Appendix A
Element 2 (Organization) Supporting Documents

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City of Half Moon Bay
SSMP and OERP Contact List

Title	Name	Contact #
City Manager	Bob Nisbet	650-726-8280
Deputy City Manager	Matthew Chidester	650-726-8272
Public Works Director	John Doughty	650-726-7177
City Engineer	Maziar Bozorginia	650-726-8251
Associate Engineer	Denice Hutten	650-750-2005
Sewer Authority Mid-Coastside (Maintenance and SSO Response)	Tim Costello (Operations Supervisor)	650-726-0124 (24 hours)
Mark Thomas Company (Operations Manager)	Frank Quach	510-299-0917
Mark Thomas Company (Operations Superintendent)	Rick Almondia	408-483-0497

ADJACENT SEWER SERVICE AREAS

Agency	Phone Number
Granada Sanitary District	650-726-7081
Montara Water and Sanitary District	650-728-3545

SSO REPORTING AND EMERGENCY CONTACT INFORMATION

Agency	Phone Number
Granada Sanitary District	650-726-7093
Montara Water and Sanitary District	650-728-3545
CA Office of Emergency Services	800-852-7550
San Mateo County Environmental Health	650-372-6200
San Mateo County Sheriff Dispatch	650-216-SMSO (7676)
San Mateo County Public Health Laboratory	650-573-2500
CA Department of Fish and Wildlife	707-944-5500
SWRCB SSO Program Manager: Paul Levy	916-323-5598

SSO REPORTING AND EMERGENCY CONTACT INFORMATION

Agency	Phone Number
Claims Representative (Internal SSO): Carl Warren & Co.	909-763-4320

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CITY OF HALF MOON BAY
CONTRACT SUBMITTAL FORM

Rev. Apr 2019

1. PROJECT MANAGER INFORMATION

PM Name: Sheri Saisi **Department:** Public Works **Project** SAMS Collections FY 2019-20

Project Description: AMENDMENT 1 TO THE PSA WITH THE SEWER AUTHORITY MID-COASTSIDE FOR SEWER COLLECTION SYSTEM CLEANING, MAINTENANCE AND RELATED SERVICES

2. VENDOR INFORMATION

Name/DBA: Sewer Authority Mid-Coastside (SAM) **Contact Person:** Kishen Prathivadi

Address: 1100 Cabrillo Highway N.
Half Moon Bay, CA 94019

Contact Phone & Email: (650) 726-0124 kishen@samcleanswater.org

CONTRACT SUBMITTAL INFORMATION

Contract: Amendment **Contract Type:** Consultant Services

Start Date: 07/01/2019 **End Date:** 07/01/2020 ☐ **On-going services**

City Council Action Required? Yes **Resolution #:** C-2019-39 **Council Action Date:** 05/07/2019

If No, Provide Reason:

Attachments must include: Insurance Certificate and Original Contract AND Amendment(s)

Public Works or Prevailing Wage Contract:

Is project registered in DIR? No **Limit: (+$15K Maint /+$25K New Construction)**

Project Manager (1) initials: SS	Project Manager (2) initials:	Deputy City Clerk Initials: JR

Department Director: John Doughty 6/21/2019
Signature Date

City Manager: Bob Nisbet 6/24/2019
Signature Date

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AMENDMENT NO. 1 TO CITY OF HALF MOON BAY AGREEMENT FOR COLLECTION SYSTEM MAINTENANCE SERVICES

THIS AGREEMENT FOR COLLECTION SYSTEM MAINTENANCE SERVICES ("Agreement") is made by and between the City of Half Moon Bay, a California municipal corporation ("City") and the Sewer Authority Mid-Coastside, a Joint Powers Agency ("Authority"), effective as of July 1, 2019.

Section 1. SERVICES. Subject to the terms and conditions set forth in this Agreement, Authority shall provide to City the services described in the Scope of Work attached hereto as Exhibit A and Exhibit C at the time and place and in the manner specified therein. For purposes of this Agreement, the term "maintenance" shall not include capital improvements, replacement of collection system facilities, or major repairs requiring design by a registered engineer. In the event of a conflict in or inconsistency between the terms of this Agreement and Exhibit A and C, this Agreement shall prevail.

1.1 **Term of Services.** The term of this Agreement shall begin on the date first noted above and shall run until July 1, 2020 unless earlier terminated by either party pursuant to Section 8, subject to possible extension by mutual agreement as specified in Section 8.2.

1.2 **Standard of Performance.** Authority shall perform all services required pursuant to this Agreement in the manner and according to the standards observed by a competent practitioner of collections system maintenance in the geographical area in which Authority is located. Authority shall prepare all work products required by this Agreement in accordance with the Scope of Work and applicable federal and state regulations and shall conform to the standards of quality normally observed by a person performing such services.

1.3 **Assignment of Personnel.** Authority shall assign only competent personnel to perform services pursuant to this Agreement. City may, in its sole discretion, at any time during the term of this Agreement, request the reassignment of any Authority personnel, Authority shall, immediately upon receiving notice from City of such request of City, evaluate, in its sole discretion, whether to reassign such person or persons. City acknowledges that reassignment of Authority personnel may requiring that the Authority meet and confer with representatives of the personnel's bargaining unit.

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1.4 **Time.** Authority shall devote such time to the performance of services pursuant to this Agreement as may be reasonably necessary to meet the standard of performance provided in Section 1.2 above and to satisfy Authority's obligations hereunder.

Section 2. COMPENSATION. Exhibits A (Scope of Work), B (Collections Budget) and C (2019-20 Regular Cleaning List) to this contract incorporated herein by this reference, contains a task-based Fee Schedule, with specifications regarding measurement and payment and unit cost. The City shall pay Authority for services rendered pursuant to the Fee Schedule at the time and in the manner set forth herein. Authority shall submit all invoices to City in the manner specified herein. Except as specifically authorized by City, Authority shall not bill City for duplicate services performed by more than one person.

Authority and City acknowledge and agree that compensation paid by City to Authority under this Agreement is based upon Authority's estimated costs of providing the services required hereunder, including salaries and benefits of employees and subcontractors of Authority. Consequently, the parties further agree that compensation hereunder is intended to include the costs of contributions to any pensions and/or annuities to which Authority and its employees, agents, and subcontractors may be eligible. City therefore has no responsibility for such contributions beyond compensation required under this Agreement except as specified herein, in the Scope of Work attached hereto as Exhibit A, in the Collections Budget attached hereto as Exhibit B or in the 2019-20 Regular Cleaning List attached hereto as Exhibit C. Nothing in the preceding sentence is intended to have any effect on payments required to be made by the City to Authority under the Agreement Creating the Sewer Authority Mid-Coastside as modified by Amendments 1 through 8 ("JEPA"), or the Stipulation and Order Regarding Expenses and Assessments of Sewer Authority Mid-Coastside entered on September 13, 2017, or any successor Stipulation and Order.

2.1 **Invoices.** Authority shall submit invoices, not more often than once a month during the term of this Agreement, based on the cost for services performed prior to the invoice date. Invoices shall contain the following information:

- Serial identifications of bills; i.e., Bill No. 1 for the first invoice, etc.;
- The beginning and ending dates of the billing period;
- A Task Summary summarizing the work performed in accordance with the Scope of Work and payment due per unit cost for each task listed in the Scope of Work, along with the amount of prior billings, the total remaining budget, and the percentage of completion of the task;
- A copy of the applicable time entries or time sheets shall be submitted showing the name of the person doing the work, the hours spent by each person, and a brief description of the work;

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- The total number of hours of work performed under the Agreement by Authority and each employee, agent, and subcontractor of Authority performing services hereunder;
- The SAM General Manager's signature.

2.2 **Monthly Payment.** City shall make monthly payments, based on complete and accurate invoices received, for services satisfactorily performed in accordance with the Scope of Work. City shall notify Authority in writing within 15 days after receipt of an invoice of any billing item that does not satisfy the requirements herein. City shall have 30 days from the receipt of an invoice that complies with all of the requirements above to pay Authority.

Should City fail to pay Authority in accordance with the preceding sentence, the unpaid amount of such invoice shall incur interest calculated from the due date in accordance with the Agreement Creating the Sewer Authority Mid-Coastside, dated February 3, 1976, as amended, but in no case shall interest paid exceed the rate prescribed by law. In the event the City notifies the Authority in writing within 15 days after receipt of an invoice of any billing item that does not satisfy the requirements herein, no interest shall accrue on the contested billing item while the dispute about that item is resolved by the parties.

2.3 **Unit Prices.** Compensation for work performed by Authority for which a unit price is specified in Exhibit B shall not exceed the extension of the unit price shown on Exhibit B times the number of units of work performed. Work that exceeds the quantities used to develop the budget, or consists of emergency repairs, all as specified in Exhibit A, must receive advanced, written authorization by the City, with the exception of SSO Response activities. The costs thereof will be invoiced by Authority and paid by City as specified in Exhibit B.

2.4 **Payment of Taxes.** Authority is solely responsible for the payment of employment taxes incurred under this Agreement and any similar federal or state taxes.

2.5 **Payment upon Termination.** In the event that the City or Authority terminates this Agreement pursuant to Section 8, the City shall compensate the Authority for all outstanding costs incurred for work satisfactorily completed as of the date of written notice of termination. Authority shall maintain adequate logs and timesheets in order to verify costs incurred to that date.

2.6 **Authorization to Perform Services.** The Authority is not authorized to perform any services or incur any costs whatsoever under the terms of this Agreement until receipt of authorization from the Contract Administrator.

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Section 3. **FACILITIES AND EQUIPMENT.** Except as set forth herein, Authority shall, at its sole cost and expense, provide all facilities and equipment that may be necessary to perform the services required by this Agreement.

Section 4. **INSURANCE REQUIREMENTS.**

4.1. During the term of this Agreement, Authority shall carry, maintain, and keep in full force and effect insurance against claims for death or injuries to persons or damages to property that may arise from or in connection with Authority's performance of this Agreement. Such insurance shall be of the types and in the amounts as set forth below:

- **General Liability**
  Authority shall maintain commercial general liability insurance with coverage at least as broad as Insurance Services Office form CG 00 01, in an amount not less than five million dollars ($5,000,000) per occurrence for bodily injury, personal injury, and property damage, including without limitation, blanket contractual liability and coverage for explosion, collapse and underground property damage hazards. If a general aggregate limit applies, either the general aggregate limit shall apply separately to this project/location or the general aggregate limit shall be twice the required occurrence limit. Authority's general liability policies shall be endorsed using Insurance Services Office form CG 20 10 to provide that City and its officers, officials, employees, volunteers, and agents shall be additional covered parties under such policies. An endorsement providing completed operations coverage for the additional covered parties, ISO form CG 20 37, is also required.

- **Auto Liability**
  Authority shall provide auto liability coverage for owned, non-owned, and hired autos using ISO Business Auto Coverage form CA 00 01, or the exact equivalent, with a limit of no less than five million dollars ($5,000,000) per accident.

- **Contractors Pollution Liability**
  Pollution Coverage shall be provided on a Contractors Pollution Liability form or other form acceptable to City providing coverage for liability arising out of sudden, accidental and gradual pollution and remediation. The policy limit shall be no less than two million dollars ($2,000,000) per claim. All activities contemplated in this agreement shall be specifically scheduled on the policy as "covered operations." The policy shall provide coverage for the hauling of waste from the project site to the final disposal location, including non-owned disposal sites.

- **Workers' Compensation**
  Authority shall maintain Workers' Compensation Insurance (Statutory Limits) and Employer's Liability Insurance with limits of at least one million dollars ($1,000,000). Authority shall submit to City, along with the certificate of insurance,

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a Waiver of Subrogation endorsement in favor of City, its officers, agents, employees, and volunteers.

4.2. During the term of this Agreement, City shall carry, maintain, and keep in full force and effect insurance against claims for death or injuries to persons or damages to property related to its Sewage Collection System. Such insurance shall be of the types and in the amounts as set forth below:

- Comprehensive General Liability Insurance with coverage limits of not less than Two Million Dollars ($2,000,000) per occurrence including public liability and property damage liability coverage. If a general aggregate limit applies, either the general aggregate limit shall apply separately to this project or the general aggregate limit shall be twice the required occurrence limit.

4.3. The policy or policies required by this Agreement shall be issued by an insurer admitted in the State of California.

4.4. Authority agrees that if it does not keep the aforesaid insurance in full force and effect, City may either (i) terminate this Agreement pursuant to Section 8.1 below; (ii) take out the necessary insurance and pay, at Authority's expense, the premium thereon, or (iii) enforce the insurance requirements in this Agreement.

4.5 If Authority maintains higher limits than the minimums shown above, City requires and shall be entitled to coverage for the higher limits maintained by Authority.

4.6. Authority shall furnish the City with original Certificates of Insurance including all required amendatory endorsements (or copies of the applicable policy language) to the City verifying the required insurance coverage before work begins. However, failure to obtain the required documents prior to the work beginning shall not waive the Authority's obligation to provide them. The City reserves the right to require complete, certified copies of all required insurance policies, including endorsements, required by these specifications, at any time.

4.7. City shall furnish Authority with original Certificates of Insurance including all required amendatory endorsements (or copies of the applicable policy language) to the Authority verifying the required insurance coverage before work begins. However, failure to obtain the required documents prior to the work beginning shall not waive the City's obligation to provide them. The Authority reserves the right to require complete, certified copies of all required insurance policies, including endorsements, required by these specifications, at any time.

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4.8. Authority shall provide proof that policies of insurance required herein expiring, or cancelled, during the term of this Agreement have been renewed or replaced with other policies providing at least the same coverage. City shall provide proof that policies of insurance required herein expiring, or cancelled, during the term of this Agreement have been renewed or replaced with other policies providing at least the same coverage. Such proof will be furnished at least two weeks prior to the expiration of the coverages, or immediately for any policy being cancelled.

4.9. The general liability, automobile, and Contractors Pollution Liability policies of insurance required by this Agreement to be maintained by Authority shall contain an endorsement naming City and its officers, employees, agents and volunteers as additional covered parties. All of the policies required under this Agreement shall contain an endorsement providing that the policies cannot be canceled or reduced except on thirty days' prior written notice to City.

4.10. The policies of insurance required by this Agreement to be maintained by City shall contain an endorsement naming Authority and its officers, employees, agents and volunteers as additional covered parties. Nothing in this provision requires the City to respond to or defend a claim arising out of Authority's failure to comply with any of its obligations contained in this Agreement or the Authority's performance of work hereunder. All of the policies required under this Agreement shall contain an endorsement providing that the policies cannot be canceled or reduced except on thirty days' prior written notice to Authority.

4.11. The insurance provided by Authority shall be primary to any coverage available to City. Any insurance or self-insurance maintained by City and/or its officers, employees, agents or volunteers, shall be in excess of Authority's insurance and shall not contribute with it. Nothing in this provision requires Authority to respond to or defend a claim solely regarding which, pursuant to section 5.2 below, Authority has no duty to defend City and its officers, officials, employees and volunteers.

4.12. All insurance coverage provided by Authority pursuant to this Agreement shall not prohibit Authority, and Authority's employees, agents or subcontractors, from waiving the right of subrogation prior to a loss. Authority hereby waives all rights of subrogation against the City based on payments made by insurance coverage provided by Authority pursuant to this Agreement. Authority agrees to obtain any endorsement that may be necessary to affect this waiver of subrogation, but this provision applies regardless of whether or not Authority has received such an endorsement.

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4.13. All insurance coverage provided by City pursuant to this Agreement shall not prohibit City, and City's employees, agents or subcontractors, from waiving the right of subrogation prior to a loss. City hereby waives all rights of subrogation against the Authority based on payments made by insurance coverage provided by City pursuant to this Agreement.

4.14. Any deductibles or self-insured retentions relating to the insurance maintained by Authority under this Agreement must be declared to and approved by the City. Any deductibles or self-insured retentions relating to the insurance maintained by City under this Agreement must be declared to the Authority.

4.15. General Liability coverage shall be maintained for a minimum of five (5) years after contract completion. In addition, if any of the required policies provide claims-made coverage, the coverage shall be maintained for a period of five years after completion of the contract. Authority or City may satisfy this requirement by renewal of existing coverage or purchase of either prior acts or tail coverage applicable to said five-year period.

4.16. The Automobile Liability Policy required to be obtained by the Authority shall be endorsed to include Transportation Pollution Liability insurance covering materials that may be transported by Authority pursuant to this Agreement.

4.17. The City reserves the right to seek to modify these insurance requirements, including limits, based on the nature of the risk, prior experience, insurer, coverage, or special circumstances, provided that such changes shall be reflected in an amendment to this Agreement pursuant to section 8.3.

Section 5. INDEMNIFICATION AND AUTHORITY'S RESPONSIBILITIES.

5.1 To the fullest extent allowed by law and subject to the remainder of this Section 5, Authority shall hold harmless, defend, and indemnify City and its officers, officials, employees and volunteers from and against any and all liability, loss, damage, expense, cost (including without limitation costs and fees of litigation) arising out of or in connection with Authority's performance of work hereunder or, where within the scope of required insurance coverage, its failure to comply with any of its obligations contained in the agreement, except such loss or damage caused by the sole or active negligence, or willful misconduct of City, and except such loss as caused by City's failure to make such major repairs or replacement as described in Section 5.2, below. In instances where the City's active negligence, willful

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misconduct, or failure to make major repairs or replacement as described in Section 5.2 accounts for only a percentage of the liability involved, the obligation of the Authority will be for that entire portion of the percentage of liability not attributable to the City's active negligence, willful misconduct, or failure to make major repairs or replacement as described in Section 5.2. Amounts (if any) paid directly by Authority in accordance with this paragraph, including (but not limited to) deductibles and self-insured retention amounts, shall be reimbursed by the Member Agencies of Authority in the following proportions: 56% by the City, 24% by Granada Community Services District, and 20% by Montara Water and Sanitary District, which is based on flows into the single consolidated treatment plant facility as established in the Authority's Fiscal Year 2019-2020 budget.

5.2 In the event that Authority has duly notified City in writing of a discrete portion of City's collection system that requires major repairs or replacement (or maintenance which is beyond Authority's obligation to furnish under this Agreement) in order to operate effectively as intended without an undue risk of overflow, spill, or other unauthorized discharge, and City agrees in writing (or, in the event of disagreement, a mutually agreeable independent third party reviews and agrees with the Authority) and does not timely undertake the needed repairs or replacement, then Authority shall have no duty pursuant to section 5.1 above to indemnify City and its officers, officials, employees and volunteers against any and all liability, claims, damage, losses and expenses caused by or resulting from City's failure to timely perform such repairs or replacement, but Authority shall have a duty to defend City against a claim wherein it is alleged that damage caused by or resulting from City's failure to timely perform such repairs or replacement was also partially caused by or resulted from SAM's services under this Agreement. City shall reimburse Authority's defense related costs in proportion to the comparative fault of the City as agreed to in a settlement or as determined in a final judgment.

5.3 It is understood that the duty of Authority to indemnify and hold harmless as described above includes the duty to defend as set forth in Section 2778 of the California Civil Code. The City and Authority shall timely notify each other of the receipt of any third-party claim relating to the Agreement. Acceptance by City of insurance certificates and endorsements required under this Agreement does not relieve Authority from liability under this indemnification and hold harmless clause, provided that payment by its insurers shall fully relieve Authority from liability under this indemnification and hold harmless clause. By execution of this Agreement, Authority acknowledges and agrees to the provisions of this Section and that it is a material element of consideration.

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5.4 The total liability in the aggregate of Authority and its employees, subcontractors or suppliers to the City and anyone claiming through or under the City on all claims of any kind arising out of or in any way related to Authority's services or from any cause or causes whatsoever shall not exceed the proceeds received from the insurance specified in Section 4 above.

Section 6. STATUS OF AUTHORITY.

6.1 **Independent Contractor.** At all times during the term of this Agreement, Authority shall be an independent contractor and shall not be an employee of City.

6.2 **Authority No Agent.** Except as specified in the Scope of Work attached hereto as Exhibit A, or as City may otherwise specify in writing, Authority shall have no authority, express or implied, to act on behalf of City in any capacity whatsoever as an agent with respect to the services performed pursuant to this Agreement.

Section 7. LEGAL REQUIREMENTS.

7.1 **Governing Law.** The laws of the State of California shall govern this Agreement.

7.2 **Compliance with Applicable Laws.** Authority and any subcontractors shall comply with all laws applicable to the performance of the work hereunder.

7.3 **Other Governmental Regulations.** To the extent that this Agreement may be funded by fiscal assistance from another governmental entity, Authority and any subcontractors shall comply with all applicable rules and regulations to which City is bound by the terms of such fiscal assistance program.

7.4 **Licenses and Permits.** Authority represents and warrants to City that Authority and its employees, agents, and any subcontractors have all licenses, permits, qualifications, and approvals of whatsoever nature that are legally required to practice their respective professions. Authority represents and warrants to City that Authority and its employees, agents, any subcontractors shall, at their sole cost and expense, keep in effect at all times during the term of this Agreement any licenses, permits, and approvals that are legally required to practice their respective professions.

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7.5 **Nondiscrimination and Equal Opportunity.** As provided in Government Code Section 12940, Authority shall not discriminate, on the basis of a person's race, religion, color, national origin, ancestry, age, physical or mental handicap or disability, medical condition, genetic information, marital status, sex, gender, gender identity, gender expression, sexual orientation, or military and veteran status against any employee, applicant for employment, subcontractor, bidder for a subcontract, or participant in, recipient of, or applicant for any services or programs provided by Authority under this Agreement. Authority shall comply with all applicable federal, state, and local laws, policies, rules, and requirements related to equal opportunity and nondiscrimination in employment, contracting, and the provision of any services that are the subject of this Agreement, including but not limited to the satisfaction of any positive obligations required of Authority thereby.

Authority shall include the provisions of this Subsection in any subcontract approved by the Contract Administrator or this Agreement.

Section 8. TERMINATION AND MODIFICATION.

8.1 **Termination.** City may cancel this Agreement at any time and without cause upon 90 day's written notice to Authority.

Authority may cancel this Agreement at any time and without cause upon 90 days' written notice to City.

In the event of termination, Authority shall be entitled to compensation for services performed to the effective date of termination; City, however, may condition payment of such compensation upon Authority delivering to City any or all documents, photographs, computer software, video and audio tapes, and other materials provided to Authority or prepared by or for Authority or the City in connection with this Agreement. In the event Authority is not provided notice of any outstanding materials to be delivered to City, Authority shall be entitled to payment within 30 days.

8.2 **Extension.** City may request that the end date of this Agreement be extended beyond the term provided for in Subsection 1.1, provided that any such extension shall require a written amendment to this Agreement, as provided for herein, and that the Parties agree to a fee schedule for services during the extension period.

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8.3 **Amendments.** The parties may amend this Agreement only by a writing signed by all the parties.

8.4 **Assignment and Subcontracting.** City and Authority recognize and agree that this Agreement contemplates performance by personnel employed by Authority and is based upon a determination of Authority's unique institutional competence, experience, and specialized institutional knowledge. Authority may not assign this Agreement or any interest therein. Authority shall not subcontract any portion of the performance contemplated and provided for herein absent a formal amendment to this Agreement. Authority may contract with a third-party consultant to provide training for its staff as specified in Exhibit A provided that this training will not add cost to the City that is not already included in the Budget attached as Exhibit B. Nothing in this Agreement shall be construed to allow City to assign this Agreement or any interest therein.

8.5 **Survival.** All obligations arising under this Agreement prior to the termination of this Agreement and all provisions of this Agreement allocating liability between City and Authority for matters pertaining to this Agreement shall survive the termination of this Agreement.

8.6 **Options upon Breach by Authority.** If Authority materially breaches any of the terms of this Agreement, City's remedies shall include, but not be limited to, the following:

8.6.1 Terminate the Agreement pursuant to Section 8.1;

8.6.2 Retain the plans, specifications, drawings, reports, design documents, and any other work product prepared by Authority pursuant to this Agreement;

8.6.3 Retain a different entity to complete the work described in Exhibit A not finished by Authority; or

8.6.4 Charge Authority the difference between the cost to complete the work described in Exhibit A that is unfinished at the time of breach and the amount that City would have paid Authority pursuant to Section 2 if Authority had completed the work.

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8.7 **Options upon Breach by City.** If City materially breaches any of the terms of this Agreement, Authority may seek the City's compliance, or may terminate the Agreement after 90 days' written notice pursuant to Section 8.1.

Section 9. KEEPING AND STATUS OF RECORDS.

9.1 **Records Created as Part of Authority's Performance.** All reports, data, maps, models, charts, studies, surveys, photographs, memoranda, plans, studies, specifications, records, files, or any other documents or materials, in electronic or any other form, that Authority prepares or obtains pursuant to this Agreement and that relate to the matters covered hereunder shall be the property of the City and Authority. Authority hereby agrees to deliver one original or certified copy of those documents to the City upon termination of the Agreement. It is understood and agreed that the documents and other materials, including but not limited to those described above, prepared pursuant to this Agreement are not necessarily suitable for any future or other use. To the extent allowed by law, City and Authority agree that, until final approval by City, all data, plans, specifications, reports and other documents will not be released to third parties without prior written consent of both parties.

9.2 **Authority's Books and Records.** Authority shall maintain any and all ledgers, books of account, invoices, vouchers, canceled checks, and other records or documents evidencing or relating to charges for services or expenditures and disbursements charged to the City under this Agreement for a minimum of three (3) years, or for any longer period required by law, from the date of final payment to the Authority to this Agreement.

9.3 **Inspection and Audit of Records.** Any records or documents that Section 9.2 of this Agreement requires Authority to maintain shall be made available for inspection, audit, and/or copying at any time during regular business hours, upon oral or written request of the City. Under California Government Code Section 8546.7, if the amount of public funds expended under this Agreement exceeds TEN THOUSAND DOLLARS ($10,000.00), the Agreement shall be subject to the examination and audit of the State Auditor, at the request of City or as part of any audit of the City, for a period of three (3) years after final payment under the Agreement.

Section 10 MISCELLANEOUS PROVISIONS.

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10.1 **Venue.** In the event that either party brings any action against the other under this Agreement, the parties agree that the venue for trial of such action shall be vested exclusively in the state courts of California in the County of San Mateo or in the United States District Court for the Northern District of California., subject to the provisions of the Code of Civil Procedure of the State of California regarding a change of venue

10.2 **Severability.** If a court of competent jurisdiction finds or rules that any provision of this Agreement is invalid, void, or unenforceable, the provisions of this Agreement not so adjudged shall remain in full force and effect. The invalidity in whole or in part of any provision of this Agreement shall not void or affect the validity of any other provision of this Agreement.

10.3 **No Implied Waiver of Breach.** The waiver of any breach of a specific provision of this Agreement does not constitute a waiver of any other breach of that term or any other term of this Agreement.

10.4 **Successors and Assigns.** Subject to Section 8.4, the provisions of this Agreement shall inure to the benefit of and shall apply to and bind the successors and assigns of the parties.

10.5 **Use of Recycled Products.** Authority shall prepare and submit all reports, written studies and other printed material on recycled paper to the extent it is available at equal or less cost than virgin paper.

10.6 **Services to Other Members.** Authority may provide collection system maintenance services for its other Member Agencies, including portions of the Granada Community Services District's collections system lying within the corporate limits of City.

10.7 **Conflict of Interest.** Authority shall not employ any City official in the work performed pursuant to this Agreement. No officer or employee of City shall have any financial interest in this Agreement that would violate California Government Code Sections 1090 *et seq.*

10.8 **Contract Administration.** This Agreement shall be administered by the City Manager or their designee ("Contract Administrator"). All correspondence shall be directed to or through the Contract Administrator. In addition, Mark Thomas & Company (MTCo) has been retained under a separate contract with the City to

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provide daily oversight of SAM activities under this Agreement, and SAM shall coordinate with MTCo as provided in Exhibit A.

10.9 Notices.

Any written notice to Authority shall be sent to:

Sewer Authority Mid-Coastside
1000 Cabrillo Highway North
Half Moon Bay, CA 94019
Attention: Acting General Manager
Phone: 650-726-0124
Email: kishen@samcleanswater.org

Any written notice to City shall be sent to:

City of Half Moon Bay
501 Main Street
Half Moon Bay, CA 94019
Attn: City Manager
Phone: 650-726-8280
Fax: (650) 726-9389
Email: publicworks@hmbcity.com

10.11 Integration. This Agreement, including the Scope of Work and Fee Schedule attached hereto and incorporated herein as Exhibits A and B represents the entire and integrated agreement between City and Authority with regard to the provision of collection system maintenance services as described herein, and supersedes all prior negotiations, representations, or agreements, either written or oral, with respect to collection system maintenance services, including the Agreement for Maintenance and Operation Services between the City of Half Moon Bay and Sewer Authority Mid-Coastside dated May 3, 1988.

This Agreement does not in any way amend or otherwise affect the JEPA. City and Authority expressly agree that the operation and maintenance by Authority of its wastewater interceptor, treatment and disposal system is independent of the operation and maintenance by Authority of City's sewerage collection system.

IN WITNESS WHEREOF, the City and the Consultant have executed this Agreement effective as of the date first written above.

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"CITY"
CITY OF HALF MOON BAY

Date: 6/24/2019

By: Bob Nisbet
City Manager

Attest:

By: Jessica Blair
City Clerk

Date: 6/24/2019

Approved as to form:

Catherine Engberg
City Attorney

"CONSULTANT"
Sewer Authority Mid-Coastside

Date: 6/18/19

By: P.R. Kishen
Kishen Prathivadi
Its: Acting General Manager

Attachments:

Exhibit A--Scope of Services
Exhibit B--Collections Budget

1013078.8

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Resolution No. C-2019-39

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF HALF MOON BAY AUTHORIZING THE CITY MANAGER TO EXECUTE AMENDMENT NO. 1 TO THE PROFESSIONAL SERVICES AGREEMENT WITH THE SEWER AUTHORITY MID-COASTSIDE FOR SEWER COLLECTION SYSTEM CLEANING, MAINTENANCE AND RELATED SERVICES

WHEREAS, the City entered into a professional services agreement with the Sewer Authority Mid-Coastside on July 23, 2018; and

WHEREAS, the City and SAM have agreed that extension of the agreement for an additional year is mutually beneficial; and

WHEREAS, SAM has indicated to staff that SAM will provide honor the annual cost figure submitted with their proposal in February 2018.

NOW, THEREFORE, BE IT RESOLVED THAT the City Council of the City of Half Moon Bay hereby authorizes the City Manager to execute Amendment No. 1 to the Professional Services Agreement with the Sewer Authority Mid-Coastside extending the expiration date to June 30, 2020 at a not to exceed amount of $176,458.

****

I, the undersigned, hereby certify that the foregoing resolution was duly passed and adopted on the 7th day of May, 2019 by the City Council of Half Moon Bay by the following vote:

AYES, Councilmembers: Brownstone, Penrose, Ruddock, Eisen, Rarback

NOES, Councilmembers:

ABSENT, Councilmembers:

ABSTAIN, Councilmembers:

ATTEST:

Jessica Blair, City Clerk

APPROVED:

Harvey Rarback, Mayor

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CSRMA California Sanitation Risk Management Authority

c/o ALLIANT INSURANCE SERVICES, INC. Insurance License No.: 0C36861
100 Pine Street, 11th Floor, San Francisco, CA 94111-5101 Tel: 415.403.1400 Fax: 415.874.4813

OFFICERS:
Paul Bushee, *President*
760.753.0155
Greg Baatrup, *Vice President*
707.429.8930

PAST PRESIDENTS:
Russ Baggerly
2010-2014
Robert Reid
2006-2010

August 22, 2018

Ms. Beverli Marshall
General Manager
Sewer Authority Mid-Coastside
1000 Cabrillo Hwy N
Half Moon Bay, CA 94019

HMB/SAM Collection System Agreement

Dear Beverli,

CSRMA will waive its rights of recovery against the City of Half Moon Bay its officers, agents, employees, and volunteers as respects the Agreement for Collection System Maintenance Services made by and between the City of Half Moon Bay and the Sewer Authority Mid-Coastside.

Please let me know if you have any questions or require anything further.

Best regards,

Seth Cole
Program Administrator
(415) 403-1419

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CERTIFICATE OF COVERAGE

DATE (MM/DD/YYYY)
8/22/2018

PRODUCER

Alliant Insurance Services, Inc.- SFO
100 Pine Street, 11th Floor
San Francisco CA 94111

NAMED COVERED PARTY

CSRMA WC Program Member:
Sewer Authority Mid-Coastside
1000 N Cabrillo Hwy
Half Moon Bay CA 95814

THIS CERTIFICATE IS ISSUED AS A MATTER OF EVIDENCE ONLY AND CONFERES NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE MEMORANDUM(S) OF COVERAGE BELOW.

THIS CERTIFICATE OF COVERAGE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING COVERAGE PROVIDER, AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: IF THE CERTIFICATE HOLDER IS AN ADDITIONAL COVERED PARTY, THE MEMORANDUM OF COVERAGE MUST BE ENDORSED. A STATEMENT ON THIS CERTIFICATE DOES NOT CONFER RIGHTS TO THE CERTIFICATE HOLDER IN LIEU OF SUCH ENDORSEMENT(S).

IMPORTANT: IF SUBROGATION IS WAIVED, SUBJECT TO THE TERMS AND CONDITIONS OF THE MEMORANDUM(S) OF COVERAGE AN ENDORSEMENT MAY BE REQUIRED. A STATEMENT ON THE CERTIFICATE DOES NOT CONFER RIGHTS TO THE CERTIFICATE HOLDER IN LIEU OF SUCH ENDORSEMENT(S).

PROGRAM AFFORDING COVERAGE

A: CSRMA - California Sanitation Risk Management Auth

B:

C:

COVERAGES

THIS IS TO CERTIFY THAT THE COVERAGE IS AFFORDED TO THE ABOVE NAMED MEMBER, AS PROVIDED BY THE MEMORANDUM(S) OF COVERAGE, FOR THE PERIOD SHOWN BELOW, NOT WITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN. THE COVERAGE AFFORDED BY THE PROGRAM DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS, AND CONDITIONS OF SUCH MEMORANDUM(S) OF COVERAGE. THE FOLOWING COVERAGE IS IN EFFECT.

JPA LTR	TYPE OF COVERAGE	MEMORANDUM NUMBER	COVERAGE EFFECTIVE DATE (MM/DD/YY)	COVERAGE EXPIRATION DATE (MM/DD/YY)	LIMITS	
	GENERAL LIABILITY				EACH OCCURRENCE	$
	☐ COMMERCIAL GENERAL LIABILITY				FIRE DAMAGE (Any one fire)	$
	☐ CLAIMS MADE ☐ OCCUR				MED EXPENSE (Any one person)	$
					PERSONAL & ADV INJURY	$
					GENERAL AGGREGATE	$
	GEN'L AGGREGATE LIMIT APPLIES PER:				PRODUCTS-COMP/OP AGG	$
	☐ MEMOR-ANDUM ☐ PROJECT ☐ LOC					
	AUTOMOBILE LIABILITY				COMBINED SINGLE LIMIT (Ea accident)	$
	☐ ANY AUTO					$
	☐ ALL OWNED AUTOS					
	☐ SCHEDULED AUTOS					
	☐ HIRED AUTOS					
	☐ NON-OWNED AUTOS					
A	**WORKERS' COMPENSATION AND EMPLOYERS LIABILITY**	CSWC SAM 1819 1	7/1/2018	7/1/2019	☐ WC STATUTORY LIMITS ☒ OTHER	$750,000
	ANY PROPRIETOR/PARTNER/ EXECUTIVE/OFFICER/MEMBER EXCLUDED?				E.L. EACH ACCIDENT	$
	IF YES, DESCRIBED UNDER SPECIAL PROVISION BELOW				E.L. DISEASE – EA EMPLOYEE	$
					E.L. DISEASE – POLICY LIMIT	$
	OTHER					
	OTHER					

DESCRIPTION OF OPERATIONS/LOCATIONS/VEHICLES/EXCLUSIONS ADDED BY ENDORSEMENT/SPECIAL/PROVISIONS

THIS CERTIFICATE IS ISSUED WITH RESPECT TO AGREEMENT FOR COLLECTION SYSTEM MAINTENANCE SERVICES BETWEEN THE CITY OF HALF MOON BAY AND SEWER AUTHORITY MID-COASTSIDE.

WAIVER OF SUBROGATION INCLUDED.

CERTIFICATE HOLDER

City of Half Moon Bay
501 Main Street
Half Moon Bay CA 94019

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED MEMORANDUM(S) OF COVERAGE BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE MEMORANDUM(S) OF COVERAGE PROVISIONS.

AUTHORIZED REPRESENTATIVE

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ENVIRONMENTAL MUNICIPALITY POLICY

POLLUTION AND REMEDIATION LEGAL LIABILITY

THIS IS A "CLAIMS-MADE AND REPORTED" POLICY. THIS POLICY REQUIRES THAT A CLAIM BE MADE AGAINST THE INSURED DURING THE POLICY PERIOD AND REPORTED TO THE COMPANY DURING THE POLICY PERIOD OR, WHERE APPLICABLE, THE EXTENDED REPORTING PERIOD. IN ADDITION, THIS POLICY MAY HAVE PROVISIONS OR REQUIREMENTS DIFFERENT FROM OTHER POLICIES YOU MAY HAVE PURCHASED. PLEASE READ CAREFULLY.

THIS POLICY CONTAINS PROVISIONS WHICH LIMIT THE AMOUNT OF LEGAL EXPENSE THE COMPANY IS RESPONSIBLE TO PAY. LEGAL EXPENSE SHALL BE APPLIED AGAINST THE SELF-INSURED RETENTION AMOUNT STATED IN ITEM 4. OF THE DECLARATIONS AND IS SUBJECT TO THE LIMITS OF LIABILITY STATED IN ITEM 3. OF THE DECLARATIONS.

In consideration of the payment of the Policy Premium stated in Item 7. of the Declarations and in reliance upon the statements contained in the Application and any other supplemental materials and information submitted herewith, and subject to all the terms and conditions of this Policy, and the Limits of Liability, and Self-Insured Retention Amount stated in the Declarations, the Company agrees with the INSURED as follows:

I. INSURING AGREEMENT

A. Coverage A - POLLUTION LEGAL LIABILITY

The Company will pay on behalf of the INSURED for LOSS and related LEGAL EXPENSE resulting from any POLLUTION CONDITION on, at, under or migrating from any COVERED LOCATION, which the INSURED has or will become legally obligated to pay as a result of a CLAIM first made against the INSURED during the POLICY PERIOD and reported to the Company, in writing, by the INSURED, during the POLICY PERIOD or, where applicable, the EXTENDED REPORTING PERIOD.

B. Coverage B - REMEDIATION LEGAL LIABILITY

The Company will pay on behalf of the INSURED for REMEDIATION EXPENSE and related LEGAL EXPENSE resulting from any POLLUTION CONDITION on, at, under or migrating from any COVERED LOCATION:

1. for a CLAIM first made against the INSURED during the POLICY PERIOD which the INSURED has or will become legally obligated to pay; or

2. that is first discovered during the POLICY PERIOD,

provided that the INSURED reports such CLAIM or POLLUTION CONDITION to the Company, in writing, during the POLICY PERIOD or, where applicable, the EXTENDED REPORTING PERIOD.

C. Coverage C - CONTINGENT TRANSPORTATION COVERAGE

The Company will pay on behalf of the INSURED for LOSS, REMEDIATION EXPENSE and related LEGAL EXPENSE resulting from any POLLUTION CONDITION that arises solely during the course of TRANSPORTATION by any CARRIER, which the INSURED has or will become legally obligated to pay as a result of a CLAIM first made against the INSURED during the POLICY PERIOD and reported to the Company, in writing, by the INSURED, during the POLICY PERIOD or, where applicable, the EXTENDED REPORTING PERIOD.

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II. DEFINITIONS

A. **ADDITIONAL NAMED INSURED** means any person(s) or entity(ies) endorsed onto this Policy as an ADDITIONAL NAMED INSURED, but solely to the extent such person(s) or entity(ies) is liable as a result of the ownership, occupation, development, operation, maintenance, financing or use of any COVERED LOCATION.

B. **BODILY INJURY** means:

1. physical injury, sickness, disease or building related illness, including death resulting therefrom, and any accompanying medical or environmental monitoring; and/or

2. mental anguish, emotional distress, or shock,

caused by any POLLUTION CONDITION.

C. **CARRIER** means any person(s) or entity(ies), other than the INSURED or any subsidiary or affiliate company of the INSURED, engaged by or on behalf of the INSURED, licensed and in the business of transporting property for hire by land motor vehicle or watercraft.

D. **CLAIM** means any demand(s), notice(s) or assertion(s) of a legal right alleging liability or responsibility on the part of the INSURED and shall include but not be limited to lawsuit(s), petition(s), order(s) or government and/or regulatory action(s), filed against the INSURED.

E. **COVERED LOCATION** means any location(s) listed in the Covered Location Schedule endorsed onto this Policy.

F. **EXTENDED REPORTING PERIOD** means the Automatic Extended Reporting Period or, if applicable, the Optional Extended Reporting Period, as described in Section V. EXTENDED REPORTING PERIOD of this Policy.

G. **FIRST NAMED INSURED** means the person or entity stated in Item 1. of the Declarations.

H. **INSURED** means the FIRST NAMED INSURED, any ADDITIONAL NAMED INSURED endorsed onto this Policy, and any present or former director, officer, partner, employee, leased worker or temporary worker thereof while acting within the course and scope of his/her duties as such.

I. **LEGAL EXPENSE** means legal costs, charges and expenses incurred in the investigation, adjustment or defense of any CLAIM for LOSS or REMEDIATION EXPENSE, or in connection with the payment of any REMEDIATION EXPENSE as applicable, and shall include any necessary expert fees paid to experts retained by defense counsel.

LEGAL EXPENSE does not include the time and expense incurred by the INSURED in assisting in the investigation or resolution of a CLAIM or in connection with REMEDIATION EXPENSE, including but not limited to the costs of the INSURED'S in-house counsel, salary charges of regular employees or officials of the INSURED, and fees and expenses of supervisory counsel retained by the INSURED.

J. **LOSS** means monetary judgment, award or settlement of compensatory damages as well as related punitive, exemplary or multiplied damages where insurance coverage is allowable by law arising from:

1. BODILY INJURY; and/or

2. PROPERTY DAMAGE.

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K. **LOW-LEVEL RADIOACTIVE WASTE AND MATERIAL** means:

1. Waste as defined in Title 10 Code of Federal Regulations, Part 61.2; and/or

2. material regulated by the United States Nuclear Regulatory Commission or an Agreement State under a Type A, B or C Specific License of Broad Scope as defined in Title 10 Code of Federal Regulations, Part 33.11.

L. **MOLD MATTER** means mold, mildew or any type or form of fungus; including any mycotoxins, spores, or byproducts produced or released by fungi.

M. **MOLD MATTER REMEDIATION STANDARD** means standards for the investigation and abatement of MOLD MATTER imposed by a Federal, State, Local or Provincial governmental authority pursuant to a law or regulation governing the investigation and abatement of MOLD MATTER. If no standards have been imposed by such authority, then the standards for investigation and abatement shall be those necessary to protect human health at the COVERED LOCATION, as determined in consultation with a MOLD MATTER PROFESSIONAL, and shall be no less than those remediation activities recommended by the New York City Department of Health & Mental Hygiene Guidelines on Assessment and Remediation of Fungi in Indoor Environments ("NYC Guidelines"), or any subsequent amendments thereof. All of these standards shall take into consideration the use of the COVERED LOCATION on the date the COVERED LOCATION was endorsed onto this Policy.

N. **MOLD MATTER PROFESSIONAL** means a Certified Industrial Hygienist, or similarly qualified health and safety professional experienced in performing mold investigation and remediation, retained by or with the prior written consent of the Company.

O. **NATURAL RESOURCE DAMAGE** means physical injury to or destruction of, as well as the assessment of such injury or destruction, including the resulting loss of value of land, fish, wildlife, biota, air, water, groundwater, drinking water supplies, and other such resources belonging to, managed by, held in trust by, appertaining to, or otherwise controlled by the United States (including the resources of the fishery conservation zone established by the Magnuson-Stevens Fishery Conservation and Management Act 16 U.S.C. 1801 et. seq.), any State, Local or Provincial government, any foreign government, any Native American tribe or, if such resources are subject to a trust restriction on alienation, any member of a Native American tribe.

P. **POLICY PERIOD** means the period stated in Item 2. of the Declarations, or any shorter period arising as a result of cancellation.

Q. **POLLUTANTS** means any solid, liquid, gaseous or thermal pollutant, irritant or contaminant including but not limited to smoke, vapors, odors, soot, fumes, acids, alkalis, toxic chemicals, hazardous substances, waste materials, including medical, infectious and pathological wastes, electromagnetic fields, LOW-LEVEL RADIOACTIVE WASTE AND MATERIAL, and MOLD MATTER.

R. **POLLUTION CONDITION** means:

1. the discharge, dispersal, release, seepage, migration, or escape of POLLUTANTS into or upon land, or structures thereupon, the atmosphere, or any watercourse or body of water including groundwater;

2. the presence of any uncontrolled or uncontained POLLUTANTS into land, the atmosphere, or any watercourse or body of water including groundwater; or

3. the presence of MOLD MATTER on buildings or structures.

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S. **PROPERTY DAMAGE** means:

1. physical injury to or destruction of tangible property, including the resulting loss of use thereof, and including the personal property of third parties;

2. loss of use of such property that has not been physically injured or destroyed;

3. diminished third party property value; and/or

4. NATURAL RESOURCE DAMAGE,

caused by any POLLUTION CONDITION.

PROPERTY DAMAGE does not include REMEDIATION EXPENSE.

T. **REMEDIATION EXPENSE** means expenses caused by a POLLUTION CONDITION and incurred to investigate, assess, remove, dispose of, abate, contain, treat or neutralize a POLLUTION CONDITION, to the extent required by:

1. Federal, State, Local or Provincial Laws, Regulations or Statutes, or any subsequent amendments thereof, or MOLD MATTER REMEDIATION STANDARDS, enacted to address a POLLUTION CONDITION, including any individual or entity acting under the authority thereof; and/or

2. a legally executed state voluntary program governing the cleanup of a POLLUTION CONDITION.

REMEDIATION EXPENSE shall also include any associated (i) monitoring and testing costs, or (ii) punitive, exemplary or multiplied damages, where insurable by law. REMEDIATION EXPENSE shall also include RESTORATION COSTS.

U. **RESTORATION COSTS** means reasonable and necessary costs incurred by the INSURED to restore, repair or replace real or personal property to substantially the same condition it was in prior to being damaged during work performed in the course of incurring REMEDIATION EXPENSE.

However, these costs shall not exceed the actual cash value of such real or personal property immediately prior to incurring the REMEDIATION EXPENSE or include costs associated with improvements or betterments. Actual cash value is defined as the cost to replace such real or personal property, immediately prior to incurring the REMEDIATION EXPENSE, minus the accumulated depreciation of the real or personal property.

V. **RESPONSIBLE INSURED** means:

1. any officer, director, or partner of the INSURED;

2. any person(s) or entity(ies) authorized by the INSURED to act for or in place of the INSURED; and/or

3. any employee of the INSURED responsible for the environmental or health and safety affairs of the INSURED.

W. **TRANSPORTATION** means:

1. **Out-Bound** - the movement by a CARRIER of the INSURED'S product or waste generated by the INSURED, after a CARRIER crosses the legal boundary of a COVERED LOCATION until the INSURED'S waste or product is delivered or unloaded by the CARRIER; and/or

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2. **In-Bound** - the loading and movement by a CARRIER of material, from a location other than a COVERED LOCATION, until the CARRIER crosses the legal boundary of a COVERED LOCATION.

X. **UNDERGROUND STORAGE TANK(S)** means any stationary container or vessel, including the associated piping connected thereto, which is ten percent (10%) or more beneath the surface of the ground and is: (i) constructed primarily of non-earthen materials; and (ii) designed to contain any substance.

III. TERRITORY

A CLAIM must be made or brought in the United States, its territories or possessions or in Canada.

This Policy shall not apply to any risk which would be in violation of the laws of the United States or Canada, as applicable, including, but not limited to, United States economic or trade sanction laws or export control laws administered by the United States Treasury, State, and Commerce Departments (e.g. the economic and trade sanctions administered by the United States Treasury Office of Foreign Assets Control).

IV. EXCLUSIONS

This Policy does not apply to LOSS, REMEDIATION EXPENSE, LEGAL EXPENSE or any other coverages afforded by endorsement attached to this Policy:

1. Non-Disclosed Conditions
arising from any POLLUTION CONDITION existing prior to the inception date of this Policy, and reported to or known by a RESPONSIBLE INSURED, which was not disclosed in writing to the Company in the Application or related materials prior to the inception date of this Policy or prior to the COVERED LOCATION being endorsed onto this Policy. Any POLLUTION CONDITION disclosed in writing to the Company and not otherwise excluded under this Policy is deemed to be first discovered on the date a COVERED LOCATION is endorsed onto this Policy.

2. Fines/Penalties/Assessments
based upon or arising out of any fines, penalties or assessments.

This exclusion does not apply to punitive, exemplary or multiplied damages.

3. Employer's Liability/Workers' Compensation
based upon or arising out of injury to:

a. any employee, director, officer, partner, leased worker or temporary worker of the INSURED if such injury occurs during and in the course of said employment, or during the performance of duties related to the conduct of the INSURED'S business, or arising out of any Workers' Compensation, unemployment compensation or disability benefits law or similar law; and

b. the spouse, child, parent, brother or sister of such employee, director, officer, partner, leased worker or temporary worker of the INSURED as a consequence of Item a. above.

4. Contractual Liability
based upon or arising as a result of liability of others assumed by the INSURED in any contract or agreement unless the liability would exist in the absence of a contract or agreement.

Only as it applies to coverages offered under this Policy, this exclusion does not apply to liability of others assumed by the INSURED in contracts listed in the Insured Contract(s) Schedule endorsed onto this Policy.

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5. Insured's Property/Bailee Liability
with respect to PROPERTY DAMAGE only, to property owned, leased or operated by, or in the care, custody or control of the INSURED, even if such PROPERTY DAMAGE is incurred to avoid or mitigate LOSS or REMEDIATION EXPENSE which may be covered under this Policy.

This exclusion does not apply to RESTORATION COSTS or NATURAL RESOURCE DAMAGE.

6. New Pollution Conditions at Divested Property
based upon or arising from any POLLUTION CONDITION on, at, under or migrating from any COVERED LOCATION, where the actual discharge, dispersal, release, seepage, migration or escape of POLLUTANTS commenced subsequent to the time such COVERED LOCATION was sold, given away, or abandoned by the INSURED, or condemned.

7. Radioactive / Nuclear Material
based upon or arising out of:

a. ionizing radiations or contamination by radioactivity from any nuclear fuel or from any nuclear waste from the processing or reaction of nuclear fuel;

b. the radioactive, toxic, explosive or other hazardous properties of any explosive nuclear assembly or nuclear component thereof;

c. the existence, required removal or abatement of Naturally Occurring Radioactive Material, including but not limited to radon;

d. high-level radioactive waste (spent nuclear fuel or the highly radioactive waste produced if spent fuel is reprocessed), uranium milling residues and waste with greater than specified quantities of elements heavier than uranium; or

e. mixed Waste as defined in Title 40 Code of Federal Regulations, Part 266.210; however, this clause e. does not apply to Mixed Waste that contains Waste as defined in Title 10 Code of Federal Regulations, Part 61.2,

including, but not limited to the actual, alleged or threatened exposure of any person(s) or property to any such matter.

8. Products Liability
based upon or arising out of goods or products manufactured, sold, handled, distributed, altered or repaired by the INSURED or by others trading under the INSURED's name including any container thereof, any failure to warn, or any reliance upon a representation or warranty made at any time with respect thereto, but only if the POLLUTION CONDITION took place away from a COVERED LOCATION and after physical possession of such goods or products has been relinquished to others.

This exclusion does not apply to Coverage C – CONTINGENT TRANSPORTATION COVERAGE, as stated in Section I. INSURING AGREEMENT of this Policy.

9. Non-Compliance
arising from any POLLUTION CONDITION that results from the intentional disregard of, or the deliberate, willful or dishonest non-compliance by a RESPONSIBLE INSURED with any statute, regulation, ordinance, order, notice letter or instruction from, by or on behalf of any governmental body or entity.

10. Hostile Acts
based upon or arising out of any consequence, whether direct or indirect, of war, invasion, act of foreign enemy, hostilities (whether war be declared or not), civil war, rebellion, revolution, insurrection or military or usurped power.

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11. Lead-Based Paint and Asbestos
based upon or arising out of the existence, required removal or abatement of lead-based paint or asbestos, in any form, in any building or structure, including but not limited to products containing asbestos, asbestos fibers, asbestos dust, and asbestos containing materials.

12. Underground Storage Tank(s)
based upon or arising out of the existence of any UNDERGROUND STORAGE TANK(S) on, at or under a COVERED LOCATION. This exclusion does not apply to UNDERGROUND STORAGE TANK(S):

a. which are closed, abandoned-in-place or removed prior to the inception date of this Policy, in accordance with all applicable Federal, State, Local or Provincial Regulations in effect at the time of closure, abandonment or removal;

b. listed in the Underground Storage Tank(s) Schedule endorsed onto this Policy, if any;

c. the existence of which is unknown by a RESPONSIBLE INSURED as of the inception date of this Policy;

d. flow-through process tanks, including oil/water separators; or

e. storage tank(s) situated in an underground area (such as a basement, cellar, mine shaft or tunnel) if the storage tank is situated upon or above the surface of the floor.

13. Insured vs. Insured
based upon or arising from a CLAIM by one INSURED against another INSURED.

14. Material Change in Use or Operations
based upon or arising out of a material change in the use of, or a material change in the operations at, any COVERED LOCATION from those set forth by the INSURED in the Application or related materials as of the inception date of this Policy.

15. Retroactive Date
based upon or arising out of any POLLUTION CONDITION that commenced prior to the Retroactive Date stated in Item 5. of the Declarations which includes any dispersal, migration or further movement of the aforementioned POLLUTION CONDITION on or after the Retroactive Date stated in Item 5. of the Declarations.

16. Reverse Retroactive Date
based upon or arising out of any POLLUTION CONDITION that commenced subsequent to the Reverse Retroactive Date stated in Item 6. of the Declarations.

17. Communicable Diseases
based upon or arising out of the exposure to infected individuals or animals, or contact with bodily fluids of infected individuals or animals.

V. EXTENDED REPORTING PERIOD

A. Automatic Extended Reporting Period:

The INSURED shall be entitled to a ninety (90) day Automatic Extended Reporting Period for no additional premium, commencing on the last day of the POLICY PERIOD, subject to the following terms and conditions:

1. The Automatic Extended Reporting Period shall apply to a CLAIM first made against the INSURED during the POLICY PERIOD and reported to the Company, in writing, by the INSURED during the Automatic Extended Reporting Period and otherwise covered by this Policy.

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2. The Automatic Extended Reporting Period shall also apply to a CLAIM first made against the INSURED during the Automatic Extended Reporting Period, resulting from any POLLUTION CONDITION first discovered and reported to the Company, in writing, by the INSURED during the POLICY PERIOD and otherwise covered by this Policy. In this case, the CLAIM shall be deemed to have been made against the INSURED on the last day of the POLICY PERIOD.

3. The Automatic Extended Reporting Period shall also apply to any POLLUTION CONDITION first discovered by the INSURED during the POLICY PERIOD and reported to the Company, in writing, by the INSURED within the Automatic Extended Reporting Period and otherwise covered under this Policy.

The ninety (90) day Automatic Extended Reporting Period does not apply where:

1. this Policy is terminated for fraud, misrepresentation or non-payment of premium as described in Section IX. CONDITIONS, B. Cancellation, Items 2.a. and 2.b.; or

2. the INSURED has purchased other insurance to replace this Policy, which provides coverage for a CLAIM and/or POLLUTION CONDITION.

B. Optional Extended Reporting Period:

The FIRST NAMED INSURED shall be entitled to purchase an Optional Extended Reporting Period in the event this Policy is non-renewed, subject to the following terms and conditions:

1. The Optional Extended Reporting Period shall become effective upon payment of an additional premium of not more than one hundred percent (100%) of the full Policy Premium. The Optional Extended Reporting Period shall be effective for three (3) consecutive three-hundred and sixty-five (365) day periods commencing on the last day of the POLICY PERIOD. The FIRST NAMED INSURED must indicate its intention, in writing, to purchase this Optional Extended Reporting Period within thirty (30) days from the last day of the POLICY PERIOD. The Automatic Extended Reporting Period of ninety (90) days will be merged into this period and is not in addition to this period.

2. The Optional Extended Reporting Period shall only apply to a CLAIM first made against the INSURED during the Optional Extended Reporting Period, resulting from any POLLUTION CONDITION first discovered and reported to the Company, in writing, by the INSURED, during the POLICY PERIOD and otherwise covered by this Policy.

The Optional Extended Reporting Period does not apply where:

1. this Policy is terminated for fraud, misrepresentation or non-payment of premium as described in Section IX. CONDITIONS, B. Cancellation, Items 2.a. and 2.b.; or

2. the INSURED has purchased other insurance to replace this Policy, which provides coverage for a CLAIM and/or POLLUTION CONDITION.

It is a condition precedent to the operation of the rights granted under Item B. above that payment of the appropriate premium shall be made not later than thirty (30) days after expiration of this Policy in the case of non-renewal.

For purposes of Item B. Optional Extended Reporting Period as referenced above, the quotation of different terms and conditions by the Company shall not be construed as a non-renewal of this Policy.

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VI. LIMITS OF LIABILITY AND SELF-INSURED RETENTION

A. The Company will pay one hundred percent (100%) of all covered LOSS, REMEDIATION EXPENSE, LEGAL EXPENSE and any other coverages afforded by endorsement attached to this Policy in excess of the applicable Self-Insured Retention Amount stated in Item 4. of the Declarations and subject to the Limits of Liability stated in Item 3. of the Declarations and the other terms and conditions of this Policy.

B. The Self-Insured Retention Amount is borne by the INSURED and is not to be insured unless the Company has expressed its prior consent in writing to the FIRST NAMED INSURED. The applicable Self-Insured Retention Amount stated Item 4. of the Declarations shall apply.

C. All LOSS, REMEDIATION EXPENSE, LEGAL EXPENSE and any other coverages afforded by endorsement attached to this Policy arising out of the same or related POLLUTION CONDITION at any one COVERED LOCATION shall be considered a single POLLUTION CONDITION and shall be subject to the applicable Limits of Liability stated in Item 3a. of the Declarations and the Self-Insured Retention Amount stated in Item 4. of the Declarations.

D. All LOSS, REMEDIATION EXPENSE, LEGAL EXPENSE or any other coverages afforded by endorsement attached to this Policy during the POLICY PERIOD or, where applicable, the EXTENDED REPORTING PERIOD shall not exceed the Limits of Liability stated in Item 3b. of the Declarations.

E. Any LOSS, REMEDIATION EXPENSE, LEGAL EXPENSE and any other coverages afforded by endorsement incurred and reported to the Company, in writing, over more than one policy period, and resulting from the same or related POLLUTION CONDITION, shall be considered a single POLLUTION CONDITION. The LOSS, REMEDIATION EXPENSE, LEGAL EXPENSE and any other coverages afforded by endorsement attached to this Policy will be subject to the same Limits of Liability and the Self-Insured Retention Amount in effect at the time the POLLUTION CONDITION was first reported to the Company, in writing, by the INSURED, during the POLICY PERIOD or, where applicable, the EXTENDED REPORTING PERIOD.

VII. REPORTING, DEFENSE, SETTLEMENT AND COOPERATION

A. As a condition precedent to the coverage hereunder, in the event any CLAIM is made against the INSURED for LOSS or REMEDIATION EXPENSE, or any POLLUTION CONDITION is first discovered by the INSURED that results in a LOSS or REMEDIATION EXPENSE:

1. The INSURED shall forward to the Company or to any of its authorized agents every demand, notice, summons, order or other process received by the INSURED or the INSURED's representative as soon as practicable; and

2. The INSURED shall provide to the Company, whether orally or in writing, notice of the particulars with respect to the time, place and circumstances thereof, along with the names and addresses of the injured and of available witnesses. In the event of oral notice, the INSURED agrees to furnish to the Company a written report as soon as practicable.

It is further agreed, that the INSURED shall cooperate with the Company and upon the Company's request shall submit to examination by a representative of the Company, under oath if required, and shall attend hearings, depositions and trials and shall assist in effecting settlement, securing and giving evidence, obtaining the attendance of witnesses and in the conduct of suits, as well as in the investigation and/or defense thereof, all without charge to the Company. The INSURED shall further cooperate with the Company and do whatever is necessary to secure and effect any rights of indemnity, contribution or apportionment which the INSURED may have.

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B. No costs, charges or expenses shall be incurred, nor payments made, obligations assumed or remediation commenced without the Company's written consent which shall not be unreasonably withheld. This provision does not apply to costs incurred by the INSURED on an emergency basis, where any delay on the part of the INSURED would cause injury to persons or damage to property, or increase significantly the cost of responding to any POLLUTION CONDITION. If such emergency occurs, the INSURED shall notify the Company immediately thereafter.

C. The Company shall have the right and the duty to defend an INSURED against any CLAIM seeking damages for a LOSS or for REMEDIATION EXPENSE. The Company will have no duty to defend the INSURED against any CLAIM for LOSS or for REMEDIATION EXPENSE to which this Policy does not apply.

D. The Company shall have the right and the duty to assume the investigation, adjustment or defense of any CLAIM. In case of the exercise of this right, the INSURED, on demand of the Company, shall promptly reimburse the Company for any element of LOSS, REMEDIATION EXPENSE, LEGAL EXPENSE or any other coverages afforded by endorsement falling within the Self-Insured Retention Amount stated in Item 4. of the Declarations.

The INSURED shall not admit liability or settle any CLAIM without the Company's consent. If the Company recommends a settlement of any CLAIM:

1. for an amount within the Self-Insured Retention Amount and the INSURED refuses such settlement, the Company shall not be liable for any LOSS, REMEDIATION EXPENSE, LEGAL EXPENSE and any other coverages afforded by endorsement in excess of the Self-Insured Retention Amount; or

2. for a total amount in excess of the Self-Insured Retention Amount and the INSURED refuses such settlement, the Company's liability for LOSS, REMEDIATION EXPENSE, LEGAL EXPENSE and any other coverages afforded by endorsement shall be limited to that portion of the recommended settlement and the costs, charges and expenses as of the date of the INSURED’s refusal which exceed the Self-Insured Retention Amount but fall within the Limits of Liability.

E. If a POLLUTION CONDITION is first discovered by the INSURED during the POLICY PERIOD and reported in writing to the Company during the POLICY PERIOD or, where applicable, the EXTENDED REPORTING PERIOD, and a CLAIM associated with such POLLUTION CONDITION is made against the INSURED and reported to the Company after the expiration of this Policy, such CLAIM shall be deemed to have been first made and reported on the last day of the POLICY PERIOD in which the POLLUTION CONDITION is first discovered, provided that the INSURED has maintained an equivalent policy with the Company on a continuous uninterrupted basis and the CLAIM is made against the INSURED and reported to the Company prior to the cancellation or expiration of such subsequent policy. It is further agreed that coverage for such CLAIM will not be provided under any subsequent policy issued by the Company.

F. The Company shall have the right to designate legal counsel for the investigation, adjustment and defense of a CLAIM. The Company shall consult with the INSURED in conjunction with the selection of counsel.

VIII. TRANSFER OF LEGAL DEFENSE DUTIES

A. If the Company believes that the Limits of Liability stated in Item 3. of the Declarations has been or soon will be exhausted in defending a CLAIM or that the Company has paid out or will soon pay out the Aggregate Liability stated in Item 3.b. of the Declarations, the Company will so notify the FIRST NAMED INSURED in writing as soon as possible. The Company will advise that its duty to defend a CLAIM seeking damages within those Limits of Liability has terminated, subject to payment of the Limits of Liability, and that it will have no duty to defend or indemnify the INSURED for any CLAIM for which notice is given after the date it sends out such notice. The Company will take immediate and appropriate steps to transfer control of any existing defense prior to exhaustion of the limits to the FIRST NAMED INSURED. The FIRST NAMED INSURED agrees to reimburse the Company for any costs which the Company bears in connection with the transfer of the defense.

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B. The Company will take appropriate steps necessary to defend the CLAIM during the transfer of the defense and avoid any unfavorable legal action provided that the FIRST NAMED INSURED cooperates in the transfer of the duties of the defense.

C. The exhaustion of the applicable Limits of Liability by the payment of LOSS, REMEDIATION EXPENSE, LEGAL EXPENSE and any other coverages afforded by endorsement will not be affected by the Company's failure to comply with any of the provisions of this section.

IX. CONDITIONS

A. **Inspection and Audit --** The Company shall be permitted but not obligated to inspect and monitor on a continuing basis the INSURED'S property or operations at any COVERED LOCATION, at any time. Neither the Company's right to make inspections and monitor nor the actual undertaking thereof nor any report thereon shall constitute an undertaking, on behalf of the INSURED or others, to determine or warrant that property or operations are safe, healthful or conform to acceptable engineering practice or are in compliance with any law, rule or regulation. Access for the inspection and audit may be coordinated through the broker or agent of the FIRST NAMED INSURED.

B. **Cancellation --** The INSURED and the Company agree to the following with regard to cancellation:

1. **Cancellation by the FIRST NAMED INSURED --** This Policy may be canceled by the FIRST NAMED INSURED by surrender thereof to the Company or any of its authorized agents or by mailing to the Company written notice stating when thereafter the cancellation shall be effective. The mailing of notice as aforesaid shall be sufficient proof of notice of cancellation. The time of surrender or the effective date and hour of cancellation stated in the notice shall become the end of the POLICY PERIOD. Confirmed delivery of such written notice by the FIRST NAMED INSURED shall be equivalent to mailing.

   The Minimum Earned Premium for this Policy will be the percentage stated in Item 8. of the Declarations of the total premium for this Policy. The FIRST NAMED INSURED is not entitled to any return of the Minimum Earned Premium upon cancellation by the FIRST NAMED INSURED.

   If the Minimum Earned Premium is less than one hundred percent (100%), and the FIRST NAMED INSURED cancels this Policy, then the amount of premium returnable after the minimum premium earned is retained by the Company shall be computed in accordance with the customary short rate table and procedure.

2. **Cancellation by the Company --** This Policy may be canceled by the Company by mailing to the FIRST NAMED INSURED at the address shown in Item 1. of the Declarations, written notice stating when not less than sixty (60) days [ten (10) days for non-payment of premium] thereafter such cancellation shall be effective. The mailing of notice as aforesaid shall be sufficient proof of notice of cancellation. The effective date and hour of cancellation stated in the notice shall become the end of the POLICY PERIOD.

   The Company may cancel this Policy at any time, but only for the following reasons:

   a. the INSURED has made a material misrepresentation which affects the Company's assessment of the risk of insuring any COVERED LOCATION; or

   b. the INSURED breaches or fails to comply with Policy terms, conditions, contractual duties, or any of its obligations under this Policy or at law; or

   c. the INSURED fails to pay the premium or fails to pay any Deductible or the Self-Insured Retention Amount for this Policy.

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If the Company cancels this Policy, then the amount of premium returnable to the INSURED shall be computed pro rata and no minimum earned premium shall apply.

In the event of cancellation of this Policy by the Company from Item b. above, the INSURED shall have sixty (60) days from the date of notice to remedy such breach or failure to comply that is the cause for cancellation. If such remedy is satisfactory to the Company, in its sole discretion, during the applicable notice period, the Company will rescind the Notice of Cancellation with a written confirmation to the FIRST NAMED INSURED that the Policy shall remain in place.

With regard to both Items 1. and 2. above:

1. The premium adjustment may be made either at the time cancellation is affected or as soon as practicable after cancellation becomes effective, but payment or tender of unearned premium is not a condition of cancellation; and

2. If a CLAIM is made against the INSURED, and the POLLUTION CONDITION related to such CLAIM is discovered or coverage is requested from the Company by the INSURED during the POLICY PERIOD or, where applicable, the EXTENDED REPORTING PERIOD, then the total premium shall be considered one hundred percent (100%) earned, and the INSURED is not entitled to any return of premium upon cancellation.

C. Declarations and Representations -- By acceptance of this Policy, the INSURED agrees that the statements contained in the Application and any other supplemental materials and information submitted herewith are the INSURED's agreements and representations, that they shall be deemed material, that this Policy is issued in reliance upon the truth of such representations and that this Policy embodies all agreements existing between the INSURED and the Company or any of its agents relating to this insurance.

D. Action Against Company -- No action shall lie against the Company unless, as a condition precedent thereto:

1. the INSURED has fully complied with all of the terms of this Policy; and

2. the amount the INSURED is obligated to pay has been finally determined either by judgment against the INSURED after actual trial or by written agreement of the INSURED, the claimant and the Company.

Any person or organization or the legal representative thereof who has secured such judgment or written agreement shall thereafter be entitled to recover under this Policy to the extent of the insurance afforded by this Policy. No person or organization shall have any right under this Policy to join the Company as a party to any action against the INSURED to determine the INSURED's liability, nor shall the Company be impleaded by the INSURED or its legal representative. Bankruptcy or insolvency of the INSURED or of the INSURED's estate shall not relieve the Company of any of its obligations hereunder.

E. Assignment -- This Policy shall be void as to the assignee or transferee, if assigned or transferred without written consent of the Company. Such consent shall not be unreasonably withheld or delayed by the Company.

F. Subrogation -- In the event of any payment under this Policy, the Company shall be subrogated to all the INSURED'S rights of recovery against any person or organization and the INSURED shall execute and deliver instruments and papers and do whatever else is necessary to secure such rights. The INSURED shall do nothing to prejudice such rights.

G. Changes -- Notice to any agent or knowledge possessed by any agent or by any other person shall not effect a waiver or a change in any part of this Policy or estop the Company from asserting any right under the terms of this Policy; nor shall the terms of this Policy be waived or changed, except by endorsement issued to form a part of this Policy.

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H. **Sole Agent --** The FIRST NAMED INSURED stated in Item 1. of the Declarations shall act on behalf of all INSUREDS for the payment or return of premium, receipt and acceptance of any endorsement issued to form a part of this Policy, giving and receiving notice of cancellation or non-renewal and the exercise of the rights provided in Section V. EXTENDED REPORTING PERIOD, Item B. Optional Extended Reporting Period.

I. **Other Insurance** -- Subject to Section VI. LIMITS OF LIABILITY AND SELF-INSURED RETENTION, this insurance shall be in excess of the Self-Insured Retention Amount stated in Item 4. of the Declarations and any other valid and collectible insurance available to the INSURED, whether such other insurance is stated to be primary, pro rata, contributory, excess, contingent or otherwise, unless such other insurance is written only as specific excess insurance over the Limits of Liability provided in this Policy.

J. **Headings --** The descriptions in the headings of this Policy are solely for convenience and form no part of this Policy terms and conditions.

K. **Jurisdiction and Venue --** It is agreed that in the event of the failure of the Company to pay any amount claimed to be due hereunder, the Company and the INSURED will submit to the jurisdiction of the State of New York and will comply with all the requirements necessary to give such court jurisdiction. Nothing in this clause constitutes or should be understood to constitute a waiver of the Company's right to remove an action to a United States District Court.

L. **Choice of Law --** All matters arising hereunder including questions related to the validity interpretation, performance and enforcement of this Policy shall be determined in accordance with the law and practice of the State of New York (notwithstanding New York's conflicts of law rules).

M. **Severability --** Except with respect to Limits of Liability and any rights and duties assigned in this Policy to the FIRST NAMED INSURED, this insurance applies as if each INSURED were the only INSURED and separately to each INSURED against whom a CLAIM is made.

Any misrepresentation, act or omission that is in violation of a term, duty or condition under this Policy by one INSURED shall not by itself affect coverage for another INSURED under this Policy. However, this condition shall not apply to the INSURED who is a parent, subsidiary or affiliate of the INSURED which committed the misrepresentation, act or omission referenced above.

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505 Eagleview Boulevard
Suite 100
Exton, PA 19341-0636
USA
Phone 800-327-1414
+1 610-458-8667

Confirmation of Coverage(s) Bound

To: Seth Cole	From: Greg Leinweber
Company: Alliant Insurance Services, Inc.	XL CATLIN Unit/Division: Environmental
E-Mail Address: scole@alliant.com	E-Mail Address: Greg.Leinweber@xlcatlin.com
CC:	Fax Replies To:
Binder For: Sewer Authority Mid-Coastside **Insured Address:** 1000 Cabrillo Highway Half Moon Bay, CA 94019	Date: 07/25/2018 Page 1 of 2 (Including cover sheet)

Thank you for your business. Please be advised that we have bound coverage for the above referenced account. This company binds the kind(s) of insurance stipulated below, per the quote letter dated 07/17/2018:

As stated in our quote to you, we require all endorsements with a signature line to be returned to XL CATLIN prior to our issuing any policies.

Policy Number	Line of Coverage	Policy Period	Insurance Company	Policy State of Domicile
PEC0052448	Pollution and Remediation Legal Liability	07/23/2018 - 07/23/2019	Indian Harbor Insurance Co	CA

Policy Number	Line of Coverage	Limit of Liability (each loss/ aggregate)	Self Insured Retention or Deductible	Policy Premium (Total)	Certified Acts of Terrorism Purchased (Y/N)
PEC0052448	Pollution and Remediation Legal Liability	Option 1 per Quote Letter	Option 1 per Quote Letter	$19,890 (Including Terrorism)	Y

Comments:

Note – XL CATLIN - Environmental will issue new and renewal policies electronically to your email inbox effective 1/1/2010. Some restrictions may apply, to include NY state, Countersignature and Facultative policies. Please contact your underwriter if you wish to receive printed policies by mail.

CONDITIONS: This Company binds the kind(s) of insurance stipulated above. The insurance is subject to the terms, conditions and limitations of the policy(ies) in current use by the Company.

Any request to amend, add, or modify terms and conditions or scope of coverage of the policy(ies) will not serve to alter the terms and conditions or scope of coverage until written acknowledgement and approval to such request is provided by the Company

This binder may be cancelled by the Insured by surrender of this binder or by written notice to the Company stating when cancellation will be effective. This binder may be cancelled by the Company by notice to the Insured in accordance with the policy conditions. This binder is cancelled when replaced by a policy. If this binder is not replaced by a policy, the Company is entitled to charge a premium for the binder according to the Rules and Rates in use by the Company.

The information contained in this facsimile message is privileged and confidential information intended only for the use of the individual and/or entity named above. If the reader of the message is not an intended recipient, or the employee or agent responsible to deliver it to the intended recipient, you are hereby notified that any distribution or copying of this communication is strictly prohibited. If you have received this communication in error, please notify us immediately by telephone and return the original message to us at the above address by mail. Thank you.

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APPLICABLE IN NEVADA

Any person who refuses to accept a binder which provides coverage of less than $1,000,000.00 when proof is required: (A) Shall be fined not more than $500.00 and (B) is liable to the party presenting the binder as proof of insurance for actual damages sustained there from.

Possibility of Additional/Return Premium - The premium for Certified Acts of Terrorism coverage is calculated based in part on the federal participation in payment of terrorism losses as set forth in the Terrorism Risk Insurance Act, as amended. The federal program established by the Act is scheduled to terminate on 12/31/14, unless extended by the federal government. Continuation of coverage for Certified Acts of Terrorism, or termination of such coverage, will be determined upon disposition of the federal program, subject to the terms and conditions of this policy. If we notify you of an additional premium charge, the additional premium will be due as specified in such notice.

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CERTIFICATE OF COVERAGE

DATE (MM/DD/YYYY): 8/1/2018

PRODUCER
Alliant Insurance Services, Inc.
100 Pine Street, 11th Floor
San Francisco CA 94111

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE PROGRAMS BELOW.

PROGRAM AFFORDING COVERAGE

COVERED PARTY
Sewer Authority Mid-Coastside
1000 N Cabrillo Hwy
Half Moon Bay CA 94019

A: CSRMA - California Sanitation Risk Management Auth
B:
C:
D:
E:

COVERAGES

THIS IS TO CERTIFY THAT THE COVERAGE IS AFFORDED TO THE ABOVE NAMED MEMBER, AS PROVIDED BY THE MEMORANDUM(S) OF COVERAGE, FOR THE COVERAGE PERIOD SHOWN BELOW, NOT WITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN. THE COVERAGE AFFORDED BY THE PROGRAM DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS, AND CONDITIONS OF SUCH MEMORANDUM(S) OF COVERAGE. THE FOLLOWING COVERAGE IS IN EFFECT.

PRO LTR	COVERAGE	MEMORANDUM OF COVERAGE	EFFECTIVE DATE (MM/DD/YYYY)	EXPIRATION DATE (MM/DD/YYYY)	LIMITS	
A	**GENERAL LIABILITY** [X] COMMERCIAL GENERAL LIABILITY [ ] CLAIMS MADE [X] OCCUR [X] Ded: $2,500 [ ] GEN'L AGGREGATE LIMIT APPLIES PER: [X] POLICY [ ] PROJECT [ ] LOC	CSL SAMCS 1718 1	12/31/2017	12/31/2018	EACH OCCURRENCE	$ 5,000,000
					DAMAGE TO RENTED PREMISES (Ea occur.)	$ 1,000,000
					MED. EXP (Any one person)	$ 1,000,000
					PERSONAL & ADV INJURY	$ 1,000,000
					GENERAL AGGREGATE	$ 5,000,000
					PRODUCTS-COMP/OP AGG	$ N/A
A	**AUTOMOBILE LIABILITY** [ ] ANY AUTO [X] ALL OWNED VEHICLES [ ] SCHEDULED AUTOS [X] HIRED AUTOS [X] NON-OWNED AUTOS [X] Ded: $2,500 [ ]	CSL SAMCS 1718 1	12/31/2017	12/31/2018	COMBINED SINGLE LIMIT (Ea accident)	$ 5,000,000
					BODILY INJURY (Per person)	$
					BODILY INJURY (Per accident)	$
					PROPERTY DAMAGE (Per accident)	$
	GARAGE LIABILITY [ ] ANY AUTO [ ]				AUTO ONLY - EA ACCIDENT	$
					OTHER THAN AUTO ONLY: EA ACC	$
					AGG	$
	WORKERS COMPENSATION AND EMPLOYERS LIABILITY ANY PROPRIETOR/PARTNER/ EXECUTIVE/OFFICER/MEMBER EXCLUDED? IF YES, DESCRIBE UNDER SPECIAL PROVISIONS BELOW				[ ] WC STATU-TORY LIMITS [ ] OTH-ER	
					E.L. EACH ACCIDENT	$
					E.L. DISEASE-EA EMPLOYEE	$
					E.L. DISEASE-POLICY LIMIT	$
	OTHER					
	OTHER					

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES / EXCLUSIONS ADDED BY ENDORSEMENT / SPECIAL PROVISIONS

City of Half Moon Bay is named as an Additional Covered Party per the Memorandum of Coverage with respect to Agreement for Collection System Maintenance Services between The City of Half Moon Bay and Sewer Authority Mid-Coastside.

Copies of the Memorandum of Coverage are available upon request.

CERTIFICATE HOLDER

City of Half Moon Bay
501 Main Street
Half Moon Bay CA 94019

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED COVERAGES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING PROGRAM AFFORDING COVERAGE WILL ENDEAVOR TO MAIL 10 DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT, BUT FAILURE TO DO SO SHALL IMPOSE NO OBLIGATION OR LIABILITY OF ANY KIND UPON THE PROGRAM AFFORDING COVERAGE, ITS AGENTS OR REPRESENTATIVES.

AUTHORIZED REPRESENTATIVE

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CALIFORNIA SANITATION RISK MANAGEMENT AUTHORITY

ADDITIONAL COVERED PARTY ENDORSEMENT

This Endorsement forms a part of the Memorandum of Coverage issued by the CALIFORNIA SANITATION RISK MANAGEMENT AUTHORITY.

ADDITIONAL COVERED PARTY: City of Half Moon Bay

CSRMA MEMBER ENTITY: Sewer Authority Mid-Coastside

DESCRIPTION OF ACTIVITY: Agreement for Collection System Maintenance Services between The City of Half Moon Bay and Sewer Authority Mid-Coastside

DATE(S) OF ACTIVITY: 12/31/2017 - 12/31/2018

LOCATION OF ACTIVITY: City of Half Moon Bay

MAXIMUM COVERAGE LIMIT: $5,000,000

DEDUCTIBLE: $2,500

The person or organization first named above is added as an ADDITIONAL COVERED PARTY pursuant to Section III(A), "Definitions" and Section VII, "Covered Parties." Coverage is provided through participation in a risk sharing joint powers authority, for general and automobile liability as defined in the Memorandum of Coverage.

The coverage being provided by this Endorsement is limited to "occurrences" arising out of the activity or location described, and the time period indicated herein, and is subject to all the terms, conditions and exclusions of the Memorandum of Coverage. Pursuant to Section III (A), the person or entity named above is only an Additional Covered Party with respect to operations performed by or on behalf of the CSRMA MEMBER ENTITY, or facilities owned or used by the CSRMA MEMBER ENTITY.

Coverage is in effect for the DATE(S) OF ACTIVITY indicated above and will not be cancelled or allowed to expire at a date other than the last date indicated except upon 30 days' written notice to the Additional Covered Party.

Date issued: 08/01/2018

Authorized Representative

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CERTIFICATE OF COVERAGE

DATE (MM/DD/YYYY): 8/1/2018

PRODUCER
Alliant Insurance Services, Inc.
100 Pine Street, 11th Floor
San Francisco CA 94111

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE PROGRAMS BELOW.

PROGRAM AFFORDING COVERAGE

COVERED PARTY
Sewer Authority Mid-Coastside
1000 N Cabrillo Hwy
Half Moon Bay CA 94019

A: Indian Harbor Insurance Company
B:
C:
D:
E:

COVERAGES

THIS IS TO CERTIFY THAT THE COVERAGE IS AFFORDED TO THE ABOVE NAMED MEMBER, AS PROVIDED BY THE MEMORANDUM(S) OF COVERAGE, FOR THE COVERAGE PERIOD SHOWN BELOW, NOT WITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN. THE COVERAGE AFFORDED BY THE PROGRAM DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS, AND CONDITIONS OF SUCH MEMORANDUM(S) OF COVERAGE. THE FOLLOWING COVERAGE IS IN EFFECT.

PRO LTR	COVERAGE	MEMORANDUM OF COVERAGE	EFFECTIVE DATE (MM/DD/YYYY)	EXPIRATION DATE (MM/DD/YYYY)	LIMITS	
	GENERAL LIABILITY				EACH OCCURRENCE	$
	☐ COMMERCIAL GENERAL LIABILITY				DAMAGE TO RENTED PREMISES (Ea occur.)	$
	☐ ☐ CLAIMS MADE ☐ OCCUR				MED. EXP (Any one person)	$
	☐				PERSONAL & ADV INJURY	$
	☐				GENERAL AGGREGATE	$
	GEN'L AGGREGATE LIMIT APPLIES PER:				PRODUCTS-COMP/OP AGG	$
	☐ POLICY ☐ PROJECT ☐ LOC					
	AUTOMOBILE LIABILITY				COMBINED SINGLE LIMIT (Ea accident)	$
	☐ ANY AUTO				BODILY INJURY (Per person)	$
	☐ ALL OWNED VEHICLES				BODILY INJURY (Per accident)	$
	☐ SCHEDULED AUTOS				PROPERTY DAMAGE (Per accident)	$
	☐ HIRED AUTOS					
	☐ NON-OWNED AUTOS					
	☐					
	☐					
	GARAGE LIABILITY				AUTO ONLY - EA ACCIDENT	$
	☐ ANY AUTO				OTHER THAN AUTO ONLY: EA ACC	$
	☐				AGG	$
	WORKERS COMPENSATION AND EMPLOYERS LIABILITY				☐ WC STATU-TORY LIMITS ☐ OTH-ER	
	ANY PROPRIETOR/PARTNER/ EXECUTIVE/OFFICER/MEMBER EXCLUDED?				E.L. EACH ACCIDENT	$
	IF YES, DESCRIBE UNDER SPECIAL PROVISIONS BELOW				E.L. DISEASE-EA EMPLOYEE	$
					E.L. DISEASE-POLICY LIMIT	$
A	**OTHER** Pollution and Remediation	PEC0052448	7/23/2018	7/23/2019	Limit of Liabiity Deductible	$2,000,000 $25,000
	OTHER					

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES / EXCLUSIONS ADDED BY ENDORSEMENT / SPECIAL PROVISIONS

THIS CERTIFICATE IS ISSUED WITH RESPECT TO AGREEMENT FOR COLLECTION SYSTEM MAINTENANCE SERVICES BETWEEN THE CITY OF HALF MOON BAY AND SEWER AUTHORITY MID-COASTSIDE.

CERTIFICATE HOLDER

City of Half Moon Bay
501 Main Street
Half Moon Bay CA 94019

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED COVERAGES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING PROGRAM AFFORDING COVERAGE WILL ENDEAVOR TO MAIL 10 DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT, BUT FAILURE TO DO SO SHALL IMPOSE NO OBLIGATION OR LIABILITY OF ANY KIND UPON THE PROGRAM AFFORDING COVERAGE, ITS AGENTS OR REPRESENTATIVES.

AUTHORIZED REPRESENTATIVE

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ACORD®

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)
8/13/2018

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER	CONTACT NAME:	
Alliant Insurance Services, Inc.- SFO 100 Pine Street, 11th Floor San Francisco CA 94111	PHONE (A/C, No, Ext):	FAX (A/C, No):
	E-MAIL ADDRESS:	
	INSURER(S) AFFORDING COVERAGE	NAIC #
	INSURER A : Safety National Casualty Corporation	15105
INSURED CSRMA WC Program Member: 1000 N Cabrillo Hwy Half Moon Bay CA 95814	INSURER B :	
	INSURER C :	
	INSURER D :	
	INSURER E :	
	INSURER F :	

COVERAGES **CERTIFICATE NUMBER:** 32382963 **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
	COMMERCIAL GENERAL LIABILITY						EACH OCCURRENCE	$
	☐ CLAIMS-MADE ☐ OCCUR						DAMAGE TO RENTED PREMISES (Ea occurrence)	$
							MED EXP (Any one person)	$
							PERSONAL & ADV INJURY	$
	GEN'L AGGREGATE LIMIT APPLIES PER:						GENERAL AGGREGATE	$
	☐ POLICY ☐ PRO-JECT ☐ LOC						PRODUCTS - COMP/OP AGG	$
	☐ OTHER:							$
	AUTOMOBILE LIABILITY						COMBINED SINGLE LIMIT (Ea accident)	$
	☐ ANY AUTO						BODILY INJURY (Per person)	$
	☐ OWNED AUTOS ONLY ☐ SCHEDULED AUTOS						BODILY INJURY (Per accident)	$
	☐ HIRED AUTOS ONLY ☐ NON-OWNED AUTOS ONLY						PROPERTY DAMAGE (Per accident)	$
								$
	☐ UMBRELLA LIAB ☐ OCCUR						EACH OCCURRENCE	$
	☐ EXCESS LIAB ☐ CLAIMS-MADE						AGGREGATE	$
	☐ DED ☐ RETENTION $							$
A	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY Y / N ANYPROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? ☐ (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below	N / A		SP 4058685	7/1/2018	7/1/2019	X PER STATUTE ☐ OTH-ER	
							E.L. EACH ACCIDENT	$ 1,000,000
							E.L. DISEASE - EA EMPLOYEE	$ 1,000,000
							E.L. DISEASE - POLICY LIMIT	$ 1,000,000
	Waiver of Subrogation							

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

THIS CERTIFICATE IS ISSUED WITH RESPECT TO AGREEMENT FOR COLLECTION SYSTEM MAINTENANCE SERVICES BETWEEN THE CITY OF HALF MOON BAY AND SEWER AUTHORITY MID-COASTSIDE.

SEE ATTACEHD WAIVER OF SUBROGATIION.

CERTIFICATE HOLDER

City of Half Moon Bay
501 Main Street
Half Moon Bay CA 94019

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

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0456 00 0113 (XWC)

ENDORSEMENT

BLANKET WAIVER OF SUBROGATION

Effective 12:01 A.M., Local Time, July 01, 2018

In consideration of the payment of premium and adherence by both parties to the terms of this Agreement, it is hereby understood and agreed that the Recovery From Others section of this Agreement is amended to include the following additional language:

> The CORPORATION has the right to pursue subrogation recoveries from anyone liable for an injury covered by this Agreement. The CORPORATION will not enforce its right against any person or organization for whom the EMPLOYER performs work under a written contract that requires the EMPLOYER to obtain this agreement from the CORPORATION.

All other terms, conditions, agreements and stipulations remain unchanged.

Attached to and forming a part of Excess Workers' Compensation and Employers' Liability Insurance Agreement No. SP 4058685, issued by SAFETY NATIONAL CASUALTY CORPORATION of St. Louis, Missouri to CALIFORNIA SANITATION RISK MANAGEMENT AUTHORITY, ET AL, dated July 01, 2018.

SAFETY NATIONAL CASUALTY CORPORATION

Secretary

President

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CITY OF HALF MOON BAY
AGREEMENT FOR COLLECTION SYSTEM MAINTENANCE SERVICES

THIS AGREEMENT FOR COLLECTION SYSTEM MAINTENANCE SERVICES ("Agreement") is made by and between the City of Half Moon Bay, a California municipal corporation ("City") and the Sewer Authority Mid-Coastside, a Joint Powers Agency ("Authority"), effective as of July 23, 2018.

Section 1. SERVICES. Subject to the terms and conditions set forth in this Agreement, Authority shall provide to City the services described in the Scope of Work attached hereto as Exhibit A at the time and place and in the manner specified therein. For purposes of this Agreement, the term "maintenance" shall not include capital improvements, replacement of collection system facilities, or major repairs requiring design by a registered engineer. In the event of a conflict in or inconsistency between the terms of this Agreement and Exhibit A, this Agreement shall prevail.

1.1 Term of Services. The term of this Agreement shall begin on the date first noted above and shall run until July 1, 2019 unless earlier terminated by either party pursuant to Section 8, subject to possible extension by mutual agreement as specified in Section 8.2.

1.2 Standard of Performance. Authority shall perform all services required pursuant to this Agreement in the manner and according to the standards observed by a competent practitioner of collections system maintenance in the geographical area in which Authority is located. Authority shall prepare all work products required by this Agreement in accordance with the Scope of Work and applicable federal and state regulations and shall conform to the standards of quality normally observed by a person performing such services.

1.3 Assignment of Personnel. Authority shall assign only competent personnel to perform services pursuant to this Agreement. City may, in its sole discretion, at any time during the term of this Agreement, request the reassignment of any Authority personnel, Authority shall, immediately upon receiving notice from City of such request of City, evaluate, in its sole discretion, whether to reassign such person or persons. City acknowledges that reassignment of Authority personnel may requiring that the Authority meet and confer with representatives of the personnel's bargaining unit.

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1.4 **Time.** Authority shall devote such time to the performance of services pursuant to this Agreement as may be reasonably necessary to meet the standard of performance provided in Section 1.2 above and to satisfy Authority's obligations hereunder.

Section 2. COMPENSATION. Exhibits A (Scope of Work) and B (Collections Budget) to this contract incorporated herein by this reference, contains a task-based Fee Schedule, with specifications regarding measurement and payment and unit cost. The City shall pay Authority for services rendered pursuant to the Fee Schedule at the time and in the manner set forth herein. Authority shall submit all invoices to City in the manner specified herein. Except as specifically authorized by City, Authority shall not bill City for duplicate services performed by more than one person.

Authority and City acknowledge and agree that compensation paid by City to Authority under this Agreement is based upon Authority's estimated costs of providing the services required hereunder, including salaries and benefits of employees and subcontractors of Authority. Consequently, the parties further agree that compensation hereunder is intended to include the costs of contributions to any pensions and/or annuities to which Authority and its employees, agents, and subcontractors may be eligible. City therefore has no responsibility for such contributions beyond compensation required under this Agreement except as specified herein, in the Scope of Work attached hereto as Exhibit A or in the Collections Budget attached hereto as Exhibit B. Nothing in the preceding sentence is intended to have any effect on payments required to be made by the City to Authority under the Agreement Creating the Sewer Authority Mid-Coastside as modified by Amendments 1 through 8 ("JEPA"), or the Stipulation and Order Regarding Expenses and Assessments of Sewer Authority Mid-Coastside entered on September 13, 2017, or any successor Stipulation and Order.

2.1 **Invoices.** Authority shall submit invoices, not more often than once a month during the term of this Agreement, based on the cost for services performed prior to the invoice date. Invoices shall contain the following information:

- Serial identifications of bills; i.e., Bill No. 1 for the first invoice, etc.;
- The beginning and ending dates of the billing period;
- A Task Summary summarizing the work performed in accordance with the Scope of Work and payment due per unit cost for each task listed in the Scope of Work, along with the amount of prior billings, the total remaining budget, and the percentage of completion of the task;
- A copy of the applicable time entries or time sheets shall be submitted showing the name of the person doing the work, the hours spent by each person, and a brief description of the work;
- The total number of hours of work performed under the Agreement by Authority and each employee, agent, and subcontractor of Authority performing services hereunder;
- The SAM General Manager's signature.

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2.2 **Monthly Payment.** City shall make monthly payments, based on complete and accurate invoices received, for services satisfactorily performed in accordance with the Scope of Work. City shall notify Authority in writing within 15 days after receipt of an invoice of any billing item that does not satisfy the requirements herein. City shall have 30 days from the receipt of an invoice that complies with all of the requirements above to pay Authority.

Should City fail to pay Authority in accordance with the preceding sentence, the unpaid amount of such invoice shall incur interest calculated from the due date in accordance with the Agreement Creating the Sewer Authority Mid-Coastside, dated February 3, 1976, as amended, but in no case shall interest paid exceed the rate prescribed by law. In the event the City notifies the Authority in writing within 15 days after receipt of an invoice of any billing item that does not satisfy the requirements herein, no interest shall accrue on the contested billing item while the dispute about that item is resolved by the parties.

2.3 **Unit Prices.** Compensation for work performed by Authority for which a unit price is specified in Exhibit B shall not exceed the extension of the unit price shown on Exhibit B times the number of units of work performed. Work that exceeds the quantities used to develop the budget, or consists of emergency repairs, all as specified in Exhibit A, must receive advanced, written authorization by the City, with the exception of SSO Response activities. The costs thereof will be invoiced by Authority and paid by City as specified in Exhibit B.

2.4 **Payment of Taxes.** Authority is solely responsible for the payment of employment taxes incurred under this Agreement and any similar federal or state taxes.

2.5 **Payment upon Termination.** In the event that the City or Authority terminates this Agreement pursuant to Section 8, the City shall compensate the Authority for all outstanding costs incurred for work satisfactorily completed as of the date of written notice of termination. Authority shall maintain adequate logs and timesheets in order to verify costs incurred to that date.

2.6 **Authorization to Perform Services.** The Authority is not authorized to perform any services or incur any costs whatsoever under the terms of this Agreement until receipt of authorization from the Contract Administrator.

Section 3. FACILITIES AND EQUIPMENT. Except as set forth herein, Authority shall, at its sole cost and expense, provide all facilities and equipment that may be necessary to perform the services required by this Agreement.

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Section 4. INSURANCE REQUIREMENTS.

4.1. During the term of this Agreement, Authority shall carry, maintain, and keep in full force and effect insurance against claims for death or injuries to persons or damages to property that may arise from or in connection with Authority's performance of this Agreement. Such insurance shall be of the types and in the amounts as set forth below:

- **General Liability**
  Authority shall maintain commercial general liability insurance with coverage at least as broad as Insurance Services Office form CG 00 01, in an amount not less than five million dollars ($5,000,000) per occurrence for bodily injury, personal injury, and property damage, including without limitation, blanket contractual liability and coverage for explosion, collapse and underground property damage hazards. If a general aggregate limit applies, either the general aggregate limit shall apply separately to this project/location or the general aggregate limit shall be twice the required occurrence limit. Authority's general liability policies shall be endorsed using Insurance Services Office form CG 20 10 to provide that City and its officers, officials, employees, volunteers, and agents shall be additional covered parties under such policies. An endorsement providing completed operations coverage for the additional covered parties, ISO form CG 20 37, is also required.

- **Auto Liability**
  Authority shall provide auto liability coverage for owned, non-owned, and hired autos using ISO Business Auto Coverage form CA 00 01, or the exact equivalent, with a limit of no less than five million dollars ($5,000,000) per accident.

- **Contractors Pollution Liability**
  Pollution Coverage shall be provided on a Contractors Pollution Liability form or other form acceptable to City providing coverage for liability arising out of sudden, accidental and gradual pollution and remediation. The policy limit shall be no less than two million dollars ($2,000,000) per claim. All activities contemplated in this agreement shall be specifically scheduled on the policy as "covered operations." The policy shall provide coverage for the hauling of waste from the project site to the final disposal location, including non-owned disposal sites.

- **Workers' Compensation**
  Authority shall maintain Workers' Compensation Insurance (Statutory Limits) and Employer's Liability Insurance with limits of at least one million dollars ($1,000,000). Authority shall submit to City, along with the certificate of insurance, a Waiver of Subrogation endorsement in favor of City, its officers, agents, employees, and volunteers.

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4.2. During the term of this Agreement, City shall carry, maintain, and keep in full force and effect insurance against claims for death or injuries to persons or damages to property related to its Sewage Collection System. Such insurance shall be of the types and in the amounts as set forth below:

- Comprehensive General Liability Insurance with coverage limits of not less than Two Million Dollars ($2,000,000) per occurrence including public liability and property damage liability coverage. If a general aggregate limit applies, either the general aggregate limit shall apply separately to this project or the general aggregate limit shall be twice the required occurrence limit.

4.3. The policy or policies required by this Agreement shall be issued by an insurer admitted in the State of California.

4.4. Authority agrees that if it does not keep the aforesaid insurance in full force and effect, City may either (i) terminate this Agreement pursuant to Section 8.1 below; (ii) take out the necessary insurance and pay, at Authority's expense, the premium thereon, or (iii) enforce the insurance requirements in this Agreement.

4.5 If Authority maintains higher limits than the minimums shown above, City requires and shall be entitled to coverage for the higher limits maintained by Authority.

4.6. Authority shall furnish the City with original Certificates of Insurance including all required amendatory endorsements (or copies of the applicable policy language) to the City verifying the required insurance coverage before work begins. However, failure to obtain the required documents prior to the work beginning shall not waive the Authority's obligation to provide them. The City reserves the right to require complete, certified copies of all required insurance policies, including endorsements, required by these specifications, at any time.

4.7. City shall furnish Authority with original Certificates of Insurance including all required amendatory endorsements (or copies of the applicable policy language) to the Authority verifying the required insurance coverage before work begins. However, failure to obtain the required documents prior to the work beginning shall not waive the City's obligation to provide them. The Authority reserves the right to require complete, certified copies of all required insurance policies, including endorsements, required by these specifications, at any time.

4.8. Authority shall provide proof that policies of insurance required herein expiring, or cancelled, during the term of this Agreement have been renewed or replaced with other policies providing at least the same coverage. City shall provide proof that

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policies of insurance required herein expiring, or cancelled, during the term of this Agreement have been renewed or replaced with other policies providing at least the same coverage. Such proof will be furnished at least two weeks prior to the expiration of the coverages, or immediately for any policy being cancelled.

4.9. The general liability, automobile, and Contractors Pollution Liability policies of insurance required by this Agreement to be maintained by Authority shall contain an endorsement naming City and its officers, employees, agents and volunteers as additional covered parties. All of the policies required under this Agreement shall contain an endorsement providing that the policies cannot be canceled or reduced except on thirty days' prior written notice to City.

4.10. The policies of insurance required by this Agreement to be maintained by City shall contain an endorsement naming Authority and its officers, employees, agents and volunteers as additional covered parties. Nothing in this provision requires the City to respond to or defend a claim arising out of Authority's failure to comply with any of its obligations contained in this Agreement or the Authority's performance of work hereunder. All of the policies required under this Agreement shall contain an endorsement providing that the policies cannot be canceled or reduced except on thirty days' prior written notice to Authority.

4.11. The insurance provided by Authority shall be primary to any coverage available to City. Any insurance or self-insurance maintained by City and/or its officers, employees, agents or volunteers, shall be in excess of Authority's insurance and shall not contribute with it. Nothing in this provision requires Authority to respond to or defend a claim solely regarding which, pursuant to section 5.2 below, Authority has no duty to defend City and its officers, officials, employees and volunteers.

4.12. All insurance coverage provided by Authority pursuant to this Agreement shall not prohibit Authority, and Authority's employees, agents or subcontractors, from waiving the right of subrogation prior to a loss. Authority hereby waives all rights of subrogation against the City based on payments made by insurance coverage provided by Authority pursuant to this Agreement. Authority agrees to obtain any endorsement that may be necessary to affect this waiver of subrogation, but this provision applies regardless of whether or not Authority has received such an endorsement.

4.13. All insurance coverage provided by City pursuant to this Agreement shall not prohibit City, and City's employees, agents or subcontractors, from waiving the right of subrogation prior to a loss. City hereby waives all rights of subrogation against the

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Authority based on payments made by insurance coverage provided by City pursuant to this Agreement.

4.14. Any deductibles or self-insured retentions relating to the insurance maintained by Authority under this Agreement must be declared to and approved by the City. Any deductibles or self-insured retentions relating to the insurance maintained by City under this Agreement must be declared to the Authority.

4.15. General Liability coverage shall be maintained for a minimum of five (5) years after contract completion. In addition, if any of the required policies provide claims-made coverage, the coverage shall be maintained for a period of five years after completion of the contract. Authority or City may satisfy this requirement by renewal of existing coverage or purchase of either prior acts or tail coverage applicable to said five-year period.

4.16. The Automobile Liability Policy required to be obtained by the Authority shall be endorsed to include Transportation Pollution Liability insurance covering materials that may be transported by Authority pursuant to this Agreement.

4.17. The City reserves the right to seek to modify these insurance requirements, including limits, based on the nature of the risk, prior experience, insurer, coverage, or special circumstances, provided that such changes shall be reflected in an amendment to this Agreement pursuant to section 8.3.

Section 5. INDEMNIFICATION AND AUTHORITY'S RESPONSIBILITIES.

5.1 To the fullest extent allowed by law and subject to the remainder of this Section 5, Authority shall hold harmless, defend, and indemnify City and its officers, officials, employees and volunteers from and against any and all liability, loss, damage, expense, cost (including without limitation costs and fees of litigation) arising out of or in connection with Authority's performance of work hereunder or, where within the scope of required insurance coverage, its failure to comply with any of its obligations contained in the agreement, except such loss or damage caused by the sole or active negligence, or willful misconduct of City, and except such loss as caused by City's failure to make such major repairs or replacement as described in Section 5.2, below. In instances where the City's active negligence, willful misconduct, or failure to make major repairs or replacement as described in Section 5.2 accounts for only a percentage of the liability involved, the obligation of the Authority will be for that entire portion of the percentage of liability not attributable

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to the City's active negligence, willful misconduct, or failure to make major repairs or replacement as described in Section 5.2. Amounts (if any) paid directly by Authority in accordance with this paragraph, including (but not limited to) deductibles and self-insured retention amounts, shall be reimbursed by the Member Agencies of Authority in the following proportions: 55.4% by the City, 24.0% by Granada Community Services District, and 20.6% by Montara Water and Sanitary District, which is based on flows into the single consolidated treatment plant facility as established in the Authority's Fiscal Year 2018-2019 budget.

5.2 In the event that Authority has duly notified City in writing of a discrete portion of City's collection system that requires major repairs or replacement (or maintenance which is beyond Authority's obligation to furnish under this Agreement) in order to operate effectively as intended without an undue risk of overflow, spill, or other unauthorized discharge, and City agrees in writing (or, in the event of disagreement, a mutually agreeable independent third party reviews and agrees with the Authority) and does not timely undertake the needed repairs or replacement, then Authority shall have no duty pursuant to section 5.1 above to indemnify City and its officers, officials, employees and volunteers against any and all liability, claims, damage, losses and expenses caused by or resulting from City's failure to timely perform such repairs or replacement, but Authority shall have a duty to defend City against a claim wherein it is alleged that damage caused by or resulting from City's failure to timely perform such repairs or replacement was also partially caused by or resulted from SAM's services under this Agreement. City shall reimburse Authority's defense related costs in proportion to the comparative fault of the City as agreed to in a settlement or as determined in a final judgment.

5.3 It is understood that the duty of Authority to indemnify and hold harmless as described above includes the duty to defend as set forth in Section 2778 of the California Civil Code. The City and Authority shall timely notify each other of the receipt of any third-party claim relating to the Agreement. Acceptance by City of insurance certificates and endorsements required under this Agreement does not relieve Authority from liability under this indemnification and hold harmless clause, provided that payment by its insurers shall fully relieve Authority from liability under this indemnification and hold harmless clause. By execution of this Agreement, Authority acknowledges and agrees to the provisions of this Section and that it is a material element of consideration.

5.4 The total liability in the aggregate of Authority and its employees, subcontractors or suppliers to the City and anyone claiming through or under the City on all claims of any kind arising out of or in any way related to Authority's services or from any cause

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or causes whatsoever shall not exceed the proceeds received from the insurance specified in Section 4 above.

Section 6. STATUS OF AUTHORITY.

6.1 **Independent Contractor.** At all times during the term of this Agreement, Authority shall be an independent contractor and shall not be an employee of City.

6.2 **Authority No Agent.** Except as specified in the Scope of Work attached hereto as Exhibit A, or as City may otherwise specify in writing, Authority shall have no authority, express or implied, to act on behalf of City in any capacity whatsoever as an agent with respect to the services performed pursuant to this Agreement.

Section 7. LEGAL REQUIREMENTS.

7.1 **Governing Law.** The laws of the State of California shall govern this Agreement.

7.2 **Compliance with Applicable Laws.** Authority and any subcontractors shall comply with all laws applicable to the performance of the work hereunder.

7.3 **Other Governmental Regulations.** To the extent that this Agreement may be funded by fiscal assistance from another governmental entity, Authority and any subcontractors shall comply with all applicable rules and regulations to which City is bound by the terms of such fiscal assistance program.

7.4 **Licenses and Permits.** Authority represents and warrants to City that Authority and its employees, agents, and any subcontractors have all licenses, permits, qualifications, and approvals of whatsoever nature that are legally required to practice their respective professions. Authority represents and warrants to City that Authority and its employees, agents, any subcontractors shall, at their sole cost and expense, keep in effect at all times during the term of this Agreement any licenses, permits, and approvals that are legally required to practice their respective professions.

7.5 **Nondiscrimination and Equal Opportunity.** As provided in Government Code Section 12940, Authority shall not discriminate, on the basis of a person's race, religion, color, national origin, ancestry, age, physical or mental handicap or disability, medical condition, genetic information, marital status, sex, gender,

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gender identity, gender expression, sexual orientation, or military and veteran status against any employee, applicant for employment, subcontractor, bidder for a subcontract, or participant in, recipient of, or applicant for any services or programs provided by Authority under this Agreement. Authority shall comply with all applicable federal, state, and local laws, policies, rules, and requirements related to equal opportunity and nondiscrimination in employment, contracting, and the provision of any services that are the subject of this Agreement, including but not limited to the satisfaction of any positive obligations required of Authority thereby.

Authority shall include the provisions of this Subsection in any subcontract approved by the Contract Administrator or this Agreement.

Section 8. TERMINATION AND MODIFICATION.

8.1 Termination. City may cancel this Agreement at any time and without cause upon 90 day's written notice to Authority.

Authority may cancel this Agreement at any time and without cause upon 90 days' written notice to City.

In the event of termination, Authority shall be entitled to compensation for services performed to the effective date of termination; City, however, may condition payment of such compensation upon Authority delivering to City any or all documents, photographs, computer software, video and audio tapes, and other materials provided to Authority or prepared by or for Authority or the City in connection with this Agreement. In the event Authority is not provided notice of any outstanding materials to be delivered to City, Authority shall be entitled to payment within 30 days.

8.2 Extension. City may request that the end date of this Agreement be extended beyond the term provided for in Subsection 1.1, provided that any such extension shall require a written amendment to this Agreement, as provided for herein, and that the Parties agree to a fee schedule for services during the extension period.

8.3 Amendments. The parties may amend this Agreement only by a writing signed by all the parties.

8.4 Assignment and Subcontracting. City and Authority recognize and agree that this Agreement contemplates performance by personnel employed by Authority

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and is based upon a determination of Authority's unique institutional competence, experience, and specialized institutional knowledge. Authority may not assign this Agreement or any interest therein. Authority shall not subcontract any portion of the performance contemplated and provided for herein absent a formal amendment to this Agreement. Authority may contract with a third-party consultant to provide training for its staff as specified in Exhibit A provided that this training will not add cost to the City that is not already included in the Budget attached as Exhibit B. Nothing in this Agreement shall be construed to allow City to assign this Agreement or any interest therein.

8.5 **Survival.** All obligations arising under this Agreement prior to the termination of this Agreement and all provisions of this Agreement allocating liability between City and Authority for matters pertaining to this Agreement shall survive the termination of this Agreement.

8.6 **Options upon Breach by Authority.** If Authority materially breaches any of the terms of this Agreement, City's remedies shall include, but not be limited to, the following:

8.6.1 Terminate the Agreement pursuant to Section 8.1;

8.6.2 Retain the plans, specifications, drawings, reports, design documents, and any other work product prepared by Authority pursuant to this Agreement;

8.6.3 Retain a different entity to complete the work described in Exhibit A not finished by Authority; or

8.6.4 Charge Authority the difference between the cost to complete the work described in Exhibit A that is unfinished at the time of breach and the amount that City would have paid Authority pursuant to Section 2 if Authority had completed the work.

8.7 **Options upon Breach by City.** If City materially breaches any of the terms of this Agreement, Authority may seek the City's compliance, or may terminate the Agreement after 90 days' written notice pursuant to Section 8.1.

Section 9. KEEPING AND STATUS OF RECORDS.

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9.1 **Records Created as Part of Authority's Performance.** All reports, data, maps, models, charts, studies, surveys, photographs, memoranda, plans, studies, specifications, records, files, or any other documents or materials, in electronic or any other form, that Authority prepares or obtains pursuant to this Agreement and that relate to the matters covered hereunder shall be the property of the City and Authority. Authority hereby agrees to deliver one original or certified copy of those documents to the City upon termination of the Agreement. It is understood and agreed that the documents and other materials, including but not limited to those described above, prepared pursuant to this Agreement are not necessarily suitable for any future or other use. To the extent allowed by law, City and Authority agree that, until final approval by City, all data, plans, specifications, reports and other documents will not be released to third parties without prior written consent of both parties.

9.2 **Authority's Books and Records.** Authority shall maintain any and all ledgers, books of account, invoices, vouchers, canceled checks, and other records or documents evidencing or relating to charges for services or expenditures and disbursements charged to the City under this Agreement for a minimum of three (3) years, or for any longer period required by law, from the date of final payment to the Authority to this Agreement.

9.3 **Inspection and Audit of Records.** Any records or documents that Section 9.2 of this Agreement requires Authority to maintain shall be made available for inspection, audit, and/or copying at any time during regular business hours, upon oral or written request of the City. Under California Government Code Section 8546.7, if the amount of public funds expended under this Agreement exceeds TEN THOUSAND DOLLARS ($10,000.00), the Agreement shall be subject to the examination and audit of the State Auditor, at the request of City or as part of any audit of the City, for a period of three (3) years after final payment under the Agreement.

Section 10 MISCELLANEOUS PROVISIONS.

10.1 **Venue.** In the event that either party brings any action against the other under this Agreement, the parties agree that the venue for trial of such action shall be vested exclusively in the state courts of California in the County of San Mateo or in the United States District Court for the Northern District of California., subject to the provisions of the Code of Civil Procedure of the State of California regarding a change of venue

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10.2 **Severability.** If a court of competent jurisdiction finds or rules that any provision of this Agreement is invalid, void, or unenforceable, the provisions of this Agreement not so adjudged shall remain in full force and effect. The invalidity in whole or in part of any provision of this Agreement shall not void or affect the validity of any other provision of this Agreement.

10.3 **No Implied Waiver of Breach.** The waiver of any breach of a specific provision of this Agreement does not constitute a waiver of any other breach of that term or any other term of this Agreement.

10.4 **Successors and Assigns.** Subject to Section 8.4, the provisions of this Agreement shall inure to the benefit of and shall apply to and bind the successors and assigns of the parties.

10.5 **Use of Recycled Products.** Authority shall prepare and submit all reports, written studies and other printed material on recycled paper to the extent it is available at equal or less cost than virgin paper.

10.6 **Services to Other Members.** Authority may provide collection system maintenance services for its other Member Agencies, including portions of the Granada Community Services District's collections system lying within the corporate limits of City.

10.7 **Conflict of Interest.** Authority shall not employ any City official in the work performed pursuant to this Agreement. No officer or employee of City shall have any financial interest in this Agreement that would violate California Government Code Sections 1090 *et seq.*

10.8 **Contract Administration.** This Agreement shall be administered by the City Manager or their designee ("Contract Administrator"). All correspondence shall be directed to or through the Contract Administrator. In addition, Mark Thomas & Company (MTCo) has been retained under a separate contract with the City to provide daily oversight of SAM activities under this Agreement, and SAM shall coordinate with MTCo as provided in Exhibit A.

10.9 **Notices.**

Any written notice to Authority shall be sent to:

Sewer Authority Mid-Coastside

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1000 Cabrillo Highway North
Half Moon Bay, CA 94019
Attention: General Manager
Phone: 650-726-0124
Email: bmarshall@samcleanswater.org

Any written notice to City shall be sent to:

City of Half Moon Bay
501 Main Street
Half Moon Bay, CA 94019
Attn: City Manager
Phone: 650-726-8280
Fax: (650) 726-9389
Email: publicworks@hmbcity.com

10.11 Integration. This Agreement, including the Scope of Work and Fee Schedule attached hereto and incorporated herein as Exhibits A and B represents the entire and integrated agreement between City and Authority with regard to the provision of collection system maintenance services as described herein, and supersedes all prior negotiations, representations, or agreements, either written or oral, with respect to collection system maintenance services, including the Agreement for Maintenance and Operation Services between the City of Half Moon Bay and Sewer Authority Mid-Coastside dated May 3, 1988.

This Agreement does not in any way amend or otherwise affect the JEPA. City and Authority expressly agree that the operation and maintenance by Authority of its wastewater interceptor, treatment and disposal system is independent of the operation and maintenance by Authority of City's sewerage collection system.

IN WITNESS WHEREOF, the City and the Consultant have executed this Agreement effective as of the date first written above.

"CITY"
CITY OF HALF MOON BAY

Date: 9/18/2018

By: _____
City Manager

Attest:

By: _____
City Clerk

Approved as to form:

_____ for Catherine Engberg
City Attorney

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Date: 10-03-18

"CONSULTANT"
Sewer Authority Mid-Coastside

Date: July 24, 2018

By: Beverli A. Marshall
Beverli A. Marshall
Its: General Manager

Attachments:

Exhibit A--Scope of Services
Exhibit B--Collections Budget

1013078.8

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EXHIBIT A

Scope of Work
City of Half Moon Bay
Sanitary Sewer System Maintenance Services
FY2018-19

GENERAL SCOPE OF SERVICES

The sanitary sewer system maintenance services contractor shall provide a comprehensive and effective operation and maintenance program using a map-based computerized maintenance management system (CMMS) that applies industry best management practices for cleaning, preventive maintenance, sanitary sewer overflow (SSO) response, and other related tasks for the wastewater collection system owned by the City. General tasks include but are not limited to providing system data to the project team; system-wide sewer line cleaning; pump station inspections and cleaning; comprehensive electronic documentation using the Lucity CMMS system supported by paper records; accurate and timely reporting; and regular communication with the City and its consultants. Sewer and pump station cleaning operations will be provided by Sewer Authority Mid-Coastside (SAM). Mark Thomas & Company (MTCo) has been retained under a separate contract with the City of Half Moon Bay (City) to provide daily oversight of SAM activities. MTCo is responsible for assuring that all SAM activities are completed in compliance with the contract documents and will advise the City as to the performance of SAM under this contract. All work shall be in compliance with the City's adopted Sewer System Management Plan (SSMP), as may be amended from time-to-time.

SAM SCOPE OF WORK

SAM, as a contractor to the City of Half Moon Bay shall provide the following services:

Task 1. Project Management

Task 1.1 Meetings

SAM field maintenance staff, supervisor(s), and the SAM General Manager will attend a kickoff meeting with City staff and MTCo. SAM will provide, for discussion by the team, the planned maintenance schedule for pipelines and lift stations for Fiscal Year 2018-19. This schedule will be accompanied by a map showing the current mainline cleaning schedule, color coded by month. The City will prepare the agenda and minutes from this meeting.

The SAM field maintenance supervisor and lead maintenance staff will attend quarterly meetings to discuss tasks completed during the prior quarter and tasks scheduled for the next quarter. The project team will also identify any issues or challenges that have been encountered, how they were resolved (or are proposed to be resolved), and

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identify and discuss any anticipated issues. SAM shall provide an updated schedule for discussion at each quarterly meeting.

Measurement and Payment: Payment shall be made per meeting, based on Exhibit B of the Agreement.

Task 1.2 Progress Reports

No later than the 10th day following the last day of each month, SAM shall submit a draft monthly status report that describes progress compared to goals. Information to be included in each report includes a list of SSO events (if any) with supporting details; list of emergency calls and their causes and actions; list of pipe segments cleaned with Pipe ID, information on the number of passes required, types and amounts of material removed from each pipe, and issues encountered; lift station inspections completed; all field documentation compiled during the previous month; and recommended actions by the City related to pipeline or lift station needs.

No later than 30 days after the end of FY 2018-19, SAM will provide a draft annual report of system maintenance activities using the monthly reports as a guideline. The annual report will include a discussion on trends in system performance and will provide the necessary information to fulfill the Monitoring, Measurement, and Modifications section of the City's SSMP.

SAM will incorporate comments from MTCo and/or the City as needed to meet the requirements established herein and submit a final version of each report. All reports shall reference both the SAM manhole ID numbers and the City manhole ID numbers for each line.

Measurement and Payment: Payment shall be per completed final report, based on Exhibit B of this Agreement.

Task 1.3 Computerized Maintenance Management System

SAM will host the CMMS using Lucity software during FY 2018-19. The software shall be sufficient to document all field data that is collected through this contract, including cleaning, inspections, repairs, and maintenance plans. SAM will provide remote access to MTCo and City staff. MTCo and City staff must have the ability to retrieve, review, change, and update Lucity data, including the Lucity GIS maps. SAM shall manage initial setup of the software, and shall hold and manage the contract and license between SAM and Lucity as related to the software. SAM will perform the initial input of all maintenance data after initial review by MTCo for accuracy and completeness. SAM will maintain the ICOM system and data until such time as data is fully migrated to Lucity and Lucity is deemed operational by the SAM and the City.

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As discussed by SAM staff and member agency managers, unless specifically requested by the City, SAM will not make any updates to the City's GIS maps, maintenance schedules, or maintenance records after the initial inputting by SAM staff; any changes of this nature will be handled by the City.

SAM agrees to provide all data to City if and/or when the City transitions to a stand-alone Lucity contract and license.

Measurement and Payment: SAM has confirmed that all costs related to CMMS implementation and management are included in other unit cost bid amounts. Completion of Lucity documentation on a monthly basis shall be considered a component of sewer line cleaning, as described in Task 3.

Task 2 Existing Data

Within 14 days following Notice to Proceed, SAM, as the current system maintenance contractor, will provide available information for review by the City and MTCo. Existing information includes the current hotspot list in list and map formats, system mapbook, data available in the current (ICOM) and planned (Lucity) CMMS including a database table of contents outlining the location of each type of information; summary of SSOs from the past 5 years including SSO response documentation; existing operational plans and manuals; current FOG inspection sites and past 3 years of associated inspection records; other pipeline and pump station maintenance records retained by SAM; and list of water meters currently used. The City will provide a copy of the Sewer Master Plan and ordinances.

Measurement and Payment: Payment will be lump sum upon delivery of all existing documents, based on Exhibit B of this Agreement.

Task 3 Sewer System Maintenance

Task 3.1 Sewer Pipeline Cleaning

All system pipes shall be cleaned during FY2018-2019. Pipe segments currently on, or subsequently placed on the hot spot list shall be cleaned in accordance with hot spot schedule during FY 2018-19.

SAM shall provide proactive and preventive sewer main cleaning to remove roots, grease, and/or debris from the system. SAM shall complete cleaning using the existing combination cleaning and vacuum truck that was purchased in approximately 2016. SAM shall provide all cleaning tools, and labor necessary to effectively access and clean the City sewer lines, following best management practices in place at Bay Area agencies such as West Bay Sanitary District and Union Sanitary District and as directed by MTCo.

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SAM shall assure that all roots, debris, fats, oils, and grease are captured and removed from the system via vacuum, and properly disposed of at a location to be identified by SAM. Under no circumstance will materials be flushed and captured using a downstream physical capture or filtering device. SAM shall be responsible for any and all costs incurred by the City that result from materials that remain in the system following use of this methodology.

Pipes shall be cleaned until the cleaning results yield "clear," as shown in Table 1. SAM shall record the contents that are removed from each pipe. Cleaning results shall be documented and provided as part of each monthly progress report.

The City agrees to obtain a water meter for use by SAM and will pay CCWD directly for the cost of water used for cleaning operations. The City will provide field oversight through City staff as well as via MTCo. The City and MTCo staff will provide observation and recommendations as to meeting best management practices only. The City and/or MTCo will not assist with any field activities.

Measurement and Payment: Payment will be per linear foot of pipe cleaned and will be made upon confirmation that all cleaning operations, including sufficient cleaning, debris removal, disposal, documentation, and entry into the CMMS system have been completed and submitted in accordance with the contract requirements. Payment will not be made for any pipes that require re-cleaning to meet contract requirements, or that are not scheduled or otherwise designated for cleaning by the City.

3.2 Hot Spot Cleaning

The hot spot list includes pipes that require cleaning more often than the routine cleaning frequency. SAM shall clean sewers on the hot spot list at their assigned frequency. Any changes to hot spot frequency will be entered into Lucity by the City or MTCo, following review of the proposed changes at a quarterly review meeting.

The current hot spot list shall be maintained and updated by SAM. SAM shall provide a quarterly update of the list which will be integrated into the Maintenance Plan prepared by MTCo. SAM shall implement the Cleaning Assessment Matrix contained in Table 1, as may be amended from time-to-time in writing by mutual consent of the parties.

Measurement and Payment: See Task 3.1

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Table 1. Cleaning Assessment Matrix

	Clear	Light	Moderate	Heavy
Debris	No observable debris	1-2 passes with debris observed and removed	3-4 passes before reaching Clear result	More than 4 passes required to reach Clear result.
Grease	No observable grease	1-2 passes with grease observed and removed	Small chunks but no logs observed. 3-4 passes before reaching Clear result.	Big chunks and/or logs observed, OR more than 4 passes before reaching Clear result.
Roots	No observable roots	1-2 passes with roots observed and removed	Thin stringy roots but no clumps observed. 3-4 passes before reaching Clear results	Thick roots and/or clumps observed, OR more than 4 passes to reach clear result.
Action	After 2 clear results, decrease frequency to next lower frequency.	Continue current maintenance frequency.	Increase to next higher maintenance frequency. Submit for CCTV assessment. Increase to next higher frequency. Submit for CCTV assessment.	

Task 3.3 Lift Station Maintenance

SAM shall conduct station checks and cleaning at each of the City's three lift stations (Ocean Colony, Pelican Point, and Bell Moon) as described below. MTCo will provide oversight and recommendations for best management practices, and, will complete station checks in event that SAM is unable due to resource or staffing needs. MTCo will not assist with station cleaning tasks.

Task 3.3.1 Weekly Station Checks

SAM will, at minimum, conduct the following station checks on a weekly basis:

- Visually inspect and check the wet well levels to ensure proper automatic start/stop levels for the pumps
- Check pumps for unusual noise or vibrations
- Clean and maintain pumping plant area
- Inspect the motor control center to ensure proper operations
- Record pump and generator hour meter readings
- Check generator batteries, fuel, oil, coolant levels, belts, hoses, tires (if portable)
- Exercise generator, simulating power failure to assure automatic startup

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- Inspect rails, piping, valves
- Exercise shut-off valves, as appropriate

Task 3.3.2 Quarterly and Annual Station Checks

SAM shall complete quarterly wet well cleaning at each of the City's lift stations. Tasks include vacuuming and cleaning each wet well. Lift station degreaser shall be used as needed to control fats, oils, and grease. SAM shall submit an MSDS sheet for approval by the City for any chemicals to be introduced to City facilities.

MTCo will complete quarterly and annual amperage tests and meg tests on pump motors, and annual pump inspections and maintenance per the manufacturer.

Measurement and Payment: Payment shall be per station per completed inspection and cleaning operation, based on Exhibit B to this Agreement.

Task 3.4 USA Marking

SAM shall respond to all Underground Service Alert (USA) calls associated with future construction in the City's service area within 48 hours of receiving the request. SAM shall research existing utilities, and measure and mark the location of existing sewer gravity and forcemain pipelines. SAM shall be responsible for any and all costs that are incurred by the City as a result of a failure to properly respond or mark existing sewer utilities in response to a USA request.

Measurement and Payment: Payment shall be per USA callout, based on Exhibit B to this Agreement.

Task 4 Sanitary Sewer Overflow Response

SAM shall respond to all sanitary sewer overflows (SSOs) within the City's service area, in accordance with the City's Sewer System Management Plan (SSMP).

Task 4.1 Training

SAM shall receive 24 hours of training from MTCo on SSO response and documentation. In addition, the MTCo Field Operations Manager will be available twenty-four hours per day, seven (7) days a week to provide telephone consultation to SAM maintenance personnel during SSO response.

In addition, SAM has stated that it will conduct internal training on the City's SSMP no less than once each year. New employees shall receive this training prior to performing sewer cleaning or assisting with SSO response. Twice each year, SAM will contract with a third-party consultant to provide collection system maintenance training for its staff to remain current with SSO volume estimation methods, equipment operations, wastewater collection system best management practices, and regulatory requirement

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updates. SAM has confirmed that this training will not add cost to the City. Also, City staff performing First Responder functions will be included in these trainings at no additional cost.

Task 4.2 SSO Response

SSO Response shall follow the State and Regional Water Board guidelines and the City's SSMP. SAM is responsible for completing all activities necessary for SSO response, from serving as the First Responder to conducting all required notifications, water quality testing, postings, communications, and field activities, and assuring that all response activities have been completed and accurately documented on paper and in the California Integrated Water Quality System (CIWQS).

SAM may receive notification of the SSO event directly from the public, from SAM staff observation, through the City, or via direct dial from a lift station alarm system. SAM shall serve as the First Responder and be on-site within 60 minutes from notification. SAM shall immediately contact the MTCo Field Operations Manager and provide a description of the situation to the Field Operations Manager by phone. MTCo will advise on actions to be taken, and SAM shall remain in close communication with MTCo throughout the entire SSO response.

Neither the City or MTCo will assist SAM with any field activities. SAM shall initiate documentation of the event and shall continue to maintain thorough and accurate records, both on paper and through photo documentation, through the entire event including any final site cleanup activities. SAM shall enter required information into CIWQS and shall make any necessary updates as identified by MTCo and/or the City. CIWQS data shall be filed by a Supervisor or Manager who is listed on CIWQS as an approved data reporter. Under no circumstances shall a SAM employee login to the City's CIWQS page using another person's login information.

Within five working days after the end of the SSO event, SAM shall convene a meeting with the City, MTCo, and SSO response staff to review the event, activities, documentation, and brainstorm strategies to avoid similar SSOs.

Measurement and Payment: Payment shall be per hour of active SSO response, and per SSO debrief, based on Exhibit B to this Agreement. Payment will be made based on information that is documented clearly in the SSO report; no payment will be made for response activities or durations that are missing or unsubstantiated. Payment will be made after the SSO has been certified by the Legally Responsible Official (LRO).

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EXHIBIT B

COLLECTIONS BUDGET

Sewer Authority Mid-Coastside (SAM) agrees to provide Collection Systems Services to the City of Half Moon Bay for the term of the Agreement (remainder of fiscal year (FY) 2018-2019) in accordance with the Scope of Work contained in Exhibit A and the Table below.

Task	Description	Unit	Qty	Unit Cost	Budget
Task 1 Project Management					
1.1	Kickoff Meeting	LS	1	$1,080	$1,080
1.2	Quarterly Review Meeting	EA	4	$540	$2,160
1.3	Monthly Status Report	EA	12	$540	$6,480
1.4	Annual Status Report	LS	1	$540	$540
Task 2 Existing System Data					
2.1	Provide Existing Data	LS	1	$2,256	$2,256
Task 3 Clean Sewer Pipelines					
3.1	Clean Entire System	LF	184,800	$1.34	$247,632
3.2	Clean Hot Spots	LF	9,000	$1.34	$12,060
Task 4 Lift Station Inspections					
4.1	Weekly Inspections	EA	52	$113	$5,876
4.2	Quarterly Inspections	EA	4	$225	$900
4.3	Annual Inspections	EA	1	$225	$225
4.4	USA Marking	EA	852	$14	$11,715
Task 5 SSO Response					
4.1	SSO Response	EA	3	$5,000	$15,000
4.2	Additional SSO Response (beyond the initial 3 SSOs)	Hour	6	$235	$1,410
4.3	Additional WQ Testing, Posting, and Communication	Hour	6	$235	$1,410
4.4	Additional Incident Debrief	EA	2	$235	$470
4.5	Additional After Hours Cost (3-Hour Minimum, M-F 4:00 p.m. to 7:00 a.m.; Weekends anytime)	Hour	4	$198	$792
4.6	Additional Labor During Work Hours for Tasks not Listed Above	Hour	4	$135	$540
				Total Year 1 Budget	$310,546

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CITY OF HALF MOON BAY
CONTRACT SUBMITTAL FORM

Rev. Apr 2019

1. PROJECT MANAGER INFORMATION

PM Name: Sheri Saisi **Department:** Public Works **Project** Sanitary Sewer System Maintenance Services

Project Description: Amendment 1 to Mark Thomas & Co. PSA for oversight of sewer collection system cleaning, maintenance and related services work. Scope amended for needed changes to City's fats, oils and greases (FOG) program; increases FY 2019-20 annual cost by $4,510 (Total $248,340).

2. VENDOR INFORMATION

Name/DBA: Mark Thomas and Company, Inc. **Contact Person:** Richard Tanaka

Address: 20863 Stevens Creek Blvd., Suite 100
Cupertino, CA 95014

Contact Phone & Email: (408) 253-7863 rtanaka@markthomas.com

CONTRACT SUBMITTAL INFORMATION

Contract: Amendment **Contract Type:** Consultant Services

Start Date: 07/01/2019 **End Date:** 06/30/2021 ☐ **On-going services**

City Council Action Required? Yes **Resolution #:** C-2019-34 **Council Action Date:** 05/07/2019

If No, Provide Reason:

Attachments must include: Insurance Certificate and Original Contract AND Amendment(s)

Public Works or Prevailing Wage Contract:

Is project registered in DIR? No **Limit: (+$15K Maint /+$25K New Construction)**

Project Manager (1) initials: SS	Project Manager (2) initials:	Deputy City Clerk Initials: JR

Department Director: John Doughty — Signature — 6/12/2019 — Date

City Manager: Bob Nisbet — Signature — 6/13/2019 — Date

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CITY OF HALF MOON BAY
FIRST AMENDMENT TO PROFESSIONAL SERVICES AGREEMENT

THIS FIRST AMENDMENT, dated July 1, 2019, ("First Amendment") TO THE PROFESSIONAL SERVICES AGREEMENT dated July 1, 2018, is made by and between the City of Half Moon Bay, a California municipal corporation ("City") and Mark Thomas and Company, Inc., a California Corporation ("Consultant").

RECITALS

WHEREAS, City and Consultant have previously entered into that certain Professional Services Agreement dated July 1, 2018, and

WHEREAS, City and Consultant desire to amend the Agreement as specified herein.

NOW, THEREFORE, it is agreed between the Parties hereto that the Agreement be, and it hereby is, amended as follows:

A. Exhibit A (Scope of Services—see Attachment 1 to this agreement), Tasks 3.6 and 3.7, first paragraph is amended as follows:

   Tasks 3.6 and 3.7 Fats, Oils, and Grease (FOG) Inspections and Follow-up Activities

   The City has a list of approximately 104 property owners requiring FOG inspections (on at least an annual basis). During the first nine (9) months of the contract, MTCo shall inspect each of the 104 properties, and based on the results from these initial inspections, MTCo shall develop a prospective inspection program and present this program to the City. Future inspections will be made according to this updated program/schedule.

B. Exhibit B (Project Budget), Tasks 3.6 and 3.7 amended to reflect changes to the Scope of Work for Fats, Oils and Grease Program (included as Attachment 2 to this agreement).

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IN WITNESS WHEREOF, the City and the Consultant have executed this Agreement effective as of the dates shown below.

"CITY"
CITY OF HALF MOON BAY

Date: 6/13/2019

By: Bob Nisbet
Bob Nisbet, City Manager

ATTEST:

By: Jessica Blair
Jessica Blair, City Clerk

Date: 6/13/2019

APPROVED AS TO FORM:

Catherine Engberg
Catherine Engberg, City Attorney

"CONSULTANT"
Mark Thomas and Company, Inc.

Date: 6/7/2019

By:
Richard Tanaka
Its: Senior Principal

ATTACHMENTS:

1. Revised Exhibit A (Amended Scope of Work)
2. Revised Exhibit B (Amended Project Budget)

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ATTACHMENT 1

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EXHIBIT A

Amended Scope of Work

City of Half Moon Bay
Sanitary Sewer System Maintenance Services
FY2018-19 through FY2020-21

GENERAL SCOPE OF SERVICES

The City has contracted with Sewer Authority Mid-Coastside (SAM) to provide cleaning and SSO response services as a component of the sanitary sewer maintenance program. Mark Thomas & Company (MTCo) is being contracted to provide oversight to SAM and perform specific additional tasks within this program. MTCo is responsible for assuring that all SAM activities are completed in compliance with the contract documents and shall advise the City as to the performance of SAM under this contract.

The sanitary sewer system maintenance program shall provide a comprehensive and effective operation and maintenance program using a map-based computerized maintenance management system (CMMS) that applies industry best management practices for cleaning, preventive maintenance, sanitary sewer overflow (SSO) response, and other related tasks.

General tasks to be completed by MTCo include, but are not limited to development of maintenance strategies, plans, and SOPs; QA/QC and training of SAM crews on City/system-wide sewer line cleaning; oversight of SAM on pump station inspections (and fill-in inspections as needed); oversight and training to SAM on wetwell cleaning; pump station maintenance; comprehensive electronic documentation using the Lucity CMMS system and review of SAM paper records; oversight to confirm that SAM provides accurate and timely reporting; FOG inspections and recommendations for enforcement; and regular communication with the City and its consultants.

MTCO SCOPE OF WORK

As proposed by MTCo in the amended scope of work and budget submitted on May 1, 2018, MTCo shall provide the services listed below. Task numbering follows the order of tasks listed in the MTCo Scope of Work, which is attached.

Task 1. Project Management

Tasks 1.1 and 1.2 Meetings

MTCo shall attend a kickoff meeting with City staff and SAM. SAM will provide, for discussion by the team, the planned maintenance schedule for pipelines and lift stations for Fiscal Year 2018-19. This schedule will be accompanied by a map showing the planned mainline cleaning schedule, color coded by month. MTCo will prepare the agenda in advance of the meeting and minutes following this meeting.

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MTCo shall attend additional quarterly meetings to discuss tasks completed during the prior quarter and tasks scheduled for the next quarter. The project team will also discuss any issues or challenges that have been encountered, how they were resolved, and anticipated issues. SAM shall provide MTCo with an updated schedule for discussion at each quarterly meeting.

MTCo shall also attend up to two City Council meetings annually upon request.

Measurement and Payment: Payment will be made on a time and materials basis, based on Exhibit B to this Agreement.

Tasks 1.3 and 1.4 Progress Reports

No later than the 25th day following the last day of each month, MTCo shall submit a draft monthly status report that describes progress compared to goals. Information to be included in each report includes a list of SSOs with supporting details; list of emergency calls and their causes and actions; list of pipes cleaned with Pipe ID, information on the number of passes required, types and amounts of material removed from each pipe, and issues encountered; lift station inspections completed; all field documentation compiled during the previous month; and recommended actions related to pipeline or lift station needs. The MTCo report shall incorporate a similar SAM report that is received by the 10th day of the same month.

No later than 45-days after the end of each service year, MTCo shall provide a draft annual report of system maintenance activities using the monthly reports as a guideline. The annual report shall include a discussion on trends in system performance and must provide information necessary to fulfill the Monitoring, Measurement, and Modifications section of the City's SSMP. This report shall incorporate a similar SAM report that is received with 30-days after the end of the service year.

MTCo will incorporate comments from the City as needed to meet the requirements established herein and submit a final version of each report. All reports shall reference both the SAM manhole ID numbers and the City manhole ID numbers for each line.

Measurement and Payment: Payment will be per completed final report, based on Exhibit B to this Agreement.

Task 1.5 Computerized Maintenance Management System

SAM will host the CMMS using Lucity software. The software will be sufficient to document all field data that is collected through this contract, including cleaning, inspections, repairs, and maintenance plans. SAM will provide remote access for use by MTCo and City staff.

In close coordination with the City, MTCo will retrieve, review, change, and update Lucity maintenance data that is initially input by SAM. MTCo will be able to access but shall not make any updates to the member agency GIS maps.

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Measurement and Payment: Payment will be made on a time and materials basis, based on Exhibit B to this Agreement.

Task 2 Review Existing Data

Within 14-days following the Notice to Proceed, SAM will provide available information for review by the City and MTCo. MTCo shall review the information provided, which is expected to include the current hotspot list in list and map formats, system mapbook, data available in the current (ICOM) and planned (Lucity) CMMS including a database table of contents outlining the location of each type of information; summary of SSOs from the past 5 years including SSO response documentation; existing operational plans and manuals; current FOG inspection sites and past 3 years of associated inspection records; other pipeline and pump station maintenance records retained by SAM; and list of water meters currently used. The City will provide a copy of the Sewer Master Plan and ordinances. MTCo shall summarize the information that is reviewed.

Measurement and Payment: Payment will be made on a time and materials basis, based on Exhibit B to this Agreement.

Task 3 Sewer System Maintenance

Tasks 3.1 and 3.2 Maintenance Plans

MTCo shall develop a written Maintenance Plan for the sewer collection system. The strategy shall document and recommend updates to the mainline cleaning schedule and pump station inspection and cleaning schedule, based on a review of the information described in Task 2.1. The plan shall also include any updates to the City's planned FOG inspection program. Any updates that are made after initial development of the plan shall be discussed and provided to the City at the quarterly review meeting that follows any such updates.

Task 3.3 through 3.5 Sewer Pipeline Cleaning

SAM will provide sewer main and hot spot cleaning services in accordance with the Agreement between the City of Half Moon Bay and SAM.

MTCo shall provide oversight to SAM, and shall review SAM's cleaning operations, results, and documentation for accuracy and completeness. MTCo shall shadow SAM staff on average two days per month to provide training and oversight. The City expects that the level of shadowing will be higher at the beginning of the contract, until MTCo is confident that SAM will provide the required services without extensive supervision. MTCo will utilize Table 1. Sam Cleaning Assessment Matrix in conjunction and other best management practices in oversight of SAM services.

Measurement and Payment: Payment will be made on a time and materials basis, based on Exhibit B to this Agreement.

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Table 1. SAM Cleaning Assessment Matrix

	Clear	Light	Moderate	Heavy
Debris	No observable debris	1-2 passes with debris observed and removed	3-4 passes before reaching Clear result	More than 4 passes required to reach Clear result.
Grease	No observable grease	1-2 passes with grease observed and removed	Small chunks but no logs observed. 3-4 passes before reaching Clear result.	Big chunks and/or logs observed, OR more than 4 passes before reaching Clear result.
Roots	No observable roots	1-2 passes with roots observed and removed	Thin stringy roots but no clumps observed. 3-4 passes before reaching Clear results	Thick roots and/or clumps observed, OR more than 4 passes to reach clear result.
Action	After 2 clear results, decrease frequency to next lower frequency.	Continue current maintenance frequency.	Increase to next higher maintenance frequency. Submit for CCTV assessment.	Increase to next higher frequency. Submit for CCTV assessment.

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Tasks 3.6 and 3.7 Fats, Oils, and Grease (FOG) Inspections and Follow-up Activities

The City has a list of approximately 104 property owners requiring FOG inspections (on at least an annual basis). During the first nine (9) months of the contract, MTCo shall inspect each of the 104 properties, and based on the results from these initial inspections, MTCo shall develop a prospective inspection program and present this program to the City. Future inspections will be made according to this updated program/schedule.

FOG inspections shall follow best management practices of agencies similar to West Bay Sanitary District. MTCo shall develop a detailed checklist for review and approval by the City and shall submit inspection results to the City within 15 days following each inspection. The inspection results shall be accompanied by recommendations for additional FOG control or enforcement. MTCo will assist the City in any required enforcement actions.

Measurement and Payment: Payment will be made on a time and materials basis, based on Exhibit B to this Agreement.

Tasks 3.8 through 3.10 Lift Station Maintenance

SAM is responsible for conducting station checks and cleaning at each of the City's three lift stations (Ocean Colony, Pelican Point, and Bell Moon), and is responsible for cleaning operations at the lift stations. MTCo will provide oversight and recommendations for best management practices, and, will complete station checks, upon request by the City in event that SAM is unable due to staffing limitations.

Weekly Station Checks

The following station checks will be completed on a weekly basis:

- Visually inspect and check the wet well levels to ensure proper automatic start/stop levels for the pumps
- Check pumps for unusual noise or vibrations
- Clean and maintain pumping plant area
- Inspect the motor control center to ensure proper operations
- Record pump and generator hour meter readings
- Check generator batteries, fuel, oil, coolant levels, belts, hoses, tires (if portable)
- Exercise generator, simulating power failure to assure automatic startup
- Inspect rails, piping, valves
- Exercise shut-off valves, as appropriate

Quarterly and Annual Station Checks

On a quarterly and annual basis, amperage tests and meg tests on pump motors shall be performed, and annual pump inspections and maintenance shall be completed per the manufacturer specifications.

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Measurement and Payment: Payment will be made on a time and materials basis for MTCo staff. MTCo services include SHAPE subconsultant services that include a five percent markup.

Task 4 Sanitary Sewer Overflow Response

SAM is responsible for responding respond to all sanitary sewer overflows (SSOs) within the City's service area, in accordance with the City's Sewer System Management Plan. MTCo is responsible for oversight of the SSO response, clean-up and reporting per State law, the City's adopted Sewer System management Plan (SSMP) and each Professional Services Agreement.

Task 4.1 Training

MTCo shall provide SAM with 24 hours of training on SSO response and documentation. In addition, the MTCo Field Operations Manager shall be available seven (7) days a week to provide telephone consultation to SAM maintenance personnel during SSO response.

Tasks 4.3 and 4.3 SSO Response

SAM is responsible for completing all activities necessary for SSO response, from serving as the "First Responder" to conducting all required notifications, water quality testing, postings, communications, and field activities, and assuring that all response activities have been completed and accurately documented in paper and in the California Integrated Water Quality System (CIWQS).

SAM will immediately contact the MTCo Field Operations Manager and provide a description of the situation to the Field Operations Manager by phone. MTCo shall advise on actions to be taken, and SAM shall remain in close communication with MTCo throughout the entire SSO response. MTCo shall provide on-site consultation as required.

SAM will initiate documentation of the event and will continue to maintain thorough and accurate records, both on paper and through photo documentation, through the entire event including any final site cleanup activities. MTCo shall review the documentation for accuracy and completeness and shall oversee any corrections or additions that are required. SAM will enter required information into CIWQS and will make any necessary updates as identified by MTCo and/or the City.

MTCo shall attend, either in person or by phone, a meeting with the City, MTCo, and SSO response staff that is held after every SSO to review the event, activities, documentation, and brainstorm strategies to avoid similar SSOs.

MTCo shall serve as the Legally Responsible Official (LRO) to certify all SSO reports The City Engineer will provide assistance and serve as back-up LRO.

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Measurement and Payment: Payment will be made on a time and materials basis, based on Exhibit B to the Agreement.

DocuSign Envelope ID: CA44EEF7-4CCC-4639-A7BE-709883844B7E

ATTACHMENT 2

DocuSign Envelope ID: CA44EEF7-4CCC-4639-A7BE-709883844B7E

EXHIBIT B

PROJECT BUDGET

MTCo has provided an overall budget spanning the three (3) year term of the Agreement. The following Table reflects the Year 2 budget, as modified by Amendment No.1 to the original agreement. The budget reflects transition to one-half system regular cleaning schedule. All work will be paid as described in the Scope of Services. Not to exceed costs are $248,339.

		2019-2020	Amendment Addition
1.0	**Project Management**		
1.1	Kickoff Meeting/Council Meeting	$865	
1.2	Quarterly Meetings	$4,877	
1.3	Status Reports	$4,357	
1.4	Annual Report	$2,950	
1.5	Maintenance Data in Lucity	$22,869	
2.0	**Existing System Data**		
2.1	Not Used	$0	
3.0	**Develop Maintenance Strategy**		
3.1	Not Used	$0	
3.2	Not Used	$0	
3.4	Clean Pipes	$45,644	
3.6	FOG Inspections and Documentation	$36,084	$2,566
3.7	FOG Follow-Up Action	$5,468	$1,944
3.8	Weekly LS Inspections	$52,060	
3.9	Quarterly LS Maintenance	$8,340	
3.10	Annual LS Maintenance	$11,088	
4.0	**SSO Response**		
4.1	Not Used	$0	
4.2 - 4.3	Field Consultation and Response	$21,828	
4.4	Review SSO Report and CIWQS Data	$19,033	
4.5	Recommendation and Documentation	$8,366	
	Total Cost	$243,829	$4,510

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Resolution No. C-2019-34

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF HALF MOON BAY AUTHORIZING THE CITY MANAGER TO EXECUTE AMENDMENT NO. 1 TO THE PROFESSIONAL SERVICES AGREEMENT WITH THE MARK THOMAS COMPANY FOR OVERSIGHT OF THE SEWER COLLECTION SYSTEM CLEANING, MAINTENANCE AND RELATED SERVICES

WHEREAS, the City Council entered into a professional services agreement with Mark Thomas Company on July 1, 2018 to provide oversight of the sewer collection system cleaning and maintenance; and

WHEREAS, the Fats, Oils and Greases (FOG) program is part of the maintenance program and within the Mark Thomas Company responsibilities; and

WHEREAS, the in the course of managing and implementing the FOG program, Mark Thomas Company has identified a significant number of new businesses requiring inspection and recommended other changes to the program which affect the scope of work approved in the original agreement; and

WHEREAS, staff has met with Mark Thomas Company representatives and reviewed the proposed scope changes and are supportive of the changes; and

WHEREAS, the scope changes will increase the cost of contract services by approximately 1.1 percent in FY 2019-20.

NOW, THEREFORE, BE IT RESOLVED THAT the City Council of the City of Half Moon Bay hereby authorizes the City Manager to execute Amendment No. 1 to the Professional Services Agreement with Mark Thomas Company modifying the scope of services to address the Fats, Oils, and Greases (FOG) program and increasing the annual cost to $248,340.

****

I, the undersigned, hereby certify that the foregoing resolution was duly passed and adopted on the 7th day of May, 2019 by the City Council of Half Moon Bay by the following vote:

AYES, Councilmembers: Brownstone, Penrose, Ruddock, Eisen, Rarback

NOES, Councilmembers:

ABSENT, Councilmembers:

ABSTAIN, Councilmembers:

DocuSign Envelope ID: CA44EEF7-4CCC-4639-A7BE-709883844B7E

ATTEST:

Jessica Blair, City Clerk

APPROVED:

Harvey Rarback, Mayor

DocuSign Envelope ID: CA44EEF7-4CCC-4639-A7BE-709883844B7E

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY) 6/28/2018

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER Dealey, Renton & Associates DRA License 0020739 P. O. Box 12675 Oakland CA 94604-2675	**CONTACT NAME:** Doris A. Chambers **PHONE (A/C, No, Ext):** 510 465-3090 **FAX (A/C, No):** **E-MAIL ADDRESS:** dchambers@dealeyrenton.com
INSURED MARKTHOMA Mark Thomas & Company, Inc. 2290 N. First Street San Jose CA 95131	**INSURER(S) AFFORDING COVERAGE** / **NAIC #** **INSURER A :** XL Specialty Insurance Co. 37885 **INSURER B :** **INSURER C :** **INSURER D :** **INSURER E :** **INSURER F :**

COVERAGES **CERTIFICATE NUMBER:** 2066871423 **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
	COMMERCIAL GENERAL LIABILITY						EACH OCCURRENCE	$
	☐ CLAIMS-MADE ☐ OCCUR						DAMAGE TO RENTED PREMISES (Ea occurrence)	$
							MED EXP (Any one person)	$
							PERSONAL & ADV INJURY	$
	GEN'L AGGREGATE LIMIT APPLIES PER:						GENERAL AGGREGATE	$
	☐ POLICY ☐ PRO-JECT ☐ LOC						PRODUCTS - COMP/OP AGG	$
	OTHER:							$
	AUTOMOBILE LIABILITY						COMBINED SINGLE LIMIT (Ea accident)	$
	☐ ANY AUTO						BODILY INJURY (Per person)	$
	☐ ALL OWNED AUTOS ☐ SCHEDULED AUTOS						BODILY INJURY (Per accident)	$
	☐ HIRED AUTOS ☐ NON-OWNED AUTOS						PROPERTY DAMAGE (Per accident)	$
								$
	UMBRELLA LIAB ☐ OCCUR						EACH OCCURRENCE	$
	EXCESS LIAB ☐ CLAIMS-MADE						AGGREGATE	$
	☐ DED ☐ RETENTION $							$
	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY Y / N						☐ PER STATUTE ☐ OTH-ER	
	ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? ☐ **(Mandatory in NH)**	N / A					E.L. EACH ACCIDENT	$
	If yes, describe under DESCRIPTION OF OPERATIONS below						E.L. DISEASE - EA EMPLOYEE	$
							E.L. DISEASE - POLICY LIMIT	$
A	Professional Liability			DPR9927773	7/1/2018	7/1/2019	$1,000,000 Per Claim $1,000,000 Annl Aggregate	

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

REF: MTC#CU-18105 - City of Half Moon Bay Sewer Maintenance and Management.
Professional Liability Deductible: $100,000.

CERTIFICATE HOLDER

City of Half Moon Bay
501 Main Street
Half Moon Bay CA 94019

CANCELLATION 30 Day NOC/10 Day for NonPay of Prem

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

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CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY): 9/17/2018

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER Asero Insurance Services 200 N. Almaden Blvd. 3rd Floor San Jose, CA 95110 www.aseroins.com License No. 0A91339	**CONTACT NAME:** Asero Insurance Services **PHONE (A/C, No, Ext):** 866-966-8928 **FAX (A/C, No):** 408-271-1802 **E-MAIL ADDRESS:** certs@aseroins.com
INSURED Mark Thomas & Company, Inc. 2290 North First Street, Suite 304 San Jose CA 95131	**INSURER(S) AFFORDING COVERAGE** — **NAIC #** **INSURER A :** Zurich American Insurance Company — 16535 **INSURER B :** American Guarantee and Liability Ins Co — 26247 **INSURER C :** **INSURER D :** **INSURER E :** **INSURER F :**

COVERAGES **CERTIFICATE NUMBER:** 44229530 **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
A	✓ **COMMERCIAL GENERAL LIABILITY** ☐ CLAIMS-MADE ✓ OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: ☐ POLICY ✓ PRO-JECT ☐ LOC ☐ OTHER:			CPO3069506-00	9/15/2018	9/15/2019	EACH OCCURRENCE DAMAGE TO RENTED PREMISES (Ea occurrence) MED EXP (Any one person) PERSONAL & ADV INJURY GENERAL AGGREGATE PRODUCTS - COMP/OP AGG $	$ 1,000,000 $ 1,000,000 $ 10,000 $ 1,000,000 $ 2,000,000 $ 2,000,000 $
B	**AUTOMOBILE LIABILITY** ✓ ANY AUTO ☐ OWNED AUTOS ONLY ☐ SCHEDULED AUTOS ✓ HIRED AUTOS ONLY ✓ NON-OWNED AUTOS ONLY			CPO3069506-00	9/15/2018	9/15/2019	COMBINED SINGLE LIMIT (Ea accident) BODILY INJURY (Per person) BODILY INJURY (Per accident) PROPERTY DAMAGE (Per accident) Comp/Coll Ded: $1,000	$ 1,000,000 $ $ $ $
B	✓ **UMBRELLA LIAB** ✓ OCCUR **EXCESS LIAB** ☐ CLAIMS-MADE ☐ DED ☐ RETENTION $			AUC3254206-00	9/15/2018	9/15/2019	EACH OCCURRENCE AGGREGATE $	$ 4,000,000 $ 4,000,000 $
B	**WORKERS COMPENSATION AND EMPLOYERS' LIABILITY** Y / N ANYPROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? ☐ **(Mandatory in NH)** If yes, describe under DESCRIPTION OF OPERATIONS below	N / A		WC3069507-00	9/15/2018	9/15/2019	✓ PER STATUTE ☐ OTH-ER E.L. EACH ACCIDENT E.L. DISEASE - EA EMPLOYEE E.L. DISEASE - POLICY LIMIT	 $ 1,000,000 $ 1,000,000 $ 1,000,000
A	Rented/Leased Equipment			CPO3069506-00	9/15/2018	9/15/2019	Per Item Limit: $10,000 Per Occurrence Limit: $100,000	

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

RE: CU-18105 City of Half Moon Bay Sewer Maintenance and Management
City of Half Moon Bay, its officers, employees, agents and volunteers as additional insureds.

NOTE: 30 DAYS NOTICE OF CANCELLATION WILL BE GIVEN EXCEPT 10 DAYS FOR NON-PAYMENT.

CERTIFICATE HOLDER

RE: CU-18105 City of Half Moon Bay Sewer Maintenance and Management

City of Half Moon Bay
501 Main Street
Half Moon Bay CA 94019

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

Joe Longwello

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AGENCY CUSTOMER ID: MARKT-1

LOC #: _____

ADDITIONAL REMARKS SCHEDULE

AGENCY Asero Insurance Services	**NAMED INSURED** Mark Thomas & Company, Inc. 2290 North First Street, Suite 304 San Jose CA 95131
POLICY NUMBER	
CARRIER / **NAIC CODE**	**EFFECTIVE DATE:**

ADDITIONAL REMARKS

THIS ADDITIONAL REMARKS FORM IS A SCHEDULE TO ACORD FORM,

FORM NUMBER: 25 **FORM TITLE:** Certificate of Liability (03/16)

HOLDER: City of Half Moon Bay
ADDRESS: 501 Main Street Half Moon Bay CA 94019

General Liability Additional Insured/ Primary & Non-Contributory as required by written contract per form U-GL-1175-C CW (07/10)
General Liability Waiver of Subrogation as required by written contract per form U-GL-1345-B CW (04/13)
Commercial Auto Liability Additional Insured/ Primary & Non-Contributory/ Waiver of Subrogation as required by written contract per form U-CA-424-F CW (04/14)
Workers' Compensation Waiver of Subrogation as required by written contract per form WC 04 03 06
(Ed.4-84)

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AGENCY CUSTOMER ID: MARKT-1

LOC #: _____

ADDITIONAL REMARKS SCHEDULE

AGENCY Asero Insurance Services	**NAMED INSURED** Mark Thomas & Company, Inc. 2290 North First Street, Suite 304 San Jose CA 95131
POLICY NUMBER	
CARRIER / **NAIC CODE**	**EFFECTIVE DATE:**

ADDITIONAL REMARKS

THIS ADDITIONAL REMARKS FORM IS A SCHEDULE TO ACORD FORM,

FORM NUMBER: 25 **FORM TITLE:** Certificate of Liability (03/16)

HOLDER: City of Half Moon Bay
ADDRESS: 501 Main Street Half Moon Bay CA 94019

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ATTACHMENT

Additional Insured – Automatic – Owners, Lessees Or Contractors

Policy No.	Eff. Date of Pol.	Exp. Date of Pol.	Eff. Date of End.	Producer No.	Add'l. Prem	Return Prem.
CPO3069506-00	**09/15/2018**	**09/15/2019**	**09/15/2018**	**67229**		

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

Named Insured: **MARK THOMAS & COMPANY INC**

Address (including ZIP Code): **2290 N 1st St. Ste. 304, San Jose, CA 95131**

This endorsement modifies insurance provided under the:

Commercial General Liability Coverage Part

A. Section **II – Who Is An Insured** is amended to include as an insured any person or organization who you are required to add as an additional insured on this policy under a written contract or written agreement.

B. The insurance provided to the additional insured person or organization applies only to "bodily injury", "property damage" or "personal and advertising injury" covered under Section **I - Coverage A - Bodily Injury And Property Damage Liability** and Section **I - Coverage B - Personal And Advertising Injury Liability**, but only with respect to liability for "bodily injury", "property damage" or "personal and advertising injury" caused, in whole or in part, by:

1. Your acts or omissions; or

2. The acts or omissions of those acting on your behalf,

and resulting directly from your ongoing operations or "your work" as included in the "products-completed operations hazard", which is the subject of the written contract or written agreement, performed for the additional insured person or organization.

C. However, regardless of the provisions of Paragraphs **A.** and **B.** above:

1. We will not extend any insurance coverage to any additional insured person or organization:

a. That is not provided to you in this policy; or

b. That is any broader coverage than you are required to provide to the additional insured person or organization in the written contract or written agreement; and

2. We will not provide Limits of Insurance to any additional insured person or organization that exceed the lower of:

a. The Limits of Insurance provided to you in this policy; or

b. The Limits of Insurance you are required to provide in the written contract or written agreement.

D. The insurance provided to the additional insured person or organization does not apply to:

"Bodily injury", "property damage" or "personal and advertising injury" arising out of the rendering or failure to render any professional architectural, engineering or surveying services including:

1. The preparing, approving or failing to prepare or approve maps, shop drawings, opinions, reports, surveys, field orders, change orders or drawings and specifications; and

2. Supervisory, inspection, architectural or engineering activities.

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E. The additional insured must see to it that:

1. We are notified as soon as practicable of an "occurrence" or offense that may result in a claim;

2. We receive written notice of a claim or "suit" as soon as practicable; and

3. A request for defense and indemnity of the claim or "suit" will promptly be brought against any policy issued by another insurer under which the additional insured may be an insured in any capacity. This provision does not apply to insurance on which the additional insured is a Named Insured, if the written contract or written agreement requires that this coverage be primary and non-contributory.

F. For the coverage provided by this endorsement:

1. The following paragraph is added to Paragraph **4.a.** of the Other Insurance Condition of Section **IV – Commercial General Liability Conditions**:

This insurance is primary insurance as respects our coverage to the additional insured person or organization, where the written contract or written agreement requires that this insurance be primary and non-contributory with respect to any other policy upon which the additional insured is a Named Insured. In that event, we will not seek contribution from any other such insurance policy available to the additional insured on which the additional insured person or organization is a Named Insured.

2. The following paragraph is added to Paragraph **4.b.** of the Other Insurance Condition of Section **IV – Commercial General Liability Conditions**:

This insurance is excess over:

Any of the other insurance, whether primary, excess, contingent or on any other basis, available to an additional insured, in which the additional insured on our policy is also covered as an additional insured on another policy providing coverage for the same "occurrence", offense, claim or "suit". This provision does not apply to any policy in which the additional insured is a Named Insured on such other policy and where our policy is required by written contract or written agreement to provide coverage to the additional insured on a primary and non-contributory basis.

G. This endorsement does not apply to an additional insured which has been added to this policy by an endorsement showing the additional insured in a Schedule of additional insureds, and which endorsement applies specifically to that identified additional insured.

All other terms and conditions of this policy remain unchanged.

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DocuSign Envelope ID: CA44EEF7-4CCC-4639-A7BE-709883844B7E

General Liability Supplemental Coverage Endorsement

ZURICH

Policy No.	Eff. Date of Pol.	Exp. Date of Pol.	Eff. Date of End.	Producer No.	Add'l. Prem.	Return Prem.
CPO3069506-00	**09/15/2018**	**09/15/2019**	**09/15/2018**	**67229**		

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

This endorsement modifies insurance provided under the:

Commercial General Liability Coverage Part

The following changes apply to this Coverage Part. However, endorsements attached to this Coverage Part will supersede any provisions to the contrary in this General Liability Supplemental Coverage Endorsement.

A. Waiver of Right of Subrogation

Paragraph **8. Transfer Of Rights Of Recovery Against Others To Us** of Section **IV** – **Commercial General Liability Conditions** is replaced by the following:

8. Transfer Of Rights Of Recovery Against Others To Us

a. If the insured has rights to recover all or part of any payment we have made under this Coverage Part, those rights are transferred to us. The insured must do nothing after loss to impair them. At our request, the insured will bring "suit" or transfer those rights to us and help us enforce them.

b. If the insured waives its right to recover payments for injury or damage from another person or organization in a written contract executed prior to a loss, we waive any right of recovery we may have against such person or organization because of any payment we have made under this Coverage Part. The written contract will be considered executed when the insured's performance begins, or when it is signed, whichever happens first. This waiver of rights shall not be construed to be a waiver with respect to any other operations in which the insured has no contractual interest.

All other terms and conditions of this policy remain unchanged.

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Coverage Extension Endorsement

ZURICH

Policy No.	Eff. Date of Pol.	Exp. Date of Pol.	Eff. Date of End.	Producer No.	Add'l. Prem	Return Prem.
CPO3069506-00	**09/15/2018**	**09/15/2019**	**09/15/2018**	**67229**		

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

This endorsement modifies insurance provided under the:

Business Auto Coverage Form
Motor Carrier Coverage Form

A. Amended Who Is An Insured

1. The following is added to the **Who Is An Insured** Provision in **Section II – Covered Autos Liability Coverage**:

The following are also "insureds":

a. Any "employee" of yours is an "insured" while using a covered "auto" you don't own, hire or borrow for acts performed within the scope of employment by you. Any "employee" of yours is also an "insured" while operating an "auto" hired or rented under a contract or agreement in an "employee's" name, with your permission, while performing duties related to the conduct of your business.

b. Anyone volunteering services to you is an "insured" while using a covered "auto" you don't own, hire or borrow to transport your clients or other persons in activities necessary to your business.

c. Anyone else who furnishes an "auto" referenced in Paragraphs **A.1.a.** and **A.1.b.** in this endorsement.

d. Where and to the extent permitted by law, any person(s) or organization(s) where required by written contract or written agreement with you executed prior to any "accident", including those person(s) or organization(s) directing your work pursuant to such written contract or written agreement with you, provided the "accident" arises out of operations governed by such contract or agreement and only up to the limits required in the written contract or written agreement, or the Limits of Insurance shown in the Declarations, whichever is less.

2. The following is added to the **Other Insurance** Condition in the Business Auto Coverage Form and the **Other Insurance – Primary and Excess Insurance Provisions Condition** in the Motor Carrier Coverage Form**:**

Coverage for any person(s) or organization(s), where required by written contract or written agreement with you executed prior to any "accident", will apply on a primary and non-contributory basis and any insurance maintained by the additional "insured" will apply on an excess basis. However, in no event will this coverage extend beyond the terms and conditions of the Coverage Form.

B. Waiver of Transfer Of Rights Of Recovery Against Others To Us

The following is added to the **Transfer Of Rights Of Recovery Against Others To Us** Condition:

This Condition does not apply to the extent required of you by a written contract, executed prior to any "accident" or "loss", provided that the "accident" or "loss" arises out of operations contemplated by such contract. This waiver only applies to the person or organization designated in the contract.

All other terms, conditions, provisions and exclusions of this policy remain the same.

Includes copyrighted material of Insurance Services Office, Inc., with its permission.
44229530 | MARKT-1 | 18-19 Master Certificate | Prabhjot Kaur | 9/17/2018 10:17:03 AM (PDT) | Page 7 of 8

WORKERS' COMPENSATION AND EMPLOYERS' LIABILITY INSURANCE POLICY

WC 04 03 06 (Ed. 4-84)

WAIVER OF OUR RIGHT TO RECOVER FROM OTHERS ENDORSEMENT—CALIFORNIA

This endorsement changes the policy to which it is attached effective on the inception date of the policy unless a different date is indicated below.

(The following "attaching clause" need be completed only when this endorsement is issued subsequent to preparation of the policy.)

This endorsement, effective on 09/15/2018 (DATE) at 12:01 A.M. standard time, forms a part of

Policy No. **WC3069507-00** Endorsement No.

of the **American Guarantee and Liability Insurance Company** (NAME OF INSURANCE COMPANY)

issued to **Mark Thomas & Company, Inc.**

Premium (if any) $

Authorized Representative

We have the right to recover our payments from anyone liable for an injury covered by this policy. We will not enforce our right against the person or organization named in the Schedule. (This agreement applies only to the extent that you perform work under a written contract that requires you to obtain this agreement from us.)

You must maintain payroll records accurately segregating the remuneration of your employees while engaged in the work described in the Schedule.

The additional premium for this endorsement shall be % of the California workers' compensation premium otherwise due on such remuneration.

Schedule

Person or Organization	**Job Description**
ALL PERSONS AND/OR ORGANIZATIONS THAT ARE REQUIRED BY WRITTEN CONTRACT OR AGREEMENT WITH THE INSURED, EXECUTED PRIOR TO THE ACCIDENT OR LOSS, THAT WAIVER OF SUBROGATION BE PROVIDED UNDER THIS POLICY FOR WORK PERFORMED BY YOU FOR THAT PERSON AND/OR ORGANIZATION	

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Resolution No. C-2018-39

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF HALF MOON BAY AUTHORIZING THE INTERIM CITY MANAGER TO EXECUTE A PROFESSIONAL SERVICES AGREEMENT WITH THE MARK THOMAS COMPANY FOR OVERSIGHT OF THE SEWER COLLECTION SYSTEM CLEANING, MAINTENANCE AND RELATED SERVICES

WHEREAS, the City Council authorized staff to issue a Request for Proposals on January 16, 2018 for collection system cleaning and maintenance services;

WHEREAS, the City received five proposals on or before the closing date of February 20, 2018; and

WHEREAS, upon review of the proposals, staff narrowed the list to the proposals from the Sewer Authority Mid-Coastside (SAM) and Mark Thomas Company (MTCo); and

WHEREAS, on March 20, 2018, the City Council received a report on the status of the RFP process and options for moving forward with completing agreement(s) for the services; and

WHEREAS, the City Council authorized staff to meet with both SAM and MTCo to discuss a blended services agreement model.

NOW, THEREFORE, BE IT RESOLVED THAT the City Council of the City of Half Moon Bay hereby authorizes the Interim City Manager to execute a professional services agreement with Mark Thomas Company for sewer collection system cleaning, maintenance and related services.

****

I, the undersigned, hereby certify that the foregoing Resolution was duly passed and adopted on the 15th day of May, 2018 by the City Council of Half Moon Bay by the following vote:

AYES, Councilmembers: EISEN, KOWALCZYK, RUDDOCK, RARBACK, PENROSE

NOES, Councilmembers:

ABSENT, Councilmembers:

ABSTAIN, Councilmembers:

ATTEST:

Jessica Blair, City Clerk

APPROVED:

Deborah Penrose, Mayor

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CITY OF HALF MOON BAY
PROFESSIONAL SERVICES AGREEMENT

THIS PROFESSIONAL SERVICES AGREEMENT ("Agreement") is entered into by and between the City of Half Moon Bay, a California municipal corporation ("City") and Mark Thomas and Company, Inc, a California Corporation ("Consultant").

1. RECITALS.

1.1. City has determined that it requires the following professional services from a consultant to assist the City overseeing the day-to-day cleaning of the City's sewer collection system, pump stations maintenance and the conduct of "FOG" inspections.

1.2. Consultant represents that it is fully qualified to perform such professional services by virtue of its experience and the training, education and expertise of its principals and employees. Consultant further represents that it is willing to accept responsibility for performing such services in accordance with the terms and conditions set forth in this Agreement.

2. DEFINITIONS.

2.1. "Scope of Services": Such professional services as are set forth in Consultant's Scope of work to City attached hereto as Exhibit A and incorporated herein by this reference.

2.2. "Approved Fee Schedule": Such compensation rates as are set forth in Consultant's fee schedule to City attached hereto as Exhibit B and incorporated herein by this reference.

2.3. "Commencement Date": July 1, 2018

2.4. "Expiration Date": June 30, 2021

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3. TERM.

3.1. The term of this Agreement shall commence at 12:00 a.m. on the Commencement Date and shall expire at 11:59 p.m. on the Expiration Date unless extended by written agreement of the parties or terminated earlier in accordance with Section 17 ("Termination") below.

4. CONSULTANT SERVICES.

4.1. Consultant shall perform the services identified in the Scope of Services. City shall have the right to request, in writing, changes in the Scope of Services. Any such changes mutually agreed upon by the parties, and any corresponding increase or decrease in compensation, shall be incorporated by written amendment to this Agreement.

4.2. Consultant shall obtain a City business license prior to commencing performance under this Agreement.

4.3. Consultant shall perform all work to the professional standards and customary level of care as ordinarily exercised by consultants providing similar services in a manner reasonably satisfactory to City.

4.4. Consultant shall comply with all applicable federal, state and local laws and regulations, including the conflict of interest provisions of Government Code Section 1090 and the Political Reform Act (Government Code Section 81000 et seq.).

4.5. During the term of this Agreement, Consultant shall not perform any work for another person or entity for whom Consultant was not working at the Commencement Date if both (i) such work would require Consultant to abstain from a decision under this Agreement pursuant to a conflict of interest statute and (ii) City has not consented in writing to Consultant's performance of such work.

4.6. Consultant represents that it has, or will secure at its own expense, all personnel required to perform the services identified in the Scope of Services. All such services shall be performed by Consultant or under its supervision, and all personnel engaged in the work shall be qualified to perform such services. Benjamin T. Porter PE, Associate shall be Consultant's project administrator and shall have direct responsibility for management of Consultant's performance under this Agreement. No change shall be made in Consultant's project administrator without City's prior written consent.

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5. COMPENSATION.

5.1. City agrees to compensate Consultant for the services provided under this Agreement, and Consultant agrees to accept in full satisfaction for such services, payment in accordance with the Approved Fee Schedule.

5.2. Consultant shall submit to City an invoice, on a monthly basis or less frequently, for the services performed pursuant to this Agreement. Each invoice shall itemize the services rendered during the billing period and the amount due. Within ten business days of receipt of each invoice, City shall notify Consultant in writing of any disputed amounts included on the invoice. Within thirty calendar days of receipt of each invoice, City shall pay all undisputed amounts included on the invoice. City shall not withhold applicable taxes or other authorized deductions from payments made to Consultant.

5.3. Payments for any services requested by City and not included in the Scope of Services shall be made to Consultant by City on a time-and-materials basis using Consultant's standard fee schedule. Consultant shall be entitled to increase the fees in this fee schedule at such time as it increases its fees for its clients generally; provided, however, in no event shall Consultant be entitled to increase fees for services rendered before the thirtieth day after Consultant notifies City in writing of an increase in that fee schedule. Fees for such additional services shall be paid within sixty days of the date Consultant issues an invoice to City for such services.

6. OWNERSHIP OF WRITTEN PRODUCTS.

6.1. All reports, documents or other written material ("written products" herein) developed by Consultant in the performance of this Agreement shall be and remain the property of City without restriction or limitation upon its use or dissemination by City. Consultant may take and retain copies of such written products as desired, but no such written products shall be the subject of a copyright application by Consultant

6.2. Consultant represents and warrants that Consultant has the legal right to utilize all intellectual property Consultant will utilize in the performance of its obligations pursuant to this Agreement. Consultant further represents that Consultant shall ensure City has the legal right to utilize all intellectual property involved in and/or resulting from Consultant's performance of this Agreement.

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7. **RELATIONSHIP OF PARTIES**. Consultant is, and shall at all times remain as to City, a wholly independent contractor. Consultant shall have no power to incur any debt, obligation, or liability on behalf of City or otherwise to act on behalf of City as an agent. Neither City nor any of its agents shall have control over the conduct of Consultant or any of Consultant's employees, except as set forth in this Agreement. Consultant shall not represent that it is, or that any of its agents or employees are, in any manner employees of City.

8. **CONFIDENTIALITY**. All data, documents, discussion, or other information developed or received by Consultant or provided for performance of this Agreement are deemed confidential and shall not be disclosed by Consultant to third parties without prior written consent by City. City shall grant such consent if disclosure is legally required. Upon request, all City data shall be returned to City upon the termination or expiration of this Agreement.

9. **INDEMNIFICATION**.

9.1. **Separate Professional Liability Indemnity.** As respect to the performance of professional services, Consultant agrees to indemnity and hold harmless (but not defend) City, and its officers, officials, employees, agents, and volunteers (collectively, the "City Indemnitees"), from and against any damages, losses, liabilities, judgements, settlements, expenses, and costs (including, without limitation, reasonable attorneys' fees, expert witness fees, legal costs, and expenses) of every nature arising out of or in connection with Consultant's, recklessness, negligent acts, errors or omissions, or willful misconduct in the performance of services under this Agreement, except such loss or damage caused the sole active negligence or willful misconduct of the City. Consultant has no obligation to pay for any of City Indemnitees defense related cost prior to a final determination of liability, or to pay any amount that exceeds Consultant's finally determined percentage of liability based upon the comparative fault of Consultant, except as provided in Civil Code Section 2782.8(a) and (e).

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9.2. **Separate Other than Professional Liability Indemnity.** Except as provided in subsection 9.1, Consultant shall hold harmless, defend (with counsel agreed to by City, which agreement shall not be unreasonably withheld) and indemnify City and its officers, officials, employees, agents, and volunteers from and against any damages, losses, liabilities, judgements, settlements, expenses, and costs (including, without limitation, reasonable attorneys' fees, expert witness fees, legal costs, and expenses) of every nature arising out of or in connection with Consultant's negligence, recklessness, or willful misconduct in performance of work hereunder or its failure to comply with any of its obligations contained in the agreement, except such loss or damage caused by the sole active negligence or willful misconduct of the City. It is understood that this duty to indemnify and hold harmless includes the duty to defend as set forth in Section 2778 of the California Civil Code.

9.3. Acceptance by City of insurance certificates and endorsements required under this Agreement does not relieve Consultant from liability under these indemnification and hold harmless clauses. By execution of this Agreement, Consultant acknowledges and agrees to the provisions of this Section and that it is a material element of consideration.

9.4. In the event that Consultant or any employee, agent, or subcontractor of Consultant providing services under this Agreement is determined by a court of competent jurisdiction or the California Public Employees Retirement System (PERS) to be eligible for enrollment in PERS as an employee of City, Consultant shall indemnify, defend, and hold harmless City for the payment of any employee and/or employer contributions for PERS benefits on behalf of Consultant or its employees, agents, or subcontractors, as well as for the payment of any penalties and interest on such contributions, which would otherwise be the responsibility of City.

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9.5. City shall have the right to offset against the amount of any compensation due Consultant under this Agreement any amount due City from Consultant as a result of Consultant's failure to pay City promptly any indemnification arising under this Section 9 or related to Consultant's failure to either (i) pay taxes on amounts received pursuant to this Agreement or (ii) comply with applicable workers' compensation laws.

9.6. The obligations of Consultant under this Section 9 will not be limited by the provisions of any workers' compensation act or similar act. Consultant expressly waives its statutory immunity under such statutes or laws as to City, its officers, agents, employees and volunteers.

9.7. City does not and shall not; waive any rights that it may possess against Consultant because of the acceptance by City, or the deposit with City, of any insurance policy or certificate required pursuant to this Agreement. This hold harmless and indemnification provision shall apply regardless of whether or not any insurance policies are determined to be applicable to the claim, demand, damage, liability, loss, cost or expense.

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10. INSURANCE.

10.1. During the term of this Agreement, Consultant shall carry, maintain, and keep in full force and effect insurance against claims for death or injuries to persons or damages to property that may arise from or in connection with Consultant's performance of this Agreement. Such insurance shall be of the types and in the amounts as set forth below:

Comprehensive General Liability Insurance with coverage limits of not less than One Million Dollars ($1,000,000) per occurrence / Two Million Dollars ($2,000,000) aggregate including products and operations hazard, contractual insurance, broad form property damage, independent consultants, personal injury, underground hazard, and explosion and collapse hazard where applicable.

Automobile Liability Insurance for vehicles used in connection with the performance of this Agreement with minimum limits of One Million Dollars ($1,000,000) per occurrence/incident.

Worker's Compensation insurance as required by the laws of the State of California.

Professional Errors and Omissions Insurance with coverage limits of not less than One Million Dollars ($1,000,000) per claim/occurrence, Two Million Dollars ($2,000,000) aggregate.

Consultant agrees to include with all subcontractors in their subcontract the same requirements and provisions of this agreement including the Indemnity and Insurance requirements to the extent they apply to the scope of the subcontractor's work. Subcontractors hired by Contractor shall agree to be bound to Contractor and City in the same manner and to the same extent as Contractor is bound to City under the Contract Documents.

10.2. The policy or policies required by this Agreement shall be issued by an insurer admitted in the State of California and with a rating of at least A: VII in the latest edition of Best's Insurance Guide.

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10.3. Consultant agrees that if it does not keep the aforesaid insurance in full force and effect, City may either (i) immediately terminate this Agreement; (ii) take out the necessary insurance and pay, at Consultant's expense, the premium thereon; or (iii) enforce the insurance requirement.

10.4. At all times during the term of this Agreement, Consultant shall maintain on file with City's Finance Manager a certificate or certificates of insurance showing that the aforesaid policies are in effect in the required amounts and naming the City and its officers, employees, agents and volunteers as additional insureds. Consultant shall, prior to commencement of work under this Agreement, file with City's Risk Manager such certificate(s).

10.5. Consultant shall provide proof that policies of insurance required herein expiring during the term of this Agreement have been renewed or replaced with other policies providing at least the same coverage. Such proof will be furnished at least two weeks prior to the expiration of the coverages.

The Consultant shall require all subcontractors to provide a valid certificate of insurance and the required endorsements included in the agreement prior to commencement of any work and will provide proof of compliance to the city.

10.6. The general liability and automobile policies of insurance required by this Agreement shall contain an endorsement naming City and its officers, employees, agents and volunteers as additional insureds. All of the policies required under this Agreement shall contain an endorsement providing that the policies cannot be canceled or reduced except on thirty days' prior written notice to City. Consultant agrees to require its insurer to modify the certificates of insurance to delete any exculpatory wording stating that failure of the insurer to mail written notice of cancellation imposes no obligation, and to delete the word "endeavor" with regard to any notice provisions.

10.7. The insurance provided by Consultant shall be primary to any coverage available to City. Any insurance or self-insurance maintained by City and/or its officers, employees, agents or volunteers, shall be in excess of Consultant's insurance and shall not contribute with it.

10.8. All insurance coverage provided pursuant to this Agreement shall not prohibit Consultant, and Consultant's employees, agents or subcontractors, from waiving the right of subrogation prior to a loss. Consultant hereby waives all rights of subrogation against the City.

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10.9. Any deductibles or self-insured retentions must be declared to and approved by the City. At the option of City, Consultant shall either reduce or eliminate the deductibles or self-insured retentions with respect to City, or Consultant shall procure a bond guaranteeing payment of losses and expenses.

10.10. Procurement of insurance by Consultant shall not be construed as a limitation of Consultant's liability or as full performance of Consultant's duties to indemnify, hold harmless and defend under Section 9 of this Agreement.

It shall be a requirement under this agreement that any available insurance proceeds broader than or in excess of the specified minimum Insurance coverage requirements and/or limits shall be made available to the Additional Insured and shall be (1) the minimum coverage and limits specified in this Agreement; or (2) the broader coverage and maximum limits of coverage of any Insurance policy, whichever is greater.

11. MUTUAL COOPERATION.

11.1. City shall provide Consultant with all pertinent data, documents and other requested information as is reasonably available for the proper performance of Consultant's services under this Agreement.

11.2. In the event any claim or action is brought against City relating to Consultant's performance in connection with this Agreement, Consultant shall render any reasonable assistance that City may require.

12. RECORDS AND INSPECTION. Consultant shall maintain full and accurate records with respect to all matters covered under this Agreement for a period of three years after the expiration or termination of this Agreement. City shall have the right to access and examine such records, without charge, during normal business hours. City shall further have the right to audit such records, to make transcripts therefrom and to inspect all program data, documents, proceedings, and activities.

13. PERMITS AND APPROVALS. Consultant shall obtain, at its sole cost and expense, all permits and regulatory approvals necessary in the performance of this Agreement. This includes, but shall not be limited to, encroachment permits and building and safety permits and inspections.

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14. **NOTICES**. Any notices, bills, invoices, or reports required by this Agreement shall be deemed received on: (i) the day of delivery if delivered by hand, facsimile or overnight courier service during Consultant's and City's regular business hours; or (ii) on the third business day following deposit in the United States mail if delivered by mail, postage prepaid, to the addresses listed below (or to such other addresses as the parties may, from time to time, designate in writing).

15. **IF TO CITY:**
City of Half Moon Bay
501 Main Street
Half Moon Bay, CA 94019
Attn: City Manager
Phone: 650-726-8280
Fax: (650) 726-9389
Email: publicworks@hmbcity.com

IF TO CONSULTANT:
Mark Thomas and Company, Inc
20863 Stevens Creek Blvd, Suite 100
Cupertino, CA 95014
Richard Tanaka
408-253-7863

rtanaka@markthomas.com

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16. SURVIVING COVENANTS. The parties agree that the covenants contained in Sections 8, 9, 10, 11.2, and 12 of this Agreement shall survive the expiration or termination of this Agreement.

17. TERMINATION.

17.1. City shall have the right to terminate this Agreement for any reason on five calendar days' written notice to Consultant. Consultant shall have the right to terminate this Agreement for any reason on sixty calendar days' written notice to City. Consultant agrees to cease all work under this Agreement on or before the effective date of any notice of termination. All City data, documents, objects, materials or other tangible things shall be returned to City upon the termination or expiration of this Agreement.

17.2. If City terminates this Agreement due to no fault or failure of performance by Consultant, then Consultant shall be paid based on the work satisfactorily performed at the time of termination. In no event shall Consultant be entitled to receive more than the amount that would be paid to Consultant for the full performance of the services required by this Agreement.

18. GENERAL PROVISIONS.

18.1. Consultant shall not delegate, transfer, subcontract or assign its duties or rights hereunder, either in whole or in part, without City's prior written consent, and any attempt to do so shall be void and of no effect. City shall not be obligated or liable under this Agreement to any party other than Consultant.

18.2. In the performance of this Agreement, Consultant shall not discriminate against any employee, subcontractor, or applicant for employment because of race, color, creed, religion, sex, marital status, sexual orientation, national origin, ancestry, age, physical or mental disability or medical condition or any other unlawful basis.

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18.3. The captions appearing at the commencement of the sections hereof, and in any paragraph thereof, are descriptive only and for convenience in reference to this Agreement. Should there be any conflict between such heading, and the section or paragraph thereof at the head of which it appears, the section or paragraph thereof, as the case may be, and not such heading, shall control and govern in the construction of this Agreement. Masculine or feminine pronouns shall be substituted for the neuter form and vice versa, and the plural shall be substituted for the singular form and vice versa, in any place or places herein in which the context requires such substitution(s).

18.4. The waiver by City or Consultant of any breach of any term, covenant or condition herein contained shall not be deemed to be a waiver of such term, covenant or condition or of any subsequent breach of the same or any other term, covenant or condition herein contained. No term, covenant or condition of this Agreement shall be deemed to have been waived by City or Consultant unless in writing.

18.5. Consultant shall not be liable for any failure to perform if Consultant presents acceptable evidence, in City's sole judgment, that such failure was due to causes beyond the control and without the fault or negligence of Consultant.

18.6. Each right, power and remedy provided for herein or now or hereafter existing at law, in equity, by statute, or otherwise shall be cumulative and shall be in addition to every other right, power, or remedy provided for herein or now or hereafter existing at law, in equity, by statute, or otherwise. The exercise, the commencement of the exercise, or the forbearance of the exercise by any party of any one or more of such rights, powers or remedies shall not preclude the simultaneous or later exercise by such party of any of all of such other rights, powers or remedies. In the event legal action shall be necessary to enforce any term, covenant or condition herein contained, the party prevailing in such action, whether reduced to judgment or not, shall be entitled to its reasonable court costs, including accountants' fees, if any, and attorneys' fees expended in such action. The venue for any litigation shall be San Mateo County, California.

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18.7. If any term or provision of this Agreement or the application thereof to any person or circumstance shall, to any extent, be invalid or unenforceable, then such term or provision shall be amended to, and solely to, the extent necessary to cure such invalidity or unenforceability, and in its amended form shall be enforceable. In such event, the remainder of this Agreement, or the application of such term or provision to persons or circumstances other than those as to which it is held invalid or unenforceable, shall not be affected thereby, and each term and provision of this Agreement shall be valid and be enforced to the fullest extent permitted by law.

18.8. This Agreement shall be governed and construed in accordance with the laws of the State of California.

18.9. All documents referenced as exhibits in this Agreement are hereby incorporated into this Agreement. In the event of any material discrepancy between the express provisions of this Agreement and the provisions of any document incorporated herein by reference, the provisions of this Agreement shall prevail. This instrument contains the entire Agreement between City and Consultant with respect to the transactions contemplated herein. No other prior oral or written agreements are binding upon the parties. Amendments hereto or deviations herefrom shall be effective and binding only if made in writing and executed by City and Consultant.

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IN WITNESS WHEREOF, the City and the Consultant have executed this Agreement effective as of the date first written above.

"CITY"
CITY OF HALF MOON BAY

Date: 6/28/2018

By: _____
City Manager

Attest:

By: _____
City Clerk

Date: 6-28-18

Approved as to form:

_____
City Attorney

"CONSULTANT"
Mark Thomas and Company, Inc.

, Inc.
Date: 6/25/18

By: _____
Richard Tanaka
Its: Senior Principal

Attachments:
EXHIBIT A. SCOPE OF SERVICES

EXHIBIT B. APPROVED FEE SCHEDULE

999419.4

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EXHIBIT A

Scope of Work

City of Half Moon Bay
Sanitary Sewer System Maintenance Services
FY2018-19 through FY2020-21

GENERAL SCOPE OF SERVICES

The City has contracted with Sewer Authority Mid-Coastside (SAM) to provide cleaning and SSO response services as a component of the sanitary sewer maintenance program. Mark Thomas & Company (MTCo) is being contracted to provide oversight to SAM and perform specific additional tasks within this program. MTCo is responsible for assuring that all SAM activities are completed in compliance with the contract documents and shall advise the City as to the performance of SAM under this contract.

The sanitary sewer system maintenance program shall provide a comprehensive and effective operation and maintenance program using a map-based computerized maintenance management system (CMMS) that applies industry best management practices for cleaning, preventive maintenance, sanitary sewer overflow (SSO) response, and other related tasks.

General tasks to be completed by MTCo include, but are not limited to development of maintenance strategies, plans, and SOPs; QA/QC and training of SAM crews on City/system-wide sewer line cleaning; oversight of SAM on pump station inspections (and fill-in inspections as needed); oversight and training to SAM on wetwell cleaning; pump station maintenance; comprehensive electronic documentation using the Lucity CMMS system and review of SAM paper records; oversight to confirm that SAM provides accurate and timely reporting; FOG inspections and recommendations for enforcement; and regular communication with the City and its consultants.

MTCO SCOPE OF WORK

As proposed by MTCo in the amended scope of work and budget submitted on May 1, 2018, MTCo shall provide the services listed below. Task numbering follows the order of tasks listed in the MTCo Scope of Work, which is attached.

Task 1. Project Management

Tasks 1.1 and 1.2 Meetings

MTCo shall attend a kickoff meeting with City staff and SAM. SAM will provide, for discussion by the team, the planned maintenance schedule for pipelines and lift stations for Fiscal Year 2018-19. This schedule will be accompanied by a map showing the planned mainline cleaning schedule, color coded by month. MTCo will prepare the agenda in advance of the meeting and minutes following this meeting.

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MTCo shall attend additional quarterly meetings to discuss tasks completed during the prior quarter and tasks scheduled for the next quarter. The project team will also discuss any issues or challenges that have been encountered, how they were resolved, and anticipated issues. SAM shall provide MTCo with an updated schedule for discussion at each quarterly meeting.

MTCo shall also attend up to two City Council meetings annually upon request.

Measurement and Payment: Payment will be made on a time and materials basis, based on Exhibit B to this Agreement.

Tasks 1.3 and 1.4 Progress Reports

No later than the 25th day following the last day of each month, MTCo shall submit a draft monthly status report that describes progress compared to goals. Information to be included in each report includes a list of SSOs with supporting details; list of emergency calls and their causes and actions; list of pipes cleaned with Pipe ID, information on the number of passes required, types and amounts of material removed from each pipe, and issues encountered; lift station inspections completed; all field documentation compiled during the previous month; and recommended actions related to pipeline or lift station needs. The MTCo report shall incorporate a similar SAM report that is received by the 10th day of the same month.

No later than 45-days after the end of each service year, MTCo shall provide a draft annual report of system maintenance activities using the monthly reports as a guideline. The annual report shall include a discussion on trends in system performance and must provide information necessary to fulfill the Monitoring, Measurement, and Modifications section of the City's SSMP. This report shall incorporate a similar SAM report that is received with 30-days after the end of the service year.

MTCo will incorporate comments from the City as needed to meet the requirements established herein and submit a final version of each report. All reports shall reference both the SAM manhole ID numbers and the City manhole ID numbers for each line.

Measurement and Payment: Payment will be per completed final report, based on Exhibit B to this Agreement.

Task 1.5 Computerized Maintenance Management System

SAM will host the CMMS using Lucity software. The software will be sufficient to document all field data that is collected through this contract, including cleaning, inspections, repairs, and maintenance plans. SAM will provide remote access for use by MTCo and City staff.

In close coordination with the City, MTCo will retrieve, review, change, and update Lucity maintenance data that is initially input by SAM. MTCo will be able to access but shall not make any updates to the member agency GIS maps.

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Measurement and Payment: Payment will be made on a time and materials basis, based on Exhibit B to this Agreement.

Task 2 Review Existing Data

Within 14-days following the Notice to Proceed, SAM will provide available information for review by the City and MTCo. MTCo shall review the information provided, which is expected to include the current hotspot list in list and map formats, system mapbook, data available in the current (ICOM) and planned (Lucity) CMMS including a database table of contents outlining the location of each type of information; summary of SSOs from the past 5 years including SSO response documentation; existing operational plans and manuals; current FOG inspection sites and past 3 years of associated inspection records; other pipeline and pump station maintenance records retained by SAM; and list of water meters currently used. The City will provide a copy of the Sewer Master Plan and ordinances. MTCo shall summarize the information that is reviewed.

Measurement and Payment: Payment will be made on a time and materials basis, based on Exhibit B to this Agreement.

Task 3 Sewer System Maintenance

Tasks 3.1 and 3.2 Maintenance Plans

MTCo shall develop a written Maintenance Plan for the sewer collection system. The strategy shall document and recommend updates to the mainline cleaning schedule and pump station inspection and cleaning schedule, based on a review of the information described in Task 2.1. The plan shall also include any updates to the City's planned FOG inspection program. Any updates that are made after initial development of the plan shall be discussed and provided to the City at the quarterly review meeting that follows any such updates.

Task 3.3 through 3.5 Sewer Pipeline Cleaning

SAM will provide sewer main and hot spot cleaning services in accordance with the Agreement between the City of Half Moon Bay and SAM.

MTCo shall provide oversight to SAM, and shall review SAM's cleaning operations, results, and documentation for accuracy and completeness. MTCo shall shadow SAM staff on average two days per month to provide training and oversight. The City expects that the level of shadowing will be higher at the beginning of the contract, until MTCo is confident that SAM will provide the required services without extensive supervision. MTCo will utilize Table 1. Sam Cleaning Assessment Matrix in conjunction and other best management practices in oversight of SAM services.

Measurement and Payment: Payment will be made on a time and materials basis, based on Exhibit B to this Agreement.

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Table 1. SAM Cleaning Assessment Matrix

	Clear	Light	Moderate	Heavy
Debris	No observable debris	1-2 passes with debris observed and removed	3-4 passes before reaching Clear result	More than 4 passes required to reach Clear result.
Grease	No observable grease	1-2 passes with grease observed and removed	Small chunks but no logs observed. 3-4 passes before reaching Clear result.	Big chunks and/or logs observed, OR more than 4 passes before reaching Clear result.
Roots	No observable roots	1-2 passes with roots observed and removed	Thin stringy roots but no clumps observed. 3-4 passes before reaching Clear results	Thick roots and/or clumps observed, OR more than 4 passes to reach clear result.
Action	After 2 clear results, decrease frequency to next lower frequency.	Continue current maintenance frequency.	Increase to next higher maintenance frequency. Submit for CCTV assessment. Increase to next higher frequency. Submit for CCTV assessment.	

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Tasks 3.6 and 3.7 Fats, Oils, and Grease (FOG) Inspections and Follow-up Activities

The City has a list of sixty-six (66) property owners requiring FOG inspections (optimally on a quarterly basis). During the first three months of the contract, MTCo shall inspect each of the sixty-six (66) properties, and based on the results from these initial inspections, SMCTo shall develop a prospective inspection program and present this program to the City. Future inspections will be made according to this updated program/schedule.

FOG inspections shall follow best management practices of agencies similar to West Bay Sanitary District. MTCo shall develop a detailed checklist for review and approval by the City and shall submit inspection results to the City within 15 days following each inspection. The inspection results shall be accompanied by recommendations for additional FOG control or enforcement. MTCo will assist the City in any required enforcement actions.

Measurement and Payment: Payment will be made on a time and materials basis, based on Exhibit B to this Agreement.

Tasks 3.8 through 3.10 Lift Station Maintenance

SAM is responsible for conducting station checks and cleaning at each of the City's three lift stations (Ocean Colony, Pelican Point, and Bell Moon), and is responsible for cleaning operations at the lift stations. MTCo will provide oversight and recommendations for best management practices, and, will complete station checks, upon request by the City in event that SAM is unable due to staffing limitations.

Weekly Station Checks

The following station checks will be completed on a weekly basis:

- Visually inspect and check the wet well levels to ensure proper automatic start/stop levels for the pumps
- Check pumps for unusual noise or vibrations
- Clean and maintain pumping plant area
- Inspect the motor control center to ensure proper operations
- Record pump and generator hour meter readings
- Check generator batteries, fuel, oil, coolant levels, belts, hoses, tires (if portable)
- Exercise generator, simulating power failure to assure automatic startup
- Inspect rails, piping, valves
- Exercise shut-off valves, as appropriate

Quarterly and Annual Station Checks

On a quarterly and annual basis, amperage tests and meg tests on pump motors shall be performed, and annual pump inspections and maintenance shall be completed per the manufacturer specifications.

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Measurement and Payment: Payment will be made on a time and materials basis for MTCo staff. MTCo services include SHAPE subconsultant services that include a five percent markup.

Task 4 Sanitary Sewer Overflow Response

SAM is responsible for responding respond to all sanitary sewer overflows (SSOs) within the City's service area, in accordance with the City's Sewer System Management Plan. MTCo is responsible for oversight of the SSO response, clean-up and reporting per State law, the City's adopted Sewer System management Plan (SSMP) and each Professional Services Agreement.

Task 4.1 Training

MTCo shall provide SAM with 24 hours of training on SSO response and documentation. In addition, the MTCo Field Operations Manager shall be available seven (7) days a week to provide telephone consultation to SAM maintenance personnel during SSO response.

Tasks 4.3 and 4.3 SSO Response

SAM is responsible for completing all activities necessary for SSO response, from serving as the "First Responder" to conducting all required notifications, water quality testing, postings, communications, and field activities, and assuring that all response activities have been completed and accurately documented in paper and in the California Integrated Water Quality System (CIWQS).

SAM will immediately contact the MTCo Field Operations Manager and provide a description of the situation to the Field Operations Manager by phone. MTCo shall advise on actions to be taken, and SAM shall remain in close communication with MTCo throughout the entire SSO response. MTCo shall provide on-site consultation as required.

SAM will initiate documentation of the event and will continue to maintain thorough and accurate records, both on paper and through photo documentation, through the entire event including any final site cleanup activities. MTCo shall review the documentation for accuracy and completeness and shall oversee any corrections or additions that are required. SAM will enter required information into CIWQS and will make any necessary updates as identified by MTCo and/or the City.

MTCo shall attend, either in person or by phone, a meeting with the City, MTCo, and SSO response staff that is held after every SSO to review the event, activities, documentation, and brainstorm strategies to avoid similar SSOs.

MTCo shall serve as the Legally Responsible Official (LRO) to certify all SSO reports The City Engineer will provide assistance and serve as back-up LRO.

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Measurement and Payment: Payment will be made on a time and materials basis, based on Exhibit B to the Agreement.

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EXHIBIT B

PROJECT BUDGET

MTCo has provided an overall budget spanning the three (3) year term of the Agreement. These budgets have been further defined to include Year 1 (FY 2018-2019), Year 2 (FY2019-2020), and Year 3 (FY2020-2021) as shown in the following tables. Actual work will be paid as described in the Scope of Services.

It should be noted that the Year 2 budget assumes that only half of the system, excluding hot spots, will require cleaning. The Year 3 budget assumes that the remaining half of the system, excluding hot spots, will require cleaning. For budgeting purposes, the length of hot spots to be cleaned remains the same across all three fiscal years.

Year 1 Budget, FY 2018-2019

Task	Description	Budget
Task 1 Project Management		
1.1	Kickoff Meeting/Council Meeting	$1,835
1.2	Quarterly Review Meeting	$3,658
1.3	Monthly Status Report	$4,357
1.4	Annual Status Report	$2,950
1.5	Maintenance Data in Lucity	$22,869
Task 2 Exsting System Data		
2.1	Review Existing Data	$23,716
Task 3 Clean Sewer Pipelines		
3.1	Mainline Cleaning Schedule	$2,287
3.2	FOG Schedule	$1,192
3.3-3.5	Clean Pipes	$90,204
3.6	FOG Inspection and Documentation	$36,084
3.7	FOG Followup Action	$5,468
3.8	Weekly Lift Station Inspections	$52,060
3.9	Quarterly Lift Station Maintenance	$8,340
3.1	Annual Lift Station Maintenance	$11,088
Task 4 SSO Response		
4.1	Training	$7,865
4.2-4.3	Field Consultation and Response	$21,828
4.4	Review Reports and CIWQS Data	$19,033
4.5	Recommendations and Documentation	$8,366
	Total Year 1 Budget	$323,201

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Year 2 Budget, FY 2019-2020

Task	Description	Budget
Task 1 Project Management		
1.1	Kickoff Meeting/Council Meeting	$865
1.2	Quarterly Review Meeting	$4,877
1.3	Monthly Status Report	$4,357
1.4	Annual Status Report	$2,950
1.5	Maintenance Data in Lucity	$22,869
Task 2 Existing System Data		
2.1	Not Used	$0
Task 3 Clean Sewer Pipelines		
3.1	Not Used	$0
3.2	Not Used	$0
3.3-3.5	Clean Pipes	$45,644
3.6	FOG Inspection and Documentation	$36,084
3.7	FOG Followup Action	$5,468
3.8	Weekly Lift Station Inspections	$52,060
3.9	Quarterly Lift Station Maintenance	$8,340
3.10	Annual Lift Station Maintenance	$11,088
Task 4 SSO Response		
4.1	Not Used	$0
4.2-4.3	Field Consultation and Response	$21,828
4.4	Review Reports and CIWQS Data	$19,033
4.5	Recommendations and Documentation	$8,366
	Total Year 2 Budget	$243,830

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Year 3 Budget, FY 2020-2021

Task	Description	Budget
Task 1 Project Management		
1.1	Kickoff Meeting/Council Meeting	$865
1.2	Quarterly Review Meeting	$4,877
1.3	Monthly Status Report	$4,357
1.4	Annual Status Report	$2,950
1.5	Maintenance Data in Lucity	$22,869
Task 2 Existing System Data		
2.1	Not Used	$0
Task 3 Clean Sewer Pipelines		
3.1	Not Used	$0
3.2	Not Used	$0
3.3-3.5	Clean Pipes	$45,644
3.6	FOG Inspection and Documentation	$36,084
3.7	FOG Followup Action	$5,468
3.8	Weekly Lift Station Inspections	$52,060
3.9	Quarterly Lift Station Maintenance	$8,340
3.10	Annual Lift Station Maintenance	$11,088
Task 4 SSO Response		
4.1	Not Used	$0
4.2-4.3	Field Consultation and Response	$21,828
4.4	Review Reports and CIWQS Data	$19,033
4.5	Recommendations and Documentation	$8,366
	Total Year 3 Budget	$243,830

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CITY OF HALF MOON BAY
PROFESSIONAL SERVICES AGREEMENT

THIS PROFESSIONAL SERVICES AGREEMENT ("Agreement") is entered into by and between the City of Half Moon Bay, a California municipal corporation ("City") and Mark Thomas and Company, Inc, a California Corporation ("Consultant").

1. RECITALS.

1.1. City has determined that it requires the following professional services from a consultant to assist the City overseeing the day-to-day cleaning of the City's sewer collection system, pump stations maintenance and the conduct of "FOG" inspections.

1.2. Consultant represents that it is fully qualified to perform such professional services by virtue of its experience and the training, education and expertise of its principals and employees. Consultant further represents that it is willing to accept responsibility for performing such services in accordance with the terms and conditions set forth in this Agreement.

2. DEFINITIONS.

2.1. "Scope of Services": Such professional services as are set forth in Consultant's Scope of work to City attached hereto as Exhibit A and incorporated herein by this reference.

2.2. "Approved Fee Schedule": Such compensation rates as are set forth in Consultant's fee schedule to City attached hereto as Exhibit B and incorporated herein by this reference.

2.3. "Commencement Date": July 1, 2018

2.4. "Expiration Date": June 30, 2021

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3. TERM.

3.1. The term of this Agreement shall commence at 12:00 a.m. on the Commencement Date and shall expire at 11:59 p.m. on the Expiration Date unless extended by written agreement of the parties or terminated earlier in accordance with Section 17 ("Termination") below.

4. CONSULTANT SERVICES.

4.1. Consultant shall perform the services identified in the Scope of Services. City shall have the right to request, in writing, changes in the Scope of Services. Any such changes mutually agreed upon by the parties, and any corresponding increase or decrease in compensation, shall be incorporated by written amendment to this Agreement.

4.2. Consultant shall obtain a City business license prior to commencing performance under this Agreement.

4.3. Consultant shall perform all work to the professional standards and customary level of care as ordinarily exercised by consultants providing similar services in a manner reasonably satisfactory to City.

4.4. Consultant shall comply with all applicable federal, state and local laws and regulations, including the conflict of interest provisions of Government Code Section 1090 and the Political Reform Act (Government Code Section 81000 et seq.).

4.5. During the term of this Agreement, Consultant shall not perform any work for another person or entity for whom Consultant was not working at the Commencement Date if both (i) such work would require Consultant to abstain from a decision under this Agreement pursuant to a conflict of interest statute and (ii) City has not consented in writing to Consultant's performance of such work.

4.6. Consultant represents that it has, or will secure at its own expense, all personnel required to perform the services identified in the Scope of Services. All such services shall be performed by Consultant or under its supervision, and all personnel engaged in the work shall be qualified to perform such services. Benjamin T. Porter PE, Associate shall be Consultant's project administrator and shall have direct responsibility for management of Consultant's performance under this Agreement. No change shall be made in Consultant's project administrator without City's prior written consent.

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5. COMPENSATION.

5.1. City agrees to compensate Consultant for the services provided under this Agreement, and Consultant agrees to accept in full satisfaction for such services, payment in accordance with the Approved Fee Schedule.

5.2. Consultant shall submit to City an invoice, on a monthly basis or less frequently, for the services performed pursuant to this Agreement. Each invoice shall itemize the services rendered during the billing period and the amount due. Within ten business days of receipt of each invoice, City shall notify Consultant in writing of any disputed amounts included on the invoice. Within thirty calendar days of receipt of each invoice, City shall pay all undisputed amounts included on the invoice. City shall not withhold applicable taxes or other authorized deductions from payments made to Consultant.

5.3. Payments for any services requested by City and not included in the Scope of Services shall be made to Consultant by City on a time-and-materials basis using Consultant's standard fee schedule. Consultant shall be entitled to increase the fees in this fee schedule at such time as it increases its fees for its clients generally; provided, however, in no event shall Consultant be entitled to increase fees for services rendered before the thirtieth day after Consultant notifies City in writing of an increase in that fee schedule. Fees for such additional services shall be paid within sixty days of the date Consultant issues an invoice to City for such services.

6. OWNERSHIP OF WRITTEN PRODUCTS.

6.1. All reports, documents or other written material ("written products" herein) developed by Consultant in the performance of this Agreement shall be and remain the property of City without restriction or limitation upon its use or dissemination by City. Consultant may take and retain copies of such written products as desired, but no such written products shall be the subject of a copyright application by Consultant

6.2. Consultant represents and warrants that Consultant has the legal right to utilize all intellectual property Consultant will utilize in the performance of its obligations pursuant to this Agreement. Consultant further represents that Consultant shall ensure City has the legal right to utilize all intellectual property involved in and/or resulting from Consultant's performance of this Agreement.

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7. **RELATIONSHIP OF PARTIES**. Consultant is, and shall at all times remain as to City, a wholly independent contractor. Consultant shall have no power to incur any debt, obligation, or liability on behalf of City or otherwise to act on behalf of City as an agent. Neither City nor any of its agents shall have control over the conduct of Consultant or any of Consultant's employees, except as set forth in this Agreement. Consultant shall not represent that it is, or that any of its agents or employees are, in any manner employees of City.

8. **CONFIDENTIALITY**. All data, documents, discussion, or other information developed or received by Consultant or provided for performance of this Agreement are deemed confidential and shall not be disclosed by Consultant to third parties without prior written consent by City. City shall grant such consent if disclosure is legally required. Upon request, all City data shall be returned to City upon the termination or expiration of this Agreement.

9. **INDEMNIFICATION**.

9.1. **Separate Professional Liability Indemnity.** As respect to the performance of professional services, Consultant agrees to indemnity and hold harmless (but not defend) City, and its officers, officials, employees, agents, and volunteers (collectively, the "City Indemnitees"), from and against any damages, losses, liabilities, judgements, settlements, expenses, and costs (including, without limitation, reasonable attorneys' fees, expert witness fees, legal costs, and expenses) of every nature arising out of or in connection with Consultant's, recklessness, negligent acts, errors or omissions, or willful misconduct in the performance of services under this Agreement, except such loss or damage caused the sole active negligence or willful misconduct of the City. Consultant has no obligation to pay for any of City Indemnitees defense related cost prior to a final determination of liability, or to pay any amount that exceeds Consultant's finally determined percentage of liability based upon the comparative fault of Consultant, except as provided in Civil Code Section 2782.8(a) and (e).

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9.2. **Separate Other than Professional Liability Indemnity.** Except as provided in subsection 9.1, Consultant shall hold harmless, defend (with counsel agreed to by City, which agreement shall not be unreasonably withheld) and indemnify City and its officers, officials, employees, agents, and volunteers from and against any damages, losses, liabilities, judgements, settlements, expenses, and costs (including, without limitation, reasonable attorneys' fees, expert witness fees, legal costs, and expenses) of every nature arising out of or in connection with Consultant's negligence, recklessness, or willful misconduct in performance of work hereunder or its failure to comply with any of its obligations contained in the agreement, except such loss or damage caused by the sole active negligence or willful misconduct of the City. It is understood that this duty to indemnify and hold harmless includes the duty to defend as set forth in Section 2778 of the California Civil Code.

9.3. Acceptance by City of insurance certificates and endorsements required under this Agreement does not relieve Consultant from liability under these indemnification and hold harmless clauses. By execution of this Agreement, Consultant acknowledges and agrees to the provisions of this Section and that it is a material element of consideration.

9.4. In the event that Consultant or any employee, agent, or subcontractor of Consultant providing services under this Agreement is determined by a court of competent jurisdiction or the California Public Employees Retirement System (PERS) to be eligible for enrollment in PERS as an employee of City, Consultant shall indemnify, defend, and hold harmless City for the payment of any employee and/or employer contributions for PERS benefits on behalf of Consultant or its employees, agents, or subcontractors, as well as for the payment of any penalties and interest on such contributions, which would otherwise be the responsibility of City.

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9.5. City shall have the right to offset against the amount of any compensation due Consultant under this Agreement any amount due City from Consultant as a result of Consultant's failure to pay City promptly any indemnification arising under this Section 9 or related to Consultant's failure to either (i) pay taxes on amounts received pursuant to this Agreement or (ii) comply with applicable workers' compensation laws.

9.6. The obligations of Consultant under this Section 9 will not be limited by the provisions of any workers' compensation act or similar act. Consultant expressly waives its statutory immunity under such statutes or laws as to City, its officers, agents, employees and volunteers.

9.7. City does not and shall not; waive any rights that it may possess against Consultant because of the acceptance by City, or the deposit with City, of any insurance policy or certificate required pursuant to this Agreement. This hold harmless and indemnification provision shall apply regardless of whether or not any insurance policies are determined to be applicable to the claim, demand, damage, liability, loss, cost or expense.

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10. INSURANCE.

10.1. During the term of this Agreement, Consultant shall carry, maintain, and keep in full force and effect insurance against claims for death or injuries to persons or damages to property that may arise from or in connection with Consultant's performance of this Agreement. Such insurance shall be of the types and in the amounts as set forth below:

Comprehensive General Liability Insurance with coverage limits of not less than One Million Dollars ($1,000,000) per occurrence / Two Million Dollars ($2,000,000) aggregate including products and operations hazard, contractual insurance, broad form property damage, independent consultants, personal injury, underground hazard, and explosion and collapse hazard where applicable.

Automobile Liability Insurance for vehicles used in connection with the performance of this Agreement with minimum limits of One Million Dollars ($1,000,000) per occurrence/incident.

Worker's Compensation insurance as required by the laws of the State of California.

Professional Errors and Omissions Insurance with coverage limits of not less than One Million Dollars ($1,000,000) per claim/occurrence, Two Million Dollars ($2,000,000) aggregate.

Consultant agrees to include with all subcontractors in their subcontract the same requirements and provisions of this agreement including the Indemnity and Insurance requirements to the extent they apply to the scope of the subcontractor's work. Subcontractors hired by Contractor shall agree to be bound to Contractor and City in the same manner and to the same extent as Contractor is bound to City under the Contract Documents.

10.2. The policy or policies required by this Agreement shall be issued by an insurer admitted in the State of California and with a rating of at least A: VII in the latest edition of Best's Insurance Guide.

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10.3. Consultant agrees that if it does not keep the aforesaid insurance in full force and effect, City may either (i) immediately terminate this Agreement; (ii) take out the necessary insurance and pay, at Consultant's expense, the premium thereon; or (iii) enforce the insurance requirement.

10.4. At all times during the term of this Agreement, Consultant shall maintain on file with City's Finance Manager a certificate or certificates of insurance showing that the aforesaid policies are in effect in the required amounts and naming the City and its officers, employees, agents and volunteers as additional insureds. Consultant shall, prior to commencement of work under this Agreement, file with City's Risk Manager such certificate(s).

10.5. Consultant shall provide proof that policies of insurance required herein expiring during the term of this Agreement have been renewed or replaced with other policies providing at least the same coverage. Such proof will be furnished at least two weeks prior to the expiration of the coverages.

The Consultant shall require all subcontractors to provide a valid certificate of insurance and the required endorsements included in the agreement prior to commencement of any work and will provide proof of compliance to the city.

10.6. The general liability and automobile policies of insurance required by this Agreement shall contain an endorsement naming City and its officers, employees, agents and volunteers as additional insureds. All of the policies required under this Agreement shall contain an endorsement providing that the policies cannot be canceled or reduced except on thirty days' prior written notice to City. Consultant agrees to require its insurer to modify the certificates of insurance to delete any exculpatory wording stating that failure of the insurer to mail written notice of cancellation imposes no obligation, and to delete the word "endeavor" with regard to any notice provisions.

10.7. The insurance provided by Consultant shall be primary to any coverage available to City. Any insurance or self-insurance maintained by City and/or its officers, employees, agents or volunteers, shall be in excess of Consultant's insurance and shall not contribute with it.

10.8. All insurance coverage provided pursuant to this Agreement shall not prohibit Consultant, and Consultant's employees, agents or subcontractors, from waiving the right of subrogation prior to a loss. Consultant hereby waives all rights of subrogation against the City.

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10.9. Any deductibles or self-insured retentions must be declared to and approved by the City. At the option of City, Consultant shall either reduce or eliminate the deductibles or self-insured retentions with respect to City, or Consultant shall procure a bond guaranteeing payment of losses and expenses.

10.10. Procurement of insurance by Consultant shall not be construed as a limitation of Consultant's liability or as full performance of Consultant's duties to indemnify, hold harmless and defend under Section 9 of this Agreement.

It shall be a requirement under this agreement that any available insurance proceeds broader than or in excess of the specified minimum Insurance coverage requirements and/or limits shall be made available to the Additional Insured and shall be (1) the minimum coverage and limits specified in this Agreement; or (2) the broader coverage and maximum limits of coverage of any Insurance policy, whichever is greater.

11. MUTUAL COOPERATION.

11.1. City shall provide Consultant with all pertinent data, documents and other requested information as is reasonably available for the proper performance of Consultant's services under this Agreement.

11.2. In the event any claim or action is brought against City relating to Consultant's performance in connection with this Agreement, Consultant shall render any reasonable assistance that City may require.

12. RECORDS AND INSPECTION. Consultant shall maintain full and accurate records with respect to all matters covered under this Agreement for a period of three years after the expiration or termination of this Agreement. City shall have the right to access and examine such records, without charge, during normal business hours. City shall further have the right to audit such records, to make transcripts therefrom and to inspect all program data, documents, proceedings, and activities.

13. PERMITS AND APPROVALS. Consultant shall obtain, at its sole cost and expense, all permits and regulatory approvals necessary in the performance of this Agreement. This includes, but shall not be limited to, encroachment permits and building and safety permits and inspections.

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14. NOTICES. Any notices, bills, invoices, or reports required by this Agreement shall be deemed received on: (i) the day of delivery if delivered by hand, facsimile or overnight courier service during Consultant's and City's regular business hours; or (ii) on the third business day following deposit in the United States mail if delivered by mail, postage prepaid, to the addresses listed below (or to such other addresses as the parties may, from time to time, designate in writing).

15. IF TO CITY:
City of Half Moon Bay
501 Main Street
Half Moon Bay, CA 94019
Attn: City Manager
Phone: 650-726-8280
Fax: (650) 726-9389
Email: publicworks@hmbcity.com

IF TO CONSULTANT:
Mark Thomas and Company, Inc
20863 Stevens Creek Blvd, Suite 100
Cupertino, CA 95014
Richard Tanaka
408-253-7863

rtanaka@markthomas.com

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16. SURVIVING COVENANTS. The parties agree that the covenants contained in Sections 8, 9, 10, 11.2, and 12 of this Agreement shall survive the expiration or termination of this Agreement.

17. TERMINATION.

17.1. City shall have the right to terminate this Agreement for any reason on five calendar days' written notice to Consultant. Consultant shall have the right to terminate this Agreement for any reason on sixty calendar days' written notice to City. Consultant agrees to cease all work under this Agreement on or before the effective date of any notice of termination. All City data, documents, objects, materials or other tangible things shall be returned to City upon the termination or expiration of this Agreement.

17.2. If City terminates this Agreement due to no fault or failure of performance by Consultant, then Consultant shall be paid based on the work satisfactorily performed at the time of termination. In no event shall Consultant be entitled to receive more than the amount that would be paid to Consultant for the full performance of the services required by this Agreement.

18. GENERAL PROVISIONS.

18.1. Consultant shall not delegate, transfer, subcontract or assign its duties or rights hereunder, either in whole or in part, without City's prior written consent, and any attempt to do so shall be void and of no effect. City shall not be obligated or liable under this Agreement to any party other than Consultant.

18.2. In the performance of this Agreement, Consultant shall not discriminate against any employee, subcontractor, or applicant for employment because of race, color, creed, religion, sex, marital status, sexual orientation, national origin, ancestry, age, physical or mental disability or medical condition or any other unlawful basis.

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18.3. The captions appearing at the commencement of the sections hereof, and in any paragraph thereof, are descriptive only and for convenience in reference to this Agreement. Should there be any conflict between such heading, and the section or paragraph thereof at the head of which it appears, the section or paragraph thereof, as the case may be, and not such heading, shall control and govern in the construction of this Agreement. Masculine or feminine pronouns shall be substituted for the neuter form and vice versa, and the plural shall be substituted for the singular form and vice versa, in any place or places herein in which the context requires such substitution(s).

18.4. The waiver by City or Consultant of any breach of any term, covenant or condition herein contained shall not be deemed to be a waiver of such term, covenant or condition or of any subsequent breach of the same or any other term, covenant or condition herein contained. No term, covenant or condition of this Agreement shall be deemed to have been waived by City or Consultant unless in writing.

18.5. Consultant shall not be liable for any failure to perform if Consultant presents acceptable evidence, in City's sole judgment, that such failure was due to causes beyond the control and without the fault or negligence of Consultant.

18.6. Each right, power and remedy provided for herein or now or hereafter existing at law, in equity, by statute, or otherwise shall be cumulative and shall be in addition to every other right, power, or remedy provided for herein or now or hereafter existing at law, in equity, by statute, or otherwise. The exercise, the commencement of the exercise, or the forbearance of the exercise by any party of any one or more of such rights, powers or remedies shall not preclude the simultaneous or later exercise by such party of any of all of such other rights, powers or remedies. In the event legal action shall be necessary to enforce any term, covenant or condition herein contained, the party prevailing in such action, whether reduced to judgment or not, shall be entitled to its reasonable court costs, including accountants' fees, if any, and attorneys' fees expended in such action. The venue for any litigation shall be San Mateo County, California.

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18.7. If any term or provision of this Agreement or the application thereof to any person or circumstance shall, to any extent, be invalid or unenforceable, then such term or provision shall be amended to, and solely to, the extent necessary to cure such invalidity or unenforceability, and in its amended form shall be enforceable. In such event, the remainder of this Agreement, or the application of such term or provision to persons or circumstances other than those as to which it is held invalid or unenforceable, shall not be affected thereby, and each term and provision of this Agreement shall be valid and be enforced to the fullest extent permitted by law.

18.8. This Agreement shall be governed and construed in accordance with the laws of the State of California.

18.9. All documents referenced as exhibits in this Agreement are hereby incorporated into this Agreement. In the event of any material discrepancy between the express provisions of this Agreement and the provisions of any document incorporated herein by reference, the provisions of this Agreement shall prevail. This instrument contains the entire Agreement between City and Consultant with respect to the transactions contemplated herein. No other prior oral or written agreements are binding upon the parties. Amendments hereto or deviations herefrom shall be effective and binding only if made in writing and executed by City and Consultant.

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IN WITNESS WHEREOF, the City and the Consultant have executed this Agreement effective as of the date first written above.

"CITY"
CITY OF HALF MOON BAY

Date: 6/29/2018

By: _____
City Manager

Attest:

By: _____
City Clerk

Date: _____

Approved as to form:

_____
City Attorney

"CONSULTANT"
Mark Thomas and Company, Inc.

, Inc.
Date: 6/25/18

By: _____
Richard Tanaka
Its: Senior Principal

Attachments:
EXHIBIT A. SCOPE OF SERVICES

EXHIBIT B. APPROVED FEE SCHEDULE

999419.4

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EXHIBIT A

Scope of Work

City of Half Moon Bay
Sanitary Sewer System Maintenance Services
FY2018-19 through FY2020-21

GENERAL SCOPE OF SERVICES

The City has contracted with Sewer Authority Mid-Coastside (SAM) to provide cleaning and SSO response services as a component of the sanitary sewer maintenance program. Mark Thomas & Company (MTCo) is being contracted to provide oversight to SAM and perform specific additional tasks within this program. MTCo is responsible for assuring that all SAM activities are completed in compliance with the contract documents and shall advise the City as to the performance of SAM under this contract.

The sanitary sewer system maintenance program shall provide a comprehensive and effective operation and maintenance program using a map-based computerized maintenance management system (CMMS) that applies industry best management practices for cleaning, preventive maintenance, sanitary sewer overflow (SSO) response, and other related tasks.

General tasks to be completed by MTCo include, but are not limited to development of maintenance strategies, plans, and SOPs; QA/QC and training of SAM crews on City/system-wide sewer line cleaning; oversight of SAM on pump station inspections (and fill-in inspections as needed); oversight and training to SAM on wetwell cleaning; pump station maintenance; comprehensive electronic documentation using the Lucity CMMS system and review of SAM paper records; oversight to confirm that SAM provides accurate and timely reporting; FOG inspections and recommendations for enforcement; and regular communication with the City and its consultants.

MTCO SCOPE OF WORK

As proposed by MTCo in the amended scope of work and budget submitted on May 1, 2018, MTCo shall provide the services listed below. Task numbering follows the order of tasks listed in the MTCo Scope of Work, which is attached.

Task 1. Project Management

Tasks 1.1 and 1.2 Meetings

MTCo shall attend a kickoff meeting with City staff and SAM. SAM will provide, for discussion by the team, the planned maintenance schedule for pipelines and lift stations for Fiscal Year 2018-19. This schedule will be accompanied by a map showing the planned mainline cleaning schedule, color coded by month. MTCo will prepare the agenda in advance of the meeting and minutes following this meeting.

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MTCo shall attend additional quarterly meetings to discuss tasks completed during the prior quarter and tasks scheduled for the next quarter. The project team will also discuss any issues or challenges that have been encountered, how they were resolved, and anticipated issues. SAM shall provide MTCo with an updated schedule for discussion at each quarterly meeting.

MTCo shall also attend up to two City Council meetings annually upon request.

Measurement and Payment: Payment will be made on a time and materials basis, based on Exhibit B to this Agreement.

Tasks 1.3 and 1.4 Progress Reports

No later than the 25th day following the last day of each month, MTCo shall submit a draft monthly status report that describes progress compared to goals. Information to be included in each report includes a list of SSOs with supporting details; list of emergency calls and their causes and actions; list of pipes cleaned with Pipe ID, information on the number of passes required, types and amounts of material removed from each pipe, and issues encountered; lift station inspections completed; all field documentation compiled during the previous month; and recommended actions related to pipeline or lift station needs. The MTCo report shall incorporate a similar SAM report that is received by the 10th day of the same month.

No later than 45-days after the end of each service year, MTCo shall provide a draft annual report of system maintenance activities using the monthly reports as a guideline. The annual report shall include a discussion on trends in system performance and must provide information necessary to fulfill the Monitoring, Measurement, and Modifications section of the City's SSMP. This report shall incorporate a similar SAM report that is received with 30-days after the end of the service year.

MTCo will incorporate comments from the City as needed to meet the requirements established herein and submit a final version of each report. All reports shall reference both the SAM manhole ID numbers and the City manhole ID numbers for each line.

Measurement and Payment: Payment will be per completed final report, based on Exhibit B to this Agreement.

Task 1.5 Computerized Maintenance Management System

SAM will host the CMMS using Lucity software. The software will be sufficient to document all field data that is collected through this contract, including cleaning, inspections, repairs, and maintenance plans. SAM will provide remote access for use by MTCo and City staff.

In close coordination with the City, MTCo will retrieve, review, change, and update Lucity maintenance data that is initially input by SAM. MTCo will be able to access but shall not make any updates to the member agency GIS maps.

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Measurement and Payment: Payment will be made on a time and materials basis, based on Exhibit B to this Agreement.

Task 2 Review Existing Data

Within 14-days following the Notice to Proceed, SAM will provide available information for review by the City and MTCo. MTCo shall review the information provided, which is expected to include the current hotspot list in list and map formats, system mapbook, data available in the current (ICOM) and planned (Lucity) CMMS including a database table of contents outlining the location of each type of information; summary of SSOs from the past 5 years including SSO response documentation; existing operational plans and manuals; current FOG inspection sites and past 3 years of associated inspection records; other pipeline and pump station maintenance records retained by SAM; and list of water meters currently used. The City will provide a copy of the Sewer Master Plan and ordinances. MTCo shall summarize the information that is reviewed.

Measurement and Payment: Payment will be made on a time and materials basis, based on Exhibit B to this Agreement.

Task 3 Sewer System Maintenance

Tasks 3.1 and 3.2 Maintenance Plans

MTCo shall develop a written Maintenance Plan for the sewer collection system. The strategy shall document and recommend updates to the mainline cleaning schedule and pump station inspection and cleaning schedule, based on a review of the information described in Task 2.1. The plan shall also include any updates to the City's planned FOG inspection program. Any updates that are made after initial development of the plan shall be discussed and provided to the City at the quarterly review meeting that follows any such updates.

Task 3.3 through 3.5 Sewer Pipeline Cleaning

SAM will provide sewer main and hot spot cleaning services in accordance with the Agreement between the City of Half Moon Bay and SAM.

MTCo shall provide oversight to SAM, and shall review SAM's cleaning operations, results, and documentation for accuracy and completeness. MTCo shall shadow SAM staff on average two days per month to provide training and oversight. The City expects that the level of shadowing will be higher at the beginning of the contract, until MTCo is confident that SAM will provide the required services without extensive supervision. MTCo will utilize Table 1. Sam Cleaning Assessment Matrix in conjunction and other best management practices in oversight of SAM services.

Measurement and Payment: Payment will be made on a time and materials basis, based on Exhibit B to this Agreement.

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Table 1. SAM Cleaning Assessment Matrix

	Clear	Light	Moderate	Heavy
Debris	No observable debris	1-2 passes with debris observed and removed	3-4 passes before reaching Clear result	More than 4 passes required to reach Clear result.
Grease	No observable grease	1-2 passes with grease observed and removed	Small chunks but no logs observed. 3-4 passes before reaching Clear result.	Big chunks and/or logs observed, OR more than 4 passes before reaching Clear result.
Roots	No observable roots	1-2 passes with roots observed and removed	Thin stringy roots but no clumps observed. 3-4 passes before reaching Clear results	Thick roots and/or clumps observed, OR more than 4 passes to reach clear result.
Action	After 2 clear results, decrease frequency to next lower frequency.	Continue current maintenance frequency.	Increase to next higher maintenance frequency. Submit for CCTV assessment. Increase to next higher frequency. Submit for CCTV assessment.	

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Tasks 3.6 and 3.7 Fats, Oils, and Grease (FOG) Inspections and Follow-up Activities

The City has a list of sixty-six (66) property owners requiring FOG inspections (optimally on a quarterly basis). During the first three months of the contract, MTCo shall inspect each of the sixty-six (66) properties, and based on the results from these initial inspections, SMCTo shall develop a prospective inspection program and present this program to the City. Future inspections will be made according to this updated program/schedule.

FOG inspections shall follow best management practices of agencies similar to West Bay Sanitary District. MTCo shall develop a detailed checklist for review and approval by the City and shall submit inspection results to the City within 15 days following each inspection. The inspection results shall be accompanied by recommendations for additional FOG control or enforcement. MTCo will assist the City in any required enforcement actions.

Measurement and Payment: Payment will be made on a time and materials basis, based on Exhibit B to this Agreement.

Tasks 3.8 through 3.10 Lift Station Maintenance

SAM is responsible for conducting station checks and cleaning at each of the City's three lift stations (Ocean Colony, Pelican Point, and Bell Moon), and is responsible for cleaning operations at the lift stations. MTCo will provide oversight and recommendations for best management practices, and, will complete station checks, upon request by the City in event that SAM is unable due to staffing limitations.

Weekly Station Checks

The following station checks will be completed on a weekly basis:

- Visually inspect and check the wet well levels to ensure proper automatic start/stop levels for the pumps
- Check pumps for unusual noise or vibrations
- Clean and maintain pumping plant area
- Inspect the motor control center to ensure proper operations
- Record pump and generator hour meter readings
- Check generator batteries, fuel, oil, coolant levels, belts, hoses, tires (if portable)
- Exercise generator, simulating power failure to assure automatic startup
- Inspect rails, piping, valves
- Exercise shut-off valves, as appropriate

Quarterly and Annual Station Checks

On a quarterly and annual basis, amperage tests and meg tests on pump motors shall be performed, and annual pump inspections and maintenance shall be completed per the manufacturer specifications.

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Measurement and Payment: Payment will be made on a time and materials basis for MTCo staff. MTCo services include SHAPE subconsultant services that include a five percent markup.

Task 4 Sanitary Sewer Overflow Response

SAM is responsible for responding respond to all sanitary sewer overflows (SSOs) within the City's service area, in accordance with the City's Sewer System Management Plan. MTCo is responsible for oversight of the SSO response, clean-up and reporting per State law, the City's adopted Sewer System management Plan (SSMP) and each Professional Services Agreement.

Task 4.1 Training

MTCo shall provide SAM with 24 hours of training on SSO response and documentation. In addition, the MTCo Field Operations Manager shall be available seven (7) days a week to provide telephone consultation to SAM maintenance personnel during SSO response.

Tasks 4.3 and 4.3 SSO Response

SAM is responsible for completing all activities necessary for SSO response, from serving as the "First Responder" to conducting all required notifications, water quality testing, postings, communications, and field activities, and assuring that all response activities have been completed and accurately documented in paper and in the California Integrated Water Quality System (CIWQS).

SAM will immediately contact the MTCo Field Operations Manager and provide a description of the situation to the Field Operations Manager by phone. MTCo shall advise on actions to be taken, and SAM shall remain in close communication with MTCo throughout the entire SSO response. MTCo shall provide on-site consultation as required.

SAM will initiate documentation of the event and will continue to maintain thorough and accurate records, both on paper and through photo documentation, through the entire event including any final site cleanup activities. MTCo shall review the documentation for accuracy and completeness and shall oversee any corrections or additions that are required. SAM will enter required information into CIWQS and will make any necessary updates as identified by MTCo and/or the City.

MTCo shall attend, either in person or by phone, a meeting with the City, MTCo, and SSO response staff that is held after every SSO to review the event, activities, documentation, and brainstorm strategies to avoid similar SSOs.

MTCo shall serve as the Legally Responsible Official (LRO) to certify all SSO reports The City Engineer will provide assistance and serve as back-up LRO.

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Measurement and Payment: Payment will be made on a time and materials basis, based on Exhibit B to the Agreement.

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EXHIBIT B

PROJECT BUDGET

MTCo has provided an overall budget spanning the three (3) year term of the Agreement. These budgets have been further defined to include Year 1 (FY 2018-2019), Year 2 (FY2019-2020), and Year 3 (FY2020-2021) as shown in the following tables. Actual work will be paid as described in the Scope of Services.

It should be noted that the Year 2 budget assumes that only half of the system, excluding hot spots, will require cleaning. The Year 3 budget assumes that the remaining half of the system, excluding hot spots, will require cleaning. For budgeting purposes, the length of hot spots to be cleaned remains the same across all three fiscal years.

Year 1 Budget, FY 2018-2019

Task	Description	Budget
Task 1 Project Management		
1.1	Kickoff Meeting/Council Meeting	$1,835
1.2	Quarterly Review Meeting	$3,658
1.3	Monthly Status Report	$4,357
1.4	Annual Status Report	$2,950
1.5	Maintenance Data in Lucity	$22,869
Task 2 Existing System Data		
2.1	Review Existing Data	$23,716
Task 3 Clean Sewer Pipelines		
3.1	Mainline Cleaning Schedule	$2,287
3.2	FOG Schedule	$1,192
3.3-3.5	Clean Pipes	$90,204
3.6	FOG Inspection and Documentation	$36,084
3.7	FOG Followup Action	$5,468
3.8	Weekly Lift Station Inspections	$52,060
3.9	Quarterly Lift Station Maintenance	$8,340
3.1	Annual Lift Station Maintenance	$11,088
Task 4 SSO Response		
4.1	Training	$7,865
4.2-4.3	Field Consultation and Response	$21,828
4.4	Review Reports and CIWQS Data	$19,033
4.5	Recommendations and Documentation	$8,366
	Total Year 1 Budget	$323,201

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Year 2 Budget, FY 2019-2020

Task	Description	Budget
Task 1	Project Management	
1.1	Kickoff Meeting/Council Meeting	$865
1.2	Quarterly Review Meeting	$4,877
1.3	Monthly Status Report	$4,357
1.4	Annual Status Report	$2,950
1.5	Maintenance Data in Lucity	$22,869
Task 2	Existing System Data	
2.1	Not Used	$0
Task 3	Clean Sewer Pipelines	
3.1	Not Used	$0
3.2	Not Used	$0
3.3-3.5	Clean Pipes	$45,644
3.6	FOG Inspection and Documentation	$36,084
3.7	FOG Followup Action	$5,468
3.8	Weekly Lift Station Inspections	$52,060
3.9	Quarterly Lift Station Maintenance	$8,340
3.10	Annual Lift Station Maintenance	$11,088
Task 4	SSO Response	
4.1	Not Used	$0
4.2-4.3	Field Consultation and Response	$21,828
4.4	Review Reports and CIWQS Data	$19,033
4.5	Recommendations and Documentation	$8,366
	Total Year 2 Budget	$243,830

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Year 3 Budget, FY 2020-2021

Task	Description	Budget
Task 1 Project Management		
1.1	Kickoff Meeting/Council Meeting	$865
1.2	Quarterly Review Meeting	$4,877
1.3	Monthly Status Report	$4,357
1.4	Annual Status Report	$2,950
1.5	Maintenance Data in Lucity	$22,869
Task 2 Existing System Data		
2.1	Not Used	$0
Task 3 Clean Sewer Pipelines		
3.1	Not Used	$0
3.2	Not Used	$0
3.3-3.5	Clean Pipes	$45,644
3.6	FOG Inspection and Documentation	$36,084
3.7	FOG Followup Action	$5,468
3.8	Weekly Lift Station Inspections	$52,060
3.9	Quarterly Lift Station Maintenance	$8,340
3.10	Annual Lift Station Maintenance	$11,088
Task 4 SSO Response		
4.1	Not Used	$0
4.2-4.3	Field Consultation and Response	$21,828
4.4	Review Reports and CIWQS Data	$19,033
4.5	Recommendations and Documentation	$8,366
	Total Year 3 Budget	$243,830

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Appendix B
Element 3 (Legal Authority) Supporting Documents

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City of Half Moon Bay

HALF MOON BAY MUNICIPAL CODE

TITLE 13 WATER AND SEWAGE

The Half Moon Bay Municipal Code is current through Ordinance C-2017-01, passed April 18, 2017.

Disclaimer: The City Clerk's Office has the official version of the Half Moon Bay Municipal Code. Users should contact the City Clerk's Office for ordinances passed subsequent to the ordinance cited above.

City Website: http://www.half-moon-bay.ca.us/

City Telephone: (650) 726-8270

Code Publishing Company

Title 13
WATER AND SEWAGE

Chapters:

13.04 Water Conservation in Landscaping Regulations
13.05 Indoor Water Use Efficiency Regulations
13.12 Sewage System--Definitions
13.15 Storm water Management and Discharge Control
13.16 Sewage System--General Provisions
13.20 Use of Public Sewers
13.24 Private Sewage Disposal
13.26 Chemical Toilets
13.28 Sewer Construction--Lateral Sewers and Connections
13.32 Public Sewer Construction
13.36 Sewer Permits and Fees
13.40 Enforcement of Sewer Regulations--Penalties
13.44 Individual Sewage Disposal Systems
13.48 Water Well Installation, Conversion and Destruction
13.52 Nondomestic Wastewater Source Control Program

Mobile Version

Chapter 13.12
SEWAGE SYSTEM--DEFINITIONS

Sections:

13.12.010 Definitions generally.
13.12.020 Applicant.
13.12.030 Building.
13.12.040 Building sewer.
13.12.050 Contractor.
13.12.060 City engineer.
13.12.070 City inspector.
13.12.080 Combined sewer.
13.12.090 Garbage.
13.12.100 Industrial wastes.
13.12.110 Lateral sewer.
13.12.120 Main sewer.
13.12.130 Manager.
13.12.140 Outside sewer.
13.12.150 Permit.
13.12.160 Person.
13.12.170 Plumbing system.
13.12.180 Private sewer.
13.12.190 Public sewer.
13.12.200 Refuse.
13.12.210 Sanitary sewers.
13.12.220 Sewage.
13.12.230 Sewage treatment plant.
13.12.240 Sewage works.
13.12.250 Sewer.
13.12.260 Side sewer.
13.12.270 Single family unit.
13.12.280 Storm sewer or storm drain.
13.12.290 Storm waters.
13.12.300 Street.

13.12.010 Definitions generally.

For the purpose of Chapters 13.16 through 13.40, additional terms shall have the meaning indicated in Chapter I of that certain plumbing code entitled “Western Plumbing Officials Uniform Plumbing Code,” copies of which are on file with the city clerk. (Ord. 2-62 §101, 1962).

13.12.020 Applicant.

“Applicant” means the person making application for a permit for a sewer or plumbing installation and is the owner of premises to be served by the sewer for which a permit is requested, or his authorized agent. (Ord. 2-62 §102, 1962).

13.12.030 Building.
“Building” means any structure used for human habitation or a place of business, recreation or other purpose, containing sanitary facilities. (Ord. 2-62 §104, 1962).

13.12.040 Building sewer.
“Building sewer” means that portion of any sewer beginning at the plumbing or drainage outlet of any building or industrial facility and running to the property line or to a private sewage disposal system. The building sewer is owned by the owner of the property it serves, and said owner is responsible for all maintenance, repairs and replacement thereof. (Ord. C-4-11 §11(A), 2011: Ord. 2-62 §105, 1962).

13.12.050 Contractor.
“Contractor” means an individual, firm, corporation, partnership or association duly licensed by the state to perform the type of work to be done under the permit. (Ord. 2-62 §108, 1962).

13.12.060 City engineer.
“City engineer” means the engineer appointed by and acting for the city and shall be a registered civil engineer. (Ord. 2-62 §110, 1962).

13.12.070 City inspector.
“City inspector” means the inspector acting for the city, the manager, the city engineer or inspector appointed by the city. (Ord. 2-62 §111, 1962).

13.12.080 Combined sewer.
“Combined sewer” means a sewer receiving sewage, industrial wastes, if any, and storm water. (Ord. 2-62 §107, 1962).

13.12.090 Garbage.
“Garbage” means food wastes from the preparation, cooking and dispensing of food and from the handling, storage and sale of produce. (Ord. 2-62 §112, 1962).

13.12.100 Industrial wastes.
“Industrial wastes” means water-carried wastes from industrial plants or factories which must receive special treatment as compared to sewage. (Ord. 2-62 §113, 1962).

13.12.110 Lateral sewer.
“Lateral sewer” means the portion of a sewer located within a public street connecting a building sewer to the main sewer, the ownership, and responsibility for all maintenance, repairs and replacement of which lies with the owner of the property it serves. (Ord. C-4-11 §11(B), 2011: Ord. 2-62 §114, 1962).

13.12.120 Main sewer.
“Main sewer” means a city-owned and maintained sewer located within a public street or easement and designed to accommodate more than one lateral sewer. (Ord. C-4-11 §11(C), 2011: Ord. 2-62 §115, 1962).

13.12.130 Manager.
“Manager” means the person or persons appointed by the council to administer and enforce the rules and regulations of the city, with respect to the city sewer system. (Ord. 2-62 §116, 1962).

13.12.140 Outside sewer.
“Outside sewer” means a sanitary sewer beyond the limits of the city, not subject to the control or jurisdiction of the city. (Ord. 2-62 §117, 1962).

13.12.150 Permit.
“Permit” means any written authorization required pursuant to this or any other regulation of the city for the installation of any sewerage. (Ord. 2-62 §118, 1962).

13.12.160 Person.
“Person” means any human being, individual, firm, company, partnership, association and private or public and municipal corporations, the United States of America, the state of California, districts and all political subdivisions, governmental agencies and mandatories thereof. (Ord. 2-62 §119, 1962).

13.12.170 Plumbing system.
“Plumbing system” means all plumbing fixtures and traps or soil, waste, special waste and vent pipes, and all sanitary sewer pipes within a building and extending to the building sewer connection three feet outside the building wall. (Ord. 2-62 §120, 1962).

13.12.180 Private sewer.
“Private sewer” means a sewer serving an independent sewage disposal system not connected with a public sewer and which accommodates one or more buildings or industries. (Ord. 2-62 §121, 1962).

13.12.190 Public sewer.
“Public sewer” means a sewer main lying within a street or right-of-way and which is owned and controlled by the city. (Ord. C-2014-04 §4, 2014: Ord. 2-62 §122, 1962).

13.12.200 Refuse.
“Refuse” means all wastes other than garbage such as cans, bottles, paper, brush and other rubbish. (Ord. 2-62 §123, 1962).

13.12.210 Sanitary sewers.
“Sanitary sewers” means any pipe or conduit designed to carry sewage only. (Ord. 2-62 §124, 1962).

13.12.220 Sewage.
“Sewage” for the purposes of Chapters 13.16 through 13.40, means all water-carried wastes from residences, businesses and institutions, as may enter the sanitary sewer system, together with incidental ground water infiltration. (Ord. 2-62 §125, 1962).

13.12.230 Sewage treatment plant.
“Sewage treatment plant” means the arrangement of works, facilities and buildings installed to treat sewage and industrial wastes. (Ord. 2-62 §126, 1962).

13.12.240 Sewage works.
“Sewage works” means all facilities for collecting, pumping, treating and disposing of sewage. (Ord. 2-62 §127, 1962).

13.12.250 Sewer.
“Sewer” means any pipe or conduit carrying sewage, industrial wastes or storm water, or any combination thereof. (Ord. 2-62 §128, 1962).

13.12.260 Side sewer.

“Side sewer” means the sewer line beginning at the foundation wall of any building and terminating at the main sewer, and includes the building sewer and lateral sewer together. (Ord. 2-62 §129, 1962).

13.12.270 Single-family unit.
“Single-family unit” means and refers to the place of residence for a single family. Property improved for multi-family purposes constitutes the number of units that the facilities thereon provide in number facilities for single-family units. When such improvements are for other than residential purposes, the number of units shall be determined by dividing the total number of persons regularly using or occupying said premises by three. When such property is unsubdivided, it is deemed to have four lots to the acre, unless the city, in its discretion, specially fixes some other number of lots therefor. (Ord. 2-62 §130, 1962).

13.12.280 Storm sewer or storm drain.
“Storm sewer” or “storm drain” means a sewer installed to carry storm or drainage waters. (Ord. 2-62 §131, 1962).

13.12.290 Storm waters.
“Storm waters” means runoff from rainfall or surface waters as differentiated from sewage or industrial wastes. (Ord. 2-62 §132, 1962).

13.12.300 Street.
“Street” means any public highway, road, street, avenue, alley, way, public place, public easement or right-of-way. (Ord. 2-62 §133, 1962).

Mobile Version

Chapter 13.16
SEWAGE SYSTEM--GENERAL PROVISIONS

Sections:

13.16.010 Short title.
13.16.020 Purpose.
13.16.030 Adoption of rules and regulations.
13.16.040 Special circumstances applications.
13.16.050 City inspector employment and compensation.
13.16.060 Permits and fees.
13.16.070 Damage or destruction of property prohibited.
13.16.080 Right of entry--Identification required.
13.16.090 Connection required.

13.16.010 Short title.
Chapters 13.12 through 13.40 shall be known as the “sanitary code” of the city of Half Moon Bay, California. (Ord. 2-62 §203, 1962).

13.16.020 Purpose.
Chapters 13.12 through 13.40 are intended to provide rules and regulations for the use and construction of sewer facilities hereafter installed, altered or repaired within the city. Chapters 13.12 through 13.40 do not apply retroactively and, in the event of an alteration or repair hereafter made, they shall apply only to the new materials and methods used therein. (Ord. 2-62 §202, 1962).

13.16.030 Adoption of rules and regulations.
The following rules and regulations respecting sewer construction and disposal of sewage and drainage of buildings and connection to the sewage works of the city are adopted, and all work in respect thereto shall be performed as herein required, and not otherwise. (Ord. 2-62 §201, 1962).

13.16.040 Special circumstances application.
When any person, by reason of special circumstances, is of the opinion that any provision of Chapters 13.12 through 13.40 is unjust or inequitable as applied to his premises, he may make written application to the city council, stating the special circumstances, citing the provision complained of, and requesting suspension or modification of that provision as applied to his premises.

If such application is approved, the city council may, by resolution, suspend or modify the provision complained of, as applied to such premises, to be effective as of the date of the application and continuing during the period of the special circumstances. (Ord. 2-62 §206, 1962).

13.16.050 City inspector employment and compensation.
The city council shall employ some fit and qualified person or persons to perform the duties of inspecting the installation, connection, maintenance and use of all side sewers, public sewers, private sewers and facilities in connection therewith in the city, to be known as the city inspector. The person so employed

shall receive as compensation for his services for making inspections required to be made by the ordinances, orders and regulations from time to time enacted and ordered by the city council, a sum to be fixed by the city council. He shall serve during the pleasure of the city council and may be another official of the city. (Ord. 2-62 §207, 1962).

13.16.060 Permits and fees.

No public sewer, side sewer, building sewer or other sewerage facility shall be installed, altered or repaired within the city until a permit for the work has been obtained from the city and all fees paid in accordance with the requirements of Chapter 13.36. (Ord. 2-62 §209, 1962).

13.16.070 Damage or destruction of property prohibited.

No unauthorized person shall maliciously, wilfully or negligently break, damage, destroy, uncover, deface or tamper with any structure, appurtenance or equipment which is a part of the city sewage works. Any person violating this provision is subject to the penalties provided by law. (Ord. 2-62 §101, 1962).

13.16.080 Right of entry--Identification required.

The officers, inspectors, managers and any duly authorized employee of the city shall carry evidence establishing his position as an authorized representative of the city, and upon exhibiting the proper credentials and identification, as provided in Chapter 1.12 of this code, shall be permitted to enter in and upon any and all buildings, industrial facilities and properties for the purposes of inspection, reinspection, observation, measurement, sampling, testing or otherwise performing such duties as may be necessary in the enforcement of the provisions of the ordinance, rules and regulations of the city. (Ord. 2-62 §902, 1962).

13.16.090 Connection required.

After May 3, 1962, it is unlawful for any person to connect to, construct, install or provide, maintain and use any other means of sewage disposal from any building in the city except by connection to a public sewer in the manner as provided in Chapters 13.12 through 13.40. (Ord. 2-62 §205, 1962).

Mobile Version

Chapter 13.20
USE OF PUBLIC SEWERS*

Sections:

13.20.010 Limitations.
13.20.020 Unlawful to deposit waste and garbage on city streets.
13.20.030 Treatment of wastes required.
13.20.040 Sewage disposal facility--Compliance required.
13.20.050 Building occupancy--Compliance required.
13.20.060 Connection to public sewer required.
13.20.070 Prohibited drainage materials.
13.20.080 Discharge of certain materials into combined or storm sewers.
13.20.090 Prohibited wastes designated.
13.20.100 Interceptors--When required.
13.20.110 Interceptors--Maintenance.
13.20.120 Preliminary treatment of wastes.
13.20.130 Preliminary treatment facility maintenance.
13.20.140 Control manholes.
13.20.150 Measurements and tests.
13.20.160 Special agreements for unusual wastes.
13.20.170 Swimming pools.

* For the statutory provisions prohibiting nuisances arising from sewage wastes, see Health & Safety Code §55410--5416.

13.20.010 Limitations.

The use of sanitary sewers is limited to the transmission of sewage, unless permitted by special agreement with the city council. Combined sewers or storm sewers may carry industrial wastes upon special permit by the city. (Ord. 2-62 §301, 1962).

13.20.020 Unlawful to deposit waste and garbage on city streets.

It is unlawful for any person to place, deposit or permit to be deposited in an unsanitary manner upon public or private property within the city, or in any area under the jurisdiction of the city, any human or animal excrement, garbage, refuse or other objectionable waste. (Ord. 2-62 §302, 1962).

13.20.030 Treatment of wastes required.

It is unlawful to discharge to any stream or watercourse any sewage, industrial wastes or other polluted waters, except where suitable treatment has been provided in accordance with provisions of Chapters 13.12 through 13.40. (Ord. 2-62 §303, 1962).

13.20.040 Sewage disposal facility--Compliance required.

Except as herein provided, it is unlawful to construct or maintain any privy, privy vault, septic tank, cesspool, seepage pit or other facility intended or used for the disposal of sewage. (Ord. 2-62 §304,

1962).

13.20.050 Building occupancy--Compliance required.
No building, industrial facility or other structure shall be occupied until the owner of the premises has complied with all rules and regulations of the city. (Ord. 2-62 §305, 1962).

13.20.060 Connection to public sewer required.
The owner of any residential building situated within the city and abutting on any street in which there is now located or may in the future be located a public sewer of the city, is required, at his expense, to connect said building directly with the proper public sewer in accordance with the provisions of Chapters 13.12 through 13.40, within thirty days after date of official notice to do so; provided, that said public sewer is within two hundred feet of the nearest point of the building.

Commercial, industrial and public buildings or institutions shall be required to connect to the district sewer system upon notice as herein provided. (Ord. 2-62 §306, 1962).

13.20.070 Prohibited drainage materials.
No leaders from roofs and no surface drains shall be connected to any sanitary sewer. No cooling water or industrial process waters shall be permitted to enter any sanitary sewer by any device or method whatsoever. (Ord. 2-62 §307, 1962).

13.20.080 Discharge of certain materials into combined or storm sewers.
Storm water and all other drainage shall be discharged to such sewers as are specifically designated as combined sewers or storm sewers, or to a natural outlet approved by the manager. Industrial cooling water or unpolluted process waters may be discharged, upon approval of the manager, to a storm sewer, combined sewer or natural outlet. (Ord. 2-62 §308, 1962).

13.20.090 Prohibited wastes designated.
Except as hereinafter provided, no person shall discharge or cause to be discharged any of the following described waters or wastes to any public sewer:

A. Any liquid or vapor having a temperature higher than one hundred fifty degrees Fahrenheit;

B. Any water or waste which may contain more than one hundred parts per million, by weight, of fat, oil or grease;

C. Any gasoline, benzine, naphtha, fuel oil or other flammable or explosive liquid, solid or gas;

D. Any garbage that has not been shredded to such a degree that all particles will be carried freely under the flow conditions normally prevailing in public sewers, with no particle greater than one-half inch in any dimension;

E. Any ashes, cinders, sand, mud, straw, shavings, metal, glass, rags, feathers, tar, plastics, wood, paunch manure, or any other solid or viscous substance capable of causing obstruction to the flow in sewers or other interference with the proper operation of the sewage works;

F. Any waters or wastes having a pH lower than five and one-half or higher than nine or having any other corrosive property capable of causing damage or hazard to structures, equipment and personnel of the sewage works;

G. Any waters or wastes containing a toxic or poisonous substance in sufficient quantity to injure or interfere with any sewage treatment process, constitute a hazard to humans or animals, or create any hazard in the receiving waters of the sewage treatment plant;

H. Any waters or wastes containing suspended solids of such character and quantity that unusual attention or expense is required to handle such materials at the sewage treatment plant;

I. Any noxious or malodorous gas or substance capable of creating a public nuisance; and

J. Any septic tank sludge. (Ord. 2-62 §309, 1962).

13.20.100 Interceptors--When required.

Grease, oil and sand interceptors shall be provided when, in the opinion of the manager, they are necessary for the proper handling of liquid wastes containing grease in excessive amounts, or any flammable wastes, sand and other harmful ingredients; except that such interceptors shall not be required for buildings used for residential purposes. All interceptors shall be of a type and capacity approved by the manager, and shall be so located as to be readily and easily accessible for cleaning and inspection. (Ord. 2-62 §310, 1962).

13.20.110 Interceptors--Maintenance.

All grease, oil and sand interceptors shall be maintained by the owner, at his expense, in continuously efficient operation at all times. (Ord. 2-62 §311, 1962).

13.20.120 Preliminary treatment of wastes.

A. The admission into the public sewers of any waters or wastes having:

1. A five-day biochemical oxygen demand greater than three hundred parts per million by weight; or

2. Containing more than three hundred fifty parts per million by weight of suspended solids; or

3. Containing any quantity of substance having the characteristics described in Section 13.20.090; or

4. An average daily flow of two percent of the average daily flow of the city, shall be subject to the review and approval of the manager.

B. Where necessary in the opinion of the manager, the owner shall provide, at his expense, such preliminary treatment as may be necessary to:

1. Reduce the biochemical oxygen demand to three hundred parts per million and the suspended solids to three hundred fifty parts per million by weight; or

2. Reduce objectionable characteristics or constituents to within the maximum limits provided for in Section 13.20.090; or

3. Control the quantities and rates of discharge of such waters or wastes.

C. Plans, specifications and any other pertinent information relating to proposed preliminary treatment facilities shall be submitted for the approval of the manager and of the Water Pollution Control Commission of the state, and no construction of such facilities shall be commenced until said approvals are obtained in writing. (Ord. 2-62 §312, 1962).

13.20.130 Preliminary treatment facility maintenance.

Where preliminary treatment facilities are provided for any waters or wastes, they shall be maintained continuously in satisfactory and effective operation by the owner at his expense. (Ord. 2-62 §313, 1962).

13.20.140 Control manholes.

When required by the manager, the owner of any property served by the side sewer carrying industrial wastes shall install a suitable control manhole in the side sewer to facilitate observation, sampling and measurement of wastes. Such manhole, when required, shall be accessibly and safely located, and shall be constructed in accordance with plans approved by the city council. The manhole shall be installed by the owner at his expense and shall be maintained by him so as to be safe and accessible at all times. (Ord. 2-62 §314, 1962).

13.20.150 Measurements and tests.

All measurements, tests and analyses of the characteristics of waters and wastes to which reference is made in Sections 13.20.090 and 13.20.120 shall be determined in accordance with standard methods and shall be determined at the control manhole provided for in Section 13.20.140, or upon suitable samples taken at said control manhole. In the event that no special manhole has been required, the control manhole shall be considered to be the nearest downstream manhole in the public sewer to the point at which the side sewer is connected. (Ord. 2-62 §315, 1962).

13.20.160 Special agreements for unusual wastes.

No statement contained in this chapter shall be construed as preventing any special agreement or arrangement between the city and any industrial concern whereby an industrial waste of unusual strength or character may be accepted by the city for treatment, subject to such terms and conditions as might be required by the city. (Ord. 2-62 §316, 1962).

13.20.170 Swimming pools.

It is unlawful for any person to discharge the contents of a swimming pool into a sanitary sewer except in the manner specified herein. The size of pipe carrying discharge water shall not be larger than two inches and shall not be under a head to exceed twenty feet. If the water is discharged by pumping, the rate of flow shall not exceed one hundred gallons per minute. Under no circumstances however shall the discharge into the public sewer exceed more than one-third the capacity of the main sewer in the street to which the lateral sewer is connected. Each swimming pool discharging to a sanitary sewer shall be equipped with an approved separator to preclude any possibility of a backflow of sewage into the swimming pool or piping system. (Ord. 2-62 §317, 1962).

Mobile Version

Chapter 13.24
PRIVATE SEWAGE DISPOSAL

Sections:

13.24.010 When public sewer not available.
13.24.020 Permit required.
13.24.030 Inspection required.
13.24.040 Design requirements.
13.24.050 Abandonment of facilities.
13.24.060 Owner responsibility for maintenance and costs.
13.24.070 Chapter not to interfere with other regulations.

13.24.010 When public sewer not available.

Where a public sewer is not available under the provisions of Section 13.20.060, the building sewer shall be connected to a private sewage disposal system, complying with the provisions of Chapters 13.12 through 13.40. (Ord. 2-62 §401, 1962).

13.24.020 Permit required.

Before commencement of construction of a private sewage disposal system, the owner shall first obtain a written permit signed by the manager. The application for such permit shall be made on a form furnished by the city, which the applicant shall supplement by any plans, specifications and other information as are deemed necessary by the manager. A permit and inspection fee shall be paid to the city at the time application is filed in accordance with the provisions of Chapter 13.36. (Ord. 2-62 §402, 1962).

13.24.030 Inspection required.

A permit for a private sewage disposal system shall not become effective until the installation is completed to the satisfaction of the city inspector. He shall be allowed to inspect the work at any stage of construction and, in any event, the applicant for the permit shall notify the city inspector when the work is ready for final inspection, and before any underground portions are covered. The inspection shall be made within forty-eight hours, Sundays and holidays excluded, of the receipt of the notice by the city inspector. (Ord. 2-62 §403, 1962).

13.24.040 Design requirements.

The type, capacities, locations and layout of a private sewage disposal system shall comply with all recommendations of the Department of Public Health of the state. No permit shall be issued for any private sewage disposal system employing subsurface soil absorption facilities where the area of the lot is less than fifteen thousand square feet. No septic tank or cesspool shall be permitted to discharge to any public sewer or any stream or watercourse. (Ord. 2-62 §404, 1962).

13.24.050 Abandonment of facilities.

At such time as a public sewer becomes available to a property served by a private sewage disposal system, as provided in Section 13.20.060, a direct connection shall be made to the public sewer in compliance with the ordinances, rules and regulations of the city, and any septic tanks, cesspools and

similar private sewage disposal facilities shall be abandoned and filled with suitable material as determined by the city inspector. (Ord. 2-62 §405, 1962).

13.24.060 Owner responsibility for maintenance and costs.

The owner shall operate and maintain the private sewage disposal facilities in a sanitary manner at all times, at no expense to the city. (Ord. 2-62 §406, 1962).

13.24.070 Chapter not to interfere with other regulations.

No statement contained in this chapter shall be construed to interfere with any additional requirements that may be imposed by any law, ordinance, rule or regulation; or by the health officer of the county, or the health officer of the city. (Ord. 2-62 §407, 1962).

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Chapter 13.28
SEWER CONSTRUCTION--LATERAL SEWERS AND CONNECTIONS

Sections:

13.28.010 Permit required.
13.28.020 Construction requirements--Compliance required.
13.28.030 Minimum size and slope.
13.28.040 Separate sewers--When required.
13.28.050 Use of old building sewers.
13.28.060 Cleanouts required.
13.28.065 Check valve.
13.28.070 Sewage lifted by artificial means.
13.28.080 Connection to public sewer.
13.28.090 Barricading of excavation.
13.28.100 Maintenance of side sewer.

13.28.010 Permit required.

In accordance with Chapter 13.36, no person shall construct a building sewer, lateral sewer or make a connection with any public sewer without first obtaining a written permit from the city and paying all fees and connection charges as required therein. (Ord. 2-62 §501, 1962).

13.28.020 Construction requirements--Compliance required.

Construction of building sewers and lateral sewers shall be in accordance with the requirements of the city. Standard plans and specifications are on file with the city engineer. Any variation must be approved by the city council. (Ord. 2-62 §502, 1962).

13.28.030 Minimum size and slope.

The minimum size of a building sewer shall be four-inch diameter. The minimum slope of a building sewer shall be one-eighth of an inch per foot or one and one-half feet per one hundred feet (1.5 percent slope). Not more than fifteen fixture units shall be connected to a four-inch diameter building or side sewer. Multiple units or multiple dwellings shall use a six-inch or greater building or side sewer. (Ord. 2-62 §503, 1962).

13.28.040 Separate sewers--When required.

No two adjacent buildings fronting on the same street shall be permitted to join in the use of the same side sewer. Every building or industrial facility must be separately connected with a public sewer if such public sewer exists in the street upon which the property abuts or in an easement which will serve said property. However, one or more buildings located on property belonging to the same owner may be served with the same side sewer during the period of said ownership. Upon the subsequent subdivision and sale of a portion of said lot, the portion not directly connected with such public sewer shall be separately connected with a public sewer, and it is unlawful for the owner thereof to continue to use or maintain such indirect connection. (Ord. 2-62 §504, 1962).

13.28.050 Use of old building sewers.
Old building sewers may be used in connection with new buildings only when they are found, upon examination and test by the city inspector, to meet all requirements of the city. (Ord. 2-62 §505, 1962).

13.28.060 Cleanouts required.
Cleanouts in building sewers shall be provided in accordance with the rules, regulations and ordinances of the city. All cleanouts shall be maintained watertight. (Ord. 2-62 §506, 1962).

13.28.065 Check valve.
An approved check valve shall be installed on all building sewers where the floor elevation of the building is lower than the top of the next upstream manhole. (Ord. 7-77 §1, 1977).

13.28.070 Sewage lifted by artificial means.
In all buildings in which any building sewer is too low to permit gravity flow to the public sewer, sanitary sewage carried by such building sewer, shall be lifted by artificial means approved by the manager, and discharged to the public sewer at the expense of the owner. (Ord. 2-62 §507, 1962).

13.28.080 Connection to public sewer.
Where a lateral sewer already exists to serve the property in question, the building sewer and the connection shall be left uncovered until approved for acceptance by the city.

Where a lateral to serve the property does not exist, the city will construct the lateral sewer at the owner's expense and proceed as above. (Ord. 2-62 §508, 1962).

13.28.090 Barricading of excavation.
All excavations for a side sewer installation shall be adequately guarded with barricades or lights so as to protect the public from hazard. Streets, sidewalks, parkways and other property disturbed in the course of the work shall be restored in a manner satisfactory to the city or any other person having jurisdiction thereover. (Ord. 2-62 §509, 1962).

13.28.100 Maintenance of side sewer.
Maintenance of the side sewer shall be the responsibility of the owner of the property served thereby. (Ord. C-2013-04 §8, 2013: Ord. 11-74 §1, 1974: Ord. 2-62 §510, 1962).

Mobile Version

Chapter 13.32
PUBLIC SEWER CONSTRUCTION*

Sections:

13.32.010 Permit required--Exception.
13.32.020 Application information--Plans and specifications preparation--Costs.
13.32.030 Subdivision map.
13.32.040 Easement or right-of-way grant.
13.32.050 Persons authorized to perform work.
13.32.060 Grade and line stakes.
13.32.070 Compliance with state, county and city regulations.
13.32.080 Design and construction standards.
13.32.090 Inspection authority designated.
13.32.100 Compliance required for final acceptance.

* For the statutory provisions authorizing cities to construct and maintain drains and sewers, see Gov. Code §38900.

13.32.010 Permit required--Exception.

In accordance with Chapter 13.36, no person shall construct, extend or connect to any public sewer without first obtaining a written permit from the city and paying all fees and connection charges and furnishing bonds as required therein. The provision of this section requiring permits shall not be construed to apply to contractors constructing sewers and appurtenances under contracts awarded and entered into by the city. (Ord. 2-62 §601, 1962).

13.32.020 Application information--Plans and specifications preparation--Costs.

A. Construction of public sewers shall be by contract let by the city, or pursuant to permit issued by the city, and all work performed shall at all times be under the direction and supervision of the city.

B. All applications for public sewer construction shall include a brief statement of the purpose and extent of service required, a preliminary plan of the proposed sewers and appurtenances to be constructed, and a deposit sufficient to cover the cost of review of the proposed plan by the city engineer.

C. Upon consideration by the city council, the city can then order final plans and specifications prepared by:

1. The city engineer; or

2. A registered civil engineer representing the applicant.

D. Based upon the city engineer's estimate of cost, a deposit of money will be required of applicant sufficient to cover the full cost of construction, including all legal, engineering, inspection and incidentals, or as an alternative, the work can be ordered under appropriate special assessment and assessment bond proceedings when deemed advisable by the city. (Ord. 2-62 §602, 1962).

13.32.030 Subdivision map.
The requirements of Sections 13.32.010 and 13.32.020 shall be fully complied with before any final subdivision map shall be approved by the city council. The final subdivision map shall provide for the dedication for public use of streets, easements or rights-of-way in which public sewer lines are to be constructed. If a final subdivision map of a tract is recorded and the work of constructing sewers to serve the tract is not completed within the time limit allowed in the permit, the city council may extend the time limit or may complete the work and take appropriate steps to enforce the provisions of the bond furnished by the subdivider. (Ord. 2-62 §603, 1962).

13.32.040 Easement or right-of-way grant.
In the event that an easement is required for the extension of the public sewer or the making of connections, the applicant shall procure and have accepted by the city council a proper easement or grant of right-of-way sufficient in law to allow the laying and maintenance of such extension or connection. (Ord. 2-62 §604, 1962).

13.32.050 Persons authorized to perform work.
Only properly licensed contractors shall be authorized to perform the work of public sewer construction within the city. All terms and conditions of the permit issued by the city to the applicant shall be binding on the contractor. The requirements of this section shall apply to side sewers installed concurrently with public sewer construction. (Ord. 2-62 §605, 1962).

13.32.060 Grade and line stakes.
Grade and line stakes shall be set by a registered engineer or his representative prior to the start of work on any public sewer construction. The contractor shall be responsible for accurately transferring grades to grade bars and sewer invert. (Ord. 2-62 §606, 1962).

13.32.070 Compliance with state, county and city regulations.
Any person constructing a sewer within a street shall comply with all state, county or city laws, ordinances, rules and regulations pertaining to the cutting of pavement, opening, barricading, lighting and protecting of trenches, backfilling and repaving thereof, and shall obtain all permits and pay all fees required by the department having jurisdiction prior to the issuance of a permit by the city. (Ord. 2-62 §607, 1962).

13.32.080 Design and construction standards.
Minimum standards for the design and construction of sewers within the city shall be in accordance with the “Specifications for Sewer Construction,” heretofore or hereafter adopted by the city, copies of which are on file in the city office. The city may permit modifications or may require higher standards where unusual conditions are encountered.

“As-built” drawings on cloth showing the actual location of all mains, structures, Y’s and laterals shall be filed with the city before final acceptance of the work. (Ord. 2-62 §609, 1962).

13.32.090 Inspection authority designated.
Inspection of all work shall be by the city inspector, and all work performed in accordance with Specifications for Sewer Construction. (Ord. 2-62 §608, 1962).

13.32.100 Compliance required for final acceptance.
Before any acceptance of any sewer line by the city and prior to the admission of any sewage into the system, the sewer line shall be tested and shall be complete in full compliance with all requirements of the Specifications for Sewer Construction and to the satisfaction of the city. (Ord. 2-62 §610, 1962).

Mobile Version

Chapter 13.36
SEWER PERMITS AND FEES

Sections:

13.36.010 Required.
13.36.020 Application--Issuance or referral.
13.36.030 Compliance required--Exception.
13.36.040 Agreement to comply.
13.36.050 Annexation fees.
13.36.070 Connection, inspection and sewer service charges established.
13.36.075 Sewer service charges.
13.36.080 Single-family residential equivalent established.
13.36.120 Charges--Alteration of use.
13.36.140 Charges--Minimum.
13.36.145 Charges--Special agreement for public facilities.
13.36.150 Time for payment of fees.
13.36.160 Disposition of fees.
13.36.180 Inspection of work.
13.36.190 Notification for inspection.
13.36.200 Condemned work--Notification of owner.
13.36.210 Costs to be paid by owner.
13.36.220 Connection of lot outside city limits.
13.36.230 Outside sewer permit--Optional.
13.36.240 Special contract for outside sewers.
13.36.250 Street excavation permit.
13.36.260 Liability.
13.36.270 Time limit on permits.

13.36.010 Required.

No unauthorized person shall uncover, make any connection with or opening into, use, alter or disturb any public sewer or appurtenances or perform any work on any lateral or building sewer without first obtaining a written permit from the city. (Ord. 2-62 §701, 1962).

13.36.020 Application--Issuance or referral.

Any person legally entitled to apply for and receive a permit shall make such application on forms provided by the city for that purpose. He shall give a description of the character of the work proposed to be done and the location, ownership, occupancy and use of the premises in connection therewith. The manager may require plans, specifications or drawings and such other information as he may deem necessary.

If the manager determines that the plans, specifications, drawings, descriptions or information furnished by the applicant are in compliance with the ordinances, rules and regulations of the city, he shall issue the

permit applied for upon payment of the required fees as hereinafter fixed; or he may refer the matter to the city for further consideration and decision. (Ord. 2-62 §702, 1962).

13.36.030 Compliance required--Exception.

After approval of the application, evidenced by the issuance of a permit, no change shall be made in the location of the sewer, the grade, materials or other details from those described in the permit or as shown on the plans and specifications for which the permit was issued, except with written permission from the city, the manager or other authorized representatives. (Ord. 2-62 §703, 1962).

13.36.040 Agreement to comply.

The applicant's signature on an application for any permit shall constitute an agreement to comply with all of the provisions, terms and requirements of Chapters 13.12 through 13.40 and other ordinances, rules and regulations of the city, and with the plans and specifications he has filed with his application, if any, together with such corrections or modifications as may be made or permitted by the city, if any. Such agreement shall be binding upon the applicant and may be altered only by the city upon the written request for the alteration from the applicant. (Ord. 2-62 §704, 1962).

13.36.050 Annexation fees.

The owner or owners of lands within areas proposed to be annexed to the city shall deposit with the clerk of the city a sum to be fixed by the city council, prior to the commencement of proceedings by the city council on the proposed annexation. The amount to be fixed by the city council shall be in a sum estimated to equal the engineering, legal and publication costs and all other charges which may be incurred by the city in preparing and examining maps, legal descriptions and other documents in relation thereto, and other expenses regularly incurred in connection therewith. Should the amount of the deposit exceed the costs incurred by the city, the excess shall be refunded to the owner or owners following the conclusion of the final hearing on the proposed annexation. Should the amount of the deposit be insufficient to pay such costs incurred by the city, the owner or owners shall advance such additional sums as shall be necessary to pay said costs prior to the final hearing on the proposed annexation. (Ord. 2-62 §706, 1962).

13.36.070 Connection, inspection and sewer service charges established.

All premises seeking a new or modified connection to the city's sewer system shall pay applicable connection and the related permitting and inspections charges. Sewer connection charges shall be based on equitable pro rata share of the replacement cost of existing sewer collection, treatment and sewage disposal facilities and the cost of any additional improvements required to serve the applicant's premises. An applicant seeking a new sewer connection shall also pay charges for any required city permit, including street excavation permit, and charges for the city's inspections. All premises connected to the city's sewer system shall pay annual sewer service charges based on the rates approved by the city council, and the strength and volume of sewage generated by the premises. Rates for issuance of a sewer permit, inspection of facilities, and for monthly sewer service charges shall be established by city council resolution in accordance with this chapter. Sewer connection charges are established by city council Resolution No. 2016-01 in the Development Impact Fee Nexus Study by Michael Baker International dated December 8, 2015, attached thereto as Exhibit "A." (Ord. C-2016-01 §2, 2016: Ord. C-3-11 §1(B), 2011: Ord. 19-86 §1, 1986; Ord. 6-75 §1, 1975: Ord. 7-72 §1(part), 1972: Ord. 1-72 §1(part), 1972: Ord. 22-70 §1(part), 1971: Ord. 2-62 §708(part), 1962).

13.36.075 Sewer service charges.

A. Premises Which Shall Be Charged. Sewer service charges are prescribed for:

1. All premises connected to the sewerage system of the city;

2. All premises which are able to connect to the sewerage system but at present are connected to a septic tank. Determination of whether a premises is able to connect to the sewerage system of the city is governed by Section 13.20.060;

3. All premises (or planned premises) for which sewer permits have been issued and which have not yet connected to the sewerage system of the city.

B. Total Amount to Be Charged. The total dollar amount of the service charge shall equal the projected annual cost of sewage treatment and administrative overhead plus any delinquent charge factor. This amount shall be adopted annually by the city council as part of the city sewer utility budget. Sewage treatment includes, but is not limited to, the costs of operation and maintenance, repairs, and capital improvements of the sewage treatment plant and sewage collection system.

By the action of adopting the sewer utility budget, the city council automatically adopts the resulting individual charges annually as prescribed by the methodology of the ordinance codified in this chapter.

The “delinquent charge factor” shall be determined by the city manager, and shall not exceed eighty percent of the annual cost of sewage treatment and administrative overhead. In the event that the amount actually collected by the city exceeds the amount to be charged for that fiscal year, the excess amount shall be applied to reduce the “total amount to be charged” for the following fiscal year.

C. Basis for Individual Charges. Sewer service charges shall be imposed based upon the volume and strength of the wastewater discharged by individual premises.

D. Class of Premises. The premises within each of the following classes are recognized as having similar sewage volume and sewage strength characteristics:

Residential Classes:

1. Residential single.
2. Residential multiple.
3. Trailer park.
4. Condominium hotel projects.

Nonresidential Classes:

1. Retirement home.
2. Restaurant.
3. Office.
4. Stores, general commercial.
5. Medical.
6. Hotel/motel.
7. Recreational.
8. School.

9. Not classifiable.

E. Wastewater Strength. A wastewater strength factor for each individual premises shall be determined based upon the class of the premises. The wastewater strength factor for each class shall be expressed as a percentage of residential class strength. The strength factor for each class is as follows:

Residential Classes	Wastewater Strength Factor
1. Residential single	100.00%
2. Residential multiple	100.00%
3. Trailer park	100.00%
4. Condominium hotel projects	100.00%
Nonresidential Classes	
1. Retirement home	100.00%
2. Restaurant	180.00%
3. Office	60.00%
4. Stores, general commercial	85.71%
5. Medical	100.00%
6. Hotel/motel	122.86%
7. Recreational	114.29%
8. School	65.71%
9. Not classifiable	Determined individually

F. Wastewater Volume. The volume of wastewater for each premises shall be determined through water consumption data supplied by the Coastside County Water District.

The periods for which water consumption data shall be collected are:

1. Wet Weather. The four-month period from November through February during which irrigation is at a minimum;

2. Twelve-Month Total. The twelve-month period from April through March.

The individual classes shall use the following water consumption data collection periods:

Residential Classes	Data Collection Period
1. Residential single	Wet weather
2. Residential multiple	Wet weather
3. Trailer park	Wet weather
4. Condominium hotel projects	Wet weather
Nonresidential Classes	
1. Retirement home	Wet weather

2.	Restaurant	Twelve-month total
3.	Office	Wet weather
4.	Stores, general commercial	Twelve-month total
5.	Medical	Twelve-month total
6.	Hotel/motel	Twelve-month total
7.	Recreational	Wet weather
8.	School	Wet weather
9.	Not classifiable	Determined individually

In the event that water consumption data for a particular premises is not available, the average water consumption of all premises in the same class as that particular premises shall be utilized.

The wastewater volume for each individual parcel shall be calculated in hundreds of cubic feet (HCF) using the following formulae:

1. Premises Using Wet Weather Data Collection Period. The sum of water used from November through February, but not less than eight HCF for any two-month period;

2. Premises Using Twelve-Month Total Data Collection Period. The sum of water used the prior year, as reflected in water meter readings for the twelve-month period from April 1 through March 31, divided by three, but not less than eight HCF for any two-month period.

G. Calculation of Charges for Individual Premises. The charge for each individual premises shall be calculated such that:

$Charge_1 = (Wastewater\ Volume)_1 \times (Wastewater\ Strength\ Factor)_1 \times (Constant)$

+

$Charge_2 = (Wastewater\ Volume)_2 \times (Wastewater\ Strength\ Factor)_2 \times (Constant)$

+

etc...

+

$Charge_n = (Wastewater\ Volume)_n \times (Wastewater\ Strength\ Factor)_n \times (Constant)$

=

the “Total Amount to be Charged”

where $Charge_n$ is the charge imposed upon the “nth” premises in the city.

H. Method of Collection. Individual charges shall be collected on the tax roll pursuant to Section 5473 of the Health and Safety Code.

The city manager may collect an individual charge at his or her discretion without use or reference to the tax roll.

I. Appeals Process. It is the sole responsibility of the owner of a premises to notify the city in the event the owner believes the charge is not applicable to the premises for which it has been prescribed. The city manager is empowered to provide relief for an individual charge that has been calculated using erroneous data. In the event the owner of a premises feels that the city manager has not provided sufficient relief for an individual charge that the owner feels has been calculated using erroneous data, the owner may appeal the city manager's decision before the city council in accordance with the requirements of Chapter 1.25. (Ord. C-2014-08 §1, 2014: Ord. C-2013-11 §1, 2013; Ord. C-3-11 §1(C), 2011: Ord. C-7-08 §14, 2008; Ord. O-1-04 §1, 2004; Ord. 2-97 §§1--3, 1997; Ord 1-89 §§1, 2, 1989; Ord. 12-88 §§1, 2, 1988; Ord. 19-86 §2, 1986; Ord. 4-85 §1, 1985; Ord. 13-83 §1, 1983; Ord. 6-75 §2, 1975: Ord. 7-72 §1(part), 1972: Ord. 1-72 §1(part), 1972: Ord. 22-70 §1(part), 1971: Ord. 2-62 §708(a), 1962).

13.36.080 Single-family residential equivalent established.

Connection charge rates shall be established by resolution of the city council based upon the following single-family residential equivalents:

A. Permanent Residential Including Single-Family Units, Multiple-Family Units, Mobile Homes Except "Adult Only" Mobile Home Parks. The number of single-family equivalents shall be equal to the total number of units occupied by one single family (e.g., a fourplex would equal four single-family equivalents).

B. Mobile Homes in "Adult Only" Parks and Transitory Residential. The total number of single-family equivalents shall be equal to fifty percent of the total number of spaces or units in hotels, motels, trailer and overnight camps and adult-only mobile home parks and all other such units for transitory residents. The total number of single-family equivalents for condominium hotel uses shall be equal to the total number of units in the development (e.g., a twenty-unit condominium hotel development would require twenty single-family equivalents).

C. Commercial, Professional and Institutional. The total number of single-family equivalents shall be determined by dividing the total estimated annual gallonage by seventy-four thousand eight hundred fourteen, but in no case shall it be less than one single-family equivalent. For the purposes of estimating the total annual gallonage, the following values shall be used:

1. Service stations and commercial or public rest facilities, three hundred gallons per day per restroom;

2. Barber and beauty shops, ten gallons per day per employee plus fifteen gallons per day per chair;

3. Restaurants, bars and other food preparation and/or serving facilities, ten gallons per day per employee plus six gallons per day per customer seat;

4. Other commercial facilities, ten gallons per day per employee;

5. Doctors, dentists or other professional offices dealing with human illness, eighty-five gallons per day per examination room;

6. Hospitals, including animal and other overnight health care institutions, two hundred fifty gallons per day per patient space;

7. Schools and other public buildings, five gallons per day times the maximum occupancy;

8. Churches, clubs and other fraternal buildings, five gallons per day times maximum occupancy. Churches, clubs and fraternal organizations may be assessed as if they are a single residential unit

under this section if, in the discretion of the city council, the level of use anticipated justifies the reduction;

9. Industrial and all other facilities, an amount to be negotiated with the city council based upon flow and sewage strength.

D. Notwithstanding the foregoing, where the city engineer determines, in his or her discretion, that a proposed use does not fit into one of the above-referenced categories, or that unique characteristics of a use listed above justify an alternative method of calculating a connection charge, the city engineer may authorize the applicant to propose an alternative connect fee based on an engineering study performed by a licensed and properly qualified civil engineer retained by the applicant and approved in advance by the city engineer or alternatively, retained by the city at the applicant's expense. Acceptance of the alternative calculation shall be at the exclusive discretion of the city engineer. (Ord. C-3-11 §1(D), 2011: Ord. 11-96 §1, 1996; Ord. 19-95 §2, 1995; Ord. 1-89 §3, 1989).

13.36.120 Charges--Alteration of use.

The connection charges herein established are applicable to the use proposed to be made of the building at the time the connection fee is charged. In the event of alteration of the building or of additional use of the sewer facilities tor which the connection charge was originally established, additional fees for such altered building or increased use shall be made at the rate then in effect so as to adjust the connection charge to the new use after having credited the original charge. (Ord. 7-72 §1(part), 1972: Ord. 1-72 §1(part), 1972: Ord. 22-70 §1(part), 1971: Ord. 2-62 §708(e), 1962).

13.36.140 Charges--Minimum.

In no case, other than residential--transitory, shall a sewer connection charge be less than the connection charge imposed for a permanent single-family residence. (Ord. C-3-11 §1(F), 2011: Ord. 2-74 §1, 1974: Ord. 7-72 §1(part), 1972: Ord. 1-72 §1(part), 1972: Ord. 22-70 §1(part), 1971: Ord. 2-62 §708(g), 1962).

13.36.145 Charges--Special agreement for public facilities.

An annual maintenance charge for sewage collection, treatment and disposal shall be made by special agreement approved by the city council for sewer services to schools, public institutions and other public facilities. (Ord. 11-74 §2, 1974: Ord. 2-62 §708(h), 1962).

13.36.150 Time for payment of fees.

Said fees shall be payable upon application for a sewer connection permit at the time of application for a building permit. Where a subdivision or division of land is involved, an estimate of said fees shall be due and payable after recordation of the final map and prior to issuance of building permits. Said estimate of fees paid shall be credited toward the actual fees in effect upon application for a sewer connection permit at the time of application for a building permit. (Ord. 7-72 §2, 1972: Ord. 1-72 §2, 1972: Ord. 22-70 §2, 1971: Ord. 2-62 §709, 1962).

13.36.160 Disposition of fees.

All connection fees collected on behalf of the city shall be deposited in the sewer expansion fund and shall be expended for such appropriate purposes as the city council may, from time to time, determine; including but not limited to the cost of engineering, legal and administrative services to plan, design and construct facilities, and to reimburse the general fund for advances heretofore or hereafter made for said purposes. Fees collected as annual maintenance charges pursuant to Section 13.36.145 shall be deposited in the general fund to be used for sewage collection, treatment and disposal. (Ord. 11-74 §2, 1974: Ord. 7-72 §3, 1972: Ord. 1-72 §3, 1972: Ord. 22-71 §3, 1971: Ord. 2-62 §710, 1962).

13.36.180 Inspection of work.

All sewer construction work, building sewers, plumbing and drainage systems shall be inspected by an inspector acting for the city to insure compliance with all requirements of the city. No sewer shall be covered at any point until it has been inspected and passed for acceptance. No sewer shall be connected to the city's public sewer until the work covered by the permit has been completed, inspected and approved by the city inspector. If the test proves satisfactory and the sewer has been cleaned of all debris accumulated from construction operations, the inspector shall issue a certificate of satisfactory completion. (Ord. 2-62 §711, 1962).

13.36.190 Notification for inspection.
It shall be the duty of the person doing the work authorized by permit to notify the office of the city, in writing, that said work is ready for inspection. Such notification shall be given not less than twenty-four hours before the work is to be inspected. It shall be the duty of the person doing the work to make sure that the work will stand the tests required by the city before giving the above notification. (Ord. 2-62 §712, 1962).

13.36.200 Condemned work--Notification of owner.
When any work has been inspected and the work condemned and no certification of satisfactory completion given, a written notice to that effect shall be given instructing the owner of the premises, or the agent of such owner, to repair the sewer or other work authorized by the permit in accordance with the ordinances, rules and regulations of the city. (Ord. 2-62 §713, 1962).

13.36.210 Costs to be paid by owner.
All costs and expenses incident to the installation and connection of any sewer or other work for which a permit has been issued shall be borne by the owner. The owner shall indemnify the city from any loss or damage that may directly or indirectly be occasioned by the work. (Ord. 2-62 §714, 1962).

13.36.220 Connection of lot outside city limits.
Permission shall not be granted to connect any lot or parcel of land outside the city to any public sewer in or under the jurisdiction of the city unless a permit therefor is obtained. The applicant shall first enter into a contract in writing whereby he shall bind himself, his heirs, successors and assigns to abide by all ordinances, rules and regulations in regard to the manner in which such sewer shall be used, the manner of connecting therewith, and the plumbing and drainage in connection therewith, and also shall agree to pay all fees required for securing the permit and a monthly fee in the amount set by the city for the privilege of using such sewer. (Ord. 2-62 §715, 1962).

13.36.230 Outside sewer permit--Optional.
The granting of such permission for an outside sewer in any event shall be optional with the city council. (Ord. 2-62 §716, 1962).

13.36.240 Special contract for outside sewers.
Where special conditions exist relating to an outside sewer, they shall be the subject of a special contract between the applicant and the city council. (Ord. 2-62 §717, 1962).

13.36.250 Street excavation permit.
A separate permit must be secured from the county or city, or Any other person having jurisdiction thereover, by owners or contractors intending to excavate in a public street for the purpose of installing sewers or making sewer connections. (Ord. 2-62 §718, 1962).

13.36.260 Liability.
The city and its officers, agents and employees shall not be answerable for any liability or injury or death to any person or damage to any property arising during or growing out of the performance of any work by

any such applicant. The applicant shall be answerable for, and shall save the city and its officers, agents and employees harmless from any liability imposed by law upon the city or its officers, agents or employees, including all costs, expenses, fees and interest incurred in defending same or in seeking to enforce this provision. Applicant shall be solely liable for any defects in the performance of his work or any failure which may develop therein. (Ord. 2-62 §719, 1962).

13.36.270 Time limit on permits.

If work under a permit is not commenced within six months from the date of issuance or if after partial completion, the work is discontinued for a period of one year, the permit shall thereupon become void and no further work shall be done until a new permit shall have been secured. A new fee shall be paid upon the issuance of said new permit. (Ord. 2-62 §720, 1962).

Mobile Version

Chapter 13.40
ENFORCEMENT OF SEWER REGULATIONS--PENALTIES

Sections:

13.40.010 Violation--Notice.
13.40.020 Public nuisance.
13.40.030 Disconnection.
13.40.040 Occupying disconnected premises--Nuisance.
13.40.050 Means of enforcement only.
13.40.060 Liability for violation.

13.40.010 Violation--Notice.

Any person found to be violating any provision of Chapters 13.12 through 13.40 or any ordinance, rule or regulation of the city, except Section 13.16.070, shall be served by the manager or other authorized person with written notice stating the nature of the violation and providing a reasonable time limit for the satisfactory correction thereof. Said time limit shall be not less than two nor more than seven working days. The offender shall, within the period of time stated in such notice, permanently cease all violations. All persons shall be held strictly responsible for any and all acts of agents or employees done under the provisions of Chapters 13.12 through 13.40 or any ordinance, rule or regulation of the city. Upon being notified by the manager of any defect arising in any sewer or of any violation of Chapters 13.12 through 13.40, the person or persons having charge of said work shall immediately correct the same. (Ord. 2-62 §801, 1962).

13.40.020 Public nuisance.

Continued habitation of any building or continued operation of any industrial facility in violation of the provisions of Chapters 13.12 through 13.40 or any ordinance, rule or regulation of the city is declared to be a public nuisance. The city may cause proceedings to be brought for the abatement of the occupancy of the building or industrial facility during the period of such violation. (Ord. 2-62 §802, 1962).

13.40.030 Disconnection.

As an alternative method of enforcing the provisions of Chapters 13.12 through 13.40 or any ordinance, rule or regulation of the city, the manager shall have the power to disconnect the user or subdivision sewer system from the sewer mains of the city. Upon disconnection, the manager shall estimate the cost of disconnection from and reconnection to the system and such user shall deposit the cost, as estimated, of disconnection and reconnection before such user is reconnected to the system. The manager shall refund any part of the deposit remaining after payment of all costs of disconnection and reconnection. (Ord. 2-62 §803, 1962).

13.40.040 Occupying disconnected premises--Nuisance.

During the period of such disconnection, habitation of such premises by human beings shall constitute a public nuisance, whereupon the city shall cause proceedings to be brought for the abatement of the occupancy of said premises by human beings during the period of such disconnection. In such event, and

as a condition of reconnection, there is to be paid to the city a reasonable attorney's fee and cost of suit arising in said action. (Ord. 2-62 §804, 1962).

13.40.050 Means of enforcement only.

The city declares that the foregoing procedures are established as a means of enforcement of the terms and conditions of its ordinances, rules and regulations, and not as a penalty. (Ord. 2-62 §805, 1962).

13.40.060 Liability for violation.

Any person violating any of the provisions of the ordinances, rules or regulations of the city shall become liable to the city for any expense, loss or damage occasioned by the city by reason of such violation. (Ord. 2-62 §807, 1962).

Mobile Version

Chapter 13.44
INDIVIDUAL SEWAGE DISPOSAL SYSTEMS

Sections:

13.44.010 Regulations adopted by reference.

13.44.020 Definitions.

13.44.030 Fees for inspection.

13.44.010 Regulations adopted by reference.

The city incorporates by reference Division No. 7, Chapter No. 6 of the county of San Mateo Ordinance Code, commonly known as an "ordinance regulating individual sewage disposal systems," together with all amendments thereto to the present date. (Ord. 13-74 §1, 1974).

13.44.020 Definitions.

All definitions contained in the referred to ordinance are adopted with the following exceptions:

A. "County of San Mateo" means city of Half Moon Bay.

B. "Board of supervisors" means city council.

C. "Unincorporated area of San Mateo County" means incorporated area of the city of Half Moon Bay. (Ord. 13-74 §2, 1974).

13.44.030 Fees for inspection.

The permit fee for each permit issued pursuant to the provisions of Division No. 7, Chapter No. 6 of the County of San Mateo Ordinance Code shall be those fees established by the county of San Mateo as they may be amended from time to time by the county of San Mateo. (Ord. 1-76 §1, 1976).

Mobile Version

Chapter 13.52
NONDOMESTIC WASTEWATER SOURCE CONTROL PROGRAM

Sections:

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13.52.020 Definitions.
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13.52.400 Revocation of permits.
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13.52.420 Public nuisance.
13.52.430 Misdemeanor.
13.52.440 Remedies cumulative.
13.52.450 Appeals.

ARTICLE I. GENERAL

13.52.010 Purpose.
The purpose of this chapter is to:

A. Establish uniform requirements for nondomestic discharges into the wastewater interceptor, treatment and disposal system used and owned jointly with other public entities as parties to the certain joint exercise of powers agreement entitled “An Agreement Creating the Sewer Authority Mid-Coastside,” dated February 3, 1976, as amended, whereby there was established the Sewer Authority MidCoastside (herein, Authority), by and between the Montara Sanitary District, Granada Sanitary District and the city of Half Moon Bay;

B. Provide for and regulate the disposal of nondomestic wastewater into the sanitary sewer system of the agency in such a manner and to such extent as may be reasonably necessary to maintain and to increase the ability of such system to handle and dispose of nondomestic wastewater without decreasing the ability of such system to handle and dispose of all sanitary sewage;

C. Improve opportunities to recycle and reclaim treated effluent and wastewater sludge;

D. Protect the physical structures of said sanitary sewer system and the efficient functioning of its component parts;

E. Protect the agency and Authority, and their personnel, and preserve and protect the health, safety and comfort of the public;

F. Comply with all applicable laws, rules, regulations and orders of the state of California and of the United States, including but not limited to, 40 CFR 403;

G. Provide for the assessment and collection of various fees and other charges reasonably necessary for the implementation, administration and enforcement of the nondomestic wastewater source control program;

H. Delegate to Authority certain duties and responsibilities as set forth in this chapter. (Ord. 9-94 §2(part), 1994).

13.52.020 Definitions.

A. General.

1. Words, phrases or terms not specifically defined in this section, and having a technical or specialized meaning shall be defined as set forth in the latest edition of "Standard Methods for the Examination of Water and Wastewater," published by the American Public Health Association, the American Water Works Association and the Water Pollution Control Federation.

2. References to waste constituents and characteristics shall have the meanings ascribed thereto in the aforesaid "Standard Methods for the Examination of Water and Wastewater," and measurements thereof shall be as set forth in such publication, or as established by federal or state regulatory agencies.

B. Specific definitions. The following words or phrases wherever used in this chapter shall have the following meanings unless the context otherwise requires:

"Ammonia" means that form of nitrogen in the tri-negative oxidation state which is chemically definable as a compound.

"Biochemical oxygen demand" means the quantity of oxygen expressed in parts per million by weight, utilized in the biochemical oxidation of organic matter under standard laboratory conditions for five consecutive days at a temperature of 20.0×C.

"Building sewer" means a sewer conveying wastewater from the premises of a discharger to the sanitary sewer system.

"Categorical standards" means national pretreatment standards specifying quantities or concentrations of pollutants or pollutant properties which may be discharged to a publicly owned treatment works by existing or new industrial dischargers in specific industrial subcategories established as separate regulations under the appropriate sub-part of 40 Code of Federal Regulations, Chapter I, Subchapter N. These standards, unless specifically noted otherwise, shall be in addition to the general prohibitions established in Article II of this chapter.

"Commercial discharger" means any discharger who is neither a residential discharger nor an industrial discharger.

"Compatible pollutant" means biochemical oxygen demand, suspended.solids, pH and fecal coliform bacteria, additional pollutants identified in Authority's National Pollutant Discharge Elimination System (NPDES) permit, or of any amendments thereto, and such other pollutants as may be designated by Authority upon a finding by the manager that such pollutants are substantially treated and removed by the sanitary sewer system.

"Contamination" means an impairment of the quality of the waters of the agency or state by waste to a degree which creates a hazard to the public health. Contamination shall include any equivalent effect resulting from the disposal of wastewater whether or not waters of the agency or state are affected thereby.

"Discharger" means any person who discharges, causes or permits the discharge of wastewater into the sanitary sewer system.

“Domestic source” means any residential or commercial discharger which only discharges domestic wastewater.

“Domestic wastewater” means wastewater from a residential or commercial discharger which does not exceed the domestic wastewater maximum allowable concentration limits and does not contain prohibited wastewater as defined in Article II of this chapter.

Domestic Wastewater--Maximum Allowable Concentration Limits: All values except settleable solids and pH are expressed in mg/L(*).

Constituent	**Concentration**
Solids, total	1200
Dissolved, total	850
Fixed	525
Volatile	325
Suspended, total	350
Fixed	75
Volatile	275
Settleable solids, mL/L-hr	20
Biochemical oxygen demand, 5-day, 20ºC	400
Total Organic Carbon (TOC)	290
Chemical Oxygen Demand (COD)	1000
Nitrogen (total as N)	85
Organic	35
Free Ammonia	50
Nitrites	0
Nitrates	0
Phosphorus (total as P)	15
Organic	5
Inorganic	10
Chlorides	350
pH	6 to 9
Oil and grease (animal or vegetable origin)	200
Oil and grease (mineral or petroleum origin)	100

(*) $mg/L = g/m^3$

Note: 1.8 x (°C) + 32 = °F.

“Fee” means a rental or other fee established pursuant to this chapter for services and facilities furnished by or on behalf of the agency to any premises in order to carry out the terms of this chapter.

“Garbage” means solid waste from the preparation, cooking and dispensing of foods, and from the handling, storage and sale of produce.

“Grease” means grease, oil, fat or other ether soluble matter, and shall include each of the following two types:

A. Dispersed grease, which means grease which is not floatable grease;

B. Floatable grease, which means grease which floats on the surface of quiescent sewage water or other liquid or which floats upon dilution of the liquid with water.

“Holding tank waste” means any waste from sewage or waste disposal holding tanks such as are associated with vessels, chemical toilets, campers, trailers, motor homes, septic tanks and vacuum pump tank trucks.

“Incompatible pollutant” means any pollutant which is not a compatible pollutant.

“Industrial discharger” means any discharger identified in the Standard Industrial Classification (SIC) Manual, prepared and published by the Executive Office of Management and Budget of the United States, classified within divisions A, B, D, E and I therein, the wastewater of which has any one or more of the following characteristics: (1) a flow of one thousand gallons or more per average work day; (2) a flow or pollutant loading greater than five percent of the design capacity of Authority’s wastewater treatment plant; (3) contains toxic pollutants in amounts defined in standards issued pursuant to Section 307(a) of the Federal Water Pollution Control Act Amendments of 1972 (Public Law 92-500; 33 U.S.C. 1151, et seq.); (4) produces a significant impact (determined by the manager) either individually or in combination with other contributing industries, on the sanitary sewer system, or upon the quality of effluent from the sanitary sewer system; (5) adopted categorical standards; or (6) constitutes a nondomestic waste.

“Industrial discharger classification” means classification of dischargers based upon classifications set forth in the Standard Industrial Classification (SIC) Manual, 1972 edition, prepared and published by the Executive Office of Management and Budget of the United States, as amended and supplemented, under the following divisions:

1. Division A -- Agricultural, forestry and fishing;
2. Division B -- Mining;
3. Division D -- Manufacturing;
4. Division E -- Transportation, communications, electric, gas and sanitary;
5. Division I -- Service.

“Industrial wastewater” means the wastewater from the production, manufacturing or processing operations of any industrial discharger, where wastewater is used for the removal of wastes other than domestic waste from the premises.

“Interference” means an inhibition or disruption of the sanitary sewer system, the wastewater treatment process or operation, or the sewage sludge removal or disposal process, which causes or significantly contributes either to a violation of Authority’s NPDES permit or to the prevention of sewage sludge being disposed of by Authority in accordance with applicable state and federal statutory provisions and regulations or permits issued thereunder.

“Manager” means the manager of Authority, or his/her designee, including, but not limited to, duly authorized personnel of the Authority.

“Mass emission rate” means the weight of material discharged to the sanitary sewer system during a specified time interval. Unless otherwise specified, the mass emission rate shall mean pounds per day of a particular waste constituent or combination of constituents.

“Nondomestic source” means any residential or commercial discharger which discharges or could potentially discharge nondomestic wastewater, and any industrial discharger.

“Nondomestic wastewater” means wastewater from a residential or commercial discharger which exceeds domestic wastewater maximum allowable concentration limits as defined in this section, prohibited wastewater as defined by Article II of this chapter, or wastewater from an industrial discharger.

“Pass-through” means the discharge of pollutants through the sanitary sewer system into navigable waters in quantities or concentrations which cause or significantly contribute to violation of Authority’s NPDES permit.

“Permit (or nondomestic wastewater source control permit)” means a permit issued hereunder in order to implement and enforce the nondomestic wastewater source control program herein established.

“Permitted discharge standards” means standards established by the Authority specifying qualities or concentrations of pollutants or pollutant properties which may be discharged into the sanitary sewer system by a nondomestic source.

“Permittee” means any discharger required to have a NDWSCP permit.

“Person” means any individual, firm, company, partnership, association, private corporation, public corporation or governmental entity, authority or agency, and the officers, agents or employees of such organizations.

“pH” means the logarithm of the reciprocal of the weight of hydrogen ions in grams per liter of solution.

“Pollutant” means dredged spoil, solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt and industrial, municipal and agricultural waste discharged into water.

“Pollution” means an alteration of the quality of the waters of the agency or state by waste to a degree which unreasonably affects such waters. The term pollution may also include contamination.

“Premises” means a parcel of land, or portion thereof, including any improvements thereon, which is directly or indirectly connected to the sanitary sewer system. Each dwelling unit of a duplex, apartment or any other multifamily residence shall be deemed a separate premises. Subject to the provisions of this paragraph, the agency shall determine what constitutes a premises.

“Priority pollutants” means all pollutants as defined by the “General Pretreatment Regulations” of the Environmental Protection Agency, found at 40 CFR 401 and 403, as the same may be amended from time

to time.

“Requirement of law” or “other requirements of law” means any pertinent provision of the Federal Water Pollution Control Act as amended by the Federal Water Pollution Control Act Amendments of 1972 (Public Law 92-500, 33 U.S.C. 1151 et seq.), or of any statute, ordinance, rule, regulation, order, directive, or of Authority’s National Pollutant Discharge Elimination System (NPDES) permit, or of any amendments thereto.

“Residential discharger” means any discharger from a residential dwelling.

“SAM” means the Sewer Authority Mid-Coastside, a public entity established by that certain agreement entitled “An Agreement Creating the Sewer Authority Mid-Coastside,” dated February 3, 1976, and any successor entity thereof.

“Sanitary sewer system” means all sewers, treatment plants and other facilities., including the agency’s share of Authority’s interceptor, treatment and disposal system, owned by the agency, or operated by the agency, or on its behalf by the Authority, for carrying, collecting, pumping, treating and disposing of sanitary sewage and industrial wastewater.

“Sewage treatment plant” means the arrangement of devices and structures for treating sanitary sewage owned and operated by the Authority.

“Sewer” means a pipe or conduit for carrying sewage.

“Standard methods” means the examination and analytical procedures for industrial waste set forth in the most recent edition of “Standard Methods for the Examination of Water, Sewage, and Industrial Waste” published jointly by the American Public Health Association and the Water Pollution Control Federation. All analytical measurements shall be in conformity with such Standard Methods or Environmental Protection Agency recommended procedures, and shall be performed by a laboratory certified by the California Department of Health Services.

“Storm waters” means the flow in sewers resulting from rainfall.

“Suspended solids” means solids that either float on the surface of, or are in suspension in, water, sewage or liquids.

“Unpolluted water” means water to which no constituent has been added, either intentionally or accidentally, which would render such water unacceptable to the agency or Authority for disposal to storm or natural drainages, or directly to surface waters.

“Waste” means sewage and any and all waste substances, whether liquid, solid, gaseous or radioactive, associated with human habitation, or of human or animal origin, or from any producing, manufacturing or processing operation of whatever nature, including such waste placed within containers of whatever nature prior to, and for purposes of, disposal.

“Wastewater” means waste and water, whether treated or untreated, discharged into, or permitted to enter into the sanitary sewer system.

“Wastewater constituents and characteristics” means the individual chemical, physical, bacteriological and radiological parameters, including volume and flow rate, and such other parameters that serve to define, classify or measure the contents, quality, quantity or strength of wastewater.

“Waters of the agency or state” means any water, whether surface, underground, and whether saline or nonsaline, within the boundaries of the agency, or within the boundaries of the agency and flowing into, touching or otherwise combined with waters outside the limits of the agency but within the boundaries of the state. (Ord. 9-94 §2(part), 1994).

13.52.030 Nondomestic wastewater source control program.

The ordinance codified in this chapter and similar documents to be adopted by the Authority and the other public agency members thereof, establishes the nondomestic wastewater source control program (the “NDWSCP”).

There are two categories of dischargers addressed in this chapter, to wit:

A. Domestic Source. If residential or commercial discharger does not exceed the domestic wastewater maximum allowable concentration limits and does not discharge a prohibited wastewater, then the discharger will be classified as a domestic source and a permit is not required pursuant to the provisions of this chapter.

B. Nondomestic Source.

1. If a residential or commercial discharger exceeds domestic wastewater maximum allowable concentration limits or discharges or could potentially discharge a prohibited wastewater, then the discharger will be classified as a nondomestic source, and a permit will be required pursuant to the provisions hereof.

2. Any industrial discharger is, by definition, a nondomestic source and is required to obtain a permit pursuant to the provisions hereof.

D. The chart below illustrates the relationship of domestic and nondomestic sources to residential, commercial and industrial dischargers.

	Domestic Source	Nondomestic Source
Residential Discharger	X	X *
Commercial Discharger	X	X *
Industrial Discharger	X	

* Only if discharger exceeds or could potentially exceed domestic wastewater maximum allowable concentration limits, or discharges or could potentially discharge a prohibited waste.

(Ord. 9-94 §2(part), 1994).

ARTICLE II. PROHIBITIONS

13.52.040 General prohibitions.

No person shall, and it is unlawful to, discharge wastes into the sanitary sewer system which cause, threaten to cause or are capable of causing, either alone or by interaction with other substances:

A. A fire or explosion;

B. Obstruction of flow in, or injury to, the sanitary sewer system, or any portion thereof;

C. Danger to life or safety of persons;

D. Conditions inhibiting or preventing the effective maintenance or operation of the sanitary sewer system;

E. Strong or offensive odors, air pollution, or any noxious, toxic or malodorous gas or substance, or gas-producing substances;

F. Interference with the wastewater treatment process or overloading of the sanitary sewer system, or excessive collection or treatment costs, or use of a disproportionate share of the capacity of the sanitary sewer system;

G. Interference with any wastewater reclamation process which does or may operate in conjunction with the sanitary sewer system, or overloading or a breakdown of such process, or excessive reclamation costs, or any product of the treatment process which renders such reclamation process impracticable or not feasible under normal operating conditions;

H. A detrimental environmental impact, or a nuisance wherever located, or a condition unacceptable to any public agency having regulatory jurisdiction over operation of the sanitary sewer system;

I. Discoloration, or any other adverse condition in the quality of the effluent from the sanitary sewer system such that receiving water quality requirements established by any statute, rule, regulation, ordinance or permit condition cannot be met by the agency or Authority;

J. Conditions at or near the sanitary sewer system, or any portion thereof, which cause, or may cause, the agency or Authority to be in violation of the requirements of law;

K. Pollutants introduced into the sanitary sewer system which pass through or cause an interference with the operation or performance of the sanitary system. (Ord. 9-94 §2(part), 1994).

13.52.050 Storm drainage and groundwater.

No person shall, and it is unlawful to, discharge, cause to be discharged or permit to be discharged, any storm water, groundwater, rainwater, street drainage, subsurface drainage or yard drainage, either directly or indirectly into the sanitary sewer system, unless a permit therefor is issued by the Authority. Authority may issue such permit only upon a finding by the manager that no reasonable alternative method of disposal of such water is available and upon authorization of the agency. (Ord. 9-94 §2(part), 1994).

13.52.060 Unpolluted water.

No person shall, and it is unlawful to, discharge, cause to be discharged or permit to be discharged any unpolluted water, including, but not limited to, cooling water, process water or blow-down water from cooling towers or evaporative coolers, either directly or indirectly into the sanitary sewer system, unless a permit therefor is issued by the Authority and upon authorization of the agency. (Ord. 9-94 §2(part), 1994).

13.52.070 Garbage grinders.

No person shall, and it is unlawful to, discharge, cause to be discharged or permit to be discharged waste from garbage grinders into the sanitary sewer system, provided, however, that:

A. Waste generated in preparation of food normally consumed on the premises which cannot be disposed of as solid waste may be so discharged;

B. Except as provided in subsection A of this section, discharge from a garbage grinder may only be made pursuant to a permit issued by the Authority;

C. No food waste disposal unit shall be connected to or discharged into any grease trap or grease interceptor. Garbage grinders from which wastes are permitted under either subsection A or B of this

section, shall be of such design and capacity to shred wastes used therein such that all waste particles shall be carried freely under normal flow conditions into and through the sanitary sewer system. (Ord. 9-94 §2(part), 1994).

13.52.080 Point of discharge.
No person shall, and it is unlawful to, discharge, cause to be discharged or permit to be discharged any wastes or wastewater, or any object, material or other substance directly into a manhole or other opening in the sanitary sewer system other than wastes or wastewater through an approved building sewer; provided, however, that wastes or wastewater may be discharged into the sanitary sewer system by means other than through an approved building sewer pursuant to a permit therefor issued by the Authority and upon authorization of the agency. (Ord. 9-94 §2(part), 1994).

13.52.090 Holding tank waste.
No person shall, and it is be unlawful to, discharge, cause to be discharged or permit to be discharged any holding tank waste into the sanitary sewer system; provided, however, that:

A. Such discharges may be made into facilities designed to receive such wastes and approved by the Authority;

B. Such discharges shall be made pursuant to a permit issued therefor by the Authority and authorized by the agency. Unless otherwise provided by the Authority and authorized by the agency, a separate permit shall be required for each separate holding tank waste discharge. (Ord. 9-94 §2(part), 1994).

13.52.100 Radioactive wastes.
No person shall, and it is unlawful to, discharge, cause to be discharged or permit to be discharged, any radioactive waste into the sanitary sewerage system, provided, however, that:

A. Persons authorized to use radioactive materials by the State Department of Health or other governmental agency empowered to regulate the use of radioactive materials may discharge, cause to be discharged, or permit to be discharged such wastes, provided that such wastes are discharged in strict conformance with current California radiation control regulations (California Administrative Code, Title XVII, Ch. 5, Sub. Ch. 4, Group 3, Art. 5) and federal regulations and recommendations for such disposal of such wastes; and

B. The person so discharging radioactive waste does so in compliance with all applicable rules and regulations of all other regulatory agencies; and

C. A permit has been issued therefor by the Authority and authorized by the agency. (Ord. 9-94 §2(part), 1994).

13.52.110 Water softening waste.
Any discharge from any water conditioning device equipment or system serving an industrial discharger, commercial discharger or planned unit development of five or more residential dwellings and which discharges salts or dissolved salts or solids into the sanitary sewer system is prohibited unless a permit therefor is issued by the Authority and upon authorization of the agency. (Ord. 9-94 §2(part), 1994).

13.52.120 Wastewater strength.
No person shall, and it is unlawful to discharge, cause to be discharged or permit to be discharged into the sanitary sewer system, any wastewater containing any of the following constituents in excess of the maximum allowable amounts established in this section therefor:

A. 0.10 mg/1 Arsenic;

B. 0.11 mg/1 Cadmium;

C. 2.77 mg/1 Chromium;

D. 3.88 mg/1 Copper;

E. 0.69 mg/1 Lead;

F. 0.010 mg/1 Mercury;

G. 3.98 mg/1 Nickel;

H. 0.43 mg/1 Silver;

I. 2.61 mg/1 Zinc; or

J. 1.20 mg/1 Cyanide;

K. 5.0 mg/1 Phenolic compounds (non-chlorinated);

L. 1.20 mg/1 Chlorinated Phenolics;

M. 0.72 µg/1 Aldrin and Dieldrin;

N. 1.08 µg/1 Chlordane and related compounds;

O. 0.36 µg/1 DDT and Derivatives;

P. 0.72 µg/1 Endrin;

Q. 1.44 µg/1 HCH;

R. 1.08 µg/1 PCBs;

S. 2.52 g/1 Toxaphene. (Ord. 9-94 §2(part), 1994).

13.52.130 Additional limitations.
No person shall, and it is unlawful to, discharge, cause to be discharged or allow to be discharged into the sanitary sewer system:

A. Any wastewater or any part thereof, any liquid, solid, vapor, gas or thing having or developing a temperature of 150ºF (65ºC) or more, or which may cause the temperature at the sewage treatment plant to exceed 104ºF (40ºC);

B. Any wastewater or other waste containing more than ±200 mg/1 of oil or grease of animal or vegetable origin;

C. Any wastewater or other waste containing more than 100 mg/1 of oil or grease of mineral or petroleum origin;

D. Any wastewater or other waste containing a pH lower than 6.0 or having a corrosive property capable of causing damage or hazard to structures or equipment of the sanitary sewer system or any portion thereof;

E. Any sand, grit, straw, metal, glass, rags, feathers, paper, tar, plastic, wood, leaves, garden clippings, manure, dead animals, offal or any other solid or viscous substance capable of causing obstruction to the

flow in the sanitary sewer system, or which in any way interferes with the proper operation of the sanitary sewer system;

F. Any wastewater or other waste containing a toxic or poisonous substance, not otherwise specifically prohibited in this chapter, in sufficient quantities to constitute a hazard to humans or animals, or to create a hazard in the sanitary sewer system, or to injure or interfere with the operation thereof;

G. Any wastewater containing suspended solids, not otherwise specifically prohibited under the provisions of this chapter, the characteristics or quantity of which require unusual attention, treatment or expense in handling or treating such material in the sanitary sewer system, or any portion thereof;

H. The use of diluting waters to meet the requirements or limitations on wastewater strength of this section or Section 13.52.120 is prohibited. (Ord. 9-94 §2(part), 1994).

13.52.140 Specific discharger limitations.

Notwithstanding the limitations upon the characteristics or quantity of wastewater discharged, caused to be discharged or permitted to be discharged into the sanitary sewer system pursuant to this article, Authority may, in connection with the issuance of permits pursuant to the provisions of Article IV of this chapter, establish additional or different specific limitations on wastewater strength upon a finding by the Authority, that:

A. The limitations set forth in this article may not be sufficient to protect the operation of the sanitary sewer system, or any portion thereof, or that the waste or wastewater proposed to be discharged otherwise constitutes a hazard to, or an unreasonable burden upon, such operation or otherwise causes or significantly contributes to violation of Authority's NPDES permit;

B. The limitations set forth in this article may be unreasonably restrictive when applied to a specific industry; imposing a less stringent limitation will not cause or contribute to violation of any state or federal requirement of law; and the less stringent limitation will not result in a pass through, interference or sludge contamination violation; or

C. State or federal pretreatment standards are established more stringent than the standards set forth in this article; or

D. Specific standards have been established by the state or federal government for a specific category of industrial discharger, more stringent than the standards set forth by this article, which would supersede the limitations set forth in this article, with respect to such category. (Ord. 9-94 §2(part), 1994).

ARTICLE III. PERMITS, REPORTS AND ADMINISTRATION

13.52.150 Permits.

A. It is unlawful for any person to discharge nondomestic wastewater into the sanitary sewer system without first obtaining a permit from the Authority. A permit must be obtained by existing nondomestic wastewater dischargers within one hundred eighty days of the effective date of the ordinance codified in this chapter. Any person proposing to discharge nondomestic wastewater must obtain a permit from the Authority prior to discharge of nondomestic wastewater into the sanitary sewer system.

B. The agency shall require all applicants for other than a residential connection permit to complete a NDWSCP permit application form and provide a copy to the manager. If the manager determines that a permit is required, the applicant must obtain a permit from the Authority and show proof of such permit to the agency prior to the issuance of a sewer connection permit.

C. Permits required or authorized pursuant to the provisions of this article shall be subject to reasonable fees and conditions determined necessary or appropriate by the Authority and the agency in order to carry out the provisions of, and ensure compliance with, this chapter, or of any other requirements of law. No such permit shall be issued by the Authority until all applicable fees and charges established pursuant to this chapter have been paid.

D. Fees shall include a nonrefundable permit application fee and, if necessary, a permit application review deposit fee. The permit application review deposit fee will be based on services to be rendered in implementing the permit. Such services are identified in Section 13.52.250. Part or all of the permit application review deposit fee may be refunded to the applicant if some or all of the services considered in establishing the deposit fee are not performed. The amount of deposit may be increased if additional services are required by the Authority or the agency to implement the permit. (Ord. 9-94 §2(part), 1994).

13.52.160 Application for permit.

A. A written application for a permit must be completed by:

1. Any industrial discharger and any person proposing to discharge industrial waste;

2. Any residential or commercial discharger discharging wastewater which may exceed the domestic wastewater maximum allowable concentration limits or which may be prohibited waste, as defined in Article II of this chapter, and any person proposing to do so.

3. All applicants for a nonresidential sewer connection permit.

B. In the case of residential and commercial dischargers, this application will be used to determine if the discharger is a domestic source or a nondomestic source, as defined in this chapter. (Industrial dischargers are, by definition, nondomestic sources).

C. The application shall be in writing in such form as the manager shall require, shall be submitted to the manager, and shall set forth the following:

1. The name and address of the applicant;

2. The name and address of the discharging facility including the name of the operator and owners;

3. The name and address of the property owner, if other than the owner of the discharging facility;

4. List of any environmental control permits held by or for the facility;

5. A brief description of the nature, average rate of production and standard industrial classification of the operation(s) carried out by the discharger;

6. Flow measurement showing the average daily and maximum daily flow from each process stream;

7. Wastewater constituents and characteristics, including, but not limited to, those categories thereof described in Article II of this chapter, the presence and amount of which shall be determined by a state-approved laboratory competent to test and describe such constituents and characteristics, and approved by the manager;

8. The time, duration and volume of the proposed wastewater discharge;

9. The average and daily peak wastewater flow rates proposed to be discharged, including weekly, monthly and seasonal variations, if any;

10. The numbers of employees per shift and shift schedules;

11. Hours of operation;

12. Site plans, floor plans, mechanical and plumbing plans, in detail necessary or appropriate to show and to describe all sewers and appurtenances by size, location and elevation;

13. A description of the activities, facilities and plant processes conducted, or proposed to be conducted on the premises, including, but not necessarily limited to, all materials manufactured, fabricated or processed, and the types of materials which are or could be discharged into the sanitary sewer system;

14. Identification of permitted discharge standards applicable to each process and type of product;

15. A statement, reviewed by an authorized representative of the discharger and certified to be a qualified professional in the field of wastewater pretreatment, indicating whether permitted standards are being met on a consistent basis, and, if not, whether additional operation and maintenance (O and M) and/or additional pretreatment is required for the discharger to meet the permitted discharge standards and requirements;

16. If additional pretreatment and/or O and M will be required to meet the permitted discharge standards, the schedule by which the industrial discharger will provide such additional pretreatment and/or O and M. The completion date in this schedule shall not be later than the compliance date established for the applicable permitted discharge standard;

17. Such other information deemed necessary by the manager to determine the effect upon the sanitary sewer system of the proposed discharge or activities related thereto, or otherwise reasonably necessary to enable the manager to carry out the provisions of this chapter or any other requirements of law.

D. Upon evaluation and approval of all pertinent data and information, the manager shall determine whether or not the applicant is a nondomestic source. If the applicant is determined to be a nondomestic source, the manager shall issue a permit, subject to terms and conditions required or authorized under the provisions set out in this chapter. The agency shall be notified of all permits issued. (Ord. 9-94 §2(part), 1994).

13.52.170 Permit conditions.

A. Permits authorized under this article shall be subject to all provisions and requirements set out in this chapter, and to all other requirements of law.

B. Permits authorized under this article may include any or all of the following:

1. The allowable average and maximum wastewater constituents and characteristics thereof permitted to be discharged into the sanitary sewer system (the permitted discharge standards);

2. Limitations upon time and rate of wastewater discharge, or requirements for flow regulations and equalization thereof;

3. Requirements for the installation and maintenance of inspection, sampling or testing facilities;

4. Pretreatment requirements, including device specifications and maintenance schedule;

5. Specifications for monitoring programs which may include, but shall not necessarily be limited to, sampling locations, frequency and method of sampling, number, types and standards for tests, and reporting schedule;

6. Requirements for submission of wastewater discharge reports;

7. Requirements for maintaining plant records relating to the wastewater discharge as specified by the manager, and providing for access of the manager thereto; provisions that such records shall be made available for copying and inspection;

8. The mean and maximum mass emission rates, or other appropriate limits when incompatible pollutants are proposed to be discharged into, or are present in, the discharger's wastewater discharge;

9. Compliance schedules;

10. Requirements for notifying the manager of any new introduction of wastewater constituents or any substantial change in the volume or character of the wastewater constituents being introduced into the wastewater stream;

11. Requirements and plans for protection against accidental discharge;

12. Requirements for notification of accidental discharge;

13. Requirements for notification of change of any information applicable to the permit or permit application;

14. Such other conditions, requirements or provisions deemed appropriate by the manager to ensure compliance with the provisions of this chapter or other requirements of law. (Ord. 9-94 §2(part), 1994).

13.52.180 Duration of permits.

A. A permit authorized under this article shall be effective for the period described therein, but, in any event, for no longer than three years. Such period described in the permit may be for a term less than a year, may be expressed in years or may be stated to expire on a specific date.

B. A permit shall expire at twelve midnight of the last day of the term specified in the permit, unless the manager gives written notice to the permittee of the termination thereof on an earlier date, in which case a new permit shall be required subject to the provisions of this chapter. Issuance of a new permit will be subject to a permit renewal fee.

C. A permittee shall notify the manager in the event of any change in the information previously supplied on the permit application form. In the event any such change could alter the permittee's quality or quantity of discharge, the permittee shall notify the manager in writing of such proposed change or changes at least thirty days prior to the making of such change or changes. Failure to do so shall be deemed a violation of this chapter.

D. Every permit shall be subject to modification, amendment or other change by Authority during the term thereof, as determined necessary by the manager, in order to obtain compliance by the discharger with the requirements of this chapter, or other requirements of law. To the extent practicable, the manager shall give written notice to a permittee of any proposed modifications, changes or amendments to the discharger's permit not less than thirty days prior to the effective date of such change, modification or amendment. To the extent reasonably necessary or appropriate, the manager may specify a time

schedule for compliance with any new conditions, provisions or requirements established by modification, change or other amendment to a permit.

E. Permittees must retain all records and documentation pertinent to permit monitoring, sampling, etc., for no less than five years. (Ord. 9-94 §2(part), 1994).

13.52.190 Nonassignabilitv of permit.

A. A permit shall be personal to each permittee, and shall relate only to the use or operation described therein.

B. No person shall, and it shall be unlawful to, assign, reassign, transfer, sell, lease, sublet or otherwise transfer a permit, or any interest therein, to any person other than the permittee, or to use, cause to be used or permit to be used, such permit in connection with a different premises, a different operation than that specified in such permit or a new expanded, modified operation. (Ord. 9-94 §2(part), 1994).

13.52.200 Refusal to issue permit.

The manager may refuse to issue a permit if any one or more of the following conditions exist:

A. The application is not accompanied by the appropriate fee;

B. The application for a permit contains misleading or false information;

C. The issuance of the permit would result in the endangerment of public health or safety;

D. The issuance of the permit would cause the Authority to violate any permit conditions or regulations of the state and/or federal government;

E. The applicant has not provided sufficient safeguards to prevent accidental discharge to the sanitary sewer system.

F. If the manager refuses to issue a permit, Authority shall notify the applicant and agency and set forth the reasons for such refusal. (Ord. 9-94 §2(part), 1994).

13.52.210 Discharge reports.

Upon a determination by the manager that such information is necessary or appropriate in order to reasonably carry out the provisions of this chapter, the manager may require that any person, other than a domestic discharger, discharging, causing to be discharged, permitting to be discharged or proposing to discharge wastewater into the sanitary sewer system shall file a periodic discharge report, the cost of which shall be borne by such person. Such report may include, but shall not necessarily be limited to, information relating to the nature of manufacturing, fabricating or other processes, fresh or nonwastewater volumes, wastewater volumes, rates of flow, mass emission rates, production quantities, hours of operation, number and classification of employees or other information relating to the generation of waste, including wastewater constituents and characteristics, of the pertinent wastewater discharge. The manager may also require that such reports include the chemical constituents and quantity of liquid or gaseous materials stored on the premises relating to such discharge, even though such materials are not normally discharged into, or become a part of the wastewater in, the sanitary sewer system. Such reports shall be in addition to self-monitoring reports required by regulatory agencies other than the Authority or the agency. The reports authorized and required under this section shall be filed with the manager at periods specified in the issued permit. (Ord. 9-94 §2(part), 1994).

13.52.220 Protection against accidental discharges.

A. Every discharger shall provide protective measures against accidental or unauthorized discharges into the sanitary sewer system of those prohibited wastes, wastewater constituents or characteristics, or volumes set forth in Article II of this chapter, or as may be otherwise set forth in any permit issued pursuant to this chapter. Such measures shall consist of operational or other procedures and/or facilities as determined reasonably necessary or appropriate by the manager. All costs of such measures shall be borne by the discharger.

B. The manager may specify standard procedures and/or facilities for each classification of discharger, and, to the extent so specified, the manager is authorized and directed to require the institution and use of such procedures, and the installation and construction of such facilities for each such classification. Alternatively, the manager may require any discharger to propose such procedures and/or facilities, which proposals shall be submitted to the manager for review, with such supporting plans, specifications, data, explanations or other matters as may reasonably be required by the manager in order to ascertain the effectiveness of the procedures and/or facilities proposed. The manager may require such revisions, amendments, modifications or other changes to such proposals, or approval, or reject the same, as the manager deems reasonably necessary or appropriate in order that such proposals ensure protection against accidental or unauthorized discharge. (Ord. 9-94 §2(part), 1994).

13.52.230 Public information.

A. All information and data furnished by, or regarding the operations of, a discharger obtained from reports, questionnaires, permit applications, permits, monitoring programs, inspections or from other sources provided or required under the provisions of this chapter shall be available to the public or other governmental agencies without restriction unless the discharger requests in writing that such information be maintained confidential, and establishes to the satisfaction of the manager that the disclosure of the information to other persons would result in unfair competitive disadvantage to the discharger, provided, however, that in no event shall wastewater constituents, characteristics or volumes be deemed confidential information.

B. Notwithstanding the foregoing, information approved by the manager as confidential shall be available for use by the agency, Authority, the state, the federal government or any agency of such entities, in connection with enforcement proceedings, or any judicial proceedings to which the discharger is a party. Subject to the foregoing, information accepted by the manager as confidential shall not be transmitted to the general public, or to any governmental agency, until and unless prior written notification is given to the discharger.

C. The manager shall quarterly publish in the newspaper a list of the dischargers which were in significant violation or significant noncompliance with any pretreatment requirements or standards during the three previous months. The notification may also summarize any enforcement action taken against the discharger(s) during the same three months. (Ord. 9-94 §2(part), 1994).

13.52.240 Special agreements.

Notwithstanding anything in this chapter to the contrary, Authority may enter into an agreement, and recover costs relating thereto, with any discharger, relating to treatment, pretreatment or other matters in furtherance of the provisions and purposes of this chapter, when unique, unusual or extraordinary circumstances require such special agreement; provided, however, that no such agreement shall authorize an extension of the final dates for compliance with required federal standards or waive such standards. All special agreements Authority enters into shall be authorized by the agency. (Ord. 9-94 §2(part), 1994).

13.52.250 Fees and deposits.

The agency and/or Authority, shall, by resolution, establish a uniform schedule of fees and a method of establishing an estimated deposit to be imposed upon and collected from applicants or dischargers to defray the costs of processing and issuing permits hereunder, and the costs of the following services:

A. Permit application review (Section 13.52.160);

B. Pretreatment device review (Section 13.52.300);

C. Grease trap/grease interceptor review (Section 13.52.310);

D. Review of proposals for protection against accidental discharges (Section 13.52.220);

E. Determination and approval of use of metered wastewater volumes (Section 13.52.320(B));

F. Determination and approval of use of estimated wastewater volumes (Section 13.62.320(C));

G. Special agreements (Section 13.52.240);

H. Such other services as are required to be performed to implement permit;

I. Such services as are required to be performed to insure that any terms and conditions in a permit have been complied with, including, but not limited to, monitoring, inspections, sampling and administration;

J. Permit renewal fee. (Ord. 9-94 §2(part), 1994).

13.52.260 Collection of fees.
Fees imposed by the Authority and/or agency's resolution shall be collected by Authority and the agency by any means available to them. Authority and the agency may collect such fees through the county property tax rolls pursuant to Section 5473 of the Health and Safety Code of the state of California. (Ord. 9-94 §2(part), 1994).

13.52.270 Delinquent fees.
Fees which are not paid when due shall be assessed a penalty for delinquent payment as follows:

A. A basic penalty of ten percent of the delinquent charges shall be assessed.

B. A penalty of one and one-half percent per month of the delinquent charges and unpaid basic penalty shall be assessed.

C. In addition to subsections A and B of this section, the discharger may be subject to the additional enforcement action as identified in Article V of this chapter.

Penalties as described above will not be assessed if fees are collected through the county property tax rolls. (Ord. 9-94 §2(part), 1994).

ARTICLE IV. MONITORING, INSPECTIONS AND PRETREATMENT

13.52.280 Monitoring facilities.
A. The manager may require a discharger to construct, operate and maintain, at the discharger's own expense, monitoring, sampling or metering facilities or other equipment to allow inspection, sampling and flow measurement of the discharger's building sewer or internal drainage systems, or waste or wastewater discharges. Such monitoring, sampling or metering facilities or equipment shall be located on the discharger's premises; provided, however, that the manager may allow such equipment or facility to be constructed upon public property adjacent to the discharger's premises upon a determination by the

manager that the location of such equipment or facilities upon the discharger's premises would be impracticable or cause unnecessary or undue hardship. In the event that the manager makes the foregoing determination, the discharger shall obtain permission for such installation or construction, and for the maintenance and operation of such facilities or equipment, from the governmental agency having jurisdiction over such public property.

B. Monitoring, sampling or metering facilities or equipment to be provided, installed, maintained and operated pursuant to the provisions of this section shall be so situated and constructed and installed as to permit safe and immediate access thereto by the manager; provided, however, that the manager may, at the option of the discharger, secure such equipment or facilities with a lock furnished by the Authority, at the expense of the discharger. The discharger shall provide sufficient space, as determined by the manager, at or near such equipment or facilities so as to allow ready and accurate monitoring, sampling and compositing of samples for analysis. Such equipment and facilities, and the sampling and measuring equipment to be maintained and operated in connection therewith, shall be so maintained and operated at all times in a safe and proper condition, by and at the expense of the discharger.

C. Monitoring, sampling or metering equipment or facilities to be furnished pursuant to the provisions of this section shall be provided in accordance with all reasonable requirements of the manager relating thereto, and all applicable construction standards and specifications of the Authority. Installation and construction of such facilities or equipment shall be completed within ninety days following written notification requiring such installation or construction from the manager. (Ord. 9-94 §2(part), 1994).

13.52.290 Inspection and sampling.

A. The manager is authorized to inspect the premises of any discharger at all reasonable times to ascertain whether the provisions of this chapter, or the provisions of any permit issued pursuant to this chapter are being complied with. Such reasonable times would include any period of time the facility is operating or wastewater is being discharged in possible violation of this chapter or the provisions of any permit issued pursuant to this chapter. Owners or occupants of premises where wastewater is created, held or discharged shall allow the manager ready access at all such reasonable times to all parts of the premises for the purposes of inspection, sampling, monitoring or performing any or all of the duties reasonably necessary or appropriate in carrying out or enforcing the provisions of this chapter, or any permit issued pursuant to this chapter. The manager shall further have the right to install and use on the discharger's premises such devices as are reasonably necessary or appropriate to conduct sampling, metering or monitoring operations or other of the aforesaid duties. In the event a discharger has established security measures requiring identification and clearance prior to entry onto such discharger's premises, the discharger shall furnish and provide such identification or clearance to the manager so as to permit ready access of the manager to the premises for the purposes described in this section.

B. An annual detailed site inspection will be conducted by the manager to review records and to verify that no substantial change in operating condition has occurred. (Ord. 9-94 §2(part), 1994).

13.52.300 Pretreatment.

A. Pretreatment of wastes or wastewater shall be furnished by every discharger on the discharger's premises when such waste or wastewater, prior to pretreatment, could result in the discharge into the sanitary sewer system of waste or wastewater prohibited under Article II of this chapter. Such pretreatment facilities shall be provided and maintained at the discharger's expense, and shall be of sufficient design and capacity to pretreat waste or wastewater discharged from the premises into the sanitary sewer system to a level meeting such minimum requirements, and such other requirements established by the manager and reasonably necessary or appropriate for the sanitary sewer system to treat adequately such waste or wastewater under normal operating and treatment conditions.

B. Prior to the installation of such pretreatment facilities, plans and specifications therefor shall be submitted to the manager, together with such data and descriptive material relating to the waste or wastewater prior to, and after such proposed pretreatment as the manager may require, in order that the manager may ascertain the wastewater constituents and characteristics and volume of the wastewater discharge after pretreatment. The manager shall review the data and description in consultation with the agency. The discharger shall make such modifications, changes or amendments to said plans and specifications as the manager may reasonably require in order that the provisions of this chapter or any permit issued, or to be issued pursuant to this chapter, shall be complied with. Upon approval of such plans and specifications by the manager, the discharger may proceed with the construction thereof; provided, however, that such approval shall not be deemed to waive or modify any other requirements of this chapter, or of any permit issued pursuant to this chapter, or of any other requirements of law.

C. Approval of plans and specifications of pretreatment facilities pursuant to this section shall not relieve the discharger from the responsibility of modifying such pretreatment facilities as necessary to produce effluent therefrom complying with all pertinent provisions of this chapter or any permit issued pursuant to this chapter, or any other requirements of law. Any proposed cessation of use, or alteration, modification or other change to approved pretreatment facilities or any portion thereof, or any change in method of operation thereof, shall be reported to the manager prior to commencement thereof, and shall be subject to the approval of the manager in consultation with the agency. Such approval may be withheld, granted or granted subject to such terms, conditions or requirements as the manager may reasonably require in order to ensure compliance with the provisions of this chapter, or any permit issued pursuant to the provisions of this chapter. (Ord. 9-94 §2(part), 1994).

13.52.310 Grease trap/grease interceptors.

A. Any type of business or establishment where grease or other objectionable materials may be discharged into a public or private sewer main or disposal system shall have a grease interceptor of a size and design to be approved by the manager and the agency.

B. Each grease interceptor shall be so installed and connected that it shall be at all times easily accessible for inspection, cleaning and removal of intercepted grease.

C. The grease interceptor shall be situated on the discharger’s premises but Authority may, when such location would be impractical or cause undue hardship on the discharger, allow the facility to be constructed in the public street or sidewalk area, subject to applicable city or county codes related thereto, and located so that it will not be obstructed by landscaping or parked vehicles.

D. Buildings remodeled for use requiring grease interceptors shall be subject to these regulations.

E. Waste discharge from fixtures and equipment in the above-mentioned types of establishments which may contain grease or other objectionable materials including, but not limited to, scullery sinks, pot and pan sinks, dishwashers, soup kettles and floor drains located in areas where such objectionable materials may exist, may be drained into the sanitary waste through the interceptor when approved by the manager; provided, however, that toilets, urinals, wash basins and other fixtures containing fecal material shall not flow through the interceptor.

F. The interceptor shall be maintained in efficient operating condition by periodic removal of the accumulated grease. The use of chemicals to dissolve grease is specifically prohibited. No such accumulated grease shall be introduced into any drainage piping or public or private sewer.

G. Abandoned grease interceptors shall be emptied and filled in accordance with applicable city or county requirements for abandoned septic tanks. (Ord. 9-94 §2(part), 1994).

13.52.320 Wastewater volume determination.

A. General. For the purposes of this chapter, unless otherwise provided pursuant to the provisions of this article, volumes of wastewater produced by nondomestic dischargers shall be determined upon the basis of volumes of freshwater, including all sources of nonwastewater, used by, or furnished to, a discharger.

B. Metering. Upon application of a nondomestic discharger, and upon a finding by the manager that a significant portion of freshwater or nonwastewater, received by the discharger from any metered source does not flow into the sanitary sewer system because of the principal activity of the discharger, or by reason of removal of wastewater by other means, the manager may authorize determination of the volume of wastewater discharge to be made by an appropriate metering device. Upon such determination by the manager, a metering device, of a type approved by the manager and the agency, shall be installed at the discharger's expense. Such metering device shall measure either the amount of wastewater discharged into the sanitary sewer system or the amount of freshwater or nonwastewater diverted from the sanitary sewer system. Upon installation, such meters shall be maintained and tested periodically for accuracy in accordance with requirements established by the manager, all of which maintenance and testing shall be at the expense of the discharger.

C. Exceptions--Estimated Volume. In lieu of use of a metering device as specified in subsection B of this section and upon a determination by the manager that it would be unnecessary or impracticable to install, maintain or operate such metering device, wastewater volume discharged by a discharger into the sanitary sewer system may be based upon an estimate thereof determined by the manager. The determination of such estimated wastewater volume shall be based upon such factors as the number of fixtures through which wastewater flows into the sanitary sewer system from the discharger's premises, seating capacity of buildings or improvements upon the premises, the population equivalent associated with the premises, annual production of goods and services related to the premises, or other factors reasonably relating to water use, wastewater volume calculations and/or diversions of wastewater flow from the sanitary sewer system. (Ord. 9-94 §2(part), 1994).

ARTICLE V. ENFORCEMENT

13.52.330 Responsibility.

A. Authority, its officers, employees or agents, are authorized to act as enforcement agents of the agency, for and on behalf of the agency, with power to inspect and issue notices for violations of the provisions of this chapter, and to prosecute violations of any of the provisions of this chapter (including, without limitation, levying of fines, disconnection of service, revocation of permits and civil and criminal court actions).

B. Authority shall bill the agency for all costs and expenses incurred by the Authority in the implementation and enforcement of this article, and the agency shall, within thirty days after the receipt of the bill from the Authority, pay same. (Ord. 9-94 §2(part), 1994).

13.52.340 Unauthorized discharges.

A. Notification. Every discharger shall notify the Authority immediately upon discharging wastes or wastewater in violation of the provisions of this chapter, or any permit issued pursuant to this chapter. A discharger who discharges, causes to be discharged, or permits to be discharged such wastes or wastewater shall, within seventy-two hours of the occurrence thereof, submit a written report to the manager describing the cause or causes of such unauthorized discharge and measures taken, or proposed to be taken, to prevent future similar occurrences. Such report shall not relieve any discharger of liability for any expense, loss or damage suffered or incurred by the agency or Authority, directly or

indirectly, by reason of such unauthorized discharge. Such report shall not relieve or absolve any person from civil liabilities, or imposition of civil or criminal penalties in any manner whatsoever.

B. Liability. A discharger found by the Authority to be in violation as described in subsection A of this section shall be liable for the cost of all monitoring, inspection, sampling and other necessary services incurred at public expense as a result of the violation. The discharger may also be liable for other public expenditures as described in this article.

C. Notices to Discharger Employees. Every nondomestic source shall post a notice prominently on the discharger's premises advising of the requirement to notify the Authority of any unauthorized discharge, including the telephone number of the Authority to be called in the event of such discharge. The manager may require any discharger to inform and advise Authority officers, agents and employees of any particular provisions of this chapter, any permit issued pursuant to this chapter or other requirements of law, or of any other information which may be of assistance in ensuring compliance with this chapter, permit or other requirements of law. (Ord. 9-94 §2(part), 1994).

13.52.350 Cease and desist orders.

Upon a determination by the manager that a discharge of waste or wastewater has occurred, or is occurring, or is about to occur, in violation of any provision of this chapter or of any provision of any permit issued pursuant to this chapter, the manager may issue an order to the discharger, and the property owner if other than the discharger, to cease and desist such discharge or practice, or operation likely to cause such discharge, and further order such person to:

A. Comply forthwith with the provisions of this chapter or the provisions of any permit issued pursuant to this chapter;

B. Comply in accordance with a time schedule established by the manager; and/or

C. Take appropriate remedial or preventative action. (Ord. 9-94 §2(part), 1994).

13.52.360 Time schedules.

Upon a determination by the manager that a discharge of waste or wastewater has occurred, or is occurring, or is about to occur in violation of the provisions of this chapter, or in violation of any provision of a permit issued pursuant to this chapter, the manager may require the discharger, and the property owner if other than the discharger, having so discharged, or discharging, or about to discharge, to submit for approval subject to such modifications, terms and conditions as the manager reasonably deems necessary or appropriate, a detailed time schedule of specific actions which the person or discharger shall take in order to eliminate or prevent such violation or violations. The property owner, if other than the discharger, will be notified of such action. (Ord. 9-94 §2(part), 1994).

13.52.370 Emergency corrections.

A. The Authority is authorized to spend public funds and to enter upon private property in order to perform emergency corrections. Emergency corrections are those corrections which the manager deems necessary in order to correct, eliminate or abate a condition upon such premises which threatens to cause, causes or caused damage to the sanitary sewer system, or which otherwise threatened to cause, causes or caused a violation of any provision of this chapter, or of any permit issued pursuant to this chapter, or of any other requirement of law, provided that the manager first determines that such damage causes or will cause, an injury to the public health, safety or welfare. Before proceeding with emergency corrections, Authority will give the responsible discharger and property owner, if other than the discharger, an opportunity to do so.

B. In the event any such repairs, construction or other public work is performed by or caused to be performed by the Authority, on any such premises, the discharger responsible for the occurrence or condition giving rise to such work, the occupant and the owner of the premises shall be liable, jointly and severally to the agency and Authority for such public expenditures.

C. If such discharger or property owner shall fail to pay the full amount of such public expenditures within thirty days after billing therefor by the Authority, Authority shall then notify the property owner, and bill the agency and the agency shall, within thirty days after receipt of the bill from the Authority, pay same. The agency may, hereafter, collect same in any manner available to it. Should the property owner fail to pay, the agency may, by order entered upon its minutes, declare that such amount, and the administrative expenses incurred by the agency or Authority, or both, incident to such expenditures, shall be transmitted to the county assessor and county tax collector by copy of the order providing, certified by the agency. Upon making such order, the unpaid amount shall constitute a lien upon the premises, and the amount thereof shall be added to the next succeeding tax bill against such property, and shall be collected at the same time and in the same manner as general agency taxes are collected, and shall be subject to the same penalties and procedure in case of delinquency. (Ord. 9-94 §2(part), 1994).

13.52.380 Damages to sewage facilities.

A. In the event damages are caused to the sanitary sewer system or any portion thereof, by reason of a waste or wastewater discharge from any premises in violation of the provisions of this chapter, or of any permit issued pursuant to this chapter, or of any other requirement of law, the discharger responsible for the occurrence or condition giving rise to such damages, and the property owner shall be liable, jointly and severally, to the agency and Authority for the full amount thereof.

B. If such discharger or property owner shall fail to pay the full amount of such damages within thirty days of billing therefor by the Authority and/or agency, Authority and/or the agency may proceed in accordance with, and the discharger shall be subject to, the provisions set forth in Section 13.52.370 of this chapter. (Ord. 9-94 §2(part), 1994).

13.52.390 Termination of service.

Subject to the provisions of this section, Authority may terminate sanitary sewage services to any premises from which waste or wastewater have been discharged, are being discharged or are threatened to be discharged in violation of any provision of this chapter, or of any permit issued pursuant to this chapter, or of any other requirement of law. Termination of service shall be in accordance with the termination procedures of the agency then in effect. (Ord. 9-94 §2(part), 1994).

13.52.400 Revocation of permits.

Authority may revoke any permit issued pursuant to the provisions of this chapter upon a determination by the manager that:

A. The permittee has failed to report factually the wastewater constituents, characteristics or volume of the permitted wastewater discharge;

B. The permittee has failed to report significant or substantial changes in the operations conducted upon the premises to which the permit pertains, or significant or substantial changes in wastewater constituents, characteristics or volumes pertaining to such premises;

C. The permittee has refused or failed to permit, reasonable access to the premises to which the permit pertains; or

D. The permittee has violated, caused to be violated or permitted to be violated, any term, condition or provision of the permit. (Ord. 9-94 §2(part), 1994).

13.52.410 Falsification of information.

It shall be unlawful for any person knowingly to make any false statement, representation, record, report, plan or other document filed with the manager pursuant to the provisions of this chapter, or of any permit issued pursuant to this chapter, or who knowingly tampers with or otherwise renders inaccurate any monitoring device or equipment installed and operated pursuant to the provisions of this chapter or of any permit issued pursuant to this chapter. (Ord. 9-94 §2(part), 1994).

13.52.420 Public nuisance.

Any discharge, or threatened discharge, or any condition which is in any manner in violation of the provisions of this chapter, or of any permit issued pursuant to this chapter, or of any order or directive of the Authority authorized by this chapter, shall be, and the same is declared to be unlawful and a public nuisance. Such nuisance may be abated, removed or enjoined, and damages assessed therefor, in any manner provided by law. (Ord. 9-94 §2(part), 1994).

13.52.430 Misdemeanor.

Any person violating or causing the violation of any provision of this chapter, or of any permit issued pursuant to this chapter, shall be guilty of a misdemeanor, and upon conviction thereof, shall be punishable by a fine of not more than one thousand dollars, or by imprisonment in the county jail for a term not exceeding thirty days, or by both such fine and imprisonment. Every day such violation continues shall constitute a separate offense. (Ord. 9-94 §2(part), 1994).

13.52.440 Remedies cumulative.

The remedies provided for in this chapter shall be cumulative and not exclusive, and shall be in addition to any or all other remedies available to the agency. (Ord. 9-94 §2(part), 1994).

13.52.450 Appeals.

A. Any discharger, permittee, applicant, property owner or other person aggrieved by any decision, action, finding, determination, order or directive of the manager, made and authorized pursuant to the provisions of this chapter, or any permit issued pursuant to this chapter, or interpreting or implementing the same, may file a written request with the manager for reconsideration thereof within ten days of such decision, action, finding, determination or order, setting forth in detail the facts supporting such discharger's or person's request for reconsideration. The manager shall render a final decision within ten days of the receipt of such request for reconsideration.

B. Any discharger, permittee, applicant, property owner or other persons aggrieved by the final determination of the manager may appeal such determination to Authority within ten days of notification by the manager of his final determination. Written notification of such appeal shall be filed with the Authority within ten days after notification of the final determination of the manager and shall set forth in detail the facts and reasons supporting the appeal. Hearing on the appeal shall be heard by the Authority Board of Directors within thirty days from the date of filing the notice of appeal. The appellant, the manager and such other persons as the Authority Board of Directors may deem appropriate, shall be heard at the hearing on such appeal. Upon conclusion of the hearing, the Authority Board of Directors may affirm, reverse or modify the final determination of the manager as the Authority Board of Directors deems just and equitable, and in furtherance of the provisions, purposes and intent of this chapter. During the pendency of any such appeal the final determination of the manager shall remain in full force and effect. Determination by the Authority Board of Directors on the appeal shall be final. (Ord. 9-94 §2(part), 1994).

Mobile Version

AN AGREEMENT CREATING THE SEWER AUTHORITY MID-COASTSIDE*

* consolidated and updated as of October 10, 2011 (includes revisions resulting from amendments 1 through 8 to the original agreement)

AN AGREEMENT CREATING
THE SEWER AUTHORITY MID-COASTSIDE

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AN AGREEMENT CREATING THE SEWER AUTHORITY MID-COASTSIDE*

THIS AGREEMENT, dated February 3, 1976, is made and entered into by and between the City of Half Moon Bay, hereinafter referred to as "Half Moon Bay", and the Montara Sanitary District, hereinafter referred to as "Montara", and the Granada Sanitary District, hereinafter referred to as "Granada";

W I T N E S S E T H:

WHEREAS, the parties hereto have in common the power to plan for, acquire, construct, reconstruct, alter, enlarge, replace, repair, maintain, manage, operate and control facilities for the collection, transmission, treatment and disposal of wastewater for the benefit of the lands and inhabitants within their respective boundaries; and

WHEREAS, it would be in the best interest of each of the parties hereto, each of which is located within the Half Moon Bay Basin, and the lands and inhabitants within the boundaries of said parties, for a single representative organization to be established, composed of elected officials from said parties, which would be capable of developing a joint waste collection, transmission, treatment disposal and management plan (herein "wastewater plan") for the Half Moon Bay Basin, and capable of acquiring, constructing, maintaining, managing, operating and controlling facilities for the joint collection, transmission, treatment and disposal of wastewater within said basin; and

WHEREAS, it has been determined that an areawide wastewater plan for said basin and the providing of facilities for joint collection, transmission, treatment and disposal of wastewater within said basin may best be undertaken and achieved by cooperative action of the parties hereto and in the manner provided for in this agreement; and

WHEREAS, Title 1, Division 7, Chapter 5 of the Government Code of the State of California authorizes the joint exercise by agreement of two or more public agencies of any power common to them;

NOW, THEREFORE, in consideration of the mutual terms, covenants and conditions herein contained, the parties hereto agree as follows:

I. DEFINITIONS

Unless the context otherwise requires, for the purposes of this agreement, the following words shall have the following meanings:

(a) "The Authority" or "SAM" means the Authority formed pursuant to this agreement.

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* consolidated and updated as of October 10, 2011 (includes revisions resulting from amendments 1 through 8 to the original agreement)

(b) "Agreement" means this Joint Exercise of Powers Agreement.

(c) "Board" or "Board of Directors" means the governing body of the Authority.

(d) "Construction" includes acquisition, reconstruction, alteration, enlargement, replacement or reparation as well as construction.

(e) "Disposal" includes reclamation as well as discharge to a receiving body of water.

(f) "Facility" or "Facilities" means any buildings, works, improvements or property acquired, constructed, maintained, managed, operated or controlled by SAM.

(g) "Fiscal Year" means July 1st to and including the following June 30th.

(h) "General Budget" means the approved budget applicable to the expenses of administration of the Authority and operation and maintenance of the facilities.

(i) "Half Moon Bay Basin" means hydrographic sub-unit #9 as defined in the ABAG report entitled "Population, Employment and Land Use Projections, San Francisco Bay Region, 1970–2000"; generally the lands between Tunitas Creek and Devil's Slide bounded on the eastern side by the ridgeline defining the coastal watersheds.

(j) "Member Agency" or "Party" means either Half Moon Bay, Granada or Montara. "Member Agencies" or "Parties" means Half Moon Bay, Granada and Montara.

(k) "Participating Member Agency" means a member agency that has or will acquire rights and assume obligations in connection with a particular project of the Authority.

(l) "Project" may include a study, a plan, or a facility.

(m) "Project Budget" means the approved budget applicable to a particular study, plan or facility.

II. PURPOSE AND POWERS

(A) Authority Created. There is hereby created a public entity to be known as the "SEWER AUTHORITY MID-COASTSIDE". The Authority is formed by this Agreement pursuant to the provisions of Title 1, Division 7, Chapter 5 of the Government Code of the State of California. The Authority shall be a public entity separate from the parties hereto.

(B) Purpose of the Agreement. The parties hereto have in common the power to plan for, acquire, construct, reconstruct, alter, enlarge, replace, repair, maintain, manage, operate and control facilities for the collection, transmission, treatment and disposal of wastewater for the benefit of the lands and inhabitants within their respective boundaries. The purpose of the Agreement is to jointly exercise the forgoing common power in the manner set forth herein.

(C) Powers of the Authority. The Authority shall have the power, in its own name, to do any or all of the following:

(1) to make and enter into contracts;

(2) to contract for the services of engineers, attorneys, planners, financial consultants, and separate and apart therefrom to employ such other persons as it deems necessary;

(3) to make plans and conduct studies;

(4) to acquire, construct, reconstruct, alter, enlarge, replace, repair, maintain, manage, operate and control any buildings, works or improvements;

(5) to acquire, hold and dispose of property;

(6) to incur debts, liabilities or obligations subject to limitations herein set forth;

(7) to sue and be sued in its own name;

(8) to apply for and accept grants, advances and contributions under any federal, state, or local programs for assistance in developing any of its projects;

(9) To establish rates, tolls, fees, rentals, or other charges in connection with the facilities and services provided by the Authority;

(10) To plan for, construct, operate, or maintain member agencies' sole-use facilities when specifically requested by that member agency, or when necessary to meet joint discharge requirements, subject to the provisions of Article VIII, Section D and E hereof.

(11) The Authority shall have the additional power and authority to issue revenue bonds in accordance with the following laws:

(a) Article 2, Chapter 5, Title 1, Division 7 of the California Government Code, commencing with Section 6540.

(b) Chapter 6, Title 5, Division 2 of the California Government Code, commencing with Section 54300.

(c) Chapter 5, Part 3, Division 5 of the California Health and Safety Code, commencing with Section 4950.

(12) to adopt regulations establishing uniform wastewater treatment standards and regulations throughout the jurisdictions of the member agencies in order to enable the Authority to comply with its NPDES permit and the federal and state regulations applicable to facilities constructed under the Clean Water Grant Program; when authorized by a member agency, implement, and enforce through civil or criminal means, such standards and regulations on behalf of said authorizing member agency; and, on its

own behalf, implement, and enforce through civil or criminal means, such standards and regulations.

The above powers are subject to the restrictions, upon the manner of exercising said powers, set forth in the Sanitary District Act of 1923, as amended, being Sections 6400 *et seq.* of the California Health and Safety Code.

(D) Boundaries. The boundary of the Authority shall be the consolidated boundaries of the member agencies. In conjunction with the consolidated San Mateo County mid-coastside wastewater treatment and disposal system (Plan F), being the project authorized to be undertaken by this Authority, the service area boundaries are defined as the current corporate City limits of the City and all lands within the Districts not zoned RM (Resource Management). Said boundaries shall be set forth and depicted on Exhibit "A" as amended or supplemented from time to time, attached hereto and by this reference made a part hereof. In the event of withdrawal from this Agreement by a member agency, the boundaries shall be revised to exclude the area under sole jurisdiction of said withdrawing member agency.

(E) Overlapping Service Areas. The member agencies recognize that certain lands are within the boundaries of the City of Half Moon Bay as well as, at the same time, within the boundaries of the Granada Sanitary District, and vice versa. To the extent that future sewer service is provided to all or any portion of said lands by any member agency electing and empowered to do so, that member agency shall provide said service from its own facilities or from its own share of capacity of any jointly owned facilities, without in any way demanding that said provision of service shall diminish the share of capacity owned by any other member agency.

III. ORGANIZATION

(A) Membership. The members of the Authority shall be each public entity which has executed this Agreement, or any addenda, amendment or supplement thereto, and which has not, pursuant to the provisions hereof, withdrawn therefrom. A list of the members shall be available to each member.

(B) Designation of Directors. Within fifteen (15) days after execution of this Agreement, the member agencies shall designate and appoint, by resolution of their respective governing bodies, representatives to act as their directors on the Board. Each member agency shall appoint two representatives to SAM, and these six representatives shall constitute the Authority's full Board of Directors. Each member agency shall also appoint one alternate director whose name shall be on file with the Board and who may assume all rights and duties of an absent director representing the appointing member agency. Each director and alternate shall hold office from the first meeting of the Board after his or her appointment by the governing body which he or she represents until a successor is selected. Directors and alternates shall serve at the pleasure of the governing body of the appointing member agency and may be removed at any time, with or without cause at the sole discretion of said member agency's governing body. A director or alternate must be a member of the governing body of the appointing member agency.

(C) Principal Office. The principal office of the Authority shall initially be the Half Moon Bay City Hall. The Board is hereby granted full power and authority to change said principal office from one location to another within its boundary. Any change shall be noted by the Secretary under this Section but shall not be considered an amendment to this Agreement.

(D) Meetings. The Board shall meet at the principal office of the Authority or at such other place as may be designated by the Board. The time and place of regular meetings of the Board shall be determined by resolution adopted by the Board. A copy of such resolution shall be furnished to each party hereto. Regular, adjourned and special meetings shall be called and held in the manner as provided in Chapter 9, Part 1, Division 2, Title 5 of the Government Code of the State of California (Section 54950 et seq.).

(E) Quorum. That number of Board members representing a simple majority of the votes on the Board shall constitute a quorum for the transaction of business, except that less than a quorum may adjourn from time to time.

(F) Powers of the Board and Limitations Thereon. All of the powers and authority of SAM shall be exercised by the Board subject to the following conditions and limitations:

(1) each director from Half Moon Bay shall be entitled to two votes; each director from Montara and Granada shall be entitled to one vote;

(2) unless otherwise provided by law or elsewhere herein, a quorum of directors may, by five (5) affirmative votes, adopt any motion and take any other action they deem appropriate to carry forward the objectives of the Authority. Passage of any resolution shall require six (6) affirmative votes;

(3) final approval of any general budget or project budget shall require the consent of every member agency or participating member agency as provided in Section (G) hereof, and Article V, Sections (A), (B), and (C), thereof;

(4) no project shall be commenced without consent of every participating member agency.

(G) Consent of Members. In any matter prescribed herein to require the consent of member agencies, said consent shall be evidenced by a certified copy of the resolution of the governing body of such member agency filed with the Authority.

(H) Officers. The Authority shall have four officers: Chair, Vice Chair, Secretary and Treasurer. The directors of the Board shall select from the Board these four officers who shall hold office for a period of one year, commencing January 1 of each year; provided that, in the event that a member agency removes from the Board a director serving as an officer, the Board shall appoint another director to fill the vacant office for the remainder of that year.

(1) The Chair shall preside at the meetings of the Board. The Chair's duties shall be to call meetings to order, adjourn meetings, announce the business before the Board in the order in which it is to be acted upon, recognize directors and non-directors entitled to the floor, put to vote all questions moved and seconded, announce results of

votes, maintain the rules of order, execute documents on behalf of the Board when duly approved for action, and carry out the other duties set forth in the bylaws. The Chair shall be entitled to exercise his or her full voting rights on all questions before the Board and need not relinquish the chair to discuss a question before the Board.

(2) A Vice Chair shall be selected and hold office in the same manner as the Chair and in the absence of the Chair shall preside and hold the same powers as if he or she were the Chair.

(3) A Secretary shall be selected from the Board by its directors.

(4) A Treasurer shall be selected from the Board by its directors.

The Chair may not serve in two officer positions simultaneously. Any director other than the Chair may serve in two officer positions simultaneously.

(I) Staff. General staff functions to serve the administrative needs of the Authority shall initially be provided by employees of the member agencies, and credited towards said respective member agencies' financial contributions or obligations as provided in Article V, Section (D) below. The staff positions shall be as follows:

(1) Manager. The authority shall employ or contract for the services of a manager who may or may not be a staff member of one of the member agencies. The manager shall answer to the Board and be responsible for all administrative needs of the Authority. The manager shall also be responsible for the general execution of all Authority policies as set by the Board.

(2) Treasurer. The Treasurer shall be the depositary and have custody of all money of the Authority from whatever source.

The Treasurer shall:

(a) Receive and receipt for all money of the Authority and place it in the treasury of the Treasurer to the credit of the Authority.

(b) Be responsible upon his or her official bond for the safekeeping and disbursement of all Authority money so held by the Treasurer.

(c) Pay, when due, out of money of the Authority so held by the Treasurer, all sums payable on outstanding bonds and coupons of the Authority.

(d) Pay any other sums due from the Authority from Authority money, or any portion thereof, only upon checks drawn against the Authority, duly authorized by the Board and executed by two directors or by one director and the manager.

(e) Verify and report in writing on the first day of July, October, January and April of each year, to the Authority, and to each of the member

agencies, the amount of money the Treasurer holds for the Authority, the amount of receipts since the last report, and the amount paid out since the last report.

(f) Perform other services as directed by the Board.

(3) Others. The Board may employ or contract for the services of individuals or other staff positions as necessary to assist in the administration and execution of the functions of the Authority.

(J) Charges for Services. Charges for the services of the manager, the treasurer, and other administrative or operating personnel supplied by any member agency shall be jointly agreed upon with the member agency or member agencies furnishing the services in advance of receipt of said services.

(K) Officers, Employees and Agents. Any officer, employee or agent of the Authority may also be an officer, employee, or agent of any member agency. The appointment or employment by the Board of such a person shall constitute a determination that the two positions are compatible. Notwithstanding the above, the Manager and the Treasurer, shall not be employees of the same member agency without the unanimous consent of the complete Board of Directors.

All privileges and immunities from liability, all exemptions from laws, ordinances and rules, and all pension, relief, disability, workers' compensation, and other benefits which apply to the activities of officers, agents, or employees of a member agency when performing their respective functions shall apply to them to the same degree and extent while engaged in the performance of any of the functions and other duties under this agreement.

None of the officers, agents, or employees directly employed by the Authority shall be deemed by reason of their employment by the Authority, to be employed by any member agency or to be subject to any of the requirements of any member agency.

(L) Accounting and Audits. There shall be a strict accountability of all Authority funds and report of all receipts and disbursements in compliance with Article I, Chapter 5, Division 7, Title I of the Government Code (Section 6500 et seq.). The Board, acting as controller, shall contract with a certified public accountant or public accountants to make an annual audit of the accounts and records of the Authority. In each case the minimum requirements of the audit shall be those prescribed by the State Controller for special districts under Section 26909 of the Government Code and shall conform to generally accepted auditing standards. The records and accounts of the Authority shall be audited annually, and a report thereof shall be filed as a public record with the Authority and with each of its member agencies and the San Mateo County Auditor, not later than six (6) months following the end of the fiscal year under examination. Any costs of the audit, including contracts with or employment of, a certified public accountant or public accountants shall be borne by the Authority and shall be charged against its general fund.

(M) Access to Property. The manager and treasurer are hereby designated as the persons who have charge of, handle, and have access to the property of the Authority. Each such

person shall file with the Authority an official bond in an amount to be fixed by the Board. Cost of said bond shall be paid by the Authority.

(N) Minutes. The secretary of the Authority shall cause to be kept minutes of regular, adjourned regular and special meetings of the Board, and shall cause a copy of the minutes to be forwarded to each director and to each of the member agencies hereto within a reasonable time which shall be fixed by the Board.

(O) Rules. The Board may adopt from time to time such rules and regulations for the conduct of its affairs as may be required. Parliamentary rules and procedures shall be those prescribed in Robert's Rules of Order. Any documents required to be executed by the Authority shall be signed by the Chair and countersigned by the Secretary, except that the Board may, by resolution, authorize other officers or employees to sign on behalf of the Authority.

IV. PLANNING AND PRESENT PROJECT

(A) Planning Policy. In keeping with the purpose of this Agreement, the member agencies hereby authorize and direct the Board to undertake such studies and planning relative to the combined service areas of the member agencies as may be necessary, to provide for the joint collection, transmission, treatment, and disposal of sewage of each of the member agencies, The specific objective of such studies shall be to develop regional solutions to the wastewater treatment and management problems which will be in accordance with all applicable federal, state and regional water quality control requirements, consistent with demographic studies applicable within the jurisdiction of Authority, and planned so as not to result in unreasonable financial burdens on the member agencies whatever course future development of the area might take. It is understood by the parties that this agreement shall not affect the rights or powers of any member agency to plan and/or construct sewer facilities independently.

The studies may include proposals for construction of joint collection systems, trunk and interceptor lines, treatment plans (sic), and disposal systems. The studies may also include proposals to be used in conjunction with facilities not within the Authority's jurisdiction. Any studies shall consider all phases of planning, design, construction, maintenance and operation of facilities proposed by the Authority, and allocation to benefited member agencies of capital, maintenance and operating costs.

(B) Present Project. The Present Project shall be a secondary wastewater treatment and disposal system, divided into four components, to service the combined needs of the member agencies to the year 2000.

(1) Phase I

(a) Components. Phase I of the system is composed of the following three components, with capacity rights, construction costs, and operation and maintenance expenses being shared as specified below, until otherwise determined pursuant to Section (4) hereafter:

(i) An intertie pipeline and attendant pumping facilities, connecting the Montara and Granada systems to a new ocean outfall, shared equally between Montara and Granada;

(ii) An ocean outfall pipeline and attendant pumping facilities, discharging the combined treated effluents from the three member agencies' treatment systems into the ocean adjacent to the existing but presently inoperative Half Moon Bay outfall line, shared one-half (½) by Half Moon Bay, one-quarter (¼) by Montara and one-quarter (¼) by Granada.

(iii) A reclamation pipeline and attendant pumping facilities, to carry secondarily treated effluent from the treatment plant at the Half Moon Bay site south to the golf course and adjacent agricultural and floricultural lands, and being solely assigned to Half Moon Bay.

(b) Possible Modification of Intertie Pipeline Component. To ensure the accomplishment of the objective of the Present Project, it is the intent of the Authority to seek to increase the gravity sections of the intertie pipeline one pipe size diameter (3 inches) from the existing design, and in pursuit of same, the Authority shall immediately process an application with the California Coastal Commission, Central Coast Regional Commission, for amendment of Coastal Development Permit No. P-79-93. Any modification of said component, pursuant to the cost-effectiveness study mentioned hereinafter or otherwise, shall be accomplished subject to the approval of the State Water Resources Control Board.

(c) Estimated Construction Costs. The estimated construction costs of Phase I components of the Present Project, including administrative, legal, engineering, and contingency expenditures, are: for the intertie pipeline and attendant pumping facilities, $3,000,000.00; for the ocean outfall and attendant pumping facilities, $3,600,000.00; and for the reclamation pipeline and attendant pumping facilities, $600,000.00.

(d) Implementation of Phase I of Present Project.

(i) Authorization to Construct. This Amendment to the Agreement constitutes approval for Phase I of the Present Project and of the budget therefor. The member agencies hereby authorize the Authority to immediately pursue and complete all planning and design efforts, including all requirements of State and Federal law, and to promptly commence construction and to accept State and Federal Grant Agreements therefor.

(ii) Construction Schedule. Construction of Phase I of the Present Project shall proceed on the time schedule as set forth in the Santa Clara County Superior Court's preliminary injunction in case No. 424949, or as said injunction may be amended or modified.

(iii) Utilization, Operation and Maintenance. Each member agency hereby agrees to utilize the Phase I components as said components are completed and available for use, and to ensure the proper operation and maintenance of same in accordance with the requirements of the Regional Water Quality Control Board for the useful life thereof. Pursuant to Article VII of this Agreement, it is hereby determined that the Authority shall have the ultimate responsibility for the maintenance and operation of the Facilities constructed as a part of the Present Project, either with its own personnel or pursuant to contract therefor.

As to any component of the Project not utilized by all member agencies, the member agency or agencies utilizing said component shall have the initial right and responsibility for maintenance and operation of said component.

Service charges shall be established consistent with the Clean Water Grant Program by the Authority or by the member agencies.

It is further hereby agreed that decisions of the Authority with respect to operations and maintenance of Phase I components including the budgets therefor, shall be made based on six affirmative votes, or failing that, five affirmative votes including no less than one vote from each member agency. A member agency shall be entitled to vote only with respect to the operation and maintenance of a facility utilized by said agency.

(2) Phase II

(a) Alternate Treatment Facilities. Phase II of the Present Project will be composed of the fourth component of the system, being treatment facilities as envisioned in one of the following two alternatives:

(i) Single Plant. One single secondary activated sludge treatment plant located at the site of the existing Half Moon Bay treatment plant facilities, and designed to treat the combined flows from the individual collection systems of the member agencies.

(ii) Multiple Plants. Three separate treatment plants as follows:

Half Moon Bay. An upgraded treatment plant located at the site of the present plant.

Montara. An upgraded treatment plant located at the site of the present plant.

Granada. A new treatment plant located in the vicinity of the present plant and pumping facilities.

(b) Determination of Phase II Treatment Facilities. The determination of the Phase II treatment facilities and their capacity, together with the allocation of said capacity and all construction costs and operation and maintenance expenses pertaining thereto, shall be made within the time schedule established in the aforementioned preliminary injunction, or as said injunction may be amended or modified, and after consideration of the following:

(i) A cost-effectiveness study, prepared in accordance with applicable State and Federal regulations governing grant funding for the construction of water pollution control facilities; and

(ii) The Land Use Plan portions of the Local Coastal Programs applicable to the respective member agencies and an analysis of the member agencies' respective sewer service needs pertinent thereto, in relation to the objectives of the Present Project.

(c) Implementation of Phase II of Present Project. This Amendment to the Agreement constitutes approval and authorization for the further planning, designing and the construction of Phase II of the Present Project.

(3) Funding.

Only those components, referred to above, which are fundable under the Clean Water Grant Program, shall be constructed by the Authority.

(4) Allocation and Reallocation of Rights, Costs and Expenses.

In the event the member agencies choose to construct a single consolidated treatment plant facility, capacity rights and construction costs pertaining thereto shall be allocated in proportion to the member agencies' respective service needs as determined by the Land Use Plan portions of the initial pertinent Local Coastal Programs adopted by the California Coastal Zone Conservation Commission; and capacity rights and construction costs previously allocated in the Phase I components shall be reallocated to be consistent with the treatment plant facility allocations, except that no member agency shall receive any capacity in, or ultimately be required to have paid any portion of, the cost of any Phase I component not utilized by that member agency. The total expenses of operation and maintenance of all of the components of the Present Project shall be shared in a manner based on flows into the single consolidated treatment plant facility.

In the event the member agencies choose to construct separate treatment plant facilities, reallocation of capacity rights and construction costs shall occur as immediately above, except that: (i) no member agency shall be allocated less capacity in any Phase I component than the amount of capacity necessary to accommodate the present design capacity of said agency's treatment facility; (ii) no member agency shall be required to pay more than the proportionate share of its capacity in said component; and (iii) no reallocation

shall occur with respect to the reclamation component. The expenses of operation and maintenance of the various components of the Present Project under the separate treatment plant concept shall be borne solely by those member agencies using said components and shall be shared in a manner based on flows into the components.

(5) Goal of the Authority.

In the event the single treatment plant concept is selected as the fourth component under Phase II, it is the intent of the Authority to further consolidate sewer functions within the service areas of the three member agencies, and to establish a uniform system of sewer service charges, levied throughout the entire jurisdiction of the Authority, with which to pay expenses of operations and maintenance.

(6) Credit for Existing Usable Facilities.

It is the intent of the member agencies to integrate existing facilities to the extent possible into all components of the Present Project. Credit shall be given any member agency for any of said agency's facilities so integrated. The credit is to be the lesser of the member agency's actual local costs, or replacement cost, less straight-line depreciation. For purposes hereof, replacement cost means the total replacement cost as distinguished from the total replacement cost less any grant which may be available therefor. Such credit shall be added to the total local share cost of the applicable component into which the existing facilities are integrated, before allocation of local share component costs is made to respective member agencies.

(7) Completion of Present Project.

The member agencies agree to complete the Present Project no later than July 1, 1983, in accordance with the requirements of the Clean Water Grant Program, in a manner that meets the stated objectives of the Present Project, and in a manner that makes maximum utilization of the immediately available funding opportunities under the Program.

(8) Member Agencies' Responsibilities.

Each member agency hereby guarantees its aliquot share of performance under this Agreement, including reimbursement to EPA and the State Water Resources Control Board, as provided by and to the extent set forth in State and Federal statutes and regulations.

(9) Wastewater Treatment Standards and Regulations.

Each member agency hereby agrees to adopt wastewater treatment standards and regulations consistent with wastewater treatment standards and regulations adopted by the Authority.

Such standards and regulations shall include provisions related to industrial waste in which there shall be established criteria for, and restrictions on, the nature and quality of industrial waste discharged either directly or indirectly into the Authority's facilities.

The industrial waste standards and regulations shall authorize the issuance of industrial waste discharge permits thereunder and provide that such permits will be issued by the Authority, shall authorize field inspectors or other employees of the Authority to act as enforcement agents of the member agency with the power to inspect and issue notices for violations of the standards and regulations, and shall confer upon, and empower the Authority to seek civil injunctive relief or criminal prosecution, or both, for noncompliance with, or violation of, such standards and regulations by any discharger.

V. BUDGETS AND PAYMENTS

(A) General Budget. Within sixty (60) days after the first meeting of the Board, a general budget shall be prepared for the balance of the fiscal year. Thereafter at or prior to each March meeting of the Board, a general budget shall be prepared for the ensuing fiscal year. The initial budget and each succeeding general budget shall include the following:

(1) the general administrative expenses of the Authority to be incurred during the period covered by the budget. Each member agency shall, within thirty days of execution of this Agreement, deposit into the general fund an amount obtained by applying to the sum of initial general administrative expenses the percentage of that member agency's voting rights;

(2) the expenses of operating and maintaining any improvements operated or maintained by the Authority;

(3) all revenues accruing to the Authority, including the assessments allocated among the member agencies to cover the general administrative, operating and maintenance expenditures;

(4) At the time of its preparation a general budget shall be submitted immediately to the governing bodies of the member agencies for approval pursuant to Article III, Section (G) above, final approval of a general budget shall require the prior consent of all member agencies. Final approval shall be made by the Board within thirty (30) days after preparation of the initial general budget and by July 1st following preparation of each succeeding budget. A copy of the general budget shall be filed with each member agency.

(5) Each member agency hereby agrees to include in each annual budget approved by the governing body of such member agency amounts estimated to be sufficient to pay all such charges and to pay to the Authority within thirty days of receipt of a statement of the member agency's allocated share of the actual general budget expenses for the billing period as determined by the Board. The Authority is hereby

authorized to take any or all legal actions necessary and permitted by law to enforce the collection of such charges or any other compliance with this agreement, including, but not limited to, actions or proceedings in mandamus to require each member agency to include the amounts estimated to be necessary in each such estimated annual budget, or to collect such charges from the taxpayers, landowners, or users of any of the facilities of the Authority.

(B) Project Budgets. In addition to the General Budget, the Board shall, prior to its initiation of a project, approve the project in concept and have a project budget prepared. Each Project Budget may include the following:

(1) the Authority's administrative expenses allocated to the project;

(2) the cost of studies and planning for the project;

(3) the cost of the engineering and construction of the project;

(4) the allocation among the participating member agencies of the total project costs including but not necessarily limited to administration, planning, design, construction and operation and maintenance;

(5) any revenues accruing to the Authority for the project from whatever source.

After the preparation of a Project Budget, it shall be submitted immediately to each member agency proposed by the Board to be a participant and to be obligated for the payment of any amount thereunder. The Authority shall not incur any expense for the project until the Project Budget has been approved by the governing body of each of the proposed participating member agencies. Consent of the participating member agencies shall be required within a reasonable length of time, said time to be determined by the Board when the Project Budget is prepared. Upon approval by all of the participating member agencies, the Board shall adopt the Project Budget and file a copy of same with each of the participating member agencies.

(C) Effect of Failure of Approval of Budgets.

(1) General Budget. If a general budget fails to attain the approval required by Section (A) hereof, the director(s) of consenting member agencies may treat the refusal of a dissenting member agency to approve the budget as a request for withdrawal from the Authority and the remaining members may thereafter, upon giving the non-consenting member agency thirty (30) days notice, proceed with the adoption of a revised budget and the non-consenting member agency shall not be obligated for future debts of the Authority nor shall it receive any benefits therefrom.

Pertaining to past debt obligations, however, the non-consenting member agency shall continue to be obligated for the operation and maintenance costs, under the original allocation formula, of any project in which it continues to derive benefits.

(2) Project Budget. If a Project Budget fails to attain the approval required by Section (B) hereof, the director(s) of consenting participating member agencies may treat the refusal of a dissenting member agency to approve the budget as a request for withdrawal from the project concerned, but not from the Authority, and the remaining participating member agencies may thereafter, upon giving the non-consenting member agency thirty (30) days notice, proceed with the adoption of a revised budget and the non-consenting member agency shall not be obligated for future debts of the project concerned nor shall it receive any benefits therefrom. The cost of preparing the Project Budget shall be divided among the proposed participating member agencies in proportion to allocation of costs to said members in the current general budget.

(D) Contributions; Payments and Advances, Use of Personnel; Equipment or Property; Exchange of Services. It is hereby agreed that:

(1) contributions from a member agency's treasury may be made for the purpose set forth in the Agreement;

(2) payments of public funds of a member agency may be made to defray the cost of such purpose;

(3) each of the member agencies may make advances of public funds, to be repaid as set forth in the Agreement;

(4) personnel, equipment or property may be used in lieu of other contributions or advances, however, all member agencies must agree upon the value to be assigned the personnel, equipment, property or services, with respect to any said contributions or advances;

(5) the member agencies may exchange services without payment of any consideration other than such services.

(E) Expenditures for the Approved Budgets. All expenditures within the designations and limitations of approved general and project budgets shall be made on the authorization of a majority of the directors present at a meeting during which budget expenditures are approved. No expenditures in excess of those budgeted shall be made without the unanimous consent and approval of all of the directors representing the member agencies affected by the budget under consideration.

(F) Payments of Amounts Due; Interest; Surplus. Amounts required to be paid by any member agency shall be due and payable thirty-five (35) days from the date of billing by the Authority. If such amount is not paid in full by the due date, interest will be added from that date at the rate charged by the bank where the Authority maintains its principal account, based on such rate in effect on the first day of the month for which the computation is made on a 30-day $100,000 certificate of deposit. Interest shall not be compounded.

After completion of the purpose for which funds were provided to the Authority by a member agency, any surplus money shall be returned to that member agency in proportion to the funds (excluding interest) so provided.

(G) Reimbursement of Funds. Grant funds received by the Authority from any federal, state or local agency to pay for budgeted expenditures for which the Authority has received monies from a member agency shall be remitted to that member based upon the ratio of the member agency's advance to the total cost of the project for which the Authority has received the grant.

VI. AUTHORITY PROJECTS

(A) Project Members. The directors representing those members determined by the Board to be participating members of a project shall, upon consent to the proposed project by the participating members, constitute a subcommittee of the Board referred to as the "_____ Project Committee." All actions by a project committee shall be deemed actions of the Authority and shall be taken in the name of the Authority; however, only the participating members of a project shall have rights and obligations in said project as herein provided.

(B) Authority Construction Projects. No project shall be constructed by the Board without the consent of every participating member. Approval of a construction project budget by all of the participating members shall constitute their consent for the construction of the project by the Authority.

VII. MAINTENANCE AND OPERATION OF FACILITIES

(A) Maintenance and Operation of Facilities. The Board shall determine, prior to the construction of any project, whether or not the Authority shall maintain and/or operate such facilities. If the Authority is to maintain and/or operate such facilities, it shall do so in an efficient and economical manner, and in a manner not detrimental to the member agencies. It is the intent of the parties that any project may be maintained and operated in the name of the Authority. If it is determined that one or more of the member agencies shall maintain and/or operate said facilities, said member agencies shall by written agreement consent thereto prior to the construction thereof.

VIII. PROPERTY RIGHTS

(A) Project Facilities. All facilities constructed by the Authority shall be held in the name of the Authority for the benefit of the membership of the Authority in accordance with the terms of this Agreement. Capacity rights in respect to project facilities shall be held for the benefit of the participating member agencies in proportion to each member agency's agreed percentage of capacity rights in such project facility. It is the intent of the foregoing provision that the Authority shall not acquire any unallocated capacity rights in any facility for disposal or use, except for the benefit of the participating member agencies in proportion to their percentage of capacity rights in said facility. Capacity rights may not be reallocated, sold, leased, assigned, or in any way transferred, whether voluntarily, or pursuant to litigation and/or administrative proceedings initiated by, in concert with, with the consent of, or on behalf of the member agency or agencies seeking any such transfers, unless the member agency or agencies, whose capacity rights may be so diminished thereby, shall give written consent to such transfer. In conjunction

with the consolidated San Mateo County mid-coastside wastewater treatment and disposal system (Plan F), being the project authorized to be undertaken by this Authority, .3 mgd treatment plant capacity shall be reserved, for the first ten years of the twenty-year design of said project, for recreational flows. In addition to flows from public recreational facilities such as parks, beaches, marinas, and marine reserves, the term 'recreational' includes recreationally related commercial facilities such as restaurants, motels, golf courses, and stables. Said recreational capacity shall be allocated to the member agencies as they may determine.

(B) Distribution of Assets and Termination of the Authority. To the extent that any funds (or property in lieu of funds) received from any member agency are used for the construction of facilities, the same shall be allocated annually on the books of the Authority to the credit of said contributing member agency. Upon termination or dissolution of the Authority herein created, the facilities, and any funds, in possession of the Authority at such time shall be distributed in kind or sold, and the proceeds thereof distributed to the member agencies at the time of termination and in proportion as their interests appear on the books of the Authority.

(C) Liabilities. Any liability incurred by the Authority during the course of its existence shall be discharged by payments hereby agreed to be made to the Authority by each of the parties hereto in proportion to their contribution or approved participation in facilities of the Authority for which the liability is attributable. Except as hereinabove provided, the debts, liabilities, and obligations of the Authority shall be the debts, liabilities or obligations of the Authority alone and not of the parties to this Agreement.

(D) Failure to Meet Discharge Requirements—Separate Effluent Discharge. The Authority shall cause the effluent of each member agency to be monitored to determine whether or not Federal and/or State discharge requirements are being met. The member agency or agencies responsible for the violation shall be solely responsible for any fines levied or criminal sanctions imposed as a result thereof.

(E) Failure to Meet Discharge Requirements—Combined Effluent Discharge. If the effluent of the member agencies is combined, and the combined effluent at the point of ultimate discharge into the receiving water fails to meet discharge requirements, the member agency or agencies responsible for the violation shall be solely responsible for any fines levied or criminal sanctions imposed. In this regard, the member agency or agencies responsible for the violations shall hold harmless the Authority and the other non-violating member agencies from all liability and/or damages incurred by said Authority and/or member agencies as a direct and proximate result of said violation, including, but not limited to, legal, engineering, and administrative expense and direct or indirect damages incurred by the Authority or the member agency as a result of a cease and desist order or court injunction from any State or Federal agency restricting construction within the jurisdictional limits of said Authority or member agency. In the event two or more member agencies are responsible for failure of the combined effluent to meet discharge requirements as above provided, the member agencies responsible for the violation shall be jointly and severally responsible to the Authority and to the other non-violating member agencies. Upon notification of such violation, the member agency or agencies shall take prompt, corrective action as necessary to meet said discharge requirements. If any member Agency fails to take such action, the Authority by unanimous vote of the Board (excluding those members of

the Board who are representatives of the member Agency or Agencies who are in violation of the discharge requirements) may elect to do either one or both of the following:

(a) Have undertaken at the cost and expense of the violating member agency or agencies the construction of such additional treatment facilities as are necessary to meet said discharge requirements.

(b) Impose a prohibition of additional connections to the collection system of the member agency or agencies in violation.

Nothing in this Section shall preclude one or more agencies from providing additional levels of treatment to insure meeting waste discharge requirements in the combined effluent. In the event that one or more member agencies are obligated to provide additional levels of treatment to meet waste discharge requirements for the combined effluent, all member agencies requiring the additional levels of treatment shall participate in the costs of such treatment based on their relative contribution of waste characteristics to be treated and the costs of providing such treatment.

IX. SETTLEMENT OF DISPUTE OR CONTROVERSY

Should any dispute or controversy arise in connection with the books, records or accounts of any party to this Agreement or in connection with the acquisition, construction, maintenance, operation, repair, reconstruction or enlargement of the Joint System or in connection with any of the affairs or operation thereof, or the execution of the term of this Agreement, the governing bodies of the parties to this Agreement may elect to arbitrate the dispute or controversy in accordance with the rules of the American Arbitration Association or by any other mutually agreeable method of settlement.

X. MISCELLANEOUS PROVISIONS

(A) Duration. The Authority shall continue until this Agreement is rescinded as herein provided.

(B) Rescission and Termination. This Agreement may be rescinded and the Authority terminated by written agreement of all member agencies. Upon termination of the Authority, its assets and liabilities shall be divided among the then member agencies in proportion to their then ownership interests.

(C) Withdrawal. Any member agency may withdraw from the Authority at any time upon giving each of the other member agencies one hundred and twenty (120) days written notice prior to the end of the fiscal year; provided, however, in the event the withdrawing member agency has any rights in any facility of the Authority or obligations to the Authority, said member agency cannot sell, lease or transfer said rights or be relieved of its obligations, without the execution of a written agreement executed by it and another member agency. The term "obligations" as used herein shall include, but not be limited to, bonded indebtedness and

capital replacement costs. Upon termination, a withdrawn member agency will be treated like all the other member agencies in regard to the provisions of Article VIII (B) hereof.

(D) Amendments. Exhibit "A" hereto shall be amended or supplemented upon a member agency filing with the Authority a certified copy of the member agency's resolution ordering a change of its boundary or service area boundary or resolution determining to withdraw from the Authority. The other provisions of this Agreement may be amended only by the consent of all member agencies.

(E) Severance. If any section, subsection, sentence, clause or phrase of this Agreement, or the application thereof to any of the member agencies or any other persons or circumstances, is for any reason held invalid, the validity of this Agreement, or the application of such provision to the other member agencies or to any other person or circumstances, shall not be affected thereby. Each of the member agencies hereby declares that it would have entered into this Agreement, and each section, subsection, sentence, clause or phrase thereof, regardless of the fact that one or more sections, subsections, sentences, clauses or phrases, or the application thereof, to any member agency or any other person or circumstances be held invalid.

(F) Filing with the Secretary of State. The Secretary of the Authority shall file with the Secretary of State a notice in accordance with Government Code Section 6503.5, and shall file notices, as appropriate, in accordance with Government Code Section 53051.

IN WITNESS WHEREOF, the parties hereto have caused these presents to be executed on the day and year first above written.

CITY OF HALF MOON BAY

By s/ Lloyd T. Cardoni
Mayor

Attest:

By s/ Barbara K. Driscoll
Deputy City Clerk

seal)

MONTARA SANITARY DISTRICT

By s/ L. Paul Leger
President Pro Temp)

Attest:

By s/ Susan C. Muth
Secretary Pro Temp)

seal)

GRANADA SANITARY DISTRICT

By s/ William L. Sawrey
President

Attest:

By s/ Larry Pollard
Secretary

seal)

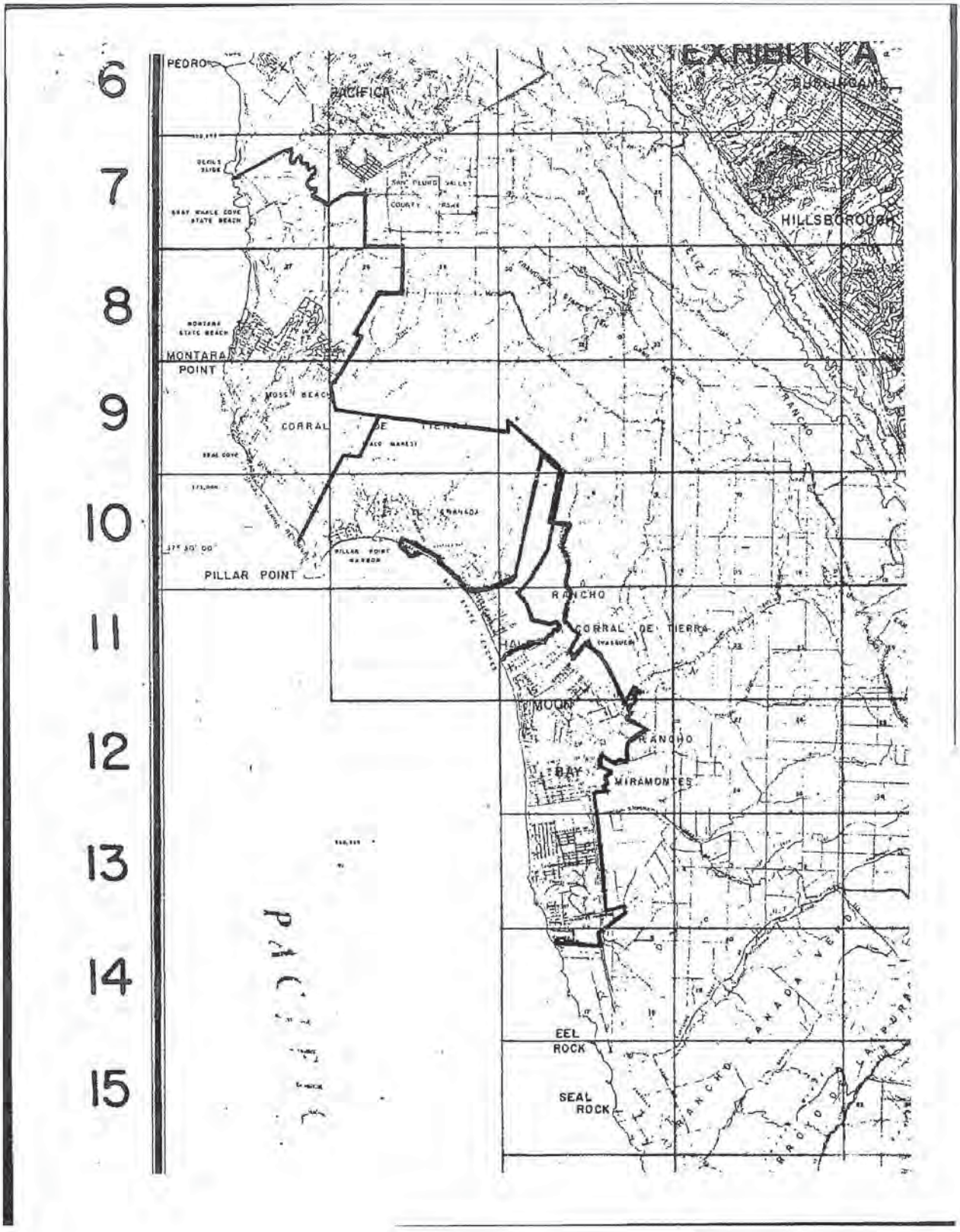
EXHIBIT A
PEDRO
PACIFICA
HILLSBOROUGH
MONTARA POINT
MOSS BEACH
CORRAL DE TIERRA
PILLAR POINT
RANCHO
CORRAL DE TIERRA
MOON
BAY
RANCHO
MIRAMONTES
EEL ROCK
SEAL ROCK
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Appendix C
Element 4 (Operation and Maintenance Program) Supporting Documents

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THE CITY OF
HALF MOON BAY
CALIFORNIA

FISCAL YEAR 2019-2020 RECOMMENDED OPERATING BUDGET

City of Half Moon Bay

501 Main Street
Half Moon Bay, CA 94019
Tel: (650) 726-8270 Fax: (650) 726-8261
http://www.hmbcity.com

City Council

Harvey Rarback, Mayor
Adam Eisen, Vice Mayor
Robert Brownstone, Councilmember
Deborah Penrose, Councilmember
Deborah Ruddock, Councilmember

City Manager

Robert Nisbet

Budget Book Preparation

Jessica Blair, Communications Director/City Clerk
Matthew Chidester, Deputy City Manager
Jennifer Chong, Management Analyst
Karen Decker, Senior Management Analyst
Jill Ekas, Community Development Director
Catherine Engberg, City Attorney
Paula Krogh, Accounting Technician
Colleen Lettire, Communications Specialist
McKayla McMahon, Intern
Jonathan Roisman, Deputy City Clerk
Caroline Weigandt, Administrative Assistant
Sara Williams, Executive Assistant to the City Manager

Management Partners

Hossein Golestan, Finance Consultant
Rick Rivera, Finance Consultant

Budget Message Translation

Victor Gaitan, Management Analyst

Cover Art Photographer

Steve Maller

GOVERNMENT FINANCE OFFICERS ASSOCIATION

Distinguished Budget Presentation Award

PRESENTED TO

City of Half Moon Bay

California

For the Fiscal Year Beginning

July 1, 2018

Christopher P. Morrill

Executive Director

California Society of Municipal Finance Officers

Certificate of Award

Excellence Award
Fiscal Year 2018-2019 Operating Budget

Presented to the

City of Half Moon Bay

For meeting the criteria established to achieve the CSMFO Excellence Award in Budgeting.

January 4, 2019

Margaret Moggia
CSMFO President

Sara Roush, Chair
Recognition Committee

Dedicated Excellence in Municipal Financial Reporting

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CITY OF HALF MOON BAY

Executive Summary

CITY OF HALF MOON BAY
City Hall • 501 Main Street • Half Moon Bay • 94019

June 18, 2019

Honorable Mayor, City Councilmembers and Community Members,

On behalf of City staff, it is my privilege to present to the City Council and the community the Recommended Operating Budget for Fiscal Year (FY) 2019-20. The Recommended Budget is a balanced budget that is a statement of the City's current financial position; a tool that projects future revenue and expenditures to guide service and budget-related decision-making; and a work plan for communicating, implementing and monitoring City operations, capital expenditures and Council priorities.

Over the first seven months of my tenure as City Manager, I have learned a considerable amount about the community, the organization and the dedicated people who provide quality City services every day. Half Moon Bay has a very active citizenry who care deeply about their community and expect a high level of service from the City. Under the steadfast leadership of the City Council, the organization is built to meet these expectations. The City has accomplished a great deal in the past year and stands ready to face the opportunities and challenges ahead. The City's conservative approach to budgeting and allocation of scarce resources—which are never enough to completely address the competing priorities of our time—place the City in a strong position following 10 years of economic growth. This is a wonderful and exciting time to *live, work, and play* in the City of Half Moon Bay, and I am truly honored to be a part of its future!

PRIOR YEAR ACCOMPLISHMENTS

During FY 2018-19, the City completed several significant projects that are aligned with the Council's four Strategic Elements: 1) Infrastructure and Environment, 2) Healthy Communities and Public Safety, 3) Fiscal Sustainability, and 4) Inclusive Government. Some of these accomplishments are summarized below:

- Completed construction of the City's new 22,000-square-foot library, which officially opened to the public on August 18, 2018. This beautiful community space is LEED certified GOLD, and was the recipient of the 2019 AIA/ALA Library Building Award and San Mateo County's Green Building Award;

- Completed seven of the nine chapters of the Local Coastal Plan Amendment and achieved significant process-related milestones. The document is scheduled to be completed this fiscal year;

- Continued to restore and remediate the former homeless encampment site at Pilarcitos Creek, responded to new encampments as they occurred, and continued to develop relationships with County and non-profits that serve the homeless;

- Adopted a district map and ordinance to switch from at-large elections to by-district elections for four (4) councilmembers, and an at-large elected Mayor;

- Adopted the Parks Master Plan. This document will guide the City for the next 25 years on the development of new parks and enhancements to existing parks and recreational facilities;

- Completed reconstruction of portions of Magnolia Avenue, Church Street, Kelly Avenue, San Benito Street, Railroad Avenue, Naples Avenue and Miramontes Point Road;

- Completed design plans and obtained Permits and California Environmental Quality Act (CEQA) approval for the Highway 1/South Main Street/Higgins Canyon Road Intersection project, which will improve safety and operations – and will enhance the downtown gateway;

- Expanded Spanish language translation services for City publications and meetings;

- Increased the number of recreation program offerings by nearly 30% and increased enrollment from 762 to 982 participants;

- In partnership with the Sheriff's Office and School District, conducted the 8th Annual Youth Summit at Cunha Middle School targeted to 8th graders;

- Conducted the sixth edition of the Network, Engage, Transform (NET) program, graduating a cohort of 20 new members;

- Established the new Legislative Subcommittee and drafted the City's first Legislative Platform;

- Approved and adopted an accessory dwelling unit (ADU) ordinance and processed numerous applications for ADUs following adoption of the ordinance;

- Installed three new electric vehicle charging stations;

- Planned and executed the City's first Coastside Community Emergency Preparedness event.

COUNCIL PRIORITIES

The City Council conducted four community listening sessions during the month of March that culminated in a priority setting workshop on March 26, 2019. At this workshop, the City Council established the following five broad priorities:

1. Affordable Housing (an ongoing multi-year priority)
2. Emergency Preparedness
3. Traffic and Transportation Demand Management
4. Sustainability
5. $15 Minimum Wage

Staff has created a work plan that lists specific projects, programs and tasks that will be carried out over the next two years to meet these priorities. Progress towards completion of the projects and tasks will be monitored with quarterly updates provided to the Council. There are several recommendations within the proposed budget in response to the Council priorities including a General Fund allocation of $400,000 towards affordable housing, $90,000 for the preparation of a Climate Action and Adaptation Plan, and an emphasis on numerous capital projects that address traffic congestion by providing new or improved bicycle/pedestrian facilities.

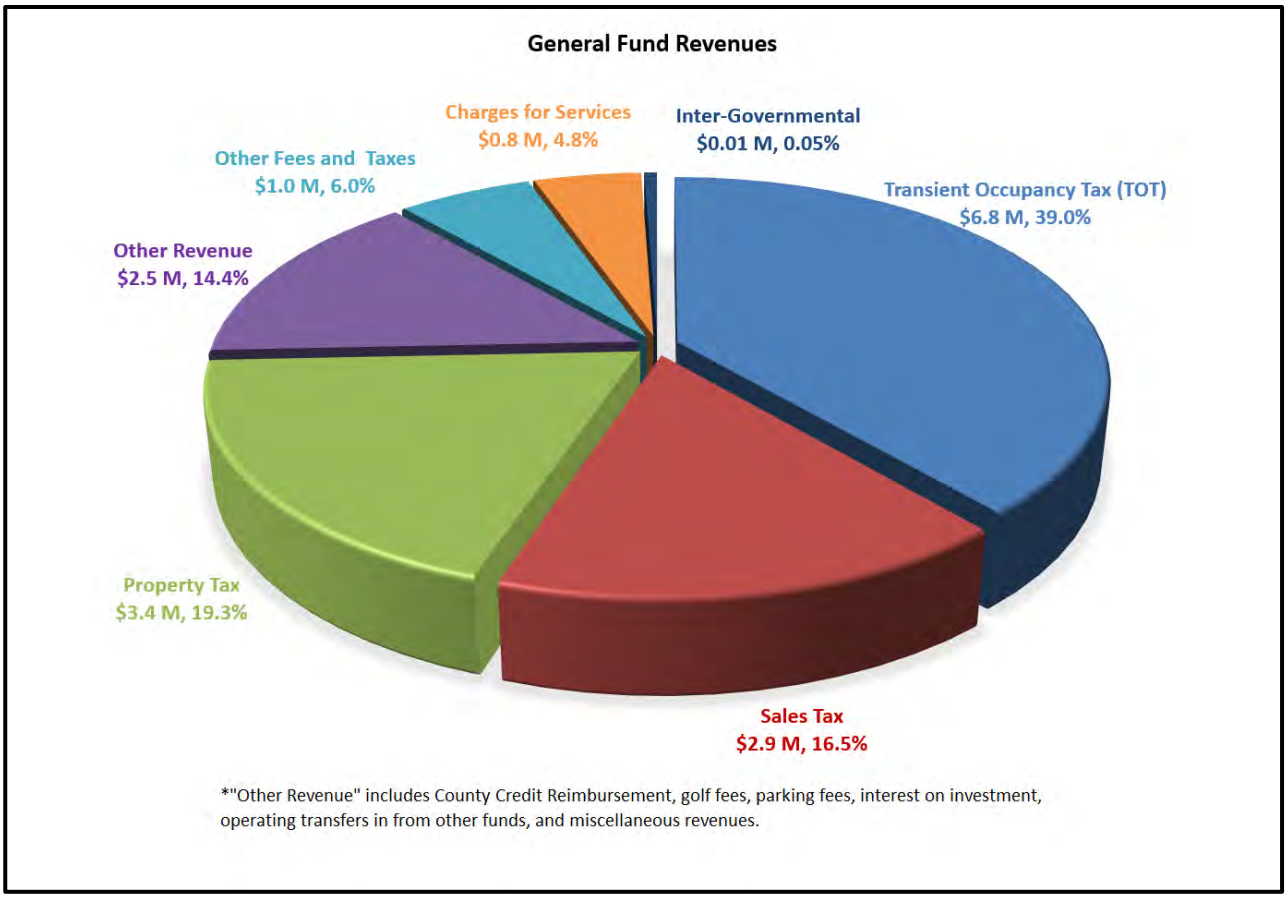
BUDGET AT A GLANCE

The City's total estimated revenue and transfers (all funds) for FY 2019-20 is $36.6 million. This amount represents a slight decrease from FY 2018-19. General Fund revenues are approximately $17.5 million. The primary three sources of General Fund revenues are Property Tax, Sales Tax, and Transient Occupancy Tax (TOT), as seen on the pie chart on the following page. The City continues to enjoy a healthy financial outlook for FY 2019-20. The three primary revenue sources continue to be strong and the City's General Fund operating expenditures are less than General Fund operating revenues, creating a small structural surplus of $300,642.

These three sources are estimated to increase by 3% over the FY 2018-19 budget. These projections are based on staff's analysis of local conditions and reflect information received from several sources, including the City's Sales and TOT Tax consultants, as well as information obtained from the County Assessor's and State Controller's offices.

Revenues and Transfers All Funds

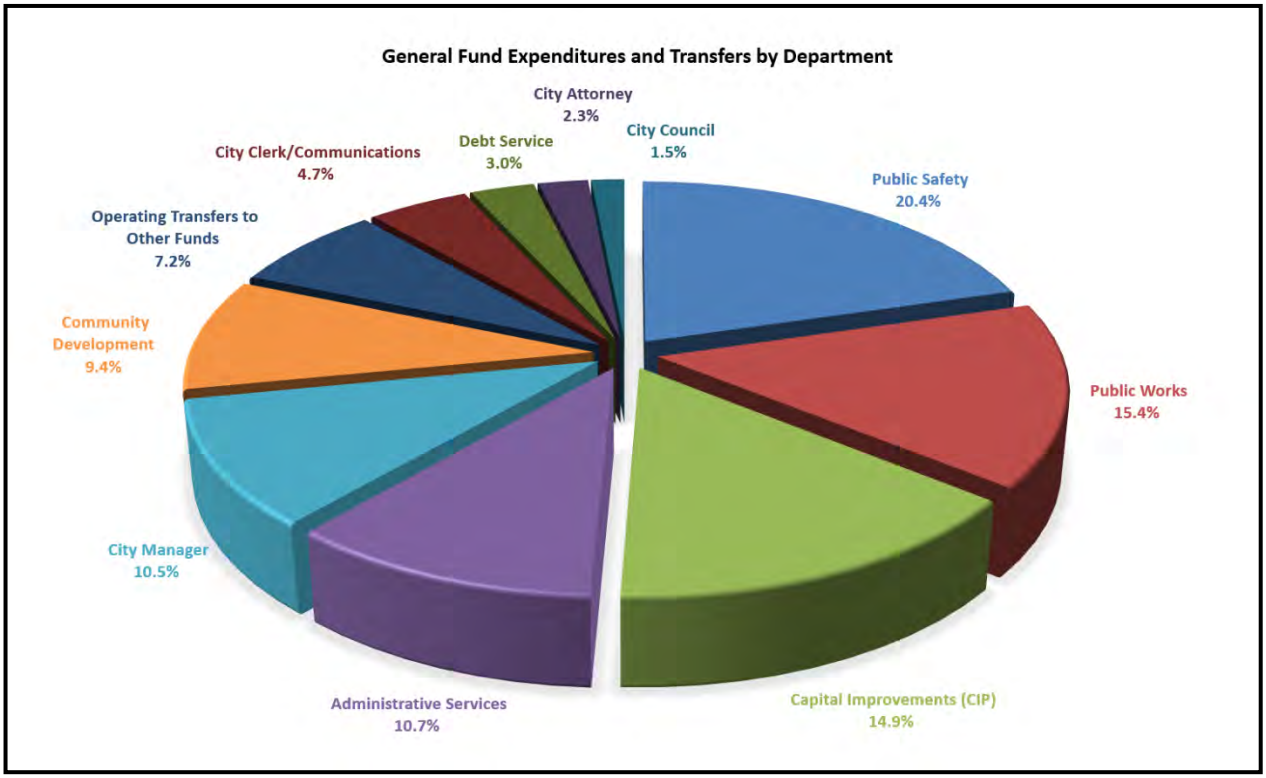
Fund Name	Actual 2016-17	Actual 2017-18	Approved Budget 2018-19	Recommended Budget 2019-2020
General Fund	$ 15,350,137	$ 16,843,109	$ 16,540,058	$ 17,455,155
Enterprise Funds	4,659,361	4,456,869	4,744,883	6,505,815
Special Revenue and Capital Projects Funds	6,879,637	19,124,687	12,658,233	10,611,149
Internal Service Funds	1,555,451	1,551,939	1,803,070	1,879,717
Debt Service	978,321	1,027,227	944,998	127,040
Grand Total	**$ 29,422,908**	**$ 43,003,832**	**$ 36,691,242**	**$ 36,578,875**



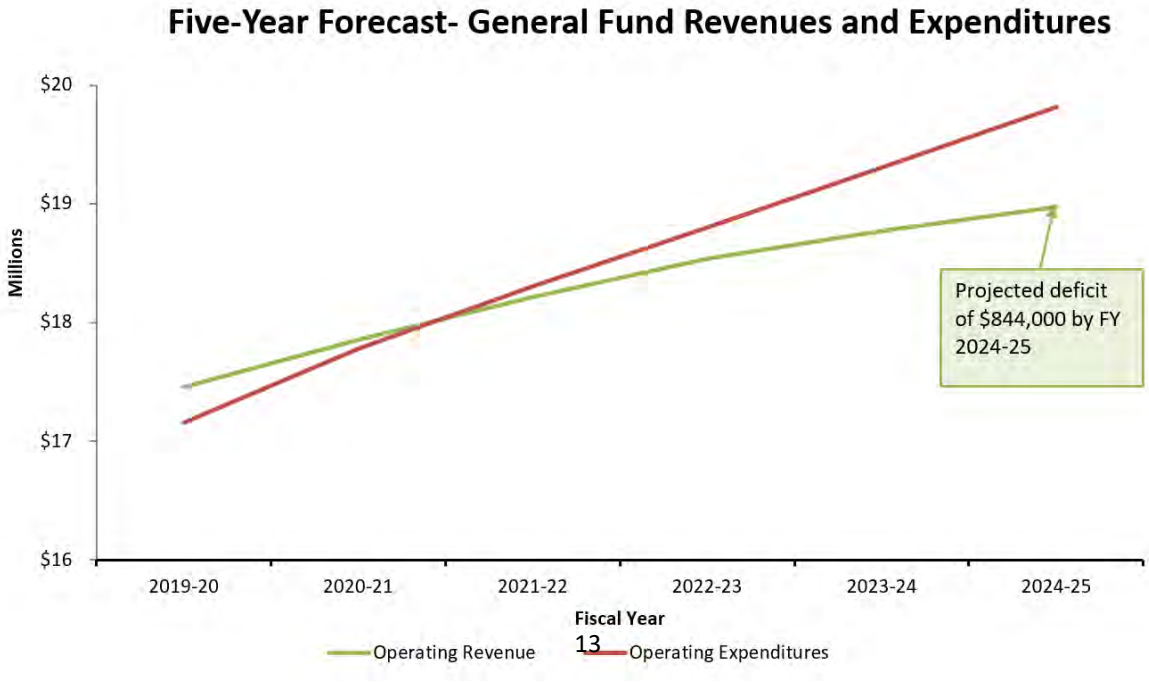
The City's total proposed budget expenditures for FY 2019-20 are $60.1 million, 34% of which is from the General Fund. Total expenditures are 49% higher than FY 2018-19. This steep increase is due to an $11.8 million pay-off of Judgement Obligation Bonds and a substantial increase in capital expenditures. Capital improvements are approximately 26% of total expenditures, or $15.5 million. Of the General Fund expenditures, the largest departmental budget is for public safety as shown in the pie chart below.

Expenditures and Transfers All Funds

Fund Name	Actual 2016-17	Actual 2017-18	Approved Budget 2018-19	Recommended Budget 2019-2020
General Fund	$ 15,024,991	$ 17,772,599	$ 17,759,746	$ 20,154,513
Enterprise Funds	3,435,917	5,299,226	10,799,562	12,504,198
Special Revenue and Capital Projects Funds	9,456,540	20,035,330	9,040,701	13,839,418
Internal Service Funds	1,543,750	1,333,528	1,781,371	1,817,705
Debt Service	937,704	937,704	940,704	11,787,040
Total All Funds	**$ 30,398,902**	**$ 45,378,386**	**$ 40,322,084**	**$ 60,102,874**



Looking ahead. In spite of positive revenue projections for FY 2019-20, economists are predicting an economic downturn in the next 12-18 months that could last between two to four years. **Based on this assumption and experience from the last recession, staff has modeled a five-year forecast for revenues and expenditures that predicts a structural deficit beginning in FY 2021-22 and reaching a deficit amount of $844,000 by FY 2024-25 as shown in the graph below.** Due to this concern, staff is proposing the establishment of a Reserve for Economic Uncertainty. The purpose of this reserve is to "smooth" out the effects of a dramatic downturn in the economy that would have a direct negative impact on the City's primary revenue sources (i.e. Property Tax, Sales Tax TOT). A specific policy for use of the fund will be prepared and provided to the City Council during the fiscal year. The overall goal is to have sufficient funds available to avoid drastic cuts to services and the lay-off of City employees.



BUDGETARY HIGHLIGHTS/SIGNIFICANT CHANGES

The budget was developed with an emphasis on the Council's overarching Strategic Elements (Fiscal Sustainability, Healthy Communities and Public Safety, Infrastructure and the Environment, and Inclusive Government), as well as the five Council Priorities listed above. Key highlights and changes are summarized below:

- There are three new positions proposed in the budget: Senior Management Analyst-Sustainability Program Manager; Recreation Leader; Maintenance Worker II.

- The Community Services Non-Profit Grant Program was renewed and the funding level of $150,000 was increased over the previous year.

- A new Communications Department was created that combines City Clerk, Government Affairs, and Community/Employee Engagement.

- The Sheriff's contract was extended for three years and increased by $326,000 for FY 2019-20. This increase reflects a cost of living increase, $150,000 towards the "service gap" caused by deputies from the unincorporated areas servicing the City, and enhanced levels of service during the summer months at Poplar Beach and other key areas.

- In early 2017, the CalPERS Board approved a decrease in the discount rate from 7.5% to 7% by 2020. The discount rate is the expected rate of return on investments. The decreased discount rate has a major impact on the City's annual unfunded actuarial liability (UAL). The City's FY 2016-17 payment was $390,000 and will be approximately $877,000 in 2019-20. Current projections show the City's UAL increasing to more than $1 million within five years. These rising pension costs will pose significant budgetary and service-level challenges in coming fiscal years.

- The Judgement Obligation Bond for acquisition of the Beachwood property will be retired in FY 2019-20. This action eliminates an annual debt service payment of $590,000 and returns a one-time $400,000 reserve to the General Fund.

- The City received a $6 million loan from the County of San Mateo for the construction of the new library. Debt service payments of $600,000 per year begin in FY 2019-20.

- A new Reserve for Economic Uncertainty was created and funded at 13% of General Fund operating expenditures ($2.2 million).

- $3 million from the General Fund was committed to capital improvements. This is a $1.1 million increase over the previous year.

The Five-Year Capital Improvement Program (CIP) has been updated along with preparation of the operating budget. The CIP document, which is presented separately, is an important

element of the City's budget as it guides the City's infrastructure and facilities work. The development of the CIP has also utilized an iterative process. The City Council has seen this plan several times and has offered input and feedback at each stage, consistently providing guidance with an emphasis on investing in the community through capital improvements.

CONCLUSION

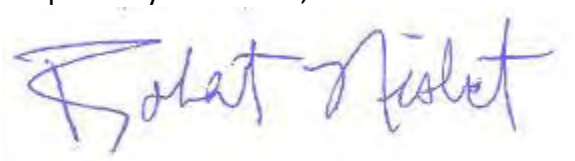
The FY 2019-20 Recommended Budget is a balanced budget that reflects the priorities of the City Council and needs of the community. Through careful, conservative fiscal management, the City is able to provide new and enhanced services while also planning for a potential downturn in the economy that may lead to a flattening, or decrease, in the City's primary revenue sources.

For more detailed information than what is stated here, the reader is encouraged to start with the Budget Overview. Departmental budgets follow and are clearly tabbed for ease of finding specific costs and services for each department.

I am pleased to report that the City's FY 2018-19 budget received the Excellence Award from the California Municipal Finance Officers Association. This award is presented to cities whose budget documents meet program criteria as a policy document, operational guide, financial plan, and communication device. We believe the FY 2019-20 budget will continue to meet the criteria for this award.

Development of the budget must be completed in a very compressed timeline and is a substantial amount of work for the entire organization. I want to acknowledge the department directors and their staff, but especially thank the dedicated budget team that was assembled to complete this document. This was an extraordinary year given the absence of a finance director and other key finance positions. Numerous staff who had not previously been involved in preparation of a municipal budget volunteered to take on this assignment, and they all did so in the most professional and competent manner. My sincerest appreciation is extended to this amazing team!

Respectfully submitted,



Bob Nisbet
City Manager

New Library opened to the public August 18, 2018

18 de junio de 2019

Honorable Alcalde, Miembros del Concejo y Miembros de la Comunidad:

De parte del personal de la Ciudad, tengo el privilegio de presentarle al Concejo de la Ciudad y a la comunidad el Presupuesto Operativo Recomendado para el Año Fiscal (FY) 2019-20. El presupuesto recomendado es un presupuesto equilibrado que es una declaración de la situación financiera actual de la Ciudad; una herramienta que proyecta ingresos y gastos futuros para guiar el servicio y la toma de decisiones relacionadas con el presupuesto; y un plan de trabajo para comunicar, implementar y monitorear las operaciones de la Ciudad, los gastos de capital y las prioridades del Concejo.

Durante los primeros siete meses de mi oficio como Administrador Municipal, he aprendido bastante en torno a la comunidad, la organización y el personal dedicado que brindan servicios de la Ciudad de calidad cada día. Half Moon Bay tiene una ciudadanía muy activa y profundamente involucrada en la comunidad y que espera un alto nivel de servicio de la Ciudad. Bajo el liderazgo constante del Concejo Municipal, la organización está diseñada para cumplir con estas expectativas. La Ciudad ha logrado mucho en el último año y está lista para enfrentar las oportunidades y los desafíos que se avecinan. El enfoque conservador de la Ciudad para el presupuesto y la asignación de recursos escasos - que nunca son suficientes para abordar por completo las prioridades en conflicto de nuestra época - coloca a la Ciudad en una posición sólida después de 10 años de crecimiento económico. ¡Este es un momento maravilloso y emocionante para vivir, trabajar y jugar en la ciudad de Half Moon Bay, y me siento verdaderamente honrado de ser parte de su futuro!

LOGROS DEL AÑO ANTERIOR

Durante el año fiscal 2018-19, la ciudad completó varios proyectos significantes alineados con los cuatro elementos estratégicos del Concejo: 1) Infraestructura y medio ambiente, 2) Comunidades saludables y seguridad pública, 3) Sostenibilidad fiscal y 4) Gobierno inclusivo. Algunos de estos logros se resumen a continuación:

- Se completó la construcción de la nueva biblioteca de la ciudad de 22,000 pies cuadrados, que se inauguró oficialmente al público el 18 de agosto de 2018. Este hermoso espacio comunitario obtuvo la certificación LEED GOLD y recibió el premio de construcción de bibliotecas AIA / ALA 2019 y el premio de construcción verde del Condado de San Mateo;

- Se completaron siete de los nueve capítulos de la enmienda del plan local costero y se lograron importantes hitos relacionados con el proceso. El documento está programado para ser completado este año fiscal;
- Se continuó restaurando y remediando el ex - campamento de personas sin hogar en el arroyo Pilarcitos, se respondió a los nuevos campamentos a medida que ocurrían y se continuó desarrollando relaciones con el Condado y organizaciones sin fines de lucro que sirven a las personas sin hogar;
- Se adoptó un mapa de distrito y una ordenanza para cambiar de elecciones generales a elecciones por distrito para cuatro (4) concejales y un alcalde electo en general;
- Se adoptó el plan maestro de parques. Este documento guiará a la Ciudad durante los próximos 25 años en el desarrollo de nuevos parques y mejoras a los parques existentes e instalaciones recreativas;
- Se completó la reconstrucción de partes de Magnolia Avenue, Church Street, Kelly Avenue, San Benito Street, Railroad Avenue, Naples Avenue y Miramontes Point Road;
- Se completaron los planes de diseño y se obtuvieron los permisos y la aprobación de la Ley de Calidad Ambiental de California (CEQA) para el proyecto de la intersección del Highway 1 / South Main Street / Higgins Canyon Road, los cuales mejorarán la seguridad y las operaciones, y mejorarán la entrada al centro de la ciudad;
- Se expandieron servicios de traducción al español para publicaciones y reuniones de la ciudad;
- Se aumentó la cantidad de ofertas de programas de recreación por casi el 30% y se aumentó la inscripción de 762 a 982 participantes;
- En asociación con la oficina del alguacil y el distrito escolar, se llevó a cabo la 8ª cumbre anual de la juventud en la escuela intermedia Cunha dirigida a los estudiantes de 8º grado;
- Se llevo a cabo la sexta edición del programa Network, Engage, Transform (NET), que graduó a una cohorte de 20 nuevos miembros;
- Se estableció el nuevo subcomité legislativo y se preparo la primera plataforma legislativa de la Ciudad;
- Se aprobó y adoptó una ordenanza de unidades de vivienda accesorias (unidades secundarias) (ADU) y se procesaron numerosas solicitudes de ADU después de la adopción de la ordenanza;
- Se instalaron tres nuevas estaciones de carga de vehículos eléctricos;
- Se planificó y ejecuto el primer evento comunitario de preparación para emergencias en la costa.

PRIORIDADES DEL CONCEJO

El Concejo Municipal llevó a cabo cuatro sesiones de escucha con la comunidad durante el mes de marzo que culminaron en un taller de establecimiento de prioridades el 26 de marzo de 2019. En este taller, el Concejo Municipal estableció las siguientes cinco prioridades generales:

1. Viviendas asequibles (una prioridad de varios años en curso)
2. Preparación para emergencias
3. Gestión de la demanda de tráfico y transporte
4. Sostenibilidad
5. Salario mínimo de $15

El personal de la cuidad ha creado un plan de trabajo que enumera proyectos, programas y tareas específicas que se llevarán a cabo durante los próximos dos años para cumplir con estas prioridades. El progreso hacia la finalización de los proyectos y tareas se supervisará con actualizaciones trimestrales proveídas al Concejo. Hay varias recomendaciones dentro del presupuesto propuesto en respuesta a las prioridades del Concejo, que incluyen una asignación del fondo general de $400,000 para viviendas asequibles, $90,000 para la preparación de un plan de adaptación y acción del clima, y un énfasis en numerosos proyectos de capital que abordan la congestión del tráfico al proveer instalaciones para bicicletas / peatones nuevas o mejoradas.

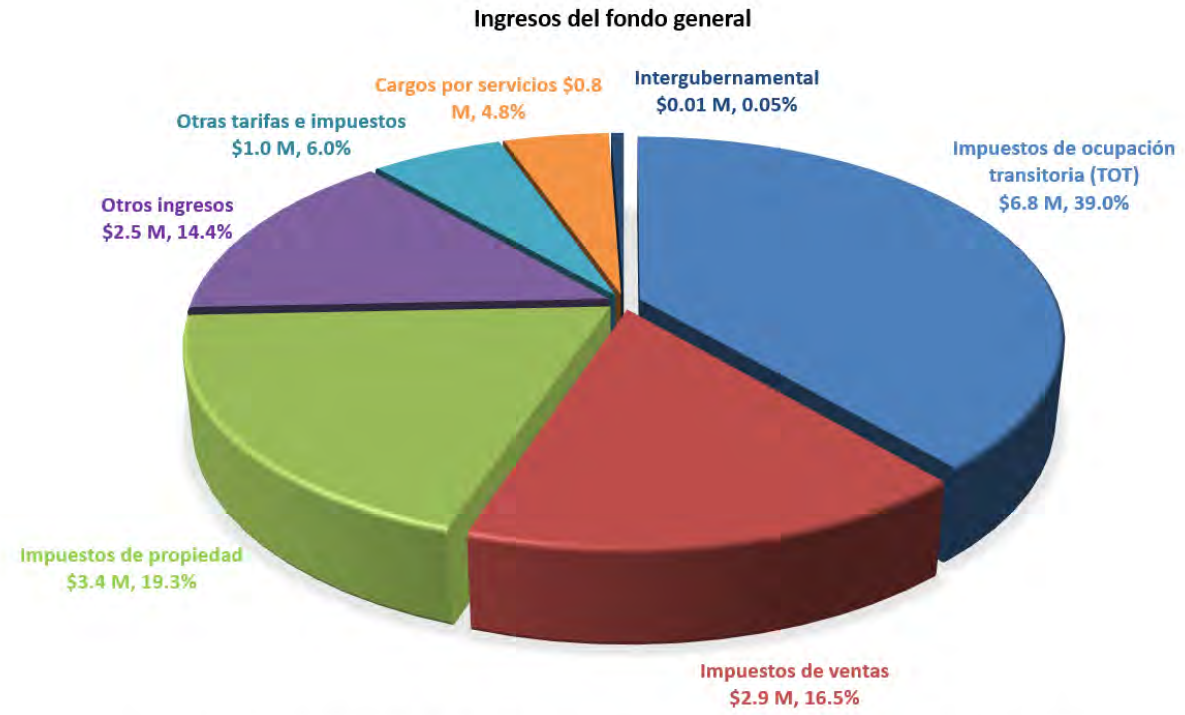
UN VISTAZO DEL PRESUPUESTO

El total de ingresos y transferencias estimados de la Ciudad (todos los fondos) para el año fiscal 2019-20 es de $36.4 millones. Esta cantidad representa una ligera disminución con respecto al año fiscal 2018-19. Los ingresos del fondo general son de aproximadamente $17.5 millones. Las tres fuentes principales de los ingresos del fondo general son los impuestos de propiedad, los impuestos de ventas y el impuesto a la ocupación transitoria (TOT, por sus siglas en inglés), como se ve en el gráfico circular de la página siguiente. La Ciudad continúa disfrutando de una perspectiva financiera saludable para el año fiscal 2019-20. Las tres fuentes principales de ingresos continúan siendo sólidas y los gastos operativos del fondo general de la Ciudad son menores que los ingresos operativos del fondo general, lo que genera un pequeño superávit estructural de $300,642.

Se estima que estas tres fuentes aumentarán por 3% con respecto al presupuesto del año fiscal 2018-19. Estas proyecciones se basan en el análisis del personal de las condiciones locales y reflejan la información recibida de varias fuentes, incluidos los asesores de impuestos de ventas y TOT de la ciudad, así como la información obtenida de las oficinas del asesor del estado y del controlador del estado.

Ingresos y tranferencia de todos fondos

Nombre del fondo	Actual 2016-17	Actual 2017-18	Presupuesto aprobado 2018-19	Presupuesto recomendado 2019-2020
Fondo General	$ 15,350,137	$ 16,843,109	$ 16,540,058	$ 17,455,155
Fondos Empresariales	4,659,361	4,456,869	4,744,883	6,505,815
Fondos de ingresos especiales y de proyectos de capital	6,879,637	19,124,687	12,658,233	10,611,149
Fondos de servicio interno	1,555,451	1,551,939	1,803,070	1,879,717
Servicio de deudas	978,321	1,027,227	944,998	127,040
Gran Total	**$ 29,422,908**	**$ 43,003,832**	**$ 36,691,242**	**$ 36,578,875**



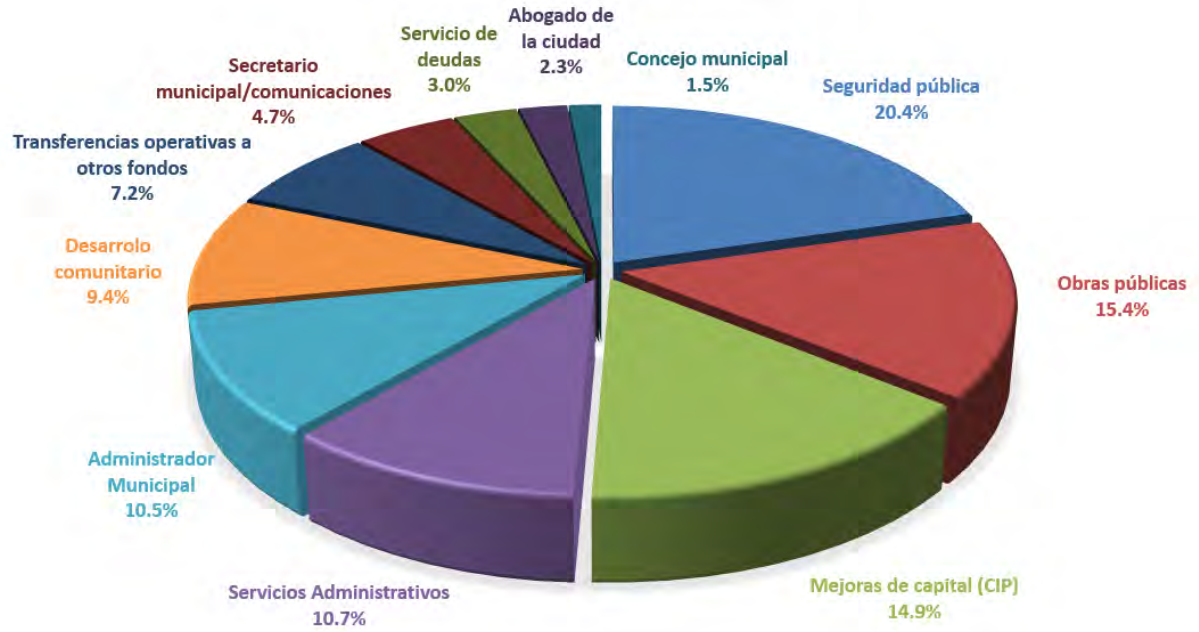
*"Otros ingresos" incluye el reembolso de crédito del condado, tarifas de golf, tarifas de estacionamiento, intereses de inversión, transferencias operativas de otros fondos e ingresos misceláneos.

Los gastos presupuestarios propuestos totales de la Ciudad para el año fiscal 2019-20 son $60.1 millones, de los cuales el 34% son del fondo general. Los gastos totales son 49% más altos que el año fiscal 2018-19. Este fuerte aumento se debe a un pago de $11.8 millones de los bonos de obligación de juicio y a un aumento sustancial en los gastos de capital. La mejora de capital es aproximadamente el 26% del gasto total, o $15.5 millones. De los gastos del fondo general, el presupuesto departamental más grande es para seguridad pública, como se muestra en el gráfico circular a continuación.

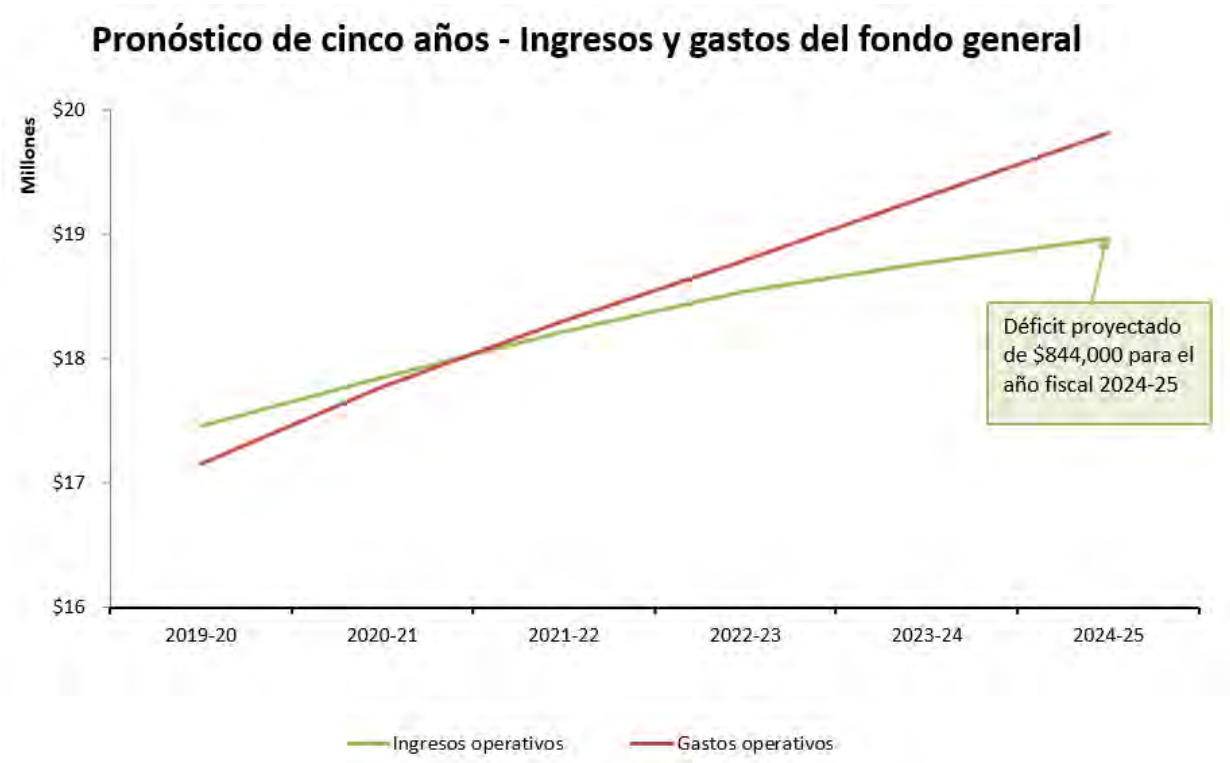
Gastos y transferencias todos fondos

Nombre del fondo	Actual 2016-17	Actual 2017-18	Presupuesto abrobado 2018-19	Presupuesto recomendado 2019-2020
Fondo general	$ 15,024,991	$ 17,772,599	$ 17,759,746	$ 20,154,513
Fondos empresariales	3,435,917	5,299,226	10,799,562	12,504,198
Fondos de ingresos especiales y de proyectos de capital	9,456,540	20,035,330	9,040,701	13,839,418
Fondos de servicio interno	1,543,750	1,333,528	1,781,371	1,817,705
Servicio de deudas	937,704	937,704	940,704	11,787,040
Total All Funds	**$ 30,398,902**	**$ 45,378,386**	**$ 40,322,084**	**$ 60,102,874**

Gastos del fondo general por departamento



Mirando hacia el futuro. A pesar de las proyecciones de ingresos positivos para el año fiscal 2019-20, varios economistas predicen una desaceleración económica en los próximos 12 a 18 meses que podría durar entre dos y cuatro años. **Sobre la base de este supuesto y la experiencia de la última recesión, el personal ha modelado un pronóstico de cinco años para ingresos y gastos que pronostica un déficit estructural a partir del año fiscal 2021-22 y que alcanza un aumento de $844,000 para el año fiscal 2024-25 como se muestra en el gráfico de abajo**. Debido a esta preocupación, el personal está proponiendo el establecimiento de una reserva para la incertidumbre económica. El propósito de esta reserva es moderar los efectos de una desaceleración dramática en la economía que tendría un impacto negativo directo en las fuentes de ingresos principales de la Ciudad (es decir, impuesto a la propiedad, TOT impuesto sobre las ventas). Se preparará una política específica para el uso del fondo y se le proveera al Concejo Municipal durante el año fiscal. El objetivo general es tener fondos suficientes disponibles para evitar recortes drásticos en los servicios y el despido de empleados de la Ciudad.



ASPECTOS DESTACADOS DEL PRESUPUESTO/CAMBIOS SIGNIFICANTES

El presupuesto se desarrolló con un énfasis en los elementos estratégicos generales del Concejo (sostenibilidad fiscal, comunidades saludables y seguridad pública, infraestructura y medio ambiente y gobierno inclusivo), así como en las cinco prioridades del Concejo enumeradas anteriormente. Los aspectos más destacados y los cambios clave se resumen a continuación:

- Hay tres nuevas posiciones propuestos en el presupuesto: Analista mayor – Gerente del programa de sostenibilidad; Líder de Recreación; Trabajador de mantenimiento II.

- El programa de becas para servicios comunitarios sin fines de lucro se renovó y el nivel de financiamiento de $150,000 se aumento comparado con el año anterior.

- Se creó un nuevo Departamento de Comunicaciones que combina el Secretario Municipal, Asuntos Gubernamentales y la Participación de la Comunidad / Empleados.

- El contrato del alguacil se extendió por tres años y se incrementó por $326,000 para el año fiscal 2019-20. Este aumento refleja un aumento en el costo de la vida, $150,000 para la "brecha de servicio" causada por los diputados de las áreas no incorporadas que prestan servicios a la Ciudad, y niveles mejorados de servicio durante los meses de verano en Poplar Beach y otras áreas clave.

- A principios de 2017, el directorio de CalPERS aprobó una disminución en la tasa de descuento de 7.5% a 7% para 2020. La tasa de descuento es la tasa de rendimiento

esperada de las inversiones. La disminución de la tasa de descuento tiene un gran impacto en el pasivo actuarial anual no financiado de la Ciudad (UAL). El pago de la Ciudad para el año fiscal 2016-17 fue de $390,000 y será de aproximadamente $877,000 en 2019-20. Las proyecciones actuales muestran que el UAL de la Ciudad aumenta a más de $1 millón en cinco años. Este aumento en los costos de las pensiones planteará importantes desafíos presupuestarios y de nivel de servicio en los próximos años fiscales.

- El bono de obligación de juicio para la adquisición de la propiedad de Beachwood se retirará en el año fiscal 2019-20. Esta acción elimina un pago anual del servicio de la deuda de $590,000 y devuelve una reserva única de $400,000 al fondo general.

- Se creó una nueva reserva para la incertidumbre económica y se financió al nivel de 13% de los gastos operativos del fondo general ($2.2 millones).

- La Ciudad recibió un préstamo de $6 millones del Condado de San Mateo para la construcción de la biblioteca nueva. Los pagos del servicio de la deuda de $600,000 por año comienzan en el año fiscal 2019-20.

- $3 millones del fondo general se comprometieron a mejoras de capital. Esto es un aumento de $1.1 millones con respecto al año anterior.

El Programa quinquenal de mejora de capital (CIP) se ha actualizado junto con la preparación del presupuesto operativo. El documento del CIP, que se presenta por separado, es un elemento importante del presupuesto de la Ciudad, ya que guía la infraestructura y el trabajo de las instalaciones de la Ciudad. El desarrollo del CIP también ha utilizado un proceso iterativo. El Concejo Municipal ha visto este plan varias veces y ha ofrecido aportes y comentarios en cada etapa, brindando constantemente orientación con un énfasis en la inversión en la comunidad a través de mejoras de capital.

CONCLUSIÓN

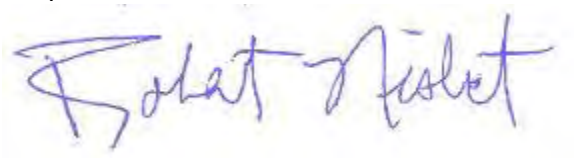
El presupuesto recomendado para el año fiscal 2019-20 es un presupuesto equilibrado que refleja las prioridades del Concejo Municipal y las necesidades de la comunidad. A través de una administración fiscal cuidadosa y conservadora, la Ciudad puede brindar servicios nuevos y mejorados al mismo tiempo que se prepara para una posible recesión en la economía, la cual puede llevar a un aplanamiento o una disminución de las fuentes de ingresos principales de la Ciudad.

Para obtener información más detallada de lo que se indica aquí, se recomienda al lector comenzar con el resumen ejecutivo y la descripción del presupuesto. Los presupuestos de los departamentos siguen y están claramente tabulados para facilitar la búsqueda de costos y servicios específicos para cada departamento.

Me complace informar que el presupuesto de la Ciudad para el año fiscal 2018-19 recibió el premio a la excelencia de parte de la Asociación de Oficiales de Finanzas Municipales de California. Este premio se otorga a las ciudades cuyos documentos presupuestarios cumplen con los criterios del programa como documento de políticas, guía operativa, plan financiero y dispositivo de comunicación. Creemos que el presupuesto del año fiscal 2019-20 continuará cumpliendo con los criterios para este premio.

El desarrollo del presupuesto se completa en una línea de tiempo muy comprimida y es una cantidad sustancial de trabajo para toda la organización. Quiero agradecer a los directores de departamento y su personal, pero especialmente agradecer al equipo de presupuesto dedicado que se reunió para completar este documento. Este fue un año extraordinario debido a la ausencia de un director de finanzas y otras posiciones financieras clave. Numerosos miembros del personal que no habían participado anteriormente en la preparación de un presupuesto municipal se ofrecieron como voluntarios para asumir esta tarea, y todos lo hicieron de la manera más profesional y competente. ¡Mi más sincero agradecimiento se extiende a este increíble equipo!

Respetuosamente,



Bob Nisbet
Administrador Municipal

La biblioteca nueva abrió al público el 18 de agosto de 2018

RESOLUTION No. C-2019-59

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF HALF MOON BAY ADOPTING THE FISCAL YEAR 2019-2020 ANNUAL OPERATING AND CAPITAL BUDGET

WHEREAS, the City Council of the City of Half Moon Bay has received and completed its review of the proposed FY 2019-20 Operating and Capital Improvement Program Budgets during the budget hearing held on June 4, 2019 and gave general direction on the recommendations contained therein during a public meeting; and

WHEREAS, the City Council of the City of Half Moon Bay has held a public hearing on June 18, 2019 for consideration of adoption of the proposed FY 2019-20 Operating and Capital Budget; and

WHEREAS, the proposed budget was prepared in accordance with the financial policies of the City; and

WHEREAS, the proposed budget is a balanced expenditure plan that ensures the maintenance of adequate reserves during FY 2019-20; and

WHEREAS, in accordance with Section 65103 of the State Government Code, the City's Planning Commission held a hearing on May 14, 2019 and determined that the Five-Year Capital Improvement Plan is consistent with the City's General Plan; and

WHEREAS, the City of Half Moon Bay now desires to adopt the 2019-20 Fiscal Year Appropriations Limit, Operating and Capital Improvement Program Budgets for FY 2019-20;

NOW THEREFORE, the City Council of the City of Half Moon Bay does hereby resolve as follows:

1. The City Council does hereby approve and adopt the City's budget of $60,102,874, including CIP allocation of $15,461,000, for fiscal year 2019-20 consisting of appropriations, inter-fund transfers and General Fund expenditures of $20,154,513 as set forth in all Fund Summary section of the Fiscal Year 2019-20 Budget.
2. The City Council does hereby approve and adopt the City's budgeted revenue of $36,578,876 for fiscal year 2019-20 and General Fund revenues of $17,455,155 as set forth in all Fund Summary section of the Fiscal Year 2019-20 Budget.
3. The amount of the 2019-20 Fiscal Year Budget for each account area of the budget may be drawn upon in the form of warrants issued for payment of demands and certified in accordance with the provisions of California Government Code Sections 37208 and 37209.
4. The City Manager is hereby authorized to prepare an administrative budget document which further specifies the accounts for the expenditure of appropriations approved by the City Council and set forth in GANN Appropriation Limit Calculation section. The City Manager shall provide the Council with copies of this budget.

5. A copy of the adopted budget, signed by the Mayor and attested to by the City Clerk, shall be kept on file with the City Clerk of the City of Half Moon Bay, as the official budget of the City of Half Moon Bay for the 2019-20 fiscal year.

****

I, the undersigned, hereby certify that the foregoing Resolution was duly passed and adopted on the 18th day of June, 2019 by the City Council of Half Moon Bay by the following vote:

AYES, Councilmembers: Brownstone, Penrose, Ruddock, Eisen, Rarback
NOES, Councilmembers:
ABSENT, Councilmembers:
ABSTAIN, Councilmembers:

ATTEST:

Jessica Blair, City Clerk

APPROVED:

Harvey Rarback, Mayor

City of Half Moon Bay

City Council

Mayor Harvey Rarback

Vice Mayor Adam Eisen

Councilmember
Debbie Ruddock

Councilmember
Deborah Penrose

Councilmember
Robert Brownstone

City Council Strategic Plan

The City Council develops Strategic Elements, Strategic Priorities, and a Capital Improvement Program to help guide the City's actions and work plans, and focus efforts on addressing the City's identified priority initiatives. Together, these comprise the City's Strategic Plan.

City Council Strategic Elements

Fiscal Sustainability	Healthy Communities and Public Safety	Inclusive Governance	Infrastructure and Environment

The overarching Strategic Elements describe how the City will conduct its operations in service to the community, and are based on the principles and values that outline the City's purposes. They offer focus toward the City Council's key priorities, and are aimed at providing high quality public services and facilities in a fiscally sustainable, responsive, and friendly manner, fostering a safe, healthy, and thriving community.

Fiscal Sustainability

- Practice sound and responsible financial management, while providing fiscally sustainable government services that address the needs of the community.
- Support and sustain a business environment that contributes to economic prosperity and revenue generation, and improves the economic well-being of the community.
- Promote a balanced economic development approach that retains, attracts, and supports businesses Citywide for a strong, stable, complementary, and diverse business environment, including tourism, coastal resources, conservation, and farmland cultivation.

Healthy Communities and Public Safety

- Foster opportunities for affordable housing for very low, low, moderate, and above moderate-income households, including entry level housing, shared housing, etc.
- Enhance safety for pedestrians, bicyclist, and motorists through a "complete streets" approach.
- Promote the health and well-being of children, youth, families, and adults of all ages and abilities.
- Promote a sustainable, comprehensive, and forward looking environmentally/green conscious community.
- Prepare City staff and community members for inevitable natural disasters and other emergencies.
- Provide comprehensive and innovative law enforcement services to reduce crime and the fear of crime; Inform and educate the community around crime prevention and awareness.

Inclusive Governance

- Manage the operations of the City as an engaged, collaborative, and responsive team of professionals who provide services in an effective, accountable, and inclusive manner.
- Emphasize a high level of community engagement through public outreach and building mutually beneficial, innovative, collaborative community partnerships throughout the City.
- Provide organizational development that invests in staff leadership skills development and other human resources, to attract, develop, support, and retain a highly qualified, valued, and diverse municipal workforce.
- Maintain accuracy, consistency, and frequency in the City's public communications, and increase Half Moon Bay's efforts to build credibility and mutual trust with the community.
- Provide and manage a repository of City records that is easily accessible to the general public.
- Promote diversity by improving knowledge of and accessibility to City services among the Latino community with emphasis on bilingual access and inclusiveness and civic participation.
- Continue and enhance transparency and accountability with community members, providing easy access to information, helpful and informed staff, and meaningful opportunities to participate in the City's decision-making processes and other municipal and community activities.

Infrastructure & Environment

- Preserve, upgrade, and maintain existing City infrastructure to manage and make progress on the backlog created as a result of deferred maintenance.
- Maintain functional and effective usage of City facilities; Sustain efforts to maintain the City as clean, inviting, accessible and aesthetically pleasing, throughout all segments of the community.
- Continue to build and enhance a more sustainable and resilient community by incorporating green and sustainable infrastructure projects and environmental conservation.
- Utilize technology to maximize efficiency and productivity for improved City operations.

City Council Priorities - FY 2019-20

Housing	Emergency Preparedness	Traffic and TDM	Sustainability	$15 Minimum Wage

The City Council Strategic Priorities are more specific areas which the City Council deems as critical to address during a given fiscal year (or over multiple fiscal years). Each Priority has a specific set of actions to be taken, which in turn contribute to, and outline, staff's objectives and work plans.

Affordable Housing

- Develop a plan to best utilize and replenish the City's affordable housing funds
- Research community land trust options and feasibility
- Consider possible tenant protection measures

Emergency Preparedness

- Update the City Emergency Operations Plan (EOP)
- Develop disaster specific preparedness plans and City emergency communications plan
- Conduct Emergency Operations Center activation exercises in collaboration with community partners
- Conduct Second Annual Coastside Preparedness Day
- Train City staff to assist in emergency response (CERT style), CPR training for all staff
- Develop bilingual emergency communications

Traffic and Transportation Demand Management

- Develop Transportation Demand Management (TDM) strategic plan
- Develop TDM regulations
- Implement CIP and Pedestrian and Bicycle Master Plan projects related to TDM
- Enhance TDM collaboration with regional and local agencies

Sustainability

- Develop a Climate Action and Adaptation Plan (CAAP)
- Develop Green Infrastructure Plan
- Develop Sustainability Strategic Plan with timelines and goals for the City, businesses and residents
- Implement projects to improve the sustainability of City operations and infrastructure

$15 Minimum Wage

- Conduct public outreach including a business survey and a community workshop
- Develop draft regulations for City Council consideration
- If implemented, develop education and outreach plan and materials

Capital Improvement Plan - FY 2019-20 through FY 2023-24

The City's Capital Improvement Program (CIP) addresses the community's needs for planned infrastructure improvements over a rolling five-year period. The CIP is intended to respond to the identified needs of the community, to ensure major infrastructure - such as streets, parks, trails, public facilities, sewers, and drainage - are well-maintained for maximum safety, public use, and enjoyment. The Capital Improvement Plan is published as a separate budget document.

About Half Moon Bay

"Live, Work, Play"

Location and Setting

Half Moon Bay sits on the Pacific Coast between forested hills and some of the most beautiful coastlines of California. It is located approximately 25 miles south of San Francisco and an easy 45-minute drive from almost anywhere in the Bay Area, within the western portion of San Mateo County. Half Moon Bay's climate is usually mild throughout the year.

Half Moon Bay is considered a rural coastal community and is home to approximately 13,000 people. Featuring the best of Northern California all in one place, visitors to Half Moon Bay enjoy miles of white sandy beaches, redwood forests, a historic downtown filled with local artisan shops, beautiful state parks, fields of wildflowers, and trails along ocean bluffs and mountain ridges as far as the eye can see.

History

The original inhabitants of Half Moon Bay were members of the Costanoan Rumsen Ohlone Tribe, one of eight bands of an indigenous group affiliated as Ohlone and/or Costanoan. Evidence of human dwelling and daily life surface throughout San Mateo County, including Half Moon Bay's Pilarcitos Creek.

The ocean and land provided adequately for its earliest residents in terms of sustenance and trade. In addition to members of the Rumsen Tribe, Spanish explorers and Mexican cowboys lived or passed through this Coastside. The beautiful coast, accessible ports, proximity to San Francisco, and the availability of land grants to early Mexican settlers in the 1840's were all factors in attracting a new wave of people to the Half Moon Bay area.

Governor Juan B. Alvarado gave a 4,424-acre Mexican land grant to a soldier, Juan Jose Candelario Miramontes, in 1841. This land was known as Rancho Miramontes which eventually transitioned into today's Downtown Main Street. The Main Street Bridge over Pilarcitos Creek was the entrance to the Miramontes Ranch. A Spanish immigrant named Estanislao Zaballa married into the family. He and other business prospectors brought a commercial flavor by opening some of Half Moon Bay's first businesses such as saloons, rooming houses and blacksmith shops. Named San Benito in the 1840's, and later Spanishtown, Half Moon Bay received its current name in 1874 and is the oldest settlement in San Mateo County.

Settlers such as James and Petra Johnston, the original owners of the majestic 'White House of Half Moon Bay,' saw potential and aspirations for cattle grazing and raising a family. James' Scottish heritage and Petra's Hispanic background, in addition to the Portuguese, Italian, Mexican and Spanish influences on the coast, demonstrate the distinct mix of ideas, traditions, occupations, and cultures that defined the area's character and identity.

In 1907, the Ocean Shore Railway was constructed along the shoreline from San Francisco to Tunitas Glen, just south of present-day Half Moon Bay. Due to financial problems and the increasing popularity of the horseless carriage, the railroad ceased operation in 1920.

The coast provided an ideal setting for "rum running" during Prohibition Era (1920 – 1933) because of its unique setting among the hidden ocean coves and thick fog. The city was small and isolated, yet close enough to access San Francisco by car. During this era, the Ocean Beach Hotel (presently Miramar Beach Restaurant) and other stops along the coast were raided numerous times for illegal liquor, gambling, and prostitution.

In 1942, the California State Highway Department constructed the Half Moon Bay Airport. Originally known as the Half Moon Bay Flight Strip, it was used during WWII by the U.S. Army and eventually turned over to the U.S. Navy at the conclusion of the war.

In 1947, San Mateo County acquired the airport, and ten years later, drag racing took it over. The Half Moon Bay Dragstrip quickly became one of the nation's premier tracks. Half Moon Bay played host to every big name the sport had to offer during the 1950's and 1960's. Presently, the airport hosts the annual Pacific Coast Dream Machines show which features magnificent driving, flying, and working machines from the 20th and 21st centuries.

At any given time, the airport houses approximately 80 aircraft and is self-funded through airport user and business fees.

The City of Half Moon Bay was incorporated in 1959. It has many reminders of its early beginnings in the mid-nineteenth century as an agricultural town. Fields of flowers, artichokes, brussels sprouts, Christmas trees, pumpkins and other crops blanket the pastoral landscape in and around town.

The City's location on the coast attracted hopeful business prospectors from many industries including fishermen and farmers. The American dream was reflected in these industrious individuals and their families whose ethnicities, aspirations, and languages converged to create a unique coastal community.

Culture, Recreation, and Local Attractions

The City and Coastside are a thriving agricultural, fishing and tourism destination. The local and surrounding agricultural community hosts a Saturday farmers' market, and many rural roadside stands sell the bounty of the local farms and nurseries.

Roughly 3,000 tons of pumpkins are grown on the Coastside every year and are featured in the Half Moon Bay Art and Pumpkin Festival held in October on Downtown's historic Main Street. The annual festival draws over 300,000 visitors for the two-day event and features some of the world's largest pumpkins.

Half Moon Bay provides a wide variety of public and private attractions. The historic downtown is home to shopping, art galleries, fine dining and entertainment. Visitors can stroll downtown to discover unique wares in local galleries, markets, shops and boutiques. Farm-fresh produce and one-of-a-kind art pieces are available side-by-side. Music, poetry readings, knitting classes and other entertainment are featured at parks, shops, wineries and eateries. First-class dining can be found at restaurants, bakeries, taquerias, delis and coffee shops. Menus include fresh fish straight off the boat and ethnic offerings from around the world.

A short distance from downtown, the California Coastal Trail meanders for five miles along beaches and bluff tops, providing a scenic setting for whale watching, biking, walking and horseback riding. Golf can be enjoyed at two golf courses acclaimed for their quality and spectacular ocean backdrops.

The Coastside has its well-known broad, sandy beaches. Adding to the coastal habitat diversity, just a few miles southwest of town is a redwood forest. Over a century ago, those forests were cut for the timber that was used in the development of the San Francisco Peninsula. Now those redwoods are enjoyed for their enduring natural beauty. There are thousands of parkland acres throughout the southern portion of San Mateo County offering coastal vistas and hillsides cloaked in vegetation, accessible via hiking and biking tails. Half Moon Bay serves as a gateway to these recreational offerings.

The City also boasts truly unique lodgings with breathtaking ocean views, world-class hotels, and quaint cottages, whose more than 200,000 guests generate over $80 million in sales for the community each year. Within the city limit, there are 13 hotels, inns, and Bed and Breakfasts in addition to three RV parks and campgrounds. The average occupancy across the 640 hotel rooms available is 67.4%.

Population and Demographics

There is a rich culture of diverse backgrounds and multi-generational families who have lived in Half Moon Bay for well over 100 years. Several of its older residential neighborhoods feature century-old architecture enhanced by colorful yards and gardens. It is not uncommon to find farmers, high-tech entrepreneurs, and artists living together. There are approximately 4,900 households, and 3,500 families (71.4% of households). For persons 25 years and older, 85% have a high school diploma, and 45.5% have a bachelor's degree or higher.[1] A snapshot of demographic highlights include:

• Median Age	47.3
• Total Households	4,858
• Average Household Size	2.59
• Median Household Income	$110,900
• Education – High School Degree or higher	84.9%
• Education – Bachelor's Degree or higher	45.5%
• Median Housing Value	$841,800
• Percent of Foreign-Born Persons	25.1%

San Mateo County Context

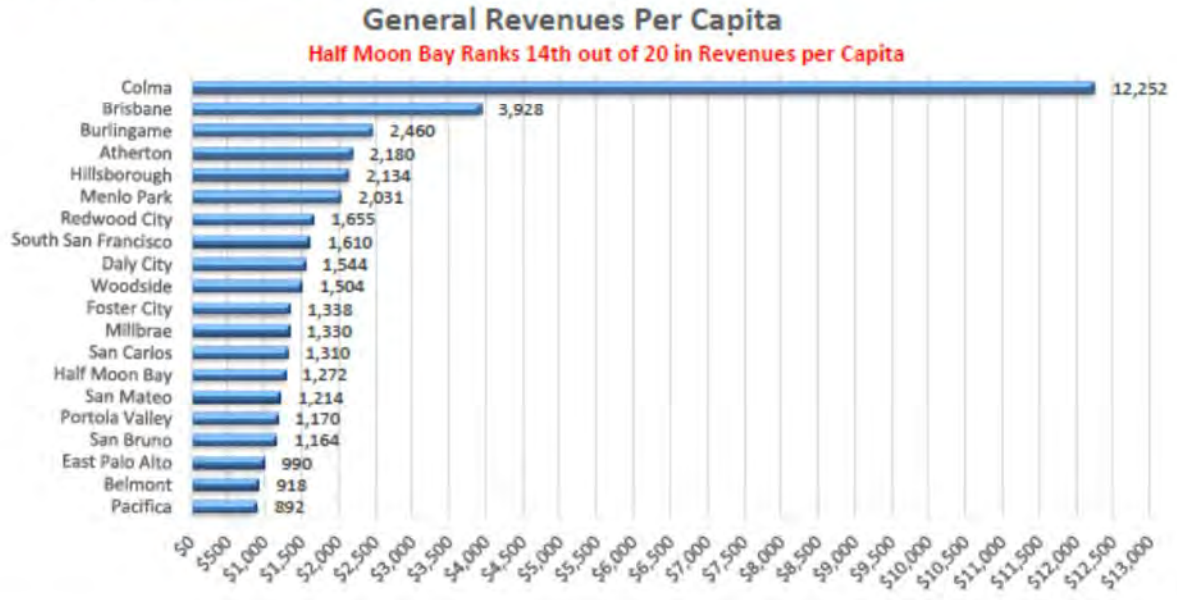
San Mateo County is part of the nine county Bay Area region. On the bayside, cities are linked by Highways 101 and 280, El Camino Real, and the CalTrain corridor. The area is a vibrant job center and part of Silicon Valley. Many Half Moon Bay employed residents work outside the City throughout this jobs-rich region.

Half Moon Bay has retained employment sectors traditional to the Coastside, while also accommodating new businesses and industries that are otherwise primarily thought to be located "over-the-hill." Despite its smaller size and distinct economic base, the City's revenues and expenditures indicate that the range and cost of City services are within the norm for the county as a whole.

[1] https://www.census.gov/quickfacts/fact/table/halfmoonbaycitycalifornia/PST045218

San Mateo County Cities Comparison

The City of Half Moon Bay ranks the 14th in revenues per capita comparing to other cities within the San Mateo county. The City is prudent in managing its resources, ranking 10th in cost per capita.



		Report Totals			Per Capita		
City	Population	General Revenues	General Expenditures	Outstanding Debt	General Revenue	General Expenditure	O/S Debt
Colma	1,514	18,549,322	16,574,308	$ 4,785,000	12,252	10,947	3,161
Brisbane	4,721	18,542,258	31,708,201	$ 2,629,846	3,928	6,716	557
Hillsborough	11,444	24,420,897	23,629,528	$ 37,261,419	2,134	2,065	3,256
Menlo Park	34,459	70,000,004	69,940,000	$ 32,940,991	2,031	2,030	956
Atherton	7,187	15,670,043	14,088,033	N/A	2,180	1,960	N/A
Burlingame	30,467	74,936,500	58,274,812	$ 48,605,686	2,460	1,913	1,595
Millbrae	22,557	29,993,962	39,235,473	$ 24,221,213	1,330	1,739	1,074
South San Francisco	67,733	109,053,694	108,047,038	35,600,000	1,610	1,595	526
Redwood City	86,200	142,651,191	124,890,195	$ 12,360,000	1,655	1,449	143
Half Moon Bay	**12,973**	**16,504,058**	**17,754,647**	**6,000,000**	**1,272**	**1,369**	**462**
Woodside	5,510	8,285,350	7,516,152	$ 4,812,888	1,504	1,364	873
San Carlos	30,364	39,770,000	41,000,009	$ 3,675,000	1,310	1,350	121
Foster City	34,151	45,709,109	45,519,467	$ 3,975,000	1,338	1,333	116
San Mateo	105,020	127,443,429	133,209,741	$ 23,500,000	1,214	1,268	224
Portola Valley	4,611	5,394,654	5,644,083	N/A	1,170	1,224	N/A
San Bruno	43,047	50,111,247	50,487,600	$ 10,313,385	1,164	1,173	240
Pacifica	38,759	34,586,000	34,568,000	$ 26,300,000	892	892	679
Belmont	27,113	24,900,000	23,800,000	$ 33,600,000	918	878	1,239
East Palo Alto	29,519	29,232,000	25,280,000	$ 16,238,000	990	856	550
Daly City	107,008	165,220,000	73,454,000	$ 31,252,000	1,544	686	292
TOTAL	**704,357**	**$ 1,050,973,718**	**$ 944,621,287**	**$ 358,070,428**	**$ 1,492**	**$ 1,341**	**$ 508**

NOTE 1: Estimated population figures are for US Census Bureau estimates as of July 1, 2018.
NOTE 2: Source of data is from the most recent City Budgets and CAFRs (FY 2018-19).
NOTE 3: There are many factors that influence cost and revenue base. For example, some cities are full service cities that provide fire and police services, while others are not.

Government Structure and City Services

The City of Half Moon Bay operates under a council-manager form of government and is governed by a five-member elected City Council. The City Council appoints a City Manager who is responsible for the oversight of daily operations and provides leadership for the City's programs.

The City Council is the policy-making body. City voters elect five Councilmembers to staggered four-year terms. The City Council appoints commission and committee members to support the public policy making process. Beginning in 2020, the City will transition to district elections, with four Councilmembers elected directly by district and an at-large mayor.

The City Council meets regularly on the first and third Tuesdays of each month at 7:00 p.m. and may call additional special meetings. All meetings of City Council and Council-appointed commissions and committees are open to the public except when certain personnel matters and legal items are discussed.

By means of its own employees and through other shared or contract services, the City of Half Moon Bay provides a variety of municipal services to its citizens, including law enforcement, library, disaster preparedness, recreation programs, maintenance of streets, parks and buildings, sanitary sewer utility collection and maintenance, planning, housing, zoning and building inspection, storm drain maintenance, code and parking enforcement, engineering and general administrative services.

City offices are open 8:30 a.m. to 5:00 p.m., Monday through Friday (except holidays).

City of Half Moon Bay Main Line	(650) 726-8270	501 Main Street
City Manager's Office	(650) 726-8280	501 Main Street
City Clerk's Office	(650) 726-8250	501 Main Street
Administrative Services	(650) 750-2034	507-B Purissima St
Recreation Services	(650) 726-8297	535 Kelly Avenue
Community Development	(650) 726-8270	501 Main Street
Public Works	(650) 726-7177	880 Stone Pine Road
Code Enforcement	(650) 726-8253	501 Main Street
Public Safety (Business Line)	(650) 726-8288	537 Kelly Avenue
Non-Emergency - After Hours	(650) 726-8286	537 Kelly Avenue

Additional information about city services is available on the City of Half Moon Bay website at www.hmbcity.com

CITY OF HALF MOON BAY

Budget Overview

Basis of Budget Preparation and Budget Overview

The City Budget is the result of a thorough, lengthy, and collaborative process involving City Council leadership and City staff expertise. The City Council sets policy direction for the budget and City staff take into consideration economic trends to forecast revenue and create a budget that accomplishes the goals of the Council while ensuring the financial stability of the City. Local, County, State, and national economic trends are among the factors considered.

ECONOMIC UPDATE

During FY 2018-19, the City experienced its eleventh straight year of economic growth, led by consumer spending and tourism. Meanwhile, the real estate and labor market continued to remain steady and strong.

The unemployment rate in San Mateo County has dropped to approximately 2.0%. The City of Half Moon Bay's unemployment rate is even lower. This compares favorably with the unemployment rates for California and nationally during the same period.

State Budget Outlook and Impact on the City

The State of California's budget and economy play significant roles in the City's financial condition. The State's budget condition is healthy and the surplus funds, to a large extent, have been used to improve reserves and pay down debt and other one-time uses. The consensus forecast anticipates continuing economic expansion in the short term, but an anticipated economic downturn is on the horizon.

Despite the State placing a high priority on building its reserves for a recession, an economic downturn of any kind would put pressure on California's finances. This in turn could force the State to make some difficult choices, such as budgetary cuts and tax increases that may directly and indirectly affect the Bay Area, San Mateo County and the City of Half Moon Bay's overall economic condition.

BUDGET DEVELOPMENT PROCESS

City staff prepare an annual operating budget each year containing revenues, appropriations, and other financial information pertaining to City's operating and capital budgets. The philosophy employed in creating this budget focuses the City's efforts on continuing to provide quality "core" municipal services in the most efficient way possible. This budget must be adopted by the City Council.

Council Strategic Planning

In preparation for the upcoming budget, the City Council hosted four community listening sessions, which allowed the Council to hear directly from members of the community to gain additional insight into the community's priorities for budget allocation of resources over the next year and beyond.

On March 26, 2019, the City Council held a Priority Setting Workshop, where the Council re-affirmed previously adopted Strategic Plan Elements and Initiatives, and identified the following list of FY 2019-20 priorities:

1. Affordable Housing
2. Emergency Preparedness
3. Traffic and Transportation Demand Management
4. Sustainability
5. $15 Hourly Minimum Wage

The table below demonstrates how the Council's FY 2019-20 priorities fit in the larger Strategic Plan Elements and Initiatives that were adopted on February 9, 2016 and reaffirmed for FY 2019-20.

Strategic Elements				
PRIORITY	**Infrastructure/ Environment**	**Healthy Communities/ Public Safety**	**Fiscal Sustainability**	**Inclusive Governance**
Affordable Housing		✓	✓	✓
Emergency Preparedness	✓	✓	✓	✓
Traffic and Transportation Demand Management	✓	✓		✓
Sustainability	✓	✓		✓
$15 Minimum Wage		✓		✓

The Executive Team held subsequent meetings to develop a Work Plan for the upcoming year to meet the Council's priorities. Funding to support Council priorities has been included in the FY 2019-20 Budget.

Budget Preparation

The annual budget cycle begins each year with the development of budget instructions, including policy directives and a budget calendar, early in the calendar year and concludes with the budget adoption by the City Council in June as shown in the budget timeline table below.

Budget Timeline	
March 2, 3, 7, 17	Community Listening Sessions
March 26	Council Strategic Planning and Priority Setting Retreat
May 16	Finance Subcommittee Meeting
May 21	Study Session – Budget Methodology, Base Budget Assumptions, Capital Plan and Budget Recommendations
June 4	City Council Review of Proposed FY 2019-20 Budget
June 18	City Council Formal Adoption

Each department was provided a Base Budget expenditure allotment consistent with the authorized FY 2018-19 Budget, adjusted by known personnel salary and benefit increases, and a

3.0% inflationary increase in other operating expenses. Each department was then given an opportunity to submit prioritized program changes for service enhancements or reductions to the Base Budget.

The City Manager reviewed department requests and formulated a Recommended Budget for Council's consideration. Staff recommendations are based on many considerations, including the City's strategic plan, staffing capacity, and potential impacts to the overall City operation and services provided to the community.

The City Council held two budget study sessions in May and June to review and discuss the Recommended Budget for the FY 2019-20. Final adoption of the Recommended Budget for FY 2019-20 is scheduled for June 18, 2019.

Basic Accounting

The City's accounting system is maintained on a fund basis in accordance with governmental accounting standards. Each fund is considered a separate accounting entity with a self-balancing set of accounts that record assets, liabilities, fund equity, revenue, and expenditures. All governmental funds are budgeted and accounted for using the modified accrual basis of accounting, which recognizes revenues when they become susceptible to accrual—i.e., measurable and available. Expenditures are recognized when the fund expense or liability is incurred.

Budgetary Control

The City utilizes the following procedures to establish budgetary control:

1. The City Manager submits to the City Council a proposed balanced operating and capital budget for the following fiscal year.
2. After a review by the City Council, a public hearing is conducted, and further comment is received from the City Council and general public.
3. Upon completion of the hearings and modifications, if any, to the proposed budget, it is adopted by the City Council through passage of an appropriate resolution.
4. The department heads are responsible to ensure the expenditures of their departments stay within the budget.
5. The budget is amended during the year by the Council as needed.
6. The City Manager is authorized to reallocate budget amounts of operational expenditure categories within funds as deemed necessary in order to meet the City's operational needs.
7. City Council approval is required for all inter-fund transfers and use of reserves, and for transfers to/from the capital expenditure category. The legal level of budgetary control is at the fund level. This is the level that City management cannot overspend the budget without approval from the City Council.

The City Council holds public budget study sessions and adopts the City operating and capital budgets no later than June 30th of each year.

The philosophy employed in creating this budget document has been to focus the City's efforts in continuing to provide quality municipal services, as well as the timely addressing of key infrastructure needs.

The City's budget goal is to achieve a balanced budget with operating revenue, including reimbursements from other funds for services provided, equal to or greater than operating expenditures (including debt service).

Staff used the following guidelines in preparation for this budget: ending fund balance (or working capital in the enterprise fund) should meet the minimum level of no less than 30% of operating expenditures, where applicable. Under this policy, it is allowable for total expenditures to exceed revenue in a given year to fund capital improvement plan projects or other "one-time" non-recurring expenditures.

Ultimately, the City's financial position and the resources in each fund will determine the level of services and the projects that the City will be able to deliver to the community in the upcoming fiscal year. These services and projects are included in the adopted annual budget.

FY 2019-20 ADOPTED BUDGET OVERVIEW

The Recommended FY 2019-20 Budget is balanced and has a small structural surplus when general revenue is compared to operating expenses.

In FY 2019-20, General Fund ongoing revenue of $17.5 million is projected to exceed General Fund operating expenses of $17.2 million by $0.3 million.

This means that the City will be able to adequately fund the cost of day-to-day operations and services in Half Moon Bay; however, future contributions from the General Fund to the CIP are contingent upon new revenues or one-time funds becoming available in the future.

Transient occupancy tax (i.e. "hotel tax"), property tax, and sales tax revenue make up 75% of General Fund revenue. All major General Fund Revenues are experiencing continued growth, as further described in the General Fund section of the budget document.

Budget Assumptions

The Base Budget is not an exact duplicate of the Adopted or Amended FY 2018-19 Budget because of actions the Council may have taken to modify the budget during the year, and most notably due to the FY 2019-20 budget assumptions used to develop the Base Budget. The following are the major assumptions used to develop the initial FY 2019-20 Base Budget:

Base Budget General Fund Revenue Assumptions

- **Total General Fund revenue** of $17.5 million shows an increase of 5.5% from the FY 2018-19 Budget.
- **The top three revenue sources,** Transient Occupancy Tax (TOT), Property Tax, and Sales and Use Tax are estimated to increase by 3% compared to the current budget; the growth of other revenues is estimated at 2%.
- **One-time** transfer from the Judgement Obligation Fund of $400,000 upon the scheduled

retirement of these bonds on August 1, 2019 and the close out of the Bond Reserve Fund.

Base Budget Expenditures Assumptions

- Total General Fund expenditures of $20.2 million, which includes $17.2 million in operating expenditures and $3 million in capital transfers to fund the Capital Improvement Program.
- Salary and Benefits projections include funding for 42 full-time equivalent (FTE) positions city-wide, including three new positions.
- Vacant positions are budgeted at top step. Projections also include salary step increases for staff members who may be eligible on their performance review dates.
- Overtime funding is included in the projections based on historical averages of overtime hours worked.
- FY 2019-20 PERS retirement rates are budgeted as provided by CalPERS: Tier 1 (2.0% @ 55) at 10.15% for classic members and Tier 2 (2% @ 62) at 7.27% for new employees without prior municipal experience or who have had a break in service.
- Salary adjustments have been made to reflect MOU provisions.
- An annual transfer of $100,000 to the Retirement Stabilization Fund, in addition to the annual amounts needed to pay for the unfunded liability.
- An annual transfer of $50,000 from General Fund to the Equipment Fund (Fund 62) is included to fund future technology and equipment needs.
- Operating Expenses are increased by 3% over FY 2018-19 budgeted amounts to account for normal inflationary increases.

Capital Improvement Program (CIP) Budget

The City's 5-Year Capital Improvement Program (CIP) is a financial planning and prioritization tool that represents the City's continuous efforts to protect public health and safety and enhance the quality of life and experience for visitors and residents in Half Moon Bay. It is adopted in conjunction with the City's Operating Budget and is presented as a separate document.

Updating the CIP annually requires coordination and cooperation between all City departments. The process includes many internal meetings to discuss current and future CIP improvements, prioritization of identified improvements, review by various advisory boards, General Plan consistency finding by the Planning Commission, and adoption by City Council.

While staff continuously assesses the needs of the City and prioritizes projects accordingly, the process to create the FY 2019-20 CIP officially began in December 2018. This resulted in the preliminary draft FY 2019-20 Capital Budget presented during the City Council Priority Setting Workshop on March 26, 2019. At the study session on May 21, 2019, guided by Council direction from the workshop, staff provided a more focused list of projects, project descriptions, and project costs. City Council approved the project list and directed staff to present the list to the Planning Commission and return with a final recommended CIP.

Staff has continued to refine project scope and budget with a summary of the CIP included in the "Capital Improvement Program" section of this document. Individuals interested in learning more about the specific improvements planned for the upcoming Fiscal Year should refer to the published Capital Improvement Program book.

Budgetary Reserves

The Government Finance Officers Association (GFOA) has issued its recommended best practice for determining the appropriate level of unrestricted General Fund balance to be, at a minimum, no less than two months of regular General Fund operating revenues or expenses, which equates to approximately 17% of annual expenses.

The City's Fund Balance Policy identifies fund balances (or reserves) as falling into the following categories: Restricted, Committed, Assigned, or Unassigned. In accordance with Government Accounting Standards Board (GASB) Statement No. 54 requirements and the City policy, the Council established the following designations for General Fund Committed Fund Balances:

- Operating Contingency Reserve 30% of annual expenditures
- Economic Uncertainty Reserve of up to 20% annual operating expenditures

The General Fund balances for FY 2017-18 through FY 2019-20 are detailed in the table below. Total operating expenses are also listed to demonstrate the percentage level of reserves and compliance with the City's Fund Balance Policy.

GENERAL FUND (RESTRICTED & UNRESTRICTED BALANCES)

Designations	Actual 2017-18	Budget 2018-19[1]	Recommended Budget 2019-20[2]
Beginning Fund Balance	***$ 11,057,160***	***$ 9,962,452***	***$ 10,000,000***
Total Revenue	**16,499,748**	**16,540,058**	**17,455,155**
Net Operating Expenditures	10,560,924	13,478,351	15,109,432
Operating Transfers	1,626,766	2,362,690	2,045,081
Total Operating Expenditures	**12,187,690**	**15,841,041**	**17,154,513**
Capital Transfers	3,780,001	1,918,705	3,000,000
Total Expenditures	**17,594,456**	**17,759,746**	**20,154,513**
Ending Fund Balance	***9,962,452***	***8,742,764***	***7,300,642***
Operating Contingency (30% of Op. Exp.)	3,656,307	4,752,312	5,146,354
Assigned for Main Street Bridge Contingencies	1,500,000	1,500,000	-
Economic Uncertainty Reserve[3] (Target 20% Op. Exp.)	-	-	2,154,288
Total Designations	***$ 5,156,307***	***$ 6,252,312***	***$ 7,300,642***
Undesignated Fund Balance	***$ 4,806,145***	***$ 2,490,452***	***$ -***
Ending Fund Balance as % of Net Op. Expenses	94%	65%	48%
Ending Fund Balance as % of Total Op. Expenses	82%	55%	43%

[1] Fund balances for the Adopted Budget 2018-19 reflect audited FY 2017-18 ending balance and budgeted revenues and expenditures.

[2] Beginning Balance for FY 2019-20 higher than budgeted FY 2018-19 ending balance due to anticipated favorable variances in budgeted revenues and expenditures.

Conclusion

The FY 2019-20 General Fund total budget expenditures total $20.2 million and include a $3 million contribution to CIP. The FY 2019-20 in the City's Revenue and Capital Funds, Enterprise Funds, Debt Service Funds, and Internal Service Funds total $39.9 million. The proposed 5-Year Capital Improvement Program (CIP) includes budgeted expenses of $15.5 million for FY 2019-20. The CIP is comprised of 46 programs and projects scheduled for FY 2019-20, 17 of which are scheduled for completion by the end of the fiscal year.

The City continues to benefit from the stable local economy and the economic growth throughout San Mateo County, Silicon Valley and the Bay Area. This is reflected in the financial outlook for the 2019-20 Fiscal Year.

Some of the challenges that the City may face in the future are:

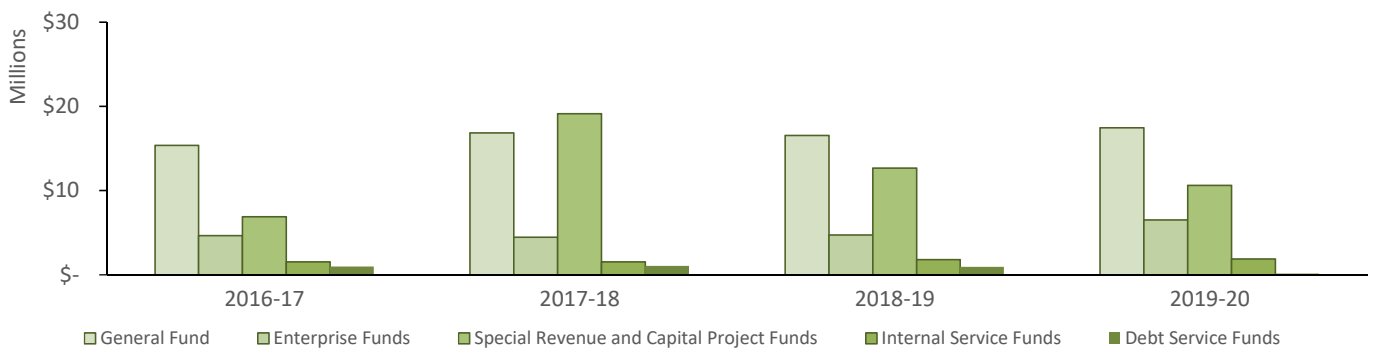
- Federal and State Budget challenges and potential threat to local governments. Various capital projects are expected to be funded by grant awards.
- Capital improvements that will need to be funded by the City.
- Increased contractual costs. The City uses outside contractors extensively, including for police services.
- Increased pension costs.
- An anticipated economic downturn and ensuring the City is financially equipped to weather a recession.

Fiscal sustainability remains a high priority for Half Moon Bay. To that end, staff continues to project revenues and expenditures in a conservative manner. In addition, the new budget includes a new Economic Uncertainty Reserve with a target amount of 20% of the operating budget in addition to the existing Contingency Reserve (30%).

Staff looks forward to continuing work with the City Council and the community in the upcoming year to address any potential financial challenges that may lay ahead, identify operational efficiencies, pursue appropriate economic development opportunities, and advise on alternative revenue options in order to ensure a high quality of life for the residents and visitors of the City of Half Moon Bay.

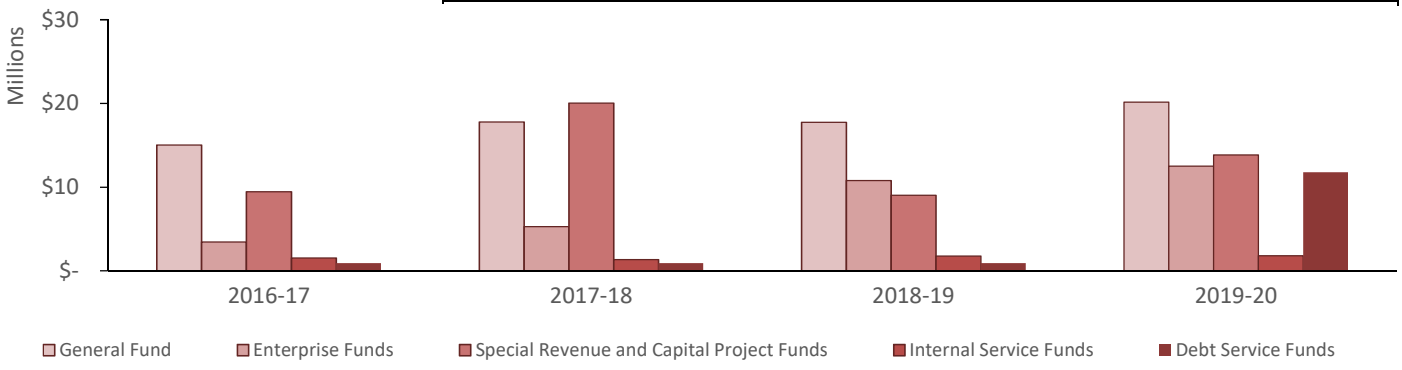
City of Half Moon Bay
FY 2019-20 Recommended Budget
Summary of Revenue & Transfers by Fund

Fund Name	Actual 2016-17	Actual 2017-18	Adopted 2018-19	Recommended 2019-20
GENERAL FUND	**$ 15,350,137**	**$ 16,843,109**	**$ 16,540,058**	**$ 17,455,155**
ENTERPRISE FUNDS				
Sewer Operating	3,420,119	2,459,071	4,567,900	6,359,258
Sewer Capital	1,239,242	1,997,798	176,983	146,557
TOTAL ENTERPRISE FUNDS	**4,659,361**	**4,456,869**	**4,744,883**	**6,505,815**
SPECIAL REVENUE FUNDS				
Storm Drain Operating	51,248	52,264	50,600	50,612
Main Street Bridge	45,085	7,642	1,146,622	3,774
Gas Tax	253,172	442,661	475,795	485,311
Streets and Roads	525,106	837,254	7,844,695	5,809,632
Measures A and W	287,595	338,275	276,100	572,910
Traffic Mitigation	507,271	869,541	50,578	35,822
Library Operation	10,967	41,140	70,700	-
Library Capital	215,590	11,520,446	32,200	-
Park/Facilities Development	1,615,994	681,493	1,346,756	1,473,793
Affordable Housing	344,034	27,409	11,100	411,322
Capital General	2,188,770	1,797,680	12,210	605,000
Police Grants	131,436	143,274	101,700	120,560
Drainage Capital	478,817	547,115	300,677	156,846
Public Facilities	224,551	1,818,494	938,500	885,567
TOTAL SPECIAL REVENUE AND CAPITAL PROJECT FUNDS	**6,879,636**	**19,124,688**	**12,658,233**	**10,611,149**
Vehicle Replacement	22,668	33,518	4,000	12,789
Equipment Replacement	262,164	203,286	203,200	206,596
Risk Management	855,028	672,831	645,970	655,334
Pension Stabilization	415,591	642,304	949,900	1,004,998
INTERNAL SERVICE FUNDS	1,555,451	1,551,939	1,803,070	1,879,717
Judgement Bonds - A	4,104	-	1,341	-
Judgement Bonds - B	978,321	1,027,227	944,998	127,040
DEBT SERVICE FUNDS	982,425	1,027,227	946,339	127,040
Total Other Funds	**14,076,873**	**26,160,723**	**20,152,525**	**19,123,721**
Total All Funds	**$ 29,427,010**	**$ 43,003,832**	**$ 36,692,583**	**$ 36,578,876**



City of Half Moon Bay
FY 2019-20 Recommended Budget
Summary of Expenditures & Transfers by Fund

Fund Name	Actual 2016-17	Actual 2017-18	Budget 2018-19	Recommended 2019-20
GENERAL FUND	**$ 15,024,991**	**$ 17,772,599**	**$ 17,759,746**	**$ 20,154,513**
ENTERPRISE FUNDS				
Sewer Operating	3,162,753	4,985,659	4,800,676	6,356,152
Sewer Capital	273,165	313,567	5,998,886	6,148,046
TOTAL ENTERPRISE FUNDS	**3,435,918**	**5,299,226**	**10,799,562**	**12,504,198**
SPECIAL REVENUE FUNDS				
Storm Drain Operating	24,260	-	52,800	54,386
Main Street Bridge	46,762	-	140,000	450,000
Gas Tax	419,512	217,941	660,009	336,746
Streets and Roads	1,236,297	1,388,588	3,095,897	6,735,862
Measure A	272,662	259,122	87,492	91,387
Traffic Mitigation	38,158	64,254	25,600	-
Library Operation	33,460	26,039	104,800	109,996
Library Capital	5,118,395	14,970,295	23,400	2
Park/Facilities Development	837,318	182,206	1,908,609	1,971,827
Affordable Housing	-	14,833	102,000	(40)
Capital General	461,474	1,355,190	875,000	1,699,578
Police Grants	87,438	54,619	106,100	409,283
Drainage Capital	198,028	91,242	837,294	872,070
Public Facilities	682,775	1,411,000	1,021,700	1,108,321
Land Assets	-	-	-	-
TOTAL SPECIAL REVENUE AND CAPITAL PROJECT FUNDS	**9,456,539**	**20,035,329**	**9,040,701**	**13,839,418**
INTERNAL SERVICE FUNDS	1,543,751	1,333,528	1,781,371	1,817,705
DEBT SERVICE FUNDS	937,704	937,704	940,704	11,787,040
Total Other Funds	**15,373,912**	**27,605,787**	**22,562,338**	**39,948,361**
Total All Funds	**$ 30,398,903**	**$ 45,378,386**	**$ 40,322,084**	**$ 60,102,874**



City of Half Moon Bay
FY 2019-20 Recommended Budget
Transfers/Allocations Summary

	Budget Transfers In 2019-20
GENERAL FUND (01)	
From Sewer Operating (05)	472,290
From Sewer Capital (06)	16,796
From Gas Tax (10)	9,837
From Library Fund (15)	17,999
From Judgement Obligation Bond Fund (78)	400,000
GENERAL FUND (01)	**916,922**
SEWER OPERATING (05)	
From Sewer Capital (06)	2,006,000
SEWER OPERATING (05)	**2,006,000**
STORM DRAIN OPERATING (07)	
From General Fund (01)	50,000
STORM DRAIN OPERATING (07)	**50,000**
STREETS AND ROADS (11)	
From General Fund (01)	371,922
From Gas Tax (10)	217,500
From General Capital (25)	714,578
STREETS AND ROADS (11)	**1,304,000**
DRAINAGE FUND (14)	
From General Fund (01)	150,000
DRAINAGE FUND (14)	**150,000**
PARK FACILITY FUND (17)	
From General Fund (01)	1,333,078
From Measure J	-
PARK FACILITY FUND (17)	**1,333,078**
AFFORDABLE HOUSING FUND (19)	
From General Fund (01)	400,000
AFFORDABLE HOUSING FUND (19)	**400,000**
GENERAL CAPITAL FUND (25)	
From General Fund (01)	605,000
GENERAL CAPITAL FUND (25)	**605,000**
PUBLIC FACILITIES FUND (48)	
From General Fund (01)	540,000
From Library Fund (15)	91,997
PUBLIC FACILITIES FUND (48)	**631,997**
EQUIPMENT FUND (62)	
From General Fund (01)	141,516
From Sewer Operating (05)	56,687
From Gas Tax (10)	1,069
From Drainage Fund (14)	531
From Streets & Roads (11)	2,856
From Measure A (12)	876
EQUIPMENT FUND (62)	**203,535**
RISK MANAGEMENT FUND (63)	
From General Fund (01)	453,565
From Sewer Operating (05)	151,640
From Gas Tax (10)	2,765
From Drainage Fund (14)	1,881
From Streets & Roads (11)	11,063
From Measure A (12)	4,041
From Parks Facilities Fund (17)	381
RISK MANAGEMENT FUND (63)	**625,336**
PENSION STABILIZATION FUND (64)	
From General Fund (01)	1,000,000
PENSION STABILIZATION FUND (64)	**1,000,000**

GRAND TOTAL	**9,225,868**

City of Half Moon Bay
FY 2019-20 Recommended Budget
Fund Balances Summary

	Projected Fund Balance 6/30/2019	Revenues & Trsfrs In Budget	Expenditures & Trsfrs Out Budget	Revenue Over(Under) Expenditures	Projected Fund Balance 6/30/2020
GENERAL FUND					
01 General	**$ 10,000,000**	**$ 17,455,155**	**$ 20,154,513**	**$ (2,699,358)**	**$ 7,300,642**
ENTERPRISE FUNDS					
05 Sewer Operating	120,000	6,359,258	6,356,152	3,106	123,106
06 Sewer Capital	7,920,000	146,557	6,148,046	(6,001,489)	1,918,511
Total Enterprise Funds	**8,040,000**	**6,505,815**	**12,504,198**	**(5,998,383)**	**2,041,617**
SPECIAL REVENUE FUNDS					
07 Storm Drain Operating	230,000	50,612	54,386	(3,774)	226,226
09 Main Street Bridge	1,700,000	3,774	450,000	(446,226)	1,253,774
10 Gas Tax	200,000	485,311	336,746	148,565	348,565
11 Streets and Roads	7,870,000	5,809,632	6,735,862	(926,230)	6,943,770
12 Measures A and W	430,000	572,910	91,387	481,523	911,523
13 Traffic Mitigation	1,680,000	35,822	-	35,822	1,715,822
15 Library	110,000	-	109,996	(109,996)	4
16 Library Capital	2,130,000	-	2	(2)	2,129,998
17 Park/Facilities Development	1,060,000	1,473,793	1,971,827	(498,034)	561,966
19 Affordable Housing	2,060,000	411,322	(40)	411,362	2,471,362
25 Capital General	1,300,000	605,000	1,699,578	(1,094,578)	205,422
22 Police Grants	330,000	120,560	409,283	(288,723)	41,277
14 Drainage Capital	750,000	156,846	872,070	(715,224)	34,776
48 Public Facilities	640,000	885,567	1,108,321	(222,754)	417,246
79 Land Assets [1]	-	-	-	-	-
Total Special Revenue and Capital Funds	**20,490,000**	**10,611,149**	**13,839,418**	**(3,228,269)**	**17,261,731**
INTERNAL SERVICE FUNDS					
61 Vehicle Replacement	910,000	12,789	151,891	(139,102)	770,898
62 Equipment Replacement	50,000	206,596	156,596	50,000	100,000
63 Risk Management	1,810,000	655,334	631,684	23,650	1,833,650
64 Retirement Stabilization Fund	1,150,000	1,004,998	877,534	127,464	1,277,464
Total Internal Service Funds	**3,920,000**	**1,879,717**	**1,817,705**	**62,012**	**3,982,012**
DEBT SERVICE FUNDS					
78 Judgment Obligation Bond -Series B	11,660,000	127,040	11,787,040	(11,660,000)	-
Total Debt Service Funds	**11,660,000**	**127,040**	**11,787,040**	**(11,660,000)**	**-**
Total Other Funds	**$ 44,110,000**	**$ 19,123,721**	**$ 39,948,361**	**$ (20,824,640)**	**$ 23,285,360**
Total All Funds	**$ 54,110,000**	**$ 36,578,876**	**$ 60,102,874**	**$ (23,523,998)**	**$ 30,586,002**

[1] Land Asset fund balance (Glencree and Beechwood) no longer included because it is not a fund balance available for appropriations.

City of Half Moon Bay
"Gann" Appropriations Limit

Article XIIIB of the California State Constitution set an appropriations limit for governmental agencies. It became effective in Fiscal Year FY 1979-80 by passage of Proposition 4 ("The Gann Initiative") and was modified by Proposition 111 in November 1989. With FY 1978-79 appropriations as the starting point, the limit is modified by the year-to-year changes both in per capita income and population, using the following alternative percentage changes for each:

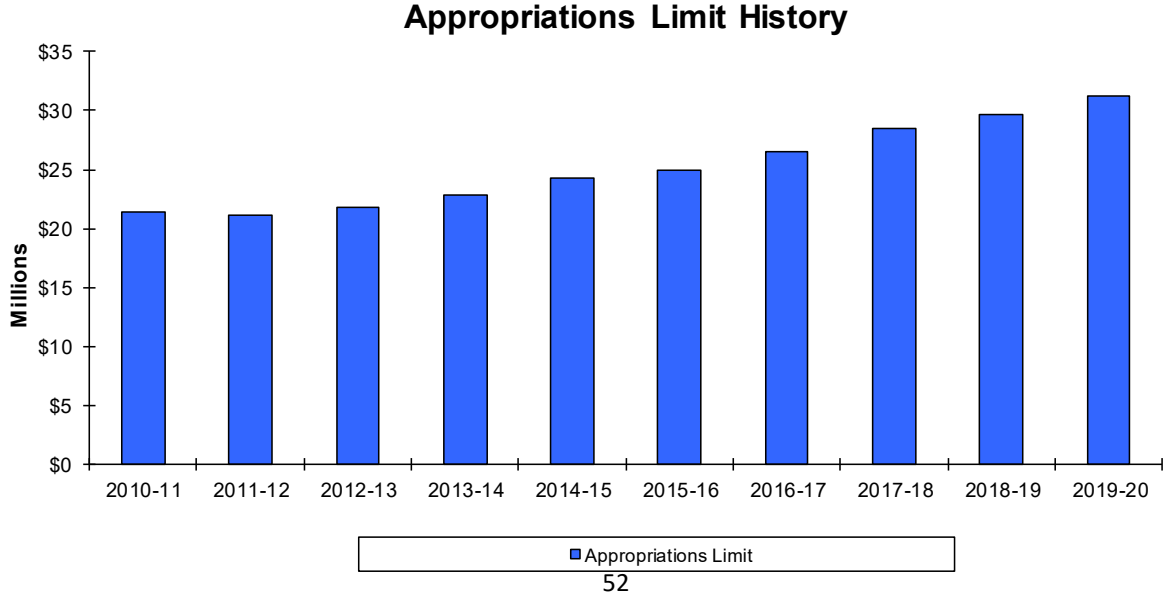
(1) Income growth -
   a. California per capita personal income, or
   b. Nonresidential assessed valuation due to new construction in the city.

(2) Population growth -
   a. City of Half Moon Bay, or
   b. County of San Mateo.

Article XIIIB also sets the guidelines as to what can be included in the appropriations limit, using "Proceeds of Taxes," as defined in the Article, in the limit calculations. The City has remained well below the appropriations limit. It is unlikely that the limit will apply in the near future.

APPROPRIATIONS LIMIT CALCULATION FY 2019-20

FY 2018-19 Appropriation Limit	$31,224,802
Per Capita Personal Income Growth	3.85% 1.0385 factor
Population Change	0.58% 1.0058 factor
Calculation of factor for FY 2019-20	1.0385 X 1.0058 = 1.0445233
FY 2019-20 Appropriation Limit	**$32,615,033**



RESOLUTION NO. C-2019-60

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF HALF MOON BAY, CALIFORNIA, ESTABLISHING THE APPROPRIATION LIMIT PURSUANT TO CALIFORNIA CONSTITUTION ARTICLE XIII B, AND SECTION 7900 ET. SEQ OF THE CALIFORNIA GOVERNMENT CODE FOR FISCAL YEAR 2019-20

WHEREAS, Article XIII B is an amendment to the California Constitution placing a restriction on the amount of proceeds of tax revenue which can be appropriated by state and local governments during a fiscal year; and

WHEREAS, the total appropriation subject to limitation shall not exceed the appropriation limit of the City of Half Moon Bay for the prior fiscal year, as adjusted for inflationary and population changes; and

WHEREAS, the City Council is required to elect which adjustment factors will be used to calculate the limit: (1) either the annual growth in California per capita personal income or the growth in non-residential assessed valuation due to new construction within the City, and (2) either the population growth in the City of Half Moon Bay or population growth in the County of San Mateo, as provided by the State Department of Finance; and

WHEREAS, the City Council has considered the matter at a regular scheduled City Council meeting.

NOW, THEREFORE, BE IT RESOLVED that the City Council hereby adopts the appropriations limit for the Fiscal Year 2019-20, as calculated in Exhibit A, and hereby determines the amount to be thirty-two million, six hundred fifteen thousand thirty-three dollars ($32,615,033) for the City of Half Moon Bay, pursuant to Article XIII B of the California Constitution.

The City selected the following adjustment factors for the calculation of this amendment to the appropriations limit for the 2019-20 fiscal year: (1) the population factor of the City of Half Moon Bay; and (2) the Percentage Change in Per Capita Personal Income over prior year, which were provided by the State of California Department of Finance in May 2019.

****

I, the undersigned, hereby certify that the foregoing Resolution was duly passed and adopted on the 18th day of June, 2019 by the City Council of Half Moon Bay by the following vote:

AYES, Councilmembers: Brownstone, Penrose, Ruddock, Eisen, Rarback
NOES, Councilmembers:
ABSENT, Councilmembers:
ABSTAIN, Councilmembers:

ATTEST:

Jessica Blair, City Clerk

APPROVED:

Harvey Rarback, Mayor

CITY OF HALF MOON BAY

FY 2019-20 BUDGET

(GANN) APPROPRIATIONS LIMIT CALCULATIONS

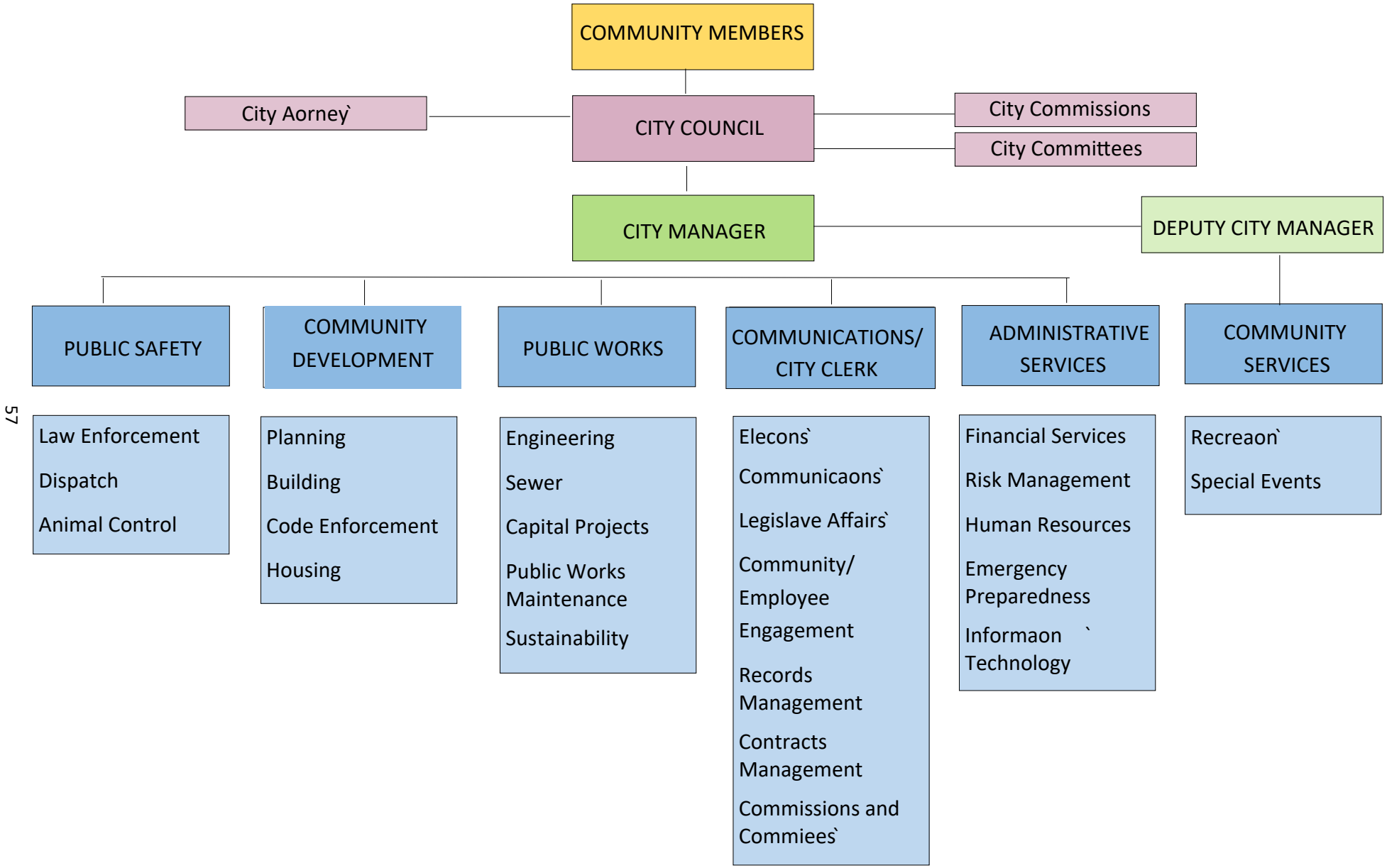
Appropriations Limit Worksheet

		Amount	Type
A	LAST YEAR'S LIMIT	31,224,802	
B	ADJUSTMENT FACTOR		
	1. POPULATION	1.0058	STATE FINANCE
	2. INFLATION	1.0385	STATE FINANCE
	3. TOTAL ADJUSTMENT	1.0445233	(B1 x B2)
C	ANNUAL ADJUSTMENT	1,390,231	(A x B3)
D	OTHER ADJUSTMENTS	-	
E	TOTAL ADJUSTMENTS	1,390,231	(C+D)
	THIS YEAR'S LIMIT	**32,615,033**	(A+E)

CITY OF HALF MOON BAY

Personnel Summary

City of Half Moon Bay Organizational Chart



City of Half Moon Bay

Executive Team

City Manager
Bob Nisbet

City Attorney
Catherine Engberg

Communications Director/
City Clerk Jessica Blair

Deputy City Manager
Matthew Chidester

Public Works Director
John Doughty

Community Development
Director Jill Ekas

Captain Saul Lopez
San Mateo County Sheriff

Administrative Services
Director – Vacant

City of Half Moon Bay
Fiscal Year Ending June 30, 2020
Personnel Summary

Full-Time Equivalent	Actual 2015-16	Actual 2016-17	Actual 2017-18	Revised 2018-19	Proposed 2019-20
City Manager	1.00	1.00	1.00	1.00	1.00
Deputy City Manager	1.00	1.00	1.00	1.00	1.00
Adminstrative Services Director	0.00	0.00	1.00	1.00	1.00
Finance Director/City Treasurer	1.00	1.00	1.00	0.00	0.00
Public Works Director	0.00	1.00	1.00	1.00	1.00
Community Development Director	1.00	1.00	1.00	1.00	1.00
Administrative Services Manager	1.00	1.00	0.00	0.00	0.00
Communications Director/City Clerk	0.00	0.00	0.00	0.00	1.00
City Clerk	1.00	1.00	1.00	1.00	0.00
Accounting Technician	2.00	2.00	2.00	2.00	2.00
Administrative Assistant	2.00	2.00	4.00	4.00	3.00
Assistant Engineer	1.00	1.00	1.00	1.00	1.00
Associate Engineer	1.00	1.00	1.00	1.00	1.00
Associate Planner	0.00	0.00	1.00	2.00	2.00
Building Attendant	0.00	0.00	1.00	1.00	1.00
City Engineer	1.00	1.00	1.00	1.00	1.00
Communications Specialist	0.00	0.00	0.00	1.00	1.00
Community Preservation Specialist	0.00	0.00	0.00	1.00	1.00
Deputy City Clerk	1.00	1.00	0.00	0.00	1.00
Executive Assistant	1.00	1.00	1.00	1.00	1.00
Finance Manager	0.00	0.00	1.00	1.00	1.00
Maintenance Worker (I/II)	3.00	3.00	5.00	4.00	5.00
Management Analyst	3.00	3.00	4.00	4.00	4.00
Permit Technician	1.00	1.00	1.00	1.00	1.00
Planning Manager	0.00	1.00	1.00	0.00	0.00
Public Works Superintendent	1.00	1.00	1.00	1.00	1.00
Recreation Coordinator	0.00	1.00	1.00	1.00	1.00
Recreation Leader	0.00	1.00	1.00	1.00	2.00
Senior Accountant	1.00	1.00	0.00	0.00	0.00
Senior Maintenance Worker	0.00	0.00	0.00	2.00	2.00
Senior Management Analyst	1.75	2.50	2.00	2.00	3.00
Senior Planner	0.00	0.00	1.00	1.00	1.00
Total Regular Fulltime Employees	**25.75**	**30.50**	**37.00**	**39.00**	**42.00**

*FTE Count does not include limited term employees.

City of Half Moon Bay
FY 2019-20 Budget
Staffing Level Summary

Department Division	Actual 2016-17	Actual 2017-18	Budget 2018-19	Recommended Budget 2019-20
General Fund				
General Administration	12.40	12.40	12.60	12.85
Community Development				
Planning Services	4.05	4.05	5.00	5.20
Building and Code Enforcement	0.65	0.65	1.40	1.55
Total Public Works	4.70	4.70	6.40	6.75
Public Works				
Administration	0.00	0.00	0.00	2.40
Engineering	2.20	2.50	2.90	2.15
Facilities Maintenance	2.75	3.15	5.95	5.55
Total Public Works	4.95	5.65	8.85	10.10
Recreation Services				
Parks/Recreation	0.40	2.40	3.70	4.55
Community Services	0.00	0.00	0.00	1.35
Total Recreation Services	0.40	2.40	3.70	5.90
Total General Fund	22.45	25.15	31.55	35.60
Other Funds				
05 - Sewer Operating	1.65	1.80	1.90	2.00
11/12 - Streets & Roads/Measure A	1.00	1.15	2.25	2.15
14 - Storm Drains	0.90	0.90	0.20	0.35
17 - Parks Facilities	0.15	0.15	0.15	0.15
19 - Affordable Housing	0.00	0.00	0.00	0.00
48 - Public Facilities	0.15	0.15	0.00	0.80
61 - Vehicle Internal Service	0.10	0.10	0.00	0.00
63 - Risk Management	1.10	1.10	0.95	0.95
Total Permanent Staffing Levels (FTE)	27.50	30.50	37.00	42.00
City Council	5.00	5.00	5.00	5.00
Total Staffing Levels (FTE)	32.50	35.50	42.00	47.00

			Full Time Equivalents (FTE)		
Service Area	FY 2017-18	Net Change	FY 2018-19	Net Change	FY 2019-2020 Proposed
City Council	5.00	-	5.00	-	5.00
City Clerk/Communications	1.90	-	1.90	0.95	2.85
City Manager	3.10	0.70	3.80	(0.80)	3.00
Finance and Risk Management	4.60	-	4.60	0.90	5.50
Admin Svcs/HR/IT/Emergency Services	3.50	(0.30)	3.20	(0.75)	2.45
Community Development/Planning Services/Building Inspection	5.15	0.65	5.80	0.95	6.75
Public Works - Engineering/Facilities Maintenance	9.00	0.25	9.25	0.85	10.10
Public Safety	0.00	-	-	-	
Recreation/Community Services	3.50	1.30	4.80	1.10	5.90
Other	5.25	0.40	5.65	(0.20)	5.45
TOTAL	**41.00**	**3.00**	**44.00**	**3.00**	**47.00**

CITY OF HALF MOON BAY

General Fund

General Fund Overview

The General Fund is the primary operating fund of the City and is used to account for day-to-day activities. It receives unrestricted revenue and provides City general administrative services, public safety and land development – related activities.

All general tax revenue and other revenues that are not allocated by law or contractual agreement to another fund are accounted for in this fund. The General Fund is an unrestricted fund, and its resources can be used for any City service or governmental purpose.

The City's major revenue sources for the General Fund are transient occupancy (hotel) taxes, sales and property taxes, charges for services and other revenue.

The General Fund provides for the cost of operating City government and includes the City Attorney, City Clerk, City Council, City Manager, Finance, Risk Management, Human Resources, Information Technology, Emergency Services Operations, Public Safety, Planning Services, Building and Code Enforcement, Engineering, Facilities Maintenance, and Recreation Services. In addition, General Fund expenditures include capital projects and reserve funding.

The City provides services to the community using a combination of City staff, programs and contract services. The Community Development, Public Works, Engineering, Building, Administrative Services, Communications/City Clerk and City Manager departments consist primarily of City staff. This work is supplemented by contracts with other government agencies and service providers that provide the City with Animal Control, Building Inspection, Building Permit Processing including plan check, Dispatch, Engineering, Information Technology, Janitorial, Law Enforcement, Legal Services, Library Operations, and limited Landscaping Maintenance services.

BUDGET OVERVIEW

The General Fund budget for FY 2019-20 is $17.5 million in revenue and $17.2 million in operating expenditures, excluding capital and non-operating transfers. This will generate a structural surplus of $0.3 million in the FY 2019-20 General Fund budget. The City continues to invest back to the community by substantially funding it's aggressive Capital Improvement Program, including contributions from the General Fund. The FY 2019-20 General Fund contribution to the Capital Program is $3.0 million. The fund balance/reserves are projected to be $7.3 million at June 30, 2020, representing a reduction of $1.4 million from June 30, 2019, due to the $3.0 million contribution to CIP.

GENERAL FUND REVENUES

Unlike appropriations that can be established at the direction of the City, many key revenue sources are controlled by external forces to the City. For instance, property tax revenue varies with real estate values, and development-related revenue is affected by the volume and type of building permits and plan check requests. Sales tax and transient occupancy tax (TOT) revenues are subject to local and national economic cycles, businesses' decision to locate in the community and travel activity of businesses and tourists.

Three sources make up almost 75% of the revenue in the General Fund: Transient Occupancy (Hotel) Tax, Property Tax and Sales Tax. These revenues are projected to increase by 3% over the FY 2018-19 budget. All other revenues with some exceptions are estimated to go up by 2%.

General Fund revenue overall is projected to come in higher than the current year's budget by 2%, as the economy continues to grow.

Key general fund revenue categories are further described below:

Transient Occupancy Taxes (TOT)

Transient occupancy taxes are assessed on The City's thirteen hotels, motels, bed & breakfast establishments, and three campgrounds at a rate of 12%, generating the City's largest source of revenue. Based on information provided by the City's Chamber of Commerce, the 640 available rooms in 2019 averaged 68% occupancy. TOT revenue has increased at a healthy rate for the last 10 years.

Property tax

Property tax is the City's second largest revenue source. Property tax revenue is collected and distributed by the County of San Mateo based on applying the constitutionally limited tax rate of 1% to the assessed value of certain secured and unsecured properties as determined by the County Assessor.

Where Do Property Taxes Go?*

*Based on the City's largest Tax Rate Area (TRA)

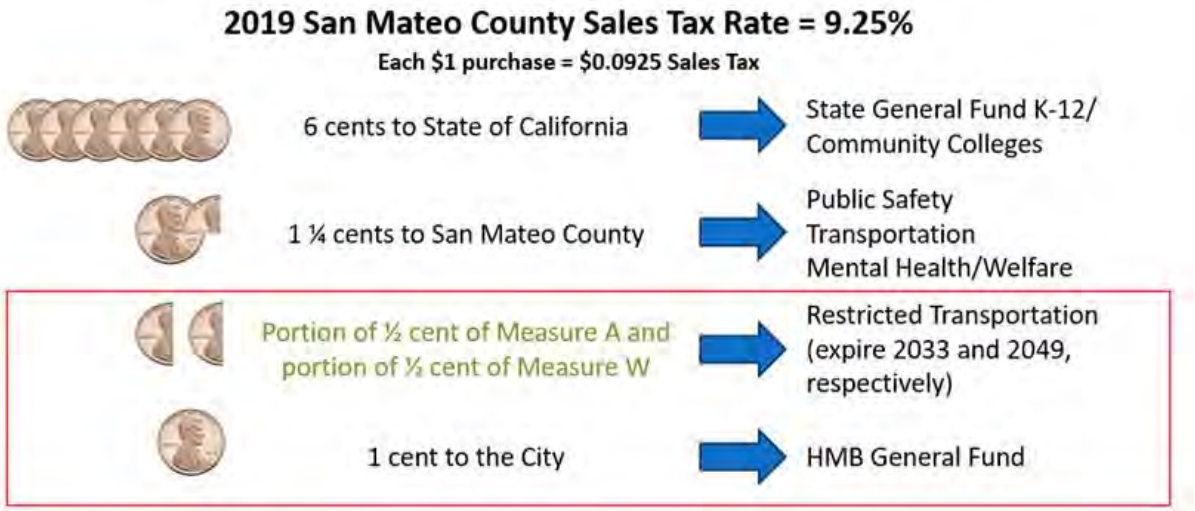
The City considers the historical rate of changes and potential economic conditions when forecasting property tax revenue. Property tax revenue shows increases based on figures from the San Mateo County Assessor's Office.

This revenue includes the distributions of excess Educational Revenue Augmentation Fund (ERAF) at 50% of the historic distribution level due to the uncertain nature of these revenues.

Sales and Use Tax

The Sales Tax is currently the City's third largest revenue source. Sales tax is collected by the State Board of Equalization against tangible items. The local portion is distributed to cities and counties based on the location of the sale. The City of Half Moon Bay receives 1¢ on every $1 purchase as listed in the chart below.

Where Do Sales Taxes Go?



Most of Half Moon Bay Sales Tax is generated from three major economic sectors, listed below. Approximately 76% of the City's total sales tax is generated from twenty-five businesses.

- Food (grocery, restaurants) – 47%
- General Retail – 15%
- Transportation (car sales, gas station) – 22%
- Other – 16%

The City's sales tax revenues are expected to continue to rise modestly, assuming favorable economic conditions continue.

Other Taxes

Other taxes include franchise fees assessed on franchise agreements with utility companies, and business license registration taxes that are being assessed on all businesses operating within the City limits.

Charges for Services

Cost of Services fees are revised on an annual basis based on a comprehensive review of actual cost. This revenue source is approximately 5% of General Fund revenue.

In FY 2017-18, staff completed a comprehensive citywide user fee study, conducted by an outside consultant. The study revised the method of calculating user-based fees, that will allow the City to accurately account for the true cost of providing various programs and services within City operations and approach full cost recovery when setting user fees. Based on the results of the study and Council adoption of the revised Master Fee Schedule, the City moved from a 56% to close to 99% recovery rate for the majority of City services that provide private benefit (e.g. most of building and planning services), while still being able to offer subsidies for services that provide public benefit (e.g. public safety, recreation, and senior services).

Other Revenues

This revenue category includes San Mateo County reimbursement relating to unfunded pension liability for safety personnel that the City pays directly to CalPERS, golf fees per the development agreement with Ocean Colony and parking fees.

GENERAL FUND EXPENDITURES

The FY 2019-20 General Fund total expenditure budget is $20.2 million, which includes $17.2 million in operating expenditures and $3 million in capital transfers to fund the City's FY 2019-20 Capital Improvement Program. This is an increase of $2.4 million or 13.5% over the FY 2018-19 budget of $17.8 million, primarily due to the increase in contribution to the CIP, additions to the budget to address Council priorities, and regular COLA adjustments.

TRANSFERS FOR CAPITAL PROJECT FUNDS

The General Fund makes contributions to the City's Capital Improvement Plan (CIP) that is budgeted in various Special Revenues and Capital Funds.

Staff always strives to identify probable funding sources for projects and explore outside funding sources whenever possible. These include Federal and State Grants, County contributions, Gas Tax and various other tax measures. When no external sources of funding can be identified, General Funds are allocated to help cover the cost of projects.

The proposed 5-Year Capital Improvement Program (CIP) has a total FY 2019-20 budget of $15.5 million, which includes a $3 million contribution from the General Fund. The CIP has 46 programs and projects scheduled for FY 2019-20, with 17 of those improvements scheduled for completion by the end of the fiscal year. Additional information on the CIP can be found in the FY 2019-24 CIP Budget document.

RESERVES AND ASSIGNED FUNDS

The City's Fund Balance Policy identifies fund balances (or reserves) as falling into the following categories: Restricted, Committed, Assigned or Unassigned. In accordance with GASB Statement No. 54 requirements and the City policy, the Council established the following designations for General Fund Committed Fund Balances:

- Operating Contingency Reserve of 30% of annual expenditures ($5 million)
- Economic Uncertainty Reserve of target 20% of annual expenditure ($2.6 million)

The General Fund balance components are detailed in the table below. The City will have a balanced budget for FY 2019-20 with no ending undesignated fund balance.

GENERAL FUND (RESTRICTED & UNRESTRICTED BALANCES)

Designations	Actual 2017-18	Budget 2018-19[1]	Recommended Budget 2019-20[2]
Beginning Fund Balance	***$ 11,057,160***	***$ 9,962,452***	***$ 10,000,000***
Total Revenue	**16,499,748**	**16,540,058**	**17,455,155**
Net Operating Expenditures	10,560,924	13,478,351	15,109,432
Operating Transfers	1,626,766	2,362,690	2,045,081
Total Operating Expenditures	**12,187,690**	**15,841,041**	**17,154,513**
Capital Transfers	3,780,001	1,918,705	3,000,000
Total Expenditures	**17,594,456**	**17,759,746**	**20,154,513**
Ending Fund Balance	***9,962,452***	***8,742,764***	***7,300,642***
Operating Contingency (30% of Op. Exp.)	3,656,307	4,752,312	5,146,354
Assigned for Main Street Bridge Contingencies	1,500,000	1,500,000	-
Economic Uncertainty Reserve[3] (Target 20% Op. Exp.)	-	-	2,154,288
Total Designations	***$ 5,156,307***	***$ 6,252,312***	***$ 7,300,642***
Undesignated Fund Balance	***$ 4,806,145***	***$ 2,490,452***	***$ -***
Ending Fund Balance as % of Net Op. Expenses	94%	65%	48%
Ending Fund Balance as % of Total Op. Expenses	82%	55%	43%

[1] Fund balances for the Adopted Budget 2018-19 reflect audited FY 2017-18 ending balance and budgeted revenues and expenditures.

[2] Beginning Balance for FY 2019-20 higher than budgeted FY 2018-19 ending balance due to anticipated favorable variances in budgeted revenues and expenditures.

The Committed Contingency Reserve provides funds for the City to cover unexpected and sharp drops in revenues due to the economy, emergency events and other unanticipated expenditures and events. The City's policy requires this reserve to be 30% of budgeted annual operating expenditures. In calculating the FY 2019-20 operating contingency reserves, staff included operating transfers in the expenditures figures and set aside $5 million for this purpose.

The assigned Economic Uncertainty Reserve is new and is in preparation for the next recession, considered overdue by historical standards. The goal of this reserve is to have 20% of budgeted annual operating expenditures which would amount to $3.2 million. The FY 2019-20 budget provides $2.6 million for this reserve.

Altogether, General Fund projected fund balance of $7.6 million represents 46% (vs 49% in the FY 2018-19 budget) of operating General Fund expenditures.

City of Half Moon Bay
FY 2019-20 Recommended Budget
General Fund Summary

	Actual 2017-2018	Budget 2018-19	Recommended 2019-20
Revenue	$ 16,843,109	$ 16,540,058	$ 17,455,155
Operating Expenditures	(11,921,403)	(13,478,351)	(15,109,432)
General Fund Transfers Out- Operating	(2,685,180)	(2,362,690)	(2,045,081)
Excess of Operating Revenue Over/(Under) Expenditures	2,236,526	699,017	300,642
General Fund Transfers Out - Capital (CIP)	(3,166,016)	(1,918,705)	(3,000,000)
Net Change to General Fund	(929,490)	(1,219,688)	(2,699,358)
Beginning Total Fund Balance	8,570,000	9,960,000	10,000,000
Ending Fund Balance	9,960,000	7,300,642	7,300,642
Committed Contingency Reserve	(4,381,975)	(4,752,312)	(5,146,354)
Assigned Contingency Reserves			
Economic Uncertainty Reserve	-	-	(2,154,288)
Main Street Bridge Contingency	(1,500,000)	(1,500,000)	-
Unassigned Fund Balance	$ 4,078,025	$ 1,048,330	$ -

Excess Revenue Over/(Under) Expenditures

There is a structural surplus in the FY 2019-20 budget of $300,642, which is down 57% from the FY 2018-19 budget surplus.

Committed Contingency Reserve

The City's reserve policy requires a reserve of 30% of budgeted annual operating expenditures. The FY 2019-20 budget is in compliance with policy and allocates $5.15 million as a General Fund contingency reserve.

Assigned Reserves for FY 2019-20

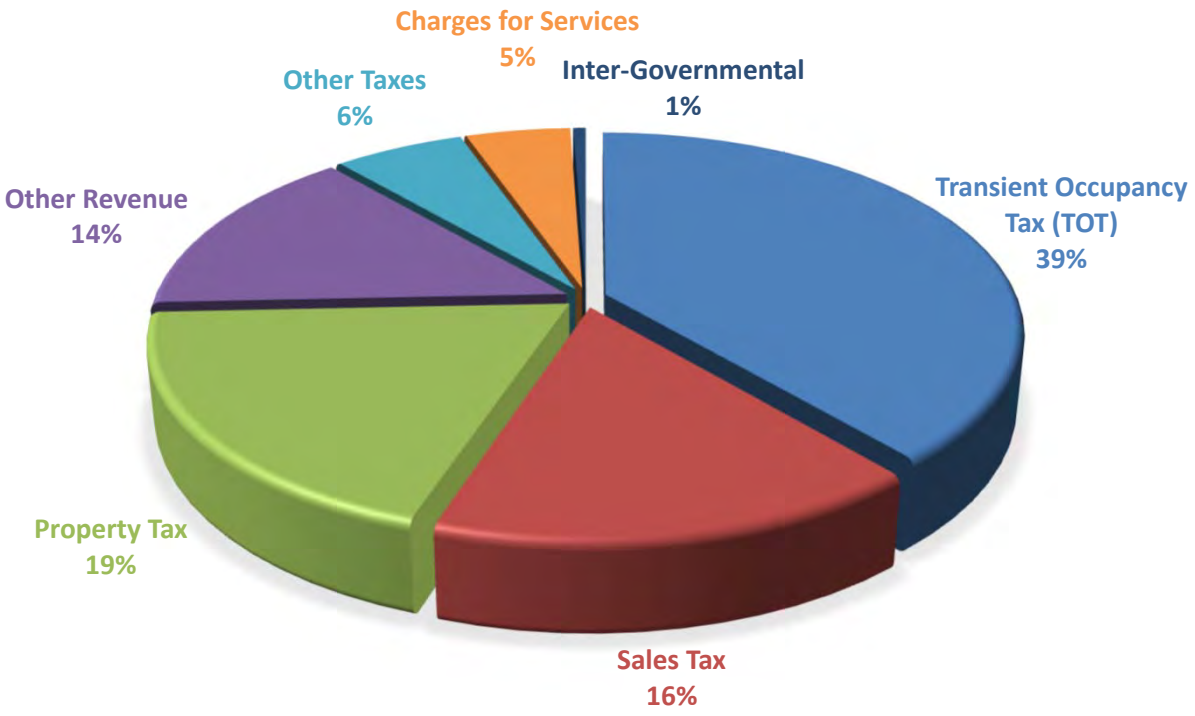
In prior years, the City assigned $1.5 million for Main Street Bridge contingencies. As of FY 2019-20, that reserve has been discontinued. Beginning in FY 2019-20, the City created an Economic Uncertainty Reserve targeted at 20% of budgeted annual operating expenditures.

City of Half Moon Bay
FY 2019-20
General Fund Revenue Detail

Description	Actual 2016-17	Actual 2017-18	Adopted 2018-19	Recommended 2019-20
Taxes				
Transient Occupancy Tax	$6,024,855	$6,434,808	$6,603,000	$6,801,090
Property Tax	$3,134,138	$3,386,659	3,268,250	3,364,798
Sales & Use Tax	$2,514,852	$2,836,614	2,791,538	2,875,123
Franchise Fees and Tax	$626,443	$668,277	709,000	723,180
Business License Tax	$293,223	$318,815	320,000	326,400
Total Taxes	**12,593,511**	**13,645,172**	**13,691,788**	**14,090,591**
Intergovernmental				
Dept of Motor Vehicles Fees (VLF)	6,407	6,628	8,000	8,160
State Reimbursements (POST/SB90)	2,529	-	3,500	-
Total Intergovernmental	**8,936**	**6,628**	**11,500**	**8,160**
Charges for Services				
Building Permits	401,324	308,737	360,895	250,073
Engineering & Planning Fees	135,305	442,204	261,708	312,392
Police Services	95,883	192,192	135,500	140,052
Recreation Services	10,080	87,536	186,000	72,220
Other	25,625	23,090	67,000	68,340
Total Charges for Services	**668,218**	**1,053,760**	**1,011,103**	**843,077**
Other Revenue				
Other Fees	614,781	407,616	190,600	425,246
Golf Fees	398,027	440,559	439,000	447,780
Interest	96,563	153,020	26,200	26,724
Parking	125,224	125,850	135,300	140,006
County Credit Reimbursement	555,822	541,121	535,548	556,649
Allocation In from Other Funds	288,956	444,430	486,754	916,922
Total Other Revenues	**2,079,373**	**2,112,596**	**1,813,402**	**2,513,327**
Ongoing General Fund Revenue[1]	15,350,038	16,818,156	16,527,793	17,055,155
Total General Fund Revenue	**$15,350,038**	**$16,818,156**	**$16,527,793**	**$17,455,155**

[1]Excludes one-time transfer of $400,000 from Judgement Obligation Fund B (Fund 78).

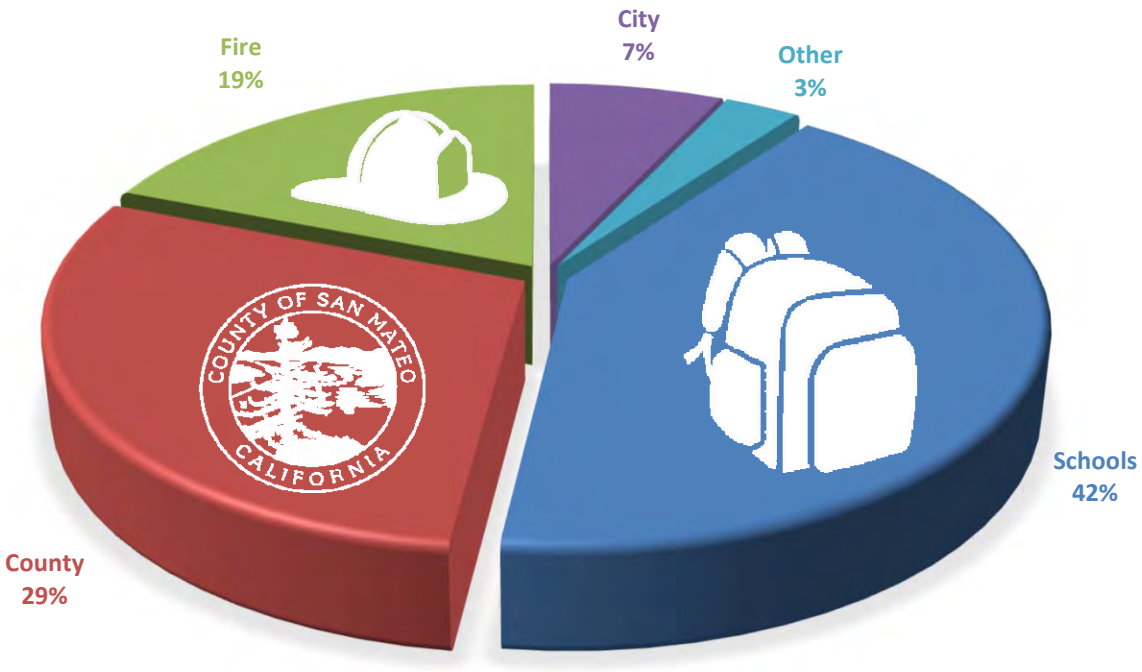
City of Half Moon Bay
FY 2019-20 Budget
General Fund Revenue



Transient Occupancy Tax (TOT)	$6,801,090
Sales Tax	2,875,123
Property Tax	3,364,798
Other Revenue	2,513,327
Other Taxes	1,049,580
Charges for Services	843,077
Inter-Governmental	8,160
Total FY 2019-20 Budget	**$ 17,455,155**

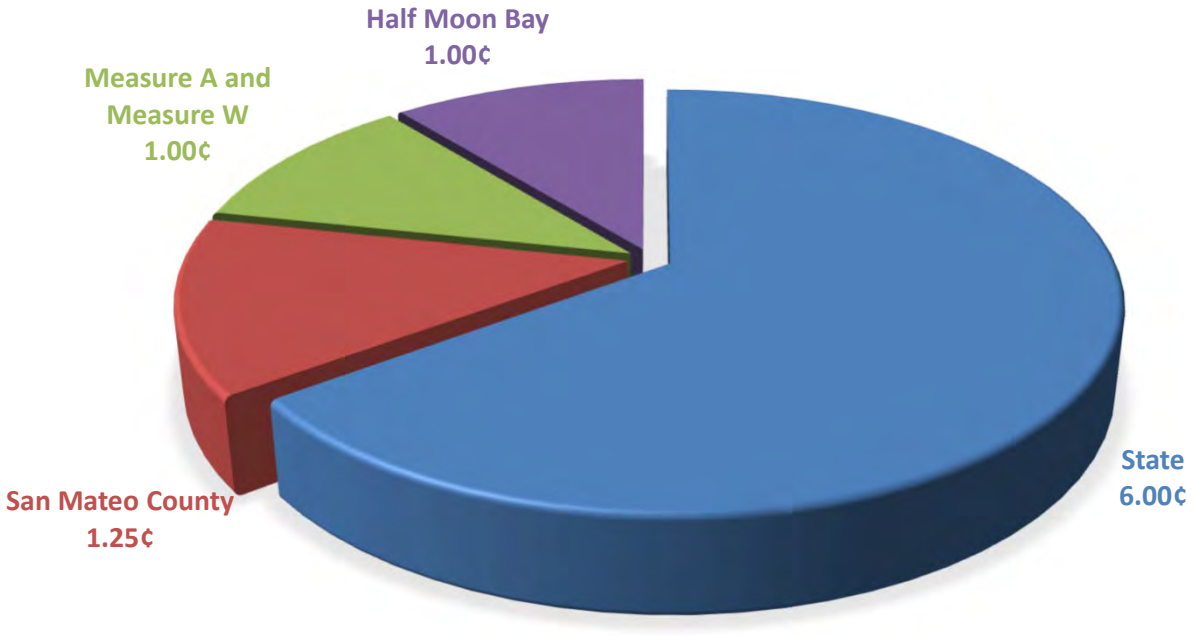
The City of Half Moon Bay's three primary revenue sources are Transient Occupancy Tax (TOT), Property Tax, and Sales Tax, which comprise 75% of total General Fund Revenue.

City of Half Moon Bay
FY 2019-20 Budget
Property Tax Revenue



The City of Half Moon Bay is a low property tax city with a share of 7% of Property Taxes. The average allocation percentage for San Mateo County cities is 18%.

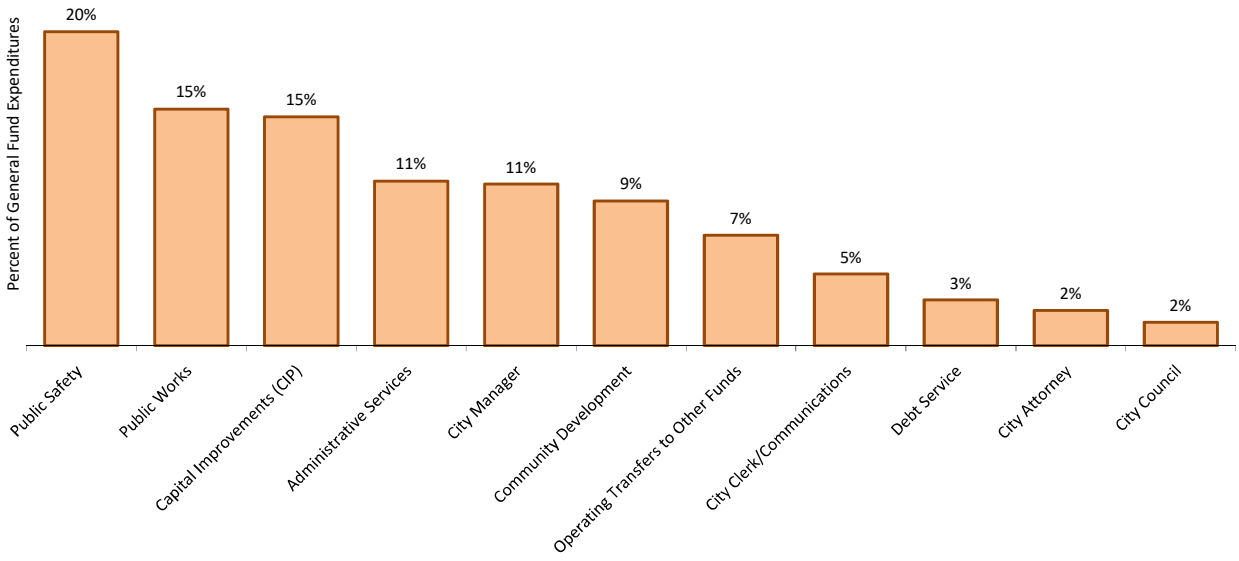
City of Half Moon Bay
FY 2019-20 Budget
Sales Tax Revenue (9.25%)



Half Moon Bay Sales Tax is generated primarily from three sectors. Approximately 76% of total Sales Tax is generated from twenty-five businesses.

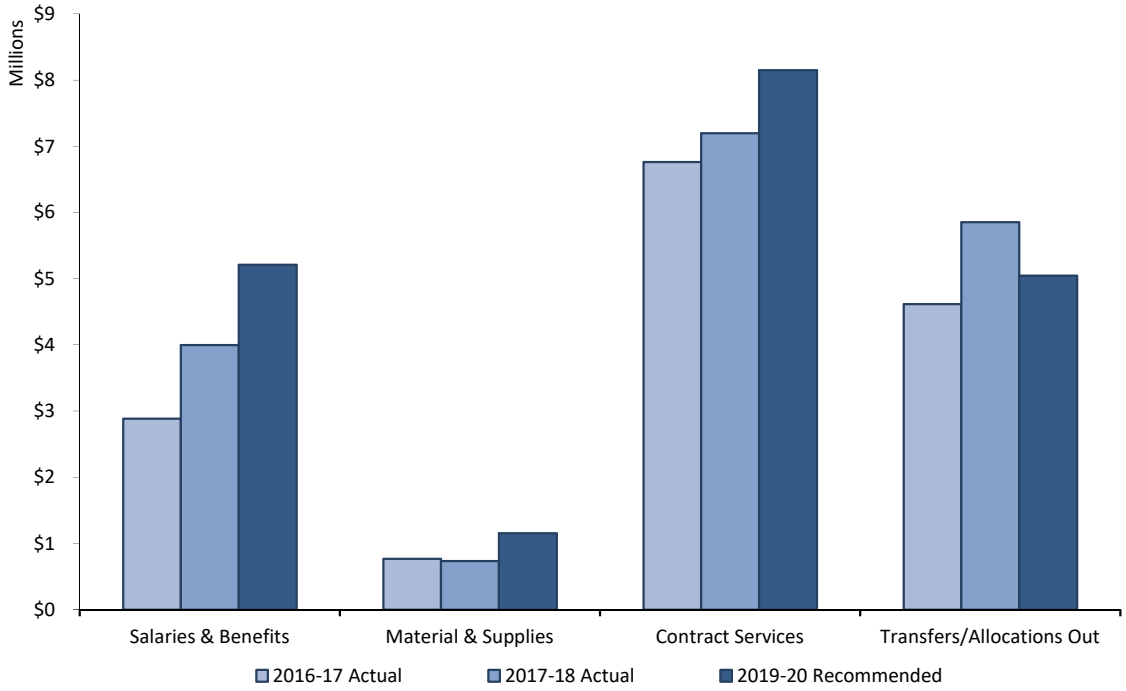
Food (grocery, restaurants)	**45%**
General Retail	**17%**
Transportation (car sales, gas stations)	**21%**
Other	**17%**
	100%

City of Half Moon Bay
FY 2019-20 Budget
General Fund Expenditures



Public Safety	$	4,116,032
Public Works	$	3,101,872
Capital Improvements (CIP)	$	3,000,000
Administrative Services	$	2,158,590
City Manager	$	2,118,248
Community Development	$	1,898,136
Operating Transfers to Other Funds	$	1,450,000
City Clerk/Communications	$	940,156
Debt Service	$	600,000
City Attorney	$	463,500
City Council	$	307,978
Total FY 2019-20 Budget	**$**	**20,154,513**

City of Half Moon Bay
FY 2019-20 Budget
General Fund Expenditures Trend - By Type



Expenditures	2016-17 Actual	2017-18 Actual	2018-19 Adopted	2019-20 Recommended	2018-19 vs 2019-20$	2018-19 vs 2019-20%
Salaries & Benefits	$ 2,882,228	$ 3,995,516	$ 4,794,233	$ 5,207,409	$ 413,176	8.6%
Material & Supplies	768,194	730,855	1,046,800	1,153,957	$ 107,157	10.2%
Contract Services	6,760,078	7,195,031	7,637,318	8,148,066	$ 510,748	6.7%
Transfers/Allocations Out	4,614,804	5,851,196	4,281,395	5,045,081	$ 763,686	17.8%
Debt Service [1]	-	-	-	600,000	$ 600,000	N/A
Total General Fund Exp.	**$ 15,025,304**	**$ 17,772,599**	**$ 17,759,746**	**$ 20,154,513**	**$ 2,394,767**	**13.5%**

Salaries and Benefits

The following new positions were added to FY 2019-20 Budget:
Senior Management Analyst
Recreation Leader I
Maintenance Worker II

Contract Services

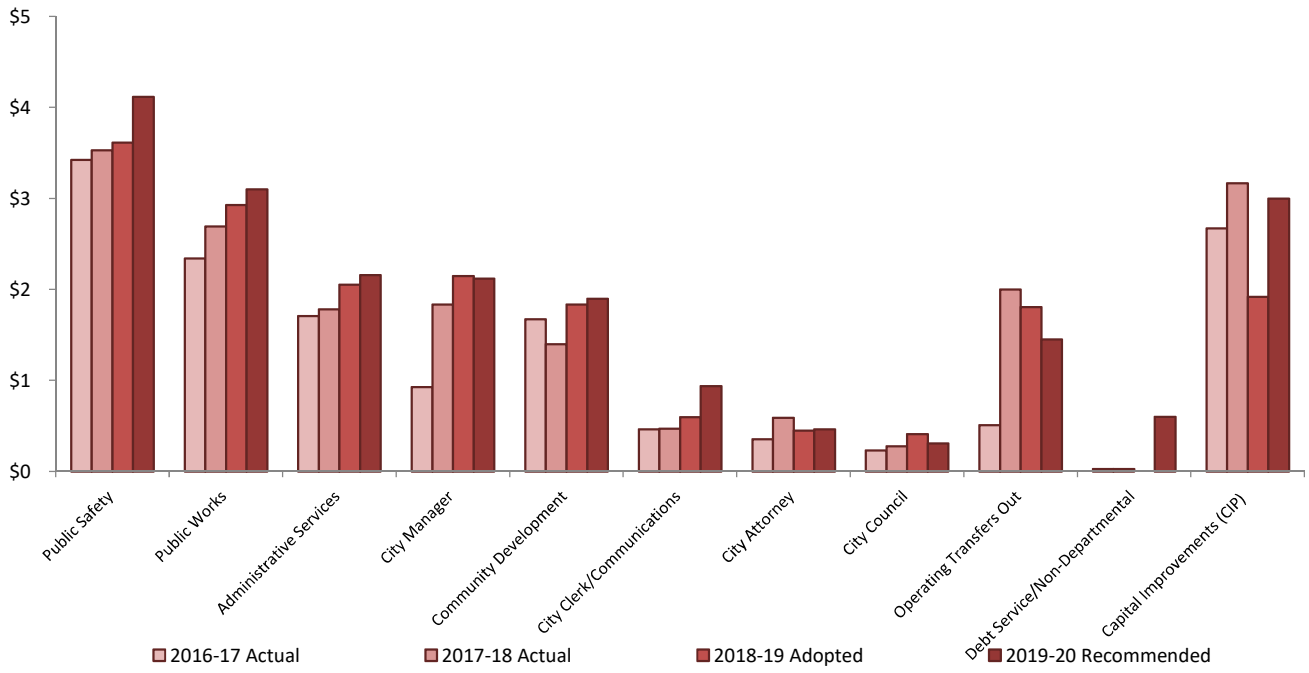
The City of Half Moon Bay contracts with outside service providers for animal control, building inspection, including plan check, dispatch, information technology, janitorial services, law enforcement, legal services, library, and some minimal landscaping maintenance.

Transfers

Transfers include Capital Improvement Program (CIP) funding, debt service, and reserve funding.

[1]Debt Service on county loan is new to general fund in FY 2019-20. There are no prior amounts available for comparison.

City of Half Moon Bay
FY 2019-20 Budget
General Fund Expenditures Trend - By Department



Expenditures	2016-17 Actual	2017-18 Actual	2018-19 Adopted	2019-20 Recommended	2017-18 vs 2018-19 %	2018-19 vs 2019-20 %
Public Safety	$ 3,424,435	$ 3,527,924	$ 3,614,926	$ 4,116,032	2.5%	13.9%
Public Works	$ 2,342,524	$ 2,692,665	$ 2,927,462	$ 3,101,872	8.7%	6.0%
Administrative Services	$ 1,706,584	$ 1,782,797	$ 2,054,014	$ 2,158,590	15.2%	5.1%
City Manager	$ 928,623	$ 1,834,068	$ 2,146,732	$ 2,118,248	17.0%	-1.3%
Community Development	$ 1,673,975	$ 1,400,234	$ 1,833,892	$ 1,898,136	31.0%	3.5%
City Clerk/Communications	$ 465,269	$ 472,213	$ 598,153	$ 940,156	26.7%	57.2%
City Attorney	$ 354,229	$ 591,857	$ 450,000	$ 463,500	-24.0%	3.0%
City Council	$ 230,862	$ 277,130	$ 409,323	$ 307,978	47.7%	-24.8%
Departmental Expense Subtotal	**$ 11,126,501**	**$ 12,578,888**	**$ 14,034,502**	**$ 15,104,513**	**11.6%**	**7.6%**
Operating Transfers Out	$ 509,947	$ 2,001,417	$ 1,806,539	$ 1,450,000	-9.7%	100.0%
Debt Service/Non-Departmental	$ 26,384	$ 26,278	$ -	$ 600,000	-100.0%	N/A
Operating Expenses Subtotal	**$ 11,662,832**	**$ 14,606,583**	**$ 15,841,041**	**$ 17,154,513**	**8.5%**	**8.3%**
Capital Improvements (CIP)	$ 2,671,933	$ 3,166,016	$ 1,918,705	$ 3,000,000	-39.4%	56.4%
Total General Fund Exp.	**$ 14,334,765**	**$ 17,772,599**	**$ 17,759,746**	**$ 20,154,513**	**-0.1%**	**13.5%**

Communications
The City has created a new Communications Department which will be responsible for Community Engagement, Advertising, and Web/Social Media outreach, which were previously under the City Manager, City Clerk, and individual departments, as needed. One Communications Specialist and 40% of the reclassified City Clerk/Communications Director position were allocated to the FY 2019-20 budget for this department.

Public Works
One Senior Management Analyst and one Maintenance Worker II positions were added to the FY 2019-20 budget.

Capital Improvements (CIP)
A one-time transfer of General Fund reserves to Capital Improvement projects (CIP) has been budgeted for FY 2019-20.

Community Development
The previously approved but not budgeted Community Preservation Specialist has been added to the FY 2019-20 budget.

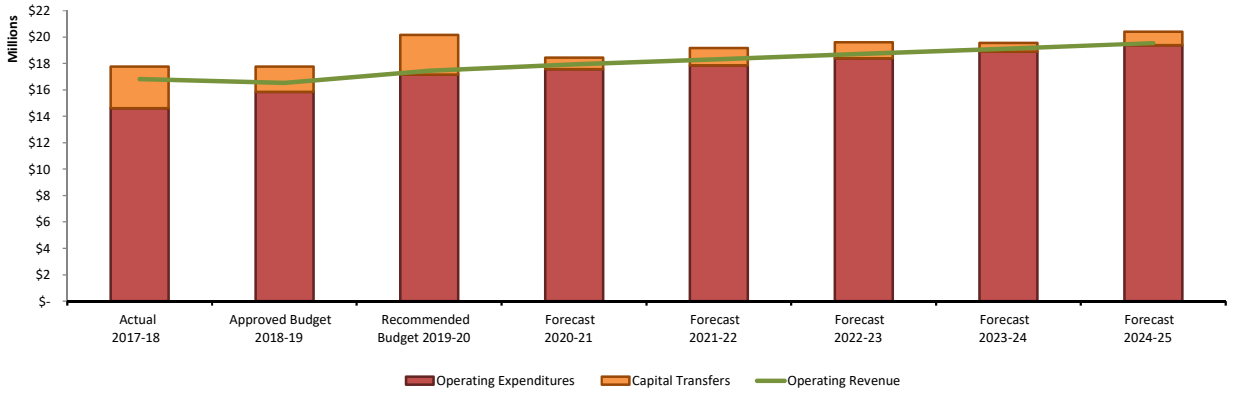
Recreation and Community Services
One Recreation Leader position was added to the FY 2019-20 budget.

City of Half Moon Bay
FY 2019-20 to FY 2024-25
General Fund Projections

REVENUES	2017-18 Actual	2018-19 Adopted Budget	2019-20 Recommended Budget	2020-21 Forecast	2021-22 Forecast	2022-23 Forecast	2023-24 Forecast	2024-25 Forecast
Transient Occupancy Tax	$ 6,434,808	$ 6,603,000	$ 6,801,090	$ 7,005,123	$ 7,145,225	$ 7,288,130	$ 7,433,893	$ 7,582,571
% Change	6.80%	2.61%	3.00%	3.00%	2.00%	2.00%	2.00%	2.00%
Property Taxes	$ 3,386,659	$ 3,268,250	$ 3,364,798	$ 3,432,094	$ 3,500,736	$ 3,570,751	$ 3,642,166	$ 3,715,009
% Change	6.67%	-3.50%	2.95%	2.00%	2.00%	2.00%	2.00%	2.00%
Sales Taxes	$ 2,836,614	$ 2,791,538	$ 2,875,123	$ 2,981,503	$ 3,079,893	$ 3,178,450	$ 3,276,982	$ 3,375,291
% Change	12.79%	-1.59%	2.99%	3.70%	3.30%	3.20%	3.10%	3.00%
Total Other Taxes	$ 987,092	$ 1,029,000	$ 1,049,580	$ 1,070,572	$ 1,091,983	$ 1,113,823	$ 1,136,099	$ 1,158,821
% Change	7.33%	4.25%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%
Other Revenue	$ 3,172,984	$ 2,836,005	$ 3,364,564	$ 3,431,855	$ 3,500,492	$ 3,570,502	$ 3,641,912	$ 3,714,750
% Change	34.69%	-10.62%	18.64%	2.00%	2.00%	2.00%	2.00%	2.00%
Total General Fund Revenue	**$ 16,818,156**	**$ 16,527,793**	**$ 17,455,155**	**$ 17,921,147**	**$ 18,318,329**	**$ 18,721,656**	**$ 19,131,052**	**$ 19,546,442**
% Change	**11.22%**	**-1.73%**	**5.61%**	**2.67%**	**2.22%**	**2.20%**	**2.19%**	**2.17%**

EXPENDITURES	2017-18 Actual	2018-19 Adopted Budget	2019-20 Recommended Budget	2020-21 Forecast	2021-22 Forecast	2022-23 Forecast	2023-24 Forecast	2024-25 Forecast
Salaries & Benefits	3,995,516	4,794,233	5,207,409	5,378,129	5,539,473	5,705,658	5,876,827	6,053,133
% Change	26.68%	16.66%	7.93%	3.28%	3.00%	3.00%	3.00%	3.00%
Materials & Supplies	730,855	1,046,800	1,153,957	1,188,576	1,224,233	1,260,960	1,298,789	1,337,753
% Change	-5.32%	30.2%	9.3%	3.00%	3.00%	3.00%	3.00%	3.00%
Contract Services	7,195,031	7,637,318	8,148,066	8,392,508	8,644,283	8,903,611	9,170,719	9,445,841
% Change	6.78%	5.79%	6.27%	3.00%	3.00%	3.00%	3.00%	3.00%
Debt Service	-	-	600,000	600,000	600,000	600,000	600,000	600,000
%Change	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
OP Transfers & Allocations	$ 2,685,180	$ 2,362,690	$ 2,045,081	2,015,451	1,842,966	1,917,092	1,959,728	1,956,106
% Change	27.64%	-14%	-16%	-1.45%	-8.56%	4.02%	2.22%	-0.18%
Capital	$ 3,166,016	$ 1,918,705	$ 3,000,000	$ 855,000	$ 1,319,961	$ 1,209,961	$ 655,000	$ 1,000,000
% Change	15.61%	-65.01%	36.04%	-71.50%	54.38%	-8.33%	-45.87%	52.67%
Total General Fund Expenses	**17,772,599**	**17,759,746**	**20,154,513**	**18,429,664**	**19,170,916**	**19,597,282**	**19,561,063**	**20,392,833**
% Change	**15.45%**	**-0.07%**	**11.88%**	**-8.56%**	**4.02%**	**2.22%**	**-0.18%**	**4.25%**
Structural Surplus (Excludes Captial)	**$ 2,211,573**	**$ 686,752**	**$ 900,642**	**$ 946,483**	**$ 1,067,374**	**$ 934,335**	**$ 824,989**	**$ 753,609**
Beginning Fund Balance	**11,057,000**	**9,963,000**	**10,000,000**	**7,300,642**	**6,792,125**	**5,939,538**	**5,063,912**	**4,633,901**
Ending Fund Balance	**10,102,557**	**8,731,047**	**7,300,642**	**6,792,125**	**5,939,538**	**5,063,912**	**4,633,901**	**3,787,510**
REVENUE OVER / (UNDER)	**(954,443)**	**(1,231,953)**	**(2,699,358)**	**(508,517)**	**(852,587)**	**(875,626)**	**(430,011)**	**(846,391)**

Transient Occupancy Tax (TOT) has increased by no less than 6% each year since FY 2009-10. The City conservatively assumes 3% annual increases in this forecast.
Property Tax is conservatively projected to incease 2% each year. Please note that excess Educational Revenue Augmentation Fund (ERAF) receipts are not included due to uncertainty.
Sales Tax is projected to increase by between 3.0% and 3.7% each year based on information provided by the City's external sales tax consultant.
OP Transfers and Allocations assume Operating Transfers of 10% of Total General Fund Expenses for FY 2020-21 through FY 2024-25.
Capital is based on the 5-year Capital Improvement Program (CIP) through FY 2023-24. FY 2024-25 is a placeholder estimate.



City of Half Moon Bay
General Fund (01)
Statement of Revenue, Expenditures and Changes in Net Assets

	Actual 2016-17	Actual 2017-18	Adopted Budget 2018-19	Recommended Budget 2019-20
Revenue				
Taxes	$ 12,593,511	$ 13,645,172	$ 13,691,788	$ 14,090,591
Intergovernmental	8,936	30,531	11,500	8,160
Charges for Services	1,637,188	1,873,250	1,590,403	1,563,263
Interest	96,563	153,020	26,200	26,724
Other Revenue	724,983	696,706	733,413	849,495
Total Revenue	$ 15,061,181	$ 16,398,679	$ 16,053,304	$ 16,538,233
Expenditures				
Operation & Maintenance				
Salaries & Benefits	$ 2,882,228	$ 3,995,516	$ 4,794,233	$ 5,207,409
Material & Supplies	768,194	730,855	1,046,800	1,153,957
Contract Services	6,760,078	7,195,031	7,637,318	8,148,066
Debt Service	-	-	-	600,000
Miscellaneous	(313)	-	-	-
Total Expenditures	$ 10,410,187	$ 11,921,403	$ 13,478,351	$ 15,109,432
Excess revenue over (under) expenditures	$ 4,650,994	$ 4,477,277	$ 2,574,953	$ 1,428,801
Other financing sources (uses)				
Transfers in/(out)				
Transfers In[1]	$ 288,956	$ 444,430	$ 486,754	$ 916,922
Transfers Out	(4,614,804)	(5,851,196)	(4,281,395)	(5,045,081)
Total financing sources (uses)	$ (4,325,848)	$ (5,406,766)	$ (3,794,641)	$ (4,128,159)
Excess revenue and other sources over (under) expenditures and other uses	$ 325,146	$ (929,490)	$ (1,219,688)	$ (2,699,358)
Beginning Net Assets, July 1 [2]	$ 10,739,444	$ 11,064,591	$ 10,135,101	$ 10,000,000
Ending Net Assets, June 30	$ 11,064,591	$ 10,135,101	$ 8,915,413	$ 7,300,642

[1] FY 2019-20 includes a one-time transfer of $400,000 from Judgement Obligation Bond Fund (Fund 78)

[2] Beginning Fund Balance for FY 2019-20 based on updated estimates and may not match budgeted estimates for FY 2018-19 ending balance.

CITY OF HALF MOON BAY

Department Budgets

City Council

City Council

Mission

The mission of the City Council of Half Moon Bay is to create policy related to providing high-quality public services and facilities in a fiscally sustainable, responsive, and friendly manner, which fosters a safe and healthy community in a semi-rural setting.

Description

The City Council is the governing body of the City. It provides community leadership, establishes policies that reflect the needs, wishes, and priorities of the community of Half Moon Bay and enacts laws and adopts resolutions and ordinances. The Mayor and City Council represent the City on various local, regional, and state policy committees and commissions. The City Council also reviews proposed State of California legislation and provides formal input into the legislative process. The City Council meets the first and third Tuesday of each month in formal public session and occasionally in additional special meetings and study sessions.

Service Priorities

- Deliberate on all matters brought before the City Council at its public meetings, and making decisions relative to those matters, while striving to meet the Elements of the Strategic Plan.
- Establish priorities for the City of Half Moon Bay.
- Allocate financial resources necessary to meet priorities and goals to provide community services.

Staffing

The Council is composed of five members who are elected at-large on a non-partisan basis for four-year staggered terms. The Mayor is appointed annually from among the elected Council members. Starting November 2020, members will be elected by-district with an at-large elected Mayor.

Service Level Changes

The current level of service will be maintained.

Budget Highlights / Summary of Changes

The City Council budget consists of funding for the five independently-elected Councilmembers as well as travel and miscellaneous expenses to carry out the work of the City.

Fiscal Year 2018-2019 Accomplishments

- Completed construction of the City's new 22,000 square foot library.
- Continued work on updating the City's General Plan and Local Coastal Program.
- Held four Council listening sessions with more than 150 participants.

- Continued to restore and remediate the former homeless encampment site on Pilarcitos Creek, responded to new encampments as they occurred, and continued to develop relationships with County and non-profits that serve the homeless.
- Adopted an ordinance to switch from at-large elections to by-district elections with an elected at-large Mayor.
- Completed the commercial cannabis tax analysis and white paper studies and prepared options for advisory ballot measures, a nursery ordinance, and a tax measure for commercial cannabis activities on the November election ballot.
- Continued efforts to maximize Transient Occupancy Tax collections, especially on short - term rentals and develop a short-term rental regulatory ordinance.
- Completed and implemented the Parks Master Plan by initiating improvements to existing Park facilities and working to identify locations for a new community-wide park.
- Hired a new City Manager.
- Adopted a smoking ordinance.

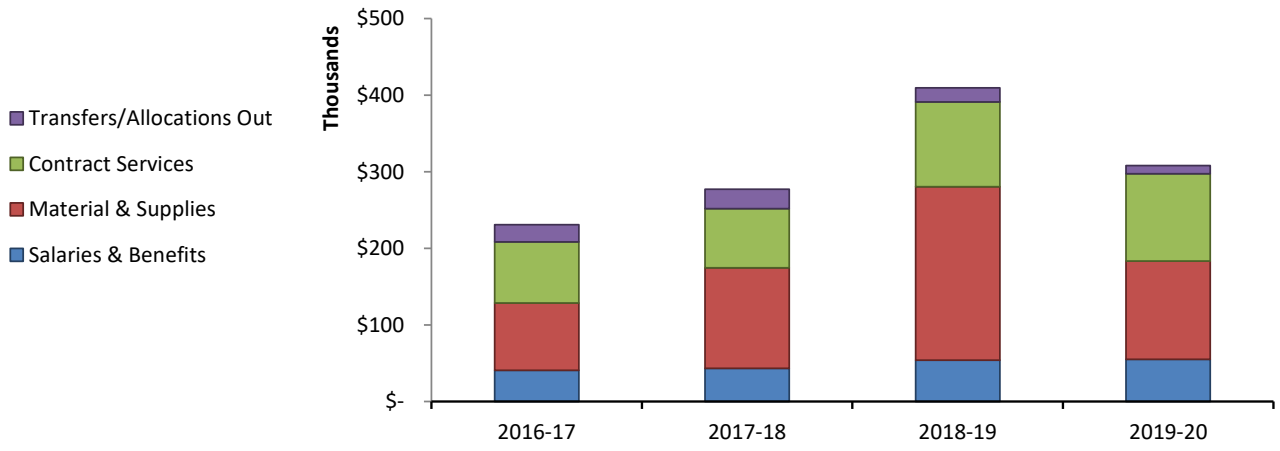
Fiscal Year 2019-2020 Goals / Strategic Plan Elements

- Affordable Housing: Develop a plan to best utilize and replenish the City's affordable housing funds; Research community land trust options and feasibility; Consider possible tenant protection measures (Healthy Communities and Public Safety)
- Emergency Preparedness: Update the City Emergency Operations Plan (EOP); Develop disaster specific preparedness plans and City emergency communications plan; Conduct Emergency Operations Center activation exercises in collaboration with community partners; Conduct Second Annual Coastside Preparedness Day; Train City staff to assist in emergency response (CERT style), CPR training for all staff; Develop bilingual emergency communications (Fiscal Sustainability, Healthy Communities and Public Safety, Inclusive Governance, Infrastructure and Environment)
- Traffic and Transportation Demand Management: Develop Transportation Demand Management (TDM) strategic plan; Develop TDM regulations; Implement CIP and Pedestrian and Bicycle Master Plan projects related to TDM; Enhance TDM collaboration with regional and local agencies (Healthy Communities and Public Safety, Inclusive Governance, Infrastructure and Environment)
- Sustainability: Develop a Climate Action and Adaptation Plan (CAAP); Develop Green Infrastructure Plan; Develop Sustainability Strategic Plan with timelines and goals for the City, businesses and residents; Implement projects to improve the sustainability of City operations and infrastructure (Fiscal Sustainability, Healthy Communities and Public Safety, Infrastructure and Environment)
- $15 Minimum Wage: Conduct public outreach including a business survey and a community workshop; Develop draft regulations for City Council consideration; If implemented, develop education and outreach plan and materials (Healthy Communities and Public Safety, Inclusive Governance)

City of Half Moon Bay
FY 2019-20 Budget

City Council (01-11)

	Audited Actual 2016-17	Audited Actual 2017-18	Budget 2018-19	Recommended Budget 2019-20
Expenditures				
Salaries & Benefits	$ 40,819	$ 43,124	$ 53,950	$ 55,135
Material & Supplies	$ 87,816	$ 131,384	$ 226,600	$ 128,338
Contract Services	$ 79,766	$ 77,330	$ 110,400	$ 113,712
Transfers/Allocations Out	$ 22,462	$ 25,292	$ 18,373	$ 10,793
Total	$ 230,862	$ 277,130	$ 409,323	$ 307,978
Revenue Sources				
General Fund	$ 230,862	$ 277,130	$ 409,323	$ 307,978
City Council Members	5.00	5.00	5.00	5.00



City Manager

City Manager

Mission

The mission of the City Manager's Office is to provide overall leadership and management of the City, execute Council policy, and ensure that residents of Half Moon Bay receive fair treatment, excellent customer service, and appropriate stewardship of tax revenue, in support of a vibrant community with well-maintained infrastructure and a broad range of customary public services.

Description

The City Manager's Office provides overall management of City operations and oversight of City departments. The City Manager is responsible for carrying out the strategic goals, policies, and directives of the City Council, for the effective and cost-efficient management of City operations and personnel, and for preparing and submitting the annual budget to the Council. The City Manager authorizes and oversees the hiring of all City Staff.

Service Priorities

- Oversee the delivery of public services in accordance with all federal and state laws, and the policies, ordinances, and resolutions adopted by the City Council.
- Direct and organize City departments, programs, and services.
- Carry out elements of the Strategic Plan and City Council priorities.
- Recommend the adoption of policies and ordinances as necessary.
- Ensure the long-term fiscal viability of the City.
- Increase the productivity, efficiency, and effectiveness of the organization.
- Enforce contracts, agreements, and permits authorized by the City Council.
- Advise the City Council on matters regarding current and future fiscal, staffing, and program needs of the City.
- Oversee customer service, and community engagement**.**
- Provide and expand quality recreational services and opportunities to individuals and families.
- Provide and expand health and wellness opportunities to youth, adults, and seniors.
- Provide and expand enrichment activities for all ages.
- Provide community gathering and meeting spaces through facility rentals.
- Provide opportunities for community engagement in recreation services programs.

Staffing

The City Manager's Department is comprised of the City Manager, Deputy City Manager, Executive Assistant, and Senior Management Analyst. The City Manager's Office provides direct oversight of the Recreation and Community Services Divisions, which respectively include a Recreation Coordinator, Recreation Leader, and part-time Building Attendants, as well as a Management Analyst.

Service Level Changes

Communication services has been transferred to the Communications/City Clerk's Office, which included one FTE for a Communications Specialist. One full-time Recreation Leader has been added to provide needed coverage of City facilities and additional service to patrons of recreation programs and facilities, which will allow the Recreation division the opportunity to expand and create new City-run recreation programs.

Budget Highlights / Summary of Changes

A one-time contract for Latino Outreach Services has been carried over from FY 2018-19 to assist in developing short and long-term strategies to better communicate and engage with the Spanish speaking Latino community. Funding for staff and consultants has been allocated to develop and implement a plan to increase the minimum wage to $15 per hour. Funding has been allocated for outreach and support for the 2020 Census.

The Department is comprised of the following divisions:

Recreation Division

Mission

The mission of the Recreation Division is to enrich lives within the community through affordable, accessible citywide programs that promote educational and recreational opportunities that contribute to a healthy community and lifestyles.

Description

The Recreation Division is responsible for delivering quality, affordable recreation programs and opportunities for community enrichment to the residents of Half Moon Bay and the Coastside. The Division is responsible for coordinating, renting, and scheduling City facilities, including Smith Field, the Train Depot, the Ted Adcock Community Center and the new Half Moon Bay Library.

Community Services Division

Mission

The mission of the Community Services Division is to engage with the community through citywide programs and initiatives that enrich lives, create forums for multiple and diverse perspectives, and provide educational opportunities through public participation.

Description

The Community Services Division serves as a link between the City and community partners including other government agencies, educational institutions, and non-profits, and helps connect residents and visitors to a variety of social, health, and human services.

Fiscal Year 2018-2019 Accomplishments

- Maintained business continuity during City Manager and other key personnel transitions.
- Expanded Spanish language translation services for City publications and meetings.

- Guided the City Council in further updating its Strategic Plan and priorities.
- Coordinated and facilitated four City Council Listening Sessions for residents to express their priorities and interests, leading up to the development of the FY 2019-20 Budget.
- Held multiple study sessions and community meetings with the City Council on important community interests.
- Continued a weekly electronic newsletter (e-news) that is distributed to over 1,200 Coastside residents.
- Completed commercial cannabis tax revenue analysis and white paper study on impacts of commercial cannabis on cities and prepared four ballot measures and a tax measure for potential commercial cannabis ordinances for the November 2018 election.
- Strengthened and fostered partnerships with County and local non-profit organizations working with underserved populations, including immigrants and homeless residents.
- Implemented the Community Services Financial Assistance Grant Program to support local non-profits who serve the Half Moon Bay Community, made improvements for FY 2019-20.
- Participated in committees with local non-profits to address the City's homeless population.
- Hosted the fourth year of the Half Moon Bay NET Community Academy.
- Assisted in commemorating the opening of the historic jail.
- Collaborated with the Half Moon Bay Historical Association to offer staff tours of Historic Downtown Half Moon Bay.
- Entered into a new long-term agreement with Half Moon Bay Little League for the use of Smith Field Park.
- Held the City's fifth annual City Hall Open House during the Night of Lights event.
- Participated in National Night Out, supporting residents who hosted block parties.
- Revitalized the City's Music in the Parks Program, including the Community Concerts Series at Mac Dutra Plaza, which drew more than 200 participants over four concerts and the first annual Summers End Music Festival at John L. Carter Park, which drew more than 500 participants.
- Increased the number of recreation program offerings from 24 classes to 31 and increased enrollment from 762 to 982 participants.
- Began using the Half Moon Bay Skate Park for Recreation programming and classes.
- Expanded the Recreation Division's partnerships with charter and home school programs.
- Partnered with Boys and Girls Club to re-open a Teen Center at the Ted Adcock Community Center and offer after school activities to teens (Healthy Communities and Public Safety).
- Made improvements to the Ted Adcock Community Center to increase rental opportunities for residents and services to the community.

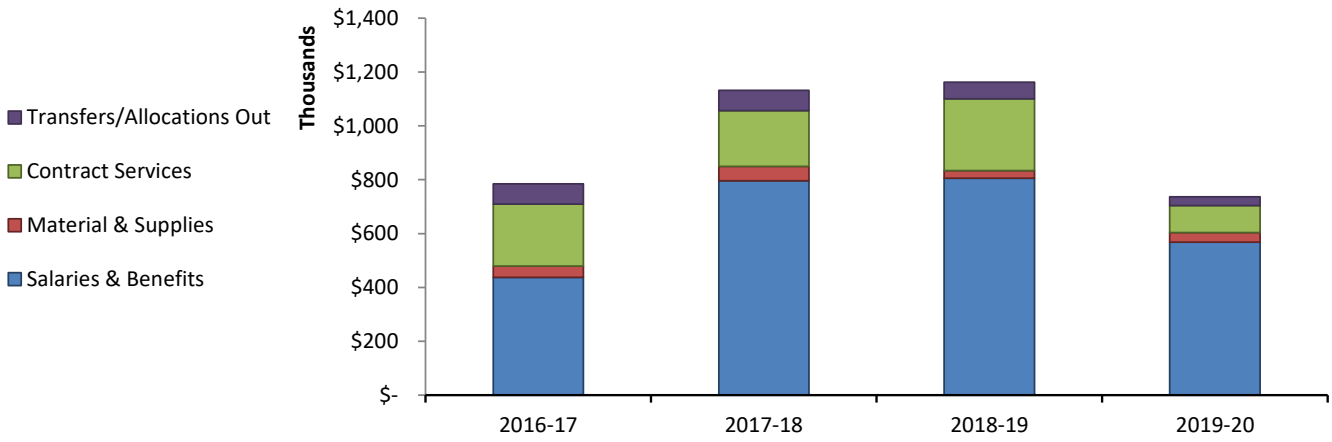
Fiscal Year 2019-2020 Goals / Strategic Plan Elements

- Advance projects that link to the City's Strategic Plan and Council Priorities (Infrastructure and Environment).

- Develop and implement plan to consider increasing the City's minimum wage to $15 per hour, three years ahead of the state schedule.
- Review and revise staff structure to maximize efficiency and increase performance (Fiscal Sustainability, Inclusive Governance).
- Work with City Council to increase transparency and reporting on the City's Strategic Plan and Council Priorities (Infrastructure and Environment).
- Implement a master plan for the Civic Center site to identify the best use of existing facilities, including the 555 Kelly Avenue property acquired in 2017 (Infrastructure and Environment).
- Collaborate with Community Development to provide information, awareness and potential policies to address the lack of affordable housing (Healthy Communities and Public Safety).
- Collaborate with Administrative Services and the Communications Department to develop and implement plans to better prepare the City, its residents, and the greater Coastside for natural disasters and other emergencies (Healthy Communities and Public Safety).
- Continue to engage in regional partnerships to support projects in Half Moon Bay and those potentially impacting the Coastside (Inclusive Governance, Infrastructure and Environment).
- Support the Parks and Recreation Commission with a focus on City Council priorities and the Parks Master Plan, including the development of collaborations to create a community garden (Inclusive Governance, Healthy Communities and Public Safety).
- Continue to expand the number and types of classes offered in the Activity Guide to reach a broader and more diverse group of residents (Healthy Communities and Public Safety, Inclusive Governance).
- Continue to improve the Ted Adcock Community Center to make it more accessible and increase rental opportunities for residents and services to the community (Infrastructure and Environment; Healthy Communities and Public Safety).
- Work with other agencies and non-profits to provide immigration information and support (Healthy Communities and Public Safety).
- Provide on-going technical support to the Homeless Housing Collaborative to identify opportunities to build permanent supportive housing (Healthy Communities and Public Safety, Infrastructure and Environment).
- Coordinate with departments on developing, refining, and tracking service level metrics (Inclusive Governance).

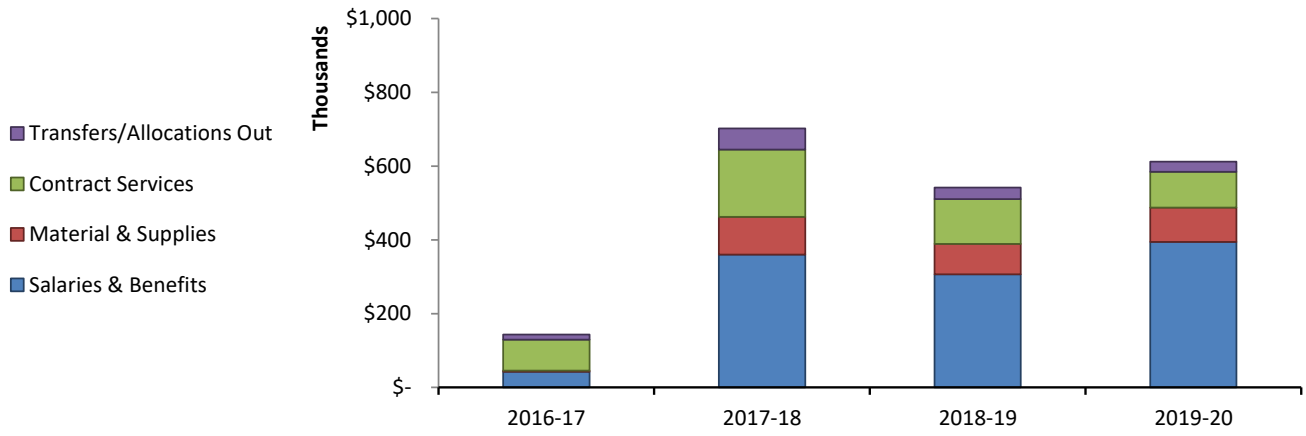
City of Half Moon Bay
FY 2019-20 Budget
City Manager (01-12)

	Audited Actual 2016-17	Audited Actual 2017-18	Budget 2018-19	Recommended Budget 2019-20
Expenditures				
Salaries & Benefits	$ 437,224	$ 795,725	$ 805,129	$ 568,632
Material & Supplies	$ 41,879	$ 54,337	$ 28,500	$ 35,062
Contract Services	$ 230,834	$ 206,871	$ 267,100	$ 100,113
Transfers/Allocations Out	$ 75,154	$ 75,024	$ 61,042	$ 33,173
Total	$ 785,091	$ 1,131,958	$ 1,161,771	$ 736,980
Revenue Sources				
General Fund	$ 785,091	$ 1,131,958	$ 1,161,771	$ 736,980
Full-Time Equivalent Employees	3.25	2.75	3.10	3.00



City of Half Moon Bay
FY 2019-20 Budget
Recreation Services (01-61)

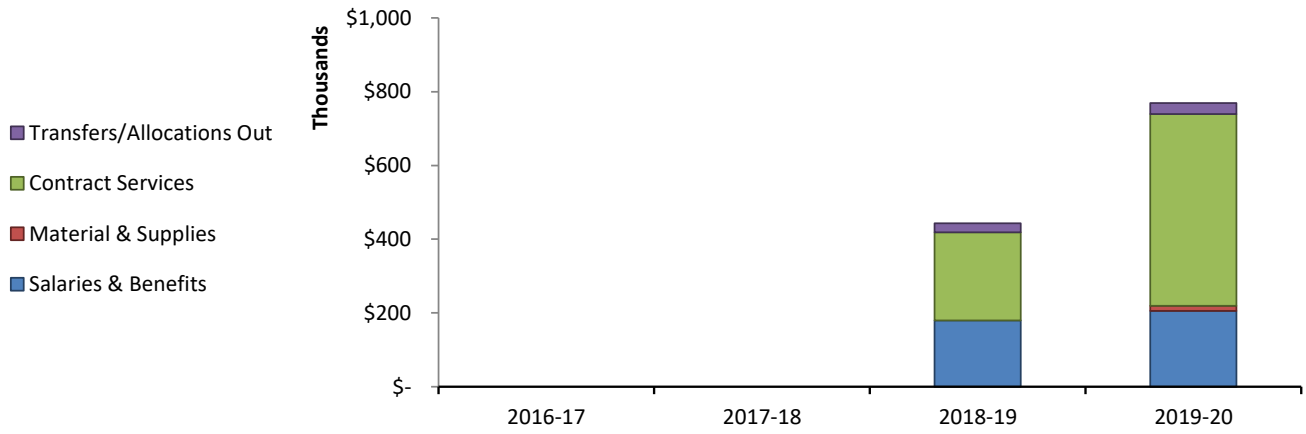
	Audited Actual 2016-17	Audited Actual 2017-18	Budget 2018-19	Recommended Budget 2019-20
Expenditures				
Salaries & Benefits	$ 42,248	$ 359,744	$ 306,643	$ 394,029
Material & Supplies	$ 3,142	$ 102,382	$ 82,700	$ 93,181
Contract Services	$ 83,776	$ 182,319	$ 121,100	$ 97,333
Transfers/Allocations Out	$ 14,366	$ 57,665	$ 31,511	$ 27,252
Total	$ 143,532	$ 702,111	$ 541,954	$ 611,795
Revenue Sources				
Recreation Services	$ 10,080	$ 87,536	$ 186,000	$ 72,220
Classes	$ 13,456	$ 124,549	$ 115,000	$ 117,300
General Fund	$ 119,996	$ 490,025	$ 240,954	$ 422,275
Total Program Sources	$ 143,532	$ 702,111	$ 541,954	$ 611,795
Full-Time Equivalent Employees[1]	24.00	2.50	3.50	4.55



[1]FTEs for FY2018-19 corrected to 3.50 from the 2.50 shown in the published FY 2018-19 budget.

City of Half Moon Bay
FY 2019-20 Budget
Community Services (01-64)

	Audited Actual 2016-17	Audited Actual 2017-18	Budget 2018-19	Recommended Budget 2019-20
Expenditures				
Salaries & Benefits	$ -	$ -	$ 179,592	$ 205,618
Material & Supplies	$ -	$ -	$ -	$ 14,000
Contract Services	$ -	$ -	$ 239,400	$ 519,582
Transfers/Allocations Out	$ -	$ -	$ 24,015	$ 30,273
Total	$ -	$ -	$ 443,007	$ 769,473
General Fund	$ -	$ -	$ 443,007	$ 769,473
Total Program Sources	$ -	$ -	$ 443,007	$ 769,473
Full-Time Equivalent Employees	-	-	1.30	1.35



City Attorney

City Attorney

Mission

The mission of the City Attorney is to provide the City Council and City staff with prompt and high-quality legal advice, counsel, and representation.

Description

The City Attorney reports directly to the City Council and is charged with the task of serving as the legal counsel to the City Council, Planning Commission, City Manager, and City staff on all legal aspects of municipal operations.

Legal services include legal advice and analysis, preparation of legislation including ordinances and resolutions, drafting or review of contracts and agreements, conducting research and supporting the City in litigation, civil and criminal actions, and code enforcement. The City Attorney attends all regular and special City Council meetings. Other services include meetings with the City Manager, City Executive Team, and other city officials on an on-call basis while keeping the City Council, City Manager, and staff advised of current laws affecting decisions and programs of the City.

Service Priorities

- Devote time and resources necessary to provide timely, affordable, high-quality legal advice.
- Minimize liability and work creatively to accomplish policy objectives of the City.
- Offer legal opinions and draft ordinances and other documents in a timely and professional manner.
- Provide high-quality litigation representation to ensure matters are resolved cost effectively.
- Respond to inquiries from the public as appropriate, and in a timely and constructive manner, while ensuring that the City's interests are protected, and policies are implemented.

Staffing

The department is comprised of the City Attorney, who is retained under contract with a law firm, and a staff of associate attorneys who act as Assistant or Deputy City Attorneys as required. Outside legal counsel may be retained for assistance on specialized issues and areas of law. The firm provides all legal services and includes all administrative costs such as paralegals, secretarial services, clerical services, continuing legal education, law library, and research costs, etc.

Service Level Changes

For FY 2019-20, the City Attorney's Office plans to continue its trend of increased onsite availability and accessibility for the City Council, Planning Commission, Parks and Recreation Commission, City committees, and staff.

Budget Highlights / Summary of Changes

The City Attorney budget consists of contract legal services for the City Attorney, Assistant and Deputy City Attorneys, and support staff. It excludes certain specialized services provided by outside legal counsel and is budgeted in respective department budgets.

FY 2018-19 Accomplishments

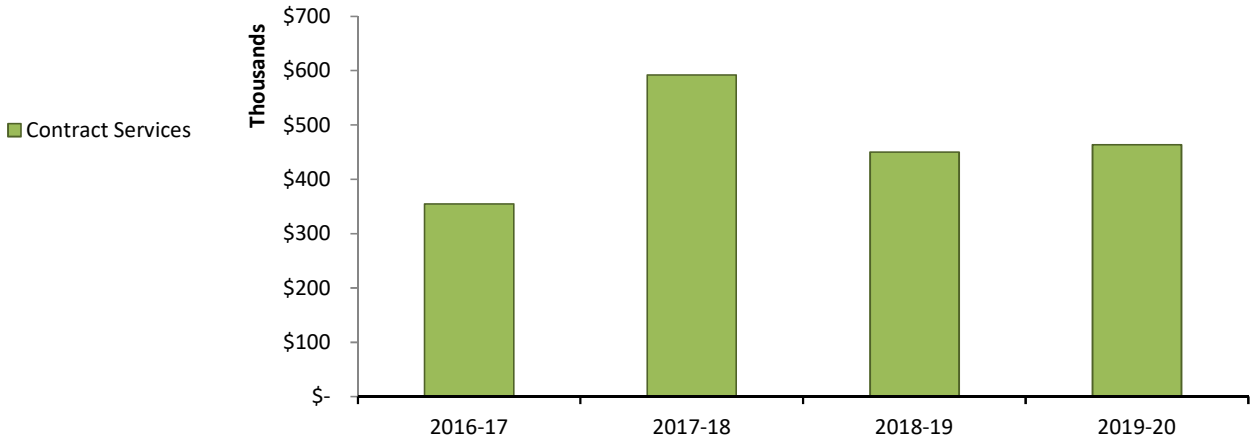
- Updated standard services agreements and public works contract documents.
- Drafted and implemented smoking and tobacco retailer ordinances, in cooperation with San Mateo County.
- Drafted code updates related to skate park liability, water efficient landscape ordinance, and off-leash dog park.
- Assisted with the City Manager transition.
- Drafted cannabis nursery ordinance and advised the City related to five local cannabis ballot measures on the November 2018 ballot.
- Lead role in drafting the accessory dwelling unit ordinance, and supported Council priority related to affordable housing.
- Negotiate voluntary compliance agreement for transient occupancy tax (TOT) collection.
- Successfully settled three civil lawsuits involving the City.

FY 2019-20 Goals / Strategic Plan Elements

- Continue to implement Council policy directives and ensure projects and directives are legally secure (Inclusive Governance).
- Draft/provide legal review of ordinances regarding Council priorities related to sustainability efforts, short term rentals, tenant protections, minimum wage and other priority matters (Inclusive Governance).
- Continue economic resolution of claims and litigation (Fiscal Sustainability).

City of Half Moon Bay
FY 2019-20 Budget
City Attorney (01-13)

	Audited Actual 2016-17	Audited Actual 2017-18	Budget 2018-19	Recommended Budget 2019-20
Expenditures				
Contract Services	$ 354,229	$ 591,857	$ 450,000	$ 463,500
Total	$ 354,229	$ 591,857	$ 450,000	$ 463,500
Revenue Sources				
General Fund	$ 354,229	$ 591,857	$ 450,000	$ 463,500
Full-Time Equivalent Employees	-	-	-	-



Communications/ City Clerk

Communications / City Clerk

Mission

The mission of the Communications / City Clerk Department is to promote openness in government and the free exchange of public information to engage residents in City policies and decision-making processes. The Communications / City Clerk Department is committed to serving the citizens of our community in a neutral and ethical manner by providing equal access to open and transparent government, ensuring the integrity of the participatory process, bridging internal and external communication pathways, and enhancing the public's trust in local government.

Description

The Communications / City Clerk Department is comprised of two divisions: Communications and City Clerk.

The Communications Division is responsible for all internal and external communications. The division ensures the dissemination of timely and accurate public information regarding City operations, projects, policies, Council actions, services, and programs, through all forms of media. The division engages the community and increases transparency through the use of multiple social media platforms and online communication tools that promote accessible and convenient information.

The City Clerk Division conducts regular and special general municipal elections in consolidation with the County of San Mateo for the election of City Councilmembers and local initiatives, referendums, and recalls. The division manages the City's legislative and governmental affairs. The division administers Political Reform Act requirements related to campaign disclosure statements, conflict of interest filings, and AB1234 ethics training. Brown Act requirements are administered by the City Clerk Division ensuring meetings, agendas, minutes, reports, public notices, resolutions, and ordinances are prepared, posted, and published pursuant to law. The City Clerk serves as Clerk of the Council and attends, monitors, and retains complete records of all City Council proceedings. The City Clerk ensures open and transparent access through records-related services including records management, retention, and Public Records Act programs. Additionally, the division administers the boards and commissions program related to vacancies, orientation, commission handbook, and Maddy Act compliance. The City Clerk serves as the City's Elections Official, Political Reform Act Filing Officer, Records Manager, and Compliance Officer.

Service Priorities

- Maintain effective communication with community members, staff, and the Council to increase the understanding of and support for City programs, policies, and projects, and to develop positive relations through impactful outreach.
- Gather and share information to support and encourage open, participatory government and an informed community.
- Manage the City's governmental and legislative affairs, including tracking legislation, preparing position letters, seeking and applying for grant opportunities, and monitoring interagency appointments and actions.

- Provide City Council support, including agenda and packet preparation, public noticing, and distribution of materials to the City Council, staff, and the public.
- Support boards and commissions, including agenda and packet preparation, public noticing, and distribution of materials to Commissioners, staff, and the public.
- Process local legislation, including resolutions, ordinances, and minutes.
- Oversee elections, including qualifying candidates, petitions, and ballot measures, processing all necessary resolutions, monitoring campaign filing requirements, and certifying election results.
- Maintain records and archives, including responses to public records requests.

Staffing

The Communications / City Clerk Department is staffed by a Communications Director/City Clerk, a Communications Specialist, a Deputy City Clerk.

Service Level Changes

The current levels of service will be maintained with existing staff.

Budget Highlights / Summary of Changes

The Communications / City Clerk budget consists of costs for compensation and operations of the department. With the addition of communications and other functions into the department, funding that was previously in individual departments for advertising, marketing, and outreach has been consolidated into the Communications / City Clerk budget. One-time startup costs for technology, equipment and training has been added to the budget.

FY 2018-19 Accomplishments

- Conducted the City's November 2018 General Municipal Election for three Councilmember seats as well as five ballot measures.
- Managed the process of converting to district-based elections to comply with the California Voting Rights Act.
- Completed review of the City's Campaign Contributions Limit.
- Continued to oversee completion of the citywide, comprehensive Records Management Update project.
- Researched and drafted the City's first Legislative Platform, managed the Legislative Subcommittee, and managed the lobbyist contract for the City's legislative affairs.
- Conducted the City's first Elections Night Out event.
- Managed successful outreach and communications plans for multiple City events, projects, and priorities.
- Developed the Communications / City Clerk Department.
- Continued distribution of the City's quarterly and e-news newsletters.
- Managed the City's agenda management software, including making updates as needed, and provided training to staff.
- Inventoried 437 offsite document storage boxes.

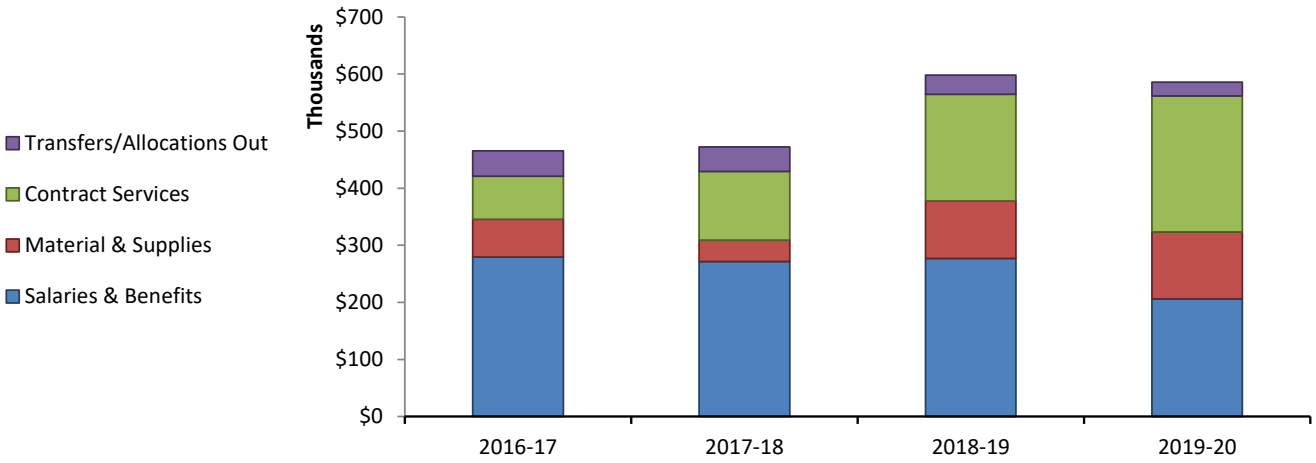
- Converted numerous paper documents to electronic records, clarified the records series to be included in the City's Electronic Document Management System, and provided training to staff.
- Processed 80 agreements, 8 ordinances, 111 resolutions, 22 City Council agenda packets, 21 City Council special meeting agendas, 7 City Council subcommittee agendas, 8 proclamations, and 71 public records requests.

FY 2019-20 Goals / Strategic Plan Elements

- Develop a Social Media Program and Policy (Inclusive Governance).
- Assist the County of San Mateo and the US Census Bureau on the 2020 Census and outreach (Inclusive Governance).
- Work with departments to update the content and usability of the City's website and department pages (Inclusive Governance).
- Conduct the City's first Future Leaders Civics Academy (Inclusive Governance).
- Continue to oversee completion of the citywide, comprehensive Records Management Update project (Inclusive Governance, Infrastructure and Environment).
- Continue to seek grant opportunities and monitor legislation in accordance with the City of Half Moon Bay Legislative Program (Healthy Communities and Public Safety, Inclusive Governance).

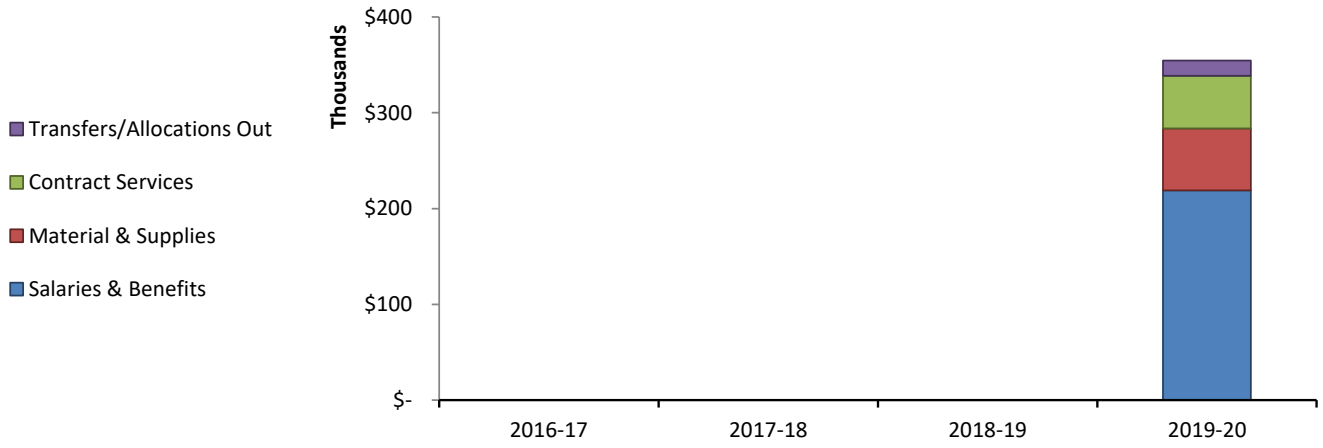
City of Half Moon Bay
FY 2019-20 Budget
City Clerk (01-15)

	Audited Actual 2016-17	Audited Actual 2017-18	Budget 2018-19	Recommended Budget 2019-20
Expenditures				
Salaries & Benefits	$ 279,447	$ 271,437	$ 277,098	$ 205,743
Material & Supplies	$ 65,967	$ 37,331	$ 100,400	$ 117,400
Contract Services	$ 75,569	$ 120,682	$ 186,900	$ 238,507
Transfers/Allocations Out	$ 44,286	$ 42,763	$ 33,755	$ 24,077
Total	$ 330,733	$ 472,213	$ 598,153	$ 585,727
Revenue Sources				
General Fund	$ 330,733	$ 472,213	$ 598,153	$ 585,727
Full-Time Equivalent Employees	1.80	1.90	1.90	1.45



City of Half Moon Bay
FY 2019-20 Budget
Communications (01-22)

	Audited Actual 2016-17	Audited Actual 2017-18	Budget 2018-19	Recommended Budget 2019-20
Expenditures				
Salaries & Benefits	$ -	$ -	$ -	$ 219,079
Material & Supplies	$ -	$ -	$ -	$ 64,500
Contract Services	$ -	$ -	$ -	$ 55,000
Transfers/Allocations Out	$ -	$ -	$ -	$ 15,849
Total	$ -	$ -	$ -	$ 354,428
Revenue Sources				
General Fund	$ -	$ -	$ -	$ 354,428
Full-Time Equivalent Employees	-	-	-	1.40



Administrative Services

GL Code: 01-16; 01-18; 01-42; 01-17; 01-19

Administrative Services

Mission

The mission of the Administrative Services Department is to manage the City's Administrative Services and administrative policies by providing high quality support services to City departments, staff and community through finance, human resources, information technology, and emergency services.

Description

The Administrative Services Department provides financial services that protect and maximize the use of City resources, reliable and current technology resources to staff, members of the City Council, Commissioners, and the community. The Department properly records all financial transactions, implements best practices in employee relations, provides quality internal customer service, and strives to promote a positive work environment for the City's talented workforce. The Department works in partnership with the San Mateo County Office of Emergency Services to train City staff and help Coastside communities prepare for emergencies. 1

Service Priorities

- Undertake financial planning and oversee preparation of the annual budget.
- Ensure internal controls through accountability, financial reporting, and audits.
- Manage cash assets including banking, cashiering, disbursements, and revenues.
- Perform accounts payable, receivable, and payroll functions.
- Fulfill the City Treasurer function, ensuring an appropriate investment of funds and debt service administration.
- Provide sound financial advice to the City Council, City Manager, and staff.
- Recruit, hire, develop, and retain a diverse and talented, professional staff.
- Manage administrative and personnel policies and procedures and ensure compliance with related laws and regulations.
- Manage confidential information when consulting employees and handling personnel records.
- Manage labor relations with all bargaining units and unrepresented employees.
- Manage grievances related to the Personnel Policies and Procedures, and MOUs.
- Enhance staff productivity with a secure network, desktop and portable hardware and supporting software.
- Minimize IT equipment down time and maximize response time and maintain IT systems for disaster recovery and business continuity.
- Maintain an effective, visitor-friendly, and informative website that conveys the City's image, mission, and services.
- Develop, review, update emergency operation and the hazard mitigation plans.
- Assist in the planning and implementation of exercises, drills, and emergency services training programs for City employees and/or other public entities.

Staffing

The Administrative Services Department is comprised of an Administrative Services Director, Finance Manager, Senior Management Analyst, two Management Analysts, two Accounting Technicians, and an Administrative Assistant.

Organization Changes

The department has been reorganized to merge the positions of Finance Director and Administrative Services Director, thereby eliminating one position.

Budget Highlights / Summary of Changes

The Administrative Services budget consists of four budget units, with compensation and operating costs for the portions of employee time allocated to each division. Contract expenditures are budgeted for professional services, emergency preparedness services from the San Mateo County Office of Emergency Services, labor relations, labor-related legal services, and Information Technology (IT) services.

The Department is comprised of the following divisions:

Finance Division

Mission

The mission of the Finance Department is to maintain accurate financial records and reports, provide financial support to other departments, and ensure compliance with the City's policies and procedures.

Description

The Finance Department is responsible for all financial operations and risk management. Finance tracks revenue, expenditures, bonded debt, and properly records all financial transactions in accordance with Generally Acceptable Accounting Principles (GAAP) and the requirements of the Government Accounting Standards Board (GASB). The department's goals are to provide financial oversight and support, including implementation and enforcement of financial policies consistent with federal, state, and local mandates, as well as industry best practices.

Human Resources Division

Mission

The mission of Human Resources Division is to provide high quality labor and employee relations, staff recruitment and retention, and staff professional development services that support the City's objectives in serving the needs of the community.

Description

The Human Resources Division recruits, develops, and supports the organization's most valuable resource – its staff. The Division implements best practices in recruitment, benefits management, professional development, labor relations, grievance management, policy development and implementation, and employee classification and compensation. The Division manages highly

sensitive and confidential information to effectively conduct workplace investigations, implement practices to enhance employee performance, manage claims and ensure compliance with local, state and federal labor regulations. The Division also participates in San Mateo County Training and Development and the Liebert Cassidy Whitmore Employment Relations Consortiums that offer training and professional development to local governments throughout the County to help recruit and retain talent in local government careers.

Information Technology Division

Mission

The mission of the Information Technology Division is to provide high quality technology-based services that support the City's goal to effectively serve the needs of the community.

Description

The Information Technology Division manages the City's information technology program, provides and maintains appropriate hardware and software to City departments, develops and maintains a secure network infrastructure, manages the City's data and voice infrastructure, maintains the City's telecommunication systems and manages the City's website. The Division ensures that staff have the resources and training to effectively use equipment and technology in furtherance of their departmental goals. The division also assists with providing research and information for Public Records Requests.

Emergency Services Division

Mission

The mission of the Emergency Services Division is to assist residents and businesses, along with other Coastside communities and City staff to be prepared for and better respond to emergencies and disasters.

Description

The Emergency Services Division works in partnership with the San Mateo County Office of Emergency Services to prepare staff, Coastside agencies and residents to effectively respond to emergencies. The Division develops and updates the general emergency operations plans and the Hazard Mitigation Plan, trains staff in emergency operations procedures, and serves as the City's representative on the Coastside Emergency Action Program and the San Mateo County Emergency Managers Association to assist with local and regional emergency preparedness efforts.

FY 2018-19 Accomplishments

- Recruited for a total of 21 permanent, interim and temporary positions.
- Successfully negotiated three-year Memorandum of Understanding agreements and Employee Compensation and Benefit plans.
- Developed funding policy related to pension unfunded actuarial liability with CalPERS.

- Appended side letters to Memorandum of Understanding agreements and Employee Compensation and Benefit plans to update sick and bereavement leave usage.
- Created or revised eight job classifications and reclassified four positions
- The City hosted 11 regional training workshops and webinars.
- Updated the five-year Hazard Mitigation Plan to ensure the City's eligibility for SMC Pre-Disaster Mitigation, and Flood Mitigation Assistance grant programs.
- Organized and facilitated public outreach for Americans with Disabilities Act (ADA) transition plan.
- Planned and executed a Coastside Community Emergency Preparedness event.
- Hosted a tabletop exercise (Yellow Command) at the Emergency Operations Center in collaboration with Office of Emergency Services and HAM Radio Club.
- Conducted Emergency Operations Center training/exercise for City staff.
- Secured a Red Cross shelter agreement for the Ted Adcock Community Center.
- Audited the Emergency Operations Plan (EOP).
- Established a state contract (CALNET 3) to reduce costs and which resulted in a substantial credit.
- Received the Budget Excellence Award from the California Society of Municipal Finance Officers and the Distinguished Budget Presentation Award from the Government Finance Officers Association (GFOA) for the FY 2018-19 Operating Budget document, representing compliance with best practices in budgeting.
- Received a Certificate of Achievement for Excellence in Financial Reporting from GFOA, indicating best practices in annual financial reporting were followed.
- Completed annual audit, prepared the City's Comprehensive Annual Financial Report (CAFR), and received a clean audit opinion from independent auditors.
- Prepared the City's Popular Annual Financial Report (PAFR) and received the Outstanding Achievement award from the GFOA.
- Completed mandated State Controller's and other financial reports in a timely manner.
- Processed 194 journal entries, 2018 vendor checks, 697 payroll checks, over 4,100 invoices, 36 special event permits and 1,804 business license applications.
- Began the implementation phase of Casselle's Enterprise Resource Planning software
- Installed GPS units in all City-owned vehicles.

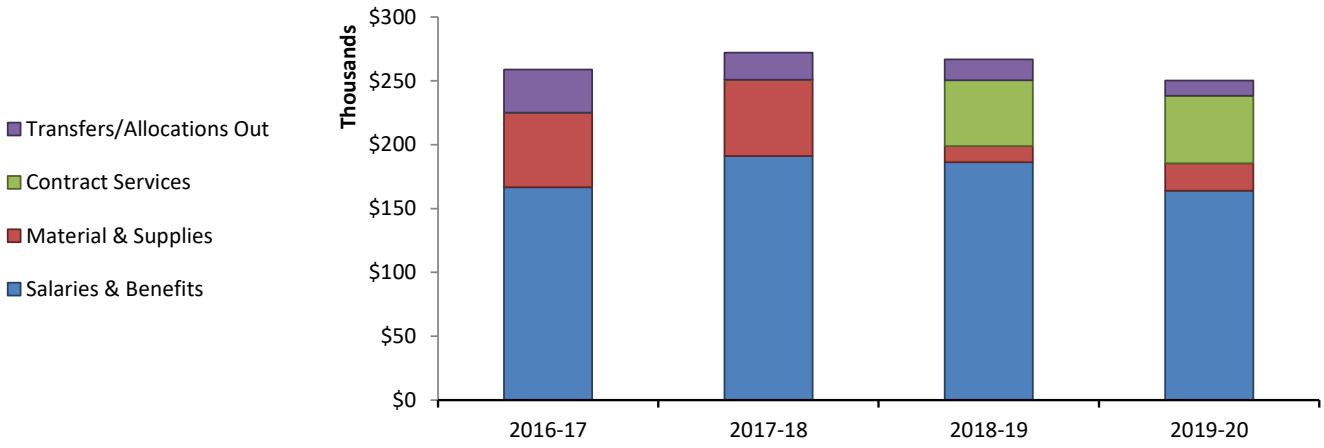
FY 2019-20 Goals / Strategic Plan Elements

- Implement onboarding process to effectively educate and orient new staff (Inclusive Governance).
- Complete the implementation of Casselle Enterprise Resource Planning software (Infrastructure and Environment, Fiscal Sustainability, Inclusive Governance)
- Continue revising the City's Personnel Policies and Procedures (Inclusive Governance).
- Continue revising the employee evaluation process to ensure compliance with Personnel Policies and Procedures (Inclusive Governance).
- Finalize implementation of a new file server and continue to establish new file structure to better support users (Infrastructure and Environment).

- Coordinate and support the Community Development Department with the purchase and implementation of an inhouse GPS system (Infrastructure and Environment and Inclusive Government).
- Coordinate and plan training exercises with partnering agencies to help increase awareness in fire safety and earthquake preparedness (Infrastructure and Environment, Healthy Communities and Public Safety).
- Update training matrix to ensure compliance with California and federal law, including CPR training (Healthy Communities and Public Safety).
- Plan and execute annual Coastside Community Emergency Preparedness event (Healthy Communities and Public Safety).
- Update the Emergency Operations Plan (Healthy Communities and Public Safety)
- Create a Continuity of Operations Plan and disaster specific preparedness plans (Healthy Communities and Public Safety)
- Continue to train employees and consultants on the City's purchasing policy and other financial and administrative matters (Fiscal Sustainability, Inclusive Governance).
- Support the City Council's Strategic Plan Elements and Initiatives as they relate to the City's Financial Operations (Infrastructure and Environment, Healthy Communities and Public Safety, Fiscal Sustainability, Inclusive Governance).

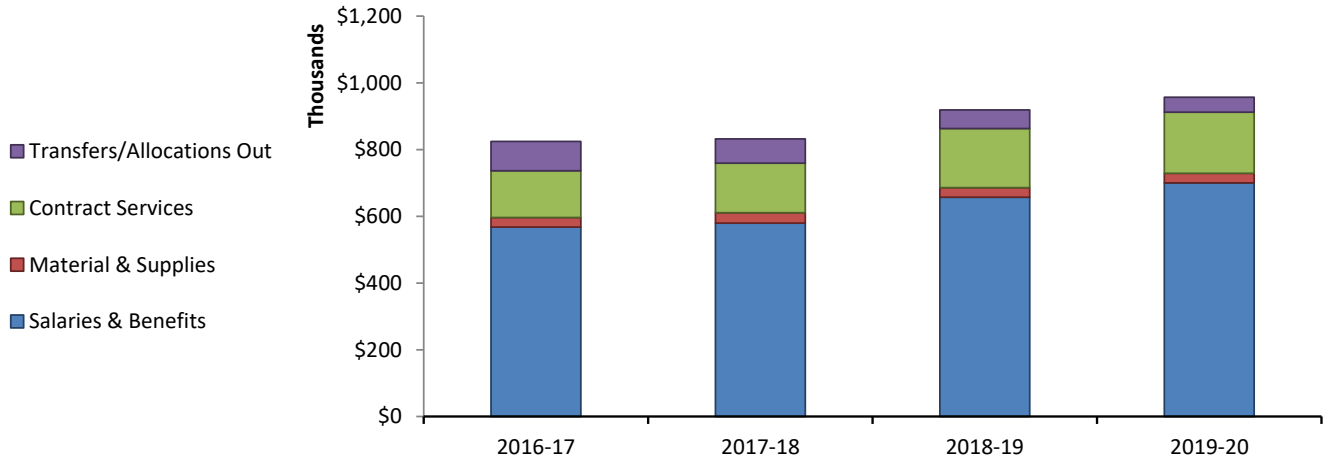
City of Half Moon Bay
FY 2019-20 Budget
Administrative Services (01-18)

	Audited Actual 2016-17	Audited Actual 2017-18	Budget 2018-19	Recommended Budget 2019-20
Expenditures				
Salaries & Benefits	$ 166,572	$ 191,209	$ 186,342	$ 164,067
Material & Supplies	$ 58,459	$ 59,553	$ 12,600	$ 21,274
Contract Services	$ 86	$ 56	$ 51,500	$ 53,045
Transfers/Allocations Out	$ 33,655	$ 21,155	$ 16,427	$ 11,830
Total	$ 258,772	$ 271,974	$ 266,869	$ 250,216
Revenue Sources				
General Fund	$ 258,772	$ 271,974	$ 266,869	$ 250,216
Full-Time Equivalent Employees	3.20	1.40	1.40	1.25



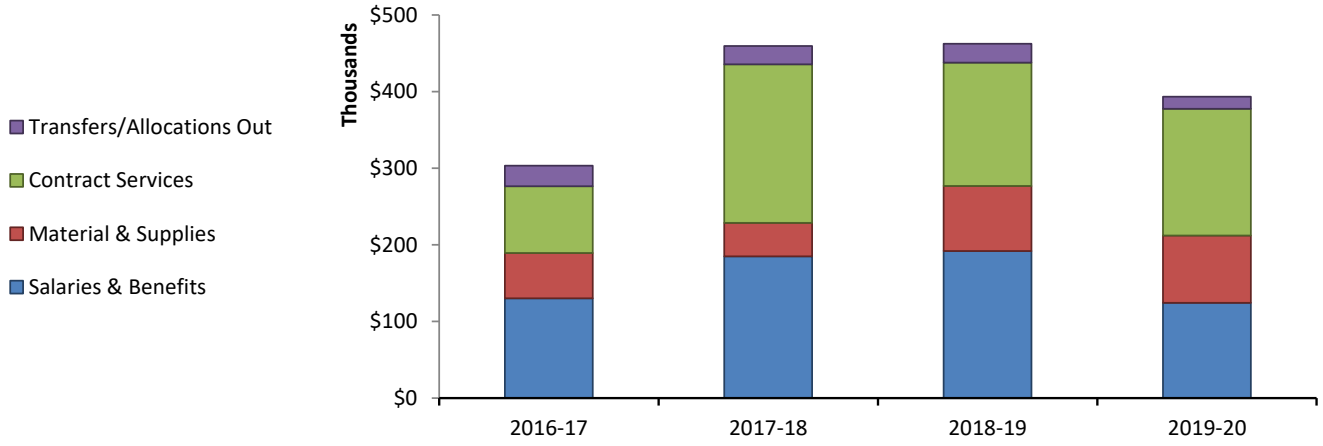
City of Half Moon Bay
FY 2019-20 Budget
Finance (01-16)

	Audited Actual 2016-17	Audited Actual 2017-18	Budget 2018-19	Recommended Budget 2019-20
Expenditures				
Salaries & Benefits	$ 567,828	$ 579,266	$ 657,544	$ 700,317
Material & Supplies	$ 28,256	$ 31,690	$ 28,100	$ 28,943
Contract Services	$ 140,132	$ 148,633	$ 177,600	$ 182,928
Transfers/Allocations Out	$ 88,388	$ 71,879	$ 55,868	$ 44,674
Total	$ 824,604	$ 831,468	$ 919,112	$ 956,862
Revenue Sources				
Business License Tax	$ 293,223	$ 318,815	$ 320,000	$ 326,400
General Fund	531,380	512,654	599,112	630,462
Full-Time Equivalent Employees	4.65	4.60	4.60	4.55



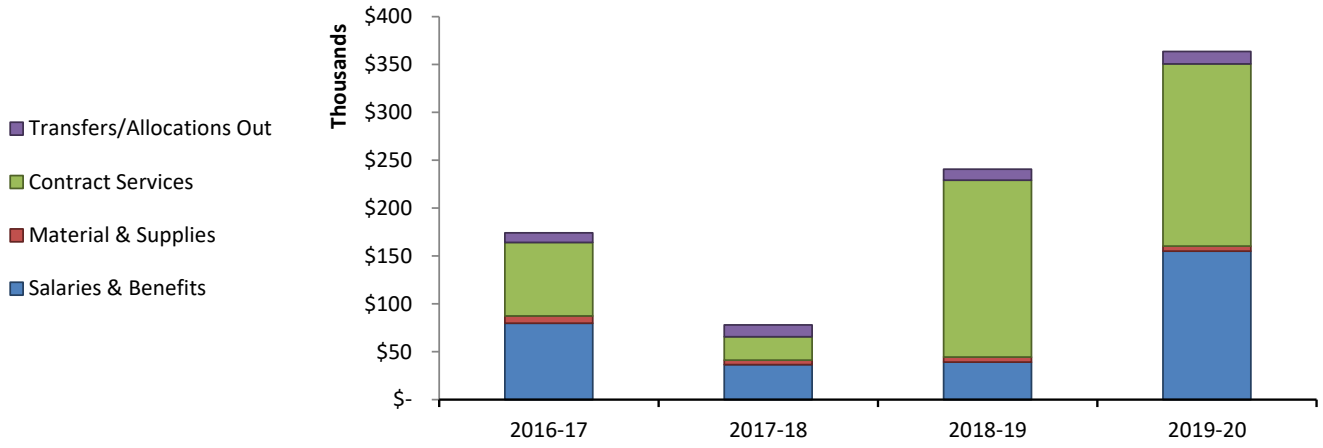
City of Half Moon Bay
FY 2019-20 Budget
Human Resources (01-17)

	Audited Actual 2016-17	Audited Actual 2017-18	Budget 2018-19	Recommended Budget 2019-20
Expenditures				
Salaries & Benefits	$ 130,219	$ 185,034	$ 191,838	$ 124,386
Material & Supplies	$ 59,286	$ 43,838	$ 85,200	$ 87,756
Contract Services	$ 86,832	$ 206,750	$ 160,700	$ 165,521
Transfers/Allocations Out	$ 27,086	$ 23,935	$ 24,563	$ 15,747
Total	$ 303,423	$ 459,558	$ 462,301	$ 393,410
Revenue Sources				
General Fund	$ 303,423	$ 459,558	$ 462,301	$ 393,410
Full-Time Equivalent Employees		1.20	1.20	0.80



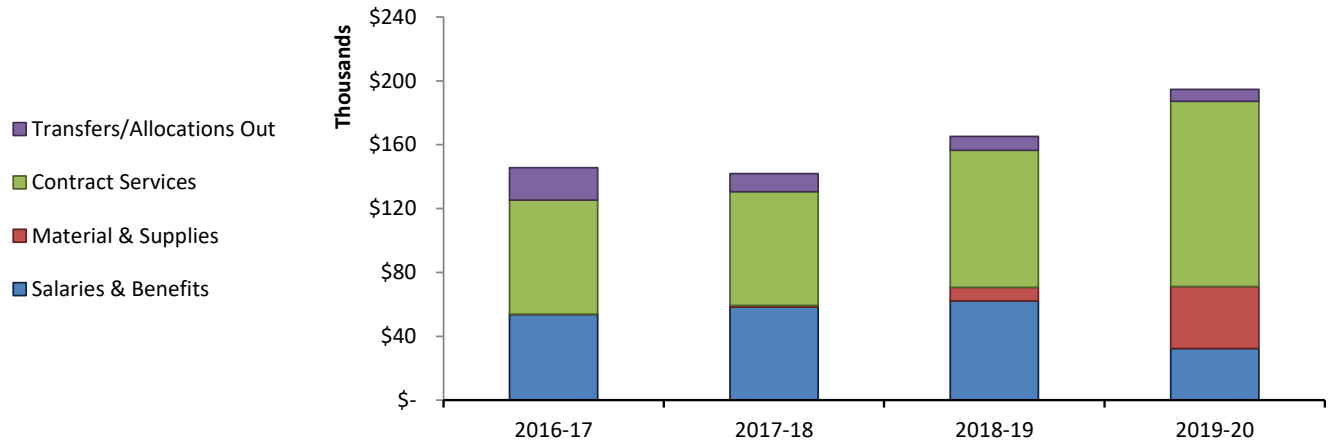
City of Half Moon Bay
FY 2019-20 Budget
Information Technology (01-19)

	Audited Actual 2016-17	Audited Actual 2017-18	Budget 2018-19	Recommended Budget 2019-20
Expenditures				
Salaries & Benefits	$ 79,772	$ 36,614	$ 39,076	$ 154,977
Material & Supplies	$ 7,742	$ 4,555	$ 5,300	$ 5,459
Contract Services	$ 76,772	$ 24,447	$ 184,800	$ 190,344
Transfers/Allocations Out	$ 9,959	$ 12,357	$ 11,435	$ 12,740
Total	$ 174,245	$ 77,974	$ 240,611	$ 363,520
Revenue Sources				
General Fund	$ 174,245	$ 77,974	$ 240,611	$ 363,520
Full-Time Equivalent Employees		0.20	0.20	0.15



City of Half Moon Bay
FY 2019-20 Budget
Emergency Services (01-42)

	Audited Actual 2016-17	Audited Actual 2017-18	Budget 2018-19	Recommended Budget 2019-20
Expenditures				
Salaries & Benefits	$ 53,683	$ 58,328	$ 62,139	$ 32,422
Material & Supplies	$ 144	$ 1,049	$ 8,500	$ 38,755
Contract Services	$ 71,418	$ 71,238	$ 85,800	$ 115,974
Transfers/Allocations Out	$ 20,296	$ 11,208	$ 8,682	$ 7,432
Total	$ 145,541	$ 141,823	$ 165,121	$ 194,583
Revenue Sources				
General Fund	$ 145,541	$ 141,823	$ 165,121	$ 194,583
Full-Time Equivalent Employees		0.40	0.40	0.25



Risk Management

Risk Management

Mission

The mission of Risk Management is to enhance safety and protect citizens, employees, and assets of the City by fostering a culture of proactive risk management to effectively forecast, control, and mitigate the City's risk through effective loss prevention, claims management, and risk financing.

Description

The Risk Management Department is comprised of two programs: General Liability and Workers Compensation. Risk Management implements safety policies, and best practices and procedures, to mitigate the City's risk exposure. The Risk Management Program protects City assets, provides liability insurance and claims management services, and promotes the safety and well-being of City employees. The program includes managing liability, property and auto claims, and insurance programs. It also develops risk reduction policies and procedures, ensures compliance with the City's risk management operational best practices, and safety standards and regulations as defined by OSHA and the City's Injury and Illness Prevention Program (IIPP). The budget provides for premiums as well as operating funds for legal and other cost resulting from claims against the City.

The City is a member of the PLAN JPA (Pooled Liability Assurance Network Joint Powers), which is comprised of 28 greater Bay Area municipalities and is currently administered by York Risk Control Services staff under the direction of a Board of Directors, represented by its member cities. The Administrative Services Director is a member of the PLAN JPA Board of Directors and serves on the Board's Risk Management and Finance Committees.

The City's Workers Compensation program is self-funded through membership in a five-city JPA (Joint Powers Authority – The Cities Group). The JPA was formed to administer workers compensation and safety programs. The Cities Group programs are augmented by City-sponsored training, a City-wide safety committee, and workplace injury prevention assessments.

Service Priorities

- Ensure the City has adequate insurance coverage for its operations.
- Undertake and complete timely claims management.
- Promote policies and programs to reduce risk exposure.
- Develop safety policies and procedures and implement risk management best practices.

Staffing

The City's General Liability Risk Management and Workers Compensation Program is supported by the Administrative Services Director and a Management Analyst, as well as the entire Executive Team, who comprise the City's Risk Management Committee.

Service Level Changes

There are no service level changes to the Risk Management Program for FY 2019-20.

Budget Highlights / Summary of Changes

The Risk Management Program is budgeted in the Internal Service Fund and is allocated to various City programs and budget units. The Program will continue to receive direct full-time equivalent allocation of 1.15 FTE in the FY 2019-20 budget.

FY 2018-19 Accomplishments

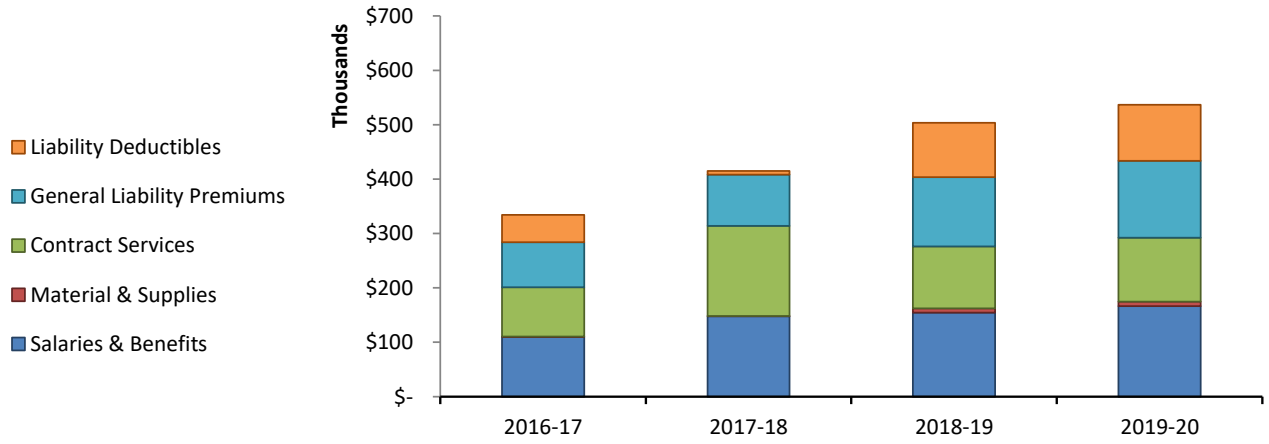
- Held regular meetings of the City's Executive Risk Management Committee to provide oversight, coordination, and direction for the City's safety and risk management programs.
- Received risk management training grants from the PLAN JPA.
- Completed a Vehicle Use Policy to comply with vehicle operations best practices and state requirements.
- Completed a citywide ADA Transition Plan to comply with the Americans with Disabilities Act and ensure that City facilities, programs, and services are accessible to disabled citizens and employees.
- Completed enrollment of City employees and officials in the DMV Pull Notice Program to comply with vehicle operations policy and best practices.
- Implemented new risk management and safety policies and procedures to ensure the City's compliance with risk management best practices framework and eligibility for grants.

FY 2019-20 Goals / Strategic Plan Elements

- Support the City Council's Strategic Elements and Initiatives as they relate to the City's Risk Management Program (Infrastructure and Environment, Healthy Communities and Public Safety, Fiscal Sustainability, Inclusive Governance).
- Comply with OSHA standards, regulations, and requirements to prevent work-related injuries and illnesses (Healthy Communities and Public Safety).
- Provide citywide training for employees and supervisors on Risk Management Program, including general liability and workers compensation procedures (Fiscal Sustainability, Inclusive Governance, Healthy Communities and Public Safety).
- Process and handle general liability and workers compensation claims in a timely manner, so that the risks to public and employees, claim expenses and legal costs can be minimized (Fiscal Sustainability, Inclusive Governance,).
- Continue to efficiently manage claims and seek recovery of costs when actions of a third-party cause damages to City property (Healthy Communities and Public Safety, Fiscal Sustainability).
- Continue to identify and reduce risks to the City (Healthy Communities and Public Safety, Fiscal Sustainability).

City of Half Moon Bay
FY 2019-20 Budget
Risk Management - General Liability (63-20)

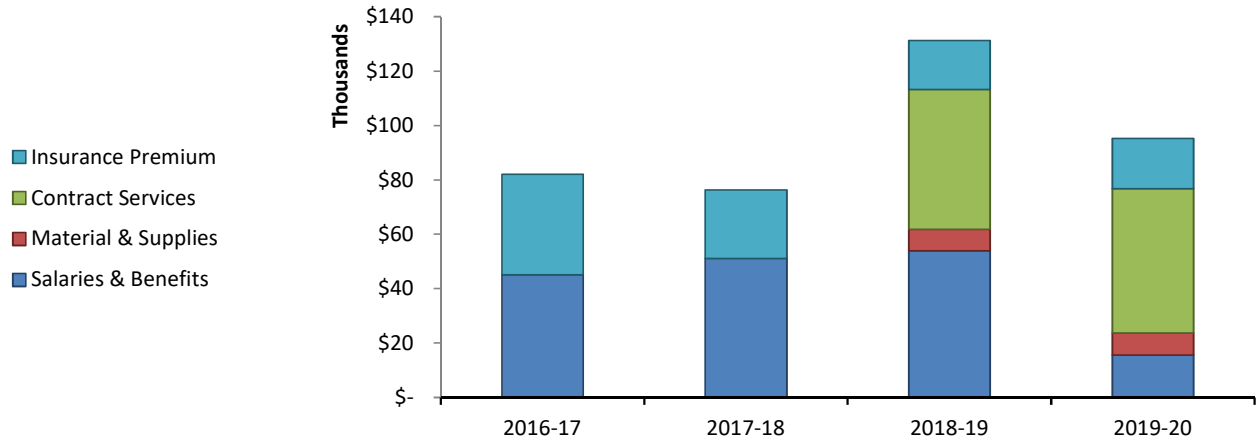
	Audited Actual 2016-17	Audited Actual 2017-18	Budget 2018-19	Recommended Budget 2019-20
Expenditures				
Salaries & Benefits	$ 110,189	$ 147,679	$ 154,494	$ 166,673
Material & Supplies	$ 500	$ 528	$ 7,900	$ 8,137
Contract Services	$ 90,263	$ 165,806	$ 114,100	$ 117,523
General Liability Premiums	$ 82,822	$ 94,011	$ 127,100	$ 141,081
Liability Deductibles	$ 50,367	$ 7,081	$ 100,000	$ 103,000
Total	$ 334,141	$ 415,105	$ 503,594	$ 536,414
Revenue Sources				
Transfers/Allocations In	$ 686,028	$ 472,969	$ 503,593	$ 526,246
Interest	$ 15,897	$ 28,507	$ 11,100	$ 30,000
Full-Time Equivalent Employees	0.80	0.85	0.85	0.85



* The Risk Management- General Liability program accounts for activities related to general liability claims against the City and insurance premiums in the FY 2019-20 Budget. The program operates on a full cost reimbursement basis from other departments.

City of Half Moon Bay
FY 2019-20 Budget
Risk Management - Workers' Compensation (63-21)

	Audited Actual 2016-17	Audited Actual 2017-18	Budget 2018-19	Recommended Budget 2019-20
Expenditures				
Salaries & Benefits	$ 45,128	$ 51,071	$ 53,877	$ 15,548
Material & Supplies	$ -	$ -	$ 7,900	$ 8,137
Contract Services	$ -	$ -	$ 51,500	$ 53,045
Insurance Premium	$ 36,965	$ 25,275	$ 18,000	$ 18,540
Total	$ 82,093	$ 76,345	$ 131,277	$ 95,270
Revenue Sources				
Transfers/Allocations In	$ 141,605	$ 156,804	$ 131,277	$ 99,088
Full-Time Equivalent Employees	0.30	0.30	0.30	0.10



* The Risk Management - Worker's Compensation program was moved from the City-wide and Human Resources Departments. The program will account for activities related to worker's compensation claims and insurance premiums. The program operates on a full cost reimbursement basis from other departments.

Public Safety

Public Safety

Mission

The mission of the Public Safety Department is to work in partnership with City departments and the community to protect life and property, enhance health and safety, and improve the quality of life of all residents, businesses, and visitors to Half Moon Bay.

Description

The City contracts with the County of San Mateo Sheriff's Office for law enforcement services including regular patrols, dispatch responses to emergency and 911 calls, investigative services, community policing, and specialized law enforcement services as needed. The San Mateo County Sheriff's Office is dedicated to the preservation of public safety by providing innovative and progressive service in partnership with the Half Moon Bay community. Animal control services are also provided through the County.

Service Priorities

- Deliver 24-hour emergency response.
- Coordinate emergency preparedness efforts.
- Detect and reduce crime.
- Enforce traffic laws.
- Manage records and reporting.
- Provide community policing.
- Coordinate the annual Youth Summit.
- Coordinate the Sheriff's Activity League on the Coastside.

Staffing

The Public Safety budget consists of key contracts for services with San Mateo County for law enforcement, dispatch, and animal control, as well as contracts with agencies that provide other related services such as citation processing. A new commanding officer was appointed to the City of Half Moon Bay/Coastside that will help establish relationship with the Spanish speaking community.

Service Level Changes

There are no service level changes to Public Safety for FY 2019-20.

Budget Highlights / Summary of Changes

The Law Enforcement budget includes a cost of living adjustment. Additionally, the contract for with the Sheriff's Office for Law Enforcement Services has been renewed for an additional three years and has been increased to better reflect the actual level of services provided to the City. The Dispatch Services budget also includes a contractually negotiated increase, while the Animal Control budget includes a reduction due to an increase in pet licensing fees.

FY 2018-19 Accomplishments

- Held Annual Youth Summit at Cunha Middle School focused towards 8th graders.
- Provided incident command and public safety for community events including the Pumpkin Festival, Night of Lights, Half Moon Bay Triathlon, 4th of July Parade and Chamarita Parade.
- Utilized School Resource Deputies and Sheriff's Activities League (SAL) staff to facilitate activities, educational programs, crime prevention, and anti-bullying efforts, and to work with school officials on safety issues.
- Participated in Gang Task Force with deployments to Half Moon Bay.
- Participated in San Mateo County Saturation Traffic Enforcement Program (STEP) with deployments to Half Moon Bay.
- Continued the Empowering Young Women Group to engage and facilitate positive outcomes in young women.
- Continued work with the Homeless Outreach Team to address homeless issues.
- Conducted, in partnership with the Sheriff's Office CARON group, numerous events held at the Half Moon Bay Library.
- Equipped Deputies with Body Worn Cameras(BWCs).
- Increased traffic enforcement with a part time motorcycle unit.

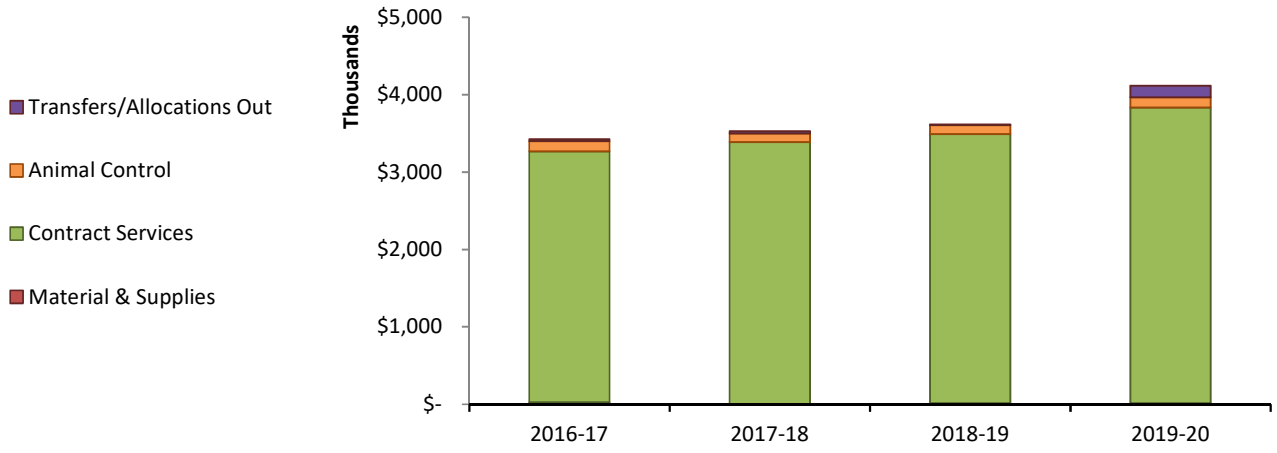
FY 2019-20 Goals / Strategic Plan Elements

- Continue to make community policing a priority and facilitate additional community events (Healthy Communities and Public Safety).
- Continue to coordinate with the City on homeless issues (Healthy Communities and Public Safety).
- Participate in the Gang Task Force (Healthy Communities and Public Safety).
- Utilize the Sheriff's Office Bicycle Unit and off-road motorcycle unit to patrol coastal trails, Poplar Beach, and other coastal areas. (Healthy Communities and Public Safety).
- Continue traffic safety through utilization of the Sheriff's Office Motorcycle Unit (Healthy Communities and Public Safety).
- Educate and disseminate prevention information regarding phone scams, burglary trends, and other crimes of opportunity (Healthy Communities and Public Safety).

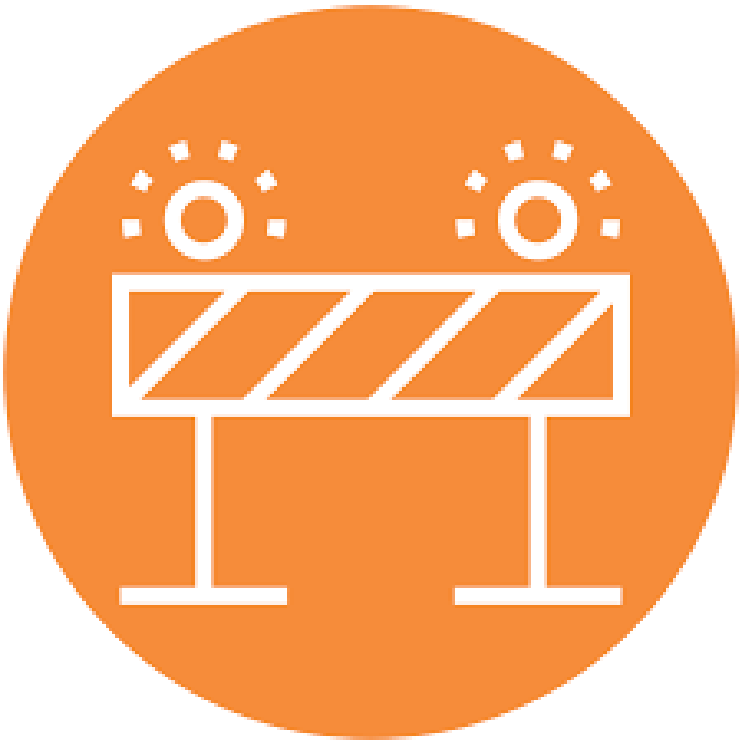
City of Half Moon Bay
FY 2019-20 Budget
Public Safety (01-41)

	Audited Actual 2016-17	Audited Actual 2017-18	Budget 2018-19	Recommended Budget 2019-20
Expenditures				
Material & Supplies	$ 24,965	$ -	$ 12,100	$ 12,463
Contract Services	$ 3,244,010	$ 3,385,489	$ 3,477,087	$ 3,821,597
Animal Control	$ 129,074	$ 115,257	$ 115,731	$ 134,034
Transfers/Allocations Out	$ 26,386	$ 27,177	$ 10,008	$ 147,937
Total	$ 3,424,435	$ 3,527,924	$ 3,614,926	$ 4,116,031
Revenue Sources				
Police Fees	$ 95,883	$ 192,192	$ 135,500	$ 140,052
[1] County Credit Reimbursements	555,822	541,121	535,548	556,649
General Fund	2,772,729	2,794,611	2,943,878	3,419,330
Full-Time Equivalent Employees	-	-	-	-

[1] Amount reimbursed by the San Mateo County Sheriff's Office toward annual unfunded pension liability paid by City directly to CalPERS.



Public Works



Public Works

Mission

The mission of the Public Works Department is to promote safety, livability and sustainability through effective management of streets, parks, facilities, and utilities. The Department is also dedicated to excellence, integrity, and environmental stewardship.

Vision

Making Half Moon Bay the premier place to vivir (live), trabajar (work) and jugar (play)!

Description

The Public Works Department coordinates and manages maintenance, replacement, and enhancement of City infrastructure, including streets, street lights, street and regulatory markings and signage, medians, parkways, the storm water collection and conveyance system, the sewer collection system, parks and trails, as well as public facilities. The Department develops, manages, and implements the City's Five-Year Capital Improvement Program (CIP), reviews private development applications, coordinates with Caltrans on Highways 1 and 92, manages and oversees the City's solid waste franchise agreement, develops and implements sustainability programs, and ensures private and public compliance with local, state, and federal regulations, including the Federal Clean Water Act, National Pollutant Discharge Elimination System, and the endangered species acts. The Department also serves as liaison to the Sewer Authority Mid-Coastside (SAM), City County Association of Governments (C/CAG), the Metropolitan Transportation Commission (MTC), Caltrans and other agencies.

Service Priorities

- Protect and enhance the public health, safety, and welfare of the community.
- Maintain critical City infrastructure, parks, trails, and public facilities.
- Develop and implement the City's Five-Year Capital Improvement Program (CIP).
- Implement preventive maintenance efforts where possible to reduce pre-mature and costly replacement.
- Implement complete streets and neighborhood traffic calming to enhance quality of life in existing and new neighborhoods.
- Encourage multi-modal transportation, traffic management and transportation demand management strategies.
- Incorporate green infrastructure, watershed management, and habitat enhancement / protection into capital infrastructure planning and design efforts.
- Identify and implement sustainability programs.
- Maintain City compliance with CalRecycle.
- Monitor and manage the City's 10-year solid waste franchise agreement.

Staffing

The Public Works Department consists of a Director, the City Engineer, Public Works Superintendent, Senior Management Analyst (added in FY 2019-20), Management Analyst, Associate Engineer, Assistant Engineer, Administrative Assistant, two (2) Senior Maintenance Workers, five (4) Worker I/II positions (one additional position added in FY 2019-20), a part time contract sewer engineer, a 32-hour contract Public Works Inspector and two (2) part time contract engineers for public works inspection and management of capital projects.

Service Level Changes

The department was formed in FY 2017-18 through reorganization of the former Community Development Department and merger of the Public Works-Facilities Maintenance Division from the City Manager's Office. In FY 2017-18 the City Council authorized the one additional Maintenance Worker I/II position to assist in maintenance efforts. In FY 2018-19, the City opened the new Half Moon Bay Library. Contract building engineer services have been utilized during the start-up and warranty period. In the coming year, we anticipate a shift away from contract maintenance to in-house day-to-day services, supplemented by contracted experts.

Budget Highlights / Summary of Changes

The department budget includes funding for personnel-related costs and consultant services as well as management and operation of departmental programs. In FY 2018-19 Administration and Sustainability division was created to provide support to the other Public Works divisions. With the creation of a new Senior Management Analyst position in FY 2019-20, the Department will assume a lead role in City sustainability programming and implementation efforts.

The Department is comprised of the following divisions:

Administration and Sustainability

Mission

The mission of Administration and Sustainability is to provide support to each of the other three divisions: 1) the Engineering Division; 2) the Capital Projects Division 3) the Infrastructure and Facilities Maintenance Division. Duties include ensuring each division is fulfilling their respective duties to protect public health, safety, welfare, and improve the quality of life of residents and visitors alike.

Description

Administration and Sustainability serves as the primary point of contact for the City Manager, City Council, SAM, the Community Development Department and other departments and agencies. The Division generally serves as the Public Information Officer (PIO) for issues pertaining to Public Works. The Division is responsible for identification, assessment, and implementation of sustainability programs, participating in the CalRecycle program, and oversight of the solid waste agreement and franchisee. The Division collaborates and coordinates projects and programs with the Community Development Department including future updates of the City's Greenhouse Gas inventory and in preparation of the Climate Action and Adaptation Plan (CAAP). The Division is also responsible for oversight of public outreach efforts including

coordination of CIP and managing Public Works information on the website. The Public Works Director serves as principal liaison to SAM staff, the SAM Board of Directors and City SAM Board representatives. The Division is responsible for the department's budget preparation, including the capital budget and oversight, management of public procurement, and accounts receivable for the department.

Engineering Division

Mission

The mission of the Engineering Division is to protect public health and safety, and improve the quality of life of residents and visitors by ensuring safe and functional streets, bridges, intersections, and infrastructure that is designed, inspected, and maintained in accordance with best practices and applicable local, state, and federal regulations and laws.

Description

The Engineering Division is responsible for review of private development, issuance of applicable permits, assisting with environmental reviews, coordination with other divisions, consultant engineers, and other utility providers in the design and construction of new public and privately funded projects and infrastructure. This division serves as lead on the preparation of studies and master plans of the City's streets, buildings and grounds, sewage and drainage systems. The Division is also responsible for managing the Traffic Safety Committee, related traffic safety regulations and other special purpose committees including the Bike Pedestrian Advisory Committee and the Main Street Advisory Committee.

Capital Projects Division

Mission

The mission of the Capital Projects Division is to protect public health and safety and improve the quality of life of residents and visitors by ensuring public infrastructure and facilities are designed, built, and inspected in accordance with the City Council approved Five-Year Capital Improvement Program (CIP).

Description

The Capital Projects Division is responsible for preparing and seeking annual approval from the City Council of the Five-Year Capital Improvement Program (CIP) and one-year capital budget. The Division identifies capital improvement needs in consultation with other divisions and departments, coordinates with non-City utility providers on design and implementation of the CIP, and oversees design, permitting, bidding, bid award, and construction of projects identified in the CIP. Division staff assist the Engineering Division in the preparation of studies and master plans for streets, parks, trails, buildings and grounds, and sewer and storm drainage systems.

Infrastructure and Facilities Maintenance Division

Mission

The mission of the Infrastructure and Facilities Maintenance Division is to proactively maintain and enhance City streets, parks, trails, facilities and infrastructure to ensure compliance with local, state, and federal laws, and continued functional and safe operations and use.

Description

The Infrastructure and Facilities Maintenance Division provides cost-effective and timely maintenance of City utilities including the sewer collection system, storm drain system, streets, sidewalks, street trees, trails/paths and parks, as well as City-owned and operated buildings to enhance and protect the health, safety, and welfare of residents and visitors alike.

FY 2018-19 Accomplishments

- Administration/Community Building
    - Hired new Public Works Superintendent, Maintenance Worker I and Administrative Assistant.
    - Collaborated with Community Development on the Bicycle and Pedestrian Master Plan, Local Coastal Land Use Plan and General Plan
    - Supported community events including Night of Lights, Pumpkin Festival and July Fourth Parade.

- Facilities
    - Finished close-out of new Half Moon Bay Library and initiated work on finalizing LEED and Zero Net Energy Certifications.
    - Designed and Bid Ted Adcock Community Center remodel project.
    - Completed Sheriff Substation assessment and remodel design.
    - Completed Main Street tree trimming.
    - Re-painted Main Street Bridge.

- Streets and Sidewalks
    - Completed the reconstruction of portions of Magnolia Avenue, Church Street, Kelly Avenue, San Benito Street, Railroad Avenue, Naples Avenue and Miramontes Point Road.
    - Completed the sidewalk repair and replacement project.
    - Secured construction funding and completed design and solicited bids for Main Street South project.
    - Initiated work on Poplar Complete/Green Street Project.
    - Completed entitlements and environmental for Highway 1 North project.

- Sustainability
    - Continued to manage the 10-year solid waste franchise agreement with Republic Services. Assisted with Homeless Encampment Cleanup efforts and restoration planning/permitting.
    - Initiated work on Green Infrastructure Plan and managed related NPDES inspections.

- Sewer
    - Implemented new collection system maintenance contract with SAM.
    - Implemented contract services with Mark Thomas Company on oversight of sewer collection system maintenance and implementation of FOG program.
    - Conducted smoke testing for portion of sewer collection system (to assess I & I) and completed CCTV inspection of all designated City "Hot Spots".
    - Completed 95-percent design of Ocean Colony Pump Station and Force Main.
    - Awarded construction contract for sewer point repair project.

- Parks
    - Designed and constructed emergency drainage repair at Poplar Beach access.
    - Awarded 40-percent design contract for Carter Park renovation.
    - Completed design and entitlement of new restrooms at Ocean View Park.
    - Initiated conceptual design and community outreach for Frenchmans Creek Park playground replacement.
    - Collaborated with Community Development on Parks Master Plan and Poplar Gateways Plan.

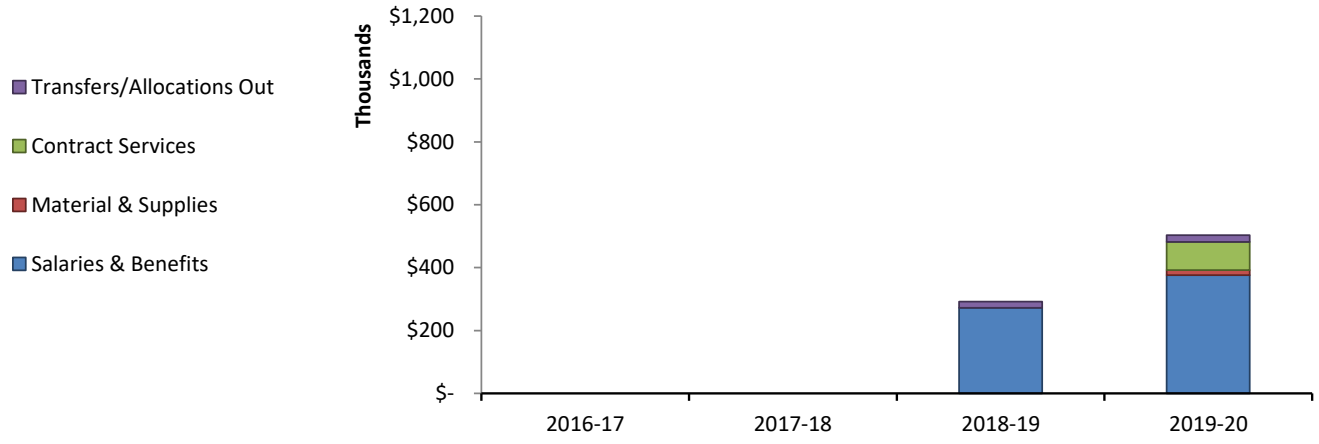
FY 2019-20 Goals / Strategic Plan Elements

- Maintain storm water conveyance ditches annually in conformance with the State Streambed Alteration Permit (Infrastructure and Environment).
- Maintain and monitor sewer collection system in conformance with the City's adopted Sewer System management Plan (SSMP) and State law (Infrastructure and Environment).
- Coordinate and collaborate with Coastside emergency preparedness efforts (Healthy Communities and Public Safety, Infrastructure and Environment).
- Collaborate on the preparation of ADA Transition Plan and prioritization of implementation (Infrastructure and Environment).
- Update and prioritize the City's Five-Year Capital Improvement Program for presentation and consideration by City Council (Fiscal Sustainability, Healthy Communities and Public Safety, Infrastructure and Environment, Inclusive Governance).
- Complete capital projects designated for FY 2019-20 (Fiscal Sustainability, Healthy Communities and Public Safety, Infrastructure and Environment, Inclusive Governance).
- Continue to implement preventive maintenance program for public facilities and infrastructure (Infrastructure and Environment).
- Monitor and manage the City's 10-year Solid Waste Franchise Agreement (Fiscal Sustainability, Infrastructure and Environment).

- Evaluate opportunities to enhance / expand parks, multi-use trails, and path opportunities (Healthy Communities and Public Safety).
- Initiate work on Climate Action and Adaptation Plan (CAAP) and evaluate other sustainability projects and programs for FY 2019-20 (Healthy Communities and Public Safety).
- Complete sewer pump station replacement at Ocean Colony and other sewer collection system capital repairs and replacements (Infrastructure and Environment).

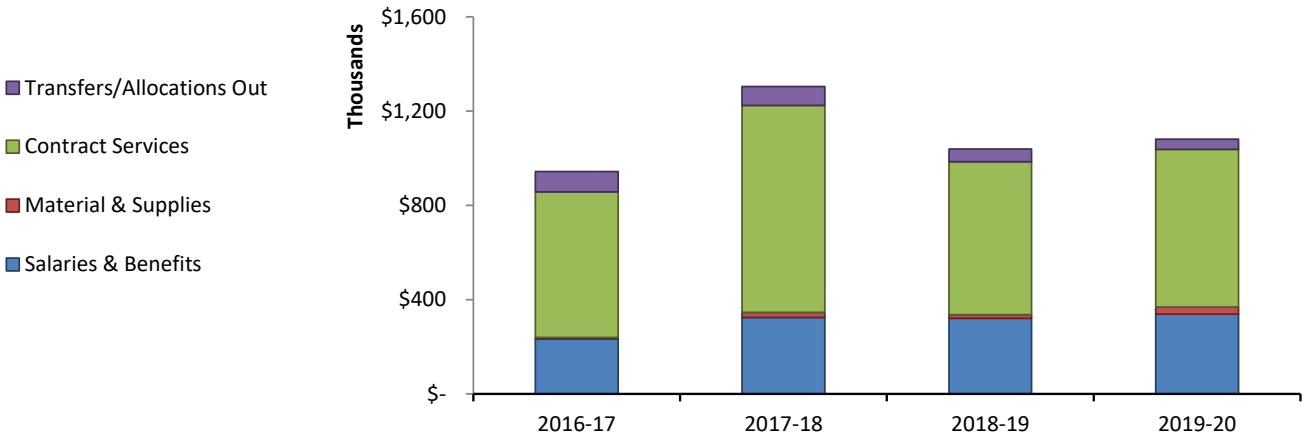
City of Half Moon Bay
FY 2019-20 Budget
Public Works - Administration (01-50)

	Audited Actual 2016-17	Audited Actual 2017-18	Budget 2018-19	Recommended Budget 2019-20
Expenditures				
Salaries & Benefits	$ -	$ -	$ 272,572	$ 376,050
Material & Supplies	$ -	$ -	$ -	$ 16,000
Contract Services	$ -	$ -	$ -	$ 90,000
Transfers/Allocations Out	$ -	$ -	$ 19,190	$ 21,567
Total	$ -	$ -	$ 291,762	$ 503,617
Revenue Sources				
AB 939 Recycling Funding	$ -	$ -	$ -	$ 163,000
General Fund	$ -	$ -	$ 291,762	$ 340,617
Full-Time Equivalent Employees	-	-	1.85	2.40



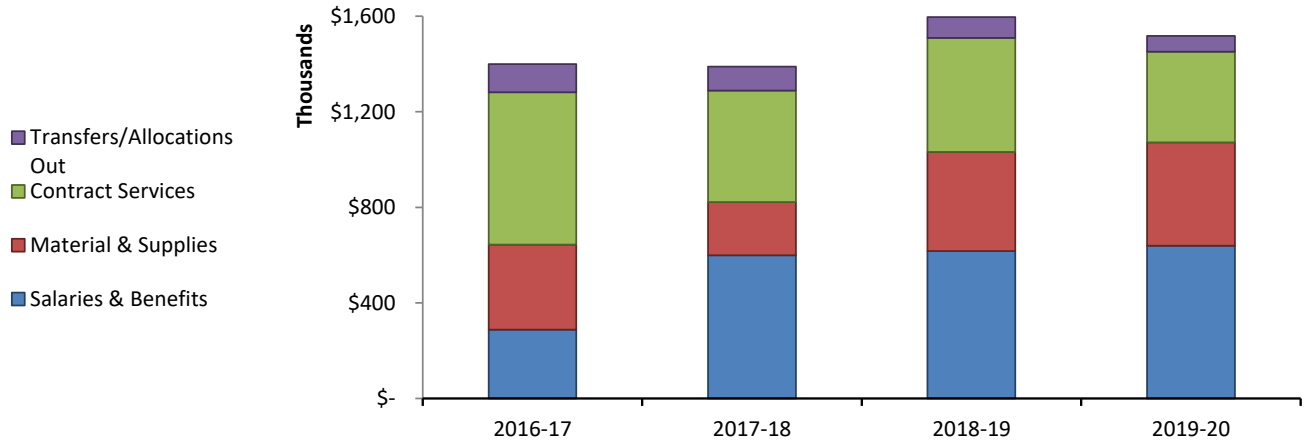
City of Half Moon Bay
FY 2019-20 Budget
Public Works - Engineering (01-51)

	Audited Actual 2016-17	Audited Actual 2017-18	Budget 2018-19	Recommended Budget 2019-20
Expenditures				
Salaries & Benefits	$ 232,486	$ 324,216	$ 321,197	$ 338,338
Material & Supplies	$ 7,050	$ 22,324	$ 14,800	$ 30,566
Contract Services	$ 617,539	$ 877,409	$ 649,500	$ 668,985
Transfers/Allocations Out	$ 86,225	$ 79,844	$ 53,557	$ 42,897
Total	$ 943,301	$ 1,303,793	$ 1,039,054	$ 1,080,786
Revenue Sources				
Engineering Fees	$ 18,691	$ 316,393	$ 91,945	$ 134,006
AB 939 Recycling Funding	$ 140,287	$ 111,150	$ 118,600	$ -
General Fund	$ 784,322	$ 876,251	$ 828,509	$ 946,780
Full-Time Equivalent Employees	2.50	3.40	2.10	2.15



City of Half Moon Bay
FY 2019-20 Budget
Public Works - Facilities Maintenance (01-55)

	Audited Actual 2016-17	Audited Actual 2017-18	Budget 2018-19	Recommended Budget 2019-20
Expenditures				
Salaries & Benefits	$ 288,031	$ 598,821	$ 616,462	$ 639,282
Material & Supplies	$ 356,571	$ 223,727	$ 414,900	$ 432,347
Contract Services	$ 637,231	$ 466,105	$ 478,300	$ 380,049
Transfers/Allocations Out	$ 117,390	$ 100,219	$ 86,984	$ 65,791
Total	$ 1,399,223	$ 1,388,872	$ 1,596,646	$ 1,517,469
Revenue Sources				
General Fund	$ 1,399,223	$ 1,388,872	$ 1,596,646	$ 1,517,469
Full-Time Equivalent Employees	3.15	5.60	5.30	5.55



Community Development

Community Development

Mission

The mission of the Community Development Department is to protect public health, safety, and welfare; enhance the community through long range and current planning; support affordable housing and economic development initiatives; and ensure building safety and code compliance while providing for inclusive and transparent planning and policy making processes that encourage community participation.

Description

The Community Development Department coordinates and manages the City's development-related functions: long-range planning, development and subdivision review, entitlement and permit processing, building inspection services, and code compliance. The Department serves as a clearinghouse for all development-related housing and economic development services. It also functions as the environmental coordinator for the City, ensuring compliance with the California Coastal Act, California Environmental Quality Act (CEQA), and the National Environmental Policy Act (NEPA).

The Department provides staff support to the City Council, Planning Commission, the Bicycle and Pedestrian Advisory Committee, and other ad hoc committees; and monitors and participates with regional organizations including the City/County Association of Governments (C/CAG) and the Association of Bay Area Governments (ABAG). The Department also provides planning support for environmental review and entitlements required for public projects including parks, streets, and other infrastructure improvements.

Service Priorities

- Implement the Local Coastal Program (LCP) and the California Coastal Act through protection of coastal resources and maximization of coastal access.
- Implement the Housing Element and facilitate development of affordable housing.
- Protect and enhance the public health, safety, and welfare of community members.
- Create safe, livable, connected, and walkable neighborhoods.
- Enhance employment and economic development opportunities for residents and businesses.
- Be responsive to residents, Councilmembers, Commissioners, staff and community.

Staffing

The department consists of a Director, Senior Planner, two Associate Planners, Administrative Assistant, Permit Technician, Community Preservation Specialist, Contract Building Official/ Inspector, and Part-Time Contract Planning Analyst.

Service Level Changes

The budget includes shifting building and planning contract services budgets to fund the new Community Preservation Specialist position. This change will give the Department capacity to better support community events, educate and inform visitors about the use of public spaces, and improve the appearance and property maintenance of residential and commercial neighborhoods.

Budget Highlights / Summary of Changes

The budget consists of personnel-related costs and contract services to cover staffing and related services. The contract planning portion of the contract services budget continues to be reduced as the planning function is returning to City staffing. There is additional reduction in contract services with the code compliance function being brought in-house. Funding for contract services will continue to cover on-call staffing support, consulting servings from a housing and LCP policy specialists, planning project management services, biological consultant services, and permit tracking and GIS programs.

The department consists of two divisions:

Building Division

Mission

The mission of the Building Division is to protect public health and safety through the issuance of required building permits; and inspection of buildings, properties, and facilities in compliance with the California Building Standards, the Half Moon Bay Municipal Code, and other federal, state, and local requirements.

Description

The Building Division staffs the City Permit Center which coordinates intake of building, engineering, and planning permits, provides building plan check services, building inspection services, and zoning and other Municipal Code-related code compliance services. Division staff also provide responsive services including same-day inspections and issuance of over-the-counter permits for ministerial matters. Division staff spend significant time in the field and their firsthand knowledge of community conditions is essential to department operations as a whole.

Planning Division

Mission

The mission of the Planning Division is to protect public health and safety, safeguard coastal resources, and improve the quality of life of community members by ensuring residences, businesses, and other uses are developed and operated in accordance with the requirements of the LCP, Zoning Ordinance, General Plan, California Environmental Quality Act (CEQA), the Subdivision Map Act, State housing laws, and other applicable local, state, and federal laws and regulations.

Description

The Planning Division serves residents and businesses by overseeing and implementing the City's development-related regulations, Local Coastal Land Use Plan, and General Plan, in accordance with state law. The Division provides support to the City's Planning Commission, whose role is to consider current development proposals and provide recommendations on land use policy matters to the City Council. Planning staff strive to provide professional, courteous, responsive, and accountable public service to the community, and to implement Council-directed policy regarding the City's regulatory and environmental framework. The division works closely with the City Manager's Office and Public Works Department.

FY 2018-19 Accomplishments

- Made significant advances with the LCP Update project, including:
  - Established and served a Planning Commission LCP Update ad hoc committee;
  - Completed seven of nine LCP chapters for Planning Commission and public review;
  - Completed comprehensive biological mapping and other studies to establish the policy framework for Development through the 2040 plan horizon and buildout;
  - Established and managed contract services with specialized LCP policy and biological resources consultants.
- Hired a contract housing specialist to support City Council's priority to address affordable housing.
- Prepared a draft ordinance for City Council and community input to institute tenant protection measures.
- Conducted two comprehensive and well-attended Community Conversations about Housing in collaboration with Home for All and the Peninsula Conflict Resolution Center.
- Utilized results of Community Conversations to incorporate numerous new approaches into the Draft LCP update to support more affordable and diverse types of housing.

Source: October 23, 2018 – Second Community Conversation About Housing "Creative, diverse and more affordable housing"

- City Council approved and Coastal Commission certified new accessory dwelling unit ordinance compliant with State law; staff achieved administrative review timeline goal of 30 days; and processed more than four times of the number of accessory dwelling units as seen in prior years.
- Supported entitlements for mixed-use and small infill residential development.
- Supported the Engineering and Capital Projects Division of the Public Works Department for entitlements and environmental review of public infrastructure projects.
- Completed environmental review of the Parks Master Plan and Bicycle and Pedestrian Master Plans. The Parks Master Plan was adopted by City Council in January; the Bicycle and Pedestrian Master Plan adoption is pending.
- Secured a Coastal Development Permit and completed environmental review for the Highway 1 North signalization project.
- Secured a Coastal Development Permit for Highway 1 South gateway and signage in association with the Highway 1 South signalization project.
- Hired the second Associate Planner and established Community Preservation Specialist position.
- Managed contracts for Planning staffing services and project management support.
- Managed the contract for building inspection, plan check and code compliance services.
- Initiated data transfer and preparation for new permit tracking software.
- Conducted an RFP process for a new GIS system.
- Prepared application materials and trained staff to prepare for commercial cannabis nursery starts business applications to implement the new ordinance.

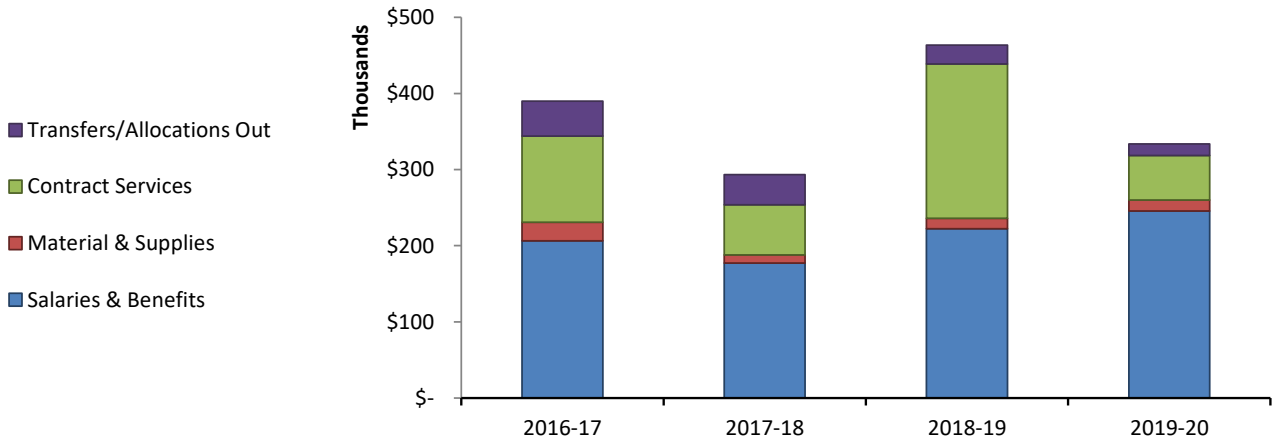
FY 2019-20 Goals / Strategic Plan Elements

- Complete LCP Land Use Plan Update for City Council approval and Coastal Commission consideration. The plan will incorporate the following City Council directives:
  - Incorporates improvements to the environmental and design review processes;
  - Updates and utilizes parking regulations appropriate to a mixed-use downtown environment;
  - Studies and initiates new approaches to water policy for the mixed-use downtown core area; and
  - Analyzes and addresses market conditions, cost to develop, and the potential for job creation and match for coastside residents.
- Establish a housing function to effectively implement the City's Housing Element and seek opportunities to accomplish the following to produce new and protect existing affordable dwelling units. For FY 2019-20 specifically address the following:
  - Affordable Housing Fund: Determine an allocation method, identify and establish new funding sources to create a sustainable fund.
  - Community Land Trust: Research and determine feasibility options for implementing a community land trust for affordable housing.
  - Tenant Protection Measures: Complete research and outreach to establish tenant protection measures.

- Seek grant funding, including SB2, for housing, environmental and sustainability plans and projects. (Healthy Communities and Public Safety, Infrastructure and Environment)
- Complete ordinance updates to reduce barriers to the production of more affordable housing by improving regulations for multi-family and mixed-use parking, small-lot infill development, the below market rate (BMR) provisions), and permit process. (Healthy Communities and Public Safety, Infrastructure and Environment)
- Hire the Community Preservation Specialist and complete the transition of code compliance form an outside contractor to an in-house function; improve responsiveness and establish a proactive engagement and education approach to code compliance and neighborhood and community preservation and enhancement. (Healthy Communities and Public Safety, Infrastructure and Environment)
- Establish an Architectural Advisory Committee. (Inclusive Governance, Infrastructure and Environment)
- Continue to provide for community engagement and transparency in processing and review of private development proposals. (Inclusive Governance, Infrastructure and Environment)
- Provide planning support for community engagement, project development, environmental review and entitlement of Public Works projects including Poplar Gateways, Poplar Complete Streets, Carter Park and the Main Street Bridge. (Infrastructure and Environment)
- Continue to assist Public Works in the annual review of the City's Five-Year CIP document and ensure Planning Commission review of the capital projects for General Plan consistency and to provide entitlement and environmental review. (Infrastructure and Environment)

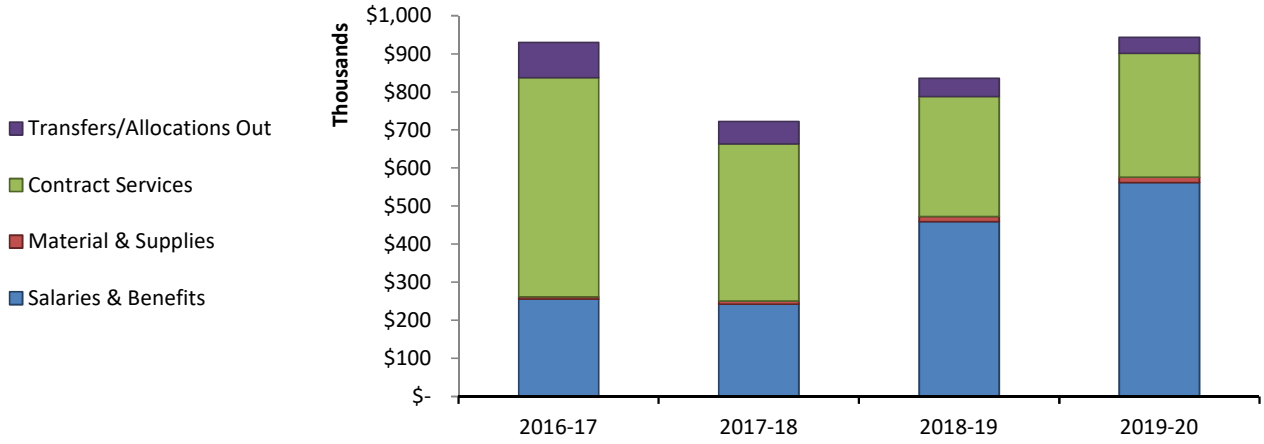
City of Half Moon Bay
FY 2019-20 Budget
Community Development (01-70)

	Audited Actual 2016-17	Audited Actual 2017-18	Budget 2018-19	Recommended Budget 2019-20
Expenditures				
Salaries & Benefits	$ 206,548	$ 177,370	$ 222,428	$ 245,838
Material & Supplies	$ 24,153	$ 10,503	$ 13,700	$ 14,111
Contract Services	$ 113,170	$ 66,000	$ 202,500	$ 58,575
Transfers/Allocations Out	$ 45,850	$ 39,567	$ 24,938	$ 15,120
Total	$ 389,721	$ 293,440	$ 463,566	$ 333,644
Revenue Sources				
General Fund	389,721	293,440	463,566	333,644
Full-Time Equivalent Employees	1.80	2.20	1.30	1.40



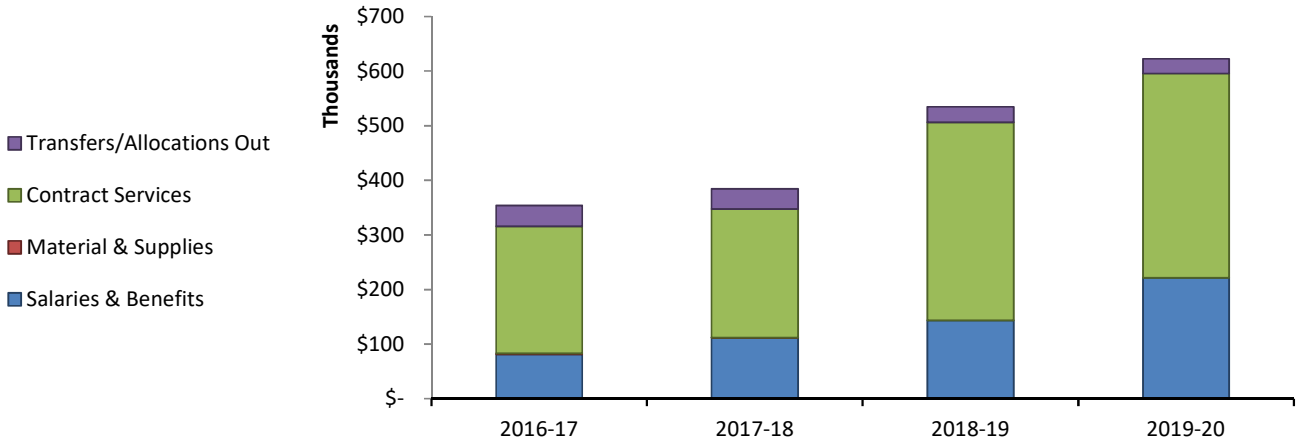
City of Half Moon Bay
FY 2019-20 Budget
Planning Services (01-71)

	Audited Actual 2016-17	Audited Actual 2017-18	Budget 2018-19	Recommended Budget 2019-20
Expenditures				
Salaries & Benefits	$ 256,078	$ 242,602	$ 458,859	$ 561,970
Material & Supplies	$ 5,347	$ 8,056	$ 13,400	$ 13,802
Contract Services	$ 575,737	$ 412,785	$ 315,800	$ 325,274
Transfers/Allocations Out	$ 93,072	$ 59,132	$ 47,678	$ 42,367
Total	$ 930,234	$ 722,575	$ 835,737	$ 943,413
Revenue Sources				
Planning Fees	$ 82,368	$ 122,576	$ 137,763	$ 140,518
Zoning Fees	$ 31,661	$ -	$ 30,000	$ 30,600
General Fund	$ 816,205	$ 599,998	$ 667,974	$ 772,295
Full-Time Equivalent Employees	4.05	4.25	4.75	3.80



City of Half Moon Bay
FY 2019-20 Budget
Building and Code Enforcement (01-52)

	Audited Actual 2016-17	Audited Actual 2017-18	Budget 2018-19	Recommended Budget 2019-20
Expenditures				
Salaries & Benefits	$ 81,369	$ 111,813	$ 143,364	$ 221,525
Material & Supplies	$ 1,529	$ 126	$ -	$ -
Contract Services	$ 232,971	$ 235,735	$ 363,100	$ 373,993
Transfers/Allocations Out	$ 38,151	$ 36,545	$ 28,125	$ 27,077
Total	$ 354,020	$ 384,219	$ 534,589	$ 622,595
Revenue Sources				
Building Permits	$ 401,324	$ 308,737	$ 360,895	$ 250,073
General Fund	(47,305)	75,482	173,694	372,522
Full-Time Equivalent Employees	0.65	0.90	1.05	1.55



CITY OF HALF MOON BAY

Other Funds

CITY OF HALF MOON BAY

Special Revenue and Capital Funds

Special Revenue and Capital Project Funds

Special Revenue Funds and Capital Project Funds are used to account for the proceeds of specific revenue sources that are, for the most part, legally or contractually restricted as to their use. In many instances, these funds pay for specialized services in the operating budget.

The Capital General Fund proceeds are derived from funds transferred from the General Fund (Fund 01). Unlike the special revenue funds, the Capital General Fund is unrestricted, and these proceeds can be used for any governmental purpose or project.

These funds typically are used to implement projects identified and prioritized annually in the Capital Improvement Program (CIP). The Capital improvement Program budgets for one fiscal year and plans for projects on a five-year horizon. The CIP is contained in a separate budget document that is adopted in conjunction with and as a companion to the operating budget.

STORM WATER MAINTENANCE & OPERATIONS (FUND 07)

The Storm Water Operating Fund (Fund 07) is a restricted fund that provides for the maintenance of the existing storm water system. The storm water system includes existing collectors, culverts, ditches, and streams. This fund is primarily supported by transfers from the General Fund.

Goals and Objectives

- Ensure existing storm water drainage systems remain clear and free of debris and contaminants.
- Annually clear debris from existing drainage systems and maintain them.
- Comply with the National Pollution Discharge Elimination System (NPDES) requirements.

MAIN STREET BRIDGE FUND (FUND 09)

The Main Street Bridge Fund is a restricted fund. It provides the funding for a major restoration of the Main Street Bridge which traverses the Pilarcitos Creek connecting downtown to Highway 92. Contributions to the Main Street Bridge Fund (Fund 09) come from the Gas Tax, federal funds and contributions from the General Fund.

Goals and Objectives

- Ensure Main Street Bridge is restored to meet seismic standards and provide access over Pilarcitos Creek for 50-75 years after completion.
- Ensure work complies with the approved local initiative and implementing City ordinance.
- Maximize use of federal, State, County and local governmental agency grants.

GAS TAX FUND (FUND 10)

The Gas Tax Fund is a restricted fund. Gas tax revenue is allocated to cities from the State in accordance with the Streets and Highways Code sections 2105, 2106, and 2107. The City uses these tax proceeds primarily for streets, road maintenance, minor improvements and related storm water improvements.

Goals and Objectives

- Maintain City streets and roads, including curbs, gutters and sidewalks, in accordance with the City's Pavement Management Program.
- Give priority to public safety in the programming of the Gas Tax Fund.

STREETS AND ROADS FUND (Fund 11)

The Streets and Roads Fund is a restricted fund. The fund accounts for the expenditures made for streets and roads and is funded by grants and other special revenues.

Goals and Objectives

- Maximize leveraging of federal, State, County and local government agency grants.
- Implement programs and projects that enhance public safety, address deferred maintenance and, where possible, leverage other funds.

MEASURE A AND MEASURE W FUND (Fund 12)

The Measure A/W Fund is a restricted fund. Measure A was originally approved by the San Mateo County voters to levy 0.5% sales and use tax within the County to fund local transportation-related maintenance and capital improvements beginning in 1988. In 2004, the voters approved a measure to continue the levy of the tax for an additional 25 years beginning in 2009. The Measure W Fund is a restricted fund. Measure W was approved by the San Mateo County voters in November 2018 to levy 0.5% sales and use tax within the County to fund road improvements, transit services, and implementation of the San Mateo County Congestion Relief Plan. The tax was approved for 30 years starting in 2019. These funds are restricted for use in maintenance and improvement of City streets and roads.

Goals and Objectives

- Maintain City streets and roads, including curbs, gutters and sidewalks, in accordance with the City's Pavement Management Program.
- Give priority to public safety and severely degraded streets and roads in the programming of the Measure A Funds.

TRAFFIC MITIGATION (Fund 13)

The Traffic Mitigation Fund is a restricted fund. Traffic mitigation fees defray the cost of constructing road improvements to mitigate the impacts of new development in Half Moon Bay. These funds are used by the City to reduce traffic congestion and provide for safety and street improvements including signals, lighting, and signage within the City.

Goals and Objectives:

- Maximize leveraging of federal, State, County and local governmental agency grants.
- Impose mitigation fees on new development as adopted by City Council.
- Implement programs that are defined to meet needs for improved infrastructure.

STORM WATER IMPROVEMENTS (Fund 14)

The Storm Water Improvements Fund is a restricted fund used for drainage improvements related to new development. The Fund is used to account for all proceeds from storm water (drain) improvement fees which are assessed on newly constructed or remodeled homes and businesses.

Goals and Objectives

- Impose mitigation fees on development as adopted by City Council.
- Maximize leveraging of federal, State, County and local governmental agency grants.

LIBRARY SERVICES OPERATING (Fund 15)

The Library Services Operating Fund is a restricted fund. The City, as part of the Countywide Library Joint Powers Authority (JPA), has assumed responsibility for the maintenance of the Half Moon Bay Branch Library structure and grounds. Maintenance is provided by Public Works Maintenance Division with assistance of specialized contract services.

Goals and Objectives

- Provide maintenance for the Half Moon Bay Library and grounds.
- Maintain as Zero Net Energy facility.
- Plan and budget for preventive maintenance.

LIBRARY CAPITAL (Fund 16)

The Library Capital Fund is a restricted fund. The Library Capital Fund includes revenue, grants, and other contributions that was used to build the new Half Moon Bay Library. This fund will continue to assist in the capital maintenance and replacement efforts in the coming years.

Goals and Objectives

- Provide funding for ongoing improvements, capital maintenance and capital replacements at the Half Moon Bay Library.

PARKS DEVELOPMENT (Fund 17)

The Parks Development Fund is a restricted fund. Development impact fees and federal, State, and County grants fund the Parks Development Fund. This fund is used for the acquisition, design and capital improvements of parks and trails in Half Moon Bay.

Goals and Objectives

- Impose park mitigation costs fees on development as adopted by City Council.
- Focus efforts on projects that Implement the Parks Master Plan and the Pedestrian and Bicycle Master Plan.
- Maximize leveraging of Federal, State, County, and local governmental agency grants.

AFFORDABLE HOUSING FUND (Fund 19)

The Affordable Housing Fund is a restricted fund. The City has the option of accepting in-lieu fees from residential projects of 10 or more units to put towards supporting the development of affordable (below market rate) units. Where the City Council chooses to accept fees, those fees are deposited in Fund 19 to be used for affordable housing programs and projects in Half Moon Bay.

Goals and Objectives

- Adopt a plan for prioritization of affordable housing funds.
- Consider alternate funding mechanisms and ordinance revisions to increase the availability and preservation of affordable housing in Half Moon Bay.

POLICE SERVICES (Fund 22)

The Police Services Fund is a restricted fund. The City receives funds for police services from federal, State, County and local governmental agencies. These funds are designated for specific police services, activities, and capital equipment. The source of revenue in FY 2019-20 is the COPS grant.

Goals and Objectives

- Maximize leveraging of grants from federal, State, County, and local governmental agencies.
- Continue to seek funding from the Association of Bay Area Governments (ABAG) for training, equipment, and risk management needs.

GENERAL CAPITAL (Fund 25)

The General Capital Fund is an unrestricted fund. The General Capital Fund includes funds transferred from the General Operating Fund (Fund 01) to implement much of the City's Capital Improvement Program. Projects include new facilities, capital maintenance/replacement, technology, and other infrastructure improvements.

Goals and Objectives

- Provide funding for CIP projects from the General Operating Fund (Fund 01).
- Provide unrestricted funds for a variety of desired Capital projects.

PUBLIC FACILITIES (Fund 48)

The Public Facilities Fund includes both restricted and unrestricted funds. Restricted funds are derived from Capital Outlay Impact Fees imposed on new development. Unrestricted funds are received from various contractual agreements that are one-time in nature and not otherwise specifically dedicated. The City uses this revenue for various public facility projects included in the CIP.

Goals and Objectives

- Impose capital outlay impact fees on development as adopted by City Council.
- Implement projects that improve usability and safety of City facilities.
- Maximize leveraging of federal, State, County, and local governmental agency grants.

LAND ASSETS (Fund 79)

In 2015, the City Council established a new restricted fund for City Land Assets. The Land Assets Fund includes the Beachwood and Glencree properties that were acquired by the City as part of the settlement of the Yamagiwa litigation in 2007. With the receipt of the Insurance Settlement payments, the Beachwood properties are no longer a necessary asset to help pay for the retirement of the Judgment Obligation Bonds. There are no changes to Land Assets Fund in FY 2019-20 Budget

Goals and Objectives

- Accounts for land assets owned by the City.
- Continue to manage and maintain the properties as open space assets including fire fuel modification to protect adjacent properties and residents.
- Provides for funds, revenue, and expenses related to these land assets.

City of Half Moon Bay
Storm Drain Operating Fund (07)
Statement of Revenue, Expenditures and Changes in Fund Balance

	Actual 2016-17	Actual 2017-18	Adopted Budget 2018-19	Recommended Budget 2019-20
Revenue				
Interest	$ 1,248	$ 2,264	$ 600	$ 612
Total Revenue	$ 1,248	$ 2,264	$ 600	$ 612
Expenditures				
Operation & Maintenance				
Salaries & Benefits	$ 2,768	$ -	$ -	$ -
Contract Services	$ 11,183	-	52,800	54,384
Total Operation & Maintenance	$ 13,951	$ -	$ 52,800	$ 54,384
Total Expenditures	$ 13,951	$ -	$ 52,800	$ 54,384
Excess revenue over (under) expenditures	$ (12,703)	$ 2,264	$ (52,200)	$ (53,772)
Other financing sources (uses)				
Transfers in/(out)				
Contribution from General Fund	$ 50,000	$ 50,000	$ 50,000	$ 50,000
Vehicle / Equipment / Risk	$ (10,309)	-	-	(2)
Total financing sources (uses)	$ 39,691	$ 50,000	$ 50,000	$ 49,998
Excess revenue and other sources over (under) expenditures and other uses	$ 26,988	$ 52,264	$ (2,200)	$ (3,774)
Beginning Fund Balance, July 1 [1]	$ 149,456	$ 176,443	$ 228,707	$ 230,000
Ending Fund Balance, June 30	$ 176,443	$ 228,707	$ 226,507	$ 226,226

[1] Beginning Fund Balance for FY 2019-20 based on updated estimates and may not match budgeted estimates for FY 2018-19 ending balance.

City of Half Moon Bay
Main Street Bridge Fund (09)
Statement of Revenue, Expenditures and Changes in Fund Balance

	Actual 2016-17	Actual 2017-18	Adopted Budget 2018-19	Recommended Budget 2019-20
Revenue				
Interest	$ 5,085	$ 7,642	$ 3,700	$ 3,774
Grants	-	-	1,142,922	-
Total Revenue	$ 5,085	$ 7,642	$ 1,146,622	$ 3,774
Capital Projects				
Capital Projects	$ 46,762	$ -	$ 140,000	$ 450,000
Total Capital Projects	$ 46,762	$ -	$ 140,000	$ 450,000
Total Expenditures	$ 46,762	$ -	$ 140,000	$ 450,000
Excess revenue over (under) expenditures	$ (41,677)	$ 7,642	$ 1,006,622	$ (446,226)
Other financing sources (uses)				
Transfers in/(out)				
From Gas Tax Fund (10)	40,000	-	-	-
Total financing sources (uses)	$ 40,000	$ -	$ -	$ -
Excess revenue and other sources over (under) expenditures and other uses	$ (1,677)	$ 7,642	$ 1,006,622	$ (446,226)
Beginning Fund Balance, July 1	$ 607,275	$ 605,598	$ 613,240	$ 1,700,000
Ending Fund Balance, June 30	$ 605,598	$ 613,240	$ 1,619,862	$ 1,253,774

[1] Beginning Fund Balance for FY 2019-20 based on updated estimates and may not match budgeted estimates for FY 2018-19 ending balance.

City of Half Moon Bay
Gas Tax Fund (10)
Statement of Revenue, Expenditures and Changes in Fund Balance

	Actual 2016-17	Actual 2017-18	Adopted Budget 2018-19	Recommended Budget 2019-20
Revenue				
Interest	$ 1,749	$ 1,814	$ 2,700	$ 2,754
Gas Tax	251,423	262,790	473,095	482,557
Miscellaneous	-	58,057	-	-
Total Revenue	$ 253,172	$ 322,661	$ 475,795	$ 485,311
Expenditures				
Operation & Maintenance				
Material & Supplies	72,074	23	81,700	84,151
Contract Services	8,878	8,997	20,800	21,424
Total Operation & Maintenance	$ 85,117	$ 9,020	$ 102,500	$ 105,575
Total Expenditures	$ 85,117	$ 9,020	$ 102,500	$ 105,575
Excess revenue over (under) expenditures	$ 168,056	$ 313,641	$ 373,295	$ 379,736
Other financing sources (uses)				
Transfers in/(out)				
Contribution from General Fund	$ -	$ 120,000	$ -	$ -
To General Fund (01)	$ (86,252)	$ (12,302)	$ (9,597)	$ (9,837)
To Streets & Roads Fund (11)	(240,000)	(190,000)	(543,095)	(217,500)
Vehicle / Equipment / Risk	(8,143)	(6,619)	(4,817)	(3,834)
Total financing sources (uses)	$ (334,395)	$ (88,921)	$ (557,509)	$ (231,171)
Excess revenue and other sources over (under) expenditures and other uses	$ (166,339)	$ 224,720	$ (184,214)	$ 148,565
Beginning Fund Balance, July 1 [1]	$ 109,273	$ (57,066)	$ 167,654	$ 200,000
Ending Fund Balance, June 30	$ (57,066)	$ 167,654	$ (16,560)	$ 348,565

[1] Beginning Fund Balance for FY 2019-20 based on updated estimates and may not match budgeted estimates for FY 2018-19 ending balance.

City of Half Moon Bay
Streets and Roads Fund (11)
Statement of Revenue, Expenditures and Changes in Fund Balance

	Actual 2016-17	Actual 2017-18	Adopted Budget 2018-19	Recommended Budget 2019-20
Revenue				
Interest	$ 37,411	$ 46,965	$ 24,600	$ 25,092
Grants	-	250,000	7,200,000	4,402,000
Measure M	86,270	-	77,000	78,540
Other Fees	74,925	76,000	-	-
Total Revenue	$ 198,606	$ 447,254	$ 7,301,600	$ 4,505,632
Expenditures				
Operation & Maintenance				
Salaries & Benefits	$ 81,301	$ 134,681	$ 202,780	$ 199,529
Material & Supplies	1,378	-	-	-
Contract Services	4,234	1,877	80,000	82,400
Total Operation & Maintenance	$ 86,913	$ 136,559	$ 282,780	$ 281,929
Capital Improvements				
Total Capital Projects	$ 841,236	$ 1,076,125	$ 2,795,000	$ 6,440,014
Total Expenditures	$ 928,148	$ 1,212,684	$ 3,077,780	$ 6,721,943
Excess revenue over (under) expenditures	$ (729,542)	$ (765,429)	$ 4,223,820	$ (2,216,311)
Other financing sources (uses)				
Transfers in				
Contribution from General Fund (01)	$ 66,500	$ 200,000	$ -	$ 371,922
From General Capital Fund (25)	-	-	-	714,578
From Gas Tax Fund (10)	240,000	190,000	543,095	217,500
Measure J (01)	20,000	-	-	-
Transfers (out)				
Vehicle/Equipment/Risk	(19,549)	(20,999)	(18,117)	(13,919)
Capital General Fund (25)	(288,600)	(154,905)	-	-
Total financing sources (uses)	$ 18,351	$ 214,096	$ 524,978	$ 1,290,081
Excess revenue and other sources over (under) expenditures and other uses	$ (711,191)	$ (551,334)	$ 4,748,798	$ (926,230)
Beginning Fund Balance, July 1 [1]	$ 4,628,790	$ 3,917,599	$ 3,366,265	$ 7,870,000
Ending Fund Balance June 30	$ 3,917,599	$ 3,366,265	$ 8,115,063	$ 6,943,771

[1] Beginning Fund Balance for FY 2019-20 based on updated estimates and may not match budgeted estimates for FY 2018-19 ending balance.

City of Half Moon Bay
Measure A/W Fund (12)
Statement of Revenue, Expenditures and Changes in Fund Balance

	Actual 2016-17	Actual 2017-18	Adopted Budget 2018-19	Recommended Budget 2019-20
Revenue				
Interest	$ 2,416	$ 3,977	$ 2,100	$ 2,142
Measure A	285,179	334,298	274,000	395,168
Measure W	-	-	-	175,600
Total Revenue	$ 287,595	$ 338,275	$ 276,100	$ 572,910
Expenditures				
Operation & Maintenance				
Salaries & Benefits	$ 48,086	$ 53,369	$ 79,589	$ 84,410
Material & Supplies	-	-	2,000	2,060
Total Operation & Maintenance	$ 48,086	$ 53,369	$ 81,589	$ 86,470
Total Expenditures	$ 48,086	$ 53,369	$ 81,589	$ 86,470
Excess revenue over (under) expenditures	$ 239,508	$ 284,906	$ 194,511	$ 486,440
Other financing sources (uses)				
Transfers in/(out)				
Vehicle/Equipment/Risk	$ (4,576)	$ (5,754)	$ (5,903)	$ (4,917)
To Streets & Roads Fund (11)	$ (220,000)	(200,000)	-	-
Total financing sources (uses)	$ (224,576)	$ (205,754)	$ (5,903)	$ (4,917)
Excess revenue and other sources over (under) expenditures and other uses	$ 14,932	$ 79,153	$ 188,608	$ 481,523
Beginning Fund Balance, July 1 [1]	$ 150,299	$ 165,231	$ 244,384	$ 430,000
Ending Fund Balance, June 30	$ 165,231	$ 244,384	$ 432,992	$ 911,523

[1] Beginning Fund Balance for FY 2019-20 based on updated estimates and may not match budgeted estimates for FY 2018-19 ending balance.

City of Half Moon Bay
Traffic Mitigation Fund (13)
Statement of Revenue, Expenditures and Changes in Fund Balance

	Actual 2016-17	Actual 2017-18	Adopted Budget 2018-19	Recommended Budget 2019-20
Revenue				
Interest	$ 4,487	$ 15,197	$ 2,400	$ 2,448
Traffic Mitigation Impact Fees	282,784	854,344	48,178	33,374
Total Revenue	$ 287,271	$ 869,541	$ 50,578	$ 35,822
Expenditures				
Operation & Maintenance				
Contract Services	$ 31,155	$ 31,481	$ 25,600	$ -
Traffic Signal Coordination	(20,500)	-	-	-
Kelly/SR 1 Intersection Improvement	27,503	$ 32,773	$ -	$ -
Total Operation & Maintenance	$ 38,158	$ 64,254	$ 25,600	$ -
Total Expenditures	$ 38,158	$ 64,254	$ 25,600	$ -
Excess revenue over (under) expenditures	$ 249,113	$ 805,287	$ 24,978	$ 35,822
Other financing sources (uses)				
Contribution from Measure A	$ 220,000	$ -	$ -	$ -
Total financing sources (uses)	$ 220,000	$ -	$ -	$ -
Excess Revenue and other sources over (under) expenditures and other uses	$ 469,113	$ 805,287	$ 24,978	$ 35,822
Beginning Fund Balance, July 1 [1]	$ 380,980	$ 850,093	$ 1,655,380	$ 1,680,000
Ending Fund Balance, June 30	$ 850,093	$ 1,655,380	$ 1,680,358	$ 1,715,822

[1] Beginning Fund Balance for FY 2019-20 based on updated estimates and may not match budgeted estimates for FY 2018-19 ending balance.

City of Half Moon Bay
Storm Drain Capital Project Fund (14)
Statement of Revenue, Expenditures and Changes in Fund Balance

	Actual 2016-17	Actual 2017-18	Adopted Budget 2018-19	Recommended Budget 2019-20
Revenue				
Interest	$ 4,430	$ 5,472	$ 3,600	$ 3,672
Storm Drain Fees	11,687	6,643	4,582	3,174
Total Revenue	$ 16,117	$ 12,115	$ 8,182	$ 6,846
Expenditures				
Capital Improvements				
Total Capital Projects	$ 101,099	$ 65,675	$ 790,000	$ 806,000
Salaries & Benefits	$ 92,240	22,407	34,102	52,432
Contract Services	-	-	10,900	11,227
Total Expenditures	$ 193,339	$ 88,081	$ 835,002	$ 869,659
Excess revenue over (under) expenditures	$ (177,222)	$ (75,967)	$ (826,820)	$ (862,813)
Other financing sources (uses)				
Transfers in/(out)				
Contribution from General Fund	$ 462,700	$ 535,000	$ 292,495	$ 150,000
Vehicle/Equipment/Risk	(4,689)	(3,161)	(2,292)	(2,412)
Total financing sources (uses)	$ 458,011	$ 531,839	$ 290,203	$ 147,588
Excess revenue and other sources over (under) expenditures and other uses	$ 280,789	$ 455,872	$ (536,617)	$ (715,224)
Beginning Fund Balance, July 1 [1]	$ 555,431	$ 836,220	$ 1,292,093	$ 750,000
Ending Fund Balance, June 30	$ 836,220	$ 1,292,093	$ 755,476	$ 34,776

[1] Beginning Fund Balance for FY 2019-20 based on updated estimates and may not match budgeted estimates for FY 2018-19 ending balance.

City of Half Moon Bay
Library Fund (15)
Statement of Revenue, Expenditures and Changes in Fund Balance

	Actual 2016-17	Actual 2017-18	Adopted Budget 2018-19	Recommended Budget 2019-20
Revenue				
Interest	$ 967	$ 1,140	$ 700	$ -
Total Revenue	$ 967	$ 1,140	$ 700	$ -
Expenditures				
Operation & Maintenance				
Material & Supplies	26,376	$ 21,836	$ 37,400	$ -
Contract Services	7,084	4,202	67,400	-
Total Operation & Maintenance	$ 33,460	$ 26,039	$ 104,800	$ -
Total Expenditures	$ 33,460	$ 26,039	$ 104,800	$ -
Excess of revenue over (under) expenditures	$ (32,493)	$ (24,899)	$ (104,100)	$ -
Other financing sources (uses)				
Transfers in/(out)				
Contribution from General Fund	$ 10,000	$ 40,000	$ 70,000	$ -
Transfers Out	-	-	-	(109,996)
Total financing sources (uses)	$ 10,000	$ 40,000	$ 70,000	$ (109,996)
Excess revenue and other sources over (under) expenditures and other uses	$ (22,493)	$ 15,101	$ (34,100)	$ (109,996)
Beginning Fund Balance, July 1 [1]	$ 126,114	$ 103,621	$ 118,722	$ 110,000
Ending Fund Balance, June 30	$ 103,621	$ 118,722	$ 84,622	$ 4

[1] Beginning Fund Balance for FY 2019-20 based on updated estimates and may not match budgeted estimates for FY 2018-19 ending balance.

City of Half Moon Bay
Library Capital Fund (16)
Statement of Revenue, Expenditures and Changes in Fund Balance

	Actual 2016-17	Actual 2017-18	Adopted Budget 2018-19	Recommended Budget 2019-20
Revenue				
Interest	$ 83,690	$ 66,736	$ 32,200	$ -
Grants	131,900	11,453,710	-	-
Total Revenue	$ 215,590	$ 11,520,446	$ 32,200	$ -
Expenditures				
Operation & Maintenance				
Contract Services	-	$ -	$ 23,400	$ -
Total Operation & Maintenance	$ -	$ -	$ 23,400	$ -
Capital Improvements	$ 5,118,395	$ 14,970,295	$ -	$ 2
Total Expenditures	$ 5,118,395	$ 14,970,295	$ 23,400	$ 2
Excess of revenue over (under) expenditures	$ (4,902,805)	$ (3,449,850)	$ 8,800	$ (2)
Excess revenue and other sources over (under) expenditures and other uses	$ (4,902,805)	$ (3,449,850)	$ 8,800	$ (2)
Beginning Fund Balance, July 1 [1]	$ 10,513,844	$ 5,611,039	$ 2,161,189	$ 2,130,000
Ending Fund Balance, June 30	$ 5,611,039	$ 2,161,189	$ 2,169,989	$ 2,129,998

[1] Beginning Fund Balance for FY 2019-20 based on updated estimates and may not match budgeted estimates for FY 2018-19 ending balance.

City of Half Moon Bay
Park Fund (17)
Statement of Revenue, Expenditures and Changes in Fund Balance

	Actual 2016-17	Actual 2017-18	Adopted Budget 2018-19	Recommended Budget 2019-20
Revenue				
Interest	$ -	$ 12,886	$ 800	$ 816
Park Impact & Developers' Fees	562,822	122,282	201,956	139,899
Grants	175,283	-	340,000	-
Miscellaneous	(5,000)	5,000	-	-
Total Revenue	$ 733,104	$ 140,169	$ 542,756	$ 140,715
Expenditures				
Operation & Maintenance				
Salaries & Benefits	$ 13,872	$ 18,160	$ 24,092	$ 26,444
Material & Supplies	-	3,032	-	-
Total Operation & Maintenance	$ 13,872	$ 21,192	$ 24,092	$ 26,444
Capital Improvements				
Total Capital Projects	$ 822,665	$ 160,398	$ 1,884,000	$ 1,945,002
Total Expenditures	$ 836,537	$ 181,590	$ 1,908,092	$ 1,971,446
Other financing sources (uses)				
Transfers in/(out)				
Contribution from General Fund	$ 212,890	$ 425,000	$ 804,000	$ 1,333,078
Contribution from Measure J	670,000	116,324	-	-
Transfers Out	(781)	(617)	(517)	(381)
Total financing sources (uses)	$ 882,109	$ 540,708	$ 803,483	$ 1,332,697
Excess revenue over (under) expenditures	$ 778,676	$ 499,286	$ (561,853)	$ (498,034)
Beginning Fund Balance, July 1 [1]	$ 406,711	$ 1,185,387	$ 1,684,674	$ 1,060,000
Ending Fund Balance, June 30	$ 1,185,387	$ 1,684,674	$ 1,122,821	$ 561,966

[1] Beginning Fund Balance for FY 2019-20 based on updated estimates and may not match budgeted estimates for FY 2018-19 ending balance.

City of Half Moon Bay
Affordable Housing Fund (19)
Statement of Revenue, Expenditures and Changes in Fund Balance

	Actual 2016-17	Actual 2017-18	Adopted Budget 2018-19	Recommended Budget 2019-20
Revenue				
Affordable Housing Developer's Fees	$ 327,264	$ -	$ -	$ -
Interest	16,770	27,409	11,100	11,322
Total Revenue	$ 344,034	$ 27,409	$ 11,100	$ 11,322
Expenditures				
Salaries & Benefits	$ -	$ 14,833	$ -	$ -
Contract Services	-	-	102,000	(40)
Total Expenditures	$ -	$ 14,833	$ 102,000	$ (40)
Other financing sources (uses)				
Transfers in/(out)				
Contribution from General Fund	$ -	$ -	$ -	$ 400,000
Total financing sources (uses)	$ -	$ -	$ -	$ 400,000
Excess of revenue over (under) expenditures	$ 344,034	$ 12,576	$ (90,900)	$ 411,362
Beginning Fund Balance, July 1 [1]	$ 1,795,745	$ 2,139,779	$ 2,152,355	$ 2,060,000
Ending Fund Balance, June 30	$ 2,139,779	$ 2,152,355	$ 2,061,455	$ 2,471,362

[1] Beginning Fund Balance for FY 2019-20 based on updated estimates and may not match budgeted estimates for FY 2018-19 ending balance.

City of Half Moon Bay
Police Grant Fund (22)
Statement of Revenue, Expenditures and Changes in Fund Balance

	Actual 2016-17	Actual 2017-18	Adopted Budget 2018-19	Recommended Budget 2019-20
Revenue				
Interest	$ 1,902	$ 3,730	$ 1,700	$ 1,734
Grants	129,534	139,543	100,000	118,826
Total Revenue	$ 131,436	$ 143,274	$ 101,700	$ 120,560
Expenditures				
Material & Supplies	$ 736	$ 15	$ -	$ -
Contract Services	86,702	54,603	106,100	409,283
Total Expenditures	$ 87,438	$ 54,619	$ 106,100	$ 409,283
Excess of revenue over (under) expenditures	$ 43,998	$ 88,655	$ (4,400)	$ (288,723)
Beginning Fund Balance, July 1 [1]	$ 193,629	$ 237,627	$ 326,282	$ 330,000
Ending Fund Balance, June 30	$ 237,627	$ 326,282	$ 321,882	$ 41,277

[1] Beginning Fund Balance for FY 2019-20 based on updated estimates and may not match budgeted estimates for FY 2018-19

City of Half Moon Bay
General Capital Fund (25)
Statement of Revenue, Expenditures and Changes in Fund Balance

	Actual 2016-17	Actual 2017-18	Adopted Budget 2018-19	Recommended Budget 2019-20
Revenue				
Grants	$ 39,827	$ 788,929	$ -	$ -
Interest	$ -	$ 15,168	$ -	$ -
Total Revenue	$ 39,827	$ 804,098	$ -	$ -
Expenditures				
Contract Services	-	200,000	-	-
Total Operation & Maintenance	$ -	$ 200,000	$ -	$ -
Capital Projects				
Total Capital Projects	$ 461,474	$ 1,155,190	$ 875,000	$ 985,000
Total Expenditures	$ 461,474	$ 1,355,190	$ 875,000	$ 985,000
Excess revenue over (under) expenditures	$ (421,647)	$ (551,092)	$ (875,000)	$ (985,000)
Other financing sources (uses)				
Other financing sources (uses)				
Transfers in/(out)				
Contribution from General Fund	$ 807,315	$ 980,582	$ 12,210	$ 605,000
Contribution from Measure J	-	13,000	-	-
Contribution from ERAF	203,028	-	-	-
Contribution from Streets & Roads Fund	288,600	-	-	-
Contribution from Public Facilities Fund	300,000	-	-	-
Contribution from Equipment Fund	550,000	-	-	-
Transfers Out	-	-	-	(714,578)
Total financing sources (uses)	$ 2,148,943	$ 993,582	$ 12,210	$ (109,578)
Excess revenue and other sources over (under) expenditures and other uses	$ 1,767,123	$ 1,246,588	$ (862,790)	$ (1,094,578)
Beginning Fund Balance, July 1 [1]	$ -	$ 1,767,123	$ 3,013,711	$ 1,300,000
Ending Fund Balance, June 30	$ 1,767,123	$ 3,013,711	$ 2,150,921	$ 205,422

[1] Beginning Fund Balance for FY 2019-20 based on updated estimates and may not match budgeted estimates for FY 2018-19

City of Half Moon Bay
Public Facilities Capital Project Fund (48)
Statement of Revenue, Expenditures and Changes in Fund Balance

	Actual 2016-17	Actual 2017-18	Adopted Budget 2018-19	Recommended Budget 2019-20
Revenue				
Interest	$ 4,645	$ 115	$ 3,500	$ 3,570
Facilities Impact & Developers' Fees	406	-	-	-
Grants	-	-	125,000	250,000
Total Revenue	$ 5,051	$ 88,494	$ 128,500	$ 253,570
Expenditures				
Salaries & Benefits	$ 13,868	$ -	$ -	$ 90,820
Contract Services	-	-	26,700	27,501
Total Operation & Maintenance	$ 13,868	$ -	$ 26,700	$ 118,321
Capital Projects				
Total Capital Projects	$ 368,126	$ 1,336,000	$ 995,000	$ 990,000
Total Expenditures	$ 381,994	$ 1,336,000	$ 1,021,700	$ 1,108,321
Excess revenue over (under) expenditures	$ (376,943)	$ (1,247,506)	$ (893,200)	$ (854,751)
Other financing sources (uses)				
Operating transfers in	$ 219,500	$ 1,730,000	$ 810,000	$ 631,997
Operating transfers out	(300,781)	(75,000)	-	-
Total financing sources (uses)	$ (81,281)	$ 1,655,000	$ 810,000	$ 631,997
Excess revenue and other sources over (under) expenditures and other uses	$ (458,224)	$ 407,494	$ (83,200)	$ (222,754)
Beginning Fund Balance, July 1 [1]	$ 753,218	$ 294,994	$ 702,488	$ 640,000
Ending Fund Balance, June 30	$ 294,994	$ 702,488	$ 619,288	$ 417,246

[1] Beginning Fund Balance for FY 2019-20 based on updated estimates and may not match budgeted estimates for FY 2018-19

CITY OF HALF MOON BAY

Debt Service Funds

Debt Service Funds

Debt Service Funds are restricted funds. They are used to account for the payment of principal and interest on long-term debt of the City. They are also used to maintain cash reserves as required under debt covenants.

JUDGMENT OBLIGATION DEBT SERVICE FUNDS SERIES 2009A (FUND 77) and SERIES 2009B (FUND 78)

In July 2009, the City issued Series 2009A and 2009B Judgment Obligation Bonds (JOB) in the amount of $5.8 million and $10.9 million, respectively. The proceeds were used to settle the City's judgment obligation (legal settlement) on the Yamagiwa case.

2009A and 2009B Series Bonds

The Series 2009A were tax exempt bonds that were originally scheduled to mature in 2025 with interest paid semi-annually and principal paid annually by the General Fund. Interest rates on the Series 2009A bonds ranged from 3% to 5.375%.

The Series 2009B are Build America Bonds issued under the provisions of the Federal American Recovery and Reinvestment Act of 2009. The Series 2009B bonds were originally set to mature in 2040, with interest due semiannually, until 2027 when principal is also due annually. Interest rates range from 8.5% to 8.65%. The City receives a Federal interest subsidy on the Build America Bonds equal to approximately 26.5% of the annual payments.

The original bond covenant required that the City maintain cash reserves in the amount of $1.2 million (rounded). These reserves are accounted for in Fund 77 (Series 2009A Bonds) and Fund 78 (Series 2009B Bonds).

Insurance Settlements & Early Retirement

The City has received insurance settlements from ABAG Plan and ICW in connection with the Yamagiwa case. In 2013, the City Council adopted a resolution approving an agreement with the Bond Trustee to retire the Judgment Obligation Bonds early (the 2009A Bonds were retired on August 1, 2014 and the 2009B Bonds will be retired on August 1, 2019).

The retirement of the 2009A Series Bonds during FY 2014-15 resulted in a reduction in debt service expenses in the General Fund of over $425,000 per year. The retirement of the Judgment Obligation Bond Series 2009B will end the expense of $590,000 in the General Fund in FY 2018-19.

The Government Code of the State of California provides for a legal debt limit of 15% of gross assessed valuation. However, this provision was enacted when assessed valuation was based upon 25% of market value.

Effective FY 1981-82, each parcel is now assessed at 100% of market value (as of the most recent change in ownership for the parcel).

The computations shown below reflect a conversion of assessed valuation data for each fiscal year from the current full valuation perspective to the 25% level that was in effect at the time that the legal debt margin was enacted by the State of California for local governments located within the state.

The legal debt limit for the City of Half Moon Bay is approximately $110 million. The City's applicable long-term debt balance of $10,915,000 (planned to retire on August 1, 2019) is approximately 10.6% of the legal debt limit.

SAN MATEO COUNTY LOAN

In FY 2017-18, the City received a loan in the amount of $6 million from the County of San Mateo to partially finance the construction of the new library. The loan carries no interest and is payable in 10 equal installments of $600,000 per year, beginning FY 2019-20. The loan repayments are budgeted as an expenditure in the General Fund.

City of Half Moon Bay
Debt Service Fund - Judgment Obligation Bond - Series B (78)
Statement of Revenue, Expenditures and Changes in Fund Balance

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	Actual 2016-17	Actual 2017-18	Adopted Budget 2018-19	Recommended Budget 2019-20
Revenue				
Interest	$ 253,359	$ 337,029	$ 252,800	$ 125,000
Investment Income/(Loss)	4,857	-	2,000	2,040
Unrealized Gain/(Loss) on Investment	29,907	-	-	-
Total Revenue	$ 288,123	$ 337,029	$ 254,800	$ 127,040
Expenditures				
Debt Service - Interest	$ 937,704	$ 937,704	$ 937,704	$ 468,872
Debt Service - Principal Payment	-	-	-	10,915,000
Contract Services	-	-	3,000	3,090
Total Expenditures	$ 937,704	$ 937,704	$ 940,704	$ 11,386,962
Excess revenue over (under) expenditures	$ (649,580)	$ (600,674)	$ (685,904)	$ (11,259,922)
Other financing sources (uses)				
Transfers in/(out)				
Transfers In	$ 690,198	690,198	690,198	-
Transfers Out	-	-	-	(400,078)
Total financing sources (uses)	$ 690,198	$ 690,198	$ 690,198	$ (400,078)
Excess revenue and other sources over (under) expenditures and other uses	$ 40,618	$ 89,524	$ 4,294	$ (11,660,000)
Beginning Fund Balance, July 1 [1]	$ 11,237,124	$ 11,277,742	$ 11,367,265	$ 11,660,000
Ending Fund Balance, June 30	$ 11,277,742	$ 11,367,265	$ 11,371,559	$ -

[1] Beginning Fund Balance for FY 2019-20 based on updated estimates and may not match budgeted estimates for FY 2018-19

CITY OF HALF MOON BAY

Internal Service Funds

Internal Service Funds

Internal Service Funds are used to account for the financing of goods or services provided by one department to other departments for the City on a cost-reimbursement basis. The four Internal Service Funds are Vehicle Replacement Fund, Equipment Replacement Fund, Risk Management Fund, and Retirement Stabilization Fund.

VEHICLE REPLACEMENT FUND (Fund 61)

The Vehicle Replacement Fund is an unrestricted fund. It covers the cost of repair, maintenance, and replacement of City vehicles. Revenue for this fund is derived from internal service charges to City departments. This Fund acts as a pass-through entity.

Goals and Objectives

- Provide timely repair and maintenance for vehicles and for purchase of new vehicles as necessary.
- Constantly review the mode of operation for the efficient utilization of the City's fleet.

EQUIPMENT REPLACEMENT FUND (Fund 62)

The Equipment Replacement Fund is an unrestricted fund, which provides for the service, maintenance, and replacement of all information technology (hardware and software), office equipment (copiers, postage meters), furniture and other equipment. Revenue for this fund is derived from internal service charges to City departments, based on a percentage of their overall budget.

Goals and Objectives

- Provide departments with efficient and effective information technology (IT) operation.
- Minimize down time and maximize response time to address citywide equipment service needs.
- Further assess future equipment needs citywide and develop applicable strategies to meet them.
- Continue using new technological solutions to improve the City's efficiency.

RISK MANAGEMENT FUND (Fund 63)

The Risk Management Fund is an unrestricted fund. The Risk Management Fund covers the cost of the City's insurance policies and payments of liability and workers' compensation claims against the City. The risk management program goal is to reduce insurance-related costs whenever possible and maintain appropriate levels of coverage and reserves.

The City is a member of the PLAN (Pooled Liability Assurance Network) JPA. This risk management pool covers the City's property and liability insurance. The City is self-funded when it comes to litigation and claims involving land-use issues. The City is a member of The Cities Group JPA for Workers' Compensation insurance program.

The allocation methodology for this fund passes on all risk management expenses to the funds and departments that incur the liabilities.

Goals and Objectives

- Proactively reduce risk exposure and reduce liability and insurance costs.
- Maintain appropriate levels of insurance coverage.
- Train staff on risk management operational best practices, safety in workplace and maintenance operations.
- Mitigate potential risk and build contingent loss reserves.

PENSION STABILIZATION FUND (Fund 64)

The Pension Stabilization Fund is an unrestricted fund. The Pension Stabilization Fund was created to smooth out major fluctuations in annual pension costs and the annual payment of the unfunded liability. Large swings have impacted the City's financials in the past, and recent changes in CalPERS actuarial assumptions and discount rate will have a significant impact on the City's future pension cost and contribution rates. The funding for this program is provided through an annual transfer from the General Fund.

Goals and Objectives

- Build reserves that can be used to meet large swings in annual pension costs.
- Budget and pay down pension side fund liabilities to save future interest costs.

City of Half Moon Bay
Vehicle Fund (61)
Statement of Revenue, Expenditures and Changes in Net Assets

	Actual 2016-17	Actual 2017-18	Adopted Budget 2018-19	Recommended Budget 2019-20
Revenue				
Facilities Impact & Developers' Fees	$ 8,578	$ 7,632	$ -	$ 8,709
Capital Impact & Developers' Fees	9,857	8,871	-	-
Interest	4,234	6,000	4,000	4,080
Miscellaneous	-	-	-	-
Total Revenue	$ 22,668	$ 22,503	$ 4,000	$ 12,789
Expenditures				
Operation & Maintenance				
Salaries & Benefits	$ 10,967	$ -	$ -	$ -
Material & Supplies	(5,278)	13,792	119,700	123,291
Depreciation	-	-	28,600	28,600
Total Operation & Maintenance	$ 5,689	$ 13,792	$ 148,300	$ 151,891
Total Expenditures	$ 5,689	$ 13,792	$ 148,300	$ 151,891
Excess revenue over (under) expenditures	$ 16,979	$ 8,711	$ (144,300)	$ (139,102)
Other financing sources (uses)				
Transfers in/(out)				
Transfers In	$ -	$ 11,015	$ -	$ -
Transfers Out	(521)	$ -	$ -	$ -
Total financing sources (uses)	$ (521)	$ 11,015	$ -	$ -
Excess revenue and other sources over (under) expenditures and other uses	$ 16,458	$ 19,726	$ (144,300)	$ (139,102)
Beginning Fund Balance, July 1 [1]	$ 680,047	$ 696,505	$ 716,231	$ 910,000
Ending Net Assets, June 30	$ 696,505	$ 716,231	$ 571,931	$ 770,898

Note: The presentation above reflects a Net Assets basis of presentation. In the Vehicle Fund, Net Assets primarily include capitalized vehicles and cash.

[1] Beginning Fund Balance for FY 2019-20 based on updated estimates and may not match budgeted estimates for FY 2018-19

City of Half Moon Bay
Equipment Fund (62)
Statement of Revenue, Expenditures and Changes in Net Assets

	Actual 2016-17	Actual 2017-18	Adopted Budget 2018-19	Recommended Budget 2019-20
Revenue				
Interest	$ 8,227	$ 6,186	$ 3,000	$ 3,060
Miscellaneous	-	-	-	-
Total Revenue	$ 8,227	$ 6,186	$ 3,000	$ 3,060
Expenditures				
Operation & Maintenance				
Salaries & Benefits	$ 2,907	$ -	$ -	$ -
Material & Supplies	11,008	9,799	29,200	30,076
Depreciation	-	-	40,000	40,000
Total Operation & Maintenance	$ 13,915	$ 9,799	$ 69,200	$ 70,076
Contract Services				
Total Capital Purchases	$ 165,417	$ 190,553	$ 84,000	$ 86,520
Total Expenditures	$ 179,332	$ 200,352	$ 153,200	$ 156,596
Excess revenue over (under) expenditures	$ (171,104)	$ (194,166)	$ (150,200)	$ (153,536)
Other financing sources (uses)				
Transfers in/(out)				
Transfers In	$ 253,937	$ 197,100	$ 200,200	$ 203,536
Transfers Out	(550,000)	$ -	$ -	$ -
Total financing sources (uses)	$ (296,063)	$ 197,100	$ 200,200	$ 203,536
Excess revenue and other sources over (under) expenditures and other uses	$ (467,167)	$ 2,934	$ 50,000	$ 50,000
Beginning Fund Balance, July 1 [1]	$ 1,139,799	$ 672,632	$ 675,565	$ 50,000
Ending Net Assets, June 30	$ 672,632	$ 675,565	$ 725,565	$ 100,000

Note: The presentation above reflects a Net Assets basis of presentation. In the Equipment Fund, Net Assets primarily include capitalized equipment and cash.

[1] Beginning Fund Balance for FY 2019-20 based on updated estimates and may not match budgeted estimates for FY 2018-19

City of Half Moon Bay
Risk Management Fund (63)
Statement of Revenue, Expenditures and Changes in Net Assets

	Actual 2016-17	Actual 2017-18	Adopted Budget 2018-19	Recommended Budget 2019-20
Revenue				
Interest	$ 15,897	$ 28,507	$ 11,100	$ 30,000
Grants	-	8,775	-	-
Miscellaneous	11,498	5,777	-	-
Total Revenue	$ 27,395	$ 43,059	$ 11,100	$ 30,000
Expenditures				
Operation & Maintenance				
ABAG Plan Risk Management Pool				
Salaries & Benefits	$ 155,317	$ 198,456	$ 208,371	$ 182,221
General Liability Premiums	79,270	91,340	127,100	141,081
Insurance Premium	36,965	25,275	18,000	18,540
Liability Deductibles	50,367	7,081	100,000	103,000
Material & Supplies	500	528	15,800	16,274
Contract Services	90,351	166,213	165,600	170,568
Total Operation & Maintenance	$ 412,770	$ 488,892	$ 634,871	$ 631,684
Total Expenditures	$ 412,770	$ 488,892	$ 634,871	$ 631,684
Excess revenue over (under) expenditures	$ (385,375)	$ (445,833)	$ (623,771)	$ (601,684)
Other financing sources (uses)				
Transfers in	$ 827,633	$ 629,773	$ 634,870	$ 625,334
Total financing sources (uses)	$ 827,633	$ 629,773	$ 634,870	$ 625,334
Excess revenue and other sources over (under) expenditures and other uses	$ 442,258	$ 183,939	$ 11,099	$ 23,650
Beginning Fund Balance, July 1 [1]	$ 1,530,984	$ 1,973,242	$ 2,157,181	$ 1,810,000
Ending Net Assets, June 30	$ 1,973,242	$ 2,157,181	$ 2,168,280	$ 1,833,650

Note: The presentation above reflects a Net Assets basis of presentation. In the Risk Management Fund, Net Assets primarily represents cash less claim liabilities.

[1] Beginning Fund Balance for FY 2019-20 based on updated estimates and may not match budgeted estimates for FY 2018-19

City of Half Moon Bay
Retirement Stabilization Fund (64)
Statement of Revenue, Expenditures and Changes in Net Assets

	Actual 2016-17	Actual 2017-18	Adopted Budget 2018-19	Recommended Budget 2019-20
Revenues				
Interest	$ 5,644	6,085	4,900	4,998
Total Revenues	$ 5,644	$ 6,085	$ 4,900	$ 4,998
Expenditures				
Operation & Maintenance				
Salaries & Benefits				
Public Employees Retirement	$ 395,439	$ 630,492	$ 845,000	$ 877,534
Total Operation & Maintenance	$ 395,439	$ 630,492	$ 845,000	$ 877,534
Total Expenditures	$ 395,439	$ 630,492	$ 845,000	$ 877,534
Excess revenue over (under) expenditures	$ (389,795)	$ (624,407)	$ (840,100)	$ (872,536)
Other financing sources (uses)				
Transfers in/(out)				
Contribution from General Fund	$ 409,947	$ 636,219	$ 945,000	$ 1,000,000
Total financing sources (uses)	$ 409,947	$ 636,219	$ 945,000	$ 1,000,000
Excess revenue and other sources over (under) expenditures and other uses	$ 20,152	$ 11,812	$ 104,900	$ 127,464
Beginning Fund Balance, July 1 [1]	$ 1,015,252	$ 1,035,404	$ 1,047,216	$ 1,150,000
Ending Net Assets, June 30	$ 1,035,404	$ 1,047,216	$ 1,152,116	$ 1,277,464

Note: The presentation above reflects a Net Assets basis of presentation. In the Retirement Stabilization Fund, Net Assets primarily represents cash.

[1] Beginning Fund Balance for FY 2019-20 based on updated estimates and may not match budgeted estimates for FY 2018-19

CITY OF HALF MOON BAY

Enterprise Funds

Enterprise Funds

Enterprise Funds are used to account for services that are financed and operated in a manner more closely related to private business enterprise. In accordance with State law, the City imposes user fees to ensure the costs of providing the services are financed primarily through those charges.

SEWER OPERATING (Fund 05)

The Sewer Operating Fund is a restricted fund that is funded by sewer user chargers. The Sewer operating budget is used to account for the financial activity of the City's sewer utility. The Fund is used to account for:

1. Wastewater treatment services provided by the Sewer Authority Mid-Coastside (SAM), a Joint Powers Authority.
2. Regular cleaning of the City-owned wastewater collection system.
3. Maintenance, rehabilitation, and repair of the City-owned wastewater collection system.

Goals and Objectives

- Protect the health and welfare of the community by ensuring the continuous uninterrupted operation of the City-owned wastewater collection and transmission systems to every extent possible to meet all federal, State and local standards.
- Provide appropriate and economical maintenance and repair of the wastewater collection and transmission system and its appurtenances.
- Fund the cost of collection, transmission and treatment of the wastewater system. This effort includes overseeing the operations of SAM as a member of the Joint Powers Authority and sitting Board of Directors.
- Continue to repair and improve damaged or substandard sections of the wastewater collection system to ensure proper operating conditions by using a program that provides cleaning, preventive maintenance, and repair of the system.
- Provide expedient response to emergency situations including SSO events.

SEWER CAPITAL (Fund 06)

The Sewer Capital Fund is a restricted fund that is funded by sewer user chargers. The Sewer Capital Fund provides resources for capital improvements included in the City's CIP and as necessitated by emergency repairs and/or emerging issues. Projects include testing, evaluation, maintenance and repairs of the City's wastewater collection system including the three sewer pump stations and force mains.

Goals and Objectives

- Replace sewer collection lines that have infiltration or damage and ensure integrity of the wastewater collection system.
- Maintain and update the City's Sewer Master Plan.
- Staff to conduct an annual review of the capital needs and sewer rates to ensure adequate resources are available to fund requirements.

SEWER RESERVE OVERVIEW

In 2010, approval was given to increase the sewer rates over a three-year period. The rate increases were critical in improving a low reserve balance that was insufficient to fund sewer operations and critical capital improvements. As a result, the Sewer Capital Fund now has a reserve balance that is available for capital improvements and contingencies. Sewer costs have steadily risen steadily over the last three years. Notably overall SAM operating costs have increased by more than 15% each of the last three years. Additionally, the City's share of the costs has risen by approximately 8% over the last three years. Finally, the City has programmed major capital projects and capital maintenance during FY 2019-20 and the following years. In FY 2018-19 and FY 2019-20, operations costs have exceeded revenues and capital funds have been used to offset the additional operating costs. Capital projects and maintenance will continue to be needed and funding will be necessary. A new sewer rate study is planned to be prepared and completed in FY 2019-20 to address this issue. Settlement of current litigation with Granada and Montara may also provide some financial relief to the Sewer Fund.

SEWER NET ASSET AND CASH PRESENTATION

The Sewer Fund Balance is presented on a dual basis in the budget document: Net Asset and Cash Reserves. Net Assets is the excess of assets over liabilities and is the basis of presentation prescribed by GASB Statement No. 34. A significant portion of the City's Net Assets is investment in SAM so it is important to review the cash reserve balance to understand the amounts available to fund operations and capital improvements.

City of Half Moon Bay
Sewer Operating Fund (05)
Statement of Revenue, Expenditures and Changes in Net Assets

	Actual 2016-17	Actual 2017-18	Adopted Budget 2018-19	Recommended Budget 2019-20
Revenue				
Sewer Service Charges	$ 3,356,217	$ 2,445,058	$ 4,248,000	$ 4,332,960
Interest	26,801	14,013	19,900	20,298
Miscellaneous	37,101	-	-	-
Total Revenue	$ 3,420,119	$ 2,459,071	$ 4,267,900	$ 4,353,258
Expenditures				
Operation & Maintenance				
Salaries & Benefits	$ 191,845	$ 234,827	$ 281,302	$ 323,018
Material & Supplies	21,280	934	19,900	20,188
Contract Services	2,502,690	4,273,271	3,774,430	5,263,319
SAM Authority	2,444,125	4,007,916	3,360,430	4,136,899
Other Contracts	58,565	265,355	414,000	1,126,420
Total Operation & Maintenance	$ 2,715,815	$ 4,509,032	$ 4,075,632	$ 5,606,525
Capital Projects				
Sanitary Sewer Improvements	$ 11,442	$ -	$ 67,000	$ 69,010
Total Capital Projects	$ 11,442	$ -	$ 67,000	$ 69,010
Total Expenditures	$ 2,727,257	$ 4,509,032	$ 4,142,632	$ 5,675,535
Excess revenue over (under) expenditures	$ 692,862	$ (2,049,961)	$ 125,268	$ (1,322,277)
Other financing sources (uses)				
Transfers in/(out)				
Contribution from Sewer Capital Fund	$ -	$ -	$ 300,000	$ 2,006,000
Equipment / Risk	(239,495)	(55,959)	(197,273)	(208,327)
Administrative Fee (to General Fund)	(196,001)	(420,668)	(460,771)	(472,290)
Total financing sources (uses)	$ (435,496)	$ (476,627)	$ (358,044)	$ 1,325,383
Excess revenue and other sources over (under) expenditures and other uses	$ 257,366	$ (2,526,588)	$ (232,776)	$ 3,106
Beginning Net Assets, July 1 [1]	$ 2,927,929	$ 3,185,295	$ 658,707	$ 120,000
Ending Net Assets, June 30	$ 3,185,295	$ 658,707	$ 425,931	$ 123,106

[1] Beginning Fund Balance for FY 2019-20 based on updated estimates and may not match budgeted estimates for FY 2018-19 ending balance.

City of Half Moon Bay
Sewer Capital Fund (06)
Statement of Revenue, Expenditures and Changes in Net Assets

	Actual 2016-17	Actual 2017-18	Adopted Budget 2018-19	Recommended Budget 2019-20
Revenue				
Interest	$ 108,202	$ 181,730	$ 73,200	$ 74,664
Sewer Rate Charges	1,131,040	1,816,068	103,783	71,893
Total Revenue	$ 1,239,242	$ 1,997,798	$ 176,983	$ 146,557
Expenditures				
Operation & Maintenance				
Salaries & Benefits	$ -	$ (686)	$ -	$ -
Loss on investment in SAM	$ -	$ -	$ 175,000	$ 180,250
Depreciation	-	99,520	100,000	100,000
Total Operation & Maintenance	$ -	$ 98,834	$ 275,000	$ 280,250
Capital Projects				
Total Capital Projects	$ 226,462	$ 203,273	$ 5,407,500	$ 3,845,000
Total Expenditures	$ 226,462	$ 302,107	$ 5,682,500	$ 4,125,250
Excess revenue over (under) expenditures	$ 1,012,781	$ 1,695,691	$ (5,505,517)	$ (3,978,693)
Other financing sources (uses)				
Transfers in/(out)				
Transfers Out	$ (46,703)	$ (11,460)	(316,386)	(2,022,796)
Total financing sources (uses)	$ (46,703)	$ (11,460)	$ (316,386)	$ (2,022,796)
Excess revenue and other sources over (under) expenditures and other uses	$ 966,078	$ 1,684,231	$ (5,821,903)	$ (6,001,489)
Beginning Net Assets, July 1 [1]	$ 21,579,281	$ 22,545,358	$ 24,229,590	$ 7,920,000
Ending Net Assets, June 30	$ 22,545,358	$ 24,229,590	$ 18,407,687	$ 1,918,511

[1] Beginning Fund Balance for FY 2019-20 based on updated estimates and may not match budgeted estimates for FY 2018-19 ending balance.

CITY OF HALF MOON BAY

Capital Improvement Program

Capital Improvement Program

The City's 5-Year Capital Improvement Program (CIP) is a financial planning and prioritization tool that represents the City's continuous efforts to protect public health and safety and enhance the quality of life and experience for visitors and residents in Half Moon Bay. The CIP identifies current and future capital improvements and provides the following benefits:

- Facilitates the scheduling of public improvements that require expenditures and appropriations over two or more fiscal years;
- Provides orderly management of capital projects consistent with the General Plan and adopted master plans; and
- Enhances eligibility for grants from the State and the federal Government.

Capital improvements are either projects or programs with total budgets that typically exceed $30,000. Projects are generally large, one-time enhancements whereas programs occur annually with a new project emphasis each year. The City capital improvement needs are a result of an aging infrastructure, significant deferred maintenance and desired construction on new and existing facilities.

Although the City's CIP looks at the upcoming five fiscal years, the funding request only covers the first year of the program, which is referred to as the Capital Budget. Improvements are prioritized based on various criteria including grant availability, legal requirements, Council's priorities, and progress on the improvement thus far. CIP improvements are divided into 8 categories as described below.

Storm Water Improvements are focused on maintaining and improving the City's storm water system to protect homes, businesses, public facilities and infrastructure. The Storm Drain Master Plan is an important component to prioritizing improvements, identifying regulatory requirements and preventing catastrophic failure of the storm water system in the future.

Economic Development Improvements are headlined by the General Plan and Local Coastal Program (LCP) Update, which has been underway since late 2013 and is scheduled for completion in FY 2019-20. In addition to completing the LCP, these improvements focus on implementing improvements that will enhance the living standard and attractiveness of Half Moon Bay for residents and visitors alike.

Operational Improvements include major capital investments to enhance the internal operational efficiencies of the City. These improvements will help City staff perform more efficiently and allow staff to respond to customer requests in a timelier manner. Each of the improvements also enhance the City's transparency as envisioned in the strategic plan.

Park Improvements are critical to maintain the health and livability of Half Moon Bay for residents and visitors alike. Within Half Moon Bay, there are parks focused on active play and others focused on passive recreation. In some cases, City parks include both aspects. These improvements focus on maintaining and enhancing the City's various park assets.

Facility Improvements focus on maintaining and enhancing the City's various facilities. With the completion of the Half Moon Bay Library, the focus on these improvements will be assessment and ongoing maintenance of current City facilities, as well as the upkeep of the new Library.

Sewer Improvements include ongoing repair and replacement of the City's sewer infrastructure as components reach the end of their service life. Infrastructure includes neighborhood sewer pipelines, larger interceptor pipelines and pump stations. Preventative maintenance and repair leads to lower component failures and help to minimize unforeseen system outages and pipe breaks that could lead to sanitary sewer overflows.

Street Improvements focus on performing routine maintenance and improvements to the City's roadways to extend the useful life of the system. This reduces the need for major street reconstruction projects, which are exponentially more expensive than performing routine upgrades and maintenance.

Trail Improvements assure safety and functionality of the City's trails. Improvements in this section address erosion issues along the Coastal Trail in addition to improving the quality of trails throughout the City.

FIVE-YEAR SUMMARY - CAPITAL IMPROVEMENT PROGRAM

EXPENDITURE

PROJECT CATEGORIES	PRIOR YEAR(S)	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY	UNFUNDED
Storm Water Improvements	$ 303,000	$ 906,000	$ 1,250,000	$ 975,000	$ 290,000	$ 150,000	$ 7,854,250	**$ 11,728,250**	$ 9,504,250
Economic Development Improvements	$ 796,257	$ 430,000	$ 350,000	$ 414,000	$ -	$ -	$ -	**$ 1,990,257**	$ 30,000
Operational Improvements	$ 250,000	$ 200,000	$ 50,000	$ -	$ -	$ -	$ -	**$ 500,000**	$ -
Parks Improvements	$ 580,000	$ 1,210,000	$ 2,000,000	$ 185,000	$ 100,000	$ 100,000	$ 12,665,000	**$ 16,840,000**	$ 13,765,000
Facility Improvements	$ 412,000	$ 1,345,000	$ 1,495,000	$ 955,000	$ 455,000	$ 455,000	$ -	**$ 5,117,000**	$ 825,000
Sewer Improvements	$ 200,000	$ 3,845,000	$ 810,000	$ 655,000	$ 630,000	$ 605,000	$ -	**$ 6,745,000**	$ -
Street Improvements	$ 1,254,000	$ 6,790,000	$ 6,180,000	$ 7,913,290	$ 4,768,290	$ 225,000	$ 2,945,000	**$ 30,075,579**	$ 6,835,000
Trail Improvements	$ 215,000	$ 735,000	$ 1,310,000	$ 645,000	$ 405,000	$ 665,000	$ 6,975,000	**$ 10,950,000**	$ 9,000,000
T O T A L	**$ 4,010,257**	**$ 15,461,000**	**$ 13,445,000**	**$ 11,742,290**	**$ 6,648,290**	**$ 2,200,000**	**$ 30,439,250**	**$ 83,946,086**	**$ 39,959,250**

REVENUE

FUNDING SOURCES	PRIOR YEAR(S)	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
Developer Funds	$ 3,100,000	$ -	$ -	$ -	$ -	$ -	$ -	**$ 3,100,000**
Donations	$ 20,000	$ -	$ -	$ -	$ -	$ -	$ -	**$ 20,000**
Gas Tax - Fund 10	$ 50,000	$ 217,500	$ 52,500	$ 52,500	$ 52,500	$ 52,500	$ -	**$ 477,500**
General Capital - Fund 25	$ 100,000	$ 50,000	$ 250,000	$ 264,000	$ -	$ -	$ -	**$ 664,000**
General Fund	$ 4,767,043	$ 3,000,000	$ 855,000	$ 905,000	$ 795,000	$ 655,000	$ -	**$ 10,977,043**
Grant - Coastal Commission	$ 160,000	$ -	$ -	$ -	$ -	$ -	$ -	**$ 160,000**
Grant - Federal	$ 1,142,922	$ 1,202,000	$ -	$ 3,202,829	$ 3,202,829	$ -	$ -	**$ 8,750,580**
Grant - Measure A	$ 915,000	$ 3,200,000	$ 3,200,000	$ -	$ -	$ -	$ -	**$ 7,315,000**
Grant - Ocean Protection Council	$ 53,214	$ -	$ -	$ -	$ -	$ -	$ -	**$ 53,214**
Measure J	$ 186,324	$ -	$ -	$ -	$ -	$ -	$ -	**$ 186,324**
Main Street Bridge - Fund 9	$ -	$ 108,078	$ -	$ 414,961	$ 414,961	$ -	$ -	**$ 937,999**
Park Facility/Development - Fund 17	$ 323,676	$ 106,922	$ 850,000	$ 330,000	$ -	$ -	$ -	**$ 1,610,598**
Public Facilities - Fund 48	$ -	$ -	$ 215,000	$ -	$ -	$ -	$ -	**$ 215,000**
Storm Drain Improvement - Fund 14	$ -	$ 100,000	$ 150,000	$ 150,000	$ 150,000	$ 150,000	$ -	**$ 700,000**
Street and Road - Fund 11	$ -	$ 714,578	$ 652,500	$ 52,500	$ 52,500	$ 52,500	$ -	**$ 1,524,578**
San Mateo County Contribution	$ 200,000	$ -	$ -	$ -	$ -	$ -	$ -	**$ 200,000**
San Mateo County Loan	$ 200,000	$ -	$ -	$ -	$ -	$ -	$ -	**$ 200,000**
Sewer Service - Fund 05/06	$ 200,000	$ 3,845,000	$ 810,000	$ 655,000	$ 630,000	$ 605,000	$ -	**$ 6,745,000**
Traffic Mitigation - Fund 13	$ -	$ -	$ 100,000	$ 50,000	$ -	$ -	$ -	**$ 150,000**
UNFUNDED	$ -	$ 30,000	$ 5,215,000	$ 2,260,000	$ 1,330,000	$ 685,000	$ 30,439,250	**$ 39,959,250**
T O T A L	**$ 11,418,179**	**$ 12,574,078**	**$ 12,350,000**	**$ 8,336,790**	**$ 6,627,790**	**$ 2,200,000**	**$ 30,439,250**	**$ 83,946,086**

FIVE-YEAR CAPITAL IMPROVEMENT PROGRAM BUDGETED EXPENDITURES
FY 2019-20 ADOPTED CAPITAL BUDGET

PROJECT TITLE	FUND	PROJECT NO.	PRIOR YEAR(S)	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY	UNFUNDED
STORM WATER IMPROVEMENTS											
GREEN INFRASTRUCTURE AND STORM WATER PROGRAM	14	563	N/A	$ 100,000	$ 150,000	$ 150,000	$ 150,000	$ 150,000	N/A	$ 700,000	$ -
KELLY/HIGHWAY 1 DRAINAGE PROJECT	14	TBD	$ 103,000	$ 656,000	$ -	$ -	$ -	$ -	$ -	$ 759,000	$ -
SEYMOUR DITCH EROSION AND COASTAL STABILIZATION	14	608	$ 200,000	$ 150,000	$ 825,000	$ 825,000	$ 140,000	$ -	$ -	$ 2,140,000	$ 1,650,000
ARROYO DE EN MEDIO EROSION REPAIR - MIRADA ROAD	14	579	$ -	$ -	$ 200,000	$ -	$ -	$ -	$ -	$ 200,000	$ -
ROOSEVELT DITCH IMPROVEMENTS	14	TBD	$ -	$ -	$ 75,000	$ -	$ -	$ -	$ -	$ 75,000	$ -
KEHOE WATER COURSE AND HABITAT ENHANCEMENT PROJECT	14	534	$ -	$ -	$ -	$ -	$ -	$ -	$ 7,854,250	$ 7,854,250	$ 7,854,250
TOTAL STORM WATER IMPROVEMENTS			**$ 303,000**	**$ 906,000**	**$ 1,250,000**	**$ 975,000**	**$ 290,000**	**$ 150,000**	**$ 7,854,250**	**$ 11,728,250**	**$ 9,504,250**
ECONOMIC DEVELOPMENT IMPROVEMENTS											
GENERAL PLAN AND LOCAL COASTAL PROGRAM UPDATE	25	564	$ 796,257	$ 250,000	$ -	$ -	$ -	$ -	$ -	$ 1,046,257	$ -
MEDIAN LANDSCAPE PROJECT	25	TBD	$ -	$ 130,000	$ -	$ -	$ -	$ -	$ -	$ 130,000	$ 30,000
MAIN STREET TREE LIGHTS	25	TBD	$ -	$ 50,000	$ -	$ -	$ -	$ -	$ -	$ 50,000	$ -
WAYFINDING AND ENTRY SIGNS (PHASE 2)	25	559	$ -	$ -	$ 350,000	$ -	$ -	$ -	$ -	$ 350,000	$ -
DOWNTOWN GATEWAY ARCH - NORTH	25	534	$ -	$ -	$ -	$ 264,000	$ -	$ -	$ -	$ 264,000	$ -
TOWN CENTER MASTER PLAN	25	TBD	$ -	$ -	$ -	$ 150,000	$ -	$ -	$ -	$ 150,000	$ -
TOTAL ECONOMIC DEVELOPMENT IMPROVEMENTS			**$ 796,257**	**$ 430,000**	**$ 350,000**	**$ 414,000**	**$ -**	**$ -**	**$ -**	**$ 1,990,257**	**$ 30,000**
OPERATIONAL IMPROVEMENTS											
FINANCIAL SOFTWARE - ENTERPRISE RESOURCE PLANNING	25	555	$ 250,000	$ 50,000	$ -	$ -	$ -	$ -	$ -	$ 300,000	$ -
GIS IMPLEMENTATION	25	586	$ -	$ 150,000	$ 50,000	$ -	$ -	$ -	$ -	$ 200,000	$ -
TOTAL OPERATIONAL IMPROVEMENTS			**$ 250,000**	**$ 200,000**	**$ 50,000**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 500,000**	**$ -**
PARKS IMPROVEMENTS											
PARKS MASTER PLAN IMPLEMENTATION PROGRAM	17	609	N/A	$ 100,000	$ 100,000	$ 100,000	$ 100,000	$ 100,000	N/A	$ 500,000	$ -
OCEAN VIEW PARK - PERMANENT RESTROOMS AND SITE IMPROVEMENTS	17	610	$ 55,000	$ 485,000	$ -	$ -	$ -	$ -	$ -	$ 540,000	$ -
POPLAR BEACH GATEWAYS PLAN	17	617	$ 360,000	$ 140,000	$ -	$ -	$ -	$ -	$ -	$ 500,000	$ -
TRAIN DEPOT AND JOHNSTON HOUSE TEMPORARY IMPROVEMENTS	17	TBD	$ -	$ 85,000	$ -	$ -	$ -	$ -	$ -	$ 85,000	$ -
WAVECREST WATER MAIN PROJECT	17	TBD	$ -	$ 100,000	$ 600,000	$ -	$ -	$ -	$ -	$ 700,000	$ -
CARTER PARK IMPROVEMENTS	17	611	$ 165,000	$ 300,000	$ 1,200,000	$ -	$ -	$ -	$ -	$ 1,665,000	$ 1,100,000
SMITH FIELD SITE ASSESSMENT AND MASTER PLAN	17	TBD	$ -	$ -	$ 100,000	$ -	$ -	$ -	$ -	$ 100,000	$ -
TRAIN DEPOT AND JOHNSTON HOUSE SITE PLAN	17	614	$ -	$ -	$ -	$ 85,000	$ -	$ -	$ -	$ 85,000	$ 250,000
PERMANENT RESTROOMS AT POPLAR BEACH	17	TBD	$ -	$ -	$ -	$ -	$ -	$ -	$ 250,000	$ 250,000	$ 65,000
STORAGE BUILDING AT SMITH FIELD	17	TBD	$ -	$ -	$ -	$ -	$ -	$ -	$ 65,000	$ 65,000	$ 350,000
NEW MAGNOLIA/SEYMOUR PARK	17	TBD	$ -	$ -	$ -	$ -	$ -	$ -	$ 350,000	$ 350,000	$ 12,000,000
NEW COMMUNITY PARK	17	TBD	$ -	$ -	$ -	$ -	$ -	$ -	$ 12,000,000	$ 12,000,000	
TOTAL PARKS			**$ 580,000**	**$ 1,210,000**	**$ 2,000,000**	**$ 185,000**	**$ 100,000**	**$ 100,000**	**$ 12,665,000**	**$ 16,840,000**	**$ 13,765,000**

FIVE-YEAR CAPITAL IMPROVEMENT PROGRAM BUDGETED EXPENDITURES
FY 2019-20 ADOPTED CAPITAL BUDGET

PROJECT TITLE	FUND	PROJECT NO.	PRIOR YEAR(S)	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY	UNFUNDED
FACILITY IMPROVEMENTS											
ADA TRANSITION PLAN IMPLEMENTATION PROGRAM	25	601	N/A	$ 75,000	$ 75,000	$ 75,000	$ 75,000	$ 75,000	N/A	$ 375,000	$ -
SIDEWALK REPLACEMENT AND REPAIR PROGRAM	25	562	N/A	$ 150,000	$ 150,000	$ 150,000	$ 150,000	$ 150,000	N/A	$ 750,000	$ -
URBAN FOREST MANAGEMENT PROGRAM	25	598	N/A	$ 80,000	$ 80,000	$ 80,000	$ 80,000	$ 80,000	N/A	$ 400,000	$ -
ANNUAL COMMUNITY ENHANCEMENT PROGRAM	25	600	N/A	$ 50,000	$ 50,000	$ 50,000	$ 50,000	$ 50,000	N/A	$ 250,000	$ -
EMERGENCY RESPONSE PROGRAM	48	604	N/A	$ 100,000	$ 100,000	$ 100,000	$ 100,000	$ 100,000	N/A	$ 500,000	$ -
TED ADCOCK COMMUNITY CENTER KITCHEN AND ENTRY REMODEL	48	621	$ 50,000	$ 270,000	$ -	$ -	$ -	$ -	$ -	$ 320,000	$ -
SHERIFF SUBSTATION RENOVATION PROJECT	48	605	$ 47,000	$ 175,000	$ -	$ -	$ -	$ -	$ -	$ 222,000	$ -
STREETLIGHT UPGRADES ON MAIN STREET	48	623	$ -	$ 110,000	$ -	$ -	$ -	$ -	$ -	$ 110,000	$ -
CIVIC CENTER SITE PLAN	48	624	$ -	$ 85,000	$ -	$ -	$ -	$ -	$ -	$ 85,000	$ -
PILARCITOS CREEK RESTORATION AND REMEDIATION PROJECT	48	TBD	$ 155,000	$ 210,000	$ 35,000	$ -	$ -	$ -	$ -	$ 400,000	$ -
CORPORATE YARD IMPROVEMENTS	48	TBD	$ -	$ 40,000	$ 180,000	$ -	$ -	$ -	$ -	$ 220,000	$ -
RESTORATION AND WATERSHED PROTECTION OF CITY PARCEL	48	622	$ 160,000	$ -	$ 825,000	$ -	$ -	$ -	$ -	$ 985,000	$ 825,000
PUBLIC WORKS CORPORATION YARD MASTER PLAN	48	TBD	$ -	$ -	$ -	$ 100,000	$ -	$ -	$ -	$ 100,000	$ -
CUNHA PARKING LOT EXPANSION FOR LIBRARY	16	545	$ -	$ -	$ -	$ 400,000	$ -	$ -	$ -	$ 400,000	$ -
TOTAL FACILITY IMPROVEMENTS			**$ 412,000**	**$ 1,345,000**	**$ 1,495,000**	**$ 955,000**	**$ 455,000**	**$ 455,000**	**$ -**	**$ 5,117,000**	**$ 825,000**
SEWER IMPROVEMENTS											
SEWER MAINTENANCE PROGRAM	06	506	N/A	$ 50,000	$ 50,000	$ 50,000	$ 50,000	$ 50,000	N/A	$ 250,000	$ -
INFLOW AND INFILTRATION PROGRAM	06	TBD	N/A	$ 150,000	$ 150,000	$ 150,000	$ 150,000	$ 150,000	N/A	$ 750,000	$ -
CITYWIDE POINT REPAIRS PROGRAM	06	TBD	N/A	$ 315,000	$ 315,000	$ 315,000	$ 315,000	$ 315,000	N/A	$ 1,575,000	$ -
MANHOLE REHABILITATION PROGRAM	06	TBD	N/A	$ 40,000	$ 40,000	$ 40,000	$ 40,000	$ 40,000	N/A	$ 200,000	$ -
PUMP STATION AND FORCE MAIN REPAIR AND REPLACEMENT PROGRAM	06	507	N/A	$ 205,000	$ 205,000	$ 50,000	$ 50,000	$ 50,000	N/A	$ 560,000	$ -
LORYN LANE SEWER MAIN REPAIR	06	TBD	$ -	$ 275,000	$ -	$ -	$ -	$ -	$ -	$ 275,000	$ -
OCEAN COLONY PUMP STATION REPLACEMENT PROJECT	06	TBD	$ 200,000	$ 2,710,000	$ -	$ -	$ -	$ -	$ -	$ 2,910,000	$ -
SANITARY SEWER MASTER PLAN	06	TBD	$ -	$ 100,000	$ 50,000	$ 50,000	$ 25,000	$ -	$ -	$ 225,000	$ -
TOTAL SEWER IMPROVEMENTS			**$ 200,000**	**$ 3,845,000**	**$ 810,000**	**$ 655,000**	**$ 630,000**	**$ 605,000**	**$ -**	**$ 6,745,000**	$ -
STREET IMPROVEMENTS											
NEIGHBORHOOD TRAFFIC SAFETY PROGRAM	11	TBD	N/A	$ 40,000	$ 40,000	$ 40,000	$ 40,000	$ 40,000	NA	$ 200,000	$ -
CROSSWALKS AND ADA RETROFIT PROGRAM	11	572	N/A	$ 65,000	$ 65,000	$ 65,000	$ 65,000	$ 65,000	N/A	$ 325,000	$ -
PAVEMENT MANAGEMENT AND TRAFFIC SAFETY PROGRAM	11	514	N/A	$ 330,000	$ 1,025,000	$ 120,000	$ 1,025,000	$ 120,000	N/A	$ 2,620,000	$ 2,290,000
HIGHWAY 1 SAFETY - SOUTH	11	523	$ 398,000	$ 3,950,000	$ -	$ -	$ -	$ -	$ -	$ 4,348,000	$ -
POPLAR COMPLETE STREET PROJECT	11	593	$ 156,000	$ 1,221,000	$ 500,000	$ -	$ -	$ -	$ -	$ 1,877,000	$ 500,000

FIVE-YEAR CAPITAL IMPROVEMENT PROGRAM BUDGETED EXPENDITURES
FY 2019-20 ADOPTED CAPITAL BUDGET

PROJECT TITLE	FUND	PROJECT NO.	PRIOR YEAR(S)	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY	UNFUNDED
STREET IMPROVEMENTS (cont.)											
HIGHWAY 1 SAFETY - NORTH	11	538	$ 350,000	$ 734,000	$ 4,000,000	$ 4,000,000	$ -	$ -	$ -	$ 9,084,000	$ 1,100,000
MAIN STREET BRIDGE PROJECT	09	759	$ 350,000	$ 450,000	$ 450,000	$ 3,638,290	$ 3,638,290	$ -	$ -	$ 8,526,579	$ -
HIGHWAY 1/KELLY AVENUE INTERSECTION IMPROVEMENT PROJECT	13	571	$ -	$ -	$ 100,000	$ 50,000	$ -	$ -	$ 1,570,000	$ 1,720,000	$ 1,570,000
KELLY AVENUE REHABILITATION PROJECT	11	TBD	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,375,000	$ 1,375,000	$ 1,375,000
TOTAL STREET IMPROVEMENTS			**$ 1,254,000**	**$ 6,790,000**	**$ 6,180,000**	**$ 7,913,290**	**$ 4,768,290**	**$ 225,000**	**$ 2,945,000**	**$ 30,075,579**	**$ 6,835,000**
TRAIL IMPROVEMENTS											
BICYCLE AND PEDESTRIAN MASTER PLAN IMPLEMENTATION PROGRAM	17	615	N/A	$ 100,000	$ 100,000	$ 100,000	$ 100,000	$ 100,000	N/A	$ 500,000	$ -
STAIR REPAIR AT CAÑADA VERDE CREEK	17	TBD	$ -	$ 80,000	$ -	$ -	$ -	$ -	$ -	$ 80,000	$ -
VERTICAL ACCESS AT POPLAR BEACH	17	597	$ 10,000	$ 140,000	$ -	$ -	$ 90,000	$ 350,000	$ -	$ 590,000	$ 440,000
HIGHWAY 1 BICYCLE/PEDESTRIAN TRAIL EXTENSION	17	595	$ -	$ 275,000	$ -	$ -	$ -	$ -	$ 1,475,000	$ 1,750,000	$ 1,475,000
BIKEWAY CONNECTIVITY PROJECT - NORTH	17	619	$ 55,000	$ 120,000	$ 495,000	$ -	$ -	$ -	$ -	$ 670,000	$ 320,000
PEDESTRIAN/BICYCLE CONNECTION TO HATCH ELEMENTARY	17	TBD	$ -	$ 20,000	$ 230,000	$ -	$ -	$ -	$ -	$ 250,000	$ 230,000
WAVECREST WALKWAY EXTENSION	17	564	$ -	$ -	$ 95,000	$ 330,000	$ -	$ -	$ -	$ 425,000	$ -
COASTAL BLUFF PRESERVATION	17	618	$ 150,000	$ -	$ 390,000	$ 215,000	$ 215,000	$ 215,000	$ -	$ 1,185,000	$ 1,035,000
NAOMI PATRIDGE TRAIL EXTENSION (SOUTH)	17	TBD	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,500,000	$ 2,500,000	$ 2,500,000
POPLAR BEACH COASTAL TRAIL - RELOCATION AND EROSION MITIGATION	17	TBD	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,000,000	$ 3,000,000	$ 3,000,000
TOTAL TRAIL IMPROVEMENTS			**$ 215,000**	**$ 735,000**	**$ 1,310,000**	**$ 645,000**	**$ 405,000**	**$ 665,000**	**$ 6,975,000**	**$ 10,950,000**	**$ 9,000,000**
TOTAL FY ALLOCATIONS			**$ 4,010,257**	**$ 15,461,000**	**$ 13,445,000**	**$ 11,742,290**	**$ 6,648,290**	**$ 2,200,000**	**$ 30,439,250**	**$ 83,946,086**	**$ 39,959,250**

CITY OF HALF MOON BAY

Other Information

CITY OF HALF MOON BAY

Investment Policy

RESOLUTION NO. C-2019-58

A RESOLUTION OF THE CITY OF HALF MOON BAY APPROVING THE CITY OF HALF MOON BAY INVESTMENT POLICY

WHEREAS, the investment policy is reviewed each year by City Council in accordance with the City of Half Moon Bay's Investment Policy;

WHEREAS, the investment policy has been reviewed to ensure any necessary updates have been incorporated;

WHEREAS, there is no change in the investment policy at this time;

NOW, THEREFORE, BE IT RESOLVED THAT The City Council of the City of Half Moon Bay hereby approves the City of Half Moon Bay's Investment Policy as contained in Exhibit A attached hereto.

****

I, the undersigned, hereby certify that the forgoing Resolution was duly passed and adopted on the 18th day of June, 2019 by the City Council of Half Moon Bay by the following vote:

AYES, Councilmembers: Brownstone, Penrose, Ruddock, Eisen, Rarback
NOES, Councilmembers:
ABSENT, Councilmembers:
ABSTAIN, Councilmembers:

ATTEST:

Jessica Blair, City Clerk

APPROVED:

Harvey Rarback, Mayor

CITY OF HALF MOON BAY INVESTMENT POLICY

POLICY OVERVIEW

PURPOSE

The purpose of this policy is to establish guidelines for the management and investment of the unexpended funds of City of Half Moon Bay (the City) under authority granted by the City Council. This policy is in compliance with the provisions of California Government Code Sections 53600 through 53684, governing investments for municipal governments.

INVESTMENT OBJECTIVES

The primary objectives of this investment policy, in order of priority, are safety, liquidity, and yield:

1. **Safety** - Safety of principal is the foremost objective of the investment program. Investments shall be undertaken in a manner that seeks to ensure the preservation of capital in the overall portfolio. This objective shall be accomplished by mitigating credit risk and market risk.

2. **Liquidity** - The investment portfolio shall remain sufficiently liquid to meet all operating requirements that may be reasonably anticipated. This objective shall be accomplished by structuring the portfolio so that securities mature concurrently with anticipated needs. The portfolio shall consist largely of securities with active secondary or resale market. Furthermore, a portion of the portfolio may be placed in money market mutual funds or the Local Agency Investment Fund (LAIF) which offer same-day liquidity for short-term funds.

3. **Yield** - The objective of the investment portfolio is designed to attain a market rate of return throughout budgetary and economic cycles, taking into consideration the investment risk constraints and liquidity needs. Investment performance shall be continually monitored and evaluated by the City Treasurer in comparison with other portfolio benchmark yields.

SCOPE

The investment policy applies to all financial assets of the City as accounted for in the Basic Financial Statements. It includes, but is not limited to, the funds listed below:

- General Fund
- Special Revenue Funds
- Capital Projects Funds
- Debt Service Fund
- Enterprise Funds

- Internal Service Funds
- Trust and Agency Funds
- Any new fund created by the City, unless specifically exempted, with the exception of the following:

    1. The City's Deferred Compensation Plan, which is excluded because it is managed by a third-party administrator and invested by individual plan participants.

    2. Proceeds of debt issuance shall be invested in accordance with the investment objectives of this policy. However, such proceeds are generally invested in accordance with permitted investment provisions of their specific bond indentures. If, in the opinion of the City Treasurer, the matching of bond reserve or escrow defeasance funds with the maturity schedule of an individual bond issue is prudent, the investment policy authorizes an extension beyond the five-year maturity limitation as outlined in this document.

USE OF STATE INVESTMENT GUIDELINES

California Government Code Sections 53600 through 53692 regulates the investment practices of public entities. It is the policy of the City to use the State's provisions for local government investments as the basis for developing and implementing the City's investment policies and practices.

STANDARDS OF CARE

1. **Prudence** - The City's investment officials shall act as fiduciary agents subject to the Prudent Investor Standard. Investments shall be made with judgment and care, under circumstances then prevailing, which persons of prudence, discretion and intelligence exercise in the management of their own affairs, not for speculation, but for investment, considering the probable safety of their capital as well as the probable income to be derived. The City Manager, City Treasurer (Finance Manager), and other individuals assigned to manage the investment portfolio, acting within the intent and scope of the investment policy and other written procedures and exercising due diligence, shall be relieved of personal responsibility and liability for an individual security's credit risk or market price changes, provided deviations from expectations are reported in a timely manner and appropriate action is taken to control adverse developments.

2. **Ethics and Conflict of Interest** - Officers and employees involved in the investment process shall refrain from personal business activity that could conflict with proper execution of the investment program or could impair their ability to make impartial investment decisions. City employees involved in the investment process shall

disclose to the City Clerk in writing any material financial interest in financial institutions that conduct business within the jurisdiction. They shall further disclose any large personal financial/investment positions that could be related to the performance of the investment portfolio.

3. **Delegation of Authority** - Authority to manage the investment program is granted to the City Manager and City Treasurer (designee Administrative Services Director) and derived from Chapter 2.12 and 2.16 of the City of Half Moon Bay Municipal Code. Under the oversight of the City Manager and the City Treasurer, specified responsibility for the operation of the investment program may be delegated to the Senior Accounting Technician, who shall act in accordance with established written procedures and internal controls consistent with the investment policy. The City Treasurer shall be responsible for all transactions undertaken and shall establish a system of controls to regulate the activities of subordinate staff members. The internal controls system includes separation of duties, custodial safekeeping, avoidance of physical delivery securities, development of wire transfer agreement, and clear delegation of authority to subordinate staff members.

The City may delegate its investment authority to an investment advisor registered under the Investment Advisers Act of 1940, so long as it can be demonstrated that these services produce a net financial advantage or necessary financial protection of the City's financial resources. The adviser shall follow this policy, and any other written instructions.

INVESTMENT GUIDELINES

SAFETY OF PRINCIPAL

Safety of principal is the primary objective of the City of Half Moon Bay. Each investment transaction shall seek to ensure that capital losses are avoided, whether from securities default, broker/dealer default or erosion of market value. The City shall seek to preserve principal by mitigating the two types of risk: credit risk and market risk.

Credit risk, defined as the risk of loss due to failure of the issuer of a security, shall be mitigated by investing in investment grade securities and by diversifying the investment portfolio so that the failure of any one issuer does not unduly harm the City's capital base and cash flow.

Market risk, defined as market value fluctuations due to overall changes in the general level of interest rates, shall be mitigated by limiting the average maturity of the City's investment portfolio to two years, the maximum maturity of any one security to five years, structuring the portfolio based on historic and current cash flow analysis eliminating the need to sell securities prior to maturity and avoiding the purchase of long term securities for the sole purpose of short term speculation.

LIQUIDITY

The City's financial portfolio shall be structured in a manner to ensure that the securities mature concurrent with anticipated cash demands. The portfolio should consist largely of securities with an active secondary or resale market to meet any unanticipated cash demands. A portion of the portfolio may be placed in money market mutual funds or LAIF, which offer same day liquidity for short- term funds.

It is the full intent of the City to hold all investments until maturity to ensure the return of all invested principal. However, securities may be sold prior to maturity under the following circumstances:

- To minimize loss of principal for a security with declining credit.
- When liquidity needs of the portfolio require that the security is sold.

INVESTMENT PARAMETERS

1. **Diversification -** The City shall diversify its investments within the parameters of this policy to avoid incurring unreasonable risks inherent in over-investing in specific instruments, individual financial institutions or maturities. Nevertheless, the asset allocation in the investment portfolio should be flexible depending upon the outlook for the economy, the securities markets, and the City's anticipated cash flow needs.

The investments shall be diversified by:

- Limiting investments in securities to avoid over concentration in securities from a specific issuer or business sector (excluding U.S. Treasury securities);
- Limiting investment in securities that have higher credit risks;
- Investing in securities with varying maturities; and
- Continuously investing a portion of the portfolio in readily available funds such as LAIF or money market mutual funds to ensure that appropriate liquidity is maintained in order to meet unanticipated cash demands.

2. **Maximum Maturities-** To the extent possible, the City shall attempt to match its investments with anticipated cash flow requirements. Unless matched to a specific cash flow of bond proceeds or bond defeasance escrow, the City will not directly invest in securities maturing more than five (5) years from the date of purchase. As a general rule, the weighted average maturity of the investment portfolio will not exceed two years.

   Reserve or escrow funds established by the issuance or defeasance of bonds and other funds with longer-term investment horizons may be invested in securities exceeding five years if the maturities of such investments are made to coincide with the expected use of funds. The intent to invest in securities with longer maturities shall be disclosed in writing to the City Council.

3. **Competitive Bidding** - It is the policy of the City to encourage competitive bidding for investment transactions that are not classified as "new issue" securities. For the purchase of non "new issue" securities and the sale of all securities at least three bidders must be contacted. However, it is understood that certain time constraints and broker portfolio limitations exist which will not accommodate the competitive bidding process. If a time or portfolio constraining condition exists, the pricing of the investment should be verified to current market conditions and documented for auditing purposes.

PERFORMANCE EVALUATION AND BENCHMARK

Investment performance is continually monitored and evaluated by the City Treasurer. The investment portfolio benchmark yield shall be the average yield on the U.S. Treasury security that most closely corresponds to the portfolio's weighted average final maturity.

PROTECTION OF SECURITIES

To protect against fraud, embezzlement, or losses caused by the collapse of an individual securities dealer:

- All securities owned by the City shall be held in safekeeping by a third party bank trust department, acting as agent for the City under the terms of a custody agreement or master repurchase agreement. All trades executed by a dealer will settle delivery vs. payment (DVP) through the City's safekeeping agent.

-or-

- All securities owned by the City shall be insured by a third party insurer and the City shall be named as insured on that policy.

Securities held in custody for the City shall be independently audited on an annual basis to verify investment holdings.

INTERNAL CONTROL

The City Treasurer is responsible for establishing and maintaining an internal control structure designed to ensure that the assets of the City are protected from loss, theft or misuse. The internal control structure shall be designed to provide reasonable assurance that these objectives are met. The concept of reasonable assurance recognizes that the cost of a control should not exceed the benefits to be derived and that the valuation of costs and benefits requires estimates and judgments by management.

If the City's investment portfolio includes more than pooled investments, an external auditor shall conduct an annual independent review to assure compliance with policies and procedures. The internal controls shall address the following points:

- Control of collusion
- Separation of transaction authority from accounting and record keeping
- Custodial safekeeping
- Avoidance of physical delivery securities
- Clear delegation of authority to subordinate staff members
- Written confirmation of transactions for investments and wire transfers
- Development of a wire transfer agreement with the lead bank and third-party custodian

INVESTMENT REPORTS

The City Treasurer shall review investments and render quarterly reports to the City Manager and City Council. These reports shall include:

- The par amount of the investment, the classification of the investment, the percentage of the total portfolio which each type of investment represents, the name of the institution or entity, the rate of interest, the maturity date, the current market value, and the source of the market value.
- A statement that the projected cash flow is adequate to meet expected obligations over the next six months.
- The weighted average maturity of the portfolio.
- The average weighted yield to maturity of the portfolio as compared to the applicable benchmark.
- Statement of compliance with the investment policy.

This report is due within 45 days of the end of the quarter. The City Manager may, at his/her discretion, require this report on a monthly basis based upon market conditions.

QUALIFIED BANKS AND BROKER/DEALERS

The City shall transact business with financial institutions that qualify as a depository of public funds in the State of California as defined in California Government Code Section 53630.5. The institution shall be a member of the FDIC and shall secure all deposits exceeding FDIC insurance coverage in accordance with California Government Code Section 53652.

All broker/dealers who desire to do business with the City shall provide the necessary information (e.g. audited financial statements, proof of state registration, proof of National Association of Securities Dealers certification, etc.) from which the City can determine their creditworthiness, the existence of any pending legal action against the firm or the individual broker as well as an understanding of the security markets that they service. To be eligible, a firm must be licensed by the State of California as a broker/dealer as defined in Section 25004 of the California Corporations Code.

The City Treasurer shall annually send a copy of the current investment policy to all financial institutions and broker/dealers approved to do business with the City. Confirmation of receipt of this policy shall be considered evidence that the dealer understands the City's investment policies and intends to sell the City only appropriate investments authorized by this investment policy.

COLLATERAL REQUIREMENTS

Collateral is required for investments in non-negotiable certificates of deposit and repurchase agreements. In order to reduce market risk, the collateral level shall be at least 102% of market

value of principal and accrued interest and marked to market weekly. Securities that are acceptable as collateral shall be the direct obligations of the United States or any agency of the United States or shall be fully guaranteed as to principal and interest by the United States or any agency of the United States.

AUTHORIZED INVESTMENTS

Investment of City funds is governed by the California Government Code Sections 53600 etc. seq. Within the context of the limitations, the following investments are authorized, as further limited herein:

1. **United States Treasury Bills, Bonds, and Notes** or those for which the full faith and credit of the United States are pledged for payment of principal and interest. There is no percentage limitation of the portfolio, which can be invested in this category, although a five-year maturity limitation is applicable.

2. **Government Sponsored Enterprises** - Obligations issued by Federal Government agencies such as the Government National Mortgage Association (GNMA), the Federal Farm Credit Bank (FFCB), the Federal Home Loan Bank (FHLB), the Federal National Mortgage Association (FNMA), the Student Loan Marketing Association (SLMA), and the Federal Home Loan Mortgage Corporation (FHLMC). There is no percentage limitation of the portfolio, which can be invested in this category, although a five-year maturity limitation is applicable.

3. **Banker's Acceptances** - Bills of exchange or time drafts drawn on and accepted by commercial banks, otherwise known as banker's acceptances, may not exceed 180 days maturity or 20% of the cost value of the portfolio. Furthermore, no more than 5% of the cost value of the portfolio may be invested in the banker's acceptances of any one commercial bank.

4. **Commercial Paper** - Commercial paper is a short-term, unsecured promissory note issued by financial and non-financial companies to raise short term cash. Up to 15% or the City's portfolio may be invested in "prime" commercial paper of the highest ranking or of the highest letter and number rating as provided by a nationally recognized statistical rating organization (Moody's or Standard and Poor's) and with maturities not to exceed 180 days. The issuer must have total assets in excess of $500 million, and have debt other than Commercial paper rated "A" or higher by two nationally recognized statistical rating organizations. The City may not hold more than 2% of a single issuer's outstanding paper.

5. **Negotiable Certificates of Deposit** -- Purchases of negotiable certificates of deposit issued by nationally or state chartered banks, state or federal savings institutions, or state-licensed branches of foreign banks may not exceed 30% of the cost value of the

portfolio. The City may not invest in an institution where a member of City Council, City management, or City Treasurer serves on the board or committee of the institution. Funds will only be invested in Certificates of Deposits that are fully insured by the Federal Deposit Insurance Corporation (FDIC) or the Federal Savings and Loan Insurance Corporation (FSLIC) in amounts up to $100,000. A maturity limitation of two years is applicable.

6. **Repurchase Agreements** - Repurchase agreements may be made on any investment authorized by this investment policy. The maturity of the repurchase agreements shall not exceed one year. The market value of the securities used as collateral for the repurchase agreements shall be monitored by the investment staff weekly and shall not be allowed to fall below 102% of the value of the repurchase agreement. A Master Repurchase agreement is required between the City and the dealer for all repurchase agreements transacted. No more than 5% of the City's investment portfolio may be invested with any one counter party, and the aggregate investment in repurchase agreements shall not exceed 10% of the City's total portfolio.

7. **Local Agency Investment Fund (LAIF)** - a State of California managed investment pool may be used up to the maximum permitted by California State Law.

8. **San Mateo County Investment Pool** - a County of San Mateo managed investment pool may be used up to the maximum of 100% of the cost value of the portfolio.

9. **Time Certificates of Deposit** - Time certificates of deposit, non- negotiable and collateralized in accordance with the California Government Code, may be purchased through banks or savings and loan associations. Since time deposits are not liquid, no more than 10% of the investment portfolio may be invested in this investment type. A maturity limitation of two years is applicable.

10. **Medium Term Corporate Notes** – defined as corporate and depository institution debt securities, with a maximum maturity of five years, may be purchased. Securities eligible for investment shall be rated AA or better by a nationally recognized securities rating organization (Moody's or Standard & Poor's). Purchase of medium term notes may not exceed 10% of the cost value of the portfolio and no more than 10% of the cost value of the portfolio may be invested in notes issued by one corporation. Commercial paper holdings should also be included when calculating the 10% limitation

11. **Money Market Mutual Funds** - Mutual funds invested in U.S. Government securities are permitted under this policy and under California Government Code Section 53601(L). All of the following criteria must also be met: (1) The fund shall have a minimum of $500 million in total portfolio value; (2) The fund shall be registered with the Securities and Exchange Commission, and shall have achieved the highest ranking or the highest letter

and numerical rating provided by not less than two nationally recognized statistical rating organizations; (3) The fund shall have retained an advisor which is registered with the SEC, or which is exempt from such registration; Investment in such funds shall not exceed 20% of the City's total portfolio; and no more than 5% of the City's total portfolio may be invested in any one mutual fund.

12. **Moneys Held By a Trustee or Fiscal Agent** - Moneys held by a trustee or fiscal agent and pledged the to the payment or security of bonds or other indebtedness obligation under a lease, installment sales or other agreement may be invested in accordance with the statutory provisions governing the issuance or defeasance of the bonds or obligation.

13. **Prohibited/Ineligible Investments** - Ineligible investments are those that are not described herein, including but not limited to, common stocks, reverse repurchase agreements, inverse floaters, range notes, mortgage derived interest only strips, derivatives securities, or any security that could result in zero interest accrual. (Sec. 53601.6)

Maximum Investment Maturity and Percentage - The following matrix of maximum maturity and percentage limits, by instrument, are established for the City's total pooled funds portfolio:

Investment Type	Maturity	Percentage
Repurchase Agreements	1 Year	0 to 100%
Local Agency Investment Fund	Upon Demand	0 to 100%
San Mateo County Investment Pool	Upon Demand	0 to 100%
U.S. Treasury Bonds/Notes/Bills	5 Years	0 to 100%
Government Sponsored Enterprises	5 Years	0 to 100%
Bankers' Acceptances	180 Days	0 to 20%
Commercial Paper	180 Days	0 to 15%
Negotiable Certificates of Deposit	2 Years	0 to 30%
Time Certificates of Deposit	2 Years	0 to 10%
Medium Term Corporate Notes	5 Years	0 to 20%
Mutual Funds/Money Market Funds	Upon Demand	0 to 20%

LEGISLATIVE CHANGES

Any State of California legislative action that further restricts allowable maturities, investment types, or percentage allocations, supersedes any and all previous applicable language in this Investment Policy.

INTEREST EARNINGS

All moneys earned and collected from investments authorized in this policy shall be allocated quarterly to various fund accounts based on the (average 13 months) cash balance in each fund as a percentage of the entire pooled portfolio.

POLICY CONSIDERATIONS

The following policy considerations apply:

1. Exemption - Any investment currently held that does not meet the guidelines of this policy shall be exempted from the requirements of this policy. At maturity or liquidation, such monies shall be reinvested only as provided by this policy.

2. Amendments - The City's investment policy shall be adopted by resolution of the City Council on an annual basis. This investment policy shall be reviewed at least annually to ensure its consistency with the overall objectives of preservation of principal, liquidity and yield, and its relevance to current law and financial and economic trends.

INVESTMENT POLICY
GLOSSARY OF TERMS

Accrued Interest - Interest earned but not yet received.

Active Deposits - Funds which are immediately required for disbursement.

Amortization - An accounting practice of gradually decreasing (increasing) an asset's book value by spreading its depreciation (accretion) over a period of time.

Arbitrage - Transactions by which securities are bought and sold in different markets at the same time for the sake of the profit arising from a yield difference in the two markets.

Asked Price - The price a broker dealer offers to sell securities.

Banker's Acceptance - A high quality, short-term money market instrument used to finance international trade. There has never been an instance of a failure to pay a banker's acceptance in full at its maturity date.

Basis Point - One basis point is one hundredth of one percent (.01).

Bid Price - The price a broker dealer offers to purchase securities.

Bond - A financial obligation for which the issuer promises to pay the bondholder a specified stream of future cash flows, including periodic interest payments and a principal repayment.

Book Value - The value at which a debt security is shown on the holder's balance sheet. Book value is acquisition cost less amortization of premium or accretion of discount.

Broker - Someone who brings buyers and sellers together and is compensated for his/her service.

Certificate of Deposit - A deposit insured up to $100,000 by the FDIC at a set rate for a specified period of time.

Collateral - Securities, evidence of deposit or pledges to secure repayment of a loan. Also refers to securities pledged by a bank to secure deposit of public moneys.

Commercial Paper - Short-term, negotiable unsecured promissory notes of corporations.

Basic Financial Statements - The official annual financial report for the City in accordance with the GASB 34 format prepared in conformity with Generally Accepted Accounting Principles (GAAP).

Coupon - The annual rate of interest that a bond's issuer promises to pay the bondholder on the bond's face value.

Credit Analysis - A critical review and appraisal of the economic and financial conditions or of the ability to meet debt obligations.

Current Yield - The interest paid on an investment expressed as a percentage of the current price of the security.

Custodian - A bank or other financial institution that keeps custody of stock certificates and other assets.

Defeased Bond Issues - Issues that have sufficient money to retire outstanding debt when due so that the agency is released from the contracts and covenants in the bond document.

Delivery vs. Payment (DVP) - Delivery of securities with a simultaneous exchange of money for the securities.

Derivative - Securities that are based on, or derived from, some underlying asset, reference date, or index.

Discount - The difference between the cost of a security and its value at maturity when quoted at lower than face value.

Diversification - Dividing investment funds among a variety of securities offering independent returns and risk profiles.

Duration - A measure of the timing of the cash flows, such as the interest payments and the principal repayment, to be received from a given fixed-income security. This calculation is based on three variables: term to maturity, coupon rate, and yield to maturity. The duration of a security is a useful indicator of its price volatility for given changes in interest rates.

Fannie Mae - Trade name for the Federal National Mortgage Association

(FNMA), a U.S. sponsored corporation.

Federal Reserve System - The central bank of the U.S. which consists of a seven-member Board of Governors, 12 regional banks and 5,700 commercial banks that are members.

Federal Deposit Insurance Corporation (FDIC) - Insurance provided to customers of a subscribing bank, which guarantees deposits to a set limit (currently $100,000) per account.

Fed Wire - A wire transmission service established by the Federal Reserve Bank to facilitate the transfer of funds through debits and credits of funds between participants within the Fed system.

Freddie Mac - Trade name for the Federal Home Loan Mortgage Corporation (FHLMC), a U.S. sponsored corporation.

Ginnie Mae - Trade name for the Government National Mortgage Association (GNMA), a direct obligation bearing the full faith and credit of the U.S. Government.

Government Accounting Standards Board (GASB) - A standard-setting body, associated with the Financial Accounting Foundation, which prescribes standard accounting practices for governmental units.

Guaranteed Investment Contracts (GICS) - An agreement acknowledging receipt of funds, for deposit, specifying terms for withdrawal, and guaranteeing a rate of interest to be paid.

Inactive Deposits - Funds not immediately needed for disbursement.

Interest Rate - The annual yield earned on an investment, expressed as a percentage.

Investment Agreements - An agreement with a financial institution to borrow public funds subject to certain negotiated terms and conditions concerning collateral, liquidity and interest rates.

Liquidity - An asset that can easily and rapidly be converted into cash without significant loss of value.

Local Agency Investment Fund (LAIF) - A pooled investment vehicle for local agencies in California sponsored by the State of California and administered by the State Treasurer.

Local Agency Investment Pool - A pooled investment vehicle, sponsored by a local agency or a group of local agencies for use by other local agencies.

Market Value - The price at which a security is trading and could presumably be purchased or sold.

Maturity - The date upon which the principal or stated value of an investment becomes due and payable.

Modified Duration - A measure of exposure to market risk of a security or a portfolio. It is the percent change in the price of a security (portfolio) or a 100 basis point change in the security's (portfolio's) yield.

Mutual Funds - An investment company that pools money and can invest in a variety of securities, including fixed-income securities and money market instruments.

Negotiable Certificate of Deposit - A large denomination certificate of deposit which can be sold in the open market prior to maturity.

New Issue - Term used when a security is originally "brought" to market.

Note - A written promise to pay a specified amount to a certain entity on demand or on a specified date.

Par Value - The amount of principal that must be paid at maturity. Also referred to as the face amount of a bond, normally quoted in $1,000 increments per bond.

Perfected Delivery - Refers to an investment where the actual security or collateral is held by an independent third-party representing the purchasing entity.

Portfolio - Combined holding of more than one stock, bond, commodity, real estate investment, cash equivalent, or other asset. The purpose of a portfolio is to reduce risk by diversification.

Primary Dealer - A group of government securities dealers that submit daily reports of market activity and security positions held to the Federal Reserve Bank of New York and are subject to its informal oversight.

Principal - The face value or par value of a debt instrument, or the amount of capital invested in a given security.

Prospectus - A legal document that must be provided to any prospective purchaser of a new securities offering registered with the SEC that typically includes information on the issuer, the issuer's business, the proposed use of proceeds, the experience of the issuer's management, and certain certified financial statements (also known as an "official statement")

Prudent Investor Standard - A standard of conduct, where a person acts with care, skill, prudence, and diligence when investing, reinvesting, purchasing, acquiring, exchanging, selling and managing funds. The test of whether the standard is being met is if a prudent person acting in a similar situation would engage in similar conduct to ensure that investments safeguard principal and maintain liquidity.

Purchase Date - The date in which a security is purchased for settlement on that or a later date.

Rate of Return - The yield obtainable on a security based on its purchase price or its current market price. This may be the amortized yield to maturity on a bond or the current income return.

Repurchase Agreement (REPO) - A transaction, where the seller agrees to buy back from the buyer (City) the securities at an agreed upon price on demand or at a specified date.

Reverse Repurchase Agreement (REVERSE REPO) - A transaction where the seller (City) agrees to buy back from the buyer the securities at an agreed upon price on demand or at a specified date.

Risk - Degree of uncertainty of return on an asset.

Rule G-37 of the Securities Rulemaking Board - Federal regulations to sever any connection between the making of political contributions and the awarding of municipal securities business.

Safekeeping Service - Offers storage and protection of assets provided by an institution serving as an agent.

Sallie Mae - Trade name for the Student Loan Marketing Association (SLMA), a

U.S. sponsored corporation.

Secondary Market - A market made for the purchase and sale of outstanding issues following the initial distribution.

Securities and Exchange Commission (SEC) - The federal agency responsible for supervising and regulating the securities industry.

Settlement Date - The date on which a trade is cleared by delivery of securities against funds.

Tax and Revenue Anticipation Notes (TRANS) - Notes issued in anticipation of receiving tax proceeds or other revenues at a future date.

Time Certificate of Deposit - A non-negotiable certificate of deposit that cannot be sold prior to maturity.

Treasury Bills (T-bills) - U.S. Treasury Bills which are short-term, direct obligations of the U.S. Government issued with original maturities of 13 weeks, 26 weeks and 52 weeks; sold in minimum amounts of $10,000 in multiples of $5,000 above the minimum. Issued in book entry form only. T-bills are sold on a discount basis.

Trustee or trust company or trust department of a bank - A financial institution with trust powers which acts in a fiduciary capacity for the benefit of the bondholders in enforcing the terms of the bond contract.

Underwriter - A dealer that purchases a new issue of municipal securities for resale.

U.S. Government Agencies - Instruments issued by various U.S. Government Agencies, most of which are secured only by the credit worthiness of the particular agency.

U.S. Treasury Obligations - Debt obligations of the United States Government sold by the Treasury Department in the forms of Bills, Notes, and Bonds. Bills are short-term obligations that mature in one year or less and are sold on the basis of a rate of discount. Notes are obligations that mature between one year and ten years. Bonds are long-term obligations that generally mature in ten years or more.

Weighted Average Maturity (WAM) - The average maturity, of all the securities that comprise a portfolio, which is typically expressed in days or years.

Yield - The rate of annual income return on an investment, expressed as a percentage. It is obtained by dividing the current dollar income by the current market price of the security.

Yield to Maturity - The rate of income return on an investment, minus any premium or plus any discount, with the adjustment spread over the period from the date of purchase to the date of maturity of the bond, expressed as a percentage.

Yield Curve - A graphic representation that shows the relationship at a given point in time between yields and maturity for bonds that are identical in every way except maturity.

CITY OF HALF MOON BAY

Master Fee Schedule

Resolution No. C-2016-09

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF HALF MOON BAY ADOPTING INFLATIONARY ADJUSTMENTS TO THE PUBLIC FACILITIES DEVELOPMENT IMPACT FEE SCHEDULES

WHEREAS, on January 19, 2016, the City Council of the City of Half Moon Bay adopted Ordinance No. C-2016-01, establishing updated Development Impact Fees for the following public facilities:

- Capital Outlay Facilities,
- Sewer Connection,
- Storm Drainage Improvements,
- Traffic Mitigation
- Park Facilities Development; and

WHEREAS, it is the City's policy that future new development should pay its fair share of public facilities and services in accordance with good fiscal management as determined by the City Council, including the increased costs of constructing public facilities; and,

WHEREAS, on December 15, 2015, the City Council held a duly noticed public hearing on the proposed update to the development impact fees with an opportunity for the public to be heard, pursuant to the provisions of Government Code §§ 66016 – 66018; and

WHEREAS, Section 14.35.040 B of the Half Moon Bay Municipal Code currently provides for the annual adjustment of the Traffic Mitigation Fee by the application of the *Engineering News Record Construction Cost Index for the San Francisco Bay Area*, the City Council of the City of Half Moon Bay desires to allow the adjustment to be applicable to all development impact fees in accordance with the same specified inflation index.

NOW THEREFORE, the City Council of the City of Half Moon Bay does hereby find, order, and resolve as follows:

SECTION 1 On July 1st of each year, beginning in July 2016, the Director of Finance, or his/her designee, shall make annual adjustments to the development impact fee schedules according to the *"Engineering News Record Construction Cost Index-20 City Annual Average for San Francisco Bay Area"* (ENR-CCI) for the preceding twelve (12) month period calculated from April 1 to March 31.

SECTION 2 The application of the inflation index does not preclude future adjustments in fees that may be warranted due to local changes in specific cost items, changes in development forecasts, or changes in future facility plans. Adjustments in the fee schedules from these factors may also be presented for consideration by the City Council.

SECTION 3 The City Council may adopt by Resolution the new schedules with the adjusted fee amounts and said adjusted fees shall become effective sixty (60) days following the adoption of the Resolution.

****

I, the undersigned, hereby certify that the forgoing Resolution was duly passed and adopted on the 19th day of January, 2016 by the City Council of Half Moon Bay by the following vote:

AYES, Councilmembers: Fraser, Kowalczyk, Muller, Penrose and Ruddock

NOES, Councilmembers:

ABSENT, Councilmembers:

ABSTAIN, Councilmembers:

ATTEST:

Jessica Blair, Interim City Clerk

APPROVED:

Rick Kowalczyk, Mayor

Resolution No. C-2019-52

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF HALF MOON BAY AUTHORIZING ADJUSTMENTS TO COST OF SERVICES SCHEDULE (USER FEES) FOR FY 2019-20

WHEREAS, the City conducted a user fee study in 2017; and

WHEREAS, based on the fee study, the City Council adopted new user fees for FY 2017-18; and

WHEREAS, City staff recommended new and refined user fees for Building, Public Works and Planning Review and Permits based on new ordinances, additional data regarding cost recovery for staff time, and adjustments for consumer price index; and

WHEREAS, the Consumer Price Index for Urban and Clerical Workers (CPI-W) was recently redefined from San Francisco-Oakland-San Jose to San Francisco-Oakland-Hayward; and

WHEREAS, the City Council held a public hearing on June 4, 2019 to consider user fee schedule amendments for Building, Public Works and Planning Review and Permits.

NOW, THEREFORE, BE IT RESOLVED THAT:

1. The City Council of the City of Half Moon Bay approves the updated user fee schedule as presented in Exhibit A; and
2. New and increased fees shall take effect on August 5, 2019.

****

I, the undersigned, hereby certify that the foregoing Resolution was duly passed and adopted on the 4th day of June 2019 by the City Council of Half Moon Bay by the following vote:

AYES, Councilmembers: BROWNSTONE, PENROSE, RUDDOCK, EISEN, AND RARBACK

NOES, Councilmembers:

ABSENT, Councilmembers:

ABSTAIN, Councilmembers:

ATTEST:

Jessica Blair, City Clerk

APPROVED:

Harvey Rarback, Mayor

Master Fee Schedule

The City's Master Fee schedule includes Developer Impact Fees and User Fees which are allowed to be imposed under State law. The Cost Allocation Plan (CAP), most recently completed in 2015, included an overall cost of service analysis from which both the Developer Impact and User Fees were established. The CAP ensures that the City is able to accurately account for the actual cost of providing programs and services by establishing fully-burdened hourly rates for staff, including direct, indirect and overhead costs; as well as for facilities. These rates are a foundation for all fees and ensure that recoverable fees for each service are complete, clearly defined and identified. The City evaluates the CAP each year and anticipates an update of the CAP within the next two to three years.

In 2016, the Developer Impact Fees were updated to establish appropriate fees address the cost of new development on certain facilities and infrastructure. In order to charge Developer Impact Fees, jurisdictions must prepare nexus studies, which the City completed in 2015. Nexus studies quantify the amount of services and infrastructure that new development will use. Developer Impact Fees are then set as established through the nexus study and incorporate the City's actual cost to provide the services and infrastructure based on the CAP, Capital Improvement Program, and other cost factors. Developer Impact Fees are evaluated annually and are planned to be updated within the next two to three years.

User Fees include Administration, Public Safety, and development review fees including building, public works/engineering and planning permits. Following the CAP, the City's User Fees were comprehensively updated and went into effect in July 2017. User Fees include both flat fees and deposits. Flat fees are set to align with the anticipated and typical cost to provide a specified service based on the CAP fully-burdened hourly rates. Flat fees are appropriate for smaller-scale or more typical services. For more variable services, such as those associated with development review, a deposit approach provides the City with a means to charge an applicant for actual time spent to process an application and to more accurately track City consultant related direct costs. With this budget, the User Fees are refined. In some cases, flat fees are reclassified as deposits, and vice versa. New fees and deposits are established for new services and to reflect on changed processing requirements.

The Master Fee Schedule is updated annually. All fees, excluding Development Impact Fees and Public Safety, are increased annually pursuant to the annual average of the Consumer Price Index for Urban and Clerical Workers (CPI-W). (Note that CPI-W regions were recently redefined. For 2019 for the San Francisco-Oakland-Hayward region is applicable; in prior years, the CPI-W area was San Francisco-Oakland-San Jose.) Development Impact Fees are increased annually by the applicable regional annual average of the Engineering News Record - Construction Cost Index (CCI).

City of Half Moon Bay
Master Fee Schedule
Other Fees, Charges & Services

Fees are increased annually by the annual average CPI-W San Francisco-Oakland-Hayward of the previous year (excluding Development Impact Fees and Public Safety)

SERVICES	FY 19-20 AMOUNT	UNIT / TYPE
I. ADMINISTRATION		
1 Returned Check Fee		
1 First Item	$25.00	Each
2 Each Additional Item	$38.00	Each
2 Duplication		
1 Photocopies	$0.11	Per page
2 Municipal Code Book	Available online	Per book
3 Bound Reports	Actual Cost	Per report
4 Budget	Available online	Each
5 Comprehensive Annual Financial Report (CAFR)	Available online	Each
6 CD Disc of City Council / Planning Commission	Available online	Each
3 Agenda Indexes for Meetings	$0.00	
4 City Clerk		
Election Filing Fee	$25.00	Each
Candidate Printing Fee	Determined per election	Deposit
5 Staff Research		
1 City Manager's Office	$60.00	Per 0.25 hour
2 Finance Department	$50.00	Per 0.25 hour
3 City Clerk's Office	$47.00	Per 0.25 hour
4 Planning Department	$58.00	Per 0.25 hour
5 Building Department	$42.00	Per 0.25 hour
6 Public Works Department - Engineering	$51.00	Per 0.25 hour
7 Public Works Department - Maintenance	$43.00	Per 0.25 hour
8 Police - Sworn	$59.00	Per 0.25 hour
9 Police - Non Sworn	$21.00	Per 0.25 hour
6 Private Alarm Permits (Chapter 9.10)		
1 Alarm Permit	$52.00	Each
2 False Alarm Response with Permit		
1st & 2nd Alarms	$0.00	No fee
3rd Alarm	$52.00	Each
4th Alarm	$107.00	Each
5th Alarm	$161.00	Each
6th Alarm and responses thereafter	$215.00	Each
3 False Alarm without Permit		
1st & 2nd Alarms	$52.00	Each
3rd Alarm	$107.00	Each
4th Alarm	$134.00	Each
5th Alarm	$188.00	Each
6th Alarm and responses thereafter	$269.00	Each
7 Film Permit (Chapter 9.74)	$553.00	Per day
8 Special Event Permits [1]		
1 Block Parties	$215.00	Per event
2 Fund Raisers	$215.00	Per event
3 Miscellaneous Events	$430.00	Per event
4 Carnival/Circus/Parade/Race/Rodeo, etc.	$430.00	Each
5 Amusement Concession	$430.00	Each
9 Poplar Beach Parking [1]		
Vehicles less than 20 feet	$2.00 / $10.00	Per hour / Per day
Horse trailers and vehicles longer than 20 feet	$3.00 / $15.00	Per hour / Per day
Yearly Permit - Half Moon Bay Residents only	$103.00	Per year (prorated quarterly)
10 BID Administration for City Hotels	$577.00	Per month (all hotels)
11 Street Closure	Actual cost	

[1] *Fees may be waived by the City Manager for NPDES related volunteer events*

II. BUILDING [2] [3]		
0 Building Hourly Rates	$174.00	Per hour
Inspections outside of normal business hours, per hour	1.5 x hourly rate	Per hour
Inspection on Sundays and Holidays, per hour	2 x hourly rate	Per hour
Reinspection fees, per hour	Hourly rate	Per hour
Inspection for which no fee is specifically indicated, per hour	Hourly rate	Per hour
1 Building Permit Fee for Alterations, Additions, and New Construction (based on valuation of improvement)		
Valuation ($)		
0 - 500 (Includes basic water heater and furnance replacements)	$174.00	Per hour

City of Half Moon Bay
Master Fee Schedule
Other Fees, Charges & Services

Fees are increased annually by the annual average CPI-W San Francisco-Oakland-Hayward of the previous year (excluding Development Impact Fees and Public Safety)

SERVICES	FY 19-20 AMOUNT	UNIT / TYPE
501 - 2,000		
First 500	$227.00	Valuation
Each Additional 100 or fraction thereof	$11.00	
2,001 - 25,000		
First 2,000	$420.00	Valuation
Each Additional 1,000 or fraction thereof	$1.00	
25,001 - 50,000		
First 25,000	$473.00	Valuation
Each Additional 1,000 or fraction thereof	$5.00	
50,001 - 100,000		
First 50,000	$631.00	Valuation
Each Additional 1,000 or fraction thereof	$3.00	
100,000 - 500,000		
First 100,000	$789.00	Valuation
Each Additional 1,000 or fraction thereof	$3.00	
500,001 - 1,000,000		
First 500,000	$2,109.00	Valuation
Each Additional 1,000 or fraction thereof	$5.00	
1,000,001 and above		
First 1,000,000	$5,062.00	Valuation
Each Additional 1,000 or fraction thereof	$5.27	
2 Building Plan Check Fee	65% of Building Permit Fee	
Miscellaneous Plan Review	$174.00	Per hour
Plan Revision	$174.00	Per hour
Fee for 4th review onwards-charged on hourly basis	$174.00	Per hour
Electronic submittal fee	$2/drawing sheet and $5.29 flat fee for supporting documents	Each
3 Miscellaneous Permit		
1 Demolition	$348.00	Up To 2 hours
2 Solar	$174.00	Per hour
Residential		
0-15kW	$174.00	Per hour
Above 15kW		
First 15kW	$174.00	Per hour
Each Additional kW or fraction thereof	$87.00	Per 0.5 hour
Commercial		
0-50 kW	$262.00	Per 1.5 hour
51-250 kW		
First 50kW	$262.00	
Each Additional kW or fraction thereof	$87.00	Per 0.5 hour
Above 205kW		
First 50kW	$262.00	Per 1.5 hour
Each Additional kW or fraction thereof	$87.00	Per 0.5 hour
3 Permit Fees for Work Without A Valid Permit	2 X Permit Fee	Fine / Penalty
4 Business License Inspection	$87.00	Per 0.5 hour
5 Address Assignment	$174.00	Per hour
4 Other Inspections and Fees		
Pre-Site Inspection	Per building hourly rate	Per hour
Re-Inspections	Per building hourly rate	Per hour
Reinspection fees	Per building hourly rate	Per hour
Inspection for which no fee is specifically indicated, per hour	Per building hourly rate	Per hour
Inspections outside of normal business hours, per hour	Per building hourly rate	Per hour
General Plan Fee	0.25%	Valuation
5 Refund (Update Refund Policy)	$87.00	Per 0.5 hour
6 Special Structural Inspection Fee	$211.00	Deposit to be determined by Public Works Director at time of application. Per Public Works hourly rate
7 Electrical Permit		
Permit Issuance		
For issuing each permit	$41.00	Each
For issuing each supplemental permit for which the original permit has not expired, been canceled or finaled	$41.00	Each
New Residential Buildings		

City of Half Moon Bay
Master Fee Schedule
Other Fees, Charges & Services

Fees are increased annually by the annual average CPI-W San Francisco-Oakland-Hayward of the previous year (excluding Development Impact Fees and Public Safety)

SERVICES	FY 19-20 AMOUNT	UNIT / TYPE
For new multifamily residential buildings (apartments and condominiums) having three or more living units, including the area of garages, carports, and other non-commercial automobile storage areas constructed at the same time, per square foot	$13.00	Per 100 square foot
For new single and two-family residential buildings, including the area of garages, carports and other minor accessory buildings constructed at the same time, per square foot	$13.00	Per 100 square foot
For other types of residential occupancies and alteration, and modifications to existing residential buildings, use the UNIT FEE SCHEDULE	See Unit Fee Schedule Below	
Private Swimming Pools		
For new private, residential, in-ground swimming pools for single family/multi-family occupancies, including a complete system of necessary branch circuit wiring, bonding, grounding, underwater lighting, water pumping, and other similar electrical equipment directly related to the operation of a swimming pool, each pool	$19.00	Each
Carnivals and Circuses		
Carnivals, circuses, or other traveling shows or exhibitions utilizing transportable-type rides, booths, displays and attractions:		
For electrical generators and electrically driven rides, each	$35.00	Each
For mechanically driven rides and walk-through attractions or displays having electric lighting, each	$6.00	Each
For a system of area and booth lighting, each	$6.00	Each
For permanently installed rides, booths, displays and attractions, use the UNIT FEE SCHEDULE	See Unit Fee Schedule Below	
Temporary Power Services		
For a temporary service power pole or pedestal including all pole or pedestal-mounted receptacle outlets and appurtenances, each	$19.00	Each
For a temporary distribution system and temporary lighting and receptacle outlets for construction sites, decorative light, Christmas tree sales lots, fireworks stands, etc., each	$19.00	Each
Receptable, Switch and Lighting Outlets		
For receptacle, switch, lighting, or other outlets at which current is used or controlled (except services, feeders, and meters):		
First 20 fixtures, each	$1.41	Each
Additional fixtures, each	$0.28	Each
For lighting fixtures, sockets, or other lamp-holding devices:		
First 20 fixtures, each	$1.41	Each
Additional fixtures, each	$1.41	Each
For pole or platform-mounted lighting fixtures	$25.00	Each
For theatrical-type lighting fixtures or assemblies	$25.00	Each
Residential Appliances		
For fixed residential appliances or receptacle outlets for same, including wall-mounted electrical ovens; counter-mounted cooking tops; electric ranges; self-contained room, console, or through wall air conditioners; space heaters; food waste grinders; dishwashers; washing machines; water heaters; clothes dryers; or other motor-operated appliance not exceeding one horsepower (HP) in rating	$3.00	Each
Non-Residential Appliances		
For residential appliances and self-contained factory-wired non-residential appliances not exceeding one horsepower (HP), kilowatt (KW), or kilovolt ampere (KVA) in rating, including medical or dental devices; food, beverage, and ice cream cabinets; illuminated show cases; drinking fountains; vending machines; laundry machines; or other similar types of equipment	$3.00	Each
Busways		
For trolley and plug-in-type busways, each 100 feet or fraction thereof **Note**: An additional fee is required for lighting fixtures, motors and other appliances that are connected to trolley and plug-in-type busways. A fee is not required for portable tools.	$25.00	Each 100 ft or fraction thereof
Power Apparatus		

SERVICES	FY 19-20 AMOUNT	UNIT / TYPE
For motors, generators, transformers, rectifiers, synchronous converters, capacitors, industrial heating, air conditioners and heat pumps, cooking or baking equipment and other apparatus, as follows (Rating in Horsepower (HP), kilowatts (KW), kilovolt-amperes (KVA), or kilo-volt-amperes-reactive (KVAR):		
Up to and including 1	$13.00	Each
Over 1 and not over 10	$13.00	Each
Over 10 and not over 50	$25.00	Each
Over 50 and not over 100	$25.00	Each
Over 100	$55.00	Each
Signs, Outline Lighting and Marquees		
For signs, outline lighting systems or marquees supplied from one branch circuit	$13.00	Each
For additional branch circuits within the same sign, outline lighting system or marquee	$13.00	Each
Services		
For services of 600 volts or less and no over 200 amperes in rating	$13.00	Each
For services of 600 volts or less and not over 200 amperes to 1,000 amperes in rating	$13.00	Each
For services over 600 volts or over 1,000 amperes in rating	$19.00	Each
Miscellaneous Apparatus, Conduits and Conductors		
For electrical apparatus, conduits and conductors for which a permit is required but for which no fee is herein set forth	$25.00	Each
Other Inspection and Fees	Per building hourly rate	Per hour
8 Mechanical Permit		
Permit Issuance		
For issuing each permit	$41.00	Each
For issuing each supplemental permit for which the original permit has not expired, been canceled or finaled	$41.00	Each
Furnaces		
For the installation or relocation of each forced-air or gravity-type furnace or burner, including ducts, and vents attached to such appliances, up to and including 100,000 Btu/h	$13.00	Each
For the installation or relocation of each forced-air or gravity-type furnace or burner, including ducts, and vents attached to such appliances over 100,000 Btu/h	$13.00	Each
For the installation or relocation of each floor furnace, including vent	$13.00	Each
For the installation or relocation of each suspended heater, recessed wall heater or floor-mounted heater	$13.00	Each
Appliance Vents		
For the installation, relocation or replacement of each appliance vent installed and not included in an appliance permit	$13.00	Each
Repairs or Additions		
For the repair of, alteration of, or addition to each heating appliance, refrigeration unit, cooling unit, absorption unit, or each heating, cooling, absorption, or evaporative cooling system, including installation of controls regulated by the Code	$19.00	Each
Boilers, Compressors and Absorption Systems		
For the installation or relocation of each boiler or compressor up to and including three horsepower, or each absorption system up to and including 100,000 Btu/h	$42.00	Each
For the installation or relocation of each boiler or compressor over three horsepower, up to and including 15 horsepower, or each absorption system over 100,000 Btu/h to and including 500,000 Btu/h	$42.00	Each
For the installation or relocation of each boiler or compressor over 15 horsepower, up to and including 30 horsepower, or each absorption system over 500,000 Btu/h to and including 1,000,000 Btu/h	$42.00	Each
For the installation or relocation of each boiler or compressor over 30 horsepower to and including 50 horsepower, or for each absorption system over 1,000,000 Btu/h to and including 1,750,000 Btu/h	$87.00	Each
Air Handlers		
For each air-handling unit to and including 10,000 cubic feet per minute, including ducts attached thereto	$13.00	Each
For each air-handling unit over 10,000 cfm	$25.00	Each

City of Half Moon Bay
Master Fee Schedule
Other Fees, Charges & Services

Fees are increased annually by the annual average CPI-W San Francisco-Oakland-Hayward of the previous year (excluding Development Impact Fees and Public Safety)

SERVICES	FY 19-20 AMOUNT	UNIT / TYPE
Evaporative Coolers		
For each evaporative cooler other than portable type	$13.00	Each
Ventilation and Exhaust		
For each ventilation fan connected to a single duct	$13.00	Each
For each ventilation system which is not a portion of any heating or air-conditioning system authorized by a permit	$13.00	Each
For the installation of each hood which is served by mechanical exhaust, including the ducts for such hood	$13.00	Each
Incinerators		
For the installation or relocation of each domestic-type incinerator	$25.00	Each
For the installation or relocation of each commercial or industrial-type incinerator	$25.00	Each
Miscellaneous		
For each appliance or piece of equipment regulated by the Mechanical Code but not classed in other appliance categories, or for which no other fee is listed in the table	$13.00	Each
9 Plumbing Permit		
Permit Issuance		
For issuing each permit	$41.00	Each
For issuing each supplemental permit for which the original permit has not expired, been canceled or finaled	$41.00	Each
Fixtures and Vents		
For each plumbing fixture or trap or set of fixtures on one trap (including water, drainage piping and backflow protection therefore)	$13.00	Each
For each repair or alteration of drainage or vent piping, each fixture	$13.00	Each
Sewers, Disposal Systems and Interceptors		
For each building sewer and each trailer park sewer	$25.00	Each
Rainwater systems-per drain (inside building)	$13.00	Each
For each cesspool (where permitted)	$13.00	Each
For each private sewage disposal system	$19.00	Each
For each industrial waste pretreatment interceptor including its trap and vent, except kitchen-type grease interceptors functioning as fixture traps	$19.00	Each
Gas Piping Systems		
For each gas-piping system of one to five outlets	$13.00	Each
For each additional gas piping system outlet, per outlet	$2.00	Each
Water Piping and Water Heaters		
For installation, alteration, or repair of water piping or water-treating equipment, or both, each	$13.00	Each
For each water heater and/or vent	$3.00	Each
Lawn Sprinklers, Vacuum Breakers & Backflow Protection Devices		
For each lawn sprinkler system or any one meter, including backflow protection devices thereof	$13.00	Each
For atmospheric-type vacuum breakers or backflow protection devices not included above:		
1 to 5	$3.00	Each
Over 5, each	$2.00	Each
For each backflow protective device other than atmospheric type vacuum breakers:		
2 inch diameter and smaller	$6.00	Each
over 2 inch diameter	$13.00	Each
Swimming Pools		
Public Pool	$41.00	Each
Public Spa	$25.00	Each
Private Pool	$41.00	Each
Private Spa (pre-manufactured)	$6.00	Per valuation
Private Spa (custom built)	$25.00	Each
Miscellaneous		
For each appliance or piece of equipment regulated by the Plumbing Code but not classed in other appliance categories, or for which no other fee is listed in this code	$13.00	Each
Other Inspection and Fees	Per building hourly rate	Per hour

[2] *The General Plan fee will be applied to all residential/commercial/industrial new construction and/or addition permits. The fee will be 0.25% ($2.50/$1000) of the valuation of the construction/addition.*
[3] *Permit fees for work done without a valid permit are 2x the applicable permit fee*

City of Half Moon Bay
Master Fee Schedule
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Fees are increased annually by the annual average CPI-W San Francisco-Oakland-Hayward of the previous year (excluding Development Impact Fees and Public Safety)

SERVICES	FY 19-20 AMOUNT	UNIT / TYPE
III. PUBLIC WORKS [4] [5]		
0 Public Works Hourly Rate	$211.00	Hourly rate
1 Public Improvement Plan Check Fee (including grading)		
Valuation ($)		
$10,000	$853.00	Flat fee
Each additional $1,000 or fraction thereof	$41.00	Flat fee
$100,000	$4,691.00	Flat fee
Each additional $1,000 or fraction thereof	$35.00	Flat fee
$500,000	$18,983.00	Flat fee
Each additional $1,000 or fraction thereof	$37.00	Flat fee
2 Construction Inspection		
Valuation ($)		
$10,000	$853.00	Flat fee
Each additional $1,000 or fraction thereof	$69.00	Flat fee
$100,000	$7,251.00	Flat fee
Each additional $1,000 or fraction thereof	$55.00	Flat fee
$500,000	$30,075.00	Flat fee
Each additional $1,000 or fraction thereof	$59.00	Flat fee
3 Final Map Review		
Parcel Map (Up to 4)	$6,569.00	Deposit
Tract Map (Up to 5)	$8,211.00	Deposit
4 Subdivision Improvement Agreement Review	$3,269.00	Deposit
5 Encroachment Permits Plan Review & Inspection		
Spot Repair (I.e. water leaks, pothole patches)	$425.00	Flat Fee
Excavation/Restoration less that 100 LF	$853.00	Flat Fee
Excavation/Restoration 100 LF or greater	$853.00	Flat Fee
each additional 100 LF	$425.00	Flat Fee
Curb, gutter, sidewalk, or driveway less that 100 LF	$853.00	Flat Fee
Curb, gutter, sidewalk, or driveway 100 LF or greater	$853.00	Flat Fee
each additional 100 LF	$425.00	Flat Fee
Sewer connections, repair or extension 100 LF or less	$853.00	Flat Fee
Storm Drain connection, repair or extension 100 LF or Greater	$853.00	Flat Fee
each additional 100 LF	$425.00	Flat Fee
Storm Drain connection, repair or extension <100 LF	$853.00	Flat Fee
each additional 100 LF	$425.00	Flat Fee
Storm Drain connection, repair or extension >100 LF	$853.00	Flat Fee
each additional 100 LF	$425.00	Flat Fee
Unpermitted encroachments	1.5 x fee	Fine / Penalty
Monitoring Wells	$425.00	Flat Fee
Permit Time Extension	$105.00	Flat Fee
6 Public Right-of-Way/Easement Encroachment (Temporay)	$211.00	Flat fee
7 Deferred Improvement Agreement Review	$425.00	Flat fee
8 Grading Permits Plan Review and Inspection [3]		
Grading changes 50-1,000 CY	$853.00	Flat fee
Grading changes >1,000 CY	$853.00	Flat fee
Additional 100 CY over 1000	$211.00	Flat fee
9 Sewer Connections		
Transfer of Uninstalled Capacity Fee	$425.00	Flat fee
10 Supporting to Planning		
1 Pre-Entitlement Processing		
Pre-Application Review	$211.00	Deposit
Pre-Application: Commercial Cannabis Business Review	$211.00	Deposit
2 Coastal Development Permit Processing		
Coastal Development Permit Exemption	$211.00	Flat Fee
Single Family Residential	$821.00	Deposit
Accessory Dwelling Unit - New Development	$422.00	Flat Fee
Multiple Family Residential	$1,642.00	Deposit
Commercial / Mixed Use	$1,642.00	Deposit
Industrial / Institutional	$1,642.00	Deposit
Other Development		
Community Development Director	$821.00	Deposit
Planning Commission	$1,642.00	Deposit

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SERVICES	FY 19-20 AMOUNT	UNIT / TYPE
Amendments		
Minor Amendments	$211.00	Flat fee
Major Amendments	$1,642.00	Deposit
3 Environmental Clearance Processing		
CEQA/NEPA Environmental Clearance		
Negative Declaration	$821.00	Deposit
EIR	$1,642.00	Deposit
4 Entitlement Processing		
Commercial Cannabis Business License	$1,642.00	Deposit
Use Permit	$821.00	Deposit
Variance / Exception Planning Commission	$821.00	Deposit
Exception/Community Development Director	$821.00	Deposit
Zoning, LCP, and GP Amendments		
LCP/GP	$821.00	Deposit
IP/Rezoning	$821.00	Deposit
Planned Unit Development Specific Plan	$821.00	Deposit
Planned Unit Development Specific Plan Amendment	$821.00	Deposit
Planned Unit Development Precise Plan	$821.00	Deposit
Planned Unit Development Precise Plan Amendment	$821.00	Deposit
Annexation/Prezoning	$821.00	Deposit
Land Division and Merger		
Certificate of Compliance	$821.00	Deposit
Lot Merger	$410.00	Deposit
Lot Line Adjustment	$821.00	Deposit
Parcel Map (four or fewer lots)	$1,642.00	Deposit
Tentative Subdivision Map	$3,285.00	Deposit
Subdivision Agreement	$0.00	No Fee
Time Extension	$821.00	Deposit
Community Development Director Review	$204.00	Deposit
11 Building Plan Review / Support		
1 Minor Residential improvement	$211.00	Flat fee
2 TI or Addition of s.f	$425.00	Flat fee
3 New SFD	$425.00	Flat fee
4 New Multifamily or Commercial	$1,064.00	Flat fee

[3] *Permit fees for work done without a valid permit are 2x the applicable permit fee*

[4] *Construction activities during October through April shall require Storm Water Pollution Prevention plans, measures and fees.*

[5] *For deposit accounts, total cost equal to 100% of staff and/or consultant time and materials*

IV. DEVELOPER IMPACT FEES[6]		
1 Single Family		
1 Sewer Connection - Assessment District Participant	$4,950.00	Per dwelling unit
Sewer Connection - Assessment District Non-Participant	$17,599.00	Each SFRE***
2 SMIP Residential*	$0.00	$100,000 Valuation
SMIP Commercial*	$0.00	$100,000 Valuation
3 BSRF (Bldg. Stndrds Admin Spec Revolving Fnd)**		
$1 - 25,000	$1.00	Valuation
$25,001 - 50,000	$2.00	Valuation
$50,001 - 75,000	$3.00	Valuation
$75,001 - 100,000	$4.00	Valuation
Every $25,000 or fraction above $100,000	$1.00	Valuation
4 Storm Drainage	$754.00	Per dwelling unit
5 Capital Outlay Facilities	$1,069.00	Per dwelling unit
6 Traffic Mitigation	$6,965.00	Per dwelling unit
7 Park Facilities	$7,864.00	Per dwelling unit
2 Development Fees; Multi-Family / Commercial		
1 Sewer Connections		
Multi-Family	$4,158.00	Per dwelling unit
Mobile Home	$3,118.00	Per dwelling unit
Office	$1,336.00	Per 1,000 square feet
Commercial/Retail	$1,929.00	Per 1,000 square feet
Lodging	$1,929.00	Per room
Industrial	$1,929.00	Per 1,000 square feet
Sewer Connection - Assessment District Non-Participant	$17,599.00	Each SFRE***

City of Half Moon Bay
Master Fee Schedule
Other Fees, Charges & Services

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SERVICES	FY 19-20 AMOUNT	UNIT / TYPE
2 SMIP Residential*	Per formula	Valuation over $3,850, the fee is $13 per $100,000 permit valuation
SMIP Commercial*	Per formula	Valuation over $1,786, the fee is $28 per $100,000 permit valuation
SMIP Flat Fee*	Per formula	Residential permits under $3,850 and Commerical permits under $1,786, fee is $.50
3 BSRF (Bldg. Stndrds Admin Spec Revolving Fnd)**	*According to Chapter 719, Statutes of 2008 (Senate Bill No. 1473)*	
$1 - 25,000	$1.00	Valuation
$25,001 - 50,000	$2.00	Valuation
$50,001 - 75,000	$3.00	Valuation
$75,001 - 100,000	$4.00	Valuation
Every $25,000 or fraction thereof above $100,000	$1.00	Valuation
4 Storm Drainage		
Multi-Family	$298.00	Per dwelling unit
Mobile Home	$0.00	Per dwelling unit
Office	$637.00	Per 1,000 square feet
Commercial/Retail	$460.00	Per 1,000 square feet
Lodging	$0.00	Per room
Industrial	$318.00	Per 1,000 square feet
5 Capital Outlay		
Multi-Family	$891.00	Per dwelling unit
Mobile Home	$676.00	Per dwelling unit
Office	$341.00	Per 1,000 square feet
Commercial/Retail	$188.00	Per 1,000 square feet
Lodging	$24.00	Per room
Industrial	$170.00	Per 1,000 square feet
6 Traffic Mitigation		
Multi-Family	$3,799.00	Per dwelling unit
Mobile Home	$3,595.00	Per dwelling unit
Office	$4,366.00	Per 1,000 square feet
Commercial/Retail	$7,316.00	Per 1,000 square feet
Lodging	$2,318.00	Per room
Industrial	$3,550.00	Per 1,000 Square Feet
7 Park Facility Fee		
Multi-Family	$6,553.00	Per dwelling unit
Mobile Home	$4,980.00	Per dwelling unit
3 Development Fees - Residential Subdivision Fees Only		
Park Dedication	Per Chapter 17.48 of Municipal Code	

[6] *Fees increase annually by the applicable regional annual average of the Engineering News Record - Construction Cost Index*

** Strong Motion Instrumentation Program Fees Set According to State of CA Dept of Conservation Rates*

*** Fees Set According to Chapter 719, Statutes of 2008 (Senate Bill No. 1473)*

**** Single Family Residential Equivalent. See Chapter 13.36.080 Section C. for Commercial, Professional and Institutional Calculation of Connection Charge.*

V. PLANNING[5]		
0 Planning Hourly Rate	$232.00	Per hour
1 Pre-Entitlement Processing		
1 Pre-Application Review	$1,553.00	Deposit
2 Pre-Application Commercial Cannabis Business	$1,553.00	Deposit
3 Measure 'D'		
Accessory Dwelling Unit	$0.00	No fee
Single Allocation	$585.00	Flat fee
Phasing Agreement	$2,261.00	Deposit
2 Coastal Development Permit Processing		
1 Coastal Development Permit Exemption	$451.00	Deposit
2 Single Family Residential		
<= 3,000 square feet	$2,251.00	Deposit
> 3,000 square feet	$2,894.00	Deposit
3 Accessory Dwelling Unit - New Development	$580.00	Flat fee
4 Multiple Family Residential		
>= Four dwelling units	$3,323.00	Deposit
< Four dwelling units	$5,575.00	Deposit
5 Commercial / Mixed Use		
<= 10,000 square feet	$3,323.00	Deposit

City of Half Moon Bay
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Other Fees, Charges & Services

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SERVICES	FY 19-20 AMOUNT	UNIT / TYPE
> 10,000 square feet	$5,575.00	Deposit
6 Industrial / Institutional		
<= 20,000 square feet	$3,323.00	Deposit
> 20,000 square feet	$5,575.00	Deposit
7 Other Development		
Community Development Director	$2,465.00	Deposit
Planning Commission	$3,162.00	Deposit
8 Amendments		
Minor Amendment	$449.00	Flat fee
Major Amendments	$2,465.00	Deposit
3 Environmental Clearance Processing		
1 CEQA/NEPA Environmental Clearance		
Negative Declaration	$4,502.00	Deposit
EIR	$10,131.00	Deposit
2 Notice of Exemption	$232.00	Flat fee
4 Design Review Processing		
1 Architectural, Landscape, and Site Plan Review	$669.00	Deposit
5 Entitlement Processing		
1 Home Occupation	$116.00	Flat fee
2 Commercial Cannabis Business License	$5,371.00	Deposit
3 Use Permit	$1,018.00	Deposit
4 Variance / Exception Planning Commission	$1,018.00	Deposit
5 Exception and Community Development Director	$449.00	Deposit
6 Zoning, LCP, and GP Amendments		
LCP/GP	$15,814.00	Deposit
IP/Rezoning	$15,814.00	Deposit
Planned Unit Development Specific Plan	$15,814.00	Deposit
Planned Unit Development Specific Plan Amendment	$7,880.00	Deposit
Planned Unit Development Precise Plan	$7,880.00	Deposit
Planned Unit Development Precise Plan Amendment	$4,074.00	Deposit
Annexation/Prezoning	$15,814.00	Deposit
6 Appeals	*Half the original fee if applicable. No appeal fee if the City is the applicant.*	
Filling Fee - Outside CCC Aplleals Jurisdiction	$232.00	Flat fee
Filling Fee - Within CCC Aplleals Jurisdiction	$0.00	No fee
Processing Fee - Paid by developer	$3,376.00	Deposit
7 Land Division and Merger		
Certificate of Compliance	$2,036.00	Deposit
Lot Merger	$899.00	Deposit
Lot Line Adjustment	$2,036.00	Deposit
Parcel Map (four or fewer lots)	$4,074.00	Deposit
Tentative Subdivision Map	$11,258.00	Deposit
Subdivision Agreement	$4,502.00	Deposit
Time Extension	$2,036.00	Deposit
8 Sign Permit		
Community Development Director Review	$177.00	Flat fee
Planning Commission Review	$1,018.00	Deposit
Exceptions Planning Commission Review	$1,018.00	Deposit
9 Other Services		
Zoning Compliance Letter	$232.00	Flat fee
Public Convenience & Necessity Letter	$232.00	Flat fee
Water Transfer Letter	$232.00	Flat fee
10 Tree Removal Review		
Up to 5 trees	$294.00	Flat Fee
More than 5 trees	$508.00	Deposit
11 Mobile Food Vendor Permit	$232.00	Flat fee
12 Sound Amplification Permit	$232.00	Flat fee
13 Fees Required by other Agencies [7]		
1 California Department of Fish and Wildlife	Fee required to review various environmental documents	Per agency schedule
2 Local Agency Formation Commission (LAFCo)	Annexation fees vary by acrage	Per agency schedule
3 San Mateo County Recorder	Fee required to record and/or post various documents	Per agency schedule

[5] *For deposit accounts, total cost equal to 100% of staff and/or consultant time and materials*

City of Half Moon Bay
Master Fee Schedule
Other Fees, Charges & Services

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SERVICES	FY 19-20 AMOUNT	UNIT / TYPE
[7] *Fees charged by these agencies are in addition to fees charged by the City*		
VI. ADMINISTRATIVE CITATION PENALTIES		
1 Violations of Municipal Code other than building or safety provisions		
1 First Violation	$100.00	Each
2 Second Violation within one calendar year	$200.00	Each
3 Third or subsequent violations within one calendar year	$500.00	Each
2 Violations of building or safety provisions of the Municipal Code		
1 First Violation	$100.00	Each
2 Second Violation within one calendar year	$500.00	Each
3 Third or subsequent violations within one calendar year	$1,000.00	Each
VII. PARKS AND RECREATION		
1 Violations of Municipal Code other than building or safety provisions		
1 First Violation	$100.00	Each
2 Second Violation within one calendar year	$200.00	Each
3 Third or subsequent violations within one calendar year	$500.00	Each
2 Violations of building or safety provisions of the Municipal Code		
1 First Violation	$100.00	Each
2 Second Violation within one calendar year	$500.00	Each
3 Third or subsequent violations within one calendar year	$1,000.00	Each
VIII. PUBLIC SAFETY		
1 Duplication		
1 Public Safety Reports	$10.00	Each
2 Photo Reproduction	$20.00	Each
3 Audio Tape/CD Reproduction	$20.00	Per tape / CD cisc
4 Audio Tape Reproduction	$20.00	Per tape / CD cisc
2 Licensing		
1 Bingo Establishment Processing (Chapter 3.94)		
Bingo Establishment	$134.00	Each
Renewal	$134.00	Each per year
2 Fortune Telling (Chapter 3.95)		
New Business	$668.00	Each
Renewal	$134.00	Each per year
New Tech.	$668.00	Each
Renewal Tech	$134.00	Each per year
3 Massage Establishments (Chapter 3.88)		
New Business	$668.00	Each
Renewal	$134.00	Each per year
Transfer	$668.00	Each
Reinstatement - "grandfather" existing practitioners prior to Jan 1, 2015	$286.00	Each
New Tech.	$0.00	No fee
Renewal (Tech)	$0.00	No fee
Reinstatement (Tech)	$0.00	No fee
4 Secondhand Dealers		
New Dealers	$134.00	Each
Renewal	$134.00	Each per year
5 Solicitor / Peddler		
New Applicant	$668.00	Each
Annual Renewal	$134.00	Each per year
3 Miscellaneous Fees		
1 Public Safety Service Fees		
Public Dance	$42.00	Each
Deputy / Sergeant / Reserve / Community Service Officer	$232.00	Per hour
2 Vehicle Release	$95.00	Per vehicle
Repossession Release	$15.00	Per vehicle
3 Clearance/Special Letters	$42.00	Each
4 Illegal Sign Confiscation	$173.00	Per incidence
5 Illegal Fireworks Confiscation	$173.00	Per citation
4 Parking Fees		
1 Nighttime Permit Parking Program (Miramar/Naples & Alsace Lorraine Neighborhoods		
HMB Resident	$41.00	Incl. up to 4 guest permits per year
Additional Resident Permits > 4	$21.00	Each per year
HMB Resident Outside Permitted Areas	$41.00	Up to two vehicles per year
Visitors	$41.00	Per vehicle per year
2 Temporary Offstreet Parking	$21.00	Per vehicle per year

City of Half Moon Bay
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Other Fees, Charges & Services

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SERVICES		FY 19-20 AMOUNT		UNIT / TYPE
5 Citation Fee Schedule^		**FEE**	**DELINQUENT FEE**	
1. Municipal Code				
10.08.060	Removing Chalk Marks	$74.00	$44.00	Each
10.12.030	Obedience To Signs	$74.00	$44.00	Each
10.36.110	Wheels Not Curbed	$45.00	$46.00	Each
10.28.060	Limited Access	$45.00	$46.00	Each
10.36.010	No Parking, Stopping, Standing	$44.00	$46.00	Each
10.36.030	Parking Restricted	$44.00	$46.00	Each
10.36.040	No Parking Zone (Permits)	$48.00	$46.00	Each
10.36.050	Parked Over 72 Hours	$48.00	$46.00	Each
10.36.060	Advertising For Sale On Street	$45.00	$46.00	Each
10.36.070	Repair Vehicle On Street	$45.00	$46.00	Each
10.36.080	Washing Vehicle On Street	$45.00	$46.00	Each
10.36.090 (B)	School Zone	$48.00	$46.00	Each
10.36.100 (A)	No Parking Posted	$48.00	$46.00	Each
10.36.100 (B)	No Parking-Narrow Street	$48.00	$46.00	Each
10.36.120	Peddler Vehicle-No Permit	$45.00	$46.00	Each
10.36.130	Emergency Signs	$78.00	$46.00	Each
10.37.020	Oversize Vehicle 0200-0500	$78.00	$46.00	Each
10.37.030	Non-Motorized Vehicle Unhook	$78.00	$46.00	Each
10.40.010	15 Min Zone (Green Curb)	$48.00	$46.00	Each
10.40.020	2 Hour Zone	$48.00	$46.00	Each
10.40.030	Parking On One-Way Streets	$48.00	$46.00	Each
10.40.040 (A)	Diagonal Parking Zone	$48.00	$46.00	Each
10.40.040 (B)	Front Tire 6 Inches From Curb	$48.00	$46.00	Each
10.40.050	Use More Than One Space	$48.00	$46.00	Each
10.40.060	No Stopping Zone	$48.00	$46.00	Each
10.40.070	12 Hour Parking-When Posted	$46.00	$44.00	Each
10.40.080	Move Vehicle - Avoid Time Limit	$46.00	$44.00	Each
10.40.090	Store Vehicle On Street	$46.00	$44.00	Each
10.40.100	Repeat Violations	$46.00	$44.00	Each
10.40.110	Extended Parking Permits	$46.00	$44.00	Each
10.44.020	Curb Marked (Red/White/Green)	$74.00	$44.00	Each
10.44.030	No Truck/Trailer	$71.00	$44.00	Each
10.44.040	Loading Zone	$46.00	$44.00	Each
10.44.050	Passenger Loading Zone	$46.00	$44.00	Each
10.44.060	No Parking In Alley	$46.00	$44.00	Each
10.44.070	Bus Zone	$46.00	$44.00	Each
10.48.030	Vehicle Off Road	$71.00	$44.00	Each
10.50.010	No Parking After Dusk Mirada/Redondo/Poplar	$74.00	$44.00	Each
10.50.020	No Parking After Dusk Wavecrest	$74.00	$44.00	Each
12.08.040	Dumping On Street/Alley/Gutter	$286.00	$44.00	Each
12.12.030	Dumping	$124.00	$44.00	Each
2. California Vehicle Code ^^		**FEE**	**DELINQUENT FEE**	
21113 (A)	Parked On Public Ground	$43.00	$42.00	Each
22500.1	Parking Prohibited	$38.00	$42.00	Each
22500 (A)	Parking In Intersection	$38.00	$42.00	Each
22500 (B)	Parking On Crosswalk	$38.00	$42.00	Each
22500 (C)	Parking In Safety Zone	$38.00	$42.00	Each
22500 (D)	Within 15' Fire Station Driveway	$38.00	$42.00	Each
22500 (E)	Parking In Driveway	$38.00	$42.00	Each
22500 (F)	Parking On Sidewalk	$38.00	$42.00	Each
22500 (G)	Obstruct Traffic @ Excavation	$38.00	$42.00	Each
22500 (H)	Double Parking	$38.00	$42.00	Each
22500 (I)	Parking In Bus Zone	$38.00	$42.00	Each
22500 (J)	Parking In Tunnel	$38.00	$42.00	Each
22500 (K)	Parking On Bridge	$38.00	$42.00	Each
22500 (L)	Blocking Wheelchair Access	$333.00	$42.00	Each
22502 (A)	Over 18" From Curb	$33.00	$42.00	Each
22502 (E)	Curb Parking/One-Way Street	$30.00	$42.00	Each
22504 (A)	Unincorporated Area Parking	$43.00	$42.00	Each
22505 (B)	No Parking - State Hwy	$48.00	$42.00	Each
22507.8 (A)	Handicapped Space Without Placard	$333.00	$42.00	Each

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SERVICES		FY 19-20 AMOUNT		UNIT / TYPE
22507.8 (B)	Blocking Handicapped Space	$333.00	$333.00	Each
22507.8 (C)	Hashmarks Handicap Zone	$333.00	$333.00	Each
22514	Fire Hydrants - Within 15 Feet	$38.00	$38.00	Each
22515	Unattended Vehicle - Engine Running	$33.00	$33.00	Each
22519	Posted For Patrons Only	$33.00	$33.00	Each
22522	Block Sidewalk Ramp	$333.00	$333.00	Each
22523 (A)	Abandon Vehicle On Highway	$105.00	$105.00	Each
22523 A/B	Abandoned Vehicle	$105.00	$105.00	Each
22523 (B)	Abandon Vehicle - Private Property	$105.00	$105.00	Each
22526 (A)	Blocking Intersection	$53.00	$53.00	Each
22951	Park Lot - Street & Alley	$25.00	$25.00	Each
22952 (A)	Park Lot-Tow/Removal	$40.00	$40.00	Each
22952 (B)	Park Lot-Tow/Removal	$40.00	$40.00	Each
23333	Stop/Park On Bridge	$43.00	$43.00	Each
23336	Violate Posted Signs	$40.00	$40.00	Each
28071	Bumper Required-Fine Or P/C	$25.00	$25.00	Each
22507.8 (A)	Handicapped Space Without Placard	$333.00	$333.00	Each
4000 (A)	Unregistered Vehicle	$53.00	$53.00	Each
4462 (B)	Registration On Wrong Vehicle	$30.00	$30.00	Each
4464	Altered License Plate	$30.00	$42.00	Each
5200	Lic Plate Missing - Fine Or P/C	$35.00	$35.00	Each
5201	Plate Positioning - Fine Or P/C	$30.00	$30.00	Each
5202	Period Of Display - Fine Or P/C	$30.00	$30.00	Each
5204 (A)	Tags Attach Wrong - Fine Or P/C	$30.00	$30.00	Each
6 D.U.I. Cost Recovery				
Arrest with Traffic Collision & Transportation		$731.00		Each

^ *Citation fee amounts increase for two or more offenses. Applicable fees are stated on the violation notice.*

^^ *California Vehicle Code Fees are established by the State of California and are not escalated by the CPI All Urban Consumers/San Francisco-Oakland-San Jose*

IX. REFUND POLICY

Any request for Fee refunds shall be submitted in writing to the appropriate Department's Director within 90 days from the date of submittal. The grounds for requesting a refund shall be detailed in the written request. However, once the City has commenced work on an applicable service for which a fee is charged, no refunds are allowed. The Department's Director shall determine if a fee is refundable based on this criterion. Any refund will be net a processing fee equivalent to 0.5 hours of the Building Hourly Rate and any other incidentals that may be incurred. The party requesting the refund shall be informed in writing of the decision of the Department's Director within ten (10) working days of receiving the written refund request. The requesting party may appeal the determination of the Department's Director to the City Manager, within ten (10) days of mailing notice to the requesting party. The City Manager's decision of the appeal review will be the final action taken by the City.

CITY OF HALF MOON BAY

Statistics

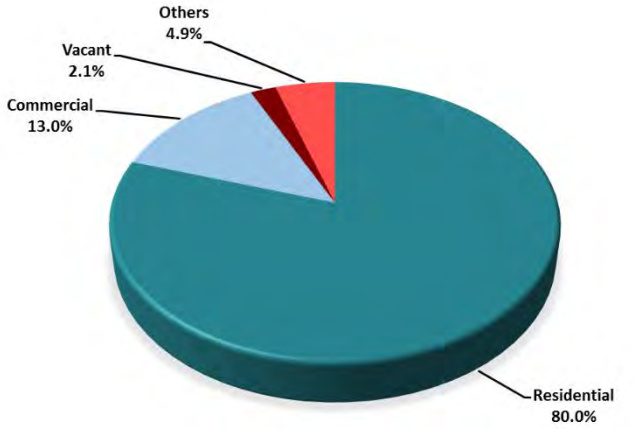
THE CITY OF HALF MOON BAY

FY 2017-18 USE CATEGORY SUMMARY

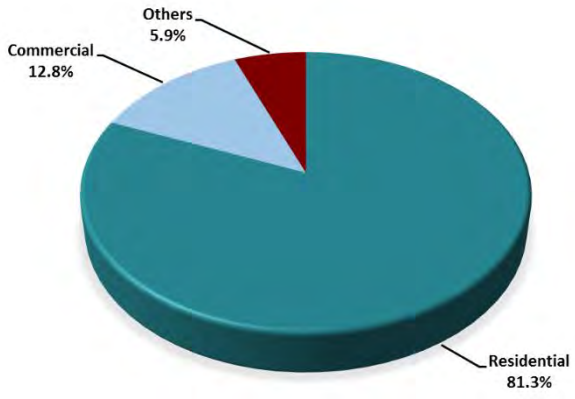
BASIC PROPERTY VALUE TABLE

Category	Parcels	Assessed Value		Net Taxable Value	
Residential	3,776	$2,395,266,812	(80.0%)	$2,365,335,848	(81.3%)
Commercial	203	$389,536,412	(13.0%)	$372,002,147	(12.8%)
Industrial	15	$7,185,938	(0.2%)	$7,185,938	(0.2%)
Dry Farm	7	$4,358,514	(0.1%)	$4,358,514	(0.1%)
Institutional	22	$18,427,488	(0.6%)	$309,882	(0.0%)
Irrigated	14	$5,944,497	(0.2%)	$4,411,271	(0.2%)
Miscellaneous	141	$26,914,954	(0.9%)	$17,677,501	(0.6%)
Recreational	22	$41,361,992	(1.4%)	$41,062,725	(1.4%)
Vacant	1,926	$62,199,420	(2.1%)	$56,557,151	(1.9%)
Unsecured	[243]	$41,213,220	(1.4%)	$40,418,385	(1.4%)
TOTALS	**6,126**	**$2,992,409,247**		**$2,909,319,362**	

ASSESSED VALUE



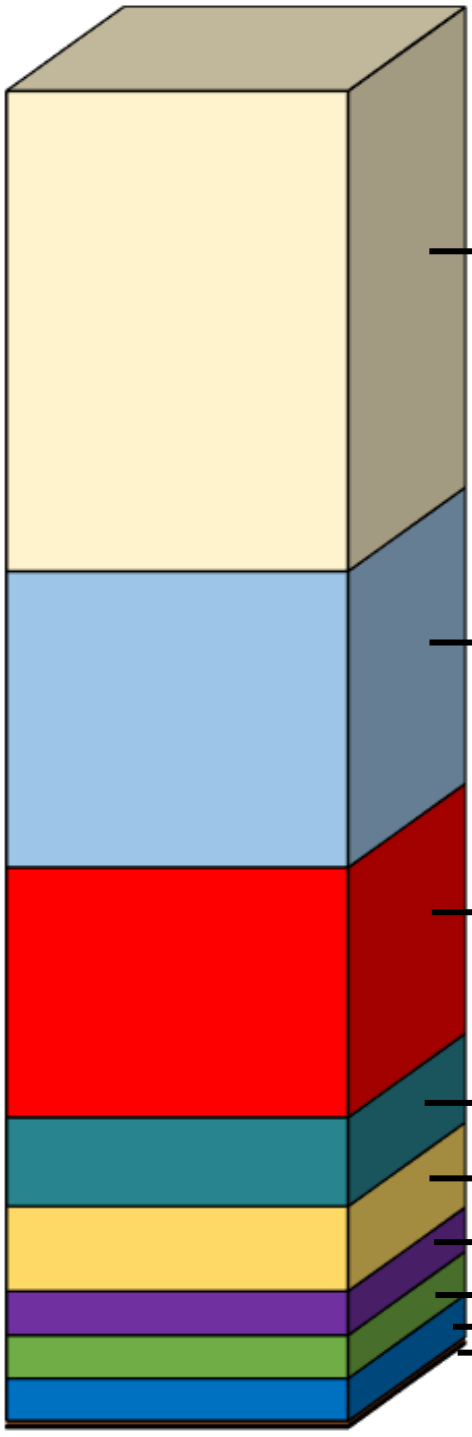
NET TAXABLE VALUE



Data Source: San Mateo County Assessor 2017/18 Combined Tax Rolls

THE CITY OF HALF MOON BAY

PROPERTY TAX DOLLAR BREAKDOWN



$0.3591	Cabrillo Unified General Purpose
$0.2215	San Mateo County
$0.1869	Coastside Fire
$0.0665	Half Moon Bay General Fund
$0.0634	San Mateo Junior College General Purpose
$0.0330	County Education Tax
$0.0323	County Library
$0.0317	Coastside County Water
$0.00330	County Harbor District
$0.00195	Bay Area, Air Pollution
$0.00041	Resource Conservation
$1.0000	

ATI (Annual Tax Increment) Ratios for Tax Rate Area 017-005, Excluding Redevelopment Factors & Additional Debt Service

Data Source: San Mateo County Assessor 2017/18 Annual Tax Increment Tables

THE CITY OF HALF MOON BAY

FY 2017-18 ROLL SUMMARY

Taxable Property Values

	Secured	Nonunitary Utilities	Unsecured
Parcels	6,126	0	243
TRAs	8	0	7
Values			
Land Improvements	1,412,228,016	0	25,986
Personal Property	1,519,072,543	0	5,949,562
Fixtures	17,325,583	0	24,471,755
Aircraft	2,569,885	0	10,765,917
Total Value	0	0	0
	$2,951,196,027	**$0**	**$41,213,220**
Exemptions			
Real Estate	81,512,081	0	370,165
Personal Property	638,766	0	374,195
Fixtures	144,203	0	50,475
Aircraft	0	0	0
Homeowners*	16,225,430	0	0
Total Exemptions*	**$82,295,050**	**$0**	**$794,835**
Total Net Value	**$2,868,900,977**	**$0**	**$40,418,385**

Combined Values	Total
Total Values	**$2,992,409,247**
Total Exemptions	**$83,089,885**
Net Total Values	**$2,909,319,362**
Net Aircraft Values	**$0**

** Note: Homeowner Exemptions are not included in Total Exemptions*

Totals do not Include Aircraft Values or Exemptions

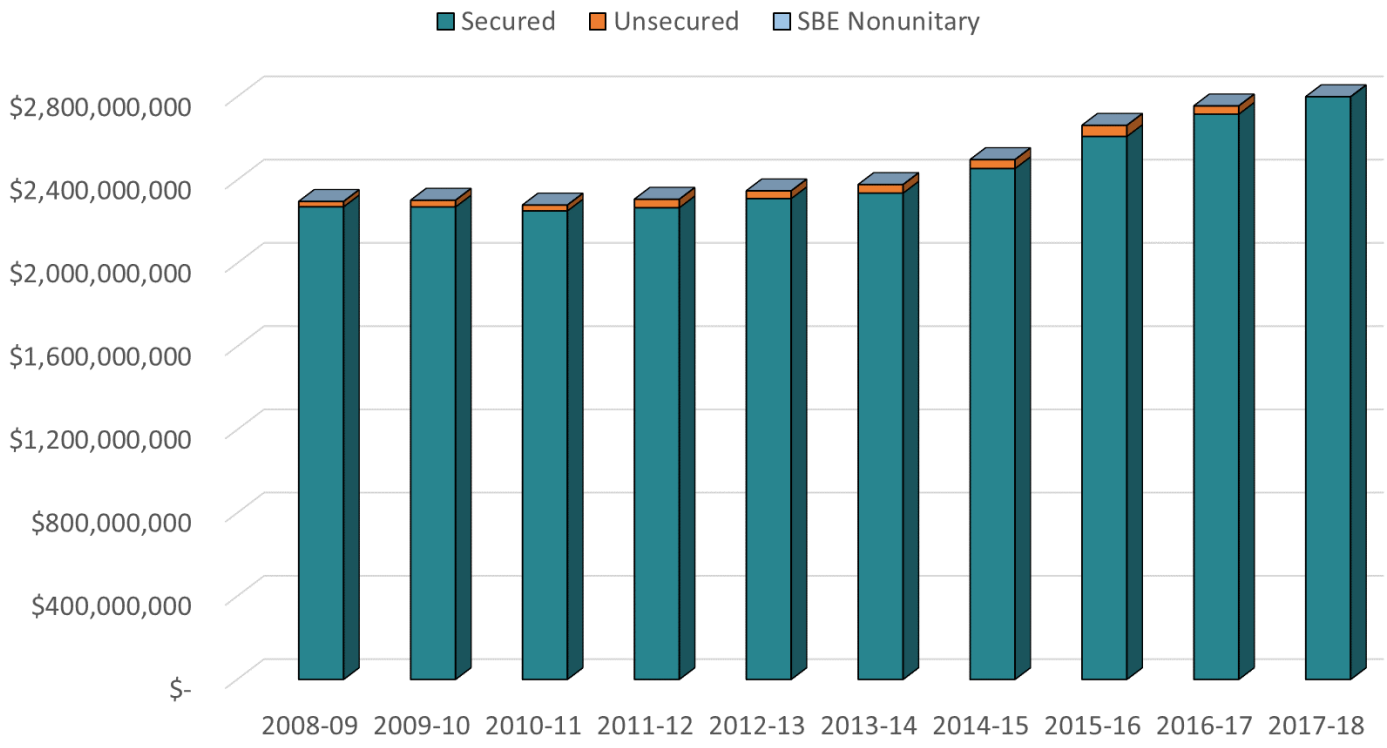
Data Source: San Mateo County Assessor 2017/18 Combined Tax Rolls

THE CITY OF HALF MOON BAY

NET TAXABLE ASSESSED VALUE HISTORY

FY 2008-09 to FY 2017-18 Taxable Property Values

Lien Year	Secured	Unsecured	SBE Nonunitary	Net Total AV	% Change
2008-09	$2,271,215,524	$25,449,648	$0	**2,296,665,172**	
2009-10	$2,270,581,839	$31,809,471	$0	**2,302,391,310**	**0.25%**
2010-11	$2,251,380,792	$28,037,312	$0	**2,279,418,104**	**-1.00%**
2011-12	$2,266,736,579	$40,476,099	$0	**2,307,212,678**	**1.22%**
2012-13	$2,310,590,314	$37,048,774	$0	**2,347,639,088**	**1.75%**
2013-14	$2,336,930,963	$40,818,124	$0	**2,377,749,087**	**1.28%**
2014-15	$2,454,848,902	$42,658,908	$0	**2,497,507,810**	**5.04%**
2015-16	$2,609,284,214	$53,103,728	$0	**2,662,387,942**	**6.60%**
2016-17	$2,716,280,909	$39,462,822	$0	**2,755,743,731**	**3.51%**
2017-18	$2,868,900,977	$40,418,385	$0	**2,909,319,362**	**5.57%**



Data Source: San Mateo County Assessor 2017/18 Combined Tax Rolls

This report is not to be used in support of debt issuance or continuing disclosure statements without the written consent of HdL, Coren & Cone

THE CITY OF HALF MOON BAY

ASSESSED VALUE OF TAXABLE PROPERTY

FY 2008-09 to FY 2017-18 Taxable Property Values

Category	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
Residential	1,819,104,616	1,814,166,741	1,806,656,465	1,807,548,717	1,847,817,296	1,871,838,949	1,986,554,631	2,128,750,156	2,238,878,627	2,365,335,848
Commercial	319,080,038	331,836,973	329,209,700	330,355,442	333,127,837	344,198,890	346,707,418	356,041,843	363,813,823	372,002,147
Industrial	5,421,901	5,600,922	5,568,852	5,901,115	6,016,889	6,133,649	6,172,772	6,292,015	6,801,114	7,185,938
Dry Farm	5,936,865	3,191,476	11,235,759	10,559,490	11,427,110	3,720,127	3,496,499	3,786,377	4,241,537	4,358,514
Govt. Owned	37,102	0								
Institutional	278,434	258,950	284,781	260,279	265,484	293,694	272,021	277,456	281,685	309,882
Irrigated	20,653,643	17,674,128	5,418,982	6,116,088	4,368,007	3,423,600	4,862,761	5,333,856	4,324,786	4,411,271
Miscellaneous	7,716,105	6,830,284	12,936,578	12,953,724	20,894,204	12,075,286	22,681,808	23,460,537	14,211,644	17,677,501
Recreational	36,654,225	38,520,391	32,211,663	37,455,517	38,043,156	38,699,751	38,874,879	39,568,823	40,290,547	41,062,725
Vacant	51,807,016	49,742,858	46,517,696	50,669,067	48,630,331	50,679,666	45,226,113	45,773,151	43,437,146	56,557,151
Unsecured	25,449,648	31,809,471	28,037,312	40,476,099	37,048,774	40,818,124	42,658,908	53,103,728	39,462,822	40,418,385
Unknown	4,525,579	2,759,116	1,340,316	4,917,140		5,867,351				
TOTALS	2,296,665,172	2,302,391,310	2,279,418,104	2,307,212,678	2,347,639,088	2,377,749,087	2,497,507,810	2,662,387,942	2,755,743,731	2,909,319,362
Total Direct Rate	0.05426	0.05426	0.05426	0.05426	0.05453	0.05452	0.05818	0.05818	0.05819	0.05819

Notes:

Exempt values are not included in Total.

In 1978 the voters of the State of California passed Proposition 13 which limited taxes to a total maximum rate of 1%, based upon the the assessed value of the property being taxed. Each year, the assessed value of property may be increased by an "inflation factor" (limited to a maximum of 2%). With few exceptions, property is only reassessed as a result of new construction activity or at the time it is sold to a new owner. At that point, the property is reassessed based upon the added value of the construction or at the purchase price (market value) or economic value of the property sold. The assessed valuation data shown above represents the only data currently available with respect to the actual market value of taxable property and is subject to the limitations described above.

Data Source: San Mateo County Assessor 2008/09 - 2017/18 Combined Tax Rolls

THE CITY OF HALF MOON BAY

FY 2017-18 TOP TEN PROPERTY TAXPAYERS

Top Property Owners Based On Net Values

Owner	Secured			Unsecured			Combined		Primary Use & Primary Agency
	Parcels	Value	% of Net AV	Parcels	Value	% of Net AV	Value	% of Net AV	
1) SHC HALF MOON BAY LLC	2	$146,205,488	5.10%	2	$647,889	1.60%	**$146,853,377**	**5.05%**	Commercial Half Moon Bay General Fund
2) OCEAN COLONY PARTNERS L P	18	$40,483,817	1.41%				**$40,483,817**	**1.39%**	Recreational Half Moon Bay General Fund
3) KEET NERHAN	34	$25,064,773	0.87%	2	$51,968	0.13%	**$25,116,741**	**0.86%**	Commercial Half Moon Bay General Fund
4) HMB MUSICH	3	$15,423,559	0.54%				**$15,423,559**	**0.53%**	Commercial Half Moon Bay General Fund
5) IWF HALF MOON BAY LLC	1	$10,487,921	0.37%				**$10,487,921**	**0.36%**	Commercial Half Moon Bay General Fund
6) LONGS DRUG STORE INC	1	$8,523,766	0.30%				**$8,523,766**	**0.29%**	Commercial Half Moon Bay General Fund
7) CASTRO PARTNERS LLC	3	$7,585,437	0.26%	1	$72,753	0.18%	**$7,658,190**	**0.26%**	Commercial Half Moon Bay General Fund
8) PROFESSIONAL PENINSULA PROPERTIES LLC	8	$7,299,311	0.25%				**$7,299,311**	**0.25%**	Commercial Half Moon Bay General Fund
9) HALF MOON BAY EDENBRIDGE	14	$7,000,000	0.24%				**$7,000,000**	**0.24%**	Vacant Half Moon Bay General Fund
10) COUNTY OF SAN MATEO	12	$6,872,359	0.24%				**$6,872,359**	**0.24%**	Commercial Half Moon Bay General Fund
Top Ten Total	96	$274,946,431	9.58%	5	$772,610	1.91%	**$275,719,041**	**9.48%**	
City Total		$2,868,900,977			$40,418,385		**$2,909,319,362**		

Data Source: San Mateo County Assessor 2017/18 Combined Tax Rolls and the SBE Non Unitary Tax Roll

THE CITY OF HALF MOON BAY

FY 2008-09 TOP TEN PROPERTY TAXPAYERS

Top Property Owners Based On Net Values

Owner	Secured			Unsecured			Combined		Primary Use & Primary Agency
	Parcels	Value	% of Net AV	Parcels	Value	% of Net AV	Value	% of Net AV	
1) SHC HALF MOON BAY LLC	2	$132,310,811	5.83%				**$132,310,811**	**5.76%**	Commercial Half Moon Bay General Fund
2) OCEAN COLONY PARTNERS LP	38	$21,117,344	0.93%	4	$303,184	1.19%	**$21,420,528**	**0.93%**	Recreational Half Moon Bay General Fund
3) KEET NERHAN	32	$20,305,027	0.89%	2	$126,276	0.50%	**$20,431,303**	**0.89%**	Commercial Half Moon Bay General Fund
4) SOUTH WAVECREST LLC	2	$19,159,616	0.84%				**$19,159,616**	**0.83%**	Recreational Half Moon Bay General Fund
5) NURSERYMEN'S EXCHANGE INC	12	$14,043,898	0.62%				**$14,043,898**	**0.61%**	Irrigated Farm Half Moon Bay General Fund
6) REGENCY CENTERS LP	3	$13,627,786	0.60%				**$13,627,786**	**0.59%**	Commercial Half Moon Bay General Fund
7) FRANCESCO CARRUBBA	3	$10,453,717	0.46%				**$10,453,717**	**0.46%**	Commercial Half Moon Bay General Fund
8) PENINSULA OPEN SPACE TRUST	21	$9,188,885	0.40%				**$9,188,885**	**0.40%**	Irrigated Farm Half Moon Bay General Fund
9) IWF HALF MOON BAY LP	1	$9,125,236	0.40%				**$9,125,236**	**0.40%**	Commercial Half Moon Bay General Fund
10) RUGGERO MILANO AND MAJIDI SHAHLA	1	$5,093,798	0.22%				**$5,093,798**	**0.22%**	Commercial Half Moon Bay General Fund
Top Ten Total	115	$254,426,118	11.20%	6	$429,460	1.69%	**$254,855,578**	**11.10%**	
City Total		$2,271,215,524			$25,449,648		**$2,296,665,172**		

Data Source: San Mateo County Assessor 2008/09 Combined Tax Rolls and the SBE Non Unitary Tax Roll

THE CITY OF HALF MOON BAY

DIRECT & OVERLAPPING PROPERTY TAX RATES

(RATE PER $100 OF TAXABLE VALUE)

Last 10 Fiscal Years										
Agency	**2008-09**	**2009-10**	**2010-11**	**2011-12**	**2012-13**	**2013-14**	**2014-15**	**2015-16**	**2016-17**	**2017-18**
Basic Levy[1]	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
Cabrillo Unified Bond	0.04640	0.04970	0.05080	0.05220	0.07220	0.07190	0.07040	0.07260	0.08320	0.07510
San Mateo Junior College	0.01650	0.01820	0.01930	0.01990	0.01940	0.01940	0.01900	0.02500	0.02470	0.02350
Total Direct & Overlapping[2] Tax Rates	**1.06290**	**1.06790**	**1.07010**	**1.07210**	**1.09160**	**1.09130**	**1.08940**	**1.09760**	**1.10790**	**1.09860**
City's Share of 1% Levy Per Prop 13[3]	0.06648	0.06648	0.06648	0.06648	0.06648	0.06648	0.06648	0.06648	0.06648	0.06648
Voter Approved City Debt Rate										
Total Direct Rate[4]	0.05426	0.05426	0.05426	0.05426	0.05453	0.05452	0.05818	0.05818	0.05819	0.05819

Notes:

[1]In 1978, California voters passed Proposition 13 which set the property tax rate at a 1.00% fixed amount. This 1.00% is shared by all taxing agencies for which the subject property resides within. In addition
to the 1.00% fixed amount, property owners are charged taxes as a percentage of assessed property values for the payment of any voter approved bonds.
[2]Overlapping rates are those of local and county governments that apply to property owners within the City. Not all overlapping rates apply to all city property owners.
[3]City's Share of 1% Levy is based on the City's share of the general fund tax rate area with the largest net taxable value within the City. ERAF general fund tax shifts may not be included in tax ratio figures.
[4]Total Direct Rate is the weighted average of all individual direct rates applied by the City/Agency preparing the statistical section information and excludes revenues derived from aircraft. Beginning in
2013/14 the Total Direct Rate no longer includes revenue generated from the former redevelopment tax rate areas. Challenges to recognized enforceable obligations are assumed to have been resolved during 2012/13. For the purposes of this report, residual revenue is assumed to be distributed to the City/Agency in the same proportions as general fund revenue.

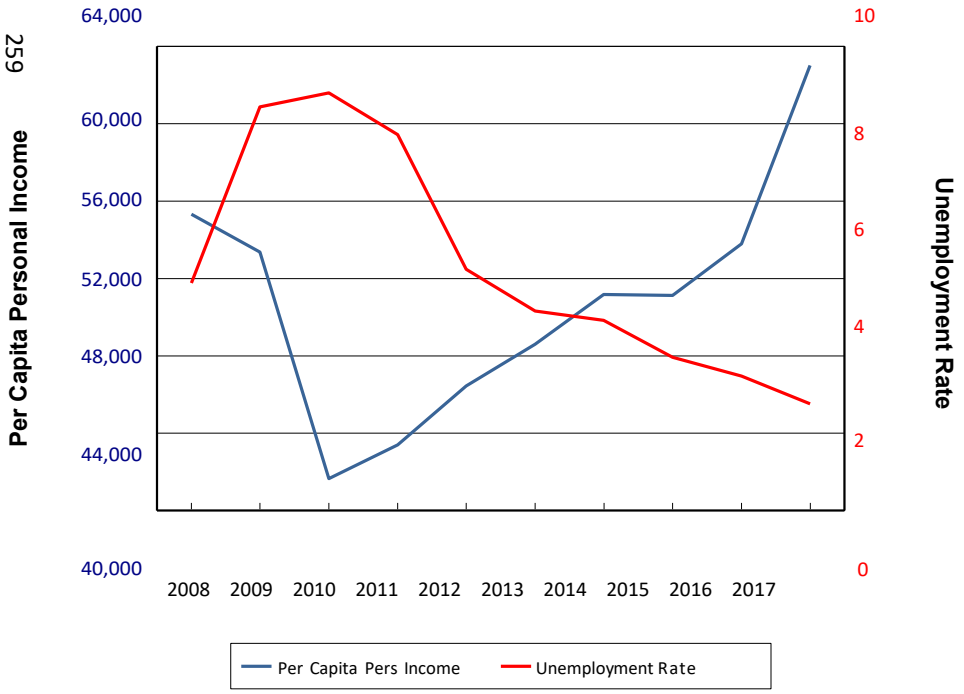
Data Source: San Mateo County Assessor 2008/09 - 2017/18 Tax Rate Table

THE CITY OF HALF MOON BAY

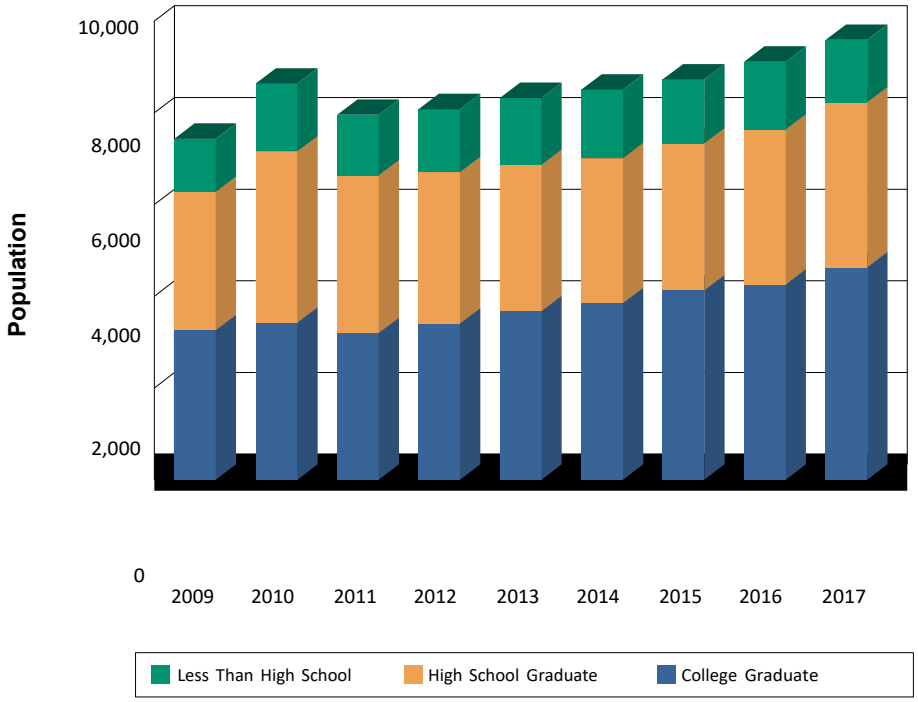
DEMOGRAPHIC AND ECONOMIC STATISTICS

Calendar Year	Population	Personal Income (In Thousands)	Per Capita Personal Income	Unemployment Rate	Median Age	% of Pop 25+ with High School Degree	% of Pop 25+ with Bachelor's Degree
2008	13,001	$719,233	$55,321	4.9%			
2009	13,206	$704,770	$53,367	8.7%	40.9	84.4%	43.9%
2010	13,371	$556,795	$41,642	9.0%	40.4	82.9%	39.7%
2011	11,478	$498,019	$43,389	8.1%	42.1	83.4%	40.2%
2012	11,581	$537,926	$46,449	5.2%	42.9	83.0%	42.2%
2013	11,721	$569,699	$48,605	4.3%	43.2	82.5%	44.2%
2014	11,727	$600,059	$51,169	4.1%	44.8	82.4%	45.3%
2015	12,528	$640,547	$51,129	3.3%	44.7	84.0%	47.3%
2016	12,591	$677,251	$53,788	2.9%	45.8	83.8%	46.7%
2017	12,639	$796,455	$63,015	2.3%	47.1	85.8%	48.3%

Personal Income and Unemployment



Education Level Attained for Population 25 and Over



Notes and Data Sources:

Population: California State Department of Finance. Unemployment Data: California Employment Development Department

2000-2009 Income, Age, and Education Data: ESRI - *Demographic Estimates are based on the last available Census.* Projections are developed by incorporating all of the prior census data released to date. Demographic Data is totaled from Census Block Groups that overlap the City's boundaries

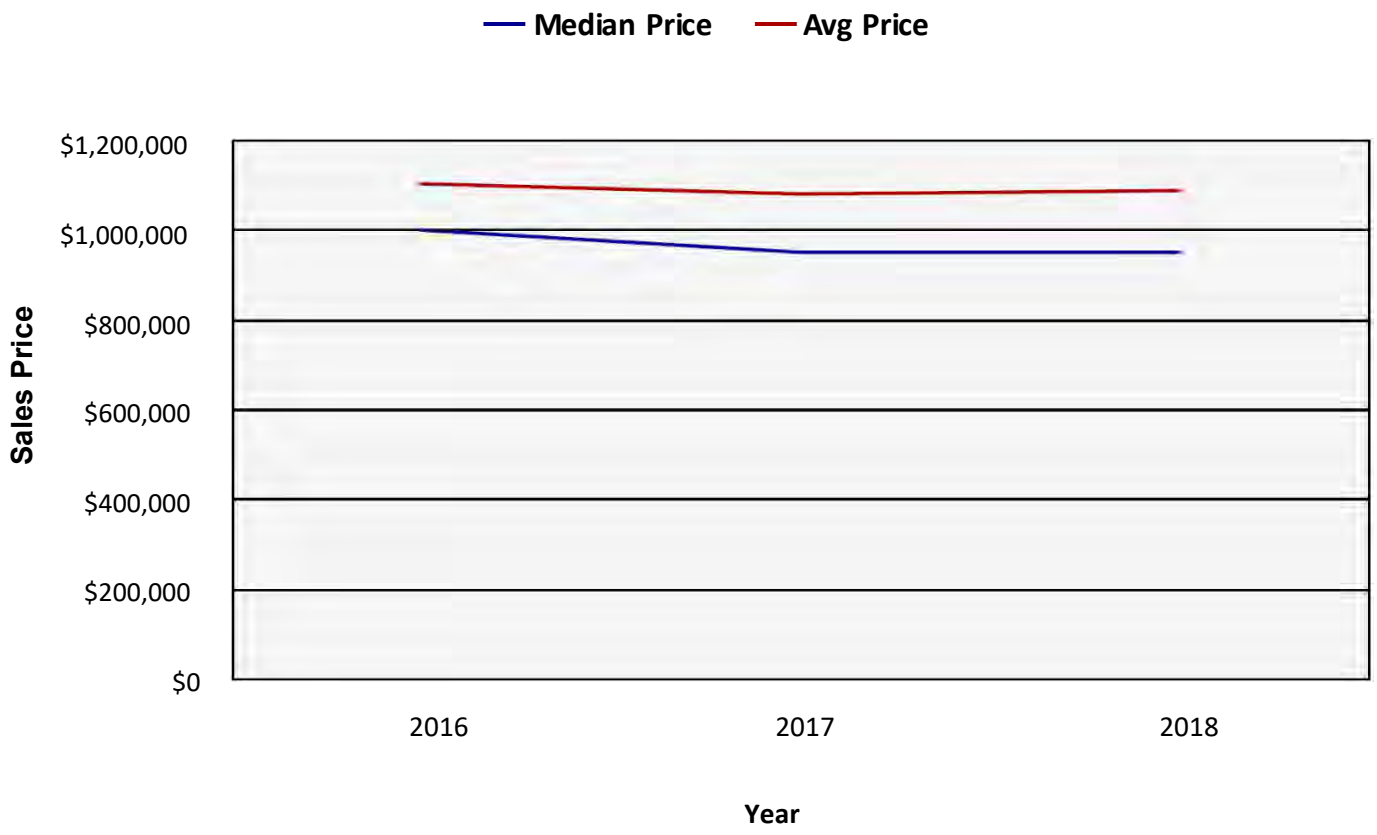
2010 and later - Income, Age and Education Data - US Census Bureau, most recent American Community Survey

THE CITY OF HALF MOON BAY

SALES VALUE HISTORY

Single Family Residential Full Value Sales (01/01/2016 - 6/30/2018)

Year	Full Value Sales	Average Price	Median Price	Median % Change
2016	137	$1,082,422	$950,000	
2017	146	$1,164,458	$1,097,000	15.47%
2018	68	$1,206,426	$1,153,500	5.15%



*Sales not included in the analysis are quitclaim deeds, trust transfers, timeshares, and partial sales.

Data Source: San Mateo County Recorder

CITY OF HALF MOON BAY

Budget and Acronym Glossaries

Budget Glossary

ACTIVITIES
Specific services performed in accomplishing program objectives and goals (see Program).

ACCRUAL
A method of accounting to record revenues when earned and expenses when incurred.

ACTUAL
A column heading in the budget. Figures found in the Actual column indicate actual financial information recorded for that time period.

ADJUSTED BUDGET
The increase or decrease of the amount budgeted for a program or account.

ADOPTED BUDGET
This is the budget that is adopted by the City Council after reviewing and providing feedback and direction on the recommended budget at one or more budget study sessions.

AGENCY FUNDS
Also known as Fiduciary Fund Types, these funds are used to account for assets held by the City in a trustee capacity or as an agent for private individuals, organizations, or other governmental agencies. The fiduciary funds used by the City include agency funds. Agency funds are custodial in nature (assets equal liabilities) and do not measure the results of operations.

ALLOCATION
A distribution of funds, or an expenditure limit established for an organizational unit or function.

APPROPRIATION
An authorization made by the City Council which permits the City to incur obligations and to make expenditures of resources in providing services as planned.

APPROPRIATION LIMIT
Propositions 4 and 111 created a restriction on the amount of revenue which can be appropriated in any fiscal year. The Limit is based on actual appropriations during the 1978-79 fiscal years, and is increased each year using the growth of population and inflation. Not all revenue is restricted by the limit; only those which are referred to as "proceeds of taxes." Some examples of proceeds of taxes are sales tax, property tax, and business license tax.

ASSESSED VALUE
A value established for real property for use as a basis in levying property taxes. For all agencies in the State of California, assessed value is established by the County for the secured and unsecured property tax rolls. The utility property tax roll is valued by the State Board of

Equalization. Under Article XIII of the State Constitution (Proposition 13 adopted by the voters on June 6, 1978) properties are assessed at 100% of full value. Proposition 13 also modified the value of real taxable property for fiscal year 1979 by rolling back values to fiscal year 1976 levels. From this base of assessment, subsequent annual increases in valuation are limited to a maximum of 2%. However, increases to full value are allowed for property improvements or upon change in ownership. Personal property is excluded from these limitations and is subject to annual reappraisal. Property taxes for general purposes cannot exceed 1% of assessed value.

AUDIT
Conducted by an independent certified public accountant (CPA), the primary objective of an audit is to determine if the City's financial statements present fairly the City's financial position and results of operations in conformity with Generally Accepted Accounting Principles (GAAP) and Governmental Accounting Standards for Comprehensive Annual Financial Reporting. In conjunction with their performance of an audit, the auditing standards require an independent auditor to report to the City Council of audit findings on adequacy of the City's internal controls as well as recommendation and improvements to the City's financial management practices.

BALANCED BUDGET
A balanced budget is a situation in financial planning or the budgeting process where total revenues are equal to or greater than total expenses.

BEGINNING/ENDING FUND BALANCE
Appropriated resources available in a fund from the prior/current year after payment of the prior/current fiscal year's expenses. This is not necessarily cash on hand.

BONDS
Bonds are a form of borrowing (debt financing) which reflects a written promise from the City to repay a sum of money on a specific date at a specified interest rate. Local governments use bonds to obtain long-term financing for large capital projects such as buildings, streets, utility infrastructure, and bridges.

BUDGET
A budget is a financial plan for a specified period of time that matches planned revenue and expenditures to municipal services, goals and, objectives. The City uses a financial plan covering a fiscal year (July 1 through June 30), with actual budget appropriations made annually.

BUDGET AMENDMENT
The City Council has the sole responsibility for adopting the City's budget and may amend or supplement the budget at any time after adoption by majority vote. The City Manager has the authority to approve administrative adjustments to the budget as long as those changes are between objects, as well as departments, within the same fund category.

BUDGET CALENDAR
A budget calendar is the schedule of budget preparations, hearings, and adoption of the annual budget.

BUDGET POLICIES
Budget policies are general and specific guidelines, developed by the City Manager in consultation with the City Council, that govern financial plan preparation and administration. Departments make their budget requests on the basis of the guidelines.

CAPITAL IMPROVEMENT PLAN (CIP)
Commonly, a CIP is a five-year plan providing for the maintenance or replacement of existing public facilities and assets and for building or acquiring new ones.

CONTINGENCY
A contingency is a budgetary reserve set aside for emergencies or unforeseen expenditures not otherwise budgeted.

CONTRACTUAL SERVICES
Services rendered to a government by private firms, individuals, or other governmental agencies are contractual services. Examples include public safety services, recreation services, utilities, maintenance agreements, and professional consulting services.

DEBT
A state of being under obligation to pay or repay someone or something.

DEBT INSTRUMENT
Debt instruments are methods of borrowing funds, including, but not limited to, general obligation bonds, judgment obligation bonds, revenue bonds, lease/purchase agreements, lease-revenue bonds, and assessment district bonds.

DEBT SERVICE
Debt service is the payment of principal and interest on bonds and other debt instruments according to a pre-determined schedule.

DEBT SERVICE FUNDS
The debt service fund type is used to account for the payment and accumulation of resources related to general long-term debt principal and interest (see Fund).

DEFICIT
A deficit is the excess of an entity's liabilities over its assets or the excess of expenditures over revenue during a single accounting period.

DEPARTMENT
A department is a major organizational unit of the City which has been assigned overall management responsibility for an operation or a group of related operations within a functional area.

DEPRECIATION
Depreciation is the expiration in the service life of capital assets attributable to wear and tear, deterioration, action of physical elements, inadequacy, or obsolescence.

DEVELOPMENT IMPACT FEES
Fees placed on the development of land or conditions required for the approval of a development project such as the donation of certain land (or money) to specific public uses. The fees are justified as an offset to the future impact that development will have on existing infrastructure.

ENTERPRISE FUNDS
The enterprise fund type is used to account for operations that are financed and operated in a manner similar to private sector enterprises and it is the intent of the City that the costs (including depreciation) of providing goods or services to the general public be financed or recovered primarily through user fees. The City accounts for Sewer Operations as an Enterprise Fund (see Fund).

EXPENDITURE
An expenditure is the outflow of funds paid or to be paid for an asset obtained or goods and services obtained regardless of when the expense is actually paid. This term applies to all funds. Note: An encumbrance is not an expenditure, but a commitment. An encumbrance reserves funds to be expended in future periods.

EXPENDITURE SAVINGS
Under the City's budgeting procedures, personnel cost projections are based on all positions being filled throughout the year. Cost projections for major supply purchases and service contracts are projected on a similar basis. However, past experience indicates that expenditures are consistently less than budgeted amounts, due at least in part to this costing methodology. Accordingly, the expenditure savings category is used to account for this factor in preparing fund balance projections.

FEES
Charges for services levied by the City to recover costs associated with providing a service or permitting an activity.

FISCAL YEAR (FY)
A fiscal year is a designated twelve-month period for budgeting and record keeping purposes. As a general law city, July 1 to June 30 is specified as the fiscal year.

FIXED ASSETS
Assets of long-term nature such as land, buildings, roads, bridges, and related infrastructure, machinery, furniture, and other equipment are fixed assets. The City has defined such assets as roads, bridges and related infrastructure with an expected life in excess of one year and an acquisition cost in excess of $5,000.

FULL-TIME EQUIVALENT
The ratio of the total number of paid hours during a period (part time, full time, contracted) by the number of working hours in that period Mondays through Fridays.

FUNCTION
A group of related programs crossing organizational (departmental) boundaries and aimed at accomplishing a broad goal or accomplishing a major service are functions.

FUND
A fund is a fiscal and accounting entity with a self-balancing set of accounts recording cash and other financial resources, together with all related liabilities and residual equities or balances, for specific activities or government functions. The six fund types used by the City are: General Fund, Special Revenue, Debt Service, Capital Project, Enterprise, and Agency Funds.

FUND BALANCE
Also known as financial position, fund balance for governmental fund types is the excess of fund assets over liabilities, and represents the cumulative effect of revenue and other financing sources over expenditures and other financing uses. For the enterprise funds, the term used is "net asset," a comparable (although not exact) financial position concept as fund balance (see Working Capital).

GAAP
GAAP stands for Generally Acceptable Accounting Principles. These are uniform minimum standards for financial accounting and recording, encompassing the conventions, rules, and procedures that define accepted accounting principles.

GASB
GASB stands for Governmental Accounting Standards Board. The accounting profession's regulatory body for governmental accounting and determines what constitutes GAAP for governmental agencies.

GANN LIMIT
An absolute dollar limit on the amount of funds derived from taxes that the City can legally appropriate and expend each fiscal year, as specified by Article 13-B of the State Constitution. Any tax revenues in excess of the Gann Limit must be returned to taxpayers. The base-year used on computing the Gann Limit is FY1978-79, with adjustments to the appropriations limit allowed succeeding fiscal years for changes in population and changes in the cost of living.

GENERAL FUND
The general fund is the primary operating fund of the City. All revenue that are not allocated by law or contractual agreement to a specific fund are accounted for in the General Fund. With the exception of subvention or grant revenue restricted for specific uses, General Fund resources can be utilized for any legitimate governmental purpose (see Fund).

GOAL
A goal is a statement of broad direction, purpose, or intent.

GOVERNMENTAL FUND
Government funding refers to financial assistance received by non-government entities in the form of federal, state, or local government grants, loans, loan guarantees, property, cooperative agreements, food commodities, direct appropriations, or other assistance.

GRANT
Contribution or gift of cash or other assets from another governmental entity to be used or expended for a specific purpose, activity, or facility.

INTERFUND TRANSFER
The movement of monies between funds of the same governmental entity is an interfund transfer.

INVESTMENT REVENUE
Investment revenue is received as interest from the investment of funds not immediately required to meet cash disbursement obligations.

LINE ITEM BUDGET
A line item budget lists detailed expenditure categories (salary, materials and supplies, telephone service, travel, etc.) separately, along with the amount budgeted for each specified category. The City uses a line-item detail to maintain and record for financial reporting and control purposes.

MATERIALS AND SUPPLIES
Expendable materials and operating supplies are necessary to conduct departmental operations.

MISSION STATEMENT
A mission statement provides policy guidance and direction for the highest priority objectives to be accomplished.

MODIFIED ACCRUAL BASIS OF ACCOUNTING
The modified accrual basis of accounting is used in conjunction with the current financial resources measurement focus. Revenue is recognized when they are available and measurable. Expenditures are recognized when goods and services are received.

OBJECT OF EXPENDITURE
Object of expenditure is a classification referring to the lowest and most detailed level of classification, such as electricity, office supplies, and contract services.

OPERATING BUDGET
The operating budget is the portion of the budget that pertains to daily operations providing basic governmental services. The program budgets in the financial plan form the operating budget.

OPERATIONS
Operations are a grouping of related programs within a functional area (see Function and Program).

PERFORMANCE MEASURES (OBJECTIVES)
Performance measures are a statement of specific direction, purpose, or intent based on the needs of the community and the goals established for a specific program. Performance measures are clearly stated objectives that are measurable in quantitative terms.

PROGRAM
Programs are group activities, operations, or organizational units designed for specific purposes or objectives.

RESERVE
A reserve is an account used to indicate that a portion of a fund's balance is legally restricted for a specific purpose or designated by the City Council and is, therefore, not available for general appropriation.

RESERVE DRAWDOWN
Reserve draw down refers to the amount of fund balance required as a funding source to balance fund budgets where appropriations exceed current revenue. If current revenue exceeds appropriations, the fund balance will increase and be referred to a reserve improvement.

RESOLUTION
A resolution is a special or temporary order of a legislative body. It is an order of a legislative body requiring less legal formality than an ordinance or statute.

RESOURCES (SOURCES)
Resources are total amounts available for appropriation, including estimated revenue, borrowing proceeds, fund transfers, and beginning balances.

SPECIAL REVENUE FUNDS
A special revenue fund type is used to account for the proceeds from specific revenues sources (other than trusts or capital funds) that are legally restricted to expenditures for specific purposes (see Fund).

STRUCTURAL BALANCE
The structural or underlying fiscal balance is the relationship between government ongoing revenues and ongoing expenditures.

SUBVENTIONS
Subventions are revenue collected by the State (or other level of government) which is allocated to the City on a formula basis. The major subventions received by the City from the State include motor vehicle in-lieu and gasoline taxes.

WORKING CAPITAL
Working capital is the excess of current assets over current liabilities.

Acronym Glossary

ACRONYM	DEFINITION
AB	Assembly Bill
ABAG	Association of Bay Area Governments
ADA	Americans with Disabilities Act
BID	Business Improvement District
C/CAG	City/County Association of Governments
CAFR	Comprehensive Annual Financial Report
CALPERS	California Public Employees Retirement System
CCWD	Coastside County Water District
CEQA	California Environmental Quality Act
CIP	Capital Improvement Program
COPS	Community-Oriented Policing Services
CPI-U	Consumer Price Index - All Urban Consumers
CSAC	California State Association of Counties
CSO	Community Service Officer
DOC	Department Operations Center
EOC	Emergency Operations Center
ERAF	Educational Revenue Augmentation Fund
FDIC	Federal Deposit Insurance Corporation
FICA	Federal Insurance Contribution Act
FPPC	Fair Political Practices Commission
FSLIC	Federal Savings and Loan Insurance Corporation
FTO	Field Training Officer
GAAP	Generally Accepted Accounting Principles
GASB	Government Accounting Standards Board
GF	General Fund
GFOA	Government Finance Officers Association
GIS	Geographic Information System
HOPTR	Homeowner Property Tax Relief
I&I	Infiltration and Inflow
IT	Information Technology
JOB	Judgment Obligation Bonds
JPA	Joint Powers Authority
LAIF	Local Agency Investment Fund
LCP	Local Coastal Plan
LTD	Long-Term Disability

ACRONYM	DEFINITION
MTC	Metropolitan Transportation Commission
NACSLB	National Advisory Council on State and Local Budgeting
NEPA	National Environmental Policy Act
NPDES	National Pollutant Discharge Elimination System
OPEB	Other Post-Employment Benefits
PMS	Pavement Management System
POST	Peace Officer Standards and Training
RDA	Redevelopment Agency
SAM	Sewer Authority Mid-Coastside
SB	Senate Bill
SLESF	Supplemental Law Enforcement Services Funds
SMC	San Mateo County
SR2S	Safe Routes to School
SRO	School Resource Officer
STIP	Statewide Transportation Improvement Plan
TDA	Transportation Development Act
TOT	Transient Occupancy Tax
VLF	Vehicle License Fee

THE CITY OF
HALF MOON BAY
CALIFORNIA

FIVE-YEAR
CAPITAL IMPROVEMENT PROGRAM
FY 2019 -20 to FY 2023 -24

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CITY OF HALF MOON BAY

CITY COUNCIL

Mayor Harvey Rarback

Vice Mayor Adam Eisen

Councilmember
Robert Brownstone

Councilmember
Deborah Penrose

Councilmember
Deborah Ruddock

ACKNOWLEDGEMENTS

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Jill Ekas, *Community Development Director*

Saul Lopez, *Chief of Police*

PLANNING COMMISSION

Brian Holt, *Chair*

James Benjamin, *Vice Chair*

Rick Hernandez, *Commissioner*

Sara Polgar, *Commissioner*

Steve Ruddock, *Commissioner*

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John Doughty, *Public Works Director*

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Budget Message Translation

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LETTER FROM CITY MANAGER TO CITY COUNCIL

CITY OF HALF MOON BAY
501 Main Street
Half Moon Bay, CA 94014

June 18, 2019

Honorable Mayor, Council Members and Community Members:

I am delighted to share with you the City's $84 million Capital Improvement Program (CIP) for fiscal years 2019-2020 through 2023-2024. This plan will serve as a road map to guide important investments in infrastructure and facilities for Half Moon Bay over the coming years.

This year's CIP document reflects the continuation of our multi-year effort to improve the usability, utility and overall effectiveness of the CIP. Staff has provided periodic updates to and engaged with the City Council on multiple occasions throughout the development of the CIP to ensure the Council's priorities are accurately reflected. Preparation of the project scopes and cost estimates included conducting assessments of the City's existing facilities and infrastructure as well as evaluations of the City's needs for the future. This work was further informed by the various policies and projects envisioned in the recently adopted Parks Master Plan, and the Bicycle/Pedestrian Plan (scheduled to be adopted in FY 2019-20). Additional assessment of facilities is planned for the coming year to identify preventive maintenance needs and to ensure that public facilities are compliant with state and federal accessibility requirements.

The FY 2019-24 CIP is presented with the Operating Budget to give the Council a full picture of the City's financial position and available resources necessary to fund the Capital Program. The FY 2019-24 Capital Budget follows the same format as prior programs and is presented with the CIP Fund Summary schedule included in both operating and capital budgets. The Five-Year CIP includes a Summary by project categories and funding sources, as well as list of funded projects by total project cost. Of the $84 million estimated expenditures for the five-year period, $15.5 million is budgeted to be expended in FY 2019-20.

As part of preparation of the CIP budget, staff has identified probable funding sources for projects and explored outside funding sources whenever possible. These include Federal and State Grants, County contributions, Gas Tax and various other tax measures. When no external sources of funding could be identified, General Fund was allocated to fund identified projects. For FY 2019-20, $3 million from the General Fund has been allocated to the CIP.

LETTER FROM CITY MANAGER TO CITY COUNCIL (cont.)

CITY OF HALF MOON BAY
501 Main Street
Half Moon Bay, CA 94014

Finally, our expectation is that this document will provide the public with a better understanding of the City Council's priorities, community needs, planned infrastructure improvements, and the opportunities for facilities betterments that the City intends over the next five years. The approved CIP responds to the identified needs of our residents to ensure major infrastructure - streets, parks, trails, public facilities, sewers, and drainage - are well maintained for maximum safety, public use, and enjoyment. Through the implementation of the five-year CIP, Half Moon Bay is strengthening and reinvesting in its facilities and infrastructure to serve the residents and visitors of this great City for years to come.

Respectfully Submitted,

Bob Nisbet
City Manager

CARTA DEL ADMINISTRADOR DE LA CIUDAD AL CONSEJO MUNICIPAL

CITY OF HALF MOON BAY
501 Main Street
Half Moon Bay, CA 94014

18 de junio del 2019

Honorable Alcalde, Miembros del Concejo y Miembros de la Comunidad:

Tengo el placer de compartir con ustedes el Programa de Mejora Capital (CIP) de $ 84 millones de la Ciudad para los años fiscales 2019-2020 a 2023-2024. Este plan servirá como una hoja de ruta para guiar importantes inversiones en infraestructura e instalaciones para Half Moon Bay en los próximos años.

El documento del CIP de este año refleja la continuación de nuestro esfuerzo plurianual para mejorar la usabilidad, la utilidad y la eficacia general del CIP. El personal ha brindado actualizaciones periódicas y se ha comunicado con el Concejo Municipal en múltiples ocasiones a lo largo del desarrollo del CIP para asegurar que las prioridades del Concejo se reflejen con precisión. La preparación de los alcances del proyecto y las estimaciones de costos incluyeron la realización de evaluaciones de las instalaciones e infraestructura existentes de la Ciudad, así como evaluaciones de las necesidades de la Ciudad para el futuro. Este trabajo fue informado adicionalmente por las diversas políticas y proyectos contemplados en el Plan Maestro de Parques que fue recientemente adoptado, y el Plan de Bicicletas / Peatones (programado para ser adoptado en el año fiscal 2019-2020). Evaluaciones adicionales de las instalaciones han sido planeadas para el próximo año para identificar las necesidades de mantenimiento preventivo y garantizar que las instalaciones públicas cumplan con los requisitos de accesibilidad estatales y federales.

El CIP del año fiscal 2019-24 se presenta con el Presupuesto Operativo para darle al Consejo una visión completa de la posición financiera de la Ciudad y los recursos disponibles necesarios para financiar el Programa Capital. El presupuesto de capital para el año fiscal 2019-24 sigue el mismo formato que los programas anteriores y se presenta con el programa del resumen del fondo CIP incluido en los presupuestos operativos y de capital. El CIP de cinco años incluye un resumen por categorías de proyectos y fuentes de financiamiento, así como una lista de proyectos financiados por el costo total del proyecto. De los $ 84 millones de gastos estimados para el período de cinco años, $ 15.5 millones se presupuestan para el año fiscal 2019-2020.

CARTA DEL ADMINISTRADOR DE LA CIUDAD AL CONSEJO MUNICIPAL (continua)

CITY OF HALF MOON BAY
501 Main Street
Half Moon Bay, CA 94014

Como parte de la preparación del presupuesto CIP, el personal ha identificado posibles fuentes de financiamiento para proyectos y exploraron fuentes de financiamiento externas cuando fue posible. Estos incluyen subvenciones federales y estatales, contribuciones del condado, impuesto a la gasolina y otras medidas fiscales. Cuando no se pudieron identificar fuentes externas de financiamiento, el Fondo General se asignó para financiar proyectos identificados. Para el año fiscal 2019-20, $ 3 millones del Fondo General se han asignado al CIP.

Finalmente, nuestra expectativa es que este documento proporcionará al público una mejor comprensión de las prioridades del Concejo Municipal, las necesidades de la comunidad, las mejoras de infraestructura planificadas y las oportunidades de mejora de las instalaciones que la Ciudad tiene previsto durante los próximos cinco años. El CIP aprobado responde a las necesidades identificadas de nuestros residentes para garantizar que la infraestructura principal (calles, parques, senderos, instalaciones públicas, alcantarillado y drenaje) sea bien mantenido para la máxima seguridad, uso y disfrute público. A través de la implementación del CIP de cinco años, Half Moon Bay se está fortaleciendo y reinvirtiendo en sus instalaciones e infraestructura para brindar servicios a los residentes y visitantes de esta gran ciudad durante los próximos años.

Presentado respetuosamente por,

Bob Nisbet
Administrador de la Ciudad

1.1 INTRODUCTION TO THE CAPITAL IMPROVEMENT PROGRAM (CIP)

The City's 5-Year Capital Improvement Program (CIP) represents the City's continuous efforts to protect public health and safety and enhance the quality of life and experience for visitors and residents in Half Moon Bay. The CIP identifies current and future capital improvements and provides the following benefits:

- Facilitates the scheduling of public improvements that require expenditures and appropriations over two or more fiscal years;
- Provides orderly management of capital projects consistent with the General Plan and adopted master plans; and
- Enhances eligibility for grants from the State and the federal Government.

Improvements are identified as either projects or programs, with total budgets typically exceeding $30,000. Occasionally, improvements may be less than $30,000, but are included in the CIP due to special circumstances such as extensive community outreach requirements.

The CIP will always be relatively front loaded due to the information available at the time of publish; meaning that a disproportional number of improvements are proposed to continue or commence in year one in comparison with years two through five. Additionally, many of the improvements that start in earlier years span latter years and will continue to require staff support and funding. Furthermore, the City's needs are dynamic and extend beyond the CIP's 5-year horizon. As such, the CIP is a living document that requires annual update.

1.2 NAVIGATING THE CIP

The CIP is divided into nine improvement categories: Completed, Storm Water, Economic Development, Operations, Parks, Facilities, Sewer, Streets, and Trails.

Projects that are completed in the fiscal year prior to the publishing of the current CIP are highlighted in the "Completed" category. All other categories are divided into a maximum of three sub-sections: Programs, FY 2019-20 Projects, and FY 2020-2024 projects. Descriptions, budget, and other important information on each program and project can be found on the individual improvement pages. Improvements that are partially or fully unfunded will have a red "Unfunded" line included in the "Source(s) of Funds" section. It's also important to note that projected costs for improvements are estimates and may ultimately more or less than the projected budget. Projects where the costs exceed the estimated budget will typically be presented to the City Council for approval of additional funding.

Projects are generally large, one-time enhancements where the project budget rolls over annually until full completion of the improvement. **Programs** are ongoing with a new project emphasis each year. Program budgets are "use it or lose it" and do not roll over to subsequent fiscal years.

1.3 FY 2019-20 CAPITAL BUDGET OVERVIEW

The FY 2019-20 Capital Budget includes 46 programs and projects with a budget of $15.5 million. This year's General Fund contribution is $3 million. These requests are comparable to the requests from FY 2018-19.

The 5-year CIP identifies 67 programs and projects with a total estimated expenditure of $84 million. Of the 67 identified improvements, 21 are fully or partially unfunded, still requiring a total of $40 million. Staff will continue to work diligently to secure funding for these improvements, but work on these may be delayed until funding is identified and secured.

The FY 2019-20 CIP includes 16 programs compared to the 12 programs in the FY 2018-19 CIP. The "Sewer Main Repair Program" was replaced with three smaller, more targeted programs while the "Annual Community Enhancement" project was converted to a program. The last program added was the "Neighborhood Traffic Safety Program."

There are 17 projects scheduled for completion in FY 2019-20. Four of these projects are temporary improvements or site plans which will likely result in future projects in the CIP. The "General Plan and Local Coastal Program Update" is also scheduled for completion this upcoming year, which will assist with the City's overall prioritization of needs for the future. The FY 2019-20 schedule is ambitious, and successful completion of the work is dependent on continued use of project management consultant services. Some

projects may be delayed as a result of emergent priorities throughout the year.

A significant change to the FY 2019-20 CIP was the deletion of all budget allocations made prior to FY 2018-19. This action was taken to ensure that projects have sufficient funding to reach completion in the upcoming fiscal year. Reviewing prior years' budgets, it was unclear if previous budget allocations for projects were rolled over and still available for upcoming expenditures or if they were returned to the General Fund. Thus, each project in the FY 2019-20 CIP is requesting the total amount of funding it will need to complete the identified scope for FY 2019-20. Moving forward, **project** budgets will roll-over year to year until the full completion of the project. In contrast, **program** funds are "use it or lose it" and will be replenished annually, subject to council approval of the CIP.

1.5 CAPITAL PROJECT FINANCING

Capital projects are financed in many ways. Most funding sources are tracked by the following three categories: Unrestricted Local Funds, Restricted Funds, and Grants. Descriptions of some, but not all, major funding sources included in the CIP are provided below:

UNRESTRICTED LOCAL FUNDS

Unrestricted revenues are generated via local taxes – such as transient occupancy tax (TOT), property tax, and sales and use tax – and are collected in the General Fund. These revenues can be put towards any City expenditure; hence the term, "unrestricted". When unrestricted revenues are allocated to the CIP, they are transferred from the General Fund to various Capital Funds (e.g. General Capital – Fund 25, Public Facilities – Fund 48, etc.), which earmarks the funds for the upcoming work. The Capital Funds are sometimes referred to as "Fund Reserves." Unrestricted funds transferred to Capital Fund remain unrestricted and can be transferred between Capital Funds or back into the General Fund for operations, as needed.

RESTRICTED FUNDS

Restricted funds are used to track revenues that are collected for specific improvements via fees and taxes. These revenues are legally or contractually restricted and can only be spent on improvements that meet specific criteria, as dictated by the terms under which the revenue was collected. Examples of restricted funding sources are described below.

Sewer Fees

The City charges a sewer fee in exchange for providing and maintaining sewer-related infrastructure. These fees can only be used on sewer-related improvements and maintenance and are tracked via "Sewer Service – Fund 05/06."

Development Impact Fees

The City collects impact fees from development projects in order to mitigate the impact of the development on City services and infrastructure. A development impact fee is a monetary exaction other than a tax or special assessment that is charged by a local governmental agency to an applicant in connection with approval of a development project for the purpose of defraying all or a portion of the cost of public facilities related to the development project. Development Impact fees may only be spent to mitigate the specific impacts caused by that development. For example, impact fees collected for storm water impacts may only be spent on storm water related capital projects.

State Gas Tax

The State of California collects a tax on the sale of gasoline, as permitted under the Streets and Highway Code. A portion of State Gas Tax money is distributed to local governments. That money is restricted to expenditures related to street maintenance and construction and are tracked via "Gas Tax-Fund 10".

GRANTS

Many projects that are partially or fully unfunded are dependent on the availability of grant funding. Over the last several years, grant funding has become more readily available and the City has made a concentrated effort to secure these funds. Staff will continue to pursue grant opportunities from all funding sources in the upcoming years.

1.6 SUMMARY OF OPERATIONS AND MAINTENANCE IMPACT

The CIP represents the City's efforts to focus on long-term capital maintenance to avoid the need for capital replacement, which is typically far more expensive than maintenance. While this approach sometimes increases annual costs of Operations and Maintenance (O&M),

it more sustainable when looking at the City's budget as a whole.

O&M concerns and needs are discussed and addressed throughout every stage of a project including project identification, project design, and project implementation. The City's focus is on implementing projects of the highest quality up-front, thus reducing maintenance and replacement costs in the future. However, it is important to note that ongoing maintenance will be necessary, regardless. Additionally, each year, the CIP is reviewed by the City Council in conjunction with the City operations budget to ensure that operational needs are considered along with the capital needs.

1.7 CIP AND CAPITAL BUDGET PROCESS

Updating the CIP annually requires coordination and cooperation between all City's departments. The process includes many internal meetings to discuss current and future CIP improvements, prioritization of identified improvements, review by various advisory boards, General Plan consistency finding by the Planning Commission, and adoption by City Council.

Project Prioritization Criteria

The CIP is reviewed annually for consistency with the City Council's strategic objectives, including the City's Strategic Plan and the Council's top five priorities. The Strategic Plan was adopted in March 2013 and includes the following four initiatives:

1. Infrastructure and Environment
2. Healthy Communities and Public Safety
3. Fiscal Sustainability
4. Inclusive Governance

Each improvement in the CIP works to further the City's efforts in at least one of the four above areas.

Furthermore, the capital needs of the City are significant and funds available for capital projects are limited. Each CIP represents a balancing act between needs, staffing capacity and available resources. The task of prioritizing capital projects is critically important because there will not be funding available for the City to accomplish every project listed in the CIP. Once a comprehensive list of improvements is compiled, staff prioritize the improvements using the following tiers (listed in order of highest priority to lowest priority):

1) Grant Funded – improvements that have secured grant funding that will expire if work is not completed
2) Mandated – improvements required by law or other mandate
3) Council Priority – improvements associated with the Council's current priorities (e.g. Emergency Preparedness, Traffic and Transportation Demand Management, Sustainability)
4) Project Underway – work is currently underway or was initiated in a prior year
5) Other Need – any other improvement identified by staff that does not meet the criteria above

Review by Advisory Boards

Pursuant to California Government Code Section 65401, the Planning Commission is required to review CIP improvements for conformance with the adopted General Plan prior to adoption by the legislative body. Conformance with the General Plan is important because the improvements in the CIP are intended to further the goals of the General Plan. The conformance review is required to be conducted at a public hearing where citizen input can be considered. The Planning Commission considered the CIP on May 14, 2019 and found the CIP consistent with the General Plan.

Adoption of the CIP by the City Council

The City Council conducted a study session on the CIP on May 7, 2019 and affirmed the draft Capital Budget. The final FY 2019-20 CIP was adopted by the City Council on June 18, 2019.

Half Moon Bay City Limits
NORTH
PACIFICA
Unincorporated
San Mateo County
Unincorporated
San Mateo County
N CABRILLO HWY
SAN MATEO RD
City of
Half Moon Bay
KELLY AVE
HIGGINS CANYON RD
WAVECREST RD
REDONDO BEACH RD
MIRAMONTEI POINT RD
Unincorporated
San Mateo County
Map not to Scale

California Society of Municipal Finance Officers

Certificate of Award

Excellence Award
Fiscal Year 2018-2019 Capital Budget

Presented to the

City of Half Moon Bay

For meeting the criteria established to achieve the CSMFO Excellence Award in Budgeting.

January 4, 2019

Margaret Moggia
CSMFO President

Sara Roush, Chair
Recognition Committee

Dedicated Excellence in Municipal Financial Reporting

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ONE-YEAR CAPITAL IMPROVEMENT PROGRAM
FY 2019-20

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ONE-YEAR CAPITAL IMPROVEMENT PROGRAM BUDGETED EXPENDITURES
FY 2019-20 ADOPTED CAPITAL BUDGET

PROJECT TITLE	FUND	PROJECT NO.	PRIOR YEAR(S)	FY 19-20	TOTAL ALL FY	UNFUNDED
STORM WATER IMPROVEMENTS						
GREEN INFRASTRUCTURE AND STORM WATER PROGRAM	14	0563	N/A	$ 100,000	$ 700,000	$ -
KELLY/HIGHWAY 1 DRAINAGE PROJECT	14	9003	$ 103,000	$ 656,000	$ 759,000	$ -
SEYMOUR DITCH EROSION AND COASTAL STABILIZATION	14	0608	$ 200,000	$ 150,000	$ 2,140,000	$ 1,650,000
TOTAL STORM WATER IMPROVEMENTS			**$ 303,000**	**$ 906,000**	**$ 3,599,000**	**$ 1,650,000**
ECONOMIC DEVELOPMENT IMPROVEMENTS						
GENERAL PLAN AND LOCAL COASTAL PROGRAM UPDATE	25	0564	$ 796,257	$ 250,000	$ 1,046,257	$ -
MEDIAN LANDSCAPE PROJECT	25	9015	$ -	$ 130,000	$ 130,000	$ 30,000
MAIN STREET TREE LIGHTS	25	9016	$ -	$ 50,000	$ 50,000	$ -
TOTAL ECONOMIC DEVELOPMENT IMPROVEMENTS			**$ 796,257**	**$ 430,000**	**$ 1,226,257**	**$ 30,000**
OPERATIONAL IMPROVEMENTS						
FINANCIAL SOFTWARE - ENTERPRISE RESOURCE PLANNING	25	0555	$ 250,000	$ 50,000	$ 300,000	$ -
GIS IMPLEMENTATION	25	0586	$ -	$ 150,000	$ 200,000	$ -
TOTAL OPERATIONAL IMPROVEMENTS			**$ 250,000**	**$ 200,000**	**$ 500,000**	**$ -**
PARKS IMPROVEMENTS						
PARKS MASTER PLAN IMPLEMENTATION PROGRAM	17	0609	N/A	$ 100,000	$ 500,000	$ -
OCEAN VIEW PARK - PERMANENT RESTROOMS AND SITE IMPROVEMENTS	17	0610	$ 55,000	$ 485,000	$ 540,000	$ -
POPLAR BEACH GATEWAYS PLAN	17	0617	$ 360,000	$ 140,000	$ 500,000	$ -
TRAIN DEPOT AND JOHNSTON HOUSE TEMPORARY IMPROVEMENTS	17	9005	$ -	$ 85,000	$ 85,000	$ -
WAVECREST WATER MAIN PROJECT	17	9004	$ -	$ 100,000	$ 700,000	$ -
CARTER PARK IMPROVEMENTS	17	0611	$ 165,000	$ 300,000	$ 1,665,000	$ 1,100,000
TOTAL PARKS			**$ 580,000**	**$ 1,210,000**	**$ 3,990,000**	**$ 1,100,000**
FACILITY IMPROVEMENTS						
ADA TRANSITION PLAN IMPLEMENTATION PROGRAM	25	0601	N/A	$ 75,000	$ 375,000	$ -
SIDEWALK REPLACEMENT AND REPAIR PROGRAM	25	0562	N/A	$ 150,000	$ 750,000	$ -
URBAN FOREST MANAGEMENT PROGRAM	25	0598	N/A	$ 80,000	$ 400,000	$ -
ANNUAL COMMUNITY ENHANCEMENT PROGRAM	25	0600	N/A	$ 50,000	$ 250,000	$ -
EMERGENCY RESPONSE PROGRAM	48	0604	N/A	$ 100,000	$ 500,000	$ -
TED ADCOCK COMMUNITY CENTER KITCHEN AND ENTRY REMODEL	48	0621	$ 50,000	$ 270,000	$ 320,000	$ -
SHERIFF SUBSTATION RENOVATION PROJECT	48	0605	$ 47,000	$ 175,000	$ 222,000	$ -
STREETLIGHT UPGRADES ON MAIN STREET	48	0623	$ -	$ 110,000	$ 110,000	$ -

ONE-YEAR CAPITAL IMPROVEMENT PROGRAM BUDGETED EXPENDITURES
FY 2019-20 ADOPTED CAPITAL BUDGET

PROJECT TITLE	FUND	PROJECT NO.	PRIOR YEAR(S)	FY 19-20	TOTAL ALL FY	UNFUNDED
FACILITY IMPROVEMENTS (cont.)						
CIVIC CENTER SITE PLAN	48	0624	$ -	$ 85,000	$ 85,000	$ -
PILARCITOS CREEK RESTORATION AND REMEDIATION PROJECT	48	9022	$ 155,000	$ 210,000	$ 400,000	$ -
CORPORATE YARD IMPROVEMENTS	48	9023	$ -	$ 40,000	$ 220,000	$ -
TOTAL FACILITY IMPROVEMENTS			**$ 252,000**	**$ 1,345,000**	**$ 3,632,000**	**$ -**
SEWER IMPROVEMENTS						
SEWER MAINTENANCE PROGRAM	06	0506	N/A	$ 50,000	$ 250,000	$ -
INFLOW AND INFILTRATION PROGRAM	06	9028	N/A	$ 150,000	$ 750,000	$ -
CITYWIDE POINT REPAIRS PROGRAM	06	9029	N/A	$ 315,000	$ 1,575,000	$ -
MANHOLE REHABILITATION PROGRAM	06	9026	N/A	$ 40,000	$ 200,000	$ -
PUMP STATION AND FORCE MAIN REPAIR AND REPLACEMENT PROGRAM	06	0507	N/A	$ 205,000	$ 560,000	$ -
LORYN LANE SEWER MAIN REPAIR	06	9027	$ -	$ 275,000	$ 275,000	$ -
OCEAN COLONY PUMP STATION REPLACEMENT PROJECT	06	9025	$ 200,000	$ 2,710,000	$ 2,910,000	$ -
SANITARY SEWER MASTER PLAN	06	9024	$ -	$ 100,000	$ 225,000	$ -
TOTAL SEWER IMPROVEMENTS			**$ 200,000**	**$ 3,845,000**	**$ 6,745,000**	$ -
STREET IMPROVEMENTS						
NEIGHBORHOOD TRAFFIC SAFETY PROGRAM	11	9000	N/A	$ 40,000	$ 200,000	$ -
CROSSWALKS AND ADA RETROFIT PROGRAM	11	0572	N/A	$ 65,000	$ 325,000	$ -
PAVEMENT MANAGEMENT AND TRAFFIC SAFETY PROGRAM	11	0514	N/A	$ 330,000	$ 2,620,000	$ 2,290,000
HIGHWAY 1 SAFETY - SOUTH	11	0523	$ 398,000	$ 3,950,000	$ 4,348,000	$ -
POPLAR COMPLETE STREET PROJECT	11	0593	$ 156,000	$ 1,221,000	$ 1,877,000	$ 500,000
HIGHWAY 1 SAFETY - NORTH	11	0538	$ 350,000	$ 734,000	$ 9,084,000	$ 1,100,000
MAIN STREET BRIDGE PROJECT	09	0759	$ 350,000	$ 450,000	$ 8,526,579	$ -
TOTAL STREET IMPROVEMENTS			**$ 1,254,000**	**$ 6,790,000**	**$ 26,980,579**	**$ 3,890,000**
TRAIL IMPROVEMENTS						
BICYCLE AND PEDESTRIAN MASTER PLAN IMPLEMENTATION PROGRAM	17	0615	N/A	$ 100,000	$ 500,000	$ -
STAIR REPAIR AT CAÑADA VERDE CREEK	17	9007	$ -	$ 80,000	$ 80,000	$ -
VERTICAL ACCESS AT POPLAR BEACH	17	0597	$ 10,000	$ 140,000	$ 590,000	$ 440,000
HIGHWAY 1 BICYCLE/PEDESTRIAN TRAIL EXTENSION (NORTH)	17	0595	$ -	$ 275,000	$ 1,750,000	$ 1,475,000
BIKEWAY CONNECTIVITY PROJECT - NORTH	17	0619	$ 55,000	$ 120,000	$ 670,000	$ 320,000
PEDESTRIAN/BICYCLE CONNECTION TO HATCH ELEMENTARY	17	9010	$ -	$ 20,000	$ 250,000	$ 230,000
TOTAL TRAIL IMPROVEMENTS			**$ 65,000**	**$ 735,000**	**$ 3,840,000**	**$ 2,465,000**
TOTAL FY ALLOCATIONS			**$ 3,700,257**	**$ 15,461,000**	**$ 50,512,836**	**$ 9,135,000**

FIVE-YEAR CAPITAL IMPROVEMENT PROGRAM
FY 2019-20

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FIVE-YEAR CAPITAL IMPROVEMENT PROGRAM BUDGETED EXPENDITURES
FY 2019-20 ADOPTED CAPITAL BUDGET

PROJECT TITLE	FUND	PROJECT NO.	PRIOR YEAR(S)	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY	UNFUNDED
STORM WATER IMPROVEMENTS											
GREEN INFRASTRUCTURE AND STORM WATER PROGRAM	14	0563	N/A	$ 100,000	$ 150,000	$ 150,000	$ 150,000	$ 150,000	N/A	$ 700,000	$ -
KELLY/HIGHWAY 1 DRAINAGE PROJECT	14	9003	$ 103,000	$ 656,000	$ -	$ -	$ -	$ -	$ -	$ 759,000	$ -
SEYMOUR DITCH EROSION AND COASTAL STABILIZATION	14	0608	$ 200,000	$ 150,000	$ 825,000	$ 825,000	$ 140,000	$ -	$ -	$ 2,140,000	$ 1,650,000
ARROYO DE EN MEDIO EROSION REPAIR - MIRADA ROAD	14	0579	$ -	$ -	$ 200,000	$ -	$ -	$ -	$ -	$ 200,000	$ -
ROOSEVELT DITCH IMPROVEMENTS	14	TBD	$ -	$ -	$ 75,000	$ -	$ -	$ -	$ -	$ 75,000	$ -
KEHOE WATER COURSE AND HABITAT ENHANCEMENT PROJECT	14	0534	$ -	$ -	$ -	$ -	$ -	$ -	$ 7,854,250	$ 7,854,250	$ 7,854,250
TOTAL STORM WATER IMPROVEMENTS			**$ 303,000**	**$ 906,000**	**$ 1,250,000**	**$ 975,000**	**$ 290,000**	**$ 150,000**	**$ 7,854,250**	**$ 11,728,250**	**$ 9,504,250**
ECONOMIC DEVELOPMENT IMPROVEMENTS											
GENERAL PLAN AND LOCAL COASTAL PROGRAM UPDATE	25	0564	$ 796,257	$ 250,000	$ -	$ -	$ -	$ -	$ -	$ 1,046,257	$ -
MEDIAN LANDSCAPE PROJECT	25	9015	$ -	$ 130,000	$ -	$ -	$ -	$ -	$ -	$ 130,000	$ 30,000
MAIN STREET TREE LIGHTS	25	9016	$ -	$ 50,000	$ -	$ -	$ -	$ -	$ -	$ 50,000	$ -
WAYFINDING AND ENTRY SIGNS (PHASE 2)	25	0559	$ -	$ -	$ 350,000	$ -	$ -	$ -	$ -	$ 350,000	$ -
DOWNTOWN GATEWAY ARCH - NORTH	25	0534	$ -	$ -	$ -	$ 264,000	$ -	$ -	$ -	$ 264,000	$ -
TOWN CENTER MASTER PLAN	25	TBD	$ -	$ -	$ -	$ 150,000	$ -	$ -	$ -	$ 150,000	$ -
TOTAL ECONOMIC DEVELOPMENT IMPROVEMENTS			**$ 796,257**	**$ 430,000**	**$ 350,000**	**$ 414,000**	**$ -**	**$ -**	**$ -**	**$ 1,990,257**	**$ 30,000**
OPERATIONAL IMPROVEMENTS											
FINANCIAL SOFTWARE - ENTERPRISE RESOURCE PLANNING	25	0555	$ 250,000	$ 50,000	$ -	$ -	$ -	$ -	$ -	$ 300,000	$ -
GIS IMPLEMENTATION	25	0586	$ -	$ 150,000	$ 50,000	$ -	$ -	$ -	$ -	$ 200,000	$ -
TOTAL OPERATIONAL IMPROVEMENTS			**$ 250,000**	**$ 200,000**	**$ 50,000**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 500,000**	**$ -**
PARKS IMPROVEMENTS											
PARKS MASTER PLAN IMPLEMENTATION PROGRAM	17	0609	N/A	$ 100,000	$ 100,000	$ 100,000	$ 100,000	$ 100,000	N/A	$ 500,000	$ -
OCEAN VIEW PARK - PERMANENT RESTROOMS AND SITE IMPROVEMENTS	17	0610	$ 55,000	$ 485,000	$ -	$ -	$ -	$ -	$ -	$ 540,000	$ -
POPLAR BEACH GATEWAYS PLAN	17	0617	$ 360,000	$ 140,000	$ -	$ -	$ -	$ -	$ -	$ 500,000	$ -
TRAIN DEPOT AND JOHNSTON HOUSE TEMPORARY IMPROVEMENTS	17	9005	$ -	$ 85,000	$ -	$ -	$ -	$ -	$ -	$ 85,000	$ -
WAVECREST WATER MAIN PROJECT	17	9004	$ -	$ 100,000	$ 600,000	$ -	$ -	$ -	$ -	$ 700,000	$ -
CARTER PARK IMPROVEMENTS	17	0611	$ 165,000	$ 300,000	$ 1,200,000	$ -	$ -	$ -	$ -	$ 1,665,000	$ 1,100,000
SMITH FIELD SITE ASSESSMENT AND MASTER PLAN	17	TBD	$ -	$ -	$ 100,000	$ -	$ -	$ -	$ -	$ 100,000	$ -
TRAIN DEPOT AND JOHNSTON HOUSE SITE PLAN	17	0614	$ -	$ -	$ -	$ 85,000	$ -	$ -	$ -	$ 85,000	$ 250,000
PERMANENT RESTROOMS AT POPLAR BEACH	17	TBD	$ -	$ -	$ -	$ -	$ -	$ -	$ 250,000	$ 250,000	$ 65,000
STORAGE BUILDING AT SMITH FIELD	17	TBD	$ -	$ -	$ -	$ -	$ -	$ -	$ 65,000	$ 65,000	$ 350,000
NEW MAGNOLIA/SEYMOUR PARK	17	TBD	$ -	$ -	$ -	$ -	$ -	$ -	$ 350,000	$ 350,000	$ 12,000,000
NEW COMMUNITY PARK	17	TBD	$ -	$ -	$ -	$ -	$ -	$ -	$ 12,000,000	$ 12,000,000	
TOTAL PARKS			**$ 580,000**	**$ 1,210,000**	**$ 2,000,000**	**$ 185,000**	**$ 100,000**	**$ 100,000**	**$ 12,665,000**	**$ 16,840,000**	**$ 13,765,000**

FIVE-YEAR CAPITAL IMPROVEMENT PROGRAM BUDGETED EXPENDITURES
FY 2019-20 ADOPTED CAPITAL BUDGET

PROJECT TITLE	FUND	PROJECT NO.	PRIOR YEAR(S)	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY	UNFUNDED
FACILITY IMPROVEMENTS											
ADA TRANSITION PLAN IMPLEMENTATION PROGRAM	25	0601	N/A	$ 75,000	$ 75,000	$ 75,000	$ 75,000	$ 75,000	N/A	$ 375,000	$ -
SIDEWALK REPLACEMENT AND REPAIR PROGRAM	25	0562	N/A	$ 150,000	$ 150,000	$ 150,000	$ 150,000	$ 150,000	N/A	$ 750,000	$ -
URBAN FOREST MANAGEMENT PROGRAM	25	0598	N/A	$ 80,000	$ 80,000	$ 80,000	$ 80,000	$ 80,000	N/A	$ 400,000	$ -
ANNUAL COMMUNITY ENHANCEMENT PROGRAM	25	0600	N/A	$ 50,000	$ 50,000	$ 50,000	$ 50,000	$ 50,000	N/A	$ 250,000	$ -
EMERGENCY RESPONSE PROGRAM	48	0604	N/A	$ 100,000	$ 100,000	$ 100,000	$ 100,000	$ 100,000	N/A	$ 500,000	$ -
TED ADCOCK COMMUNITY CENTER KITCHEN AND ENTRY REMODEL	48	0621	$ 50,000	$ 270,000	$ -	$ -	$ -	$ -	$ -	$ 320,000	$ -
SHERIFF SUBSTATION RENOVATION PROJECT	48	0605	$ 47,000	$ 175,000	$ -	$ -	$ -	$ -	$ -	$ 222,000	$ -
STREETLIGHT UPGRADES ON MAIN STREET	48	0623	$ -	$ 110,000	$ -	$ -	$ -	$ -	$ -	$ 110,000	$ -
CIVIC CENTER SITE PLAN	48	0624	$ -	$ 85,000	$ -	$ -	$ -	$ -	$ -	$ 85,000	$ -
PILARCITOS CREEK RESTORATION AND REMEDIATION PROJECT	48	9022	$ 155,000	$ 210,000	$ 35,000	$ -	$ -	$ -	$ -	$ 400,000	$ -
CORPORATE YARD IMPROVEMENTS	48	9023	$ -	$ 40,000	$ 180,000	$ -	$ -	$ -	$ -	$ 220,000	$ -
RESTORATION AND WATERSHED PROTECTION OF CITY PARCEL	48	0622	$ 160,000	$ -	$ 825,000	$ -	$ -	$ -	$ -	$ 985,000	$ 825,000
PUBLIC WORKS CORPORATION YARD MASTER PLAN	48	TBD	$ -	$ -	$ -	$ 100,000	$ -	$ -	$ -	$ 100,000	$ -
CUNHA PARKING LOT EXPANSION FOR LIBRARY	16	0545	$ -	$ -	$ -	$ 400,000	$ -	$ -	$ -	$ 400,000	$ -
TOTAL FACILITY IMPROVEMENTS			**$ 412,000**	**$ 1,345,000**	**$ 1,495,000**	**$ 955,000**	**$ 455,000**	**$ 455,000**	**$ -**	**$ 5,117,000**	**$ 825,000**
SEWER IMPROVEMENTS											
SEWER MAINTENANCE PROGRAM	06	0506	N/A	$ 50,000	$ 50,000	$ 50,000	$ 50,000	$ 50,000	N/A	$ 250,000	$ -
INFLOW AND INFILTRATION PROGRAM	06	9028	N/A	$ 150,000	$ 150,000	$ 150,000	$ 150,000	$ 150,000	N/A	$ 750,000	$ -
CITYWIDE POINT REPAIRS PROGRAM	06	9029	N/A	$ 315,000	$ 315,000	$ 315,000	$ 315,000	$ 315,000	N/A	$ 1,575,000	$ -
MANHOLE REHABILITATION PROGRAM	06	9026	N/A	$ 40,000	$ 40,000	$ 40,000	$ 40,000	$ 40,000	N/A	$ 200,000	$ -
PUMP STATION AND FORCE MAIN REPAIR AND REPLACEMENT PROGRAM	06	0507	N/A	$ 205,000	$ 205,000	$ 50,000	$ 50,000	$ 50,000	N/A	$ 560,000	$ -
LORYN LANE SEWER MAIN REPAIR	06	9027	$ -	$ 275,000	$ -	$ -	$ -	$ -	$ -	$ 275,000	$ -
OCEAN COLONY PUMP STATION REPLACEMENT PROJECT	06	9025	$ 200,000	$ 2,710,000	$ -	$ -	$ -	$ -	$ -	$ 2,910,000	$ -
SANITARY SEWER MASTER PLAN	06	9024	$ -	$ 100,000	$ 50,000	$ 50,000	$ 25,000	$ -	$ -	$ 225,000	$ -
TOTAL SEWER IMPROVEMENTS			**$ 200,000**	**$ 3,845,000**	**$ 810,000**	**$ 655,000**	**$ 630,000**	**$ 605,000**	**$ -**	**$ 6,745,000**	$ -
STREET IMPROVEMENTS											
NEIGHBORHOOD TRAFFIC SAFETY PROGRAM	11	9000	N/A	$ 40,000	$ 40,000	$ 40,000	$ 40,000	$ 40,000	NA	$ 200,000	$ -
CROSSWALKS AND ADA RETROFIT PROGRAM	11	0572	N/A	$ 65,000	$ 65,000	$ 65,000	$ 65,000	$ 65,000	N/A	$ 325,000	$ -
PAVEMENT MANAGEMENT AND TRAFFIC SAFETY PROGRAM	11	0514	N/A	$ 330,000	$ 1,025,000	$ 120,000	$ 1,025,000	$ 120,000	N/A	$ 2,620,000	$ 2,290,000
HIGHWAY 1 SAFETY - SOUTH	11	0523	$ 398,000	$ 3,950,000	$ -	$ -	$ -	$ -	$ -	$ 4,348,000	$ -
POPLAR COMPLETE STREET PROJECT	11	0593	$ 156,000	$ 1,221,000	$ 500,000	$ -	$ -	$ -	$ -	$ 1,877,000	$ 500,000

FIVE-YEAR CAPITAL IMPROVEMENT PROGRAM BUDGETED EXPENDITURES
FY 2019-20 ADOPTED CAPITAL BUDGET

PROJECT TITLE	FUND	PROJECT NO.	PRIOR YEAR(S)	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY	UNFUNDED
STREET IMPROVEMENTS (cont.)											
HIGHWAY 1 SAFETY - NORTH	11	0538	$ 350,000	$ 734,000	$ 4,000,000	$ 4,000,000	$ -	$ -	$ -	$ 9,084,000	$ 1,100,000
MAIN STREET BRIDGE PROJECT	09	0759	$ 350,000	$ 450,000	$ 450,000	$ 3,638,290	$ 3,638,290	$ -	$ -	$ 8,526,579	$ -
HIGHWAY 1/KELLY AVENUE INTERSECTION IMPROVEMENT PROJECT	13	0571	$ -	$ -	$ 100,000	$ 50,000	$ -	$ -	$ 1,570,000	$ 1,720,000	$ 1,570,000
KELLY AVENUE REHABILITATION PROJECT	11	TBD	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,375,000	$ 1,375,000	$ 1,375,000
TOTAL STREET IMPROVEMENTS			**$ 1,254,000**	**$ 6,790,000**	**$ 6,180,000**	**$ 7,913,290**	**$ 4,768,290**	**$ 225,000**	**$ 2,945,000**	**$ 30,075,579**	**$ 6,835,000**
TRAIL IMPROVEMENTS											
BICYCLE AND PEDESTRIAN MASTER PLAN IMPLEMENTATION PROGRAM	17	0615	N/A	$ 100,000	$ 100,000	$ 100,000	$ 100,000	$ 100,000	N/A	$ 500,000	$ -
STAIR REPAIR AT CAÑADA VERDE CREEK	17	9007	$ -	$ 80,000	$ -	$ -	$ -	$ -	$ -	$ 80,000	$ -
VERTICAL ACCESS AT POPLAR BEACH	17	0597	$ 10,000	$ 140,000	$ -	$ -	$ 90,000	$ 350,000	$ -	$ 590,000	$ 440,000
HIGHWAY 1 BICYCLE/PEDESTRIAN TRAIL EXTENSION	17	0595	$ -	$ 275,000	$ -	$ -	$ -	$ -	$ 1,475,000	$ 1,750,000	$ 1,475,000
BIKEWAY CONNECTIVITY PROJECT - NORTH	17	0619	$ 55,000	$ 120,000	$ 495,000	$ -	$ -	$ -	$ -	$ 670,000	$ 320,000
PEDESTRIAN/BICYCLE CONNECTION TO HATCH ELEMENTARY	17	9010	$ -	$ 20,000	$ 230,000	$ -	$ -	$ -	$ -	$ 250,000	$ 230,000
WAVECREST WALKWAY EXTENSION	17	0564	$ -	$ -	$ 95,000	$ 330,000	$ -	$ -	$ -	$ 425,000	$ -
COASTAL BLUFF PRESERVATION	17	0618	$ 150,000	$ -	$ 390,000	$ 215,000	$ 215,000	$ 215,000	$ -	$ 1,185,000	$ 1,035,000
NAOMI PATRIDGE TRAIL EXTENSION (SOUTH)	17	TBD	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,500,000	$ 2,500,000	$ 2,500,000
POPLAR BEACH COASTAL TRAIL - RELOCATION AND EROSION MITIGATION	17	TBD	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,000,000	$ 3,000,000	$ 3,000,000
TOTAL TRAIL IMPROVEMENTS			**$ 215,000**	**$ 735,000**	**$ 1,310,000**	**$ 645,000**	**$ 405,000**	**$ 665,000**	**$ 6,975,000**	**$ 10,950,000**	**$ 9,000,000**
TOTAL FY ALLOCATIONS			**$ 4,010,257**	**$ 15,461,000**	**$ 13,445,000**	**$ 11,742,290**	**$ 6,648,290**	**$ 2,200,000**	**$ 30,439,250**	**$ 83,946,086**	**$ 39,959,250**

FIVE-YEAR SUMMARY - CAPITAL IMPROVEMENT PROGRAM

EXPENDITURE

PROJECT CATEGORIES	PRIOR YEAR(S)	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY	UNFUNDED
Storm Water Improvements	$ 303,000	$ 906,000	$ 1,250,000	$ 975,000	$ 290,000	$ 150,000	$ 7,854,250	**$ 11,728,250**	$ 9,504,250
Economic Development Improvements	$ 796,257	$ 430,000	$ 350,000	$ 414,000	$ -	$ -	$ -	**$ 1,990,257**	$ 30,000
Operational Improvements	$ 250,000	$ 200,000	$ 50,000	$ -	$ -	$ -	$ -	**$ 500,000**	$ -
Parks Improvements	$ 580,000	$ 1,210,000	$ 2,000,000	$ 185,000	$ 100,000	$ 100,000	$ 12,665,000	**$ 16,840,000**	$ 13,765,000
Facility Improvements	$ 412,000	$ 1,345,000	$ 1,495,000	$ 955,000	$ 455,000	$ 455,000	$ -	**$ 5,117,000**	$ 825,000
Sewer Improvements	$ 200,000	$ 3,845,000	$ 810,000	$ 655,000	$ 630,000	$ 605,000	$ -	**$ 6,745,000**	$ -
Street Improvements	$ 1,254,000	$ 6,790,000	$ 6,180,000	$ 7,913,290	$ 4,768,290	$ 225,000	$ 2,945,000	**$ 30,075,579**	$ 6,835,000
Trail Improvements	$ 215,000	$ 735,000	$ 1,310,000	$ 645,000	$ 405,000	$ 665,000	$ 6,975,000	**$ 10,950,000**	$ 9,000,000
T O T A L	**$ 4,010,257**	**$ 15,461,000**	**$ 13,445,000**	**$ 11,742,290**	**$ 6,648,290**	**$ 2,200,000**	**$ 30,439,250**	**$ 83,946,086**	**$ 39,959,250**

REVENUE

FUNDING SOURCES	PRIOR YEAR(S)	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
Developer Funds	$ 3,100,000	$ -	$ -	$ -	$ -	$ -	$ -	**$ 3,100,000**
Donations	$ 20,000	$ -	$ -	$ -	$ -	$ -	$ -	**$ 20,000**
Gas Tax - Fund 10	$ 50,000	$ 217,500	$ 52,500	$ 52,500	$ 52,500	$ 52,500	$ -	**$ 477,500**
General Capital - Fund 25	$ 100,000	$ 50,000	$ 250,000	$ 264,000	$ -	$ -	$ -	**$ 664,000**
General Fund	$ 4,767,043	$ 3,000,000	$ 855,000	$ 905,000	$ 795,000	$ 655,000	$ -	**$ 10,977,043**
Grant - Coastal Commission	$ 160,000	$ -	$ -	$ -	$ -	$ -	$ -	**$ 160,000**
Grant - Federal	$ 1,142,922	$ 1,202,000	$ -	$ 3,202,829	$ 3,202,829	$ -	$ -	**$ 8,750,580**
Grant - Measure A	$ 915,000	$ 3,200,000	$ 3,200,000	$ -	$ -	$ -	$ -	**$ 7,315,000**
Grant - Ocean Protection Council	$ 53,214	$ -	$ -	$ -	$ -	$ -	$ -	**$ 53,214**
Measure J	$ 186,324	$ -	$ -	$ -	$ -	$ -	$ -	**$ 186,324**
Main Street Bridge - Fund 9	$ -	$ 108,078	$ -	$ 414,961	$ 414,961	$ -	$ -	**$ 937,999**
Park Facility/Development - Fund 17	$ 323,676	$ 106,922	$ 850,000	$ 330,000	$ -	$ -	$ -	**$ 1,610,598**
Public Facilities - Fund 48	$ -	$ -	$ 215,000	$ -	$ -	$ -	$ -	**$ 215,000**
Storm Drain Improvement - Fund 14	$ -	$ 100,000	$ 150,000	$ 150,000	$ 150,000	$ 150,000	$ -	**$ 700,000**
Street and Road - Fund 11	$ -	$ 714,578	$ 652,500	$ 52,500	$ 52,500	$ 52,500	$ -	**$ 1,524,578**
San Mateo County Contribution	$ 200,000	$ -	$ -	$ -	$ -	$ -	$ -	**$ 200,000**
San Mateo County Loan	$ 200,000	$ -	$ -	$ -	$ -	$ -	$ -	**$ 200,000**
Sewer Service - Fund 05/06	$ 200,000	$ 3,845,000	$ 810,000	$ 655,000	$ 630,000	$ 605,000	$ -	**$ 6,745,000**
Traffic Mitigation - Fund 13	$ -	$ -	$ 100,000	$ 50,000	$ -	$ -	$ -	**$ 150,000**
UNFUNDED	$ -	$ 30,000	$ 5,215,000	$ 2,260,000	$ 1,330,000	$ 685,000	$ 30,439,250	**$ 39,959,250**
T O T A L	**$ 11,418,179**	**$ 12,574,078**	**$ 12,350,000**	**$ 8,336,790**	**$ 6,627,790**	**$ 2,200,000**	**$ 30,439,250**	**$ 83,946,086**

COMPLETED IMPROVEMENTS

The CIP is generally a forward planning document. However, it is important to take time to reflect on the accomplishments of the prior fiscal year. This section of the CIP represents the diverse and complex nature of the work the City undertakes each year in the CIP and provides the opportunity to appreciate the ongoing commitments of the City Council to improving and maintaining the quality of life in Half Moon Bay.

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PROJECT TITLE: LIBRARY REPLACEMENT - PHASE 2 CONSTRUCTION

Category:	Facilities			**Project Number:**	545		
Project Location:	620 Correas Street			**Lead Department:**	Public Works		
Type:	Community Enhancement			**Status:**	COMPLETED		
Duration:	Q3 FY16-17	TO	Q1 FY18-19	**Fund Number:**	16	**Fund Name:**	Library Capital

DESCRIPTION:

This project includes construction of the new 22,000 square foot Library and related site improvements. The project is jointly funded by the City, San Mateo County, and the San Mateo County Library Joint Powers Authority. Construction commenced on February 14, 2017 and will continue through the first quarter of FY 18-19.

JUSTIFICATION:

This project is a high priority of the City Council.

STRATEGIC PLAN GOAL (please check all that apply)	
X	Infrastructure
X	Healthy Community/Public Safety
	Fiscal Sustainability
X	Inclusive Governance

ADDITIONAL DETAILS:

Funding for the library is split 50/50 between the City of Half Moon Bay and the County of San Mateo (approx. $12M each), with furnishing and equipment being funded by the Friends of the Library and the San Mateo County Library Joint Powers Authority. The City and County already contributed $6M each to the project, and the City's remaining $6M share will be obtained via loan from the County. Payments to County will begin in 2019.

FINAL ESTIMATED COST:	**$25,000,000**

PROJECT TITLE: BICYCLE AND PEDESTRIAN MASTER PLAN

Category:	Trails			**Project Number:**	580		
Project Location:	Citywide			**Lead Department:**	Community Development		
Type:	Strategic Plan			**Status:**	COMPLETED		
Initial Funding:	FY 16-17	**Estimated Completion:**	FY 18-19	**Fund Number:**	17	**Fund Name:**	Parks

DESCRIPTION:

This project includes a Master Plan for pedestrian trails, pathways, and bikeways. The Plan will refine locations, alignments and design, improve multimodal safety and operation, identify potential sources of funding, and help prioritize future capital projects. FY 18-19 will focus on CEQA compliance and plan adoption.

JUSTIFICATION:

The City does not currently have a comprehensive plan for pedestrian trails, pathways and bikeways. This plan makes the City more competitive for grants and will assist in the preparation of future CIPs.

STRATEGIC PLAN GOAL (please check all that apply)

X	Infrastructure
X	Healthy Community/Public Safety
	Fiscal Sustainability
	Inclusive Governance

ADDITIONAL DETAILS:

This project was initiated in FY 2016-17 and will carry over into FY 2017-18.

FINAL PROJECT COST:	**$ 160,530**

PROJECT TITLE: CORREAS STREET RECONSTRUTION PROJECT

Category:	Streets			**Project Number:**	607		
Project Location:	Intersection of Correas Street & Purissima Street			**Lead Department:**	Public Works		
Type:	Community Enhancement			**Status:**	COMPLETED		
Duration:	FY 17-18	TO	FY 18-19	**Fund Number:**	11	**Fund Name:**	Streets and Roads

DESCRIPTION:

This project involves reconstruction of the pavement of Correas Street from Purissima Street to Chruch Street with full-depth pavement section. The project also includes bulb-outs at the corner of Purrissima Street and Correas Street, incorporation of green infrastructure, and crosswalk markings.

JUSTIFICATION:

Originally, Correas Street was proposed to be slurry sealed as part of the Library project. Upon further investigation, it was determined that the pavement structural section was failing. The project was packaged with other improvements at the intersection and recieved grant funding for the green infrastructure and safe routes to school portions of the project.

STRATEGIC PLAN GOAL (please check all that apply)

X	Infrastructure
X	Healthy Community/Public Safety
	Fiscal Sustainability
X	Inclusive Governance

ADDITIONAL DETAILS:

This project received funding through the C/CAG Green Infrastructure and Safe Routes to School program, as well as credits from PG&E.

FINAL PROJECT COST:	**$ 538,395**

PROJECT TITLE: SHERIFF SUBSTATION FACILITY ASSESSMENT

Category:	Facilities			**Project Number:**	605		
Project Location:	Citywide			**Lead Department:**	Public Works		
Type:	Capital Maintenance			**Status:**	COMPLETED		
Duration:	FY17-18	TO	FY18-19	**Fund Number:**	48	**Fund Name:**	Public Facilities

DESCRIPTION:

This project includes the completion of an assessment of the City's Sheriff Substation and creation of a prioritized list identifying repair and replacement needs. This project will result in a prioritized and itemized maintanence schedule for operational sustainability of the Substation.

JUSTIFICATION:

The Substation is comprised of four modular buidlings that are well beyond their normal life expectancy. The assessment will deteremine if its feasible to do temporary repairs to keep the building operational and recommend a long-term implementation plan.

STRATEGIC PLAN GOAL (please check all that apply)	
X	Infrastructure
X	Healthy Community/Public Safety
	Fiscal Sustainability
	Inclusive Governance

ADDITIONAL DETAILS:

Due to enhancements made to the Ted Adcock Community Center in FY 2017-18, the focus of the assessment will be the Sheriff's Department. Depending on the recommendations from the assessment, improvements may be funded through the Emergency Response Program. Funding for implementation has been programmed for FY 19-20 in the "Sheriff Substation Project."

FINAL PROJECT COST:	**$**	**12,964**

PROJECT TITLE: ELECTRIC VEHICLE CHARGING STATION(S)

Category:	Economic Development			**Project Number:**	537		
Project Location:	Downtown Half Moon Bay			**Lead Department:**	Public Works		
Type:	Community Enhancement			**Status:**	COMPLETED		
Duration:	FY 17-18	TO	FY 18-19	**Fund Number:**	25	**Fund Name:**	General Capital

DESCRIPTION:

This project includes the purchase and installation of three level two, dual-port electric vehicle charging station at City Hall, the new library, and the Ted Adcock Community Center. This also includes electrical work that is required to support the new stations.

JUSTIFICATION:

The charging station(s) will encourage residents and visitors with electric vehicles to travel to and within Half Moon Bay. This project will further emphasize Half Moon Bay's commitment to sustainability programs and efforts.

STRATEGIC PLAN GOAL (please check all that apply)

X	Infrastructure
X	Healthy Community/Public Safety
	Fiscal Sustainability
	Inclusive Governance

ADDITIONAL DETAILS:

This project was extended through FY 20-21 to account for reporting requirements for the grant funds received.

FINAL PROJECT COST:	**$ 48,696**

PROJECT TITLE: PARKS MASTER PLAN

Category:	Parks			**Project Number:**	583		
Project Location:	Citywide			**Lead Department:**	Community Development		
Type:	Community Enhancement			**Status:**	COMPLETED		
Duration:	FY 16-17	TO	FY 18-19	**Fund Number:**	17	**Fund Name:**	Parks

DESCRIPTION:

This project includes the development of the RFP, selection of the consultant, and preparation of a Parks Master Plan including an assessment of current parks and facilities and potential future park sites. The Master Plan will include an assessment of potential safety and security issues, irrigation systems, and other needs identified in the project scope. FY 18-19 will focus on CEQA compliance and plan adoption.

JUSTIFICATION:

The project was identified by the City Council as a high priority during the February 9, 2016 retreat.

STRATEGIC PLAN GOAL (please check all that apply)

X	Infrastructure
X	Healthy Community/Public Safety
	Fiscal Sustainability
	Inclusive Governance

ADDITIONAL DETAILS:

This project was initiated in FY 2016-17 and will continue into FY 18-19 in order to complete CEQA.

FINAL PROJECT COST:	**$ 184,310**

PROJECT TITLE: MUNICIPAL ENERGY EFFICIENCY UPGRADES

Category:	Facilities			**Project Number:**	620		
Project Location:	353 Kelly Avenue, 537 Kelly Avenue, 110 Higgins Canyon Road, 501 Main Street			**Lead Department:**	Public Works		
Type:	Capital Maintenance			**Status:**	COMPLETED		
Duration:	FY 18-19	TO	FY 18-19	**Fund Number:**	48	**Fund Name:**	Public Facilities

DESCRIPTION:

This project includes the installation of double-paned windows at the Ted Adcock Community Center (TACC) and lighting upgrades at TACC, the Sheriff's Substation, the Train Depot, and City Hall.

JUSTIFICATION:

In FY 2017-18, the City successfully applied for and accepted grant funding from C/CAG to assist municipal energy upgrades.

STRATEGIC PLAN GOAL (please check all that apply)

X	Infrastructure
X	Healthy Community/Public Safety
	Fiscal Sustainability
	Inclusive Governance

ADDITIONAL DETAILS:

FINAL PROJECT COST*:	**$ 37,933**

*Final project did not include window replacement at the TACC, which was incorporated into the "Ted Adcock Community Center Kitchen and Entry Remodel" project (#621)

PROGRAM TITLE: ADA TRANSITION PLAN

Category:	Facilities			**Project Number:**	601		
Project Location:	Citywide			**Lead Department:**	Finance		
Type:	Mandated			**Status:**	COMPLETED		
Duration:	FY 17-18	TO	FY 18-19	**Fund Number:**	25	**Fund Name:**	General Capital

DESCRIPTION:

This program ensures the City's compliance with the Americans with Disabilities Act (ADA). The ADA requires all public agencies to adopt a Transition Plan to evaluate and identify physical barriers that prevent public access to services and programs. In FY 2017-18, the City issued an RFP and contract for a consultant to develop the ADA Transition Plan. The focus of FY 2018-19 will be the completion of the ADA Transition Plan and the identification of future improvements.

JUSTIFICATION:

This program will ensure City compliance with the Americans with Disability Act requirements and to improve accessibility and safety for the disabled commmunity.

STRATEGIC PLAN GOAL (please check all that apply)	
X	Infrastructure
X	Healthy Community/Public Safety
	Fiscal Sustainability
X	Inclusive Governance

ADDITIONAL DETAILS:

FINAL PROJECT COST:	**$ 44,500**

STORM WATER IMPROVEMENTS

As a Coastal City, Half Moon Bay is vulnerable to the effects of storms, the flow of storm water and storm surge. Investments in the City's storm water system are essential to protect homes, businesses, public facilities and infrastructure. The Storm Drain Master Plan is an important component to prioritizing improvements, identifying regulatory requirements and preventing catastrophic failure of the storm water system in the future.

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STORM WATER IMPROVEMENTS - FIVE-YEAR SUMMARY
CAPITAL IMPROVEMENT PROGRAM

EXPENDITURES/BUDGETS											
FUND ACCOUNTS:		PROJECT TITLE	PRIOR YEAR(S)	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY	UNFUNDED
Fund	Project										
14	0563	GREEN INFRASTRUCTURE AND STORM WATER PROGRAM	N/A	$ 100,000	$ 150,000	$ 150,000	$ 150,000	$ 150,000	N/A	$ 700,000	$ -
14	9003	KELLY/HIGHWAY 1 DRAINAGE PROJECT	$ 103,000	$ 656,000	$ -	$ -	$ -	$ -	$ -	$ 759,000	$ -
14	0608	SEYMOUR DITCH EROSION AND COASTAL STABILIZATION	$ 200,000	$ 150,000	$ 825,000	$ 825,000	$ 140,000	$ -	$ -	$ 2,140,000	$ 1,650,000
14	0579	ARROYO DE EN MEDIO EROSION REPAIR - MIRADA ROAD	$ -	$ -	$ 200,000	$ -	$ -	$ -	$ -	$ 200,000	$ -
14	TBD	ROOSEVELT DITCH IMPROVEMENTS	$ -	$ -	$ 75,000	$ -	$ -	$ -	$ -	$ 75,000	$ -
14	0534	KEHOE WATER COURSE AND HABITAT ENHANCEMENT PROJECT	$ -	$ -	$ -	$ -	$ -	$ -	$ 7,854,250	$ 7,854,250	$ 7,854,250
TOTAL			$ 303,000	$ 906,000	$ 1,250,000	$ 975,000	$ 290,000	$ 150,000	$ 7,854,250	$ 11,728,250	$ 9,504,250

FUNDING								
FUNDING SOURCE(S):	PRIOR YEAR(S)	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
General Fund	$ 1,084,000	$ 150,000	$ 150,000	$ -	$ 140,000	$ -	$ -	$ 1,524,000
San Mateo County Contribution	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Storm Drain Improvement - Fund 14	$ -	$ 100,000	$ 150,000	$ 150,000	$ 150,000	$ 150,000	$ -	$ 700,000
UNFUNDED	$ -	$ -	$ 825,000	$ 825,000	$ -	$ -	$ 7,854,250	$ 9,504,250
TOTAL	$ 1,084,000	$ 250,000	$ 1,125,000	$ 975,000	$ 290,000	$ 150,000	$ 7,854,250	$ 11,728,250

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STORM WATER IMPROVEMENT PROGRAMS

PROGRAM TITLE: GREEN INFRASTRUCTURE AND STORM WATER PROGRAM

Category:	Storm Water	**Program Number:**	0563		
Project Location:	Citywide	**Lead Department:**	Public Works		
Type:	Mandated	**Status:**	Previously Approved		
Duration:	Ongoing	**Fund Number:**	14	**Fund Name:**	Storm Drain Capital

DESCRIPTION:

The focus of FY 19-20 is the finalization of the Storm Drain Master Plan (Phase II) and maintaining required mechanical storm water devices. The City will also incorporate flow meters at key locations including Kehoe and Highway 1. Years 2-5 will focus on small projects and analyses in response to identified storm water issues. Projects identified in this program will be incorporated in future CIPs as distinct projects.

JUSTIFICATION:

The City owns and maintains a majority of the storm drain system. Major maintenance and capital improvements are necessary to meet State and Federal laws as well as protect public health and safety and property.

STRATEGIC PLAN GOAL (please check all that apply)

X	Infrastructure
X	Healthy Community/Public Safety
X	Fiscal Sustainability
	Inclusive Governance

ADDITIONAL DETAILS:

This program was previously titled "Storm Drain Master Plan Implmenetation Program."

Accomplishments in FY 18-19 include acquisition of permits for the Kelly Avenue storm drain improvements and award of construction contract. This project has been included in this year's CIP as a distinct project.

EXPENDITURES	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	TOTAL ALL FY
Prof.Serv/Env.	$ 5,000	$ 10,000	$ 10,000	$ 10,000	$ 10,000	$ 45,000
Construction	$ 85,000	$ 120,000	$ 120,000	$ 120,000	$ 120,000	$ 565,000
PM-CM	$ 10,000	$ 20,000	$ 20,000	$ 20,000	$ 20,000	$ 90,000
TOTAL	**$ 100,000**	**$ 150,000**	**$ 150,000**	**$ 150,000**	**$ 150,000**	**$ 700,000**
SOURCE(S) OF FUNDS						
Storm Drain Improvement - Fund 14	$ 100,000	$ 150,000	$ 150,000	$ 150,000	$ 150,000	$ 700,000
TOTAL	**$ 100,000**	**$ 150,000**	**$ 150,000**	**$ 150,000**	**$ 150,000**	**$ 700,000**

STORM WATER IMPROVEMENT PROJECTS

FY 2019-20

PROJECT TITLE: KELLY/HIGHWAY 1 DRAINAGE PROJECT

Category:	Storm Water			**Project Number:**	9003		
Project Location:	Highway 1/Kelly Avenue			**Lead Department:**	Public Works		
Type:	Capital Maintenance/Community Enhancement			**Status:**	NEW		
Initial Funding	FY 18-19	**Estimated Completion**	FY 19-20	**Fund Number:**	14	**Fund Name:**	Storm Drain Capital

DESCRIPTION:

This project involves improvements to the drainage at the intersection of Highway 1 and Kelly Avenue, diverting stormwater to flow along the east side of Highway 1, to the north of the intersection adjacent to Shoreline Station.

JUSTIFICATION:

There is an existing storm drain culvert beneath Highway 1 that conveys storm drainage from the east to west of Highway 1. Due to the lack of adequate drainage capacity west of Highway 1 at Kelly Avenue, excessive amounts of storm water flood Cabrillo Unified and Hatch Elementary school as well as Kelly Avenue.

STRATEGIC PLAN GOAL (please check all that apply)

X	Infrastructure
X	Healthy Community/Public Safety
	Fiscal Sustainability
X	Inclusive Governance

ADDITIONAL DETAILS:

This improvement was identified as part of the Highway 1/Kelly Avenue Intersection improvement project and a 2017 Drainage Study prepared by BKF Engineers.

EXPENDITURES	PRIOR YEARS BUDGET EXPENDITURES	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
Engineering & Design	$ 61,000							$ 61,000
Construction		$ 656,000						$ 656,000
PM-CM	$ 42,000							$ 42,000
TOTAL	**$ 103,000**	**$ 656,000**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 759,000**

SOURCE(S) OF FUNDS	PRIOR YEARS BUDGET ALLOCATIONS	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
General Fund	$ 759,000							$ 759,000
TOTAL	**$ 759,000**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 759,000**

PROJECT TITLE: SEYMOUR DITCH EROSION AND COASTAL STABILIZATION

Category:	Storm Water			**Project Number:**	0608		
Project Location:	Seymour Ditch, west of Seymour Pedestrian Bridge			**Lead Department:**	Public Works		
Type:	Capital Maintenance/Community Enhancement			**Status:**	Previously Approved		
Initial Funding	FY 18-19	**Estimated Completion**	FY 22-23	**Fund Number:**	14	**Fund Name:**	Storm Drain Capital

DESCRIPTION:

This project involves finalizing the design, environmental, obtaining the Coastal Development Permit (CDP) of the Seymour Ditch and protection of the San Mateo County landfill immediately adjacent to the ditch. The project will require partnership with San Mateo County, resource agencies and adjacent property owners (Peninsula Open Space Trust (POST) and Coastside Land Trust (CLT), analysis of alternatives, design of preferred alternatives, permitting for the preferred alternative and ultimately construction on the ditch, which is 300 linear feet across. Budget also includes costs for monitoring the ditch for 5 years following completion of the repairs.

In FY 19-20 the City will make a concerted effort to partner with San Mateo County on funding this project. The proposed funding will provide an alternatives analysis and construction documents based on preferred option. Budget for FY 20-21 reflects costs for ongoing monitoring of the ditch as required by the Coastal Development Permit (CDP).

JUSTIFICATION:

The Seymour Ditch is experiencing significant erosion at the outlet to Poplar Beach. Temporary repairs were completed in FY 17-18 but a permanent repair is needed.

STRATEGIC PLAN GOAL (please check all that apply)

X	Infrastructure
X	Healthy Community/Public Safety
	Fiscal Sustainability
X	Inclusive Governance

ADDITIONAL DETAILS:

Work completed in FY 2018-19 include stakeholder collaboration and alternatives analysis. The City, San Mateo County Resource Conservation District, POST, and CLT, have requested asisstance form the Army Core of Engineers (under section 206) for habitat restoration and basin upstream storm water retetion.

EXPENDITURES	PRIOR YEARS BUDGET EXPENDITURES	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
Engineering & Design	$ 100,000	$ 75,000						$ 175,000
Prof.Serv/Env.	$ 100,000	$ 75,000			$ 140,000			$ 315,000
Construction			$ 750,000	$ 750,000				$ 1,500,000
PM-CM			$ 75,000	$ 75,000				$ 150,000
TOTAL	**$ 200,000**	**$ 150,000**	**$ 825,000**	**$ 825,000**	**$ 140,000**	**$ -**	**$ -**	**$ 2,140,000**

SOURCE(S) OF FUNDS	PRIOR YEARS BUDGET ALLOCATIONS	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
General Fund	$ 200,000	$ 150,000			$ 140,000			$ 490,000
San Mateo County Contribution								
UNFUNDED			$ 825,000	$ 825,000				$ 1,650,000
TOTAL	**$ 200,000**	**$ 150,000**	**$ 825,000**	**$ 825,000**	**$ 140,000**	**$ -**	**$ -**	**$ 2,140,000**

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STORM WATER IMPROVEMENT PROJECTS

FY 2020-24

PROJECT TITLE: ARROYO DE EN MEDIO EROSION REPAIR - MIRADA ROAD

Category:	Storm Water			**Project Number:**	0579		
Project Location:	Mirada Road and Arroyo De En Medio			**Lead Department:**	San Mateo County Public Works		
Type:	Public Safety Enhancement			**Status:**	Previously Approved		
Initial Funding	FY 17-18	**Estimated Completion**	FY 20-21	**Fund Number:**	14	**Fund Name:**	Storm Drain Capital

DESCRIPTION:

This project is a joint effort between the City and San Mateo County to address major erosion to the 145 foot long ditch which is causing damage to public improvements near Mirada Road. The City and County have jointly filed a Coastal Development Permit with the Coastal Commission to complete permanent repairs. San Mateo County is the lead agency on the project, with the City making a monetary contribution.

JUSTIFICATION:

County repairs are needed to stabilize and maintain access to homes off of Mirada Road and to maintain public access to the Coastal Trail (Mirada Road). The City portion of the work involves stabilizing the bank of Arroyo De En Medio which in turn will help protect the County's Coastal Trail Bridge.

STRATEGIC PLAN GOAL (please check all that apply)

X	Infrastructure
X	Healthy Community/Public Safety
	Fiscal Sustainability
	Inclusive Governance

ADDITIONAL DETAILS:

This project was initiated in FY 16-17 and will carry over into FY 19-20 due to delays in the design and permitting process. Sand mitigation issues and costs may result in delay, additional costs, or withdrawal of CDP.

EXPENDITURES	PRIOR YEARS BUDGET EXPENDITURES	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
Construction			$ 200,000					$ 200,000
TOTAL	**$ -**	**$ -**	**$ 200,000**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 200,000**

SOURCE(S) OF FUNDS	PRIOR YEARS BUDGET ALLOCATIONS	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
General Fund	$ 125,000		$ 75,000					$ 200,000
TOTAL	**$ 125,000**	**$ -**	**$ 75,000**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 200,000**

PROJECT TITLE: ROOSEVELT DITCH IMPROVEMENTS

Category:	Storm Water		**Project Number:**	TBD	
Project Location:	Roosevelt Ditch at Pullman Court		**Lead Department:**	Public Works	
Type:	Capital Maintenance		**Status:**	Previously Approved	
Initial Funding	FY 19-20	**Estimated Completion** TBD	**Fund Number:**	14	**Fund Name:** Storm Drain Capital

DESCRIPTION:

The focus of FY 20-21 will be biological and hydrologic studies of the Roosevelt Ditch. After assessment of the ditch, staff will program funding for future design and construction (not currently reflected).

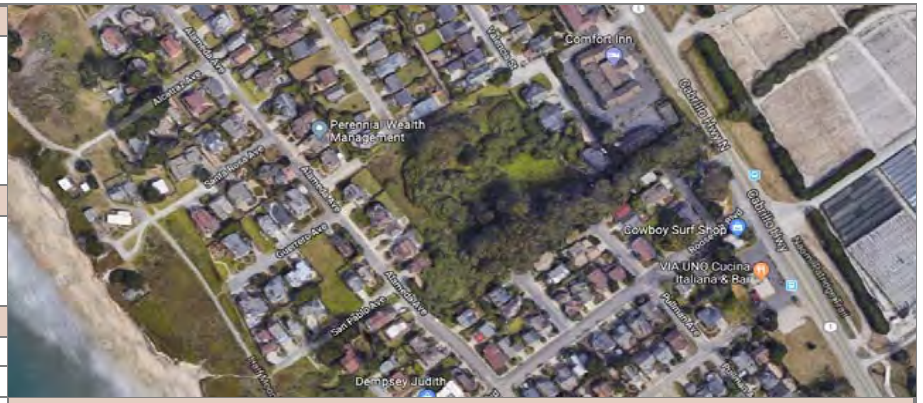
Future work envisioned includes repair or replacement of retention wall and possible relocation of utilities.

JUSTIFICATION:

Roosevelt Ditch has experienced significant erosion damage partly due to the heavy rain events of the last couple years. Trees have fallen and caused damage to the courts adjacent and have been subjected to localized flooding as a result.

STRATEGIC PLAN GOAL (please check all that apply)

X	Infrastructure
X	Healthy Community/Public Safety
	Fiscal Sustainability
	Inclusive Governance



ADDITIONAL DETAILS:

Staff may request use of the funds in the Emergency Response Program to address critical issues and concerns.

EXPENDITURES	PRIOR YEARS BUDGET EXPENDITURES	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
Prof.Serv/Env.			$ 75,000					$ 75,000
TOTAL	**$ -**	**$ -**	**$ 75,000**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 75,000**

SOURCE(S) OF FUNDS	PRIOR YEARS BUDGET ALLOCATIONS	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
General Fund			$ 75,000					$ 75,000
UNFUNDED								$ -
TOTAL	**$ -**	**$ -**	**$ 75,000**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 75,000**

PROJECT TITLE: KEHOE WATER COURSE AND HABITAT ENHANCEMENT PROJECT

Category:	Storm Water			**Project Number:**	0534		
Project Location:	Pilarcitos Creek to Frontage Road			**Lead Department:**	Public Works		
Type:	Capital Maintenance/Community Enhancement			**Status:**	Previously Approved		
Initial Funding	Unfunded	**Estimated Completion**	TBD	**Fund Number:**	14	**Fund Name:**	Storm Drain Capital

DESCRIPTION:

This project involves project design and consultation with resource/permitting agencies to address hydrologic and hydraulic issues within the 21,648 linear foot watershed and alternation of the Kehoe Streambed agreement. Habitat enhancement may be included as a desired outcome as part of the consultation, scoping, and grant seeking process.

JUSTIFICATION:

The City has conducted a hydrology/hydraulic study and identified broad recommendations for implementation.

STRATEGIC PLAN GOAL (please check all that apply)

X	Infrastructure
X	Healthy Community/Public Safety
	Fiscal Sustainability
	Inclusive Governance

ADDITIONAL DETAILS:

EXPENDITURES	PRIOR YEARS BUDGET EXPENDITURES	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
Engineering & Design							$ 250,000	$ 250,000
Prof.Serv/Env.							$ 790,000	$ 790,000
Construction							$ 6,504,250	$ 6,504,250
PM-CM							$ 310,000	$ 310,000
TOTAL	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 7,854,250**	**$ 7,854,250**

SOURCE(S) OF FUNDS	PRIOR YEARS BUDGET ALLOCATIONS	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
UNFUNDED							$ 7,854,250	$ 7,854,250
TOTAL	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 7,854,250**	**$ 7,854,250**

ECONOMIC DEVELOPMENT IMPROVEMENTS

This project section is headlined by the General Plan and Local Coastal Program (LCP) Update, which has been underway since late 2013 and is scheduled for completion in FY 2019-20. In addition to completing the LCP, this section focuses on implementing improvements that will enhance the living standard and attractiveness of Half Moon Bay for residents and visitors alike.

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ECONOMIC DEVELOPMENT IMPROVEMENTS - FIVE-YEAR SUMMARY
CAPITAL IMPROVEMENT PROGRAM

EXPENDITURES/BUDGET											UNFUNDED
FUND ACCOUNTS:		PROJECT TITLE	PRIOR YEAR(S)	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY	
Fund	Project										
25	0564	GENERAL PLAN AND LOCAL COASTAL PROGRAM UPDATE	$ 796,257	$ 250,000	$ -	$ -	$ -	$ -	$ -	$ 1,046,257	$ -
25	9015	MEDIAN LANDSCAPE PROJECT	$ -	$ 130,000	$ -	$ -	$ -	$ -	$ -	$ 130,000	$ 30,000
25	9016	MAIN STREET TREE LIGHTS	$ -	$ 50,000	$ -	$ -	$ -	$ -	$ -	$ 50,000	$ -
25	0559	WAYFINDING AND ENTRY SIGNS (PHASE 2)	$ -	$ -	$ 350,000	$ -	$ -	$ -	$ -	$ 350,000	$ -
25	0534	DOWNTOWN GATEWAY ARCH - NORTH	$ -	$ -	$ -	$ 264,000	$ -	$ -	$ -	$ 264,000	$ -
25	TBD	TOWN CENTER MASTER PLAN	$ -	$ -	$ -	$ 150,000	$ -	$ -	$ -	$ 150,000	$ -
TOTAL			$ 796,257	$ 430,000	$ 350,000	$ 414,000	$ -	$ -	$ -	$ 1,990,257	$ 30,000

FUNDING								
FUNDING SOURCE(S):	PRIOR YEAR(S)	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
General Fund	$ 663,043	$ 250,000	$ -	$ 150,000	$ -	$ -	$ -	$ 1,063,043
Grant - Coastal Commission	$ 160,000	$ -	$ -	$ -	$ -	$ -	$ -	$ 160,000
Grant - Ocean Protection Council	$ 53,214	$ -	$ -	$ -	$ -	$ -	$ -	$ 53,214
General Capital - Fund 25	$ 100,000	$ 50,000	$ 250,000	$ 264,000	$ -	$ -	$ -	$ 664,000
Donations	$ 20,000	$ -	$ -	$ -	$ -	$ -	$ -	$ 20,000
UNFUNDED	$ -	$ 30,000	$ -	$ -	$ -	$ -	$ -	$ 30,000
TOTAL	$ 996,257	$ 330,000	$ 250,000	$ 414,000	$ -	$ -	$ -	$ 1,990,257

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ECONOMIC DEVELOPMENT IMPROVEMENT PROJECTS

FY 2019-20

PROJECT TITLE: GENERAL PLAN AND LOCAL COASTAL PROGRAM UPDATE

Category:	Economic Development			**Project Number:**	0564		
Project Location:	Citywide			**Lead Department:**	Community Development		
Type:	Strategic Plan			**Status:**	Previously Approved		
Initial Funding:	FY 13-14	**Estimated Completion:**	FY 19-20	**Fund Number:**	25	**Fund Name:**	General Capital

DESCRIPTION:

This project involves the creation/updating of the General Plan and Local Coastal Program. The General Plan is the "blueprint" for the future of Half Moon Bay, including the planning policies and regulations to carry out the community's vision. It defines the community's long-term goals for land use, housing, conservation, open space, transportation, safety, noise and more.

JUSTIFICATION:

The City is required to maintain an up-to-date General Plan and Local Coastal Program.

STRATEGIC PLAN GOAL (please check all that apply)

X	Infrastructure
X	Healthy Community/Public Safety
X	Fiscal Sustainability
X	Inclusive Governance

ADDITIONAL DETAILS:

"Prior Years Budget Expenditures" include funds previously expended from the operating budget prior to this project being added to the CIP.

EXPENDITURES	PRIOR YEARS BUDGET EXPENDITURES	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
Prof.Serv/Env.	$ 796,257	$ 250,000						$ 1,046,257
TOTAL	**$ 796,257**	**$ 250,000**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 1,046,257**

SOURCE(S) OF FUNDS	PRIOR YEARS BUDGET ALLOCATIONS	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
General Fund	$ 583,043	$ 250,000						$ 833,043
Grant - Coastal Commission	$ 160,000							$ 160,000
Grant - Ocean Protection Council	$ 53,214							$ 53,214
TOTAL	**$ 796,257**	**$ 250,000**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 1,046,257**

PROJECT TITLE: MEDIAN LANDSCAPE PROJECT

Category:	Economic Development			**Project Number:**	9015		
Project Location:	Highway			**Lead Department:**	Public Works		
Type:	Community Enhancement			**Status:**	Rolled Over		
Initial Funding:	FY 18-19	**Estimated Completion:**	FY 19-20	**Fund Number:**	25	**Fund Name:**	General Capital

DESCRIPTION:

This project involves completion of the Highway 1 landscape meeting between South Main Street and just south of Kelly Avenue.

JUSTIFICATION:

This project was identified by the City Council as the Annual Community Enhancement project for FY 18-19.

STRATEGIC PLAN GOAL (please check all that apply)

X	Infrastructure
	Healthy Community/Public Safety
	Fiscal Sustainability
	Inclusive Governance

ADDITIONAL DETAILS:

Unfunded amount to be obtained through additional fundraising and/or potential grant opportunities.

EXPENDITURES	PRIOR YEARS BUDGET EXPENDITURES	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
Engineering & Design		$ 10,000						$ 10,000
Prof.Serv/Env.		$ 10,000						$ 10,000
Construction		$ 100,000						$ 100,000
PM-CM		$ 10,000						$ 10,000
TOTAL	**$ -**	**$ 130,000**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 130,000**

SOURCE(S) OF FUNDS	PRIOR YEARS BUDGET ALLOCATIONS	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
General Fund	$ 80,000							$ 80,000
Donations	$ 20,000							$ 20,000
UNFUNDED		$ 30,000						$ 30,000
TOTAL	**$ 100,000**	**$ 30,000**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 130,000**

PROJECT TITLE: MAIN STREET TREE LIGHTS

Category:	Economic Development			**Project Number:**	9016		
Project Location:	Highway			**Lead Department:**	Public Works		
Type:	Community Enhancement			**Status:**	NEW		
Initial Funding:	FY 20-21	**Estimated Completion:**	FY 20-21	**Fund Number:**	25	**Fund Name:**	General Capital

DESCRIPTION:

This project includes design and installation of festoon lighting along the Main Street downtown corridor.

JUSTIFICATION:

The City supports various celebrations in the downtown corridor and would like to supply improved festive lighting.

STRATEGIC PLAN GOAL (please check all that apply)

X	Infrastructure
	Healthy Community/Public Safety
	Fiscal Sustainability
	Inclusive Governance

ADDITIONAL DETAILS:

The City's electrical network is being reviewed for potential deficiencies and upgrades prior to installation of festoon lighting.

EXPENDITURES	PRIOR YEARS BUDGET EXPENDITURES	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
Engineering & Design								$ -
Prof.Serv/Env.								$ -
Construction		$ 50,000						$ 50,000
PM-CM								$ -
TOTAL	**$ -**	**$ 50,000**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 50,000**

SOURCE(S) OF FUNDS	PRIOR YEARS BUDGET ALLOCATIONS	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
General Capital - Fund 25		$ 50,000						$ 50,000
TOTAL	**$ -**	**$ 50,000**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 50,000**

ECONOMIC DEVELOPMENT IMPROVEMENT PROJECTS

FY 2020-24

PROJECT TITLE: WAYFINDING AND ENTRY SIGNS (PHASE 2)

Category:	Economic Development			**Project Number:**	0559		
Project Location:	Citywide			**Lead Department:**	Public Works		
Type:	Community Enhancement			**Status:**	Previously Approved		
Initial Funding:	FY 15-16	**Estimated Completion:**	FY 20-21	**Fund Number:**	25	**Fund Name:**	General Capital

DESCRIPTION:

This project is a follow-on to the signage plan that was approved by the Planning Commission and City Council in 2015. This phase includes the fabrication and installation of the remaining Wayfinding and Entry signs along Highway 1 and Highway 92. CalTrans encroachment permits will be required for many of these signs, which may cause further delays to the project.

JUSTIFICATION:

This project is identified as an economic development tool and community identification and enhancement.

STRATEGIC PLAN GOAL (please check all that apply)

X	Infrastructure
X	Healthy Community/Public Safety
	Fiscal Sustainability
	Inclusive Governance

ADDITIONAL DETAILS:

This project has been placed on hold to allow other priority projects to proceed.

EXPENDITURES	PRIOR YEARS BUDGET EXPENDITURES	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
Engineering & Design			$ 25,000					$ 25,000
Prof.Serv/Env.			$ 10,000					$ 10,000
Construction			$ 295,000					$ 295,000
PM-CM			$ 20,000					$ 20,000
TOTAL	**$ -**	**$ -**	**$ 350,000**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 350,000**

SOURCE(S) OF FUNDS	PRIOR YEARS BUDGET ALLOCATIONS	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
General Capital - Fund 25	$ 100,000		$ 250,000					$ 350,000
TOTAL	**$ 100,000**	**$ -**	**$ 250,000**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 350,000**

PROJECT TITLE: DOWNTOWN GATEWAY ARCH - NORTH

Category:	Economic Development			**Project Number:**	0534		
Project Location:	Main Street, between Highway 92 and Stone Pine Road			**Lead Department:**	Public Works		
Type:	Community Enhancement			**Status:**	Previously Approved		
Initial Funding:	FY 21-22	**Estimated Completion:**	FY 21-22	**Fund Number:**	25	**Fund Name:**	General Capital

DESCRIPTION:

This project is a follow-on to the signage plan that was approved by the Planning Commission and City Council in 2015. This project involves the bidding and construction of an archway entry feature on the north part of Main Street to encourage visitation to Downtown Half Moon Bay. The arch will be 65 feet across and 16 feet tall.

JUSTIFICATION:

This project is identified as an economic development tool.

STRATEGIC PLAN GOAL (please check all that apply)

	Infrastructure
	Healthy Community/Public Safety
X	Fiscal Sustainability
	Inclusive Governance

ADDITIONAL DETAILS:

This project was moved to FY 21-22 in anticipation of the Main Street Bridge Rehabilitation Project.

EXPENDITURES	PRIOR YEARS BUDGET EXPENDITURES	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
Engineering & Design				$ 18,000				$ 18,000
Prof.Serv/Env.				$ 9,000				$ 9,000
Construction				$ 210,000				$ 210,000
PM-CM				$ 27,000				$ 27,000
TOTAL	**$ -**	**$ -**	**$ -**	**$ 264,000**	**$ -**	**$ -**	**$ -**	**$ 264,000**

SOURCE(S) OF FUNDS	PRIOR YEARS BUDGET ALLOCATIONS	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
General Capital - Fund 25				$ 264,000				$ 264,000
TOTAL	**$ -**	**$ -**		**$ 264,000**	**$ -**	**$ -**	**$ -**	**$ 264,000**

PROJECT TITLE: TOWN CENTER MASTER PLAN

Category:	Economic Development			**Project Number:**	TBD		
Project Location:	Downtown Half Moon Bay			**Lead Department:**	Community Development		
Type:	Strategic Plan			**Status:**	Previously Approved		
Initial Funding:	FY 21-22	**Expected Completion**	FY 21-22	**Fund Number:**	25	**Fund Name:**	General Capital

DESCRIPTION:

This project includes the preparation of a Master Plan for the downtown core area. The Plan is envisioned to include a detailed land use plan, circulation plan, parking plan, architectural guidelines and streetscape/street furniture plans (including benches, streetlights and refuse cans).

JUSTIFICATION:

The General Plan is anticipated to include policies directing and clarifying the objective of this document.

STRATEGIC PLAN GOAL (please check all that apply)

	Infrastructure
X	Healthy Community/Public Safety
X	Fiscal Sustainability
X	Inclusive Governance

ADDITIONAL DETAILS:

This project was moved to FY 21-22 due to the revised schedule of the General Plan and Local Coastal Plan.

EXPENDITURES	PRIOR YEARS BUDGET EXPENDITURES	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
Prof.Serv/Env.				$ 130,000				$ 130,000
PM-CM				$ 20,000				$ 20,000
TOTAL	**$ -**	**$ -**	**$ -**	**$ 150,000**	**$ -**	**$ -**	**$ -**	**$ 150,000**

SOURCE(S) OF FUNDS	PRIOR YEARS BUDGET ALLOCATIONS	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
General Fund				$ 150,000				$ 150,000
TOTAL	**$ -**	**$ -**		**$ 150,000**	**$ -**	**$ -**	**$ -**	**$ 150,000**

OPERATIONAL IMPROVEMENTS

This section includes major capital investments to enhance the internal operational efficiencies of the City. These improvements will help City staff perform more efficiently and allow staff to respond to customer requests in a timelier manner. Each of the improvements will also enhance the City's transparency as envisioned in the strategic plan.

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OPERATIONAL IMPROVEMENTS - FIVE-YEAR SUMMARY
CAPITAL IMPROVEMENT PROGRAM

EXPENDITURES											UNFUNDED
FUND ACCOUNTS:		PROJECT TITLE	PRIOR YEAR BUDGET EXPENDITURES	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY	
Fund	Project										
25	0555	FINANCIAL SOFTWARE - ENTERPRISE RESOURCE PLANNING	$ 250,000	$ 50,000	$ -	$ -	$ -	$ -	$ -	300,000	$ -
25	0586	GIS IMPLEMENTATION	$ -	$ 150,000	$ 50,000	$ -	$ -	$ -	$ -	200,000	$ -
TOTAL			$ 250,000	$ 200,000	$ 50,000	$ -	$ -	$ -	$ -	$ 500,000	$ -

FUNDING SOURCE(S):	PRIOR YEAR BUDGET ALLOCATIONS	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
General Fund	$ 450,000	$ -	$ 50,000	$ -	$ -	$ -	$ -	$ 500,000
UNFUNDED	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL	$ 450,000	$ -	$ 50,000	$ -	$ -	$ -	$ -	$ 500,000

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OPERATIONAL IMPROVEMENT PROJECTS

FY 2019-20

PROJECT TITLE: FINANCIAL SOFTWARE - ENTERPRISE RESOURCE PLANNING

Category:	Operations			**Project Number:**	0555		
Project Location:	501 Main Street			**Lead Department:**	Finance		
Type:	Strategic Plan			**Status:**	Rolled Over		
Initial Funding:	FY 15-16	**Estimated Completion:**	FY 19-20	**Fund Number:**	25	**Fund Name:**	General Capital

DESCRIPTION:

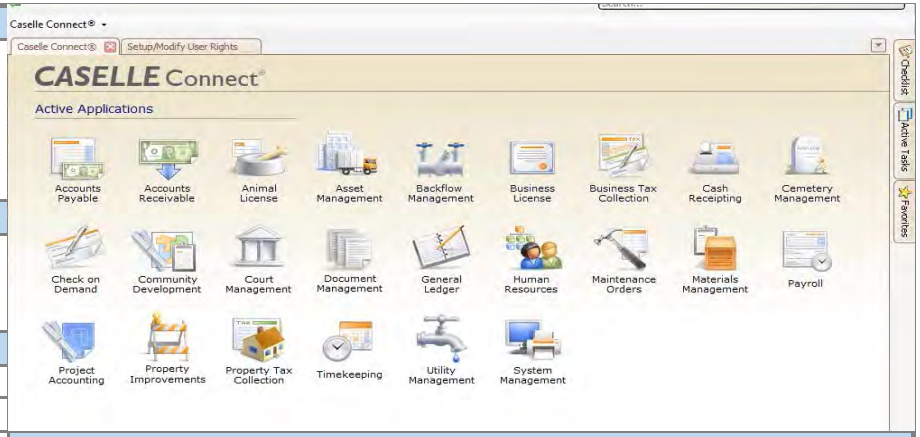
This project includes the preparation of an Request for Proposals (RFP), evaluation, and implementation of the City's first Enterprise Resource Planning (ERP) System. The ERP includes integration of accounting, purchasing, accounts payable, accounts receivable, human resources, payroll, permitting, and potentially other elements as needed.

JUSTIFICATION:

The City currently does not have an ERP. The inclusion of an ERP will increase efficiency of staff.

STRATEGIC PLAN GOAL (please check all that apply)

X	Infrastructure
	Healthy Community/Public Safety
X	Fiscal Sustainability
	Inclusive Governance



ADDITIONAL DETAILS:

The City also opted to purchase a module for Permit Tracking. This project includes the scope and budget originally allocated for the "Permit System and Asset Management Software" project.

EXPENDITURES	PRIOR YEARS BUDGET EXPENDITURES	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
PM-CM	$ 250,000	$ 50,000						$ 300,000
TOTAL	**$ 250,000**	**$ 50,000**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 300,000**

SOURCE(S) OF FUNDS	PRIOR YEARS BUDGET ALLOCATIONS	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
General Fund	$ 300,000							$ 300,000
TOTAL	**$ 300,000**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 300,000**

PROJECT TITLE: GIS IMPLEMENTATION

Category:	Operations			**Project Number:**	0586		
Project Location:	501 Main Street			**Lead Department:**	Public Works		
Type:	Strategic Plan			**Status:**	Previously Approved		
Initial Funding:	FY 15-16	**Estimated Completion:**	FY 20-21	**Fund Number:**	25	**Fund Name:**	General Capital

DESCRIPTION:

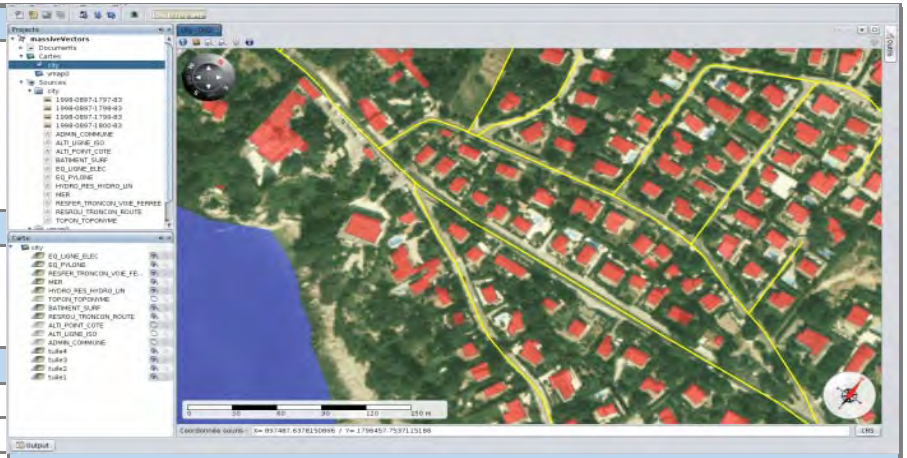
This project includes the identification, purchase, and implementation of hardware and software to enhance the City's Geographic Information System (GIS) capacity. FY 19-20 will focus on identifying potential partners and software/hardware needs and beginning the implementation of the system.

JUSTIFICATION:

The City currently utilizes an outside service for GIS. The City lacks the ability to update infrastructure mapping and to create map layers and presentation maps.

STRATEGIC PLAN GOAL (please check all that apply)

	Infrastructure
	Healthy Community/Public Safety
X	Fiscal Sustainability
X	Inclusive Governance



ADDITIONAL DETAILS:

Staff is evaluating potential means to partner and collaborate with other Coastside agencies to meet GIS needs.

EXPENDITURES	PRIOR YEARS BUDGET EXPENDITURES	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
Prof.Serv/Env.								$ -
Implementation		$ 125,000	$ 50,000					$ 175,000
PM-CM		$ 25,000						$ 25,000
TOTAL	**$ -**	**$ 150,000**	**$ 50,000**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 200,000**

SOURCE(S) OF FUNDS	PRIOR YEARS BUDGET ALLOCATIONS	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
General Fund	$ 150,000		$ 50,000					$ 200,000
TOTAL	**$ 150,000**	**$ -**	**$ 50,000**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 200,000**

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PARK IMPROVEMENTS

Parks are critical to maintain the health and livability of Half Moon Bay for residents and visitors alike. Within Half Moon Bay, there are parks focused on active play and others focused on passive recreation. In some cases, City parks include both aspects. This section focuses on maintaining and enhancing the City's various park assets.

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PARK IMPROVEMENTS - FIVE-YEAR SUMMARY
CAPITAL IMPROVEMENT PROGRAM

EXPENDITURES/BUDGET										UNFUNDED
FUND ACCOUNTS:		PROJECT TITLE	PRIOR YEAR(S):	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY	
Fund	Project										
17	0609	PARKS MASTER PLAN IMPLEMENTATION PROGRAM	N/A	$ 100,000	$ 100,000	$ 100,000	$ 100,000	$ 100,000	N/A	$ 500,000	$ -
17	0610	OCEAN VIEW PARK - PERMANENT RESTROOMS AND SITE IMPROVEMENTS	$ 55,000	$ 485,000	$ -	$ -	$ -	$ -	$ -	$ 540,000	$ -
17	0617	POPLAR BEACH GATEWAYS PLAN	$ 360,000	$ 140,000	$ -	$ -	$ -	$ -	$ -	$ 500,000	$ -
17	9004	WAVECREST WATER MAIN PROJECT	$ -	$ 100,000	$ 600,000	$ -	$ -	$ -	$ -	$ 700,000	$ -
17	0611	CARTER PARK IMPROVEMENTS	$ 165,000	$ 300,000	$ 1,200,000	$ -	$ -	$ -	$ -	$ 1,665,000	$ 1,100,000
17	9005	TRAIN DEPOT AND JOHNSTON HOUSE TEMPORARY IMPROVEMENTS	$ -	$ 85,000	$ -	$ -	$ -	$ -	$ -	$ 85,000	$ -
17	TBD	SMITH FIELD SITE ASSESSMENT AND MASTER PLAN	$ -	$ -	$ 100,000	$ -	$ -	$ -	$ -	$ 100,000	$ -
17	0614	TRAIN DEPOT AND JOHNSTON HOUSE SITE PLAN	$ -	$ -	$ -	$ 85,000	$ -	$ -	$ -	$ 85,000	$ -
17	TBD	PERMANENT RESTROOMS AT POPLAR BEACH	$ -	$ -	$ -	$ -	$ -	$ -	$ 250,000	$ 250,000	$ 250,000
17	TBD	STORAGE BUILDING AT SMITH FIELD	$ -	$ -	$ -	$ -	$ -	$ -	$ 65,000	$ 65,000	$ 65,000
17	TBD	NEW MAGNOLIA/SEYMOUR PARK	$ -	$ -	$ -	$ -	$ -	$ -	$ 350,000	$ 350,000	$ 350,000
17	TBD	NEW COMMUNITY PARK	$ -	$ -	$ -	$ -	$ -	$ -	$ 12,000,000	$ 12,000,000	$ 12,000,000
TOTAL			$ 580,000	$ 1,210,000	$ 2,000,000	$ 185,000	$ 100,000	$ 100,000	$ 12,665,000	$ 16,840,000	$ 13,765,000

FUNDING								
FUNDING SOURCE(S):	PRIOR YEAR(S):	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
General Fund	$ 595,000	$ 858,078	$ 100,000	$ 100,000	$ 100,000	$ 100,000	$ -	$ 1,853,078
Donations	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Measure J	$ 186,324	$ -	$ -	$ -	$ -	$ -	$ -	$ 186,324
Park Facility/Development - Fund 17	$ 173,676	$ 106,922	$ 755,000	$ -	$ -	$ -	$ -	$ 1,035,598
UNFUNDED	$ -	$ -	$ 1,100,000	$ -	$ -	$ -	$ 12,665,000	$ 13,765,000
TOTAL	$ 955,000	$ 965,000	$ 1,955,000	$ 100,000	$ 100,000	$ 100,000	$ 12,665,000	$ 16,840,000

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PARK IMPROVEMENT PROGRAMS

PROGRAM TITLE: PARKS MASTER PLAN IMPLEMENTATION PROGRAM

Category:	Parks	**Project Number:**	0609		
Project Location:	Citywide	**Lead Department:**	Public Works		
Type:	Capital Maintenance/Community Enhancement	**Status:**	Previously Approved		
Duration:	Ongoing	**Fund Number:**	17	**Fund Name:**	Parks

DESCRIPTION:

This program was developed in response to the findings in the Parks Master Plan (PMP). This program will focus on completing the priorities identified that are not substantial enough to be a stand alone Capital Improvement Project.

The project for FY 19-20 will be upgrades and enhancements to the Frenchman's Creek Park.

JUSTIFICATION:

This program was created in order to implement the recommendations from the Parks Master Plan completed in FY 2018-19.

STRATEGIC PLAN GOAL (please check all that apply)

X	Infrastructure
X	Healthy Community/Public Safety
X	Fiscal Sustainability
	Inclusive Governance

ADDITIONAL DETAILS:

Accomplishments in FY 2018-19 include the installation of fencing at Smith Field and Poplar Beach; electrical enhancements and security lighting at Carter Park; parking lot enhancements at Frenchmen's Creek; park furniture enhancements and replacements at various locations; and installation of automatic locks at park restrooms.

EXPENDITURES	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	TOTAL ALL FY
Construction	$ 70,000	$ 70,000	$ 70,000	$ 70,000	$ 70,000	$ 350,000
Equipment	$ 30,000	$ 30,000	$ 30,000	$ 30,000	$ 30,000	$ 150,000
PM-CM						$ -
TOTAL	**$ 100,000**	**$ 100,000**	**$ 100,000**	**$ 100,000**	**$ 100,000**	**$ 500,000**
SOURCE(S) OF FUNDS						
General Fund	$ 100,000	$ 100,000	$ 100,000	$ 100,000	$ 100,000	$ 500,000
TOTAL	**$ 100,000**	**$ 100,000**	**$ 100,000**	**$ 100,000**	**$ 100,000**	**$ 500,000**

PARK IMPROVEMENT PROJECTS

FY 2019-20

PROJECT TITLE: OCEAN VIEW PARK - PERMANENT RESTROOMS AND SITE IMPROVEMENTS

Category:	Parks			**Project Number:**	0610		
Project Location:	Ocean View Park			**Lead Department:**	Public Works		
Type:	Capital Maintenance/Community Enhancement			**Status:**	Previously Approved		
Initial Funding:	FY 18-19	**Estimated Completion:**	FY 19-20	**Fund Number:**	17	**Fund Name:**	Parks

DESCRIPTION:

This project includes the design and renovation of the restroom at Ocean View Park. This project will relocate and expand the facility to better serve daily park users.

JUSTIFICATION:

The current restroom is aging and in constant need of repair. Park users have identified this as a priority for them.

STRATEGIC PLAN GOAL (please check all that apply)

X	Infrastructure
X	Healthy Community/Public Safety
X	Fiscal Sustainability
	Inclusive Governance

ADDITIONAL DETAILS:

EXPENDITURES	PRIOR YEARS BUDGET EXPENDITURES	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
Engineering & Design	$ 55,000	$ 10,000						$ 65,000
Construction		$ 450,000						$ 450,000
PM-CM		$ 25,000						$ 25,000
TOTAL	**$ 55,000**	**$ 485,000**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 540,000**

SOURCE(S) OF FUNDS	PRIOR YEARS BUDGET ALLOCATIONS	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
General Fund	$ 300,000	$ 240,000						$ 540,000
TOTAL	**$ 300,000**	**$ 240,000**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 540,000**

PROJECT TITLE: POPLAR BEACH GATEWAYS PLAN

Category:	Parks			**Project Number:**	0617		
Project Location:	Railroad Avenue to Coastal Trail			**Lead Department:**	Public Works		
Type:	Community Enhancement/Public Safety			**Status:**	Previously Approved		
Initial Funding	FY 17-18	**Estimated Completion:**	FY 19-20	**Fund Number:**	17	**Fund Name:**	Parks

DESCRIPTION:

This multi-year project will create a Master Plan for the Poplar Beach area, improve parking and access, create a phased program for erosion mitigation, bluff restoration, creation of gateway elements, and initiate work on the easterly re-alignment of the Coastal Trail between Poplar Street and Kelly Avenue. The focus of FY 18-19 will be to complete the Master Plan, with subsequent years intended to focus on the implementation of the Master Plan. Cost estimates will be provided after the Master Plan is completed.

JUSTIFICATION:

While San Mateo County is encouraging coastal tourism and SamTrans now provides a free shuttle to Poplar Beach on weekends, the Poplar Beach Gateway Area is in need of a more user-friendly design and aesthetic. The pathway to Poplar Beach has deteriorated as a result of deferred maintenance and is a safety hazard.

STRATEGIC PLAN GOAL (please check all that apply)

X	Infrastructure
X	Healthy Community/Public Safety
	Fiscal Sustainability
	Inclusive Governance

ADDITIONAL DETAILS:

Accomplishments in FY 17-18 include the purchase and installion of new refuse/recycle containers, educational/environmental signage, and new fencing, rehabilitating the Ped/Bike Trail from Railroad Avenue to the Coastal Trail, and making temporary repairs to drainage in select areas.

EXPENDITURES	PRIOR YEARS BUDGET EXPENDITURES	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
Engineering & Design	$ 30,000							$ 30,000
Prof.Serv/Env.	$ 17,500	$ 140,000						$ 157,500
Construction	$ 292,500							$ 292,500
PM-CM	20000							$ 20,000
TOTAL	**$ 360,000**	**$ 140,000**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 500,000**

SOURCE(S) OF FUNDS	PRIOR YEARS BUDGET ALLOCATIONS	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
General Fund		$ 118,078						$ 118,078
Measure J	$ 186,324							$ 186,324
Park Facility/Development - Fund 17	$ 173,676	$ 21,922						$ 195,598
TOTAL	**$ 360,000**	**$ 140,000**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 500,000**

PROJECT TITLE: TRAIN DEPOT AND JOHNSTON HOUSE TEMPORARY IMPROVEMENTS

Category:	Parks			**Project Number:**	9005		
Project Location:	110 Higgins Canyon Road			**Lead Department:**	Public Works		
Type:	Capital Maintenance/Community Enhancement			**Status:**	Previously Approved		
Initial Funding	FY 19-20	**Estimated Completion:**	FY 19-20	**Fund Number:**	17	**Fund Name:**	Parks

DESCRIPTION:

This project will focus on updating existing site improvements (e.g. repaving parking lot and driveway and ADA compliance).

JUSTIFICATION:

The City is required to maintain their properties and update facilities to be ADA compliant.

STRATEGIC PLAN GOAL (please check all that apply)

X	Infrastructure
X	Healthy Community/Public Safety
	Fiscal Sustainability
	Inclusive Governance

ADDITIONAL DETAILS:

EXPENDITURES	PRIOR YEARS BUDGET EXPENDITURES	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
Prof.Serv/Env.		$ 10,000						$ 10,000
Construction		$ 70,000						
PM-CM		$ 5,000						$ 5,000
TOTAL	**$ -**	**$ 85,000**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 85,000**

SOURCE(S) OF FUNDS	PRIOR YEARS BUDGET ALLOCATIONS	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
Park Facility/Development - Fund 17		$ 85,000						$ 85,000
TOTAL	**$ -**	**$ 85,000**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 85,000**

PROJECT TITLE: WAVECREST WATER MAIN PROJECT

Category:	Parks			**Project Number:**	9004		
Project Location:	Wavecrest Road from Best Western to Smith Field			**Lead Department:**	Public Works		
Type:	Community Enhancement/Public Safety			**Status:**	NEW		
Initial Funding:	FY 19-20	**Estimated Completion:**	FY 19-20	**Fund Number:**	17	**Fund Name:**	Parks

DESCRIPTION:

This project includes the design, permitting, and installation of a new water line/main to serve fire protection and irrigation needs at Smith Field Park (approximately 2,640 linear feet). Staff plans to request the Coastside County Water District (CCWD) to design and install a new water line. In the alternative, the City may have to design and install a new waterline.

JUSTIFICATION:

The current water line size is inadequate to properly handle the fire protection and irrigation needs of Smith Field.

STRATEGIC PLAN GOAL (please check all that apply)

X	Infrastructure
X	Healthy Community/Public Safety
	Fiscal Sustainability
	Inclusive Governance

ADDITIONAL DETAILS:

EXPENDITURES	PRIOR YEARS BUDGET EXPENDITURES	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
Engineering & Design		$ 50,000						$ 50,000
Prof.Serv/Env.		$ 50,000						$ 50,000
Construction			$ 550,000					$ 550,000
PM-CM			$ 50,000					$ 50,000
TOTAL	**$ -**	**$ 100,000**	**$ 600,000**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 700,000**

SOURCE(S) OF FUNDS	PRIOR YEARS BUDGET ALLOCATIONS	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
General Fund		$ 100,000						$ 100,000
Park Facility/Development - Fund 17			$ 600,000					$ 600,000
TOTAL	**$ -**	**$ 100,000**	**$ 600,000**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 700,000**

PROJECT TITLE: CARTER PARK IMPROVEMENTS

Category:	Parks			**Project Number:**	0611		
Project Location:	Carter Park			**Lead Department:**	Public Works/Administration		
Type:	Capital Maintenance/Community Enhancement			**Status:**	Previously Approved		
Initial Funding:	FY 18-19	**Estimated Completion:**	FY 20-21	**Fund Number:**	17	**Fund Name:**	Parks

DESCRIPTION:

The Parks Master Plan identified John L. Carter Memorial Park as an opportunity to create a more actively utilized space be adding improvements to facilitate greater opportunities for performances and day camps. The purpose of this project is to develop and implement a long-term plan for the site and identify projects that may be completed in the near-term to improve the site.

The focus of FY 19-20 will be completing 60% design drawings and cost estimates.

JUSTIFICATION:

This project was identified as a project in the Parks Master Plan completed in FY 2018-19.

STRATEGIC PLAN GOAL (please check all that apply)

X	Infrastructure
X	Healthy Community/Public Safety
X	Fiscal Sustainability
	Inclusive Governance

ADDITIONAL DETAILS:

Conceptual site plan was completed in FY 18-19. Construction costs may vary based upon 60% design and cost estimates.

EXPENDITURES	PRIOR YEARS BUDGET EXPENDITURES	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
Engineering & Design		$ 150,000	$ 50,000					$ 200,000
Prof.Serv/Env.	$ 150,000	$ 150,000	$ 50,000					$ 350,000
Construction			$ 1,000,000					$ 1,000,000
PM-CM	$ 15,000		$ 100,000					$ 115,000
TOTAL	**$ 165,000**	**$ 300,000**	**$ 1,200,000**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 1,665,000**

SOURCE(S) OF FUNDS	PRIOR YEARS BUDGET ALLOCATIONS	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
General Fund	$ 165,000	$ 300,000						$ 465,000
Park Facility/Development - Fund 17			$ 100,000					$ 100,000
UNFUNDED			$ 1,100,000					$ 1,100,000
TOTAL	**$ 165,000**	**$ 300,000**	**$ 1,200,000**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 1,665,000**

PARK IMPROVEMENT PROJECTS

FY 2020-24

PROJECT TITLE: SMITH FIELD SITE ASSESSMENT AND MASTER PLAN

Category:	Parks			**Project Number:**	TBD		
Project Location:	Smith Field Park			**Lead Department:**	Administration		
Type:	Capital Maintenance/Community Enhancement			**Status:**	Previously Approved		
Initial Funding	FY 18-19	**Estimated Completion:**	FY 20-21	**Fund Number:**	17	**Fund Name:**	Parks

DESCRIPTION:

This is a multi-year project that involves significant improvements to Smith Field. Implementation of identified improvements from the assessment is estimated to occur in FY 19-20. FY 20-23 will focus on completing a Master Plan of Smith Field with latter years of the project designated for implementation of findings from the Master Plan.

JUSTIFICATION:

This project was identified as a project in the Parks Master Plan completed in FY 2018-19.

STRATEGIC PLAN GOAL (please check all that apply)

X	Infrastructure
X	Healthy Community/Public Safety
	Fiscal Sustainability
	Inclusive Governance

ADDITIONAL DETAILS:

This plan is intended to immediately follow the Wavecrest Water Main Project.

EXPENDITURES	PRIOR YEARS BUDGET EXPENDITURES	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
Construction			$ 90,000					$ 90,000
PM-CM			$ 10,000					$ 10,000
TOTAL	**$ -**	**$ -**	**$ 100,000**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 100,000**

SOURCE(S) OF FUNDS	PRIOR YEARS BUDGET ALLOCATIONS	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
General Fund	$ 45,000							$ 45,000
Park Facility/Development - Fund 17			$ 55,000					$ 55,000
TOTAL	**$ 45,000**	**$ -**	**$ 55,000**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 100,000**

PROJECT TITLE: TRAIN DEPOT AND JOHNSTON HOUSE SITE PLAN

Category:	Parks			**Project Number:**	0614
Project Location:	110 Higgins Canyon Road			**Lead Department:**	Administration
Type:	Capital Maintenance/Community Enhancement			**Status:**	Rolled Over
Initial Funding	FY 18-19	**Estimated Completion:**	FY 21-22	**Fund Number:**	17

Fund Name: Parks

DESCRIPTION:

The Parks Master Plan identified the Johnston House and Train Depot Property as an opportunity to add low-impact activities and facilities for family picnicking, as well as enhancements to the historic nature of the site. The purpose of this project is to develop a long-term plan for the site and identify projects that may be completed in the near-term to improve the site.

JUSTIFICATION:

This project was identified as a project in the Parks Master Plan completed in FY 2018-19.

STRATEGIC PLAN GOAL (please check all that apply)

X	Infrastructure
X	Healthy Community/Public Safety
	Fiscal Sustainability
X	Inclusive Governance

ADDITIONAL DETAILS:

EXPENDITURES	PRIOR YEARS BUDGET EXPENDITURES	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
Prof.Serv/Env.				$ 75,000				$ 75,000
Construction								
PM-CM				$ 10,000				$ 10,000
TOTAL	**$ -**	**$ -**	**$ -**	**$ 85,000**	**$ -**	**$ -**	**$ -**	**$ 85,000**

SOURCE(S) OF FUNDS	PRIOR YEARS BUDGET ALLOCATIONS	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
General Fund	$ 85,000							$ 85,000
TOTAL	**$ 85,000**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 85,000**

PROJECT TITLE: PERMANENT RESTROOMS AT POPLAR BEACH

Category:	Parks			**Project Number:**	TBD		
Project Location:	Poplar Beach Gateway			**Lead Department:**	Public Works		
Type:	Community Enhancement			**Status:**	Previously Approved		
Initial Funding:	Unfunded	**Estimated Completion:**	TBD	**Fund Number:**	17	**Fund Name:**	Parks

DESCRIPTION:

This project involves the design and installation of a pre-fabricated, self-contained restroom at Poplar Beach Gateway.

JUSTIFICATION:

This project was identified as a project in the Parks Master Plan completed in FY 2018-19.

STRATEGIC PLAN GOAL (please check all that apply)	
X	Infrastructure
X	Healthy Community/Public Safety
	Fiscal Sustainability
	Inclusive Governance

ADDITIONAL DETAILS:

This project will be scheduled along with the implementation of the Poplar Beach Gateways Master Plan.

EXPENDITURES	PRIOR YEARS BUDGET EXPENDITURES	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
Prof.Serv/Env.							$ 10,000	$ 10,000
Construction							$ 230,000	$ 230,000
PM-CM							$ 10,000	$ 10,000
TOTAL	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 250,000**	**$ 250,000**

SOURCE(S) OF FUNDS	PRIOR YEARS BUDGET ALLOCATIONS	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
UNFUNDED							$ 250,000	$ 250,000
TOTAL	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 250,000**	**$ 250,000**

PROJECT TITLE: STORAGE BUILDING AT SMITH FIELD

Category:	Parks			**Project Number:**	TBD		
Project Location:	Smith Field			**Lead Department:**	Public Works		
Type:	Capital Maintenance			**Status:**	Previously Approved		
Initial Funding:	Unfunded	**Estimated Completion:**	TBD	**Fund Number:**	17	**Fund Name:**	Parks

DESCRIPTION:

This project involves the design and installation of a storage building at Smith Field for City equipment.

JUSTIFICATION:

The City requires adequate, weatherproof storage for equipment in order to maintain Smith Field.

STRATEGIC PLAN GOAL (please check all that apply)

X	Infrastructure
X	Healthy Community/Public Safety
	Fiscal Sustainability
	Inclusive Governance

ADDITIONAL DETAILS:

EXPENDITURES	PRIOR YEARS BUDGET EXPENDITURES	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
Engineering & Design							$ 5,000	$ 5,000
Construction							$ 50,000	$ 50,000
PM-CM							$ 10,000	$ 10,000
TOTAL	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 65,000**	**$ 65,000**

SOURCE(S) OF FUNDS	PRIOR YEARS BUDGET ALLOCATIONS	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
UNFUNDED							$ 65,000	$ 65,000
TOTAL	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 65,000**	**$ 65,000**

PROJECT TITLE: NEW MAGNOLIA/SEYMOUR PARK

Category:	Parks			**Project Number:**	TBD		
Project Location:	Magnolia and Seymour Street			**Lead Department:**	Public Works		
Type:	Community Enhancement			**Status:**	Previously Approved		
Initial Funding:	Unfunded	**Estimated Completion:**	TBD	**Fund Number:**	17	**Fund Name:**	Parks

DESCRIPTION:

This project involves converting an existing vacant lot into a new neighborhood park. It will include the design, bid, purchase, and installation of new park features.

JUSTIFICATION:

This project was identified as a project in the Parks Master Plan completed in FY 2018-19.

STRATEGIC PLAN GOAL (please check all that apply)

X	Infrastructure
X	Healthy Community/Public Safety
	Fiscal Sustainability
	Inclusive Governance

ADDITIONAL DETAILS:

EXPENDITURES	PRIOR YEARS BUDGET EXPENDITURES	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
Engineering & Design							$ 40,000	$ 40,000
Prof.Serv/Env.							$ 20,000	$ 20,000
Construction							$ 270,000	$ 270,000
PM-CM							$ 20,000	$ 20,000
TOTAL	$ -	$ -	$ -	$ -	$ -	$ -	**$ 350,000**	**$ 350,000**

SOURCE(S) OF FUNDS	PRIOR YEARS BUDGET ALLOCATIONS	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
UNFUNDED							$ 350,000	$ 350,000
TOTAL	$ -	$ -	$ -	$ -	$ -	$ -	**$ 350,000**	**$ 350,000**

PROJECT TITLE: NEW COMMUNITY PARK

Category:	Parks			**Project Number:**	TBD		
Project Location:	Citywide			**Lead Department:**	Administration		
Type:	Community Enhancement			**Status:**	Previously Approved		
Initial Funding:	Unfunded	**Estimated Completion:**	TBD	**Fund Number:**	17	**Fund Name:**	Parks

DESCRIPTION:

This a multi-year project that starts with site acquisition. Pending successful acquisition of a suitable site, future years will focus on conducting necessary environmental test and construction of the new park.

JUSTIFICATION:

This project was identified as a project in the Parks Master Plan completed in FY 2018-19.

STRATEGIC PLAN GOAL (please check all that apply)

X	Infrastructure
X	Healthy Community/Public Safety
	Fiscal Sustainability
	Inclusive Governance

ADDITIONAL DETAILS:

Construction costs will depend on land acquisition and size of potential park site.

EXPENDITURES	PRIOR YEARS BUDGET EXPENDITURES	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
Land Acquisition							$ 5,000,000	$ 5,000,000
Engineering & Design							$ 2,000,000	$ 2,000,000
Prof.Serv/Env.							$ 1,000,000	$ 1,000,000
Construction							$ 3,000,000	$ 3,000,000
PM-CM							$ 1,000,000	$ 1,000,000
TOTAL	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 12,000,000**	**$ 12,000,000**

SOURCE(S) OF FUNDS	PRIOR YEARS BUDGET ALLOCATIONS	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
UNFUNDED							$ 12,000,000	$ 12,000,000
TOTAL	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 12,000,000**	**$ 12,000,000**

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FACILITY IMPROVEMENTS

This section of the CIP focuses on maintaining and enhancing the City's various facilities. With the completion of the Half Moon Bay Library, the focus on this section of the CIP will be assessment and ongoing maintenance of current City facilities, as well as the upkeep of the new Library.

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FACILITY IMPROVEMENTS - FIVE-YEAR SUMMARY
CAPITAL IMPROVEMENT PROGRAM

EXPENDITURES/BUDGET											
FUND ACCOUNTS:		PROJECT TITLE	PRIOR YEAR(S):	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY	UNFUNDED
Fund	Project										
25	0601	ADA TRANSITION PLAN IMPLEMENTATION PROGRAM	N/A	$ 75,000	$ 75,000	$ 75,000	$ 75,000	$ 75,000	N/A	$ 375,000	$ -
25	0562	SIDEWALK REPLACEMENT AND REPAIR PROGRAM	N/A	$ 150,000	$ 150,000	$ 150,000	$ 150,000	$ 150,000	N/A	$ 750,000	$ -
25	0598	URBAN FOREST MANAGEMENT PROGRAM	N/A	$ 80,000	$ 80,000	$ 80,000	$ 80,000	$ 80,000	N/A	$ 400,000	$ -
25	0600	ANNUAL COMMUNITY ENHANCEMENT PROGRAM	N/A	$ 50,000	$ 50,000	$ 50,000	$ 50,000	$ 50,000	N/A	$ 250,000	$ -
48	0604	EMERGENCY RESPONSE PROGRAM	N/A	$ 100,000	$ 100,000	$ 100,000	$ 100,000	$ 100,000	N/A	$ 500,000	$ -
48	0621	TED ADCOCK COMMUNITY CENTER KITCHEN AND ENTRY REMODEL	$ 50,000	$ 270,000	$ -	$ -	$ -	$ -	$ -	$ 320,000	$ -
48	0605	SHERIFF SUBSTATION RENOVATION PROJECT	$ 47,000	$ 175,000	$ -	$ -	$ -	$ -	$ -	$ 222,000	$ -
48	0623	STREETLIGHT UPGRADES ON MAIN STREET	$ -	$ 110,000	$ -	$ -	$ -	$ -	$ -	$ 110,000	$ -
48	0624	CIVIC CENTER SITE PLAN	$ -	$ 85,000	$ -	$ -	$ -	$ -	$ -	$ 85,000	$ -
48	9022	PILARCITOS CREEK RESTORATION AND REMEDIATION PROJECT	$ 155,000	$ 210,000	$ 35,000	$ -	$ -	$ -	$ -	$ 400,000	$ -
48	9023	CORPORATE YARD IMPROVEMENTS	$ -	$ 40,000	$ 180,000	$ -	$ -	$ -	$ -	$ 220,000	$ -
48	0622	RESTORATION AND WATERSHED PROTECTION OF CITY PARCEL	$ 160,000	$ -	$ 825,000	$ -	$ -	$ -	$ -	$ 985,000	$ 825,000
48	TBD	PUBLIC WORKS CORPORATION YARD MASTER PLAN	$ -	$ -	$ -	$ 100,000	$ -	$ -	$ -	$ 100,000	$ -
16	0545	CUNHA PARKING LOT EXPANSION FOR LIBRARY	$ -	$ -	$ -	$ 400,000	$ -	$ -	$ -	$ 400,000	$ -
TOTAL			$ 412,000	$ 1,345,000	$ 1,495,000	$ 955,000	$ 455,000	$ 455,000	$ -	$ 5,117,000	$ 825,000

FUNDING								
FUNDING SOURCE(S):	PRIOR YEAR(S):	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
General Fund	$ 862,000	$ 895,000	$ 455,000	$ 555,000	$ 455,000	$ 455,000	$ -	$ 3,677,000
General Capital - Fund 25	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Public Facilities - Fund 48	$ -	$ -	$ 215,000	$ -	$ -	$ -	$ -	$ 215,000
San Mateo County Contribution	$ 200,000	$ -	$ -	$ -	$ -	$ -	$ -	$ 200,000
San Mateo County Loan	$ 200,000	$ -	$ -	$ -	$ -	$ -	$ -	$ 200,000
UNFUNDED	$ -	$ -	$ 825,000	$ -	$ -	$ -	$ -	$ 825,000

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FACILITY IMPROVEMENT PROGRAMS

PROGRAM TITLE: ADA TRANSITION PLAN IMPLEMENTATION PROGRAM

Category:	Facilities	**Project Number:**	0601		
Project Location:	Citywide	**Lead Department:**	Public Works		
Type:	Mandated	**Status:**	Previously Approved		
Duration:	Ongoing	**Fund Number:**	25	**Fund Name:**	General Capital

DESCRIPTION:

This program is intended to fund ADA improvements related to other defined projects and will ensure the City is in compliance with the Americans with Disabilities Act (ADA).

Projects anticipated in FY 19-20 include supporting the Ted Adcock Community Center Remodel and Sheriff Substation Renovation projects.

JUSTIFICATION:

This program is required to ensure City compliance with the Americans with Disability Act requirements and to improve accessibility and safety.

STRATEGIC PLAN GOAL (please check all that apply)

X	Infrastructure
X	Healthy Community/Public Safety
X	Fiscal Sustainability
X	Inclusive Governance

ADDITIONAL DETAILS:

Accomplishments in FY 18-19 include completion of the ADA Transition Plan.

EXPENDITURES	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	TOTAL ALL FY
Construction	$ 65,000	$ 65,000	$ 65,000	$ 65,000	$ 65,000	$ 325,000
PM-CM	$ 10,000	$ 10,000	$ 10,000	$ 10,000	$ 10,000	$ 50,000
TOTAL	**$ 75,000**	**$ 75,000**	**$ 75,000**	**$ 75,000**	**$ 75,000**	**$ 375,000**
SOURCE(S) OF FUNDS						
General Fund	$ 75,000	$ 75,000	$ 75,000	$ 75,000	$ 75,000	$ 375,000
TOTAL	**$ 75,000**	**$ 75,000**	**$ 75,000**	**$ 75,000**	**$ 75,000**	**$ 375,000**

PROGRAM TITLE: SIDEWALK REPLACEMENT AND REPAIR PROGRAM

Category:	Facilities	**Project Number:**	0562		
Project Location:	Citywide	**Lead Department:**	Public Works		
Type:	Community Enhancement/Public Safety	**Status:**	Previously Approved		
Duration:	Ongoing	**Fund Number:**	25	**Fund Name:**	General Capital

DESCRIPTION:

This program includes the City's share of repair and replacement of cracked and deteriorated sidewalk segments identified and prioritized in the 2016 sidewalk survey. Each year, a scope of repair/replacement work will be scheduled based on funding availability and prioritization of needed repairs.

Projects anticipated in FY 19-20 include reassessing the sidewalk network and

JUSTIFICATION:

Sidewalks are required to be compliant with the Americans with Disabilities Act and be safely navigable by the general public.

STRATEGIC PLAN GOAL (please check all that apply)

X	Infrastructure
X	Healthy Community/Public Safety
X	Fiscal Sustainability
	Inclusive Governance

ADDITIONAL DETAILS:

Accomplishments in FY 18-19 include completing the removal and replacement of approximately 300 citywide locations (heavy focus on downtown corridor) previously identified through the sidewalk survey and coordination with utility companies to repair locations affected by their underground utility vaults and boxes.

EXPENDITURES	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	TOTAL ALL FY
Construction	$ 140,000	$ 140,000	$ 140,000	$ 140,000	$ 140,000	$ 700,000
PM-CM	$ 10,000	$ 10,000	$ 10,000	$ 10,000	$ 10,000	$ 50,000
TOTAL	**$ 150,000**	**$ 150,000**	**$ 150,000**	**$ 150,000**	**$ 150,000**	**$ 750,000**
SOURCE(S) OF FUNDS						
General Fund	$ 150,000	$ 150,000	$ 150,000	$ 150,000	$ 150,000	$ 750,000
TOTAL	**$ 150,000**	**$ 150,000**	**$ 150,000**	**$ 150,000**	**$ 150,000**	**$ 750,000**

PROGRAM TITLE: URBAN FOREST MANAGEMENT PROGRAM

Category:	Facilities	**Project Number:**	0598		
Project Location:	Citywide	**Lead Department:**	Public Works		
Type:	Community Enhancement/Public Safety	**Status:**	Previously Approved		
Duration:	Ongoing	**Fund Number:**	25	**Fund Name:**	General Capital

DESCRIPTION:

This program includes the scheduling of programmatic pruning, removal, and replacement of approximately 2,500 City owned trees and potential cost share for trees jointly maintained by City and property owners.

Projects anticipated in FY 19-20 include addressing high priority tree removals and pruning as identified in the City tree survey and the initiation of grid pruning.

JUSTIFICATION:

The urban forest is an asset of the City and all who live and visit the community. Maintenance of trees is critical to the ongoing health of the urban forest and reducing the impacts of tree roots on sidewalks and utilities. Furthermore, trees represent one of the most significant hazards to public health and safety when not properly maintained.

STRATEGIC PLAN GOAL (please check all that apply)

X	Infrastructure
X	Healthy Community/Public Safety
X	Fiscal Sustainability
	Inclusive Governance

ADDITIONAL DETAILS:

Accomplishments in FY 18-19 include the trimming of over 300 trees along Main Street. The City also established a pragmatic grid pruning cycle to maintain the structural integrity of street trees by focusing on a manageable quantity of pruning annually.

EXPENDITURES	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	TOTAL ALL FY
Maintenance	$ 80,000	$ 80,000	$ 80,000	$ 80,000	$ 80,000	$ 400,000
TOTAL	**$ 80,000**	**$ 80,000**	**$ 80,000**	**$ 80,000**	**$ 80,000**	**$ 400,000**
SOURCE(S) OF FUNDS						
General Fund	$ 80,000	$ 80,000	$ 80,000	$ 80,000	$ 80,000	$ 400,000
TOTAL	**$ 80,000**	**$ 80,000**	**$ 80,000**	**$ 80,000**	**$ 80,000**	**$ 400,000**

PROJECT TITLE: ANNUAL COMMUNITY ENHANCEMENT PROGRAM

Category:	Facilities	**Project Number:**	0600		
Project Location:	Citywide	**Lead Department:**	Public Works		
Type:	Community Enhancement	**Status:**	Previously Approved		
Duration:	Ongoing	**Fund Number:**	25	**Fund Name:**	General Capital

DESCRIPTION:

This is an annual allocation for a high-visibility community project(s) that will be identified by the City Council each year. City Council will be asked to identify the project(s) within the first quarter of the Fiscal Year.

JUSTIFICATION:

City Council asked for this program to be added to the CIP.

STRATEGIC PLAN GOAL (please check all that apply)

X	Infrastructure
X	Healthy Community/Public Safety
	Fiscal Sustainability
X	Inclusive Governance

HALF MOON BAY
CALIFORNIA

ADDITIONAL DETAILS:

Funding from FY 17-18 and FY 18-19 was put towards the Highway 1 Median Project (see project page).

EXPENDITURES	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	TOTAL ALL FY
Implementation	$ 50,000	$ 50,000	$ 50,000	$ 50,000	$ 50,000	$ 250,000
TOTAL	**$ 50,000**	**$ 50,000**	**$ 50,000**	**$ 50,000**	**$ 50,000**	**$ 250,000**
SOURCE(S) OF FUNDS						
General Fund	$ 50,000	$ 50,000	$ 50,000	$ 50,000	$ 50,000	$ 250,000
TOTAL	**$ 50,000**	**$ 50,000**	**$ 50,000**	**$ 50,000**	**$ 50,000**	**$ 250,000**

PROGRAM TITLE: EMERGENCY RESPONSE PROGRAM

Category:	Facilities	**Project Number:**	0604		
Project Location:	Citywide	**Lead Department:**	Public Works		
Type:	Public Safety Enhancement	**Status:**	Previously Approved		
Duration:	Ongoing	**Fund Number:**	48	**Fund Name:**	Public Facilities

DESCRIPTION:

This program covers inevitable, unexpected, and emergency events that are prevalent in a coastside community including coastal erosion, storm repair, flood response and other similar events. This program does not have any schedule projects.

JUSTIFICATION:

These types of emergency events often require immediate response from the City.

STRATEGIC PLAN GOAL (please check all that apply)

X	Infrastructure
X	Healthy Community/Public Safety
X	Fiscal Sustainability
X	Inclusive Governance

ADDITIONAL DETAILS:

Program funding was accessed in FY 18-19 to make emergency storm water repairs at Poplar Beach.

EXPENDITURES	FY 18-19	FY 19-20	FY 20-21	FY 21-22	FY 22-23	TOTAL ALL FY
Construction	$ 100,000	$ 100,000	$ 100,000	$ 100,000	$ 100,000	$ 500,000
TOTAL	**$ 100,000**	**$ 100,000**	**$ 100,000**	**$ 100,000**	**$ 100,000**	**$ 500,000**
SOURCE(S) OF FUNDS						
General Fund	$ 100,000	$ 100,000	$ 100,000	$ 100,000	$ 100,000	$ 500,000
TOTAL	**$ 100,000**	**$ 100,000**	**$ 100,000**	**$ 100,000**	**$ 100,000**	**$ 500,000**

FACILITY IMPROVEMENT PROJECTS

FY 2019-20

PROJECT TITLE: TED ADCOCK COMMUNITY CENTER KITCHEN AND ENTRY REMODEL

Category:	Facilities			**Project Number:**	0621		
Project Location:	537 Kelly Avenue			**Lead Department:**	Public Works		
Type:	Capital Maintenance/Community Enhancement			**Status:**	Previously Approved		
Initial Funding:	FY 17-18	**Estimated Completion:**	FY 19-20	**Fund Number:**	48	**Fund Name:**	Public Facilities

DESCRIPTION:

This project includes a major remodel of the Ted Adcock Community Center kitchen, Day Room windows, and will feature ADA improvements to the restrooms.

JUSTIFICATION:

In FY 17-18, the City assumed responsibility for direct recreation programming for the community. The kitchen is not up to current County Environmental Health Department requirements and cannot be utilized to prepare and serve food. The Day Room windows have also reached the end of their usable life and are not energy efficient.

STRATEGIC PLAN GOAL (please check all that apply)

X	Infrastructure
X	Healthy Community/Public Safety
X	Fiscal Sustainability
	Inclusive Governance

ADDITIONAL DETAILS:

EXPENDITURES	PRIOR YEARS BUDGET EXPENDITURES	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
Engineering & Design	$ 50,000							$ 50,000
Construction		$ 250,000						$ 250,000
PM-CM		$ 20,000						$ 20,000
TOTAL	**$ 50,000**	**$ 270,000**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 320,000**

SOURCE(S) OF FUNDS	PRIOR YEARS BUDGET ALLOCATIONS	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
General Fund	$ 250,000	$ 70,000		$ -	$ -	$ -	$ -	$ 320,000
TOTAL	**$ 250,000**	**$ 70,000**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 320,000**

PROJECT TITLE: SHERIFF SUBSTATION RENOVATION PROJECT

Category:	Facilities			**Project Number:**	0605		
Project Location:	Citywide			**Lead Department:**	Public Works		
Type:	Capital Maintenance			**Status:**	Previously Approved		
Initial Funding	FY 18-19	**Estimated Completion:**	FY 19-20	**Fund Number:**	48	**Fund Name:**	Public Facilities

DESCRIPTION:

The scope of this project will be determined by the results of the Sheriff Substation Assessment.

JUSTIFICATION:

The City must maintain its facilities in order to avoid more costly repairs and maintenance in the future. It is in the City's best interest to develop preventative maintenance programs and set aside incremental funding for major repairs and replacements.

STRATEGIC PLAN GOAL (please check all that apply)

X	Infrastructure
X	Healthy Community/Public Safety
X	Fiscal Sustainability
	Inclusive Governance

ADDITIONAL DETAILS:

This project was previously called "Sheriff Substation Remodel Project" and has been combined with the Sheriff Substation Facility Assessment.

EXPENDITURES	PRIOR YEARS BUDGET EXPENDITURES	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
Engineering & Design	$ 35,000							$ 35,000
Construction	$ 12,000	$ 75,000						$ 87,000
FF&E		$ 75,000						$ 75,000
PM-CM		$ 25,000						$ 25,000
TOTAL	**$ 47,000**	**$ 175,000**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 222,000**

SOURCE(S) OF FUNDS	PRIOR YEARS BUDGET ALLOCATIONS	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
General Fund	$ 112,000	$ 110,000						$ 222,000
TOTAL	**$ 112,000**	**$ 110,000**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 222,000**

PROJECT TITLE: STREETLIGHT UPGRADES ON MAIN STREET

Category:	Facilities			**Project Number:**	0623		
Project Location:	Downtown Main Street			**Lead Department:**	Public Works		
Type:	Community Enhancement/Public Safety			**Status:**	Previously Approved		
Initial Funding	FY 18-19	**Estimated Completion:**	FY 19-20	**Fund Number:**	48	**Fund Name:**	Public Facilities

DESCRIPTION:

This project involves repairing and replacing of the streetlight fixtures on Main Street and converting them to light-emitting diodes (LEDs).

JUSTIFICATION:

Many of the streetlights are in need of repair and upgrades.

STRATEGIC PLAN GOAL (please check all that apply)

X	Infrastructure
X	Healthy Community/Public Safety
	Fiscal Sustainability
	Inclusive Governance

ADDITIONAL DETAILS:

EXPENDITURES	PRIOR YEARS BUDGET EXPENDITURES	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
Prof.Serv/Env.		$ 10,000						$ 10,000
Construction		$ 100,000						$ 100,000
TOTAL	**$ -**	**$ 110,000**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 110,000**

SOURCE(S) OF FUNDS	PRIOR YEARS BUDGET ALLOCATIONS	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
General Fund	$ 100,000	$ 10,000						$ 110,000
TOTAL	**$ 100,000**	**$ 10,000**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 110,000**

PROJECT TITLE: CIVIC CENTER SITE PLAN

Category:	Facilities			**Project Number:**	0624		
Project Location:	535, 537, and 555 Kelly Street			**Lead Department:**	Administration		
Type:	Capital Maintenance/Community Enhancement			**Status:**	Rolled Over		
Initial Funding	FY 18-19	**Estimated Completion:**	FY 19-20	**Fund Number:**	48	**Fund Name:**	Public Facilities

DESCRIPTION:

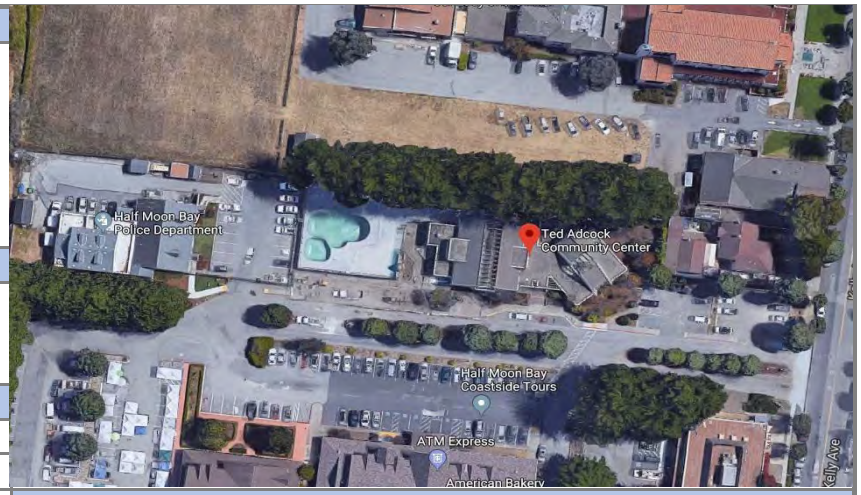
In late 2017, the City acquired 555 Kelly Street which completed the City's ownership of the eastern strip of the Shoreline Station Center property which includes the Emergency Operations Center, Police Station, Skate Park, Ted Adcock Community Center, and parking lots. This project will seek to identify the best uses of the City's properties over the long-term, and identify projects that may be completed in the near-term to improve the site which may include modifications of the City owned portions to enhance the community's access to the variety of services offered.

JUSTIFICATION:

This project was identified as a project in the Parks Master Plan completed in FY 2018-19.

STRATEGIC PLAN GOAL (please check all that apply)

X	Infrastructure
X	Healthy Community/Public Safety
	Fiscal Sustainability
X	Inclusive Governance



ADDITIONAL DETAILS:

Potential enhancements on site will be determined by findings of the Civic Center Site Plan.

EXPENDITURES	PRIOR YEARS BUDGET EXPENDITURES	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
Prof.Serv/Env.		$ 85,000						$ 85,000
TOTAL	**$ -**	**$ 85,000**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 85,000**

SOURCE(S) OF FUNDS	PRIOR YEARS BUDGET ALLOCATIONS	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
General Fund	$ 85,000							$ 85,000
TOTAL	**$ 85,000**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 85,000**

PROJECT TITLE: PILARCITOS CREEK RESTORATION AND REMEDIATION PROJECT

Category:	Facilities			**Project Number:**	9022		
Project Location:	537 Kelly Avenue			**Lead Department:**	Administration		
Type:	Community Enhancement/Public Safety			**Status:**	NEW		
Initial Funding:	FY 17-18	**Estimated Completion:**	FY 20-21	**Fund Number:**	48	**Fund Name:**	Public Facilities

DESCRIPTION:

This project will complete restoration of riparian habitat and the unabated growth of non-native plant species. All planned restoration activities will occur outside the active creek channel in accordance with U.S. Army Corps of Engineer (USACE) requirements.

JUSTIFICATION:

This project is necessary to restore habitat areas adjacent to Pilarcitos Creek that were impacted by homeless encampment activities.

STRATEGIC PLAN GOAL (please check all that apply)

X	Infrastructure
X	Healthy Community/Public Safety
X	Fiscal Sustainability
	Inclusive Governance

ADDITIONAL DETAILS:

The City implemented Phase 1 of the Pilarcitos Creek Restoration Project in May 2018, which included the collaborative and compassionate removal of homeless encampments from within the riparian corridor, removal of debris, and temporary fencing. The City has also submitted a Prop 68 grant application for this work.

EXPENDITURES	PRIOR YEARS BUDGET EXPENDITURES	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
Prof.Serv/Env.	$ 96,000	$ 25,000	$ 35,000					$ 156,000
Construction	$ 59,000	$ 185,000						$ 244,000
TOTAL	**$ 155,000**	**$ 210,000**	**$ 35,000**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 400,000**

SOURCE(S) OF FUNDS	PRIOR YEARS BUDGET ALLOCATIONS	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
General Fund	$ 155,000	$ 210,000						$ 365,000
Public Facilities - Fund 48			$ 35,000					$ 35,000
TOTAL	**$ 155,000**	**$ 210,000**	**$ 35,000**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 365,000**

PROJECT TITLE: CORPORATE YARD IMPROVEMENTS

Category:	Facilities			**Project Number:**	9023		
Project Location:	Citywide			**Lead Department:**	Public Works		
Type:	Capital Maintenance			**Status:**	NEW		
Duration:	FY 19-20	TO	FY 19-20	**Fund Number:**	48	**Fund Name:**	Public Facilities

DESCRIPTION:

This project includes the assessment and placement of a temporary shop building on the existing lease hold site.

JUSTIFICATION:

Current structures are unstable and not weather proof. The City would also like to consolidate its maintenance activities.

ADDITIONAL DETAILS:

STRATEGIC PLAN GOAL (please check all that apply)

X	Infrastructure
X	Healthy Community/Public Safety
X	Fiscal Sustainability
	Inclusive Governance

EXPENDITURES	PRIOR YEARS BUDGET EXPENDITURES	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
Engineering & Design			$ 10,000					$ 10,000
Prof.Serv/Env.			$ 10,000					$ 10,000
Construction		$ 40,000	$ 150,000					$ 190,000
PM-CM			$ 10,000					$ 10,000
TOTAL	**$ -**	**$ 40,000**	**$ 180,000**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 220,000**

SOURCE(S) OF FUNDS	PRIOR YEARS BUDGET ALLOCATIONS	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
General Fund		$ 40,000						$ 40,000
Public Facilities - Fund 48			$ 180,000					$ 180,000
TOTAL	**$ -**	**$ 40,000**	**$ 180,000**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 220,000**

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FACILITY IMPROVEMENT PROJECTS

FY 2020-24

PROJECT TITLE: RESTORATION AND WATERSHED PROTECTION OF CITY PARCEL

Category:	Facilities			**Project Number:**	0622		
Project Location:	APNs: 048270080 and 048270070			**Lead Department:**	Public Works		
Type:	Capital Maintenance/Community Enhancement			**Status:**	Rolled Over		
Initial Funding	FY 18-19	**Estimated Completion:**	FY 20-21	**Fund Number:**	48	**Fund Name:**	Public Facilities

DESCRIPTION:

This project includes the study, design, bid, and implementation of a restoration plan for the easterly portion of APN 048270080 and APN 048270070 which in total span 373,500 square feet. FY 19-20 will focus on design and pursuit of grants, with implementation planned for FY 20-21.

JUSTIFICATION:

The parcels are located in and around Environmentally Sensitive Habitat (ESHA). APN 048270080 was formerly used as a construction staging site for the sewer treatment plant. APN 048270080 joins the restored wetlands/frog pond which is designated ESHA. Development of this site for a corporation yard or use other than open space/passive recreation is infeasible.

STRATEGIC PLAN GOAL (please check all that apply)

X	Infrastructure
	Healthy Community/Public Safety
X	Fiscal Sustainability
	Inclusive Governance

ADDITIONAL DETAILS:

The City will also be exploring potential mitigation banking through this restoration project.

EXPENDITURES	PRIOR YEARS BUDGET EXPENDITURES	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
Engineering & Design	$ 100,000							$ 100,000
Prof.Serv/Env.	$ 50,000							$ 50,000
Construction			$ 750,000					$ 750,000
PM-CM	$ 10,000		$ 75,000					$ 85,000
TOTAL	**$ 160,000**	**$ -**	**$ 825,000**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 985,000**

SOURCE(S) OF FUNDS	PRIOR YEARS BUDGET ALLOCATIONS	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
General Fund	$ 160,000							$ 160,000
UNFUNDED			$ 825,000					$ 825,000
TOTAL	**$ 160,000**	**$ -**	**$ 825,000**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 985,000**

PROJECT TITLE: PUBLIC WORKS CORPORATION YARD MASTER PLAN

Category:	Facilities			**Project Number:**	TBD		
Project Location:	TBD			**Lead Department:**	Public Works		
Type:	Capital Maintenance			**Status:**	NEW		
Initial Funding	FY 21-22	**Estimated Completion:**	FY 21-22	**Fund Number:**	48	**Fund Name:**	Public Facilities

DESCRIPTION:

This project includes assessment of existing facilities, current and future needs, and site identification.

JUSTIFICATION:

The City needs a permanent Corporation Yard to adequately service the community. The current Corp Yard is on lease and is not a long-term solution.

STRATEGIC PLAN GOAL (please check all that apply)

X	Infrastructure
X	Healthy Community/Public Safety
X	Fiscal Sustainability
X	Inclusive Governance

ADDITIONAL DETAILS:

EXPENDITURES	PRIOR YEARS BUDGET EXPENDITURES	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
Prof.Serv/Env.				$ 100,000				$ 100,000
TOTAL	**$ -**	**$ -**	**$ -**	**$ 100,000**	**$ -**	**$ -**	**$ -**	**$ 100,000**

SOURCE(S) OF FUNDS	PRIOR YEARS BUDGET ALLOCATIONS	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
General Fund				$ 100,000				$ 100,000
TOTAL	**$ -**	**$ -**	**$ -**	**$ 100,000**	**$ -**	**$ -**	**$ -**	**$ 100,000**

PROJECT TITLE: CUNHA PARKING LOT EXPANSION FOR LIBRARY

Category:	Facilities			**Project Number:**	0545		
Project Location:	620 Correas Street			**Lead Department:**	Public Works		
Type:	Community Enhancement			**Status:**	Rolled Over		
Initial Funding	FY 16-17	**Estimated Completion:**	FY 21-22	**Fund Number:**	16	**Fund Name:**	Library Capital

DESCRIPTION:

This project involves the expansion of the Cunha Middle School Parking Lot into a 51,100 square foot, "shared use" parking facility between the new Half Moon Bay Library and Cunha Middle School.

JUSTIFICATION:

The Coastal Development Permit for the Library includes the parking lot expansion. However, expansion cannot occur until removal of temporary modular classrooms from the site.

STRATEGIC PLAN GOAL (please check all that apply)

X	Infrastructure
X	Healthy Community/Public Safety
X	Fiscal Sustainability
	Inclusive Governance

ADDITIONAL DETAILS:

This project is on hold until Building C at the Cunha site is reconstructed and modulars are removed. This delay will provide an opportunity to assess the need for this additional parking.

EXPENDITURES	PRIOR YEARS BUDGET EXPENDITURES	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
Engineering & Design				$ 20,000				$ 20,000
Construction				$ 335,000				$ 335,000
PM-CM				$ 45,000				$ 45,000
TOTAL	**$ -**	**$ -**	**$ -**	**$ 400,000**	**$ -**	**$ -**	**$ -**	**$ 400,000**

SOURCE(S) OF FUNDS	PRIOR YEARS BUDGET ALLOCATIONS	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
San Mateo County Loan	$ 200,000							$ 200,000
San Mateo County Contribution	$ 200,000							$ 200,000
TOTAL	**$ 400,000**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 400,000**

SEWER IMPROVEMENTS

The City's sewer infrastructure, which includes neighborhood sewer pipelines, larger interceptor pipelines and pump stations, requires ongoing repair as components reach the end of their service life. Preventative maintenance and repair leads to lower component failures and help to minimize unforeseen system outages and pipe breaks that could lead to sanitary sewer overflows.

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SEWER IMPROVEMENTS - FIVE-YEAR SUMMARY

CAPITAL IMPROVEMENT PROGRAM

EXPENDITURES/BUDGET											
FUND ACCOUNTS:		PROJECT TITLE	PRIOR YEAR(S)	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY	UNFUNDED
Fund	Project										
06	0506	SEWER MAINTENANCE PROGRAM	N/A	$ 50,000	$ 50,000	$ 50,000	$ 50,000	$ 50,000	N/A	**$ 250,000**	$ -
06	9028	INFLOW AND INFILTRATION PROGRAM	N/A	$ 150,000	$ 150,000	$ 150,000	$ 150,000	$ 150,000	N/A	**$ 750,000**	$ -
06	9029	CITYWIDE POINT REPAIRS PROGRAM	N/A	$ 315,000	$ 315,000	$ 315,000	$ 315,000	$ 315,000	N/A	**$ 1,575,000**	$ -
06	9026	MANHOLE REHABILITATION PROGRAM	N/A	$ 40,000	$ 40,000	$ 40,000	$ 40,000	$ 40,000	N/A	**$ 200,000**	$ -
06	0507	PUMP STATION AND FORCE MAIN REPAIR AND REPLACEMENT PROGRAM	N/A	$ 205,000	$ 205,000	$ 50,000	$ 50,000	$ 50,000	N/A	**$ 560,000**	$ -
06	9027	LORYN LANE SEWER MAIN REPAIR	$ -	$ 275,000	$ -	$ -	$ -	$ -	$ -	**$ 275,000**	$ -
06	9025	OCEAN COLONY PUMP STATION REPLACEMENT PROJECT	$ 200,000	$ 2,710,000	$ -	$ -	$ -	$ -	$ -	**$ 2,910,000**	$ -
06	9024	SANITARY SEWER MASTER PLAN	$ -	$ 100,000	$ 50,000	$ 50,000	$ 25,000	$ -	$ -	**$ 225,000**	$ -
TOTAL			**$ 200,000**	**$ 3,845,000**	**$ 810,000**	**$ 655,000**	**$ 630,000**	**$ 605,000**	**$ -**	**$ 6,745,000**	$ -

FUNDING								
FUNDING SOURCE(S):	PRIOR YEAR(S)	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
Sewer Service - Fund 05/06	$ 200,000	$ 3,845,000	$ 810,000	$ 655,000	$ 630,000	$ 605,000	$ -	**$ 6,745,000**
TOTAL	**$ 200,000**	**$ 3,845,000**	**$ 810,000**	**$ 655,000**	**$ 630,000**	**$ 605,000**	**$ -**	**$ 6,745,000**

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SEWER IMPROVEMENT PROGRAMS

PROGRAM TITLE: SEWER MAINTENANCE PROGRAM

Category:	Sewer	**Project Number:**	0506		
Project Location:	Citywide	**Lead Department:**	Public Works		
Type:	Capital Maintenance	**Status:**	Previously Approved		
Duration:	Ongoing	**Fund Number:**	06	**Fund Name:**	Sewer Capital

DESCRIPTION:

This program is intended to address unforeseen issues within the City's sewer network.

JUSTIFICATION:

The City owns and maintains the sanitary sewer conveyance system and it is imperative to have a routine sewer maintenance and upgrade program to reduce the likelihood of sanitary sewer overflows.

STRATEGIC PLAN GOAL (please check all that apply)

X	Infrastructure
X	Healthy Community/Public Safety
	Fiscal Sustainability
	Inclusive Governance

ADDITIONAL DETAILS:

Accomplishments in FY 18-19 include design and bid of the point repair project of approximately 100 point repairs throughout the City and subsequent CCTV inspections and smoke testing investigations. The City also completed manhole rehabilitations at Redondo Beach, Correas Street, Purissima Street, and Church Street.

EXPENDITURES	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	TOTAL ALL FY
Construction	$ 50,000	$ 50,000	$ 50,000	$ 50,000	$ 50,000	$ 250,000
TOTAL	**$ 50,000**	**$ 50,000**	**$ 50,000**	**$ 50,000**	**$ 50,000**	**$ 250,000**
SOURCE(S) OF FUNDS						
Sewer Service - Fund 05/06	$ 50,000	$ 50,000	$ 50,000	$ 50,000	$ 50,000	$ 250,000
TOTAL	**$ 50,000**	**$ 50,000**	**$ 50,000**	**$ 50,000**	**$ 50,000**	**$ 250,000**

PROGRAM TITLE: INFLOW AND INFILTRATION PROGRAM

Category:	Sewer	**Project Number:**	9028		
Project Location:	Citywide	**Lead Department:**	Public Works		
Type:	Capital Maintenance	**Status:**	NEW		
Duration:	Ongoing	**Fund Number:**	06	**Fund Name:**	Sewer Capital

DESCRIPTION:

This program is focused on the assessment of inflow and infiltration (I&I) issues throughout the City, with an emphasis on identified hotspot areas. This program will identify projects to be include in the Citywide Point Repairs Program, the Manhole Rehabilitation Program, and other sewer main improvements.

JUSTIFICATION:

The City owns and maintains the sanitary sewer conveyance system and it is imperative to have a routine sewer maintenance and upgrade program to reduce the likelihood of sanitary sewer overflows.

STRATEGIC PLAN GOAL (please check all that apply)

X	Infrastructure
X	Healthy Community/Public Safety
X	Fiscal Sustainability
	Inclusive Governance

ADDITIONAL DETAILS:

EXPENDITURES	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	TOTAL ALL FY
Prof.Serv/Env.	$ 150,000	$ 150,000	$ 150,000	$ 150,000	$ 150,000	$ 750,000
TOTAL	**$ 150,000**	**$ 150,000**	**$ 150,000**	**$ 150,000**	**$ 150,000**	**$ 750,000**
SOURCE(S) OF FUNDS						
Sewer Service - Fund 05/06	$ 150,000	$ 150,000	$ 150,000	$ 150,000	$ 150,000	$ 750,000
TOTAL	**$ 150,000**	**$ 150,000**	**$ 150,000**	**$ 150,000**	**$ 150,000**	**$ 750,000**

PROGRAM TITLE: CITYWIDE POINT REPAIRS PROGRAM

Category:	Sewer	**Project Number:**	9029		
Project Location:	Citywide	**Lead Department:**	Public Works		
Type:	Capital Maintenance	**Status:**	NEW		
Duration:	Ongoing	**Fund Number:**	06	**Fund Name:**	Sewer Capital

DESCRIPTION:

This program addresses minor collection system deficiencies and preventive maintenance that are identified through regular maintenance activities, and typically do not require significant planning or design (e.g. point repair maintenance and inflow and infiltration (I&I) repair).

JUSTIFICATION:

The City owns and maintains the sanitary sewer conveyance system and it is imperative to have a routine sewer maintenance and upgrade program to reduce the likelihood of sanitary sewer overflows.

STRATEGIC PLAN GOAL (please check all that apply)

X	Infrastructure
X	Healthy Community/Public Safety
X	Fiscal Sustainability
	Inclusive Governance

ADDITIONAL DETAILS:

This annual program is established through the smoke test and Closed Circuit TV (CCTV) programs. Each subsequent year will be planned based on the previous year's findings.

EXPENDITURES	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	TOTAL ALL FY
Engineering & Design	$ 25,000	$ 25,000	$ 25,000	$ 25,000	$ 25,000	$ 125,000
Prof.Serv/Env.	$ 25,000	$ 25,000	$ 25,000	$ 25,000	$ 25,000	$ 125,000
Construction	$ 250,000	$ 250,000	$ 250,000	$ 250,000	$ 250,000	$ 1,250,000
PM-CM	$ 15,000	$ 15,000	$ 15,000	$ 15,000	$ 15,000	$ 75,000
TOTAL	**$ 315,000**	**$ 315,000**	**$ 315,000**	**$ 315,000**	**$ 315,000**	**$ 1,575,000**
SOURCE(S) OF FUNDS						
Sewer Service - Fund 05/06	$ 315,000	$ 315,000	$ 315,000	$ 315,000	$ 315,000	$ 1,575,000
TOTAL	**$ 315,000**	**$ 315,000**	**$ 315,000**	**$ 315,000**	**$ 315,000**	**$ 1,575,000**

PROGRAM TITLE: MANHOLE REHABILITATION PROGRAM

Category:	Sewer	**Project Number:**	9026		
Project Location:	Citywide	**Lead Department:**	Public Works		
Type:	Capital Maintenance	**Status:**	NEW		
Duration:	Ongoing	**Fund Number:**	06	**Fund Name:**	Sewer Capital

DESCRIPTION:

This program focuses on the retrofit, rehabilitation, and replacement of sanitary sewer manholes throughout the City.

The focus of FY 19-20 will be to implement improvements along Railroad Avenue to address low elevations and reduce the inflow and infiltration (I&I).

JUSTIFICATION:

The City owns and maintains the sanitary sewer conveyance system and it is imperative to have a routine sewer maintenance and upgrade program to reduce the likelihood of sanitary sewer overflows.

STRATEGIC PLAN GOAL (please check all that apply)

X	Infrastructure
X	Healthy Community/Public Safety
X	Fiscal Sustainability
	Inclusive Governance

ADDITIONAL DETAILS:

EXPENDITURES	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	TOTAL ALL FY
Engineering & Design	$ 5,000	$ 5,000	$ 5,000	$ 5,000	$ 5,000	$ 25,000
Construction	$ 35,000	$ 35,000	$ 35,000	$ 35,000	$ 35,000	$ 175,000
TOTAL	**$ 40,000**	**$ 40,000**	**$ 40,000**	**$ 40,000**	**$ 40,000**	**$ 200,000**
SOURCE(S) OF FUNDS						
Sewer Service - Fund 05/06	$ 40,000	$ 40,000	$ 40,000	$ 40,000	$ 40,000	$ 200,000
TOTAL	**$ 40,000**	**$ 40,000**	**$ 40,000**	**$ 40,000**	**$ 40,000**	**$ 200,000**

PROGRAM TITLE: PUMP STATION AND FORCE MAIN REPAIR AND REPLACEMENT PROGRAM

Category:	Sewer	**Project Number:**	0507		
Project Location:	Citywide	**Lead Department:**	Public Works		
Type:	Capital Maintenance	**Status:**	Previously Approved		
Duration:	Ongoing	**Fund Number:**	06	**Fund Name:**	Sewer Capital

DESCRIPTION:

This program is a multi-year effort including design, repair and replacement of the City's pump stations.

The focus of FY 19-20 is the design and construction of the Pelican Point Pump Station. Future years will focus on improvement to the Bell Moon Pump Station and reoccurring repairs.

JUSTIFICATION:

This project addresses known pump station deficiencies that require action in the near term and provides reliable emergency power generation at the pump stations.

STRATEGIC PLAN GOAL (please check all that apply)

X	Infrastructure
X	Healthy Community/Public Safety
	Fiscal Sustainability
	Inclusive Governance

ADDITIONAL DETAILS:

Accomplishments in FY 18-19 include design and bid of the Ocean Colony Pump station rehabilitation and force main replacement (included in this CIP as a separate project).

EXPENDITURES	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	TOTAL ALL FY
Engineering & Design	$ 20,000	$ 20,000				$ 40,000
Prof.Serv/Env.	$ 20,000	$ 20,000				$ 40,000
Construction	$ 150,000	$ 150,000	$ 50,000	$ 50,000	$ 50,000	$ 450,000
PM-CM	$ 15,000	$ 15,000				$ 30,000
TOTAL	**$ 205,000**	**$ 205,000**	**$ 50,000**	**$ 50,000**	**$ 50,000**	**$ 560,000**
SOURCE(S) OF FUNDS						
Sewer Service - Fund 05/06	$ 205,000	$ 205,000	$ 50,000	$ 50,000	$ 50,000	$ 560,000
TOTAL	**$ 205,000**	**$ 205,000**	**$ 50,000**	**$ 50,000**	**$ 50,000**	**$ 560,000**

SEWER IMPROVEMENT PROJECTS

FY 2019-20

PROJECT TITLE: LORYN LANE SEWER MAIN REPAIR

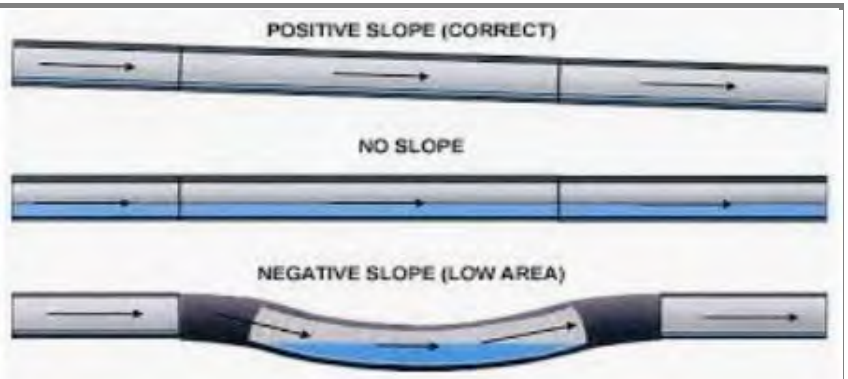
Category:	Sewers			**Project Number:**	9027		
Project Location:	Loryn Lane			**Lead Department:**	Public Works		
Type:	Capital Maintenance			**Status:**	NEW		
Initial Funding	FY 19-20	**Estimated Completion:**	FY 19-20	**Fund Number:**	06	**Fund Name:**	Sewer Capital

DESCRIPTION:

This project will replace a segment of the sewer main adjacent to Loryn Lane. After further investigation, the sanitary sewer main at this location requires replacement of a significant section with limited and challenging access points.

JUSTIFICATION:

Project will address critical improvements to the operations and will reduce risk of sanitary sewer overflow and improve service/conveyance.



STRATEGIC PLAN GOAL (please check all that apply)

X	Infrastructure
X	Healthy Community/Public Safety
X	Fiscal Sustainability
	Inclusive Governance

ADDITIONAL DETAILS:

This project was identified as part of the sewer maintenance program and the scope was larger than originally anticipated. Therefore a specific project has been identified.

EXPENDITURES	PRIOR YEARS BUDGET EXPENDITURES	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
Engineering & Design		$ 10,000						$ 10,000
Prof.Serv/Env.								$ -
Construction		$ 240,000						$ 240,000
PM-CM		$ 25,000						$ 25,000
TOTAL	**$ -**	**$ 275,000**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 275,000**

SOURCE(S) OF FUNDS	PRIOR YEARS BUDGET ALLOCATIONS	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
Sewer Service - Fund 05/06		$ 275,000						$ 275,000
TOTAL	**$ -**	**$ 275,000**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 275,000**

PROJECT TITLE: OCEAN COLONY PUMP STATION REPLACEMENT PROJECT

Category:	Sewers			**Project Number:**	9025		
Project Location:	Ocean Colony			**Lead Department:**	Public Works		
Type:	Capital Maintenance			**Status:**	NEW		
Initial Funding	FY 17-18	**Estimated Completion:**	FY 19-20	**Fund Number:**	06	**Fund Name:**	Sewer Capital

DESCRIPTION:

This project includes the design and construction of the Ocean Colony Pump Station and Force Main.

JUSTIFICATION:

This project addresses known pump station deficiencies at Ocean Colony that require action in the near term and provides reliable emergency power generation.

STRATEGIC PLAN GOAL (please check all that apply)

X	Infrastructure
X	Healthy Community/Public Safety
	Fiscal Sustainability
	Inclusive Governance

ADDITIONAL DETAILS:

This project was a result of work done through the Pump Station and Force Main Repair and Replacement Program and as identified in the Sanitary Sewer Master Plan.

EXPENDITURES	PRIOR YEARS BUDGET EXPENDITURES	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
Engineering & Design	$ 175,000	$ 70,000						$ 245,000
Prof.Serv/Env.	$ 25,000	$ 10,000						$ 35,000
Construction		$ 2,600,000						$ 2,600,000
PM-CM		$ 30,000						$ 30,000
TOTAL	**$ 200,000**	**$ 2,710,000**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 2,910,000**

SOURCE(S) OF FUNDS	PRIOR YEARS BUDGET ALLOCATIONS	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
Sewer Service - Fund 05/06	$ 200,000	$ 2,710,000						$ 2,910,000
TOTAL	**$ 200,000**	**$ 2,710,000**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 2,910,000**

PROJECT TITLE: SANITARY SEWER MASTER PLAN

Category:	Sewers			**Project Number:**	9024		
Project Location:	Citywide			**Lead Department:**	Public Works		
Type:	Capital Maintenance			**Status:**	NEW		
Initial Funding	FY 19-20	**Estimated Completion:**	FY 22-23	**Fund Number:**	06	**Fund Name:**	Sewer Capital

DESCRIPTION:

This project will review the Sanitary Sewer Master Plan and update based on the Local Coastal Land Use Plan and other planning documents. The focus of FY 19-20 will be the analysis of potential implementation of Lucity sewer operations software throughout the City, in order to establish an independent monitoring and operations system. Staff will also look to recalibrate the hydraulic model and analyze CCTV and smoke testing results from FY 18-19.

JUSTIFICATION:

The City owns and maintains the sanitary sewer conveyance system and requires periodic review and updates to support the City's General Plan and guiding documents.

STRATEGIC PLAN GOAL (please check all that apply)

X	Infrastructure
X	Healthy Community/Public Safety
X	Fiscal Sustainability
	Inclusive Governance

ADDITIONAL DETAILS:

EXPENDITURES	PRIOR YEARS BUDGET EXPENDITURES	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
Prof.Serv/Env.		$ 100,000	$ 50,000	$ 50,000	$ 25,000			$ 225,000
TOTAL	**$ -**	**$ 100,000**	**$ 50,000**	**$ 50,000**	**$ 25,000**	**$ -**	**$ -**	**$ 225,000**

SOURCE(S) OF FUNDS	PRIOR YEARS BUDGET ALLOCATIONS	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
Sewer Service - Fund 05/06		$ 100,000	$ 50,000	$ 50,000	$ 25,000			$ 225,000
TOTAL	**$ -**	**$ 100,000**	**$ 50,000**	**$ 50,000**	**$ 25,000**	**$ -**	**$ -**	**$ 225,000**

STREET IMPROVEMENTS

The City's pavement network consists of approximately 28 center-lane miles of pavement. This section of the CIP focuses on performing routine maintenance and improvements to the City's roadways to extend the useful life of the system. This reduces the need for major street reconstruction projects, which are exponentially more expensive than performing routine upgrades and maintenance.

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STREET IMPROVEMENTS - FIVE-YEAR SUMMARY
CAPITAL IMPROVEMENT PROGRAM

EXPENDITURES/BUDGET											UNFUNDED
FUND ACCOUNTS:		PROJECT TITLE	PRIOR YEAR(S)	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY	
Fund	Project										
11	9000	NEIGHBORHOOD TRAFFIC SAFETY PROGRAM	N/A	$ 40,000	$ 40,000	$ 40,000	$ 40,000	$ 40,000	NA	**$ 200,000**	$ -
11	0572	CROSSWALKS AND ADA RETROFIT PROGRAM	N/A	$ 65,000	$ 65,000	$ 65,000	$ 65,000	$ 65,000	N/A	**$ 325,000**	$ -
11	0514	PAVEMENT MANAGEMENT AND TRAFFIC SAFETY PROGRAM	N/A	$ 330,000	$ 1,025,000	$ 120,000	$ 1,025,000	$ 120,000	N/A	**$ 2,620,000**	$ 2,290,000
11	0523	HIGHWAY 1 SAFETY - SOUTH	$ 398,000	$ 3,950,000	$ -	$ -	$ -	$ -	$ -	**$ 4,348,000**	$ -
11	0593	POPLAR COMPLETE STREET PROJECT	$ 156,000	$ 1,221,000	$ 500,000	$ -	$ -	$ -	$ -	**$ 1,877,000**	$ 500,000
11	0538	HIGHWAY 1 SAFETY - NORTH	$ 350,000	$ 734,000	$ 4,000,000	$ 4,000,000	$ -	$ -	$ -	**$ 9,084,000**	$ 1,100,000
09	0759	MAIN STREET BRIDGE PROJECT	$ 350,000	$ 450,000	$ 450,000	$ 3,638,290	$ 3,638,290	$ -	$ -	**$ 8,526,579**	$ -
13	0571	HIGHWAY 1/KELLY AVENUE INTERSECTION IMPROVEMENT PROJECT	$ -	$ -	$ 100,000	$ 50,000	$ -	$ -	$ 1,570,000	**$ 1,720,000**	$ 1,570,000
11	TBD	KELLY AVENUE REHABILITATION PROJECT	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,375,000	**$ 1,375,000**	$ 1,375,000
T O T A L			**$ 1,254,000**	**$ 6,790,000**	**$ 6,180,000**	**$ 7,913,290**	**$ 4,768,290**	**$ 225,000**	**$ 2,945,000**	**$ 30,075,579**	**$ 6,835,000**

FUNDING								
FUNDING SOURCE(S):	PRIOR YEAR(S)	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
General Fund	$ 928,000	$ 371,922	$ -	$ -	$ -	$ -	$ -	**$ 1,299,922**
Gas Tax - Fund 10	$ 50,000	$ 217,500	$ 52,500	$ 52,500	$ 52,500	$ 52,500	$ -	**$ 477,500**
Grant - Measure A	$ 600,000	$ 3,200,000	$ 3,200,000	$ -	$ -	$ -	$ -	**$ 7,000,000**
Grant - Federal	$ 1,142,922	$ 1,202,000	$ -	$ 3,202,829	$ 3,202,829	$ -	$ -	**$ 8,750,580**
Developer Funds	$ 3,100,000	$ -	$ -	$ -	$ -	$ -	$ -	**$ 3,100,000**
Main Street Bridge - Fund 9	$ -	$ 108,078	$ -	$ 414,961	$ 414,961	$ -	$ -	**$ 937,999**
Street and Road - Fund 11	$ -	$ 714,578	$ 652,500	$ 52,500	$ 52,500	$ 52,500	$ -	**$ 1,524,578**
Traffic Mitigation - Fund 13	$ -	$ -	$ 100,000	$ 50,000	$ -	$ -	$ -	**$ 150,000**
UNFUNDED	$ -	$ -	$ 1,525,000	$ 1,220,000	$ 1,025,000	$ 120,000	$ 2,945,000	**$ 6,835,000**

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STREET IMPROVEMENT PROGRAMS

PROGRAM TITLE: NEIGHBORHOOD TRAFFIC SAFETY PROGRAM

Category:	Streets	**Project Number:**	9000		
Project Location:	Citywide	**Lead Department:**	Public Works		
Type:	Community Enhancement/Public Safety	**Status:**	NEW		
Duration:	Ongoing	**Fund Number:**	11	**Fund Name:**	Streets and Roads

DESCRIPTION:

The program involves implementation of a neighborhood traffic calming and safety program and will provide a source of funding to address neighborhood concerns on a first-come, first-serve basis.

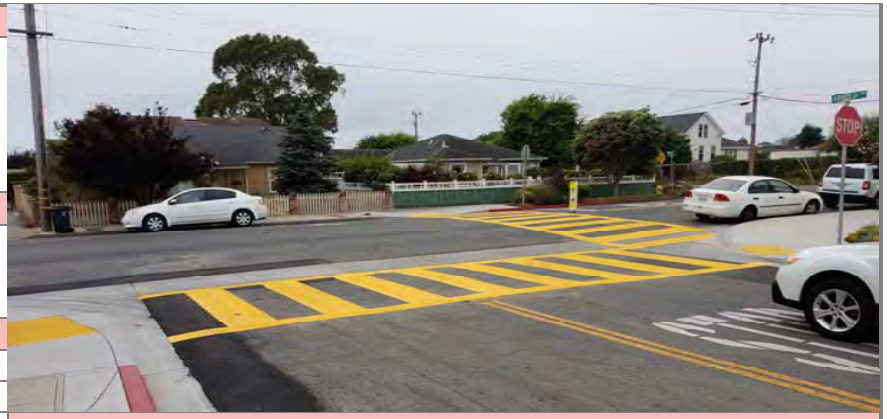
This program was created in response to requests from neighborhood requests and petitions for traffic improvements.

JUSTIFICATION:

The City receives requests from neighborhoods for traffic calming and safety improvements such as speed bumps, signage, and road diets.

STRATEGIC PLAN GOAL (please check all that apply)

X	Infrastructure
X	Healthy Community/Public Safety
X	Fiscal Sustainability
X	Inclusive Governance



ADDITIONAL DETAILS:

This is a new program.

EXPENDITURES	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	TOTAL ALL FY
Construction	$ 40,000	$ 40,000	$ 40,000	$ 40,000	$ 40,000	$ 200,000
TOTAL	**$ 40,000**	**$ 40,000**	**$ 40,000**	**$ 40,000**	**$ 40,000**	**$ 200,000**
SOURCE(S) OF FUNDS						
Gas Tax - Fund 10	$ 20,000	$ 20,000	$ 20,000	$ 20,000	$ 20,000	$ 100,000
Street and Road - Fund 11	$ 20,000	$ 20,000	$ 20,000	$ 20,000	$ 20,000	$ 100,000
TOTAL	**$ 40,000**	**$ 40,000**	**$ 40,000**	**$ 40,000**	**$ 40,000**	**$ 200,000**

PROGRAM TITLE: CROSSWALKS AND ADA RETROFIT PROGRAM

Category:	Streets	**Project Number:**	0572		
Project Location:	Citywide	**Lead Department:**	Public Works		
Type:	Mandated	**Status:**	Previously Approved		
Duration:	Ongoing	**Fund Number:**	11	**Fund Name:**	Streets and Roads

DESCRIPTION:

This program involves annual evaluation, prioritization and construction of improvements, including sidewalks and curb ramps, to comply with the American Disabilities Act (ADA). This program also includes the placement of new and improved crosswalks to improve pedestrian safety, often in conjunction with ADA related work.

Projects anticipated in FY 19-20 include implementation of improvements identified in the ADA Transition Plan.

JUSTIFICATION:

This program maintains the City's compliance with the Americans with Disabilities Act and improves pedestrian safety.

STRATEGIC PLAN GOAL (please check all that apply)

X	Infrastructure
X	Healthy Community/Public Safety
X	Fiscal Sustainability
X	Inclusive Governance

ADDITIONAL DETAILS:

Accomplishments in FY 2018-19 include completion of the ADA Transition Plan.

EXPENDITURES	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	TOTAL ALL FY
Construction	$ 60,000	$ 60,000	$ 60,000	$ 60,000	$ 60,000	$ 300,000
PM-CM	$ 5,000	$ 5,000	$ 5,000	$ 5,000	$ 5,000	$ 25,000
TOTAL	**$ 65,000**	**$ 65,000**	**$ 65,000**	**$ 65,000**	**$ 65,000**	**$ 325,000**
SOURCE(S) OF FUNDS						
Gas Tax - Fund 10	$ 32,500	$ 32,500	$ 32,500	$ 32,500	$ 32,500	$ 162,500
Street and Road - Fund 11	$ 32,500	$ 32,500	$ 32,500	$ 32,500	$ 32,500	$ 162,500
TOTAL	**$ 65,000**	**$ 65,000**	**$ 65,000**	**$ 65,000**	**$ 65,000**	**$ 325,000**

PROGRAM TITLE: PAVEMENT MANAGEMENT AND TRAFFIC SAFETY PROGRAM

Category:	Streets	**Project Number:**	0514		
Project Location:	Citywide	**Lead Department:**	Public Works		
Type:	Capital Maintenance/Community Enhancement	**Status:**	Previously Approved		
Duration:	Ongoing	**Fund Number:**	11	**Fund Name:**	Streets and Roads

DESCRIPTION:

The program involves the ongoing slurry sealing, repaving, and reconstruction of streets throughout the City.

Projects anticipated in FY 19-20 include construction of the Mill Street/San Benito Street improvements and design of the FY 20-21 Street Improvements Project. The City will also complete the Pavement Management Survey (PTAP-20), which will review the current pavement conditions and provide recommendations for future projects.

JUSTIFICATION:

This program is intended to maintain or enhance the City's Pavement Condition Index (PCI) at 65 or better and improve safety and aesthetics.

STRATEGIC PLAN GOAL (please check all that apply)

X	Infrastructure
X	Healthy Community/Public Safety
X	Fiscal Sustainability
	Inclusive Governance

ADDITIONAL DETAILS:

Accomplishments in FY 2018-19 include the construction of the 2018-19 Street Reconstruction Project.

EXPENDITURES	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	TOTAL ALL FY
Engineering & Design	$ 100,000		$ 100,000		$ 100,000	$ 300,000
Prof.Serv/Env.	$ 15,000		$ 20,000		$ 20,000	$ 55,000
Construction	$ 200,000	$ 1,000,000		$ 1,000,000		$ 2,200,000
PM-CM	$ 15,000	$ 25,000		$ 25,000		$ 65,000
TOTAL	**$ 330,000**	**$ 1,025,000**	**$ 120,000**	**$ 1,025,000**	**$ 120,000**	**$ 2,620,000**
SOURCE(S) OF FUNDS						
Gas Tax - Fund 10	$ 165,000					$ 165,000
Street and Road - Fund 11	$ 165,000					$ 165,000
UNFUNDED		$ 1,025,000	$ 120,000	$ 1,025,000	$ 120,000	$ 2,290,000
TOTAL	**$ 330,000**	**$ 1,025,000**	**$ 120,000**	**$ 1,025,000**	**$ 120,000**	**$ 2,620,000**

STREET IMPROVEMENT PROJECTS

FY 2019-20

PROJECT TITLE: HIGHWAY 1 SAFETY - SOUTH

Category:	Streets			**Project Number:**	0523		
Project Location:	Highway 1 South, from Seymour Street to Wavecrest Road			**Lead Department:**	Public Works		
Type:	Community Enhancement/Public Safety			**Status:**	Previously Approved		
Initial Funding:	FY 16-17	**Estimated Completion:**	FY 19-20	**Fund Number:**	11	**Fund Name:**	Streets and Roads

DESCRIPTION:

This project will provide operational and safety improvements to Highway 1 between Wavecrest Road and Seymour Street. It also includes construction of a signal at the Higgins Canyon Road, Main Street and Highway 1 intersection with landscape and gateway signage, as well as controlled pedestrian/bicycle access to serve Naomi Patridge Trail and Smith Field Park. This project is principally funded through a grant from San Mateo County Transportation Authority.

JUSTIFICATION:

The Highway 1 and South Main Street intersection does not function efficiently with the current design. Furthermore, this will provide a critical controlled east-west pedestrian/bicycle crossing.

STRATEGIC PLAN GOAL (please check all that apply)

X	Infrastructure
X	Healthy Community/Public Safety
	Fiscal Sustainability
	Inclusive Governance

ADDITIONAL DETAILS:

This project was initiated in FY 16-17 and will carry over into FY 19-20 due to delays by CalTrans review and permitting. Accomplishments for FY 18-19 include completion of design and issuance of Coastal Development Permit and environmental clearance.

EXPENDITURES	PRIOR YEARS BUDGET EXPENDITURES	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
Engineering & Design	$ 398,000							$ 398,000
Prof.Serv/Env.								$ -
Construction		$ 3,500,000						$ 3,500,000
PM-CM		$ 450,000						$ 450,000
TOTAL	**$ 398,000**	**$ 3,950,000**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 4,348,000**

SOURCE(S) OF FUNDS	PRIOR YEARS BUDGET ALLOCATIONS	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
Grant - Measure A	$ 300,000	$ 3,200,000						$ 3,500,000
General Fund	$ 98,000	$ 252,922						$ 350,922
Street and Road - Fund 11		$ 497,078						$ 497,078
TOTAL	**$ 398,000**	**$ 3,950,000**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 4,348,000**

PROJECT TITLE: POPLAR COMPLETE STREET PROJECT

Category:	Streets			**Project Number:**	0593		
Project Location:	Poplar Street Between Main and Railroad			**Lead Department:**	Public Works		
Type:	Community Enhancement/Public Safety			**Status:**	Previously Approved		
Duration:	FY 17-18	**Estimated Completion:**	FY 20-21	**Fund Number:**	11	**Fund Name:**	Streets and Roads

DESCRIPTION:

This project includes the design and improvement of a 3,012 foot strip of Poplar Street from Main Street to Railroad Avenue as a "Complete Street" project. Anticipated enhancements include pedestrian and bicycle facilities, storm water improvements, and green infrastructure.

JUSTIFICATION:

The project will provide a safe and inviting access to and from Poplar Beach and the Coastal Trail for residents and visitors.

STRATEGIC PLAN GOAL (please check all that apply)

X	Infrastructure
X	Healthy Community/Public Safety
	Fiscal Sustainability
	Inclusive Governance

ADDITIONAL DETAILS:

This project received grant funding obligation in FY 17-18 from the Metropolitan Transportation Commission. The unfunded portion of the project will likely be funded through the Deferred Street Improvement Agreements (Property Owner Contributions) or an additional grant. Accomplishments in FY 18-19 include initiation of community engagement and award of design and environmental contract.

EXPENDITURES	PRIOR YEARS BUDGET EXPENDITURES	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
Engineering & Design	$ 156,000							$ 156,000
Prof.Serv/Env.		$ 19,000						$ 19,000
Construction		$ 1,202,000	$ 500,000					$ 1,702,000
PM-CM								$ -
Maintenance								$ -
TOTAL	**$ 156,000**	**$ 1,221,000**	**$ 500,000**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 1,877,000**

SOURCE(S) OF FUNDS	PRIOR YEARS BUDGET ALLOCATIONS	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
General Fund	$ 156,000	$ 19,000						$ 175,000
Grant - Federal		$ 1,202,000						$ 1,202,000
Property Owner Contribution								$ -
UNFUNDED			$ 500,000					$ 500,000
TOTAL	**$ 156,000**	**$ 1,221,000**	**$ 500,000**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 1,877,000**

PROJECT TITLE: HIGHWAY 1 SAFETY - NORTH

Category:	Streets			**Project Number:**	0538		
Project Location:	Highway 1 North, from Main Street @ Highway 1 to Spindrift Way			**Lead Department:**	Public Works		
Type:	Community Enhancement/Public Safety			**Status:**	Previously Approved		
Initial Funding:	FY 16-17	**Estimated Completion:**	FY 22-23	**Fund Number:**	11	**Fund Name:**	Streets and Roads

DESCRIPTION:

This project includes operational and safety improvements to Highway 1 between North Main Street and Grandview Ave. It also includes lane intersection improvements for signalization and development of a multi-use trail on the east side of Highway 1 from Main Street North to Spindrift Way. This project is principally funded through a grant from San Mateo County Transportation Authority and also includes development-related impact fees from the Pacific Ridge Subdivision (Ailanto).

JUSTIFICATION:

Highway 1, between Main Street and Kehoe, contains pinch points that impact traffic flow. The Pacific Ridge Subdivision requires the installation of a traffic signal at Terrace Avenue and Highway 1. This project allows the City to coordinate development-related and overall safety improvements for pedestrians and multi-modal transit riders.

STRATEGIC PLAN GOAL (please check all that apply)

X	Infrastructure
X	Healthy Community/Public Safety
X	Fiscal Sustainability
X	Inclusive Governance

ADDITIONAL DETAILS:

This project was initiated in FY 16-17 and will carry over into FY 20-21 due to delays by CalTrans review and permitting process. Accomplishments for FY 18-19 include CalTrans PEER approval.

EXPENDITURES	PRIOR YEARS BUDGET EXPENDITURES	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
Engineering & Design	$ 350,000	$ 634,000						$ 984,000
Prof.Serv/Env.								$ -
Construction			$ 3,500,000	$ 3,500,000				$ 7,000,000
PM-CM		$ 100,000	$ 500,000	$ 500,000				$ 1,100,000
TOTAL	**$ 350,000**	**$ 734,000**	**$ 4,000,000**	**$ 4,000,000**	**$ -**	**$ -**	**$ -**	**$ 9,084,000**

SOURCE(S) OF FUNDS	PRIOR YEARS BUDGET ALLOCATIONS	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
General Fund	$ 634,000	$ 100,000						$ 734,000
Gas Tax - Fund 10	$ 50,000							$ 50,000
Grant - Measure A	$ 300,000		$ 3,200,000					$ 3,500,000
Developer Funds	$ 3,100,000							$ 3,100,000
Street and Road - Fund 11			$ 600,000					$ 600,000
UNFUNDED				$ 1,100,000				$ 1,100,000
TOTAL	**$ 4,084,000**	**$ 100,000**	**$ 3,800,000**	**$ 1,100,000**	**$ -**	**$ -**	**$ -**	**$ 9,084,000**

PROJECT TITLE: MAIN STREET BRIDGE PROJECT

Category:	Streets			**Project Number:**	0759		
Project Location:	Main Street, South of Stone Pine Road			**Lead Department:**	Public Works		
Type:	Capital Maintenance/Community Enhancement			**Status:**	Previously Approved		
Initial Funding:	FY 16-17	**Estimated Completion:**	FY 22-23	**Fund Number:**	09	**Fund Name:**	Main Street Bridge

DESCRIPTION:

This project includes a major retrofit and rehabilitation of the Main Street Bridge. This project will bring the bridge into conformance with current ADA seismic requirements and extend the useful life an additional 75 years.

JUSTIFICATION:

The Main Street bridge is more than 100 years old and is in need of a seismic retrofit and major rehabilitation.

STRATEGIC PLAN GOAL (please check all that apply)

X	Infrastructure
X	Healthy Community/Public Safety
	Fiscal Sustainability
	Inclusive Governance

ADDITIONAL DETAILS:

Staff secured approval from CalTrans to advance the funding to begin design FY 17-18. Project timeline is dependent on federal funding availability for construction and permitting by CalTrans.

EXPENDITURES	PRIOR YEARS BUDGET EXPENDITURES	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
Engineering & Design	$ 300,000	$ 400,000	$ 400,000					$ 1,100,000
Prof.Serv/Env.								$ -
Construction				$ 3,202,829	$ 3,202,829			$ 6,405,658
PM-CM	$ 50,000	$ 50,000	$ 50,000	$ 435,461	$ 435,461			$ 1,020,921
TOTAL	**$ 350,000**	**$ 450,000**	**$ 450,000**	**$ 3,638,290**	**$ 3,638,290**	**$ -**	**$ -**	**$ 8,526,579**

SOURCE(S) OF FUNDS	PRIOR YEARS BUDGET ALLOCATIONS	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
General Fund	$ 40,000							$ 40,000
Main Street Bridge - Fund 9		$ 108,078		$ 414,961	$ 414,961			$ 937,999
Grant - Federal	$ 1,142,922			$ 3,202,829	$ 3,202,829			$ 7,548,580
TOTAL	**$ 1,182,922**	**$ 108,078**	**$ -**	**$ 3,617,790**	**$ 3,617,790**	**$ -**	**$ -**	**$ 8,526,579**

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STREET IMPROVEMENT PROJECTS

FY 2020-24

PROJECT TITLE: HIGHWAY 1/KELLY AVENUE INTERSECTION IMPROVEMENT PROJECT

Category:	Streets			**Project Number:**	0571		
Project Location:	Highway 1 and Kelly Avenue			**Lead Department:**	Public Works		
Type:	Community Enhancement/Public Safety			**Status:**	Previously Approved		
Initial Funding:	FY 18-19	**Estimated Completion:**	TBD	**Fund Number:**	13	**Fund Name:**	Traffic Mitigation

DESCRIPTION:

This project includes the final design, permitting, bid, and reconstruction of the 15,000 square foot Kelly Avenue-Highway 1 intersection. The project is intended to provide improved and safer pedestrian crossing and extend the southbound left turn stacking per Caltrans requirements. This project also includes an alternative analysis for a potential bicycle and pedestrian overcrossing of Highway 1.

JUSTIFICATION:

Highway 1 and Kelly Avenue have been identified by the City Council, the Cabrillo Unified School District, Caltrans and the public as an intersection of concern. The City is obligated to extend the left turn stacking by two cars as a mitigation measure for the New Library.

STRATEGIC PLAN GOAL (please check all that apply)

X	Infrastructure
X	Healthy Community/Public Safety
	Fiscal Sustainability
	Inclusive Governance

ADDITIONAL DETAILS:

Staff has proceeded to design and construct storm water improvements at this intersection. The City continues to seek grant funding to complete this project.

EXPENDITURES	PRIOR YEARS BUDGET EXPENDITURES	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
Engineering & Design			$ 100,000				$ 20,000	$ 120,000
Prof.Serv/Env.				$ 50,000			$ 20,000	$ 70,000
Construction							$ 1,450,000	$ 1,450,000
PM-CM							$ 80,000	$ 80,000
TOTAL	**$ -**	**$ -**	**$ 100,000**	**$ 50,000**	**$ -**	**$ -**	**$ 1,570,000**	**$ 1,720,000**

SOURCE(S) OF FUNDS	PRIOR YEARS BUDGET ALLOCATIONS	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
General Fund								$ -
Traffic Mitigation - Fund 13			$ 100,000	$ 50,000				$ 150,000
UNFUNDED							$ 1,570,000	$ 1,570,000
TOTAL	**$ -**	**$ -**	**$ 100,000**	**$ 50,000**	**$ -**	**$ -**	**$ 1,570,000**	**$ 1,720,000**

PROJECT TITLE: KELLY AVENUE COMPLETE STREET PROJECT

Category:	Streets			**Project Number:**	TBD		
Project Location:	Kelly Avenue, west of Highway 1			**Lead Department:**	Public Works		
Type:	Community Enhancement/Public Safety			**Status:**	Previously Approved		
Initial Funding:	Unfunded	**Estimated Completion:**	TBD	**Fund Number:**	11	**Fund Name:**	Streets and Roads

DESCRIPTION:

This project will include the design and improvement of 4532 feet of Kelly Avenue, from Main Street to the beach, as a "Complete Street" project. Enhancements are anticipated to include improved pedestrian/bicycle access and drainage.

JUSTIFICATION:

The project will bring Kelly Avenue in conformance with the State's mandated Complete Streets Policy.

STRATEGIC PLAN GOAL (please check all that apply)

X	Infrastructure
X	Healthy Community/Public Safety
	Fiscal Sustainability
	Inclusive Governance

ADDITIONAL DETAILS:

EXPENDITURES	PRIOR YEARS BUDGET EXPENDITURES	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
Engineering & Design							$ 180,000	$ 180,000
Prof.Serv/Env.							$ 95,000	$ 95,000
Construction							$ 1,000,000	$ 1,000,000
PM-CM							$ 100,000	$ 100,000
TOTAL	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 1,375,000**	**$ 1,375,000**

SOURCE(S) OF FUNDS	PRIOR YEARS BUDGET ALLOCATIONS	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
UNFUNDED							$ 1,375,000	$ 1,375,000
TOTAL	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 1,375,000**	**$ 1,375,000**

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TRAIL IMPROVEMENTS

Trails are characteristically important to residents and visitors alike. The City is tasked to complete many capital projects to assure safety and functionality of its trails. Improvements in this section address erosion issues along the Coastal Trail in addition to improving the quality of trails throughout the City.

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TRAIL IMPROVEMENTS - FIVE-YEAR SUMMARY
CAPITAL IMPROVEMENT PROGRAM

EXPENDITURES/BUDGET											
FUND ACCOUNTS:		PROJECT TITLE	PRIOR YEAR(S)	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY	UNFUNDED
Fund	Project										
17	0615	BICYCLE AND PEDESTRIAN MASTER PLAN IMPLEMENTATION PROGRAM	N/A	$ 100,000	$ 100,000	$ 100,000	$ 100,000	$ 100,000	N/A	$ 500,000	$ -
17	0597	VERTICAL ACCESS AT POPLAR BEACH	$ 10,000	$ 140,000	$ -	$ -	$ 90,000	$ 350,000	$ -	$ 590,000	$ 440,000
17	0595	HIGHWAY 1 BICYCLE/PEDESTRIAN TRAIL EXTENSION (NORTH)	$ -	$ 275,000	$ -	$ -	$ -	$ -	$ 1,475,000	$ 1,750,000	$ 1,475,000
17	0619	BIKEWAY CONNECTIVITY PROJECT - NORTH	$ 55,000	$ 120,000	$ 495,000	$ -	$ -	$ -	$ -	$ 670,000	$ 320,000
17	9007	STAIR REPAIR AT CAÑADA VERDE CREEK	$ -	$ 80,000	$ -	$ -	$ -	$ -	$ -	$ 80,000	$ -
17	9010	PEDESTRIAN/BICYCLE CONNECTION TO HATCH ELEMENTARY	$ -	$ 20,000	$ 230,000	$ -	$ -	$ -	$ -	$ 250,000	$ 230,000
17	0564	WAVECREST WALKWAY EXTENSION	$ -	$ -	$ 95,000	$ 330,000	$ -	$ -	$ -	$ 425,000	$ -
17	0618	COASTAL BLUFF PRESERVATION	$ 150,000	$ -	$ 390,000	$ 215,000	$ 215,000	$ 215,000	$ -	$ 1,185,000	$ 1,035,000
17	TBD	NAOMI PATRIDGE TRAIL EXTENSION (SOUTH)	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,500,000	$ 2,500,000	$ 2,500,000
17	TBD	POPLAR BEACH COASTAL TRAIL - RELOCATION AND EROSION MITIGATION	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,000,000	$ 3,000,000	$ 3,000,000
TOTAL			$ 215,000	$ 735,000	$ 1,310,000	$ 645,000	$ 405,000	$ 665,000	$ 6,975,000	$ 10,950,000	$ 9,000,000

FUNDING							
FUNDING SOURCE(S):	PRIOR YEAR(S)	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
General Fund	$ 185,000	$ 475,000	$ 100,000	$ 100,000	$ 100,000	$ 100,000	$ -	$ 1,060,000
General Capital - Fund 25	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Park Facility/Development - Fund 17	$ 150,000	$ -	$ 95,000	$ 330,000	$ -	$ -	$ -	$ 575,000
Grant - Measure A	$ 315,000	$ -	$ -	$ -	$ -	$ -	$ -	$ 315,000
UNFUNDED	$ -	$ -	$ 940,000	$ 215,000	$ 305,000	$ 565,000	$ 6,975,000	$ 9,000,000

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TRAIL IMPROVEMENT PROGRAMS

PROGRAM TITLE: BICYCLE AND PEDESTRIAN MASTER PLAN IMPLEMENTATION PROGRAM

Category:	Trails	**Project Number:**	0615		
Project Location:	Citywide	**Lead Department:**	Public Works		
Type:	Community Enhancement/Public Safety	**Status:**	Previously Approved		
Duration:	Ongoing	**Fund Number:**	17	**Fund Name:**	Parks

DESCRIPTION:

This project includes the implementation of the projects identified in the Bike and Pedestrian Master Plan.

Projects anticipated in FY 19-20 include design and construction of major rehabilitation for two sections of the Coastal Trail within the Ocean Colony Subdivision.

JUSTIFICATION:

This program was created in order to implement the recommendations from the Bicycle and Pedestrian Master Plan completed in FY 2018-19.

STRATEGIC PLAN GOAL (please check all that apply)

X	Infrastructure
X	Healthy Community/Public Safety
	Fiscal Sustainability
	Inclusive Governance

ADDITIONAL DETAILS:

Accomplishments in FY 2018-19 include the completion of the Master Plan and ongoing work with the Bicycle/Pedestrian Advisory Committee (BPAC) and successful grant application for the Naomi Patridge East Side Parallel Trail - North.

EXPENDITURES	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	TOTAL ALL FY
Engineering & Design	$ 10,000	$ 10,000	$ 10,000	$ 10,000	$ 10,000	$ 50,000
Construction	$ 90,000	$ 90,000	$ 90,000	$ 90,000	$ 90,000	$ 450,000
TOTAL	**$ 100,000**	**$ 100,000**	**$ 100,000**	**$ 100,000**	**$ 100,000**	**$ 500,000**
SOURCE(S) OF FUNDS						
General Fund	$ 100,000	$ 100,000	$ 100,000	$ 100,000	$ 100,000	$ 500,000
TOTAL	**$ 100,000**	**$ 100,000**	**$ 100,000**	**$ 100,000**	**$ 100,000**	**$ 500,000**

TRAIL IMPROVEMENT PROJECTS

FY 2019-20

PROJECT TITLE: STAIR REPAIR AT CAÑADA VERDE CREEK

Category:	Trails			**Project Number:**	9007		
Project Location:	Cañada Verde Park			**Lead Department:**	Public Works		
Type:	Capital Maintenance/Community Enhancement			**Status:**	Previously Approved		
Initial Funding	FY 19-20	**Estimated Completion:**	FY 19-20	**Fund Number:**	17	**Fund Name:**	Parks

DESCRIPTION:

This project involves the long-term repair of 5,280 linear feet of stairs that provide access from the Ocean Colony Trail (and Ritz Carlton) to Manhattan Beach.

JUSTIFICATION:

This project will provide a safer means of access for pedestrians to Manhattan Beach.

STRATEGIC PLAN GOAL (please check all that apply)

X	Infrastructure
X	Healthy Community/Public Safety
	Fiscal Sustainability
	Inclusive Governance

ADDITIONAL DETAILS:

This access is required under the CDP for the Ritz Carlton. Staff will be seeking financial support from private parties including Ocean Colony and Ritz Carlton.

EXPENDITURES	PRIOR YEARS BUDGET EXPENDITURES	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
Engineering & Design		$ 15,000					$ -	$ 15,000
Prof.Serv/Env.							$ -	$ -
Construction		$ 65,000					$ -	$ 65,000
PM-CM							$ -	$ -
TOTAL	**$ -**	**$ 80,000**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 80,000**

SOURCE(S) OF FUNDS	PRIOR YEARS BUDGET ALLOCATIONS	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
General Fund		$ 80,000					**$ -**	$ 80,000
TOTAL	**$ -**	**$ 80,000**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 80,000**

PROJECT TITLE: VERTICAL ACCESS AT POPLAR BEACH

Category:	Trails			**Project Number:**	0597		
Project Location:	Poplar Beach			**Lead Department:**	Public Works		
Type:	Community Enhancement/Public Safety			**Status:**	Previously Approved		
Initial Funding	FY 17-18	**Estimated Completion:**	FY 23-24	**Fund Number:**	17	**Fund Name:**	Parks

DESCRIPTION:

This project involves the assessment of options, design of preferred alternation, and construction of formal access from the bluff top to the beach near Poplar Beach parking lot (118 linear feet). While every effort will be made to accommodate access, it is unlikely that this accessway can or will be fully ADA compliant. The City will ensure full compliance with ADA for access at Poplar Beach Parking Lot and blufftop gateway areas. Work effort will include permitting through the California Coastal Commission. The focus of FY 19-20 is completion of design, environmental, and Coastal Development Permit, as well as construction of the improvements. Outer years will focus on constructing permanent improvements.

JUSTIFICATION:

This project was identified as a project in the Bicycle and Pedestrian Master Plan completed in FY 2018-19. Extension of the trail to the north will provide residents of Grandview Avenue, Spindrift Avenue, and Frenchmans Creek neighborhoods safe ped/bike crossing of Highway 1 to beaches, the coastal trail, and other amenities.

STRATEGIC PLAN GOAL (please check all that apply)

X	Infrastructure
X	Healthy Community/Public Safety
	Fiscal Sustainability
	Inclusive Governance

ADDITIONAL DETAILS:

Accomplishments in FY 18-19 include the emergency storm water repairs that preserved the existing vertical access.

EXPENDITURES	PRIOR YEARS BUDGET EXPENDITURES	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
Engineering & Design	$ 10,000				$ 90,000		$ -	$ 100,000
Prof.Serv/Env.		$ 10,000				$ 35,000	$ -	$ 45,000
Construction		$ 130,000				$ 280,000	$ -	$ 410,000
PM-CM						$ 35,000	$ -	$ 35,000
TOTAL	**$ 10,000**	**$ 140,000**	**$ -**	**$ -**	**$ 90,000**	**$ 350,000**	**$ -**	**$ 590,000**

SOURCE(S) OF FUNDS	PRIOR YEARS BUDGET ALLOCATIONS	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
Park Facility/Development - Fund 17	$ 150,000							$ 150,000
UNFUNDED					$ 90,000	$ 350,000		$ 440,000
TOTAL	**$ 150,000**	**$ -**	**$ -**	**$ -**	**$ 90,000**	**$ 350,000**	**$ -**	**$ 590,000**

PROJECT TITLE: HIGHWAY 1 BICYCLE/PEDESTRIAN TRAIL EXTENSION (NORTH)

Category:	Trails			**Project Number:**	0595		
Project Location:	Spindrift Way to Ruisseau Francais Avenue			**Lead Department:**	Public Works		
Type:	Community Enhancement/Public Safety			**Status:**	Previously Approved		
Initial Funding	FY 17-18	**Estimated Completion:**	FY 21-22	**Fund Number:**	17	**Fund Name:**	Parks

DESCRIPTION:

This project includes the extension of a 10-foot wide bicycle/pedestrian (multi-purpose) Class I trail from Spindrift Way to Ruisseau Francais Avenue (1,600 feet). This project also includes a new bridge crossing over Frenchman's Creek and is an extension of the Highway 1 Safety projects. Additionally, this project includes the 1,400 foot extension of the Naomi Patridge trail from Roosevelt Boulevard to Mirada Road (Terminus of San Mateo County portion of multi-purpose trail). The design and construction of this project is intended to parallel the Highway 1 Safety - North project to the extent that funding is available.

JUSTIFICATION:

This project was identified as a project in the Bicycle and Pedestrian Master Plan completed in FY 2018-19. This project will fully connect the bicycle and pedestrian path from downtown Half Moon Bay to the northern City limits. The County has a proposed project to connect the Coastside trail to the northern City limits.

STRATEGIC PLAN GOAL (please check all that apply)

X	Infrastructure
X	Healthy Community/Public Safety
X	Fiscal Sustainability
	Inclusive Governance

ADDITIONAL DETAILS:

This project was postponed to FY 2019-20 to allow staff time to identify new funding sources. Additional delays may occur due to lack of funding. The City will seek funding assistance from San Mateo County to provide extension and safe access between the City and unincorporated County (Princeton).

EXPENDITURES	PRIOR YEARS BUDGET EXPENDITURES	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
Engineering & Design		$ 175,000					$ -	$ 175,000
Prof.Serv/Env.		$ 100,000					$ -	$ 100,000
Construction							$ 1,325,000	$ 1,325,000
PM-CM							$ 150,000	$ 150,000
TOTAL	**$ -**	**$ 275,000**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 1,475,000**	**$ 1,750,000**

SOURCE(S) OF FUNDS	PRIOR YEARS BUDGET ALLOCATIONS	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
General Fund		$ 275,000					**$ -**	$ 275,000
UNFUNDED							$ 1,475,000	$ 1,475,000
TOTAL	**$ -**	**$ 275,000**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 1,750,000**

PROJECT TITLE: BIKEWAY CONNECTIVITY PROJECT - NORTH

Category:	Trails			**Project Number:**	0619		
Project Location:	Bike Trail from Roosevelt to Mirada, east of Hwy 1			**Lead Department:**	Public Works		
Type:	Community Enhancement/Public Safety			**Status:**	Previously Approved		
Initial Funding	FY 18-19	**Estimated Completion:**	FY 20-21	**Fund Number:**	17	**Fund Name:**	Parks

DESCRIPTION:

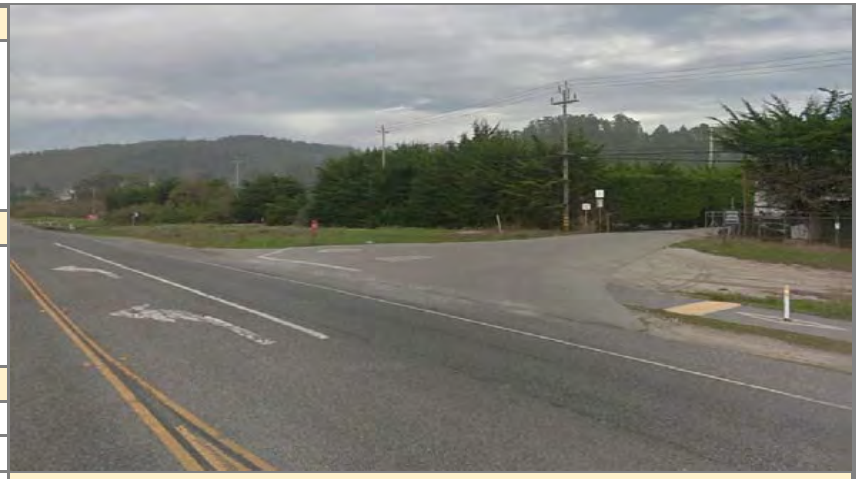
This project includes the design, permitting, environmental clearance, and construction of a Class I multi-use path parallel to the east side of Highway 1 between Roosevelt Boulevard and Mirada Road. The project will extend the current Class I path from the existing terminus at Roosevelt Boulevard north to the City limits. The path will be approximately 10-foot wide and will be extended for approximately 0.26 miles north.

JUSTIFICATION:

In 2015, the City completed interim repairs to stabilize the stairs under an Emergency Coastal Development Permit. Long term repairs/relocation will be necessary as the site is subject to coastal erosion and related impacts from Sea Level Rise (SLR).

STRATEGIC PLAN GOAL (please check all that apply)

X	Infrastructure
X	Healthy Community/Public Safety
	Fiscal Sustainability
X	Inclusive Governance



ADDITIONAL DETAILS:

This project is funded by SMCTA Measure A Bicycle and Pedestrian program.

EXPENDITURES	PRIOR YEARS BUDGET EXPENDITURES	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
Engineering & Design	$ 30,000	$ 50,000						$ 80,000
Prof.Serv/Env.	$ 25,000	$ 50,000						$ 75,000
Construction			$ 450,000					$ 450,000
PM-CM		$ 20,000	$ 45,000					$ 65,000
TOTAL	**$ 55,000**	**$ 120,000**	**$ 495,000**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 670,000**

SOURCE(S) OF FUNDS	PRIOR YEARS BUDGET ALLOCATIONS	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
Grant - Measure A	$ 315,000							$ 315,000
General Fund	$ 35,000							$ 35,000
UNFUNDED			$ 320,000					$ 320,000
TOTAL	**$ 350,000**	**$ -**	**$ 320,000**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 670,000**

PROJECT TITLE: PEDESTRIAN/BICYCLE CONNECTION TO HATCH ELEMENTARY

Category:	Trails			**Project Number:**	9010		
Project Location:	2nd Avenue - Central Avenue to Granelli Avenue			**Lead Department:**	Public Works		
Type:	Capital Maintenance/Community Enhancement			**Status:**	NEW		
Initial Funding:	FY 19-20	**Estimated Completion:**	FY 20-21	**Fund Number:**	17	**Fund Name:**	Parks

DESCRIPTION:

The project will improve the bicycle/pedestrian access on 2nd Avenue from Central Avenue to Granelli Avenue. The project will also incorporate green infrastructure, ADA improvements, and an educational component.

JUSTIFICATION:

This project was identified as necessary by both the City of Half Moon Bay and the Alvin S. Hatch Elementary School and Manuel F. Cunha Intermediate School Safe Routes to School: Summary of Walking Audit Observations and Recommendations (2013).

STRATEGIC PLAN GOAL (please check all that apply)

X	Infrastructure
X	Healthy Community/Public Safety
	Fiscal Sustainability
	Inclusive Governance

ADDITIONAL DETAILS:

The City has submitted multiple grant applications for this project and implementation is contingent on grant funding.

EXPENDITURES	PRIOR YEARS BUDGET EXPENDITURES	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
Engineering & Design		$ 10,000	$ 20,000					$ 30,000
Prof.Serv/Env.		$ 10,000	$ 10,000					$ 20,000
Construction			$ 190,000					$ 190,000
PM-CM			$ 10,000					$ 10,000
TOTAL	**$ -**	**$ 20,000**	**$ 230,000**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 250,000**

SOURCE(S) OF FUNDS	PRIOR YEARS BUDGET ALLOCATIONS	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
General Fund		$ 20,000						$ 20,000
UNFUNDED			$ 230,000					$ 230,000
TOTAL	**$ -**	**$ 20,000**	**$ 230,000**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 250,000**

TRAIL IMPROVEMENT PROJECTS

FY 2020-24

PROJECT TITLE: WAVECREST WALKWAY EXTENSION

Category:	Trails			**Project Number:**	0564		
Project Location:	Coastal Trail to Highway 1 Trail			**Lead Department:**	Public Works		
Type:	Community Enhancement/Public Safety			**Status:**	Previously Approved		
Initial Funding	FY 19-20	**Estimated Completion:**	FY 20-21	**Fund Number:**	17	**Fund Name:**	Parks

DESCRIPTION:

This project will provide an all-weather use walkway along 2,162 linear foot of Wavecrest Road to encourage multi-modal transportation to Smith Field park.

JUSTIFICATION:

This project was identified as a project in the Bicycle and Pedestrian Master Plan completed in FY 2018-19. The project will provide non-automobile-dependent access to Smith Field Park.

STRATEGIC PLAN GOAL (please check all that apply)

X	Infrastructure
X	Healthy Community/Public Safety
	Fiscal Sustainability
	Inclusive Governance

ADDITIONAL DETAILS:

This project will be scheduled in conjunction with the Wavecrest Water Main Project.

EXPENDITURES	PRIOR YEARS BUDGET EXPENDITURES	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
Engineering & Design			$ 50,000					$ 50,000
Prof.Serv/Env.			$ 25,000					$ 25,000
Construction				$ 330,000				$ 330,000
PM-CM			$ 20,000					$ 20,000
TOTAL	**$ -**	**$ -**	**$ 95,000**	**$ 330,000**	**$ -**	**$ -**	**$ -**	**$ 425,000**

SOURCE(S) OF FUNDS	PRIOR YEARS BUDGET ALLOCATIONS	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
Park Facility/Development - Fund 17			$ 95,000	$ 330,000				$ 425,000
TOTAL	**$ -**	**$ -**	**$ 95,000**	**$ 330,000**	**$ -**	**$ -**	**$ -**	**$ 425,000**

PROJECT TITLE: COASTAL BLUFF PRESERVATION

Category:	Trails			**Project Number:**	0618		
Project Location:	Costal Trail from Poplar St. to Kelly Ave.			**Lead Department:**	Public Works		
Type:	Public Safety Enhancement			**Status:**	Previously Approved		
Initial Funding	FY 18-19	**Estimated Completion:**	FY 23-24	**Fund Number:**	17	**Fund Name:**	Parks

DESCRIPTION:

This multi-year project includes improvements to the Coastal Trail with the intention of increasing its current life span by 5 years. The focus of FY 19-20 is identification of funding sources to complete this work.

JUSTIFICATION:

The Coastal Trail has experienced a significant amount of erosion and poses a safety hazard to users. Improvements will help to protect the trail.

STRATEGIC PLAN GOAL (please check all that apply)	
X	Infrastructure
X	Healthy Community/Public Safety
	Fiscal Sustainability
	Inclusive Governance

ADDITIONAL DETAILS:

This project is on hold until funding sources are secured. The City is hopeful that the new Countywide Sea Level Rise and Flooding Agency will assist with identification of funding.

EXPENDITURES	PRIOR YEARS BUDGET EXPENDITURES	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
Engineering & Design	$ 30,000		$ 30,000	$ 30,000	$ 30,000	$ 30,000	$ -	$ 150,000
Prof.Serv/Env.	$ 20,000		$ 20,000	$ 20,000	$ 20,000	$ 20,000	$ -	$ 100,000
Construction	$ 75,000		$ 325,000	$ 150,000	$ 150,000	$ 150,000	$ -	$ 850,000
PM-CM	$ 25,000		$ 15,000	$ 15,000	$ 15,000	$ 15,000	$ -	$ 85,000
TOTAL	**$ 150,000**	**$ -**	**$ 390,000**	**$ 215,000**	**$ 215,000**	**$ 215,000**	**$ -**	**$ 1,185,000**

SOURCE(S) OF FUNDS	PRIOR YEARS BUDGET ALLOCATIONS	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
General Fund	$ 150,000					$ -	**$ -**	$ 150,000
UNFUNDED			$ 390,000	$ 215,000	$ 215,000	$ 215,000		$ 1,035,000
TOTAL	**$ 150,000**	**$ -**	**$ 390,000**	**$ 215,000**	**$ 215,000**	**$ 215,000**	**$ -**	**$ 1,185,000**

PROJECT TITLE: NAOMI PATRIDGE TRAIL EXTENSION (SOUTH)

Category:	Trails			**Project Number:**	TBD		
Project Location:	Wavecrest Road to Miramontes Point Road			**Lead Department:**	Public Works		
Type:	Community Enhancement/Public Safety			**Status:**	Previously Approved		
Initial Funding:	Unfunded	**Estimated Completion:**	TBD	**Fund Number:**	17	**Fund Name:**	Parks

DESCRIPTION:

The project includes the extension of the Naomi Patridge Trail from Wavecrest Road to Miramontes Point Road. As part of initial work, the City will evaluate whether a single trail on the east side of Highway 1, a single trail on the west side, or a trail on each side is functionally and financially best. The large number of private driveways on the west side of Highway 1 is of concern for user safety.

JUSTIFICATION:

This project was identified as a project in the Bicycle and Pedestrian Master Plan completed in FY 2018-19. There is currently no off-street pedestrian/bicycle access between Wavecrest Road and Miramontes Point Road.

STRATEGIC PLAN GOAL (please check all that apply)

X	Infrastructure
X	Healthy Community/Public Safety
	Fiscal Sustainability
	Inclusive Governance

ADDITIONAL DETAILS:

The City was unsuccessful in securing grant funding for this project, but will continue to pursue new grant funding opportunities. Work on this project is on hold until a funding source is identified.

EXPENDITURES	PRIOR YEARS BUDGET EXPENDITURES	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
Engineering & Design							$ 100,000	$ 100,000
Prof.Serv/Env.							$ 100,000	$ 100,000
Construction							$ 2,100,000	$ 2,100,000
PM-CM							$ 200,000	$ 200,000
TOTAL	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 2,500,000**	**$ 2,500,000**

SOURCE(S) OF FUNDS	PRIOR YEARS BUDGET ALLOCATIONS	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
UNFUNDED							$ 2,500,000	$ 2,500,000
TOTAL	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 2,500,000**	**$ 2,500,000**

PROJECT TITLE: POPLAR BEACH COASTAL TRAIL - RELOCATION AND EROSION MITIGATION

Category:	Trails			**Project Number:**	TBD		
Project Location:	Coastal Trail Along Poplar Beach			**Lead Department:**	Public Works		
Type:	Community Enhancement/Public Safety			**Status:**	Previously Approved		
Initial Funding:	Unfunded	**Estimated Completion:**	TBD	**Fund Number:**	17	**Fund Name:**	Parks

DESCRIPTION:

This project involves the construction of the new Poplar Beach Coastal Trail easterly of its current alignment due to sea-level rise and localized erosion. This project will also include connection to the Poplar Beach Parking Lot, erosion mitigation, bluff top restoration and new controlled access.

JUSTIFICATION:

This project was identified as a project in the Parks Master Plan completed in FY 2018-19. The adjacent bluff has eroded and jeopardizes the integrity of the trail.

STRATEGIC PLAN GOAL (please check all that apply)

X	Infrastructure
X	Healthy Community/Public Safety
	Fiscal Sustainability
	Inclusive Governance

ADDITIONAL DETAILS:

EXPENDITURES	PRIOR YEARS BUDGET EXPENDITURES	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
Engineering & Design							$ 600,000	$ 600,000
Prof.Serv/Env.							$ 300,000	$ 300,000
Construction							$ 1,500,000	$ 1,500,000
PM-CM							$ 600,000	$ 600,000
TOTAL	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 3,000,000**	**$ 3,000,000**

SOURCE(S) OF FUNDS	PRIOR YEARS BUDGET ALLOCATIONS	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL ALL FY
UNFUNDED							$ 3,000,000	$ 3,000,000
TOTAL	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 3,000,000**	**$ 3,000,000**

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APPENDICES

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FIVE-YEAR CAPITAL IMPROVEMENT PROGRAM FUNDING SOURCES

DESCRIPTION	FUND	PROJECT NO.	PRIOR YEARS	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL
DEVELOPER FUNDS										
HIGHWAY 1 SAFETY - NORTH	11	0538	3,100,000	-	-	-	-	-	-	3,100,000
TOTAL DEVELOPER FUNDS CONTRIBUTION			**3,100,000**	**-**	**-**	**-**	**-**	**-**		**3,100,000**
DONATIONS										
MEDIAN LANDSCAPE PROJECT	25	9015	20,000	-	-	-	-	-	-	20,000
TOTAL DONATIONS CONTRIBUTION			**20,000**	**-**	**-**	**-**	**-**	**-**	**-**	**20,000**
GAS TAX - FUND 10										
NEIGHBORHOOD TRAFFIC SAFETY PROGRAM	11	9000	N/A	20,000	20,000	20,000	20,000	20,000	N/A	100,000
CROSSWALKS AND ADA RETROFIT PROGRAM	11	0572	N/A	32,500	32,500	32,500	32,500	32,500	N/A	162,500
PAVEMENT MANAGEMENT AND TRAFFIC SAFETY PROGRAM	11	0514	N/A	165,000	-	-	-	-	N/A	165,000
HIGHWAY 1 SAFETY - NORTH	11	0538	50,000	-	-	-	-	-	-	50,000
TOTAL GAS TAX CONTRIBUTION			**50,000**	**217,500**	**52,500**	**52,500**	**52,500**	**52,500**	**-**	**477,500**
GENERAL CAPITAL - FUND 25										
MAIN STREET TREE LIGHTS	25	9016	-	50,000	-	-	-	-	-	50,000
WAYFINDING AND ENTRY SIGNS (PHASE 2)	25	0559	100,000	-	250,000	-	-	-	-	350,000
DOWNTOWN GATEWAY ARCH - NORTH	25	0534	-	-	-	264,000	-	-	-	264,000
TOTAL GENERAL CAPITAL CONTRIBUTION			**100,000**	**50,000**	**250,000**	**264,000**	**-**	**-**	**-**	**664,000**
GENERAL FUND										
KELLY/HIGHWAY 1 DRAINAGE PROJECT	14	9003	759,000	-	-	-	-	-	-	759,000
SEYMOUR DITCH EROSION AND COASTAL STABILIZATION	14	0608	200,000	150,000	-	-	140,000	-	-	490,000
ARROYO DE EN MEDIO EROSION REPAIR - MIRADA ROAD	14	0579	125,000	-	75,000	-	-	-	-	200,000
ROOSEVELT DITCH IMPROVEMENTS	14	TBD	-	-	75,000	-	-	-	-	75,000
GENERAL PLAN AND LOCAL COASTAL PROGRAM UPDATE	25	0564	583,043	250,000	-	-	-	-	-	833,043
MEDIAN LANDSCAPE PROJECT	25	9015	80,000	-	-	-	-	-	-	80,000
TOWN CENTER MASTER PLAN	25	TBD	-	-	-	150,000	-	-	-	150,000
FINANCIAL SOFTWARE - ENTERPRISE RESOURCE PLANNING	25	0555	300,000	-	-	-	-	-	-	300,000
GIS IMPLEMENTATION	25	0586	150,000	-	50,000	-	-	-	-	200,000
PARKS MASTER PLAN IMPLEMENTATION PROGRAM	17	0609	N/A	100,000	100,000	100,000	100,000	100,000	N/A	500,000
OCEAN VIEW PARK - PERMANENT RESTROOMS AND SITE IMPROVEMENTS	17	0610	300,000	240,000	-	-	-	-	-	540,000
POPLAR BEACH GATEWAYS PLAN	17	0617	-	118,078	-	-	-	-	-	118,078
WAVECREST WATER MAIN PROJECT	17	9004	-	100,000	-	-	-	-	-	100,000
CARTER PARK IMPROVEMENTS	17	0611	165,000	300,000	-	-	-	-	-	465,000
SMITH FIELD SITE ASSESSMENT AND MASTER PLAN	17	TBD	45,000	-	-	-	-	-	-	45,000
TRAIN DEPOT AND JOHNSTON HOUSE SITE PLAN	17	0614	85,000	-	-	-	-	-	-	85,000
ADA TRANSITION PLAN IMPLEMENTATION PROGRAM	25	0601	N/A	75,000	75,000	75,000	75,000	75,000	N/A	375,000
SIDEWALK REPLACEMENT AND REPAIR PROGRAM	25	0562	N/A	150,000	150,000	150,000	150,000	150,000	N/A	750,000
URBAN FOREST MANAGEMENT PROGRAM	25	0598	N/A	80,000	80,000	80,000	80,000	80,000	N/A	400,000
ANNUAL COMMUNITY ENHANCEMENT PROGRAM	25	0600	N/A	50,000	50,000	50,000	50,000	50,000	N/A	250,000
EMERGENCY RESPONSE PROGRAM	48	0604	N/A	100,000	100,000	100,000	100,000	100,000	N/A	500,000

FIVE-YEAR CAPITAL IMPROVEMENT PROGRAM FUNDING SOURCES

DESCRIPTION	FUND	PROJECT NO.	PRIOR YEARS	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL
TED ADCOCK COMMUNITY CENTER KITCHEN AND ENTRY REMODEL	48	0621	250,000	70,000	-	-	-	-	-	320,000
SHERIFF SUBSTATION RENOVATION PROJECT	48	0605	112,000	110,000	-	-	-	-	-	222,000
STREETLIGHT UPGRADES ON MAIN STREET	48	0623	100,000	10,000	-	-	-	-	-	110,000
CIVIC CENTER SITE PLAN	48	0624	85,000	-	-	-	-	-	-	85,000
PILARCITOS CREEK RESTORATION AND REMEDIATION PROJECT	48	9022	155,000	210,000	-	-	-	-	-	365,000
CORPORATE YARD IMPROVEMENTS	48	9023	-	40,000	-	-	-	-	-	40,000
RESTORATION AND WATERSHED PROTECTION OF CITY PARCEL	48	0622	160,000	-	-	-	-	-	-	160,000
PUBLIC WORKS CORPORATION YARD MASTER PLAN	48	TBD	-	-	-	100,000	-	-	-	100,000
HIGHWAY 1 SAFETY - SOUTH	11	0523	98,000	252,922	-	-	-	-	-	350,922
POPLAR COMPLETE STREET PROJECT	11	0593	156,000	19,000	-	-	-	-	-	175,000
HIGHWAY 1 SAFETY - NORTH	11	0538	634,000	100,000	-	-	-	-	-	734,000
MAIN STREET BRIDGE PROJECT	09	0759	40,000	-	-	-	-	-	-	40,000
BICYCLE AND PEDESTRIAN MASTER PLAN IMPLEMENTATION PROGRAM	17	0615	N/A	100,000	100,000	100,000	100,000	100,000	N/A	500,000
STAIR REPAIR AT CAÑADA VERDE CREEK	17	9007	-	80,000	-	-	-	-	-	80,000
HIGHWAY 1 BICYCLE/PEDESTRIAN TRAIL EXTENSION (NORTH)	17	0595	-	275,000	-	-	-	-	-	275,000
BIKEWAY CONNECTIVITY PROJECT - NORTH	17	0619	35,000	-	-	-	-	-	-	35,000
PEDESTRIAN/BICYCLE CONNECTION TO HATCH ELEMENTARY	17	9010	-	20,000	-	-	-	-	-	20,000
COASTAL BLUFF PRESERVATION	17	0618	150,000	-	-	-	-	-	-	150,000
TOTAL GENERAL FUND CONTRIBUTION			**4,767,043**	**3,000,000**	**855,000**	**905,000**	**795,000**	**655,000**	**-**	**10,977,043**
GRANT - COASTAL COMMISSION										
GENERAL PLAN AND LOCAL COASTAL PROGRAM UPDATE	25	0564	160,000	-	-	-	-	-	-	160,000
TOTAL GRANT - COASTAL COMMISSION CONTRIBUTION			**160,000**	**-**	**-**	**-**	**-**	**-**	**-**	**160,000**
GRANT - FEDERAL										
POPLAR COMPLETE STREET PROJECT	11	0593	-	1,202,000	-	-	-	-	-	1,202,000
MAIN STREET BRIDGE PROJECT	09	0759	1,142,922	-	-	3,202,829	3,202,829	-	-	7,548,580
TOTAL GRANT - FEDERAL CONTRIBUTION			**1,142,922**	**1,202,000**	**-**	**3,202,829**	**3,202,829**	**-**	**-**	**8,750,580**
GRANT - MEASURE A										
HIGHWAY 1 SAFETY - SOUTH	11	0523	300,000	3,200,000	-	-	-	-	-	3,500,000
HIGHWAY 1 SAFETY - NORTH	11	0538	300,000	-	3,200,000	-	-	-	-	3,500,000
BIKEWAY CONNECTIVITY PROJECT - NORTH	17	0619	315,000	-	-	-	-	-	-	315,000
TOTAL GRANT - MEASURE A CONTRIBUTION			**915,000**	**3,200,000**	**3,200,000**	**-**	**-**	**-**	**-**	**7,315,000**
GRANT - OCEAN PROTECTION COUNCIL										
GENERAL PLAN AND LOCAL COASTAL PROGRAM UPDATE	25	0564	53,214	-	-	-	-	-	-	53,214
TOTAL GRANT - OCEAN PROTECTION COUNCIL CONTRIBUTION			**53,214**	**-**	**-**	**-**	**-**	**-**	**-**	**53,214**
MEASURE J										
POPLAR BEACH GATEWAYS PLAN	17	0617	186,324	-	-	-	-	-	-	186,324
TOTAL MEASURE J CONTRIBUTION			**186,324**	**-**	**-**	**-**	**-**	**-**		**186,324**
MAIN STREET BRIDGE - FUND 9										
MAIN STREET BRIDGE PROJECT	09	0759	-	108,078	-	414,961	414,961	-	-	937,999
TOTAL MAIN STREET BRIDGE - FUND 9 CONTRIBUTION			**-**	**108,078**	**-**	**414,961**	**414,961**	**-**	**-**	**937,999**

FIVE-YEAR CAPITAL IMPROVEMENT PROGRAM FUNDING SOURCES

DESCRIPTION	FUND	PROJECT NO.	PRIOR YEARS	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL
PARK FACILITY/DEVELOPMENT - FUND 17										
POPLAR BEACH GATEWAYS PLAN	17	0617	173,676	21,922	-	-	-	-	-	195,598
WAVECREST WATER MAIN PROJECT	17	9004	-	-	600,000	-	-	-	-	600,000
CARTER PARK IMPROVEMENTS	17	0611	-	-	100,000	-	-	-	-	100,000
TRAIN DEPOT AND JOHNSTON HOUSE TEMPORARY IMPROVEMENTS	17	9005	-	85,000	-	-	-	-	-	85,000
SMITH FIELD SITE ASSESSMENT AND MASTER PLAN	17	TBD	-	-	55,000	-	-	-	-	55,000
VERTICAL ACCESS AT POPLAR BEACH	17	0597	150,000	-	-	-	-	-	-	150,000
WAVECREST WALKWAY EXTENSION	17	0564	-	-	95,000	330,000	-	-	-	425,000
TOTAL PARK FACILITY/DEVELOPMENT - FUND 17 CONTRIBUTION			**323,676**	**106,922**	**850,000**	**330,000**	**-**	**-**	**-**	**1,610,598**
PUBLIC FACILITIES - FUND 48										
PILARCITOS CREEK RESTORATION AND REMEDIATION PROJECT	48	9022	-	-	35,000	-	-	-	-	35,000
CORPORATE YARD IMPROVEMENTS	48	9023	-	-	180,000	-	-	-	-	180,000
TOTAL PUBLIC FACILITIES - FUND 48 CONTRIBUTION			**-**	**-**	**215,000**	**-**	**-**	**-**	**-**	**215,000**
SAN MATEO COUNTY CONTRIBUTION										
CUNHA PARKING LOT EXPANSION FOR LIBRARY	16	0545	200,000	-	-	-	-	-	-	200,000
TOTAL SAN MATEO COUNTY CONTRIBUTION			**200,000**	**-**	**-**	**-**	**-**	**-**	**-**	**200,000**
SAN MATEO COUNTY LOAN										
CUNHA PARKING LOT EXPANSION FOR LIBRARY	16	0545	200,000	-	-	-	-	-	-	200,000
TOTAL SAN MATEO COUNTY LOAN CONTRIBUTION			**200,000**	**-**	**-**	**-**	**-**	**-**	**-**	**200,000**
SEWER SERVICE - FUND 05/06										
SEWER MAINTENANCE PROGRAM	06	0506	N/A	50,000	50,000	50,000	50,000	50,000	N/A	250,000
INFLOW AND INFILTRATION PROGRAM	06	9028	N/A	150,000	150,000	150,000	150,000	150,000	N/A	750,000
CITYWIDE POINT REPAIRS PROGRAM	06	9029	N/A	315,000	315,000	315,000	315,000	315,000	N/A	1,575,000
MANHOLE REHABILITATION PROGRAM	06	9026	N/A	40,000	40,000	40,000	40,000	40,000	N/A	200,000
PUMP STATION AND FORCE MAIN REPAIR AND REPLACEMENT PROGRAM	06	0507	N/A	205,000	205,000	50,000	50,000	50,000	N/A	560,000
LORYN LANE SEWER MAIN REPAIR	06	9027	-	275,000	-	-	-	-	-	275,000
OCEAN COLONY PUMP STATION REPLACEMENT PROJECT	06	9025	200,000	2,710,000	-	-	-	-	-	2,910,000
SANITARY SEWER MASTER PLAN	06	9024	-	100,000	50,000	50,000	25,000	-	-	225,000
TOTAL SEWER SERVICE - FUND 05/06 CONTRIBUTION			**200,000**	**3,845,000**	**810,000**	**655,000**	**630,000**	**605,000**	**-**	**6,745,000**
STORM DRAIN IMPROVEMENT - FUND 14										
GREEN INFRASTRUCTURE AND STORM WATER PROGRAM	14	0563	N/A	100,000	150,000	150,000	150,000	150,000	N/A	700,000
TOTAL STORM DRAIN IMPROVEMENT - FUND 14 CONTRIBUTION			**-**	**100,000**	**150,000**	**150,000**	**150,000**	**150,000**	**-**	**700,000**
STREET AND ROAD - FUND 11										
NEIGHBORHOOD TRAFFIC SAFETY PROGRAM	11	9000	N/A	20,000	20,000	20,000	20,000	20,000	N/A	100,000
CROSSWALKS AND ADA RETROFIT PROGRAM	11	0572	N/A	32,500	32,500	32,500	32,500	32,500	N/A	162,500
PAVEMENT MANAGEMENT AND TRAFFIC SAFETY PROGRAM	11	0514	N/A	165,000	-	-	-	-	N/A	165,000
HIGHWAY 1 SAFETY - SOUTH	11	0523	-	497,078	-	-	-	-	-	497,078
HIGHWAY 1 SAFETY - NORTH	11	0538	-	-	600,000	-	-	-	-	600,000
TOTAL STREET AND ROAD - FUND 11 CONTRIBUTION			**-**	**714,578**	**652,500**	**52,500**	**52,500**	**52,500**	**-**	**1,524,578**
TRAFFIC MITIGATION - FUND 13										
HIGHWAY 1/KELLY AVENUE INTERSECTION IMPROVEMENT PROJECT	13	0571	-	-	100,000	50,000	-	-	-	150,000
TOTAL TRAFFIC MITIGATION - FUND 13 CONTRIBUTION			**-**	**-**	**100,000**	**50,000**	**-**	**-**	**-**	**150,000**

FIVE-YEAR CAPITAL IMPROVEMENT PROGRAM FUNDING SOURCES

DESCRIPTION	FUND	PROJECT NO.	PRIOR YEARS	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FUTURE YEARS	TOTAL
UNFUNDED										
SEYMOUR DITCH EROSION AND COASTAL STABILIZATION	14	0608	-	-	825,000	825,000	-	-		1,650,000
KEHOE WATER COURSE AND HABITAT ENHANCEMENT PROJECT	14	0534	-	-	-	-	-	-	7,854,250	7,854,250
MEDIAN LANDSCAPE PROJECT	25	9015	-	30,000	-	-	-	-	-	30,000
CARTER PARK IMPROVEMENTS	17	0611	-	-	1,100,000	-	-	-	-	1,100,000
PERMANENT RESTROOMS AT POPLAR BEACH	17	TBD	-	-	-	-	-	-	250,000	250,000
STORAGE BUILDING AT SMITH FIELD	17	TBD	-	-	-	-	-	-	65,000	65,000
NEW MAGNOLIA/SEYMOUR PARK	17	TBD	-	-	-	-	-	-	350,000	350,000
NEW COMMUNITY PARK	17	TBD	-	-	-	-	-	-	12,000,000	12,000,000
RESTORATION AND WATERSHED PROTECTION OF CITY PARCEL	48	0622	-	-	825,000	-	-	-	-	825,000
PAVEMENT MANAGEMENT AND TRAFFIC SAFETY PROGRAM	11	0514	N/A	-	1,025,000	120,000	1,025,000	120,000	N/A	2,290,000
POPLAR COMPLETE STREET PROJECT	11	0593	-	-	500,000	-	-	-	-	500,000
HIGHWAY 1 SAFETY - NORTH	11	0538	-	-	-	1,100,000	-	-	-	1,100,000
HIGHWAY 1/KELLY AVENUE INTERSECTION IMPROVEMENT PROJECT	13	0571	-	-	-	-	-	-	1,570,000	1,570,000
KELLY AVENUE COMPLETE STREET PROJECT	11	TBD	-	-	-	-	-	-	1,375,000	1,375,000
VERTICAL ACCESS AT POPLAR BEACH	17	0597	-	-	-	-	90,000	350,000	-	440,000
HIGHWAY 1 BICYCLE/PEDESTRIAN TRAIL EXTENSION (NORTH)	17	0595	-	-	-	-	-	-	1,475,000	1,475,000
BIKEWAY CONNECTIVITY PROJECT - NORTH	17	0619	-	-	320,000	-	-	-	-	320,000
PEDESTRIAN/BICYCLE CONNECTION TO HATCH ELEMENTARY	17	9010	-	-	230,000	-	-	-	-	230,000
COASTAL BLUFF PRESERVATION	17	0618	-	-	390,000	215,000	215,000	215,000	-	1,035,000
NAOMI PATRIDGE TRAIL EXTENSION (SOUTH)	17	TBD	-	-	-	-	-	-	2,500,000	2,500,000
POPLAR BEACH COASTAL TRAIL - RELOCATION AND EROSION MITIGATION	17	TBD	-	-	-	-	-	-	3,000,000	3,000,000
TOTAL UNFUNDED			**-**	**30,000**	**5,215,000**	**2,260,000**	**1,330,000**	**685,000**	**30,439,250**	**39,959,250**
TOTAL FY CONTRIBUTIONS			**11,418,179**	**12,574,078**	**12,350,000**	**8,336,790**	**6,627,790**	**2,200,000**	**30,439,250**	**83,946,086**

ABAG
Association of Bay Area Governments

Appropriation
An authorization by the City Council to make expenditures and/or to incur obligations for a specific purpose.

Assessed Value
A valuation set upon real estate by the County Assessor as a basis for levying taxes. Proposition 13 required that assessed values be rolled back to 1976 values and increased by a maximum of 2% per year unless property is improved or sold.

BAAQMD
Bay Area Air Quality Management District

Bond
A written promise to pay a specified sum of money (principal) at a specific date in the future, together with periodic interest at a specific rate. In the Operating Budget, these payments are identified as debt service. Bonds are used to obtain long-term financing for capital improvements.

Bond Rating
A rating from a schedule of grades indicating the probability of timely repayment of principal and interest on bonds issued. These ratings are a major influence on the interest that a borrowing government must pay on each bond issue.

CALTRANS
California Department of Transportation

Capital Budget
The annual adoption by the Council of project appropriations. Project appropriations are for the amount necessary to carry out a capital project's expenditure plan, including multi-year contracts for which a total appropriation covering several year's planned expenditures may be required.

Capital Improvement
A permanent addition to the City's assets including the planning, design construction, or the purchase of land, buildings or facilities, or the major renovation of the same. This includes the installation of new and/or the repair of old traffic signals, roads and buildings.

Capital Improvement Program (CIP)
An on-going five-year plan for single and multiple year capital expenditures which is updated annually.

Carry Over
Appropriated funds that remain unspent at the end of a fiscal year, which are allowed to be retained by the department or capital project to which they were appropriated so that they may be expended in the next fiscal year for the purpose designated.

CCC
California Coastal Commission

CCWD
Coastside County Water District

CDFW
California Department of Fish and Wildlife

CFPD
Coastside Fire Protection District

CLT
Coastside Land Trust

Change Order
A written order adding or deducting work or changing requirements or terms in a portion of the contract work that is to be is performed. For CIP work the City must verify and authorize the change order before payment is made to the contractor who is performing work under the City contract.

Channelization
Painted or raised islands within roadway areas that separate traffic travelling in opposite directions or directing the flow of traffic in a desired direction.

Comprehensive Budget
An itemized summary of probable income and expenditures that will occur in the course of conducting the City's business over the period of time covered by the budget.

Contingency
Funds set aside for the current fiscal year to be used for unanticipated expenditures, new programs or to absorb unforeseen revenue losses.

Construction
Building of a project of a small or large scale.

Construction Management
It is the overall planning, coordination, and control of a project from beginning to completion.

Current Resources
Resources that can be used to meet current obligations and expenditures including revenues and transfers from other funds.

Current Surplus/Deficit
Defined as the difference between current resources and operating and/or CIP requirements.

Debt
All long-term credit obligations of the City

and its agencies, whether backed by the City's full faith and credit or by pledged revenues, and all interest-bearing short-term credit obligations.

Design
A project expenditure category that includes architectural fees, engineering fees, site planning, surveys, soil studies and staff costs for design services directly attributable to a specific project.

Debt Service
The payment of interest and principal on an obligation resulting from the issuance of bonds or notes.

Debt Service Requirements
The amount of money which is required to pay interest and principal on outstanding debt and required contributions to accumulate monies for the future retirement of long term bonds.

Encumbrance
A legal obligation to pay funds, the expenditure of which has not yet occurred.

Engineering
A project expenditure category that includes engineering services, generally performed by City staff, to develop and implement projects. Tasks include project development, budgeting, designer selection and administration, design review, bidding and project management.

Equipment
Items of a tangible nature, costing $500 or more.

Expenditure
The actual spending of funds set-aside by an appropriation.

Fiscal Year
A 52-week period used for accounting purposes. Within the City of Half Moon Bay, the fiscal year begins on July 1st and ends on June 30th.

Fund
A separate, independent accounting entity with its own assets, liabilities and fund balance: the proceeds of a fund may be restricted in their use.

Fund Balance
The equity retained within governmental accounts.

General Fund
The City's principal operating account, which is supported by taxes and fees which have no restrictions as to their use.

General Obligation Bonds
Bonded debt incurred with the general obligation of the City of Half Moon Bay to pay its scheduled retirement of principal and interest. General Obligation Bonds are backed by the full faith and credit of the City.

Inspection
A project expenditure category that includes on-site inspection and materials testing to assure that plan requirements are met, complaint resolution and financial management by processing progress payments, change orders and extra work payment requests.

MTC
Metropolitan Transportation Commission

Non-Departmental Expenses
Program costs which do not relate to any one department but represent costs of a general, city-wide nature such as debt service, insurance, reserves, etc.

Operating Budget
The annual appropriation of funds for ongoing program costs including employee services other services and supplies, equipment and debt service.

POST
Peninsula Open Space Trust

Reserve
An amount set aside on an on-going basis, irrespective of fiscal years, for anticipated future expenditures.

Resources
Total amounts of funds available for appropriation during the fiscal year including revenues, fund transfers and beginning fund balances.

Resurfacing or Overlay
Placing a new layer of asphalt concrete, usually one inch thick or thicker, over an existing street pavement to regain or improve load-carrying ability of the road surface and improve ride-ability.

Revenues
The amount of monies received from taxes, fees, permits, licenses and interest during the fiscal year.

RWQCB
Regional Water Quality Control Board

Street Sealing (Slurry Seal)
A mixture of liquid asphalt emulsion and fine aggregate that is applied to the surface of a street in a thin layer. The layer acts as a seal by filling cracks in the pavement that would allow water to penetrate roadway materials supporting the pavement accelerating deterioration and hastening the need for overlay or reconstruction.

SMCRCD
San Mateo County Resource Conservation District. The City of Half Moon Bay is covered by the San Francisco regional office.

Revenue Bonds
Bonded debt incurred by the City of Half Moon Bay to finance capital expenditures

for utility or other enterprises which will generate an income stream from business activities which is calculated to repay the bonds.

SAM
Sewer Authority Mid-Coastside

SAMTRANS
San Mateo County Transit District

SMCTA
San Mateo County Transportation Authority

Testing
The process of verifying, in new construction, all (or some, depending on scope) of the subsystems for mechanical (HVAC), plumbing, electrical, fire/life safety, building envelopes, interior systems (example laboratory units), co-generation, utility plants, sustainable systems, lighting, wastewater, controls, and building security to achieve the owner's project requirements as intended by the building owner and as designed by the building architects and engineers.

USACE
United States Army Corp of Engineers

USDFW
United Stated Department of Fish and Wildlife.

City of Half Moon Bay

Sewer Cleaning Matrix

The City's sewer contractors collects all observations made during sewer cleaning operations regarding the extent and nature of materials removed. The contractors maintains or changes the frequency of the hot spot pipes based on cleaning results and/or CCTV data. The matrix below outlines the process of adjusting the frequency of the pipe based on cleaning results.

Sewer Cleaning Results Matrix

	Clear	Light	Moderate	Heavy
Debris	No observable debris	Minor amount of debris 1-2 passes	moderate amounts of debris 3-4 passes	Significant amounts of debris More than 4 passes Operator concern for future stoppage
Grease	No observable grease	Minor amounts of grease 15 minutes or less to clean 1-2 passes	Small "chunks" No "logs" 15-30 minutes to clean 3-4 passes	Big "chunks" or "logs" More than 4 passes Operator concern for future stoppage
Roots	No observable roots	Minor amounts of roots 1-2 passes	Thin stringy roots No "clumps" 3-4 passes	Thick roots Large "clumps" More than 4 passes Operator concern for future stoppage
Debris: Structural pipe fragments, soil, rock, etc.	No observable materials	Specify material (if possible) Minor amounts of material	Specify material Moderate amounts of material per line segment	Specify material Significant amounts of material per line segment. Operator concern for future stoppage.

City of Half Moon Bay

Sewer Cleaning Matrix

	Clear	Light	Moderate	Heavy
Action:	Decrease frequency to next lower frequency after 2 clear results (e.g. months to 12 months)	Continue current maintenance frequency	Increasing current maintenance frequency to next higher frequency (e.g. 6 months to 3 months)	Increasing current maintenance frequency to next higher frequency (e.g. 6 months to 3 months)

City of Half Moon Bay

List of Available Maintenance Equipment

Provided by:
Sewer Authority Mid-Coastside

- 1x Pump Station Stanby Pump – used for Bell Moon and Ocean Colony pump stations
- Tranducer
- Touch Screens
- 2x Small Jetters
- 2in Trach Pump
- 6in Pump (rental)
- 1x 1000 gallon Vacuum, flushing truck
- 2x 700 gallon “PipeHunter” flushing trucks
- One “push-type” camera, for attachment and use with one of the PipeHunters
- 1x Small Towable VAC Trailer
- Various cleaning nozzles and tools

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Appendix D
Element 5 (Design and Performance Provisions) Supporting Documents

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CITY OF HALF MOON BAY

STANDARD DESIGN GUIDELINES

FOR

PUBLIC WORKS CONSTRUCTION

2016

CITY OF HALF MOON BAY

STANDARD DESIGN GUIDELINES FOR

PUBLIC WORKS CONSTRUCTION

Community Development Department

Engineering Section

June 2016

INTRODUCTION

The City of Half Moon Bay (HMB) Standard Design Guidelines is a compilation of design guidelines, specifications, and standard drawings necessary for use in construction of public works improvements and site grading within the City of HMB.

The purpose of this manual is to assist Homeowners, Developers, Builders, Contractors, Engineers, and Architects by providing information regarding the standard drawings, specifications, design procedures and requirements, checklists, and other information applicable to construction of public works projects and private developments within the City of HMB. *Should any portion of these Standard Design Guidelines be found to be in conflict with the provisions of the City of HMB Municipal or Zoning Codes, the provision of the referenced Codes shall govern.*

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Date

Approved by:
City of Half Moon Bay

Peykan Abbassi
City Engineer — July 8, 2016
Date

VOLUME I

TECHNICAL SPECIFICATIONS

TECHNICAL SPECIFICATIONS
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SECTION 01350
NOTIFICATION TO RESIDENTS AND BUSINESSES

PART 1 - GENERAL

1.1 DESCRIPTION

Work Includes

1. Advance notice door hangers shall be distributed to residents and businesses on all streets where work within this Contract is included.
2. **"NO PARKING TOW AWAY"** signs shall be posted on the street in which the work is to be performed in accordance to the directions in this Section.

PART 2 - PRODUCTS

2.1 ADVANCE NOTICE DOOR HANGERS OR NOTICES

Advance notice door hangers or notices shall be provided by the Contractor after approval of the City.

2.2 NO PARKING SIGNS

"NO PARKING TOW AWAY" signs shall be provided by the Contractor.

PART 3 - EXECUTION

3.1 DISTRIBUTION

A. Advance notice door hangers or notices will be hand delivered by the Contractor to businesses, residents, or others that will be impacted by the work, 14 days in advance of construction and/or street closure.

B. Dated **"NO PARKING TOW AWAY"** signs shall be posted a minimum of 48- hours in advance of all work which requires that cars not be parked on the street. Date and time of work shall be written on these signs in 2" high letters with a 1/4" felt marker. These signs shall be placed on barricades per these specifications or located near the curb and gutter. All signs must be removed immediately after the specific work has been completed. Any cars which remain parked on the street in violation of the posted **"NO PARKING TOW AWAY"** sign shall be towed away under the direction of the Sheriff's Office.

C. The Contractor shall call the Sheriff's Office Communications Dispatch Center prior to the start of work each day, to report all street closures for that day.

D. Sign Posting

1. **No Parking Signs**
   a. All signs indicating a **"NO PARKING TOW AWAY"** zone shall be posted a minimum of 48-hours in advance.
   b. Signs shall be properly filled out including dated time of posting, and initialed by the Contractor.
   c. Signs shall be posted on both sides of the barricade.

d. Signs shall be placed on both ends of the **"NO PARKING"** zone.

e. All signs indicating a **"NO PARKING"** zone, shall be removed the same day that the work requiring **"NO PARKING"** zone is completed.

f. The **"NO PARKING TOW AWAY"** signs (see above) shall be provided by the Contractor and shall be ordered immediately after the Notice to Proceed is issued.

g. The Inspector and the Half Moon Bay City's Community Development Department and Sheriff's Office shall be notified of the **"NO PARKING TOW AWAY"** zone, before the 48-hour period, for their approval.

2. **Use of Barricades**

a. Shall be Type III barricades, with properly working and maintained flashing lights.

b. Shall be placed at intervals of no greater than 50 feet.

c. Shall be placed in the street or in the parkway as close to the street as possible where it is easily visible.

d. Shall be removed from the street the same day the work is completed.

3. **Certification of Posting**

a. After the **"NO PARKING"** zone is established, the Contractor shall provide the Engineer with a signed certificate stating when the signs were posted, what time periods the zone covers, and a sketch showing the location.

b. The Contractor shall also provide photographs of the posting to verify the condition of the "NO PARKING" at the time of posting.

NOTE: IF POSTING PROCEDURES ARE NOT PROPERLY FOLLOWED, THE CONTRACTOR SHALL RESCHEDULE THE WORK FOR THAT SITE AND ABSORB ANY INCURRED COSTS.

* * *

SECTION 01550

TRAFFIC REGULATIONS

PART 1 - GENERAL

1.1 OBJECTIVES

A. The Contractor shall provide for safe movement of vehicular, bicycle and pedestrian traffic, including persons with disabilities in accordance with the American's with Disabilities Act of 1990 (ADA), through and around construction operations. Traffic control requirements set forth herein are the minimum requirements imposed. The Contractor shall be solely responsible for providing all protective measures necessary.

B. Proper traffic movement through the work area depends upon the driver controlling and directing his/her vehicle properly under unexpected situations and pedestrian attention to signs. The means of clarifying such conditions to the public include signs, flaggers, pavement markings, barricades, lights, cones and delineators.

C. No one standard sequence of signs or control devices will suit all conditions, which may result from construction operations. Even for the same work the conditions may vary from hour to hour, requiring adjustment and revision of the traffic control program in effect.

D. The traffic control requirements specified herein are intended to establish general principles to be observed in the control and regulation of traffic through and around construction operations anticipated for this project. All pedestrian and vehicular detours are subject to review by the sheriff or enforcement officer of the agencies having jurisdiction, and the Contractor shall revise the detours as ordered at no additional cost.

E. Clean up site each day after completing work and remove all traffic hazards. Daily traffic control measures shall continue until cleanup activities have been satisfactorily completed and all of the Contractor's equipment has been removed from the traveled way area.

1.2 DESCRIPTION OF WORK

B. Work Included:

1. At all times, the Contractor shall provide safe and adequate passage for vehicular and pedestrian traffic through, around and adjacent to all construction operations by use of detours, bridging, backfilling, paving, traffic barriers or other favorably reviewed means.
2. The Contractor shall establish and maintain detours and conduct his construction operations in such a manner as to minimize hazard, inconvenience and disruption to the public.
3. Traffic control shall be directed equally to the regulation and protection of pedestrian traffic including pedestrians, bicyclists, joggers, skaters, skateboarders, etc.
4. The Contractor shall provide for protection of pedestrians and separation of pedestrians from construction operations at all times.
5. The Contractor shall direct, divert and detour traffic through, around and adjacent

to construction operations in accordance with the traffic control plans as specified herein or in accordance with favorably reviewed Traffic Control Plans. The Contractor may revise the Traffic Control Plan as necessary only with the favorable review of the Engineer.

1.3 REFERENCES

A. Standard Plans and Specifications, California Department of Transportation, latest edition.

B. California Manual on Uniform Traffic Controls (CAMUTCD), California Department of Transportation, latest edition.

C. Work Area Traffic Control Handbook, Building News Incorporated, P.O. Box 3031, Terminal Annex, Los Angeles, California 90051.

1.4 SUBMITTALS

A. Traffic Control Plans:

1. Submit Traffic Control Plans to clearly describe proposed traffic control measures. The plans shall be in accordance with the Standard Plans and Specifications and the CAMUTCD. When required by the City Engineer Traffic Control Plans shall be prepared by a licensed Civil or Traffic Engineer.
2. The Traffic Control Plan shall provide a detailed approach for detours and to control traffic through the construction zone, shall conform to Caltrans and City standards, and will be approved by the City Engineer before construction begins.
3. The submittals shall consist of scaled drawings for each situation anticipated to be encountered, i.e., intersections, mid-block (each during working and non-working hours), etc. and necessary details.
4. The scaled drawings shall show signs, traffic control devices and flaggers as required.

PART 2 - PRODUCTS

2.1 CONSTRUCTION SIGNS

A. Construction signs shall conform to the standards of the Standard Plans and Specifications and the CAMUTCD.

B. Temporary warning signs in construction areas shall have a black legend and border on an orange background. Color for other signs shall follow the standard for all highway signs.

C. All signs used during hours of darkness shall be retroreflective.

2.2 OTHER TRAFFIC CONTROL DEVICES

A. General: Traffic control devices shall conform to the standards of the Standard Plans and Specifications, and the CAMUTCD.

B. Cones or Delineators:

1. Cones or delineators shall consist of cylindrical or cone shaped plastic devices, which shall be 18 inches to 48 inches in height.
2. Cones or delineators shall have a flexible base of suitable weight, which will ensure stability.
3. Cones or delineators used during hours of darkness shall be affixed with retroreflective sleeves or be internally illuminated meeting the requirements of the CAMUTCD.

C. Barricades:

1. Barricades shall be Type I, Type II or Type III barricades as set forth in the Standard Plans and Specifications, and the CAMUTCD.
2. Barricades used during hours of darkness shall be equipped with flashers.

PART 3 - EXECUTION

3.1 DIVERTING PEDESTRIAN TRAFFIC

A. Whenever construction operations obstruct the flow of pedestrian traffic or present a hazard to pedestrians, the Contractor shall take appropriate action to protect and separate pedestrians from the work area and to direct pedestrians to alternate routes.

B. Such action may include placement of barricades between pedestrians and work areas, placement of warning signs, and provision of personnel as required to protect pedestrians as conditions warrant.

3.2 DIVERTING VEHICULAR TRAFFIC

A. Whenever construction operations obstruct the flow of vehicular traffic or present a hazard to vehicles operating in the vicinity of construction operations, the Contractor shall take appropriate action to warn, detour and otherwise protect approaching drivers and vehicles.

3.3 TRAFFIC CONTROL DEVICES

A. General:

1. Provide traffic control devices in sufficient quantities and types as required to provide safe and adequate traffic control.
2. During hours of darkness approved lights shall be included, in proper working order, to illuminate signs and hazards and alert approaching traffic.
3. Provide and maintain barricades along all open trenches in contact with traffic.
4. No work may begin on any day or at any time before traffic control devices have been placed, test driven and, if required, adjusted and revised.

B. Placement:

1. Place all traffic control devices in accordance with the Standard Plans and Specifications, the CAMUTCD and approved Traffic Control Plan.
2. Adjust locations of devices to suit the conditions and circumstances of each detour situation. In all cases, place signs to most effectively convey their messages to approaching traffic.

3. The Contractor shall adjust and revise all traffic control devices if determined to be required by the City Engineer or Sheriff's Office.
4. The Contractor shall provide additional traffic control devices if required to maintain the safe flow of traffic through construction operation.

C. Maintenance of Devices:
1. The Contractor shall maintain all traffic control devices, at proper locations and in proper working order, at all times during construction operations and whenever a hazard resulting from Contractor's operations exists.
2. The Contractor shall adjust and revise traffic control devices, placement, etc., to suit changing conditions around construction operations.

D. Removal of Devices:
1. Traffic control devices shall remain in place at all times required to alert approaching traffic of upcoming hazards.
2. After hazard has been removed, remove all traffic control devices. Remove signs or completely cover their messages.

3.4 FLAGGERS

A. General: The Contractor shall employ flaggers:
1. As required for each specific detour.
2. At all locations on a construction site where barricades and warning signs cannot control the moving traffic.

B. Placement: Where flaggers are required, they shall be logically placed in relation to the equipment or operation so as to give adequate warning and shall be placed in accordance with the Standard Plans and Specifications, the CAMUTCD, and the approved Traffic Control Plan.

C. Warning Signs:
1. Place warning signs ahead of the flagger in accordance with the Standard Plans and Specifications, the CAMUTCD, and the approved Traffic Control Plan. The distance between signs and the flagger shall be based on the posted traffic approach speed.
2. During hours of darkness, illuminate flagger stations such that the flagger will be clearly visible to approaching traffic. Lights for illuminating the flagger station shall comply with the Standard Plans and Specifications, the CAMUTCD, and the approved Traffic Control Plan.

D. Equipment:
1. Provide flaggers with high-visibility safety apparel in accordance with the Standard Plans and Specifications, and the CAMUTCD at all times. Provide flaggers with hand signs in accordance with the Standard Plans and Specifications, and the CAMUTCD.
2. Provide flaggers with two-way radios for communication when necessary. Red flags shall only be used for traffic control in emergency situations.

3.5 NOTICE TO AGENCIES

A. The Contractor shall notify in writing all agencies having jurisdiction at least forty- eight (48) hours, excluding holidays and weekends, prior to instituting any lane closure or detour. At the end of each day's work, the Contractor shall inform the ambulance services, sheriff's office and fire departments of the status of all detours and/or lane or road closures that will be in effect after the next day.

B. List of Agencies:
1. City of Half Moon Bay
2. Coastside Fire Protection District
3. Sheriff's Office
4. U.S. Postal Service
5. School District Transportation Office, as appropriate
6. SamTrans for bus services
7. Ambulance Companies
8. Allied Waste

3.6 EMERGENCY VEHICLE ACCESS THROUGH DETOURS

A. During construction in or adjacent to roadways in the project site, Contractor shall maintain at least one lane open in each direction of the road to allow emergency vehicle access for sheriff, fire and ambulance to the project vicinity.

B. During all detours and/or street closures the Contractor shall provide for movement of emergency vehicles through the work area.

C. When temporary traffic control is provided by flaggers they shall be instructed to give immediate passage to emergency vehicles with active lights or sirens.

D. It is essential that the Contractor's work and equipment do not impede egress from any fire station or sheriff's office to other areas of their service area.

3.7 ACCESS TO PRIVATE PROPERTY

A. General: The Contractor shall schedule operations to minimize disruption of access to private property.

B. Notice to Residents: Prior to blocking access to any private driveway or parking lot entrance, the Contractor shall notify the resident or business owner or tenant of pending closure and allow resident to remove vehicles.

C. Nights: During non-working hours no driveway, house or parking lot shall be denied access to a public roadway.

3.8 DETOURS DURING NON-WORKING HOURS

A. General: The Contractor shall not be permitted to maintain any lane closure or road closure during non-working hours without first obtaining written approval of the Engineer.

B. Restoration of Pavement:

1. During non-working hours the Contractor shall restore travel lanes to their original alignment and configuration by means of backfilling and temporary pavement or bridging in accordance with City Standards and approved by the City Engineer.
2. The Contractor shall place signs conforming to the Standard Plans and Specifications, and the CAMUTCD at uneven temporary pavement or bridging.

3.9 PARKING RESTRICTIONS

A. General: The Contractor shall post approved **"NO PARKING – CONSTRUCTION TOW-AWAY ZONE"** signs at all locations necessary to establish work areas and detour traffic.

B. Signs:

1. Signs shall read: **"NO PARKING - CONSTRUCTION TOW-AWAY ZONE".**
2. Signs shall be placed at least 48 hours in advance of restriction.

3.10 BRIDGING OVER TRENCHES AND EXCAVATIONS

A. General: Bridging shall be placed across all trenches and excavations in existing streets and at driveways when work is not in progress. Bridging shall be in accordance with the Standard Plans and Specifications and the CAMUTCD and approved by the City Engineer.

B. Design of Bridging:

1. Bridging for vehicular traffic shall be of sufficient width to accommodate the required number of travel lanes.
2. Bridging shall be designed to support H-20 vehicular traffic.
3. All bridging shall be set flush with travel surface or a satisfactory transition from travel surface to top of bridging shall be provided.
    a. A satisfactory transition shall mean a change in elevation between the levels of not less than twelve (12) inches horizontal to one (1) inch vertical.
    b. Transition may be accomplished by means of temporary pavement.

3.11 TEMPORARY TRAFFIC LANES

A. Temporary traffic lanes shall be at least 10 feet wide. Provide an additional 2 feet of clearance from curbs. The length of temporary lanes should be limited to the area under construction and the distance necessary to divert traffic in accordance with the Standard Plans and Specifications, the CAMUTCD, and the approved Traffic Control Plan.

3.12 STAGING AREAS

A. The Contractor shall provide his own staging areas.

* * *

SECTION 02100

CLEARING, GRUBBING AND STRIPPING

PART 1 - GENERAL

1.1 WORK INCLUDED

A. Clearing the entire area within the limits of work of all rubbish, debris and other objectionable material, and disposal of same.

B. Stripping the entire area within the limits of work of all swamp grass, shrubs, weeds, and other vegetative growth of any nature, and disposal of same.

C. Grubbing the entire area within the limits of work of all vegetative material and disposal of same.

D. Removal of trees and preservation, care, and pruning of trees to remain in place.

E. Trimming of tree (limbs and tree roots) as may be required to construct the improvements.

F. Dust alleviation and control.

G. The work shall include the provision of all labor, materials, equipment and apparatus not specifically mentioned herein or noted on the plans, but which are incidental and necessary to complete the work specified.

1.2 JOB CONDITIONS

A. The Contractor will be held responsible for any damage to trees injured during construction, i.e., limb breakage, tearing of bark along trunk or excessive root damage

B. Contractor shall provide adequate dust alleviation and control measures at all times during the course of the work.

1.3 QUALIFICATIONS

A. All tree pruning and removal performed shall be executed by a company, having in full-time employment, an Arborist certified by the Western Chapter International Society of Arboriculture. Certification must be verified, and the Arborist must be directly responsible for decisions made, and should visit the work sites, as required.

B. Pruning shall be performed to the standards of the International Society of Arborists Pruning Guidelines, and to ANSI A-300.

C. Tree pruning shall not occur without first securing a “Heritage Tree” pruning permit for all trees meeting the Tree Preservation Ordinance’s size description. Permit applications shall be submitted to the Public Works Services Department.

D. Tree removal shall not occur without first securing a “Heritage Tree” Removal Permit. For regulations on size description, application procedure and fees, refer to the City’s Tree Preservation Ordinance available from the Planning Section.

1.4 APPLICABLE PUBLICATIONS

A. Trees and Building Sites: Official Publication of the International Society of Arboriculture.

B. Arboriculture: The care of trees and shrubs by Dr. Richard Harris.

PART 2 - PRODUCTS

NONE

PART 3 - EXECUTION

3.1 PERFORMANCE

A. Clearing shall consist of the removal of ground cover of every nature including grass, shrubs, weeds, and vegetation that will otherwise impede construction operations, as approved by Engineer.

B. At sites where the excavation has taken place near trees to remain, and many living roots remain exposed to the air, the contractor shall cover the exposed roots within 2 hours with sand, soil, moist burlap or other means acceptable to the Engineer.

C. Spoils from the work site resulting from clearing, grubbing and stripping operations shall be removed from the entire limits of worksite and properly disposed of in accordance with applicable laws and regulations.

3.2 TREE PRUNING

A. Tree pruning shall be performed to balance the crown and eliminate hazards. The main work performed shall be to reduce the sail effect through thinning, reducing end weights, shortening long heavy limbs, removing deadwood, weak limbs and sucker growth. Limbs shall be pruned back to an appropriate lateral branch.

B. All final cuts shall be made at the outer edge of the branch collar per City Details. The pruning work shall be performed in a safe and proper manner, adhering to CAL-OSHA and ANSI Standards.

C. The Contractor shall be responsible for the preservation of all public and private property. Pruning includes the cutting of limbs, cleanup, removal and disposal of cuttings and debris. Elm logs must be properly disposed of per State Quarantine. Work shall be performed by a two-man crew with one climber, one ground person, a dumping chipper truck and chipper, and any other necessary saws, lines, tools

and safety equipment. The work area shall have appropriate cones and signs for safe pedestrian and vehicle traffic.

3.3 TREE REMOVAL

A. Trees designated by the Engineer for removal shall be removed prior to the construction of the new improvements. The work shall be performed in a safe manner, adhering to CAL-OSHA and ANSI Standards. The work area shall have appropriate cones and signs for safe vehicle and pedestrian traffic. The contractor shall be responsible for the preservation of all public and private property. All wood shall be properly disposed of.

B. Stumps shall be ground to a minimum 8" below finished subgrade, including the removal of surface roots, all woody portions and stump debris, within 24" of the tree trunk.

C. For sidewalk repair work, trees shall be removed in the order designated by the Engineer, at least 2 weeks prior to start of work.

3.4 ROOT PRUNING

A. Tree roots greater than 3” in diameter and less than 12” below ground level shall not be cut without approval of the Engineer.

B. Roots shall be cut cleanly, as far from the trunk of the tree as possible, and not underneath the newly constructed sidewalk. Root pruning shall be to a depth of 18".

C. Root pruning shall be performed using a Vermeer Root Cutting Machine. Alternate equipment or techniques must be approved by the Engineer. Root pruning shall be completed prior to base or subgrade preparation.

D. Root pruning shall be completed prior to base or subgrade preparation, or to any excavation adjacent to the tree.

E. Excavation in an area where roots are present shall not cause the tearing or ripping of tree roots. Roots must first be cleanly severed prior to continuing with the excavation, or tunneled around to prevent damage to the root.

F. Tree roots shall not remain exposed to drying out. Root ends shall be covered with soil or burlap and kept moist until the final backfill or grade is established.

3.5 TREE PROTECTION

A. Construction materials, debris, washout water and stockpiles shall not be stored within the drip line or protective fencing area under any tree.

B. Vehicles shall not be parked under any tree within the drip line or protective fencing area.

C. Where vehicles or equipment must operate or travel under drip line or unpaved

landscape areas, Contractor shall place a minimum 10-inch layer of woodchips or other cushioning surface material approved by the Engineer before starting work there. This mulch layer shall be replenished as necessary to maintain a ten- inch depth until operations in this area are complete and shall be removed upon completion of work unless directed by Engineer. Where crane outriggers or other heavy equipment must be positioned in drip line or unpaved landscape areas, contractor shall provide additional protection against soil compaction and landscape damage. Means of providing additional protection may include placement of additional mulch, base rock, heavy timbers or steel plates. Contractor shall obtain Engineers approval for protective measures prior to placing or operating heavy equipment in unpaved landscape over the root areas of tress to remain.

D. Where called for on the plans, place storm fence or other approved protective barriers around trees to be saved.

3.6 DUST ALLEVIATION AND CONTROL

A. Contractor shall be responsible for providing pollution and dust abatement and control measures continuously during the course of the work.

B. Contractor shall utilize reclaimed water, or dust palliatives, in compliance with the City's Water Conservation Ordinance.

3.7 CLEANUP

A. Upon completion of clearing and stripping operations, the entire work site shall be cleaned of all construction debris, waste, rubbish of any nature.

B. Contractor shall repair any damage to the existing irrigation system caused by the work and replace any portion of the existing irrigation system that is removed as a result of work per section 02910. Contractor shall incur these costs at own expense.

C. Except where shown or specified otherwise, any lawn area or existing groundcover area disturbed by the work shall be restored to existing grade and replanted with sod or plants as those removed with Engineers approval.

D. Construction debris, waste and rubbish remaining on-site upon completion of clearing and stripping operations shall become the property of the Contractor, and shall be removed from the work site and disposed of in a lawful manner.

* * *

SECTION 02133

STORMWATER POLLUTION PREVENTION

PART 1 - GENERAL

1.1 WORK INCLUDED

A. Prohibit illicit discharge (non-rainwater) into the storm drain system.

B. Construct any and all necessary systems to eliminate contaminants from entering the storm water system.

C. Clean up and control of work site materials, spoils and debris.

D. Removal of contaminants produced by the project.

E. The work shall include the provision of all labor, materials, equipment and apparatus not specifically mentioned herein or noted on the plans, but which are incidental and necessary to complete the work specified.

1.2 APPLICABLE PUBLICATIONS

A. National Pollution Discharge Elimination system (NPDES) Permit No. CAS612008 - October 14, 2009, revised May 11, 2015.

B. California Storm Water Best Management Practice Handbooks:
1. Municipal
2. Industrial/Commercial
3. Construction Activity

C. C.3 Stormwater Technical Guidance Ver. 4.1, October 2014.

D. California State Water Resources Control Board, Construction General Permit CAS000002 Order No. 2010-0014 DWQ (for sites greater than 1 (one) acre.

1.3 QUALITY ASSURANCE

A. All work performed under this contract and all contractors and their associates and/or employees are required to comply with all applicable storm water regulations and to implement Best Management Practices (BMP's) at all times.

B. A plan shall be submitted for the proposed control of contaminants entering the storm water system. The plan must be approved by the Engineer prior to the commencement of work.

C. All employees and subcontractors shall be trained on the storm water pollution prevention requirements contained in these specifications.

D. A supply of spill clean-up materials such as rags or absorbents shall be kept readily accessible on-site.

1.4 ALLOWABLE DISCHARGES

A. Under current NPDES regulations, the following discharges to the storm drainage system are permitted, as long as the discharges are not significant pollutants:
1. Diverted stream flows, springs and natural drainage courses;
2. Rising flood waters;
3. Air conditioning condensation;
4. Domestic water line and hydrant flushing; and
5. Landscape irrigation.

B. Groundwater from dewatering and foundation drains will need additional certification that the groundwater has been tested or evaluated for the presence of pollutants subject to non-stormwater discharge regulations. In such a case, a Special Sewer Discharge Permit shall be required for the water to be discharged to the Sanitary Sewer System, as directed.

PART 2 - PRODUCTS

NONE

PART 3 – EXECUTION

3.1 RECYCLING

A. At the end of each working day, all scrap, debris and waste material shall be collected and materials disposed of properly.

B. Dry, empty paint cans/buckets, old brushes, rollers, rags and drop cloths shall be disposed of in approved waste collection.

C. Dumpsters shall be inspected for leaks. As leaks are detected, the trash hauling contractor shall be contacted to replace or repair dumpsters that leak.

D. Water from cleaning dumpsters shall not be discharged on-site.

E. Regular waste collection shall be arranged for before dumpsters overflow.

3.2 HAZARDOUS MATERIAL/WASTE MANAGEMENT/MATERIALS MANAGEMENT

A. Designated areas of the project site shall be proposed by the contractor for approval by the Engineer suitable for material delivery, storage and waste collection as far from catch basins, gutters, drainage courses and creeks as possible.

B. All hazardous materials such as pesticides, paints, thinners, solvents and fuels; and all hazardous wastes such as waste oil and antifreeze shall be labeled and stored in accordance with State and Federal regulations.

C. All hazardous materials and all hazardous wastes shall be stored in accordance with secondary containment regulations, and it is recommended that these materials and wastes be covered as needed, to avoid potential management of collected rain water as a hazardous waste.

D. The contractor shall dispose of all excess thinners, solvents, chemicals, oil-based and water-based paint as hazardous waste.

E. Regular hazardous waste collection shall be arranged for to comply with time limits on the storage of hazardous wastes.

F. Granular materials shall be stored a minimum of ten feet from the closest catch basin and curb return. The contractor shall not allow these granular materials to enter the storm drain or creek.

G. Warning signs shall be posted in areas containing or treated with chemicals.

H. An accurate up-to-date inventory, including Material Safety Data Sheets (MSDS) of hazardous wastes stored on site shall be kept and available to assist emergency response personnel in the event of a hazardous materials incident.

I. Maintenance and fueling of vehicles and equipment shall be performed in a designated, bermed area, or over a drip pan that will not allow run-off of spills. Vehicles and equipment shall be regularly checked and have leaks repaired promptly. Secondary containment, shall be used to catch leaks or spills any time that vehicle or equipment fluids are dispensed, changed or poured.

3.3 CHEMICAL USAGE

A. When rain is forecast within 24 hours, or during wet weather, the Engineer may prevent the contractor from applying chemicals in outside areas.

B. Pesticides or fertilizers shall not be over-applied and material manufacturer's instructions shall be followed regarding uses, protective equipment, ventilation, flammability and mixing of chemicals. Over-application of a pesticide constitutes a "label violation" subject to an enforcement action by the San Mateo County Agriculture Commissioner.

3.4 DUST CONTROL

A. Reclaimed water shall be used to control dust on a daily basis or as directed by the Engineer

B. At the end of each working day, or as directed by the engineer, the roadways and on-site paved areas shall be cleaned and swept of all materials attributed to or involved in the work. Streets shall not be washed down into a storm drain or creek in lieu of street sweeping. Water wash may be picked up by a vacuum unit in lieu of sweeping.

3.5 SAWCUTTING

A. The contractor shall cover or barricade catch basins using control measures such as

filter fabric, straw bales, sand bags and fine earthen dams to keep slurry out of the storm drain system. The contractor shall ensure that the entire opening is sealed.

B. Sawcutting debris and spoils be removed by shovel, absorption, vacuum or pick up of waste prior to moving to the next location or at the end of each working day, whichever is sooner.

C. If slurry enters a catch basin, the slurry shall be removed from the storm drain immediately.

3.6 DEWATERING OPERATIONS

A. Water shall be routed through a control measure as determined and approved by the Engineer such as a sediment trap, sediment basin or Baker tank to remove settleable solids prior to discharge to the storm drain system. Filtration of the water following the control measure may be required on a case-by-case basis.

B. The filtered water shall be reused for other purposes such as dust control or irrigation to the extent possible.

C. If the project is within an area of known groundwater contamination, the water from dewatering operations shall be tested prior to discharge. If the water meets the Regional Water Quality Control Board standards, it may be discharged into the storm drain. With Sewer Authority Mid-Coastside (SAM) permit, water may be discharged into the sanitary sewer. Otherwise, the water shall be treated and hauled off-site for proper disposal.

3.7 CONCRETE GROUT AND MORTAR WASTE MANAGEMENT

A. Concrete, grout and mortar shall be stored away from the drainage areas and ensure that these materials do not enter the storm drain system.

B. Concrete trucks shall not be washed out into streets, gutters, storm drains, drainage channels or creeks.

C. Concrete trucks and equipment shall be washed out off-site or in a designated area on-site where the water will flow onto dirt or into a temporary pit or bermed area. The water shall percolate into the soil and the hardened concrete placed in a waste container for disposal. If a suitable soil or bermed area is not available on-site, the wash water shall be collected and removed off-site and disposed of properly.

D. Water created by the washing of exposed aggregate concrete finish shall be collected in a suitable dirt area or filtered through straw bales or equivalent material before entering the storm drain system. Sweepings from exposed aggregate finish shall be collected and disposed of in a waste container or removed off-site and disposed of properly.

3.8 PAVING OPERATIONS

A. Catch basins and manholes shall be covered when paving or applying seal coat, tack coat, slurry seal or fog seal.

B. The Engineer may direct the contractor to protect drainage courses by using control measures such as earth dike, straw bale and sand bag to divert run-off or trap filter sediment.

C. Excess sand (placed as part of a sand seal or to absorb excess oil) shall not be swept or washed down into gutters, storm drains or creeks. The sand shall be collected and returned to the stockpile or disposed of in a trash container or hauled to an approved dump site. Water shall not be used to wash down fresh asphalt concrete.

3.9 PAINTING

A. The cleaning of painting equipment and tools shall be performed in a designated area that will not enter the gutters, storm drains or creeks.

B. Excess paint shall be removed from brushes, rollers and equipment prior to cleanup.

C. Wash water from aqueous cleaning of water-based paint tools and equipment shall be disposed of in a sanitary sewer or onto a designated dirt area.

D. Paint thinners and solvents from oil-based paints shall be filtered and re-used when possible. Waste sludge, thinner and solvent from cleaning tools and equipment shall be disposed of as a hazardous waste**.**

3.10 SITE CLEANUP

A. The cleaning of equipment of materials shall not be performed on-site or in the street using soaps, solvents, degreasers, steam cleaning or equivalent methods.

B. All cleanup must be performed in a designated area that will not allow the cleaning rinse to flow off-site or into streets, gutters, storm drains, or creeks.

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SECTION 02202

TRENCHING AND BACKFILL

PART 1 - GENERAL

1.1 WORK INCLUDED

A. This section covers trenching and backfill requirements for buried piping systems specified in Storm Drainage - Section 02720; Sanitary Sewers -Section 02730; Irrigation Systems - Section 02910, Street and Safety Lighting -Section 16500. For Water Systems, refer to Coastside County Water District (CCWD) Standards.

B. This Section also covers requirements for excavation and for compaction of succeeding layers after backfill has been placed around pipe.

1.2 APPLICABLE PUBLICATIONS

A. The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the general designation only.

B. American Society for Testing and Materials (ASTM) Publications: C-33
Specification for Concrete Aggregates
C-36 Sieve Analysis of Fine and Coarse Aggregates
C-50 Portland Cement
C-260 Air Entraining Admixtures
D-424 Plastic Limit and Plasticity Index of Soils
C-618 Fly Ash and Raw or Calcined Natural Pozzolan for use as a Mineral Admixture in Portland Cement
D-1557 Moisture-Density Relations of Soils and Soil Aggregate Mixtures Using10-lb. (4.54 KG) Rammer and 18-in. (457 mm) Drop
D-2419 Sand equivalent Value of Soils and Fine Aggregate
D-2487 Classification of soils for Engineering purposes
D-3017 Density of Soil and Soil Aggregate in Place by Nuclear Methods (Shallow Depth)

1.3 SUBMITTALS

A. Certified test reports for the permeable material backfill tested in accordance with ASTM C 136.

B. Samples: Submit 1 gallon size sample of permeable material for approval.

C. Shoring and Sheeting Plan: Before starting work submit a CAL-OSHA permit for the shoring and sheeting plan when trench excavation is five feet deep or more.

D. Dewatering Plan: If required in the Special Conditions, before starting work submit a dewatering plan describing the basic components of the dewatering including silt control, etc.

E. Traffic Plan: When work will occur on or adjacent to the right-of-way submit a Traffic Control Plan in accordance with Section 01550 72 hours in advance for approval prior to starting work.

1.4 QUALITY ASSURANCE

A. Percentage of compaction specified shall be the minimum acceptable. The percentage represents the ratio of the dry density of the compacted backfill material to the maximum dry density of the material as determined by the procedure set forth in ASTM Designation D1557. For field density tests, ASTM D-3017 may be used.

B. D-load or class of pipe requirements shown or called for on the plans shall be the minimum acceptable.

1.5 JOB CONDITIONS, PROTECTION, AND SHORING

A. Existing Utilities:

1. Unless shown to be removed, protect active utility lines shown on the Plans or otherwise made known to the Contractor prior to excavating. If damaged, repair or replace at the Contractor's expense. Pothole as required to verify utility location. Contractor shall be responsible for contacting all utility companies and coordinating any work which requires relocation or abandonment of existing utilities.
2. If active utility lines are encountered and are not shown on the Plans or otherwise made known to the Contractor, promptly take necessary steps to assure that service is not interrupted.
3. If a known service is interrupted as a result of work under this section, immediately restore service by repairing the damaged utility at Contractor's expense.
4. If foreseen or unforeseen existing utilities are newly found to interfere with the permanent facilities being constructed under this Contract, immediately notify the Engineer for directions.
5. Do not proceed with permanent repair or relocation of utilities until written instructions are received from the Engineer.
6. No construction water shall be disposed of in the City's storm drain system.
7. Comply with all conditions and requirements indicated and specified under the specific utility section of these specifications.

B. PROTECTION OF PERSONS & PROPERTY:

1. Install all necessary underpinning, shoring, lagging, cribbing, and bracing of ample strength to support adjoining soils, paving and structures. All such items shall be so constructed that they will not interfere with the building of any structural elements, and shall be removed upon completion of the shoring operation.
2. Barricade open depressions and holes occurring as part of this work, and post warning lights on property adjacent to or with public access.
3. Operate warning lights during hours from dusk to dawn each day and as otherwise required.

4. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by operations of Contractor.
5. No trenches shall be left open during non-working hours.
6. Install fences and barricades to secure the area from the public.

C. SHORING

1. The Contractor is solely responsible for all bracing and shoring. The Contractor shall forward their application for shoring to the California Division of Industrial Safety for their review. Contractor's application shall include the basic design, assumed soils conditions and estimation of forces to be resisted, together with plans and specifications of the materials and methods to be used, and shall be prepared by a Civil Engineer registered in California.
2. If an application for a shoring permit is required, no excavation in trench section or around structures shall proceed until the approved shoring plan has been received by the Engineer.

D. DEWATERING

1. Remove all water, including rain water, encountered during trench and sub-structure work to an approved location by pumps, drains, and other approved methods.
2. Keep excavations and site construction area free from water.

E. DUST CONTROL

1. Use means necessary to control dust on and near the work, and on and near off-site areas, if such dust is caused by the Contractor's operations during performance of the Work, or if resulting from the condition in which the Contractor leaves the site.
2. Thoroughly moisten surfaces as required to prevent dust being a nuisance to the public, neighbors, and personnel performing other work on the site.
3. Use dust palliatives or reclaimed water (not potable water).

F. Maintain access to adjacent areas at all times.

G. Maintain and/or replace all bench marks, monuments, construction stakes and other reference points.

H. Repair or restore damage to any portion of the work resulting from movement of the sides or bottom of trenches or other excavation which is attributable to the Contractor's acts or omissions, whether sides are braced or not.

PART 2 - PRODUCTS

2.1 GENERAL SOIL MATERIALS

A. In general, soils used for backfill shall be select material free of debris, roots, wood,

scrap material, vegetation, refuse, soft unsound particles, frozen, deleterious, or objectionable materials, satisfactory to the Engineer, free of stones or lumps exceeding 3 inches in greatest dimension.

2.2 PIPE BEDDING AND INITIAL BACKFILL MATERIAL

A. Pipe bedding and initial backfill up to six inches above the top of the pipe shall be Class I, Type A, ¾" maximum size gradation permeable material, conforming to Section 68-202F(2) of the State of California Department of Transportation Standard Specifications.

B. Material shall contain at least 75% of the particles having one or more fractured faces.

C. Bedding and backfill material shall be subject to the approval of the Engineer.

2.3 SELECT BACKFILL ABOVE INITIAL BACKFILL OR BEDDING

A. In non-paved areas unless otherwise shown on plans, select backfill shall conform to the requirements for soil materials above, and shall be classified as (GW), (GP), (GM), (SW), (SP) or (SM) by ASTM D 2487 and meet the following:

1. Sand equivalent shall not be less than 25 when tested in accordance with ASTM D 2419, plasticity index shall not exceed 15 when tested in accordance with ASTM D 424, and not more than 25% by weight shall be finer than the No. 200 sieve.
2. On-site native material may be used as backfill if it conforms to 2.03A.1, above.

B. In paved areas, select backfill shall be Class 2 aggregate base, 3/4" maximum size gradation conforming to Section 26-1.02B of the State of California Standard Specifications.

2.4 SUBDRAIN MATERIAL

A. Where required for trench drainage and for subsurface drains, bedding shall conform to the requirements of Class 1, Type A Permeable material per Section 68 of State Standard Specifications.

2.5 CONTROLLED DENSITY FILL (CDF) (in trenches)

A. Controlled density fill will be accepted in lieu of the standard backfill specifications. It shall be mandatory in trenches eight (8) inches wide or less where the prevention of subsequent settlement after placement of backfill is required. CDF shall conform to the following requirements:

1. Strength Requirements
   a. Non-structural CDF that can be excavated by hand shall produce unconfined compressive 28 day strengths from 50 psi to a maximum of 150 psi. CDF that is to be excavated by hand shall contain aggregate no larger than 3/8" top size nor shall the 3/8" aggregate comprise more than 30% of the total aggregate content.
2. Materials
   a. Cement shall meet the standards as set forth in ASTM C-150, Type II Cement.

b. Fly ash shall meet the standards as set forth in ASTM C-618, for Class F pozzolans. The fly ash shall not inhibit the entrainment of air.
c. Air entraining agent shall meet the standards as set forth in ASTM C-260.
d. Aggregates need not meet the standards as set forth in ASTM C-33. Any aggregate, producing performances characteristics of the CDF, for any project will be accepted for consideration as follows. The amount of material passing a #200 sieve shall not exceed 12% and no plastic fines shall be present.

3. Mix Proportions
   a. CDF shall be a mixture of cement, Class F pozzolan, aggregate, air entraining agent and water. CDF shall be batched by a ready mixed concrete plant and delivered to the job site by means of transit mixing trucks.
   b. The actual mix proportions shall be determined by the producer of the controlled density fill to meet job site conditions, minimum and maximum strengths, and unit weight. Entrained air content shall be a minimum of 4.0%. The actual entrained air content shall be established for each job with the materials and aggregates to be used to meet the placing and unit weight requirements. Entrained air content may be as high as 20% for fluidity requirements.
4. Mix Design
   a. Mix design shall meet the Engineer's approval.

PART 3 - EXECUTION

3.1 GENERAL TRENCHING AND EXCAVATING

A. Trenches may be excavated either by hand, or mechanically. Trenches shall be cut with vertical sides, and shall be of sufficient width to provide adequate space for working therein; such space shall be a minimum clear distance of six (6) inches of shoring and a maximum of nine (9) inches clear of shoring on each side of the pipe barrel when the pipe is properly placed and aligned in conformity with the plans. Glory hole excavation or vee trenches will not be allowed. Trench sides shall be parallel to and at equal distance from the center-line of the pipe, when aligned in conformity with the plans.

B. Excavated material shall be loaded into trucks immediately upon removal from the trench to prevent stockpiling on roadways or walkways.

C. Where the excavated trench exceeds the widths specified above, furnish higher strength pipe, or other methods of construction as approved by the Engineer, to adequately provide for the increased loading, which the trench widening will cause. Stepped trenches shall meet the approval of the Engineer.

D. Pipe trenches shall be excavated to a depth below the bottom of the pipe sufficient to provide for pipe bedding materials as required by Section 3.02.

E. Where a trench has been excavated below the designed grade, the bottom of the trench shall be refilled to proper subgrade with approved material well compacted in place, in an approved manner.

F. The Engineer shall have the right to limit the amount of trench which is opened or

partially opened at any one time; and also to limit the amount of trench left without backfill, at any one time.

G. No trench or holes shall be left open overnight. Use steel plates to protect open trenches overnight.

H. Excavation for thrust blocks shall be neat to the line and dimensions shown or called for on the plans.

I. Provide for dewatering trenches and excavations and subsequent control of ground water, utilizing such pumps or other equipment as may be necessary to control ground water and seepage until backfilling is completed.

3.2 GENERAL BEDDING

A. Utilities shall be laid on a firm layer of firm bedding material not less than four (4) inches in depth as shown or as noted on the plans and detail drawings, except that bedding shall not be required for utilities two (2) inches or less in nominal diameter. Compact as specified herein.

B. Upon completion of bedding operations and, prior to the installation of pipe or appurtenances, notify the Engineer who will then inspect the bedding layer. Pipe laying shall not commence until the bedding has been approved.

3.3 GENERAL BACKFILLING

A. Backfill shall be as shown on the plans. Place in 6-inch maximum loose lifts to one foot above pipe unless otherwise specified. Bring up evenly on each side, and for the full length of the structure. Ensure that no damage is done to structures or protective coatings thereon. Place the remainder of the backfill in 8-inch maximum loose lifts unless otherwise specified. Compact each loose lift as specified in Paragraph 3.04 "General Compaction" before placing the next lift. Where unacceptable settlements occur in trenches and pits due to improper compaction, excavate to the depth necessary to rectify the problem, then backfill and compact the excavation as specified herein and restore the surface to the required elevation.

B. No backfill shall be placed until the line has been inspected and approved for backfilling.

3.4 GENERAL COMPACTION

A. Use hand-operated plate type vibratory or other suitable hand tampers in areas not accessible to larger rollers or compactors. Be careful to avoid damaging pipes and protective pipe coatings. Compaction shall be in accordance with the following unless otherwise specified. If necessary, the Contractor's selected equipment and construction procedure shall be altered, changed or modified in order to meet the specified compaction requirements.

B. Initial backfill and bedding shall be carefully packed under the haunches of the pipe and brought up simultaneously on both sides so as to obviate any displacement of the pipe from its true alignment. Bedding shall be compacted in layers not more than eight (8) inches in thickness in a manner that will preclude moving the pipe, to not less than 95%

of maximum dry density as determined by the procedure set forth in ASTM Designation D1557. Jetting of backfill material will not be permitted.

C. Select backfill above the initial backfill shall be placed in loose lifts not exceeding eight (8) inches in thickness before compaction, and compacted by the use of pneumatic tampers or other mechanical means approved. Water or dry, as required, to bring the soils as close as practicable to the optimum moisture content for proper compaction. Compaction equipment or methods that produce horizontal or vertical earth pressures which may cause excessive displacement or may damage the pipeline will not be permitted. Lifts of backfill shall be compacted to 95% of maximum dry density or greater as determined by the procedure set forth in ASTM Designation D1557. Jetting of backfill material will not be permitted.

D. For flowable CDF, compaction is not necessary for placement. Trench sections may be filled in one lift above the initial backfill material in a manner which will; not disturb the line, prevent a misalignment, movement, floatation of or otherwise damage the utility.

E. Backfill will be inspected and tested by the Engineer during placement. Contractor shall cooperate with the Engineer and shall provide working space for such tests in his operations. Backfill not compacted in accordance with these specifications shall be recompacted, or removed as necessary and replaced to meet specified requirements prior to proceeding with the work.

3.5 GENERAL BRACING AND SHORING

A. The Contractor shall furnish, place and maintain such bracing and shoring as may be required to support the sides of the excavations for the proper protection of workmen; to facilitate the work; and to prevent damage to adjacent structures or facilities.

B. Upon completion of the work, all bracing and shoring shall be removed, unless otherwise directed by the Engineer. Current requirements are for a maximum depth of 5 feet without CAL-OSHA approved shoring.

3.6 SPECIAL EARTHWORK REQUIREMENTS FOR SUBSURFACE DRAINS

A. Excavate to the dimensions indicated.

B. Provide a bedding surface of uniform density consisting of permeable material as indicated in paragraph 2.02 of this specifications section.

C. Backfill around and over the pipes after pipe installation has been approved with permeable material to the depth indicated. Place in maximum loose lifts of 8 inches.

D. Compact each lift with mechanical tampers or rammers. Compact bedding and backfill materials to 90% of ASTM D1557, Method D, maximum density. Place the remainder of the trench backfill as specified.

3.7 SPECIAL REQUIREMENTS FOR CONTROLLED DENSITY FILL (CDF)

A. Applications of CDF include, but are not limited to: backfills, structural fills, insulating fills, road base, slab base, trench bedding, void and abandoned tank fills caisson and

pile fills, abandoned pipes and culverts.

B. CDF shall be discharged from the mixer by any reasonable means into the area to be filled, including tremie methods or elephant trunk chutes. CDF shall be brought uniformly to the elevation as shown on the plans. Trench sections to be filled with CDF shall be contained at either end by bulkheads of earth fill.

C. Permanent pavement may be placed directly upon the CDF as soon as it has sufficiently self-consolidated so that the surface will withstand the process of paving without displacement or disruption. If the placement of the CDF is not completed early enough to allow for permanent paving to be completed the same day, the contractor shall provide steel plates to span the trench and prevent traffic contact with the CDF overnight or until permanent paving can be placed.

D. Compaction is not necessary when placing CDF.

3.8 FIELD QUALITY CONTROL

A. The Engineer will inspect, test and approve trench backfill layers before further construction is permitted thereon. Number of tests required will be determined by the Engineer.

B. If backfill has been placed, that is below the specified density, provide additional compaction with subsequent retesting until successful compaction is achieved.

3.9 DUST ALLEVIATION AND CONTROL

A. Contractor shall be responsible for and shall provide pollution and dust abatement and control measures satisfactorily during the course of the work.

B. The Contractor shall utilize reclaimed water, or dust palliatives, in compliance with the City's Water Conservation Ordinance.

3.10 FINISH OPERATIONS

A. Pipes shall be laid to finished grades indicated on the plans.

B. Dispose of all surplus material or material unsuitable for filling or grading off the site in a legal manner.

C. Satisfactorily restore any existing improvements, paving, landscaping, and other utilities disturbed during the course of constructing the improvements.

D. Existing traffic markings and control devices damaged or disturbed during construction shall be replaced or repaired to the satisfaction of the Engineer.

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SECTION 02206

ROCKSLOPE PROTECTION

PART 1 - GENERAL

1.1 WORK INCLUDED

A. Clearing, grubbing and stripping work site.

B. Grading and shaping of waterway or lagoon slopes.

C. Placing borrow material for slope re-establishment.

D. Placing rockslope protection on slopes.

E. Dust alleviation and control.

F. Cleanup and disposal of excess material.

G. Supplying all labor, materials, equipment and apparatus not specifically mentioned herein or noted on the plans, but which are incidental and necessary to complete the work specified.

1.2 APPLICABLE PUBLICATIONS

A. Publications listed below form a part of this specifications to the extent referenced. The publications are referred to in the text by the general designation only.

B. American Society for Testing and Materials (ASTM) Publication:

D-1557	Moisture-Density Relations of Soils and Soil Aggregate Mixtures using 10-lb. (4.54 KG) Rammer and 18-in. (457mm) Drop.

1.3 QUALITY ASSURANCE

A. Finish surface of the prepared rockslope subgrade shall not vary more than 0.15 feet from that called for on the plans or detail drawings when completed, and immediately prior to placement of the rockslope protection.

B. Percentage of compaction specified shall be the minimum acceptable. The percentage represents the ratio of the dry density of the compacted material to the maximum dry density of the material as determined by the procedure set forth in ASTM Designation D1557.

1.4 JOB CONDITIONS

A. Contractor shall accurately grade and prepare the rockslope section to the lines and grades called for on the plans and detail drawings.

B. Fill required shall consist of suitable excavated material if available, and/or such imported borrow material as may be required for the work conforming to the requirements therefor.

C. Contractor shall provide satisfactory dust alleviation and control measures continuously during the course of work.

D. Surplus material including all waste, rubbish and construction debris shall be disposed of by the Contractor.

PART 2 - PRODUCTS

2.1 IMPORT MATERIAL FOR FILL

A. Import material for fill shall conform to Section 02220, Grading and Earthwork.

B. Materials not conforming to the above specifications and requirements shall remain the property of the Contractor and shall be removed from the job site as directed.

2.2 ROCK FOR ROCKSLOPE PROTECTION

A. Rock shall be light grey in color and subject to approval by the Engineer.

B. Size of aggregate shall conform to the following gradation:

Size (inches)	Percent Passing
9	100
8	98
7	78
6	50
5	30
4	6
3	2

C. Aggregate shall be clean of dirt, clay and organic material.

D. Rock shall have a minimum specific gravity of 2.50.

E. Rock shall have a durability index of not less than 52 percent when tested in accordance with Test Method No. California 229.

F. All the rock shall be supplied from the same source.

PART 3 - EXECUTION

3.1 PREPARATION

A. Prior to placing fill or rockslope protection, all areas shall have been stripped of all vegetation and other objectionable materials as directed.

B. The slope shall be graded to the elevations shown on the plans, and compacted as specified in Section 02220 of these Specifications.

3.2 PLACEMENT

A. Rock shall be placed at a nominal twelve (12) inch thickness measured perpendicular to the slope. The Contractor shall adjust spread rates to assure that this requirement is met.

B. Existing slopes shall be trimmed and graded as directed. In the event that erosion has taken place, regrade the slopes to the slope ratio shown on the plans, for a satisfactory rock placement.

C. Round boulders or cobbles shall not be allowed in the work. Angular shapes may be used. Flat or needle-shaped rocks will not be accepted unless the thickness of the individual pieces is greater than 1/3 the length.

D. Finished slope of the rock slope shall be as shown on the plans.

E. Rock shall not be stockpiled prior to placement higher than three (3) feet nor closer than fifteen (15) feet from the top of the bank.

F. Local surface irregularities of the slope protection shall not vary from the planned slopes by more than 6 inches measured at right angles to the slope.

G. Placing of rocks by dumping will not be permitted.

3.3 SITE DRAINAGE

A. Contractor shall be solely responsible for provision of adequate site drainage at all times during the course of the work.

B. All in-progress work within the construction area detrimentally affected by surface runoff shall be satisfactorily corrected to comply with Specification section 02133.

3.4 CLEANUP

A. Upon completion of rock slope protection operations, the Contractor shall thoroughly clean the rocks of all waste, rubbish and construction debris.

B. Surplus imported fill material remaining upon completion of rock slope protection operations shall be segregated as to type, and must be disposed of.

C. Surplus rock slope material remaining upon completion of rock slope protection operations shall be transported off the site.

* * *

SECTION 02220

GRADING AND EARTHWORK

PART 1 - GENERAL

1.1 WORK INCLUDED

A. Grading, earthwork and roadway excavation and/or fill.

B. Subgrade preparation.

C. Dust alleviation and control.

D. Cleanup and disposal of excess material.

E. Supplying all labor, materials, equipment and apparatus not specifically mentioned herein or noted on the plans, but which are incidental and necessary to complete the work specified.

1.2 APPLICABLE PUBLICATIONS

A. The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the general designation only.

B. American Society for Testing and Materials (ASTM) Publications:

D 424 - Test Method for Plastic Limit and Plasticity index of Soils.

D 1556 - Test method for Density of Soil in place by Sand Cone Method.

D 1557 - Moisture-Density Relations of Soils and Soil Aggregate Mixtures Using 10lb (4.54 KG) Rammer and 18-in. (457mm) Drop.

D 2922 - Density of Soil and Soil Aggregate in Place by Nuclear Methods

D 2419 - Sand Equivalent Value of Soils and Fine Aggregate.

1.3 QUALITY ASSURANCE

A. Finish surface of the graded and prepared subgrade shall not vary more than 0.10 feet from that called for on the plans or detail drawings when completed, and immediately prior to placement of the roadway structural section.

B. Percentage of compaction specified shall be the minimum acceptable. The percentage represents the ratio of the dry density of the compacted material to the maximum dry density of the material as determined by the procedure set forth in ASTM Designation D1557.

C. Submit test results on imported material to indicate conformance with these requirements.

1.4 JOB CONDITIONS

A. Accurately grade and prepare the roadway subgrade section to the lines and grades called for on the plans and detail drawings with due provision for future surface improvements.

B. Fill required shall consist of suitable excavated material if available, and/or such approved imported borrow material as may be required for the work conforming to these requirements.

C. Provide dust alleviation and control measures satisfactory to the Engineer continuously during the course of the work.

D. Surplus excavation material remaining upon completion of the grading and roadway subgrade preparation shall be segregated as to type, and must be transported and disposed off-site in a lawful manner.

PART 2 - PRODUCTS

2.1 SOIL AND AGGREGATE MATERIALS

A. Site Fill and Backfill Materials - General:

1. Provide various types of materials as specified herein and indicated on the Plans.
2. In lieu of obtaining materials from on-site sources, approved import materials may be substituted or required.
3. All fill and backfill materials shall be free of deleterious substances, large rocks, garbage, rubbish, wood or organic debris.
4. All materials, regardless of source, are subject to approval prior to procurement or placement.

B. Unclassified Locally Obtained or Imported Fill Beneath or Adjacent to Roadways and for Structural Backfill:

1. Unless otherwise shown on the Plans, use suitable materials obtained from Contract excavation. Supplement with import materials, if required and authorized. Suitable materials shall be non-organic, native soil or soil-rock. Expansive silt and clay with L.L. greater than 50 is unsuitable fill material and shall not be used.
2. No import materials for structural fill or embankment fill will be authorized until suitable materials from Contract excavation have been exhausted.

2.2 IMPORTED MATERIAL FOR FILL

A. Material for fill shall consist of inert, granular soil and rock fragments supplied from previously tested and approved sources, and shall conform to the following specifications and requirements:

1. All material shall be free of organic materials, trash and debris, expansive clays or any other deleterious materials, and shall be subject to the approval and acceptance of the Engineer.

2. The contractor shall designate his proposed import sources in advance and shall provide the source samples of material proposed to be furnished for evaluation.

3. Minimum "R" value shall be 25."R" values for acceptable import material shall be determined by the procedure set forth in Test Method No. California 301 of the State of California, Department of Transportation, and the material shall conform to the following gradation requirements:

Maximum particle size	4 inches
Percent passing 1-1/2" screen	50-100
Percent passing No. 4 screen	20-100
Percent passing No. 200 screen	10-30

4. Plasticity Index for acceptable import material shall be less than fifteen (15) when determined by the procedure set forth in ASTM Designation D424.

5. Sand Equivalent for acceptable import material shall be not less than twenty-five (25) when determined by the procedure set forth in ASTM Designation D2419.

PART 3 - EXECUTION

3.1 PREPARATION

A. Prior to placing fill, all areas shall be stripped of all vegetation and other objectionable materials to the satisfaction of the Engineer. Such areas shall then be scarified to a minimum depth of eight (8) inches, the scarified material conditioned to a moisture content that will permit compaction to the specified density, and compacted to a density of not less than ninety (90) percent of maximum dry density as determined by the procedure set forth in ASTM Designation D1557.

B. Do not proceed with filling until the grade has been satisfactorily inspected.

3.2 PLACING AND COMPACTING FILL MATERIAL

A. Control soil compaction during construction to provide the minimum percentage of density specified for each area as determined according to ASTM D-1556 or ASTM D-2922. All operations will be subject to the approval of the Engineer.

B. Compact all fill material within one foot of finished grade by methods specified below, under paragraph "C," or by other methods, if approved by the City, so as to produce the specified minimum degree of compaction, as determined by ASTM D-1557.For a minimum depth of 8 inches below existing subgrade or fill placed under roadways or parking areas shall be compacted to 95 percent compaction. In landscaped areas, place and compact fill to 1" below the surface of adjacent curbs, walks and drives. Fill in landscape areas shall be compacted to 85 percent. Unless otherwise specified or indicated, all other fill shall be compacted to 90 percent.

C. Spread fill material in uniform lifts not exceeding 8" in uncompacted thickness. Before

compaction begins, bring fill to a uniform water content within 1 to 3 percent of optimum by either: (1) aerating the material if it is too wet, or (2) spraying the material with water if it is too dry. Each lift shall be thoroughly mixed to ensure a uniform distribution of water content. If suitable compaction can be demonstrated, thickness of fill placement may be increased, subject to written approval of the Engineer.

D. Remove and replace, or scarify and air dry soil material that is too wet to permit compacting to specified density. Soil material that has been removed because it is too wet to permit compacting may be temporarily stockpiled or spread and allowed to dry. Assist drying by discing, harrowing, or pulverizing, until moisture content is reduced to a satisfactory value as determined by moisture-density relation tests.

E. Any fill that does not meet the specification requirements shall be removed and/or recompacted until the requirements are satisfied.

3.3 GENERAL GRADING & EARTHWORK

A. Earthwork shall consist of excavating to the lines and grades called for on the plans and detail drawings.

B. Materials shall be removed or placed to the lines and grades indicated for subgrade for roadway, curbs, gutters, driveways, walks or paths, and any other improvements called for on the plans and detail drawings. Materials shall be placed and compacted as specified above for fill material.

3.4 SUBGRADE PREPARATION UNDER PAVED AREAS

A. After excavating to the subgrade elevation shown on the plans, and prior to installation of aggregate base, the entire work area shall be scarified to a minimum depth of eight (8) inches, wetted or dried to an appropriate moisture content, and compacted to the lines and grades called for on the plans and detail drawings at a density of not less than ninety five (95) percent of maximum dry density as determined by the procedure set forth in ASTM Designation D1557.

B. The Contractor shall at all times maintain the subgrade surface in such condition as to readily drain effectively. Vehicular and equipment traffic shall be distributed across the prepared surface in such a manner as to prevent continual operation in one path. The Contractor shall repair any damage to the prepared subgrade.

C. Storage or stockpiling of heavy loads on the roadway subgrade will not be permitted. Use only approved storage areas.

D. The Contractor shall be responsible for any failure of the underlying native soils during the course of the work and shall repair any damage.

E. Finished subgrade shall be subject to the approval of the Engineer and no select material or improvement shall be placed thereon until approval for same has been obtained.

3.5 FIELD QUALITY CONTROL

A. The Engineer will inspect, test and approve subgrades and fill layers before further

construction is permitted thereon; and will conduct a sufficient number of tests chosen at Engineer's discretion to enable said Engineer to approve fill as it is placed. Areas to receive structural fills and all structural excavations shall be approved before covering or filling.

B. If in the Engineer's opinion, based on the results of testing for subgrade or fills which have been placed and compacted below the specified density, the Contractor shall provide additional compaction testing at their costs until the affected subgrade or fill is approved.

3.6 DUST ALLEVIATION AND CONTROL

A. The Contractor shall be responsible for and shall provide pollution and dust abatement and control measures continuously during the course of the work.

B. The Contractor shall utilize reclaimed water, or dust palliatives, in compliance with the City's Water Conservation Ordinance.

3.7 DISPOSAL OF EXCESS MATERIAL

A. Surplus materials and construction debris remaining upon completion of the work shall become the property of the Contractor unless otherwise specified herein or noted on the plans, and shall be removed from the work site by the Contractor and disposed of off-site in a lawful manner.

* * *

SECTION 02500

ASPHALT PAVING AND SURFACING

PART 1 - GENERAL

1.1 WORK INCLUDED

A. Traffic control as required to divert vehicular and pedestrian traffic around construction.

B. Spreading and compacting aggregate sub-base material.

C. Spreading and compacting aggregate base material.

D. Spreading and compacting asphalt concrete pavement and surfacing.

E. Grinding existing pavement at conforms and for overlaying.

F. Replacing asphalt concrete surfacing (Spot Reconstruction).

G. Shoulder backing.

H. Applying prime coat and tack coat.

I. Dust alleviation and control.

J. Cleanup and disposal of debris.

K. Supplying all labor, materials, equipment and apparatus not specifically mentioned herein or noted on the plans, but which are incidental and necessary to complete the work specified.

1.2 APPLICABLE PUBLICATION

A. The publications listed below form a part of this specification to the extent referenced. The publication is referred to in the text by the general designation only.

B. American Society for Testing and Materials (ASTM) Publication: D-1557 Moisture-Density Relations of Soils and Soil Aggregate Mixtures Using 10-lb. (4.54 KG) Rammer and 18-in. (457mm) Drop.

C. California Department of Transportation Testing Manual:

Test 304 Method of Preparation of Bituminous Mixtures for Testing

Test 375 Determining the In-Place Density and Relative Compaction of AC Pavement

1.3 QUALITY ASSURANCE

A. Codes and Standards

1. Spreading and compacting of aggregate subbase material shall conform to the applicable provisions of Section 25 of the State Standard Specifications.
2. Spreading and compacting of aggregate base material shall conform to the applicable provisions of Section 26 of the State Standard Specifications.
3. Spreading and compacting of asphalt concrete shall conform to the applicable provisions of Section 39 of the State Standard Specifications.
4. Traffic Control shall conform to Section 01550 of these Specifications.

B. Allowable Tolerances

1. Finish surface of the aggregate base or aggregate subbase courses shall not vary more than 0.05 feet from the grade established by the Engineer.
2. Finish surface of asphalt concrete when measured with a twelve-foot straight edge shall not vary more than 0.01 feet in the longitudinal direction and 0.02 feet transversely below the lower edge of the straight-edge.
3. Percentage of compaction specified shall be the minimum acceptable. The percentage represents the ratio of the dry density of the compacted material to the maximum dry density of the material as determined by the procedure set forth in ASTM Designation D1557.

C. Submittals

1. For aggregate bases and sub-bases, the contractor shall arrange and provide for the following acceptance tests to be performed on samples taken at the job site, based on a frequency of one series of tests per 3000 tons of material placed or as directed by the Engineer:
   a. "R" valve, per California Test Method 301;
   b. Sieve Analysis, per California Test Method 202;
   c. Sand equivalency, per California Test Method 217;
   d. For aggregate bases, the durability index, per California Test Method 229.
2. Provide the Engineer daily with one (1) copy of a material certificate signed by material producer certifying that each material item complies with or exceeds the specified requirements for each type of material delivered.
3. Provide the Engineer with one (1) copy of certified plant load out slips for each load of material delivered showing net weight of aggregate base, subbase or asphalt concrete delivered to the job site, to be attached to the appropriate material certificate.
4. Submit a traffic detour plan and obtain approval prior to closing any traffic lane.

1.4 JOB CONDITIONS & MINIMUM TEMPERATURES

A. Aggregate base or subbase material shall not be placed until the subgrade has been approved.

B. Provide satisfactory dust alleviation and control measures continuously during the course of the work.

C. Prime or tack coat materials shall not be applied unless the ambient temperature is above 50°F and has not been below 35°F during the twelve (12) hours immediately prior to application. Prime or tack coats shall not be applied when the surface to be coated is wet or contains an excess of moisture.

D. Asphalt concrete shall not be applied unless the ambient temperature is above 50 degrees F and rising, the surface is dry, and upon specific approval by the Engineer.

E. Temperature of asphalt concrete shall not be less than 250 degrees F during initial spreading.

PART 2 - PRODUCTS

2.1 AGGREGATE SUBBASE

A. Materials for aggregate subbase shall conform to the requirements for Class 2 aggregate subbase contained in Section 25-1.02A of the State Standard Specification.

2.2 AGGREGATE BASE

A. Materials for aggregate base shall conform to the requirements for Class 2 aggregate base contained in Section 26-1.02A of the State Standard Specifications.

2.3 ASPHALT CONCRETE

A. Asphalt to be mixed with aggregate to form asphalt concrete shall be steam- refined paving asphalt, grade PG-64-10, conforming to the requirements of Section 92-1.02 and 1.03 of the State Standard Specifications.

B. Aggregate for asphalt concrete shall be Type A conforming to the requirements of Section 39-2.02 of the State Standard Specifications with the following special provisions:

1. Grading of combined aggregates for new asphalt concrete pavement, walkways, and overlays two (2) inches or more in thickness shall be three-quarter (3/4) inch maximum size, medium grading.
2. Grading of combined aggregate for asphalt concrete pavement, walkways and overlays less than two (2) inches in thickness shall be one half (l/2) inch maximum size, medium grading.

C. Liquid asphalt for prime coat shall be Grade SS-1 conforming to the requirements of Section 94 of the State Standard Specifications.

D. Asphaltic emulsion for tack coat (paint binder) shall be emulsified asphalt, Type SS-1h conforming to the requirements of Section 94-1.01 through 1.05 of the State Standard Specifications.

E. Suppliers' certification showing conformance to these specifications shall be delivered with each shipment of materials to the job site.

2.4 REINFORCING FABRIC

A. Reinforcing fabric, if required by the plans, shall conform to Section 88 of the State Standard Specifications.

B. At least one side of the reinforcing fabric shall be heat bonded, or heat set.

PART 3 - EXECUTION

3.1 AGGREGATE SUBBASE

A. Subbase material shall be placed, spread and compacted in conformance with the requirements of Section 25-1.04 and 1.05 of the State Standard Specifications.

B. Subbase material shall be compacted to a relative density of not less than 95% when tested in accordance with the requirements of ASTM 1557.

3.2 AGGREGATE BASE

A. Base material shall be placed, spread and compacted in conformance with the applicable requirements of Section 26-1.035, 1.04 and 1.05 of the State Standard Specifications.

B. Base material shall be compacted to a relative density of not less than 95% when tested in accordance with the requirements of ASTM 1557.

3.3 PRIME, TACK COATS, AND SURFACE PREPARATION

A. Liquid asphalt prime coat shall then be applied to the aggregate base course in conformance with the requirements of Section 39-4.02 of the State Standard Specifications. Prime coat shall be applied at the rate of 0.25 gallons per square yard unless otherwise directed. After the liquid asphalt has penetrated the base course, any excess standing on the surface shall be absorbed to the satisfaction of the Engineer with a suitable coating of clean sand.

B. Tack coat shall be applied to all vertical surfaces of existing pavement, curbs, gutters, catch basins, manhole frames, and construction joints in the surfacing to the horizontal surface of all existing pavements to be resurfaced and other surfaces designated. Asphaltic paint binder shall be provided in sufficient quantity to produce a thin, uniform black, glossy coat of asphalt. Pools in unevenly distributed material shall be spread out by squeegee, broom or other means so an even coverage is attained. Immediately in advance of placing HMA, apply additional tack coat to damaged areas or where loose or extraneous material is removed. Do not track tack coat onto pavement surfaces beyond the job site. Discontinue application of emulsion early enough to comply with lane closure specifications and daily work advancement. Do not track tack coat onto pavement surfaces beyond the job site.

C. Distributed areas shall be redistributed by means of hand brooms. Tack coat shall be applied in conformance with the applicable requirements of Section 39- 4.02 of the State Standard Specifications.

D. Prior to placing asphalt over existing pavement, sweep the pavement clean of loose dirt to the satisfaction of the Engineer.

3.4 ASPHALT CONCRETE

A. Asphalt concrete shall be proportioned, mixed, placed, spread and compacted in conformance with the applicable requirements of Section 39-3 and 39-6 of the State Standard Specifications and the following requirements:

1. Asphalt concrete shall be placed only upon specific approval of the Engineer. When, in the opinion of the Engineer, the surface is too wet, no asphalt concrete shall be placed. The Engineer will make the final decision as to whether conditions are satisfactory for paving.
2. No asphalt concrete surface course shall be placed when the ambient temperature is less than 50° F. All compaction shall be completed before the temperature of the mixture drops below 200°F.
3. All longitudinal joints shall be "hot" joints; cold joints are only allowed transversely at discontinuance of the day's run.
4. Asphalt concrete for roadways shall be placed in layers when the total depth called for on the plans and detail drawings exceeds two (2) inches. The final layer shall not be less than one and one-half (1-1/2) inches in compacted thickness no more than two (2) inches. Where more than four and one-half (4-1/2) inches in total compacted thickness are specified, three (3) or more layers shall be required. The first lower layer shall not exceed two and one-half (2-1/2) inches in compacted thickness.
5. All asphalt courses shall be placed by means of an approved self-propelled asphalt paving machine. Contractor may place lower courses and compact all courses with equipment conforming to the requirements of Section 39-5 of the State Standard Specification.
6. The window/pick-up machine method for spreading asphalt may be used with the following restrictions:
    a. The machine is self-supporting and may not transmit loads to the paving machine. The use of a track type machine is recommended.
    b. The maximum window length in front of the paving machine shall be 200-feet, and shall not block intersections.
    c. The Contractor shall furnish a “Dump Man” for the control of window distribution.
    d. At the sole discretion of the Engineer, depending on ambient temperature and the length of haul, the loaded trucks must be covered with a tarp.
    e. Any damages to the reinforcing fabric caused by the pick-up machine shall be repaired before the work is allowed to continue.
    f. At the sole discretion of the Engineer, depending on traffic control operations, the use of double-bottom dump trucks may be prohibited.

7. Where asphalt paving is to be laid against concrete gutter, the first pass shall start at the gutter and successive passes work towards the center of the street, and the finish surface of the asphalt concrete wearing course shall be constructed to a height one-quarter (1/4) inch above the abutting edge of the gutter.

8. Trucks, loaded or empty, shall not be allowed on the new surface until the asphalt concrete reaches ambient temperature.

B. The final lift of asphalt paving shall not be placed until all other construction activity, including building construction and landscaping is completed.

C. When placing asphalt over existing pavement, repair large cracks, spalls, and chuck-holes, and clean the pavement surface to the satisfaction of the City Engineer.

D. Asphalt concrete shall be rolled such that compaction after rolling shall be 95% of the density obtained with the California Test 304. Field density tests may be conducted by the Engineer to confirm density using the California Test 375.

E. Failure to meet the specified density may require credits back to the City for non-conformance.

3.5 ADJUST MANHOLES, VALVES, AND MONUMENT COVERS

A. Existing manholes, lampholes, valve and monument covers, or other such structures in the line of the work shall be adjusted to conform with the new grade after completion of paving operations.

B. The box will be adjusted by removing the existing concrete pad and pouring a new pad of concrete.

C. The concrete collar shall be circular and shall be covered with a minimum of two (2) inches of asphalt concrete to blend in with the adjacent surfacing.

D. Extension rings will not be acceptable. Contractor shall be responsible for preserving the survey point in its original position.

3.6 ASPHALT PLANING

A. The depth, width, and shape of the cut shall be as shown on the plans by a project-specific detail, or if there is no project-specific detail, as shown on City Standard Engineering Detail A-6.

B. Asphalt planing operations shall provide a final cut resulting in a uniform surface conforming to the typical cross sections, and be performed without damage to the surfacing to remain in place.

C. For overlay, plane as necessary to allow a minimum overlay of two (2) inch to new elevations.

D. Where transverse joints are planed in the pavement at conform lines no drop-off shall remain between the existing pavement and the planed area when the pavement is opened to public traffic. If asphalt concrete has not been placed to the level of existing pavement before the pavement is to be opened to public traffic a temporary asphalt concrete taper shall be constructed. Asphalt concrete for

temporary tapers shall be placed to the level of the existing pavement and tapered on a slope of 1:30 (Vertical: Horizontal) or flatter to the level of the planed area.

E. The contractor will be held responsible for any and all damage to trees, plants, and shrubs caused by the grinding operation and shall satisfactorily replace with new material or correct any damage.

F. Ground asphalt concrete shall be removed from the job site and disposed of immediately following the grinding operation.

G. Ground areas shall be overlaid within one week of grinding.

3.7 ASPHALT CONCRETE SPOT RECONSTRUCTION

A. This work shall consist of removing existing asphalt concrete surfacing and underlying base material and replacing the removed surfacing and base material with new asphalt concrete as shown on the plans and specified in these technical specifications.

B. The exact limits of asphalt concrete surfacing to be removed and replaced will be determined by the Engineer.

C. Existing surfacing and underlying base material removed during a work period shall be replaced before the lane is to be opened.

D. A four-foot wide grind is required as shown on the plans and directed by the Engineer.

E. Surfacing and base material shall be removed without damage to surfacing that is to remain in place. Damage to pavement which is to remain in place shall be repaired to a condition satisfactory to the Engineer.

F. The material remaining in place, after removing surfacing and base material to the required depth, shall be graded to a plane, watered, and compacted.

1. The finished surface of the remaining material shall not extend above the grade established by the Engineer

2. Areas of the base material which are low or beyond the area approved by the Engineer as a result of over excavation shall be filled, at the Contractor's expense, with asphalt concrete.

3.8 SHOULDER BACKING

A. Shoulder backing shall be applied as shown on the plans, in conformance with the applicable provisions of sections 24 and 26, "Lime Stabilization" and "Aggregate Bases" of the State Standard Specifications, and these technical specifications.

B. Work shall consist of placing a compacted layer of lime treated, Class 2 aggregate base on the shoulder of the roadway, in areas shown on the plans or as directed by the Engineer. Affected shoulder areas generally consist of previously disturbed aggregate and dirt adjacent to the paved roadway.

C. Shoulder backing shall be four feet in width and two inches in height, unless otherwise shown on the plans or directed by the Engineer.

3.9 REINFORCEMENT FABRIC

A. Reinforcing Fabric shall be installed in accordance with Section 39-4.03 of the State Standard Specifications.

B. Fabric which may have become damaged by paving equipment shall be satisfactorily repaired prior to proceeding with the paving operation.

C. Install fabric with bonded side up.

D. At each utility cover which would be covered with fabric, the fabric shall be neatly cut around the cover to allow for raising of the cover to finish grade.

3.10 SPEED HUMPS/TABLES

A. Install speed humps/tables where shown on the plans using hot mix asphalt concrete, 3/8” maximum size gradation.

B. Apply tack coat to existing pavement prior to laying asphalt.

C. Spread asphalt by hand using a template/screed approved by the Engineer to the dimensions shown.

D. Compact the humps/tables using an 8-ton static roller.

E. Multiple lifts may be required at the discretion of the Engineer, in order to accomplish the design tolerances. In which case, multiple templates or screeds may be required.

F. The cross-section of the humps/tables shall not vary by more than 0.25” from the design height.

3.11 DUST ALLEVIATION AND CONTROL

A. Contractor shall provide satisfactory pollution and dust abatement and control measures continuously during the course of the work.

B. The Contractor shall utilize reclaimed water, or dust palliatives, in compliance with the City's Water Conservation Ordinance.

3.12 TRAFFIC CONTROL AND STRIPING

A. Provide satisfactory traffic control measures and warning devices to safely detour traffic around construction activity in accordance with Section 01550 of these Specifications.

B. If the street is to be opened for traffic, or as directed by the Engineer, temporary delineation shall be placed on new surfaces immediately after the asphalt concrete has been finished rolled. Temporary delineation shall conform to Section 02840 of these Specifications.

3.13 CLEANUP

A. Upon completion of asphalt paving and surfacing operations, the entire work site shall be cleaned of all waste, rubbish, and construction debris of any nature.

* * *

SECTION 02544

CRACK TREATMENT

PART 1 – GENERAL

1.1 SCOPE

A. This specification covers the materials, equipment, construction and procedures for treating cracks in asphalt concrete pavement including shoulders and parking areas

PART 2 – PRODUCTS

2.1 GENERAL

A. Crack treatment shall be hot-applied and conform to the table in part 2.02

2.2 MATERIALS/MIX DESIGN/TESTING

Crack Treatment Material

Quality Characteristic	ASTM Test Method [a]	Type 2 Material
Softening point (min.)	D 36	96 °C
Cone penetration at 77°F (max.)	D 5329	40
Resilience at 77°F, unaged, %	D 5329	25-65
Flexibility [b]	D 3111	0 °C
Tensile adhesion, %, (min.)	D 5329	400
Specific gravity (max.)	D 70	1.25
Asphalt compatibility	D 5329	Pass
Sieve test (percent passing)	See note c	100

Notes:

a. Except for viscosity, cure each specimen at a temperature of 23 °C ± 2 °C and relative humidity of 50 ± 10 percent for 24 ± 2 hours before testing.

b. For flexibility test, the specimen size must be 6.4 ± 0.2 mm thick x 25 ± 0.2 mm wide x 150 ± 0.5 mm long. Test mandrel diameter must be 6.4 ± 0.2 mm. Bend arc must be 180 degrees. Bend rate must be 2 ± 1 seconds. At least 4 of 5 test specimens must pass at the specified test temperature without fracture, crazing, or cracking.

c. For hot-applied crack treatment, dilute with toluene and sieve through a No. 8 sieve. If the manufacturer provides a statement that added components passed the No. 16 sieve before blending, this requirement is void.

If crack treatment material is delivered to the job site in containers, each container must be marked with the following information. If crack treatment material is not delivered in containers, the following information must accompany the delivery:

1. Manufacturer's name
2. Production location
3. Product brand or trade name
4. Product designation
5. Crack treatment trade name
6. Batch or lot number
7. Maximum heating temperature
8. Expiration date for cold application only

Hot-applied crack treatment must be delivered to the job site premixed in cardboard containers with meltable inclusion liners or in a fully meltable package.

PART 3 – EXECUTION

3.1 SURFACE PREPARATION

A. Treat cracks from 1/4 to 1 inch in width for the entire length of the crack. Fill or repair cracks wider than 1 inch as directed by the Engineer.

B. Cracks must be clean and dry before treating. Before treating, blast cracks with oil-free compressed air at a pressure of at least 90 psi.

C. If the pavement temperature is below 40 °F or if there is evidence of moisture in the crack, use a hot air lance immediately before applying crack treatment. The hot air lance must not apply flame directly on the pavement.

3.2 APPLICATION AND WORKMANSHIP

A. Heat hot-applied crack treatment material in compliance with the manufacturer's instructions. Comply with the manufacturer's application instructions.

B. Insert crack treatment with a nozzle inserted into the crack. Fill the crack so that it is recessed less than 1/4 inch.

C. Immediately remove crack treatment material spilled or deposited on the pavement surface.

* * *

SECTION 02550

CONCRETE IMPROVEMENTS

PART 1 - GENERAL

1.1 WORK INCLUDED

A. Traffic control as required to divert vehicular and pedestrian traffic around the construction.

B. Mixing and transporting Portland Cement Concrete.

C. Forming concrete.

D. Placing and finishing concrete.

E. Curing concrete.

F. Protecting concrete improvements.

G. Steel Reinforcement.

H. Dust alleviation and control.

I. Cleanup and disposal of debris.

J. Supplying all labor, materials and equipment not specifically mentioned herein or noted on the plans, but which are incidental and necessary to complete the work specified.

1.2 APPLICABLE PUBLICATION

A. The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the general designation only.

B. American Society for Testing and Materials (ASTM) Publication:

A - 82	Cold Drawn Steel Wire for Concrete Reinforcement.
A - 185	Steel Welded Wire Fabric, Plain, for Concrete Reinforcement.
A - 615	Deformed and Plain Billet Steel Bars for Concrete Reinforcement.
C - 94	Specification for Ready-mixed Concrete.
C – 114	Method for Chemical Analysis of Hydraulic Cement.
C - 150	Portland Cement.
C - 452	Test Methods for potential Expansion of Portland Cement Mortars exposed to Sulfate.
C - 618	Fly Ashand Raw or Calcined Natural Pozzolan for use as a Mineral Admixture in Portland Cement.
C - 1751	Preformed Expansion Joint Fillers for Concrete Paving and Structural Construction. (Non- extruding and Resilient Bituminous Types)

1.3 QUALITY ASSURANCE

A. Compressive strength and cement content for the class of Portland Cement Concrete herein designated shall be the minimum acceptable.

B. No concrete for concrete improvements shall be placed until the subgrade, the forms, and reinforcement have been approved.

C. Color and surface texture of decorative concrete paving or surfacing shall closely match the approved sample for the work.

D. Codes and Standards:

1. Proportioning of Portland Cement concrete shall conform to the applicable provisions of Section 90-5 of the State Standard Specifications.
2. Mixing and transporting of Portland Cement Concrete shall conform to the applicable provisions of Section 90-6 of the State Standard Specifications.
3. Curing of Portland Cement Concrete shall conform to the applicable provisions of Sections 90-7.03 and 90-8.02 of the State Standard Specifications.
4. Protection of Portland Cement Concrete shall be provided in conformance with the applicable provisions of Section 90-8 of the State Standard Specifications.
5. Forming of concrete for improvements shall conform to the provisions of Section 73-1.04 of the State Standard Specifications forming for cast-in- place structures shall conform to Section 51-1.05 of the State Standard Specifications.
6. Placing of concrete improvements shall conform to the provisions of Sections 73-1.05 and 73-1.05A, of the State Standard Specifications; placing of concrete for cast-in-place concrete structures shall conform to Section 51-1.09 of the State Standard Specifications.
7. Finishing of cast-in-place concrete structures shall conform to the provisions of Section 51-1.18 of the State Standard Specifications. Finishing of concrete improvements shall conform to Section 73 of the Standard Specifications. Unless otherwise called for on the plans, all buried surfaces shall have "Ordinary Surface Finish" all exposed surfaces shall have "Class 1 Surface Finish".
8. Placing of steel reinforcement shall conform to the requirements of Section 52-1.07 of the State Standard Specifications.
9. Splicing of steel reinforcement shall conform to the requirements of Section 52-1.08 of the State Standard Specifications.

E. Certifications

1. At the time of delivery provide certificates of compliance signed by both Contractor and Supplier containing the following statements:

    a. Materials supplied comply with the specification in all respects.

    b. Proportioning and mixing is in compliance with a design mix which has been field tested in accordance with the herein requirements and produces the required compressive strength under like conditions.

c. Statement of type and amount of any admixtures.

d. All certificates shall include the Material and Supplier's mix design number.

2. At time of delivery provide certified delivery ticket stating volume of concrete delivered and time of mixing, or time of load-out in case of transit mixers.

1.4 JOB CONDITIONS

A. Admixtures shall not be used except upon the prior written permission of the Engineer and, if permitted, the concrete containing same will be subject to the same compliance testing as herein specified for the various classes of concrete.

B. Temperature of mixed concrete, immediately prior to placement, shall not be less than 50° F, nor more than 90°F. Aggregates and water shall be heated or cooled at the mixing plant by supplier as necessary to produce concrete within these limits. Neither aggregates nor mixing water shall be heated to exceed 150°F.

C. No additional mixing water shall be incorporated into the concrete during transport or after arrival at the work site unless such water is specifically authorized by the Engineer. If authorization to add mixing water is obtained and mixing water is added to the mix, the mixer drum shall then be revolved a minimum of thirty (30) revolutions.

D. Hand mixing of Portland Cement Concrete shall not be allowed except upon prior written approval.

E. Where a portion of existing concrete improvements is to be reconstructed, the section to be removed shall first be a cut with an approved concrete saw to a minimum depth of one-half the depth of the existing concrete at the first score line beyond the area to be replaced.

F. Where concrete removal is required, it shall be removed to the nearest score line of joints.

G. Prior to placing concrete for concrete structures, Contractor shall first secure approval of the forms and any required reinforcement.

PART 2- PRODUCTS

2.1 AGGREGATE FOR PORTLAND CEMENT CONCRETE

A. Aggregates for Portland Cement Concrete shall conform to the requirements of Section 90-2.02A and B of the State Standard Specification.

B. Unless otherwise specified or called for on the plans for the work, aggregate size and gradation for Portland Cement Concrete shall conform to the requirements of Section 90-3.04 of the State Standard Specifications for one inch (1") maximum combined aggregate.

2.2 WATER FOR PORTLAND CEMENT CONCRETE

A. Water for mixing and curing concrete and for washing aggregates shall conform to the requirements of Section 90-2.03 of the State Standard Specifications.

2.3 CEMENT FOR PORTLAND CEMENT CONCRETE

A. Cement for Portland Cement Concrete to be placed in roadway improvements such as curbs, gutters, walks, valley gutters, driveways, surface and subsurface pads or slabs shall be Type V or Type II (modified) cement conforming to the requirements of ASTM Designation C150, with the following modifications:

1. The cement shall not contain more than 0.60% by weight of alkalies, calculated as the percentage of Na_20 plus 0.658 times the percentage of K_20 when determined by either direct 4 intensity flame photometry or by the atomic absorption method. The instrument and procedure used shall be qualified as to precision and accuracy in accordance with the requirements of ASTM Designation C114.
2. The autoclave expansion shall not exceed 0.50%.
3. Mortar, containing the Portland Cement to be used and the sand, when tested in accordance with Test Method No. Calif 527, shall not expand in water more than 0.010% and shall have an air content less than 048%.
4. Allowable tri-calcium Aluminate (C_3A) by weight shall not exceed 5%. Allowable tetracalcium alumino ferrite plus twice the tricalcium aluminate (C_4AF+2C_3A) by weight shall not exceed 25%. The sulfate expansion test (ASTM C452) may be used in lieu of the above chemical requirements, provided the sulfate expansion does not exceed 0.040% at 14 days (max).
5. The Contractor may substitute pozzolan for Portland Cement in amounts up to 15% of the required mix unless high early strength concrete is specified. Pozzolan shall consist of Class F fly ash meeting the requirements of ASTM C618.

B. Cement for Portland Cement Concrete to be placed in surface improvements shall contain a coloring compound equivalent to 1/4 pound of lampblack per cubic yard, added to the concrete at the central mixing plant.

C. Liquiblack, as supplied by Concrete Corporation of Redwood City, California, may be used in lieu of lampblack. One pint of liquiblack shall be considered equal to one pound of lampblack.

2.4 CLASSIFICATION OF PORTLAND CEMENT CONCRETE

A. Portland Cement Concrete shall be classified Class "A" or according to the compressive strength requirements specified in Section 90 of the State Standard Specifications.

B. Portland Cement Concrete not conforming to the above classification or having required minimum compressive strengths other than those set forth above, shall conform to requirements to be set forth for same noted on the plans or detail drawings.

2.5 EXPANSION JOINT MATERIAL

A. Material for expansion joints in Portland cement concrete improvements shall be

premolded expansion joint fillers of the thickness called for on the plans and conforming to the requirements of ASTM Designation D1751. Expansion joint material shall be shaped to fit the cross section of the concrete prior to being placed. Suppliers certificates showing conformance with this specification shall be delivered with each shipment of materials delivered to the job site.

2.6 REINFORCEMENT AND DOWELS

A. Bar reinforcement for concrete improvements shall be deformed steel bars of the size or sizes called for on the plans conforming to the requirements of ASTM Designation A615 for Grade 60 bars. Size and shape for bar reinforcement shall conform to the details shown or called for on the plans.

B. Slip dowels, where noted or called for on the plans or detail drawings shall be smooth billet-steel bars as designated and conforming to the requirements of ASTM Designation A615 for Grade 60 bars. Ends of bars inserted in new work shall be covered with a cardboard tube sealed with cork; no grease or oil will be used.

C. Mesh for reinforcement for concrete improvements shall be cold drawn steel wire mesh of the size and spacing called for on the plans conforming to the requirements of ASTM Designation A82 for the material and ASTM Designation A185 for the mesh. Size and extent of mesh reinforcement shall conform to the details shown or called for on the plans.

D. Tie wire for reinforcement shall be eighteen (18) gauge or heavier black annealed conforming to the requirements of ASTM Designation A82.

E. Suppliers certificates showing conformance with this specification shall be delivered with each shipment of materials delivered to the job site.

2.7 COLOR AND PATTERN FOR DECORATIVE PAVEMENT

A. Colors for decorative pavement and surfacing shall be CHROMIX admixtures as manufactured by the L. M. Scofield Company, Schedule A-312.05 or approved equal. The specific color shall be as designated or called for on the plans.

B. Curing compound for color conditioned decorative pavement shall be LITHOCHROME colorwax as manufactured by the L. M. Scofield Company or approved equal.

C. Patterns for decorative pavement or surfacing shall be standard "Bomanite" patterns as copyrighted by the Bomanite Corporation of Palo Alto, California or equal. The specific pattern shall be as designated or called for on the plans.

2.8 ACCESSORY MATERIALS

A. Materials for water stops and other items required in the placement of Portland Cement Concrete shall conform to the applicable requirements of Section 51 of the State Standard Specifications unless otherwise specifically noted or called for on the plans or detail drawings.

B. Curing compound for use on exposed surfaces of Portland Cement Concrete shall be "Non-Pigmented Curing Compound - chlorinated Rubber Base-Clear" conforming to the

requirements contained in Section 90-7.01B of the State Standard Specifications.

2.9 MATERIAL FOR FORMS

A. Material for forms for cast-in-place concrete shall conform to the requirements of Section 51-1.05 of the State Standard Specifications.

PART 3 - EXECUTION

3.1 STRUCTURAL EXCAVATION

A. Structural excavation may be either by hand, or by machine and shall be neat to the line and dimension shown or called for on the plans. Excavation shall be sufficient width to provide adequate space for working therein, and comply with CAL-OSHA requirements.

B. Where an excavation has been constructed below the design grade, the bottom of the excavation shall be backfilled to grade with approved material and compacted in place to 95% of the maximum dry density.

C. Surplus excavation material remaining upon completion of the work shall be either removed from job site, or conditioned to optimum moisture content and compacted as fill at the site.

3.2 BRACING AND SHORING

A. The Contractor shall furnish, place and maintain such bracing and shoring as may be required to support the sides of the excavations for the proper protection to workmen; to facilitate the work; to prevent damage to adjacent structures or facilities. Upon completion of the work, all bracing and shoring shall be removed, unless otherwise directed.

B. The Contractor is solely responsible for all bracing and shoring and shall, if required, submit an application and supporting data for an effective shoring system to the Engineer. The Engineer may forward the application to the California Division of Industrial Safety for design, assumed soils conditions, and the estimation of forces to be resisted, together with plans and specifications of the materials and methods to be used. The application shall be prepared by a Civil Engineer registered in California. No excavation around cast-in-place concrete structures shall proceed until the Contractor has received the return of an approved application, if required.

3.3 FORMS FOR CONCRETE

A. Concrete improvements shall be formed with a smooth and true upper edge and the side of the form shall be placed next to concrete with a smooth finish. Forms shall be constructed or made rigid enough to withstand the pressure of the fresh concrete to be placed without any distortion.

B. All forms shall have been thoroughly cleaned prior to placement and shall be coated with an approved form oil sufficient to prevent adherence of concrete prior to placing.

C. Forms shall be carefully set to the alignment and grade established and shall conform to

the required dimensions. Forms shall be rigidly held in place by stakes set at satisfactory intervals. Sufficient clamps, spreaders and braces shall be installed to insure the rigidity of the forms.

D. Forms for back and face of curbs, lip of gutters and edge of walks, valley gutters or other surface slabs shall be equal to the full depth of the concrete as shown, noted or called for on the plans or detail drawings. Composite forms made up from benders or thin planks of sufficient ply to ensure rigidity of the form in the shape required may be used on curves and curb returns.

3.4 PLACING STEEL REINFORCEMENT

A. Bars shall be free of mortar, oil, dirt, excessive mill scale and scabby rust and other coatings of any character that would destroy or reduce the bond. All bending shall be done cold, to the shapes shown on the plans. The length of lapped splices shall be as follows:

1. Reinforcing bars No. 8, or smaller, shall be lapped at least 45 bar diameters of the smaller bar joined, and reinforced bars Nos. 9, 10, and 11 shall be lapped at least 60 bar diameters of the smaller bars joined, except when otherwise shown on the plans.
2. Splice locations shall be made as indicated on the plans.

B. Reinforcement shall be accurately placed as shown on the plans and shall be firmly and securely held in position by wiring at intersections and splices and by using precast mortar blocks or ferrous metal chairs, spacers, metal hangers, supporting wires, and other approved devices of sufficient strength to resist crushing under applied loads. Supports and ties shall be such as to permit walking on reinforcing without undue displacement.

C. Reinforcing shall be placed so as to have the following minimum concrete cover:

Surfaces exposed to water	4"
Surfaces poured against earth	3"
Formed surfaces exposed to earth or weather	2"
Slabs, walls, not exposed to weather or earth	1"

D. Minimum spacing, center of parallel bars shall be two and one half (2-1/2) times the diameter of the larger sized bar. All reinforcing shall be securely tied in place prior to pouring concrete. Placing of dowels or other reinforcing in the wet concrete is not permitted.

3.5 MIXING CONCRETE

A. All concrete shall be transit mixed in accordance with the requirements of ASTM Designation C94. Transit mixed concrete shall be mixed for not less than ten (10) minutes total, of which not less than three (3) minutes shall be on the site just prior to pouring. Mixing shall be continuous with no interruptions from the time the truck is filled

until the time it is emptied. Concrete shall be placed within one hour of the time water is first added.

B. Hand mixing of concrete for use in concrete structures will not be permitted.

3.6 PLACING CONCRETE

A. Subgrade shall be thoroughly wetted prior to the placing of concrete for all concrete placed directly on soil. All standing water shall be removed prior to placing of concrete.

B. No concrete shall be placed until the subgrade and the forms have been approved.

C. Concrete shall be conveyed from mixer to final location as rapidly as possible by methods preventing separation of the ingredients. Deposit concrete as nearly as possible in final position to avoid re-handling.

D. Concrete shall be placed and compacted in forms without segregation by means of mechanical vibration or by other means as approved by the Engineer. Vibration shall continue until the material is sufficiently consolidated and absent of all voids without causing segregation of material. The use of vibrators for extensive shifting of fresh concrete will not be permitted.

E. All control and construction joints shall be as shown on the plans.

F. Concrete in certain locations may be pumped into place upon prior approval. When this procedure requires redesign of the mix, such redesign shall be submitted for approval in the same manner as herein specified for approval of design mixes.

3.7 FORM REMOVAL

A. Forms shall be removed without damage to concrete. All forms below the ground surface, together with all shores and braces, shall be removed before backfilling.

B. Backfill against concrete shall not commence until the concrete has developed sufficient strength to prevent damage.

C. Forms with cast-in-place walls shall remain in place at least 72 hours after pouring.

D. Forms with suspended slabs shall remain in place at least 28 days after pouring.

E. Edge forms shall remain in place at least 24 hours after pouring.

3.8 EXPANSION JOINTS

A. Expansion joints incorporating premolded joint fillers shall be constructed at twenty (20) foot intervals in all concrete curbs, gutters and sidewalks, and at the ends of curb returns. At each expansion joint, one-half by twelve inch (1/2" x 12") smooth slip dowels shall be installed in the positions shown or noted on the detail drawings.

B. Slip dowels shall be oriented at right angles to the expansion joint and shall be held firmly in place during the construction process by means of appropriate chairs.

C. Expansion joints and slip dowels shall be constructed in valley gutters and driveway approaches in the positions indicated or called for on the detail drawings.

3.9 CONTROL JOINTS

A. Control joints shall be constructed in concrete curbs, gutters, walkways and pavements between expansion joints at ten (10) foot intervals throughout, or as shown on the plans. Depth of joint score shall be a minimum of one-fourth (25%) the thickness of the concrete.

3.10 FINISHING

A. Concrete curb and gutter shall be finished in conformance with the applicable requirements of Section 73-1.04 and 73-1.05A of the State Standard Specifications as modified herein.

B. Where monolithic curb, gutter and sidewalk is specified, separate concrete pours will not be allowed.

C. Horizontal surfaces shall receive a medium broom finish unless otherwise shown.

3.11 ROADWAY ACCESSORY CONSTRUCTION

A. Concrete walkways, island paving, valley gutters and driveway approaches shall be formed, placed and finished in conformance with the applicable requirements of Section 73-1.04 and 73-1.06 of the State Standard Specifications as modified herein.

B. Where new concrete curb and gutter is to be constructed against existing AC remove 12” of the AC to form new gutter lip. Patch pave after gutter form is removed.

3.12 CONNECTING TO EXISTING CONCRETE IMPROVEMENTS

A. Whenever new curb, gutter, or sidewalk is to connect to existing improvements to remain, sawcut to existing sound concrete at the nearest score line or expansion joint. Drill and insert ½ " diameter by 12" long dowels at 24" on center into existing improvements. Install pre-molded expansion joint filler at the matching joint.

B. A “cold” joint to the existing curb, gutter or sidewalk is not permitted.

3.13 DECORATIVE PAVEMENT CONSTRUCTION

A. Decorative pavement for streets or roadways and decorative surfacing for median islands or other installations shall be formed and placed as a concrete slab conforming to the details therefor shown or noted on the drawings.

3.14 FIELD QUALITY CONTROL

A. Finish subgrade for concrete improvements shall be subject to approval prior to placement of forms.

B. No concrete shall be placed prior to approval of forms.

C. Appearance and finish of all concrete improvements constructed shall not contain "bird baths" or pond water and shall be smooth and ridge free.

D. Finish grade at top of curb**,** flow line of gutter, and the finish cross section of concrete improvements shall conform to the design grades and cross sections.

E. Variation of concrete improvements from design grade and cross section as shown or called for on the plans shall not exceed the tolerances established in Sections 73-1.05 and/or 73-1.06 of the State Standard Specifications, as applicable.

3.15 RESTORATION OF EXISTING IMPROVEMENTS

A. Existing pavement or other improvements removed or damaged due to the installation of concrete improvements shall be replaced in kind.

B. Existing landscaping or planting removed, damaged or disturbed due to the installation of concrete improvements shall be replaced in kind.

3.16 CLEANUP

A. Surplus material and debris remaining upon completion of the work shall be segregated as to type, and transported from the job site and disposed of in a legal manner.

* * *

SECTION 02670

UTILITY POLYETHYLENE CONTAINMENT PIPE SYSTEMS

PART 1 – GENERAL

1.1 WORK INCLUDED

A. Trenching and other excavation.

B. Ground water control.

C. Pipe bedding.

D. Installation of containment pipe and appurtenances.

E. Backfill and compaction of backfill.

F. Dust alleviation and control.

G. Cleanup and restoration of surface in improved areas.

H. Supplying all labor, materials, equipment and apparatus not specifically mentioned herewith or noted on the plans, but which are incidental and necessary to complete the work specified.

1.2 APPLICABLE PUBLICATIONS

A. The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the general designation only.

B. American Society for Testing and Materials (ASTM) Publications:

D-638 Standard Test Method for Tensile Properties of Plastics.
D-790 Standard Test Methods for Flexural Properties of unreinforced and reinforced Plastics and Electrical Insulating Materials.
D-1248 Specifications for Polyethylene Plastics Molding and Extrusion Materials.
D-1505 Test Methods for Density of Plastics by Density Gradient Technique.
D-1603 Test Method for Carbon Black in Olefin Plastics.
D-1693 Test Methods for Environmental Stress Cracking Ethylene Plastics.
D-2774 Standard Recommended Practice for Underground Installation of Thermoplastic Pipe
D-3015 Standard Practice for Microscopical Examination of Pigment Dispersion in Plastic Compounds.
D-3035 Standard Specification for Polyethylene (PE) Plastic Pipe (SDRPR) Based on Controlled Outside Diameter.
D-3261 Standard Specifications for Butt Heat Fusion
Polyethylene (PE) Plastic Fittings for Polyethylene (PE) Plastic Pipe and Tubing.
D-3350 Specifications for Polyethylene Plastic Pipe and Fittings Materials.

1.3 QUALITY ASSURANCE

A. All Work shall be done to the satisfaction of the representative of the Geotechnical Consultant and shall meet the approval of the City Engineer.

B. Class of pipe requirements shown or called for on the plans shall be the minimum acceptable.

C. Submit manufacturer's data on the pipe material, fittings and service material.

D. The City Engineer may require manufacturer's certificates showing conformance with this specification with any shipment of materials to the job site.

1.4 JOB CONDITIONS

A. Note and conform with conditions and requirements indicated and specified under Section 02202 of these Specifications.

B. Contractor shall conduct operations and schedule cleanup in a manner to cause the least possible obstruction and inconvenience to traffic, pedestrians and to adjacent property owners or tenants.

PART 2 - PRODUCTS

2.1 PIPE MATERIALS

A. The polyethylene containment pipe shall be Plexco Polyethylene, or equal, conforming to ASTM D-1248 with a PE 3408 designation. The size of pipe, SDR and pressure rating shall be as designated on the plans.

B. The Contractor shall install pressure-sensitive tape noting the intended use for the inner carrier pipe. Adhesive-backed Pipe Labeling Tape shall be PVC Plastic tape manufactured specifically for direct placement onto pipe, cable or conduit for warning and identification. Tape shall be a minimum of 2.2 mils, an adhesive strength of 26 psi, and with tensile strength of 32 lb. per inch of width. Tape shall be of the type provided in rolls, color coded for the utility involved with warning and identification imprinted in bold letters continuously and repeatedly over entire tape length. Code and letter coloring shall be permanent, unaffected by moisture or other substances contained in trench material.

C. All pipe lengths shall be butt fused by means of a heat fusion process in accordance with ASTM D-3261.

D. All fittings shall be of the same material as the mainpipe and shall be joined to the main pipe by means of a heat fusion process in accordance with ASTM D- 3261.

E. The polyethylene containment pipe shall be supplied with “spider” supports sized with spacing as recommended by the pipe manufacturer for support of the carrier pipe.

2.2 LEAK DETECTION VAULTS

A. Leak detection vaults shall be precast reinforced concrete with poured in place reinforced concrete bottoms of the form and dimensions shown and detailed on the plans and shall conform to the requirements of ASTM Designation C478. Concrete used for leak detection vaults, bases and thrust blocks shall be Class “A” shall conform to Section 02550 of these Specifications.

B. Containment pipe connections to leak detection vaults shall be PE fusion welded flanged connections with rubber gaskets and 316 SS anchor bolts and nuts.

C. Frames and covers for leak detection vaults shall be gray iron castings of the form and dimensions shown and detailed on the plans and shall conform to the requirements of ASTM Designation A48 for Class 30B castings. Frames and covers shall be match marked in sets which have been machined after fabrication to provide a firm and continuous seat. All castings shall be thoroughly cleaned and coated with commercial quality asphaltic varnish prior to delivery.

D. Reinforcement for leak detection vaults and bases shall be deformed steel bars conforming to Section 02550 of these Specifications.

E. All exposed reinforcing bars required for thrust blocks and anchors shall be fusion epoxy coated conforming to Section 02661 of these Specifications, or stainless steel with equivalent load carrying capabilities as specified for deformed steel bars.

F. Mortar for precast leak detection and cone section joints shall consist of one (1) part Portland cement conforming to the requirements of Section 02550 of these Specifications, with two (2) parts of mortar sand by volume. Sand shall be well graded and of such size that all will pass a No. 8 sieve. Mortar materials shall be mixed to a consistency suitable for making joints on concrete pipe and all mortar shall be used within thirty (30) minutes after mixing water has been added. Admixtures shall not be added to mortar without the prior approval.

2.3 PIPE BEDDING AND BACKFILL MATERIAL

A. Shall conform to Section 02202 of these Specifications.

PART 3 - EXECUTION

3.1 TRENCHING, BACKFILL AND SHORING

A. Shall conform to Section 02202 of these Specifications.

3.2 CONTAINMENT PIPE INSTALLATION

A. Installation: Pipe and appurtenances shall be installed in accordance with the best practice, and in conformance with the applicable requirements of the manufacturer's handbooks. All pipes shall be laid on a bed prepared by handwork, dug true to line and grade, to furnish a true and firm bearing for the pipe throughout its entire length.

B. Joints between plain ends of polyethylene pipe shall be made by butt fusion when possible. The pipe manufacturer's fusion procedures shall be followed at all times as well as the recommendations of the Fusion Machine Manufacturer. The wall thickness of the adjoining pipes shall have the same DR at the point of fusion.

C. On each day butt fusions are to be made, the first fusion of the day shall be a trial fusion. The trial fusion shall be allowed to cool completely, then fusion test straps shall be cut out. The test strap shall be 12-inches or 30 times the wall thickness in length (minimum) an 1-inch or 1.5 times the wall thickness in width (minimum). Bend the test strap until the ends of the strap touch. If the fusion fails at the joint, a new trial fusion shall be made, cooled completely and tested. Butt fusion of pipe to be installed shall not commence until a trial fusion has passed the bent strap test.

D. Socket fusions shall be tested by a bent strap test as described by the pipe manufacturer. The pipe manufacturer shall provide visual guidelines for inspecting the butt, saddle and socket fusion joints.

E. Handling: Pipe shall be carefully handled during hauling, unloading, and placing operations, so as to avoid breakage or damage. Strap-type slings shall be used for lifting and placing; no chains or hooks will be permitted. Broken or damaged pipe or appurtenances will be rejected, and shall thereupon be removed from the work and replaced.

F. Alignment: All pipe shall be accurately laid in conformity with the prescribed lines and grades as established by the City Engineer. Each length shall be jointed to the preceding section as specified, and after said jointing has been completed, there shall be no movement of the pipe in subsequent operations.

G. Cleaning: Before each new length of pipe is placed, the interior of the preceding pipe shall be carefully cleaned of all dirt and debris. When pipe laying is not in progress, all open pipe ends shall be satisfactorily closed with watertight plugs.

H. Bearing: Pipe in the trench shall have continuous uniform bearing along its bottom, except at bell holes. Before lowering pipe into the trench, the Contractor shall remove all stakes, debris, loose rock and other hard material from the bottom of the trench.

I. Positioning: After the final positioning, pipe shall be held in place in the trench with backfill material placed equally on both sides of the pipe at as many locations as required to hold the pipe section in place. After joints are completed, the backfill material shall be redistributed and compacted as herein required.

J. Closure: At the end of each day and when work is not in progress, all open ends of pipe installed in the line shall be satisfactorily closed with watertight plugs.

3.3 CONNECTIONS

A. Unless separately listed on the bid schedule, Contractor shall make all required connections to existing facilities and improvements at no additional cost, and compensation for such work shall be deemed as included in the price bid for pipe installation.

3.4 STRUCTURES

A. Structures and appurtenances shall be installed at the location and to the lines and dimensions shown on the plans and detail drawings, and as established by the City Engineer. Structures shall be installed in conformance with the applicable requirements of Section 71-1.07 of the State Standard Specifications. Precast structures shall be accurately assembled with full mortar bed joints.

B. Frames for leak detection vaults in paved areas shall be accurately placed flush with and in the plane of the finish pavement. Tops of structures in unpaved areas shall be constructed to the grades shown or called for on the plans and established by the City Engineer. Leak detection vault frames in new roadway subgrade shall be brought to finish pavement plane and grade immediately after paving operations. All leak detection vault frames in paved areas shall be secured by means of concrete frame anchor slabs as shown and detailed on the plans and detail drawings.

3.5 CLEANUP

A. Upon completion of containment pipe construction operations, all lines, vaults, and other structures shall be thoroughly cleaned of dirt, rubbish, debris and obstructions of any kind to the satisfaction of the City Engineer, and the entire work site shall be cleaned of all waste, rubbish, and construction debris of any nature.

* * *

SECTION 02720

STORM DRAINAGE

PART 1 - GENERAL

1.1 WORK INCLUDED

A. Trenching and other excavation.

B. Ground water control.

C. Pipe bedding.

D. Installation of storm drains and appurtenances.

E. Installation of underdrains and appurtenances.

F. Backfill and compaction of backfill.

G. Dust alleviation and control.

H. Cleanup and restoration of surface in improved areas.

I. Supplying all labor, materials, equipment and apparatus not specifically mentioned herein or noted on the plans, but which are incidental and necessary to complete the work specified.

1.2 APPLICABLE PUBLICATIONS

A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text only by the general designation.

B. American Society for Testing and Materials (ASTM) Publications:

A - 34	Structural Steel.
A - 48	Gray Iron Castings.
A - 123	Zinc Coatings, Rolled, Pressed Forged Mat.
A - 386	Zinc Coating (Hot-Dip) on Assembled Steel Products.
C - 76	Reinforced Concrete Culvert.
C - 443	Joints for Circular Concrete Sewer and Culvert Pipe, using Rubber Gaskets.
C - 478	Precast Reinforced Concrete Manhole Sections.
C - 497	Method of Testing Concrete Pipe, Sections, or Tile.
D – 1784	Rigid Poly Vinyl Chloride (PVC) Compounds and Chlorinated Poly Vinyl Chloride Compounds
D - 1785	Pipe, Poly Vinyl Chloride (PVC) Schedules 40, 80 and 120.

D - 2564 Solvent Cements for Poly Vinyl Chloride (PVC) Plastic Pipe and Fittings.

D - 3034 PVC Sewer Pipe and Fittings

F - 477 Elastomeric Seals (Gaskets) for joining Plastic Pipe.

F – 679 Standard Specifications for Poly Vinyl Chloride large Diameter Plastic gravity sewer pipe and fittings

1.3 QUALITY ASSURANCE

A. Submit manufacturer's data on pipe, drainage structure and castings to be used.

B. The Engineer may require manufacturer's or supplier's certificates showing conformance with this specification to be delivered with each shipment of material delivered to the job site.

C. D-Load or class of pipe requirements shown or called for on the plans shall be the minimum acceptable.

D. All pipes shall bear the manufacturer's label for the type, specification, and classification of the pipe.

E. All storm drains shall be subject to passing a ball test.

1.4 JOB CONDITIONS

A. Note and conform to conditions and requirements indicated and specified under Section 02202 of the Specifications.

PART 2 - PRODUCTS

2.1 REINFORCED CONCRETE PIPE

A. Pipe 12 inches and larger shall be reinforced concrete, bell and spigot-type pipe, conforming to the requirements of ASTM Designation C76 except that all pipe shall have been manufactured using Portland Cement Concrete conforming to the requirements of Section 02550 of these Specifications.

B. Pipe strength requirements shall be designated in terms of D-load as shown or called for on the plans. D-load as used herein is defined as the maximum load the pipe will sustain per foot of length per foot of internal diameter under the standard three-edge bearing test without the appearance of any crack one one-hundredth (0.01) inch in width exceeding twelve (12) inches in length when tested in accordance with the procedure set forth in ASTM Designation C497.

C. Pipe wall thickness and bell and spigot mating surfaces shall be the same for each size and class or D-load of pipe delivered to the job site. The concrete cover over any reinforcement shall not be less than 1” for 12” RCP and 1-1/2” for 18” RCP.

D. Pipe shall be cured by water curing, steam curing, or a combination of both as required to produce the D-load strengths shown, noted or called for on the plans.

E. All reinforced concrete pipe shall have rubber gasket joints that are self- centering and so designed that after the joint is made up, the rubber gasket shall not be required to support the weight of the pipe. Spigot grooves shall be provided in all joints, and the joint and gasket shall conform to the requirements of ASTM Designation C443. All joints shall be watertight.

F. Pipe lengths shall not exceed twelve (12) feet for all pipe except that short lengths of pipe (two (2) feet nominal) shall be furnished and installed at all connections to structures and appurtenances.

G. Each section of pipe shall be clearly and legibly marked with waterproof paint to show the date of manufacture, the D-load classification of the pipe, and the type of cement used in the manufacture of the pipe.

2.2 POLY VINYL CHLORIDE PIPE

A. PVC pipe for minor storm drains less than twelve (12) inches in diameter shall conform to the requirements of ASTM 3034 or ASTM F-679 and shall have a DR rating of 26. All pipe and fittings shall be made of PVC plastic having a minimum cell classification of 12454-B or 13364-B as defined in ASTM D-1784. Pipe barrel shall have the words "STORM DRAIN" marked along the longitudinal axis of the outside in 1-5/8" high block letters with permanent ink. The words shall be repeated at 2-foot spacing along the pipe length.

B. The Contractor may substitute pressure-sensitive tape in lieu of stenciling. Adhesive-backed Pipe Labeling Tape shall be PVC Plastic tape manufactured specifically for direct placement onto pipe, cable or conduit for warning and identification. Tape shall be a minimum of 2.2 mils, an adhesive strength of 26 psi, and with tensile strength of 32 lb. per inch of width. Tape shall be of the type provided in rolls, color coded for the utility involved with warning and identification imprinted in bold letters continuously and repeatedly over entire tape length. Code and letter coloring shall be permanent, unaffected by moisture or other substances contained in trench material.

C. Couplings and fittings for use with PVC non-pressure pipe shall be of the same materials and in compliance with the requirements specified for the pipe. Couplings and fittings shall be equipped with rubber rings which fit into individual grooves formed in the inner wall to the requirement of ASTM Designation F-477.

2.3 PVC UNDERDRAINS

A. PVC underdrains shall consist of four (4) inch Schedule 40 perforated Poly Vinyl chloride (PVC) pipe conforming to the requirements of ASTM Designation D1785. B. Joints and fittings for PVC underdrains shall conform to the requirements of ASTM Designation D1785.

B. Solvent cement for joining PVC underdrain pipe, couplings and fittings shall conform to the requirements of ASTM Designation D2564.

C. Permeable material bedding and cover for subsurface drains shall be as specified in Section 02202 of these Specifications.

D. Filter Fabric for underdrains shall conform to Section 88 of the Standard Specifications.

2.4 STORM DRAIN MANHOLES

A. Barrel and cone sections for storm drain manholes shall be precast reinforced concrete of the form and dimensions shown and detailed on the plans and shall conform to the requirements of ASTM Designation C478. Concrete used for manhole barrel and cone sections shall conform to the requirements of Section 02550 of these Specifications.

B. Frames and covers for manholes shall be gray iron castings of the form and dimensions shown and detailed on the plans and shall conform to the requirements of ASTM Designation A48 for Class 30B castings. Frames and covers shall be match marked in sets which have been machined after fabrication to provide a firm and continuous seat. Each cover shall have cast into it the raised letters "STORM DRAIN". All castings shall be thoroughly cleaned and coated with commercial quality asphaltic varnish prior to delivery.

C. Steps for manholes and other storm structures shall be polypropylene to the form and dimensions shown and detailed on the plans.

D. Concrete for manhole bases shall be Class "A" conforming to the requirements of Section 02550 of these Specifications.

E. Reinforcement for manhole bases shall be deformed steel bars conforming to Section 02550 of these Specifications. Size and shape of reinforcement shall conform to the details shown on the plans.

F. Mortar for precast manhole section joints shall consist of one (1) part Portland Cement conforming to the requirements of Section 02550 of these Specifications, with two (2) parts of sand by volume. Sand shall be well graded and of such size that all will pass a No. 8 sieve.

G. Concrete for manhole frame anchor slabs shall be Class "A" conforming to the requirements of Section 02550 of these Specifications.

2.5 CONCRETE CURB INLETS

A. Concrete curb inlets for storm drains shall be cast in place, reinforced concrete of the form and dimensions shown and detailed on the plans.

B. Insert form for the curb inlet and other parts shall be as manufactured by Santa Rosa Cast Products, or approved equal. Concrete used in the construction of concrete curb inlets shall conform to the requirements for Class "A" concrete set forth in Section 02550 of these Specifications. Forming, placing and finishing shall conform to Section 02550 of these Specifications.

C. Reinforcement used in the construction of precast curb inlets shall be deformed steel bars conforming to Section 02550 of these Specifications.

D. Miscellaneous steel shapes used in construction of concrete curb inlets shall be structural quality carbon steel conforming to the requirements of ASTM

E. Designation A36 and shall be hot-dip galvanized after fabrication in conformance with the requirements of ASTM Designation A123.

F. Steps for curb inlets, where required, shall be polypropylene to the form and dimensions shown and detailed on the plans.

2.6 CAST-IN-PLACE DRAINAGE STRUCTURES

A. All concrete structures are to be cast in place except where specifically noted on the plans and specifications.

B. Concrete for cast-in-place drainage structures shall be Class "A" conforming to the requirements of Section 02550 of these Specifications.

C. Forming, placing and finishing concrete, and reinforcement for cast-in-place drainage structures shall conform to Section 02550.

D. Steel for frames and grates or covers for cast-in-place drainage structures shall be structural steel conforming to the requirements of ASTM Designation A36. Frames and grates or covers shall be fabricated to the form and dimensions shown and detailed on the plans and shall be hot-dip galvanized after complete fabrication in conformance with the requirements of ASTM Designation A386. Frames and grates or covers shall be match marked in sets which have been so constructed as to provide a firm and continuous seat.

E. Welding for frames and grates shall conform to the requirements of the American Welding Society for Arc and Gas Welding in Building Construction.

2.7 PIPE BEDDING AND COVER MATERIAL

A. Shall be as specified in Section 02202 of these Specifications.

PART 3 - EXECUTION

3.1 TRENCHING, BACKFILLING AND SHORING

A. Shall conform to Section 02202 of these Specifications.

3.2 PIPE INSTALLATION

A. Installation: Storm drain pipe, underdrains and appurtenances shall be installed in accordance with the best practice, and in conformance with the plans and these Specifications.

B. Handling: Pipe shall be carefully handled during hauling, unloading, and placing operations, so as to avoid breakage or damage. Strap-type slings shall be used for lifting

and placing; no chains or hooks will be permitted. Broken or damaged pipe including chipped bells of spigots, will be rejected, and shall be removed from the work site.

C. Alignment: All pipe shall be accurately laid in conformity with the prescribed lines and grades as established by the Engineer. Each length shall be joined to the preceding section as specified, and after said jointing has been completed, there shall be no movement of the pipe in subsequent operations.

D. Pipe Deflections: The laying of pipe on curved alignment will be permitted only when necessary to conform with the alignment shown or called for on the plans. Joint deflections called for on the plans shall be permitted up to one half of the deflection recommended by the pipe manufacturer.

E. Cleaning**:** Before each new length of pipe is placed, the interior of the preceding pipe shall be carefully cleaned of all dirt and debris. When pipe laying is not in progress, all open pipe ends shall be closed with plugs in a satisfactory manner to the Engineer.

F. Bearing**:** Pipe in the trench shall have continuous uniform bearing along its bottom, except all bell holes. Before lowering pipe into the trench, the Contractor shall remove all stakes, debris, loose rock and other hard material from the bottom of the trench.

G. Positioning: After the final positioning, pipe shall be held in place in the trench with cover materials placed equally on both sides of the pipe at as many locations as required to hold the pipe section in place. Position plastic pipe with "STORM DRAIN" markings facing up. After joints are completed, the cover material shall be redistributed and compacted as herein required.

H. Closure: At the end of each day and when work is not in progress, the open ends of pipe installed in the line shall be closed with plugs and openings for appurtenances shall be suitably covered.

3.3 CONNECTIONS

A. Unless separately listed on the bid schedule, make all required connections to existing facilities and improvements at no additional cost, and compensation for such work shall be deemed as included in the price bid for pipe installation.

B. All connections to manholes shall be constructed with concrete channels directed toward outlet pipe as shown and detailed on the plans.

C. Break-out holes in manholes for connecting new pipe shall be grouted all around to prevent ground water infiltration. Pipes shall be cut off flush with the inside surface of the manhole. Use PVC manhole adapters in break-out holes in manholes for connecting new PVC pipe and grout all around to prevent ground water infiltration. Pipes shall be cut off flush with the inside surface of the manhole.

D. A 2-foot nominal length of pipe shall be used when entering and leaving all manholes and structures.

3.4 STRUCTURES

A. Structures and appurtenances shall be installed at the location and to the lines and dimensions shown on the plans and detail drawings.

B. Structures shall be constructed and/or installed in conformance with the applicable requirements of Section 51 of the State Standard Specifications. Unless otherwise noted on the plans or detail drawings, all exposed surfaces of poured in place structures and appurtenances shall have a Class 1 surface finish.

C. Frames for manholes and tops of catch basins, inlets and other structures in paved areas shall be accurately placed flush with and in the plane of the finish pavement. All manhole frames in paved area shall be secured by means of concrete anchor slabs as shown and detailed on the plans and detail drawings.

D. All joints and pipe openings on manhole sections, risers, and grade adjustment rings shall be grouted smooth and flush with the interior of the structure in a workmanlike manner.

3.5 STORM DRAIN PLUGS & CLEANING

A. Where called for on the plans or directed, plugs shall be placed in open ends of storm drains. Plugs shall consist of a brick and mortar wall not less than eight (8) inches in thickness constructed in such a manner as to ensure a watertight seal. Mortar for plugs shall conform to the requirements of paragraph 2.04F hereof.

B. Storm drain pipe and structures shall be cleaned of all dirt, debris, and form work.

C. Pipes shall be balled with an approved rubber ball to insure cleanliness prior to acceptance.

3.6 UNDERDRAINS

A. Trenches for underdrains shall be excavated in the location shown.

B. Place filter fabric in the trench to protect the permeable material and pipe prior to backfilling.

C. The pipe installed and the trench backfilled with permeable material according to the dimensions and details shown on the plans.

D. Perforated pipe, fabric, and permeable material shall be installed in accordance with Section 68-1.03 of the Standard Specifications.

* * *

SECTION 02730

SANITARY SEWERS

PART 1 – GENERAL

1.1 WORK INCLUDED

A. Trenching and other excavation.

B. Ground water control.

C. Pipe bedding.

D. Installation of sanitary sewers and appurtenances.

E. Backfill and compaction of backfill.

F. Infiltration and leakage testing for gravity sewers.

G. Hydrostatic and leakage testing for force mains.

H. Dust alleviation and control.

I. Cleanup and restoration of surface in improved areas.

J. Supplying all labor, materials, equipment and apparatus not specifically mentioned herewith or noted on the plans, but which are incidental and necessary to complete the work specified.

1.2 APPLICABLE PUBLICATIONS

A. The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the general designation only.

B. American Society for Testing and Materials (ASTM) Publications:

A - 48	Gray Iron Castings.
A - 276	Standard Specifications for Stainless and Heat-Resisting Steel Bars and Shapes.
C - 478	Precast Reinforced Concrete Manhole Sections.
D – 1784	Rigid Poly (Vinyl Chloride) (PVC) Compounds and Chlorinated Poly (Vinyl Chloride) (CPVC) Compounds.
D - 3034	Type PSM Poly (Vinylchloride) (PVC) Sewer Pipe and Fittings.
F - 477	Elastomeric Seals (Gaskets) for joining Plastic Pipe.

F - 679 Standard Specification for Poly (Vinyl Chloride) (PVC) large Diameter Plastic Gravity Sewer Pipe and fittings.

C. American Water Works Association (AWWA) Publications:

C - 110 Gray-Iron and Ductile-Iron Fittings 3" through 48" for Water and other Liquids.

C - 111 Rubber Gasket Joints for Ductile-Iron and Gray Iron Pressure Pipe and Fittings.

C - 900 Polyvinyl Chloride (PVC) Pressure Pipe, 4" through 12", for Water.

1.3 QUALITY ASSURANCE

A. Sanitary sewer gravity mains shall be subject to a ball test, infiltration and leakage tests. Sanitary sewer force mains shall be subject to air testing, and hydrostatic and leakage tests.

B. Class of pipe requirements shown or called for on the plans shall be the minimum acceptable.

C. Submit manufacturer's data on the pipe material, fittings and service material.

D. Construction practices for PVC pipe shall comply with Uni-Bell's "Handbook of PVC Pipe".

E. The Engineer may require manufacturer's certificates showing conformance with this specification with any shipment of materials to the job site.

1.4 JOB CONDITIONS

A. Note and conform with conditions and requirements indicated and specified under Section 02202 of these Specifications.

B. Contractor shall conduct operations and schedule cleanup in a manner to cause the least possible obstruction and inconvenience to traffic, pedestrians and to adjacent property owners or tenants.

PART 2 - PRODUCTS

2.1 PIPE MATERIALS

A. All PVC pipe and fittings for sanitary sewers and laterals shall conform to the requirements of ASTM D-3034 or ASTM F – 679 with SDR rating of 26. All the pipe and fittings shall be made of PVC plastic having a minimum cell classification of 12454-B as defined in specification ASTM D – 1784. The size of pipe shall be as designated on the plans and the size indicated shall be the internal clear diameter of the pipe. Individual pipe lengths shall not exceed twenty (20) feet in length. All pipe shall be stenciled with

the words "SANITARY SEWER" in 1-5/8" high block lettering with permanent ink. The words shall be repeated at 2-foot spacing along the pipe length.

B. The Contractor may substitute pressure-sensitive tape in lieu of stenciling. Adhesive-backed Pipe Labeling Tape shall be PVC Plastic tape manufactured specifically for direct placement onto pipe, cable or conduit for warning and identification. Tape shall be a minimum of 2.2 mils, an adhesive strength of 26 psi, and with tensile strength of 32 lb. per inch of width. Tape shall be of the type provided in rolls, color coded for the utility involved with warning and identification imprinted in bold letters continuously and repeatedly over entire tape length. Code and letter coloring shall be permanent, unaffected by moisture or other substances contained in trench material.

C. Joints shall be with either a factory provided, rubber gasketed coupling, or integral bell; couplings or bells shall have a solid rubber ring conforming to ASTM F-477, factory assembled and locked into place to prevent displacement during installation, with continuous stainless steel shear rings supplied by Mission Rubber Company, or approved equal.

D. Wye branches at the cleanout and the cleanout riser shall be PVC conforming to ASTM D-3034, DR 26.

2.2 ADDITIONAL REQUIREMENTS FOR FORCE MAINS

A. Pipe for sanitary sewer force mains shall conform to the requirements of AWWA C-900, Class 150, DR 18 pipe.

B. Fittings for PVC sanitary sewer force mains shall be ductile iron castings conforming to the requirements of AWWA Standard C153 for two hundred (250) psi working pressure. Fittings shall be furnished with either push-on joints for use with pressure pipe or flanged joints as designated on the plans. Both push- on and flanged joints shall conform to the requirements of AWWA Standard C111 for cast-iron pressure pipe.

C. Bolts, nuts, and washers for flanged fittings shall be stainless steel, ASTM A- 276, Type 316.

2.3 SANITARY SEWER MANHOLES

A. Barrel and cone sections for sanitary sewer manholes shall be precast reinforced concrete of the form and dimensions shown and detailed on the plans and shall conform to the requirements of ASTM Designation C478. Concrete used for manhole barrel and cone sections shall conform to Section 02550 of these Specifications.

B. Frames and covers for manholes shall be gray iron castings of the form and dimensions shown and detailed on the plans and shall conform to the requirements of ASTM Designation A48 for Class 30B castings Frames and covers shall be match marked in sets which have been machined after fabrication to provide a firm and continuous seat. Each cover shall have cast into it the raised letters "SANITARY SEWER." All castings shall be thoroughly cleaned and coated with commercial quality asphaltic varnish prior to delivery.

C. Steps for manholes shall be polypropylene conforming to the form and dimensions shown and detailed on the plans.

D. Concrete for manhole and cleanout bases shall be Class "A" conforming to the requirements of Section 02550 of these Specifications.

E. Reinforcement for manhole and cleanout bases shall be deformed steel bars conforming to Section 02550 of these Specifications.

F. Mortar for precast barrel and cone section joints shall consist of one (1) art Portland cement conforming to the requirements of Section 02550 of these Specifications, with two (2) parts of mortar sand by volume. Sand shall be well graded and of such size that all will pass a No. 8 sieve. Mortar materials shall be mixed to a consistency suitable for making joints on concrete pipe and all mortar shall be used within thirty (30) minutes after mixing water has been added. Admixtures shall not be added to mortar without the prior approval.

G. PVC manhole adapters shall be as shown on the drawings.

2.4 SANITARY SEWER CLEANOUTS

A. Install sanitary sewer cleanouts per project details and specifications

B. Wye branches and risers for sanitary sewer cleanouts shall conform to the City's Standard Details.

C. Cleanout box shall be Christy concrete type F08 Curb Valve Box with F08R lid marked “SEWER” when installed in location not subject to vehicular loading.

D. When installed in location subject to vehicular loading, cleanout box shall be Christy concrete type G05T Traffic Valve Box with G05CT Traffic Lid marked “SEWER” and shall be provided with 8” concrete base

2.5 SANITARY SEWER LATERALS

A. Contractor shall verify location and diameter of all active laterals which is paid under the appropriate bid item.

B. Sanitary sewer lateral shall be installed to conform to City’s Standard Details.

C. Sanitary sewer lateral shall be installed perpendicular to the main sewer line or as directed in the field by City Inspector. Tracer wire shall be installed in lateral pipeline and conform to City Standard details.

D. See Paragraph 3.05 of this Specification Section for more details regarding lateral installation.

2.6 CONCRETE FOR THRUST BLOCKING FOR FORCE MAINS

A. Reinforcement for concrete thrust blocks shall conform to Section 02550 of these Specifications.

B. Concrete for thrust blocks shall be Portland cement concrete conforming to the applicable requirements of Section 02550 of these Specifications.

C. All exposed reinforcing bars required for thrust blocks and anchors shall be fusion epoxy coated conforming to Section 02661 of these Specifications, or stainless steel with equivalent load carrying capabilities as specified for deformed steel bars.

2.7 PIPE BEDDING AND COVER MATERIAL

A. Shall conform to Section 02202 of these Specifications.

PART 3 - EXECUTION

3.1 TRENCHING, BACKFILL AND SHORING

A. Shall conform to Section 02202 of these Specifications.

3.2 PIPE INSTALLATION

A. Installation: Pipe and appurtenances shall be installed in accordance with the best practice, and in conformance with the applicable requirements of the manufacturer's handbooks. Pipe laying shall start at the low end of each section and proceed upgrade. All bell and spigot pipe shall be laid with the bell end upgrade. All pipes shall be laid on a bed prepared by handwork, dug true to line and grade, to furnish a true and firm bearing for the pipe throughout its entire length. Adjustment of pipes to the line and grade shall be made by scraping away or filling in and tamping material under the body of the pipe throughout its entire length and not by blocking or wedging. Unless otherwise indicated or directed by the Engineer, pipe shall be laid continuously through manhole locations and any connections therein made by means of appropriate fittings to provide a smooth and continuous channel. Bell holes shall be provided at the ends of each pipe length of sufficient size to permit making up the particular type of joint being used. Each length of pipe shall be rotated so that the stenciled or taped words "SANITARY SEWER" will be located on the top of the pipe.

B. Handling: Pipe shall be carefully handled during hauling, unloading, and placing operations, so as to avoid breakage or damage. Strap-type slings shall be used for lifting and placing; no chains or hooks will be permitted. Broken or damaged pipe or appurtenances will be rejected, and shall thereupon be removed from the work and replaced.

C. Alignment: All pipe shall be accurately laid in conformity with the prescribed lines and grades as established by the Engineer. Each length shall be jointed to the preceding section as specified, and after said jointing has been completed, there shall be no movement of the pipe in subsequent operations.

D. Pipe Deflections: The laying of pipe on curved alignment by means of un- symmetrical closure of joints, will be permitted only when necessary to conform to the alignment shown on the plans. Grade breaks indicated on the plans shall be accomplished by un-symmetrical closure of pipe and NOT by means of fittings. Joint deflections called for on

the plans shall be permitted up to one-half of the deflections recommended by the pipe manufacturer.

E. Cleaning**:** Before each new length of pipe is placed, the interior of the preceding pipe shall be carefully cleaned of all dirt and debris. When pipe laying is not in progress, all open pipe ends shall be satisfactorily closed with watertight plugs.

F. Bearing: Pipe in the trench shall have continuous uniform bearing along its bottom, except at bell holes. Before lowering pipe into the trench, the Contractor shall remove all stakes, debris, loose rock and other hard material from the bottom of the trench.

G. Positioning: After the final positioning, pipe shall be held in place in the trench with backfill material placed equally on both sides of the pipe at as many locations as required to hold the pipe section in place. After joints are completed, the backfill material shall be redistributed and compacted as herein required.

H. Closure: At the end of each day and when work is not in progress, all open ends of pipe installed in the line shall be satisfactorily closed with watertight plugs.

I. Thrust Blocking for Force Mains: Concrete thrust blocks of the form and dimensions shown or noted on the plans shall be provided at all changes in horizontal and vertical alignments and at such other points as may be called for on the plans. Thrust blocks shall be installed in strict conformance with the details shown or noted on the plans.

3.3 CONNECTIONS

A. Unless separately listed on the bid schedule, Contractor shall make all required connections to existing facilities and improvements at no additional cost, and compensation for such work shall be deemed as included in the price bid for pipe installation.

B. All connections in manholes shall be constructed with concrete channels directed toward the outlet pipe as shown and detailed on the plans.

C. Use PVC manhole adapters in break-out holes in manholes for connecting new PVC pipe and grout all around to prevent ground water infiltration. Pipes shall be cut off flush with the inside surface of the manhole.

D. Use 2-foot nominal lengths of pipe when entering and leaving manholes and structures.

3.4 STRUCTURES

A. Structures and appurtenances shall be installed at the location and to the lines and dimensions shown on the plans and detail drawings, and as established by the Engineer. Structures shall be installed in conformance with the applicable requirements of Section 71-1.07 of the State Standard Specifications. Precast structures shall be accurately assembled with full mortar bed joints.

B. Frames for manholes in paved areas shall be accurately placed flush with and in the plane of the finish pavement. Tops of structures in unpaved areas shall be constructed to the grades shown or called for on the plans and established by the Engineer. Manhole

frames in new roadway subgrade shall be brought to finish pavement plane and grade immediately after paving operations. All manhole frames in paved areas shall be secured by means of concrete frame anchor slabs as shown and detailed on the plans and detail drawings.

3.5 LATERALS

A. Unless otherwise noted on the plans, all sanitary sewer laterals shall terminate in a cleanout constructed to the form and dimensions shown and detailed on the plans and detail drawings. "Lateral sewer" means the portion of a sewer located within a public street connecting a building sewer to the main sewer, the ownership, and responsibility for all maintenance, repairs and replacement of which lies with the owner of the property it serves. (City Code Chapter 13.12.110).

3.6 CLEANING SANITARY SEWERS

A. Contractor shall flush and clean all sewer mains by means of pneumatic, sewer cleaning balls. The balls shall be of the appropriate size to fit the sewer pipe being cleaned. "Sewer Balling" operations shall be conducted by experienced personnel under the observation of the Engineer. The ball shall be introduced at the uppermost manhole and passed from manhole to manhole by means of a line with sufficient head of water to carry the ball along. The movement of the ball shall be controlled by a rope; care shall be exercised not to feed the ball too rapidly in order that all debris can be removed at each manhole.

B. Each section of the sewer line shall be thoroughly cleaned before proceeding to the next section. Where sewer balls will not pass, flexible sewer rods with approved spears or cutters may be used to clear the obstruction. Where obstructions cannot be cleared by sewer rodding, the obstructions shall be removed by excavation at the Contractor's expense. The Contractor shall remove all debris from sewer lines using approved methods.

C. Installation cost shall include cost for water for sanitary sewer flushing and cleaning operations.

3.7 TESTING SANITARY SEWERS

A. Sanitary sewer systems including laterals, and sanitary force mains shall be tested for tightness after completion of all backfilling and prior to request for final inspection. Contractor shall notify the Engineer at least two (2) working days in advance of proposed testing dates. Tests of gravity sewers shall be made from end or manhole to manhole unless grades are flat enough to permit testing two or more sections at one time. Sections which fail to pass the tests shall be repaired or replaced, and the section retested until it falls within specified allowances.

B. All water for sanitary sewer testing shall be provided and the tests performed by the Contractor in conformance with the following requirements:

1. Mandrell Test

    a. Pipes shall be tested for deflection by passing a mandrel through the pipe without

obstruction.

b. The size of the mandrel shall be set at 92.5% of the base inside diameter of the pipe, as defined in ASTM 3034.

2. Water Leakage Test

   a. Preparation for Test: The sewer line to be tested shall be plugged at the downstream manhole. All openings in the upstream manhole shall be plugged except the downstream opening for the line to be tested. All branch sewers running from wye connections on the mains shall be plugged at their upper ends if the test head would cause them to overflow. The Test section shall then be filled with water and allowed to stand for at least thirty (30) minutes before test is started.

   b. Test Procedure: The water level in the upstream manhole or test tee shall be brought to a height approximately 4 feet above the crown of the open sewer at the upper end of the test section. The hydrostatic head in the test section shall be maintained so that no point in the section is the head less than four (4) feet or greater than 18 feet. In the case of a submerged section of line, the said head limitation shall be the difference between internal and external water levels. The test shall consist of measuring the loss of water during a one (1) hour period.

   c. Allowable Leakage: The allowable leakage in one (1) hours' time based on an average hydrostatic head of 4 feet for the entire test section, shall not exceed 0.4 gallons per inch of pipe diameter for each 500 feet of pipe.

   d. Manhole Leakage: Should an initial test show excessive leakage in a section of line, it is permissible to draw off the water and test the manhole that contained water. This test shall be made by plugging all openings in the manhole, filling same with water to the same elevation as used for the initial test, and checking the loss in a one-hour period. The leakage so determined may be deducted from the total leakage in the section of pipe initially tested. If, in the opinion of the Engineer, the manhole leakage thus determined is excessive, the Contractor shall waterproof interior of the manhole by applying a coating of grout or an approved water- proofing material.

3. Force Mains

   a. Preparation for Tests: The Contractor shall provide all necessary material and equipment, and shall perform all work required in connection with the testing of the force main system, as specified herein. Hydrostatic and leakage tests shall be made only after the trenches have been backfilled sufficiently to hold the pipe firmly in position. Hydrostatic tests for sewer force mains shall be made on all sections to a hydrostatic pressure of 150 psi. Excess pressure will not be permitted. Each section of pipe to be tested shall be slowly filled with water using care to expel all air. Water shall be allowed to stand in the pipe for 24 hours before test pressure is applied.

   b. Test Procedure: The required pressure as measured at the lowest elevation, shall be applied for not less than one hour. Any leakage discovered in consequence of the pressure test shall be corrected, and the test shall be repeated until satisfactorily completed. Any defective pipe, fittings, or valves,

shall be repaired or replaced.

c. Allowable Leakage: No section of force main will be accepted until the leakage is less than 15 U.S. gallons per 24 hours per mile of pipe per inch of internal pipe diameter.

4. Air Leakage Test - The Contractor, at his option, may substitute an air pressure test in lieu of the hydrostatic test specified above for gravity sewers.

a. The procedure shall be as described in Uni-Bell B-6-90, "Recommended Practice for Low Pressure Air Testing of Installed Sewer Pipe."

b. The procedure shall be to securely plug all openings in the section of the line to be tested, and apply an air pressure of approximately four (4) psi.

c. The elapsed time observed for a pressure drop of one (1) psi shall not be less than shown on Table I of Uni-Bell B-6.

3.8 SANITARY SEWER PLUGS

A. All ends of sanitary sewers provided for future connection shall be plugged with material of the same joint characteristics as specified for the sanitary sewer main or lateral.

3.9 CLEANUP

A. Upon completion of sanitary sewer construction operations, all lines, manholes, and other structures shall be thoroughly cleaned of dirt, rubbish, debris and obstructions of any kind to the satisfaction of the Engineer, and the entire work site shall be cleaned of all waste, rubbish, and construction debris of any nature.

* * *

SECTION 02732

CLEANING AND CLOSED CIRCUIT TELEVISION (CCTV) INSPECTION OF SEWER PIPE

PART 1 - GENERAL

1.1 WORK INCLUDED

A. This section covers the initial and final cleaning, and the initial and final closed circuit TV (video) inspection of sewer pipelines. The word "clean" in this section is defined as the removal of all accumulations including sludge, dirt, sand, rocks, grease, roots, and other solid or semisolid material in the pipe.

B. Supplying all labor, materials, equipment and apparatus not specifically mentioned herewith or noted on the plans, but which are incidental and necessary to complete the work specified.

1.2 APPLICABLE PUBLICATIONS

A. The publications listed below form a part of this specification:

B. Standard Specifications for Public Works Construction latest Edition, (refer as the Green Book herein) Section 500-1.1.4 - Cleaning and Preliminary Inspection.

C. Standard Specifications for Public Works Construction latest Edition (refer as the Green Book herein) Section 500-1.1.5 - Television Inspection.

1.3 JOB CONDITIONS

A. The Contractor shall conduct operations and schedule cleanup in a manner to cause the least possible obstruction and inconvenience to traffic, pedestrians and to adjacent property owners or tenants.

1.4 SUBMITTALS

A. The Contractor shall submit a plan for bypassing sewage around the work area and facilities where sewage flows must be interrupted to carry the work. The plan shall be reviewed by the engineer and shall be acknowledged as acceptable before any work is started.

B. For each of the initial and final inspection, Contractor shall submit to an external hard drive containing all the videos, images, and inspection reports in Wincan V8 inspection software format with audio of all sewer reaches inspected. Work will not be considered complete until the following items have been received and approved by the City.

1. Initial and final video inspection shall be in digital format using Wincan Version 8 Inspection software recorded digitally to an external drive. At the beginning of

the inspection, the information of the inspection shall be displayed in the following PACP format:

a. Surveyed by
b. Street
c. Locations Code
d. Direction of inspection
e. Pipe material
f. Pipe diameter
g. Length of reach to be televised
h. Manhole number from which the camera is traveling
i. Manhole number to which the camera is traveling
j. Pipe ID
k. Inspection Time/Date

In addition, each recording shall continuously display the following information:

a. City
b. Number of the manhole from which the camera is traveling
c. Number of the manhole to which the camera is traveling
d. Direction of flow (indicated by arrow)
e. Date of recording
f. Pipe diameter
g. Pipe material
h. Footage

2. The video shall be labeled with the Contractor's name, date televised, street name, identification of the sewer reach(es) inspected, and run number. The audio portion of the CCTV inspection shall be in English and intelligible in its entirety. If the CCTV inspection are of such poor quality that the Engineer is unable to evaluate the condition of the sewer, locate sewer service connections, or verify cleaning, the Contractor shall re-televise the sanitary sewer and provide a new CCTV inspection of good quality at no cost to the City. No payment will be made for CCTV inspection that does not meet the requirements of these specifications.

PART 2 - PRODUCT - NOT APPLICABLE

PART 3 - EXECUTION

3.1 INITIAL AND FINAL CLEANING OF SEWER PIPE

A. The Contractor shall clean sewer pipe of any obstruction and debris including roots in accordance with the “Standard Specifications for Public Works Construction latest Edition,” (refer as the Green Book herein) Section 500-1.1.4 - Cleaning and Preliminary Inspection - and the following additions and added subsections.

B. Add the following to paragraph (b) of Section 500-1.1.4 of the Green Book to read:

High velocity hydrocleaning equipment shall have the following:

1. A minimum of 700 feet of high pressure hose.

2. A 1,000-gallon minimum water tank, auxiliary engines and pumps, and a hydraulically driven hose reel.

3. Equipment operating controls located above ground.

4. Minimum working pressure of 1,000 pounds per square inch at a 50 gpm rate.

C. Add the following subsections to Section 500-1.1.4 of the Green Book to read:

1. Cleaning Precautions

   During sewer cleaning operations, satisfactory precautions shall be taken in the use of cleaning equipment. When hydraulically propelled cleaning tools which depend upon water pressure to provide their cleaning force, or tools which retard the flow in the sewer line are used, precautions shall be taken to ensure that the water pressure created does not damage or cause flooding of public or private property being served by the sewer. Care shall be exercised to avoid pipe damage.

2. Root Removal

   Videotapes and TV log of existing sewers, if available, will be provided upon request for general guidance only. The Contractor is responsible for all interpretations made from these logs. The omission of noting on the Drawings of the existence of roots within a sewer line shall not relive the Contractor of the responsibility of removal of roots as part on the cleaning of the sewer at bid cost. Roots shall be removed where shown on Video Tape or revealed by the Contractor's television inspection. Special attention shall be used during the cleaning operations to assure removal of roots from the joints. Procedures may include the use of mechanical equipment such as rodding machines and bucket machines using root cutters and porcupines, and equipment such as high-velocity jet cleaners. Chemical root treatment shall not be used by the Contractor.

3. Material Removal

   All sludge, dirt, sand, rocks, grease and other solid or semisolid material resulting from the cleaning operation shall be removed at the downstream manhole of the section being cleaned. Passing material from manhole section to manhole section which could cause line stoppages, accumulations of sand in wet wells, or damage pumping equipment, shall not be permitted.

4. Material Disposal

   All solids or semisolids resulting from the cleaning operations shall be removed from the site and disposed of at a suitable sanitary landfill site as defined by the Titles 22 and 23 of the California Administrative Code. All Materials shall be removed from the site no less often than at the end of each workday. Under no circumstances will the Contractor be allowed to accumulate debris, etc, on the site of work beyond a single workday, except in totally enclosed containers and as

approved by the Engineer.

5. Sewer Flow Control

a. General

When depth of flow in the pipe upstream of the manhole section being worked is above the maximum allowable for television inspection, joint testing and/or sealing; or when necessary to accomplish the specified sewer line replacement; the flow shall be reduced to the required level by plugging or blocking of the flow, and by pumping the flow around the section being worked.

Depth of flow shall not exceed that shown below for the respective pipe sizes as measured in the manhole when performing television inspection, joint testing and/or sealing.

Maximum Depth of Flow in Inches

Pipe Sizes in Inches	**Television Inspection**	**Joint Testing/ Sealing**
6	1.20	1.50
8	1.60	2.00
10	2.00	2.50
12	3.00	3.00
15	3.75	4.50
18	4.50	5.40
21	5.25	6.30
24	6.00	7.20
27	8.10	9.45
30	9.00	10.50
33 and up	30% of Pipe Diameter	35% of Pipe Diameter

Amount of the flow allowed in sewer line shall be in accordance with the manufacturer's recommendations and as approved by the Engineer.

Plugging, Blocking, and Pumping

When sewer flow control is required, the Contractor shall furnish, install, and operate pumps, plugs, conduits, and other equipment to divert the flow of sewage around the pipeline reach in which work is to be performed. The plug shall be provided with a tag line. The pumping system shall be of sufficient capacity to handle existing flow plus additional flow that may occur during a rainstorm. If pumping is required on a 24-hour basis, engines shall be equipped in a manner to keep noise to a minimum. Standby pumps shall be provided as required. Pumping shall be done by the Contractor in such manner as will not damage public or private property of create a nuisance or health menace. The pumped sewage shall be in an enclosed hose or pipe and shall be reinserted into the

sanitary sewer system. Sewage shall not be allowed to free flow in gutters, streets or over sidewalks, etc. Nor shall any sewage be allowed to flow into the storm inlets or conduits. After the work has been completed, flow shall be restored to normal.

D. Additional Requirement for Final Cleaning of Sewer Pipe:

The Project is ready for cleaning when the following work has been completed:

a. All sewer mains and laterals are rehabilitated/installed, backfilled, and compacted.
b. All structures are in place, all channeling is complete, and pipelines are accessible from structures.
c. All other underground facilities, utility piping, and conduits are installed.
d. Placement of aggregate base has been completed.
e. Final air test has been completed.

Acceptance of the cleaning shall be based upon the subsequent video inspection of the line.

3.2 INITIAL AND FINAL CLOSED CIRCUIT TELEVISION (CCTV) INSPECTION OF SEWER LINE

A. Prior to rehabilitation of each sewer section, the Contractor shall be required to conduct a manhole to manhole Closed Circuit Television (CCTV) survey of the lines to determine the general condition of the sewer, to determine defective pipe sections for point repairs, to log the location of all house laterals and to verify location of active house laterals.

B. The Contractor will abide by the requirements of the "Standard Specifications for Public Works Construction latest Edition," (refer as the Green Book herein) Section 500-1.1.5 - Television Inspection - and the following additions and added subsections.

C. Add the following to Section 500-1.1.5 of the Green Book to read:

1. When sewer line depth of flow at the upstream manhole of the section being televised is above the maximum allowable for television inspection, the Contractor shall reduce the flow in accordance with Subsection 500 - 1.1.4 of the Sewer Line Cleaning Specification above to permit proceeding with the television inspection.

2. Television inspection shall be done one sewer section at a time. The section being inspected shall be isolated from the remainder of the sewer with upstream sewage flow by-passed. The camera shall be moved through the sewer section in either direction at a uniformly slow rate of means of power cable winches at each manhole, stopping at each defect to allow adequate evaluation

3. Should the camera get stuck in the sewer, the Contractor shall be responsible for all costs involved in extracting it. Costs related to difficulties encountered during internal television inspection are incidental to the Contract and claims, therefore, will not be considered.

D. Add the following subsections to Section 500-1.1.5 of the Green Book to read:

1. Initial CCTV Inspection

    a. The Contractor is required to clean the sewers and manholes per Section 500-1.1.4 and television inspect all proposed rehabilitative pipes shown on plans.

    b. No construction work shall be started on a particular sewer unless the Engineer has had five working days to review the inspection documentation for the sewer. The method of rehabilitation/replacement of each sewer will be re-evaluated by the Engineer on the basis of the television inspection information furnished by the Contractor and the replacement/rehabilitation method will be changed if it is determined necessary or advisable. Such changes in the method replacement/rehabilitation shall not be considered substantial changes in the character of the work.

    c. As directed by the Engineer and at locations where CCTV inspection or pipe installation work is hampered by an obstruction which cannot be removed by conventional sewer cleaning equipment or by other approved internal means, spot excavations shall be performed to expose and remove the obstruction. Spot excavations shall be performed as specified elsewhere in this contract document.

E. Additional Requirement for performing Closed Circuit Television (CCTV) inspection of sewer line.

1. Contractor shall take at least one picture of all mid-to-major defects in pipe that will be in JPEG format. Each JPEG file will be named in accordance with the line and footage. One photograph shall also be taken of each lateral connection looking up into the lateral.

2. Contractor shall setup at the upstream manhole whenever possible to video inspect with the flow. The camera will move at a uniform rate at a speed no greater than 30 feet per minute. Distance of the line will be measured and recorded from the center of manhole to the center of the next manhole. The distance will be accurate within 2 feet of every 1000 linear feet inspected. If more than one manhole reach is inspected in a single run, the footage counter shall be reset to zero at the center of all intermediate manholes. The camera shall pause for a sufficient amount of time to adequately document and provide accurate distance measurements of all defects in pipe and the connections observed in the line. The camera shall rotate and look directly at each defect and look into each connection to thoroughly document the conditions and determine if the lateral is in service. Contractor shall capture photos of any moderate and above damages or abnormal conditions.

3. The recording shall include an audio portion describing the condition of the lines with the video image. The audio portion will be sufficiently free of background noise to produce an oral report that clear and easily discernible. At the beginning of each inspection run, the audio shall identify Contractor's name, the crew member, date, time, street location, name of line, pipe size, pipe material, direction of inspection,

and the pipe numbers at the beginning and end of the reach. The audio shall note during the inspection the location and condition of the pipe defects, including all cracks, breaks, cracked or misaligned joints, root intrusion, infiltration, missing pieces of pipe, corrosion, deposits, obstructions, and any other items which reflect the condition of the sewer line. The audio shall also note the location of the connections, and whether the connection is in service. All observations shall be included on the inspection report.

4. Continuous digital recordings of the inspection view as it appears on the monitor shall be stored. A digital recording will be made of the entire inspection. The video will be recorded in MPEG 4 unless prior arrangements are made between the City and Contractor.

5. In case the camera cannot pass from upstream to downstream, a reverse setup shall be attempted. In case of this type of setup, a separate MPEG file will be stored. Inspection data shall be obtained using WinCan software. This shall include data tables, observations, pictures, and video. Contractor shall use standard observation codes consistent with PACP coding. Once all inspections are complete, Contractor shall give the City of Half Moon Bay a hard drive that details all of the captured information, and WinCan reader program that has full rights for viewing all videos, pictures, and observations.

F. Additional Requirement for Final CCTV Inspection of sewer line:

The project is ready for final video inspection when pipelines and structures have been cleaned a maximum of thirty (30) minutes before the inspection is to take place.

The following observations from television inspections shall be considered defects in the construction of new sewer pipelines and shall require correction prior to project completion:

a. Sags greater than fifteen percent (15%) of the inside pipe diameter.
b. Open or offset joints.
c. Cracked or damaged pipe.
d. Out of round pipe.
e. Joint infiltration.
f. Debris or other foreign objects.
g. Other obvious deficiencies.

G. Traffic Control requirement in performing Closed Circuit TV (CCTV) inspection.

1. CONTRACTOR shall adhere to the WATCH Manual for traffic control. All Contractor's trucks shall have an arrow board and beacons as well as a full set of cones, candle sticks, and "Men at Work" signs and tripods that shall be used to provide safety for both employees and the general public.

* * *

SECTION 02733

POINT REPAIR

PART 1 - GENERAL

1.1 WORK INCLUDED

A. Point repairs (spot repairs) are work required to prepare defective sections of existing sewer lines for rehabilitation. Excavation from the surface is required to accomplish the necessary repairs. Generally, the work will require repair of existing sags, offset joints, cracks, protruding laterals, removal and replacement of short sections of damaged pipe, and any other defects deemed necessary after the initial and/or final video inspection.

B. Flow control, if required to accomplish the repair, shall be performed as described in Section 02732, Part 3, Subsection 3.01, Paragraph C.5.

C. The CONTRACTOR shall repair the point repairs after determining that it is necessary and approved by the Engineer. The work shall include verifying the location of the point repair, locating all interfering utilities, temporary flow bypassing, excavation, shoring, dewatering, pipe repairs or replacement, backfilling, and surface restoration.

D. All point repairs discovered through subsequent investigations, and/or directed by the Engineer, shall be completed prior to rehabilitating the pipe by grouting or lining or other method of repair. The exact location of the point repairs will be determined by the Contractor and approved by the Engineer after the pipe is exposed. All work to expose and correct the defects, and the materials and methods used shall conform to the applicable specifications, including excavation and backfill, surface restorations, pipe installation, and sewer flow control.

E. All point repairs shall be visually inspected and measured by the Engineer prior to backfilling.

F. Supplying all labor, materials, equipment and apparatus not specifically mentioned herewith or noted on the plans, but which are incidental and necessary to complete the work specified.

1.2 JOB CONDITIONS

A. The Contractor shall conduct operations and schedule cleanup in a manner to cause the least possible obstruction and inconvenience to traffic, pedestrians and to adjacent property owners or tenants.

1.3 SUBMITTALS

A. The Contractor shall submit to the Engineer for approval, a detailed plan including the location, method, and lineal footage or each location of spot repairs prior to the actual work.

B. The Contractor shall submit a plan for bypassing sewage around the work area and facilities where sewage flows must be interrupted to carry the work. The plan shall be reviewed by the engineer and shall be acknowledged as acceptable before any work is started.

PART 2 - PRODUCT - NOT APPLICABLE

PART 3 - EXECUTION

3.1 Notification

A. The Contractor shall notify the Engineer not less than 48 hours in advance of the time he plans to begin repair work at a particular location within the project.

B. After the point repair is located and exposed, the Engineer will inspect the damaged pipe and confirm the required repair and methods proposed by the Contractor.

3.2 Repair Methods

A. One or a combination of the following methods could be used. Method selected from below or recommended by the Contractor, shall be subject to approval by the Engineer prior to its installation.

1. Repair Clamp: Install full circle repair clamps as recommended by the manufacturer and approved by the Engineer. All metallic hardware shall be 316 stainless steel.

2. Heat-Shrink Sleeve: Install in accordance with manufacturer's recommendations.

3. Remove and Replace Pipe and Fittings: Remove defective pipe or fittings to the nearest joint or by cutting perpendicular to the pipe axis to leave a plain end. Prepare a replacement section of like pipe material or as otherwise approved by the Engineer or shown on the drawings. Make connections using standard joints, repair clamps, couplings, or heat- shrink sleeves.

3.3 Backfill

1. Backfill, including pipe bedding, shall be placed and compacted as specified in Section 02202, "Trenching and Backfill", of this Specification.

2. Flow shall be returned into the repaired section prior to placement of backfill.

3. The Contractor shall correct any settlement of backfill which may occur within the guaranty period at no cost to the Agency.

* * *

SECTION 02734

PIPE BURSTING

PART 1 – GENERAL

1.1 WORK INCLUDED

A. Sewer renewal using the pipe bursting method has been developed to enable a range of relatively small sewer pipe to be replaced without open-cutting.

B. The scope of work requires the Contractor to provide all materials, labor, equipment, and services necessary for bypass pumping, and/or diversion of sewage flows, rehabilitation of existing sanitary sewers by bursting the existing pipe and inserting a high density polyethylene pipe (HPDE), reconnection of active sewer lateral connections, anchoring new pipe, and initial and final cleaning & CCTV inspection and final testing of the pipe system.

C. The sewer replacement work details include:

1. Site Planning and Preparation
    a. Perform Site Investigation.
    b. Perform Initial Cleaning and Close Circuit TV Inspection.
    c. Formulate and execute plans for launching pit excavation, layout for sewer by-pass pumping system, marking existing utilities, laterals, cleanout, etc.
2. Pipe Installation
    a. Excavate Launching Pit.
    b. Install Sewer By-Pass Pumping System.
    c. Excavate to Relieve Affects of Bursting to Existing Utilities.
    d. Excavate to Expose All Active Laterals.
    e. Temporary Disconnect / Plug All Active Laterals Connections.
    f. Install New Sewer Pipe by Pipe Bursting Method.
    g. Anchor Pipe and Seal Manholes.
    h. Replace Existing Active Laterals, Cleanouts, and Lampholes.
    i. Reconnect All Active Lateral Connections to New Sewer Main. Disconnect and plug all inactive laterals.
    j. Perform Final Cleaning and Close Circuit TV Inspection.
    k. Remove Sewage By-Pass System.
    l. Backfill and Restore Excavations.
3. Cleanup and Restore Existing Surface Condition and Structures.
4. Repair Defective Work Per Engineer's Final Inspection.

C. The Contractor is responsible for proper and accurate installation of the new sewer pipe regardless of the method described in this section and the following subsections. The Contractor shall ensure that the new pipe's vertical and horizontal alignment is as indicated on the plans and in accordance with these specifications.

D. Supplying all labor, materials, equipment and apparatus not specifically mentioned herewith or noted on the plans, but which are incidental and necessary to complete the work specified.

1.2 APPLICABLE PUBLICATION

A. Reference Specifications: This specification references American Society for Testing and Materials (ASTM) and American Welding Society (AWS) standard specifications, which are made a part hereof by such reference and shall be the latest edition and revision thereof. Conformance to the following shall be required.

ASTM D-1238 Measuring Flow Rates of Thermoplastics by Extrusion Plastometer

ASTM D-1248 Specification for Polyethylene Plastics Molding and Extrusion Materials

ASTM D-1505 Density of Plastics by the Density-Gradient Technique

ASTM D-1599 Test for Short Term Rupture Strength of Plastic Pipe, Tubing and Fittings

ASTM D-1693 Test for Environmental Stress-Cracking of Ethylene Plastics

ASTM D-1928 Preparation of Compression Molded Polyethylene Test Samples

ASTM D-2122 Determining Dimensions of Thermoplastic Pipe and Fittings

ASTM D-2321 Underground Installation of Thermoplastic Flexible Sewer Pipe

ASTM D-2657 Practice for Heat-Joining Polyolefin Pipe and Fittings

ASTM D-2837 Obtaining Hydrostatic Design Basis for Thermoplastic Pipe Materials

ASTM D-3035 Specification for Polyethylene (PE) Plastic Pipe (SDR-PR) Based on Controlled Outside Diameter (Up to 6" IPS)

ASTM D-3261 Specification for Butt Heat Fusion Polyethylene (PE) Plastic Fittings for Polyethylene (PE) Plastic Pipe and Tubing

ASTM D-3350 Specification for Polyethylene Plastic Pipe and Fittings Material

ASTM F-585 Practice for Insertion of Flexible Polyethylene Pipe into Existing Sewers

ASTM F-714 Specification for Polyethylene (PE) Plastic Pipe (SDR-PR) Based on Outside Diameter (3" IPS and larger)

AWS D1.1 AWS Standard Qualification Procedure

1.3 WARRANTY AND QUALITY ASSURANCE

A. General Bid Requirements:

1. The bidder, or his/her Sub-contractor, shall be properly licensed and trained to perform pipe bursting, having at least 10,000 lineal feet of successful installation in the United States within the last 2 years, in pipelines ranging from 4 to 12 inches. Documentation of the licensing and experience and details of two years minimum

training of the on-site foreman and the installers who will perform the actual pipe bursting system, shall be provided with the bid.

B. The Contractor shall provide to the City a warranty to be in force and effect for a period of one (1) year from the date of acceptance by the City. The warranty is inclusive of the Contractor to repair or replace the pipe should failure result from faulty material or installation.

C. Correction of failed HDPE pipe deemed unacceptable, as a result of the post video inspection shall be the responsibility of the Contractor, at no extra cost to the City. Method of correction/repair shall be approved by the City.

D. The finished HDPE pipe shall be continuous over the entire length of run between the launching and receiving pits and shall be free from visual defects.

E. The Contractor shall carry out the operations in strict accordance with all applicable OSHA regulations.

F. Delivery, Storage and Handling

1. Transport, handle, and store pipe and fittings as recommended by manufacturer.
2. If pipe and fittings become damaged before or during installation, it shall be repaired as recommended by the manufacturer or replaced as required by the Engineer at the Contractor's expense, before proceeding further.
3. Deliver, store, and handle other materials as required to prevent damage.

G. Only those tools designed for the aforementioned procedures, and approved by the pipe manufacturer or supplier and the ENGINEER, shall be used for assembly of pipe fittings to ensure proper installation. The heater plate shall be equipped with suitable means to measure the temperature of plate surfaces and to assure uniform heating such as thermometers or pyrometers.

H. The CONTRACTOR shall televise the installed pipe after existing services have been reconnected and manhole work has been completed. The original television inspection files in Wincan version 8 format shall be provided to the ENGINEER. The CONTRACTOR shall repair all damages found during the review of the final video inspection. The damages shall include but not limited to sags, leaks, cracks, unsecured joints, visual defects, and others which in the opinion of the ENGINEER are not acceptable and would impair the serviceability of the new piping system.

1.4 SUBMITTALS

A. Submit the following Contractor's Drawings:

1. Shop drawings, catalog data and manufacturer's technical data showing complete information on material composition, physical properties, and dimension of pipe and fittings. Include manufacturer's recommendation for handling, storage, and repair of pipe and fittings if damaged.
2. The Contractor shall prepare and submit for the Engineer's approval a detailed description of the Pipe Bursting Plan, including materials and equipment, lateral reconnection, bypass pumping system, plan of operation, schedule of work, etc. No work shall begin prior to approval by the Engineer of the Contractor's Pipe

Bursting plan. The followings should be included:

a. Detail drawings and written description of the entire construction procedure to bypass sewage flow, install pipe, reconnection of sewer house connections.

b. Working drawings for showing excavation locations, dimensions, sheeting and shoring, method of dewatering, and other utilities that may be affected; width and length of working area, access pit, and portion of existing sewer to be removed to conduct the work; sewage flow by-pass; and maintenance of traffic.

c. Design of the sheeting and shoring for the excavations, and dewatering shall be the Contractor's responsibility.

B. Television inspection reports and video tapes made prior to and after pipe insertion. (See Section 02732 for details of submittals).

C. Grout and design mixes and grout testing reports.

D. Certification:

1. Certification by the manufacturer that all pipe and fittings furnished under this specification were manufactured, sampled, tested, and inspected in accordance with ASTM D3350 and ASTM F714. Certification shall be signed by an authorized agent of the manufacturer.

2. The CONTRACTOR performing the pipe installation shall be certified by the pipe bursting system manufacturer that the CONTRACTOR is a licensed installer of the manufacturers' system.

3. Polyethylene pipe jointing shall be performed by personnel trained in the use of joint fusion and stab joint equipment and recommended methods for pipe bursting connection. Personnel directly involved with installing the pipe shall receive training in the proper methods for handling, inserting, trimming, and finishing the pipe. The Contractor shall provide a certification of training and experience for each fusion and installing crew member.

4. The Contractor shall perform trial fusion welds and submit samples to the owner for review prior to installation of the pipe. Full penetration welds shall provide homogenous material across the cross section of the weld. The fusion machine employed for the trial welds shall be the same machine to be utilized for the installation work.

5. Fusion equipment shall be operated only by technicians who have been certified by the pipe manufacturer or supplier who have a minimum of two (2) years of experience fusion welding 4-inch or larger diameter pipelines. The technician's experience shall be documented in the HDPE pipe material.

E. The CONTRACTOR shall submit a sewage bypass pumping and/or diversion plan for review by the ENGINEER at least 10 days prior to pipe installation. The sewage bypass pumping and/or diversion plan shall include an emergency response plan to be followed in the event of a failure of the bypass pumping and/or diversion system. The CONTRACTOR shall notify the ENGINEER 24 hours prior to commencing the bypass pumping operation. The CONTRACTOR'S plan for sewage bypass pumping and/or diversion shall be satisfactory to the ENGINEER before the CONTRACTOR shall be allowed to commence sewage bypass pumping and/or diversion.

F. **As-built drawings:** The CONTRACTOR shall indicate and draw, with clear and accurate dimensions, on plans the as-built locations of newly installed sewer mains, laterals and cleanouts.

1.5 JOB CONDITIONS

A. Note and conform to conditions and requirements indicated and specified under Section 02202 of these Specifications.

B. Contractor shall conduct operations and schedule cleanup in a manner to cause the least possible obstruction and inconvenience to traffic, pedestrians and to adjacent property owners or tenants.

PART 2 - PRODUCTS

2.1 GENERAL

A. The CONTRACTOR shall provide polyethylene pipe as specified. The pipe shall be made to diameter and tolerances in accordance with ASTM D3035. The minimum ratio of orthogonal diameters prior to installation shall be 0.95. All pipe shall be made from virgin grade material. The pipe shall be of the diameter and class shown or specified and shall be furnished complete with all fabricated fittings, and other appurtenances as necessary for a complete and functional system.

2.2 HDPE PIPE, JOINTS AND FITTINGS

A. Unless approved otherwise by the Engineer, pipe and fittings shall be **SDR 17**, Extra High Molecular Weight, High Density Polyethylene PE 4710, Cell Class PE445574C, per ASTM D3350. Pipe shall be co-extruded using a melt homogenizing/plasticating extruder and appropriate die.

B. The pipe and fittings materials shall meet the requirements for Type III, Class C, Category 5, Grade P34 material as described in ASTM D1248. Pipe and fittings shall be made in conformance with ASTM F714 and ASTM D3261 as modified for the specified material. The pipe shall contain no recycled compound except that generated in the manufacturer's own plant from resin of the same specification from the same raw material pipe.

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1. Pipe, fittings, and joints shall meet or exceed the following physical properties:

Property	ASTM Test Method	Nominal Value
Density, gm/cc	D 1505	0.96
Melt Index, gm/10 min.	D 1238-E	0.10
High Load Melt Index, gm/10 min.	D 1238-F	12.0
Tensile Strength @ Break, psi	D 638	4,500
Tensile Strength @ Yield, psi	D 638	>3,400
Elongation, %	D 638	>700
Flexural Modulus, psi	D 790	136,000
Environmental Stress Cracking Resistance F20' Hours (100ºC)	D 1693 (Cond. C)	>5,000
Brittleness Temperature,º	D 746	<-103
Melting Point, ºF	D 789	261
Vicat Softening Temperature, ºF	D 1525	255
Hardness, Shore D	D 2240	64
Volume Resistivity, ohm-cm	D 991	2.6X10(16^{th})
ASTM D 1248 Classification:	Type III Class C P 34	Category 5 Grade
ASTM D 1248 Classification:	445574C	
RECOMMENDED HYDROSTATIC DESIGN STRESS:	800 psi @ 73.4ºF 400 psi @ 140ºF	

2. Pipe and Fittings Markings:

   a. Pipe shall be marked at 3-foot intervals or less with the manufacturer's name (or trade mark), the designation ASTM D3350 and ASTM 714, including the year of issue, the letters "PE" followed by the cell classification number of the raw material compound used and the polyethylene grade per ASTM D1248, and the Hydrostatic Design Basis in hundreds of psi; the nominal pipe size in inches, the dimensional ratio, and the manufacturer's code identifying the resin manufacturer, lot number, and date of manufacture.

b. Fittings shall be marked with the manufacturer's name (or trade mark), the designation ASTM D3350 and ASTM 714, and the manufacturer's code identifying the resin manufacturer, lot number, lot number, and date of manufacture.

3. Pipe and Fittings shall be homogeneous throughout and free of:

a. Serious abrasion, cutting, or gouging of the outside surface extending to more than 10 percent of the wall thickness in depth.
b. Cracks
c. Kinking (generally due to excessive or abrupt bending)
d. Flattening
e. Holes
f. Blisters
g. Other injurious defects

C. They shall be uniform in color, opacity, density, and other physical properties. Any pipe and fittings not meeting these criteria shall be rejected.

D. The average outside diameter and wall thickness of pipe and fittings shall conform to Table 1 when measured in accordance with ASTM D2122.

TABLE 1

Nominal Size (inches)	Nominal OD (inches)	Minimum Wall Thickness SDR26 (inches)	Minimum Wall Thickness SDR17 (inches)	Minimum Wall Thickness SDR11 (inches)
3	3.5	0.135	0.206	0.318
4	4.5	0.173	0.265	0.409
5	5.563 5.375	0.214 0.207	0.327 0.316	0.506
6	6.625	0.255	0.390	0.602
7	7.125	0.274	0.419	0.648
8	8.625	0.332	0.507	0.784
10	10.75	0.413	0.632	0.977
12	12.75	0.490	0.750	1.159

E. Pipe and Fittings Color: Pipe and fittings shall conform to the following:

1. Inside: The inner wall shall be white, light green, light red (vitrified clay color), or natural. Yellow, black, and light purple are not acceptable.
2. Outside: The outer wall shall be black, white, light green, light red (vitrified clay color), or natural. Yellow and light purple are not acceptable.
3. Both the inside and outside may be the same color.

F. Joints:

1. Pipe lengths shall be assembled in the field with butt-fused joints in accordance with ASTM D 2657 and the pipe manufacturer's written instructions shall apply. Butt- fused joints shall have internal bead projections of not more than 1/4 inch. Bead projections on the outside and inside of the pipe shall be removed. Joint strength shall be equal to or greater than the pipe and shall indicate a ductile rather than brittle fracture when tested.

2. Joint with Fusion Equipment: The fusion machine shall have hydraulic pressure control for fusing two pipe ends together and shall be equipped with gauges to monitor fusion pressures. The machine shall be equipped with an electric or gasoline engine powered facing unit to square and trim the pipe ends smooth and provide full surface contact with the heating plate. The heating plate on the fusion machine shall be electrically heated and thermostatically controlled with a temperature gauge and be capable of maintaining 500ºF with a tolerance of 10ºF. Fusion temperature shall be as recommended by the pipe manufacturer.

2.3 PVC PIPE, JOINTS AND FITTINGS

A. Shall conform to Section 02730 - Sanitary Sewers of these specifications

2.4 SANITARY SEWER LATERALS

A. Contractor shall verify location and diameter of all active laterals.

B. Sanitary sewer lateral shall be installed to conform to the City's Standard Details or modified herein as shown in the Contract Drawings. Connections to the HDPE main shall be performed using electrofusion wye saddles.

C. Heat fusion electrofusion wye saddles shall be made of polyethylene pipe compound that meets the requirements of ASTM D1248, Class C and suitable for fusion welding to polyethylene pipe. Fusion saddles shall be electrofusion wye saddle as manufactured by Central Plastics Company, Driscopipe, Miller, Dupont or approved equal.

D. Connections to the existing sewer house connection pipe shall be made using sleeved stainless steel flexible couplings. All flexible couplings shall conform to ASTMC425 and be manufactured by Fernco Joint Sealer Co., DFW Plastics, Inc. or approved equal.

E. For laterals shown to be constructed using open cut method, the Contractor shall conform to Specification Section 02730 Sanitary Sewers.

2.5 SANITARY SEWER CLEANOUTS

A. Install sanitary sewer cleanouts per project details and specifications.

B. Wye branches and risers for sanitary sewer cleanouts shall conform to the City's project details.

C. Cleanout box shall be Christy concrete type F08 Curb Valve Box with F08R lid marked "SEWER" when installed in location not subject to vehicular loading.

D. When installed in location subject to vehicular loading, cleanout box shall be Christy concrete type G05T Traffic Valve Box with G05CT Traffic Lid marked "SEWER" and shall be provided with 8" concrete base.

2.6 GROUT

A. The grout design mix shall meet or exceed 500 psi compressive strength at 28 days tested accordance with ASTM C495 or C109. Contractor may incorporate grout additives to improve its flow properties, provided the minimum compressive strength requirements are met.

2.7 EQUIPMENT

A. External and Internal Bead removers shall be McElroy Manufacturing, Inc. or equal.

B. Bursting head/mechanism must be capable of pipe bursting existing repair section of cast iron pipe with minimal damage to the immediate and above ground environment and structures.

PART 3 - EXECUTION

3.1 GENERAL

A. This section is intended to provide the Contractor with general guidance on the methods to be used to install the sewer pipe using the pipe bursting method. Nothing contained herein shall relieve the Contractor from completing the pipe bursting operation in the most feasible, efficient and safe manner, using required materials to the lines and grades shown on the plans and to the requirements of these specifications.

3.2 SITE INVESTIGATION

A. Prior to pipe bursting operation, the Contractor shall perform a careful site investigation to locate and record possible surface obstructions, locate and mark active and inactive sewer laterals; and formulate and submit plans to replace the pipe, to reconstruct all sewer laterals, and to restore all structures and plants that would be damaged by the project work.

3.3 PREPARATION

A. Preliminary Site Work

1. Excavation of launch areas, etc. shall be carried out according to the planned schedule submitted to the Engineer prior to commencement of work.

2. Installation of by-pass pumping equipment shall be complete and operational.

3. All buried utilities adjacent to the line of operation shall be reviewed and where necessary excavated to relive transient loading during the insertion operation.

4. Excavations for all active house connection laterals shall be completed before the insertion of the new pipe. Manhole positions along the line of insertion and lateral excavations will be used to check progress as the head passes these points.

5. Any heavy concrete reinforcement present along the line of insertion shall be broken out prior to the operation to allow steady and free passage of the expander.

B. By-Pass Sewage

1. The Contractor shall furnish, install, and operate pumps, plugs, conduits, and other equipment to divert the flow of sewage around the pipeline reach in which work is to be performed. The plug shall be provided with a tag line. The pumping system shall be of sufficient capacity to handle existing flow plus additional flow that may occur during a rainstorm. If pumping is required on a 24-hour basis, engines shall be equipped in a manner to keep noise to a minimum. Standby pumps shall be provided as required. Pumping shall be done by the Contractor in such manner as will not damage public or private property or create a nuisance or health menace. The pumped sewage shall be in an enclosed hose or pipe and shall be reinserted into the sanitary sewer system. Sewage shall not be allowed to free flow in gutters, streets or over sidewalks, etc. Nor shall any sewage be allowed to flow into the storm inlets or conduits. After the work has been completed, flow shall be restored to normal.

2. The Contractor shall be responsible for continuity of sanitary sewer service (i.e. building laterals) to each facility connected to the section of sewer during the execution of the work**. Building laterals shall not be disconnected or plugged overnight**; that is continuing service on the laterals should not be interrupted during the peak flow period from 5 P.M. the day before to 9 A.M. the next day.

C. Cleaning and Closed Circuit TV Inspection for Sewer Pipe

1. Prior to pipe bursting operation, the Contractor shall perform an initial sewer cleaning and closed circuit TV (CCTV) inspection according to Section 02732 of this Specification to determine the general condition of the sewer, to remove any obstruction and debris, to determine defective pipe sections for point repairs, to log the location of all house laterals and to verify location of active house laterals.

D. Excavation

1. Existing utilities shall be located and protected as required by utility owners.

2. Excavation, dewatering, sheeting, shoring, and bracing shall be in accordance with FED-OSHA 29 C.F.R., Part 1926 Sub-Part P. Sewer house connections shall be exposed prior to pipe installation operation.

3. Access excavations shall be provided as required to facilitate the pipe bursting insertion. When practicable, they shall be located where interference to vehicular traffic and inconvenience to the public is minimized. Access excavations shall coincide with sewer house connections, changes in the sewer line and grade and to provide access to the sewer in both directions. Excavations that have pull or push equipment installed shall have adequate support provided to prevent damage to adjacent areas.

E. Locating Existing Sewer Lateral Connection

1. Upon completion by the Contractor of CCTV inspection, the Contractor shall mark in the field the location of the existing sewer lateral connection.

2. The Contractor shall expose the existing sewer lateral connection and make arrangements with the resident to access all the plumbing fixtures in each house and perform dye tests when necessary or other means to determine if the exposed sewer lateral connection is active. If access to the house fixtures is denied by the resident, the exposed sewer lateral connection shall be assumed active unless otherwise directed by the Engineer and shall be reconnected in accordance with these specifications.

3. All inactive sewer laterals shall be plugged at the sewer main.

3.4 PIPE BURSTING AND PIPE INSTALLATION

A. Site Organization

1. Excavation of launch pits shall be situated to provide minimum inconvenience to residents, businesses or traffic. Launch excavation will be situated to give maximum possible advantage to the insertion operation but more importantly to give minimum inconvenience to traffic and pedestrian users. Launch pits shall not be located in the easement areas and private property without permission of the homeowner and the Engineer.

2. Dimensions will vary with depth of cover and size of pipe and also pipe wall thickness. These latter parameters, together with ambient temperature, control the pipe bend radius and the pipe manufacturer's recommendations must be used to obtain the slit trench length.

3. A sump hole in the base of the excavations should be provided to allow pumping of water from the excavation.

4. Layout of a temporary by-pass pumping system to isolate the working area should take into account the location of pumps and pipes, possible pump failure contingency and avoidance of blocking entrances to homes, drives, bus stops, etc. Equipment used should be selected to give minimum noise levels and emission of fumes. All costs for this time are included in the bid price per linear foot of replacement.

5. Where buried utilities are known to exist, surface marking should be carried out and where necessary local excavations made to relieve the possibility or transferred loading. This is especially important in the case of gas mains which should be at least one foot away from the line of work. If nearer than this, special arrangements must be made with the local gas utility to comply with codes of practice.

6. Existing manholes shall be utilized where-ever practical. Remove manhole inverts and bottoms to permit access for installation equipment.

7. Support equipment used to perform the work shall be located away from buildings

so as not to create a noise impact. Provide silencers or other devices to reduce machine noise as required to meet local requirements.

B. Pipe Installation

1. The Contractor shall remove internal bead.

2. Contact by radio shall be maintained between key positions at all times so that slowing down, stopping and starting can be effected when necessary.

3. The Contractor shall record the general progress, i.e. insertion rates in feet per minute, reasons for stoppages, signs of failure of equipment and road or other surface damage.

4. Particular care shall be exercised when passing buried utilities or when near building foundations.

5. At manholes or lateral excavations, the Contractor shall slow the rate of progress to examine the winch rope attachments on the head and the pipe retaining assembly at the rear of the head. Repairs and replacements in these positions are much easier that having to excavate to repair between positions.

6. Thread winch and associated lines through sewer section to be rehabilitated. Keep lines away from pedestrian and vehicular traffic.

7. For the method using sectional pipe, only existing manholes in the street may be used for launch and receiving access. Manholes in the easement area may be used only with the permission of the homeowner and the Engineer. Remove manhole invert and bottom as required.

3.5 ANCHORING PIPE AND SEALING MANHOLES

A. After the pipe has been installed in the entire length of the sewer section, anchor the pipe at manholes. The pipe shall protrude in the manholes for enough distance to allow sealing and trimming.

B. Sealing the pipe at manholes providing a flexible gasket connector in the manhole wall at the end of the pipe, centered in the existing manhole wall. Grout the flexible connector in the manhole wall filling all voids the full thickness of the manhole wall.

C. Restore manhole bottom and invert.

3.6 CLEANING SANITARY SEWERS

A. Contractor shall flush and clean all sewer mains by means of pneumatic, sewer cleaning balls. The balls shall be of the appropriate size to fit the sewer pipe being cleaned. "Sewer Balling" operations shall be conducted by experienced personnel under the observation of the Engineer. The ball shall be introduced at the uppermost manhole and passed from manhole to manhole by means of a line with sufficient head of water to carry the ball along. The movement of the ball shall be controlled by a rope; care shall be exercised not to feed the ball too rapidly in order that all debris can be removed at each manhole.

B. Each section of the sewer line shall be thoroughly cleaned before proceeding to the next section. Where sewer balls will not pass, flexible sewer rods with approved spears or cutters may be used to clear the obstruction. Where obstructions cannot be cleared by sewer rodding, the obstructions shall be removed by excavation at the Contractor's expense. The Contractor shall remove all debris from sewer lines using approved methods.

C. Installation cost shall include cost for water for sanitary sewer flushing and cleaning operations.

3.7 TESTING SANITARY SEWERS

A. Sanitary sewer systems including laterals, and sanitary sewer mains shall be tested for tightness after completion of all backfilling and prior to request for final inspection. Contractor shall notify the Engineer at least two (2) working days in advance of proposed testing dates. Tests of gravity sewers shall be made from end or manhole to manhole unless grades are flat enough to permit testing two or more sections at one time. Sections which fail to pass the tests shall be repaired or replaced, and the section retested until it falls within specified allowances.

B. All water for sanitary sewer testing shall be provided and the tests performed by the Contractor in conformance with the following requirements:

1. Mandrell Test
    a. Pipes shall be tested for deflection by passing a mandrel through the pipe without obstruction.
    b. The size of the mandrel shall be set at 92.5% of the base inside diameter of the pipe, as defined in ASTM 3034.

C. Leakage Tests shall be performed per City Standard Specification Section 02730, “Sanitary Sewer” - Subsection 3.07, “Testing Sanitary Sewer”.

3.8 MANHOLE INSPECTION

A. Manholes will be inspected after completion and within the guarantee period. Leakage and other defects that were a result of the Contractor’s work shall be eliminated and repaired by the Contractor as required by the Engineer, at the Contractor’s expense.

3.08 FINAL CLEANING AND CLOSE CIRCUIT TELEVISION INSPECTION (CCTV) REQUIREMENTS

B. Prior to final acceptance and final inspection of the pipe, the contractor shall flush and clean all parts of the newly installed HDPE pipes by removing all accumulated construction debris, rocks, gravel, sand and other foreign material from the pipe.

C. Perform final CCTV inspection per specification Section 02732 and Section 02737 after existing sewer mains and laterals are completely replaced/rehabilitated.

* * *

SECTION 02737

CURED-IN-PLACE PIPE (CIPP)

PART 1 - GENERAL

1.1 WORK INCLUDED

A. Scope

1. This section covers the work necessary to furnish and install, complete in place, a cured-in-place pipe (CIPP) for rehabilitation of existing sanitary sewers as specified herein. The Contractor shall provide all materials, labor, equipment, and services necessary for bypass pumping of sewage flows in mains and services, cleaning and pre-television inspection of sewer to be lined, complete installation, inversion, and curing process of cured-in-place pipe, re-connection of service laterals, pipe sealing at manholes, and final television inspection and testing of the lined pipe sewer system. Cured-in- place pipe shall be as specified herein and installed at the locations shown on the Drawings.

B. Process Description

1. The rehabilitation of existing sanitary sewer lines by Cured-In-Place process includes reconstruction of the existing lines by forming a new pipe within the existing, structurally deteriorated pipe which has generally maintained its original shape. Installation of the Cured-In-Place Pipe shall be accomplished by the use of an inversion process or a winched-in application. The reconstruction of the existing line shall be accomplished by installing a flexible tube which is first impregnated with a thermosetting resin. The tube is either inverted into the pipeline by using hydrostatic head (water pressure), compressed air pressure or some other approved inversion method, or pulled into the pipeline from manhole to manhole using mechanical equipment (winch). After full insertion, the tube is cured by circulating hot water or introducing controlled air or steam throughout the length of the tube to cure it into a hard, impermeable pipe. This “pipe” shall extend the full length of the original sewer, and shall provide a structurally sound, joint less, tight-fitting, water-tight pipe within a pipe.
2. Cleanup and Restore Existing Surface Condition and structures.
3. Repair Defective Work per Engineer’s Final Inspection.
4. The Contractor is responsible for proper and accurate installation of the new sewer pipe regardless of the method described in this section and the following subsections. The Contractor shall ensure that the new pipe’s vertical and horizontal alignment is as indicated on the plans and in accordance with these specifications.
5. Supplying all labor, materials, equipment and apparatus not specifically mentioned herewith or noted on the plans, but which are incidental and necessary to complete the work specified.

1.2 APPLICABLE PUBLICATION

A. The following documents form a part of these specifications to the extent stated herein and shall be the latest edition thereof. Where differences exist between codes and standards, the one affording the greatest protection shall apply.

American Society for Testing and Materials (ASTM):

ASTM D 256	Standard Test Methods for Impact Resistance of Plastics and Electrical Insulating Materials.
ASTM D 543	Resistance of Plastics to Chemical Reagents.
ASTM D 638	Tensile Properties of Plastics
ASTM D 732	Standard Test Method for Shear Strength of Plastics by Punch Tool.
ASTM D 790	Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.
ASTM F 1216	Standard Practice for Rehabilitation of Existing Pipelines and Conduits by the Inversion and Curing of Resin-Impregnated Tube (1991 Revision).
ASTM D 2990	Tensile, Compressive, and Flexural Creep and Creep-Rupture of Plastics.

Federal Water Pollution Control Act of 1972 (FWPCA): As Amended.

National Association of Sewer Service Companies (NASSCO): Recommended Specifications for Sewer Collection System Rehabilitation.

1.3 WARRANTY AND QUALITY ASSURANCE

A. General Bid Requirements:

1. The curing and installation methods of the liner shall be described and included with the Bid. The Contractor shall demonstrate that the method is applicable and that his/her experience in using the method is proven.

2. The bidder, or his/her Sub-contractor, shall be properly licensed and trained to a cured-in-place pipe lining process having at least thirty (30,000) lineal feet of successful installation in the United States within the last 2 years, in pipelines ranging from 4 to 48 inches. Documentation of the licensing and details of two years minimum training of the on-site foreman of the Contractor, or his/her CIPP Sub-contractor, who will perform the actual lining process, shall be provided.

B. The Contractor shall provide to the City a warranty to be in force and effect for a period of ONE (1) year from the date of acceptance by the City. The warranty shall

cause the Contractor to repair or remove and replace the liner should failure result from faulty materials or installation.

C. Correction of failed liner or liner pipe deemed unacceptable, as a result of the post video inspection and/or test reports for structural values, thickness, chemical resistance, etc., shall always be the responsibility of the Contractor, at no extra cost to the City. Method of correction/repair shall be approved by the City with prior field demonstration, if required. It shall be understood that minimum criteria of the specification shall not be lowered to compromise with lower than the required test values, unless approved in writing.

D. The finished liner shall be continuous over the entire length of run between two manholes and shall be free from visual defects. The finished liner shall meet or exceed the requirements of Section 2.01-D.2 of this specification, “Finished and Cured Liner Properties.”

E. Wrinkles in the finished liner pipe which exceed 5% of the pipe diameter are unacceptable; Contractor shall remove either the liner or the wrinkled segments which exceed 5% of the pipe diameter. Repair of the removed sections shall be proposed by the Contractor and approved by the Engineer.

F. The Contractor shall carry out the operations in strict accordance with all applicable OSHA regulations. Particular attention is called to those safety requirements involving work on an elevated platform and entry into a confined space.

G. Delivery, Storage and Handling

1. Transport, handle, and store pipe and fittings as recommended by manufacturer.
2. If pipe and fittings become damaged before or during installation, it shall be repaired as recommended by the manufacturer or replaced as required by the Engineer at the Contractor’s expense, before proceeding further.
3. Deliver, store, and handle other materials as required to prevent damage.

H. Only those tools designed for the aforementioned procedures, and approved by the pipe manufacturer or supplier and the ENGINEER, shall be used for assembly of pipe fittings to ensure proper installation.

I. The CONTRACTOR shall televise the installed pipe after existing services have been reconnected and manhole work has been completed. The original television inspection video tape shall be provided to the ENGINEER. The CONTRACTOR shall repair all damages found during the reviewing of these final TV inspection video tapes. The damages shall include but not limited to sags, leaks, cracks, unsecure joints, visual defects, and others which in the opinion of the ENGINEER are not acceptable and would impair the serviceability of the new piping system.

1.4 SUBMITTALS

A. The Contractor shall submit for approval by the Engineer the following information:

B. Certification by the manufacturer that all pipe and fittings furnished under this specification were manufactured, sampled, tested, and inspected in accordance with ASTM F1216-91. Certification shall be signed by an authorized agent of the

manufacturer. Verification of product conformance with the chemical resistance and physical testing requirements of the latest edition of Green Book, Section 210-2.3.3 AND 500-1.4.2 - ASTM test methods D638, D790 and D2990) shall also be provided to the Engineer for approval a minimum of 15 days prior to the commencement of the scheduled work. A report of test results shall be furnished for the Engineer's review. The date the pipe was manufactured shall be included in the Certification.

C. Manufacturer's recommendations for the installation of the CIPP including resin application, curing process details (including temperature control), storage procedures, service connection methods, trimming and finishing, and quality control measures to be used for cured-in-place pipe lining of main-lines and services.

D. Certification from the Manufacturer(s) that the installer is licensed to perform the work.

E. Certification from the manufacturer(s) that the resin material complies with the required application, meets the intended service condition, and that the resin will meet the physical requirements set forth in this specification. Information from the resin manufacturer shall include specifications, characteristics and properties of the resin, methods of application, curing temperatures, and duration of temperature (step cooking temperatures/hours at each and final stages).

F. Grout and design mixes and grout testing reports.

G. Recommended grout and equipment to seal any open area in the reconnected (cut) service laterals AND the annular space between the cured-in-place pipe and the existing pipe at the manholes.

H. Television inspection reports and video tapes made prior to and after pipe insertion. (See Section 02732 for details of submittals).

I. The CONTRACTOR shall submit a sewage bypass pumping and/or diversion plan for review by the ENGINEER at least 10 days prior to pipe installation. The sewage bypass pumping and/or diversion plan shall include an emergency response plan to be followed in the event of a failure of the bypass pumping and/or diversion system. The CONTRACTOR shall notify the ENGINEER 24 hours prior to commencing the bypass pumping operation. The CONTRACTOR'S plan for sewage bypass pumping and/or diversion shall be satisfactory to the ENGINEER before the CONTRACTOR shall be allowed to commence sewage bypass pumping and/or diversion.

J. The Contractor shall submit to the Engineer a detailed plan of construction including the installation procedures, equipment set-up, and the locations of the proposed access points for approval. The Contractor shall have an approved plan of construction prior to commencing any construction.

1.5 JOB CONDITIONS

A. Note and conform to conditions and requirements indicated and specified under Section 02202 of these Specifications.

B. Contractor shall conduct operations and schedule cleanup in a manner to cause the least possible obstruction and inconvenience to traffic, pedestrians and to adjacent property owners or tenants.

PART 2 - PRODUCTS

2.1 MATERIALS

A. The liner pipe material shall be designed for use in gravity sanitary sewers and shall be in strict conformance with all applicable sections of ASTM F1216 specifications. All materials and procedures used in the cured-in-place pipe rehabilitation process shall be equal to or exceed the manufacturer's standards.

B. **Tube:** The liner tube shall be fabricated to meet performance requirements as specified in section 1.03.04, Finished and Cured Liner Properties, of this specification. Two different types of systems shall be considered for cured-in- place pipe rehabilitation:

1. Fiber Felt Tube System:

    a. The felt tube shall be a thermoplastic polyester or acrylic tube consisting of one or more layers of flexible needled felt or an equivalent woven and/or non-woven material capable of carrying resin, and with sufficient needling and cross lapping and strength to withstand the installation pressures and curing temperatures. The felt tube to be furnished shall be compatible with the resin and catalyst systems to be utilized.

    b. The tube shall be free of tears, holes cuts, foreign materials and other defects and will be subject to inspection by the City.

    c. The finished lining shall consist of inner polyurethane and outer polyester felt layer (or layers) impregnated with a thermosetting resin and fabricated to fit tight against the existing pipe wall. An allowance shall be made for circumferential stretching during inversion.

    d. Contractor shall determine the minimum tube length necessary to effectively span the designated run between manholes, unless otherwise specified. Contractor shall field verify the lengths in the field prior to impregnation of the tube with resin, to insure that the tube will have sufficient length to extend the entire length of run.

OR

2. Fiberglass Mat System:

    a. The tube shall be composed of a high strength, fiberglass mat system capable of retaining resin, contained within a system of polyethylene film. The tube shall have sufficient needling and cross lapping to yield a minimum burst strength of 800 pounds per square inch in transverse directions (hoop stress), and strength to withstand the installation pressures and curing temperatures. The tube shall be free from tears, holes cuts, foreign materials and other defects, and will be subject to inspection by the City.

C. Resin/Catalyst

1. The resin used shall be compatible with the rehabilitation process used, and

designed for a wastewater environment. The resin shall be able to cure in the presence or absence of water, and the initiation temperature for cure shall be as recommended by the resin manufacturer and approved by the Engineer. The resin shall have sufficient thixotropic properties to obtain non- draining characteristics when impregnated into the fiber fabric.

2. Unless otherwise specified or approved by the Engineer, the resin shall be an epoxy vinylester system and shall be able to meet the service conditions specified for the tube system.

3. The Engineer shall also be informed in advance, for verification and inspection of the resin material at the "wet out" of the tube. The inspection shall be at the discretion of the Engineer, which shall not relieve the Contractor of his responsibilities. The wet-out procedure shall utilize the resin and catalyst in sufficient quantities to ensure complete impregnation of the liner and provide the properties specified in Section, Finished and Cured Liner Properties.

4. The catalyst system shall be compatible with the resin and other materials to be utilized in the rehabilitation process. Quantity and type of catalyst shall be selected based on the curing conditions and recommendations of the resin manufacturer.

D. Liner Design Criteria

1. The Cured-In-Place Pipe thickness shall be calculated and designed upon the following physical conditions of the existing pipe to be rehabilitated:

   a. All pipes shall be considered fully deteriorated.

   b. All pipes shall be subjected to a soil load of 120 lbs./cu. Ft., with applicable live load, and water table two (2) feet below the top of the ground.

   c. Pipes in good condition shall have a minimum of 2% ovality in the circumference. A higher value of ovality shall be used if the pipe is deteriorated.

   d. Factor of safety (N) of 2.0 shall be used for calculations.

   e. The Contractor shall measure the inside diameter of the existing pipe in the field so that the liner can be lined in a tight fitted condition.

   f. Conditions (a) and/or (b) above may change after the initial TV report, if approved by the Engineer. The Engineer shall have the right to modify/change the required liner thickness, depending upon field conditions evident from the video tape(s).

   g. **The minimum material wall thickness derived using design criteria for the City shall be equivalent to SDR-34.** The calculated wall thickness derived using the above design criteria shall be compared to the specified (bidded) pipe thickness (SDR-34). The Engineer then has the right to either keep the specified pipe thickness (SDR-34) or change to the calculated pipe thickness for installation. Material cost shall be adjusted accordingly.

2. Finished and Cured Liner Properties

   a. The finished cured-in-place pipe liner shall fit tightly and neatly against the existing pipe walls. The liner shall be fabricated from materials which, when cured, will be suitable for continuous service in sewerage environments containing hydrogen sulfide, carbon monoxide, carbon dioxide, methane, dilute (10%) sulfuric acid at an average wastewater temperature of 80°F, dilute (10%) phosphoric acid, petroleum hydrocarbons, gasoline, vegetable oil, tap water (pH 6.5 - 9), up to 1 hour per day exposure to 5 percent sodium hydroxide up to a pH of 11, moisture saturation, and external exposure to soil bacteria and chemical attack which may be due to materials in the surrounding ground or sewage within.

      The cured-in-place pipe system shall conform to and comply with the requirements above and with the minimum standard physical properties as follows:

STRUCTURAL/ MECHANICAL PROPERTY	ASTM TEST METHOD	ASTM MINIMUM SHORT TERM VALUE	ASTM MINIMUM LONG TERM VALUE
Tensile Strength (@ yield)	D-638	4,000 psi.	
Tensile Modulus	D-638	250,000 psi.	125,000 psi.
Flexural Strength	D-790	5,000 psi.	
Flexural Modulus	D-790	300,000 psi.	150,000 psi.
Shear Strength	D-732	55,000 psi.	
Impact Strength	D-256	1.9 in. -lb.	

The initial stiffness factor shall conform to the following table:

Nominal ID of Original Pipe (inches)	Stiffness Factor (EI)1 (in3-lbf/in2)	Maximum Allowable Depth of Groundwater Above Invert .2 (Feet)
6	328	238
8	328	96
10	328	48
12	328	27
12	1109	96
15	1109	48
18	1109	27
18	2628	67

Stiffness factor shall be determined in accordance with ASTM D2412.

E. Liner pipe material shall be homogeneous throughout and free of:

1. Serious abrasion, cutting, or gouging of the outside surface extending to more than 10 percent of the wall thickness in depth.
2. Cracks
3. Kinking (generally due to excessive or abrupt bending)
4. Flattening
5. Holes
6. Blisters
7. Other injurious defects

They shall be uniform in color, opacity, density, and other physical properties. Any pipe and fittings not meeting these criteria shall be rejected.

2.2 SANITARY SEWER LATERALS

A. Contractor shall verify location and diameter of all active laterals.

B. Sanitary sewer lateral shall be installed to conform to the City's Standard Details or modified herein as shown in the Contract. Drawings. Lateral to main connections shall be performed using strap-on wye rubber saddles.

C. Lateral to main connection shall be backfilled with controlled density fill to provide concrete support to strap-on wye rubber saddle.

D. Connections to the existing sewer house connection pipe shall be made using sleeved stainless steel flexible couplings. All flexible couplings shall conform to ASTMC425 and be manufactured by Fernco Joint Sealer Co., DFW Plastics, Inc. or approved equal.

E. The sewer lateral connection shall have a slope equal to the existing or a minimum of two-percent.

F. For laterals shown to be constructed using pipe bursting method, the Contractor shall conform to details specified under Section 02734, Pipe Bursting. For laterals shown to be constructed using open cut method, the Contractor shall conform to Specification Section 02730 Sanitary Sewers.

2.3 SANITARY SEWER CLEANOUTS

A. Install sanitary sewer cleanouts per project details and specifications.

B. Wye branches and risers for sanitary sewer cleanouts shall conform to the City's project details.

C. Cleanout box shall be Christy concrete type F08 Curb Valve Box with F08R lid marked "SEWER" when installed in location not subject to vehicular loading.

D. When installed in location subject to vehicular loading, cleanout box shall be Christy concrete type G05T Traffic Valve Box with G05CT Traffic Lid marked "SEWER" and shall be provided with 8" concrete base.

PART 3 - EXECUTION

3.1 GENERAL

A. This section is intended to provide the Contractor with general guidance on the methods to be used to install the sewer pipe using cured in place pipe lining rehabilitation method. Nothing contained herein shall relieve the Contractor from completing the pipe rehabilitation in the most feasible, efficient and safe manner, using required materials to the lines and grades shown on the plans and to the requirements of these specifications.

3.2 SITE INVESTIGATION

A. Prior to pipe rehabilitation, the Contractor shall perform a careful site investigation to locate and record possible surface obstructions, locate and mark active and inactive sewer laterals; and formulate and submit plans to replace the pipe, to reconnect all sewer laterals, and to restore all structures and plants that would be damaged by the project work.

3.3 PREPARATION

A. Preliminary Site Work

1. Installation of by-pass pumping equipment shall be complete and operational. Layout of a temporary by-pass pumping system to isolate the working area should take into account the location of pumps and pipes, possible pump failure contingency and avoidance of blocking entrances to homes, driveways, bus stops, etc. Equipment used should be selected to give minimum noise levels and emission of fumes. All costs for this time are included in the bid price per linear foot of replacement.

2. Verification of all active and in-active house connection laterals shall be completed before the insertion of the new pipe. Manhole positions along the line of insertion shall be used to check progress as the liner passes these points.

3. Any heavy concrete reinforcement present along the line of insertion shall be broken out prior to the operation to allow steady and free passage of the liner.

4. Support equipment used to perform the work shall be located away from buildings so as not to create a noise impact. Provide silencers or other devices to reduce machine noise as required to meet local requirements.

B. By-Pass Sewage

1. The Contractor shall furnish, install, and operate pumps, plugs, conduits, and other equipment to divert the flow of sewage around the pipeline reach in which work is to be performed. The plug shall be provided with a tag line. The pumping system shall be of sufficient capacity to handle existing flow plus additional flow that may occur during a rainstorm. If pumping is required on a 24-hour basis, engines shall be equipped in a manner to keep noise to a minimum. Standby pumps shall be

provided as required. Pumping shall be done by the Contractor in such manner as will not damage public or private property or create a nuisance or health menace. The pumped sewage shall be in an enclosed hose or pipe and shall be reinserted into the sanitary sewer system. Sewage shall not be allowed to free flow in gutters, streets or over sidewalks, etc. Nor shall any sewage be allowed to flow into the storm inlets or conduits. After the work has been completed, flow shall be restored to normal.

2. The Contractor shall be responsible for continuity of sanitary sewer service (i.e. building laterals) to each facility connected to the section of sewer during the execution of the work**. Building laterals shall not be disconnected or plugged overnight**; that is continuing service on the laterals should not be interrupted during the peak flow period from 5 P.M. the day before to 9 A.M. the next day. **Plugging of laterals is therefore allowed only from 9 A.M. to 5 P.M. of the same day.**

C. Cleaning and Closed Circuit TV Inspection for Sewer Pipe

1. Prior to pipe rehabilitation, the Contractor shall perform an initial sewer cleaning and closed circuit television (CCTV) inspection according to Section 02732 of this Specification to determine the general condition of the sewer, to remove any obstruction and debris, to determine defective pipe sections for point repairs, to log the location of all house laterals and to verify location of active house laterals.

D. Point Repairs

1. Point repairs are work required to prepare defective sections of existing sewer lines for rehabilitation.

2. Work shall be performed per Section 02733 of this Specification. The work shall include verifying the location of the point repair, locating all interfering utilities, temporary flow bypassing, traffic control, excavation, shoring, dewatering, pipe repairs or replacement, backfilling, and surface restoration.

3.4 INSTALLATION

A. The Contractor's shall retain the services of a licensed installer of the manufacturer of the cured-in-place pipe rehabilitation system to assist the Contractor during preparation and installation of the system to certify that the work has been performed in accordance with the manufacturer's recommendations. The Contractor shall obtain detailed installation instruction and procedures from the manufacturer for the actual installation of the cured-in- place liner system.

B. The host pipeline shall be cleaned and televised in accordance with Section 02732. The outside diameter of the tube being inserted shall be properly sized to allow for expansion so that the CIPP liner can fit tightly against the host pipe.

C. The tube shall be installed through the existing manholes, in accordance with the manufacturer’s recommendations and procedures. The finished pipe on mainline reaches shall be continuous over the entire length between manholes. A seal, recommended by the installer, shall be installed at the entrance to each manhole between the tube and the existing pipe.

D. During the curing process, the Contractor shall keep logs, charts and/or graphs of the liner temperatures at the upstream and downstream manholes to insure that proper temperatures and cure times have been achieved. These documents may be required by the Engineer at any time during and after the curing process.

E. Immediately after curing of the cured-in-place pipe and after testing, within the same working day, the Contractor shall reinstate all existing active service connection per City standard details. Rough edges, string or other pipe defects that would prevent solids from free flowing shall be removed.

F. The Contractor shall also have a remote control cutting and grouting device on site to reinstate house lateral connections. There will be no initial relief hole; all cut shall be finish cut to the approximate original size and shape of the service lateral. Rough edges, strings or other pipe defects that would prevent solids from free flowing shall be removed. The Contractor shall have a back-up remote control cutting device on site in case of malfunction.

G. Any evidence of infiltration between the service connection and the existing pipe shall be corrected by the Contractor. The method of correction shall be submitted and approved by the Engineer.

H. The beginning and end of the cured-in-place pipe shall be cut flush at the inlet and outlet points in the manhole by using a rotary cutter, and the ends shall be sealed to the rehabilitated pipeline. The sealing material shall be compatible with the cured-in-place liner pipe and shall provide a watertight seal.

3.5 SEALING AT MANHOLES

A. The cured-in-place CIPP shall make a tight seal at the manhole opening with no annular gaps. Under all circumstances, the liner shall be sealed to the manhole and host pipe with appropriate type of sealant. The sealing material shall be compatible with the cured-in-place liner pipe and shall provide a watertight seal.

3.6 SEWER HOUSE CONNECTIONS

A. All active laterals shall be verified. Sanitary sewer lateral shall be installed to conform to the City's Standard Details. See specifications Section 02730 and 02734 for more details regarding lateral installation.

3.7 FIELD TESTING

A. Sanitary sewer systems including laterals, and sanitary sewer mains shall be tested for tightness after completion of all backfilling and prior to request for final inspection. Contractor shall notify the Engineer at least two (2) working days in advance of proposed testing dates. Tests of gravity sewers shall be made from end or manhole to manhole unless grades are flat enough to permit testing two or more sections at one time. Sections which fail to pass the tests shall be repaired or replaced, and the section retested until it falls within specified allowances.

B. All water for sanitary sewer testing shall be provided and the tests performed by the Contractor in conformance with the following requirements:

1. Mandrell Test

a. Pipes shall be tested for deflection by passing a mandrel through the pipe without obstruction.

b. The size of the mandrel shall be set at 92.5% of the base inside diameter of the pipe, as defined in ASTM 3034.

C. Air Leakage Tests shall be performed per City Standard Specification Section 02730, “Sanitary Sewers” - Subsection 3.07, “Testing Sanitary Sewer”.

3.8 FIELD SAMPLING, LABORATORY TESTING and ACCEPTANCE TESTING

A. The physical properties of the installed CIPP shall be verified through field sampling and laboratory testing, as approved by the Engineer. Following the curing and cooling of the installed pipe, the Contractor with or without the aid of the independent lab field personnel hired by the City, shall remove pipe samples at locations determined by the Engineer and/or City inspector. The samples shall be clearly labeled with the date, time of day, duration of curing, and location of the sample. The sample shall be tested by an independent third party testing laboratory hired by the City for the following parameters:

Average Outside Diameter - ASTM D 2122

Average Inside Diameter - ASTM D 2122

Minimum Wall Thickness - ASTM D 2122

Pipe Stiffness at 5% - ASTM D 2412

Tensile Strength at Yield - ASTM D 638

Tensile Modulus - ASTM D 638

Flexural Strength - ASTM D 790

Flexural Modulus - ASTM D 790

Impact Strength - ASTM D 256

The Lab shall provide the Engineer for approval, with certified test results of the short term properties of the CIPP pipe liner material from the actual installed liner at a minimum of two samples taken at a random locations, and with no more than three (3) samples, per each project area of lining set-up. Locations of sample shall be as directed by the Engineer.

CIPP liner pipe samples shall be submitted to a certified laboratory which has been approved by the Engineer and tested to confirm that the liner pipe conforms to the requirements of the latest edition of Green Book, Section 500-1.4.2,
210-2 and ASTM F1216.

B. Field sample preparation for Cured-In-Place lining method shall be according to ASTM F-1216, item 8.1.1.

C. The testing costs are to be paid by the City and therefore, should not be included in the bid. However, if the work should fail to pass the tests, it is the Contractor's responsibility to correct the work and re-test at the Contractor's expense. The City shall not pay for these re-installations and re-tests.

D. If within the warranty period, any section of the sewer system is not acceptable due to subsequent excessive leakage or any other defects, although originally accepted, the Contractor shall repair or replace the affected portion at no cost to the Agency. It is understood that if the Contractor fails to do such work as required, the Surety shall be liable for said costs of repair or replacement.

3.9 MANHOLE INSPECTION

A. Manholes will be inspected after completion and within the guarantee period. Leakage and other defects that were a result of the Contractor's work shall be eliminated and repaired by the Contractor as required by the Engineer, at the Contractor's expense.

3.10 FINAL CLEANING AND CLOSE CIRCUIT TELEVISION INSPECTION (CCTV) REQUIREMENTS

A. Upon completion of the cured-in place sewer lining operations, all lines, manholes, and other structures shall be thoroughly cleaned of dirt, rubbish, debris and obstructions of any kind to the satisfaction of the Engineer, and the entire work site shall be cleaned of all waste, rubbish, and construction debris of any nature.

B. Prior to acceptance of any rehabilitated sanitary sewer line, a closed circuit television (CCTV) inspection shall be performed using Wincan Version 8 inspection software recorded digitally to an external drive.

C. Defects such as high and low spots, joint separations, offset joints, chipped ends, cracked or damaged pipe, infiltration points and debris in lines shall be corrected to the satisfaction of the Engineer. For joint separations, low spots and chipped ends, the following maximum acceptable limits will apply for 6-10 inch pipes:

Joint separations	1/2 inch
Low spots	1 inch maximum depth
Chipped ends	1/4 inch

D. For pipe larger than 10 inch, maximum limits will be specified by the Engineer for each project.

E. The complete job is ready for television inspection when the following work has been completed:

1. All sewers pipelines are installed and backfilled.
2. All structures are in place, all channeling is complete and pipelines are accessible from structures.
3. All other underground facilities, utility piping and conduits are installed.
4. Final street grading is complete and ready for asphaltic concrete surfacing.
5. Pipelines to be inspected have been preliminarily balled and flushed or cleaned by a high pressure cleaner.

6. Final leakage test has been completed and approved.
7. Flood and drain the sewer system just prior to video inspection.

E. When the above work is completed, the Contractor shall arrange with the Engineer for close circuit television (CCTV) inspection.

F. The Contractor shall repair or replace failed sections as required by the Engineer.

G. Those portions of the pipeline system that have been corrected must be re- televised.

H. Refer to specification Section 02732 for additional details regarding close circuit television video (CCTV) inspection.

* * *

SECTION 02738

MANHOLE REHABILITATION

PART 1 - GENERAL

1.1 WORK INCLUDED

A. Scope:

1. This section covers repair, structural restoration and rehabilitation of existing manholes as required to eliminate leakage into the structures and provide protection against biogenic corrosion by providing a structural, monolithic liner on the manhole inside walls.

2. Construction Photographs: The Contractor shall provide the City with preconstruction and post construction digital photo files of the manholes indicated for rehabilitation. Provide a list correlating the photo file number with manhole's approximate location. All photographs shall have sufficient detail of the interior of each manhole to reveal conditions of existing defects and rehabilitated features.

B. Process Description:

1. Manhole structural restoration is achieved by spraying the manhole walls and bench surfaces with cementitious materials (mortar) to create a monolithic wall with no joints. This process provides a uniform minimum thickness of ½" in depth, forming an impervious, monolithic liner with physical properties that exceed those of the existing structure. The system consists of three primary components; (1) materials consisting of pre-blended, fiber-reinforced mortar, (2) specialized equipment designed to mix and convey the material, and (3) proper application techniques.

2. The mortar must be designed for this particular use and shall have:
   - A minimum tensile strength of 500 psi (ASTM C 496)
   - A minimum 28 days flexural strength of 600 psi (ASTM C78)
   - A minimum 28 days compressive strength of 5000 psi (ASTM C109)
   - A minimum 28 days bond strength of 2300 psi (ASTM C 882)

3. The equipment must be specially designed to mix, pump and spray the wet mortar in a uniform controlled manner.

4. The applicator, approved and trained by the manufacturer, shall furnish all labor and equipment and materials for applying a corrosive resistant cementitious material to form the structural liner. All aspects of the installation shall be in accordance with the manufacturer's recommendation and per the following specifications which includes:

   a. The removal of any loose and unsound substrate.
   b. Cleaning of the area to be sprayed with high pressure water.

c. The repair and filling of voids.
d. The repair and sealing on the inverts and benches.
e. The elimination of active infiltration prior to making the application.
f. Finally, the spay application of an acid resistant cementitious material to form a structurally enhanced corrosion resistant monolithic liner.

C. Supplying all labor, materials, equipment and apparatus not specifically mentioned herewith or noted on the plans, but which are incidental and necessary to complete the work specified.

1.2 JOB CONDITIONS

A. The Contractor shall conduct operations and schedule cleanup in a manner to cause the least possible obstruction and inconvenience to traffic, pedestrians and to adjacent property owners or tenants.

1.3 SUBMITTALS

B. A list of locations and references for other projects in which the products was used shall be furnished to the Engineer prior to commencing work.

C. The Contractor shall submit the manufacturer documents containing product (mortar and water-stop patching compound) technical information, ASTM test results and certification, application procedures and specifications for approval.

D. The Contractor shall submit a plan for bypassing sewage around the work area and facilities where sewage flows must be interrupted to carry the work. The plan shall be reviewed by the engineer and shall be acknowledged as acceptable before any work is started.

1.4 REQUIREMENTS

A. The installer, whether the Contractor or a subcontractor, shall be a certified installer of the lining system. The installer's personnel shall be adequately trained in maintenance and operation of the required installation equipment, as certified by the lining manufacturer. A letter from the manufacturer of the lining system, verifying the certification of the installer required to be on-site during installation, shall be submitted to the City.

B. Prior to the installation of the lining system, the host structure shall be prepared to produce a concrete surface suitable for application and adhesion of the specified lining system. Cleaning and surface preparation shall include the inspection of the host structure for any damage or leaks, and the removal of any protrusions on the surface of the host structure that could interfere with the installation of the lining system. Any damage or leaks shall be reported to the Engineer. Cleaning methods may include high pressure water cleaning at a minimum of 34.5MPa (5,000 psi), abrasive blast, or a method recommended by the manufacturer of the lining system, or another cleaning method submitted to the Engineer for approval. The Contractor shall protect the host structure from damage by the cleaning equipment, water and air pressure. Flow bypassing, if required by the lining system, shall be as specified under Section 02740.

C. Debris from the cleaning operation shall not be allowed to enter the sewer system. The Contractor shall furnish, install and remove any necessary debris containment devices while maintaining sewer flow. The Contractor shall remove and dispose of all debris collected from the cleaning operation. If reinforcing steel is exposed, either before or after removing deteriorated concrete, it shall be thoroughly cleaned to remove all contamination and rust particles. Immediately after the cleaned reinforcing steel is inspected and accepted by the Engineer, the Contractor shall place a protective coating on the exposed reinforcing steel. The protective coating shall be approved by the Engineer in accordance with the manufacturers' specifications.

PART 2 - PRODUCT

2.1 MATERIALS

A. Cementitious material (i.e. spray-able mortar) shall be SewperCoat as manufactured by Kerneos Aluminate Technologies or SP15 Spray Mortar as manufactured by ThoRoc or Strong-Seal MS-2A as manufactured by Strong-Seal Systems Group or Drycon - SM as manufactured by IPA Systems Inc. or approved equal. Polyurethane coating material shall be Utilithane 1600 Polyurethane Coating as manufactured by Prime Coatings Incorporated or SprayShield by Sprayroq or approved equal. Epoxy coating material shall be Raven 405 manufactured by Raven Lining Systems or approved equal. The minimum liner shall be 3mm (125 mils) thick.

	Polyurethane	**Epoxy Primer**
Tensile Strength ASTM D 638, Type IV, MPa (psi) (min)	13.8 (2,000)	41.4 (6,000)
Elongation at Break, % ASTM D 638, Type IV	40	5
Wear Resistance, mg. wt. Loss Taber abrasion, ASTM D4060	60[1]	100[1]
Hardness, Shore D, Durometer ASTM D 2240	55	75
Tear Resistance, kg/mm (ppi) ASTM D 624	2.7 (150)	N/A
Peel Strength, Concrete, g/mm (pli) ASTM D 903	125 (7)[2]	125 (7)[2]
Weight Change[3]	±1.5%	±1.5%

B. Other applicable crack repair materials such as patching material, infiltration control material, and grouting material shall be obtained from the same manufacturer of the mortar for consistency in material used.

2.2 EQUIPMENTS

A. Progressive cavity pumps are preferred because of their ability to provide a consistent volume of material to the spray head. High-pressure cleaning system and water storage tank are also required. A water metering system should be provided on the equipment to allow the application to properly control the volume of water added.

PART 3 - EXECUTION

3.1 SANITARY SEWER MANHOLE WALL REPAIR

A. Comply with all relevant provisions of the Safety and Health Regulations for

Construction, promulgated by the Secretary of Labor, as set forth in Title 29 C.F.R., and with all provisions of the California Occupational Safety and Health Act of 1973.

B. Specific attention is directed to OSHA safety rules, regulations and precautions to be taken by the Contractor before entering sanitary sewer manholes, and sanitation structures with respect to physical and chemical hazards which may be present.

C. Manhole walls shall be sealed where shown or specified, or as directed by the Engineer. Rehabilitation of the manhole walls shall be accomplished by applying a structural, spray-able repair mortar coating to the original surface plane or a minimum of 0.5 inch. The manufacturer's recommendations shall be strictly followed for the entire operation including cleaning and preparing the manhole walls, storing and preparing the products, and sealing the manholes. The product must be specifically formulated for use in the sewer system and bear the manufacturer's certification that it will fulfill the requirement described herein when applied in accordance with the manufacturer's recommendations.

D. Prior to the sealing operation, the manhole walls shall be thoroughly cleaned using a high pressure water blast with a minimum nozzle pressure of 2,500 psi or higher as required to remove all surface debris and loose materials. All cracks, openings, active water infiltration, and deteriorated joints in the manhole walls shall then be repaired in accordance with the sealing product manufacturer's recommendations.

E. Where occur, seal crack openings greater than 1/8 inch on inside of existing manholes by chipping out a minimum depth and width of ¾" to provide mechanical key for mortar.

F. Where occur, remove any loose bricks or pieces of brick, mortar or concrete and fill all voids and joints with mortar.

G. Where occur, seal all active water infiltration using rapid setting, water stop patching compound manufactured for this purpose.

H. Sealing manhole walls shall mean that the entire wall surface and the base are sealed with the new mortar coating. The manhole wall seal shall extend from the top of the cone to the base. This seal will include the area where the walls join the base and the location where the pipes enter and exit the manhole, even if through the manhole base.

I. Solid debris resulting from required preparatory operations shall be prevented from entering the sewer pipe and shall be removed from the manhole prior to sealing.

J. Polyurethane Liner Installation and Curing: Lining material shall be applied to all prepared surfaces from 25mm (1 inch) below the low-flow water level to the base of the ring and cover unless otherwise specified. All termination points of the lining material to the existing subsurface shall be keyed into the subsurface by mechanically scoring a minimum 6mm x 6mm (1/4 inch x 1/4 inch) keyway. Prior to application of the polyurethane, the subsurface shall be primed with the epoxy primer to a thickness of 7.6µm (3 mils) minimum to 12.7µm (5 mils) maximum. Polyurethane shall be applied to a thickness of 3.2mm (125 mils) immediately prior to the epoxy primer becoming tack-free Lining material shall be uniform in color, fully cured, free of holidays, surface

imperfections, blisters and sags and adequately adhered to the subsurface.

K. Epoxy Liner Installation and Curing: Lining material shall be applied to all prepared surfaces from 25mm (1 inch) below the low-flow water level to the base of the ring and cover unless otherwise specified. Termination points of the lining to the existing subsurface shall be keyed into the subsurface by mechanically scoring a minimum 6mm x 6mm (1/4 inch x 1/4 inch) keyway. Epoxy shall be applied to a thickness of 3.2 mm (125 mils). Lining material shall be uniform in color, fully cured, free of holidays, surface imperfections, blisters and sags and adequately adhered to the subsurface.

3.2 SANITARY SEWER MANHOLE INVERT AND BENCH REPAIR

A. The existing bench and trough area shall be thoroughly cleaned. Remove loose and unsound materials such as mortar, brick, clay pipe and concrete. Care shall be taken to avoid damage to other parts of the manhole structure. Loose materials shall be prevented from entering into the sewer lines and shall be properly disposed by the Contractor.

B. Repair manhole inverts and rebuild benches that have visible damage or infiltration present.

C. Trowel mix uniformly onto damaged invert and bench at a minimum thickness of ½ inch, extending out onto base of manhole sufficiently.

D. Finished invert and bench surfaces shall be smooth and free of ridges.

3.3 FIELD SAMPLE AND FINAL ACCEPTANCE

A. The Contractor shall provide the Engineer for approval, with certified test results of the short term properties of the structural grout material from the actual installed grout liner at a minimum of 4 samples taken at random from different batch of material.

B. Grout samples shall be submitted to a certified laboratory hired by the Engineer and tested to confirm that the liner pipe conforms to the minimum ASTM requirements stated in Section 1.01-B.2. Final payment for project shall be withheld pending receipt and approval of results of tests.

C. Visually verify the absence of leaks. Manholes will also be inspected after completion and within the guarantee period. Leakage and other defects that were a result of the Contractor's work shall be eliminated and repaired by the Contractor as required by the Engineer, at the Contractor's expense.

3.4 TESTING AND REPAIR

A. The testing costs are to be paid by the City and therefore, should not be included in the bid. However, if the work should fail to pass the tests, it is the Contractor's responsibility to correct the work and re-test at the Contractor's expense. The City shall not pay for these re-installations and re-tests.

B. **Spark Test:** The cured lining system shall be spark tested for holidays with the high voltage holiday detector instrument specified by the coating manufacturer or as specified in the Special Provisions. The voltage shall be set at a minimum of 15,000 volts. For thicknesses greater than 3.81mm (150 mils), the voltage shall be set at 100

volts per 25.4µm (1 mil) of thickness of the applied lining material. Identified holidays shall be marked without contaminating the lining surface and repaired.

C. Mil Gauge Test: During installation, a mil gauge shall be used to verify that the minimum thickness of the lining meets and/or exceeds the minimum thickness as specified herein.

D. Adhesion Testing: Adhesion testing shall be performed on a minimum of 1 structure or 15 percent of all rehabilitated structures, whichever is greater. Adhesion testing shall be conducted after the liner system has cured in accordance with the manufacturer's specifications. Adhesion testing shall be in accordance with ASTM D4541.

E. Liner Repairs: Holidays, uncured lining material, blisters, surface imperfections and damage to the liner resulting from the adhesion test shall be repaired to a point 25mm (1 inch) minimum beyond the limits of the damaged area. The repair shall be 3mm (125 mils) thick. Holidays shall be primed and recoated with the same lining system to a minimum additional thickness of 30 mils unless otherwise specified by the liner manufacturer or approved by the Engineer. Blisters, uncured lining and surface imperfections shall be completely removed and the areas recoated with appropriate lining material to 25 mm (1 inch) minimum beyond the repair areas at a minimum thickness of 100 mils. Additional spark testing shall be performed after repairs are completed.

* * *

SECTION 02840

ROADWAY MARKING ACCESSORIES

PART 1 - GENERAL

1.1 WORK INCLUDED

A. Cleaning and sweeping of streets before application of markings.

B. Application of temporary and permanent stripes and pavement markings.

C. Application of raised pavement markers.

D. Application of roadway markers and delineators.

E. Installation of traffic control signs.

F. Restoration of existing improvements.

G. Cleanup and removal of debris.

H. Supplying all labor, materials, equipment and apparatus not specifically mentioned herein or noted on the plans, but which are incidental and necessary to complete the work specified.

1.2 QUALITY ASSURANCE

A. Manufacturer's certificates showing conformance with this specification shall be delivered with each shipment of materials and equipment delivered to the job site.

B. Only City inspected and approved material may be used for roadway delineation.

C. Codes and Standards

1. The standards, recommended methods and tests contained in the publications cited below shall determine the standards for the work to be done hereunder unless otherwise specifically designated on the plans:

    a. The *California Manual on Uniform Traffic Control Devices* (*California MUTCD*), latest edition.

    b. The regulations, standards, and tests of the State of California Department of Transportation Materials and Research Division.

    c. The *State of California Standard Plans and Standard Specifications,* and applicable related *Standard Special Provisions*.

2. Traffic signs, roadway markers and delineators, traffic stripes, pavement markings, and pavement markers shall be placed in the locations shown on the plans and shall conform to the applicable sections of the California MUTCD and the State of California Highway Design Manual.

3. Reference by manufacturers, brands or models is to establish type and quality of materials desired. Substitutions of materials of equal quality will be permitted upon the prior written approval.

1.3 JOB CONDITIONS

A. No striping, markings, or markers shall be applied until pavement surfaces have been approved.

B. Concrete shall be thoroughly cured before application of striping, markings, or markers thereon.

PART 2 - PRODUCTS

2.1 TEMPORARY PAVEMENT MARKERS

A. Short term, temporary pavement markers shall be day/night retroreflective raised pavement markers conforming to the requirements of Section 12 of the State Standard Specifications and Part 6 of the California MUTCD.

2.2 THERMOPLASTIC STRIPES AND MARKING

A. Traffic stripes and pavement markings shall be thermoplastic material, unless otherwise noted on plans. Thermoplastic stripes and markings shall be extruded thermoplastic conforming to Section 84-1 and 84-2 of the *State Standard Specifications*.

B. Thermoplastic stripes and markings shall have a minimum skid friction value of BPN = 35.

C. Glass beads applied to molten thermoplastic material, or paint must comply with State Specification 8010-004.

D. Submit certificates of compliance showing conformance with this specification for each load of material delivered to the job site.

2.3 PERMANENT PAVEMENT MARKERS AND ADHESIVES

A. Pavement markers shall be the type and description shown, noted or called for on the plans and detail drawings, and shall conform to the requirements of Section 85 of the State Standard Specifications and the State Standard Plans.

B. Adhesive for pavement markers shall be either epoxy or hot melt bituminous adhesive conforming to the requirements of Section 85 of the State Standard Specifications.

C. Submit certificates of compliance showing conformance with these specifications for each load of pavement markers delivered to the job site. Pavement markers must be on Caltrans' Authorized Material List of signing and delineation materials.

2.4 REFLECTORIZED MARKERS AND POSTS

A. Retroreflective markers and delineators shall be of the size, type and description shown, noted, or called for on the plans and detail drawings and shall conform to the requirements of Section 82 of the State Standard Specifications, and the *California MUTCD*.

B. Posts for retroreflective markers shall be of the type shown, noted, or called for on the plans and detail drawings and shall conform to the requirements of Section 82-1.02 of the *State Standard Specifications*.

C. Target plates for markers shall be of the type shown, noted, or called for on the plans and detail drawings and shall conform to the requirements of Section 82-1.02E of the *State Standard Specifications*.

D. Reflectors for markers and delineators must consist of Type III or higher grade retroreflective sheeting on the State Authorized Material List for signing and delineation materials, and shall comply with requirements in the *California MUTCD*.

E. Mounting hardware shall conform to the requirements of Section 82-1.02H of the *State Standard Specifications*.

2.5 TRAFFIC CONTROL SIGNS

A. Traffic control sign panels shall be of the type, size, shape, and pattern designated or called for on the plans and detail drawings. Where sign sizes are not specified in the plans, the designated Standard size sign in accordance with the *California MUTCD* shall be used.

B. Signs shall conform to the requirements of Section 56-4 of the *State Standard Specifications*.

C. Signs must comply with the *California Sign Specifications* and the *Federal Standard Highway Signs and Markings Book*.

D. Submit a certificate of compliance for:

1. Aluminum sheeting
2. Retroreflective sheeting
3. Screened-process colors
4. Nonreflective, opaque, black film

E. Sign panels shall be constructed of aluminum, unless otherwise specified on plans. Aluminum panels shall conform to the requirements in Section 56- 2.01B(5), 56-2.02, and 56-2.05B of the *State Standard Specifications*, and the *State Standard Plans*.

F. Retroreflective sign sheeting shall conform to the requirements in Section 56- 2.01B(6) of the *State Standard Specifications* and Part 2 of the *California MUTCD*.

G. Sign information must be imprinted in 1/4-inch upper case letters and numerals. Locate this information on the back, lower right of each sign panel. Sign information must include:

1. Month and year of fabrication
2. Type of retroreflective sheeting
3. Sheeting manufacturer's identification and lot number for the retroreflective sheeting

H. Posts for traffic control signs, unless designated to be mounted on traffic signal or electrolier standards, shall be as designated and detailed on the plans.

I. Mounting hardware for traffic control signs shall conform to the details shown or called for on the plans. Mounting hardware for signal or electrolier standards or metal posts shall conform to the applicable requirements and specifications shown and noted on *Plan* RS4of *State Standard Plans* and Section 56-4.02E of the *State Standard Specifications*.

J. Concrete bases for traffic control sign posts shall be Portland cement concrete of the shape and dimensions shown or called for on the plans and detail drawings, and shall conform to the requirements of Section 02550 of these specifications and Section 90-2 of the *State Standard Specifications*.

2.6 PROTECTION

A. The Contractor shall protect the newly installed pavement markers and stripes from damage until the material has cured.

B. Replace any markers broken, misaligned or otherwise disturbed prior to opening roadway to traffic.

PART 3 - EXECUTION

3.1 TEMPORARY PAVEMENT MARKERS

A. Temporary pavement markers shall be installed and replaced as directed.

B. If permanent pavement markers cannot be installed immediately, short term, temporary pavement markers shall be installed on new roadways before the street will be opened for traffic.

C. Temporary pavement markers, at a minimum, shall be placed at 24 feet on centers in the appropriate colors to delineate centerlines and travel lanes on multi-lane roadways except that edge lines shall not be simulated with raised pavement markers.

3.2 THERMOPLASTIC STRIPES AND MARKINGS

A. Thermoplastic stripes and markings shall be applied hot in conformance with the manufacturer's recommended instructions and the applicable requirements of Section 84-2.03 of the *State Standard Specifications*.

B. Use mechanical wire brushing to remove dirt, contaminants, and loose material from the pavement surface that is to receive the traffic stripe or pavement marking. Use abrasive blast cleaning to remove laitance and curing compound from the surface of new concrete pavement that is to receive the traffic stripe or pavement marking.

C. Apply a traffic stripe or a pavement marking to a dry surface during a period of favorable weather when the pavement surface is above 50 degrees F.

D. Apply extruded thermoplastic at a temperature from 400 to 425 degrees F, unless a different temperature is instructed by the manufacturer.

E. Apply glass beads to the surface of the molten thermoplastic at a rate of at least 8 lb/100 sq ft. Glass beads must be embedded in the coat or thermoplastic to a depth of 1/2 their diameters.

F. Apply extruded thermoplastic for a traffic stripe at a rate of at least 0.20 lb/ft of 4- inch wide solid stripe. The applied thermoplastic traffic stripe must be at least 0.06 inch thick. An applied thermoplastic pavement marking must be 0.10 to 0.15 inch thick.

3.3 PAVEMENT MARKERS

A. Pavement markers shall be installed in conformance with the requirements of Section 85-1.03 of the *State Standard Specifications*.

B. Remove undesirable material from the pavement surface. Clean the pavement surface by abrasive blast cleaning when directed by the Engineer.

C. Markers shall be installed accurately to the line established by the Engineer. No markers shall be installed until the surface and layout have been approved by the Engineer.

3.4 REFLECTORIZED MARKERS

A. Reflectorized markers shall be installed in conformance with the requirements of Section 82-1.03 of the State Standard Specifications, except that the metal marker posts shall not be driven in place without prior approval of the Engineer.

B. Reflectorized markers shall be installed accurately at the locations called for on the plans and in the positions specified on the detail drawings.

3.5 TRAFFIC CONTROL SIGNS

A. Traffic control signs shall be installed in conformance with the requirements of the *California MUTCD*, and Section 56 of the State Standard Specifications.

B. After erection, damage to traffic sign faces shall be repaired as required.

3.6 RESTORATION OF EXISTING IMPROVEMENTS

A. Existing signs or other markings removed or damaged due to the installation of roadway markers or traffic control signs shall be replaced in kind.

B. Existing landscaping or planting removed, damaged or disturbed due to the installation of roadway markers or traffic control signs shall be replaced in kind.

3.7 CLEANUP

A. Upon completion of the installation of Roadway Markings and Accessories, Contractor shall thoroughly clean the work site of all waste, rubbish and construction debris of any nature.

B. Upon removal of temporary signs, patch holes in walkway or roadway with Portland Cement concrete conforming to Section 02550 of these Specifications.

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SECTION 02900

LANDSCAPING

PART 1 - GENERAL

1.1 WORK INCLUDED

A. Clearing and grubbing.

B. Site grading to subgrade for topsoil.

C. Leaching of subgrade soils.

D. Placing topsoil and prepared soil backfill.

E. Planting.

F. Watering.

G. Staking and guying of trees and shrubs.

H. Maintenance of planted material, including application of pre and post emergent herbicides for weed control.

I. Cleanup and restoration of disturbed surfaces.

J. Supplying all labor, materials, equipment, and apparatus not specifically mentioned herein or noted on the plans, but which are incidental and necessary to complete the Work specified.

1.2 APPLICABLE PUBLICATIONS

A. The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the general designation only.

B. American society for Testing and Materials (ASTM) Publications:

D - 1557	Moisture-Density Relations of Soils and Soil Aggregate Mixtures using 10-lb. (4.54 KG) Rammer and 18-in. (457 mm) Drop.

1.3 QUALITY ASSURANCE

A. Percentage of compaction specified shall present the ratio of the dry density of the compacted backfill material to the maximum dry density of the material as determined by the procedure set forth in ASTM Designation D1557.

B. Plant material as indicated on the "Plant List" and delivered to the job site shall be subject to the approval of the Engineer prior to planting. Any plant material as indicated

on the "Plant List" which is rejected by the Engineer shall be removed from the site immediately and replaced by the Contractor.

C. Submit list of plant materials and source location 30 days in advance of planting date, to allow the City an opportunity to inspect and tag plant material at the source before delivery to site.

1.4 JOB CONDITIONS

A. Contractor shall accurately grade and prepare the landscape subgrade to six (6) inches below the adjacent top of curbs within median areas and as shown on the plans outside of median areas.

B. Contractor shall provide dust alleviation and control measures during the course of the work at no additional expense to the Contract.

C. Substitutions for plant materials called for on the "Plant List" shall not be allowed except with prior written consent of the Engineer. All substitute plant materials shall conform to the requirements of these specifications.

D. Contractor shall be solely responsible for the maintenance of landscape areas until acceptance of the work including weed and pest control.

E. All irrigation work shall be inspected and approved by the Engineer before landscape work may begin.

F. Prior to excavation for planting or placing of stakes, Contractor shall locate all electric cables, conduits, sprinkler valve control wires, and all utility lines so that proper precautions may be taken not to damage such improvements. Any damage occurring during planting shall promptly be satisfactorily repaired by Contractor.

PART 2 - PRODUCTS

2.1 IMPORT MATERIAL FOR SITE GRADING

A. Import material for site fill shall conform to Section 02220 of these Specifications.

B. Materials not conforming to the above specifications and requirements shall remain the property of the Contractor and shall be removed from the job site.

2.2 PLANT MATERIALS

A. Plant materials shall be as indicated on the plans. Plant names on the "Plant List" shall be listed by both nursery name and technical name.

B. Sizes of plants shall be as stated on the "Plant List". Contractor stock (1 gallon, 5 gallon, and 15 gallon) shall have been grown in containers for at least one (1) year, but not over two (2) years.

C. Plants shall be symmetrical, typical for variety and species, sound, healthy, vigorous, free from plant disease, insect pests, and other eggs, and have healthy, normal root

systems, well filling their containers, but not to the point of being root bound. Plants shall not be pruned prior to delivery and in no case shall trees be topped before delivery.

D. The height and spread of all plant material shall be measured with branches in their normal position, and shall be as indicated on the plans. The caliper of all trees shall be measured 4'-0" above the surface of the ground. Where caliper or other dimensions of any plant materials are omitted from the "Plant List", it shall be understood that these plant materials shall be normal stock for type listed.

2.3 SEEDED LAWN MATERIALS

A. Grass seed shall be fresh, clean, new crop seed composed of the following varieties, or approved equal, mixed in proportions and testing minimum percentages of purity and germination as indicated below:

NAME	BY WEIGHT	PURITY	GERMINATION	MAXIMUM WEED CONTENT
*Warren's A-34 Bluegrass	25%	95%	90%	0.25%
Creeping Red Fescue	25%	96.89%	94%	0.20%
Penn Fine Ryegrass	50%	95%	90%	0.25%

* (Fylking Bluegrass may be substituted if sufficient quantities of Warren's A-34 Bluegrass are not available, upon prior approval by the Engineer.)

2.4 SODDED LAWN MATERIALS

A. Sod shall be well-established, disease-free, and in a healthy and vigorous growing condition at time of placement and shall be as grown by "Cal-Turf" or approved equal. Sod in all areas, except as noted for shade on the plans, shall be a mixture consisting of thirty percent (30%) Fylking Bluegrass and seventy percent (70%) Manhattan Ryegrass. Sod in shade areas shall be Warren's A-34 (100% weed free) or approved equal.

2.5 TOPSOIL AND PREPARED SOIL BACKFILL

A. Topsoil shall consist of a fertile friable soil sandy loam conforming to the U.S. Bureau of Soils triangular distribution chart. Laboratory certification of the conformance of the topsoil material to these requirements shall be delivered with each batch of topsoil delivered to the site, and approved by the Engineer.

B. To the topsoil, add six (6) cubic yards of nitrogen stabilized Fir or Redwood and thirty-five (35) pounds of "Agriform" C.R.F. Controlled Release Fertilizer in the formulation 16-7-12 + Iron, or approved equal per 1,000 square feet (500 cubic feet) of topsoil.

C. Topsoil shall be free of any refuse, heavy or stiff clay, hard clods, stones larger than one inch, roots larger than one-half inch in diameter, noxious weeds, Bermuda grass, nut grass, and other deleterious materials. Topsoil shall be free from toxic amounts of either acid or alkaline chemicals and shall be capable of sustaining plant life.

D. Prepared soil mix for backfill in holes for trees, vines and shrubs shall consist of one-half (1/2) cubic yard of sandy loam topsoil and one-half (1/2) cubic yard of nitrogen stabilized fir or redwood per cubic yard of mix. One "Agriform" plant tablet (21 gram), or approved equal, shall also be placed for each twelve (12) inches of root ball circumference of the tree or shrub being planted.

2.6 FERTILIZERS AND ADDITIVES

A. Fertilizer shall be "Agriform" C.R.F. Controlled Release Fertilizer in the formulation 16-7-12 + Iron, or approved equal. It shall be uniform in composition, dry and free flowing, and shall be delivered to the site in the original unopened containers. Any fertilizer which becomes caked or otherwise damaged shall be replaced.

B. Fertilizer tablets shall be "Agriform" Planting Tablets as manufacture-by Agriform International Chemicals, Inc., or approved equal, with formulation 20-10-5 (21 gram).

C. Nitrogen stabilized fir or redwood shall be bulk treated with a reactive form of nitrogen (NH3) as manufactured under one of the following trade names "Tillo", "Redwood Soil Conditioner", "Ceda-Soil", "Turf and Tee".

D. Mulch shall be "Walk on Bark", as manufactured by Sequoia Forest Products, or approved equal.

E. Weed Control Material shall be pre-emergent herbicide, Trifluralin (Treflan R) or Diphenamid (Dymid R or Enide R) or approved equal.

2.7 STAKING AND GUYING MATERIALS

A. Stakes for trees and shrubs shall be lodge pole pine as supplied by "B.V.C." or approved equal. Stakes shall be either two (2) inches or three (3) inches in diameter as shown on the plans and shall have been pressure treated with copper-chromate-arsenate or approved equal. The length of stakes shall be as indicated on the plans and all stakes shall be pointed at one end.

B. Tree ties shall be corded rubber tree straps as manufactured by "Gro-Strait" or approved equal. Ties shall be located as indicated on the plans.

2.8 ROOT BARRIER

A. Root Barriers shall be Deep Root Panels DR-128, or acceptable equivalent.

PART 3 - EXECUTION

3.1 CLEARING AND GRUBBING

A. All weeds and grasses shall be dug out by the roots and disposed of off the site, except those weeds and grasses that are not the perennial type, are less than 2- 1/2 inches high and are not bearing seeds. The aforementioned weeds may be turned under.

3.2 SITE FILL AND GRADING

A. Areas to receive fill to landscape subgrade shall be scarified to a minimum depth of six (6) inches, conditioned to a moisture content that will permit compaction to the specified density, and compacted to a density of not less than ninety (90) percent of maximum dry density as determined by the procedure set forth in ASTM Designation D1557.

B. Import material for fill to landscape subgrade shall be placed in uniform horizontal layers not exceeding eight (8) inches in loose thickness and shall be compacted to a density of not less than ninety (90) percent of maximum dry density as determined by the procedure set forth in ASTM Designation D1557.

C. Subgrade for landscape shall be finished at six (6) inches below the adjacent top of curb grades shown or called for on the plans to the satisfaction of the Engineer prior to installation of irrigation and/or leaching systems, if any are required, and prior to leaching.

3.3 LEACHING

A. Fifteen (15) days prior to planting and prior to placing topsoil, subgrade for all planting areas shall be irrigated with automatic controller in operation at the maximum rate of one (1) inch per hour with a total of twenty-four (24) inches of water in a twenty-four (24) hour period.

B. Leaching operations shall be conducted in such a manner that said operation will not interfere with construction work by others. Surface runoff will not be permitted.

3.4 PLACING TOPSOIL AND SOIL MIX BACKFILL

A. Placing topsoil shall begin only after leaching operations have been completed to the satisfaction of the Engineer.

B. All areas to be planted shall have topsoil placed to a depth, that when compacted to a density of not less than eighty-five (85) percent of maximum dry density, shall conform to the lines, grades and elevations shown on the plans. Topsoil shall not be worked when the moisture content is so great that excessive compaction will occur, nor when it is so dry that a dust will form in the air or that clods will not break readily. Water shall be applied, as necessary, to provide ideal moisture content for planting. Prepared soil mix shall be used for backfill in all holes for trees, vines and shrubs.

3.5 MULCHING

A. In designated ground areas mulch shall be applied to a uniform depth of two (2) inches.

3.6 METHOD OF PLANTING

A. No planting shall be done until all grading and irrigation system operations have been completed, finish grades have been established, the planting areas have been properly prepared as herein specified, and the work has been approved by the Engineer.

B. All plants shall be set so that, when settled, they bear the same relation to the required grade as they bore to the natural grade before being transplanted. Each plant shall be planted in the center of the hold and backfilled, unless otherwise specified, with prepared soil mix backfill. No backfill in muddy condition shall be used. No filling will be permitted above crown. All broken or frayed roots shall be properly cut off. All backfill shall be properly tamped.

C. Any plant material furnished as indicated on the "Plant List" which is not in compliance with the requirements of these specifications shall be removed immediately and replaced.

3.7 PLANTING OF TREES

A. Positions of all trees shall be marked and approved in the field prior to planting.

B. Holes for trees shall be excavated two times the diameter of root ball and ***a*** minimum of nine (9) inches below the bottom of root ball around a platform to support the tree at proper depth. Soil at sides and bottoms shall be loosened by scarifying or other approved method. Holes shall be backfilled with prepared soil mix to the bottom of the root ball depth. After the root ball has been set to the required grade, backfill to half the root ball depth, and place "Agriform" plant tablets equally spaced around root ball. The number of tablets shall be equal to the circumference of the root ball in inches divided by twelve (12). Fill the remaining portion with prepared soil mix and thoroughly tamp the backfill.

C. Remove any previous nursery staking and ties. Set plants in center of the hole, in a vertical position without staking.

D. Trees shall be planted so that the root crown is 2 inches above surrounding soil, and at least one inch above surrounding soil after settling. All plants shall be thoroughly "watered-in" within one hour after planting.

E. Root barriers shall be installed at the time of planting as shown on plans, or as designated by the Engineer.

F. Each tree shall be supported by two round treated stakes, per City Details. Tying shall be done with two (2) ties per tree, one from each stake. Ties shall be tied at the lowest height the trunk can be supported allowing the crown or top to stand upright. Use "Figure 8" method to attach ties. Stakes must be set in ground a minimum of two feet (2'). Stakes shall parallel sidewalk or curb. Stakes shall be located in the soil outside the rootball. Stakes shall be cut off above the tie-point to a height so as not to rub or contact branches.

G. Trees shall be pruned to remove broken, crossing, rubbing branches or to lightly thin branches. A dominant central leader should be established. Prune girdling or curling roots.

H. Turf shall be maintained a distance of 12” from tree trunk.

3.8 PLANTING OF SHRUBS AND VINES

A. Shrubs and vines shall be planted in holes of at least twelve (12) inches greater in diameter than their ball of earth and at least six (6) inches below the bottom of the ball. Compacted soil at the bottom of the hole shall be loosened and the hole filled with prepared soil mix to the bottom of the ball. When the plant has been properly set, the hole shall be half filled and "Agriform" plant tablets placed. The number of tablets to be placed shall equal the circumference of their ball of earth divided by twelve (12). The remainder shall be filled to the required grade with prepared soil mix and then thoroughly settled by tamping and watering. All vines shall be removed from stakes, untied, and securely fastened in an approved manner to wall, fence, or other surface next to which they are planted and/or as shown on the plans.

B. Prepare depressed water basin as wide as plant balls at each plant. Water thoroughly, backfilling any voids with additional prepared planting mix followed by tamping. Do not basin flat sized plants.

3.9 PLANTING OF GROUND COVERS

A. Directly after planting, ground cover areas shall have applied a pre-emergent herbicide acceptable to the Engineer in accordance with the manufacturer's rates and procedures followed by an application of commercial fertilizer 6-20-20 applied at the rate of 35 lbs./1,000 sq. ft. A mulch top dressing shall then be placed over the fertilizer.

B. Plant spacing for flat sized plants shall be as specified on the plans. Ground cover areas are to be moistened prior to planting. No flat plants are to be planted in dry soil.

C. Set plants in the center of holes so that the crown of plants will be level with finished grade after settling of the soil, then backfill and water.

D. Plants shall not be allowed to dry out before, or while being planted. Keep exposed roots moist by means of wet sawdust, peat moss, or burlap at all times during planting operations. Do not expose roots of plants to the air except while being placed in the ground.

3.10 WATERING BASINS

A. Watering basins shall consist of a depression in the soil around each tree and plant at the outside edge and following the shape of the planting hole area. Area shall be firmly compacted. Depressions for trees and for shrubs from five-gallon or larger containers, shall be at least four (4) inches deep. Depressions for all other shrubs, vines or plants not otherwise specified shall be at least two (2) inches deep, and thoroughly tamped.

B. Watering shall be done so as not to expose the crown by washing away the mound in the center. However, if any settling occurs, the mound shall be satisfactorily replaced.

3.11 LAWNS

A. Seeded or Sodded Lawn

1. Prior to planting lawn, the topsoil shall have been raked to a smooth, firm surface

and then rolled with a 200-pound water ballast roller.

2. All lawn areas whether seeded or sodded shall be thoroughly watered. Lawns are to be kept continuously moist by watering as deemed necessary to insure germination or maintain healthy growth as the case may be.

3. Any lawn areas that do not show a prompt catch of grass shall be re- seeded or re-sodded to the original specification at ten (10) day intervals until an acceptable stand of grass is produced.

B. Seeded Lawn

1. Seed shall be sown in two directions at the rate of 3 lbs/1,000 sq. ft. in each direction for a combined rate of 6 lbs./1,000 sq. ft.

2. After seeding operation is complete, top dress entire seed bed area using Nitrolized fir or redwood shavings at the rate of 1 cu. yd./1,000 sq. ft. of lawn.

3. After top dressing, roll entire seed bed area with a 200-pound water ballast roller to press seed firmly into seed bed.

4. After lawn planting is complete, fertilizer shall be applied as follows: 16-6-8

Polycoated Fertilizer at the rate of 7 lbs./1000 sq. ft. of lawn.

C. Sodded Lawn

1. Quantities of sod delivered to site shall not remain unplanted longer than one (1) day. Sod remaining unplanted longer than 24 hours shall be removed from the work and replaced.

2. All sod shall be set tight without gaps between pieces and shall be rolled with a 200-pound water ballast immediately after first watering.

3. All sodded areas shall be thoroughly watered. Lawns are to be kept continuously moist by watering as often as required to maintain vigorous growth.

3.12 WATERING

A. Immediately after planting, water shall be applied to each tree and shrub by means of a hose. The water shall be applied in a moderate stream in the planting holes and until the material around the roots is completely saturated from the bottom of the hole to the top of the ground.

B. Following the planting of ground cover plants, furnished in flats, each plant shall be immediately and thoroughly watered by means of a hose and a slow running stream of water.

C. Water shall be applied in sufficient quantities, and as often as seasonal conditions require, to keep the ground wet at all times, well below the root system of grass and planting until acceptance of the entire work.

3.13 ROOT BARRIER INSTALLATION

A. An approved root barrier shall be placed in the trench created alongside the new, or

existing sidewalk or curb as directed by the Engineer.

B. The barrier shall be a continuous length and shall extend from finished grade downwards to a minimum depth of 18".

3.14 MAINTENANCE

A. As a Contract requirement, Contractor shall maintain all landscaping for a period of at least sixty (60) calendar days after the date of written preliminary acceptance of landscape areas by the Engineer.

B. The Contract maintenance period may begin prior to completion of the total work, but in no case shall the Contract maintenance period end prior to the final acceptance of the work by the City Council. If completion of the work is delayed for whatever reason, Contractor shall maintain all landscaping until final acceptance of the work. The project shall not be accepted until the end of the 60-day maintenance period.

C. Plants, shrubs, trees, lawn or other landscaping which are replaced during the original Contract maintenance period shall be maintained for an additional maintenance period of sixty (60) calendar days beginning from the time of replacement.

D. Contract maintenance work shall consist of applying water (except initial watering of plants), weeding, caring for plants, edging and mowing of lawns and the following additional maintenance requirements:

1. Water lawn until final acceptance of work by the City. Seeded lawn shall be maintained 60 calendar days after germination of all grass species in seed mix. Immediately following the first mowing, apply commercial fertilizer 16-6-8 at a rate of 7 pounds per 1,000 sq. ft. Maintain a fertility level sufficient to insure a rapid, vigorous, healthy stand of grass.
2. During the maintenance period, all plants and planted areas shall be kept well watered and weed free at all times. Weeds, Dallas and Johnson grass and Bermuda grass shall be removed. Grass shall be mowed before it exceeds two (2) inches in height. Grass clippings shall be collected during mowing operations and removed from the site. The entire project shall be cared for and maintained in a neat and clean condition.
3. After each lawn cutting, the edge of the grass shall be trimmed to a neat and uniform line. Lawn and lawn edges are to be maintained in a neat and orderly condition until the final acceptance of work.
4. Workmen shall not be allowed to work on lawn areas before, during or after planting. Damaged or compacted lawn areas shall be recultivated and re- planted.
5. After initial mowing, lawn shall be mowed a minimum of twice every **seven (7) calendar days** and a final mowing shall occur one (1) day prior to the end of the maintenance period.
6. Any damage to landscape areas including depressions caused by vehicles, bicycles, foot traffic or damage incurred by gophers or moles shall be satisfactorily replaced.

3.15 WARRANTY PERIOD

A. Dead or dying trees and shrubs shall be replaced at the contractor's expense prior to the end of the warranty period.

3.16 DUST ALLEVIATION AND CONTROL

A. Contractor shall be responsible for and shall provide pollution and dust abatement and control measures during the course of the work, including street sweepers and/or watering truck fully manned and operable as required.

3.17 RESTORATION OF EXISTING IMPROVEMENTS

A. Existing paving and other improvements removed or damaged due to the installation of landscaping shall be replaced in kind.

3.18 CLEANUP

A. Surplus materials and construction debris remaining upon the completion of the work shall become the property of the Contractor unless otherwise specified herein or noted on the plans, and shall be removed from the work site promptly by the Contractor and disposed of in a lawful manner.

* * *

SECTION 02910

IRRIGATION

PART 1 - GENERAL

1.1 WORK INCLUDED

A. Trenching and other excavation.

B. Irrigation lines, valve control circuits and appurtenances.

C. Irrigation controllers and remote control valves.

D. Electrical service and service installation if required.

E. Testing.

F. Backfill and compaction of backfill.

G. Dust alleviation and control.

H. Cleanup and disposal.

I. Supplying all labor, materials, equipment, and apparatus not specifically mentioned herein or noted on the plans, but which are incidental and necessary to complete the work specified.

1.2 APPLICABLE PUBLICATIONS

A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by the general designation only.

B. American Society for Testing and Materials (ASTM) Publications:

D - 1785	Pipe, Polyvinyl Cholride (PVC) Plastic Schedules 40, 80 and 120.

1.3 QUALITY ASSURANCE

A. Irrigation mains, lines and appurtenances shall be subject to successfully passing a leakage test as prescribed herein.

B. Irrigation lines shall be installed after satisfactory completion of roadway or landscape subgrade.

C. Submit catalogue cuts of irrigation valves, controllers, and associated equipment for approval.

1.4 JOB CONDITIONS

A. Contractor shall conduct operations and schedule cleanup in a manner to cause the least possible obstruction and inconvenience to traffic, pedestrians, and any adjacent property owners or tenants.

B. Locations for proposed irrigation controllers and/or electrical service points shown on the plans are approximate only and the exact locations for such shall be as established in the field by the Engineer.

C. Damage resulting from movement of the sides or bottom of trenches or other excavation which is attributable to the Contractor's acts or omissions, whether sides are braced or not, and any portions of the area and work affected by such movement, shall be satisfactorily repaired or restored.

D. Contractor shall supply and deliver the following equipment and information prior to acceptance of the work:

1. Three (3) each (if applicable) quick coupler valve keys and hose swivel ells.
2. Two (2) sets of various special wrenches or tools that may be required for adjustment of sprinkler heads or equipment.
3. Three (3) (if applicable) keys or wheel handles required to operate hose bibs.
4. Two (2) copies of the instruction manual for each irrigation controller.

E. Comply and conform with conditions and requirements indicated under Section 02202, Trenching and Backfill, of these Specifications.

PART 2 - PRODUCTS

2.1 PIPE AND FITTINGS FOR IRRIGATION MAINS

A. Pressure mains and non-pressure mains shall be polyvinyl chloride (PVC) Schedule 40 conforming to the requirements of ASTM Designation D1785 and shall be provided with solvent weld joints and fittings.

B. All plastic fittings shall be Schedule 40 polyvinyl chloride (PVC) conforming to the requirements of ASTM Designation D1785 and shall be specifically made for the type of pipe used.

C. All nipples and fittings for risers shall be Schedule 80 polyvinyl-chloride (PVC) conforming to the requirements of ASTM Designation D1785. Nipples, fittings and risers shall be same size as sprinkler head inlets.

D. All polyvinyl chloride (PVC) pipe and fittings shall be free from imperfections.

E. Metallic nipples and fittings for above-ground installation of backflow preventer systems shall be Schedule 40 brass nipples and class 125# bronze fittings. All brass nipples and bronze fittings shall be factory threaded.

2.2 JOINTS FOR POLYVINYL CHLORIDE (PVC) PIPE

A. Rubber ring seal joints shall be made in accordance with the manufacturer's instructions and as indicated on the plans.

B. Solvent weld joints shall be made using P-70 primer as manufactured by "Weld- On" or approved equal and "Weld-On" 710 joint cement or approved equal.

C. All threaded joints shall be factory formed. Field threading of pipe or fittings will not be permitted. Threaded joint connections shall be made with virgin teflon tape, or approved equal.

2.3 VALVES AND VALVE BOXES

A. Gate valves, where required on the plans, shall be the same size as the main line and shall be "Stockham", or approved equal. Size and type of valve shall be as indicated on the plans.

B. Quick coupling valves shall be as manufactured by "Rainbird", brass or bronze one piece body designed for a working pressure of 125 psi and equipped with metal covers, or approved equal. Contractor shall provide the Engineer with three (3) for each quick coupler keys and double lug hose swivel ells. Type and model of valve shall be as indicated on the plans.

C. Remote control valves shall be as shown on plans, normally closed, diaphragm actuated, electrically operated from remote location by means of 18/24V, 50/60H, 7.5VA coil, with brass bleed plug for manual operation. Substitutions for irrigation controllers and/or remote control valves shall be at the sole option of the Engineer and shall require prior written consent. Remote control valve sizes shall be the same as the supply runs on which they are to be installed.

D. Valve boxes for gate valves and remote control valves in turf, shrub and ground cover areas shall be fiberglass reinforced plastic, color green, as manufactured by "Ametek", "Carson" or approved equal.

1. Gate Valves Box Covers to be factory marked "Irrigation Control Valve" and shall have a valve number permanently stenciled on it with white exterior paint.
2. Remote Control Valve Boxes shall be rectangular with a minimum dimension of 10-1/2" x 17-1/4" at the base. Cover to be factory marked "RCV" and shall have a station number permanently stenciled on it with white exterior paint.
3. Valves shall be individually housed. Manifolding of valves in a single valve box shall not be permitted.

2.4 SPRINKLER HEADS

A. All bubblers and stationary shrub sprays on risers, pop-up spray heads and gear- driven stream rotors for ground cover, shrubs and turf shall be as manufactured by "Toro" or approved equal. Type and model of such heads shall be as indicated on the plans.

B. All pop-up spray heads and gear-driven stream rotors for ground cover, shrubs and turf

shall be as manufactured by “Hunter” or by "Toro", or approved equal. Type and model of such heads shall be as indicated on the plans.

2.5 IRRIGATION LINE INSTALLATION

A. Controllers for irrigation systems shall be solid state type controllers as manufactured by either Irritrol, Rainmaster or as shown. Controller installations shall consist of the following models to provide the required number of control valve stations to a maximum of twenty-four (24) stations per controller installation:

1. Irrritrol Model MCXX
2. Rainmaster Model SA6-MR8XX/RHG/PMR-CAC/FSAV-150P+200MV

Note: XX shall be substituted by the number of stations.

B. Substitution for irrigation controllers on an "or equal" basis shall be at the sole option of, and shall require the prior written consent from the Engineer.

C. Remote final strength shall be verified by the contractor in presence of the project inspector prior to final installation to determine the need of a high gain antenna assembly.

D. Irrigation controllers shall be mounted as specified in the Detail Drawings.

E. Controllers shall be 120V from a metered power supply, unless solar or battery operated systems are specified.

F. All electrical wires and cables, shall be placed in conduits (1” minimum diameter).

G. Controller enclosures shall be furnished with acceptable keyed locking mechanisms and furnished with keys.

2.6 BACKFLOW PREVENTION DEVICE

A. Backflow prevention devices shall be as required by Section 1003 of the Uniform Plumbing Code, and as approved by the County Public Health Department. Model and details of such devices shall be as indicated on the plans.

2.7 CONTROL VALVE CIRCUITS

A. Wire for valve control circuits shall be UL-approved for direct burial in ground, size #14-l. Common ground wire shall have white insulating jacket. Control wire shall have jacket of color other than white and the jacket color for any circuit shall be continuous between controller and valve. A circuit color code schedule shall be posted inside each controller enclosure.

B. Splices shall be made with #2006-S "Buchanon" splice caps and 3M #3576 "Scotchloc" seal packs or approved equal.

2.8 THRUST BLOCKS FOR RUBBER RING SEAL JOINTS

A. Thrust blocks shall be provided where necessary to resist pressure on rubber ring seal joints. Concrete for thrust blocking shall conform to the requirements of Section 02550 of these specifications.

2.9 PIPE COVER MATERIAL

A. Shall be in conformance to Section 02202, Trenching and Backfill, of these Specifications.

PART 3 - EXECUTION

3.1 TRENCHING, BACKFILLING AND COMPACTION

A. Shall be in conformance to Section 02202, Trenching and Backfill, of these Specifications.

3.2 IRRIGATION LINE INSTALLATION

A. Pipe, valves, fittings, and appurtenances shall be installed as accurately as possible in accordance with the locations shown on the plans. All polyvinyl chloride (PVC) pipe shall be installed with identification markings facing upward, visible from the top of the trench. Cap or plug openings as pipeline is assembled to prevent entrance of dirt or obstructions. Remove caps or plugs only when necessary to continue assembly. Where pipes pass through sleeves, provide removable non-decaying plug at ends to prevent entrance of earth. No irrigation lines shall be constructed before subgrade for roadway and median areas have been satisfactorily completed.

B. Depth of cover for pressure mains shall be twenty-four (24) inches below subgrade in areas to be paved and in landscape areas. Depth of cover for non- pressure lines shall be eighteen (18) inches below sub-grade in areas to be paved, eighteen (18) inches below subgrade for topsoil for mainlines and twelve (12) inches below subgrade for topsoil for lateral lines in landscape areas.

C. Pipe, valves and fittings shall be carefully handled during hauling, unloading, and placing operations, so as to avoid breakage or damage. All polyvinylchloride (PVC) pipe shall be stored carefully, and protected from prolonged sunlight. Broken or damaged pipe or appurtenances will be rejected and shall be replaced.

D. Irrigation lines shall be installed as accurately as possible in accordance with the locations shown on the plans. The plans are diagrammatic only, and where irrigation lines on the plans are shown under paved areas but running parallel and adjacent to planted areas, the intent is to install the irrigation lines in the planted area. Irrigation lines shall have a minimum horizontal clearance of four (4) inches from each other, and a minimum horizontal clearance of twelve (12) inches from other underground lines (this requirement does not apply to any lines crossing at angles from 45 to 90 degrees with each other). A minimum of two (2) inches vertical clearance shall be maintained between lines which cross between these angles. No irrigation line shall be installed parallel to and directly over another line. Intermediate high spot along the irrigation line

shall not be allowed.

E. All pipes shall be assembled free from dirt, shall be reamed and all burrs shall be removed. When pipe laying is not in progress, all open pipe ends shall be closed with watertight plugs in a manner satisfactory to the Engineer. Before installation of irrigation lines, the Contractor shall remove all stakes, debris, loose rock and other hard material from the bottom of the trench.

F. After the final positioning, the pipe shall be held in place in the trench with backfill material placed equally on both sides of the pipe at as many locations as are required to hold the pipe section in place. After joints are completed, the backfill material shall be redistributed and compacted as herein required.

G. At the end of each day and when work is not in progress, the open ends of pipe installed in the line shall be closed with watertight plugs, and openings for valves and other appurtenances shall be suitably covered.

H. Concrete thrust blocks of the form and dimensions shown or noted on the plans shall be provided as indicated on the plans. Form thrust blocks in such a manner to prevent any concrete from coming in contact with the pipe. Thrust blocks shall be constructed to completely fill the void between solid soil and the fitting, and shall be installed in strict conformance with the applicable details shown or noted on the plans.

3.3 JOINT AND FITTING INSTALLATION

A. Rubber Ring Seal Joints

1. Use factory made male ends or prepared field cut male end joints to exact specifications of factory made ends. Join lengths of pipe by means of integrally formed bell end on pipe using rubber ring seal. Carefully clean bell or coupling and insert rubber ring without lubricant. Position ring carefully according to manufacturer's instructions.
2. Lubricate male end according to manufacturer's instructions and insert male end to specified depth. Use hands only when inserting PVC pipe.
3. Thrust blocks shall be provided where necessary to resist system pressure on joints or fittings made with rubber ring seal joint pipe in accordance with the details shown on the plans.

B. Solvent Weld Joints

1. Prepare joint by first making sure the pipe end is square, then deburring the pipe end and cleaning pipe of dirt, dust and moisture.
2. Dry-insert pipe into fitting to check for proper sizing. Pipe should enter fitting 1/3 to 2/3 depth of socket.
3. Coat the inside socket surface of the fitting and the external surface of the male end of the pipe with 711 primer manufactured by "Weld-On" or approved equal. Then, without delay, apply "Weld-On" 710 joint cement or approved equal liberally to the inside of the socket. At this time, apply a second coat of cement to the pipe end.
4. Insert pipe immediately into fitting and turn 1/4 turn to distribute cement and

remove air bubbles. The pipe must seat to the bottom of the socket and fitting. The fitting shall be properly aligned without strain.

5. Hold joint still for approximately thirty (30) seconds and then wipe the excess cement from the pipe and fitting.

6. Cure joint a minimum of thirty (30) minutes before handling and at least six (6) hours before allowing water in the pipe.

C. Threaded Joints

l. Field threading of plastic pipe or fittings is not permitted. Only factory formed threads and factory fabricated nipples or risers shall be permitted.

2. When assembling threaded plastic joints, take up joint no more than one full turn beyond hand tight.

3. Threaded joint connections shall be made up with virgin teflon tape, or approved equal.

3.4 VALVE AND VALVE BOX INSTALLATION

A. Valve boxes shall be grouped and located in shrub and ground cover areas wherever possible. Valves shall be installed no farther than twelve (12) inches from the main line and no closer than twelve (12) inches from walk edges, buildings and walls.

B. Thoroughly flush main line before installation. Valves shall be installed as indicated on the details shown on the plans.

C. All control valves shall be three (3) inches minimum and eight (8) inches maximum below finish grade to the top of the flow control stem.

D. Quick coupling valves shall be located as called for on the plans and installed as indicated on the details shown on the plans.

E. Valve boxes shall be set flush with finish grade in lawn areas and one and one- half (1-1/2) inches above grade in shrub areas.

3.5 SPRINKLER HEAD INSTALLATION

A. Lawn heads shall be located with a minimum of one (1) inch, a maximum of two (2) inches, clear from adjacent paving or headers, and flush with them where a potential hazard may occur. Other lawn heads shall be installed as indicated on the details shown on the plans.

B. Pop-up heads of approved design shall be installed at edges of landscaped areas adjoining paved areas as indicated on the details shown on the plans. Interior shrub heads shall be either pop-up heads set level with finish grade or fixed heads set six (6) inches above finish grade.

C. Individual heads shall be adjusted as required to obtain uniform coverage without overthrow onto buildings, paving, main walks, or other structures.

D. Each section of lateral pipe shall be thoroughly flushed out before the sprinkler heads

are attached.

E. Sprinkler heads shall be located and installed as shown on the plans.

3.6 IRRIGATION CONTROLLER INSTALLATION

A. Controller enclosures shall be located, and irrigation controllers and enclosures shall be installed, as shown on the plans. The sprinkler controller chart shall be a photostatic reproduction of the sprinkler or irrigation plan, provided and installed by the Contractor. It shall be laminated permanently in plastic and securely attached to the inside lid of the controller cabinet and shall correctly relate each section to its respective system.

3.7 CONTROL WIRE INSTALLATION

A. Connection of control lines to controller shall be in sequential arrangement according to assigned identification number of valve. Connections shall be made by crimping bare wires with brass connectors and sealing with epoxy resin sealer packs. Control lines shall be labeled at the controller with permanent non-fading labels indicating identification number of valve controlled.

B. All control wiring shall be laid to minimum depth of eighteen (18) inches in common trenches with mainline piping wherever possible. Where control lines do not parallel mains, wires shall be strapped at intervals of at least ten (10) feet to the underside of two by four redwood boards.

C. Where control lines pass under paving, they shall pass through Schedule 40 PVC conduit sleeves. Where control wires pass through sleeves, Contractor shall provide removable non-decaying plug at ends of the sleeve to prevent entrance of earth.

D. Contractor shall loop a minimum of three (3) feet of extra wire in each valve box; both control wire and ground wire. All splices shall be made at a valve box only.

3.8 ELECTRICAL SERVICE INSTALLATION

A. Make all electrical connections to 120 Volt service at each controller location. Install a disconnect switch inside the pedestal of the controller cabinet. All electrical work and materials shall comply with these specifications and any further requirements of the permit issued for the electrical service connection by the serving utility.

3.9 TESTING

A. Hydrostatic and leakage tests shall be made only after the trenches have been backfilled sufficiently to hold the pipe firmly in position with no fittings being backfilled.

B. All welded plastic pipe joints shall have cured for at least 24 hours. Provide all water necessary for filling and flushing at no additional expense to the Contract.

C. Pressure irrigation mains shall be subjected to a hydrostatic test of 125 psi. Each section being tested shall be slowly filled with water, care being taken to expel all air from the pipe by such means as are necessary. The pipes must be flushed before testing to remove any foreign material. The test pressure shall be applied for not less

than four (4) hours. Any leakage discovered in consequence of the pressure test shall be corrected and the test shall be repeated until satisfactory results are obtained. Any defective pipe, fittings, valves, or joints shall be repaired or replaced.

D. Contractor shall provide water as necessary for hydrostatic testing.

* * *

SECTION 16500

SIGNALS, LIGHTING AND ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 WORK INCLUDED

A. Installation of electroliers and appurtenances.

B. Installation of traffic signal standards, posts, cabinets, and foundations.

C. Traffic signal heads, push button assemblies, luminaries, hardware and appurtenances.

D. Conduit, circuits, and appurtenances.

E. Trenching for conduits and appurtenances, and backfill.

F. Traffic Signal controller assembly.

G. Installation of electrical service, service cabinet, circuits and connections to existing circuits.

H. Battery Backup System.

I. Dust alleviation and control.

J. Cleanup and restoration of surface in improved areas, including pavement markings and signage.

K. Supplying all labor, materials, equipment and apparatus not specifically mentioned herein or noted on the plans, but which are incidental and necessary to complete the work specified.

1.2 APPLICABLE PUBLICATIONS

A. The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the general designation only.

1. The State of California, Department of Transportation Standard Specifications, Standard Plans, and Manual on Uniform Traffic Control Devices (MUTCD).

2. NEC – The National Electric Code.

3. California Division of Industrial Safety Electrical Orders (Title 8).

4. I.E.S. – Illumination Engineering Society of Standards.

5. NEMA – National Electrical Manufacturers Association Standards.

6. IMSA – International Municipal Signal Standards and Specifications.

7. SPUC Electrical Safety Orders (i.e., General Order No. 95)

8. American Society for Testing and Materials (ASTM) Publications:

A – 123	Zinc Coatings, Rolled, Pressed Forged Mat.
A - 307	Carbon Steel Bolts and Studs, 60,000 psi Tensile Strength.
B - 3	Specification for Soft or Annealed Copper Wire.
B - 8	Cubic Conduit Hard Medium Soft.
D – 1785	Pipe, Poly Vinyl Chloride (PVC) Plastic, Schedules 40, 80 &120.

1.3 SUBMITTALS

A. Contractor shall submit shop drawings on all electroliers, fixtures, and signal system equipment components, and catalogue cuts of conduits, conductors, pull boxes, and other equipment for approval prior to ordering material and equipment.

B. Traffic Control Plan: When work will occur on or adjacent to the right-of-way, submit a Traffic Control Plan is accordance with Section 01550 72 hours in advance for approval prior to starting work.

1.4 QUALITY ASSURANCE

A. All work shall be done under the supervision of, and to the satisfaction of the City Engineer.

B. Installation shall be in conformance with the NEC.

C. All material for signals and safety lighting shall require the Underwriters' Laboratories label, except material for which U. L. does not provide label service listing.

D. All material shall be new, packed in original containers, installed or turned over to the City free of rust, corrosion, or any other defects.

E. To the extent possible, all equipment or materials for any one system shall be furnished by the same manufacturer. Such items as conduit, conduit fittings and appurtenances supplied for any one system shall be the same throughout the project.

F. Compaction, Compression, and Tests:

1. The percentage of compaction or the compressive strength specified shall be the minimum allowable.

2. Compressive strength of concrete shall be determined utilizing test cylinders taken during the pour at such times and frequencies as designated by the City Engineer. Sampling shall be in accordance with the requirements of ASTM C172 and the specimens shall be made and cured in accordance with the requirements of ASTM C31. Compression testing shall conform to the requirements of ASTM C39.

G. Certification of Materials:

1. Portland Cement Concrete: When requested, provide City Engineer with two (2) copies of mill test reports of aggregate, cement, and reinforcement supplied, showing compliance with the respective Specifications.

2. Provide City Engineer with copies of certified plant load-out slips showing volume of concrete delivered and time of mixing for each load.

1.5 JOB CONDITIONS

A. Contractor shall conduct operations and schedule cleanup in a manner to cause the least possible obstruction and inconvenience to traffic, pedestrians and any adjacent property owners and tenants.

B. Contractor shall protect open excavations and trenches with covers, railings and fences as required, together with signs, lights and other warning devices sufficient to protect and maintain safe pedestrian, bicycle, and vehicular traffic through the work area to the satisfaction of the City Engineer.

C. Contractor shall conduct operations in such a manner that existing facilities and utilities which are to remain in place will note be damaged. Excavation, trenching, and other work under or adjacent to existing pipelines, conduit runs, or structures of any kind, shall be protected in such a manner as not to interfere with the safe operation and use of such facilities. Should any damage be incurred to existing facilities or structures during the operations, the Contractor shall immediately notify the proper owners or authorities, and shall arrange for the immediate repair of the facilities at the Contractor's expense.

D. The location of proposed signal and electrolier standards, pull boxes, conduits, cabinets, and other equipment shown on the plans is approximate only and the exact location of such shall be as established in the field by the City Engineer.

E. Construction area shall be left in a clean, neat, and workmanlike condition. All construction waste, rubbish, and debris remaining upon completion of the work shall become the property of the Contractor unless otherwise specified herein or noted on the plans and shall be removed from the work-site by the Contractor and disposed of off-site in a lawful manner to the satisfaction of the City Engineer.

F. Comply and conform to conditions and requirements indicated herein and specified under all other sections of these Specifications.

1.6 MAINTAINING EXISTING AND TEMPORARY ELECTRICAL SYSTEMS

A. Traffic signal and street lighting system shutdowns shall be limited to periods between the hours of 9:00 AM and 3:00 PM.

B. Existing street lighting and signal communication systems shall be maintained during construction operations. Maintain existing safety lighting on streets to the minimum required by the Special Provisions, or as required by the City Engineer. Maintenance of existing street light and traffic signal systems shall be considered as included in the

contract lump sum prices for the work item involved and no additional compensation will be allowed therefore.

C. The contractor shall place "Stop Ahead" and "Stop" signs to direct vehicle and pedestrian traffic through the intersection during traffic signal system shutdown. Temporary "Stop Ahead" and "Stop" signs shall be either covered or removed when the system is turned on.

D. "Stop Ahead" and "Stop" signs shall be furnished by the contractor and shall conform to the provisions in the California MUTCD and Section 12-3.06, "Construction Area Signs", of the Standard Specifications, except that the base material for the signs shall not be plywood.

E. One "Stop Ahead" sign and two "Stop" signs shall be placed for each direction of traffic. Location of the signs shall be as directed by the City Engineer.

F. Full compensation for furnishing, installing, maintaining and removing temporary "Stop Ahead" and "Stop" signs and for covering signs not in use shall be considered as included in the contract lump sum price paid for the work item involved and no additional compensation will be allowed therefore.

PART 2 - PRODUCTS

2.1 PORTLAND CEMENT CONCRETE

A. Concrete shall be Class "A" conforming to the requirements of Section 02550 of these Specifications.

B. Portland Cement Concrete for foundations shall conform to Section 90-10, “Minor Concrete”, of the Standard Specifications and shall contain not less than 470 pounds of cement per cubic yard, except concrete for reinforced pile foundations shall contain not less than 564 pounds of cement per cubic yard.

C. Hand mixing of concrete shall not be permitted.

2.2 PAINTING

A. Painting shall conform to the provisions of Section 86-2.16 “Painting” of the Standard Specifications, and these provisions.

B. All electroliers, standards, pedestals, posts, cabinets, and luminaire housings shall be coated with two part recoatable epoxy primer and two coats of Hi-solids polyurethane paint, Sherman Williams color RWC 6687 or approved equal:

Epoxy primer:	Part A: B67R5
	Part B: B67V5
Hi-solids polyurethane:	B65T304
Hardener:	B60V30

C. All signal head mountings, brackets, fittings, outside of vehicle signal heads, and pedestrian signal head housings shall be finished with two coats of enamel, low- luster Pervo paint #2836, Oxford Brown or approved equal.

D. Front of backplates and inside of visors of traffic signal heads shall be painted lusterless black.

E. Contractor shall submit color chips for approval by City Engineer.

F. Painting shall be considered to be included in the contract lump sum price for the work item involved and no additional compensation will be allowed therefore.

G. Touch-up painting shall be provided where required by the City Engineer.

H. Poles in downtown shall be black. See Precise Plan.

2.3 FOUNDATIONS

A. Foundations shall consist of Portland Cement Concrete conforming to the requirements of Section 2.01 of these specifications and be constructed to conform to the details shown or called for on the plans.

B. Anchor bolts, nuts and washers shall be fabricated from steel conforming to the requirements of ASTM Designation A307. Size and shape of anchor bolts shall conform to the details shown on the plans. Bolts, nut and washers shall be galvanized after fabrication in conformance with the requirements of ASTM Designation A123. All bolts and threads shall be lightly greased prior to acceptance.

C. Reinforcement for foundations shall be deformed steel bars conforming to the requirements of Section 02550 of the Specifications. Size and shape for bar reinforcement shall conform to the details shown or called for on the plans.

2.4 ELECTROLIERS

A. Electrolier masts, arms, fixtures, luminaires and appurtenances shall conform to the details shown on the plans.

2.5 CONTROLLER ASSEMBLIES

A. Controller assemblies shall be a Type 90 NEMA Controller Assembly compatible with the City's designated controller system, conforming to Section 86-3.02 "Type 90 Controller Assemblies" of the Standard Specifications including controller unit, completely wired controller cabinet, inductive loop sensor units, conflict monitor, and load switches.

B. Cabinets shall be Type P as shown on Standard Plan ES-3A. Cabinet shall be prime coated and finished in accordance with Section 2.02 "Painting". A graffiti coating acceptable to the City shall then be applied.

C. Contractor shall furnish and install battery backup systems in conformance with paragraph 2.21 these Specifications.

2.6 PULL BOXES

A. Pull boxes shall be precast reinforced concrete of the size noted or called for on the plans and shall conform to the applicable provisions of Section 86-2.06 "Pull Boxes" of the State Standard Specifications with the following exceptions:

1. Grout in the bottom of pull boxes will not be permitted, Contractor shall use drain rock at box sump.
2. Covers of pull boxes shall be Christy “Fibrelyte” secured by means of either stainless steel bolts and nuts, or studs and nuts conforming to the requirements of said Section 86-2.06A of the State Standard Specifications.
3. All ferrous metal parts shall be galvanized after fabrication in conformance with the requirements of Section 75-1.05 “Galvanizing” of the Standard Specifications.
4. Covers for lighting pull boxes shall be marked "Street Lighting" in conformance with the requirements of Section 86-2.06B "Cover Marking" of the Standard Specifications.

2.7 CONDUIT

A. Conduit shall conform to the provisions in Section 86-2.05 “Conduit” of the Standard Specifications.

B. Conduit for underground electrical circuits shall be Poly Vinyl Chloride (PVC) type 1120, Schedule 40 with solvent weld joints, conforming to ASTM D-1785 and the requirements in the UL Standard for Rigid Non-Metallic Conduit (Publication UL 651). Minimum size conduit shall be 2" diameter.

B. Fittings and couplings for underground electrical conduit shall be Poly Vinyl Chloride (PVC), Schedule 40 specifically manufactured for the conduit used.

C. Conduit joints shall be solvent weld made by means of "Weld-On" P-70 primer and "Weld-On" cement, or approved equal.

D. All empty conduit or conduit for future circuits shall be installed with a 3/16 inch diameter nylon pull rope for future conductor extensions.

2.8 CONDUCTORS

A. Conductors shall conform to the provisions in Section 86-2.08 “Conductors” of the Standard Specifications and these provisions.

B. Conductors shall be copper of the type and size shown or called for on the plans. Copper wire shall conform to the applicable provisions of ASTM Designations B3 and B8.

C. Minimum conductor size is No. 8 AWG and shall be stranded. Wire size shall be based on American Wire Gage (AWG) and conductor diameter shall not be less than 98 percent of the specified AWG diameter.

D. Conductors shall be UL listed and rated for 600 volt operation.

E. Conductors shall be spliced by the use of “C” shaped compression connectors as shown on the Standard Plans.

F. Traffic Signal Cable, 12 Conductor No. 14 AWG stranded (600 volt class) and meeting IMSA Specification 20-1-1984, may be used in lieu of individual wires.

G. Insulation for conductors shall be one of the following:

1. Type RHH or RHW cross-linked polyethylene.
2. Type THW OR THWN Poly Vinyl chloride.
3. At any point, the minimum thickness of any Type THWN insulation shall be 13 mils for conductor sizes No. 14 and No. 12, 18 mils for conductor size No. 10, 27 mils for conductor sizes No. 8 and No. 6, and 36 mils for conductor sizes No. 4 and No. 2. At any point, the minimum thickness of the nylon jacket shall be 4 mils for conductor sizes No. 14 to No. 10, inclusive, 5 mils for conductor sizes No. 8 and No. 6, and 6 mils for conductor sizes No. 4 and No. 2.

2.9 LUMINAIRES AND BALLASTS

A. Luminaires shall be high pressure sodium vapor luminaries of the voltage, type and wattage shown on the plans, and shall be in conformance with all requirements in Section 86-6.01 “High-Pressure Sodium Luminaries” of the Standard Specifications, and these provisions.

B. Ballasts shall conform to all of the provisions in Section 86-6.01 ”High-Pressure Sodium Lamp Ballasts”, of the Standard Specifications, and these provisions.

C. Hardware shall be stainless steel or cadmium plated. Machine screws or bolts shall be used to secure removable components. Sheet metal screws shall not be used.

D. The lamp socket shall be of high temperature, flame retardant thermoset material with self-wiping contacts or may be of other equally durable material. The socket shall be rated for 660 watts and 1,000 volts.

E. Ballasts for luminaries to be mounted on mast arms, brackets or lowering assemblies shall be located within the luminaire housing. The ballast for each horizontally mounted luminaire shall consist of components mounted on the luminaire housing, components mounted on a metal plate secured to the house, or components mounted on a down opening door. The door shall be hinged and secured to the luminaire housing separately from the refractor of flat lens frame. The door shall be easily removable and replaceable. The door shall be secured to the housing in a manner to prevent its accidental opening when the refractor of flat lens frame is opened.

F. Ballasts for luminaries to be mounted on mast arms, brackets, or lowering assemblies shall be the regulator, non-regulating reactor, autotransformer, or high reactance type.

G. Section 86-6.01A (1), “Regular Type Ballasts”, shall be lag-type regulator type ballasts.

H. The 12th paragraph in Section 86-6.10, "High-Intensity-Discharge Lamp Ballasts" of

the Standard Specifications is amended to read:

> "Ballasts for luminaires shall be located within the luminaire housing. The ballast for each vertically mounted luminaire shall consist of components mounted in the luminaire housing and components mounted on a metal plate secured to the pole."

I. Luminaries shall be the semi-cutoff type with a Type IV distribution.

J. Fused splice connectors shall conform to the provisions in Section 86-2.095 “Fused Splice Connectors” of the Standard Specifications, and these provisions.

K. Each street light shall have an individual spliced fused connector located in the pull box adjacent to the pole.

L. All fixture housings shall be painted in accordance with section 2.02 “Painting” of these specifications.

M. The terminal strips shall have protective barriers between each terminal. The terminal screws shall be captive and equipped with wire grips for wire up to No. 8. All components shall be pre-wired to a single strip assuring that field connections are made to clearly identified line terminals.

N. Prior to energizing luminaries, the lamp socket should be checked to assure that it is set in the proper location for the required light distribution in accordance with the manufacturer’s instructions, and the luminaries shall be tilted five degrees (5°) above the horizontal.

O. The supplier shall submit copies of certified tests to substantiate the satisfactory performance of the luminaries under 100 mph winds.

P. A fused disconnect shall be furnished inside the luminaries so that when the door is opened the ballast primary circuit is broken, thereby allowing the fixture to be serviced without shock hazard.

Q. Door frame shall be extruded aluminum construction hinged with stainless steel pins and be removable by means of quick release safety latch.

R. Lens shall be of clear, thermal, and impact tempered glass of 0.156” minimum thickness, sealed with a gasket of heat resistant polypropylene.

S. Ballast shall be open core-coil capacitor and starter type, high power factor type, suitable for starting lamp to -20°F.

T. Ballast shall be mounted within the luminaries on a separate extruded aluminum panel having fins for heat dissipation with quick-release fasteners so that ballast assembly may be removed and replaced as a unit.

U. Lamp holder shall be the mogul base ceramic type 5 KV pulse rated, having nickel-plated screw shell and contacts, reflector seal shall be airtight.

V. All electrical components shall be rated for 240 volt single-phase two wire with insulation rated at 600 volts.

2.10 STANDARDS, STEEL PEDESTALS AND POSTS

A. Standards for traffic signals and lighting, and steel pedestals for cabinets and other similar equipment shall be located as shown on the plans, and shall conform to the provisions of Section 86-2.04 “Standards, Steel Pedestals, and Posts” of the Standard Specifications and these specifications.

B. Reference is made to Section 86-7 "Removing, Reinstalling or Salvaging Electrical Equipment" of the Standard Specifications. Salvaged material not reused shall be delivered to the City of Half Moon Bay Corporation Yard at 880 Stone Pine Road. The cost of this shall be considered in the lump sum of the work item involved and no addition compensation will be allowed therefore.

C. All anchor bolts shall be galvanized steel and lightly greased prior to installation of the pole.

D. All required drilling of poles shall be done in the field after the pole is mounted.

E. Where the plans refer to the side tenon detail at the end of the signal mast arm, the applicable tip tenon detail may be substituted.

F. The contractor shall either install a 3/16 inch or larger brass bolt on each existing standard for bonding, or preferably to be provided by pole manufacturer on the side of pole adjacent to hand-hole. The bolt shall be installed on the outside of the shaft near the baseplate where it is to be covered by the bolt cover. The shaft of the standard shall be drilled for no larger than a 1/4 inch hole near the baseplate to provide passage for the bonding conductor.

2.11 SERVICE PEDESTALS

A. Type III CF service equipment enclosures shall be fabricated from aluminum and shall conform to the fabrication requirements in Section 86-2.11, "Service", of the Standard Specifications except as follows:

1. All exterior seams for enclosure and doors shall be continuously welded by the gas tungsten arc (TIG) process.

2. Sealing of the anodic coating shall be in a five (5) percent aqueous solution of nickel acetate (PH 5.0 to 6.5) for 15 minutes at 210°F.

B. The anchor bolts for Type III CF service equipment cabinets shall be 5/8 inch diameter, minimum.

C. One (1) each Type III CF service equipment cabinets shall have one 200-amp meter socket. See the construction plans for wiring schematic.

D. Cabinets shall be prime coated and finished in accordance with Section 2.02 “Painting”. A graffiti coating acceptable to the City shall then be applied.

E. Circuit breakers used as service disconnect equipment shall have a minimum interrupting capacity of 42,000 amperes, RMS, for 120/240-volt services and 30,000 amperes, RMS, for 480-volt services.

F. Minimum amperage for sub-circuit breakers shall be as shown on plans.

G. Circuit breakers shall be mounted on non-energized clips. All circuit breakers shall be mounted vertically with the up position of the handle being the "ON" position.

H. Dead front panel or panels, and corresponding exterior door, shall be hinged on one side and shall be able to open without the use of tools.

2.12 HEAT SHRINK TUBING

A. Heat shrink tubing shall be dual wall, irradiated polyefin tubing containing an adhesive inner wall. When heated, the inner wall shall melt and fill all crevices and interstices of the object being covered while the outer wall shrinks. Each end of the heat shrink tube or the open end of the open end of the end clamp of heat shrink material shall, after contraction, overlap the conductor insulation at least 1-1/2 inches.

B. All heat shrink tubing shall also meet the following requirements:

1. Shrinkage Ratio: 33 percent, maximum, of supplied diameter when heated to 125°C. and allowed to cool to 25°C.
2. Dielectric Strength: 350 kilovolts per inch, minimum.
3. Resistivity: 1014 ohms per centimeter, minimum.
4. Tensile Strength: 2,500 lbs. per square inch, minimum.
5. Operating Temperature: -5 °C. to 135°C.
6. Water Absorption: 0.5 percent, maximum.

2.13 DUCT SEAL

A. Sealant for duct seal shall consist of "Duct Seal Compound" as manufactured by Johns-Mansville Industries, Appleton Electric Company and Killark Products, or approved equal.

2.14 PHOTOELECTRIC CONTROLS

A. Photoelectric controls shall conform to the provisions in section 86-6.07 “Photoelectric Controls” of the Standard Specifications and these specifications.

B. Unmetered street lights or lighting circuits shall use Type IV photoelectric controls. Each luminaire shall be equipped with an individual photoelectric unit conforming to Section 86-6.07B(1) of the State Standard Specifications with the following additional requirement:

1. The photoelectric unit receptacle shall be adjustable to allow for positioning to the satisfaction of the City Engineer.

C. Metered street lighting circuits serviced from an electrical service equipment enclosure shall use Type V photoelectric controls. Each Type III-BF or Type III- CF service equipment enclosure shall be equipped with a central photoelectric unit capable of switching multiple lighting circuits. Each luminaire shall be supplied with a shorting cap when a Type V photoelectric control is used.

2.15 SIGNAL INTERCONNECT CABLE

A. Signal Interconnect Cable (SIC) shall be six-pair No. 19, AWG solid bare copper conductors. Conductors shall be in twisted pairs. Color coding shall distinguish each pair. SIC cable shall conform to IMSA Specification 20-2-1984.

B. The cable jacket shall be IMSA 20-2 black, high-density polyethylene, rated for a minimum of 600 volts and shall have a nominal wall thickness of 60 mils, minimum. The cable jacket or the moisture resistant tape directly under the outer jacket shall be marked with the manufacturer's name, insulation type designation, number of conductors and conductor size and voltage and temperature rating.

C. No splices shall be allowed. Connections will be at the designated terminals in controller cabinets. A minimum of three (3) feet of slack shall be provided at each pull box and six (6) feet at each controller cabinet.

D. Cable shall be provided with an overall copper shield which shall be grounded at each end.

2.16 VEHICULAR TRAFFIC SIGNAL ASSEMBLIES

A. Vehicular Traffic Signal Assemblies shall conform to the provisions of Section 86-4 "Traffic Signal Faces and Fittings" of the Standard Specifications and these specifications.

B. Painting shall be in conformance with paragraph 2.02 "Painting" of these specifications.

C. All vehicular traffic signal assemblies shall include a backplate. Backplates for traffic signal heads mounted on mast-arms shall be louvered.

D. All signal sections shall be 12-inch units.

E. The first paragraph of Section 86-4.08 "Signal Mounting Assemblies" of the Standard Specifications is amended to read:

> "Signal mounting assemblies shall consist of 1-1/2 inch standard steel pipe or galvanized conduit, necessary fittings, slip-fittings and terminal compartments. Pipe fittings shall be ductile iron, galvanized steel, copper, brass, or bronze. Mast arm slip-fittings shall be cast bronze or hot-dip galvanized ductile iron. Post top slip-fittings and terminal compartments shall be cast bronze, Type-356-T6 aluminum or hot-dip galvanized ductile iron."

F. All signals shall be tightened and aligned properly at time of mounting to the satisfaction of the City Engineer.

G. After installation, all signal lenses must be covered until signal turn-on for final inspection, and then recovered until acceptance of the work by the City at which time the Contractor shall uncover all lenses.

2.17 LIGHT EMITTING DIODE SIGNAL MODULE

A. Light Emitting Diode (LED) Signal Modules shall conform to the provisions in Section 86-4.02, "Light Emitting Diode Signal Module" in the Standard Specifications and to the provisions in Standard Special Provision 86-385 "Light Emitting Diode Signal Modules."

B. References contained in these Specifications and Provisions to "State," "Department," or similar references meant to refer to the Department of Transportation shall be amended to refer to the City or the City Engineer as appropriate.

2.18 PEDESTRIAN PUSH-BUTTONS

A. All pedestrian push-buttons shall be "accessible" type push buttons, and shall conform to the requirements in Section 86-5.02 "Pedestrian Push Button Assemblies" of the Standard Specifications and to Sections 4E.08 "Pedestrian Detectors" and 4E.09, "Accessible Pedestrian Signal Detectors" in the California Manual on Uniform Traffic Control Devices, latest edition.

B. All pedestrian push buttons shall be the Navigator Accessible Pedestrian Signal type, by Polara Engineering Inc., or approved equal.

C. Push button system shall be installed per the manufacturer specifications and details. Contractor shall be responsible for all required system components, including but not limited to, push button assemblies, control units, wiring circuits, and configuration devices.

D. Accessible Pedestrian Signals shall include the following custom and sound options:

1. Custom Locate Sound – Plays a sound at a selectable interval to assist a blind pedestrian in locating the Push Button Station.

2. Custom Location Message(s) – Typically message states street being crossed and cross street names, and other vital information to help pedestrian with location and direction.

3. Custom Walk Message(s) – Typically alerts pedestrians that the walk interval has begun and name of street being crossed.

4. Custom Clearance Sounds/Countdown – Plays a sound to let pedestrians know they should clear intersection crosswalk. This option tone typically would sound similar to the locate tone but is played at a faster rate or counts down the number of seconds in the clearance phase.

2.19 PEDESTRIAN SIGNALS

A. Pedestrian signals shall be the Light Emitting Diode (LED) type pedestrian signal,

conforming to the provisions of Standard Special Provision 86-405 “Light Emitting Diode Pedestrian Signal Modules” and Section 4E of the California Manual on Uniform Traffic Control Devices.

B. Pedestrian signals shall be the “Countdown” type pedestrian signals conforming to the provisions in Section 4E.07, “Countdown Pedestrian Signals” of the California Manual on Uniform Traffic Control Devices, latest edition.

C. Pedestrian Signal Faces shall be a single section with the “Upraised Hand” and “Walking Person” overlain on the left of the pedestrian signal face, and the “Countdown” on the right of the pedestrian signal face.

2.20 BATTERY BACK-UP SYSTEM FOR TRAFFIC SIGNALS

A. Battery Back-up Systems for Traffic Signals shall be in conformance with “Specification for Battery Back-up System For Traffic Signals Utilizing Light Emitting Diodes (LED) Traffic Signal Modules” by the Department of Transportation dated July 2004, as amended below:

1. References to “State,” “Department,” or similar references meant to refer to the Department of Transportation shall be amended to refer to the City or the City Engineer as appropriate.

2. References to Caltrans Model 332A Cabinets, Model 170E Controllers, and Model 2070 Controllers shall be amended to refer to Caltrans Type P Cabinets and NEMA Type 90 Controllers as appropriate.

3. The following sections, paragraphs and figures are deleted in their entirety:

    a. Paragraph 2.1.1 & 2.1.2;
    b. Paragraph 2.1.5 & 2.1.6;
    c. Section 2.2;
    d. Paragraph 2.3.5 through paragraph 2.3.7;
    e. Paragraph 2.3.14 through paragraph 2.3.16;
    f. Section 5.6;
    g. Figure 2.

4. The following sections and paragraphs are amended as follows:

    a. Paragraph 2.1.7 – delete option (1) Internal Mounted Option;
    b. Paragraph 2.3.3 line 3 shall read – “The specific finish of the external cabinet shall be <u>in conformance with Section 2.02 “Painting” of these Specifications. A graffiti coating acceptable to the City shall then be applied.</u> ”

5. The following paragraph is added to Section 5:

    a. Paragraph 5.0: <u>The Contractor shall provide a Certificate of Compliance to the City Engineer certifying that the battery back-up system meets or exceeds these specifications.</u>

2.21 LUBRICATING COMPOUND

A. Contractor shall apply high-pressure, high-temperature anti-seize and lubricating

compound on all threaded nuts and bolts, including anchor bolts and components of signal mounting hardware assemblies.

B. Contractor shall use THREADEASE of approved equal.

PART 3 - EXECUTION

3.1 TRENCHING, BACKFILL AND SHORING

A. Trenching shall conform to Section 02202 of these Specifications.

B. Depth of trenches for conduit or conductors in areas to be covered by street paving shall be such as to provide thirty (30) inches of cover for conduits or conductors. Trench depth under sidewalks shall be such as to provide eighteen (18) inches of cover over the conduit or conductor to the paving subgrade, or as indicated on the plans.

3.2 CONDUIT JACKING

A. Placement of conduit beneath existing pavement and sidewalk may be by jacking methods when approved by the City Engineer.

B. Where conduit is to be installed by jacking or drilling longitudinally along the curb line, installation shall conform to the provisions in Section 86-2.05C, “Installation” of the Standard Specifications.

C. Pavement shall not be disturbed without written permission of the City Engineer.

D. Jacking pits shall be kept two (2) feet clear of the edge of any type of pavement.

E. Excessive use of water, such that pavement might be undermined or subgrade softened, will not be permitted.

3.3 FOUNDATIONS

A. Concrete for foundations of standards and cabinets shall be installed in conformance with section 2.01, “Portland Cement Concrete,” of these specifications.

B. Top of foundations for electroliers shall be (2) inches above the surrounding finish grade in unpaved areas or shall be flush with top of curb when adjacent to curbs. The top two (2) inches of foundations for street electroliers shall be placed after the electrolier is in proper position.

C. Top of foundations for service pedestals shall be to the dimension or elevation shown or noted on the plans.

D. Excavation for electrolier foundations shall be done with an auger to the diameter called for on the plans and the top portion of the foundation above the surrounding subgrade shall be formed.

E. Foundations for electroliers adjacent to curbs shall be set to provide a minimum of twenty-four (24) inches clear from face of curb to center of electrolier mast.

F. Controller cabinet foundation shall be constructed to extend 5-1/2" above the surrounding grade, and shall be installed with a cast in ground rod.

G. In unpaved areas, a four (4) inch think Portland Cement Concrete pad shall be constructed in front of cabinets. Pad dimension shall be as directed by the City Engineer.

H. The fifth paragraph in Section 86-2.03, "Foundations," of the Standard Specifications is amended to read:

Cast-in-drilled hole concrete pile foundations for traffic signal and lighting standards shall conform to the provisions in Section 49, "Piling," with the added requirements that standards shall not be erected until seven days have elapsed after placing the concrete, and except that material resulting from drilled holes shall be disposed as provided in Section 86-2.01, "Excavating and Backfilling," of the Standard Specifications.

3.4 CONDUIT

A. Install conduits in the locations shown on the plans. Additional conduit not shown on the plans, but required to serve signal system shown on plans, shall be installed as directed by the City Engineer.

B. After conductors have been installed, the ends of conduits terminating in controller cabinets and pull boxes shall be sealed with an approved type of sealing compound.

C. All empty conduits shall be installed with 3/16" diameter nylon pull rope for future use.

3.5 PULL BOXES

A. Pull boxes of the size and type specified shall be installed at the locations shown on the plans. Additional pull boxes required for construction and not shown on the plans shall be installed by the Contractor at the direction of the City Engineer.

B. Top of pull boxes shall be set flush with surrounding finish grade land in curbed areas shall be set flush with top of curb.

C. Where the sump of an existing pull box is disturbed by the Contractor's operations, the sump shall be reconstructed.

3.6 CONDUCTORS

A. Conductors shall be pulled through rigid non-metallic conduit by hand only using nylon or polypropylene pull rope with a minimum tensile strength of 500 pounds. Nylon or polypropylene pull rope shall be installed in all conduits which are to receive future conductors.

B. All splices of conductors shall use Type "C" shaped compression connectors and shall be insulated by means of Method "B" as set forth in Section 86-2.09E "Splice Insulation" of the State Standard Specifications.

C. Splices shall be made in pull boxes, or terminal compartments only. All signal conductors may be spliced, in pull boxes, where circuits branch except where duplicate parallel conductors are shown in the conductor schedule.

D. All splices for connection to electroliers shall have fused disconnect splice connectors installed in the pull box adjacent to the electrolier. Fused splice connectors shall be installed in conformance with the requirements of Section 86-2.095 “Fused Splice Connectors” of the State Standard Specifications.

E. Provide at least three (3) feet of slack within each pull box.

F. After conductors have been installed, the end of conduits terminating in service cabinets, standards, electroliers and pull boxes shall be sealed with Duct Seal Compound.

G. Cables shall be permanently identified as to circuit or phase. Identification shall be placed on each cable in each pull box and near the end of terminated cable.

H. When three or more conductors are to be enclosed within a single splice using heat shrink material, mastic shall be placed around each conductor prior to being placed inside the heat shrink material. The mastic shall be the type recommended by the manufacturer of the heat shrink material.

3.7 SERVICE

A. Electrical services for street and safety lighting shall be installed in conformance with the applicable requirements of Section 86-2.11 “Service” of the State Standard Specifications and shall meet the requirements of the serving utility.

B. The twelfth paragraph in Section 86-2.11 "Service" of the Standard Specifications is amended to read:

> Except for power for the contractor's operations, upon written request by the contractor, the City Engineer will arrange with the serving utility to complete service connections for both temporary and permanent installations and the City will pay all costs and fees required by the utility. Such request shall be submitted not less than 15 days before service connections are required.

C. Service conduit and pull boxes shall be installed as soon as possible to enable the utility company to schedule work well in advance of completion of the project.

D. To facilitate the utility company in providing underground service connections, a conduit with conductors shall be run to the service point designated on the plans. Two No. 5 pull boxes shall be installed adjacent to the service point and an elbow to the face of the utility pole. The utility company shall then install the conductors through the elbow from the pull box.

3.8 LUMINAIRES

A. Prior to energizing a luminaire, the lamp socket shall be set in the proper location for the required light distribution in accordance with the manufacturer's instructions for the

type of distribution called for on the plans.

B. Set fixtures level and flush with the roadway surface.

3.9 PHOTOELECTRIC CONTROLS

A. Photoelectric controls shall be installed as per the detail shown on the plans, and adjusted to point in the north direction.

3.10 STANDARDS AND PEDESTALS

A. All poles shall be installed as shown, leveled and cleared of all concrete.

B. Salvaged material not reused shall be delivered to the City of Half Moon Bay Corporation Yard at 880 Stone Pine Road. The cost of this shall be considered in the contract price paid under the work item involved and no additional compensation will be allowed therefore.

C. All required drilling on poles, masts, mast arms and fixtures shall be done in the field after the pole (mast) has been satisfactorily installed, plumbed and cleaned.

D. For bonding existing intersectional street lighting standards the contractor shall either install a 3/16 inch or larger brass bolt, or preferably a means to be provided by pole manufacturer on side of pole adjacent to hand-hole. The bolt shall be installed on the outside of the shaft near the base plate where it will be covered by the bolt cover. The shaft of the standard shall be drilled for no larger than a 1/4 inch hole near the base plate to provide passage for the bonding conductor.

E. Payment for modifications for touch-up painting and bonding of existing standards shall be considered as included in the contract lump sum price paid for street lighting.

3.11 BONDING AND GROUNDING

A. Bonding and grounding shall conform to the provisions in Section 86-2.10 "Bonding and Grounding" of the Standard Specifications, these special provisions, the latest issue of the National Electric Code, Section 250-91(c), and to Sections 2395.91(b) and (c)l of the State of California Low Voltage Electrical Safety Orders, Title 8.

B. Grounding jumper shall be attached by means provided by pole manufacturer, if possible. If not, contractor shall provide a 3/16 inch or larger brass bolt in the standard or pedestal and shall be run through conduit to the ground rod or bonding wire in adjacent pull box.

C. Grounding jumper shall be visible after cap has been poured on foundation.

3.12 REMOVING, REINSTALLING OR SALVAGING ELECTRICAL EQUIPMENT

A. Salvaged electrical materials shall be hauled to the City of Half Moon Bay Corporation Yard at 880 Stone Pine Road, and stockpiled.

B. Full compensation for hauling and stockpiling electrical materials shall be considered

as included in the contract price paid for the item requiring the material to be salvaged and no additional compensation will be allowed therefore.

3.13 EXCAVATION AND BACKFILLING

A. Excavation and backfilling for trenches, foundations and other appurtenance shall conform to the provisions in Section 86-2.01, “Excavating and Backfilling” of the State Standard Specifications and Section 02202 of the Specifications.

3.14 DISPOSAL OF LOW SODIUM LAMPS

A. All unserviceable sodium lamps recovered from the existing street lights shall be disposed of per local, State and Federal regulations. The contractor shall confirm the location of the disposal with the Public Works Services.

B. Sodium can generate a high degree of heat when exposed to small amounts of water; therefore the following precautions must be taken while handling the lamps.

1. Prevent the bulb from being scratched.
2. Be sure the power supply is off before installing or removing the lamp.
3. In case the outer bulb is broken, avoid making contact with metal parts to prevent electrical shock.

3.15 INDUCTIVE LOOP DETECTORS

A. Loop detectors shall conform to the provisions in Section 86-5.01A “Inductive Loop Detectors” of the Standard Specifications, details and notes shown on the Standard Plans, and these specifications.

B. Loop detector sensor units and asphaltic emulsion sealant for inductive detector loop installation shall be furnished by the contractor.

C. Loop detectors to be installed in an area that is to receive new asphalt concrete shall be installed prior to the final overlay of asphalt concrete.

D. Where the inductive loop detector conductors are to be installed in an area that is to be resurfaced with asphalt concrete, the loop detector conductor shall be placed in slots cut in the existing pavement. The conductors shall be installed as shown on the plans in the existing pavement.

E. Loops shall be centered within traffic lanes unless otherwise specified.

F. Contractor shall position loops so that no portion of any loop lies over conduit.

G. Contractor shall make tentative layouts of all loops as shown on plans, then arrange for confirmation of layouts by the City Engineer prior to sawcutting.

H. All loops shall be brought to pull box individually through a chase and conductors shall have two turns of twist per foot and spliced in pull box.

I. Wire shall be installed in a slot sawcut in the pavement. Residue resulting from slot cutting operations shall not be permitted to flow across shoulders or lanes occupied by public traffic and shall be removed from the pavement surface by vacuuming or other approved method before any residue flows off of the pavement surface. Residue from sawcutting operations shall be disposed of outside the highway right of way in conformance with the provisions in Section 7-1.13 of the Standard Specifications.

J. Slots cut in the pavement shall be smooth, washed clean, blown out and thoroughly dried before installing conductors.

K. Loop wire shall be Type 1, Type RHW-USE neoprene-jacketed or Type USE cross-linked polyethylene insulated, No. 12, stranded copper wire, the minimum insulation thickness at any point shall be 40 mils, in accordance with Section 86-5.01 A of the Standard Specifications. One continuous, unbroken length shall be used to form a loop of the number of turns required and the lead-in from loop to junction box.

L. The lead-ins from the detector shall be Type B, lead-in cable shall be insulated with 20 mils of high-density polyethylene. The conductors shall be twisted together with at least 2 turns per foot and the twisted pair shall be protected with a copper or aluminum polyester shield. A No. 20, minimum, copper drain wire shall be provided and connected to the equipment ground within the cabinet. The cable shall be provided with a high-density polyethylene or high-density polypropylene outer jacket with a nominal thickness of 32 mils. An amorphous interior moisture penetration barrier of nonhydroscopic polyethylene or polypropylene fillers shall be provided in accordance with Section 86-5.01A. The lead-in shall be spliced, soldered and taped to the loop at the junction box. The shield shall be connected to the controller cabinet ground bus. Where spade terminals are used to secure the lead-in wire to field terminal blocks, the spade terminals shall be soldered as well as crimped to the UF wire. All detector lead-in cable shall be continuous - no splicing is permitted.

M. After the loop conductors are installed in the pavement, the slots shall be filled to within 1/8” of the pavement surface with the appropriate sealant. All excess shall be removed.

N. Detector loop lead-ins shall be installed in conduit from the gutter to the splice box. After installation of loop wires, gutter end of conduit is to be sealed with duct seal and excavation is to be filled with sand to within 1-1/2" of road surface and capped with asphalt.

O. All splices shall be soldered to ensure constant low resistance and must be insulated in such a manner that the installation maintains resistance to ground of not less than 100 megaohms. To ensure that the loop installation is correct, a continuity check of the loop writing and a resistance check of this loop-to-ground shall be performed using a "megger" or other suitable insulation tester, with a representative of the City Engineer present. Loop readings that decrease below 20 megaohms during the guarantee period shall be considered below minimum limits and shall require replacement.

P. The contractor shall test the detectors with a motor-driven cycle, as defined in the California Vehicle Code that is licensed for street use by the Department of Motor Vehicles of the State of California. The unladen weight of the vehicle shall not exceed 200 pounds and the engine displacement shall not exceed 100 cubic centimeters. Special features, components or vehicles designed to activate the detector will not be

permitted. The contractor shall provide an operator who shall drive the motor-driven cycle through the response or detection area of the detector at not less than three (3) miles per hour nor more than seven (7) miles per hour. The detector shall provide an indication in response to this test.

Q. Chevron asphalt loop sealant or equal shall be used.

R. Adjacent loops shall be tied to the same four-channel detector.

S. The number of lead-in-cable required to achieve the specified detection shall be installed.

T. Where Type "A" loops are indicated on the plans, except for speed monitoring installation, a six-foot diameter circular loop may be installed in lieu of the shape shown on the plans. The sides of the slot shall be vertical and the minimum radius of the slot entering and leaving the circular part of the loop shall be 1-1/2 inches.

U. If any part of the loop conductor, including the portion leading to the adjacent pull box, is damaged by the contractor's operations, the entire detector loop shall be replaced. If any adjacent loop is damaged during such replacement, that loop shall also be replaced.

3.16 RESTORATION OF EXISTING IMPROVEMENTS

A. Existing pavement or other improvements removed or damaged due to the installation of work items shall be replaced in kind to the satisfaction of the City Engineer, at the Contractor’s expense.

B. Existing landscaping, irrigations, or plantings removed, damaged or disturbed due to the work items shall be replaced in kind to the satisfaction of the City Engineer, at the Contractor’s expense.

C. All construction areas shall be left in a clean, neat and workmanlike condition. All construction waste, rubbish and debris remaining upon completion of the work shall become the property of the contractor unless otherwise specified herein or noted on the plans and shall be removed from the worksite by contractor and disposed of off-site in a lawful manner to the satisfaction of the City Engineer.

3.17 ACCEPTANCE TEST AND TURN ON

A. The work item will not be considered acceptable until it has been energized and visually inspected by the City Engineer. Prior to acceptance testing, all equipment as shown on the Plans shall be installed and operable, including but not limited to, pedestrian signals, pedestrian push buttons, vehicle detectors, lighting, signs, and pavement delineation.

B. All louvers, visors, and signal faces shall be directed to provide maximum visibility.

C. Contractor shall pay all energy costs until the street light system has successfully passed the acceptance test and initial turn on.

D. Initial turn on of signal systems shall be made between 9 a.m. and 2 p.m., unless

specified otherwise.

E. Contractor shall notify the City Engineer seven (7) days prior to intended date of initial turn on. City will arrange for presence of the Police Department at the time of initial turn-on.

F. Turn-on procedures must be approved by the City Engineer. Contractor shall be responsible for all required traffic control measures required for the turn-on, to the satisfaction of the City Engineer.

* * *

VOLUME II

STANDARD DETAILS

STREET IMPROVEMENTS

STANDARD DETAILS

STREET IMPROVEMENT STANDARD DETAILS

Standard City Title Block SDG-1

Title	Plate No.
Valley or Cross Gutter	SI-1
Curbs and Gutters	SI-2
Sidewalk Detail	SI-3
Sidewalk Detail	SI-3A
Commercial Driveway Approach	SI-4
Residential Driveway Approach with Curb	SI-5
Residential Driveway Approach with Curb	SI-5A
Curb Ramp Details	SI-6
Typical Sections Residential Streets	SI-7
Typical Sections Collector Streets	SI-8
Limited R/W Streets	SI-8A
Standard Street Sections	SI-9
Traffic Control Sign	SI-10
Street Name Sign	SI-10A
Sign Installation Plans	SI-10B
Red Curb Painting	SI-11
Cul-de-sac Details	SI-12
Frontage and Driveway Regulations	SI-13
Driveway Design Illustrations Fire Apparatus - Pumper	SI-14
Boxed Survey Monument	SI-15
General Notes for Street Plans	SI-16
General Notes for Street Plans (continued)	SI-16A
Asphalt Planing	SI-17
Special - Curb and Gutter Reconstruction	SI-18
Minimum Clear Sight Triangles	SI-19
Intersection Sight Distance	SI-20
Intersection Sight Distance (Notes)	SI-20A
Tree Planting Detail	SI-21
Tree Well Detail 1	SI-21A
Tree Well Detail 2	SI-21B

IMPROVEMENT PLAN LAYOUT

NOTES:

1. AFFIX REGISTRATION STAMP AND SIGNATURE OF ENGINEER, INCLUDING EXPIRATION DATE. A REGISTERED ENGINEER MUST SIGN THE FIRST SHEET OF PLANS; STRUCTURAL ENGINEERS MUST SIGN STRUCTURAL PLANS, ETC.
2. ADD ENGINEER'S LOGO, IF APPROPRIATE.
3. THE SHEET TITLE, FOLLOWED "PLANS FOR THE IMPROVEMENTS OF", FOLLOWED BY THE PROJECT/SUBDIVISION NAME.
4. APPROVAL BLOCKS SHALL APPEAR ON EACH SHEET AND WILL BE SIGNED BY THE CITY OF HALF MOON BAY.
5. FILL IN THE INITIALS OF THE DESIGNER, DELINEATOR, AND CHECKER, WITH DATES.
6. REVISION BLOCKS SHALL NOT BE USED UNTIL THE PLANS ARE APPROVED.
7. FOR REVISED PLANS, PUT THE REVISION NUMBER IN A TRIANGLE, △1, BRIEFLY DESCRIBE THE REVISION AND ADD THE DATE. CITY WILL INITIAL HE ORIGINAL. ON PLAN, PUT A "CLOUD" IN RED PENCIL AROUND THE ITEMS REVISED, WITH A CLEARLY IDENTIFIED SUBSCRIPT △1 TO CORRESPOND WITH THE REVISION BLOCK.
8. THE CITY WILL ASSIGN A FILE NUMBER TO EACH SHEET OF DRAWINGS.

CITY OF HALF MOON BAY, CALIFORNIA STANDARD DETAIL

APPROVED BY:

DATE: CITY ENGINEER XXXXXXX ##, ####

STANDARD CITY TITLE BLOCK

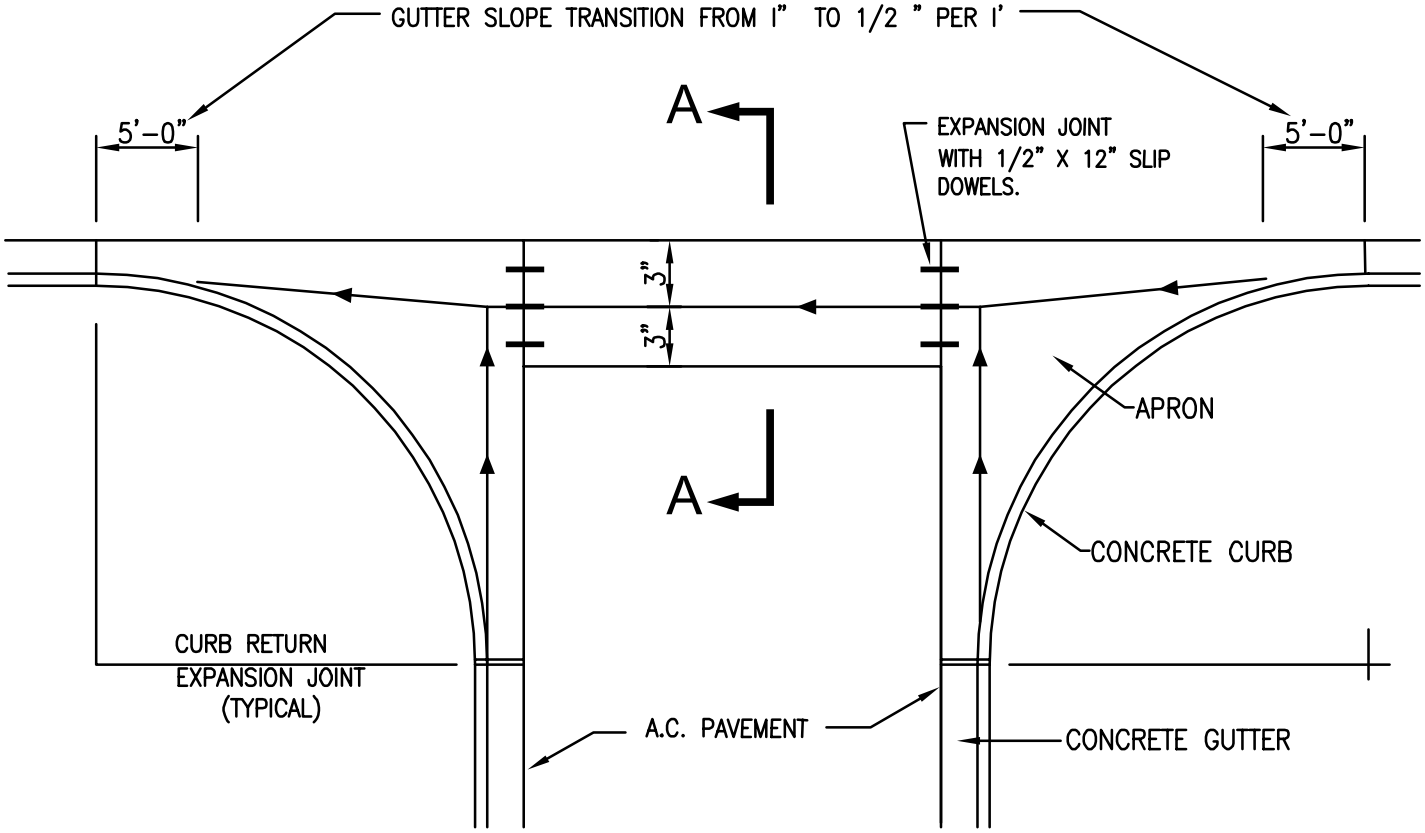
STD. DETAIL No. SDG-1

225

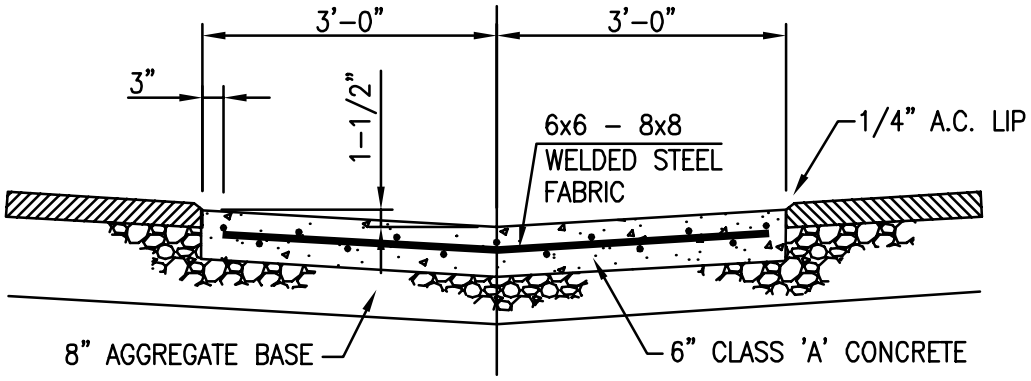
SEE NOTE 6&7 — SEE NOTE 5 — SEE NOTE 4 — SEE NOTE 3 — SEE NOTE 1&2 → ENG Exp.

						APPROVED	CITY OF HALF MOON BAY CALIFORNIA COMMUNITY DEVELOPMENT DEPARTMENT ENGINEERING	TITLE SHEET
								PLANS FOR IMPROVEMENT OF
						APPROVED		
Date	No.	Revisions	By	App		City Engineer		

1 OF



PLAN



SECTION A-A

NOTES:

1. APRON TO BE 6" THICK, CLASS 'A' CONCRETE AND POURED MONOLITHIC WITH ADJACENT CURB AND GUTTER.
2. VALLEY GUTTER TO BE POURED SEPARATE FROM APRONS.

NO SCALE

CITY OF HALF MOON BAY, CALIFORNIA STANDARD DETAIL

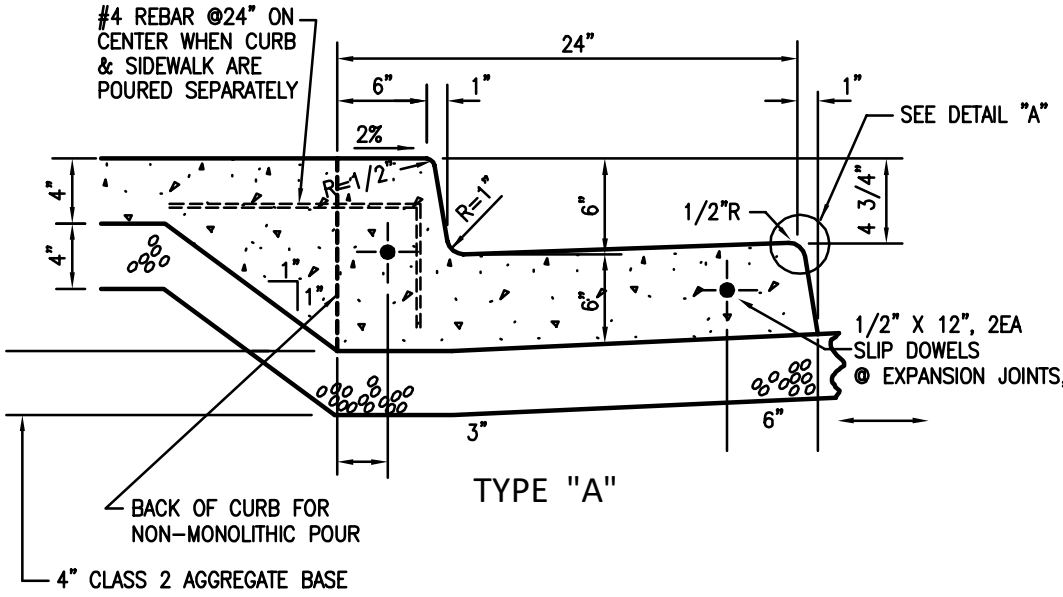
APPROVED BY:

CITY ENGINEER

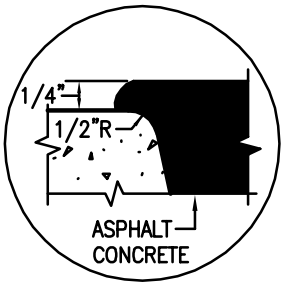
DATE: XXXXXX ##, ####

VALLEY OR CROSS GUTTER

STD. DETAIL No. SI-1



TYPE "A"



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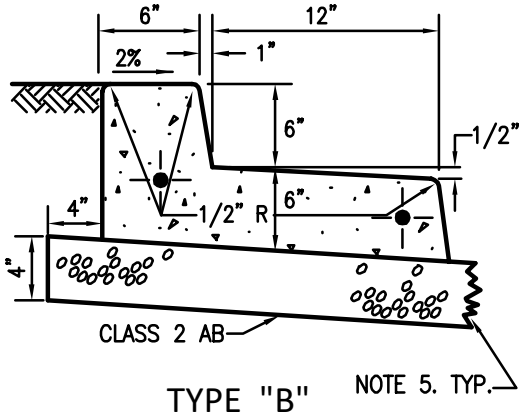
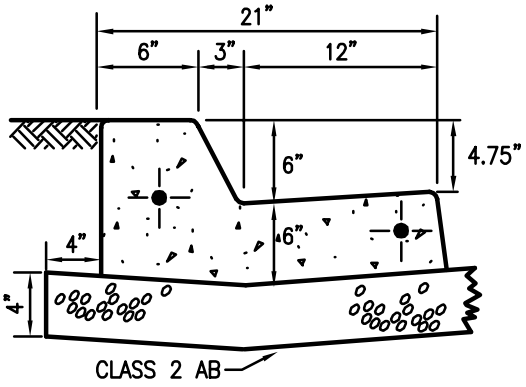


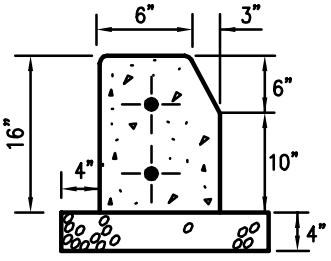
TYPE "B"



TYPE "C"

NOTES:

1. EXPANSION JOINTS WITH DOWELS TO BE PLACED EACH 20' EXCEPT AT RETURNS
2. PAVING AT GUTTER LIP SHALL CONFORM TO DETAIL "A" IN ALL CASES, EXCEPT WHERE STREET SLOPES AWAY FROM GUTTER, IN WHICH CASE PAVEMENT SURFACE SHALL MATCH GUTTER LIP.
3. CONCRETE TO BE CLASS "A".
4. THE RELATIVE COMPACTION OF MATERIAL BELOW ALL CURB, GUTTER & SIDEWALK SHALL NOT BE LESS THAN 95%.
5. BASEROCK TO BE EXTENDED A MINIMUM OF 2' BEYOND LIP OF GUTTER PRIOR TO POURING CONCRETE.
6. WHERE NEW CURB AND GUTTER IS TO BE POURED IN EXISTING STREETS REMOVE A 12" WIDE SECTION OF ASPHALT AND REPLACE WITH DEEP LIFT ASPHALT.



TYPE "C"
VERTICAL CURB ONLY

NO SCALE

CITY OF HALF MOON BAY, CALIFORNIA STANDARD DETAIL

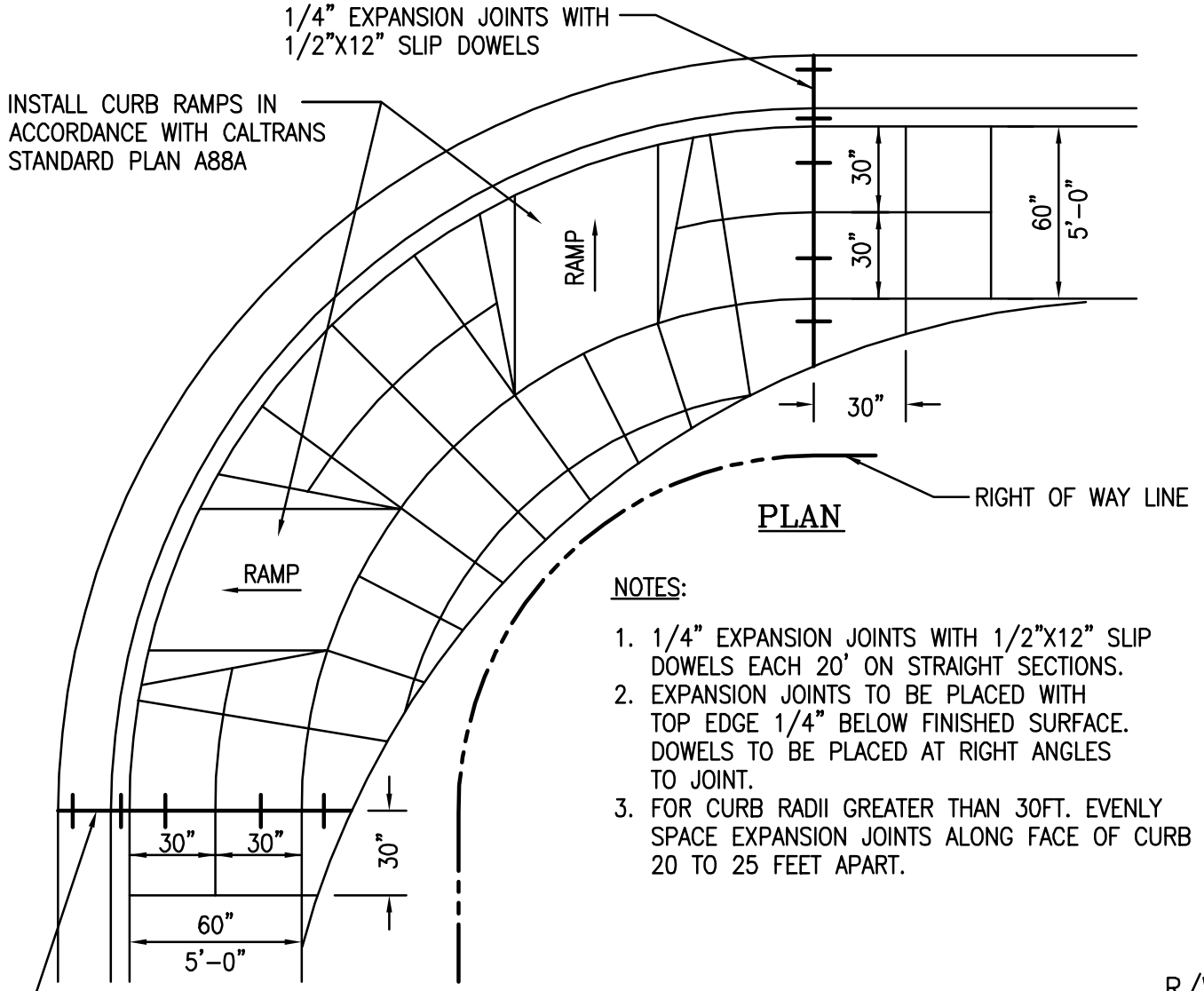
APPROVED BY:

CITY ENGINEER

DATE: XXXXXXX ##, ####

CURBS AND GUTTERS

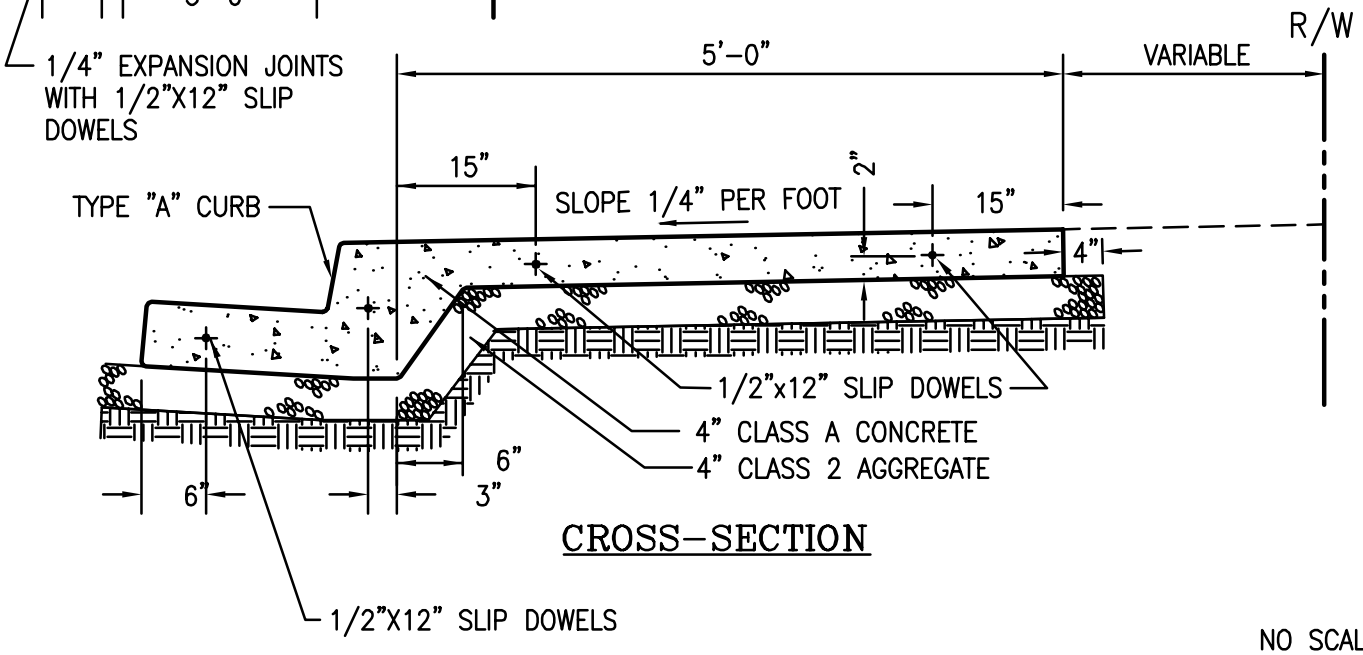
STD. DETAIL No. SI-2



PLAN

NOTES:

1. 1/4" EXPANSION JOINTS WITH 1/2"X12" SLIP DOWELS EACH 20' ON STRAIGHT SECTIONS.
2. EXPANSION JOINTS TO BE PLACED WITH TOP EDGE 1/4" BELOW FINISHED SURFACE. DOWELS TO BE PLACED AT RIGHT ANGLES TO JOINT.
3. FOR CURB RADII GREATER THAN 30FT. EVENLY SPACE EXPANSION JOINTS ALONG FACE OF CURB 20 TO 25 FEET APART.



CROSS-SECTION

NO SCALE

CITY OF HALF MOON BAY, CALIFORNIA STANDARD DETAIL

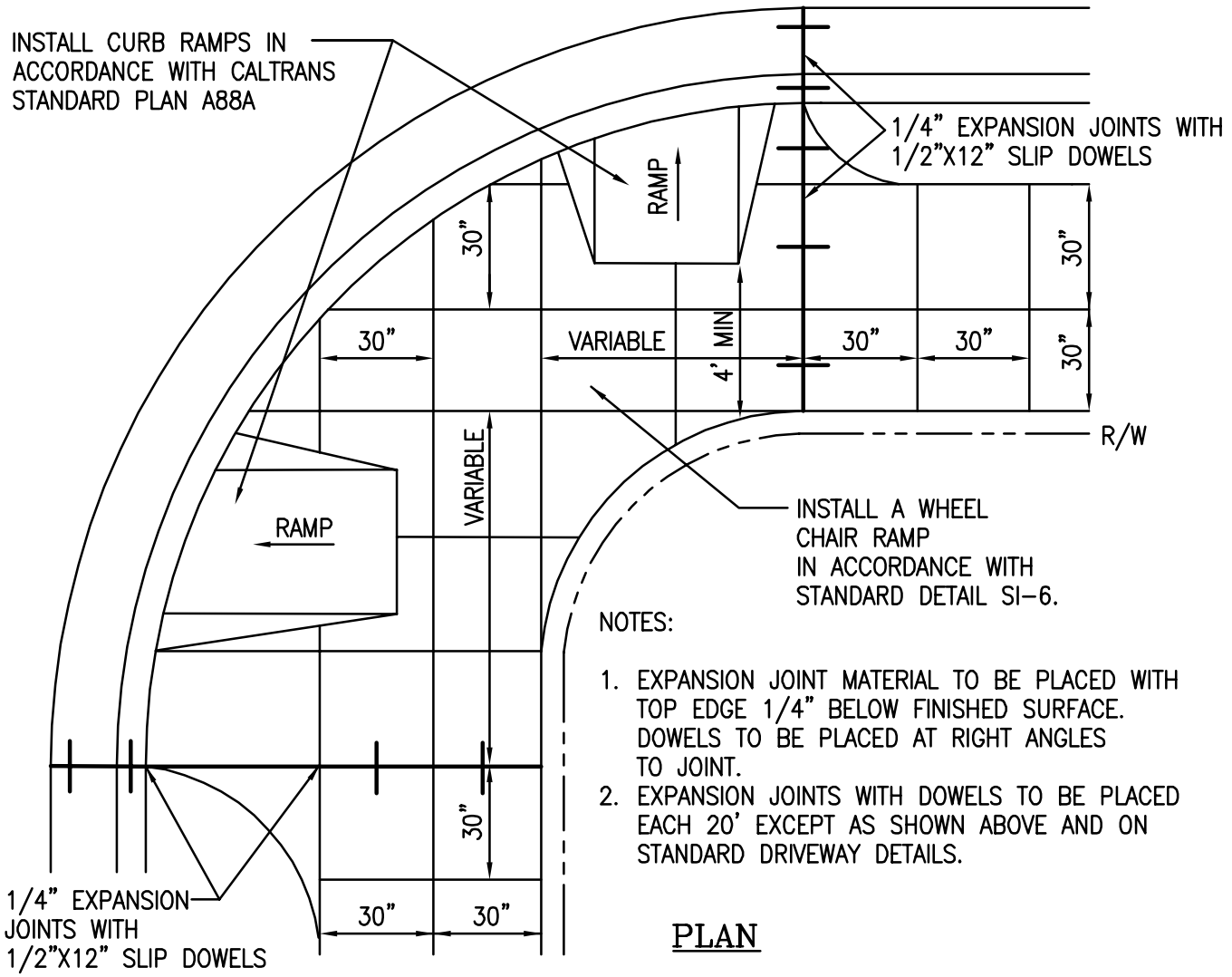
APPROVED BY:

CITY ENGINEER

DATE: XXXXXXX ##, ####

SIDEWALK DETAIL (MONOLITHIC)

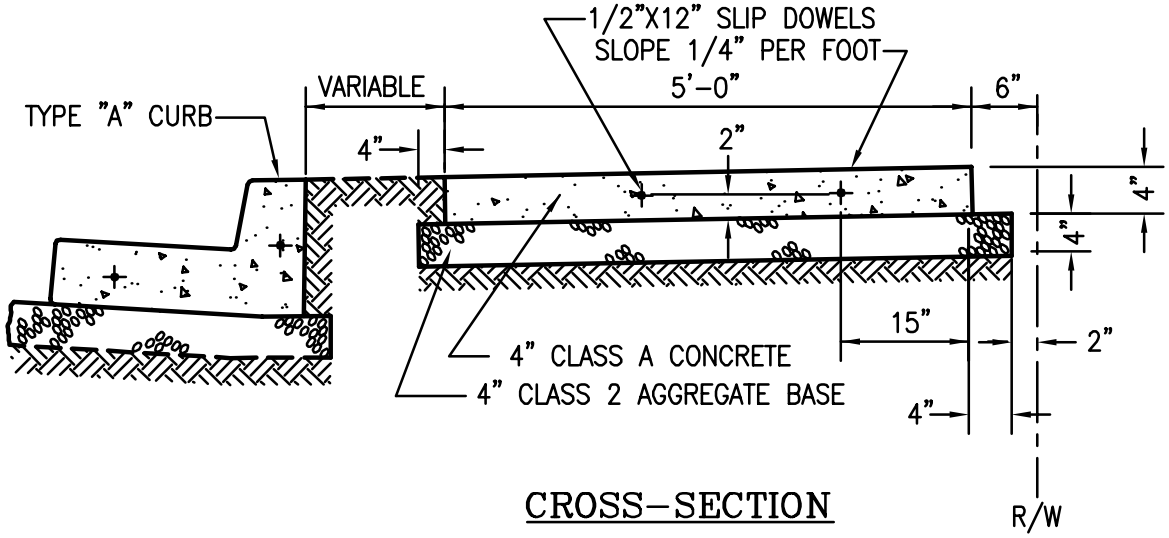
STD. DETAIL No. *SI-3*



NOTES:

1. EXPANSION JOINT MATERIAL TO BE PLACED WITH TOP EDGE 1/4" BELOW FINISHED SURFACE. DOWELS TO BE PLACED AT RIGHT ANGLES TO JOINT.
2. EXPANSION JOINTS WITH DOWELS TO BE PLACED EACH 20' EXCEPT AS SHOWN ABOVE AND ON STANDARD DRIVEWAY DETAILS.

PLAN



CROSS-SECTION

NO SCALE

CITY OF HALF MOON BAY, CALIFORNIA STANDARD DETAIL

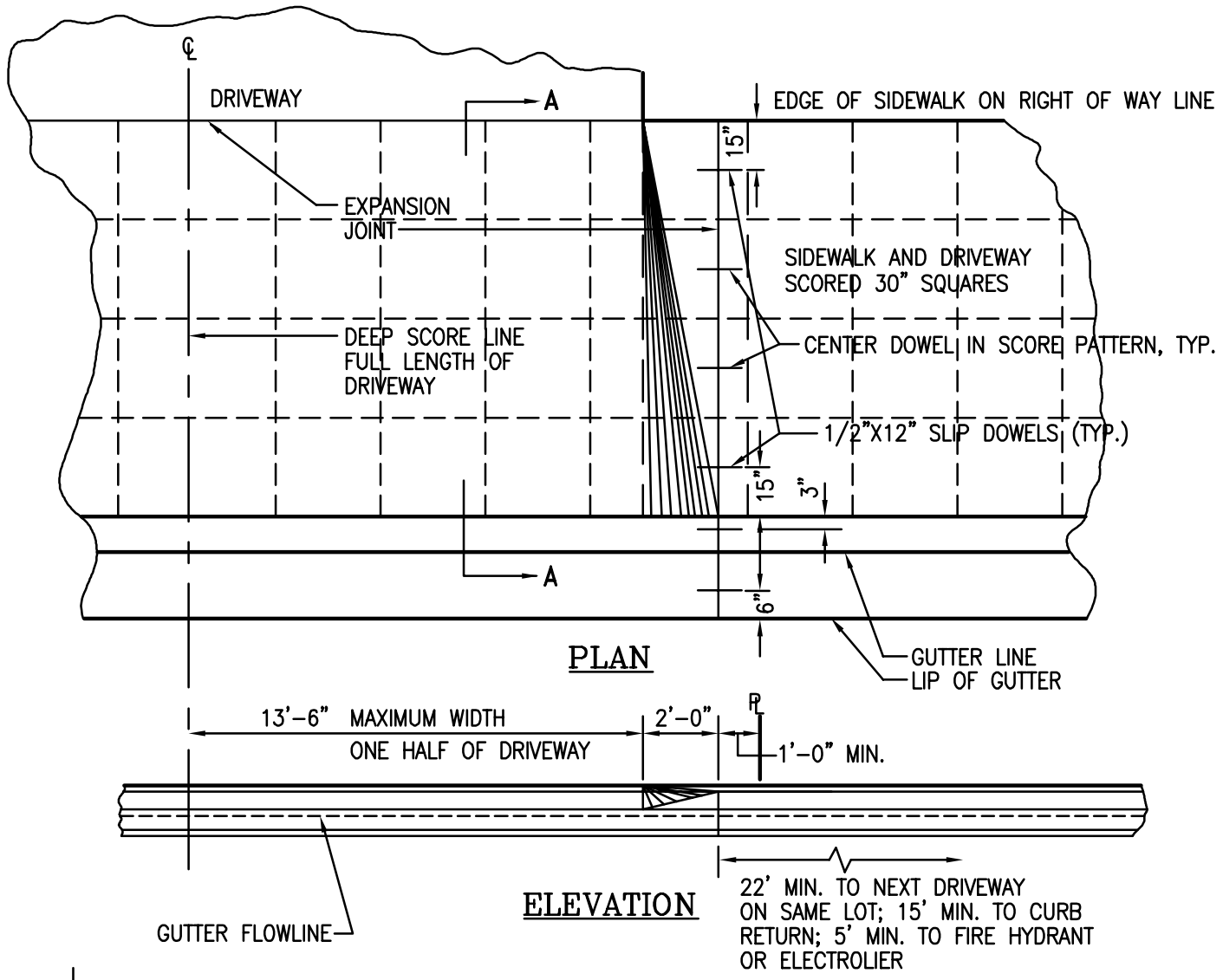
APPROVED BY:

CITY ENGINEER

DATE: XXXXXXX ##, ####

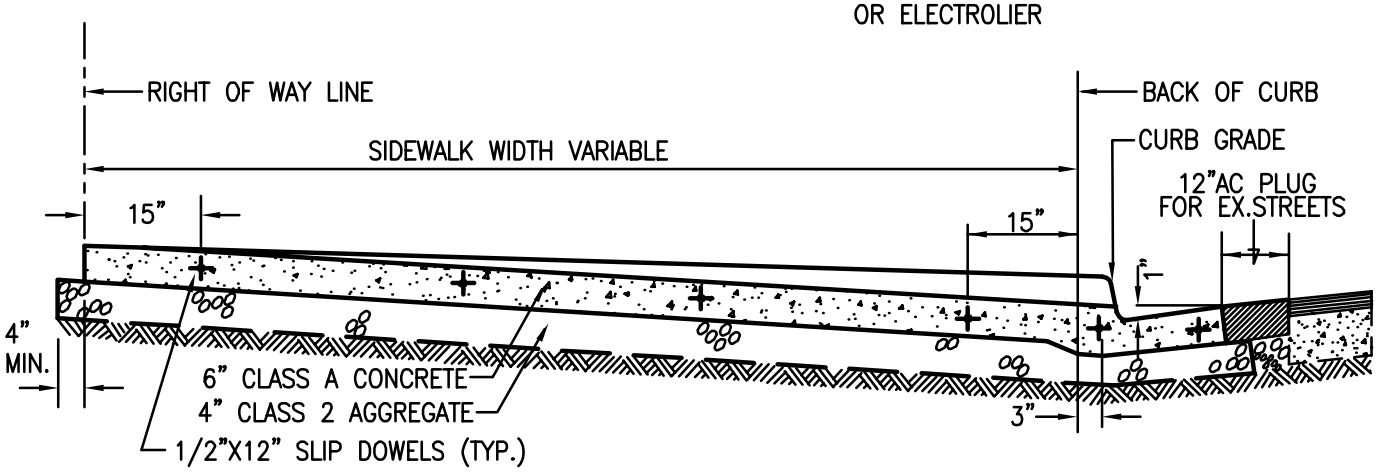
SIDEWALK DETAIL (PARKWAY)

STD. DETAIL No. *SI-3A*



PLAN

ELEVATION



SECTION A–A

NO SCALE

CITY OF HALF MOON BAY, CALIFORNIA STANDARD DETAIL

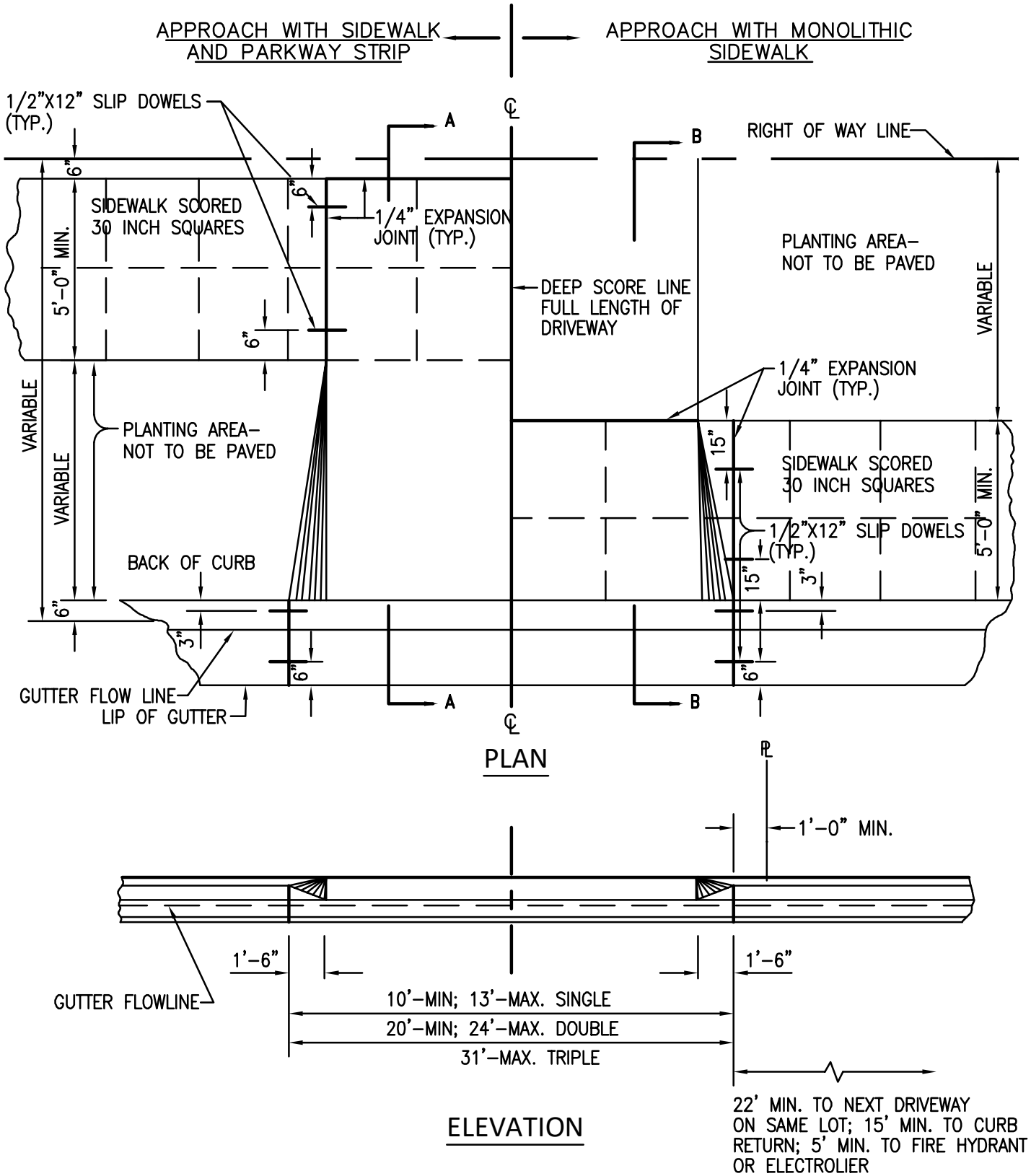
APPROVED BY:

CITY ENGINEER

DATE: XXXXXXX ##, ####

COMMERCIAL DRIVEWAY APPROACH

STD. DETAIL No. SI-4



NO SCALE

CITY OF HALF MOON BAY, CALIFORNIA STANDARD DETAIL

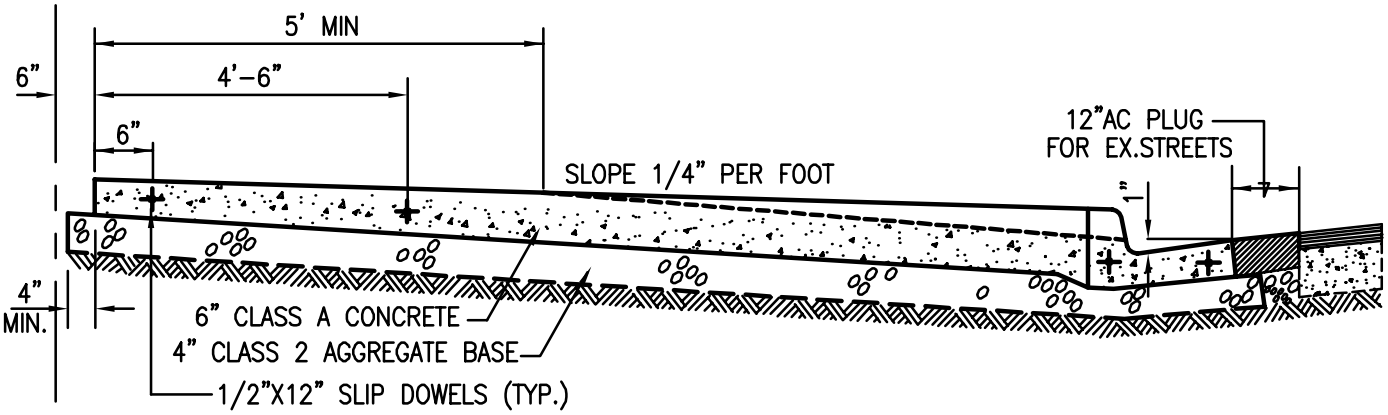
APPROVED BY:

CITY ENGINEER

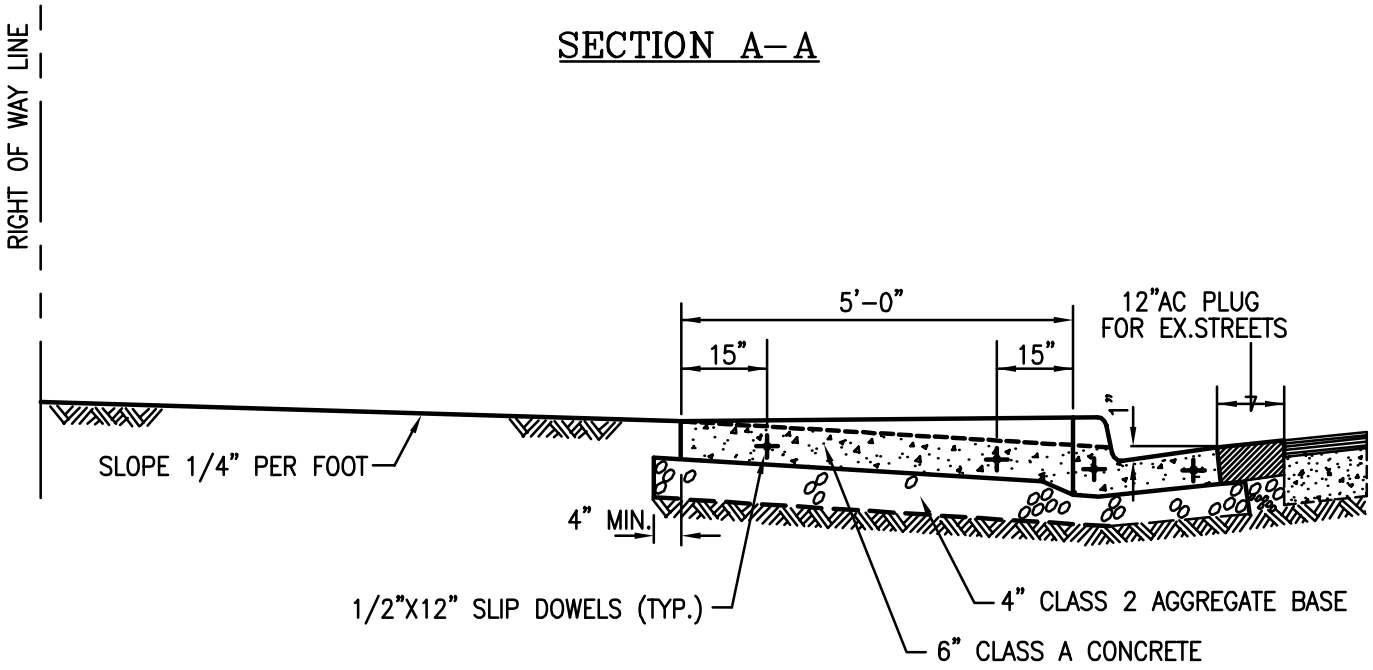
DATE: XXXXXX ##, ####

RESIDENTIAL DRIVEWAY APPROACH WITH CURB

STD. DETAIL No. SI-5



SECTION A-A



SECTION B-B

NOTES:

1. WHEN INSTALLING A DRIVEWAY IN AN EXISTING SIDEWALK, REMOVE EXISTING CURB, GUTTER AND SIDEWALK TO THE NEAREST CONTROL JOINT ON EITHER SIDE OF THE DRIVEWAY. REMOVE AND REPLACE A 12" WIDE STRIP OF ASPHALT PAVEMENT ACROSS THE WIDTH OF THE DRIVEWAY TO FORM NEW GUTTER.

NO SCALE

CITY OF HALF MOON BAY, CALIFORNIA STANDARD DETAIL

APPROVED BY:

CITY ENGINEER

DATE: XXXXXXX ##, ####

RESIDENTIAL DRIVEWAY APPROACH WITH CURB

STD. DETAIL No. SI-5A

SEE CALTRANS STANDARD PLAN RNSP A88A & A88B FOR CURB RAMP DETAILS

USE LATEST CALTRANS APPROVED DETAILS

NO SCALE

CITY OF HALF MOON BAY, CALIFORNIA STANDARD DETAIL

APPROVED BY:

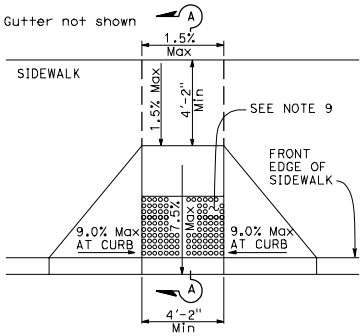
CITY ENGINEER

DATE: XXXXXXX ##, ####

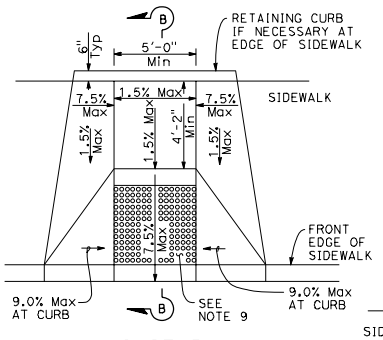
CURB RAMP DETAILS

STD. DETAIL No.

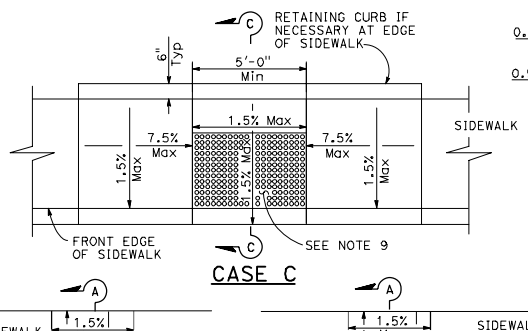
SI-6



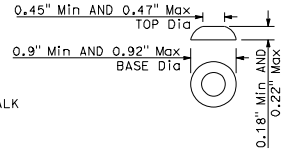
CASE A



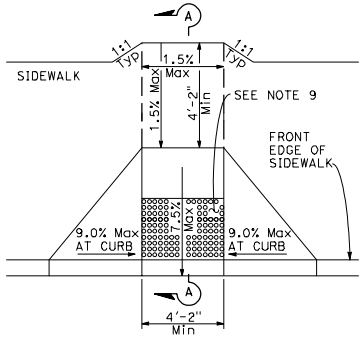
CASE B



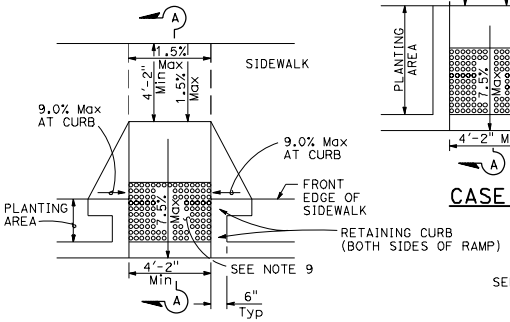
CASE C



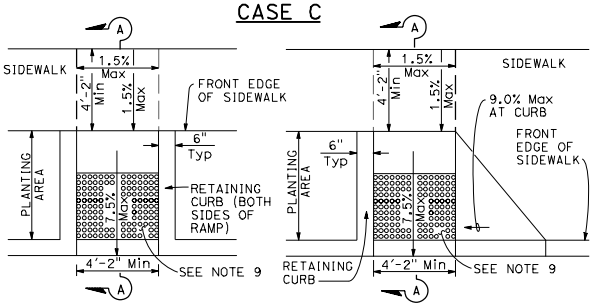
RAISED TRUNCATED DOME



CASE D

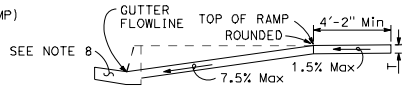


CASE E

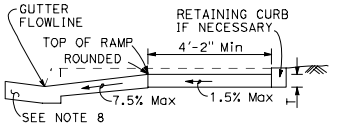


CASE F

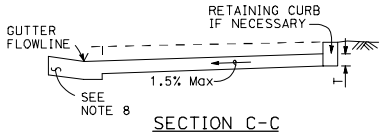
CASE G
See Note 4



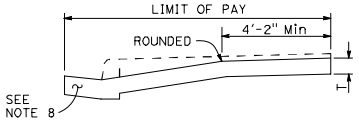
SECTION A-A



SECTION B-B
Depress entire sidewalk as required

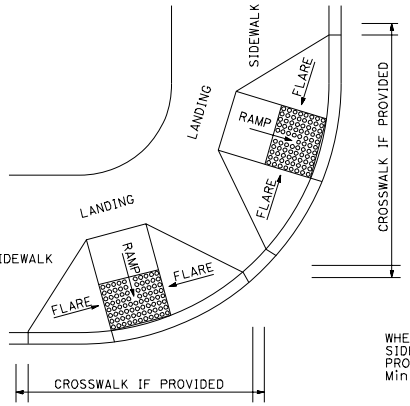


SECTION C-C

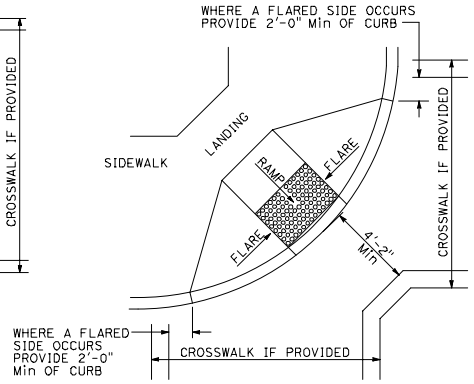


RETROFIT PAY LIMITS
Existing curb and sidewalk

RAISED TRUNCATED DOME PATTERN (IN-LINE)
DETECTABLE WARNING SURFACE
See Note 9



DETAIL A
TYPICAL TWO-RAMP CORNER INSTALLATION
See Note 1



DETAIL B
TYPICAL ONE-RAMP CORNER INSTALLATION
See Notes 1 and 3

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS

H. David Cordova
REGISTERED CIVIL ENGINEER
July 3, 2015
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Hector David Cordova
No. C41957
Exp. 3-31-16
CIVIL
STATE OF CALIFORNIA

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

TO ACCOMPANY PLANS DATED _____

NOTES:

1. As site conditions dictate, Case A through Case G curb ramps may be used for corner installations similar to those shown in Detail A and Detail B. The case of curb ramps used in Detail A do not have to be the same. Case A through Case G curb ramps also may be used at mid block locations, as site conditions dictate.
2. If distance from curb to back of sidewalk is too short to accommodate ramp and 4'-2" platform (landing) as shown in Case A, the sidewalk may be depressed longitudinally as in Case B, or C or may be widened as in Case D.
3. When ramp is located in center of curb return, crosswalk configuration must be similar to that shown for Detail B.
4. As site conditions dictate, the retaining curb side and the flared side of the Case G ramp shall be constructed in reversed position.
5. If located on a curve, the sides of the ramp need not be parallel, but the minimum width of the ramp shall be 4'-2".
6. Side slope of ramp flares vary uniformly from a maximum of 9.0% at curb to conform with longitudinal sidewalk slope adjacent to top of the ramp, except in Case C and Case F.
7. Transitions from ramps and landing to walks, gutters or streets shall be flush (no lip) and free of abrupt changes.
8. Counter slopes of adjoining gutters and road surfaces immediately adjacent to and within 24 inches of the curb ramp shall not be steeper than 1:20 (5.0%). Gutter pan slope shall not exceed 1" of depth for each 2'-0" of width.
9. Curb ramps shall have a detectable warning surface that extends the full width and 3'-0" depth of the ramp. A 4'-0" wide detectable warning surface may be used on a 4'-2" wide curb ramp. Detectable Warning Surfaces shall conform to the requirements in the Standard Specifications.
10. Sidewalk and ramp thickness, "T", shall be 3½" minimum.
11. Utility pull boxes, manholes, vaults and all other utility facilities within the boundaries of the curb ramp will be relocated or adjusted to grade by the owner prior to, or in conjunction with, curb ramp construction.
12. Detectable warning surface may have to be cut to allow removal of utility covers while maintaining full detectable warning width and depth.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CURB RAMP DETAILS

NO SCALE

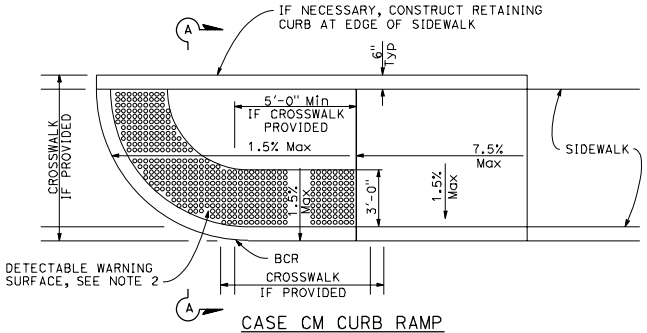
RSP A88A DATED JULY 3, 2015 SUPERSEDES RSP A88A DATED MARCH 21, 2014 AND RSP A88A DATED JULY 19, 2013 AND STANDARD PLAN A88A DATED MAY 20, 2011 - PAGE 121 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP A88A

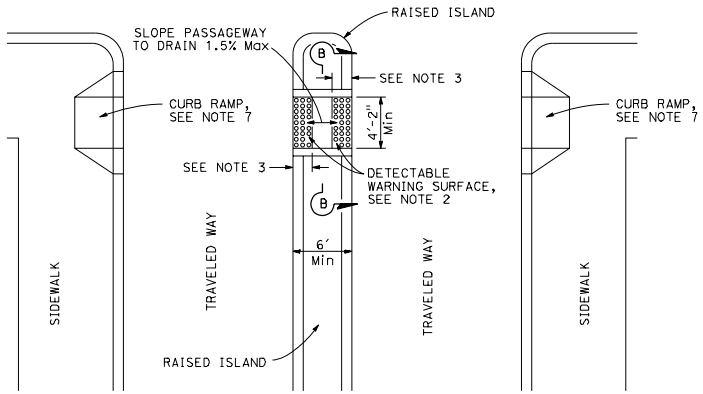
6-30-15

2010 REVISED STANDARD PLAN RSP A88A

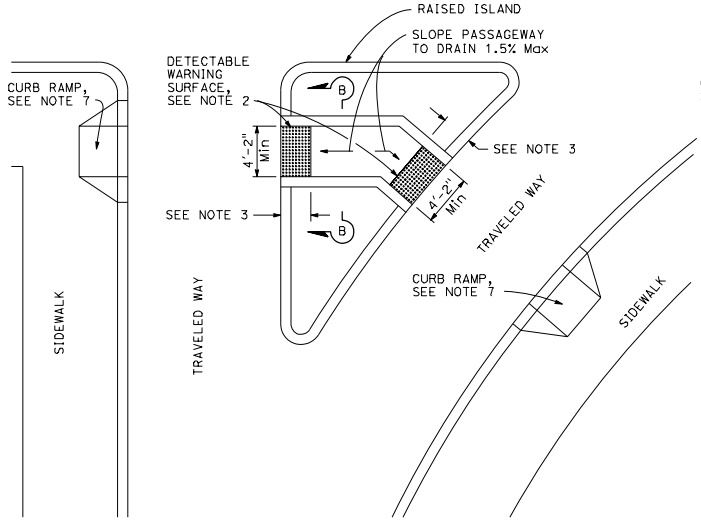
Gutter not shown



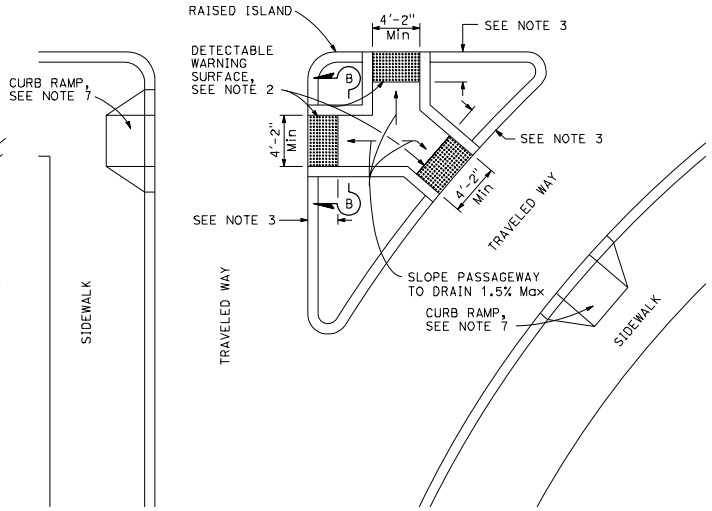
CASE CM CURB RAMP



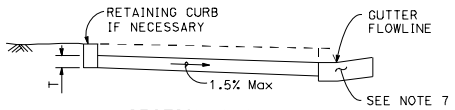
TYPE A PASSAGEWAY



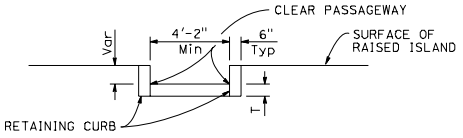
TYPE B PASSAGEWAY



TYPE C PASSAGEWAY



SECTION A-A



SECTION B-B

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS

REGISTERED CIVIL ENGINEER

July 3, 2015
PLANS APPROVAL DATE

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

REGISTERED PROFESSIONAL ENGINEER
Hector David Cordova
No. C41957
Exp. 3-31-16
CIVIL
STATE OF CALIFORNIA

TO ACCOMPANY PLANS DATED _____

NOTES:

1. Sidewalk, ramp and passageway thickness, "T", shall be 3½" minimum.
2. For details of detectable warning surfaces, see Revised Standard Plan RSP A88A.
3. Where an island passageway length is greater than or equal to 6'-0", but less than 8'-0", each detectable warning surface shall extend the full width and 2'-0" depth of the passageway length. Where an island passageway length is greater than or equal to 8'-0", each detectable warning surface shall extend the full width and 3'-0" depth of the passageway length. A 4'-0" wide detectable warning surface may be used on a 4'-2" wide island passageway.
4. Transitions from ramps to walks, gutters or streets shall be flush (no lip) and free of abrupt changes.
5. Utility pull boxes, manholes, vaults and all other utility facilities within the boundaries of the curb ramp will be relocated or adjusted to grade by the owner prior to, or in conjunction with, curb ramp construction.
6. Detectable warning surface may have to be cut to allow removal of utility covers while maintaining full detectable warning width and depth.
7. For additional curb ramp details, see Revised Standard Plan RSP A88A.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CURB RAMP AND ISLAND PASSAGEWAY DETAILS

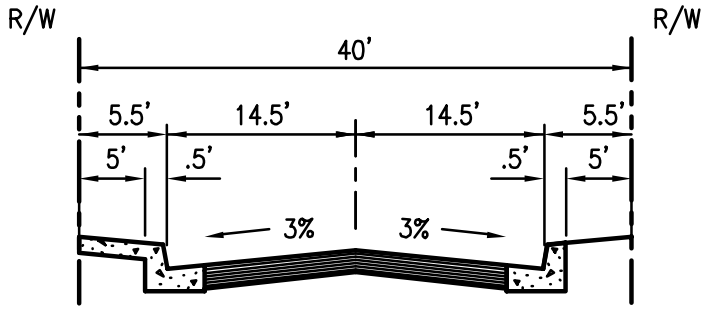
NO SCALE

RSP A88B DATED JULY 3, 2015 SUPERSEDES RSP A88B DATED MARCH 21, 2014 AND RSP A88B DATED JULY 19, 2013 AND STANDARD PLAN A88B DATED MAY 20, 2011 - PAGE 122 OF THE STANDARD PLANS BOOK DATED 2010.

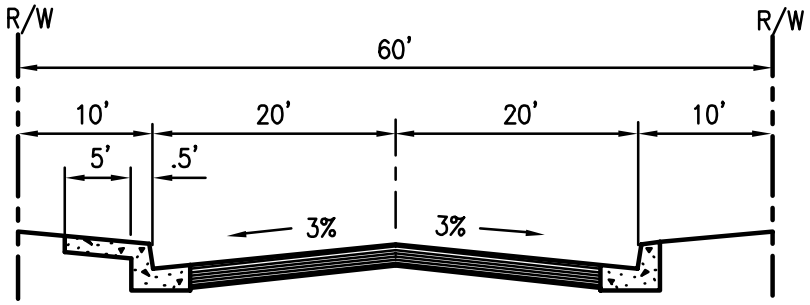
REVISED STANDARD PLAN RSP A88B

4-28-15

2010 REVISED STANDARD PLAN RSP A88B



RESIDENTIAL STREET : 2 – LANES
40' LIMITED R/W



RESIDENTIAL STREET : 2 – LANES
60' R/W

NOTES:

1. INCREASED WIDTHS MAY BE REQUIRED WHERE STREETS ARE TO SERVE COMMERCIAL OR INDUSTRIAL PROPERTY, OR WHERE PRESENT OR ANTICIPATED TRAFFIC CONDITIONS WARRANT SUCH INCREASE.
2. SEE STANDARD DRAWINGS FOR REQUIREMENTS OF PRIVATE STREETS.
3. CURBS AND GUTTER SHALL CONFORM TO STANDARD DETAIL SI–2 OR SI–3.
4. SIDEWALK SHALL CONFORM TO STANDARD DETAIL SI–3.

NO SCALE

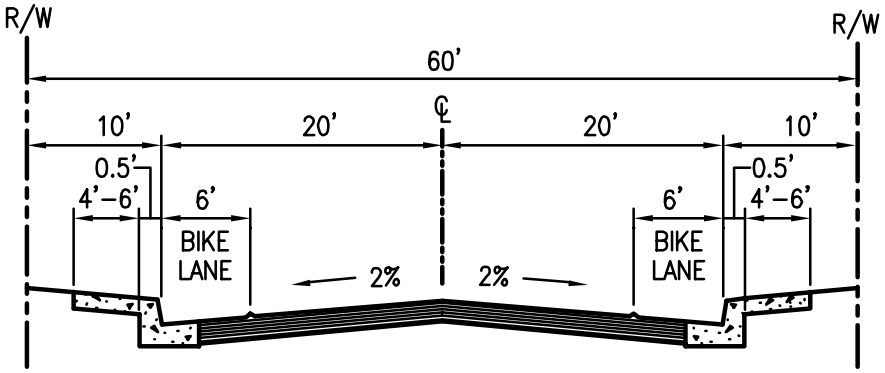
CITY OF HALF MOON BAY, CALIFORNIA STANDARD DETAIL

APPROVED BY:

CITY ENGINEER
DATE: XXXXXXX ##, ####

TYPICAL SECTIONS RESIDENTIAL STREETS

STD. DETAIL No.
SI-7



COLLECTOR : 2 – LANES

NO SCALE

CITY OF HALF MOON BAY, CALIFORNIA STANDARD DETAIL

APPROVED BY:

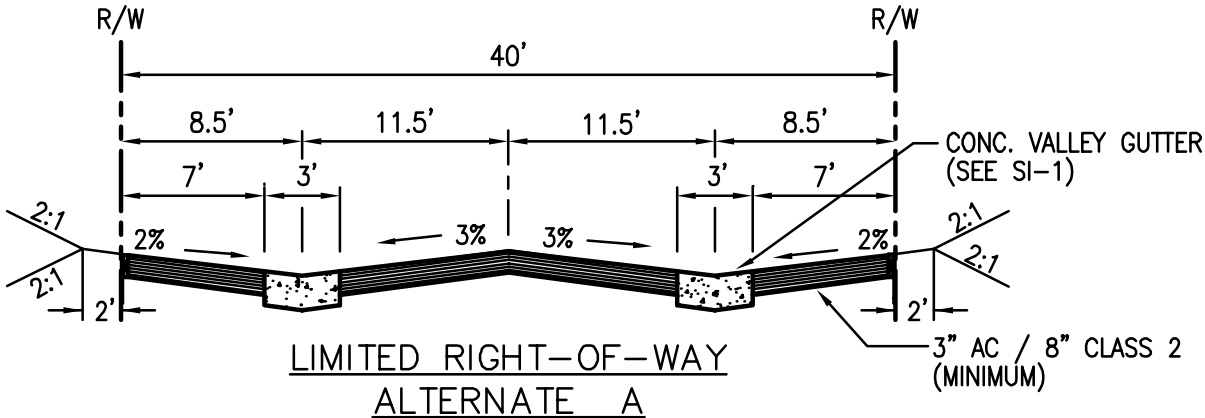
CITY ENGINEER

DATE: XXXXXXX ##, ####

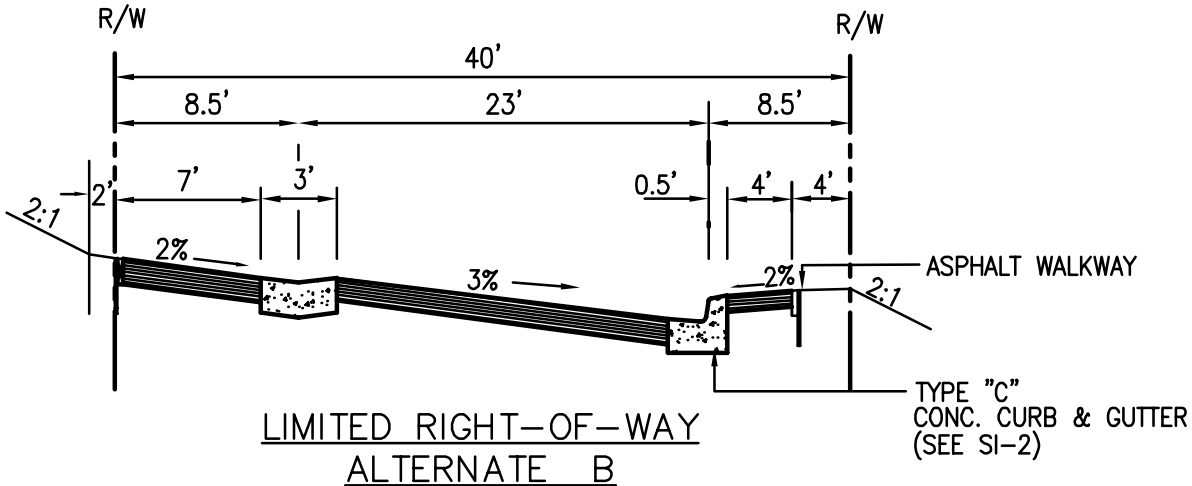
TYPICAL SECTIONS
COLLECTOR STREETS

STD. DETAIL No.

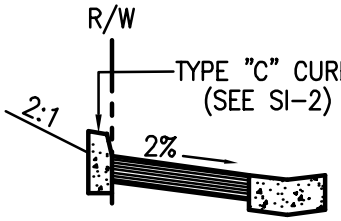
SI-8



LIMITED RIGHT-OF-WAY
ALTERNATE A
(WHERE DRAINAGE CONTROL IS NOT CRITICAL)



LIMITED RIGHT-OF-WAY
ALTERNATE B
(WHERE DRAINAGE CONTROL IS CRITICAL)



OPTIONAL

NOTES:

1. OPTIONAL CURB TREATMENT SHALL BE LIMITED TO UPHILL SLOPES 6' VERTICAL FEET IN HEIGHT OR LESS, AS APPROVED.
2. AT THE DISCRETION OF A REPRESENTATIVE OF THE CITY, THE TOP SLOPE ON THE DOWNHILL SIDE MAY BEGIN 18" FROM THE EDGE OF THE WALKWAY.
3. SLOPE CONTROL EASEMENTS SHALL BE GRANTED TO THE CITY AS NECESSARY.
4. EDGE OF ASPHALT SHALL BE PROTECTED WITH REDWOOD HEADER BOARD.
5. FOR ALTERNATE B, PARKING BAYS MAY BE REQUIRED.
6. PARKING SHALL BE LIMITED TO AREAS CONTAINING THE 7 FOOT WALKWAY WITH VALLEY GUTTERS OR PARKING BAYS. "NO PARKING" SIGNS SHALL BE POSTED TO PREVENT PARKING ON THE SIDE CONTAINING A CURB AND GUTTER.
7. PAVEMENT SECTION OF 4" A.C. OVER 8" A.B. IS THE MINIMUM REQUIRED.
8. GEOTECHNICAL CONSULTANT TO DETERMINE ACTUAL PAVEMENT SECTION BASED ON FIELD TEST DATA.
9. THE TRANSITION LENGTH REQUIRED TO GO FROM VALLEY GUTTER TO VERTICAL CURB SHALL BE 3'.
10. INSTALL 2" x 8" ROUGH REDWOOD HEADER, STAKED AT 24" O.C.

NO SCALE

CITY OF HALF MOON BAY, CALIFORNIA STANDARD DETAIL

APPROVED BY:

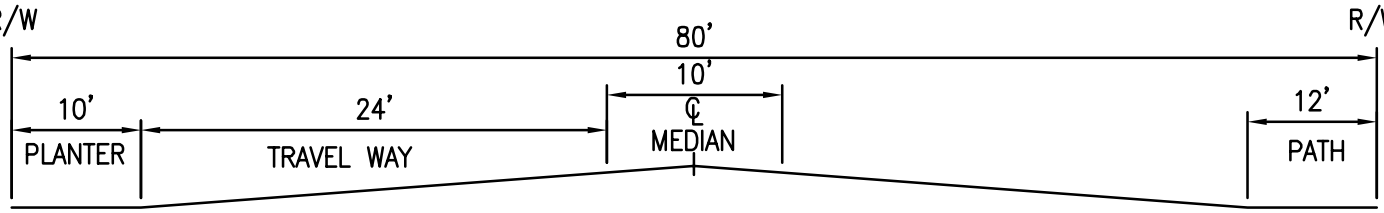
CITY ENGINEER

DATE: XXXXXXX ##, ####

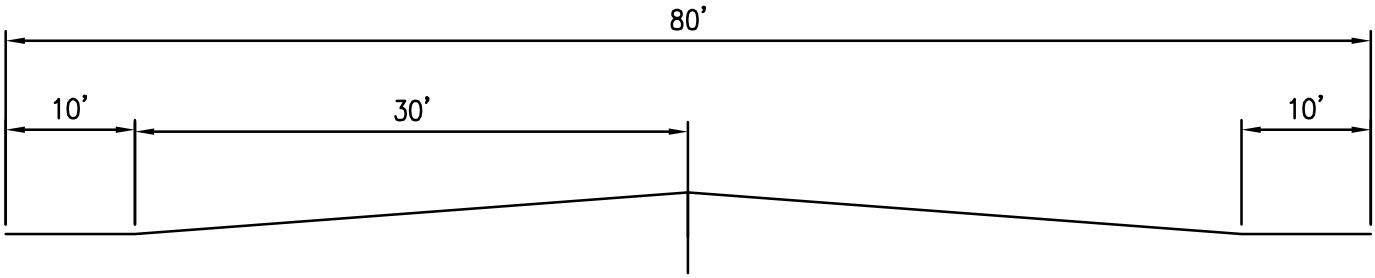
LIMITED R/W STREETS

STD. DETAIL No.

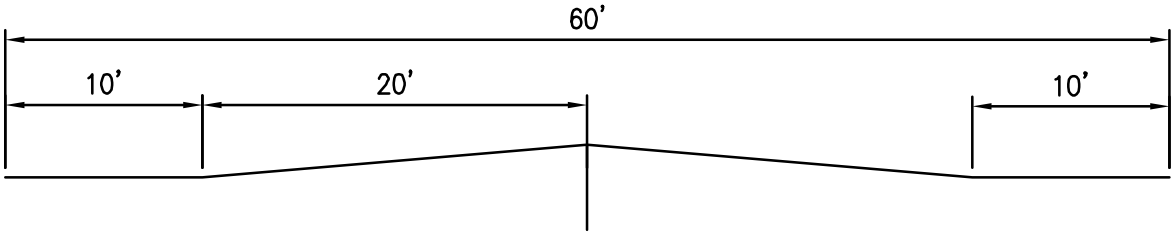
SI-8A



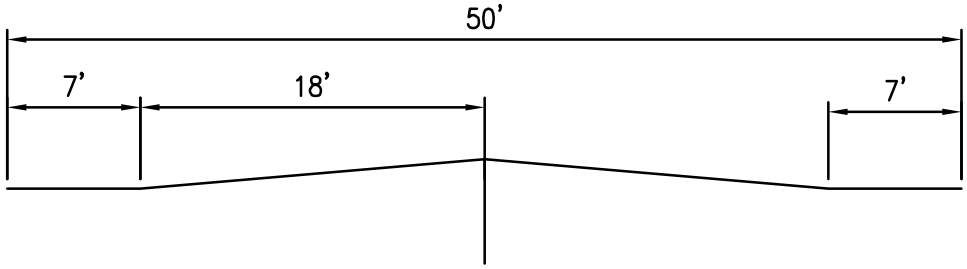
MAJOR ARTERIAL



SECONDARY ARTERIAL



COLLECTOR



RESIDENTIAL

MAJOR ARTERIAL – NO PARKING, NO DRIVEWAY ACCESS, LIMITED CONTROLLED INTERSECTION.

SECONDARY ARTERIAL – CONTROLLED PARKING AND ACCESS.

COLLECTOR – PARKING, LIMITED DRIVEWAY ACCESS, CONTROLLED INTERSECTIONS.

MINOR – PARKING, DRIVEWAY ACCESS, CONTROLLED INTERSECTION.

NO SCALE

CITY OF HALF MOON BAY, CALIFORNIA STANDARD DETAIL

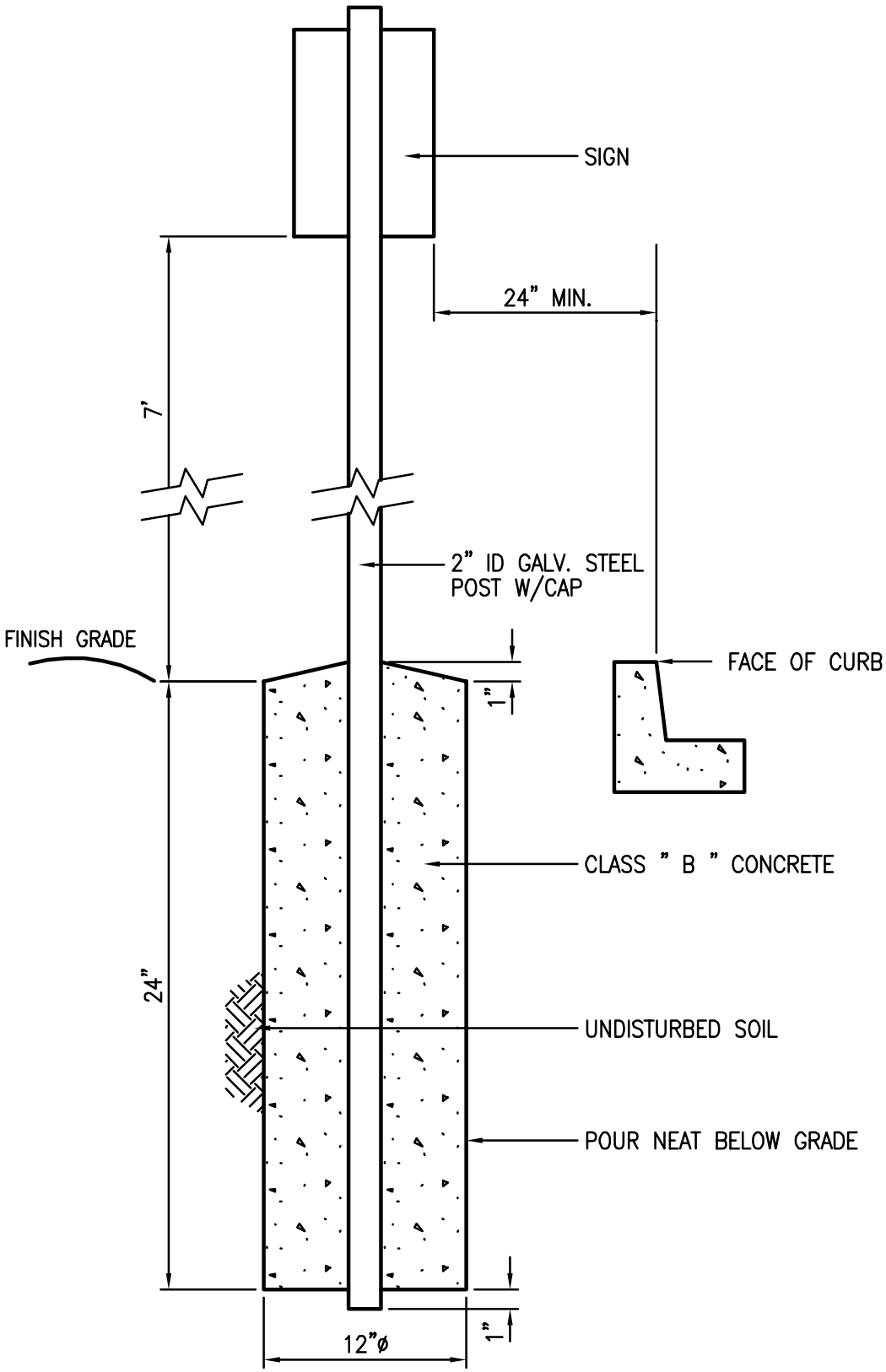
APPROVED BY:

CITY ENGINEER

DATE: XXXXXX ##, ####

STANDARD STREET SECTIONS

STD. DETAIL No. SI-9



NO SCALE

CITY OF HALF MOON BAY, CALIFORNIA STANDARD DETAIL

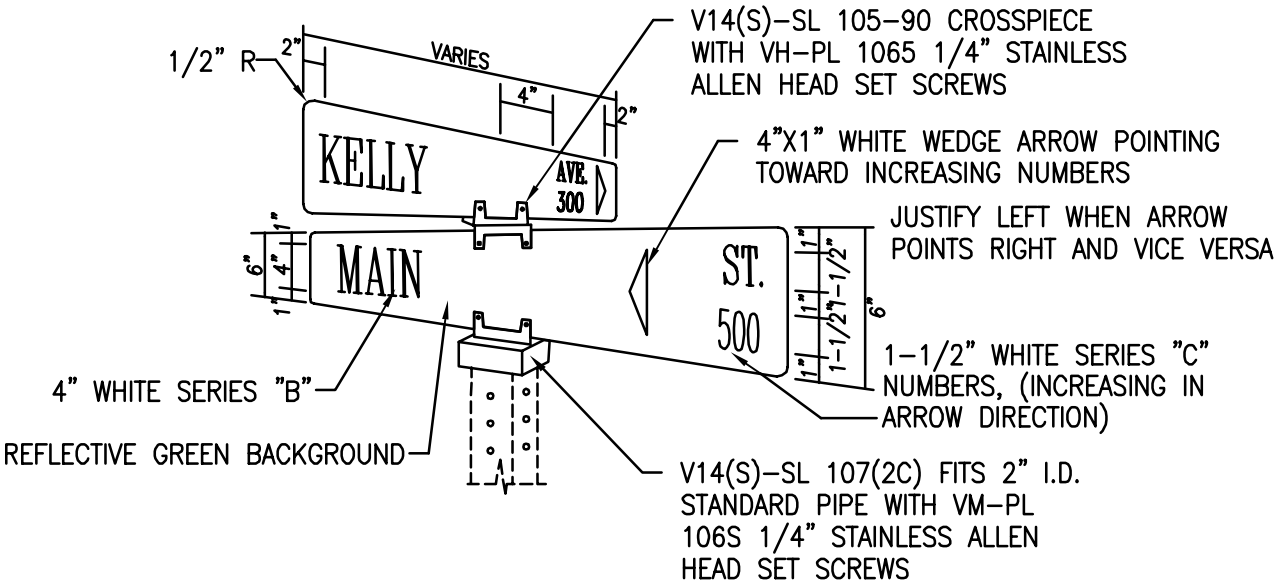
APPROVED BY:

CITY ENGINEER

DATE: XXXXXXX ##, ####

TRAFFIC CONTROL SIGN

STD. DETAIL No. SI-10



CITY WIDE
(WHITE ON GREEN)

NOTES:

1. ALL BACKGROUND SHEETING AND LETTERS USED SHALL BE HIGH INTENSITY MANUFACTURED BY 3M COMPANY.
2. ALL STREET NAME BLANKS SHALL BE ALUMINUM WITH A MAXIMUM THICKNESS OF 0.080 INCH, 6" HIGH, AND VARIABLE LENGTH TO ACCOMODATE MESSAGE.
3. ALL SIGNS SHALL BE MOUNTED ON A 2 INCH I.D. GALVANIZED STEEL PIPE UNLESS AN EXISTING CITY STREET LIGHT POLE IS AVAILABLE IN THE LOCATION TO BE SPECIFIED. CLEARANCE TO THE BOTTOM OF THE LOWEST SIGN, REGARDLESS OF STYLE OF MOUNTING, SHALL BE A MINIMUM OF SEVEN FEET ABOVE THE SIDEWALK AND NOT EXTEND INTO THE TRAVELED WAY.
4. SIGNS SHALL BE PLACED AND LOCATED AT THE DIRECTION OF THE CITY ENGINEER.

NO SCALE

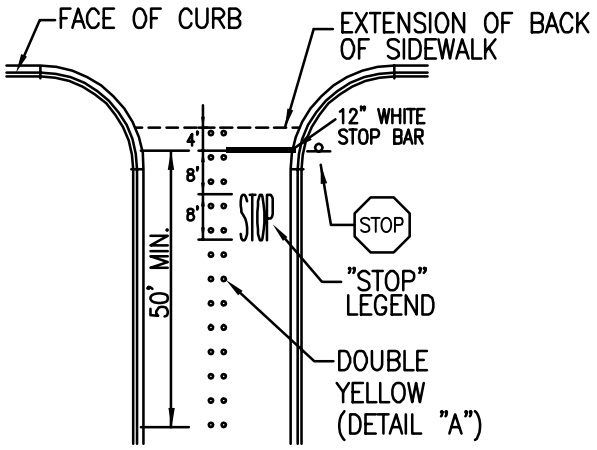
CITY OF HALF MOON BAY, CALIFORNIA STANDARD DETAIL

APPROVED BY:

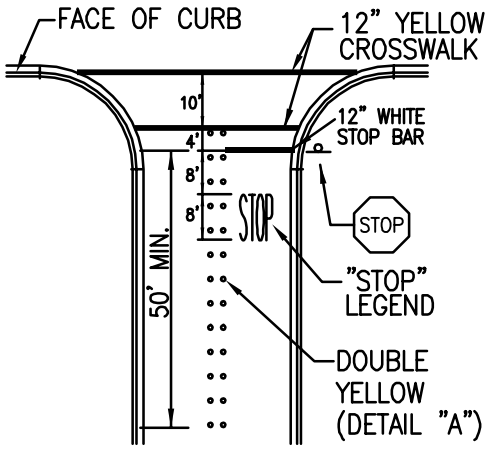
CITY ENGINEER
DATE: XXXXXXX ##, ####

STREET NAME SIGN

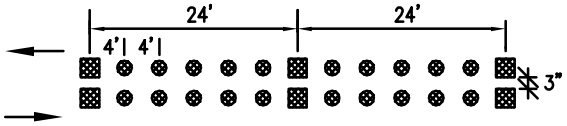
STD. DETAIL No. SI-10A



INTERSECTION DETAIL
(WITHOUT CROSSWALK)



INTERSECTION DETAIL
AT SCHOOL CROSSING



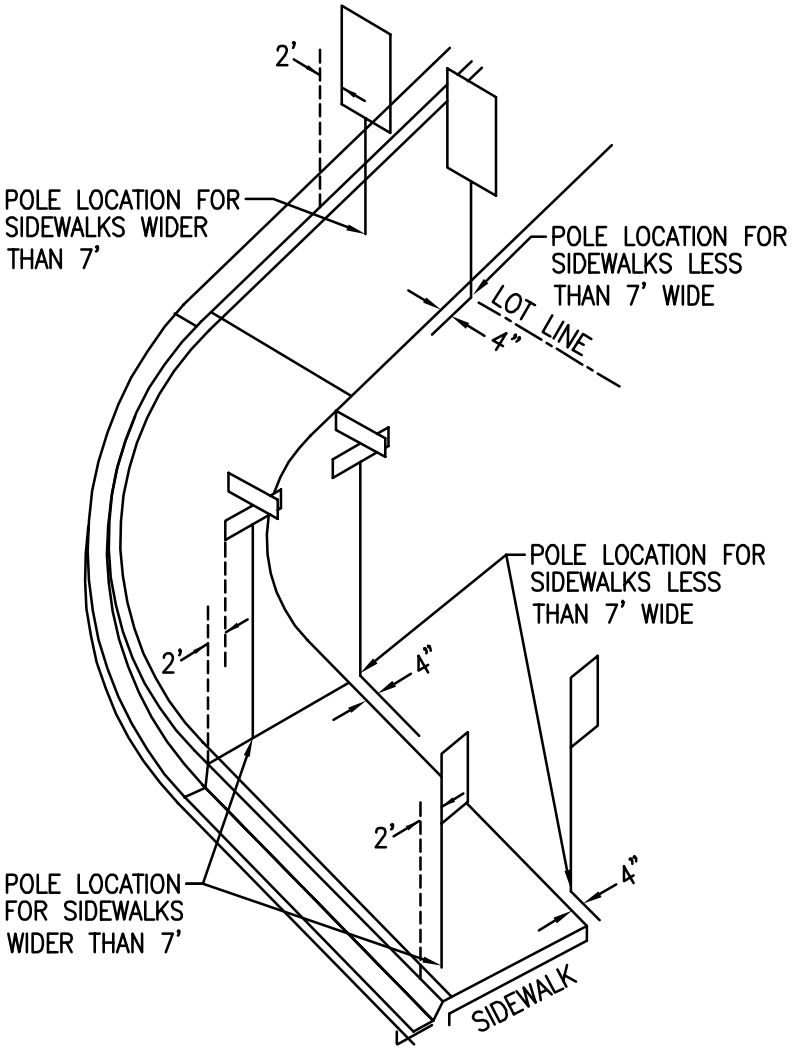
DETAIL "A"

PAVEMENT MARKERS DETAIL FOR
NO PASSING ZONES – TWO DIRECTION

LEGEND:

- TYPE AY YELLOW NON-REFLECTIVE MARKER
- TYPE D TWO-WAY YELLOW RETROREFLECTIVE MARKER

(REFER TO CALTRANS STANDARD SPECS)



TYPICAL SIGN POST
PLACEMENT DETAIL

NO SCALE

NOTES:

1. SEE SHEET SI-10 FOR SIGN POST DETAIL.
2. PAVEMENT MARKINGS SHALL BE THERMOPLASTIC.
3. SEE DETAIL "A" FOR PAVEMENT MARKER DETAILS.

CITY OF HALF MOON BAY, CALIFORNIA STANDARD DETAIL

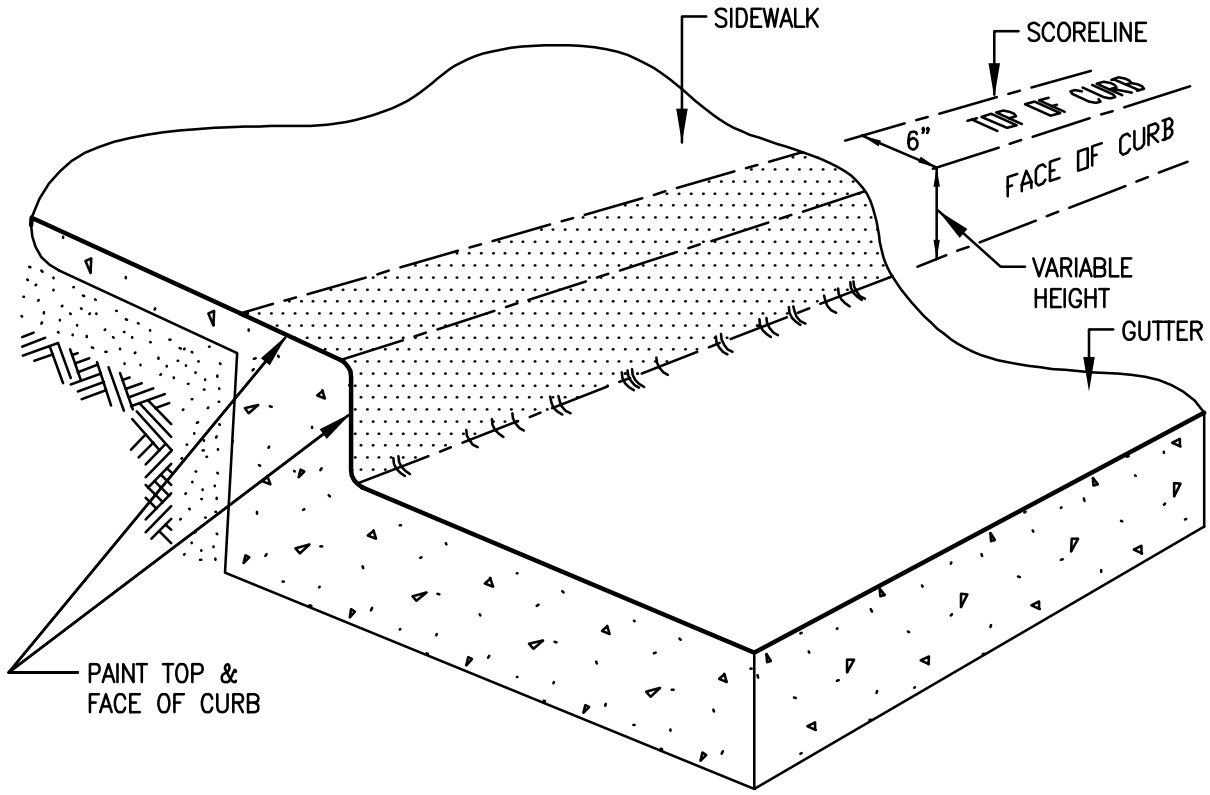
APPROVED BY:

CITY ENGINEER

DATE: XXXXXXX ##, ####

SIGN INSTALLATION PLANS

STD. DETAIL No. SI-10B



PERSPECTIVE VIEW

NOTES:

1. RED CURB PAINT SHALL BE J.E.BAUER, ZONE LAC CURB PAINT NO. 2052A9, RED LATEX BASE OR EQUAL.
2. TEMPERATURE DURING APPLICATION SHALL NOT BE LESS THAN 50°
3. CURB SHALL BE DRY TWO DAYS PRIOR TO APPLICATION.
4. ALL RED CURBING REMOVED SHALL BE REPLACED. NEW CONSTRUCTION WHICH RESULTS IN ADDITIONAL RED CURBING SHALL BE INSTALLED ONLY AT THE DIRECTION OF THE CITY ENGINEER.

NO SCALE

CITY OF HALF MOON BAY, CALIFORNIA STANDARD DETAIL

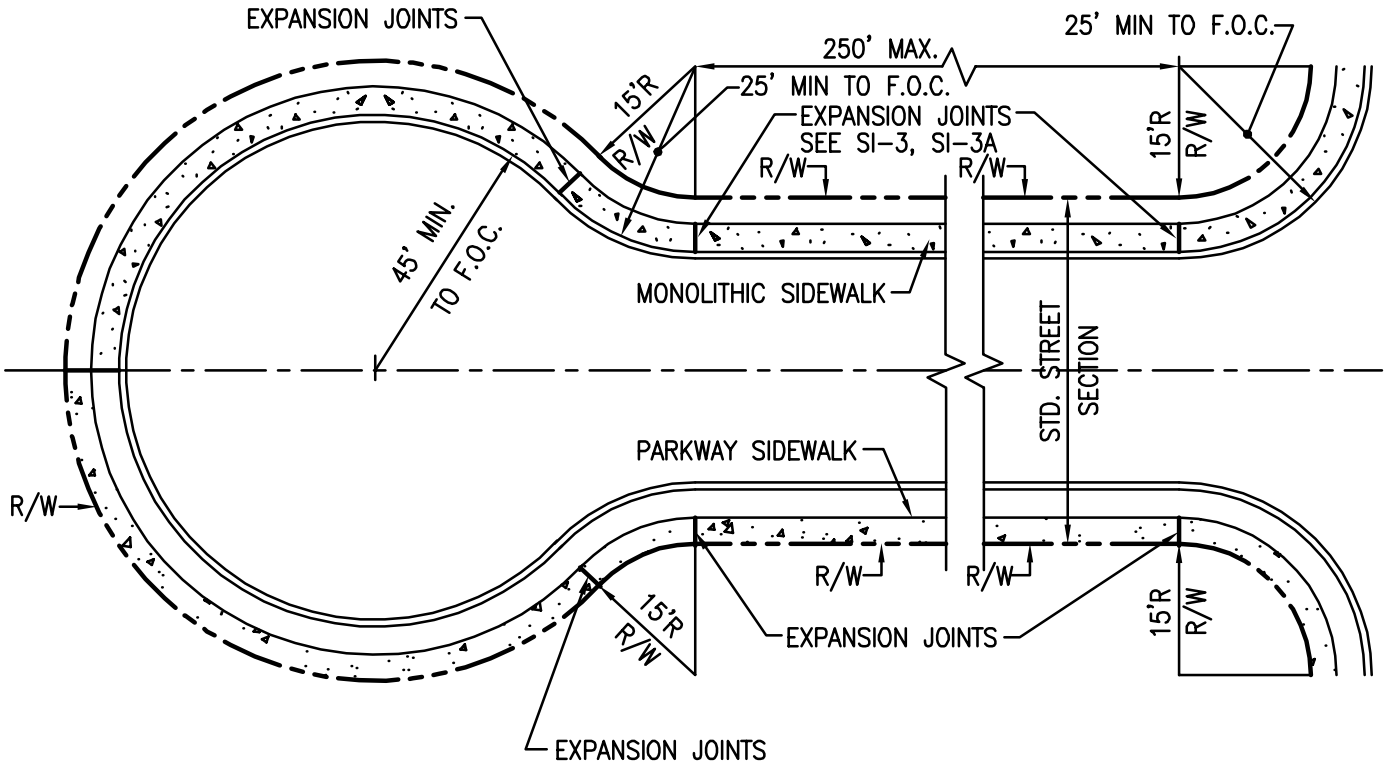
APPROVED BY:

CITY ENGINEER

DATE: XXXXXXX ##, ####

RED CURB PAINTING

STD. DETAIL No. SI-11



CUL-DE-SAC

NO SCALE

CITY OF HALF MOON BAY, CALIFORNIA STANDARD DETAIL

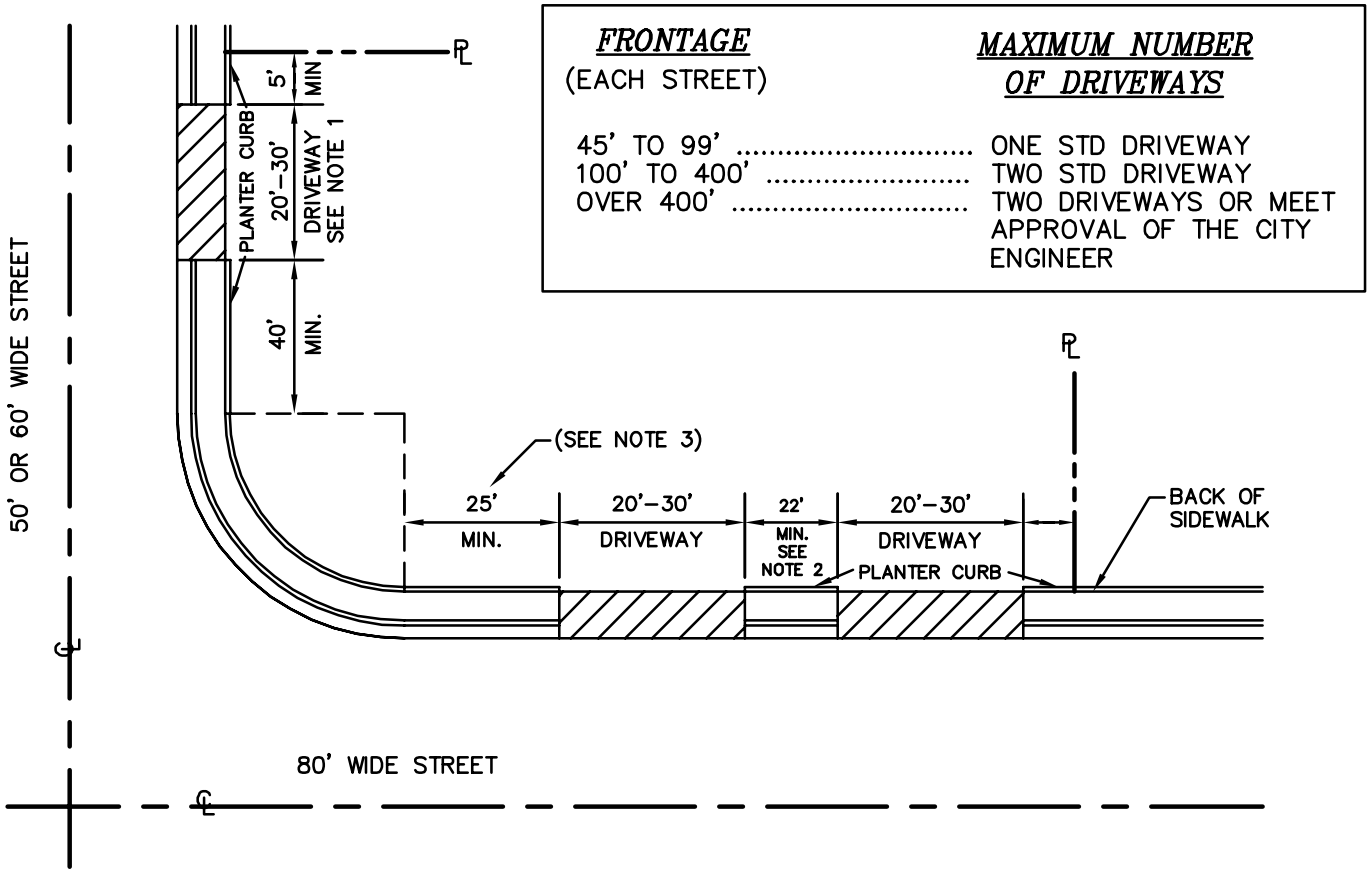
APPROVED BY:

CITY ENGINEER

DATE: XXXXXXX ##, ####

CUL-DE-SAC DETAILS

STD. DETAIL No. SI-12



NOTES:

1. 20' TO 30' WIDTH DRIVEWAYS MAY BE APPROVED ON 50 OR 80 FOOT STREET FRONTAGES.
2. 22' MINIMUM ALLOWABLE DISTANCE BETWEEN DRIVEWAYS FOR LESS THAN 100' FRONTAGE. FRONTAGE EXCEEDING 100' SHALL BE CONSIDERED SEPARATE FRONTAGES.
3. ALL EXCEPTIONS TO THIS STANDARD MUST BE APPROVED BY THE CITY ENGINEER.
4. COMMERCIAL DRIVEWAYS DEPENDENT UPON PROJECT

NO SCALE

CITY OF HALF MOON BAY, CALIFORNIA STANDARD DETAIL

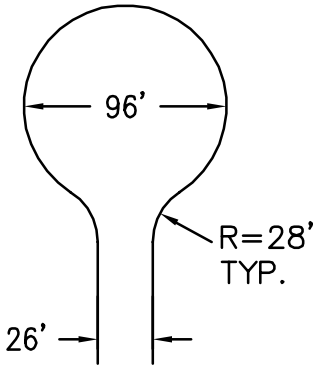
APPROVED BY:

CITY ENGINEER

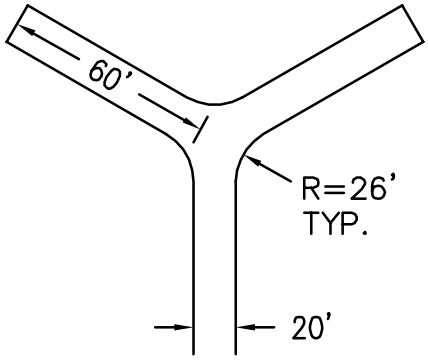
DATE: XXXXXXX ##, ####

FRONTAGE AND DRIVEWAY REGULATIONS

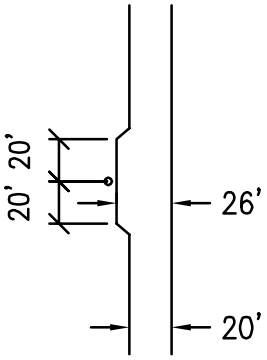
STD. DETAIL No. *SI-13*



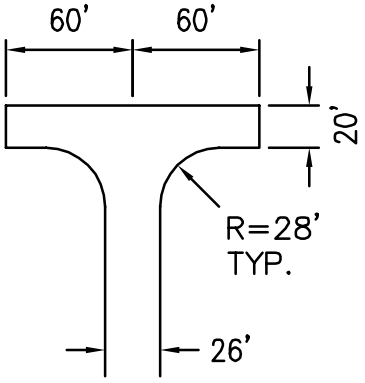
96' DIAMETER CUL-DE-SAC



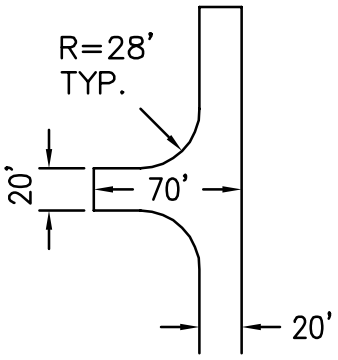
60' "Y"



MINIMUM CLEARANCE AROUND A FIRE HYDRANT



120' HAMMERHEAD



ACCEPTABLE ALTERNATIVE TO 120' HAMMERHEAD

NOTES:

1. REFER TO ROADS AND TURNAROUNDS DESIGN CRITERIA (VOLUME III, ATTACHMENT "O")

NO SCALE

CITY OF HALF MOON BAY, CALIFORNIA STANDARD DETAIL

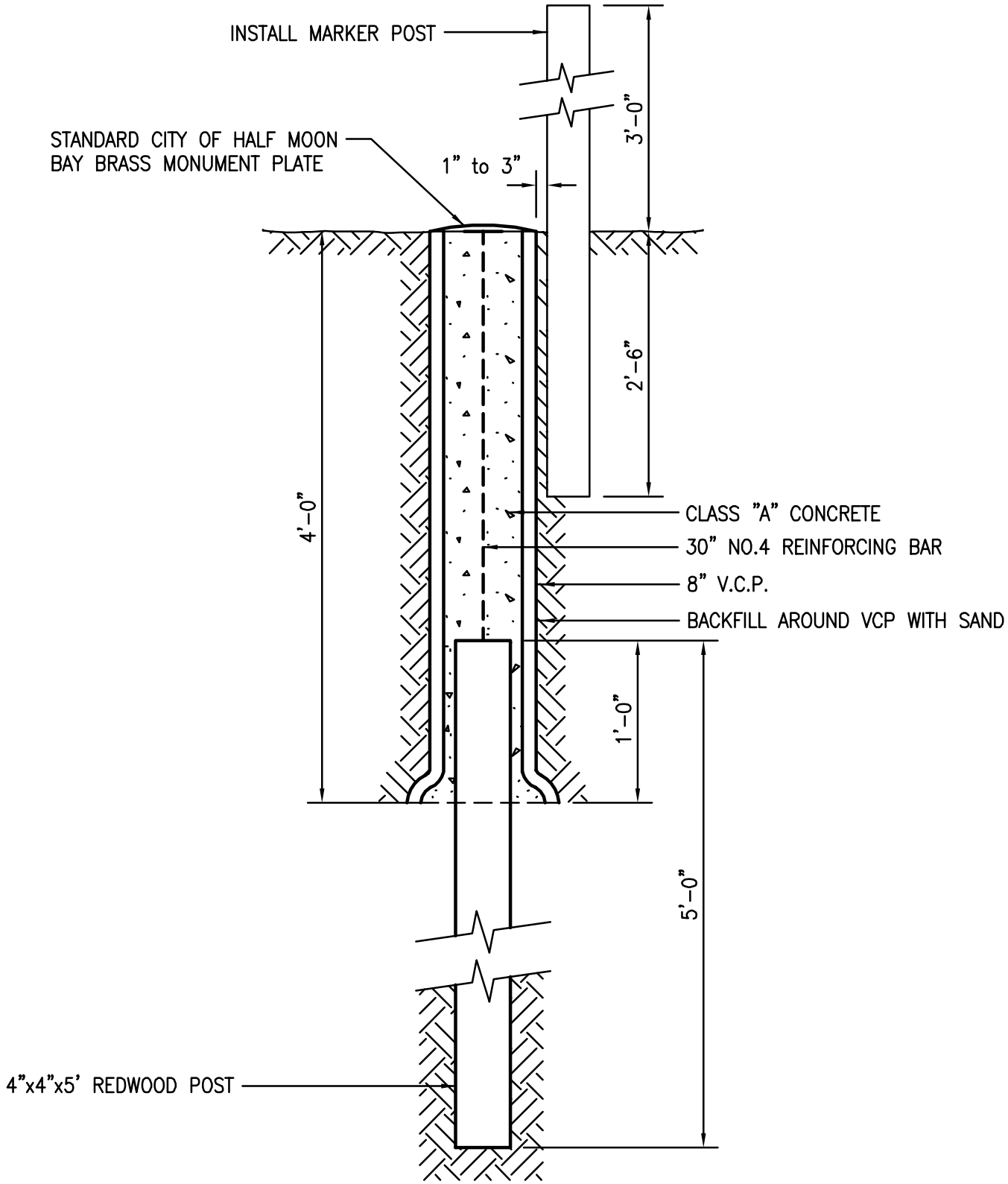
APPROVED BY:

CITY ENGINEER

DATE: XXXXXX ##, ####

DRIVEWAY DESIGN ILLUSTRATIONS
FIRE APPARATUS - PUMPER

STD. DETAIL No.
SI-14



NO SCALE

CITY OF HALF MOON BAY, CALIFORNIA STANDARD DETAIL

APPROVED BY:

CITY ENGINEER

DATE: XXXXXXX ##, ####

BOXED SURVEY MONUMENT

STD. DETAIL No. SI-15

GENERAL NOTES FOR STREET PLANS:

1. ALL WORK SHALL BE DONE IN ACCORDANCE WITH THESE PLANS, CITY STANDARDS PLANS, THE STATE OF CALIFORNIA "STANDARD SPECIFICATIONS", LATEST EDITION, AND THE STANDARD DRAWING OF THE COUNTY OF SAN MATEO

2. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO FAMILIARIZE HIMSELF/HERSELF WITH THE JOB SITE AND THE LOCATION OF ALL UNDERGROUND FACILITIES SHOWN OR NOT SHOWN ON THESE PLANS. NEITHER THE CITY OF HALF MOON BAY NOR THE ENGINEER WILL BE RESPONSIBLE FOR ANY DAMAGES TO UNDERGROUND FACILITIES.

3. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN ALL NECESSARY PERMITS.

4. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO CALL THE CITY OFFICE AT (650)726-8285 FOR INSPECTION 24 HOURS PRIOR TO PERFORMING ANY WORK. WORK PERFORMED WITHOUT CALLING FOR INSPECTION SHALL BE REJECTED AND SHALL BE REMOVED SOLELY AT THE CONTRACTOR'S EXPENSE.

5. UTILITY CONTRACTORS SHALL BE RESPONSIBLE FOR OBTAINING COMPACTION TESTS OF ALL TRENCH BACKFILL AND STREET SUBGRADES AND SUBMITTING THEM TO THE CITY ENGINEER FOR APPROVAL. NOTIFY CITY OFFICE AT (650)726-8285.

6. THE STREET STRUCTURAL SECTIONS SHOWN ON THESE PLANS ARE TENTATIVE. AT THE COMPLETION OF ROUGH GRADING, A MATERIAL REPORT AND THE PROPOSED STRUCTURAL SECTION SHALL BE SUBMITTED BY THE TRACT ENGINEER TO THE CITY ENGINEER FOR REVIEW AND EVALUATION; APPROVAL WILL BE GIVEN WHEN ALL STRUCTURAL SECTION REQUIREMENTS HAVE BEEN MET. THE MINIMUM PAVEMENT SECTION SHOWN ON THESE PLANS SHALL BE USED TO CONSTRUCT THE ROADWAY STRUCTURAL SECTION IN-LIEU OF COMPLETION OF THE MATERIAL REPORT (INCLUDING REQUIRED R-VALUE TESTS) FOR THE ROADWAY SUBGRADE AND EMBANKMENT IN ORDER TO OBTAIN A FINAL RECOMMENDED STRUCTURAL SECTION FOR THE STREET. ANY DEVIATION FROM THE MINIMUM PAVEMENT SECTION SHOWN ON THE PLANS MUST RECEIVE WRITTEN APPROVAL FROM THE CITY ENGINEER.

7. CUT SHEETS SHALL BE PREPARED BY THE DEVELOPER'S ENGINEER AND SUBMITTED TO THE CITY ENGINEER. NO CONSTRUCTION SHALL BE ALLOWED PRIOR TO THE CITY ENGINEER'S APPROVAL OF THE CUT SHEETS.

8. LOCATIONS OF DRIVEWAY APPROACHES SHALL BE ADDED TO THE PRECISE GRADING PLAN IF NOT ON ORIGINAL STREET PLANS. ANY WATER OR SEWER LATERALS CONSTRUCTED AT THE DRIVEWAY APPROACH LOCATIONS SHALL BE RELOCATED AT THE CONTRACTOR'S EXPENSE.

9. THE CONTRACTOR SHALL SATISFY HIMSELF/HERSELF THAT ESTIMATED QUANTITIES SHOWN ARE CORRECT BEFORE BIDDING ON ANY ITEM.

10. THE CONTRACTOR SHALL MAINTAIN DUST CONTROL AT ALL TIMES. WORK SITE AND EXTERIOR STREETS SHALL BE IN A NEAT, CLEAN, HAZARD-FREE, AND ORDERLY STATE THROUGHOUT CONSTRUCTION. SITE SHALL BE CLEANED UPON REQUEST OF THE INSPECTOR.

11. ALL EXISTING PAVEMENT TO BE REMOVED SHALL BE SAW CUT AND REMOVED TO CLEAN STRAIGHT LINES. HEADER CUTS MAY BE PROVIDED ADJACENT TO SAWCUTS.

12. AT ALL LOCATIONS WHERE NEW PAVEMENT JOINS EXISTING, THE EXISTING PAVEMENT SHALL BE COATED WITH AN ASPHALTIC EMULSION.

13. THE CONTRACTOR RESPONSIBLE FOR THE PROTECTION OF ALL UTILITY VALVES, BOXES AND COVERS, AND ADJUSTING OF ALL WATER VALVE BOXES AND COVERS TO FINISH GRADES.

14. THE CONTRACTOR SHALL RESET MANHOLE RINGS IN ACCORDANCE WITH CITY OF HALF MOON BAY STANDARDS.

15. THE PRIVATE ENGINEER SIGNING THESE PLANS IS RESPONSIBLE FOR THE ACCURACY AND ACCEPTABILITY OF THE WORK HERON. IN THE EVENT OF DISCREPANCIES ARISING DURING CONSTRUCTION, THE PRIVATE ENGINEER SHALL BE RESPONSIBLE FOR DETERMINING AN ACCEPTABLE SOLUTION AND REVISING THE PLANS FOR APPROVAL OF THE CITY ENGINEER.

16. THE CONTRACTOR SHALL CALL IN A LOCATION REQUEST TO UNDERGROUND SERVICE ALERT (USA), PHONE NUMBER 811 IN NOR CAL, TWO (2) WORKING DAYS BEFORE DIGGING. NO INSPECTION WILL BE PROVIDED BY THE CITY ENGINEER'S OFFICE, AND NO CONSTRUCTION PERMIT ISSUED INVOLVING EXCAVATION FOR UNDERGROUND FACILITIES WILL BE VALID, UNLESS THE APPLICANT HAS BEEN PROVIDED AN INQUIRY IDENTIFICATION NUMBER BY USA.

17. ALL IRRIGATION LINES ENCOUNTERED DURING CONSTRUCTION SHALL BE REPLACED WITH 12–GUAGE DIPPED AND WRAPPED–WELDED STEEL PIPE.

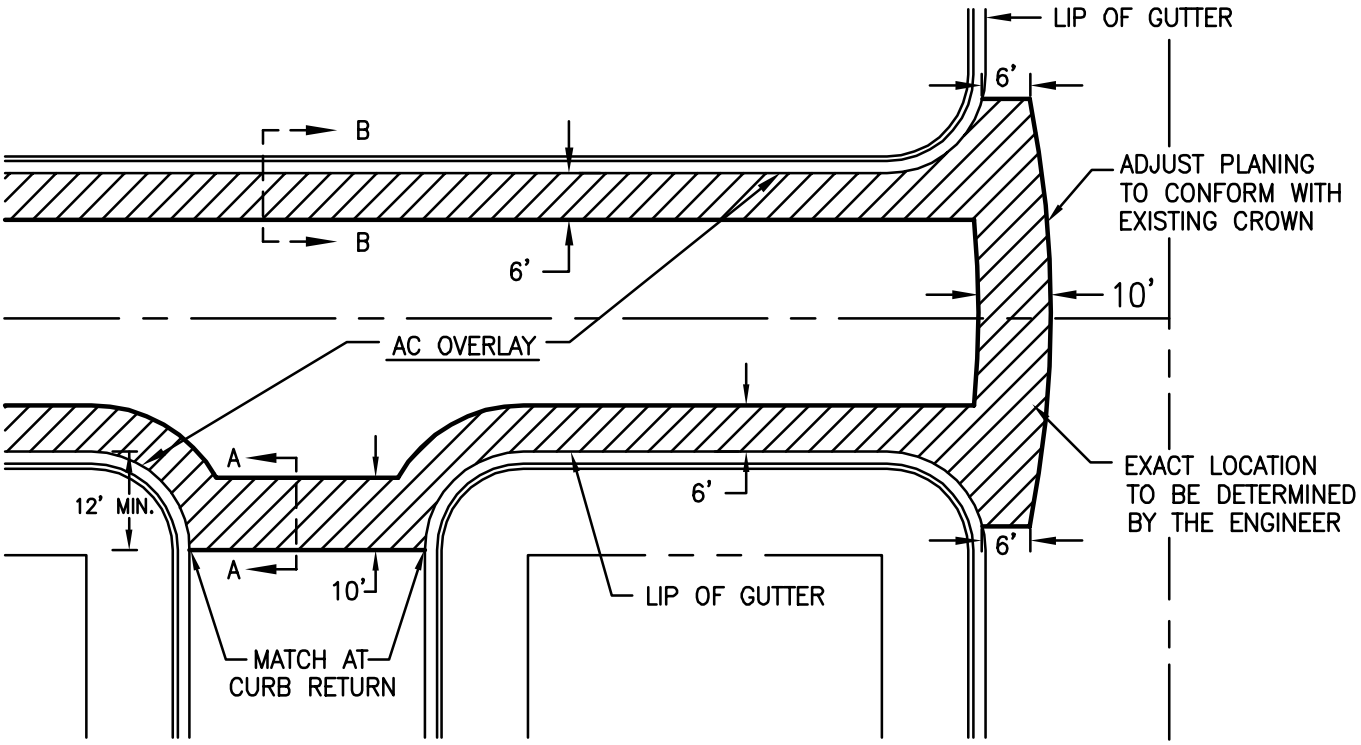
18. CITY APPROVAL OF PLANS DOES NOT RELIEVE THE DEVELOPER FROM THE RESPONSIBILITY FOR THE CORRECTION OF ERROR AND OMISSION DISCOVERED DURING CONSTRUCTION. UPON REQUEST, THE REQUIRED PLAN REVISIONS SHALL BE PROMPTLY SUBMITTED TO THE CITY ENGINEER FOR APPROVAL.

19. WHEN IMPROVEMENTS ARE TO BE PLACED ON NATIVE SOIL THAT CONSISTS OF A ROCKY MATERIAL, THE SUBGRADE SHALL BE PREPARED BY REMOVING ALL ROCKS WHICH PROTRUDE ABOVE THE SUB–GRADE AND ALL VOIDS OR DEPRESSIONS SHALL BE FILLED WITH A FINE GRADE MATERIAL OF A QUALITY BETTER THAN THE NATIVE MATERIAL.

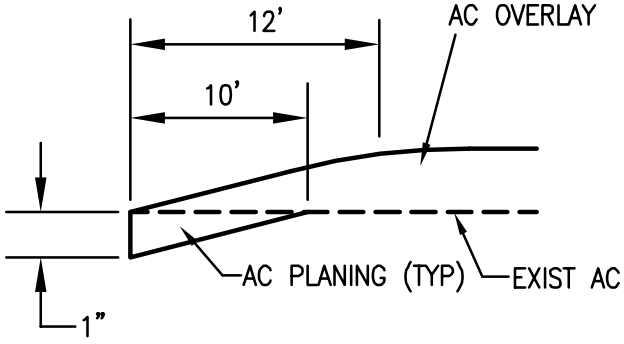
20. IF THE ASPHALT CONCRETE IS TO BE PLACED ON SUB–GRADE, A SOILS STERILANT REGISTERED BY THE E.P.A. FOR USE UNDER A.C. AND P.C.C. SHALL BE UNIFORMLY APPLIED AT THE MANUFACTURER'S RECOMMENDED RATE FOR THE FULL PAVEMENT WIDTH PRIOR TO PAVING.

21. NO WORK SHALL COMMENCE WITH PUBLIC RIGHT–OF–WAY WITHOUT OBTAINING A PUBLIC WORKS PERMIT AND NOTIFYING THE CITY INSPECTOR TO SCHEDULE A PRE–CONSTRUCTION MEETING 24 HOURS PRIOR TO START OF WORK.

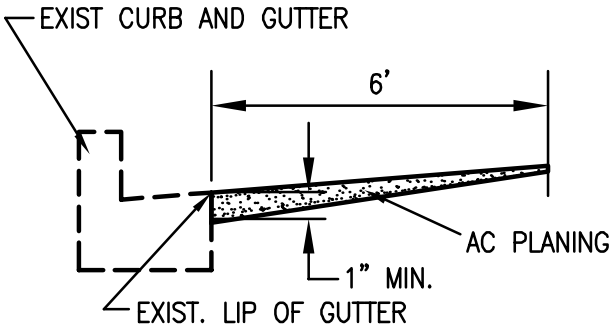
22. ALL QUANTITIES SHALL BE SHOWN ON THE PLANS INCLUDING EARTHWORK, REMEDIAL GRADING, REMOVALS, ETC.



INTERSECTION
PLANING DETAILS



SECTION A–A



PARKING LANE
PLANING DETAILS

SECTION B–B

NOTES:

1. NO ASPHALT PLANING REQUIRED NEXT TO ASPHALT BERMS.

NO SCALE

CITY OF HALF MOON BAY, CALIFORNIA STANDARD DETAIL

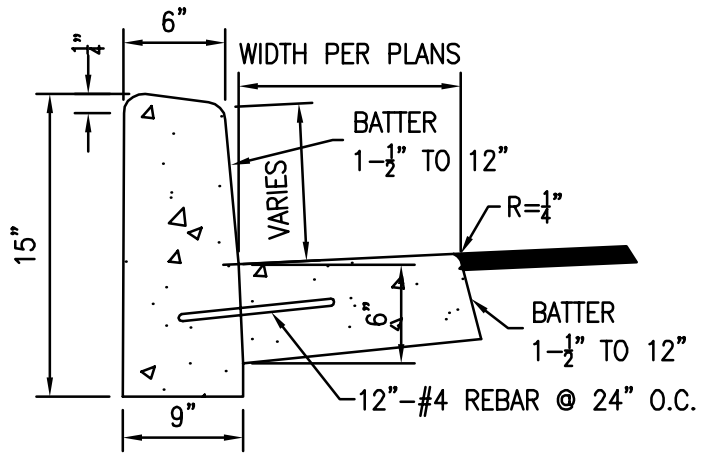
APPROVED BY:

CITY ENGINEER

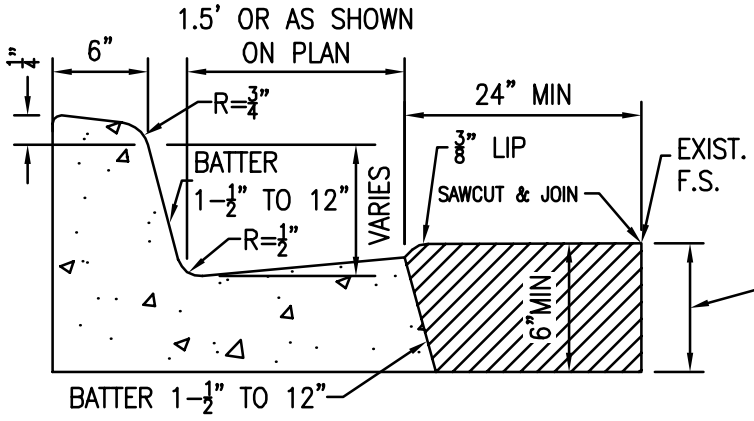
DATE: XXXXXXX ##, ####

TYPICAL HEADER CUT AND COLD PLANE DETAILS

STD. DETAIL No. *SI-17*

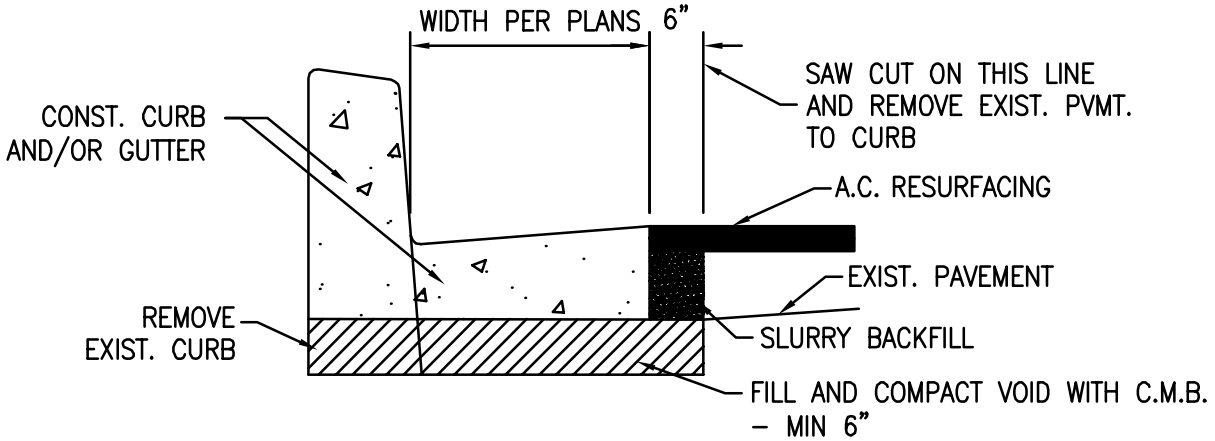


SEPARATE CURB AND GUTTER SECTION



EXCAVATE LEVEL OF BOTTOM OF CURB GUTTER, COMPACT SURFACE, AND REPLACE WITH FULL DEPTH ASPHALT CONCRETE (SEE NOTE NO. 2. & 3)

REMOVAL & REPLACEMENT OF INTEGRAL CURB & GUTTER WITHOUT ADDITIONAL OVERLAY



REMOVAL & REPLACEMENT FOR CURB AND GUTTER CONSTRUCTION WITH ASPHALT OVERLAYS ON STREET

NOTES:

1. USE OF THESE SPECIAL CURB AND GUTTER RECONSTRUCTION DETAILS SHALL ONLY OCCUR WHEN STANDARD CURB AND GUTTER CONSTRUCTION IS PREVENTED BY EXISTING SITE CONDITIONS OR WHEN REMOVING AND REPLACING CURB AND GUTTER AT THE SAME ELEVATION.
2. IF THE EXISTING ASPHALT PAVEMENT THICKNESS IS GREATER THAN 6 INCHES, THE FULL THICKNESS OF EXISTING ASPHALT SHALL BE REMOVED AND REPLACED WITH FULL DEPTH ASPHALT CONCRETE PAVEMENT.
3. IF THE EXISTING AGGREGATE BASE IS ENCOUNTERED AT THE LEVEL OF THE BOTTOM OF THE CURB, IT SHALL BE LEFT IN PLACE AND RECOMPACTED PRIOR TO ASPHALT PLACEMENT.
4. FOR PAVEOUTS WIDER THAN 24 INCHES, THE APPROPRIATE ASPHALT CONCRETE PAVEMENT OVER CRUSHED AGGREGATE STRUCTURAL SECTION SHALL BE CONSTRUCTED FOR THE FULL WIDTH OF THE PAVEMENT.

CITY OF HALF MOON BAY, CALIFORNIA STANDARD DETAIL

APPROVED BY:

CITY ENGINEER

DATE: XXXXXXX ##, ####

SPECIAL - CURB AND GUTTER RECONSTRUCTION

STD. DETAIL No. SI-18

NOTES:

(A) ADEQUATE VISIBILITY FOR VEHICULAR AND PEDESTRIAN TRAFFIC SHALL BE PROVIDED AT CLEAR SIGHT TRIANGLES AT ALL INTERSECTIONS OF PUBLIC RIGHTS-OF-WAY AND PRIVATE STREETS AND DRIVEWAYS, THROUGH THE FOLLOWING MEASURES.

(1) THERE SHALL BE NO MAN-MADE VISUAL OBSTRUCTION IN CLEAR SIGHT TRIANGLES EXCEPT BY NO MORE THAN TWO POSTS OR COLUMNS, EACH WITH A WIDTH NO GREATER THAN TWELVE INCHES.

(2) THERE SHALL BE NO MONUMENT SIGNS, WALLS, OR FENCES ALLOWED WITHIN A CLEAR SIGHT TRIANGLE.

(3) THE MAXIMUM HEIGHT OF LANDSCAPING SHALL BE LIMITED TO 18 INCHES.

(B) CLEAR SIGHT TRIANGLES ARE RIGHT TRIANGLES WHICH ARE MEASURED AS FOLLOWS:

(1) THE ANGLE IS FORMED BY THE INTERSECTION OF EITHER:

(a) THE INTERSECTION OF THE EDGES OF TWO ROADWAYS (PUBLIC AND PRIVATE) AS MEASURED AT THE EDGE OF THEIR ULTIMATE PLANNED RIGHT-OF-WAY; OR

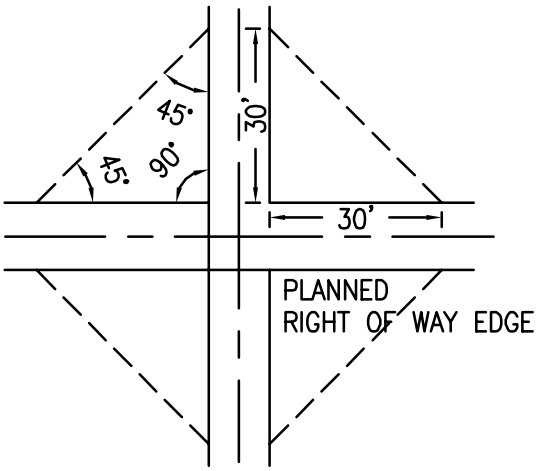
(b) THE INTERSECTION OF THE EDGE OF A PRIVATE DRIVEWAY OR ALLEY AND THE EDGE OF THE ULTIMATE PLANNED RIGHT-OF-WAY OF AN INTERSECTION ROADWAY.

(2) THE TWO ANGLES OF A CLEAR SIGHT TRIANGLE SHALL EACH BE LOCATED AS FOLLOWS:

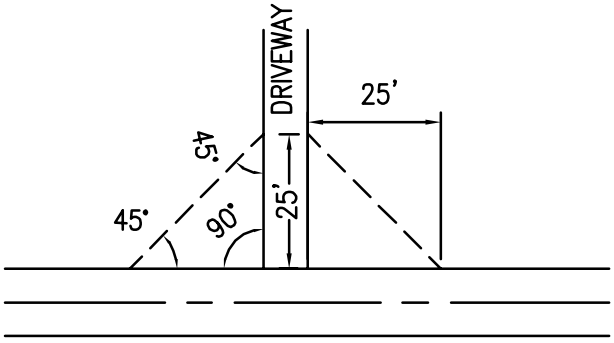
(a) ROADWAY INTERSECTIONS: 30 FEET FROM THE ROADWAY INTERSECTION

(b) PRIVATE DRIVEWAY OR ALLEYWAY: 25 FEET FROM THE INTERSECTION

(C) THE CLEAR SIGHT TRIANGLES SHALL APPLY FOR 90 DEGREE AND SKEWED STREET INTERSECTIONS, AND DRIVEWAYS AND ALLEYS.

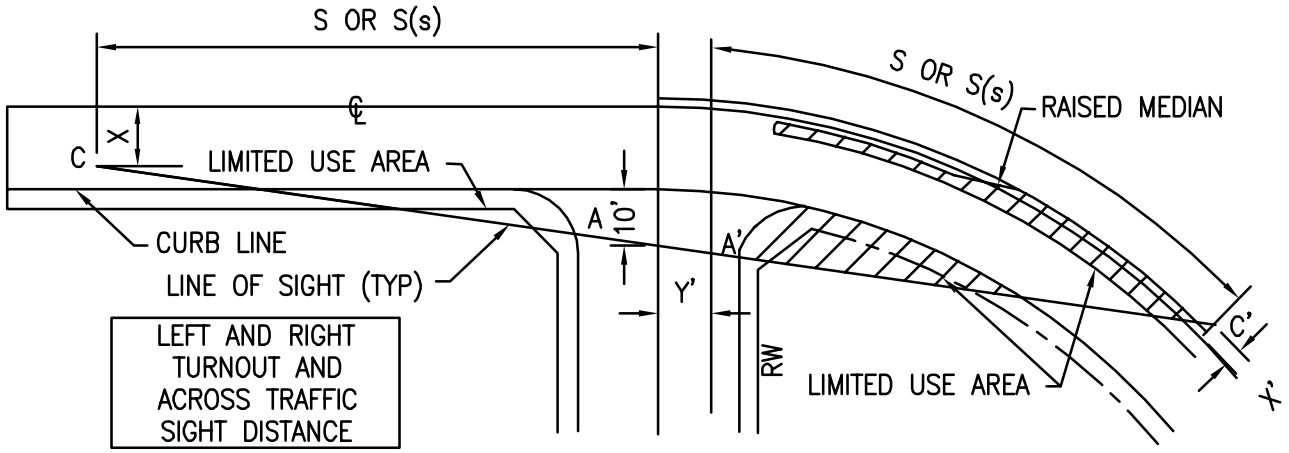


ROADWAY INTERSECTIONS



PRIVATE DRIVEWAY
OR ALLEYWAY

CITY OF HALF MOON BAY, CALIFORNIA STANDARD DETAIL		
APPROVED BY: CITY ENGINEER DATE: XXXXXXX ##, ####	MIMIMUM CLEAR SIGHT TRIANGLES	STD. DETAIL No. SI-19



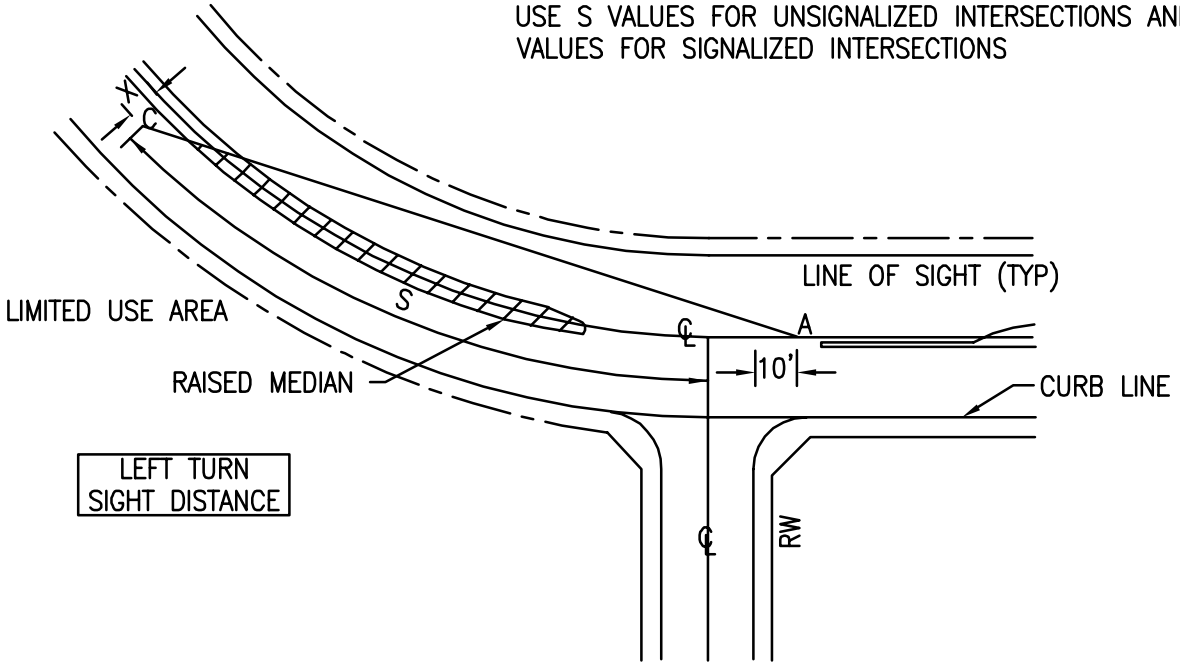
LEFT AND RIGHT TURNOUT AND ACROSS TRAFFIC SIGHT DISTANCE

MAJOR

	S	S(s)	Y'	X*	X'*
MAJOR	660	580	37	37	13
PRIMARY	610	500	25	25	13
SECONDARY	550	430	18	18	6
COMMUTER	500	360	0	0	0
COLLECTOR	390	250	0	0	0
LOCAL	280	150	0	0	0

X AND X' ARE BASED ON A STANDARD 14' MEDIAN FOR MAJOR AND PRIMARY HIGHWAYS

USE S VALUES FOR UNSIGNALIZED INTERSECTIONS AND S(s) VALUES FOR SIGNALIZED INTERSECTIONS



LEFT TURN SIGHT DISTANCE

NO SCALE

CITY OF HALF MOON BAY, CALIFORNIA STANDARD DETAIL

APPROVED BY:

CITY ENGINEER

DATE: XXXXXXX ##, ####

INTERSECTION SIGHT DISTANCE

STD. DETAIL No. SI-20

NOTES:

1. THE DISTANCE S REPRESENTS THE CORNER SIGHT DISTANCE MEASURED ALONG THE CENTERLINE OF THE ROAD. THE CORNER SIGHT DISTANCE IS THE DISTANCE REQUIRED TO ALLOW 7 $\frac{1}{2}$ SECONDS FOR THE DRIVER ON THE CROSS ROAD (OR LEFT TURN POCKET) TO SAFELY CROSS THE MAIN ROADWAY OR TURN LEFT WHILE THE APPROACH VEHICLE TRAVELS AT THE ASSUMED DESIGN SPEED OF THE MAIN ROADWAY.

2. THE DISTANCE S SHOULD BE INCREASED BY 20% FROM THE AMOUNT SHOWN ON THE TABLE ON SUSTAINED DOWNGRADES STEEPER THAN 3% AND LONGER THAN ONE MILE.

3. POINTS A AND A' ARE THE LOCATIONS OF A DRIVER'S LINE OF SIGHT (3.5 FOOT EYE HEIGHT) TO ONCOMING VEHICLES (4.25 FOOT OBJECT HEIGHT) LOCATED AT POINTS C AND C' WHILE IN A VEHICLE AT AN INTERSECTION 10 FEET BACK FROM THE PROJECTION OF THE CURB LINE. IN NO CASE SHALL POINTS A OR A' BE LESS THAN FIFTEEN FEET FROM THE EDGE OF THE TRAVELED WAY.

4. THE DISTANCE Y' IS THE DISTANCE MEASURED FROM THE CENTERLINE OF THE MAIN ROAD TO THE FAR RIGHT THROUGH TRAVEL LANE. THE DISTANCE Y' IS EQUAL TO ZERO FOR T–INTERSECTIONS. THE DISTANCE X IS THE DISTANCE MEASURED FROM THE CENTERLINE OF THE MAIN ROAD TO THE CENTER OF THE FAR RIGHT THROUGH TRAVEL LANE. THE DISTANCE X' IS THE DISTANCE MEASURED FROM THE CENTERLINE OF THE MAIN ROAD TO THE CENTER OF THE TRAVEL LANE NEAREST THE CENTERLINE OF THE ROAD.

5. THE LIMITED USE AREA IS DETERMINED BY THE GRAPHICAL METHOD USING THE APPROPRIATE DISTANCES GIVEN IN THE ABOVE TABLE. IT SHALL BE USED FOR THE PURPOSE OF PROHIBITING OR CLEARING OBSTRUCTIONS IN ORDER TO MAINTAIN ADEQUATE SIGHT DISTANCE AT INTERSECTIONS.

6. THE LINE OF SIGHT LINE SHALL BE SHOWN AT INTERSECTIONS ON ALL LANDSCAPING PLANS, GRADING PLANS AND TENTATIVE TRACT PLANS WHERE A SAFE SIGHT DISTANCE IS QUESTIONABLE. IN CASES WHERE AN INTERSECTIONS IS LOCATED ON A VERTICAL CURVE, A PROFILE AT THE LINE OF SIGHT MAY BE REQUIRED.

7. OBSTRUCTIONS SUCH AS BUS SHELTER, WALLS OR LANDSCAPING WITHIN THE LIMITED USE AREA WHICH COULD RESTRICT THE LINE OF SIGHT SHALL NOT BE PERMITTED.

   A. PLANTS AND SHRUBS WITHIN THE LIMITED USE AREA SHALL BE OF THE TYPE THAT WILL GROW NO HIGHER THAN 12 INCHES ABOVE THE GROUND AND SHALL BE MAINTAINED AT A MAXIMUM HEIGHT OF 12 INCHES ABOVE THE GROUND. MAINTENANCE AT A LOWER HEIGHT MAY BE REQUIRED ON CREST VERTICAL CURVES PER NOTE 6 ABOVE.

   B. A PROFILE OF THE LINE OF SIGHT MAY BE REQUIRED TO VERIFY 12" MINIMUM VERTICAL CLEARANCE ABOVE HEIGHT OBSTRUCTIONS SUCH AS SLOPE LANDSCAPING, PLANTS AND SHRUBS.

   C. THE TOE OF SLOPE MAY ENCROACH INTO THE LIMITED USE AREA PROVIDED THAT THE REQUIREMENTS OF (B) ABOVE ARE SATISFIED.

   D. IN LIEU OF PROVIDING A PROFILE OF THE LINE OF SIGHT, THE TOE OF SLOPE SHALL NOT ENCROACH INTO THE LIMITED USE AREA, AND THE LIMITED USE AREA SHALL SLOPE AT 2% MAXIMUM TO THE ROADWAY.

8. TREES SHALL NOT BE PERMITTED WITHIN ANY PORTION OF THE LIMITED USE AREA.

9. MEDIAN AREAS LESS THAN SIX (6) FEET IN WIDTH SHALL BE PAVED WITH CONCRETE.

10. RESIDENTIAL DRIVEWAYS SERVING FOUR OR MORE UNITS AND COMMERCIAL DRIVEWAYS SHALL BE TREATED AS LOCAL STREET INTERSECTIONS.

CITY OF HALF MOON BAY, CALIFORNIA STANDARD DETAIL

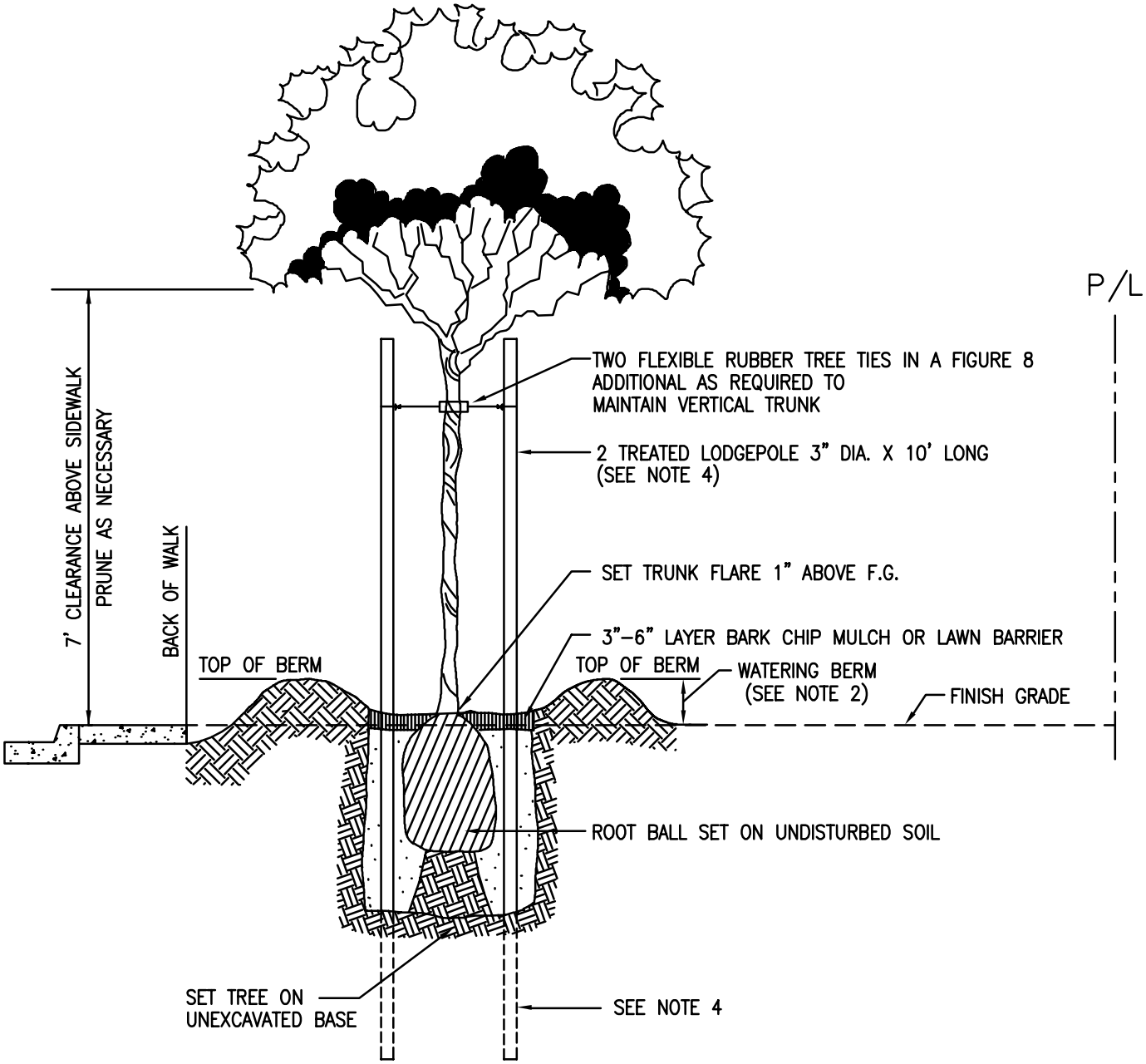
APPROVED BY:

CITY ENGINEER

DATE: XXXXXX ##, ####

INTERSECTION SIGHT DISTANCE (NOTES)

STD. DETAIL No. SI-20A



NOTES:

1. PLANT PIT TO BE MIN. 2 TIMES THE DIAMETER OF THE ROOTBALL AND NO DEEPER THAN ORIGINAL CONTAINER.
2. IN LAWN AREAS, EDGE OF SOD/SEED TO BE OUTSIDE OF WATERING BERM (2' MIN. DIAMETER).
3. PLANT TREES NO CLOSER THAN 5' FROM WATER SERVICES, 5' FROM SEWER LATERALS, 3' FROM WALKWAYS, 5' FROM DRIVEWAYS AND NEAREST UTILITY.
4. STAKES SHALL BE POUNDED 24" MINIMUM INTO UNDISTURBED SOIL.
5. STAKES SHALL BE INSTALLED TO PROTECT FROM PREVAILING WIND. ONE STAKE MAY BE REQUIRED AND LOCATED UPWIND OF TREE.

NO SCALE

CITY OF HALF MOON BAY, CALIFORNIA STANDARD DETAIL

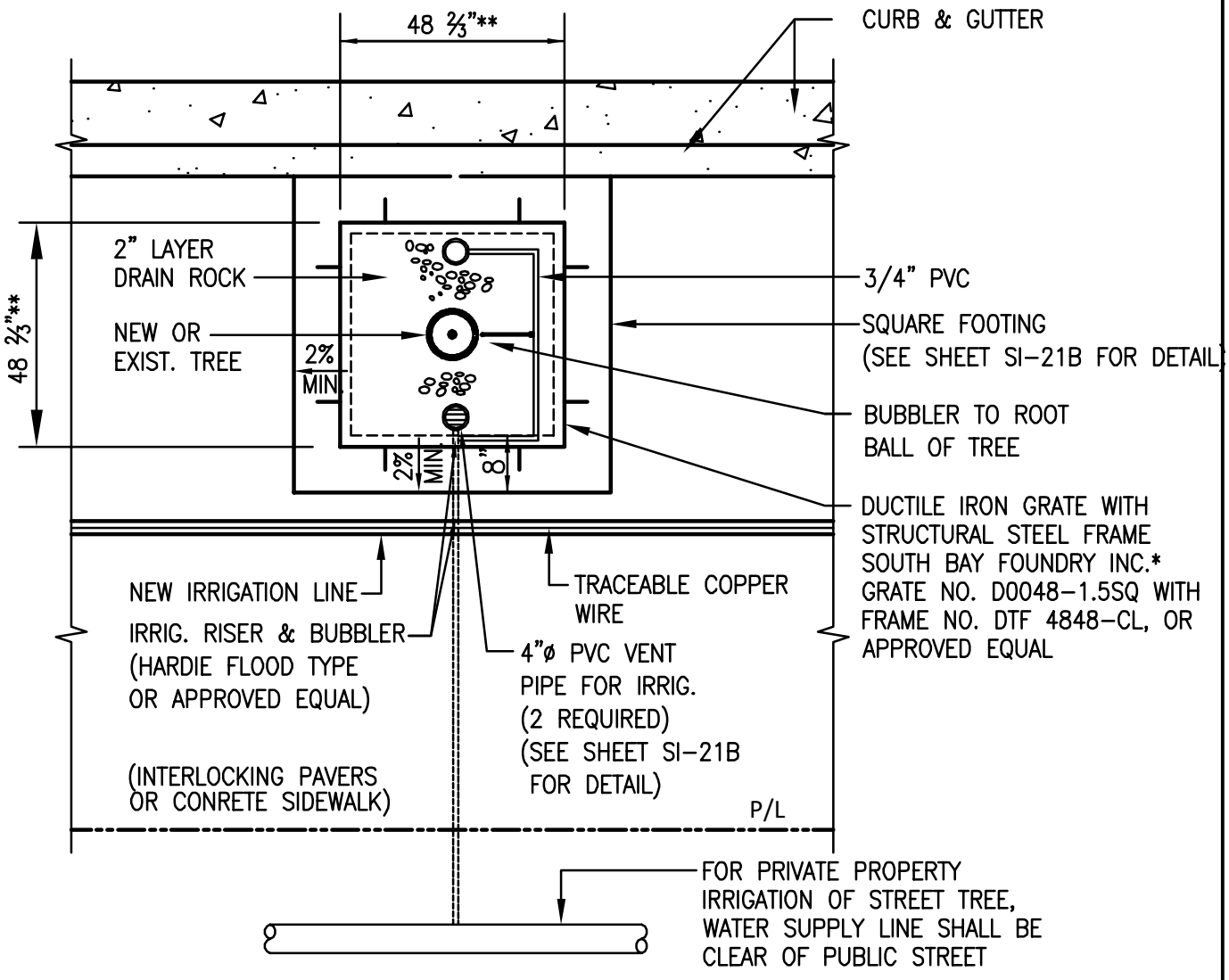
APPROVED BY:

CITY ENGINEER

DATE: XXXXXXX ##, ####

TREE PLANTING DETAIL

STD. DETAIL No. SI-21



TREE WELL WITH IRON GRATE AND STEEL FRAME ASSEMBLY

* SOUTH BAY FOUNDRY INC. CAN BE REACHED AT 1-(209) 367-1940

** LARGER SQUARE GRATES MAY BE APPROVED BY THE CITY LANDSCAPE ARCHITECT

NO SCALE

CITY OF HALF MOON BAY, CALIFORNIA STANDARD DETAIL

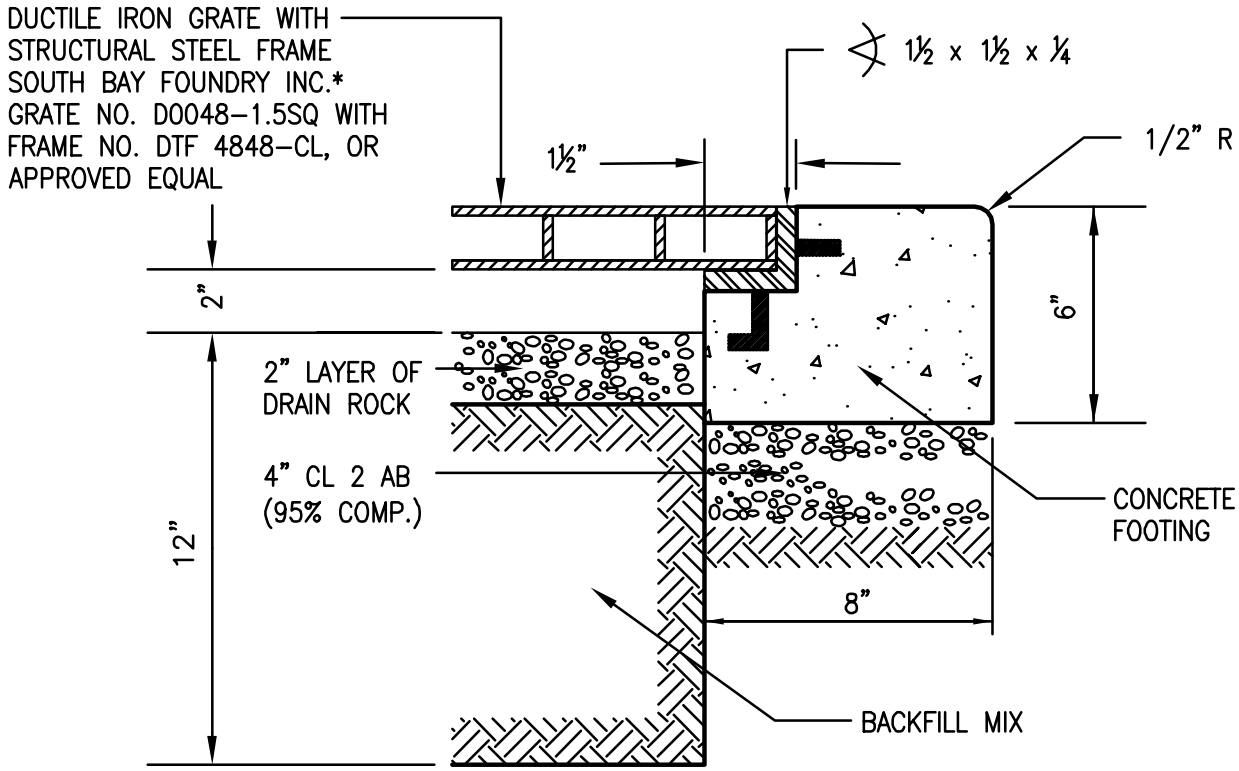
APPROVED BY:

CITY ENGINEER

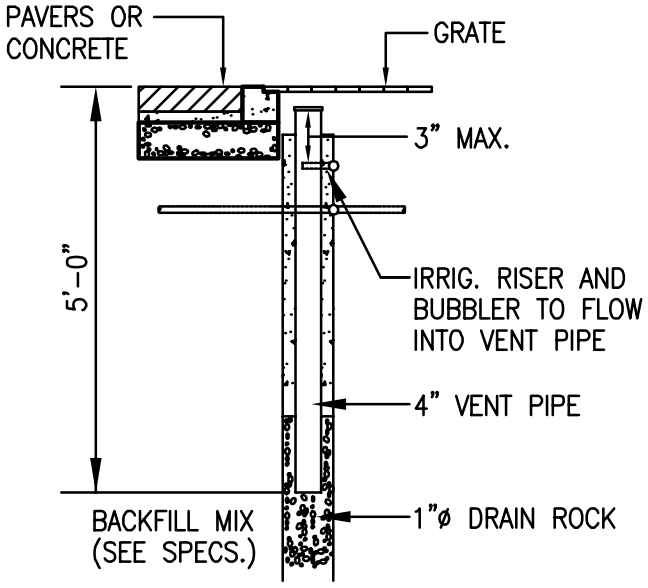
DATE: XXXXXXX ##, ####

TREE WELL DETAIL 1

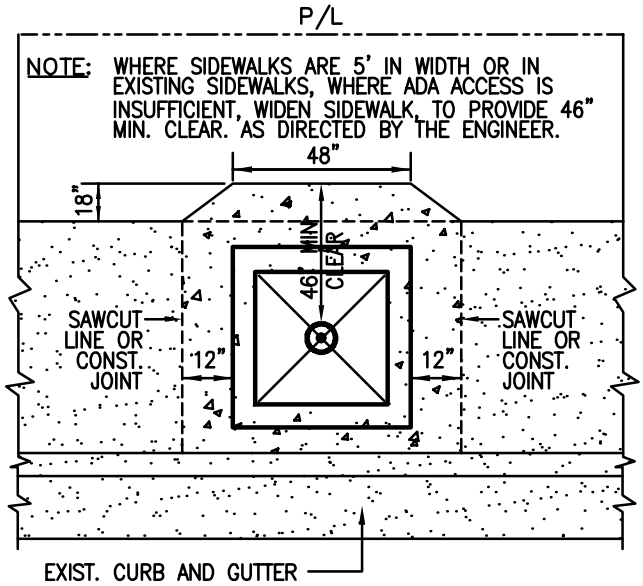
STD. DETAIL No. SI-21A



CONCRETE FOOTING DETAIL



VENT PIPE DETAIL



ADA ACCESS DETAIL

* SOUTH BAY FOUNDRY INC. CAN BE REACHED AT 1–(209) 367–1940

NO SCALE

CITY OF HALF MOON BAY, CALIFORNIA STANDARD DETAIL

APPROVED BY:

CITY ENGINEER

DATE: XXXXXXX ##, ####

TREE WELL DETAIL 2

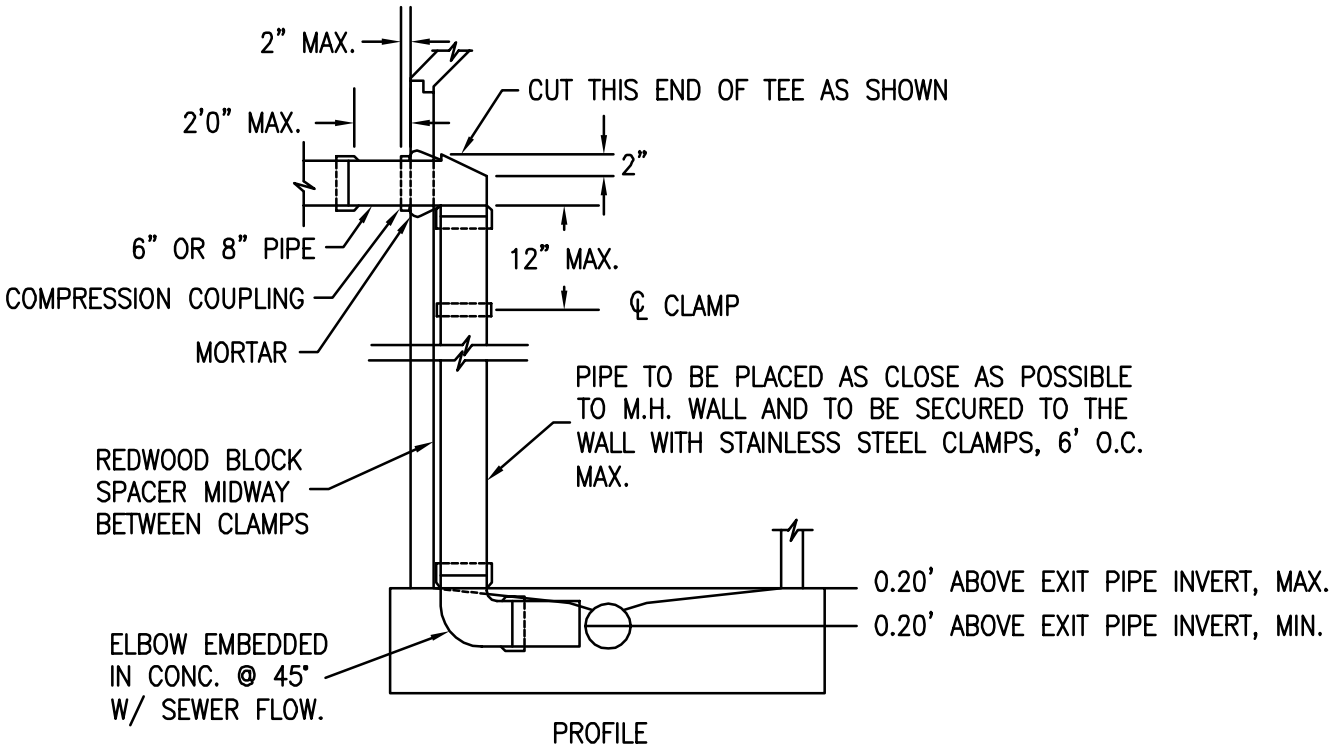
STD. DETAIL No. *SI-21B*

SANITARY SEWER

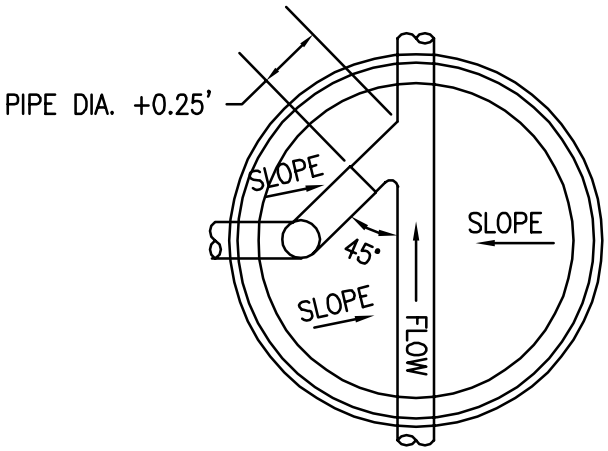
STANDARD DETAILS

SANITARY SEWER STANDARD DETAILS

Title	Plate No.
Inside Drop Connection Detail	SS-1
Sewer Manhole Cover	SS-2
Type I Manhole (6"-21" Diameter Pipe)	SS-3
Type II Manhole (24"-48” Diameter Pipe)	SS-4
Type III Manhole (Pipes Larger than 48” Diameter)	SS-5
Saddle Manhole	SS-6
Standard Sewer Lateral and Cleanout	SS-7
ABS or PVC Cleanout to Grade (Sewer Connected to Riser)	SS-8
Concrete Encasement Detail	SS-9
Sanitary Sewer and Water Main Separation Details (Parallel)	SS-10A
Sanitary Sewer and Water Main Separation Details (Crossing)	SS-10B
Sewer Tee Detail	SS-11
Backwater Check Valve System Detail	SS-12
Standard 60" and 72" Sewer Manhole	SS-12
Raising and Lowering Manhole Detail in Street (for Resurfacing)	SS-13
Raising and Lowering Manhole Notes	SS-13A
Raising and Lowering Manhole Notes (continued)	SS-13B
General Notes for Sanitary Sewer Plans	SS-14



PROFILE



PLAN

NOTES:

1. ALL INSIDE DROPE PIPING TO BE P.V.C. OR A.B.S.
2. CEMENT ALL JOINTS.
3. DROP CONNECTION PIPE AND FITTINGS TO BE SAME SIZE AS ENTERING PIPE. CLAMPS TO BE 11/2:X12 GAUGE
4. STAINLESS STEEL, ANCHORED TO M.H. WALL WITH 2–1/2" CADMIUM PLATED BOLTS.

NO SCALE

CITY OF HALF MOON BAY, CALIFORNIA STANDARD DETAIL

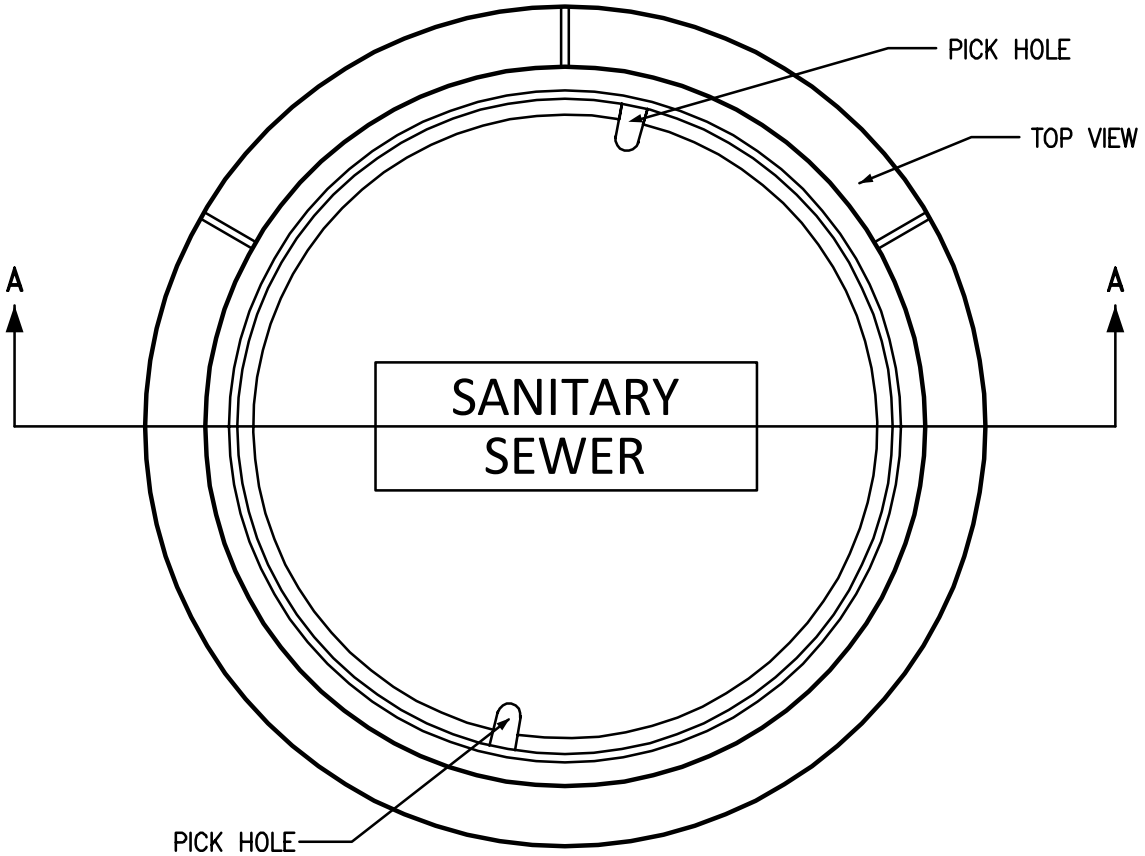
APPROVED BY:

CITY ENGINEER

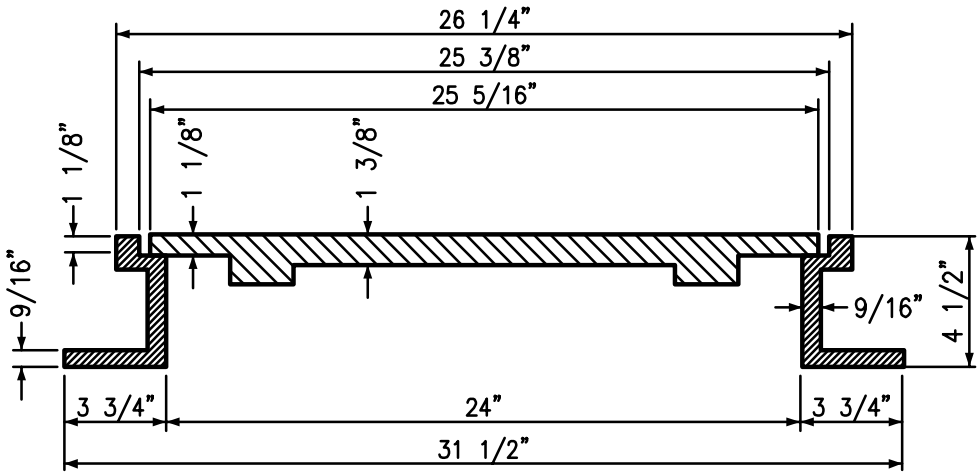
DATE: XXXXXX ##, ####

INSIDE DROP CONNECTION DETAIL

STD. DETAIL No. *SS-1*



PLAN



SECTION A-A

NOTES:

1. ALL MATERIAL USED IN MANUFACTURING SHALL CONFORM TO A.S.T.M. A48, CLASS 30.
2. ALL CASTINGS TO BE COMPLETELY CLEANED AND PAINTED WITH ASPHALTIC VARNISH, AFTER MANUFACTURE.
3. USE PHOENIX P–1090, D&L SUPPLY A–1024, OR EQUAL.

NO SCALE

CITY OF HALF MOON BAY, CALIFORNIA STANDARD DETAIL

APPROVED BY:

CITY ENGINEER

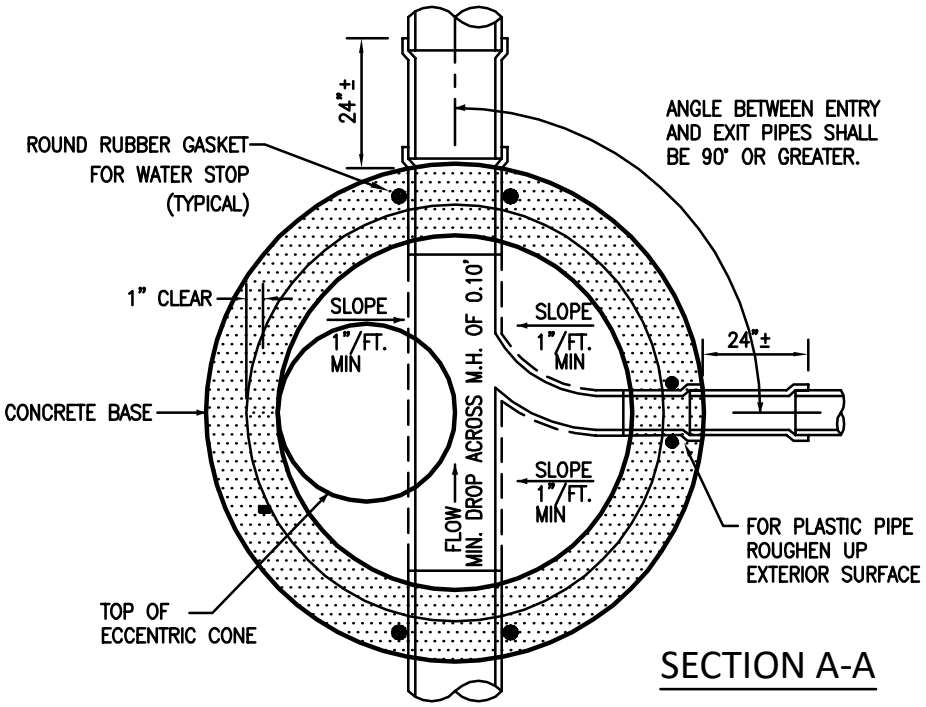
DATE: XXXXXXX ##, ####

SEWER MANHOLE COVER

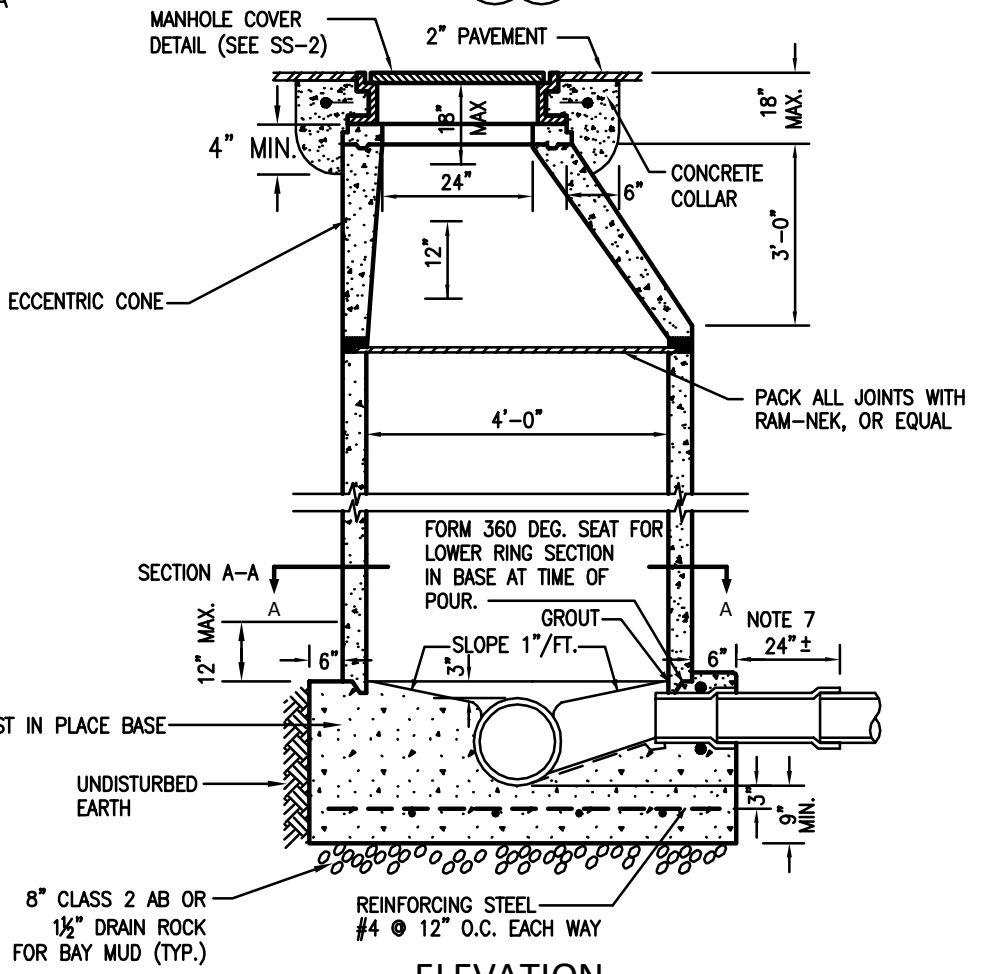
STD. DETAIL No. SS-2

NOTES:

1. PROVIDE A MINIMUM DROP OF 0.10' ACROSS MANHOLE WHEN LINE BENDS AND/OR PIPE DIAMETER CHANGES.
2. CONCRETE SHALL BE CLASS A.
3. ALL JOINTS SHALL BE MADE WATER-TIGHT WITH NEOPRENE GASKETS OR RAM-NECK.
4. MINIMUM CROWN ELEVATION OF SMALLER DIAMETER INLET PIPE SHALL BE NO LESS THAN THE CROWN ELEVATION OF THE OUTLET PIPE WITHOUT APPROVAL OF CITY ENGINEER. MAXIMUM DROP FROM INVERT OF INLET PIPE TO CROWN OF OUTLET PIPE SHALL BE 1'-0".
5. LAY PIPE THROUGH MANHOLE WHEN POSSIBLE.
6. TOP OF PIPE TO BE REMOVED WITHIN MANHOLE. TRIM TO NEAT LINE AND FINISH OFF WITH GROUT TO LEAVE A SMOOTH FINISH.
7. PROVIDE TWO JOINTS AT ALL ENTRY POINTS TO MANHOLES.
8. REINFORCED CONCRETE MANHOLE SECTIONS SHALL BE PRECAST, AND SHALL CONFORM TO ASTM C-478.



SECTION A-A



ELEVATION

NO SCALE

CITY OF HALF MOON BAY, CALIFORNIA STANDARD DETAIL

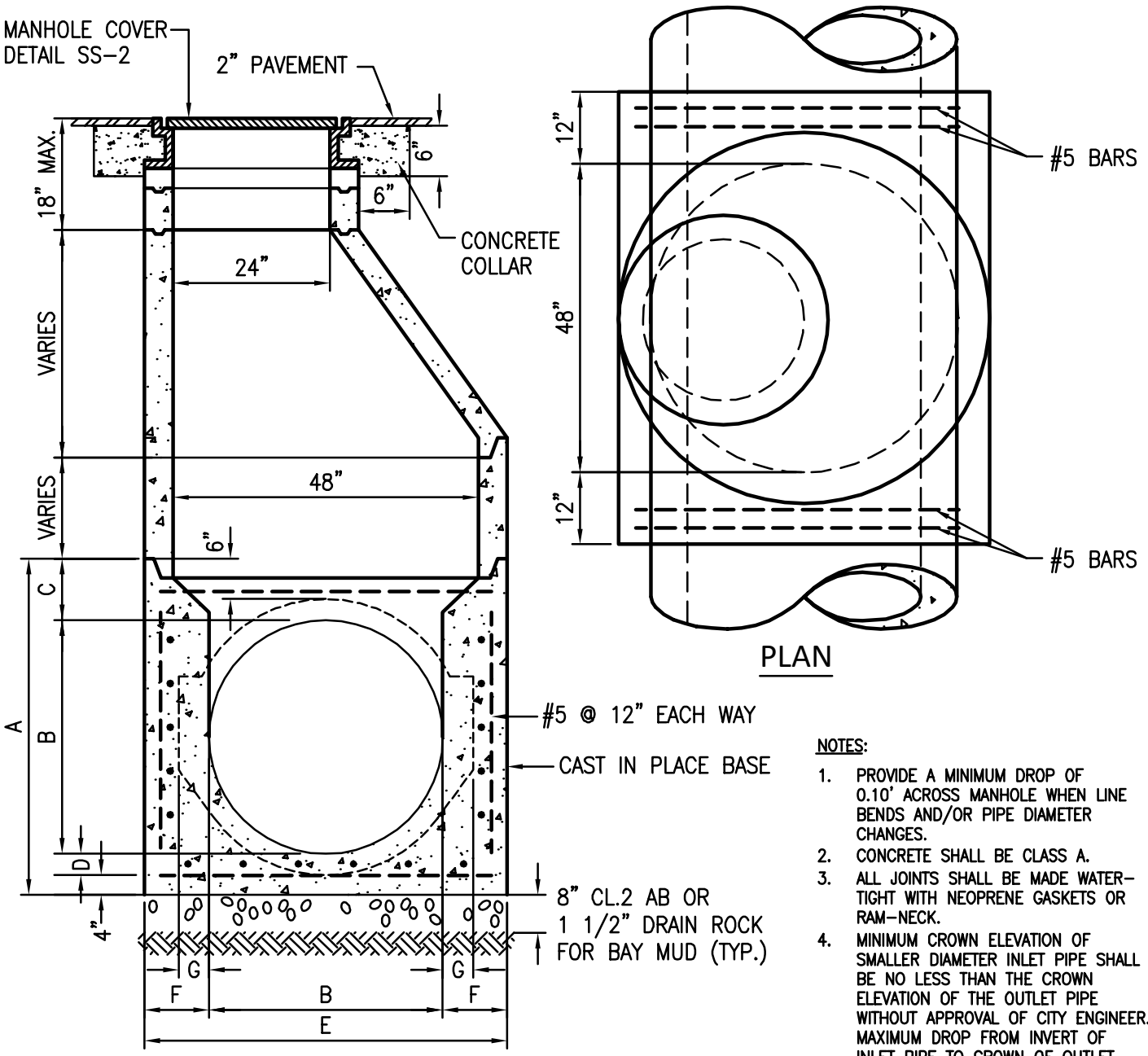
APPROVED BY:

CITY ENGINEER

DATE: XXXXXXX ##, ####

TYPE I MANHOLE (PIPES 6" TO 21" DIAMETER)

STD. DETAIL No. SS-3



SECTION

PLAN

DIA.	A	B	C	D	E	F	MIN G
24"	40"	24"	9"	3"	56"	16"	3"
27"	43"	27"	9"	3"	56"	14.5"	3"
30"	46"	30"	9"	3"	56"	13"	3"
36"	53"	36"	9.5"	3.5"	56"	10"	3.5"
42"	60"	42"	10"	4"	60"	9"	4"
48"	68"	48"	11"	5"	66"	9"	5"

NOTES:

1. PROVIDE A MINIMUM DROP OF 0.10' ACROSS MANHOLE WHEN LINE BENDS AND/OR PIPE DIAMETER CHANGES.
2. CONCRETE SHALL BE CLASS A.
3. ALL JOINTS SHALL BE MADE WATER-TIGHT WITH NEOPRENE GASKETS OR RAM-NECK.
4. MINIMUM CROWN ELEVATION OF SMALLER DIAMETER INLET PIPE SHALL BE NO LESS THAN THE CROWN ELEVATION OF THE OUTLET PIPE WITHOUT APPROVAL OF CITY ENGINEER. MAXIMUM DROP FROM INVERT OF INLET PIPE TO CROWN OF OUTLET PIPE SHALL BE 1'-0".
5. LAY PIPE THROUGH MANHOLE WHEN POSSIBLE.
6. TOP OF PIPE TO BE REMOVED WITHIN MANHOLE. TRIM TO NEAT LINE AND FINISH OFF WITH GROUT TO LEAVE A SMOOTH FINISH.
7. PROVIDE TWO JOINTS AT ALL ENTRY POINTS TO MANHOLES.
8. REINFORCED CONCRETE MANHOLE SECTIONS SHALL BE PRECAST, AND SHALL CONFORM TO ASTM C-478.

NO SCALE

CITY OF HALF MOON BAY, CALIFORNIA STANDARD DETAIL

APPROVED BY:

CITY ENGINEER

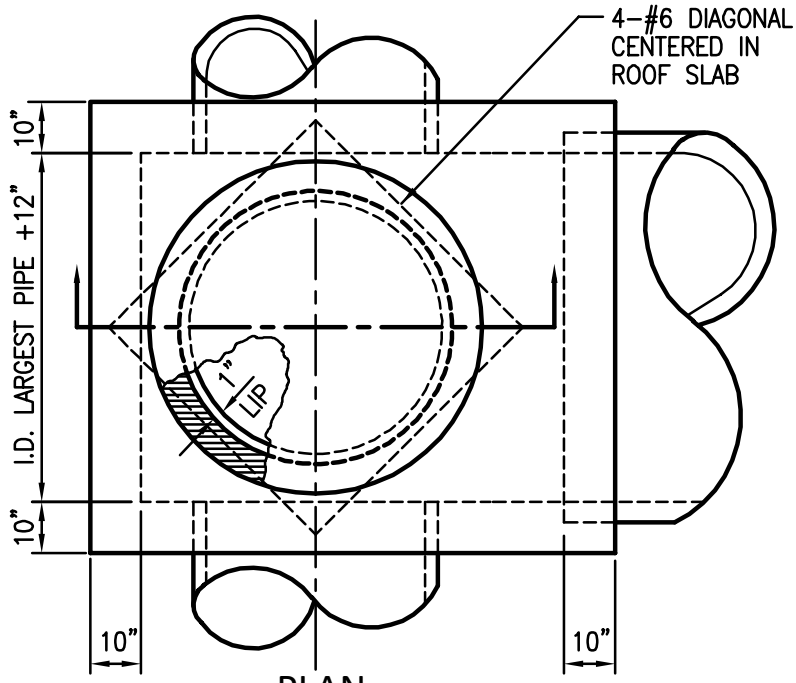
DATE: XXXXXXX ##, ####

TYPE II MANHOLE (24" - 48" DIAMETER PIPE)

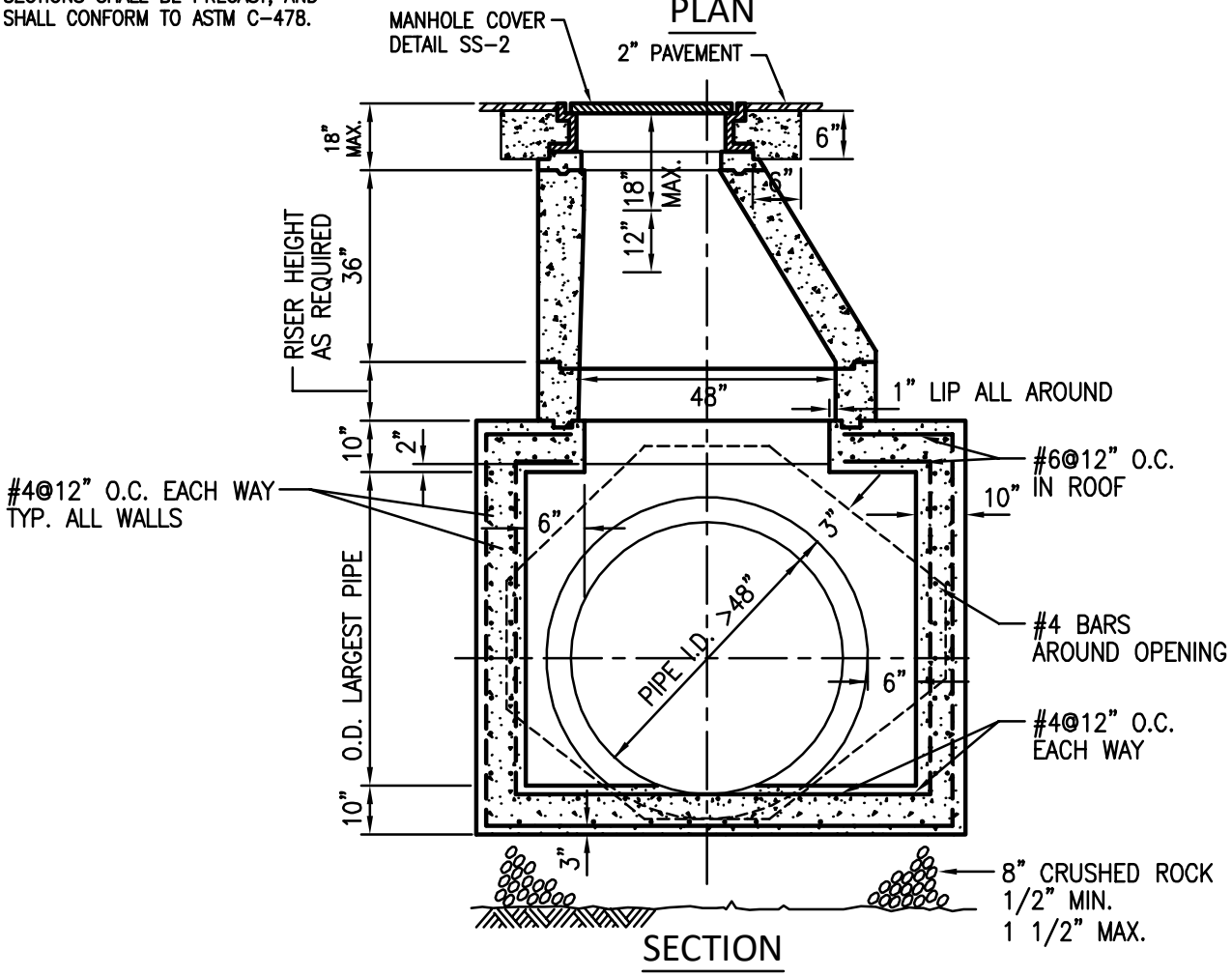
STD. DETAIL No. SS-4

NOTES:

1. PROVIDE A MINIMUM DROP OF 0.10' ACROSS MANHOLE WHEN LINE BENDS AND/OR PIPE DIAMETER CHANGES.
2. CONCRETE SHALL BE CLASS A.
3. ALL JOINTS SHALL BE MADE WATER-TIGHT WITH NEOPRENE GASKETS OR RAM-NECK.
4. MINIMUM CROWN ELEVATION OF SMALLER DIAMETER INLET PIPE SHALL BE NO LESS THAN THE CROWN ELEVATION OF THE OUTLET PIPE WITHOUT APPROVAL OF CITY ENGINEER. MAXIMUM DROP FROM INVERT OF INLET PIPE TO CROWN OF OUTLET PIPE SHALL BE 1'-0".
5. LAY PIPE THROUGH MANHOLE WHEN POSSIBLE.
6. TOP OF PIPE TO BE REMOVED WITHIN MANHOLE. TRIM TO NEAT LINE AND FINISH OFF WITH GROUT TO LEAVE A SMOOTH FINISH.
7. PROVIDE TWO JOINTS AT ALL ENTRY POINTS TO MANHOLES.
8. REINFORCED CONCRETE MANHOLE SECTIONS SHALL BE PRECAST, AND SHALL CONFORM TO ASTM C-478.



PLAN



SECTION

NO SCALE

CITY OF HALF MOON BAY, CALIFORNIA STANDARD DETAIL

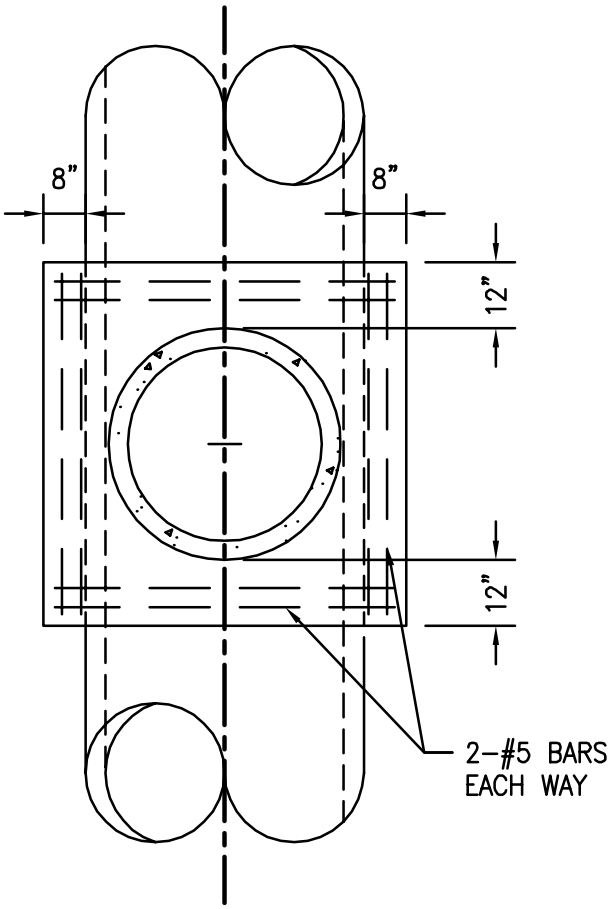
APPROVED BY:

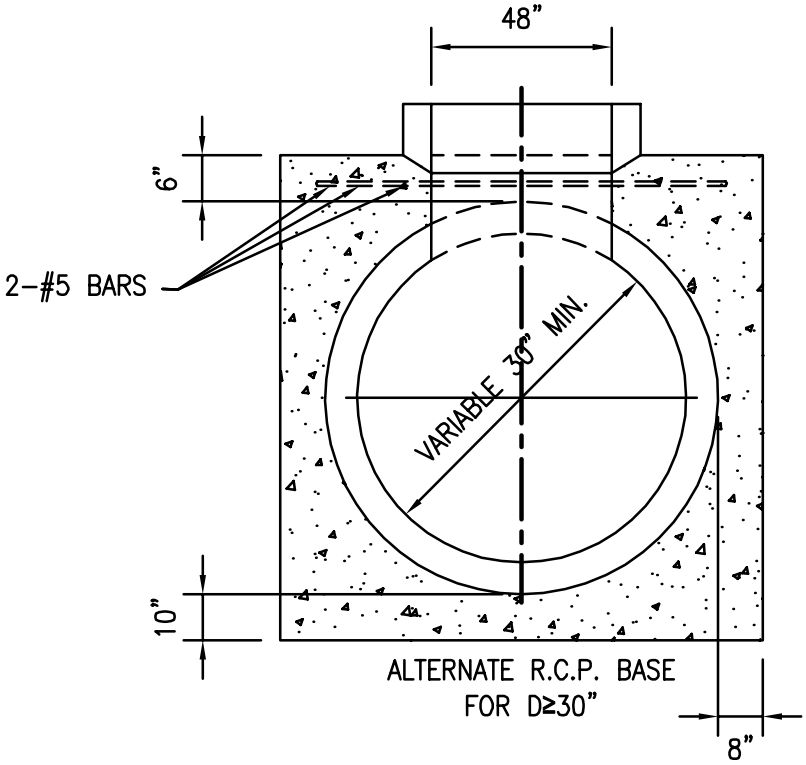
CITY ENGINEER

DATE: XXXXXXX ##, ####

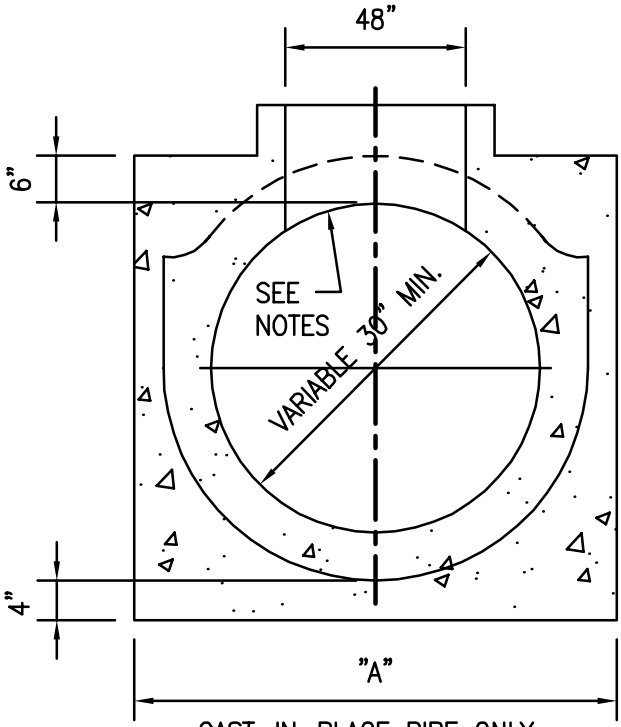
TYPE III MANHOLE (PIPES LARGER THAN 48" DIA.)

STD. DETAIL No. SS-5





ALTERNATE R.C.P. BASE
FOR D≥30"



CAST–IN–PLACE PIPE ONLY
(SEE NOTES)

SECTIONS

NOTES:

1. REMOVE CONCRETE IN MANHOLE OPENING AND CONSTRUCT RISER BASE WHILE CONCRETE IS STILL FRESH.
2. PLACE RISER SECTION AFTER CONCRETE HAS SET.
3.

PIPE DIA.	30"	36"	42"	48"	54"
"A"	5'–0"	5'–0"	5'–0"	5'–8"	6'–3"
PIPE DIA.	60"	66"	72"		
"A"	6'–10"	7'–5"	8'–0"		

VIVIR·TRABAJAR·JUGAR HALF MOON BAY INC. 1959

CITY OF HALF MOON BAY, CALIFORNIA STANDARD DETAIL

APPROVED BY:

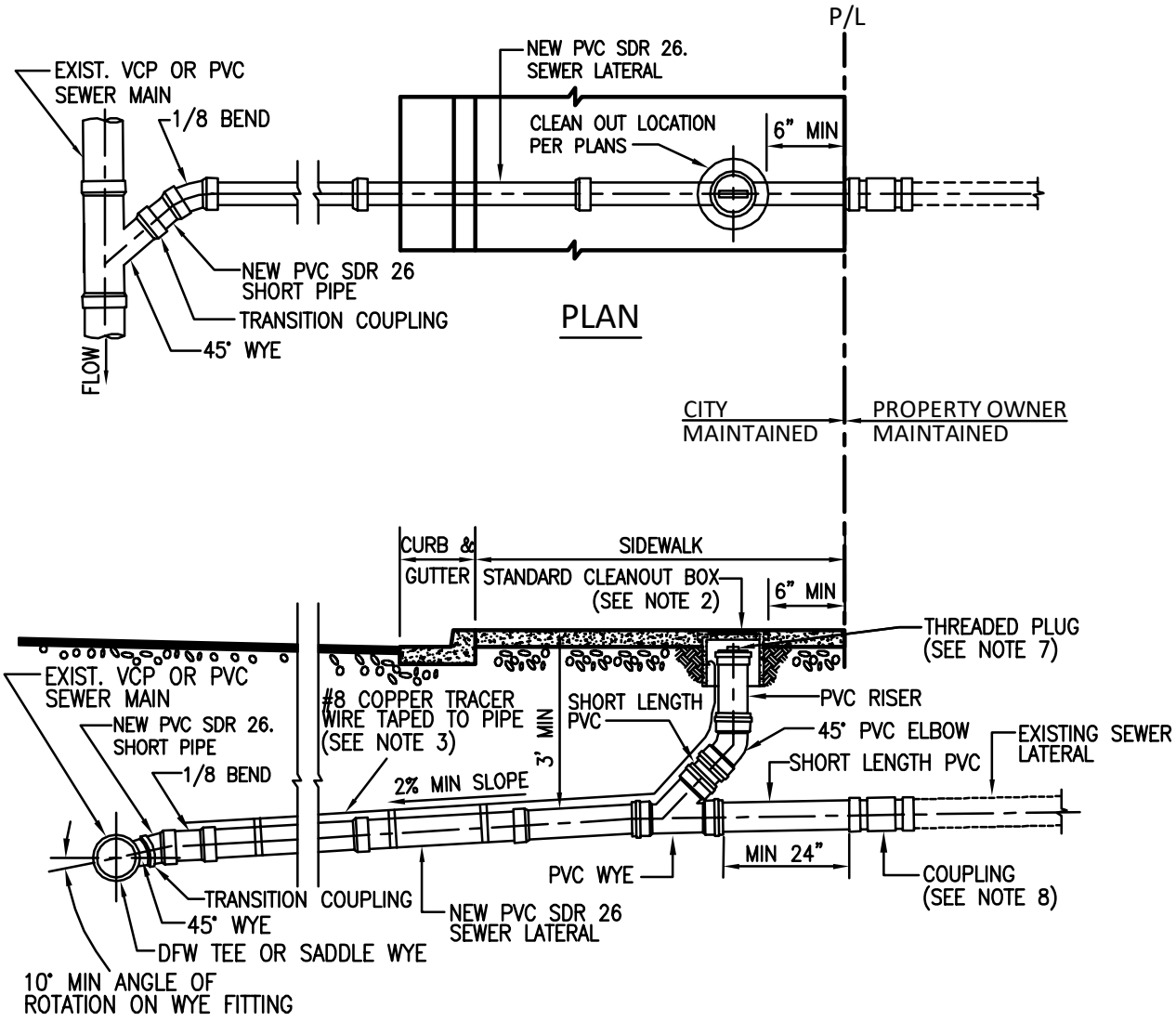
CITY ENGINEER

DATE: XXXXXXX ##, ####

SADDLE MANHOLE

STD. DETAIL No.

SS-6



PROFILE (STANDARD)

NOTES:

1. CLEANOUT BOX SHALL BE CHRISTY CONCRETE TYPE F08 CURB VALVE BOX WITH F08R LID MARKED "SEWER" WHEN INSTALLED IN LOCATION NOT SUBJECT TO VEHICULAR LOADING.
2. WHEN INSTALLED IN LOCATION SUBJECT TO VEHICULAR LOADING, CLEANOUT BOX SHALL BE CHRISTY CONCRETE TYPE G05T TRAFFIC VALVE BOX WITH G05CT TRAFFIC LID MARKED "SEWER AND SHALL BE PROVIDED WITH 8" CONCRETE BASE.
3. TAPE #8 COPPER TRACER WIRE AT 3' INTERVAL WITH FILAMENT TAPE.
4. LATERAL AND RISER SHALL BE ASTM 3034 PVC SDR 26. PVC FITTING SHALL BE SDR 26, AS PER SPECIFICATIONS.
5. TO CONNECT NEW LATERAL TO EXISTING MAIN, USE FLEX-SEAL ADJUSTABLE REPAIR COUPLING (ARC) WITH CONTINUOUS STAINLESS STEEL SHEAR RING, BY MISSION RUBBER COMPANY (800-854-9991) OR APPROVED EQAUL.
6. STAMP "S" ON TOP OF CURB FOR ALL NEW LATERALS.
7. USE PVC CLEANOUT WITH THREADED PLUG.
8. USE FLEXIBLE NON-SHEAR RUBBER COUPLING WITH STAINLESS STEEL SHEAR BAND.

NO SCALE

CITY OF HALF MOON BAY, CALIFORNIA STANDARD DETAIL

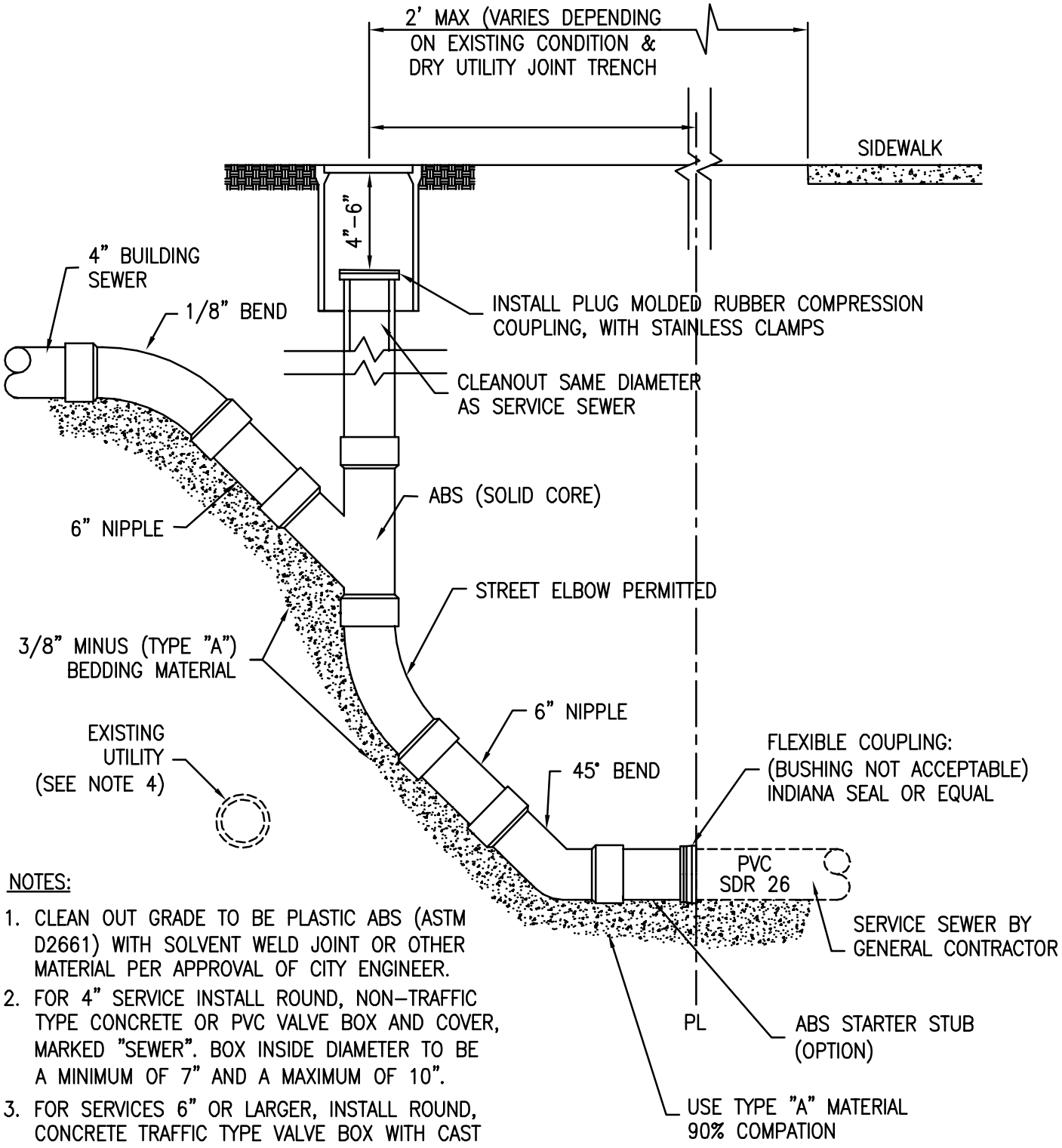
APPROVED BY:

CITY ENGINEER

DATE: XXXXXXX ##, ####

STANDARD SEWER LATERAL AND CLEANOUT

STD. DETAIL No. SS-7



NOTES:

1. CLEAN OUT GRADE TO BE PLASTIC ABS (ASTM D2661) WITH SOLVENT WELD JOINT OR OTHER MATERIAL PER APPROVAL OF CITY ENGINEER.
2. FOR 4" SERVICE INSTALL ROUND, NON–TRAFFIC TYPE CONCRETE OR PVC VALVE BOX AND COVER, MARKED "SEWER". BOX INSIDE DIAMETER TO BE A MINIMUM OF 7" AND A MAXIMUM OF 10".
3. FOR SERVICES 6" OR LARGER, INSTALL ROUND, CONCRETE TRAFFIC TYPE VALVE BOX WITH CAST IRON COVER MARKED "SEWER".
4. INSTALLATION TO AVOID EXISTING UTILITY ONLY.
5. DEPTH AFTER CLEANOUT SHOULD BE 4' MINIMUM, 5' MAXIMUM. EXISTING CONDITIONS MAY VARY.
6. 4'x4' REDWOOD POST PAINTED GREEN AT PROPERTY LINE.

NO SCALE

CITY OF HALF MOON BAY, CALIFORNIA STANDARD DETAIL

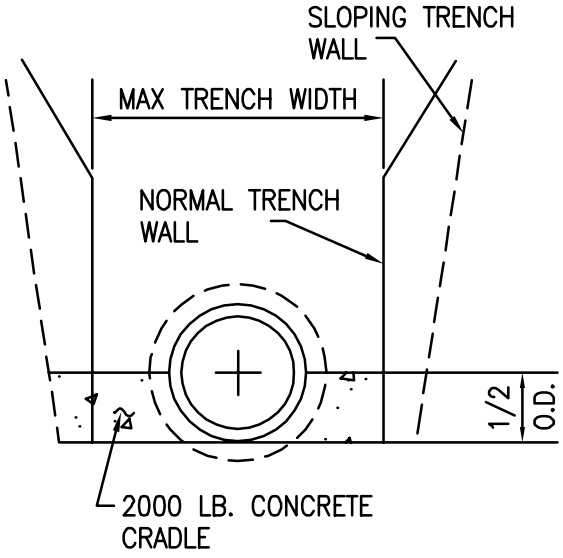
APPROVED BY:

CITY ENGINEER

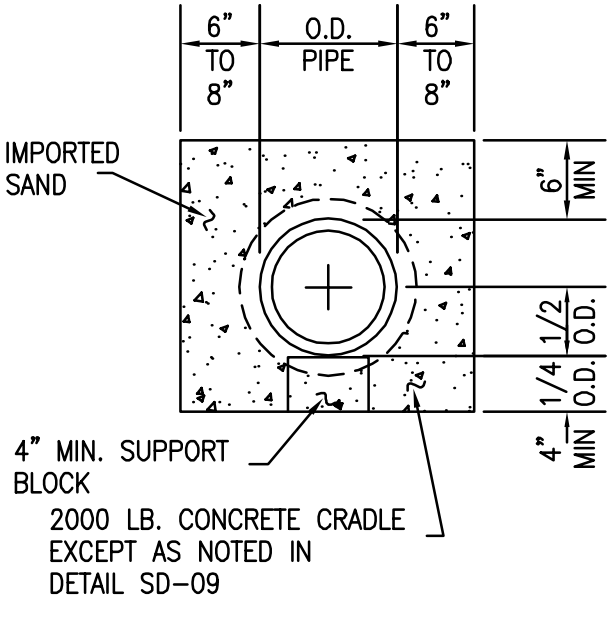
DATE: XXXXXXX ##, ####

ABS OR PVC CLEANOUT TO GRADE (SEWER CONNECTED TO RISER)

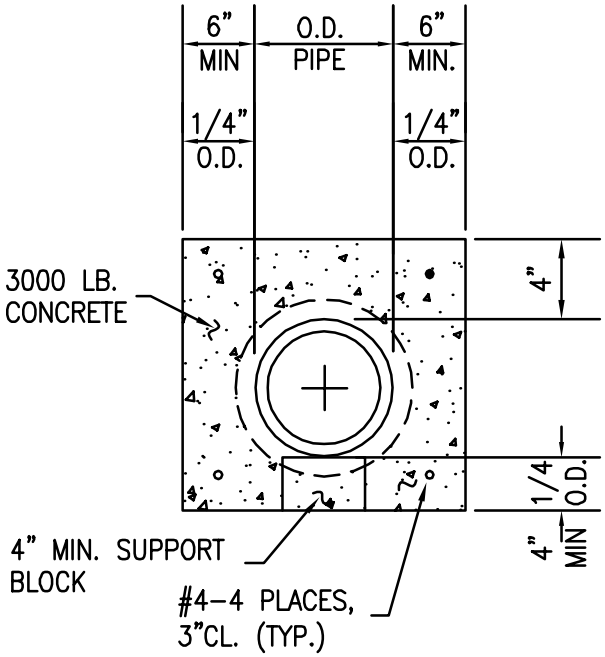
STD. DETAIL No. SS-8



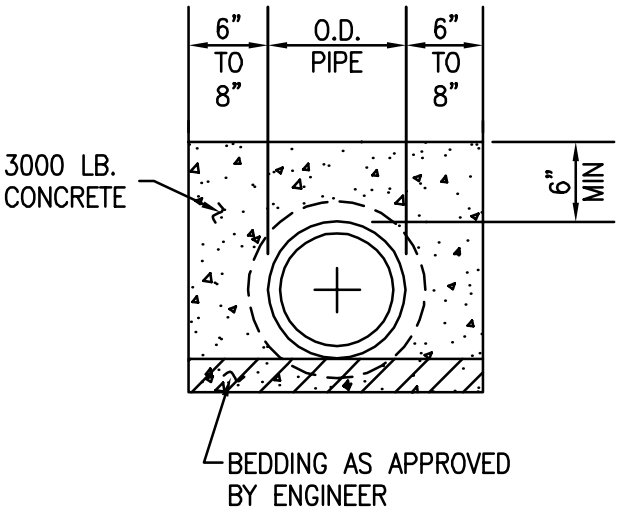
CRADLE FOR EXCESSIVE TRENCH BOTTOM WIDTH



CONCRETE BLOCK



CONCRETE ENCASEMENT



CONCRETE JACKET

NOTES:

1. ALL PIPING TO BE DUCTILE IRON (CONCRETE LINED) AND POLY WRAPPED UNLESS OTHERWISE SPECIFIED BY CITY ENGINEER.
2. SUBSTITUTE MATERIALS CAN BE USED FOR CONCRETE JACKETS AND ENCASEMENT PER APPROVAL OF CITY ENGINEER.

NO SCALE

CITY OF HALF MOON BAY, CALIFORNIA STANDARD DETAIL

APPROVED BY:

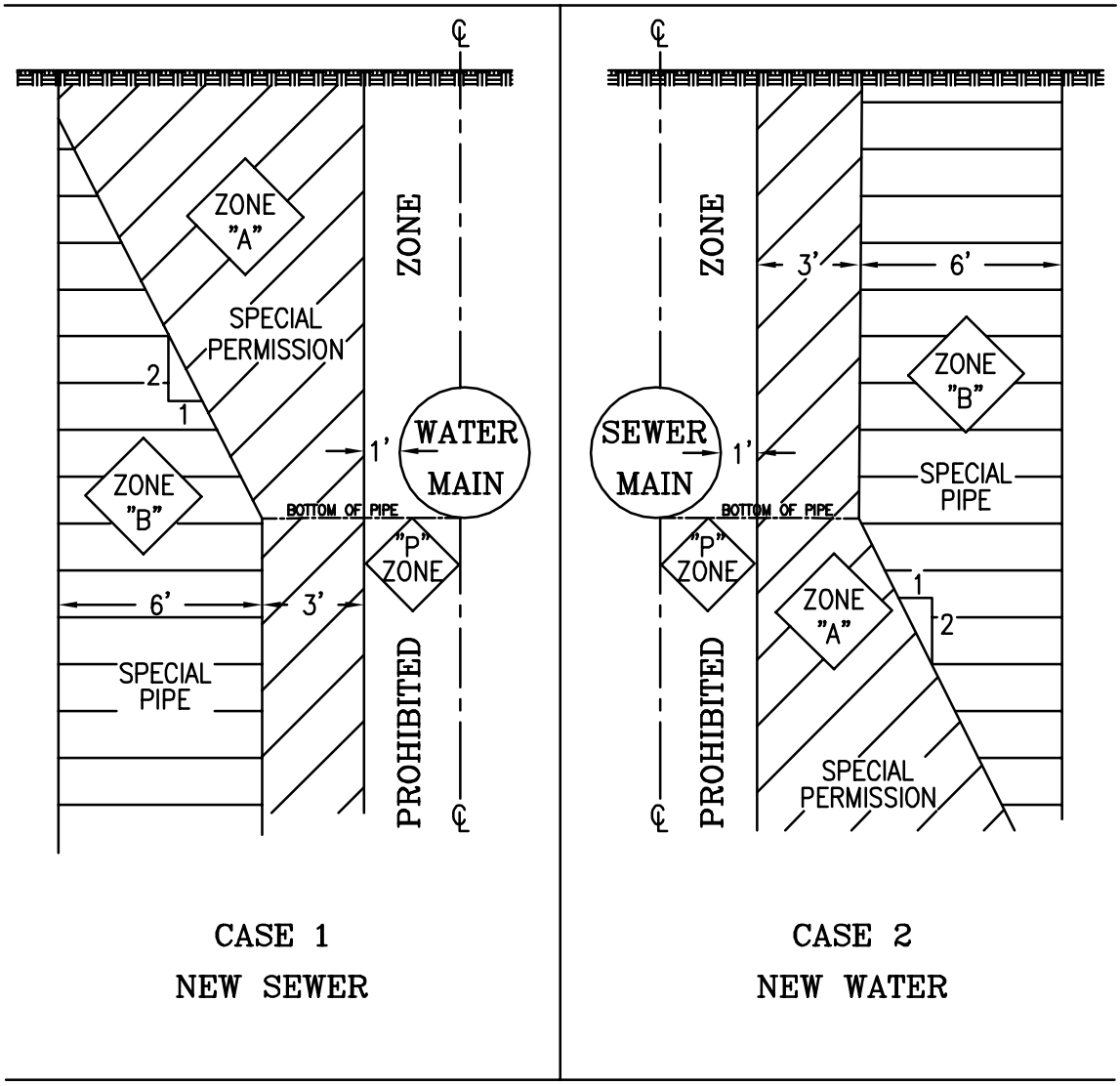
CITY ENGINEER

DATE: XXXXXXX ##, ####

CONCRETE ENCASEMENT DETAIL

STD. DETAIL No. SS-9

PARALLEL CONSTRUCTION
(CROSS SECTION OF TRENCH)



NOTES:

1. ZONES ARE IDENTICAL ON EITHER SIDE OF CENTER LINES.
2. "P" ZONE IS A PROHIBITED CONSTRUCTION ZONE PER SECTION 64630, TITLE 22, CALIFORNIA ADMINISTRATIVE CODE.
3. ZONE "A" SPECIAL PERMISSION (ALL ZONES REQUIRE REVIEW BY CITY ENGINEER).
4. ZONE "B" SPECIAL PIPE REQUIRED.
5. NO JOINTS TO BE WITHIN 10' OF EDGE OF WATER MAIN EXCEPT AS APPROVED BY CITY ENGINEER.

NO SCALE

CITY OF HALF MOON BAY, CALIFORNIA STANDARD DETAIL

APPROVED BY:

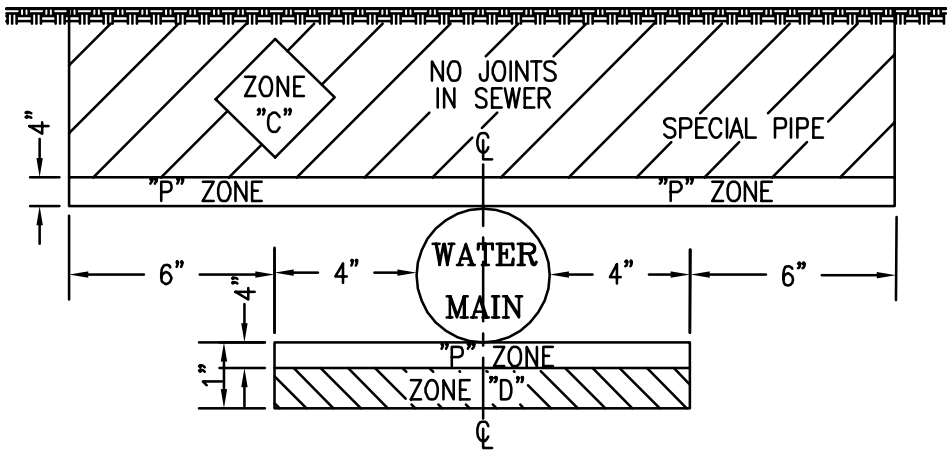
CITY ENGINEER

DATE: XXXXXXX ##, ####

SANITARY SEWER & WATER MAIN SEPARATION DETAILS (PARALLEL)

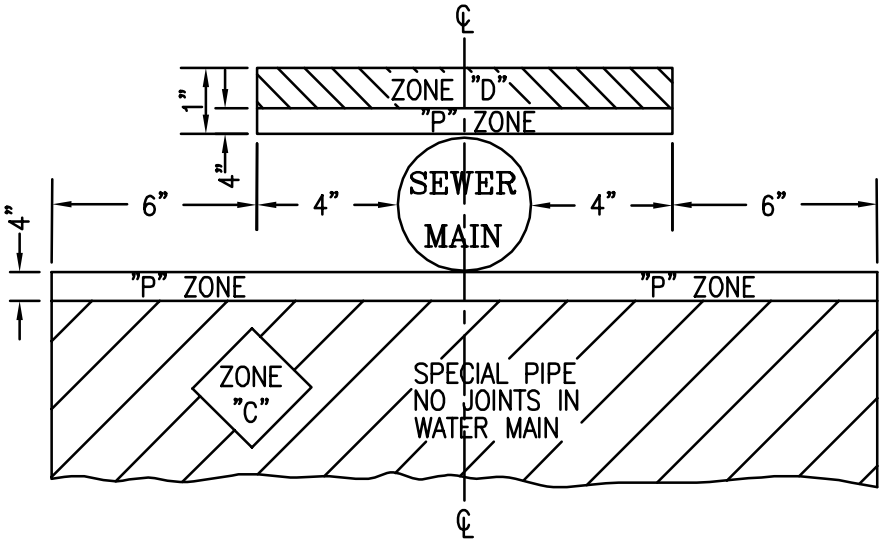
STD. DETAIL No. SS-10A

WATER & SEWER MAIN CROSSINGS



CASE 1

NEW SEWER



CASE 2

NEW WATER

NOTES:

1. "P" ZONE IS A PROHIBITED CONSTRUCTION ZONE PER SECTION 64630, TITLE 22, CALIFORNIA ADMINISTRATIVE CODE.
2. ZONE "C" SPECIAL PIPE, NO JOINTS.
3. ZONE "D" SPECIAL PIPE, NO JOINTS.
4. NO JOINTS TO BE WITHIN 10' OF EDGE OF WATER MAIN, EXCEPT AS APPROVED BY CITY ENGINEER.

NO SCALE

CITY OF HALF MOON BAY, CALIFORNIA STANDARD DETAIL

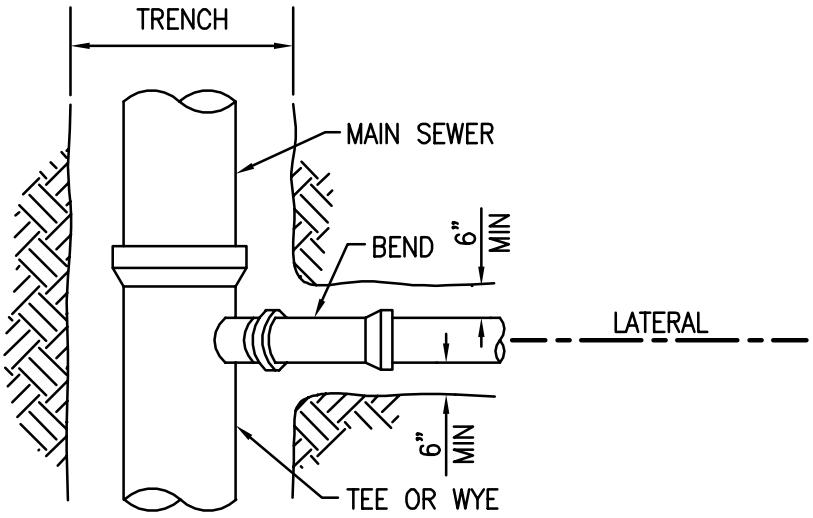
APPROVED BY:

CITY ENGINEER

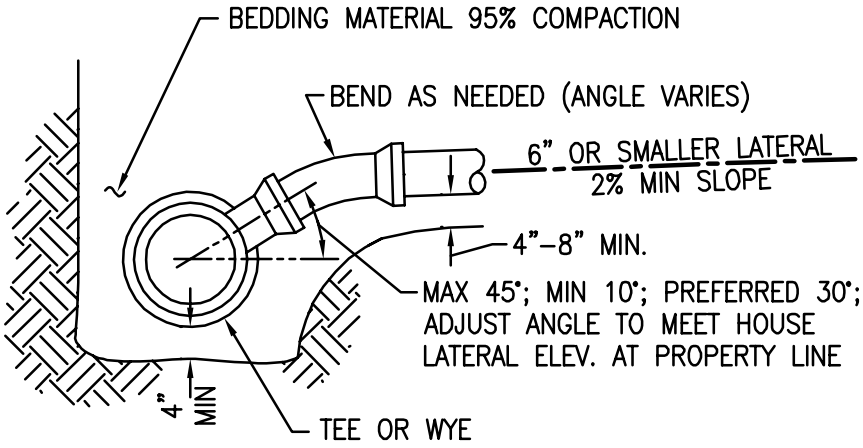
DATE: XXXXXXX ##, ####

SANITARY SEWER & WATER MAIN SEPARATION DETAILS (CROSSING)

STD. DETAIL No. *SS-10B*



PLAN



ELEVATION

NOTES:

1. TEES OR WYES AT VERTICAL ANGLES GREATER THAN 45°, ONLY AT PROPERTY LINE (SEE DETAIL SS–7)
2. EXTRA CARE SHALL BE TAKEN IN PLACING & COMPACTING MATERIAL FOR TEE SUPPORT, TAMP UNDER & AROUND ALL FITTINGS.
3. TYPE "A" 3/8" MINUS PER UTILITY TRENCH DETAIL UT–1. (24" ABOVE PIPE IF TYPE D MATERIAL IS USED IN INTERMEDIATE ZONE.

NO SCALE

CITY OF HALF MOON BAY, CALIFORNIA STANDARD DETAIL

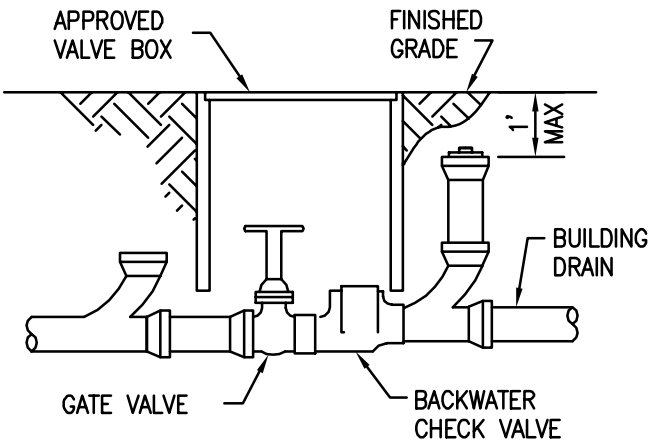
APPROVED BY:

CITY ENGINEER

DATE: XXXXXX ##, ####

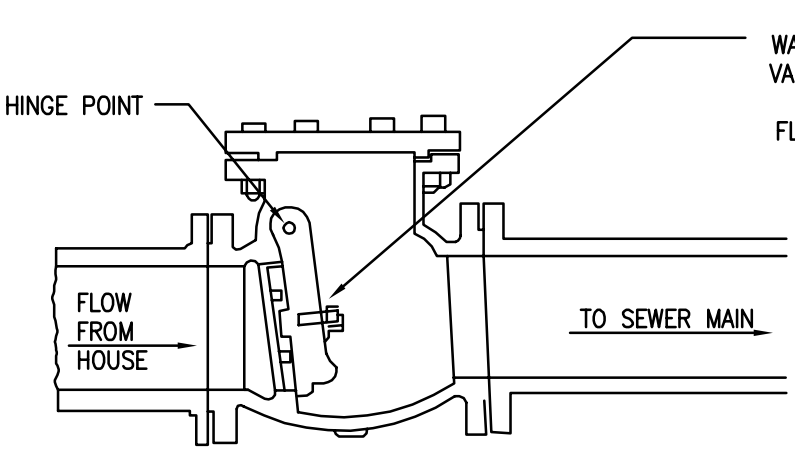
SEWER TEE DETAIL

STD. DETAIL No. SS-11



REQUIRED WHEN OVERFLOW SYSTEM CANNOT BE USED WITHOUT POSSIBLE SERIOUS PROPERTY DAMAGE

BACKWATER CHECK VALVE & SHUTOFF SYSTEM



NOTE: LOCATION OF DEVICE TO BE APPROVED BY CITY BUILDING DEPARTMENT PRIOR TO INSTALLATION

BACKWATER CHECK VALVE

NOTES:

1. USE BACKWATER OVERFLOW SYSTEM WHEN THE LEVEL OF THE LOWEST PLUMBING FIXTURE IS AT OR BELOW A POINT 18" ABOVE THE LEVEL OF THE NEAREST UPSTREAM SEWER STRUCTURE (MANHOLE OR RODHOLE).
2. CLEANOUT SIZE SHALL BE EQUAL TO HOUSE LATERAL SIZE.

NO SCALE

CITY OF HALF MOON BAY, CALIFORNIA STANDARD DETAIL

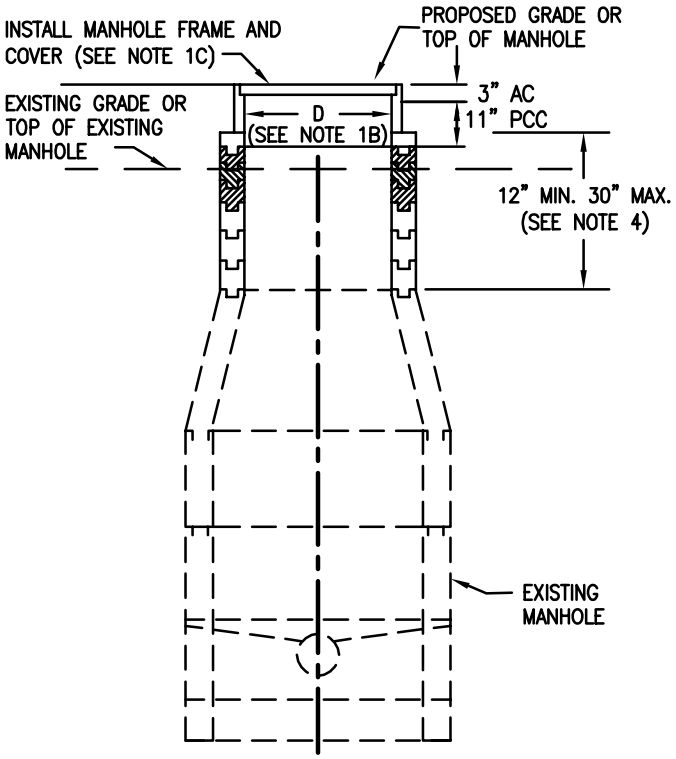
APPROVED BY:

CITY ENGINEER

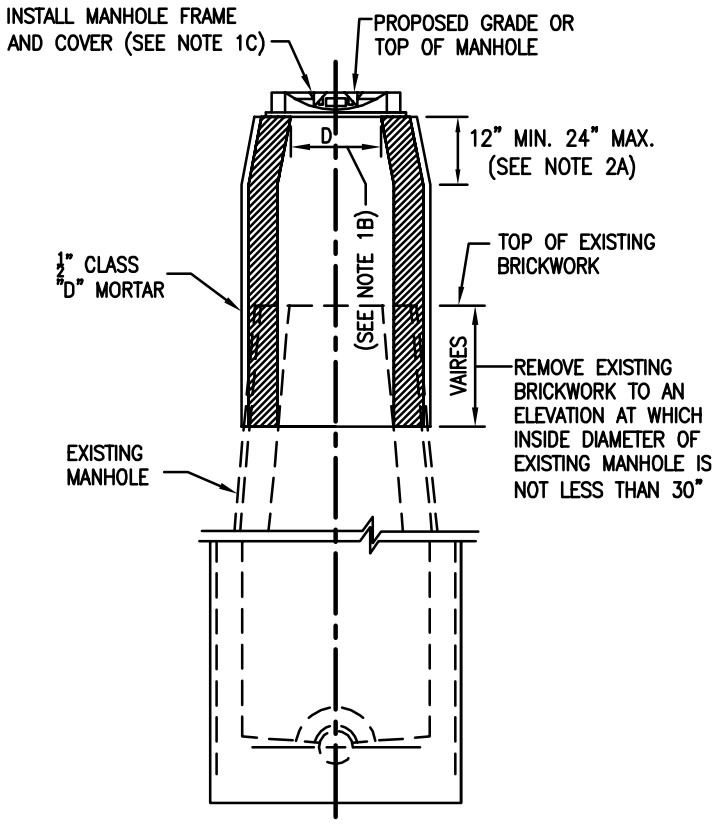
DATE: XXXXXXX ##, ####

BACKWATER CHECK VALVE SYSTEM DETAIL

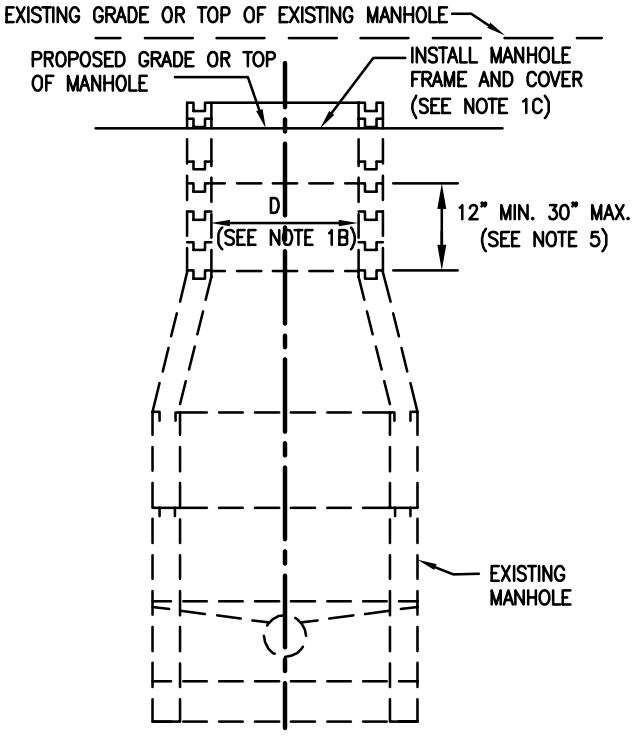
STD. DETAIL No. SS-12



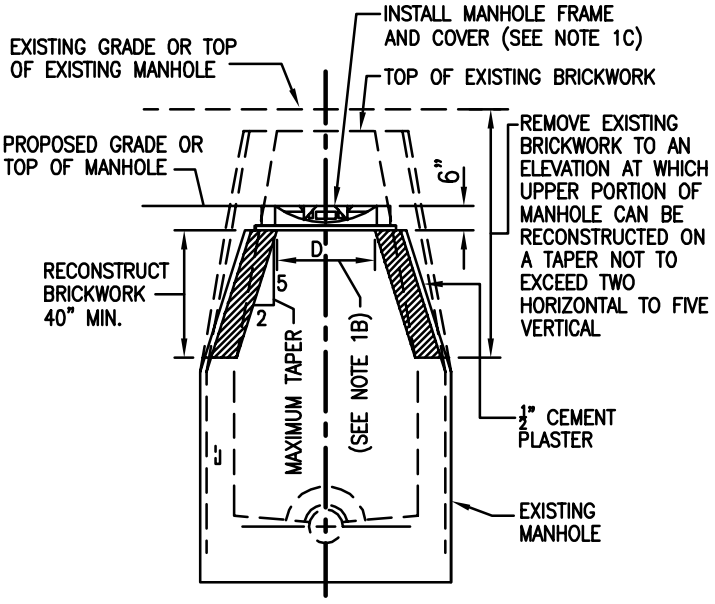
RAISING EXISTING PRECAST CONCRETE SEWER MANHOLES



RAISING EXISTING BRICK MANHOLES



LOWERING EXISTING PRECAST CONCRETE SEWER MANHOLES



LOWERING EXISTING BRICK MANHOLES

NO SCALE

CITY OF HALF MOON BAY, CALIFORNIA STANDARD DETAIL

APPROVED BY:

CITY ENGINEER

DATE: XXXXXXX ##, ####

RAISING AND LOWERING MANHOLE DETAIL IN STREET (FOR RESURFACING)

STD. DETAIL No. *SS-13*

NOTES:

1. GENERAL

   A. DIMENSION "D" SHALL BE THE SAME AS THE SIZE OF MANHOLE FRAME AND COVER TO BE USED.

   B. THE CONTRACTOR MAY REUSE THE EXISTING MANHOLE FRAME AND COVER, UNLESS DAMAGED BY HIM DURING HIS CONSTRUCTION OPERATIONS OR WHEN OTHERWISE INDICATED ON THE PROJECT PLANS. ITEMS DAMAGED BY THE CONTRACTOR SHALL BE REPLACED WITH IDENTICAL NEW ITEMS AT NO EXPENSE TO THE AGENCY.

   C. EXISTING STEPS LOCATED WITHIN REMOVAL LIMITS SHALL BE REMOVED. WHEN REMOVAL OF EXISTING STEPS BEYOND THE MANHOLE REMOVAL LIMITS IS INDICATED ON THE PROJECT PLANS. THE STEPS SHALL BE REMOVED TO A DEPTH OF (2 IN.) BEYOND THE INSIDE FACE OF THE BRICK MANHOLE. THE HOLES SHALL BE FILLED WITH CLASS "D" MORTAR.

2. RAISING EXISTING BRICK MANHOLES

   A. BRICK MANHOLES TO BE RAISED LESS THAN (1 FT.) MAY BE EXTENDED VERTICALLY, PROVIDED THAT AT A DEPTH OF (2 ½ FT.) BELOW THE TOP OF THE MANHOLE AT ITS NEW ELEVATION. THE INSIDE DIAMETER OF THE MANHOLE IS (30 IN.) OR GREATER.

   B. BRICK MANHOLES TO BE RAISED LESS THAN (3 ½ IN.) MAY BE RAISED BY APPLYING CLASS "D" MORTAR TO THE TOP OF THE EXISTING BRICKWORK. IF THE BRICK MANHOLE IS TO BE RAISED (3 ½ IN.) OR MORE. A NEW COURSE OR COURSES OF BRICKWORK SHALL BE PLACED ON TOP OF THE EXISTING BRICKWORK.

3. LOWERING EXISTING BRICK MANHOLES

   A. WHERE A BRICK MANHOLE IS TO BE LOWERED LESS THAN (1 FT.), THE FRAME MAY BE RESET ON THE EXISTING BRICKWORK AND THE (40 IN.) MINIMUM BRICKWORK RECONSTRUCTION OMITTED, PROVIDED THAT THE BASE OF THE FRAME DOES NOT OVERHANG THE BRICKWORK ON THE INSIDE SURFACE OF THE MANHOLE MORE THAN AN AVERAGE (1 ½ IN.) IN ANY QUADRANT NOR MORE THAN (2 IN.) AT ANY POINT.

4. RAISING EXISTING PRECAST CONCRETE SEWER MANHOLES

   A. PRECAST CONCRETE MANHOLES TO BE RAISED LESS THAN (3 IN.) MAY BE RAISED BY APPLYING CLASS "D" MORTAR TO THE TOP OF THE EXISTING MANHOLE, PROVIDED THE TOTAL HEIGHT OF MORTAR, EXISTING AND NEWLY APPLIED, DOES NOT EXCEED (3 IN.)

   B. WHERE THE PRECAST CONCRETE MANHOLE IS TO BE RAISED (3 IN.) OR MORE, OR WHERE THE TOTAL HEIGHT OF MORTAR, EXISTING AND NEWLY APPLIED, WOULD EXCEED (3 IN.), GRADE RINGS SHALL BE UTILIZED. CLASS "D", MORTAR MAY BE USED FOR FINAL ADJUSTMENT, BUT NOT MORE THAN (3 IN.) IN HEIGHT. WHERE RAISING THE MANHOLE WOULD RESULT IN THE UPPER SEGMENT OF THE SHAFT BEING MORE THAN (30 IN.) IN HEIGHT, REMOVED THE REDUCER AND THE UPPER SEGMENT OF THE SHAFT, INSTALL ADDITIONAL RINGS OR PIPE TO THE LOWER SEGMENT OF THE SHAFT, AND REINSTALL THE REDUCER AND GRADE RINGS AS REQUIRED.

NOTES (CONTINUED)

5. LOWERING EXISTING PRECAST CONCRETE SEWER MANHOLE

   A. REMOVE SUFFICIENT GRADE RINGS TO LOWER THE MANHOLES AS REQUIRED. APPLY CLASS "D" MORTAR TO A HEIGHT NOT EXCEEDING (3 IN.) FOR ADJUSTMENT TO FINAL GRADE.

   B. WHERE REMOVAL OF GRADE RINGS WOULD RESULT IN THE UPPER SEGMENT OF THE SHAFT BEING LESS THAN (12 IN.) IN HEIGHT, REMOVE THE REDUCER AND SUFFICIENT SECTIONS OF THE LOWER SEGMENT OF THE SHAFT AND REINSTALL ANY NECESSARY SEGMENT OF THE LOWER SHAFT, THE REDUCER, AND THE GRADE RINGS TO CONFORM TO THE REQUIREMENTS OF THIS PLAN.

   C. EXISTING GRADE RINGS NEED NOT BE REMOVED IF EXISTING MORTAR IS REMOVED, AND AT LEAST (1 ½ IN.) OF MORTAR MAY BE PLACED ON TOP OF THE EXISTING GRADE RINGS TO RESEAT THE FRAME.

6. REPLACE BRICK REDUCER WITH PRECAST CONCRETE REDUCER AND SHAFT

   UNLESS OTHERWISE INDICATED ON THE PLANS, THE CONTRACTOR SHALL INSTALL A PRECAST CONCENTRIC CONCRETE REDUCER, CONCRETE GRADE RINGS, AND CONCRETE PIPE IN LIEU OF RECONSTRUCTING A BRICK REDUCER, PROVIDED:

   A. THE MAXIMUM I.D. OF SEWER PIPE CONNECTED TO THE MANHOLE DOES NOT EXCEED (8 IN.)

   B. THE CONTRACTOR SECURES PRIOR APPROVAL FROM THE ENGINEER TO INSTALL THE CONCENTRIC REDUCER ONTO THE MANHOLE SHAFT. THE ENGINEER MAY, AS PART OF THE INSTALLATION, REQUIREMENTS, REQUIRE THE CONTRACTOR TO COAT THE INSIDE OF THE REDUCER, RINGS, AND PIPE WITH AN APPROVED COATING.

   C. THE CONCRETE GRADE RINGS, THE CONCRETE REDUCER, AND ANY CONCRETE PIPE SHALL BE JOINED TOGETHER AND BEDDED ONTO THE EXISTING BRICK MANHOLE WITH CLASS "D" MORTAR. THE DEPTH, WIDTH, AND THICKNESS OF THE MORTAR SHALL BE OF SUFFICIENT DIMENSIONS TO PROPERLY AND ADEQUATELY JOIN AND BED THE COMPONENT PARTS.

CITY OF HALF MOON BAY
DEPARTMENT OF PUBLIC WORKS
STANDARD SPECIFICATIONS

GENERAL NOTES

1. ALL REFERENCES TO "DISTRICT" IN THESE GENERAL NOTES SHALL MEAN THE APPROPRIATE CITY SEWER OR SEWER AUTHORITY MID-COASTSIDE (SAM).

2. THE APPROVAL OF THESE PLANS BY THE CITY SHALL BE INTERPRETED TO MEAN THAT THE SANITARY SEWER DESIGN SHOWN ON THESE PLANS MEETS THE CITY'S STANDARDS. THE CITY'S APPROVAL IN NO WAY GUARANTEES ANY OTHER ASPECT OF THIS PLAN OR ITS ACCURACY RELATIVE TO ACTUAL FIELD CONDITIONS.

3. THE CONTRACTOR SHALL CONTACT THE CITY AT (650) 726-8260 TWO (2) WORKING DAYS IN ADVANCE OF BEING ANY SANITARY SEWER WORK. THE CONTRACTOR SHALL THEREAFTER KEEP THE INSPECTOR FOR HE CITY INFORMED OF SCHEDULE FOR SANITARY SEWER WORK.

4. ALL SANITARY SEWER WORK CONSTRUCTED WITHOUT INSPECTION BY THE CITY OR SAM SHALL BE REMOVED AND RECONSTRUCTED WITH INSPECTION.

5. THE CONTRACTOR SHALL CONTACT UNDERGROUND SERVICE ALERT FORTY-EIGHT (48) HOURS IN ADVANCE OF BEGINNING ANY WORK.

6. THE CONTRACTOR SHALL FIELD VERIFY THE LOCATION OF ALL UTILITIES BEFORE BEGINNING ANY EXCAVATING.

7. THE CONTRACTOR SHALL OBTAIN ANY AND ALL PERMITS REQUIRED BY THE CITY BEFORE BEGINNING ANY SANITARY SEWER WORK.

8. UPON THE COMPLETION OF CONSTRUCTION A COMPLETE SET OF REPRODUCIBLE MYLAR "AS-CONSTRUCTED" PLANS SHALL BE PROVIDED TO THE CITY.

9. SANITARY SEWER SERVICE SHALL BE MAINTAINED AT ALL TIMES. THE CONTRACTOR SHALL USE WHATEVER MEANS ARE NECESSARY (E.G. PUMPS, ETC.) TO MAINTAIN THIS SERVICE DURING CONSTRUCTION.

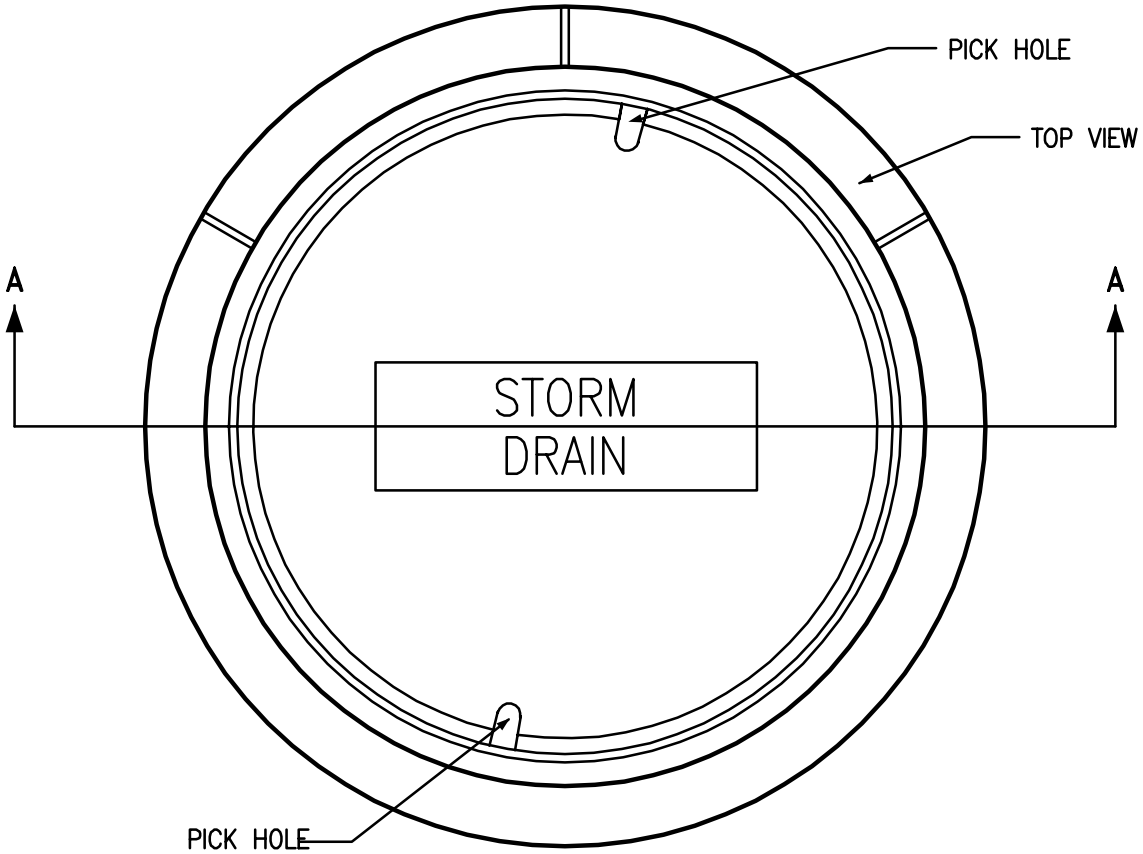
10. PRIOR TO COMMENCING ANY SANITARY SEWER WORK IN OFF-SITE EASEMENTS THE CONTRACTOR SHALL PROVIDE THE CITY WITH ADEQUATE EVIDENCE THAT ALL AFFECTED PROPERTY OWNERS (AND TENANTS WHERE APPLICABLE) WERE NOTIFIED WELL IN ADVANCE OF THE DATE WORK IN THESE EASEMENTS WAS TO BEGIN AND THAT THEY HAVE UPDATED THAT NOTICE IN A TIMELY MANNER WHEN THOSE DATES HAVE CHANGED.

STORM DRAIN

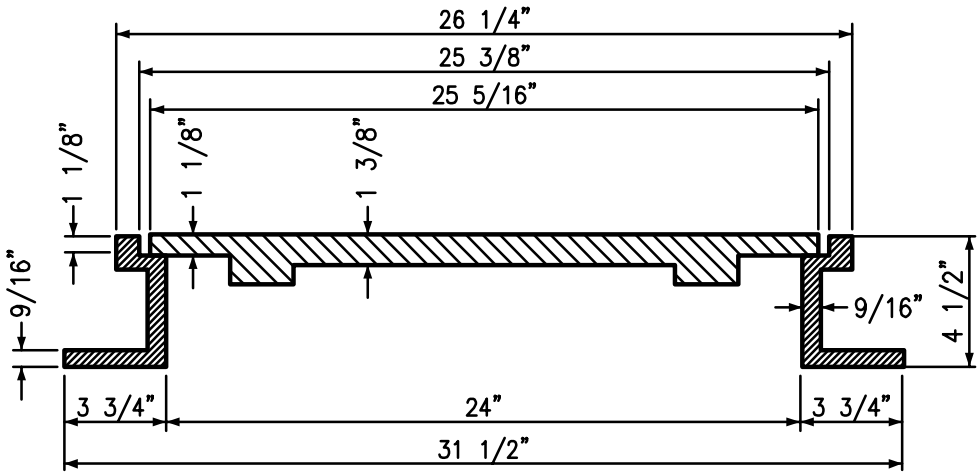
STANDARD DETAILS

STORM DRAIN STANDARD DETAILS

Title	Plate No.
Standard 24" Manhole Frame & Cover	SD-1
Pipe Cover Requirements - CF, RCP, ACP, VCP and Cast-In-Place	SD-2
No Dumping Public Notice Detail	SD-3



PLAN



SECTION A-A

NOTES:

1. ALL MATERIAL USED IN MANUFACTURING SHALL CONFORM TO A.S.T.M. A48, CLASS 30.
2. ALL CASTINGS TO BE COMPLETELY CLEANED AND PAINTED WITH ASPHALTIC VARNISH, AFTER MANUFACTURE.
3. USE PHOENIX P-1090, D&L SUPPLY A-1024, OR EQUAL.

NO SCALE

CITY OF HALF MOON BAY, CALIFORNIA STANDARD DETAIL

APPROVED BY:

CITY ENGINEER

DATE: XXXXXXX ##, ####

STANDARD 24" MANHOLE FRAME AND COVER

STD. DETAIL No. SD-1

MAXIMUM TRENCH DEPTH
MEASURED SURFACE TO BOTTOM OF TRENCH IN FEET

DIAMETER	C-14 CONC. PIPE -CLASS-			REINFORCED CONCRETE PIPE -CLASS-					VCP E.S.	CAST IN PLACE
	1	2	3	I	II	III	IV	V		
10	12	17	29	NOT PERMITTED				NO LIMIT	NO LIMIT	NO LIMIT
12	12	17	21		8	12	30			
15	12	17	20		10	15	35			
18	11	17	19		11	16	38			
21	11	17	19		12	17	39			
24	11	16	19		12	18	39			
27	11	16	18		13	19	39			
30	11	15	17		14	19	38			
33	11	15	16		14	20	38			
36	10	13	14		13	17	27	69	25	
42	NOT PERMITTED				14	18	29	62	APPROVED ON DESIGN BASIS	
48					15	19	30	60		
54					16	20	31	58		
60				14	16	21	31	57		45
66				15	17	22	32	56		35
72				15	18	23	33	56		30

MINIMUM TRENCH DEPTH
MEASURED SURFACE TO TOP OF TRENCH IN INCHES

TYPE	CLASS	MIN. COVER	
		STREET	OFF ST.
C-14 CONC. PIPE	1	30	12
	2	27	12
	3	24	12
REIN. CONCRETE AND ASBESTOS CEMENT	I	27	12
	II	24	12
	III	12	12
	IV	12	12
	V	24	12
VCP	ES.		
CAST IN PLACE CONCRETE PIPE	——	12	12

NOTES:

1. ALL DEPTHS SHOWN FOR FLEXIBLE PAVEMENT AND TRENCH WIDTH EQUAL TO O.D. OF PIPE PLUS 16" FOR PIPE 33" AND SMALLER INSIDE DIAMETER. TRENCH WIDTH EQUALS O.D. OF PIPE PLUS 24" FOR PIPE 36" AND LARGER IN INSIDE DIAMETER. TRENCH WIDTH MEASURED AT TOP OF PIPE.

2. THIS DETAIL SHALL BE A GUIDE ONLY. THE CITY REQUIRES THAT A NCPI LOAD CALCULATION BE RUN ON ALL PIPES FOR TRENCH LOAD DESIGN.

CITY OF HALF MOON BAY, CALIFORNIA STANDARD DETAIL

APPROVED BY:

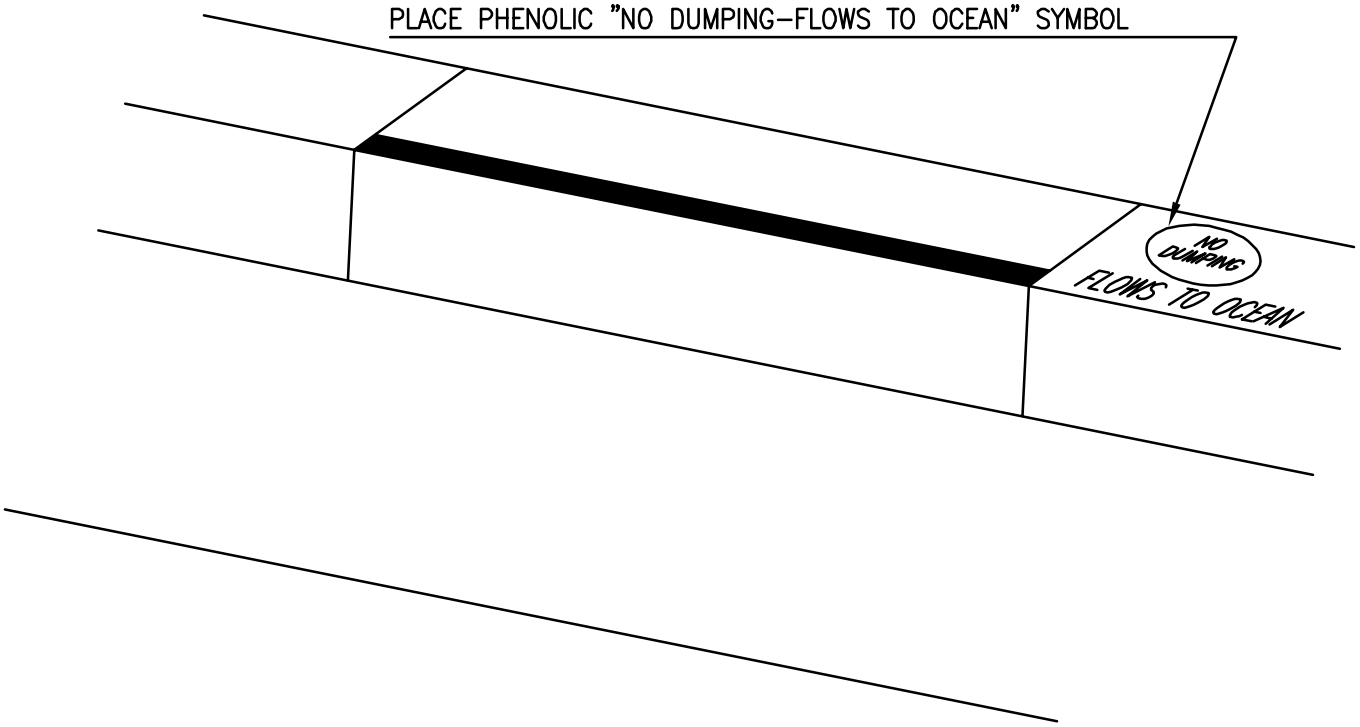
CITY ENGINEER

DATE: XXXXXXX ##, ####

PIPE COVER REQUIREMENTS CP, RCP, ACP, VCP & CAST-IN-PLACE

STD. DETAIL No. SD-2

A PUBLIC NOTICE SHALL BE PLACED ADJACENT TO ALL DRAIN INLETS IN ACCORDANCE WITH THE DETAIL BELOW.



NOTES:

1. MESSAGE AND SYMBOL SHALL BE PERMANENTLY FLANGED WITH THE USE OF EPOXY OR ANOTHER METHOD RECOMMENDED BY THE MANUFACTURER APPROVED BY THE CITY OF HALF MOON BAY PRIOR TO THE CONSTRUCTION OF THE CURB AND GUTTER.
2. COLORS SHALL BE BLUE LETTERING AND GRAPHIC WITH WHITE BACKGROUND.
3. FOR AREA DRAIN INLETS, NOTICE WILL BE PLACED ADJACENT AND PARALLEL TO THE LONG AXIS OF THE DRAIN

CITY OF HALF MOON BAY, CALIFORNIA STANDARD DETAIL

APPROVED BY:

CITY ENGINEER

DATE: XXXXXX ##, ####

NO DUMPING PUBLIC NOTICE DETAIL

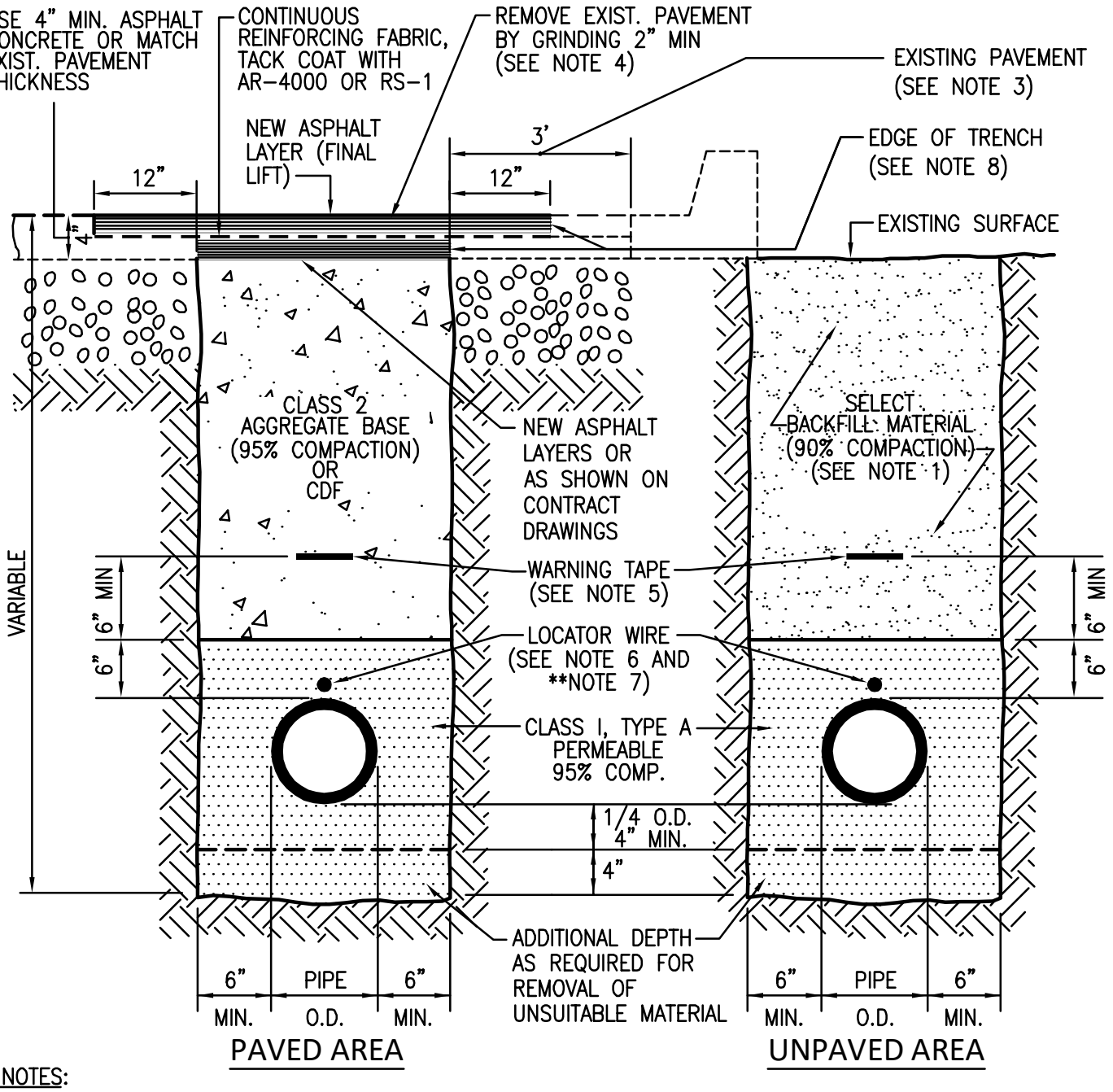
STD. DETAIL No. SD-3

UTILITY TRENCH

STANDARD DETAILS

UTILITY TRENCH STANDARD DETAILS

Title	Plate No.
Utility Trench Detail	UT-1



NOTES:

1. SELECT BACKFILL MATERIAL – MATERIAL FROM EXCAVATION, FREE FROM STONES OR LUMPS EXCEEDING 3" IN GREATEST DIMENSION, VEGETABLE MATTER OR UNSATISFACTORY MATERIAL. (SEE SPECIFICATIONS)
2. FOR NEW STREETS USE DESIGN STRUCTURAL SECTION AS SHOWN ON PLANS.
3. IF THE EDGE OF THE TRENCH FALLS WITHIN 3' OF THE GUTTER, THE ENTIRE PAVEMENT SHALL BE REMOVED.
4. IF EXISTING PAVEMENT IS LESS THAN 3" THICK, PAVEMENT EDGE SHALL BE SAWCUT TO FULL DEPTH IN LIEU OF GRINDING.
5 PLACE WARNING TAPE 14" ABOVE PIPE.
6. PLACE LOCATOR WIRE AT TOP OF PIPE. (FOR WATER PIPES AND SANITARY SEWER FORCE MAIN PIPES ONLY)

**7. FOR NEW SANITARY SEWER AND STORM DRAIN PROJECTS, LOCATOR WIRE IS NO LONGER NEEDED.

8. IF IN LIEU OF GRINDING, THE T-TRENCH IS CUT THE FULL DEPTH OF THE PAVEMENT THEN THE EDGE OF THE T-TRENCH SHALL BE CONSIDERED THE NEW EDGE OF TRENCH.

NO SCALE

CITY OF HALF MOON BAY, CALIFORNIA STANDARD DETAIL

APPROVED BY:

CITY ENGINEER

DATE: XXXXXXX ##, ####

UTILITY TRENCH DETAIL

STD. DETAIL No. UT-1

VOLUME III

DESIGN CRITERIA

DESIGN CRITERIA
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THE CITY OF HALF MOON BAY

ENGINEERING STANDARDS

VOLUME III: DESIGN CRITERIA

PART I - GENERAL ENGINEERING PLAN REQUIREMENTS

The following criteria has been established by the City of Half Moon Bay to guide Consulting Engineers in preparing and processing maps, plans, studies, reports processing and documents for subdivisions and developments, and shall apply to both public and private improvements. Conformance to these Standards is required, and these criteria should be considered as minimum requirements.

See the latest edition of the City of Half Moon Bay Municipal Code for applicable City ordinances and regulations. Copies of Ordinances and Codes can be purchased at the office of the City Clerk.

A. Preliminary Investigation

1. Upon request from the Consulting Engineer, the Engineering Division will furnish if available, the Consulting Engineer with prints of base maps showing existing sanitary sewer lines, "As-Built" plans of adjoining streets (if available), storm drain, bench mark locations, monument locations, and these Design Criteria. The locations and elevations of existing utilities shall be verified in the field by the Engineer and shown on the plans.

2. If there are facilities in the street whose depth and/or location cannot be determined without excavation, and if the knowledge of those depths and locations are critical to the design, the Design Engineer shall engage a private contractor, obtain permits, and make necessary investigations.

3. Submittals are made only after a Registered Civil Engineer has completed and signed the plans. Submittals shall include a cover letter, along with the plans and the design calculations for review and approval by the City Engineer. Incomplete plans will be returned without being reviewed.

4. The design engineer shall also obtain information on utilities from PG&E, AT&T, XFINITY, Cable, Comcast, RCN, and any other known public utility company.

B. Submittal Requirements

1. For the initial submittal, the Design Engineer should use the following checklist for submitting material to the City of Half Moon Bay Engineering Division. Submittals will be rejected unless they are complete, and as a minimum include the following items:

   a) For All Projects:
      i. Improvement Plans & Specifications (4 copies)
      ii. Landscape and Irrigation Plans (3 copies)
      iii. Soils and Geotechnical Report

iv. Detailed Cost Estimate
v. Right-of-Way or Easement Plats and Legal Descriptions
vi. Hydrology Calculations & Drainage Area Master Plan
vii. Deposit for Plan Checking and Map Checking (Attachment "H")
viii. Statement of which flood zone the site is located and whether it is subject to flooding.

b) In Addition to the Above Information, for Projects Involving Subdivision of Land:

i. Subdivision Map (2 copies)
ii. Covenants, Conditions & Restrictions (CC&R'S) (3 copies)
iii. Subdivision Maps of the Surrounding Areas
iv. Map Calculations and Lot Closures
v. Preliminary Title Report
vi. Architectural Plans (for condominium projects)
vii. *Erosion Control Plan
viii. *Sewer System Analysis
ix. *Structural Calculations for retaining walls
x. Tree Protection Plan

(*) These Items may or may not be required, depending on site conditions, and as determined by the Engineering Division.

2. Engineering will review the plans and return "redlined" checkprints. Subsequent submittals shall be accompanied by the City's "redlined" plans and may include a separate, written response.

3. Final submission shall include the signed original plans, and for subdivisions shall include the executed subdivision map. (See Attachment "I" for material to accompany the subdivision map.)

C. Improvement Plans

1. All plans shall be on City Standard 24" x 36" sheets of good quality paper with a one-and-a-half (1-1/2) inch margin on the left side and a one-half inch margin on the top, bottom and right side. All profiles shall be at the bottom of the sheet. Plan and profile paper shall be used for the sheets containing water, sanitary sewer facilities, and storm drains. The title blocks in electronic format are available at Engineering and Construction.

2. Plans shall be in ink. At the discretion of the Engineering Division plans may be rejected for poor quality.

3. The scale for improvement plans shall be 1" = 20' for the horizontal, and 1" = 2' for the vertical for slopes up to 5%; 1" = 4' vertical scale may be used for slopes greater than 5%. (1" = 40' for the horizontal may be allowed depending on the complexities of the job and upon prior approval.) Larger scales may be used (i.e., 1" = 10") only if required to show more detailed information, and then on a limited area

4. All lettering shall be a minimum height of 0.1".

5. No shading will be allowed.

6. All plans must show the following information, and for multiple sheets of plans, the drawings shall have a cover sheet. That cover sheet shall contain the following items:

   a. Location map, and vicinity map with north arrow.

   b. Typical Street Sections, including Design "R" Value and Traffic Index with type of curb and sidewalk for each street.

   c. Project bench mark and its location referenced to City Datum.

   d. Title block indicating name of project, name of consultant, scale and date. (See Attachment "G").

   e. Approval blocks to be signed by City of Half Moon Bay.

   f. Those parts of the Standard City Legend, (Standard Detail AA-1) and of the Standard City Abbreviations, (Standard Detail AA-2) that are applicable to the project.

   g. A list of City of Half Moon Bay Standard Details Referred to in the Improvement Plans.

   h. A composite map showing an overview of the project. Utilities should be shown on the composite maps, but need not be dimensioned.

   i. General Notes (See Attachment "A").

   j. Sheet Index.

   k. Certifications by Soils Engineer and Civil Engineer (See Attachment "B").

   l. Design Engineer's signature and stamp (including date of expiration). Each additional sheet of the plans shall have an approval block for the City and a title block.

   m. Design Engineer's business name and address.

7. Details shall be put on a separate sheet and cross-referenced on the appropriate plan sheet:

   1 Detail No.
   4 Sheet No.

   References to City Standard Detail drawings shall be by appropriate drawing number. As follows:

   M-1 Standard Drawing No.
   RCS

8. Drawing number. The following information shall be shown on the plans:

303

a. Design Data:

1) North Arrow and Scale

2) Right-of-Way Lines

3) Lot Lines

4) Boring Locations

5) Structures

6) Street Names

7) Size, Material and Length of Each Run of Pipe

8) Match Lines

9) Limit of Work & Conforms

10) Coordinate Values on Control Line Monuments Where Available

11) Trees 6” in Diameter and above (existing & proposed)

b. Existing topographic information, including property up to at least 50 feet beyond the project boundary of the property; or as required on adjoining streets to establish existing drainage patterns.

c. Plan and profiles of proposed public and private streets and utilities.

d. Grading, including both existing and proposed contours, and supplemental cross sections as required.

e. Traffic control sign and striping.

9. Profile Items Shown When Applicable.

a. Conventional street cross-sections shall include three-line street profiles: top(s) of curb, centerline and original ground line. Raised median will have top of median curbs in addition to the normal three-line profile. Irregular street sections may use other profiles as required by the City Engineer.

b. One line profiles (centerline) will be accepted if the following note is added***:*** "Top of curb elevations are (dimension) feet (above/below) the centerline elevations." Where this standard crown or curb height cannot be maintained, the curb profiles are required.

c. Curb return profiles.

d. Vertical curb lengths.

e. Curb inlet size, type and station.

f. For cul-de-sacs, top of curb profiles around the sac.

g. The size, material, slope, strength (D-load or wall thickness) on each run of pipe.

h. Existing improvement profiles being joined.

i. Show all existing driveways, structures, pipelines, etc., which affect the profile.

j. For storm drains, show the energy grade line and elevations at each structure.

10. Where a partial street is being constructed to widen an existing street, provide working cross sections at 50-foot intervals up to 100 feet past the conforms, more frequently as required to show the conforms with existing pavement.

11. All proposed improvements shall be located on the drawings by one of the following methods:

    a. Stationing and offset (from west increasing easterly, from south increasing northerly.)

    b. Coordinates

    c. Dimensions

    Whichever of the methods is chosen, the basis of the method must be clear and referenced to some existing feature which will remain.

D. Specifications

Half Moon Bay Standard Technical Specifications and Standard Details are available, at a cost, from the Engineering Division.

E. Utility Systems

1. New electrical distribution system, gas, telephone and Cable T.V. facilities shall be placed underground according to the standards of the utility companies.

2. The alignment of these installations shall be approved by the Engineering Division, and shown on the improvement plans.

F. Street Trees - Landscaping and Irrigation

1. Street trees and landscaping shall be designed and built to the satisfaction of the Public Works Services Department and the Engineering Division. The landscaping includes the common areas and the frontage along the public streets adjacent to the development or subdivision.

2. For common area landscaping, soil samples shall be taken off the existing on- site soil, or the imported material, and recommendations shall be submitted for soil amendments.

G. Covenants, Conditions and Restrictions (CC&R's)

1. Where it is applicable for the maintenance of the common areas, the private street system, the sewer facilities, the storm drain facilities, the street lighting and traffic control and the landscaping, a Homeowners Association shall be established prior to the recordation of the Planned Development Permit and the final subdivision map.

2. The CC&R's shall be submitted to the Engineering Division, for coordination and approval.

H. Improvement Security

1. Installation of all improvements shown on the plans as approved by City Engineer for a development shall be secured by bonds or certificates of deposit.

2. Provide a detailed cost estimate prepared by the design engineer for review and approval by the City Engineer. The estimate shall include 10% for contingencies and 5% for construction engineering.

3. Security for Faithful Performance and for payment of Labor and Materials are each to be 100% of the approved Engineer's Estimate.

I. Fees

1. Prior to approval of the subdivision map, the developer shall deposit all City plan checking fees and inspection fees and any other fees to be paid according to City ordinance. (See Attachment "H")

2. Prior to obtaining a building permit, the developer shall pay the necessary sewer and water fees according to the latest City Ordinance.

J. Condominium Plans

1. The condominium plan shall include, but shall not be limited to, the following information: site plan with the private access road layout; parking areas layout with designations; building layout. The site plan shall be dimensioned with bearings, setback distances, etc.

2. The condominium plans shall include all building plans, all or typical unit plans, fully dimensioned, including ceiling heights, etc.

3. Condominium plans shall be on 18" x 26" sheets as part of the Final Map.

K. Final Map

1. Follow the checklist in Attachment "I" for completing the Final Map.

2. Building permits will not be issued and construction shall not start, until the Final Map has been recorded.

L. Construction Permits

1. Construction Permits are required for installing facilities within any public right- of-way or within an easement, where such construction is not covered by a subdivision agreement. Examples would be, permits to extend water, sewer, or storm drain facilities; construction of facilities under a use permit or a building permit.

2. Submit three (3) sets of plans, an engineer's estimate of cost, and a deposit for plan checking and inspection, in accordance with the schedule shown on Attachment "H".

3. The applicant will be required to fill out an application for the Construction Permit, post bonds and insurance as required, before plans can be approved.

4. When a construction permit is approved, the following note will be put on each sheet where it applies.

   "For (description of private facility) within the (public right-of-way, drainage easement, etc.), see Construction Permit #_.

5. Some typical examples of construction permits are private drains, fire lines, sewer lines tying into public mains; sidewalk and driveway reconstruction in public right-of-way.

M. Reference Standards for Design

The following texts are some of the references to be used as a minimum requirement in determining the performance standards for improvements designed in this section.

1. Handbook of Hydraulics, King & Brater.

2. American Water Works Association (AWWA) Standards and Manuals.

3. American Society for Testing & Materials (ASTM) Standards.

4. Sewer Design And Construction, Manual No. 37, American Society of Civil Engineers.

5. Uniform Building Code, as adopted by City.

6. Uniform Plumbing Code, as adopted by City.

7. Erosion and Sediment Control Field Manual, published by the California Regional Water Quality Control Board.

8. Highway Design Manual, Traffic Manual (chapters 1, 2, 3, 7, and the lighting portions of chapter 9), Caltrans, latest editions.

9. California Manual on Uniform Traffic Control Devices, Caltrans latest edition

10. Standard Plans and Specifications, Caltrans latest edition.

11. Lighting Handbook, by Illuminating Engineering Society (IES)

12. Institute of Transportation Engineers Traffic Engineering Handbook, latest edition.

13. The Publications of the Portland Cement Association and the Asphalt Institute.

14. Uniform Fire Code, as adopted by Council.

PART II - SOILS AND GRADING CRITERIA

A. Soils and Foundation Report

1. Unless waived by the City Engineer, a soils report shall be prepared by a registered Professional Engineer, which shall include the results of an investigation of the following, based upon adequate test borings.

2. A structural foundation investigation and recommendation for all proposed facilities.

3. Report on investigation and recommendation for excavation and grading.

4. Report on investigation and recommendations for trench backfill for all soils encountered in the work to assure proper compaction.

5. Soil test on "R" values of soil for determining street sections.

6. The soils shall be tested for corrosivity using the procedures described in Appendix "A" of AWWA C-105. Any soil having a soil-test evaluation of 10 points or more shall require the use of cathodic protection.

7. Recommendations for landscaping to maintain adequate slopes for proper drainage and erosion control.

B. Final Soils Report

1. At the completion of a project, the soils engineer shall submit a "Final Report" to the Engineering Division.

2. The Final Report shall include a map showing the locations of all compaction tests, a summary of all compaction tests performed, a certification that the work was substantially completed in accordance with the plans and specifications, comments on any unusual or problem situations which occurred during construction.

C. Grading Plans, General

1. The developer's geotechnical engineer shall review the grading plans prior to City approval and certify that the plans are in compliance with his recommendations.

2. Grading shall conform to the requirements of the Grading Ordinance and Chapter 70 of the UBC. The following general grading requirements shall govern:

   a. Continuous soils inspection shall be provided by the developer's geotechnical engineer during the grading operation. Compaction reports shall be submitted and approval obtained prior to start of the next phase of the work. Reports shall be signed by a registered Professional Engineer.

   b. The developer shall submit the compaction test results for review by the City Engineer.

D. Rough Grading Plans

1. Rough grading plans shall be of adequate scale to show all the site information on one sheet.

2. Information to be shown on the rough grading plan shall include, but is not limited to:

   a. Pad elevation for each building;
   b. Rough grade at each property corner and at the front yard slope;
   c. Street grade at each property line;
   d. Rough street section at subgrade elevation;
   e. Site drainage pattern and inlet structures;
   f. Existing and proposed contours;
   g. Areas of cut and fills, and
   h. Earthwork quantities, for a balanced site.

E. Plot and Finish Grading Plans

1. There is no set format for the plot and finish grading plan. It should be on a separate sheet from the sheets showing the on-site utilities. The format will depend on (a) the scale, (b) the size of the project, and (c) the detail needed to show the required information clearly. Follow the checklist shown on Attachment "C". The information needed is as follows:

   a. Top of curb and gutter flowline elevations of the City street to which the project is draining.

   b. The "finished floor" and "pad" elevations of the buildings. The minimum finished floor elevation shall be set at six inches above the referenced flood plain plus predicted settlement.

   c. Design finished grade elevations at all lot corners.

   d. A section showing the relationship between the building foundation and the ground outside the foundation and the sideyard swales.

   e. Any walls, fences or structures whether existing (if they will remain), or proposed.

   f. Surface swales, at 2% minimum slope, except that 1.5% slopes on swales are adequate if area drains are provided, and if downspouts are connected to the drainage system.

   g. Existing contours and proposed elevations (or contours) clearly showing how the site will drain and the depth of cut and fill.

   h. Existing elevations on adjacent property and up to 50 feet beyond the property, sufficient to show the effect of the new development on those properties.

   i. On-site and off-site storm drainage system, as necessary to indicate existing and proposed drainage patterns.

   j. "Grading certificates" (see Attachment "B" for the wording of these items).

2. Each street intersection shall be shown with contours every 0.2' to show proper drainage patterns.

3. All street and on-site areas shall be provided with an adequate drainage system, as required by Part V, "Storm Drainage Design".

4. In hillside areas, the plans shall include an erosion control plan satisfactory to the Engineering Division. Such plan shall contain the following information:

   a. A delineation and brief description of the measures to be undertaken to retain sediment on the site, including, but not limited to, the designs and specifications for berms, sediment detention basins, dikes, mulches and erosion control planting, and a schedule for their maintenance and upkeep.

   b. Special consideration may have to be given to providing flow diverters or backfill stabilizers for steep streets and utility trenches.

5. All trees located on the property or affected by the development.

F. Retaining Walls

1. All retaining walls greater than 4 feet in height, as measured from the bottom of the footing to top of the wall, and walls supporting surcharge or supporting sloping backfill, shall be designed by a registered professional engineer, and supporting calculations shall be submitted along with the improvement plans.

2. Walls shall be designed in accordance with Section 2308 of the Uniform Building Code, or more restrictive criteria as recommended by the project soils engineer.

3. Walls supporting traffic loads within a horizontal distance equal to their height shall be designed with a two-foot earth surcharge.

4. Retaining walls which fall within this category shall be constructed of reinforced concrete or reinforced cement masonry.

5. Walls less than four (4) feet in height may be built out of pressure-treated timber, provided that the material shall be stamped or tagged with the appropriate seal from the American Wood Preservative Board (AWPP) Standard LP-22 or better.

6. Provisions shall be made for draining the water behind the wall to prevent build-up of fluid pressure.

7. Retaining walls in marine environment will require special design considerations as required by the City Engineer.

G. Trenching and Backfill

1. Utility trenches shall be designed to provide five feet of horizontal clearance between respective facilities.

2. Where the depth of cover over any utility is less than three feet or greater than 20 feet, the Design Engineer must provide load calculations, special trench designs, or both, to justify inadequate trench depths.

3. In existing public streets the standard "Tee" trench is to be used with no trenches left open overnight; temporary paving or plating is required.

4. The utility trench must be clear of the influence line from the bottom of the footing on adjacent structures (See Attachment "E").

5. Backfill material is imported and must meet the requirements of the Standard Technical Specifications and Standard Details.

6. In bay mud conditions, trenches will require continuous sheet pile shoring designed by a Registered Civil Engineer. See the Standard Technical Specifications and Standard Details for special requirements for trenching and backfilling in bay mud conditions.

7. Utilities shall be designed to provide 12" of vertical clearance between other utilities.

H. Storm Water Discharge Permit

1. The San Mateo Countywide Storm Water Pollution Prevention Program (SWPPP) has implemented a program to investigate and eliminate the illegal discharges of deleterious, toxic, or hazardous substances into the public storm water system. Half Moon Bay is a co-permittee to the "San Mateo County Storm Water Management Plan, 1993-1998", dated June 21, 1993. On September 15, 1993, the California Regional Water Quality Control Board (San Francisco Bay Region) issued Order No. 93-106, NPDES Permit No. CA 0029921, regulating inter alia, storm water discharges by the City of Half Moon Bay.

2. All construction activity related to grading requires conformance to the SWPPP. All construction activity where clearing, grading, and excavation results in a land disturbance must be covered by a General Construction Activity Storm Water Permit, issued by the State Water Resources Control Board.

3. Developers/Contractors must complete a "Checklist for Construction Requirements" and follow construction "Best Management Practices (BMP)" to prevent illicit discharges to the Storm Drainage System.

4. Engineers shall prepare erosion and sedimentation control plans and specifications to prevent erosion and to control sediment transport. Such plans shall follow the guidance of the "Erosion and Sediment Control Field Manual", published by the California Regional Water Quality Control Board

5. Sites which are within 200 feet of wetland, stream, pond, lake, river or bay will require even more stringent controls, as described in the Checklist for Construction Requirements.

PART III - STREET DESIGN CRITERIA

A. Public Streets, General

1. Caltrans Highway Design and Traffic Manuals shall be used in the design of the horizontal and vertical alignment.

2. The width of the street(s) shall be the minimum as shown on the Standard Detail A-1.

3. Wheelchair ramps shall be included at all intersections, and curb returns. The ramp shall conform to the City Standard Details.

4. For new subdivisions, provide a 5' wide Public Service Easement (PSE) on each side of the dedicated right of way.

B. Alignment

1. Minimum centerline radius of horizontal curvature shall be based upon the existing design speed of adjacent roadways or as determined by the City Engineer.

2. Roadway geometrics at intersections shall be designed to accommodate a standard WB-50, 60 foot turning radius to allow for emergency vehicle access.

3. Right-of-way line radii at intersections shall be a minimum of 15 feet, and face of curb radii shall be a minimum of 25 feet.

4. Where the angle of intersection is acute, or where a sight-distance problem may be anticipated, an increased property line radius may be required by the City Engineer.

5. The angle between centerlines of intersecting streets shall be as nearly right angles as possible, but in no case less than 80 degrees or greater than 100 degrees, except as approved by the City Engineer.

6. All streets entering upon any given street shall have their centerlines directly opposite each other or separated by preferably 300 feet, 200 feet minimum.

C. Gradients

1. Minimum longitudinal grade on any street, public or private, shall be 0.5% for curb and gutter, with a minimum fall of 0.2' around curb returns.

2. Transverse slopes shall be 3%.

3. The maximum grade on any street or alley shall be as follows:
   a. Arterials: 7%
   b. Collector streets: 12%
   c. Residential streets and hillside streets: 15%

4. Super-elevation may be provided on streets where required by the City Engineer. Use Caltrans Highway Design Manual for design of super-elevation.

5. Grades on both sides of the street shall be the same.

6. Vertical curves shall be as follows:

    a. Residential and industrial streets shall be designed to provide a minimum stopping sight-distance corresponding to a design speed equal to the prima facia residential speed limit plus five miles per hour.

    b. Major streets and collector roads shall be designed to accommodate vehicle speeds of 35 miles per hour or more.

    c. Vertical curves shall be used when the algebraic change in grade exceeds 1% and shall have a minimum length of 50 feet.

7. The maximum grade for a permanent cul-de-sac street turning area shall be 5%.

8. The maximum grade at any intersection of two streets shall be 10% within the intersection and for at least 50 feet from the curb return.

9. When any road is extended to a subdivision boundary for the purpose of providing a future connection to adjoining property, the subdivider shall submit an alignment and profile demonstrating the feasibility of such future extension.

D. Pavement, Structural Sections

1. All design shall conform to the State of California Gravel Equivalent Hveem Stabilometer method, using the R-value of the native soil and the minimum traffic indices T.I. as follows:

    a. For all cul-de-sacs a minimum T.I. of 4.5.

    b. For all residential streets a minimum T.I. of 5.0.

    c. All others, use the Traffic Index as determined by the City Engineer, based upon the projected volume of traffic.

2. Road surfacing on all classes of residential streets shall be asphaltic concrete, unless otherwise required and approved.

3. Minimum thickness of asphaltic concrete surfacing shall be four inches (4”).

4. Minimum thickness of Class 2 aggregate base material shall be eight inches (8”).

E. Private Developments

The above design criteria for public streets shall apply to all Private Streets in new developments, and to all off-street parking and loading facilities with the following additional requirements.

1. The Private Street and off-street parking facility can be designed with "crown" section or with "V" section.

2. If the cross section is crowned, then both sides of the street will have vertical curb and gutter. The curb heights will be 6" and the gutter width will be 12".

3. If the cross section is "V", then a concrete gutter shall be placed along the centerline of the street. The concrete gutter shall be three feet wide and six inches thick. Along each side of the street, a vertical curb with six inch curb- face will be placed.

4. It is permitted for private streets or off-street parking facility with "V" section and adjacent parking bays to place the three foot wide concrete gutter along the parking bay side of the street.

5. The minimum longitudinal gutter slope is 0.50%.

6. The cross slope for asphalt surfaces is 3.0% with a longitudinal slope up to 3.0%; however, 2.0% cross slope is permitted if the longitudinal slope exceeds 3.0%.

7. The minimum pavement section shall be four inch (4") A.C. on eight inch (8") Class 2 Aggregate Base.

8. Pavement shall be installed in two lifts, the final lift of paving shall be installed after all the construction activity is complete including housing construction and landscaping and just prior to final acceptance.

F. Speed Humps

Speed humps may only be installed where approved by the City's Traffic Committee, where an engineering evaluation concludes that the use of such control device is warranted.

1. Dimensions, spacing, location, and traffic control shall conform to the City's Standard Details.

2. Installation shall conform to the City's Standard Technical Specifications.

G. Sidewalks

1. Public and private streets shall be designed to accommodate concrete sidewalks, wherever practical.

2. Sidewalk construction shall consist of either a monolithic (integrally cast with the curb and gutter) or parkway style, as directed.

3. New sidewalk shall match existing construction (monolithic or parkway style).

H. Street Names

1. New street names shall be reviewed and approved in advance by the Fire Department and Sheriff's Office.

2. Names shall not conflict with other similar names within San Mateo County.

PART IV - DRIVEWAYS AND OFF-STREET PARKING AND LOADING FACILITIES

A. Driveways

Driveways, which are defined as any approach to or from a street over and upon an adjacent gutter, curb or sidewalk.

1. All driveway approaches shall conform to the City's Standard Details.

2. No driveway approach to off-street parking spaces shall be constructed which does not serve a garage, carport or garage space to the rear of the building setback line established by the Zoning Ordinance; provided, that a single driveway approach may be constructed to serve a vacant or unimproved lot.

3. For residential driveways, a driveway approach serving a single garage, carport or garage space shall not exceed 15 feet in width, measured from top of curb to top of curb; driveway approaches serving garages, carports or garage spaces for two motor vehicles shall not exceed 26 feet in width, and driveway approaches serving garages, carports or garage spaces for three or more motor vehicles shall not exceed 33 feet in width measured between the top of curbs at curb cuts.

4. For commercial driveways, the maximum driveway approach width is 33 feet between top of curbs at curb cuts. Driveway approach width shall match the existing driveway width beyond the sidewalk.

5. In no event shall the total width of all driveway approaches serving any parcel exceed sixty percent (60%) of the street frontage of the parcel.

6. There shall be twenty-two feet or a multiple thereof between driveway approaches on the same parcel; provided, that the City Engineer may approve a distance between driveway approaches which is not a multiple of twenty-two feet if he finds that the total number of parking spaces available on the street adjacent to the parcel is not reduced by allowing such other distance.

7. No driveway approach shall be located within thirty inches (30”) of any traffic signal, electrolier, fire hydrant, pedestrian crosswalk, curb inlet, or any other public improvement or facility of a similar nature.

8. All driveway approaches, whether on an improved or an unimproved street, shall be constructed to the established grade for that street at the right-of-way line. In the event no grade has been established for the street on which the driveway or driveway approach is to be constructed, such driveway or driveway approach shall be constructed to a grade at the right-of-way to be approved by the City Engineer.

9. Driveway ramps up or down to elevated or depressed parking lots or garages shall start at a point 3 feet beyond the right-of-way line, and shall have a grade no steeper than 20%, with a 6 feet long vertical curve located at the grade break (See Attachment "D-2").

10. Long, dead end driveways or private access roads shall be provided with fire truck

turnouts which may take the shape of a “hammerhead” at the end or as “shunts” on the intermediate turnouts. The maximum spacing in turnouts shall be 150 feet. Minimum outside turning radius shall be 48 feet; maximum inside radius shall be 22 feet; minimum straight section shall be 35 feet; minimum driveway width shall be 23 feet. (See Attachment “O”).

B. Parking Lots and Off-Street Parking and Loading Facilities

1. Consult the latest edition of the City of Half Moon Bay Municipal Code or Planning Manager for the schedule of the required number and type of parking spaces for each kind of development.

2. Grading and paving requirements shall conform to Part III, "Street Design Criteria."

3. The horizontal layout shall be as shown on Attachment "D-1". Parking lots shall be landscaped and permanently maintained by the property owner, per the City's Zoning Ordinance.

4. Parking lots and off-site parking and loading facilities shall be designed so that vehicles can enter or exit without backing across public sidewalks or rights-of- way. The turning radius of design vehicles shall be as shown on Attachment "D-2".

5. Compact stalls are allowed up to the maximum ratio allowed by Ordinance. Compact stalls must be permanently painted "Compact."

6. The location of compact parking shall be subject to approval by the City Engineer.

7. Parking facilities, except those in residential areas with four or less stalls, shall include a turn-around area satisfactory to the City Engineer.

8. Parking stalls at the end of rows abutting walls, fences, or other continuous fixed object shall have an additional width of 1.0 feet.

9. Parking stalls next to fences, walls, sidewalks, landscapes or structures shall contain wheel stops, curbs or other protective devices. Where a stall is adjacent to a landscaped median, a 12 inch wide concrete curb or mowband shall be used for passenger ingress and egress.

10. Parking stalls shall be clearly striped or marked.

11. Clearly marked handicapped spaces shall be provided in each parking facility as required by State law.

12. All parking spaces shall have a uniform dimension of 8-1/2' x 18', in a manner provided by the Zoning Ordinance.

C. Sidewalk Repair Criteria

1. The City Engineer or his designated representative, may require concrete, curb and gutter, sidewalks, or driveways to be repaired during review of plans submitted for Building Permit or Construction Permit.

2. Concrete repair may be performed by issuance of a Sidewalk or Encroachment Permit; if in the opinion of the Engineer, the work is minor in nature and involves generally less than $1000 worth of construction, such Sidewalk Permits are issued at the counter and administered by the Building and Inspection Division.

3. Major concrete repair, if in the opinion of the City Engineer requires a Construction Permit issued by Engineering and Construction, including the posting of bonds and insurance as stipulated in the application.

4. The concrete work is deemed in need of repair if any one of the following conditions prevail:

   a. The vertical displacement in two adjoining sections of concrete exceeds ½";

   b. The horizontal displacement between two adjoining sections exceeds 5/8";

   c. The rise in grade exceeds 4" over a horizontal length of 4'; and

   d. The drop in grade exceeds 3" over a horizontal distance of 4'.

   e. Spalling in excess of ¾" depth.

PART V - STORM DRAIN DESIGN CRITERIA

A. Hydrology Studies and Hydraulic Analyses

1. Drainage area master plans and calculations are to be submitted with all subdivision improvement plans, permit improvement plans for storm drains, street improvements and with all grading plans. The plans should include the following information:

    a. For the on-site drainage, a scaled Engineering topographic map shall be used. A second map of appropriate scale, preferably 1"= 100′ scale, used to show large off-site drainage basins.

    b. Delineated and labeled project site plan showing all existing drainage basins, both before and after development.

    c. The area in acres and the flow (Q) in CFS of all drainage entering and leaving the site prior to development, as well as after development.

    d. Drainage area and design flows for all the drainage facilities to be constructed.

2. The objective of section is to maintain post development peak runoff rates, and average volume of runoff, similar to existing, pre-development levels. This will minimize the impact to downstream drainage systems, eliminating scour and erosion.

3. Hydraulic calculations shall accompany the plans as follows:

    a. Show the amount of run-off determined for each of the areas for the 100 year storm.

    b. Show the peak flow of the pipes and inlets, energy grade lines (EGL), and pipe slopes of the proposed drainage system.

    c. The project shall make provisions for storage and release of storm water at a rate which will not exceed previously existing conditions release shall be provided to a publicly maintained street or storm drain.

    d. The amount of post development storage can be determined using the Synthetic Unit Hydrograph or other means satisfactory to the City Engineer. (See Attachment “M”).

    e. Using the Rational Method may be satisfactory for small drainage areas (< 5 acres); larger areas may require more sophisticated methods, as approved by the City Engineer.

B. Size Criteria

1. Closed conduits should be designed for the full flow condition. They may be allowed to operate under pressure, provided the hydraulic gradient is 0.50 feet below the intake lip of any inlet, which may be affected after allowance for settlement. In no event shall the energy gradient rise above the lip of the intake.

2. Use the Manning Formula for determining the flow in pipes, with the minimum "n" value of 0.013 for RCP or PVC; "n" = 0.024 for CMP, and other values as recommended by King's "Handbook" for miscellaneous conduit shapes.

3. Match soffits unless pipes are submerged, whereby it is OK to match inverts. Minimum design velocity shall be 2.0 fps for the design flow.

4. For areas less than 200 acres, to determine peak-flow, use rational formula Q=CIA. See Attachment "F" for the IDF Curve to determine the rainfall intensity, using the 100-year storm. Runoff coefficients shall be as follows:

"C" Factor	Description
0.30	Parks and Open Areas
0.50	Residential (R-1) Areas
0.70	Multiple Dwelling and Single-Family Attached Areas
0.90	Paved Areas
0.95	Roof Area and Driveway Area of Townhouses Bordering Streets

(For combined paved and unpaved areas, a "weighted" C-factor shall be used.) The initial time of concentration may be estimated from the equation below:

$$T_c = 10 + 0.0078 \left(\frac{L^{3/2}}{H^{1/2}} \right)^{0.77}$$

where: L = the maximum length of travel, in feet.

H = the difference in elevation along the effective slope line, in feet.

T_c = the time of concentration, in minutes.

5. For losses in bends and structures, use the following formula:

$$H = \frac{K V^2}{2g}$$

where K = 1.25 for 90° bends, K = 0.75 for bends between 45° and 90°, and K = 0.50 for structures and bends 0° - 45°.

6. Minimum size pipe for publicly-maintained systems shall be 12" in diameter.

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C. Alignment

1. Conduits 24 inches or less in diameter should be laid on straight alignment and uniform grade between consecutive manholes.

2. Horizontal and vertical curves are not recommended. However, in cases where justification can be shown, limited use of such designs will be considered. A design report or letter report will be required from the design engineer to document the justifications for utilizing a curved alignment.

3. Radii of curvature must be of sufficient length to limit deflections to 1/2 the manufacturer's recommended allowable deflection. Complete and accurate details shall be furnished, including: the exact location of such curved sewers, length of curve, radius of curvature, and stationing of curve points.

4. Where curved alignments are utilized, the City may require the following:

   a. Slope greater than minimum slope for the size of pipe.

   b. Manhole spacing of less than 300 feet.

   c. Provide a licensed professional land surveyor or engineer to continuously monitor installation of the curved pipe during construction.

   d. Video inspection of curved pipes prior to final acceptance.

5. The following are common locations required for manholes/drainage structures:

   a. Where two or more conduits join,

   b. At intermediate points on long pipe runs, maximum spacing of 300 feet,

   c. Where the conduit changes in size,

   d. At sharp curves or angle points in excess of 10 degrees, and

   e. Points where an abrupt change of the grade occurs.

6. Minimum horizontal clearance to other utilities shall be five feet.

7. Minimum vertical clearance from other utilities shall be one foot.

8. Minimum cover from top of pipe to surface shall be three feet.

9. The maximum angle from in-going pipe to outgoing pipe shall be 90 degrees.

10. Minimum horizontal clearance form any structure shall be based on the criteria of keeping the bottom of the trench clear of the "1 to 1" plane from the bottom of the structural footing (Attachment "E").

D. Materials

1. Materials shall be Reinforced Concrete pipe for pipes 12" in diameter and larger, and PVC for pipes less than 12" conforming to the requirements of the City's Standard Technical Specifications. Minimum "D" Load values for RCP shall be 1350.

2. Trench load calculations shall be provided where depth of cover is less than three feet and greater than 20 feet.

3. For plastic pipe the maximum allowable deflection shall be 3%.

E. Storm Drain Design for Private Street Systems

1. All concentrated run-off shall be carried in to an on-site stormwater treatment facility.

2. The minimum pipe diameter is eight inches. Minimum velocity is 2 fps for the design flow.

3. All downspouts from buildings shall be shown with their relationship to the storm drain system. In no case shall the downspouts be permitted to discharge over walkway or a sidewalk or porch, or patio.

4. Parking bays should drain to a grass/vegetated swale, then into the concrete gutter of the private street.

5. Water from valley gutter and drainage devices shall be intercepted by an appropriately sized stormwater treatment facility and piped to the nearest storm drain in the street.

6. Inlets shall be sized such that the minimum inside width of the structure is 1 foot larger than the inside diameter of the out-going pipe.

7. Inlets over 4 feet deep shall have a minimum opening of 24" x 30", with steps to allow access.

F. NPDES Permit Requirements

1. Every project must have a completed “NPDES Permit Compliance Checklist” (Attachment ”P”).

2. The checklist shows the requirements needed in order to prevent stormwater pollution as part of the County-wide Stormwater Pollution Prevention Program (STOPPP).

3. In addition to erosion control plans, the applicant will have to provide for permanent source control measures selected from the City’s “Model List of Source Control Measures”.

4. Group I Projects (over 1 acre of impervious surface) will need to obtain a Notice of Intent (NOI) with the State Water Resources Control Board, and must prepare a Stormwater Pollution Prevention Plan (SWPPP).

5. Developers will be asked to sign an Operations and Maintenance Agreement for any new permanent stormwater treatment control measures.

6. Plans will need to be approved by the San Mateo County Mosquito Abatement District. See the County's Vector Control Plan for guidance on how to address potential mosquito breeding habitat.

7. Group I projects in the hillside area, will require hydrograph modification per City's SWPPP.

PART VI - SANITARY SEWER SYSTEM DESIGN CRITERIA (Public & Private)

A. Size Criteria

1. Definitions

   a. The main is that portion of the sewer system between manholes, or between manhole and the end of the main line provided with a lamphole.

   b. A lateral is that portion of the sewer system which is connected to the main and which serves one parcel or building.

2. The gravity sewer main lines shall be a minimum of eight inch (8") in diameter except that dead end lines of less than 300 feet can be 6 inches in diameter. Laterals shall be a minimum of 4" in diameter for single family residences and 6" for commercial, duplex and multi-family lots.

3. Laterals shall be placed at least 3' below top of curb grade elevation with 2% minimum slope and with a cleanout 6" from property line on private property (at the right-of-way or easement line).

4. 6”, 8", and 10" main lines shall have a minimum slope of 0.3%; 12", 14" and 15" main lines shall have a minimum slope of 0.2%; slopes to be adjusted to account for partial flow to maintain the minimum velocity.

5. For gravity flow, use the Manning formula with a minimum design velocity shall be 2 fps for the design flow, and with a design "n" factor of 0.013.

6. Lampholes are acceptable at the end of line if the distance is not more than 100' to the downstream manhole.

7. Design flows to be submitted to City for approval. (see Attachment "J" for the sewage generation worksheet).

8. Each lateral must have an approved cleanout. Only one lateral is allowed per parcel.

B. Alignment

1. Under normal conditions, sewers should be located in street right-of-way five feet south or west of the street right-of-way centerline. When it is necessary to locate sewers in easements, such easement shall be at least fifteen feet in width. Sewers 24 inches in diameter or larger, or over twelve feet in depth, may require wider easements.

2. Conduits 24 inches or less in diameter should be laid on straight alignment and uniform grade between consecutive manholes.

3. Horizontal and vertical curves are not recommended. However, in cases where justification can be shown, limited use of such designs will be considered. A design

report or letter report will be required from the design engineer to document the justifications for utilizing a curved alignment.

4. Radii of curvature must be of sufficient length to limit deflections to 1/2 the manufacturer's recommended allowable deflection. Complete and accurate details shall be furnished, including: exact location of such curved sewers, length of curve, degree of curve (or radius) and stationing of curve points.

5. Where curved alignments are utilized, the City may require the following:

   a. Slope greater than minimum slope for the size of pipe.

   b. Manhole spacing of less than 300 feet.

   c. Provide a licensed professional land surveyor or engineer to continuously monitor installation of the curved pipe during construction.

   d. Video inspection curved pipes prior to final acceptance.

6. The following are common locations required for manholes:

   a. Where two or more sewer mains join,

   b. At intermediate points on long pipe runs, maximum spacing of 300 feet,

   c. Where the conduit changes in size,

   d. At sharp curves or angle points in excess of 10 degrees, and

   e. Points where an abrupt change of the grade occurs.

7. Horizontal clearances between water lines and sewer lines shall be 10 feet or unless otherwise approved by the City Engineer. Clearances between all other utilities shall be 5 feet.

8. Minimum vertical clearance from other utilities shall be one foot; and sewers must clear underneath water lines.

9. Minimum horizontal clearance from any structure shall be based on the criteria of keeping the bottom of the trench clear of the "1 to 1" plane from the bottom of the structural footing (Attachment "E").

10. No sewer laterals shall be connected to manholes.

11. Minimum cover over gravity sewers and force mains shall be three (3) feet.

C. Materials

1. Materials for sanitary sewers shall be PVC conforming to the City's Standard Technical Specifications.

2. Sanitary sewers will be required to pass a low pressure air test or water test prior to acceptance.

D. Maintenance Requirements

1. The City will maintain sanitary sewers in public streets, private streets, and easements up to the cleanout.

2. Property owners must maintain the cleanout and the pipe beyond the cleanout.

PART VII - TRAFFIC CONTROL, SIGNING AND LIGHTING

A. Traffic Studies

1. Traffic studies may be required by the City Engineer in order to adequately assess the impact of a proposal on the existing and/or planned street system. Unless waived by the City Engineer, a detailed study will be required for a non-residential development proposal when it will generate at least one hundred (100) vehicles per hour during the peak hour, or any residential development with one hundred-fifty (150) or more dwelling units.

2. This study shall be the responsibility of the developer and must be prepared by a registered professional engineer with adequate experience in transportation engineering.

3. All studies must first be reviewed and approved by the City Engineer.

4. Guidelines for traffic studies are as outlined in Transportation Impact Analyses for Site Development: An ITE Proposed Recommended Practice, Institute of Transportation Engineers, latest edition.

5. The developer shall submit a design and pay the cost for the modification of traffic signals adjacent to the development, which may need to be relocated or revised because of the development or street widening accompanying that development.

6. When it can be shown that a particular development impacts a street or streets to a point that a traffic signal is deemed necessary for the safety and efficiency of vehicles and/or pedestrians, the developer shall be responsible for the cost and installation.

B. Traffic Signal Design Criteria

1. The plans shall be developed in accordance with Caltrans Standard Specifications Section 86, "Signals, Lighting and Electrical Systems," Caltrans Standard Plans, and the California Manual on Uniform Traffic Control Devices, and shall include as a minimum the following items in the general order and with the basic content indicated.

   a. One set of the construction plans for a traffic signal installation must be submitted when the design engineer makes his normal submission of improvement plans to the City. This requirement also applies to the second and succeeding plan submissions when plans are revised prior to plan approval.

   b. The plans must provide for all removals, relocations, temporary signals, and delivery of salvaged materials to a specified location in the City's Corporation Yard. Located at 880 Pine Stone Road, the end of Stone Pine Road.

   c. All existing traffic signal equipment, pedestrian access routes, and street lights shall remain in operation until new installations are energized.

d. Minimum conduit size shall be two inches (2"), Schedule 40 PVC electrical conduit.

e. Any existing run which is disturbed shall be re-pulled completely with all old wire removed, and new wire installed.

f. No conductor splicing shall be permitted, except in pullboxes, terminal compartments, control cabinet and pedestal cabinet.

g. All detectors shall be centered in striped traffic lanes.

h. In appropriate traffic lanes the detector loop closest to the stop bar shall be capable of detecting bicycles. Bicycle lanes shall be equipped with detector loops capable of detecting bicycles. All detector loops capable of detecting bicycles shall be marked in accordance with the latest edition of the Caltrans Standard Plans, Specifications, and the California Manual on Uniform Traffic Control Devices.

c When feasible on a new street construction, all loops shall be installed prior to the installation of the final pavement lift.

i. For advance detectors, avoid installing conduit in the medians.

j. In paved areas, use concrete pull boxes, with steel covers.

k. Use #3-1/2 pull boxes on detector only runs, #7 pull box adjacent to controller, and #5 pull box everywhere else.

l. Emergency vehicle preemption shall be provided at all signalized intersections by a 3M Opticom Priority Control System.

2. The developer will be responsible for the energy and maintenance costs for any and all traffic control devices and lighting installed prior to acceptance of the improvements by the City Engineer.

C. Street Lighting Design Criteria

1. In public streets, street lights conforming to City of Half Moon Bay Standard Drawings shall be installed on all public streets in locations as required by Engineering & Construction.

2. Design street lighting to maintain illumination levels according to the following table:

Recommended Illumination Levels
By Illuminating Engineering Society (IES)

Road Classification	Area Classification	Light Level in Average (Footcandles) (See Note a)	Uniformity Ratio (Average to Minimum)
Collector	Commercial Intermediate Residential	1.2 0.9 0.6	4 to 1
Local	Commercial Intermediate Residential	0.9 0.7 0.4	6 to 1
Sidewalks	Intermediate Residential	0.6 0.2	6 to 1
Intersections		0.8	

Notes

a. Based upon asphalt road surface with diffuse or slightly specular reflectance.

b. Based upon using IES Type III light distribution luminaires.

3. Provide distribution cut-off, appropriate IES light Distribution luminaires and shielding to prevent over-illumination onto adjacent private property.

4. In private, residential streets, the poles shall be designed for a minimum height of 8' and a maximum height of 16'. Design street lighting to maintain an average horizontal illumination of 0.25 foot-candles with a 10:1 ratio of average to minimum illuminance.

5. All luminaires shall be LED, as indicated on the plans and described in the specifications; all circuits shall be 240 Volts and wired directly to a service pedestal within the public service easement.

6. Poles shall be anodized aluminum or steel with two coats of factory-applied paint, applied per City Specifications. Shop drawings of the pole and fixture shall be submitted to the City Engineer for approval.

7. Poles, mast arms and footings shall be designed to resist the overturning caused by a 100-mph wind load.

8. In addition to the illumination provided above, local street lighting shall be located at:

   a. All intersections.

   b. Near end of cul-de-sac when center line of intersecting street to end of cul-de-sac exceeds 180 feet.

   c. Abrupt change in street alignment or grade or other unusual condition.

d. Mid-block locations when intersection center lines are more than 180 feet apart.

e. Location where special police traffic control aid is required.

9. Each street light shall be provided with a Caltrans Standard No. 3-1/2 splice box containing a 5-amp in-line fuse for each hot leg, and 1/2" diameter by 8 feet long copper ground rod.

10. All new conduit shall be a minimum of two inches (2") in diameter and shall be designed for a maximum fill of 26%. Existing conduits may be sized for a maximum of 40% fill.

11. Street lights for subdivisions shall be designed to be metered separately from other usage. Meter shall be installed within a separate Type III BF Service Pedestal with a single 200 amp (min.) meter.

12. After street light installation is complete, arrange for the City's Engineering Division to "yellow tag" the facility so that the circuit can be energized by PG&E.

D. Signing and Striping

1. All regulatory, warning and route marker signs shall be made in accordance with the standards indicated in Caltrans Standard Plans and Specifications, latest edition, and the “California Manual on Uniform Traffic Control Devices,” latest edition.

2. Pavement and curb markings shall be in accordance with the requirements of the latest editions of the City's Standard Details and Standard Technical Specifications, Caltrans Standard Plans and Specifications, and the “California Manual on Uniform Traffic Control Devices.

3. Striping shall be thermoplastic in accordance with the requirements of the latest editions of the City’s Standard Details and Technical Specifications, Caltrans Standard Plans and Specifications, and the “California Manual on Uniform Traffic Control Devices.

E. Maintenance Requirements

1. The City will maintain street lights, signs and striping in publicly dedicated streets only.

2. Private street lights and traffic control devices shall be maintained by the homeowner's association or property owner.

PART VIII - PRIVATE DEVELOPMENTS: SUBMITTING SHOP DRAWINGS, CUT SHEETS AND REVISIONS AND "AS-BUILT" DRAWINGS

A. Submittals and Shop Drawings

1. To ensure that the specified products are furnished and installed in accordance with design intent, procedures have been established for advance submittal of design data and for its review and approval or rejection by the Developer's Engineer.

2. The term "shop drawings" as used herein includes fabrication, erection and installation, layout, and setting drawings, list or schedules of materials and equipment; manufacturer's standard drawings, descriptive literature, catalogues and brochures, performance and test data; and all other drawings and descriptive data pertaining to materials, equipment, and methods of construction as may be required to show that the materials, equipment, or systems, and the positions thereof, conform to the Contract requirements.

3. Contractor shall be required to check and verify all field measurements and shall submit for review, with such promptness as to cause no delay in his own work or in that of any other contractor or subcontractor, all shop or setting drawings and schedules required for the work of the various trades. Shop drawings shall be prepared at the Contractor's expense and shall be sent to the office of the Developer's Engineer.

4. Shop drawings shall be submitted to the Developer's Engineer, including manufacturers' literature, brochures, catalog cuts, design calculations, and other pertinent printed matter or data.

5. After the Developer's Engineer or Architect has performed his review of shop drawings, he will stamp five sets and he will submit them to the City of Half Moon Bay for review. The City will return three copies of the drawings with appropriate designation: approval, conditional approval, or disapproval.

6. When shop drawings and/or other submittals are required to be revised or corrected and resubmitted, as directed, Contractor shall make such revisions and/or corrections and resubmit the drawings or other material in the same manner as specified in Paragraph 4 above.

7. The Developer's Engineer and the City will review and return shop drawings with reasonable promptness, so as not to cause any delay in the work.

B. Cut Sheets

1. One day prior to starting work on the grading, underground utilities, curb and gutter, the Developer's Engineer must submit "Cut sheets" to the City Engineer.

2. Cut sheets shall show the proposed grade, the existing grade, and the amount of cut or fill for each grade stake to be set on the job.

C. Revisions to Approved Sheets

1. Plans will have been thoroughly checked by the City and/or its authorized representative, but such checking and/or approval does not relieve the developer from his responsibility to correct errors, omissions or make changes required by special conditions.

2. Any change made to a set of plans after they have been signed will require documented revision. These changes will be reviewed and signed by the City Engineer prior to the installation of the improvements.

3. All areas covered by the proposed change shall be enclosed in a numbered "bubble" or "cloud". Refer to Attachment "G" for correct nomenclature for making revisions.

4. All sheets affected by the proposed revision shall be included in the set submitted for checking.

D. Addition of New Sheets

1. If a proposed revision requires the addition of a new sheet, it shall be added to the back of the existing sheet, the new sheet numbered with a suffix "B", and the original sheet renumbered with the suffix "A".

2. When a new drawing is added, all other sheets directly affected by it shall refer to the new drawing (i.e., cross reference).

3. If an existing drawing is being completely revised, the existing sheet will be marked "Void - Replaced by Sheet # -B. This shall be noted as a revision on the voided sheet.

   a. The revised drawing number shall have the suffix "B" and the original drawing number shall have the suffix "A".

   b. The drawing being voided shall have a large "X" put through the middle of the drawing, except for the title block area.

      i. The "X" is not to go through the title block.

      ii. There shall be no bubbles added to a sheet being voided.

E. Record Drawings

It should be noted that if the above revision procedures have been followed, the plans will already reflect "As-Built" conditions, and only Note 5. on the following page would pertain.

1. Before final approval of the project plans, it shall be the applicant's responsibility to make arrangements with the design engineer for the preparation and submittal of the Record Drawings. The applicant shall submit evidence that such arrangements have been made with the City Engineer.

2. The engineer shall perform sufficient field work to verify that the Record Drawings are in substantial compliance with the field conditions.

3. The Record Drawings shall be the original tracings, or permanent mylar reproductions of the original tracings, good quality, showing the engineer's certificate in accordance with Attachment "B", along with his signature.

4. Indicate "As-Built" changes as a revision to the drawings as described above with a "Cloud", a Numbered Note, and "'As-Built' Conditions Noted" shown in the Revision Block.

5. If no changes occurred, simply write "Record Drawings" in the Revision Block.

PART IX - SPECIAL REQUIREMENTS FOR UTILITIES LOCATED ON OR NEAR CLOSED LANDFILL AREAS

A. General

1. Projects within the limits of closed landfill areas require special consideration be given to the design of underground utilities. The expected settlements will have an impact on future site improvements and, therefore, require an analysis of differential settlement based on the depth of bay mud, depth of refuse, and the amount of fill material placed over the low permeability landfill clay cap. Additionally, the low permeability landfill clay cap must be avoided and preserved at all times during construction.

2. The limits of the closed landfill area shall include a "near" area which extends a minimum of twenty (20) feet outside the limits of the impermeable clay cap layer.

3. The design engineer must consult the project geotechnical report during the initial design phase, verify settlement projections, and then the Geotechnical Consultant must review and approve the grading and utility plans before the initial submittal is made to the City.

B. Design Intent

1. Achieve acceptable performance as the site settles.

2. Avoid penetration of the low permeability landfill clay cap (barrier layer).

3. Minimize future maintenance requirements.

C. Submittal Requirements

1. Post Landfill Closure Settlement Monitoring Data covering a minimum period of two years.

2. Project Geotechnical Report containing at a minimum the following:

   Background information including original landfill grading plan, historical sequence of landfill operations, previous uses and topography.

   a. Information about Bay Mud properties from previous laboratory tests.

   b. Information about landfill waste characteristics.

   c. Past and expected future additional fill that will or has contributed to settlement.

   d. Bay Mud settlement calculations.

   e. Landfill waste settlement calculations.

   f. Profiles used for settlement calculations.

g. Settlement verses time plots.

h. Fill locations and amounts.

i. Computer program input and output hardcopy files.

j. Calculations for the compression coefficient (*Cc)* and recompression coefficient *(Cr)*.

k. Maps of Existing Topography, Utilities, and Landfill Gas Collection Systems preferably at a scale of 1" = 40'.

l. Barrier Layer and Refuse Depth Contour Map at a minimum scale of 1" = 40' and a depth contour interval of 1 foot.

m. Contour Map of Anticipated Settlement at a minimum scale of 1"=40' and a settlement contour interval of 0.2 foot.

3. Utility Design Documentation showing designed (pre-settlement) and finished (anticipated post-settlement) utility profiles at a minimum scale of 1″= 40′ (horiz.) and 1″ = 4′ (vert.). Design documentation shall also include settlement design calculations.

4. Utility Inspection, Maintenance, and Ground Settlement Monitoring Manual (Refer to paragraph E. below).

D. Utility Design Criteria

1. A factor of safety shall be applied to the design of pipe slopes. The project geotechnical report shall include a recommendation for an appropriate factor of safety based upon sound engineering judgment and the availability and reliability of the supporting data used to predict settlement. Consideration should be given to the varying thickness of refuse, Bay Mud, recent fill, potential for void collapse within the refuse, and the time history of refuse and fill placement.

2. Particular care shall be given to the slope of gravity utilities so that flow reversal is not created as settlement occurs. Where possible, the direction of flow should be planned such that differential settlements increase rather than decrease the slope of the utility line.

3. Utility connections to pile-supported structures shall be designed to accommodate the total estimated settlement of the surrounding ground.

4. Minimize additional fill over the barrier layer in refuse areas in order to minimize differential settlement.

5. Avoid penetration of the barrier layer. Consideration should be given to minimum cover over utilities, depths of required trench bedding, required thrust block dimensions, minimum depths of cathodic protection appurtenances, minimum excavations for tapping sleeves and valves, utility crossing clearances, utility structure dimensions, etc. A checklist shall be submitted to the City Engineer indicating due consideration for these items (See Attachment "K" for checklist). If the barrier layer is

inadvertently penetrated, the utility trench or excavation shall be lined with an impermeable material and effectively tied back into the barrier layer.

6. Where the potential for gas migration into the utility trench exists, gas barriers such as plugs or collars of impermeable material shall be provided at regular intervals along building service laterals.

7. Align utilities to avoid landfill areas and/or crossing of landfill boundaries wherever possible.

8. Minimize storm drainage piping by sheet flowing surface runoff to the maximum extent possible.

9. Provide leak detection vaults for pressure utilities at a minimum spacing of 250 feet.

10. Pipe materials:

    a. Gravity Pipes:
    Sanitary Sewer

    Materials shall be PVC AWWA C-900 conforming to the requirements of the City's Standard Technical Specifications.

    Storm Drain

    Materials shall be polyethylene AWWA C906 conforming to the City's Standard Technical Specifications.

    b. Pressure Pipes:

    Sanitary Sewer Force Main and Water

    Sizes 4" and larger in diameter - Materials shall be polyethylene AWWA C906 conforming to the City's Standard Technical Specifications.

    Sizes ½" through 3" in diameter - Materials shall be polyethylene AWWA C901 conforming to the City's Standard Technical Specifications.

    Pressure pipes shall be enclosed in a polyethylene containment pipe conforming to the City's Standard Specifications for Utility Polyethylene Containment Pipe System.

11. A gate valve shall be provided on the water line within 50 feet outside the landfill boundary.

E. Utility Inspection, Maintenance and Settlement Monitoring Program

1. A plan for periodic inspection to determine the effects of settlement on underground utilities is required. The ground settlement monitoring program is to be implemented in order to obtain data which will aid in creating accurate projections for future maintenance requirements. At a minimum the inspection, maintenance and

settlement monitoring program shall contain the following:

a. Discussion on settlement characteristics pertinent to the site.

b. Discussion of each utility and/or utility structure and its intended function with respect to settlement.

c. Discussion on inspection, maintenance, repair and settlement monitoring procedures for each utility line, junction box, and service connection, including recommended maintenance schedules.

d. Appropriate forms to document inspections and maintenance performed as well as the monitoring surveys performed comparing actual verses projected settlement.

e. The settlement monitoring points and benchmarks shall be established to the satisfaction of the City Engineer and the monitoring program shall begin as soon as the structures and final grades are completed. On-site benchmarks shall be established on pile-supported structures.

f. To ensure the quality of the survey data, an elevation loop from an off-site benchmark shall be run when the on-site benchmarks are established. The accuracy of the elevations recorded shall be to the nearest one hundredth of a foot. This shall be done before any monitoring points are surveyed. This loop shall be run every five years or whenever one of the on-site benchmarks is disturbed.

g. The monitoring points shall be surveyed every six months for the first two years after the structures and final grades are completed. The accuracy of the elevations recorded shall be to the nearest one hundredth of a foot.

h. The Developer shall provide a minimum two year warranty against defects in material, workmanship, and labor. If the Inspection, Maintenance, and Monitoring Program is implemented as specified herein, and after two years the monitoring information indicates acceptable performance of utilities as determined by the City Engineer, then the City will accept and take over maintenance of the utilities which are planned for public maintenance. Should the Inspection, Maintenance, and Monitoring Program not be implemented as specified, or if monitoring information reveals unacceptable performance of utilities as determined by the City Engineer, the City Engineer may request additional warranty period time until an acceptable performance is achieved.

F. Special Drawings for Utilities on Landfill

1. The City Engineer will meet with the Developer to review any special details or specifications, which need to be incorporated into the plans prior to completing the plan review process.

2. Developers are required to implement whichever special details and specifications are deemed appropriate by the City Engineer.

ATTACHMENT A - 1

GENERAL NOTES

1. Elevations and locations of all existing utility crossings shall be verified by the contractor prior to start of any construction affecting said lines. Contact USA at (800) 642-2444 at least two working days prior to excavation.

2. All applicable work and materials shall be done in accordance with the City of Half Moon Bay Standard Technical Specifications and Details, prepared in the office of Engineering and Construction, including modifications contained herein.

3. The Contractor shall restore all damaged, removed or otherwise disturbed walls, fences, services, utilities, improvements or features of whatever nature, due to contractor's work.

4. The Contractor shall coordinate his work with the installation of facilities by PG&E, AT&T, and Cable TV installation. Valve boxes and manholes, and structures to be set to grade in concrete after paving.

5. All street monuments and other permanent monuments disturbed during the process of construction shall be replaced before acceptance of the improvements by the City Engineer.

6. The Contractor shall give the City Engineer two working days advance notice for inspection. (650)726-8265.

7. No trees 12" diameter or larger measured between 6" and 36" above grade, shall be removed without the written consent of the City Engineer. Tree removals, if necessary, shall conform to Chapter 12.18 – Sidewalk and Tree Maintenance and Liability from the City's Municipal Code.

8. For lane closures, the Contractor shall prepare a traffic control plan and obtain approval of the City Engineer before commencing work. The Contractor shall provide flagmen, cones or barricades, as necessary to control traffic and prevent hazardous conditions per the California Standard Plans, Specifications, and Manual on Traffic Control Devices, latest edition.

9. Pedestrian, public accesses, wheelchair accesses shall be maintained during the construction to the satisfaction of the City Engineer.

10. No trenches or holes shall be left open overnight; use steel plating or hot-mix asphalt as required to protect open trenches overnight.

11. The Contractor shall control dust at all times and sweep streets as often as necessary during construction as required by the City Engineer.

12. All revisions to this plan must be reviewed and approved by the City Engineer prior to construction and shall be accurately shown on revised plans stamped and signed by City Engineer prior to the installation of the improvements.

13. All construction staking for curb, gutter, sidewalk, sanitary sewers, storm drains, water lines, fire hydrants, electroliers, etc., shall be done by a registered Civil Engineer or licensed Land Surveyor.

ATTACHMENT A - 2

NOTES FOR WORKING IN UNINCORPORATED AREAS

1. Contractor shall obtain an Encroachment Permit from the County of San Mateo - Department of Public Works prior to commencing any work within the county road right-of-way. Contractor shall abide by all special provisions of the Encroachment Permit including the provision that drainage be maintained throughout the duration of the work and returned to its pre-construction condition at the end of the work.

2. No work shall be done at any waterline when it crosses a sewer main (including service laterals) without the inspector for the local sewer district present to observe the work.

3. No sanitary sewer main or service lateral may be cut to facilitate the laying of the water main or water service lines.

4. If sanitary sewer mains or service laterals are accidentally damaged, all repairs shall be made in accordance with the repair standards of the County of San Mateo's Public Works Office. No repair may be commenced until the County of San Mateo's Public Works Office has approved the procedure.

5. When inspections are to be made by County personnel (road department and local sewer district), arrangements shall be made a minimum of two (2) working days in advance of the inspection.

6. Temporary trench paving, consisting of hot-mix asphalt, will be required in paved areas at the end of each working day.

7. The Contractor's Engineer shall stake the location of water main, including fire hydrants and water services, for the City and County Public Works review at least 48 hours in advance of construction.

ATTACHMENT B

The following certificates shall be placed on all improvement plans and signed by a licensed professional.

"GRADING CERTIFICATE" ***(TO BE SIGNED AT PROJECT COMPLETION)***

"Prior to occupancy, a licensed civil engineer shall certify to the City Engineer that the site has been graded to the elevations shown on the Plan, and that the site will drain properly."

R.C.E .*I* R.G.E.

(Signature) (Date)

"GEOTECHNICAL ENGINEER'S CERTIFICATE"

"Reviewed and Approved for Conformance with Soils Report Requirements"

R.C.E .*I* R.G.E.

(Signature) (Date)

RECORD DRAWINGS (To be signed at project's completion)

These Record Drawings are based on limited field review and field surveys, as necessary by _____, and we and the City of Half Moon Bay assume no liability for the accuracy of the information.

(R.C.E./LLS/AIA/C-16, as appropriate)

(Signature) (Date)

ATTACHMENT C

PLOT AND FINISH GRADING PLAN REQUIREMENTS
FOR
PRIVATE DEVELOPMENT

DESIGN STANDARDS FOR DRAINAGE

1. GENERAL

A. Drainage - both existing and proposed - is the basic consideration in the design of grading. Providing for adequate drainage onto and off of the proposed site is one of the most important aspects of grading plan design since the best compacted fill or graded slope can be completely nullified by inadequate drainage provisions.

B. These requirements are based on guidelines listed in Chapter 33 of the Uniform Building Code. These are minimum standards, not maximum provisions, which can guarantee adequate drainage under all conditions. Depending on the topography, layout, or soil conditions, more restrictive requirements may be necessary as determined by the reviewing official.

C. The designer, in coordination with the soil engineer, must determine the necessities of each individual site on its own merits, and design for problems peculiar to the site. Long-term performance must be considered with enough conservatism in design to take into account the general lack of maintenance received by residential sites.

D. Grading and drainage plans must be signed, dated and stamped by a registered architect or civil engineer, on the original drawing.

E. For hillside lots, a geotechnical engineer must submit a certified soils report, and stamp the grading plan.

2. DRAINAGE GRADIENTS

A. The following minimum gradients for drainage are required for development of private property: (See Attachment "C-1"):

Dirt/Grass ……..... …… - 2%
Asphalt Driveway ….. - 1% (longitudinal flow) 2% (sheet flow)
Portland Cement Concrete…- 0.5% (longitudinal swale)*;* 1% (sheet flow)
Terrace/Interceptor Drains ...- 5%

B. The following are maximum gradients:

Graded earth swales … - 6%
Driveways …….. - 20% (See Attachment "D-2")

ATTACHMENT C (continued)

3. CUT AND FILL SLOPES

A. All cut and fill slopes shall be no steeper than 2:1; for steeper slopes, a soils engineer must submit a soils report, and stamp, date and sign the original drawing of the grading plan.

B. Drainage standards for slopes are established to prevent excessive erosion and subsequent instability. No surface water from buildings or pads should be permitted to flow over the slopes. Drainage from the natural slopes above the graded cut slope should be diverted away by a terrace drain or a "V"-ditch. (See Attachment"C-2").

PLAN REQUIREMENTS

A. A plot and finish grading plan is required to be submitted with all applications for a building permit. The following is a check list of items which as a minimum, must be shown on the plot and finished grading plans:

___ 1. The site address.
___ 2. The owner's name, address and phone number.
___ 3. The names, addresses and phone numbers of the architect, civil engineer, surveyor, or other designer.
___ 4. Location of stockpile area for excess dirt.
___ 5. The volume of cut and fill needed, (if greater than 50 CY).
___ 6. Import or export of dirt involving 50 CY or more requires a dirt hauling permit from the City Engineer.
___ 7. Fully dimensioned property lines and boundaries.
___ 8. Vicinity map with enough detail so the site can be easily found.
___ 9. North arrow, scale and legend.
___ 10. Location of any buildings, structures, driveways, drainage ditches, or element of the project such as pool, patio, tennis court, etc., on or within 15 feet of the property where the work is to be performed.
___ 11. Location and height of all retaining walls (note: retaining walls with a height exceeding four feet from the bottom of footing require a special permit per Section 301 of the UBC.
___ 12. Accurate contours showing the present topography of the site and adjacent property. Existing and proposed contours shall be shown at intervals of one foot or less on slopes up to five percent, and not more than five feet on slopes in excess of five percent, and shall extend 10 feet across adjoining streets (when said streets are unimproved) and adjoining property lines.
___ 13. Elevations, dimensions, locations, extents and slopes of all proposed grading, by contours or other means, including finish curb at points of extension of lot lines and curb return points; finish and existing grade elevations at each principal corner for the structure and points of significant change of slope; the garage and

ATTACHMENT C (continued)

finished floor elevations; center of driveway elevation at property line and curb face elevations at all lot corners. Note: for subdivision lots, contours and elevations shall be on the same datum as the tentative map and improvement plans.

___ 14. Adequate drainage notes and specifications. Entire lot drainage pattern and disposition of surface and roof drainage; roof, rear yard, patio, etc., impervious areas drainage is to be collected and conveyed to an on-site stormwater treatment facility. Grass Swales shall be provided to drain side yards to front or rear yards. Provide design consideration for safe over-flow discharge of a 100-year storm event.

___ 15. Detailed plans of all drainage devices, walls, cribbing, or other protective devices to be constructed as part of the proposed work.

___ 16. All cut and fill slopes with continuous "daylight" lines.

___ 17. Top and toe of all cut and fill slopes.

___ 18. Maintain post-development storm water runoff to pre-development runoff conditions, especially when existing drainage flows onto private properties.

___ 19. Existing easements, streets with center lines, sewer, storm drain, and access easements, existing and proposed.

___ 20. Location, diameter and dripline of all existing trees 12 inches or more in diameter measured between 6" & 36", both on the property and within the public right-of-way.

___ 21. All cut and fill control specifications.

___ 22. Provisions for protecting adjacent properties.

___ 23. For hillside lots, erosion control and or slope protection.

___ 24. Crawl space height must be defined.

___ 25. Easements and controlling dimensions.

___ 26. Cleanouts at each bend in the underground drain pipe, including the bend at the downspout.

___ 27. Tree protection plan for all trees to be retained and a tree removal notes for trees to be removed. (See Heritage Tree Ordinance)

B. DRIVEWAY REQUIREMENTS

___ 1. Show driveway location, width and slope.

___ 2. Approach must conform to City Standard Details.

___ 3. The construction of new driveway requires a permit from Engineering and Construction.

ATTACHMENT C (continued)

C. SIDEWALK, CURB AND GUTTER REQUIREMENTS

___ 1. Show existing curb, gutter, driveways, wheelchair ramps.

___ 2. Broken or damaged sidewalk, curb, and gutter must be replaced.

___ 3. New sidewalk curb, & gutter must conform to City Standard Details.

___ 4. The construction of new sidewalks requires a permit from Engineering and Construction

D. UTILITY REQUIREMENTS

___ 1. Show existing and proposed water, sewer, gas, storm drains, electric, and Cable TV.

___ 2. Show appropriate City Details for new water, sewer, & storm drains.

___ 3. Work within public right-of-way requires construction permit from Engineering Division.

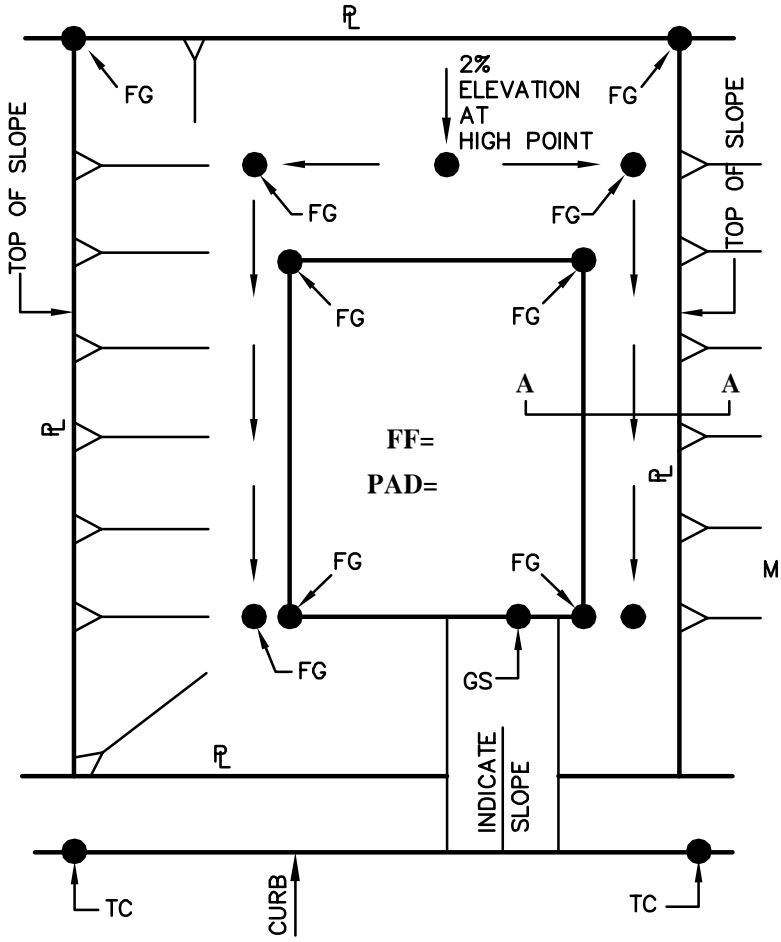
___ 4. Show any easements affecting the property.

___ 5. Installation of a new sanitary sewer lateral cleanout, next to right-of-way line, requires a permit from Engineering Division. Obtain this permit prior to issuance of a Building Permit.

___ 6. All new utility service lines shall be placed underground.

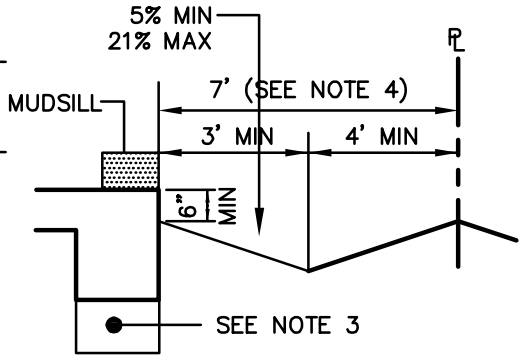
ATTACHMENT C-1

TYPICAL LOT DRAINAGE



LEGEND

- ● LOCATION OF REQUIRED SPOT ELEVATION
- → DIRECTION OF CONCENTRATED FLOW WITHIN A SWALE
- FG = FINISHED GRADE ELEVATION
- FF = FINISHED FLOOR ELEVATION
- TC = TOP OF CURB ELEVATION
- GS = GARAGE SLAB ELEVATION
- ℄ = PROPERTY LINE



SECTION A-A

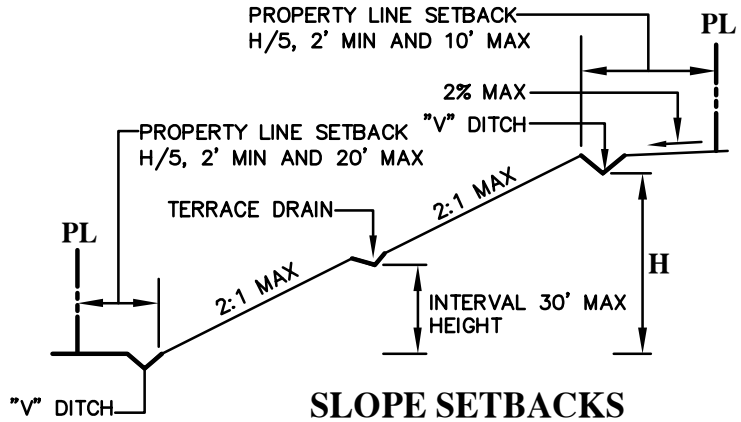
TYPICAL SIDEYARD SWALE

NOTES:

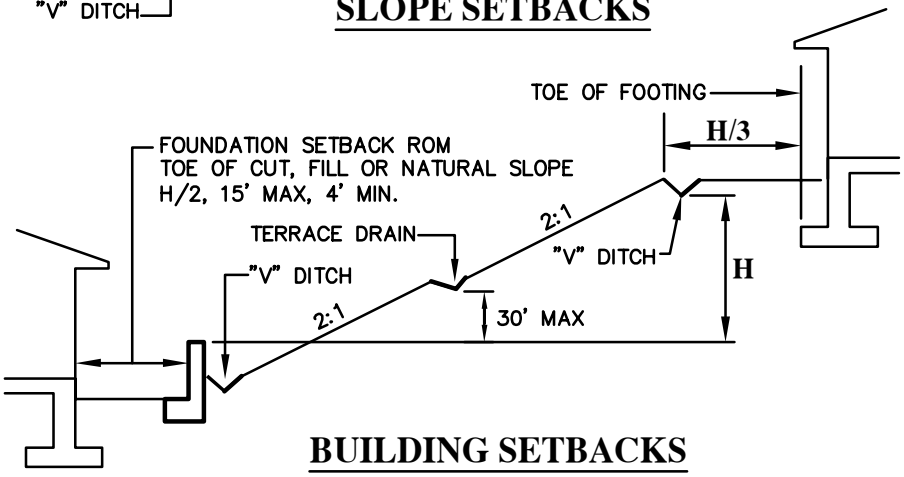
1. GRASSY SWALES ARE PREFERRED.
2. A PAVED DRAINAGE SWALE, A CATCH BASIN AND PIPE, OR SIMILAR DRAINAGE DEVICE IS REQUIRED WHEN A PORCH, FIREPLACE, OR A PORTION OF THE BUILDING EXTENDS WITHIN THE MINIMUM ESTABLISHED SETBACKS.
3. FOUNDATIONS MAY HAVE TO BE DEEPENED TO PROVIDE CLEARANCE FOR SIDEYARD SWALES AND ADJACENT UTILITIES WITHOUT EXPOSING FOOTINGS; SEE ATTACHMENT D–2 FOR SETBACK REQUIREMENTS AND MINIMUM FLOOR ELEVATIONS.
4. THIS DIMENSION MAY BE CONTROLLED BY ZONING ORDINANCE, BUT IS THE MINIMUM DRAINAGE SETBACK.
5. IF THESE MINIMUM SURFACE DRAINAGE STANDARDS CANNOT BE ACHIEVED, THEN AN APPROVED UNDERGROUND SYSTEM WILL BE INSTALLED, THEREBY CURB DRAINS MAY BE UTILIZED AS APPROVED BY CITY ENGINEER.
6. NO ADDITIONAL DRAINAGE WILL BE PERMITTED ONTO ADJOINING PROPERTY, NOR WILL DRAINAGE FROM ADJOINING PROPERTY BE BLOCKED.
7. LOT DRAINAGE PLANE SHALL BE SIGNED AND STAMPED BY A REGISTERED ENGINEER.
8. CONCENTRATED FLOW ACROSS SIDEWALK IS NOT ALLOWED.

ATTACHMENT C-2 (1 of 2)

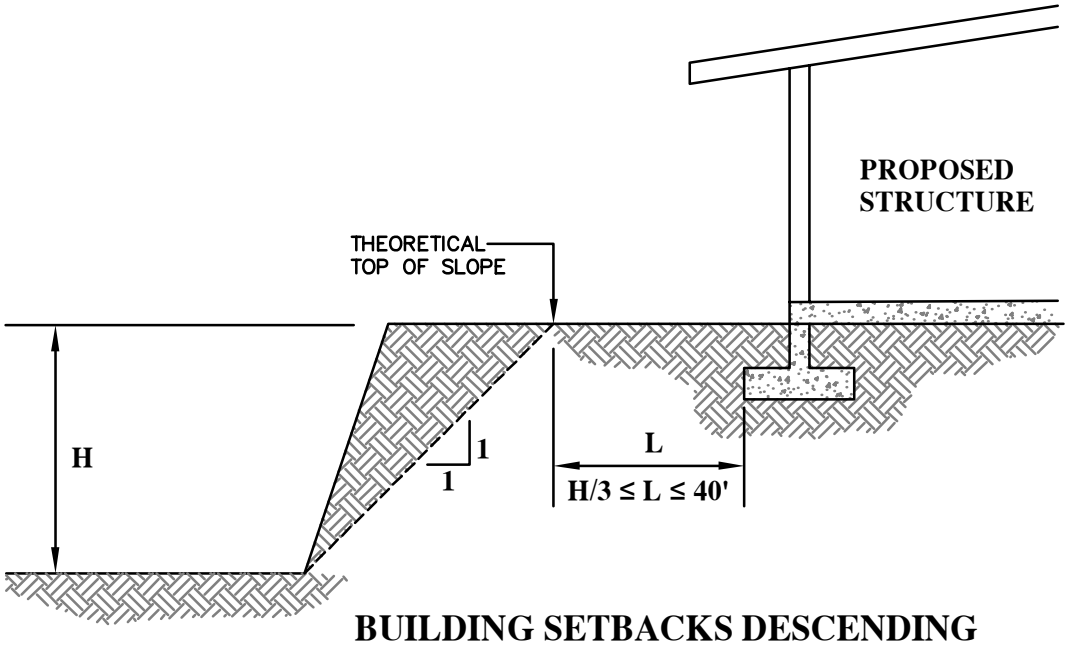
SLOPE REQUIREMENTS, BUILDING SETBACKS, FLOOR ELEVATIONS



SLOPE SETBACKS



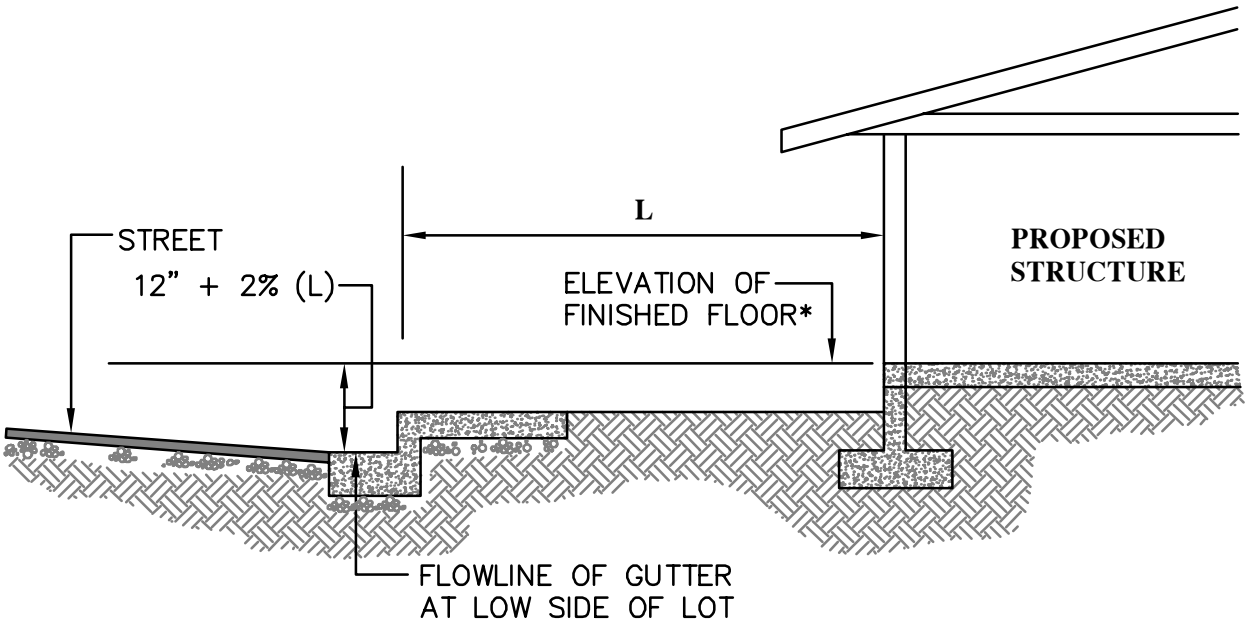
BUILDING SETBACKS



BUILDING SETBACKS DESCENDING SLOPE (EXCEEDING 1 TO 1)

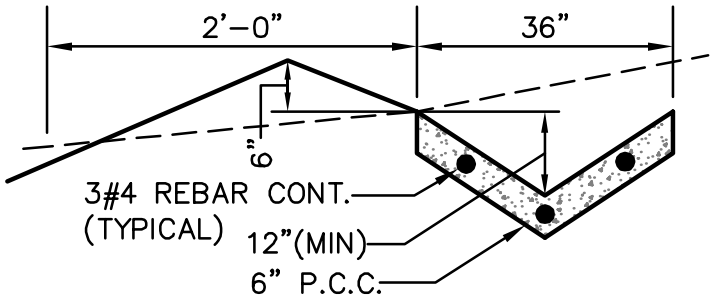
ATTACHMENT C-2 (2 of 2)

SLOPE REQUIREMENTS, BUILDING SETBACKS, FLOOR ELEVATIONS

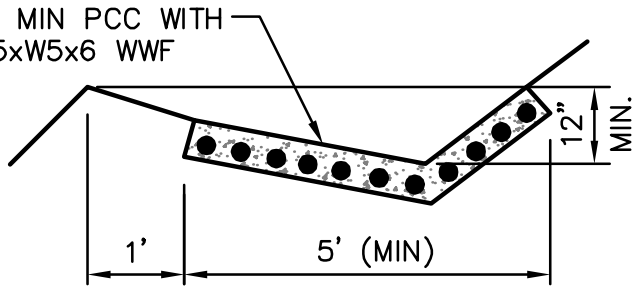


* MINIMUM ELEVATION MUST BE 1' ABOVE FLOOD ELEVATION (PLUS SETTLEMENT) IF IN A DESIGNATED FLOOD PLAIN

MINIMUM FLOOR ELEVATION



"V" DITCH

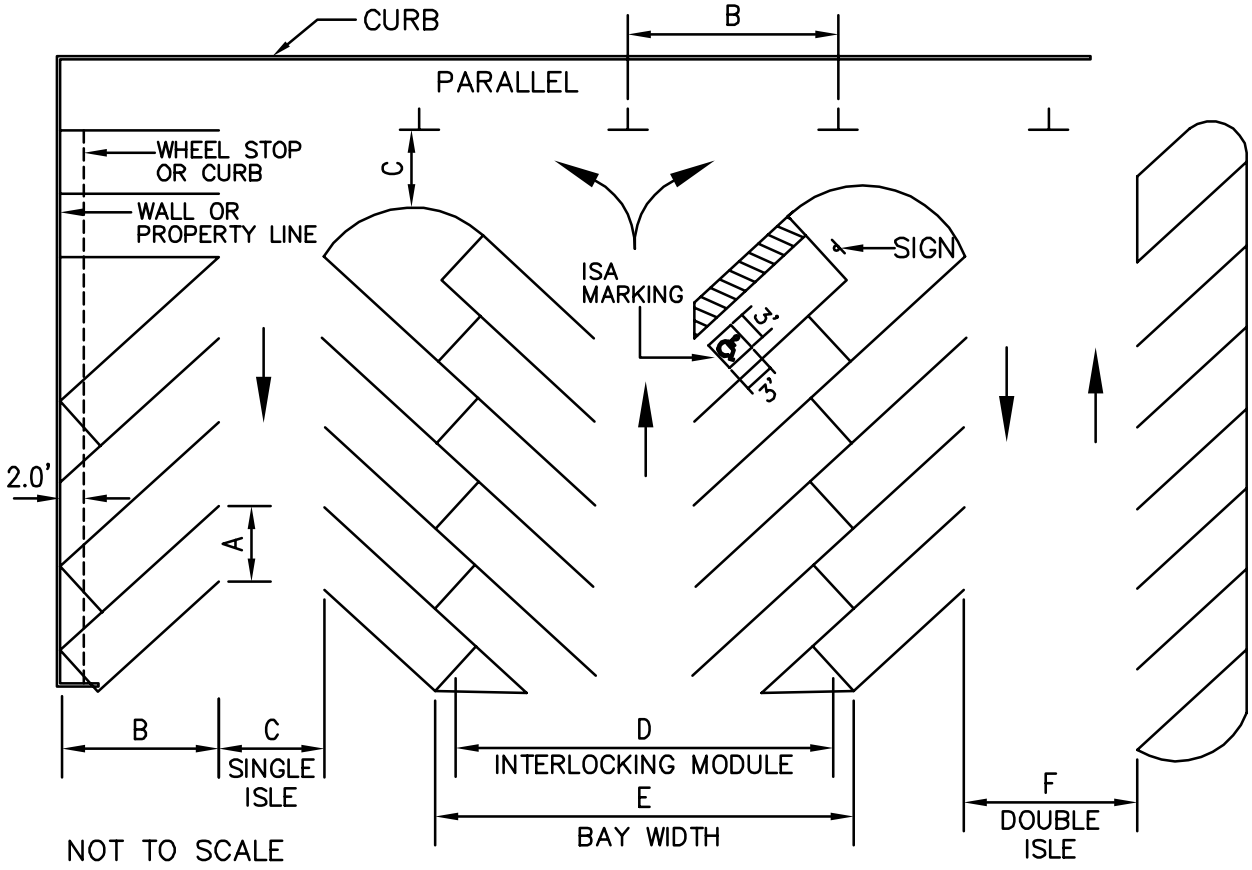


TERRACE DRAIN

CAPACITY SHOULD BE ADEQUATE TO HANDLE CALCULATED FLOW AND MUST BE CHECKED BY THE DESIGNING CIVIL ENGINEER TO CONDUCT TERRACE DRAINAGE TO THE STREET OR IMPROVED DRAINAGE DEVICE.

ATTACHMENT D-1

PARKING DIMENSIONS

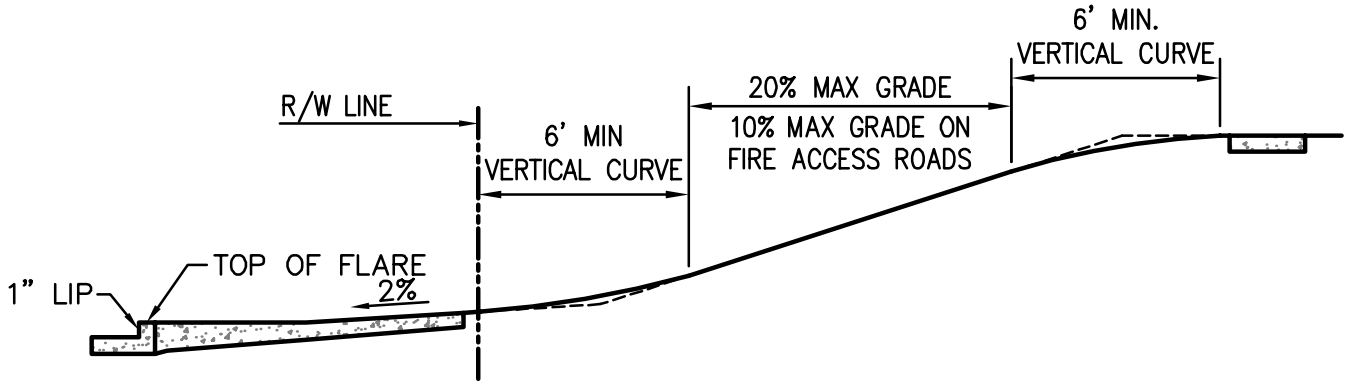


TYPICAL PARKING DIMENSIONS (IN FEET)*							
PARKING ANGLE	STALL WIDTH	A	B	C	D	E	F
30°	8.5	17.0	16.4	11.0	36.4	11.0	21.0
45°	8.5	12.0	18.7	12.0	43.4	12.0	22.0
60°	8.5	9.8	19.8	16.0	51.4	16.0	23.0
75°	8.5	8.8	19.6	24.0	61.0	24.0	24.0
90°	8.5	8.5	18.0	25.0	61.0	25.0	25.0
Parallel	8.0	8.0	22.0	12.0	N/A	12.0	24.0

* SEE ZONING ORDINANCE FOR ADDITIONAL PARKING SPACE REQUIREMENTS

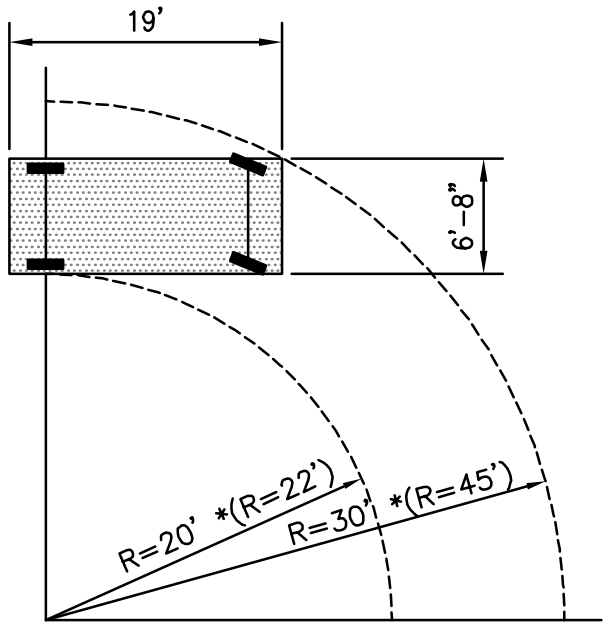
ATTACHMENT D-2

DRIVEWAY RAMPS & TURNING RADII



RAMP DETAIL

ALONG CENTERLINE OF DRIVEWAY



TURNING RADII (DESIGN VEHICLE)

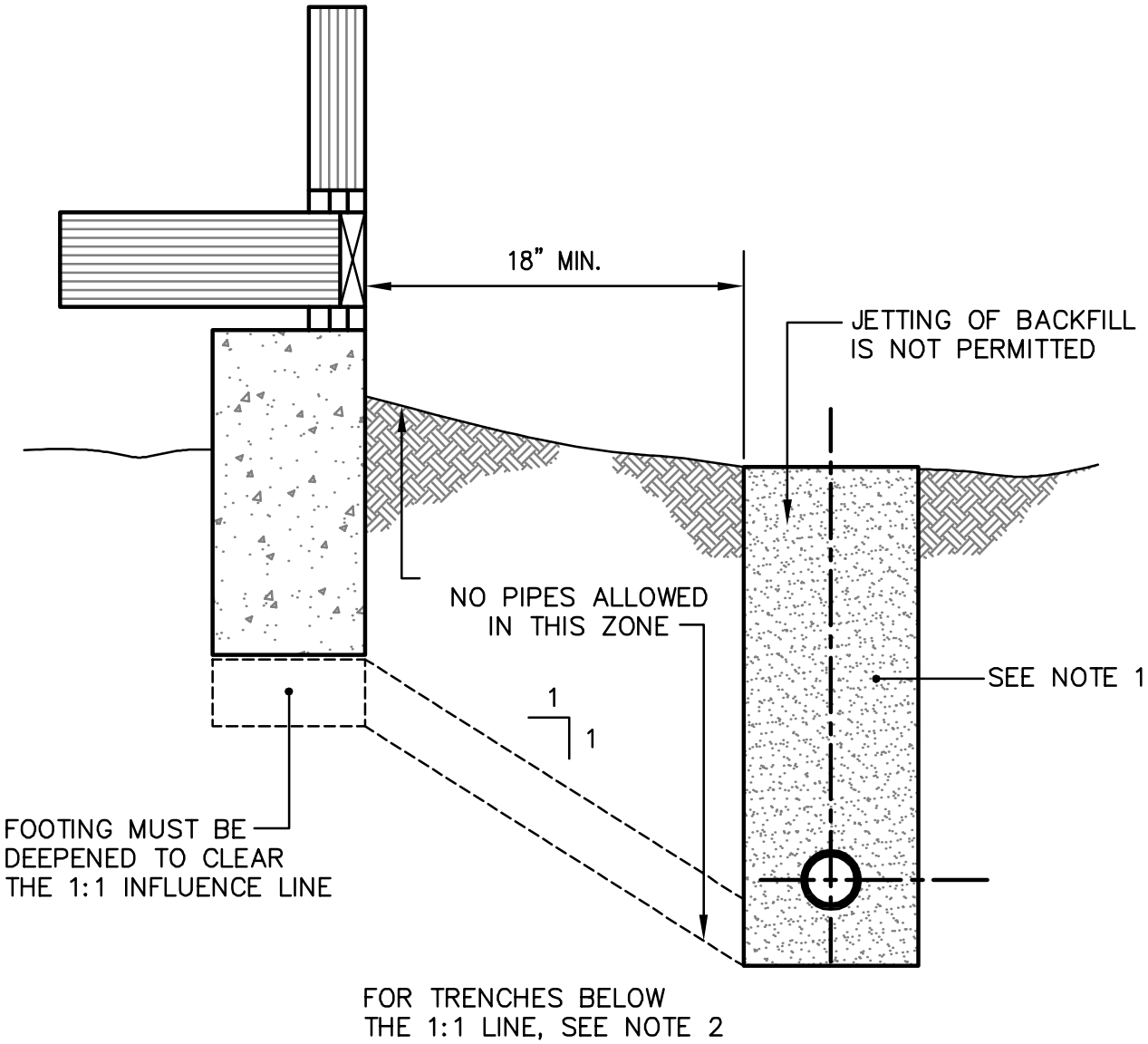
* NOTES:

1. HALF MOON BAY FIRE TRUCK TURNING RADII SHOWN IN PARTHESES SHALL BE USED FOR DESIGN OF FACILITIES REQUIRING FIRE TRUCK ACCESS. VERIFY WITH FIRE MARSHALL.

ATTACHMENT E

TRENCH CLEARANCE FROM FOOTINGS

(TRENCH PARALLEL TO FOOTING)



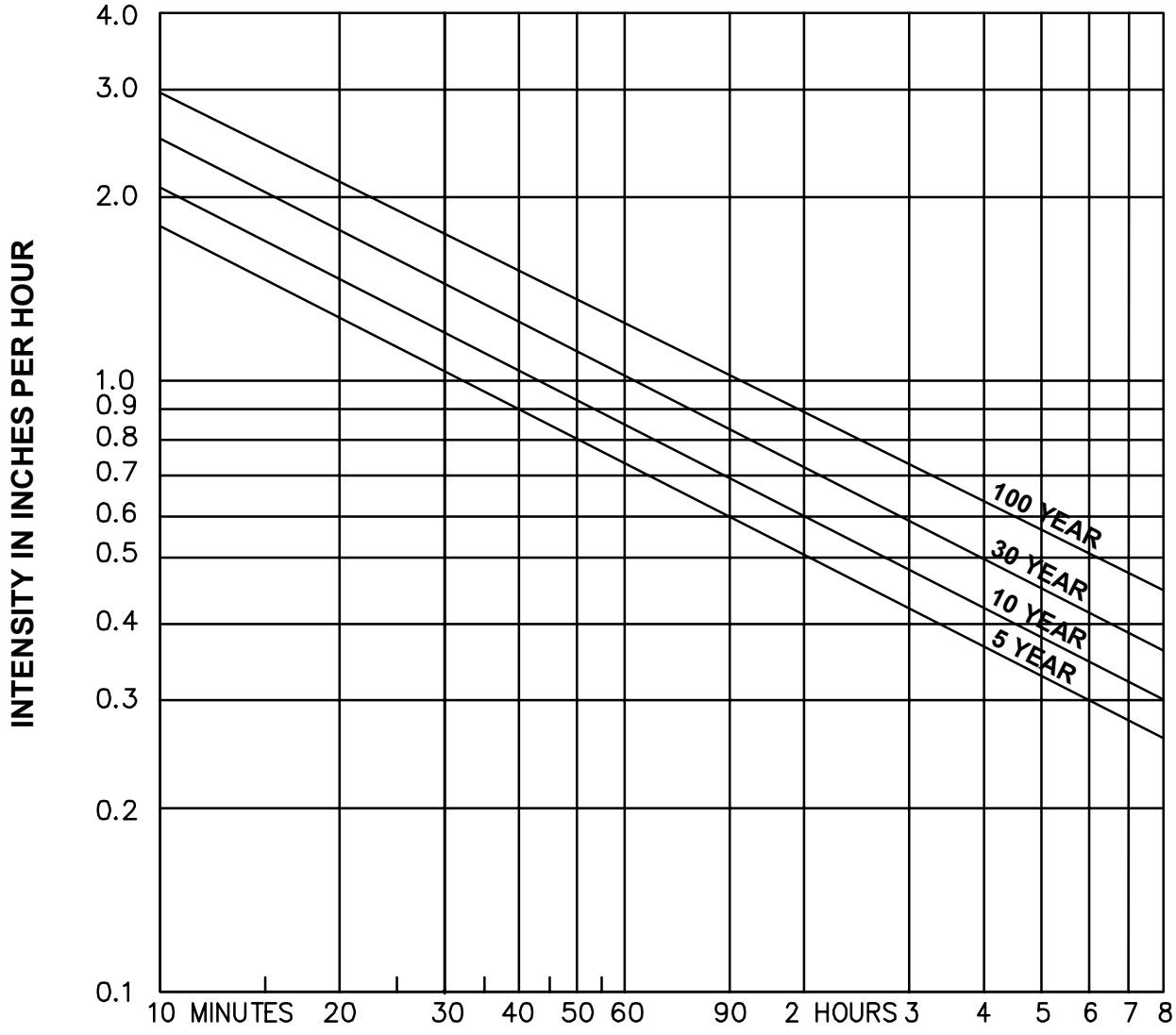
NOTES:

1. SEE SPECIFICATION FOR TRENCH BACKFILL REQUIREMENTS.
2. THIS CASE REQUIRES THE DEEPENING OF THE PERIMETER FOOTING, OR RELOCATING UTILITY TO CLEAR 1:1 PLANE.

NOT TO SCALE

ATTACHMENT F

I.D.F CURVES



RAINFALL INTENSITY FREQUENCY CURVES FOR HALF MOON BAY

NOTES:

1. AFFIX REGISTRATION STAMP AND SIGNATURE OF ENGINEER, INCLUDING EXPIRATION DATE. A REGISTERED ENGINEER MUST SIGN THE FIRST SHEET OF PLANS; STRUCTURAL ENGINEERS MUST SIGN STRUCTURAL PLANS, ETC.
2. ADD ENGINEER'S LOGO, IF APPROPRIATE.
3. THE SHEET TITLE, FOLLOWED "PLANS FOR THE IMPROVEMENTS OF", FOLLOWED BY THE PROJECT/SUBDIVISION NAME.
4. APPROVAL BLOCKS SHALL APPEAR ON EACH SHEET AND WILL BE SIGNED BY THE CITY OF HALF MOON BAY.
5. FILL IN THE INITIALS OF THE DESIGNER, DELINEATOR, AND CHECKER, WITH DATES.
6. REVISION BLOCKS SHALL NOT BE USED UNTIL THE PLANS ARE APPROVED.
7. FOR REVISED PLANS, PUT THE REVISION NUMBER IN A TRIANGLE, △1 , BRIEFLY DESCRIBE THE REVISION AND ADD THE DATE. CITY WILL INITIAL HE ORIGINAL. ON PLAN, PUT A "CLOUD" IN RED PENCIL AROUND THE ITEMS REVISED, WITH A CLEARLY IDENTIFIED SUBSCRIPT △1 TO CORRESPOND WITH THE REVISION BLOCK.
8. THE CITY WILL ASSIGN A FILE NUMBER TO EACH SHEET OF DRAWINGS.

SEE NOTE 6&7 — SEE NOTE 5 — SEE NOTE 4 — SEE NOTE 3 — SEE NOTE 1&2 → ENG Exp.

						APPROVED	CITY OF HALF MOON BAY CALIFORNIA ENGINEERING	TITLE SHEET
								1 OF
						APPROVED		PLANS FOR IMPROVEMENT OF
Date	No.	Revisions	By	App		City Engineer		

ATTACHMENT H

FEES AND CHARGES

Please see the City of Half Moon Bay's latest Master Fee Schedule for the most current fees and charges.

ATTACHMENT I

CHECKLIST FOR PROCESSING OF FINAL MAPS

NOTE: This checklist has been compiled as an aid for processing of record maps for divisions of land into 5 or more lots generally (some exceptions). See the referenced sections of the City's Municipal Code, Title 17 – SUBDIVISIONS, and the State Map Act (as amended 1 Jan 87) for details and complete exposition.

	FORM AND CONTENT OF FINAL MAP	**Reference**
_____	1. Sheet size – 18 x 26 inches, with blank 1″ margin on all sides	66434 (b)
_____	2. Sheet number and total sheets marked on each sheet	" "
_____	3. Relation of each sheet to adjoining sheets clearly shown	" "
_____	4. Legibly drawn, printed, or reproduced permanently in black on:	66434 (a)
_____	a. Tracing cloth or polyester base film	" "
_____	5. Certif., affid., & acknowl. may be stamped or printed (opaque ink)	" "
_____	6. Title block – Name of subdivision	re30.35 (a)
_____	a. Legal description (caption or metes and bonds)	" " (d)
_____	1. Kind of division – subdivision, resub.,	Convention
_____	2. Relation to specified original tract of land – all or part of	re30.35 (d)
_____	3. Details of recordation of original tract	" "
_____	4. Location of subdivision – city, county, state	" "
_____	b. Date of map, scale, north point	" " (a)
_____	c. Firm preparing map – street, city, state, zip code	" " (d)
_____	d. Identification as condominium plan, if applicable	Convention
_____	7. Survey data to locate & retrace monuments, & any all int. & ext. lines	66434 (c)
_____	a. Bearings and distances or straight lines	" "
_____	b. Radii and arc length, or chord bearings and length, for all curves	" "
_____	c. Information necessary to locate centers of curves	" "
_____	d. Ties to existing monuments used to establish subd. boundaries	" "
_____	e. Record dimensions shown in ( ), if different from measured values	Convention
_____	8. Exterior boundary shown by distinctive symbol and clearly designated	66434 (e)
_____	9. Location of subdivision and its relation to surrounding surveys	" "
_____	10. Remainder (if designated) shown by survey, unless 5 A or more	66424.6, 66434 (e)
_____	11. Location, names, and widths of existing and proposed streets	re30.35 (g)
_____	12. Location, width, and direction of watercourses, including flood area	" " (h) (4)
_____	13. Location, purpose, and widths of existing easements	" " (i)
_____	a. Reference to public record if existing easements recorded	Convention
_____	14. Each lot or parcel numbered or lettered in consecutive sequence	66434 (d)
_____	15. Each block numbered or lettered in consecutive sequence	" "
_____	16. Lot areas to nearest square foot or one-tenth acre	re30.35 (c)
_____	17. Special conditions of tentative map and/or PD approval	30.51

ATTACHMENT I

	FORM AND CONTENT OF FINAL MAP (Continued)	Reference
_____	18. Monuments indicated, both found and newly set (per stds. In 8771)	30.85, 66495
_____	a. All exterior boundaries monumented or referenced	" "
_____	1. Subdivision corners & suitable intervals, angle points, curve ends	Convention
_____	b. Reference to recording data, if existing monuments recorded	8771
_____	c. Witness monuments, if recorded monuments not able to be replaced	" "
_____	d. Monuments locating new streets tied to monuments of record	" "
_____	e. Legend identifying found and set monuments, type, and material	Convention
_____	f. Additional monuments as required by City Engineer	30.85
_____	19. Dedications for public uses – show size and indicate purpose	66439, 30.73
_____	a. Streets, highways, expressways, freeways, and alleys	" "
_____	1. Identify special access rights and abutter's rights	" "
_____	2. Note or symbol identifying any waivers of access rights	30.72, 66476
_____	3. Street names as continued, and as approved by CD Director	30.119
_____	4. Street lighting, traffic signal, fire alarm, and water systems	30.87
_____	b. Sanitary sewer systems and appurtenant structures (P.S.E.)	30.73
_____	c. Storm drainage easements-pipes, planned or natural channels (P.S.E.)	30.116 (e)
_____	d. Tree planting & maintenance ease. (T.P.M.E.), earth retaining walls	30.122, 30.87
_____	e. Public utility company easements (P.S.E.)	30.73
_____	1. Electrical, gas, telephone, per 66473.2, cable per 66473.3	30.87 (h) (i)
_____	f. Other improvement easements as conditions of tent. or PD approval	30.87 (m)
_____	g. Pedestrian, equestrian, and bicycle path easements.	66411.1(2), 30.72, 30.120
_____	h. Access easements relating to public waters	30.93
_____	i. School dedications to RC and/or Belmont Elementary Districts	66478.1 et. al
_____	j. Conservation and open space dedications	30.73
_____	20. Reservations for parks, rec., fire stations, libraries, or other	30.98
_____	21. Delineation of areas for non-public use (easements or fee)	Condit. or
_____	a. Common areas, parks, access, sunlight easement (66475.3), other	Convention
_____	b. Reference to any recorded instruments re new private easements	" "
_____	22. See MAP ACT for amending maps and/or certificates of correction	66469
_____	23. Info not affecting title interest, by ordinance only	66434 (f), 66434.2 (a)

	CERTIFICATES, ACKNOWLEDGEMENTS, & NOTES (Items 1 & 2 may be combined)	Reference
_____	1. Owner's certificate - all whose consent is required to pass clear title	30.56
_____	a. Consent to making pf map and recordation	66436
_____	b. Signatures - identify as owners, trustees, executors, or other	" "
_____	c. Exceptions for certain property interests as noted in Map Act	" "
_____	d. Dedications for specified public uses	66439
_____	1. Streets, other ways - with waiver of access, if applicable	30.72, 30.73
_____	2. Easements for sewers, storm drains, and public utilities (P.S.E.)	30.73
_____	3. Easements for pedestrian/bicycle paths (P.S.E.)	30.122
_____	4. Tree planting and maintenance easements (T.P.M.E.)	30.73
_____	5. Optional statement identifying streets not offered for dedication	66439
_____	6. See other check list for subdivisions fronting on public waters	66478.1
_____	7. Signatures - identify as owners, trustees, executors, or others	66439

ATTACHMENT I

CERTIFICATES, ACKNOWLEDGEMENTS, & NOTES (Continued)

		Reference
_____	2. Certificate identifying and designating common areas	Cal Legal Forms 30.54
_____	a. Not dedicated for use by the general public, but ...	" "
_____	b. Intended for the common use & enjoyment of owners in the subd.	" "
_____	c. As more fully provided in CCR's applicable to (name of subd.)	" "
_____	d. Said CCR's are hereby incorporated in and made part of this map	" "
_____	e. Signatures - identify as owners, trustees, executors, or others	" "
_____	3. Acknowledgement for each signer - Notary seal not required, if . . .	66436
_____	a. Identify and execution attested	Civil Code 1191
_____	b. Identify title of signer for corporations - president, etc.	" "
_____	4. Certificate of approval of City Council, with:	66440
_____	a. Date of meeting at which map was approved	" "
_____	b. Acceptance or rejection of dedications or waivers of access	30.72, 66440, 66476
_____	c. See other check list for subdivisions fronting on public waters	66478.1
_____	d. Date and signature of City Clerk - name, title, and city	66440
_____	5. Certificate of RE or surveyor responsible for survey and map	66441
_____	a. Map and survey by or under direction, date of survey, true & complete	" "
_____	b. Type and position of monuments are as indicated on map, or:	" "
_____	c. Will be set on or before a specified later date	" "
_____	d. Monuments are (or will be) sufficient to retrace survey	" "
_____	e. Signature - Name, registration, seal (with exp. if CE, B & P 6735)	" "
_____	6. Certificate of City Engineer (for execution by Comm. Dev. Dir.)	66442
_____	a. Map has been examined	" "
_____	b. Subdivision is substantially as approved tentative or alteration	" "
_____	c. All provisions of Map Act and local ordinances complied with	" "
_____	d. Satisfied that map is technically correct	" "
_____	e. Signature - Name, registration, seal (with exp. if CE, B & P 6735)	" "
_____	7. Certificate of County Recorder .... at request of owners or agent	66466 (c)
_____	8. Note identifying resolution creating an owner's development lien	66434.1
_____	a. Recording indicia, & property subject to owner's development lien	" "
_____	b. Each parcel subject to prorated amount of owner's development lien	" "
_____	9. Note identifying basis of bearings	66434 (e)
_____	10. Note identifying units of dimensions	Convention
_____	11. Note identifying borders and acreage of subdivision (to tenths)	re30.35 (c)
_____	12. Signature of util. co. having existing easements; their option, if:	66436 (c) (1)
_____	a. Decided at tent. review, subd. will not interfere with easements	" "
_____	b. Map 7 Sec. 66436 sent to util. co. by developer (certified mail)	" "
_____	13. Statement why signatures unobtainable for obsolete easements, etc.	66436 (c) (2)
_____	14. Other certificates & acknowlegements if required by City ordinance	66443
_____	15. Additional certificates as determined by City Engineer	30.52
_____	16. Note identifying CA coord. system (if used) & ctrl coords.	8771.5 P&V, 8813PR

ATTACHMENT I

	REVIEW AND RECORDING OF FINAL MAP	Reference
_____	1. Final map conforms with approved tentative map	30.51
_____	a. Conditions of approval incorporated in map and CCR's	" "
_____	b. Conditions of PD approval incorporated	Per Cond.
_____	c. Approved recommendations of agencies within 3 miles, if any	66453
_____	d. Approved recommendations of State Dept. of Transportation, if any	66455
_____	2. Map complies with Map Act and City Subdivision Ordinance	30.54 (c)
_____	a. Sufficiency of affidavits and acknowledgements	30.54 (a)
_____	b. Correctness of survey and mathematical data	" " (b)
_____	c. Sufficiency and adequacy of public service easements	" " (d)
_____	d. No lots divided by a City boundary line	30.117 (d)
_____	3. Title report examined	30.56
_____	a. All persons required to consent to map, dedications, and recording	30.56, 66436
_____	b. Existing easements shown and referenced on map	" "
_____	4. Monuments in conformity with Sec. 8771 Bus. & Prof. code	30.85
_____	a. Min. 1 ext. boundary line set or referenced before map recorded	30.85
_____	b. Interior monuments set before map is recorded, or:	66496 et al
_____	c. Interior monuments set later if performance security deposited	" "
_____	5. Improvement plans and cost estimate approved by City Engineer	30.86 (b)
_____	6. Improvement agreement drafted by City Attorney	Procedural
_____	7. Grant deeds to City, for land or easements not dedicated by map	30.56
_____	8. CCR's reviewed by City attorney, Engineering, and Planning	30.53 (g)
_____	a. Maintenance responsibilities of Association specifically detailed	Convention
_____	b. City, State, & Federal maintenance stds., City right to enforce	" "
_____	c. City right to approve maintenance amendment	" "
_____	d. Private streets irrevocably private, with right of City access	Council
_____	9. Executed mylars submitted, with 1 cloth and 1 paper copy	30.54. 66466 (e)
_____	a. Certificate signatures underprinted, permanent, & reproducible	30.54
_____	10. Certificate of City Engineer executed & sealed by CD Director	30.54, 66457
_____	11. City Council approval of map, deeds, 7 agreement	30.55
_____	12. Improvement agreement sent by City Clerk for execution	30.79
_____	a. Bonding and insurance to City Clerk by Developer	30.79, 30.80
_____	b. Additional deposit if required for plan review costs _____	30.71
_____	13. Tax certificate obtained by Developer (delivered to Engr.)	66492
_____	a. Surety for estimated taxes, as noted on tax certificate	66493
_____	14. Certificate of Council approval executed & sealed by City Clerk	66440
_____	15. Map and documents transmitted to County by City Clerk	30.57, 66464
_____	a. Transmittal letters to County Clerk of Board, and Recorder	" "
_____	b. Improvement agreement with resolution #8722	" "
_____	c. Deeds of dedication with resolution of acceptance #7101	" "
_____	d. Map recording fee _____ ($6 first sheet, $2 each after)	Procedural
_____	16. Additional documents accompanying map to County	30.57
_____	a. Tax certificate & surety; CCR's; deeds to Association, other	" "
_____	17. Map Guarantee, required by Recorder at time of recordation	66465
_____	18. After recordation, following item required from subdivider	30.57
_____	a. One copy of CCR's with recording indicia, for Eng. Division files	" "

ATTACHMENT J

SEWAGE GENERATION PROJECTION WORKSHEET

JOB TITLE_____ CAL. BY _____
JOB NUMBER _____ CHKD.BY _____
JOB LOCATION _____ DATE _____

ATTACHMENT Q MUST BE COMPLETE BEFORE PROCEEDING SEWER GENERATION IS BASED ON 95% OF INDOOR WATER DEMAND PROJECTION

Key: GPD_W = GPD Water Demand Projected from Attachment Q
GPD_S = GPD Sewer Demand Projected

A. RESIDENTIAL

_____ GPD_W X 0.95 = _____ **GPD_S**

B. OFFICE/COMMERCIAL

_____ GPD_W X 0.95 = _____ **GPD_S**

C. HOTEL

_____ GPD_W X 0.95 = _____ **GPD_S**

D. RESTAURANTS

_____ GPD_W X 0.95 = _____ **GPD_S**

E. ALL OTHERS TO BE REVIEWED ON A CASE BY CASE BASIS

= _____ **GPD_S**

F. INFILTRATION

1. PVC pipe:_____ miles X 100 GPD X _____ diameter (in.) = _____**GPD_S**

2. Clay pipe:_____ miles X 500 GPD X _____ diameter (in.) = _____**GPD_S**

G. AVERAGE DAILY FLOW = _____ GPD (SUM OF A – F)

H. PEAK HOURLY FLOW* FOR PUMPING STATIONS

1. Peak Business Hr. Flow = [(B+C+E)/12 hrs + (F/24 hrs)] x 2.5/60min + [(A+D)/12hrs]/60 min = _____ **GPM**
2. Peak Off-Hrs. Flow = [(A+C+D)/12 hrs + (F/24 hrs)] x 2.5/60min + [(B+E)/12hrs]/60 min = _____ **GPM**

* Peak hourly flows assume an effective 12-hour fay and that office and residential peaks occur at separate times.

ATTACHMENT K

DESIGN REVIEW CHECKLIST

The improvement plans accompanying this check list have been prepared by me or under my direction and checked for conformance with the City of Half Moon Bay Engineering Standards.

Engineer's Signature _____ Date _____

Instructions: Place a check mark to indicate you have addressed the utility design issue with respect to its potential impact to the low permeability clay cap over the landfill areas.

___ 1. Minimum pipe cover requirements.

___ 2. Minimum depth of required trench bedding.

___ 3. Minimum dimensions of required thrust blocks.

___ 4. Minimum depths of required cathodic protection devices.

___ 5. Minimum excavation required for tapping sleeves and valves.

___ 6. Minimum vertical clearances at crossings.

___ 7. Minimum dimensions of utility structures such as manholes, junction boxes, leak detection vaults, etc.

ATTACHMENT L

HALF MOON BAY SPEED HUMP
POLICY SUMMARY
SUBJECT TO THE CITY ENGINEER'S APPROVAL

Definitions

Speed hump: A raised pavement area for speed control purposes conforming to explicit engineering specifications for maximum height, profile and minimum length (in direction of vehicle travel).

Speed bump: A raised pavement area for speed control purposes *not* conforming to recognized engineering specifications for *speed humps;* generally, more abrupt (higher/or shorter) than *speed humps*

Eligibility Conditions

Eligible For Humps	Ineligible/Questionable For Humps
Persistent speed problem : 85'th 5ile speed 33mph or greater or 66% of all vehicles exceed 25mph or average of top 15 5ile speeds observed is 40 mph or greater.	Speeds unremarkable: Criteria opposite not met.
Local access street.	Arterial or collector street.
Two-lane street.	Street with more than two lanes.
Street less than 40 feet wide.	Street wider than 40 feet.
Pavement quality satisfactory.	Pavement needs resurfacing / reconstruction.
Grades lees than 5 percent in area of hump.	Grades greater than 5 percent or sustained downgrade present.
Straight and level or mild horizontal and/or vertical curves.	Horizontal curves of less than 300 foot centerline radius or vertical curves with less than safe stopping sight distance
Streets posted 30 mph or less.	Streets posted 35 mph or more.
Low volume streets (generally below 3000 ADT).	Moderate to high volume streets (generally more than 3000 ADT).
Streets used by a relatively normal percentage of long wheelbased vehicles (trucks).	Streets used by an abnormally high percentage of long wheelbased vehicles.
Streets used occasionally by emergency vehicles operating at low to moderate speeds.	Streets used as primary emergency vehicle circulation routes.
Streets not used for frequent, regularly-scheduled public transit routes. Use by school transit, paratransit and infrequent conventional transit tripper service is acceptable.	Regular frequently served conventional transit routes.

Design and Construction Considerations

Maximum height: 3 inches, Minimum length; 14 feet. See profile detail on Figure III.

Signs and markings: See details per Figure IV.

Spacing: 200 feet to 750 feet; 275 to 550 feet desirable.

Location: 60 feet minimum from intersections; 200 foot sight distance desirable for isolated mid-block locations.

Drainage: Maintain gutter flows.

Illumination: Locate to take advantage of existing street lighting where feasible.

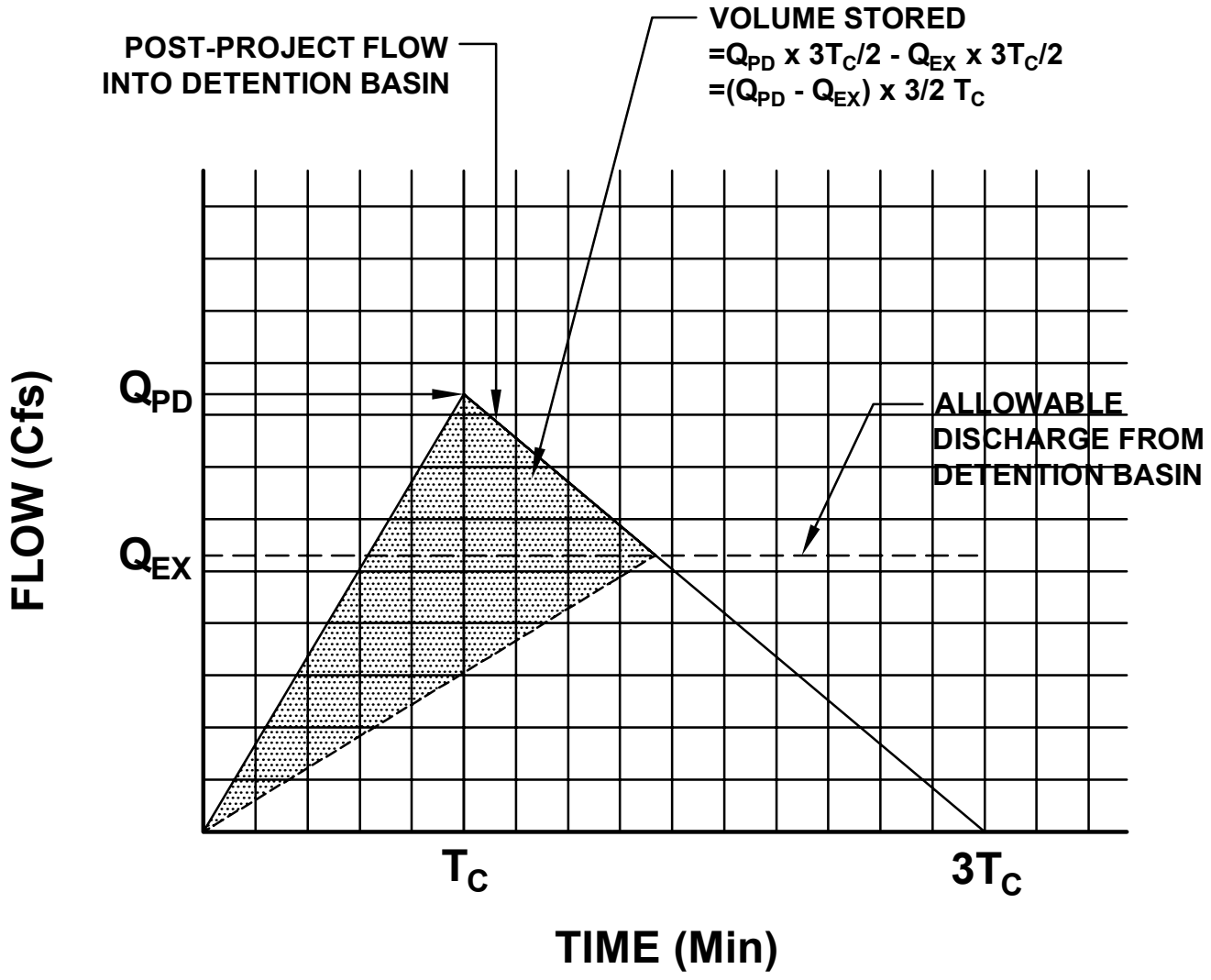
Appearance: Locate to minimize visibility of signs and markings from closest homes.

Avoid the following:

- Locations within intersections
- Locations at driveways
- Locations over utility manholes, gate valves, pull boxes, access vaults or ventilation gratings
- Locations at fire hydrants
- Locations immediately upgrade from drainage inlets.
- Locations at or adjacent to surface cross drains.

ATTACHMENT M

SYNTHETIC UNIT HYDROGRAPH
FOR ESTIMATING POST-DEVELOPMENT STORMWATER STORAGE



$Q_{PD} = C_{PD}IA$
$Q_{EX} = C_{EX}IA$

PD = POST-DEVELOPMENT CONDITIONS
EX = EXISTING PRE-DEVELOPMENT CONDITIONS

ATTACHMENT N

CITY OF HALF MOON BAY

GEOTECH/GEOLOGIST FINAL REPORT
FOR
CONSTRUCTION PERMIT NO._____

To be completed by Geotechnical Engineer:

_____is the Soils Engineer/Engineering Geologist

of Record for the proposed grading located at_____;

work performed by_____(Contractor).

Per the International Building Code, the Soils Engineer/Engineering Geologist of Record is responsible for continuous inspection during all aspects of grading at the subject site. The Soils Engineer/Engineering Geologist will provide this Final Report upon completion of grading, certifying that all grading has been completed satisfactorily. The Soils Engineer/Engineering Geologist of Record should be familiar with Volume III, Engineering Design Standards of City of Half Moon Bay, "Soil and Grading Criteria", 2006, and the 2006 edition of the International Building Code. The Soils Engineer/Engineering Geologist of Record shall be familiar with the project geotechnical report(s), grading plans, and building plans for this project. If the Soils Engineer/Engineering Geologist of Record changes during the course of this grading work, a new Geotech/Geologist of Record form must be completed, signed by the appropriate parties, and submitted to this office within 5 working days of the change.

SUPPLEMENTARY INFORMATION REQUIRED

The following information is required as part of the final report and special inspection declaration:

A. A complete record of all field and laboratory tests, including location and elevation of all field density tests.

B. Special Inspectors Report Declaration (if Special Inspectors were used)

"I declare that based upon personal knowledge (observation of work), the work performed and materials used during the grading operations described in this report are in conformance to those anticipated in the geotechnical report for this project and in accordance with the plans and specifications for this project as approved by the City of Half Moon Bay."

by:_____Inspector

ATTACHMENT N (continued)

This declaration shall be signed by the inspector. If more than one inspector observed grading operations, each shall sign an individual declaration and shall indicate the dates for which the declaration applies.

C. Geologists Certificate Declaration

"I declare that all work for which I have professional responsibility, performed during the grading operations described in this report, was done in accordance with the recommendations contained in the geotechnical report(s) for this project and in accordance with the plans and specifications for this project as approved by the City of Half Moon Bay."

"I further declare that the Special Inspector(s) whose report(s) appear in this document were under my professional supervision, and that I have reviewed his/her/their reports and find them to be correct and accurate to the best of my knowledge and belief."

"I attest under penalty if perjury to the truth and correctness of all the facts, exhibits, maps, and attachments presented with and made a part of this application."

Signed*_____ Date_____

Mailing Address_____ Phone_____

_____

_____

(Affix and sign professional stamp below.)

Property Owner_____ Date_____

ATTACHMENT O

COASTSIDE FIRE DISTRICT	*Fire Marshal's Office* *Coastside Fire Protection District* *1191 Main St., Half Moon Bay, California 94019 (650) 726-5213*	Date: Feb. 4, 1997 Revised: June 30, 2015 Number: ***R-001***
Title: ***Roads and Turnarounds***	Approved: ***Mark Mondragon***	

ROADS AND TURNAROUNDS

Purpose:

This provision establishes the minimum requirements necessary to provide safe and adequate access for emergency equipment, civilian evacuation, and to allow unobstructed traffic circulation during an emergency. The provisions of this regulation shall apply to new and existing roadways or driveways, which are extended, reconstructed, or improved pursuant to a new development approval. Fire department emergency access shall be provided when new structures or buildings are constructed, and for existing structures where the San Mateo County or City of Half Moon Bay Building Regulations requires the entire structure or building to conform to the requirements for new structures or buildings.

Fire Department Emergency Access:

Fire department emergency access is to be provided to within 150 ft of all portions of the facility and all portions of the exterior walls of the first story of the buildings as measured by an approved access route around the exterior of the building or facility.

Dimensions:

All new emergency access roads shall have 15 ½ feet of vertical clearance, and have an unobstructed minimum width of 20 feet. Where hydrants are located, the road shall be a minimum of 26 feet wide for a length of 20 feet on each side of the hydrant (40 feet total length).

Surface:

Emergency access roads shall be designed and maintained to support the imposed load of a fire apparatus weighing at least 75,000 lbs. and shall have a minimum of 2"asphalt surface providing all-weather driving capabilities. Certification by a civil engineer may be required.

Grades of less than 15% shall be surfaced with a minimum Class 2 aggregate base with 95% compaction and an asphalt surface.

Grades of 15% to 20% shall require a non-skid asphalt or concrete surface, or equivalent. Grades 15% to 20% shall be limited to 150 ft. in length.

Turning Radius:
The centerline turning radius for emergency apparatus access roads shall be 35 feet.

Turnarounds:
Dead-end emergency access exceeding 150 ft shall be provided with width and turnaround provisions meeting California Fire Code appendix D. Turnarounds shall have a maximum longitudinal slope no greater than eight percent (8%). The longitudinal slope is defined as the slope corresponding to the long axis of a vehicle as it travels into, out of, and through a turnaround. This slope shall be maintained beginning at and ending at the point of tangency of the edge of pavement curves for the turnaround. The cross slope perpendicular to the longitudinal slope shall not exceed five percent (5%).

Road Grade:
1. Road grades shall not exceed 15% without the approval of the Fire Marshal. (See surface requirements above.)
2. Road grades shall not exceed 20%.
3. Grades 15% to 20% shall be limited to 150 ft. in length.

Parking:
Parking on emergency access roads shall be as follows:
a. 20-26 feet road width -no parking on either side of the roadway.
b. 26-35 feet road width -parking is allowed on only one side of roadway.
c. 36 feet road width -parking is not restricted.
d. Turnaround bulbs -no parking is allowed in bulb if diameter is less than 96 feet.
e. The posting of no parking signs may be required on roadways were parking is restricted.

Bridges:
When a bridge is used as a part of emergency access, it shall be constructed and maintained in accordance with AASHTO HB-17. The bridge shall be designed for a live load sufficient to carry the imposed loads of fire apparatus as stated herein:

1. Weight: Every private bridge hereafter constructed or re-constructed due to damage, deterioration, or obsolescence shall be designed to support an imposed load of fire apparatus weighing at least 75,000 lbs. Vehicle loads shall be posted and dated at both entrances to bridges. (HS20-44 Highway loading)

2. Height: A minimum clear vertical clearance of 13 ½ feet as measured from the driving surface of the bridge shall be provided. In situations where a grade change occurs which might require a greater vertical clearance, such additional clearance shall be determined on a case-by-case basis by the Fire Marshal.

3. Width: All bridges must be a minimum of 20 feet clear width. The Fire Marshal may allow the width to be reduced for a bridge providing access to R-3, U-1, or U-2

occupancies. One-way bridges, and bridges with less than 20' of clear width, require a turnout at both ends of the bridge.

4. Certification: Every private bridge providing fire apparatus access hereinafter constructed or re-constructed shall be engineered by a licensed civil or structural engineer and approved by the Fire Marshal. Certification that the bridge complies with the design standards required in sub-section (a) of this section must be provided by the design engineer, to the Fire Chief.

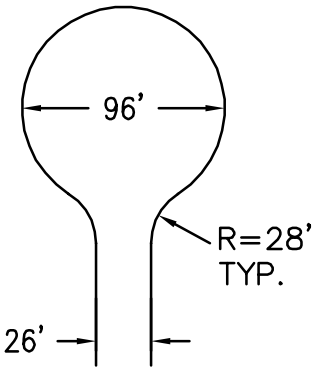
5. Re-certification: Every private bridge shall be re-certified every ten (10) years or whenever deemed necessary by the Fire Marshal.

Gates:

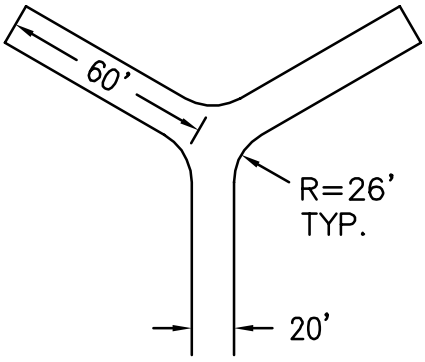
Gates shall be a minimum of 2 feet wider than the roadway they serve.
Overhead gate structures shall have a minimum of 15 ½ feet of vertical clearance. Locked gates shall be provided with a Knox Box or Knox Padlock for fire department access. Electric gates shall be provided with a Knox Gate Switch and automatically open during power failures unless equipped with manual override capability (when authorized by Coastside Fire Dist.). Gates providing fire access to a driveway or other roadway shall be located at least 35 feet from the primary road or street and shall open to allow a vehicle to stop without obstructing traffic on the adjoining roadway. Contact Coastside Fire District for Knox Box application.

ATTACHMENT O

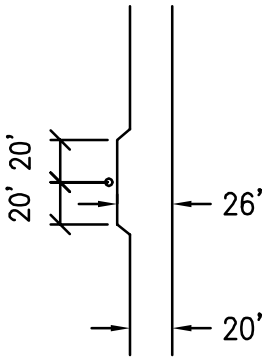
ROADS AND TURNAROUNDS



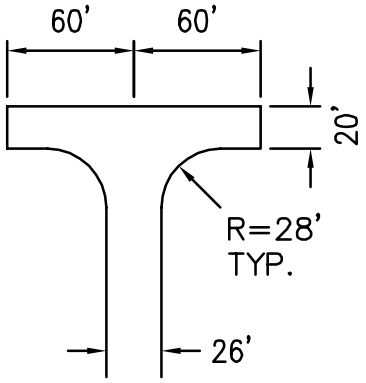
96' DIAMETER CUL-DE-SAC



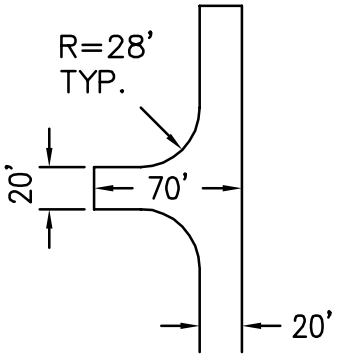
60' "Y"



MINIMUM CLEARANCE AROUND A FIRE HYDRANT



120' HAMMERHEAD



ACCEPTABLE ALTERNATIVE TO 120' HAMMERHEAD

SAN MATEO COUNTYWIDE Water Pollution Prevention Program

ATTACHMENT P
CITY OF HALF MOON BAY

C.3 and C.6 Development Review Checklist

Municipal Regional Stormwater Permit (MRP)
Stormwater Controls for Development Projects

Project Information

I.A **Enter Project Data** *(For "C.3 Regulated Projects," data will be reported in the municipality's stormwater Annual Report.)*

Project Name: _____ Case Number: _____

Project Address & Cross St.: _____

Project APN: _____ Project Watershed: _____

Applicant Name: _____ **I.A.4** Slope on Site: _____ %

Applicant Phone: _____ Applicant Email Address: _____

Development type: (check all that apply)

- ☐ Single Family Residential: A stand-alone home that is not part of a larger project.
- ☐ Single Family Residential: Two or more lot residential development.[1] # of units: _____
- ☐ Multi-Family Residential # of units: _____
- ☐ Commercial
- ☐ Industrial, Manufacturing
- ☐ Mixed-Use # of units: _____
- ☐ Streets, Roads[2], etc.
- ☐ 'Redevelopment' as defined by MRP: creating, adding and/or replacing exterior existing impervious surface on a site where past development has occurred.

I.A.1

- ☐ **'Special land use categories'** as defined by MRP: (1) auto service facilities[3], (2) retail gasoline outlets, (3) restaurants, (4) uncovered parking area (stand-alone or part of a larger project)
- ☐ Institutions: schools, libraries, jails, etc.
- ☐ Parks and trails, camp grounds, other recreational
- ☐ Agricultural, wineries
- ☐ Kennels, Ranches
- ☐ Other, Please specify_____

Project Description[4]: _____

(Also note any past or future phases of the project.) _____

_____

I.A.2 Total Area of Site: _____ acres

I.A.3 Total Area of land disturbed during construction (include clearing, grading, excavating and stockpile area):_____ acres.

I.A.5 Certification:

I certify that the information provided on this form is correct and acknowledge that, should the project exceed the amount of new and/or replaced impervious surface provided in this form, the as-built project may be subject to additional improvements.

☐ Attach Preliminary Calculations ☐ Attach Final Calculations ☐ Attach copy of site plan showing areas

Name of person completing the form:_____ Title:_____

Signature:_____ Date:_____

Phone number: _____ Email address: _____

[1] Common Plans of Development (subdivisions or contiguous, commonly owned lots, for the construction of two or more homes developed within 1 year of each other) are not considered single family projects by the MRP.

[2] Roadway projects creating 10,000 sq.ft. or more of contiguous impervious surface are subject to C.3 requirements if the roadway is new or being widened with additional traffic lanes.

[3] See Standard Industrial Classification (SIC) codes here

[4] Project description examples: 5-story office building, industrial warehouse, residential with five 4-story buildings for 200 condominiums, etc.

I.B Is the project a "C.3 Regulated Project" per MRP Provision C.3.b?

I.B.1 Enter the amount of impervious surface[5] Retained, Replaced and/or Created by the project:

Table I.B.1 Impervious[5] and Pervious Surfaces

Type of Impervious[5] Surface	**I.B.1.a** Pre-Project Impervious[5] Surface (sq.ft.)	**I.B.1.b** Existing Impervious[5] Surface to be Retained[6] (sq.ft.)	**I.B.1.c** Existing Impervious[5] Surface to be Replaced[6] (sq.ft.)	**I.B.1.d** New Impervious[5] Surface to be Created[6] (sq.ft.)	**I.B.1.e** Post-Project Impervious[5] Surface (sq.ft.) (=b+c+d)
Roof area(s)					
Impervious[5] sidewalks, patios, paths, driveways, streets					
Impervious[5] uncovered parking[7]					
Totals of Impervious Surfaces:					

I.B.1.f - Total Impervious[5] Surface Replaced and Created ***(sum of totals for columns I.B.1.c and I.B.1.d)*:**

Type of Pervious Surface	Pre-Project Pervious Surface (sq.ft.)				Post-project Pervious Surface (sq.ft.)
Landscaping					
Pervious Paving				**I.B.1.e.1:**	
Green Roof					
Totals of Pervious Surfaces:					
Total Site Area (Total Impervious[5]+Total Pervious=**I.A.2**)					

I.B.2 Please review and attach additional worksheets as required below using the Total Impervious Surface (IS) Replaced and Created in cell I.B.1.f from Table I.B.1 above and other factors:

	Check all that apply:	**Check One** Yes	No	**Attach Worksheet**
I.B.2.a	Does this project involve any earthwork? If YES, then Check Yes, and Complete Worksheet A. If NO, then go to I.B.2.b	☐	☐	A
I.B.2.b	Is **I.B.1.f** greater than or equal to 2,500 sq.ft? If YES, then the Project is subject to Provision C.3.i. - complete Worksheets B, C & go to I.B.2.c. If NO, then Stop here - go to I.A.5 and complete Certification or ask municipal staff for Small Project Checklist.	☐	☐	B, C
I.B.2.c	Is the total Existing IS to be Replaced (column **I.B.1.c**) 50 percent or more of the total Pre-Project IS (column **I.B.1.a**)? If YES, site design, source control and treatment requirements apply to the whole site. Continue to I.B.2.d If NO, these requirements apply only to the impervious surface created and/or replaced. Continue to I.B.2.d	☐	☐	
I.B.2.d	Is this project a Special Land Use Category (**I.A.1**) and is **I.B.1.f** greater than or equal to 5,000 sq.ft? If YES, project is a Regulated Project. Fill out Worksheet D. Go to I.B.2.f. If NO, go to I.B.2.e	☐	☐	D
I.B.2.e	Is **I.B.1.f** greater than or equal to 10,000 sq.ft? If YES, project is a C.3 Regulated Project - complete Worksheet D. Then continue to I.B.2.f. If NO, then skip to I.B.2.g.	☐	☐	D
I.B.2.f	Is **I.B.1.f** greater than or equal to 43,560 sq.ft? If YES, project may be subject to Hydromodification Management requirements - complete Worksheet E then continue to I.B.2.g. If NO, then go to I.B.2.g.	☐	☐	E
I.B.2.g	Is **I.A.3** greater than or equal to 1 acre? If YES, check box, obtain coverage under the CA Const. General Permit & submit Notice of Intent to municipality - go to I.B.2.h. If NO, then go to I.B.2.h. For more information see: www.swrcb.ca.gov/water_issues/programs/stormwater/construction.shtml	☐	☐	
I.B.2.h	Is this a Special Project or does it have the potential to be a Special Project? If YES, complete Worksheet F - then continue to I.B.2.i. If NO, go to I.B.2.i.	☐	☐	F
I.B.2.i	Is project a High Priority Site? (Determined by the Municipality. High Priority Sites can include those located in or within 100 feet of a sensitive habitat, an Area of Special Biological Significance, a body of water, or **starting 7/1/16** on sites disturbing >=5,000 ft^2 with slopes >=15% (see **I.A.4**) (or per municipal criteria/map) and are subject to monthly inspections from Oct 1 to April 30.) If YES, complete section G-2 on Worksheet G - then continue to I.B.2.j. If NO, then go to I.B.2.j	☐	☐	G
I.B.2.j	For Municipal Staff Use Only: Are you using Alternative Certification for the project review? If YES, then fill out section G-1 on Worksheet G. Fill out other sections of Worksheet G as appropriate. See cell **I.B.1.e.1** above - Is the project installing 3,000 square feet or more of pervious paving? If YES, then fill out section G-3 on Worksheet G. Add to Municipal Inspection Lists (C.3.h)	☐ ☐	☐ ☐	G

[5] Per the MRP, pavement that meets the following definition of pervious pavement is NOT an impervious surface. Pervious pavement is defined as pavement that stores and infiltrates rainfall at a rate equal to immediately surrounding unpaved, landscaped areas, or that stores and infiltrates the rainfall runoff volume described in Provision C.3.

[6] "Retained" means to leave existing impervious surfaces in place, unchanged; "Replaced" means to install new impervious surface where existing impervious surface is removed anywhere on the same property; and "Created" means the amount of new impervious surface being proposed which exceeds the total existing amount of impervious surface at the property.

[7] Uncovered parking includes the top level of a parking structure.

Worksheet A

C6 – Construction Stormwater BMPs

Identify Plan sheet showing the appropriate construction Best Management Practices (BMPs) used on this project:
(Applies to all projects with earthwork)

Yes	Plan Sheet	Best Management Practice (BMP)
☒		Control and prevent the discharge of all potential pollutants, including pavement cutting wastes, paints, concrete, petroleum products, chemicals, wash water or sediments, rinse water from architectural copper, and non-stormwater discharges to storm drains and watercourses.
☒		Store, handle, and dispose of construction materials/wastes properly to prevent contact with stormwater.
☒		Do not clean, fuel, or maintain vehicles on-site, except in a designated area where wash water is contained and treated.
☒		Train and provide instruction to all employees/subcontractors re: construction BMPs.
☐		Protect all storm drain inlets in vicinity of site using sediment controls such as berms, fiber rolls, or filters.
☐		Limit construction access routes and stabilize designated access points.
☐		Attach the San Mateo Countywide Water Pollution Prevention Program's construction BMP plan sheet to project plans and require contractor to implement the applicable BMPs on the plan sheet.
☐		Use temporary erosion controls to stabilize all denuded areas until permanent erosion controls are established.
☐		Delineate with field markers clearing limits, easements, setbacks, sensitive or critical areas, buffer zones, trees, and drainage courses.
☐		Provide notes, specifications, or attachments describing the following: ▪ Construction, operation and maintenance of erosion and sediment controls, include inspection frequency; ▪ Methods and schedule for grading, excavation, filling, clearing of vegetation, and storage and disposal of excavated or cleared material; ▪ Specifications for vegetative cover & mulch, include methods and schedules for planting and fertilization; ▪ Provisions for temporary and/or permanent irrigation.
☐		Perform clearing and earth moving activities only during dry weather.
☐		Use sediment controls or filtration to remove sediment when dewatering and obtain all necessary permits.
☐		Trap sediment on-site, using BMPs such as sediment basins or traps, earthen dikes or berms, silt fences, check dams, soil blankets or mats, covers for soil stock piles, etc.
☐		Divert on-site runoff around exposed areas; divert off-site runoff around the site (e.g., swales and dikes).
☐		Protect adjacent properties and undisturbed areas from construction impacts using vegetative buffer strips, sediment barriers or filters, dikes, mulching, or other measures as appropriate.

Worksheet B

C3 - Source Controls

Select appropriate source controls and identify the detail/plan sheet where these elements are shown.

Yes	Detail/Plan Sheet No.	Features that require source control measures	Source Control Measures (Refer to Local Source Control List for detailed requirements)
☐		Storm Drain	Mark on-site inlets with the words "No Dumping! Flows to Bay" or equivalent.
☐		Floor Drains	Plumb interior floor drains to sanitary sewer[8] [or prohibit].
☐		Parking garage	Plumb interior parking garage floor drains to sanitary sewer.[8]
☐		Landscaping	▪ Retain existing vegetation as practicable. ▪ Select diverse species appropriate to the site. Include plants that are pest- and/or disease-resistant, drought-tolerant, and/or attract beneficial insects. ▪ Minimize use of pesticides and quick-release fertilizers. ▪ Use efficient irrigation system; design to minimize runoff.
☐		Pool/Spa/Fountain	Provide connection to the sanitary sewer to facilitate draining.[8]
☐		Food Service Equipment (non-residential)	Provide sink or other area for equipment cleaning, which is: ▪ Connected to a grease interceptor prior to sanitary sewer discharge.[8] ▪ Large enough for the largest mat or piece of equipment to be cleaned. ▪ Indoors or in an outdoor roofed area designed to prevent stormwater run-on and run-off, and signed to require equipment washing in this area.
☐		Refuse Areas	▪ Provide a roofed and enclosed area for dumpsters, recycling containers, etc., designed to prevent stormwater run-on and runoff. ▪ Connect any drains in or beneath dumpsters, compactors, and tallow bin areas serving food service facilities to the sanitary sewer.[8]
☐		Outdoor Process Activities [9]	Perform process activities either indoors or in roofed outdoor area, designed to prevent stormwater run-on and runoff, and to drain to the sanitary sewer.[8]
☐		Outdoor Equipment/ Materials Storage	▪ Cover the area or design to avoid pollutant contact with stormwater runoff. ▪ Locate area only on paved and contained areas. ▪ Roof storage areas that will contain non-hazardous liquids, drain to sanitary sewer[8], and contain by berms or similar.
☐		Vehicle/ Equipment Cleaning	▪ Roofed, pave and berm wash area to prevent stormwater run-on and runoff, plumb to the sanitary sewer[8], and sign as a designated wash area. ▪ Commercial car wash facilities shall discharge to the sanitary sewer.[8]
☐		Vehicle/ Equipment Repair and Maintenance	▪ Designate repair/maintenance area indoors, or an outdoors area designed to prevent stormwater run-on and runoff and provide secondary containment. Do not install drains in the secondary containment areas. ▪ No floor drains unless pretreated prior to discharge to the sanitary sewer.[8] ▪ Connect containers or sinks used for parts cleaning to the sanitary sewer.[8]
☐		Fuel Dispensing Areas	▪ Fueling areas shall have impermeable surface that is a) minimally graded to prevent ponding and b) separated from the rest of the site by a grade break. ▪ Canopy shall extend at least 10 ft. in each direction from each pump and drain away from fueling area.
☐		Loading Docks	▪ Cover and/or grade to minimize run-on to and runoff from the loading area. ▪ Position downspouts to direct stormwater away from the loading area. ▪ Drain water from loading dock areas to the sanitary sewer.[8] ▪ Install door skirts between the trailers and the building.
☐		Fire Sprinklers	Design for discharge of fire sprinkler test water to landscape or sanitary sewer.[8]
☐		Miscellaneous Drain or Wash Water	▪ Drain condensate of air conditioning units to landscaping. Large air conditioning units may connect to the sanitary sewer.[8] ▪ Roof drains from equipment drain to landscaped area where practicable. ▪ Drain boiler drain lines, roof top equipment, all wash water to sanitary sewer.[8]
☐		Architectural Copper Rinse Water	▪ Drain rinse water to landscaping, discharge to sanitary sewer[8], or collect and dispose properly offsite. See flyer "Requirements for Architectural Copper."

[8] Any connection to the sanitary sewer system is subject to sanitary district approval.

[9] Businesses that may have outdoor process activities/equipment include machine shops, auto repair, industries with pretreatment facilities.

Worksheet C

Low Impact Development – Site Design Measures

Select Appropriate Site Design Measures *(Required for C.3 Regulated Projects; all other projects are encouraged to implement site design measures, which may be required at municipality discretion.) Projects that create and/or replace 2,500 – 10,000 sq.ft. of impervious surface, and stand-alone single family homes that create/replace 2,500 sq.ft. or more of impervious surface, must include* ***one of Site Design Measures a through f*** *(Provision C.3.i requirements).*[10] *Larger projects must also include applicable Site Design Measures g through i. Consult with municipal staff about requirements for your project.*

Select appropriate site design measures and Identify the Plan Sheet where these elements are shown.

Yes	Plan Sheet Number	
☐		a. Direct roof runoff into cisterns or rain barrels and use rainwater for irrigation or other non-potable use.
☐		b. Direct roof runoff onto vegetated areas.
☐		c. Direct runoff from sidewalks, walkways, and/or patios onto vegetated areas.
☐		d. Direct runoff from driveways and/or uncovered parking lots onto vegetated areas.
☐		e. Construct sidewalks, walkways, and/or patios with pervious or permeable surfaces. Use the specifications in the C3 Technical Guidance (Version 4.1) downloadable at www.flowstobay.org/newdevelopment.
☐		f. Construct bike lanes, driveways, and/or uncovered parking lots with pervious surfaces. Use the specifications in the C3 Technical Guidance (Version 4.1) downloadable at www.flowstobay.org/newdevelopment.
☐		g. Limit disturbance of natural water bodies and drainage systems; minimize compaction of highly permeable soils; protect slopes and channels; and minimize impacts from stormwater and urban runoff on the biological integrity of natural drainage systems and water bodies.
☐		h. Conserve natural areas, including existing trees, other vegetation and soils.
☐		i. Minimize impervious surfaces.

Regulated Projects can also consider the following site design measures to reduce treatment system sizing:

Yes	Plan Sheet Number	
☐		j. Self-treating area (see Section 4.2 of the C.3 Technical Guidance)
☐		k. Self-retaining area (see Section 4.3 of the C.3 Technical Guidance)
☐		l. Plant or preserve interceptor trees (Section 4.1, C.3 Technical Guidance)

[10] See MRP Provision C.3.a.i.(6) for non-C.3 Regulated Projects, C.3.c.i.(2)(a) for Regulated Projects, C.3.i for projects that create/replace 2,500 to 10,000 sq.ft. of impervious surface and stand-alone single family homes that create/replace 2,500 sq.ft. or more of impervious surface.

Worksheet D

C3 Regulated Project - Stormwater Treatment Measures

Check all applicable boxes and indicate the treatment measure(s) included in the project.

Yes	
☐ Attach Worksheet F and Calculations	Is the project a **Special Project**?[11] If yes, consult with municipal staff about the need to evaluate the feasibility and infeasibility of 100% LID treatment. Indicate the type of non-LID treatment to be used, the hydraulic sizing method[12], and percentage of the amount of runoff specified in Provision C.3.d that is treated: Non-LID Treatment Measures: — Hydraulic sizing method[12] — % of C.3.d amount of runoff treated ☐ Media filter — ☐2.a ☐2.b ☐2.c — ____% ☐ Tree well filter — ☐2.a ☐2.b ☐2.c — ____%
☐	Is the project using infiltration systems? The MRP no longer requires the use or analysis of the feasibility of infiltration, but infiltration systems are encouraged and may be beneficial depending on the project. Indicate the infiltration measures to be used, and hydraulic sizing method: Infiltration Measures: — Hydraulic sizing method[12] ☐ Bioinfiltration[13] — ☐1.a ☐1.b ☐2.c ☐3 ☐ Infiltration trench — ☐1.a ☐1.b ☐ Other (specify):
☐	Is the project harvesting and using rainwater? The MRP no longer requires the use or analysis of the feasibility of rainwater harvesting, but it rainwater harvesting and use is encouraged and may be beneficial depending on the project." Rainwater Harvesting/Use Measures: — Hydraulic sizing method[12] ☐ Rainwater Harvesting for indoor non-potable water use — ☐1.a ☐1.b ☐ Rainwater Harvesting for landscape irrigation use — ☐1.a ☐1.b
☐	Is the project installing biotreatment measures? Indicate the biotreatment measures to be used, and the hydraulic sizing method: Biotreatment Measures: — Hydraulic sizing method[12] ☐ Bioretention area — ☐2.c ☐3 ☐ Flow-through planter — ☐2.c ☐3 ☐ Other (specify): _____

A copy of the long term Operations and Maintenance (O&M) Agreement and Plan for this project will be required. Please contact the NPDES Representative of the applicable municipality for an agreement template and consult the C.3 Technical Guidance at www.flowstobay.org for maintenance plan templates for specific facility types.

[11] Special Projects are smart growth, high density, or transit-oriented developments with the criteria defined in Provision C.3.e.ii.(2), (3) or (4) (see Worksheet F).

[12] Indicate which of the following Provision C.3.d.i hydraulic sizing methods were used. Volume based approaches: 1(a) Urban Runoff Quality Management approach, or 1(b) 80% capture approach (recommended volume-based approach). Flow-based approaches: 2(a) 10% of 50-year peak flow approach, 2(b) 2 times the 85th percentile rainfall intensity approach, or 2(c) 0.2-Inch-per-hour intensity approach (recommended flow-based approach – also known as the 4% rule). Combination flow and volume-based approach: 3.

[13] See Section 6.1 of the C.3 Technical Guidance for conditions in which bioretention areas provide bioinfiltration.

Worksheet E

Hydromodification Management

E-1 Is the project a Hydromodification Management[14] (HM) Project?

E-1.1 Is the total impervious area increased over the pre-project condition?

- ☐ Yes. Continue to E-1.2
- ☐ No. The project is NOT required to incorporate HM Measures.
  Go to Item E-1.4 and check "No."

E-1.2 Is the site located in an HM Control Area per the HM Control Areas map (Appendix H of the C.3 Technical Guidance)?

- ☐ Yes. Continue to E-1.3
- ☐ No. Attach map, indicating project location. The project is NOT required to incorporate HM Measures.
  Skip to Item E-1.4 and check "No."

E-1.3 Has an engineer or qualified environmental professional determined that runoff from the project flows only through a hardened channel or enclosed pipe along its entire length before emptying into a waterway in the exempt area?

- ☐ Yes. Attach map of facility. Go to Item E-1.4 and check "Yes."
- ☐ No. Attach map, indicating project location. The project is NOT required to incorporate HM Measures.
  Skip to Item E-1.4 and check "No."

E-1.4 Is the project a Hydromodification Management Project?

- ☐ Yes. The project is subject to HM requirements in Provision C.3.g of the Municipal Regional Stormwater Permit.
- ☐ No. The project is EXEMPT from HM requirements.

- ➢ If the project is subject to the HM requirements, incorporate in the project flow duration control measures designed such that post-project discharge rates and durations match pre-project discharge rates and durations.
- ➢ The Bay Area Hydrology Model (BAHM) has been developed to help size flow duration controls. See www.bayareahydrologymodel.org. Guidance is provided in Chapter 7 of the C.3 Technical Guidance.

E-2 Incorporate HM Controls (if required)

Are the applicable items provided with the Plans?

Yes	No	NA	
☐	☐	☐	Site plans with pre- and post-project impervious surface areas, surface flow directions of entire site, locations of flow duration controls and site design measures per HM site design requirement
☐	☐	☐	Soils report or other site-specific document showing soil type(s) on site
☐	☐	☐	If project uses the Bay Area Hydrology Model (BAHM), a list of model inputs and outputs.
☐	☐	☐	If project uses custom modeling, a summary of the modeling calculations with corresponding graph showing curve matching (existing, post-project, and post-project with HM controls curves), goodness of fit, and (allowable) low flow rate.
☐	☐	☐	If project uses the Impracticability Provision, a listing of all applicable costs and a brief description of the alternative HM project (name, location, date of start up, and entity responsible for maintenance).
☐	☐	☐	If the project uses alternatives to the default BAHM approach or settings, a written description and rationale.

[14] Hydromodification is the change in a site's runoff hydrograph, including increases in flows and durations that results when land is developed (made more impervious). The effects of hydromodification include, but are not limited to, increased bed and bank erosion of receiving streams, loss of habitat, increased sediment transport and/or deposition, and increased flooding. Hydromodification control measures are designed to reduce these effects.

Worksheet F
Special Projects

Complete this worksheet for projects that appear to meet the definition of "Special Project", per Provision C.3.e.ii of the Municipal Regional Stormwater Permit (MRP). The form assists in determining whether a project meets Special Project criteria, and the percentage of low impact development (LID) treatment reduction credit. Special Projects that implement less than 100% LID treatment must provide a narrative discussion of the feasibility or infeasibility of 100% LID treatment. See Appendix J of the C.3 Technical Guidance Handbook (download at www.flowstobay.org) for more information.

F.1 "Special Project" Determination *(Check the boxes to determine if the project meets any of the following categories.)*

Special Project Category "A"

Does the project have ALL of the following characteristics?

- ☐ Located in a municipality's designated central business district, downtown core area or downtown core zoning district, neighborhood business district or comparable pedestrian-oriented commercial district, or historic preservation site and/or district[15];
- ☐ Creates and/or replaces 0.5 acres or less of impervious surface;
- ☐ Includes no surface parking, except for incidental parking for emergency vehicle access, ADA access, and passenger or freight loading zones;
- ☐ Has at least 85% coverage of the entire site by permanent structures. The remaining 15% portion of the site may be used for safety access, parking structure entrances, trash and recycling service, utility access, pedestrian connections, public uses, landscaping and stormwater treatment.

☐ No (continue) ☐ Yes – Complete Section F.2 below

Special Project Category "B"

Does the project have ALL of the following characteristics?

- ☐ Located in a municipality's designated central business district, downtown core area or downtown core zoning district, neighborhood business district or comparable pedestrian-oriented commercial district, or historic preservation site and/or district[20];
- ☐ Creates and/or replaces more than 0.5 acres of impervious area and less than 2.0 acres;
- ☐ Includes no surface parking, except for incidental parking for emergency access, ADA access, and passenger or freight loading zones;
- ☐ Has at least 85% coverage of the entire site by permanent structures. The remaining 15% portion of the site may be used for safety access, parking structure entrances, trash and recycling service, utility access, pedestrian connections, public uses, landscaping and stormwater treatment;
- ☐ Minimum density of either 50 dwelling units per acre (for residential projects) or a Floor Area Ratio (FAR) of 2:1 (for commercial projects) - mixed use projects may use either criterion. **Note Change on 7/1/16[16]**

☐ No (continue) ☐ Yes – Complete Section F-2 below

Special Project Category "C"

Does the project have ALL of the following characteristics?

- ☐ At least 50% of the project area is within 1/2 mile of an existing or planned transit hub[17] or 100% within a planned Priority Development Area[18];
- ☐ The project is characterized as a non-auto-related use[19]; and
- ☐ Minimum density of either 25 dwelling units per acre (for residential projects) or a Floor Area Ratio (FAR) of 2:1 (for commercial projects) - mixed use projects may use either criterion. **Note Change on 7/1/16[16]**

☐ No (continue) ☐ Yes – Complete Section F-2 below

---

[15] And built as part of a municipality's stated objective to preserve/enhance a pedestrian-oriented type of urban design.

[16] **Effective 7/1/16**, the MRP establishes definitions for "Gross Density"(GD) & FAR. GD is defined as, "the total number of residential units divided by the acreage of the entire site area, including land occupied by public right-of-ways, recreational, civic, commercial and other non-residential uses." FAR is defined as," the Ratio of the total floor area on all floors of all buildings at a project site (except structures, floors, or floor areas dedicated to parking) to the total project site area.

[17] "Transit hub" is defined as a rail, light rail, or commuter rail station, ferry terminal, or bus transfer station served by three or more bus routes. (A bus stop with no supporting services does not qualify.)

[18] A "planned Priority Development Area" is an infill development area formally designated by the Association of Bay Area Government's / Metropolitan Transportation Commission's FOCUS regional planning program.

[19] Category C specifically excludes stand-alone surface parking lots; car dealerships; auto and truck rental facilities with onsite surface storage; fast-food restaurants, banks or pharmacies with drive-through lanes; gas stations; car washes; auto repair and service facilities; or other auto-related project unrelated to the concept of transit oriented development.

F.2 LID Treatment Reduction Credit Calculation

(If more than one category applies, choose only one of the applicable categories and fill out the table for that category.)

Category	Impervious Area Created/Replaced (sq. ft.)	Site Coverage (%)	Project Density[16] or FAR[16]	Density/Criteria	Allowable Credit (%)	Applied Credit (%)
A			N.A.	N.A.	100%	
B				Res ≥ 50 DU/ac or FAR ≥ 2:1	50%	
				Res ≥ 75 DU/ac or FAR ≥ 3:1	75%	
				Res ≥ 100 DU/ac or FAR ≥ 4:1	100%	
C				**Location credit (select one)[20]:**		
				Within ¼ mile of transit hub	50%	
				Within ½ mile of transit hub	25%	
				Within a planned PDA	25%	
				Density credit (select one):		
				Res ≥ 30 DU/ac or FAR ≥ 2:1	10%	
				Res ≥ 60 DU/ac or FAR ≥ 4:1	20%	
				Res ≥ 100 DU/ac or FAR ≥ 6:1	30%	
				Parking credit (select one):		
				≤ 10% at-grade surface parking[21]	10%	
				No surface parking	20%	
				TOTAL TOD CREDIT =		

F.3 Narrative Discussion of the Feasibility/Infeasibility of 100% LID Treatment:

If project will implement less than 100% LID, prepare a discussion of the feasibility or infeasibility of 100% LID treatment, as described in Appendix K of the C.3 Technical Guidance.

F.4 Select Certified Non-LID Treatment Measures:

If the project will include non-LID treatment measures, select a treatment measure certified for "Basic" General Use Level Designation (GULD) by the Washington State Department of Ecology's Technical Assessment Protocol – Ecology (TAPE). Guidance is provided in Appendix K of the C.3 Technical Guidance (download at www.flowstobay.org).[22]

[20] To qualify for the location credit, at least 50% of the project's site must be located within the ¼ mile or ½ mile radius of an existing or planned transit hub, as defined on page 1, footnote 2. A planned transit hub is a station on the MTC's Regional Transit Expansion Program list, per MTC's Resolution 3434 (revised April 2006), which is a regional priority funding plan for future transit stations in the San Francisco Bay Area. To qualify for the PDA location credit, 100% of the project site must be located within a PDA, as defined on page 1, footnote 3.

[21] The at-grade surface parking must be treated with LID treatment measures.

[22] TAPE certification is used in order to satisfy Special Project's reporting requirements in the MRP.

Worksheet G
(For municipal staff use only)

G-1 **Alternative Certification:** Were the treatment and/or HM control sizing and design reviewed by a qualified third-party professional that is not a member of the project team or agency staff?

☐ Yes ☐ No Name of Reviewer _____

G-2 **High Priority Site:** High Priority Sites can include those located in or within 100 feet of a sensitive habitat, an Area of Special Biological Significance (ASBS), a body of water, or **starting 7/1/16** on "hillside projects" disturbing >=5,000 sq.ft. of land and with steep slopes (of >=15% - see cell **I.A.4** - or as identified by municipal criteria or map). These sites are subject to monthly inspections from Oct 1 to April 30. See MRP Provision C.6.e.ii.(2).

.

☐ Yes ☐ No If yes, then add site to Staff's Monthly Rainy Season Construction Site Inspection List

G-3 **Inspections of Sites with Pervious Paving: Starting 7/1/16**, Regulated projects that are installing 3,000 sq.ft. or more of pervious paving (see cell **I.B.1.e.1**) (excluding private-use patios in single family homes, townhomes, or condominiums) must have the paving system inspected by the jurisdiction upon completion of the installation and the site must be added to the jurisdiction's list of sites needing inspections at least once every five years – see provision C.3.h. Pervious pavement systems include pervious concrete, pervious asphalt, pervious pavers and grid pavers etc. and are described in the C3 Technical Guidance (Version 4.1) downloadable at: www.flowstobay.org/newdevelopment.

☐ Yes ☐ No If yes, then add site to Staff's Lists for Inspections at the end of Construction and O&M.

Operations and Maintenance (O&M) Submittals

G-4 Stormwater Treatment Measure and/HM Control Owner or Operator's Information:

Name:_____

Address:_____

Phone:_____ Email:_____

- *Applicant must call for inspection and receive inspection within 45 days of installation of treatment measures and/or hydromodification management controls.*

The following questions apply to C.3 Regulated Projects and Hydromodification Management Projects.

		Yes	No	N/A
G-4.1	Was maintenance plan submitted?	☐	☐	☐
G-4.2	Was maintenance plan approved?	☐	☐	☐
G-4.3	Was maintenance agreement submitted? (Date executed:_____)	☐	☐	☐

- *Attach the executed maintenance agreement as an appendix to this checklist.*

G-5 **Annual Operations and Maintenance (O&M) Submittals (for municipal staff use only):**

For C.3 Regulated Projects and Hydromodification Management Projects, indicate the dates on which the Applicant submitted annual reports for project O&M:

_____

G-6 **Comments (for municipal staff use only):**

_____

_____

_____

_____

_____

G-7 NOTES (for municipal staff use only):

Section I Notes:_____

Worksheet A Notes:_____

Worksheet B Notes:_____

Worksheet C Notes:_____

Worksheet D Notes:_____

Worksheet E Notes:_____

Worksheet F Notes:_____

G-8 Project Close-Out (for municipal staff use only):

		Yes	No	NA
8.1	Were final Conditions of Approval met?	☐	☐	
8.2	Was initial inspection of the completed treatment/HM measure(s) conducted? (Date of inspection:_____)	☐	☐	☐
8.3	Was maintenance plan submitted? (Date executed:_____)	☐	☐	☐
8.4	Was project information provided to staff responsible for O&M verification inspections? (Date provided to inspection staff:_____)	☐	☐	☐

G-9 Project Close-Out (Continued -- for municipal staff use only):

Name of staff confirming project is closed out:_____

Signature:_____ Date:_____

Name of O&M staff receiving information:_____

Signature:_____ Date:_____

ATTACHMENT Q (1 of 3)

WATER DEMAND PROJECTION WORKSHEET

JOB TITLE _____ CAL. BY _____
JOB NUMBER _____ CHKD. BY _____
JOB LOCATION _____ DATE _____

INDOOR WATER DEMAND PROJECTION

A. RESIDENTIAL

1. Single Family (1-7 Units/Acre)
   _____ Units X 2.8 Persons = _____ Persons
2. Multi - Family (8-20 Units/Acre)
   _____ Units X 2.5 Persons = _____ Persons
3. High - Density (21+ Units/Acre)
   _____ Units X 2.2 Persons = _____ Persons

_____ Persons X 60* GPD = _____ **GPD Projected**

B. OFFICE/COMMERCIAL

_____ sqft X 0.13 gpd/sqft = _____ **GPD Projected**

C. HOTEL

_____ rooms X 195 gpd/room = _____ **GPD Projected**

D. RESTAURANTS

_____ seats X 30 gpd/seat = _____ **GPD Projected**

E. ALL OTHERS SEE PAGE 3:

= _____ **GPD Projected**

LANDSCAPING WATER DEMAND PROJECTION

_____ sqft X 3.5 cuft of water /sqft of landscape per year = _____ **CUFT/YR**

To convert to GPD:

_____ cuft/yr X 7.48 gal/cuft X 1 yr/365 days = _____ **GPD Projected**

TOTAL DOMESTIC WATER DEMAND PROJECTION

INDOOR + LANDSCAPING PROJECTION = _____ **GPD Projected**

* From SFPUC Demand Study by URS, " Projected Water Usage for BAWSCA Agencies " , Tech Memo of August 2006.

ATTACHMENT Q (2 of 3)

WATER DEMAND PROJECTION WORKSHEET
OCCUPANT LOADS

JOB TITLE _____ CAL. BY _____
JOB NUMBER _____ CHKD. BY _____
JOB LOCATION _____ DATE _____

DESIGNED USE OF THE FACILITY	OCCUPANT LOAD OF FLOOR AREA
A. SCHOOL/CLASSROOM	20 sqft/person
B. HEALTH CLUB	50 sqft/person
C. MANUFACTURING AREAS	200 sqft/person
D. NURSERIES (DAY-CARE)	35 sqft/person
E. STORAGE FACILITIES	300 sqft/person

ATTACHMENT Q (3 of 3)

WATER DEMAND PROJECTION WORKSHEET
UNIT LOADS

JOB TITLE _____ CAL. BY _____
JOB NUMBER _____ CHKD. BY _____
JOB LOCATION _____ DATE _____

TYPE OF ESTABLISHMENT	VOLUME OF CONSUMPTION/DAY
Assembly Halls	2 gal per seat
Bowling Alley	75 gal per lane
Churches	7 gal per seat
Dance Halls	2 gal per person
General Hospitals	0.27 gal per sqft
Health Clubs	25 gal per person
Laundries	400 gal per machine
Manufacturing (excluding industrial usage)	30 gal per person/shift
Motels with bath, toilet and kitchen wastes	170 gal per room
Nursing homes/Daycare	75 gal per person
Medical Offices (other than hospitals)	0.18 gal per sqft
Research and Development	0.21 gal per sqft
Schools	35 gal per person
Service Station	750 gal per bay
Storage facilities	1 gal per person
Stores (Retail type)	450 gal per 25 ft frontage
(Food -- non-restaurant type)	900 gal per 25 ft frontage
Trailer parks or tourist camps (with built-in bath)	50 gal per person

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Appendix E
Element 6 (Overflow Emergency Response Plan) Supporting Documents

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SPILL EMERGENCY RESPONSE PLAN

City of Half Moon Bay
Updated May 2023

Waste Discharge I.D. No.: 2SSO10139

V.W. HOUSEN
& ASSOCIATES

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ELEMENT 6 – SPILL EMERGENCY RESPONSE PLAN

This section of the SSMP provides a summary of the City's emergency response documents and procedures for sanitary sewer spills. SAM provides spill emergency response by contract, and is required to follow the City's Spill Emergency Response Plan (Spill ERP). Mark Thomas and Company (MTCo) provides sewer collection system operations and maintenance support to the City.

6.1 INTRODUCTION

The Spill Emergency Response Plan includes measures to protect public health and the environment. This plan includes information to support the City and SAM's response to sanitary sewer spills in a timely manner that minimizes water quality impacts and nuisance by:

- Stopping the spill and preventing/minimizing a discharge to waters of the State[1];
- Intercepting sewage flows to prevent/minimize spill volume discharged into waters of the State;
- Recovering, cleaning up and disposing of sewage and wash down water; and
- Cleaning publicly accessible areas while preventing toxic discharges to waters of the State.

6.2 REGULATORY REQUIREMENTS

On May 2, 2006, the State Water Resources Control Board (SWRCB) issued a directive through Order No. 2006-0003-DWQ to require all public wastewater collection system agencies in California with greater than one mile of sewers to be regulated under the Statewide WDR. Portions of this Order related to monitoring and reporting were amended by Order No. 2013-0058-EXEC, dated July 30, 2013. All of the previous SWRCB Orders were superseded by Order No. 2022-0103-DWQ, effective June 5, 2023, which is referenced in this document as the Statewide WDR.

The City must develop and implement a spill emergency response plan to ensure prompt detection and response to spills to reduce spill volumes and collect information for prevention of future spills. At a minimum, this plan must include procedures to:

- Notify primary responders, appropriate local officials, and appropriate regulatory agencies of a spill in a timely manner;
- Notify other potentially affected entities (for example, health agencies, water suppliers, etc.) of spills that potentially affect public health or reach waters of the State;

[1] Waters of the State include any surface water or groundwater, including saline waters, within the boundaries of the state as defined in Water Code section 13050(e), and are inclusive of waters of the United States.

- Comply with the notification, monitoring and reporting requirements of the Statewide WDR, State law and regulations, and applicable Regional Water Board Orders;
- Ensure that appropriate staff and contractors implement the Spill Emergency Response Plan and are appropriately trained;
- Address emergency system operations, traffic control, and other necessary response activities;
- Contain a spill and prevent/minimize discharge to waters of the State or any drainage conveyance system;
- Minimize and remediate public health impacts and adverse impacts on beneficial uses of waters of the State;
- Remove sewage from the drainage conveyance system;
- Clean the spill area and drainage conveyance system in a manner that does not inadvertently impact beneficial uses in the receiving waters;
- Implement technologies, practices, equipment, and interagency coordination to expedite spill containment and recovery;
- Implement pre-planned coordination and collaboration with storm drain agencies and other utility agencies/departments prior, during, and after a spill event;
- Conduct post-spill assessments of spill response activities;
- Document and report spill events as required by the Statewide WDR; and
- Annually, review and asses effectiveness of the Spill Emergency Response Plan and update it as needed.

6.3 SPILL CATEGORIES

The SWRCB defines a spill as a discharge of sewage from any portion of a sanitary sewer system due to a sanitary sewer system spill, operational failure, and/or infrastructure failure. Exfiltration of sewage is not considered to be a spill if the exfiltrated sewage remains in the subsurface and does not reach a surface water of the State.

Four categories of spills, Categories 1 through 4, are defined in the Statewide WDR, as defined in Table 6.1 on the following page. Table 6.2 summarizes the regulatory reporting requirements for each category of spill. For reporting purposes, the Statewide WDR also has requirements for a “No Spill” category.

All agencies that own or operate sanitary systems greater than one mile in length that collect and/or convey untreated or partially treated wastewater to a publicly owned treatment facility are required to report all spills, excluding private lateral spills.

TABLE 6.1 STATEWIDE WDR SPILL CATEGORIES

Category 1	• A spill of any volume of sewage from or caused by a sanitary sewer system or publicly owned lateral that results in a discharge to: o A surface water, including a surface water body that contains no flow or volume of water; or o A drainage conveyance system that discharges to surface waters when the sewage is not fully captured and returned to the sanitary sewer system or disposed of properly. • Any spill volume not recovered from a drainage conveyance system is considered a discharge to surface water, unless the drainage conveyance system discharges to a dedicated stormwater infiltration basin or facility.
Category 2	• A spill from a sewer main of 1,000 gallons or greater that does not discharge to a surface water.
Category 3	• A spill from a sewer main of equal to or greater than 50 gallons and less than 1,000 gallons that does not discharge to a surface water.
Category 4	• A spill from a sewer main of less than 50 gallons that does not discharge to a surface water.

6.4 NOTIFICATION PROCEDURES

This section describes the initial notification process, and initial response activities that occur when there is a potential sewer spill.

6.4.1. Responsibilities

The following SAM and MTCo staff are responsible for receiving and responding to spills:

- First Responder to spills: SAM Lead Collection System Maintenance Worker during normal work hours; designated SAM First Responder outside of work hours with possible MTCo assistance. First Responder is usually the on-duty Treatment Plant/Lift Station Supervisor but may also be SAM on-call sanitary sewer staff.
- SAM First Responder to pump station failures: Operations Staff during normal working hours, designated First Responder outside of working hours with possible MTCo assistance
- For processing of claims resulting from spills: Deputy City Manager, City of Half Moon Bay

TABLE 6.2 SUMMARY OF REGULATORY REPORTING DEADLINES

Element	Requirement	Method
NOTIFICATION	Category 1 Spill Greater than 1,000 Gallons: • Notify OES within two hours of becoming aware of the spill • Obtain an OES notification control number. • Also notify San Mateo County Environmental Health and the US Coast Guard	• Call Cal OES at: **(800) 852-7550** • San Mateo County Environmental Health Services **(650) 442-2666** and the County Health Officer at **(650) 372-6200** • US Coast Guard **(415) 399-3530**
REPORTING	Category 1 Spill: • Draft Report within three business days of becoming aware of the spill | LRO certifies within 15 calendar days of spill end date • Spill Technical Report within 45 calendar days after the spill end date if 50,000 gallons or more Category 2 Spill: • Draft Report within 3 business days of becoming aware of the spill | LRO certifies within 15 calendar days of the spill end date Category 3 & 4 Spills: • CAT 3 - Certified report within 30 calendar days of the end of month in which the spill occurred • CAT 4 - Monthly the estimated total spill volume exiting the sanitary sewer system, and the total number of all Category 4 spills within 30 calendar days after the end of the calendar month in which the spills occurred • LRO certifies annually a report of all Category 4 spills, by February 1 after the end of the calendar year in which the spills occurred "No Spill" Certification • LRO certifies that no Spill occurred within 30 calendar days of the end of the month in which there are no spills.	• Enter data into the CIWQS Online Spill Database (http://ciwqs.waterboards.ca.gov/), certified by the Legally Responsible Official(s). • All information required by CIWQS will be captured in the Sanitary Sewer Spill Report. • Certified spill reports may be updated by amending the report or adding an attachment to the spill report within 90 calendar days after the spill end date. After 90 days, the State Spill Program Manager must be contacted to request to amend a spill report along with a justification for why the additional information was not available prior to the end of the 90 days.
WATER QUALITY MONITORING	The City will conduct water quality sampling within 18 hours after being aware of Category 1 spills in which 50,000 gallons or greater are spilled to surface waters. EHS may require daily water quality sampling until compliance is achieved.	Water quality results will be included in the Spill Technical Report for Category 1 spills in which 50,000 gallons or greater reach surface waters.

MTCo staff will notify the Public Works Director and provide pertinent information regarding the spill. The SAM Operations Supervisor makes the initial (2-hour) notifications. MTCo enters the information in CIWQS and makes all follow-up (maximum 3-day) reports. The City Engineer certifies all reports as the LRO.

6.4.2. Notification by Field Staff or the Public

The City is most often notified by the public or field staff of a spill. The public contacts the City, and is redirected to contact the SAM telephone number, which is **(650) 726-0124 day or night.** Spills may also be reported in person at the City or SAM offices, or via 9-1-1. If the call is made to 9-1-1, the receiving agency notifies SAM of the spill to provide First Response. The SAM telephone number is included in the phone book and on SAM's website, which can be accessed through the url:: http://samcleanswater.org/about

The individual receiving the call should collect the information listed in Table 6.3 on the following page.

TABLE 6.3 INFORMATION TO GATHER FROM CALLER OF POTENTIAL SPILL

Call Notes from Potential Spill – Conversation Checklist
• Date and time of call; • Date and time the caller first noticed the spill, if available; • Specific location of the potential problem; • Narrative description of the complaint, including any information the caller provided regarding whether the spill has reached surface waters or a drainage conveyance system, if available; • Caller's contact information, if available; and • Additional supportive information such as whether the caller smells any odor, or whether the appearance was at a cleanout or manhole would be beneficial. • Document on the same record the final resolution of the call.

Figures 6.1 and 6.2 on the following pages present flowcharts showing SAM's chain of communication, beginning with spill notification from the public, during normal working hours and non-working hours.

During normal working hours, SAM Lead Collection Worker and collection workers are the First Responder. During non-business hours, notification is routed to the SAM Operations Supervisor, who deploys SAM collection system maintenance staff as needed for first response.

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FIGURE 6.1 SPILL NOTIFICATION AND RESPONSE DURING BUSINESS HOURS

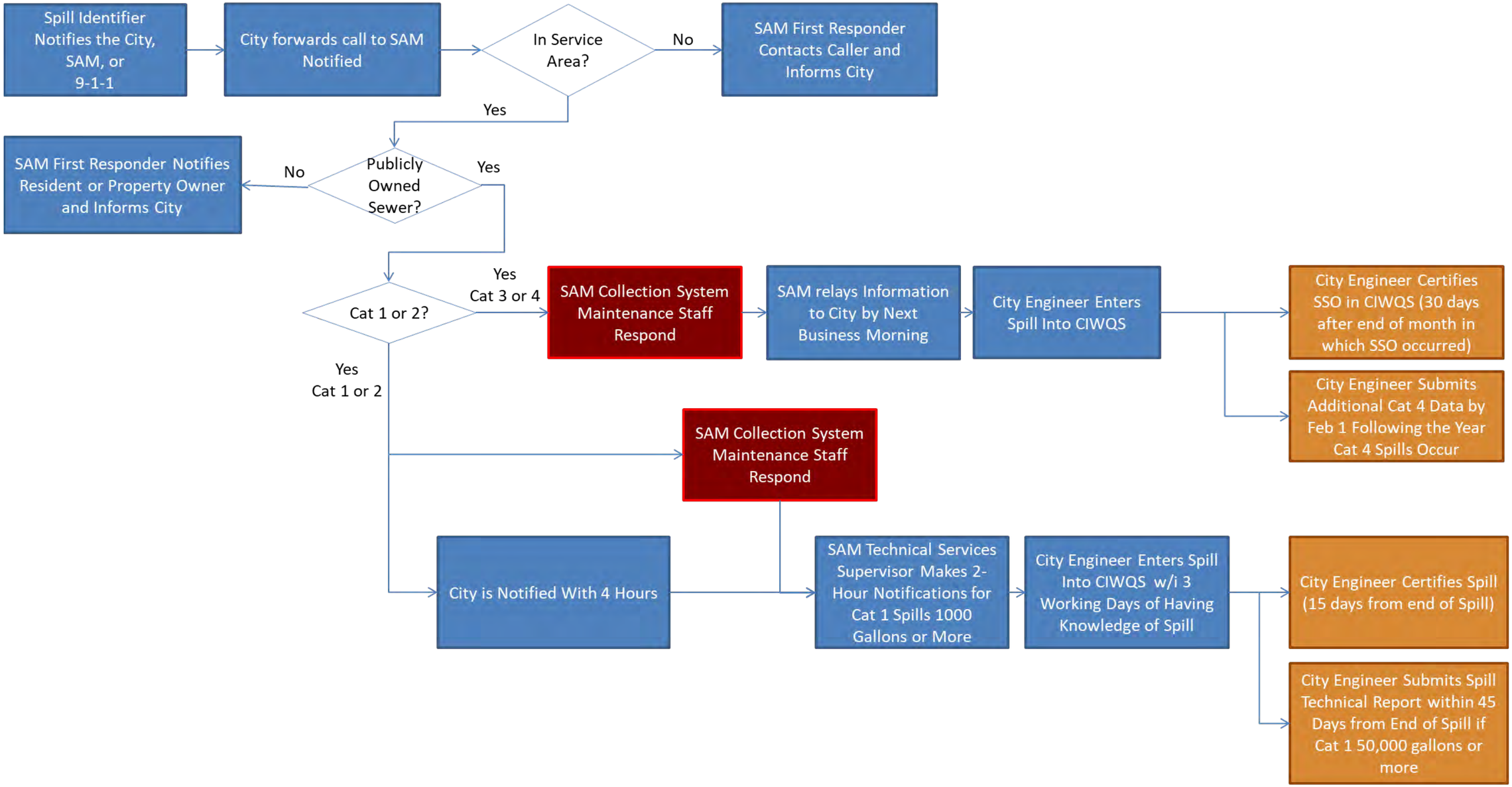
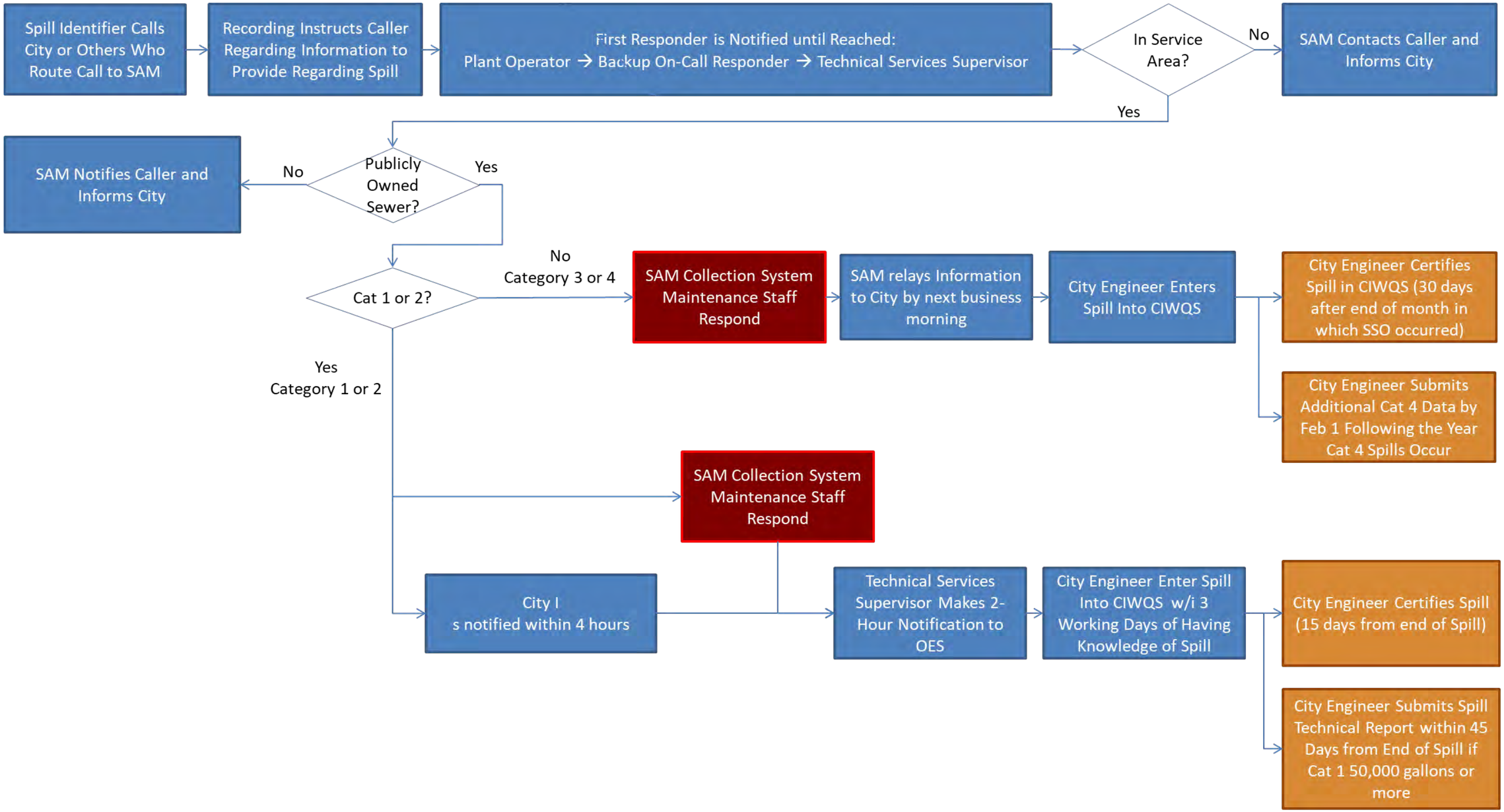


FIGURE 6.2 SPILL NOTIFICATION AND RESPONSE OUTSIDE OF BUSINESS HOURS



The SAM Operations Supervisor notifies MTCo upon receiving the spill notification and relays preliminary observations as soon as practical after arriving at the site. Based on the information provided to MTCo by SAM, MTCo determines whether or not to mobilize a response crew to provide additional support to SAM staff. MTCo then relays information to the City Public Works Director and/or City Engineer.

For public spills within the City's service area that are less than 500 gallons in volume, MTCo will provide information to the City by the morning of the first subsequent business day. For spills greater than 500 gallons in volume, the information must be relayed to the City's Public Works Superintendent **within 4 hours of learning of the spill**.

6.4.3. Notification During Normal Working Hours

During normal office hours, which are from Monday through Friday from 8:00 a.m. to 4:30 p.m. excluding holidays, the SAM staff member that receives the call, or other recipient, notifies the SAM Operations Supervisor who then dispatches the Lead Collection System Worker. The SAM Operations Supervisor immediately notifies MTCo and relays information from the caller. SAM Operations Supervisor then deploys collection system maintenance staff for spill investigation and response. Information collected at the site is also relayed to MTCo. MTCo relays this information to the City Public Works Director and/or City Engineer.

If the spill is a Category 1, the SAM Operations Supervisor makes the initial (2-hour) notification to Cal OES and also notifies MTCo of the Category 1 determination. MTCo in turn notifies the City Public Works Director/City Engineer.

6.4.4. Response Outside of Normal Working Hours

After normal working hours, the caller calls SAM's main number and is directed to press "1". The caller is directed to leave a message and told that SAM will call them back. The caller is directed to leave their name, address, telephone number, and a description of the problem.

The voice mail notification system attempts to contact the First Responder. The voice mail notification system rolls over to a back-up cell phone number after 15 minutes of trying to contact the First Responder, and then to SAM's Operations Supervisor after 15 minutes of trying to contact the back-up number, and then cycles back through this list until a person is reached.

If the call is made to the City after normal working hours, the caller is redirected to contact 9-1-1in which the receiving agency (Fire Department / Sherriff's Office) contacts SAM's main number and follows the notification procedure outlined above.

After hours, SAM's First Responder is usually the on-duty treatment plant/lift station operator. The plant is staffed every day, including weekends and holidays. SAM also designates and pays on-call staff to work after hours, weekends, and holidays. The SAM First Responder retrieves the message remotely, and may call the caller for additional information.

After the call is received by the First Responder, back-up on call staff, and/or Operations Supervisor, spill response and reporting proceed in the same manner as during normal working hours.

SAM's general voice mail box is checked at the beginning of each working day to ensure that all calls received during the prior off-hours period have received a response.

6.4.5. Notification from Pump Station SCADA Alarms

The City's three pump station alarms are conveyed to SAM via auto-dialer. Alarm conditions and other pump station issues are monitored and response is provided by SAM collection system maintenance staff and mechanics.

If the alarm is related to a condition that could lead to a spill, or if a spill is occurring, SAM will proceed with the spill notification and mitigation procedures. If the alarm is due to a condition that can be addressed immediately, SAM will address the condition. If pump or electrical repairs are required, or SAM cannot immediately address the issue, SAM will immediately notify MTCo so MTCo can mobilize specialty assistance.

The City has a separate Pump Station Emergency Response Plan, include in Appendix E, that outlines emergency notification and response procedures to be implemented by SAM First Responders in the event of a spill at one of the City's three pump stations.

6.5 SPILL RESPONSE PROGRAM

6.5.1. Contact Information

Following are names and contact information for the City spill responders.

- In Case of Emergency: 911
- County Sheriff Dispatch: (650) 216-SMSO (7676)
- Office of Emergency Services: (800) 852-7550
- City Engineer:
- Sewer Authority Mid-Coastside:
- Related Agencies:

- California Regional Water Quality Control Board: (510) 622-2300
- California Department of Fish and Wildlife Services: (707) 944-5500
- County Environmental Health Services: (650) 442-2666
- County Health Officer: (650) 372-6200
- California Office of Emergency Services: (800) 852-7550
- U.S. Coast Guard : (415) 399-3530

6.5.2. First Responder Priorities

The first responder's priorities are as follows:

- To follow safe work practices, including those related to traffic control, confined space, and employee and public safety
- To respond promptly with the appropriate equipment
- To evaluate the cause of spill and determine responsibility
- To restore the flow as soon as possible
- To contain the spill whenever feasible
- To minimize public access to and/or contact with the spilled sewage

6.5.3. Available Equipment

SAM has a variety of equipment available for clearing blockages and impact mitigation and cleanup activities, including the following:

- Combination Vacuum and Hydrojet truck
- Push cameras
- Hand-held GPS unit
- Trash pump and hoses
- Vacuum trailer
- Disposable cameras
- Spill berm & Spill mat
- Spill Shark (water based spill absorbent)
- 6 inch and 2 inch pumps

6.5.4. Initial Response

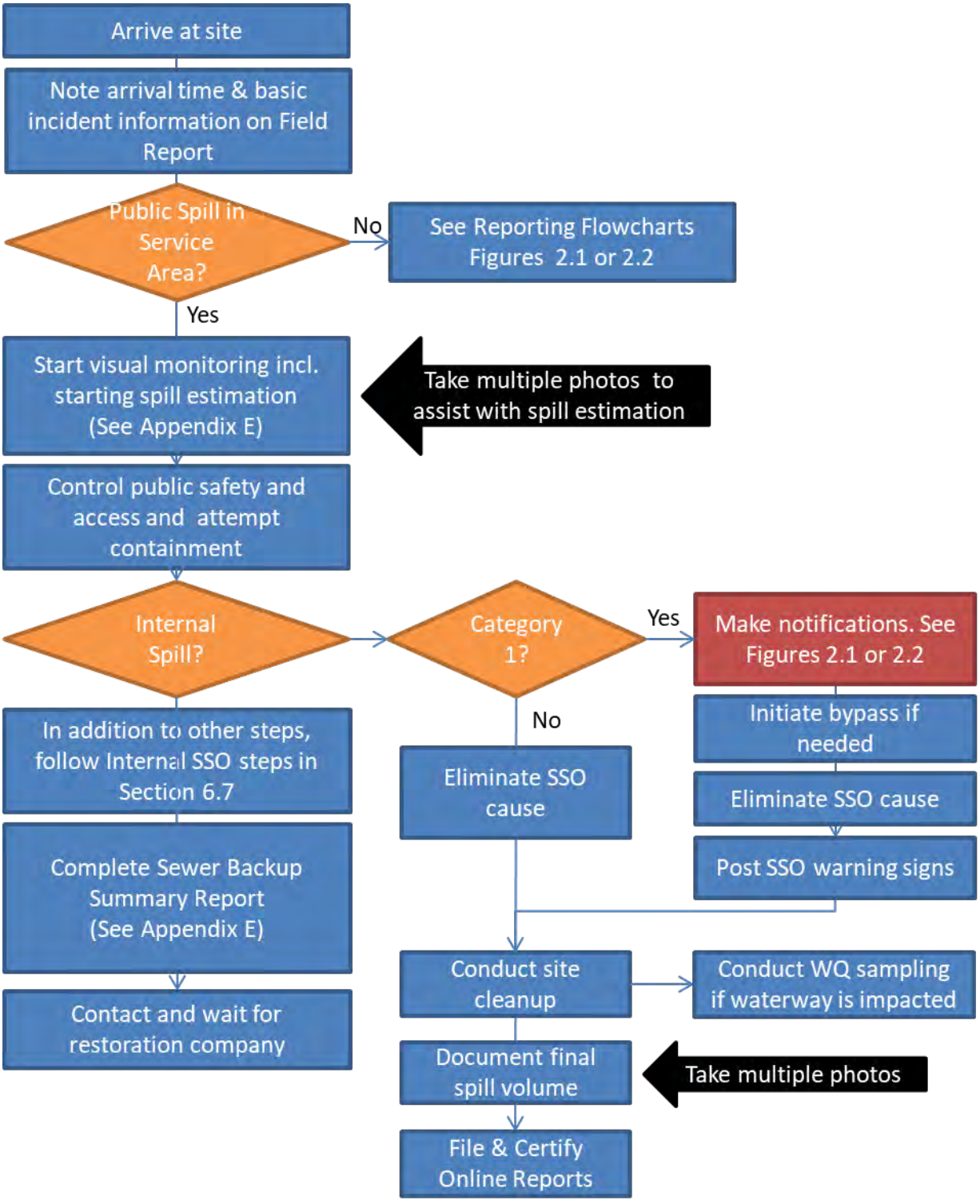
Figure 6.3 provides a flowchart that shows the steps involved in initial spill response. The First Responder reports to the location within 60 minutes of the initial spill report with the objective of minimizing and/or eliminating a spill. The appropriate response measure varies based on the circumstances and nature of the spill and the information provided by the caller. Actions related to external and internal spills are summarized below. Internal spills are spills that occur inside private property.

6.5.5. External Spill

An external spill is a spill occurring in the public right of way. Upon arrival at the site, the First Responder (currently SAM staff) should complete the following:

- Note arrival time at spill site, and include the time in the SAM Spill Reporting Form (Appendix E). Record basic incident information on site, and complete the form after finishing the response.
- Verify the existence of the spill.
- Field-verify the address and nearest cross street, and confirm that the spill is part of the City's sewer/conveyance system.
- Conduct visual monitoring to determine immediate actions, starting with documentation of spill volume using the methods included in Appendix E.
- Notify MTCo and relay preliminary observations.
- If the spill is a Cat 1 and is greater than or equal to 1000 gallons, the SAM Operations Supervisor must notify Cal OES within 2 hours of being aware of the spill. Also notify County EHS.
- Begin activities to contain, mitigate, and minimize impacts from the spill, and restore flow. Spilled sewage shall be vacuumed and/or pumped, and to the extent possible, discharged back into the sanitary sewer system.

FIGURE 6.3 SPILL RESPONSE ACTIVITIES



- If the blockage cannot be cleared within a reasonable time, or sewer requires construction repairs to restore flow, then initiate containment and/or bypass pumping. If assistance is required, immediately contact other employees, contractors, and equipment suppliers.

- Identify and clearly assess the affected area and extent of spill, including possible impacts on surface water. Where it is safe and practical, visually inspect surface water in the vicinity of the spill & record observations on the Spill Report Form. Record signs of receiving water impacts including clear signs of sewage (solids, grease, paper), abnormal color, fish kills, etc.
- The California Department of Fish and Wildlife (CDFW) should be notified in the event a spill impacts any creeks, cullies, or natural waterways. CDFW will provide guidance associated with cleanup. Cleanup should proceed quickly, and any water used in the process should be dechlorinated prior to use.
- The US Coast Guard should be notified in the event a spill impacts the ocean.
- Notify the Public Works Director if the spill appears to be large (over 1,000 gallons), has entered a waterway or storm drain, is in a sensitive area, may imminently and substantially endanger human health, results in fish kills, or if there is doubt regarding the extent, impact, or how to proceed, or if additional help is needed for line cleaning or repair, containment, recovery, lab analysis, and/or site cleanup.
- If the spill volume is 50,000 gallons or greater, where safe and feasible, take necessary water quality samples at the point of discharge and at upstream and downstream locations. Water quality monitoring is not given precedence over stopping the spill or protecting public health. However, if sufficient personnel are available, monitoring is conducted in parallel with these activities or with the cleanup effort.
- For spills to surface waters greater than or equal to 50,000 gallons, water quality sampling is required **no later than 18 hours** after the initial notification of the spill.
- Comply with all safety precautions (traffic, confined space, etc.).
- Contact caller, if time permits. Identify spill cause, including conducting CCTV inspection as appropriate.
- Document all activities through photos and written documentation.

The First Responder should provide the completed Spill Reporting Form to MTCo. MTCo will enter the information in the CWIQS database as required to meet SWRCB deadlines.

All contact information is provided in Appendix E.

6.5.6. Internal Spill

An internal spill is a spill occurring inside a private property. Upon arrival at the location of a spill into a house or a building, the First Responder should evaluate and determine if the spill was caused by a blockage in the lateral or in the City-owned sewer main. If a blockage is found in a property owner's lateral, it should be clearly communicated that response and repair of private laterals is not the City's responsibility. The homeowner is responsible for clearing any blockage in the home's plumbing system or private lateral and for any resulting flood damage to the structure. The homeowner is also responsible for damage that happens because a lateral was not properly installed.

If a backup in the City's main line is found to have caused the spill in a house or building, the First Responder should take steps to address the issue as described under External Spills, above. The First Responder should provide a copy of the residential sewage contamination flyer that is included in Appendix E to the property owner, and instruct the property owner to follow the following guidelines:

- Keep all family members and pets away from the affected area.
- Place towels, rags, blankets, etc. between areas that have been affected and areas that have not been affected, and move any uncontaminated property away from the spill area.
- Move any uncontaminated property away from the spill area. Do not remove any contaminated items.
- Turn off the HVAC system.

The First Responder should follow the following steps to assist the homeowner:

- Gather information.
- Call Carl Warren & Co. (claims representative from California Sanitation Risk Management Authority) who then reaches out to the property owner to setup a restoration company.
- Forward Spill Report Form and related documents to the Public Works Director.

6.5.7. Pump Station Spill

The First Responder will immediately notify MTCo upon receiving a pump station alarm and/or notification. The First Responder will then go to the site of the potential pump station or force main failure and shall determine whether the alarm is associated with a pending or current spill and if flow can be restored within a reasonable time. If it appears that flow cannot be restored within a reasonable time or if the conveyance system facility requires construction and/or repairs, then the First Responder shall immediately notify MTCo so MTCo can mobilize specialty assistance. The First Responder will employ a pump station emergency response plan covering

containment, bypass pumping, and contractual assistance. The pump station emergency response plan is included in Appendix E.

In addition, response activities discussed above should be implemented where applicable.

6.5.8. Containment or Bypass

The First Responder should attempt to contain as much of the spilled sewage as possible using the following steps:

- Determine the immediate destination of the spilling sewage;
- Plug storm drains using available equipment and materials to contain the spill, where feasible. If spilled sewage has made contact with the storm drainage system, attempt to contain the spilled sewage by plugging downstream storm drainage facilities;
- Contain/direct the spilled sewage using dike/dam or sandbags;
- Pump around the blockage/pipe failure/pump station or vacuum flow from upstream of the blockage and dispose of downstream of the blockage to prevent further spilling; and
- If a spill reaches a water body, follow the requirements below for posting and spill notification signage and conduct water quality sampling if the spill volume is 50,000 gallons or greater.

6.5.9. Sewage Volume Estimation

Use the methods outlined in Appendix E to estimate the volume of the spilled sewage. Wherever possible, document the estimate using photos of the spill site before and during the recovery operation. If possible, use at least two methods to confirm the accuracy of the estimated spill volume.

Some spills may occur in locations where the wastewater can seep into the ground or flow away from the spill location. In such conditions, consider when the spill was first detected and observations from bystanders in order to determine the total spill volume.

6.6 IMPACT TO SURFACE WATERS

If a spill is confirmed to have entered surface waters, the Public Works Director must be notified immediately. The response team should then proceed with the following additional activities:

- Determine the extent of the spill by investigating downstream until there is no evidence of sewage or debris along the creek or water body. Make receiving water visual observations detailed in this section.
- If the spill is 50,000 gallons or greater, collect water quality samples within 18 hours of becoming aware of the spill.
- Post contaminated water sign(s) and protect the water body from public access on all

sides.

- Photograph sign placement and evidence of the spill in and around the water body to the farthest point reached by the sewage.
- Determine if the water body is safe to enter. During the winter storm season, cleaning the water body may not be feasible due to high water flows.
- If feasible, block the water body downstream of the affected area in a location that is safe to enter and is accessible to set up a pump or utilize other sewer cleaning equipment.
- To the extent feasible, recover and return contaminated water to the collection system.
- For spills 50,000 gallons or greater, perform follow-up sampling until posted signs can be removed. The SAM Operations Supervisor ultimately determines when this happens and makes any follow up calls to affected agencies.

6.6.1. Receiving Water Visual Observations

Through visual observations and use of best available spill volume-estimating techniques and field calculation techniques, the response team shall gather and document the following information for spills discharging to surface waters:

- Estimated spill travel time to the receiving water.
- For spills entering a drainage conveyance system, estimated spill travel time from the point of entry into the drainage conveyance system to the point of discharge into the receiving water.
- Estimated spill volume entering the receiving water.
- Photography of:
    - Waterbody bank erosion,
    - Floating matter;
    - Water surface sheen;
    - Discoloration of receiving water; and
    - Impact to the receiving water

6.6.2. Water Quality Monitoring Plan

Water quality sampling and testing are required for spills that are 50,000 gallons or greater and reach surface water. Sampling and testing may be required for spills less than 50,000 gallons as required by the San Mateo County Health Officer. The purpose of testing is to determine the extent and impact of the spill. The following guidelines must be followed:

- The First Responder should arrange for collection of samples. Samples should be collected as soon as possible after the discovery of the spill event.

- Sample locations are listed in the table below. The County may require additional sample locations.
- Samples must be collected **within 18 hours** of initial knowledge of the spill event.
- Records of monitoring information should include the date, exact place, and time of sampling or measurements, the individual(s) who performed the sampling or measurements, the date(s) analyses were performed, the individual(s) who performed the analyses, the analytical technique or method used, and the results of such analyses.

The required water quality sampling procedures are as follows:

- Collect one water sample, each day of the duration of the spill, upstream of the spill entry point if sewage discharges to a surface water via a drainage conveyance system.
- In addition, collect from three receiving water sampling locations (upstream, at the spill entry point, and downstream).
- If the receiving water has no flow during the duration of the spill, report "No Sampling Due to No Flow" for the receiving water sampling locations.
- Analyze the collected receiving water samples for **Ammonia** and the appropriate other bacterial indicator(s) that include one or more of the following, unless directed otherwise by the Regional Water Board: **Total Coliform Bacteria, Fecal Coliform Bacteria, E-coli, and/or Enterococcus.**
- Collect and analyze additional samples as required by the applicable Regional Water Board Executive Officer or designee.

Sample locations are described further in Table 6.4. The distance above and below the sample point should be selected by the City and/or SAM as appropriate for the spill location. Often, samples are taken 100 feet upstream and downstream of the spill location, and also at the spill location.

TABLE 6.4 SAMPLING LOCATIONS FOR SPILLS 50,000 GALLONS OR GREATER

Sampling Location	Description
• DCS-001	• A point in a drainage conveyance system before the drainage conveyance system flow discharges into a receiving water.
• RSW-001 Point of Discharge	• A point in the receiving water where sewage initially enters the receiving water.
• RSW-001U: Upstream of Point of Discharge	• A point in the receiving water, upstream of the point of sewage discharge, to capture ambient conditions absent of sewage discharge impacts.
• RSW-001D: Downstream of Point of Discharge	• A point in the receiving water, downstream of the point of sewage discharge, where the spill material is fully mixed with the receiving water.

- Sample analysis must be conducted according to sufficiently sensitive test methods approved under 40 Code of Federal Regulations Part 136 for the sample analysis of pollutants. A method is considered sufficiently sensitive when the minimum level of the analytical method approved under 40 Code of Federal Regulations Part 136 is at or below the receiving water pollutant criteria; and
- The analysis of water quality samples required per this General Order must be performed by a laboratory that has accreditation pursuant to Article 3 (commencing with section 100825) of Chapter 4 of Part 1 of Division 101 of the Health and Safety Code. (Water Code section 13176(a).) The State Water Board accredits laboratories through its Environmental Laboratory Accreditation Program (ELAP). Additional sites may require sampling, following the requirements of the County Environmental Health Services (EHS) department.

In addition, recommended procedures from EHS include the following:

- Keep the sterile collection bottle closed until it is to be filled. Do not contaminate inner surface of the lid or bottle rim;
- Collect water sample just below the surface in knee deep water, approximately 3 feet deep (full arm's length), without rinsing. If needed, extend the sampling pole to the fullest length to reach deeper water depth. Minimize contact with bank or beach bed as water fouling may occur;
- Remove cap and hold the bottle near its base and plunge it, neck downward, below the surface;
- Turn bottle until neck points slightly upward and mouth is directed toward the current. Fill bottle leaving about 1 inch of air to allow lab to mix by shaking. Collect a minimum of 100 mL. (If applicable, insert sterile collection bottle into the holder on the sample pole. Extend the sample pole and plunge bottle end into the water, bottle opening downward);
- Immediately place cap securely on bottle to avoid leaks and contamination;

- Dry the bottle;
- Label container with distinctive sample site name, date, and time collected; and
- Complete the laboratory requisition slip with requested information (site, bottle number, collector, date and time of collection, type of sample, test requested, name and phone number of responsible person for reporting purposes, and deliverer name). Note any field observations that may have occurred during the sampling;

Samples should be tested for ammonia, fecal coliform, total coliform and enterococcus. Samples should be stored and shipped by placing the water sample bottle in a cooler with frozen blue ice. Water sample must be kept cool. Ice may be used but care must be taken so water samples are not contaminated or diluted by the ice.

Water samples may be taken to the **County of San Mateo Public Health Laboratory at 225 W. 37th Avenue, Room No. 113, San Mateo, CA 94403, (650) 573-2500.** The water samples must be brought to the laboratory within 8 hours of collection, before 3:00 pm, for processing.

If a spill occurs during the weekend, the First Responder shall coordinate with the County laboratory on call personnel to provide the water samples.

6.6.3. Spill Technical Report

If 50,000 gallons or greater spill reaches surface waters, a Spill Technical Report must be prepared and submitted to the CIWQS online spill database within 45 calendar days of the spill end date. A template for the Spill Technical Report is included in Appendix E. The Spill Technical Report must include, at a minimum, the following:

Spill causes and circumstances, including at minimum:

1. Complete and detailed explanation of how and when the spill was discovered;

    a) Photographs illustrating the spill origin, the extent and reach of the spill, drainage conveyance system entrance and exit, receiving water, and post-cleanup site conditions;

    b) Diagram showing the spill failure point, appearance point(s), the spill flow path, and ultimate destinations;

    c) Detailed description of the methodology employed, and available data used to calculate the discharge volume and, if applicable, the recovered spill volume;

    d) Detailed description of the spill cause(s);

    e) Description of the pipe material, and estimated age of the pipe material, at the failure location;

    f) Description of the impact of the spill;

g) Copy of original field crew records used to document the spill; and

h) Historical maintenance records for the failure location.

2. The City's response to the spill:

   a) Chronological narrative description of all actions taken by the City to terminate the spill;

   b) Explanation of how the SERP was implemented to respond to and mitigate the spill; and

   c) Final corrective action(s) completed and a schedule for planned corrective actions, including:

      i) Local regulatory enforcement action taken against an illicit discharge in response to this spill, as applicable,

      ii) Identifiable system modifications, and operation and maintenance program modifications needed to prevent repeated spill occurrences, and

      iii) Necessary modifications to the SERP to incorporate lessons learned in responding to and mitigating the spill.

3. Water Quality Monitoring, including at minimum:

   a) Description of all water quality sampling activities conducted;

   b) List of pollutant and parameters monitored, sampled and analyzed;

   c) Laboratory results, including laboratory reports;

   d) Detailed location map illustrating all water quality sampling points; and

   e) Other regulatory agencies receiving sample results (if applicable).

4. Evaluation of spill impact(s), including a description of short-term and long-term impact(s) to beneficial uses of the surface water.

The City Engineer is responsible for the development of the report using the documentation provided by the First Responders. MTCo will enter the Spill Technical Report in the CWIQS for certification by the City Engineer as the designated LRO. The City Engineer will review the certified spill report and advise MTCo of any potential changes that should be made to amend the certification.

6.6.4. Spill Notification Signage

Barriers shall be installed to prevent the public from having contact with the sewage. Signs should be posted to keep vehicles and pedestrians away from contact with spilled sewage. Signs

should remain in place until removal of the signs is directed by EHS. A sample warning sign is included in Appendix E.

If a creek, stream, and/or beach have been contaminated as a result of a spill, notifications should be posted at visible access locations until the risk of contamination has subsided to acceptable background levels. The warning signs, once posted, should be checked every day to ensure that they are still in place. "Closed" signs should be posted at the outfall and a minimum of 100 feet upstream and 100 feet downstream of the discharge. If there is a large volume of sewage, more signs must be posted downstream.

Signs must remain posted until the removal of signs is approved by EHS and the County Public Health Officer.

6.7 RECOVERY AND CLEANUP

The recovery and cleanup phase begins immediately after the flow has been restored and the spill has been contained to the extent possible. The spill recovery and cleanup procedures include volume estimation, sewage recovery, and cleanup and disinfection.

6.7.1. Clean Up and Disinfection

Clean up and disinfection procedures should be implemented to reduce the potential for human health issues and adverse environmental impacts that are associated with a spill event. The procedures described are for dry weather conditions and should be modified as required for wet weather conditions. Clean up should proceed quickly in order to minimize negative impact. Any water that is used in the cleanup process should be de-chlorinated prior to use.

Where cleanup is beyond the capabilities of response staff, SAM's Operations Supervisor will request authorization from the Public Works Director to contact a cleanup contractor to complete the work.

Spills inside houses or buildings should be cleaned by a professional cleaning company. Contact information for professional cleaning companies can be found in the "Water Damage Restoration" section of the Yellow Pages. Claims by homeowners should be forwarded to the Deputy City Manager.

6.7.2. Guidelines for Cleanup

On **hard surface areas**, collect all signs of sewage solids and sewage-related material either by hand or with the use of rakes, brooms, and shovels. Take reasonable steps to contain and vacuum up the wastewater. Wash down the affected area with clean water and/or non-toxic biodegradable surface disinfectant until the water runs clear. Allow area to dry. Repeat the process if additional cleaning is required.

On **landscaped or unpaved areas**, collect all signs of sewage solids and sewage-related material either by hand or with the use of rakes, brooms, and shovels. Wash down the affected area with clean water until the water runs clear. Either contain or vacuum up the wash water so that none is released. Allow the area to dry. Repeat the process if additional cleaning is required.

Small volumes of contaminated soil can be disposed into SAM's wastewater treatment plant. Outside contractors should be hired to dispose larger volumes of contaminated soils. Operators must use PPE such as gloves and glasses during cleanup operations.

If the spill has reached the **storm drain system**, a vacuum excavation truck should be used to vacuum/pump out the catch basin and any other portion of the storm drain that may contain sewage. In the event that a spill occurs at night, the location should be re-inspected as soon as possible the following day. The operator should look for any signs of sewage solids and sewage-related material that may warrant additional cleanup activities.

6.7.3. Claims for Backups into a Building

The responder to a sewer backup into a house or building should complete the following:

- Gather information from the building owner.
- Notify SAM's Operations Supervisor and the City Public Works Director of the incident.
- Call Carl Warren & Co. (claims representative from California Sanitation Risk Management Authority) who then reaches out to the property owner to setup a restoration company.
- Forward Spill Report Form and related documents to Deputy City Manager. For potential claims, follow the City's claims management process.

6.7.4. Post-Spill Assessment

For each spill event greater than 1,000 gallons, all participants involved in the response – from the person who received the call to the last person to leave the site – should meet, as soon as feasible, after the event to review and evaluate the incident and SAM's response procedures. The objective of the Post-Spill Assessment is to determine actions necessary, if any, to reduce the recurrence and better mitigate the effects of spills.

6.8 SPILL DOCUMENTATION

In accordance with the WDR, SAM must maintain, on behalf of the City, records for each sanitary sewer spill. Records include:

1. Records are retained for at least five (5) years

2. Records are readily available, either electronic or hard copies, for review by Water Board staff during onsite inspections or through an information request

3. Records are retained for each of the following spill-related events and activities:

    a. Spill event complaints.
    b. Category 4 spills (to supplement document that is retained for Cat 1 through 3 spills for regulatory reporting).
    c. Sewer system telemetry records.
    d. Sewer system management plan implementation records.
    e. Audit records.
    f. Equipment records.
    g. Work orders.

The records must be maintained at the SAM office and should also be entered into the joint SAM and member agency CMMS system where applicable. MTCo utilizes SAM's sewer spill documentation and develops necessary spill reports to submit to CIWQS.

Specific requirements for recordkeeping are listed further in the sections below.

6.8.1. Spill Event Complaints

The City shall maintain records for each of the following spill-related events and activities:

- Spill event complaint, including but not limited to records documenting how the City responded to notifications of spills. Each complaint record must, at a minimum, include the following information:
    - Date, time, and method of notification.
    - Date and time the complainant first noticed the spill, if available.
    - Narrative description of the complaint, including any information the caller provided regarding whether the spill has reached surface waters or a drainage conveyance system, if available.
    - Complainant's contact information, if available.
    - Final resolution of the complaint.
- Records documenting the steps and/or remedial action(s) undertaken by the City.
- Records documenting how estimate(s) of volume(s) and, if applicable, volume(s) of spill recovered were calculated.
- All California Office of Emergency Services notification records, as applicable.
- Water quality monitoring records.

6.8.2. Supplement Recordkeeping for Category 4 Spills

The City shall maintain the following records for each individual Category 4 spill:

1. Contact information: Name and telephone number of City contact person to respond to spill-specific questions.
2. Spill location name.
3. Description and GPS coordinates for the system location where the spill originated.
4. Did the spill reach a drainage conveyance system? If Yes:
    a. Description of drainage conveyance system location,
    b. Estimated spill volume fully recovered within the drainage conveyance system,
    c. Estimated spill volume remaining within the drainage conveyance system, and
    d. Estimated total spill volume exiting the sanitary sewer system.
5. Spill date and start time.
6. Spill cause(s) (for example, root intrusion, grease deposition, etc.).
7. System failure location (for example, main, pump station, etc.).
8. Description of spill response activities including description of immediate spill containment and cleanup efforts.
9. Description of how the volume estimation was calculated, including, at minimum:
    a. The methodology and type of data relied upon, including supervisory control and data acquisition (SCADA) records, flow monitoring or other telemetry information used to estimate the volume of the spill discharged, and the volume of the spill recovered (if any volume of the spill was recovered), and
    b. The methodology and type of data relied upon to estimate the spill start time, on-going spill rate at time of arrival (if applicable), and the spill end time.
10. Description of implemented system modifications and operating/maintenance modifications.

6.8.3. Recordkeeping for Total Annual Spill Information

The City shall keep the following records summarizing annual spills:

1. Estimated total annual spill volume.
2. Description of spill corrective actions, including at minimum:
    a. Local regulatory enforcement action taken against the sewer lateral owner in response to a spill, as applicable, and
    b. System operation, maintenance and program modifications implemented to prevent repeated spill occurrences at the same spill location.

6.8.4. Sewer System Telemetry Records

The City shall maintain the following sewer system telemetry records if used to document compliance with Statewide WDR, as applicable:

1. Supervisory control and data acquisition (SCADA) system(s).
2. Alarm system(s).
3. Flow monitoring device(s) or other instrument(s) used to estimate sewage flow rates, and/or volumes.
4. Computerized maintenance management system records.
5. Asset management-related records.

6.8.5. Sewer System Management Plan Implementation Records

The City shall maintain records documenting the implementation of its Sewer System Management Plan, including documents supporting its Sewer System Management Plan audits, corrections, modifications, and updates to the Sewer System Management Plan.

6.8.6. Audit Records

The City shall maintain, at minimum, the following records pertaining to its Sewer System Management Plan audits, and other internal audits:

1. Completed audit documents and findings.
2. Name and contact information of staff and/or consultants that conducted or involved in the audit.
3. Follow-up actions based on audit findings.

6.8.7. Equipment Records

The City shall maintain a log of all owned and leased sewer system cleaning, operational, maintenance, construction, and rehabilitation equipment.

6.8.8. Work Orders

The City shall maintain record of work orders for operations and maintenance projects.

6.8.9. Spill Specific Monitoring (Documentation)

Spill-specific monitoring means the gathering of information and data for a specific spill event to be reported or kept as records. The Statewide WDR requires the following assessments, as a component of data gathering following a spill.

6.8.9.1. Spill Location and Spread

The City shall visually assess the spill location(s) and spread using photography, global positioning system (GPS), and other best available tools. The City shall document the critical spill locations, including:

- Photography and GPS coordinates for:
  - The system location where spill originated, or
  - For multiple appearance points of a single spill event, the points closest to the spill origin.
- Photography for:
  - Drainage conveyance system entry locations,
  - The location(s) of discharge into surface waters, as applicable,
  - Extent of spill spread, and
  - The location(s) of clean up.

6.8.9.2. Spill Volume Estimation

The City shall estimate the total spill volume using updated volume estimation techniques, calculations, and documentation for electronic reporting, and retain relevant records. The City shall update its notification and reporting of estimated spill volume (which includes spill volume recovered) as further information is gathered during and after a spill event.

- Initial service call information.
- Spill Report Form.
- Copies of the certified CIWQS report forms including volume estimate.
- CCTV inspection if completed.
- Water quality sampling and test results, if applicable.
- Spill Technical Report if prepared.

6.8.9.3. Other Records

In addition to the abovementioned records, the following additional records should also be retained for all spills when available and as applicable:

- All original recordings for continuous monitoring instrumentation.
- Service call records and complaint logs of calls received by the City for the previous five years.
- Work orders, work completed, and any other maintenance records from the previous five

years that are associated with spills.

- Documentation of performance and implementation measures for the previous five years.

6.9 SPILL REPORTING

This section describes the requirements that have been established for reporting of spills to the regulatory agencies.

Table 6.5 summarizes key deadlines to be aware of for spill reporting. Table 6.6 summarizes all regulatory reporting timelines, as described further in this section. Table 6.7 provides contact and access information for regulatory reporting.

TABLE 6.5. KEY DEADLINES FOR SPILL REPORTING

2 HOURS of being aware of spill	**Call Office of Emergency Services & Health Department if Category 1 sewer main spill is 1000 gallons or more**
3 BUSINESS DAYS of being aware of spill	Submit draft reports to CIWQS for Category 1 and sewer main or Category 2 sewer main spills
15 CALENDAR DAYS from spill end date	Certify Category 1 and Category 2 spills
30 CALENDAR DAYS from end of month if applicable	Certify Category 3 and/or Category 4 sewer main spills or submit “No Spill” report
45 CALENDAR DAYS from spill end date	Submit Spill Technical Report for spills 50,000 gallons or larger that reach surface waters
90 CALENDAR DAYS from spill end date (Cat 1 or 2) or certified spill report due date (Cat 3)	Submit amended spill report for Category 1 through 3 spills
FEBRUARY 1 of each year	Submit Category 4 spill summary report

TABLE 6.6 REGULATORY REPORTING REQUIREMENTS

If Spill	Then Notify
• Category 1 Spill: 1000 gallons or more reaching a surface water or with the potential to reach a surface water. •	**2-Hour Notification to** Cal OES: (800) 852-7550. Ask for an OES Control Number (for RWQCB). San Mateo County Environmental Health Services (EHS) (650) 442-2666 and County Health Officer (650) 372-6200 should also be contacted. **Within 3 Business Days** of having knowledge of spill report to SWRCB using CIWQS **Within 15 Calendar Days** of Conclusion of Response certify by LRO using CIWQS **Within 45 Calendar Days of Conclusion of Response** submit Spill Technical Report via CIWQS online database if 50,000 gallons or more **Additional Notification as Needed** – California DFWS: (707)-944-5500 and US Coast Guard (415) 399-3530
• Category 2 Spill: 1,000 gallons or more without the potential to reach surface waters.	**Within 3 Business Days** of having knowledge of spill report to SWRCB using CIWQS. **Within 15 Calendar Days** of Conclusion of Response certify by LRO using CIWQS.
• Category 3 Spill: 50 gallons to 999 gallons without the potential to reach surface waters. • Category 4 Spill: 49 gallons or less, not reaching surface waters.	**Within 30 Calendar Days** past End of Month with Spill Event, report to SWRCB and certify by LRO using CIWQS. **By February 1 of the Year Following the Year in Which Cat 4 Spills Occurred** submit annual report to SWRCB and Certify by LRO using CIWQS.
• No Spill Reporting: (no spills in month.	**Within 30 Calendar Days** past End of Month report by LRO to SWRCB using CIWQS.
• Annual Report (Was Collection System Questionnaire)	Update and certify April 1 beginning in 2024 (Submit Collection System Questionnaire on prior schedule in 2023)

TABLE 6.7 CONTACT AND ACCESS INFORMATION FOR REGULATORY REPORTING

California Integrated Water Quality System (CIWQS)

SWRCB REPORTING TIMEFRAMES DEPEND ON THE SIZE AND FINAL DESTINATION OF THE SPILL

- CIWQS must be used for reporting if the website is available (http://ciwqs.waterboards.ca.gov)
    - User Name: XXXX
    - Password: XXXX
    - Waste Discharge Identification Number (WDID): 2SSO10139
- The spill database will automatically generate an email notification with customized information about the spill upon initial reporting and final certification for all Category 1 spills.
- Emails must be sent to the EHS and the San Francisco Bay RWQCB.
- Fax the RWQCB if the website is down.

Two-Hour Notification

1. State Office of Emergency Services (OES)
    - Phone: (800) 852-7550. Make sure you ask for an "OES CONTROL NUMBER"
2. San Mateo County Environmental Health Services
    - Health Officer (650) 372-6200
    - Main Number (650) 442-2666
3. RWQCB Region 2 (San Francisco Bay)
    - Phone – Day: (510) 622-2300
    - Phone – Night: (510) 622-2369
    - Online: RB2SpillReports@waterboards.ca.gov
4. US Coast Guard (415) 399-3530
5. US Fish & Wildlife Service (707) 944-5500

Other Contact Information

1. County Sheriff's Office (650) 216-SMSO (7676)
2. County Public Health Laboratory (650) 573-2500

6.9.1. Multiple Appearance Points – Single Spill

For reporting purposes, if one spill event of whatever category results in multiple appearance points in a sewer system, a single spill report is required in CIWQS which includes the GPS coordinates for the location of the spill appearance point closest to the failure point, blockage or location of the flow condition that caused the spill, and descriptions of the locations of all other discharge points associated with the single spill event.

6.9.2. 2-Hour Notification to Regulatory Agencies of Spills

Cal OES is only to be notified of a Category 1 spill greater than or equal to 1,000 gallons discharged to surface water or spilled in a location where it probably will be discharged to surface water. In addition, San Mateo County EHS should be contacted in this event. During regular business hours, the Health Officer can be reached at (650) 372-6200 and the main EHS phone number to call is (888) 442-2666. During evenings/weekends, call the County Sheriff's Office at (650) 216-SMSO (7676)

The SAM's Operations Supervisor is responsible for reviewing field data for reporting to regulatory agencies by SAM's Operations Supervisor. If it is determined that the criteria for OES notification was met, then the First Responder must notify OES of the event no later than two (2) hours after:

1. The City has knowledge of the spill;
2. Notification is possible; and
3. Notification can be provided without substantially impeding cleanup or other emergency measures.

The OES State Warning Center phone number is (800) 852-7550. The SAM First Responder is responsible for obtaining an **OES Control Number**.

Following the initial notification to OES and until the spill report is certified in the SWRCB online spill Database, the LRO will provide updates (or provide direction for updates to be provided) to OES regarding substantial changes to estimated volume of untreated or partially treated sewage discharged and any substantial changes to known impact(s).

The following information should be reported to Cal OES, as applicable:

- Name and phone number of the person notifying the California Office of Emergency Services.
- Estimated spill volume (gallons).
- Estimated spill rate from the system (gallons per minute).
- Estimated discharge rate (gallons per minute) directly into surface waters or indirectly into a drainage conveyance system.

- Spill incident description, which includes:
  - Brief narrative of the spill event, and
  - Spill incident location (address, city, and zip code) and closest cross streets and/or landmarks,
  - Name and phone number of contact person on-scene
  - Date and time the Enrollee was informed of the spill event,
  - Name of sanitary sewer system causing the spill,
  - Spill cause or suspected cause (if known),
  - Amount of spill contained,
  - Name of receiving water body receiving or potentially receiving discharge, and
  - Description of water body impact and/ or potential impact to beneficial uses.

Following the initial notification to Cal OES and until the spill report is certified in the SWRCB online Sanitary Sewer Spill Database, the LRO will provide updates (or provide direction for updates to be provided) to Cal OES regarding substantial changes to the following:

- Estimated spill volume (increase or decrease in gallons initially estimated).
- Estimated discharge volume discharged directly into surface waters or indirectly into a drainage conveyance system (increase or decrease in gallons initially estimated).
- Additional impact(s) to the receiving water(s) and beneficial uses.

6.9.3. Detailed Reporting Requirements

Table 6.6, above, provides detail on the City's regulatory reporting process, which is also described below. All reporting must be submitted electronically to the online CIWQS Sanitary Sewer System Database (https://ciwqs.waterboards.ca.gov). Electronic reporting may solely be conducted by a Legally Responsible Official or Data Submitter(s) previously designated by the Legally Responsible Official.

The City shall report any information that is protected by the Homeland Security Act, by email to SanitarySewer@waterboards.ca.gov, with a brief explanation of the protection provided by the Homeland Security Act for the subject report to be protected from unauthorized disclosure and/or public access, and for official Water Board regulatory purposes only.

6.9.4. Category 1 Spills

6.9.4.1. Spill Reporting for Category 1 Spills – 3 Business Days of Becoming Aware of Spill

- Cal OES, EHS, and the County Health Officer shall receive notification of Category 1 spills greater than or equal to 1,000 gallons.

- MTCo, the City's Data Submitter must then submit the initial draft report to the SWRCB's CIWQS Online spill database @ http://ciwqs.waterboards.ca.gov/ciwqs within 3 business days of becoming aware of the spill.

Table 6.8 on the following page lists information that is required in the draft spill report. The data provided in the draft spill must be supplemented further, during the certification process, as discussed further below

TABLE 6.8 CATEGORY 1 AND 2 CIWQS DRAFT SPILL REPORT – REQUIRED INFORMATION

Required Information for Category 1 and 2 Draft Spill Reports
1. Contact information: Name and telephone number of contact person to respond to spill-specific questions. 2. Spill location name. 3. Date and time the City was notified of, or self-discovered, the spill. 4. Operator arrival time. 5. Estimated spill start date and time. 6. Date and time the City notified the California Office of Emergency Services, and the assigned control number. 7. Description, photographs, and GPS coordinates of the system location where the spill originated. 8. If a single spill event results in multiple appearance points, provide GPS coordinates for the appearance point closest to the failure point and describe each additional appearance point in the spill appearance point explanation field. 9. Estimated total spill volume exiting the system. 10. Description and photographs of the extent of the spill and spill boundaries. 11. Did the spill reach a drainage conveyance system? If Yes: a. Description of the drainage conveyance system transporting the spill. b. Photographs of the drainage conveyance system entry location(s). c. Estimated spill volume fully recovered from the drainage conveyance system. d. Estimated spill volume remaining within the drainage conveyance system. e. Description and photographs of all discharge point(s) into the surface water. ** Items 12 and 13 are required for Category 1 spills only ** 12. Estimated spill volume that discharged to surface waters. 13. Estimated total spill volume recovered.

6.9.4.2. Spill Certification for Category 1 Spills – 15 Calendar Days of the Spill End Date

Within 15 calendar days of the spill end date, the LRO must review and certify the report in the CWIQS Online spill database @ http://ciwqs.waterboards.ca.gov/ciwqs

The Certified Spill Report requires additional information to supplement the data provided in the Draft Spill Report. Table 6.9 on the following page summarizes information that is required during spill certification.

6.9.4.3. Spill Technical Report

If 50,000 gallons or greater from a spill reaches surface waters, a Spill Technical Report must be prepared and submitted to the CIWQS online spill database within 45 calendar days of the spill end date. The LRO is responsible for submitting the Spill Technical Report. The required contents of the Spill Technical Report are discussed in Section 6.6, above.

6.9.4.4. Spill Amendments for Category 1 Spills – 90 Calendar Days of the Spill End Date

The City shall update or add additional information to a Certified Spill Report within 90 calendar days of the spill end date by amending the report or by adding an attachment to the Spill Report in the online CIWQS Sanitary Sewer System Database. The Enrollee shall certify the amended report. After 90 calendar days, the City shall contact the State Water Board at SanitarySewer@waterboards.ca.gov to request to amend a Spill Report. The Legally Responsible Official shall submit justification for why the additional information was not reported within the Amended Spill Report due date.

6.9.5. Category 2 Spills

6.9.5.1. Spill Reporting for Category 2 Spills – 3 Business Days of Becoming Aware of the Spill

Within 3 business days of becoming aware of the spill, the LRO must submit the initial report to the SWRCB's CWIQS Online Spill Database @ http://ciwqs.waterboards.ca.gov/ciwqs. The draft report shall include Items 1 through 11 of the list provided above for the Category 1, 3-day draft report.

6.9.5.2. Spill Certification for Category 2 Spills – 15 Calendar Days of the Spill End Date

Within 15 calendar days of the spill end date, the LRO must review and certify the report in the CWIQS Online Spill Database @ http://ciwqs.waterboards.ca.gov/ciwqs. The Spill Certification must include, in addition to the information provided in the draft report, Items 1 through 13 of the list provided above for the Category 1 Spill Certification. *In addition, the Spill Certification must include a new Item 14 - Whether or not the spill was located within 1,000 feet of a municipal surface water intake.*

TABLE 6.9 CATEGORY 1 AND 2 CIWQS SPILL CERTIFICATION – REQUIRED INFORMATION

Required Information for Category 1 and 2 Spill Certification
1. Description of the spill event destination(s), including GPS coordinates if available, that represent the full spread and reach of the spill. 2. Spill end date and time. 3. Description of how the spill volume estimations were calculated, including at a minimum: a. The methodology, assumptions and type of data relied upon, such as supervisory control and data acquisition (SCADA) records, flow monitoring or other telemetry information used to estimate the volume of the spill discharged, and the volume of the spill recovered (if any volume of the spill was recovered). b. The methodology(ies), assumptions and type of data relied upon for estimations of the spill start time and the spill end time. 4. Spill cause(s) (for example, root intrusion, grease deposition, etc.). 5. System failure location (for example, main, lateral, pump station, etc.). 6. Description of the pipe material, and estimated age of the pipe material, at the failure location. 7. Description of the impact of the spill. 8. Whether or not the spill was associated with a storm event. 9. Description of spill response activities including description of immediate spill containment and cleanup efforts. 10. Description of spill corrective action, including steps planned or taken to reduce, eliminate, and prevent reoccurrence of the spill, and a schedule of major milestones for those steps. 11. Spill response completion date. 12. Detailed narrative of investigation and investigation findings of cause of spill. 13. Reasons for an ongoing investigation (as applicable) and the expected date of completion. ** Items 14 through 17 are required for Category 1 spills only ** 14. Name and type of receiving water body(s). 15. Description of the water body(s), including but not limited to: a. Observed impacts on aquatic life. b. Public closure, restricted public access, temporary restricted use, and/or posted health warnings due to spill. c. Responsible entity for closing/restricting use of water body. d. Number of days closed/restricted as a result of the spill. 16. Whether or not the spill was located within 1,000 feet of a municipal surface water intake. 17. If water quality samples were collected, identify sample locations and the parameters the water quality samples were analyzed for. If no samples were taken, “Not Applicable” shall be selected.

6.9.5.3. Amended Certified Spill Reports for Individual Category 2 Spills – 90 Calendar Days of the Spill End Date

The City shall update or add additional information to a Certified Spill Report within 90 calendar days of the spill end date by amending the report or by adding an attachment to the Spill Report in the online CIWQS Sanitary Sewer System Database. The LRO shall certify the amended report. After 90 calendar days, the City shall contact the State Water Board at SanitarySewer@waterboards.ca.gov to request to amend a Spill Report. The Legally Responsible Official shall submit justification for why the additional information was not reported within the Amended Spill Report due date.

6.9.6. Category 3 and 4 Spills

6.9.6.1. Monthly Spill Reporting for Category 3 Spills

Within 30 calendar days of the end of the calendar month in which the spill occurred, the LRO must submit and certify a report to the SWRCB's CWIQS Online Spill database @ http://ciwqs.waterboards.ca.gov/ciwqs. For each spill, the report shall include the information shown in Table 6.10.

TABLE 6.10 CATEGORY 3 CIWQS SPILL CERTIFICATION – REQUIRED INFORMATION

Required Information for Category 3 Spill Certification
1. Contact information: Name and telephone number of Enrollee contact person to respond to spill-specific questions. 2. Spill location name. 3. Date and time the Enrollee was notified of, or self-discovered, the spill. 4. Operator arrival time. 5. Estimated spill start date and time. 6. Description, photographs, and GPS coordinates where the spill originated: a. If a single spill event results in multiple appearance points, provide GPS coordinates for the appearance point closest to the failure point and describe each additional appearance point in the spill appearance point explanation field. 7. Estimated total spill volume exiting the system. 8. Description and photographs of the extent of the spill and spill boundaries. 9. Did the spill reach a drainage conveyance system? If Yes: a. Description of the drainage conveyance system transporting the spill. b. Photographs of the drainage conveyance system entry locations(s). c. Estimated spill volume fully recovered from the drainage conveyance system.

Required Information for Category 3 Spill Certification

d. Estimated spill volume discharged to a groundwater infiltration basis or facility, if applicable.

10. Estimated total spill volume recovered.
11. Description of the spill event destination(s), including GPS coordinates, if available, that represent the full spread and reaches of the spill.
12. Spill end date and time.
13. Description of how the spill volume estimations were calculated, including, at minimum:
    a. The methodology and type of data relied upon, including supervisory control and data acquisition (SCADA) records, flow monitoring or other telemetry information used to estimate the volume of the spill discharged, and the volume of the spill recovered (if any volume of the spill was recovered).
    b. The methodology and type of data relied upon to estimate the spill start time, on-going spill rate at time of arrival (if applicable), and the spill end time.
14. Spill cause(s) (for example, root intrusion, grease deposition, etc.).
15. System failure location (for example, main, pump station, etc.).
16. Description of the pipe/infrastructure material, and estimated age of the pipe/infrastructure material, at the failure location.
17. Description of the impact of the spill.
18. Whether or not the spill was associated with a storm event.
19. Description of spill response activities including description of immediate spill containment and cleanup efforts.
20. Description of spill corrective actions, including steps planned or taken to reduce, eliminate, and prevent reoccurrence of the spill, and a schedule of the major milestones for those steps; including, at minimum:
    a. Local regulatory enforcement action taken against an illicit discharge in response to this spill, as applicable.
    b. Identifiable system modifications, and operation and maintenance program modifications needed to prevent repeated spill occurrences at the same spill event location, including:
        i. Adjusted schedule/method of preventive maintenance.
        ii. Planned rehabilitation or replacement of sanitary sewer asset.
        iii. Inspected, repaired asset(s), or replaced defective asset(s).
        iv. Capital improvements
        v. Documentation verifying immediately implemented system modifications and operating/maintenance modifications.
        vi. Description of spill response activities.
        vii. Spill response completion date.

Required Information for Category 3 Spill Certification
viii. Ongoing investigation efforts, and expected completion date of investigation to determine the full cause of spill. 21. Detailed narrative of investigation and investigation findings of cause of spill.

6.9.6.2. Amended Certified Spill Reports for Individual Category 3 Spills – 90 Calendar Days of the Spill End Date

The City shall update or add additional information to a Certified Spill Report within 90 calendar days of the spill end date by amending the report or by adding an attachment to the Spill Report in the online CIWQS Sanitary Sewer System Database. The LRO shall certify the amended report. After 90 calendar days, the City shall contact the State Water Board at SanitarySewer@waterboards.ca.gov to request to amend a Spill Report. The Legally Responsible Official shall submit justification for why the additional information was not reported within the Amended Spill Report due date.

6.9.6.3. Monthly Spill Reporting for Category 4 Spills

Within 30 calendar days of the end of the calendar month in which the spill occurred, the LRO must submit and certify the estimated total spill volume exiting the sanitary sewer system and the total number of all Category 4 spills to the SWRCB's CWIQS Online spill database @ http://ciwqs.waterboards.ca.gov/ciwqs.

6.9.6.4. Annual Spill Reporting for Category 4 Spills

Upload and certify a report, in an acceptable digital format, of all Category 4 spills to the online CIWQS Sanitary Sewer System Database, by February 1st after the end of the calendar year in which the spills occur.

6.9.7. Monthly Certification of "No-Spills"

If no spills occur during a calendar month, the LRO shall certify, within 30 calendar days after the end of each calendar month, a "No-Spill" certification statement in the online CIWQS Sanitary Sewer System Database, certifying that there were no spills for the designated month.

If a spill starts in one calendar month and ends in a subsequent calendar month, and the City has no further spills of any category, in the subsequent calendar month, the LRO shall certify "no-spills" for the subsequent calendar month. If the City has no spills from its systems during a calendar month, but the City voluntarily reported a spill from a private lateral or a private system, the LRO shall certify "no-spills" for that calendar month.

6.9.8. CIWQS Not Available

In the event that the CIWQS online spill database is not available, the LRO should fax or e-mail all required information to the RWQCB office at (510) 622-2460 in accordance with the time schedules identified above. In such an event, the City will submit the appropriate reports using the CIWQS online spill database when the database becomes available. A copy of all documents that certify the submittal in fulfillment of this section shall be retained in the spill document file.

6.9.9. Amending Spill Reports

The LRO is responsible for amending spill reports. Certified spill reports may be updated by amending the report or adding an attachment to the spill report within 90 calendar days after the spill end date. After 90 days, the City must contact the State Spill Program Manager to request to amend a spill report along with a justification for why the additional information was not available prior to the end of the 90 days. The SWRCB Spill Permit/Reporting contact information is as follows:

State Board: SanitarySewer@waterboards.ca.gov

Walter Mobley
State Water Resources Control Board
Division of Water Quality
1001 I Street 15th Floor
Sacramento, CA 95814
E-mail: Walter.Mobley@waterboards.ca.gov
Phone: (916) 323-0878

6.10 TRAINING

All City, SAM, MTCo personnel. and contractors who may have a role in responding to, reporting, and/or mitigating a sewer system spill receive training on the contents of this Spill ERP. All new employees also receive training before they are placed in a position where they may have to respond. Current employees receive regular refresher training on the SSMP and SERP.

The City and SAM received training on the SSMP and SERP upon its last update in 2014. In June 2019, MTCo provided training to SAM field staff on spill response and reporting. City staff will be retrained upon adoption of updated SSMP documents in 2020. The City's sewer maintenance contractors are responsible for training their staff in all maintenance, emergency response, and safety operations necessary to perform work.

Records are kept of all training that is provided in support of this plan. The records for all scheduled training courses and for each spill emergency response training event include date, time, place, content, name of trainer(s), and names of attendees.

6.11 COMMUNICATIONS WITH THE PUBLIC

A sewer backup is a stressful event and may include interactions with an angry residential property owner or resident. Professional presentation is important, as a homeowner will likely become unhappy if it is perceived that response staff are indifferent, uncaring, unresponsive, and/or incompetent.

Effective management of a sewage backup situation is critical to avoid the potential for a costly, prolonged process with the property owner. The property owner should feel assured that the City and SAM are responsive and that their best interest is the City's top priority.

How you communicate, whether on the phone, in writing, or in person, is how you will be perceived. Good communication with the homeowner results in greater confidence in the City and SAM's ability to address the problem satisfactorily, and a greater chance that the property owner will be cooperative as SAM completes response and follow-up activities.

When interacting with an affected homeowner, consider the following:

- The homeowner needs ample time to explain the situation.
- As soon as possible, let the homeowner know that you will determine if the source of the sewer backup is in the sewer main and, if it is, will have it corrected as quickly as you can.
- Confirm that you understand their concern and then explain what can be done to address the issue, either by SAM if applicable, or an outside contractor.
- The determination of fault will be handled by management staff. If it is determined that the City is at fault, the property owner has the right to file a claim for any reasonable repairs or losses resulting from the incident.
- Keep the homeowner informed on what is being done and will be done to correct the problem.
- Keep focused on getting the job done in a very professional manner.

6.12 APPENDIX E

Appendix E includes the following documents that are referenced in this Spill Emergency Response Plan. The information in this document will change from time to time. Please contact the Public Works Director for the most recent updates to the Spill Emergency Response Plan.

- Contact Information
- SAM Spill Reporting Form
- Residential Sewage Contamination Flyer
- Spill Volume Estimation Methods
- Spill Technical Report Outline

- Sample Warning Sign
- Pump Station Emergency Response Plan

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PUMP STATION OVERFLOW EMERGENCY RESPONSE PLAN

City of Half Moon Bay
February 2020

WDID No. : 2SSO10139

Prepared by

V.W. HOUSEN
& ASSOCIATES

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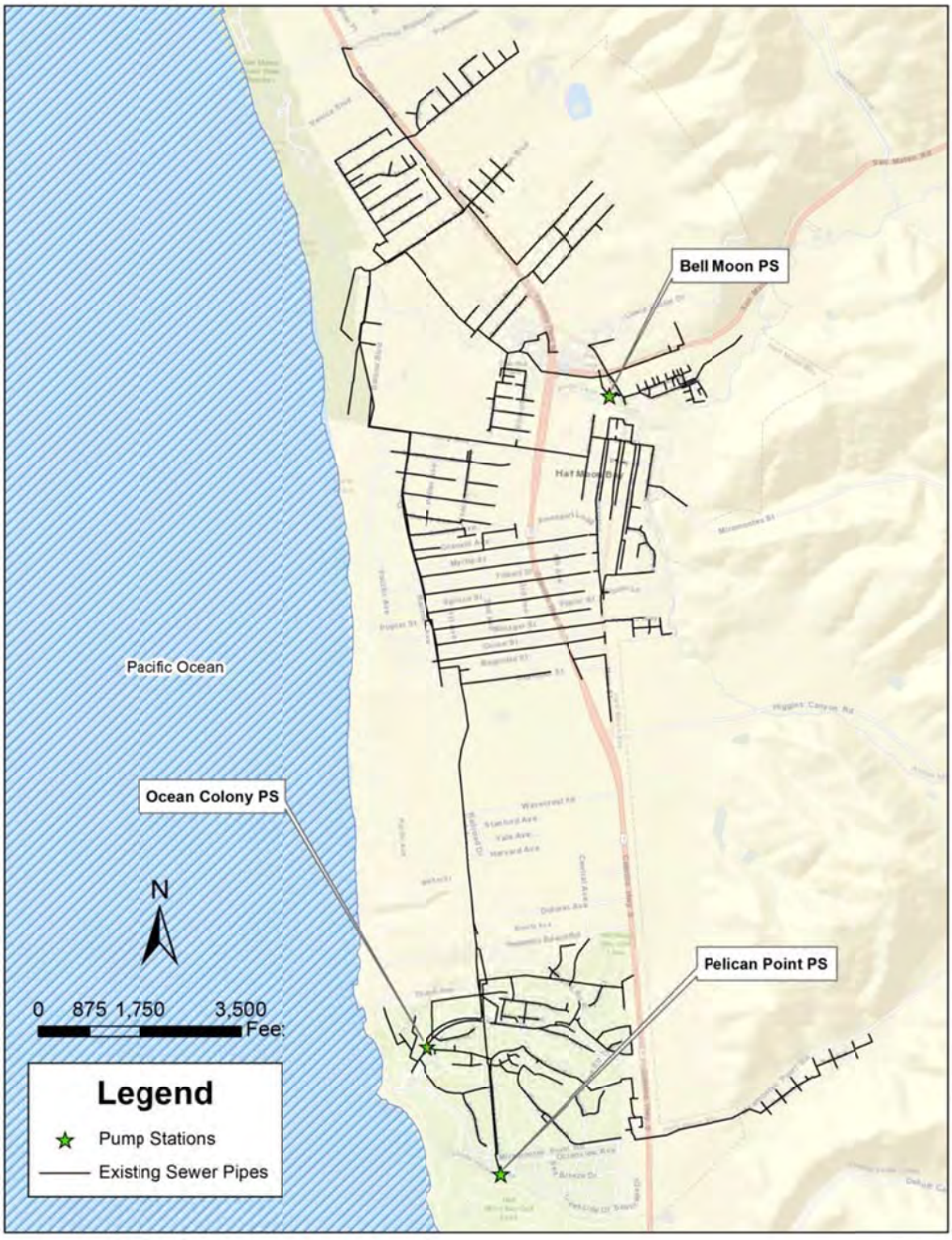
Chapter 1 Pump Station Information

The City of Half Moon Bay Pump Station Emergency Response Plan (PERP) provides guidelines for responding to and reporting emergency incidents (i.e. overflow, pump failure) that occur in the pump stations. The City's sewer collection system serves a population of approximately 13,000 and consists of approximately 35 miles of gravity sewer mains, 3,750 lateral connections, 1.5 miles of force mains, and three pump stations. The City's Collection System Map is shown in Figure 1-1.

Figure 1-1. Collection System Map and Pump Station Locations



1.1 Bell Moon Pump Station

Bell Moon Pump Station conveys sewage from a small portion of the commercial area west of Main Street and north of Pilarcitos Creek to the gravity flow trunk sewer in Main Street. The pump station is located along the south side of the parking lot at 248 Main Street as shown in Figure 1-2 on the following page. The lift station discharges to a 4-inch force main that discharges to a 6-inch gravity main on Main Street at sewer manhole H11035. Table 1-1 summarizes Bell Moon pump station characteristics.

Table 1-1 Bell Moon Pump Station Characteristics

Location Summary		
Address	248 Main Street, Half Moon Bay, CA	
Lat, Long	37.466779, -122.429922	
Sewer Map	City of Half Moon Bay Sewer Collection System Map Book page **H11**	
Directions	• From the Sewer Authority Mid-Coastside Treatment Plant at 1000 Cabrillo Hwy N, Half Moon Bay, CA 94019 • Head northeast on Bev Cunha's Country Rd toward Frontage Rd (0.3 mi) • Turn right onto Frontage Rd (0.2 mi) • Turn right onto Cabrillo Hwy N (0.4 mi) • Use the left 2 lanes to turn left after Burger King (on the right) (0.2 mi) • Turn right onto Main St (322 ft) • Turn into the parking lot at 248 Main Street, and the pump station will be on your left	
Pump Capacities		
#1	3 HP Flygt NP 3085	5[1] GPM
#2	3 HP Flygt NP 3085	30 GPM
Backup Systems		
Backup Power	Mitsubishi® S4L2-W461ML 22.3 hp @ 1800 rpm. The generator is capable of running at 13 kW / 13 kVA (54A @ 240V) rated capacity. The pump station has a receptacle for connecting the portable generator.	
Bypass	Utilize 1,000 gallon Vactor Truck as means of bypass during repair/maintenance operations	
Flow Monitoring	Electromagnetic flow meter - Siemens Model 5100W with a MAGFLO 5000 converter	

[1]The mix-flush valve on Pump #1 significantly reduces its pumping capacity.

Figure 1-2. Bell Moon Pump Station Location

1.2 Ocean Colony Pump Station

The Ocean Colony Pump Station conveys sewage to the City's gravity system from the Ocean Colony community and from Miramontes Point Road. In addition, sewage from the Pelican Point pump station can be re-directed to the Ocean Colony pump station during bypass operations. The pump station is located on Fairway Drive as shown in Figure 1-3. The lift station discharges to a 6-inch force main that discharges to an 18-inch gravity main on Redondo Beach Road, and manhole number H22005. Table 1-2 summarizes Ocean Colony Pump Station Characteristics.

Figure 1-3. Ocean Colony Pump Station Location

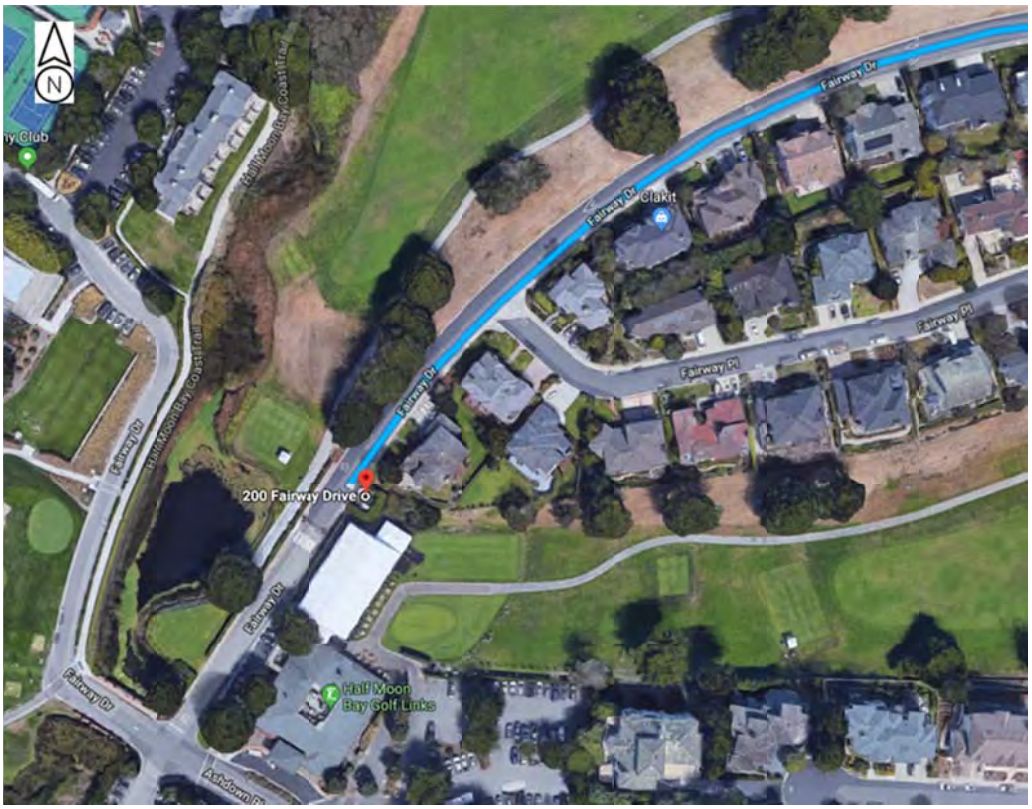


Table 1-2. Ocean Colony Pump Station Characteristics

Location Summary		
Address	202 Fairway Drive, Half Moon Bay, CA	
Lat, Long	37.435459, -122.440083	
Sewer Map	City of Half Moon Bay Sewer Collection System Map Book page **H24**	
Directions	• From the Sewer Authority Mid-Coastside Treatment Plant at 1000 Cabrillo Hwy N, Half Moon Bay, CA 94019 • Head northeast on Bev Cunha's Country Rd toward Frontage Rd (0.3 mi) • Turn right onto Frontage Rd (0.2 mi) • Turn right onto CA-1 S/Cabrillo Hwy N (2.8 mi) • Turn right onto Fairway Drive (0.8 mi)	
Pump Capacities		
#1	47 HP Submersible Flygt C3201.280	500 GPM
#2	47 HP Submersible Flygt C3201.280	500 GPM
Backup Systems		
Backup Pump	SAM is in the process of acquiring a backup pump through a pump vendor.	
Backup Power	Onsite generator Energy Model DS00125D6SRAK0574 that utilizes a John Deere 4045HF285 125 kW engine. Diesel fuel tank capacity of 240 gallons.	
Bypass	Utilize 1,000 gallon Vactor Truck as means of bypass during repair/maintenance operations	
Flow Monitoring	Currently not equipped with a flow meter.	

1.3 Pelican Point Pump Station

The Pelican Point Pump Station conveys sewage from the area south of Miramontes Road and West of Highway 1, in the southern portion of the City, as shown in Figure 1-4. Flows are generated by the Pelican Point and Canada Cove Mobile Home Parks, both adjacent to the pump station, and the Moon Ridge Apartments on the east side of Highway 1. The lift station discharges to a 6-inch force main that discharges to an 18-inch gravity main on Redondo Beach Road, at manhole H22005. Flows can be temporarily redirected to an 8-inch gravity sewer system at the end of Cypress Point Road via valving located in an access vault if force main maintenance is needed. Table 1-3 provides additional information on the Pelican Point Pump Station.

Figure 1-4. Pelican Point Pump Station Location

Table 1-3. Pelican Point Pump Station Characteristics

Location Summary		
Address	1001 Miramontes Point Road, Half Moon Bay, CA	
Lat, Long	37.429329, -122.435492	
Sewer Map	City of Half Moon Bay Sewer Collection System Map Book page **H29**	
Directions	• From the Sewer Authority Mid-Coastside Treatment Plant at 1000 Cabrillo Hwy N, Half Moon Bay, CA 94019 • Head northeast on Bev Cunha's Country Rd toward Frontage Rd (0.3 mi) • Turn right onto Frontage Rd (0.2 mi) • Turn right onto CA-1 S/Cabrillo Hwy N (3.0 mi) • Turn right onto Miramontes Point Rd (0.5 mi) • Turn Left – Destination will be on your left (453 ft)	
Pump Capacities		
#1	10 HP Submersible Flygt pumps, Model NP 3127	225 GPM
#2	10 HP Submersible Flygt pumps, Model NP 3127	225 GPM
Backup Systems		
Backup Pump	10 HP Submersible Flygt pumps, Model NP 3127	
Backup Power	Onsite generator DMT Corporation Model 80C	
Bypass	Utilize 1,000 gallon Vactor Truck as means of bypass during repair/maintenance operations	
Flow Monitoring	Currently not equipped with a flow meter.	

Chapter 2 Emergency Contact Information

Sewer Authority Mid-Coastside receives alarm for pump station emergencies including all service calls pertaining to the City's sewer collection system. SAM receives all alarms directly. In addition, SAM receives a phone call from a third party alarm system, Hue & Cry, notifying them of the alarm at the stations. After receiving the call, SAM will notify Mark Thomas and Company (MTCo) of the alarm received and will proceed with emergency response. A second call will be made by SAM to MTCo after arriving on the site to relay their observations. From this point, MTCo will decide whether or not to mobilize an MTCo crew for further assistance.

2.1 OERP and PERP Contact List

SEWER AUTHORITY MID-COASTSIDE

SAM Staff	Name	Contact #
SAM Business Hours (Maintenance and SSO Response)	SAM Administrative Assistant	650-726-0124
SAM Non-Business Hours (Maintenance and SSO Response)	On-Call Employee	650-726-0124
Pump Station Staff	Carlos Mendez	(650) 438-1938 / (650) 430-9210
Supervisor of Treatment/Field Operations	Tim Costello	650-245-8538
Lead Collection Worker	Tony Young	650-703-9123
Engineering & Construction Contracts Manager	Kishen Prathivadi	951-764-5674

MARK THOMAS & COMPANY

Mark Thomas Company Staff	Name	Contact #
Pump Station Maintenance Lead Worker	Tony Soares	408-253-7863
Pump Station Maintenance Worker	Dale Bennett	408-761-5875
Operations & Maintenance Supervisor	Frank Quach	510-299-0917
Project Manager	Benjamin Porter	650-726-8251

CITY OF HALF MOON BAY

City Staff	Name	Contact #
Public Works Director	John Doughty	831-247-1088
City Engineer	Maziar Bozorginia	408-489-9026
Associate Civil Engineer	Denice Hutten	650-750-2005

ADJACENT SEWER SERVICE AREAS

Agency	Phone Number
Granada Sanitary District	650-726-7081
Montara Water and Sanitary District	650-728-3545

SSO REPORTING AND EMERGENCY CONTACT INFORMATION

Agency	Phone Number
Granada Sanitary District	650-726-7093
Montara Water and Sanitary District	650-728-3545
CA Office of Emergency Services	800-852-7550
San Mateo County Environmental Health	650-372-6200
San Mateo County Sheriff Dispatch	650-216-SMSO (7676)
San Mateo County Public Health Laboratory	650-573-2500
CA Department of Fish and Wildlife	707-944-5500
SWRCB SSO Program Manager: Paul Levy	916-323-5598
Claims Representative (Internal SSO): Carl Warren & Co.	909-763-4320

Chapter 3 Hazards and Cautions

This section of the PERP identifies the different hazards that could potentially be encountered at the City's pump stations.

3.1 Traffic Control

SSO response crew observes safety practices and utilizes personal protective equipment for addressing traffic hazards when responding to emergencies in and around the pump stations. In the event of an overflow, the SSO response crew will setup detours as needed in order to keep the public away from the spill areas. The SSO response crew may utilize some or all of the following equipment listed below:

- Traffic cones
- Caution tape
- Barricades
- Signage

3.2 Obstacles and Crossings

There are no known obstacles or crossings.

3.3 Safety Hazards

3.3.1 Electric Hazards

In order to ensure that electrical equipment within the pump stations is properly shut off for repair or maintenance, the SSO response crew will follow standard Lockout and Tagout procedures at all times. Response crew members will verify that all electrical equipment capable of storing energy is controlled prior to initiating exposure.

3.3.2 Sanitary Hazards

As part of SSO response during an overflow, crew members will wear latex gloves under leather gloves in combination with safety glasses to avoid contamination when handling equipment and raw sewage.

3.3.3 Lifting Hazards

In cases where it is necessary to remove the submersible pumps for servicing or repair, the SAM, MTCo, or other emergency contractors will observe proper rigging and lifting techniques.

3.4 Safety Practices

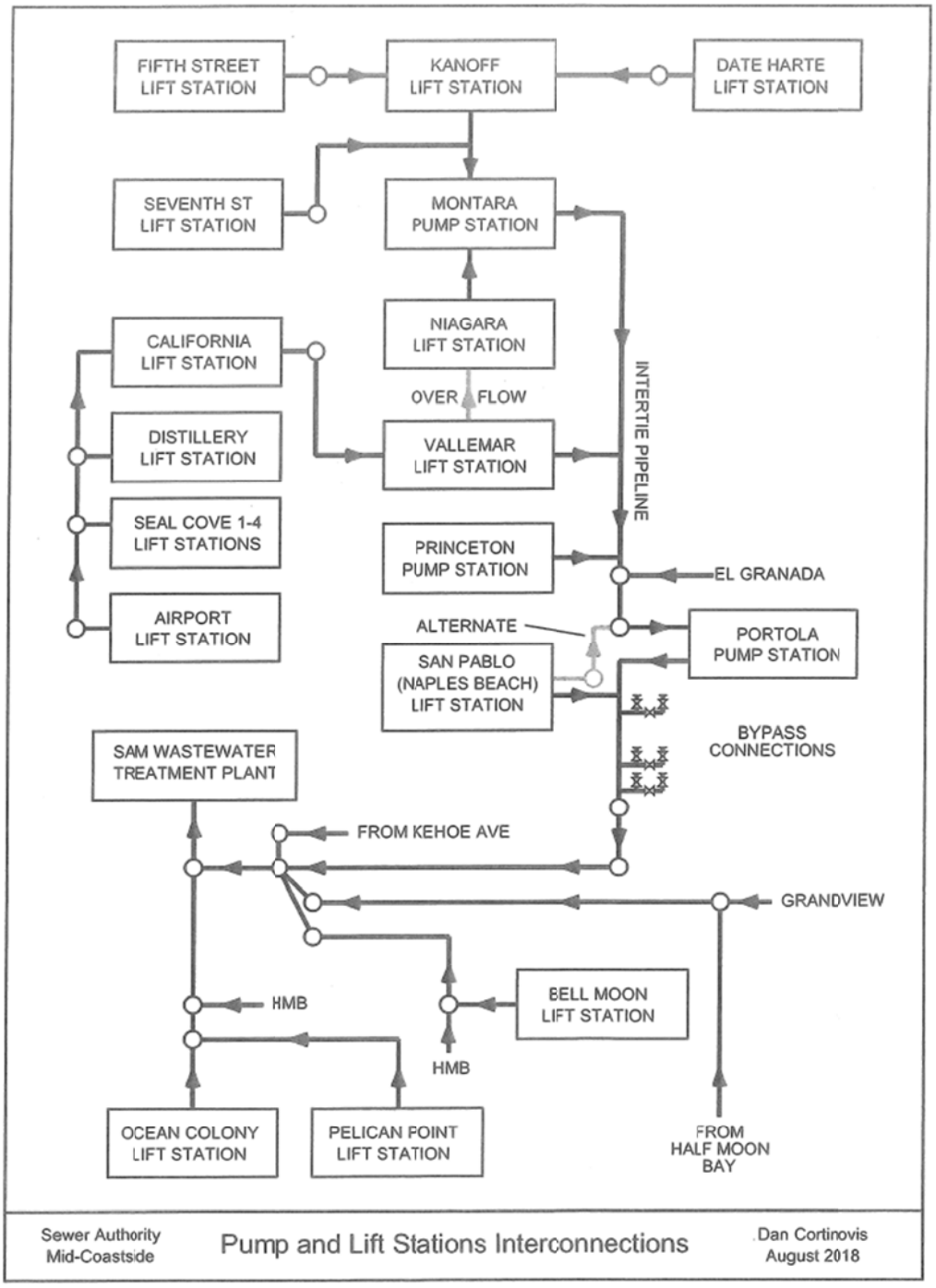
The SSO responder will follow good work practices including CalOSHA rules and regulations to ensure safety of the response crew members. Some of the safety practices include but are not limited to:

- Confined Space
- Lockout/Tagout
- Proper PPE
- Respiratory protection
- Any other safety procedure/program, as required.

Chapter 4 Pump Station Network & Schematics

Figure 4-1 shows the how all pump stations from the SAM member agencies, including the City's three pump stations, convey flow to the SAM wastewater treatment plant.

Figure 4-1. Pump and Lift Station Interconnections



Figures 4-2 through 4-4 show individual system schematics for the City's three pump stations.

Figure 4.2. Bell Moon PS System Schematics

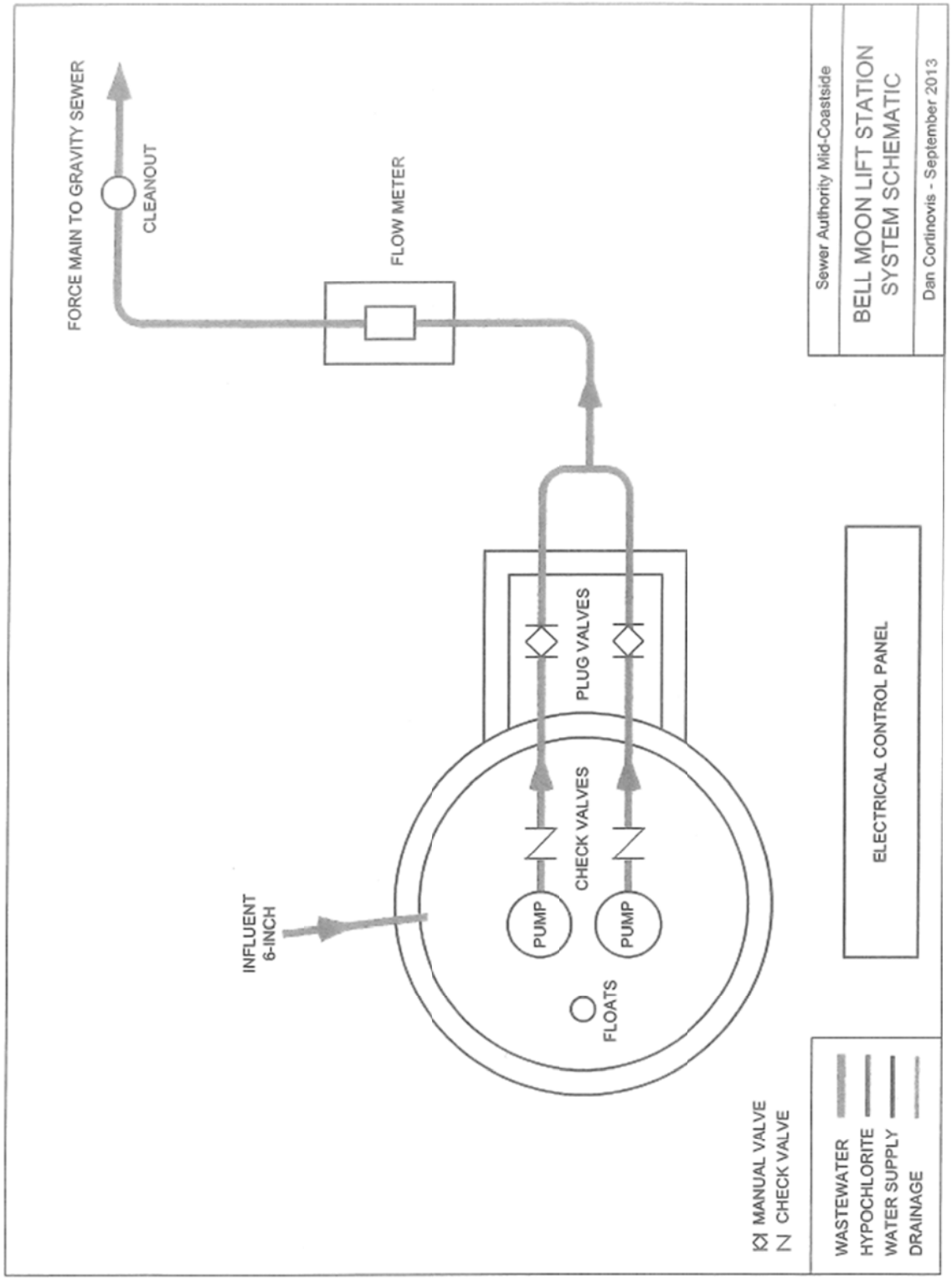


Figure 4.3. Ocean Colony PS System Schematics

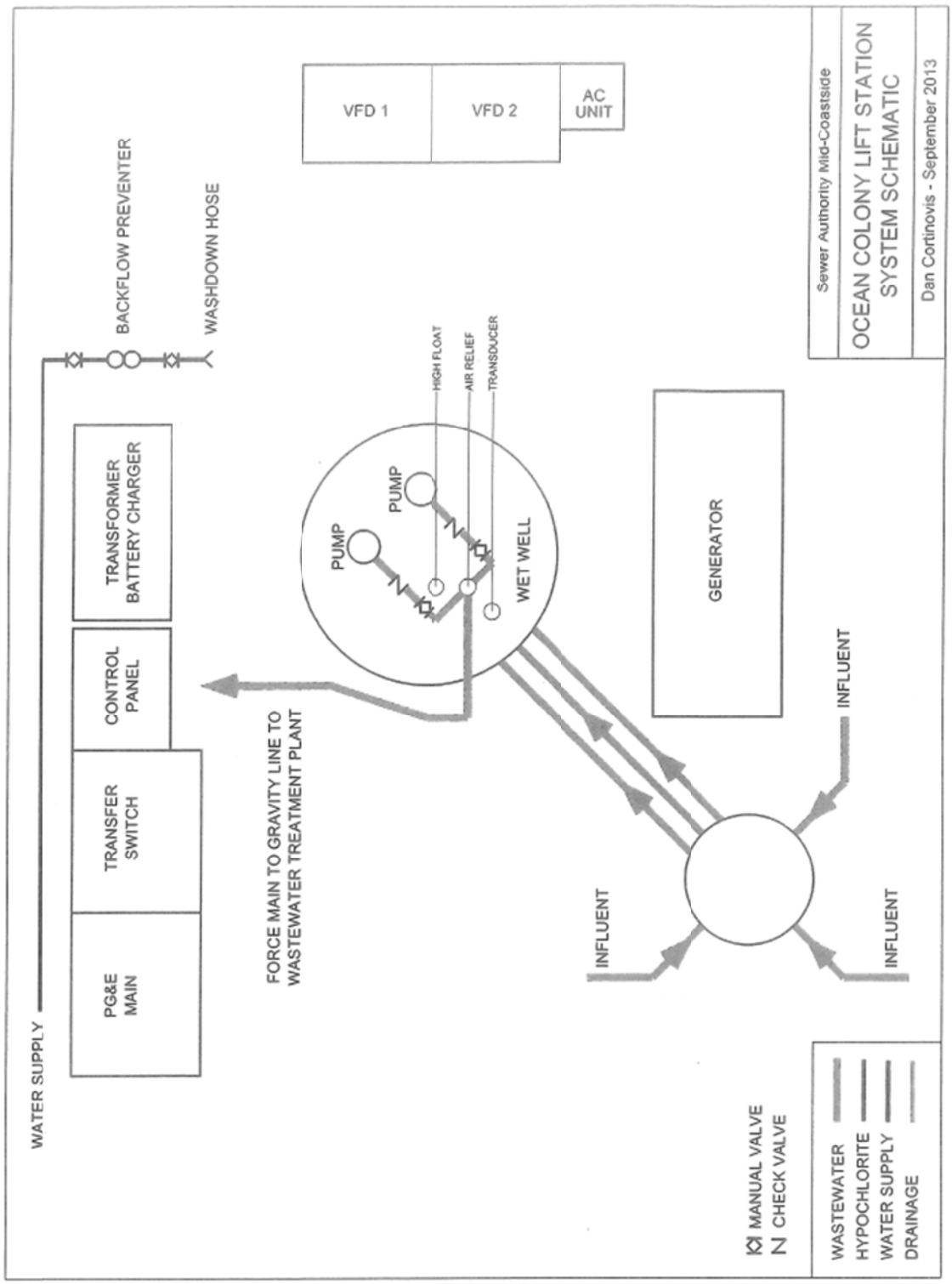
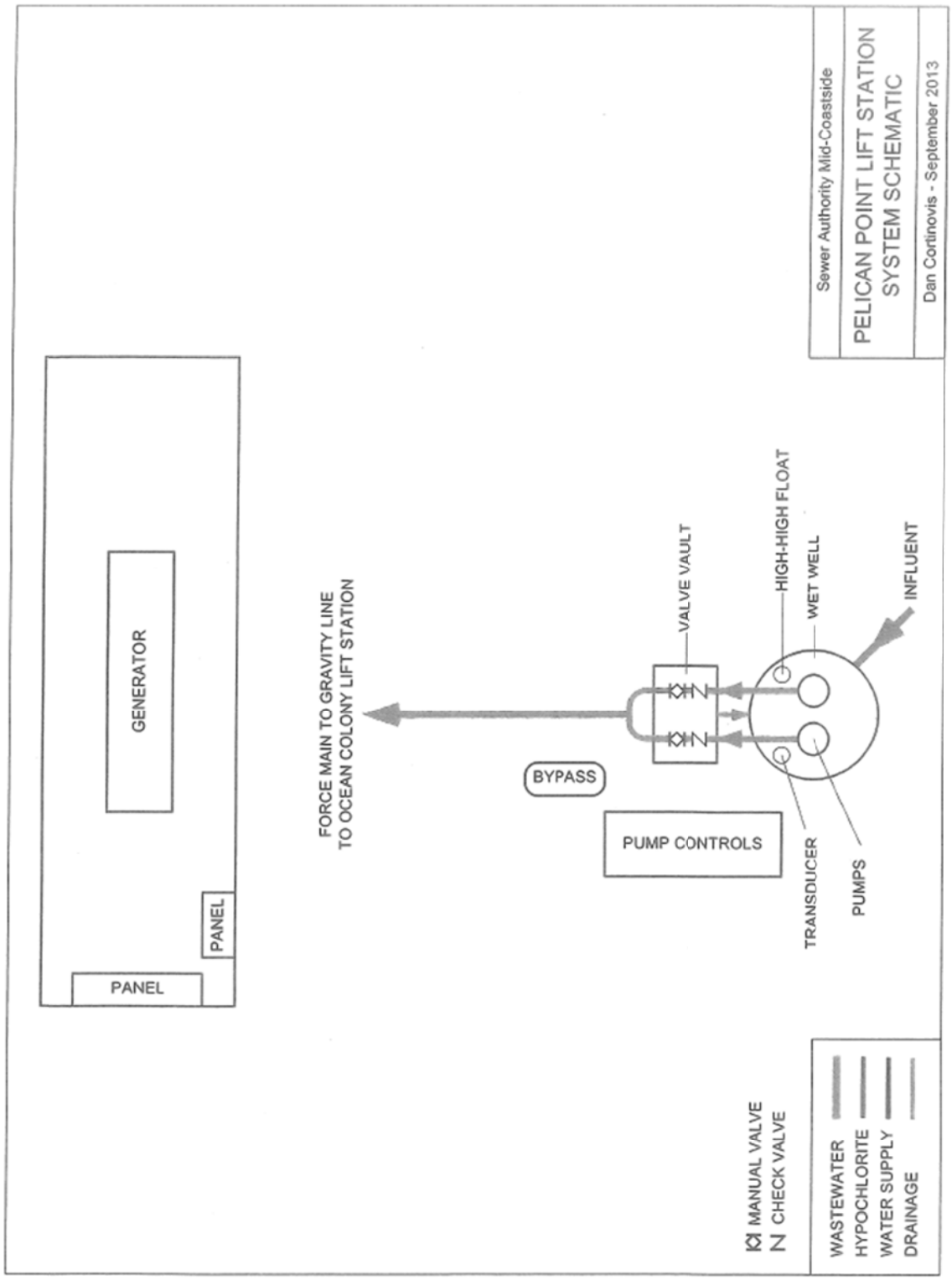


Figure 4.4. Pelican Point PS System Schematics



Chapter 5 Emergency Response Decision Tree

There are several emergency scenarios that warrant immediate response from SAM initially, with MTCo as support. These include but are not limited to:

- Power Failure
- Float Failure
- Clogged Pump/Failed Pump
- High Level Alarm

SAM serves as the City's emergency first response contractor while MTCo provides assistance with documentation and reports observations directly to the City. MTCo may also provide assistance to SAM with emergency response procedures as necessary.

5.1 Response Decision Tree

The Decision Tree diagram on Figure 5-1 serves as a guide for all emergency response activities.

5.2 Spill Notification and SSO Response Procedures

After the SSO response crew has followed the Response Decision Tree and determined that the emergency is SSO-related, The SSO response crew will follow the Spill Notification Procedures and SSO Response Activities guidelines as indicated in the OERP and shown in Figures 5-2 through 5-5, on the following pages of this section.

Figure 5-1. Response Decision Tree

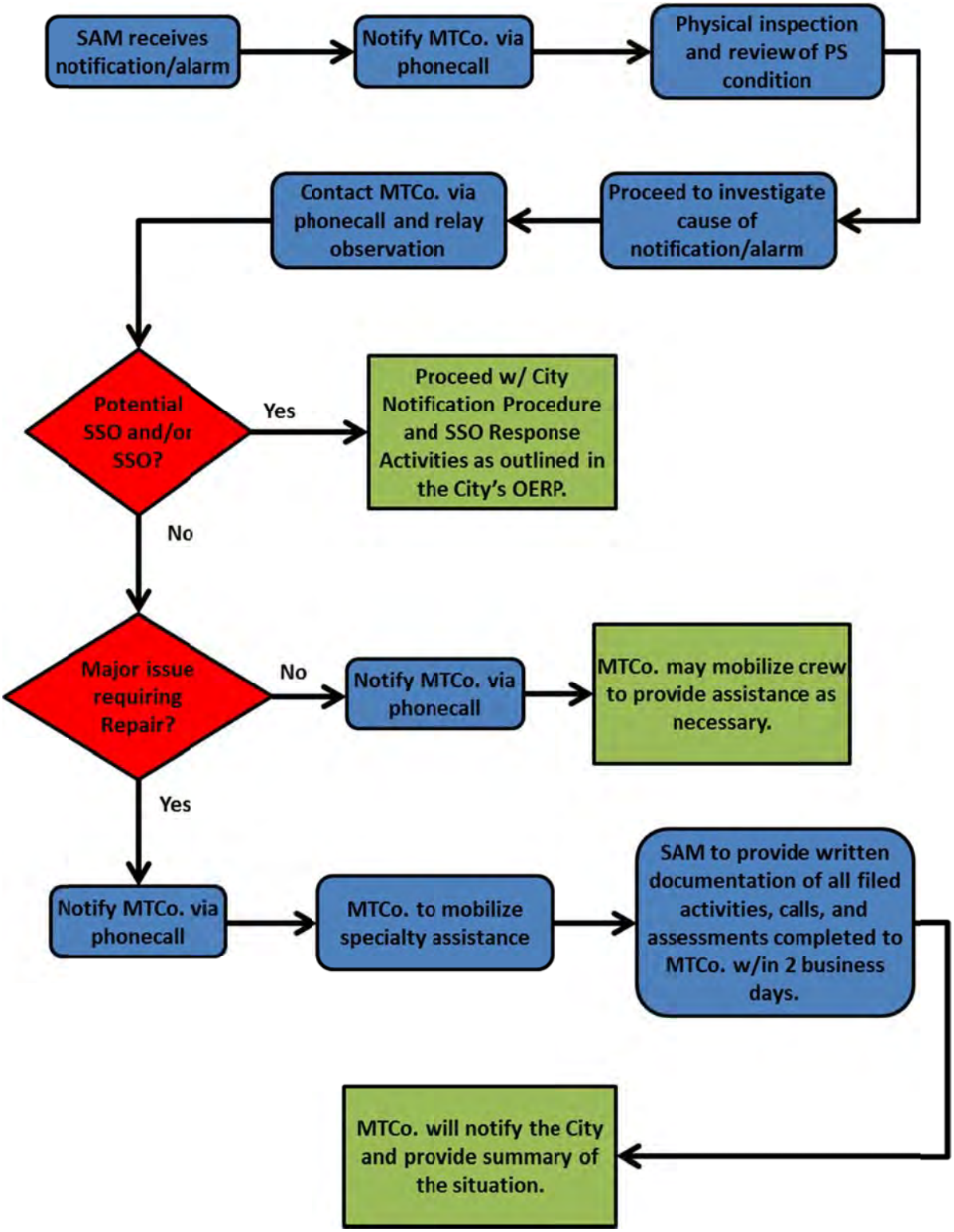


Figure 5-2. SSO Response Notification Process

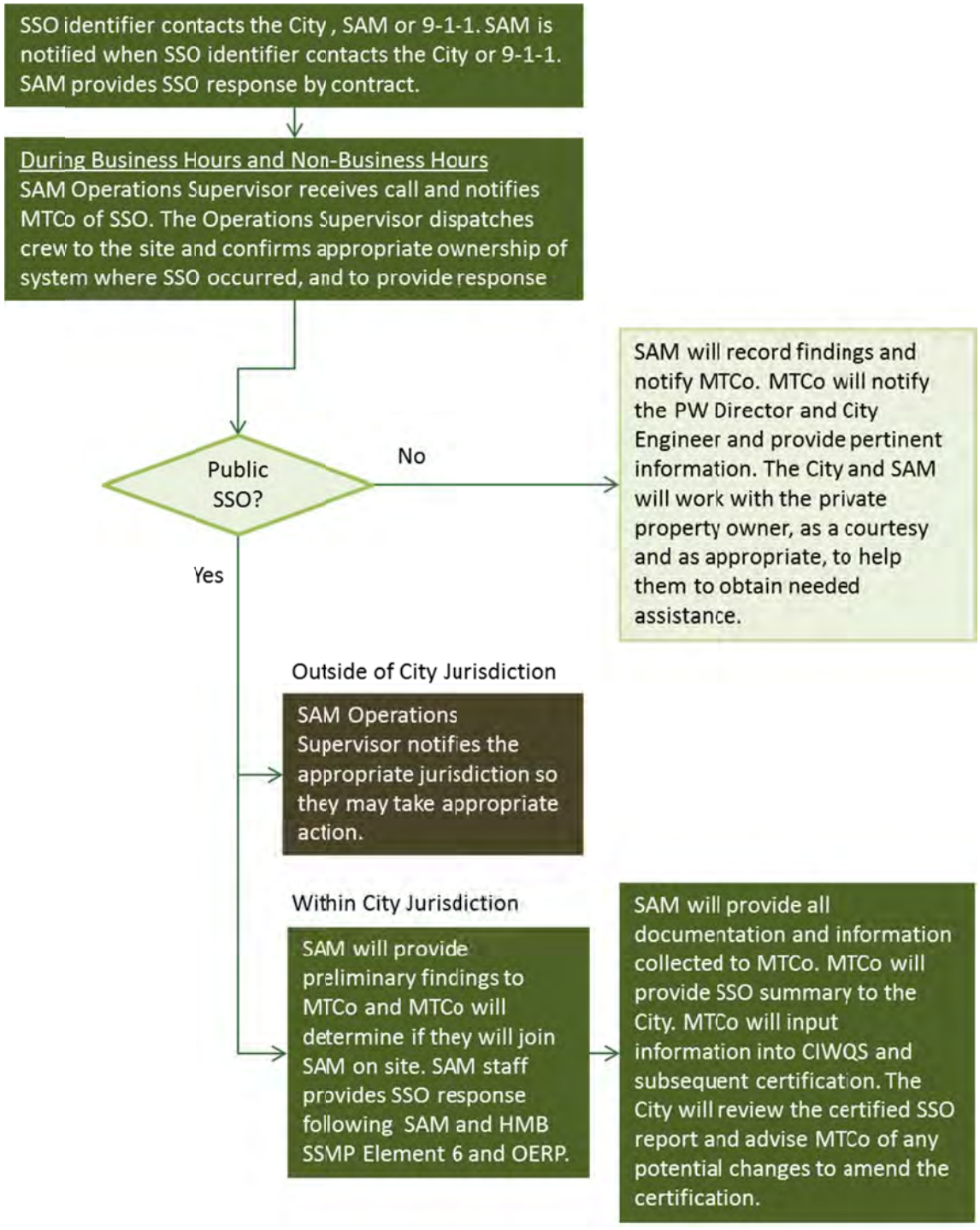


Figure 5-3. SSO Response Activities

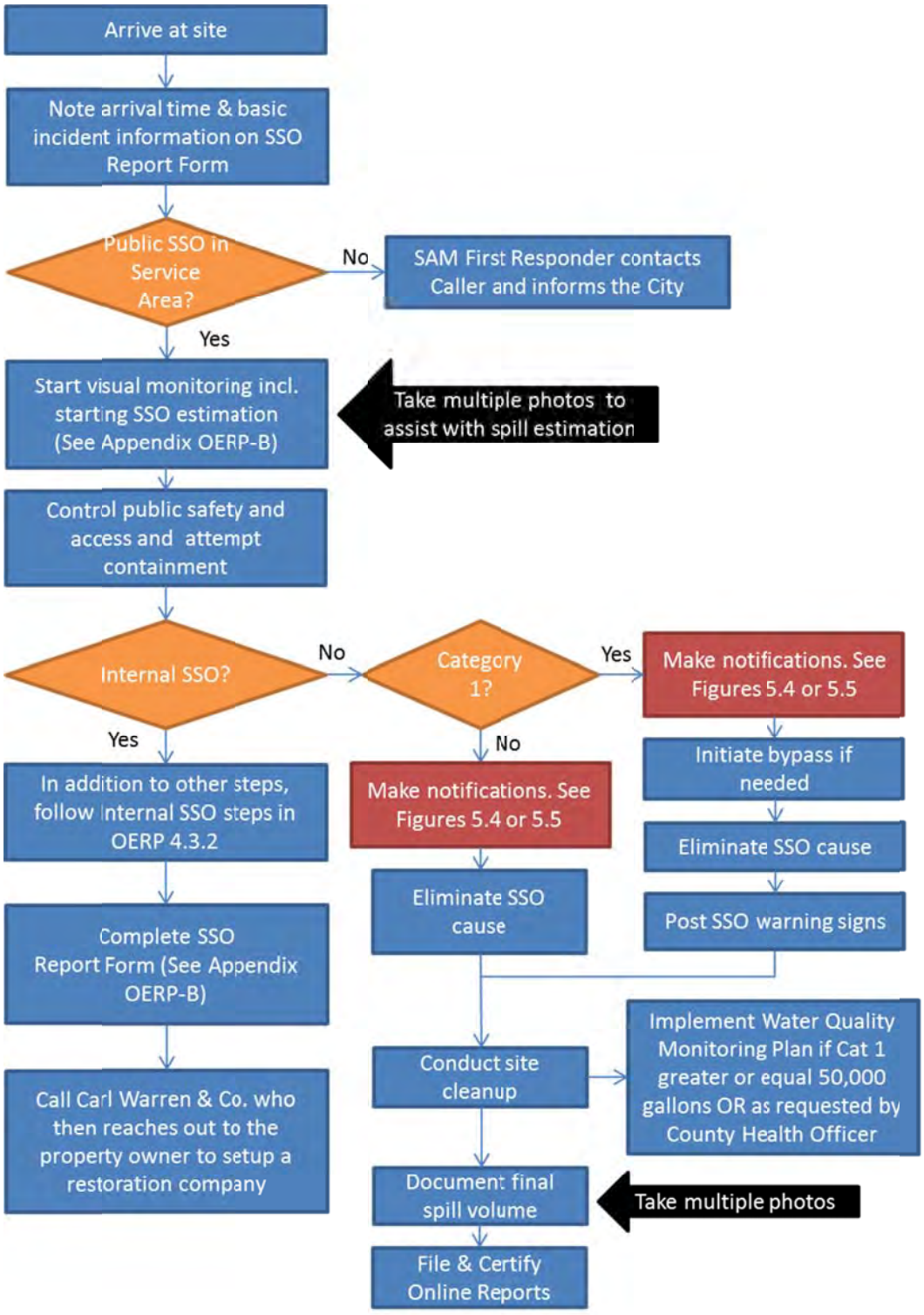


Figure 5-4. SSO Response Chain of Communication (Business Hours)

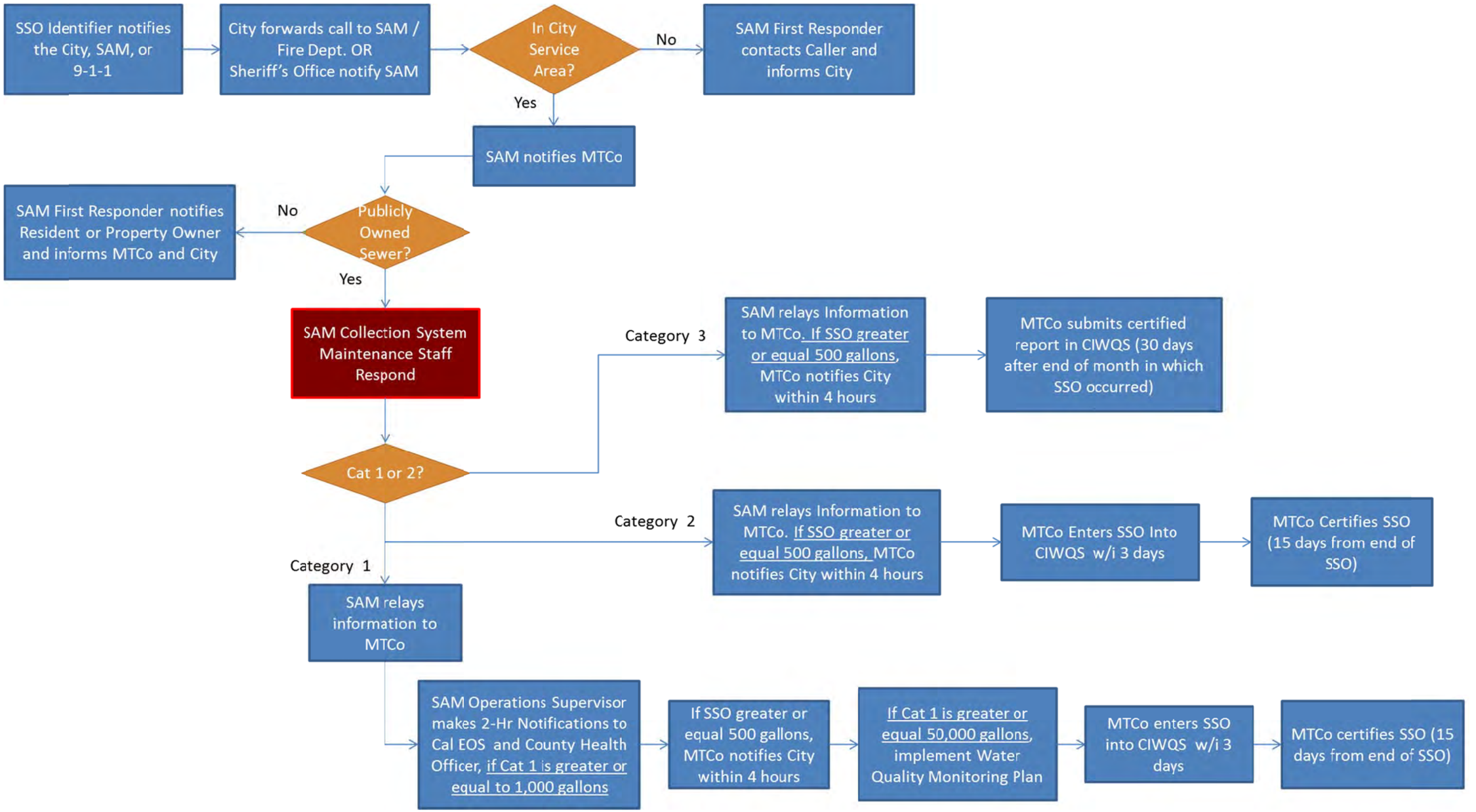
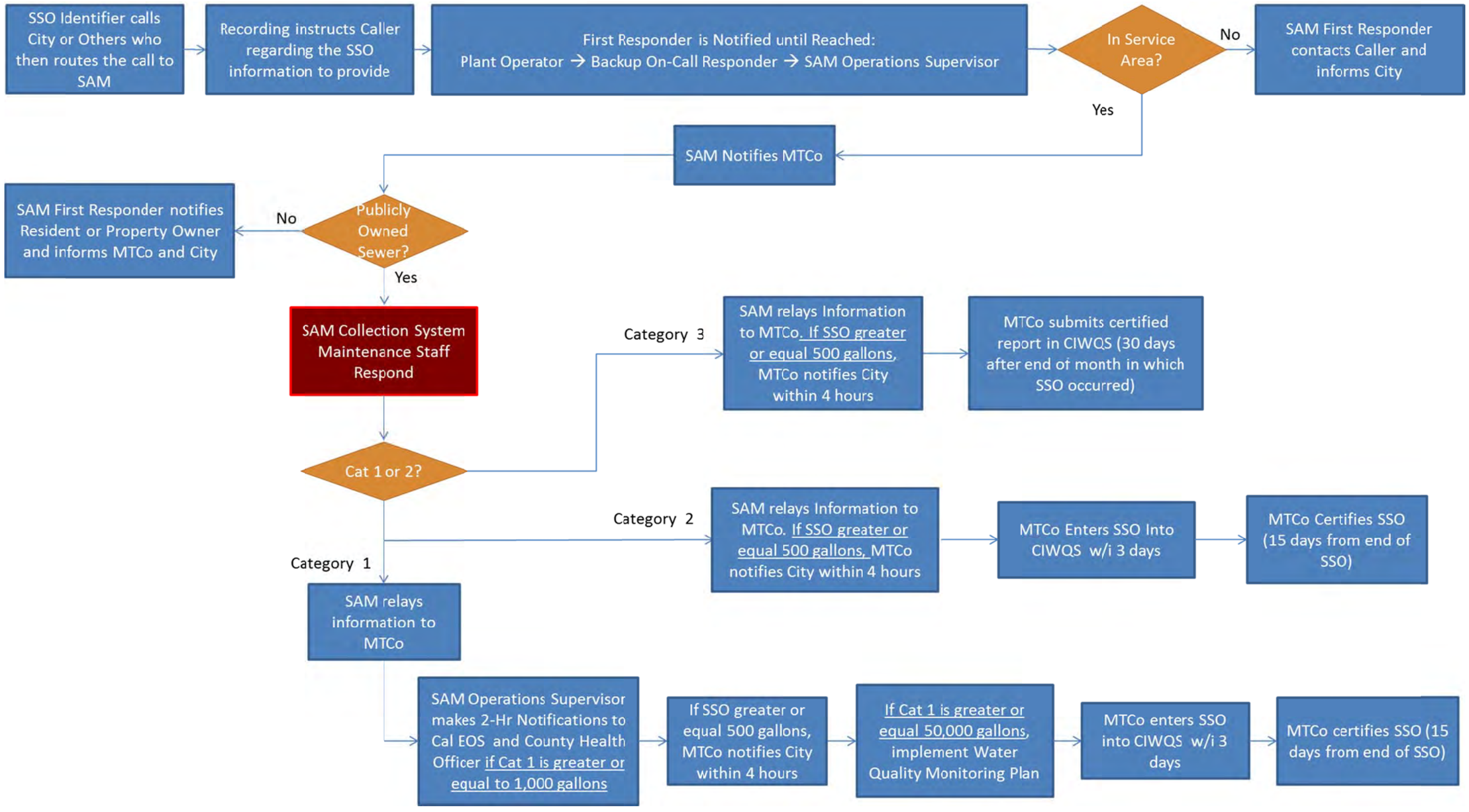


Figure 5-5. SSO Response Chain of Communication (Non-Business Hours)



Chapter 6 Spill Containment Procedures

6.1 Spill Containment Procedures

SAM staff should attempt to contain as much of the spilled sewage as possible using the following steps:

- Determine the immediate destination of the overflowing sewage originating from the pump station.
- Plug storm drains using available equipment and materials listed below to contain the spill, where feasible. If spilled sewage has made contact with the storm drainage system, attempt to contain the spilled sewage by plugging downstream storm drainage facilities.
- Contain/direct the spilled sewage using dike/dam or sandbags
- Check critical manhole locations and perform the steps above if overflow is observed. Refer to section 6.3 for location of critical manhole locations.
- Vacuum the station wetwell using the Vactor Truck and discharge wastewater to either the nearest large diameter gravity main or SAM treatment plant. Refer to section 6.3 for the discharge location at each station.
- If an SSO reaches a water body, follow the requirements below for posting and SSO notification signage.

6.2 Available Spill Containment Equipment

The following equipment will be utilized for spill containment procedures. These include but are not limited to:

- Spill berm
- Spill mat
- Spill Shark (water based spill absorbent)
- 2 inch pump
- 6 inch pump
- 1,000 gallon Vactor truck

6.3 Estimated SSO Flow Map

Figures 6-1 through 6-3 and Tables 6-1 through 6-3 on the following pages show the estimated direction of SSO flow and critical structures (i.e. storm drain inlets, creeks, etc.) that needs to be protected in the event that a spill occur within each of the pump stations.

Figure 6-1. Bell Moon Pump Station Projected SSO Flow Map. See Table 6-1 for SSO Response Activities.

Table 6-1. SSO Response Activities for Bell Moon Pump Station

#	Description	Containment
1	Storm drain inlets	Protect the storm drain inlets using the following spill containment equipment: **Sandbags, spill mat, or spill shark**.
2	2x sewer manholes @ lower elevation	There are 2 manholes (H07033 and H10033) that are at a lower rim elevation compared to the pump station. Check these 2 locations for signs of overflow and use the following spill containment equipment to address the overflow**: Sandbags, spill shark, or Vactor truck**.
3	Pump Station	Vacuum the station wet well using a **Vactor truck.**
4	Discharge Point @ WWTP	Discharge the recovered sewage from the **Vactor truck** into SAM's wastewater treatment plant.

Figure 6-2. Ocean Colony Pump Station Projected SSO Flow Map. See Table 6-2 for SSO Response Activities.

Table 6-2. SSO Response Activities for Ocean Colony Pump Station

#	Description	Containment
1	Storm drain inlets	Protect the storm drain inlets using the following spill containment equipment: **Sandbags, spill mat, or spill shark**.
2	2x sewer manholes @ lower elevation	There are 2 manholes (H24006 and H24005) that are at a lower rim elevation compared to the pump station. Check these 2 locations for signs of overflow and use the following spill containment equipment to address the overflow**: Sandbags, spill shark, or Vactor truck**.
3	Pump Station	Vacuum the station wet well using a **Vactor truck.**
4	Discharge Point @ Redondo Beach Road	Discharge the recovered sewage from the **Vactor truck** into manhole H22005 (end of forcemain into 18in gravity main) located along Redondo Beach Rd.

Figure 6-3. Pelican Point Pump Station Projected SSO Flow Map. See Table 6-3 for SSO Response Activities.

Table 6-3. SSO Response Activities for Pelican Point Pump Station

#	Description	Containment
1	Canada Verde Creek	Protect the creek by containing/directing sewage using the following spill containment equipment: **Sandbags, spill mat, or spill shark**.
2	Pump Station	Vacuum the station wet well using a **Vactor truck.**
3	Discharge Point at manhole H22005 along Redondo Beach Rd	Discharge the recovered sewage from the **Vactor truck** into manhole H22005 (end of forcemain into 18in gravity main) located along Redondo Beach Rd.

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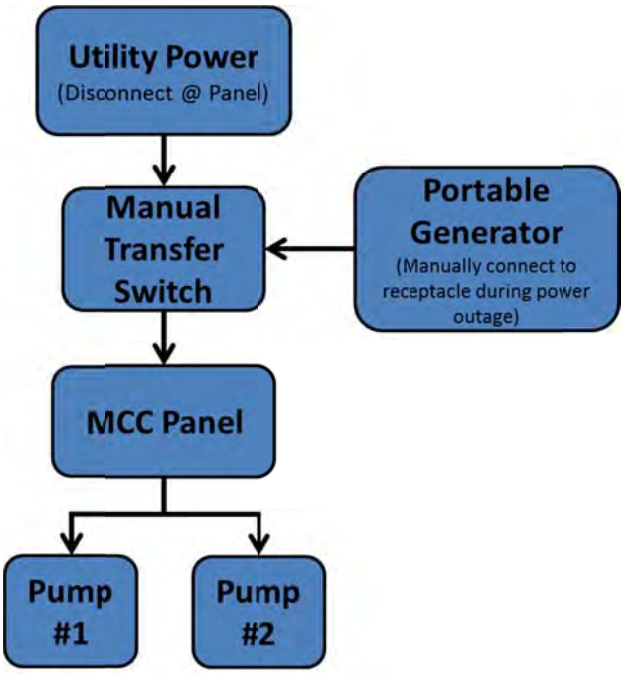
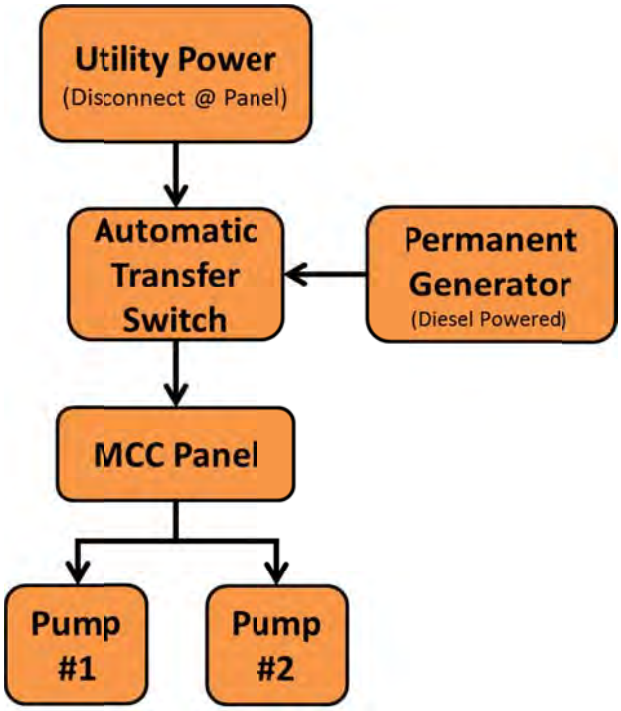
Chapter 7 Pump Station Power Map

This chapter provides diagrams showing the power configuration at each pump station.

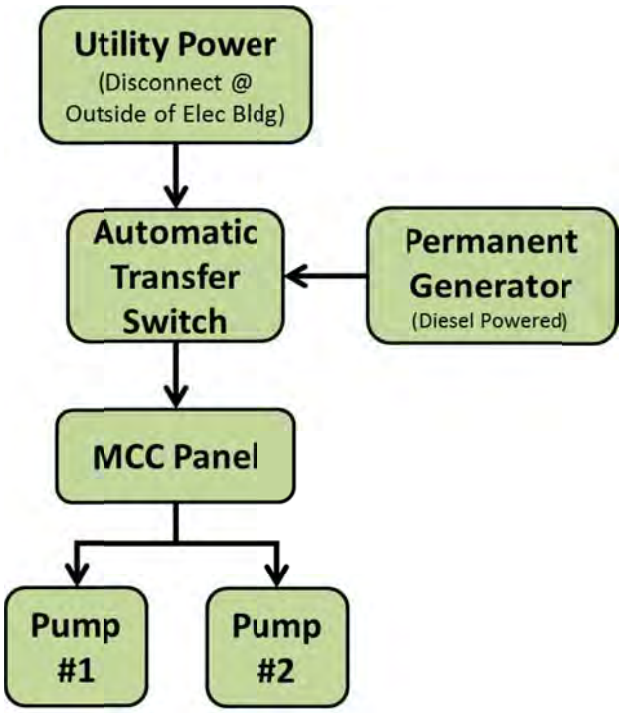
7.1 Bell Moon Station Power Map



7.2 Ocean Colony Power Map



7.3 Pelican Point Power Map



Chapter 8 Pump Station System Controls & Panels

This chapter includes photos of the pump station control panels.

8.1 Bell Moon Pump Station

The power meter and utility disconnect are located on the left side of the station after entering the fenced gate, and are shown in Figure 8-1. The manual transfer switch is located at the back end of the station on the left side of the main control panel, and is shown in Figure 8-2.

Figure 8-1. Power Meter / Utility Disconnect (Inside Right Panel)

Figure 8-2. Manual Transfer Switch (Side of Panel)

The main control panel includes Hand-Off-Auto switches for Pump 1 and Pump 2, as shown in Figure 8-3.

Figure 8-3. Main Control Panel – SCADA Panel (Top) / Pump 1 Hand-Off-Auto Switch (Left) / Pump 2 Hand-Off-Auto Switch (Right)

The Bell Moon Pump Station includes a portable generator receptacle, which is located at the back end of the station on the left side of the main control panel and shown on Figure 8-4. A dedicated trailer-mounted portable generator is owned by the City of Half Moon Bay and stored at the City's corporation yard.

Figure 8-4. Portable Generator Receptacle

8.2 Ocean Colony Pump Station Photos

The power meter and utility disconnect are located inside the first panel on the left side upon entering the station, and are shown in Figure 8-5. The automatic transfer switch is located inside the panel next to the power meter and utility disconnect, and is shown in Figure 8-6, both on the following page.

Figures 8-7 shows the SCADA panel, Pump 1&2 Hand-Off-Auto switch, and load breakers. Figure 8-8 shows the generator control system located inside the generator housing, and the Emergency Stop switch on this control panel both located on the right side of upon entering the station.

Figure 8-5. Power Meter and Utility Disconnect

Figure 8-6. Automatic Transfer Switch

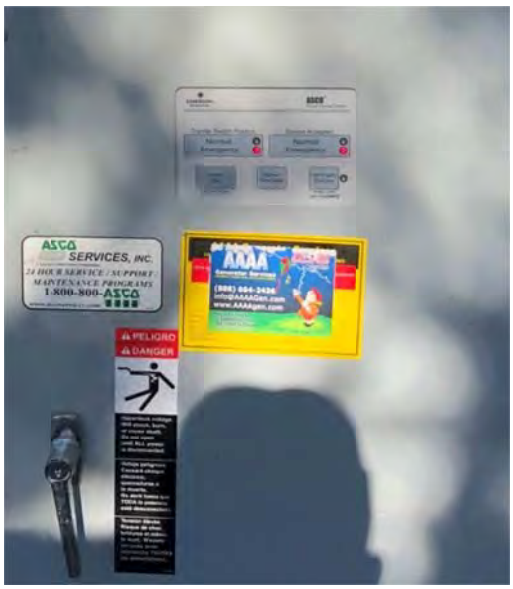


Figure 8-7. SCADA Panel (Top) / Pump 1&2 Hand-Off-Auto Switch (Left) / Load Breakers (Bottom)

Figure 8-8. Generator Control System (Inside Generator Housing) / Emergency Stop (Bottom Left)

8.3 Pelican Point Pump Station Photos

The power meter and utility disconnect are located on the side of the electrical building, and are shown in Figure 8-9. Figure 8-10 shows the SCADA panel located inside the electrical building and Pump 1&2 Hand-Off-Auto switch breakers located at the bottom of this panel. Figure 8-11 shows the generator control system panel and Figure 8-12 shows the Automatic Transfer Switch and generator receptacle all located inside the electrical building.

Figure 8-9. Power Meter and Utility Disconnect (Side of Electrical Bldg.)

Figure 8-10. SCADA Panel (Top) / Pump 1&2 Hand-Off-Auto Switch (Bottom of Panel)

Figure 8-11. Generator Control System

Figure 8-12. Automatic Transfer Switch and Portable Generator Receptacle (Bottom Left Cable with White Receptacle)

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Chapter 9 Lockout / Tagout Procedures

All Half Moon Bay pump stations receive constant power source from electrical utility providers. Ocean Colony and Pelican Point pump stations have built in backup power sources through permanent generators. It is important to follow proper lockout/tagout procedures to help protect staff from uncontrolled hazardous energy that may escape from electrical equipment during isolation or servicing.

9.1 Bell Moon Pump Station Entire Pump Station Electrical Shutdown Procedures

The following procedures must be followed in the order shown during any a full electrical shutdown of the Bell Moon pump station:

- Locate the utility disconnect switch inside the panel next to the power meter and turn the switch down to the OFF position (see Figure 9-1).
- Lock and tag the utility disconnect panel.
- Locate the manual transfer switch at the side of the main control panel and turn the lever down to the OFF position (see Figure 9-2).
- Lock and tag the manual transfer switch lever.
- This station does not have a permanent backup generator. There is no need to check for generator status.

Figure 9-1. Utility Disconnect (Inside Right Panel)

Figure 9-2. Manual Transfer Switch

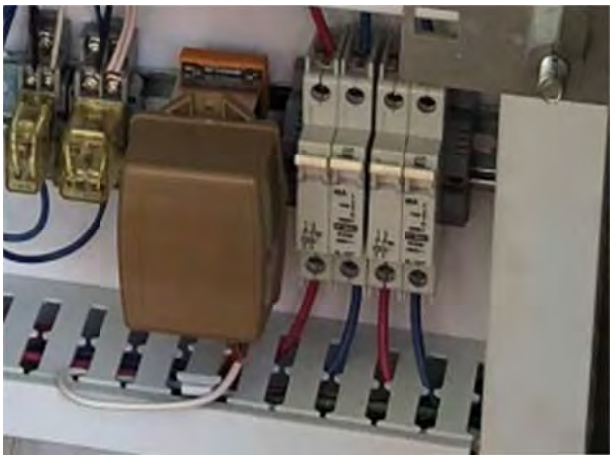
9.2 Bell Moon Pump Station Individual Pump Electrical Shutdown

The following procedures must be followed in the order shown during any individual pump electrical shutdown at the Bell Moon pump station:

- Determine the pump that needs to be shutdown.
- Rotate the pump's Hand-Off-Auto switch to the OFF position (middle) (see Figure 9-3).
- Open the main control panel and locate the pump disconnect (bottom right next to brown box) and turn the switch of the pump that needs to be shut down to the OFF position (see Figure 9-4).
- Tag the pump disconnect.

Figure 9.3. Pump Hand-Off-Auto Switch

Figure 9.4. Pump Disconnect



9.3 Ocean Colony Pump Station Entire Pump Station Electrical Shutdown

The following procedures must be followed in the order shown during any a full electrical shutdown of the Ocean Colony pump station:

- Since this station has a backup generator, the generator has the tendency to start up after disconnecting the utility power supply.
- Start the shutdown procedure by opening the generator enclosure and pushing the OFF button in the generator control system panel (see Figure 9-5). Locate the main generator breaker inside the enclosure and turn the breaker off.
- Lock and tag the generator enclosure.
- Locate the utility disconnect switch (next to the main control panel) and turn the switch down to the OFF position (see Figure 9-6).
- Lock and tag the disconnect switch cover.

Figure 9-5. Generator Control System

Figure 9-6. Utility Disconnect

9.4 Ocean Colony Pump Station Individual Pump Electrical Shutdown

The following procedures must be followed in the order shown during any individual pump electrical shutdown at the Ocean Colony pump station:

- Open the main control panel.
- Determine the pump that needs to be shut down.
- Rotate the pump Hand-Off-Auto switch to the "O" position (middle) (see Figure 9-7).
- Tag the pump's Hand-Off-Auto switch.
- Locate the pump disconnect and turn the switch of the pump that needs to be shut down to the OFF position.
- Tag the pump disconnect panel.

Figure 9.7. Pump Hand-Off-Auto Switch

9.5 Pelican Point Pump Station Entire Pump Station Electrical Shutdown

The following procedures must be followed in the order shown during an entire pump station electrical shutdown at the Pelican Point pump station:

- Since this station has a backup generator, the generator has the tendency to start up after disconnecting the utility power supply.
- Start the shutdown procedure by turning the Engine Control switch to the middle (OFF) located at the bottom of the generator control system panel (see Figure 9-8). Locate the main generator breaker inside the enclosure and turn the breaker off.
- Tag the generator control system.
- Locate the automatic transfer switch and turn the handle until the arrow points to "✵" (see Figure 9-9)
- Lock and tag the panel.
- Locate the utility disconnect and turn the switch down to the OFF position (see Figure 9-10).
- Lock and tag the disconnect switch cover.

Figure 9-8. Pump Hand-Off-Auto Switch

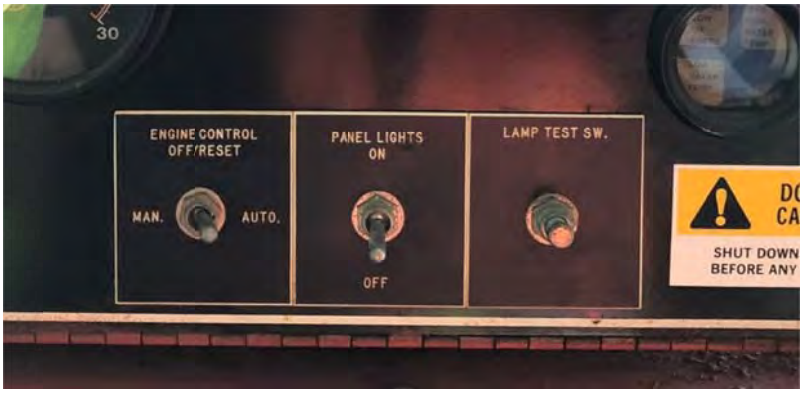


Figure 9-9. Automatic Transfer Switch

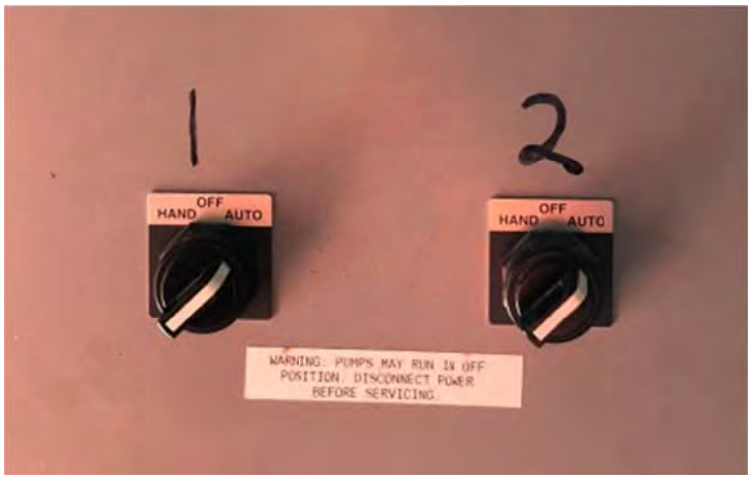
Figure 9-10. Utility Disconnect (Side of Electrical Bldg.)

9.6 Pelican Point Pump Station Individual Pump Electrical Shutdown

The following procedures must be followed in the order shown during any individual pump electrical shutdown at the Pelican Point pump station:

- Determine the pump that needs to be shut down.
- Rotate the pump Hand-Off-Auto switch to the OFF position (middle) (see Figure 9-11).
- Tag the pump's Hand-Off-Auto switch.
- Locate the pump disconnect and turn the switch of the pump that needs to be shut down to the OFF position.
- Tag the pump disconnect panel.

Figure 9-11. Hand-Off-Auto Switch



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Chapter 10 Pump Station Bypass

10.1 Bell Moon Bypassing Procedures

There is currently no formal bypassing procedure or system setup at the Bell Moon pump station. Instead of bypassing this station, SAM will utilize a vactor truck to capture and truck sewage flows to the nearest available downstream location or to the wastewater treatment plant.

10.2 Ocean Colony Bypassing Procedures

There is currently no formal bypassing procedure or system setup at the Ocean Colony pump station. Instead of bypassing this station, SAM will utilize a vactor truck to capture and truck sewage flows to the nearest available downstream location or to the wastewater treatment plant. The City recently designed an upgrade to the Ocean Colony pump station that includes means to bypass flow. The project is expected to be constructed in 2020.

10.3 Pelican Point Bypassing Procedures

The Pelican Point pump station is valved to allow flows to be pumped through the Ocean Colony forcemain, should the existing Pelican Point forcemain require repair or replacement. However, if the pump station fails, or the emergency generator fails during a power outage, then there is currently no formal bypassing procedure or system setup to bypass these flows around the station. Instead of bypassing this station, SAM will utilize a vactor truck to capture and truck sewage flows to the nearest available downstream location or to the wastewater treatment plant.

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Appendix F
Element 7 (FOG Control Program) Supporting Documents

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MARK THOMAS

CITY OF HALF MOON BAY
FAT OIL GREASE CONTROL PROGRAM
INSPECTION REPORT

Facility Name:				Inspection Date:	
Facility Address:				Insp. Start time:	
Contact:		Phone #		Insp. End time:	

Violation/Remedial Action:

Violation	Remedial Action	Additional Information	**Due Date**	Completed Date

Areas Inspected:

Fixtures / Items	Inspect	Notes	Status
GCD Records	o Present o Some Missing o Not present o Data complete o Data incomplete		o Compliant o Violation
Sinks	o Strainers present & secure o Wares scraped to trash prior to wash		o Compliant o Violation
Floor Drains/Sinks	o Grates/Strainers present & secure o No excessive food waste		o Compliant o Violation
Drain Problems	o No chemical drain cleaners o All drains flowing freely		o Compliant o Violation
Mop Sinks	o Drains to sanitary sewer o Grates present & secure		o Compliant o Violation
Dishwasher	o Yes o No o If yes, not connected to HGI		o Compliant o Violation
Grinder	o Yes o No o If yes, not connected to HGI		o Compliant o Violation
Floor Mats	o cleaned over sanitary sewer drain		o Compliant o Violation
Tallow Bin	o Bin & area free of stains/tracking		o Compliant o Violation
			o Compliant o Violation
			o Compliant o Violation

Recommendations / Notes:

Date	*Inspector*	*Phone #*	*Date*	*Facility Contact*

GCD Inspections:

HGI (trap):			
Location:		o Above Grade o Below Grade	
Size		Opened:	o Yes o No
Installed Correctly:		o Yes o No o UTD	
Inlet Baffle intact:		o Yes o No o UTD	
Outlet baffle/shroud intact:		o Yes o No o UTD	
Flow Restrictor:		o Yes o No o UTD	
Grease in Effluent:		o Yes o No o UTD	
Records Adequate:		o Yes o No o UTD	
Notes:			

HGI (trap):			
Location:		o Above Grade o Below Grade	
Size		Opened:	o Yes o No
Installed Correctly:		o Yes o No o UTD	
Inlet Baffle intact:		o Yes o No o UTD	
Outlet baffle/shroud intact:		o Yes o No o UTD	
Flow Restrictor:		o Yes o No o UTD	
Grease in Effluent:		o Yes o No o UTD	
Records Adequate:		o Yes o No o UTD	
Notes:			

GGI (interceptor):			
Location:		Opened:	o Yes o No
Size:		Sample Box:	o Yes o No
Installed Correctly:		o Yes o No o UTD	
Inlet standpipe intact:		o Yes o No o UTD	
Crossover standpipe intact:		o Yes o No o UTD	
Outlet standpipe intact:		o Yes o No o UTD	
Grease in Effluent:		o Yes o No o UTD	
Records Adequate:		o Yes o No o UTD	
Notes:			

GGI (interceptor):			
Location:		Opened:	o Yes o No
Size:		Sample Box:	o Yes o No
Installed Correctly:		o Yes o No o UTD	
Inlet standpipe intact:		o Yes o No o UTD	
Crossover standpipe intact:		o Yes o No o UTD	
Outlet standpipe intact:		o Yes o No o UTD	
Grease in Effluent:		o Yes o No o UTD	
Records Adequate:		o Yes o No o UTD	
Notes:			

Powered GCD:			
Type:			
Location:		o Above Grade o Below Grade	
Size		Opened:	o Yes o No
Installed Correctly:		o Yes o No o UTD	
In Operation:		o Yes o No o UTD	
Records Adequate:		o Yes o No o UTD	
Device-specific Notes:			

Powered GCD:			
Type:			
Location:		o Above Grade o Below Grade	
Size		Opened:	o Yes o No
Installed Correctly:		o Yes o No o UTD	
In Operation:		o Yes o No o UTD	
Records Adequate:		o Yes o No o UTD	
Notes:			

MARK THOMAS

Grease Management

KEEP GREASE OUT OF THE SYSTEM

Grease Control Device Maintenance
Recordkeeping

All food service establishments are required to keep maintenance records for their grease traps, interceptors, and mechanical grease control devices for a minimum of three years. Records must be readily available for review by Environmental Inspectors.

Failure to maintain records on site for a minimum of three years is a violation of the local sewer ordinance and may result in fines.

Device: Grease Interceptor
Cleaning Method: Professional Pumping Company Only

Establish and maintain a log to track maintenance and hold receipts from your professional pumping company. If you have more than one grease interceptor, establish and maintain a separate log for each one.

Receipts must include the following information:

- Pumping company name, address, and phone number.
- Truck IKG number.
- Date and time of pumping service.
- Name and address of your business.
- Location of each grease control device.
- Size and type of your grease control device.
- Approximate quantity of grease and solid food waste recorded in gallons, inches, or percentages.
- Pumping frequency.
- Details on any structural, maintenance, or repair issues.
- Grease disposal location.

Device: Grease Trap
Cleaning Method: Professional Pumping Company or Self-Cleaning

Establish and maintain a log to track maintenance and hold receipts from your professional pumping company if you use one. If you have more than one grease trap, establish and maintain a separate log for each one.

Logs must include the following information:

- Date of cleaning.
- Name of person who cleaned the trap.
- Approximate quantity of grease and solid food waste recorded in gallons, inches, or percentages.
- Location of each grease control device.
- Waste removal and disposal method.
- Grease disposal location.
- Any other relevant notes.
- Keep receipts with your self-cleaning log sheets if you use a professional cleaning service.

Grease in the system causes problems in storm drains and sanitary sewers — and increases your operating costs.

Whether you contract a professional pumping service, perform the cleaning yourself, or do both, you are responsible for keeping and maintaining maintenance records.

Example of a Recordkeeping Log for a Grease Control Device

Business: Acme Cafe Grease Control Device Size: 100 lbs Location of Grease Control Device: Underneath 3-pot sink

Example

Date of Cleaning	Name	Waste Volume Observed/Removed	Maintenance Done	Disposal Method	Notes
07-07-11	John Smith	3- 4 gallons FOG & solids removed	Trap emptied, cleaned	Solids dried, double-bagged, put in dumpster.	Patched hole in baffle wall

MARK THOMAS

Grease Control Device Maintenance Recordkeeping Log

Business: _____ Grease Control Device Size: _____ Location of Grease Control Device: _____

Date of Cleaning	Name	Waste Volume Observed/Removed	Maintenance Done	Disposal Method	Notes
7-07-11	John Smith	3- 4 gallons FOG & solids removed	Trap emptied, cleaned	Solids dried, double-bagged, put in dumpster.	Patched hole in baffle wall

Grease Control Device Maintenance Recordkeeping Log

Business: _____ Grease Control Device Size: _____ Location of Grease Control Device: _____

Date of Cleaning	Name	Waste Volume Observed/Removed	Maintenance Done	Disposal Method	Notes

MARK THOMAS

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Grease Management

KEEP GREASE OUT OF THE SYSTEM

Grease Interceptor Maintenance

What is the Purpose of a Grease Interceptor?

- A grease interceptor is designed to separate Fats, Oils, and Grease (FOG) and solid food waste from your kitchen wastewater.
- Buildup of FOG and solid food waste in your plumbing may cause blockages in either your plumbing or the sanitary sewer lines. This can lead to a sanitary sewer overflow into your building, a neighbor's building, streets, or the environment. It is important to clean your grease interceptor regularly.

Cleaning Frequency

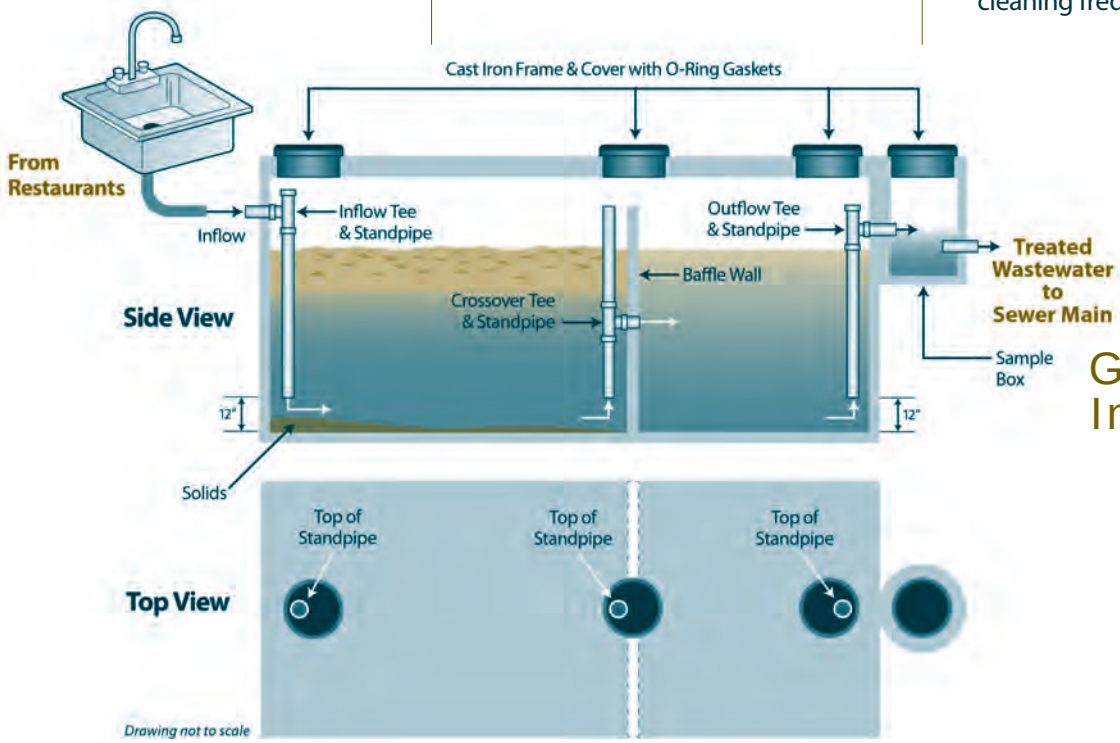
- Grease interceptors shall be cleaned at least once every 90 days. More frequent cleaning may be necessary to keep your interceptor operating properly.

Twenty-Five Percent Rule

- Pump your interceptor when **the final chamber is twenty-five percent (25%) full of FOG** and solid food waste or within 90 days of the last pumping, **whichever comes first**.

Standards for Evaluating Grease Interceptors

- Manhole and sample box lids should be easily removable for cleaning and inspections.
- The baffle wall and all three standpipes must be in place and unbroken, above and below the water and grease levels.
- If any standpipes are under water or grease, they must be raised above the grease level. High water or grease level could result from a blockage in the downstream pipes.
- Downstream blockages could indicate inadequate interceptor cleaning frequency.



Grease Interceptor

Grease in the system causes problems in storm drains and sanitary sewers — and increases your operating costs.

Failure to maintain records on site for a minimum of three years is a ***violation of your local sewer ordinance and may result in fines. See the*** *"Grease Control Device Maintenance Recordkeeping" factsheet for more information.*

Discharging used cooking or deep fryer oil, rotisserie fat, or solid food waste into kitchen sinks, mop sinks, and floor drains in your kitchen that are connected to the sanitary sewer system is a violation of your local sewer use ordinances.

Discharging anything, including oil, grease waste, wash water, or rinse water to the storm drain system is a violation of the local sewer use ordinance.

Kitchen Best Management Practices (BMPs)

- Grease and solid food waste can build up inside the interceptor and may cause the interceptor to operate less efficiently.
- Scraping grease and food waste to the garbage before washing dishes will minimize the amount of grease and solids going into the grease interceptor and will improve interceptor performance.

Tips on Routine Grease Interceptor Maintenance

- The pumping service should wash and scrape all sides, standpipes, and surfaces inside the interceptor and completely pump out all contents.
- The pumping service shall not decant (return) wastewater back into the interceptor; the grease concentration in interceptor wastewater is very high.
- Make sure your pumping service cleans the sample box and effluent standpipe of the interceptor. You may need to pump more often if you see fresh grease being discharged into your sample box.
- Require the pumping service to show the disposal destination for your waste on the pumping invoice. Your business may be liable for any illegal dumping or discharge of waste from your facility.
- Do visual inspections after pumping services are performed or when plumbers snake or hydro-jet plumbing or laterals to make sure the interceptor standpipes are not damaged.
- Keep grease interceptor pumping records on site for a minimum of three years. Refer to the Grease Control Device Maintenance Recordkeeping sheet for more information.

MARK THOMAS

Grease Management

KEEP GREASE OUT OF THE SYSTEM

Grease Trap Maintenance

What is the Purpose of a Grease Trap?

- A grease trap is designed to separate Fats, Oils, and Grease (FOG) and solid food waste from your kitchen wastewater.
- Buildup of FOG and solid food waste in your plumbing may cause blockages in either your plumbing or the sanitary sewer lines. This can lead to an overflow into your building, a neighbor's building, streets, or the environment. It is important to clean your grease trap regularly.

Cleaning Frequency

- Grease traps shall be cleaned at least once every 30 days. More frequent cleaning may be necessary if:
- Your sinks are draining slowly, possibly due to buildups in the trap.
- Water levels in the trap or floor drains are high, possibly due to grease-related blockages in your plumbing.
- The grease trap smells bad because solids are filling the bottom of the trap quickly.
- Your trap is not sized correctly for your restaurant operations, menu, or number of meals served.

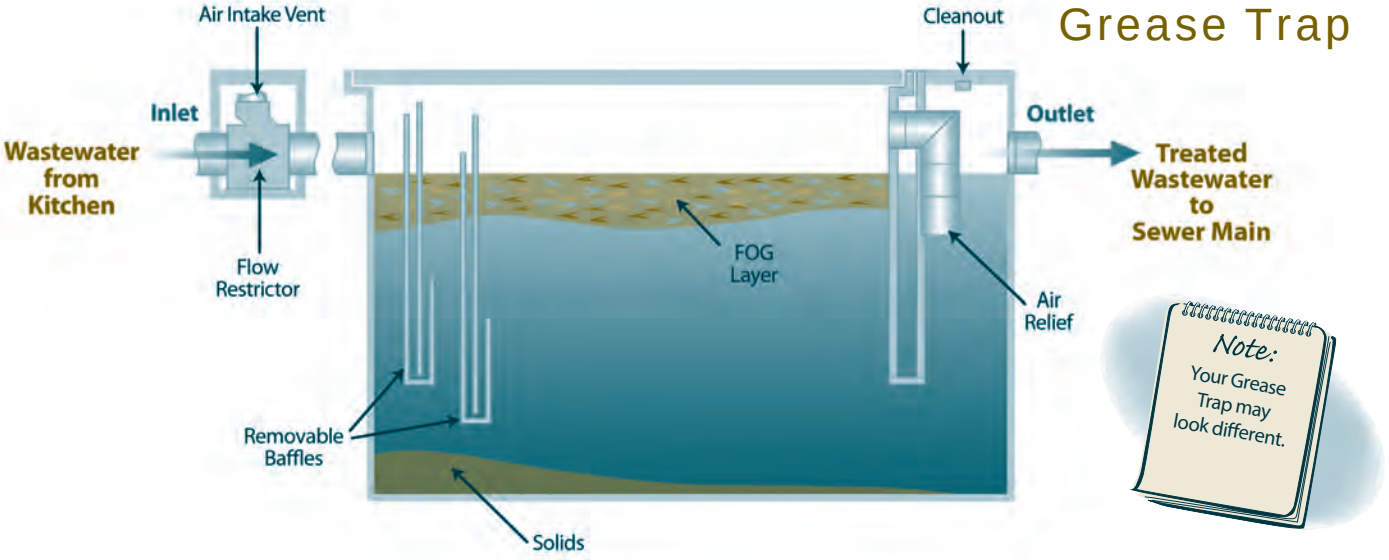
Twenty-Five Percent Rule

- Clean the trap when it is twenty-**five percent (25%) full of FOG** and solid food waste or within 30 days of the last pumping, **whichever comes first**.

Common Problems Leading to Grease Trap Repair or Replacement

- Grease trap installed backwards, without flow controls, or otherwise in violation of plumbing codes or manufacturer specifications.
- Missing or damaged parts, such as the removable baffle plates.
- Leaks due to rust holes or punctures in the walls or floors.
- Illegal connection to the dishwasher or garbage grinder to the grease trap.

Grease Trap



Grease in the system causes problems in storm drains and sanitary sewers — and increases your operating costs.

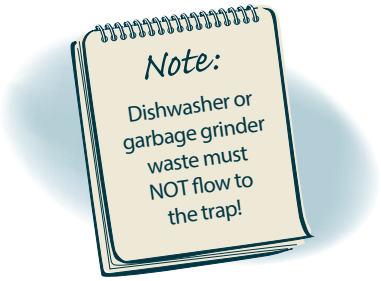
Failure to maintain records on site for a minimum of three years is a ***violation of your local sewer ordinance and may result in fines. See the "Grease Control Device Maintenance Recordkeeping" factsheet for more information.***

Discharging used cooking or deep fryer oil, rotisserie fat, or solid food waste into kitchen sinks, mop sinks, and floor drains in your kitchen that are connected to the sanitary sewer system is a violation of your local sewer use ordinances.

Discharging anything, including oil, grease waste, wash water, or rinse water to the storm drain system is a violation of the local sewer use ordinance.

Kitchen Best Management Practices (BMPs)

- Scraping grease and food waste to the garbage before washing dishes will minimize the amount of grease and solids going into the grease trap and will often improve trap performance.



Tips on Routine Grease Trap Maintenance

- To ensure proper maintenance, we recommend using a professional grease hauling company.
- Cleaning consists of emptying the entire trap, including FOG, wastewater, and solid food waste; making sure the removable baffle plates and parts are thoroughly cleaned and replaced properly after each cleaning.
- Keep a maintenance log sheet posted near the grease trap if you self-clean the trap.
- Melt ice in the sink plumbed to the grease trap an hour or two before cleaning. This helps cool and harden the grease in the trap, making cleaning easier and reducing odors.
- Have an extra gasket available for your grease trap lid and use allen screws (which resist stripping) to secure the lid.
- Run your hood fans during cleaning to reduce odors.
- Call a plumber to snake or hydro-flush your sewer lateral (plumbing) pipes to the street periodically to remove any blockages.
- If you choose to self-clean your grease trap, please see the "How to Clean Your Grease Trap" poster for guidance.

APPENDIX F, FOG FACILITIES LIST
Ctiy of Half Moon Bay
Last Revised:2/22/2018

Business Name (DBA)	Business Address	Business Type	SIC Description		Latest Priority
PROPHET PROJECT, INC.	2351 CABRILLO HWY	AGRI PROD CROPS	Florists		M
BAY CITY FLOWER CO	2265 CABRILLO HWY S	AGRICULTURAL SERVICES	Flower And Field Bulbs\wholesale		H
ANDREOTTI NURSERY	131 KELLY AVE	AGRICULTURAL SERVICES	Nursery Stock, Growing Of		M
ANDREOTTI FAMILY FARM	329 KELLY AVE	AGRICULTURAL SERVICES	Farm-product Raw Materials, Not Elsewhere Classified		M
PACIFIC BELL TELEPHONE COMPANY	525 KELLY ST	COMMUNICATION	Telephone Communications, Except Radiotelephone		M
ANDREINI BROTHERS INC	151 MAIN ST	CONTRACTOR - (BASED OUTSI	Excavation Work		M
MCGREGER CONSTRUCTION	168 W POINT AVE	CONTRACTOR - GEN'L BLDG	General Contractors-single-family Houses		L
PREMIER TERMITE FLOORS	116 CABRILLO HWY N	CONTRACTOR - SPEC TRADE	Special Trade Contractors, Not Elsewhere Classified		L
SHEET METAL DESIGN	514 KELLY ST	CONTRACTOR - SPEC TRADE	Special Trade Contractors, Not Elsewhere Classified		M
PALLADINO PAINTING INC	102 PRINCETON AVE O	CONTRACTOR - SPEC TRADE	Painting And Paper Hanging		M
HALF MOON BAY ROOFING	239 SAN MATEO RD	CONTRACTOR - SPEC TRADE	Roofing Work, Including Repairing-contractors		L
SUNRISE PAINTING INCORPORATED	525 SAN MATEO RD	CONTRACTOR - SPEC TRADE	Paint And Wallpaper Stripping-contractors		L
R G MASONRY INC	11831 SAN MATEO RD	CONTRACTOR - SPEC TRADE	Masonry, Stone Setting, And Other Stone Work		L
FRUIT GARDEN	80 CABRILLO HWY N STE M	Current		80	M
COASTSIDE LUTHERAN CHURCH	900 CABRILLO HWY	EXEMPT	Churches		L
SEWER AUTHORITY MID COASTSIDE	1000 CABRILLO HWY N	EXEMPT			M
CUNHA INTERMEDIATE SCHOOL	600 CHURCH ST	EXEMPT	Elementary And Secondary Schools		M
COASTSIDE STATE PARKS ASSOCIATION	95 KELLY AVE	EXEMPT	Book Stores		M
CABRILLO UNIFIED SCHOOL DISTRICT	498 KELLY AVE	EXEMPT	Schools And Educational Services, Not Elsewhere Classified		M
HALF MOON BAY HIGH SCHOOL	1 LEWIS FOSTER DR	EXEMPT	High Schools		M
SENIOR COASTSIDERS	925 MAIN ST	EXEMPT	Senior Center		H
HATCH ELEMENTARY SCHOOL	490 MIRAMONTES AVE	EXEMPT	Elementary And Secondary Schools		M
DAYLIGHT NURSERY/DAYLIGHT FARMS	925 MIRAMONTES ST	FARMERS MARKET	Flowers, Nursery Stock, And Florists' Supplies		M
STOLOSKI & GONZALEZ INC	2750 N CABRILLO HWY	FRUIT-VEGETABLE-XMAS TREI	Vegetable Farms		M
AMERICAS BEST VALUE INN & SUITES	3020 CABRILLO HWY N	GENERAL BUSINESS	Hotels And Motels		M
HALF MOON BAY WINERY LLC	700 MILL	GENERAL BUSINESS	Wines\wholesale		H
BW HALF MOON BAY LODGE 325	2400 CABRILLO HWY S	HOTEL / MOTEL	Hotels And Motels		M
COASTSIDE FARM	1101 CABRILLO HWY N	OTHER BUSINESS	General Farms, Primarily Crop		M
B K MOTORS INC	108&112A N CABRILLO HWY	OTHER BUSINESS	Automobiles, Used Cars Only\retail		H
FARMER JOHNS PUMPKIN FARM	850 CABRILLO HWY N	PUMPKIN PATCH	Crops, Riding		M
BAY CHEVRON	375 CABRILLO HWY N	RETAIL - AUTO/GAS	Gasoline And Oil\retail		H
MORE FOR LESS	501 KELLY ST	RETAIL - AUTO/GAS	Convenience Food Stores\retail		M
A TO Z AUTOS	210 MAIN ST STE 2C	RETAIL - AUTO/GAS	Automotive Dealers, Not Elsewhere Classified		M
HALF MOON BAY ALLIANCE	120 SAN MATEO RD	RETAIL - AUTO/GAS	Gasoline Service Stations		M
HALF MOON BAY SHELL SERVICE	201 SAN MATEO RD	RETAIL - AUTO/GAS	Gasoline Service Stations		M
ENTERPRISE RENT A CAR	213 SAN MATEO RD 112	RETAIL - AUTO/GAS	Automobile Rental With Drivers		M
JAMES FORD INC	100 SEYMOUR ST	RETAIL - AUTO/GAS	Automobiles, New And Used\retail		M
RICE TRUCKING SOIL FARM INC	2119 CABRILLO HWY S	RETAIL - BLDG/GARDEN SUPPI	Sand And Gravel Dealers\retail		M
HALF MOON BAY BUILDING & GARDEN	119 MAIN ST	RETAIL - BLDG/GARDEN SUPPI	Garden Supplies And Tools\retail		H
FABBRI HOME & GARDEN	501 SAN MATEO RD 5B	RETAIL - BLDG/GARDEN SUPPI	Garden Supplies And Tools\retail		L
TAQUERIA LA MORDIDA	80 CABRILLO HWY N	RETAIL - FOOD & DRINK			H
GRANOLA'S COFFEE HOUSE	116 CABRILLO HWY N	RETAIL - FOOD & DRINK	Cafes		M
VIA UNO L L C	2810 CABRILLO HWY N	RETAIL - FOOD & DRINK			M
F & J KITCHEN INC	3048 CABRILLO HWY N	RETAIL - FOOD & DRINK	Restaurants		M

APPENDIX F, FOG FACILITIES LIST
Ctiy of Half Moon Bay
Last Revised:2/22/2018

Business Name (DBA)	Business Address	Business Type	SIC Description	Latest Priority
THE BARN	3068 CABRILLO HWY N	RETAIL - FOOD & DRINK	Hamburger Stands	M
SAMS CHOWDER HOUSE	4210 CABRILLO HWY N	RETAIL - FOOD & DRINK	Restaurants	H
BRAZZLE BERRY	80 CABRILLO HWY N M	RETAIL - FOOD & DRINK	Ice Cream And Frozen Desserts	M
STARBUCKS COFFEE #6631	80 CABRILLO HWY N Q	RETAIL - FOOD & DRINK	Coffee Shops	L
CHINA KITCHEN	80 CABRILLO HWY N STE U	RETAIL - FOOD & DRINK	Restaurants, Carry-out	H
SUBWAY #10252	80 CABRILLO HWY N STE V1	RETAIL - FOOD & DRINK	Fast Food Restaurants	M
CHEF LEE	80 CABRILLO HWY N U	RETAIL - FOOD & DRINK		L
DAD'S LUNCHEONETTE	225 CABRILLO HWY S	RETAIL - FOOD & DRINK	Restaurants, Carry-out	H
SWEET 55	225 CABRILLO HWY S	RETAIL - FOOD & DRINK		H
TAQUERIA LA MEXICANA	250 CABRILLO HWY S	RETAIL - FOOD & DRINK	Restaurants, Fast Food	M
THREE AMIGOS	270 CABRILLO HWY S	RETAIL - FOOD & DRINK	Restaurants, Fast Food	M
CAMERONS RESTAURANT & PUB	1410 CABRILLO HWY S	RETAIL - FOOD & DRINK	Restaurants	M
HALF MOON BAY JOES	2380 CABRILLO HWY S	RETAIL - FOOD & DRINK	Restaurants	M
ROMESCO BISTRO AND TAPAS	225 CABRILLO HWY S 102C	RETAIL - FOOD & DRINK		M
MULLINS BAR & GRILL	2450 CABRILLO HWY S STE 250	RETAIL - FOOD & DRINK	Restaurants	M
SPANISHTOWN MEXICAN REST	515 CHURCH ST	RETAIL - FOOD & DRINK	Restaurants	M
CAFE CAPISTRANO	523 CHURCH ST	RETAIL - FOOD & DRINK	Restaurants	M
SUSHI MAIN STREET SAKE BAR	400 MAIN ST	RETAIL - FOOD & DRINK	Restaurants	M
ITS ITALIA PIZZERIA INC	401 MAIN ST	RETAIL - FOOD & DRINK	Restaurants	M
CHEZ SHEA	408 MAIN ST	RETAIL - FOOD & DRINK	Restaurants	M
THE HALF MOON BAY WINE & CHEESE C(	421 MAIN ST	RETAIL - FOOD & DRINK	Cheese Stores\retail	M
M COFFEE	522 MAIN ST	RETAIL - FOOD & DRINK	Coffee Shops	L
CAFE SOCIETY	522 MAIN ST	RETAIL - FOOD & DRINK	Cafes	M
NANOS YOGURT SHACK	523 MAIN ST	RETAIL - FOOD & DRINK	Yogurt, Frozen	M
TOKENZ MAIN STREET	524 MAIN ST	RETAIL - FOOD & DRINK	Miscellaneous Retail Stores, Not Elsewhere Classified	M
MAIN STREET GRILL	547 MAIN ST	RETAIL - FOOD & DRINK	Eating Places	H
MOONSIDE BAKERY & CAFE INC	604 MAIN ST	RETAIL - FOOD & DRINK	Retail Bakeries	M
BARTERRA	643 MAIN ST	RETAIL - FOOD & DRINK	Wine Bars	M
ARK GRILL	724 MAIN ST	RETAIL - FOOD & DRINK	Restaurants	M
CETRELLA	845 MAIN ST	RETAIL - FOOD & DRINK	Restaurants	M
GHERKINS SANDWICH SHOP	328 MAIN ST #101	RETAIL - FOOD & DRINK	Restaurants, Carry-out	M
RAMANS COFFEE AND CHAI	101 MAIN ST A	RETAIL - FOOD & DRINK	Coffee Stores\retail	M
SUSHI MAIN STREET	696 MILL ST	RETAIL - FOOD & DRINK	Restaurants	M
MULLINS BAR & GRILL	2 MIRAMONTES POINT RD	RETAIL - FOOD & DRINK	Restaurants	M
ROUND TABLE PIZZA	50 N CABRILLO HIGHWAY 3	RETAIL - FOOD & DRINK	Pizza Parlors	M
SPICE ME	500 PURISSIMA ST C	RETAIL - FOOD & DRINK	Restaurants	M
THE FISHERMANS TAVERNA	99 SAN MATEO RD	RETAIL - FOOD & DRINK		M
PEETS COFFEE AND TEA	142 SAN MATEO RD	RETAIL - FOOD & DRINK	Coffee Stores\retail	M
TACO BELL #30800	146 SAN MATEO RD	RETAIL - FOOD & DRINK	Fast Food Restaurants	M
HAPPY TACO TAQUERIA	184 SAN MATEO RD	RETAIL - FOOD & DRINK	Restaurants	M
STRAW HAT PIZZA	186 SAN MATEO RD	RETAIL - FOOD & DRINK	Restaurants, Carry-out	H
AJS COFFEE INC	198 SAN MATEO RD	RETAIL - FOOD & DRINK	Coffee Shops	M
SAMS COFFEE SHOP	210 SAN MATEO RD	RETAIL - FOOD & DRINK	Coffee Shops	M
FLYING FISH GRILL	211 SAN MATEO RD	RETAIL - FOOD & DRINK	Restaurants, Fast Food	H

APPENDIX F, FOG FACILITIES LIST
Ctiy of Half Moon Bay
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Business Name (DBA)	Business Address	Business Type	SIC Description	Latest Priority
MONSOON HIMALAYAN CUISINE	20 STONE PINE RD	RETAIL - FOOD & DRINK	Restaurants	H
HALF MOON BAY COFFEE COMPANY	20 STONE PINE RD A	RETAIL - FOOD & DRINK	Restaurants	H
CHINA HOUSE	20 STONE PINE RD C	RETAIL - FOOD & DRINK	Restaurants	H
PIZZERIA WEST	20 STONE PINE RD D	RETAIL - FOOD & DRINK		H
SHIKI JAPANESE CUISINE	20 STONE PINE RD E	RETAIL - FOOD & DRINK	Restaurants	H
JERSEY JOES COASTSIDE	40 STONE PINE RD K	RETAIL - FOOD & DRINK	Restaurants	H
BURGER KING 5378	30 CABRILLO HWY N	RETAIL - FOOD STORE	Fast Food Restaurants	H
BASKIN ROBBINS	44 CABRILLO HWY N	RETAIL - FOOD STORE	Eating Places	H
SAFEWAY STORES INC 308	70 CABRILLO HWY N	RETAIL - FOOD STORE	Grocery Stores	M
MC DONALDS HALF MOON BAY	100 CABRILLO HWY N	RETAIL - FOOD STORE	Restaurants, Fast Food	M
HALF MOON BAY WASABI CO	2351 CABRILLO HWY N	RETAIL - FOOD STORE	Greenhouses For Food Crops	M
SUNSHINE DONUTS	80 CABRILLO HWY N P	RETAIL - FOOD STORE	Doughnuts, Except Frozen	M
MERCADO GUADALAJARA	225 CABRILLO HWY S 106C	RETAIL - FOOD STORE	Food Markets\retail	M
TOM & PETES PRODUCE	270 MAIN ST	RETAIL - FOOD STORE	Fruit And Vegetable Markets	M
PASTA MOON INC	315 MAIN ST	RETAIL - FOOD STORE	Restaurants	M
CUNHA GROCERY INC	448 MAIN ST	RETAIL - FOOD STORE	Grocery Stores	M
ORLANDOS PLACITA MARKET	500 PURISSIMA ST B	RETAIL - FOOD STORE	Grocery Stores	M
HALF MOON BAY FISH MARKET INC	99 SAN MATEO RD	RETAIL - FOOD STORE	Meat And Fish (seafood) Markets, Including Freezer Provisioners	M
DAICHI SUSHI	150 SAN MATEO RD	RETAIL - FOOD STORE	Restaurants	M
NEW LEAF COMMUNITY MARKETS INC	150 SAN MATEO RD	RETAIL - FOOD STORE	Grocery Stores, With Or Without Fresh Meat\retail	M
MERCADO MI FAMILIA INCORPORATED	182 SAN MATEO RD	RETAIL - FOOD STORE	Grocery Stores	M
7 ELEVEN	196 SAN MATEO RD	RETAIL - FOOD STORE	Grocery Stores	M
HILLTOP MARKET	251 SAN MATEO RD	RETAIL - FOOD STORE		M
CVS/PHARMACY #9216	60 CABRILLO HWY N	RETAIL - GENERAL MDSE	Miscellaneous Retail Stores, Not Elsewhere Classified	M
RITE AID 5885	170 SAN MATEO RD	RETAIL - GENERAL MDSE	Variety Stores	M
H M B LUCKY 99 CENT & UP STORE INC	160 SAN MATEO RD C	RETAIL - GENERAL MDSE	Miscellaneous Retail Stores, Not Elsewhere Classified	M
H M B LUCKY 99 CENT & UP STORE INC	160 SAN MATEO ROAD	RETAIL - GENERAL MDSE	Miscellaneous Retail Stores, Not Elsewhere Classified	M
ALENA JEAN	340 PURISSIMA ST	RETAIL - GIFT & GIFT BASKETS	Florists\retail	M
ENSO	131 KELLY AVE	RETAIL - MISCELLANEOUS	Miscellaneous Retail Stores, Not Elsewhere Classified	H
BIKE WORKS THE	520 KELLY ST G	RETAIL - MISCELLANEOUS	Bicycle And Bicycle Parts Dealers, Except Motorized\retail	H
BIG CREEK LUMBER CO	111 MAIN ST	RETAIL - MISCELLANEOUS		M
HASSETT HARDWARE	111 MAIN ST	RETAIL - MISCELLANEOUS	Hardware Stores	M
GARDEN APOTHECARY	329 MAIN ST	RETAIL - MISCELLANEOUS	Beauty Parlor Equipment And Supplies\wholesale	M
HALF MOON BAY FEED & FUEL	331 MAIN ST	RETAIL - MISCELLANEOUS	Miscellaneous Retail Stores, Not Elsewhere Classified	M
PASTORINO HAY & RANCH SUPPLY INC	921 MIRAMONTES ST	RETAIL - MISCELLANEOUS	Hay Farms	L
FIREWOOD FARMS	551 SAN MATEO RD	RETAIL - MISCELLANEOUS	Firewood And Fuel Wood Containing Fuel Binder	L
BOBA DUDE	80 CABRILLO HWY	RETAIL - RESTAURANTS	Restaurants	M
VIA UNO L L C	2810 CABRILLO HWY N	RETAIL - RESTAURANTS		M
DUNKIN DONUTS	118 SAN MATEO ROAD	RETAIL - RESTAURANTS	Restaurants	M
PAULOS AUTO CARE	129 MAIN ST	SERVICE - AUTO REPAIR	Automobile Service Stations\retail	M
COAST TRANSMISSIONS	141 MAIN ST	SERVICE - AUTO REPAIR	Automotive Transmission Repair Shops	M
D R W MOTORSPORT	143 MAIN ST	SERVICE - AUTO REPAIR	General Automotive Repair Shops	M
HALF MOON BAY AUTO REPAIR INC	149 MAIN ST	SERVICE - AUTO REPAIR	Automotive Repair Shops, General	M
PROFESSIONAL AUTO CARE	125 MAIN ST A	SERVICE - AUTO REPAIR	Automotive Repair Shops, General	M

APPENDIX F, FOG FACILITIES LIST
Ctiy of Half Moon Bay
Last Revised:2/22/2018

Business Name (DBA)	Business Address	Business Type	SIC Description	Latest Priority
ANGELOS MUFFLER & AUTO REPAIR	332 PURISSIMA ST	SERVICE - AUTO REPAIR	Automotive Repair Shops, Not Elsewhere Classified	M
GINOS AUTO BODY & PAINT	334 PURISSIMA ST	SERVICE - AUTO REPAIR	Top, Body, And Upholstery Repair Shops And Paint Shops	M
PHILS H M B TIRE & AUTO CARE	422 PURISSIMA ST	SERVICE - AUTO REPAIR	Automotive Repair Shops, Not Elsewhere Classified	M
Curley & Reds Autobody & Towing	215 SAN MATEO RD	SERVICE - AUTO REPAIR	Automotive Services, Except Repair And Carwashes	M
GREENHOUSE CLEANERS	80 CABRILLO HWY N A	SERVICE - BUSINESS	Laundry And Garment Services, Not Elsewhere Classified	M
WHITE ELEPHANT HMB	50 CABRILLO HWY N B-3	SERVICE - BUSINESS	Restaurants	M
SEA CREST SCHOOL	901 ARNOLD WAY	SERVICE - EDUCATION	Schools And Educational Services, Not Elsewhere Classified	L
FLORA FARM	340 PURISSIMA ST	SERVICE - LANDSCAPE & GARI	Landscape Planning	L
STEVEN MELO INC	450 WAVECREST RD	SERVICE - LANDSCAPE & GARI	Lawn And Garden Services	M
COMFORT INN	2930 CABRILLO HWY N	SERVICE - LODGING	Hotels And Motels	M
BEACH HOUSE LLC	4100 CABRILLO HWY N	SERVICE - LODGING	Hotels And Motels	L
COASTSIDE INN	230 CABRILLO HWY S	SERVICE - LODGING	Hotels And Motels	M
PLUM TREE COURT 1 2 3	642 JOHNSTON ST	SERVICE - LODGING	Hotels And Motels	M
SACRILEGE BREWERY AND KITCHEN	730 MAIN ST	SERVICE - LODGING		M
SAN BENITO HOUSE	356 MAIN ST	SERVICE - LODGING	Hotels And Motels	M
MILL ROSE BED & BREAKFAST	615 MILL ST	SERVICE - LODGING	Bed And Breakfast Inns	M
RITZ CARLTON HOTEL	1 MIRAMONTES POINT RD	SERVICE - LODGING	Hotels And Motels	M
PRINCETON MACHINE SHOP	178 CORNELL AVE	SERVICE - MISCELLANEOUS	Machine Shops, Jobbing And Repair	M
KELLY STREET LAUNDRY	650 KELLY	SERVICE - MISCELLANEOUS	Coin-operated Laundries And Drycleaning	L
M V TRANSPORTATION INC	121 MAIN ST	SERVICE - MISCELLANEOUS	Transportation Services, Not Elsewhere Classified	M
BOBS CAR WASH L L C	240 MAIN ST	SERVICE - MISCELLANEOUS	Carwashes	M
CROWN CLEANERS	210 SAN MATEO RD 109	SERVICE - MISCELLANEOUS	Laundry And Garment Services, Not Elsewhere Classified	M
BLUE WHITE CLEANERS	101 MAIN ST F	SERVICE - PERSONAL	Laundry And Garment Services, Not Elsewhere Classified	H
COASTSIDE CARPET CLEANER	145 MAIN ST	SERVICE - PROFESSIONAL	Carpet And Upholstery Cleaning	L
DEL MAR EQUESTRIAN CENTER	1820 CABRILLO HWY N	SERVICE - RECREATION	Horses And Other Equines	M
OCEAN VIEW DRIVING RANGE	201 KELLY AVE	SERVICE - RECREATION	Golf Driving Ranges	M
HALF MOON BAY GOLF LINKS	2 MIRAMONTES POINT RD	SERVICE - RECREATION	Public Golf Courses	M
ALL ANIMALS MOBILE VETERINARY	1600 CABRILLO HWY S	SERVICE - VETERINARY SERVI	Veterinarians For Pets And Other Animal Specialties	L
BRANSCOMB FARMS L L C	780 FRENCHMANS CREEK RD	SERVICE - VETERINARY SERVI	Breeding Of Livestock	M
ACTION TOWING AND ROAD SERVICE INC	183 HARVARD AVE	TRANSPORATION SERVICES	Towing Service, Automotive	M
Andreotti Family Farm	800 CABRILLO HWY N	WHLSLE - NONDURABLE GOOI	Farm-product Raw Materials, Not Elsewhere Classified	L
SCHICKENBERG NURSERY	2351 CABRILLO HWY N	WHLSLE - NONDURABLE GOOI	Nursery Stock\wholesale	M
ROCKET FARMS INC	2651 CABRILLO HWY N	WHLSLE - NONDURABLE GOOI	Nursery Stock\wholesale	M
HALF MOON BAY BAKERY	514 MAIN ST	WHLSLE - NONDURABLE GOOI	Retail Bakeries	M
CALTRANS - HALF MOON BAY	2203 CABRILLO HWY			M
MCCAHON NURSERY	1450 CABRILLO HWY S			M
BOBS FRESH VEGETABLES	2900 HWY 1			M
SMC SHERIFF HALF MOON BAY SUB STA	535 KELLY			M
Verizon Wireless Half Moon Bay East	200 LEWIS FOSTER DR			L
NUNES WATER TREATMENT PLANT	500 LEWIS FOSTER DR			M
PG&E: HALF MOON BAY SUBSTATION	175 MAIN ST			M
NANTUCKET WHALE INN	779 MAIN ST			L
COASTSIDE FIRE DISTRICT, HMB	1191 MAIN ST			M
AZEVEDO FEED COMPANY	1815 MIRAMONTES POINT			M

APPENDIX F, FOG FACILITIES LIST
Ctiy of Half Moon Bay
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Business Name (DBA)	Business Address	Business Type	SIC Description	Latest Priority
Verizon Wireless Half Moon Bay South	1 MIRAMONTES POINT RD			L

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Appendix G
Element 8 (System Evaluation and Capacity Assurance Plan) Supporting Documents

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City of Half Moon Bay

Sewer System Master Plan

Final

June 2016

AKEL
ENGINEERING GROUP, INC.

CITY OF HALF MOON BAY

2016

SEWER SYSTEM MASTER PLAN

FINAL

June 2016

AKEL
ENGINEERING GROUP, INC.

AKEL
ENGINEERING GROUP, INC.

Smart Planning Our Water Resources

June 20, 2016

City of Half Moon Bay
501 Main Street
Half Moon Bay, CA 94019

Attention: John Doughty
Development Services Manager

Subject: Sewer System Master Plan – Final Report

Dear John:

We are pleased to submit the final report for the City of Half Moon Bay Sewer System Master Plan. This report is intended as a standalone document to provide the City of Half Moon Bay with a useful planning document for the expansion of the sewer system to accommodate future growth. The master plan documents the following:

- Existing collection system facilities, acceptable hydraulic performance criteria, and projected wastewater flows.
- Development and calibration of the City's GIS-based hydraulic sewer model.
- Capacity evaluation of the existing sewer system with improvements to mitigate existing deficiencies and to accommodate future growth.
- Capital improvement program (CIP) with an opinion of probable construction costs and suggestions for cost allocations to meet AB 1600.

We extend our thanks to you, Mo Sharma, Former City Engineer; Bruce Ambo, Former Planning Manager; and other City staff whose courtesy and cooperation were valuable components in completing this study.

Sincerely,

AKEL ENGINEERING GROUP, INC.

Tony Akel, P.E.
Principal

Enclosure: Report

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Acknowledgements

City Council

Rick Kowalczyk, Mayor

Debbie Ruddock, Vice Mayor

Marina Fraser

John Muller

Deborah Penrose

Management Personnel

Alex Khojikian, Former Deputy City Manager

Mo Sharma, Former City Engineer

Bruce Ambo, Former Planning Manager

Vivian Housen, Consultant

City of Half Moon Bay
Sewer System Master Plan

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City of Half Moon Bay
Sewer System Master Plan

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EXECUTIVE SUMMARY

This executive summary provides a brief background of the City of Half Moon Bay sewer system, the need for this Sewer System Master Plan, proposed improvements intended to mitigate existing deficiencies, and improvements recommended for servicing future growth. The capital improvement program is included at the end of this chapter.

ES.1 STUDY OBJECTIVES

This master plan provides the City with a tool for planning the sewer system infrastructure facilities to meet future growth. The objective of this master plan is to evaluate the City's sewer system infrastructure and recommend capacity improvements necessary to service the needs of existing users and future developments. Should planning conditions change, and depending on their magnitude, adjustments to the master plan recommendations might be necessary.

This master plan included the following elements:

- Summarize the City's existing sewer system facilities.
- Document growth planning assumptions and known future developments.
- Update the sewer system performance criteria.
- Project future sewer flows.
- Redevelop the hydraulic model.
- Evaluate the capacity adequacy of the sewer mains and lift stations to meet existing and projected flow requirements.
- Document the capacity analysis in tables.
- Recommend a capital improvement program (CIP) with an opinion of probable costs
- Perform a capacity allocation between existing and future developments. Capacity allocation was identified for each known development, and may be used for cost sharing.
- Develop a Sewer System Master Plan.

ES.2 STUDY AREA DESCRIPTION

The City of Half Moon Bay is located on California's Pacific Coast in San Mateo County. It is bound on the north by the community of El Granada, the Pacific Ocean to the west, and is surrounded by undeveloped hills to the south and the east.

The area included in this study was outlined by the sewer service area of Half Moon Bay, as shown on **Figure ES.1**. The City currently provides sewer service to over 3,200 acres of varying land uses, and expansion areas were determined based on location and proximity to the Half Moon Bay service area.

ES.3 SEWER COLLECTION SYSTEM OVERVIEW

The City provides sewer collection services to approximately 10,900 residents and assorted commercial, industrial, and institutional land uses. The City's collection system consists of approximately 34 miles of up to 21-inch gravity sewer pipes that convey flows towards the Sewer Authority Mid-Coastside WWTP, located off of Bev Cunha's Country Road, as shown on **Figure ES.2**.

A system-wide pipe inventory, listing the total length by pipe diameter, is shown on **Table ES.1**. This table is based on information extracted from the City's GIS and available CAD mapping. The 6-inch and 8-inch diameter pipes account for 82 percent of the total sewer pipe lengths.

ES.4 SEWER AUTHORITY MID-COASTSIDE WASTEWATER TREATMENT PLANT

The Sewer Authority Mid-Coastside (SAM) WWTP permitted for an average dry weather flow of 4 MGD. The treatment facility is located one mile north of downtown Half Moon Bay off of State Route 1. The plant's current design capacity is capable of accommodating a peak hourly wet weather flow of up to 15 MGD. The plant is currently operating at an average flow of approximately 1.7 MGD. The City of Half Moon Bay currently accounts for approximately half of the inflow to the SAWM WWTP.

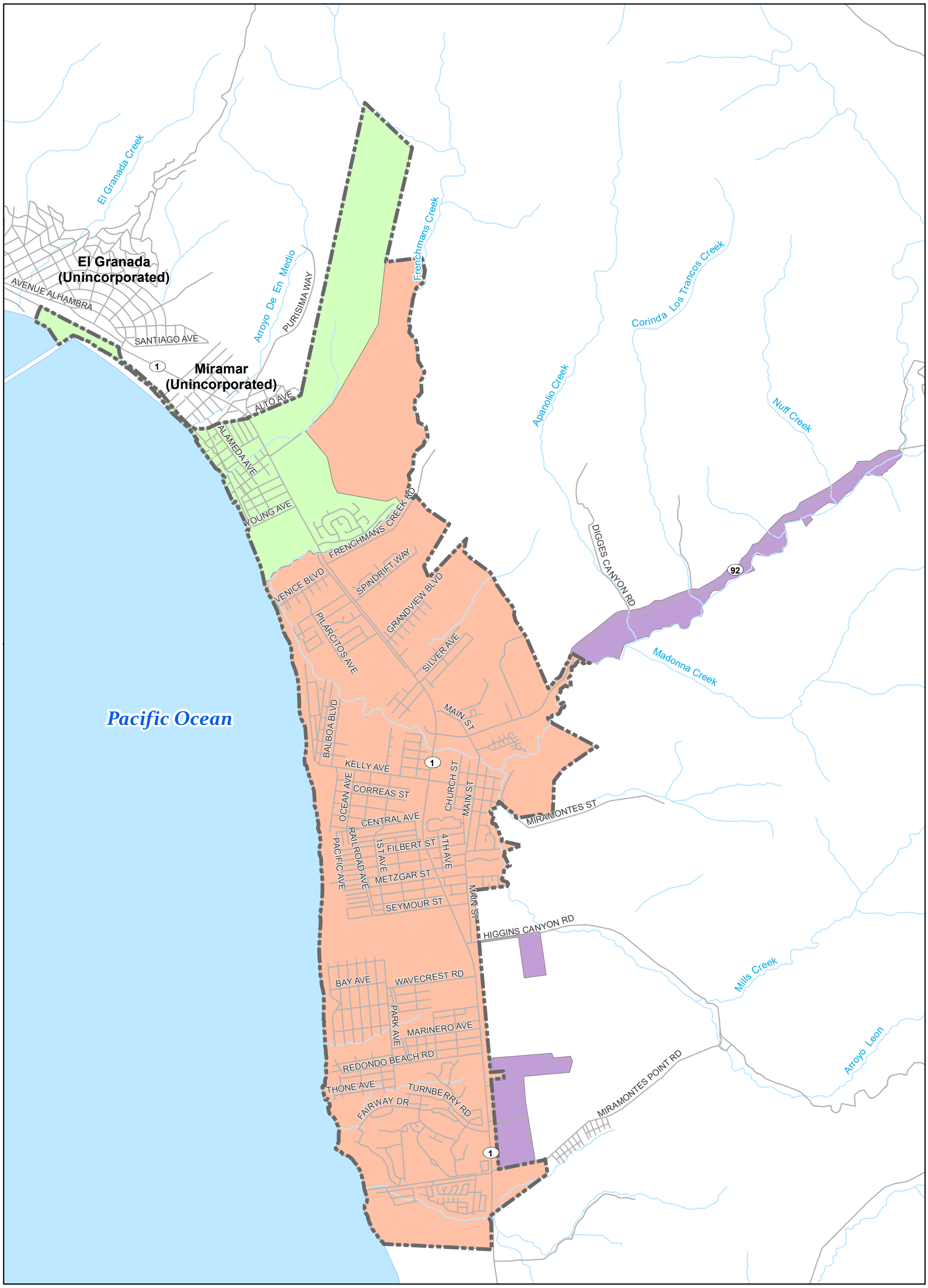
ES.5 FLOWS AT THE SAM WWTP

The sewer flows collected and treated at the SAM WWTP vary monthly, daily, and hourly. While the dry weather flows are influenced by customer uses, the wet weather flows are influenced by the severity and length of storm events. December was the maximum month during 2014, with December being much higher than average due to the considerable amount of rain received that month.

Flow data influent to the SAM WWTP was obtained from SAM reporting data. The flow data covered a period from 2005 to 2014. From this data monthly, daily, and peak daily flows were determined as summarized on **Table ES.2**.

ES.6 HYDRAULIC MODEL AND PERFORMANCE CRITERIA

Gravity sewer capacities depend on several factors including: material and roughness of the pipe, the limiting velocity and slope, and the maximum allowable depth of flow. Design criteria include



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Sewer Service Providers

- City of Half Moon Bay
- Granada Sanitary District
- Outside City Limits

- City of Half Moon Bay
- Streets
- Creeks
- Ocean

Updated: February 24, 2016

0 0.25 0.5 1 Mile

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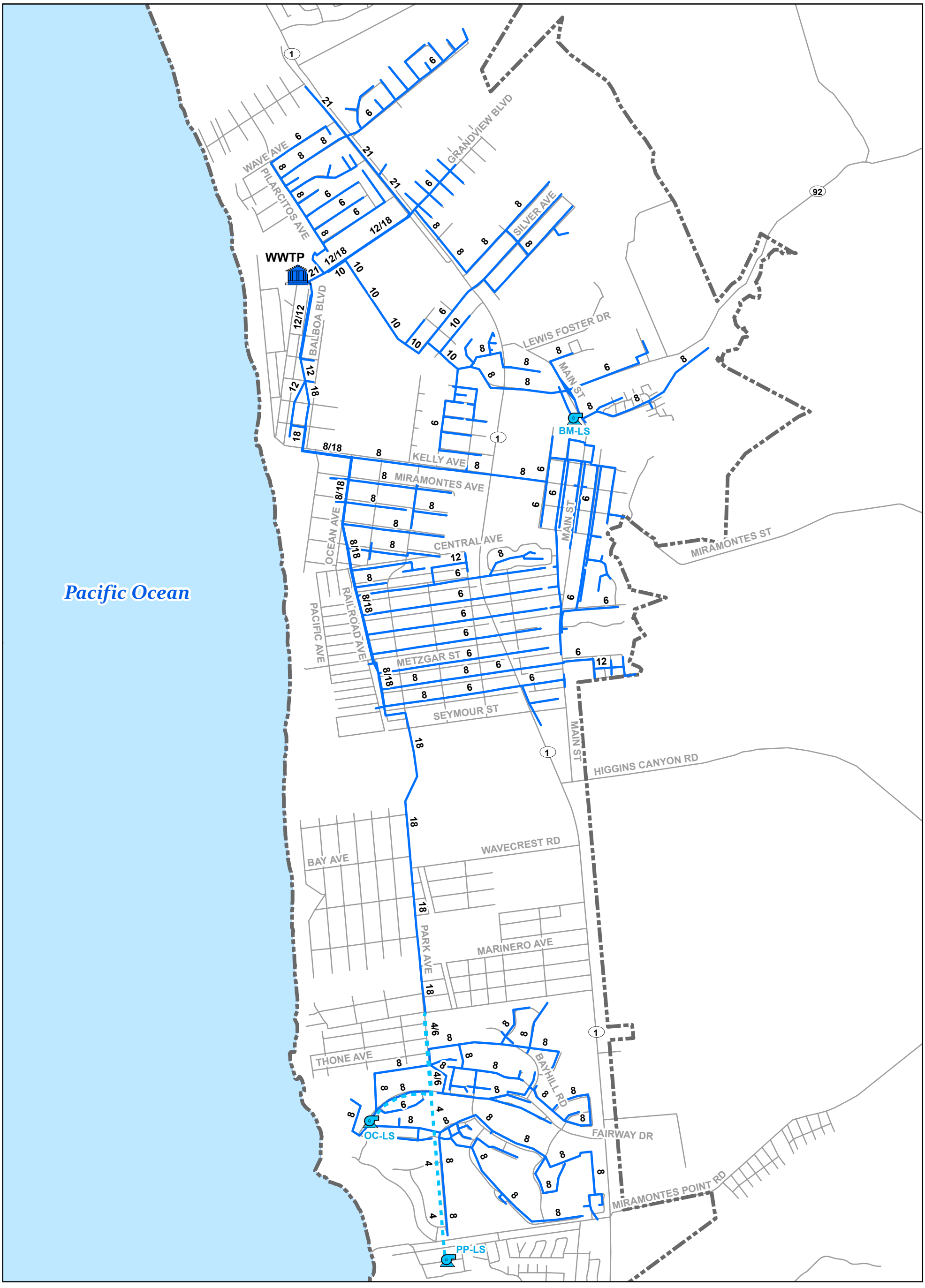
ES.1
Existing Sewer Service Providers

Sewer System Master Plan
City of Half Moon Bay



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Existing System

- WWTP
- Lift Stations
- Pipes
- Force Mains
- Streets
- City Limits
- Ocean

Updated: February 9, 2016

0 500 1,000 2,000 Feet

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ES.2 Existing Sewer System

Sewer System Master Plan
City of Half Moon Bay

Table ES.1 Modeled Pipe Inventory

Sewer System Master Plan
City of Half Moon Bay

Pipe Diameter	Total Length		
(in)	(ft)	(miles)	(%)
Gravity Mains			
6"	74,173	14.0	41%
8"	73,019	13.8	40%
10"	3,608	0.7	2%
12"	6,888	1.3	4%
18"	13,178	2.5	7%
21"	2,892	0.5	2%
Total	**173,758**	**32.9**	
Force Mains			
4"	4,415	0.8	2%
6"	2,429	0.5	1%
Total	**6,844**	**1.3**	
Total			
Total	**180,602**	**34.2**	**100%**

Notes.

1. Existing pipe inventory was extracted from the City's GIS-based hydraulic model developed in 2016.

Table ES.2 Historical Flow Data and Peaking Factors

Sewer System Master Plan

City of Half Moon Bay

Year	Population	Average Annual Flow			Seasonal Average		Maximum Month		Maximum Day		Peak Hour[3]		Rainfall	
		AAF	Per Capita Flow	Percentage Change	ADWF	AWWF	MMDWF	MMWWF	MDDWF	MDWWF	PDWF	PWWF	Wet Season	Total
Historical Flows														
		(MGD)	(gpcd)		(MGD)	(MGD)	(MGD)	(MGD)	(MGD)	(MGD)	(MGD)	(MGD)	(MGD)	(MGD)
2005	11,629	1.16	100		0.97	1.35	1.04	1.64	1.19	4.26	1.91	5.54	24.58	27.56
2006	11,493	1.16	101	0%	0.98	1.35	1.10	1.85	1.29	3.46	2.07	4.50	27.16	28.42
2007	11,408	0.91	79	-22%	0.92	0.89	0.98	0.99	1.12	1.67	1.79	2.17	12.27	14.66
2008	11,396	0.85	75	-6%	0.80	0.91	0.85	1.20	1.00	3.44	1.60	4.47	14.23	15.31
2009	11,403	0.78	69	-8%	0.74	0.82	0.80	1.11	0.91	2.19	1.46	2.84	5.82	9.62
2010	11,324	0.84	74	8%	0.73	0.95	0.78	1.09	0.99	2.84	1.58	3.69	24.75	28.58
2011	11,373	0.71	63	-15%	0.60	0.82	0.70	1.18	0.95	2.59	1.52	3.36	12.89	20.10
2012	11,478	0.87	76	22%	0.82	0.93	0.84	1.34	0.95	3.46	1.51	4.50	22.69	25.20
2013	11,643	0.70	60	-19%	0.67	0.74	0.70	0.86	1.01	1.15	1.62	1.50	4.36	6.35
2014	11,727	0.75	64	7%	0.67	0.84	0.70	1.52	0.81	4.03	1.30	5.23	22.04	23.90
Historical Peaking Factors (Applied to AAF)														
2005		1.00			0.84	1.16	0.89	1.41	1.03	3.67	1.64	4.77		
2006		1.00			0.84	1.16	0.94	1.59	1.11	2.97	1.78	3.87		
2007		1.00			1.02	0.98	1.09	1.10	1.23	1.84	1.97	2.39		
2008		1.00			0.93	1.07	0.99	1.40	1.17	4.02	1.87	5.23		
2009		1.00			0.95	1.05	1.02	1.42	1.17	2.79	1.87	3.63		
2010		1.00			0.87	1.13	0.92	1.30	1.18	3.38	1.88	4.39		
2011		1.00			0.85	1.15	0.98	1.66	1.33	3.63	2.14	4.72		
2012		1.00			0.93	1.07	0.96	1.54	1.08	3.97	1.73	5.16		
2013		1.00			0.95	1.05	1.00	1.22	1.44	1.64	2.30	2.13		
2014		1.00			0.89	1.11	0.93	2.02	1.08	5.33	1.72	6.93		
Peaking Factor Analysis and Recommendations														
10-Year Average			76		0.91	1.09	0.97	1.47	1.18	3.33	1.89	4.32		
10-Year Maximum			101		1.02	1.16	1.09	2.02	1.44	5.33	2.30	6.93		
5-Year Maximum			76		0.95	1.15	1.00	2.02	1.44	5.33	2.30	6.93		
Last Year			64		0.89	1.11	0.93	2.02	1.08	5.33	1.72	6.93		
Recommended Factor			76		**0.90**	**1.15**	**0.98**	**1.50**	**1.25**	**4.00**	**2.10**	**6.40**		

Notes:

1. Flow component definitions are as follows:
   - AAF - Average Annual Flow (annual flow, expressed in daily or other time units)
   - ADWF - Average Dry Weather Flow (average flow that occurs on a daily basis during the dry weather season)
   - AWWF - Average Wet Weather Flow (average flow that occurs on a daily basis during the wet weather season)
   - MMDWF - Maximum Month Dry Weather Flow (maximum month flow during the dry weather season)
   - MMWWF - Maximum Month Wet Weather Flow (maximum month flow during the wet weather season)
   - MDDWF - Maximum Day Dry Weather Flow (highest measured daily flow that occurs during a dry weather season)
   - MDWWF - Maximum Day Wet Weather Flow (highest measured daily flow that occurs during a wet weather season)
   - PDWF - Peak Hour Dry Weather Flow (highest measured hourly flow that occurs during a dry weather flow)
   - PWWF - Peak Hour Wet Weather Flow (highest measured hourly flow that occurs during wet weather)
2. Source: Sewer Authority Mid-Coastline Board Meeting Agendas
3. Peak Hourly Flows were not reported in the meeting agendas. As such, a peaking factor of 1.6 times the MDDWF, and 1.3 times the MDWWF were applied to estimated peak hourly flows at the plant.

capacity requirements for the sanitary sewer collection facilities, flow calculation methodologies for future users, flow peaking factors, and accounting for infiltration and inflows.

Partial flow in gravity sewers is expressed as a depth of flow to pipe diameter ratio (d/D). For circular gravity conduits, the highest capacity is generally reached at 92 percent of the full height of the pipe (d/D ratio of 0.92). This is due to the additional wetted perimeter and increased friction of a gravity pipe.

During peak dry weather flows (PDWF), the maximum allowable d/D ratio for proposed pipes is 0.75. The maximum allowable d/D ratio for all existing pipes (all diameters) is 0.90. The criterion for existing pipes is relaxed in order to maximize the use of the existing pipes before costly pipes improvements are required.

During peak wet weather flows (PWWF), to avoid premature or unnecessary trunk line replacements, the capacity analysis allowed the d/D ratio to exceed the dry weather flow criteria and surcharge. This condition is evaluated using the dynamic hydraulic model criteria that stipulates that the hydraulic grade line (HGL), even during a surcharged condition, should be at least three feet below the manhole rim elevation

The City's design standards pertaining to the d/D criteria are summarized in **Table ES.3**

ES.7 CAPACITY EVALUATION

The system performance and design criteria was used as a basis to judge the adequacy of capacity for the existing sanitary sewer system. The design flows simulated in the hydraulic model for existing conditions are summarized as follows:

- Existing PDWF = 1.75 MGD
- Existing PWWF = 5.32 MGD

During the peak dry weather simulations, the maximum allowable pipe d/D criteria of 0.75 for new pipes was used. For existing pipes, the criteria was relaxed to allow a maximum d/D ratio of 0.90 to prevent unnecessary pipe replacements. During the peak wet weather simulations, capacity deficiencies included pipe segments with a hydraulic grade line (HGL) that rises within three feet of the manhole rim elevation.

In general, the hydraulic model indicated that the sanitary sewer system exhibited acceptable performance to service the existing customers during peak dry weather flows. However, several areas were noted as deficient during the peak wet weather flow analysis.

Additionally, the system performance and design criteria was used to evaluate the performance of the existing system, and for recommending future system improvements to accommodate potential future growth. The design flows simulated in the hydraulic model for the general plan buildout are summarized as follows:

Table ES.3 Sewer System Performance and Design Criteria

Sewer System Master Plan
City of Half Moon Bay

Pipeline Criteria

Peak Dry Weather Flow Criteria

Diameter (in)	Maximum Allowable d/D	
	Existing Trunks	Proposed Trunks
8 to 12	0.90	0.75
> 12	0.90	0.75

Peak Wet Weather Flow Criteria

Hydraulic Grade Line (HGL) should be at least **3 foot** below the manhole rim

Pipe Size (in)	Minimum Grade (ft/ft)	Capacity (n = 0.013) (mgd)	(cfs)
8	0.0026	0.36	0.55
10	0.0019	0.56	0.87
12	0.0015	0.79	1.23
15	0.0011	1.28	1.98
18	0.0009	1.78	2.75
21	0.0007	2.43	3.76
24	0.0006	3.27	5.05
27	0.0005	4.18	6.47
30	0.0004	5.13	7.94
33	0.0004	6.04	9.34
36	0.0004	7.61	11.78
42	0.0003	10.27	15.90

Unit Flow Factor Criteria

Classification	Recommended Factor (Gallons per Day per Capita)
Per Capita Flow	76

Notes.

1. Pipe friction factor assumed at 0.013
2. Per capita flow factor is based on the 10-year average and the 5-year maximum average annual flow rate.

- Buildout PDWF = 2.30 MGD
- Buildout PWWF = 7.01 MGD

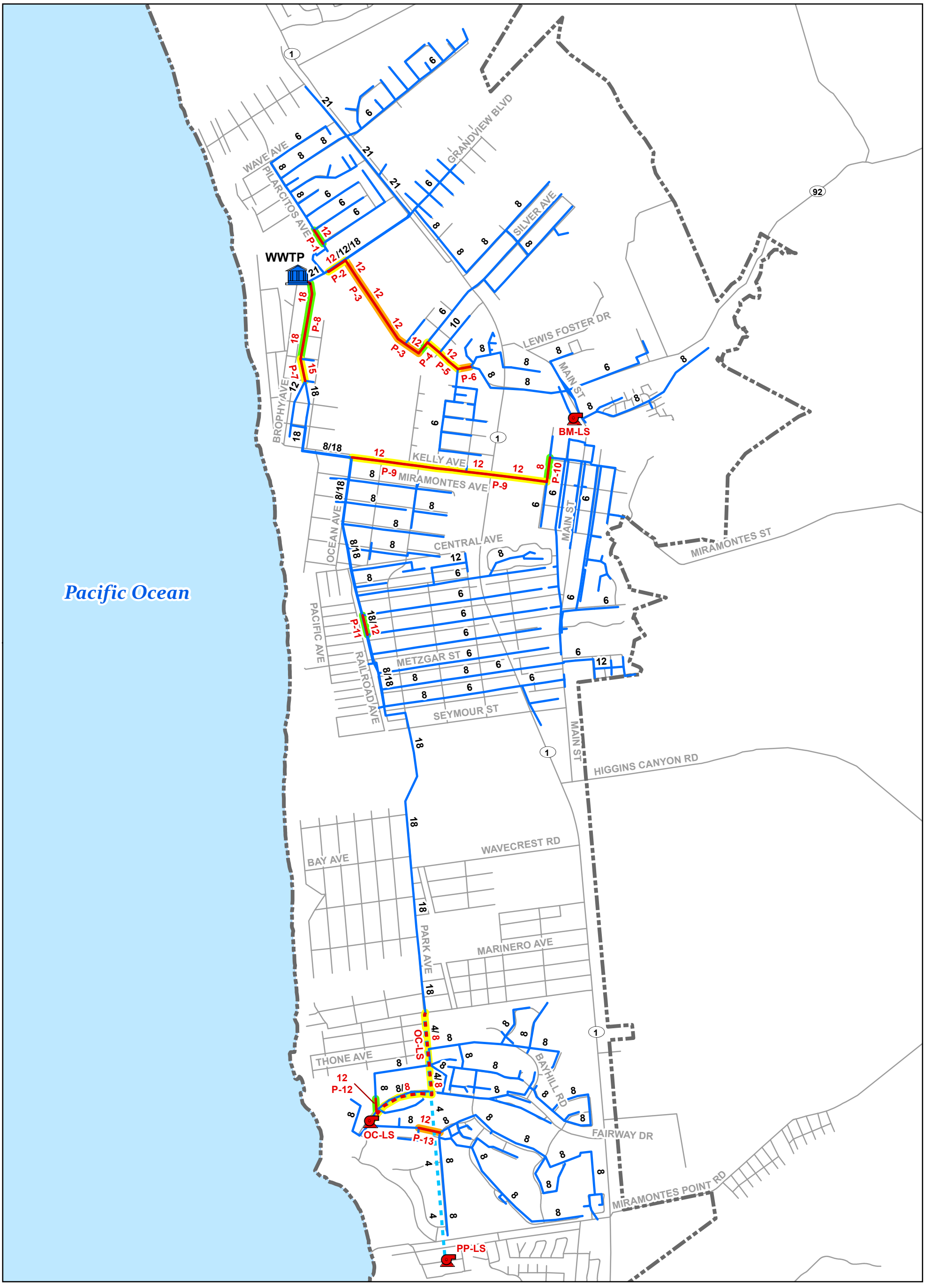
During the peak dry weather simulations, the maximum allowable pipe d/D criteria of 0.75 for new pipes was used. For existing pipes, the criteria was relaxed to allow a maximum d/D ratio of 0.90 (full pipe capacity) to prevent unnecessary pipe replacements. During the peak wet weather simulations, capacity deficiencies included pipe segments with a hydraulic grade line (HGL) that rises within three feet of the manhole rim elevation.

ES.8 CAPITAL IMPROVEMENT PROGRAM

The Capital Improvement Program includes pipeline and lift station projects recommended in this master plan (**Table ES.4**). A numbering system was included for ease of reference and for locating the improvements on corresponding figures. **Figure ES.3** graphically shows the locations, and reference numbers, for each proposed pipeline and lift station.

The estimated construction costs include the baseline costs plus 20 percent contingency allowance for unforeseen events and unknown field conditions. Additionally, the capital improvement costs include a 25 percent allowance for project related costs (engineering design, project administration, construction management and inspection, and legal costs).

Costs estimated in this study are adjusted utilizing the Engineering News Record (ENR) Construction Cost Index (CCI), which is widely used in the engineering and construction industries. The costs in this Sewer System Master Plan were calculated using a 20-City national average ENR CCI of 10,092, reflecting a date of November of 2015.



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Proposed Improvements

- Lift Stations
- Pipes
- Force Mains
- Pipe Improvement Segment
- Pipe Improvement Segment
- Pipe Improvement Segment

Existing System

- WWTP
- Pipes
- Force Mains
- Streets
- City Limits
- Ocean

Updated: March 8, 2016

0 500 1,000 2,000 Feet

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ES.3
Capacity Improvement Projects

Sewer System Master Plan
City of Half Moon Bay

Table ES.4 Capital Improvement Program

Sewer System Master Plan
City of Half Moon Bay

Improvement No.	Type of Improvement	Alignment	Limits	Pipeline Improvements			Infrastructure Costs				Baseline Constr. Costs[1]	Estimated Constr. Costs[1,3]	Land Acquisition Costs	Capital Improv. Costs[1,4]	Suggested Cost Allocation		Cost Allocation	
				Existing Diameter	Deficiency Type	New/Suggested Rehabilitation	Diameter	Length	Unit Cost[1]	Infr. Cost[2]					Existing Users	Future Users	Existing Users	Future Users
				(in)			(in)	(ft)	($/unit)	($)	($)	($)	($)	($)	(%)	(%)	($)	($)
Pipe Improvements																		
P-1	Pipe	Pilarcitos Ave	From St. John Ave to Kehoe Ave	8	Hydraulic	Replace	12	275	267	73,436	73,436	88,124		110,155	81%	19%	89,225	20,929
P-2	Pipe	Bev Cunha's Country Rd	From 350 ft northwest of WWTP gate on Bev Cunha's Country Rd to WWTP gate	10	Hydraulic	Replace	12	350	267	93,464	93,464	112,157		140,197	88%	12%	123,373	16,824
P-3	Pipe	ROW (Ag Land)	From Grand Blvd cul-de-sac, through ag land, to approx. 350 ft north-west of WWTP gate on Bev Cunha's Country Rd	10	Hydraulic	Replace	12	1,900	267	507,378	507,378	608,854		761,068	88%	12%	669,740	91,328
P-4	Pipe	Grand Blvd	From approx. 250 ft north-east of Grand Blvd cul-de-sac to Grand Blvd cul-de-sac	10	Hydraulic	Replace	12	225	267	60,084	60,084	72,101		90,126	88%	12%	79,311	10,815
P-5	Pipe	ROW (Vacant Land)	From south side of Safeway building to approx. 250 ft north-east of Grand Blvd cul-de-sac	10	Hydraulic	Replace	12	650	267	173,577	173,577	208,292		260,365	82%	18%	213,500	46,866
P-6	Pipe	ROW (Parking Lot)	From terminus of San Mateo Rd in Safeway parking lot to south side of Safeway building	8	Hydraulic	Replace	10	275	261	71,738	71,738	86,086		107,608	76%	24%	81,782	25,826
P-7	Pipe	ROW (Vacant Land)	From approx. 1,100 ft north of Half Moon Bay Coastal Trail terminus on Kelly Ave and Balboa Blvd to approx. 275 ft in north-west direction	12	Hydraulic	Replace	15	275	281	77,257	77,257	92,708		115,885	75%	25%	86,914	28,971
P-8	Pipe	ROW (Vacant Land)	From end of pipe P-7 to north-east to the WWTP	12	Hydraulic	Replace	18	1,300	303	393,307	393,307	471,968		589,961	73%	27%	430,671	159,289
P-9	Pipe	Kelly Ave	From Church St to approx. 300 ft north-west of Potter Ave	8	Hydraulic	Replace	12	3,200	267	854,532	854,532	1,025,439		1,281,798	100%	0%	1,281,798	0
P-10	Pipe	Church St	From Mill St to Kelly Ave	6	Hydraulic	Replace	8	375	241	90,300	90,300	108,360		135,450	100%	0%	135,450	0
P-11	Pipe	Railroad Ave	From approx. 125 ft north-west of Spruce St to approx 125 ft north-west of Filbert St	8	Hydraulic	Replace	12	325	267	86,788	86,788	104,146		130,183	56%	44%	72,902	57,280
P-12	Pipe	ROW (Golf Course)	From golf course to approx 275 ft south-west of intersection of Fairway Dr and Fairway Pl	8	Hydraulic	Replace	12	225	267	60,084	60,084	72,101		90,126	100%	0%	90,126	0
P-13	Pipe	ROW (Golf Course)	From approx. 100 ft north-east of intersection of Cypress Point Rd and Inverness Rd to north-west on the golf course	8	Hydraulic	Replace	12	375	267	100,140	100,140	120,169		150,211	100%	0%	150,211	0
									Subtotal - Sewer System Improvements		**2,642,088**	**3,170,506**	**0**	**3,963,132**			**3,505,003**	**458,129**
Lift Station Improvements[5]																		
BM-LS	Lift Station		Bell Moon Lift Staton						Varies	632,000	632,000			632,000			632,000	
OC-LS[6,7]	Lift Station		Ocean Colony Lift Station						Varies	1,600,000	1,600,000			1,600,000			1,600,000	
PP-LS	Lift Station		Pelican Point Lift Station						Varies	744,000	744,000			744,000			744,000	
									Subtotal - Lift Station Improvements		**2,976,000**	**-**	**-**	**2,976,000**			**2,976,000**	
													Total Improvement Cost	**6,939,132**			**6,481,003**	**458,129**

Notes:

1. Unit Costs reflect an ENR 20-City Average CCI of 10092 (November 2015).
2. Lift Station Infrastructure Costs are total rehabilitation costs extracted from Sanitary Sewer Pump Station Evaluation report prepared by Schaaf and Wheeler Consulting Engineers, including the 60%contingency presented in the report tables.
3. Baseline construction costs plus 20% to account for unforeseen events and unknown conditions.
4. Estimated construction cost plus 25% to cover other costs including: engineering design, project administration (developer and City staff), construction management and inspection, and legal costs.
5. Total rehabilitation costs for lift stations are extracted from Table 15, Table 19, and Table 23 of Sanitation Sewer Pump Station Evaluation report.
6. Sanitary Sewer Pump Station Report by Schaaf and Wheeler Consulting Engineers refers to a Sewer System Study dated March 2, 2010 and recommends upgrading the 6-inch force main conveying flow from Ocean Colony Lift Station to an 8-inch. For future peak wet weather flow, the hydraulic model indicates maximum velocity increasing to 10 ft/s in the 6-inch force main. It is recommended that the force main be upgraded to an 8-inch, which indicates the maximum velocity to be approximately 6 ft/sec.
7. The cost for upgrading the 6-inch force main to an 8-inch force main is included in the lump sum cost of rehabilitation of Ocean Colony Lift Station as provided in the 2015 report by Schaaf and Wheeler Consulting Engineers.

CHAPTER 1 - INTRODUCTION

This chapter provides a brief background of the City's sewer water system, the need for this master plan, and the objectives of the study. Abbreviations and definitions are also provided in this chapter.

1.1 BACKGROUND

The City of Half Moon Bay (City) provides sewer collection services to residential, commercial, industrial, and institutional accounts. The City owns and operates a sewer collection system that consists of 3 lift stations and over 34 miles of sewer collection and trunk pipelines, which convey sewer flows to the Sewer Authority Mid-Coastside (SAM) wastewater treatment plant (WWTP).

Recognizing the importance of planning, developing, and financing sewer system facilities to provide enhanced service and reliability for existing customers and to serve anticipated growth, the City initiated this Sewer System Master Plan. On March 20th, 2013, the City of Half Moon Bay authorized Akel Engineering Group Inc. to prepare this 2016 Sewer System Master Plan.

1.2 OBJECTIVE

This master plan provides the City with a tool for planning the sewer system infrastructure facilities to meet future growth. The objective of this master plan is to evaluate the City's sewer system infrastructure and recommend capacity improvements necessary to service the needs of existing users and future developments. Should planning conditions change, and depending on their magnitude, adjustments to the master plan recommendations might be necessary.

This master plan included the following elements:

- Summarize the City's existing sewer system facilities.
- Document growth planning assumptions and known future developments.
- Update the sewer system performance criteria.
- Project future sewer flows.
- Redevelop the hydraulic model.
- Evaluate the capacity adequacy of the sewer mains and lift stations to meet existing and projected flow requirements.
- Document the capacity analysis in tables.
- Recommend a capital improvement program (CIP) with an opinion of probable costs

- Perform a capacity allocation between existing and future developments. Capacity allocation was identified for each known development, and may be used for cost sharing.
- Develop a Sewer System Master Plan.

1.3 STUDY AREA DESCRIPTION

The City of Half Moon Bay is located on California's Pacific Coast in San Mateo County, as shown in **Figure 1.1**. It is bound on the north by the community of El Granada, the Pacific Ocean to the west, and is surrounded by undeveloped hills to the south and the east.

The area included in this study was outlined by the sewer service area of Half Moon Bay, as shown on **Figure 1.2**. The City currently provides sewer service to over 3,200 acres of varying land uses, and expansion areas were determined based on location and proximity to the Half Moon Bay service area.

1.4 REPORT ORGANIZATION

The Sewer System Master Plan report contains the following chapters:

Chapter 1 - Introduction. This chapter provides a brief background of the City's sewer system, the need for this master plan, and the objectives of the study. Abbreviations and definitions are also provided in this chapter.

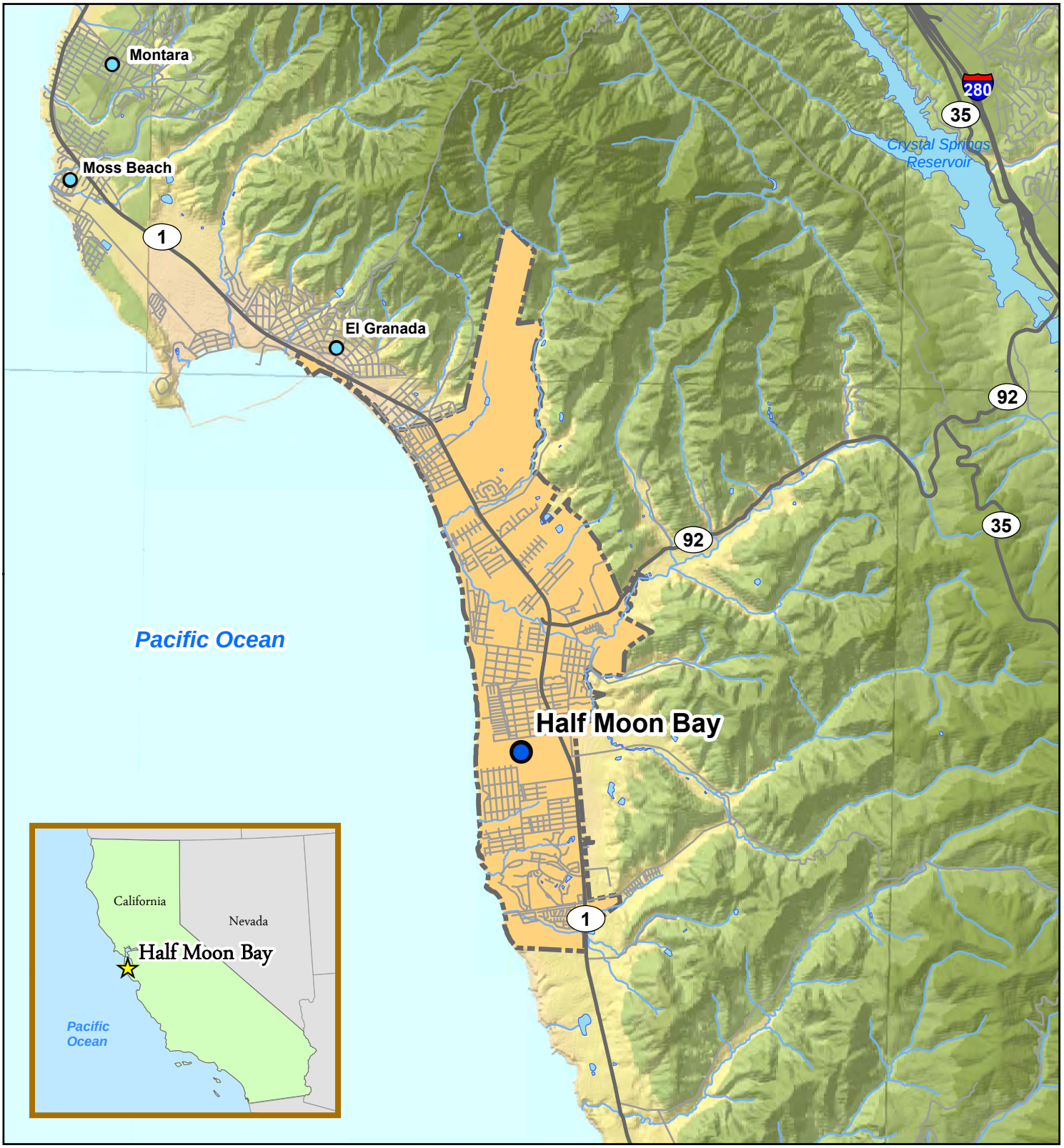
Chapter 2 - Planning Areas Characteristics. This chapter presents a discussion of the planning area characteristics for this master plan and defines the land use classifications. This chapter also includes areas of projected growth based on the existing conditions report for the in progress General Plan.

Chapter 3 - System Performance and Design Criteria. This chapter presents the City's performance and design criteria, which was used in this analysis for identifying current system capacity deficiencies and for sizing proposed sewer trunk mains.

Chapter 4 – Existing Sewer Collection Facilities. This chapter summarizes existing sewer collection system, and includes an inventory of the sewer pipeline network and lift stations.

Chapter 5 – Sanitary Sewer Flows. This section presents a summary of the sanitary sewer system capacity evaluation during peak dry weather flows and peak wet weather flows for the existing and buildout flows. The recommended sanitary sewer system improvements needed to mitigate capacity deficiencies are also discussed in this chapter.

Chapter 6 - Hydraulic Model Development. This chapter describes the development and calibration of the City's sanitary sewer system hydraulic model. Hydraulic network analysis has become an effectively powerful tool in all aspects of sanitary sewer system planning, design, operation, management, and system reliability analysis. The City's hydraulic model was used to



Legend

- Cities
- Half Moon Bay
- State Highways
- Streets
- Creeks
- Lakes
- Ocean

Updated: June 16, 2016

0 0.25 0.5 1 Mile

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Figure 1.1
Regional Location Map

Sewer System Master Plan
City of Half Moon Bay

El Granada Creek
El Granada
(Unincorporated)
AVENUE ALHAMBRA
SANTIAGO AVE
Arroyo De En Medio
PURISIMA WAY
Frenchmans Creek
Miramar
(Unincorporated)
ALTO AVE
ALAMEDA AVE
YOUNG AVE
FRENCHMANS CREEK RD
VENICE BLVD
SPINDRIFT WAY
GRANDVIEW BLVD
PILARCITOS AVE
SILVER AVE
Pacific Ocean
BALBOA BLVD
MAIN ST
KELLY AVE
CORREAS ST
OCEAN AVE
CHURCH ST
MAIN ST
CENTRAL AVE
RAILROAD AVE
PACIFIC AVE
1ST AVE
FILBERT ST
4TH AVE
METZGAR ST
SEYMOUR ST
MAIN ST
BAY AVE
WAVECREST RD
PARK AVE
MARINERO AVE
REDONDO BEACH RD
THONE AVE
FAIRWAY DR
TURNBERRY RD
Apanolio Creek
Corinda Los Trancos Creek
Nuff Creek
DIGGES CANYON RD
92
Madonna Creek
MIRAMONTES ST
HIGGINS CANYON RD
Mills Creek
MIRAMONTES POINT RD
Arroyo Leon

Legend

Sewer Service Providers

- City of Half Moon Bay
- Granada Sanitary District
- Outside City Limits
- City of Half Moon Bay
- Streets
- Creeks
- Ocean

Updated: February 24, 2016

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Figure 1.2
Existing Sewer Service Providers

Sewer System Master Plan
City of Half Moon Bay

evaluate the capacity adequacy of the existing system and to plan its expansion to service anticipated future growth.

Chapter 7 - Evaluation and Proposed Improvements. This chapter presents a summary of the sewer system evaluation and identifies improvements needed to mitigate existing deficiencies as well as improvements needed to expand the system and service growth.

Chapter 8 - Capital Improvement Program. This chapter provides a summary of the recommended sewer system improvements to mitigate existing capacity deficiencies and for accommodating anticipated future growth. The chapter also presents the cost criteria and methodologies for developing the capital improvement program. Finally, a capacity allocation analysis, usually used for cost sharing purposes, is also included.

1.5 ACKNOWLEDGEMENTS

Obtaining the necessary information to successfully complete the analysis presented in this report, and developing the long term strategy for mitigating the existing system deficiencies and for accommodating future growth was accomplished with the strong commitment and very active input from dedicated team members including:

- Alex Khojikian, Former Deputy City Manager
- Mo Sharma, Former City Engineer
- Bruce Ambo, Former Planning Manager
- Scott Phillips, Associate Planner
- Vivian Housen, Consultant
- Larry Carnahan, Public Works Superintendent

1.6 UNIT CONVERSIONS AND ABBREVIATIONS

Engineering units were used in reporting flow rates and volumes pertaining to the design and operation of various components of the sewer collection system. Where it was necessary to report values in smaller or larger quantities, different sets of units were used to describe the same parameter. Values reported in one set of units can be converted to another set of units by applying a multiplication factor. A list of multiplication factors for units used in this report is shown on **Table 1.1**.

Various abbreviations and acronyms were also used in this report to represent relevant sewer system terminologies and engineering units. A list of abbreviations and acronyms is included in **Table 1.2**.

1.7 GEOGRAPHIC INFORMATION SYSTEMS

This master planning effort made extensive use of Geographic Information Systems (GIS) technology, for completing the following tasks:

Table 1.1 Unit Conversions

Sewer System Master Plan
City of Half Moon Bay

Volume Unit Calculations		
To Convert From:	**To:**	**Multiply by:**
acre feet	gallons	325,857
acre feet	cubic feet	43,560
acre feet	million gallons	0.3259
cubic feet	gallons	7.481
cubic feet	acre feet	2.296×10^{-5}
cubic feet	million gallons	7.481×10^{-6}
gallons	cubic feet	0.1337
gallons	acre feet	3.069×10^{-6}
gallons	million gallons	1×10^{-6}
million gallons	gallons	1,000,000
million gallons	cubic feet	133,672
million gallons	acre feet	3.069
Flow Rate Calculations		
To Convert From:	**To:**	**Multiply By:**
ac-ft/yr	mgd	8.93×10^{-4}
ac-ft/yr	cfs	1.381×10^{-3}
ac-ft/yr	gpm	0.621
ac-ft/yr	gpd	892.7
cfs	mgd	0.646
cfs	gpm	448.8
cfs	ac-ft/yr	724
cfs	gpd	646300
gpd	mgd	1×10^{-6}
gpd	cfs	1.547×10^{-6}
gpd	gpm	6.944×10^{-4}
gpd	ac-ft/yr	1.12×10^{-3}
gpm	mgd	1.44×10^{-3}
gpm	cfs	2.228×10^{-3}
gpm	ac-ft/yr	1.61
gpm	gpd	1,440
mgd	cfs	1.547
mgd	gpm	694.4
mgd	ac-ft/yr	1,120
mgd	gpd	1,000,000

Table 1.2 Abbreviations and Acronyms

Sewer System Master Plan
City of Half Moon Bay

Abbreviation	Expansion	Abbreviation	Expansion
2014 SSSMP	2016 Sewer System Master Plan	gpd	Gallons per Day
10Yr-24Hr	10-Year 24-Hour	gpm	Gallons per Minute
AACE International	Association for the Advancement of Cost Engineering	HGL	Hydraulic Grade Line
ADWF	Average Dry Weather Flow	in/hr	Inch per Hour
AAF	Annual Average Flow	I&I	Infiltration and Inflow
Akel	Akel Engineering Group, Inc.	LF	Linear Feet
AWWF	Average Wet Weather Flow	MDDWF	Maximum Day Dry Weather Flow
BWF	Base Wastewater Flow	MDWWF	Maximum Day Wet Weather Flow
CCI	Construct Cost Index	MGD	Million Gallons per Day
CCTV	Closed Circuit Television	MMDWF	Maximum Month Dry Weather Flow
CDP	Census Designated Place	MMWWF	Maximum Month Wet Weather Flow
CIP	Capital Improvement Program	NOAA	National Oceanic and Atmospheric Administration
City	City of Half Moon Bay	PWSS	Public Water System Statistics
DDF	Depth Duration Frequency	PDWF	Peak Dry Weather Flow
d/D	depth of flow to pipe diameter	PWWF	Peak Wet Weather Flow
EDUs	Equivalent Dwelling Units	ROW	Right of Way
ENR	Engineering News Record	SCADA	Supervisory Control and Data Acquisition
fps	Feet per Second	VCP	Vitrified Clay Pipe
FY	Fiscal Year	V&A	Villalobos and Associates
GIS	Geographic Information Systems	WWTP	Wastewater Treatment Plant

- Developing the physical characteristics of the hydraulic model (pipes and manholes, pumps and wet wells)
- Allocating existing sewer flows
- Calculating and allocating future sewer flows, based on projected future developments population
- Generating maps and exhibits used in this master plan

CHAPTER 2 - PLANNING AREA CHARACTERISTICS

This chapter presents a discussion of the planning area characteristics for this master plan and defines the land use classifications. This chapter also includes areas of projected growth based on the existing conditions report for the in progress General Plan.

2.1 STUDY AREA

The study area generally consisted of the areas within or directly adjacent to the existing City of Half Moon Bay sewer service area. The Half Moon Bay service area is generally bound by Frenchmans Creek to the north, with a section of the service area extending northeast along and north of Frenchmans Creek Road. The service area to the south is bound by the extents of the Canada Cove mobile home park and the Pelican Point RV Park. The service area to the east is bound by the city limits and the service area to the west is bound by the Pacific Ocean.

2.2 LAND USE

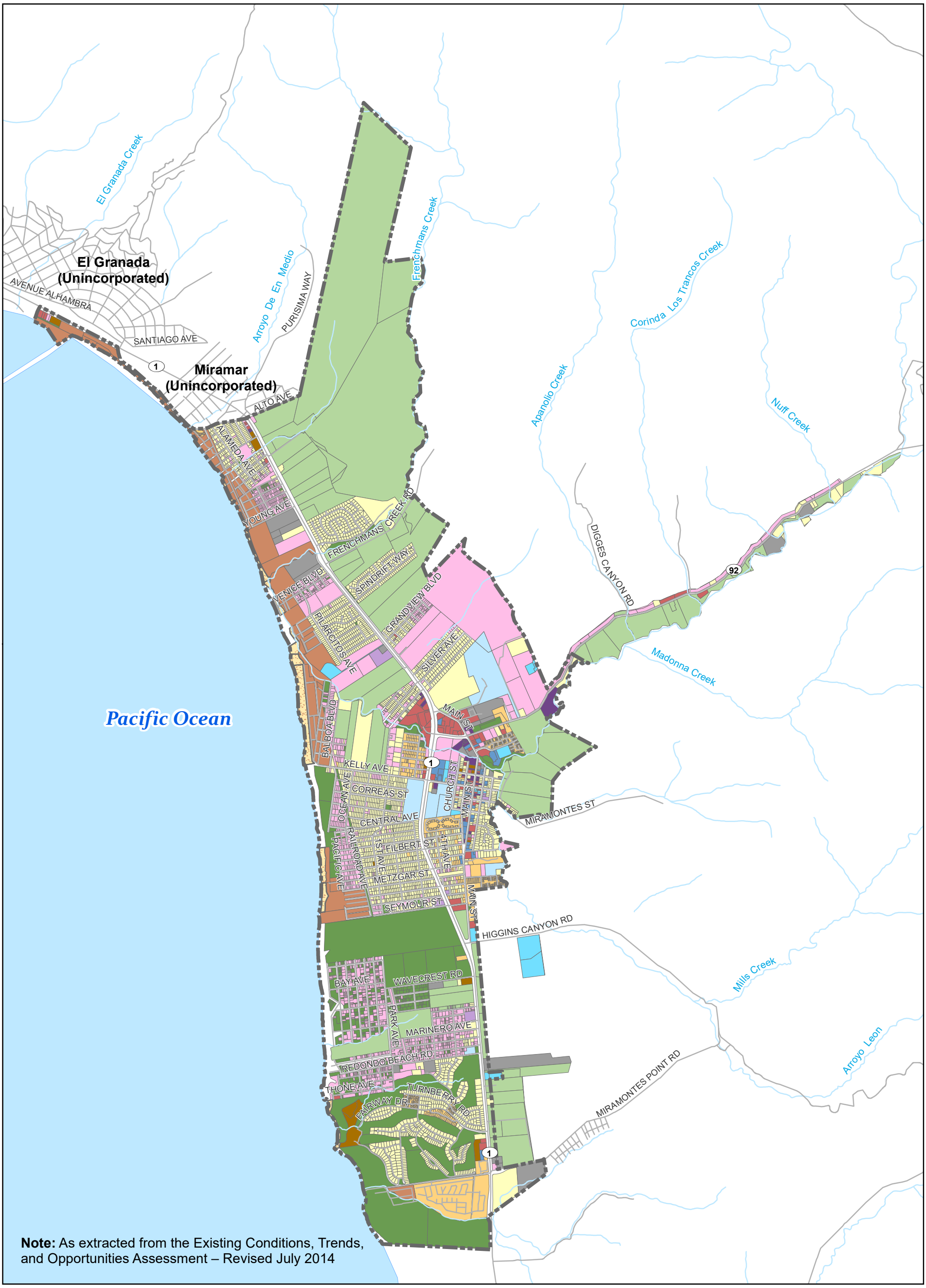
The existing land use designations used in this master plan are consistent with the Land Use Element of the City's General Plan, and as received from the City's planning division. The City's General Plan land use is currently in progress and was not available at the time of this master plan's completion. The existing land use is documented on **Figure 2.1**, and varies from agricultural to beach land uses, with a mixture of residential and non-residential land uses. **Table 2.1** lists the acreages for each land type.

2.3 PLANNED UNIT DEVELOPMENTS

The General Plan Land Use is currently under review, and was not available during the preparation of this Master Plan. To evaluate the potential growth of the City and to plan infrastructure needed to accommodate that growth, this master plan relied on the "Current Development Projects" and "Planned Unit Developments" outlined in the Existing Conditions Report. There are approximately 9 development projects in progress, and approximately 19 Planned Unit Developments. Recent and current development projects and planned unit developments were evaluated to determine the projected population that may result from the growth. Relevant extracts from the Existing Conditions Report are included in **Appendix A** for reference.

2.4 HISTORICAL AND FUTURE GROWTH

The City's historical and projected population data are presented in **Figure 2.2**. The historical population has remained relatively flat over the past 15 years, as documented by the California Department of Finance. The projected population was estimated at 1.5 percent, based on direction from City planning staff, with a 2036 population of 16,475.



Note: As extracted from the Existing Conditions, Trends, and Opportunities Assessment – Revised July 2014

Legend

Existing Land Use

- Agriculture/Nurseries
- Beach
- Commercial/Retail
- General Industrial
- Hotel/Lodging
- Mixed Use
- Single Family Residential
- Multi Family Residential
- Office
- Open Space/Parks
- Public Recreation
- Public/Government
- Religious
- School/Educational Facility
- Vacant
- City Limits
- Streets
- Creeks
- Ocean

N W GIS E S

0 0.25 0.5 1 Mile

Updated: February 11, 2016

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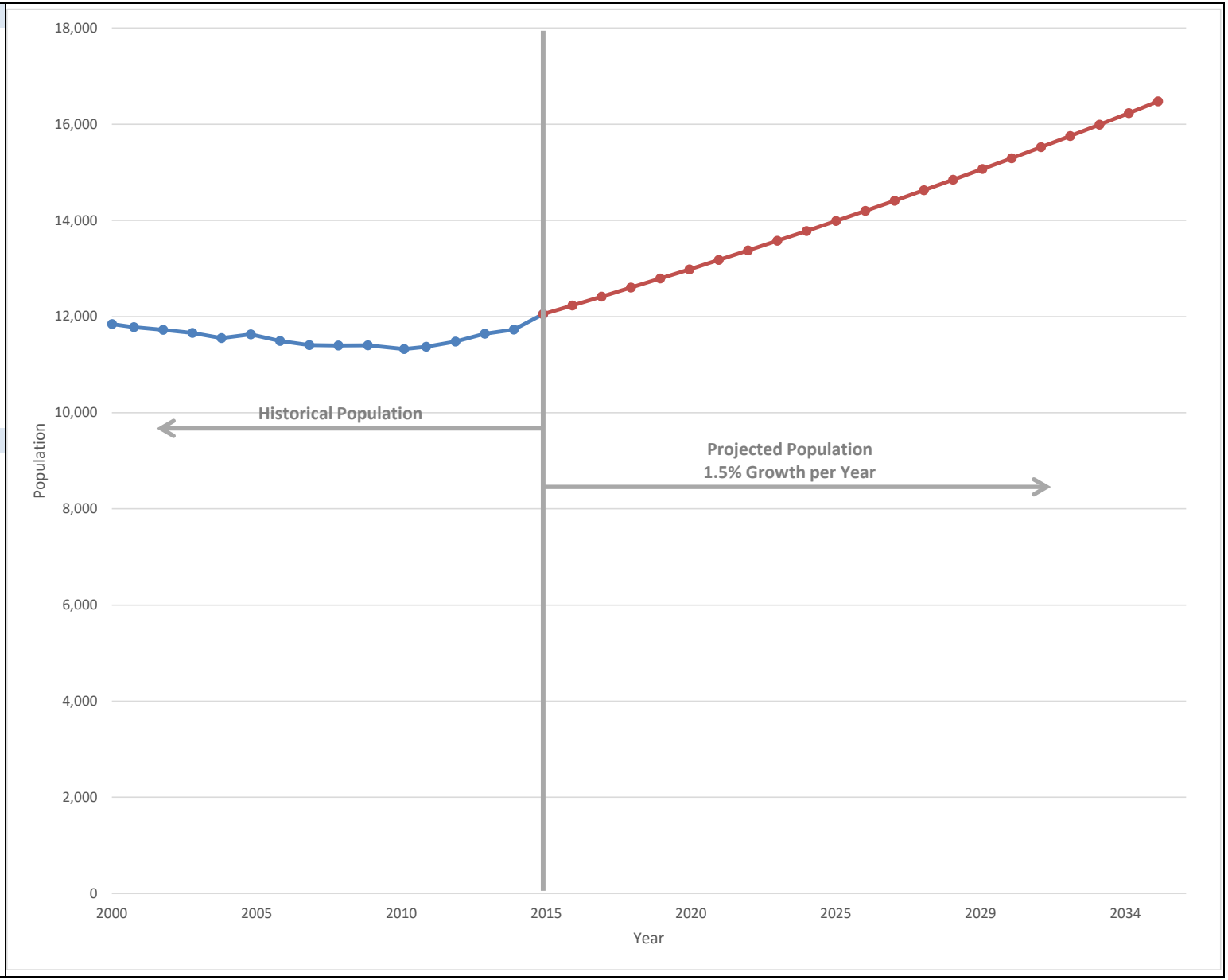
Figure 2.1
Existing Land Use

Sewer System Master Plan
City of Half Moon Bay

Historical Population		
2000	11,842	
2001	11,779	-0.5%
2002	11,722	-0.5%
2003	11,659	-0.5%
2004	11,552	-0.9%
2005	11,629	0.7%
2006	11,493	-1.2%
2007	11,408	-0.7%
2008	11,396	-0.1%
2009	11,403	0.1%
2010	11,324	-0.7%
2011	11,373	0.4%
2012	11,478	0.9%
2013	11,643	1.4%
2014	11,727	0.7%
2015	12,051	2.8%
Projected Population		
2016	12,232	1.5%
2017	12,415	1.5%
2018	12,601	1.5%
2019	12,790	1.5%
2020	12,982	1.5%
2021	13,177	1.5%
2022	13,375	1.5%
2023	13,576	1.5%
2024	13,780	1.5%
2025	13,987	1.5%
2026	14,197	1.5%
2027	14,410	1.5%
2028	14,626	1.5%
2029	14,845	1.5%
2030	15,068	1.5%
2031	15,294	1.5%
2032	15,523	1.5%
2033	15,756	1.5%
2034	15,992	1.5%
2035	16,232	1.5%
2036	16,475	1.5%



Notes:

1. Historical Population based on California Department of Finance Sheets E-4 and E-8, with 2000 and 2010 as Census benchmark populations.
2. Projected population based on City Planning staff recommendations of 1.5 percent.

6/16/2016

Figure 2.2
Historical and Projected Population
Sewer System Master Plan
City of Half Moon Bay

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Table 2.1 Existing Land Use within Planning Area

Sewer System Master Plan
City of Half Moon Bay

Land Use Classification	Acreage
Ag Related Industrial	70
Agriculture	762
Cemetery	4
Commercial/Retail	50
Duplex	13
General Industrial	25
Golf Course	259
Hotel/Lodging	24
Mixed Use	16
Mobile Home Park	60
Multi Family Residential	41
Nurseries & Greenhouses	612
Office	18
Open Space	246
Parks	38
Public Recreation / Beaches	232
Public/Government	38
Religious	13
School/Educational Facility	78
Single Family Residential	603
Townhomes	25
Vacant	522
Total	**3,747**

Note:

1. Existing land use was estimated using Figure 3-1 of the Existing Conditions report for the General Plan Update.

CHAPTER 3 – SYSTEM PERFORMANCE AND DESIGN CRITERIA

This chapter presents the City's performance and design criteria, which was used in this analysis for identifying current system capacity deficiencies and for sizing proposed sewer trunk mains

3.1 HYDRAULIC CAPACITY CRITERIA

In addition to applying the City design standards for evaluating hydraulic capacities; this master plan included dynamic hydraulic modeling. The dynamic modeling was a critical and essential element in identifying surcharge conditions resulting from downstream bottlenecks in the gravity sewers.

3.1.1 Gravity Sewers

Gravity sewer capacities depend on several factors including: material and roughness of the pipe, the limiting velocity and slope, and the maximum allowable depth of flow.

Manning's Equation for Pipe Capacity

The Continuity equation and the Manning equation for steady-state flow are used for calculating pipe capacities in open channel flow. Open channel flow can consist of either open conduits or, in the case of gravity sewers, partially full closed conduits. Gravity full flow occurs when the conduit is flowing full but has not reached a pressure condition.

- Continuity Equation: $Q = V A$

  Where:
  Q = peak flow, in cubic feet per second (cfs)
  V = velocity, in feet per second (fps)
  A = cross-sectional area of pipe, in square feet (sq. ft.)

- Manning Equation: $V = (1.486 R^{2/3} S^{1/2})/n$

  Where:
  V = velocity, fps
  n = Manning's roughness coefficient
  R = hydraulic radius (area divided by wetted perimeter), ft
  S = slope of pipe, in feet per foot

Manning's Roughness Coefficient (n)

The Manning roughness coefficient 'n' is a friction coefficient that is used in the Manning formula for flow calculation in open channel flow. In sewer systems, the coefficient can vary between 0.011 and 0.017 depending on pipe material, size of pipe, depth of flow, root intrusion, smoothness of joints, and other factors.

For the purpose of this evaluation, and in accordance with City standards, an "n" value of 0.013 was used for both existing and proposed gravity sewer pipes.

Partial Flow Criteria (d/D)

Partial flow in gravity sewers is expressed as a depth of flow to pipe diameter ratio (d/D). For circular gravity conduits, the highest capacity is generally reached at 92 percent of the full height of the pipe (d/D ratio of 0.92). This is due to the additional wetted perimeter and increased friction of a gravity pipe.

When designing sewer pipelines, it is common practice to use variable flow depth criteria that allow higher safety factors in larger sizes. Thus, design d/D ratios may range between 0.5 and 0.92, with the lower values used for smaller pipes. The smaller pipes may experience flow peaks greater than planned or may experience blockages from debris.

The City's design standards pertaining to the d/D criteria are summarized in **Table 3.1**. During peak dry weather flows (PDWF), the maximum allowable d/D ratio for existing pipes is 0.9. Future mains were sized for a maximum allowable d/D ratio of 0.75.

During peak wet weather flows (PWWF), to avoid premature or unnecessary trunk line replacements, the capacity analysis allowed the d/D ratio to exceed the dry weather flow criteria and surcharge. This condition is evaluated using the dynamic hydraulic model and the criteria listed on **Table 3.1** stipulates that the hydraulic grade line (HGL), even during a surcharged condition, should be at least three feet below the manhole rim elevation.

Minimum Pipe Sizes and Design Velocities

In order to minimize the settlement of sewage solids, it is standard practice in the design of gravity sewers to specify that a minimum velocity of 2 feet per second (fps) be maintained when the pipeline is half-full. At this velocity, the sewer flow will typically result with self-cleaning of the pipe.

Due to hydraulics of a circular conduit, velocity of half-full flows approaches the velocity of nearly full flows. **Table 3.1** lists the minimum slopes, varying by pipe size, in accordance with the City's design standards. The design standards also specify minimum pipe sizes, depending on the peak dry weather flows (PDWF).

Changes in Pipe Size

When a smaller gravity sewer pipe joins a larger pipe, the invert of the larger pipe is generally located to maintain the same energy gradient. One of the methods used to approximate this condition includes placing the 80 percent depth point (d/D at 0.8) from both sewers at the same elevation. For master planning purposes, and in the absence of known field data, sewer crowns were matched at the manholes for future pipelines. Existing pipeline elevations were extracted from the previous hydraulic model.

Table 3.1 Sewer System Performance and Design Criteria

Sewer System Master Plan
City of Half Moon Bay

Pipeline Criteria

Peak Dry Weather Flow Criteria

Diameter (in)	Maximum Allowable d/D	
	Existing Trunks	Proposed Trunks
8 to 12	0.90	0.75
> 12	0.90	0.75

Peak Wet Weather Flow Criteria

Hydraulic Grade Line (HGL) should be at least 3 foot below the manhole rim

Pipe Size (in)	Minimum Grade (ft/ft)	Capacity (n = 0.013)	
		(mgd)	(cfs)
8	0.0026	0.36	0.55
10	0.0019	0.56	0.87
12	0.0015	0.79	1.23
15	0.0011	1.28	1.98
18	0.0009	1.78	2.75
21	0.0007	2.43	3.76
24	0.0006	3.27	5.05
27	0.0005	4.18	6.47
30	0.0004	5.13	7.94
33	0.0004	6.04	9.34
36	0.0004	7.61	11.78
42	0.0003	10.27	15.90

Unit Flow Factor Criteria

Classification	Recommended Factor (Gallons per Day per Capita)
Per Capita Flow	76

Notes.

1. Pipe friction factor assumed at 0.013
2. Per capita flow factor is based on the 10-year average and the 5-year maximum average annual flow rate.

3.1.2 Force Mains and Lift Stations

The Hazen-Williams formula is commonly used for the design of force mains as follows:

- Hazen Williams Velocity Equation: $V = 1.32\ C\ R^{0.63}\ S^{0.54}$

  Where:
  V = mean velocity, fps
  C = roughness coefficient
  R = hydraulic radius, ft
  S = slope of the energy grade line, ft/ft

The value of the Hazen-Williams 'C' varies and depends on the pipe material and is also influenced by the type of construction and pipe age. A 'C' value of 120 was used in this analysis.

The minimum recommended velocity in force mains is 2 feet per second (fps). The economical pumping velocity in force mains ranges between 3 and 5 fps. A maximum desired velocity is typically around 7 fps and a maximum not-to-exceed velocity is at 10 fps.

The capacities of pump stations are evaluated and designed to meet the peak wet weather flows (PWWF) with one standby pump having a capacity equal to the largest operating unit. The standby pump provides a safety factor in case the duty pump malfunctions during operations and allows for maintenance.

3.2 DRY WEATHER FLOW CRITERIA

Wastewater unit factors are coefficients commonly used in planning level analysis to estimate future average daily flows for areas not yet developed. The unit factors are multiplied may be multiplied by several different categories, including people, dwelling units, or land use types. This Master Plan relied on a per person flow factor for projecting future flows.

3.2.1 Per Capita Unit Flow Methodology

Unit factors are coefficients used to estimate the average daily water demands or average daily wastewater flows for areas with predetermined land uses. The unit factors are multiplied by the number of dwelling units for residential categories, and by the gross acreages for non-residential categories, to yield the average daily demands or average daily wastewater flow projections; or by the expected population increase over a period of time.

There are several methods for developing the unit factors. This analysis used a per capita flow factor of 76 gallons per day per capita (gpdc) and is documented on **Table 3.1**.

3.2.2 Peaking Factors

The wastewater collection system is evaluated based on its ability to convey peak sewer flows. Peaking factors represent the increase in sewer flows experienced above the average annual flows (AAF). The various peaking conditions are numerical values obtained from a review of historical data and, at times, tempered by engineering judgment.

The peaking conditions that are significant to hydraulic analysis of the sewer system include:

- peak dry weather flows (PDWF)
- peak wet weather flows (PWWF)

Typical values for peaking factors of 2.0 are generally used to estimate peak flows at treatment facilities, while peaking factors between 3.0 and 4.0 are used to estimate peak flows in the smaller upstream areas of the system.

For the purpose of this capacity analysis and hydraulic modeling effort, the peaking factors were represented with a 24-hour diurnal curve based on actual flow monitoring data for each basin and sub-basin. For design purposes, and PDWF peaking factor of 2.1 and a PWWF peaking factor of 6.4 are recommended.

3.3 WET WEATHER FLOW CRITERIA

The wet weather flow criteria accounts for the infiltration and inflows (I&I) that seep into the City's wastewater collection system during storm events.

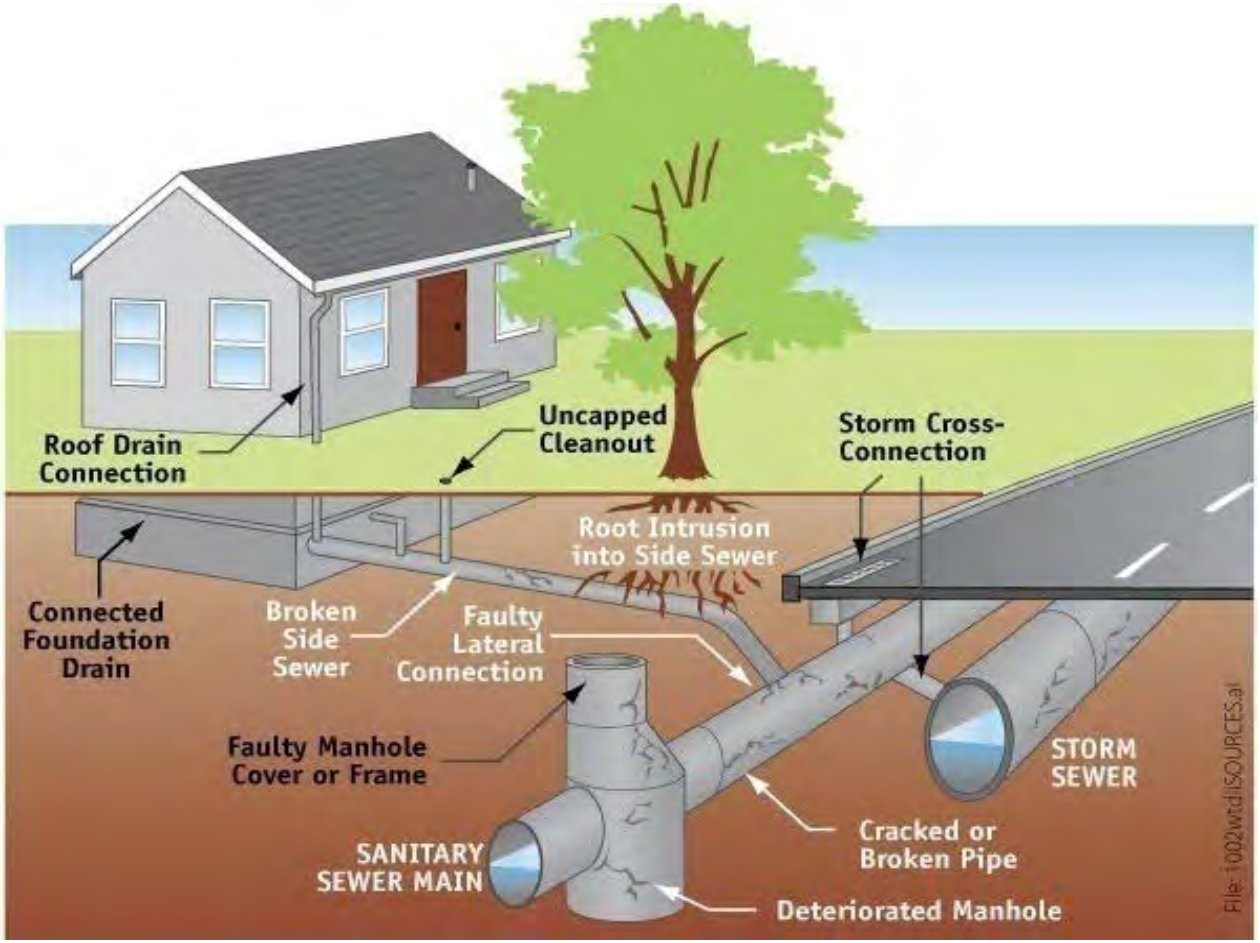
3.3.1 Infiltration and Inflow

Groundwater Infiltration and Inflow (I&I) is associated with extraneous water entering the sewer through defects in pipelines and manholes. Infiltration occurs when groundwater levels or the soil is saturated and will cause an increase in flows in the collection system. **Figure 3.1** was developed by King County, Washington and was included in this chapter to illustrate the typical causes of infiltration and inflow.

There are several accepted methodologies for estimating infiltrations and inflows (I&I). These include:

- **Methodology 1.** Based on Acreages. In this methodology, factors that may range between 400 and 1,500 gallons per day (gpd) or more are applied to acreages for estimating the I&I component.
- **Methodology 2.** Based on Linear Feet of Pipe. In this methodology, factors that may range between 12 and 30 or more gallons per day per inch diameter per 100 linear feet (gpd/inch diameter/100 lf) are applied to linear feet of gravity sewers.
- **Methodology 3**. Based on a percentage of Average Dry Weather Flows. In this methodology, Infiltration and Inflows (I&I) are calculated based on a percentage of the average dry weather flow.

This capacity analysis and master plan based the infiltration and inflow on specific flow monitoring data from the 2014 Villalobos and Associates (V&A) Flow Monitoring Program. Thus, the



Source: King County, WA
http://www.kingcounty.gov/environment/wastewater/II/What.aspx?print=1

LEGEND

Inflow Sources (Black Text)

Infiltration Sources (White Text)

Figure 3.1
Infiltration and Inflow Sources
Sewer System Master Plan
City of Half Moon Bay

6/16/2016

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infiltration and inflows are reasonable and reflect the actual behavior of the wastewater collection system.

3.3.2 2014 V&A Flow-Monitoring Program

In 2014, the City contracted Villalobos and Associates (V&A) to conduct a city-wide temporary flow-monitoring program in order to identify areas of the City that experience excessive wet weather rain dependent infiltration and inflow (RDII). As a part of the flow-monitoring program, V&A installed 9 flow meters to measure flow in the City's sewer drainage basins. In addition, 4 permanent flow meters were evaluated as part of the flow monitoring period (**Figure 3.2**)

The 2014 V&A Flow Monitoring Program captured two rainfall events and included a summary report identifying areas of the City that were most affected by rain dependent infiltration and inflows. The report from V&A is included in **Appendix B**.

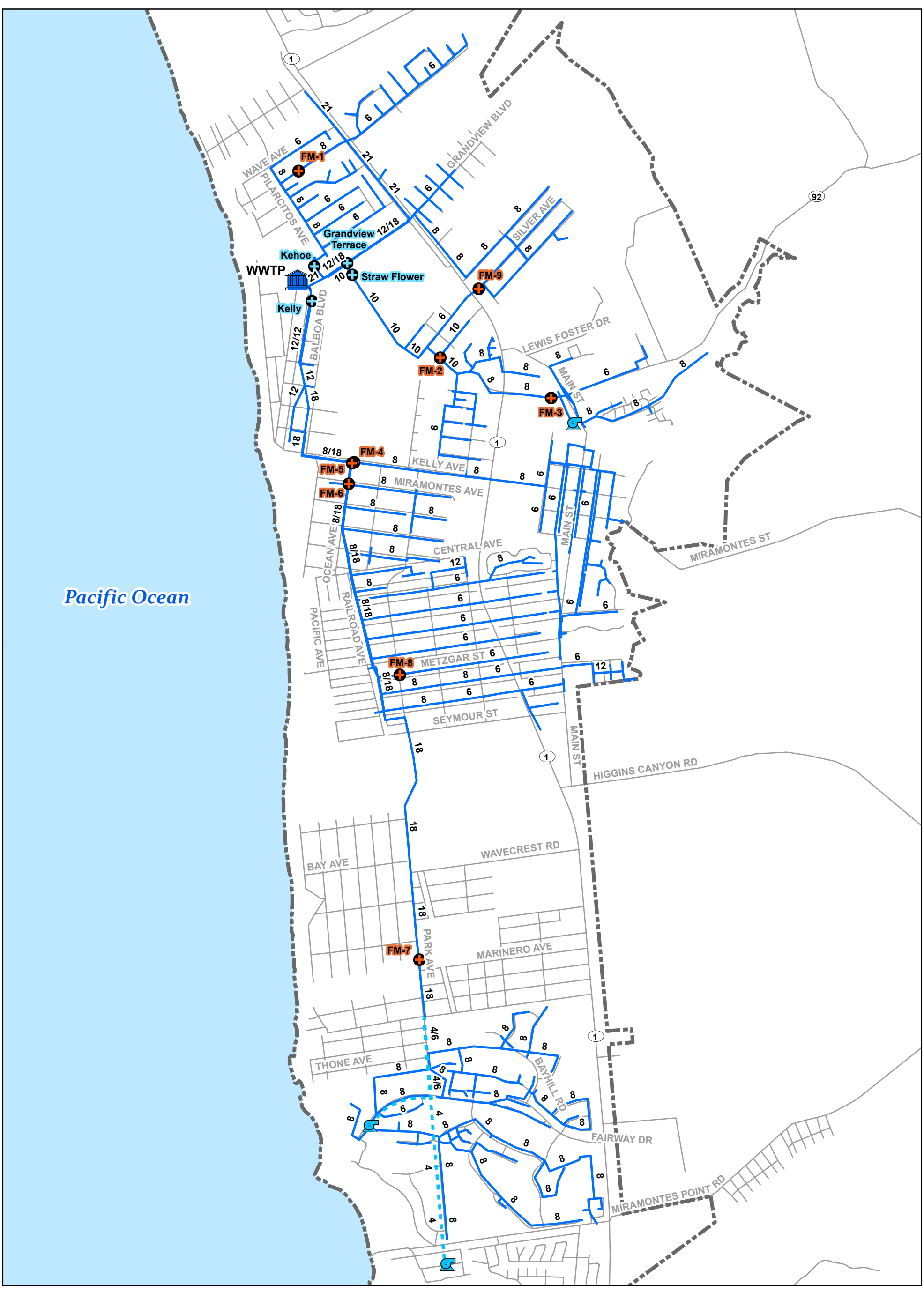
3.3.3 10-Year 24-Hour Design Storm

A synthetic design storm is typically used to evaluate the sewer collection system's response during wet weather flow conditions.

- **10-Year Frequency.** Industry standards include design storms that range between 5-year and 20-year events. The 10-Year frequency is a common industry standard for coastal and bay area municipalities and was therefore used.
- **24-Hour Duration.** A 24-hour duration is typically chosen because the majority of large storms that come from the Pacific Ocean and cause extensive infiltration and inflows (I&I) generally last that long.
- **Peak Aligned Rainfall Distribution.** The National Resources Conservation Service, previously known as the Soil Conservation Service, has developed rainfall distributions for wide geographic regions based on traditional Depth-Duration-Frequency (DDF) rainfall data. In this methodology, the balanced rainfall centered distribution is adjusted to coincide the peak rainfall intensity with the peak system flow. Incrementally lower intensities are placed on alternating sides of the peak.

Thus, the NOAA Atlas 14 Depth Duration Frequency (DDF), 10-year 24-hour (10yr-24hr) design storm, with a peak aligned rainfall distribution, was used to evaluate the capacity adequacy of the City's sewer system during wet weather flow conditions.

Figure 3.3 is intended to show the diurnal comparison between the design storm and the two storm events experienced during February of 2014. As shown on the exhibit, the storms measured during the February 2014 flow monitoring program were relatively small compared to the 10-year design storm. The State of California has been in a period of prolonged drought, and storm occurrences and intensities have been sporadic. As a consequence, groundwater infiltration levels are also diminished compared to historically observed numbers.



Legend

- City Flow Monitors
- 2013 & 2014 V&A Flow Monitors

Existing System

- WWTP
- Lift Stations
- Pipes
- Force Mains
- Streets
- City Limits
- Ocean

Updated: February 11, 2016

0 500 1,000 2,000 Feet

N W GIS E S

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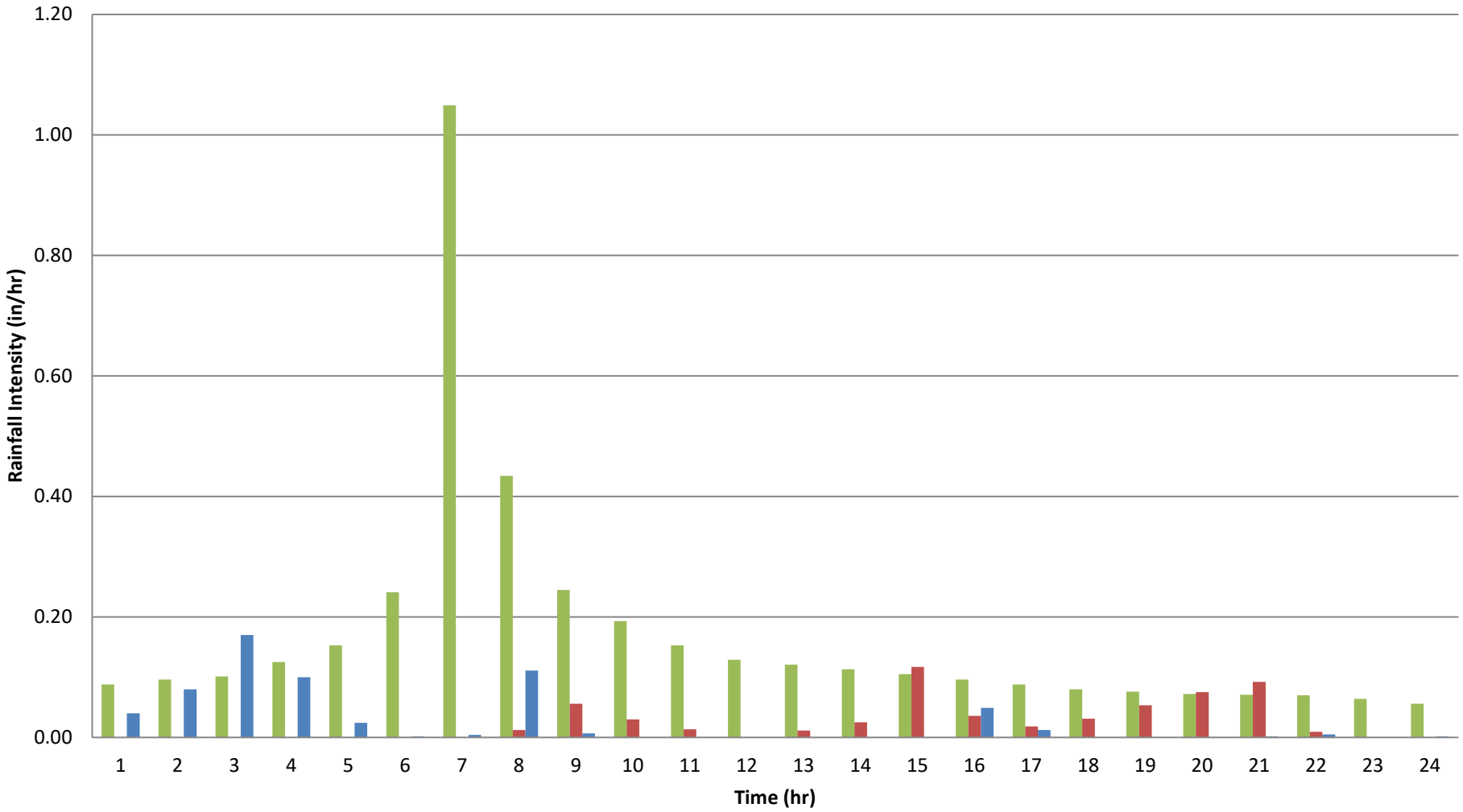
Figure 3.2
Flow Monitor Locations

Sewer System Master Plan
City of Half Moon Bay



LEGEND

- Design Storm: 10 Year - 24 Hour (4.02 in)
- Historical Storm Event 1: February 26th, 2014 (0.58 in)
- Historical Storm Event 2: February 28th, 2014 (0.61 in)

6/16/2016

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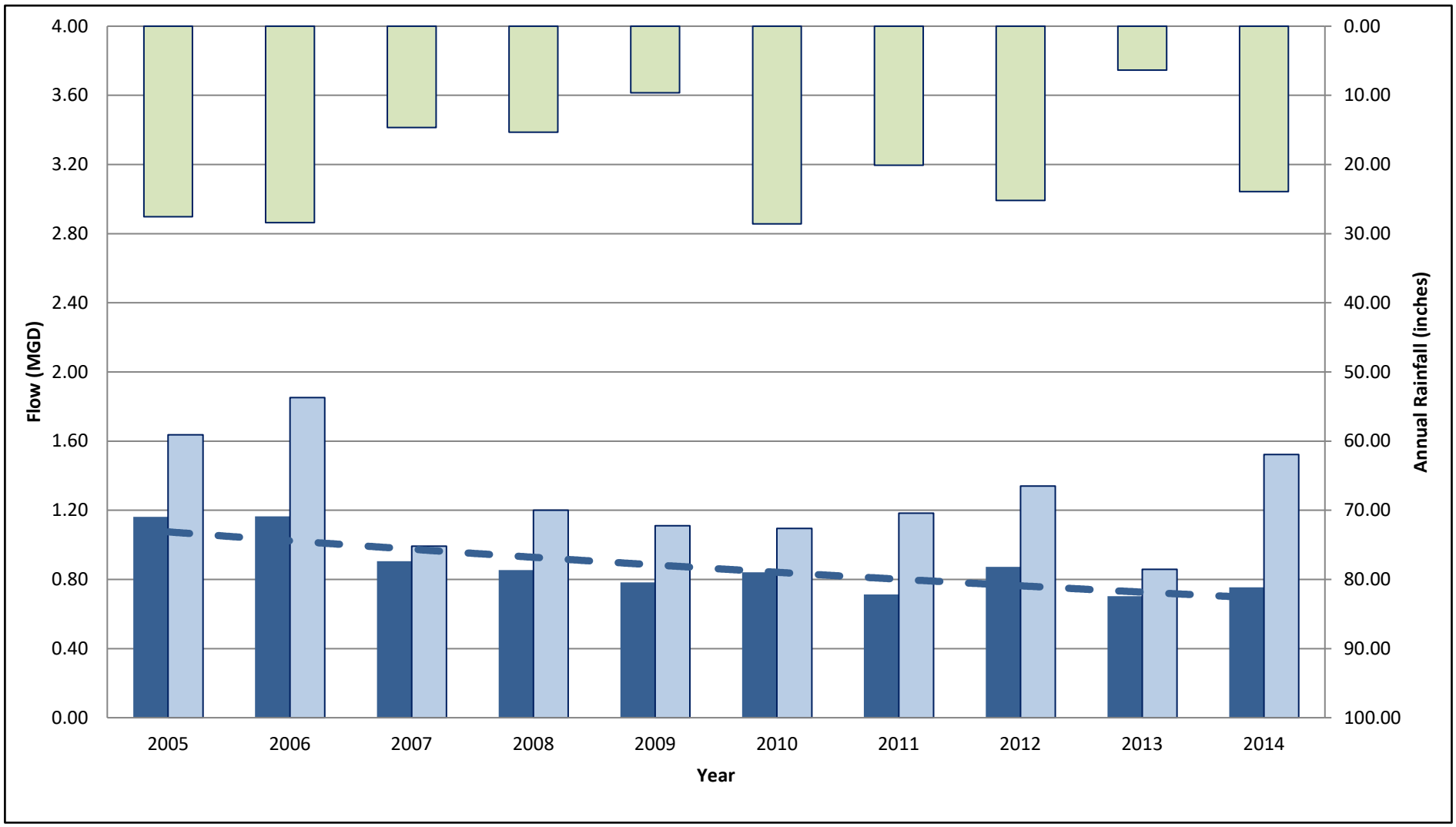
Figure 3.3

10-Year 24-Hour Storm
(Design vs. 2014 Storms)

Sewer System Master Plan
City of Half Moon Bay

The wet season flows were compared to the average annual flow on **Figure 3.4**. Additionally, the rainfall totals for each year were documented to provide a gage on how the system has historically responded to rainfall events. As shown, in periods of consecutive wet years, the system has a higher wet weather response. To account for this response, the modeled baseflow was increased to address the higher groundwater infiltration during consecutive wet years. This adjustment varied depending on the areas identified in the V&A Flow Monitoring Report documentation of high groundwater infiltration basins.



LEGEND

- Average Annual Flow
- Maximum Month Wet Weather Flow
- Rainfall
- Expon. (Average Annual Flow)

6/16/2016

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Figure 3.4
Wet Weather Flow
Historical Trends
Sewer System Master Plan
City of Half Moon Bay

CHAPTER 4 – EXISTING SEWER COLLECTION FACILITIES

This chapter summarizes existing sewer collection system, and includes an inventory of the sewer pipeline network and lift stations.

4.1 SEWER COLLECTION SYSTEM OVERVIEW

The City provides sewer collection services to approximately 10,900 residents and assorted commercial, industrial, and institutional land uses. The City's collection system consists of approximately 34 miles of up to 21-inch gravity sewer pipes that convey flows towards the Sewer Authority Mid-Coastside WWTP, located off of Bev Cunha's Country Road, as shown on **Figure 4.1**.

A system-wide pipe inventory, listing the total length by pipe diameter, is shown on **Table 4.1**. This table is based on information extracted from the City's GIS and available CAD mapping. The 6-inch and 8-inch diameter pipes account for 82 percent of the total sewer pipe lengths.

4.2 SEWER COLLECTION BASINS

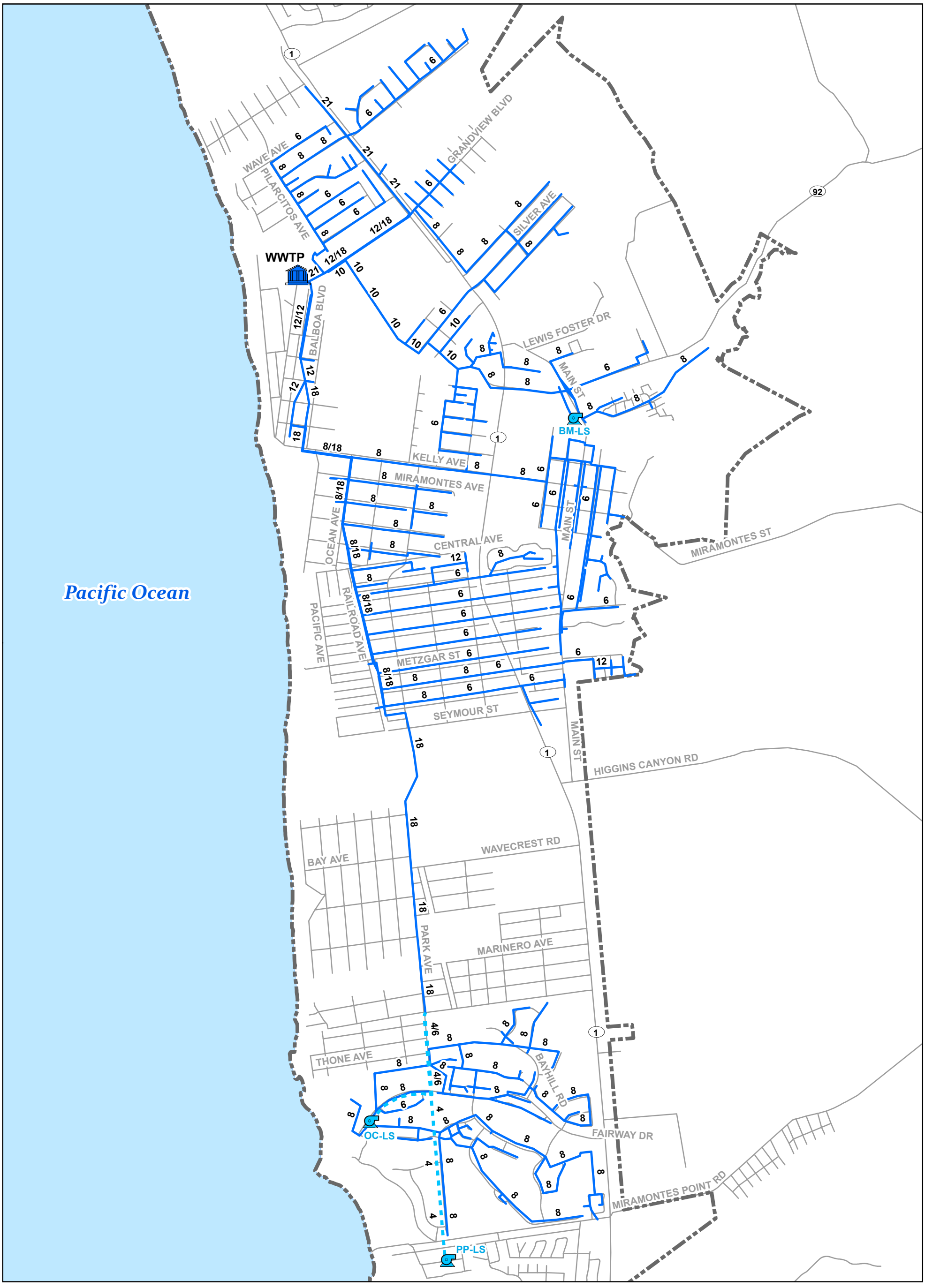
Due to topography, the sanitary sewer system is divided into five separate dendritic sewer collection basins, each defining the boundaries of a sewer collection trunk system. The following five major wastewater collection basins were created and shown on **Figure 4.2**: Kehoe, Grandview Terrace, Strawflower, Kelly, and Park Avenue. These collection basins are named for the permanent flow meters that monitor each system, with the exception of Park Avenue. Park Avenue was separated from Kelly to document the flows from the hotel and golf course community.

4.2.1 Kehoe Basin

The Kehoe Basin encompasses approximately 360 acres in the northern portion of the City service area. This basin includes the area generally north of Kehoe Avenue and south of Frenchman's Creek. The Kehoe Basin is serviced by an 8-inch pipeline that runs along Pilarcitos Avenue before jogging across right of way alignments to the 21-inch trunk on Bev Cunha's County Road. This basin generally collects flows from residential development.

4.2.2 Grandview Terrace Basin

The Grandview Terrace Basin encompasses approximately 330 acres in the northeastern portion of the City service area. This basin includes the area generally east of State Route 1 and north of Lewis Foster Drive. The Grandview Terrace Basin is serviced by a 12-inch pipeline that runs along Bev Cunha's Country Road from State Route 1. This basin generally collects flows from residential development and from the high school.



Legend

Existing System

- WWTP
- Lift Stations
- Pipes
- Force Mains
- Streets
- City Limits
- Ocean

Updated: February 9, 2016

0 500 1,000 2,000 Feet

N W GIS E S

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File Name & Path: P:\xGIS\GIS_Projects\HalfMoonBay\Final\HMB_Fig4-1-ExistingSystem_020916.mxd

Figure 4.1
Existing Sewer System

Sewer System Master Plan
City of Half Moon Bay

Grandview Terrace
Kehoe
Straw Flower
Kelly
Park Ave
WWTP
Pacific Ocean
DIGGES CANYON RD
GRANDVIEW BLVD
WAVE AVE
PILARCITOS AVE
SILVER AVE
LEWIS FOSTER DR
BALBOA BLVD
MAIN ST
KELLY AVE
MIRAMONTES AVE
CENTRAL AVE
OCEAN AVE
PACIFIC AVE
RAILROAD AVE
METZGAR ST
SEYMOUR ST
MIRAMONTES ST
HIGGINS CANYON RD
BAY AVE
WAVECREST RD
PARK AVE
MARINERO AVE
THONE AVE
BAYHILL RD
FAIRWAY DR
MIRAMONTES POINT RD
92
1

Legend

Existing System

- WWTP
- Lift Stations
- Pipes
- Force Mains

Sewer Basins

- Grandview Terrace
- Kehoe
- Kelly
- Park Ave
- Straw Flower

- Streets
- City Limits
- Ocean

Updated: March 22, 2016

0 500 1,000 2,000 Feet

N W GIS E S

AKEL ENGINEERING GROUP, INC.

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Figure 4.2
Existing Sewer Basins

Sewer System Master Plan
City of Half Moon Bay

Table 4.1 Modeled Pipe Inventory

Sewer System Master Plan
City of Half Moon Bay

Pipe Diameter	Total Length		
(in)	(ft)	(miles)	(%)
Gravity Mains			
6"	74,173	14.0	41%
8"	73,019	13.8	40%
10"	3,608	0.7	2%
12"	6,888	1.3	4%
18"	13,178	2.5	7%
21"	2,892	0.5	2%
Total	**173,758**	**32.9**	
Force Mains			
4"	4,415	0.8	2%
6"	2,429	0.5	1%
Total	**6,844**	**1.3**	
Total			
Total	**180,602**	**34.2**	**100%**

Notes.

1. Existing pipe inventory was extracted from the City's GIS-based hydraulic model developed in 2016.

4.2.3 Straw Flower Basin

The Straw Flower Basin encompasses approximately 340 acres in the eastern portion of the City service area. This basin includes the area generally along State Route 1 and State Route 92, and north of Pine Avenue. The Straw Flower Basin is serviced by a 10-inch pipeline that runs along a right of way alignment through wetlands, before joining the Grandview Terrace 12-inch pipeline on Bev Cunha's Country Road. This basin generally collects flows from residential, commercial, and industrial development.

4.2.4 Kelly Basin

The Kelly Basin encompasses approximately 750 acres in the south-central portion of the City service area. This basin includes the area generally south of Kelly Avenue, and north of Seymour Street. The Kelly Basin is serviced by an 18-inch pipeline and then parallel 12-inch pipelines that jog along Balboa Boulevard, and then through coastal wetlands, before discharging into the SAM WWTP. This basin generally collects flows from residential and commercial development, and also collects the flows from the Park Avenue Basin.

4.2.5 Park Avenue Basin

The Park Avenue Basin encompasses approximately 1,090 acres in the southern portion of the City service area. This basin includes the area generally south of Seymour Street to the city limits in the south. The Park Avenue Basin is serviced by an 18-inch gravity main that runs north along Park Avenue. The gravity main collects flows from the Ocean Colony and Pelican Point lift stations near Redondo Beach Road. This basin generally collects flows from the commercial and residential development associated with the golf course and mobile home park developments.

4.3 LIFT STATIONS

When routing flows by gravity is not possible due to adverse grades, lift stations are used to pump flows. The City currently maintains three lift stations in the sewer collection system, as summarized on **Table 4.2** and shown on **Figure 4.1**.

Table 4.2 lists each lift station with relevant information obtained from the City's records including: location and number of pumps. The lift stations are operated to turn "on" or "off" based on the levels in their wet wells. **Table 4.2** also documents the size and length of the force main downstream from each lift station.

4.4 SEWER AUTHORITY MID-COASTSIDE WASTEWATER TREATMENT PLANT

The Sewer Authority Mid-Coastside (SAM) WWTP permitted for an average dry weather flow of 4 MGD. The treatment facility is located one mile north of downtown Half Moon Bay off of State Route 1. The plant's current design capacity is capable of accommodating a peak hourly wet weather flow of up to 15 MGD. The plant is currently operating at an average flow of

Table 4.2 Lift Station Inventory

Sewer System Master Plan
City of Half Moon Bay

Lift Station Name	Location	Pumps			Force Main	
		No.	Duty Pumps (gpm)	Standby Pumps (gpm)	Diameter (in)	Length (ft)
Bell Moon	Parking Lot at 248 Main St	2	5	30	4	285
Ocean Colony	South-west of Fairway Dr and Fairway Pl	2	500	500	6	2,430
Pelican Point	South of Miramontes Rd and west of Cabrillo Hwy	2	225	255	4	4,130

approximately 1.7 MGD. The City of Half Moon Bay currently accounts for approximately half of the inflow to the SAWM WWTP.

CHAPTER 5 – SANITARY SEWER FLOWS

This chapter summarizes existing sewer flows and projects the future sewer flows tributary to the Half Moon Bay sewer collection system. This chapter identifies the design flows used in the hydraulic modeling effort and capacity evaluation. The design flows include the existing condition (existing customers) and the projected ultimate buildout scenario.

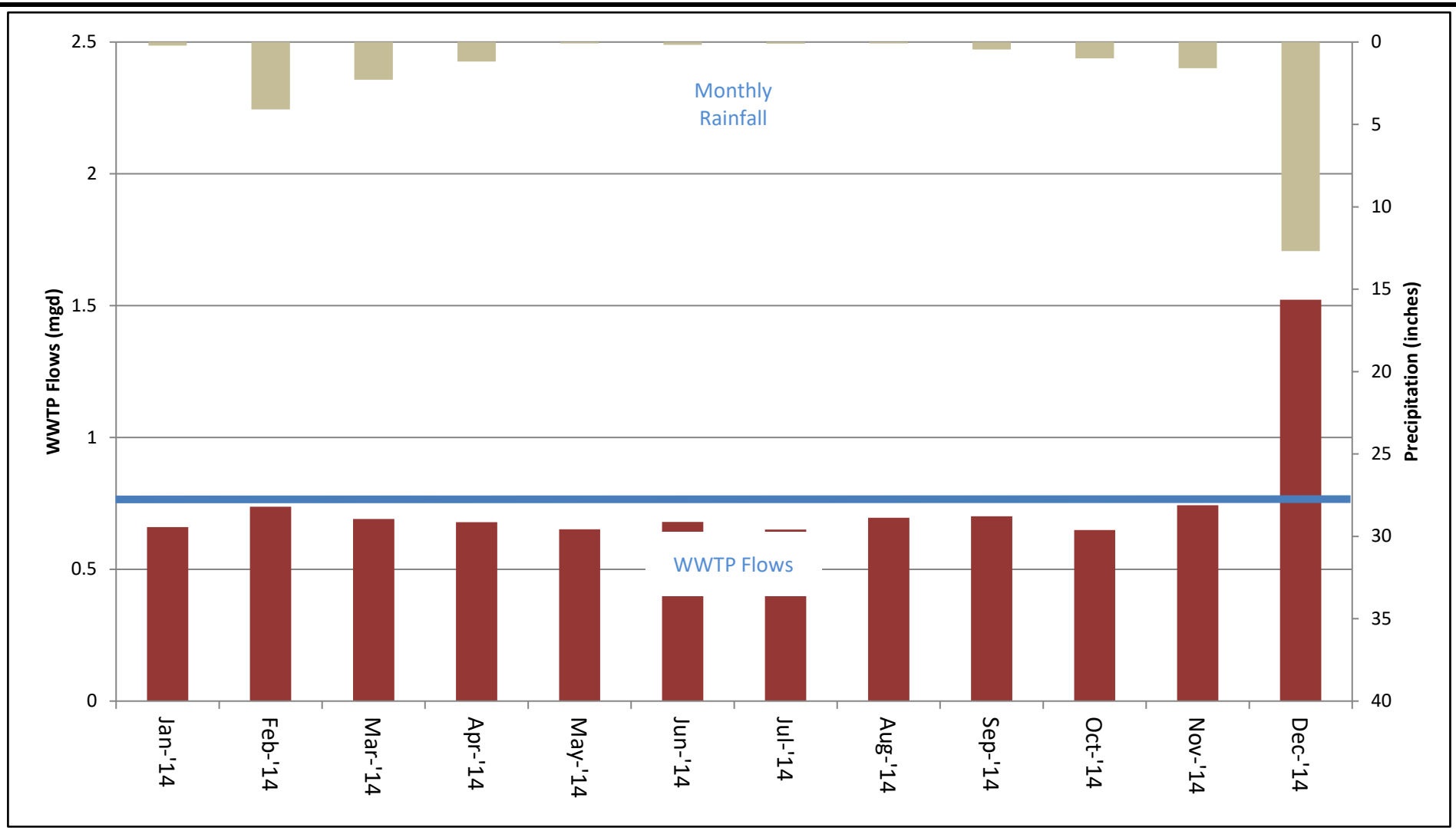
5.1 FLOWS AT THE SAM WWTP

The sewer flows collected and treated at the SAM WWTP vary monthly, daily, and hourly. While the dry weather flows are influenced by customer uses, the wet weather flows are influenced by the severity and length of storm events. **Figure 5.1** shows the monthly flows verses rainfall at the WWTP for 2014. December was the maximum month during 2014, with December being much higher than average due to the considerable amount of rain received that month.

Flow data influent to the SAM WWTP was obtained from SAM reporting data. The flow data covered a period from 2005 to 2014. From this data monthly, daily, and peak daily flows were determined as summarized on **Table 5.1**.

The following definitions are intended to document relevant terminologies shown on **Table 5.1**:

- **Average Annual Flow (AAF).** The average annual flow is the total annual flow, or average monthly flow, for a given year, expressed in daily or other time units. This flow includes the combined average of the average dry weather flow (ADWF) and average wet weather flow (AWWF).
- **Average Dry Weather Flow (ADWF).** The average dry weather flow occurs on a daily basis during the dry weather season, with no evident reaction to rainfall. The ADWF also includes the Base Wastewater Flow (BWF). The base wastewater flow is the average flow that is generated by residential, commercial, and industrial users. The flow pattern from these users varies depending on land use types.
- **Average Wet Weather Flow (AWWF).** This average wet weather flow occurs on a daily basis during the wet weather season. In addition to the flow components in the ADWF, the AWWF includes infiltration and inflow from storm rainfall events.
- **Maximum Month Dry Weather Flow (MMDWF).** This maximum month flow occurs during the dry weather season.
- **Maximum Month Wet Weather Flow (MMWWF).** This maximum month flow occurs during the wet weather season.



LEGEND

- Monthly Flows
- Rainfall
- 2014 Average Flow

6/16/2016

AKEL ENGINEERING GROUP, INC.

Figure 5.1

2014 Wastewater Treament Plant Flows

Sewer System Master Plan
City of Half Moon Bay

Table 5.1 Historical Flow Data and Peaking Factors

Sewer System Master Plan

City of Half Moon Bay

Year	Population	Average Annual Flow			Seasonal Average		Maximum Month		Maximum Day		Peak Hour[3]		Rainfall	
		AAF	Per Capita Flow	Percentage Change	ADWF	AWWF	MMDWF	MMWWF	MDDWF	MDWWF	PDWF	PWWF	Wet Season	Total
Historical Flows														
		(MGD)	(gpcd)		(MGD)	(MGD)	(MGD)	(MGD)	(MGD)	(MGD)	(MGD)	(MGD)	(MGD)	(MGD)
2005	11,629	1.16	100		0.97	1.35	1.04	1.64	1.19	4.26	1.91	5.54	24.58	27.56
2006	11,493	1.16	101	0%	0.98	1.35	1.10	1.85	1.29	3.46	2.07	4.50	27.16	28.42
2007	11,408	0.91	79	-22%	0.92	0.89	0.98	0.99	1.12	1.67	1.79	2.17	12.27	14.66
2008	11,396	0.85	75	-6%	0.80	0.91	0.85	1.20	1.00	3.44	1.60	4.47	14.23	15.31
2009	11,403	0.78	69	-8%	0.74	0.82	0.80	1.11	0.91	2.19	1.46	2.84	5.82	9.62
2010	11,324	0.84	74	8%	0.73	0.95	0.78	1.09	0.99	2.84	1.58	3.69	24.75	28.58
2011	11,373	0.71	63	-15%	0.60	0.82	0.70	1.18	0.95	2.59	1.52	3.36	12.89	20.10
2012	11,478	0.87	76	22%	0.82	0.93	0.84	1.34	0.95	3.46	1.51	4.50	22.69	25.20
2013	11,643	0.70	60	-19%	0.67	0.74	0.70	0.86	1.01	1.15	1.62	1.50	4.36	6.35
2014	11,727	0.75	64	7%	0.67	0.84	0.70	1.52	0.81	4.03	1.30	5.23	22.04	23.90
Historical Peaking Factors (Applied to AAF)														
2005		1.00			0.84	1.16	0.89	1.41	1.03	3.67	1.64	4.77		
2006		1.00			0.84	1.16	0.94	1.59	1.11	2.97	1.78	3.87		
2007		1.00			1.02	0.98	1.09	1.10	1.23	1.84	1.97	2.39		
2008		1.00			0.93	1.07	0.99	1.40	1.17	4.02	1.87	5.23		
2009		1.00			0.95	1.05	1.02	1.42	1.17	2.79	1.87	3.63		
2010		1.00			0.87	1.13	0.92	1.30	1.18	3.38	1.88	4.39		
2011		1.00			0.85	1.15	0.98	1.66	1.33	3.63	2.14	4.72		
2012		1.00			0.93	1.07	0.96	1.54	1.08	3.97	1.73	5.16		
2013		1.00			0.95	1.05	1.00	1.22	1.44	1.64	2.30	2.13		
2014		1.00			0.89	1.11	0.93	2.02	1.08	5.33	1.72	6.93		
Peaking Factor Analysis and Recommendations														
10-Year Average			76		0.91	1.09	0.97	1.47	1.18	3.33	1.89	4.32		
10-Year Maximum			101		1.02	1.16	1.09	2.02	1.44	5.33	2.30	6.93		
5-Year Maximum			76		0.95	1.15	1.00	2.02	1.44	5.33	2.30	6.93		
Last Year			64		0.89	1.11	0.93	2.02	1.08	5.33	1.72	6.93		
Recommended Factor			76		**0.90**	**1.15**	**0.98**	**1.50**	**1.25**	**4.00**	**2.10**	**6.40**		

Notes:

1. Flow component definitions are as follows:
   - AAF - Average Annual Flow (annual flow, expressed in daily or other time units)
   - ADWF - Average Dry Weather Flow (average flow that occurs on a daily basis during the dry weather season)
   - AWWF - Average Wet Weather Flow (average flow that occurs on a daily basis during the wet weather season)
   - MMDWF - Maximum Month Dry Weather Flow (maximum month flow during the dry weather season)
   - MMWWF - Maximum Month Wet Weather Flow (maximum month flow during the wet weather season)
   - MDDWF - Maximum Day Dry Weather Flow (highest measured daily flow that occurs during a dry weather season)
   - MDWWF - Maximum Day Wet Weather Flow (highest measured daily flow that occurs during a wet weather season)
   - PDWF - Peak Hour Dry Weather Flow (highest measured hourly flow that occurs during a dry weather flow)
   - PWWF - Peak Hour Wet Weather Flow (highest measured hourly flow that occurs during wet weather)
2. Source: Sewer Authority Mid-Coastline Board Meeting Agendas
3. Peak Hourly Flows were not reported in the meeting agendas. As such, a peaking factor of 1.6 times the MDDWF, and 1.3 times the MDWWF were applied to estimated peak hourly flows at the plant.

- **Maximum Day Dry Weather Flow (MDDWF).** This is the highest measured daily flow that occurs during a dry weather season.
- **Maximum Day Wet Weather Flow (MDWWF).** This is the highest measured daily flow that occurs during a wet weather season.
- **Peak Dry Weather Flow (PDWF).** This is the highest measured hourly flow that occurs during a dry weather season.
- **Peak Wet Weather Flow (PWWF).** This is the highest measured hourly flow that occurs during a wet weather season.

Table 5.1 shows the influent flows experienced at the SAM WWTP have decreased from 1.16 MGD in 2005 (AAF) to 0.75 MGD in 2014. The flows decreased by 35% from 2005 to 2014. Table 5.1 also indicates that, in the City of Half Moon Bay, the maximum day wet weather flows are significantly higher than the average annual flow. For comparison purposes, this table documents estimated peak hourly flows for dry weather and wet weather based on peaking factors observed in the flow monitoring period.

In addition to listing the 2005-2014 flows, and for comparison purposes, the table calculates the peaking factors applied to the corresponding average annual flows for each year. During wet weather flows, the maximum daily volume (MDWWF) experienced at the SAM WWTP for Half Moon Bay was 4.00 times higher than the average annual flow. The maximum hourly peak flow (PWWF) rate experienced at the SAM WWTP was 6.4 times higher than the average annual flow rate.

5.2 PROJECTED SERVICE AREA FLOWS

The projected sewer flows for the Half Moon Bay service area were developed based on population and the recent and Planned Unit Developments discussed in a previous chapter. Table 5.2 documents the projected future sanitary sewer flows based on population, and itemizes the portion of Half Moon Bay that flows to the Granada sewer system. Future average annual flows are expected to reach 1.10 MGD in 2036, with a corresponding population increase of 3,466 people for the service area.

To correlate the expected flow increase in the hydraulic model, the recent developments and Planned Unit Developments were itemized on Table 5.3 to determine the contributing population. New units and the land use are documented on the table, and the estimated new population is documented. The new population is documented at approximately 3,387 people, which closely correlates to the 2036 flows on Table 5.2.

Table 5.2 Projected Service Area Population and Wastewater Flows

Sewer System Master Plan
City of Half Moon Bay

Historical and Projected Population			Estimated Service Area Population Projections[1,2]				Estimated Service Area Wastewater Flows[3]			
Year	HMB Population	Percent Change	Granada (5% / 25%)	Cumulative Granada Population Increase	HMB (95% / 75%)	Cumulative HMB Population Increase	Average Annual (MGD)	Average Dry (MGD)	Peak Dry (MGD)	Peak Wet (MGD)
2015	12,051	2.8%	1,105	-	10,946	-	0.83	0.75	1.75	5.32
2016	12,232	1.5%	1,114	9	11,118	172	0.84	0.76	1.77	5.41
2017	12,415	1.5%	1,123	18	11,292	346	0.86	0.77	1.80	5.49
2018	12,601	1.5%	1,133	28	11,469	523	0.87	0.78	1.83	5.58
2019	12,790	1.5%	1,142	37	11,648	702	0.89	0.80	1.86	5.67
2020	12,982	1.5%	1,190	48	11,792	846	0.90	0.81	1.88	5.74
2021	13,177	1.5%	1,239	49	11,938	992	0.91	0.82	1.91	5.81
2022	13,375	1.5%	1,288	50	12,087	1,141	0.92	0.83	1.93	5.88
2023	13,576	1.5%	1,338	50	12,238	1,292	0.93	0.84	1.95	5.95
2024	13,780	1.5%	1,389	51	12,391	1,445	0.94	0.85	1.98	6.03
2025	13,987	1.5%	1,441	52	12,546	1,600	0.95	0.86	2.00	6.10
2026	14,197	1.5%	1,494	53	12,703	1,757	0.97	0.87	2.03	6.18
2027	14,410	1.5%	1,547	53	12,863	1,917	0.98	0.88	2.05	6.26
2028	14,626	1.5%	1,601	54	13,025	2,079	0.99	0.89	2.08	6.34
2029	14,845	1.5%	1,656	55	13,189	2,243	1.00	0.90	2.11	6.42
2030	15,068	1.5%	1,711	56	13,357	2,411	1.02	0.91	2.13	6.50
2031	15,294	1.5%	1,768	57	13,526	2,580	1.03	0.93	2.16	6.58
2032	15,523	1.5%	1,825	57	13,698	2,752	1.04	0.94	2.19	6.66
2033	15,756	1.5%	1,883	58	13,873	2,927	1.05	0.95	2.21	6.75
2034	15,992	1.5%	1,942	59	14,050	3,104	1.07	0.96	2.24	6.83
2035	16,232	1.5%	2,002	60	14,230	3,284	1.08	0.97	2.27	6.92
2036	16,475	1.5%	2,063	61	14,412	3,466	1.10	0.99	2.30	7.01

Notes:

1. Estimated service area population is based on an evaluation of existing land uses within the Service Area boundaries of Half Moon Bay and Granada.
2. Future service area population projections are based on a 1.5% growth rate and the following distribution:
   Imminent Growth (2015-2019): Imminent growth, based on the location of opportunity sites, is expected at 95% in Half Moon Bay and 5% in Granada.
   Future Growth (2020-2025): Future growth is expected at 75% in Half Moon Bay and 25% in Granada.
3. Estimated service area flows are based on historical flows and recommended peaking factors .

Table 5.3 Development Inventory and Estimated Population

Sewer System Master Plan
City of Half Moon Bay

No.	Development	Status[1]	Priority	Acres	Land Use	Number of New Units[2]	Estimated New Population[3]
1	Amesport Landing	Developed	n/a	11			
2	Andreotti (Cypress Cove)	Developed	n/a	23			
3	Carnoustie	Development in Progress	1	7	Residential	32	82
4	Carter Hill		2	56	Residential	50	127
5	Cassinelli & South Main Street		2	4	Mixed Use	35	89
6	Dykstra Ranch (Pacific Ridge)		1	114	Residential	63	161
7	Guerrero Ave	Not in HMB Service Area	n/a	5			
8	LC Smith		1	5	Commercial		
9	Matteucci	Partially Developed	2	14	Residential	2	5
10	Miramar Beach	Not in HMB Service Area	n/a	2			
11	North Wavecrest		3	389	Residential	600	1,530
12	Nurserymen's Exchange & Adjacent Property	Not in HMB Service Area	n/a	36			
13	Ocean Colony	Developed	n/a	264			
14	Pilarcitos West Urban Reserve			29	Residential	200	510
15	Podesta		1	35	Mixed Use	125	319
16	South Wavecrest	Developed	n/a	126			
17	Surf Beach/Dunes Beach	Not in HMB Service Area	n/a	45			
18	Venice Beach		2	39	Residential	75	191
19	West of Railroad		2	30	Residential	65	166
20	Half Moon Village		1	1	Residential	115	207
	Total			1,235		1,362	**3,387**

Notes:

1. Based on sewer system service area and current development status.
2. Residential units based on a combination of aerial photography review, HMB LCP Land Use Plan Documents, and Existing Conditions Chapter 3.
3. 2.55 people per Single Family Unit per Housing Element. Half Moon Village assumed at 1.8 people per unit for senior living.

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5.3 SEWER COLLECTION SYSTEM DESIGN FLOWS

The design flows most relevant in this capacity analysis of the sanitary sewer system, in addition to the Maximum Day Dry Weather Flows (MDDWF), include the peak dry weather flow (PDWF) and peak wet weather flow (PWWF).

- **Peak Dry Weather Flow (PDWF).** The PDWF is used for evaluating the capacity adequacy of the sanitary sewer system, and to meet the criteria set forth in the previous chapter.
- **Peak Wet Weather Flow (PWWF).** The PWWF is used for designing the capacity of the collection system, while allowing acceptable amounts of surcharging in the system. During PWWF a relaxed criteria was used compared to PDWFs. The hydraulic analysis allowed surcharging to occur during wet weather conditions with the hydraulic grade line (HGL) rising up to three feet below the manhole rim. If the HGL at any time was less than three feet from the manhole rim, the pipe was considered deficient.

The design flows used in evaluating the capacity adequacy of the sewer collection system are summarized on Table 5.4. The table lists the maximum day and peak hour flows for dry and wet weather conditions. PDWF and PWWF used for evaluating the existing collection system were estimated at 1.75 MGD and 5.32 MGD, respectively. The PDWF and PWWF used for designing the General Plan buildout system, including growth, were estimated at 2.30 MGD and 7.01 MGD, respectively.

Table 5.4 Design Flows

Sewer System Master Plan

City of Half Moon Bay

Description	Flow	
	Maximum Day (mgd)	Peak Hour (mgd)
Existing Condition Scenarios		
Existing DWF	1.23	1.75
Existing WWF (10Yr-24Hr Design Storm)	3.03	5.32
Ultimate Buildout Scenarios		
Buildout DWF	1.59	2.30
Buildout WWF (10Yr-24Hr Design Storms)	4.01	7.01

Notes:

1. Estimated flows for 2015 are used as flows for Existing Condition Scenarios

CHAPTER 6 - HYDRAULIC MODEL

This chapter describes the development and calibration of the City's sanitary sewer system hydraulic model. Hydraulic network analysis has become an effectively powerful tool in all aspects of sanitary sewer system planning, design, operation, management, and system reliability analysis. The City's hydraulic model was used to evaluate the capacity adequacy of the existing system and to plan its expansion to service anticipated future growth.

6.1 HYDRAULIC MODEL SOFTWARE SELECTION

The City's hydraulic model combines information on the physical characteristics of the sanitary sewer system (pipelines, lift stations) and operational characteristics (how they operate). The hydraulic model then performs calculations and solves series of equations to simulate flows in pipes, including backwater calculations for surcharged conditions.

There are several network analysis software products released by different manufacturers that can equally perform the hydraulic analysis satisfactorily. The selection of a particular software depends on user preferences, the sanitary sewer system's unique requirements, and the costs for purchasing and maintaining the software.

The hydraulic modeling software used for evaluating the capacity adequacy of the Half Moon Bay sewer system, InfoSWMM by Innovyze Inc., utilizes the fully dynamic St. Venant's equation which has a more accurate engine for simulating backwater and surcharge conditions, in addition to having the capability for simulating manifold force mains. The software also incorporates the use of the Manning Equation in other calculations including upstream pipe flow conditions. The St Venant's and Manning's equations are discussed in the System Performance and Design Criteria chapter.

6.2 HYDRAULIC MODEL DEVELOPMENT

Computer modeling requires the compilation of large numerical databases that enable data input into the model. Detailed physical aspects, such as pipe size, ground elevation, invert elevations, and pipe lengths contribute to the accuracy of the model.

Pipes and manholes represent the physical aspect of the system within the model. A manhole is a computer representation of a place where sewer flows may be allocated in the hydraulic system, while a pipe represents the conveyance aspect of the sewer flows. In addition, selected lift station capacity and design head settings were also included into the hydraulic model.

Developing the hydraulic model included system skeletonization, digitizing and quality control, developing pipe and manhole databases, and sewer loading allocation.

6.2.1 Skeletonization

Skeletonizing the model refers to the process where pipes not essential to the hydraulic analysis of the system are stripped from the model. Skeletonizing the model is useful in creating a system that accurately reflects the hydraulics of the pipes within the system. In addition, skeletonizing the model will reduce complexities of large models, which will also reduce the time of analysis while maintaining accuracy, but will also comply with the limitations imposed by the computer program.

In the City of Half Moon Bay's case, skeletonizing was not necessary, as the system was small and the previous hydraulic model was relatively complete. As such, the City maintained pipes are included in the hydraulic model, consistent with the previous modeling efforts.

6.2.2 Digitizing and Quality Control

SAM staff completed a GIS mapping project for the sanitary sewer system prior to initiating this master plan project. City staff also maintained CAD files that were used prior to the GIS system implementation. The GIS data, in conjunction with the previous hydraulic model, were the basis for developing the updated hydraulic model used in the capacity evaluation of the sewer system.

During the development of the new hydraulic model, the project team consisting of City staff and Akel Engineering staff implemented a thorough quality control program to resolve discrepancies.

6.2.3 Load Allocation

Load allocation consists of assigning sewer flow to the appropriate manholes (nodes) in the model. The goal is to distribute the loads throughout the model to best represent actual system response.

Allocating loads to manholes within the hydraulic model required multiple steps, incorporating the efficiency and capabilities of GIS and the hydraulic modeling software. Determining the existing sewer loads was accomplished by estimating wastewater flows based on a combination of the V&A Flow Monitoring Program and the City's existing land uses. Flows were ultimately balanced at the flow meters and at the SAM WWTP.

6.3 MODEL CALIBRATION

Calibration is intended to instill a level of confidence in the flows that are simulated, and it generally consists of comparing model predictions to the 2014 V&A flow monitoring program, and making necessary adjustments.

6.3.1 Calibration Plan

Calibration can be performed for steady state conditions, which model the peak hour flows, or for dynamic conditions (24 hours or more). Dynamic calibration consists of comparing the model predictions to diurnal operational changes in the wastewater flows. The City's hydraulic model was calibrated for dynamic conditions.

In sanitary sewer systems, and when using dynamic hydraulic modeling to evaluate the impact of wet weather flows, it is common practice to calibrate the model to the following three conditions:

- Peak dry weather flows.
- Peak wet weather flows from storm rainfall Event No. 1.
- Peak wet weather flows from storm rainfall Event No. 2.

After the model is calibrated to these conditions, it is benchmarked and used for evaluating the capacity adequacy of the sanitary sewer system, under dry and wet weather conditions.

6.3.2 2014 V&A Temporary Flow Monitoring Program

A temporary flow monitoring program was included in this project to validate the existing dry and wet weather flows from each sewer basin. The program consisted of installing 9 flow meters, for a period of 14 days, from February 26, 2014 to March 11, 2014. Villalobos and Associates (V&A) was retained to install the flow meters, monitor rainfall, and perform an Infiltration and Inflow analysis. V&A also included 4 permanent flow meters that are used by SAM. The selected flow monitoring sites are listed on **Table 6.1** and shown on **Figure 6.1**. The connectivity of the monitored basins is shown graphically on **Figure 6.2**.

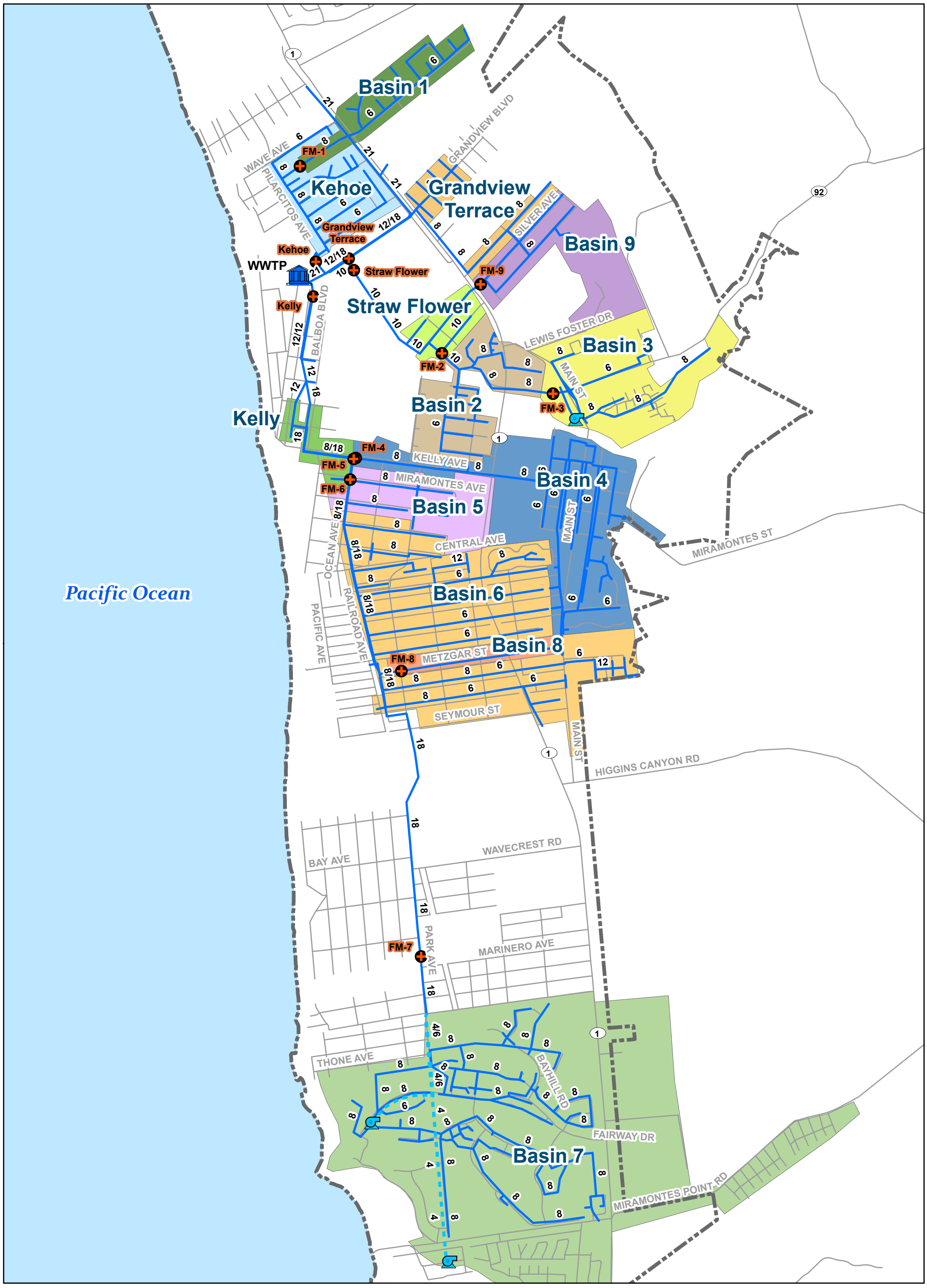
The 2014 V&A Flow Monitoring Program captured two rainfall events and included a summary report identifying areas of the City that were most affected by rain dependent infiltration and inflows. The two rainfall events experienced during the flow monitoring period varied in duration and intensity and provided an insight into the sewer system response to storm conditions.

Data from the V&A flow monitoring effort, as documented in the 2014 V&A Flow Monitoring Program, was used in this analysis to calibrate the computer hydraulic model to average dry weather flow (ADWF) and peak wet weather flow (PWWF) conditions. A summary of observed flows during the monitoring period is included on **Table 6.2**.

6.3.3 Dynamic Model Calibration

The calibration process was iterative as it involved calibrating each of the 13 flow monitored sites and for the three calibration conditions: 1) peak dry weather flow, 2) peak wet weather flows from storm rainfall Event No. 1, and 3) peak wet weather flows from storm rainfall Event No. 2.

The rain events of February 26, 2014 (Event No. 1) and February 28, 2014 (Event No. 2) were used to calibrate the hydraulic model to the wet weather conditions. The diurnal curves for each of the 13 sites were extracted from the 2014 V&A Flow Monitoring Program and the data was used for comparison purposes with the hydraulic model predictions. The calibration effort continued until it yielded acceptable results for each site and for each of the three calibration conditions. It should be noted that the V&A Flow Monitoring Results documented high levels of groundwater infiltration. Additionally, further analysis indicates that the system has a sustained



Legend

Flow Monitors

Metered Basins
- Basin 1
- Basin 2
- Basin 3
- Basin 4
- Basin 5
- Basin 6
- Basin 7
- Basin 8
- Basin 9
- Straw Flower
- Grandview Terrace
- Kehoe
- Kelly

Existing System
- WWTP
- Lift Stations
- Pipes
- Force Mains
- Streets
- City Limits
- Ocean

Updated: February 11, 2016

0 500 1,000 2,000 Feet

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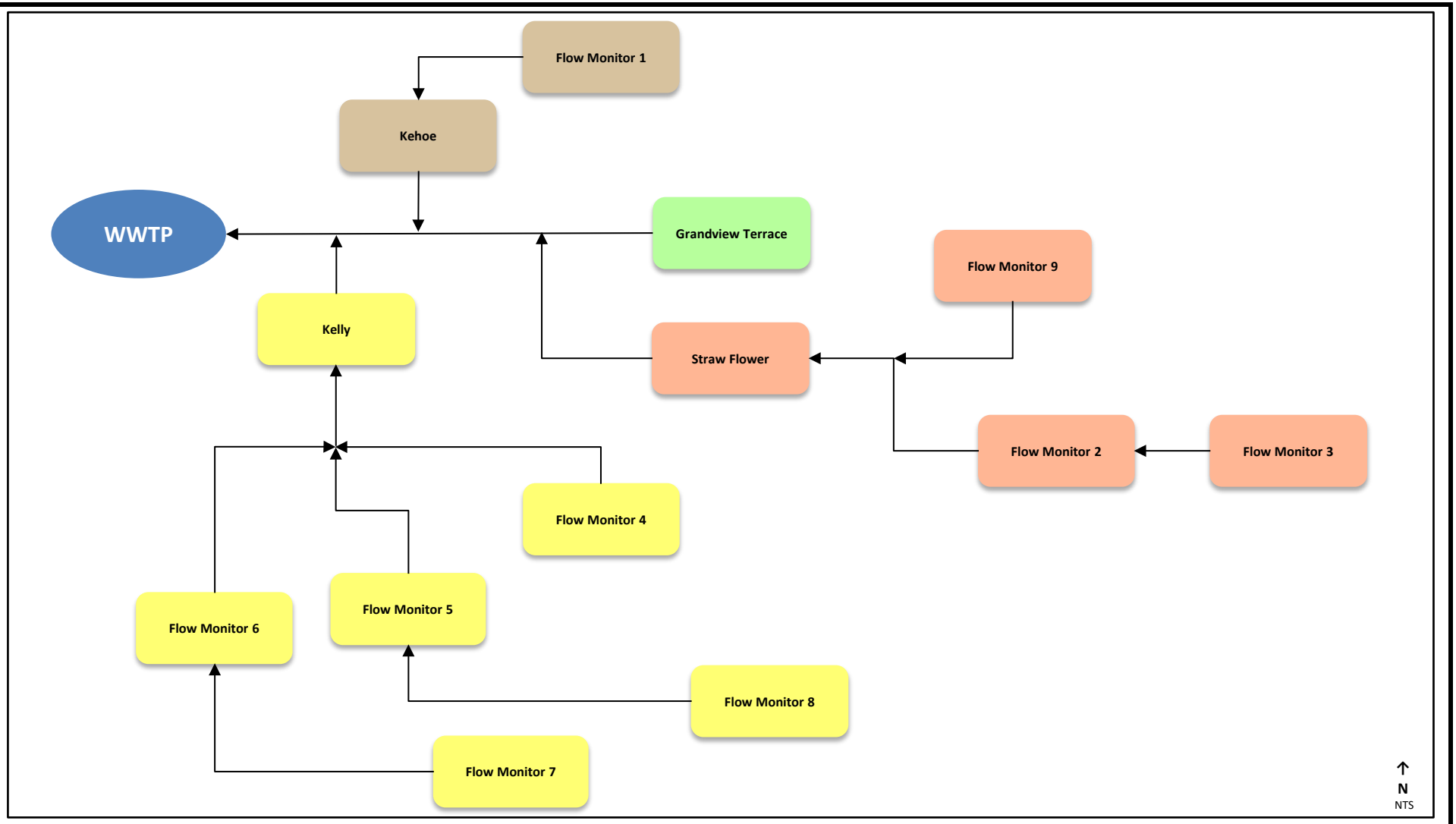
Figure 6.1
V&A Flow Monitoring Program

Sewer System Master Plan
City of Half Moon Bay



LEGEND

- Kehoe Tributary Area
- Grandview Terrace Tributary Area
- Straw Flower Tributary Area
- Kelly Tributary Area
- Wastewater Pipeline Connectivity

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Figure 6.2

Sewer Tributary Area and Pipeline Connectivity

Sewer System Master Plan
City of Half Moon Bay

Table 6.1 Flow Monitoring Sites

Sewer System Master Plan
City of Half Moon Bay

Site No.	GIS Manhole ID	Location	Metered Pipe Size	Monitoring Periods	
				From Date	To Date
Temporary Flow Monitors					
1	B3-034	Beach Ave north-east of Pilarcitos Ave	8 in	2/26/2014	3/11/2014
2	B3-132	South-west of Belleville Ave cul-de-sac	10 in	2/26/2014	3/11/2014
3	B2-147	San Mateo Rd east of Cabrillo Hwy	8 in	2/26/2014	3/11/2014
4	B2-088	Kelly Ave north-west of Potter Ave	8 in from East	2/26/2014	3/11/2014
5	B2-088	Kelly Ave north-west of Potter Ave	8 in from South	2/26/2014	3/11/2014
6	B1-154	Ocean Ave and Miramontes Ave	18 in	2/26/2014	3/11/2014
7	B1-128	Wavecrest Rd and University Ave	18 in	2/26/2014	3/11/2014
8	B1-040	1st Ave between Metzgar St and Poplar St	6 in	2/26/2014	3/11/2014
9	B3-125	Silver Ave north-east of Cabrillo Hwy	8 in	2/26/2014	3/11/2014
Permanent Flow Monitors					
Kehoe	B3-073	Located within Wastewater Treatment Facility	8 in	2/26/2014	3/4/2014
Grandview Terrace	B3-116	Located near Wastewater Treatment Facility	12 in	2/26/2014	3/4/2014
Straw Flower	B3-142	Located near Wastewater Treatment Facility	10 in	2/26/2014	3/4/2014
Kelly	B3-149	Located within Wastewater Treatment Facility	12 in	2/26/2014	3/4/2014

Table 6.2 Flow Monitoring Summary

Sewer System Master Plan

City of Half Moon Bay

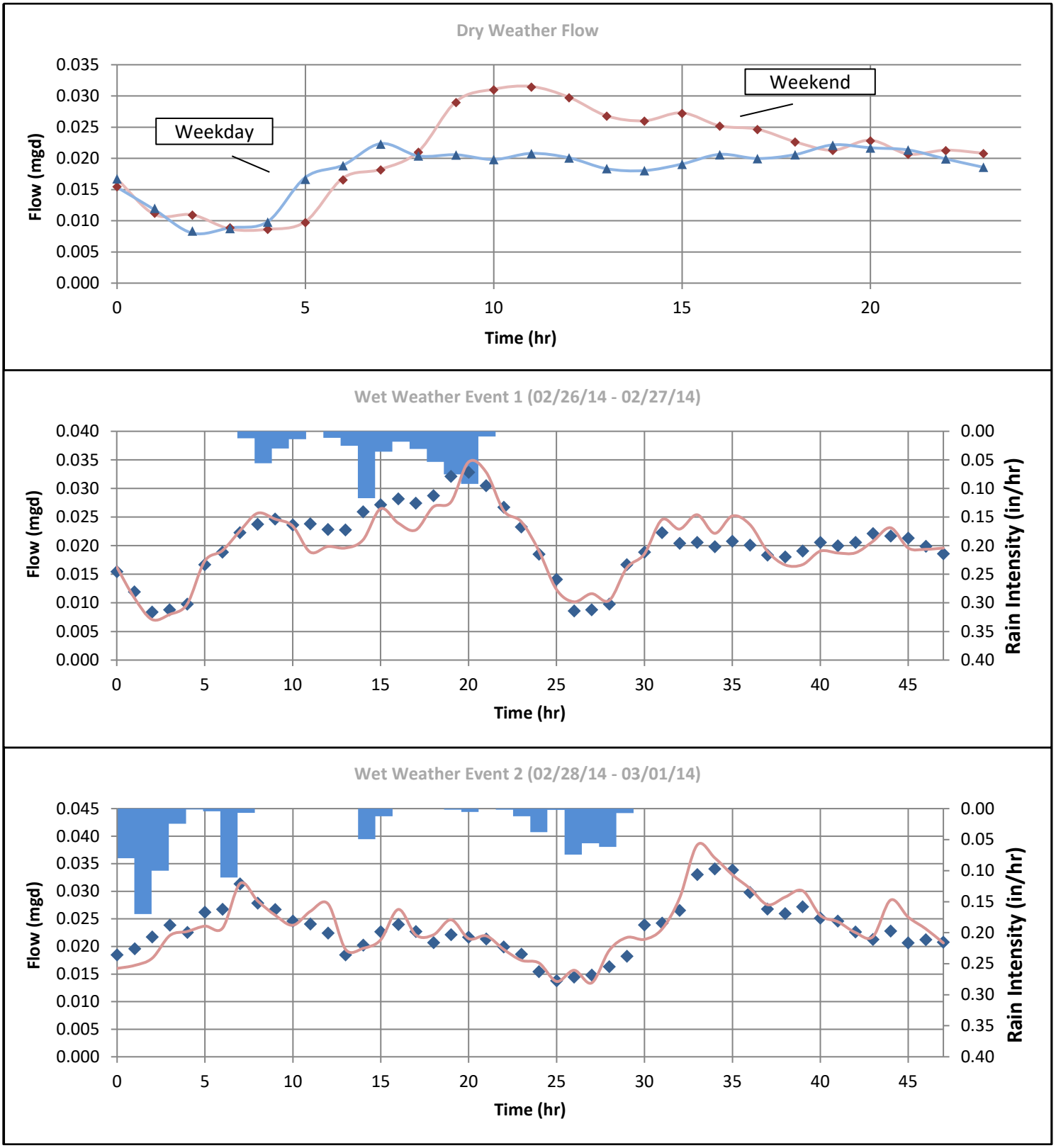
Flow Monitor ID	Average Day		Peak Hour	
	Dry Weather **ADWF** (gpm)	Wet Weather **AWWF** (gpm)	Dry Weather **PDWF** (gpm)	Wet Weather **PWWF** (gpm)
Temporary Flow Monitors				
1	14	16	18	69
2	97	100	145	210
3	22	31	40	70
4	50	62	83	104
5	17	24	28	91
6	203	297	309	502
7	134	160	195	262
8	4	14	7	24
9	57	55	77	104
Permanent Flow Monitors				
Kehoe	50	63	79	108
Grandview Terrace	24	27	40	60
Straw Flower	159	173	225	261
Kelly	296	390	397	775

response from groundwater infiltration during periods of consecutive rainfall events. As such, the modeled baseflow for wet weather evaluation was adjusted to account for the groundwater infiltration effects. This adjustment varied depending on location, and consistent with the V&A Flow Monitoring program.

The calibration results for each flow monitoring site are documented in **Appendix C**. These results indicate the calibration effort yielded reasonable comparisons between the flow monitoring data and the hydraulic model predictions at the 13 sites. Representative extracts from **Appendix C** are shown on **Figures 6.3** and **6.4**. After each of the calibration processes were completed, the hydraulic model was benchmarked for further analysis and evaluation. A summary of the calibration results is included on **Table 6.3** for the temporary monitors, and **Table 6.4** for the permanent monitors.

6.3.4 Use of the Calibrated Model

The calibrated hydraulic model was used as an established benchmark in the capacity evaluation of the existing sanitary sewer system. The model was also used to identify improvements necessary for mitigating existing system deficiencies and for accommodating future growth. The hydraulic model is a valuable investment that will continue to prove its worth to the City as future planning issues or other operational conditions surface. It is recommended that the model be maintained and updated with new construction projects to preserve its integrity.



LEGEND

- Rain Event
- Hydraulic Model
- V&A Flow Monitoring
- V&A Flow Monitoring

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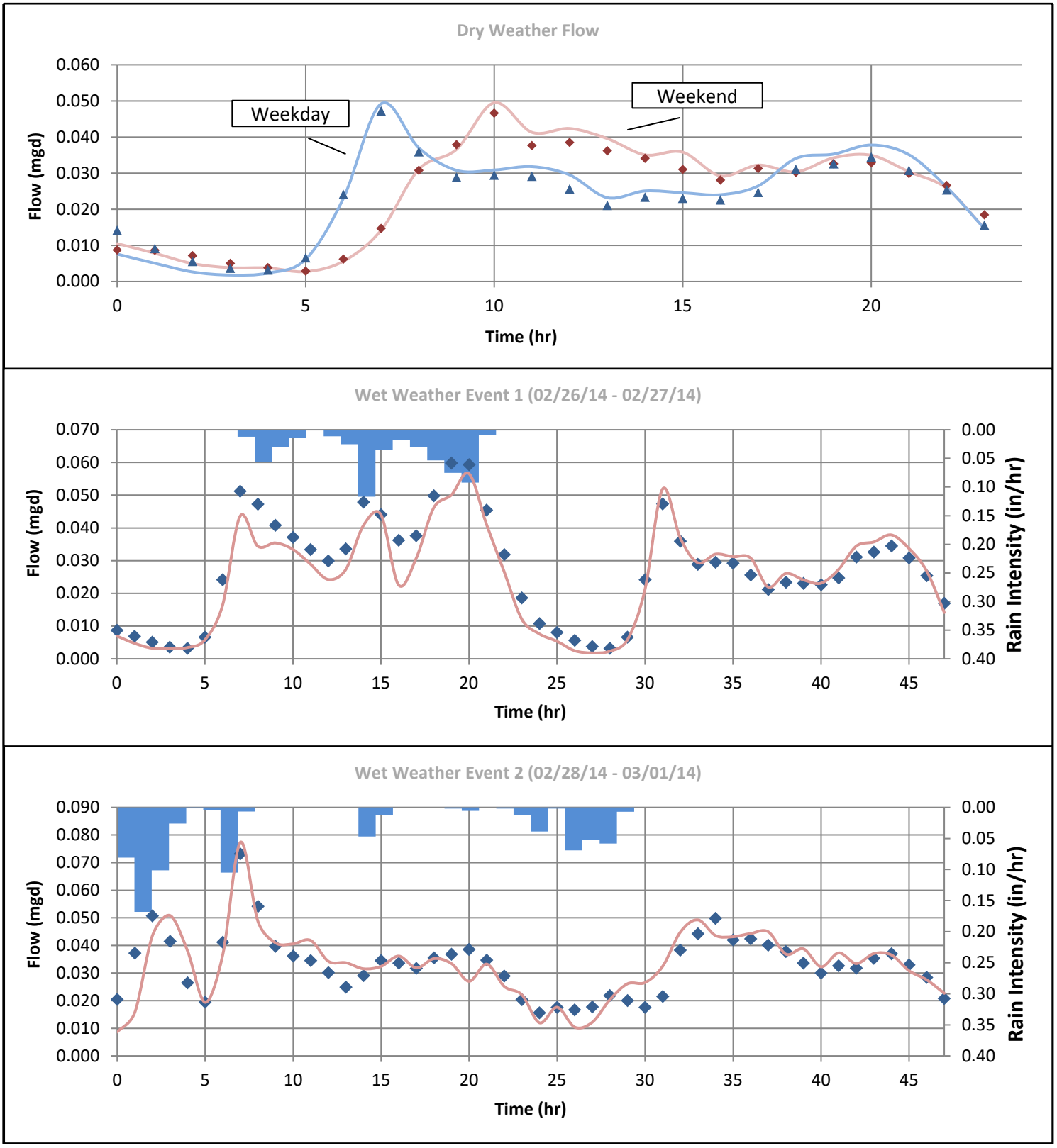
Figure 6.3
Flow Monitor 1
410 Beach Ave.
Sewer System Master Plan
City of Half Moon Bay



LEGEND

- Rain Event
- Hydraulic Model
- V&A Flow Monitoring
- V&A Flow Monitoring

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Figure 6.4

Flow Monitor 5

Kelly Ave. Entrance of Ocean View Driving Range (middle of street)

Sewer System Master Plan

City of Half Moon Bay

Table 6.3 Calibration Results Summary (Temporary Flow Monitors)

Sewer System Master Plan
City of Half Moon Bay

	Meter 1			Meter 2			Meter 3			Meter 4			Meter 5		
	Flow Monitored (MGD)	Model (MGD)	Percent Difference (%)	Flow Monitored (MGD)	Model (MGD)	Percent Difference (%)	Flow Monitored (MGD)	Model (MGD)	Percent Difference (%)	Flow Monitored (MGD)	Model (MGD)	Percent Difference (%)	Flow Monitored (MGD)	Model (MGD)	Percent Difference (%)
Dry Period (Weekday)															
Minimum	0.008	0.008	4%	0.020	0.020	0%	0.007	0.006	-5%	0.016	0.015	-4%	0.002	0.003	80%
Maximum	0.022	0.022	0%	0.196	0.194	-1%	0.046	0.047	2%	0.107	0.108	1%	0.049	0.047	-4%
Average	0.018	0.018	0%	0.131	0.130	0%	0.032	0.032	0%	0.073	0.073	1%	0.024	0.023	-3%
Dry Period (Weekend)															
Minimum	0.009	0.009	0%	0.030	0.029	-5%	0.006	0.006	-2%	0.012	0.013	10%	0.003	0.003	6%
Maximum	0.032	0.031	0%	0.244	0.251	3%	0.072	0.070	-3%	0.131	0.129	-1%	0.049	0.047	-6%
Average	0.021	0.021	-1%	0.149	0.144	-3%	0.032	0.031	-3%	0.072	0.073	1%	0.025	0.024	-3%
Wet Period (Event 1)															
Minimum	0.007	0.008	18%	0.025	0.020	-21%	0.014	0.006	-54%	0.019	0.015	-21%	0.002	0.003	76%
Maximum	0.035	0.033	-5%	0.302	0.248	-18%	0.081	0.079	-2%	0.135	0.138	2%	0.057	0.060	6%
Average	0.020	0.020	1%	0.136	0.140	3%	0.041	0.039	-4%	0.080	0.081	1%	0.025	0.027	7%
Wet Period (Event 2)															
Minimum	0.013	0.014	3%	0.038	0.052	36%	0.017	0.011	-32%	0.034	0.031	-10%	0.009	0.013	54%
Maximum	0.038	0.034	-11%	0.247	0.256	3%	0.101	0.081	-20%	0.137	0.142	4%	0.077	0.073	-5%
Average	0.024	0.023	-3%	0.142	0.154	9%	0.044	0.043	0%	0.089	0.085	-4%	0.033	0.032	-3%

	Meter 6			Meter 7			Meter 8			Meter 9		
	Flow Monitored (MGD)	Model (MGD)	Percent Difference (%)	Flow Monitored (MGD)	Model (MGD)	Percent Difference (%)	Flow Monitored (MGD)	Model (MGD)	Percent Difference (%)	Flow Monitored (MGD)	Model (MGD)	Percent Difference (%)
Dry Period (Weekday)												
Minimum	0.070	0.086	22%	0.0616	0.0537	-13%	0.0046	0.0032	-30%	0.0362	0.0372	3%
Maximum	0.447	0.435	-2%	0.2658	0.2761	4%	0.0105	0.0105	0%	0.1235	0.1230	0%
Average	0.271	0.278	3%	0.1820	0.1784	-2%	0.0068	0.0067	-1%	0.0795	0.0798	0%
Dry Period (Weekend)												
Minimum	0.076	0.072	-4%	0.0621	0.0646	4%	0.0028	0.0029	3%	0.0372	0.0379	2%
Maximum	0.542	0.539	-1%	0.3248	0.3243	0%	0.0093	0.0091	-1%	0.1379	0.1361	-1%
Average	0.313	0.313	0%	0.2052	0.2028	-1%	0.0061	0.0061	1%	0.0860	0.0856	0%
Wet Period (Event 1)												
Minimum	0.085	0.078	-8%	0.0486	0.0485	0%	0.0022	0.0046	112%	0.0199	0.0372	87%
Maximum	0.560	0.552	-1%	0.3106	0.3085	-1%	0.0250	0.0256	2%	0.1394	0.1383	-1%
Average	0.329	0.313	-5%	0.2019	0.1917	-5%	0.0106	0.0108	1%	0.0757	0.0836	10%
Wet Period (Event 2)												
Minimum	0.181	0.159	-12%	0.0846	0.0891	5%	0.0034	0.0032	-7%	0.0217	0.0491	126%
Maximum	0.722	0.677	-6%	0.3780	0.3410	-10%	0.0351	0.0343	-2%	0.1332	0.1433	8%
Average	0.424	0.421	-1%	0.2285	0.2102	-8%	0.0199	0.0218	9%	0.0787	0.0888	13%

Table 6.4 Calibration Results Summary (Permanent Flow Monitors)

Sewer System Master Plan

City of Half Moon Bay

	Kehoe			Grandview Terrace			Straw Flower			Kelly		
	Flow Monitored (MGD)	Model (MGD)	Percent Difference (%)	Flow Monitored (MGD)	Model (MGD)	Percent Difference (%)	Flow Monitored (MGD)	Model (MGD)	Percent Difference (%)	Flow Monitored (MGD)	Model (MGD)	Percent Difference (%)
Dry Period (Weekday)												
Minimum	0.0198	0.0230	16%	0.0137	0.0134	-2%	0.0601	0.0639	6%	0.1639	0.1160	-29%
Maximum	0.0994	0.0968	-3%	0.0648	0.0649	0%	0.3227	0.3210	-1%	0.5680	0.5416	-5%
Average	0.0607	0.0617	2%	0.0377	0.0366	-3%	0.2202	0.2195	0%	0.4170	0.3859	-7%
Dry Period (Weekend)												
Minimum	0.0209	0.0247	18%	0.0172	0.0161	-7%	0.0604	0.0744	23%	0.1767	0.1010	-43%
Maximum	0.1508	0.1430	-5%	0.0557	0.0566	2%	0.3836	0.3851	0%	0.6013	0.6692	11%
Average	0.0843	0.0834	-1%	0.0320	0.0327	2%	0.2369	0.2405	2%	0.4344	0.4135	-5%
Wet Period (Event 1)												
Minimum	0.0198	0.0230	16%	0.0143	0.0134	-6%	0.0620	0.0639	3%	0.1768	0.1130	-36%
Maximum	0.1291	0.1294	0%	0.0774	0.0705	-9%	0.3759	0.4030	7%	0.5930	0.7055	19%
Average	0.0707	0.0704	0%	0.0397	0.0398	0%	0.2263	0.2348	4%	0.4421	0.4254	-4%
Wet Period (Event 2)												
Minimum	0.0372	0.0390	5%	0.0183	0.0220	21%	0.0694	0.1135	63%	0.2746	0.2352	-14%
Maximum	0.1529	0.1531	0%	0.0864	0.0751	-13%	0.3577	0.3977	11%	1.1164	0.7847	-30%
Average	0.0895	0.0874	-2%	0.0379	0.0396	4%	0.2465	0.2553	4%	0.5575	0.5289	-5%

CHAPTER 7 - EVALUATION AND PROPOSED IMPROVEMENTS

This section presents a summary of the sanitary sewer system capacity evaluation during peak dry weather flows and peak wet weather flows for the existing and buildout flows. The recommended sanitary sewer system improvements needed to mitigate capacity deficiencies are also discussed in this chapter.

7.1 OVERVIEW

The calibrated hydraulic model was used for evaluating the sanitary sewer system for capacity deficiencies during peak dry weather flows (PDWF) and peak wet weather flows (PWWF). Since the hydraulic model was calibrated for dynamic modeling, the analysis duration was established at 24 hours for most analyses.

The criteria used for evaluating the capacity adequacy of the wastewater collection system facilities (gravity mains, force mains, and lift stations) were discussed and summarized in the System Performance and Design Criteria chapter.

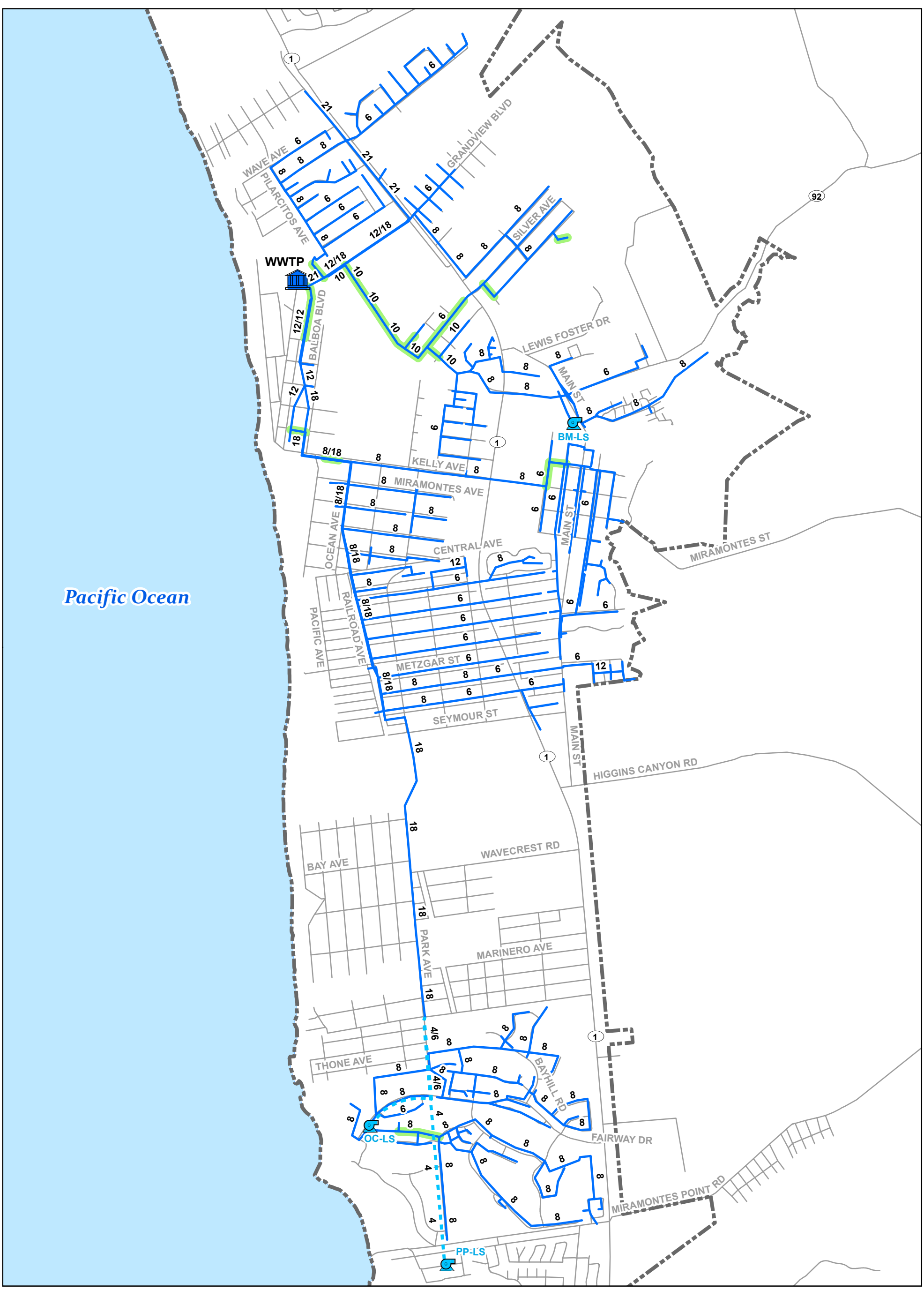
7.2 EXISTING SEWER SYSTEM CAPACITY EVALUATION

The system performance and design criteria, summarized on **Table 3.1**, were thus used as a basis to judge the adequacy of capacity for the existing sanitary sewer system. The design flows simulated in the hydraulic model for existing conditions were summarized on **Table 5.4** and are as follows:

- Existing PDWF = 1.75 MGD
- Existing PWWF = 5.32 MGD

During the peak dry weather simulations, the maximum allowable pipe d/D criteria of 0.75 for new pipes was used. For existing pipes, the criteria was relaxed to allow a maximum d/D ratio of 0.90 to prevent unnecessary pipe replacements. During the peak wet weather simulations, capacity deficiencies included pipe segments with a hydraulic grade line (HGL) that rises within three feet of the manhole rim elevation.

In general, the hydraulic model indicated that the sanitary sewer system exhibited acceptable performance to service the existing customers during peak dry weather flows (**Figure 7.1**). However, several areas were noted as deficient during the peak wet weather flow analysis (**Figure 7.2**).



Legend

Pipe d/D

- d/D > 0.90
- d/D 0.75 - 0.90
- d/D 0.50 - 0.75

Existing System

- WWTP
- Lift Stations
- Pipes
- Force Mains
- Streets
- City Limits
- Ocean

Updated: February 10, 2016

0 500 1,000 2,000 Feet

N W GIS E S

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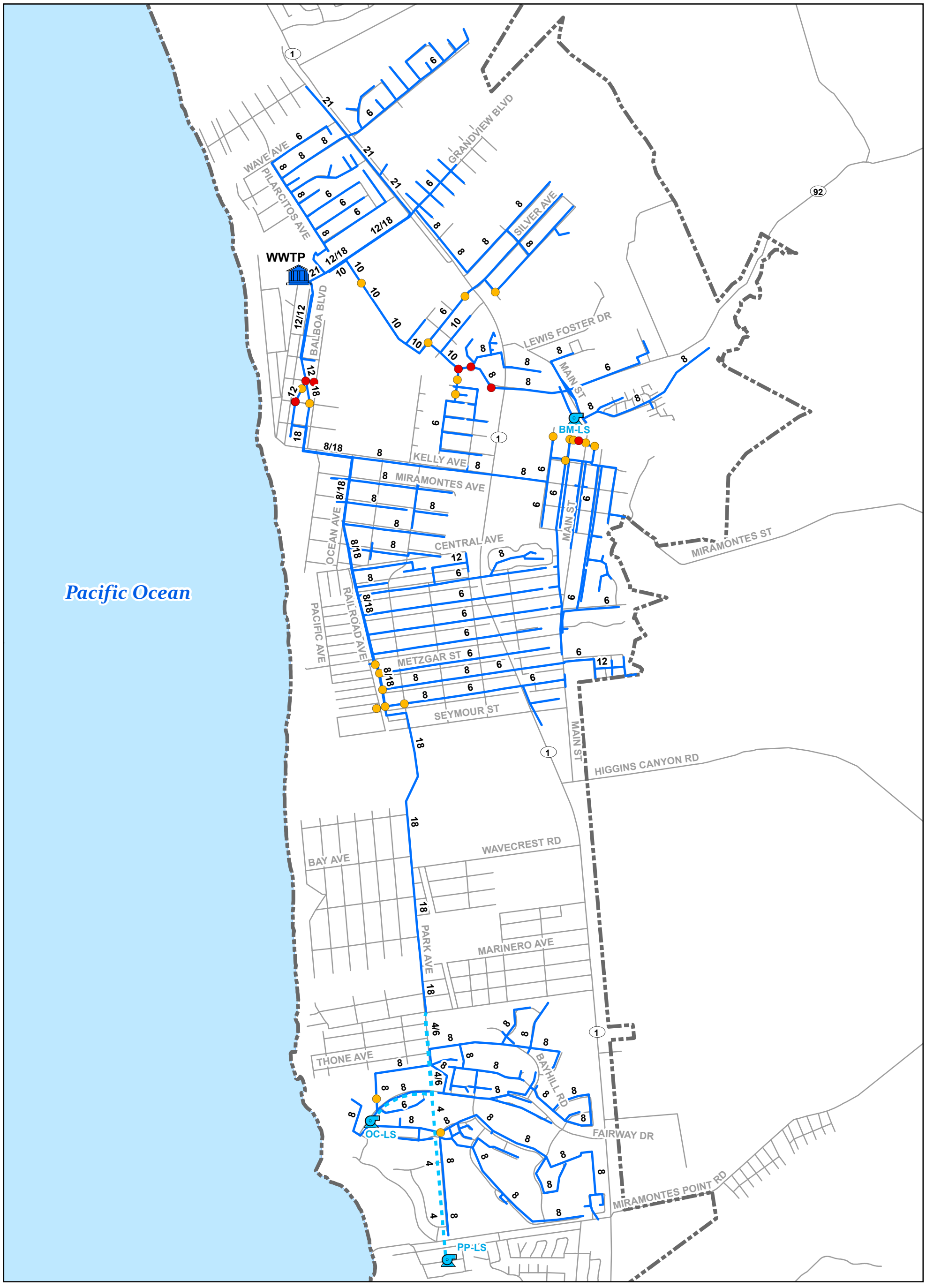
Figure 7.1
Existing System Analysis for PDWF

Sewer System Master Plan
City of Half Moon Bay



Legend

- Flooding Manholes
- Surcharging Manholes ≤ 3 ft

Existing System

- WWTP
- Lift Stations
- Pipes
- Force Mains
- Streets
- City Limits
- Ocean

Updated: February 9, 2016

0 500 1,000 2,000 Feet

N W GIS E S

Figure 7.2
Existing System Analysis for PWWF

Sewer System Master Plan
City of Half Moon Bay

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7.2.1 Existing Peak Dry Weather Flows Capacity Evaluation

The design DWF for Half Moon Bay at the SAM Wastewater Treatment Plant for this scenario was estimated at 1.75 MGD, as documented on **Table 5.4**. In general, the hydraulic model indicated that the sanitary sewer system exhibited acceptable performance to service the existing customers during peak dry weather flows.

The hydraulic model does not predict pipe deficiencies in the existing system during peak dry weather flows (**Figure 7.1**). Several pipe reaches are over half full, and identified and highlighted on this figure.

7.2.2 Existing Peak Wet Weather Flows Capacity Evaluation

The design PWWF at the SAM Wastewater Treatment Plant for this scenario was estimated at 5.32 MGD, as documented on **Table 5.4**. The hydraulic model indicated that, during PWWF, portions of the system did not perform adequately in maintaining a hydraulic grade line below the City's criteria.

The hydraulic model does predict pipe deficiencies in the existing system during peak wet weather flows (**Figure 7.2**). Deficient pipe reaches that exceed the maximum allowable capacity criteria (3 feet below manhole rim) were identified and highlighted on this figure, including:

- Wetlands near the Straw Flower meter. This area experiences surcharging conditions exceeding the City criteria.
- Shopping Center west of State Route 1 and State Route 92 intersection. This area experiences surcharging conditions exceeding the City criteria, and the hydraulic model indicates flooding may occur during wet weather conditions.
- Grand Boulevard and Quart Avenue. This area experiences surcharging conditions exceeding the City criteria.
- Balboa Boulevard, north of Kelly Avenue. This area experiences surcharging conditions exceeding the City criteria, and the hydraulic model indicates flooding may occur during wet weather conditions.
- Railroad Avenue from Metzgar Street to Magnolia Street. This area experiences surcharging conditions exceeding the City criteria.
- Fairway Drive and Fairway Place. This area experiences surcharging conditions exceeding the City criteria.
- Cypress Point Road and Inverness Road. This area experiences surcharging conditions exceeding the City criteria.

7.3 FUTURE SYSTEM CAPACITY IMPROVEMENTS

The system performance and design criteria summarized on Table 3.1, was used as a basis to judge the capacity adequacy of the existing sanitary sewer system and to size potential future improvements needed to service future growth. The design flows simulated in the hydraulic model for the general plan buildout were summarized on Table 5.4 and are as follows:

- Buildout PDWF = 2.30 MGD
- Buildout PWWF = 7.01 MGD

During the peak dry weather simulations, the maximum allowable pipe d/D criteria of 0.75 for new pipes was used. For existing pipes, the criteria was relaxed to allow a maximum d/D ratio of 0.90 (full pipe capacity) to prevent unnecessary pipe replacements. During the peak wet weather simulations, capacity deficiencies included pipe segments with a hydraulic grade line (HGL) that rises within three feet of the manhole rim elevation.

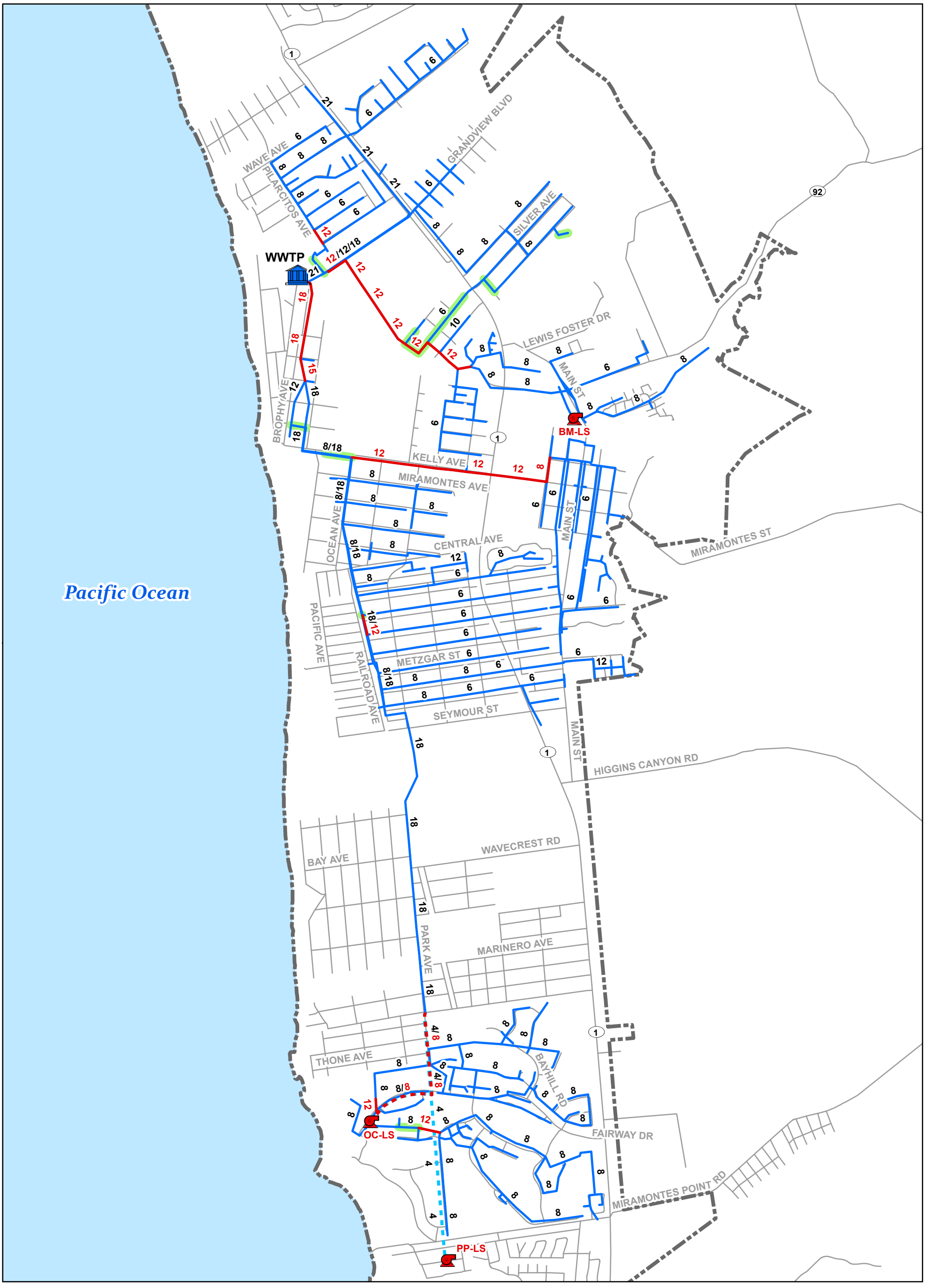
The proposed capacity improvements for the sanitary sewer system are listed on Table 7.1. This table lists the master plan assigned improvement number (e.g., P-1), along with other relevant information including alignment description, pipe size, pipe length, and a suggested phasing. The proposed improvements are shown with pipe sizes and the PDWF analysis on Figure 7.3. Similarly, Figure 7.4 documents the proposed improvements with the PWWF analysis.

7.4 LIFT STATIONS AND FORCE MAINS CAPACITY EVALUATION

The lift stations evaluated in this master plan include the Bell Moon Lift Station, the Pelican Point Lift Station, and the Ocean Colony Lift Station. It should be noted that the City recently completed a Sanitary Sewer pump Station Evaluation in October of 2015. This report documents the physical condition, capacity evaluation, and force main evaluation for each of the lift stations. This master plan relied on the lift station capacities from the 2015 evaluation, and updated the evaluation to include the results from the calibrated hydraulic model. The capacity evaluation for each lift station is documented on Table 7.2.

The capacity evaluation for the lift stations was performed in accordance with the City criteria, which dictates that the firm capacity of the lift station be considered. The firm capacity is documented as the total lift station capacity less a standby pump equal to the largest pump out of service. The analysis results are documented as follows:

- **Bell Moon Lift Station.** The Bell Moon Lift Station has a firm capacity of 5 gallons per minute (gpm), and a total capacity of 30 gpm. The existing and future peak wet weather flow (PWWF) is documented at approximately 17 gpm, which exceeds the firm capacity by approximately 12 gpm.
- **Ocean Colony Lift Station.** The Ocean Colony Lift Station has a firm capacity of 500 gpm, and a total capacity of 1,000 gpm. The existing PWWF is documented at



Legend

Proposed Improvements
- Lift Stations
- Pipes
- Force Mains

Pipe d/D
- d/D > 0.90
- d/D 0.75 - 0.90
- d/D 0.50 - 0.75

Existing System
- WWTP
- Pipes
- Force Mains
- Streets
- City Limits
- Ocean

Updated: February 10, 2016

0 500 1,000 2,000 Feet

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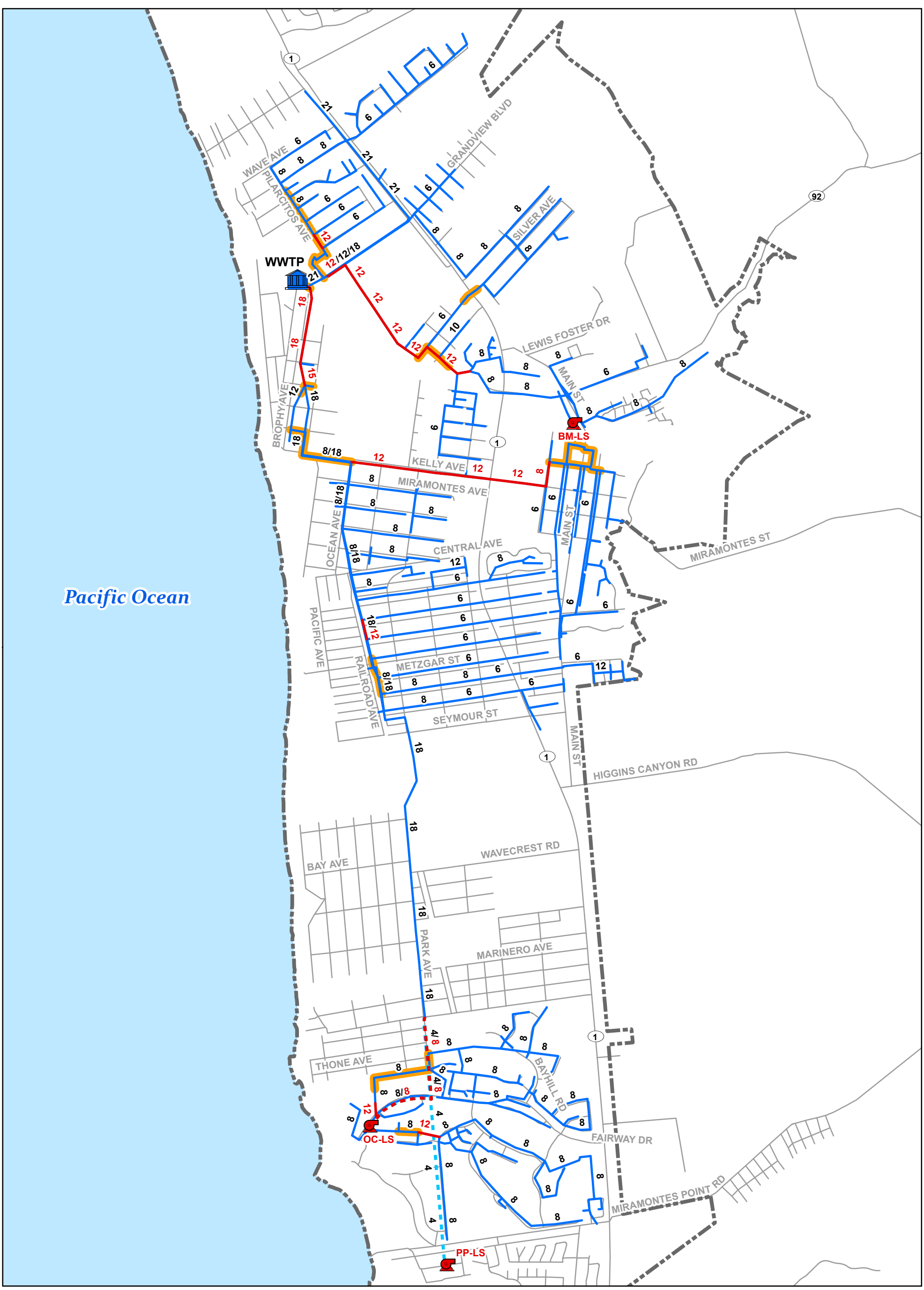
Figure 7.3
Future System Analysis for PDWF

Sewer System Master Plan
City of Half Moon Bay



Legend

Proposed Improvements
- Lift Stations
- Pipes
- Force Mains

Pipe d/D
- d/D ≥1.0

- Surcharging Manholes < 3 ft

Existing System
- WWTP
- Pipes
- Force Mains
- Streets
- City Limits
- Ocean

Updated: February 11, 2016

0 500 1,000 2,000 Feet

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Figure 7.4
Future System Analysis for PWWF

Sewer System Master Plan
City of Half Moon Bay

Table 7.1 Proposed Capacity Improvements

Sewer System Master Plan

City of Half Moon Bay

Improvement No.	Type of Improvement	Alignment	Limits	Existing Pipe Diameter (in)	Parallel, Replace, or New	New Pipe Diameter (in)	Pipe Length (ft)
Pipe Improvements							
P-1	Pipe	Pilarcitos Ave	From St. John Ave to Kehoe Ave	8	Replace	12	275
P-2	Pipe	Bev Cunha's Country Rd	From 350 ft northwest of WWTP gate on Bev Cunha's Country Rd to WWTP gate	10	Replace	12	350
P-3	Pipe	ROW (Ag Land)	From Grand Blvd cul-de-sac, through ag land, to approx. 350 ft north-west of WWTP gate on Bev Cunha's Country Rd	10	Replace	12	1,900
P-4	Pipe	Grand Blvd	From approx. 250 ft north-east of Grand Blvd cul-de-sac to Grand Blvd cul-de-sac	10	Replace	12	225
P-5	Pipe	ROW (Vacant Land)	From south side of safeway building to approx. 250 ft north-east of Grand Blvd cul-de-sac	10	Replace	12	650
P-6	Pipe	ROW (Parking Lot)	From terminus of San Mateo Rd in Safeway parking lot to south side of safeway building	8	Replace	10	275
P-7	Pipe	ROW (Vacant Land)	From approx. 1,100 ft north of Half Moon Bay Coastal Trail terminus on Kelly Ave and Balboa Blvd to approx. 275 ft in north-west direction	12	Replace	15	275
P-8	Pipe	ROW (Vacant Land)	From end of pipe P-7 to north-east to the WWTP	12	Replace	18	1,300
P-9	Pipe	Kelly Ave	From Church St to approx. 300 ft north-west of Potter Ave	8	Replace	12	3,200
P-10	Pipe	Church St	From Mill St to Kelly Ave	6	Replace	8	375
P-11	Pipe	Railroad Ave	From approx. 125 ft north-west of Spruce St to approx 125 ft north-west of Filbert St	8	Replace	12	325
P-12	Pipe	ROW (Golf Course)	From golf course to approx 275 ft south-west of intersection of Fairway Dr and Fairway Pl	8	Replace	12	225
P-13	Pipe	ROW (Golf Course)	From approx. 100 ft north-east of intersection of Cypress Point Rd and Inverness Rd to north-west on the golf course	8	Replace	12	375

Notes:

1. Lift station capacity improvements in this master plan are consistent with improvements recommended in the Sanitary Sewer Pump Station Report by Schaaf and Wheeler Consulting Engineers, dated 10/29/2015.

Table 7.2 Lift Station Evaluation

Sewer System Master Plan
City of Half Moon Bay

Lift Station Name	Duty Pumps[1]	Standby Pumps[1]	Firm Capacity (gpm)	Total Capacity (gpm)	Existing PWWF	Excess/ Deficiency[2] (gpm)	Future PWWF (gpm)	Excess/ Deficiency[2] (gpm)
Bell Moon	1 @ 5 gpm	1 @ 30 gpm	5	35	17	- 12	17	- 12
Ocean Colony	1 @ 500 gpm	1 @ 500 gpm	500	1,000	936	- 436	945	- 445
Pelican Point	1 @ 225 gpm	1 @ 225 gpm	225	450	314	- 89	314	- 89

Notes:

1. Source: Sanitary Sewer Pump Station Evaluation prepared by Schaaf and Wheeler Consulting Civil Engineers
2. Excess/Deficiency in capacity results from comparing respective PWWF with Firm Capacity of the pump station.

- approximately 936 gpm, with a slight increase in flows to 945 gpm at future PWWF conditions. This exceeds the lift station firm capacity by approximately 436 gpm and 445 gpm respectively.
- **Pelican Point Lift Station.** The Pelican Point Lift Station has a firm capacity of 225 gallons per minute (gpm), and a total capacity of 450 gpm. The existing and future peak wet weather flow (PWWF) is documented at approximately 314 gpm, which exceeds the firm capacity by approximately 89 gpm.

CHAPTER 8 – CAPITAL IMPROVEMENT PROGRAM

This chapter provides a summary of the recommended sewer system improvements to mitigate existing capacity deficiencies and for accommodating anticipated future growth. The chapter also presents the cost criteria and methodologies for developing the capital improvement program. Finally, a capacity allocation analysis, usually used for cost sharing purposes, is also included.

8.1 COST ESTIMATE ACCURACY

Cost estimates presented in the Capital Improvement Program (CIP) were prepared for general master planning purposes and, where relevant, for further project evaluation. Final costs of a project will depend on several factors including the final project scope, costs of labor and material, and market conditions during construction.

The Association for the Advancement of Cost Engineering (AACE International), formerly known as the American Association of Cost Engineers has defined three classifications of assessing project costs. These classifications are presented in order of increasing accuracy: Order of Magnitude, Budget, and Definitive.

- **Order of Magnitude Estimate.** This classification is also known as an "original estimate", "study estimate", or "preliminary estimate", and is generally intended for master plans and studies.

  This estimate is not supported with detailed engineering data about the specific project, and its accuracy is dependent on historical data and cost indexes. It is generally expected that this estimate would be accurate within -30 percent to +50 percent.

- **Budget Estimate.** This classification is also known as an "official estimate" and generally intended for predesign studies. This estimate is prepared to include flow sheets and equipment layouts and details. It is generally expected that this estimate would be accurate within -15 percent to +30 percent.

- **Definitive Estimate.** This classification is also known as a "final estimate" and prepared during the time of contract bidding. The data includes complete plot plans and elevations, equipment data sheets, and complete specifications. It is generally expected that this estimate would be accurate within -5 percent to + 15 percent.

Costs developed in this study should be considered "Order of Magnitude" and have an expected accuracy range of **-30 percent** and **+50 percent**.

8.2 COST ESTIMATE METHODOLOGY

Cost estimates presented in this chapter are opinions of probable construction and other relevant costs developed from several sources including: cost curves and Akel experience on other master planning projects. Where appropriate, costs were escalated to reflect the more current Engineering News Records (ENR) Construction Cost Index (CCI).

This section documents the unit costs used in developing the opinion of probable construction costs, the Construction Cost Index, the land acquisition costs, and markups to account for construction contingency and other project related costs.

8.2.1 Unit Costs

The unit cost estimates used in developing the Capital Improvement Program are summarized on Table 8.1. The unit costs are intended for developing the Order of Magnitude estimate, and do not account for site specific conditions, labor or material costs during the time of construction, final project scope, implementation schedule, detailed utility and topography surveys, investigation of alternative routings for pipes, and other various factors. These factors are assumed included in the contingencies applied to the final capital improvement cost.

The unit costs include:

- **Pipeline Unit Costs.** These costs vary by pipe sizes (up to 21 inches) and are based on the length of pipes, in feet.
- **Pump Station Costs.** These costs are based on a 2015 lift station report discussed in a previous chapter.

8.2.2 Construction Cost Index

Costs estimated in this study are adjusted utilizing the Engineering News Record (ENR) Construction Cost Index (CCI), which is widely used in the engineering and construction industries.

The costs in this Sewer System Master Plan were calculated using a 20-City national average ENR CCI of 10,092, reflecting a date of November of 2015.

8.2.3 Land Acquisition

Construction of pipelines is generally assumed to be within existing or future street right-of-ways, or already purchased right-of-ways lands. Most of the future flows assumed in this plan are related to infill development, or development anticipated to occur adjacent to existing infrastructure. As such, no land acquisition fees are anticipated in this study.

Table 8.1 Capital Improvement Unit Costs

Sewer System Master Plan
City of Half Moon Bay

Pipe Size (in)	Unit Costs[1] ($/Lineal Foot)
Gravity Pipes	
6	**$235**
8	**$241**
10	**$261**
12	**$267**
15	**$281**
18	**$303**
21	**$329**
Contingencies[2,3]	
Construction Costs: 20%	
Capital Improvement Costs: 25%	
Lift Stations[4,5]	
Varies	

Notes:

1. Unit Costs reflect an ENR 20-City Average CCI of 10092 (November 2015).
2. Estimated Construction Costs to account for unforseen events and unknown conditions.
3. Capital Improvement Costs to cover costs including: engineering design, project administration (developer and City staff), construction management and inspection, and legal costs.
4. Lift Station costs are taken from the Sanitary Sewer Pump Station Evaluation report prepared by Schaaf & Wheeler Consulting Engineers.
5. Total rehabilitation costs are included in the CIP from Table 15, Table 19, and Table 23 present in Sanitary Sewer Pump Station Evaluation report.

Construction Contingency Allowance

Knowledge about site-specific conditions for each proposed project is limited at the master planning stage; therefore construction contingencies were used. In the absence of bid tabulations, the estimated construction cost includes a **20 percent** contingency allowance to account for unforeseen events and unknown field conditions.

8.2.4 Project Related Costs

The capital improvement costs also account for project-related costs, comprising of engineering design, project administration (developer and City staff), construction management and inspection, and legal costs. In the absence of bid tabulations, the project related costs were estimated by applying an additional **25 percent** to the estimated construction costs.

8.3 CAPITAL IMPROVEMENT PROGRAM

The CIP costs for the projects identified in this master plan for mitigating existing system deficiencies and for serving anticipated future growth throughout the City are summarized on **Table 8.2**.

A numbering system was included in **Table 8.2** for ease of reference and for locating the improvements on corresponding figures. **Figure 8.1** graphically shows the locations, and reference numbers, for each proposed pipeline and lift station.

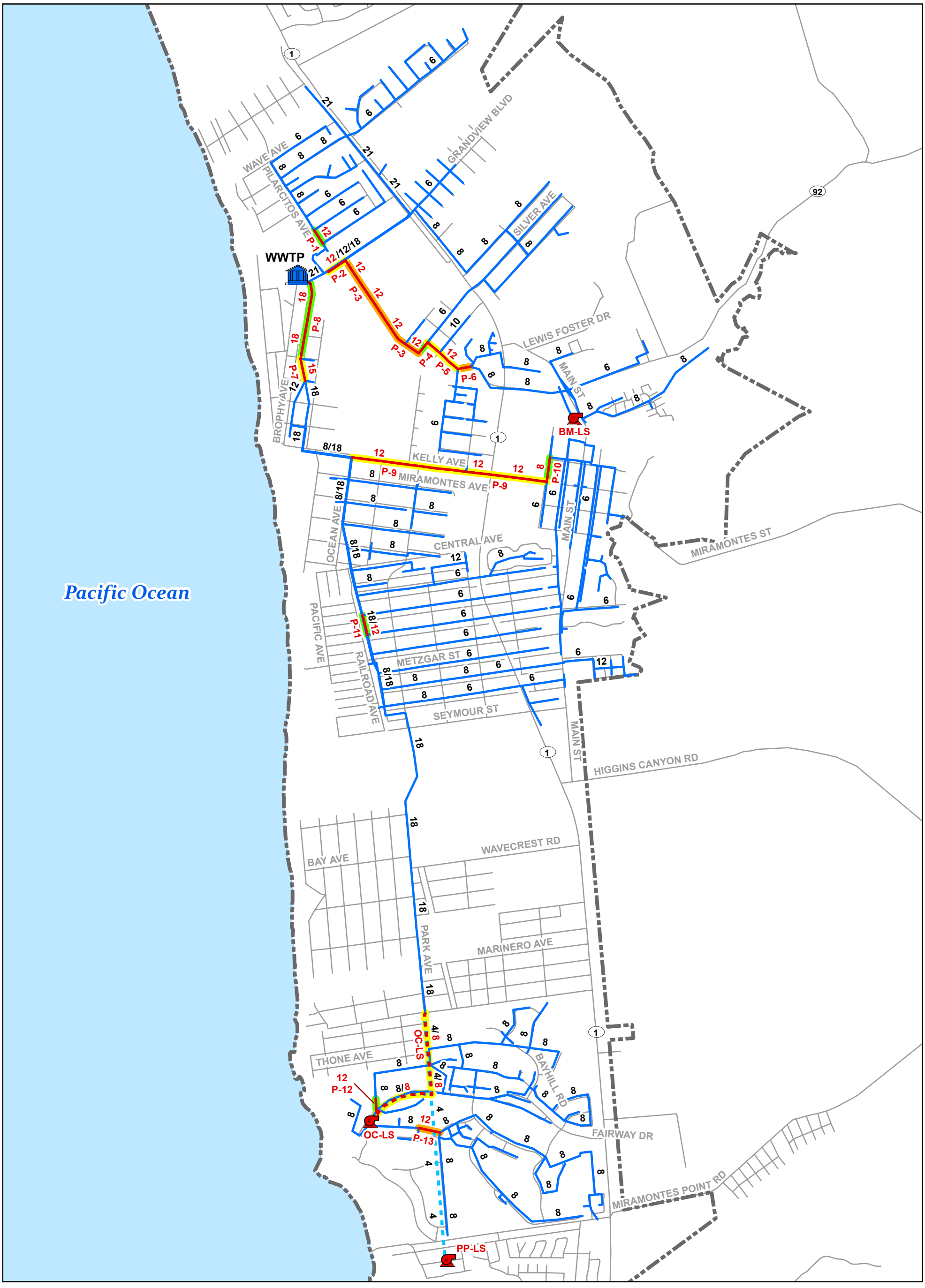
8.4 CAPACITY ALLOCATION ANALYSIS

In compliance with provisions of Assembly Bill AB 1600, the analysis differentiates between the proposed projects needs to service existing users and for those required to service anticipated future growth. The capacity allocation analysis, for the proposed improvements, was based on the average dry weather flows from existing customers compared to average dry weather flows from the buildout scenarios.

The capacity allocation analysis, for each improvement, is summarized on **Table 8.1**, listing the percent benefiting existing versus future users, and the corresponding capacity improvement cost for each.

8.5 CONSTRUCTION TRIGGERS

Phasing of improvements, where feasible, will delay premature construction of sewer collection facilities and optimize the use of existing facilities. The suggested triggers for the construction of the sewer system facilities listed in this master plan are preliminary and will be dictated by the timing of the anticipated developments. Construction triggers are expressed in single family dwelling units (DUs) and are estimated at approximately 196 gpd. In general, improvements are needed as soon as possible to mitigate existing deficiencies. Improvement P-1 can include approximately 75 new dwelling units prior to construction.



Legend

Proposed Improvements

- Lift Stations
- Pipes
- Force Mains
- Pipe Improvement Segment
- Pipe Improvement Segment
- Pipe Improvement Segment

Existing System

- WWTP
- Pipes
- Force Mains
- Streets
- City Limits
- Ocean

Updated: March 8, 2016

0 500 1,000 2,000 Feet

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Figure 8.1
Capacity Improvement Projects

Sewer System Master Plan
City of Half Moon Bay

Table 8.2 Capital Improvement Program

Sewer System Master Plan
City of Half Moon Bay

Improvement No.	Type of Improvement	Alignment	Limits	Pipeline Improvements			Infrastructure Costs				Baseline Constr. Costs[1]	Estimated Constr. Costs[1,3]	Land Acquisition Costs	Capital Improv. Costs[1,4]	Suggested Cost Allocation		Cost Allocation	
				Existing Diameter	Deficiency Type	New/Suggested Rehabilitation	Diameter	Length	Unit Cost[1]	Infr. Cost[2]					Existing Users	Future Users	Existing Users	Future Users
				(in)			(in)	(ft)	($/unit)	($)	($)	($)	($)	($)	(%)	(%)	($)	($)
Pipe Improvements																		
P-1	Pipe	Pilarcitos Ave	From St. John Ave to Kehoe Ave	8	Hydraulic	Replace	12	275	267	73,436	73,436	88,124		110,155	81%	19%	89,225	20,929
P-2	Pipe	Bev Cunha's Country Rd	From 350 ft northwest of WWTP gate on Bev Cunha's Country Rd to WWTP gate	10	Hydraulic	Replace	12	350	267	93,464	93,464	112,157		140,197	88%	12%	123,373	16,824
P-3	Pipe	ROW (Ag Land)	From Grand Blvd cul-de-sac, through ag land, to approx. 350 ft north-west of WWTP gate on Bev Cunha's Country Rd	10	Hydraulic	Replace	12	1,900	267	507,378	507,378	608,854		761,068	88%	12%	669,740	91,328
P-4	Pipe	Grand Blvd	From approx. 250 ft north-east of Grand Blvd cul-de-sac to Grand Blvd cul-de-sac	10	Hydraulic	Replace	12	225	267	60,084	60,084	72,101		90,126	88%	12%	79,311	10,815
P-5	Pipe	ROW (Vacant Land)	From south side of Safeway building to approx. 250 ft north-east of Grand Blvd cul-de-sac	10	Hydraulic	Replace	12	650	267	173,577	173,577	208,292		260,365	82%	18%	213,500	46,866
P-6	Pipe	ROW (Parking Lot)	From terminus of San Mateo Rd in Safeway parking lot to south side of Safeway building	8	Hydraulic	Replace	10	275	261	71,738	71,738	86,086		107,608	76%	24%	81,782	25,826
P-7	Pipe	ROW (Vacant Land)	From approx. 1,100 ft north of Half Moon Bay Coastal Trail terminus on Kelly Ave and Balboa Blvd to approx. 275 ft in north-west direction	12	Hydraulic	Replace	15	275	281	77,257	77,257	92,708		115,885	75%	25%	86,914	28,971
P-8	Pipe	ROW (Vacant Land)	From end of pipe P-7 to north-east to the WWTP	12	Hydraulic	Replace	18	1,300	303	393,307	393,307	471,968		589,961	73%	27%	430,671	159,289
P-9	Pipe	Kelly Ave	From Church St to approx. 300 ft north-west of Potter Ave	8	Hydraulic	Replace	12	3,200	267	854,532	854,532	1,025,439		1,281,798	100%	0%	1,281,798	0
P-10	Pipe	Church St	From Mill St to Kelly Ave	6	Hydraulic	Replace	8	375	241	90,300	90,300	108,360		135,450	100%	0%	135,450	0
P-11	Pipe	Railroad Ave	From approx. 125 ft north-west of Spruce St to approx 125 ft north-west of Filbert St	8	Hydraulic	Replace	12	325	267	86,788	86,788	104,146		130,183	56%	44%	72,902	57,280
P-12	Pipe	ROW (Golf Course)	From golf course to approx 275 ft south-west of intersection of Fairway Dr and Fairway Pl	8	Hydraulic	Replace	12	225	267	60,084	60,084	72,101		90,126	100%	0%	90,126	0
P-13	Pipe	ROW (Golf Course)	From approx. 100 ft north-east of intersection of Cypress Point Rd and Inverness Rd to north-west on the golf course	8	Hydraulic	Replace	12	375	267	100,140	100,140	120,169		150,211	100%	0%	150,211	0
									Subtotal - Sewer System Improvements		**2,642,088**	**3,170,506**	**0**	**3,963,132**			**3,505,003**	**458,129**
Lift Station Improvements[5]																		
BM-LS	Lift Station		Bell Moon Lift Staton						Varies	632,000	632,000			632,000			632,000	
OC-LS[6,7]	Lift Station		Ocean Colony Lift Station						Varies	1,600,000	1,600,000			1,600,000			1,600,000	
PP-LS	Lift Station		Pelican Point Lift Station						Varies	744,000	744,000			744,000			744,000	
									Subtotal - Lift Station Improvements		**2,976,000**	**-**	**-**	**2,976,000**			**2,976,000**	
													Total Improvement Cost	**6,939,132**			**6,481,003**	**458,129**

Notes:

1. Unit Costs reflect an ENR 20-City Average CCI of 10092 (November 2015).
2. Lift Station Infrastructure Costs are total rehabilitation costs extracted from Sanitary Sewer Pump Station Evaluation report prepared by Schaaf and Wheeler Consulting Engineers, including the 60%contingency presented in the report tables.
3. Baseline construction costs plus 20% to account for unforeseen events and unknown conditions.
4. Estimated construction cost plus 25% to cover other costs including: engineering design, project administration (developer and City staff), construction management and inspection, and legal costs.
5. Total rehabilitation costs for lift stations are extracted from Table 15, Table 19, and Table 23 of Sanitation Sewer Pump Station Evaluation report.
6. Sanitary Sewer Pump Station Report by Schaaf and Wheeler Consulting Engineers refers to a Sewer System Study dated March 2, 2010 and recommends upgrading the 6-inch force main conveying flow from Ocean Colony Lift Station to an 8-inch. For future peak wet weather flow, the hydraulic model indicates maximum velocity increasing to 10 ft/s in the 6-inch force main. It is recommended that the force main be upgraded to an 8-inch, which indicates the maximum velocity to be approximately 6 ft/sec.
7. The cost for upgrading the 6-inch force main to an 8-inch force main is included in the lump sum cost of rehabilitation of Ocean Colony Lift Station as provided in the 2015 report by Schaaf and Wheeler Consulting Engineers.

APPENDICES

APPENDIX A

Extracts from Existing Conditions Report

CURRENT DEVELOPMENT PROJECTS

Of the nine active development projects in Half Moon Bay (identified as under review or approved but not yet constructed), seven are for the development of single-family residences. Of these, two are large-scale projects involving the development of existing PUDs. The 63-unit Pacific Ridge project will develop the PUD site identified in the LUP as Dykstra Ranch. The 32-unit Carnoustie project will fill in a PUD site between Wavecrest and Ocean Colony. Of the two non-single-family residential projects, one is the Half Moon Village multi-family senior development currently under construction on Main Street. The other involves the development of additional commercial and storage space at the James Ford auto dealership, as well as a proposed subdivision map that would create eight R-2 lots at Main Street and Seymour south of the downtown area. Table 3-9 details current development projects that are under review, approved, and under construction. These sites are shown in Figure 3-5.

Table 3-9: Current Development Projects

#	*Description*	*Land Use*	*Gross Acres*	*Non-Residential Sq. Ft.*	*FAR*	*Dwelling Units (DU)*	*DU/ Acre*
1	Single Family Residence - CDP Application	Single Family Residential	0.16	N/A	N/A	1	6.1
2	Single Family Residence - Environmental Review (pre-CDP)	Single Family Residential	0.12	N/A	N/A	1	8.7
3	James Ford: Auto sales, rental, and storage; R-2 subdivision map (8 lots)	Commercial; Residential	5.04	1,250 (sales/rental) 38,880 (storage)	0.2	N/A	N/A
4	Single Family Residence - Environmental Review	Single Family Residential	0.19	N/A	N/A	1	5.4
5	Single Family Residence - Environmental Review	Single Family Residential	0.19	N/A	N/A	1	5.4
6	Single Family Residence - CDP Application	Single Family Residential	0.10	N/A	N/A	1	10.3
7	Pacific Ridge: 63 Single Family Units Approved	Single Family Residential	114.10	N/A	N/A	63	0.6
8	Carnoustie: 32 Single Family Units Approved (15 constructed, 17 to be constructed)	Single Family Residential	6.66	N/A	N/A	32	4.8
9	Half Moon Village: 115 Multi-Family Units Approved (45 permitted and constructed, 70 to be permitted in 2014)	Multi-Family Residential	1.11	N/A	N/A	115	104.1

Source: City of Half Moon Bay, 2014.

in a PUD site face a specific set of development challenges. As evidenced by Wavecrest, Venice Beach, and Surf/Dunes Beach, the number of unique owners of parcels with a given PUD site can be high. This can create complexities for the development of specific plans that would cover the entirety of each site, as owners may have difficulty reaching a consensus, and many owners may be unresponsive. Additionally, most of the PUDs are constrained by LUP policies that were designed to protect resources, control density, and provide for elements such as access and infrastructure. As the context of each PUD has changed since the policies were determined—whether in terms of partial development, ownership, surrounding land uses, anticipated growth, emerging hazards, habitat composition, or circulation priorities—the General Plan and LCP update process offers an opportunity to reevaluate the appropriateness of PUD-related policies, reiterating those with continued relevance and revising others to improve clarity or better reflect current conditions and standards. ~~most of these PUDs are constrained by development conditions posed in the LUP that were designed to protect resources and control density, but which may now be considered outdated.~~

Table 3-13: Planned Unit Developments[1]

PUD Name	*Acres*	*Number of Parcels*	*Number of Underutilized Parcels*	*Number of Vacant Parcels*	*Number of Owners (Vacant Parcels)[2]*
Amesport Landing	11	14	0	0	N/A
Andreotti (Cypress Cove)	23	145	6	2	2
Carnoustie	7	32	0	0	N/A
Carter Hill	56	10	2	4	2
Cassinelli & South Main Street	4	4	0	0	N/A
Dykstra Ranch (Pacific Ridge)[3]	114	26	0	0	N/A
Guerrero Ave	5	4	0	1	1
LC Smith	5	1	0	0	N/A
Matteucci	14	21	2	8	5
Miramar Beach	2	12	1	1	1
North Wavecrest	389	967	2	693	334
Nurserymen's Exchange & Adjacent Property	36	4	3	1	1
Ocean Colony	264	555	16	1	1
Pilarcitos West Urban Reserve[4]	29	72	4	56	40
Podesta	35	2	1	0	N/A
South Wavecrest	126	2	0	0	N/A
Surf Beach/Dunes Beach	45	174	6	148	412
Venice Beach	39	104	4	93	382
West of Railroad	30	150	0	137	802

Notes:

1 Rows shown in gray indicate PUDs where no opportunity sites are present.

2 This number may be higher than the actual number of unique owners due to variations in the transcription of owner names.

3 Though these parcels are currently vacant, development for this PUD has been approved.

4 Though zoned as PUD, these parcels have a LUP designation of Regional Public Recreation.

Source: San Mateo County Assessor's Office, 2014; City of Half Moon Bay, 2014; Dyett & Bhatia, 2014.

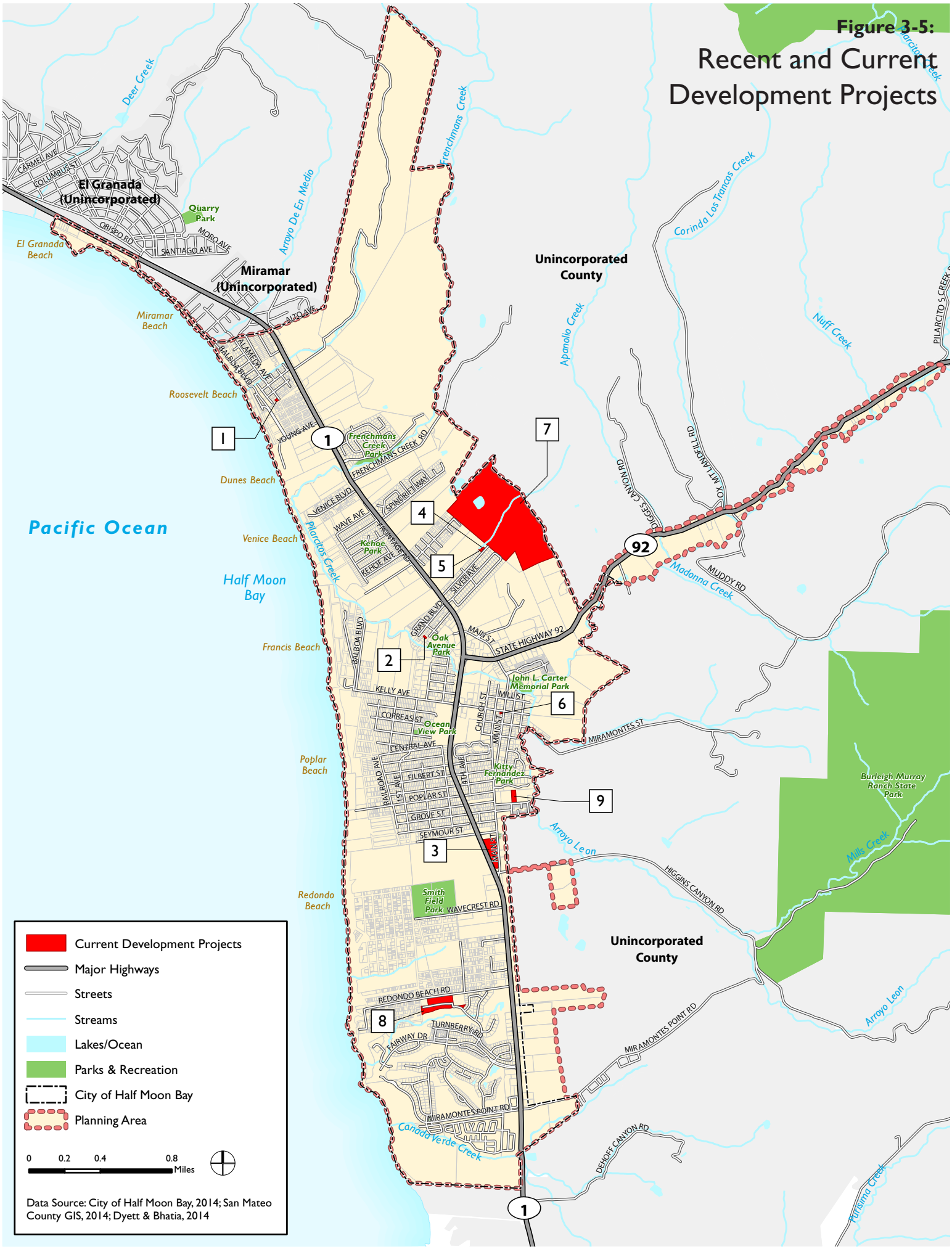
Figure 3-5:
Recent and Current Development Projects
El Granada (Unincorporated)
Miramar (Unincorporated)
Unincorporated County
Unincorporated County
Pacific Ocean
Half Moon Bay
El Granada Beach
Miramar Beach
Roosevelt Beach
Dunes Beach
Venice Beach
Francis Beach
Poplar Beach
Redondo Beach
Deer Creek
Arroyo De En Medio
Frenchmans Creek
Corinda Los Trancos Creek
Apanolio Creek
Nuff Creek
Pilarcitos Creek
Madonna Creek
Arroyo Leon
Mills Creek
Canada Verde Creek
Quarry Park
Frenchmans Creek Park
Kehoe Park
Oak Avenue Park
John L. Carter Memorial Park
Ocean View Park
Kitty Fernandez Park
Smith Field Park
Burleigh Murray Ranch State Park
CARMEL AVE
COLUMBUS ST
OBISPO RD
MORO AVE
SANTIAGO AVE
ALTO AVE
ALAMEDA AVE
BALBOA BLVD
YOUNG AVE
FRENCHMANS CREEK RD
VENICE BLVD
SPINDRIFT WAY
WAVE AVE
PACIFIC COAST HWY
KEHOE AVE
SILVER AVE
GRAND BLVD
MAIN ST
STATE HIGHWAY 92
BALBOA BLVD
KELLY AVE
CORREAS ST
CENTRAL AVE
RAILROAD AVE
1ST AVE
FILBERT ST
POPLAR ST
GROVE ST
SEYMOUR ST
4TH AVE
CHURCH ST
MILL ST
MIRAMONTES ST
WAVECREST RD
REDONDO BEACH RD
TURNBERRY RD
FAIRWAY DR
MIRAMONTES POINT RD
DEHOFF CANYON RD
HIGGINS CANYON RD
MUDDY RD
BOX MTL LANDFILL RD
1
2
3
4
5
6
7
8
9
92
Current Development Projects
Major Highways
Streets
Streams
Lakes/Ocean
Parks & Recreation
City of Half Moon Bay
Planning Area
0 0.2 0.4 0.8 Miles
Data Source: City of Half Moon Bay, 2014; San Mateo County GIS, 2014; Dyett & Bhatia, 2014

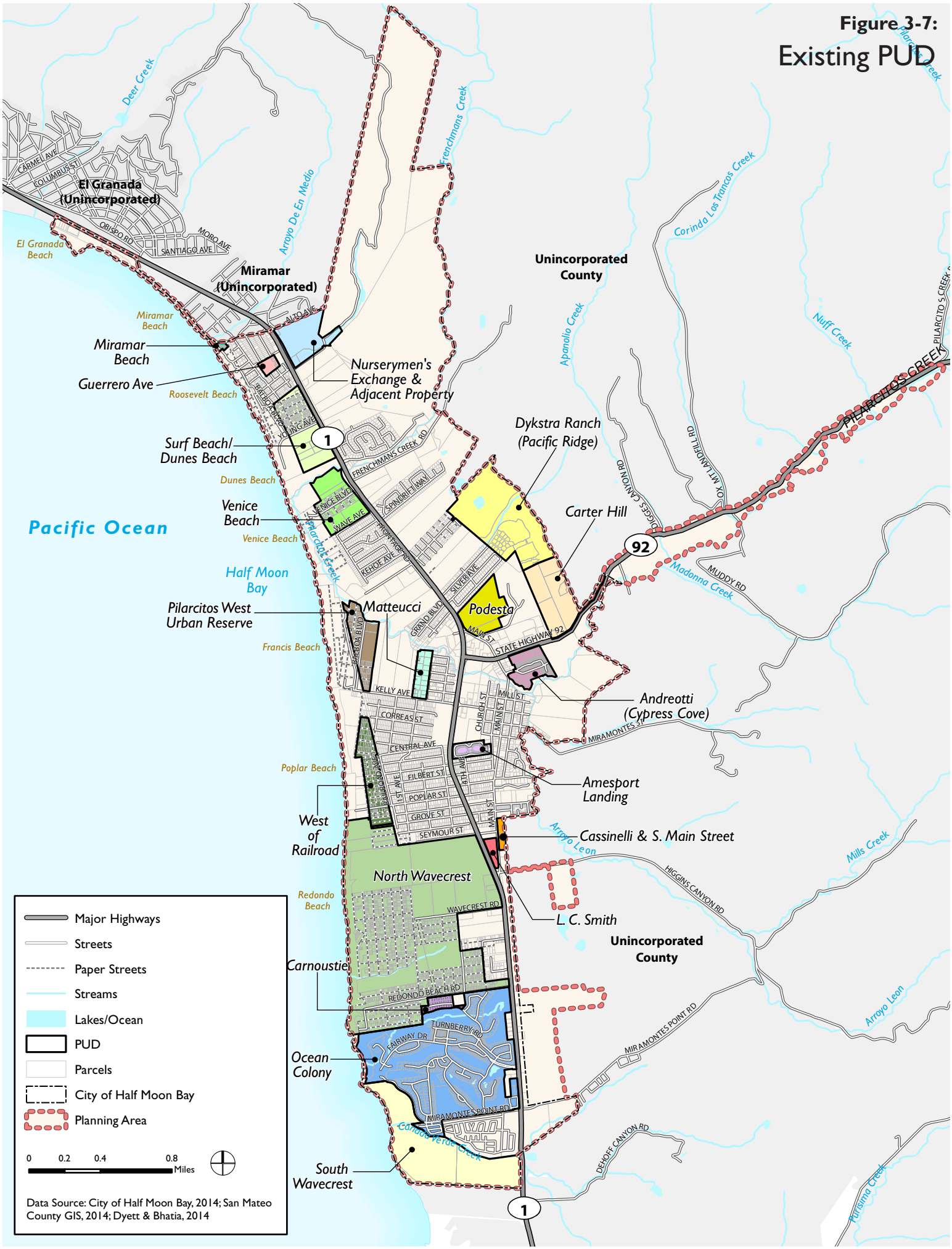
Figure 3-7:
Existing PUD
El Granada (Unincorporated)
Miramar (Unincorporated)
Unincorporated County
Unincorporated County
Pacific Ocean
Half Moon Bay
Miramar Beach
Guerrero Ave
Nurserymen's Exchange & Adjacent Property
Surf Beach/ Dunes Beach
Dykstra Ranch (Pacific Ridge)
Carter Hill
Venice Beach
Pilarcitos West Urban Reserve
Matteucci
Podesta
Andreotti (Cypress Cove)
Amesport Landing
West of Railroad
Cassinelli & S. Main Street
North Wavecrest
L. C. Smith
Carnoustie
Ocean Colony
South Wavecrest
El Granada Beach
Roosevelt Beach
Dunes Beach
Venice Beach
Francis Beach
Poplar Beach
Redondo Beach
Deer Creek
Arroyo De En Medio
Frenchmans Creek
Corinda Los Trancos Creek
Apanolio Creek
Nuff Creek
Madonna Creek
Arroyo Leon
Mills Creek
Arroyo Leon
Carmel Ave
Columbus St
Obispo Rd
Moro Ave
Santiago Ave
Alto Ave
Young Ave
Frenchmans Creek Rd
Spindrift Way
Venice Blvd
Wave Ave
Rehoe Ave
Silver Ave
Grand Blvd
Main St
State Highway 92
Kelly Ave
Correas St
Church St
Mill St
Central Ave
Filbert St
Poplar St
Grove St
Seymour St
1st Ave
4th Ave
Main St
Wavecrest Rd
Higgins Canyon Rd
Redondo Beach Rd
Turnberry Rd
Fairway Dr
Miramontes Point Rd
Carlos Verde Creek
Dehoff Canyon Rd
Miramontes St
Muddy Rd
Ridge Canyon Rd
Cox Mt Landell Rd
Pilarcitos Creek
Purisima Creek
1
92
Major Highways
Streets
Paper Streets
Streams
Lakes/Ocean
PUD
Parcels
City of Half Moon Bay
Planning Area
0 0.2 0.4 0.8 Miles
Data Source: City of Half Moon Bay, 2014; San Mateo County GIS, 2014; Dyett & Bhatia, 2014

APPENDIX B

V&A Flow Monitoring Program

SANITARY SEWER FLOW MONITORING AND INFLOW / INFILTRATION STUDY

City of Half Moon Bay

July 2014

V&A

SANITARY SEWER FLOW MONITORING AND INFLOW / INFILTRATION STUDY

Prepared for

City of Half Moon Bay
501 Main Street
Half Moon Bay, CA 934019

Prepared by

V&A

July 2014

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APPENDIX

Appendix A: Flow Monitoring Sites: Data, Graphs, Information

ABBREVIATIONS, TERMS AND DEFINITIONS USED IN THIS REPORT

Table i. Abbreviations

Abbreviation	Term
ADWF	average dry weather flow
CCTV	closed-circuit television
CIP	capital improvement plan
CO	carbon monoxide
d/*D*	depth/diameter ratio
FM	flow monitor
gpd	gallons per day
gpm	gallons per minute
GWI	groundwater infiltration
H_2S	hydrogen sulfide
I/I	inflow and infiltration
IDM	inch-diameter-mile (miles of pipeline multiplied by the diameter of the pipeline in inches)
IDW	inverse distance weighting
LEL	lower explosive limit
mgd	million gallons per day
NOAA	National Oceanic and Atmospheric Administration
PS	pump station
Q	flow rate
QA/QC	quality assurance/quality control
RDI	rainfall-dependent infiltration
ROW	right of way
RRI	rainfall-responsive infiltration
RG	rain gauge
SSO	sanitary sewer overflow
WEF	Water Environment Federation
WRCC	Western Regional Climate Center
WWTP	wastewater treatment plant

Table ii. Terms and Definitions

Term	Definition
Attenuation	Flow attenuation in a sewer collection system is the natural process of the reduction of the peak flow rate through redistribution of the same volume of flow over a longer period of time. This occurs as a result of friction (resistance), internal storage and a tendency to reach a steady state along the sewer pipes. As the flows from the basins combine within the trunk sewer lines, (a) the peaks from each basin will not necessary coincide at the same time, and (b) due to the length and time of travel through the trunk sewers, peak flows will ***attenuate*** as the peak flows move downstream. The sum of the peak flows of individual basins upstream will generally be greater than the measured peak flows observed at points downstream.
Average dry weather flow (ADWF)	Average flow rate or pattern from days without noticeable inflow or infiltration response. ADWF usage patterns for weekdays and weekends differ and must be computed separately. ADWF can be expressed as a numeric average or as a curve showing the variation in flow over a day. ADWF includes the influence of normal groundwater infiltration (not related to a rain event).
Basin	Sanitary sewer collection system upstream of a given location (often a flow meter), including all pipelines, inlets, and appurtenances. Also refers to the ground surface area near and enclosed by the pipelines. A basin may refer to the entire collection system upstream from a flow meter or exclude separately monitored basins upstream.
Depth/diameter (*d*/*D*) ratio	Depth of water in a pipe as a fraction of the pipe's diameter. A measure of fullness of the pipe used in capacity analysis.
Design storm	A theoretical storm event of a given duration and intensity that aligns with historical frequency records of rainfall events. For example, a 10-year, 24-hour design storm is a storm event wherein the volume of rain that falls in a 24-hour period would historically occur once every 10 years. Design storm events are used to predict I/I response and are useful for modeling how a collection system will react to a given set of storm event scenarios.
Infiltration and inflow	Infiltration and inflow (I/I) rates are calculated by subtracting the ADWF flow curve from the instantaneous flow measurements taken during and after a storm event. Flow in excess of the baseline consists of inflow, rainfall-responsive infiltration, and rainfall-dependent infiltration. **Combined I/I** is the total sum in gallons of additional flow attributable to a storm event.
Infiltration, *groundwater*	Groundwater infiltration (**GWI**) is groundwater that enters the collection system through pipe defects. GWI depends on the depth of the groundwater table above the pipelines as well as the percentage of the system submerged. The variation of groundwater levels and subsequent groundwater infiltration rates is seasonal by nature. On a day-to-day basis, groundwater infiltration rates are relatively steady and will not fluctuate greatly.
Infiltration, *rainfall-dependent*	Rainfall-dependent infiltration (**RDI**) is similar to groundwater infiltration but occurs as a result of storm water. The storm water percolates into the soil, submerges more of the pipe system, and enters through pipe defects. RDI is the slowest component of storm-related infiltration and inflow, beginning gradually and often lasting 24 hours or longer. The response time depends on the soil permeability and saturation levels.
Infiltration, *rainfall-responsive*	Rainfall-responsive infiltration (**RRI**) is storm water that enters the collection system through pipe defects, but normally in sewers constructed close to the ground surface such as private laterals. RRI is independent of the groundwater table and reaches defective sewers via the pipe trench in which the sewer is constructed, particularly if the pipe is placed in impermeable soil and bedded and

Term	Definition
	backfilled with a granular material. In this case, the pipe trench serves as a conduit similar to a French drain, conveying storm drainage to defective joints and other openings in the system.
Inflow	**Inflow** is defined as water discharged into the sewer system, including private sewer laterals, from **direct** connections such as downspouts, yard and area drains, holes in manhole covers, cross-connections from storm drains, or catch basins. Inflow creates a peak flow problem in the sewer system and often dictates the required capacity of downstream pipes and transport facilities to carry these peak instantaneous flows. Overflows are often attributable to high inflow rates.
Normalization	To run an "apples-to-apples" comparison amongst different basins, calculated metrics must be **normalized**. Individual basins will have different runoff areas, pipe lengths and sanitary flows. There are three common methods of normalization. Depending on the information available, one or all methods can be applied to a given project: ❖ Pipe Length: The metric is divided by the length of pipe in the upstream basin expressed in units of inch-diameter-mile (IDM). ❖ Basin Area: The metric is divided by the estimated drainage area of the basin in acres. ❖ ADWF: The metric is divided by the average dry weather sanitary flow (ADWF).
Normalization, *inflow*	The peak I/I flow rate is used to quantify inflow. Although the instantaneous flow monitoring data will typically show an inflow peak, the inflow response is measured from the I/I flow rate (in excess of baseline flow). This removes the effect of sanitary flow variations and measures only the I/I response: ❖ Pipe Length: The peak I/I flow rate is divided by the length of pipe (IDM) in the upstream basin. The result is expressed in gallons per day (gpd) per IDM (gpd/IDM). ❖ Basin Area: The peak I/I flow rate is divided by the geographic area of the upstream basin. The result is expressed in gpd per acre. ❖ ADWF: The peak I/I flow rate is divided by the average dry weather flow (ADWF). This is a ratio and is expressed without units.
Normalization, *GWI*	The estimated GWI rates are compared to acceptable GWI rates, as defined by the Water Environment Federation, and used to identify basins with high GWI: ❖ Pipe Length: The GWI flow rate is divided by the length of pipe (IDM) in the upstream basin. The result is expressed in gallons per day (gpd) per IDM (gpd/IDM). ❖ Basin Area: The GWI flow rate is divided by the geographic area of the upstream basin. The result is expressed in gpd per acre. ❖ ADWF: The GWI flow rate is divided by the average dry weather flow (ADWF). This is a ratio and is expressed without units.
Normalization, *RDI*	The estimated RDI rates at a period 24 hours or more after the conclusion of a storm event are used to identify basins with high RDI:

Term	Definition
	❖ Pipe Length: The RDI flow rate is divided by the length of pipe (IDM) in the upstream basin. The result is expressed in gallons per day (gpd) per IDM (gpd/IDM). ❖ Basin Area: The RDI flow rate is divided by the geographic area of the upstream basin. The result is expressed in gpd per acre. ❖ ADWF: The RDI flow rate is divided by the average dry weather flow (ADWF). This is a ratio and is expressed without units.
Normalization, *total I/I*	The estimated totalized I/I in gallons attributable to a particular storm event is used to identify basins with high total I/I. Because this is a totalized value rather than a rate and can be attributable solely to an individual storm event, the volume of the storm event is also taken into consideration. This allows for a comparison not only between basins but also between storm events: ❖ Pipe Length: Total gallons of I/I is divided by the length of pipe (IDM) in the upstream basin and the rainfall total (inches) of the storm event. The result is expressed in gallons per IDM per inch of rain. ❖ Basin Area (R-Value): Total gallons of I/I is divided by total gallons of rainfall water that fell within the acreage of the basin area. This is a ratio and expressed as a percentage. R-value is described as "the percentage of rainfall that enters the collection system." Systems with R-values less than 5%[1] are often considered to be performing well. ❖ ADWF: Total gallons of I/I is divided by the ADWF and the rainfall total of the storm event. The result is expressed in million gallons per mgd of ADWF per inch of rain.
Peaking factor	Ratio of peak measured flow to average dry weather flow. This ratio expresses the degree of fluctuation in flow rate over the monitoring period and is used in capacity analysis.
Surcharge	When the flow level is higher than the crown of the pipe, then the pipeline is said to be in a **surcharged** condition. The pipeline is surcharged when the *d*/*D* ratio is greater than 1.0.
Synthetic hydrograph	A set of algorithms developed to approximate the actual I/I hydrograph. The synthetic hydrograph is developed strictly using rainfall data and response parameters representing response time, recession coefficient and soil saturation.
Weekend/weekday ratio	The ratio of weekend ADWFs to weekday ADWFs. In residential areas, this ratio is typically slightly higher than 1.0. In business districts, depending on type of service, this ratio can be significantly less than 1.0.

[1] Keefe, P.N. "Test Basins for I/I Reduction and SSO Elimination." 1998 WEF Wet Weather Specialty Conference, Cleveland.

EXECUTIVE SUMMARY

Scope and Purpose

V&A was retained by the City of Half Moon Bay (City) to perform sanitary sewer flow monitoring, rainfall monitoring, and inflow and infiltration (I/I) analysis. Flow and rainfall monitoring was performed over a one-week period at nine open-channel flow monitoring sites within the City. The City also maintains four of their own flow meters. V&A was provided data for these sites by the City and incorporated them into this report. The flow meters were installed beginning February 25, 2014, and removed on March 12, 2014. The purpose of this study was to measure sanitary sewer flows at the flow monitoring sites and estimate available sewer capacity and infiltration and inflow (I/I) occurring in the basins upstream from the flow monitoring sites.

Site Flow Monitoring and Capacity Results

Peak measured flows and the corresponding flow levels (depths) are important to understand the capacity limitations of a collection system. Table 1 summarizes the peak recorded flows, levels, *d*/*D* ratios, and peaking factors per site during the flow monitoring period. Capacity analysis data is presented on a site-by-site basis and represents the hydraulic conditions only at the site locations; hydraulic conditions in other areas of the collection system will differ.

Table 1. Capacity Analysis Summary

Metering Site	ADWF (mgd)	Peak Measured Flow (mgd)	Peaking Factor[c]	Diameter (in)	Peak Level (in)	Peak *d*/*D* Ratio[c]	Level Surcharged above Crown (ft)
Site 1	0.019	0.047	2.5	8	1.51	0.19	-
Site 2	0.136	0.251	1.8	10	3.95	0.40	-
Site 3	0.032	0.131	4.1	8	2.50	0.31	-
Site 4	0.072	0.153	2.1	8	6.04	0.76	-
Site 5	0.024	0.095	4.0	8	3.97	0.50	-
Site 6	0.283	0.738	2.6	18	5.61	0.31	-
Site 7	0.189	0.392	2.1	18	5.64	0.31	-
Site 8	0.007	0.039	5.8	6	2.29	0.38	-
Site 9	0.081	0.172	2.1	8	3.96	0.50	-
Kehoe[a]	0.067	0.158	2.3				
Grandview Terrace[a,b]	0.036	0.093	2.6				
Straw Flower[a]	0.225	0.378	1.7				
Kelly[a]	0.422	1.158	2.7				

[a] Kehoe, Grandview, Strawflower and Kelly are meters that are owned by the City and not maintained by V&A. V&A received only flow data from these meters; thus, analyses related to flow level (depth) are not included.

[b] The Grandview meter appears to be under-reporting flow. V&A made adjustments to the flow, based on upstream meters deemed to be functioning well, in order to include the site in the I/I analysis.

[c] Sites with peaking factor higher than 3.0 and peak d/D ratio higher than 0.75 are highlited in red.

The following capacity analysis results are noted:

- **Peaking Factor:** Sites 3, 5 and 8 had peaking factors that exceeded typical design threshold limits for the ratio of peak flow to average dry weather flow.
- ***d*/*D* Ratio:** Site 4 had a *d*/*D* ratio that exceeded the common design threshold for *d*/*D* ratio. It should be noted that the peak level that was recorded was not a result of a rainfall event. It was also observed that several sites had recorded peak levels that were not related to rainfall events.

Figure 1 shows bar graphs of the capacity results. Figure 2 shows a schematic diagram of the peak measured flows with peak flow levels.

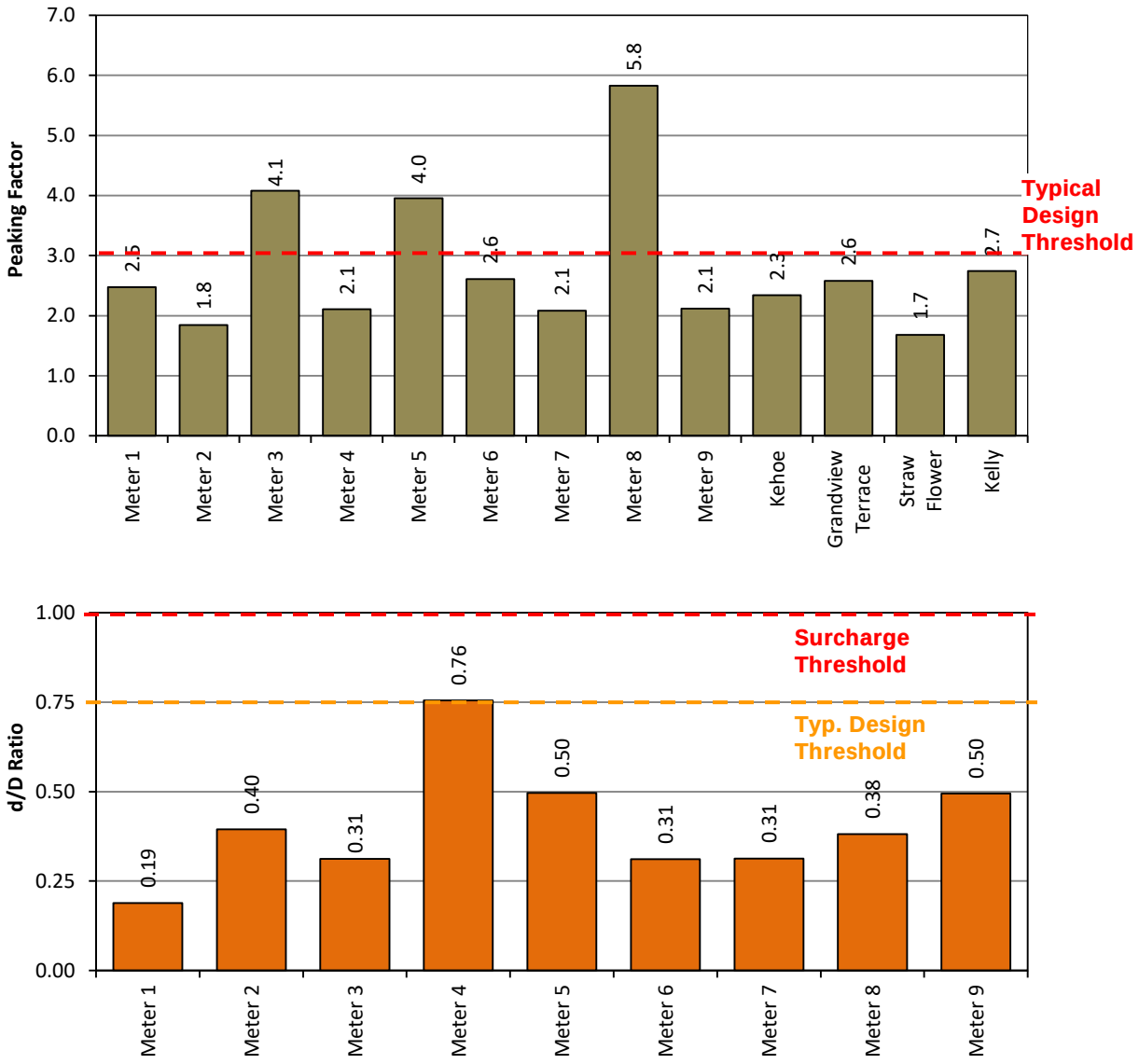


Figure 1. Capacity Summary Bar Graphs: Peaking Factors and Peak *d*/*D* Ratios

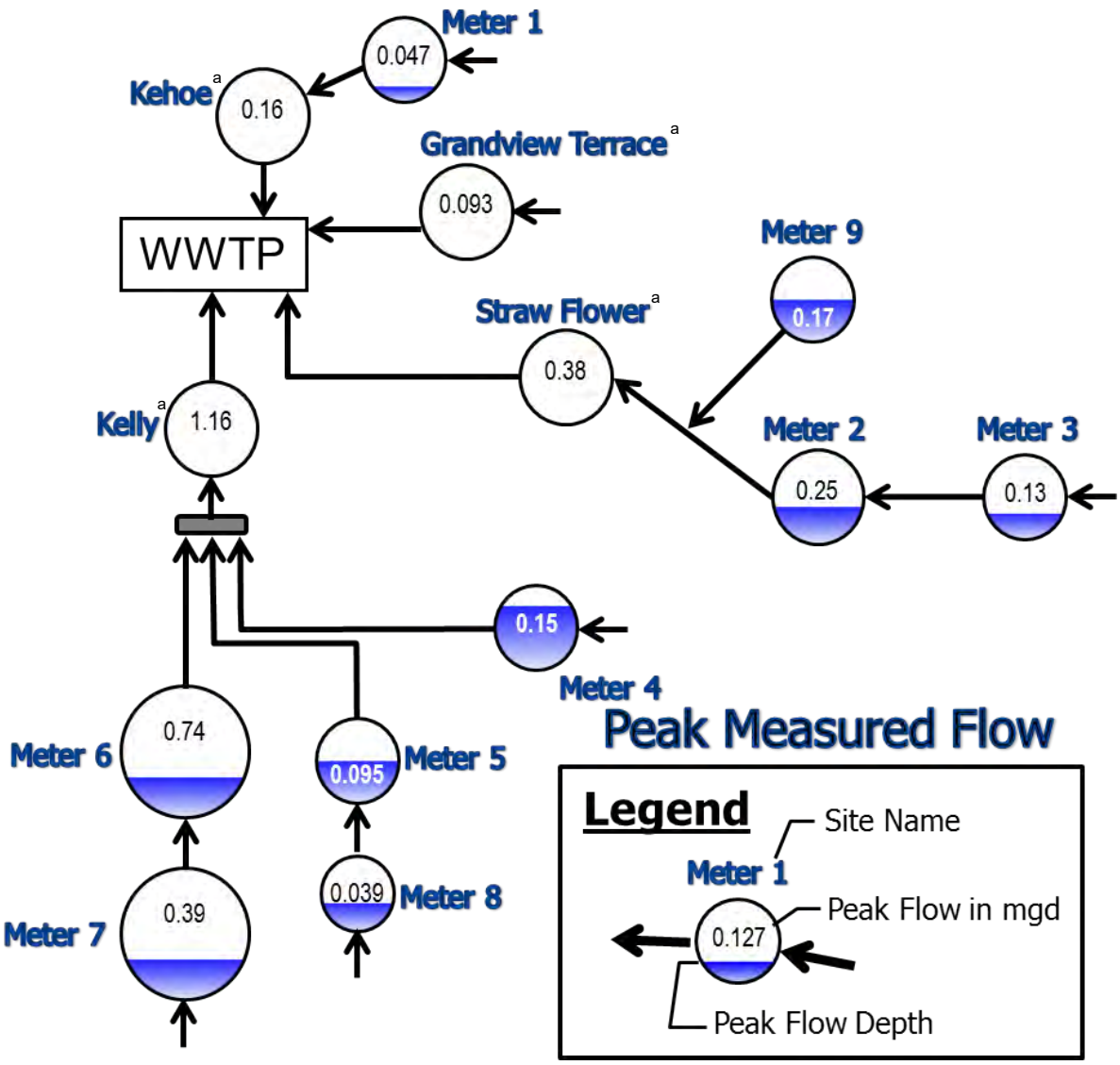


Figure 2. Peak Measured Flow (Flow Schematic)

[a] Kehoe, Grandview, Strawflower and Kelly are meters that are owned by the City and not maintained by V&A. V&A did not receive flow level (depth) data for these site; thus the peak flow depth portion of this graphic is not included for these sites.

Basin Inflow and Infiltration Analysis Results

Table 2 summarizes the I/I results for the eleven flow monitoring basins that were isolated during this study. I/I analysis was based on the rainfall event occurred on February 28, 2014. Infiltration and inflow rankings are shown such that 1 represents the highest infiltration or inflow contribution and 11 represents the least. The upper three ranked basins for each analysis are shown color coded in red. Please refer to the *I/I Methods* section for more information on inflow and infiltration analysis methods and ranking methods. Figure 3 through Figure 6 show temperature maps of the overall rankings for each inflow and infiltration component. The following additional information is noted:

- **Basin 5/6:** Flow data confirms a cross-connection between Basins 5 and 6 upstream from the monitoring locations. To maintain proper isolation of boundary conditions, these basins were combined for I/I analysis (refer to the 'Flow Monitoring Basins' section on page 10).
- **Kelly:** The Kelly flow monitoring site was used to confirm total combined flows from Sites 4, 5 and 6; however the Kelly basin was not large enough or did not have sufficient connections to be analyzed as a stand-alone basin.

Table 2. I/I Analysis Summary

Metering Basin	ADWF (mgd)	Peak I/I Rate (mgd)	Combined I/I (gallons)	Inflow Ranking	RDI Ranking	Evidence of High GWI?	Combined I/I Ranking
Basin 1	0.019	0.018	3,800	10	6	Yes	8
Basin 2	0.104	0.015	6,900	11	7	No	9
Basin 3	0.032	0.078	12,100	3	10	No	5
Basin 4	0.072	0.072	12,200	7	9	No	10
Basin 5/6	0.112	0.181	70,000	5	2	No	3
Basin 7	0.189	0.128	32,300	9	4	No	7
Basin 8	0.007	0.030	9,000	2	1	Yes	2
Basin 9	0.081	0.055	0	8	8	Yes	11
Kehoe	0.049	0.047	13,100	6	3	No	4
Grandview Terrace	0.036	0.038	6,900	4	5	Yes	6
Straw Flower	0.008	0.042	11,200	1	11	No	1

The following inflow/infiltration analysis results are noted:

- **Inflow:** Basins 3, 8 and Straw Flower ranked highest for normalized inflow contribution.
- **Rainfall-Dependent Infiltration:** Basin 5/6, 8 and Kehoe ranked highest for normalized RDI contribution.
- **Groundwater Infiltration:** Basins 1, 8, 9 and Grandview Terrace had GWI rates that were **above** the WEF typical low-to-average ratio, indicating excessive groundwater infiltration.
- **Combined I/I:** Basins 5/6, 8 and Straw Flower ranked highest for normalized combined I/I contribution.

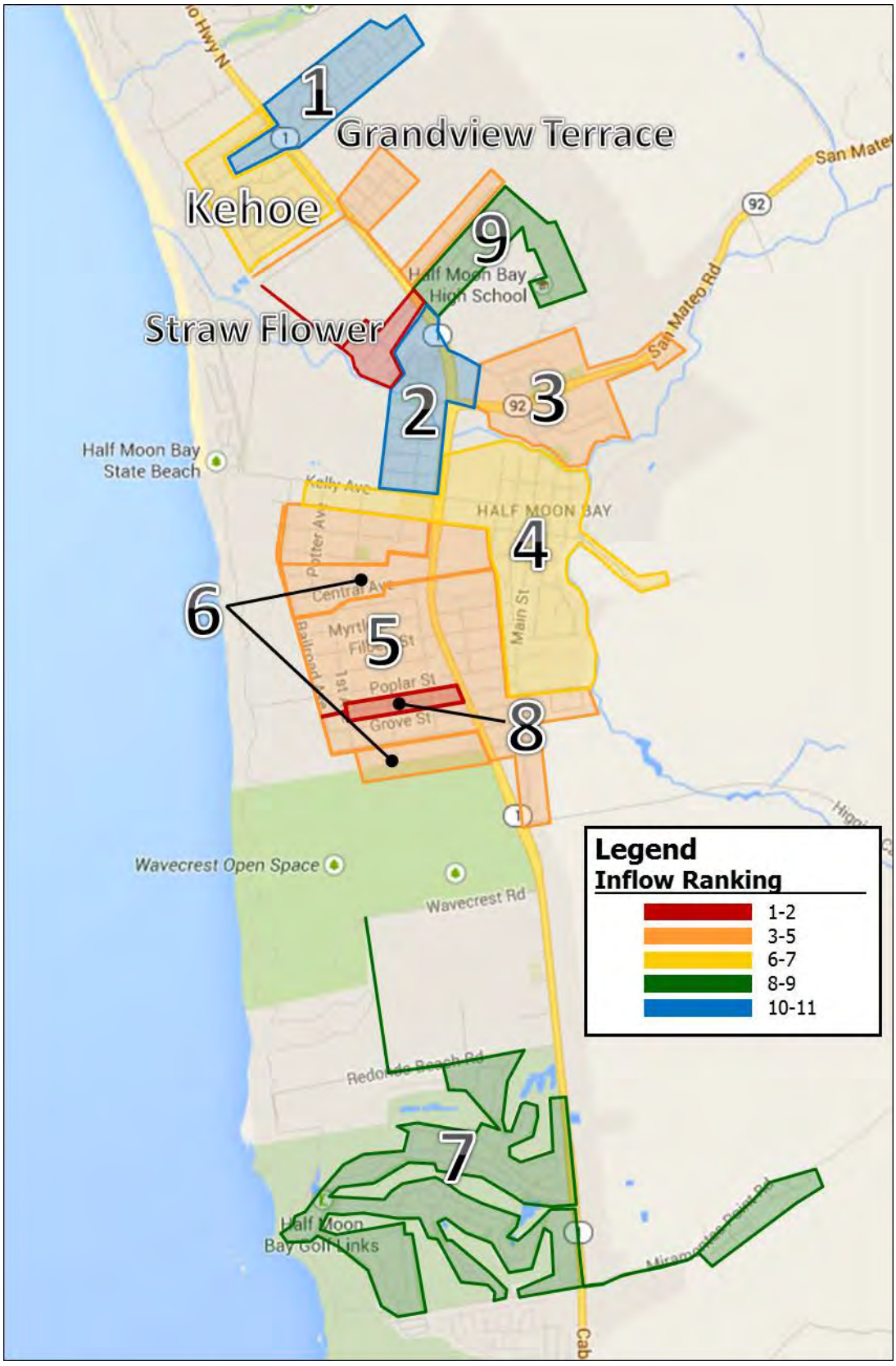


Figure 3. Inflow Temperature Map (by Rank)

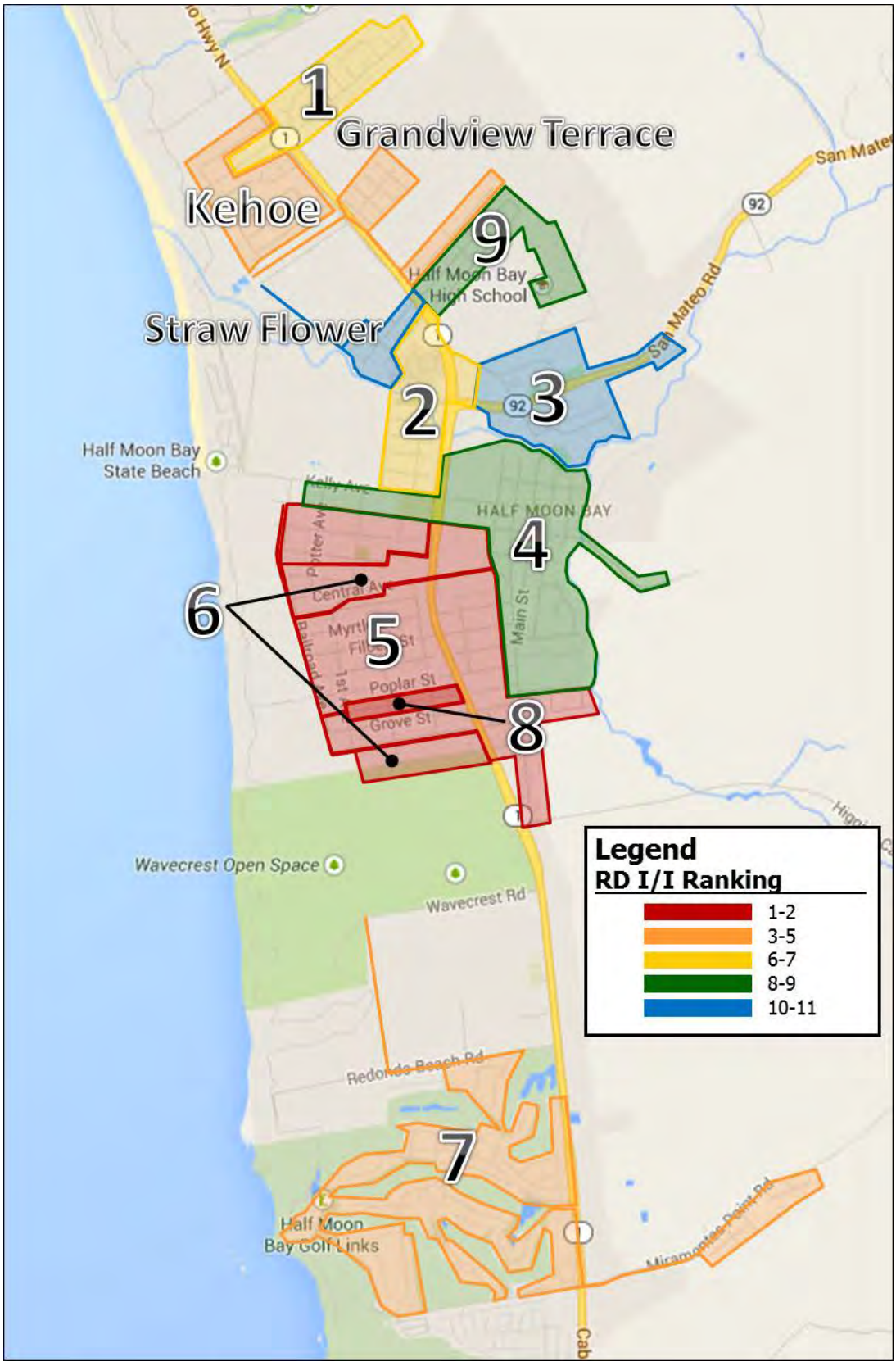


Figure 4. RDI Temperature Map (by Rank)

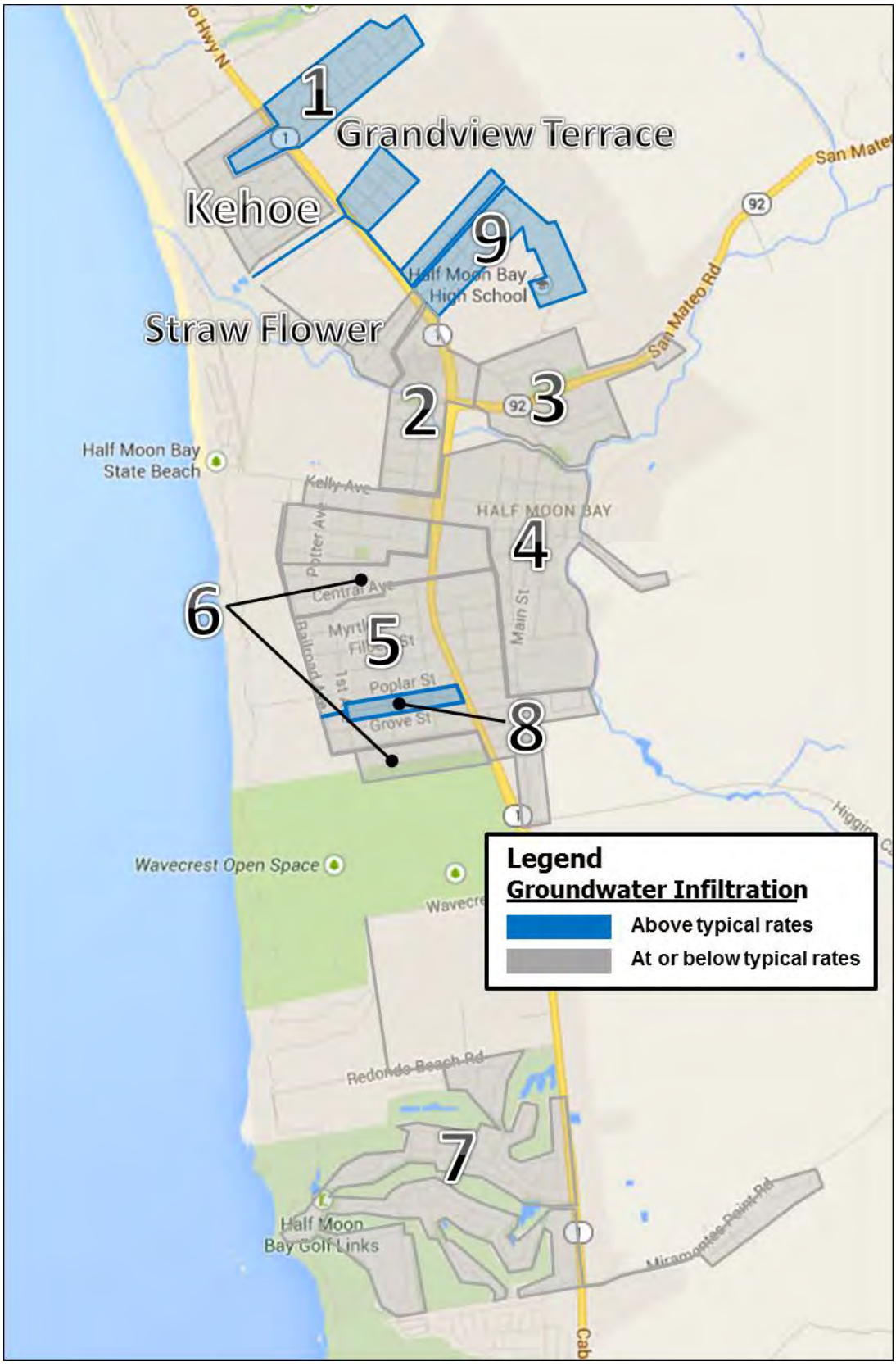


Figure 5. Basins with Groundwater Infiltration

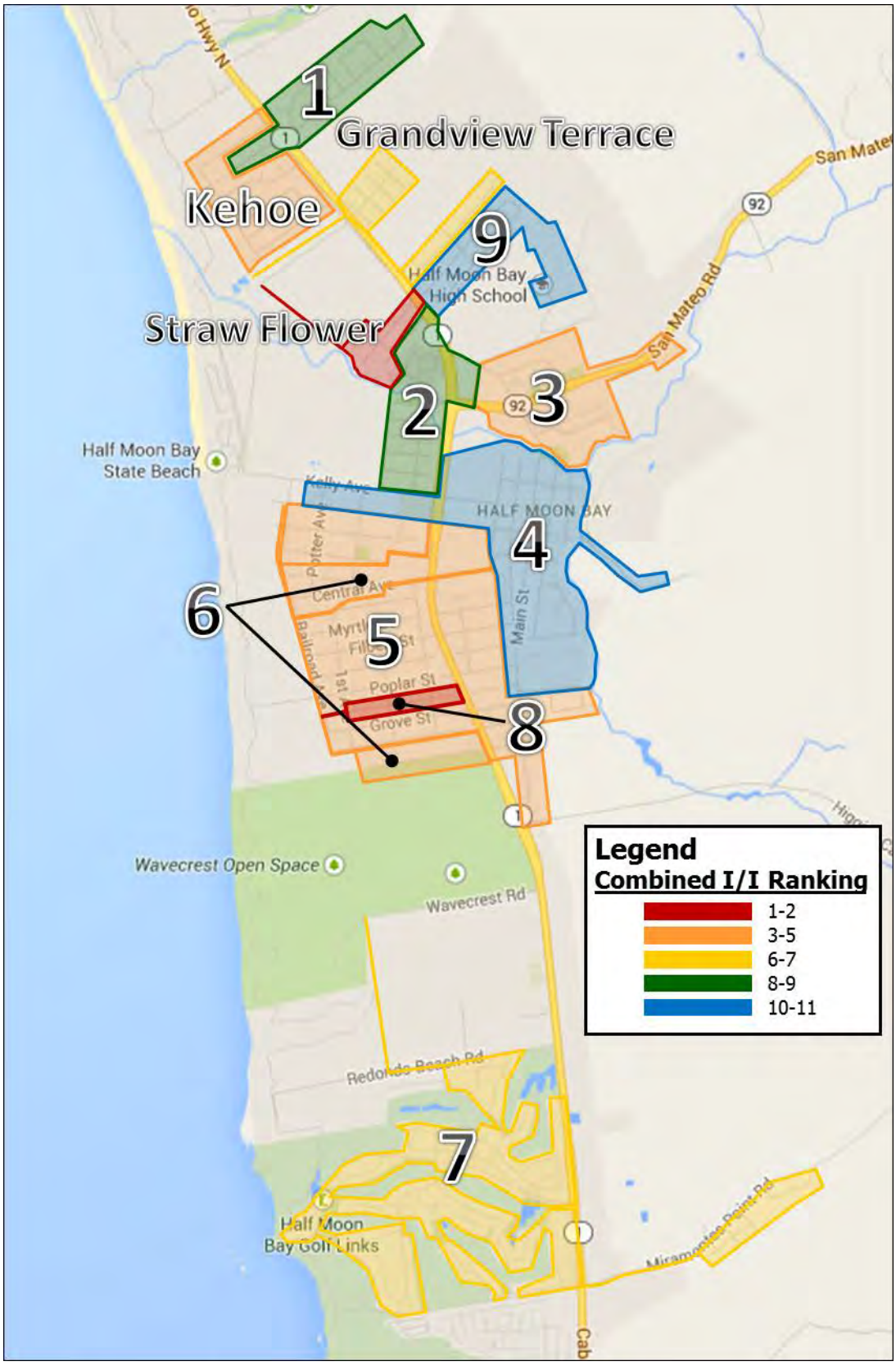


Figure 6. Combined I/I Temperature Map (by Rank)

Recommendations

The results and analyses of this report are given for informational purposes. The City engineer (or representative) should conduct proper due diligence and use the analyses presented in this report at his/her discretion.

V&A advises that future I/I reduction plans consider the following recommendations:

1. **Determine I/I Reduction Program:** The City should examine its I/I reduction needs to determine a future I/I reduction program.
    a. If peak flows, sanitary sewer overflows, and pipeline capacity issues are of greater concern, then priority can be given to investigate and reduce sources of inflow within the basins with the greatest inflow problems. The highest inflow occurred in Basins 3, 8 and Straw Flower.
    b. If total infiltration and general pipeline deterioration are of greater concern, then the program can be weighted to investigate and reduce sources of infiltration within the basins with the greatest infiltration problems.
        i. The highest normalized rainfall-dependent infiltration occurred in Basin 5/6, 8 and Kehoe.
        ii. The highest groundwater infiltration occurred in Basins 1, 8, 9 and Grandview Terrace.
2. **I/I Investigation Methods:** Potential I/I investigation methods include the following:
    a. Smoke testing.
    b. Mini-basin flow monitoring.
    c. Nighttime reconnaissance work to (1) investigate and determine direct point sources of inflow and (2) determine the areas and pipe reaches responsible for high levels of infiltration contribution.
3. **I/I Reduction Cost-Effectiveness Analysis:** The City should conduct a study to determine which is more cost-effective: (1) locating the sources of inflow and infiltration and systematically rehabilitating or replacing the faulty pipelines or (2) continued treatment of the additional rainfall-dependent I/I flow.

INTRODUCTION

Scope and Purpose

V&A was retained by the City of Half Moon Bay (City) to perform sanitary sewer flow monitoring, rainfall monitoring, and inflow and infiltration (I/I) analysis. Flow and rainfall monitoring was performed over a one-week period at nine open-channel flow monitoring sites within the City. The City also maintains four of their own flow meters. V&A was provided data for these sites by the City and incorporated them into this report. The flow meters were installed beginning February 25, 2014, and removed on March 12, 2014. The purpose of this study was to measure sanitary sewer flows at the flow monitoring sites and estimate available sewer capacity and infiltration and inflow (I/I) occurring in the basins upstream from the flow monitoring sites, as shown in Figure 8 and Figure 9.

Flow Monitoring Sites

Flow monitoring sites are the manholes where the flow monitors were placed. Flow monitoring site data may include the flows of one or many drainage basins. To isolate a flow monitoring basin, an addition or subtraction of flows may be required[2]. Capacity and flow rate information is presented on a site-by-site basis. The locations and other information for the flow monitoring sites are shown in Table 3.

Flow Monitoring Basins

Flow monitoring basins are localized areas of a sanitary sewer collection system upstream of a given location (often a flow meter), including all pipelines, inlets, and appurtenances (Figure 9). The basin refers to the ground surface area near and enclosed by the pipelines. A basin may refer to the entire collection system upstream from a flow meter or may exclude separately monitored basins upstream. I/I analysis in this report will be conducted on a basin-by-basin basis. For this study subtraction of flows was required to isolate the drainage areas of some flow monitoring basins. Also shown in Table 4 are the equations (in which *Q* refers to flow rate) used to calculate the flow rate results for each basin from the flow rates recorded at the monitoring sites. For this study, Site Kelly was not separated as its own basin because the flows of three other basins would need to be subtracted out and the size of the basin for Site Kelly was comparatively small. This could introduce margins of error that exceed the flows that would be isolated by this basin. Detailed descriptions of the individual flow monitoring sites, including photographs, are included in *Appendix A*.

Basins 5 and 6

Basins 5 and 6 were combined for the I/I analysis for several reasons. Figure 7 shows the flow at both sites from February 26, 2014 through March 4, 2014. In the morning hours of March 3, both Sites 5 and 6 experienced a shift in the balance of flows between the two sites. The pipelines for these two sites run parallel for several blocks. The flow data confirms the decrease in flow experienced at Site 6 was related to the flow increase at Site 5. The exact nature of the cross-

[2] There is error inherent in flow monitoring. Adding and subtracting flows increases error on an additive basis. For example, if Site A has an error of ±10% and Site B has an error of ±10%, then the resulting flow when subtracting Site A from Site B would have an error of up to ±20%.

connections was not known by V&A; thus, it was necessary to combine Basins 5 and 6 into one basin for the purposes of I/I analysis.

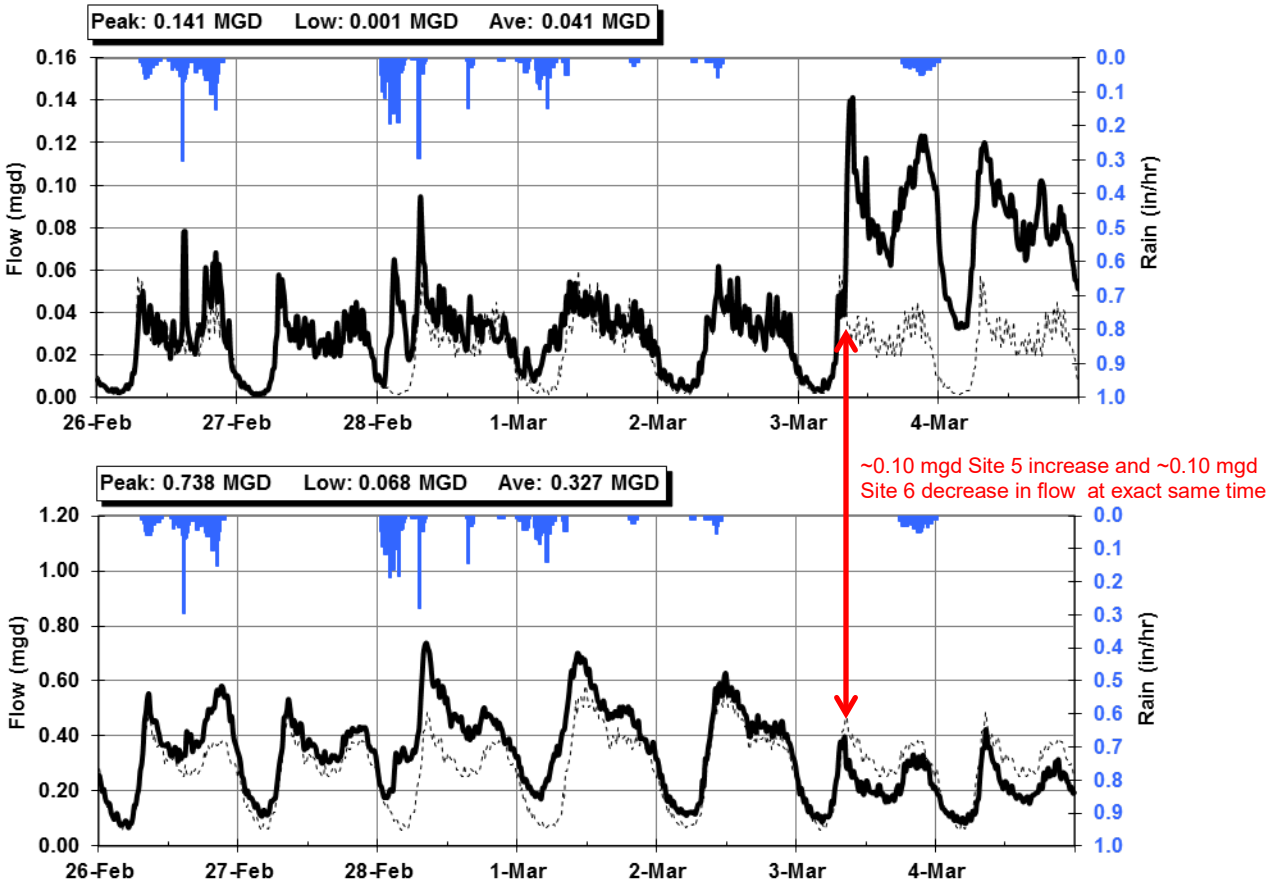


Figure 7. Flows at Site 5 (top) and Site 6 (bottom) from Feb. 26, 2014 through Mar. 4, 2014.

Table 3. List of Flow Monitoring Sites

Metering Site	Pipe Dia. (in)	Location
Site 1	8	Beach Ave., NE of Pilarcitos Ave.
Site 2	10	In field SW of end of Belleville Blvd.
Site 3	8	Off shoulder of eastbound San Mateo Rd., east of Cabrillo Hwy.
Site 4	8	In driveway of 201 Kelly Dr.
Site 5	8	In driveway of 201 Kelly Dr.
Site 6	18	Intersection of Ocean Ave. and Miramontes Ave.
Site 7	18	At west end of Wavecrest Rd.
Site 8	6	1st Ave, between Poplar St. and Metzgar St.
Site 9	8	At southwest end of Silver Ave.
Kehoe	N/A	City Meter located within Treatment Facility
Grandview Terrace	N/A	City Meter located within Treatment Facility
Straw Flower	N/A	City Meter located within Treatment Facility
Kelly	N/A	City Meter located on Balboa Blvd, north of Kelly Ave.

Table 4. Flow Monitoring Basin Information

Flow Metering Basin	Metering Basin Size (acres)	Basin Flow Calculation
Basin 1	42	$Q_{1(Basin)} = Q_{1(Site)}$
Basin 2	63	$Q_{2(Basin)} = Q_{2(Site)} - Q_{3(Site)}$
Basin 3	79	$Q_{3(Basin)} = Q_{3(Site)} - Q_{9(Site)}$
Basin 4	158	$Q_{4(Basin)} = Q_{4(Site)}$
Basin 5/6	245	$Q_{5(Basin)} = Q_{5(Site)} + Q_{6(Site)} - Q_{8(Site)} - Q_{7(Site)}$
Basin 7	204	$Q_{7(Basin)} = Q_{7(Site)}$
Basin 8	14	$Q_{8(Basin)} = Q_{8(Site)}$
Basin 9	61	$Q_{9(Basin)} = Q_{9(Site)}$
Kehoe	51	$Q_{Kehoe(Basin)} = Q_{Kehoe(Site)} - Q_{1(Site)}$
Grandview Terrace	26	$Q_{Grandview\ Terrace\ (Basin)} = Q_{Grandview\ Terrace\ (Site)}$
Straw Flower	24	$Q_{Straw\ Flower\ (Basin)} = Q_{Straw\ Flower\ (Site)} - Q_{9(Site)} - Q_{2(Site)}$

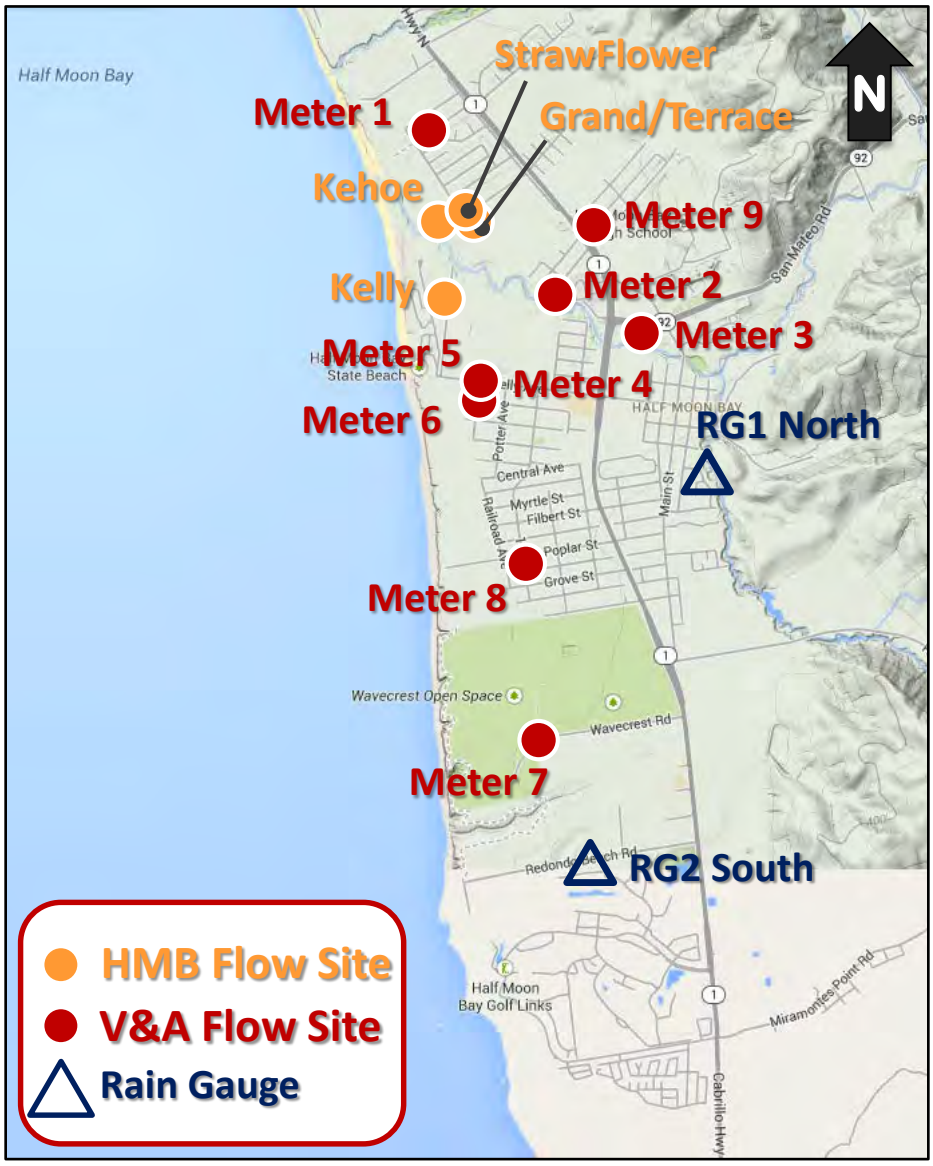


Figure 8. Site Location Map

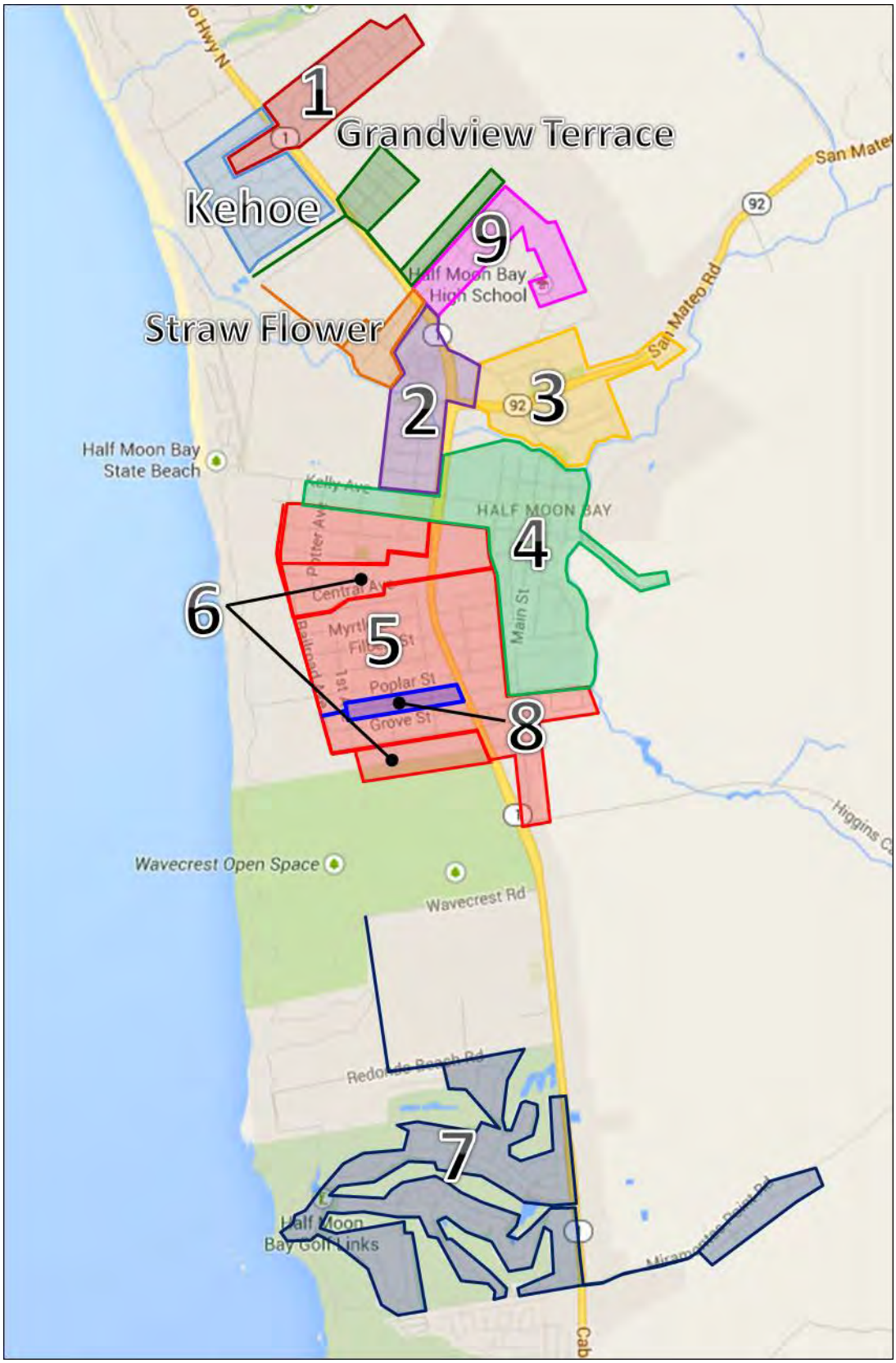


Figure 9. Basin Location Map

METHODS AND PROCEDURES

Confined Space Entry

A confined space (Photo 1) is defined as any space that is large enough and so configured that a person can bodily enter and perform assigned work, has limited or restricted means for entry or exit and is not designed for continuous employee occupancy. In general, the atmosphere must be constantly monitored for sufficient levels of oxygen (19.5% to 23.5%) and the absence of hydrogen sulfide (H_2S) gas, carbon monoxide (CO) gas, and lower explosive limit (LEL) levels. A typical confined space entry crew has members with OSHA-defined responsibilities of Entrant, Attendant and Supervisor. The Entrant is the individual performing the work. He or she is equipped with the necessary personal protective equipment needed to perform the job safely, including a personal four-gas monitor (Photo 2). If it is not possible to maintain line-of-sight with the Entrant, then more Entrants are required until line-of-sight can be maintained. The Attendant is responsible for maintaining contact with the Entrants to monitor the atmosphere on another four-gas monitor and maintaining records of all Entrants, if there are more than one. The Supervisor develops the safe work plan for the job at hand prior to entering.

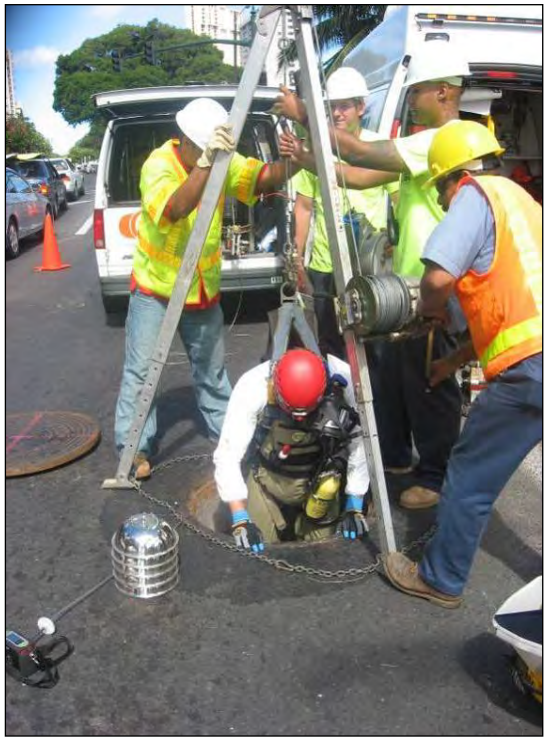


Photo 1. Confined Space Entry

Photo 2. Typical Personal Four-Gas Monitor

Flow Meter Installation

V&A installed nine Isco 2150 area-velocity flow meters at the metering locations referenced in Table 3. Isco 2150 meters use submerged sensors with a pressure transducer to collect depth readings and an ultrasonic Doppler sensor to determine the average fluid velocity. The ultrasonic sensor emits high-frequency (500 kHz) sound waves, which are reflected by air bubbles and suspended particles in the flow. The sensor receives the reflected signal and determines the Doppler frequency shift, which indicates the estimated average flow velocity. The sensor is typically mounted at a manhole inlet to take advantage of smoother upstream flow conditions. The sensor may be offset to one side to lessen the chances of fouling and sedimentation where these problems are expected to occur. Manual level and velocity measurements were taken during installation of the flow meters and again when they were removed and compared to simultaneous level and velocity readings from the flow meters to ensure proper calibration and accuracy. Figure 10 shows a typical installation for a flow meter with a submerged sensor.

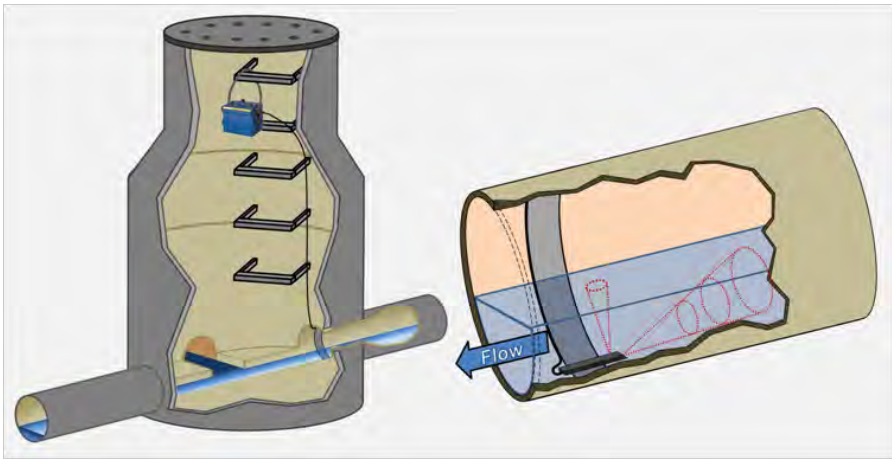


Figure 10. Typical Installation for Flow Meter with Submerged Sensor

Flow Calculation

Data retrieved from the flow meter was placed into a spreadsheet program for analysis. Data analysis includes data comparison to field calibration measurements, as well as necessary geometric adjustments as required for sediment (sediment reduces the pipe's wetted cross-sectional area available to carry flow). Area-velocity flow metering uses the continuity equation,

$$Q = V \cdot A$$

where Q is the volume flow rate, V is the average velocity as determined by the ultrasonic sensor, and A is the cross-sectional area of flow as determined from the depth of flow. For circular pipe,

$$A = \left[\frac{D^2}{4}\cos^{-1}\left(1-\frac{2d}{D}\right)\right] - \left[\left(\frac{D}{2}-d\right)\left(\frac{D}{2}\right)\sin\left(\cos^{-1}\left(1-\frac{2d}{D}\right)\right)\right],$$

where D is the pipe diameter and d is the depth of flow.

RESULTS AND ANALYSIS

Rainfall: Rain Gauge Data

V&A utilized rain data from rain gauges maintained by local weather enthusiasts. While V&A performed QA/QC analysis to ensure, to the extent possible, the quality of the rainfall data, it is noted that V&A has no direct control over these gauges.

There were two primary rainfall events spread over several days. Event 1 saturated the soils enough for Event 2 to elicit an I/I response sufficient to be used for infiltration and inflow analysis for this study, as summarized in Table 5. Figure 11 graphically displays the rainfall activity recorded over the flow monitoring period (RG North shown). Figure 12 shows the rain accumulation plot of the period rainfall, as well as the historical average rainfall[3] in Half Moon Bay during this project duration. Rainfall totals for RG North and RG South were 87% and 69%, respectively, of historical normal levels during this time period.

Table 5. Rainfall Events Used for I/I Analysis

Rainfall Event	RG North Event Rainfall (in)	RG South Event Rainfall (in)
Event 1: February 26, 2014	0.58	0.52
Event 2: February 28, 2014 – March 1, 2014	0.94	0.68
Total over Monitoring Period	*1.95*	*1.53*

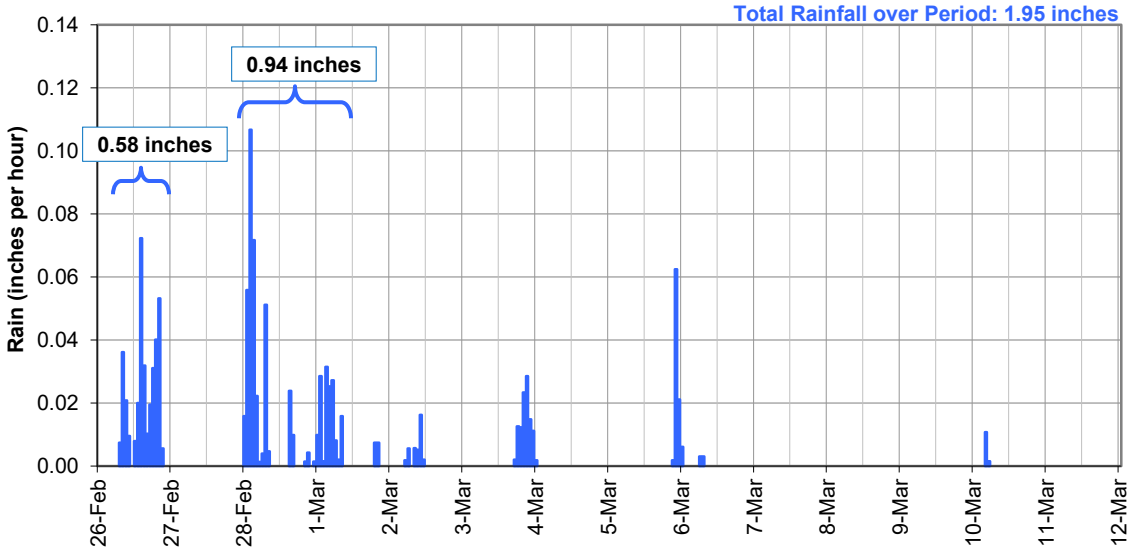


Figure 11. Rainfall Activity over Flow Monitoring Period (RG North)

[3] Historical data taken from the WRCC (Station 043714 in Half Moon Bay): http://www.wrcc.dri.edu/summary/climsmnca.html

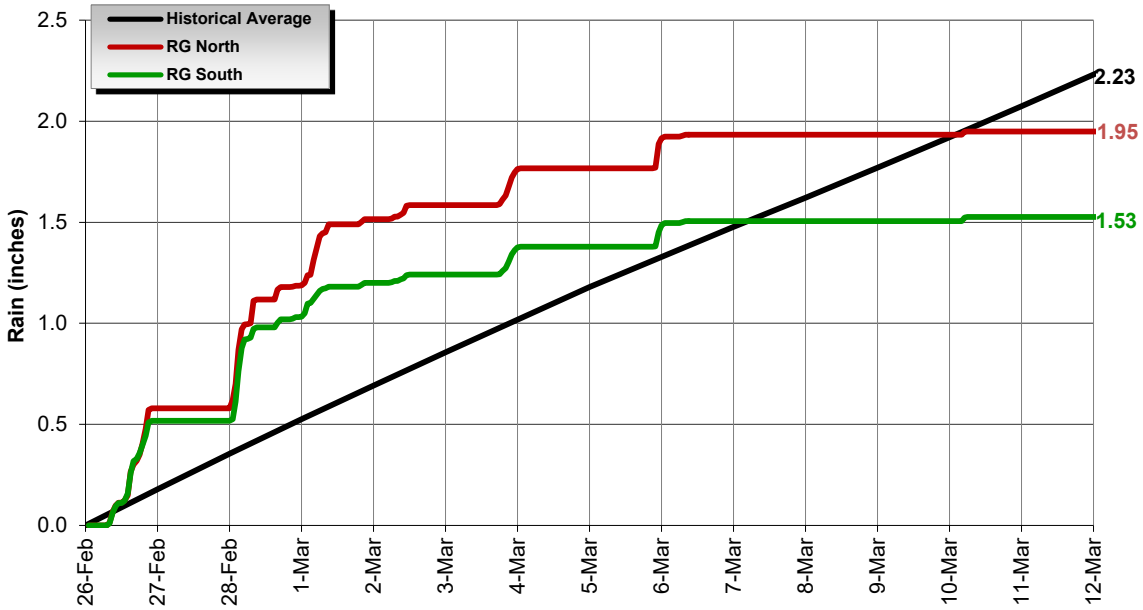


Figure 12. Rainfall Accumulation Plot

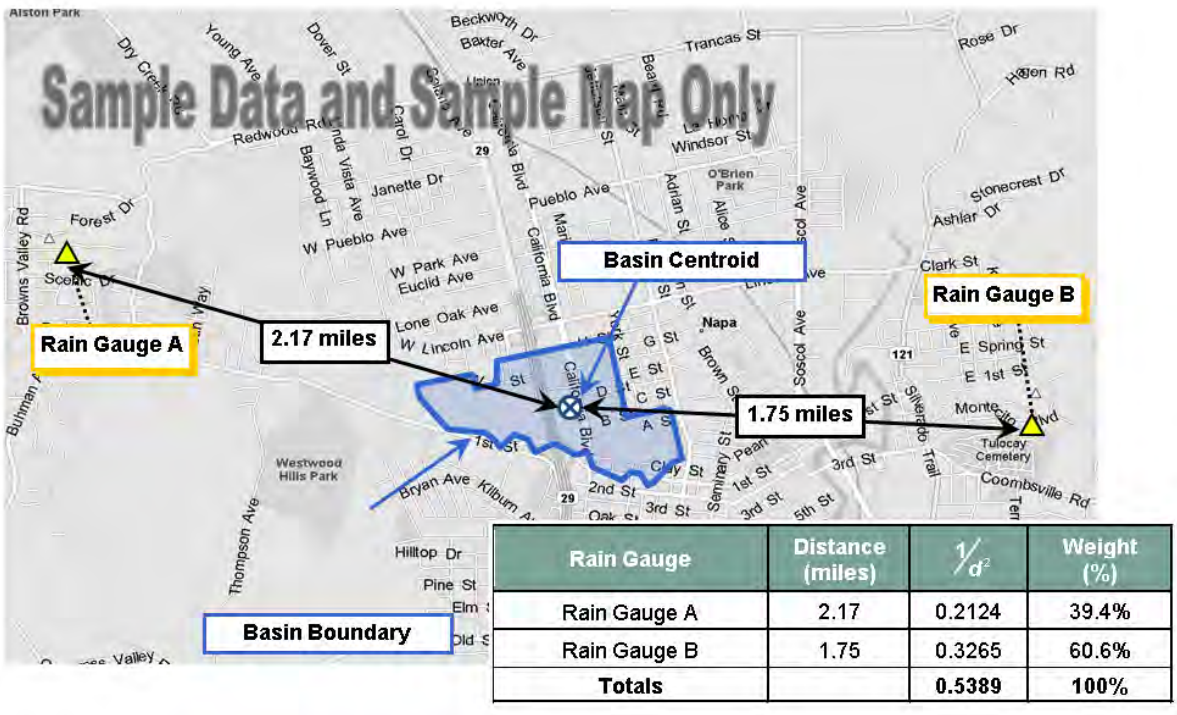
Rain Gauge Triangulation Distribution

The rainfall affecting the sanitary sewer collection system basins must be calculated based on the proximity to the rain gauge locations. The mean precipitation for each site was calculated by taking data from RG North and RG South and using the inverse distance weighting (IDW) method. IDW is an interpolation method that assumes the influence of each rain gauge location diminishes with distance. The approximate geographic coordinates of each site were determined and a weighted average was taken of the precipitation data from nearby rain gauge locations.

IDW is performed using the equation

$$w = \frac{1/d^{p}}{\sum 1/d^{p}}$$

where the weight, w, depends on the distance, d, from the rain gauge to the monitoring site and p, a user-selected power ($p > 0$). The most common choice of p in hydrological studies of watershed areas is 2. Figure 13 illustrates the IDW method with sample data.



Rain Gauge	Distance (miles)	$1/d^2$	Weight (%)
Rain Gauge A	2.17	0.2124	39.4%
Rain Gauge B	1.75	0.3265	60.6%
Totals		**0.5389**	**100%**

Figure 13. Rainfall Inverse Distance Weighting Method

The rain gauge distribution as calculated for each metering site for this project is shown in Table 6.

Table 6. Rain Gauge Distribution by Basin

Metering Basin	RG North (%)	RG South (%)
Basin 1	100%	0%
Basin 2	100%	0%
Basin 3	100%	0%
Basin 4	100%	0%
Basin 5	91%	9%
Basin 6	85%	18%
Basin 7	0%	100%
Basin 8	81%	19%
Basin 9	100%	0%
Kehoe	100%	0%
Grandview Terrace	100%	0%
Straw Flower	100%	0%

Rainfall: Storm Event Classification

It is important to classify the relative size of the major storm event that occurs over the course of a flow monitoring period[4]. Storm events are classified by intensity and duration. Based on historical data, frequency contour maps for storm events of given intensity and duration have been developed by the National Oceanic and Atmospheric Administration (NOAA) for all areas within the continental United States. For example, the NOAA Rainfall Frequency Atlas[5] classifies a 10-year, 24-hour storm event in Half Moon Bay (at the location of the RG North rain gauge) as 4.13 inches (Figure 14). This means that in any given year, there is a 10% chance that 4.13 inches of rain will fall in any 24-hour period.

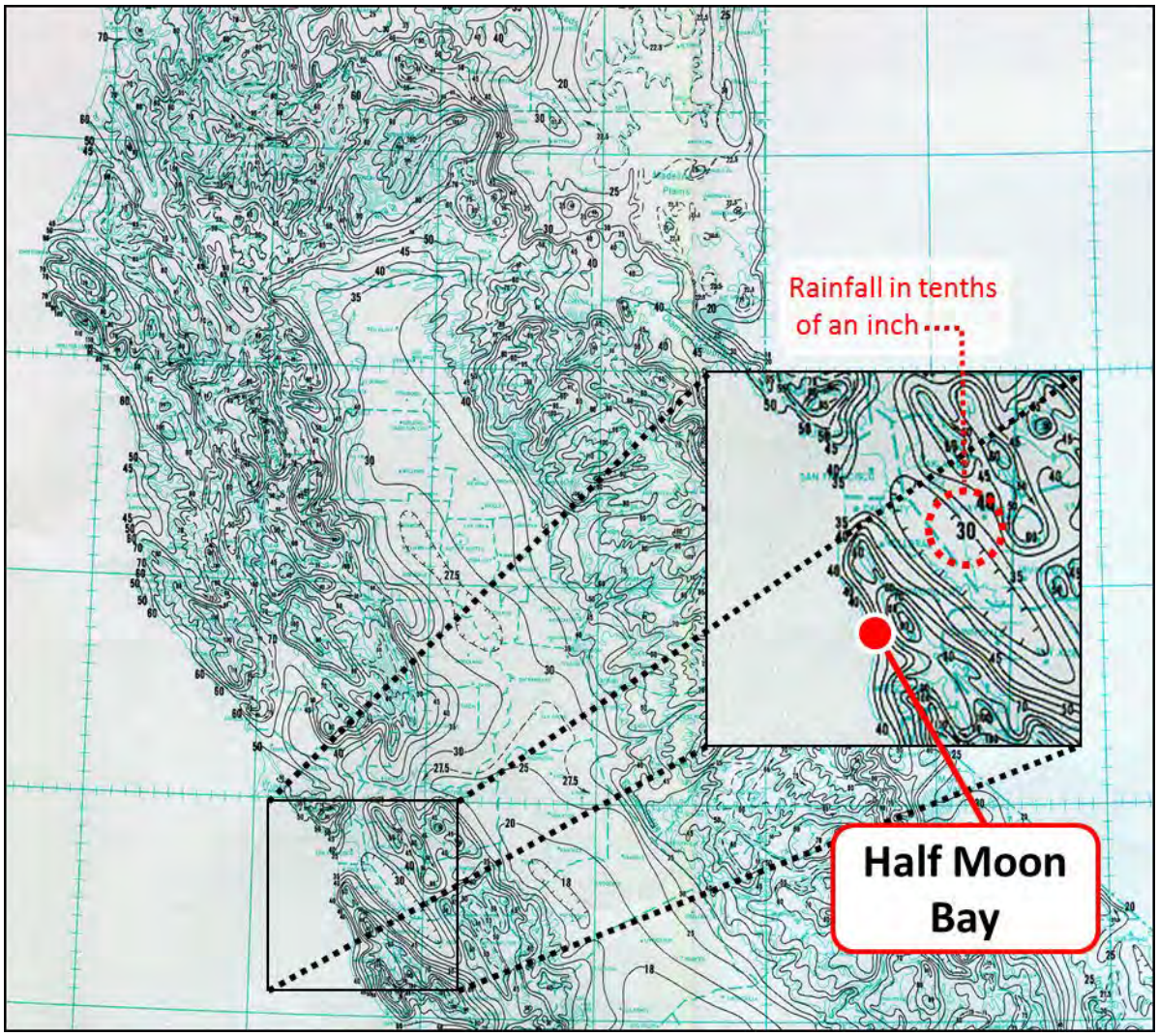


Figure 14. NOAA Northern California Rainfall Frequency Map

[4] Sanitary sewers are often designed to withstand I/I contribution to sanitary flows for "design" storm events of specific sizes.

[5] NOAA Western U.S. Precipitation Frequency Maps Atlas 2, 1973: http://www.wrcc.dri.edu/pcpnfreq.html

From the NOAA frequency maps, for a specific latitude and longitude, the rainfall densities for period durations ranging from 15 minutes to 60 days are known for rain events ranging from 1-year to 100-year intensities. These are plotted to develop a rain event frequency map specific to each rainfall monitoring site. Superimposing the peak measured densities for Event 2 on the rain event frequency plot determines the classification of the storm event, as shown in Figure 15.

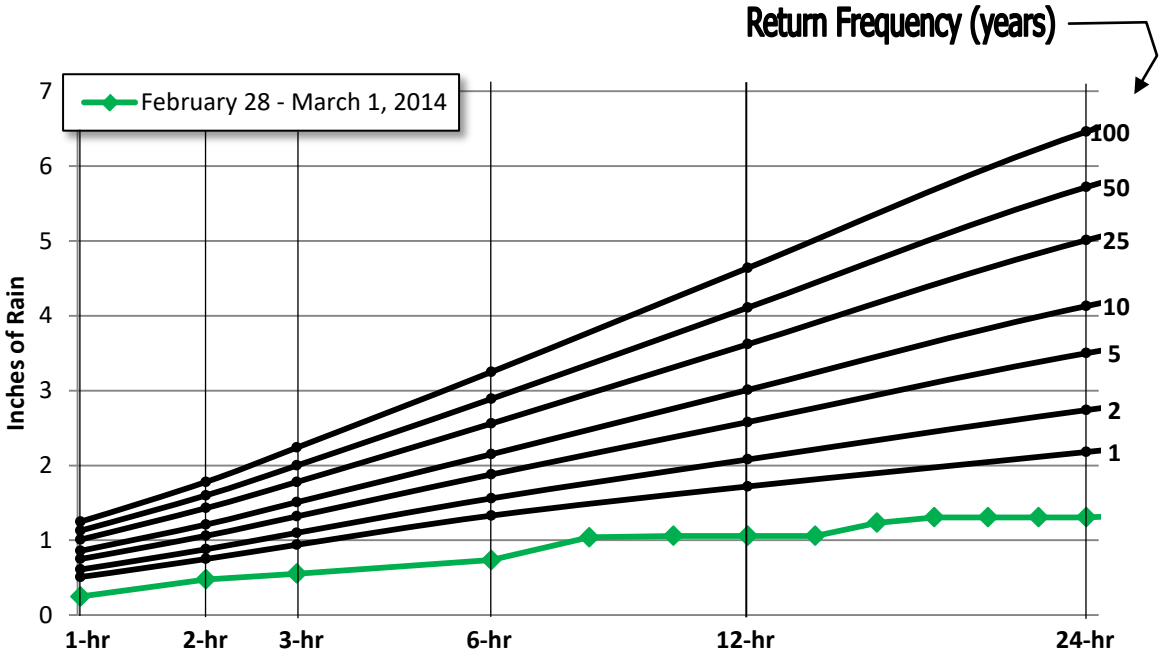


Figure 15. Storm Event Classification (RG North)

The rain event that occurred during the flow-monitoring period was classified as less than a 1-year, rainfall events at both rain gauges.

Flow Monitoring: Average Dry Weather Flows

Weekday and weekend flow patterns vary and must be separated when determining average dry weather flows. Days least affected by rainfall were used to estimate weekend and weekday average flows. Table 7 lists the average dry weather flow (ADWF) recorded during this study for the flow monitoring sites. Figure 16 shows the weekday/weekend ADWF curves established for Site 7. Detailed graphs of the flow monitoring data on a site-by-site basis are included in *Appendix A*.

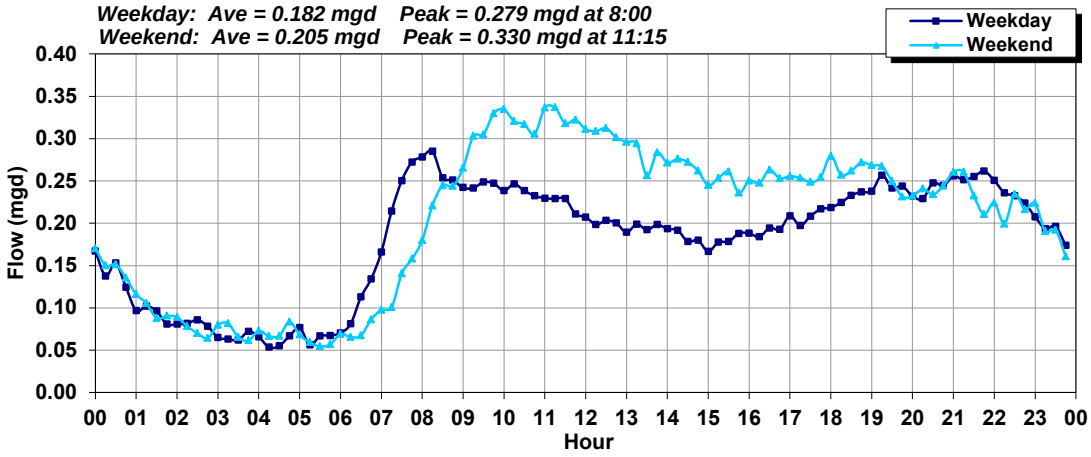


Figure 16. Sample ADWF Diurnal Flow Patterns

Graphs of the ADWF flow patterns for each site may be found in *Appendix A*. The overall average dry weather flow (ADWF) is calculated per the following equation:

$$ADWF = \left(ADWF_{Weekday} \times \frac{5}{7} \right) + \left(ADWF_{Weekend} \times \frac{2}{7} \right),$$

Table 7 lists the average dry weather flow (ADWF) recorded during this study for the flow monitoring sites. Figure 17 shows a schematic diagram of the average dry weather flows and flow levels.

Table 7. Dry Weather Flow Summary

Monitoring Site	Weekday ADWF (mgd)	Weekend ADWF (mgd)	Overall ADWF (mgd)	Weekend/ Weekday Ratio
Site 1	0.018	0.021	0.019	1.16
Site 2	0.131	0.149	0.136	1.14
Site 3	0.032	0.032	0.032	1.02
Site 4	0.073	0.072	0.072	0.99
Site 5	0.024	0.025	0.024	1.06
Site 6	0.271	0.313	0.283	1.15
Site 7	0.182	0.205	0.189	1.13

Monitoring Site	Weekday ADWF (mgd)	Weekend ADWF (mgd)	Overall ADWF (mgd)	Weekend/ Weekday Ratio
Site 8	0.007	0.006	0.007	0.89
Site 9	0.079	0.086	0.081	1.08
Kehoe	0.061	0.084	0.067	1.39
Grandview Terrace	0.038	0.032	0.036	0.85
Straw Flower	0.220	0.237	0.225	1.08
Kelly	0.417	0.434	0.422	1.04

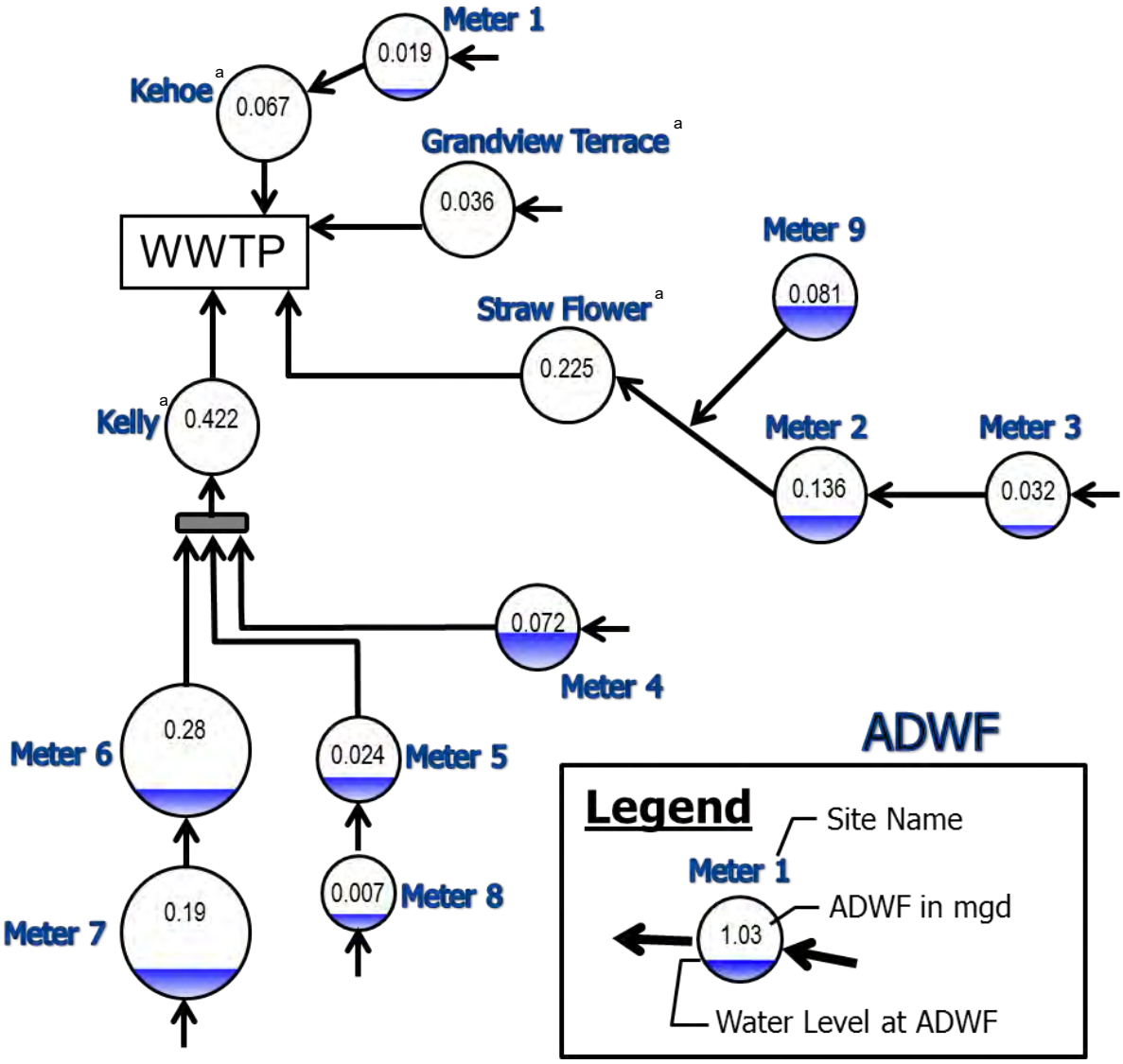


Figure 17. Average Dry Weather Flow (Flow Schematic)

[a] Kehoe, Grandview, Strawflower and Kelly are meters that are owned by the City and not maintained by V&A. V&A did not receive flow level (depth) data for these site; thus the peak flow depth portion of this graphic is not included for these sites.

Flow Monitoring: Peak Measured Flows and Pipeline Capacity Analysis

Peak measured flows and the corresponding flow levels (depths) are important to understand the capacity limitations of a collection system. The peak flows and flow levels reported are from the peak measurements as taken across the entirety of the flow monitoring period. Peak flows and levels may not correspond to a rainfall event, but instead may be caused due to blockages, grease or roots that cause a backflow condition. Two key capacity analysis terms are defined as follows:

- **Peaking Factor:** Peaking factor is defined as the peak measured flow divided by the average dry weather flow (ADWF). A peaking factor threshold value of 3.0 is commonly used for sanitary sewer design.
- ***d*/*D* Ratio:** The *d*/*D* ratio is the peak measured depth of flow (*d*) divided by the pipe diameter (*D*). A *d*/*D* ratio of 0.75 is a common maximum threshold value used for pipe design. The *d*/*D* ratio for each site was computed based on the maximum depth of flow from the flow monitoring study.

Table 8 summarizes the peak recorded flows, levels, *d*/*D* ratios, and peaking factors per site during the flow monitoring period. Capacity analysis data is presented on a site-by-site basis and represents the hydraulic conditions only at the site locations; hydraulic conditions in other areas of the collection system will differ. Sites with peaking factor higher than 3.0 and peak d/D ratio higher than 0.75 are highlited in red.

Table 8. Capacity Analysis Summary

Metering Site	ADWF (mgd)	Peak Measured Flow (mgd)	Peaking Factor[c]	Diameter (in)	Peak Level (in)	Peak *d*/*D* Ratio	Level Surcharged above Crown (ft)
Site 1	0.019	0.047	2.5	8	1.51	0.19	-
Site 2	0.136	0.251	1.8	10	3.95	0.40	-
Site 3	0.032	0.131	4.1	8	2.50	0.31	-
Site 4	0.072	0.153	2.1	8	6.04	0.76	-
Site 5	0.024	0.095	4.0	8	3.97	0.50	-
Site 6	0.283	0.738	2.6	18	5.61	0.31	-
Site 7	0.189	0.392	2.1	18	5.64	0.31	-
Site 8	0.007	0.039	5.8	6	2.29	0.38	-
Site 9	0.081	0.172	2.1	8	3.96	0.50	-
Kehoe[a]	0.067	0.158	2.3				
Grandview Terrace[a,b]	0.036	0.093	2.6				
Straw Flower[a]	0.225	0.378	1.7				
Kelly[a]	0.422	1.158	2.7				

[a] Kehoe, Grandview, Strawflower and Kelly are meters that are owned by the City and not maintained by V&A. V&A received only flow data from these meters; thus, analyses related to flow level (depth) are not included.

[b] The Grandview meter appears to be under-reporting flow. V&A made adjustments to the flow, based on upstream meters deemed to be functioning well, in order to include the site in the I/I analysis.

The following capacity analysis results are noted:

- **Peaking Factor:** Sites 3, 5 and 8 had peaking factors that exceeded typical design threshold limits for the ratio of peak flow to average dry weather flow.
- ***d*/*D* Ratio:** Site 5 had a *d*/*D* ratio that exceeded the common design threshold for *d*/*D* ratio. It should be noted that the peak level that was recorded was not a result of a rainfall event. It was also observed that several sites had recorded peak levels that were not related to rainfall events.

Figure 18 shows bar graphs of the capacity results. Figure 19 shows a schematic diagram of the peak measured flows with peak flow levels.

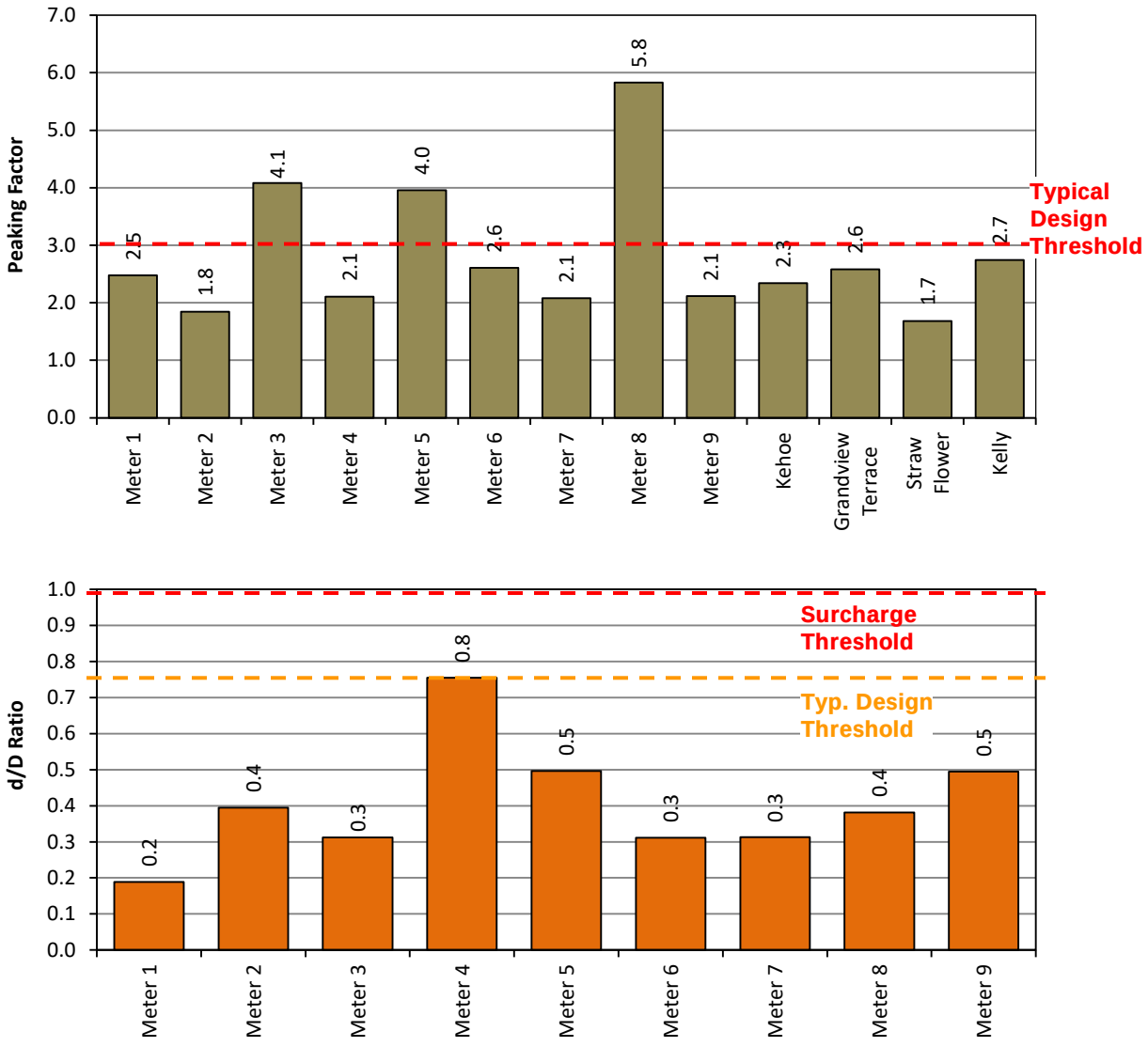


Figure 18. Capacity Summary Bar Graphs: Peaking Factors and Peak *d*/*D* Ratios

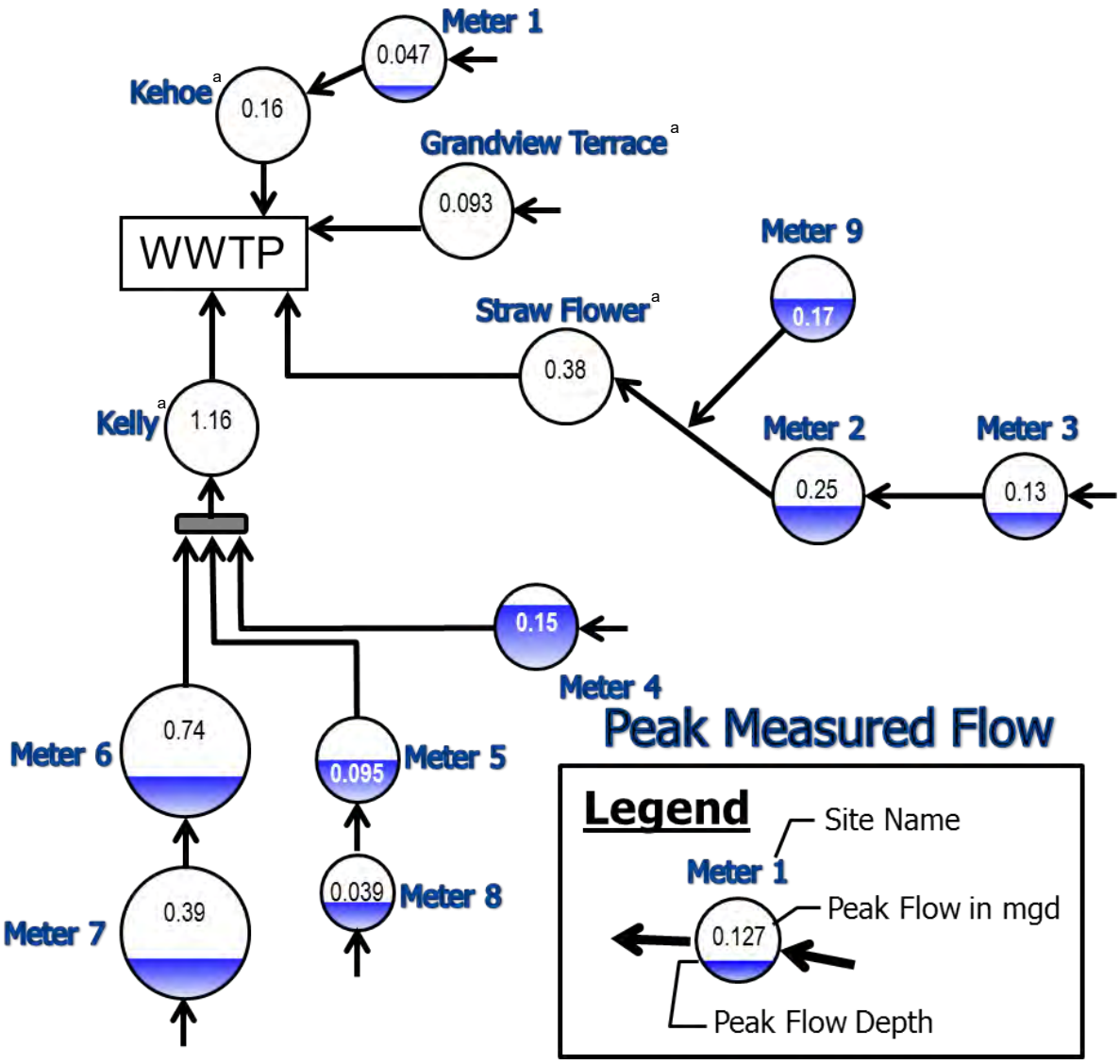


Figure 19. Peak Measured Flow (Flow Schematic)

[a] Kehoe, Grandview, Strawflower and Kelly are meters that are owned by the City and not maintained by V&A. V&A did not receive flow level (depth) data for these site; thus the peak flow depth portion of this graphic is not included for these sites.

Inflow / Infiltration Analysis: Definitions and Identification

Inflow and infiltration (I/I) consists of storm water and groundwater that enter the sewer system through pipe defects and improper storm drainage connections and is defined as follows:

Inflow

- **Definition:** Storm water inflow is defined as water discharged into the sewer system, including private sewer laterals, from direct connections such as downspouts, yard and area drains, holes in manhole covers, cross-connections from storm drains, or catch basins.
- **Impact:** This component of I/I creates a peak flow problem in the sewer system and often dictates the required capacity of downstream pipes and transport facilities to carry these peak instantaneous flows. Because the response and magnitude of inflow is tied closely to the intensity of the storm event, the short-term peak instantaneous flows may result in surcharging and overflows within a collection system. Severe inflow may result in sewage dilution, resulting in upsetting the biological treatment (secondary treatment) at the treatment facility.
- **Cost of Source Identification and Removal:** Inflow locations are usually less difficult to find and less expensive to correct. These sources include direct and indirect cross-connections with storm drainage systems, roof downspouts, and various types of surface drains. Generally, the costs to identify and remove sources of inflow are low compared to potential benefits to public health and safety or the costs of building new facilities to convey and treat the resulting peak flows.
- **Graphical Identification:** Inflow is usually recognized graphically by large-magnitude, short-duration spikes in flow immediately following a rain event.

Infiltration

- **Definition:** Infiltration is defined as water entering the sanitary sewer system through defects in pipes, pipe joints, and manhole walls, which may include cracks, offset joints, root intrusion points, and broken pipes.
- **Impact:** Infiltration typically creates long-term annual volumetric problems. The major impact is the cost of pumping and treating the additional volume of water, and of paying for treatment (for municipalities that are billed strictly on flow volume).
- **Cost of Source Detection and Removal:** Infiltration sources are usually harder to find and more expensive to correct than inflow sources. Infiltration sources include defects in deteriorated sewer pipes or manholes that may be widespread throughout a sanitary sewer system.
- **Graphical Identification:** Infiltration is often recognized graphically by a gradual increase in flow after a wet-weather event. The increased flow typically sustains for a period after rainfall has stopped and then gradually drops off as soils become less saturated and as groundwater levels recede to normal levels.

Figure 20 shows sample graphs indicating the typical graphical response patterns for inflow and infiltration.

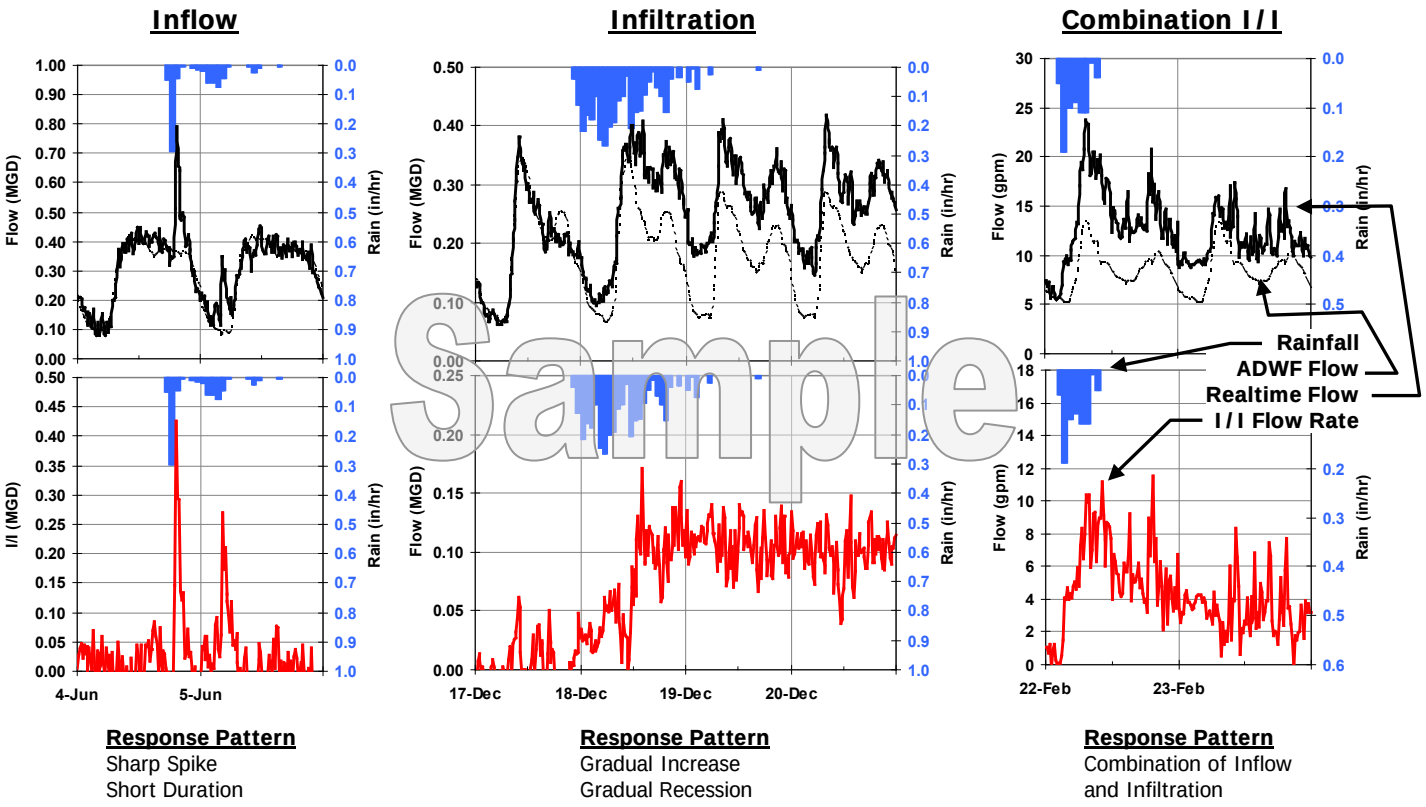


Figure 20. Inflow and Infiltration: Graphical Response Patterns

Infiltration Components

Infiltration can be further subdivided into components as follows:

- **Groundwater Infiltration:** Groundwater infiltration depends on the depth of the groundwater table above the pipelines as well as the percentage of the system submerged. The variation of groundwater levels and subsequent groundwater infiltration rates is seasonal by nature. On a day-to-day basis, groundwater infiltration rates are relatively steady and will not fluctuate greatly.
- **Rainfall-Dependent Infiltration:** This component occurs as a result of storm water and enters the sewer system through pipe defects, as with groundwater infiltration. The storm water first percolates directly into the soil and then migrates to an infiltration point. Typically, the time of concentration for rainfall-related infiltration may be 24 hours or longer, but this depends on the soil permeability and saturation levels.
- **Rainfall-Responsive Infiltration** is storm water which enters the collection system indirectly through pipe defects, but normally in sewers constructed close to the ground surface such as private laterals. Rainfall-responsive infiltration is independent of the groundwater table and reaches defective sewers via the pipe trench in which the sewer is constructed, particularly if the pipe is placed in impermeable soil and bedded and backfilled with a granular material. In this case, the pipe trench serves as a conduit similar to a French drain, conveying storm drainage to defective joints and other openings in the system. This type of infiltration can have a quick response and graphically can look very similar to inflow.

Figure 21 illustrates the possible sources and components of I/I.

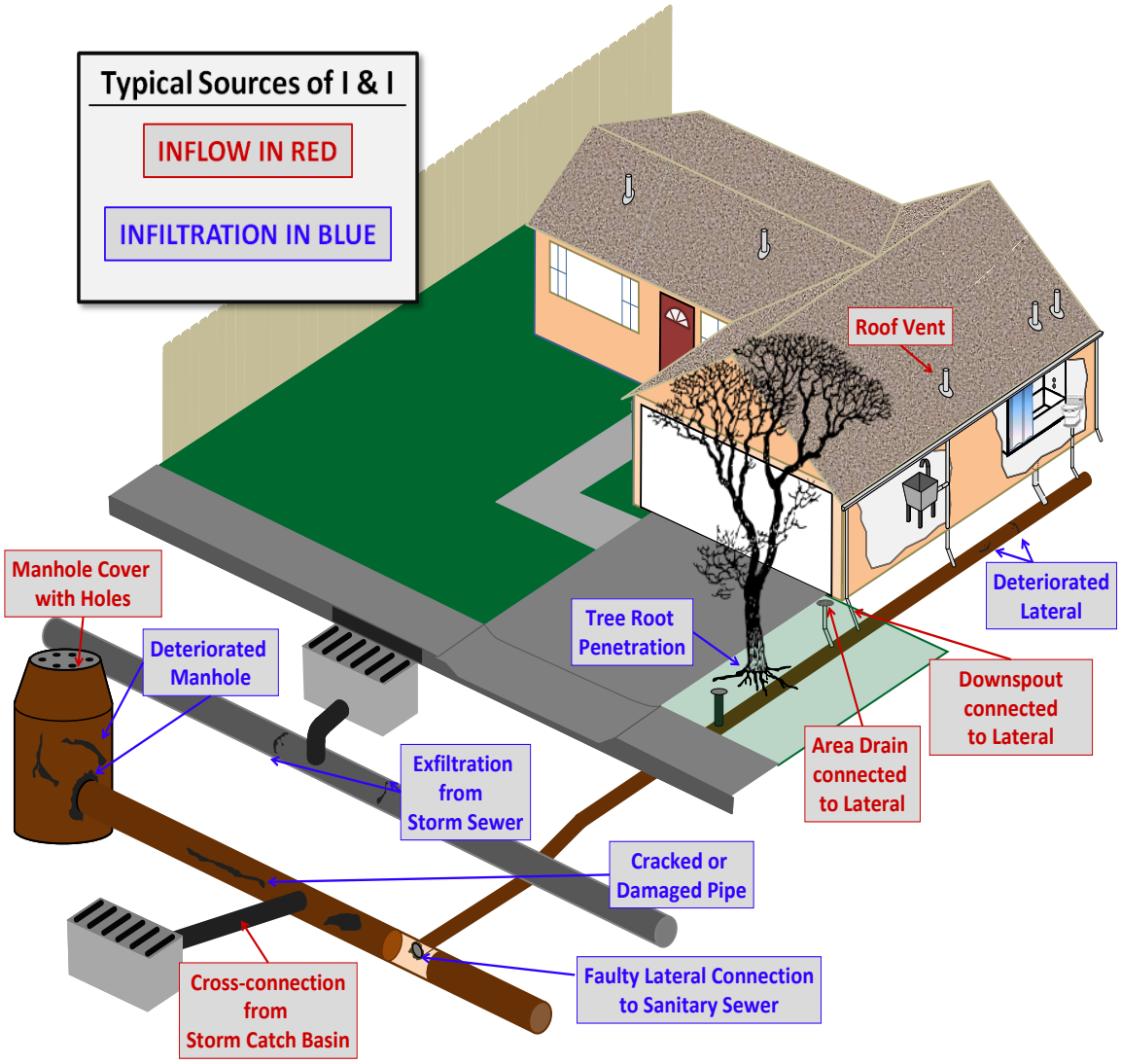


Figure 21. Typical Sources of Infiltration and Inflow

Inflow / Infiltration: Analysis Methods

After differentiating I/I flows from ADWF flows, various calculations can be made to determine which I/I component (inflow or infiltration) is more prevalent at a particular site and to compare the relative magnitudes of the I/I components between drainage basins and between storm events, as follows:

Inflow Indicators

Peak I/I Flow Rate: Inflow is characterized by sharp, direct spikes occurring during a rainfall event. Peak I/I rates are used for inflow analysis[6]. After determining the peak I/I flow rate for a given site, and for a given storm event, there are three ways to *normalize* the peak I/I rates for an "apples-to-apples" comparison amongst the different drainage basins:

- **Peak I/I Flow Rate per IDM:** Peak measured I/I rate divided by length of pipe within the drainage basin, expressed in units of inch-diameter-mile (IDM, miles of pipeline multiplied by the diameter of the pipeline in inches). Final units are gallons per day (gpd) per IDM.
- **Peak I/I Flow Rate per Acre:** Peak measured I/I rate divided by the geographic area of the upstream basin in acres. Units are gpd per acre.
- **Peak I/I Flow Rate to ADWF Ratio:** Peak measured I/I rate divided by average dry weather flow (ADWF). This is a ratio and is expressed without units.

Infiltration Indicators

Dry Weather Groundwater Infiltration: GWI analysis is conducted by looking at minimum dry weather flow to average dry weather flow ratios and comparing them to established standards to quantify the rate of excess groundwater infiltration. As with inflow, GWI infiltration rates can be normalized by means of pipe length (IDM), basin area (acres), and dry weather flow rates (ADWF). These methods are discussed in further detail in the *Groundwater Analysis* section later in this report.

Rainfall-Dependent Infiltration: Infiltration occurring after the conclusion of a storm event is classified as rainfall-dependent infiltration. Analysis is conducted by looking at the infiltration rates at set periods after the conclusion of a storm event. Depending on the particular collection system and the time required for flows to return to ADWF levels, different set periods may be examined to determine the basins with the greatest or most sustained rainfall-dependent infiltration rates.

Combined I/I Indicators

Total Infiltration: The total inflow and infiltration is measured in gallons per site and per storm event. Because it is based on total I/I volume, it is an indicator of combined inflow and infiltration and is used to identify the overall volumetric influence of I/I within the monitoring basin. As with inflow, pipe length, basin area, and dry weather flow are used to normalize combined I/I for basin comparison:

- **Combined I/I Flow Rate per IDM:** Total infiltration (gallons) divided by length of pipe (IDM) and divided by storm event rainfall (inches of rain). Final units are gallons per day (gpd) per IDM per inch of rain.

[6] I/I flow rate is the realtime flow less the estimated average dry weather flow rate. It is an estimate of flows attributable to rainfall. By using peak measured flow rates (inclusive of ADWF), the I/I flow rate would be skewed higher or lower depending on whether the storm event I/I response occurs during low-flow or high-flow hours.

- **R-Value:** Total infiltration (gallons) divided by the total rainfall that fell within the acreage of that basin (gallons of rainfall). This is expressed as a percentage and is explained as "the percentage of rain that enters the sanitary sewer collection system." Systems with R-values less than 5%[7] are often considered to be performing well.
- **Combined I/I Flow Rate per ADWF:** Total infiltration (gallons) divided by the ADWF (gpd) and divided by storm event rainfall (inches of rain). Final units are million gallons per mgd of ADWF per inch of rain.

Instantaneous flows were plotted against ADWF flows to analyze the I/I response to rainfall events. Figure 22 illustrates a sample of how this analysis is conducted and some of the measurements that are used to distinguish infiltration and inflow. Similar graphs were generated for the individual flow monitoring sites and can be found in *Appendix A*.

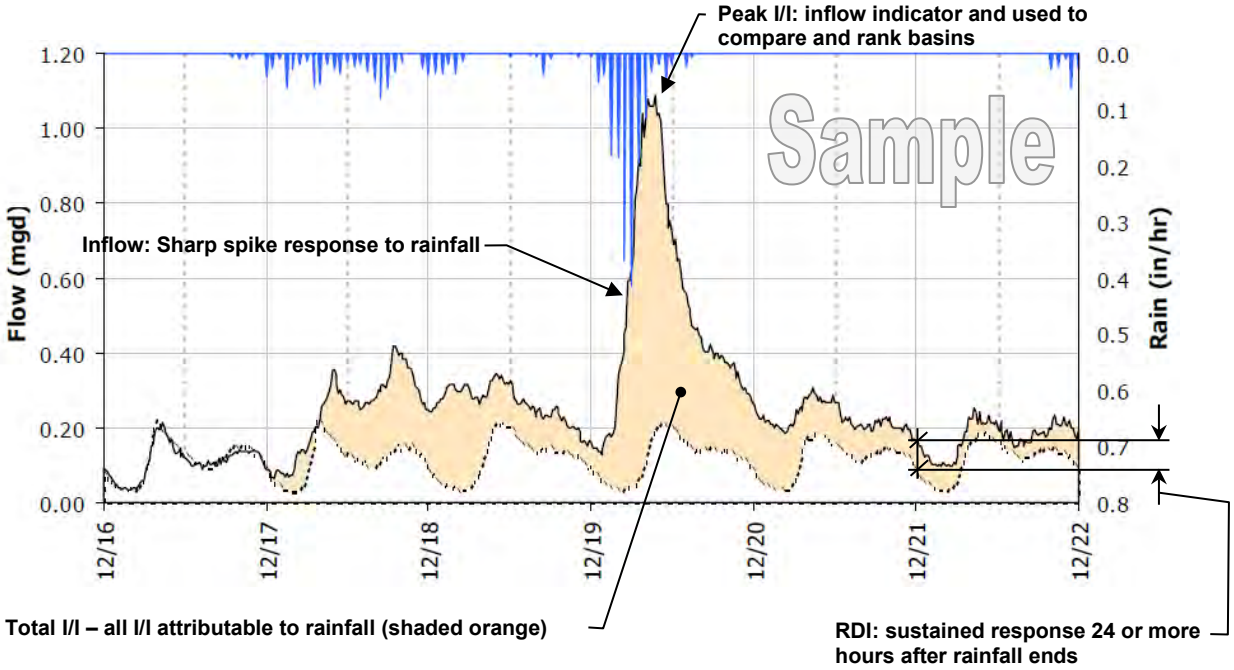


Figure 22. Sample Infiltration and Inflow Isolation Graph

The infiltration and inflow indicators were normalized by basin area and by ADWF in this report. Final rankings were determined by weighting the normalization methods by 51% for ADWF, and 49% for basin area, with ties broken by ADWF. The per-ADWF method is given a higher weight including the tie-break because, for this study. The per-acre method was given the lower weighting because the catchment area per each flow monitoring basin is estimated but requires a thorough hydrologic study to determine the true watershed.

[7] Keefe, P.N. "Test Basins for I/I Reduction and SSO Elimination." 1998 WEF Wet Weather Specialty Conference, Cleveland.

Inflow / Infiltration: Results

I/I Period

The I/I analyses and results presented in this section were for I/I flow elicited from Storm Event 2 from 12:00am to 1:00 pm. These hours were selected because they showed the most definitive I/I response amoungst all of the monitoring sites, and because it was the only period for which all the City meters reported usable data.

Inflow Results Summary

Table 9 summarizes the peak measured I/I flows and inflow analysis results (refer to the *I/I Methods* section for more information on inflow analysis methods and ranking procedures). The upper three ranked basins for each analysis are shown color coded in red.

Table 9. Basin Inflow Analysis Summary

Metering Basin	ADWF (mgd)	Peak I/I Rate (mgd)	Peak I/I per Acre (gpd/acre)	Peak I/I per ADWF	Inflow Ranking[a]
Basin 1	0.019	0.018	424	0.94	10
Basin 2	0.104	0.015	238	0.14	11
Basin 3	0.032	0.078	986	2.43	3
Basin 4	0.072	0.072	458	1.00	7
Basin 5/6	0.112	0.181	740	1.62	5
Basin 7	0.189	0.128	627	0.68	9
Basin 8	0.007	0.030	2,114	4.47	2
Basin 9	0.081	0.055	893	0.67	8
Kehoe	0.049	0.047	931	0.98	6
Grandview Terrace	0.036	0.038	1,446	1.04	4
Straw Flower	0.008	0.042	1,748	5.52	1

[a] Ranking of 1 represents most inflow after normalization.

The following inflow analysis results are noted:

- Basins 3, 8 and Straw Flower ranked highest for normalized inflow contribution.

Figure 23 shows bar graph summaries of the inflow analysis. Figure 24 shows a temperature map summary of the inflow analysis results per basin.

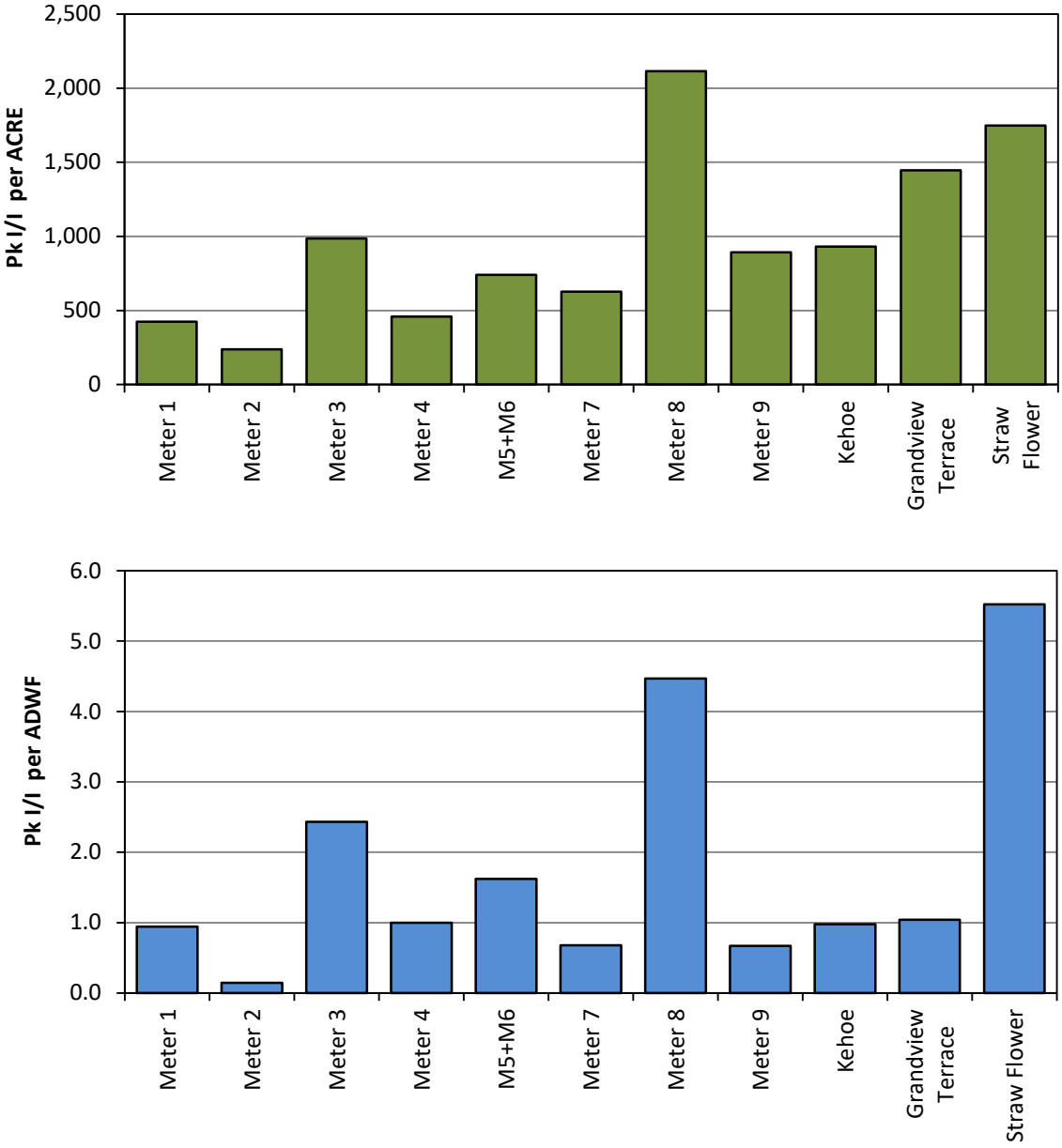


Figure 23. Bar Graphs: Inflow Analysis Summary

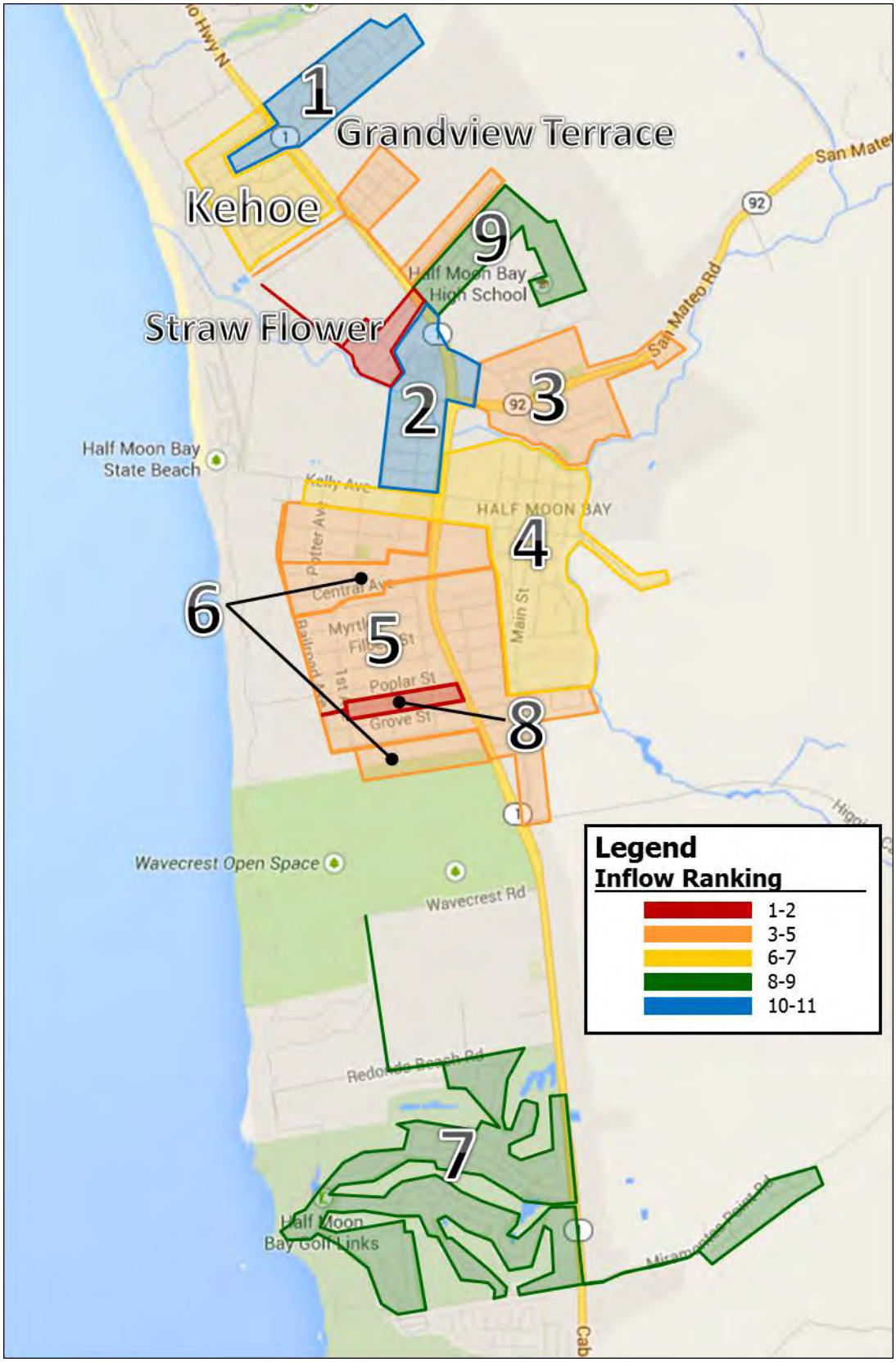


Figure 24. Inflow Temperature Map (by Rank)

Rainfall-Dependent Infiltration Results Summary

Table 10 summarizes the calculated average RDI flow rate during the low-flow hours immediately following the early morning hours of Storm Event 2 (refer to the *I/I Methods* section for more information on RDI analysis methods and ranking methods). The upper three ranked basins for each analysis are shown color coded in red.

Table 10. Basin RDI Analysis Summary

Metering Basin	ADWF (mgd)	RDI Rate (mgd)	RDI per Acre (GPAD)	RDI per ADWF	RDI Ranking[A]
Basin 1	0.019	0.006	137	30%	6
Basin 2	0.104	0.015	239	14%	7
Basin 3	0.032	0.003	33	8%	10
Basin 4	0.072	0.006	37	8%	9
Basin 5/6	0.112	0.119	485	106%	2
Basin 7	0.189	0.059	287	31%	4
Basin 8	0.007	0.016	1,158	245%	1
Basin 9	0.081	0.011	186	14%	8
Kehoe	0.049	0.026	506	53%	3
Grandview Terrace	0.036	0.007	275	20%	5
Straw Flower	0.008	0.000	0	0%	11

[A] Ranking of 1 represents most RDI after normalization.

The following RDI analysis results are noted:

- Basin 5/6, 8 and Kehoe ranked highest for normalized RDI contribution.

Figure 25 shows bar graph summaries of the RDI analysis. A temperature map by overall ranking is shown in Figure 26.

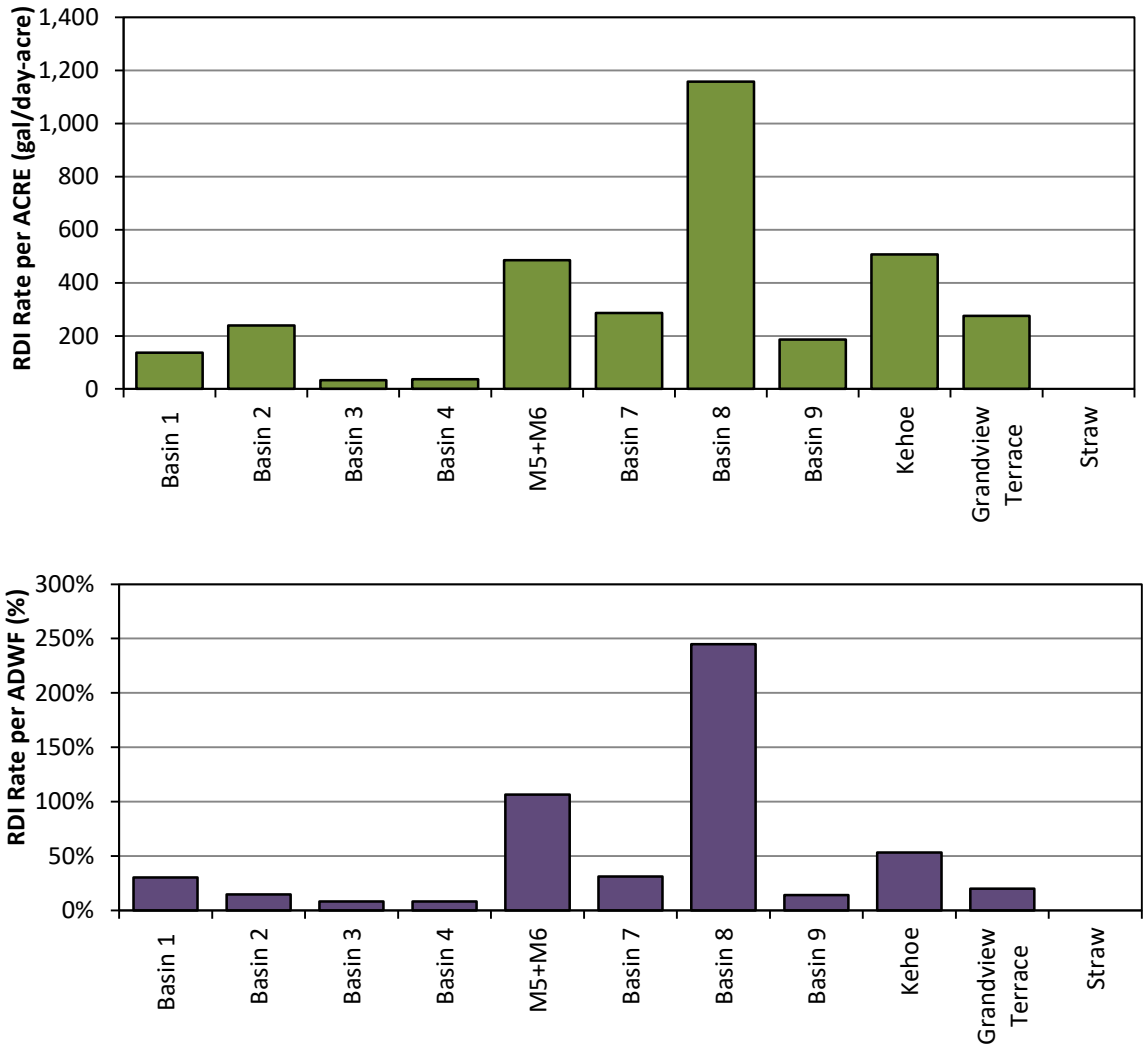


Figure 25. Bar Graphs: RDI Analysis Summary

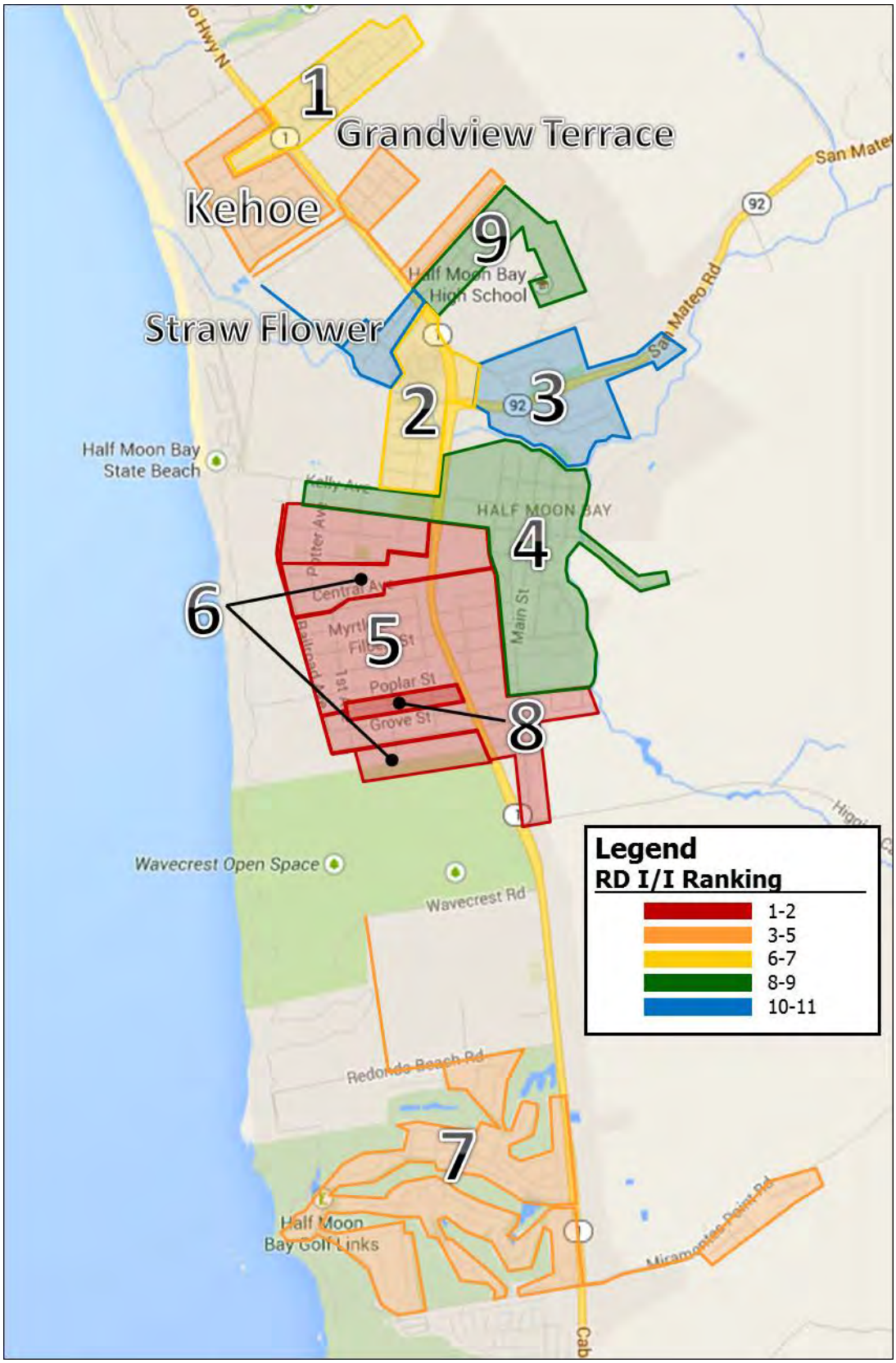


Figure 26. RDI Temperature Map (by Rank)

Groundwater Infiltration Results Summary

Dry weather (ADWF) flow can be expected to have a predictable diurnal flow pattern. While each site is unique, experience has shown that, given a reasonable volume of flow and typical loading conditions, the daily flows fall into a predictable range when compared to the daily average flow. If a site has a large percentage of groundwater infiltration occurring during the periods of dry weather flow measurement, the amplitudes of the peak and low flows will be dampened[8]. Figure 27 shows a sample of two flow monitoring sites, both with nearly the same average daily flow, but with considerably different peak and low flows. In this *sample* case, Site B1 may have a considerable volume of groundwater infiltration.

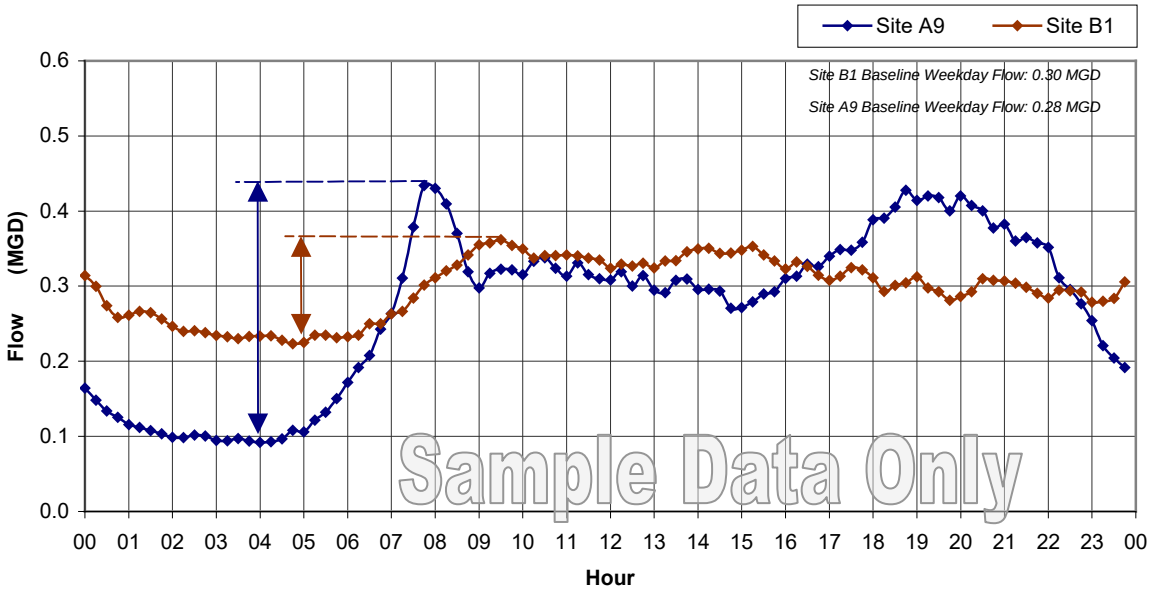


Figure 27. Groundwater Infiltration Sample Figure

It can be useful to compare the low-to-ADWF flow ratios for the flow metering sites. A site with abnormal ratios, and with no other reasons to suspect abnormal flow patterns (such as proximity to a pump station, treatment facilities, etc.), has a possibility of higher levels of groundwater infiltration in comparison to the rest of the collection system. Figure 28 plots the low-to-ADWF flow ratios against the ADWF flows for the sites monitored during this study. The dotted line shows "typical" low-to-ADWF ratios per the Water Environment Federation (WEF)[9]. The following GWI results are noted:

- Basins 1, 8, 9 and Grandview Terrace had GWI rates that were **above** the WEF typical low-to-average ratio, indicating excessive groundwater infiltration.

Figure 29 shows a color-coded map of the basins with rates of groundwater infiltration considerably above typical groundwater infiltration standards (as set forth by WEF).

[8] In an extreme case, perhaps 0.2 mgd of ADWF flow and 2.0 mgd of groundwater infiltration, the peaks and lows would be barely recognizable; the ADWF flow would be nearly a straight line.

[9] WEF Manual of Practice No. 9, "Design and Construction of Sanitary and Storm Sewers."

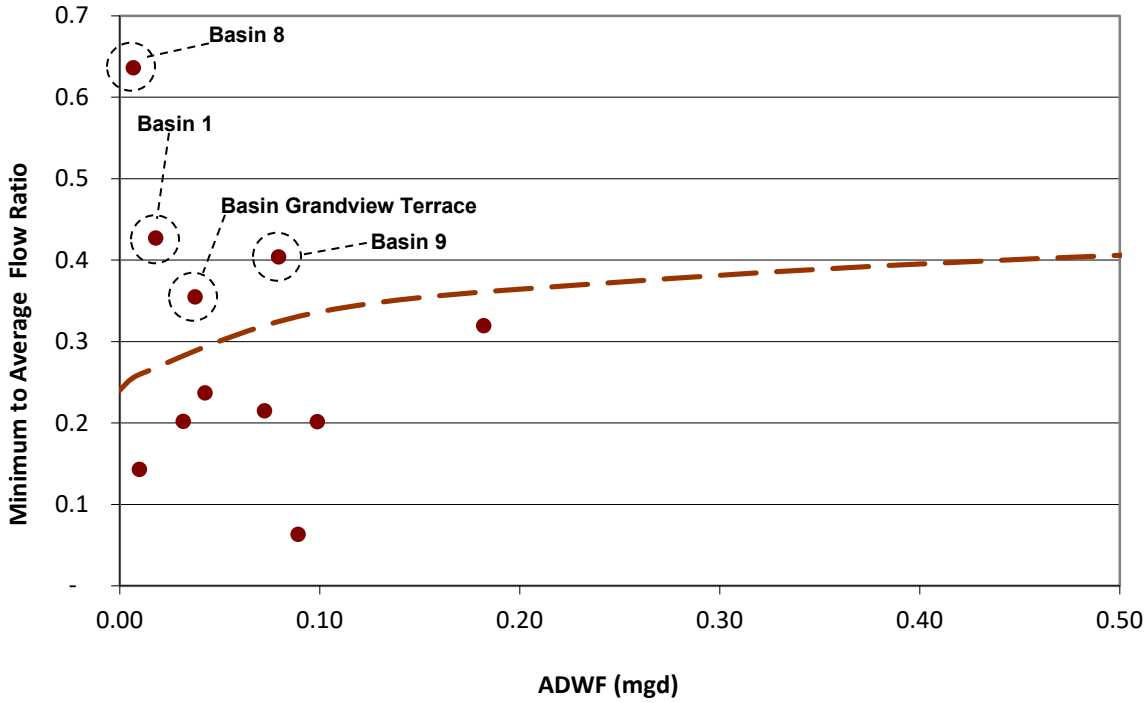


Figure 28. Minimum Flow Ratios vs. ADWF[10]

[10] Due to attenuation, it should be expected that sites with larger flow volumes should not have quite the peak-to-average and low-to-average flow ratios as sites with lesser flow volumes, which is why the WEF typical trend lines slope closer to 1.0 as the ADWF increases, as shown in the figure.

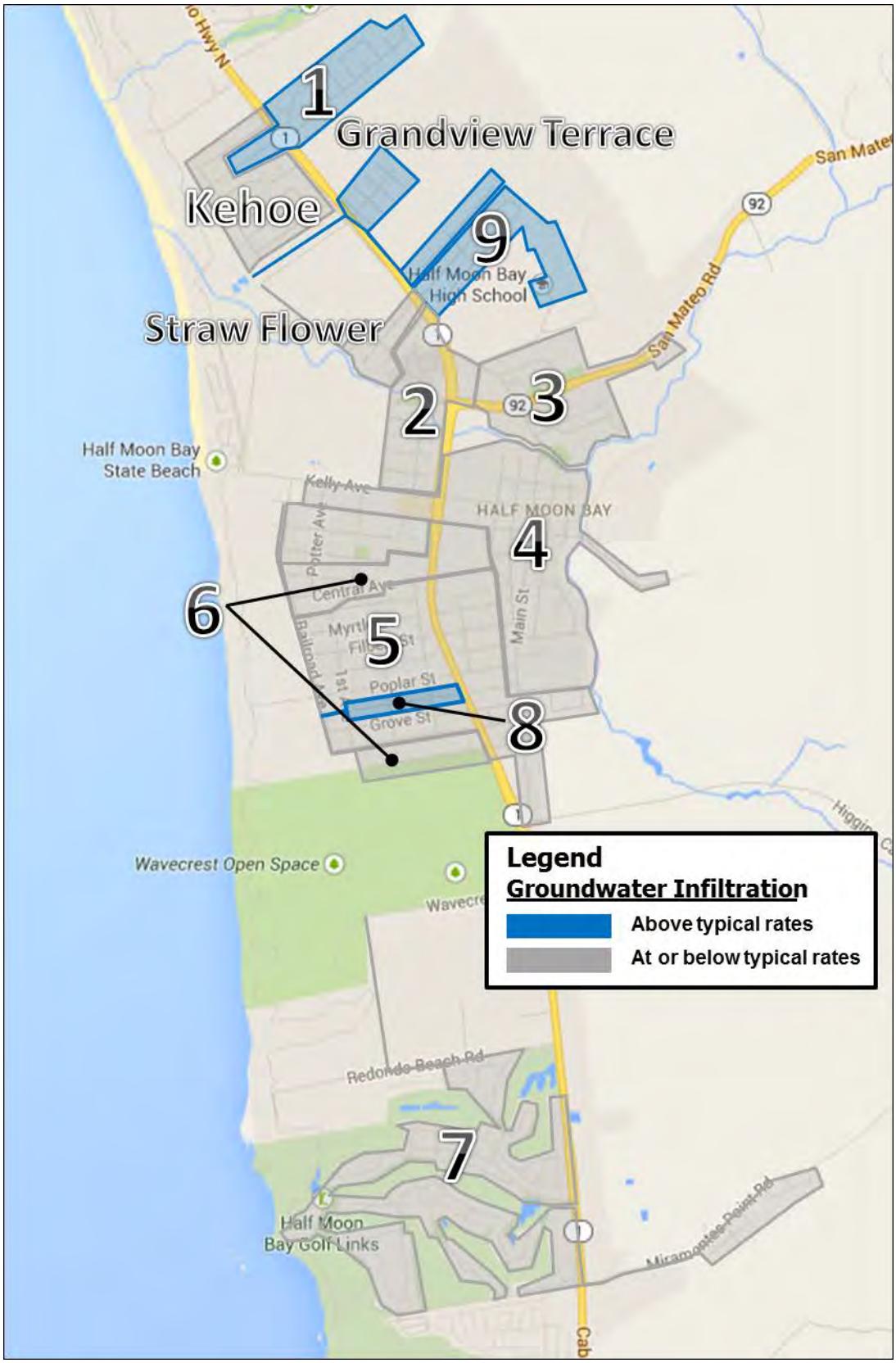


Figure 29. Basins with Groundwater Infiltration

Combined I/I Results Summary

Combined I/I analysis considers the totalized volume (in gallons) of both inflow and rainfall-dependent infiltration over the course of a storm event.

Table 11 summarizes the combined I/I flow results for both storm events (refer to the *I/I Methods* section for more information on combined I/I analysis methods and ranking methods). The upper three ranked basins for each analysis are shown color coded in red.

Table 11. Basin Combined I/I Analysis Summary

Metering Basin	ADWF (mgd)	Combined I/I (gallons)	R-Value (%)	Combined I/I per ADWF	Combined I/I Ranking[A]
Basin 1	0.019	3,800	0.62%	0.376	8
Basin 2	0.104	6,900	0.75%	0.124	9
Basin 3	0.032	12,100	1.05%	0.705	5
Basin 4	0.072	12,200	0.53%	0.313	10
Basin 5/6	0.112	70,000	2.00%	1.191	3
Basin 7	0.189	32,300	1.27%	0.372	7
Basin 8	0.007	9,000	4.53%	2.601	2
Basin 9	0.081	0	0.00%	0.000	11
Kehoe	0.049	13,100	1.76%	0.503	4
Grandview Terrace	0.036	6,900	1.82%	0.357	6
Straw Flower	0.008	11,200	3.21%	2.754	1

[A] Ranking of 1 represents most combined I/I after normalization.

The following combined I/I analysis results are noted:

- Basins 5/6, 8 and Straw Flower ranked highest for normalized combined I/I contribution.

Figure 30 shows bar graph summaries of the combined I/I analysis. A temperature map by overall ranking is shown in Figure 31.

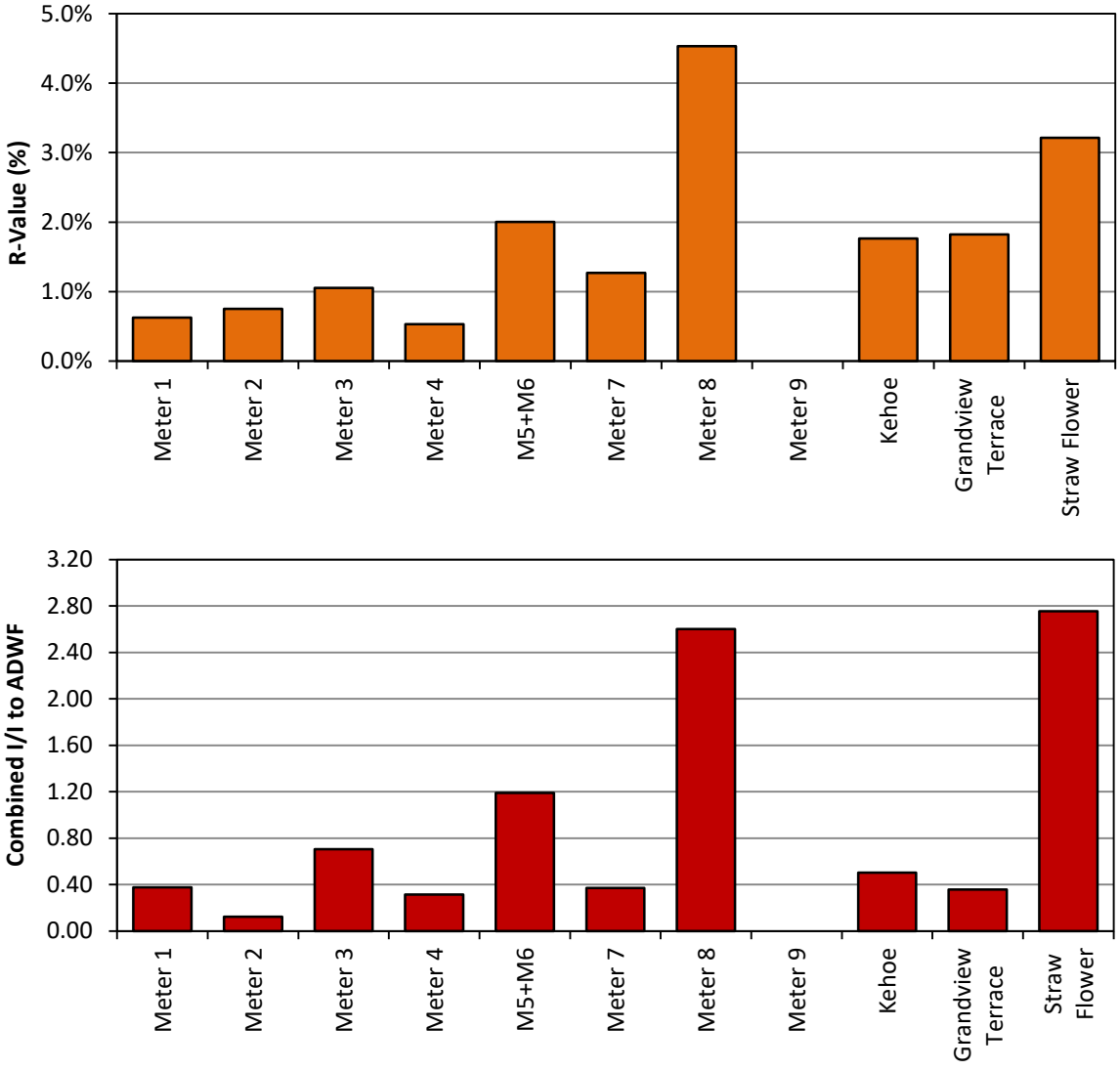


Figure 30. Bar Graphs: Combined I/I Analysis Summary

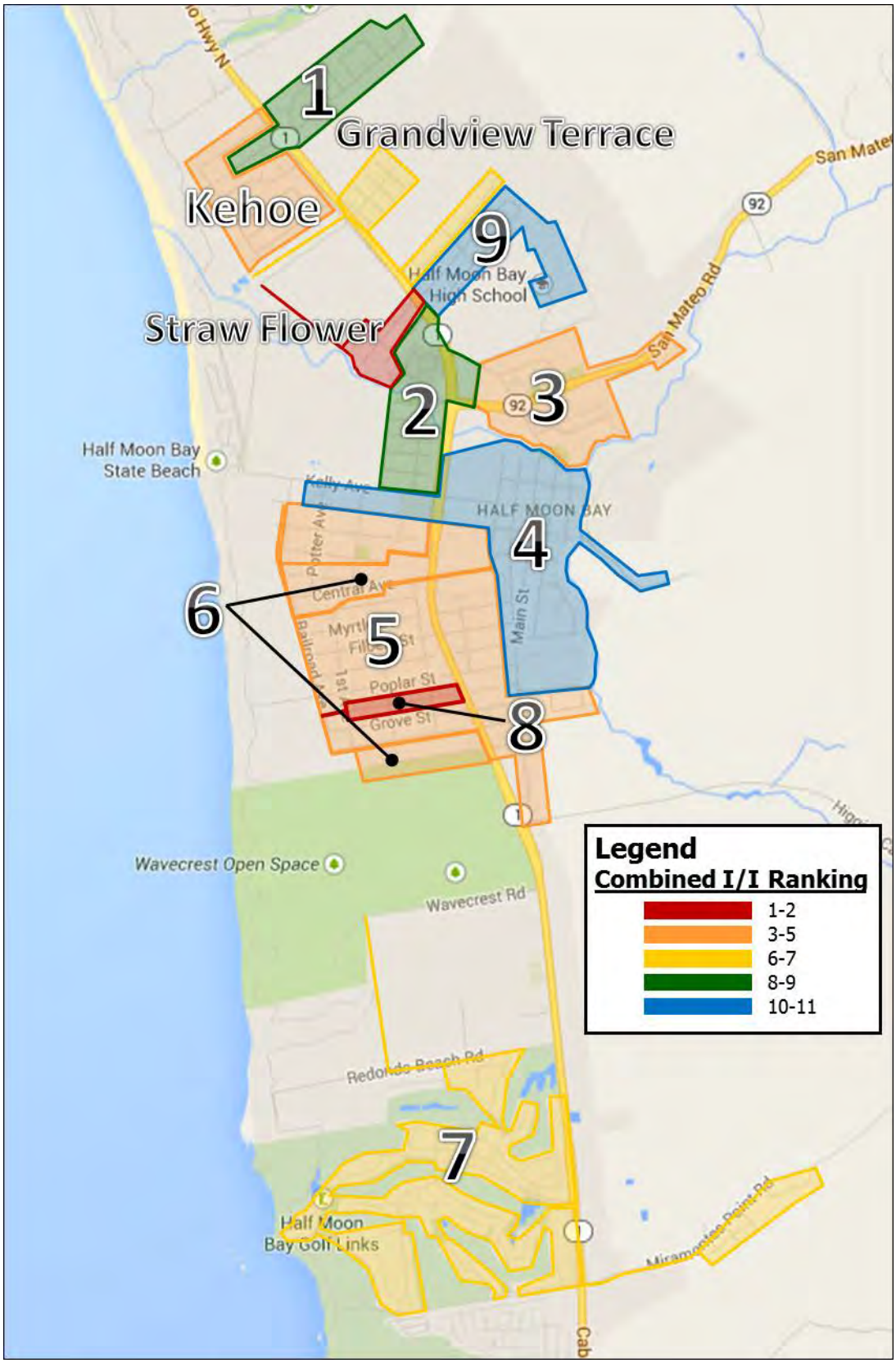


Figure 31. Combined I/I Temperature Map (by Rank)

Inflow / Infiltration: Synthetic Hydrographs

In order to model design storms, synthetic hydrographs were developed to approximate the actual RDI hydrograph shape in terms of the time to the peak and the recession coefficient. The actual RDI hydrograph was best matched with a synthetic hydrograph by separating the synthetic hydrograph into seven volume components (R1 through R7). The seven components represent different response times to the rainfall event and, therefore, different infiltration or inflow paths into the sewer system. R1 is characterized by a short response time and is assumed to consist of mainly inflow. R7 represents slower response and longer recession times and consists of mostly infiltration. Levels of soil saturation are also considered. Using synthetic hydrograph analysis, appropriate time and recession parameters were estimated by a trial-and-error procedure until a good match was obtained. For example, the hydrograph and its component hydrographs for Storm Event 1, for Site 7 is shown in Figure 32.

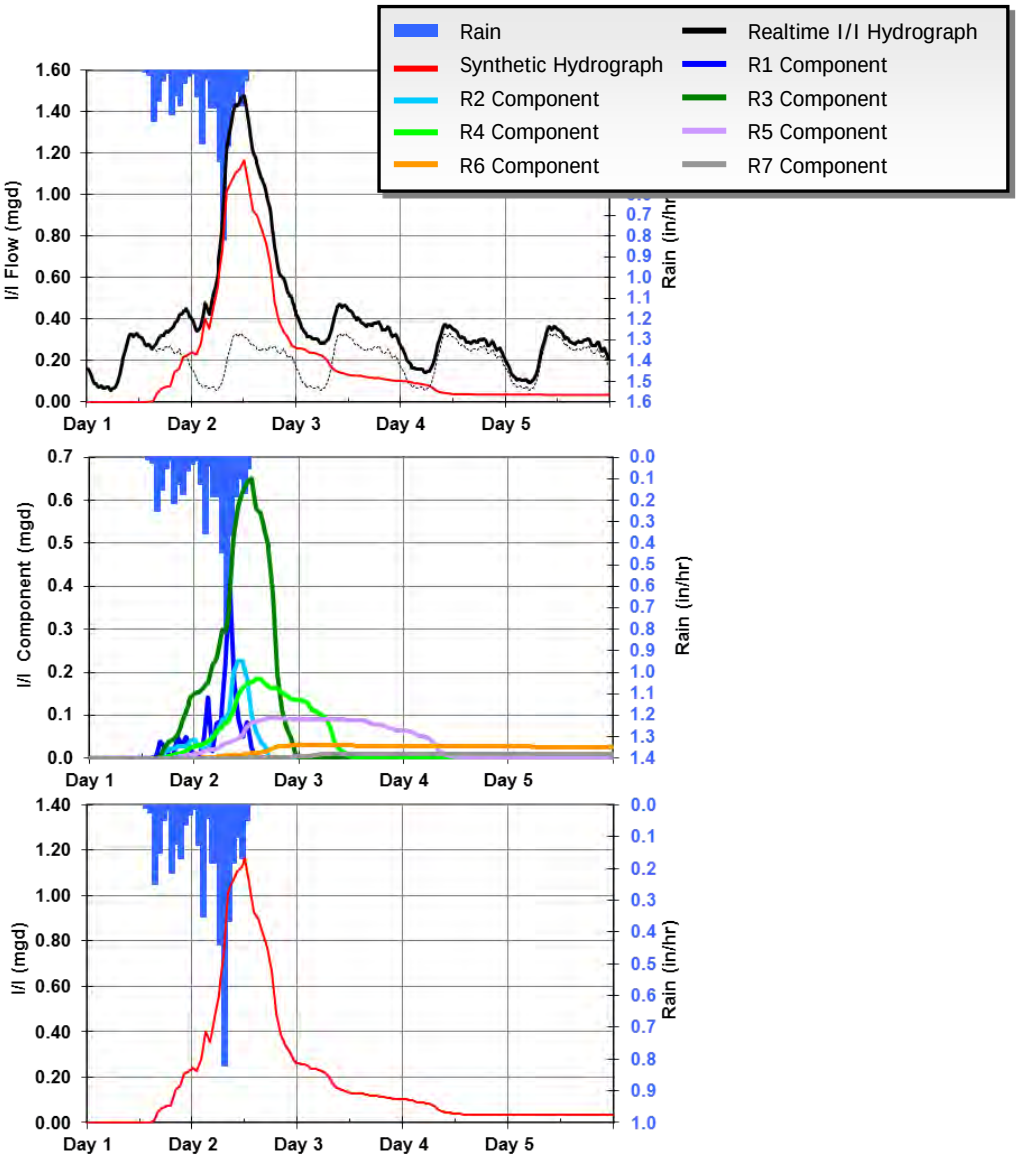


Figure 32. Site 7, Storm Event 2: Synthetic Hydrograph

Design Storm Development

With the I/I response modeled by a synthetic hydrograph, design storms can be applied. This serves two functions: (a) predicted flows are based on the same storm event and are therefore normalized to each other, making for easier and better comparisons, and (b) the resulting I/I flows can be predicted for a design storm event. This helps to calibrate modeling efforts that will determine if the collection system has adequate capacity to handle very large storm events.

V&A used a 10-year, 24-hour design storm for this analysis. Storm events were taken from the NOAA Precipitation-Frequency Atlas of the Western United States. Figure 33 summarizes the design storm magnitude and profile. This particular profile distribution also fits the NOAA criterion for 2-hour and 6-hour durations, in addition to the 24-hour duration.

10-Year, 24-hour Design Storm	
Hour	Inches of Rain
1	0.010
2	0.025
3	0.253
4	0.152
5	0.051
6	0.015
7	0.217
8	0.124
9	0.174
10	0.062
11	0.031
12	0.012
13	0.128
14	0.359
15	0.043
16	0.179
17	0.179
18	0.439
19	0.815
20	0.359
21	0.179
22	0.102
23	0.171
24	0.051
Total:	**4.12**

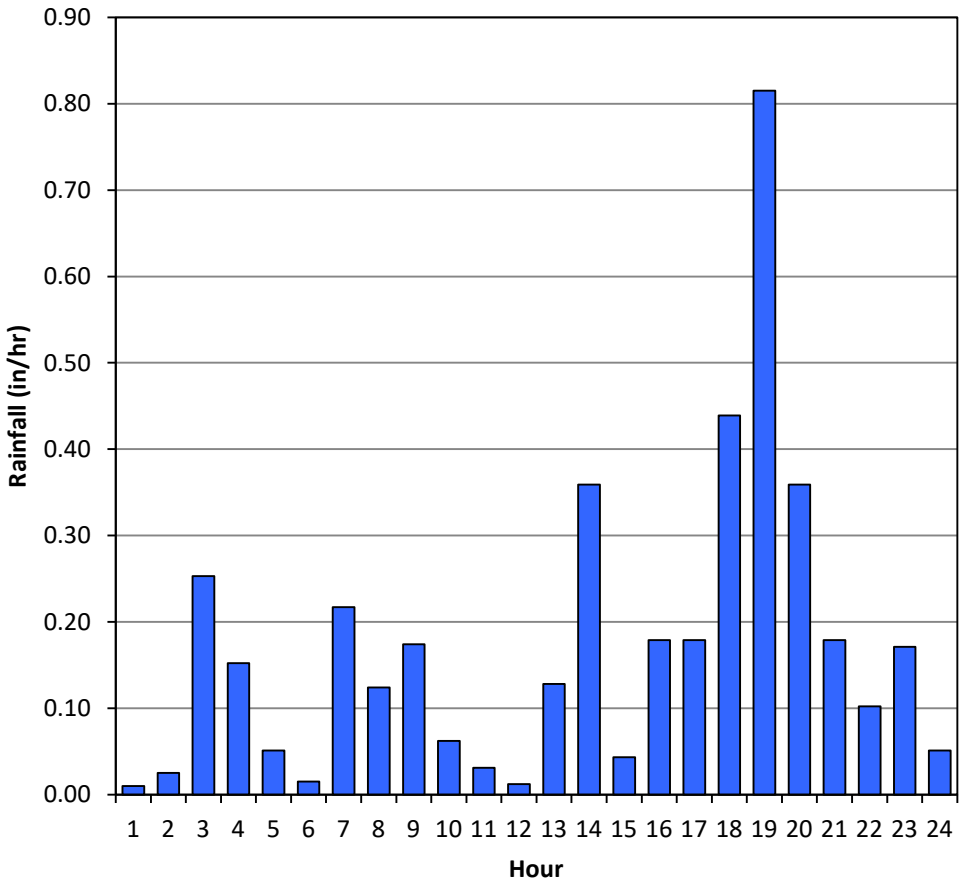


Figure 33. 10-Year, 24-Hour Design Storm Values and Profile

Design Storm Response Summary

The 10-year, 24-hour storm event was applied to the synthetic I/I hydrograph components developed for each flow monitoring site. This method produces the best estimated response to the design storm events. These results assume full ground saturation and that the peak I/I flows from the design storm coincide with peak sanitary flows to produce a "worst-case" scenario of peak wet weather flows. Table 12 summarizes the final results for the design storm on a site-by-site basis.

Table 12. Design Storm I/I Analysis Summary

Metering Site	Predicted Peak Dry Weather Flow (mgd)	Predicted Peak I/I Rate (mgd)	Predicted Peak Flow (mgd)	Predicted Total I/I (gallons)
Basin 1	0.033	0.22	0.25	74,000
Basin 2	0.256	1.09	1.35	290,000
Basin 3	0.079	0.91	0.99	216,000
Basin 4	0.133	0.84	0.97	218,000
Basin 5/6	0.607	4.04	4.64	2,560,000
Basin 7	0.330	1.16	1.49	949,000
Basin 8	0.012	0.35	0.37	249,000
Basin 9	0.139	0.10	0.24	26,000
Kehoe	0.154	0.69	0.85	269,000
Grandview Terrace	0.070	0.32	0.39	135,000
Straw Flower	0.618	4.79	5.40	2,587,000

RECOMMENDATIONS

V&A advises that future I/I reduction plans consider the following recommendations:

1. **Determine I/I Reduction Program:** The City should examine its I/I reduction needs to determine a future I/I reduction program.
    a. If peak flows, sanitary sewer overflows, and pipeline capacity issues are of greater concern, then priority can be given to investigate and reduce sources of inflow within the basins with the greatest inflow problems. The highest inflow occurred in Basins 3, 8 and Straw Flower.
    b. If total infiltration and general pipeline deterioration are of greater concern, then the program can be weighted to investigate and reduce sources of infiltration within the basins with the greatest infiltration problems.
        i. The highest normalized rainfall-dependent infiltration occurred in Basin 5/6, 8 and Kehoe.
        ii. The highest groundwater infiltration occurred in Basins 1, 8, 9 and Grandview Terrace.
2. **I/I Investigation Methods:** Potential I/I investigation methods include the following:
    a. Smoke testing.
    b. Mini-basin flow monitoring.
    c. Nighttime reconnaissance work to (1) investigate and determine direct point sources of inflow and (2) determine the areas and pipe reaches responsible for high levels of infiltration contribution.
3. **I/I Reduction Cost-Effectiveness Analysis:** The City should conduct a study to determine which is more cost-effective: (1) locating the sources of inflow and infiltration and systematically rehabilitating or replacing the faulty pipelines or (2) continued treatment of the additional rainfall-dependent I/I flow.

APPENDIX A

FLOW MONITORING SITES: DATA, GRAPHS, INFORMATION

City of Half Moon Bay

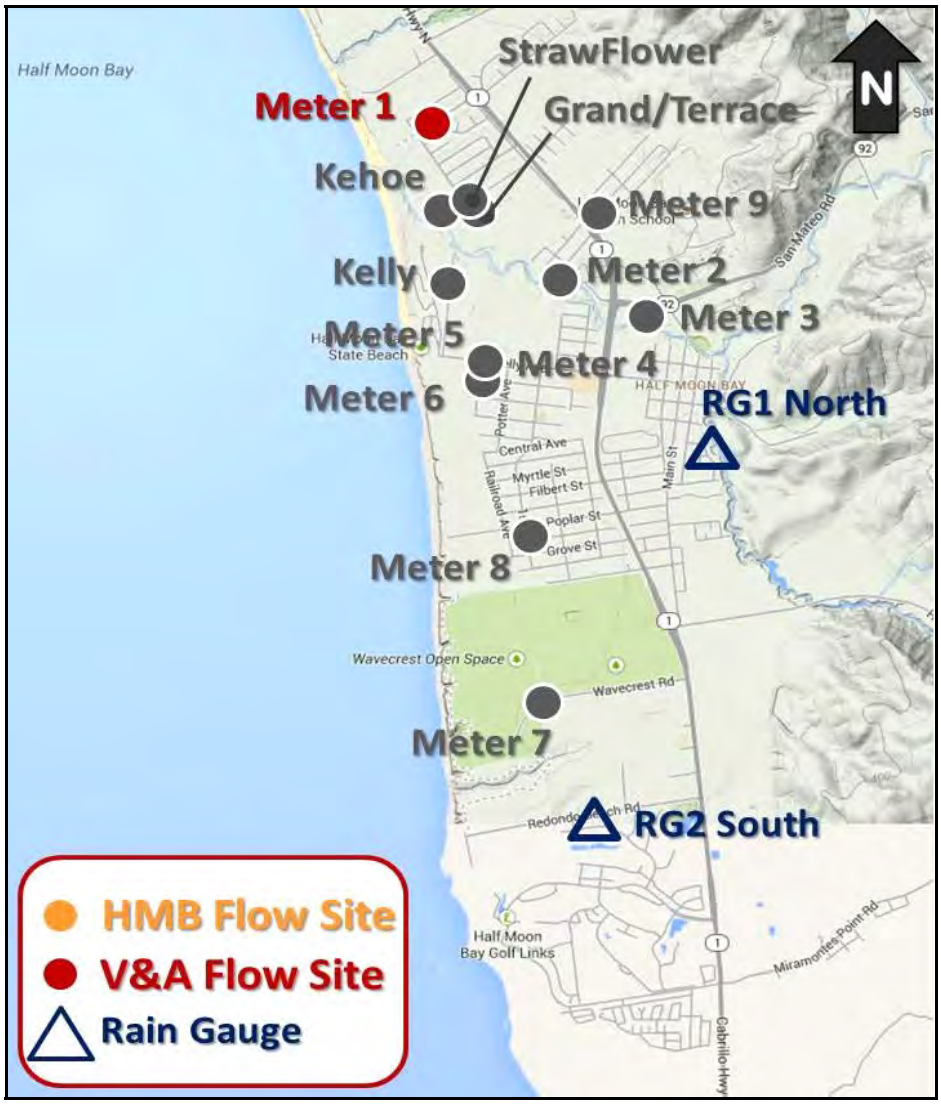
Sanitary Sewer Flow Monitoring

Temporary Monitoring: February 26 to March 11, 2014

Monitoring Site: Meter 1

Location: 410 Beach Avenue

Data Summary Report



Vicinity Map: Meter 1

METER 1

Site Information

Location: 410 Beach Avenue

Coordinates: 122.4451° W, 37.4776° N

Rim Elevation: 35 feet

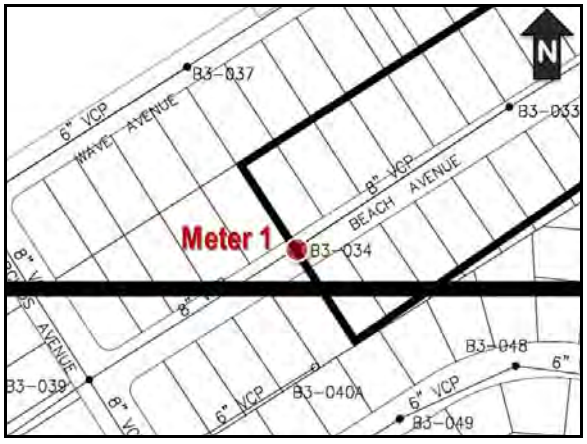
Pipe Diameter: 8 inches

Baseline Flow: 0.019 mgd

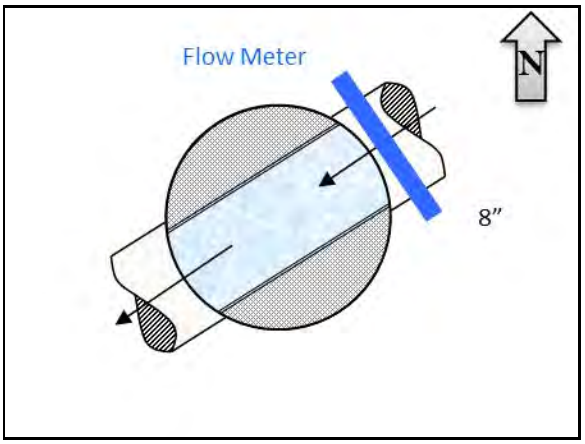
Peak Measured Flow: 0.112 mgd

Street View

Satellite View



Sanitary Sewer Map



Flow Diagram

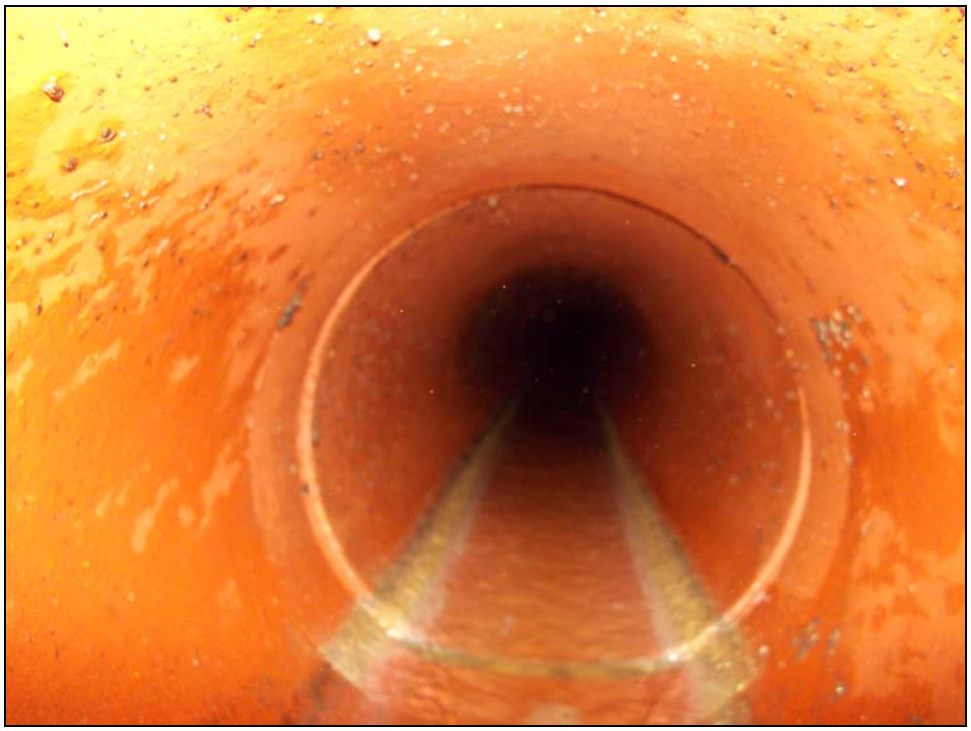
Plan View

METER 1

Additional Site Photos

Effluent Pipe

Influent Pipe

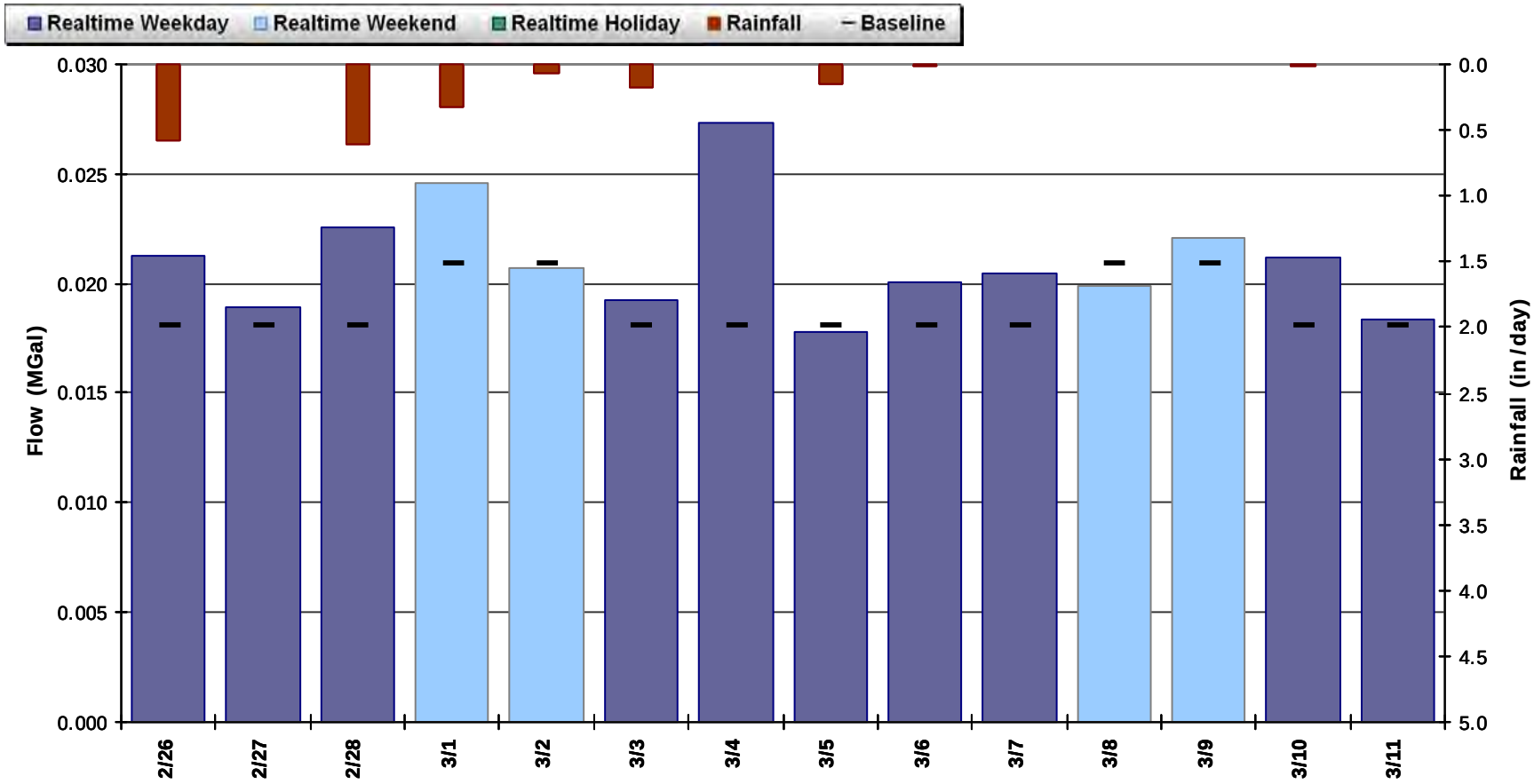


METER 1

Period Flow Summary: Daily Flow Totals

Avg Period Flow: 0.021 MGal **Peak Daily Flow: 0.027 MGal** **Min Daily Flow: 0.018 MGal**

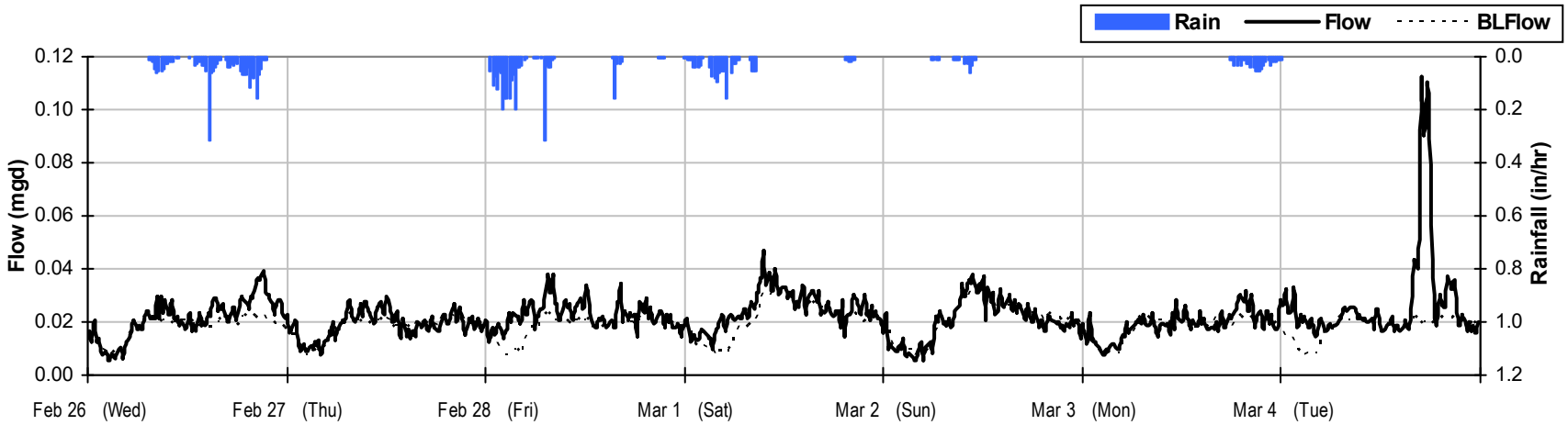
Total Period Rainfall: 1.94 inches

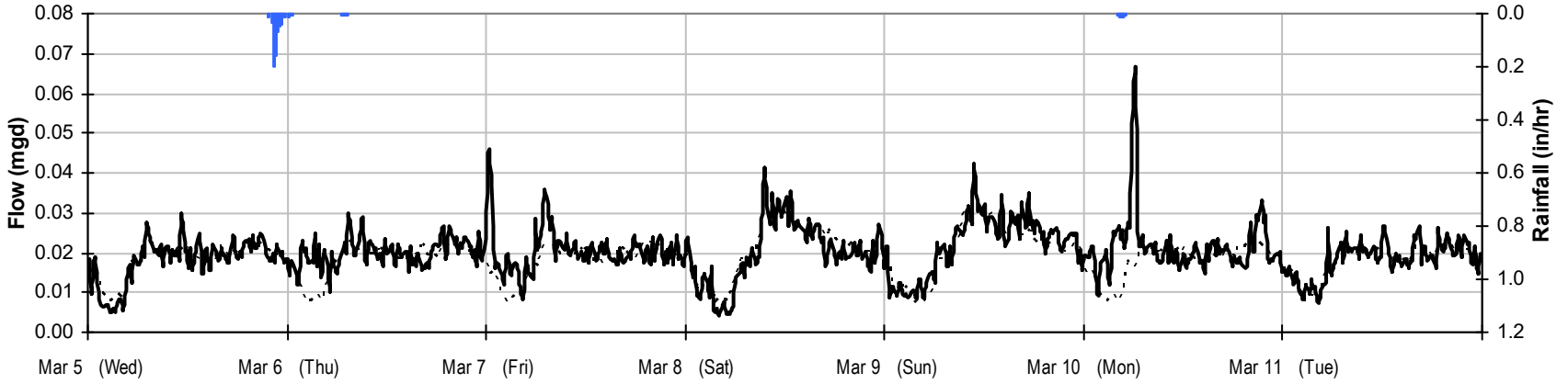


METER 1

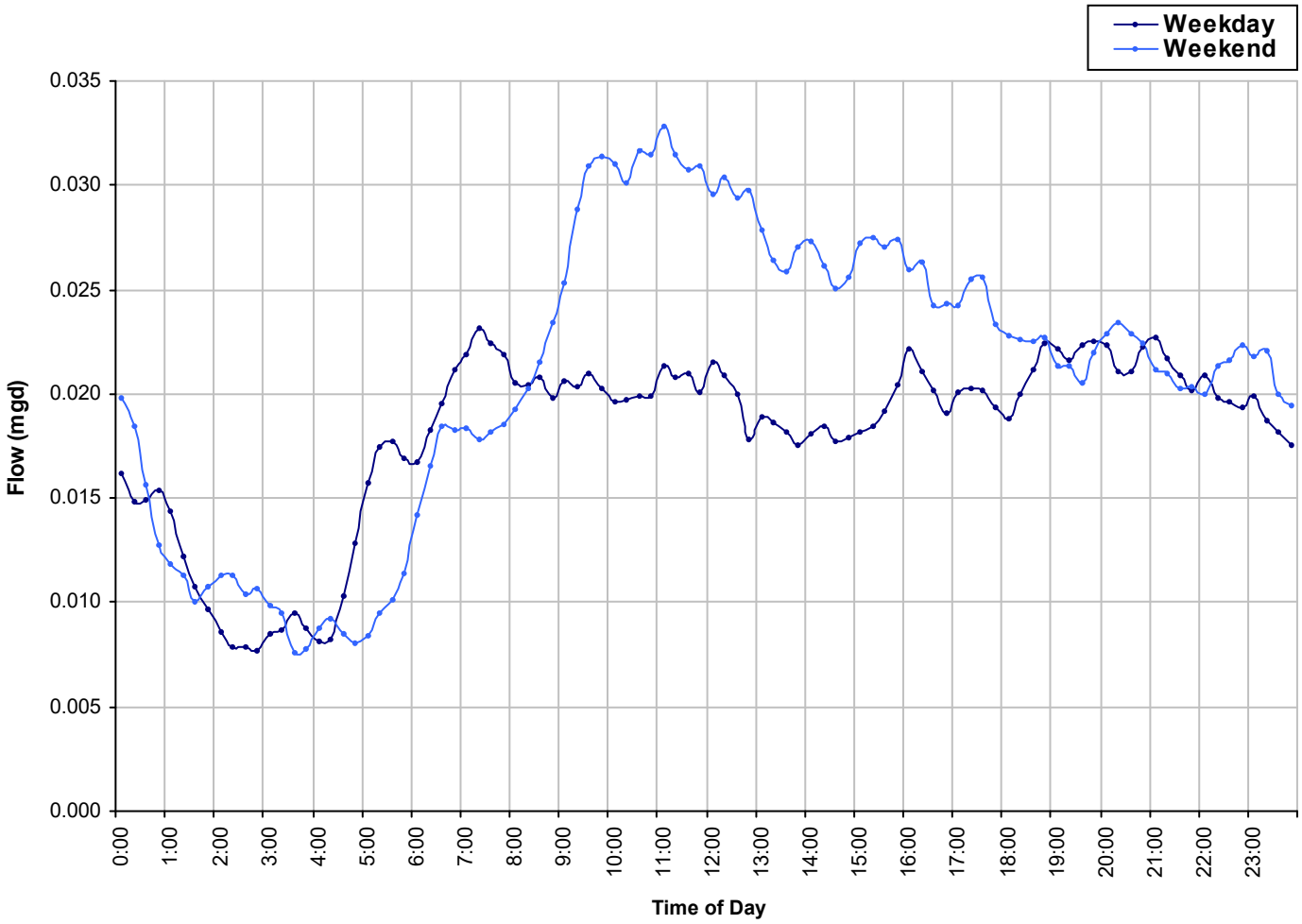
Flow Summary: 2/26/2014 to 3/11/2014

Total Period Rainfall: 1.94 inches **Avg Flow: 0.021 mgd** **Peak Flow: 0.112 mgd** **Min Flow: 0.004 mgd**

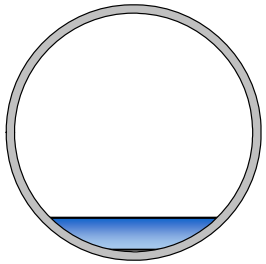




METER 1
Baseline Flow Hydrographs



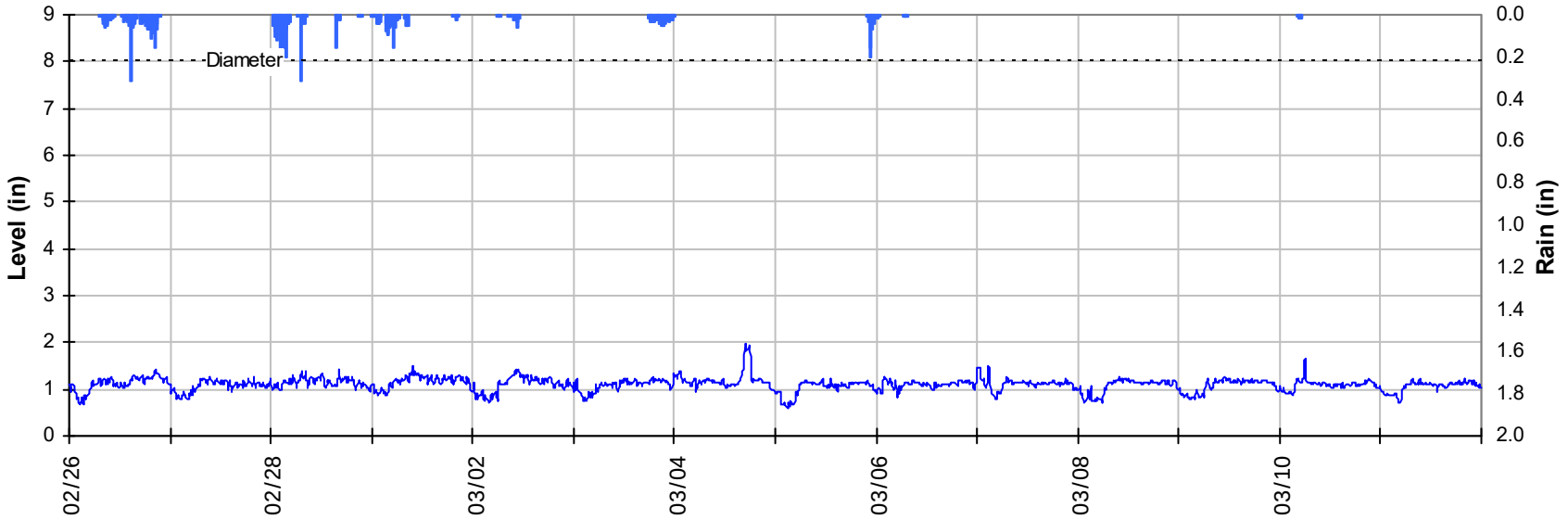
Baseline Flow:
0.019 *mgd*

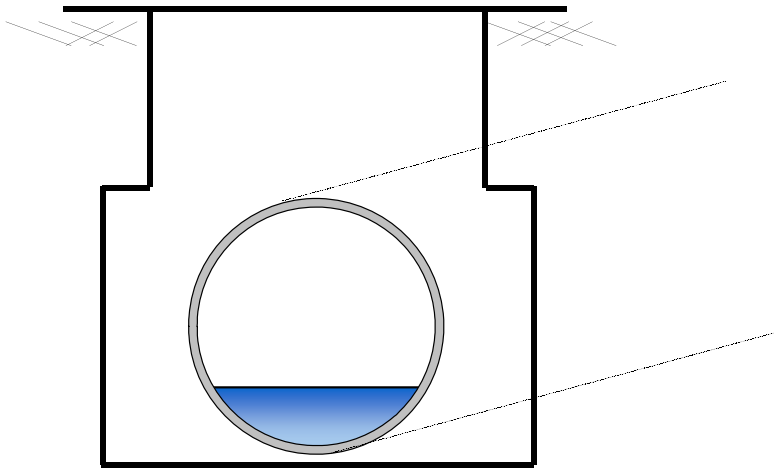


METER 1

Site Capacity and Surcharge Summary

Realtime Flow Levels with Rainfall Data over Monitoring Period





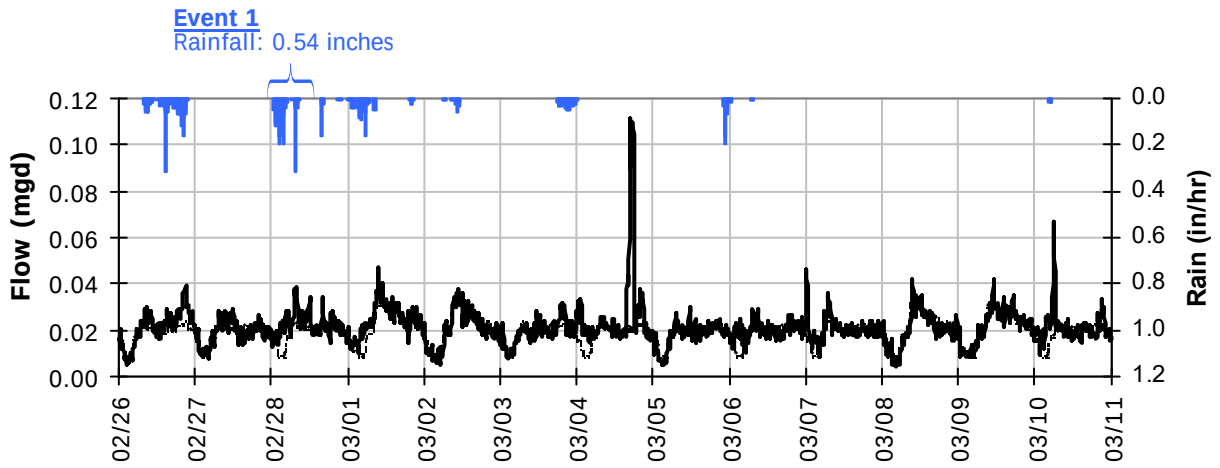
Pipe Diameter: 8 *inches*

Peak Measured Level: 1.97 *inches*

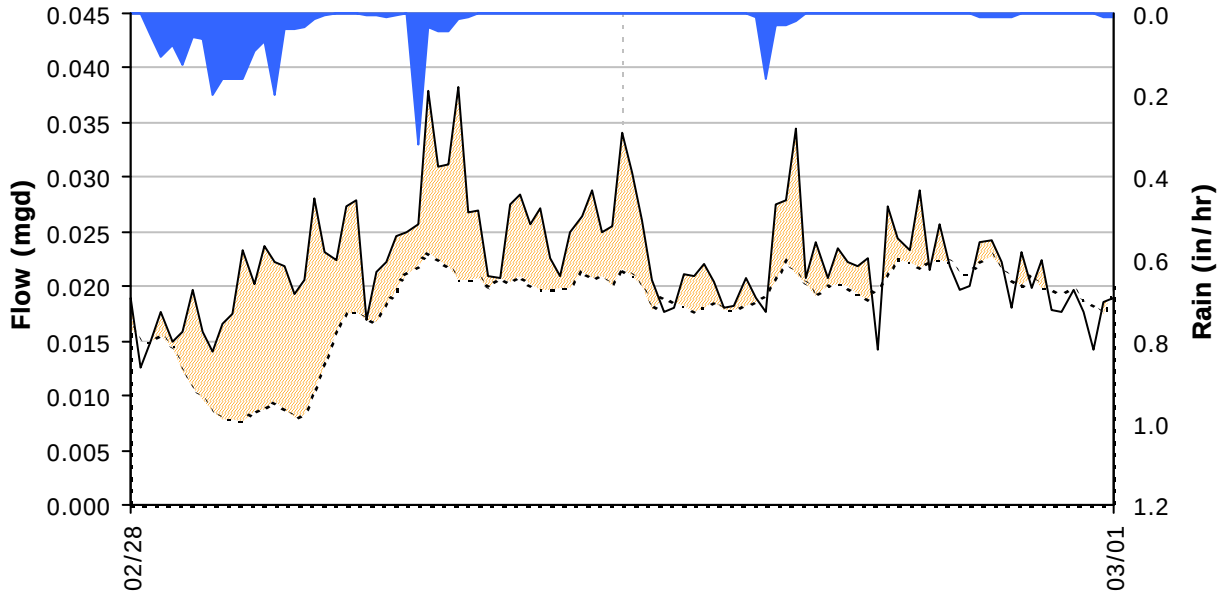
Peak d/D Ratio: 0.25

METER 1
I/I Summary: Event 1

Baseline and Realtime Flows with Rainfall Data over Monitoring Period



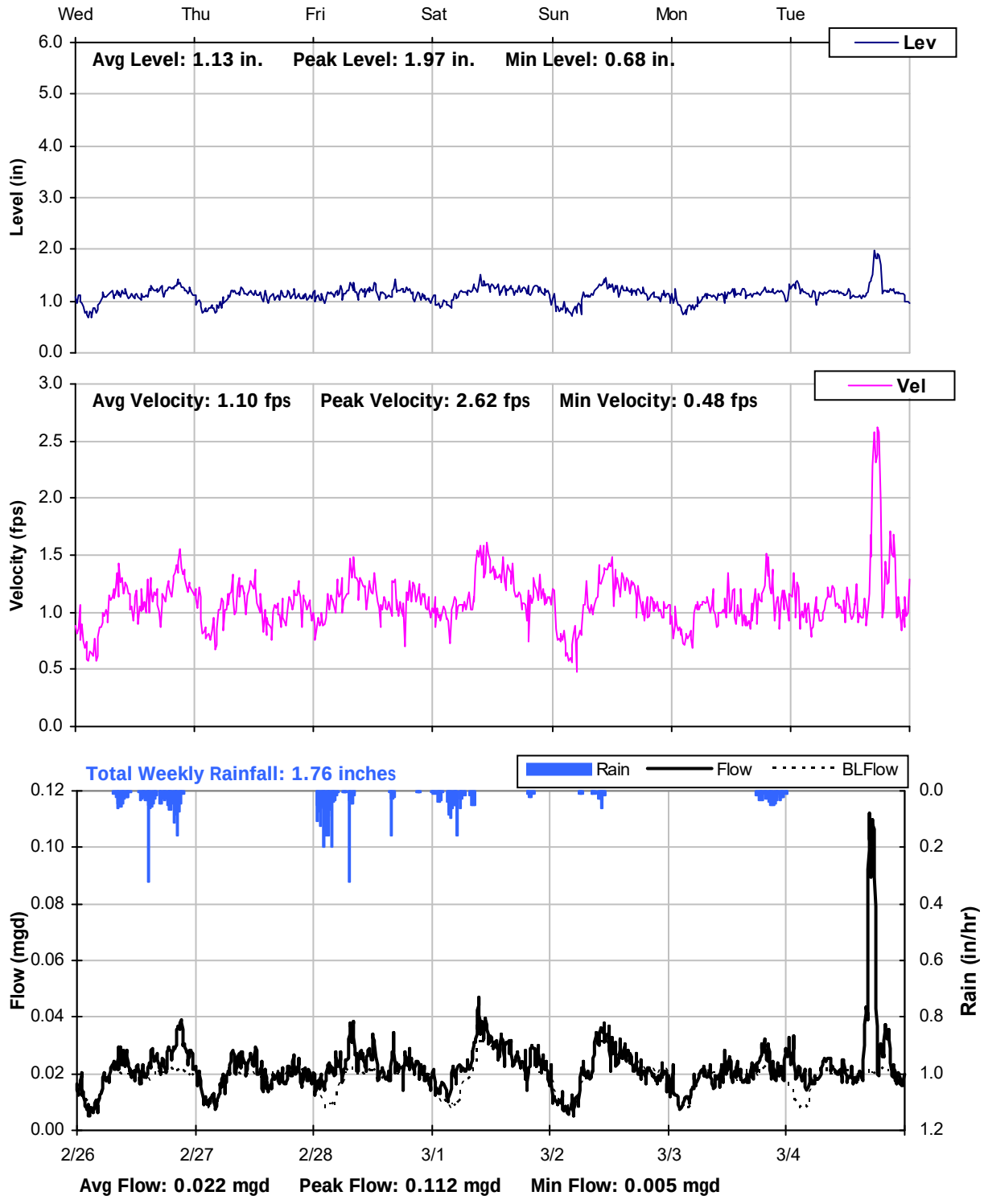
Event 1 Detail Graph



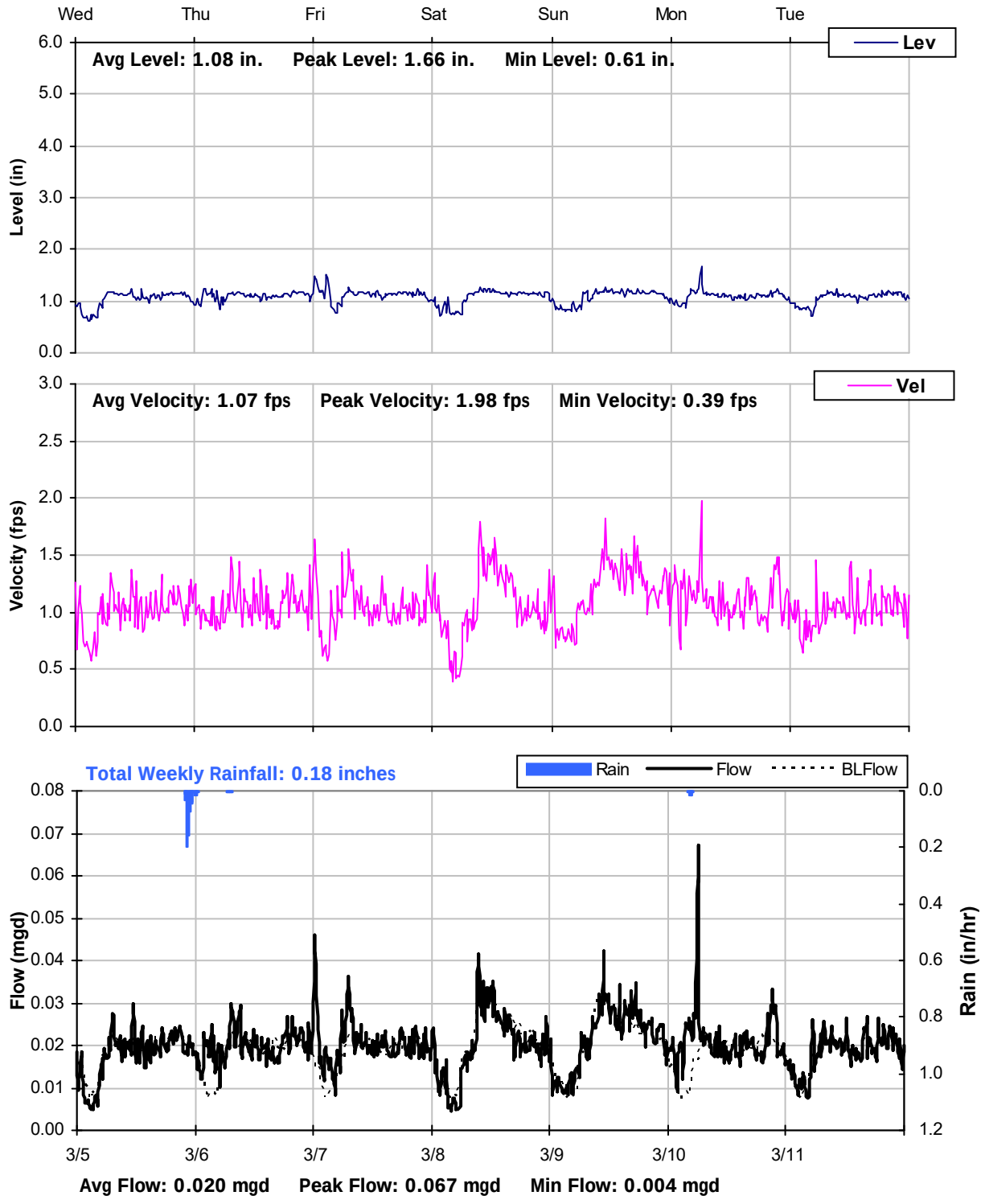
Storm Event I/I Analysis (Rain = 0.54 inches)

Capacity		Inflow / Infiltration	
Peak Flow:	0.04 *mgd*	**Peak I/I Rate:**	0.02 *mgd*
PF:	2.03	**Total I/I:**	4,000 *gallons*

METER 1
Weekly Level, Velocity and Flow Hydrographs
2/26/2014 to 3/5/2014



METER 1
Weekly Level, Velocity and Flow Hydrographs
3/5/2014 to 3/12/2014



City of Half Moon Bay

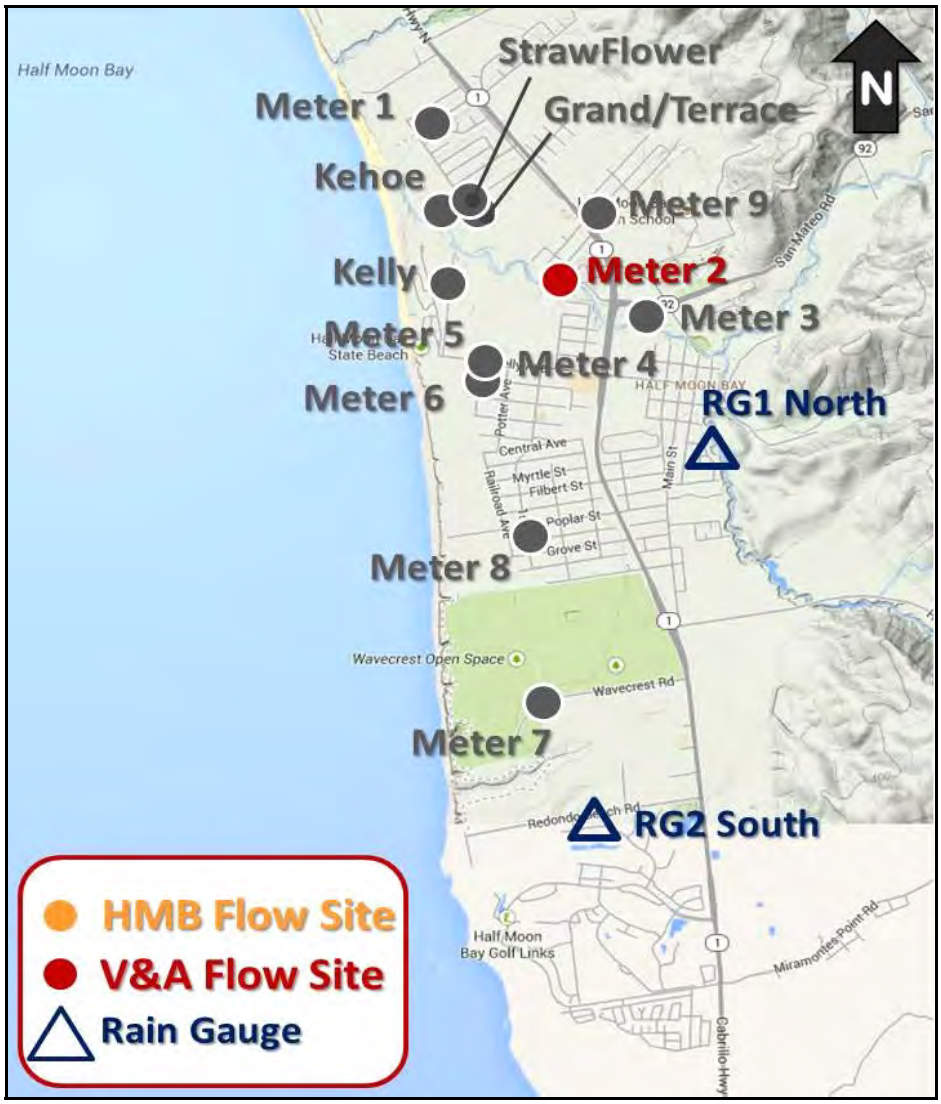
Sanitary Sewer Flow Monitoring

Temporary Monitoring: February 26 to March 11, 2014

Monitoring Site: Meter 2

Location: In Field at South End of Belleville Boulevard

Data Summary Report



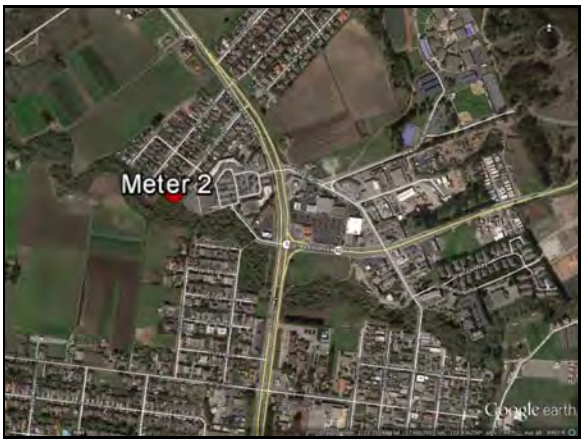
Vicinity Map: Meter 2

METER 2

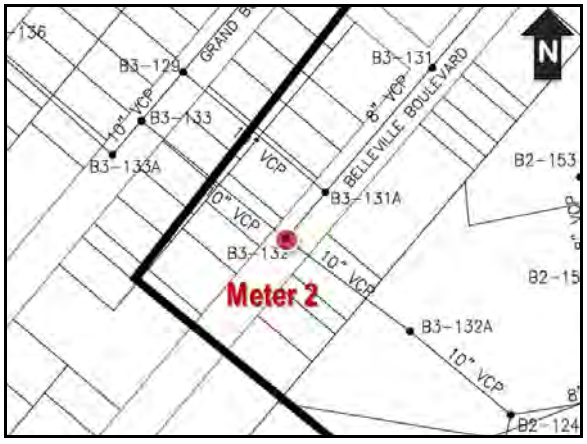
Site Information

Location:	In Field at South End of Belleville Boulevard
Coordinates:	122.4372° W, 37.4694° N
Rim Elevation:	41 feet
Pipe Diameter:	10 inches
Baseline Flow:	0.136 mgd
Peak Measured Flow:	0.345 mgd

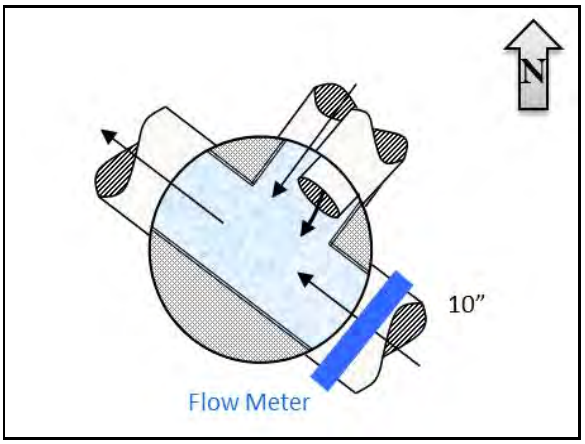
Street View



Satellite View



Sanitary Sewer Map



Flow Diagram

Plan View

METER 2

Additional Site Photos

Effluent Pipe

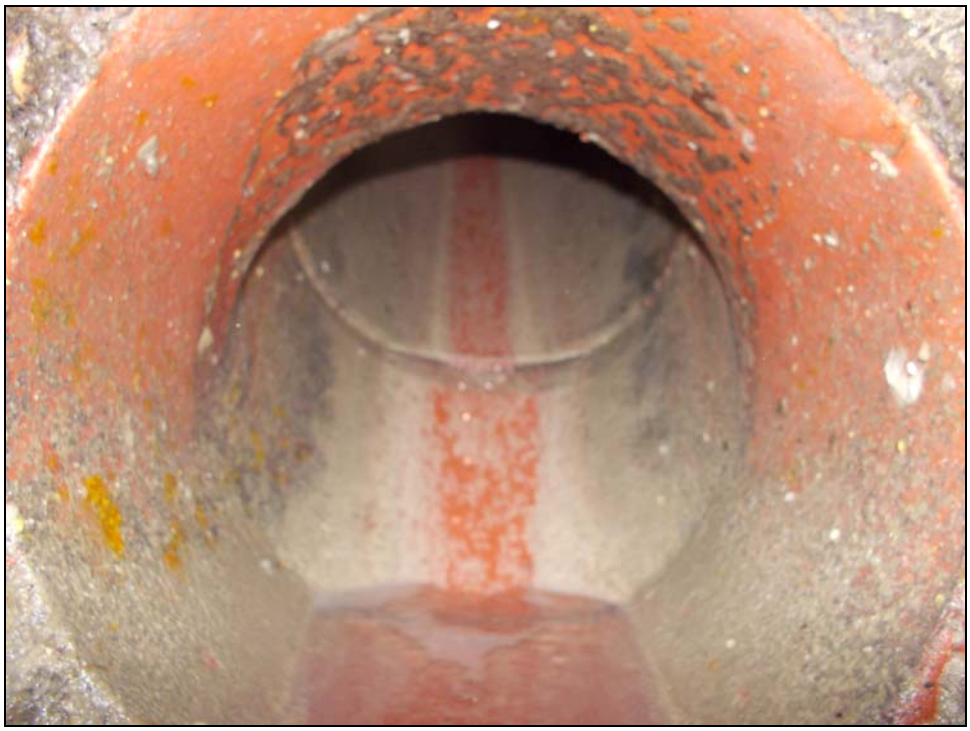
Influent Pipe

METER 2

Additional Site Photos

Drop Inlet - Upper

Drop Inlet - Lower

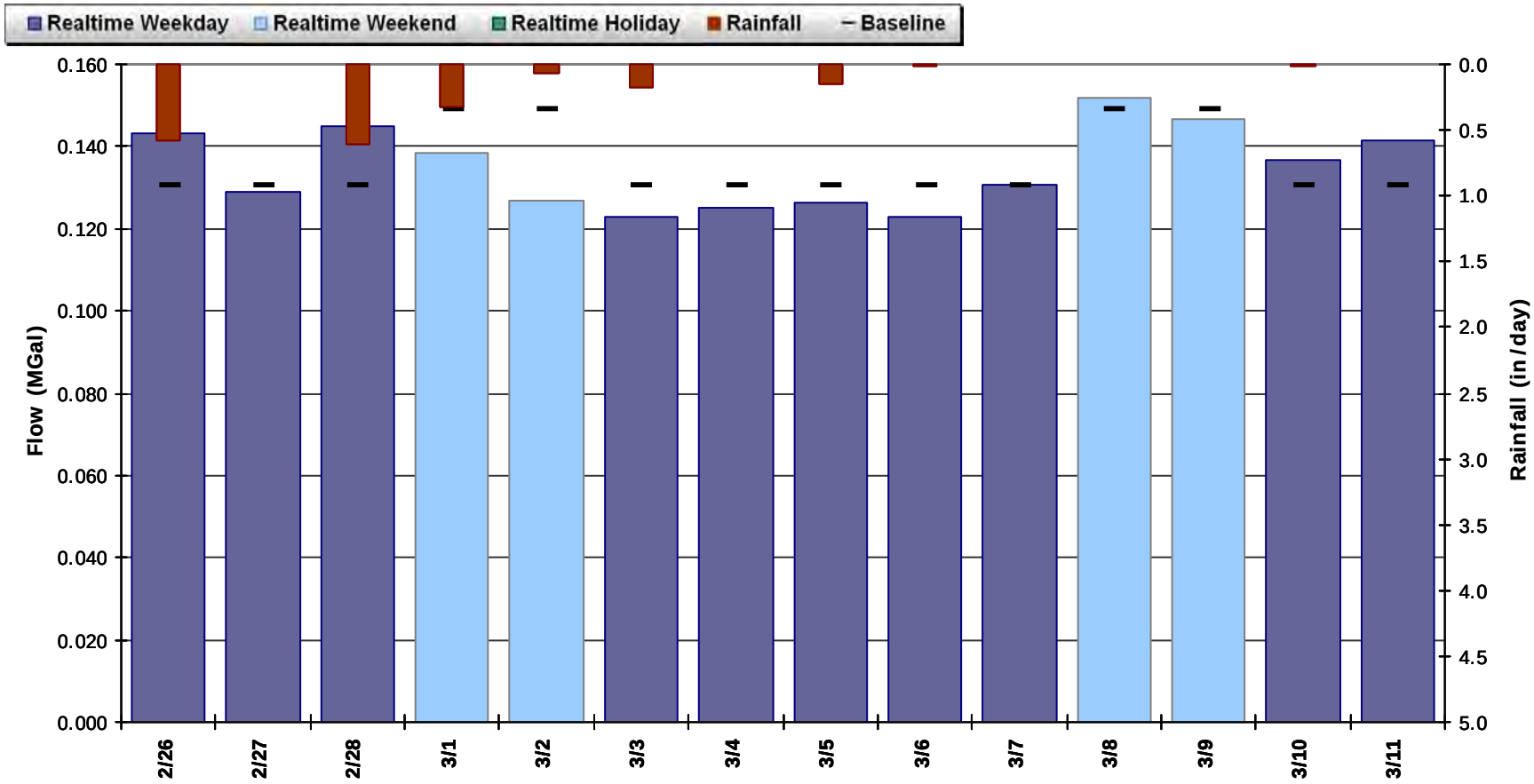


METER 2

Period Flow Summary: Daily Flow Totals

Avg Period Flow: 0.135 MGal **Peak Daily Flow: 0.152 MGal** **Min Daily Flow: 0.123 MGal**

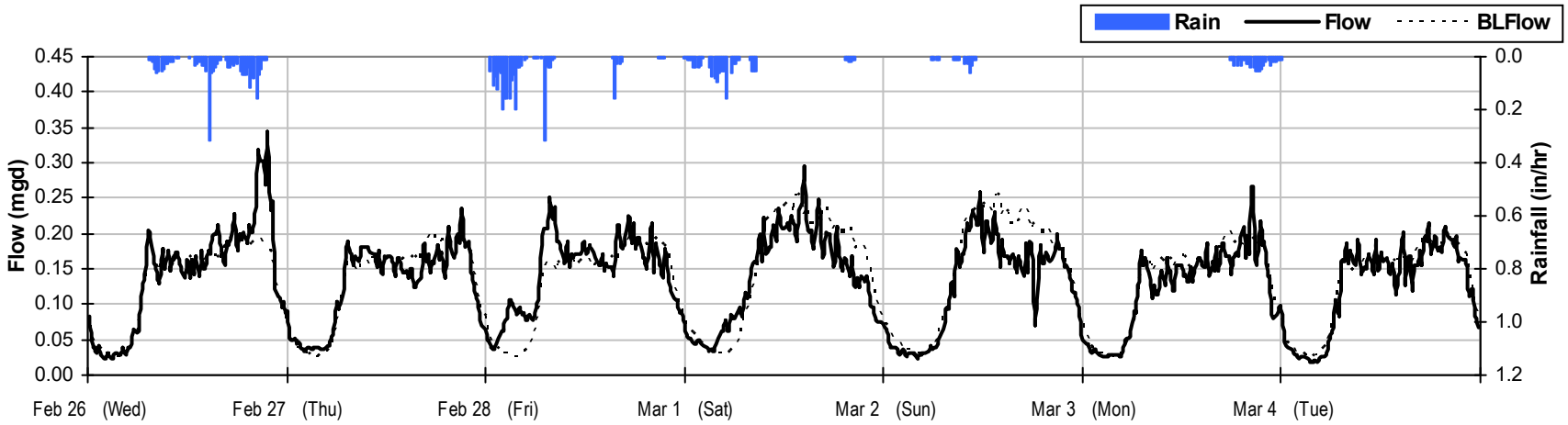
Total Period Rainfall: 1.94 inches

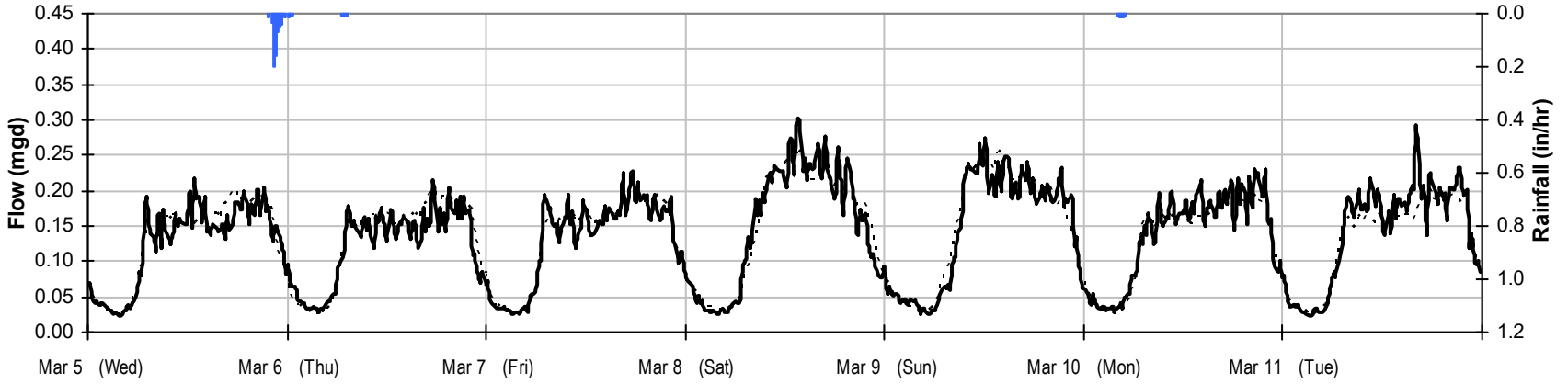


METER 2

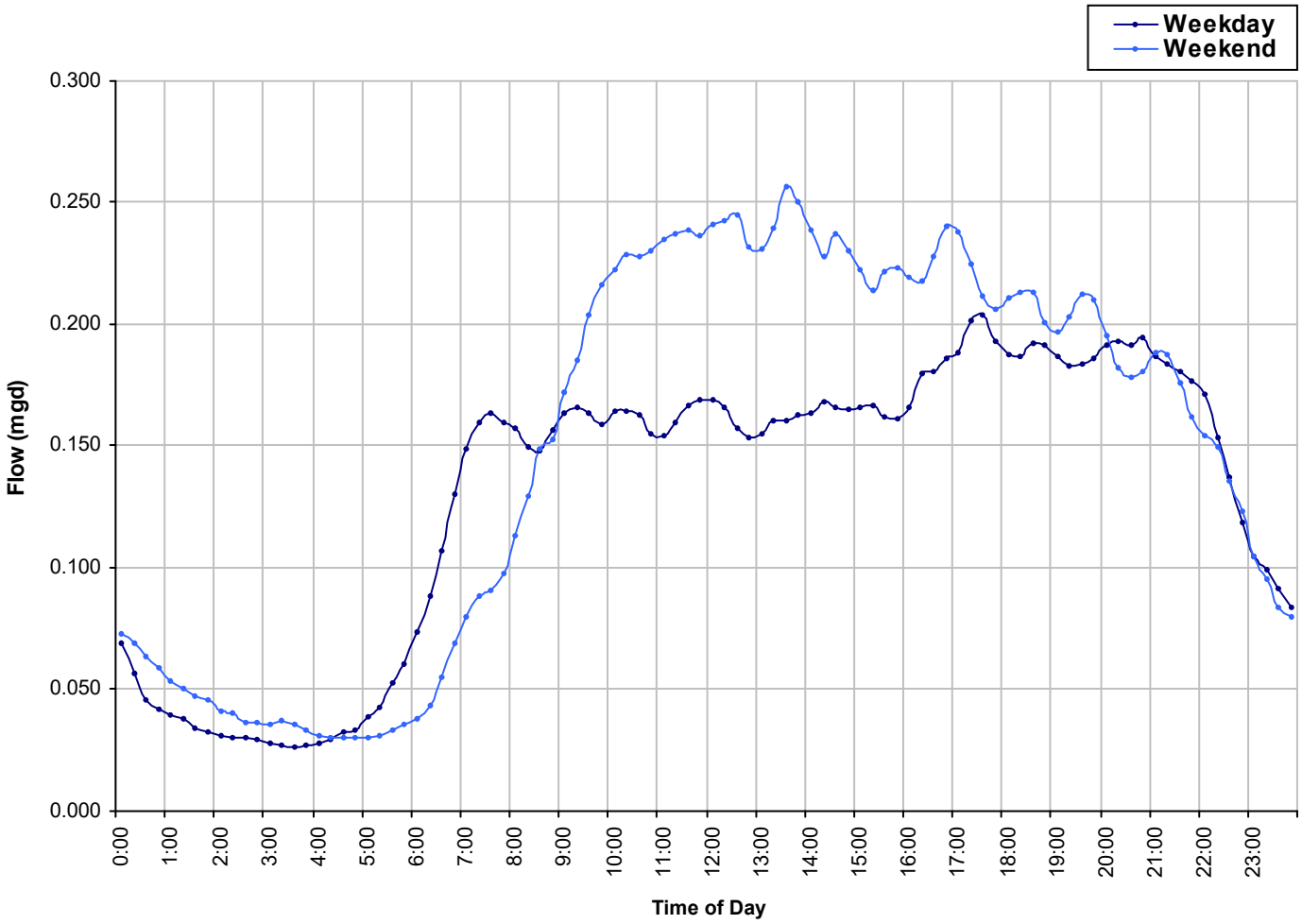
Flow Summary: 2/26/2014 to 3/11/2014

Total Period Rainfall: 1.94 inches **Avg Flow: 0.135 mgd** **Peak Flow: 0.345 mgd** **Min Flow: 0.017 mgd**

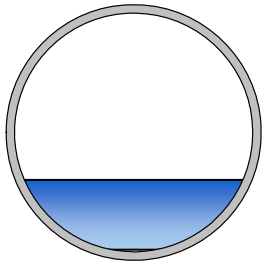




METER 2
Baseline Flow Hydrographs



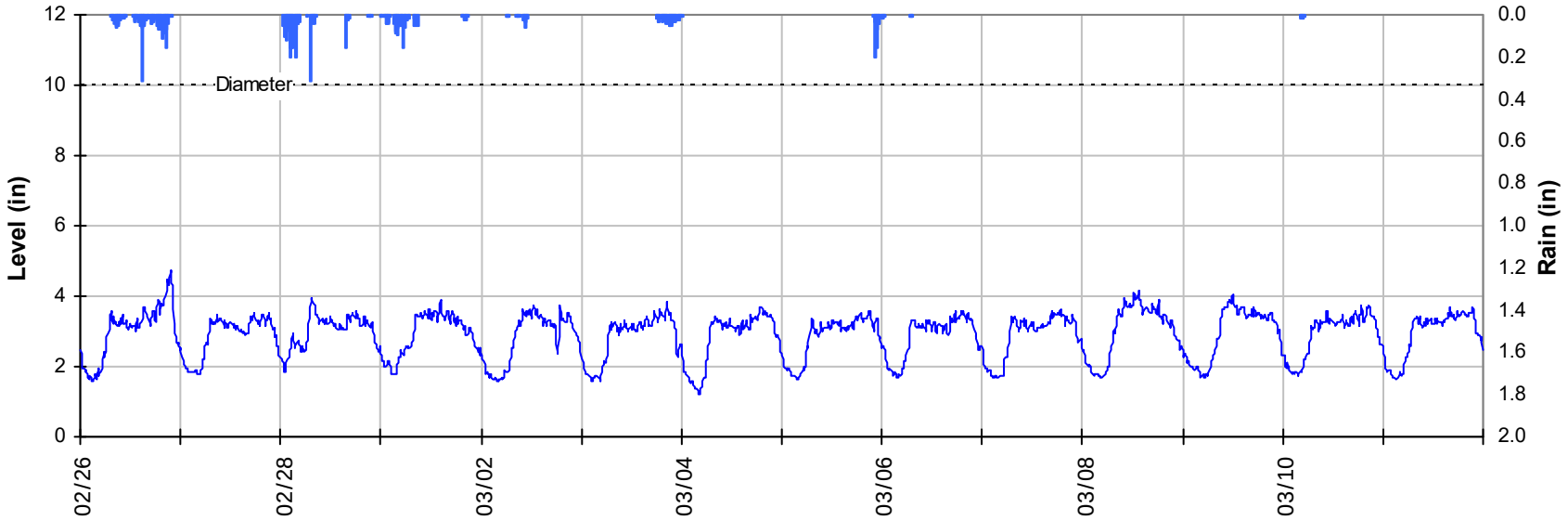
Baseline Flow:
0.136 *mgd*

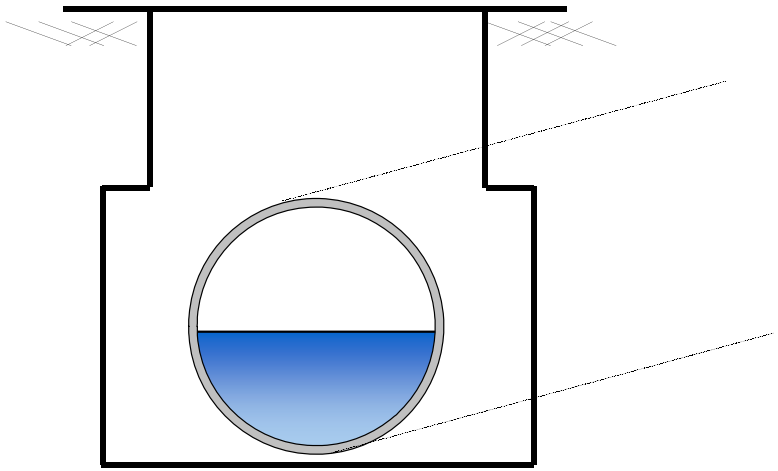


METER 2

Site Capacity and Surcharge Summary

Realtime Flow Levels with Rainfall Data over Monitoring Period

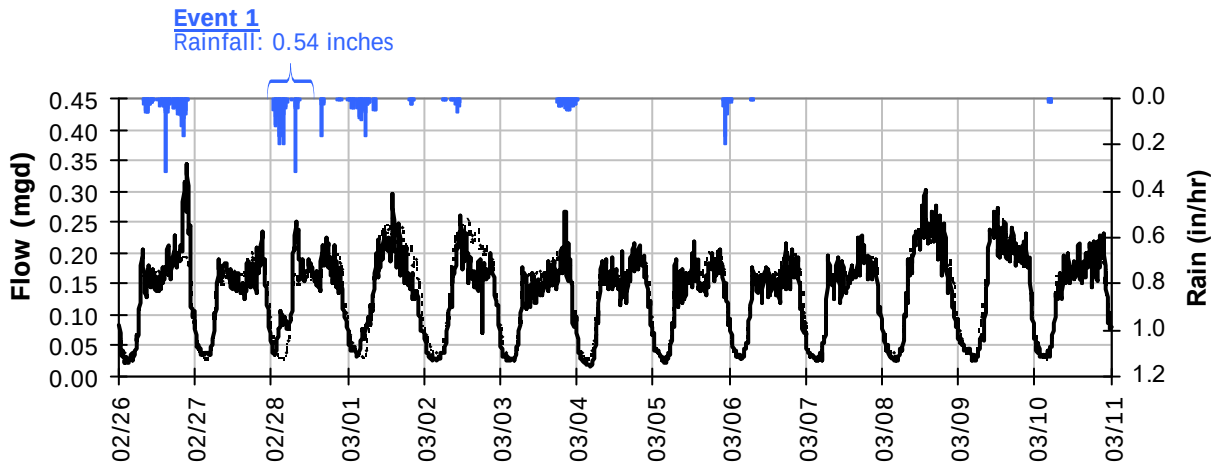




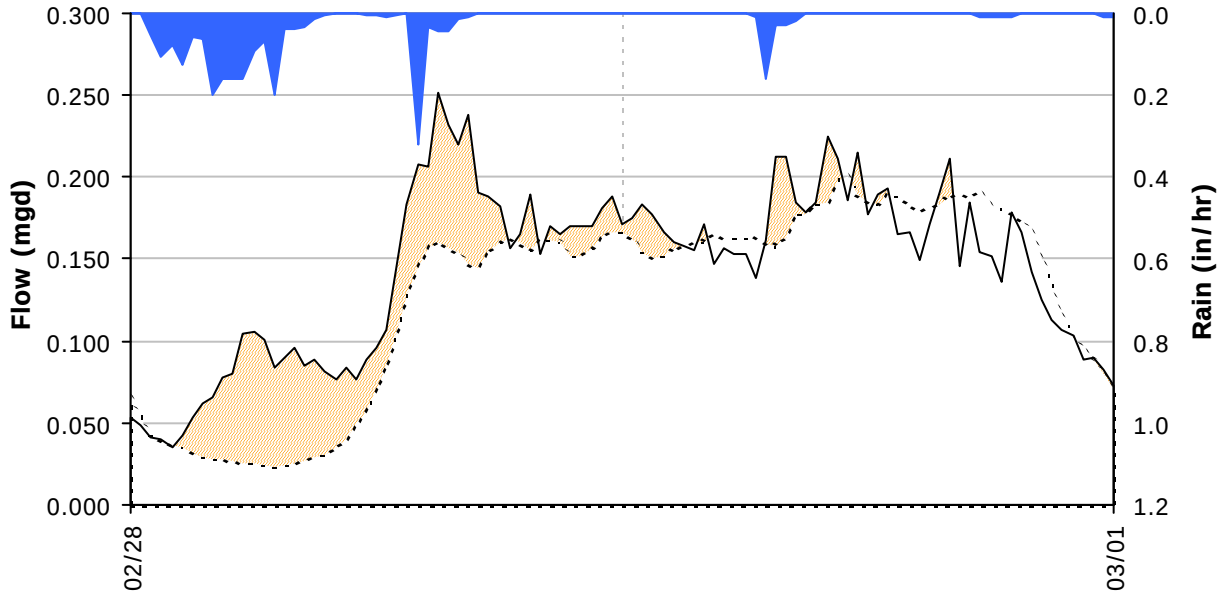
Pipe Diameter:	10	*inches*
Peak Measured Level:	4.76	*inches*
Peak d/D Ratio:	0.48	

METER 2
I/I Summary: Event 1

Baseline and Realtime Flows with Rainfall Data over Monitoring Period



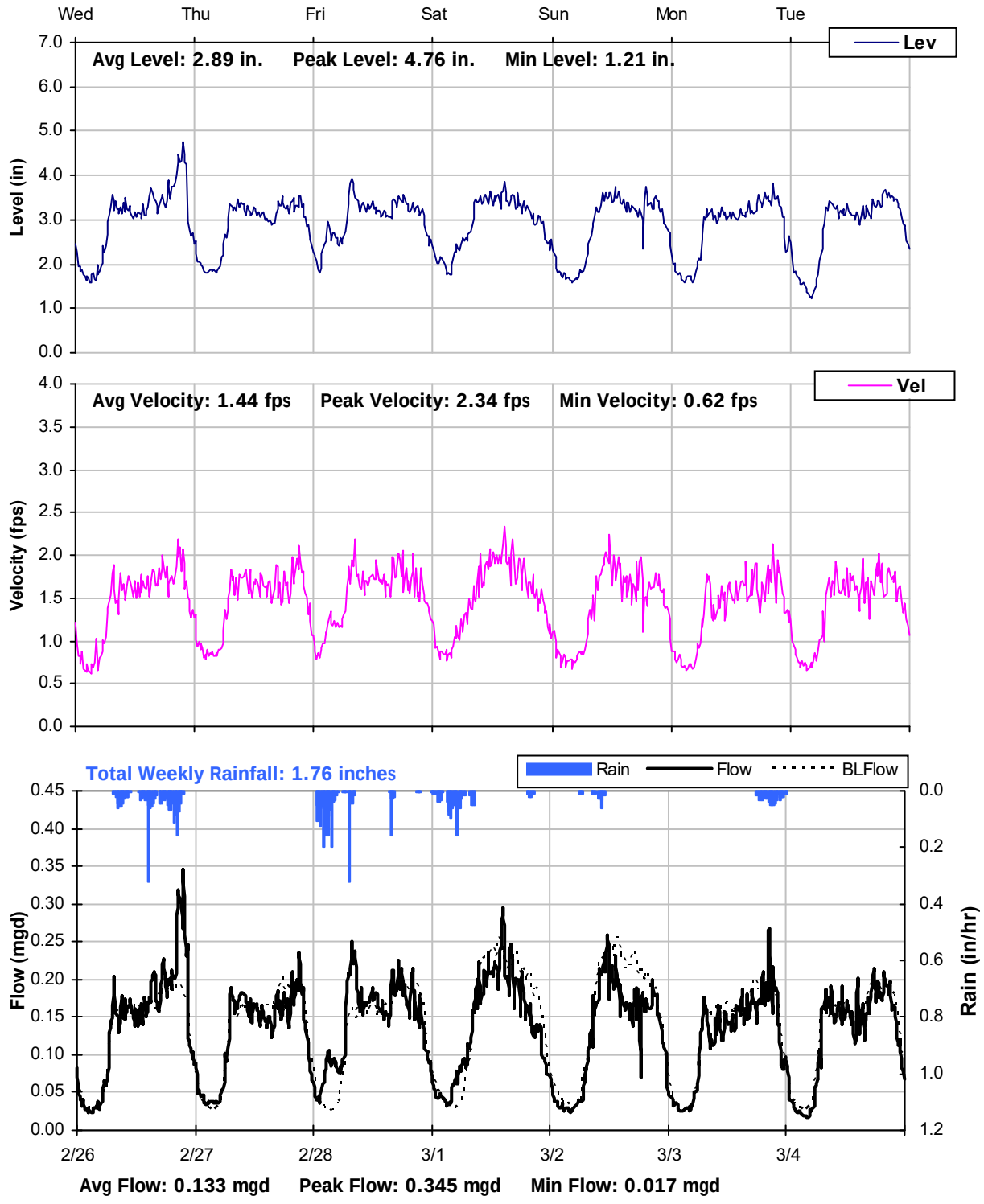
Event 1 Detail Graph



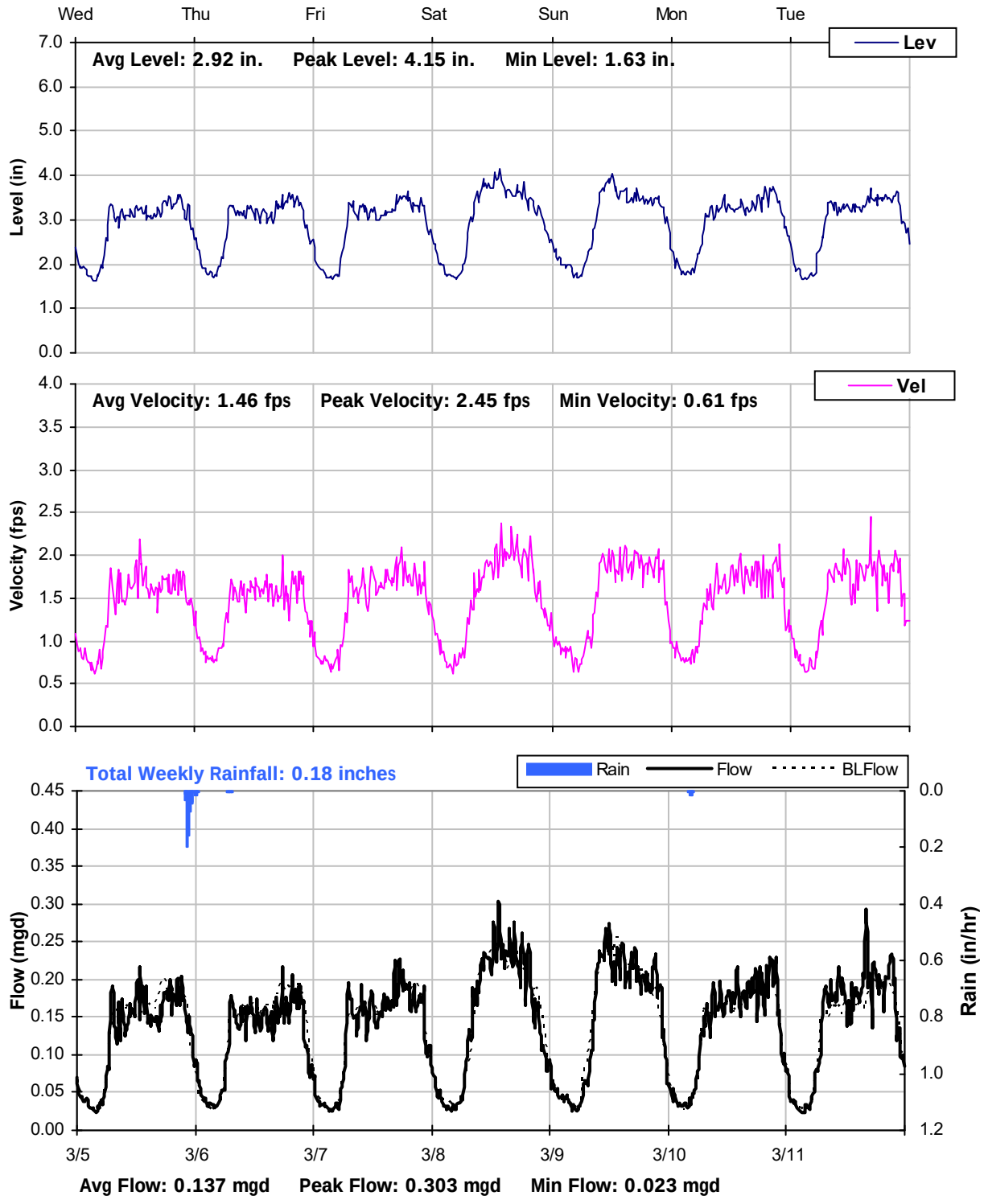
Storm Event I/I Analysis (Rain = 0.54 inches)

Capacity		Inflow / Infiltration	
Peak Flow:	0.25 *mgd*	**Peak I/I Rate:**	0.09 *mgd*
PF:	1.85	**Total I/I:**	19,000 *gallons*

METER 2
Weekly Level, Velocity and Flow Hydrographs
2/26/2014 to 3/5/2014



METER 2
Weekly Level, Velocity and Flow Hydrographs
3/5/2014 to 3/12/2014



City of Half Moon Bay

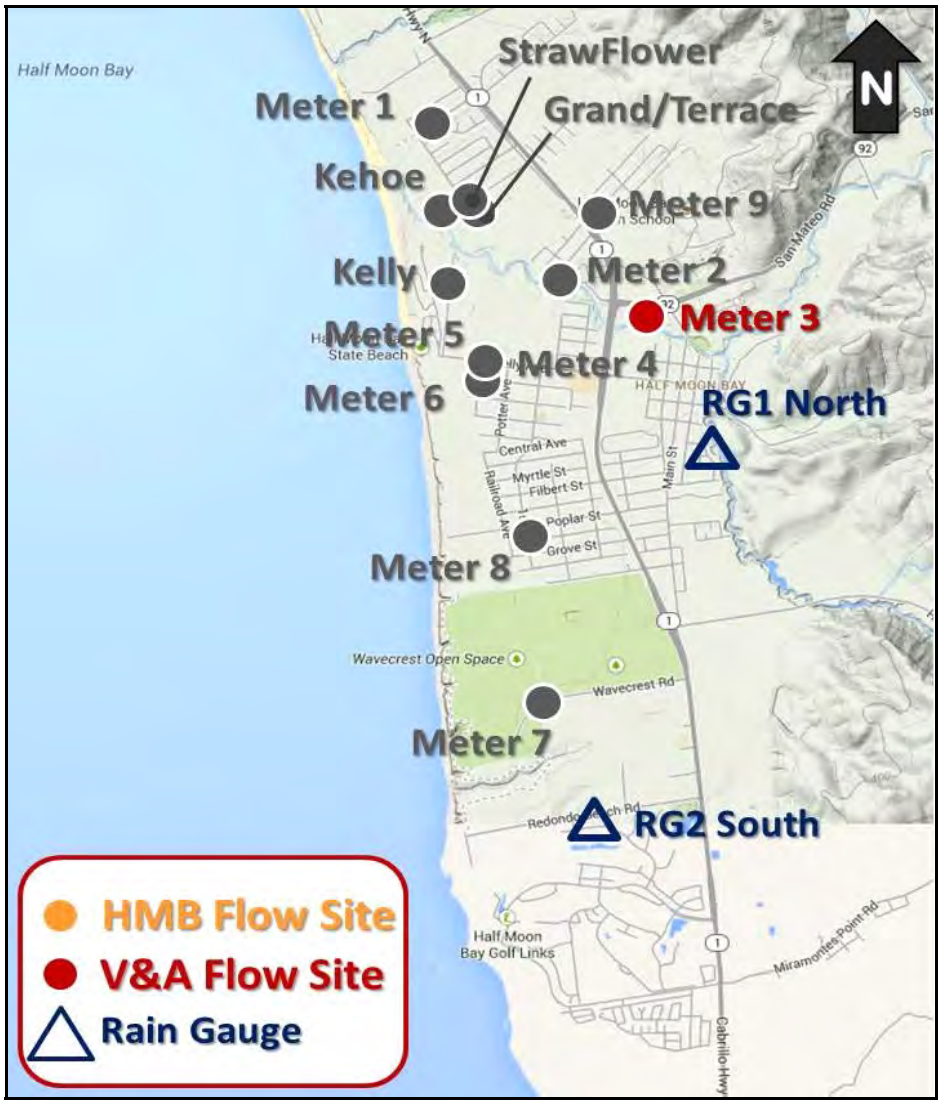
Sanitary Sewer Flow Monitoring

Temporary Monitoring: February 26 to March 11, 2014

Monitoring Site: Meter 3

Location: San Mateo Road East of Cabrillo Highway

Data Summary Report



Vicinity Map: Meter 3

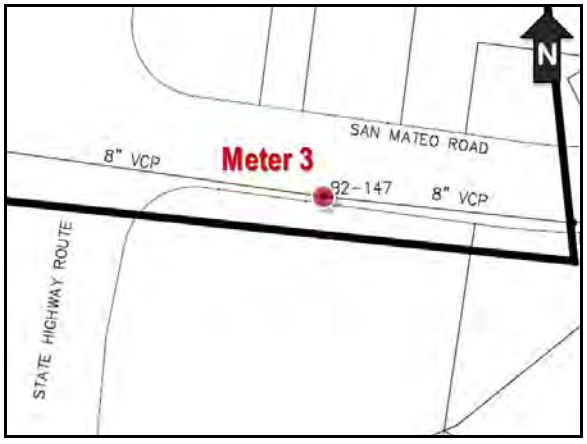
METER 3

Site Information

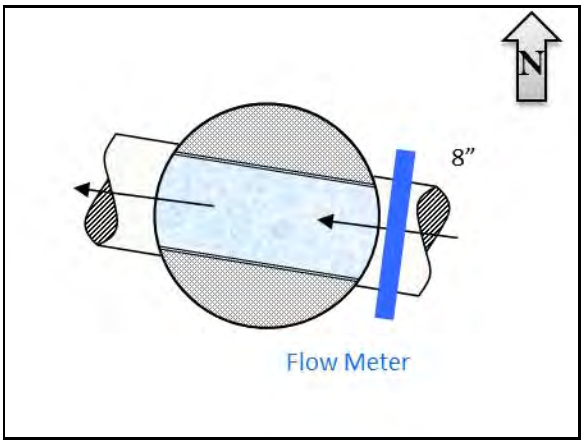
Location:	San Mateo Road East of Cabrillo Highway
Coordinates:	122.4324° W, 37.4678° N
Rim Elevation:	56 feet
Pipe Diameter:	8 inches
Baseline Flow:	0.032 mgd
Peak Measured Flow:	0.131 mgd

Street View

Satellite View



Sanitary Sewer Map



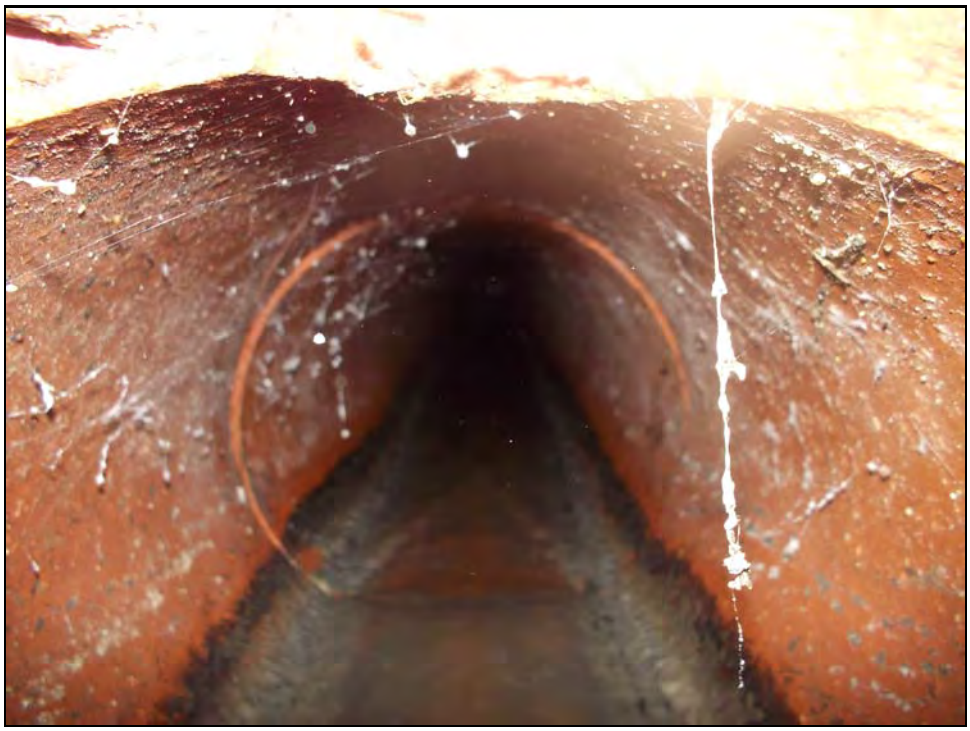
Flow Diagram

Plan View

METER 3

Additional Site Photos

Effluent Pipe



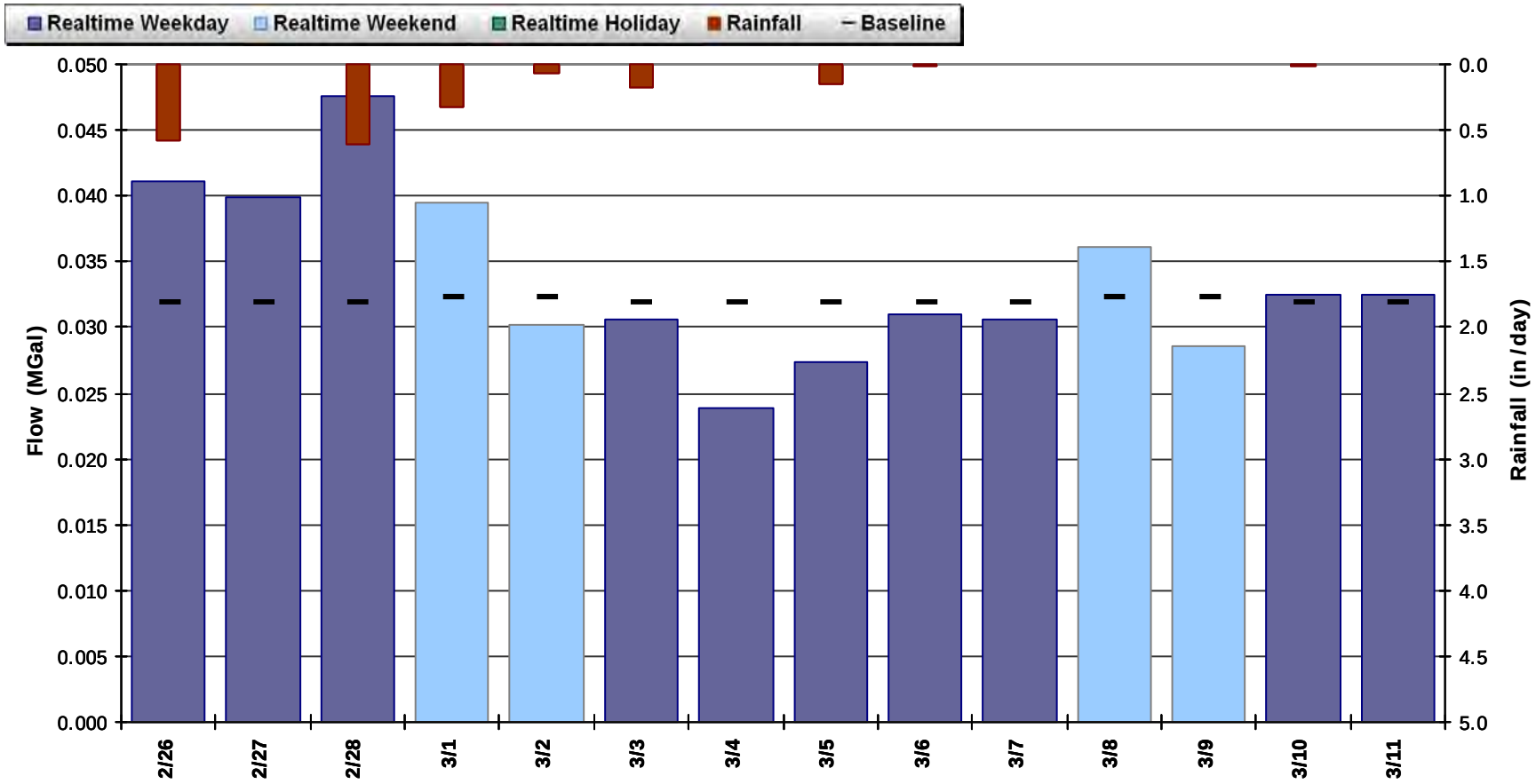
Influent Pipe

METER 3

Period Flow Summary: Daily Flow Totals

Avg Period Flow: 0.034 MGal **Peak Daily Flow: 0.048 MGal** **Min Daily Flow: 0.024 MGal**

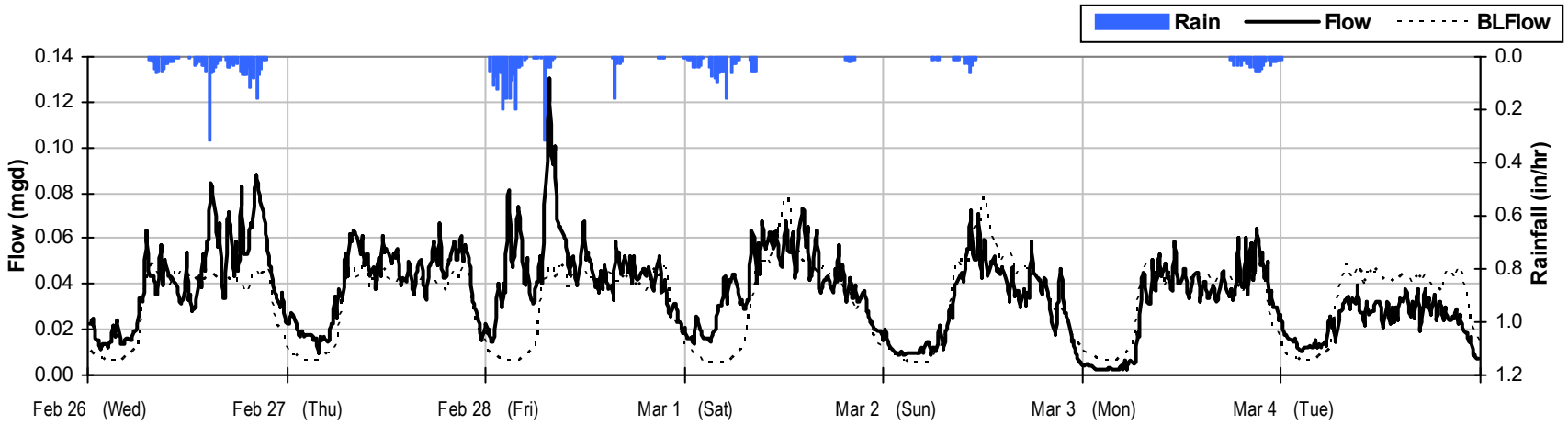
Total Period Rainfall: 1.94 inches

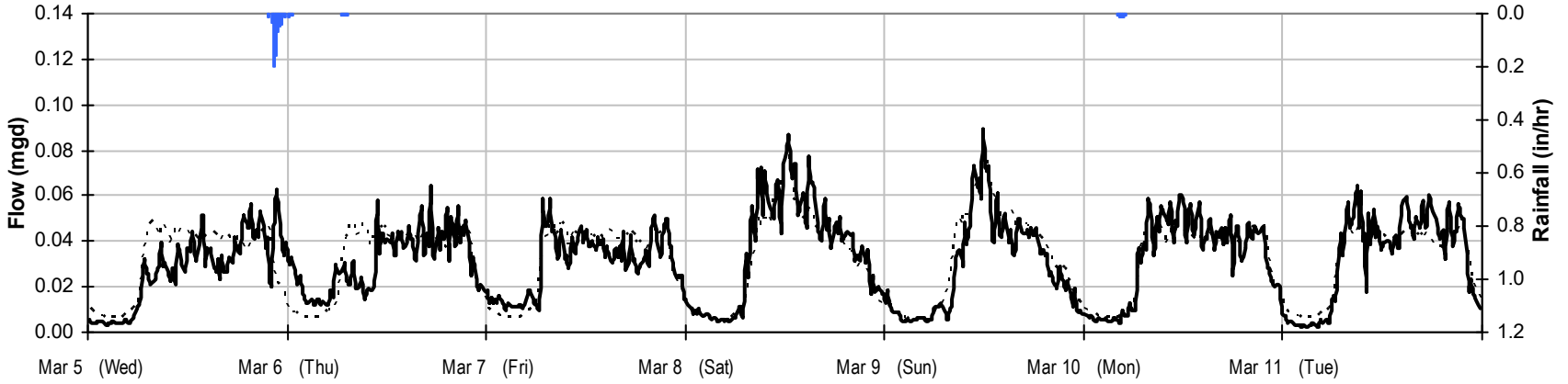


METER 3

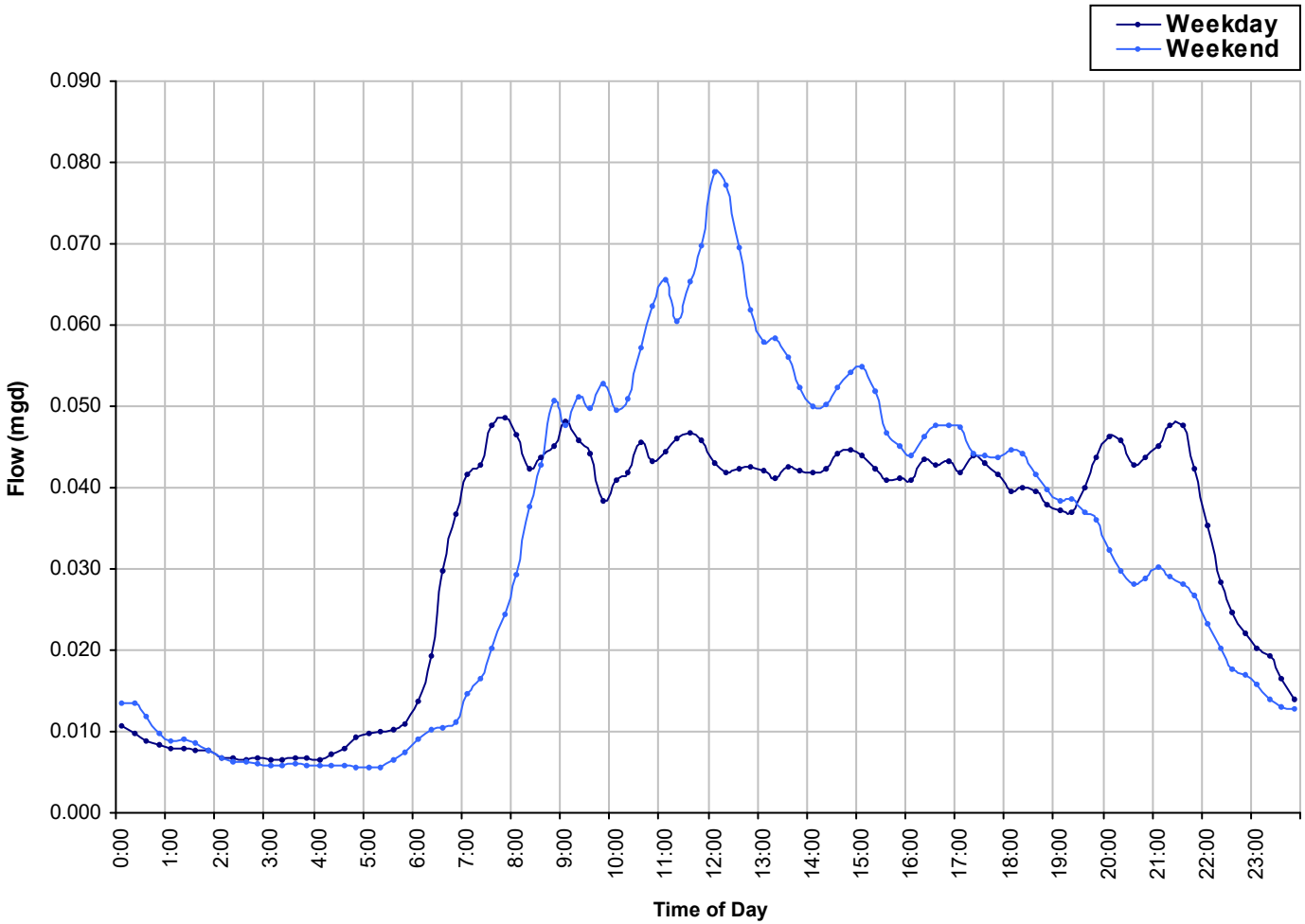
Flow Summary: 2/26/2014 to 3/11/2014

Total Period Rainfall: 1.94 inches **Avg Flow: 0.034 mgd** **Peak Flow: 0.131 mgd** **Min Flow: 0.002 mgd**

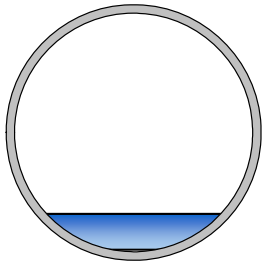




METER 3
Baseline Flow Hydrographs



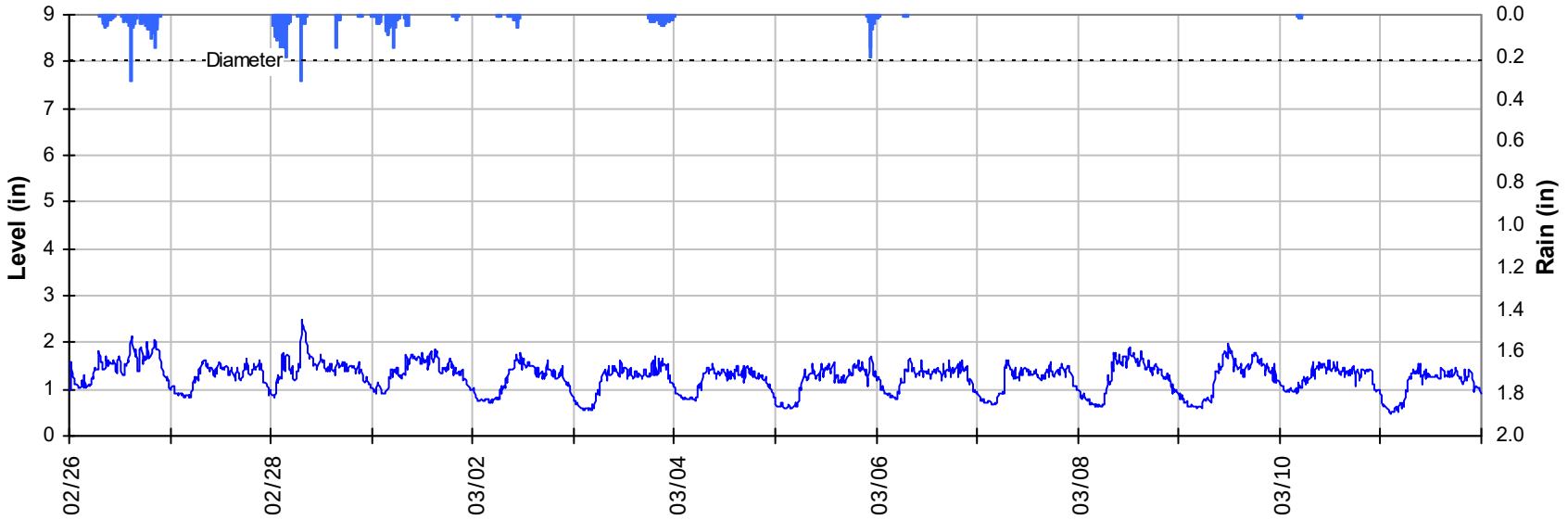
Baseline Flow:
0.032 *mgd*

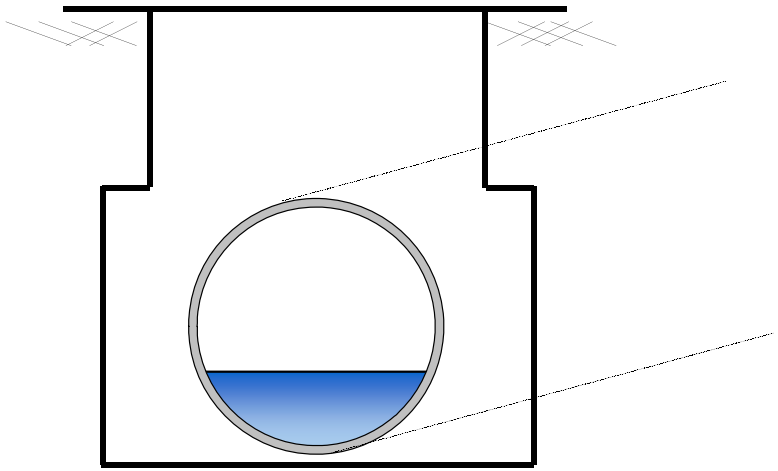


METER 3

Site Capacity and Surcharge Summary

Realtime Flow Levels with Rainfall Data over Monitoring Period





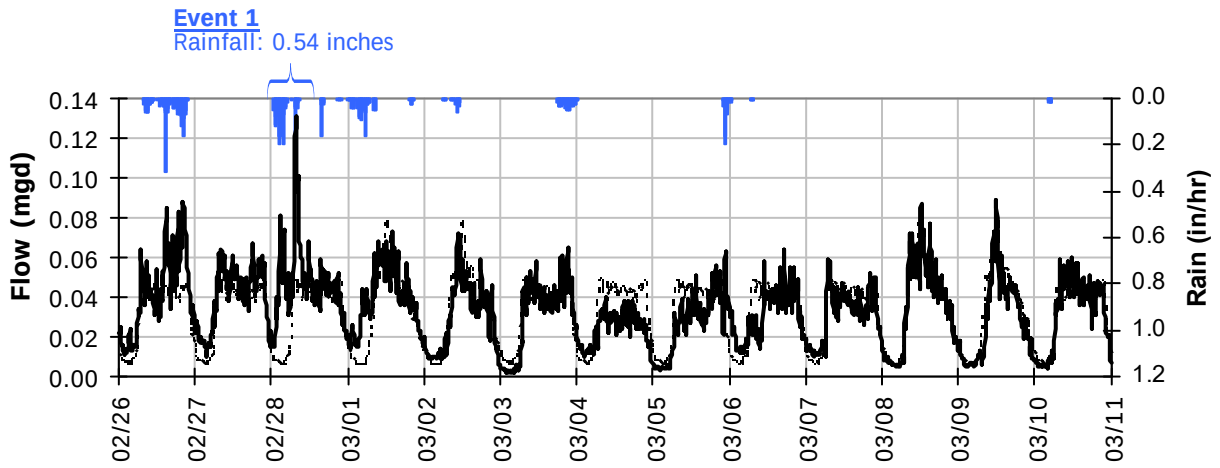
Pipe Diameter: 8 *inches*

Peak Measured Level: 2.5 *inches*

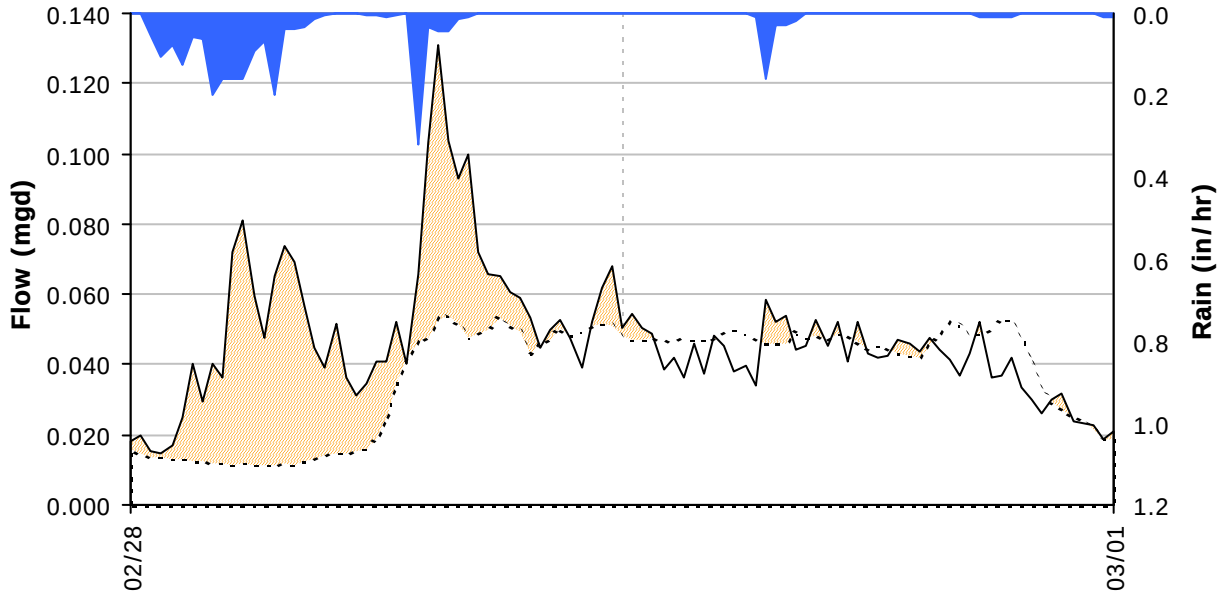
Peak d/D Ratio: 0.31

METER 3
I/I Summary: Event 1

Baseline and Realtime Flows with Rainfall Data over Monitoring Period



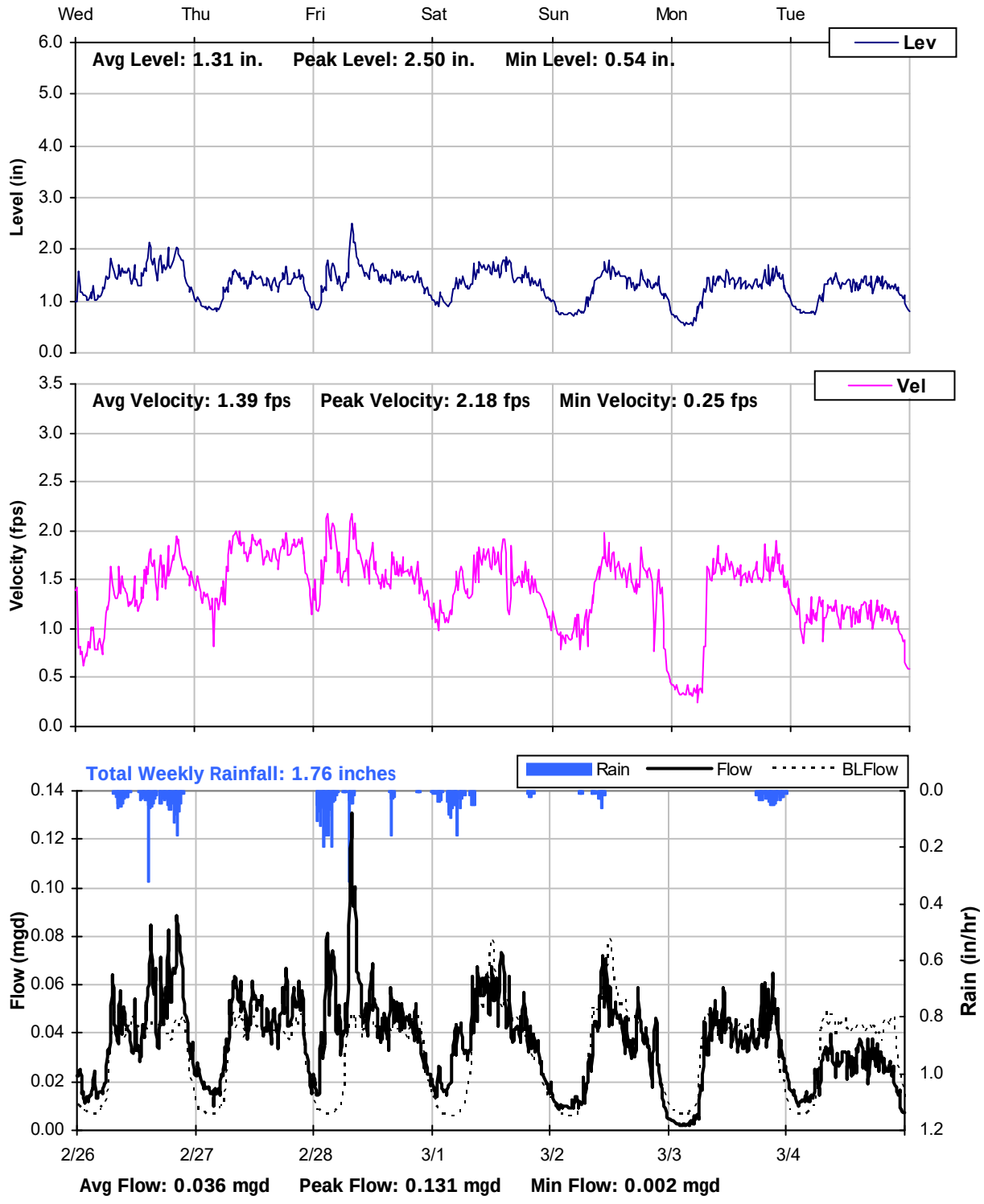
Event 1 Detail Graph



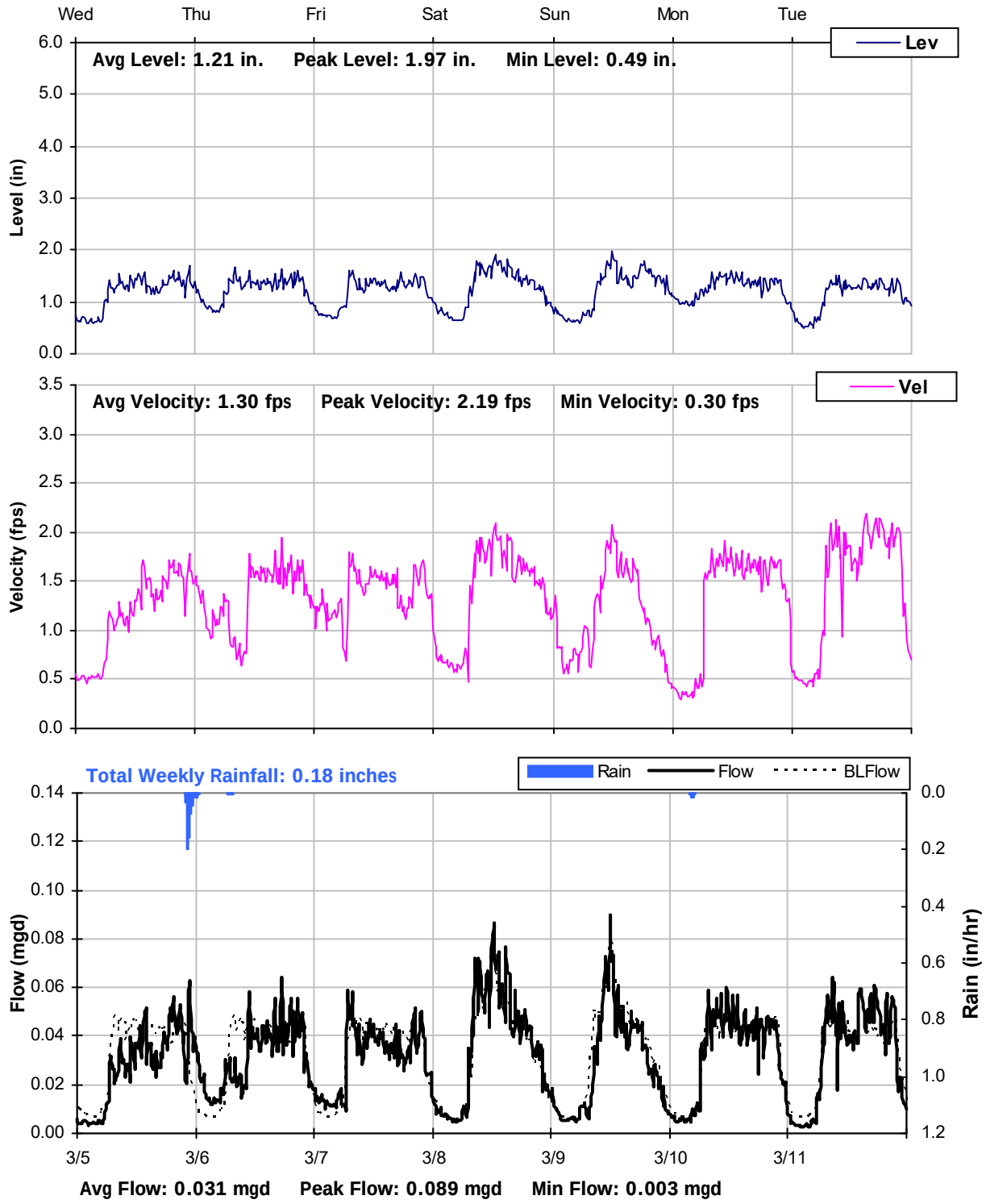
Storm Event I/I Analysis (Rain = 0.54 inches)

Capacity		Inflow / Infiltration	
Peak Flow:	0.13 *mgd*	**Peak I/I Rate:**	0.08 *mgd*
PF:	4.08	**Total I/I:**	12,000 *gallons*

METER 3
Weekly Level, Velocity and Flow Hydrographs
2/26/2014 to 3/5/2014



METER 3
Weekly Level, Velocity and Flow Hydrographs
3/5/2014 to 3/12/2014



City of Half Moon Bay

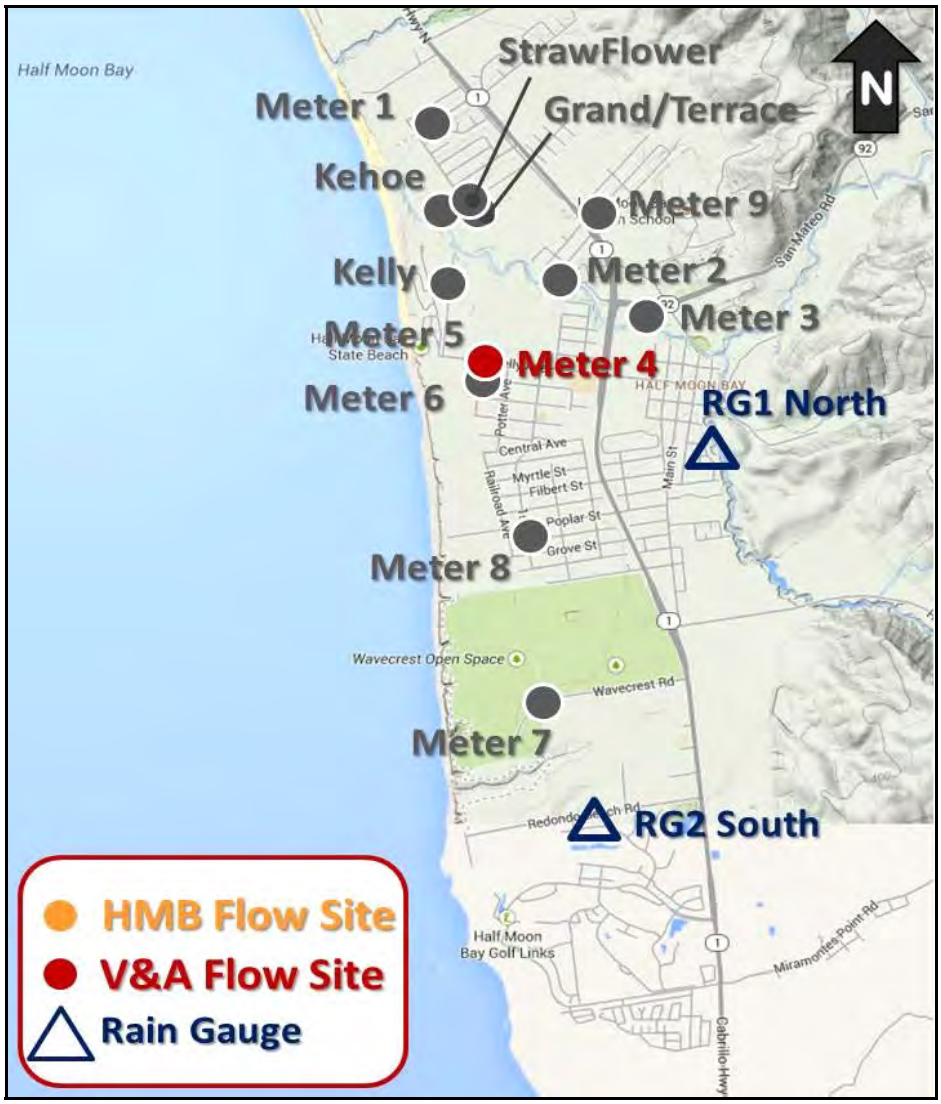
Sanitary Sewer Flow Monitoring

Temporary Monitoring: February 26 to March 11, 2014

Monitoring Site: Meter 4

Location: Kelly Avenue at Entrance to Ocean View Driving Range (at Edge of Street)

Data Summary Report

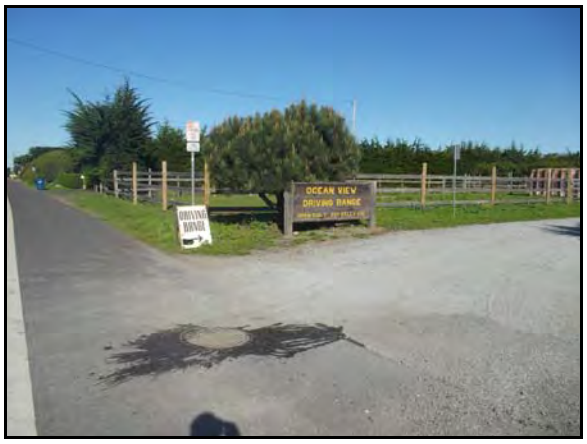


Vicinity Map: Meter 4

METER 4

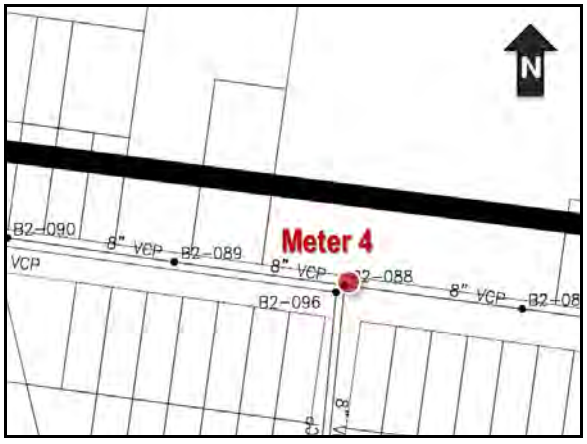
Site Information

Location:	Kelly Avenue at Entrance to Ocean View Driving Range (at Edge of Street)
Coordinates:	122.4419° W, 37.4649° N
Rim Elevation:	47 feet
Pipe Diameter:	8 inches
Baseline Flow:	0.072 mgd
Peak Measured Flow:	0.162 mgd

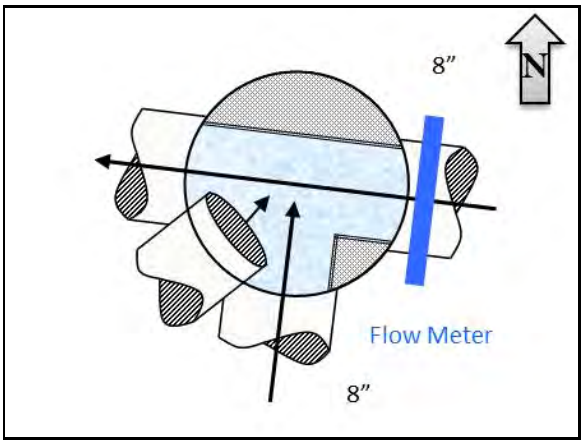


Street View

Satellite View



Sanitary Sewer Map



Flow Diagram

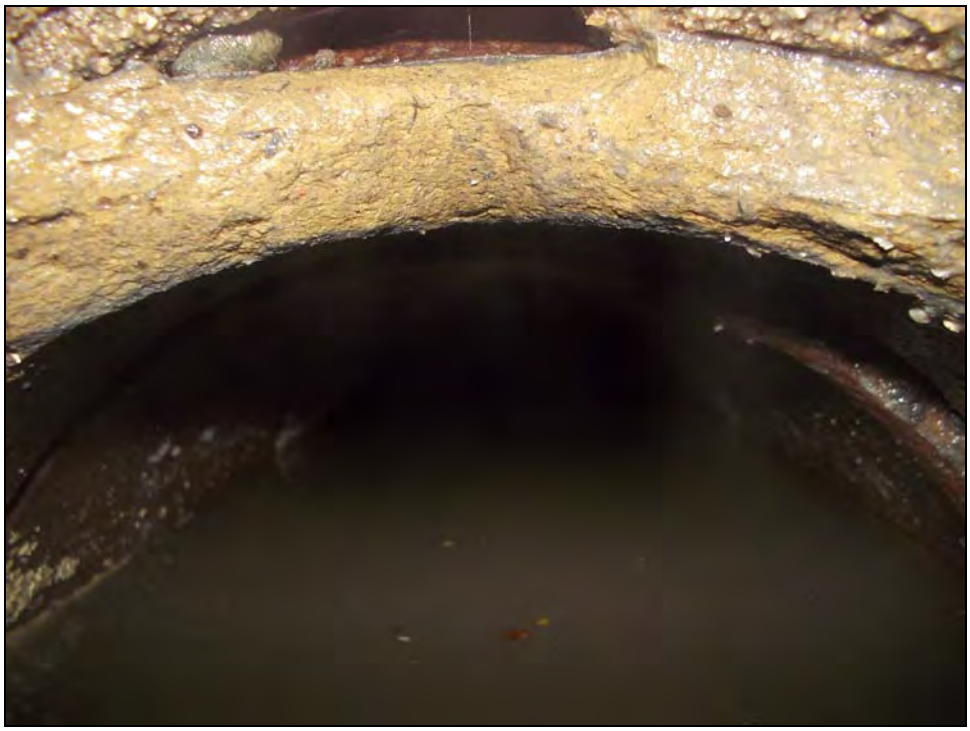
Plan View

METER 4

Additional Site Photos

Effluent Pipe

Influent Pipe

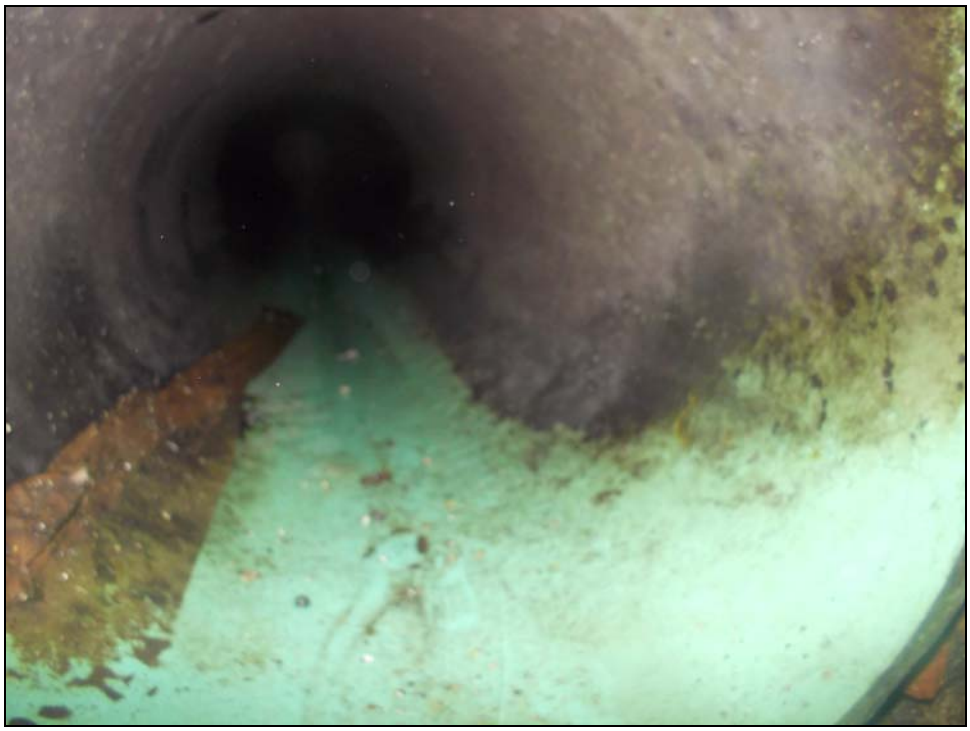


METER 4

Additional Site Photos

South Influent Line

Cross Connection

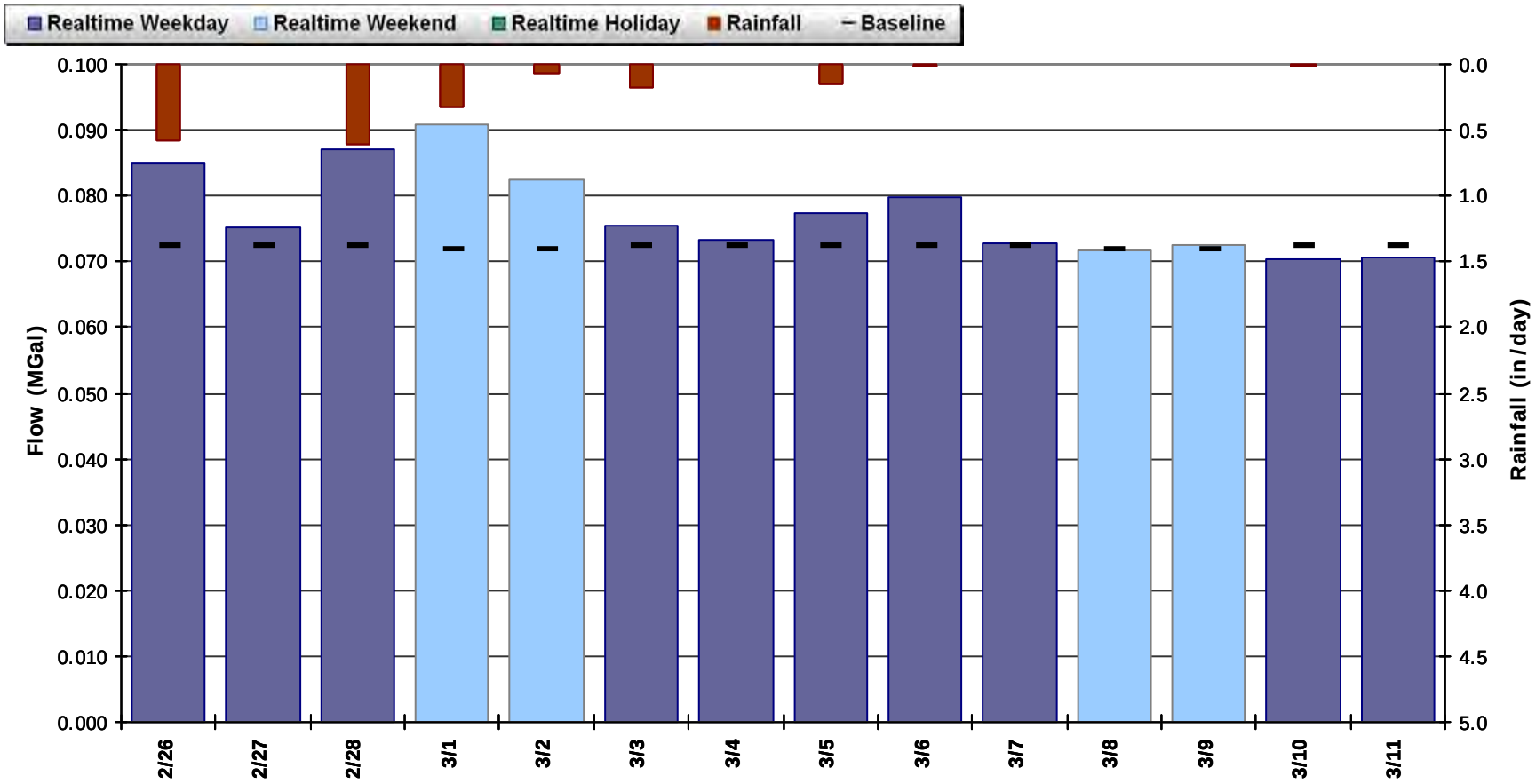


METER 4

Period Flow Summary: Daily Flow Totals

Avg Period Flow: 0.077 MGal **Peak Daily Flow: 0.091 MGal** **Min Daily Flow: 0.070 MGal**

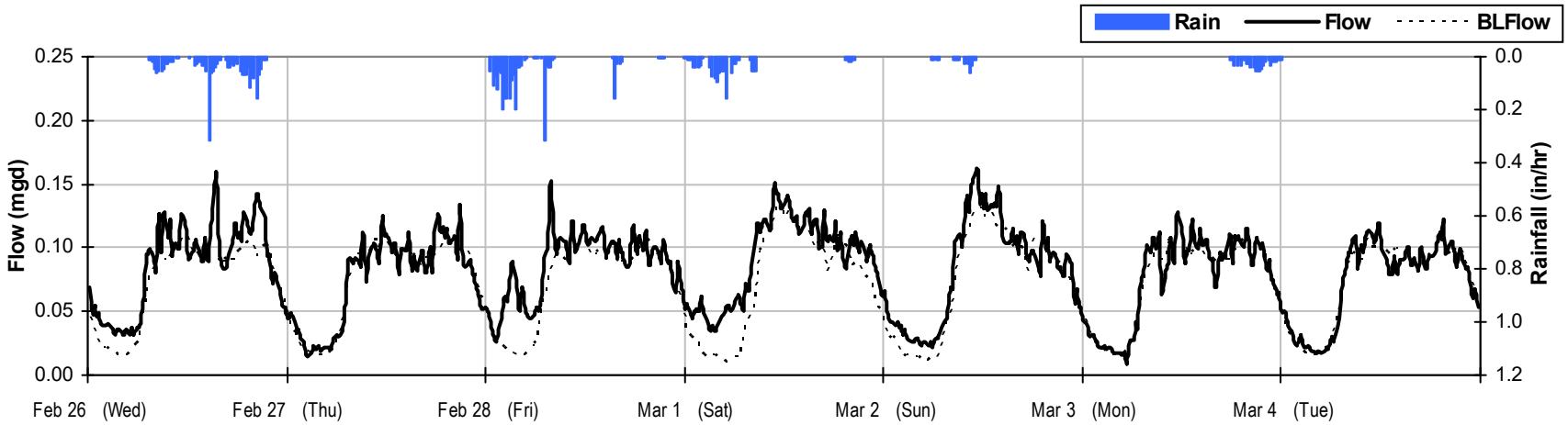
Total Period Rainfall: 1.94 inches

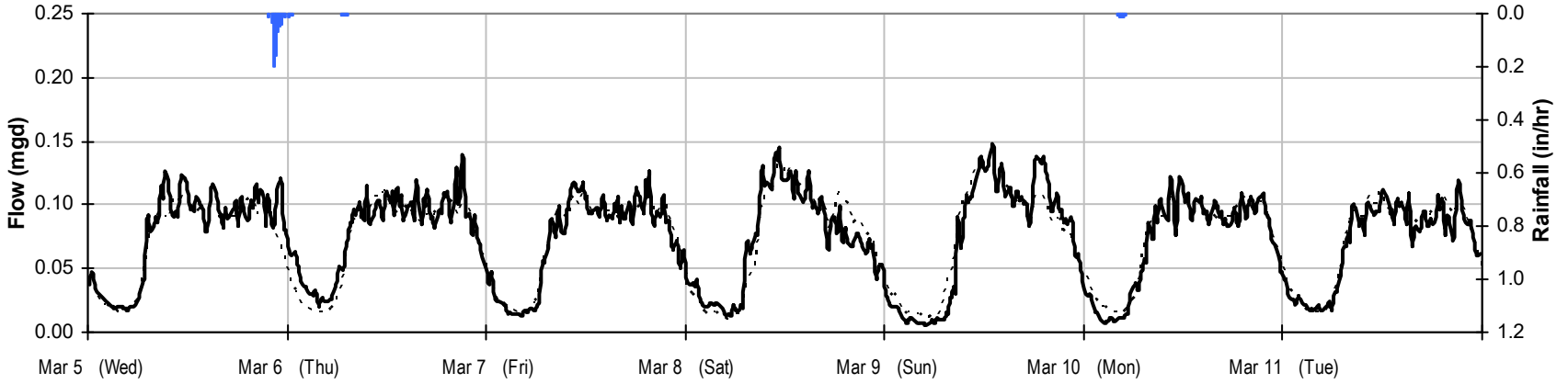


METER 4

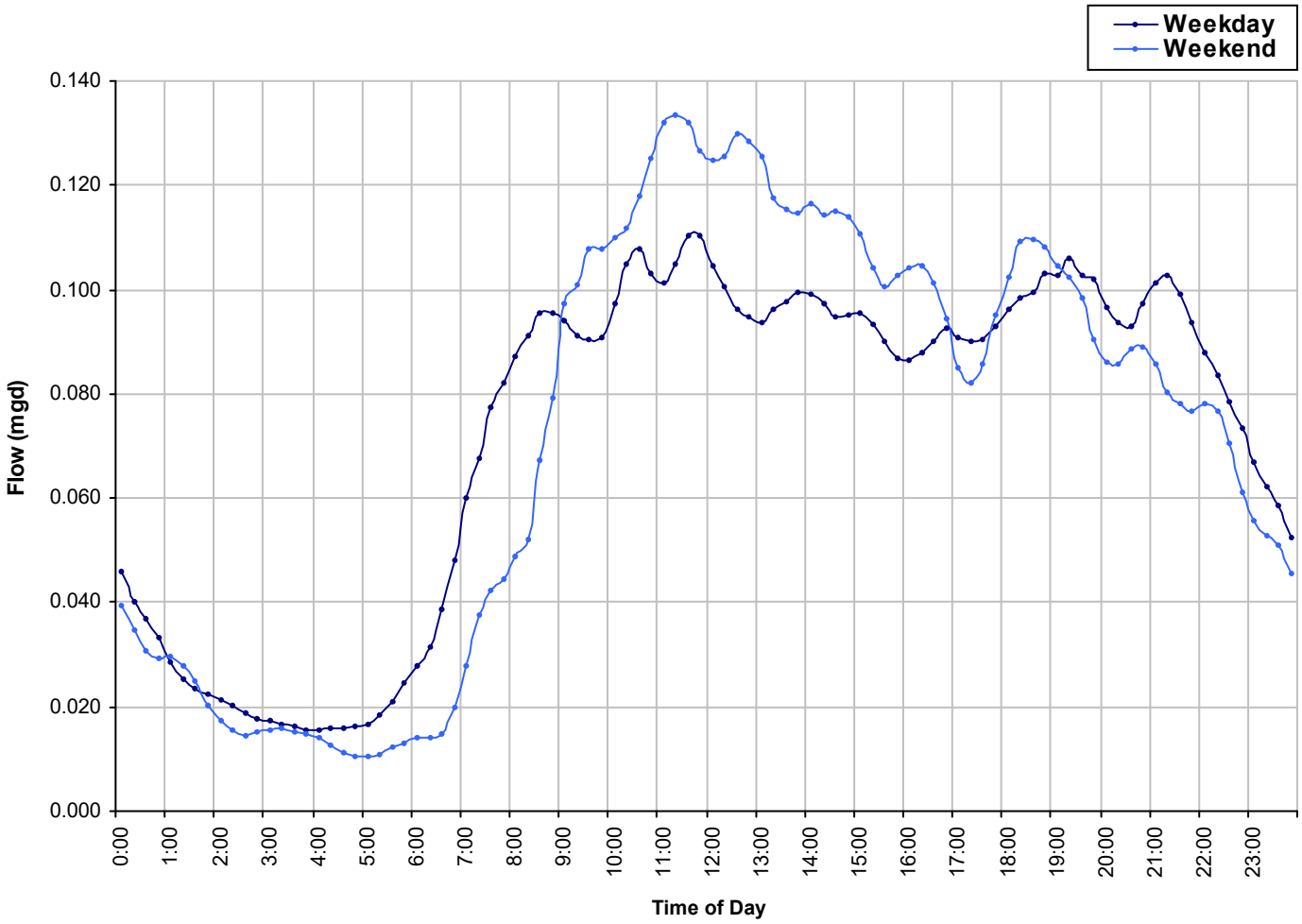
Flow Summary: 2/26/2014 to 3/11/2014

Total Period Rainfall: 1.94 inches **Avg Flow: 0.077 mgd** **Peak Flow: 0.162 mgd** **Min Flow: 0.006 mgd**

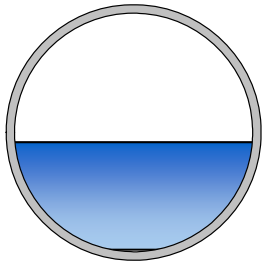




METER 4
Baseline Flow Hydrographs



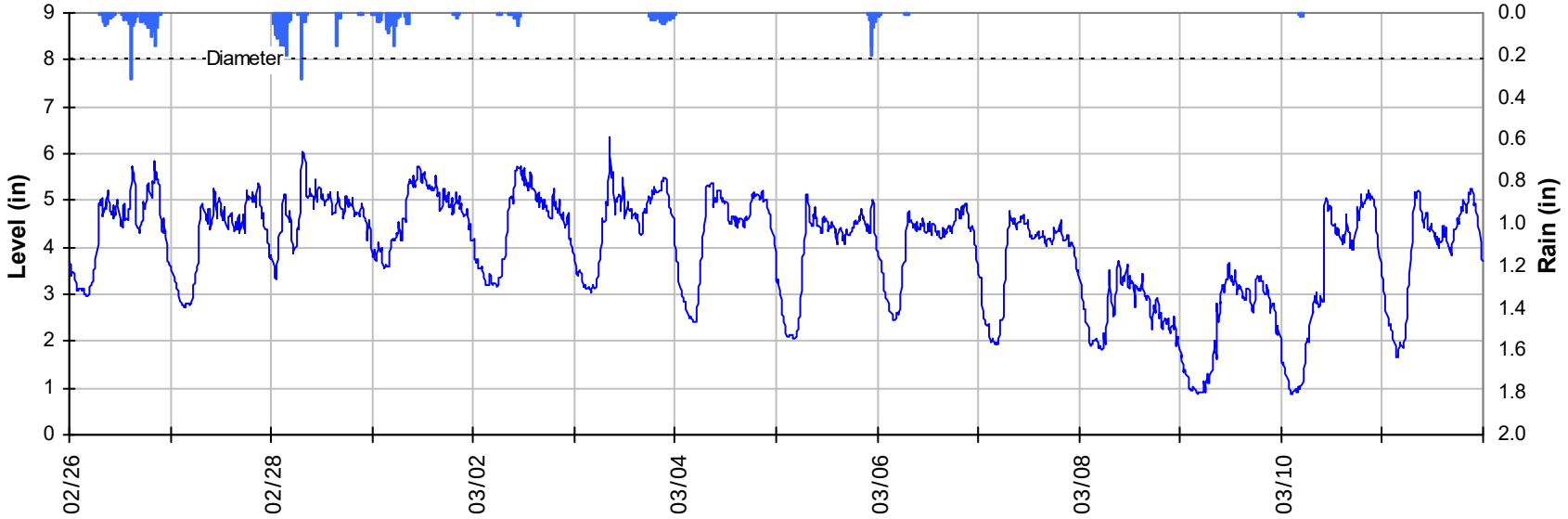
Baseline Flow:
0.072 *mgd*

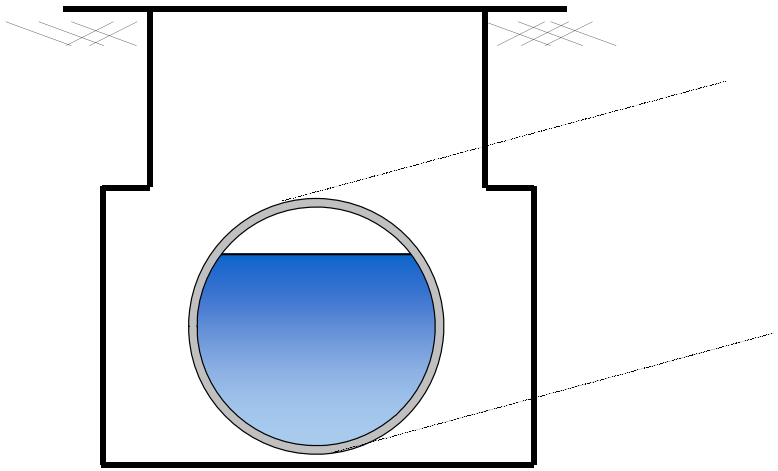


METER 4

Site Capacity and Surcharge Summary

Realtime Flow Levels with Rainfall Data over Monitoring Period





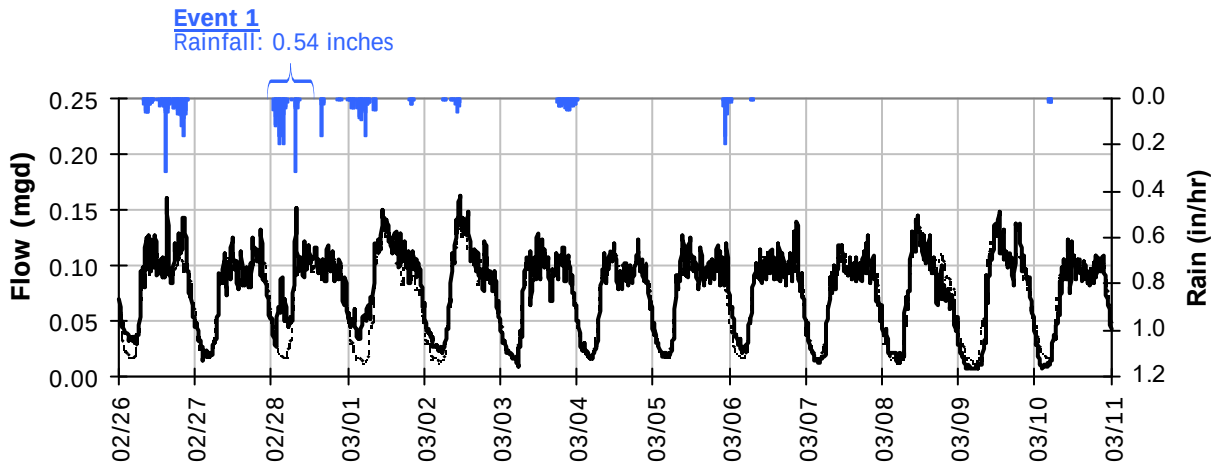
Pipe Diameter: 8 *inches*

Peak Measured Level: 6.34 *inches*

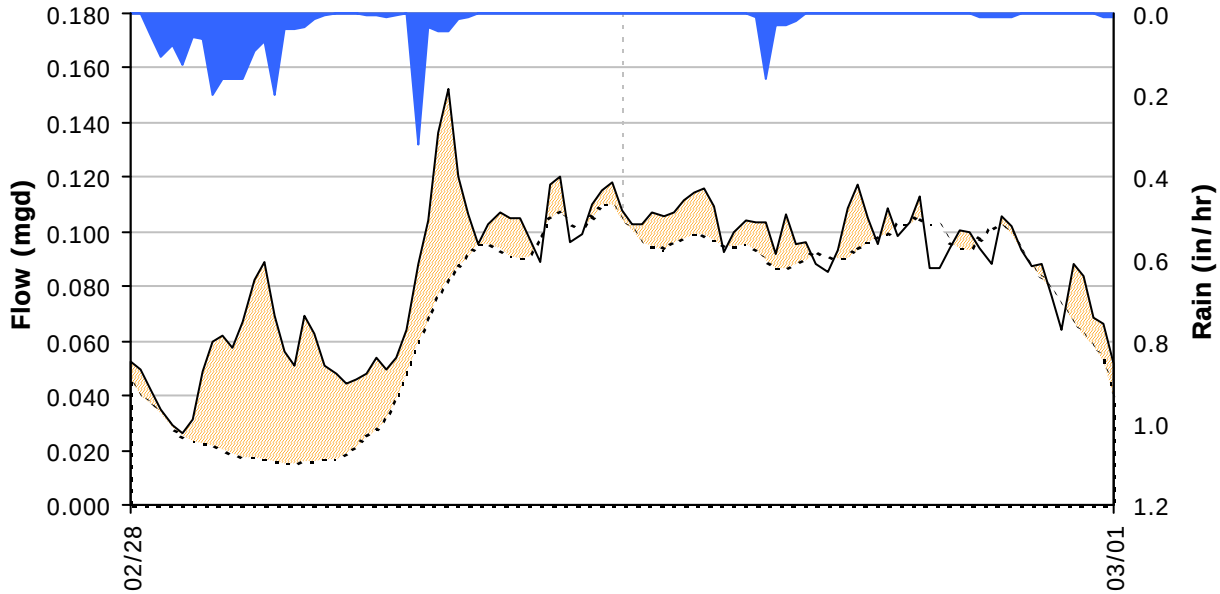
Peak d/D Ratio: 0.79

METER 4
I/I Summary: Event 1

Baseline and Realtime Flows with Rainfall Data over Monitoring Period



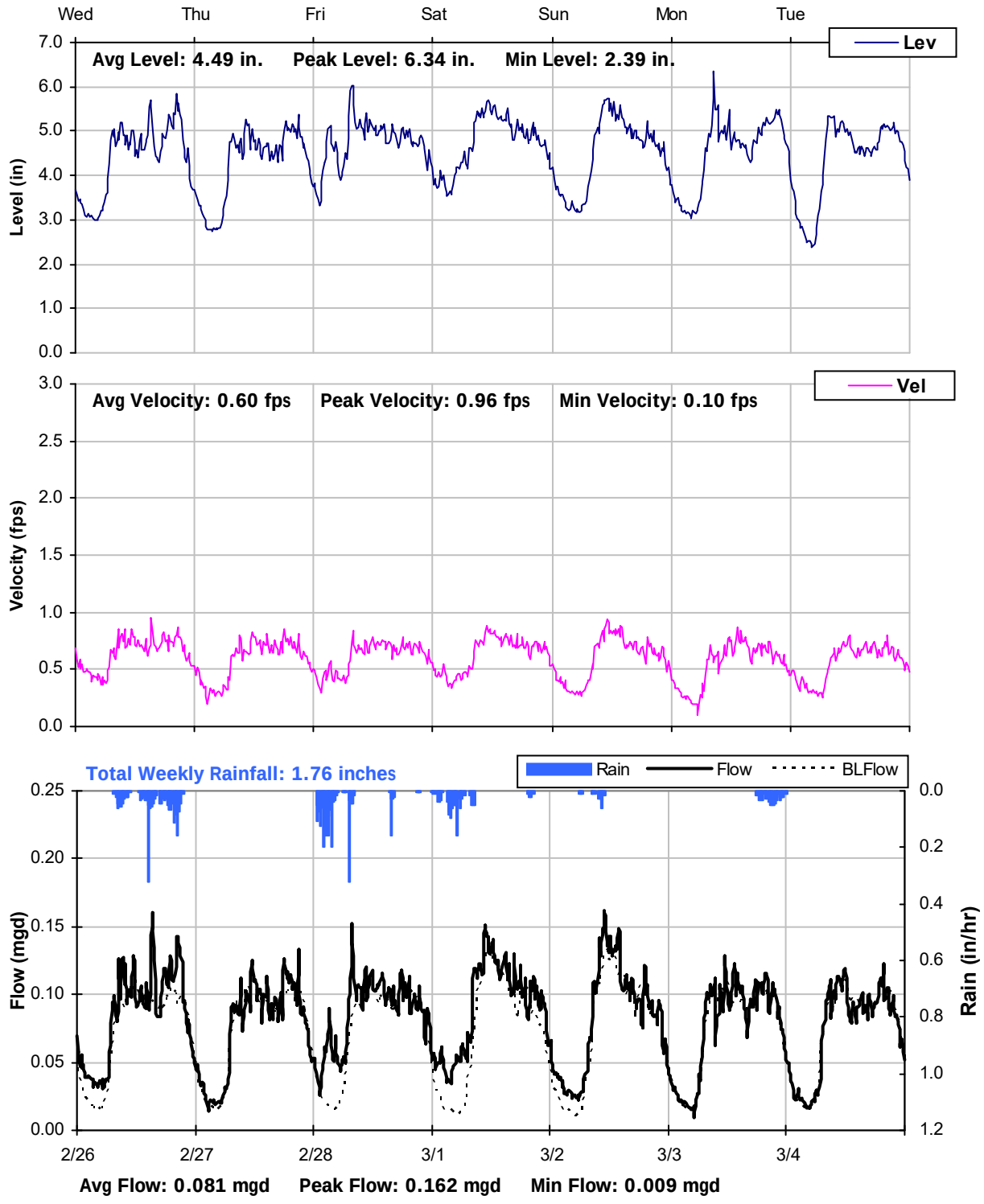
Event 1 Detail Graph



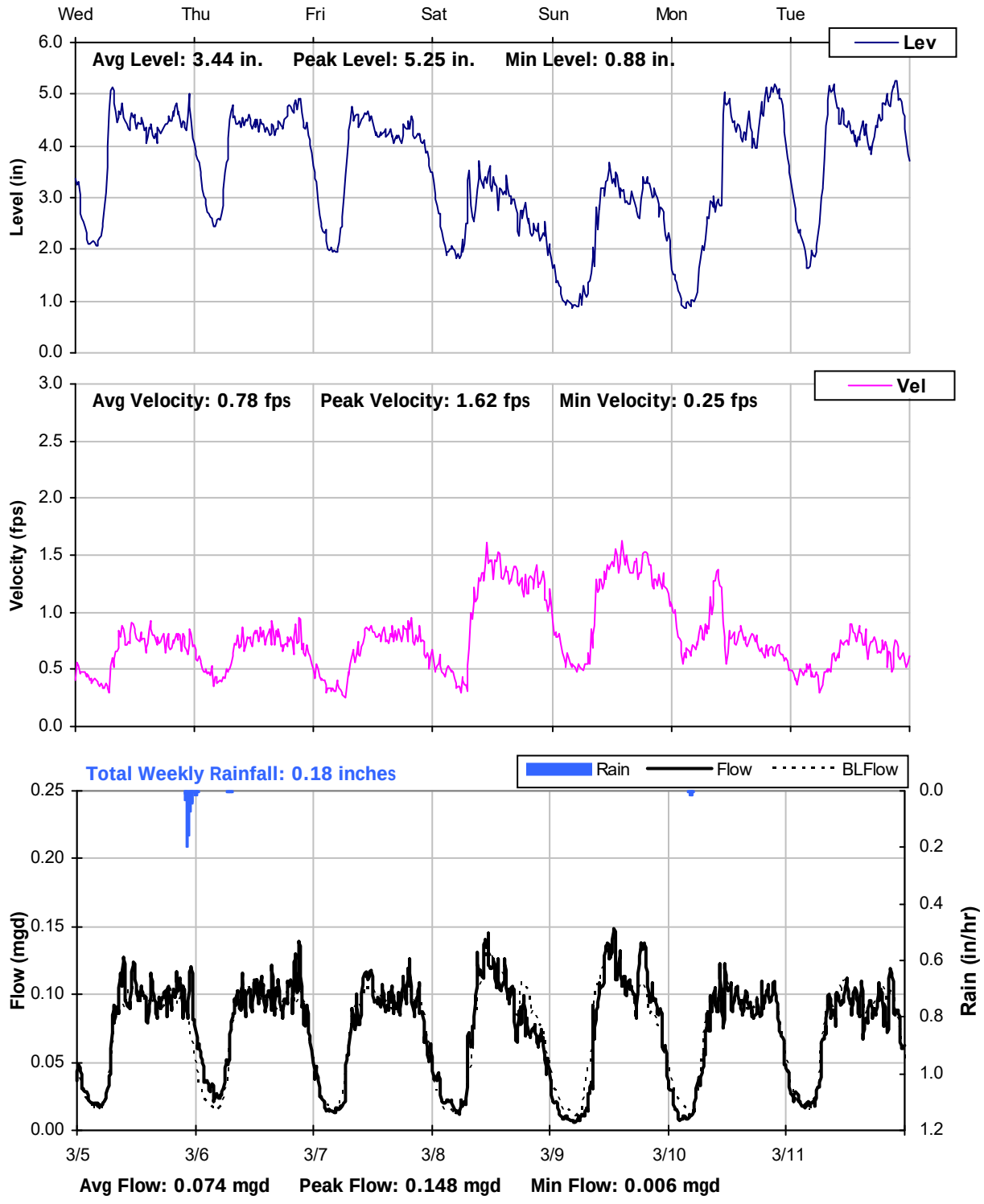
Storm Event I/I Analysis (Rain = 0.54 inches)

Capacity		Inflow / Infiltration	
Peak Flow:	0.15 *mgd*	**Peak I/I Rate:**	0.07 *mgd*
PF:	2.11	**Total I/I:**	12,000 *gallons*

METER 4
Weekly Level, Velocity and Flow Hydrographs
2/26/2014 to 3/5/2014



METER 4
Weekly Level, Velocity and Flow Hydrographs
3/5/2014 to 3/12/2014



City of Half Moon Bay

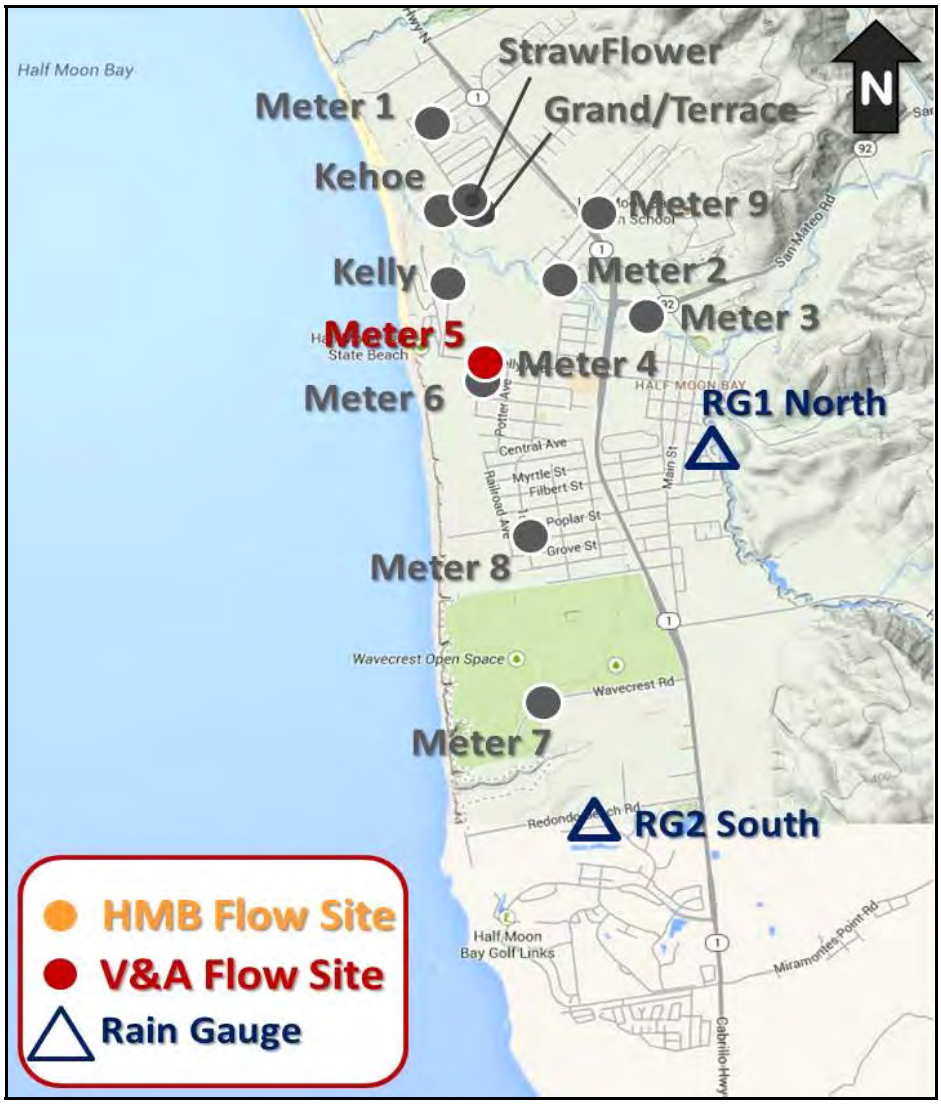
Sanitary Sewer Flow Monitoring

Temporary Monitoring: February 26 to March 11, 2014

Monitoring Site: Meter 5

Location: Kelly Avenue at Entrance to Ocean View Driving Range (in Middle of Street)

Data Summary Report

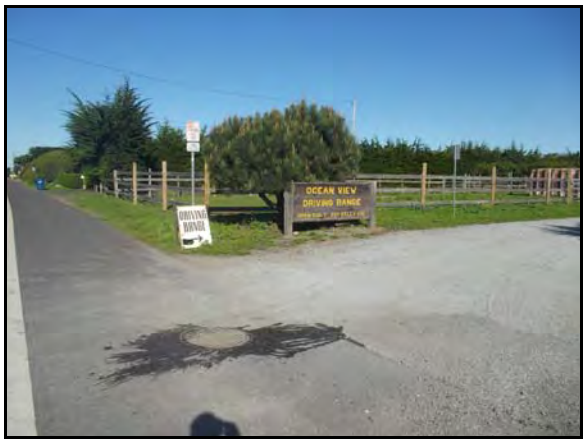


Vicinity Map: Meter 5

METER 5

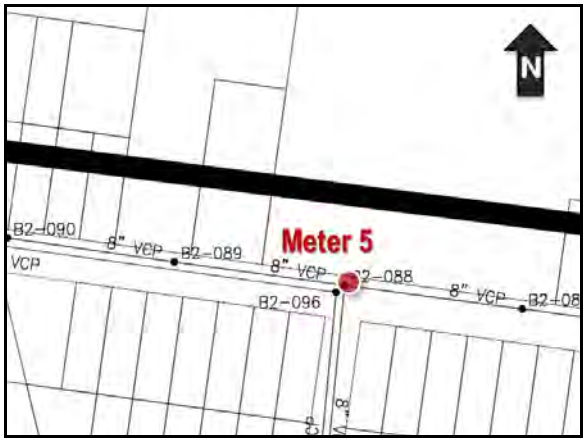
Site Information

Location:	Kelly Avenue at Entrance to Ocean View Driving Range (in Middle of Street)
Coordinates:	122.4419° W, 37.4649° N
Rim Elevation:	47 feet
Pipe Diameter:	8 inches
Baseline Flow:	0.024 mgd
Peak Measured Flow:	0.150 mgd

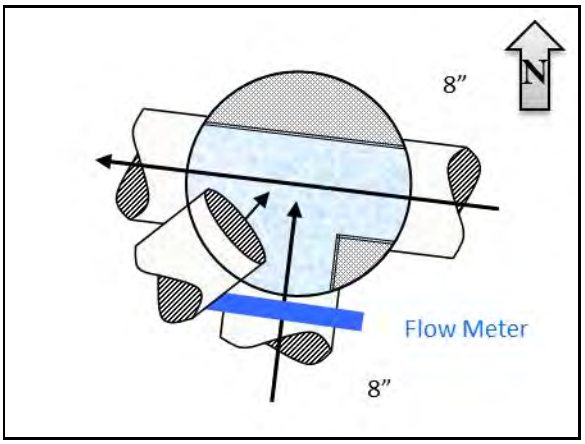


Street View

Satellite View



Sanitary Sewer Map



Flow Diagram

Plan View

METER 5

Additional Site Photos

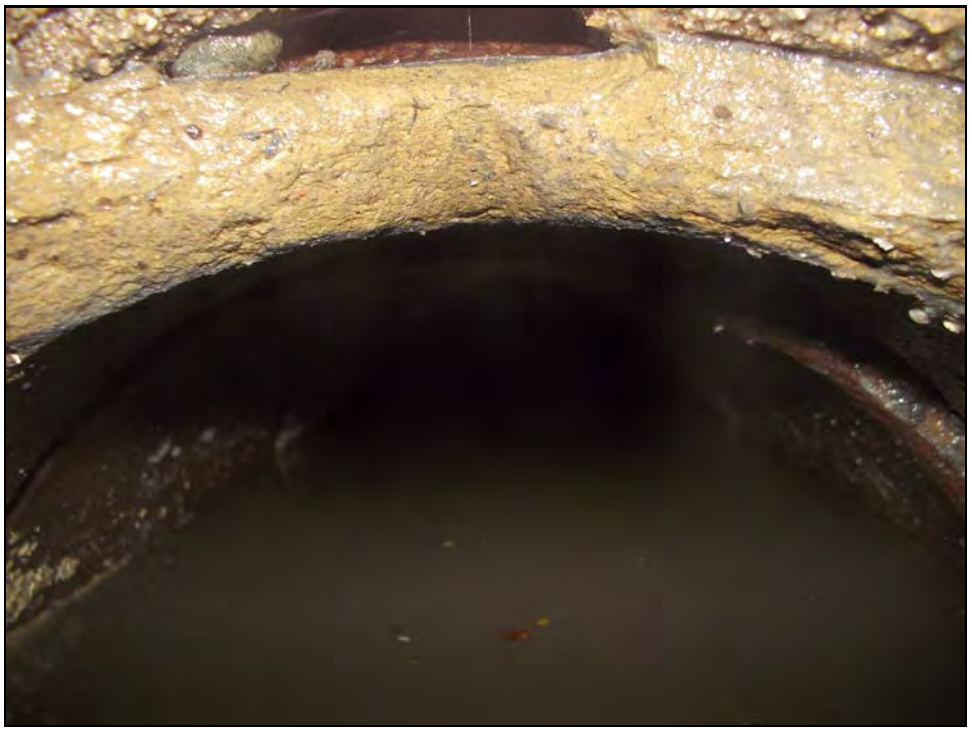
Effluent Pipe

Influent Pipe

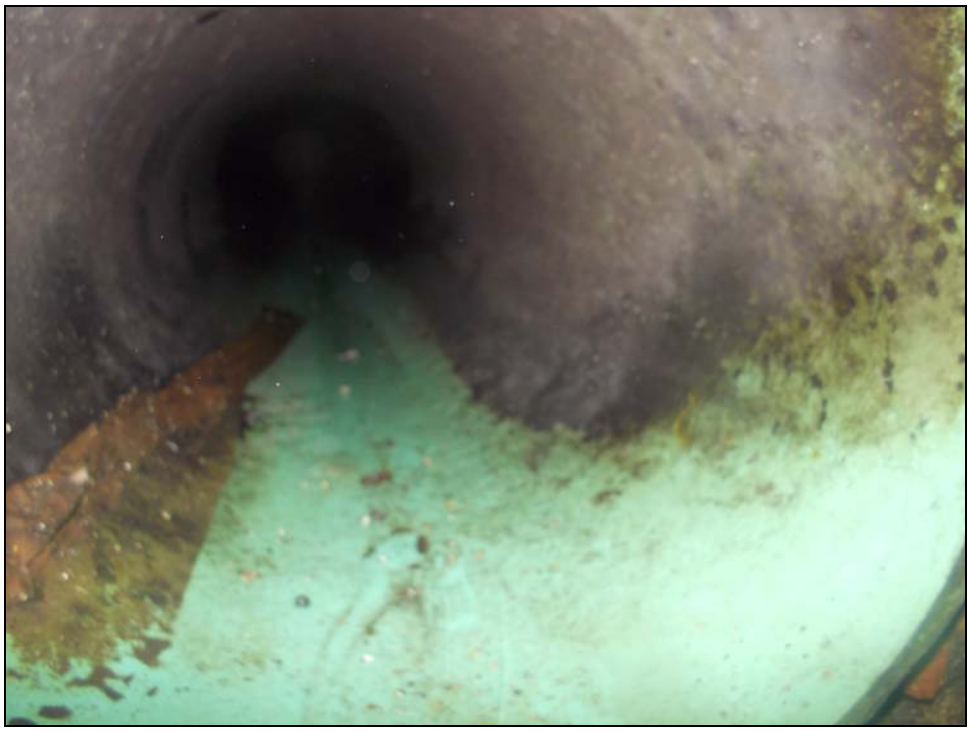
METER 5

Additional Site Photos

East Influent Line



Cross Connection

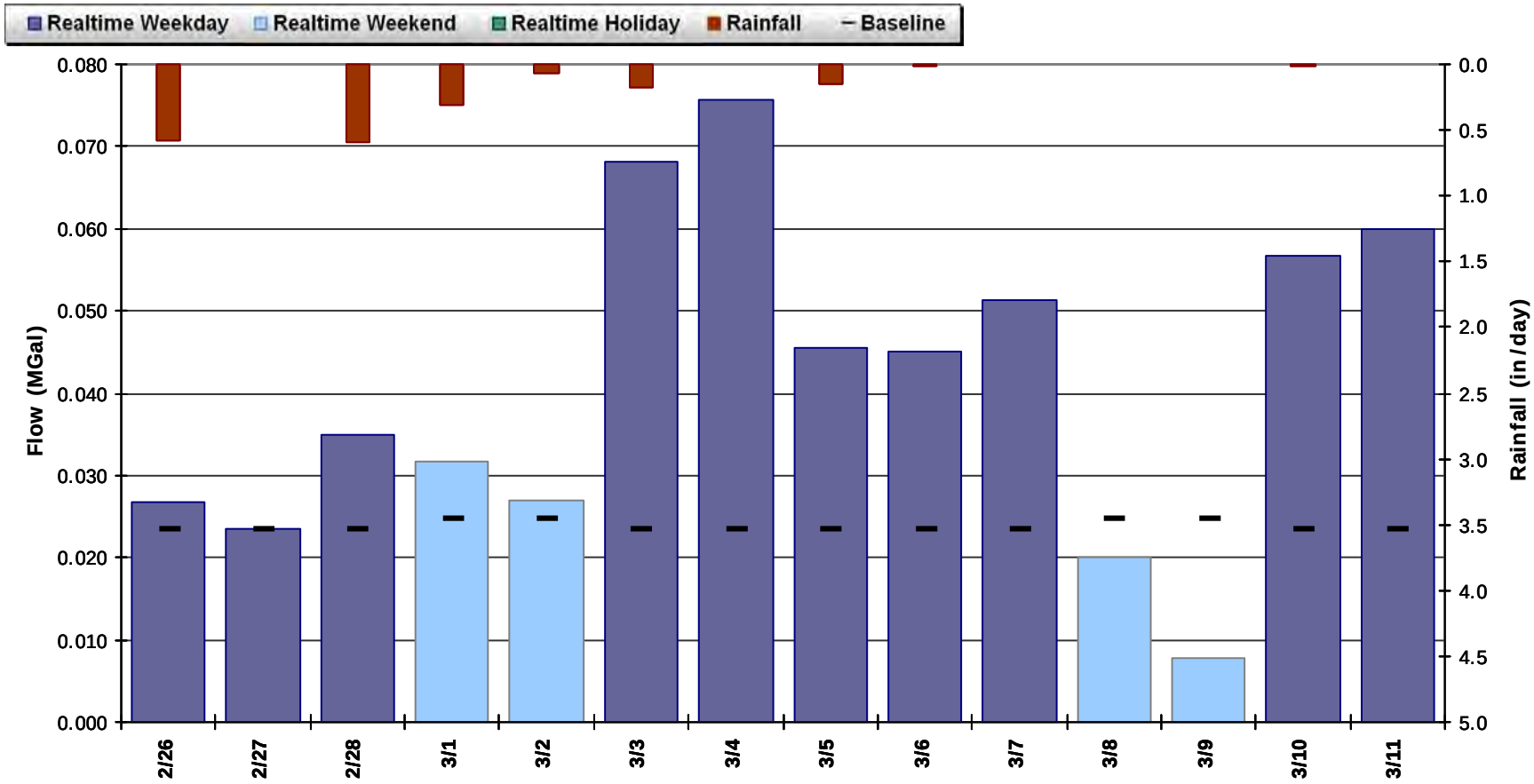


METER 5

Period Flow Summary: Daily Flow Totals

Avg Period Flow: 0.041 MGal **Peak Daily Flow: 0.076 MGal** **Min Daily Flow: 0.008 MGal**

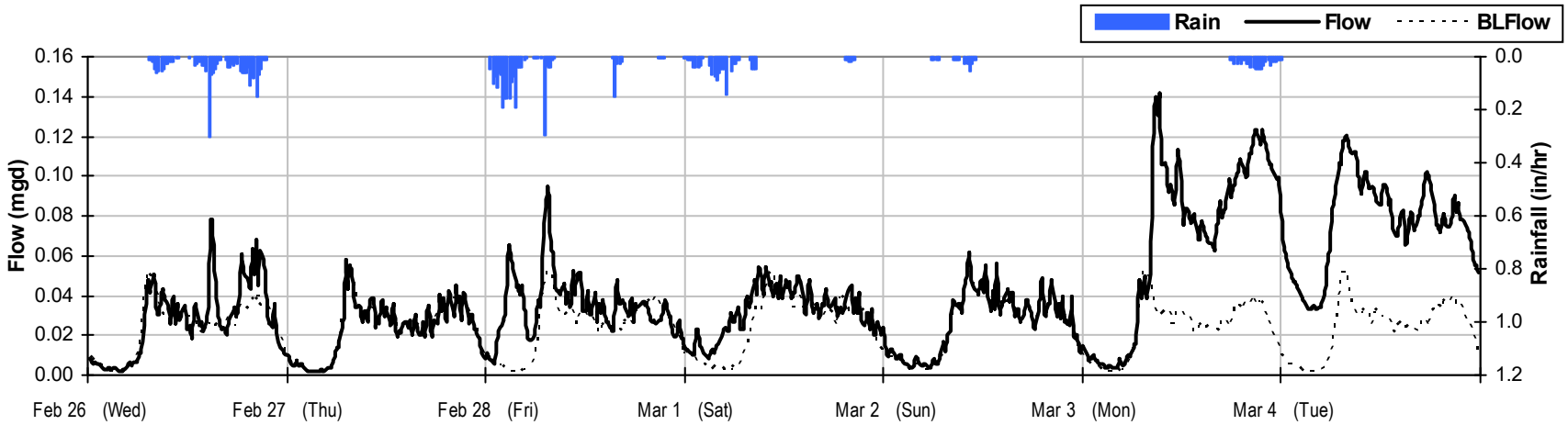
Total Period Rainfall: 1.90 inches

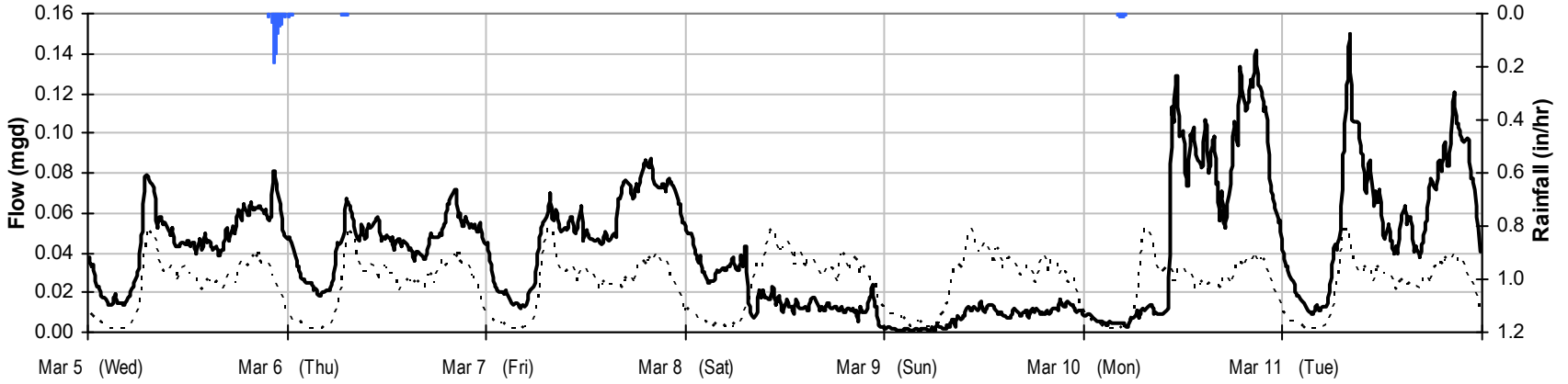


METER 5

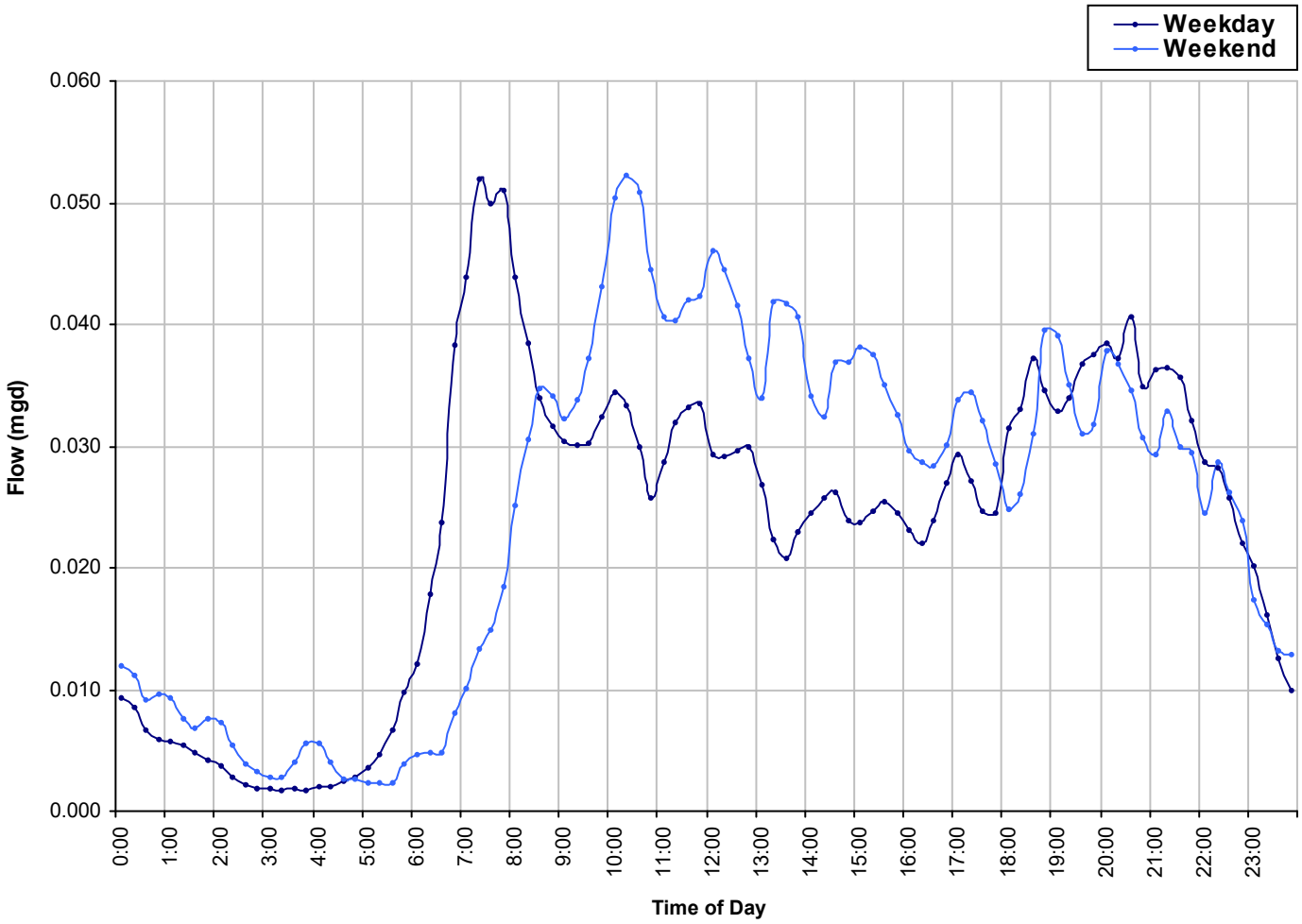
Flow Summary: 2/26/2014 to 3/11/2014

Total Period Rainfall: 1.90 inches **Avg Flow: 0.041 mgd** **Peak Flow: 0.150 mgd** **Min Flow: 0.001 mgd**

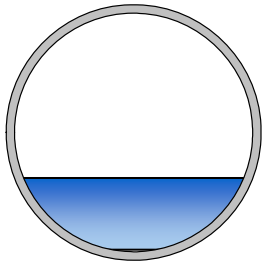




METER 5
Baseline Flow Hydrographs



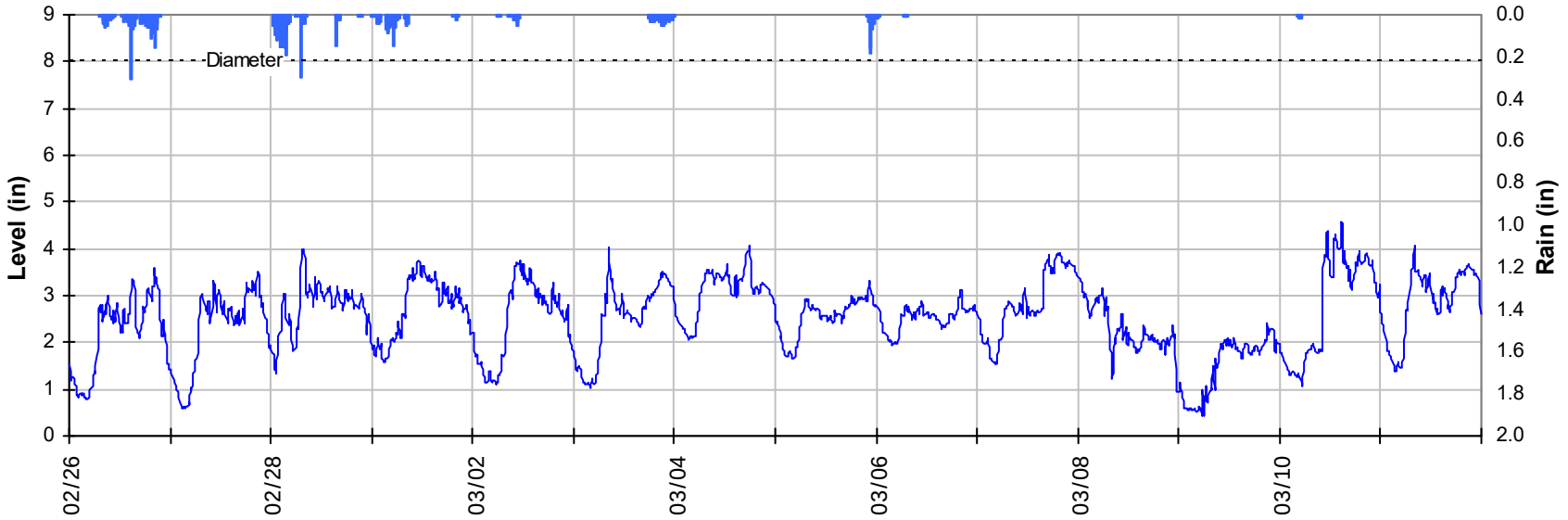
Baseline Flow:
0.024 *mgd*

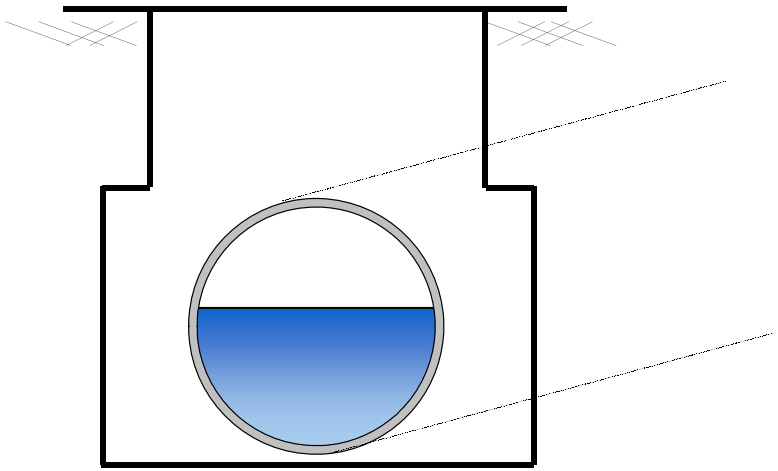


METER 5

Site Capacity and Surcharge Summary

Realtime Flow Levels with Rainfall Data over Monitoring Period

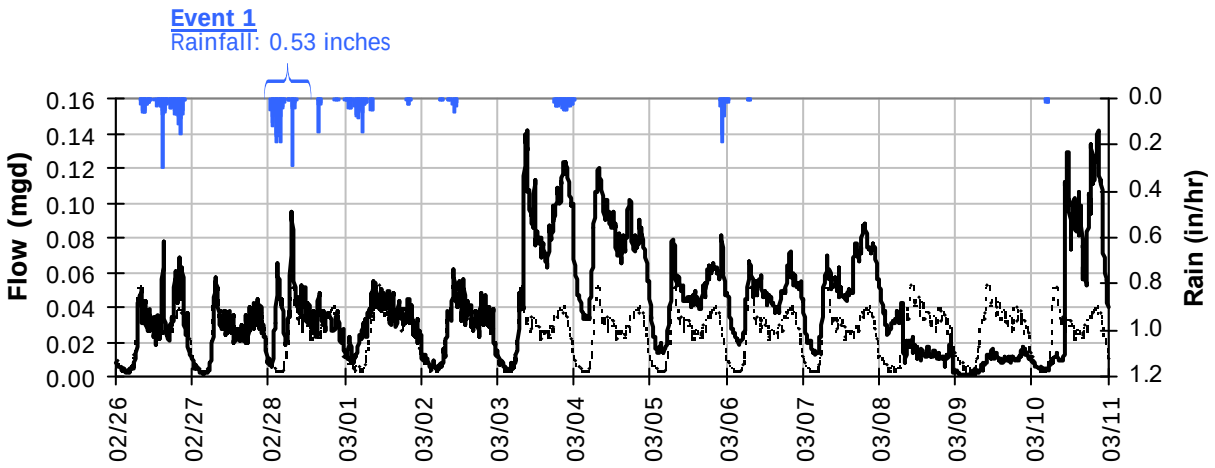




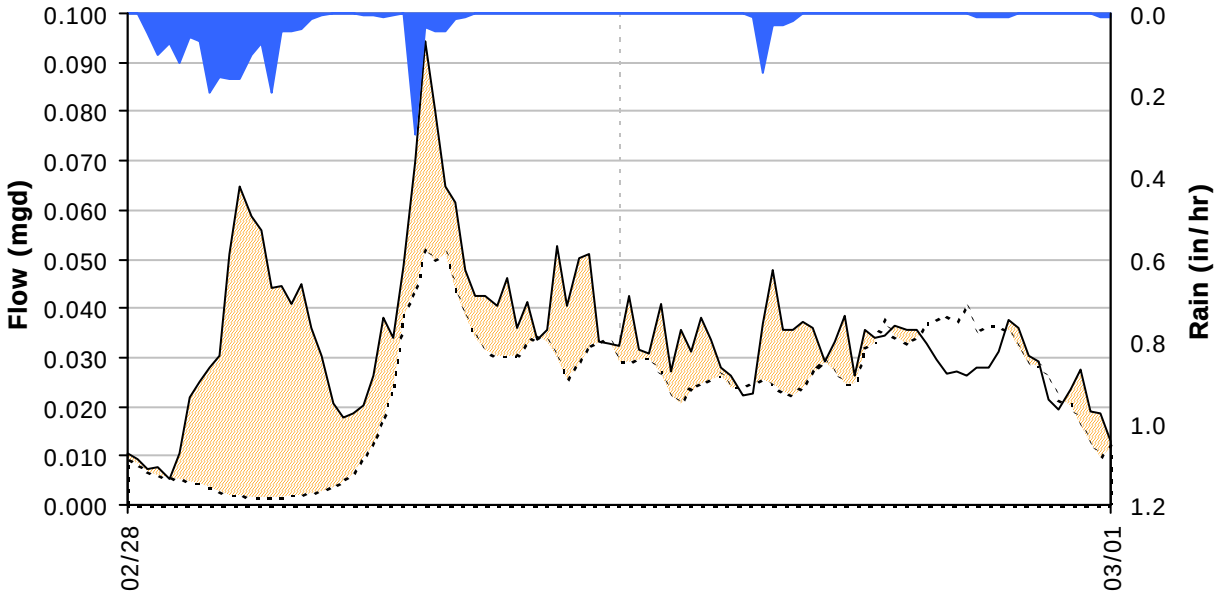
Pipe Diameter:	8	*inches*
Peak Measured Level:	4.59	*inches*
Peak d/D Ratio:	0.57	

METER 5
I/I Summary: Event 1

Baseline and Realtime Flows with Rainfall Data over Monitoring Period



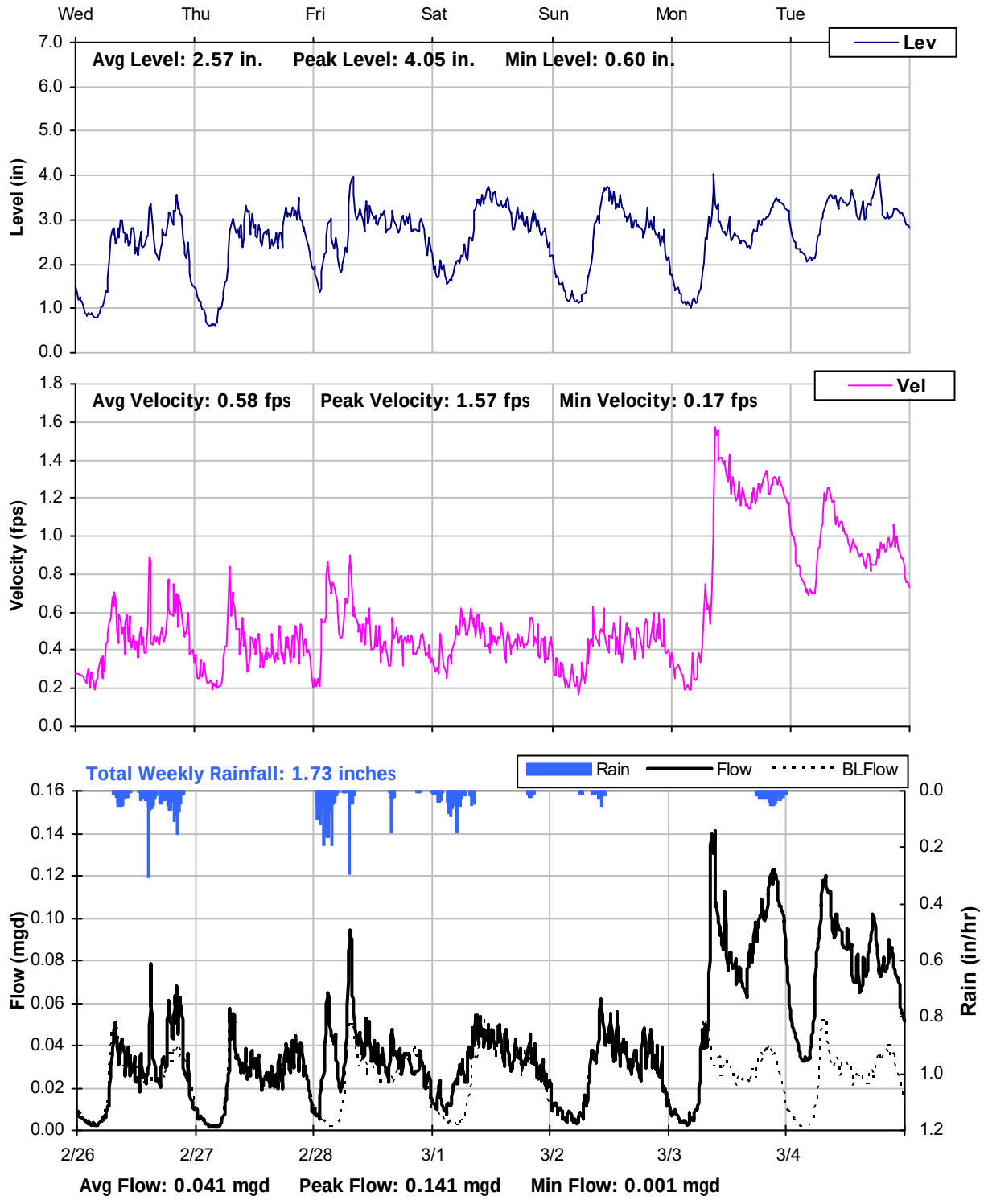
Event 1 Detail Graph



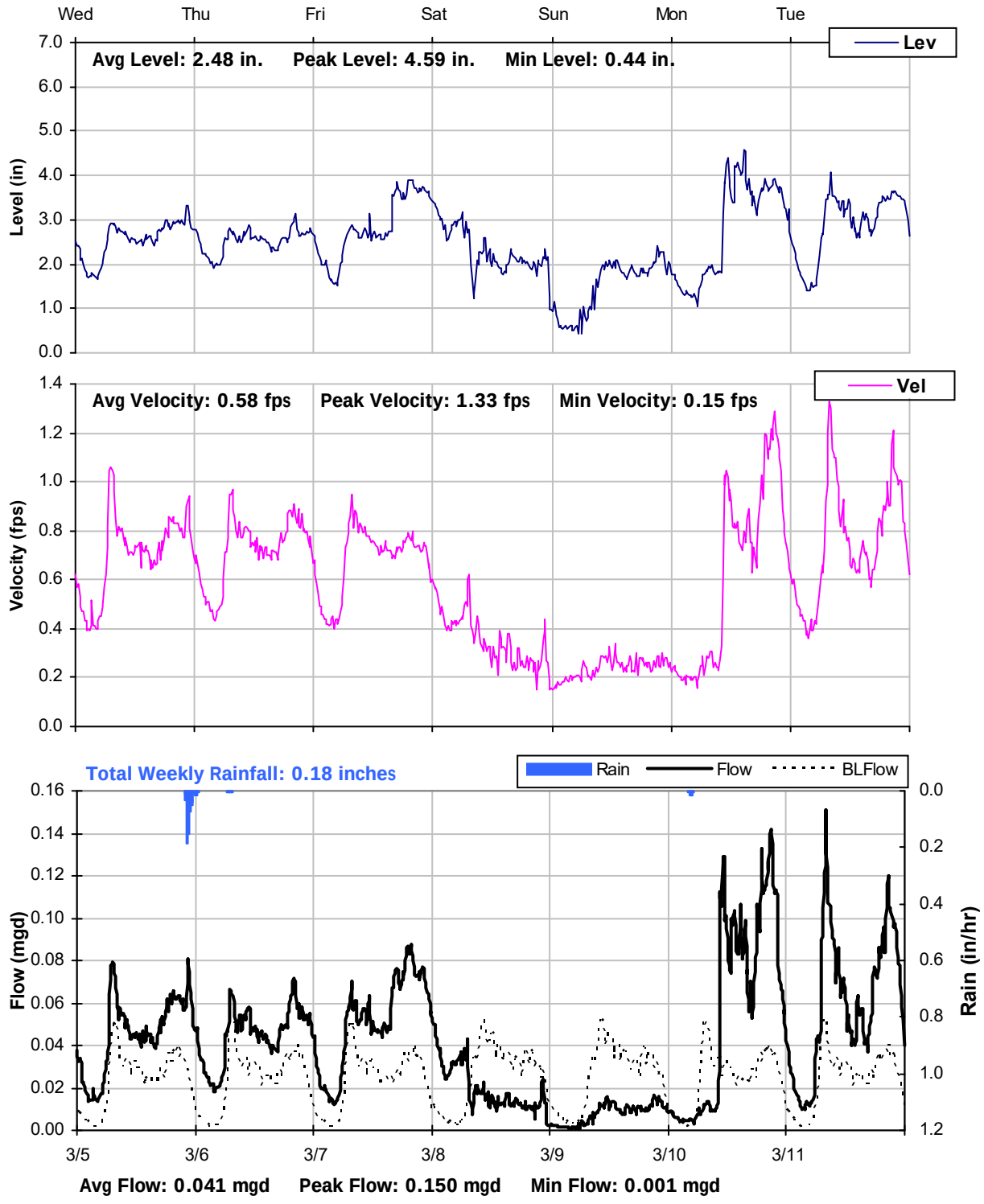
Storm Event I/I Analysis (Rain = 0.53 inches)

Capacity		Inflow / Infiltration	
Peak Flow:	0.09 *mgd*	**Peak I/I Rate:**	0.06 *mgd*
PF:	3.96	**Total I/I:**	10,000 *gallons*

METER 5
Weekly Level, Velocity and Flow Hydrographs
2/26/2014 to 3/5/2014



METER 5
Weekly Level, Velocity and Flow Hydrographs
3/5/2014 to 3/12/2014



City of Half Moon Bay

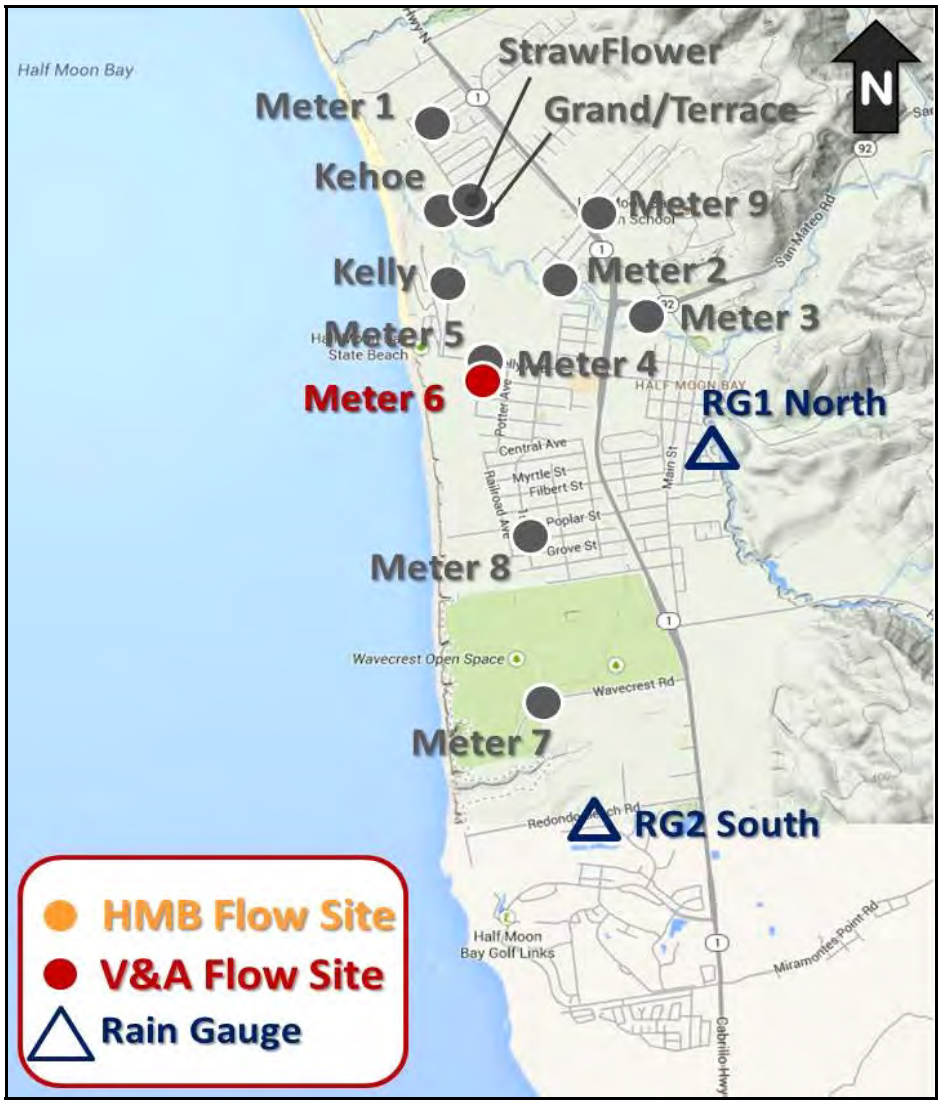
Sanitary Sewer Flow Monitoring

Temporary Monitoring: February 26 to March 11, 2014

Monitoring Site: Meter 6

Location: Miramontes Avenue and Ocean Avenue

Data Summary Report



Vicinity Map: Meter 6

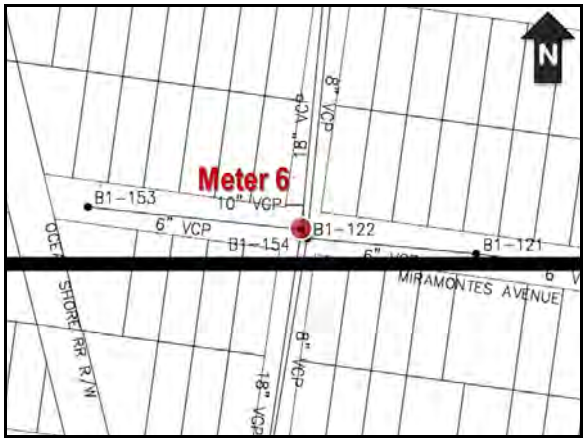
METER 6

Site Information

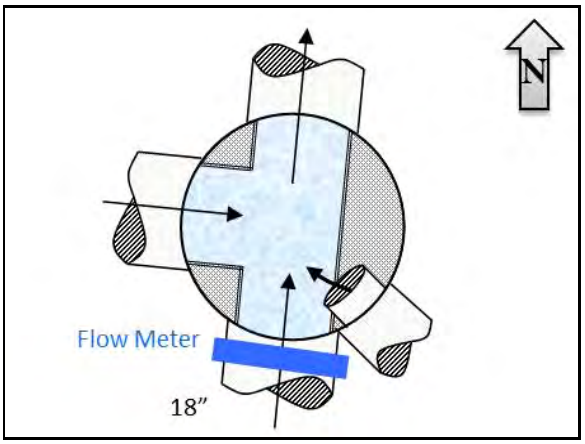
Location:	Miramontes Avenue and Ocean Avenue
Coordinates:	122.4421° W, 37.4639° N
Rim Elevation:	46 feet
Pipe Diameter:	18 inches
Baseline Flow:	0.283 mgd
Peak Measured Flow:	0.738 mgd

Street View

Satellite View



Sanitary Sewer Map



Flow Diagram

Plan View

METER 6

Additional Site Photos

Effluent Pipe

Influent Pipe

METER 6

Additional Site Photos

West Lateral Pipe

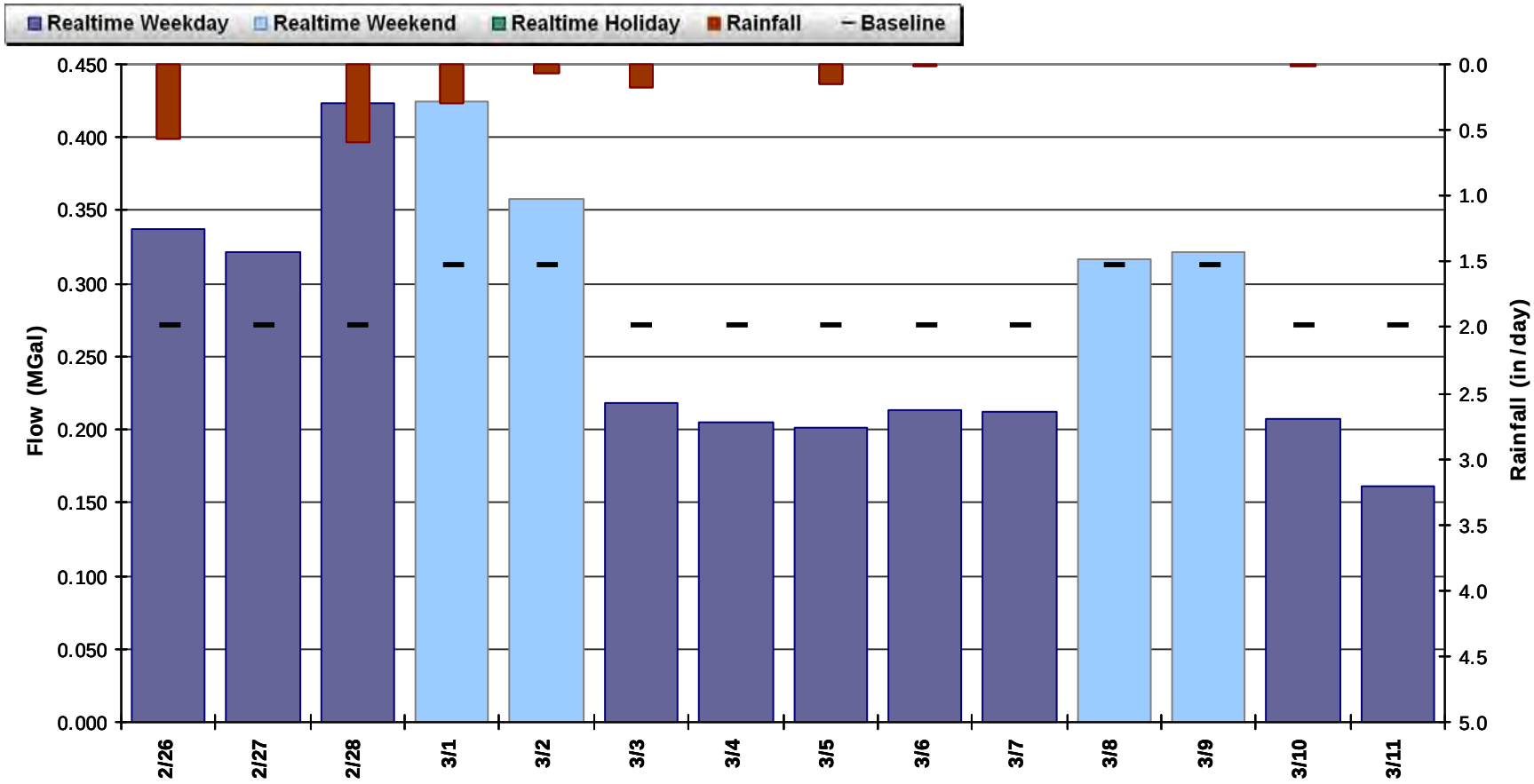
South East Lateral Pipe

METER 6

Period Flow Summary: Daily Flow Totals

Avg Period Flow: 0.280 MGal **Peak Daily Flow: 0.425 MGal** **Min Daily Flow: 0.162 MGal**

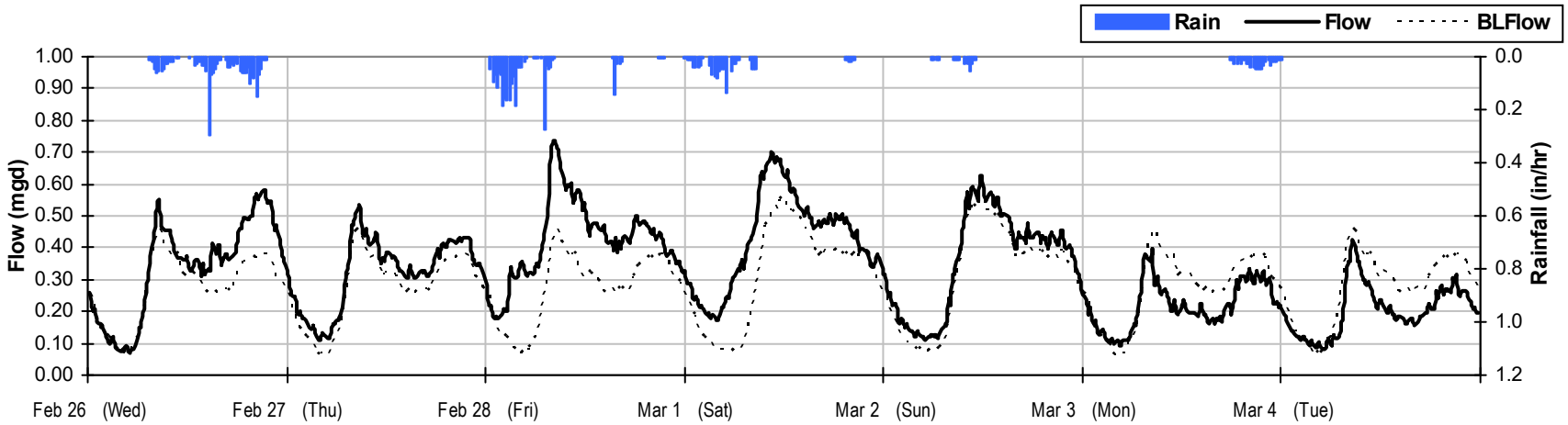
Total Period Rainfall: 1.88 inches

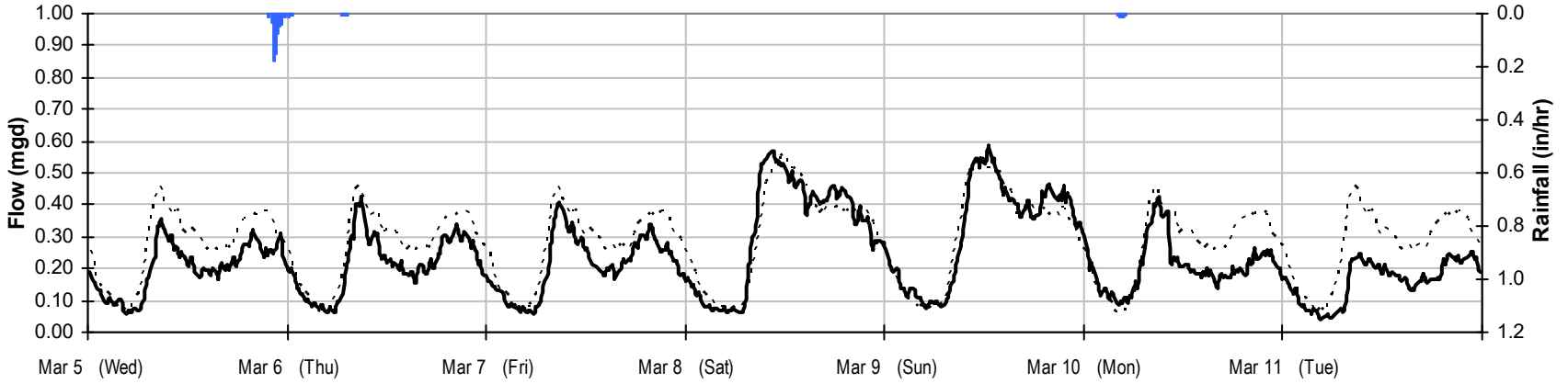


METER 6

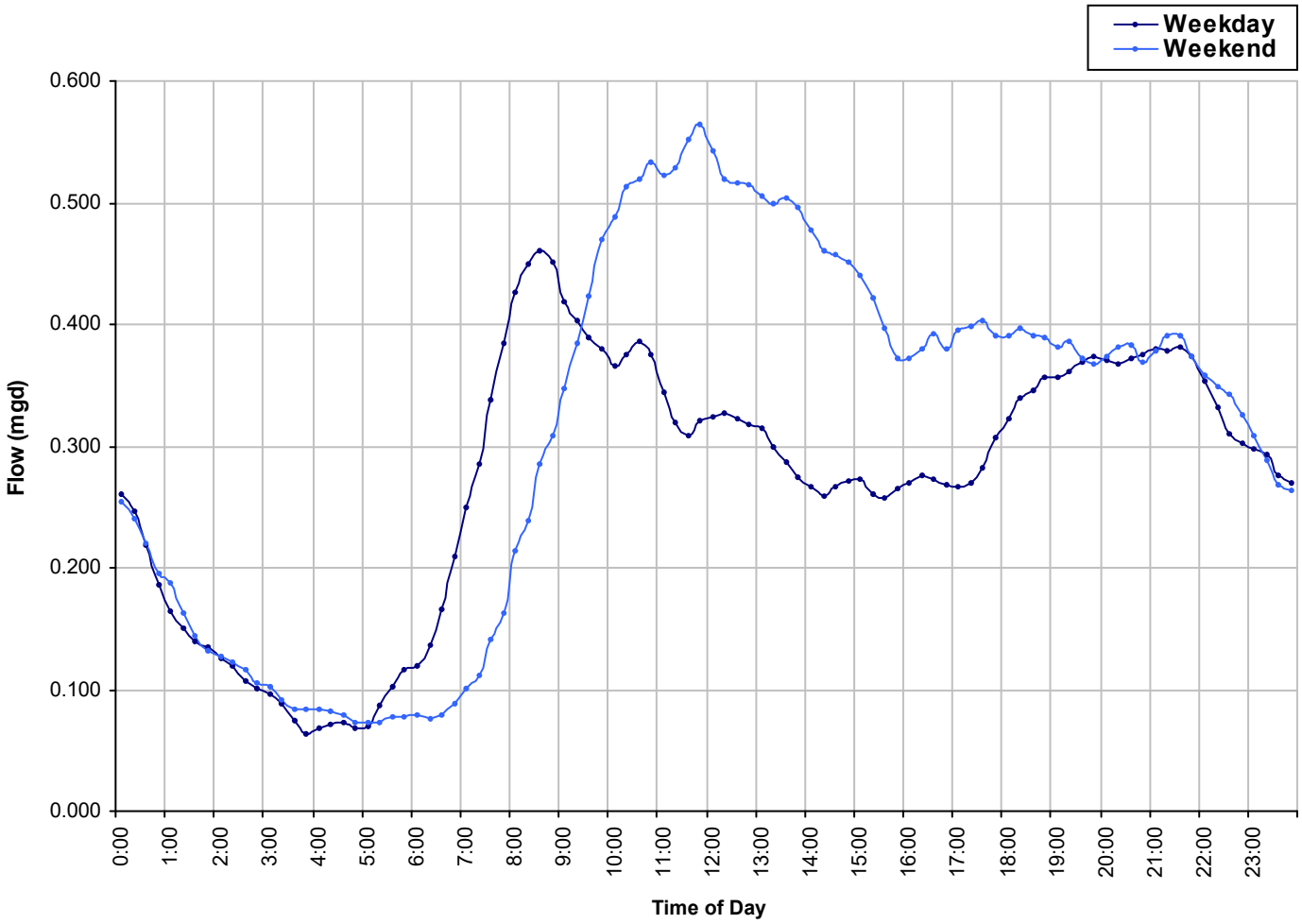
Flow Summary: 2/26/2014 to 3/11/2014

Total Period Rainfall: 1.88 inches **Avg Flow: 0.280 mgd** **Peak Flow: 0.738 mgd** **Min Flow: 0.040 mgd**

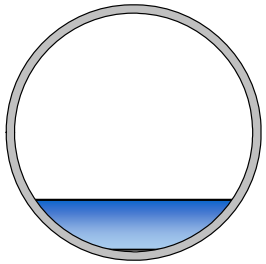




METER 6
Baseline Flow Hydrographs



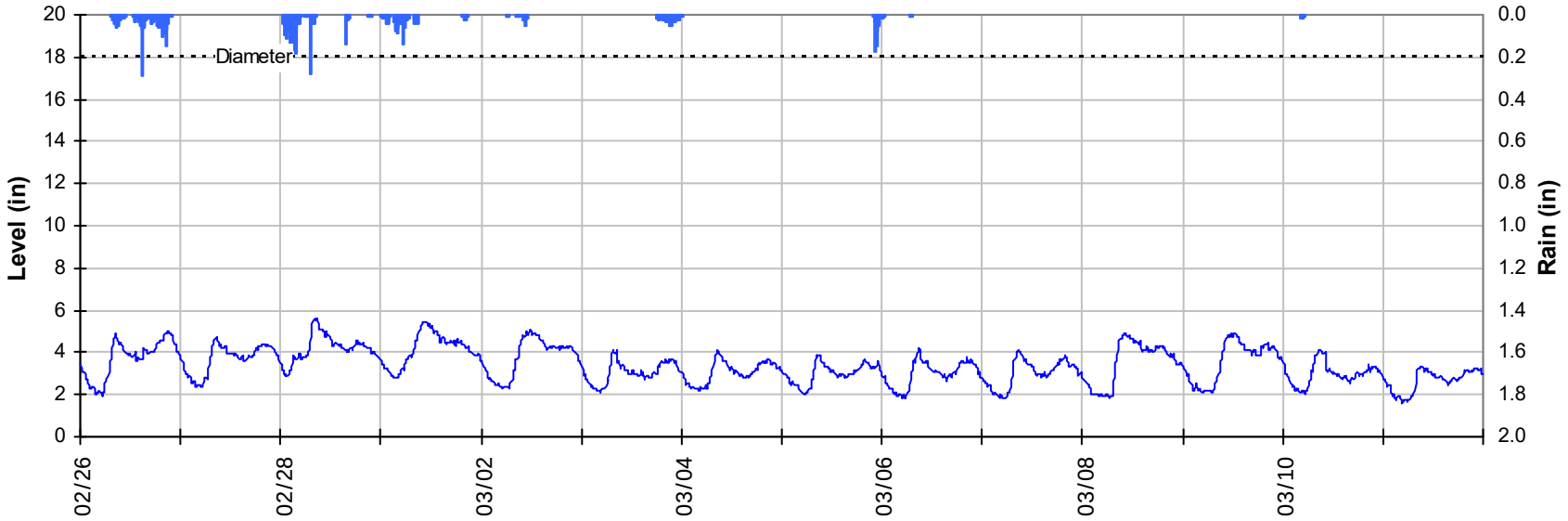
Baseline Flow:
0.283 *mgd*

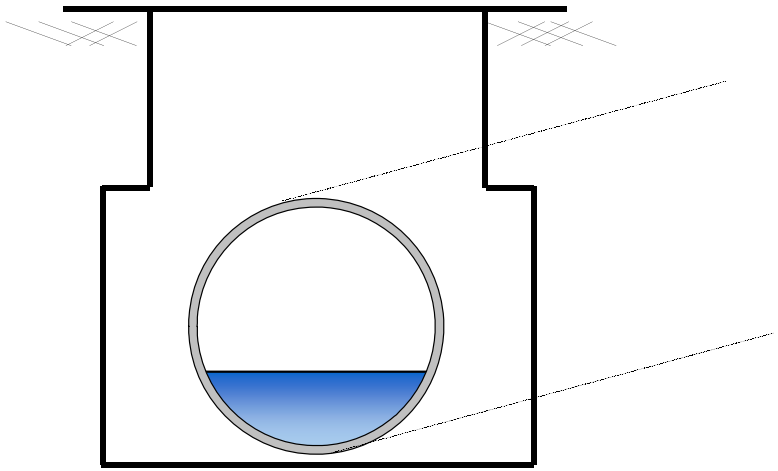


METER 6

Site Capacity and Surcharge Summary

Realtime Flow Levels with Rainfall Data over Monitoring Period

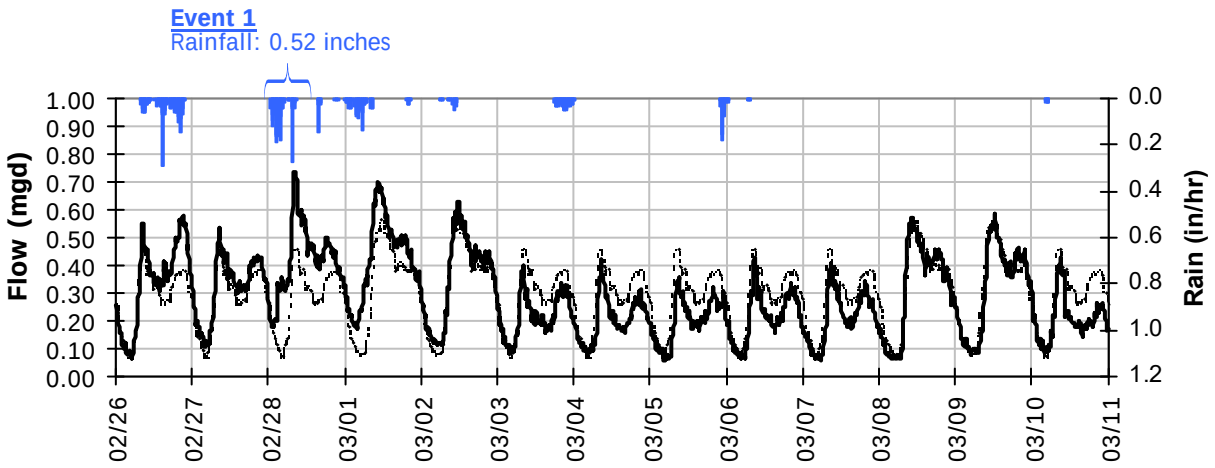




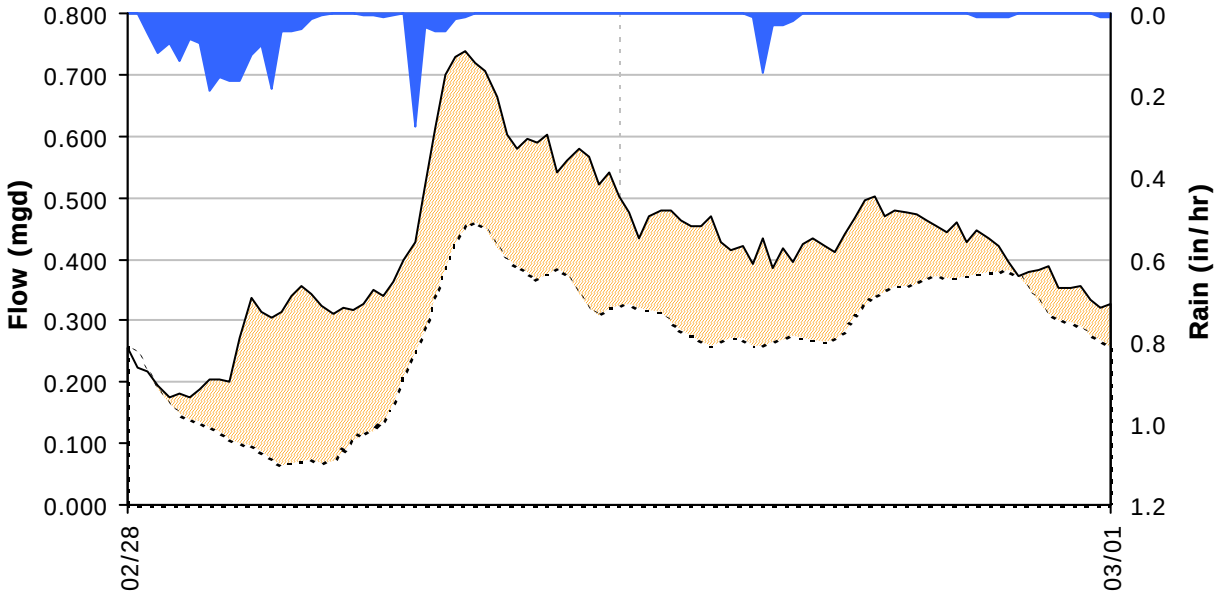
Pipe Diameter:	18	*inches*
Peak Measured Level:	5.61	*inches*
Peak d/D Ratio:	0.31	

METER 6
I/I Summary: Event 1

Baseline and Realtime Flows with Rainfall Data over Monitoring Period



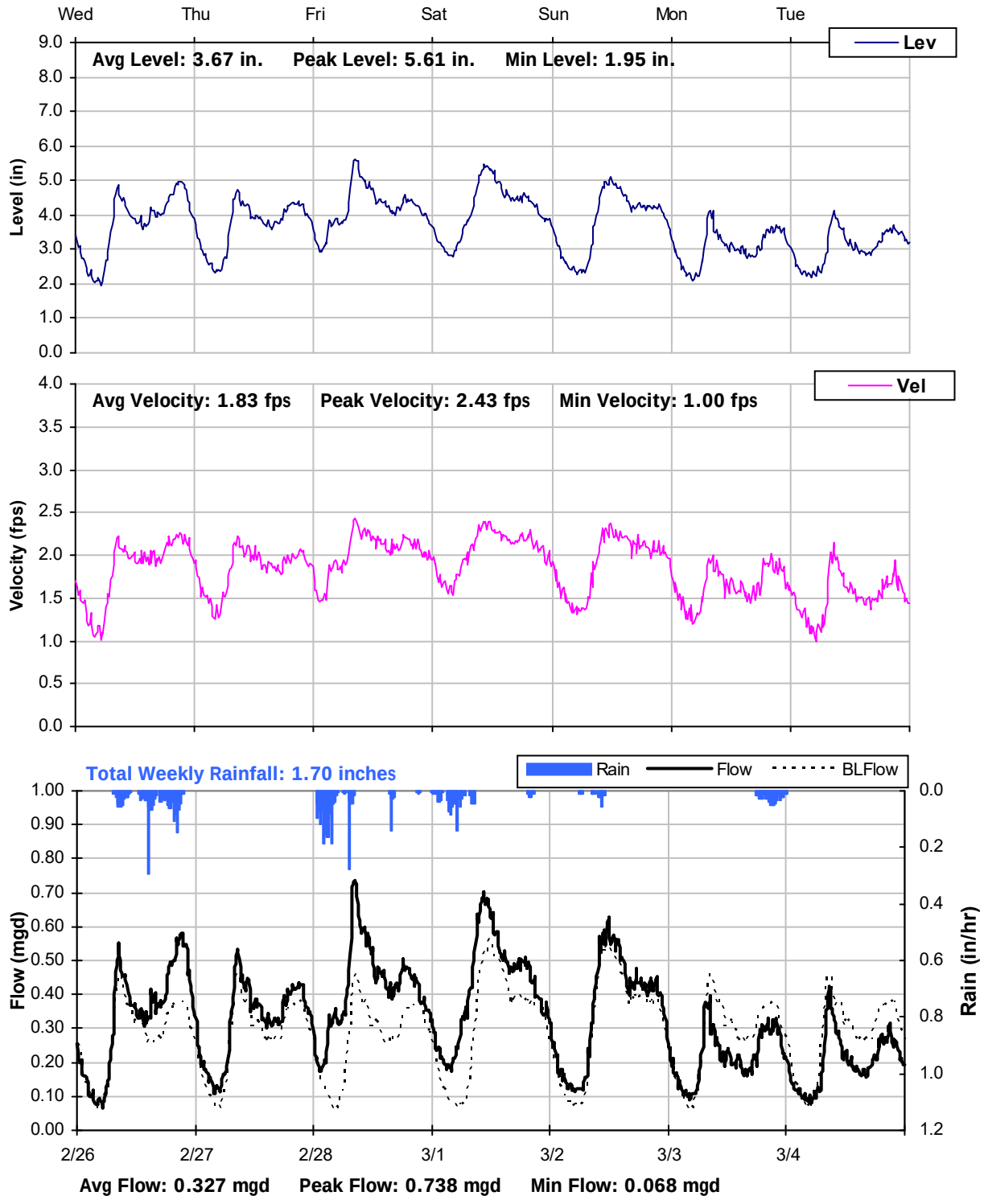
Event 1 Detail Graph



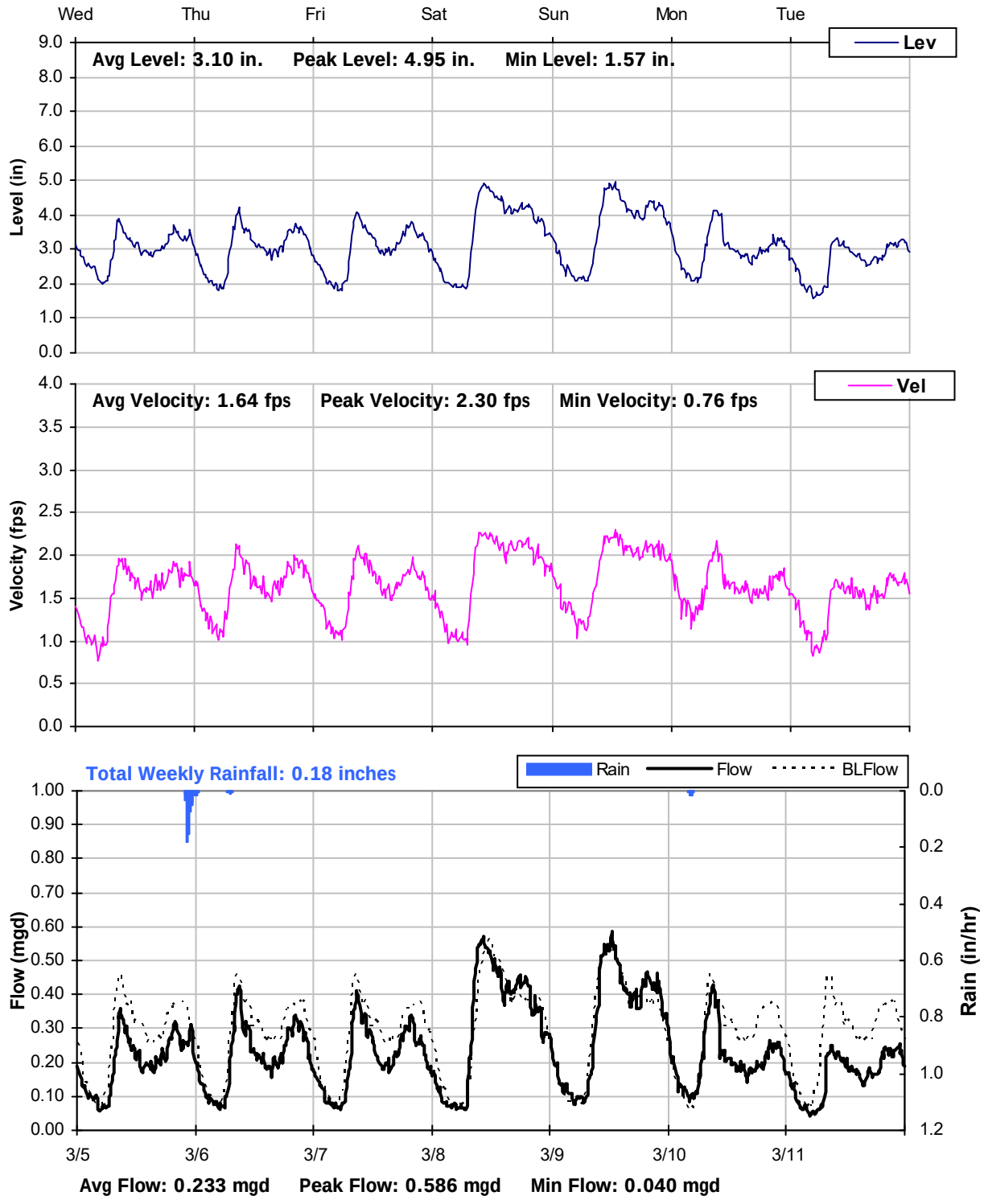
Storm Event I/I Analysis (Rain = 0.52 inches)

Capacity		Inflow / Infiltration	
Peak Flow:	0.74 *mgd*	**Peak I/I Rate:**	0.31 *mgd*
PF:	2.61	**Total I/I:**	101,000 *gallons*

METER 6
Weekly Level, Velocity and Flow Hydrographs
2/26/2014 to 3/5/2014



METER 6
Weekly Level, Velocity and Flow Hydrographs
3/5/2014 to 3/12/2014



City of Half Moon Bay

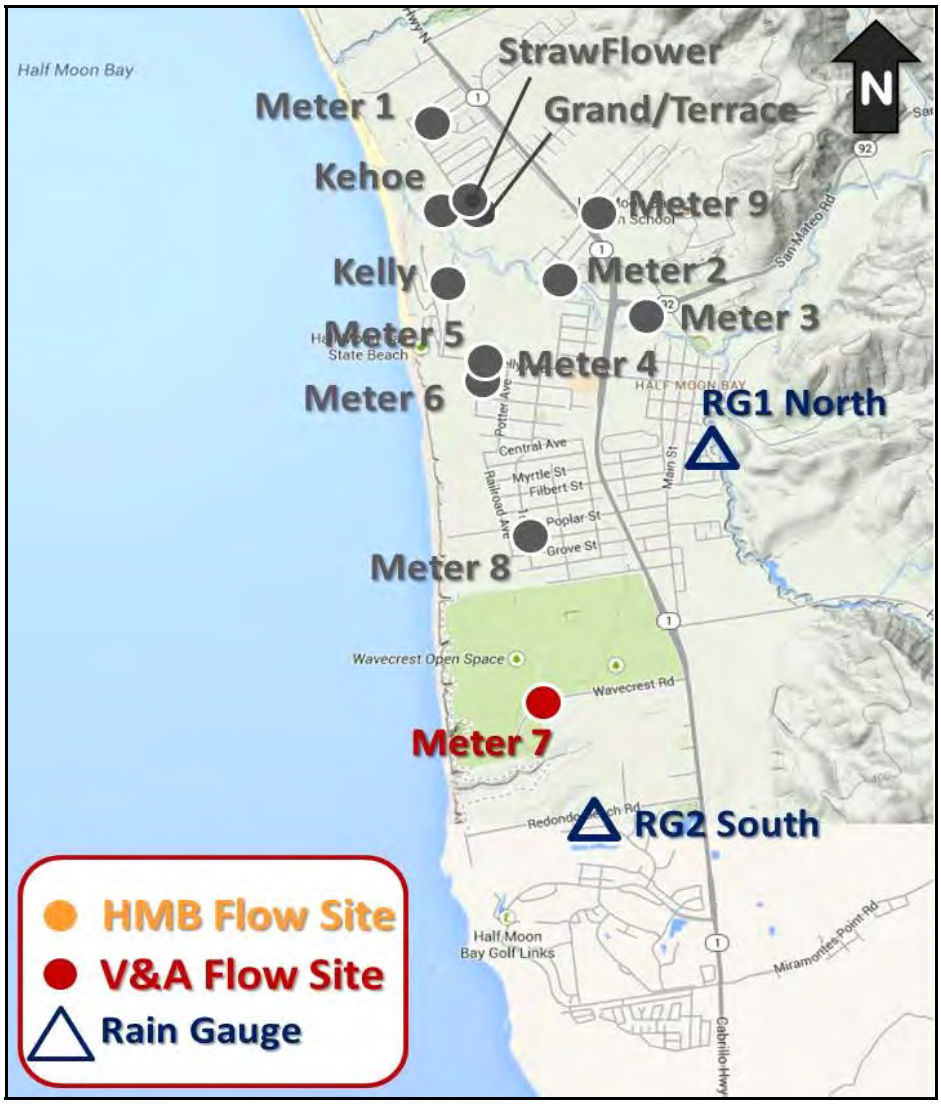
Sanitary Sewer Flow Monitoring

Temporary Monitoring: February 26 to March 11, 2014

Monitoring Site: Meter 7

Location: Wavecrest Road and University Avenue

Data Summary Report



Vicinity Map: Meter 7

METER 7

Site Information

Location: Wavecrest Road and University Avenue

Coordinates: 122.4380° W, 37.4466° N

Rim Elevation: 82 feet

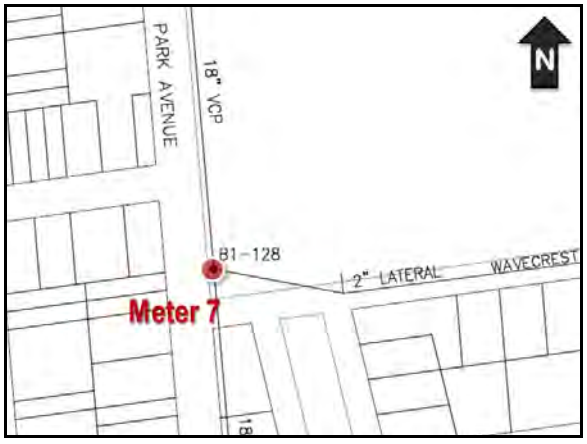
Pipe Diameter: 18 inches

Baseline Flow: 0.189 mgd

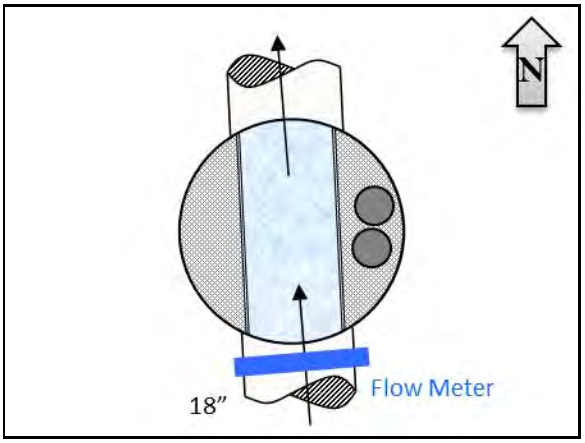
Peak Measured Flow: 0.392 mgd

Street View

Satellite View



Sanitary Sewer Map



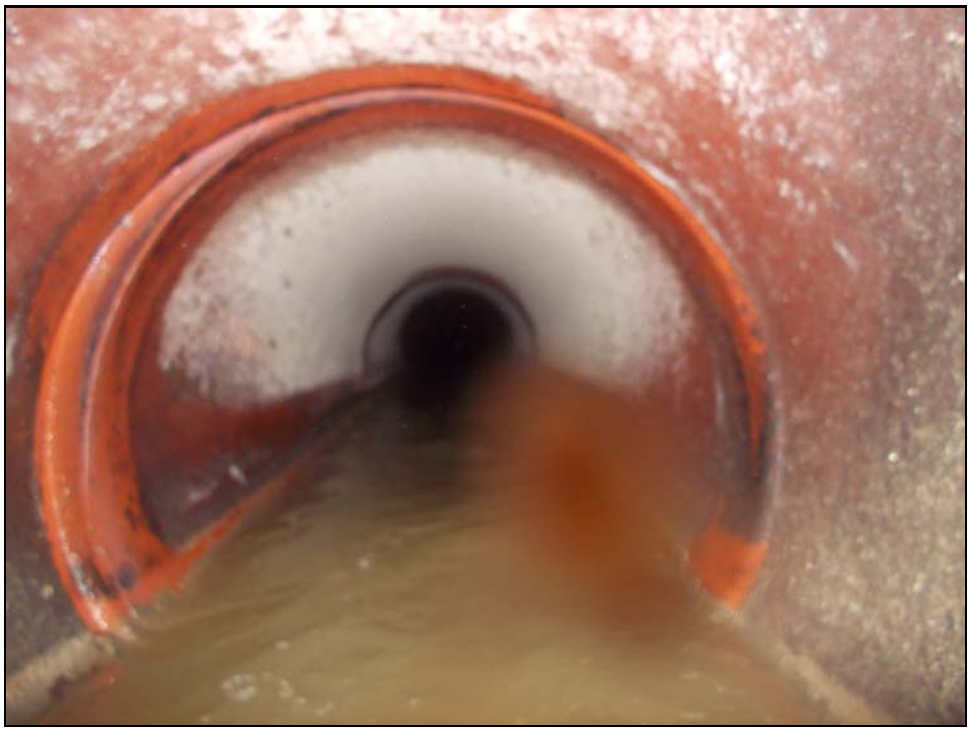
Flow Diagram

Plan View

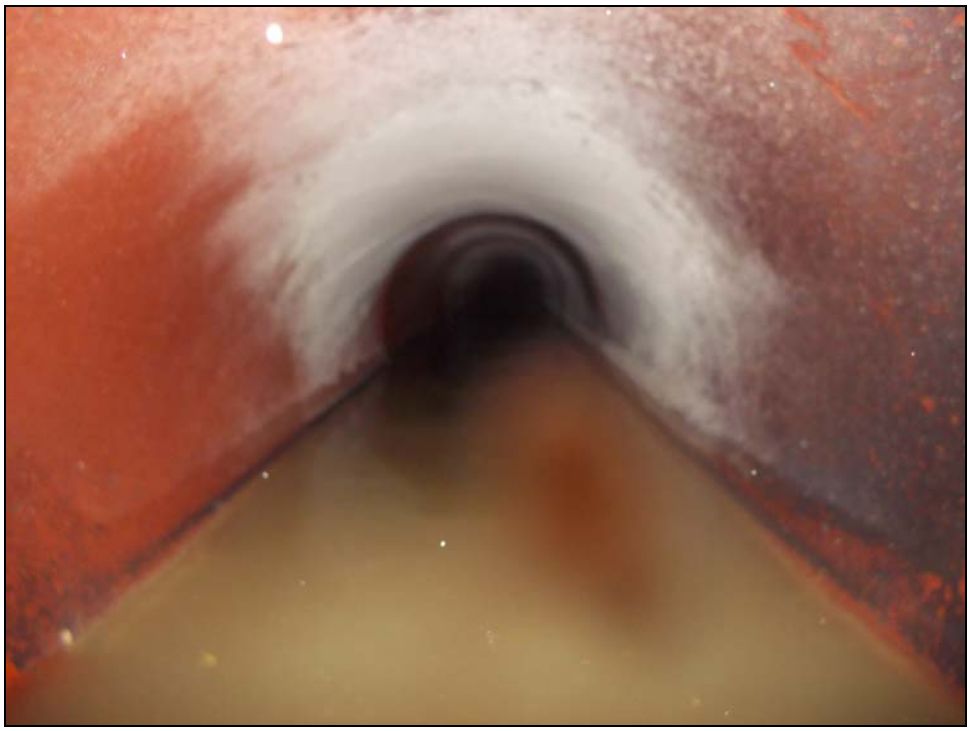
METER 7

Additional Site Photos

Effluent Pipe



Influent Pipe

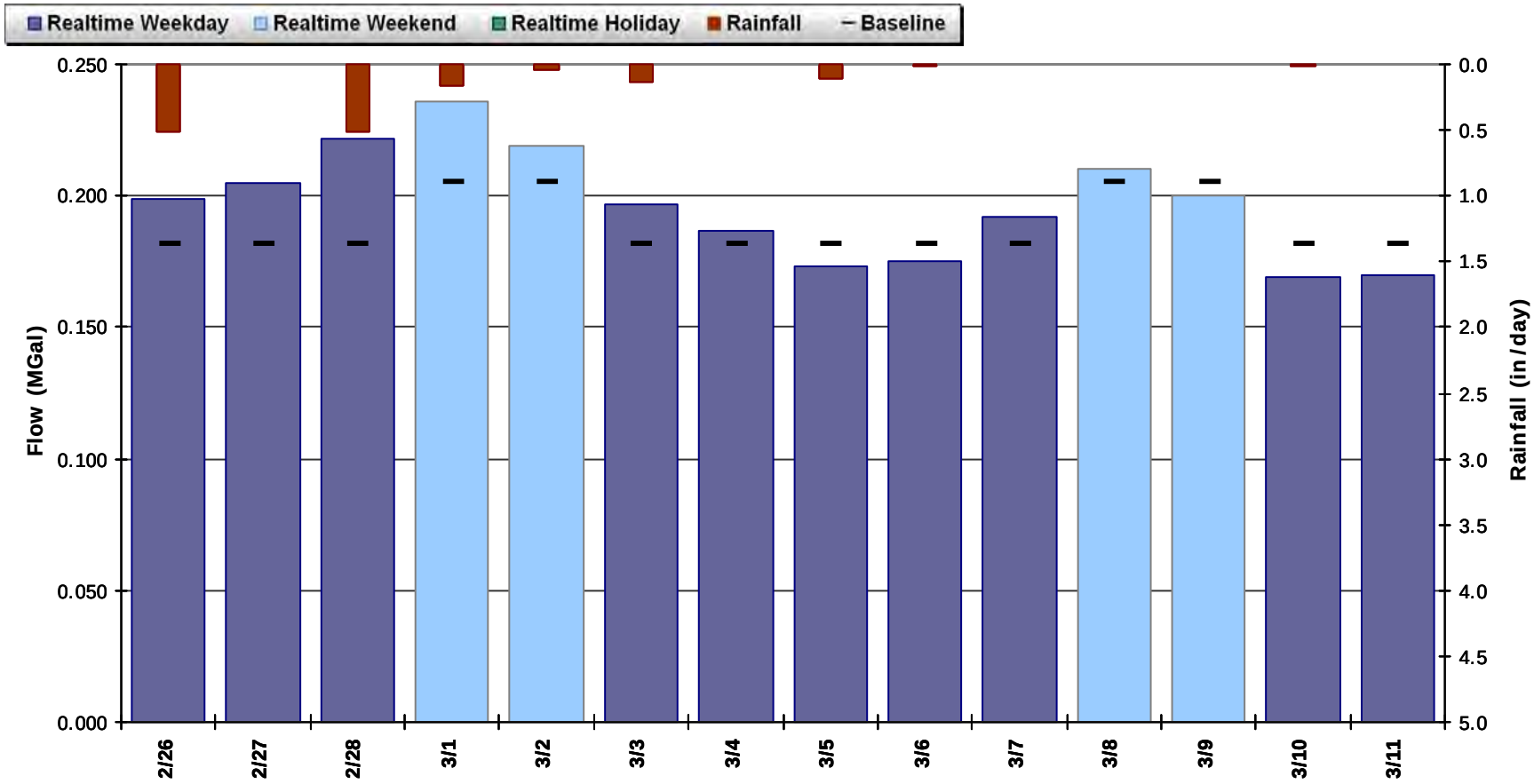


METER 7

Period Flow Summary: Daily Flow Totals

Avg Period Flow: 0.197 MGal **Peak Daily Flow: 0.236 MGal** **Min Daily Flow: 0.169 MGal**

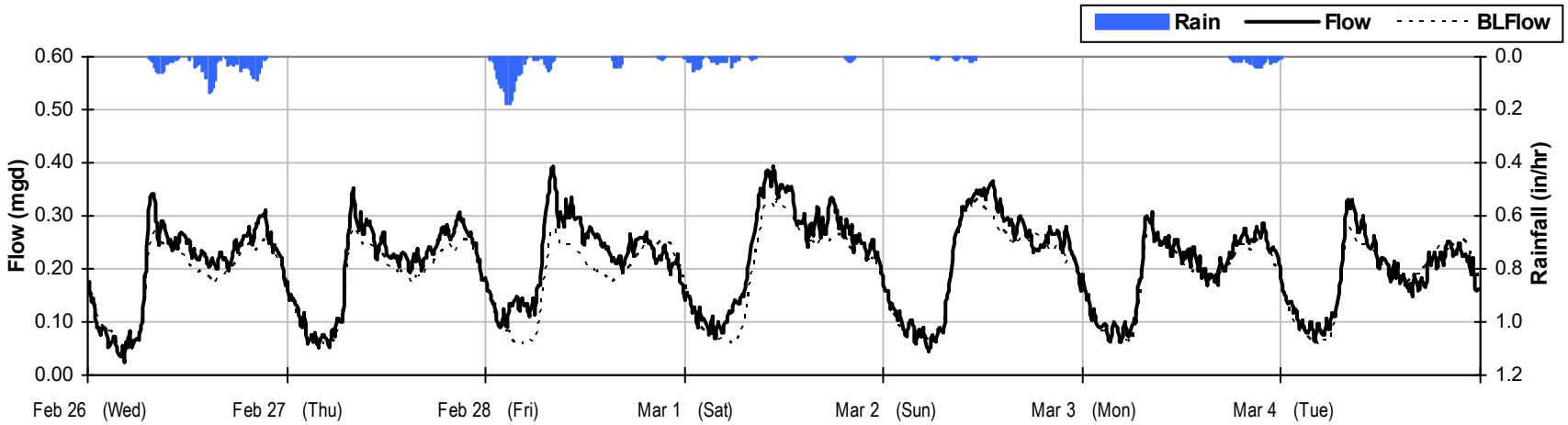
Total Period Rainfall: 1.51 inches

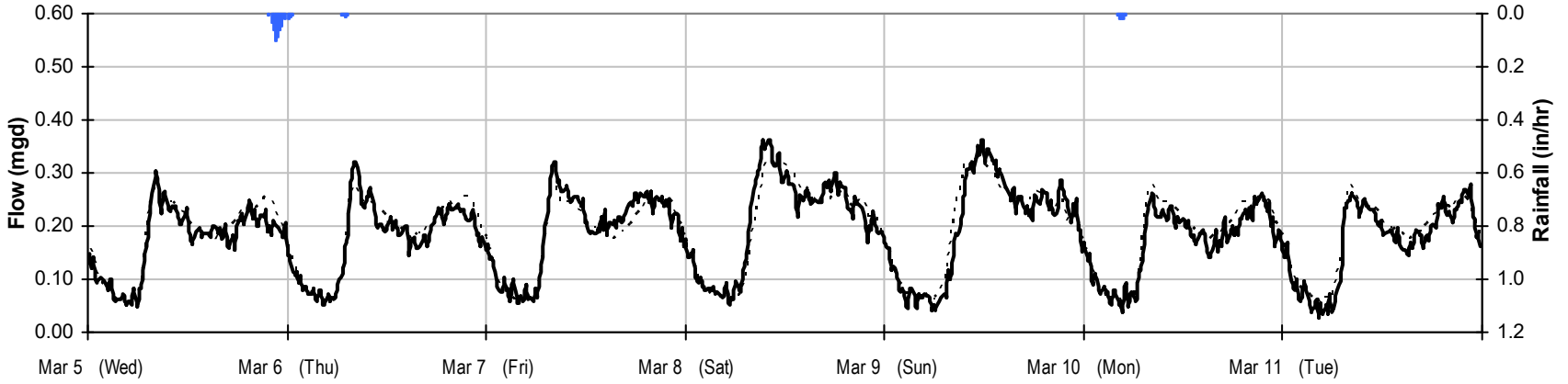


METER 7

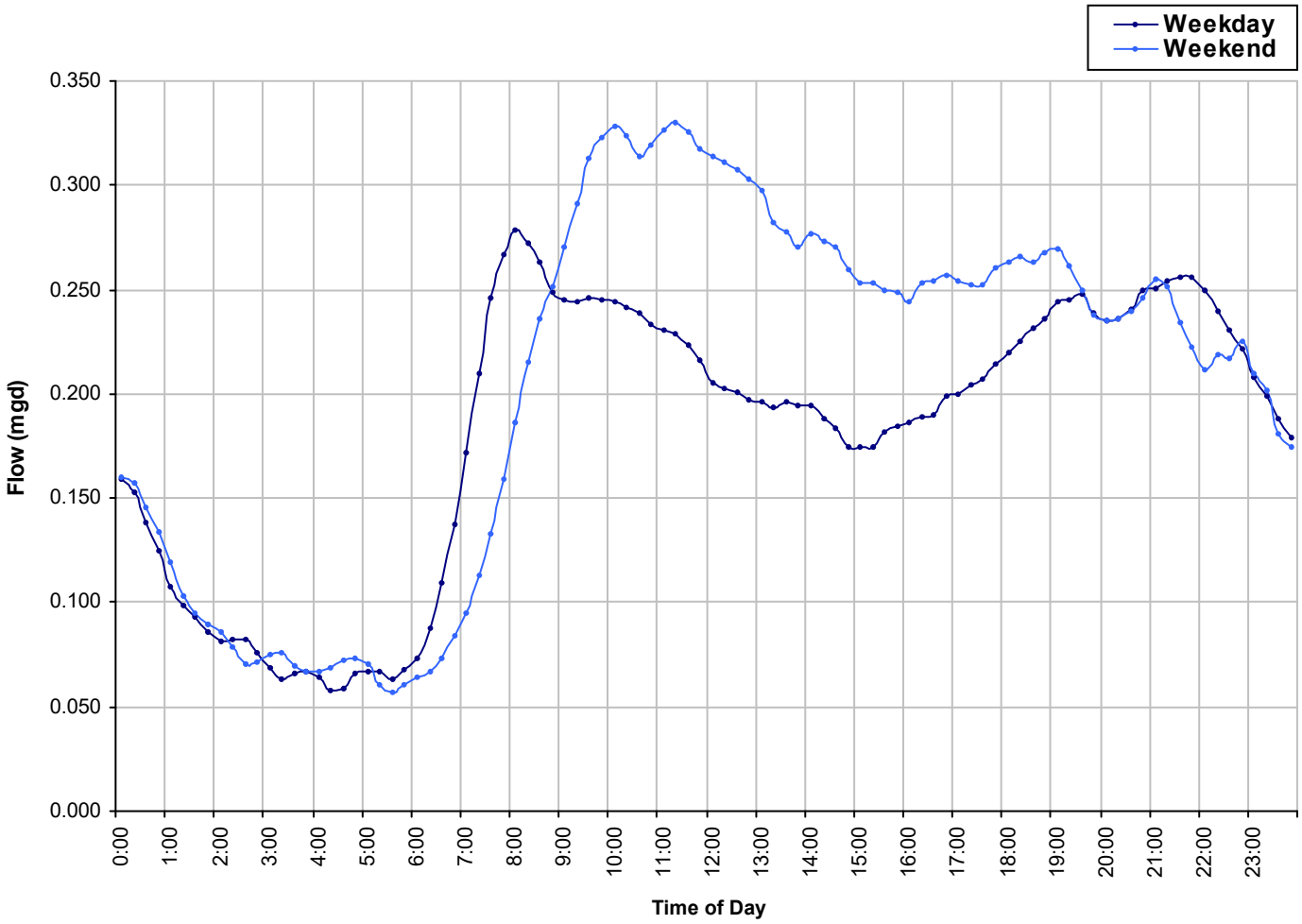
Flow Summary: 2/26/2014 to 3/11/2014

Total Period Rainfall: 1.51 inches **Avg Flow: 0.197 mgd** **Peak Flow: 0.392 mgd** **Min Flow: 0.025 mgd**

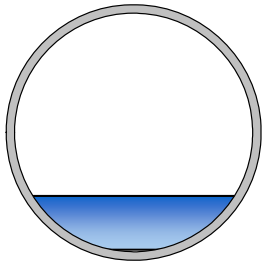




METER 7
Baseline Flow Hydrographs



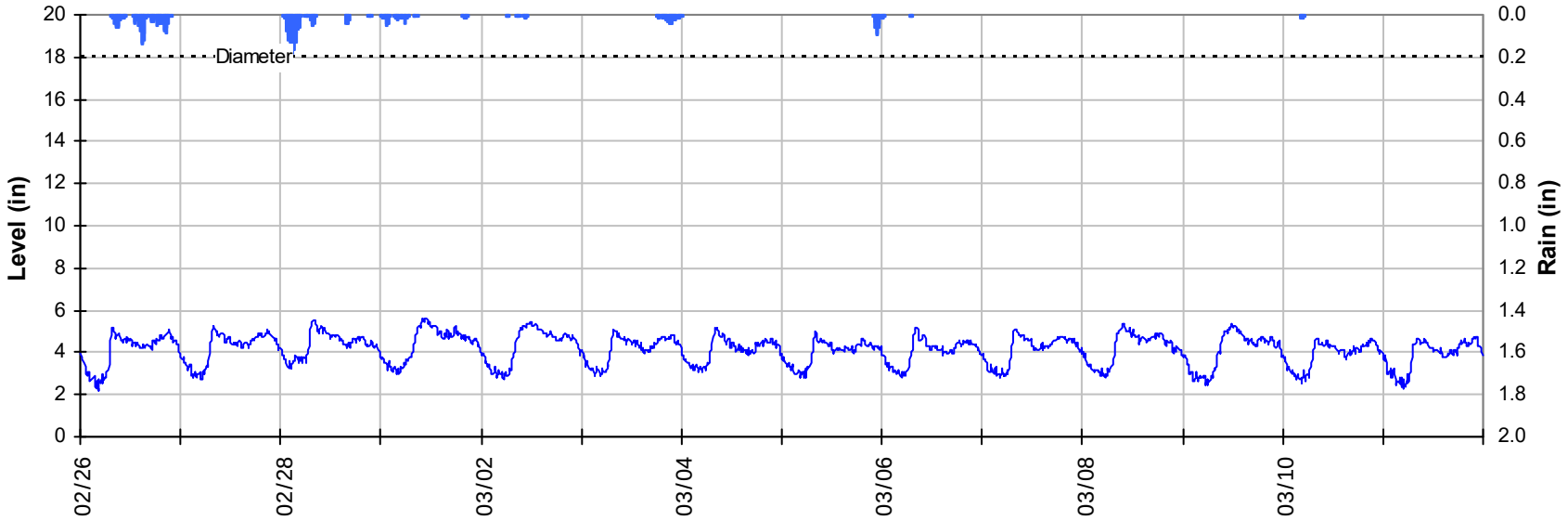
Baseline Flow:
0.189 *mgd*

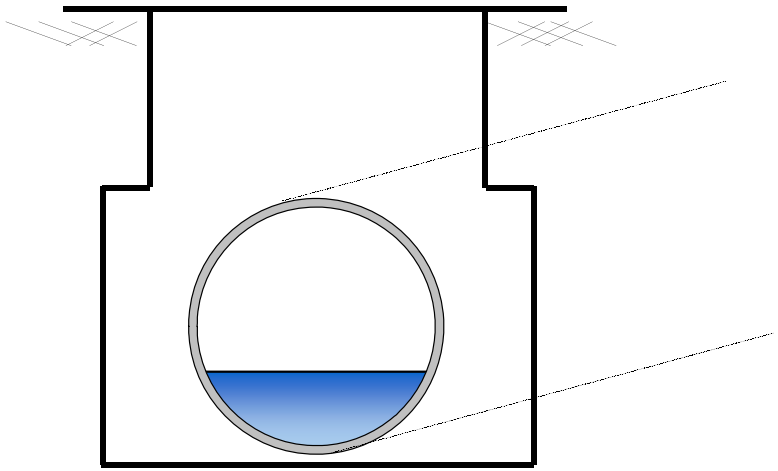


METER 7

Site Capacity and Surcharge Summary

Realtime Flow Levels with Rainfall Data over Monitoring Period

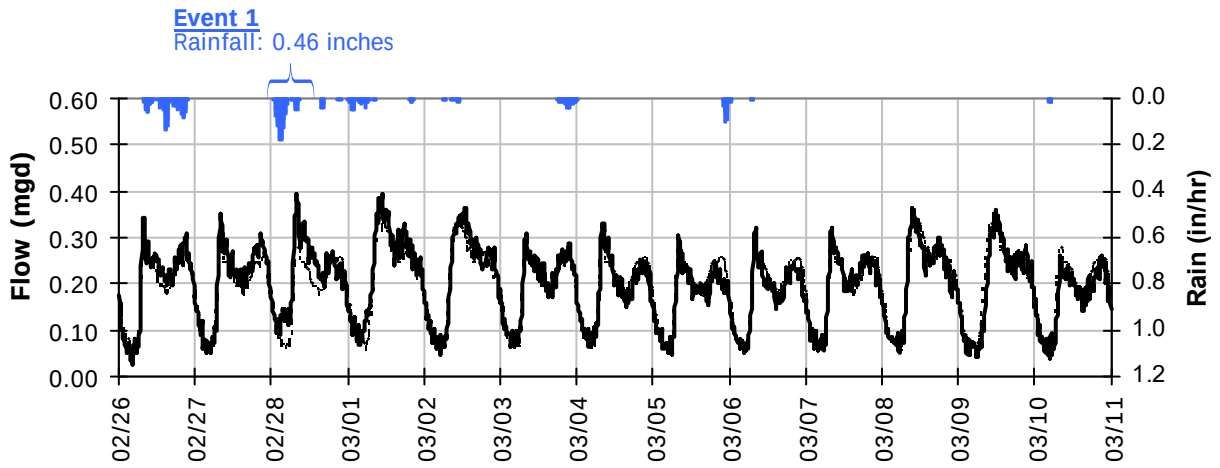




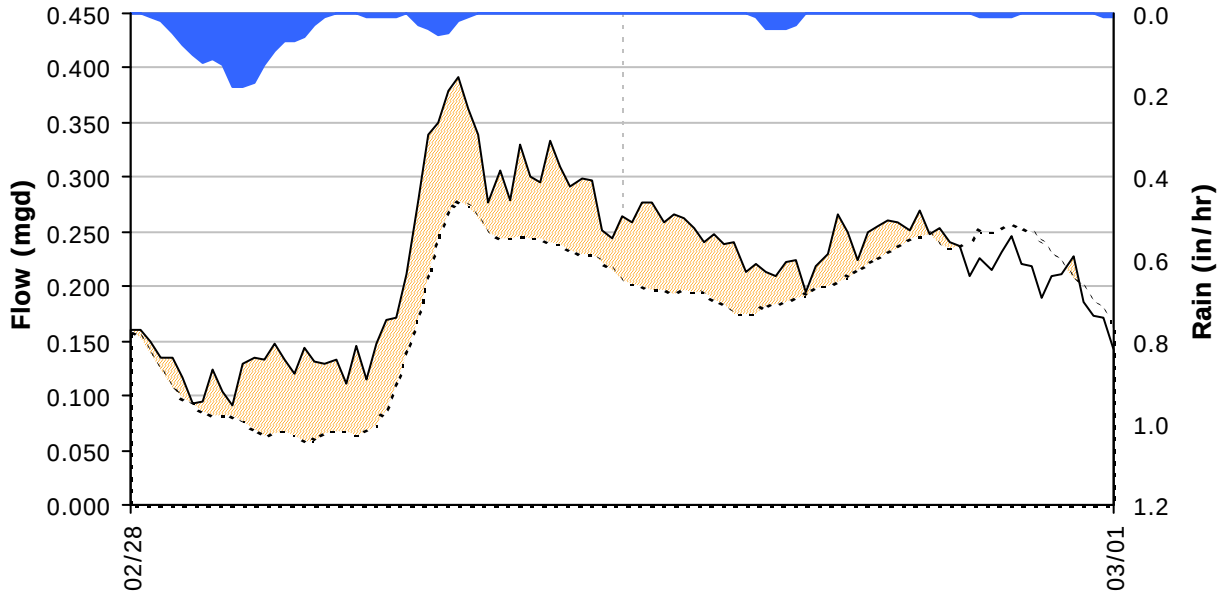
Pipe Diameter:	18	*inches*
Peak Measured Level:	5.64	*inches*
Peak d/D Ratio:	0.31	

METER 7
I/I Summary: Event 1

Baseline and Realtime Flows with Rainfall Data over Monitoring Period



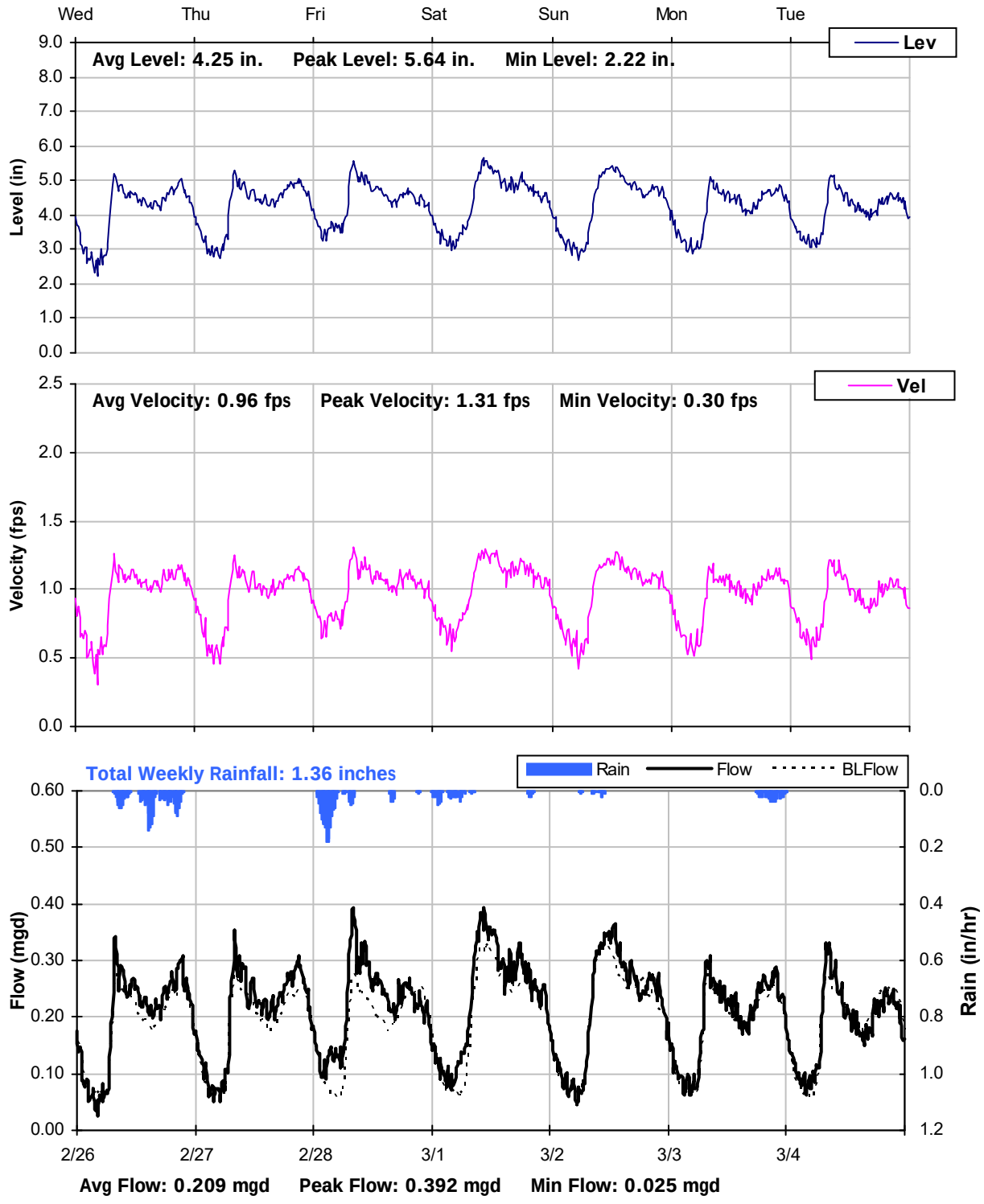
Event 1 Detail Graph



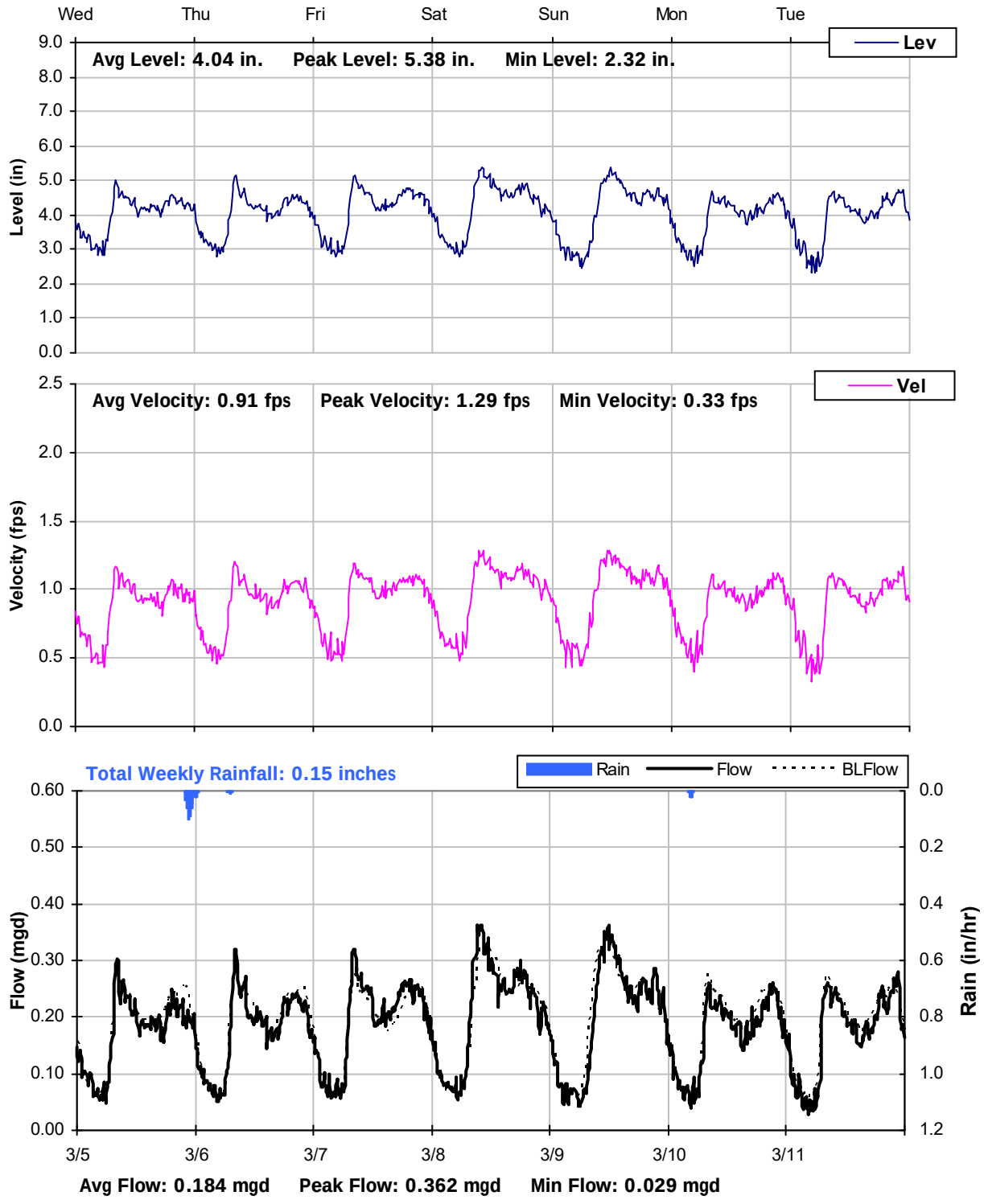
Storm Event I/I Analysis (Rain = 0.46 inches)

Capacity		Inflow / Infiltration	
Peak Flow:	0.39 *mgd*	**Peak I/I Rate:**	0.13 *mgd*
PF:	2.08	**Total I/I:**	32,000 *gallons*

METER 7
Weekly Level, Velocity and Flow Hydrographs
2/26/2014 to 3/5/2014



METER 7
Weekly Level, Velocity and Flow Hydrographs
3/5/2014 to 3/12/2014



City of Half Moon Bay

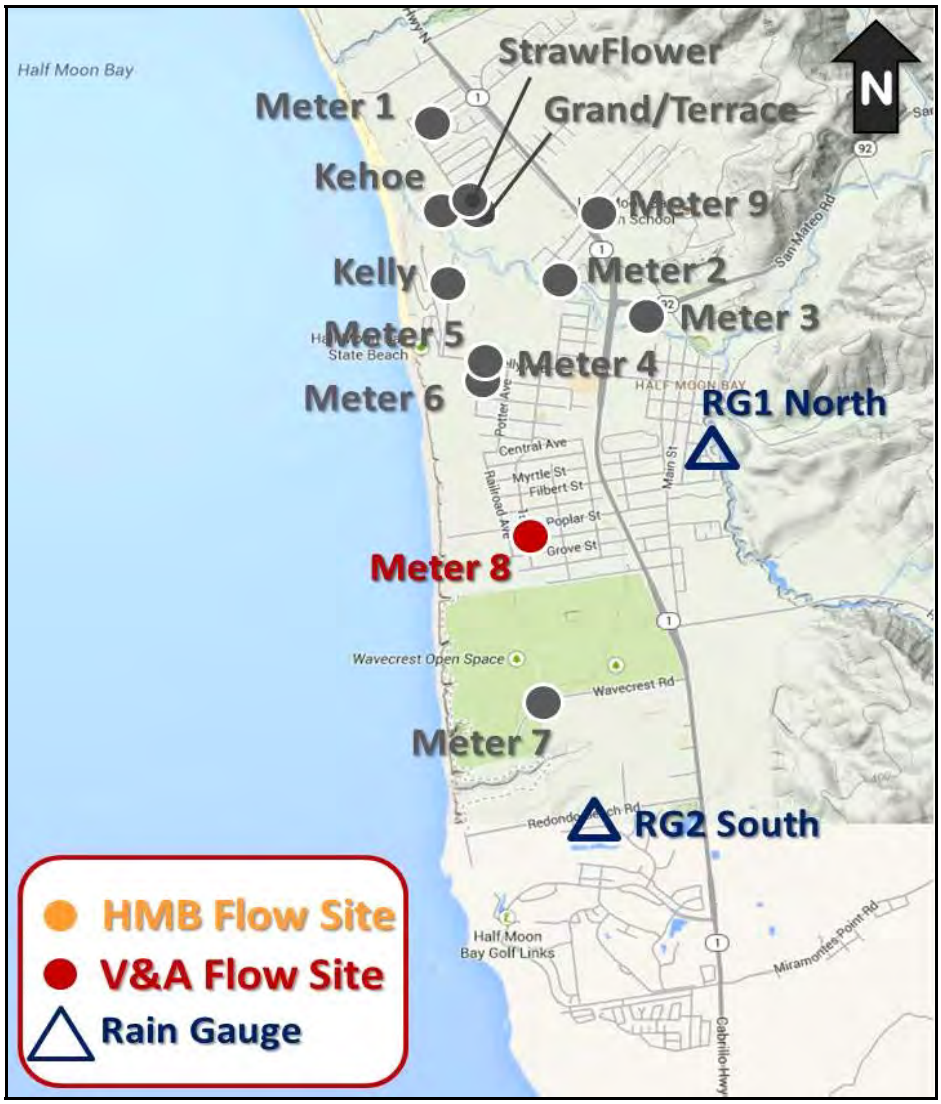
Sanitary Sewer Flow Monitoring

Temporary Monitoring: February 26 to March 11, 2014

Monitoring Site: Meter 8

Location: 1st Avenue between Metzgar Street and Poplar Street

Data Summary Report



Vicinity Map: Meter 8

METER 8

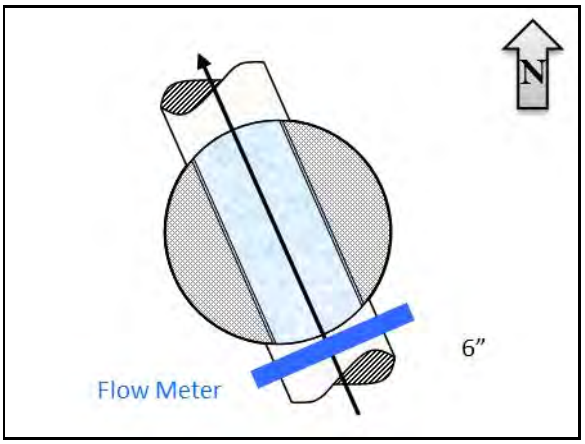
Site Information

Location:	1st Avenue between Metzgar Street and Poplar Street
Coordinates:	122.4391° W, 37.4555° N
Rim Elevation:	64 feet
Pipe Diameter:	6 inches
Baseline Flow:	0.007 mgd
Peak Measured Flow:	0.039 mgd

Street View

Satellite View

Sanitary Sewer Map



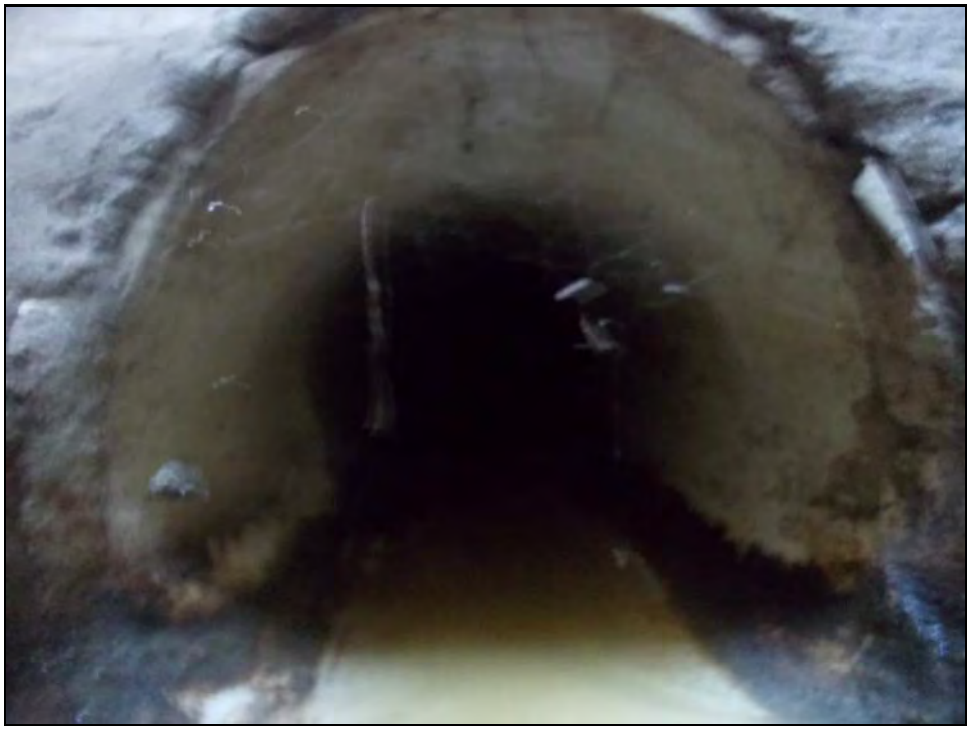
Flow Diagram

Plan View

METER 8

Additional Site Photos

Effluent Pipe



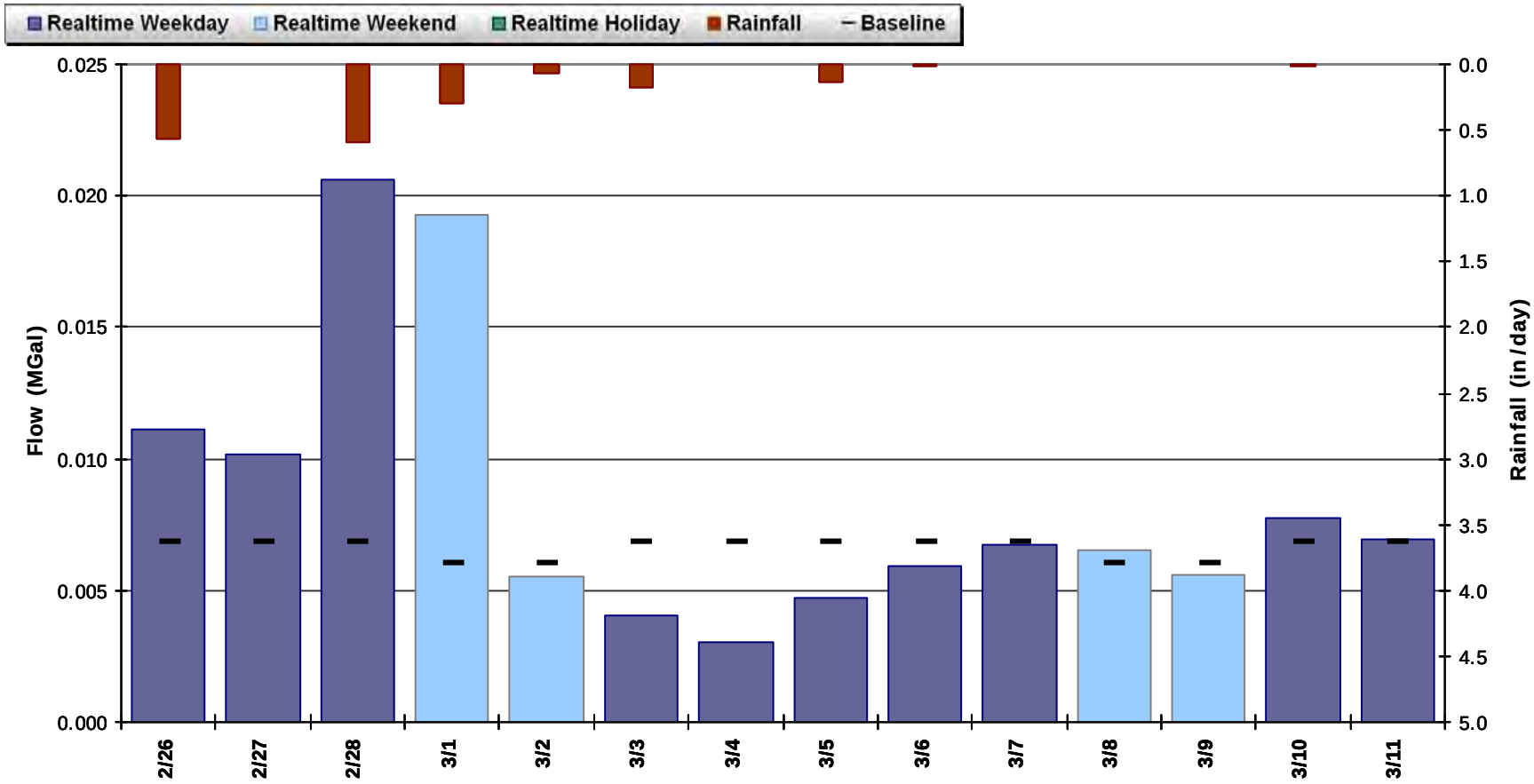
Influent Pipe

METER 8

Period Flow Summary: Daily Flow Totals

Avg Period Flow: 0.008 MGal **Peak Daily Flow: 0.021 MGal** **Min Daily Flow: 0.003 MGal**

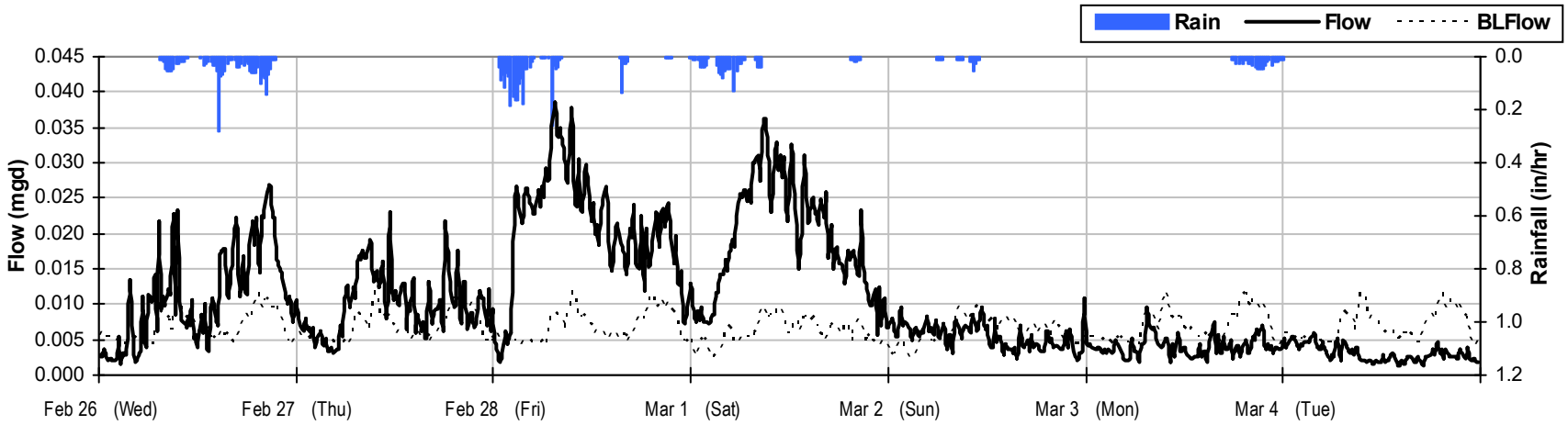
Total Period Rainfall: 1.86 inches

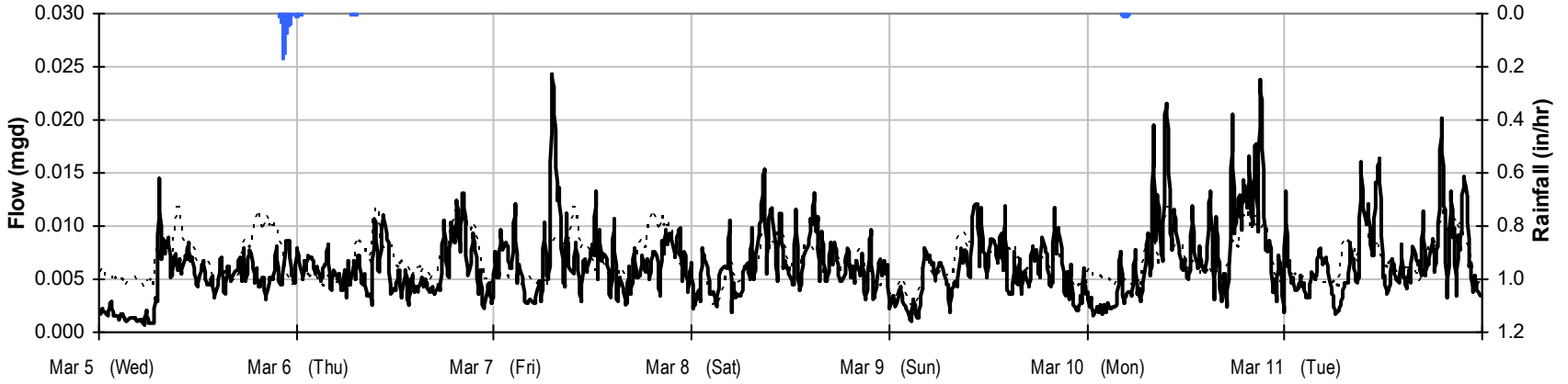


METER 8

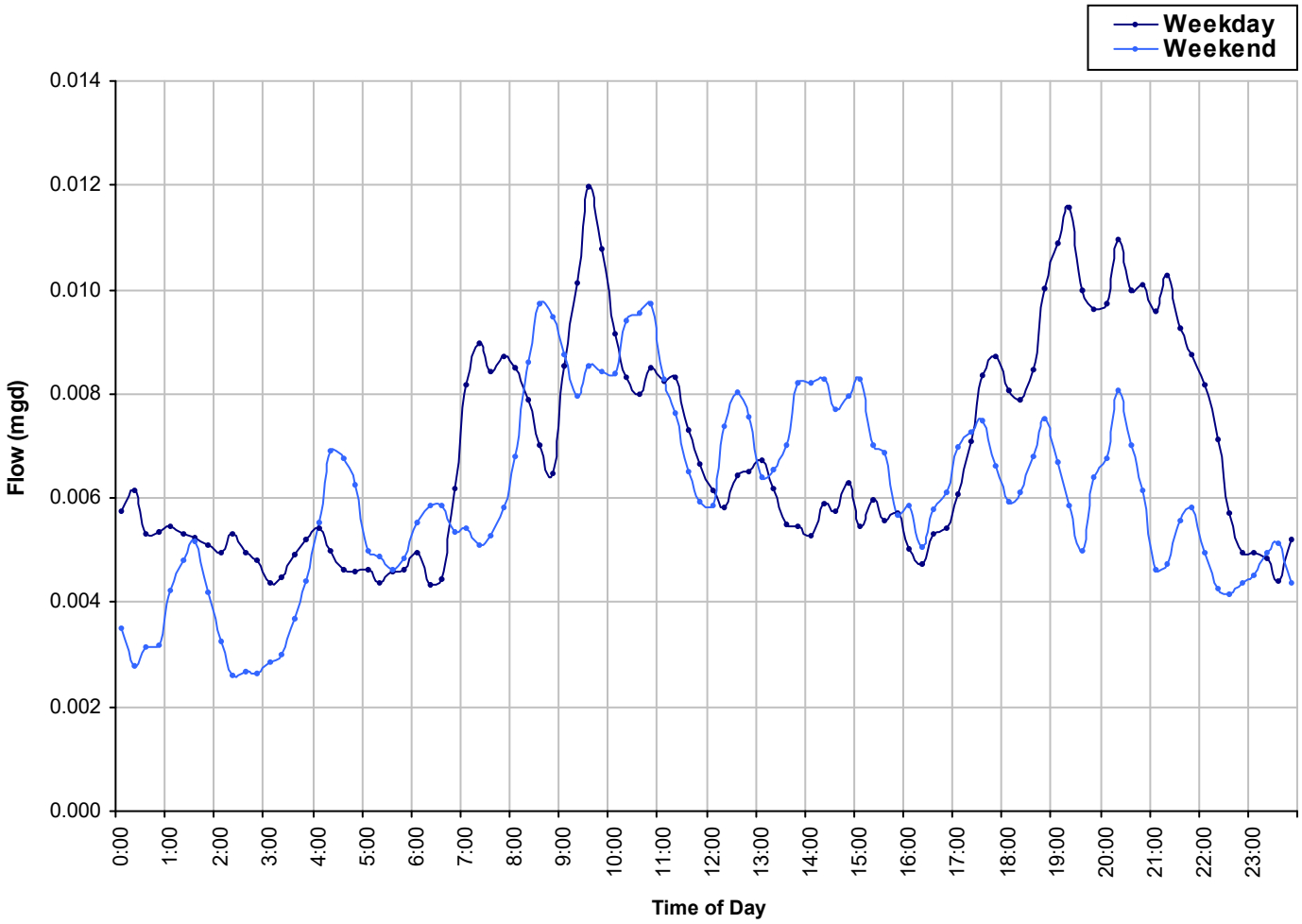
Flow Summary: 2/26/2014 to 3/11/2014

Total Period Rainfall: 1.86 inches **Avg Flow: 0.008 mgd** **Peak Flow: 0.039 mgd** **Min Flow: 0.001 mgd**

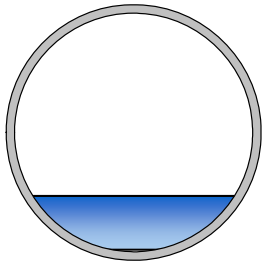




METER 8
Baseline Flow Hydrographs



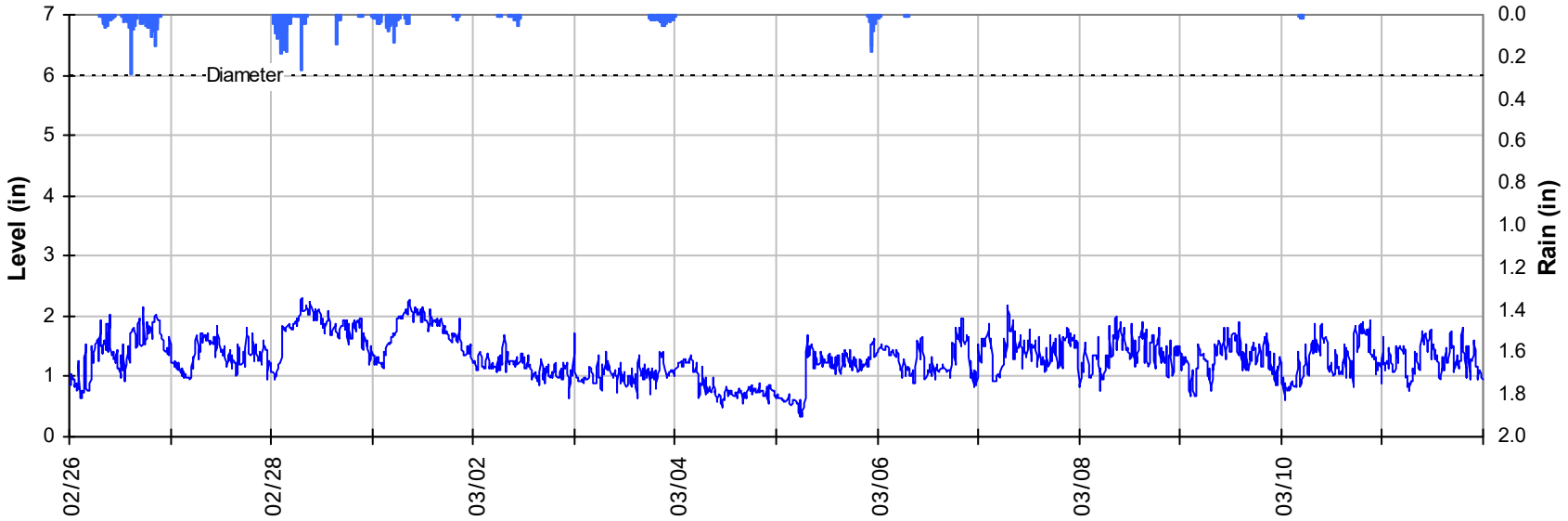
Baseline Flow:
0.007 *mgd*

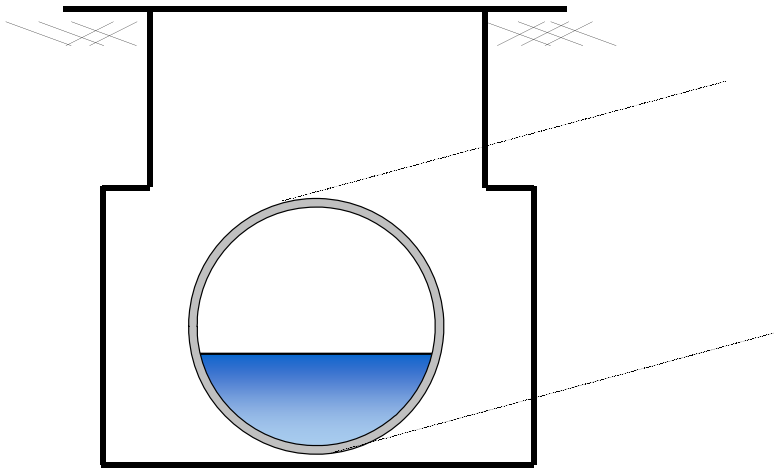


METER 8

Site Capacity and Surcharge Summary

Realtime Flow Levels with Rainfall Data over Monitoring Period

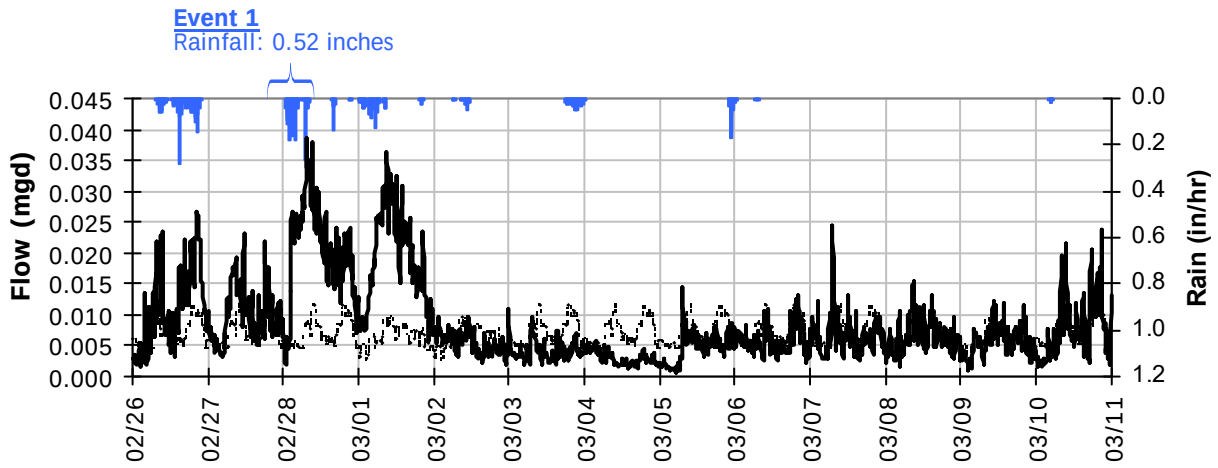




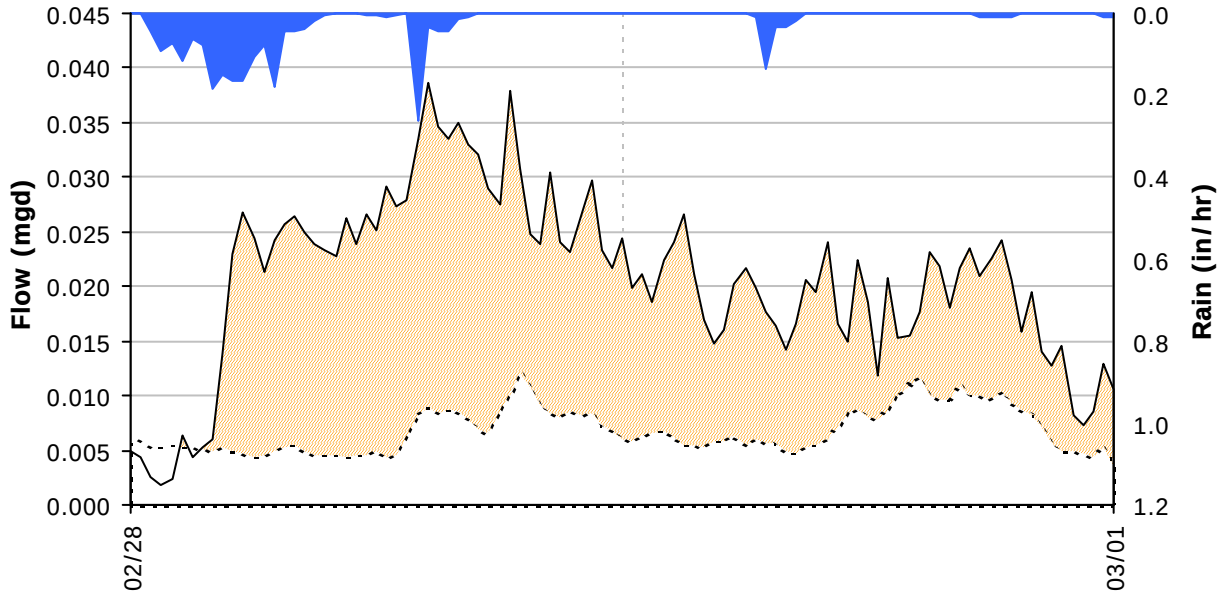
Pipe Diameter:	6	*inches*
Peak Measured Level:	2.29	*inches*
Peak d/D Ratio:	0.38	

METER 8
I/I Summary: Event 1

Baseline and Realtime Flows with Rainfall Data over Monitoring Period



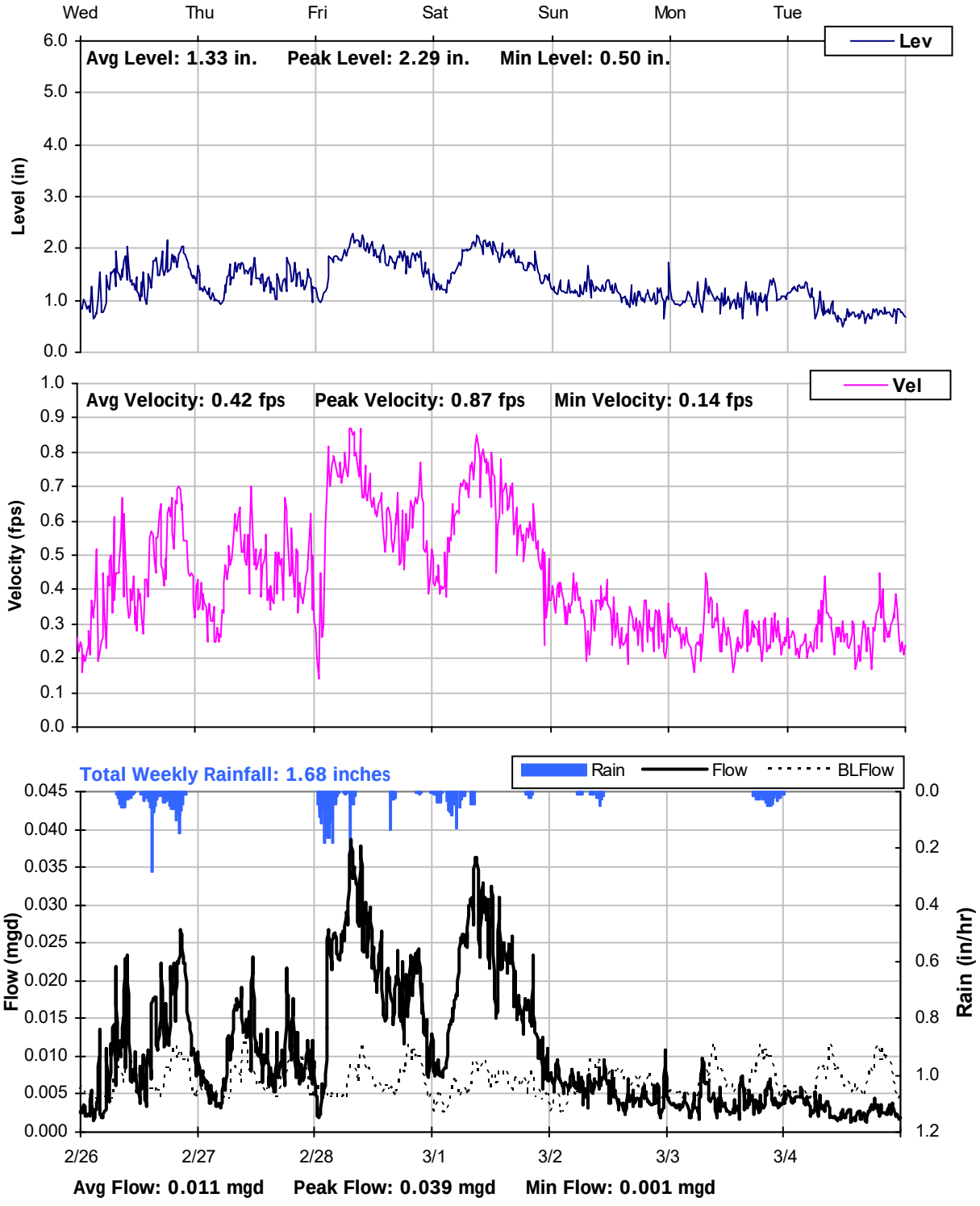
Event 1 Detail Graph



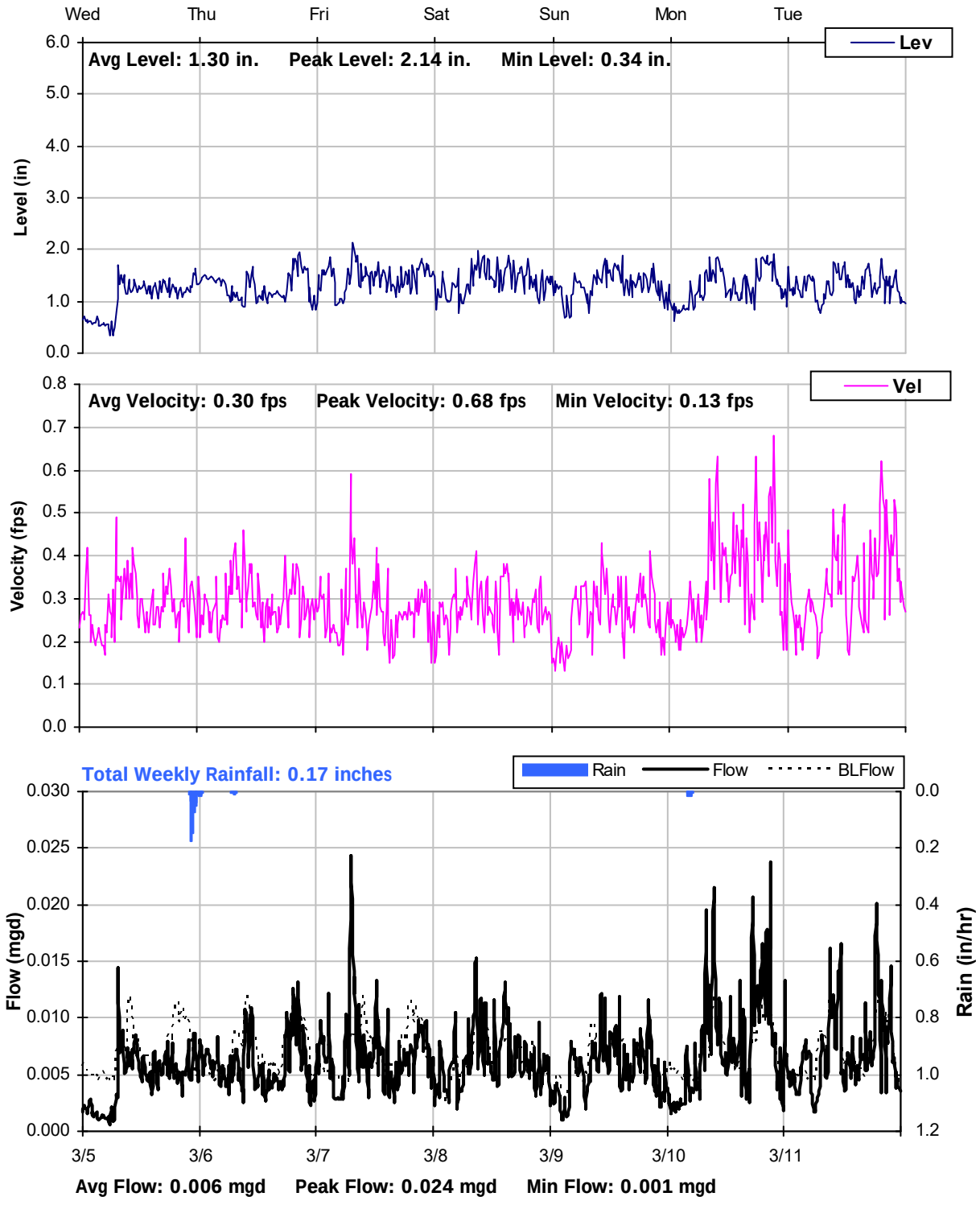
Storm Event I/I Analysis (Rain = 0.52 inches)

Capacity		Inflow / Infiltration	
Peak Flow:	0.04 *mgd*	**Peak I/I Rate:**	0.03 *mgd*
PF:	5.83	**Total I/I:**	9,000 *gallons*

METER 8
Weekly Level, Velocity and Flow Hydrographs
2/26/2014 to 3/5/2014



METER 8
Weekly Level, Velocity and Flow Hydrographs
3/5/2014 to 3/12/2014



City of Half Moon Bay

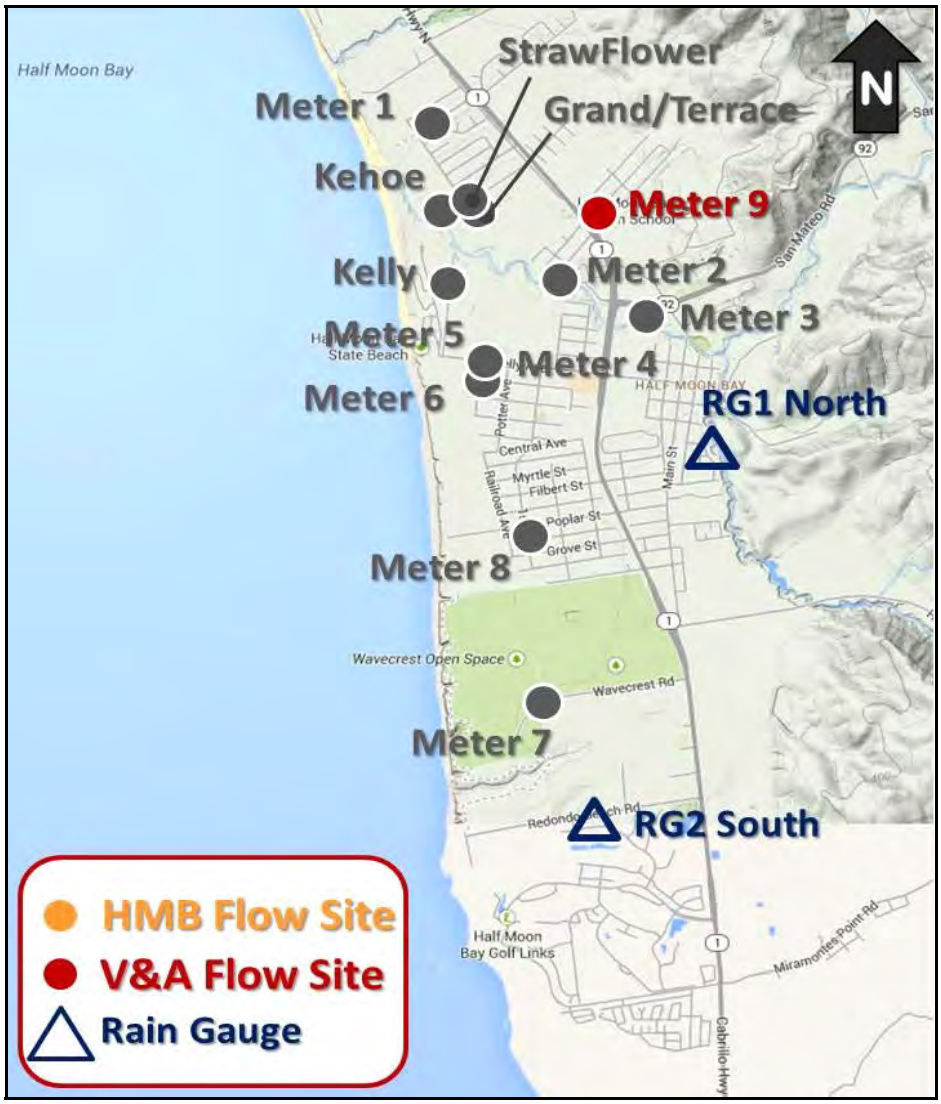
Sanitary Sewer Flow Monitoring

Temporary Monitoring: February 26 to March 11, 2014

Monitoring Site: Meter 9

Location: Silver Avenue North of Cabrillo Highway

Data Summary Report



Vicinity Map: Meter 9

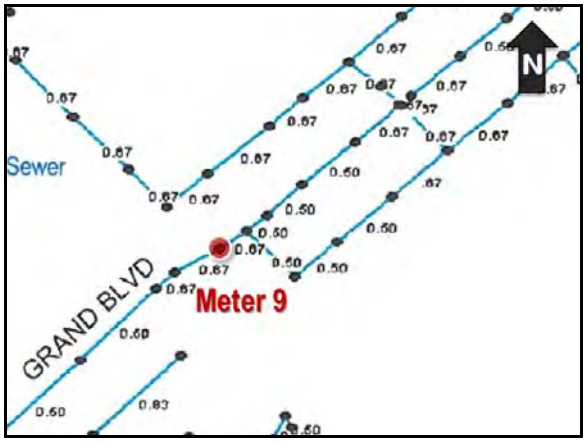
METER 9

Site Information

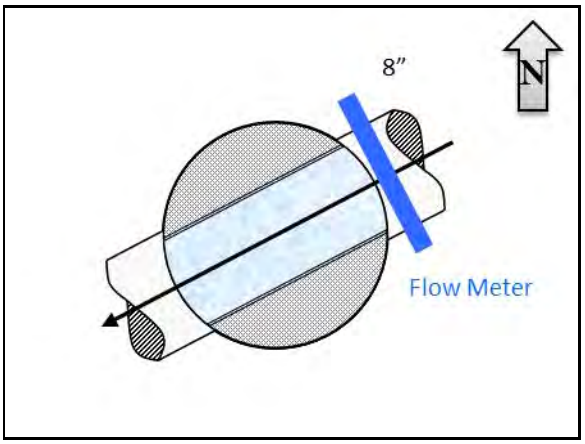
Location:	Silver Avenue North of Cabrillo Highway
Coordinates:	122.4351° W, 37.4725° N
Rim Elevation:	56 feet
Pipe Diameter:	8 inches
Baseline Flow:	0.081 mgd
Peak Measured Flow:	0.186 mgd

Street View

Satellite View



Sanitary Sewer Map



Flow Diagram

Plan View

METER 9

Additional Site Photos

Effluent Pipe

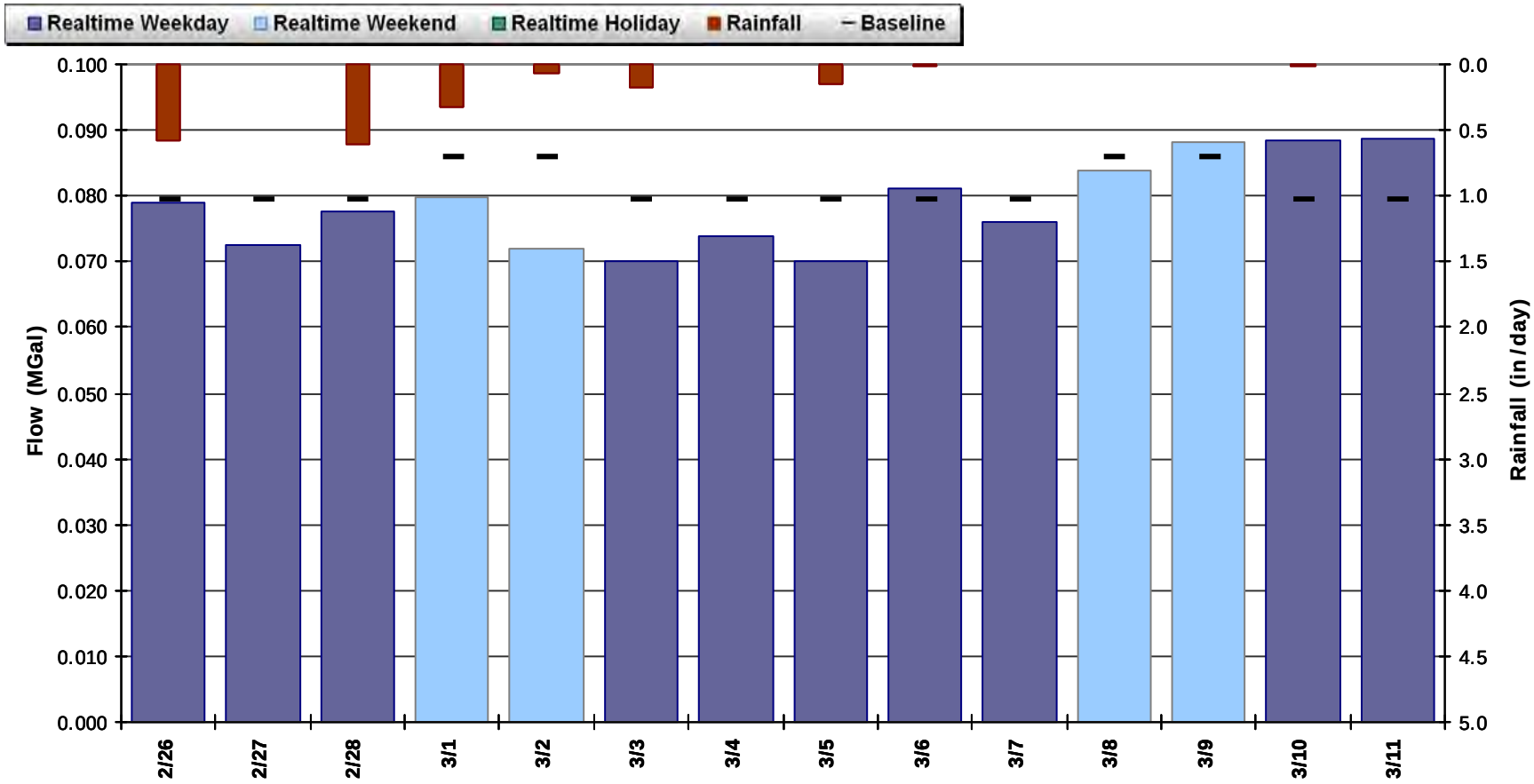
Influent Pipe

METER 9

Period Flow Summary: Daily Flow Totals

Avg Period Flow: 0.079 MGal **Peak Daily Flow: 0.089 MGal** **Min Daily Flow: 0.070 MGal**

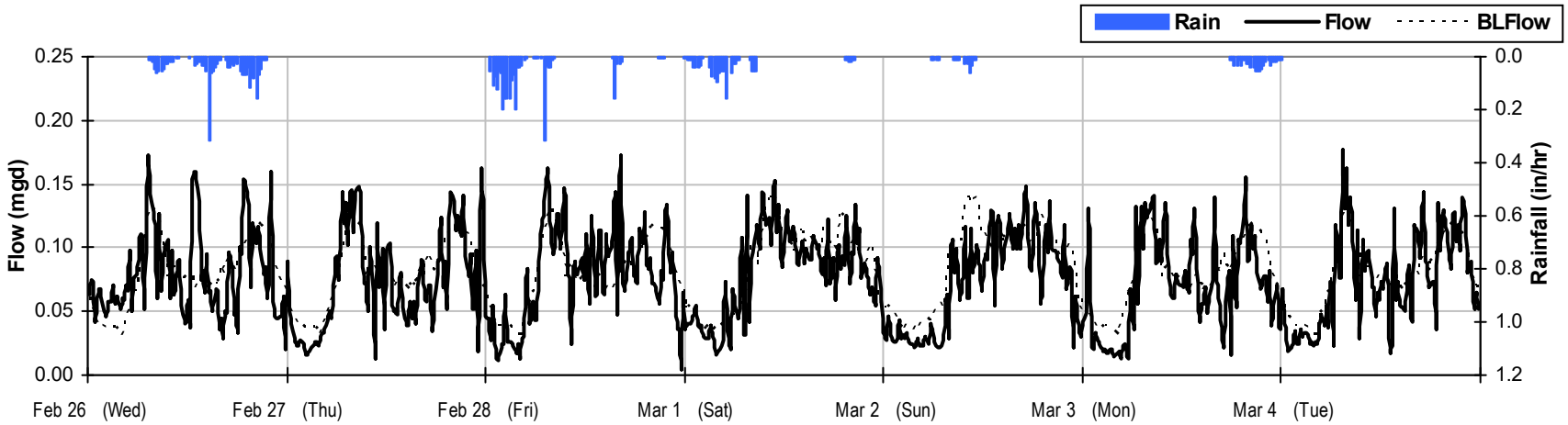
Total Period Rainfall: 1.94 inches

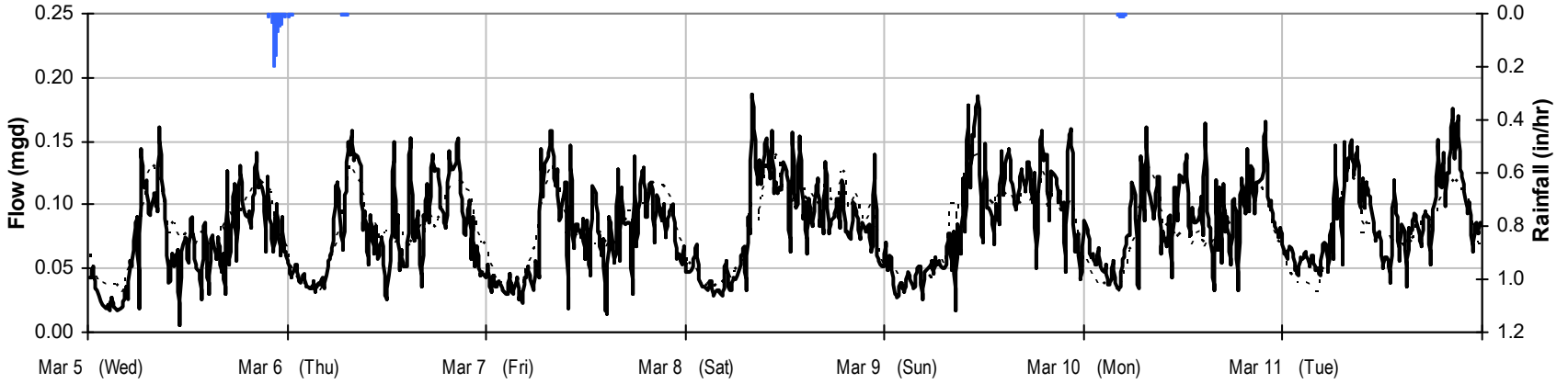


METER 9

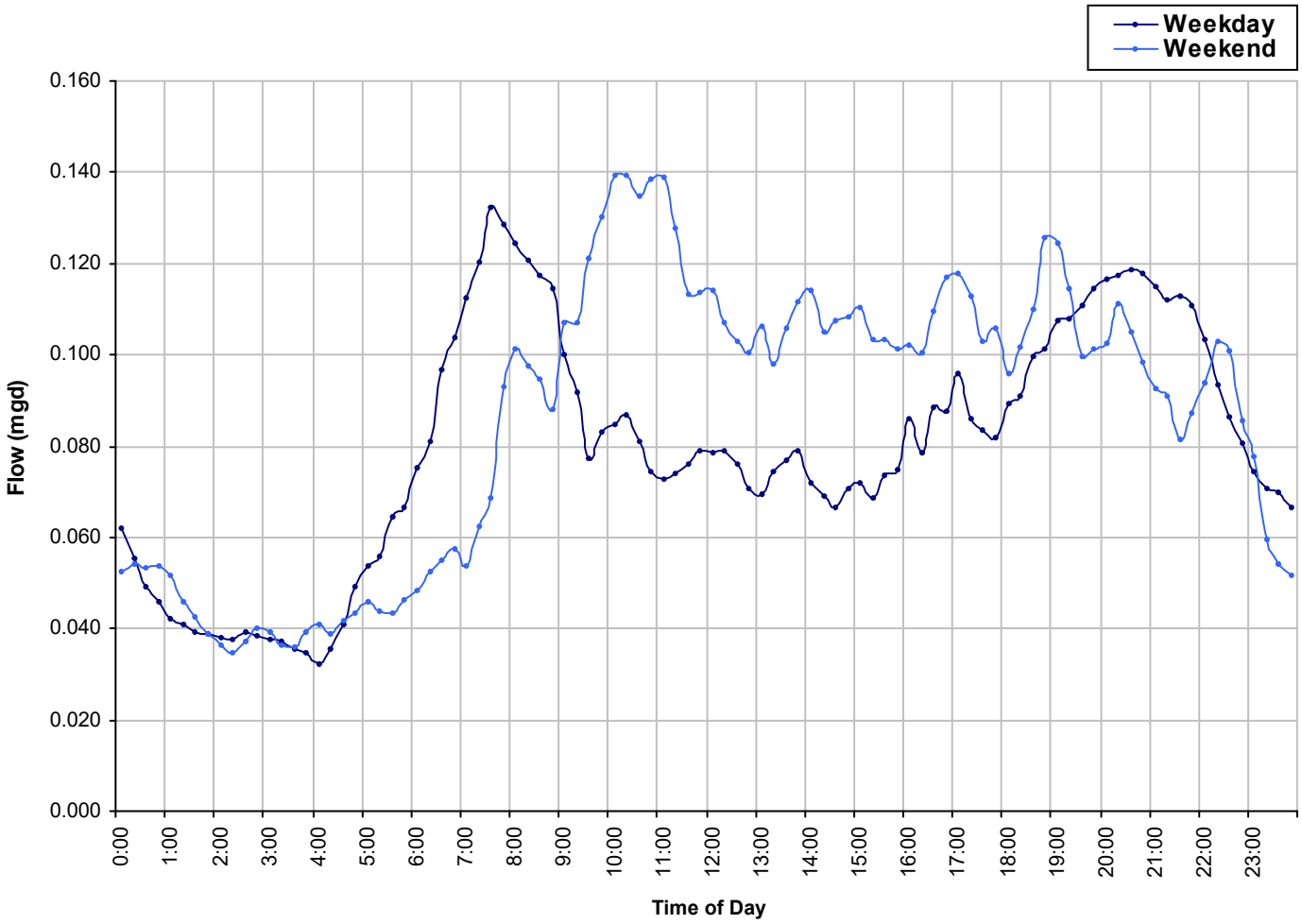
Flow Summary: 2/26/2014 to 3/11/2014

Total Period Rainfall: 1.94 inches **Avg Flow: 0.079 mgd** **Peak Flow: 0.186 mgd** **Min Flow: 0.004 mgd**

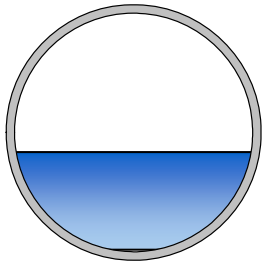




METER 9
Baseline Flow Hydrographs



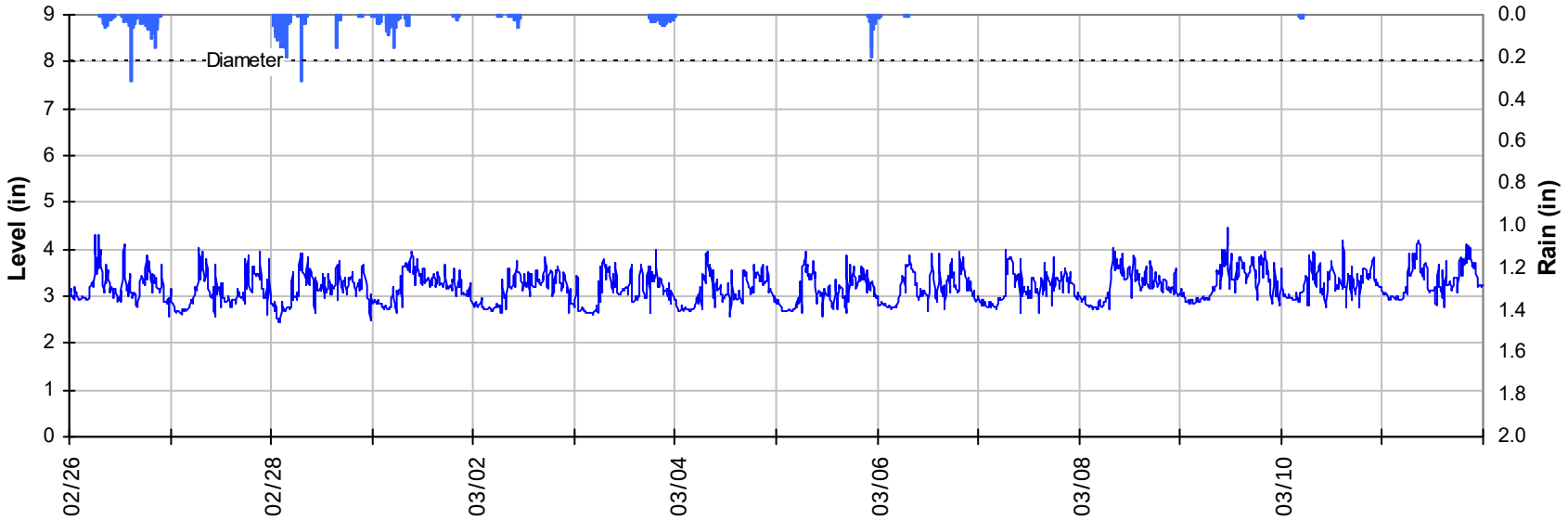
Baseline Flow:
0.081 *mgd*

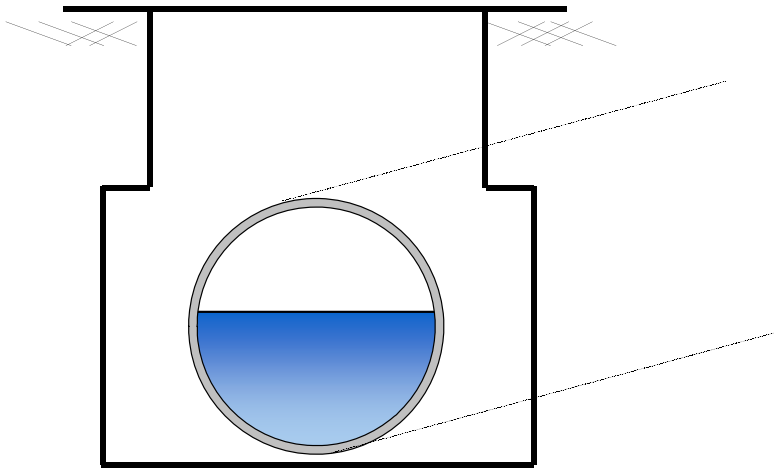


METER 9

Site Capacity and Surcharge Summary

Realtime Flow Levels with Rainfall Data over Monitoring Period

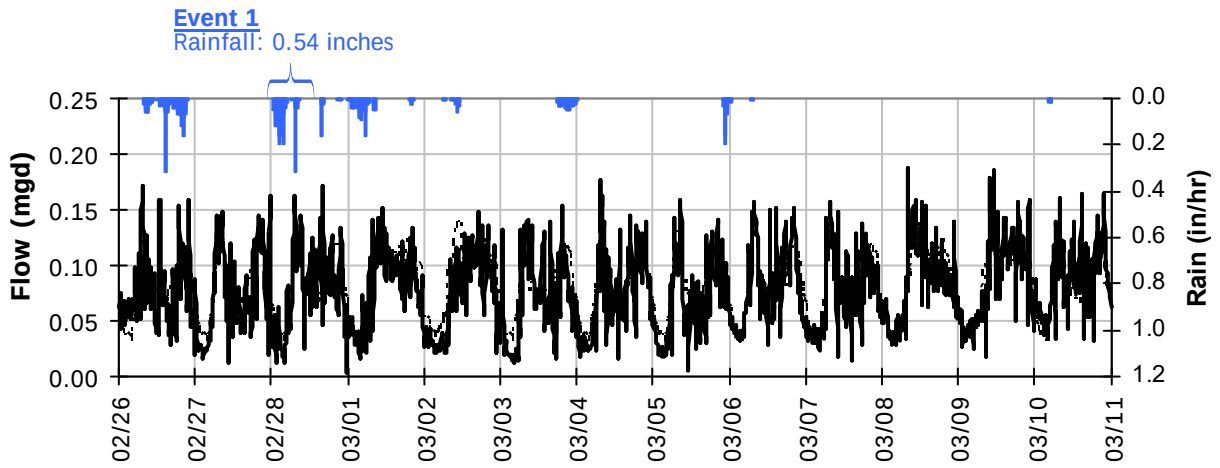




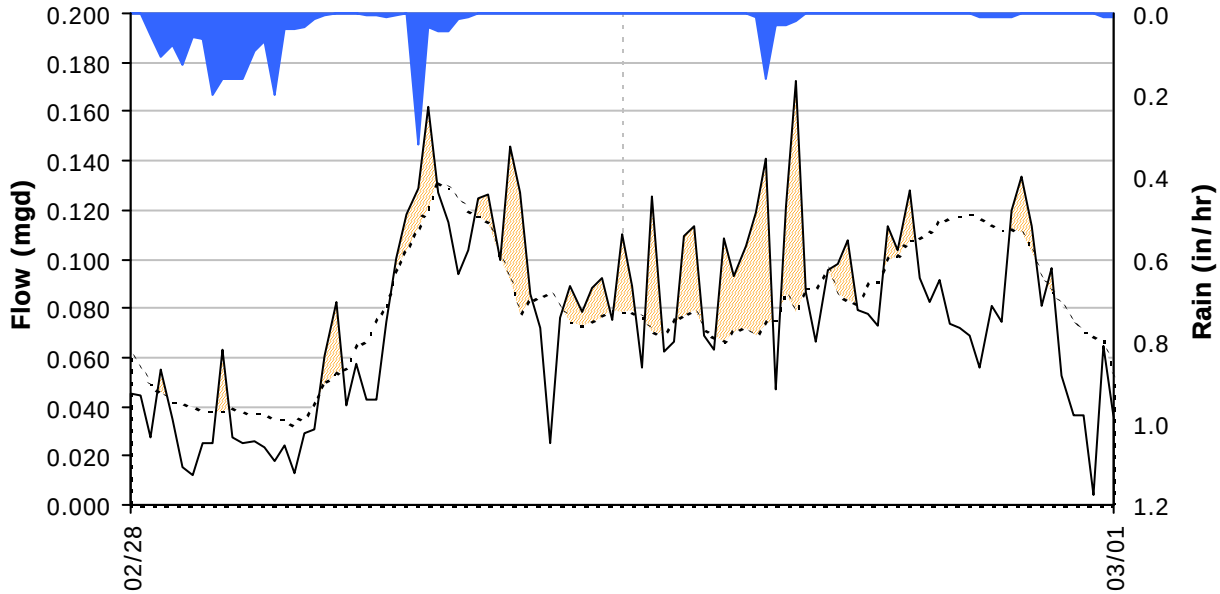
Pipe Diameter:	8	*inches*
Peak Measured Level:	4.47	*inches*
Peak d/D Ratio:	0.56	

METER 9
I/I Summary: Event 1

Baseline and Realtime Flows with Rainfall Data over Monitoring Period



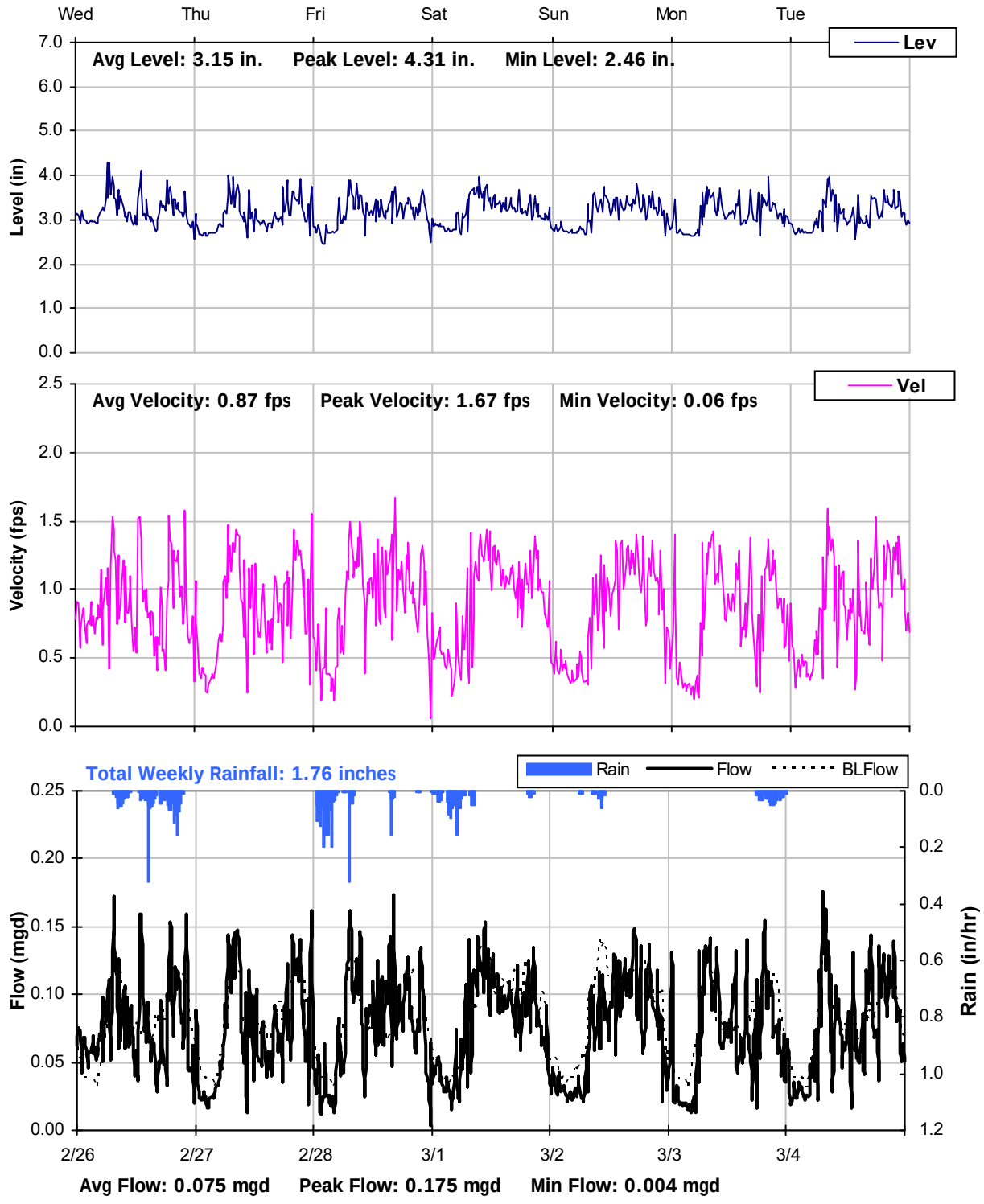
Event 1 Detail Graph



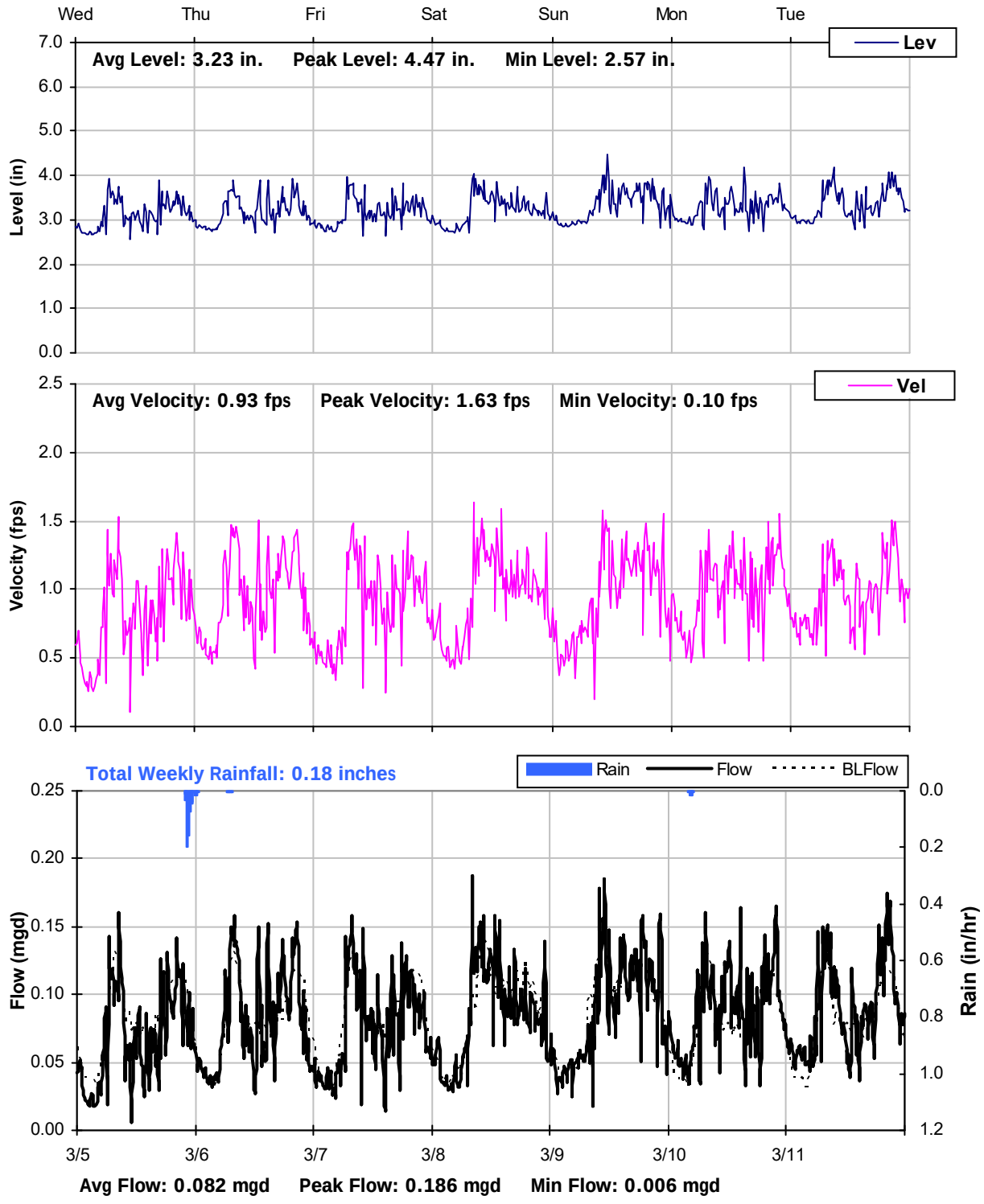
Storm Event I/I Analysis (Rain = 0.54 inches)

Capacity		Inflow / Infiltration	
Peak Flow:	0.16 *mgd*	**Peak I/I Rate:**	0.05 *mgd*
PF:	1.99	**Total I/I:**	-1,000 *gallons*

METER 9
Weekly Level, Velocity and Flow Hydrographs
2/26/2014 to 3/5/2014



METER 9
Weekly Level, Velocity and Flow Hydrographs
3/5/2014 to 3/12/2014



City of Half Moon Bay

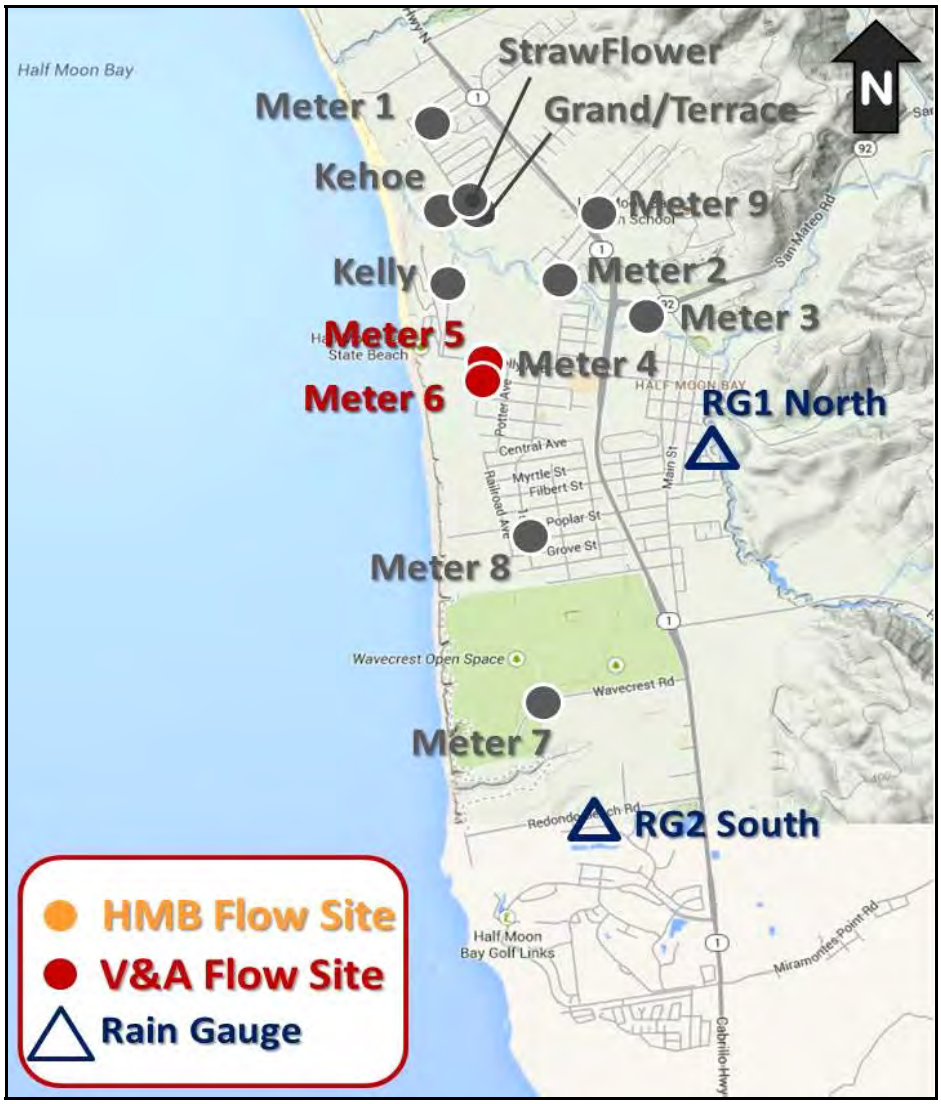
Sanitary Sewer Flow Monitoring

Temporary Monitoring: February 26 to March 11, 2014

Monitoring Site: M5+M6

Location: Basin 5 + Basin 6

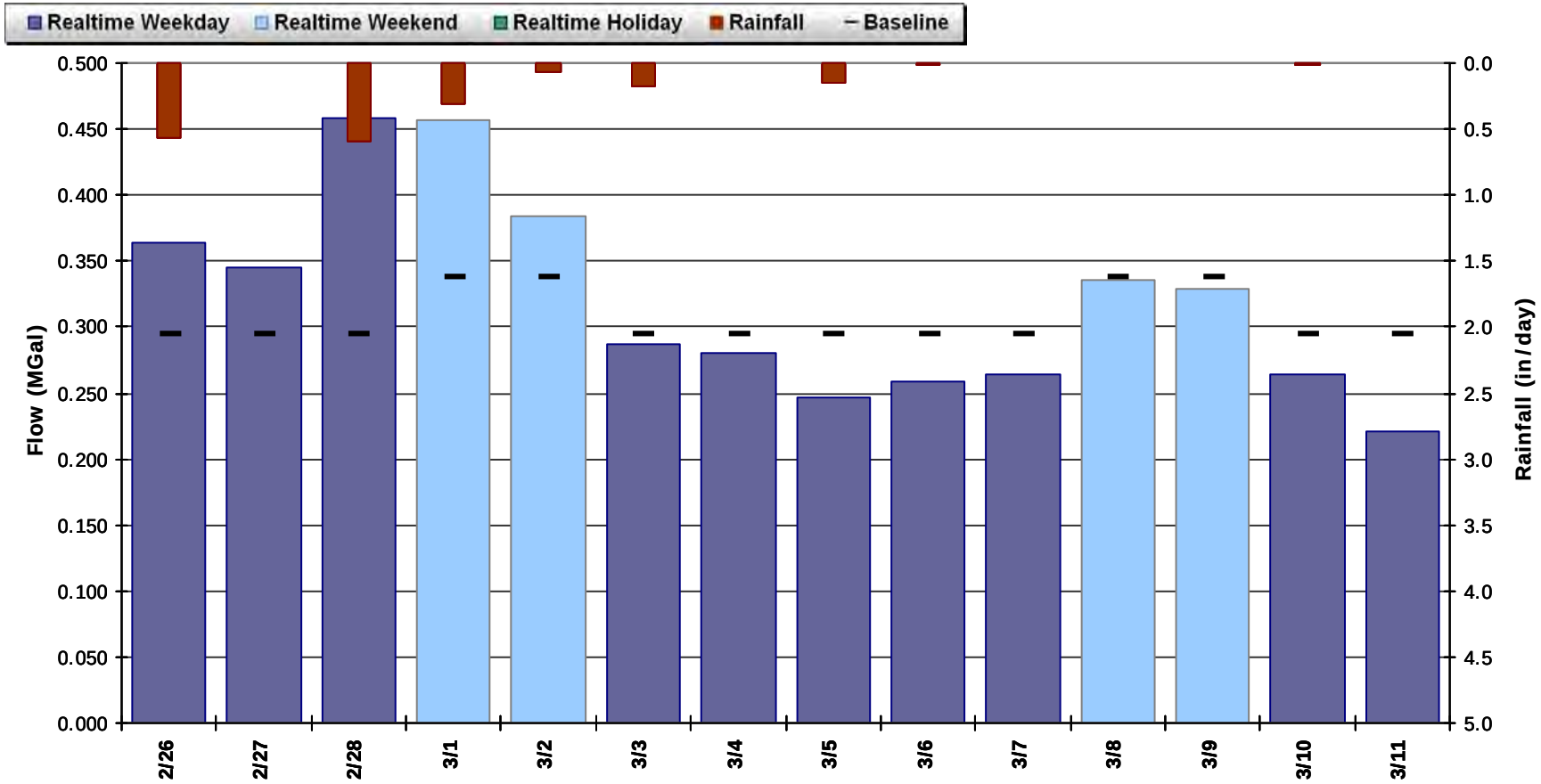
Data Summary Report



Vicinity Map: M5+M6

M5+M6

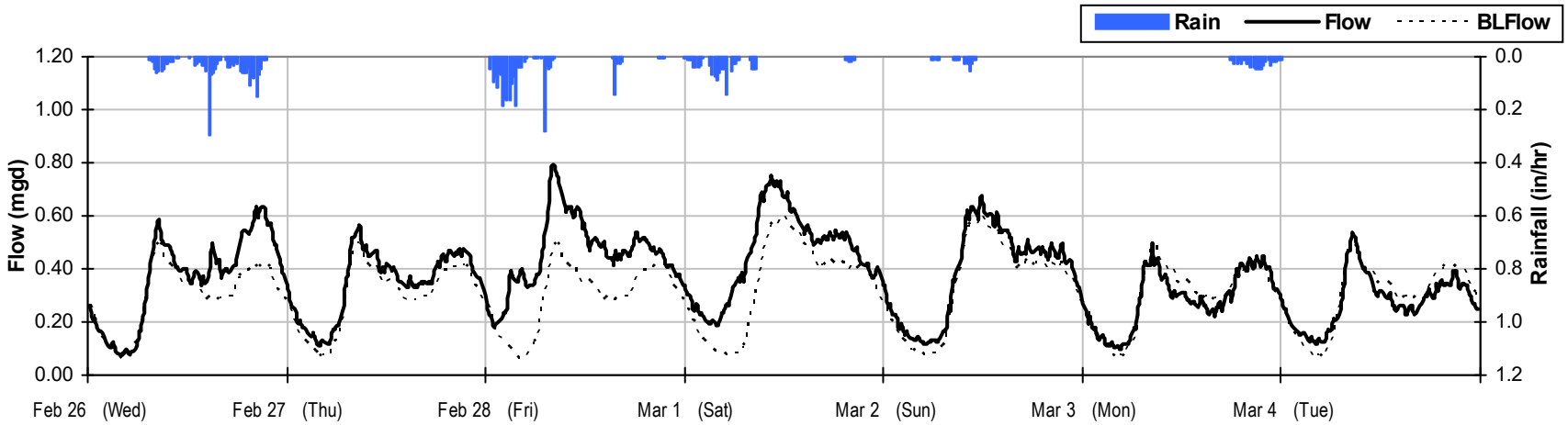
Period Flow Summary: Daily Flow Totals

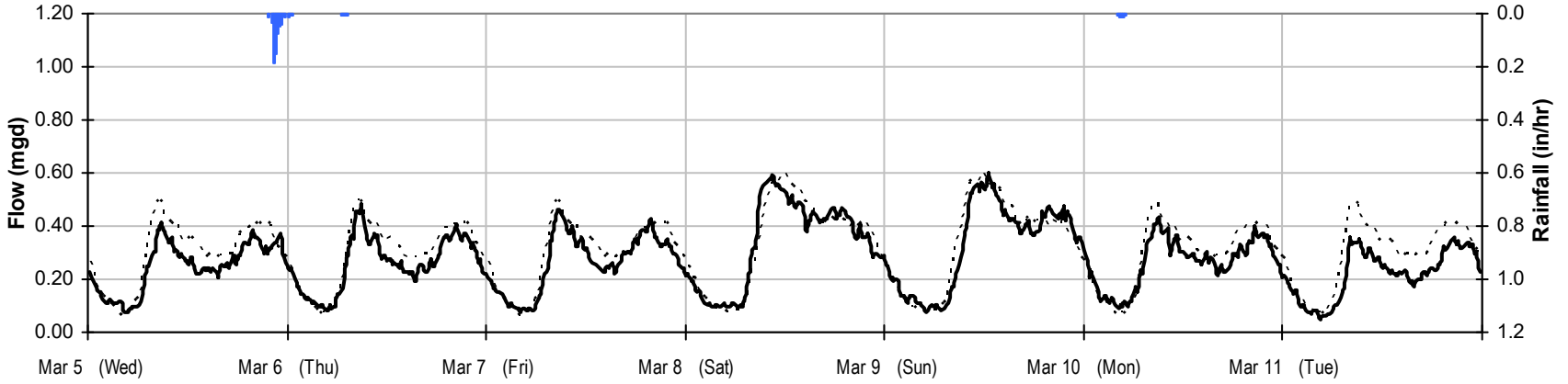


M5+M6

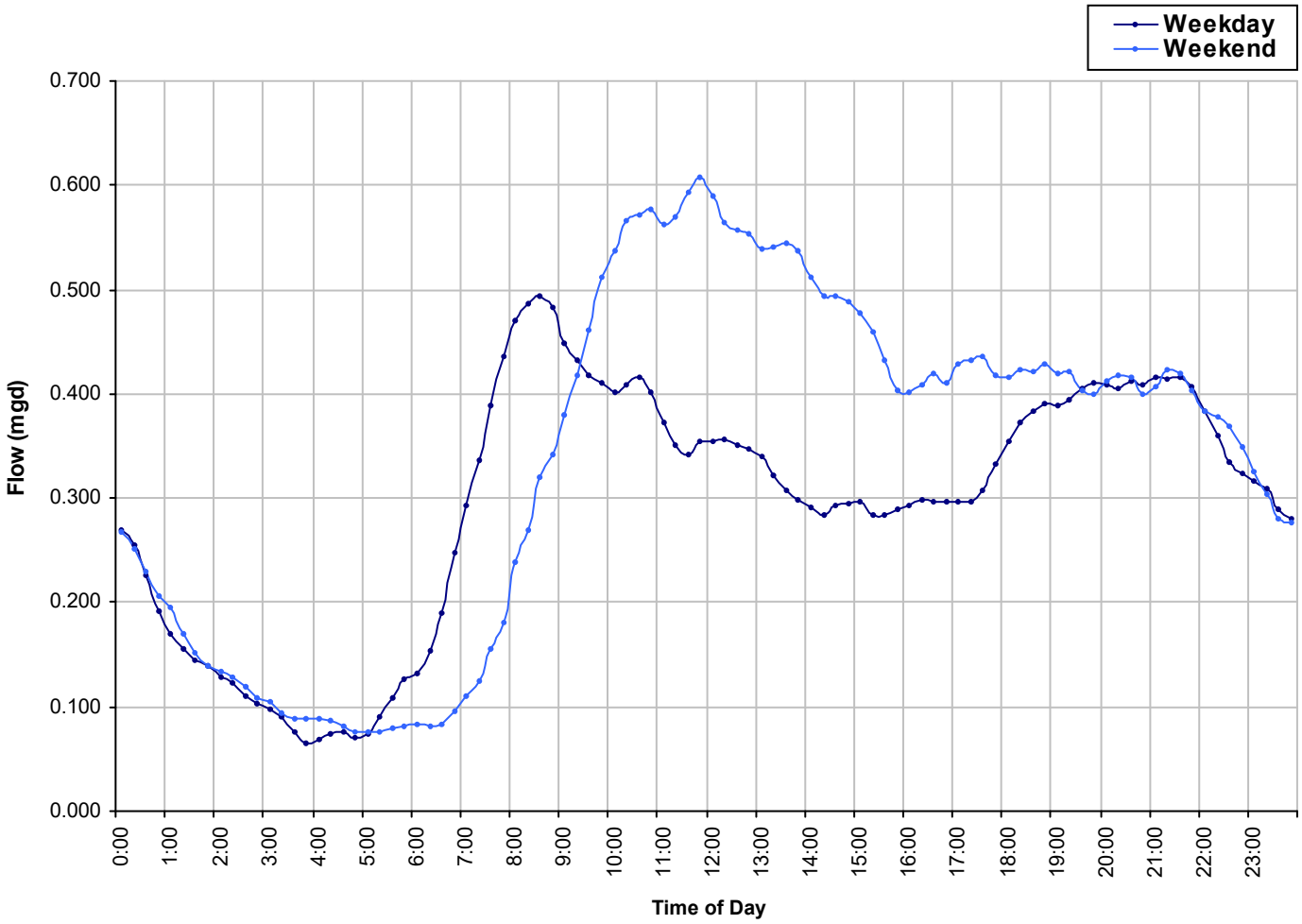
Flow Summary: 2/26/2014 to 3/11/2014

Total Period Rainfall: 1.89 inches **Avg Flow: 0.321 mgd** **Peak Flow: 0.790 mgd** **Min Flow: 0.052 mgd**

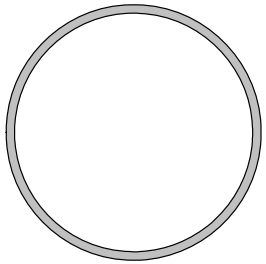




M5+M6
Baseline Flow Hydrographs

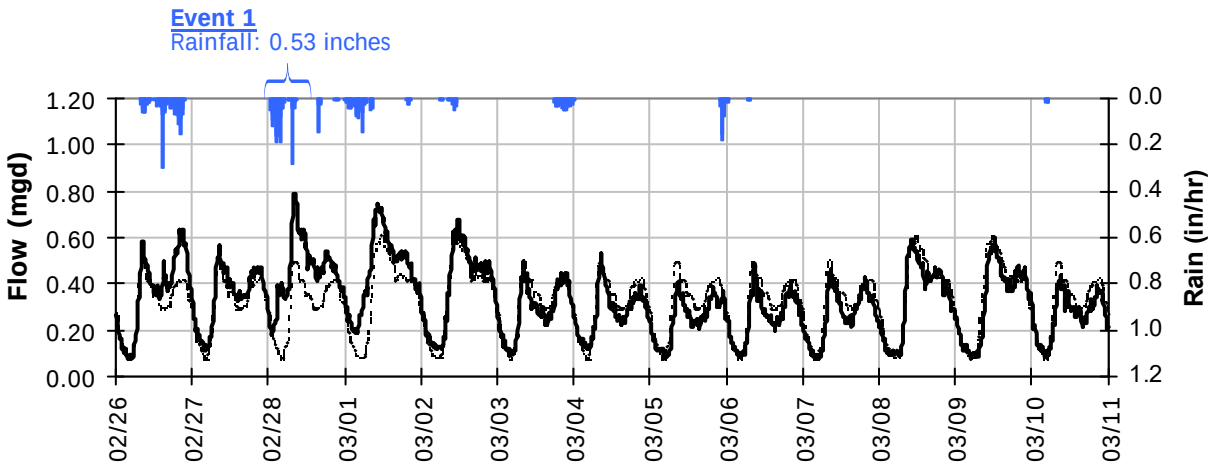


Baseline Flow:
0.307 *mgd*

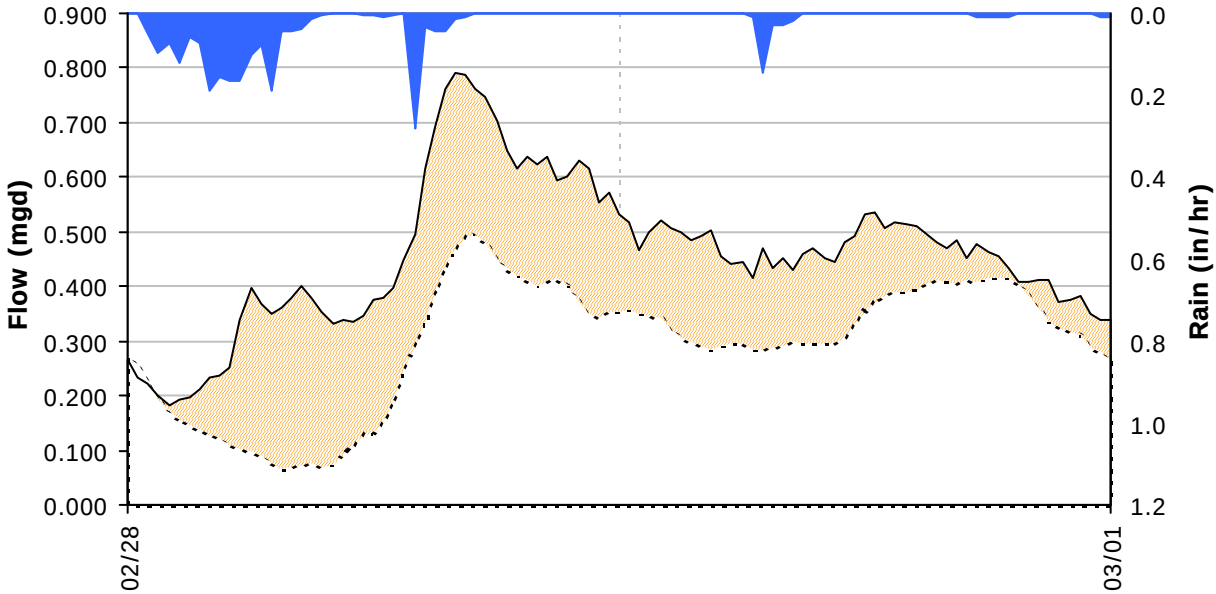


M5+M6
I/I Summary: Event 1

Baseline and Realtime Flows with Rainfall Data over Monitoring Period



Event 1 Detail Graph



Storm Event I/I Analysis (Rain = 0.53 inches)

Capacity		Inflow / Infiltration	
Peak Flow:	0.79 *mgd*	**Peak I/I Rate:**	0.33 *mgd*
PF:	2.57	**Total I/I:**	111,000 *gallons*

City of Half Moon Bay

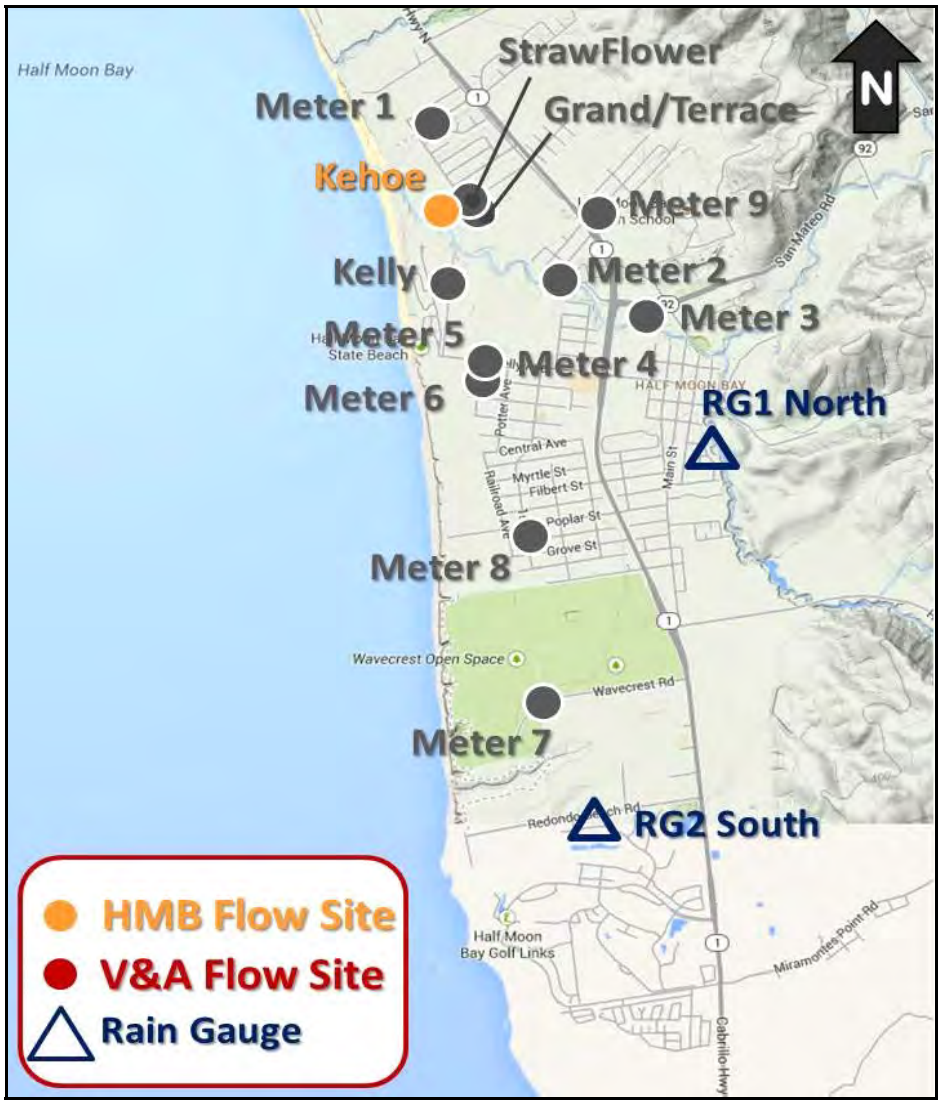
Sanitary Sewer Flow Monitoring

Temporary Monitoring: February 26 to March 11, 2014

Monitoring Site: Kehoe

Location: City Meter located within Treatment Facility

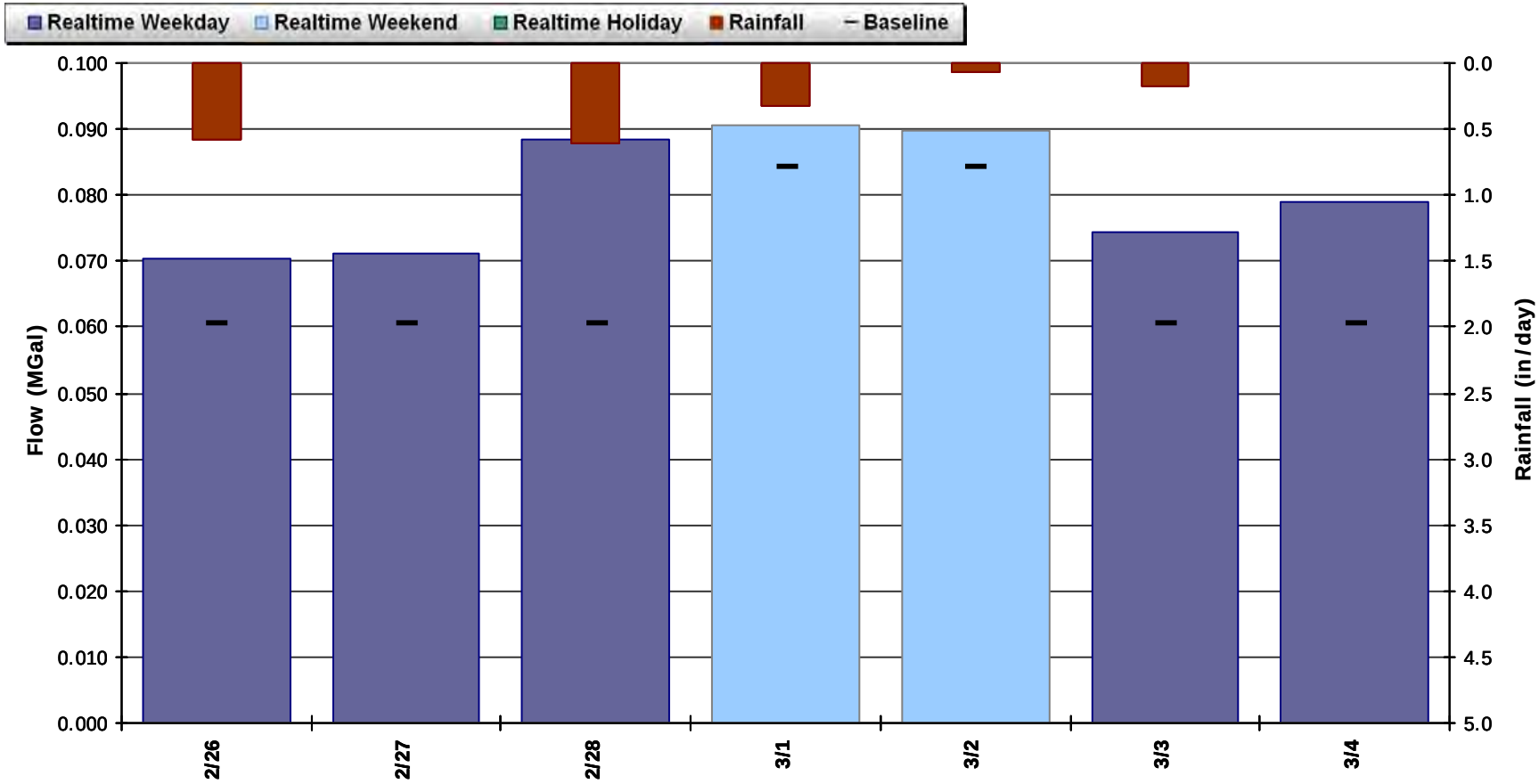
Data Summary Report



Vicinity Map: Kehoe

KEHOE

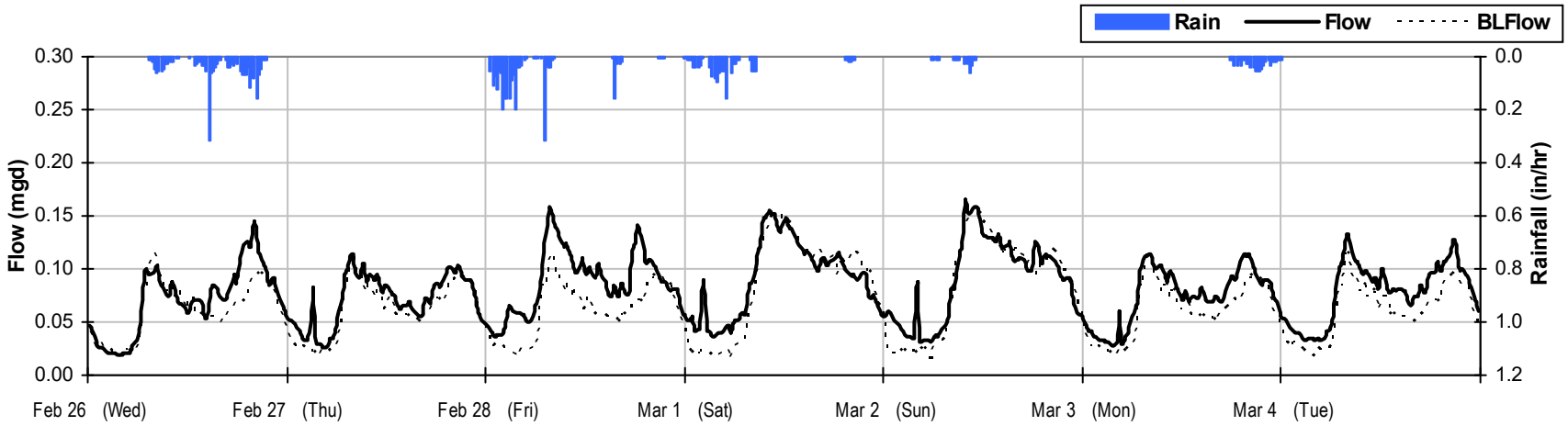
Period Flow Summary: Daily Flow Totals



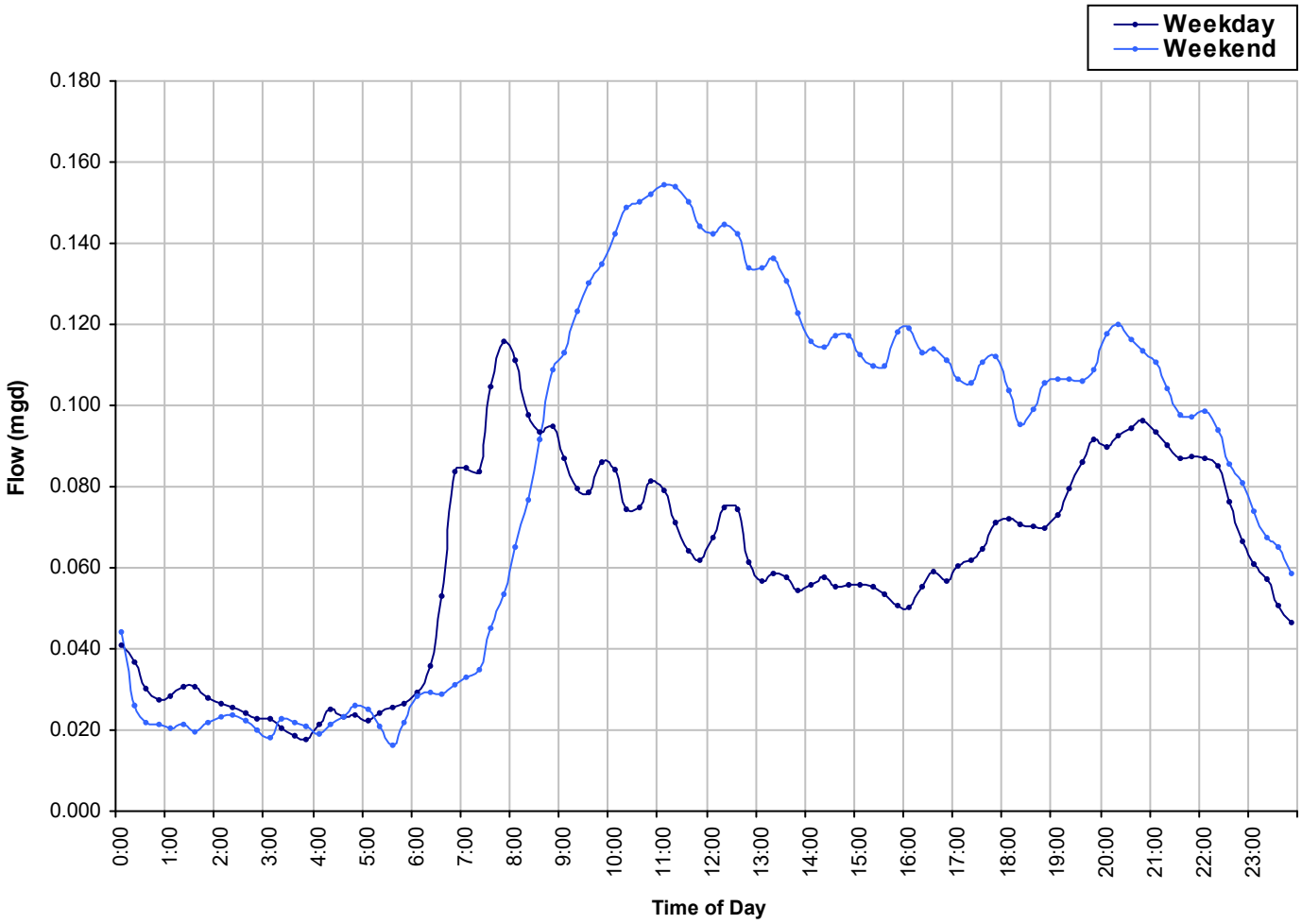
KEHOE

Flow Summary: 2/26/2014 to 3/11/2014

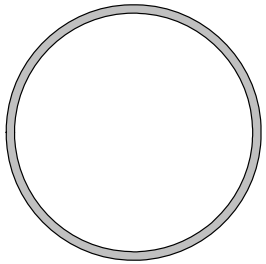
Total Period Rainfall: 1.76 inches **Avg Flow: 0.080 mgd** **Peak Flow: 0.165 mgd** **Min Flow: 0.019 mgd**



KEHOE
Baseline Flow Hydrographs



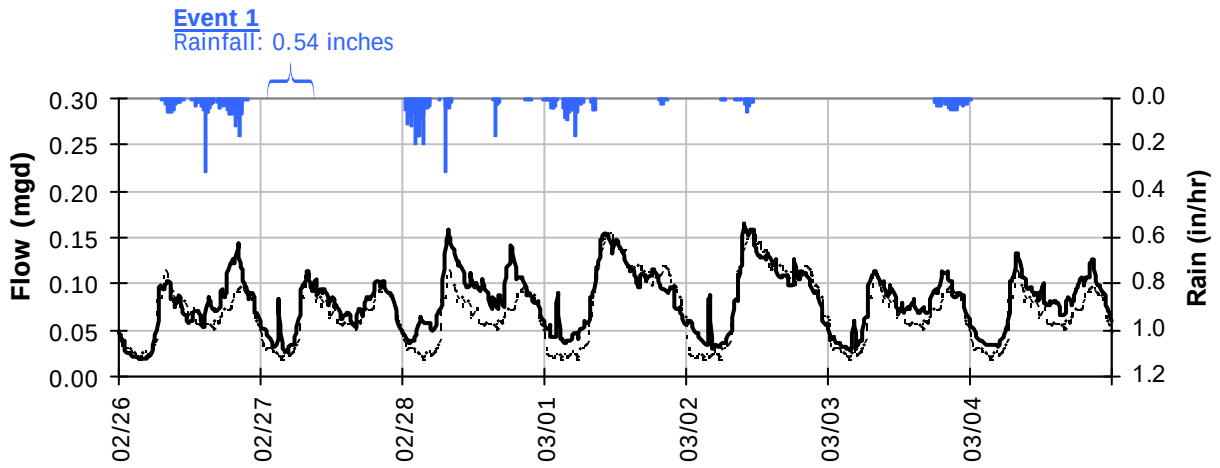
Baseline Flow:
0.067 *mgd*



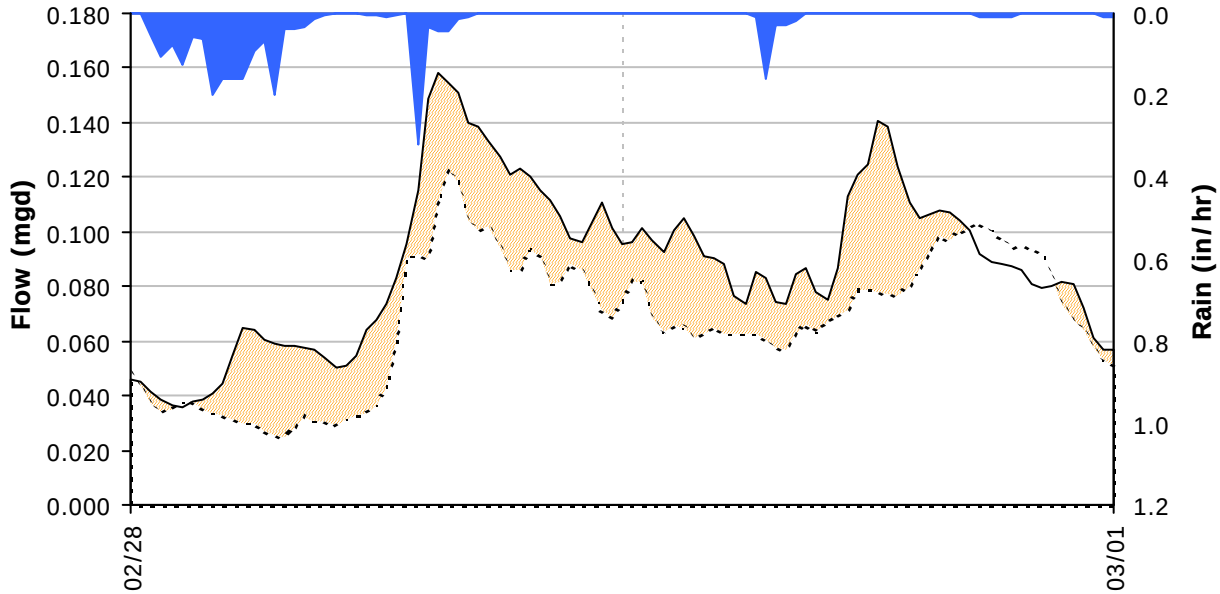
KEHOE

I/I Summary: Event 1

Baseline and Realtime Flows with Rainfall Data over Monitoring Period



Event 1 Detail Graph



Storm Event I/I Analysis (Rain = 0.54 inches)

Capacity		Inflow / Infiltration	
Peak Flow:	0.16 *mgd*	**Peak I/I Rate:**	0.06 *mgd*
PF:	2.34	**Total I/I:**	13,000 *gallons*

City of Half Moon Bay

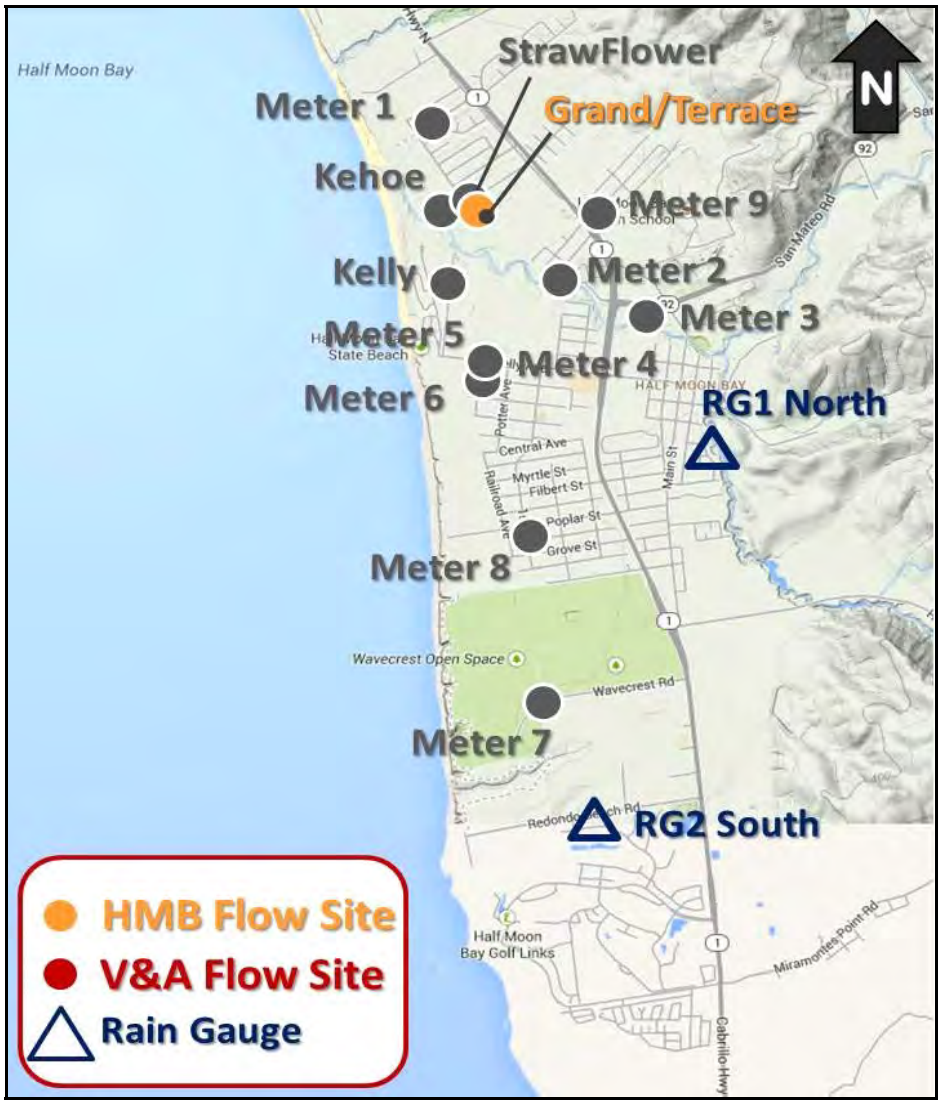
Sanitary Sewer Flow Monitoring

Temporary Monitoring: February 26 to March 11, 2014

Monitoring Site: Grandview Terrace

Location: City Meter located within Treatment Facility

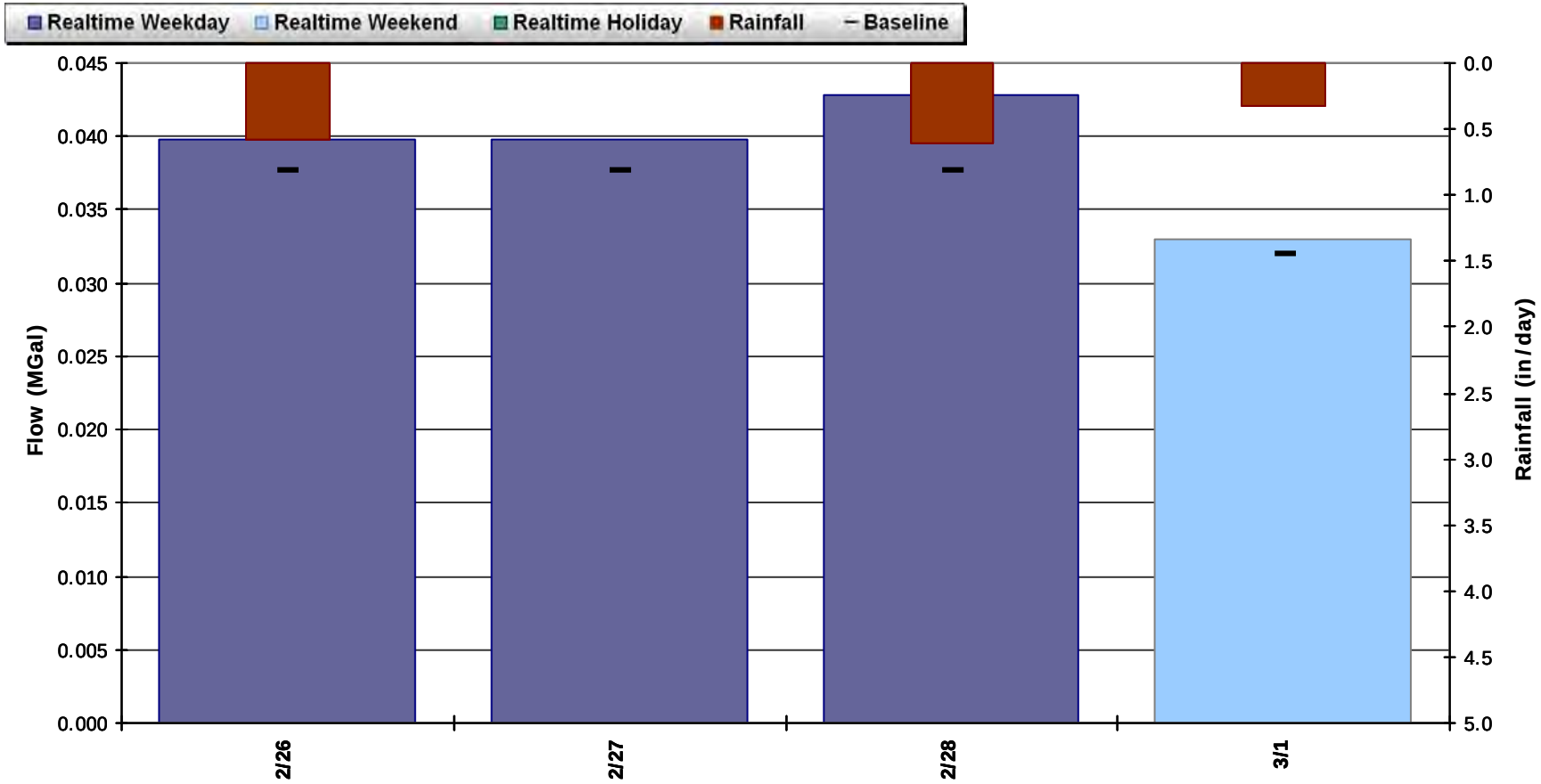
Data Summary Report



Vicinity Map: Grandview Terrace

GRANDVIEW TERRACE

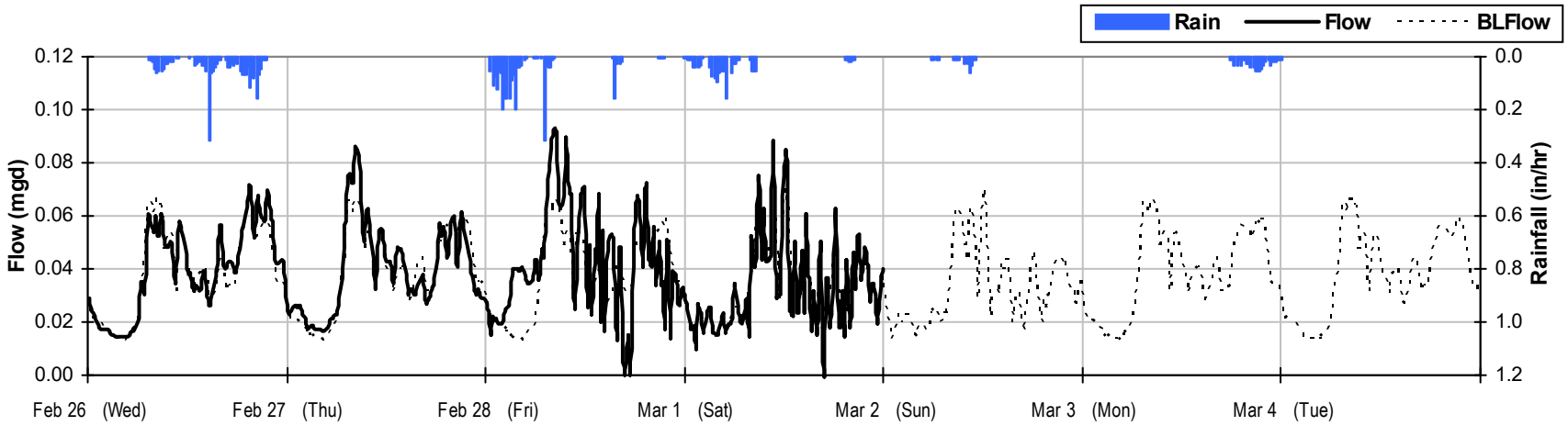
Period Flow Summary: Daily Flow Totals



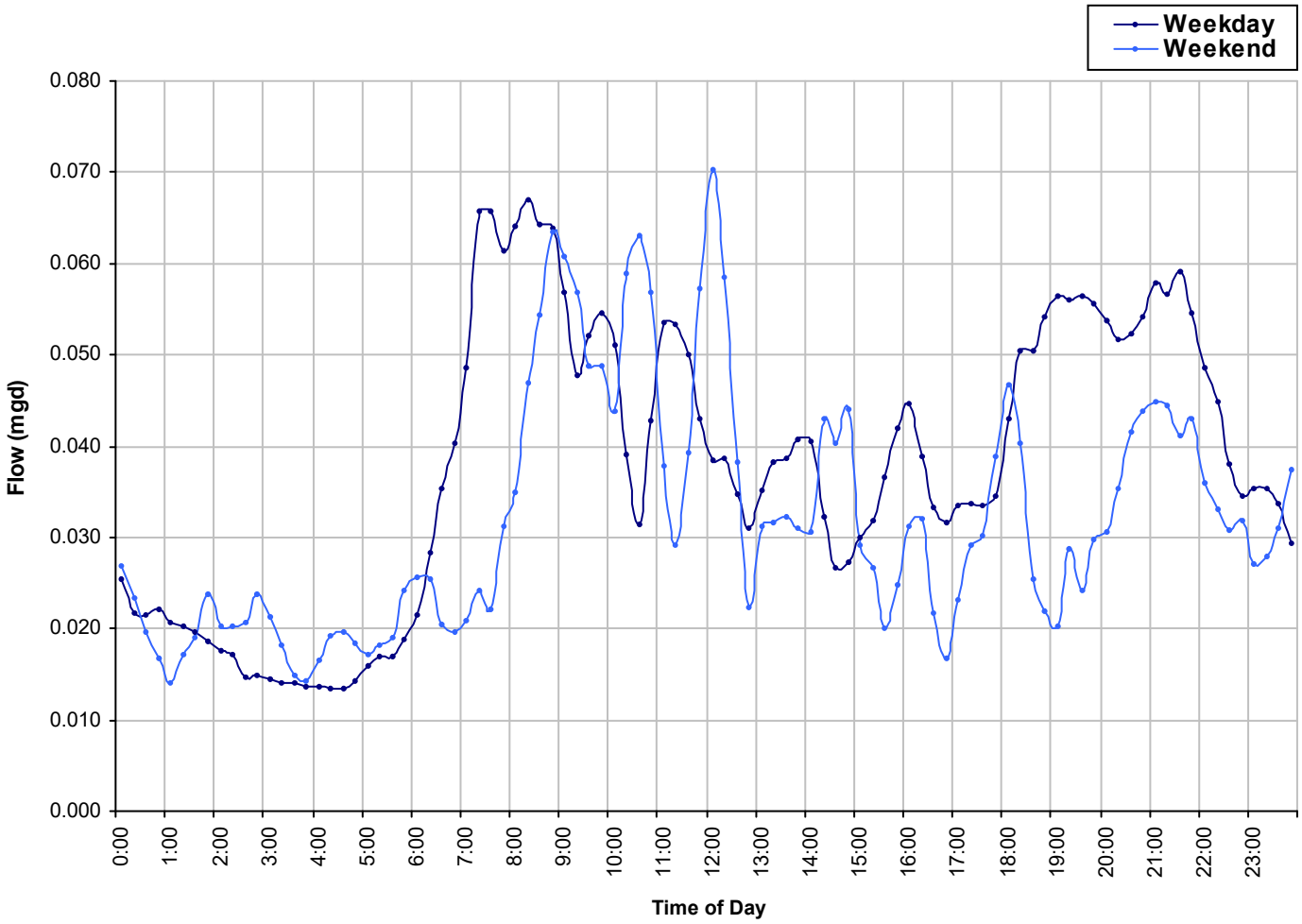
GRANDVIEW TERRACE

Flow Summary: 2/26/2014 to 3/11/2014

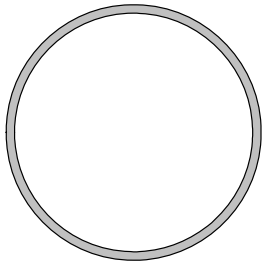
Total Period Rainfall: 1.76 inches **Avg Flow: 0.039 mgd** **Peak Flow: 0.093 mgd** **Min Flow: 0.000 mgd**



GRANDVIEW TERRACE
Baseline Flow Hydrographs

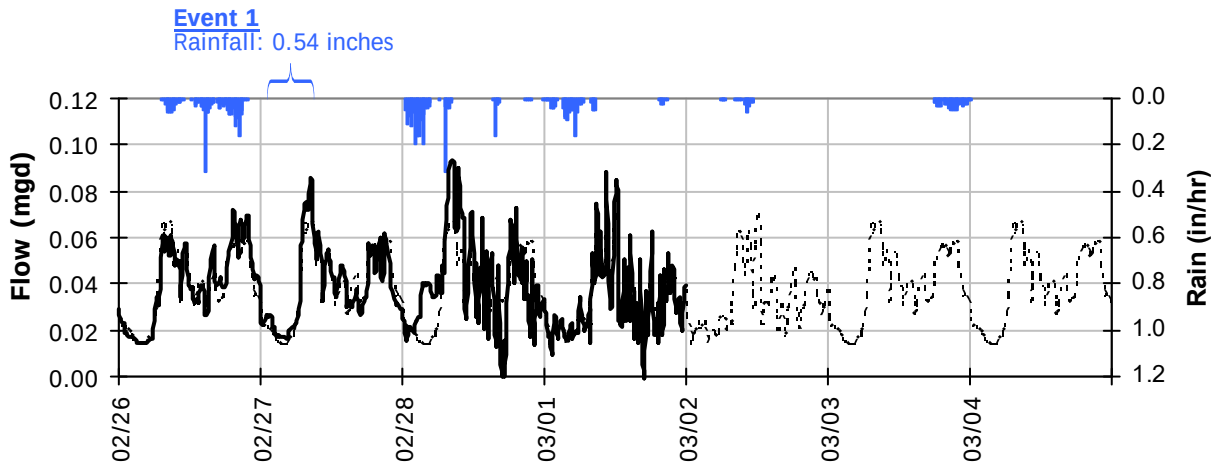


Baseline Flow:
0.036 *mgd*

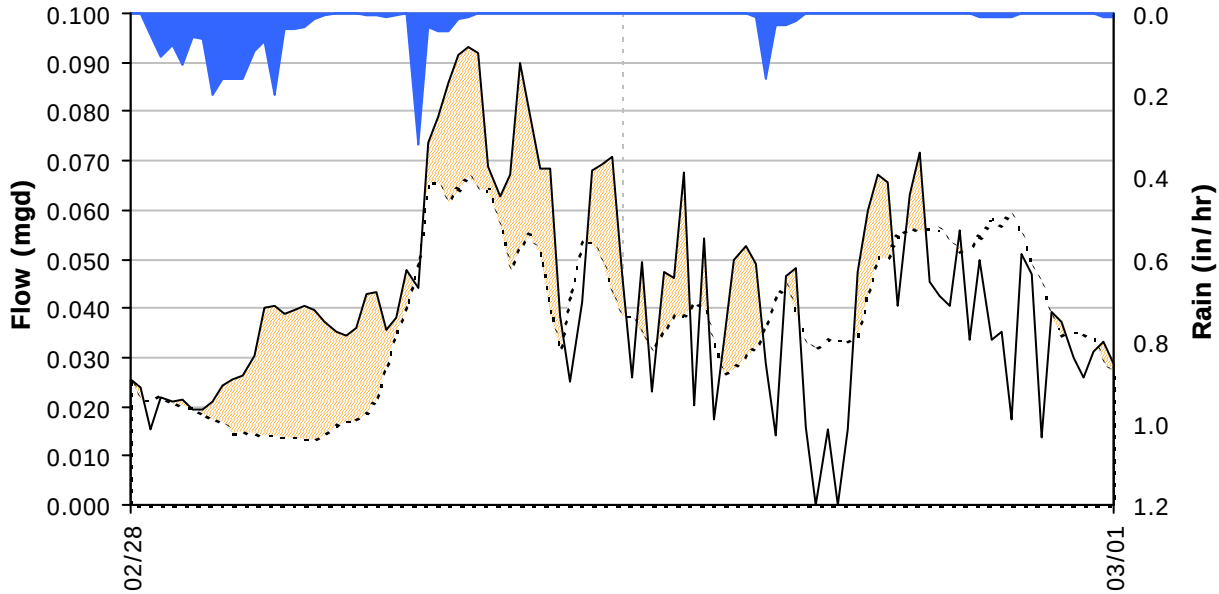


GRANDVIEW TERRACE
I/I Summary: Event 1

Baseline and Realtime Flows with Rainfall Data over Monitoring Period



Event 1 Detail Graph



Storm Event I/I Analysis (Rain = 0.54 inches)

Capacity		Inflow / Infiltration	
Peak Flow:	0.09 *mgd*	**Peak I/I Rate:**	0.04 *mgd*
PF:	2.58	**Total I/I:**	7,000 *gallons*

City of Half Moon Bay

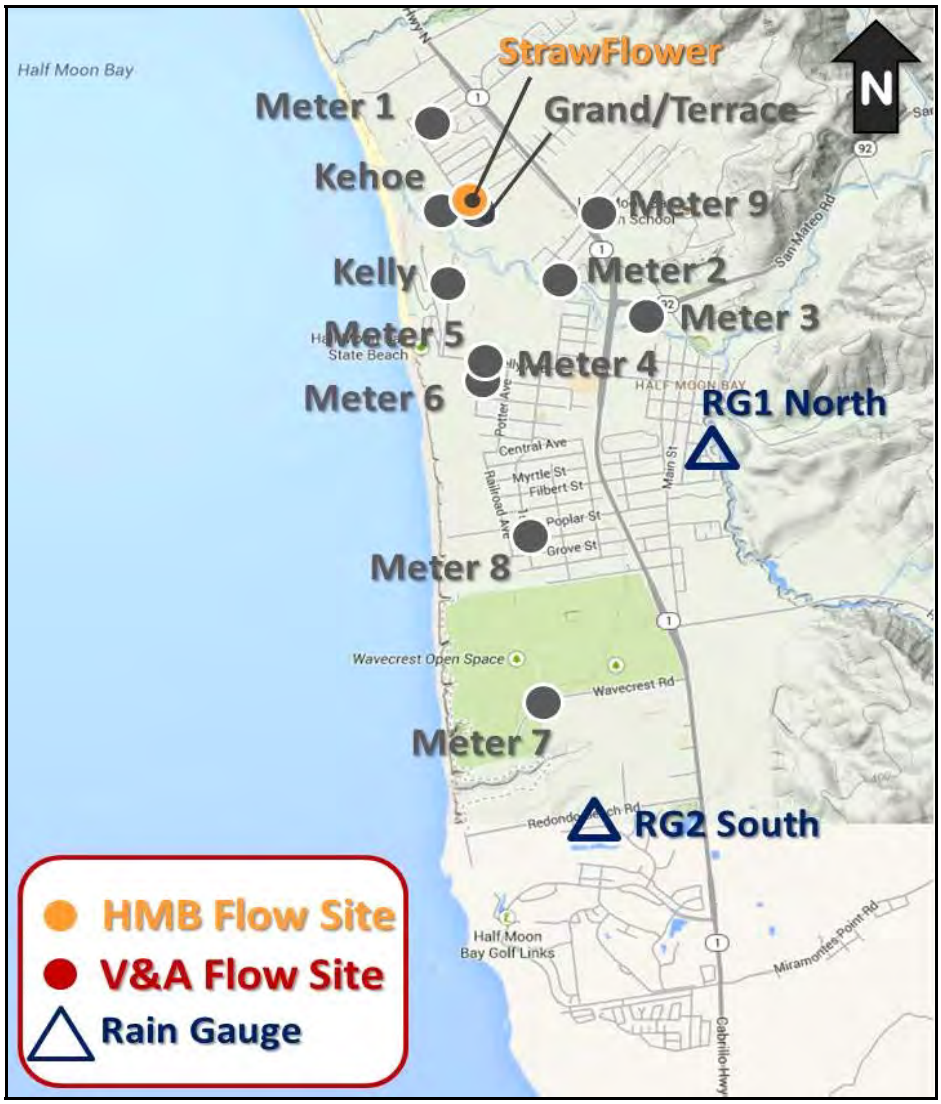
Sanitary Sewer Flow Monitoring

Temporary Monitoring: February 26 to March 11, 2014

Monitoring Site: Straw Flower

Location: City Meter located within Treatment Facility

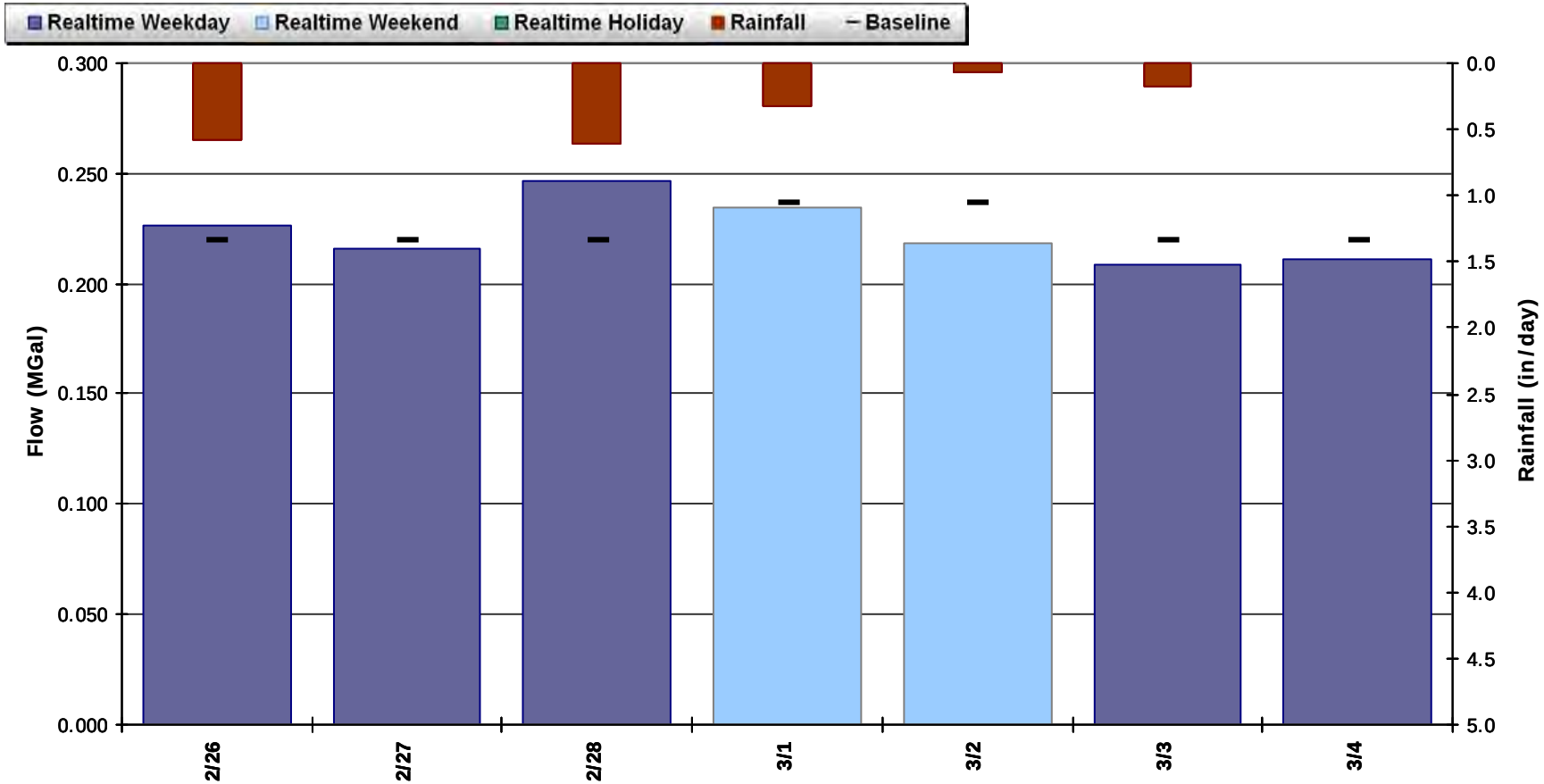
Data Summary Report



Vicinity Map: Straw Flower

STRAW FLOWER

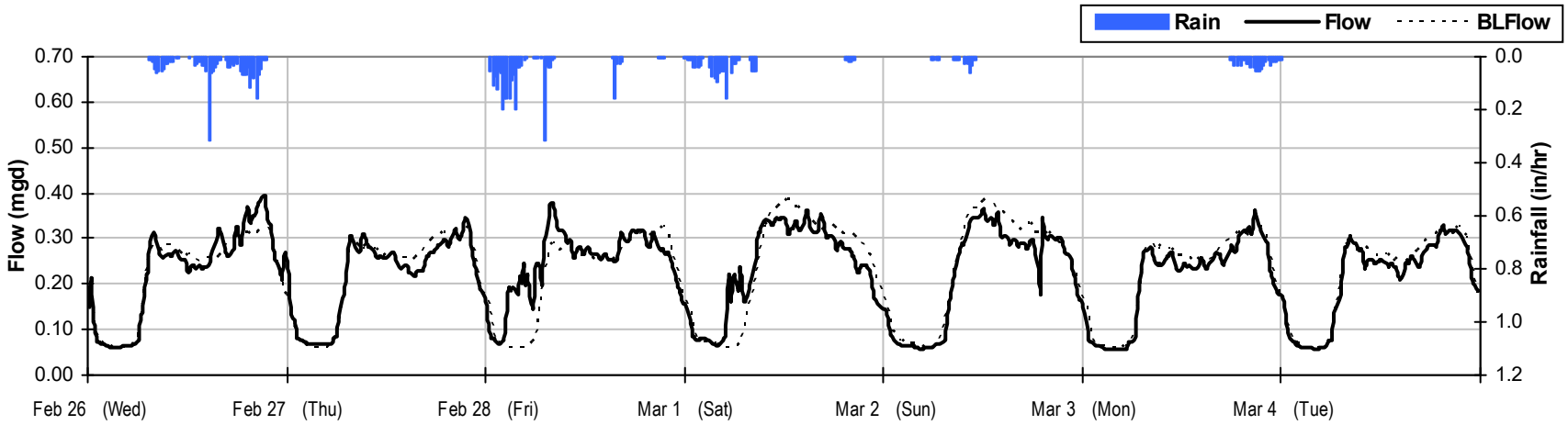
Period Flow Summary: Daily Flow Totals



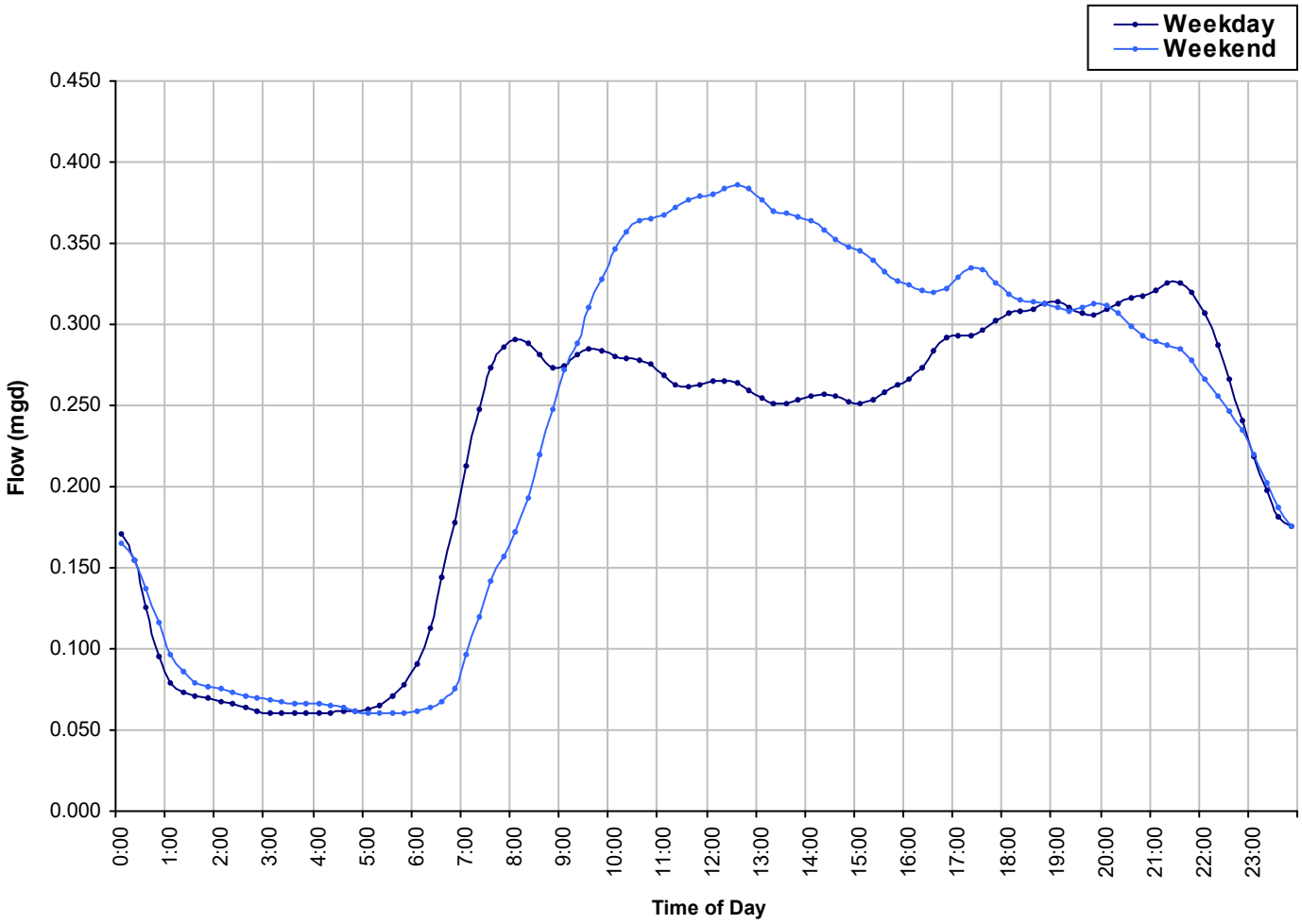
STRAW FLOWER

Flow Summary: 2/26/2014 to 3/11/2014

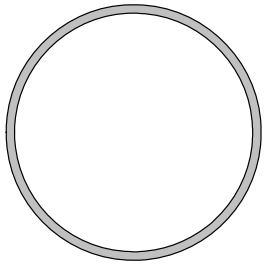
Total Period Rainfall: 1.76 inches **Avg Flow: 0.223 mgd** **Peak Flow: 0.396 mgd** **Min Flow: 0.055 mgd**



STRAW FLOWER
Baseline Flow Hydrographs

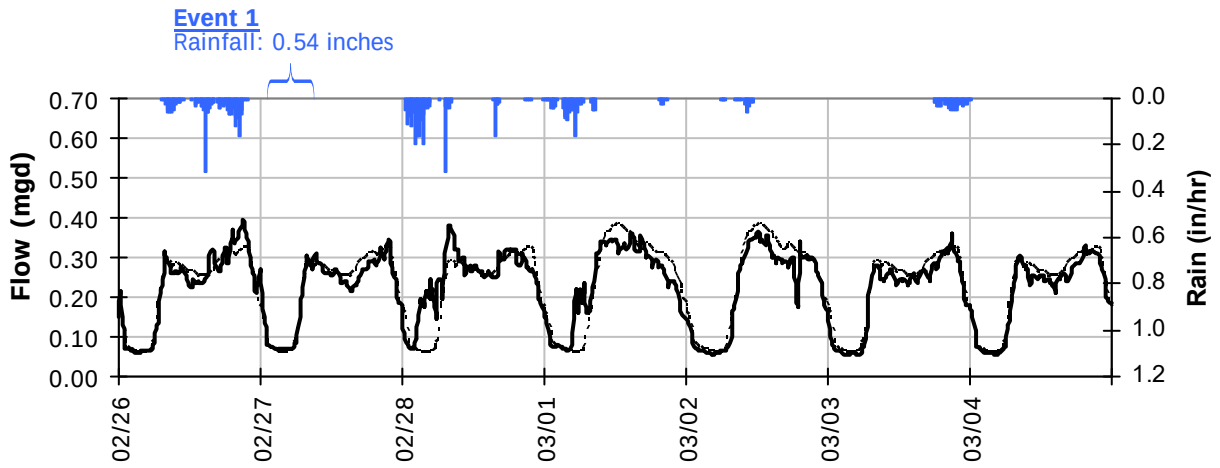


Baseline Flow:
0.225 *mgd*

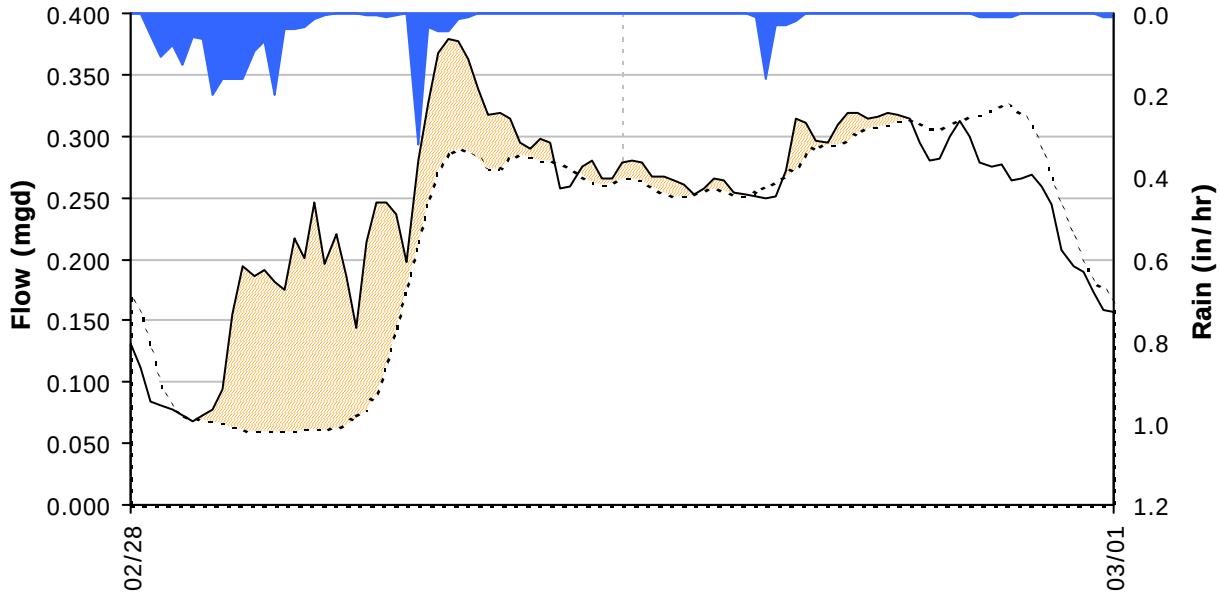


STRAW FLOWER
I/I Summary: Event 1

Baseline and Realtime Flows with Rainfall Data over Monitoring Period



Event 1 Detail Graph



Storm Event I/I Analysis (Rain = 0.54 inches)

Capacity		Inflow / Infiltration	
Peak Flow:	0.38 *mgd*	**Peak I/I Rate:**	0.18 *mgd*
PF:	1.68	**Total I/I:**	30,000 *gallons*

City of Half Moon Bay

Sanitary Sewer Flow Monitoring

Temporary Monitoring: February 26 to March 11, 2014

Monitoring Site: Kelly

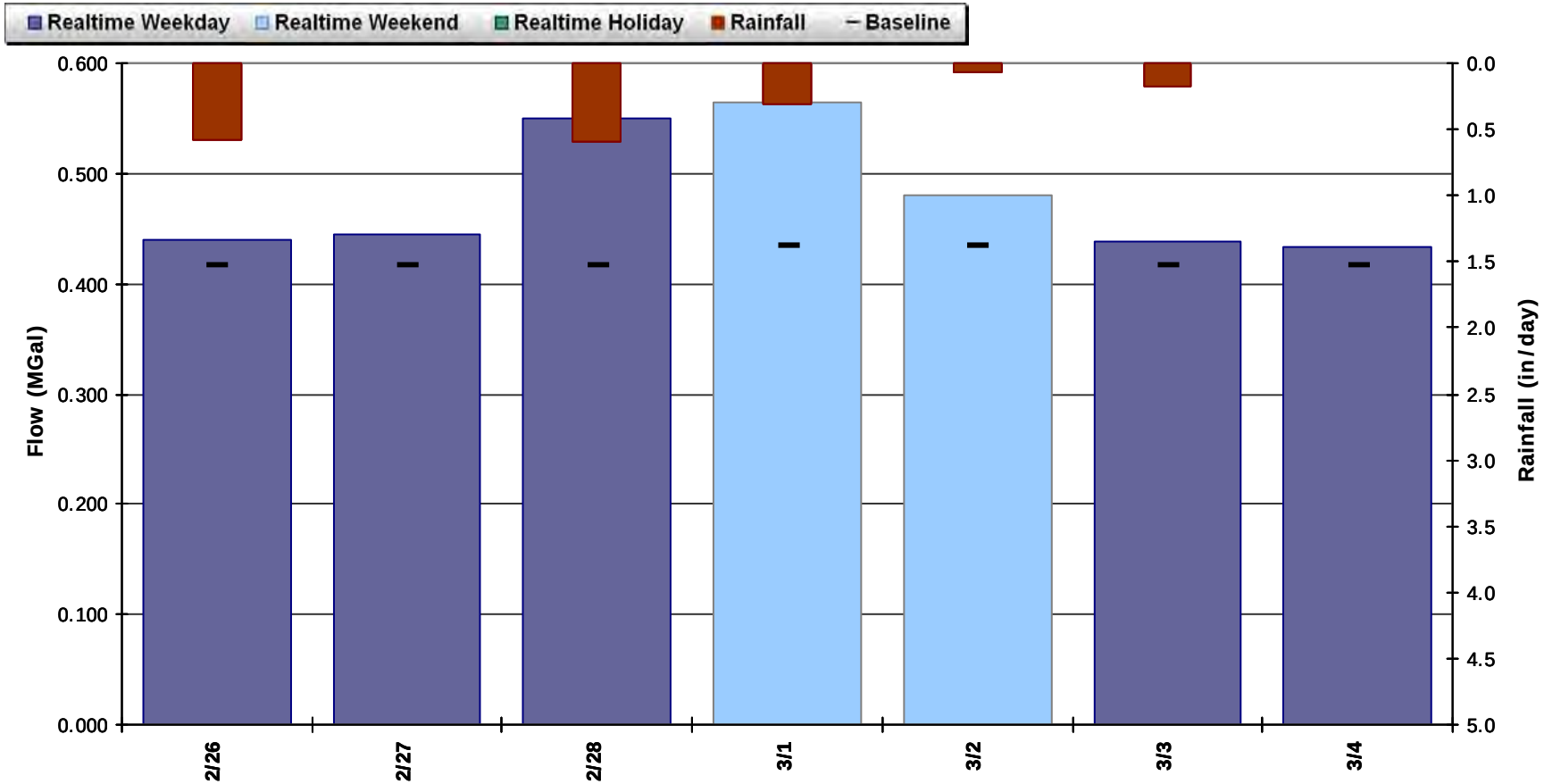
Location: City Meter located on Balboa Boulevard, north of Kelly Avenue

Data Summary Report

Vicinity Map: Kelly

KELLY

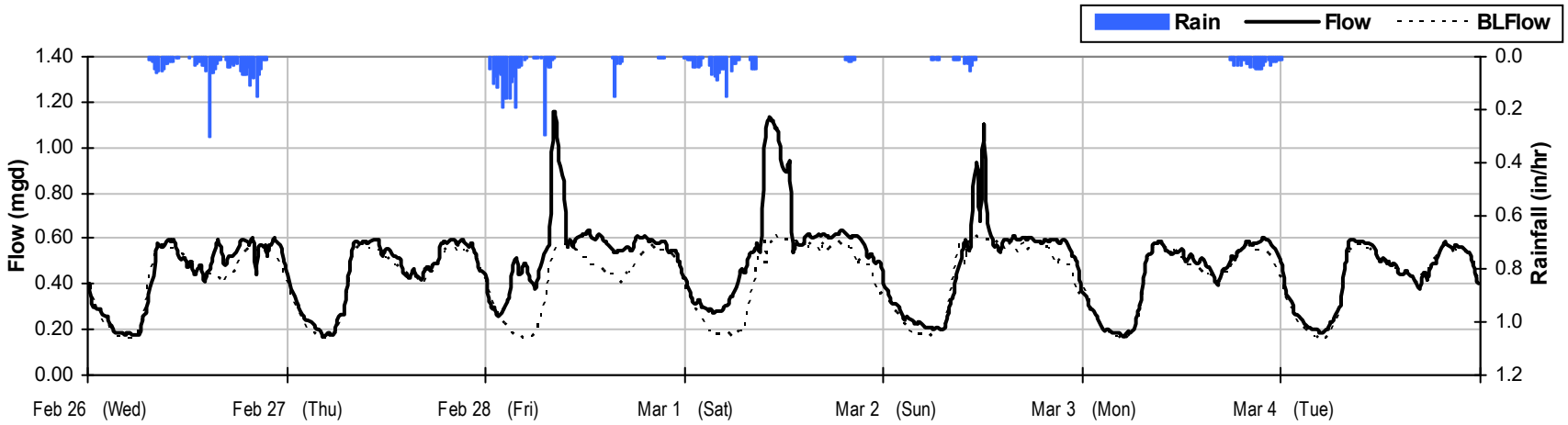
Period Flow Summary: Daily Flow Totals



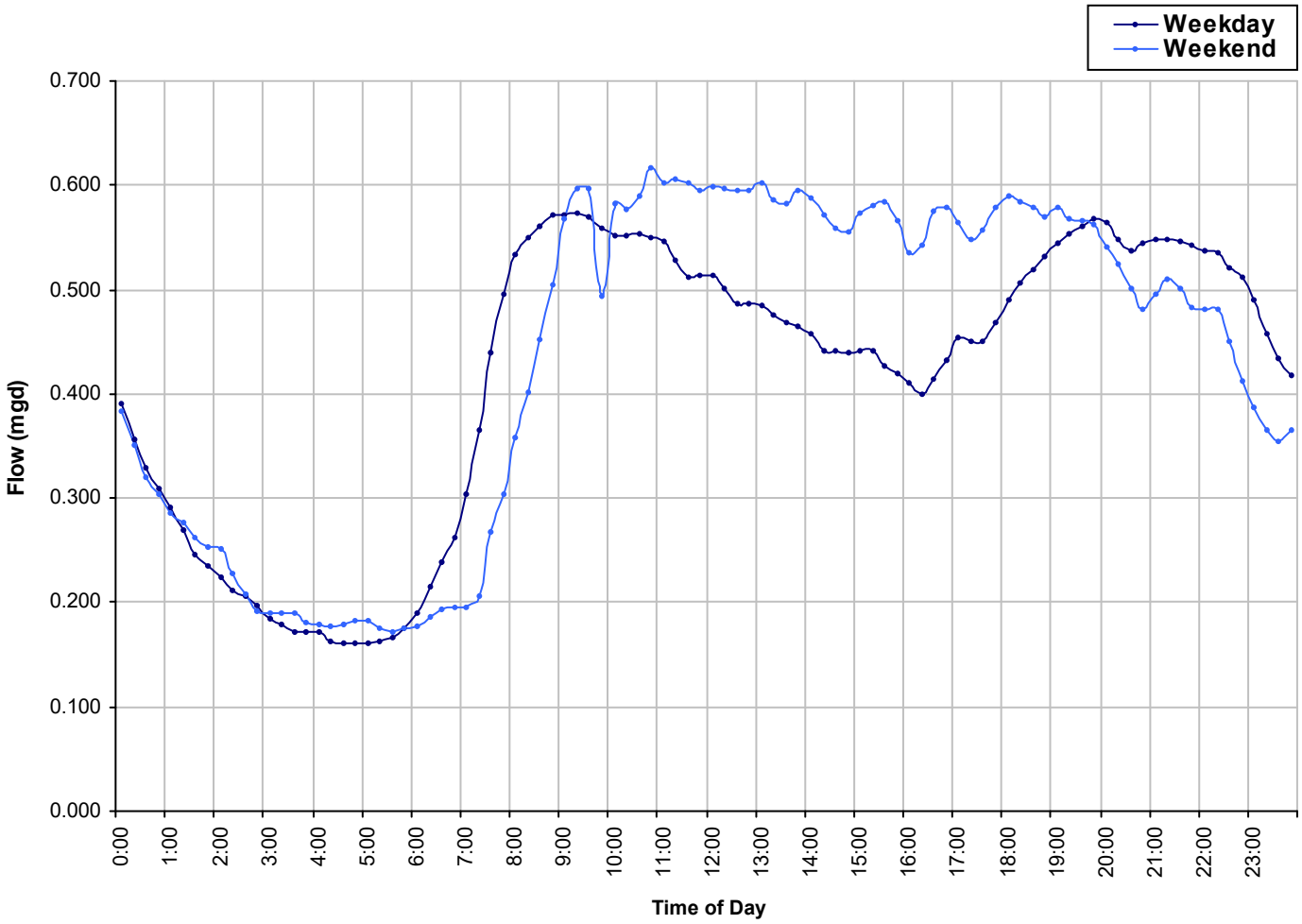
KELLY

Flow Summary: 2/26/2014 to 3/11/2014

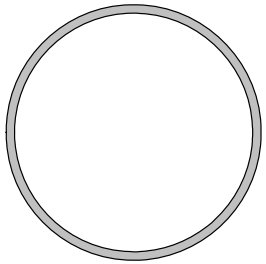
Total Period Rainfall: 1.73 inches **Avg Flow: 0.479 mgd** **Peak Flow: 1.158 mgd** **Min Flow: 0.172 mgd**



KELLY
Baseline Flow Hydrographs

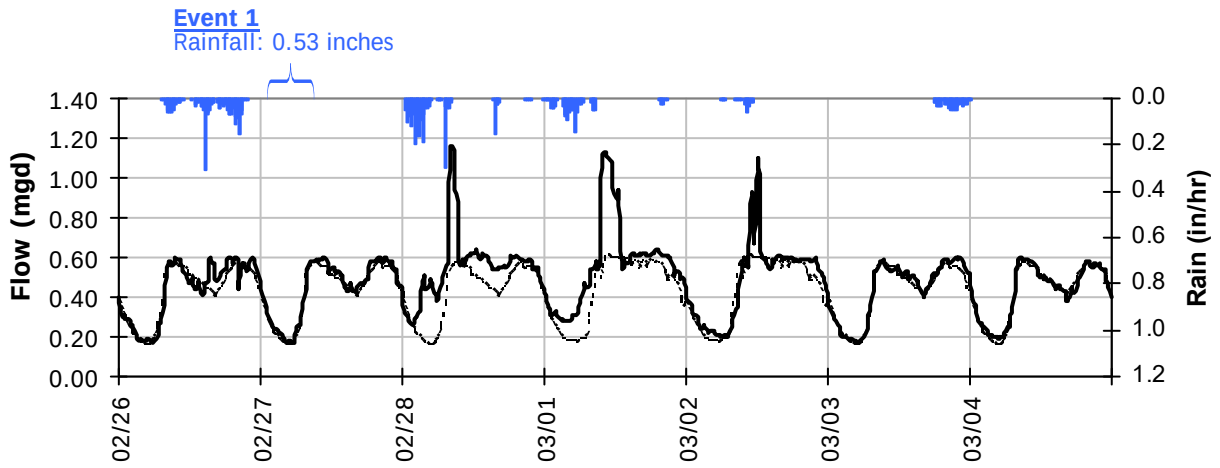


Baseline Flow:
0.422 *mgd*

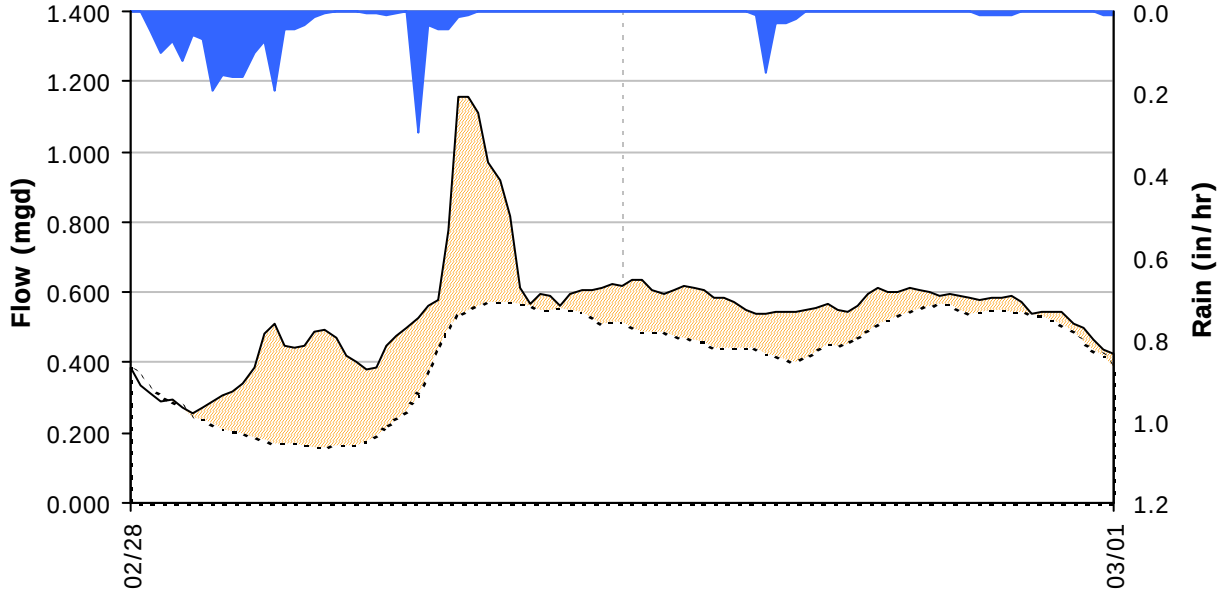


KELLY
I/I Summary: Event 1

Baseline and Realtime Flows with Rainfall Data over Monitoring Period



Event 1 Detail Graph



Storm Event I/I Analysis (Rain = 0.53 inches)

Capacity		Inflow / Infiltration	
Peak Flow:	1.16 *mgd*	**Peak I/I Rate:**	0.62 *mgd*
PF:	2.74	**Total I/I:**	98,000 *gallons*

V&A

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Oakland, CA 94612
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510.903.6601 **Fax**

San Diego
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San Diego, CA 92127
858.576.0226 **Tel**

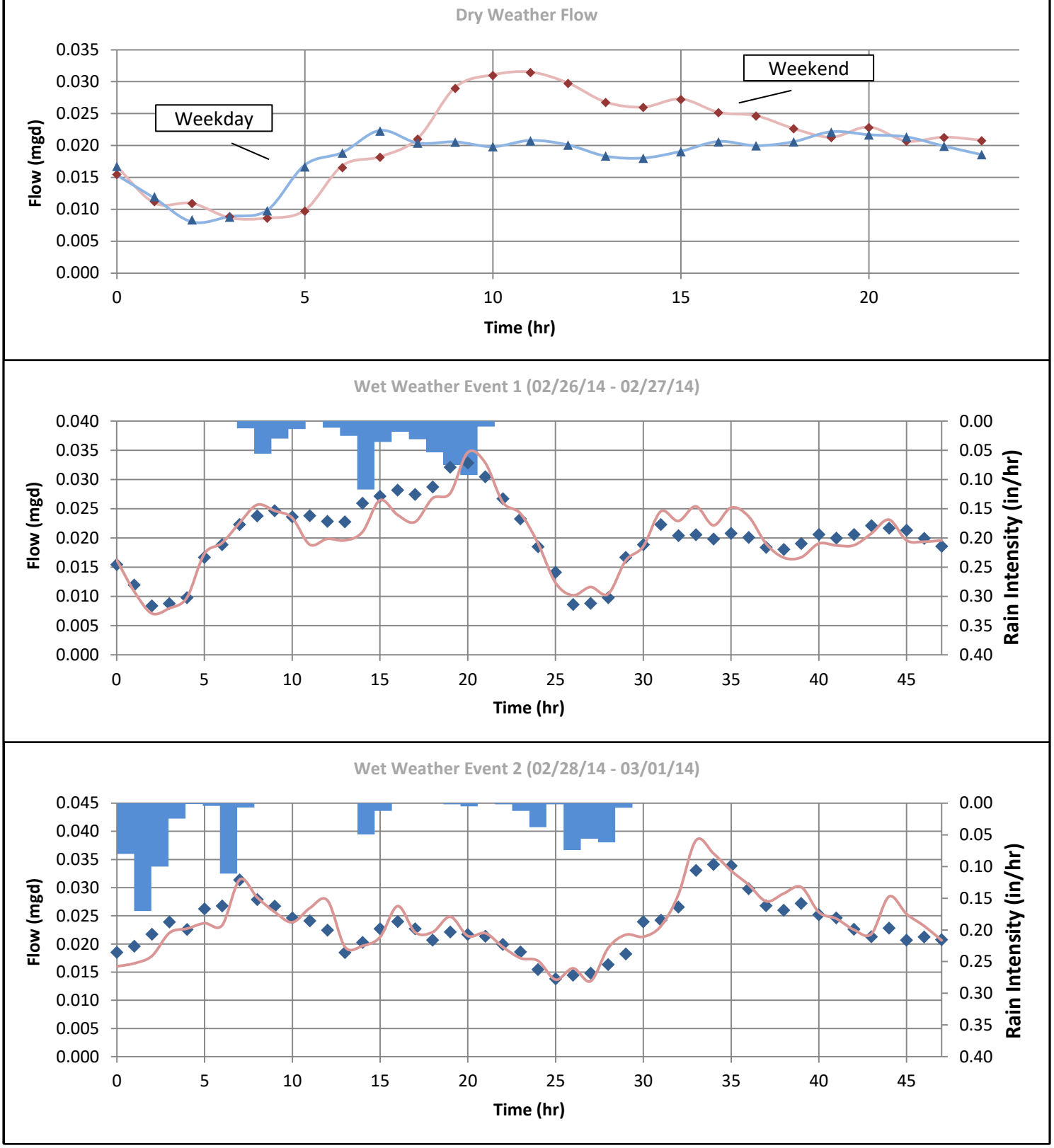
Houston
8220 Jones Road, Suite 500
Houston, TX 77065
713.568.9067 **Tel**

Las Vegas
3430 East Russell Road, Suite 316
Las Vegas, NV 89120
702.522.7967 **Tel**
702.553.4694 **Fax**

vaengineering.com

APPENDIX C

Calibration Results



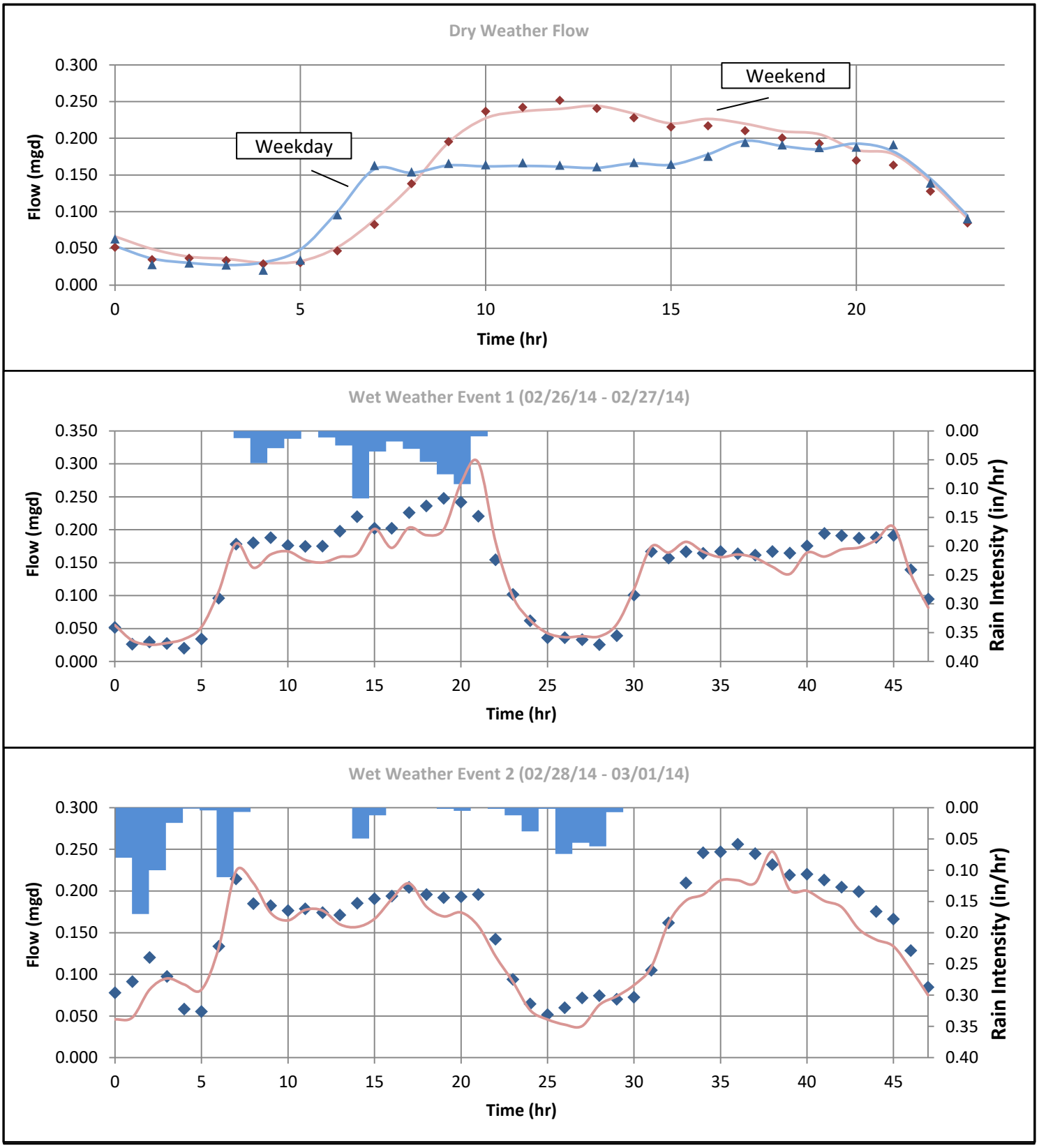
LEGEND

- Rain Event
- Hydraulic Model
- V&A Flow Monitoring
- V&A Flow Monitoring

February 17, 2015

Figure 1
Flow Monitor 1
410 Beach Ave.
Sewer System Master Plan
City of Half Moon Bay

AKEL ENGINEERING GROUP, INC.



LEGEND

- Rain Event
- Hydraulic Model
- V&A Flow Monitoring
- V&A Flow Monitoring

February 17, 2015

AKEL ENGINEERING GROUP, INC.

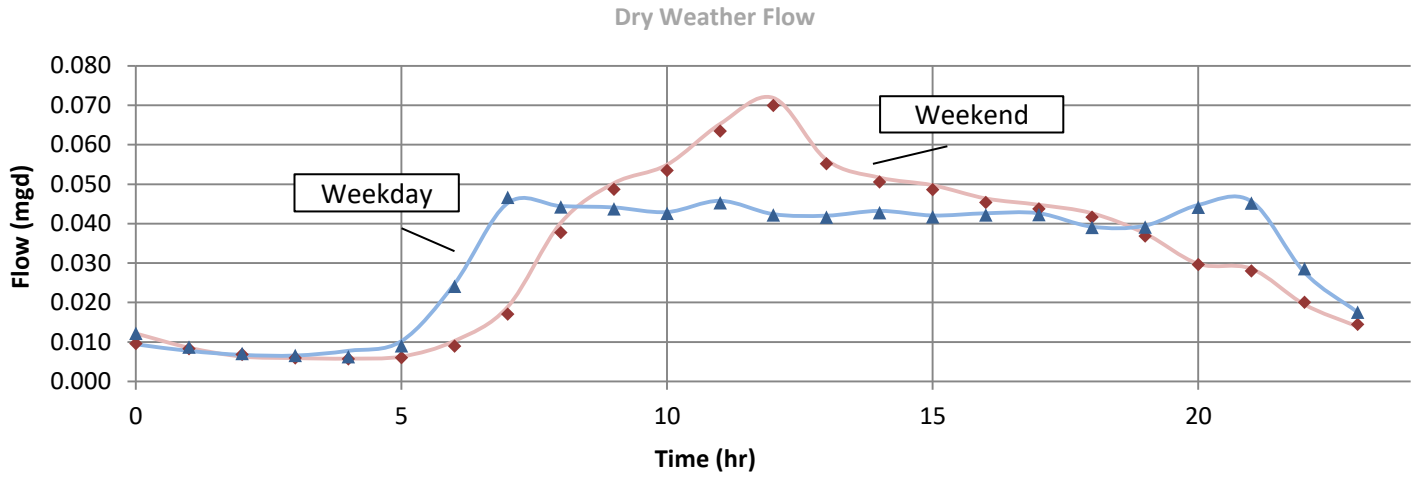
Figure 2

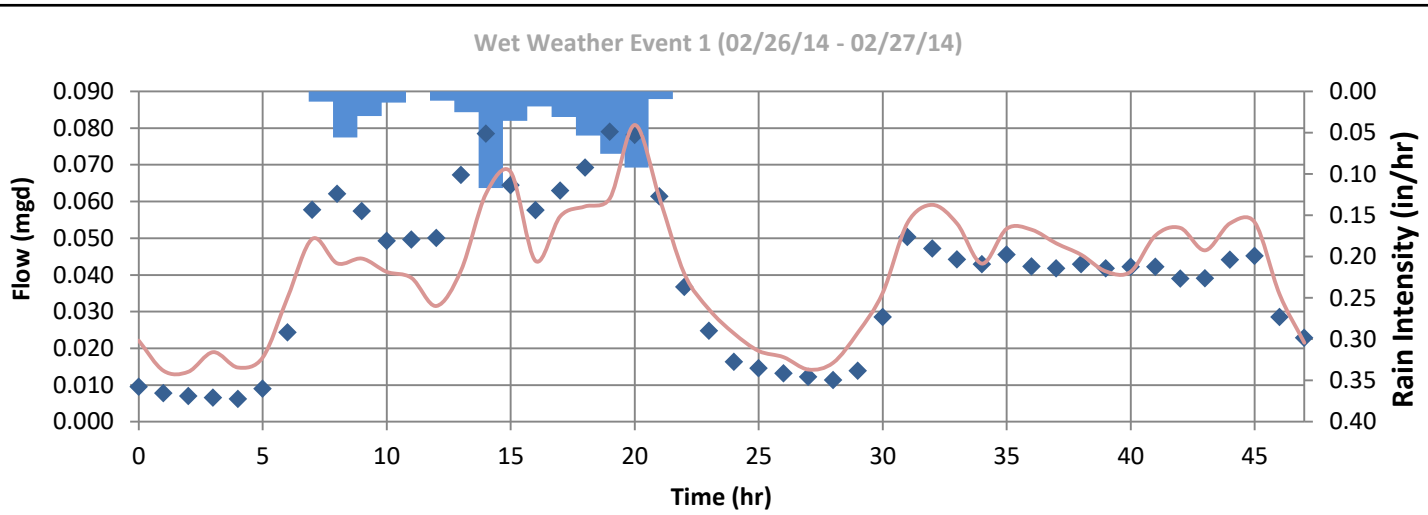
Flow Monitor 2

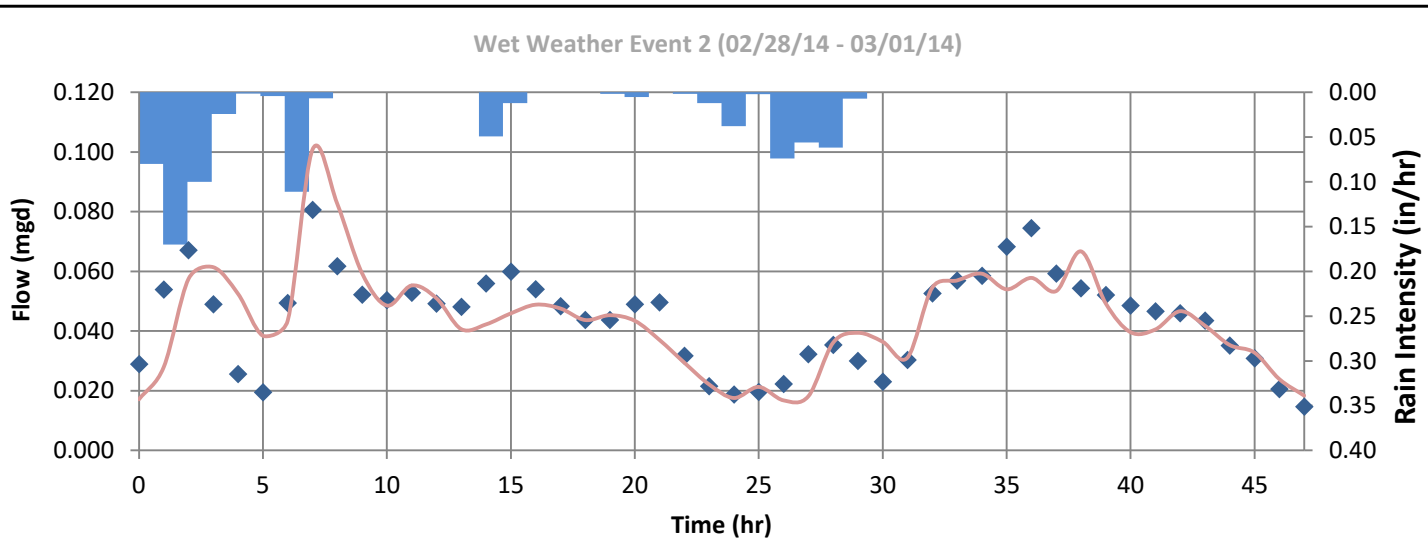
In field s/o Belleville Blvd.

Sewer System Master Plan

City of Half Moon Bay







LEGEND

- Rain Event
- Hydraulic Model
- V&A Flow Monitoring
- V&A Flow Monitoring

February 17, 2015

AKEL ENGINEERING GROUP, INC.

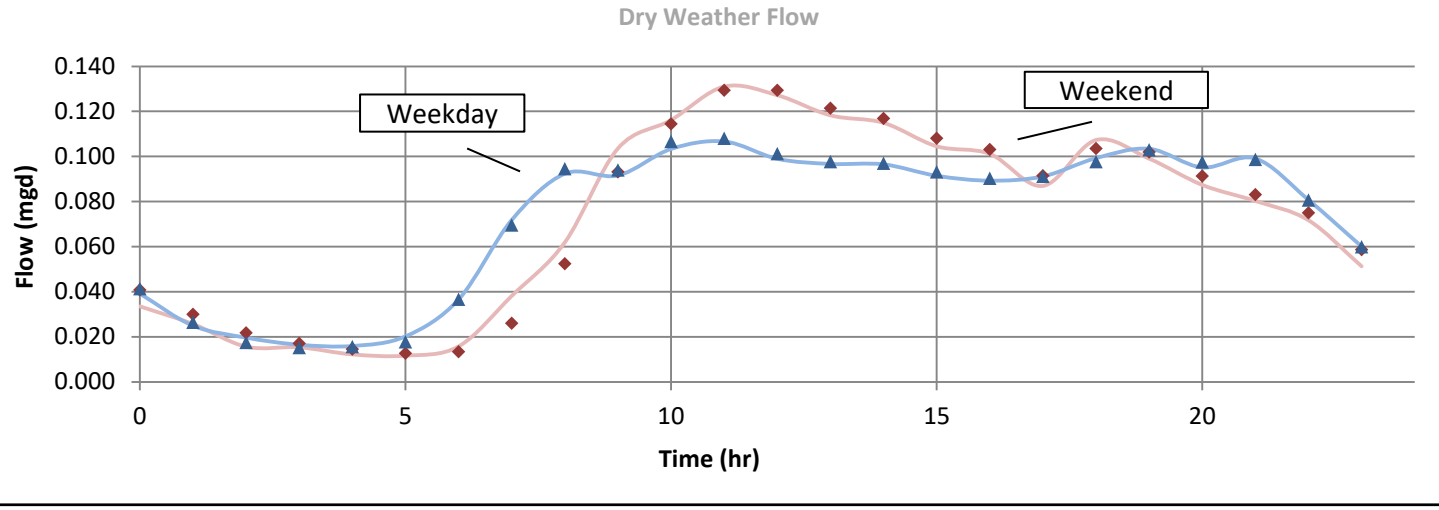
Figure 3

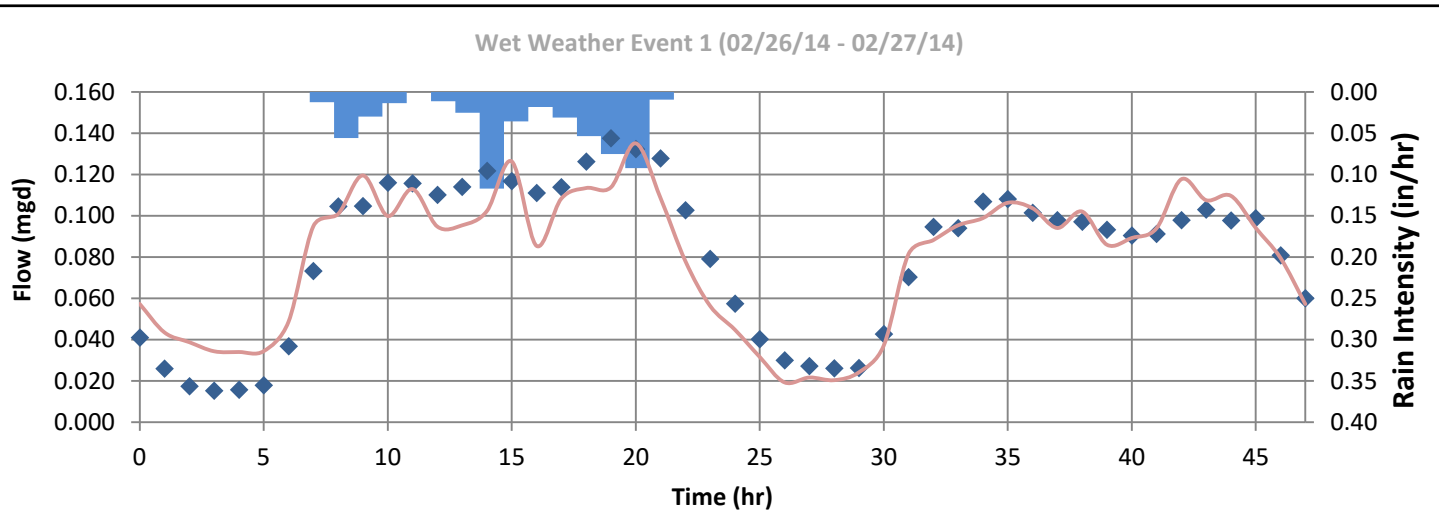
Flow Monitor 3

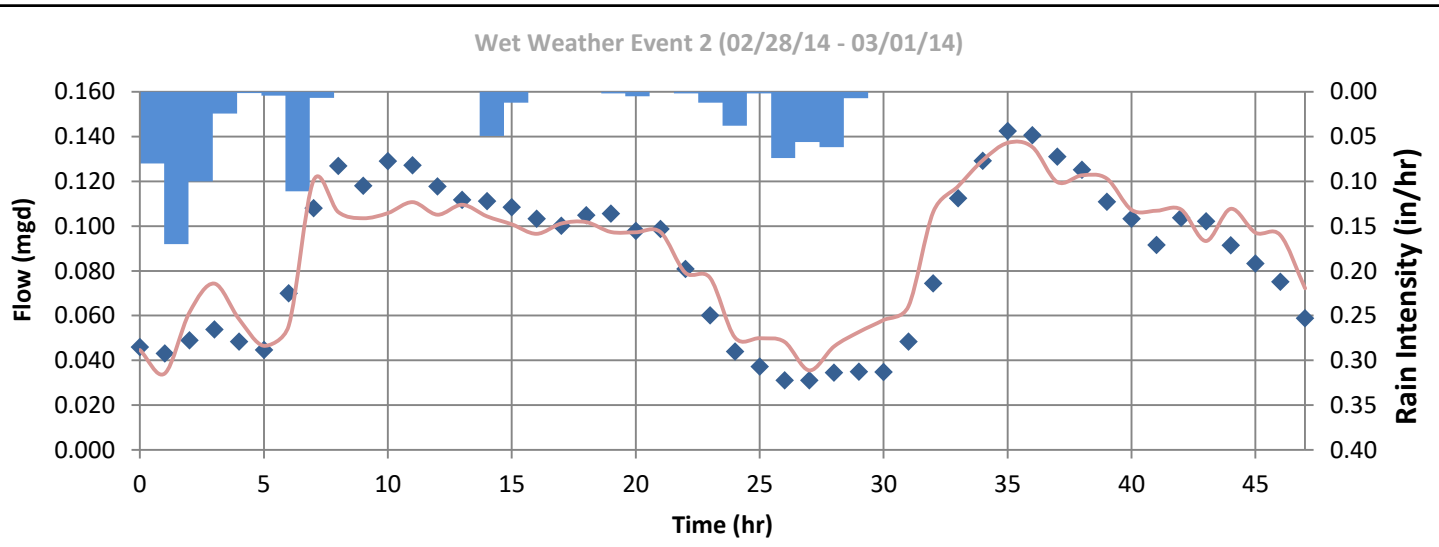
San Mateo Rd. e/o Cabrillo Hwy.

Sewer System Master Plan

City of Half Moon Bay







LEGEND

- Rain Event
- Hydraulic Model
- V&A Flow Monitoring
- V&A Flow Monitoring

February 17, 2015

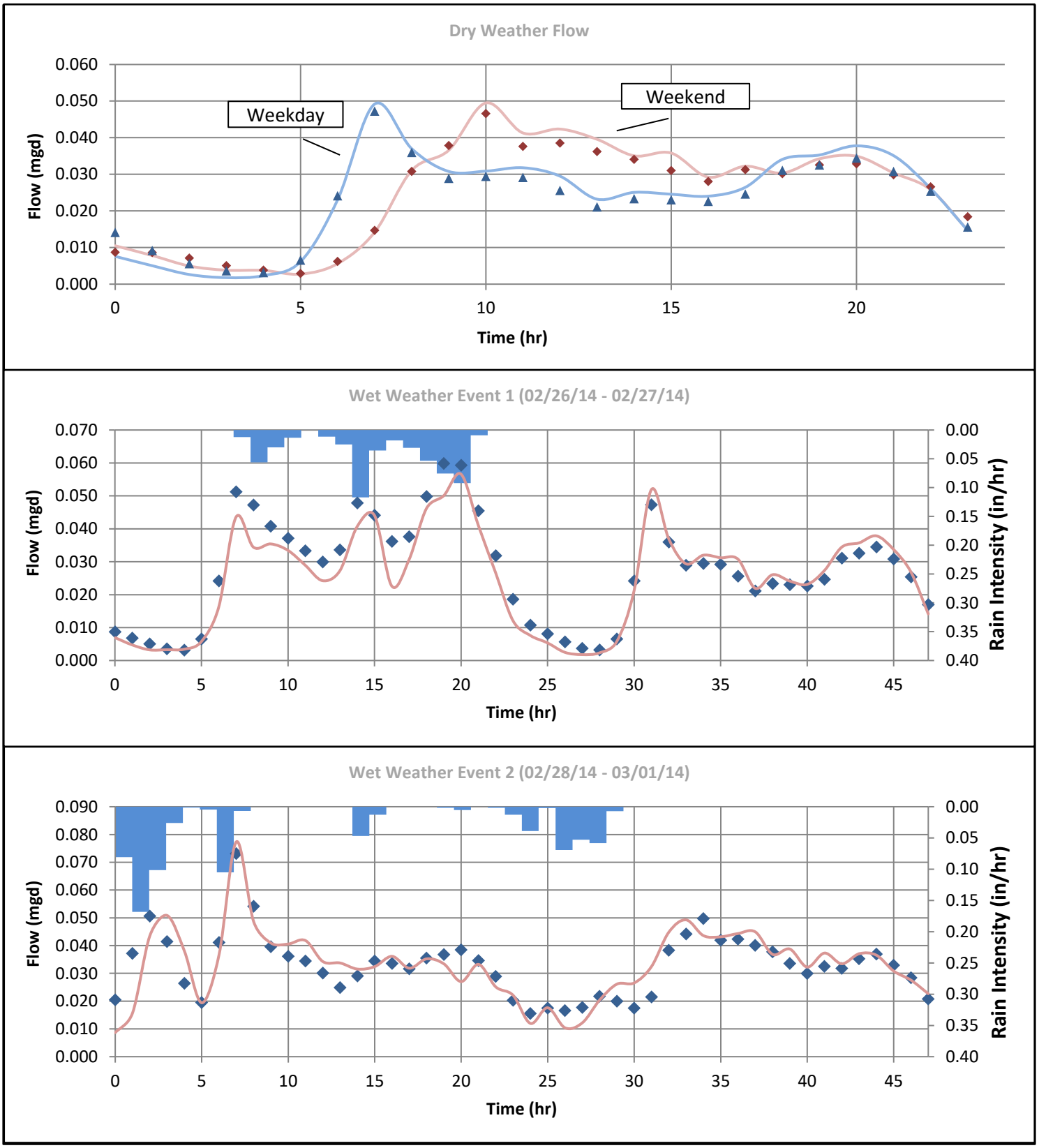
AKEL ENGINEERING GROUP, INC.

Figure 4

Flow Monitor 4

Kelly Ave. Entrance of Ocean View Driving Range (edge of street)

Sewer System Master Plan
City of Half Moon Bay



LEGEND

- Rain Event
- Hydraulic Model
- V&A Flow Monitoring
- V&A Flow Monitoring

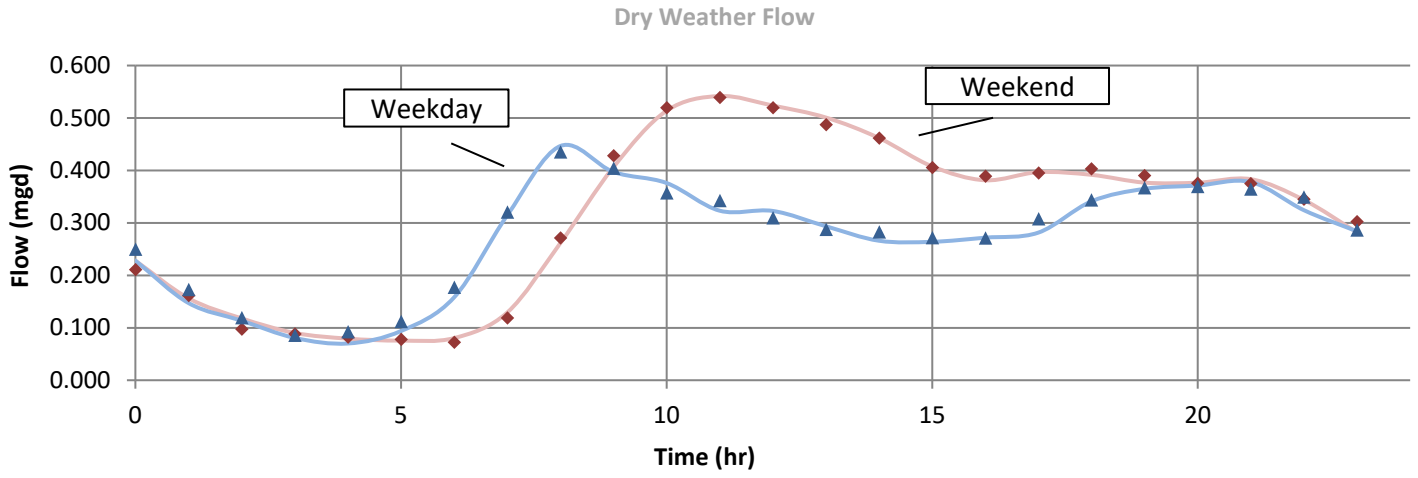
February 17, 2015

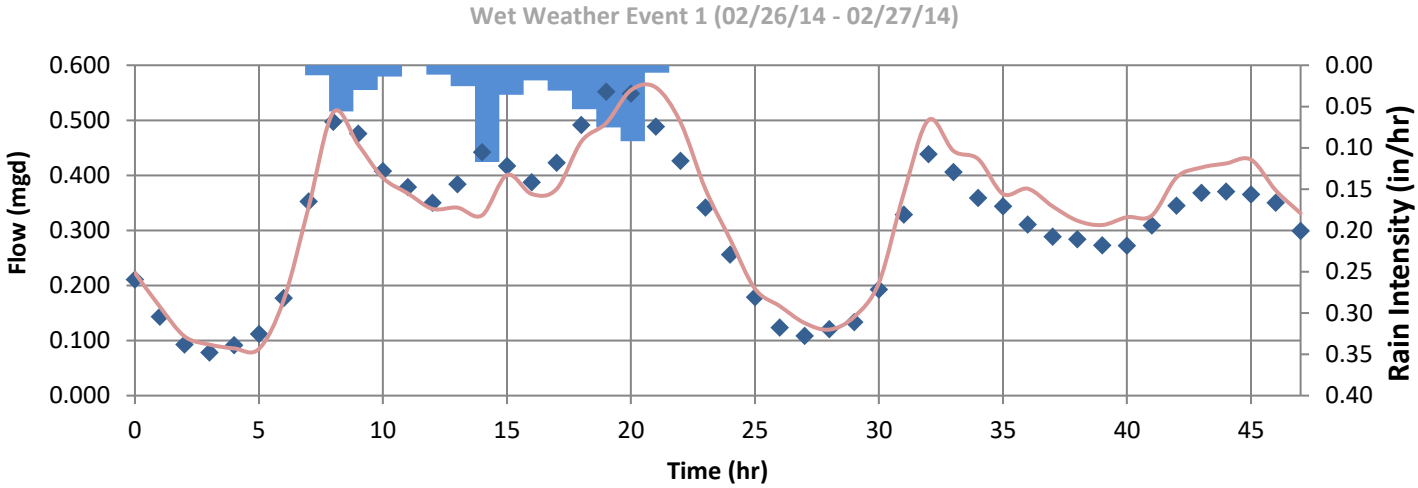
Figure 5
Flow Monitor 5

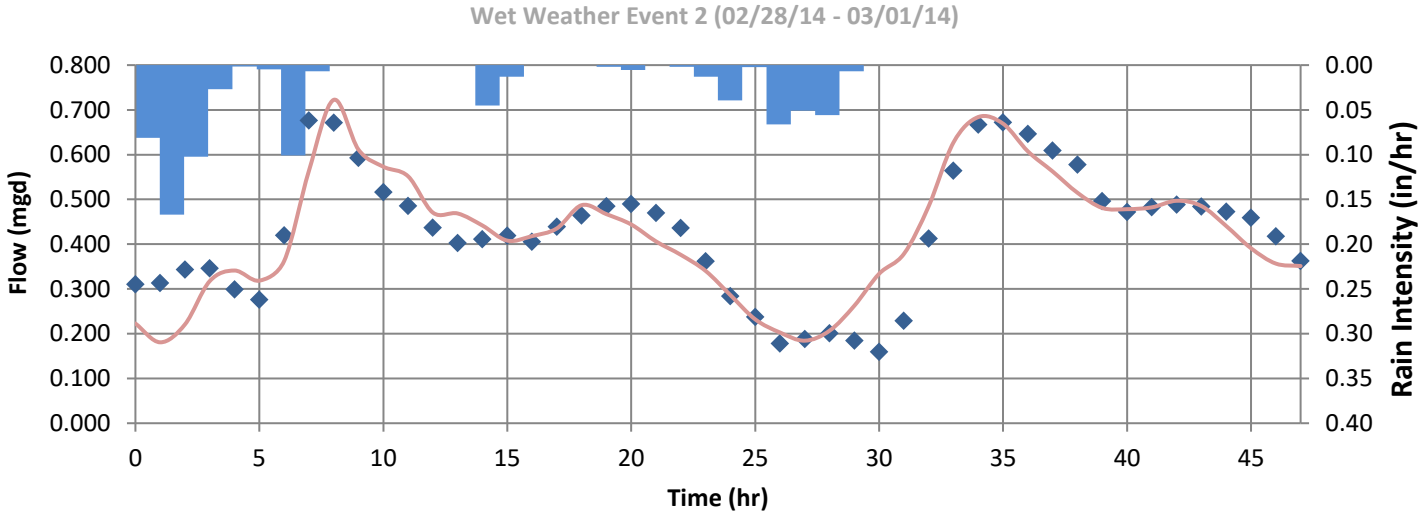
Kelly Ave. Entrance of Ocean View Driving Range (middle of street)

Sewer System Master Plan
City of Half Moon Bay

AKEL ENGINEERING GROUP, INC.







LEGEND

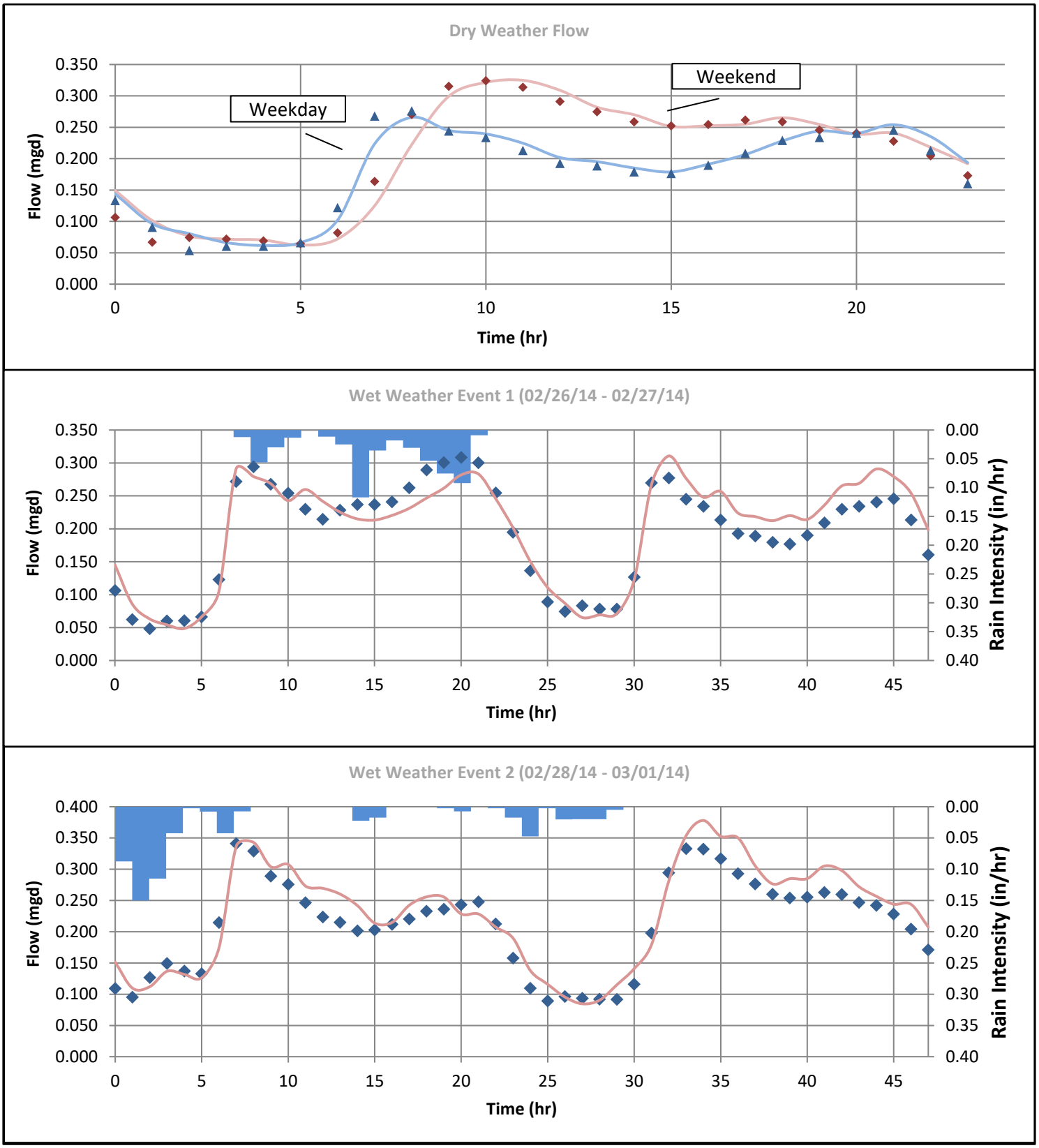
- Rain Event
- Hydraulic Model
- V&A Flow Monitoring
- V&A Flow Monitoring

February 17, 2015

AKEL ENGINEERING GROUP, INC.

Figure 6
Flow Monitor 6

Miramontes Ave. and Ocean Ave.
Sewer System Master Plan
City of Half Moon Bay



LEGEND

- Rain Event
- Hydraulic Model
- V&A Flow Monitoring
- V&A Flow Monitoring

February 17, 2015

AKEL ENGINEERING GROUP, INC.

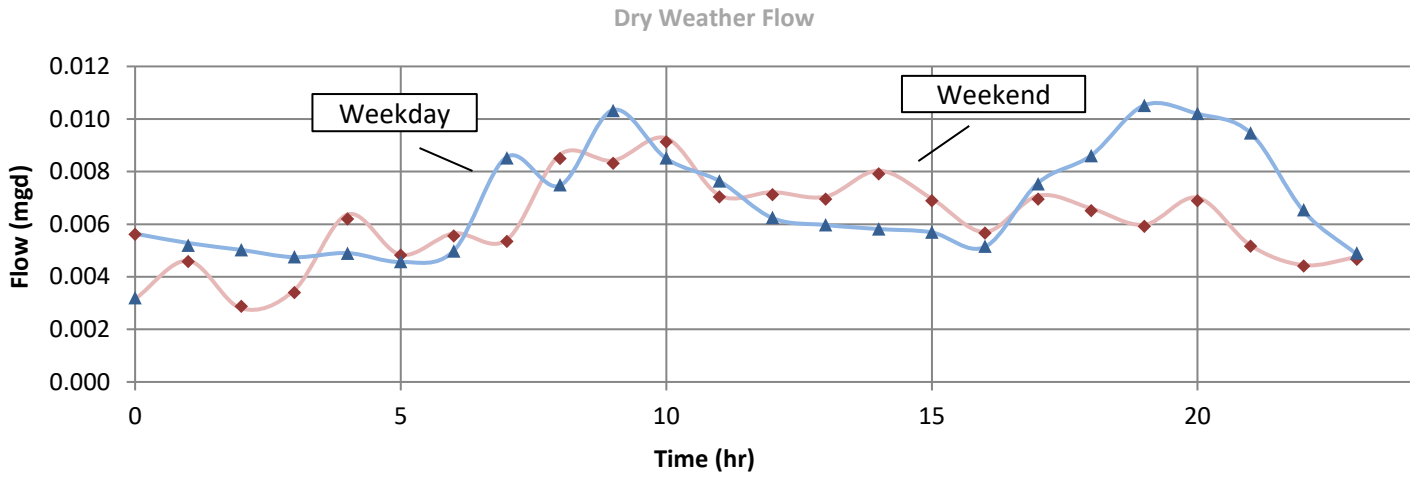
Figure 7

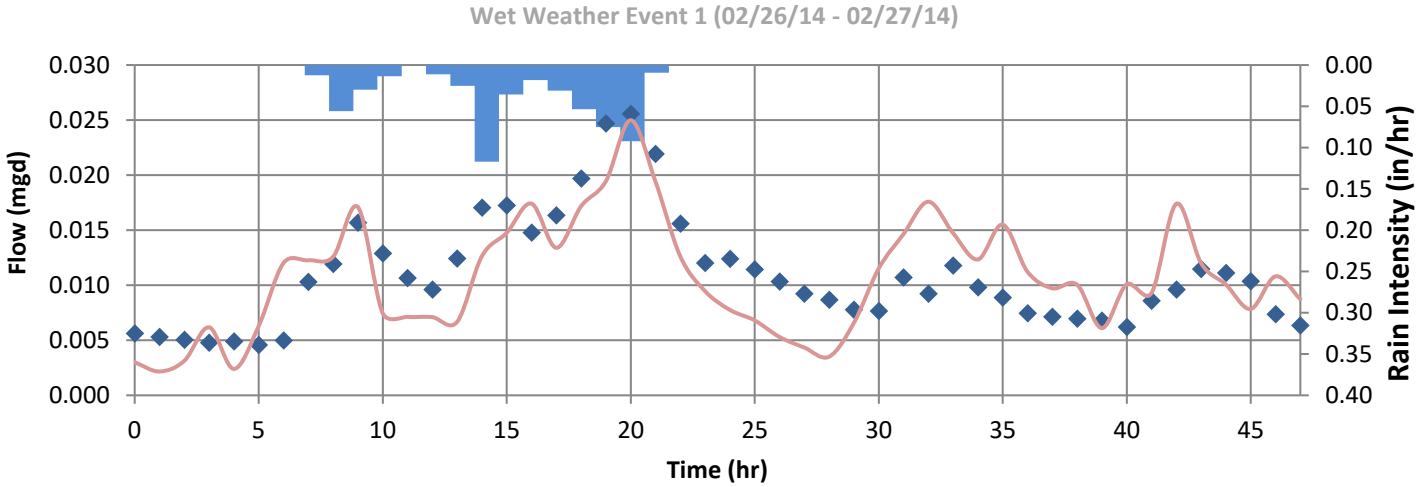
Flow Monitor 7

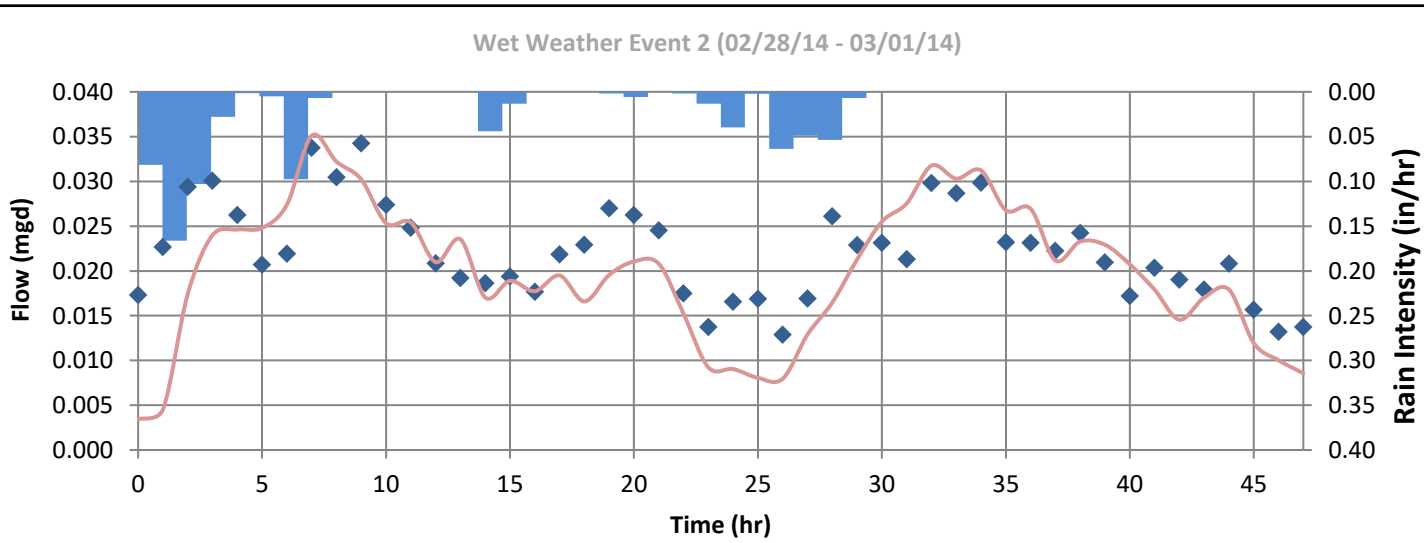
Wavecrest Rd. and University Ave.

Sewer System Master Plan

City of Half Moon Bay







LEGEND

- Rain Event
- Hydraulic Model
- V&A Flow Monitoring
- V&A Flow Monitoring

February 17, 2015

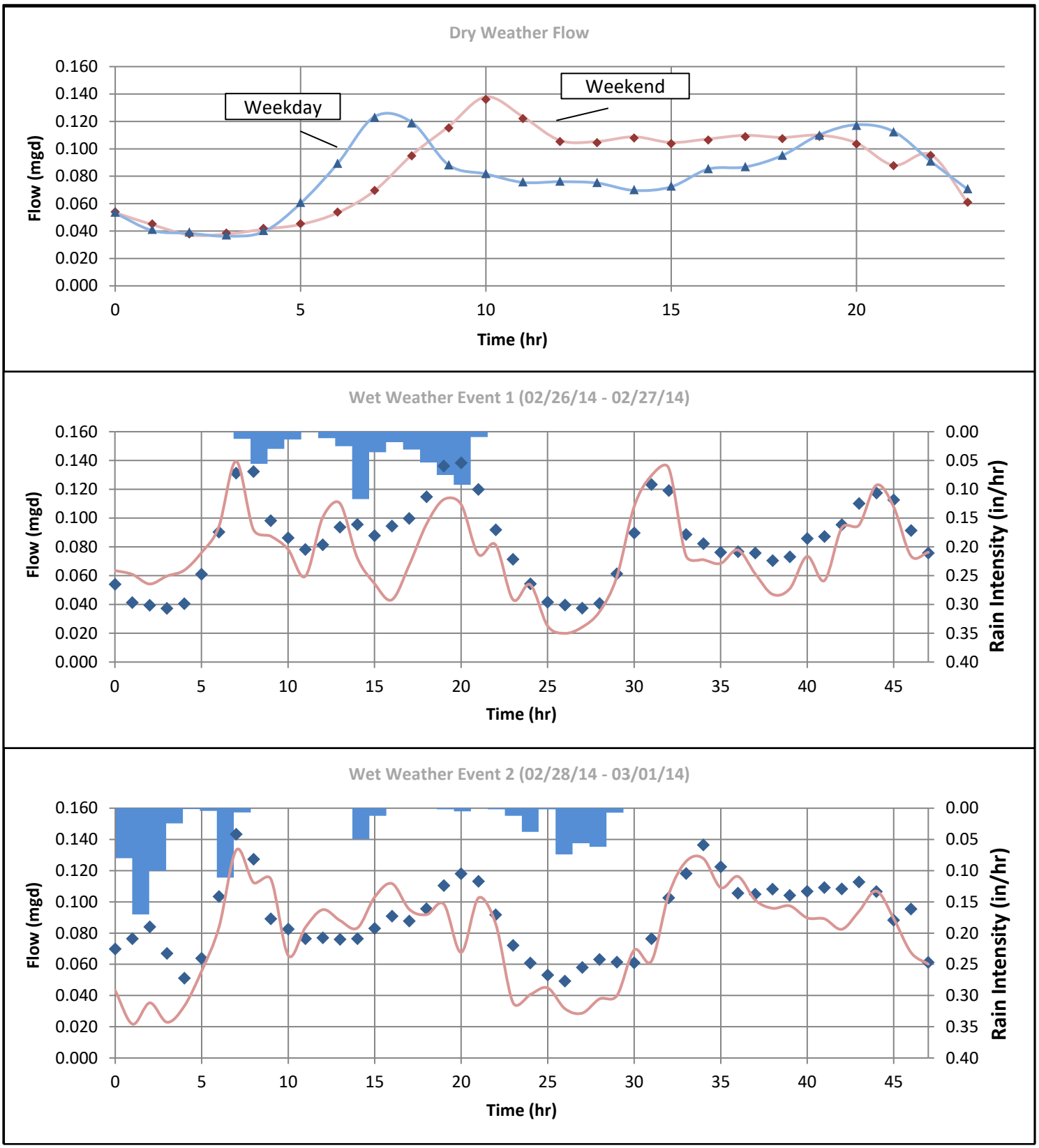
AKEL ENGINEERING GROUP, INC.

Figure 8

Flow Monitor 8

1st Ave. b/w Metzgar St. and Poplar St.

Sewer System Master Plan
City of Half Moon Bay



LEGEND

- Rain Event
- Hydraulic Model
- V&A Flow Monitoring
- V&A Flow Monitoring

February 17, 2015

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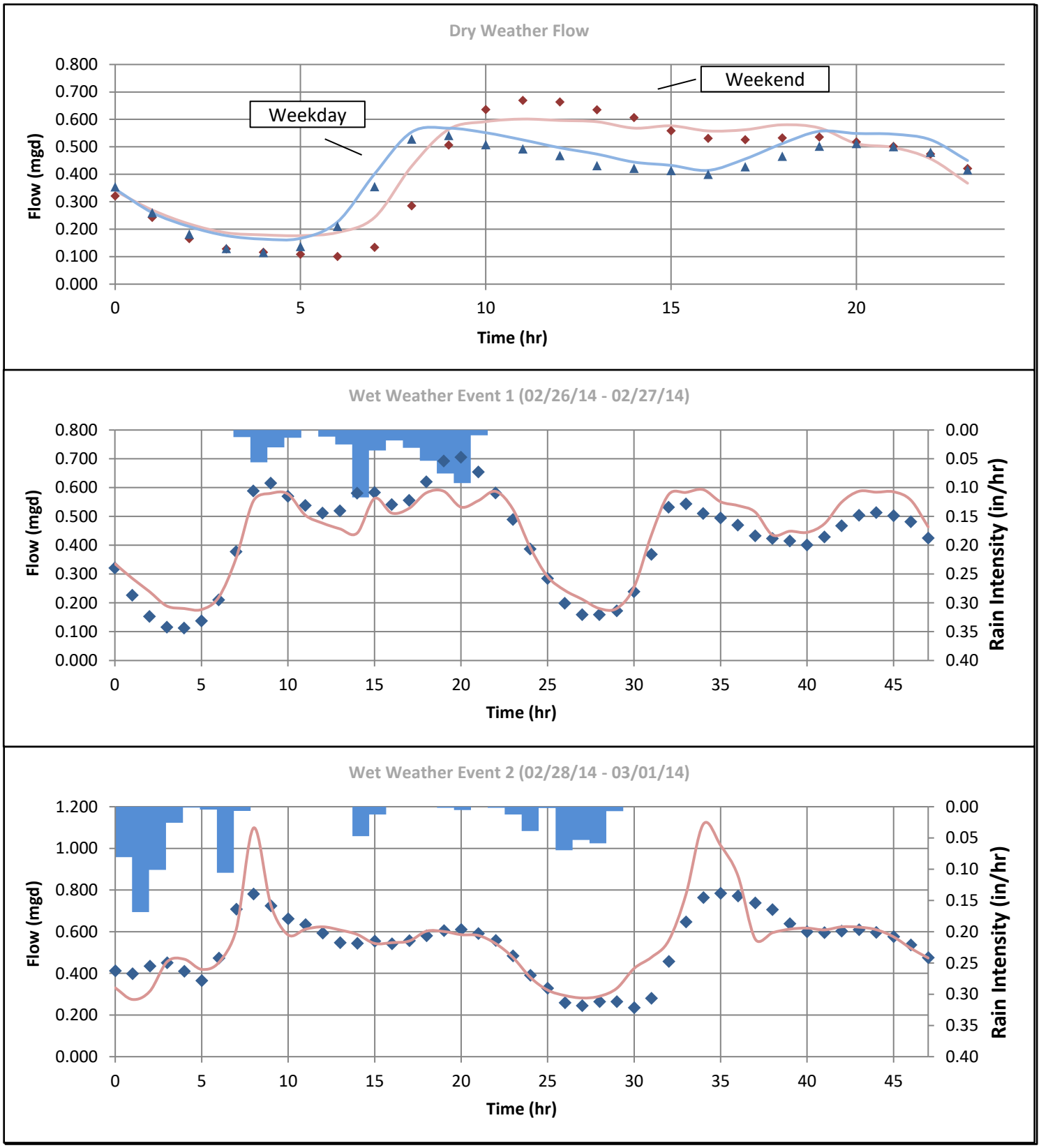
Figure 9

Flow Monitor 9

Silver Ave. n/o Cabrillo Hwy.

Sewer System Master Plan

City of Half Moon Bay



LEGEND

- Rain Event
- Hydraulic Model
- V&A Flow Monitoring
- V&A Flow Monitoring

February 17, 2015

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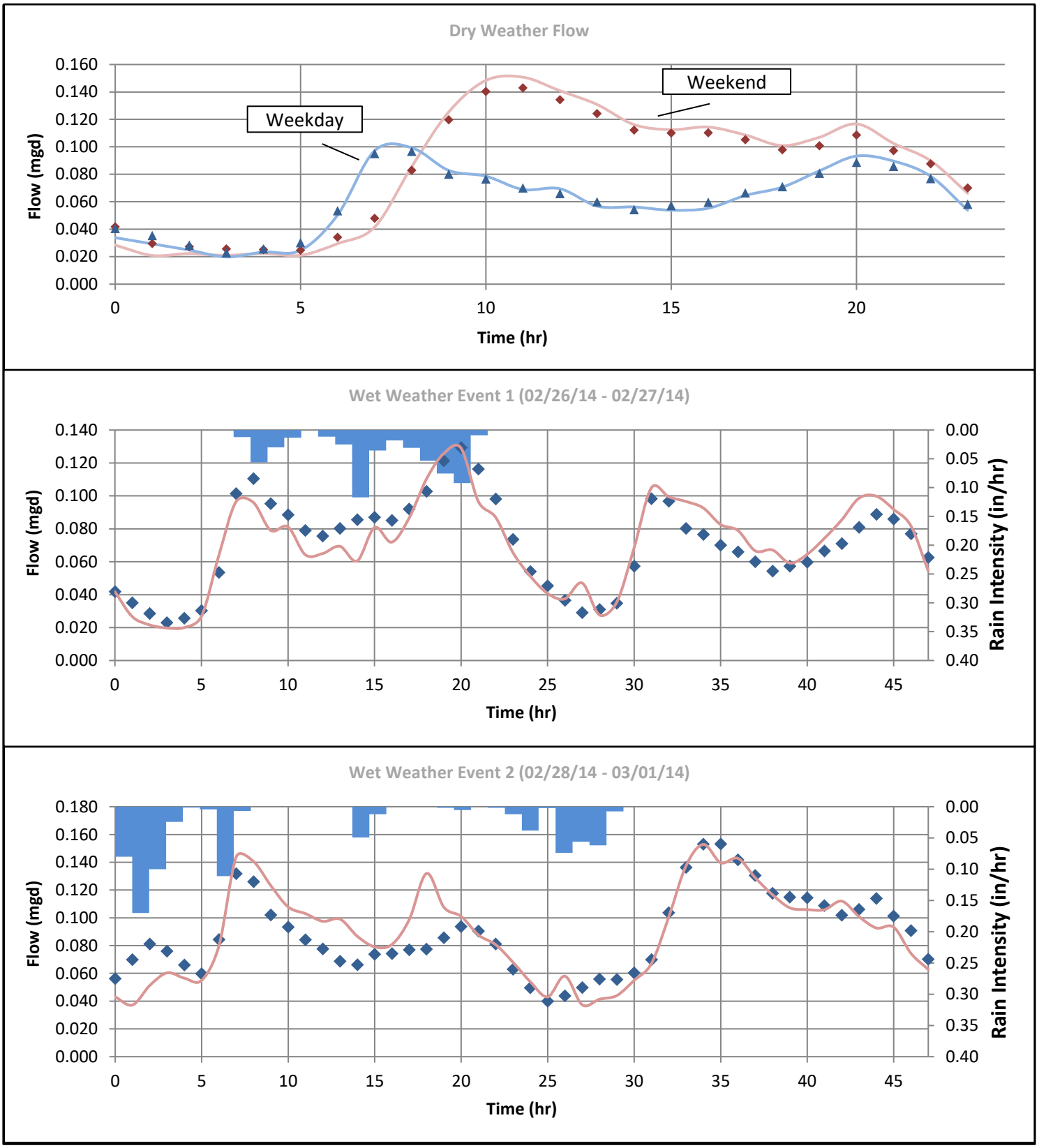
Figure 10

Kelly

Balboa Blvd. n/o Kelly Ave.

Sewer System Master Plan

City of Half Moon Bay



LEGEND

- Rain Event
- Hydraulic Model
- V&A Flow Monitoring
- V&A Flow Monitoring

February 17, 2015

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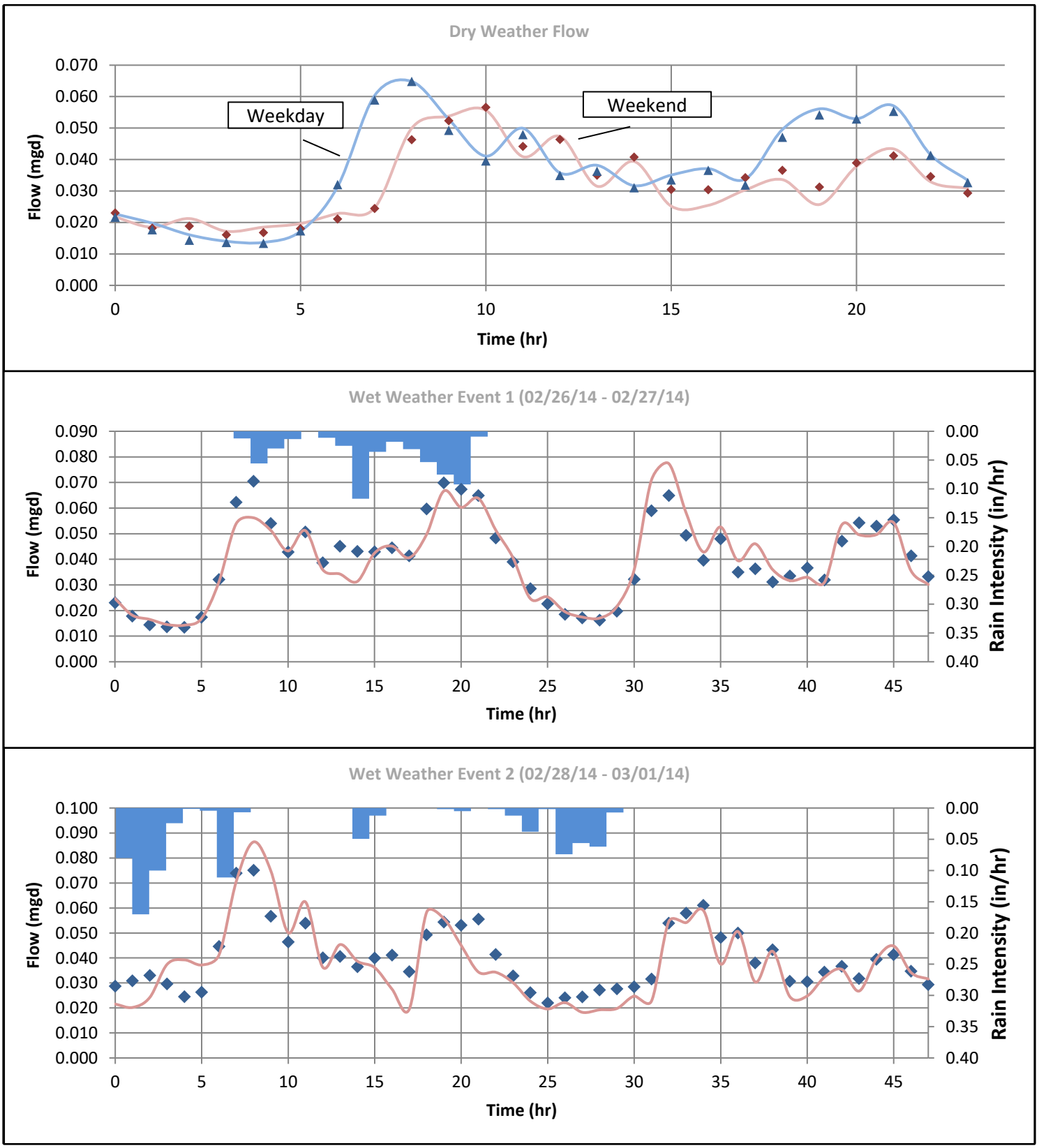
Figure 11
Kehoe
Within Treatment Facility

Sewer System Master Plan
City of Half Moon Bay



LEGEND

- Rain Event
- Hydraulic Model
- V&A Flow Monitoring
- V&A Flow Monitoring

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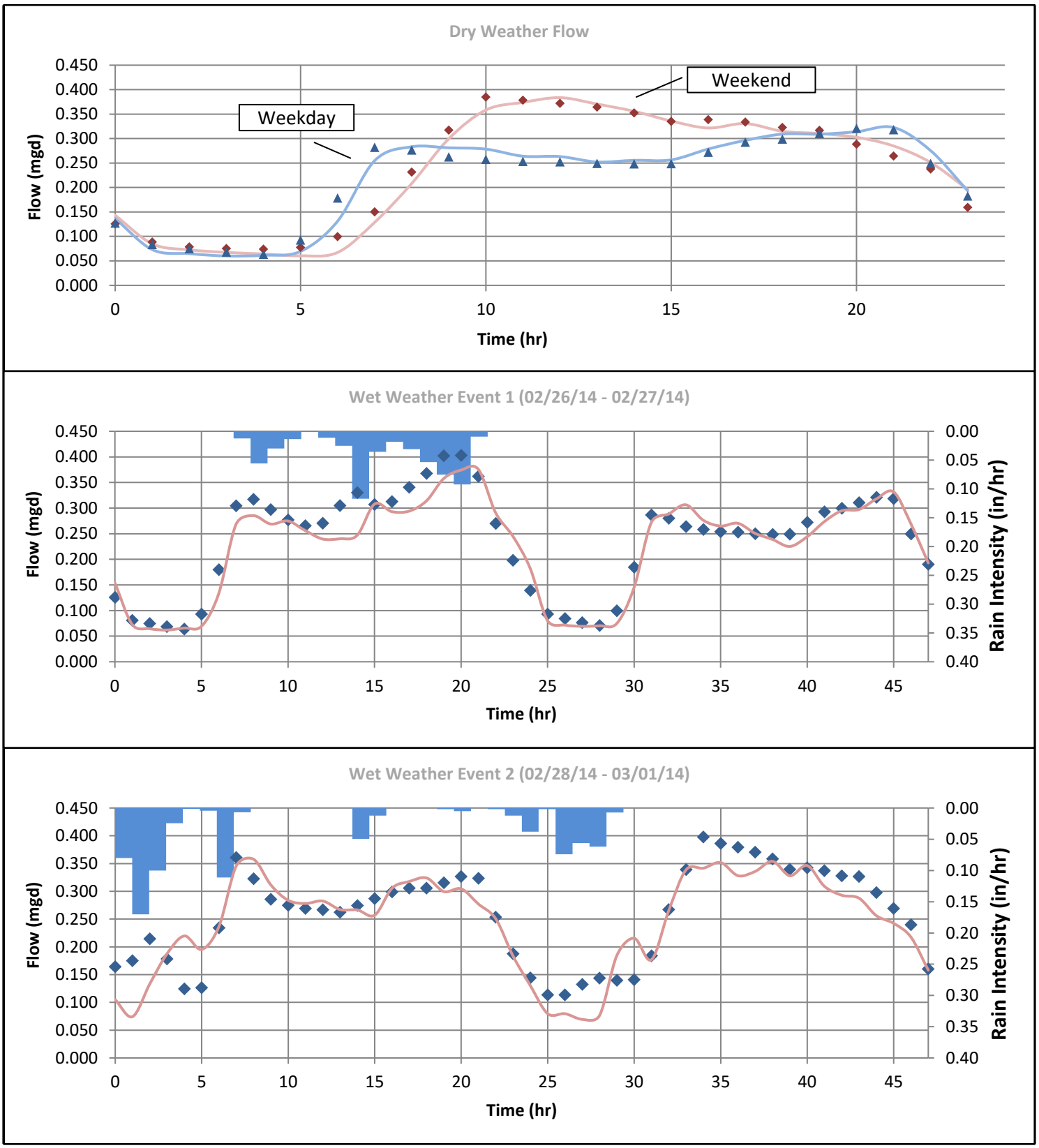
Figure 12

Grandview Terrace

In field, near end of Bev Cunha's Country Road

Sewer System Master Plan

City of Half Moon Bay



LEGEND

- Rain Event
- Hydraulic Model
- V&A Flow Monitoring
- V&A Flow Monitoring

February 17, 2015

AKEL ENGINEERING GROUP, INC.

Figure 13

Straw Flower

In field, near end of Bev Cunha's Country Road

Sewer System Master Plan
City of Half Moon Bay

City of Half Moon Bay

Sanitary Sewer Pump Station Evaluation

PREPARED FOR:

THE CITY OF HALF MOON BAY

501 MAIN STREET

HALF MOON BAY, CA 94019

OCTOBER 29, 2015

Schaaf & Wheeler
CONSULTING CIVIL ENGINEERS

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City of Half Moon Bay

Sanitary Sewer Pump Station Evaluation

PREPARED FOR:

THE CITY OF HALF MOON BAY

501 MAIN STREET

HALF MOON BAY, CA 94019

OCTOBER 29, 2015

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Overview

The City of Half Moon Bay provides sewer collection services to the areas south of Frenchmans Creek to the Pelican Point RV Park along Miramontes Point Road. The system serves a population of approximately 10,000 and consists of approximately 35 miles of gravity sewer mains, 3,750 lateral connections, 3 to 4 miles of force mains, and three pump stations. The system delivers sewage to the Sewer Authority Mid-Coastside treatment plant located at the end of Bev Cunha's Country Road in Half Moon Bay.

The City of Half Moon Bay (City) engaged Schaaf & Wheeler, Consulting Civil Engineers to evaluate the Bell Moon, Ocean Colony, and Pelican Point sanitary sewer pump stations which are owned by the City and operated and maintained by SAM (Sewer Authority Mid-Coastside). Each station was visited and evaluated based on the following items:

- Pumping capacity
- Efficiency and reliability of pump application and control strategy
- Pump station reliability
- Time to overflow in the event of a pump station failure
- Condition and reliability of electrical equipment and motor control centers
- Backup power generation
- SCADA control and monitoring
- Safety of pump station operations and maintenance, and compliance with local, state, and federal codes and regulations
- Structural integrity, seismic vulnerability, and compliance with safety regulations
- Force main size, material, age and visible condition

The location of each pump station evaluated is shown in Figure 1. This report describes the criteria used to evaluate each station and summarizes the pump station evaluations. Detailed individual pump station reports are included in Appendix A.

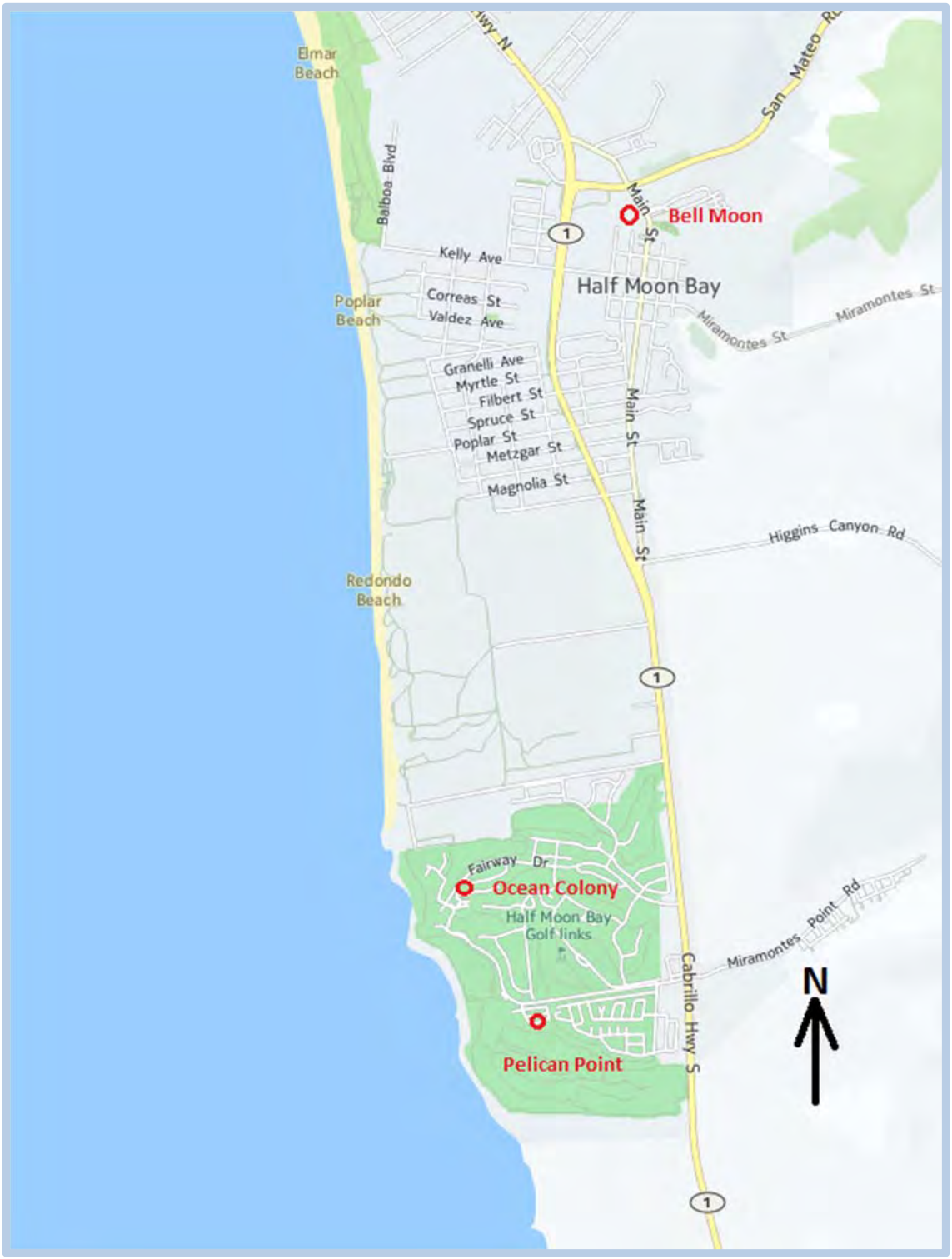

Figure 1: Pump Station Location Map

Pump Station Evaluation

The following sections describe the pump station assessment performed for each pump station. Analysis of the current condition of each station is limited to visual inspection, pump drawdown tests, record drawings, previous reports, and information provided by the City. Pump station site visits and inspections were performed on January 15, 2015. Information regarding the existing pumping logic, known issues, and desired improvements were obtained from the SAM operations and maintenance staff during the site visits and follow-up correspondence.

The improvements recommended herein are based on typical service life of pump station equipment and structures. Anticipated service life of pump station equipment varies greatly based on several factors. It may be necessary to replace some equipment earlier than noted, and some may last longer than expected.

Pump Station Inflows and Capacities

Sanitary sewer pump stations are typically designed to have a firm capacity equal to or greater than the peak wet weather inflow (PWWF) to the station. Firm capacity is defined as the capacity of the pump station with the largest pump out of service. PWWF rates represent the maximum contribution of a given pump station's tributary service area including groundwater infiltration and direct stormwater inflow. Peak dry weather inflow (PDWF) rates represent the maximum contribution excluding groundwater infiltration and stormwater inflow.

Sources of Flow Information

Two sources of data were used to determine pump station inflow rates. One source is from the Engineering Evaluation Report for the Ocean Colony Pump Station & Force Main Upgrade Options by Psomas dated February 23, 2000, which relies on flows from a Sanitary Sewer Report by Brian Kangas Faulk dated July 13, 1998. Preliminary results for the City of Half Moon Bay Sewer System Master Plan by Akel Engineering Group, Inc. were emailed to Schaaf and Wheeler on June 22, 2015.

PDWF and PWWF

The preliminary master plan flow rates from Akel Engineering Group and from the Psomas report are significantly different. Due to this significant difference, separate flow rate calculations were performed and used for evaluating the pump stations. The flow rate calculations are included in Appendix B.

Under normal operating procedures the Pelican Point Pump Station discharges to a manhole at Redondo Beach Road which then flows by gravity to the SAM treatment plant. There are isolation valves which allow the force main to discharge to the gravity sewer system at the end of Cypress Hill Road which then flows to the Ocean Colony Pump Station. This discharge point at the end of Cypress Hill Road is only utilized when maintenance is required on the force main. The Ocean Colony PWWF within this report excludes the flows from Pelican Point Pump Station. If the operation of this force main should change in the future the inflow rates to the Ocean Colony Pump Station should be increased.

A summary of the pump station inflows is shown in Table 1 below.

Table 1: Pump Station Inflows

Pump Station	Akel Engineering Report		Psomas Report	Flow used for Assessment	Flow used for Assessment
	ADWF (GPM)	PWWF (GPM)	PWWF (GPM)	PDWF (GPM)	PWWF (GPM)
Bell Moon	1.4	19.4	-	5	20
Ocean Colony	92.4	478.5	1197	377	950
Pelican Point	23.6	81.3	250	117	200

Pump Station Capacities

Pump station capacities were estimated by performing system curve calculations, by obtaining manufacturer's pump curve data, and/or by performing a drawdown test. The system curves, assumptions, and additional information for each pump station is provided in Appendix A. A comparison of the pump station firm capacities and inflows are shown in Table 2. Firm capacity is defined as the capacity of the pump station with the largest pump out of service.

Table 2: Pump Station Firm Capacity

Pump Station	Total # of Pumps	PWWF (GPM)	Firm Capacity (GPM)
Bell Moon	2	20	5[1]
Ocean Colony	2	950	500[2]
Pelican Point	2	200	225

1 – Mix flush valve running concurrently with pump. Pump #2 without flush mix operates at approximately 30 gpm.
2 – Based on system calculations with a 6-inch force main and a derated pump curve due to the current age of the pumps

Bell Moon pump station is undersized when the flush mix valve which is attached to Pump #1 is operating. During the pump station site visit the mix flush valve ran continuously; however, it should only run for 20 to 50 seconds before turning off. Maintenance staff should adjust the flush valve to ensure the flush valve closes within 50 seconds or less. With the flush mix valve adjusted properly Bell Moon pump station should have sufficient capacity to convey the calculated PWWF. The Ocean Colony pumps were installed in 1994. Maintenance staff reported that both pumps are required to run to keep up with peak flows. The pump curves were derated to account for their age. New pumps with similar characteristics may be able to handle the peak wet weather flows; however, the current pumps cannot due to their age. Pelican Point has sufficient capacity to handle PWWF.

Time to Overflow

The time to overflow for a pump station gives the City an idea of the amount of time they have to respond to a pump station failure before an overflow occurs. It was assumed that no pumps were running, and a constant inflow rate equal to the PDWF and PWWF. The pump station record drawings were used with SAM's GIS sewer data to determine wetwell elevation, pipe sizes, and manhole locations. Assumptions were made about sewer invert elevations and manhole elevations. The storage volume in the system between the lowest manhole rim elevations and the high level float elevation was determined by calculating the volume of the manholes and pipes between these elevations. The total storage volume was then divided by the PDWF and PWWF rates to calculate the time to overflow. A summary of the estimated time to overflow after the high water alarm level is reached is shown in Table 3 below.

Table 3: Estimated Time to Overflow

Pump Station	PDWF Time to Overflow (Minutes)	PWWF Time to Overflow (Minutes)
Bell Moon	133	33
Ocean Colony	20	8
Pelican Point	19	11

Pump Station Reliability

To prevent sanitary sewer overflows pump stations need to be reliable and they need to have fully redundant equipment. Each pump station was evaluated on the following requirements, which were developed based on the requirements set forth by the Regional Water Quality Control Board (RWQCB).

1. Each station and force main should be capable of handling the PWWF without overflow.
2. Each pump station should have an automatic alarm and communication system that notifies the Operator of an electrical or mechanical failure.
3. Each station should have backup or redundant equipment (pumps and power supply).
    a. Each station shall be capable of handling the PWWF with the largest pump out of service.
    b. Each station shall have a permanent backup generator.
        i. If there is not adequate room for a permanent backup generator, or if the City decides not to install permanent backup generators, the City shall have a plan in place to ensure the pump stations continue operation in the event of a citywide power outage (respond to alarm with portable generator before overflow).
4. Pump station force mains shall be capable of conveying the PWWF while maintaining a flow velocity between 2 and 8 feet per second under normal operating conditions.
5. The City shall have a plan for bypass pumping at each station if necessary. Methods of bypass pumping may require the addition of a bypass pumping connection to the force main and the use of portable pumps.

A summary of the pump station reliability requirements are shown in Table 4, additional information is included within the individual pump station reports in Appendix A.

Table 4: Pump Station Reliability Summary

Pump Station	Lacks Capacity to Meet PWWF	Lacks Secondary Controls	Add Bypass Pumping Connection
Bell Moon	X	X	
Ocean Colony	X	X	X
Pelican Point		X	

Pump Application and Control Strategy

The efficiency and reliability of the pump application and control strategy for each station was evaluated based on the following criteria:

Pump Type:

- Efficiency of existing pumps in relation to similar pumps that are currently available
- Issues encountered with current pumps, based on O&M staff input

Pump Size and Number of Pumps:

- Comparison of firm capacity to the PWWF
- Can more efficient and effective pumping be achieved with more or less pumps

Pump Station Configuration:

- Does the size of the current wetwell allow for proper pump cycling
- Potential pump operation issues with station configuration

Control Strategy:

- Efficiency of existing control strategy
- Does control strategy have adequate redundancy (secondary pump controls)

Recommended modifications or upgrades to the pumps, pump configurations, and control strategies are discussed in the individual pump station reports within Appendix A.

Pump Station Controls

To meet the reliability requirements, each pump station shall have a set of fully redundant pump controls. We recommend a combination of automatic and mechanical devices that start/stop the pumps according to the water level in the station's wet-well. Automatic controls would ideally be supplied with an uninterruptible power source i.e. a battery backup with enough capacity to control the system until the permanent backup generator can start and power the station. The uninterruptible power source should also be capable of powering the communications system so that a power failure alarm can be sent when necessary. The mechanical backup should send a high level alarm and provide independent mechanical control of the station. A typical automatic control is a PLC with a transmitter/receiver which measures levels on a continuous basis. A typical mechanical system is a series of relays and float switches; a high water float switch to start all pumps and to send a high water alarm, and a second float switch to shut pumps off at the indicated low water level and send a low water alarm.

The three pump stations assessed are not currently capable of operating automatically in the event of a pump controller (PLC) failure. To remedy this, a secondary controller should be installed and should be independent of the primary controller. It is recommended that this controller be a basic pump control circuit that starts all available station pumps when the high level float is tripped and stops all pump when the low level float is tripped. Alternatively, more than one high level float switch can be used to start each individual pump separately.

Force Main & Flow Monitoring

The pump station force mains were evaluated on their ability to convey the PWWF while maintaining a flow velocity between 2 and 8 ft/s during normal operation. Force main design standards recommend maintaining a minimum flow velocity of 2 ft/s under normal operation to prevent solids from settling. The maximum flow velocity of 8 ft/s is a recommendation developed to minimize friction head loss and surge pressures within the force main.

A summary of the force main evaluation is shown in Table 5 below. The force main sizes were obtained from the City's pump station record drawings, force main drawings and graphical information system (GIS) data. The Ocean Colony force main appears to be a 6 inch diameter pipe on all available drawings; however, the GIS data indicates that it is 8 inches in diameter. For the purposes of this report, the Ocean Colony force main is assumed to be a 6 inch.

The velocity within the force main at the Bell Moon Pump Station is significantly below the recommended minimum velocity. The force main velocity at the Ocean Colony Pump Station is higher than the recommended maximum velocity. Recommendations to improve the operating condition of the existing pumps is described within the individual pump station reports in Appendix A.

Normal operation of Pelican Point Force Main is to discharge at Redondo Beach Road; however, flows can be directed to the gravity sewer system at the end of end of Cypress Hill Road. If the flow is diverted at Cypress Hill Road it ends up at the Ocean Colony Pump Station. The flows and analysis within this report assume that the normal operating procedures are to have the Pelican Point force main discharge at Redondo Beach Road.

Table 5: Force Main Summary

Pump Station	Force Main Diameter (in)	Force Main Material	Force Main Length (ft)	PWWF (gpm)	Station Firm Capacity (gpm)	Velocity at PWWF (ft/s)	Force Main Installation Date	Has Bypass Pumping Connection
Bell Moon	4	PVC	255	20	5[1]	0.5	Unknown	Yes
Ocean Colony	6	AC	2,481	950	500[2]	10.8[3]	Unknown	No
Pelican Point	6	PVC/ HDPE	3,718/ 412[4]	200	225	2.3	2001 & 2006	Yes

1 – Mix flush valve running concurrently with pump. Pump #2 without flush mix operates at 30 gpm.
2 – Based on system calculations with a 6-inch force main and a derated pump curve due to the current age of the pumps
3 – Based on 6-inch force main.
4 – Total force main length is 4,130 feet.

The ages of the force main at Bell Moon and Ocean Colony are unknown. The majority of the Pelican Point force main was replaced in late 2001 and the remaining portion closest to the pump station was replaced in 2006. Previous reports suggested that the AC force main at Ocean Colony was constructed in the early 1970s. The City of Half Moon Bay, Sewer System Study, dated March 2, 2010 recommended the City plan to replace Ocean Colony force main with High Density Polyethylene (HDPE) pipe and initiate a study to evaluate replacement options. The Bell Moon force main is PVC with unknown age. The 2006 Bell Moon Lift Station Retrofit plugged the existing active PVC force main and activated an existing PVC sewer force main (presumably a backup line).

Force Main Inspection

Our recommendations for force main inspections, procedures, and approximate costs are detailed below.

Ocean Colony Force Main Inspection:

Based on the age, material, and history of previous leaks of the Ocean Colony Force Main we recommend evaluating replacement or rehabilitation options instead of performing a detailed force main inspection and assessment. Properly evaluating the force main would be a costly process and would likely result in a recommendation to rehabilitate or replace the force main.

To properly assess the Ocean Colony Force Main Asbestos Cement (AC) pipe force main we would recommend performing the following assessments:

- Utilize SmartBall inspection techniques or similar to evaluate the force main for existing leaks and to identify gas pockets
    - Insert SmartBall, or other method at the pump station, flush to the discharge manhole and collect data
- Install transient pressure monitor at the pump station to monitor the force main pressure during normal operation of the pump station
- Monitor the H2S gasses at the discharge manhole
- Perform a fatigue analysis for the force main
- Evaluate external corrosion by taking soil samples and analyzing corrosion potential
- Analyze the collected data, assess the condition of the force main, identify problem areas, and make projections for estimated remaining useful life

The cost of performing this inspection would cost over $120,000. Performing a closed circuit television (CCTV) inspection is another option; however, it would not provide enough detailed information to determine remaining service life of the overall pipe, but could be useful in evaluating locations needing point repairs, valve locations, and for evaluating potential rehabilitation methods, such as slip-lining options. The procedure for performing CCTV inspection is as follows:

1) Create access points, as needed, along the force main. At least two new access points are needed for Ocean Colony (maximum 1,600 feet between access points). Additional access points might be required if there are any butterfly or plug valves. Access point can be created by excavating around the force main. Due to the fragile nature of the AC pipe force main, only hand excavation should be done within 2 feet of the force main. Dewater the force main, install a tee cleanout with a cap and utility box or install a saddle and hot tap the force main, and install a clean out with a gate valve and utility box.
2) Provide storage and bypass pumps at the pump station.
3) Dewater the force main and clean the force main using a hydro-jetter.
4) Video inspect the force main.

CCTV videoing the whole Ocean Colony force main would cost approximately $40,000 and would require diverting/storage of approximately 500,000 gallons (during dry weather) over the three day period needed to inspect the force main. The time to inspect could be reduced if multiple cameras were deployed to simultaneously inspect different sections of the force main.

Pelican Point Force Main Inspection Procedure:

The PVC portion of the force main that was constructed in 2001 and HDPE portion of the force main that was constructed in 2006 does not currently need to be inspected unless the City has specific concerns regarding the installation methods or current condition.

Bell Moon Force Main Inspection Procedure:

The Bell Moon force main is an unknown age and should be inspected using CCTV. The procedure for inspecting the PVC Bell Moon force main is as follows:

- Drain and clean the existing force main using a hydro-jetter from the existing cleanout to the discharge manhole.
- Inspect the force main using CCTV from the existing cleanout to the discharge manhole.

The estimated time required to clean and inspect the force main is between 2 and 4 hours. If done during dry weather, using a vacuum truck with a minimum 10 cubic yard capacity to divert the incoming flows should be sufficient to prevent sewer overflows during inspection; however, the wetwell levels should be continuously monitored during inspection. The estimate cost to inspect the Bell Moon force main is approximately $2,000 assuming the City will perform dewatering, cleaning, and vacuum truck services.

Bypass Pumping Connection

The City shall have a plan to perform bypass pumping at each pump station, in the event of a pump station failure. Bypass pumping may require the addition of a bypass pumping connection unless the discharge manhole is relatively close and a flexible hose can easily be routed from the wetwell or upstream manhole to the discharge manhole without causing access issues with roads or sidewalks. A bypass pumping connection will enable the use of temporary pumps in the event of a complete pump station failure. A bypass pumping connection is also useful during routine maintenance so the wetwell can be completely drained. The pumping connection shall include an isolation valve so that work can be performed on the force main and valves within the pump station. We recommend the City have a plan and the required equipment in place to perform bypass pumping in the event of a pump station failure. This may require purchasing portable pumps or obtaining a rental agreement to provide portable pumps on an as needed basis. Ocean Colony pump station does not have a bypass pumping connection, but does have above ground piping that could be removed and connected to in emergency. This however would take a significant amount of time to connect to and an actual bypass pumping connection is recommended.

Flow Monitoring

Bell Moon is the only pump station with a flow meter. We recommend adding flow meters to both Ocean Colony and Pelican Point and connecting them to a SCADA system so that the flows can be monitored and connected. Flow monitoring of the pump station provides many benefits, including:

- Identification of pump defects and clogging issues
- Provides more accurate information for updating hydraulic sewer model and defining design conditions for future system improvements
- Quantifies flow rates sent to the treatment plant

As flow data is collected, we recommend updating the City's hydraulic model to accurately represent the current conditions of the system. This may also affect the design conditions of the pump stations to be

rehabilitated in the future; therefore, this should be an ongoing process of collecting data and updating the hydraulic model.

Electrical Equipment and Motor Control Assessment

In general, the three pump stations evaluated are well maintained and appear to be fully operational per the original design. Electrical controls were replaced when the pump stations were rehabilitated. Observed Electrical Code violations and recommended improvements are mentioned within in the individual pump station reports in Appendix A.

Communication and Monitoring

A Supervisory control and data acquisition (SCADA) system is typically used to collect and send alarm data, and a RTU (Remote Terminal Unit) or a telephone connection is typically used to convey the information. Information and control signals are sent and received between supervisory locations and controlled points on a continuous basis.

As mentioned in the pump station reliability section, from a reliability standpoint, each pump station shall have an automatic alarm and communication system that coordinates with the City's on-call staff. The system shall have a backup power source to ensure continuous operation in the event of a power failure. At a minimum, sanitary sewer pump stations shall have the following alarms:

- Pump Failure (for each pump) which sends an alarm notifying operators of the failure.
- Power Failure notifying operators that the primary power has failed and that the station has transferred to a secondary source of power either manually or automatically.
- High water in the wetwell alarm and starts all available pumping.
- Low water in the wetwell alarm and stops all pumping.
- Communications Failure

Each of the City's three pump stations that were assessed is equipped with an RTU communications system. If there are failures or power is interrupted, a communication failure alarm is reported to the supervisory location. A summary of the current alarm and communication data is shown in Table 6.

Table 6: Current Pump Station Alarms

Alarm	Bell Moon	Ocean Colony	Pelican Point
Communication Failure	Yes	Yes	Yes
Power Failure	Yes	Yes	Yes
Wetwell Entry	No	No	No
Vault Entry	No	No	No
Panel Entry	No	No	No
Pump Failure	Yes	Yes	Yes
High Level	Yes	Yes	Yes
Low Level	No	No	No
Generator Failure	N/A	Yes	Yes

The current set of pump station alarms is adequate to properly monitor the pump stations; however, the City should consider expanding the sensors, alarms, and data collection during the next pump station rehabilitation.

Backup Power Generation

The City currently has permanent generators to supply power at Ocean Colony and Pelican Point. Bell Moon relies on a portable generator during power outages. The detailed individual pump station reports address possible areas of concern but for practical purposes the City is capable of operating all three stations with standby emergency backup power. An added reliability component at the locations where a permanent generator is installed would be to add a means to quickly connect a portable generator in the event of permanent generator failure. This could be accomplished using a generator plug tied into the main power bus with mechanical interlocks to comply with utility requirements. This should be considered during the next pump station rehabilitation.

The required run time for backup generators without refueling depends on the City's ability to refill the fuel tanks during a large, extended power outage. In our experience with designing backup generators for similar agencies, having sufficient fuel supply to run the generator for 48-hours at full load allows the operating agency enough time to refuel the generator. The City may choose to increase or decrease the fuel storage requirement based on the location of the generator and the availability of fuel trucks during extended power outages.

Table 7: Backup Power

Pump Station	Has Backup Generator On-site	Has Automatic Transfer Switch (ATS)	Has Receptacle for Portable Generator Connection	Generator Run Time[1] (Hr)
Bell Moon	No	No	Yes	N/A
Ocean Colony	Yes	Yes	No	47
Pelican Point	Yes	Yes	No	UNK

1 – Generator run time is estimated based on a full generator tank at normal operating conditions

The existing generators are adequately sized to start and run all pumps. The generator sizes should be evaluated during the next pump station rehabilitation to ensure they are compatible with the planned improvements.

The Pelican Point generator does not have adequate space surrounding the generator. The existing shed/building will need to be removed and replaced during the next pump station rehabilitation to provide adequate clearances to the generator and electrical equipment.

Structural and Seismic Assessment

The structural/seismic assessment involved a visual survey of the pump station facilities and review of available record drawings focusing on the general structural condition of the pump stations and their components and the presence of any conditions which would pose a potential hazard in the event of an earthquake. This assessment utilized a probabilistic approach to identify structural deficiencies and seismic hazards, meaning the assessment focused on elements with a greater probability of failure during a seismic event or a greater hazard associated with their failure during a seismic event. The assessments

of the pump stations were based on past experience in the design and anchorage of similar structures and equipment, knowledge of the governing California Building Code, and an understanding of what is generally necessary to adequately and safely anchor equipment, considering also that these facilities lie within a very seismically active area.

The assessment of the general structural condition of each pump station included consideration of the following items:

1. Overall condition of the pump station concrete structure including cracking, deterioration, or spalling of the concrete.
2. Corrosion of metal components of the structure, piping and ductwork, exterior panels and cabinets, and equipment bases, stands, or base plates.
3. Obvious settlement of the structure or the dirt or pavement around the structure.
4. Condition of the hatches, ladders, stairs, and platforms.
5. Condition of non-shrink grout at base plates or other locations.
6. Presence of roots growing into the wetwells through joints in the structure.
7. Deterioration of any wood components.

The assessment of the pump stations and their components for seismic hazards included consideration of the following items:

1. Anchorage of pumps and motors, electrical/control panels and cabinets, emergency generators, SCADA antenna poles, and other equipment.
2. Lateral bracing of suspended equipment, suction/discharge piping, ductwork, electrical conduit, and other miscellaneous piping.

Following these guidelines, the field visits yielded no major recommendations regarding needed improvements to address structural or seismic deficiencies. In addition to general structural upgrades, additional support and bracing of suspended items is needed at some of the pump stations. As the pump station components are upgraded, the design engineer should install additional support and bracing of suspended items that meets the most recent version of the California Building Code.

Liquefaction Hazard

The City of Half Moon Bay is located between the San Andreas fault and the San Gregorio fault. The San Gregorio fault is located approximately 0.7 miles southwest from Ocean Colony and Pelican Point pump station. The San Andreas fault is located approximately 5.2 miles northeast of Bell Moon pump station. According to the Working Group on California Earthquake Probabilities (WGCEP) the probability of a 6.7 magnitude or greater earthquake occurring between 2007 and 2036 along the Northern San Andreas fault segment is 21% and a 6% probability along the San Gregorio fault.

Liquefaction most often occurs in loose saturated sandy soils during significant seismic events. Liquefaction causes the soil to lose strength and can lead to differential settlement along pipelines, manholes, and pump stations. According to the U.S. Geologic Survey (USGS) the pump stations are located in areas of Moderate to High liquefaction susceptibility. Geotechnical borings at each pump station would be necessary to determine the potential for soils to liquefy during an earthquake. This report does not include recommendations for improvements to any pump stations to address the issues of

liquefaction. However, it is important for the City to be aware of this potential hazard. Table 8 summarizes the liquefaction potential for each of the stations.

Table 8: Liquefaction Potential

Pump Station	Liquefaction Potential
Bell Moon	High
Ocean Colony	High
Pelican Point	Moderate

Miscellaneous Site Assessments

The overall condition, access, the ability to lift pumps, safety, reliability, and flood hazard of each pump station was assessed. Additionally, Schaaf & Wheeler discussed operations and maintenance issues with SAM staff. Identified deficiencies and recommended improvements are mentioned within the individual pump station reports. None of the pump station sites are located within the 100-year FEMA floodplain.

Recommended Improvements

Pumping facilities rely heavily on mechanical and electrical equipment that wear out and need to be replaced. On average, pumping equipment can be expected to last anywhere from 20 to 30 years with proper maintenance. Structural facilities should last much longer, at least 50 years, although metal, wood, and even concrete surfaces all require regular care. Therefore, we recommend using a 25-year replacement schedule for all equipment. The existing structures are in good shape; therefore, we assumed that the structures do not have to be replaced during the next pump station rehabilitation. A summary of the cost to replace the pump station equipment as well as a recommended replacement schedule is shown in Table 9.

Table 9: Pump Station Rehabilitation Schedule

Pump Station	Total Cost Including Contingency and Soft Costs	Recommended Rehabilitation Date
Bell Moon	$623,000	2026-2036
Ocean Colony	$1,600,000 to $2,500,000	2015-2018
Pelican Point	$744,000	2026-2036

The rehabilitation cost estimates for each station have been created to provide expected pump station replacement costs to be used for a long term budgetary analysis, and to assist in the development of an on-going pump station rehabilitation program. All estimated costs are based on current costs. Future costs need to be adjusted for future costs and changing regulations that could impact pump station rehabilitation costs. A detail breakdown of estimated costs for each pump station is shown in Appendix A.

Additionally, some modifications should be made to the pump station in the short term to help prevent sanitary sewer overflows and improve the safety to personnel operating and maintaining the pump stations. These short term improvements are shown in Table 10 and described in more detail in Appendix A.

Table 10: Short Term Improvements

Pump Station	Item	Comments	Current Cost
Bell Moon	Adjust Pump Flush Valve		$2,000
Bell Moon	Install Secondary Controller		$15,000
Bell Moon	Install Air Valve, CCTV Inspection FM, Evaluate Pumping Capacity		$15,000
Bell Moon	Install Permanent Generator	Including property acquisition, retaining wall, electrical, etc.	$110,000
Ocean Colony[1]	Install Air Valve		$15,000
Ocean Colony[1]	Secondary Controller		$15,000
Ocean Colony[1]	Replace Pumps	May also require significant electrical and piping upgrades which are not included in the cost	$150,000
Pelican Point	Replace Generator and ATS	Assumed new generator will be pad mounted outside of existing building, additional electrical upgrades may be required.	$80,000
Pelican Point	Install Secondary Controller		$15,000
		Subtotal	**$417,000**
		60% for Contingency, Admin., CM, Engr.	$250,000
		Total	**$667,000**

1. The Ocean Colony Pump Station is near the end of its design life cycle. The pump station should be completely rehabilitated in the near future. If the pump station cannot be rehabilitated in the near future, we recommend implementing the some short term improvements shown herein. Replacement of the pumps may trigger complete replacement of the electrical equipment which will significantly increase the costs.

The City of Half Moon Bay, Sewer System Study, dated March 2, 2010 recommended to replace the Ocean Colony Force Main due to the age and multiple breaks that have occurred along the line. Replacement of the force main should be planned and coordinated with the pump station rehabilitation. The force main size should also be evaluated due to the high velocities. The Pelican Point Force Main was recently replaced will not likely need rehabilitation or replacement for another 25 to 50 years. The force main serving the Bell Moon pump station should also be inspected prior to rehabilitation the pump station. If the force mains need rehabilitation or replacement, a summary of potential costs is shown in Table 11. The cost estimate assumes pipe lining for trenchless construction costs or a conventional open trench construction method. The estimated costs do not include right of way acquisition costs and should only be used as a planning tool.

Table 11: Force Main Replacement Costs

Force Main	Size (in)	Length (ft)	Trenchless Unit Cost[1]	Trenchless Cost	Conventional Unit Cost	Conventional Cost
Bell Moon	4	255	$150	$38,000	$260	$66,000
Ocean Colony	8[2]	2,481	$200	$496,000	$300	$744,000
Pelican Point	6	3,685	$190	$700,000	$280	$1,032,000
			Subtotal	**$1,234,000**		**$1,842,000**
60% for Contingency, Admin., CM, Engr.				$740,000		$1,105,000
			Total	**$1,974,000**		**$2,947,000**

1 – Includes additional cost for replacing air valves, fittings, etc.
2 – Existing force main is 6 inches in diameter; however, it should be replaced with a larger pipe. The size should be evaluated during the next pump station rehabilitation.

Pump Station Maintenance

Each pump station should have a bound copy of its site-specific operations and maintenance manual on site; and all personnel need to be familiar with the contents of the manuals. Proper equipment lubrication and maintenance following manufacturer's recommendations (which must be included in the operations and maintenance manual) is essential to efficient operation and longevity.

Manufacturer's maintenance instructions should be followed exactly, particularly when the pump or engine is still under warranty. Flygt recommends having their submersible pumps inspected at least once a year, and they should have a major overhaul in an authorized service shop at least once every third year. If the seals have been replaced an inspection of the oil is recommended after one week of operation. An accurate inspection and overhaul log should be kept for each pump.

Typical operation and maintenance activities for major pump station equipment are included in Appendix C.

Appendix A: Individual Pump Station Reports

Bell Moon Pump Station

Background

Bell Moon Pump Station conveys sewage from a small portion of the commercial area west of Main Street and north of Pilarcitos Creek to the gravity flow trunk sewer in Main Street. The pump station is located along the side of the parking lot at 248 Main Street as shown in Figure 2. The pump station is a wetwell pit that was last rehabilitated in 2006. The 2006 rehabilitation included installation of two Flygt Model NP 3085, 3 horsepower (hp) submersible pumps and included a spare third pump which is stored at the treatment plant. The 2006 rehabilitation project designed the pumps for a flow of 120 gallons per minute (gpm) and a total dynamic head (TDH) of 21.7 feet.

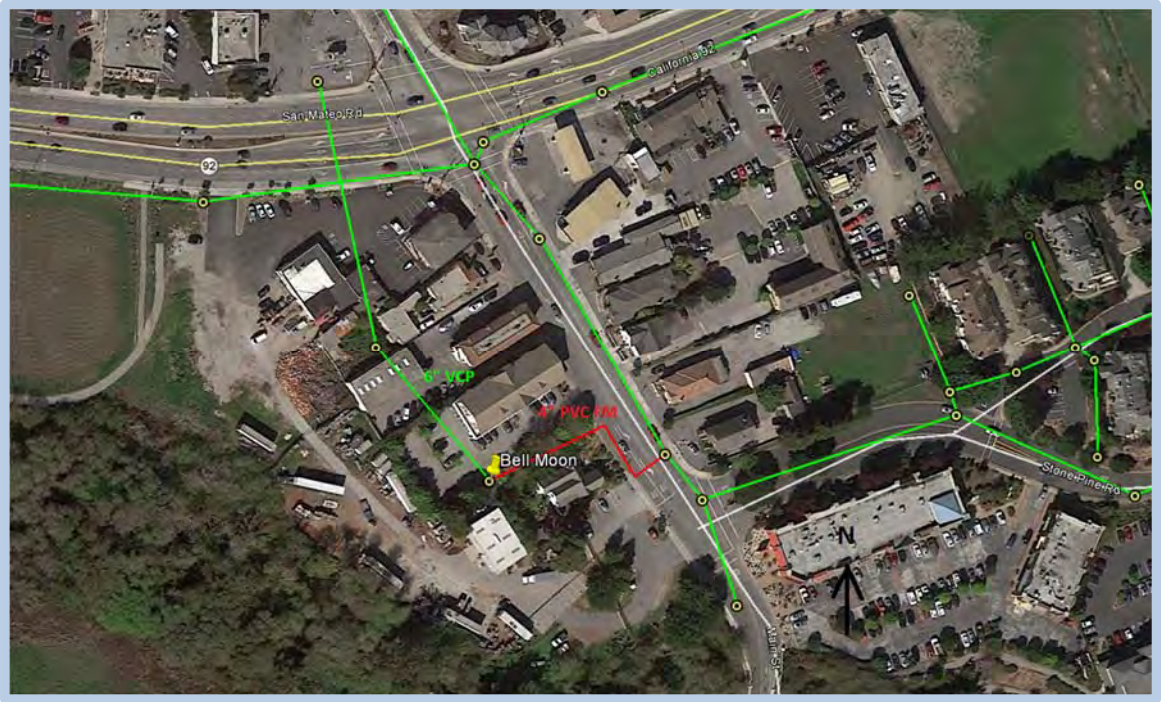

Figure 2: Bell Moon Pump Station

Pump Station Inflows and Capacities

The Bell Moon pump station serves a relatively small area with a limited amount of inflow into the pump station. Bell Moon pump station has two pumps, one of which has a Flygt mix-flush valve which is used to reduce the fats, oils, and grease (FOG) buildup in the wetwell. A drawdown test of both pumps were performed on January 13, 2015. Discharge flow rates, measured at the flow meter adjacent to the wetwell, were between 5 gpm to 10 gpm for pump #1 which has the flush mix valve that ran continuously while pump #1 was in operation and 30 gpm for pump #2. The design capacity of the pumps is significantly higher as discussed in the Pump Application section below. The pump station inflows and capacity are shown Table 12.

Table 12: Bell Moon Pump Station Capacity

Total # of Pumps	PWWF (GPM)	Firm Capacity (GPM)
2	20	5[1]

1 – Mix flush valve ran continuously during flow test. Pump #2 without flush mix operates at 30 gpm which is adequate to convey the PWWF.

Pump Station Reliability

The pump station was evaluated for reliability for reliability as described in the Pump Application and Control Strategy portion of the main report. PWWF are currently not met at Bell Moon pump station. The mix-flush valve significantly reduces Pump #1 pumping capacity. The mix-flush valve should only run for 20 to 50 seconds before shutting off. Maintenance staff should adjust the flush valve to ensure the flush valve closes within 50 seconds or less. After adjustment, maintenance staff should confirm that pump #1 firm capacity is similar to pump #2 (30 gpm). If adjusting the valve does not result in a pumping capacity greater than 20 gpm, then the City should consider replacing the pump and/or removing the mix-flush valve.

In the event of a controller failure, there is no means to automatically start the pumps without staff on-site. A secondary controller should be added to prevent overflows in the event of a primary controller failure. A summary of reliability deficiency is shown in Table 13.

Table 13: Bell Moon Reliability Assessment

Reliability Deficiency	Corrective Action
Insufficient Pumping Capacity	Adjust Pump #1 mix-flush valve to close within 50 seconds, install air valve, confirm discharge rate of both pumps exceeds PWWF
Lack of Redundant Controller	Install secondary level controller and level sensor to provide pump control in the event of primary controller failure

Pump Application and Control Strategy

The Bell Moon Pump Station consists of two rail mounted submersible 3 hp Flygt pumps, model number NP 3085. The pumps are properly sized to convey the PWWF; however, they are not currently operating at their design point. We recommend the following actions to remedy and further investigate the problem:

1. Adjust mix-flush valve so that it closes within 50 seconds of the pump starting
2. Install an air release valve on the high point in the force main, just outside of the pump station (further described in the Force Main and Flow Monitoring section below)
3. CCTV inspect force main to observe current sediment loads and hydraulic capacity
4. Evaluate pumping capacity of each pump after the previous items have been performed. If the capacity is not improved with these measures the problem should be further investigated and remedied.

The system curve for the existing pumps is shown in Figure 3. The flush valve helps reduce FOG and fly issues at the pump station. The pump station has a pressure transducer level sensor for primary controls and backup floats, both of which control the pumps through a programmable logic controller (PLC). If the PLC fails, maintenance staff would have to manually operate the pump station as previously discussed. The currently installed pumps are designed specifically for municipal sewage applications and there are

no known issues with the pumps beyond those previously noted. The use of two pumps, each capable of conveying the PWWF is adequate for the Bell Moon Pump Station.

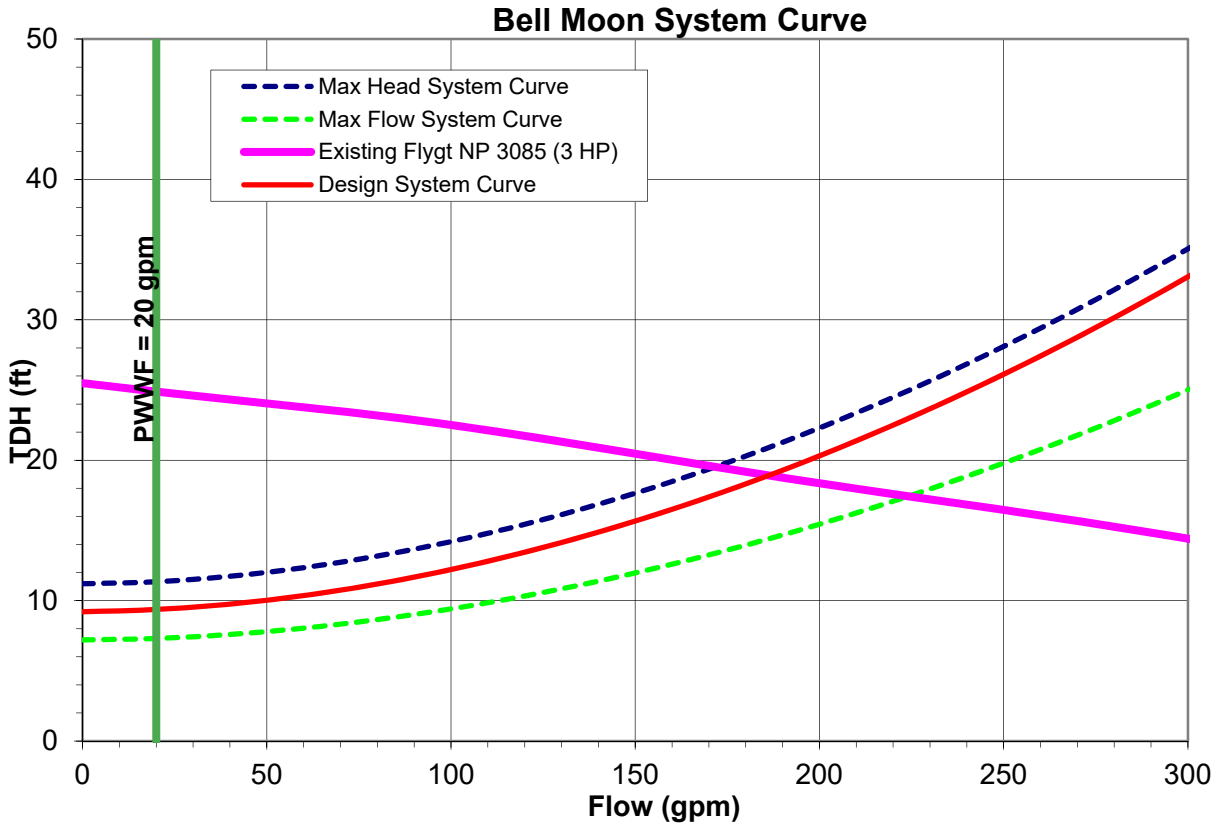

Figure 3: Bell Moon System Curve

With the pumps operating as designed, each pump (with the lead pump rotating every start) will have a cycle time of approximately 9 minutes (each pump will start a maximum of 7 times per hour); which is below the manufacturers recommendations for maximum pump cycling. Therefore, the pump station wetwell is properly sized to allow for proper pump cycling times. The time to overflow during PDWF is approximately 2 hours as shown in Table 3. This should provide adequate time for the City to respond and prevent a sanitary sewer overflow in the event of a pump station failure.

Force Main and Flow Monitoring

The Bell Moon pump station serves a small area and doesn't receive a significant amount of flows. The City may want to evaluate options for redirecting the corresponding flows into a gravity sewer system and eliminating the pump station; however, there does not appear to be a clear method for doing this. Flows are currently monitored by an electromagnetic flow meter (Siemens Model 5100W with a MAGFLO 5000 converter). The flow meter is installed within approximately 2 feet of the upstream elbow which is closer than recommended for electromagnetic flow meters; therefore, the accuracy of the readings may be reduced. Additionally, the air valve is located at a high point in the force main and there is no means for releasing the air. This may significantly reduce the accuracy of the flow meter.

The sewage is discharged from the pump station along a 4-inch PVC force main. The pump station was originally constructed with two separate 4-inch PVC line. During the 2006 pump station rehabilitation

project, the active PVC line was plugged and a new connection was made to the inactive PVC line. The age of the force main is unknown and should be inspected before the next pump station rehabilitation.

The force main was installed with a high point at the pump station as shown in Figure 4, and there are no means for releasing air within the force main. As previously mentioned the pumps are not currently operating at their design point and this may be a likely cause for the reduced flow rate. We recommend either installing an air release valve at the high point in the force main or investigating to determine if air and gas is accumulating at the high point. This could be accomplished by installing a pipe tap on the top of the pipe with an isolation valve and routinely purging the pipe to determine if air is accumulating. An air valve at this location would extend above ground and may require an additional vault. Air in the force main system can also result in pipe integrity issues and degraded useful life of the force main.

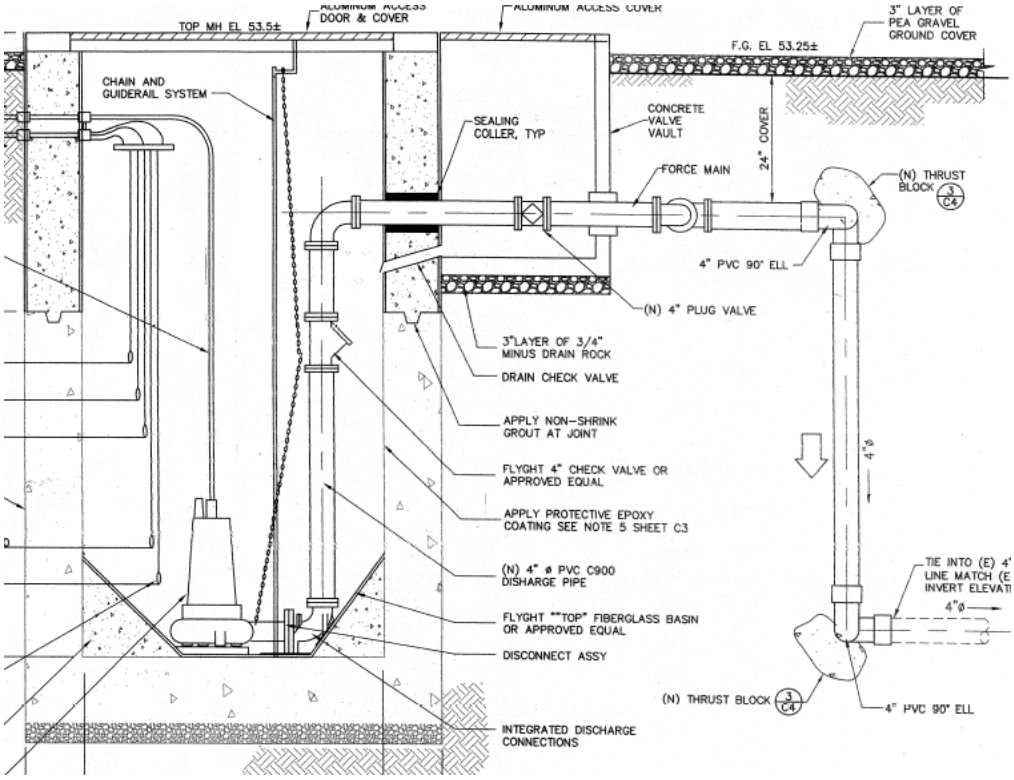

Figure 4: Bell Moon Discharge Piping

Electrical Assessment

The electrical equipment at the pump station appears to be in good working condition and is well maintained. Electrical power and controls are housed in a freestanding stainless steel weatherproof enclosure. Bell Moon Lift Station does not have an emergency generator on site. SAM uses a portable generator that is stored at the Treatment Plant. During a power outage, the generator is brought to the station to provide backup power. The pump station has a receptacle for connecting the portable generator. The generated specified for the 2006 rehabilitation was a Honda Model EB #1000 with a 9.6

gallon fuel tank rated for 9,500 watt at 120/240 V and is capable of running for approximately 4.4 hours at rated capacity.

Communications

Communications at the pump station is PLC based and includes radio telemetry linked to the City's SCADA system. The backup system uses an autodialer which notifies operations staff in the event of a SCADA system failure. The current communications system appears to be adequate; however, the City should consider expanding the alarms and data collection with the next pump station rehabilitation as discussed in the main report.

Structural Assessment

The pump station consists of two submersible pumps in a 4-foot diameter concrete wetwell. There is a concrete top slap with hatches that cover the wetwell. There are also nearby concrete valve vaults. There is an approximate 5 foot retaining wall along on the south side of the wetwell. The wetwell was epoxy coated during the 2006 rehabilitation. Overall the pump station is in good structural condition. No major cracks were observed in the wetwell or on the concrete slabs. Some deterioration of the concrete surfaces and piping within the wetwell was noted; however, it does not appear to be a significant concern at this time.

We recommend performing the following pump station structural improvements during the next pump station rehabilitation:

1. Inspect all structures and equipment for deterioration and corrosion
2. Replace corroded and deteriorated metallic piping and equipment in the wetwell.
3. Rehabilitate and/or coat interior surfaces of wetwell.

Pump Station Rehabilitation Summary

In order to address reliability issues, a few improvements should be addressed in the near future. A cost estimate for the short term improvements is included in Table 14.

Table 14: Bell Moon Pump Station Short Term Improvements

Item	Comments	Current Cost
Adjust Mix-Flush Valve	Maintenance staff can do this	$2,000
Secondary Controller		$15,000
Install Air Valve	Or investigate need for air valve, will require vault	$15,000
Permanent Generator	Requires property acquisition, retaining wall, electrical	$110,000
	Subtotal	**$142,000**
	60% for Contingency, Admin., CM, Engr.	$85,000
	Total	**$227,000**

When the pump station nears the end of its design life cycle, the pump station should be completely rehabilitated. Improvements that should be included in the rehabilitation and costs associated with the improvements are shown in Table 15.

Table 15: Bell Moon Rehabilitation Costs

Item	Comments	Current Cost
Pump #1		$25,000
Pump #2		$25,000
Mix-Flush Valve		$5,000
Generator	Includes Generator Pad & ATS	$60,000
Control Panel		$85,000
Miscellaneous Electrical	Wiring, Conduits, Sensors, etc.	$50,000
Piping & Valves		$25,000
Flow Meter		$15,000
Wetwell Rehabilitation	Structural Repair, Coating, Hatch Replacement, etc.	$40,000
Bypass Pumping	During Construction	$15,000
Demolition & Disposal		$20,000
Misc. Improvements	Misc. additional site improvements	$30,000
	Subtotal	**$395,000**
	60% for Contingency, Admin., CM, Engr.	$237,000
	Total	**$632,000**

Pump Station Photos

Figure 5: Bell Moon Pump Station

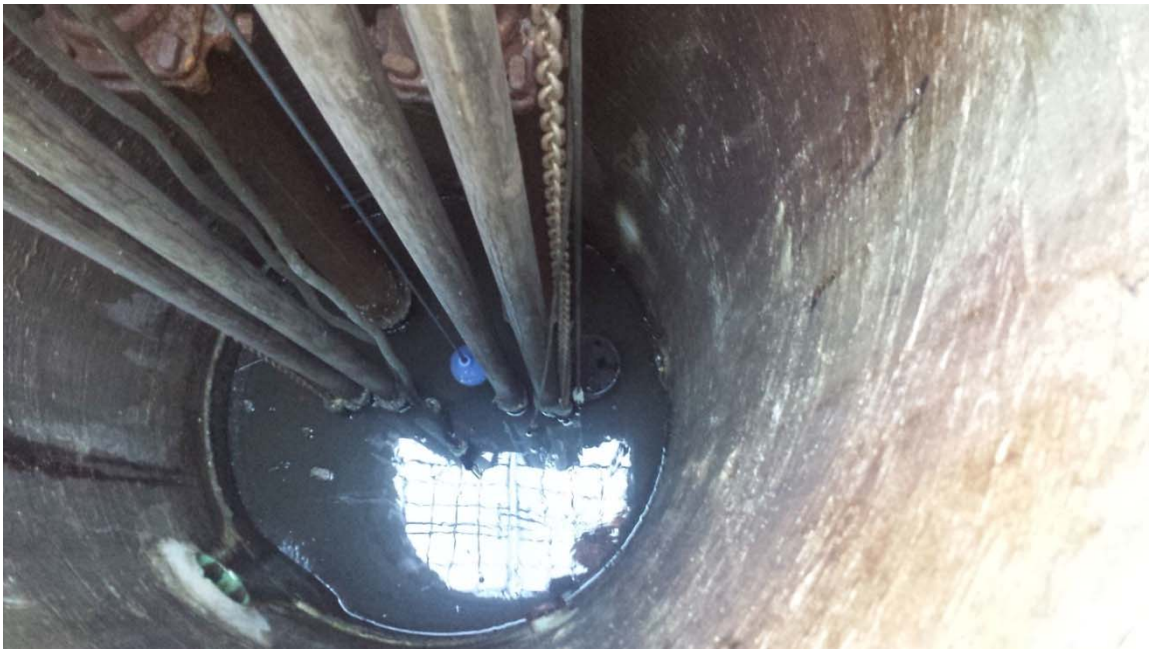

Figure 6: Bell Moon Wetwell

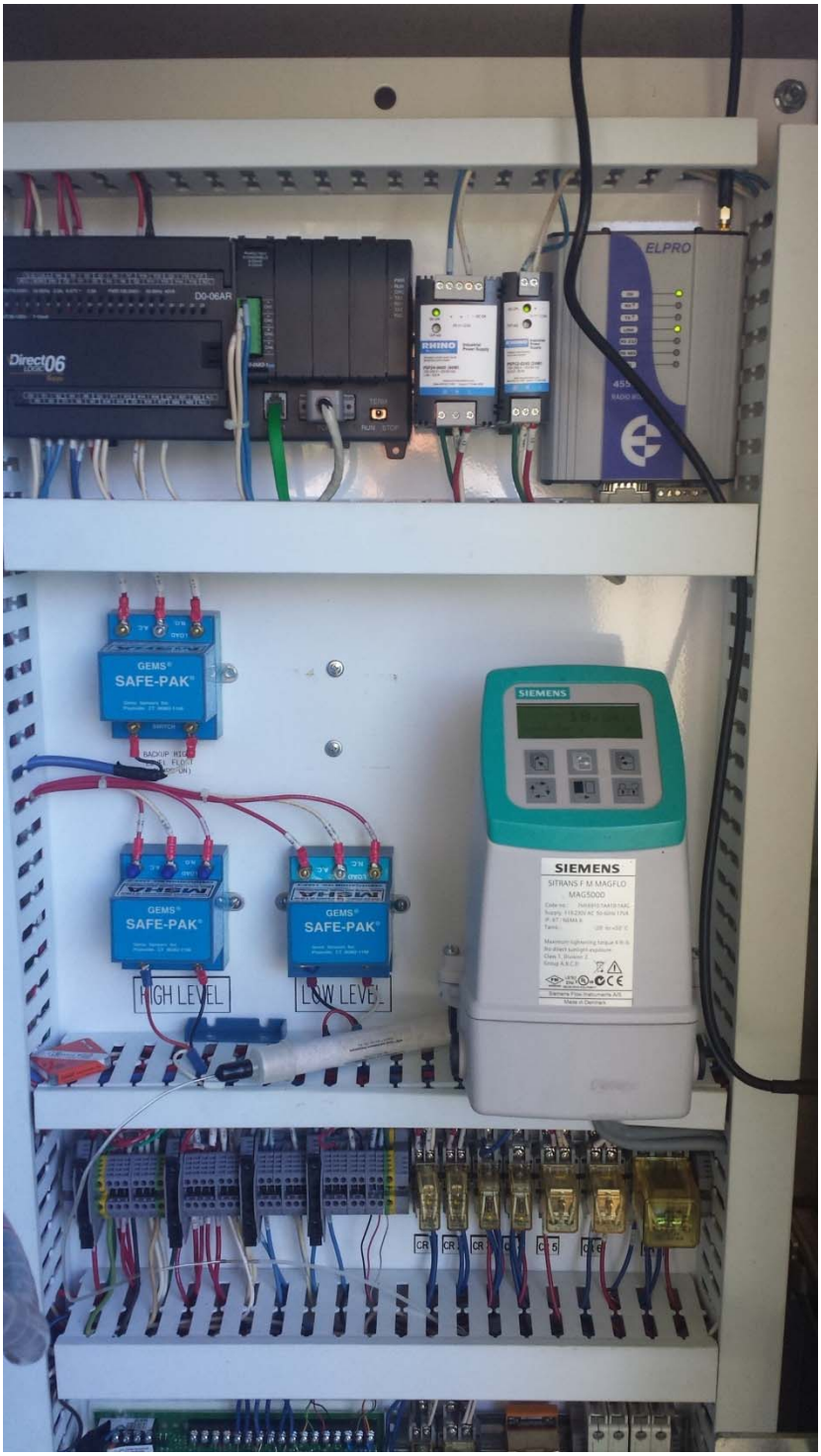

Figure 7: Bell Moon Control Panel

Ocean Colony Pump Station

Background

The Ocean Colony Pump Station conveys sewage from the Ocean Colony community and from Miramontes Point Road. In addition, sewage from the Pelican Point pump station can be re-directed to the Ocean Colony pump station. The pump station is located on Fairway Drive as shown in Figure 8. The lift station discharges to a 6" force main that discharging at Redondo Beach Road. The pump station was last rehabilitated in 1994.

Figure 8: Ocean Colony Pump Station

Pump Station Inflows and Capacities

Ocean Colony pump station conveys sewage from the Ocean Colony community and from Miramontes Point Road. Sewage from Pelican Point pump station can be re-directed to the Ocean Colony pump station if maintenance is required on the Pelican Point force main. Flows shown in Table 16 do not include flows from Pelican Point. It is assumed that flows from Pelican Point are routed to Ocean Colony only during the dry season and not during significant storm events. The PWWF flows and assumptions herein should be confirmed prior to rehabilitation of the pump station. Maintenance staff reported significant amounts of Inflow and Infiltration (I&I), as well as sand, rocks, and grit enter the pump station. Maintenance staff reported that both pumps have to run during high flows.

Table 16: Ocean Colony Pump Station Capacity

Total # of Pumps	PWWF (GPM)	Firm Capacity (GPM)
2	950	500[1]

1 – Based on system calculations with a 6-inch force main and a derated pump curve due to the current age of the pumps

Pump Station Reliability

The pump station was evaluated for reliability as described in the Pump Application and Control Strategy portion of the main report. The current aged pumps are not capable of conveying the PWWF and should be replaced in the near future.

The pump station does not have any bypass pumping connection. If a pump station failure occurs a bypass connection will make it easier to discharge the sewage until the pump station is repaired.

In the event of a controller failure, there is no means to automatically start the pumps without staff on-site. A secondary controller should be added to control the pumps in the event of a primary controller failure. A summary of reliability deficiency is shown in Table 17.

Table 17: Ocean Colony Reliability Assessment

Reliability Deficiency	Corrective Action
Insufficient Pumping Capacity	Replace Pumps (will likely require replacement of electrical equipment as well)
Lack of Redundant Controller	Install secondary level controller and level sensor to control pumps in the event of primary controller failure
Lacks Bypass Connection	Install bypass pumping connection

Pump Application and Control Strategy

The Ocean Colony Pump Station consists of two rail mounted submersible 47 hp Flygt pumps with variable frequency drives (VFDs) controlled by ACS550 drive. A system curve for the existing pumps is shown in Figure 9. The pumps are near the end of their useful life and according to operations staff both pumps need to run in order to convey the flows during peak inflows. The pump station has a pressure transducer level sensor for primary controls and backup floats, both of which control the pumps through a programmable logic controller (PLC). If the PLC fails, maintenance staff would have to manually operate the pump station as previously discussed. The PLC is connected to an uninterruptable power supply (UPS) so that station alarms can be conveyed in the event of power failure. The use of two pumps, each capable of conveying the PWWF is adequate for the Ocean Colony Pump Station.

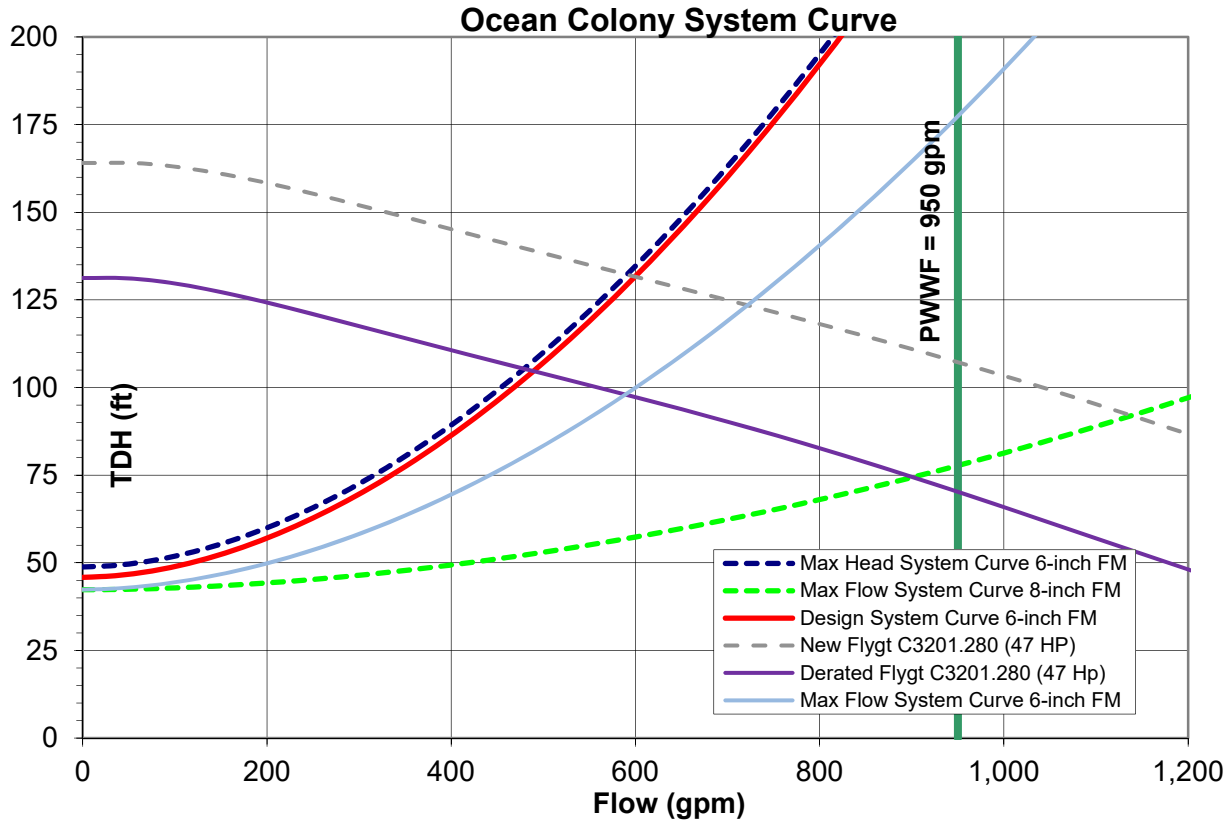

Figure 9: Ocean Colony System Curve

Based on adequately sized pumps, each pump (with the lead pump rotating every start) will have a cycle time of approximately 13 minutes (each pump will start a maximum of 5 times per hour); which is below the manufacturers recommendations for maximum pump cycling. Therefore, the pump station wetwell is properly sized to allow for proper pump cycling times. The time to overflow during PDWF is 20 minutes, which does not likely provide sufficient time for operations staff to respond in the event of a pump station failure. This emphasizes the need to have fully functioning and redundant equipment that is capable of conveying the peak inflow rates.

Force Main and Flow Monitoring

The Ocean Colony pump station is not currently equipped with a flow meter. The Ocean Colony pump station is the largest of the Half Moon Bay pump stations. Monitoring flows at the pump station could be useful for sewer studies, sewer modeling, sizing replacement pumps, and identifying pump station issues.

The pump station discharges to a 6-inch AC pipe and discharges at a manhole located at Redondo Beach Road. The City of Half Moon Bay, Sewer System Study, dated March 2, 2010 recommended the City plan to replace Ocean Colony force main with High Density Polyethylene (HDPE) pipe and initiate a study to evaluate replacement options. Maintenance staff reports that multiple breaks have occurred along the force main. If the force main needs to be replaced in the near future we recommend planning and designing the replacement simultaneously with the pump station as their sizes and components are dependent on each other. Preliminary analysis indicates that the new force main should be an 8-inch

pipe and include a valved cross connection with the Pelican Point force main for redundancy. Pipe bursting AC pipe requires the agency to register the area as an active asbestos waste disposal site; therefore, pipe bursting is not recommended. A new 8" force main would need to be installed with trenchless methods or with conventional open cut methods. The construction methods and pipe material should be evaluated based on field conditions and construction costs.

The discharge piping at the pump station extends vertically out of the wetwell, the drops back down, creating a high point in the force main. The 1994 sewer rehabilitation drawings show an existing air valve at the high point; however, the air valve has been removed (possibly due to clogging or odor issues). Without the air valve, air pockets will form in the discharge piping, reducing the pumping efficiency and capacity and could cause damage to the piping. If the pump station is not fully rehabilitated in the near future we recommend installing a sewage combination air valve at the high point of the discharge piping. Eliminating this high point in the force main should be considered during the next pump station rehabilitation.

Electrical Assessment

The electrical equipment at the pump station appears to be in good working condition. Electrical power and controls are housed in a freestanding stainless steel enclosure. The pump station has a backup diesel powered generator on site that was installed in 2012. The generator is an Onsite Energy Model DS00125D6SRAK0574 that utilizes a John Deere 4045HF285 125 kW engine. The diesel fuel tank has a capacity of 240 gallons. The generator appears to be in good shape. The generator is adequately sized to start and run both pumps and reuse of the generator should be considered during the next pump station rehabilitation.

Communications

Communications at the pump station is PLC based and includes radio telemetry linked to the City's SCADA system. The backup system uses an autodialer which notifies operations staff in the event of a SCADA system failure. The current communications system appears to be adequate; however, the City should consider expanding the alarms and data collection with the next pump station rehabilitation as discussed in the main report.

Structural Assessment

The pump station consists of two submersible pumps in a concrete wetwell. There is a concrete top slap with hatches that cover the wetwell. There is also a manhole adjacent to the wetwell where the gravity sewer discharges to before flowing to the wetwell with the pumps. No major cracks were observed in the wetwell or on the concrete slabs. In the wetwell, some deterioration of the concrete surfaces and piping has occurred. There is no fall protection installed on the wetwell access hatches. Fall protection should be added during the next pump station rehabilitation and operations staff should provide temporary measures for protecting the area while the hatches are in the open position.

We recommend performing the following pump station structural improvements during the next pump station rehabilitation:

1. Replace corroded and deteriorated metallic piping and equipment in the wetwell.
2. Apply concrete coating to all interior surfaces of wetwell and adjacent manhole.
3. Replace access hatches and install fall protection,

Pump Station Rehabilitation Summary

The Ocean Colony Pump Station is near the end of its design life cycle. The pump station should be completely rehabilitated in the near future. However, if the pump station cannot be rehabilitated in the near future, we recommend implementing the some short term improvements shown in Table 18.

Table 18: Ocean Colony Short Term Improvements

Item	Comments	Current Cost
Install Air Valve		$15,000
Secondary Controller		$15,000
Replace Pumps	May also require significant electrical and piping upgrades which are not included in the cost	$150,000
	Subtotal	**$180,000**
	60% for Contingency, Admin., CM, Engr.	$108,000
	Total	**$288,000**

The Ocean Colony pump station should be completely rehabilitated in the near future. Improvements that should be included in the rehabilitation and costs associated with the improvements are shown in Table 19.

Table 19: Ocean Colony Rehabilitation Costs

Item	Comments	Current Cost
Pump #1		$80,000
Pump #2		$80,000
Control Panel		$150,000
Miscellaneous Electrical	Wiring, Conduits, etc.	$80,000
Generator	Assume existing gen needs to be replaced, may be able to reuse	$100,000
Piping, Valves, Vault		$100,000
Bypass Connection		$20,000
Flow Meter & Vault		$40,000
Wetwell & Manhole Rehabilitation, Hatches, Etc.	Structural Repair & Coating, Replace Hatches, Etc.	$100,000
Bypass Pumping	During Construction	$60,000
Demolition & Disposal		$40,000
Misc. Improvements	Misc. additional site improvements	$150,000
	Subtotal	**$1,000,000**
	60% for Contingency, Admin., CM, Engr.	$600,000
	Total	**$1,600,000**

The rehabilitation cost does not include easement/property acquisition, nor does it include replacement of the wetwell. If these two items are necessary, the total project cost including contingencies and soft costs **could increase to approximately $2,500,000**.

Pump Station Photos

Figure 10: Ocean Colony Pump Station

Figure 11: Ocean Colony Manhole

Figure 12: Ocean Colony Wetwell

Figure 14: Discharge Piping

Figure 13: Control Panel

Pelican Point Pump Station

Background

The Pelican Point Pump Station conveys sewage from the area south of Miramontes Road and West of Highway 1. The location of the pump station is shown in Figure 15. The pump station discharges through a 6-inch force main. The force main discharges at Redondo Beach Road, but can be redirected to the gravity sewer system at the end of Cypress Point Road if force main maintenance is needed.

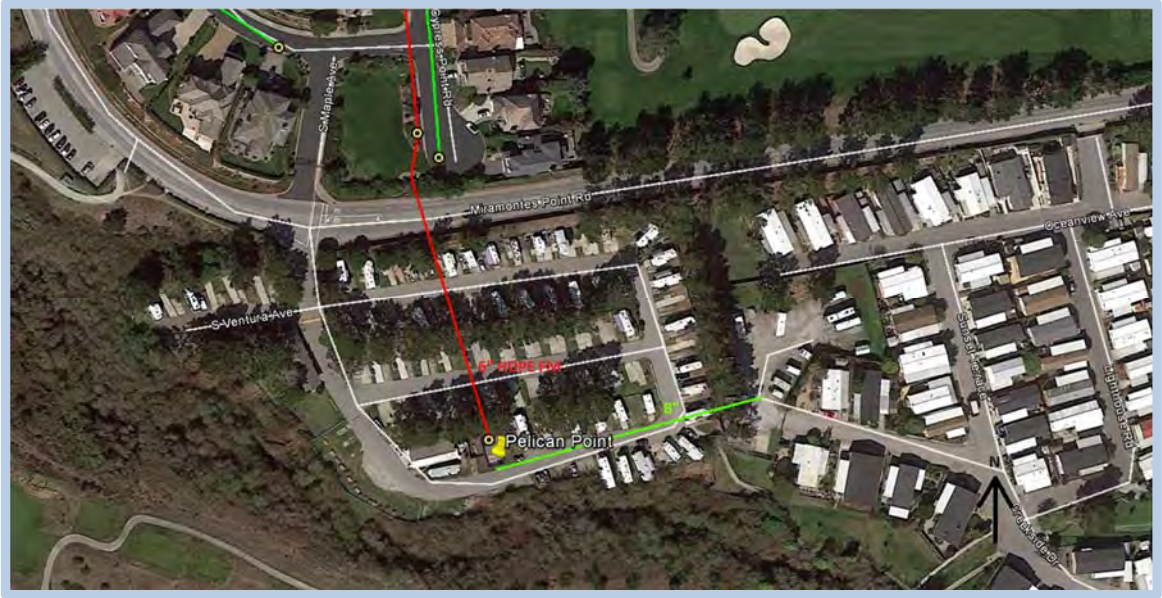

Figure 15: Pelican Point Pump Station

Pump Station Inflows and Capacities

Pelican Point pump station conveys sewage from the mobile home parks South of Miramontes Point Road. Sewage from Pelican Point pump station can be directed to the Ocean Colony pump station or directly to Redondo Beach Road. This assessment assumes the normal operating condition is to discharge directly to Redondo Beach Road. A pump drawdown test was performed on January 13, 2015 to determine firm capacity of the pump station. Resulting pump station capacity and inflow rates are shown in Table 20.

Table 20: Pelican Point Pump Station Capacity

Total # of Pumps	PWWF (GPM)	Firm Capacity (GPM)
2	200	225

Pump Station Reliability

The pump station was evaluated for reliability for reliability as described in the Pump Application and Control Strategy portion of the main report. The pumps currently have enough capacity to meet PWWF. Maintenance staff reported that there is occasionally grease build up in the sewer line and both pumps sometimes run after the release of the plugged up grease.

The pump station generator is old and the original company that manufactured the generator no longer exists. Finding parts for the generator could be difficult and the generator is near the end of its useful life cycle. The generator is housed in an older storage shed and does not provide adequate space to easily access the generator. The City should consider replacing the generator in the near future.

In the event of a controller failure, there is no means to automatically start the pumps without staff on-site. A secondary controller should be added to prevent overflows in the event of a primary controller failure. A summary of reliability deficiency is shown in Table 21Table 17.

Table 21: Pelican Point Reliability Assessment

Reliability Deficiency	Corrective Action
Backup Power	Replace generator
Lack of Redundant Controller	Install secondary level controller and level sensor to provide pump control in the event of primary controller failure

Pump Application and Control Strategy

Pelican Point pump station consists of two rail mounted submersible Flygt pumps, Model NP 3127, 10 hp. A system curve for the existing pumps are shown in Figure 16. The pumps are controlled using a PLC. The pump station has a pressure transducer level sensor for primary controls and backup floats, both of which control the pumps through a programmable logic controller (PLC). If the PLC fails, maintenance staff would have to manually operate the pump station as previously discussed. The use of two pumps, each capable of conveying the PWWF is adequate for the Ocean Colony Pump Station.

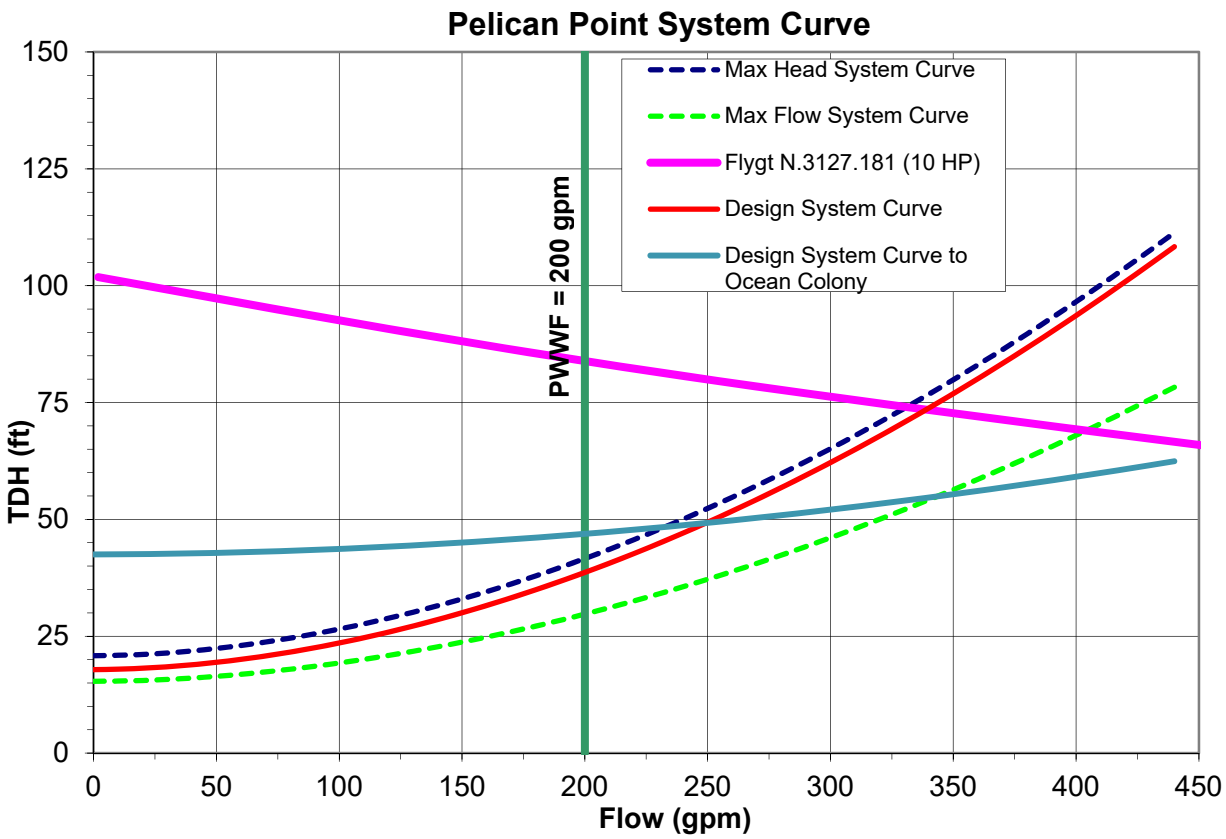

Figure 16: Pelican Point System Curve

Based on the existing pumps, each pump (with the lead pump rotating every start) will have a cycle time of approximately 19 minutes (each pump will start a maximum of 3 times per hour); which is well below the manufacturers recommendations for maximum pump cycling. Therefore, the pump station wetwell is properly sized to allow for proper pump cycling times.

The estimated time to overflow during PDWF is 19 minutes, which does not likely provide sufficient time for operations staff to respond in the event of a pump station failure. This emphasizes the need to have fully functioning and redundant equipment that is capable of conveying the peak inflow rates.

Force Main and Flow Monitoring

The Pelican Point pump station is currently not equipped with a flow meter. Monitoring flows at the pump station could be useful for sewer studies, sewer modeling, sizing replacement pumps, and identifying pump issues.

The pump station discharge piping was designed with a high point located at the pump station as shown in Figure 17, and there are no means for releasing air within the force main. We recommend either installing an air release valve at the high point in the force main or investigating to determine if air and gas is accumulating at the high point. This could be accomplished by installing a pipe tap on the top of the pipe with an isolation valve and routinely purging the pipe to determine if air is accumulating. An air valve at this location would extend above ground and may require an additional vault. Air in the force main

system can result in reduced pump capacity, pipe integrity issues, and degraded useful life of the force main.

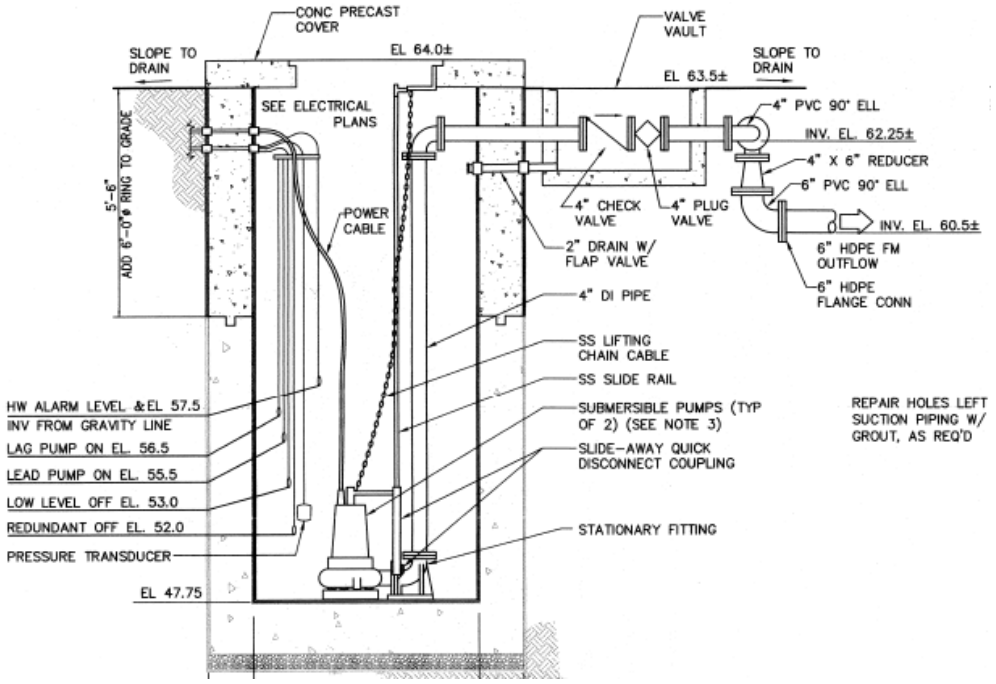

Figure 17: Bell Moon Discharge Piping

The pump station initially discharges to a 6-inch HDPE pipe until it reaches the end of Cypress Point Road. Between Cypress Point Road and Redondo Beach Road the force main is believed to be a 6" AC pipe approximately the same age as the Ocean Colony force main. This portion of the force main should be evaluated along with the Ocean Colony force main as discussed in the Force Main Inspection section of the main report.

Electrical Assessment

Electrical power and controls are housed in an older metal shed. The metal shed is showing signs of rusting, inadequately sized, poorly lit, and provides little sound proofing. The existing generator is a DMT Corporation Model 80C generator. The generator is old and DMT Corporation, which manufactured the generator, is no longer in business. Replacement parts for the generator may no longer be available and the generator is near the end of its useful life cycle. Some electrical equipment associated with the generator is also aged and needs to be replaced such as the automatic transfer switch. Besides the generator, all other electrical components appear to be in decent working condition.

Communications

Communications at the pump station is PLC based and includes radio telemetry linked to the City's SCADA system. The backup system uses an autodialer which notifies operations staff in the event of a SCADA system failure. The current communications system appears to be adequate; however, the City should consider expanding the alarms and data collection with the next pump station rehabilitation as discussed in the main report.

Structural Assessment

The pump station consists of two submersible pumps in a concrete wetwell. There is a concrete top slap with hatches that cover the wetwell. There is fall protection over the wetwell and adjacent valve vault. No major cracks were observed in the wetwell or on the concrete slabs. In the wetwell, only a minor concrete and metal deterioration was observed.

We recommend performing the following pump station structural improvements during the next pump station rehabilitation:

1. Replace corroded and deteriorated metallic piping and equipment in the wetwell.
2. Coat interior surfaces of wetwell.

Pump Station Rehabilitation Summary

In order to address reliability issues and to minimize the possibility of sanitary sewer overflows, there are a couple improvements that should be performed in the near future. A cost estimate for the near term improvements is included in Table 22.

Table 22: Pelican Point Pump Station Short Term Improvements

Item	Comments	Current Cost
Replace Generator and ATS	Assumed new generator will be pad mounted outside of existing building, additional electrical upgrades may be required.	$80,000
Install Secondary Controller		$15,000
	Subtotal	**$95,000**
	60% for Contingency, Admin., CM, Engr.	$57,000
	Total	**$152,000**

When the pump station nears the end of its design life cycle, the pump station should be completely rehabilitated. Improvements that should be included in the rehabilitation and costs associated with the improvements are shown in Table 23.

Table 23: Pelican Point Rehabilitation Costs

Item	Comments	Current Cost
Pump #1		$30,000
Pump #1		$30,000
Control Panel		$90,000
Generator		$80,000
Miscellaneous Electrical	Wiring, Conduits, etc.	$60,000
Piping & Valves		$30,000
Flow Meter & Vault		$25,000
Wetwell Rehabilitation	Structural Repair & Coating	$25,000
Bypass Pumping	During Construction	$25,000
Demolition & Disposal		$20,000
Misc. Improvements	Misc. additional site improvements	$50,000
	Subtotal	**$465,000**
	60% for Contingency, Admin., CM, Engr.	$279,000
	Total	**$744,000**

Pump Station Photos

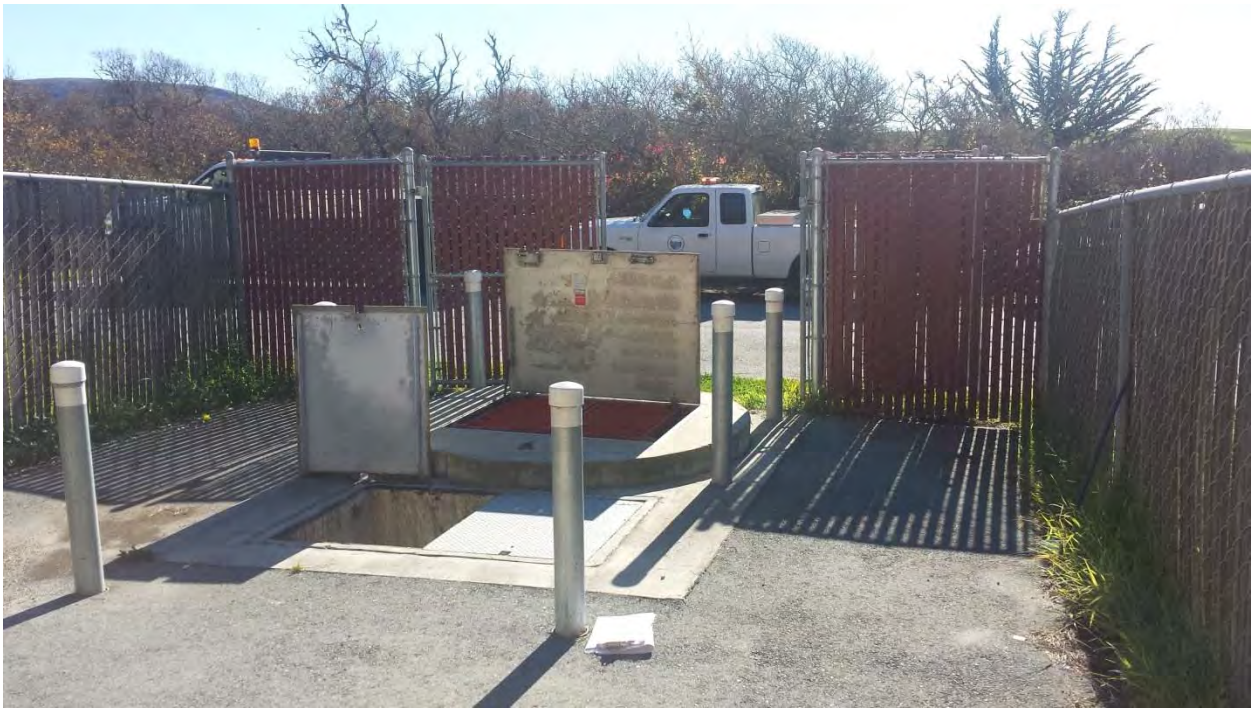

Figure 18: Pelican Point Pump Station

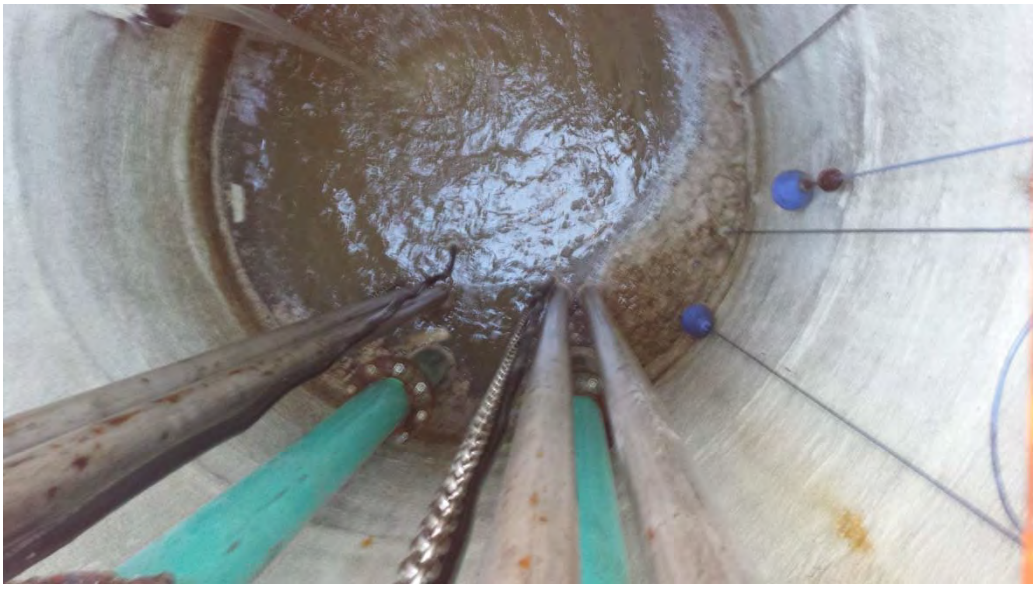

Figure 19: Pelican Point Wetwell

Figure 20: Pelican Point Pump Controls

Figure 21: Pelican Point Generator

Appendix B: Pump Station Flows

PSOMAS Flows

TABLE 1 – EXISTING AND FUTURE WASTEWATER FLOWS

Existing /Future	Flow Origin	Ave. (gpm)	Peak (gpm)	Comment
Existing	Ocean Colony	160	512	V&A report; MH 162+70-28 = ave.
	Pelican Point	N/A	250	Pumped flow from Pelican Point Pump Station
	Restaurant	N/A	60	Assumed 60 meals/3 hr @ 3 gal per meal
	Colony Club	28.3	90	Assumed 40 seats @ 20 gal per seat * 85% waste
	Existing Flow Sub-Total =		**912**	
Future	Hotel	N/A	150	See letter in Appendix D from Psomas to the city
	Farm Labor Housing	21	67	Projected house counts * SAM ave. flows * 3.2 peaking factor
	Ocean Colony	13	42	
	S. Wavecrest	8	26	
	Future Flow Sub-Total =		**285**	

Total = 1197 gpm at Ocean Colony

Total = 250 gpm at Pelican Point

Akel Flows

Table A Lift Station Inflows - ADWF and PWWF
Sewer System Master Plan
City of Half Moon Bay

PRELIMINARY

Lift Station	Flow Condition ADWF (MGD)	PWWF (MGD)	ADWF (gpm)	PWWF (gpm)
Bell Moon	0.002	0.028	1.4	19.4
Ocean Colony	0.133	0.689	92.4	478.5
Pelican Point	0.034	0.117	23.6	81.3

Notes: 6/19/2015

1. Lift station flows based on calibrated model flow distributions.
2. PWWF - 10-Year 24-Hour design storm based on NOAA Atlas 14.

Schaaf & Wheeler Calculated Flows

Tributary Sewage Flows - Pelican Point

	No. of SF DU's	Gross Area (ac)	Unit Flow (gpd/DU)[2]	BWF (gpd)	BWF (gpm)	BWF (cfs)
Mobile Home Park	283	43.00	250	70,750	49.13	0.109
MD Multi-Family		0.00	0	0	0.00	0.000
Open		0.00	0	0	0.00	0.000
		43.0			49.13	0.109
				ADWF	49.13	gpm
				Peaking Factor[1]	4	
				PWWF	**196.5**	**gpm**

Note:

1) Includes I&I factor

2) Assumed 2.5 person per mobile home

3) Calculation based on Montara Sewer District Standards

Tributary Sewage Flows - Pelican Point

	No. of SF DU's	Gross Area (ac)	Unit Flow (gpd/DU)	BWF (gpd)	BWF (gpm)	BWF (cfs)
Mobile Home Park	283	43.00	175	49,525	34.39	0.077
MD Multi-Family		0.00	0	0	0.00	0.000
Open		0.00	0	0	0.00	0.000
		43.0			34.39	0.077
				Base Wastewater Flow	34.39	gpm
				Peaking Factor[1]	3.4	
				PDWF	**116.9**	**gpm**
				GWI	2.99	gpm
				RDI/I	77.64	gpm
				PWWF	**197.6**	**gpm**

Note:

1) Source: Figure 3-6 *Gravity Sanitary Sewer Design and Construction ASCE MOE No.60* (City of Los Angeles)

Tributary Sewage Flows - Oecan Colony

	No. of SF DU's	Gross Area (ac) [2]	Unit Flow (gpd/DU)	BWF (gpd)	BWF (gpm)	BWF (cfs)
SF Residential		170.00	940	159,800	110.97	0.247
MD Multi-Family		0.00	2,270	0	0.00	0.000
Open		160.00	0	0	0.00	0.000
		330.0			110.97	0.247

Base Wastewater Flow		110.97	gpm
Peaking Factor[1]		3.4	
	PDWF	**377.3**	**gpm**
GWI		22.92	gpm
RDI/I		595.83	gpm
PWWF		996.1	gpm
Adjusted[3]	**PWWF**	**950**	**gpm**

Note:

1) Source: Figure 3-6 *Gravity Sanitary Sewer Design and Construction ASCE MOE No.60* (City of Los Angeles)
2) Ritz Carlton Hotel & Restaurant is a part of the Residential acreage calculation. Area does not include flows from Pelican Point pump station.

3) The PWWF flows was adjusted slightly since this is mainly gated community with less of a population during the winter

Tributary Sewage Flows - Bell Moon

	No. of Students	Gross Area (ac)	Unit Flow (gpd/DU)	BWF (gpd)	BWF (gpm)	BWF (cfs)
Office & Commercial		3.00	640	1,920	1.33	0.003
Open		1.00	0	0	0.00	0.000
		4.0			1.33	0.003

Base Wastewater Flow		1.33	gpm
Peaking Factor[1]		3.4	
	PDWF	**4.5**	**gpm**
GWI		0.83	gpm
RDI/I		7.22	gpm
PWWF		12.6	gpm
Adjusted[2]	**PWWF**	**20.0**	**gpm**

Note:

1) Source: Figure 3-6 *Gravity Sanitary Sewer Design and Construction ASCE MOE No.60* (City of Los Angeles)

2) Adjusted to account for a higher peaking factor and to be aligned with Akel Engineering

Appendix C: Operation & Maintenance

Electrical and Communications

Each pump station should have a bound copy of its site-specific operations and maintenance manual on site; and all personnel need to be familiar with the contents of the manuals. Proper equipment lubrication and maintenance following the manufacturer's recommendations (which must be included in the operations and maintenance manual) is essential to efficient operation and longevity.

Manufacturer's maintenance instructions should be followed exactly, particularly when the pump or engine is still under warranty.

Table 24: Electrical Panel

Maintenance Task	Calendar Time
Check junction boxes	1 Yr
Check and clean all cabinets to make sure they are clean and dry	1 Yr
Inspect cabinets for corrosion, damage, etc. repair and paint as necessary	1 Yr
Check connections on terminal board	1 Yr
Conduct phase to phase resistance check	1 Yr
Check rubbersheating on cable is undamaged	1 Yr
Check resistance of FLS10	1 Yr
Check resistance of thermal contacts	1 Yr
Check running values of voltage and amperage	1 Yr

Table 25: Level Sensors

Maintenance Task	Calendar Time
Inspect, clean, and check operation of all float switches	1 Mo.
Inspect, clean and check operation and set levels of transducer (where applicable)	1 Mo.

Table 26: Backup Generator

Maintenance Task	Operating Time	Calendar Time
Inspect fuel, oil level, coolant	8 Hr	1 Mo.
Inspect air cleaner. Battery	50 Hr	1 Yr
Clean governor linkage, breather, air cleaner	100 Hr	1 Yr
Clean fuel filter, replace oil filter, change crankcase oil, check switchgear	200 Hr	1 Yr
Clean commutator, collector rings, relays, cooling system; inspect brushes, valve clearances, starting and stopping systems, water pump	500 Hr	1 Yr
Check injectors, grind valves (if required), remove carbon, clean oil passages, replace secondary fuel filter, clean generator, grease bearings.	1000 Hr	2 Yr

Table 27: SCADA and Communication

Maintenance Task	Calendar Time
Visually inspect that SCADA components are functional and undamaged	1 Mo.
Check the operation of all alarm signals	3 Mo.

Pump Maintenance

Manufacturer's maintenance instructions should be followed exactly, particularly when the pump or engine is still under warranty. Refer to operation and maintenance manual of the product installed at each pump station for detailed maintenance activities. The following maintenance tasks were developed based on standard submersible pumps under normal operating conditions. Shorter maintenance intervals may be necessary for abrasive or corrosive applications.

Manufacturer's maintenance instructions should be followed exactly, particularly when the pump or engine is still under warranty.

Table 28: Pumps and Motors

Maintenance Task	Calendar Time
Replace O-rings of filling plugs and junction cover. Grease new O-rings	1 Yr
Check impeller clearance and adjust if necessary	1 Yr
Check rotation of impeller	1 Yr
Check screws and condition on lifting handle	1 Yr
Check cable and connection to power	1 Yr
Stator Housing – Drain all liquid and check resistance of leakage sensor	1 Yr
Check settings of overload protection	1 Yr
Check thermal contacts	1 Yr
Check oil housing and fill with new oil	1 Yr
Drain liquid if any in inspection chamber	1 Yr
Replace bearings	3 Yr
Replace mechanical seal units	3 Yr

Table 29: Rail Mounting

Maintenance Task	Calendar Time
Visually inspect guiderail system for damage and corrosion and replace parts as needed	1 Yr

Wetwell & Valve Vaults

Each pump station should have a bound copy of its site-specific operations and maintenance manual on site; and all personnel need to be familiar with the contents of the manuals. Proper equipment lubrication and maintenance following the manufacturer's recommendations (which must be included in the operations and maintenance manual) is essential to efficient operation and longevity.

Table 30: Wetwell

Maintenance Task	Calendar Time
Visually inspect wetwell for debris and general damage	1 Mo.
Clean wetwell and remove debris	1 Mo. Or less
Observe a complete pumping cycle of each pump	1 Mo.

Table 31: Access Hatches

Maintenance Task	Calendar Time
Visually inspect the hatch when opened	1 Mo.
Visually inspect personal safety devices	1 Mo.

Table 32: Valve Vaults

Maintenance Task	Calendar Time
Visually inspect the valve box and valve box cover when opened	1 Mo.
Clean and dewater valve box as necessary	1 Mo.

Piping, Fittings, Hardware and Valves Maintenance

Each pump station should have a bound copy of its site-specific operations and maintenance manual on site; and all personnel need to be familiar with the contents of the manuals. Proper equipment lubrication and maintenance following the manufacturer's recommendations (which must be included in the operations and maintenance manual) is essential to efficient operation and longevity.

Table 33: Piping, Fittings, Hardware, and Valves

Maintenance Task	Calendar Time
Visually inspect piping for damage and corrosion, repair and paint as necessary	1 Mo.
Flush force main by running all pumps, or other means	1 Mo.
Visually inspect fittings for damage and wear	1 Mo.
Visually inspect bolts and other hardware for damage and wear, replace as necessary	1 Mo.
Check operation of gate valves (fully open and close) and visually inspect	3 Mo.
Check operation of check valves (fully open and close) and visually inspect	1 Mo.
Re-lubricate check and gate valves as needed	-

Appendix H
Element 9 (Monitoring, Measurement & Program Modifications)
Placeholder for Future Supporting Documents

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Appendix I
Element 10 (SSMP Program Audits) Supporting Documents

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City of Half Moon Bay
SSMP Change Log

Date	SSMP Element	Description of Change/Revision Made	Change Authorized by
05 / 2018	2	Updated roles and responsibilities of City Manager, City Engineer, Public Works Director, and Public Works Superintendent	
07 / 2018	2	Updated Organizational Chart and Contact Information	
05 / 2018	3	Included most recent version of the City's Municipal Code Chapter 13 in Appendix B	
07 / 2018	4	Updated collection system map description	
05 / 2018	4	Included FY 2017-18 in Appendix C	
07 / 2018	4	Revised description of preventive maintenance activities	
07 / 2018	4	Revised description of CCTV Maintenance operations	
07 / 2018	5	Included reference to Central Contra Costa County Standard Specs and Drawings where the City's standards do not address construction needs	
08 / 2018	6	Included list of available sewer maintenance equipment provided by SAM	
08 / 2018	6	Identified alternative testing laboratory	
05 / 2018	6	Updated name and contact info of SWRCB SSO Program Manager	
07 / 2018	7	Updated FOG Program description	
07 / 2018	8	Updated description of System Evaluation and Capacity Assurance Plan, Sewer Collection System Design Flows, Hydraulic Model, and System Capacity Evaluation and Improvements	
05 / 2018	9	Updated SSO Trend values	
07 / 2018	10	Updated SSMP Audit processes	

City of Half Moon Bay
SSMP Change Log

Date	SSMP Element	Description of Change/Revision Made	Change Authorized by
10 / 2019	2	Updated roles and responsibilities of City Manager, City Engineer, Public Works Director, and Public Works Superintendent	
02 / 2020	2	Updated Organizational Chart and Contact Information	
10 / 2019	4	Updated Resources and Budget for Sewer System Management	
10 / 2019	4	Included FY 2019/20 Adopted Operating Budget	
10 / 2019	4	Included FY 2019/20 Adopted Operating Budget	
01 / 2020	4	Updated collection system map description	
02 / 2020	4	Revised description of preventive maintenance activities	
02 / 2020	4	Revised description of CCTV Program	
06 / 2019	6	Included Pump Station Emergency Response Plan	
10 / 2019	6	Included SSO Training records	
01 / 2020	6	Updated Response Program section	
02 / 2020	6	Revised Figure 6.2 SSO Response Activities chart	
02 / 2020	6	Updated Guidelines for Cleanup section	
02 / 2020	6	Updated Water Quality Sampling description	
02 / 2020	6	Included SAM SSO Report Form	
01 / 2019	7	Included FOG Inspection Form	
01 / 2019	7	Included FOG Best Management Practices	
01 / 2019	7	Included FOG Facilities List	
02 / 2020	8	Revised description on System Capacity Evaluation and Improvements	
12 / 2019	9	Updated SSO Trend values	
02 / 2020	9	Updated Utility Metrics Table	
02 / 2020	10	Included 2020 SSMP Audit	

City of Half Moon Bay
SSMP Change Log

Date	SSMP Element	Description of Change/Revision Made	Change Authorized by
08 / 2021	4	Added section to address TMDL requirements	
06 / 2023	All	Updated terminology to eliminate SSO and Overflow and replace with Spill to be consistent with SERP. Replaced Appendix E1 OERP with SERP. Deleted OERP text in Element 6.	
06 / 2023	9	Updated Spill data to reflect the most recent five years.	

City of Half Moon Bay
SSMP Change Log

Date	SSMP Element	Description of Change/Revision Made	Change Authorized by

City of Half Moon Bay
SSMP Audit Report Form

Audit Period Covered: June 2014 through February 2018

Audit completed by: V.W. Housen & Associates

Introduction	Yes	No
Is the current system description complete and up to date? Are all infrastructure statistics current and complete?	✓	
Discussion:		

	Element 1 – Goals	Yes	No
A	Are the goals stated in the SSMP still appropriate and accurate?	✓	
Discussion:			

	Element 2 -- Organization	Yes	No
A	Is the Contact Information current?		✓
B	Is the Sanitary Sewer Overflow Responder List current?	✓	
C	Is the Organization Chart in Figure 2-1 of the SSMP current?		✓
D	Are the position descriptions an accurate portrayal of staff responsibilities?	✓	
E	Is the chain of communication for reporting and responding to SSOs accurate and up-to-date?	✓	

Discussion:

The contact information and organizational chart are not up to date due to staff changes. All these information will be included in the next SSMP update.

Element 3 – Legal Authority		Yes	No
Does the SSMP contain current references to the City's Code documenting it's legal authority to:			
A	Prevent illicit discharges?	✓	
B	Require proper design and construction of sewers and connections?	✓	
C	Ensure access for maintenance, inspection, or repairs for portions of the lateral owned or maintained by the City?	✓	
D	Limit discharges of fats, oil and grease?	✓	
E	Enforce any violation of its sewer ordinances?	✓	
F	Were any changes or modifications made in the past year or since the last SSMP audit to City Ordinances, Regulations, or standards?		✓
Discussion:			

Element 4 – Operations and Maintenance		Yes	No
Collection System Maps			
A	Does the SSMP reference the current process and procedures for maintaining the City's sanitary sewer system maps?	✓	
B	Are the City's wastewater collection system maps complete, current, and sufficiently detailed?	✓	
Prioritized Preventive Maintenance			
C	Does the SSMP describe current preventive maintenance activities and the system for prioritizing the cleaning of sewer lines?	✓	
D	Based upon the SSO information in CIWQS and the Annual SSO Report, are the City's preventive maintenance activities sufficient and effective in minimizing SSOs and blockages?	✓	

Element 4 – Operations and Maintenance		Yes	No
Rehabilitation and Replacement Program			
E	Is there an ongoing condition assessment program sufficient to rank the condition of sewer pipes and schedule rehabilitation? Are the current components of this program documented in the SSMP?	✓	
F	Does the rehabilitation and replacement plan include a capital improvement plan that addresses proper management and protection of the infrastructure assets? Does the plan include a time schedule for implementing the short and long-term plans plus a schedule for developing the funds needed for the capital improvement plan?		✓
Contingency Equipment and Replacement Inventory			
G	Does the SSMP list the major equipment currently used in the operation and maintenance of the collection system?	✓	
H	Are contingency equipment and replacement parts sufficient to respond to emergencies and properly conduct regular maintenance?	✓	
Training			
I	Are the training records current?		✓
J	Does the SSMP document current training expectations and programs?		✓

Discussion:

The City will initiate a new CCTV inspection program in 2018, beginning with inspection of the current hot spot pipelines. Results from this program will be used to assess the condition of the pipes and serve as basis in developing a rehabilitation and replacement program.

SAM provides emergency response for the City through a sewer maintenance contract. They maintain sewer service equipment and keeps replacement parts necessary to properly conduct regular maintenance and respond to emergencies.

Element 5 – Design and Performance Standards		Yes	No
A	Does the SSMP reference current design and construction standards for the installation of new sanitary sewer systems, pump stations and other appurtenances and for the rehabilitation and repair of existing sanitary sewer systems?	✓	
B	Does the SSMP document current procedures and standards for inspecting and testing the installation of new sewers, pumps, and other appurtenances and the rehabilitation and repair of existing sewer lines?	✓	
Discussion:			

	Element 6 – Overflow and Emergency Response Plan (OERP)	Yes	No
A	Does the City's OERP contain proper notification procedures so that the primary responders and regulatory agencies are informed of all sanitary sewer overflows (SSOs) as required by the WDR and MRP?	✓	
B	Does the OERP have a program to ensure an appropriate response to all overflows?	✓	
C	Does the OERP contain procedures to ensure prompt notification to appropriate regulatory agencies and other potentially affected entities of all SSOs that potentially affect public health or reach waters of the State in accordance with the MRP? Does the SSMP identify the officials who will receive immediate notification of such SSOs?	✓	
D	Are staff and contractor personnel aware of and appropriately trained on the procedures of the OERP?	✓	
E	Does the OERP contain procedures to address emergency operations such as traffic and crowd control and other necessary response activities?		✓
F	Does the OERP ensure that all reasonable steps are taken to contain and prevent the discharge of untreated and partially treated wastewater to waters of the United States and to minimize or correct any adverse impact on the environment resulting from SSOs, including such accelerated or additional monitoring as may be necessary to determine the nature and impact of the discharge?	✓	
G	Considering SSO performance data, is the OERP effective in handling SSOs in order to safeguard public health and the environment?	✓	
H	Is the Water Quality Monitoring Plan current and has it been trained on and practiced by staff that would be involved in a SSO of large volume?	✓	
I	Was sampling conducted within 48 hours for all SSOs greater than 50,000 gallons and were results entered for these SSOs through the CIWQS website?	✓	
J	Has the City prepared a Technical Report for all SSOs larger than 50,000 gallons? Have all Technical Reports been filed on the CIWQS website as required?	✓	
Discussion:			

	Element 7 – Fats, Oils, and Grease (FOG) Control Program	Yes	No
A	Does the Fats, Oils, and Grease (FOG) Control Program include a description of public education outreach efforts that promote proper handling and disposal of FOG?		✓
B	Does the FOG program include a plan for the disposal of FOG generated within the sewer system service area?		✓
C	Does the City have sufficient legal authority to prohibit discharges to the system and identify measures to prevent SSOs and blockages caused by FOG?	✓	
D	Are there requirements to install grease removal devices (such as traps or interceptors), best management practices (BMP) requirements, record keeping, maintenance requirements and reporting requirements established in the City's FOG Control Program?		✓
E	Does the City have authority to inspect grease producing facilities and have sufficient staff to inspect and enforce the FOG ordinance?	✓	
F	Does the FOG control program identify sections of the collection system subject to FOG blockages, establish a cleaning schedule and address source control measures to minimize these blockages?		✓
G	Does the FOG control program implement source control measures for all sources of FOG discharged to the collection system?		✓
H	Is the current FOG program effective in minimizing blockages of sewer lines resulting from discharges of FOG to the system?		✓

Discussion:

The City currently does not have an official FOG Control program. FOG has not been identified as a significant issue in the sewer collection system.

Element 8 – System Evaluation and Capacity Assurance Plan		Yes	No
A	Does the System Evaluation and Capacity Assurance Plan evaluate hydraulic deficiencies in the system and provide estimates of peak flows associated with conditions similar to those causing overflow events, if applicable?	✓	
B	Does the City's capital improvement program (CIP) establish a schedule of approximate completion dates for both short-term and long-term improvements and is the schedule reviewed and updated to reflect current budgetary capabilities and activity accomplishment?		✓
C	Does the City take steps needed to establish a short and long-term CIP to address hydraulic deficiencies, including prioritization, alternatives analysis, and schedules? Are repair and replacement projects developed based upon condition assessment and/or field maintenance results?	✓	
Discussion: In 2016, the City hired Akel Engineering Group to conduct a Sewer System Master Plan that documents capacity evaluation of the existing sewer system with recommended capital improvements to mitigate existing deficiencies and to accommodate future growth.			

Element 9 – Monitoring, Measurement, and Program Modifications		Yes	No
A	Does the City maintain relevant information that can be used to establish and prioritize appropriate SSMP activities?	✓	
B	Does the City monitor the implementation and, where appropriate, measure the effectiveness of each element of the SSMP?	✓	
C	Does the City assess the success of the preventive maintenance program?	✓	
D	Does the City update program elements, as appropriate, based upon monitoring or performance evaluations?	✓	
E	Does the SSMP identify and illustrate SSO trends, including frequency, location and volume of SSOs?	✓	
Discussion:			

Element 10 – SSMP Audits		Yes	No
A	Does the audit focus on the effectiveness of the SSMP? If not, what needs to be changed to increase the effectiveness of the overall collection system program?	✓	
B	Were the audit results shared with the City Council? And the public, via the City website?		✓
C	Will the SSMP Audit be completed, reviewed, and filed as an Appendix to the SSMP on a biennial basis?	✓	
D	Do any proposed changes to the SSMP require Board approval as they have a substantial change in the policies and procedures for collection system operations and maintenance?		✓
Discussion:			

Element 11 – Communication Program		Yes	No
A	Does the City communicate on a regular basis with the public and other agencies about the development and implementation of the SSMP? Does the communication system provide the public the opportunity to provide input as the program is developed and implemented? Were annual progress reports and metrics of implementation of the SSMP provided to the City Council?		✓
Discussion: City staff reports sewer related activities to the City Council on a monthly basis.			

Change Log		Yes	No
A	Is the SSMP Change Log current and up to date?	✓	
Discussion:			

City of Half Moon Bay
SSMP Audit Report Form

Audit Period Covered: March, 2018 through February, 2020

Audit completed by: V.W. Housen & Associates on February 2020

Introduction	Yes	No
Is the current system description complete and up to date? Are all infrastructure statistics current and complete?	✓	
Discussion:		

	Element 1 – Goals	Yes	No
A	Are the goals stated in the SSMP still appropriate and accurate?	✓	
Discussion:			

	Element 2 -- Organization	Yes	No
A	Is the Contact Information current?	✓	
B	Is the Sanitary Sewer Overflow Responder List current?	✓	
C	Is the Organization Chart in Figure 2-1 of the SSMP current?	✓	
D	Are the position descriptions an accurate portrayal of staff responsibilities?	✓	
E	Is the chain of communication for reporting and responding to SSOs accurate and up-to-date?	✓	
Discussion:			

Element 3 – Legal Authority		Yes	No
Does the SSMP contain current references to the City's Code documenting it's legal authority to:			
A	Prevent illicit discharges?	✓	
B	Require proper design and construction of sewers and connections?	✓	
C	Ensure access for maintenance, inspection, or repairs for portions of the lateral owned or maintained by the City?	✓	
D	Limit discharges of fats, oil and grease?	✓	
E	Enforce any violation of its sewer ordinances?	✓	
F	Were any changes or modifications made in the past year or since the last SSMP audit to City Ordinances, Regulations, or standards?		✓
Discussion:			

Element 4 – Operations and Maintenance		Yes	No
Collection System Maps			
A	Does the SSMP reference the current process and procedures for maintaining the City's sanitary sewer system maps?	✓	
B	Are the City's wastewater collection system maps complete, current, and sufficiently detailed?		✓
Prioritized Preventive Maintenance			
C	Does the SSMP describe current preventive maintenance activities and the system for prioritizing the cleaning of sewer lines?	✓	
D	Based upon the SSO information in CIWQS and the Annual SSO Report, are the City's preventive maintenance activities sufficient and effective in minimizing SSOs and blockages?	✓	

Element 4 – Operations and Maintenance		Yes	No
Rehabilitation and Replacement Program			
E	Is there an ongoing condition assessment program sufficient to rank the condition of sewer pipes and schedule rehabilitation? Are the current components of this program documented in the SSMP?	✓	
F	Does the rehabilitation and replacement plan include a capital improvement plan that addresses proper management and protection of the infrastructure assets? Does the plan include a time schedule for implementing the short and long-term plans plus a schedule for developing the funds needed for the capital improvement plan?		✓
Contingency Equipment and Replacement Inventory			
G	Does the SSMP list the major equipment currently used in the operation and maintenance of the collection system?	✓	
H	Are contingency equipment and replacement parts sufficient to respond to emergencies and properly conduct regular maintenance?	✓	
Training			
I	Are the training records current?	✓	
J	Does the SSMP document current training expectations and programs?	✓	

Discussion:

The City completed its most recent CCTV inspection program in January 2020 that included hot spot pipelines. Results of this CCTV program including recommendations from SAM and MTCo will serve as the basis of the next round of rehabilitation and replacement program.

Element 5 – Design and Performance Standards		Yes	No
A	Does the SSMP reference current design and construction standards for the installation of new sanitary sewer systems, pump stations and other appurtenances and for the rehabilitation and repair of existing sanitary sewer systems?	✓	
B	Does the SSMP document current procedures and standards for inspecting and testing the installation of new sewers, pumps, and other appurtenances and the rehabilitation and repair of existing sewer lines?	✓	
Discussion:			

	Element 6 – Overflow and Emergency Response Plan (OERP)	Yes	No
A	Does the City's OERP contain proper notification procedures so that the primary responders and regulatory agencies are informed of all sanitary sewer overflows (SSOs) as required by the WDR and MRP?	✓	
B	Does the OERP have a program to ensure an appropriate response to all overflows?	✓	
C	Does the OERP contain procedures to ensure prompt notification to appropriate regulatory agencies and other potentially affected entities of all SSOs that potentially affect public health or reach waters of the State in accordance with the MRP? Does the SSMP identify the officials who will receive immediate notification of such SSOs?	✓	
D	Are staff and contractor personnel aware of and appropriately trained on the procedures of the OERP?	✓	
E	Does the OERP contain procedures to address emergency operations such as traffic and crowd control and other necessary response activities?		✓
F	Does the OERP ensure that all reasonable steps are taken to contain and prevent the discharge of untreated and partially treated wastewater to waters of the United States and to minimize or correct any adverse impact on the environment resulting from SSOs, including such accelerated or additional monitoring as may be necessary to determine the nature and impact of the discharge?	✓	
G	Considering SSO performance data, is the OERP effective in handling SSOs in order to safeguard public health and the environment?	✓	
H	Is the Water Quality Monitoring Plan current and has it been trained on and practiced by staff that would be involved in a SSO of large volume?	✓	
I	Was sampling conducted within 48 hours for all SSOs greater than 50,000 gallons and were results entered for these SSOs through the CIWQS website?	✓	
J	Has the City prepared a Technical Report for all SSOs larger than 50,000 gallons? Have all Technical Reports been filed on the CIWQS website as required?	✓	

Element 6 – Overflow and Emergency Response Plan (OERP)	Yes	No
Discussion: The City does not have a formal traffic and crowd control program. However, the City's contractors are equipped with traffic cones and utility trucks in order to divert traffic as needed during emergency response procedures.		

	Element 7 – Fats, Oils, and Grease (FOG) Control Program	Yes	No
A	Does the Fats, Oils, and Grease (FOG) Control Program include a description of public education outreach efforts that promote proper handling and disposal of FOG?	✓	
B	Does the FOG program include a plan for the disposal of FOG generated within the sewer system service area?	✓	
C	Does the City have sufficient legal authority to prohibit discharges to the system and identify measures to prevent SSOs and blockages caused by FOG?	✓	
D	Are there requirements to install grease removal devices (such as traps or interceptors), best management practices (BMP) requirements, record keeping, maintenance requirements and reporting requirements established in the City's FOG Control Program?	✓	
E	Does the City have authority to inspect grease producing facilities and have sufficient staff to inspect and enforce the FOG ordinance?	✓	
F	Does the FOG control program identify sections of the collection system subject to FOG blockages, establish a cleaning schedule and address source control measures to minimize these blockages?	✓	
G	Does the FOG control program implement source control measures for all sources of FOG discharged to the collection system?	✓	
H	Is the current FOG program effective in minimizing blockages of sewer lines resulting from discharges of FOG to the system?	✓	

Element 7 – Fats, Oils, and Grease (FOG) Control Program	Yes	No
Discussion: The FOG inspection program in combination with the sewer mainline cleaning observations will help the City identify any potential location in the collection system that may be subject to FOG blockages.		

	Element 8 – System Evaluation and Capacity Assurance Plan	Yes	No
A	Does the System Evaluation and Capacity Assurance Plan evaluate hydraulic deficiencies in the system and provide estimates of peak flows associated with conditions similar to those causing overflow events, if applicable?	✓	
B	Does the City's capital improvement program (CIP) establish a schedule of approximate completion dates for both short-term and long-term improvements and is the schedule reviewed and updated to reflect current budgetary capabilities and activity accomplishment?		✓
C	Does the City take steps needed to establish a short and long-term CIP to address hydraulic deficiencies, including prioritization, alternatives analysis, and schedules? Are repair and replacement projects developed based upon condition assessment and/or field maintenance results?	✓	
Discussion: The City is in the process of developing a long-term capital improvement plan to assure that the City has sufficient capacity to address buildout wet weather flows. This information will be included in the SSMP after the City has finalized the plan.			

	Element 9 – Monitoring, Measurement, and Program Modifications	Yes	No
A	Does the City maintain relevant information that can be used to establish and prioritize appropriate SSMP activities?	✓	
B	Does the City monitor the implementation and, where appropriate, measure the effectiveness of each element of the SSMP?	✓	

Element 9 – Monitoring, Measurement, and Program Modifications		Yes	No
C	Does the City assess the success of the preventive maintenance program?	✓	
D	Does the City update program elements, as appropriate, based upon monitoring or performance evaluations?	✓	
E	Does the SSMP identify and illustrate SSO trends, including frequency, location and volume of SSOs?	✓	
Discussion:			

Element 10 – SSMP Audits		Yes	No
A	Does the audit focus on the effectiveness of the SSMP? If not, what needs to be changed to increase the effectiveness of the overall collection system program?	✓	
B	Were the audit results shared with the City Council? And the public, via the City website?		✓
C	Will the SSMP Audit be completed, reviewed, and filed as an Appendix to the SSMP on a biennial basis?	✓	
D	Do any proposed changes to the SSMP require Board approval as they have a substantial change in the policies and procedures for collection system operations and maintenance?		✓
Discussion:			

Element 11 – Communication Program		Yes	No
A	Does the City communicate on a regular basis with the public and other agencies about the development and implementation of the SSMP? Does the communication system provide the public the opportunity to provide input as the program is developed and implemented? Were annual progress reports and metrics of implementation of the SSMP provided to the City Council?		✓
Discussion: City staff reports sewer related activities to the City Council on a monthly basis.			

Change Log		Yes	No
A	Is the SSMP Change Log current and up to date?	✓	
Discussion:			

City of Half Moon Bay
SSMP Audit Report Form

Audit Period Covered: March, 2020 through April, 2022

Audit completed by: V.W. Housen & Associates on April 7, 2022

Introduction	Yes	No
Is the current system description complete and up to date? Are all infrastructure statistics current and complete?	✓	
Discussion:		

	Element 1 – Goals	Yes	No
A	Are the goals stated in the SSMP still appropriate and accurate?	✓	
Discussion:			

	Element 2 -- Organization	Yes	No
A	Is the Contact Information current?	✓	
B	Is the Sanitary Sewer Overflow Responder List current?	✓	
C	Is the Organization Chart in Figure 2-1 of the SSMP current?	✓	
D	Are the position descriptions an accurate portrayal of staff responsibilities?	✓	
E	Is the chain of communication for reporting and responding to SSOs accurate and up-to-date?	✓	

Element 2 -- Organization	Yes	No
Discussion: A: Confirm that contact information is current. B: Confirm that contracts with SAM and Mark Thomas & Company have been renewed. Update Appendix A documents (Sewer Maintenance Agreement with Sewer Authority Mid-Coastside and Sewer Maintenance Agreement with Mark Thomas & Company.		

Element 3 – Legal Authority		Yes	No
Does the SSMP contain current references to the City's Code documenting it's legal authority to:			
A	Prevent illicit discharges?	✓	
B	Require proper design and construction of sewers and connections?	✓	
C	Ensure access for maintenance, inspection, or repairs for portions of the lateral owned or maintained by the City?	✓	
D	Limit discharges of fats, oil and grease?	✓	
E	Enforce any violation of its sewer ordinances?	✓	
F	Were any changes or modifications made in the past year or since the last SSMP audit to City Ordinances, Regulations, or standards?	✓	
Discussion: F: City of Half Moon Bay Municipal Code Title 13 Water and Sewer was updated and passed on November 3, 2020. Update Appendix B documents.			

Element 4 – Operations and Maintenance		Yes	No
Collection System Maps			
A	Does the SSMP reference the current process and procedures for maintaining the City's sanitary sewer system maps?	✓	

Element 4 – Operations and Maintenance		Yes	No
B	Are the City's wastewater collection system maps complete, current, and sufficiently detailed?	✓	
Prioritized Preventive Maintenance			
C	Does the SSMP describe current preventive maintenance activities and the system for prioritizing the cleaning of sewer lines?		✓
D	Based upon the SSO information in CIWQS and the Annual SSO Report, are the City's preventive maintenance activities sufficient and effective in minimizing SSOs and blockages?	✓	
Rehabilitation and Replacement Program			
E	Is there an ongoing condition assessment program sufficient to rank the condition of sewer pipes and schedule rehabilitation? Are the current components of this program documented in the SSMP?	✓	
F	Does the rehabilitation and replacement plan include a capital improvement plan that addresses proper management and protection of the infrastructure assets? Does the plan include a time schedule for implementing the short and long-term plans plus a schedule for developing the funds needed for the capital improvement plan?		✓
Contingency Equipment and Replacement Inventory			
G	Does the SSMP list the major equipment currently used in the operation and maintenance of the collection system?	✓	
H	Are contingency equipment and replacement parts sufficient to respond to emergencies and properly conduct regular maintenance?	✓	
Training			
I	Are the training records current?	✓	
J	Does the SSMP document current training expectations and programs?	✓	

Element 4 – Operations and Maintenance	Yes	No
Discussion: C/F: The City has completed more recent CCTV inspections since the SSMP, including inspection of hot spot pipelines. Results of this CCTV program including recommendations from SAM and MTCo will serve as the basis of the next round of rehabilitation and replacement program. The updated SSMP should include information about recent inspection programs, as well as associated rehabilitation and replacement programs. As of the adoption of the SSMP, the City has developed a long-term capital improvement plan. The Five-Year Capital Improvement Program (FY 2021-22 to FY 2025-26) includes annual budget information for sewer improvements including a sewer maintenance program, point repair program, manhole rehabilitation program, pump station replacement project, and sewer masterplan development, amongst other things. The CIP should be included in the next SSMP update, and Appendix C should be updated accordingly. I: Confirm that training records are current.		

Element 5 – Design and Performance Standards		Yes	No
A	Does the SSMP reference current design and construction standards for the installation of new sanitary sewer systems, pump stations and other appurtenances and for the rehabilitation and repair of existing sanitary sewer systems?	✓	
B	Does the SSMP document current procedures and standards for inspecting and testing the installation of new sewers, pumps, and other appurtenances and the rehabilitation and repair of existing sewer lines?	✓	
Discussion:			

	Element 6 – Overflow and Emergency Response Plan (OERP)	Yes	No
A	Does the City's OERP contain proper notification procedures so that the primary responders and regulatory agencies are informed of all sanitary sewer overflows (SSOs) as required by the WDR and MRP?	✓	
B	Does the OERP have a program to ensure an appropriate response to all overflows?	✓	
C	Does the OERP contain procedures to ensure prompt notification to appropriate regulatory agencies and other potentially affected entities of all SSOs that potentially affect public health or reach waters of the State in accordance with the MRP? Does the SSMP identify the officials who will receive immediate notification of such SSOs?	✓	
D	Are staff and contractor personnel aware of and appropriately trained on the procedures of the OERP?	✓	
E	Does the OERP contain procedures to address emergency operations such as traffic and crowd control and other necessary response activities?		✓
F	Does the OERP ensure that all reasonable steps are taken to contain and prevent the discharge of untreated and partially treated wastewater to waters of the United States and to minimize or correct any adverse impact on the environment resulting from SSOs, including such accelerated or additional monitoring as may be necessary to determine the nature and impact of the discharge?	✓	
G	Considering SSO performance data, is the OERP effective in handling SSOs in order to safeguard public health and the environment?	✓	
H	Is the Water Quality Monitoring Plan current and has it been trained on and practiced by staff that would be involved in a SSO of large volume?	✓	
I	Was sampling conducted within 48 hours for all SSOs greater than 50,000 gallons and were results entered for these SSOs through the CIWQS website?	✓	
J	Has the City prepared a Technical Report for all SSOs larger than 50,000 gallons? Have all Technical Reports been filed on the CIWQS website as required?	✓	

Element 6 – Overflow and Emergency Response Plan (OERP)	Yes	No
Discussion: E: The City does not have a formal traffic and crowd control program. However, the City's contractors are equipped with traffic cones and utility trucks in order to divert traffic as needed during emergency response procedures.		

	Element 7 – Fats, Oils, and Grease (FOG) Control Program	Yes	No
A	Does the Fats, Oils, and Grease (FOG) Control Program include a description of public education outreach efforts that promote proper handling and disposal of FOG?	✓	
B	Does the FOG program include a plan for the disposal of FOG generated within the sewer system service area?	✓	
C	Does the City have sufficient legal authority to prohibit discharges to the system and identify measures to prevent SSOs and blockages caused by FOG?	✓	
D	Are there requirements to install grease removal devices (such as traps or interceptors), best management practices (BMP) requirements, record keeping, maintenance requirements and reporting requirements established in the City's FOG Control Program?	✓	
E	Does the City have authority to inspect grease producing facilities and have sufficient staff to inspect and enforce the FOG ordinance?	✓	
F	Does the FOG control program identify sections of the collection system subject to FOG blockages, establish a cleaning schedule and address source control measures to minimize these blockages?	✓	
G	Does the FOG control program implement source control measures for all sources of FOG discharged to the collection system?	✓	
H	Is the current FOG program effective in minimizing blockages of sewer lines resulting from discharges of FOG to the system?	✓	

Element 7 – Fats, Oils, and Grease (FOG) Control Program	Yes	No
Discussion: The FOG inspection program in combination with the sewer mainline cleaning observations will help the City identify any potential location in the collection system that may be subject to FOG blockages. Since the adoption of the SSMP, the City has developed domestic and non-domestic FOG pamphlets for public education. The City plans to distribute these to the public with the adoption of the next SSMP. These documents should also be posted on the City website.		

	Element 8 – System Evaluation and Capacity Assurance Plan	Yes	No
A	Does the System Evaluation and Capacity Assurance Plan evaluate hydraulic deficiencies in the system and provide estimates of peak flows associated with conditions similar to those causing overflow events, if applicable?	✓	
B	Does the City's capital improvement program (CIP) establish a schedule of approximate completion dates for both short-term and long-term improvements and is the schedule reviewed and updated to reflect current budgetary capabilities and activity accomplishment?	✓	
C	Does the City take steps needed to establish a short and long-term CIP to address hydraulic deficiencies, including prioritization, alternatives analysis, and schedules? Are repair and replacement projects developed based upon condition assessment and/or field maintenance results?	✓	
Discussion: Since the adoption of the SSMP, the City has been completed a flow monitoring study to confirm system flows. The City has also updated its hydraulic model in InfoWorks ICM. The City is currently updating its Sewer System Master Plan based on the flow monitoring and hydraulic model results. The Master Plan will include capital improvement recommendations based on system capacity evaluations. The SSMP update should reflect this information.			

	Element 9 – Monitoring, Measurement, and Program Modifications	Yes	No
A	Does the City maintain relevant information that can be used to establish and prioritize appropriate SSMP activities?	✓	

Element 9 – Monitoring, Measurement, and Program Modifications		Yes	No
B	Does the City monitor the implementation and, where appropriate, measure the effectiveness of each element of the SSMP?	✓	
C	Does the City assess the success of the preventive maintenance program?	✓	
D	Does the City update program elements, as appropriate, based upon monitoring or performance evaluations?	✓	
E	Does the SSMP identify and illustrate SSO trends, including frequency, location and volume of SSOs?	✓	
Discussion:			

Element 10 – SSMP Audits		Yes	No
A	Does the audit focus on the effectiveness of the SSMP? If not, what needs to be changed to increase the effectiveness of the overall collection system program?	✓	
B	Were the audit results shared with the City Council? And the public, via the City website?	✓	
C	Will the SSMP Audit be completed, reviewed, and filed as an Appendix to the SSMP on a biennial basis?	✓	
D	Do any proposed changes to the SSMP require Board approval as they have a substantial change in the policies and procedures for collection system operations and maintenance?	✓	
Discussion:			

Element 11 – Communication Program		Yes	No
A	Does the City communicate on a regular basis with the public and other agencies about the development and implementation of the SSMP? Does the communication system provide the public the opportunity to provide input as the program is developed and implemented? Were annual progress reports and metrics of implementation of the SSMP provided to the City Council?		✓
Discussion: City staff reports sewer related activities to the City Council on a monthly basis.			

Change Log		Yes	No
A	Is the SSMP Change Log current and up to date?	✓	
Discussion:			

Appendix J
Element 11 (Communication Plan)
Placeholder for Future Supporting Documents

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