MARINA COAST WATER DISTRICT

11 RESERVATION ROAD, MARINA, CA 93933-2099
Home Page: www.mcwd.org
TEL: (831) 384-6131 FAX: (831) 883-5995

Agenda
Regular Board Meeting, Board of Directors
Marina Coast Water District
and
Regular Board Meeting, Board of Directors
Marina Coast Water District Groundwater Sustainability Agency

Dual Locations
11 Reservation Road, Marina, California
And
Waimānalo Public and School Library
41-1320 Kalanianaʻole Hwy, Waimānalo, HI 96795

Tuesday, June 25, 2019, 6:30 p.m. PST
(Please Note the Location and Day Change)

This meeting has been noticed according to the Brown Act rules. The Board of Directors meet regularly on the third Monday of each month with workshops scheduled for the first Monday of some months. The meetings normally begin at 6:30 p.m. and are usually held at the City of Marina Council Chambers at 211 Hillcrest Avenue, Marina, California.

Our Mission: *We provide our customers with high quality water, wastewater collection and conservation services at a reasonable cost, through planning, management and the development of water resources in an environmentally sensitive manner.*

1. Call to Order

2. Roll Call

3. Public Comment on Closed Session Items *Anyone wishing to address the Board on matters appearing on Closed Session may do so at this time. Please limit your comment to four minutes. The public may comment on any other items listed on the agenda at the time they are considered by the Board.*

4. Closed Session

A. Pursuant to Government Code 54956.9
Conference with Legal Counsel – Existing Litigation

This agenda is subject to revision and may be amended prior to the scheduled meeting. Pursuant to Government Code section 54954.2(a)(1), the agenda for each meeting of the Board shall be posted at the City of Marina Council Chambers. The agenda shall also be posted at the following locations but those locations are not official agenda posting locations for purposes of section 54954.2(a)(1): District offices at 11 Reservation Road, Seaside City Hall, the City of Marina Library, and the City of Seaside Library. A complete Board packet containing all enclosures and staff materials will be available for public review on Wednesday, June 19, 2019. Copies will also be available at the Board meeting. Information about items on this agenda or persons requesting disability related modifications and/or accommodations should contact the Board Clerk 48 hours prior to the meeting at: 831-883-5910.

1) In the Matter of the Application of California-American Water Company (U210W) for Approval of the Monterey Peninsula Water Supply Project and Authorization to Recover All Present and Future Costs in Rates, California Public Utilities Commission Application ("A.") 12-04-019

2) In the Matter of the Application of California-American Water Company (U 210 W) for an Order (1) Approving a Settlement Agreement with the County of Monterey and the Monterey County Water Resources Agency to Settle and Resolve Claims and Issues Between the Parties and to Promote the Development, Construction and Operation of a Water Supply Project for Monterey County on an Expedited Basis, and (2) Authorizing the Transfer of Authorized Costs Related to the Settlement Agreement to Its Special Request 1 Surcharge Balancing Account, California Public Utilities Commission Application ("A.") 13-05-017, and related California Supreme Court petition for writ of review.

3) City of Marina and Marina Coast Water District, Petitioners v. Public Utilities Commission of the State of California, Respondent (California-American Water Company, et al., Real Parties in Interest), Petitions for Writ of Review, California Supreme Court Case No. S253585

4) Marina Coast Water District vs California-American Water Company, Monterey County Water Resources Agency; and, California-American Water Company, Monterey County Water Resources Agency vs Marina Coast Water District, San Francisco Superior Court Case Nos. CGC-15-547125, CGC-15-546632 (Complaint for Damages, Breach of Warranties, etc.)

5) Marina Coast Water District v, California Coastal Commission (California-American Water Company, Real Party in Interest), Santa Cruz County Superior Court Case No. 15CV00267, Sixth Appellate District Court of Appeals Case No. H045468

6) Bay View Community DE, LLC; Bryan Taylor; Greg Carter; and Brooke Bilyeu vs Marina Coast Water District; Board of Directors of Marina Coast Water District; County of Monterey and Does 1-25, inclusive, Monterey County Superior Court Case No. 18CV000765 (Petition for Writ of Mandate or Administrative Mandate, and Complaint for Declaratory and Injunctive Relief and Breach of Contract)

7) Marina Coast Water District, and Does 1-100 v, County of Monterey, County of Monterey Health Department Environmental Health Bureau, and Does 101-110, Monterey County Superior Court Case No. 18CV000816 (Petition for Writ of Mandate and Complaint for Injunctive Relief)

B. Pursuant to Government Code 54957.6
Conference with Labor Negotiators
Agency Negotiators (Keith Van Der Maaten, Jan Shriner)
Employee Organization: Marina Coast Water District Employees Association

C. Pursuant to Government Code 54957.6
Conference with Labor Negotiators
Agency Negotiators (Keith Van Der Maaten, Jan Shriner)
Employee Organization: Teamsters Local 890

7:00 p.m. Reconvene Open Session

5. Reportable Actions Taken During Closed Session *The Board will announce any reportable action taken during closed session and the vote or abstention on that action of every director present, and may take additional action in open session as appropriate. Any closed session items not completed may be continued to after the end of all open session items.*

A. Consider Adoption of Resolution No. 2019-38 to Approve the Memorandum of Understanding Between the Marina Coast Water District Employees Association and the Marina Coast Water District
Action: The Board of Directors will consider approving the Memorandum of Understanding between the Marina Coast Water District Employees Association and the Marina Coast Water District.

B. Consider Adoption of Resolution No. 2019-39 to Approve the Memorandum of Understanding Between the Teamsters Local 890 and the Marina Coast Water District
Action: The Board of Directors will consider approving the Memorandum of Understanding between the Teamsters Local 890 and the Marina Coast Water District.

C. Consider Adoption of Resolution No. 2019-40 to Approve the Terms and Conditions of the Employment Agreement Between the Unrepresented Employees and the Marina Coast Water District
Action: The Board of Directors will consider approving the term and conditions of the employment agreement between the unrepresented employees and the Marina Coast Water District

6. Pledge of Allegiance

7. Oral Communications *Anyone wishing to address the Board on matters not appearing on the Agenda may do so at this time. Please limit your comment to four minutes. The public may comment on any other items listed on the agenda at the time they are considered by the Board.*

8. Workshop

A. Receive Presentation on the Draft Sewer, Water and Recycled Water Master Plan Studies for the Marina and Ord Community Service Areas and Provide Direction Regarding Preparation of the Final Documents

B. Receive Presentation on the Draft Capacity Fees for the Marina and Ord Community Service Areas and Provide Direction Regarding Preparation of the Final Documents

9. **Consent Calendar**

A. Receive and File the Check Register for the Month of May 2019

B. Consider Approval of the Draft Minutes of the Joint Board/GSA Meeting of May 20, 2019

C. Consider Adoption of Resolution No. 2019-41 to Approve a Contract with Fieldman Rolapp & Associates to Provide Financial Advisory Services to the District

D. Consider Adoption of Resolution No. 2019-42 to Approve a Memorandum of Understanding between Marina Coast Water District and the Monterey Peninsula Unified School District Regarding the In-School Water Conservation Education Program

E. Consider Adoption of Resolutin No. 2019-43 to Authorize a Notice of Completion for the Watkins Gate RISD Rehab Project to be Filed with the Monterey County Recorder

10. **Action Items** *The Board will review and discuss agenda items and take action or direct staff to return to the Board for action at a following meeting. The public may address the Board on these Items as each item is reviewed by the Board. Please limit your comment to four minutes.*

A. Consider Adoption of Resolution No. 2019-44 to Approve the Marina Coast Water District Budget for FY 2019-2020

Action: The Board of Directors will consider approving the FY 2018-2019 budget.

B. Consider Adoption of Resolution No. 2019-45 to Approve the District's Five-Year Capital Improvement Projects Budget

Action: The Board of Directors will consider approving the District's five-year Capital Improvement Projects budget for the Central Marina and Ord Community service areas.

C. Consider Adoption of Resolution No. 2019-46 Placing a Director in Nomination as a Member of the Association of Califonia Water Agencies Region 5 Board

Action: The Board of Directors will consider nominating a Director to the ACWA Region 5 Board.

D. Consider Adoption of Resolution No. 2019-47 to Approve an Addition to the Board Procedures Manual

Action: The Board of Directors will consider approving an addition to the Board Procedures Manual.

E. Discuss, Consider, and Determine Action on Vice President Jan Shriner's Request for Censure as to Director Peter Le

Action: The Board of Directors will discuss Vice President Jan Shriner's request for censure of Director Peter Le and determine what action should be taken.

11. Informational Items *Informational items are normally provided in the form of a written report or verbal update and may not require Board action. The public may address the Board on Informational Items as they are considered by the Board. Please limit your comments to four minutes.*

A. General Manager's Report

B. Counsel's Report

C. Committee and Board Liaison Reports

1. Water Conservation Commission
2. Joint City-District Committee
3. Executive Committee
4. Community Outreach Committee
5. Budget and Personnel Committee
6. M1W Board Member Liaison
7. LAFCO Liaison
8. FORA
9. WWOC Report
10. JPIA Liaison
11. Special Districts Association
12. SVBGSA Liaison (Steering Committee)

12. Board Member Requests for Future Agenda Items

13. Director's Comments *Director reports on meetings with other agencies, organizations and individuals on behalf of the District and on official District matters.*

14. Adjournment *Set or Announce Next Meeting(s), date(s), time(s), and location(s):*

Regular Meeting: *Monday, July 15, 2019, 6:30 p.m.,*
Marina Council Chambers, 211 Hillcrest Avenue, Marina

Return to Agenda

Marina Coast Water District
Agenda Transmittal

Agenda Item: 5-A Meeting Date: June 25, 2019

Prepared By: Paula Riso Approved By: Keith Van Der Maaten

Agenda Title: Consider Adoption of Resolution No. 2019-38 to Approve the Memorandum of Understanding between the Marina Coast Water District Employees Association and the Marina Coast Water District

Staff Recommendation: The Board of Directors consider adoption of Resolution No. 2019-38 to approve the Memorandum of Understanding between the MCWDEA and the Marina Coast Water District.

Background: *5-Year Strategic Plan, Goal 5.0 - Our objective is to recruit and retain a highly qualified, diverse and inspired workforce that delivers the essential services of our mission statement to the public while providing outstanding customer service. Our strategy is to utilize sound policies and personnel practices, offer competitive compensation and benefits, and provide opportunities for training, development, and professional growth while ensuring a safe and secure workplace.*

The Board appointed the General Manager, Keith Van Der Maaten, and Vice President Jan Shriner as the negotiators to represent the District.

Discussion/Analysis: Over the past several months, the District negotiators and the Marina Coast Water District Employees Association (MCWDEA) met several times and worked toward agreement on a Memorandum of Understanding (MOU). Negotiations have produced a tentative agreement on the MOU and the Board is now asked to consider final approval with an effective date of July 1, 2019.

Environmental Review Compliance: None required.

Financial Impact: ___X___Yes _____No Funding Source/Recap: Expenditures are allocated across all cost centers for salaries and benefits.

Other Considerations: If the Board cannot agree on the terms of the MOU, the Board can continue negotiations until a mutual agreement is reached.

Material Included for Information/Consideration: Resolution No. 2019-38; and, the draft MOU between the MCWDEA and the Marina Coast Water District will be provided at the meeting.

Action Required: ___X_____Resolution ________Motion ________Review
(Roll call vote is required.)

Board Action

Motion By_______________ Seconded By_________________ No Action Taken_______________

Ayes____________________________ Abstained_________________________________

Noes____________________________ Absent___________________________________

June 25, 2019

Resolution No. 2019-38
Resolution of the Board of Directors
Marina Coast Water District
Approving Memorandum of Understanding
Between the Marina Coast Water District Employees Association
and the Marina Coast Water District

RESOLVED by the Board of Directors ("Directors") of the Marina Coast Water District ("District"), at a regular meeting duly called and held on June 25, 2019, at 11 Reservation Road, Marina, California as follows:

WHEREAS, the Board appointed General Manager, Keith Van Der Maaten, and Vice President Jan Shriner to represent the District in negotiations with the supervisory and general service staff; and,

WHEREAS, the District negotiators met and negotiated with representatives of the Marina Coast Water District Employees Association; and,

WHEREAS, a tentative agreement has been reached on the MOU between the Marina Coast Water District Employees Association and the Marina Coast Water District; and,

WHEREAS, the effective date of the MOU will be July 1, 2019, unless otherwise noted in the MOU.

NOW, THEREFORE, BE IT RESOLVED, that the Board of Directors of the Marina Coast Water District does hereby approve the Memorandum of Understanding between the Marina Coast Water District Employees Association and the Marina Coast Water District, and authorizes and directs the General Manager to execute the Agreement in substantially the same form presented at this meeting on behalf of the Marina Coast Water District, and to take all other actions necessary to fully perform the District's obligations under the Agreement.

PASSED AND ADOPTED on June 25, 2019, by the Board of Directors of the Marina Coast Water District by the following roll call vote:

Ayes: Directors ____

Noes: Directors ____

Absent: Directors ____

Abstained: Directors ____

Jan Shriner, Vice President

ATTEST:

Keith Van Der Maaten, Secretary

CERTIFICATE OF SECRETARY

The undersigned Secretary of the Board of the Marina Coast Water District hereby certifies that the foregoing is a full, true and correct copy of Resolution No. 2019-38 adopted June 25, 2019.

Keith Van Der Maaten, Secretary

Return to Agenda

Marina Coast Water District
Agenda Transmittal

Agenda Item: 5-B Meeting Date: June 25, 2019

Prepared By: Paula Riso Approved By: Keith Van Der Maaten

Agenda Title: Consider Adoption of Resolution No. 2019-39 to Approve the Memorandum of Understanding between the Teamsters Local 890 and the Marina Coast Water District

Staff Recommendation: The Board of Directors consider adoption of Resolution No. 2019-39 to approve the Memorandum of Understanding between the Teamsters Local 890 and the Marina Coast Water District.

Background: *5-Year Strategic Plan Goal 5.0 - Our objective is to recruit and retain a highly qualified, diverse and inspired workforce that delivers the essential services of our mission statement to the public while providing outstanding customer service. Our strategy is to utilize sound policies and personnel practices, offer competitive compensation and benefits, and provide opportunities for training, development, and professional growth while ensuring a safe and secure workplace.*

The Board appointed the General Manager, Keith Van Der Maaten, and Vice President Jan Shriner as the negotiators to represent the District.

Discussion/Analysis: Over the past several months, the District negotiators and the Teamsters Local 890 (Teamsters) met several times and worked toward agreement on a Memorandum of Understanding (MOU). Negotiations have produced a tentative agreement on the MOU and the Board is now asked to consider final approval with an effective date of July 1, 2019, unless otherwise noted in the MOU.

Environmental Review Compliance: None required.

Financial Impact: ___X___Yes _____No Funding Source/Recap: Expenditures are allocated across all cost centers for salaries and benefits.

Other Considerations: If the Board cannot agree on the terms of the MOU, the Board can continue negotiations until a mutual agreement is reached.

Material Included for Information/Consideration: Resolution No. 2019-39; and, the draft MOU between the Teamsters and the Marina Coast Water District will be provided at the meeting.

Action Required: ___X____Resolution ________Motion ________Review
(Roll call vote is required.)

Board Action

Motion By_______________ Seconded By_________________ No Action Taken_______________

Ayes____________________________ Abstained_________________________________

Noes____________________________ Absent___________________________________

June 25, 2019

Resolution No. 2019-39
Resolution of the Board of Directors
Marina Coast Water District
Approving Memorandum of Understanding
Between the Teamsters Local 890 and the Marina Coast Water District

RESOLVED by the Board of Directors ("Directors") of the Marina Coast Water District ("District"), at a regular meeting duly called and held on June 25, 2019, at 11 Reservation Road, Marina, California as follows:

WHEREAS, the Board appointed the General Manager, Keith Van Der Maaten, and Vice President Jan Shriner to represent the District in negotiations with the management and confidential staff; and,

WHEREAS, the District negotiators met and negotiated with representatives of the Teamsters Local 890; and,

WHEREAS, a tentative agreement has been reached on the MOU between the Teamsters Local 890 and the Marina Coast Water District; and,

WHEREAS, the effective date of the MOU will be July 1, 2019, unless otherwise noted in the MOU.

NOW, THEREFORE, BE IT RESOLVED, that the Board of Directors of the Marina Coast Water District does hereby approve the Memorandum of Understanding between the Teamsters Local 890 and the Marina Coast Water District, and authorizes and directs the General Manager to execute the Agreement in substantially the same form presented at this meeting on behalf of the Marina Coast Water District, and to take all other actions necessary to fully perform the District's obligations under the Agreement.

PASSED AND ADOPTED on June 25, 2019, by the Board of Directors of the Marina Coast Water District by the following roll call vote:

Ayes: Directors____

Noes: Directors____

Absent: Directors____

Abstained: Directors____

Jan Shriner, Vice President

ATTEST:

Keith Van Der Maaten, Secretary

CERTIFICATE OF SECRETARY

The undersigned Secretary of the Board of the Marina Coast Water District hereby certifies that the foregoing is a full, true and correct copy of Resolution No. 2019-39 adopted June 25, 2019.

Keith Van Der Maaten, Secretary

Return to Agenda

Marina Coast Water District
Agenda Transmittal

Agenda Item: 5-C | Meeting Date: June 25, 2019

Prepared By: Paula Riso | Approved By: Keith Van Der Maaten

Agenda Title: Consider Adoption of Resolution No. 2019-40 to Approve the Terms and Conditions of the Employment Agreement Between the Unrepresented Employees and the Marina Coast Water District

Staff Recommendation: The Board of Directors consider adoption of Resolution No. 2019-40 to approve the Terms and Conditions of the Employment Agreement between the unrepresented employees and the Marina Coast Water District.

Background: *5-Year Strategic Plan Goal 5.0 - Our objective is to recruit and retain a highly qualified, diverse and inspired workforce that delivers the essential services of our mission statement to the public while providing outstanding customer service. Our strategy is to utilize sound policies and personnel practices, offer competitive compensation and benefits, and provide opportunities for training, development, and professional growth while ensuring a safe and secure workplace.*

Discussion/Analysis: The Deputy General Manager/District Engineer, Legal Counsel and HR/Risk Administrator are management positions which are not currently part of the represented management group (Teamsters Local 890). At this time, only the HR/Risk Administrator position is filled.

On February 8, 2011, the Board approved Resolution No. 2011-16 approving the unrepresented employee's terms and conditions of employment as more appropriate to the salary and benefits as that of the Teamsters Local 890 Memorandum of Understanding (MOU) and a letter outlining the terms and conditions was placed in the files of the unrepresented employees.

As a new Teamsters MOU has been drafted, and, once approved, the Board is requested to continue to apply the same terms and conditions of the 2019-2023 MOU to the unrepresented employees.

Environmental Review Compliance: None required.

Financial Impact: ___X___Yes _____No Funding Source/Recap: Expenditures are allocated across all cost centers for salaries and benefits.

Other Considerations: This agreement is dependent upon approval of the Teamsters MOU.

Material Included for Information/Consideration: Resolution No. 2019-40.

Action Required: ___X_____Resolution ________Motion ________Review
(Roll call vote is required.)

Board Action

Motion By_______________ Seconded By_________________ No Action Taken_______________

Ayes____________________________ Abstained_________________________________

Noes____________________________ Absent____________________________________

June 25, 2019

Resolution No. 2019-40
Resolution of the Board of Directors
Marina Coast Water District
Approving the Change in Terms and Conditions of the Employment Agreement
Between the Unrepresented Employees and the Marina Coast Water District

RESOLVED by the Board of Directors ("Directors") of the Marina Coast Water District ("District"), at a regular meeting duly called and held on June 25, 2019, at 11 Reservation Road, Marina, California as follows:

WHEREAS, the Deputy General Manager/District Engineer, Legal Counsel and HR/Risk Administrator are management positions, but not currently part of the represented management group (Teamsters Local 890); and,

WHEREAS, the HR/Risk Administrator is the only unrepresented position that is currently filled; and,

WHEREAS, previously, the Board approved the unrepresented employee's terms and conditions of employment as more appropriate to the salary and benefits as that of the Teamsters Local 890 Memorandum of Understanding (MOU) and a letter outlining the terms and conditions was placed in the files of the unrepresented employees; and,

WHEREAS, the recently approved terms and conditions of the Teamsters Memorandum of Understanding (MOU), July 1, 2019 through June 30, 2023, are appropriate to the current salary and benefits of the unrepresented employees and should be applied in the employment agreement.

NOW, THEREFORE, BE IT RESOLVED, that the Board of Directors of the Marina Coast Water District does hereby approve a Change in Terms and Conditions of the Employment Agreement between the Unrepresented Employees and the Marina Coast Water District, and authorizes and directs the General Manager to execute an Agreement in substantially the same form presented at this meeting on behalf of the Marina Coast Water District, and to take all other actions necessary to fully perform the District's obligations under the Agreement.

PASSED AND ADOPTED on June 25, 2019, by the Board of Directors of the Marina Coast Water District by the following roll call vote:

Ayes: Directors______________________________

Noes: Directors______________________________

Absent: Directors______________________________

Abstained: Directors______________________________

____

Jan Shriner, Vice President

ATTEST:

____

Keith Van Der Maaten, Secretary

CERTIFICATE OF SECRETARY

The undersigned Secretary of the Board of the Marina Coast Water District hereby certifies that the foregoing is a full, true and correct copy of Resolution No. 2019-40 adopted June 25, 2019.

____

Keith Van Der Maaten, Secretary

Return to Agenda

Marina Coast Water District
Agenda Transmittal

Agenda Item: 8-A | Meeting Date: June 25, 2019

Prepared By: Michael Wegley | Approved By: Keith Van Der Maaten

Agenda Title: Receive Presentation on the Draft Sewer, Water and Recycled Water Master Plan Studies for the Marina and Ord Community Service Areas and Provide Direction Regarding Preparation of the Final Documents

Staff Recommendation: The Board of Directors receives the presentation on the draft Sewer, Water and Recycled Water Master Plan Studies and provides direction to staff regarding preparation of the final documents.

Background: *5-Year Strategic Plan Mission Statement – To provide our customers with high quality water, wastewater collection and conservation services at a reasonable cost, through planning, management and the development of water resources in an environmentally sensitive manner.*

A master plan addresses the recommended schedule of facility improvements needed to meet the projected sewer, water and recycled water demands in the District for the planning horizon. Development of a master plan results in a proposed capital improvement program including engineering estimates of probable project cost for the proposed sewer, water and recycled water infrastructure improvements.

Impacts and changes in the projected rate of development and planned growth are documented in the 2015 Urban Water Management Plan. The two sewer master plans previously prepared for MCWD are:

- Marina Wastewater Collection System Master Plan, Winzler & Kelly, February 2005.
- Ord Community Wastewater System Master Plan, RBF Consulting, July 19, 2005.

The new sewer master plan study reevaluates the hydraulic capacity to identify and update system improvement needs based on the latest current wastewater projections. This provides a basis for updating capital improvements for the wastewater collection system pipelines, lift stations and force mains due to system deficiencies and anticipated future growth.

The last water system master plan was prepared for the District by Carollo Engineers in November 2006. The new water master plan study reevaluates the water distribution system using computer hydraulic modeling and analyzes demand, supply capacity, and performs system-wide storage analysis.

The Recycled Water Master Plan is new to the District drawing upon several recycled water studies and irrigation systems already built to receive recycled water.

Discussion/Analysis: The draft Sewer, Water and Recycled Water Master Plans Study prepared by Akel Engineering:

- Ensures adequate sewer collection and pumping systems available to meet wastewater demands,
- Ensures adequate water supply, disinfection, storage and distribution systems available to meet municipal potable water demands,
- Ensures adequate recycled water conveyance, storage and distribution systems available to meet municipal nonpotable demands, and
- Minimizes the negative effects of potential peaks, shortages, and district expansion.

The draft Master Plans will be presented to the Fort Ord Reuse Authority Water and Wastewater Oversight Committee July 11, 2019 for their input.

Environmental Review Compliance: None required.

Financial Impact: ______Yes ___X___No Funding Source/Recap: Funding for this project comes from the Engineering Professional Services Budget.

Other Considerations: None.

Material Included for Information/Consideration: Draft Sewer, Water and Recycled Water Master Plans.

Action Required: _______Resolution ________Motion ___X___Review

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Board Action

Motion By______________ Seconded By________________ No Action Taken______________

Ayes___________________________ Abstained______________________________

Noes___________________________ Absent_________________________________

Return to Agenda

MARINA COAST WATER DISTRICT

2019

SEWER MASTER PLAN

Draft

April 2019
(Excluding Capacity Fees)

AKEL ENGINEERING GROUP, INC.

AKEL
ENGINEERING GROUP, INC.

Smart Planning Our Water Resources

April 12, 2019

Marina Coast Water District
2840 4th Avenue
Marina, CA 93933

Attention: Michael Wegley, P.E.
District Engineer

Subject: 2019 Sewer Master Plan – Draft Report

Dear Michael:

We are pleased to submit the draft report for the Marina Coast Water District Sewer Master Plan. This master plan is a standalone document, though it was prepared as part of the integrated infrastructure master plans for the water, sewer, and recycled water master plans. The master plan documents the following:

- Existing sewer system facilities, acceptable hydraulic performance criteria, and projected sewer flows consistent within the District service area.
- Development and calibration of the District's GIS-based sewer system hydraulic model.
- Capacity evaluation of the existing water 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; Keith Van Der Maaten, General Manager; Brian True, Senior Civil Engineer; and other District staff whose courtesy and cooperation were valuable components in completing this study.

Sincerely,

AKEL ENGINEERING GROUP, INC.

Tony Akel, P.E.
Principal

Enclosure: Report

Acknowledgements

Board of Directors

Dr. Thomas P. Moore, Board President

Jan Shriner, Board Vice President

Herbert Cortez

Peter Le

Matt Zefferman

Management Personnel

Keith Van Der Maaten, General Manager

Michael Wegley, District Engineer

Kelly Cadiente, Director of Administrative Services

Derek Cray, Maintenance and Operations Manager

Brian True, Senior Civil Engineer

Jaron Hollida, Assistant Engineer

Andrew Racz, Associate Engineer

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APPENDICES

CHAPTER 1 - INTRODUCTION

This chapter provides a brief background of the Marina Coast Water District's (District) sewer 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 Marina Coast Water District (District) is located approximately 10 miles north of the City of Monterey, 8 miles east of the City of Salinas, and 3 miles south of the City of Castroville (**Figure 1.1**). The District provides sewer collection service to approximately 36,000 residents, as well as a myriad of commercial, industrial, and institutional establishments. The District owns, operates, and maintains the sewer collection system, which consists of more than 150 miles of gravity trunks and force mains up to 72-inches in diameter, which ultimately convey flows to the Monterey One Water treatment plant.

In 2005, the District developed a Wastewater Collection System Master Plan for the Central Marina system that identified capacity deficiencies in the existing sewer system and recommended improvements to alleviate existing deficiencies and serve future developments within the defined Planning Service Area. The District completed a similar master plan for the Fort Ord Cost Center in 2005.

Recognizing the importance of planning, developing, and financing system facilities to provide reliable sanitary sewer service to existing customers and for servicing anticipated growth within the sphere of influence, the District initiated updating elements of the previous master plans to reflect current land use conditions, and to consolidate the plans into one comprehensive planning document.

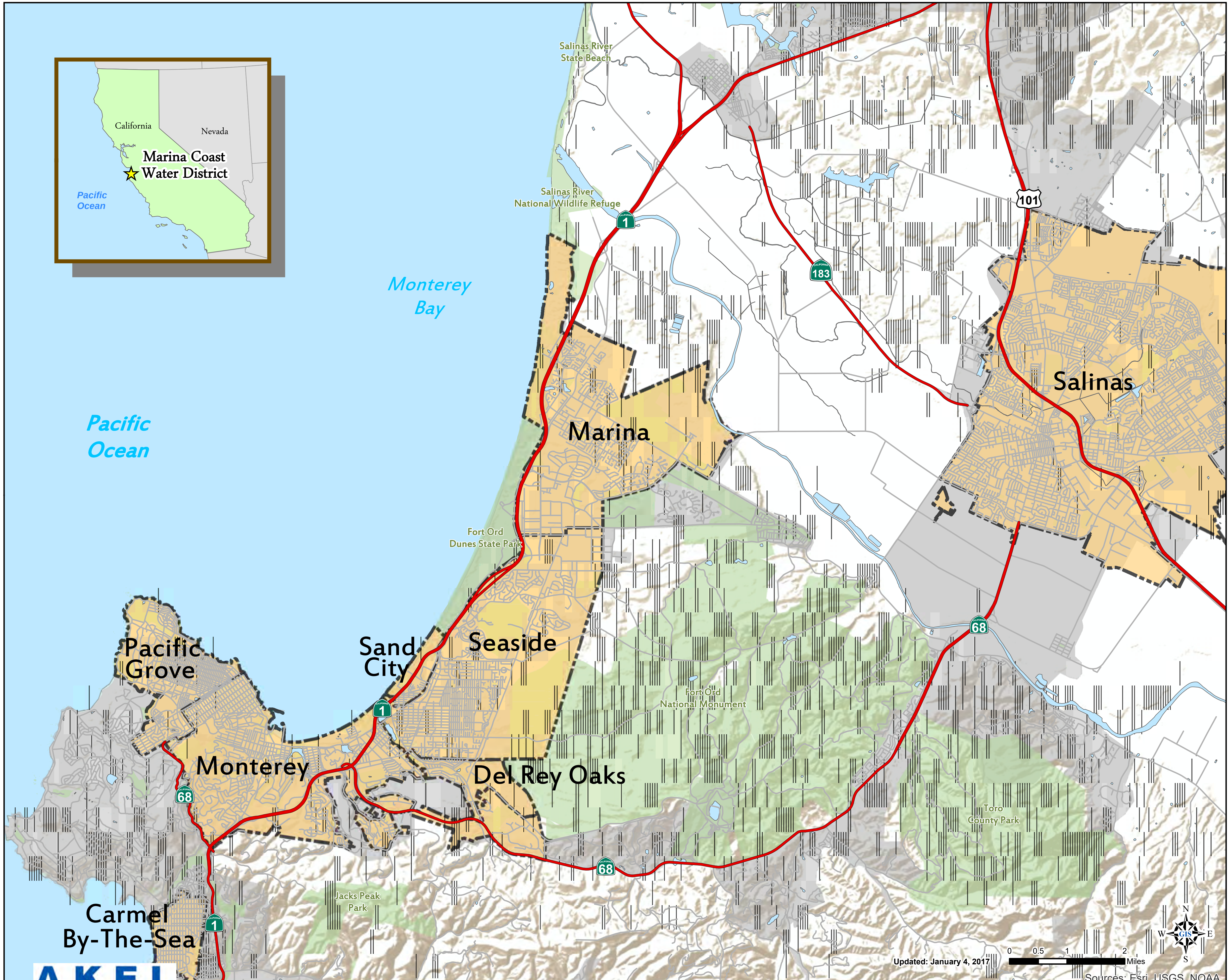
1.2 SCOPE OF WORK

Marina Coast Water District approved Akel Engineering Group Inc. to prepare this master plan in November of 2016. This 2019 Sewer Master Plan (SMP) is intended to serve as a tool for planning and phasing the construction of future sanitary sewer system facilities for the projected buildout of the Marina Coast Water District. The 2019 SMP evaluates the District's sewer system and recommends capacity improvements necessary to service the needs of existing users and for servicing the future growth of the District.

Should planning conditions change, and depending on their magnitude, adjustments to the master plan recommendations might be necessary.

This master plan includes the following tasks:

- Summarize the District's existing sewer system facilities.



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Legend

- Major Highways
- City Limits
- Urbanized Area
- Protected Open Space
- Rivers/Streams
- Waterbodies

PRELIMINARY

Figure 1.1
Regional Location Map

Sewer Master Plan
Marina Coast Water District

- Document growth planning assumptions and known future developments.
- Summarize the sewer system performance criteria and design storm event.
- Project future sewer flows.
- Develop and calibrate the physical characteristics of the hydraulic model (gravity mains, force mains, and lift stations).
- Evaluate the adequacy of capacity for the sanitary sewer system facilities to meet existing and projected peak dry weather flows and peak wet weather flows.
- Recommend a capital improvement program (CIP) with an opinion of probable construction costs.
- Perform a capacity allocation analysis for cost sharing purposes between existing users and future growth.
- Develop a 2019 Sewer Master Plan Report.

1.3 INTEGRATED APPROACH TO MASTER PLANNING

This District implemented an integrated master planning approach and contracted the services of Akel Engineering Group to prepare the following documents:

- Water Master Plan
- Sewer Master Plan
- Recycled Water Master Plan

While each of these reports is published as a standalone document, they have been coordinated for consistency with the various planning documents within the District's service area. Additionally, each document has been cross referenced to reflect relevant analysis results with the other documents.

1.4 PREVIOUS MASTER PLANS

The District's most recent sewer master plan was completed in 2005. This master plan included evaluation of servicing growth to the planning area, evaluated existing sewer flows and projected future flows and recommended phased improvements to the sewer system for a horizon year of 2020. Additionally, the 2005 master plan included the development of the hydraulic model which was used for evaluating the sewer system. Improvements were recommended for servicing existing and future growth areas, and a corresponding Capital Improvement Program was developed to quantify the corresponding costs.

1.5 RELEVANT REPORTS

The District has completed several special studies intended to evaluate localized growth. These reports were referenced and used during this capacity analysis. The following lists relevant reports that were used in the completion of this master plan, as well as a brief description of each document:

- **Marina Coast Water District Wastewater Collection System Master Plan, February 2005 (2005 WWSMP).** This report documents the planning and performance criteria, evaluates the sewer system, recommends improvements, and provides an estimate of costs.
- **Ord Community Wastewater System Master Plan, July 2005 (2005 WWSMP)**. This report documents the planning and performance criteria, evaluates the sewer system, recommends improvements, and provides an estimate of costs.
- **Seaside County Sanitation District, 2011 Sewer Master Plan and Rate Study.** This report documents the planning and performance criteria, existing and future flows, collection system analysis, recommends improvements, and provides an estimate of costs for the Seaside County Sanitation District service area, which includes portions of the City of Seaside, the City of Del Rey Oaks, and Sand City.
- **City of Marina General Plan, December 2006, (2006 General Plan).** The City's 2006 General Plan provides future land use planning, and growth assumptions for the planning areas. Additionally, this report establishes the planning horizon for improvements in this master plan.
- **County of Monterey General Plan, October 2010.** The County's 2010 General Plan addresses unincorporated areas of the County and considers the general plans of cities within the County to allow for cooperative planning. The Fort Ord Land Use Plan provided within the County's 2010 General Plan was used to assist in the development of the potential future land use within the District's service area.
- **City of Monterey General Plan, January 2005.** The City's 2005 General Plan provides future land use planning and growth assumptions. These growth assumptions were used to assist in the development of the potential future land use within the District's service area, generally along South Boundary Road.
- **City of Seaside General Plan, August 2004.** The City of Seaside's 2004 General Plan provides future land use planning and growth assumptions. These growth assumptions were used to assist in the development of the potential future land use within the District's service area, generally along General Jim Moore Boulevard south of Inter-Garrison Road.
- **City of Del Rey Oaks General Plan, January 1997.** The City of Del Rey Oaks' 1997 General Plan provides future land use planning and growth assumptions. These growth assumptions were used to assist in the development of the potential future land use within the District's service area, generally along South Boundary Road east of General Jim Moore Boulevard.

- **California State University, Monterey Bay Draft Campus Master Plan, June 2017.** The California State University, Monterey Bay's (CSUMB) Draft Campus Master Plan provides future land use planning and growth assumptions for the exiting campus. These growth assumptions were used to assist in the development of the planned future land use of the CSUMB campus within the District's service area.

- **Fort Ord Reuse Plan, June 1997 (1997 FORP).** The Fort Ord Reuse Plan, prepared by the Fort Ord Reuse Authority, provides future land use planning and development assumptions for lands that are part of the former Fort Ord.

- **Marina Coast Water District 2015 Urban Water Management Plan, (2015 UWMP).** The 2015 Urban Water Management Plan (UWMP) establishes a benchmark per capita water usage and targets in order to achieve higher levels of water conservation for the sustainability of water supply sources. This includes adopting an updated water shortage contingency plan, defining supply sources, addressing supply reliability, and projecting sustainable supply yields and future demands.

1.6 REPORT ORGANIZATION

The Sewer Master Plan report contains the following chapters:

Chapter 1 – Introduction. This chapter provides a brief background of the Marina Coast Water District's (District) 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 Area Characteristics. This chapter presents a discussion of the planning area characteristics for this master plan and includes a study area description, service area land use, and population for the Marina Coast Water District.

Chapter 3 – System Performance and Design Criteria. This chapter presents the District's performance and design criteria, which were used in this master plan for evaluating the adequacy of capacity for the existing sewer system and for sizing improvements required to mitigate deficiencies and to accommodate future growth. The design criteria includes: capacity requirements for the sewer facilities, flow calculation methodologies for future users, flow peaking factors, and accounting for infiltration and inflows.

Chapter 4 – Existing Sewer Collection Facilities. This chapter provides a description of the District's existing sewer system facilities including gravity trunks, force mains, lift stations, and sewer collection basins. The chapter also includes a brief description of the Monterey One Water (M1W) wastewater treatment plant, which treats and disposes of the wastewater for Central Marina and the Ord Community.

Chapter 5 –Sewer Flows. This chapter summarizes historical sewer flows experienced at the Monterey One Water WWTP and defines flow terminologies relevant to this evaluation. This chapter discusses the wastewater flow distribution within the collection basins and identifies the design flows used in the hydraulic modeling effort and capacity evaluation. The design flows include the flows due to existing conditions and buildout development conditions.

Chapter 6 – Hydraulic Model Development. This chapter describes the development and calibration of the District's sewer system hydraulic model. Hydraulic network analysis has become an effectively powerful tool in all aspects of sewer system planning, design, operation, management, and system reliability analysis. The District's hydraulic model was used to 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 capacity evaluation during peak dry weather flows and peak wet weather flows for the existing and buildout development conditions. This chapter summaries the lift station condition assessment performed by GHD. The recommended sewer system improvements needed to mitigate capacity deficiencies are also discussed in this chapter.

Chapter 8 – Capital Improvement Program. This chapter provides a summary of the recommended Capital Improvement Program (CIP) for the District's sewer system. The program is based on the evaluation of the District's sewer system and on the recommended projects described in the previous chapters. The CIP has been prepared to assist the District in planning and constructing the collection system improvements through the ultimate buildout scenario. This chapter also presents the cost criteria and methodologies for developing the capacity improvement costs.

1.7 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:

- Keith Van Der Maaten, General Manager
- Mike Wegley, District Engineer
- Derek Cray, Maintenance and Operations Manager
- Brian True, Senior Civil Engineer
- Jaron Hollida, Assistant Engineer
- Andrew Racz, Associate Engineer
- Andy Sterbenz, Consultant

1.8 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 system. In some cases, different sets of units were used to describe the same parameter where it was necessary to report values in smaller or larger quantities. 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 are 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.**

1.9 GEOGRAPHIC INFORMATION SYSTEMS

This master planning effort made extensive use of Geographic Information Systems (GIS) technology, for efficiently completing the following tasks:

- Developing the physical characteristics of the hydraulic model (gravity mains, force mains, and lift stations).
- Allocating existing sewer loads, as calculated using the developed sewer unit factors.
- Calculating and allocating future sewer loads, based on the future developments land use.
- Extracting ground elevations along the gravity and force mains from available contour maps.
- Generating maps and exhibits used in this master plan.

Table 1.1 Unit Conversions

Sewer Master Plan

Marina Coast Water District

PRELIMINARY

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	1,000,000
million gallons	gallons	1×10^{-6}
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 Master Plan

Marina Coast Water District

PRELIMINARY

Abbreviation	Expansion	Abbreviation	Expansion
10yr-24hr	10-Year 24-Hour	HGL	Hydraulic Grade Line
AACE	Association for the Advancement of Cost Engineering	in/hr	Inch per Hour
ADWF	Average Dry Weather Flow	I&I	Infiltration and Inflow
AAF	Annual Average Flow	LF	Linear Feet
Akel	Akel Engineering Group, Inc.	LS	Lift Station
AWWF	Average Wet Weather Flow	M1W	Monterey One Water
CCI	Construct Cost Index	MCWRA	Monterey County Water Resources Agency
CCTV	Closed Circuit Television	MDDWF	Maximum Day Dry Weather Flow
CDP	Census Designated Place	MDWWF	Maximum Day Wet Weather Flow
CIP	Capital Improvement Program	MGD	Million Gallons per Day
CIPP	Cured in Place Pipe	MMDWF	Maximum Month Dry Weather Flow
DDF	Depth Duration Frequency	MMWWF	Maximum Month Wet Weather Flow
d/D	depth of flow to pipe diameter	MPWMD	Monterey Peninsula Water Management District
District/ MCWD	Marina Coast Water District	NASSCO	National Association of Sewer Service Compaines
ENR	Engineering News Record	NOAA	National Oceanic and Atmospheric Administration
ft	Feet	PDWF	Peak Dry Weather Flow
fps	Feet per Second	PWWF	Peak Wet Weather Flow
FY	Fiscal Year	PACP	Pipeline Assessment and Certification Program
GIS	Geographic Information Systems	ROW	Right of Way
gpdc	Gallons per day per capita	SWRCB	State Water Resources Control Board
gpd	Gallons per Day	VCP	Vitrified Clay Pipe
gpm	Gallons per Minute	UWMP	Urban Water Management Plan
HE	Household equivalent	WWTP	Wastewater Treatment Plant

CHAPTER 2 - PLANNING AREA CHARACTERISTICS

This chapter presents a discussion of the planning area characteristics for this master plan and includes a study area description, service area land use, and population for the Marina Coast Water District.

2.1 STUDY AREA DESCRIPTION

The Marina Coast Water District is located in Monterey County on the west coast of California, south of the City of San Francisco. The District is located approximately 10 miles north of the City of Monterey, 8 miles east of the City of Salinas, and 3 miles south of the City of Castroville. Pacific Coast Highway 1 runs from south to north near the District's western boundary. The District currently serves more than 36,000 customers and encompasses an area greater than 29,000 acres.

The District service area is generally bound to the north by Marina Green Drive, to the east by Reservation Road, to the west by Pacific Coast Highway 1, and to the south by South Boundary Road. The topography generally slopes downward toward the ocean from west to east, with elevations ranging between 50 feet to more than 400 feet. **Figure 2.1** displays the District's existing service area and the local municipal boundaries.

The District operates and maintains a sanitary sewer collection system that covers the majority of former Fort Ord area, the City of Marina, and portions of the City of Seaside. Currently, the wastewater flows are conveyed to outfalls that enter regional interceptors that convey flow to the Monterey One Water wastewater treatment plant (M1W).

2.2 SEWER SERVICE AREA

The District's sewer system services residential and non-residential lands within the District limits, as shown on **Figure 2.1**. The District's sewer service area can generally be divided into two regions: the Central Marina and the Ord Community. The boundaries and planning area characteristics of these two regions are briefly described in the following sections:

2.2.1 Central Marina Service Area

The Central Marina service area region is within the city limits generally north of Patton Parkway and west of Salinas Avenue. The future development within this service area region is generally comprised of the development of vacant parcels located throughout the city as well as one large area of potential development generally north of Beach Road.

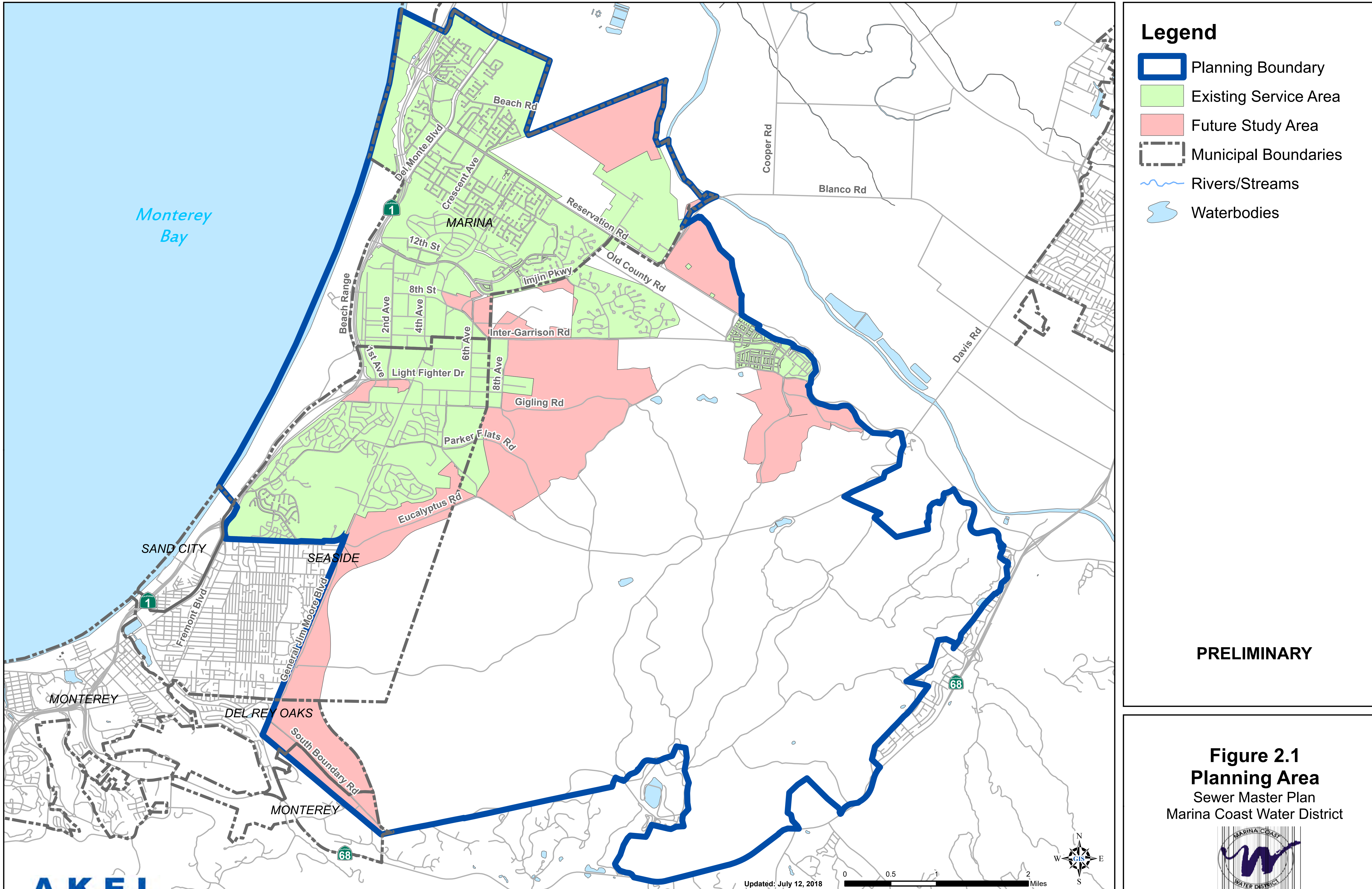

Figure 2.1
Planning Area
Sewer Master Plan
Marina Coast Water District

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2.2.2 Ord Community Service Area

The Ord Community service area region includes developed, vacant, and designated open space lands within portions of the County of Monterey, City of Marina, City of Seaside, City of Monterey within the former Fort Ord. The City of Del Rey Oaks within the former Fort Ord is part of the Seaside County Sanitation District. The potential future development within this area is generally comprised of the redevelopment of the former Fort Ord and the new development on currently vacant lands.

For conservative planning purposes the master plan assumes the buildout development of potential developable lands, however the Fort Ord Reuse Authority (FORA) has established limits for growth within the former Fort Ord area, which are briefly summarized as follows:

2.2.2.1 15-Year Development Areas

In addition to outlining improvements, the FORA capital improvement plan specifies the allowable development within the former Fort Ord area. These allowable developments typically represent a portion of the potential developable lands and are summarized on **Table 2.1**. The potential acreages associated with these development limits, summarized on **Table 2.2**, were estimated for the purposes of establishing future water demands. These acreages were based on the following general assumptions:

- Residential: Future dwelling units were converted to acreages based on an average dwelling unit density of 8 du/acre
- Office, Industrial, Commercial: Future square feet of development were converted to acreages based on an average floor-area-ratio of 0.6.
- Hotel: Acreages for future hotels were estimated based on various planning documents and County of Monterey parcel database

2.2.2.2 Parker Flats Land Use Swap

The 1997 Fort Ord Installation-Wide Multi-Species Habitat Management Plan (1997 HMP) identified up to 6,300 acres throughout the Fort Ord base that could potentially develop from vegetation and habitat to a municipal-type use. As part of the 1997 HMP, East Garrison development was limited to 200 acres, with the majority of development slated for the Parker Flats are of Fort Ord. In 2002, FORA, the County of Monterey, and Monterey Peninsula College submitted a proposal to modify the 1997 HMP land use, specifically allowing for more development in the East Garrison area, while converting developable lands in Parker Flats to habitat reserve areas. This proposal was submitted as an official Land Swap Agreement (LSA) to the United States Army and the United States Fish and Wildlife Service.

The LSA ultimately allowed for an additional 210 acres of land to be developed at East Garrison, while converting approximately 447 acres of land within Parker Flats to habitat reserve. The Memorandum of Understanding (MOU) for the LSA was signed on October 14, 2003.

Table 2.1 Fort Ord Reuse Authority 10-Year Development Limits

Marina Coast Water District
Sewer Master Plan

PRELIMINARY

Development Areas[1]	Residential (du)	Office (sf)	Industrial (sf)	Commercial (sf)	Hotel Rooms
Campus Town Specific Plan					
26 Acre Parcel (Planned)	150	0	0	0	0
Campus Town / 26 Acre (Planned)	0	10,000	30,000	40,000	300
Campus Town / Surplus II (Planned)	0	10,000	40,000	50,000	0
Surplus II (Planned)	238	0	0	0	0
Subtotal	388	20,000	70,000	90,000	300
Cypress Knolls					
Cypress Knolls (Entitled)	712	0	0	0	0
Del Rey Oaks					
Del Rey Oaks (Planned)	691	0	0	0	0
Del Rey Oaks RV Park (Entitled)	0	400,000	0	0	0
Del Rey Oaks RV Park (Planned)	0	0	0	0	550
Subtotal	691	400,000	0	0	550
Dunes Phase 1, 2, & 3					
Dunes Phase 1 (Entitled)	187	69,000	0	80,000	0
Dunes Phase 2 (Entitled)	225	0	0	0	394
Dunes Phase 3 (Entitled)	435	450,000	450,000	0	0
Subtotal	847	519,000	450,000	80,000	394
East Garrison					
East Garrison I (Entitled)	721	68,000	0	34,000	0
Main Gate					
Main Gate	0	0	0	150,000	350
Main Gates (Planned)	145	0	0	0	0
Subtotal	145	0	0	150,000	350
City of Monterey					
Monterey (Planned)	0	721,524	216,276	0	0
Sea Haven					
Sea Haven A (Entitled)	802	0	0	0	0
Seahaven (Entitled)	127	0	0	0	0
Subtotal	929	0	0	0	0
Seaside East					
Seaside East (Planned)	310	30,000	30,000	30,000	0
Seaside Resort					
Seaside Resort (Entitled)	122	0	0	10,000	330
Seaside Resort TS (Entitled)	0	0	0	0	68
Subtotal	122	0	0	10,000	398
UC MBEST					
UC (Planned)	0	680,000	100,000	310,000	0
UC Blanco Triangle (Planned)	240	0	0	0	0
Subtotal	240	680,000	100,000	310,000	0
Development Total					
	5,105	**2,438,524**	**866,276**	**704,000**	**1,992**

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10/19/2018

Note:

1. Development Areas extracted from Development Forecasts documented in FORA "FY 2018-2019 Capital Improvement Program", Table 6 and Table 7.

Table 2.2 15-Year Development Summary
Sewer Master Plan
Marina Coast Water District

PRELIMINARY

Development Areas	Development Limits[1]			Estimated Development Area			
	Residential (du)	Office, Industrial, Commercial (sf)	Hotel (rooms)	Residential[2] (acres)	Office, Industrial, Commercial[3] (acres)	Hotel[4] (acres)	Total (acres)
1	2	3	4	5	6	7	8
Campus Town Specific Plan	388	180,000	300	48.5	6.9	2.5	57.9
Cypress Knolls	712	0	0	89.0	0.0	0.0	89.0
Del Rey Oaks	691	400,000	550	86.4	15.3	38.6	140.2
Dunes Phase 1, 2, & 3	847	1,049,000	394	105.9	40.1	12.9	158.9
East Garrison	721	102,000	0	90.1	3.9	0.0	94.0
Main Gate	145	150,000	350	18.1	5.7	7.8	31.6
City of Monterey	0	937,800	0	0.0	35.9	0.0	35.9
Sea Haven	929	0	0	116.1	0.0	0.0	116.1
Seaside East	310	90,000	0	38.8	3.4	0.0	42.2
Seaside Resort	122	10,000	398	15.3	0.4	16.8	32.4
UC MBEST	240	1,090,000	0	30.0	41.7	0.0	71.7
Total	**5,105**	**4,008,800**	**1,992**	**638.1**	**153.4**	**78.5**	**870.0**

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3/15/2019

Notes:

1. Development limits based on development Forecasts documented in FORA “FY 2018-2019 Capital Improvement Program”, Table 6 and Table 7 and reflect remaining entitlements.
2. Residential acreage estimated based on average residential density of 8 dwelling units per acre.
3. Office, Industrial, and Commercial acreage estimated bsaed on average floor-area-ratio of 0.6.
4. Acreage for hotel development estimated based on available planning information and County of Monterey parcel database.

The tables and figures included in this Master Plan document the respective land use planning agency General Plan maps, with input from District staff. However, and in adherence to the LSA, developable acreages were adjusted to reflect the most recent planning data, and as provided by FORA staff. This included utilizing FORA GIS information to determine on a parcel by parcel basis what lands are included in the LSA.

2.3 EXISTING AND FUTURE LAND USE

The existing and future land use for the District service area is based on a combination of planning documents that includes the following sources: City of Marina, City of Seaside, City of Monterey, City of Del Rey Oaks, CSU Monterey Bay, County of Monterey, FORA, and District staff. For planning purposes, the various residential and commercial land use types across the multiple jurisdictions within the District service area were consolidated into single residential and commercial categories.

The existing and future land use conditions are graphically summarized on **Figure 2.2** and **Figure 2.3.** It should be noted that **Figure 2.3** also includes the aforementioned Parker Flats – East Garrison LSA boundaries. The existing and future land use acreages, summarized on **Table 2.3**, can be broken down into the following categories:

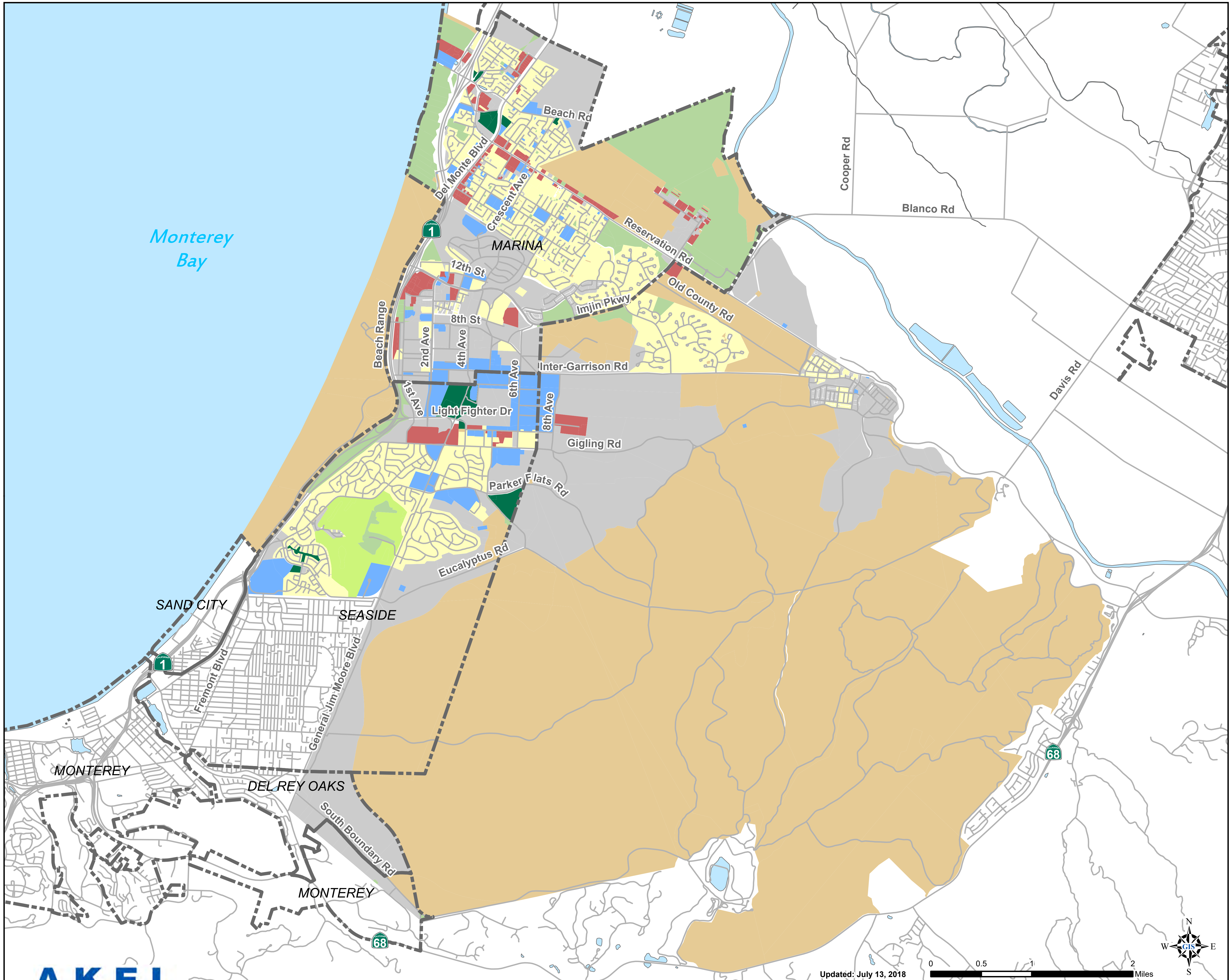
- **Existing Development:** These acreages represent existing developed lands.
- **Existing Lands - Redeveloped:** These acreages represent existing developed lands expected to redevelop into other land use types under the buildout land use development condition.
- **Existing Development - Unchanged:** These acreages represent the total existing acreages expected to remain under the buildout land use development condition.
- **New Lands - Redevelopment:** These acreages represent lands that have redeveloped from a prior use and into a new respective category.
- **New Development:** These acreages represent gains from the development of existing vacant lands.

The total existing and future land use acreages are summarized below and shown on **Table 2.3**:

- 4,776 acres of developed lands inside the service area.
- 5,113 acres of undeveloped lands inside the service area.

2.4 HISTORICAL AND FUTURE GROWTH

According to the District's 2015 UWMP the 2015 service area population was approximately 32,375. The District's 2015 UWMP utilized varying annual growth rates and projected a 2035 population of 70,161. For the purpose of this master plan, District staff chose to utilize a set



Legend

Municipal Boundaries

Existing Land Use

- Residential
- Commercial
- Institutional/School
- Open Space
- Designated Open Space
- Park/Sports Field
- Golf Course
- Planned Development Area
- Rivers/Streams
- Waterbodies

PRELIMINARY

Figure 2.2
Existing Land Use
Sewer Master Plan
Marina Coast Water District

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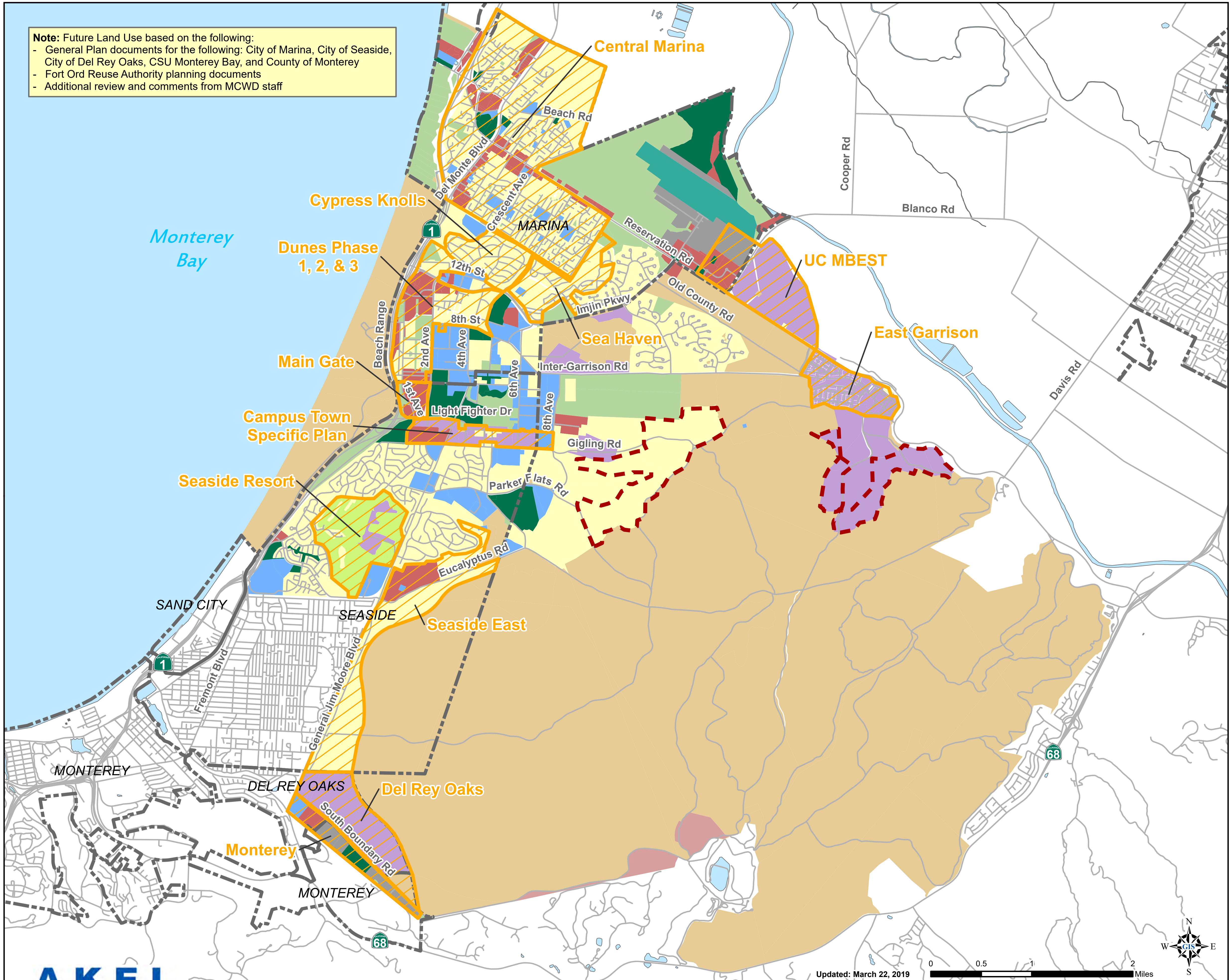

Legend

- Municipal Boundaries
- 10-Year Development Areas
- Parker Flats Land Use Swap

Future Land Use

- Residential
- Commercial
- Industrial
- AirportRunway
- Institutional/School
- Planned Development
- Mixed Use District
- Open Space
- Designated Open Space
- Park/Sports Field
- Golf Course
- Serviced by Others
- Rivers/Streams
- Waterbodies

PRELIMINARY

Figure 2.3
Future Land Use
Sewer Master Plan
Marina Coast Water District

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Table 2.3 Existing and Future Service Areas

Sewer Master Plan

Marina Coast Water District

PRELIMINARY

Land Use Classification	Existing Development			Future Development				Total Development at Buildout of Study Area	Development Outside of Future Study Area	Planning Area Total
	Existing Development (acres)	Existing Lands - Redeveloped (acres)	Subtotal Existing Development - Unchanged (acres)	New Lands - Redevelopment (acres)	New Development Inside Existing Service Area (acres)	New Development Outside Existing Service Area (acres)	Subtotal Future Development (acres)	(acres)	(acres)	(acres)
Residential										
Residential	2,574	-196	2,378	85	1,167	1,033	2,285	4,663	0	4,663
Non-Residential										
Commercial	349	-40	309	21	235	139	395	704	1	705
Park	103	-5	98	103	156	222	481	579	0	579
Institutional	689	-148	541	23	191	58	272	813	1	814
Planned Development Mixed Use District	0	0	0	134	475	726	1,336	1,336	0	1,336
Other										
Bayonet Golf Course	322	-15	307	0	0	0	0	307	0	307
Open Space - Other	438	0	438	46	0	0	46	484	0	484
Designated Open Space[5]	45	0	45	0	0	0	0	45	17,754	17,799
ROW	33	-8	25	0	1	0	1	26	0	26
Airport Runway	224	0	224	0	0	0	0	224	0	0
Parker Flats LU Swap	0	0	0	0	0	709	709	709	0	0
Total										
	4,776	**-412**	**4,364**	**412**	**2,225**	**2,888**	**5,524**	**9,889**	**17,756**	**26,712**

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1/25/2019

Note:

1. Designated Open Space includes lands not planned for development, based on directions from District staff.

growth rate of 3.0 percent, which results in a 2035 population of 58,473. Assuming 3.0 percent growth, the District service area is not expected to reach the UWMP 2035 population until the year 2041.

Based on the land use estimated in this master plan, there is a population capacity of approximately 83,300 people. Based on an annual growth rate of 3.0 percent, the District service area will not reach the buildout population until the year 2047. The District's historical and projected population estimates are summarized on **Table 2.4**.

Table 2.4 Historical and Projected Population

Sewer Master Plan

Marina Coast Water District

PRELIMINARY

Year	Population[1,2]	Annual Growth (%)
Historical Population		
2005	29,477	-
2006	29,154	-1.1%
2007	29,065	-0.3%
2008	29,533	1.6%
2009	29,743	0.7%
2010	30,840	3.7%
2011	31,141	1.0%
2012	31,445	1.0%
2013	31,752	1.0%
2014	32,062	1.0%
2015	32,375	1.0%
2016	33,346	3.0%
2017	34,347	3.0%
2018	35,377	3.0%
Projected Population		
2019	36,438	3.0%
2020	37,531	3.0%
2021	38,657	3.0%
2022	39,817	3.0%
2023	41,012	3.0%
2024	42,242	3.0%
2025	43,509	3.0%
2026	44,815	3.0%
2027	46,159	3.0%
2028	47,544	3.0%
2029	48,970	3.0%
2030	50,439	3.0%
2031	51,952	3.0%
2032	53,511	3.0%
2033	55,116	3.0%
2034	56,770	3.0%
2035	58,473	3.0%
2036	60,227	3.0%
2037	62,034	3.0%
2038	63,895	3.0%
2039	65,812	3.0%
2040	67,786	3.0%
2041	69,820	3.0%
2042	71,914	3.0%
2043	74,072	3.0%
2044	76,294	3.0%
2045	78,583	3.0%
2046	80,940	3.0%
2047	83,368	3.0%

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Note:

1. Population for years 2005 - 2015 extracted from Marina Coast Water District 2015 Urban Water Management Plan
2. Population for years 2016 - 2047 calculated assuming annual growth rate of 3.0% as directed by District staff.

CHAPTER 3 - SYSTEM PERFORMANCE AND DESIGN CRITERIA

This chapter presents the District's performance and design criteria, which were used in this master plan for evaluating the adequacy of capacity for the existing sewer system and for sizing improvements required to mitigate deficiencies and to accommodate future growth. The design criteria includes: capacity requirements for the sewer facilities, flow calculation methodologies for future users, flow peaking factors, and accounting for infiltration and inflows.

3.1 HYDRAULIC CAPACITY CRITERIA

In addition to applying the District 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. The hydraulic modeling software used for evaluating the capacity adequacy of the Madera 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, in addition to manifolded force mains. The software also incorporates the use of the Manning Equation in other calculations including upstream pipe flow conditions.

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

St. Venant's Equation for Pipe Capacity

Dynamic modeling facilitates the analysis of unsteady and non-uniform flows (dynamic flows) within a sewer system. Some hydraulic modeling programs have the ability to analyze these types of flows using the St. Venant equation, which take into account unsteady and non-uniform conditions that occur over changes in time and cross-section within system pipes.

The St. Venant equation is a set of two equations, a continuity equation and a dynamic equation, that are used to analyze dynamic flows within a system. The first equation, the continuity equation, relates the continuity of flow mass within the system pipes in terms of: (A) the change in the cross-sectional area of flow at a point over time and (B) The change of flow over the distance of piping in the system. The continuity equation is provided as follows:

- Continuity Equation: $$\underset{(A)}{\frac{\partial A}{\partial t}} + \underset{(B)}{\frac{\partial Q}{\partial x}} = 0$$

Where:
t = time
x = distance along the longitudinal direction of the channel
Q = discharge flow
A = flow cross-sectional area perpendicular to the x directional axis

The second equation, the dynamic equation, relates changes in flow to fluid momentum in the system using: (A) Changes in acceleration at a point over time, (B) Changes in convective flow acceleration, (C) Changes in momentum due to fluid pressure at a given point, (D) Changes in momentum from the friction slope of the pipe and (E) Fluid momentum provided by gravitational forces. The dynamic equation is provided as follows:

- Dynamic Equation: $$\underset{(A)}{\frac{\partial Q}{\partial t}} + \underset{(B)}{\frac{\partial}{\partial t}\left(\beta \frac{Q^2}{A}\right)} + \underset{(C)}{gA\frac{\partial y}{\partial x}} + \underset{(D)}{gAS_f} - \underset{(E)}{gAS_o} = 0$$

Where:
t = time
x = distance along the longitudinal direction of the channel
Q = discharge flow
A = flow cross-sectional area perpendicular to the x directional axis
y = flow depth measured from the channel bottom and normal to the x directional axis
S_f = friction slope
S_o = channel slope
β = momentum
g = gravitational acceleration

Use of this method of analysis provides a more accurate and precise analysis of flow conditions within the system compared to steady state flow analysis methods. It must be noted that two assumptions are made for use of St. Venant equations in the modeling software. First, flow is one dimensional. This means it is only necessary to consider velocities in the downstream direction and not in the transverse or vertical directions. Second, the flow is gradually varied. This means the vertical pressure distribution increases linearly with depth within the pipe.

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 0.009 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 District standards, an "n" value of 0.013 was used for both existing and proposed gravity sewer pipes unless directed otherwise by District staff based on pipe structural condition. This "n" value is an acceptable practice in planning studies.

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 District's design standards pertaining to the d/D criteria are summarized in **Table 3.1**. During peak dry weather flows (PDWF) and peak wet weather flows (PWWF), the maximum allowable d/D ratio for gravity pipelines are summarized as follows:

- 12-inch diameter and smaller: 0.67
- 15-inch to 24-inch diameter: 0.80
- 27-inch diameter and larger: 0.90

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**, which stipulates that the hydraulic grade line (HGL), even during a surcharged condition, should be at least three feet below the manhole rim elevation.

Table 3.1 Performance and Design Criteria

Sewer Master Plan
Marina Coast Water District

PRELIMINARY

Pipeline Peak Dry Weather Flow Criteria	
Diameter (in)	Maximum Allowable d/D
12" pipe or smaller	0.67
15" to 24"	0.80
27" pipe or larger	0.90

Pipeline Peak Wet Weather Flow Criteria

No surcharging within 3 feet of rim elevation

Pipeline Velocities	
Max Velocity (ft/s)	8.00
Min Velocity (ft/s)	2.00

Lift Station Capacity

Lift Station capacity shall be sized to meet Peak Wet Weather Flow with largest unit out of service

Pipe Size	Minimum Grade	Capacity (n = 0.013)	
(in)	(ft/100 ft)	(mgd)	(cfs)
6	0.60	0.22	0.34
8	0.40	0.39	0.60
10	0.32	0.63	0.97
12	0.28	0.96	1.49
15	0.15	1.59	2.46
18	0.12	2.30	3.56
21	0.10	3.17	4.90

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 the 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 District's design standards.

Changes in Pipe Size

When a smaller gravity sewer pipe joins a larger pipe, the invert of the larger pipe is generally 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.

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 110 was used in this analysis.

The minimum recommended velocity in force mains is at 2 feet per second. 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. For the purposes of this plan, a minimum velocity of 2 fps and a maximum design velocity of 8 fps were used.

The capacities of pump stations are evaluated and designed to meet the peak wet weather flows 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

Sewer unit flow factors are coefficients commonly used in planning level analysis to estimate future average daily sewer flows for areas with predetermined land uses. The unit factors are multiplied by the number of dwelling units or gross acreages for residential categories, and by the gross acreages for non-residential categories, to yield the average daily sewer flow projections.

3.2.1 Average Daily Sewer Unit Flow Factors

Sewer flow factors were based on water demands as extracted from the District's 2016 water consumption billing records and system-wide return to sewer ratios. A return to sewer ratio, which reflects the proportion of water consumed that is discharged to the sewer system, was applied to each unadjusted water demand factor for individual land use types.

The return to sewer ratios were identified for both the Central Marina and Ord Community service areas to determine an appropriate system-wide average ratio; a summary of this return-to-sewer analysis is provided on **Table 3.2**. Generally, non-residential land uses within both the Central Marina and Ord Community service areas return between 85% and 95% of the water demand to the sewer system. The residential land use return to sewer ratios were estimated at 70% for the Central Marina and 60% for Ord Community. For planning purposes, a District-wide residential return to sewer ratio of 70% was selected for the unit flow factor analysis.

These return to sewer ratios were incorporated into the sewer unit flow factor analysis summarized on **Table 3.3**, where they were applied to the unadjusted water unit demand factors. Based on this analysis, the sewer unit flow factors range from 190 gpd/acre for Institutional land use types to nearly 1,200 gpd/acre for Commercial land use types. The recommended sewer unit flow factors are summarized on **Table 3.4**. Certain areas of the various general plans used as part of this analysis include mixed-use type developments. In an effort to plan for these areas, a combination of the residential and commercial unit factors were used, assuming development at approximately 70% residential and 30% commercial.

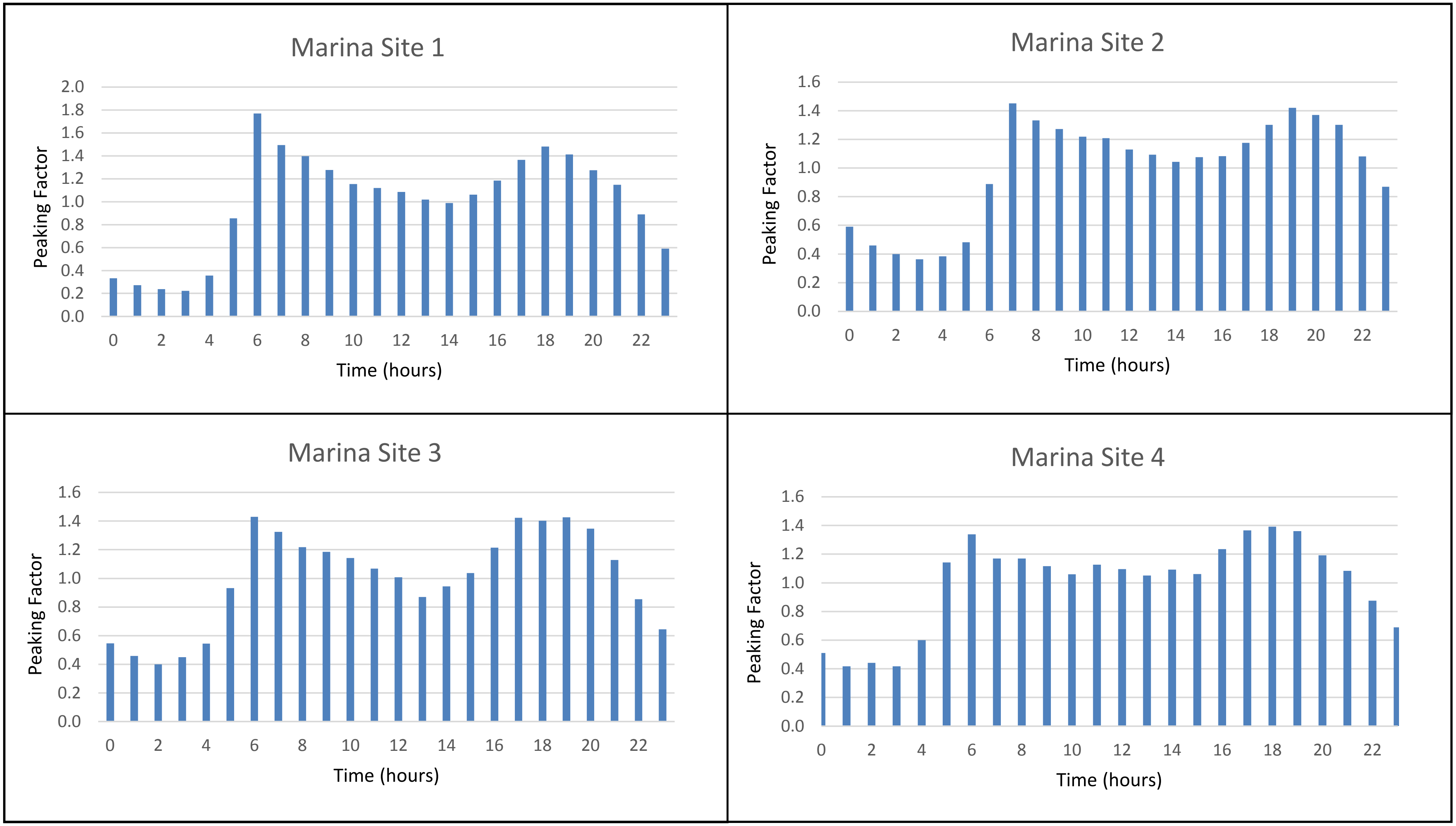
3.2.2 Peaking Factors

The sanitary sewer system is evaluated based on its ability to convey peak sewer flows. Peaking factors represent the increase in sewer flows experienced above the average dry weather flows (ADWF). 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 or less are generally used to estimate peak flows at treatment facilities where flow fluctuations are smoothed out during the time of travel in the sewer, while peaking factors between 3.0 and 4.0 are used to estimate peak flows in the smaller upstream areas of the system where low flow conditions are prone to greater fluctuations. This study developed 24-hour diurnal patterns and peaking factors for dry and wet weather flows for the tributary area to each flow monitor, as shown on **Figure 3.1**, **Figure 3.2**, and **Figure 3.3**.



LEGEND

PRELIMINARY

Peaking Factor

Note: Detailed flow monitor locations provided in Appendix A

February 15, 2018

Figure 3.1

Hydraulic Model Diurnals

Sewer Master Plan

Marina Coast Water District

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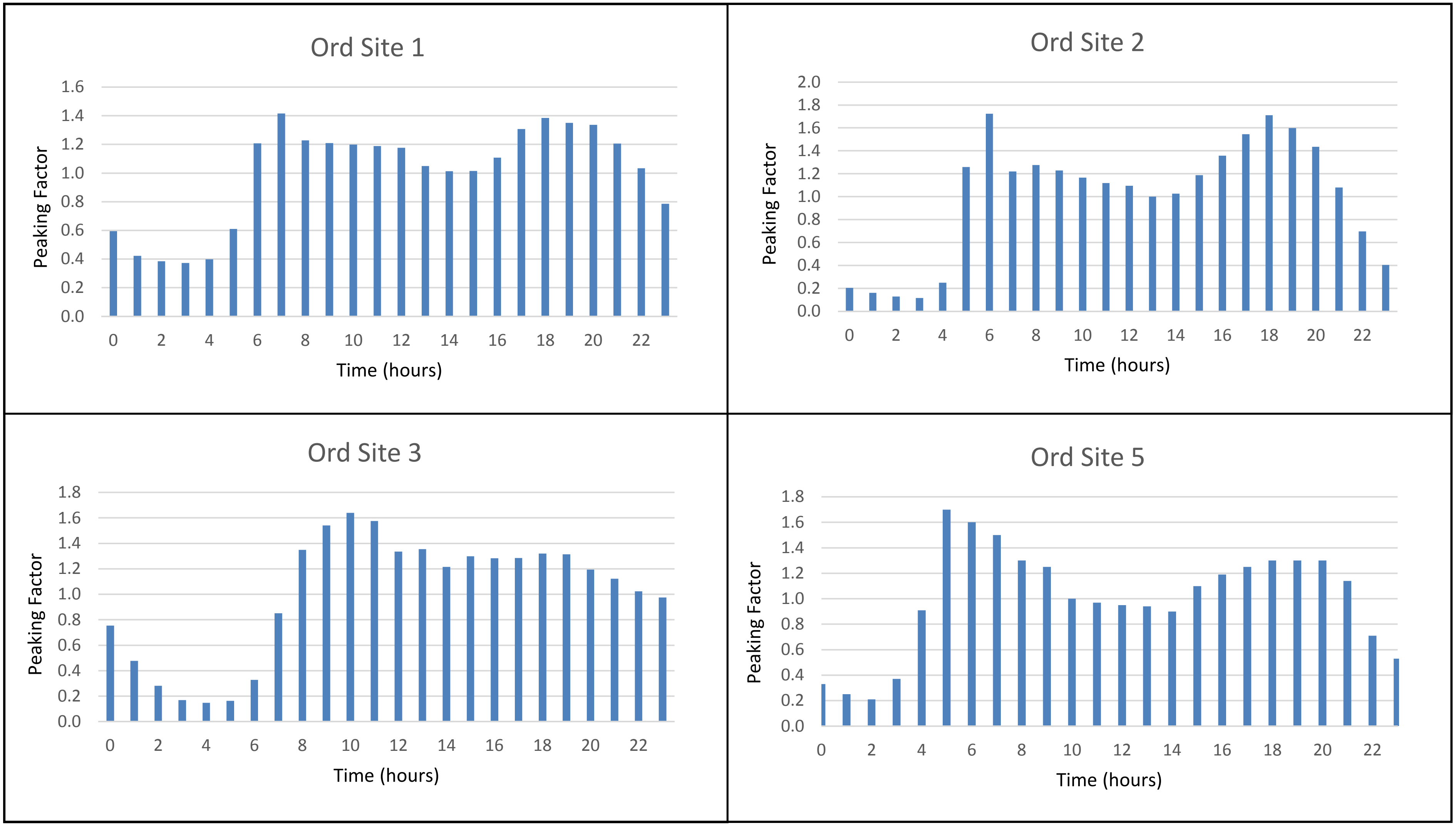

LEGEND

PRELIMINARY

Peaking Factor

Note: Detailed flow monitor locations provided in Appendix A

February 15, 2018

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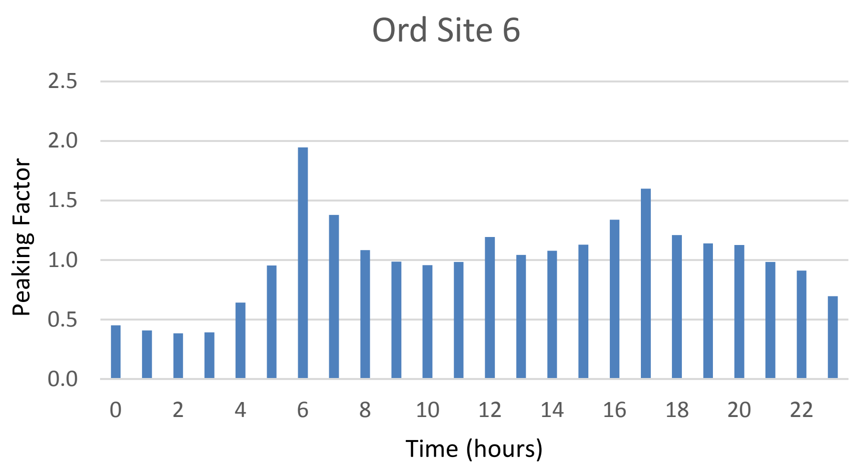
Figure 3.2

Hydraulic Model Diurnals

Sewer Master Plan

Marina Coast Water District



LEGEND

PRELIMINARY

Peaking Factor

Note: Detailed flow monitor locations provided in Appendix A

February 15, 2018

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Figure 3.3

Hydraulic Model Diurnals

Sewer Master Plan

Marina Coast Water District

Table 3.2 Return to Sewer Ratios Analysis

Sewer Master Plan
Marina Coast Water District

PRELIMINARY

Land Use Classification	City of Marina			Fort Ord Community			System-Wide	
	Consumption[1,2] (gpd)	Return to Sewer Ratio (%)	Balance to Wastewater Flows (gpd)	Consumption[1,2,3] (gpd)	Return to Sewer Ratio (%)	Balance to Wastewater Flows (gpd)	Return to Sewer Ratio (%)	Balance to Wastewater Flows
Residential								
Residential	1,159,219	0.7	811,453	1,087,160	0.6	652,296	0.7	1,572,465
Subtotal	1,159,219		811,453	1,087,160		652,296		1,572,465
Non-Residential								
Commercial	347,141	0.95	329,784	45,357	0.95	43,090	0.95	372,873
Institutional	5,099	0.85	4,334	134,097	0.85	113,982	0.85	118,316
Irrigation	32,168	0	0	103,348	0	0	0	0
Subtotal	384,407		334,118	282,802		157,072		491,189
Non-Demand Generating								
Open Space	0	0	0	0	0	0	0	0
Designated Open Space	0	0	0	0	0	0	0	0
Other[4]	0	0	0	0	0	0	0	0
Subtotal	0		0	0		0		0
Total Wastewater Flows								
Total ADWF Using Return to Sewer Ratios			**1,145,571**			**809,368**		**2,063,655**
Measured ADWF			**1,140,000**			**800,000**		**1,940,000**

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10/16/2017

Note:

1. Water demand distribution was based on the 2016 Water Billing Records. These demands were verified and do not vary greatly from year to year.
2. Consumption based on 2014 production minus 10% and 10% water loss was in the water distribution system.
3. Consumption Tributary to the Fritzche Lift Station has been removed from the above return to sewer analysis.
4. "Other" land use classification includes non-demand generating land use types, including the Bayonet Golf Course and ROW.

Table 3.3 Sewer Flow Unit Factor Analysis

Sewer Master Plan

Marina Coast Water District

PRELIMINARY

Land Use Classification	Existing Development within Service Area	Average Daily Water Demand			Existing Average Daily Sewer Unit Factors							
		Consumption[1,2]			Recommended Return to Sewer Ratio	Sewer Flows		Sewer Flows at 100% Occupancy			Sewer Unit Factor	
		Annual Consumption	Unadjusted Unit Factor	Balance to Consumption		Unadjusted Sewer Unit Factor	Balance to Existing Conditions	Vacancy Rate[3,4]	Projected Flows at 100% Occupancy		Recommended Factor	Balance Using Recommended Unit Factor
	(acres)	(gpd)	(gpd/acres)			(gpd/acre)	(gpd)	(%)	(gpd/acre)	(gpd)	(gpd/acre)	(gpd)
Residential												
Residential	2,560	2,246,565	878	2,246,565	0.67	588	1,505,198	8.0%	635	1,625,614	640	1,638,112
Subtotal	2,560	2,246,565		2,246,565			1,505,198			1,625,614		1,638,112
Non-Residential												
Commercial	345	393,510	1,139	393,510	0.95	1,082	373,834	9.4%	1,184	408,975	1,190	411,079
Institutional	719	139,302	197	139,302	0.85	167	120,154	9.4%	183	131,448	190	136,596
Park	140	136,456	974	136,456	0	0	0	0.0%	0	0	0	0
Subtotal	1,205	669,268		669,268			493,988			540,423		547,675
Non-Demand Generating												
Open Space	0	0	0	0	0	0	0	0.0%	0	0	0	0
Designated Open Space	0	0	0	0	0	0	0	0.0%	0	0	0	0
Other[5]	362	0	0	0	0	0	0	0.0%	0	0	0	0
Subtotal	362	0		0			0			0		0
Totals												
	4,126	**2,915,832**		**2,915,832**			**1,999,186**			**2,166,037**		**2,185,787**

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1/25/2019

Note:

1. Water demand distribution was based on the 2016 Water Billing Records. These demands were verified and their distribution does not vary greatly from year to year.
2. Consumption based on 2014 production minus 10%
3. Residential vacancy rate extracted from California Department of Finance Sheet E-5 published 2016. (Average of City of Marina and City of Seaside : 8.0 % Vacancy Rate).
4. Commercial/Institutional vacancy rate extracted from market study by Cushman and Wakefield, dated first quarter of 2016. Vacancy rates shown are average of rates for the cities of Marina, Del Rey Oaks, Seaside and Sand City.
5. Other Land use classification includes non-demand generating landuse types, including the Bayonet Golf Course and ROW.

Table 3.4 ADWF Sewer Unit Factors

Sewer Master Plan

Marina Coast Water District

PRELIMINARY

Land Use Classification	Recommended Factor (gpd/acre)
Residential	**640**
Commercial	**1,190**
Institutional	**190**
Planned Development Mixed Use District[1]	**805**

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11/10/2017

Notes:

1. ADWF Sewer Unit Factor assumes development consists of 70% Residential and 30% Commercial.

3.3 WET WEATHER FLOW CRITERIA

The wet weather flow criteria accounts for the infiltration and inflows (I&I) that seep into the District's sewer system during storm events.

3.3.1 Infiltration and Inflow

Groundwater infiltration and inflow is associated with extraneous water entering the sewer through defects in pipelines and manholes. Infiltration occurs when groundwater rises or the soil is saturated due to seasonal factors such as a storm event which causes an increase in flows in the sewer system. The ground water will enter the sewer system through cracks in the pipes or deteriorating manholes. Inflow occurs when surface water enters the wastewater collection system from storm drain cross connections, manhole covers, or roof/footing drains. **Figure 3.4** 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 infiltration 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/100LF) are applied to linear feet of gravity sewers.

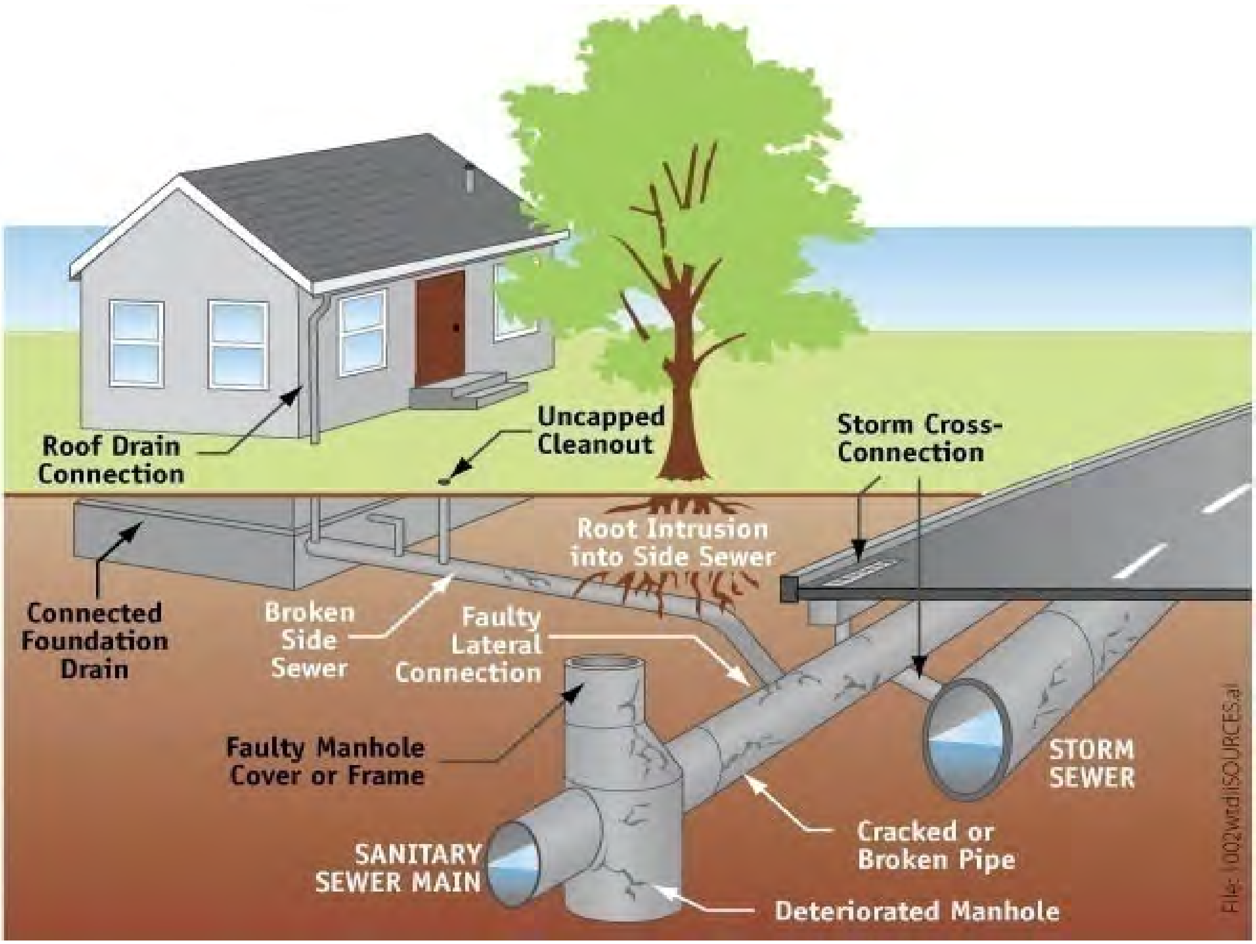
- **Methodology 3**. Based on a percentage of Average Dry Weather Flows. In this methodology, Infiltration and Inflows (I&I) are calculated based on a percentage of the average dry weather flow.

- **Methodology 4**. Based on flow monitoring data. In this methodology, infiltration and inflows are determined by analyzing flow monitoring data of current and past flow monitoring efforts.

This capacity analysis and master plan based the infiltration and inflow on specific flow monitoring data from the Villalobos and Associates (V&A) 2017 Flow Monitoring Program (**Appendix A**). Thus, the infiltration and inflows are reasonable and reflect the actual behavior of the sewer system.

3.3.2 Sewer System Flow Monitoring

In 2017, V&A's services were used for a temporary flow monitoring program to capture 9 sites during dry and wet weather flows, which are summarized on **Figure 3.5**.



Source: King County, WA
http://www.kingcounty.gov/environment/wastewater/II/What.aspx?print=1

LEGEND

Inflow Sources (Black Text)

Infiltration Sources (White Text)

PRELIMINARY

Figure 3.4

Infiltration and Inflow Sources

Sewer Master Plan
Marina Coast Water District

December 13, 2016

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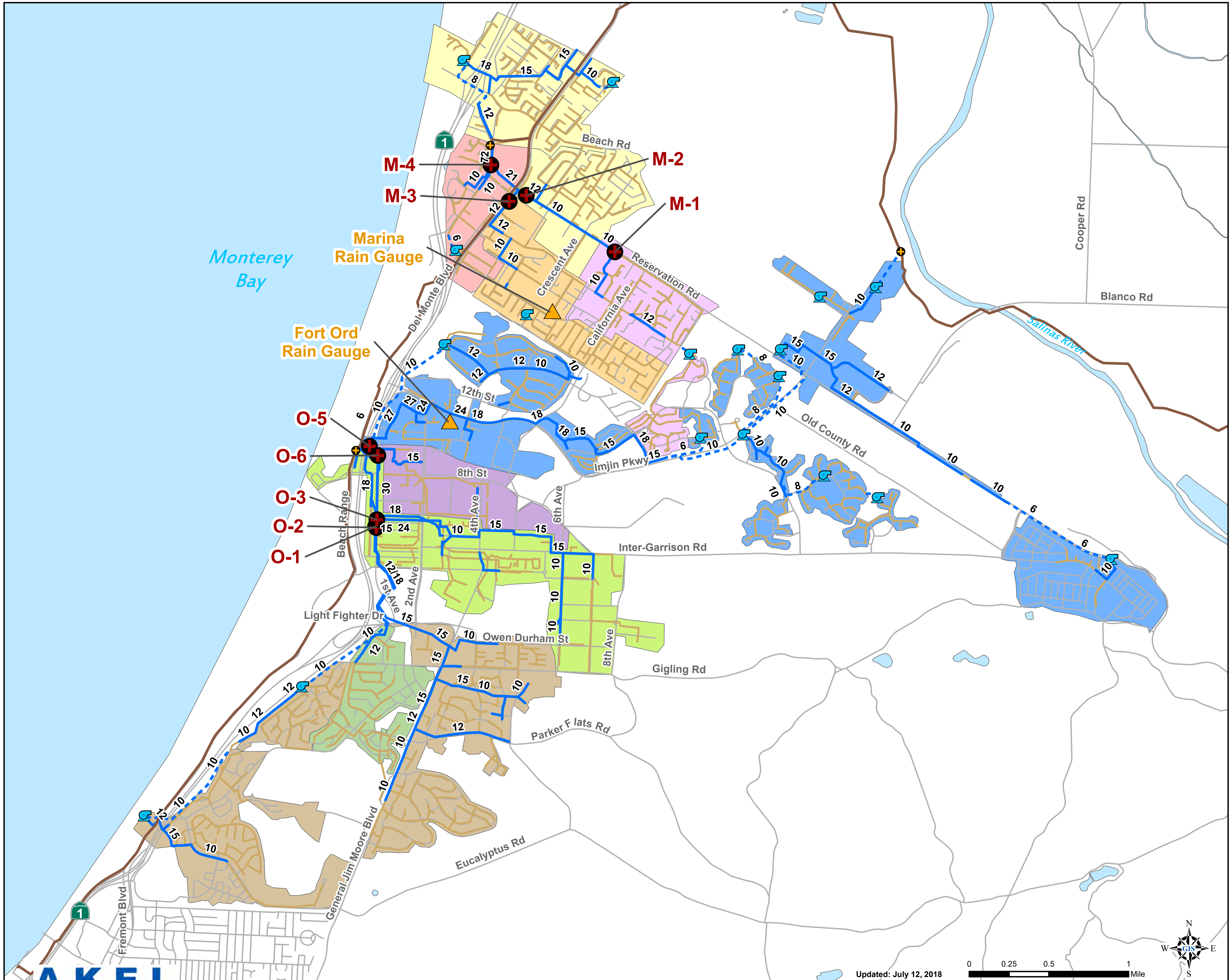

Legend

- Rain Gauge
- Flow Meters

Flow Meter Basins

- M-1
- M-2
- M-3
- M-4
- O-1
- O-2
- O-3
- O-5
- O-6

Existing Modeled System

- Lift Stations
- Outfalls

Gravity Mains by Size

- 8" and Smaller
- 10" and Larger
- Force Mains
- Monterey One Water Interceptor
- Streets
- Waterbodies
- Rivers/Streams

PRELIMINARY

Figure 3.5
Flow Monitoring Program
Sewer Master Plan
Marina Coast Water District

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There were two rain gauges used for the wet weather analysis. The rainfall historical data was then determined by weighted average of those two rain gauges. The two rain gauges were located in the City of Marina close to the intersection of Vaughn Avenue and Reindollar Avenue and in the Ord Community near the intersection of Imjin Parkway and Third Avenue. The flow monitoring and rain data were used in this analysis to calibrate the computer hydraulic model to average dry weather flow and wet weather flow conditions.

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. The design storm information was collected from the National Oceanic and Atmospheric Administration (NOAA) Atlas 14 Volume 6.

- **10-Year Frequency.** Industry standards include design storms that range between 5-year and 20-year events. Based on current regulatory trends, a 10-year storm event was chosen for the District to evaluate the capacity adequacy of the sanitary sewer system.

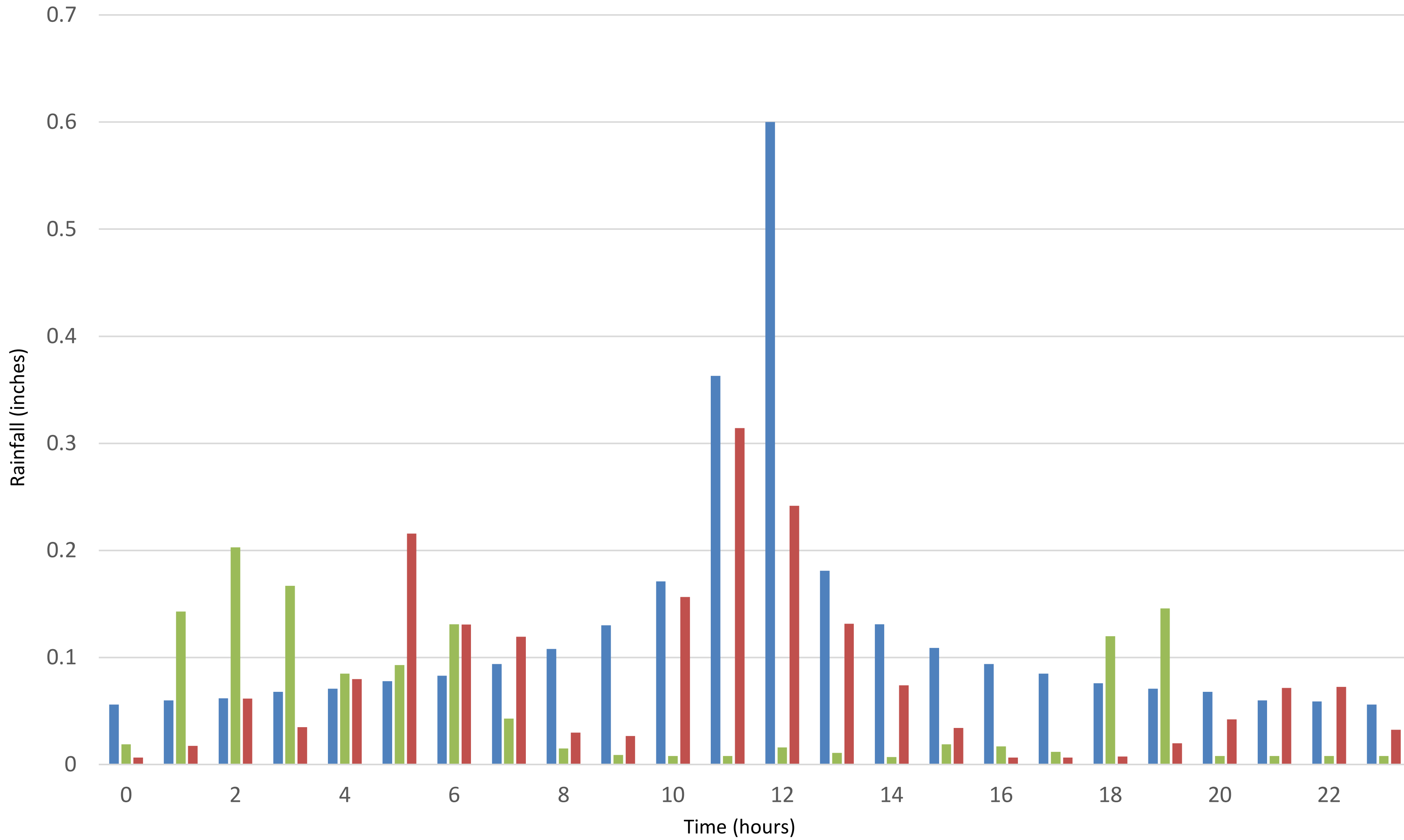
- **24-Hour Duration.** Peak flows from a storm event are usually cause by brief intense rains, that can happen as part of an individual event or as a portion of a larger storm. The 24-hour storm duration is longer than needed to determine peak flow but aids in identifying infiltration and inflows a sewer system may experience during a storm event.

- **Balanced Rainfall Centered 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 highest rainfall intensity is placed at the center of the storm. 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 balanced rainfall distribution, was used to evaluate the capacity adequacy of the District's sewer system during wet weather flow conditions.

The selected 10-year 24-hour design storm was further compared to historical storm events used for the calibration process, between January 2017 and February 2017, as shown on **Table 3.5**. The table lists the total rainfall volume, duration, peak hour intensity, and total rainfall depth (if available) for each storm event.

Figure 3.6 is intended to show the diurnal comparison between the design storm and the two storm events experienced during February of 2017. The comparison indicates that, based on the balanced centered hyetograph, the design storm's peak hour value is at 0.60 inches per hour (in/hr), while the February 9th and 19th storms peak values are respectively 0.20 and 0.31 in/hr respectively. This comparison illustrates the more conservative nature of the design storm.



LEGEND

PRELIMINARY

Design Storm: 10 Year 24 Hour (2.93 in)

Historical Storm Event 1: February 19-20, 2017 (1.94 in)

Historical Storm Event 2: February 9-10, 2017 (1.30 in)

Note: Historical storm events based on data recorded at the following locations:

- Fort Ord, Intersection of Imjin Parkway and 3rd Avenue
- Marina, Intersection of Vaughn Avenue and Reindollar Avenue

March 15, 2018

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Figure 3.6

10-Year 24-Hour Storm (Design vs Historical Storm)

Sewer Master Plan

Marina Coast Water District

Table 3.5 Storm Events Analysis

Sewer Master Plan

Marina Coast Water District

PRELIMINARY

Storm Event	Estimated Return Interval	Single Rainfall Event Volume and Intensity[1]	
		Volume (in)	Peak Intensity (in//hr)
Central Marina			
February 9 - February 10, 2017	4-Year 6-Hour	1.30	0.20
February 19 - February 20, 2017	8-Year 12-Hour	1.94	0.31
Ord Community			
February 9 - February 10, 2017	4-Year 6-Hour	1.30	0.21
February 19 - February 20, 2017	10-Year 12-Hour	2.07	0.31
Design Storm	10-Year 24-Hour	**2.93**	0.60

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5/5/2017

Notes:

1. Rainfall volume and peak intensities based on 2017 V&A flow monitoring information.

CHAPTER 4 - EXISTING SEWER COLLECTION FACILITIES

This chapter provides a description of the District's existing sewer system facilities including gravity trunks, force mains, lift stations, and sewer collection basins. The chapter also includes a brief description of the Monterey One Water (M1W) wastewater treatment plant, which treats and disposes of the wastewater for Central Marina and the Ord Community.

4.1 SEWER COLLECTION SYSTEM OVERVIEW

The District provides sewer collection services to approximately 10,000 residential, commercial and institutional accounts. The District's modeled collection system, shown on **Figure 4.1**, consists of approximately 150 miles of up to 72-inch gravity sewer pipes that convey flows, via the M1W interceptor pipeline, towards the M1W treatment plant, located north of the City of Marina.

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 District's GIS and was updated to reflect the review of construction drawings provided by District Staff. The 8-inch to 15-inch diameter pipes account for more than 80 percent of the total length of sewer pipe.

4.2 SEWER COLLECTION BASINS AND TRUNKS

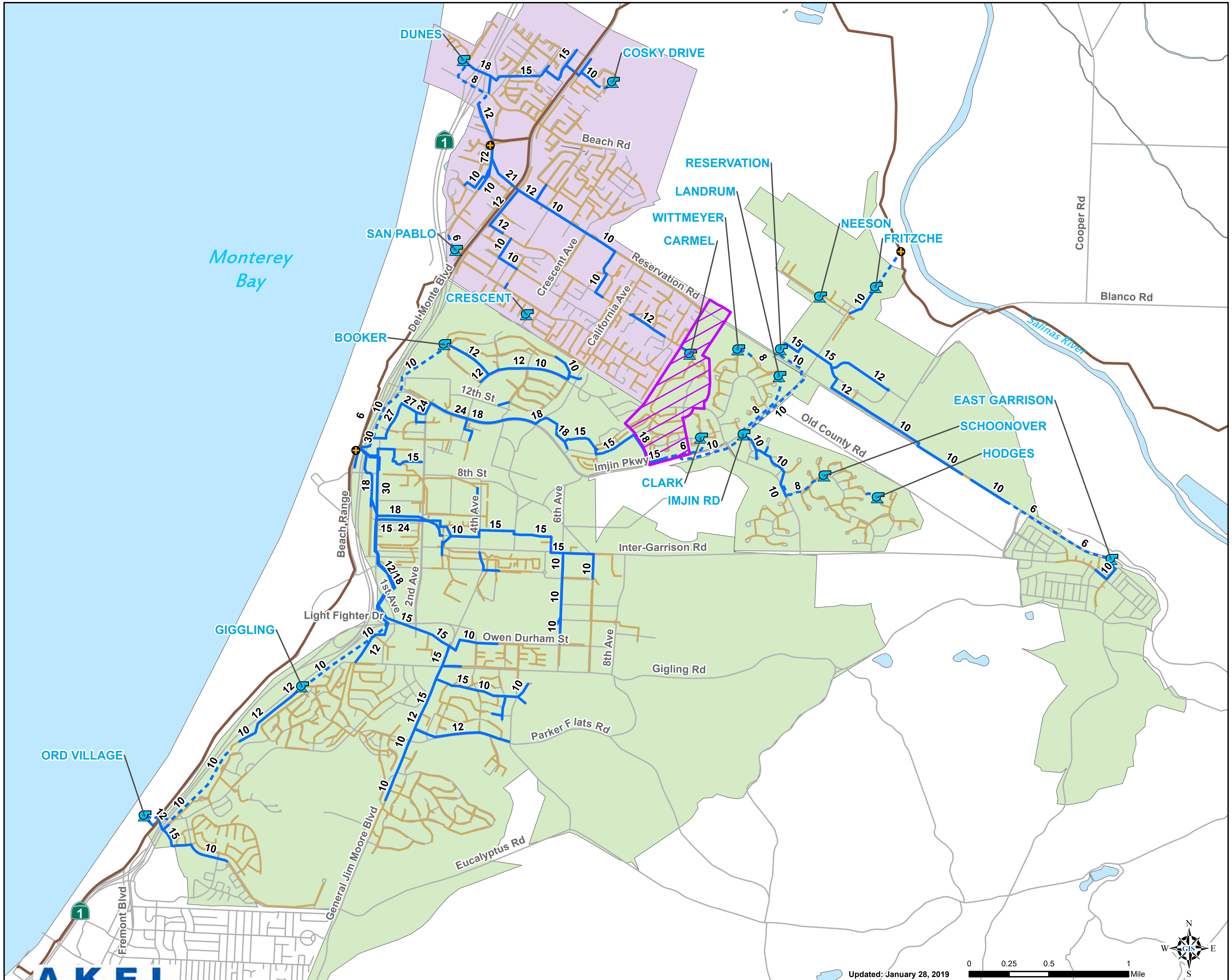
Based on the varying topography and numerous lift stations, the sewer system is divided into multiple collection basins that serve to collect flows from smaller developments and route that flow to larger sewer trunk lines. These basins are based on the areas tributary to the flow monitors installed as part of the 2017 V&A flow monitoring program as discussed in a previous chapter. These collection basins are shown on **Figure 4.2** and summarized in the following section.

4.2.1 M-1 Collection Basin

The M-1 collection basin encompasses approximately 319 acres in the southeast portion of the Central Marina service area, south of Reservation Road and east of Everett Circle. Flows are collected in a 12-inch gravity pipeline along Carmel Avenue before entering the M-2 collection basin. This collection basin also includes flows tributary to the Carmel Lift Station, which are discharged to the 8-inch gravity main on Carmel Avenue at Salinas Avenue.

4.2.2 M-2 Collection Basin

The M-2 collection basin encompasses approximately 700 acres in the north portion of the Central Marina service area, generally north of Reservation Road between Highway 1 and Crescent Avenue. Flows are collected in a 12-inch pipeline along Reservation Road before being conveyed to the M1W interceptor pipeline. This collection basins also includes flows tributary to the Dunes Lift Station and Cosky Lift Station.



Legend

Existing Modeled System

- Lift Stations
- Outfalls

Gravity Mains by Size

- 8" and Smaller
- 10" and Larger
- Force Mains
- Monterey One Water Interceptor

Cost Centers

- Central Marina
- Ord Community
- Ord Community Service Area Tributary to Central Marina Outfall
- Streets
- Waterbodies
- Rivers/Streams

PRELIMINARY

Figure 4.1 Existing Modeled Sewer System

Sewer Master Plan
Marina Coast Water District

AKEL ENGINEERING GROUP, INC.

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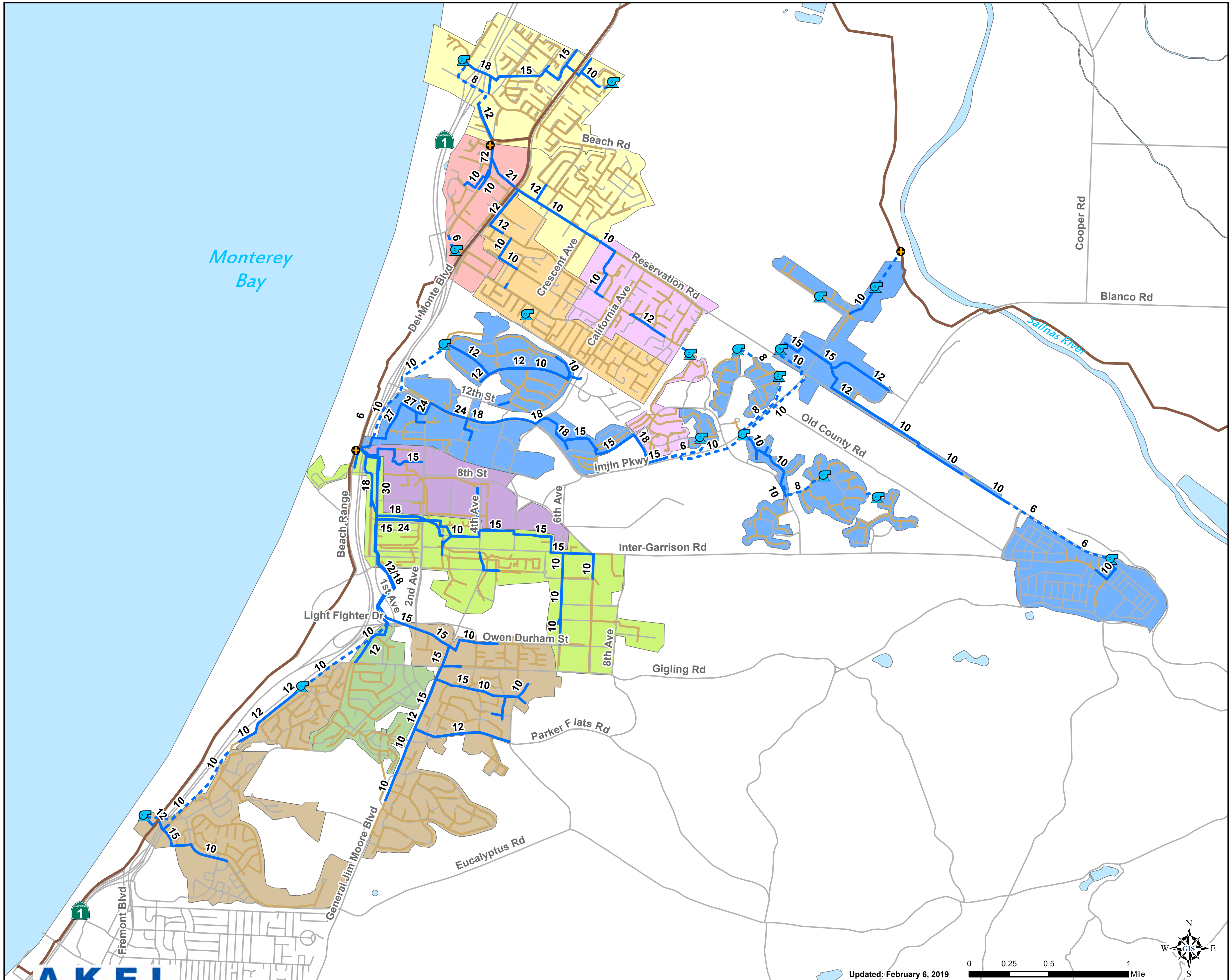


Legend

Existing Modeled System

- Lift Stations
- Outfalls

Gravity Mains by Size

- 8" and Smaller
- 10" and Larger
- Force Mains
- Monterey One Water Interceptor

Collection Basins

- M-1
- M-2
- M-3
- M-4
- O-1
- O-2
- O-3
- O-5
- O-6
- Streets
- Waterbodies
- Rivers/Streams

PRELIMINARY

Figure 4.2
Sewer Collection Basins
Sewer Master Plan
Marina Coast Water District

AKEL
ENGINEERING GROUP, INC.

Table 4.1 Existing Pipe Inventory

Sewer Master Plan

Marina Coast Water District

PRELIMINARY

Pipe Size (in)	Pipe Length (ft)	(miles)
Gravity Mains		
4	21,503	4.1
6	278,147	52.7
8	321,825	61.0
10	42,988	8.1
12	29,724	5.6
14	669	0.1
15	34,100	6.5
18	13,899	2.6
21	1,415	0.3
24	3,375	0.6
27	4,379	0.8
30	4,326	0.8
54	1,190	0.2
72	486	0.1
Subtotal	**758,026**	**143.6**
Force Mains		
4	4,706	0.9
6	3,914	0.7
8	5,069	1.0
10	19,641	3.7
12	420	0.1
15	349	0.1
18	1,459	0.3
27	40	0.0
42	849	0.2
Subtotal	**33,749**	**6.4**
Total		
	791,775	**150.0**

AKEL ENGINEERING GROUP, INC.

7/20/2017

4.2.3 M-3 Collection Basin

The M-3 collection basin encompasses approximately 337 acres in the south portion of Central Marina service area, generally south of Carmel Avenue between Highway 1 and Bayer Drive. Separate 8-inch gravity mains on Reindollar Avenue and Carmel Avenue collect a majority of the collection basin flows before entering a 12-inch gravity main on Del Monte Boulevard, which conveys the flows to the M-2 collection basin. This collection basin also includes flows tributary to the Crescent Lift Station, which are discharged to the 8-inch gravity main on Crescent Avenue south of Reindollar Avenue.

4.2.4 M-4 Collection Basin

The M-4 collection basin encompasses approximately 208 acres in the west portion of the Central Marina service area, generally south of Reservation Road between Highway 1 and Del Monte Boulevard. Flows are collected by an 8-inch and 10-inch gravity mains along Lake Drive before being conveyed to the M1W interceptor pipeline. This collection basin also includes flows tributary to the San Pablo Lift Station, which are discharged to the 8-inch gravity main on Lake Drive at Palm Avenue.

4.2.5 O-1 Collection Basin

The O-1 collection basin encompasses approximately 1,001 acres in the south portion of the Ord Community service area and is generally divided into two sections. The first section collects flows tributary to the existing Fort Ord Village and Gigling lift stations, which are then discharged to an existing 15-inch gravity main on First Avenue at Lightfighter Drive. The second section collects flows east of General Jim Moore Boulevard south of Owen Durham Street, which are ultimately conveyed by a 15-inch gravity main to an existing 15-inch gravity main on First Avenue at Lightfighter Drive. These flows are eventually conveyed to the M1W interceptor pipeline.

4.2.6 O-2 Collection Basin

The O-2 collection basin encompasses approximately 215 acres in the south portion of the Ord Community service area, south of Lighfighter Drive between Luzon Road and General Jim Moore Boulevard. Two separate 8-inch gravity mains along existing right-of-way and California Road collect flows before combining into a 12-inch gravity main in existing right-of-way north of Gigling Road. These flows are eventually conveyed to the M1W interceptor pipeline.

4.2.7 O-3 Collection Basin

The O-3 collection basin encompasses approximately 592 acres in the west portion of the Ord Community service area, generally east of First Avenue and south of 5th Street. Flows are collected by 8-inch, 10-inch, and 15-inch pipelines along Inter-Garrison Road and existing right-of-way before entering an existing 30-inch gravity main on First Avenue. These flows are eventually conveyed to the M1W interceptor pipeline.

4.2.8 O-5 Collection Basin

The O-5 collection basin encompasses approximately 1,217 acres in the northeast portion of the Ord Community service area. This collection basins includes flows from the tributary areas of the following lift stations: East Garrison, Hodges, Schoonover, Wittemeyer, Landrum, Clark, Reservation, Imjin, and Booker. Flows are generally collected by gravity along Imjin Road and existing right-of-way in 15-inch, 18-inch, 24-inch, and 27-inch mains before being conveyed to the M1W interceptor pipeline.

4.2.9 O-6 Collection Basin

The O-6 collection basin encompasses approximately 243 acres in the northwest portion of the Ord Community service area, east of 1st Avenue generally between 9th Street and 5th Street. 8-inch and 15-inch gravity pipelines collect flow along existing right-of-way before being conveyed to the Ord Community outfall.

4.2.10 Monterey One Water Interceptor System

The District's sewer flows are discharged into the M1W interceptor pipeline system, which conveys flows to the M1W treatment plant, located north of the City of Marina.

In addition to flows from Central Marina and the Ord Community the interceptor pipeline system, commonly referred as the Monterey Peninsula Interceptor System collects the flows from the nearby cities of Seaside, Del Rey Oaks, Sand City, Monterey, and Pacific Grove.

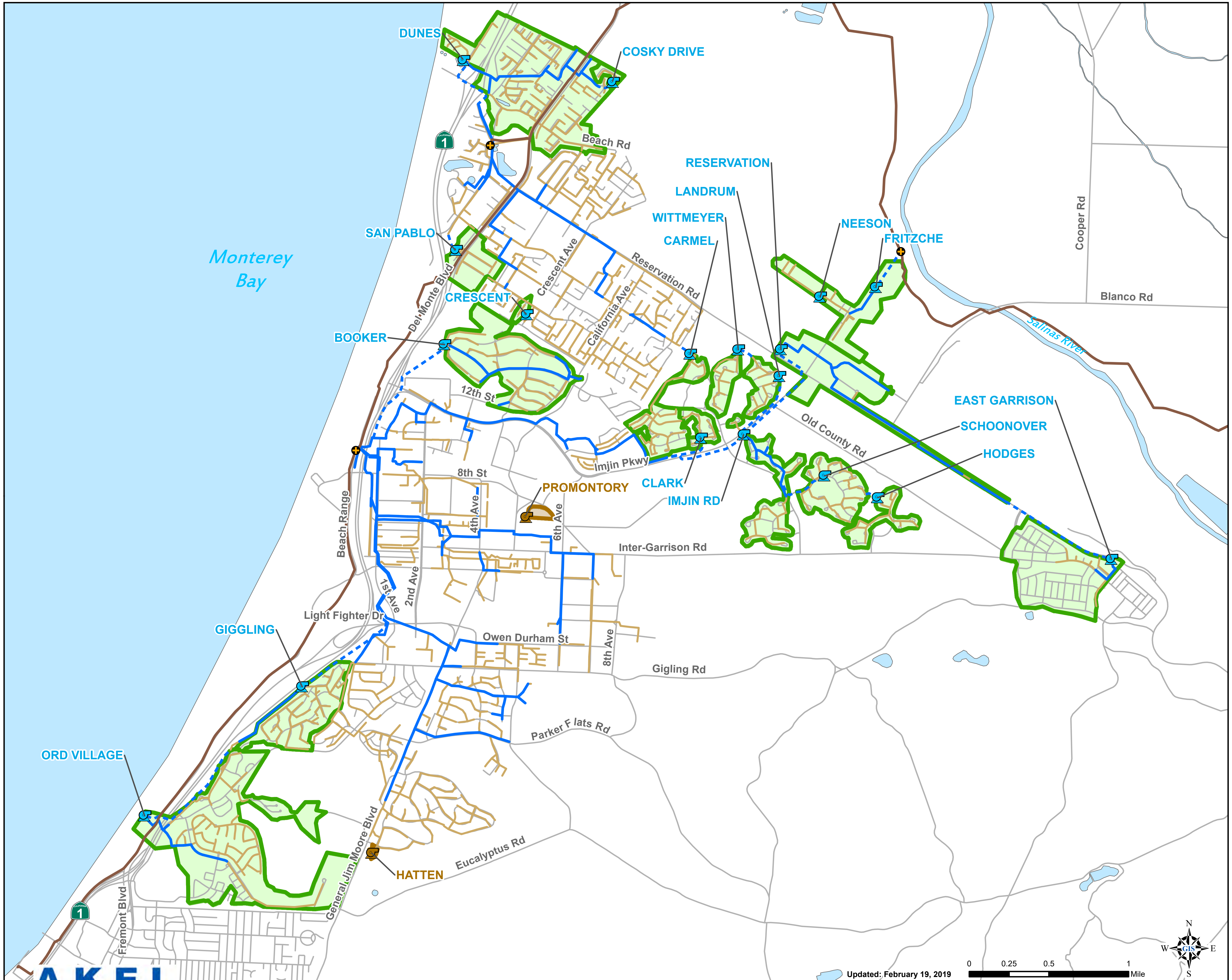
4.3 LIFT STATIONS

When routing flows by gravity is not possible due to adverse grades, lift stations are used to pump flows. The District currently maintains fourteen lift stations in the sewer collection system, shown on **Table 4.2** and **Figure 4.3**, which are summarized on the following pages. Additionally, a flow diagram summarizing the connectivity of the existing lift stations is shown on **Figure 4.4**.

- **Ord Village Lift Station.** The lift station, constructed prior to 1960, is located near the end of Beach Range Road and was rehabilitated in 2016. The Ord Village Lift Station was initially installed as a wastewater treatment plant to treat flows generated by the Ord Community. The lift station includes 2 duty pumps and 1 standby pump that are each rated at 960 gpm. The pumps discharge into a 10-inch force main that conveys flows northwest toward Monterey Road.

- **Gigling Lift Station.** The lift station is located at the intersection of Okinawa Road and Noumea Road and was built in 2016. The lift station includes 2 duty pumps and 1 standby pump that are each rated at 874 gpm. The pump discharges into a 10-inch force main that conveys flows northeast along Cabrillo Highway.

- **Hatten Lift Station.** The lift station is located at the southern end of Hatten Road and was built in 1966. The lift station includes 1 duty pump and 1 standby pump that are both rated



Legend

Non-Modeled System
- Lift Stations
- Lift Station Tributary Areas

Existing Modeled System
- Lift Stations
- Outfalls

Gravity Mains by Size
- 8" and Smaller
- 10" and Larger
- Force Mains
- Monterey One Water Interceptor
- Streets
- Lift Station Tributary Areas
- Rivers/Streams
- Waterbodies

PRELIMINARY

Figure 4.3
Existing Lift Stations
Sewer Master Plan
Marina Coast Water District

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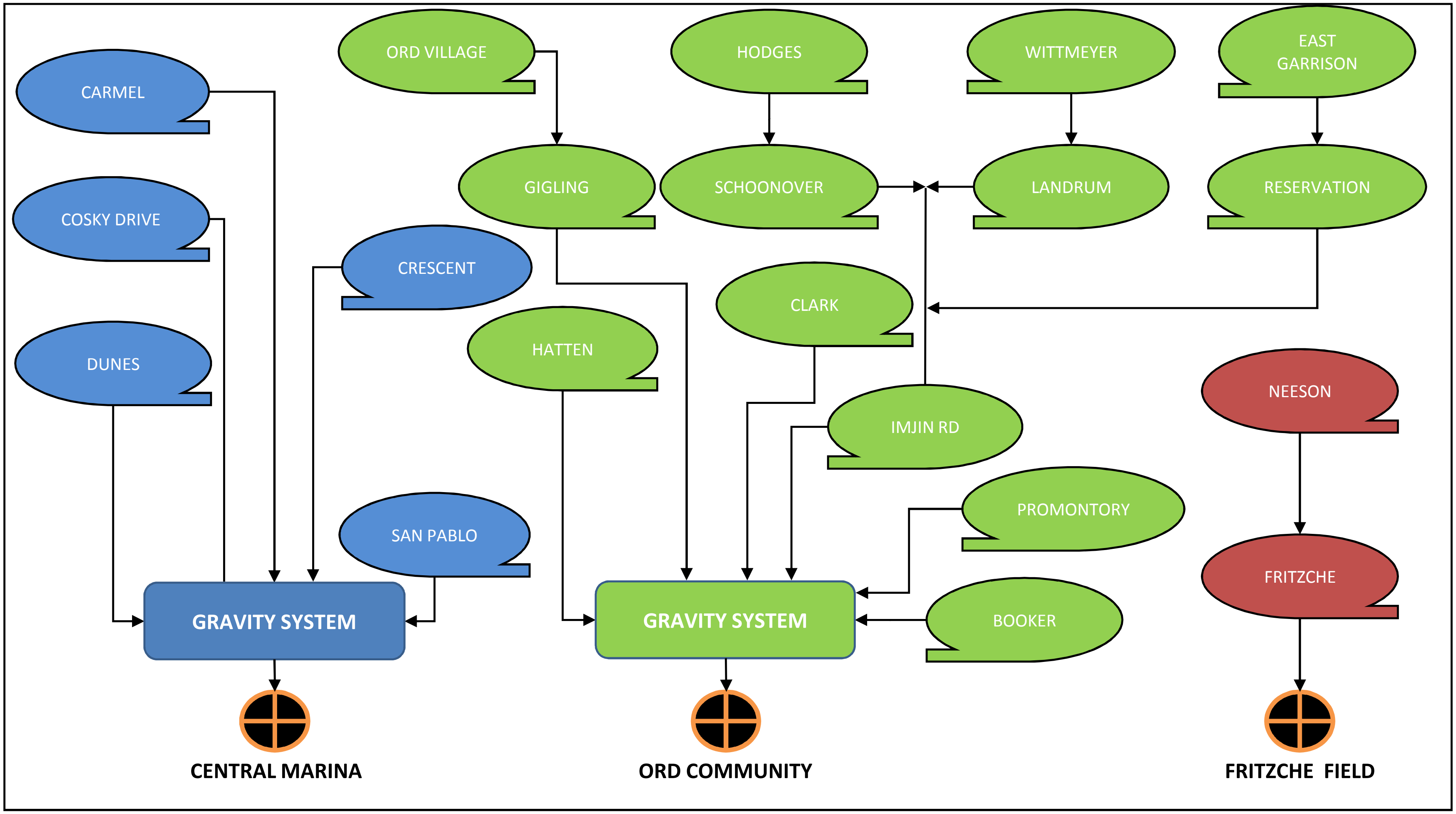


LEGEND

PRELIMINARY

Wastewater Outfall

Gravity Main System

Central Marina

Wastewater Lift Station

Ord Community

Wastewater Trunks

Fritzche Field

January 16, 2019

Figure 4.4

Lift Station Connectivity Schematic

Sewer Master Plan

Marina Coast Water District

AKEL ENGINEERING GROUP, INC.

Table 4.2 Lift Station Inventory

Sewer Master Plan

Marina Coast Water District

PRELIMINARY

Lift Station Information			Wet Well Dimensions [1]				Pumps [5]				Pump Controls [3]					
No.	Location	Type	Diameter (ft)	Length (ft)	Width (ft)	Depth (ft)	Quantity	Capacity (mgd)	Capacity (gpm)	TDH (ft)	Lead On (ft)	Lead Off (ft)	Lag 1 On (ft)	Lag 1 Off (ft)	Lag 2 On (ft)	Lag 2 Off (ft)
Ord Community																
Fritzche Field	Fritzsche Field North	Submersible		8.0	8.0	11.0	2	2 @ 0.23	2 @ 160	44	4.5	2.5	5.0	2.5		
Promontory	8th Street	Submersible	6			21.0	2	2 @ 0.13	2 @ 93	50.9	4.5	2.5	5.0	2.5		
Carmel	Carmel Avenue	Submersible	6			22.0	2	2 @ 0.37	2 @ 254	23	5.5	2.0	6.0	2.5		
East Garrison	Reservation Rd	Submersible	8			18.0	2	2 @ 0.53	2 @ 370	100	5.0	2.0	5.5	2.0		
Ord Village	End of Beach Range Road	Dry Pit		12.0	6.0	11.0	4	3 @ 1.38 Sump @ 0.07	3 @ 960 Sump @ 50	3 @ 162	5.0	2.2	5.2	2.4	5.4	2.5
Wittemeyer	North of Wittemeyer Court	Submersible	6			16.0	2	2 @ 0.2	2 @ 140	36	4.0	2.0	5.0	2.5		
Booker	End of Booker Street	Dry Pit		13.0 8.0	6.0 8.0	20.0 17.0	3	2 @ 1.09 Sump @ 0.07	2 @ 760 Sump @ 50	2 @ 64	5.0	2.0	5.0	2.0		
Clark	Brostrum Drive at Clark Court	Submersible	6			16.0	2	2 @ 0.37	2 @ 260	86.5	4.0	2.0	4.5	2.0		
Neeson	Neeson Road/ Marina Airport	Submersible		6.6	6.0	16.0	1	0.58	400	13.2	Floats					
Landrum	Landrum Court	Submersible	7			24.0	2	2 @ 0.50	2 @ 350	48	7.0	2.0	7.3	2.0		
Imjin	Imjin at Abrams	Submersible	8			12.0	2	2 @ 1.00	2 @ 700	62.5	4.5	1.7	5.0	2.0		
Schoonover	Schoonover at Warrelman	Submersible	7			22.0	2	2 @ 0.68	2 @ 470	69.5	6.5	2.0	7.0	2.0		
Hatten	Hatten Road	Submersible	3			10.0	2	2 @ 0.06	2 @ 40		Floats					
Gigling	Okinawa and Noumea Road	Dry Pit		22.0	8.0	16.0	4	3 @ 1.26 Sump @ 0.07	3 @ 874 Sump @ 50	3 @ 115	7.5	4.0	7.7	4.0	8.0	4.0
Reservation	Reservation Road 1,125 ft nw/o Imjin	Submersible	8			24.0	2	2 @ 1.02	2 @ 710	68	4.6	2.5	6.0	4.0		
Hodges	Hodges Court	Submersible	6			13.0	2	2 @ 0.14	2 @ 94	41	5.5	3.0	6.0	3.0		
Central Marina																
Dunes	Dunes Drive	Submersible	7			20.0	2	2 @ 1.00	2 @ 700	71	7.5	2.8	8.0	2.8		
San Pablo	San Pablo Ct	Submersible	6			13.0	2	2 @ 0.29	2 @ 200	26	5.5	2.0	5.8	2.0		
Cosky	Cosky Drive	Submersible	6			14.0	2	2 @ 0.31	2 @ 216	42.9	3.5	2.0	4.0	2.0		
Crescent	Crescent Street	Submersible	5.0			11.0	2	2 @ 0.14	2 @ 100	28	4.5	2.0	5.0	2.0		

3/1/2019

Notes:

1. From "Lift Station Inventory Table" received 01/20/2017.
2. Information extrated from "MVWD EOC Charts", Infrastructure inventories, received 12/14/2016.
3. From "Lift Station Inventory Table" received 01/20/2017.
4. Based on information received from District March 2, 2018.
5. Updated inventory information received from MCWD Staff on March 1, 2019.

at 40 gpm. The pump discharges into a 6-inch force main that conveys flows north towards Arloncourt Road. This lift station is not included in the hydraulic model.

- **Promontory Lift Station.** This lift station is located on the Promontory student housing facility, southeast of the intersection of 5th Avenue and 8th Street. This lift station includes 1 duty pump and 1 standby pump that are both rated at 93 gpm. The pump discharges into two parallel 3-inch force mains that convey flows south toward Inter-Garrison Road. This lift station is not included in the hydraulic model.

- **Hodges Lift Station.** The lift station is located at Hodges Court and was built in 1989. The lift station includes 1 duty pump and 1 standby pump that are both rated at 94 gpm. The pump discharges into a 4-inch force main that conveys flows west towards Sherman Court.

- **Fritzche Field Lift Station.** The lift station is located at Fritzche Field North. The lift station includes 1 duty pump and 1 standby pump that are both rated at 160 gpm. The pump discharges into a 6-inch force main that conveys flows north along existing right-of-way..

- **East Garrison Lift Station.** The lift station is located at the intersection of Reservation Road and East Garrison Road and was built in 1999. The lift station includes 1 duty pump and 1 standby pump that are both rated at 370 gpm. The pump discharges into a 6-inch force main that conveys flows east along Reservation Road.

- **Wittemeyer Lift Station.** This lift station is located at the intersection of Reservation Road and East Garrison Road and was built in 1985. The lift station includes 1 duty pump and 1 standby pump that are both rated at 140 gpm. The pump discharges into a 4-inch force main that conveys flows east towards Bandholtz Court.

- **Carmel Lift Station.** This lift station is located on Carmel Avenue and was built in 2007. The lift station includes 1 duty pump and 1 standby pump that are both rated at 254 gpm. The pump discharges into a 6-inch force main that conveys flows along Carmel Avenue.

- **Booker Lift Station.** This lift station is located approximately 100 feet west of the intersection of Booker Street and Hayes Circle and was built in 1966. The lift station includes 1 duty pump and 1 standby pump that are both rated at 760 gpm. The pump discharges into a 10-inch force main that conveys flows south along State Highway 1.

- **Clark Lift Station.** This lift station is located at the intersection of Brostrom Drive and Clark Court and was rehabilitated in 2016. The lift station includes 1 duty pump and 1 standby pump that are both rated at 260 gpm. The pump discharges into a 6-inch force main that conveys flows west along Imjin Road.

- **Neeson Lift Station.** This lift station is located at the intersection of Neeson Road and Foxtrot Street. The lift station includes a duty pump that is rated at 400 gpm. The pump discharges into an 8-inch force main that conveys flows north along Foxtrot Street.

- **Landrum Lift Station.** This lift station is approximately located at the northeast end of Landrum Court and was rehabilitated in 2006. The lift station includes 1 duty pump and 1 standby pump that are both rated at 350 gpm. The pump discharges into an 8-inch force main that conveys flows west along Imjin Road.

- **Imjin Lift Station.** This lift station is located approximately 700 feet east of the intersection of Imjin Parkway and Abrams Drive. The Imjin lift station was built in 1970 and includes 1 duty pump and 1 standby pump that are both rated at 700 gpm.. The pump discharges into a 10-inch force main that conveys flows west along Imjin Road.

- **Schoonover Lift Station.** This lift station is located approximately 100 feet west of the intersection of Schoonover Road and Warrelman Court. The lift station includes 1 duty pump and 1 standby pump that are both rated at 470 gpm. The pump discharges into an 8-inch force main that conveys flows west along Schoonover Road.

- **Reservation Lift Station.** This lift station is located approximately 1,000 feet west of the intersection of Reservation Road and Imjin Parkway and was built in 1998. The lift station includes 1 duty pump and 1 standby pump that are both rated at 710 gpm. The pump discharges into a 10-inch force main that conveys flows east along Reservation Road.

- **Dunes Lift Station (#2).** This lift station, originally constructed in 1969, is located on Dunes Drive and was rehabilitated in 1987. The lift station was reconstructed in 2016, and along with the force main alignment, was moved to the west side of Highway 1. The lift station includes 1 duty pump and 1 standby pump that are both rated at 700 gpm. The pump discharges into an 8-inch force main that conveys flows west along Reservation Road.

- **San Pablo Lift Station (#3).** This lift station, originally constructed in 1959, is located on San Pablo Court and was rehabilitated in 2000. The lift station includes 1 duty pump and 1 standby pump that are both rated at 200 gpm. The pump discharges into a 6-inch force main that conveys flows north along Lake Drive.

- **Cosky Drive Lift Station (#5).** This lift station, originally constructed in 1969, is located approximately 300 feet east of the intersection of Michael Drive and Cosky Drive and was rehabilitated in 2016. The lift station includes 1 duty pump and 1 standby pump that are both rated at 216 gpm. The pump discharges into a 6-inch force main that conveys flows west along Cosky Drive.

- **Crescent Lift Station (#6).** This lift station is located approximately 300 feet north of the intersection of Patton Parkway and Crescent Street and was built in 1977 and rehabilitated in 2012. The lift station includes 1 duty pump and 1 standby pump that are both rated at 100 gpm. The pump discharges into a 6-inch force main that conveys flows north of Crescent Street

Table 4.2 lists each lift station with relevant information obtained from the District's records including: lift station number, location, wet well dimensions, and number of pumps and respective capacities. The lift stations are operated to turn "on" or "off" based on the levels in their wet wells.

4.4 MONTEREY ONE WATER WASTEWATER TREATMENT PLANT

Sewer flows from the Central Marina and Ord Community service areas are conveyed to the Monterey One Water interceptor, commonly referred to as the Peninsula Interceptor System. Flows are conveyed through this interceptor to the Monterey One Water regional treatment plant (formerly MRWPCA). The Ord Community service area discharges to the Monterey One Water interceptor through a parshall flume located at the headworks of the decommissioned Main Garrison Wastewater Treatment Plant. The Central Marina service area discharges to the M1W 72-inch diameter forebay pipe and lift station near the intersection of Reservation Road and Dunes Drive. The lift station pumps the sewage into the M1W interceptor pipeline that flows into the M1W wastewater treatment plant.

M1W wastewater treatment plant treats on average 18.5 mgd of sewer flows, collecting flows from 12 different entities including the cities of Pacific Grove, Monterey, Seaside, Sand City, Del Rey Oaks, and Marina. The construction of the wastewater treatment plant began in the late 1980s. The wastewater treatment plant currently services approximately 250,000 people on the Monterey Peninsula.

CHAPTER 5 –EXISTING AND BUILDOUT SEWER FLOWS

This chapter summarizes historical sewer flows experienced at the Monterey One Water WWTP and defines flow terminologies relevant to this evaluation. This chapter discusses the wastewater flow distribution within the collection basins and identifies the design flows used in the hydraulic modeling effort and capacity evaluation. The design flows include the flows due to existing conditions and buildout development conditions.

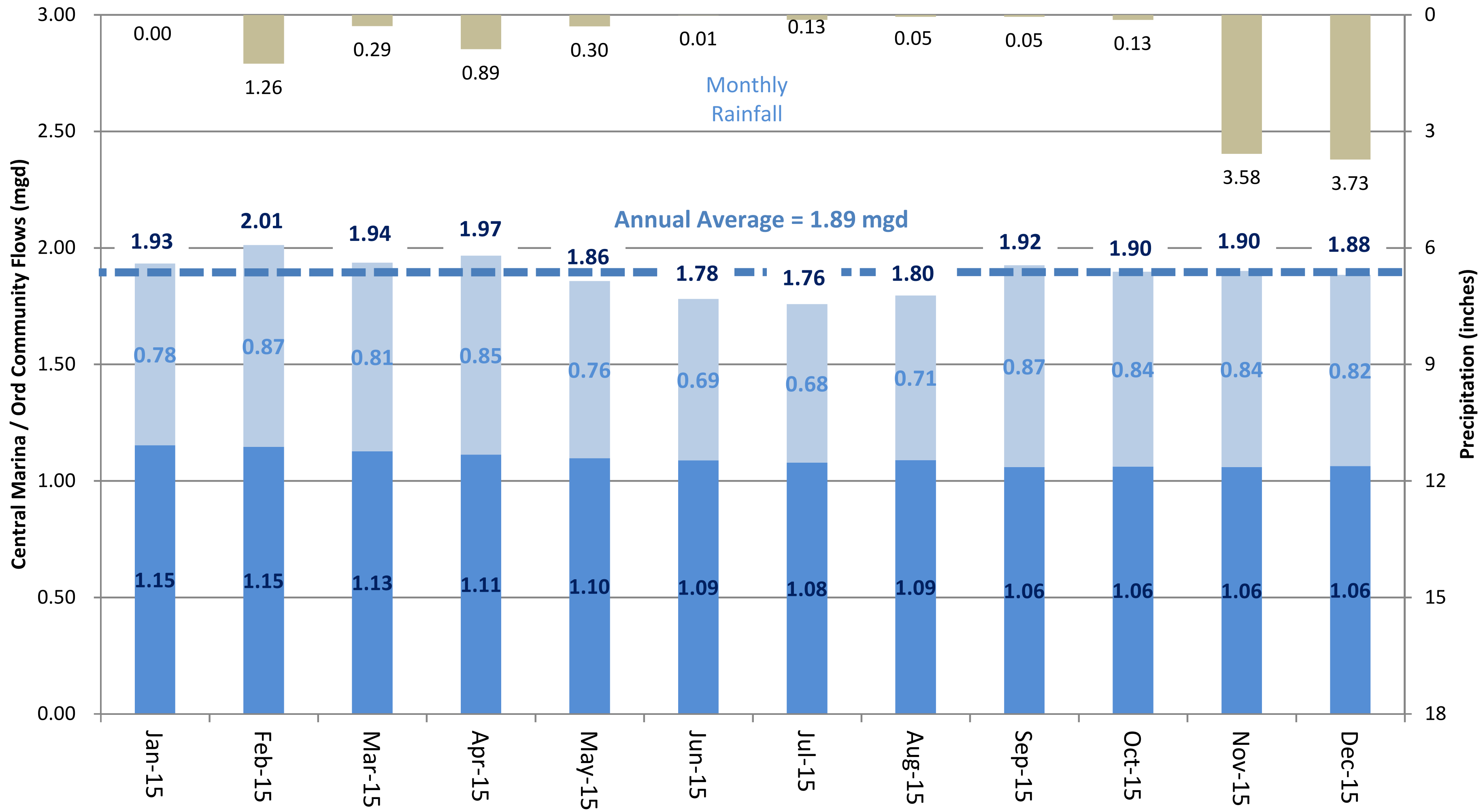
5.1 FLOWS AT THE MONTEREY ONE WATER INTERCEPTOR

The wastewater flows collected for the Central Marina and Ord Community service areas are discharged to the M1W interceptor. The parshall flume located at the decommissioned Main Garrison Wastewater Treatment plant records the daily wastewater flows collected throughout the Ord Community service area, while a lift station located near the intersection of Reservation Road and Dunes Drive records the daily wastewater flows collected throughout the Central Marina service area. **Figure 5.1** shows the monthly flows for both service areas, including the Central Marina and the Ord Community versus rainfall at the for year 2015. January, February, March and April were also the maximum months during 2015, due to the considerable amount of rain received those months.

Flow data influent to the M1W interceptor was obtained from District and M1W operation staff. The flow data covered a period from 2009 to 2016. From this data monthly, daily, and peak daily flows, were determined as summarized on **Table 5.1** and **Table 5.2**.

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.



PRELIMINARY

LEGEND

- Central Marina Monthly Flows
- 2015 Average Flow
- Ord Community Monthly Flows
- Rainfall

October 13, 2017

Figure 5.1

2015 Monthly Flows

Sewer Master Plan

Marina Coast Water District

AKEL ENGINEERING GROUP, INC.

Table 5.1 Historical Data - Central Marina Outfall

Sewer Master Plan

Marina Coast Water District

PRELIMINARY

Year	Average Annual Flow (AAF) (mgd)	Percentage Change	Seasonal Average ADWF[1] (mgd)	Seasonal Average AWWF[2] (mgd)	Maximum Month MMDWF (mgd)	Maximum Month MMWWF (mgd)	Maximum Day MDDWF (mgd)	Maximum Day MDWWF (mgd)
Historical Flows								
2009	1.21		1.21	1.21	1.23	1.23	1.35	1.36
2010	1.22		1.22	1.23	1.26	1.28	1.38	1.42
2011	1.21		1.21	1.20	1.22	1.23	1.30	1.33
2012[3]	1.17		1.17	1.17	1.18	1.19	1.31	1.32
2013[3]	1.17		1.17	1.17	1.18	1.19	1.28	1.39
2014	1.14		1.14	1.14	1.15	1.16	1.23	1.26
2015	1.09		1.08	1.10	1.10	1.15	1.20	1.38
2016	1.09		1.09	1.10	1.10	1.11	1.19	1.27
Historical Peaking Factors (Applied to ADWF)								
2009			1.00	1.00	1.01	1.01	1.12	1.12
2010			1.00	1.00	1.03	1.05	1.13	1.16
2011			1.00	0.99	1.01	1.02	1.07	1.10
2012 [3]			1.00	1.00	1.01	1.02	1.11	1.12
2013 [3]			1.00	1.00	1.01	1.02	1.09	1.19
2014			1.00	1.00	1.01	1.02	1.08	1.11
2015			1.00	1.02	1.01	1.06	1.11	1.28
2016			1.00	1.01	1.01	1.02	1.09	1.17

AKEL ENGINEERING GROUP, INC.

Notes:

1. Dry weather months include months from May to September.
2. Wet weather months include months from October to April.
3. Year 2012 and 2013 statistics shown in grey due to incomplete data. Values shown are 2011 and 2014 average.
4. 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)

Table 5.2 Historical Data - Ord Community Outfall

Sewer Master Plan

Marina Coast Water District

PRELIMINARY

Year	Average Annual Flow (AAF) (mgd)	Percentage Change	Seasonal Average ADWF[1] (mgd)	Seasonal Average AWWF[2] (mgd)	Maximum Month MMDWF (mgd)	Maximum Month MMWWF (mgd)	Maximum Day MDDWF (mgd)	Maximum Day MDWWF (mgd)
Historical Flows								
2009	0.91		0.89	0.92	0.94	0.96	0.97	1.00
2010	0.90		0.87	0.92	0.96	0.98	0.99	0.99
2011	0.90		0.88	0.91	0.94	0.96	0.98	1.03
2012[3]	0.87		0.84	0.90	0.91	0.94	1.05	0.96
2013[3]	0.87		0.84	0.90	0.91	0.94	0.94	1.00
2014	0.85		0.80	0.88	0.88	0.93	0.90	0.98
2015	0.79		0.74	0.83	0.87	0.87	0.88	0.93
2016	0.85		0.83	0.88	0.90	0.91	0.94	0.95
Historical Peaking Factors (Applied to ADWF)								
2009			1.00	1.04	1.06	1.08	1.09	1.13
2010			1.00	1.05	1.09	1.11	1.13	1.13
2011			1.00	1.04	1.07	1.09	1.11	1.17
2012[3]			1.00	1.07	1.08	1.12	1.25	1.14
2013[3]			1.00	1.07	1.08	1.12	1.12	1.18
2014			1.00	1.10	1.10	1.16	1.13	1.22
2015			1.00	1.12	1.17	1.17	1.19	1.25
2016			1.00	1.06	1.08	1.09	1.13	1.15

Notes :

1. Dry weather months include months from May to September.
2. Wet weather months include months from October to April.
3. Year 2012 and 2013 statistics shown in grey due to incomplete data. Values shown are 2011 and 2014 average.
4. 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)

- **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.
- **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 historical sewer flows for Central Marina while **Table 5.2** shows the historical sewer flows for the Ord Community. The average annual flows for the Central Marina have decreased from 1.21 mgd in 2009 to 1.09 mgd in 2016, which is a decrease of approximately 9.7%. The average annual flows for the Ord Community have decreased from 0.91 mgd in 2009 to 0.85 mgd in 2016, which is a decrease of 6%.

In addition to listing the 2009-2016 flows, and for comparison purposes, the table calculates the peaking factors applied to the corresponding average dry weather flows (ADWF) for each year. During wet weather flows in 2016, the maximum daily volume (MDWWF) contributed by the City of Marina at the outfall was 1.17 times higher than the average dry weather flow for the same year. During wet weather flows in 2016, the maximum daily volume contributed by the Ord Community was 1.15 times higher than the average dry weather flow for the same year.

5.2 EXISTING SEWER FLOWS BY MONITORING BASIN

The existing sewer flows represented in this Master Plan were based on the District's water consumption billing records. The number of acres and corresponding wastewater flows, by sewer collection basin, are summarized on **Table 5.3**. These basins correspond to flow monitor collection basins discussed in a previous chapter. Below is a description of the existing average annual flows of the nine basins delineated for the development of this Master Plan.

- **Central Marina Basin M-1.** This basin includes 20 percent of the total acres and 11 percent of the existing dry weather flows generated by the City of Marina.
- **Central Marina Basin M-2.** This basin includes 45 percent of the total acres and 49 percent of the existing dry weather flows generated by the City of Marina.

Table 5.3 Existing Average Dry Flows by Basin

Sewer Master Plan

Marina Coast Water District

PRELIMINARY

Basin ID	Area [1]		Average Dry Weather Flows	
	Acres	Percent of Total	Flows (mgd)	Percent of Total
Central Marina				
M-1	306	20%	0.11	11%
M-2	689	45%	0.51	49%
M-3	348	23%	0.26	25%
M-4	178	12%	0.17	16%
Subtotal	**1,522**	**100%**	**1.06**	**100%**
Ord Community				
O-1	1,016	31%	0.40	40%
O-2	230	7%	0.07	7%
O-3	636	20%	0.18	18%
O-4	*Removed from the analysis*			
O-5	1,173	36%	0.34	34%
O-6	174	5%	0.02	2%
Subtotal	**3,229**	**100%**	**1.01**	**100%**
Total	**4,751**		**2.06**	

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Note:

1. Area shown represents developed parcels within meter tributary area.
2. Meter O-4 was initially installed on a pipeline that had no flow. District staff elected not to reinstall the meter and received in leiu services.

- **Central Marina Basin M-3.** This basin includes 23 percent of the total acres and 25 percent of the existing dry weather flows generated by the City of Marina,
- **Central Marina Basin M-4.** This basin includes 12 percent of the total acres and 16 percent of the existing dry weather flows.
- **Ord Community Basin O-1.** This basin includes 31 percent of the total acres and 40 percent of the existing dry weather flows.
- **Ord Community Basin O-2.** This basin includes 45 percent of the total acres and 49 percent of the existing dry weather flows.
- **Ord Community Basin O-3.** This basin includes 26 percent of the total acres and 25 percent of the existing dry weather flows.
- **Ord Community Basin O-5.** This basin includes 36 percent of the total acres and 34 percent of the existing dry weather flows.
- **Ord Community Basin O-6.** This basin includes 5 percent of the total acres and 2 percent of the existing dry weather flows.

5.3 FUTURE SEWER FLOWS

Future sewer flows were projected using unit factors for residential and non-residential land uses and included the developments within the Future Service Area, as identified in Chapter 2. These flows were used in sizing future infrastructure facilities, include gravity and force mains as well as lift stations. Flows were also used for allocating and reserving capacities in the existing or proposed facilities. The following sections document the future sewer flows based on the development limits prepared by FORA as well as the buildout development horizon.

5.3.1 Near-Term Sewer Flows

The potential development area associated with the FORA development limits was previously summarized on Table 2.2. Using the sewer factors for residential and non-residential land uses the future average dry weather flows for the near-term developments are summarized on Table 5.4. The total average annual sewer flows due to the near-term developments is estimate to be 0.7 mgd.

5.3.2 Buildout Sewer Flows

Table 5.5 documents the total acreages for residential and non-residential land use, and the undeveloped lands designated for urbanization. The undeveloped lands were multiplied by the corresponding unit flow factor to estimate the future sewer flows. The 2017 flows were increased to 2.2 mgd to account for 100% occupancy, and the ultimate buildout flows were calculated at 5.1 mgd.

Table 5.4 Near-Term Development Flows

Sewer Master Plan

Marina Coast Water District

PRELIMINARY

Development Areas	Development Limits[1]			Estimated Development Area				Estimated Average Dry Weather Flow[5]
	Residential (du)	Office, Industrial, Commercial (sf)	Hotel (rooms)	Residential[2] (acres)	Office, Industrial, Commercial[3] (acres)	Hotel[4] (acres)	Total (acres)	(mgd)
1	2	3	4	5	6	7	8	10
Campus Town Specific Plan	388	180,000	300	48.5	6.9	2.5	57.9	0.04
Cypress Knolls	712	0	0	89.0	0.0	0.0	89.0	0.06
Del Rey Oaks	691	400,000	550	86.4	15.3	38.6	140.2	0.12
Dunes Phase 1, 2, & 3	847	1,049,000	394	105.9	40.1	12.9	158.9	0.13
East Garrison	721	102,000	0	90.1	3.9	0.0	94.0	0.06
Main Gate	145	150,000	350	18.1	5.7	7.8	31.6	0.03
City of Monterey	0	937,800	0	0.0	35.9	0.0	35.9	0.04
Sea Haven	929	0	0	116.1	0.0	0.0	116.1	0.07
Seaside East	310	90,000	0	38.8	3.4	0.0	42.2	0.03
Seaside Resort	122	10,000	398	15.3	0.4	16.8	32.4	0.03
UC MBEST	240	1,090,000	0	30.0	41.7	0.0	71.7	0.07
Total	**5,105**	**4,008,800**	**1,992**	**638.1**	**153.4**	**78.5**	**870.0**	**0.68**

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3/15/2019

Notes:

1. Development limits based on development Forecasts documented in FORA "FY 2018-2019 Capital Improvement Program", Table 6 and Table 7 and reflect remaining entitlements.
2. Residential acreage estimated based on average residential density of 8 dwelling units per acre.
3. Office, Industrial, and Commercial acreage estimated bsaed on average floor-area-ratio of 0.6.
4. Acreage for hotel development estimated based on available planning information and County of Monterey parcel database.
5. Estimated demand based on residential and non-residential unit factors consistent with master plan unit factors.

Table 5.5 Average Daily Sewer Flows
Sewer Master Plan
Marina Coast Water District

PRELIMINARY

Land Use Classifications	Buildout Sewer Flows															
	Existing Development			Future Development within Study Area								Future Development Ouside of Future Study Area			Total	
	Existing Development - Unchanged	Sewer Unit Factor	Average Daily Flow	New Lands - Redevelopment	New Development		Subtotal Future Development	Sewer Unit Factor	Average Daily Flow	Total Development at Buildout of Study Area	Total Average Daily Flow	Development Outside of Future Study Area	Sewer Unit Factor	Average Daily Flow	Total Development within Planning Area	Average Daily Flow
					Inside Existing Service Area	Outside Existing Service Area										
	(acre)	(gpd/acre)	(gpd)	(acre)	(acre)	(acre)	(acre)	(gpd/acre)	(gpd)	(gpd/acre)	(gpd)	(acre)	(gpd/acre)	(gpd)	(acre)	(gpd)
Residential																
Residential	2,378	640	1,521,793	85	1,167	1,033	2,285	640	1,462,310	4,663	2,984,102	0	640	30	4,663	2,984,133
Subtotal Residential	2,378		1,521,793	85	1,167	1,033	2,285			4,663	2,984,102	0		30	4,663	2,984,133
Non-Residential																
Commercial	309	1,190	367,460	21	235	139	395	1,190	470,104	704	837,564	1	1,190	1,216	705	838,780
Park	98	0	0	103	156	222	481	0	0	579	0	0	0	0	579	0
Institutional	541	190	102,863	23	191	58	272	190	51,653	813	154,516	1	190	174	814	154,690
Planned Development Mixed Use District	0	805	0	134	475	726	1,336	805	1,075,256	1,336	1,075,256	0	805	0	1,336	1,075,256
Subtotal Non-Residential	948		470,323	280	1,058	1,146	2,484		1,597,013	3,432	2,067,336	2		1,390	3,433	2,068,726
Other																
Bayonet Golf Course	307	0	0	0	0	0	0	0	0	307	0	0	0	0	307	0
Open Space - Other	438	0	0	46	0	0	46	0	0	484	0	90	0	0	574	0
Designated Open Space	45	0	0	0	0	0	0	0	0	45	0	18,238	0	0	18,283	0
ROW	25	0	0	0	1	0	1	0	0	26	0	0	0	0	26	0
Airport Runway	224	0	0	0	0	0	0	0	0	224	0	0	0	0	224	0
Parker Flats LU Swap	0	0	0	0	0	709	709	0	0	709	0	0	0	0	709	0
Subtotal Other	1,039		0	46	1	709	756		0	1,794	0	18,328		0	20,122	0
Totals	4,364		**1,992,116**	412	2,225	2,888	5,524	0	0	9,889	**5,051,439**	18,330	0	1,420	28,218	**5,052,859**

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11/6/2017

Additional sewer flows at the buildout of the District's Planning Area include flows from infill development, which occurs within the existing service area, and future development outside of the District's existing service area. Future sewer flows were allocated to the sewer system based on the following methodologies:

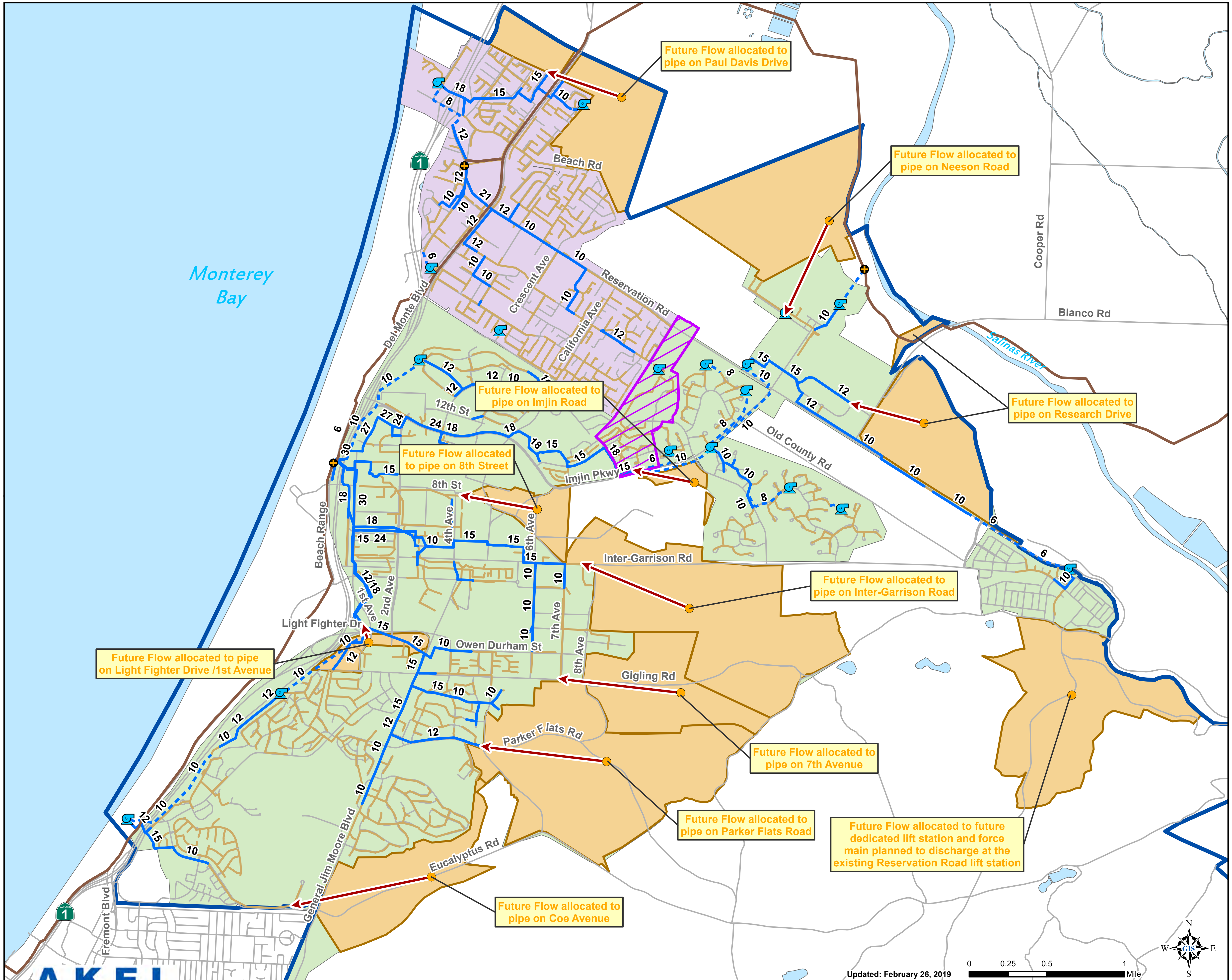
- **Infill Development:** Future sewer flows due to either the redevelopment of existing developed lands or the development of existing lands within the existing service area were allocated to existing manholes in proximity to the future development.
- **Future Development:** Future sewer flows for new development outside of the existing service area were consolidated into general tributary areas based on parcel boundaries and existing topography and assumed to discharge to the existing sewer system at various locations. These future consolidated tributary areas, and preliminary discharge locations, are documented on Figure 5.2. It should be noted that, due to the unknown development horizon of future development, these discharge connections are preliminary and future hydraulic analysis is recommended as development occurs.

5.4 SEWER SYSTEM DESIGN FLOWS

The design flows most relevant in this capacity analysis of the 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 and in the District standards.
- **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 5.6. The table lists the maximum day and peak hour flows for dry and wet weather conditions.



Legend

Existing Modeled System

- Lift Stations
- Outfalls

Gravity Mains by Size

- 8" and Smaller
- 10" and Larger
- Force Mains
- Monterey One Water Interceptor

Cost Centers

- Central Marina
- Ord Community
- Ord Community Service Area Tributary to Central Marina Outfall
- Areas of Future Development
- Planning Boundary
- Streets
- Waterbodies
- Rivers/Streams

PRELIMINARY

Figure 5.2
Future Development Flow Allocation
Sewer Master Plan
Marina Coast Water District

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Table 5.6 Design Flows at Buildout

Sewer Master Plan

Marina Coast Water District

PRELIMINARY

Flow Condition	Existing Conditions		Buildout Conditions	
	DWF (mgd)	WWF (mgd)	DWF (mgd)	WWF (mgd)
Central Marina				
Maximum Day	1.3	2.0	1.7	2.6
Peak Hour	2.1	4.9	2.6	6.5
Ord Community				
Maximum Day	1.2	4.9	5.3	7.4
Peak Hour	1.9	7.7	8.2	15.7

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1/31/2019

Notes:

1. Flows shown were extracted from District sewer system hydraulic model and reflect operations of lift stations and flow attenuation.

CHAPTER 6 - HYDRAULIC MODEL DEVELOPMENT

This chapter describes the development and calibration of the District's sewer system hydraulic model. Hydraulic network analysis has become an effectively powerful tool in all aspects of sewer system planning, design, operation, management, and system reliability analysis. The District'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 District'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 District's 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 manifolded 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 into 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. Table 6.1 lists the total length of modeled sewer pipes at 104 miles.

6.2.2 Digitizing and Quality Control

During the development of the new hydraulic model, the project team consisting of District staff and Akel Engineering staff, implemented a thorough quality control program to resolve discrepancies. The quality control program included the following:

- The previous hydraulic model, developed in H2OMap Sewer, and used in the previous master plan
- Supplemental field surveys
- Existing CAD sewer system maps

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 sewer loads was accomplished by using the wastewater flow factors developed for this master plan as well as parcel data including acreage and land use. The loads calculated were allocated to the nearest manhole that serves the corresponding parcel using the capabilities the hydraulic model has for allocating loads.

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 2017 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 District's hydraulic model was calibrated for dynamic conditions.

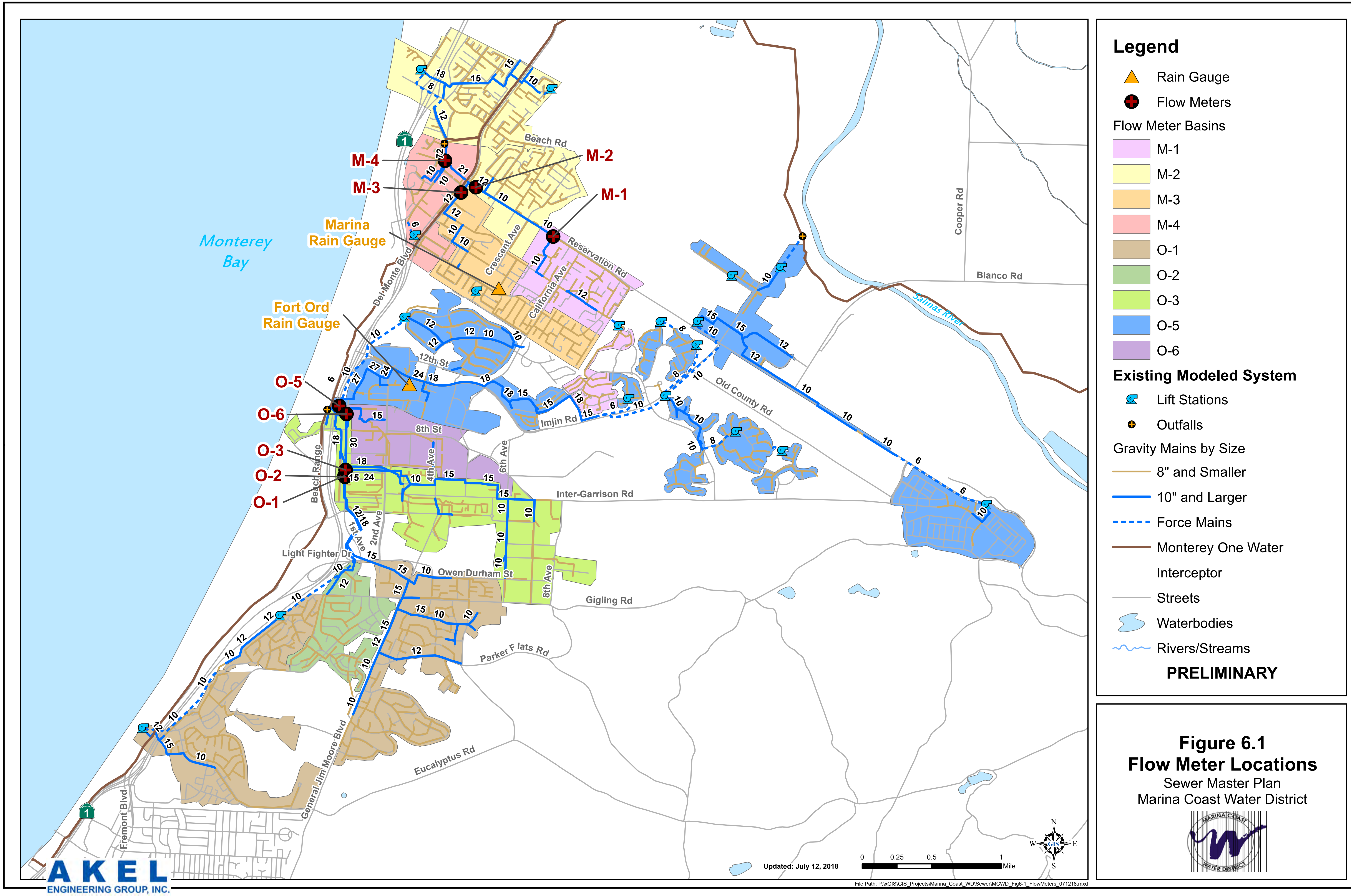

Figure 6.1
Flow Meter Locations
Sewer Master Plan
Marina Coast Water District

Table 6.1 Existing Modeled Pipe Inventory

Sewer Master Plan
Marina Coast Water District

PRELIMINARY

Pipe Size (in)	Pipe Length (ft)	Pipe Length (miles)
Gravity Mains		
4	1,127	0.2
6	114,937	21.8
8	263,721	49.9
10	43,449	8.2
12	30,827	5.8
14	0	0.0
15	31,083	5.9
18	13,474	2.6
21	1,376	0.3
24	5,626	1.1
27	2,237	0.4
30	3,563	0.7
72	440	0.1
Subtotal	**511,861**	**96.9**
Force Mains		
4	967	0.2
6	8,166	1.5
8	6,659	1.3
10	18,888	3.6
Subtotal	**34,680**	**6.6**
Total		
	546,541	**103.5**

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2/13/2018

Note:

1. Pipeline length extracted from hydraulic model developed by Akel Engineering Group.

In 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.(19 February 2017-20 February 2017)
- Peak wet weather flows from storm rainfall Event No. 2.(9 February 2017- 10 February 2017)

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 2017 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 5 weeks, from January 2017 to February 2017. Villalobos and Associates (V&A) was retained to install the flow meters, monitor rainfall, and perform an Infiltration and Inflow analysis. The selected flow monitoring sites are listed on **Table 6.2** and shown on **Figure 6.1**.

The 2017 V&A Flow Monitoring Program captured two rainfall events and included a summary report identifying areas of the District 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 (**Table 3.5**), and provided an insight into the sewer system response to storm conditions.

During the V&A flow monitoring program two rain gauges were set up within the District service area to record storm events during the monitoring period and are shown on **Figure 6.1**. Data from the V&A flow monitoring effort, as documented in the 2017 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.

It should be noted that the site for Meter O-4 was initially located on a sewer main that did not have any flow. In the process of locating the other sites, V&A was tasked with additional work to determine and document pipeline connectivity in the Ord Community, as well as notifying District staff of a deteriorated sewer main requiring immediate attention. In lieu of additional out of scope, District staff chose to eliminate O-4 from the flow monitoring program.

6.3.3 Dynamic Model Calibration

The calibration process was iterative as it involved calibrating each of the 6 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.

Table 6.2 Flow Monitor Sites

Sewer Master Plan

Marina Coast Water District

PRELIMINARY

Site ID	Location Description	Pipe Size (in)	Manhole ID
Central Marina			
M-1	1,000 ft e/o intersection of Reservation Rd and Crescent Ave	12" SW (In Pipe)	K606
M-2	Intersection of Reservation Rd and Del Monte Blvd	12" SE (In Pipe)	L368
M-3	Intersection of Reservation Rd and Del Monte Blvd	12" SW (In Pipe)	G421
M-4	Intersection of Robin Dr and Hilo Ave	10" N (Out Pipe)	E331
Ord Community			
O-1	Intersection of 5th St and 1st Ave	18" SW (In Pipe)	G451
O-2	Intersection of 5th St and 1st Ave	12" SE (In Pipe)	D452
O-3	Intersection of 5th St and 1st Ave	15" E (In Pipe)	J306
O-5	NW corner of VA Clinic Parking Lot	15" N (In Pipe)	UVA1
O-6	1st Ave n/o 8th St	15" E (In Pipe)	UVB6

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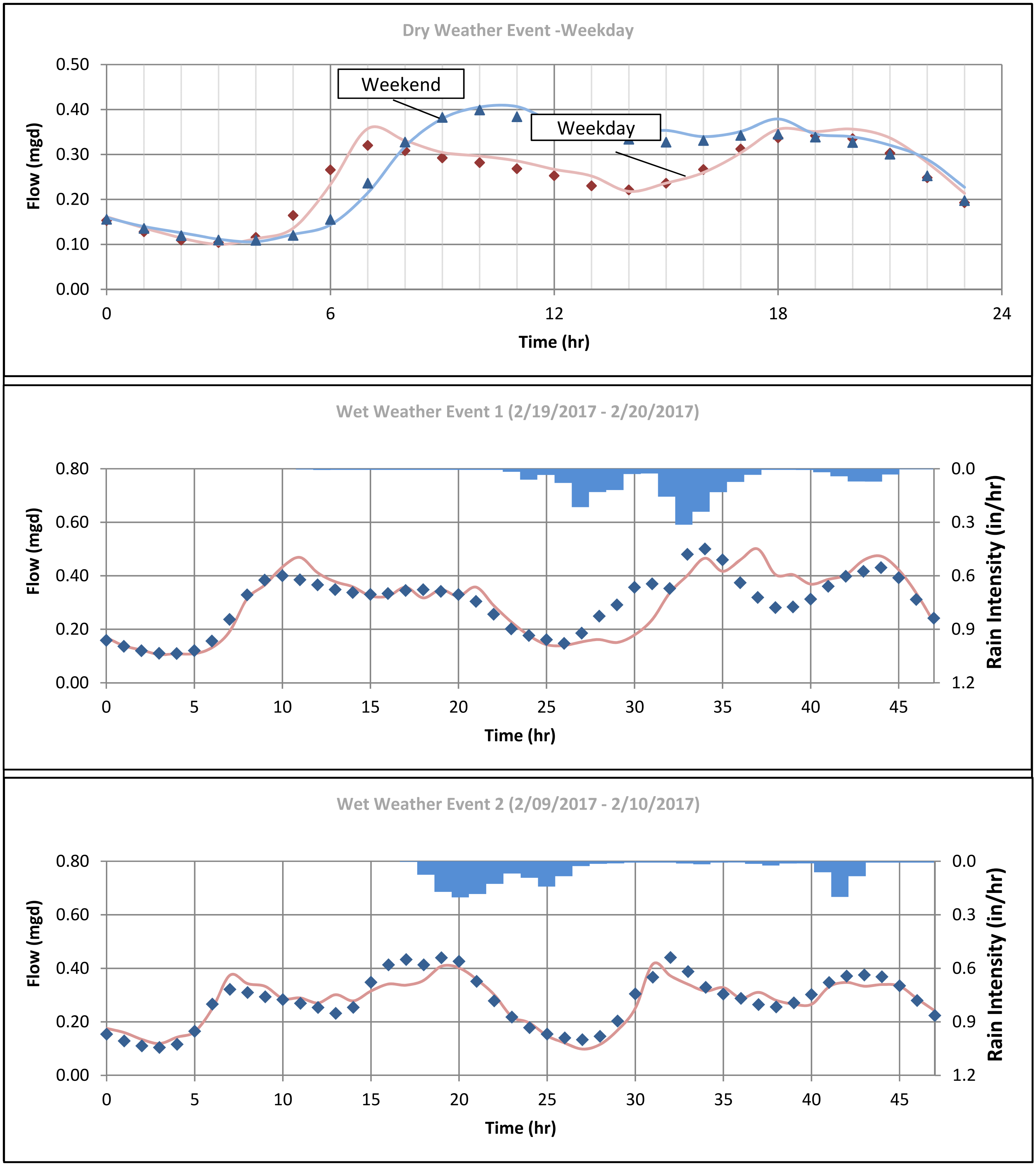
3/15/2018

The rain events of February 19-20, 2017 (Event No. 1) and February 9-10, 2017 (Event No. 2), as listed on **Table 3.5**, were used to calibrate the hydraulic model to the wet weather conditions. The diurnal curves for each of the 9 sites were extracted from the 2017 V&A Flow Monitoring Program and the data was used for comparison purposes with the hydraulic model predictions. The calibration effort is an iterative process and continues until it yields acceptable results for each site and for each of the three calibration conditions.

The calibration results for each flow monitoring site are documented in **Appendix B** and briefly summarized on Table 6.3. These results indicate the calibration effort yielded reasonable comparisons between the flow monitoring data and the hydraulic model predictions at the 9 sites. The calibration results were reviewed and approved by District staff, and representative extracts from **Appendix B** are shown on **Figures 6.2** and **6.3**. After each of the calibration process has been completed, the hydraulic model was benchmarked for further analysis and evaluation.

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 District 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

PRELIMINARY

Rain Event

Hydraulic Model

V&A Flow Monitoring

V&A Flow Monitoring

AKEL ENGINEERING GROUP, INC.

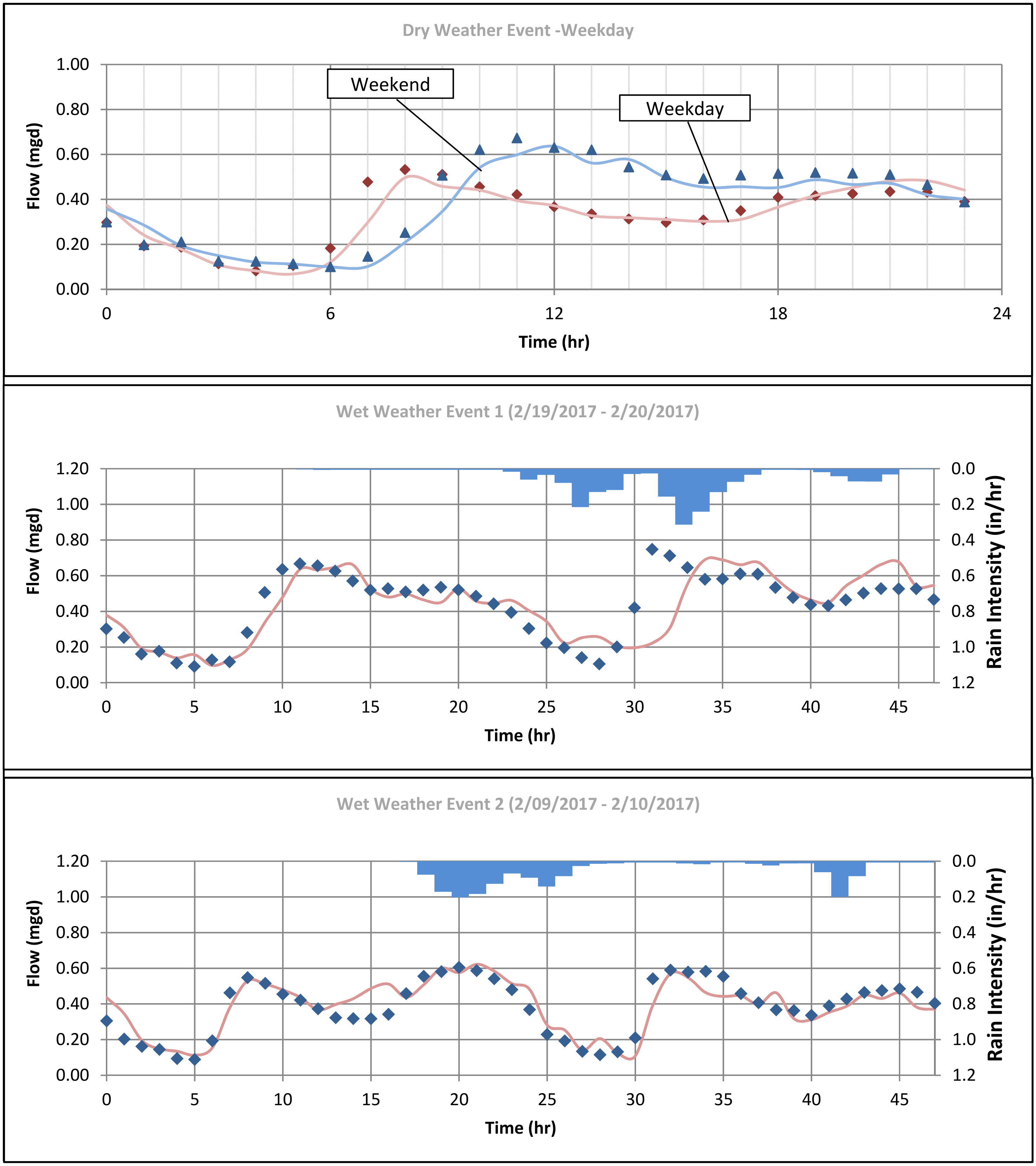
October 18, 2017

Figure 6.2

M-3 Marina

Sewer Master Plan

Marina Coast Water District



LEGEND

PRELIMINARY

Rain Event

Hydraulic Model

V&A Flow Monitoring

V&A Flow Monitoring

AKEL ENGINEERING GROUP, INC.

October 18, 2017

Figure 6.3

O-5 Fort Ord

Sewer Master Plan

Marina Coast Water District

Table 6.3 Calibration Results Summary

Sewer Master Plan
Marina Coast Water District

PRELIMINARY

Flow Monitoring ID		Units	Dry Period (Weekday) Minimum	Dry Period (Weekday) Maximum	Dry Period (Weekday) Average	Dry Period (Weekend) Minimum	Dry Period (Weekend) Maximum	Dry Period (Weekend) Average	Wet Weather (Event 1) Minimum	Wet Weather (Event 1) Maximum	Wet Weather (Event 1) Average	Wet Weather (Event 2) Minimum	Wet Weather (Event 2) Maximum	Wet Weather (Event 2) Average
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
M-1	Flow Monitored	(mgd)	0.0237	0.188	0.106	0.017	0.206	0.114	0.022	0.225	0.131	0.026	0.200	0.116
	Model	(mgd)	0.0281	0.164	0.106	0.025	0.198	0.120	0.022	0.214	0.135	0.024	0.201	0.122
	Difference	(mgd)	-0.0044	0.023	0.000	-0.0076	0.008	-0.006	0.0005	0.011	-0.004	0.0017	-0.001	-0.006
		(%)	**16**	**-14**	**0**	**30**	**-4**	**5**	**-3**	**-5**	**3**	**-7**	**0**	**5**
M-2	Flow Monitored	(mgd)	0.1286	0.514	0.354	0.122	0.636	0.389	0.120	1.170	0.514	0.134	0.738	0.401
	Model	(mgd)	0.1209	0.510	0.363	0.120	0.682	0.413	0.115	0.977	0.477	0.116	0.817	0.430
	Difference	(mgd)	0.0077	0.003	-0.009	0.0019	-0.045	-0.023	0.0058	0.194	0.037	0.0174	-0.080	-0.029
		(%)	**-6**	**-1**	**2**	**-2**	**7**	**6**	**-5**	**-20**	**-8**	**-15**	**10**	**7**
M-3	Flow Monitored	(mgd)	0.0999	0.357	0.250	0.106	0.407	0.278	0.106	0.500	0.302	0.098	0.416	0.274
	Model	(mgd)	0.1040	0.342	0.241	0.109	0.399	0.268	0.109	0.500	0.299	0.104	0.440	0.278
	Difference	(mgd)	-0.0040	0.016	0.009	-0.0028	0.008	0.010	-0.0032	0.000	0.003	-0.0059	-0.024	-0.004
		(%)	**4**	**-5**	**-4**	**3**	**-2**	**-4**	**3**	**0**	**-1**	**6**	**6**	**1**
M-4	Flow Monitored	(mgd)	0.0694	0.232	0.167	0.056	0.244	0.170	0.066	0.274	0.181	0.072	0.239	0.172
	Model	(mgd)	0.0676	0.227	0.164	0.060	0.236	0.167	0.060	0.274	0.185	0.072	0.257	0.183
	Difference	(mgd)	0.0018	0.005	0.002	-0.0036	0.008	0.002	0.0060	0.000	-0.004	0.0003	-0.017	-0.011
		(%)	**-3**	**-2**	**-1**	**6**	**-3**	**-1**	**-10**	**0**	**2**	**0**	**7**	**6**
O-1 [1]	Flow Monitored	(mgd)	0.1671	0.636	0.449	0.144	0.637	0.440	0.145	0.705	0.468	0.131	0.956	0.473
	Model	(mgd)	0.0746	0.726	0.446	0.062	0.755	0.452	0.065	0.796	0.480	0.065	0.776	0.470
	Difference	(mgd)	0.0925	-0.090	0.003	0.0821	-0.119	-0.013	0.0800	-0.092	-0.013	0.0653	0.180	0.003
		(%)	**-124**	**12**	**-1**	**-132**	**16**	**3**	**-123**	**12**	**3**	**-100**	**-23**	**-1**
O-2	Flow Monitored	(mgd)	0.0088	0.130	0.076	0.008	0.125	0.072	0.009	0.209	0.083	0.007	0.170	0.070
	Model	(mgd)	0.0100	0.123	0.075	0.010	0.131	0.076	0.010	0.171	0.093	0.010	0.164	0.086
	Difference	(mgd)	-0.0012	0.007	0.001	-0.0022	-0.006	-0.004	-0.0006	0.038	-0.010	-0.0027	0.006	-0.015
		(%)	**12**	**-6**	**-1**	**22**	**5**	**5**	**6**	**-22**	**10**	**28**	**-3**	**18**
O-3	Flow Monitored	(mgd)	0.0250	0.278	0.169	0.014	0.239	0.143	0.031	0.924	0.258	0.030	0.703	0.235
	Model	(mgd)	0.0283	0.273	0.169	0.028	0.235	0.146	0.028	0.977	0.251	0.028	0.550	0.225
	Difference	(mgd)	-0.0033	0.005	0.001	-0.0139	0.004	-0.002	0.0034	-0.053	0.007	0.0020	0.153	0.010
		(%)	**12**	**-2**	**0**	**51**	**-2**	**1**	**-12**	**5**	**-3**	**-7**	**-28**	**-5**
O-5	Flow Monitored	(mgd)	0.0679	0.497	0.327	0.099	0.636	0.375	0.097	0.690	0.432	0.109	0.622	0.389
	Model	(mgd)	0.0819	0.532	0.335	0.100	0.673	0.399	0.091	0.748	0.431	0.088	0.605	0.382
	Difference	(mgd)	-0.0139	-0.036	-0.008	-0.0005	-0.037	-0.024	0.0053	-0.058	0.001	0.0203	0.017	0.007
		(%)	**17**	**7**	**2**	**1**	**5**	**6**	**-6**	**8**	**0**	**-23**	**-3**	**-2**
O-6	Flow Monitored	(mgd)	0.0078	0.040	0.020	0.006	0.029	0.019	0.009	0.183	0.043	0.006	0.072	0.027
	Model	(mgd)	0.0085	0.031	0.021	0.007	0.030	0.020	0.007	0.126	0.038	0.009	0.092	0.032
	Difference	(mgd)	-0.0007	0.009	0.000	-0.0009	-0.001	-0.001	0.0013	0.057	0.005	-0.0028	-0.020	-0.005
		(%)	**9**	**-28**	**0**	**13**	**2**	**6**	**-19**	**-46**	**-14**	**32**	**22**	**17**

12/11/2017

Note:
1. Flow Fluctuations are heavily influenced by the Ord Village Lift Station at flow monitoring site O-1.

CHAPTER 7 - EVALUATION AND PROPOSED IMPROVEMENTS

This chapter presents a summary of the sewer system capacity evaluation during peak dry weather flows and peak wet weather flows for the existing and buildout development conditions. This chapter summaries the lift station condition assessment performed by GHD. The recommended 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

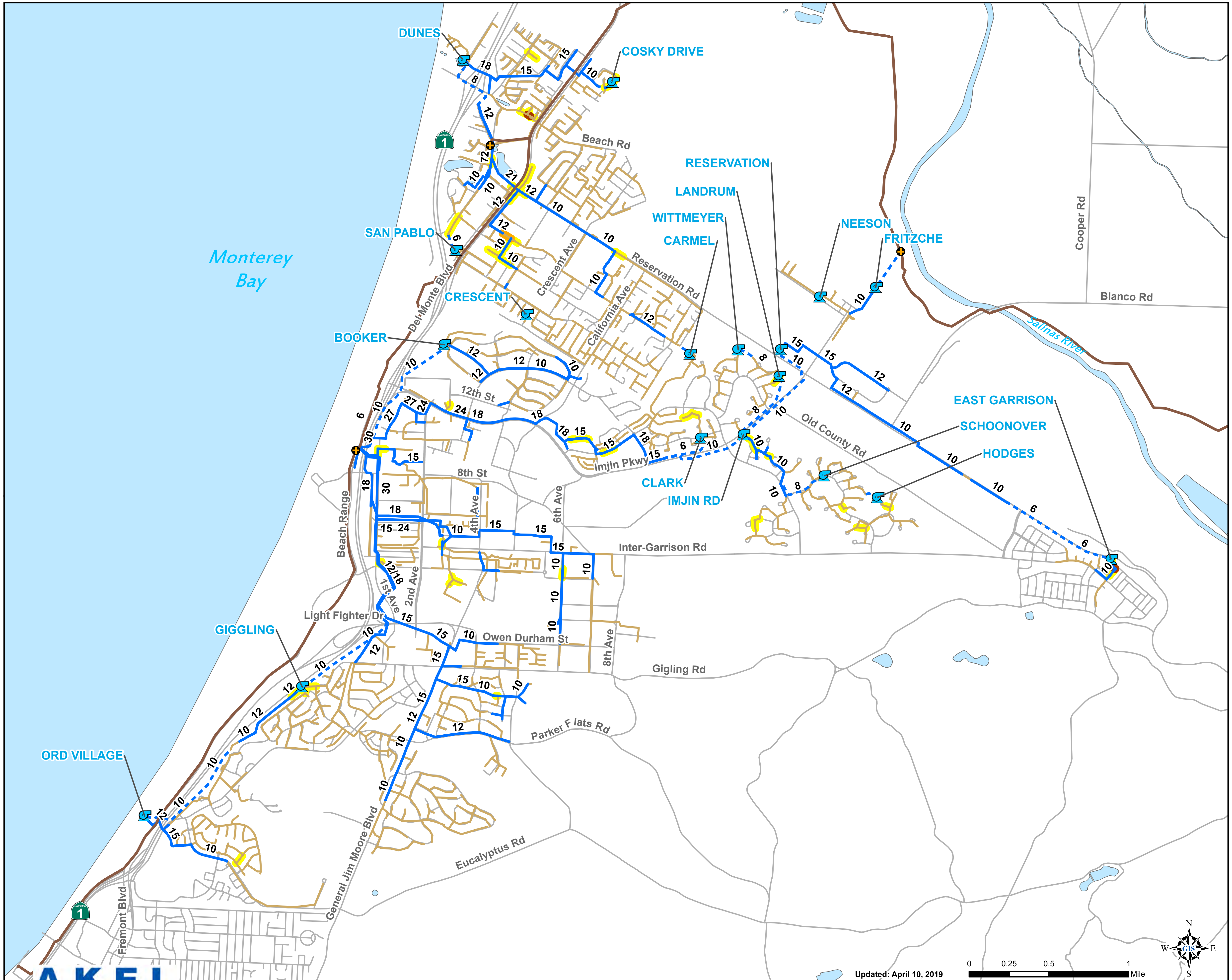
The system performance and design criteria summarized on **Table 3.1** were used as a basis to judge the adequacy of capacity for the existing sewer system. The design flows simulated in the hydraulic model for existing conditions were summarized on **Table 5.6**.

During the peak dry weather simulations, the maximum allowable pipe d/D criteria for gravity pipelines (0.67 for 12-inch or, 0.8 for sewer mains ranging in size from 15-inches to 24 inches, and 0.9 for sewer mains equal or greater to 27 inches) was used. 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 sewer system exhibited acceptable performance to service the existing customers during both peak dry weather flows (**Figure 7.1**) and peak wet weather flows (**Figure 7.2**). The results of the existing system capacity evaluations are discussed in the following sections.

7.2.1 Existing Peak Dry Weather Flows Capacity Evaluation

The existing dry weather flow analysis indicated that the existing sewer system exhibited acceptable performance to service existing customers during peak dry weather flows, as



Legend

Pipe d/D

- d/D > 0.90
- d/D 0.75 - 0.90
- d/D 0.50 - 0.75

Existing Modeled System

- Lift Stations
- Outfalls

Gravity Mains by Size

- 8" and Smaller
- 10" and Larger
- Force Mains
- Monterey One Water Interceptor
- Streets
- Waterbodies
- Rivers/Streams

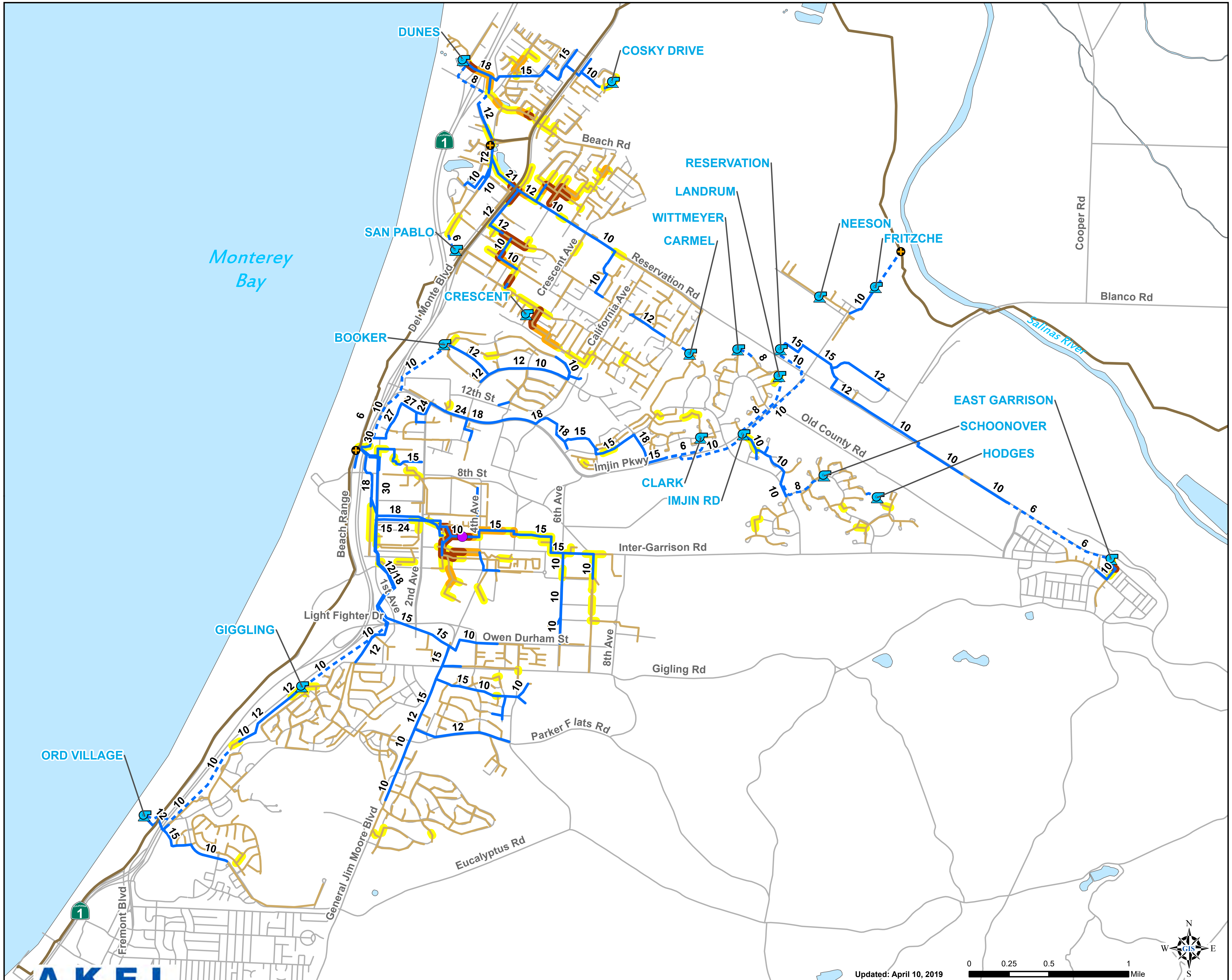
PRELIMINARY

Figure 7.1
Existing System Analysis for PDWF

Sewer Master Plan
Marina Coast Water District

AKEL ENGINEERING GROUP, INC.

File Path: P:\xGIS\GIS_Projects\Marina_Coast_WD\Sewer\MCWD_Fig7-1_Exist-PDWF_041019.mxd



Legend

Surcharging Manholes

- Flooding
- HGL < 3 ft of Manhole Rim

Pipe d/D

- d/D > 0.90
- d/D 0.75 - 0.90
- d/D 0.50 - 0.75

Existing Modeled System

- Lift Stations
- Outfalls

Gravity Mains by Size

- 8" and Smaller
- 10" and Larger
- Force Mains
- Monterey One Water Interceptor
- Streets
- Waterbodies
- Rivers/Streams

PRELIMINARY

Figure 7.2
Existing System Analysis for PWWF

Sewer Master Plan
Marina Coast Water District

AKEL ENGINEERING GROUP, INC.

File Path: P:\xGIS\GIS_Projects\Marina_Coast_WD\Sewer\MCWD_Fig7-2_Exist-PWWF_041019.mxd documented on **Figure 7.1**, with the following exception:

- Beach Road west of Del Monte Boulevard. This existing 8-inch pipeline experiences d/D ratios over 0.9 under peak dry weather flow conditions.

7.2.2 Existing Peak Wet Weather Flows Capacity Evaluation

The design flows for the capacity evaluation under existing and buildout development conditions are summarized on **Table 5.5**. The existing wet weather flow analysis indicated that the existing sewer system exhibited acceptable performance to service existing customers during peak wet weather flows, with some exceptions noted on **Figure 7.2**.

It should be noted that District staff have indicated that under existing wet weather flow conditions the manholes shown on **Figure 7.2** have not been noted as surcharging in the field. The PWWF analysis represents a conservative evaluation, and while not experiencing consistent surcharging under existing wet weather conditions, it is recommended District staff monitor these manholes during significant storm events.

7.3 LIFT STATION ASSESSMENT

This Sewer Master Plan included a review of the District's exiting sewer lift stations, which included the following analyses:

- **Pumping Capacity Evaluation:** The pumping capacity of each modeled lift station was reviewed to ensure each station is capable of conveying sewer flows under existing and buildout development conditions. This evaluation compared peak lift station inflows under peak wet weather conditions against the existing lift station firm capacities and documented any recommended improvements. The results of the pump station capacity evaluation are documented on **Table 7.1**.

- **Force Main Evaluation:** The existing lift station force mains were evaluated to determine capacity adequacy for both existing and buildout development conditions. This evaluation analyzed the pipeline velocity for the existing force mains and determined if a larger pipeline is required to convey either existing or buildout sewer flows. The results of the force main evaluation are documented on **Table 7.2**.

- **Condition Assessment:** GHD conducted a condition assessment of the 12 highest priority lift stations, which included documentation of the existing physical conditions, a condition rating of 1 (Very Good) to 5 (Very Poor) for various onsite components, and an opinion of probable cost for potential improvements. The report completed by GHD for the condition assessment is included in **Appendix C**, while the following sections include a brief summary of the information prepared for each lift station. It should be noted that the

Table 7.1 Lift Station Capacity Analysis

Sewer Master Plan

Marina Coast Water District

PRELIMINARY

Pump Station	Firm Capacity (Excludes Standby) (gpm)	Total Capacity (Includes Standby) (gpm)	Existing Peak Wet Weather Flows (gpm)	Existing Peak Wet Weather Flows (mgd)	Surplus/ Deficiency (gpm)	Future Peak Wet Weather Flows (gpm)	Future Peak Wet Weather Flows (mgd)	Surplus/ Deficiency (gpm)	Recommended Improvements
Central Marina									
Dunes	700	1,400	1,135	1.63	**-435**	882	1.27	**-182**	Replace with 3 x 450 gpm
San Pablo	200	400	84	0.12	116	90	0.13	110	
Cosky	216	432	43	0.06	173	42	0.06	174	
Crescent	100	200	12	0.02	88	12	0.02	88	
Ord Community									
Fritzche Field	160	320	31	0.04	129	279	0.40	**-119**	Replace with 3 x 150 gpm
Carmel	254	508	46	0.07	208	60	0.09	194	
East Garrison	370	740	123	0.18	247	288	0.41	82	
Ord Village	1,920	2,880	308	0.44	1,612	725	1.04	1,195	
Wittemeyer	140	280	34	0.05	106	34	0.05	106	
Booker	760	1,520	61	0.09	699	309	0.44	451	
Clark	260	520	34	0.05	226	34	0.05	226	
Neeson	400	400	10	0.01	390	100	0.14	300	
Landrum	350	700	89	0.13	261	87	0.13	263	
Imjin	700	1,400	1,236	0.62	**-536**	1,358	1.96	**-658**	Replace with 3 x 700 gpm
Schoonover	470	940	205	0.29	265	197	0.28	273	
Gigling	1,700	2,550	401	0.58	1,299	856	1.23	844	
Reservation	710	1,420	179	0.26	531	1,180	1.70	**-470**	Replace with 3 x 600 gpm
Hodges	94	188	50	0.07	44	49	0.07	45	

Table 7.2 Force Main Evaluation

Sewer Master Plan

Marina Coast Water District

PRELIMINARY

Lift Station ID	Force Main Length (ft)	Force Main Diameter (in)	Existing Peak Wet Weather Flows		Future Peak Wet Weather Flows		Recommended Improvements
			Flow (mgd)	Velocity (ft/s)	Flow (mgd)	Velocity (ft/s)	
Central Marina							
Dunes	2,240	8	1.39	6.8	1.37	6.1	
San Pablo	632	6	0.14	2.0	0.16	1.2	
Cosky	526	6	0.08	0.9	0.09	0.7	
Crescent	42	6	0.07	0.3	0.03	0.3	
Ord Community							
Fritzche Field	872	6	0.01	0.2	0.44	3.5	
Carmel	487	6	0.10	0.9	0.10	0.8	
East Garrison	3,964	6	0.18	2.2	0.41	3.2	
Ord Village	4,038	10	0.58	3.1	1.08	3.1	
Wittemeyer	536	4	0.06	1.3	0.06	1.1	
Booker	4,080	10	0.27	0.5	0.84	2.4	
Clark	1,642	6	0.09	1.0	0.12	0.9	
Neeson	78	8	0.01	0.1	0.15	0.6	
Landrum	2,449	8	0.20	1.0	0.16	0.7	
Imjin	2,910	10	1.03	2.8	1.96	5.5	
Schoonover	1,893	8	0.40	2.2	0.39	1.7	
Gigling	3,697	10	0.65	2.5	1.47	4.2	
Reservation	4,156	10	0.30	1.5	1.74	4.9	
Hodges	432	4	0.09	1.9	0.09	1.6	

discussion in the following sections only includes a summary of the condition assessment results for components that received a score of 4 (Poor) or 5 (Very Poor).

7.3.1 Dunes Lift Station

The following sections document the pumping capacity evaluation, force main evaluation, and condition assessment for the Dunes Lift Station.

- **Pumping Capacity Evaluation:** The maximum modeled lift station inflow under existing PWWF conditions is 1,135 gpm and 882 gpm under buildout PWWF conditions. This lift station experiences a decrease in flows due to the future diversion of flows along Cove Way, Cardoza Ave, and Reservation Road. This lift station is under capacity during existing and buildout development conditions. It should be noted that District staff have indicated operational records show that the existing lift station firm capacity is capable of conveying peak flows. Therefore, it is recommended that District staff continue to monitor the operations of this lift station and replace the existing pumps when necessary.

- **Force Main Evaluation:** As documented on Table 7.2 the existing 8-inch Dunes force main is adequate to convey flows under existing and buildout development conditions

- **Condition Assessment:** In order to improve personnel safety, the installation of a ground fault circuit interrupter (GFCI) on both the 120-volt convenience receptacle and the receptacle unit circuit breaker is recommended.

7.3.2 San Pablo Lift Station

The following sections document the pumping capacity evaluation, force main evaluation, and condition assessment for the San Pablo Lift Station.

- **Pumping Capacity Evaluation:** The maximum modeled lift station inflow under existing PWWF conditions is 84 gpm and 90 gpm under buildout PWWF conditions. The existing lift station capacity is sufficient for existing and buildout conditions.

- **Force Main Evaluation:** As documented on Table 7.2 the existing 6-inch force main is adequate to convey flows under existing and buildout development conditions

- **Condition Assessment:** The condition assessment indicated that the components of this lift station are in generally acceptable condition, with no components receiving a score of 4 or greater.

7.3.3 Cosky Lift Station

The following sections document the pumping capacity evaluation and force main evaluation for the Cosky Lift Station.

- **Pumping Capacity Evaluation:** The maximum modeled lift station inflow under existing PWWF conditions is 43 gpm and 42 gpm under buildout PWWF conditions. The existing lift station capacity is sufficient for existing and buildout conditions.
- **Force Main Evaluation:** As documented on Table 7.2 the existing 6-inch force main is adequate to convey flows under existing and buildout development conditions
- **Condition Assessment:** The condition assessment conducted by GHD did not include the Cosky lift station.

7.3.4 Crescent Lift Station

The following sections document the pumping capacity evaluation, force main evaluation, and condition assessment for the Crescent Lift Station.

- **Pumping Capacity Evaluation:** The maximum modeled lift station inflow under existing PWWF conditions is 12 gpm and 12 gpm under buildout PWWF conditions. The existing lift station capacity is sufficient for existing and buildout conditions.
- **Force Main Evaluation:** As documented on Table 7.2 the existing 6-inch force main is adequate to convey flows under existing and buildout development conditions
- **Condition Assessment:** The existing valve pit interior shows signs of cracking and surface damage, as well as a collection of sand in the bottom; additionally, the piping and valves within the existing valve pit lack proper support. The full replacement of the valve pit is recommended. Additionally, at the time of the condition assessment the float switch cables were coiled on a hook within the wet well and the floats were not within the operating range of the wet well.

7.3.5 Fritzche Field Lift Station

The following sections document the pumping capacity evaluation, force main evaluation, and condition assessment for the Fritzche Field Lift Station.

- **Pumping Capacity Evaluation:** The maximum modeled lift station inflow under existing PWWF conditions is 31 gpm and 279 gpm under buildout PWWF conditions. This lift station is under capacity during buildout development conditions and is recommended for replacement.
- **Force Main Evaluation:** As documented on Table 7.2 the existing 6-inch force main is adequate to convey flows under existing and buildout development conditions

  Condition Assessment: Due to signs or rusting and component overheating, the pump control panel and backup power generator enclosure and exhaust system are recommended for replacement.

7.3.6 Carmel Lift Station

The following sections document the pumping capacity evaluation and force main evaluation for the Carmel Lift Station.

- **Pumping Capacity Evaluation:** The maximum modeled lift station inflow under existing PWWF conditions is 46 gpm and 60 gpm under buildout PWWF conditions. The existing lift station capacity is sufficient for existing and buildout conditions.

- **Force Main Evaluation:** As documented on Table 7.2 the existing 6-inch force main is adequate to convey flows under existing and buildout development conditions

- **Condition Assessment:** The condition assessment conducted by GHD did not include the Carmel lift station.

7.3.7 East Garrison Lift Station

The following sections document the pumping capacity evaluation, force main evaluation, and condition assessment for the East Garrison Lift Station.

- **Pumping Capacity Evaluation:** The maximum modeled lift station inflow under existing PWWF conditions is 123 gpm and 288 gpm under buildout PWWF conditions. The existing lift station capacity is sufficient for existing and buildout conditions.

- **Force Main Evaluation:** As documented on Table 7.2 the existing 6-inch force main is adequate to convey flows under existing and buildout development conditions

- **Condition Assessment:** Due to signs of significant corrosion, it is recommended that the valve vault pipes and valves, as well as the wet well piping be replaced. Additionally, the valve vault drainage appeared to be blocked due to signs of standing water within the valve vault.

7.3.8 Ord Village Lift Station

The following sections document the pumping capacity evaluation, force main evaluation, and condition assessment for the Ord Village Lift Station.

- **Pumping Capacity Evaluation:** The maximum modeled lift station inflow under existing PWWF conditions is 308 gpm and 725 gpm under buildout PWWF conditions. The existing lift station capacity is sufficient for existing and buildout conditions.

- **Force Main Evaluation:** As documented on Table 7.2 the existing 10-inch force main is adequate to convey flows under existing and buildout development conditions

  Condition Assessment: Due to a lack of drainage on an on-site concreate pad, damage to the existing main pullbox and meter has occurred, which presents a safety hazard; adding drainage to this concrete pad is recommended. Additionally, the fuel tank leak detection panel is heavily rusted and recommended for full replacement. The existing bulk fuel tank is also in poor condition and is recommended for replacement.

7.3.9 Wittemeyer Lift Station

The following sections document the pumping capacity evaluation and force main evaluation for the Wittemeyer Lift Station.

- **Pumping Capacity Evaluation:** The maximum modeled lift station inflow under existing PWWF conditions is 34 gpm and 34 gpm under buildout PWWF conditions. The existing lift station capacity is sufficient for existing and buildout conditions.

- **Force Main Evaluation:** As documented on Table 7.2 the existing 4-inch force main is adequate to convey flows under existing and buildout development conditions

- **Condition Assessment:** The condition assessment conducted by GHD did not include the Wittemeyer lift station.

7.3.10 Booker Lift Station

The following sections document the pumping capacity evaluation, force main evaluation, and condition assessment for the Booker Lift Station.

- **Pumping Capacity Evaluation:** The maximum modeled lift station inflow under existing PWWF conditions is 61 gpm and 309 gpm under buildout PWWF conditions. The existing lift station capacity is sufficient for existing and buildout conditions.

- **Force Main Evaluation:** As documented on Table 7.2 the existing 10-inch force main is adequate to convey flows under existing and buildout development conditions

- **Condition Assessment:** According to the condition assessment, the lift station's service area is planned to be redeveloped, and it is recommended that the lift station undergo major rehabilitation or replacement.

7.3.11 Clark Lift Station

The following sections document the pumping capacity evaluation, force main evaluation, and condition assessment for the Clark Lift Station.

- **Pumping Capacity Evaluation:** The maximum modeled lift station inflow under existing PWWF conditions is 34 gpm and 34 gpm under buildout PWWF conditions. The existing lift station capacity is sufficient for existing and buildout conditions.

- **Force Main Evaluation:** As documented on Table 7.2 the existing 6-inch force main is adequate to convey flows under existing and buildout development conditions

- **Condition Assessment:** The condition assessment conducted by GHD did not include the Clark lift station.

7.3.12 Neeson Lift Station

The following sections document the pumping capacity evaluation, force main evaluation, and condition assessment for the Neeson Lift Station.

- **Pumping Capacity Evaluation:** The maximum modeled lift station inflow under existing PWWF conditions is 10 gpm and 100 gpm under buildout PWWF conditions. The existing lift station capacity is sufficient for existing and buildout conditions.

- **Force Main Evaluation:** As documented on **Table 7.2** the existing 8-inch force main is adequate to convey flows under existing and buildout development conditions

- **Condition Assessment:** Due to significant aging and deterioration of multiple components of the lift station, including the pump, piping, valves, piping and valve supports, concrete slab, electrical equipment, and wet well level monitoring unit, a complete lift station replacement is recommended.

7.3.13 Landrum Lift Station

The following sections document the pumping capacity evaluation and force main evaluation for the Landrum Lift Station.

- **Pumping Capacity Evaluation:** The maximum modeled lift station inflow under existing PWWF conditions is 89 gpm and 87 gpm under buildout PWWF conditions. The existing lift station capacity is sufficient for existing and buildout conditions.

- **Force Main Evaluation:** As documented on **Table 7.2** the existing 8-inch force main is adequate to convey flows under existing and buildout development conditions

- **Condition Assessment:** The condition assessment conducted by GHD did not include the Landrum lift station.

7.3.14 Imjin Lift Station

The following sections document the pumping capacity evaluation, force main evaluation, and condition assessment for the Imjin Lift Station.

- **Pumping Capacity Evaluation:** The maximum modeled lift station inflow under existing PWWF conditions is 1,236 gpm and 1,358 gpm under buildout PWWF conditions. This lift station is under capacity during buildout development conditions and is recommended for replacement.

- **Force Main Evaluation:** As documented on **Table 7.2** the existing 10-inch force main is adequate to convey flows under existing and buildout development conditions

- **Condition Assessment:** Due to a high amount of corrosion the valve vault piping and valves are recommended for replacement.

7.3.15 Schoonover Lift Station

The following sections document the pumping capacity evaluation and force main evaluation.

- **Pumping Capacity Evaluation:** The maximum modeled lift station inflow under existing PWWF conditions is 205 gpm and 197 gpm under buildout PWWF conditions. The existing lift station capacity is sufficient for existing and buildout conditions.

- **Force Main Evaluation:** As documented on Table 7.2 the existing 8-inch force main is adequate to convey flows under existing and buildout development conditions

- **Condition Assessment:** The condition assessment conducted by GHD did not include the Schoonover lift station.

7.3.16 Gigling Lift Station

The following sections document the pumping capacity evaluation, force main evaluation, and condition assessment for the Gigling Lift Station.

- **Pumping Capacity Evaluation:** The maximum modeled lift station inflow under existing PWWF conditions is 401 gpm and 856 gpm under buildout PWWF conditions. The existing lift station capacity is sufficient for existing and buildout conditions.

- **Force Main Evaluation:** As documented on Table 7.2 the existing 10-inch force main is adequate to convey flows under existing and buildout development conditions

- **Condition Assessment:** Due to rust and excess polyurethane foam within the SCADA equipment enclosure some components of the PLC are recommended for replacement.

7.3.17 Reservation Lift Station

The following sections document the pumping capacity evaluation, force main evaluation, and condition assessment for the Reservation Lift Station.

- **Pumping Capacity Evaluation:** The maximum modeled lift station inflow under existing PWWF conditions is 179 gpm and 1,180 gpm under buildout PWWF conditions. This lift station is under capacity during buildout development conditions and is recommended for replacement.

- **Force Main Evaluation:** As documented on Table 7.2 the existing 10-inch force main is adequate to convey existing flows but will require upsizing to a new 12-inch in order to accommodate sewer flows under buildout development conditions.

- **Condition Assessment:** Due to significant corrosion the valve pit pipes and valves are recommended for replacement.

7.3.18 Hodges Lift Station

The following sections document the pumping capacity evaluation and force main evaluation for the Hodges Lift Station.

- **Pumping Capacity Evaluation:** 49 maximum modeled lift station inflow under existing PWWF conditions is 50 gpm and 43 gpm under buildout PWWF conditions. The existing lift station capacity is sufficient for existing and buildout conditions.

- **Force Main Evaluation:** As documented on **Table 7.2** the existing 4-inch force main is adequate to convey flows under existing and buildout development conditions

- **Condition Assessment:** The condition assessment conducted by GHD did not include the Hodges lift station.

7.3.19 Hatten Lift Station

This lift station services a small tributary area and was not included in the hydraulic model. However, it was included in the condition assessment by GHD and the results are described in the following section.

- **Condition Assessment:** The lack of concrete slab at the base of the electrical control panel has contributed to severe corrosion. Additionally, there is no support for the exterior piping and valves. The installation of a concrete slab and appropriate piping and valve supports is recommended.

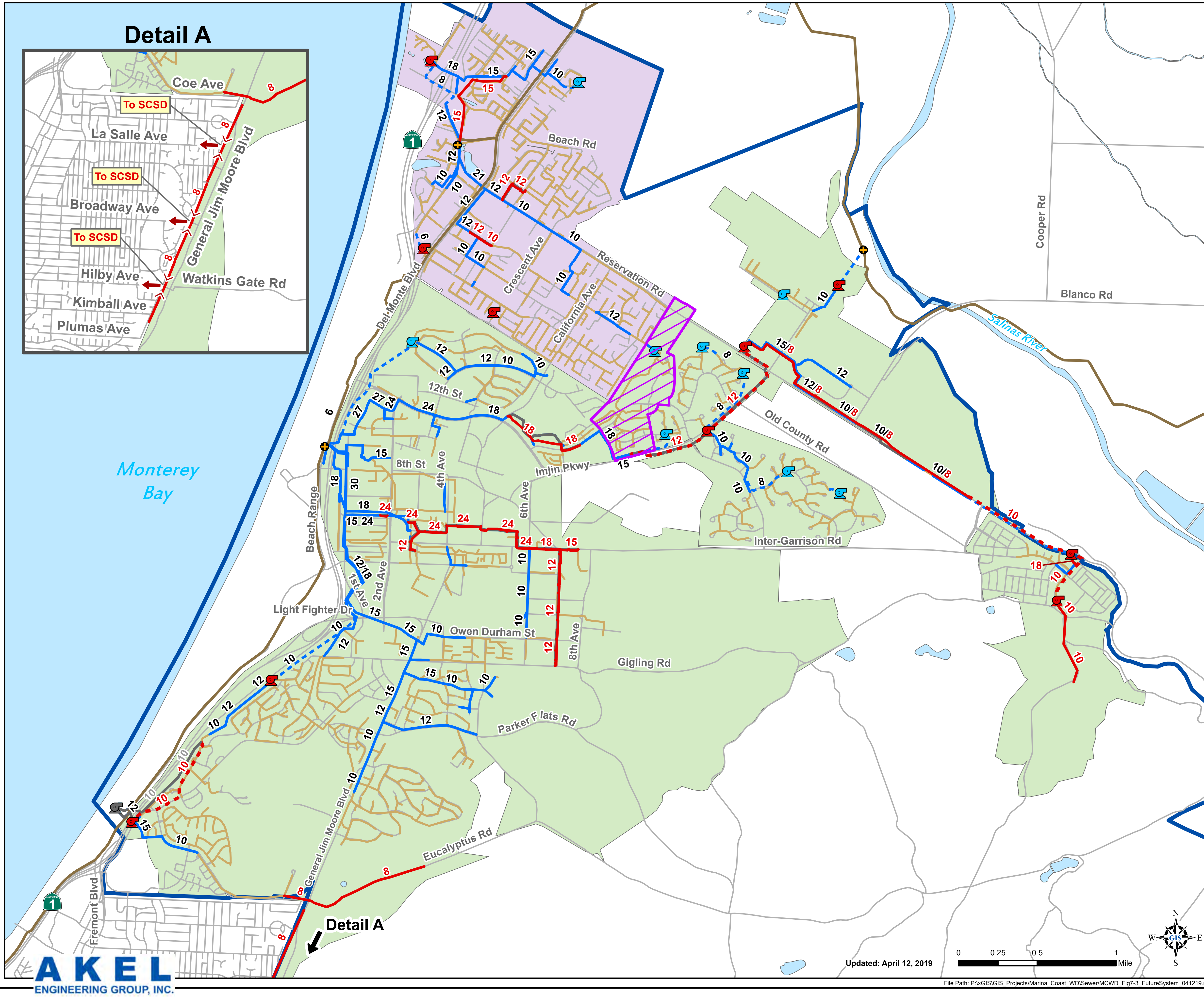
7.4 BUILDOUT CAPACITY IMPROVEMENTS

The system performance and design criteria summarized on **Table 3.1** were used as a basis to recommend improvements to the District's sewer system to mitigate existing system deficiencies and accommodate future growth. The design flows simulated in the hydraulic model for the buildout of the District service area are documented on **Table 5.5**.

The proposed capacity improvements for the sewer system are shown graphically on **Figure 7.3** and summarized on **Table 7.3**, which includes lift station, force main, and gravity main improvements. This table lists the master plan assigned improvement number (e.g., P-1), along with other relevant information including alignment description, capacity or pipe size, and pipe length. These improvements are also summarized on the following pages.

7.4.1 Lift Station Capacity Improvements

This section summarizes the recommended lift station capacity improvements. It should be noted that recommended lift station replacement capacities are quantified in terms of three-pump lift



Legend

Future Improvements

- Lift Stations
- Gravity Mains
- Force Mains
- Abandoned Lift Stations
- Abandoned Pipes

Existing Modeled System

- Lift Stations
- Outfalls

Gravity Mains by Size

- 8" and Smaller
- 10" and Larger
- Force Mains
- Monterey One Water Interceptor
- Planning Boundary

Cost Centers

- Central Marina
- Ord Community
- Ord Community Service Area Tributary to Central Marina Outfall
- Streets
- Waterbodies
- Rivers/Streams

PRELIMINARY

Figure 7.3
Proposed Improvements
Sewer Master Plan
Marina Coast Water District

Table 7.3 Schedule of Improvements

Sewer Master Plan
Marina Coast Water District

PRELIMINARY

Improv. No.	Improv. Type	Alignment	Limits	Improvement Details			
Central Marina Sewer System							
Gravity Main Improvements				**Existing Diameter** (in)	**New/Parallel/ Replace**	**Diameter** (in)	**Length** (ft)
M-P1	Gravity Main	ROW, Cove Way, Cardoza	From Abdy Way to Reservation Rd	-	New	15	1,975
M-P2	Gravity Main	Reservation Rd	From Cardoza Ave to 150' s/o Seaside Cir	-	New	15	1,725
M-P3	Gravity Main	Eucalyptus St, Peninsula Dr, Vista del Camino	From Viking Ln to Reservation Rd	8	Replace	12	1,350
M-P4	Gravity Main	Carmel Ave	From Seacrest Ave to Sunset Ave	8	Replace	10	575
M-P5	Gravity Main	Reservation Rd	From Sunset Ave to Casa de Bolea	8	Replace	12	350
Lift Station Improvements				**Existing Capacity** (gpm)	**Recommended Capacity** (gpm)		
M-LSD	Lift Station Replacement	Dunes Lift Station		2 x 700	Replacement Capacity	3 x 450	
M-LSCR	Lift Station Replacement	Crescent Lift Station		2 x 100	Replacement Capacity		
Miscellaneous Improvements				**Improvement Type**			
MS-M1	WWTP	Located at the Marina WWTP		Demolition			
MS-M2	Gravity Main	Del Monte Boulevard	Reservation Road	Replace			
Ord Community Sewer System							
Gravity Main Improvements				**Existing Diameter** (in)	**New/Parallel/ Replace**	**Diameter** (in)	**Length** (ft)
O-P1	Gravity Main	Barloy Canyon Road	3,000' of future pipeline to convey future flows from development	-	New	10	2,950
O-P2	Gravity Main	ROW	From Ord Avenue to East Garrison Lift Station	15	Replace	18	400
O-P3	Gravity Main	Reservation Rd	From 4,700' w/o East Garrison Lift Station to Reservation Road Lift Station	-	New	8	9,900
O-P4	Gravity Main	Abrams Dr	From w/o Inchon Ct to 80th Artillery Ct	10,15	Replace	18	675
O-P5	Gravity Main	ROW	N/o Abrams Dr following Abrams Dr/ Imjin Pkwy	15	Replace	18	1,325
O-P6	Gravity Main	ROW e/o Imjin Pkwy	From California Ave to 475' n/o Abrams Dr	18	Replace	18	1,100
O-P7	Gravity Main	7th Ave	From n/o Butler St to Inter-Garrison Rd	8,10	Replace	12	4,550
O-P8	Gravity Main	Inter-Garrison Rd	From 625' e/o 7th Ave to 7th Ave	8	Replace	15	700
O-P9	Gravity Main	Inter-Garrison Rd	From 7th Avenue to 6th Ave	10	Replace	18	1,100
O-P10	Gravity Main	Inter-Garrison Rd	Jogging from 6th Ave to General Jim Moore Blvd	10,15	Replace	24	3,975
O-P11	Gravity Main	ROW n/o Inter-Garrison Rd	Jogging from 4th Ave to 1,300' w/o 4th Ave	10	Replace	24	1,675
O-P12	Gravity Main	ROW	Jogging from 3rd Ave to 400' n/o Inter-Garrison Rd	8,10	Replace	12	1,000
O-P13	Gravity Main	5th St	From 2nd Ave to 200' w/o 2nd Ave	15	Replace	24	250
O-P14	Gravity Main	1st Ave	From 1st St to 8th St	12,18,30	Replace	12,18,30	3,100
O-P15	Gravity Main	Eucalyptus Rd	From approximately 4,000' e/o General Jim Moore Blvd to approximatley 800' w/o General Jim Moore Blvd	-	New	8	5,050
Force Main Improvements				**Existing Diameter** (in)	**New/Parallel/ Replace**	**Diameter** (in)	**Length** (ft)
O-FM1	Force Main	Reservation Rd	From Phase 2 of the East Garrison Development to 4,700 ft w/o East Garrison	-	New	10	6,075
O-FM2	Force Main	Monterey Rd, existing ROW	From relocated Ord Village LS to existing gravity main n/o Corregidor Rd	10	Replace	10	3,950

Table 7.3 Schedule of Improvements

Sewer Master Plan
Marina Coast Water District

PRELIMINARY

Improv. No.	Improv. Type	Alignment	Limits	Existing Capacity (gpm)	Recommended Capacity (gpm)	
Lift Station Improvements						
O-LSEG2	New	East Garrison Phase 2	Watkins Gate Rd and Chapel Hill Road	-	New	3 x 175 gpm
O-LSR	Lift Station Replacement	Reservation Road Lift Station		2 x 710	Replacement Capacity	3 x 600
O-LSI	Lift Station Replacement	Imjin Lift Station		2 x 700	Replacement Capacity	3 x 700
O-LSF	Lift Station Replacement	Fritzche Lift Station		2 x 160	Replacement Capacity	3 x 150
O-LSG	Lift Station/ Force Main	Gigling Lift Station				
O-LSO	Lift Station Rehabilitation		Ord Village Sewer Pipeline and Lift Station Improvement Project			
O-LSB	Lift Station Demolition and Replacement		Booker, Hatten, Neeson LS improvements			
Miscellaneous Improvements						
MS-O1	Service		Del Rey Oaks Collection System Planning			
MS-O2	Gravity Main		SCSD Sewer Improvements - Del Rey Oaks			
MS-O3	Service		Monterey One Water Buy-In			
MS-O4	Gravity Main		Inter-Garrison/ 8th Avenue Sewer Connection			
MS-O5	WWTP		Demolish Ord Main Garrison WWTP			
MS-O6	Gravity Main		Seaside East Side Developments Parcels (future growth)			
MS-O7	Lift Station		Miscellaneous Lift Station Improvements			
MS-O8	Lift Station/ Gravity Main		Cypress Knolls Sewer Pipeline and Lift Station Improvement Project			
General Sewer System Improvements						
G-1	Odor Control Project	Various Locations				
G2	Corporation Yard Demolition and Rehab					

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stations. However, two-pump replacement capacities are documented for informational purposes and may be implemented at the discretion of District staff

- **Dunes:** As documented on **Table 7.1** the buildout flow requirement for the Dunes lift station is 882 gpm. A new lift station is recommended for construction with three 450 gpm pumps, two duty and one standby, for a total lift station capacity of 1,350 gpm. As an alternative two-pump option, two 900 gpm pumps, one duty and one standby, may be constructed for a total lift station capacity of 1,800 gpm;

- **Fritzche Field:** As documented on **Table 7.1** the buildout flow requirement for the Fritzche Field lift station is 280 gpm. A new lift station is recommended for construction with three 150 gpm pumps, two duty and one standby, for a total lift station capacity of 450 gpm. As an alternative two-pump option, two 300 gpm pumps, one duty and one standby, may be constructed for a total lift station capacity of 600 gpm;

- **Imjin:** As documented on **Table 7.1** the buildout flow requirement for the Imjin lift station is 1,358 gpm. A new lift station is recommended for construction with three 700 gpm pumps, two duty and one standby, for a total lift station capacity of 2,100 gpm. As an alternative two-pump option, two 1,400 gpm pumps, one duty and one standby, may be constructed for a total lift station capacity of 2,800 gpm.

- **Reservation:** As documented on **Table 7.1** the buildout flow requirement for the Reservation lift station is 1,180 gpm. A new lift station is recommended for construction with three 600 gpm pumps, two duty and one standby, for a total lift station capacity of 1,800 gpm. As an alternative two-pump option, two 1,200 gpm pumps, one duty and one standby, may be constructed for a total lift station capacity of 2,400 gpm.

- **East Garrison Phase 2:** In order to convey the future flows from the East Garrison Phase 2 development a new lift station is recommended. This lift station is planned to have three 175 gpm pumps, two duty and one standby, for a total lift station capacity of 425 gpm. As an alternative two-pump option, two 350 gpm pumps, one duty and one standby, may be constructed for a total lift station capacity of 700 gpm.

7.4.2 Force Main Improvements

This section documents the recommended force main capacity improvements.

- **East Garrison Phase 2**: A new 10-inch force main is recommended to convey flows from the future East Garrison Phase 2 development.

- **Ord Village Force Main**: As part of the lift station relocation project the existing 10-inch forcemain is planned for replacement.

7.4.3 Gravity Main Improvements

This section documents the gravity main improvements. This section documents pipeline improvements within the Marina Coast sewer service area.

7.4.3.1 Central Marina

This section documents pipeline improvements within the Central Marina sewer service area.

- **M-P1:** Construct a new 15-inch gravity main in Cove Way and Cardoza Avenue from Abdy Way to Reservation Road.
- **M-P2:** Construct a new 15-inch gravity main in Reservation Road from Cardoza Avenue to 150 feet south of Seaside Circle.
- **M-P3:** Replace the existing 8-inch gravity main with a new 12-inch gravity main along Eucalyptus Street, Peninsula Drive, and Vista del Camino from Viking Lane to Reservation Road.
- **M-P4:** Replace the existing 8-inch gravity main with a new 10-inch gravity main along Carmel Avenue from Seacrest Avenue to Sunset Avenue.
- **M-P5:** Replace the existing 8-inch gravity main with a new 12-inch gravity main along Reservation Road from Sunset Avenue to Casa de Bolea.

7.4.3.2 Ord Community

This section documents pipeline improvements within the Ord Community sewer service area.

- **O-P1:** Construct a new 10-inch gravity sewer in Barloy Canyon Road to serve future development.
- **O-P2:** Replace the existing 15-inch gravity main with a new 18-inch gravity main along existing right-of-way from Ord Avenue to East Garrison Lift Station.
- **O-P3:** Construct a new 8-inch gravity main in Reservation Road from 4,700 feet west of East Garrison Lift Station to Reservation Road Lift Station.
- **O-P4:** Replace the existing 10-inch and 15-inch gravity mains with a new 18-inch gravity main along Abrams Drive from west of Inchon Court to 80th Artillery Court.
- **O-P5:** Replace the existing 15-inch gravity main with a new 18-inch gravity main within the planned Marina Heights development.
- **O-P6:** Replace the existing 18-inch gravity main with a new 18-inch gravity main along the within the planned Marina Heights development

- **O-P7:** Replace the existing 8-inch and 10-inch gravity mains with a new 15-inch gravity main along 7th Avenue from north of Butler Street to Inter-Garrison Road.
- **O-P8:** Replace the existing 8-inch gravity main with a new 15-inch gravity main along Inter-Garrison Road from 625 feet east of 7th Avenue to 7th Avenue
- **O-P9:** Replace the existing 10-inch gravity main with a new 18-inch gravity main along Inter-Garrison Road from 7th Avenue to 6th Avenue.
- **O-P10:** Replace the existing 10-inch and 15-inch gravity mains with a new 24-inch gravity main along Inter-Garrison Road and existing right-of-way, jogging from 6th Avenue to General Jim Moore Boulevard.
- **O-P11:** Replace the existing 10-inch gravity main with a new 24-inch gravity main along existing right-of-way, generally jogging from 4th Avenue to approximately 1,300 feet west of 4th Avenue.
- **O-P12:** Replace the existing 8-inch and 10-inch gravity mains with a new 12-inch gravity main along the right-of-way north of Inter-Garrison Road from 4th Avenue to 405 feet west of 4th Avenue.
- **O-P13:** Replace the existing 15-inch gravity main with a new 24-inch gravity main along 5th Street from 2nd Avenue to 200 feet west of 2nd Avenue.
- **O-P14:** Replace the existing 12, 18, and 30-inch gravity main with a new 30-inch gravity main along 1st Avenue from 1st Street to 8th Street.
- **O-P15:** Construct a new 8-inch gravity main along Eucalyptus Road from approximately 4,000 feet east of General Jim Moore Boulevard to approximately 800 feet west of General Jim Moore Boulevard.

7.4.4 Miscellaneous Improvements

This section documents miscellaneous improvements within the Marina Coast sewer service area.

7.4.4.1 *Central Marina*

This section documents miscellaneous improvements within the Central Marina sewer service area.

- **MS-M1:** Demolish the Marina Waste Water Treatment Plan located on Reservation Road 500 feet northwest of Dunes Drive.
- **MS-M2:** Replace the existing gravity main with a new gravity main along Del Monte Boulevard from Del Monte Boulevard to Reservation Road.

7.4.4.2 Ord Community

This section documents miscellaneous improvements within the Ord Community sewer service area.

- **MS-O1:** This project will provide resources for the purpose of planning how future district waste water generated from Del Rey Oaks development will be conveyed to Monterey OneWater.
- **MS-O2:** This improvement includes the planning, design, and construction of future sewer system infrastructure to convey flows from the future development within the City of Del Rey Oaks to the existing Seaside County Sanitation District (SCSD) sewer system. This also improvement also accounts for the District’s proportional cost for the necessary improvements to the SCSD sewer system.
- **MS-O3:** This is a preliminary value for the cost of purchasing additional capacity for conveying sanitary sewer flows to Monterey OneWater beyond the pre-purchase capacity obtained from the Army.
- **MS-O4:** This project includes the construction of a gravity sewer main to serve potential future development along the proposed Eastside Parkway alignment.
- **MS-O5:** Demolish the Ord Main Garrison Waste Water Treatment Plant located on Beach Range Road between 8th Street and 12th Street.
- **MS-O6:** This project accounts for the District's proportional cost for improvements to the existing SCSD sewer system due to the future development of Seaside East, east of General Jim Moore Boulevard south of Eucalyptus Road. Flows are currently planned to be collected along General Jim Moore Boulevard and conveyed to the existing SCSD sewer system at La Salle Avenue, Broadway Avenue, and Hilby Avenue. Preliminary sizes and alignments for the pipelines intended to serve this area are documented in the capital improvements section, and are shown for completeness. The final alignment and diameter are subject to the review and approval of the District Engineer.
- **MS-O7:** This project includes general maintenance, health, and safety improvements to 8 existing lift stations in the Ord Community area in order to increase lift station life and accommodate increased capacity. The improvements included in this project may supersede the recommendations of the lift station condition assessment discussed in a previous section.
- **MS-O8:** This projects includes the construction of small portions of up-sized gravity main conveying flow to Booker Lift Station to provide capacity for potential future development.

CHAPTER 8 - CAPITAL IMPROVEMENT PROGRAM

This chapter provides a summary of the recommended Capital Improvement Program (CIP) for the District's sewer system. The program is based on the evaluation of the District's sewer system and on the recommended projects described in the previous chapters. The CIP has been prepared to assist the District in planning and constructing the collection system improvements through the ultimate buildout scenario. This chapter also presents the cost criteria and methodologies for developing the capacity improvement costs.

8.1 COST ESTIMATE ACCURACY

Cost estimates presented in the capacity improvement costs 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. 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 indices. 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 pre-design 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, and 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, Akel experience on other master planning projects, and input from District staff on the development of public and private cost sharing. 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.

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 Master Plan were benchmarked using a 20-City national average ENR CCI of 11,089, reflecting a date of June 2018.

8.2.3 Construction Contingency Allowance

Knowledge about site-specific conditions for each proposed project is limited at the master planning stage; therefore construction contingencies were used. The estimated construction costs in this master plan include a **48.5 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 District staff), construction management and inspection, and legal costs. The project related costs in this master plan were estimated by applying an additional **25 percent** to the estimated construction costs.

Table 8.1 Unit Costs

Sewer Master Plan

Marina Coast Water District

PRELIMINARY

Pipelines[1,2]	
Pipe Size (in)	**Cost** ($/lineal foot)
8	218
10	243
12	279
15	303
18	327
21	352
24	400
27	450
30	500
36	600
Lift Station[2,3]	
Estimated Lift Station Project Cost = 9,045*Q^2 + 293951*Q + 342,261 , where Q is in mgd	

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Notes :

1. Construction costs are based on Bid Tabs Results received from District staff on October 18, 2018.
2. Construction costs estimated using June 2018 ENR CCI of 11,089.
3. Lift Station costs based on Akel Engineering Group experience on similar projects.

8.3 LIFT STATION CONDITION ASSESSMENT COSTS

The lift station condition assessment, completed by GHD, included an opinion of probable costs for improvements to priority components receiving a condition score of 5 (Very Poor), 4 (Poor), or 3 (Moderate/Fair). The recommended improvements and associated costs are documented in **Table 8.2**. The costs for these condition assessment improvements are incorporated into the sewer system Capital Improvement Program, with the following exceptions:

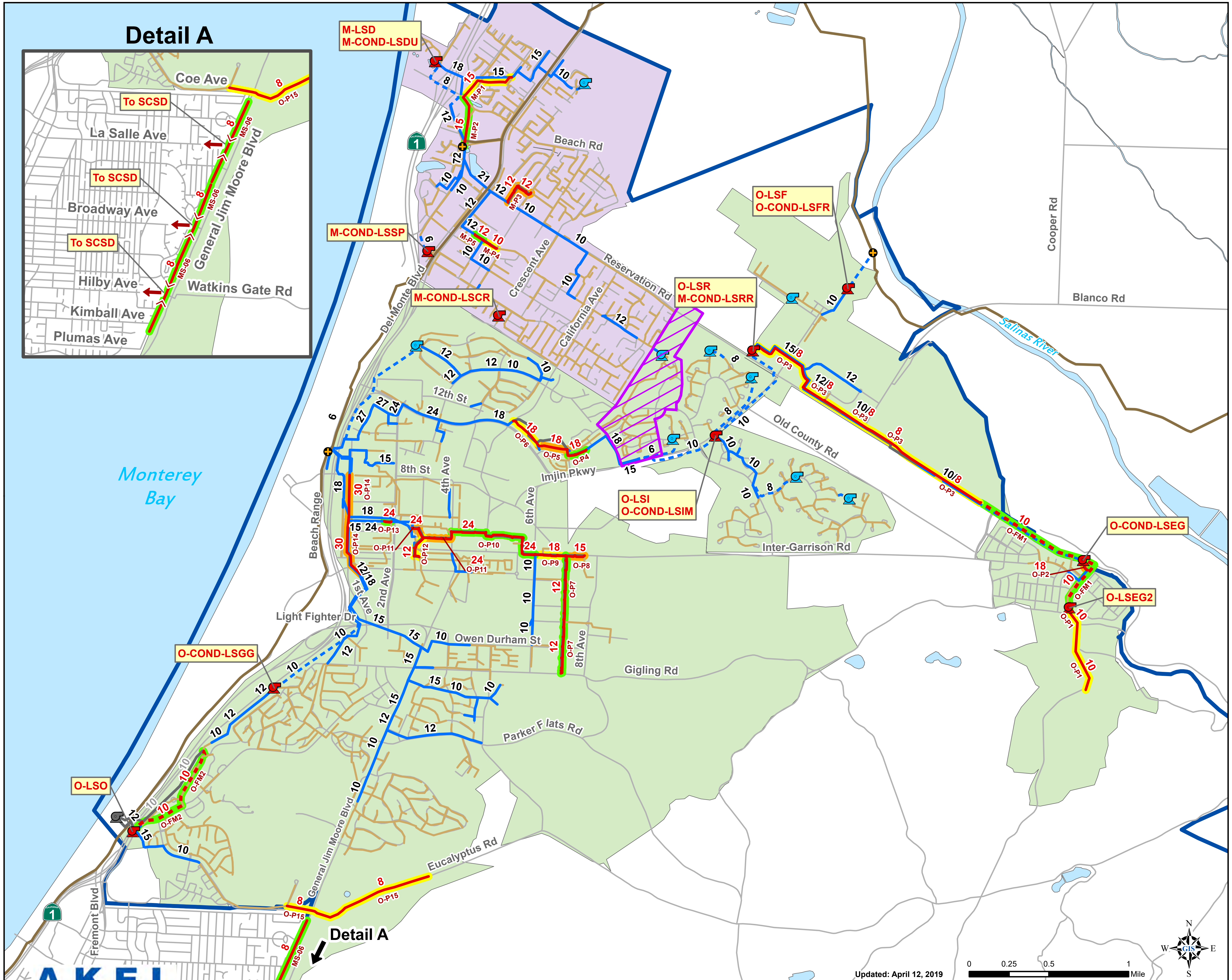
- **Dunes Lift Station:** Under existing conditions, the Dunes lift station is under capacity and recommended for replacement. It is assumed that the existing condition deficiencies will be mitigated as part of this lift station replacement.
- **Crescent Lift Station:** The District plans to replace the Crescent lift station in the near future as a result of age and condition. It is assumed that the existing condition will be mitigated as part of this lift station replacement.
- **Hatten Lift Station:** The District plans to abandon the Hatten lift station in the near future; therefore, the condition assessment costs are not included in the Capital Improvement Program.
- **Neeson Lift Station:** The District plans to abandon the Neeson lift station in the near future; therefore, the condition assessment costs are not included in the Capital Improvement Program.
- **Booker Lift Station:** The District plans to reconfigure the existing wet well and perform site work at the Booker lift station in the near future. It is assumed that this will address the existing condition deficiencies, which primarily consists of wet well configuration and issues with the existing site. However, it is recommended District staff review the condition assessment findings and incorporate any additional improvements not currently planned in the upcoming reconfiguration and site work.
- **Ord Village Lift Station:** The District plans to relocate the existing Ord Village lift station and it is assumed that that this will address the existing condition deficiencies.

8.4 CAPITAL IMPROVEMENT PROGRAM

The schedule of improvements for the projects identified in this master plan for mitigating existing system deficiencies and for serving anticipated buildout future growth throughout the District are summarized on **Table 8.3**. Each improvement was assigned a unique coded identifier associated with the improvement type and is summarized graphically on **Figure 8.1**.

8.4.1 Near-Term Development Infrastructure Requirements

For the purposes of this master plan, and based on District staff input on the potential for buildout development to occur over an extended period of time, the Capital Improvement Program



Legend

Future Improvements

- Lift Stations
- Gravity Mains
- Force Mains
- Abandoned Lift Stations
- Abandoned Pipes

Existing Modeled System

- Lift Stations
- Outfalls

Gravity Mains by Size

- 8" and Smaller
- 10" and Larger
- Force Mains
- Monterey One Water Interceptor
- Planning Boundary

Cost Centers

- Central Marina
- Ord Community
- Ord Community Service Area Tributary to Central Marina Outfall
- Streets
- Waterbodies
- Rivers/Streams

PRELIMINARY

Figure 8.1
Capital Improvement Program

Sewer Master Plan
Marina Coast Water District

Table 8.2 Lift Station Condition Assessment Improvement Costs

Sewer Master Plan

Marina Coast Water District

PRELIMINARY

Lift Station	Assessment Factor	Lift Station Component	Construction Cost[1] ($)	Baseline Const. Cost ($)	Estimated Const. Cost[2] ($)	Capital Improv. Cost[3] ($)
City of Marina Sewer System						
Dunes						
DUN-1	Wet Well	Discharge Pipes	3,200	3,200	4,800	6,000
DUN-2	Wet Well	Concrete Wall	19,900	19,900	29,600	37,000
DUN-3	Electrical Equipment	120 volt convenience receptacle	500	500	800	1,000
		Lift Station Subtotal -	**23,600**	**23,600**	**35,200**	**44,000**
San Pablo						
SPB-1	Hatches	Structural Support	4,000	4,000	6,000	7,500
SPB-2	Electrical Equipment	NEMA 3R equipment enclosure	2,200	2,200	3,300	4,200
SPB-3	Electrical Equipment	Conduit	2,000	2,000	3,000	3,800
SPB-4	Backup Power	Generator	16,300	16,300	24,300	30,400
SPB-5	Controls	Float Switches	100	100	200	300
		Lift Station Subtotal -	**24,600**	**24,600**	**36,800**	**46,200**
Crescent						
CRE-1	Piping / Valves	Valve Pit, Valves, Piping, and Valve Pit Structure	5,900	5,900	8,800	11,000
CRE-2	Electrical Equipment	Pump Control Panel Enclosure	500	500	800	1,000
CRE-3	Electrical Equipment	Transfer Switch Enclosure	300	300	500	700
CRE-4	Electrical Equipment	Conduits entering the wet well	100	100	200	300
CRE-5	Controls	Float Switches	17,800	17,800	26,500	33,200
CRE-6	Access / Safety	Expand Fence	25,100	25,100	37,300	46,700
		Lift Station Subtotal -	**49,700**	**49,700**	**74,100**	**92,900**
Fort Ord Sewer System						
Neeson						
NEE-1	Pumping Unit	Pumps	94,600	94,600	140,500	175,700
NEE-2	Piping / Valves	Piping / Valves	2,000	2,000	3,000	3,800
NEE-3	Wet Well	Lid	2,500	2,500	3,800	4,800
NEE-4	Wet Well	Piping / Valves	3,100	3,100	4,700	5,900
NEE-5	Structure	Concrete Slab	2,200	2,200	3,300	4,200
NEE-6	Pipe / Equip Supports	Support for Pipes and Valves	700	700	1,100	1,400
NEE-7	Wet Well	Support for Pipes and Valves	700	700	1,100	1,400
NEE-8	Electrical Equipment	General Electrical Equipment	50,000	50,000	74,300	92,900
NEE-9	Controls	Level Control	2,500	2,500	3,800	4,800
NEE-10	SCADA / Alarms	PLC/ telemetry package	10,000	10,000	14,900	18,700
NEE-11	SCADA / Alarms	Alarm Notification	2,000	2,000	3,000	3,800
NEE-12	General Site	Access	2,000	2,000	3,000	3,800
NEE-13	General Site	Security Lighting	1,000	1,000	1,500	1,900
		Lift Station Subtotal -	**173,300**	**173,300**	**258,000**	**323,100**
Gigling						
GIG-1	HVAC	Metal Ducts	2,100	2,100	3,200	4,000
GIG-2	Piping / Valves	Access to pump removal	20,000	20,000	29,700	37,200
GIG-3	Piping / Valves	Air Lock Issues - Piping / Valves	10,000	10,000	14,900	18,700
GIG-4	Primary Power	Generator	46,400	46,400	69,000	86,300
GIG-5	Primary Power	Bulk Tank	200,000	200,000	297,000	371,300
GIG-6	SCADA / Alarms	PLC - Contents	500	500	800	1,000
GIG-7	Access	Pavement	135,300	135,300	201,000	251,300
GIG-8	Security	Barbed Wire Fence	30,000	30,000	44,600	55,800
		Lift Station Subtotal -	**444,300**	**444,300**	**660,200**	**825,600**

Table 8.2 Lift Station Condition Assessment Improvement Costs

Sewer Master Plan

Marina Coast Water District

PRELIMINARY

Lift Station	Assessment Factor	Lift Station Component	Construction Cost[1] ($)	Baseline Const. Cost ($)	Estimated Const. Cost[2] ($)	Capital Improv. Cost[3] ($)
Hatten						
HAT-1	Structure	Base Support	2,300	2,300	3,500	4,400
HAT-2	Structure	Pipe / Equip Support	200	200	300	400
HAT-3	Wet Well	Wet Well Lid	2,500	2,500	3,800	4,800
HAT-4	Backup Power	Generator or Trailer Mount Unit	16,300	16,300	24,300	30,400
HAT-5	SCADA / Alarms	PLC / Telemetry	11,000	11,000	16,400	20,500
HAT-6	Security	Fencing	22,800	22,800	33,900	42,400
		Lift Station Subtotal -	**55,100**	**55,100**	**82,200**	**102,900**
Imjin						
IMJ-1	Piping / Valves	Valve Vault Piping and Valves	10,700	10,700	15,900	19,900
IMJ-2	Wet Well	Fall Protection	2,300	2,300	3,500	4,400
IMJ-3	Electrical Equipment	Auto Transfer Switch	6,000	6,000	9,000	11,300
IMJ-4	Electrical Equipment	Conduit	2,500	2,500	3,800	4,800
IMJ-5	Electrical Equipment	Demo Control Panel / New Pullbox	7,500	7,500	11,200	14,000
		Lift Station Subtotal -	**29,000**	**29,000**	**43,400**	**54,400**
Ord Village						
FOV-1	Headworks	Muffin Monster Communitors	42,700	42,700	63,500	79,400
FOV-2	HVAC	Metal Ducting	2,400	2,400	3,600	4,500
FOV-3	Piping / Valves	Pipe at the end of discharge line	3,200	3,200	4,800	6,000
FOV-4	Piping / Valves	Air lock Issues	10,000	10,000	14,900	18,700
FOV-5	Structure	Drainage of Concrete Pad on West Side of Pump Station	500	500	800	1,000
FOV-6	Structure	Bulk Fuel Tank	20,000	20,000	29,700	37,200
FOV-7	Windows	Window Replacement	500	500	800	1,000
FOV-8	Wet Well	Wet Well Hatch	4,000	4,000	6,000	7,500
FOV-9	Electrical Equipment	Service entrance switchboard	25,000	25,000	37,200	46,500
FOV-10	Electrical Equipment	Fuel tank leak detection panel	2,000	2,000	3,000	3,800
FOV-11	Backup Power	175 kW Caterpillar diesel generator	60,700	60,700	90,200	112,800
FOV-12	Security	Fencing and Site Lighting	2,000	2,000	3,000	3,800
		Lift Station Subtotal -	**173,000**	**173,000**	**257,500**	**322,200**
Booker						
BKR-1	Pumping Unit	Additional Pump	10,000	10,000	14,900	18,700
BKR-2	Headworks	Muffin Monster Communitor	40,700	40,700	60,500	75,700
BKR-3	HVAC	Redesign of HVAC System	4,600	4,600	6,900	8,700
BKR-4	Piping / Valves	Gate Valves	900	900	1,400	1,800
BKR-5	Wet Well / Dry Pit	Dry Pit Dimensions	5,200	5,200	7,800	9,800
BKR-6	Wet Well / Dry Pit	Dry Pit Hatch Upgrade	4,000	4,000	6,000	7,500
BKR-7	Wet Well / Dry Pit	Dry Pit Stairs	1,500	1,500	2,300	2,900
BKR-8	Structure	Concrete Slab	82,100	82,100	122,000	152,500
BKR-9	Primary Power	Pole mount transformer	5,000	5,000	7,500	9,400
BKR-10	Backup Power	Generator	32,100	32,100	47,700	59,700
BKR-11	Backup Power	250 gallon bulk diesel fuel tank	18,000	18,000	26,800	33,500
BKR-12	SCADA /Alarms	PLC - radio link	300	300	500	700
BKR-13	Security	Fencing	22,800	22,800	33,900	42,400
BKR-14	Security	Lighting	5,000	5,000	7,500	9,400
		Lift Station Subtotal -	**232,200**	**232,200**	**345,700**	**432,700**
Fritzche						
FRI-1	Piping / Valves	Valve Vault Piping & Valves	7,000	7,000	10,400	13,000
FRI-2	Wet Well	Pipes	900	900	1,400	1,800

Table 8.2 Lift Station Condition Assessment Improvement Costs

Sewer Master Plan

Marina Coast Water District

PRELIMINARY

Lift Station	Assessment Factor	Lift Station Component	Construction Cost[1] ($)	Baseline Const. Cost ($)	Estimated Const. Cost[2] ($)	Capital Improv. Cost[3] ($)
FRI-3	Hatches	Pneumatics and Fall Protection	4,000	4,000	6,000	7,500
FRI-4	Electrical Equipment	Cabinet - Pump Motor Starters and Militronics Mini-Ranger level controller	35,000	35,000	52,000	65,000
FRI-5	Backup Power	Generator	16,300	16,300	24,300	30,400
		Lift Station Subtotal -	**63,200**	**63,200**	**94,100**	**117,700**
East Garrison						
EAG-1	Piping /Valves	Valve Vault Pipes and Valves	2,800	2,800	4,200	5,300
EAG-2	Wet Well	Piping in Wet Well	2,600	2,600	3,900	4,900
EAG-3	Structure	Concrete Pad	1,700	1,700	2,600	3,300
EAG-4	Pipe / Equip Supports	Concrete block under Y Valve in valve vault	400	400	600	800
EAG-5	Electrical Equipment	PVC conduits between the electrical panels and wet well	5,000	5,000	7,500	9,400
EAG-6	Backup Power	Generator Receptacle	19,200	19,200	28,600	35,800
EAG-7	Backup Power	Automatic Transfer Switch	600	600	900	1,200
		Lift Station Subtotal -	**32,300**	**32,300**	**48,300**	**60,700**
Reservation Road						
RES-1	Headworks	Muffin Monster Grinder	5,700	5,700	8,500	10,700
RES-2	Piping / Valves	Valve Vault Piping and Valves	2,900	2,900	4,400	5,500
RES-3	Wet Well	Wet Well Coating	2,500	2,500	3,800	4,800
RES-4	Electrical Equipment	Automatic Transfer Switch	6,000	6,000	9,000	11,300
RES-5	Security	Fencing	22,800	22,800	33,900	42,400
		Lift Station Subtotal -	**39,900**	**39,900**	**59,600**	**74,700**

AKEL ENGINEERING GROUP, INC.

7/13/2018

Notes:

1. Condition assessment improvements and construction costs based on lift station condition assessment report prepared by GHD. Improvements shown may be superseded based on hydraulic capacity improvements or other lift station improvements currently planned by District staff.
2. Estimated Construction costs include 48.5 percent of baseline construction costs to account for unforeseen events and unknown field conditions, and for Contractor's overhead and profit, general conditions, and sales tax, consistent with 2007 Water Master plan.
3. Capital Improvement Costs also include an additional 25 percent of the estimated construction costs to account for administration, construction management, and legal costs.

Table 8.3 Buildout Capital Improvement Program
Sewer Master Plan
Marina Coast Water District

PRELIMINARY

Improv. No.	Type of Improvement	Alignment	Limits	Improvement Details				Suggested Cost Allocation: Existing Users (%)	Suggested Cost Allocation: Future Users (%)	Included in 15-Year CIP
Central Marina Sewer System										
Gravity Main Improvements				Existing Diameter (in)	New/Parallel/Replace	Diameter (in)	Length (ft)			
M-P1	Gravity Main	ROW, Cove Way, Cardoza Ave	From Abdy Way to Reservation Rd	-	New	15	1,975	1%	99%	Yes
M-P2	Gravity Main	Reservation Rd	From Cardoza Ave to 150' s/o Seaside Cir	-	New	15	1,725	1%	99%	Yes
M-P3	Gravity Main	Eucalyptus St, Peninsula Dr, Vista del Camino	From Viking Ln to Reservation Rd	8	Replace	12	1,350	85%	15%	Yes
M-P4	Gravity Main	Carmel Ave	From Seacrest Ave to Sunset Ave	8	Replace	10	575	100%	0%	Yes
M-P5	Gravity Main	Reservation Rd	From Sunset Ave to Casa de Bolea	8	Replace	12	350	100%	0%	Yes
Lift Station Improvements				Existing Capacity (gpm)	Improvement Type	Recommended Capacity (gpm)				
M-LSD	Lift Station Replacement	Dunes Lift Station		2 x 700	Capacity Upgrade	3 x 450		100%	0%	Yes
M-LSCR	Lift Station Replacement	Crescent Lift Station		2 x 100	Capacity Upgrade	2 x 100		100%	0%	Yes
Condition Assessment Improvements[4]					Improvement Type					
M-COND-LSSP	Condition	San Pablo Lift Station			Condition Improvements			100%	0%	Yes
Miscellaneous Improvements					Improvement Type					
MS-M1	WWTP	Located at the Marina WWTP			Demolition			100%	0%	Yes
MS-M2	Gravity Main	Del Monte Boulevard	Del Monte Blvd/ Reservation Rd		Replace			100%	0%	Yes
Ord Community Sewer System										
Gravity Main Improvements				Existing Diameter (in)	New/Parallel/Replace	Diameter (in)	Length (ft)			
O-P1	Gravity Main	Barloy Canyon Road	3,000' of future pipeline to convey future flows from development	-	New	10	2,950	0%	100%	-
O-P2	Gravity Main	ROW	From Ord Avenue to East Garrison Lift Station	15	Replace	18	400	0%	100%	Yes
O-P3	Gravity Main	Reservation Rd	From 4,700' w/o East Garrison Lift Station to Reservation Road Lift Station	-	New	8	9,900	0%	100%	-
O-P4	Gravity Main	Abrams Dr	From w/o Inchon Ct to 80th Artillery Ct	10,15	Replace	18	675	34%	66%	Yes
O-P5	Gravity Main	ROW	N/o Abrams Dr following Abrams Dr/ Imjin Pkwy	15	Replace	18	1,325	27%	73%	Yes
O-P6	Gravity Main	ROW e/o Imjin Pkwy	From California Ave to 475' n/o Abrams Dr	18	Replace	18	1,100	24%	76%	Yes
O-P7	Gravity Main	7th Ave	From n/o Butler St to Inter-Garrison Rd	8,10	Replace	12	4,550	0%	100%	-
O-P8	Gravity Main	Inter-Garrison Rd	From 625' e/o 7th Ave to 7th Ave	8	Replace	15	700	0%	100%	-
O-P9	Gravity Main	Inter-Garrison Rd	From 7th Avenue to 6th Ave	10	Replace	18	1,100	0%	100%	-
O-P10	Gravity Main	Inter-Garrison Rd	Jogging from 6th Ave to General Jim Moore Blvd	10,15	Replace	24	3,975	11%	89%	-
O-P11	Gravity Main	ROW n/o Inter-Garrison Rd	Jogging from 4th Ave to 1,300' w/o 4th Ave	10	Replace	24	1,675	15%	85%	Modified
O-P12	Gravity Main	ROW	Jogging from 3rd Ave to 400' n/o Inter-Garrison Rd	8,10	Replace	12	1,000	47%	53%	-
O-P13	Gravity Main	5th St	From 2nd Ave to 200' w/o 2nd Ave	15	Replace	24	250	0%	100%	-
O-P14	Gravity Main	1st Ave	From 1st St to 8th St	12,18,30	Replace	30	3,100	100%	0%	Yes
O-P15	Gravity Main	Eucalyptus Rd	From approximately 4,000' e/o General Jim Moore Blvd to approximatley 800' w/o General Jim Moore Blvd	-	New	8	5,050	0%	100%	Yes
Force Main Improvements				Existing Diameter (in)	New/Parallel/ Replace	Diameter (in)	Length (ft)			
O-FM1	Force Main	Reservation Rd	From Phase 2 of the East Garrison Development to 4,700 ft w/o East Garrison Lift Station	-	New	10	6,075	0%	100%	-
O-FM2	Force Main	Monterey Rd, existing ROW	From relocated Ord Village LS to existing gravity main n/o Corregidor Rd	10	Replace	10	3,950	42%	58%	Yes
Lift Station Improvements				Existing Capacity (gpm)	Improvement Type	Recommended Capacity (gpm)				
O-LSEG2	New	East Garrison Phase 2	East Garrison Phase 2	-	New	3 x 175 gpm		0%	100%	-
O-LSR	Lift Station Replacement	Reservation Road Lift Station	Reservation Road Lift Station	2 x 710	Replacement Capacity	3 x 600		15%	85%	-
O-LSI	Lift Station Replacement	Imjin Lift Station	Imjin Lift Station	2 x 700	Replacement Capacity	3 x 700		32%	68%	-
O-LSF	Lift Station Replacement	Fritzche Lift Station	Fritzche Lift Station	2 x 160	Replacement Capacity	3 x 150		11%	89%	-
O-LSG	Lift Station/ Force Main	Gigling Lift Station	Gigling LS and FM Improvements			-	-	100%	0%	Yes
O-LSO	Lift Station Rehabilitation		Ord Village Sewer Pipeline and Lift Station Improvement Project			-	-	43%	57%	Yes
O-LSB	Lift Station Demolition and Replacement		Booker, Hatten, Neeson LS improvements			-	-	100%	0%	Yes
Condition Assessment Improvements[4]					Improvement Type					
O-COND-LSGG	Condition	Gigling Lift Station			Condition Improvements			100%	0%	Yes
O-COND-LSIM	Condition	Imjin Lift Station			Condition Improvements			100%	0%	Yes
O-COND-LSFR	Condition	Fritzche Lift Station			Condition Improvements			100%	0%	Yes

Table 8.3 Buildout Capital Improvement Program
Sewer Master Plan
Marina Coast Water District

PRELIMINARY

Improv. No.	Type of Improvement	Alignment	Limits	Improvement Details	Suggested Cost Allocation Existing Users (%)	Suggested Cost Allocation Future Users (%)	Included in 15-Year CIP
O-COND-LSEG	Condition	East Garrison Lift Station		Condition Improvements	100%	0%	Yes
O-COND-LSRR	Condition	Reservation Road Lift Station		Condition Improvements	100%	0%	Yes
Miscellaneous Improvements							
MS-O1	Service		Del Rey Oaks Collection System Planning		0%	100%	Yes
MS-O2	Gravity Main		SCSD Sewer Improvements - Del Rey Oaks		0%	100%	Yes
MS-O3	Service		Monterey One Water Buy-In		50%	50%	Yes
MS-O4	Gravity Main		Inter-Garrison/ 8th Avenue Sewer Connection		0%	100%	Yes
MS-O5	WWTP		Demolish Ord Main Garrison WWTP		100%	0%	Yes
MS-O6	Gravity Main		Seaside East Side Developments Parcels (future growth)		0%	100%	Yes
MS-O7	Lift Station		Miscellaneous Lift Station Improvements		50%	50%	Yes
MS-O8	Lift Station/ Gravity Main		Cypress Knolls Sewer Pipeline and Lift Station Improvement Project		0%	100%	Yes

parallels the FORA development limit horizon and evaluates the improvements required in the next 15 years. These improvements and their associated costs are included on **Table 8.4** and shown graphically on **Figure 8.2**, reflect the sewer system infrastructure necessary to mitigate existing system deficiencies and serve the 15-year development.

It should be noted that some improvements are required for buildout development only and are not included in this Capital Improvement Program. Additionally, the capacities of recommended gravity mains and lift stations may be reduced based on the limited development within the near-term horizon. District staff may, at their prerogative and based on the approval of the District Engineer, require the construction of the buildout improvement. Thus, capacity sharing for the buildout improvements are documented on **Table 8.3**.

8.4.2 Recommended Cost Allocation Analysis and "In-Tract" Development

Cost allocation analysis is needed to identify improvement funding sources, and to establish a nexus between development impact fees and improvements needed to service growth. In compliance with the provisions of Assembly Bill AB 1600, the analysis differentiates between the project needs of servicing existing users and for those required to service anticipated future developments. The cost responsibility is based on model parameters for existing and future land use, and may change depending on the nature of development. **Table 8.3** and **Table 8.4** lists each improvement, and separates the cost by responsibility between existing and future users.

It should be noted that the District adopted an "In-Tract" policy in January 2004, and as related to development, and redevelopment, within the Ord Community Cost Center. This policy was adopted in an effort to fulfill obligations to the Fort Ord Reuse Authority, as well as avoiding undue cost burden to the existing customers within the Ord community. This policy is a result of inadequate design, age, and aggressive deterioration of the facilities located within the Ord Community Cost Center. The full "In-Tract" policy is included in **Appendix D**. The following is directly from the District's "In-Tract" policy:

For all proposed redevelopment projects in areas served by existing water and wastewater collection infrastructure, the developer will be required to implement one of the following procedures:

1. *Where redevelopment will raze the existing buildings and streets:*
    - *Developer completes a subdivision water and sewer master plan per the District standards.*
    - *Developer replaces all existing water and wastewater collection pipelines and components within the project area to District standards, and replaces all existing water and wastewater collection pipelines and components adjacent to the project area to District standards, as project impacts necessitate.*
    - *Developer provides meter boxes for all structures and landscaping.*
    - *Developer provides for District's installation of remote read meters.*
2. *Where redevelopment will use existing buildings and infrastructure or will raze or remodel a portion or all of the existing buildings but streets and existing infrastructure will remain:*
    - *Developer completes a subdivision water and sewer master plan per the District standards. This subdivision master plan would include a physical and design standard*

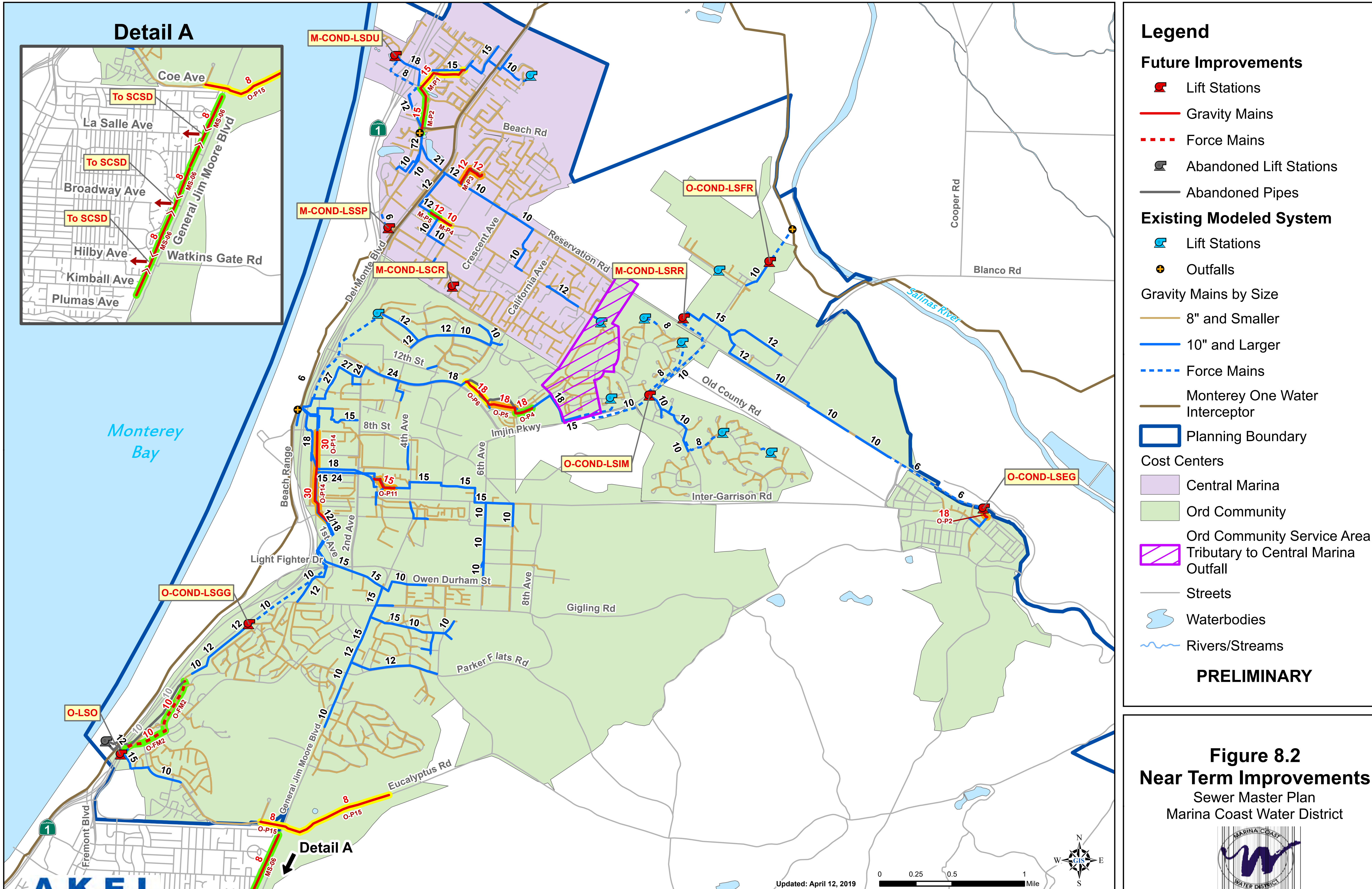


Figure 8.2
Near Term Improvements
Sewer Master Plan
Marina Coast Water District

File Path: P:\xGIS\GIS_Projects\Marina_Coast_WD\Sewer\MCWD_Fig8-3_NearTermImp_041219.mxd

Table 8.4 Near Term Capital Improvement Program
Sewer Master Plan
Marina Coast Water District

PRELIMINARY

Improv. No.	Type of Improvement	Alignment	Limits	Improvement Details				Infrastructure Costs: Unit Cost ($)	Infrastructure Costs: Infr. Cost ($)	Baseline Construction Costs ($)	Estimated Construction Cost[1] ($)	Capital Improvement Cost[2,3] ($)	Suggested Cost Allocation: Existing Users (%)	Suggested Cost Allocation: Future Users (%)	Cost Allocation: Existing Users ($)	Cost Allocation: Future Users ($)
Central Marina Sewer System																
Gravity Main Improvements				**Existing Diameter** (in)	**New/Parallel/Replace**	**Diameter** (in)	**Length** (ft)									
M-P1	Gravity Main	ROW, Cove Way, Cardoza Ave	From Abdy Way to Reservation Rd	-	New	15	1,975	303	598,745	598,800	889,300	1,111,700	1%	99%	11,117	1,100,583
M-P2	Gravity Main	Reservation Rd	From Cardoza Ave to 150' s/o Seaside Cir	-	New	15	1,725	303	522,955	523,000	776,700	970,900	1%	99%	9,709	961,191
M-P3	Gravity Main	Eucalyptus St, Peninsula Dr, Vista del Camino	From Viking Ln to Reservation Rd	8	Replace	12	1,350	279	376,527	376,600	559,300	699,200	85%	15%	594,320	104,880
M-P4	Gravity Main	Carmel Ave	From Seacrest Ave to Sunset Ave	8	Replace	10	575	243	139,455	139,500	207,200	259,000	100%	0%	259,000	0
M-P5	Gravity Main	Reservation Rd	From Sunset Ave to Casa de Bolea	8	Replace	12	350	279	97,618	97,700	145,100	181,400	100%	0%	181,400	0
				Subtotal - City of Marina Pipeline Improvements					**1,735,300**	**1,735,600**	**2,577,600**	**3,222,200**			**1,055,546**	**2,166,654**
Lift Station Improvements				**Existing Capacity** (gpm)	**Improvement Type**	**Recommended Capacity** (gpm)										
M-LSD	Lift Station Replacement	Dunes Lift Station		2 x 700	Capacity Upgrade	3 x 450			1,127,627	1,127,700	1,674,700	2,093,400	100%	0%	2,093,400	0
M-LSCR	Lift Station Replacement	Crescent Lift Station		2 x 100	Capacity Upgrade	2 x 100			-	-	-	401,576	100%	0%	401,576	0
				Subtotal - City of Marina Lift Station Improvements					**1,127,627**	**1,127,700**	**1,674,700**	**2,494,976**			**2,494,976**	**0**
Condition Assessment Improvements[4]					**Improvement Type**											
M-COND-LSSP	Condition	San Pablo Lift Station			Condition Improvements				24,600	24,600	36,800	46,200	100%	0%	46,200	0
				Subtotal - Central Marina Condition Assessment Improvements					**24,600**	**24,600**	**36,800**	**46,200**			**46,200**	**0**
Miscellaneous Improvements					**Improvement Type**											
MS-M1	WWTP	Located at the Marina WWTP			Demolition							883,265	100%	0%	883,265	0
MS-M2	Gravity Main	Del Monte Boulevard	Del Monte Blvd/ Reservation Rd		Replace							553,161	100%	0%	553,161	0
				Subtotal - Central Marina Miscellaeous Improvements								**1,436,426**			**1,436,426**	**0**
Total Central Marina Improvement Costs																
				Gravity Main Improvements					**1,735,300**	**1,735,600**	**2,577,600**	**3,222,200**			**1,055,546**	**2,166,654**
				Lift Station Improvements					**1,127,627**	**1,127,700**	**1,674,700**	**2,494,976**			**2,494,976**	**0**
				Condition Assessment Improvements					**24,600**	**24,600**	**36,800**	**46,200**			**46,200**	**0**
				Miscellaneous Improvements					**0**	**0**	**0**	**1,436,426**			**1,436,426**	**0**
				Total - Central Marina Improvements					**2,887,527**	**2,887,900**	**4,289,100**	**7,199,802**			**5,033,148**	**2,166,654**
Ord Community Sewer System																
Gravity Main Improvements				**Existing Diameter** (in)	**New/Parallel/Replace**	**Diameter** (in)	**Length** (ft)									
O-P2	Gravity Main	ROW	From Ord Avenue to East Garrison Lift Station	15	Replace	18	400	327	130,966	131,000	194,600	243,300	0%	100%	0	243,300
O-P4	Gravity Main	Abrams Dr	From w/o Inchon Ct to 80th Artillery Ct	10,15	Replace	18	675	327	221,005	221,100	328,400	410,500	43%	57%	175,039	235,461
O-P5	Gravity Main	ROW	N/o Abrams Dr following Abrams Dr/ Imjin Pkwy	15	Replace	18	1,325	327	433,825	433,900	644,400	805,500	38%	62%	303,514	501,986
O-P6	Gravity Main	ROW e/o Imjin Pkwy	From California Ave to 475' n/o Abrams Dr	18	Replace	18	1,100	327	360,157	360,200	534,900	668,700	45%	55%	299,507	369,193
O-P11	Gravity Main	ROW n/o Inter-Garrison Rd	Jogging from 4th Ave to 1,300' w/o 4th Ave	10	Replace	15	950	303	288,004	288,100	427,900	534,900	50%	50%	267,361	267,539

Table 8.4 Near Term Capital Improvement Program
Sewer Master Plan
Marina Coast Water District

PRELIMINARY

Improv. No.	Type of Improvement	Alignment	Limits	Improvement Details				Infrastructure Costs Unit Cost ($)	Infrastructure Costs Infr. Cost ($)	Baseline Construction Costs ($)	Estimated Construction Cost[1] ($)	Capital Improvement Cost[2,3] ($)	Suggested Cost Allocation Existing Users (%)	Suggested Cost Allocation Future Users (%)	Cost Allocation Existing Users ($)	Cost Allocation Future Users ($)
O-P14	Gravity Main	1st Ave	From 1st St to 8th St	12,18,30	Replace	30	3,100	-	-	-	-	408,340	100%	0%	408,340	0
O-P15	Gravity Main	Eucalyptus Rd	From approximately 4,000' e/o General Jim Moore Blvd to approximatley 800' w/o General Jim Moore Blvd	-	New	8	5,050	218	1,102,298	1,102,300	1,637,000	2,046,300	0%	100%	0	2,046,300
				Subtotal - Ord Community Pipeline Improvements					**2,536,255**	**2,536,600**	**3,767,200**	**5,117,540**			**1,453,761**	**3,663,779**
Force Main Improvements				**Existing Diameter** (in)	**New/Parallel/Replace**	**Diameter** (in)	**Length** (ft)									
O-FM2	Force Main	Monterey Rd, existing ROW	From relocated Ord Village LS to existing gravity main n/o Corregidor Rd	10	Replace	10	3,950	214	845,756	845,800	1,256,100	1,570,200	42%	58%	667,033	903,167
				Subtotal - Ord Community Force Main Improvements					**845,756**	**845,800**	**1,256,100**	**1,570,200**			**667,033**	**903,167**
Lift Station Improvements				**Existing Capacity** (gpm)	**Improvement Type**	**Recommended Capacity** (gpm)										
O-LSG	Lift Station/ Force Main	Gigling Lift Station	Gigling LS and FM Improvements			-	-	-	-	-	-	2,021,079	100%	0%	2,021,079	0
O-LSO	Lift Station Rehabilitation		Ord Village Sewer Pipeline and Lift Station Improvement Project			-	-	-	-	-	-	2,247,000	43%	57%	956,206	1,290,794
O-LSB	Lift Station Demolition and Replacement		Booker, Hatten, Neeson LS improvements			-	-	-	-	-	-	726,240	100%	0%	726,240	0
				Subtotal - Ord Community Lift Station Improvements					**0**	**0**	**0**	**4,994,319**			**3,703,525**	**1,290,794**
Condition Assessment Improvements[4]					**Improvement Type**											
O-COND-LSGG	Condition	Gigling Lift Station			Condition Improvements				444,300	444,300	660,200	825,600	100%	0%	825,600	0
O-COND-LSIM	Condition	Imjin Lift Station			Condition Improvements				29,000	29,000	43,400	54,400	100%	0%	54,400	0
O-COND-LSFR	Condition	Fritzche Lift Station			Condition Improvements				63,200	63,200	94,100	117,700	100%	0%	117,700	0
O-COND-LSEG	Condition	East Garrison Lift Station			Condition Improvements				32,300	32,300	48,300	60,700	100%	0%	60,700	0
O-COND-LSRR	Condition	Reservation Road Lift Station			Condition Improvements				39,900	39,900	59,600	74,700	100%	0%	74,700	0
				Subtotal - Ord Community Condition Assessment Improvements					**608,700**	**608,700**	**905,600**	**1,133,100**			**1,133,100**	**0**
Miscellaneous Improvements																
MS-O1	Service		Del Rey Oaks Collection System Planning									61,200	0%	100%	0	61,200
MS-O2	Gravity Main		SCSD Sewer Improvements - Del Rey Oaks									2,039,964	0%	100%	0	2,039,964
MS-O3	Service		Monterey One Water Buy-In									11,040,808	50%	50%	5,520,404	5,520,404
MS-O4	Gravity Main		Inter-Garrison/ 8th Avenue Sewer Connection									1,035,000	0%	100%	0	1,035,000
MS-O5	WWTP		Demolish Ord Main Garrison WWTP									1,623,648	100%	0%	1,623,648	0
MS-O6	Gravity Main		Seaside East Side Developments Parcels (future growth)									6,480,709	0%	100%	0	6,480,709
MS-O7	Lift Station		Miscellaneous Lift Station Improvements									1,497,360	50%	50%	748,680	748,680
MS-O8	Lift Station/ Gravity Main		Cypress Knolls Sewer Pipeline and Lift Station Improvement Project									97,424	0%	100%	0	97,424
				Subtotal - Ord Community Miscellaneous Improvements					**0**	**0**	**0**	**23,876,113**			**7,892,732**	**15,983,381**

Table 8.4 Near Term Capital Improvement Program
Sewer Master Plan
Marina Coast Water District

PRELIMINARY

Improv. No.	Type of Improvement	Alignment	Limits	Improvement Details	Infrastructure Costs: Unit Cost ($)	Infrastructure Costs: Infr. Cost ($)	Baseline Construction Costs ($)	Estimated Construction Cost[1] ($)	Capital Improvement Cost[2,3] ($)	Suggested Cost Allocation: Existing Users (%)	Suggested Cost Allocation: Future Users (%)	Cost Allocation: Existing Users ($)	Cost Allocation: Future Users ($)
Total Ord Community Improvement Costs													
				Gravity Main Improvements		**2,536,255**	**2,536,600**	**3,767,200**	**5,117,540**			**1,453,761**	**3,663,779**
				Force Main Improvements		**845,756**	**845,800**	**1,256,100**	**1,570,200**			**667,033**	**903,167**
				Lift Station Improvements		**0**	**0**	**0**	**4,994,319**			**3,703,525**	**1,290,794**
				Condition Assessment Improvements		**608,700**	**608,700**	**905,600**	**1,133,100**			**1,133,100**	**0**
				Miscellaneous Improvements		**0**	**0**	**0**	**23,876,113**			**7,892,732**	**15,983,381**
				Total Ord Community Community Improvements		**3,990,711**	**3,991,100**	**5,928,900**	**36,691,272**			**14,850,151**	**21,841,121**
General Miscellaneous Sewer System Improvements													
G-1	Odor Control Project	Various Locations	Odor Control Project						100,000	100%	0%	100,000	0
G-2	Other	Corporation Yard Demolition and Rehab							116,300	100%	0%	116,300	0
				Subtotal - General Sewer System Improvements					**216,300**			**216,300**	**0**
Total Sewer System Improvement Costs													
				Gravity Main Improvements		**4,271,556**	**4,272,200**	**6,344,800**	**8,339,740**			**2,509,307**	**5,830,433**
				Force Main Improvements		**845,756**	**845,800**	**1,256,100**	**1,570,200**			**667,033**	**903,167**
				Lift Station Improvements		**1,127,627**	**1,127,700**	**1,674,700**	**7,489,295**			**6,198,501**	**1,290,794**
				Condition Assessment Improvements		**633,300**	**633,300**	**942,400**	**1,179,300**			**1,179,300**	**0**
				Miscellaneous Improvements		**0**	**0**	**0**	**25,528,839**			**9,545,458**	**15,983,381**
				Total Improvement Cost		**6,878,238**	**6,879,000**	**10,218,000**	**44,107,374**			**20,099,599**	**24,007,775**

AKEL ENGINEERING GROUP, INC.

3/28/2019

Notes :
1. Estimated Construction costs include 48.5 percent of baseline cosntruction costs to account for unforeseen events and unknown field conditions, and for Contractor's overhead and profit, general conditions, and sales tax, consistent with 2007 Water Master plan.
2. Capital Improvement Costs also include an additional 25 percent of the estimated construction costs to account for administration, construction management, and legal costs.
3. Costs for improvements shown with only Capital Improvement Cost are based on information provided by District staff.
4. Costs associated with condition assessment improvements are included for planning purposes and are to be implemented at the discretion of District staff or may be superceded by other planned lift station improvements.

condition assessment of the systems per District standards. The subdivision master plan must be approved by the District prior to receiving water and sewer service.

- *From the subdivision master plan, the Developer replaces components as required by the District.*
- *Developer relocates the District's backbone water/sewer infrastructure (infrastructure that serves other upstream and downstream users) onto roadway right of way, as necessary.*
- *When the Developer is planning to construct improvements, including, but not limited to, structures, landscape areas, walkways, parking facilities, etc., over existing water and sewer infrastructure, then the Developer is responsible to relocate existing water/sewer infrastructure away from under proposed improvements.*

- *The developer will enter into a separate utility agreement with the District to provide for anticipated higher maintenance costs of the remaining older systems that will be left in place.*
- *The separate utility agreement will include an annual water and wastewater collection inspection report to be completed by the Developer or its successor in accordance with District standards. That agreement will require the developer to provide an annual wastewater collection system, water system inspection report in accordance with District standards and to provide master meters for the project. The water inspection report will include a water audit.*
- *Developer provides meter boxes for all structures and landscaping.*
- *Developer provides for District's installation of remote read meters.*

8.4.3 Construction Triggers

As a part of this Master Planning process, construction triggers were developed in an effort to orderly plan the expansion of the water system. These construction triggers are based on equivalent dwelling units (EDU), which are defined as *insert information from Bartle Wells.* It should be noted that Bartle Wells and Associates prepared an updated analysis of EDUs for the District, and based on industry standards and approved by District staff. This analysis is included in **Appendix E**, and summarized as follows:

Summarize EDU Analysis from Bartle Wells

To be finalized pending MCWD staff approval

APPENDICES

APPENDIX A

Sewer Flow Monitoring and Inflow/Infiltration Study, 2017 (V&A)

DRAFT

Marina Coast Water District

2017 Sewer Flow Monitoring and Inflow/Infiltration Study

Prepared for: Akel Engineering Group, Inc.
7433 N. First Street, Suite 103
Fresno, CA 93720

Date: June 2017

Prepared by: V&A consulting engineers

<V&A Project No. 16-0271>

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Tables

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Abbreviations and Acronyms

Abbreviations/Acronyms	Definition
ADWF	Average Dry Weather Flow
AVG	Average
CCTV	Closed-Circuit Television
CDEC	California Data Exchange Center
CIP	Capital Improvement Plan
CO	Carbon Monoxide
CWOP	Citizen Weather Observing Program
DIA.	Diameter
d/D	Depth/Diameter Ratio
FT.	Feet
FM	Flow Monitor
GPD	Gallons per Day
GPM	Gallons per Minute
GWI	Groundwater Infiltration
H2S	Hydrogen Sulfide
IN.	Inch
I/I	Inflow and Infiltration
IDM	Inch-Diameter Mile
IDW	Inverse Distance Weighting
LEL	Lower Explosive Limit
MAX.	Maximum
MGD	Million Gallons per Day
MIN.	Minimum
NOAA	National Oceanic and Atmospheric Administration
N/A	Not applicable
PF	Peaking Factor
PS	Pump Station
Q	Flow Rate
RDI/I	Rainfall-Dependent Infiltration and Inflow
RG	Rain Gauge
SSO	Sanitary Sewer Overflow
V&A	V&A Consulting Engineers, Inc.
WEF	Water Environment Federation
WRCC	Western Regional Climate Center

Terms and Definitions

Term	Definition
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 is expressed as a numeric average and may include 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 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. **Total 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 that is 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.
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.
Peaking factor (PF)	PF is the 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 has been 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.

Executive Summary

Scope and Purpose

V&A Consulting Engineers, Inc. (V&A) has completed sanitary sewer flow monitoring and inflow and infiltration (I/I) analysis within the Marina Coast Water District (District) collection system. Flow monitoring was performed for 4 weeks from January 19, 2017 through February 20, 2017 at nine open-channel flow monitoring sites. There were three general purposes of this study.

1. Establish the baseline sanitary sewer flows at the flow monitoring sites.
2. Estimate available sewer capacity.
3. Isolate I/I response and perform I/I analysis.

Monitoring Sites

The flow monitoring sites were selected and approved by Akel Engineering Group (AEG) and are listed in Table ES-1 and illustrated in Figure ES-1. Site O4 was removed from this study; upon a thorough investigation, this pipeline was determined to be abandoned.

Table ES-1. List of Monitoring Sites

Site / Basin	District Manhole No.	Monitored Pipe	Pipe Dia. (in)	Location	Basin Isolation Equation	Basin Area (acres)
M1	K606	SW Inlet	11.5	358 Reservation Road	$= Q_{M1}$	197
M2	L638	SE Inlet	12	210 Reservation Road	$= Q_{M2} - Q_{M1}$	103
M3	G421	SW Inlet	12	3148 Del Monte Boulevard	$= Q_{M3}$	152
M4	E331	South Inlet	10	Robin Drive at Hilo Avenue	$= Q_{M4}$	163
O1	J306	South Inlet	18	Lot northwest of intersection of 1st Avenue and 5th Street	$= Q_{O1}$	879
O2	D452A	South Inlet	12	Open space southwest of intersection of 1st Avenue and 5th Street	$= Q_{O2}$	215
O3	J306	East Inlet	15	Lot northwest of intersection of 1st Avenue and 5th Street	$= Q_{O3}$	243
O5	UVA1	NE Inlet	29.5	Northwest corner VA Clinic parking lot	$= Q_{O5}$	1,518
O6	UVB1	East Inlet	14.5	VA Clinic parking lot, near motorcycle parking	$= Q_{O6}$	235

Note: NE = Northeast, SE = Southeast, SW = Southwest

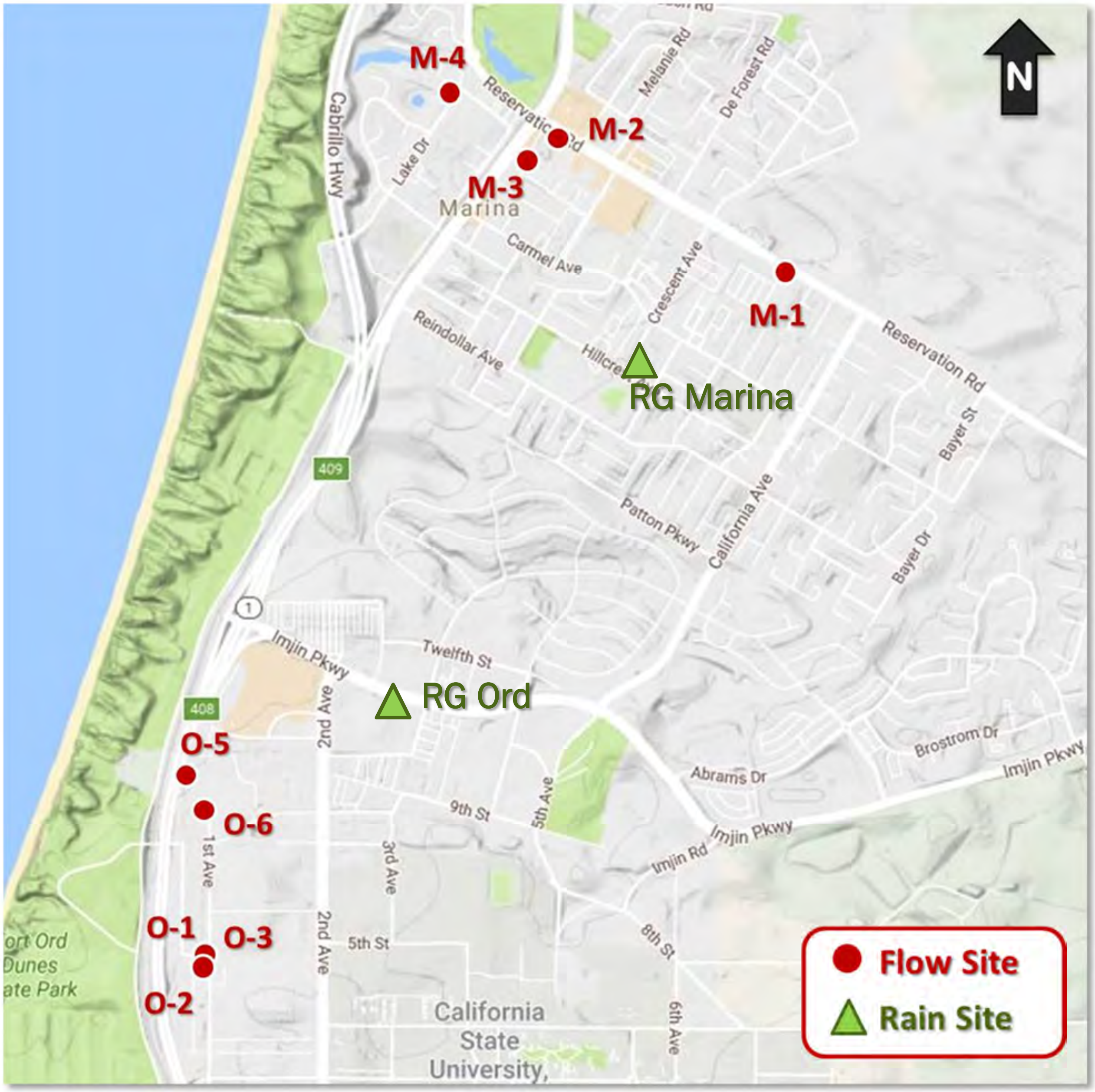

Figure ES-1. Map of Flow Monitoring Sites

Rainfall Monitoring

There were four main rainfall events that occurred over the course of the flow monitoring period and rainfall totals for the District were approximately 86% above historical normal. The following storm event classification items are noted:

- Event 4 (February 20 - 21, 2017) was the largest classified rainfall event over the monitoring period, classified as about a 5-year, 12-hour event and a 3-year, 24-hour event.
- The full flow monitoring period had rainfall classified as about a 2-year, 45-day event.

Flow Monitoring and Capacity Results

Peak measured flows and the consequent hydraulic grade line data are important to understand the capacity limitations of a collection system. The following 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). Peaking factors are influenced by many factors including size and topography of tributary area, flow attenuation, flow restrictions, characteristics of I/I entering the collection system, and hydraulic features such as pump stations.
- **d/D Ratio**: The d/D ratio is the peak measured depth of flow (d) divided by the pipe diameter (D). The d/D ratio for each site was computed based on the maximum depth of flow for the study. Standards for d/D ratio vary from agency to agency, but typically range between d/D ≤ 0.5 and d/D ≤ 0.75.

Table ES-2 summarizes the peak recorded flows, levels, *d/D* ratios, and peaking factors per site during the flow monitoring period. Results of note have been shaded in RED 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 ES-2. Capacity Analysis Summary

Metering Site	ADWF (MGD)	Peak Measured Flow (MGD)	Peaking Factor	Pipe Diameter, *D* (IN)	Max Depth, *d* (IN)	*Max d/D* Ratio	Surcharge above Pipe Crown (FT)
M1	0.110	0.279	2.5	11.5	6.79	0.59	-
M2	0.371	1.465	4.0	12	9.69	0.81	-
M3	0.260	0.634	2.4	12	3.01	0.25	-
M4	0.169	0.330	2.0	10	5.67	0.57	-
O1	0.446	1.384	3.1	18	3.61	0.20	-
O2	0.075	0.342	4.5	12	2.46	0.21	-
O3	0.168	1.068	6.4	15	4.58	0.31	-
O5	0.344	0.832	2.4	29.5	5.35	0.18	-
O6	0.020	0.199	10.1	14.5	3.54	0.24	-

Figure ES-2 illustrates a flow schematic of the peak flow condition at the flow monitoring sites. The following capacity analysis results are noted:

- **Peaking Factor**: Sites O3 and O6 had peaking factors greater than 5 corresponding to rainfall events; Site O6 had the highest peaking factor with a value greater than 10.
- **d/D Ratio**: None of the flow monitoring sites surcharged during this flow study. Site M2 had a maximum *d/D* ratio that just exceeded the typical threshold of 0.75.

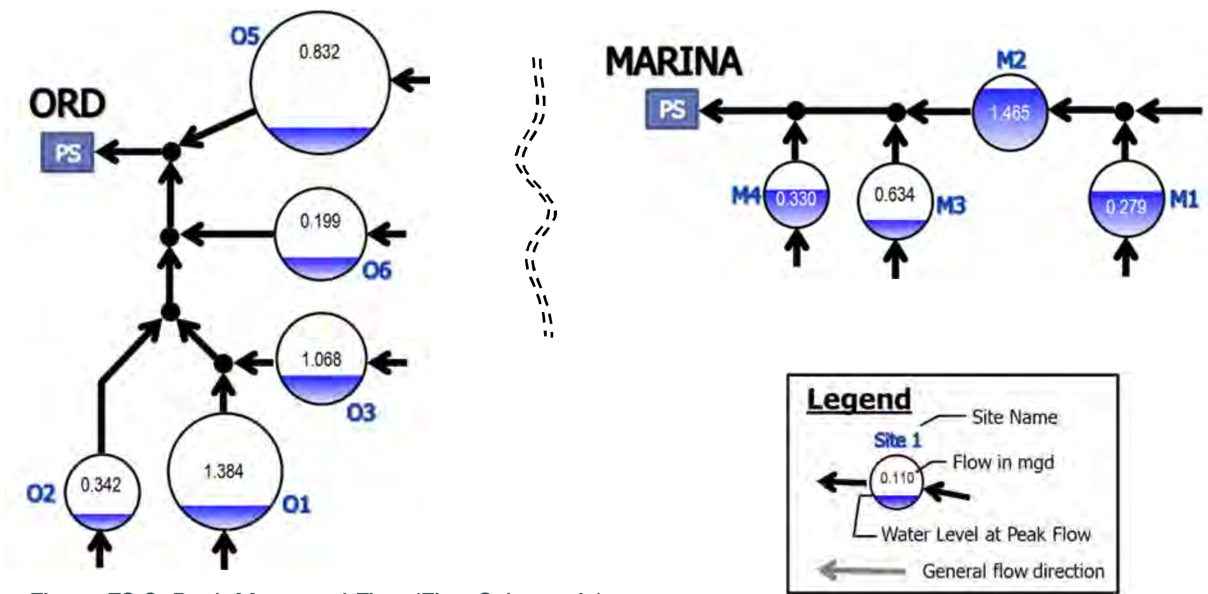

Figure ES-2. Peak Measured Flow (Flow Schematic)

Infiltration and Inflow Analysis

Table ES-3 summarizes I/I results for the flow monitoring sites that were monitored during this study. Please refer to the *I/I Methods* section for more information on inflow and infiltration analysis methods and ranking methods. Event 3 (February 16 – 19, 2017) and Event 4 (February 20 – 21, 2017) elicited the greatest I/I response and were analyzed for this study. Results of note have been shaded in RED.

Table ES-3. I/I Analysis Summary

Monitoring Basin	ADWF (mgd)	Event 3 (Feb 16-19)		Event 4 (Feb 19-20)		Inflow Rank[A]	Total I/I Rank[A]
		Peak I/I Rate (mgd)	Total I/I (gallons)	Peak I/I Rate (mgd)	Total I/I (gallons)		
Basin M1	0.110	0.105	10,000	0.082	14,000	8	6
Basin M2	0.263	0.282	58,000	0.753	128,000	3	3
Basin M3	0.260	0.136	15,000	0.270	53,000	5	5
Basin M4	0.169	0.057	5,000	0.151	15,000	9	9
Basin O1	0.446	0.297	25,000	0.447	49,000	6	8
Basin O2	0.075	0.031	2,000	0.075	13,000	7	7
Basin O3	0.168	0.618	132,000	0.848	219,000	2	2
Basin O5	0.344	0.536	53,000	0.332	75,000	4	4
Basin O6	0.020	0.133	20,000	0.165	38,000	1	1

[A] Ranking of 1 represents most I/I after normalization.

The following inflow analysis results are noted:

- Basins O3 and O6 ranked highest for normalized inflow contribution. For the Marina collection system, Basin M2 ranked highest for normalized inflow contribution.

- Basins O3 and O6 ranked highest for normalized total I/I contribution. For the Marina collection system, Basin M2 ranked highest for normalized total I/I contribution.
- For all sites, the I/I receded to baseline levels within a couple hours of the conclusion of the rainfall event, indicating minimal RDI component. Infiltration does not appear to be an issue for the Marina or Ord collection systems.

Recommendations

V&A advises that future I/I reduction plans consider the following recommendations:

1. **Determine I/I Reduction Program:** The District 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 occurs in Basins O3 and O6 in the Ord collection system, and in Basin M2 for the Marina collection system.
   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. Infiltration does not appear to be an issue for the Marina or Ord collection systems.
2. **I/I Investigation Methods:** Potential I/I investigation methods include the following:
   c. Smoke testing
   d. Mini-basin flow monitoring
   e. 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 District 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.

1 Introduction

1.1 Scope and Purpose

V&A Consulting Engineers, Inc. (V&A) has completed sanitary sewer flow monitoring and inflow and infiltration (I/I) analysis within the Marina Coast Water District (District) collection system. Flow monitoring was performed for 4 weeks from January 19, 2017 through February 20, 2017 at nine open-channel flow monitoring sites. There were three general purposes of this study.

1. Establish the baseline sanitary sewer flows at the flow monitoring sites.
2. Estimate available sewer capacity.
3. Isolate I/I response and perform I/I analysis.

1.2 Flow Monitoring Sites, Sewerage Basins and Rain Gauges

The FM sites were selected and approved by Akel Engineering Group. Flow monitoring sites are identified as the manholes where the flow monitors were secured and the pipelines wherein the flow sensors were placed. Sites 01 and 03 were located in the same manhole but measured different inlet pipes. Site 04 was removed from this study; upon a thorough investigation, this pipeline was determined to be abandoned. Capacity analyses and flow rates are presented on a site-by-site basis.

Flow monitoring site data may include the flows of one or many drainage 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. The basin refers to the ground surface area near and enclosed by the pipelines[1]. 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[2].

Rain data was obtained from the National Oceanic and Atmospheric Administration (NOAA) Citizen Weather Observer Program (CWOP). CWOP members send data from their private weather station (PWS) to the NOAA MADIS server; the data undergoes quality checking and then is distributed. While V&A has no direct control over the rain gauges, V&A performs additional QA/QC on the data to ensure its suitability for use.

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[1] Basin boundaries were estimated using rough sanitary sewer maps provided by AEG. Basin acreages are considered estimates.

[2] There is error inherent in flow monitoring. Addition: When adding flows, the overall error will be approximately the weighted average of the errors of elements of the equation. For example: if Site A has a value of 12 mgd and an error of ±10% (±1.2 mgd) and Site B has a value of 10 and an error of ±10% (±1 mgd), then the resulting flow when adding Sites A + B is 22 ± 2.2 mgd (error is still 10%).

Subtraction: When subtracting flows, the overall error can be considerably higher than the errors of the components. For example: if Site A has a value of 12 mgd and an error of ±10% (±1.2 mgd) and Site B has a value of 10 and an error of ±10% (±1 mgd), then the resulting flow when subtracting Site A - Site B is 2 ± 2.2 mgd (the error is now very high at ±110%).

The FM sites and associated basins (including basin flow equations) are listed in Table 1-1. The FM sites and associated basins and shown in Figure 1-1 and Figure 1-2, respectively. Detailed descriptions of the individual flow monitoring sites, including photographs, are included in Appendix A.

Table 1-1. List of Flow Monitoring Sites

Site / Basin	District Manhole No.	Monitored Pipe	Pipe Dia. (in)	Location	Basin Isolation Equation	Basin Area (acres)
M1	K606	SW Inlet	11.5	358 Reservation Road	$= Q_{M1}$	197
M2	L638	SE Inlet	12	210 Reservation Road	$= Q_{M2} - Q_{M1}$	103
M3	G421	SW Inlet	12	3148 Del Monte Boulevard	$= Q_{M3}$	152
M4	E331	South Inlet	10	Robin Drive at Hilo Avenue	$= Q_{M4}$	163
O1	J306	South Inlet	18	Lot northwest of intersection of 1st Avenue and 5th Street	$= Q_{O1}$	879
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O5	UVA1	NE Inlet	29.5	Northwest corner VA Clinic parking lot	$= Q_{O5}$	1,518
O6	UVB1	East Inlet	14.5	VA Clinic parking lot, near motorcycle parking	$= Q_{O6}$	235

Note: NE = Northeast, SE = Southeast, SW = Southwest

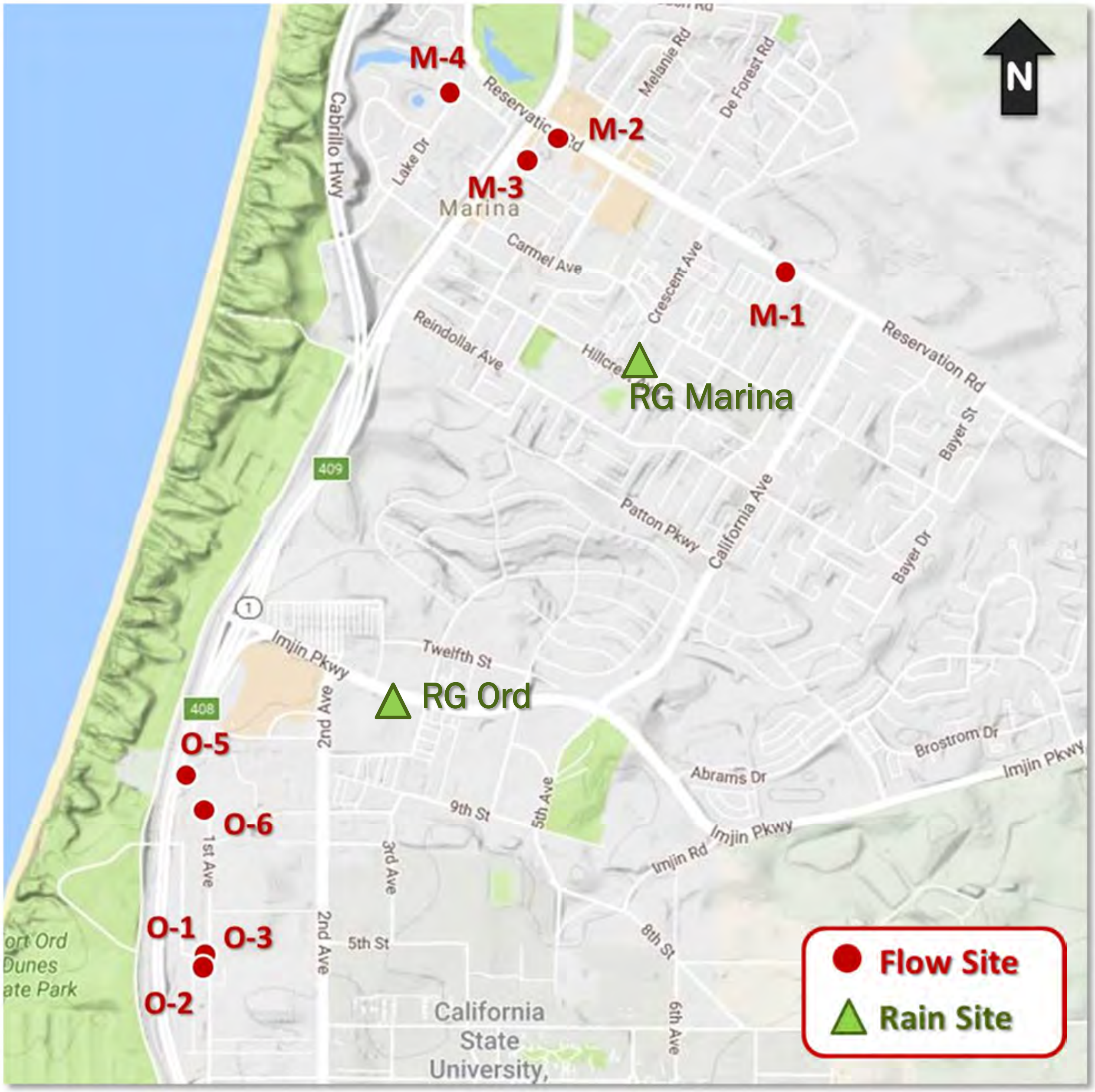

Figure 1-1. Map of Flow Monitoring Sites

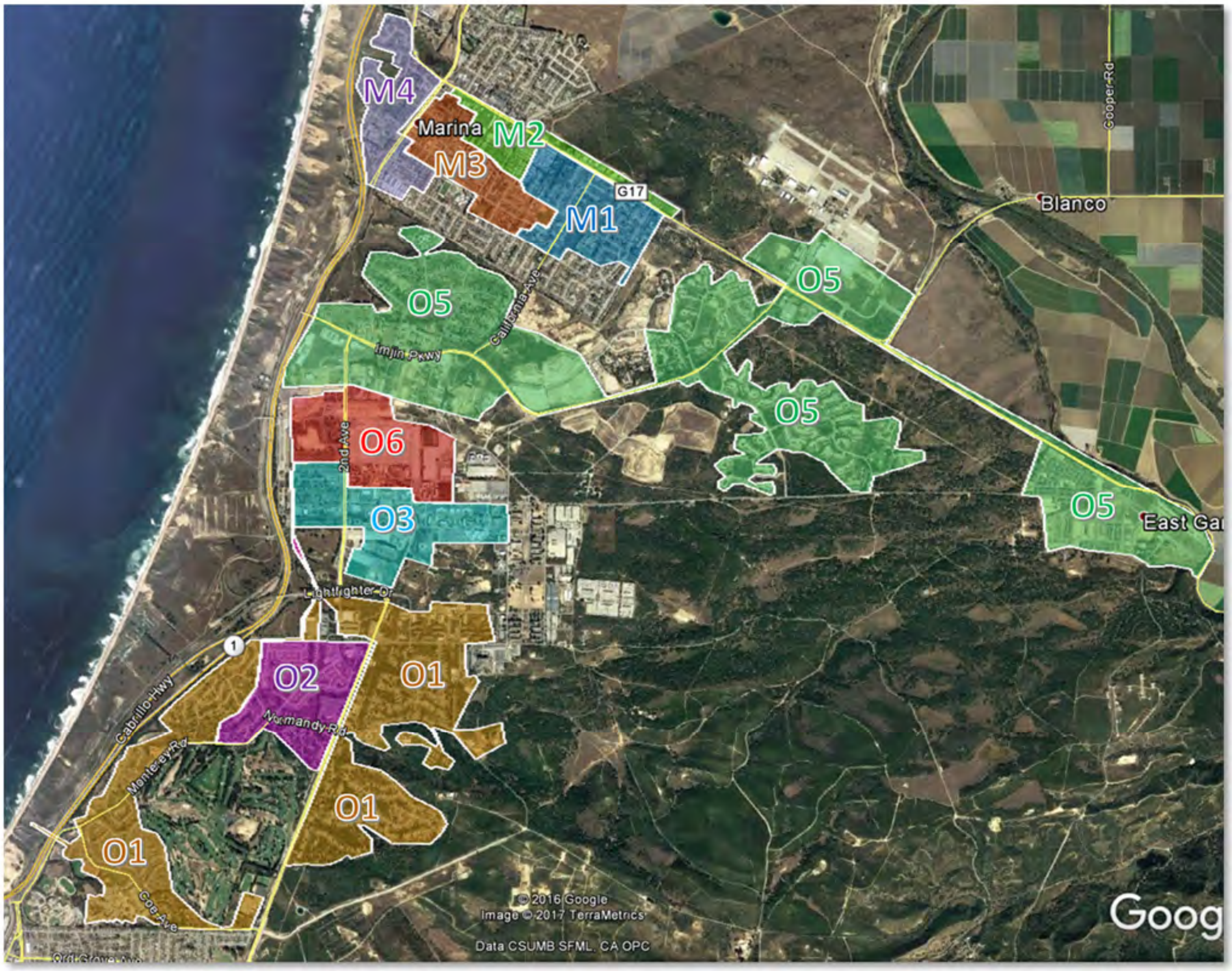

Figure 1-2. Flow Monitoring Basin Map

2 Methods and Procedures

2.1 Confined Space Entry

A confined space (Photo 2-1) 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 presence 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 2-2). 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 using another four-gas monitor and maintaining records of all Entrants, if there is more than one. The Supervisor is responsible for developing the safe work plan for the job at hand prior to entering.

Photo 2-1. Confined Space Entry

Photo 2-2. Typical Personal Four-Gas Monitor

2.2 Flow Meter Installation

V&A installed Isco 2150 area-velocity flow meters for temporary metering within the collection system. 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 2-1 shows a typical installation for a flow meter with a submerged sensor.

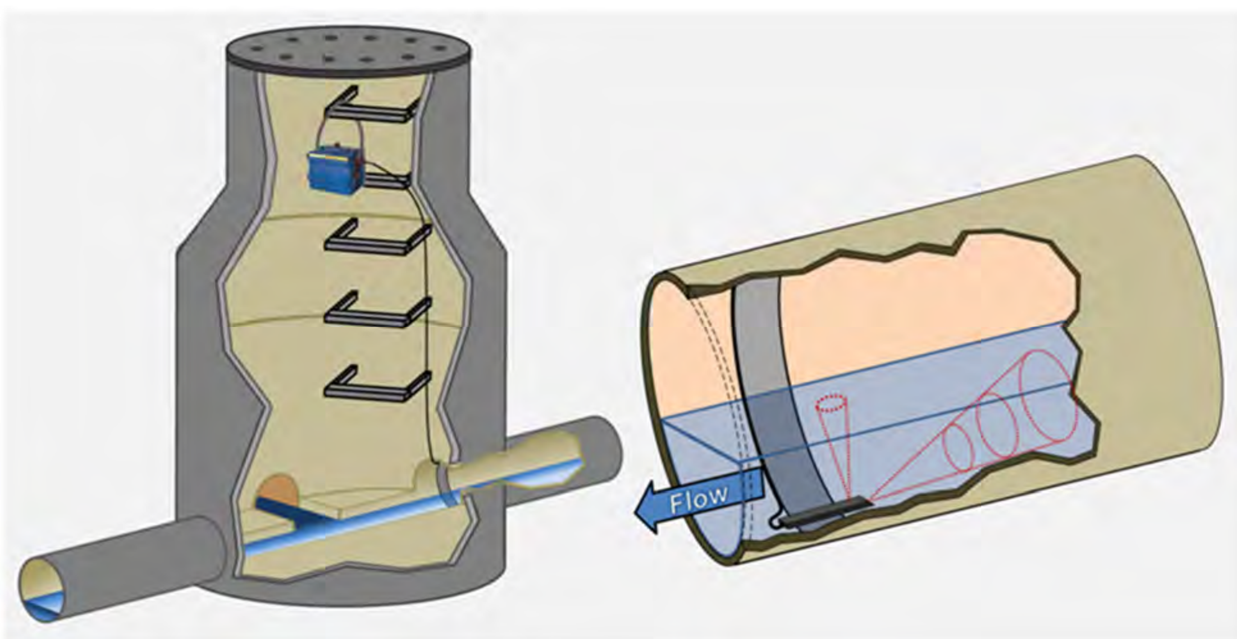

Figure 2-1. Typical Installation for Flow Meter with Submerged Sensor

2.3 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,

$$Q = v \cdot A = v \cdot (A_T - A_S)$$

where Q : volume flow rate

v: average velocity as determined by the ultrasonic sensor

A: cross-sectional area available to carry flow

A_T: total cross-sectional area with both wastewater and sediment

A_S: cross-sectional area of sediment.

For circular pipe,

$$A_T = \left[\frac{D^2}{4}\cos^{-1}\left(1-\frac{2d_W}{D}\right)\right]-\left[\left(\frac{D}{2}-d_W\right)\left(\frac{D}{2}\right)\sin\left(\cos^{-1}\left(1-\frac{2d_W}{D}\right)\right)\right]$$

$$A_S = \left[\frac{D^2}{4}\cos^{-1}\left(1-\frac{2d_S}{D}\right)\right]-\left[\left(\frac{D}{2}-d_S\right)\left(\frac{D}{2}\right)\sin\left(\cos^{-1}\left(1-\frac{2d_S}{D}\right)\right)\right]$$

where d_W: distance between wastewater level and pipe invert

d_S: depth of sediment

D: pipe diameter

2.4 Average Dry Weather Flow Determination

For this study, four distinct average dry weather flow curves were established for each site location:

- Mondays – Thursdays
- Fridays
- Saturdays
- Sundays

Flows for many sites differ on Friday evenings compared to Mondays through Thursdays. Starting around 7 pm, the flows are often decreased (compared to Monday through Thursday). Similarly, flow patterns for Saturday and Sunday were also separated due to their unique evening flow pattern. This type of differentiation can be important when determining I/I response, especially if a rain event occurs on a Friday, Saturday or Sunday evening.

Figure 2-2 illustrates a sample of varying flow patterns within a typical week dry week.

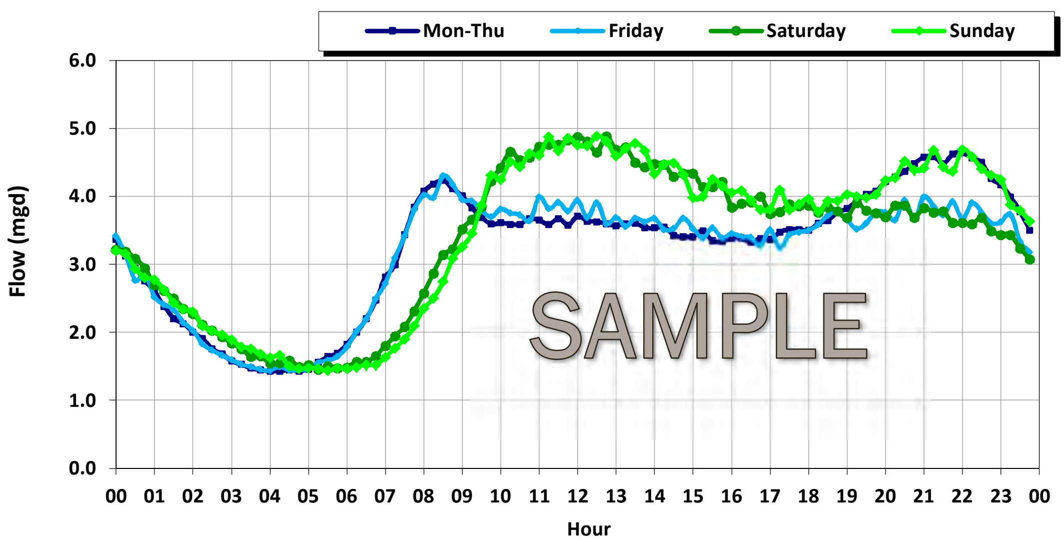

Figure 2-2. Sample ADWF Diurnal Flow Patterns

ADWF curves are taken from “Dry Days”, when RDI had the least impact on the baseline flow. The overall average dry weather flow (ADWF) was calculated per the following equation:

$$ADWF = \left(ADWF_{Mon-Thu} \times \frac{4}{7}\right) + \left(ADWF_{Fri} \times \frac{1}{7}\right) + \left(ADWF_{Sat} \times \frac{1}{7}\right) + \left(ADWF_{Sun} \times \frac{1}{7}\right)$$

2.5 Flow 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 diffusion along the sewer pipes. Fluids are constantly working towards equilibrium. For example, a volume of fluid poured into a static vessel with no outside turbulence will eventually stabilize to a static state, with a smooth fluid surface without peaks and valleys. Attenuation within a sanitary sewer collection system is based upon this concept. A flow profile with a strong peak will tend to stabilize towards equilibrium, as shown in Figure 2-3.

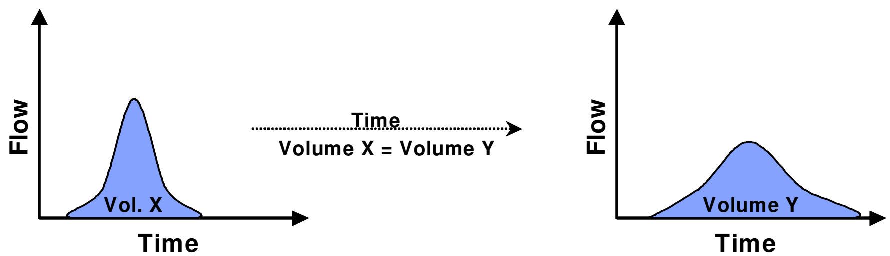

Figure 2-3. Attenuation Illustration

Within a sanitary sewer collection system, each individual basin will have a specific flow profile. As the flows from the basins combine within the trunk sewer lines, the peaks from each basin will (a) not necessarily coincide at the same time, and (b) due to the length and time of travel through the trunk sewers, peak flows will attenuate prior to reaching the treatment facility. The sum of the peak flows of the individual basins within a collection system will usually be greater than the peak flows observed at the treatment facility.

2.6 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 in the following subsections..

2.6.1 Definition and Typical Sources

- **Inflow:** 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.
- **Infiltration:** 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.

Figure 2-4 illustrates the possible sources and components of I/I.

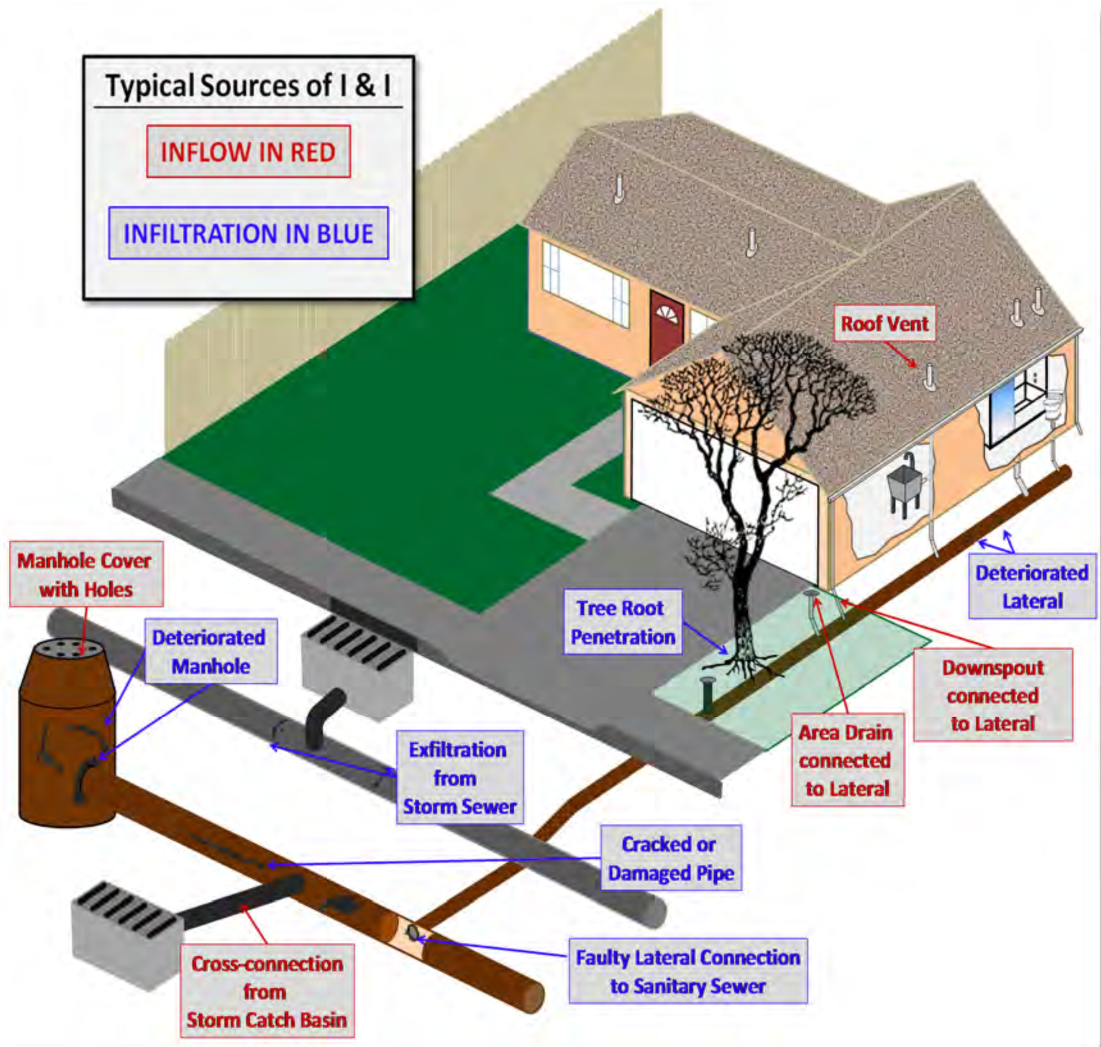

Figure 2-4. Typical Sources of Infiltration and Inflow

2.6.2 Infiltration Components

Infiltration can be further subdivided into components as follows:

- **Groundwater Infiltration:** Groundwater infiltration (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.
- **Rainfall-Dependent Infiltration:** Rainfall-Dependent Infiltration (RDI) 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.

2.6.3 Impact and Cost of Source Detection and Removal

- **Inflow:**
  - 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.
- **Infiltration:**
  - 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.

2.6.4 Graphical Identification of I/I

Inflow is usually recognized graphically by large-magnitude, short-duration spikes immediately following a rain event. 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. Real time flows were plotted against ADWF to analyze the I/I response to rainfall events. Figure 2-5 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.

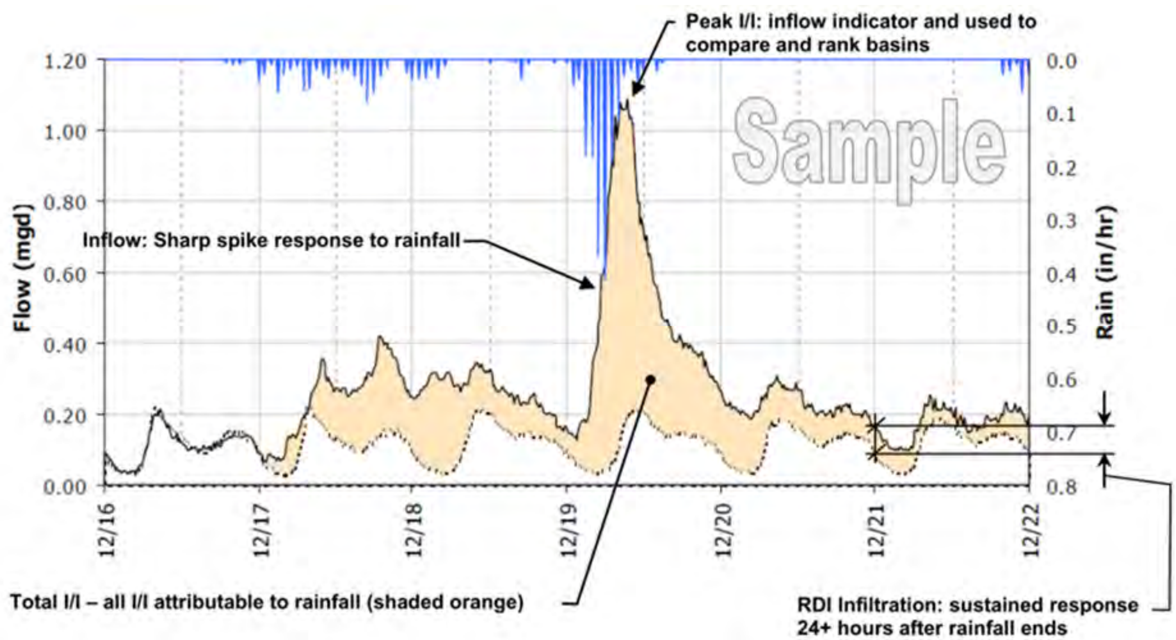

Figure 2-5. Sample Infiltration and Inflow Isolation Graph

2.6.5 Analysis Metrics

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:

- **Inflow – 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[4].
- **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.
- **Rainfall-Dependent Infiltration:** RDI 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

[4] I/I flow rate is the real time 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.

and the time required for flows to return to ADWF levels, different periods may be examined to determine the basins with the greatest or most sustained rainfall-dependent infiltration rates.

- **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.

2.6.6 Normalization Methods

There are three ways to *normalize* the I/I analysis metrics for an "apples-to-apples" comparison amongst the different drainage basins:

- **per-ADWF:** The metric is divided by the established average dry weather flow rate and typically expressed as a ratio. *Peaking Factors* are examples of using ADWF to normalize data from different sites.
- **per-IDM:** The metric is divided by length of pipe (IDM [inch-diameter mile]) contained within the upstream basin. Final units typically are gallons per day (gpd) per IDM.
- **per-ACRE:** The metric is divided by the acreage of the upstream basin. Final units typically are gallons per day (gpd) per ACRE.

I/I metrics for each basin were normalized by the per-ADWF method in this report.

3 Rainfall Results

3.1 Rainfall Monitoring

There were four main rainfall events that occurred over the flow monitoring period, summarized in Table 3-1. Figure 3-1 shows rainfall activity and intensity over the flow monitoring period (Marina Rain Gauge shown). Figure 3-2 shows the rain accumulation plots for both rain gauges compared to the historical average rainfall[5] in the District during this project duration. Rainfall totals for the District were approximately 86% above historical normal levels during this time period.

Table 3-1. Rainfall Events Used for I/I Analysis

Rainfall Event	Rain Gauge MARINA (in)	Rain Gauge ORD (in)
Event 1: January 18 - 24, 2017	2.19	2.04
Event 2: February 9 - 11, 2017	1.23	1.23
Event 3: February 16 - 18, 2017	1.20	1.20
Event 4: February 20 - 21, 2017	1.87	1.95
Total over Monitoring Period	**7.39**	**7.21**

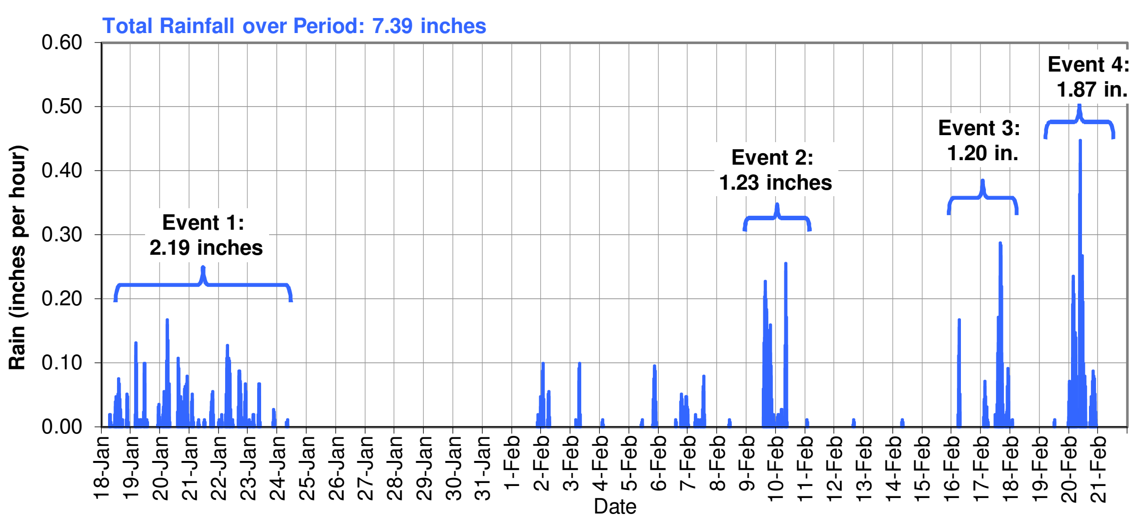

Figure 3-1. Rainfall Activity over Monitoring Period (Marina Rain Gauge)

[5] Historical data taken as weighted average from the WRCC Stations 45795 in Monterey and 47669 in Salinas: http://www.wrcc.dri.edu/summary/climsmnca.html

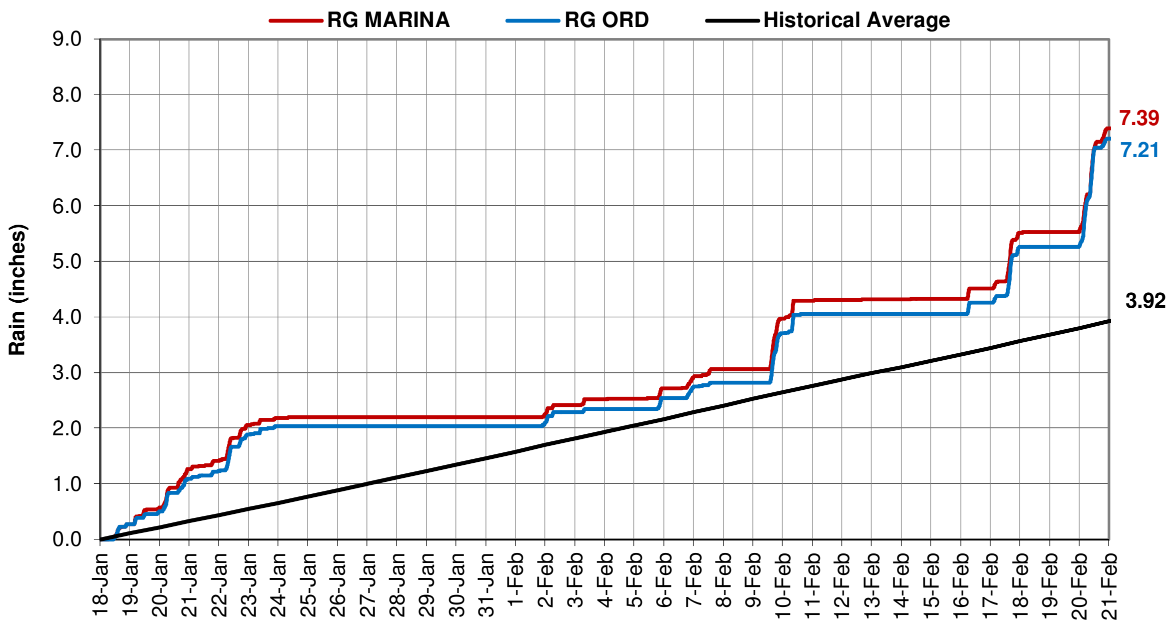

Figure 3-2. Monitored Accumulated Precipitation Compared to Historical Average

3.2 Rainfall: Rain Event Classification

It is important to classify the relative size of the major Rain event that occurs over the course of a flow monitoring period[6]. Rain events are classified by intensity and duration. Based on historical data, frequency contour maps for Rain events of given intensity and duration have been developed by NOAA for all areas within the continental United States. For example, the NOAA Rainfall Frequency Atlas[7] classifies a 10-year, 24-hour Rain event in Marina at the Marina Rain Gauge location as 2.63 inches (Figure 3-3). This means that in any given year, at this specific location, there is a 10% chance that 2.63 inches of rain will fall in any 24-hour period.

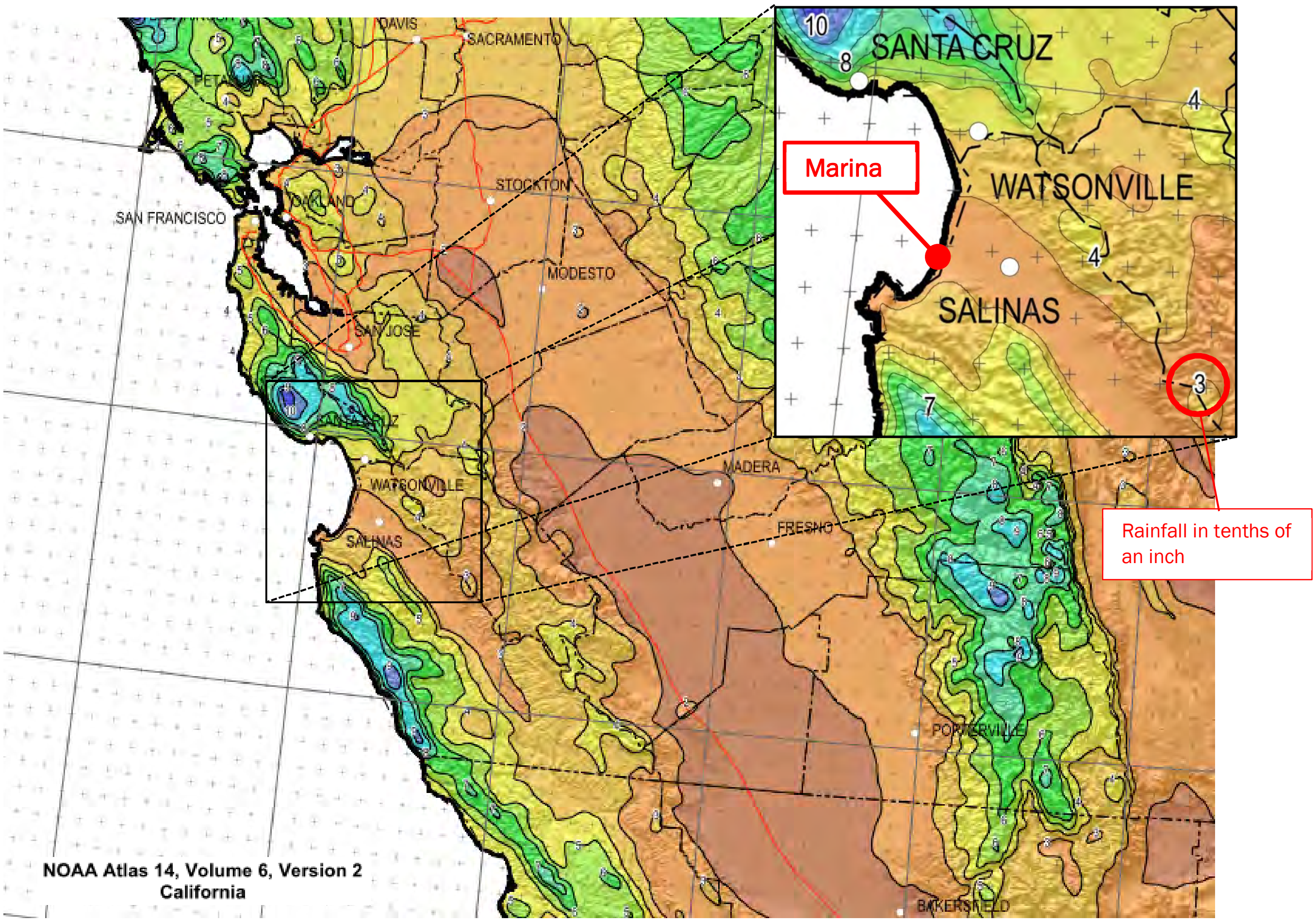

Figure 3-3. NOAA California Map of Isopluvials of 10-year, 24-hour Precipitation

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 all the rainfall events on the rain event frequency plot determines the classification of the rain events, shown in Figure 3-4 and Figure 3-5 for the Marina Rain Gauge. Table 3-2 summarizes the classification of the rainfall events for both rain gauge locations that occurred during the flow monitoring period.

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[6] Sanitary sewers are often designed to withstand I/I contribution to sanitary flows for specific-sized "design" Rain events.

[7] A Atlas 14, Volume 6, Version 2 California ftp://hdsc.nws.noaa.gov/pub/hdsc/data/sw/ca10y24h.pdf

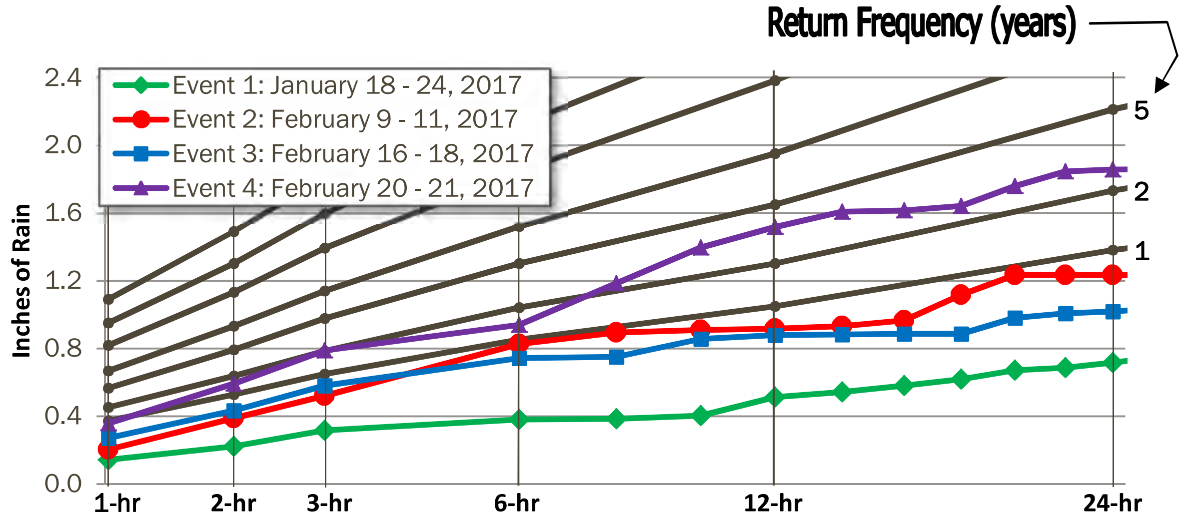


Figure 3-4. Short-Term Rain Event Classification (Marin RG)

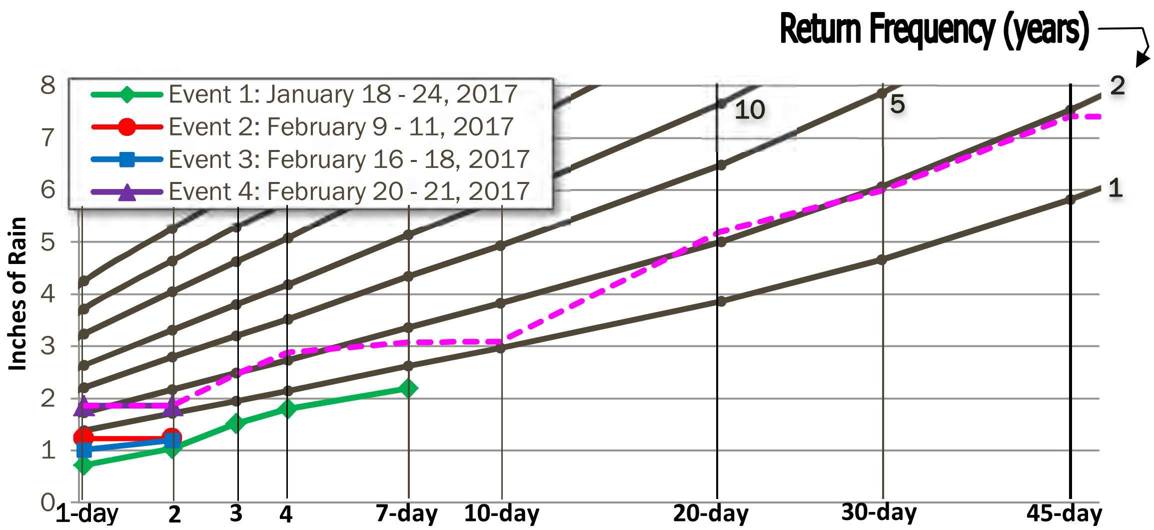


Figure 3-5. Long-Term Rain Event Classification (Marin RG)

Table 3-2. Classification of Rainfall Events

Rainfall Event	Rain Gauge Marina	Rain Gauge Ord
Event 1: January 18 - 24, 2017	< 1-year	< 1-year
Event 2: February 9 - 11, 2017	< 1-year	< 1-year
Event 3: February 16 - 18, 2017	< 1-year	< 1-year
Event 4: February 20 - 21, 2017	4-year, 12-hour 3-year, 24-hour	6-year, 12-hour 3-year, 24-hour
Monitoring Period (January 18 – February 21, 2017)	2-year, 45-day	2-year, 20-day

The following storm event classification items are noted:

- Event 4 (February 20 - 21, 2017) was the largest classified rainfall event over the monitoring period, classified as about a 5-year, 12-hour event and a 3-year, 24-hour event.
- The full flow monitoring period had rainfall classified as about a 2-year, 45-day event.

4 Flow Monitoring Results

4.1 Average Flow Analysis

Table 4-1 summarizes the dry weather flow data measured for this study. ADWF curves for each site can be found in Appendix A. Figure 4-1 shows a schematic diagram of the average dry weather flows and flow levels.

Table 4-1. Average Dry Weather Flow Summary

Site	Sediment (inches)	Mon - Thu ADWF (mgd)	Friday ADWF (mgd)	Saturday ADWF (mgd)	Sunday ADWF (mgd)	Overall ADWF (mgd)
M1	1.0	0.106	0.105	0.114	0.124	0.110
M2	none	0.360	0.348	0.389	0.416	0.371
M3	none	0.256	0.244	0.278	0.272	0.260
M4	none	0.169	0.164	0.170	0.174	0.169
O1	none	0.446	0.452	0.440	0.446	0.446
O2	none	0.075	0.076	0.072	0.079	0.075
O3	none	0.182	0.156	0.143	0.147	0.168
O5	none	0.328	0.326	0.375	0.394	0.344
O6	none	0.019	0.022	0.019	0.021	0.020

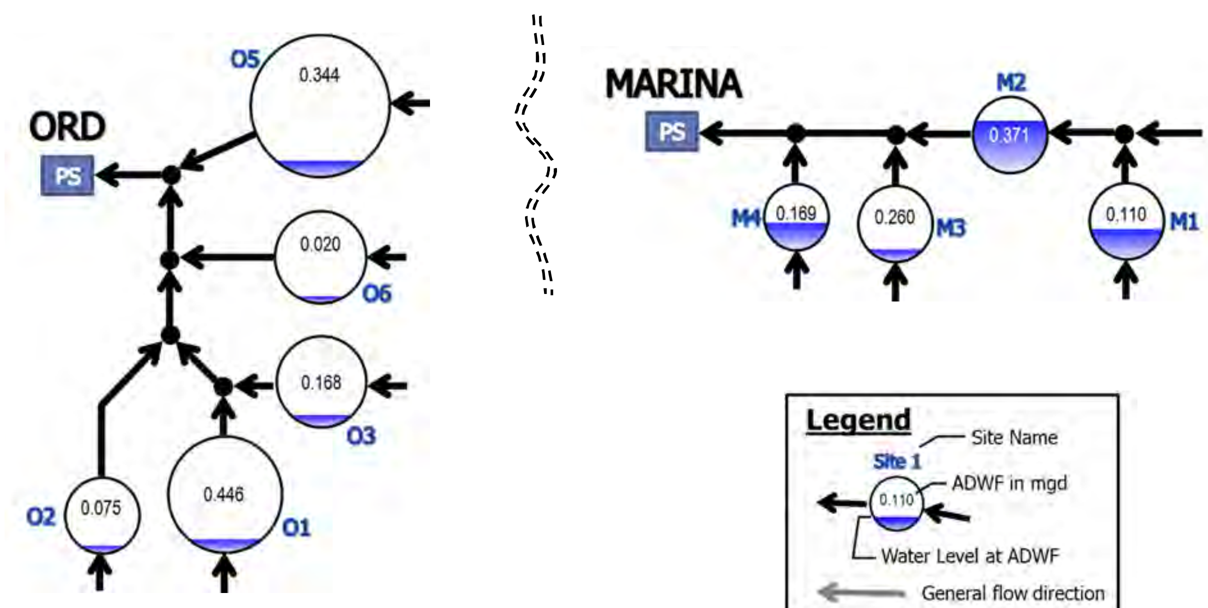


Figure 4-1. Dry Weather Flow Schematic

4.2 Capacity Analysis: Peaking Factor and d/D Ratio

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. The following capacity analysis terms are defined as follows:

- **Peaking Factor:** Peaking factor is defined as the peak measured flow divided by the ADWF. Peaking factors are influenced by many factors including size and topography of tributary area, proximity to pump stations, and the amount and characteristics of I/I entering the collection system. Flow attenuation and flow restrictions will also affect the peaking factor. A peaking factor threshold value of 3.0 is commonly used for sanitary sewer design of new pipe; however, it is noted that this value is variable and subject to attenuation and the size of the upstream collector area. The District should follow its own standards and criteria when examining peaking factors.
- **d/D Ratio:** The d/D ratio is the peak measured depth of flow (d) divided by the pipe diameter (D). Standards for d/D ratio vary from agency to agency, but typically range between 0.5 and 0.75. The d/D ratio for each site was computed based on the maximum depth of flow for the flow monitoring study.

Table 4-2 summarizes the peak recorded flows, levels, *d/D* ratios, and peaking factors per site during the flow monitoring period. Results of note have been shaded in RED. Capacity analysis data are 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. Figure 4-2 and Figure 4-3 show bar graphs of the capacity results. Figure 4-4 shows a schematic diagram of the peak measured flows with peak flow levels.

Table 4-2. Capacity Analysis Summary

Metering Site	ADWF (MGD)	Peak Measured Flow (MGD)	Peaking Factor	Pipe Diameter, *D* (IN)	Max Depth, *d* (IN)	*Max d/D* Ratio	Surcharge above Pipe Crown (FT)
M1	0.110	0.279	2.5	11.5	6.79	0.59	-
M2	0.371	1.465	4.0	12	9.69	0.81	-
M3	0.260	0.634	2.4	12	3.01	0.25	-
M4	0.169	0.330	2.0	10	5.67	0.57	-
O1	0.446	1.384	3.1	18	3.61	0.20	-
O2	0.075	0.342	4.5	12	2.46	0.21	-
O3	0.168	1.068	6.4	15	4.58	0.31	-
O5	0.344	0.832	2.4	29.5	5.35	0.18	-
O6	0.020	0.199	10.1	14.5	3.54	0.24	-

The following capacity analysis results are noted:

- **Peaking Factor**: Sites O3 and O6 had peaking factors greater than 5 corresponding to rainfall events; Site O6 had the highest peaking factor with a value greater than 10.
- **d/D Ratio**: None of the flow monitoring sites surcharged during this flow study. Site M2 had a maximum *d/D* ratio that just exceeded the typical threshold of 0.75.

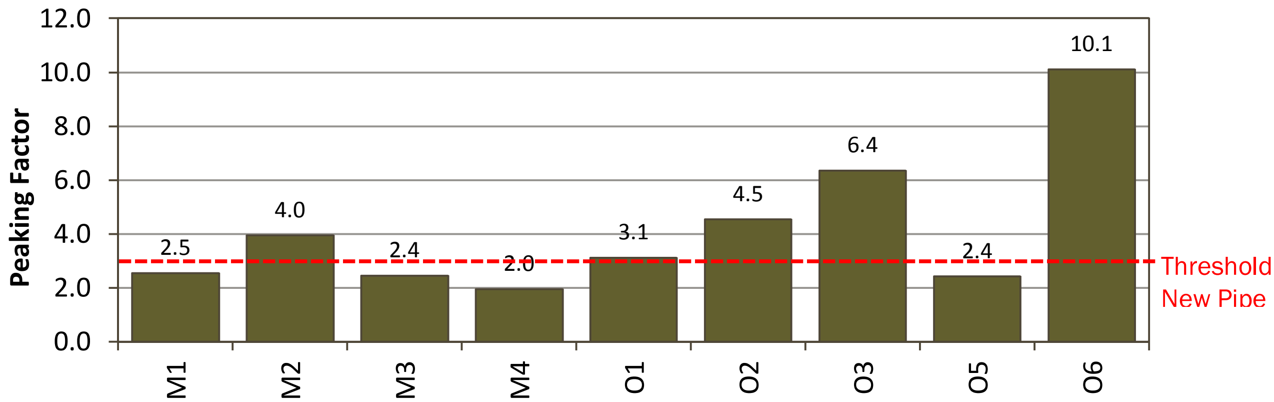


Figure 4-2. Capacity Summary: Peaking Factors

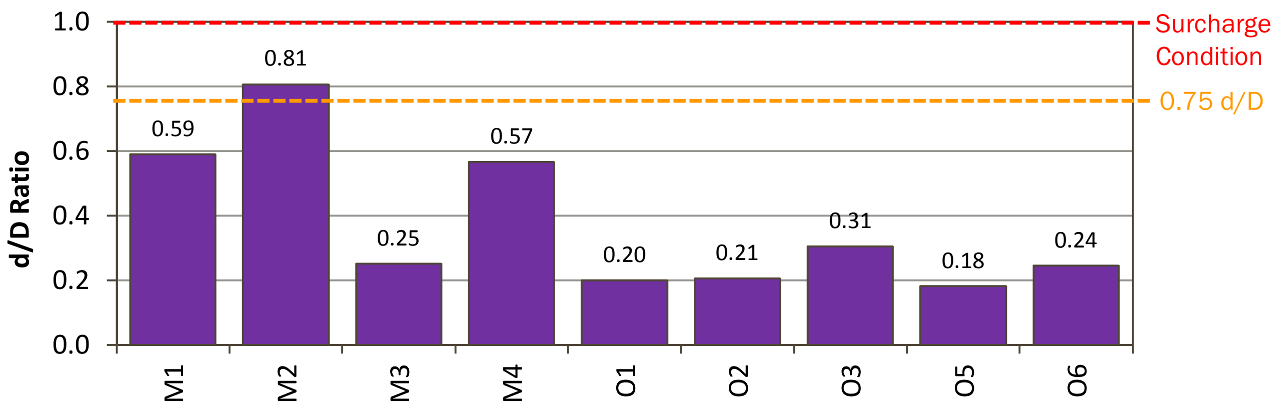


Figure 4-3. Capacity Summary: Max d/D Ratios

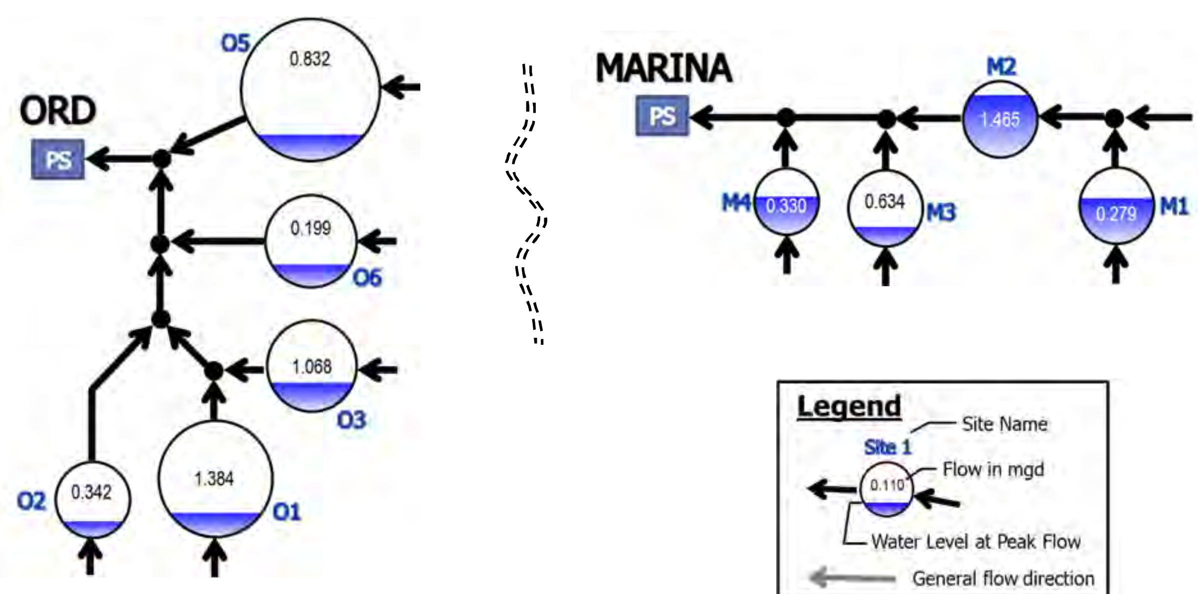


Figure 4-4. Peak Measured Flow (Flow Schematic)

5 Inflow and Infiltration Results

5.1 Preface

Figure 5-1 is shown in reference to the I/I analyses conducted for this study.

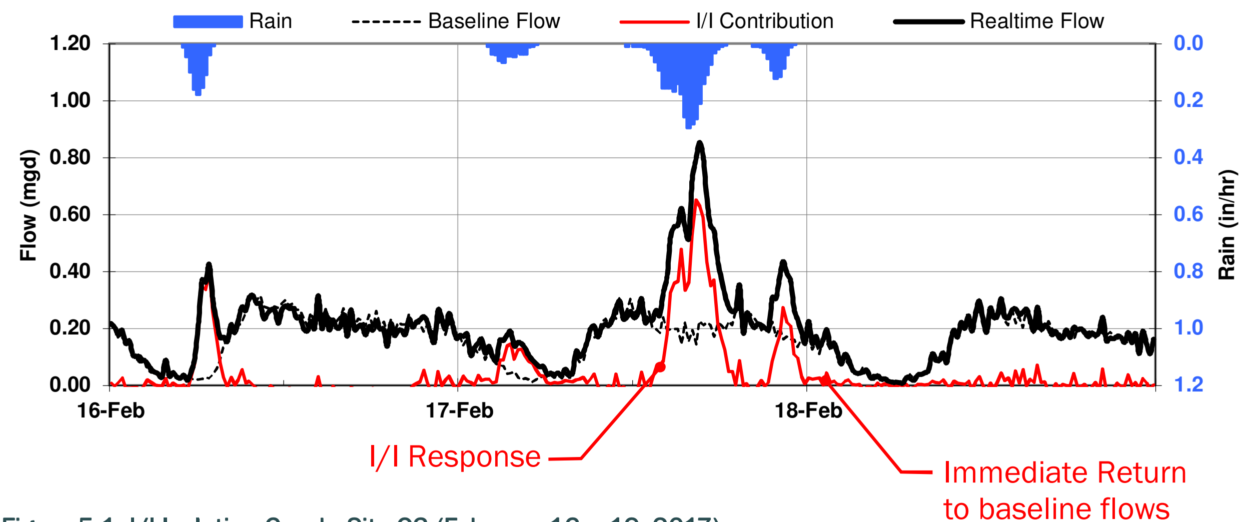


Figure 5-1. I/I Isolation Graph, Site 03 (February 16 – 19, 2017)

The following items are noted for the I/I analyses of this study:

- In all sites, the I/I receded to baseline levels within a couple hours of the conclusion of the rainfall event, indicating minimal RDI component within the total I/I response. A quantitative RDI analysis could not be performed for this study. It is estimated that soils of the region are sandy and porous and do not hold groundwater or rain dependent infiltration water above the elevation levels of the pipes. Similarly, RDI analysis could not be performed for this study.
- Event 3 (February 16 – 19, 2017) and Event 4 (February 20 – 21, 2017) elicited the greatest I/I response and were analyzed for this study.

5.2 Inflow Results Summary

Inflow is rain water discharged into the sewer system through direct connections such as downspouts, area drains, and cross-connections to catch basins. These sources transport rain water directly into the sewer system and the corresponding flow rates are tied closely to the intensity of the rain. This component of I/I often causes 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.

Table 5-1 and Figure 5-2 summarize the peak measured I/I flows and normalized inflow results. Results of note in Table 5-1 have been shaded in RED. The following inflow analysis results are noted:

- Basins O3 and O6 ranked highest for normalized inflow contribution. For the Marina collection system, Basin M2 ranked highest for normalized inflow contribution.

Table 5-1. Inflow Analysis Summary

Monitoring Basin	ADWF (mgd)	Event 3 (Feb 16-19)		Event 4 (Feb 19-20)		Overall Rank[A]
		Peak I/I Rate (mgd)	Peak I/I per ADWF (rank)	Peak I/I Rate (mgd)	Peak I/I per ADWF (rank)	
Basin M1	0.110	0.105	1.0 (5)	0.082	0.7 (9)	8
Basin M2	0.263	0.282	1.1 (4)	0.753	2.9 (3)	3
Basin M3	0.260	0.136	0.5 (7)	0.270	1.0 (4)	5
Basin M4	0.169	0.057	0.3 (9)	0.151	0.9 (8)	9
Basin O1	0.446	0.297	0.7 (6)	0.447	1.0 (5)	6
Basin O2	0.075	0.031	0.4 (8)	0.075	1.0 (6)	7
Basin O3	0.168	0.618	3.6 (2)	0.848	5.0 (2)	2
Basin O5	0.344	0.536	1.6 (3)	0.332	1.0 (7)	4
Basin O6	0.020	0.133	6.9 (1)	0.165	8.5 (1)	1

[A] Ranking of 1 represents most inflow after normalization. Event 4 had the higher response and was used to break ties.

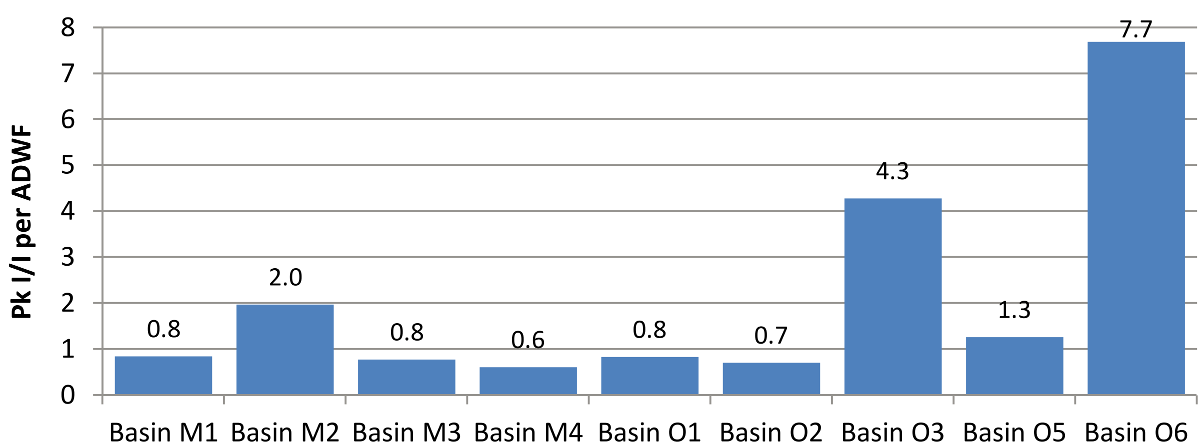


Figure 5-2. Bar Graph: Inflow Analysis Results (Avg Peak I/I to ADWF Ratio, both events)

5.3 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 5-2 and Figure 5-3 summarize the combined I/I flow results. The top ranked basins with the highest normalized combined I/I have been shaded in RED. The following inflow analysis results are noted:

- Basins O3 and O6 ranked highest for normalized total I/I contribution. For the Marina collection system, Basin M2 ranked highest for normalized total I/I contribution. As inflow was determined to be the primary component of I/I for this system, it makes sense that these rankings match the inflow rankings.

Table 5-2. Basins Combined I/I Analysis Summary

Monitoring Basin	ADWF (mgd)	Event 3 (Feb 16-19)		Event 4 (Feb 19-20)		Overall Rank[A]
		Total I/I (gallons)	Total I/I per ADWF (rank)	Total I/I (gallons)	Total I/I per ADWF (rank)	
Basin M1	0.110	10,000	0.08 (5)	14,000	0.07 (7)	6
Basin M2	0.263	58,000	0.18 (3)	128,000	0.26 (3)	3
Basin M3	0.260	15,000	0.05 (6)	53,000	0.11 (5)	5
Basin M4	0.169	5,000	0.02 (8)	15,000	0.05 (9)	9
Basin O1	0.446	25,000	0.05 (7)	49,000	0.06 (8)	8
Basin O2	0.075	2,000	0.02 (9)	13,000	0.09 (6)	7
Basin O3	0.168	132,000	0.64 (2)	219,000	0.66 (2)	2
Basin O5	0.344	53,000	0.13 (4)	75,000	0.11 (4)	4
Basin O6	0.020	20,000	0.86 (1)	38,000	1.01 (1)	1

[A] Ranking of 1 represents most inflow after normalization. Event 4 had the higher response and was used to break ties.

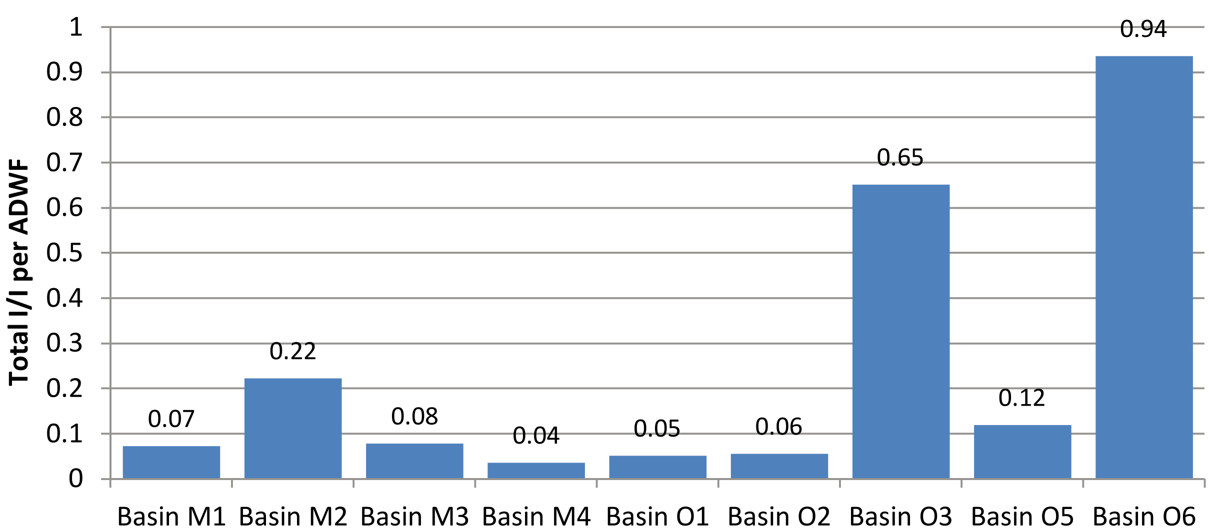


Figure 5-3. Bar Graph: Total I/I Analysis Results (Avg Ratio, both events)

6 Recommendations

V&A advises that future I/I reduction plans consider the following recommendations:

1. **Determine I/I Reduction Program:** The District 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 occurs in Basins O3 and O6 in the Ord collection system, and in Basin M2 for the Marina collection system.
    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. Infiltration does not appear to be an issue for the Marina or Ord collection systems.
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 District 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 Site Reports: Data, Graphs, Information

Marina Coast Water District

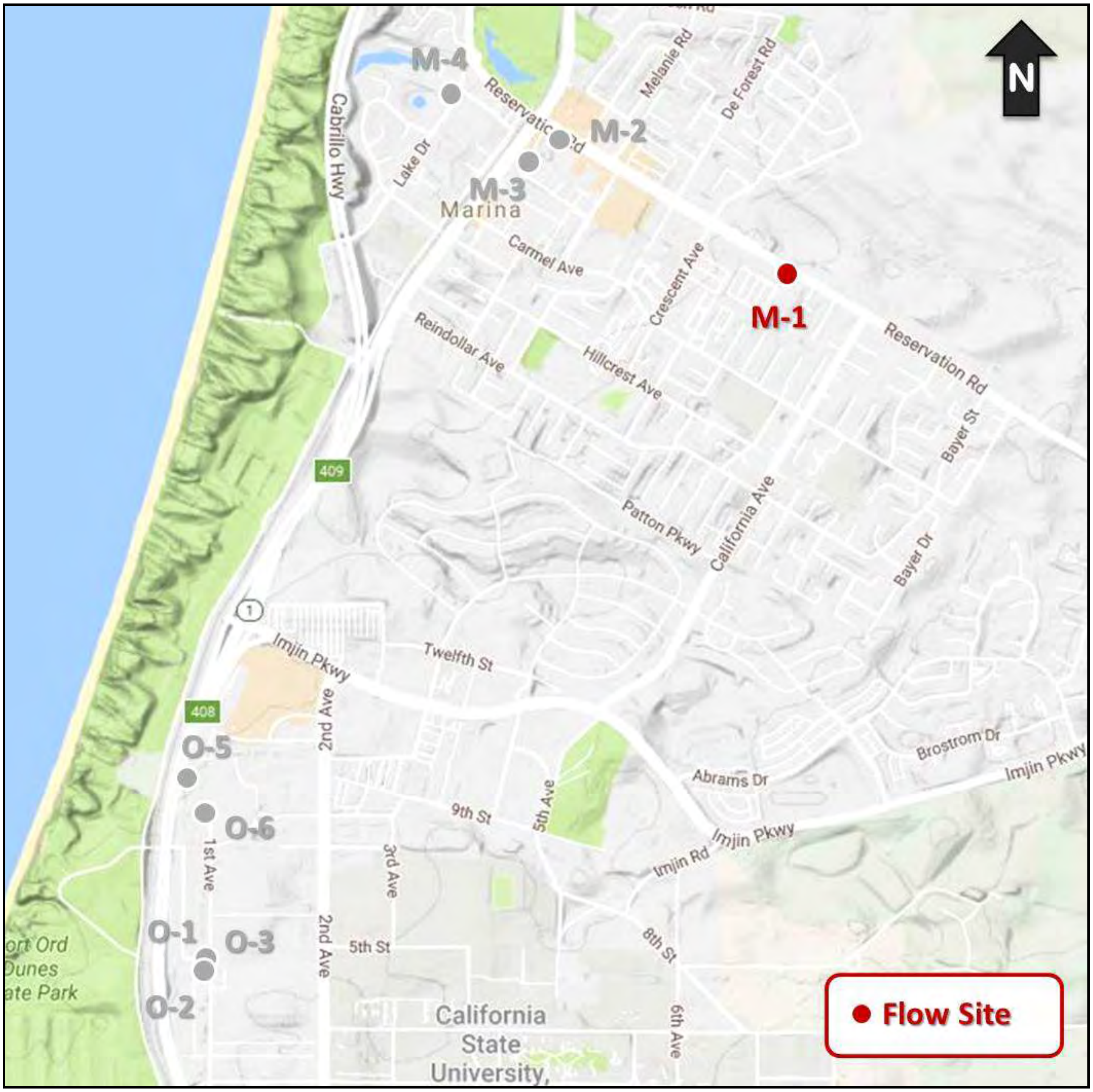
Sanitary Sewer Flow Monitoring

Temporary Monitoring: January 2017 - March 2017

Monitoring Site: Site M1

Location: 358 Reservation Road

Data Summary Report



Vicinity Map: Site M1

SITE M1

Site Information

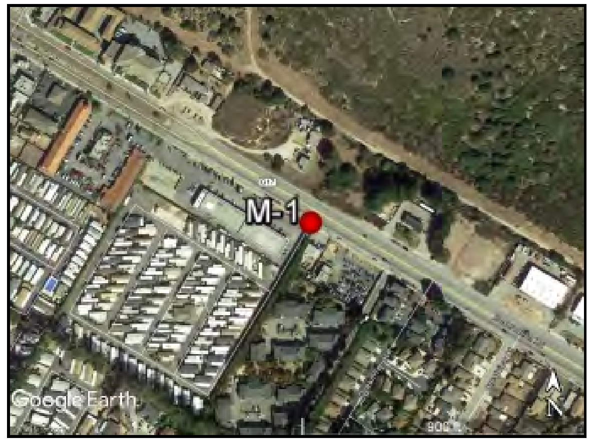
Location: 358 Reservation Road

Coordinates: 121.7885° W, 36.6822° N

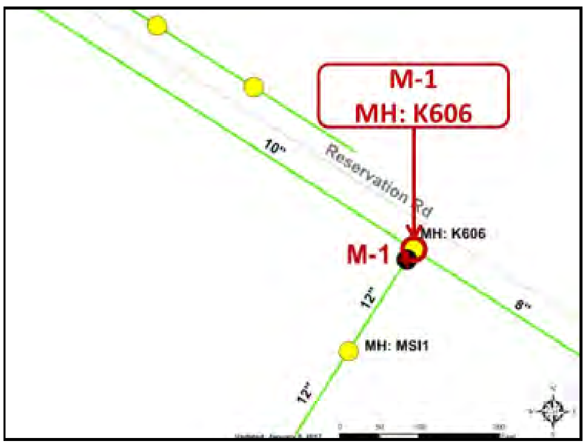
Pipe Diameter: 11.5 inches

ADWF: 0.110 mgd

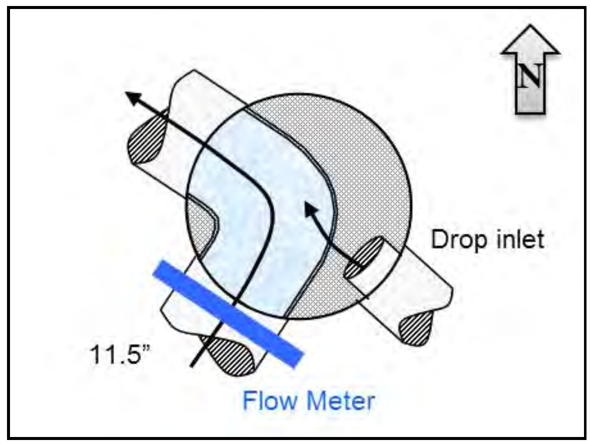
Peak Measured Flow: 0.279 mgd



Satellite Map



Sewer Map



Flow Sketch

Street View

Plan View

SITE M1

Additional Site Photos

Effluent Pipe

West Influent Pipe

SITE M1

Additional Site Photos

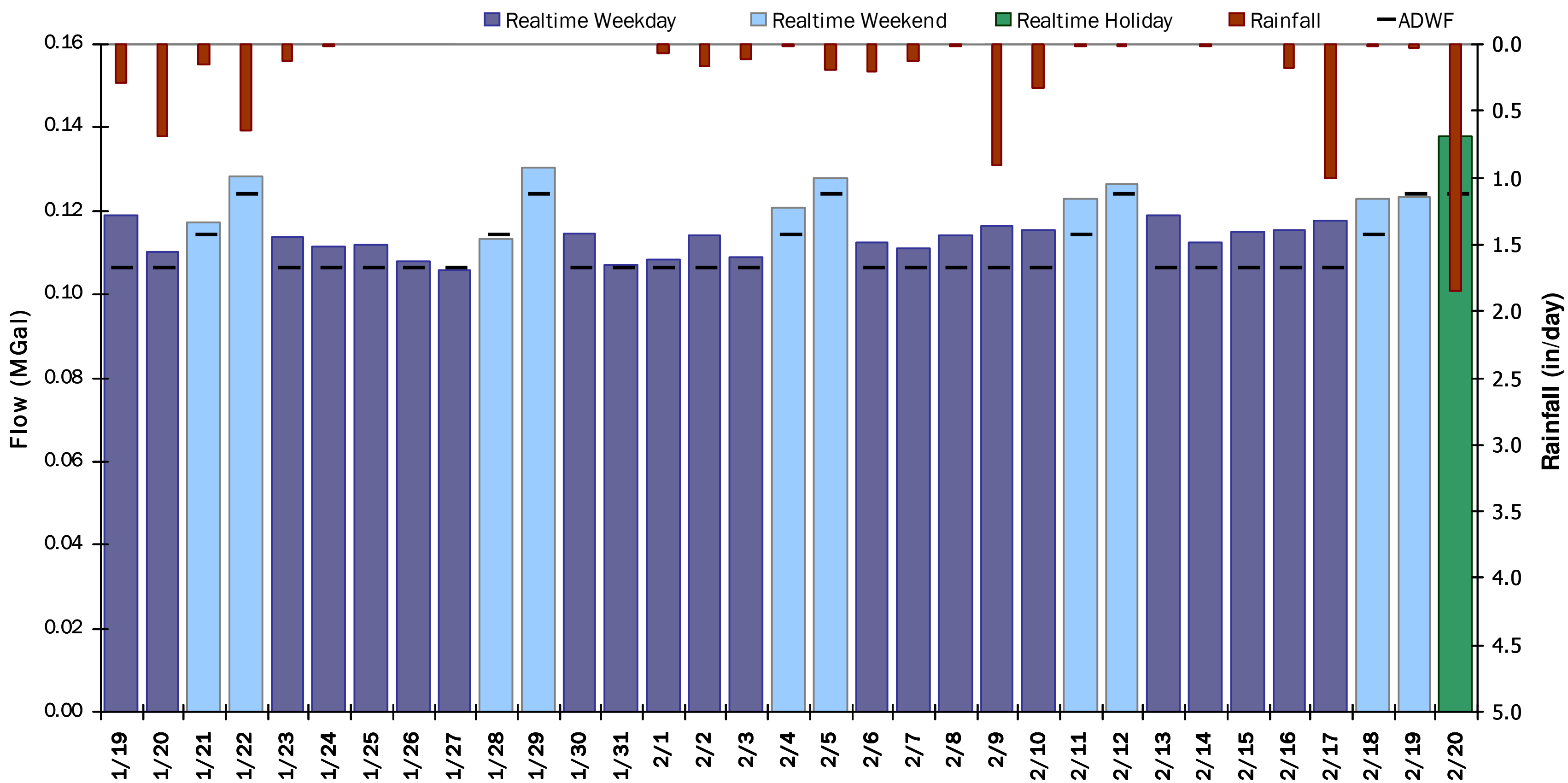
East Influent Pipe (Lower)

SITE M1

Period Flow Summary: Daily Flow Totals

Avg Period Flow: 0.117 MGal **Peak Daily Flow: 0.138 MGal** **Min Daily Flow: 0.106 MGal**

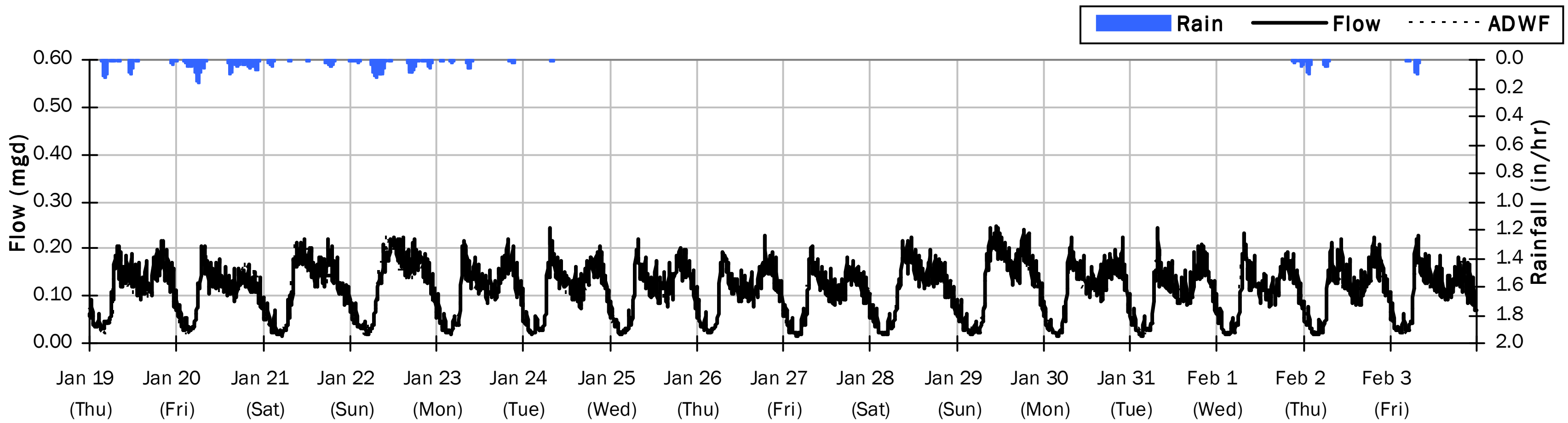
Total Period Rainfall: 7.11 inches

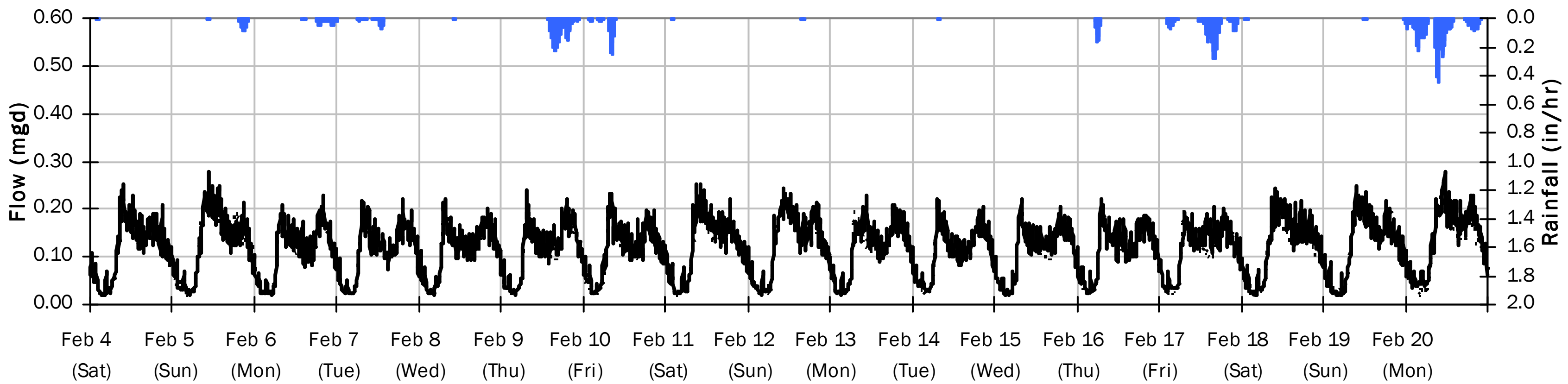


SITE M1

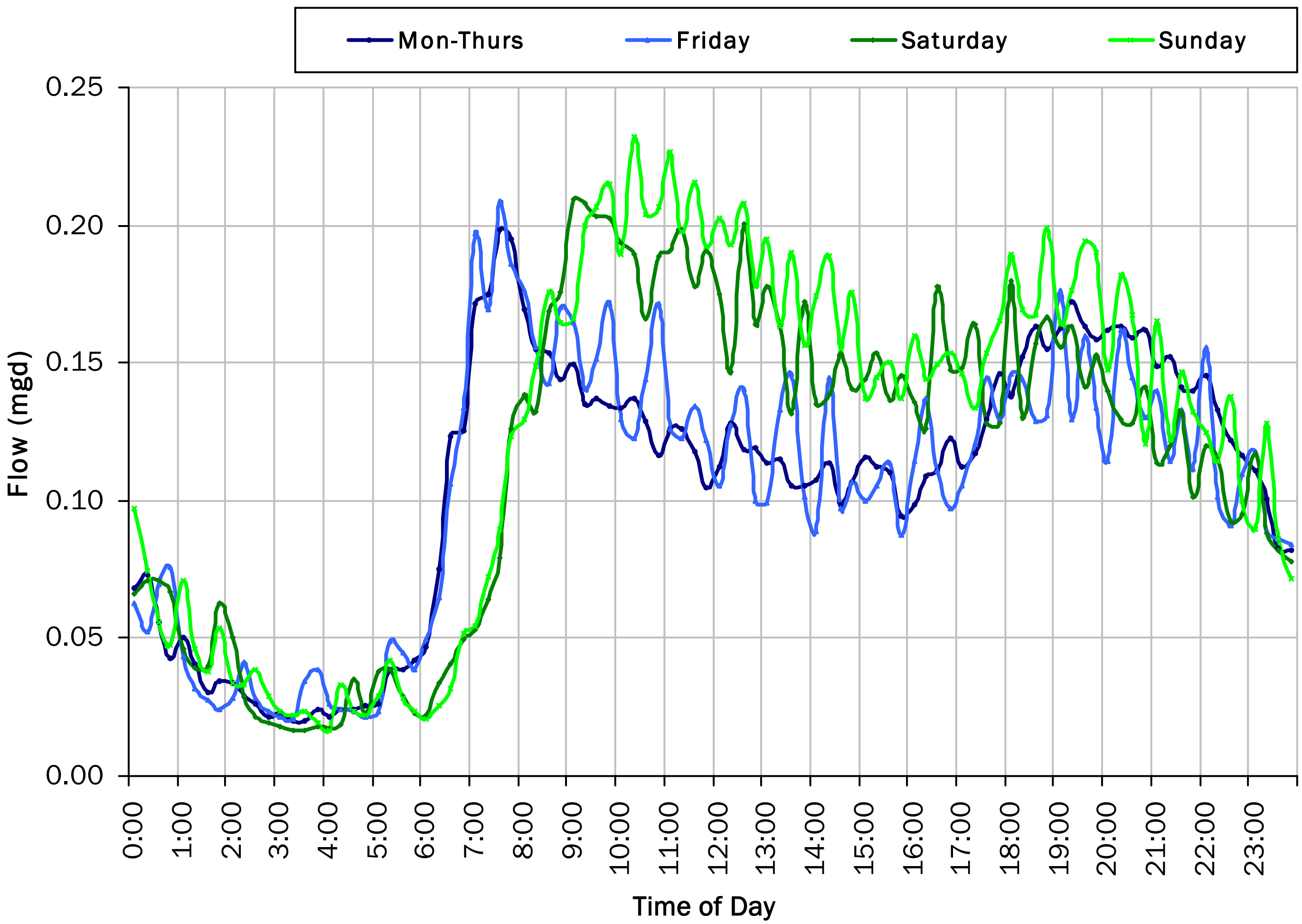
Flow Summary: 1/19/2017 to 2/20/2017

Total Period Rainfall: 7.11 inches   Avg Flow: 0.117 mgd   Peak Flow: 0.279 mgd   Min Flow: 0.016 mgd

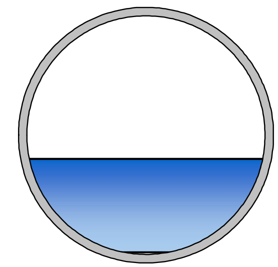




SITE M1
Average Dry Weather Flow Hydrographs

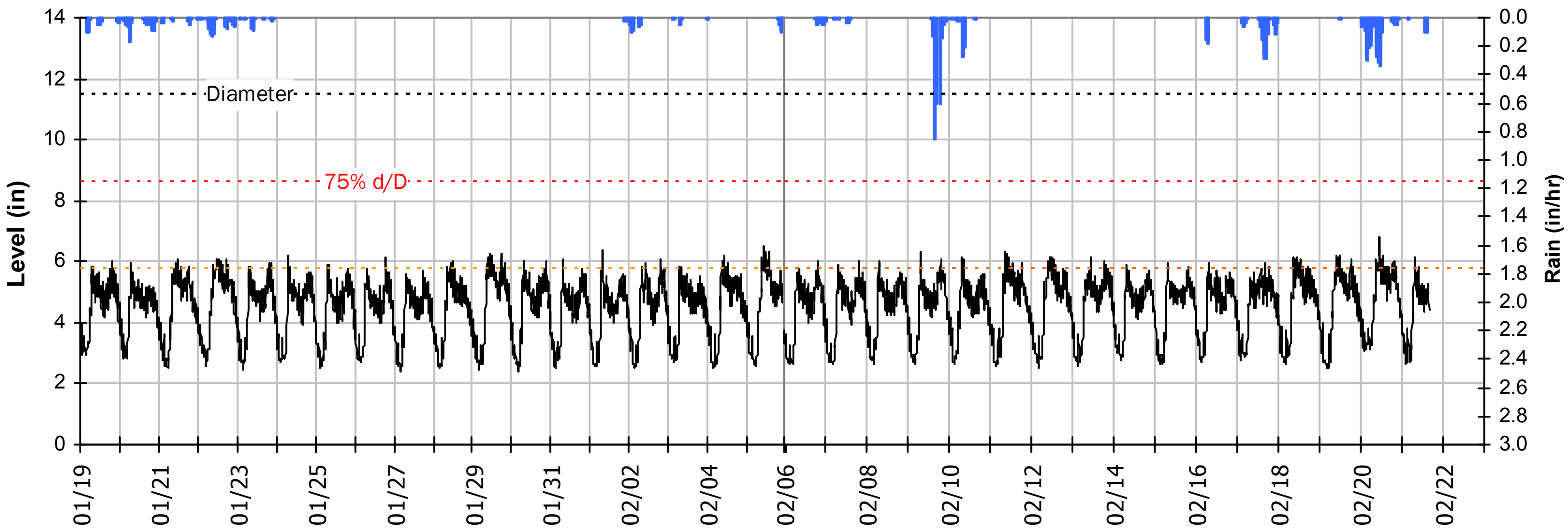


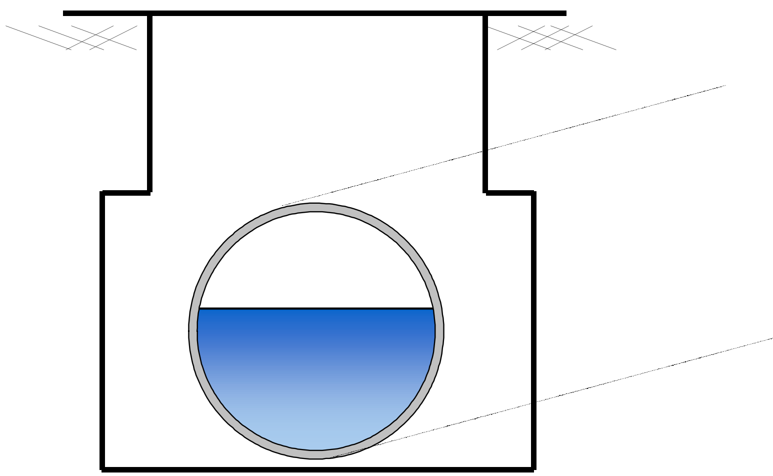
ADWF:
0.110 *mgd*



SITE M1
Site Capacity and Surcharge Summary

Realtime Flow Levels with Rainfall Data over Monitoring Period

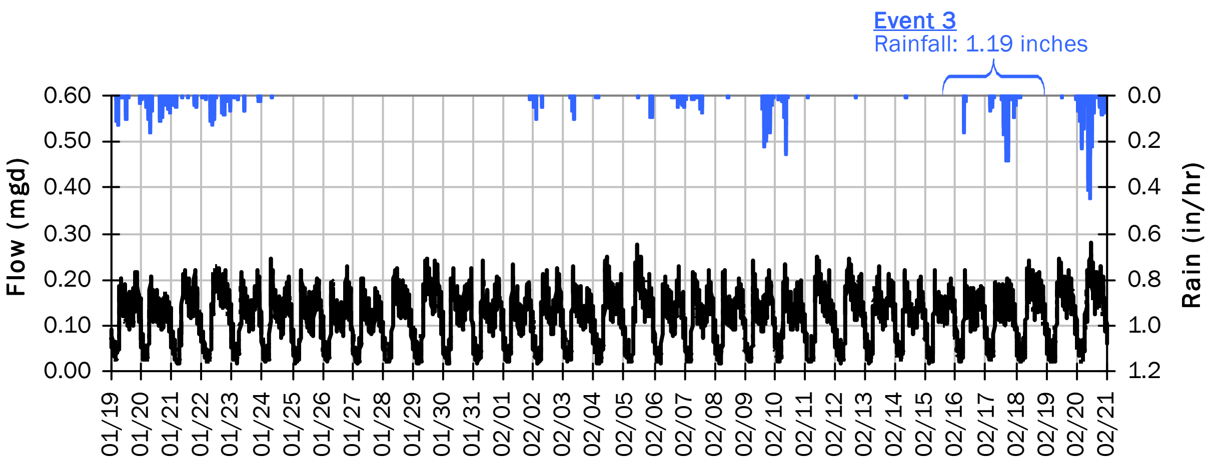




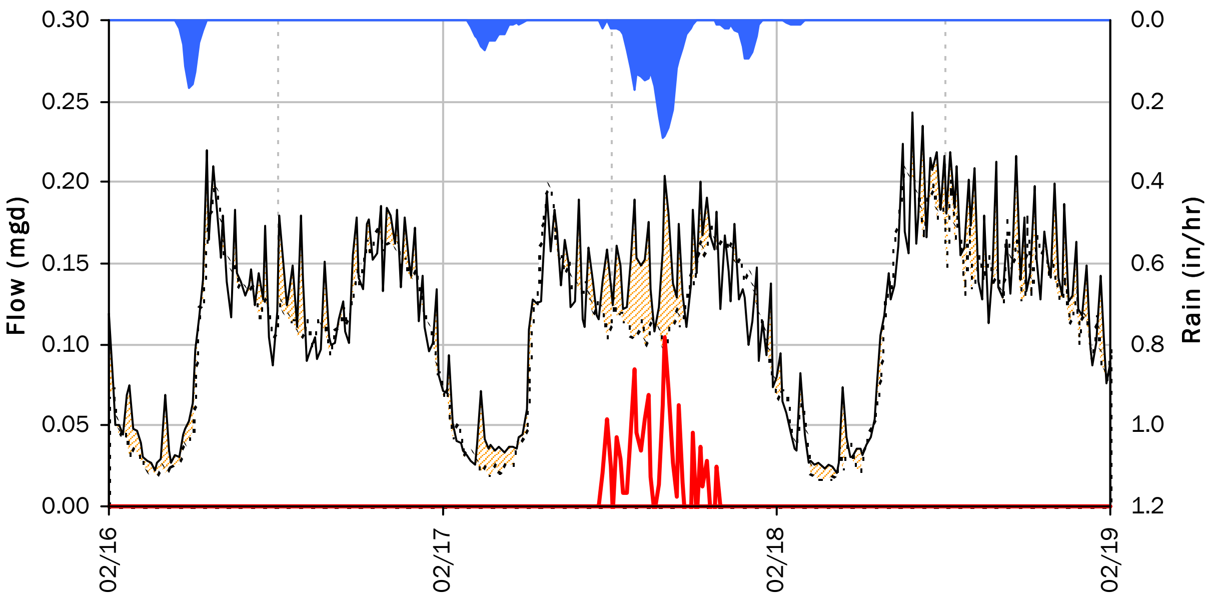
Pipe Diameter:	11.5	*inches*
Peak Measured Level:	6.79	*inches*
Peak d/D Ratio:	0.59	

SITE M1
I/I Summary: Event 3

Baseline and Realtime Flows with Rainfall Data over Monitoring Period



Event 3 Detail Graph

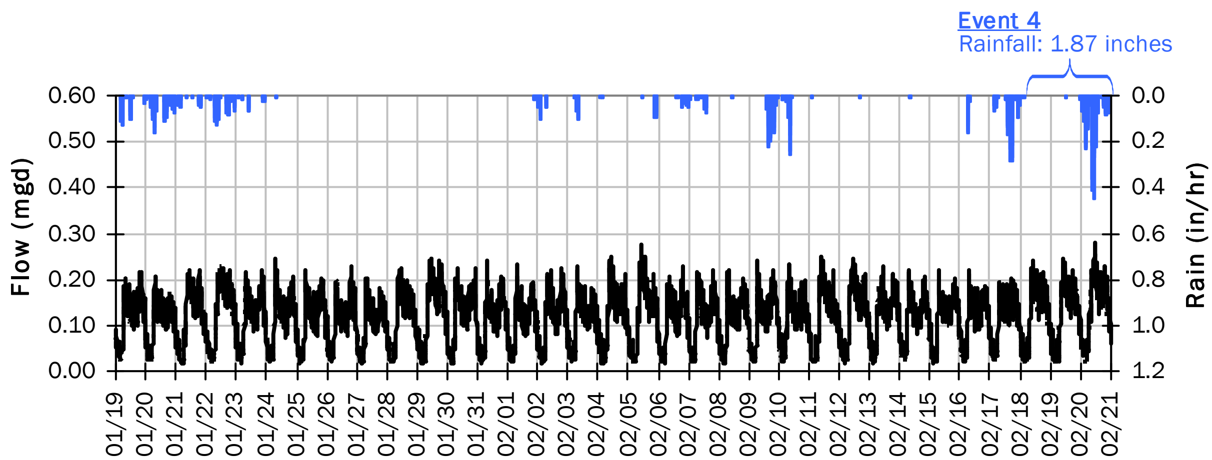


Storm Event I/I Analysis (Rain = 1.20 inches)

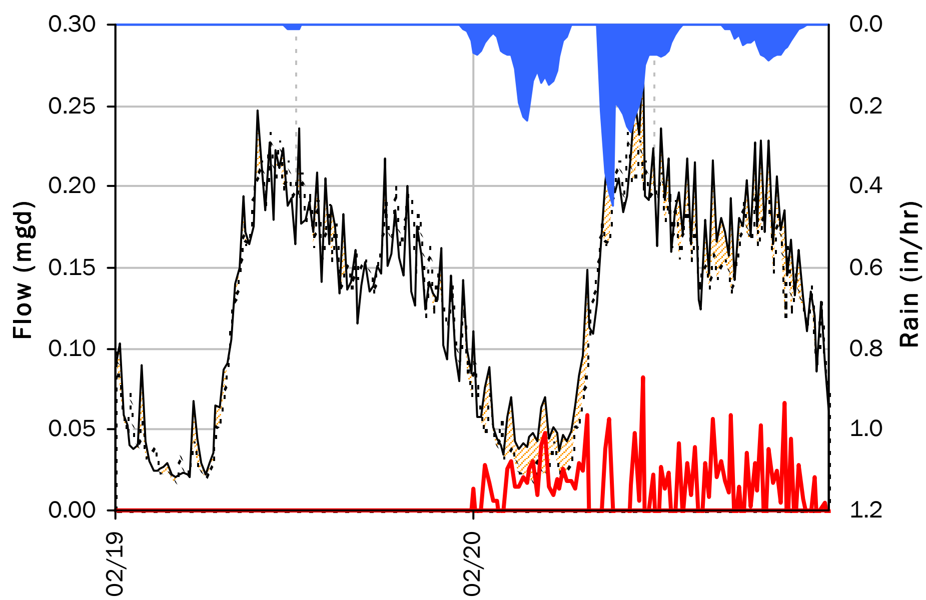
Capacity		**Inflow / Infiltration**	
Peak Flow:	0.20 *mgd*	**Peak I/I Rate:**	0.11 *mgd*
PF:	1.85	**Total I/I:**	10,000 *gallons*
Peak Level:	5.93 *in*		
d/D Ratio:	0.52		

SITE M1
I/I Summary: Event 4

Baseline and Realtime Flows with Rainfall Data over Monitoring Period



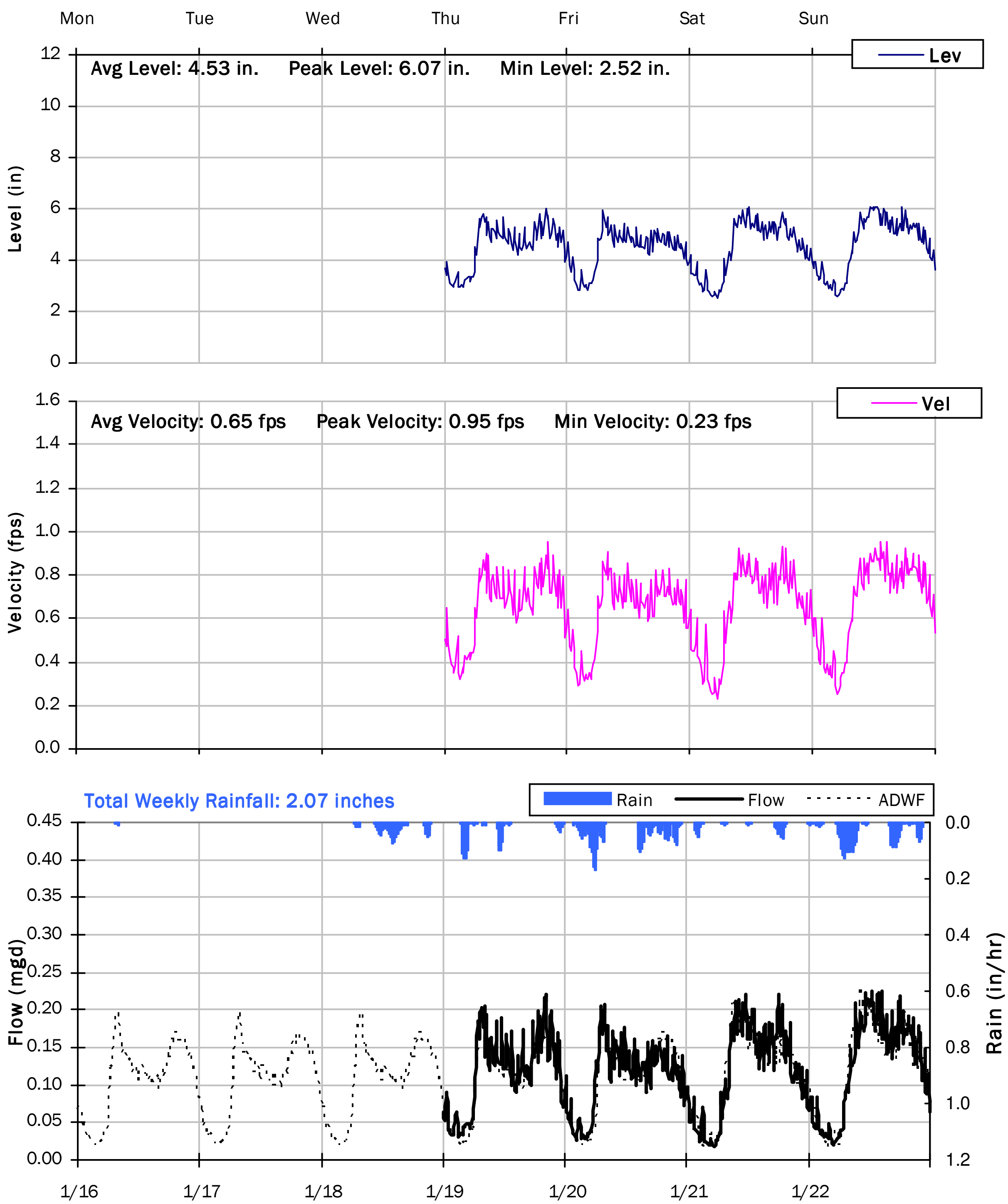
Event 4 Detail Graph



Storm Event I/I Analysis (Rain = 1.87 inches)

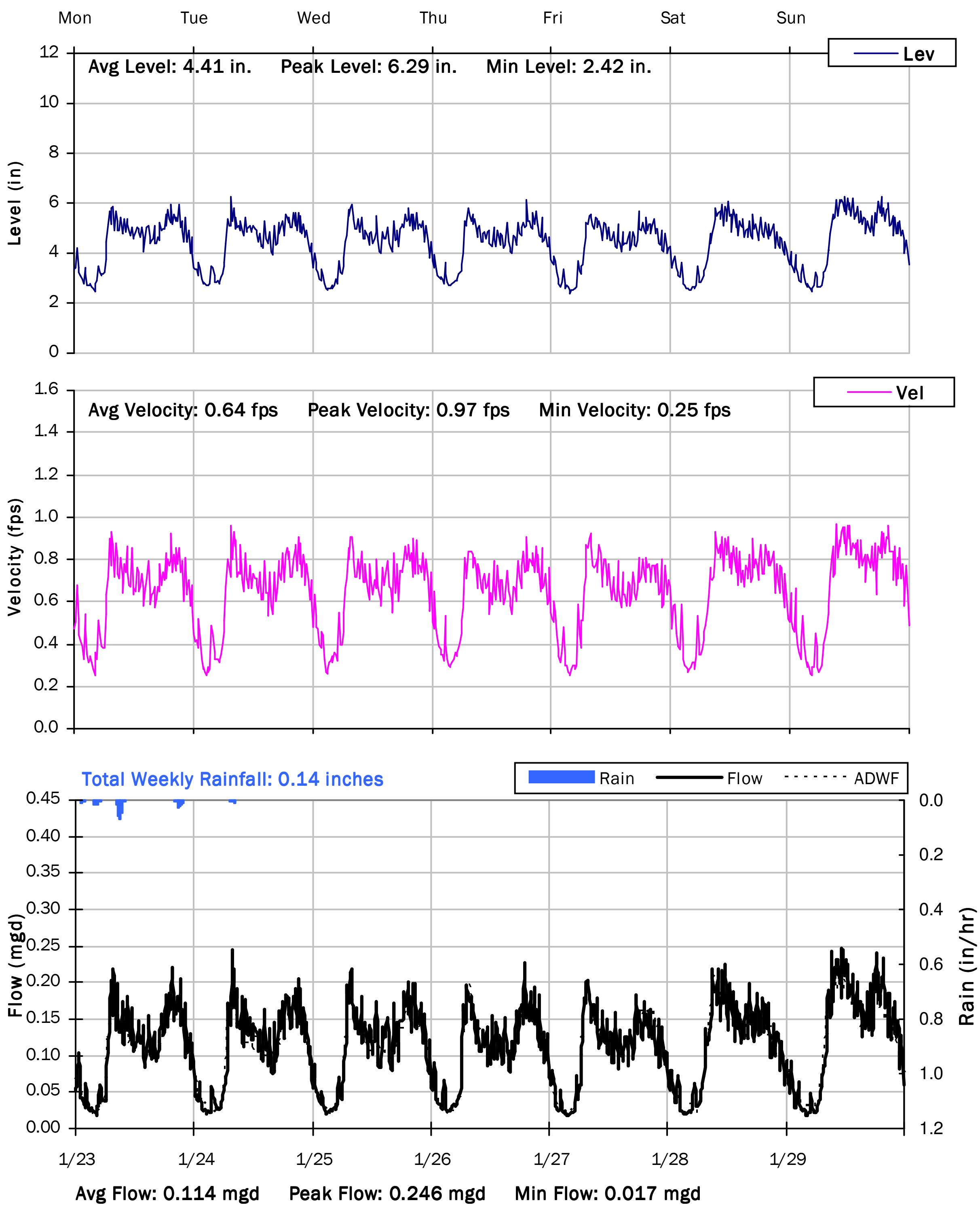
Capacity		Inflow / Infiltration	
Peak Flow:	0.28 *mgd*	**Peak I/I Rate:**	0.08 *mgd*
PF:	2.53	**Total I/I:**	14,000 *gallons*
Peak Level:	6.79 *in*		
d/D Ratio:	0.59		

SITE M1
Weekly Level, Velocity and Flow Hydrographs
1/16/2017 to 1/23/2017

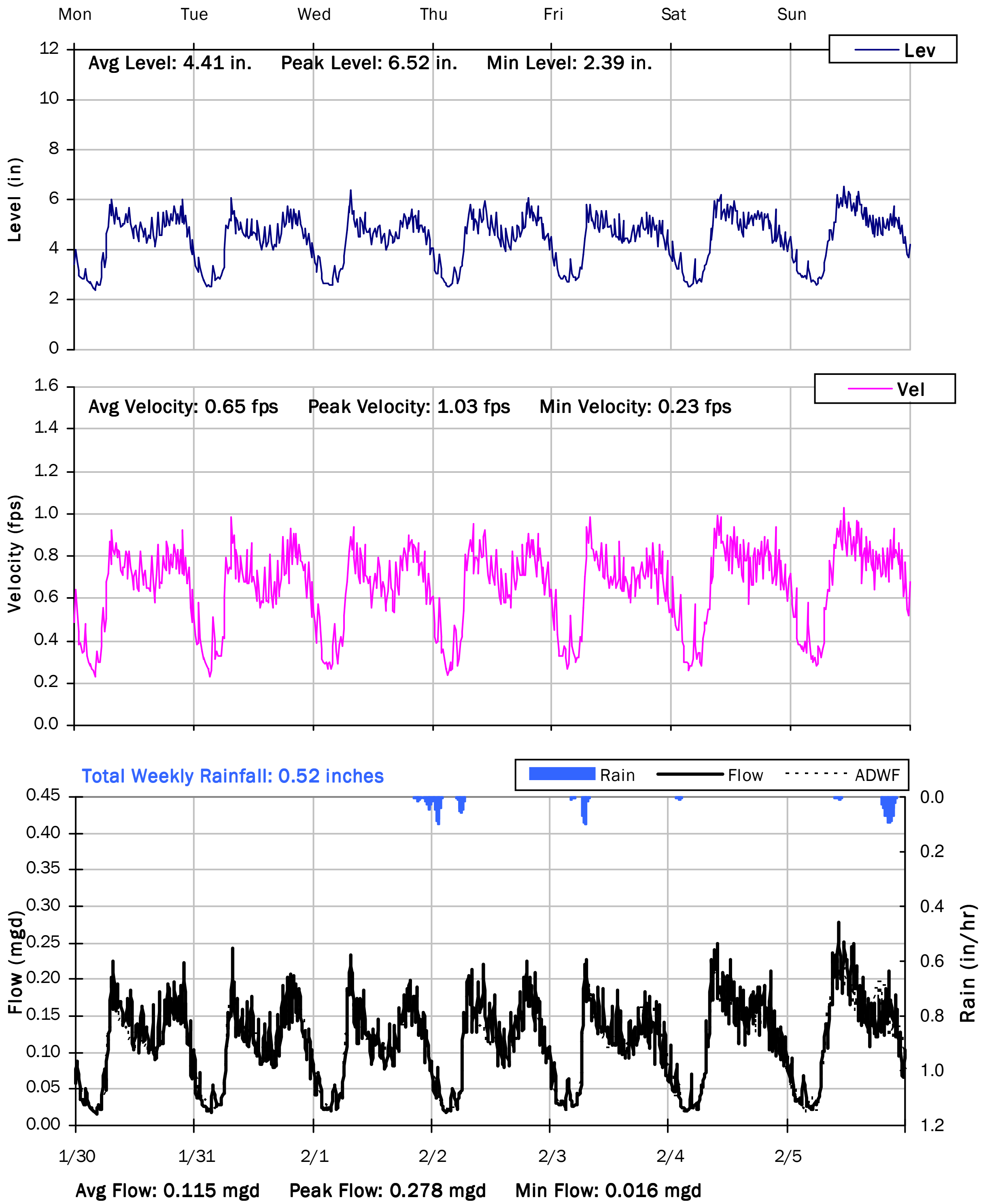


Avg Flow: 0.119 mgd Peak Flow: 0.226 mgd Min Flow: 0.017 mgd

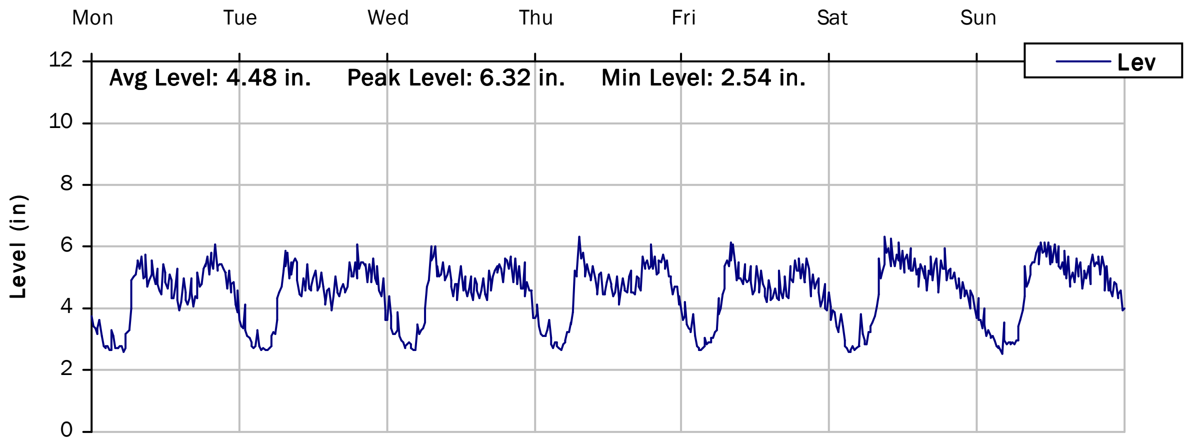
SITE M1
Weekly Level, Velocity and Flow Hydrographs
1/23/2017 to 1/30/2017

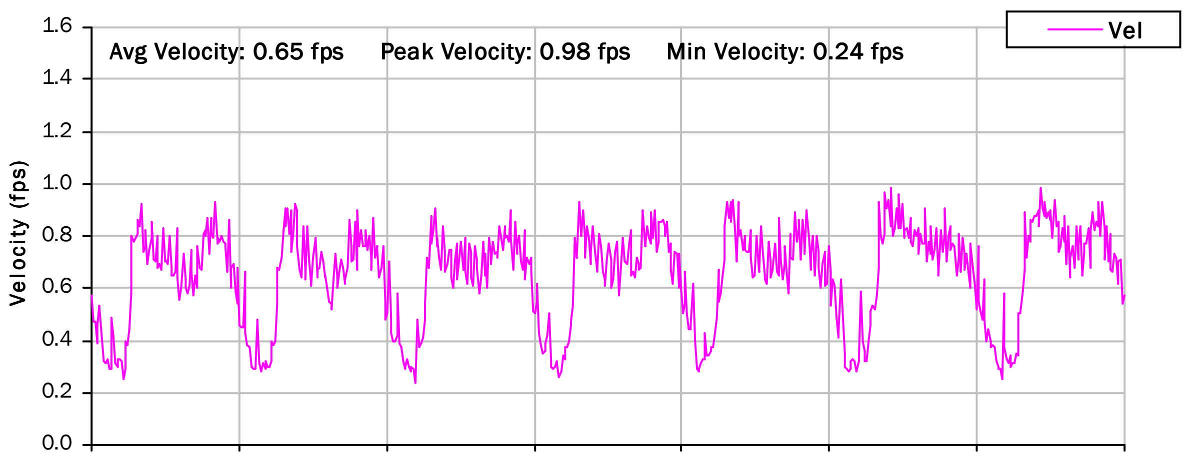


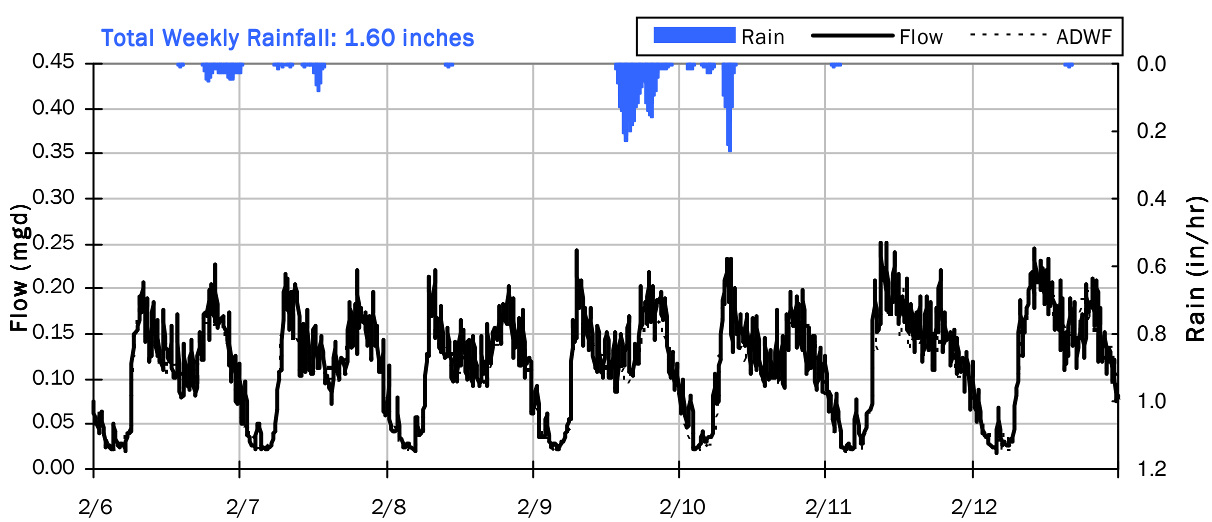
SITE M1
Weekly Level, Velocity and Flow Hydrographs
1/30/2017 to 2/6/2017



SITE M1
Weekly Level, Velocity and Flow Hydrographs
2/6/2017 to 2/13/2017

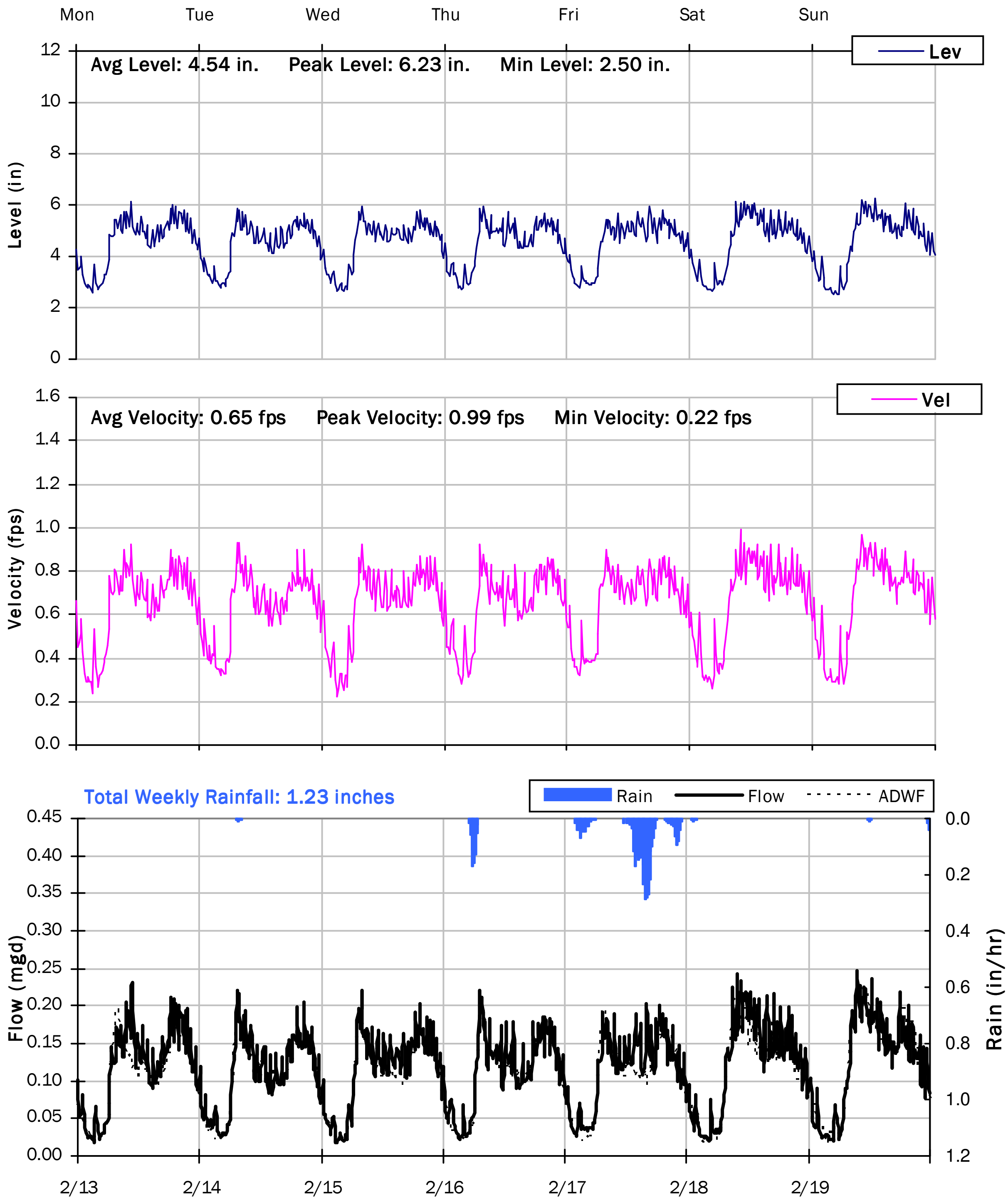






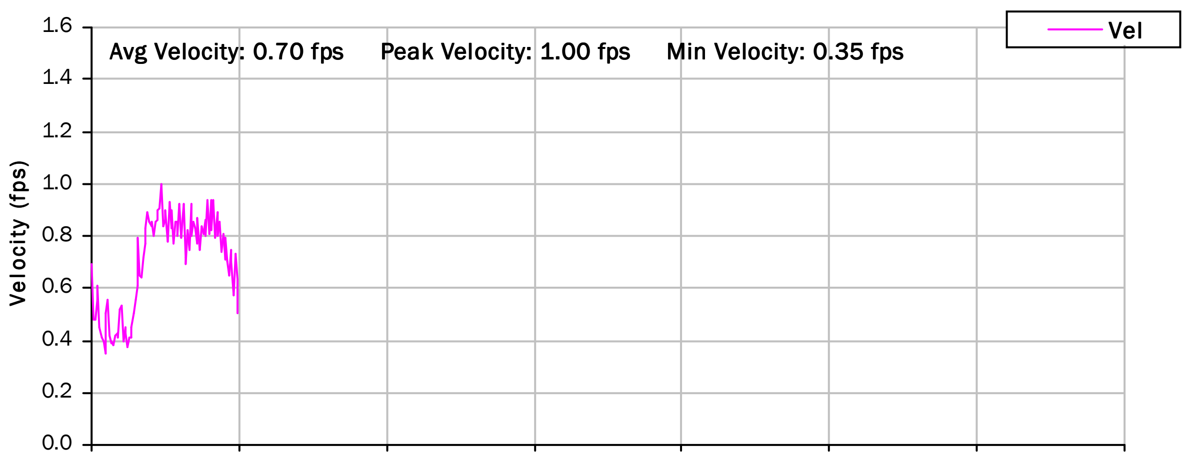
Avg Flow: 0.117 mgd Peak Flow: 0.251 mgd Min Flow: 0.018 mgd

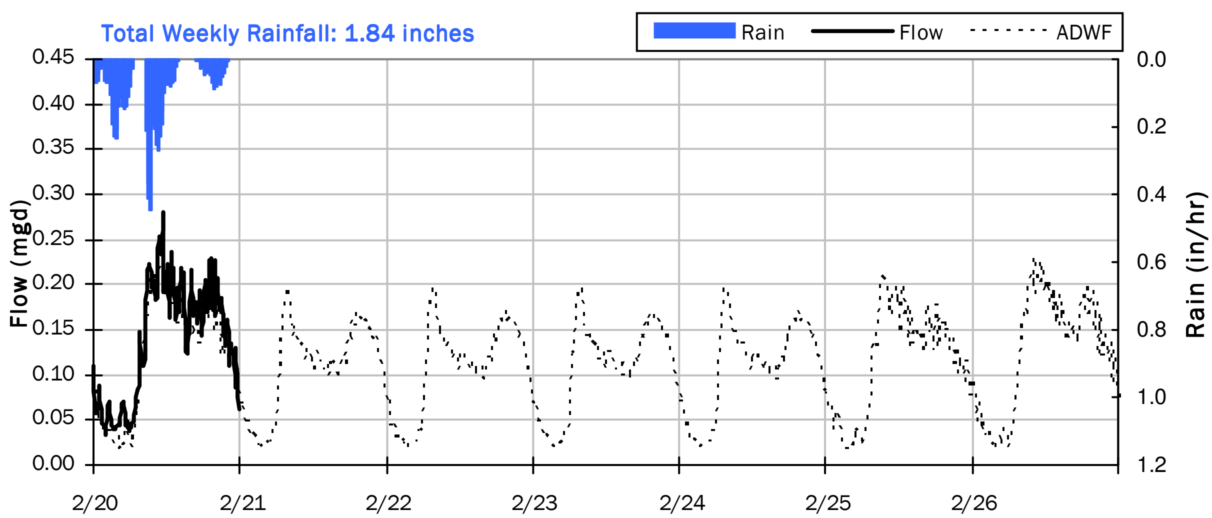
SITE M1
Weekly Level, Velocity and Flow Hydrographs
2/13/2017 to 2/20/2017



Avg Flow: 0.118 mgd **Peak Flow: 0.247 mgd** **Min Flow: 0.018 mgd**

SITE M1
Weekly Level, Velocity and Flow Hydrographs
2/20/2017 to 2/27/2017





Avg Flow: 0.138 mgd Peak Flow: 0.279 mgd Min Flow: 0.034 mgd

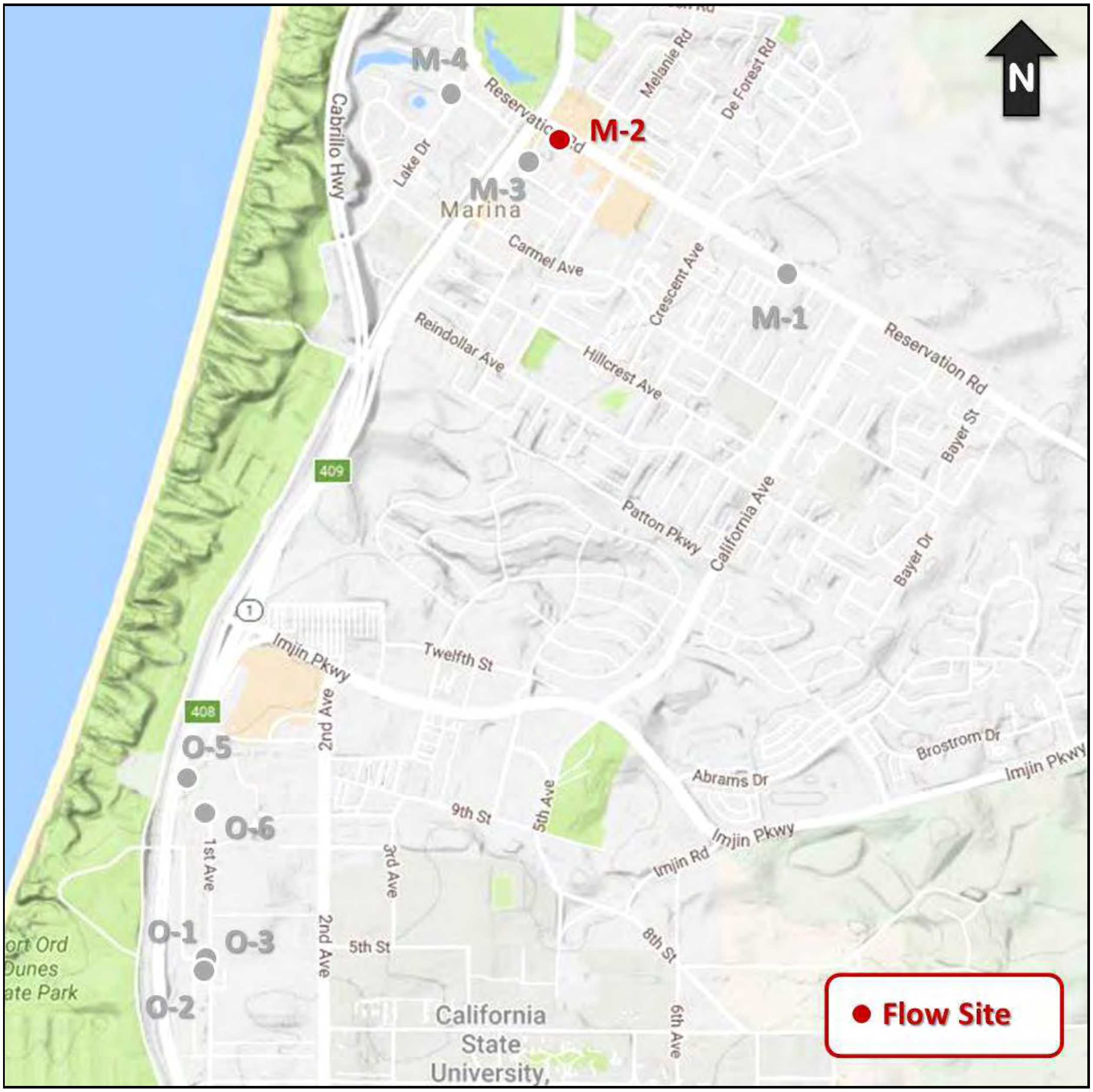
Marina Coast Water District

Sanitary Sewer Flow Monitoring
Temporary Monitoring: January 2017 - March 2017

Monitoring Site: Site M2

Location: 210 Reservation Road

Data Summary Report



Vicinity Map: Site M2

SITE M2

Site Information

Location: 210 Reservation Road

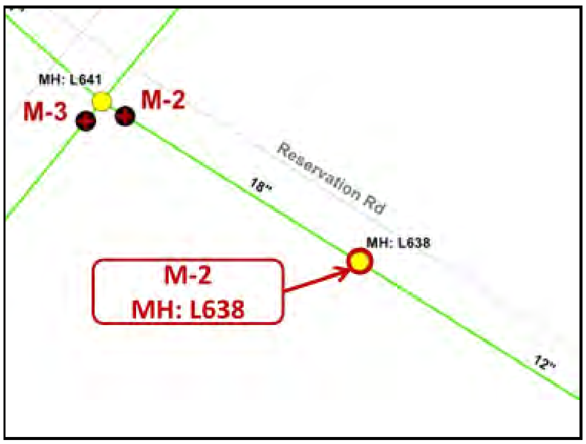
Coordinates: 121.7988° W, 36.6870° N

Pipe Diameter: 12 inches

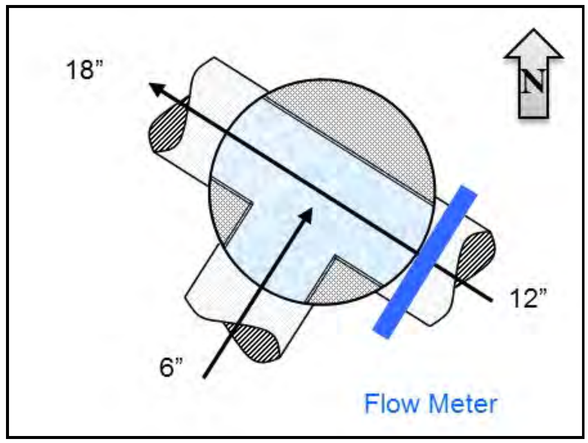
ADWF: 0.372 mgd

Peak Measured Flow: 1.465 mgd

Satellite Map

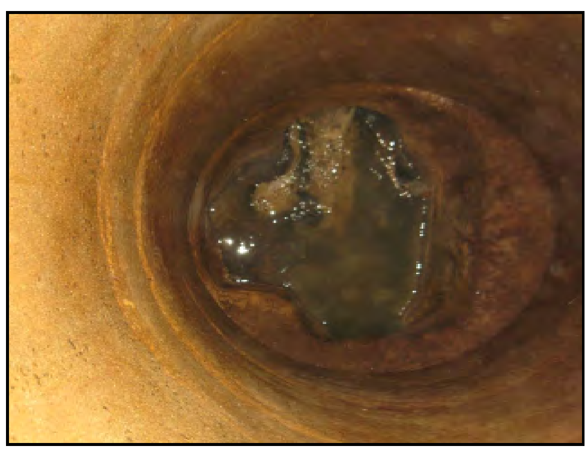


Sewer Map



Flow Sketch

Street View



Plan View

SITE M2

Additional Site Photos

Effluent Pipe

East Influent Pipe

SITE M2

Additional Site Photos

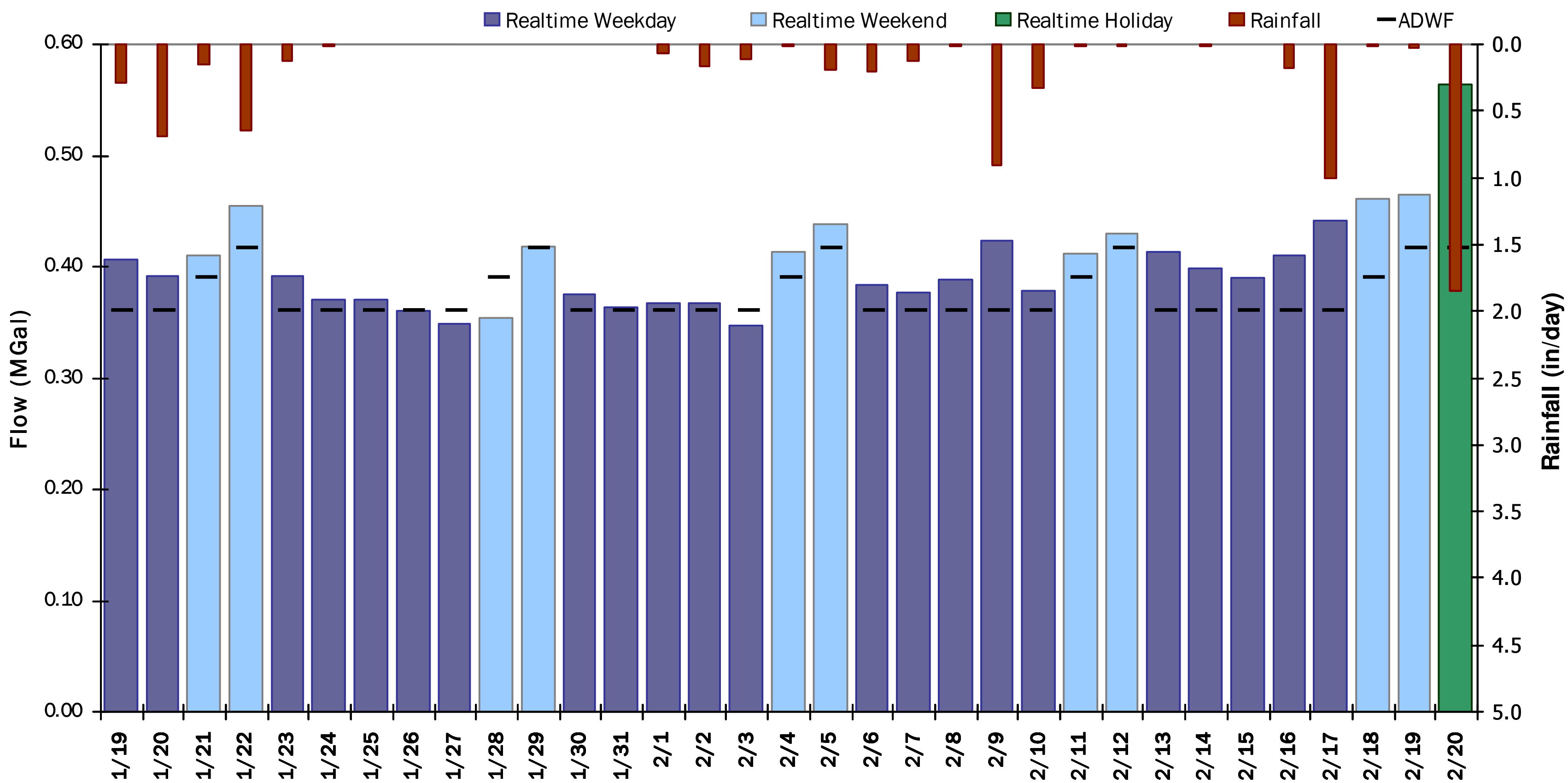
South Influent Pipe

SITE M2

Period Flow Summary: Daily Flow Totals

Avg Period Flow: 0.403 MGal Peak Daily Flow: 0.563 MGal Min Daily Flow: 0.348 MGal

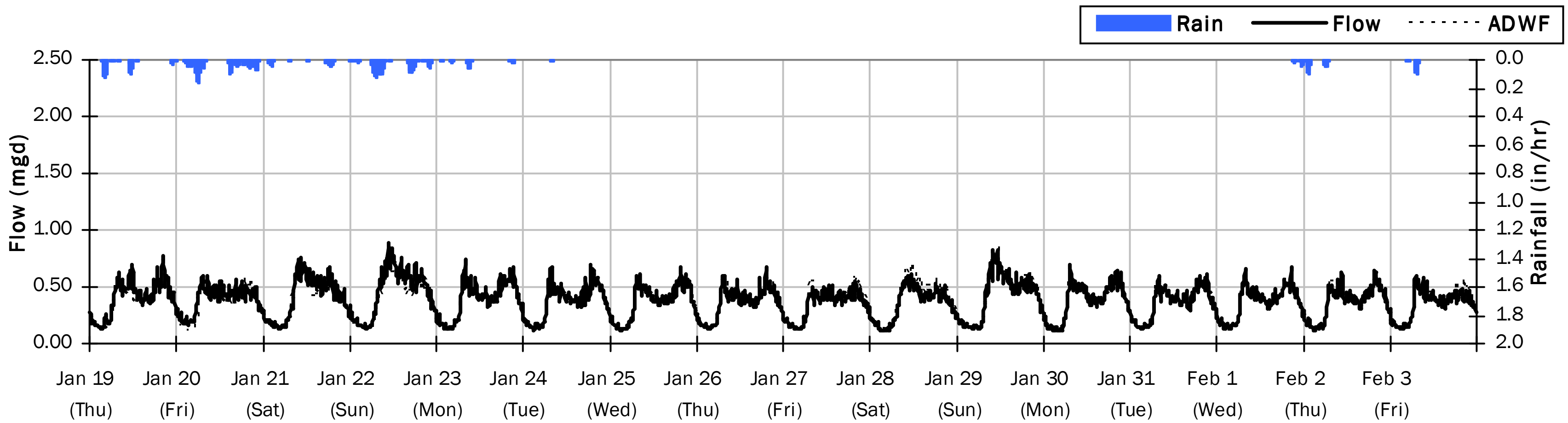
Total Period Rainfall: 7.11 inches

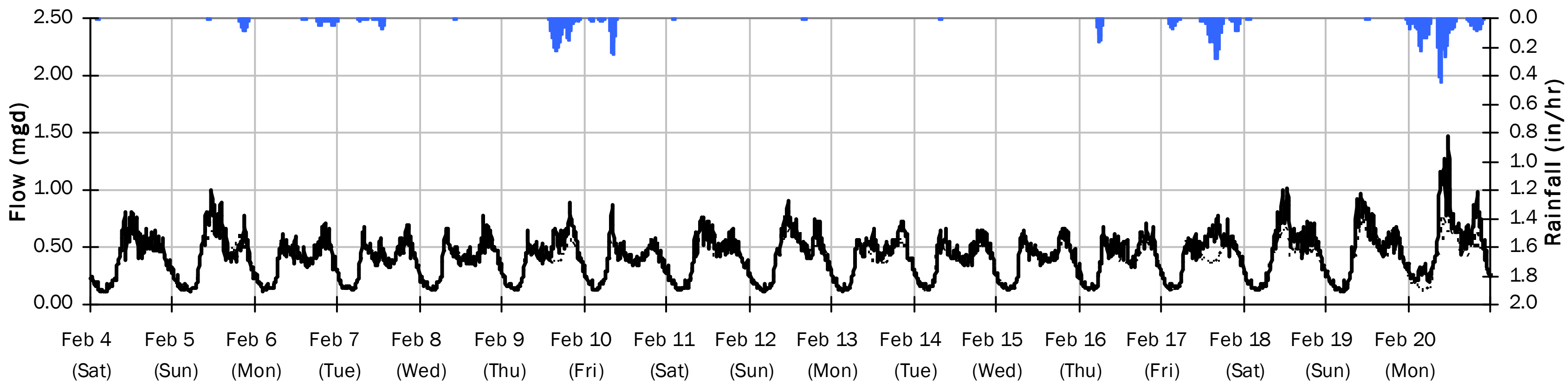


SITE M2

Flow Summary: 1/19/2017 to 2/20/2017

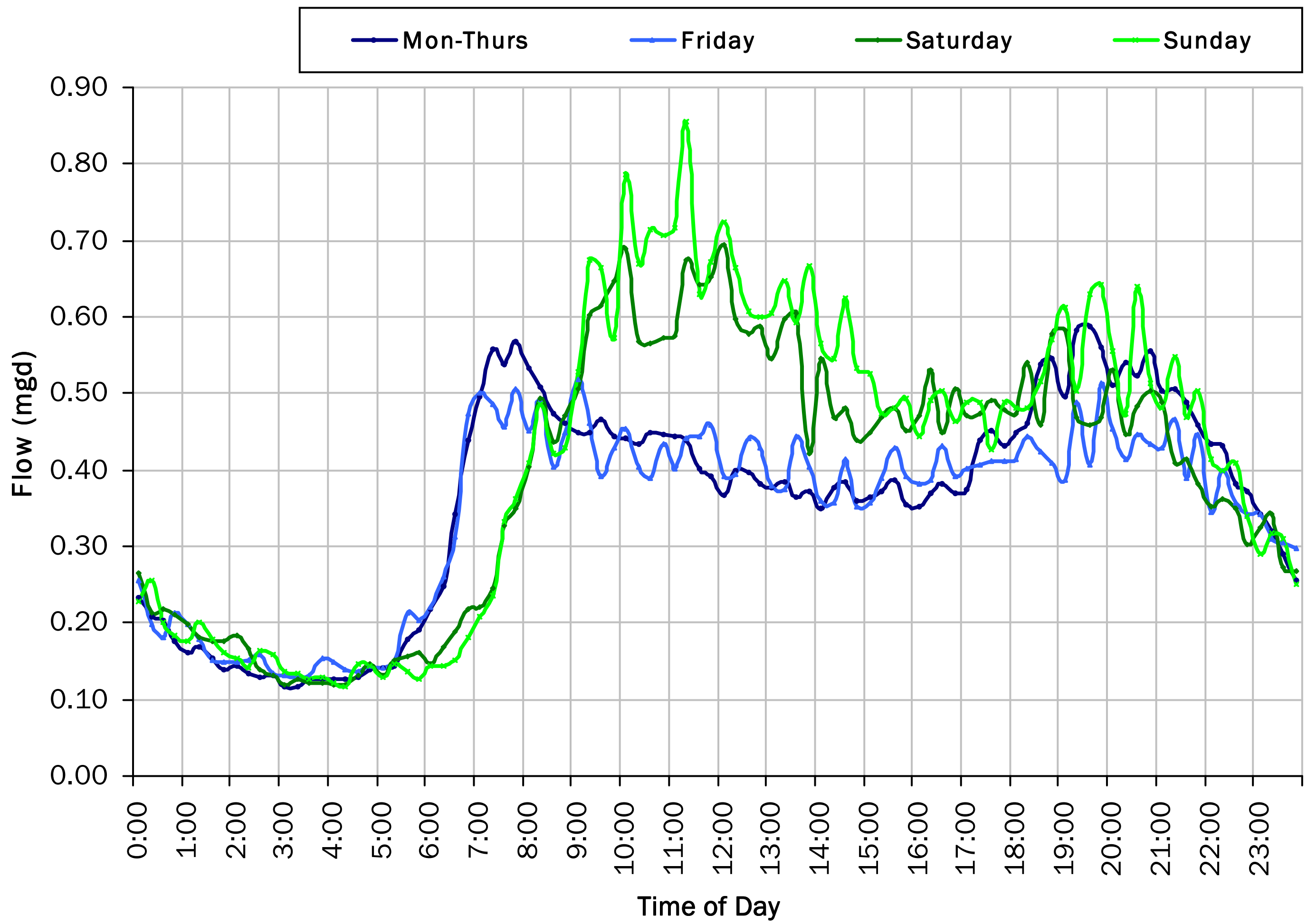
Total Period Rainfall: 7.11 inches   **Avg Flow: 0.403 mgd**   **Peak Flow: 1.465 mgd**   **Min Flow: 0.109 mgd**





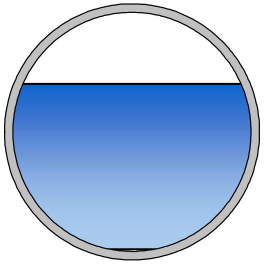
SITE M2

Average Dry Weather Flow Hydrographs



ADWF:

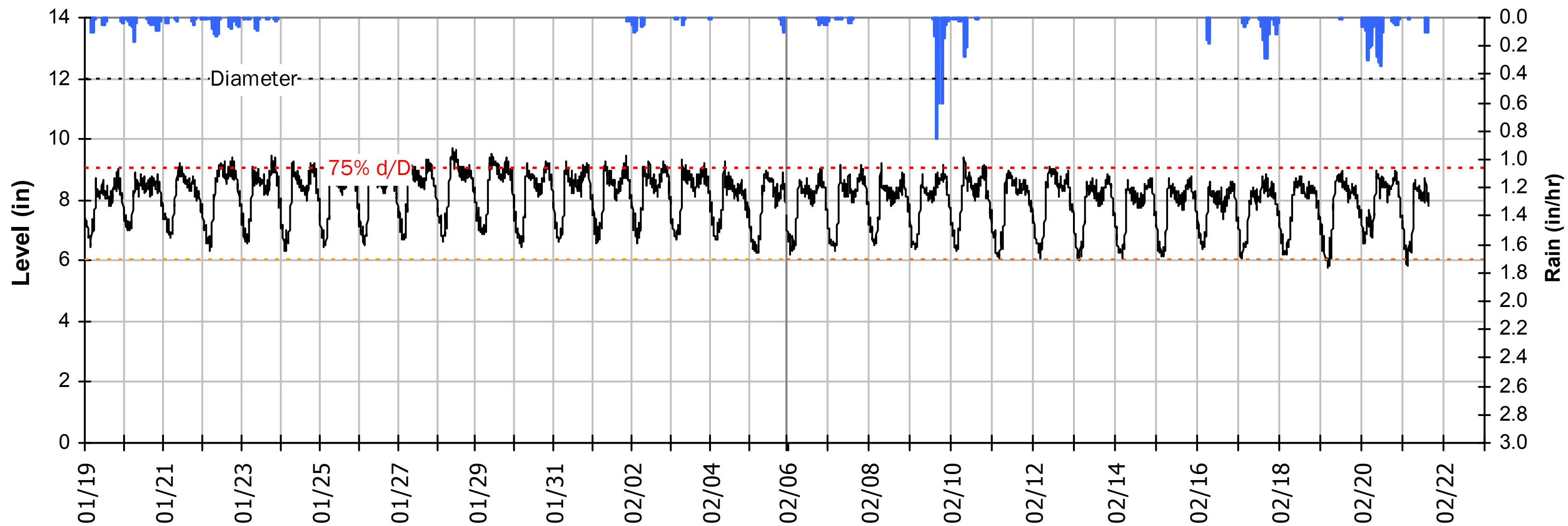
0.372 *mgd*

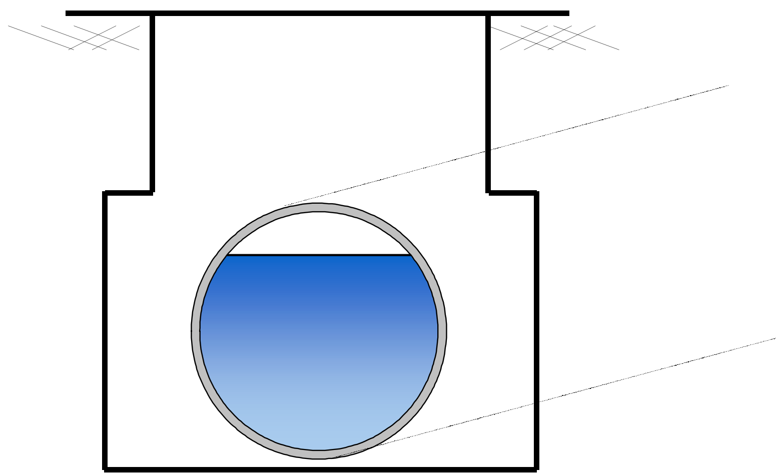


SITE M2

Site Capacity and Surcharge Summary

Realtime Flow Levels with Rainfall Data over Monitoring Period

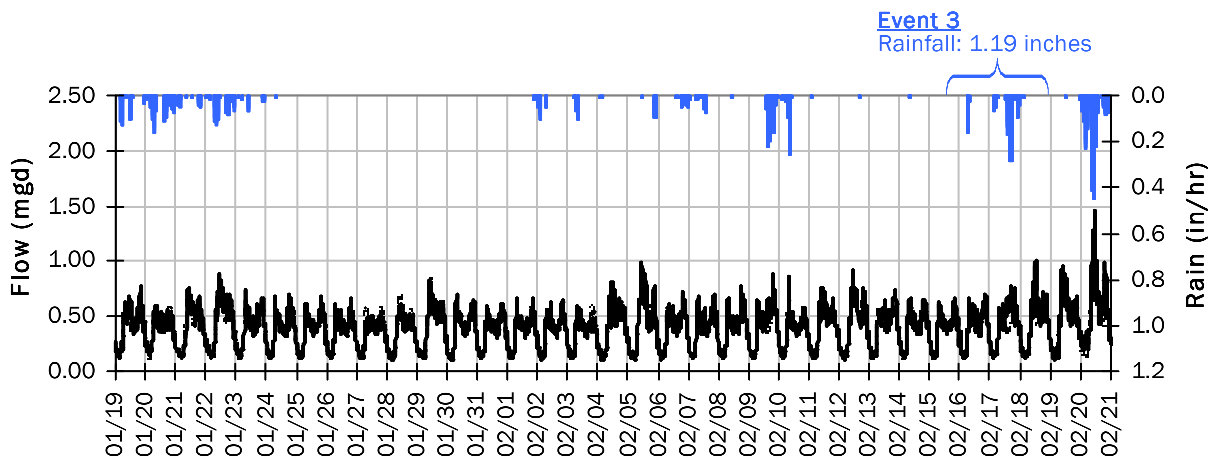




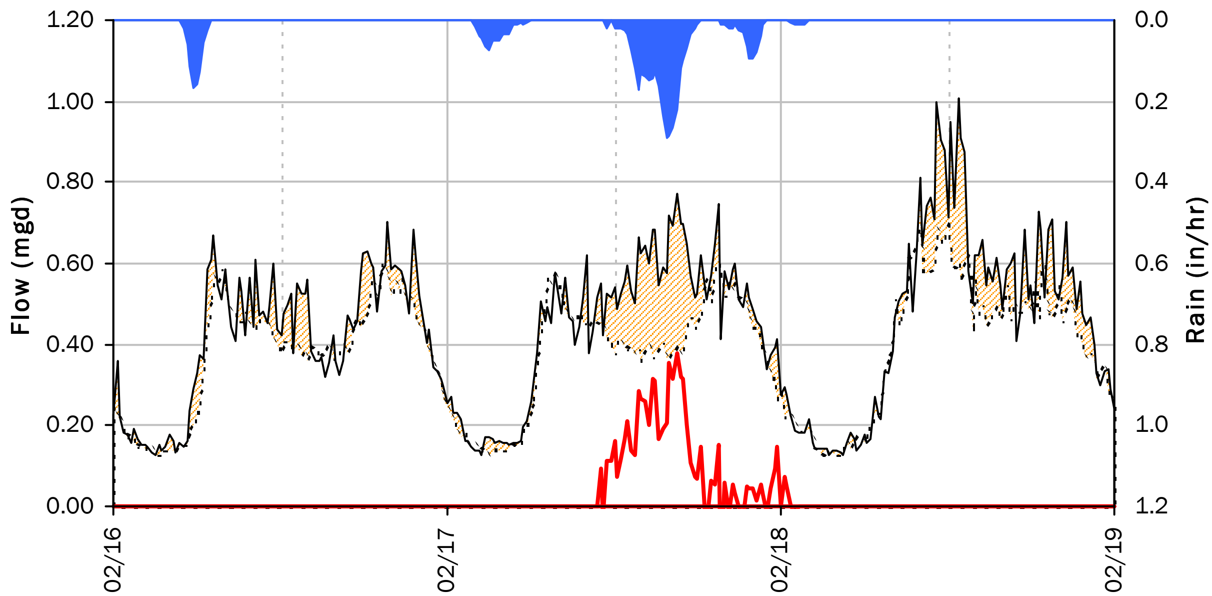
Pipe Diameter:	12	*inches*
Peak Measured Level:	9.69	*inches*
Peak d/D Ratio:	0.81	

SITE M2
I/I Summary: Event 3

Baseline and Realtime Flows with Rainfall Data over Monitoring Period



Event 3 Detail Graph



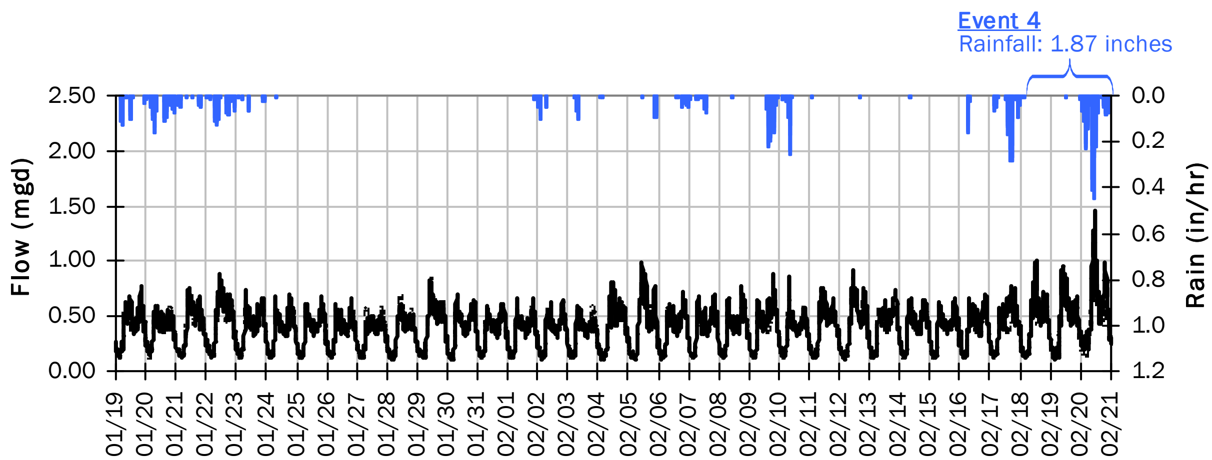
Storm Event I/I Analysis (Rain = 1.20 inches)

Capacity		Inflow / Infiltration	
Peak Flow:	0.77 *mgd*	**Peak I/I Rate:**	0.38 *mgd*
PF:	2.07	**Total I/I:**	68,000 *gallons*
Peak Level:	8.82 *in*		
d/D Ratio:	0.74		

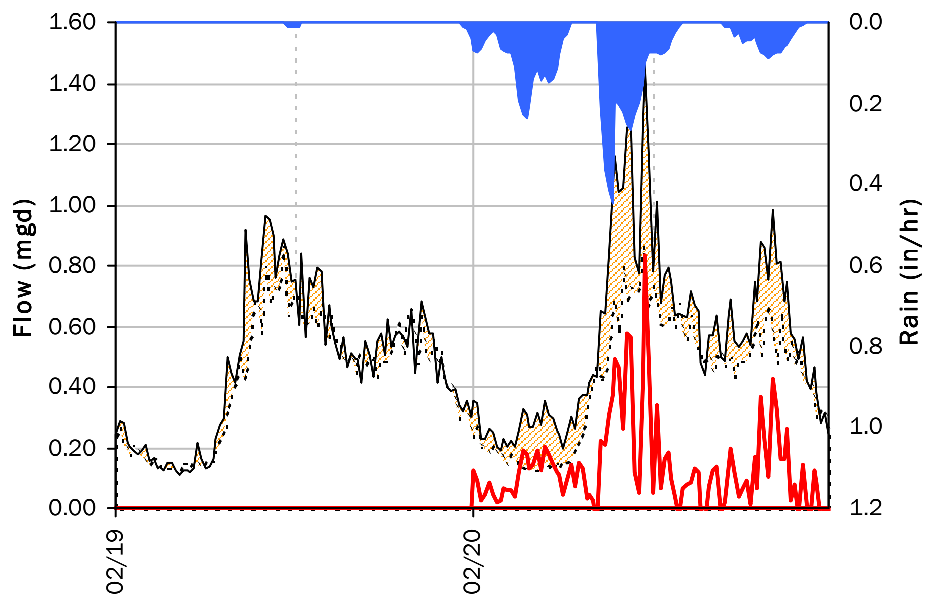
SITE M2

I/I Summary: Event 4

Baseline and Realtime Flows with Rainfall Data over Monitoring Period



Event 4 Detail Graph



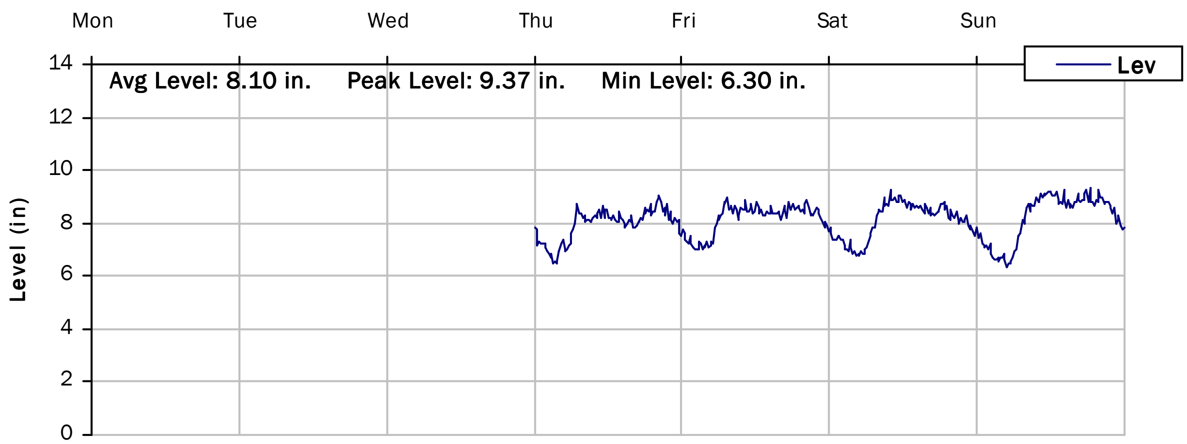
Storm Event I/I Analysis (Rain = 1.87 inches)

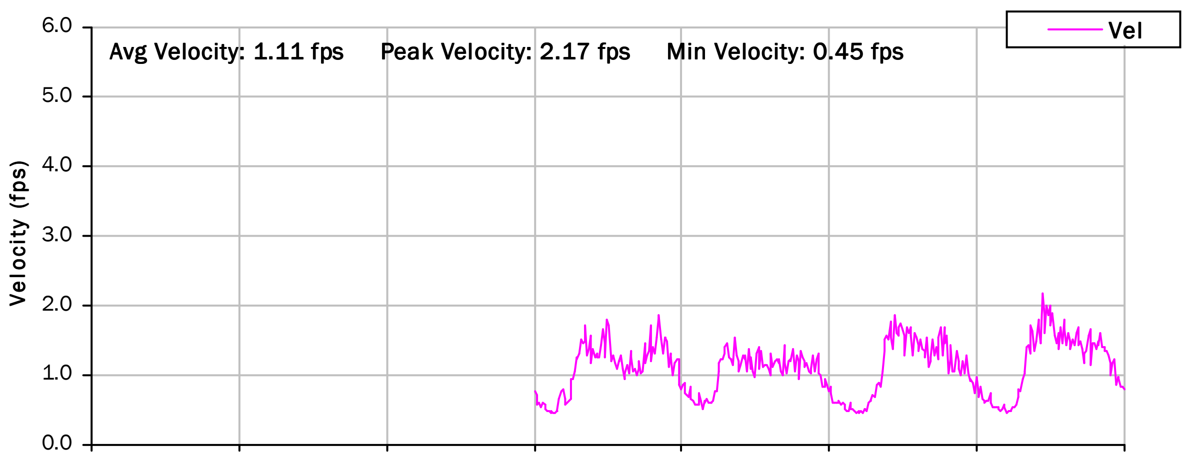
Capacity		**Inflow / Infiltration**	
Peak Flow:	1.46 *mgd*	**Peak I/I Rate:**	0.83 *mgd*
PF:	3.92	**Total I/I:**	142,000 *gallons*
Peak Level:	8.98 *in*		
d/D Ratio:	0.75		

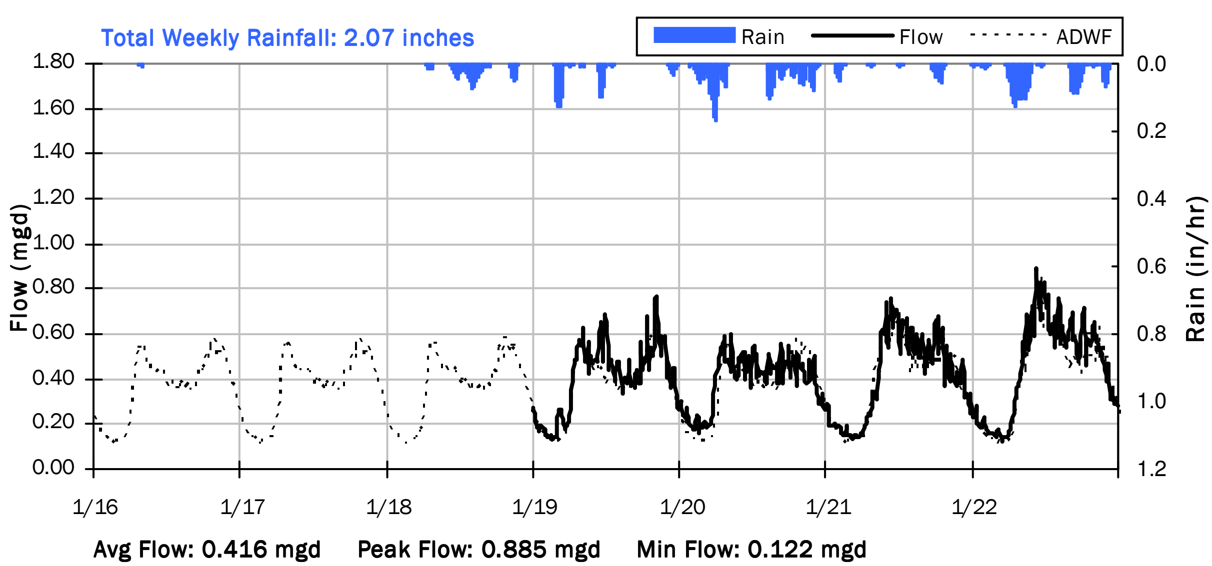
SITE M2

Weekly Level, Velocity and Flow Hydrographs

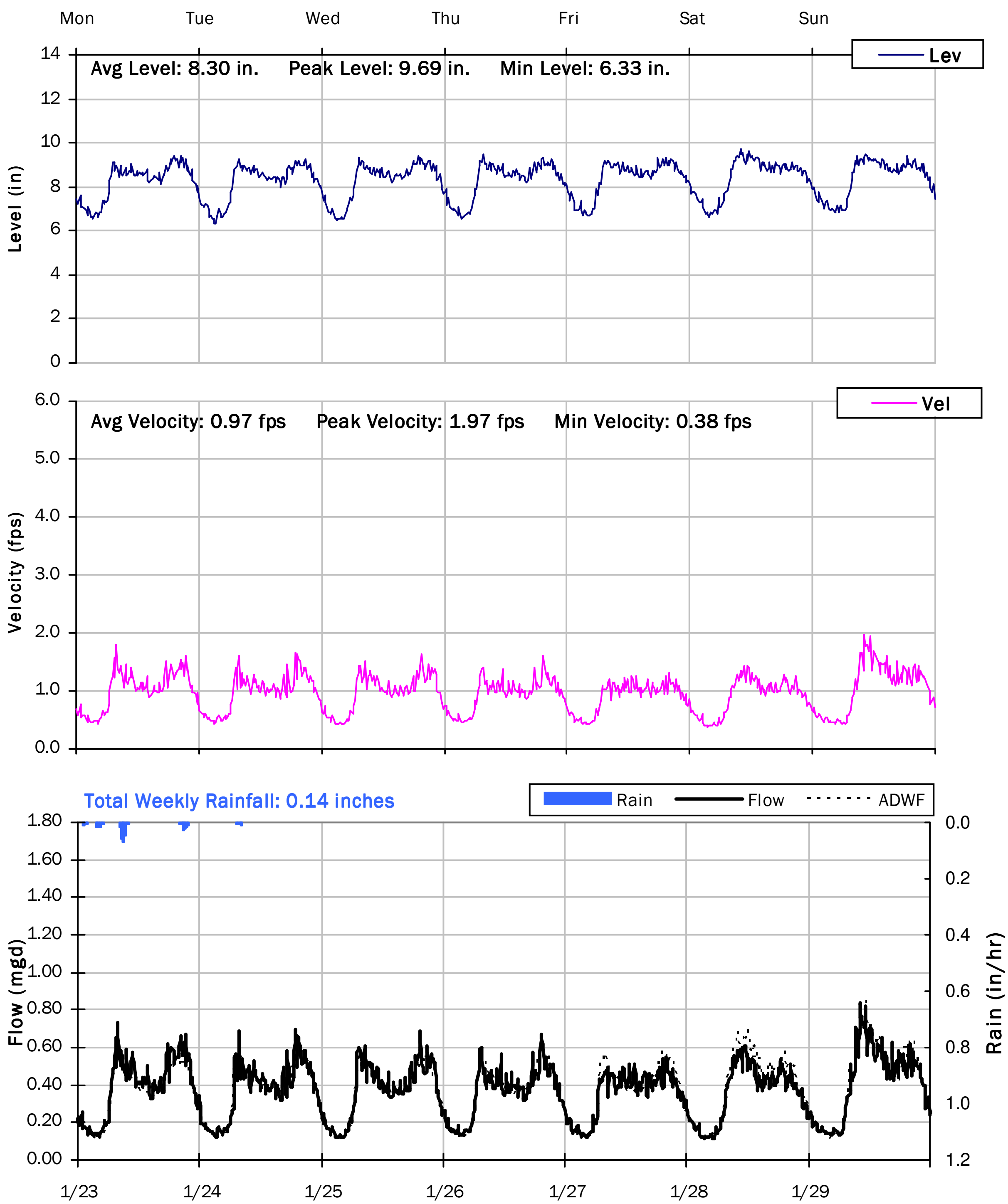
1/16/2017 to 1/23/2017





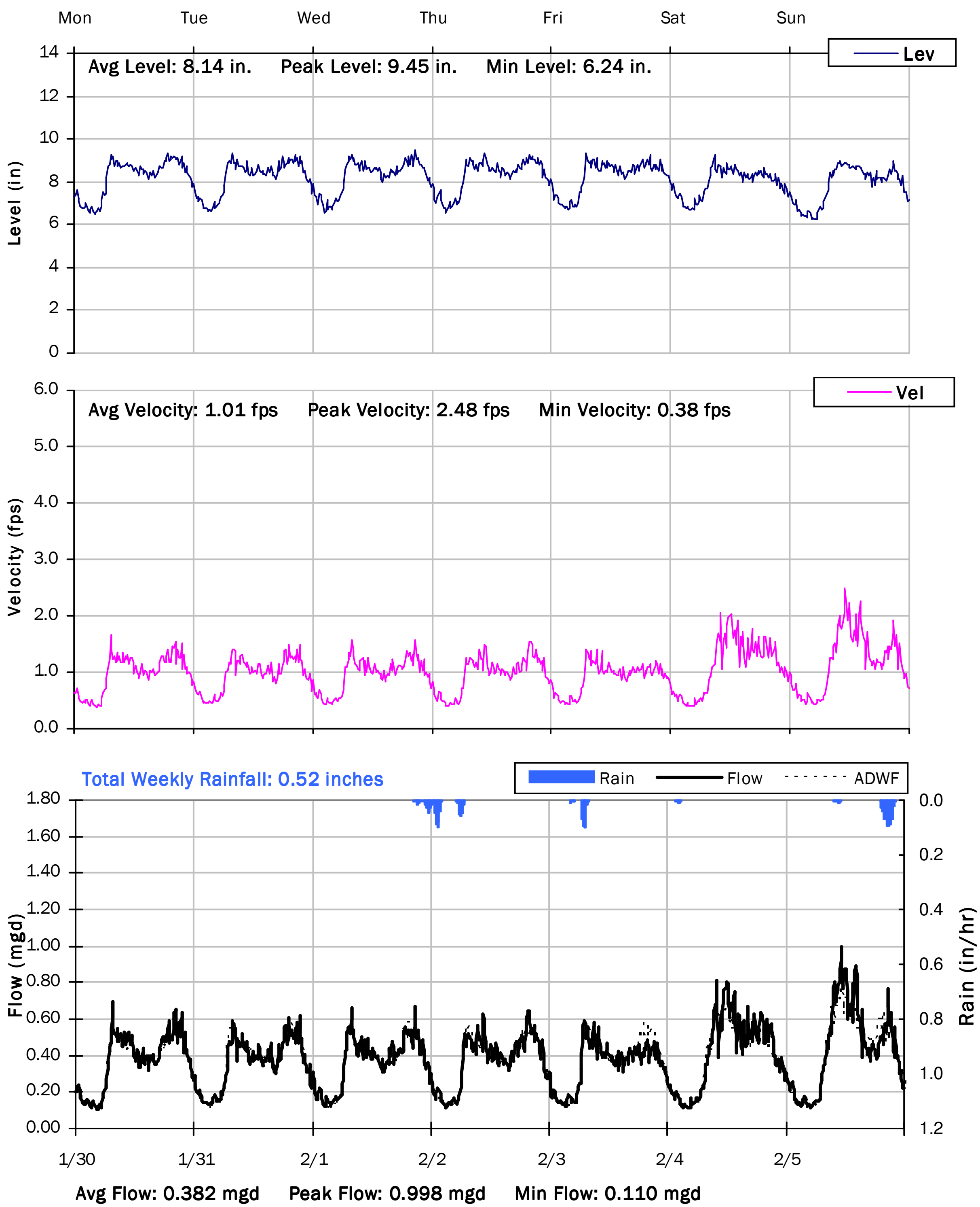


SITE M2
Weekly Level, Velocity and Flow Hydrographs
1/23/2017 to 1/30/2017

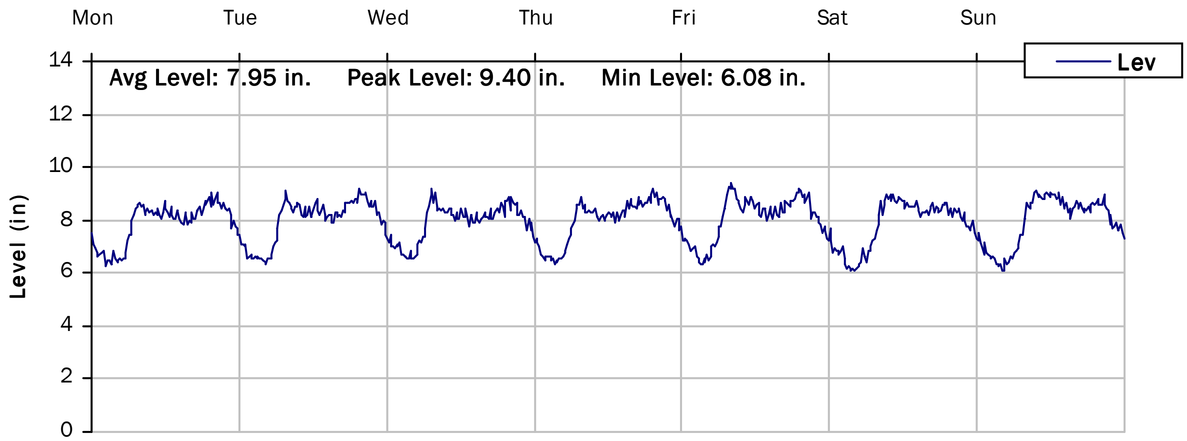


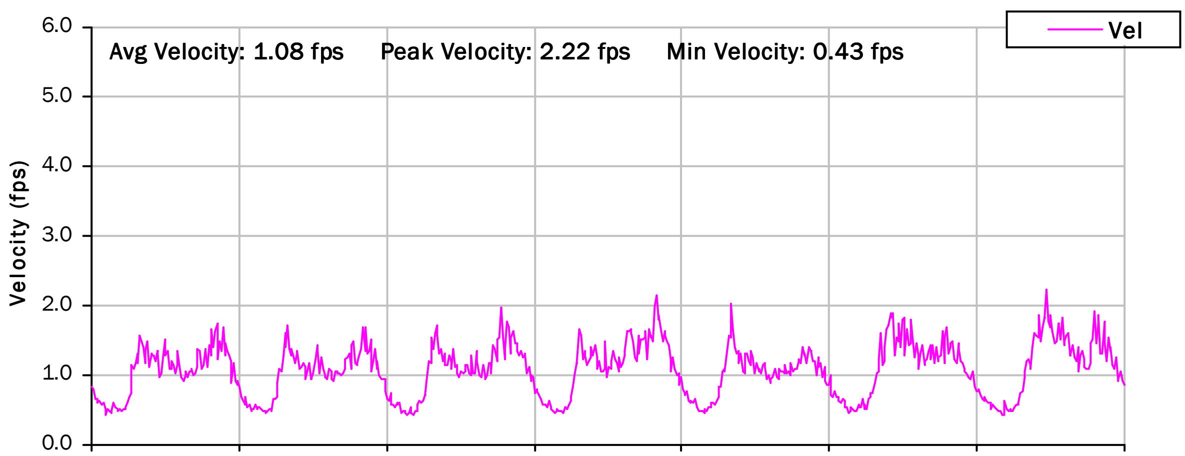
Avg Flow: 0.373 mgd **Peak Flow: 0.830 mgd** **Min Flow: 0.114 mgd**

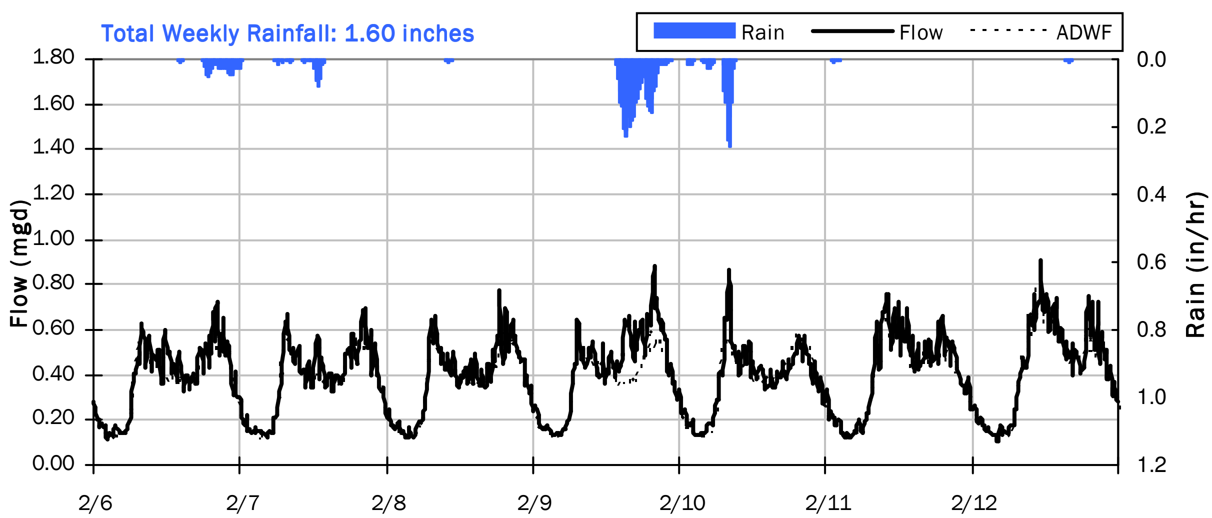
SITE M2
Weekly Level, Velocity and Flow Hydrographs
1/30/2017 to 2/6/2017



SITE M2
Weekly Level, Velocity and Flow Hydrographs
2/6/2017 to 2/13/2017

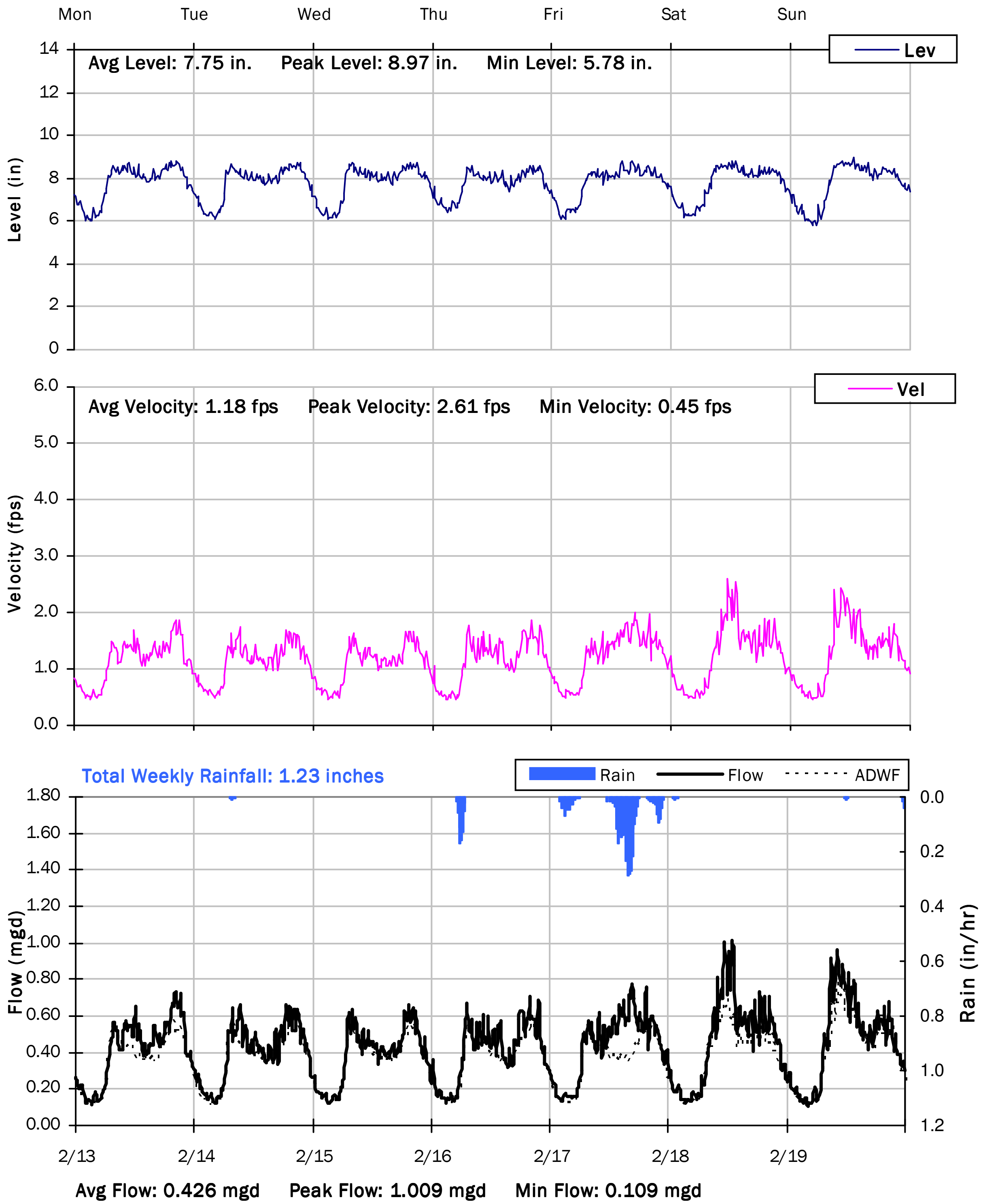




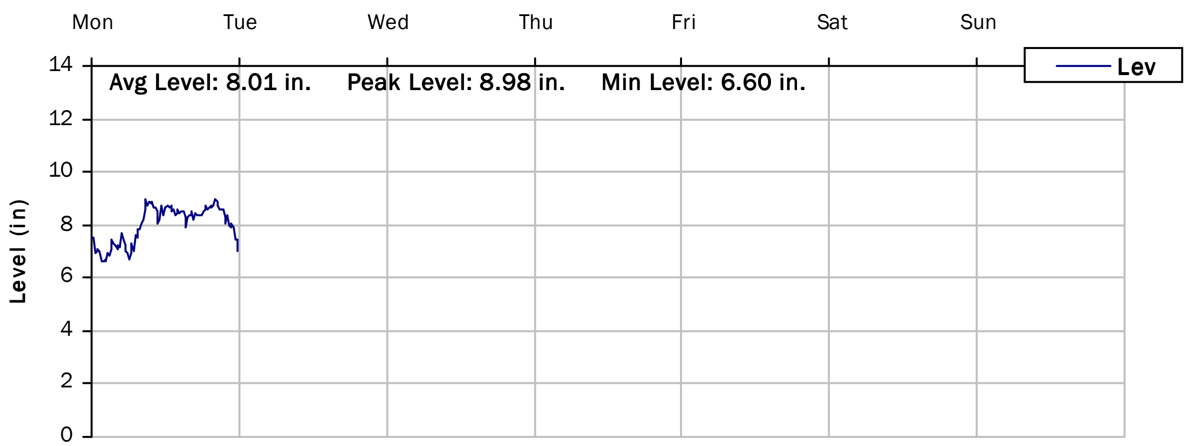


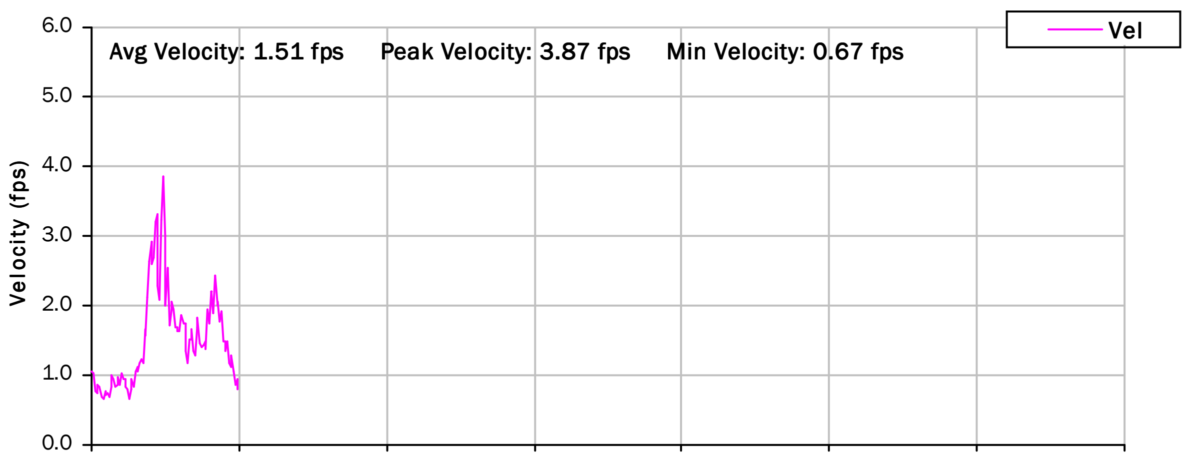
Avg Flow: 0.399 mgd **Peak Flow: 0.910 mgd** **Min Flow: 0.110 mgd**

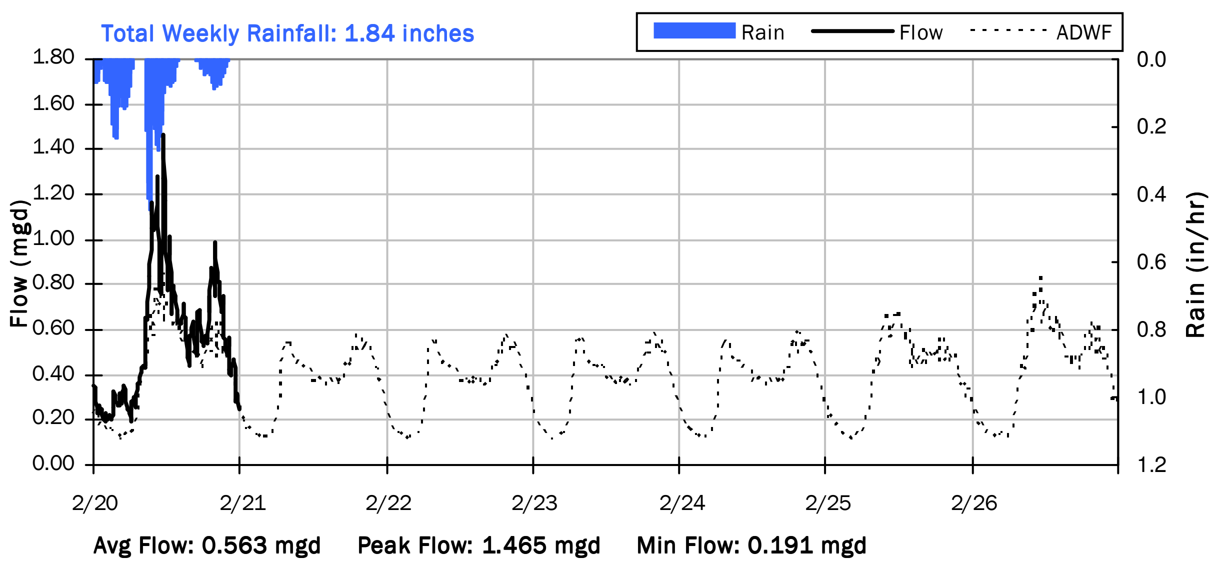
SITE M2
Weekly Level, Velocity and Flow Hydrographs
2/13/2017 to 2/20/2017



SITE M2
Weekly Level, Velocity and Flow Hydrographs
2/20/2017 to 2/27/2017







Marina Coast Water District

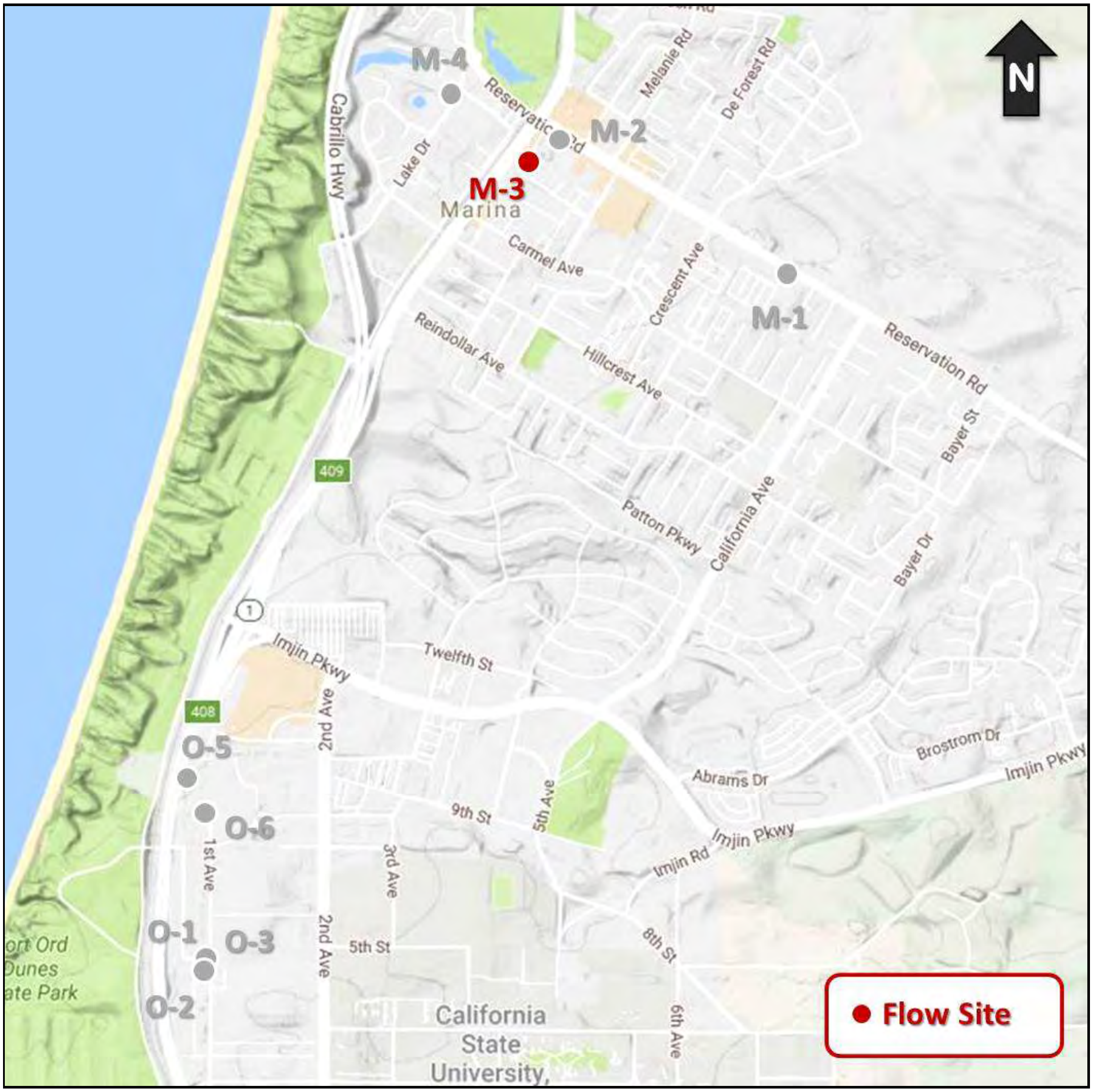
Sanitary Sewer Flow Monitoring

Temporary Monitoring: January 2017 - March 2017

Monitoring Site: Site M3

Location: 3148 Del Monte Boulevard

Data Summary Report



Vicinity Map: Site M3

SITE M3

Site Information

Location: 3148 Del Monte Boulevard

Coordinates: 121.8006° W, 36.6864° N

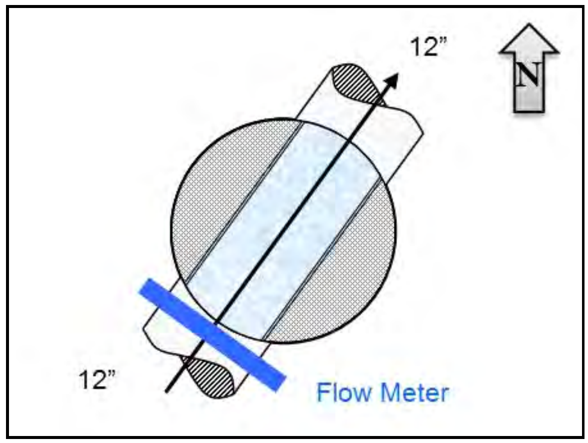
Pipe Diameter: 12 inches

ADWF: 0.261 mgd

Peak Measured Flow: 0.634 mgd

Satellite Map

Sewer Map



Flow Sketch

Street View


Plan View

SITE M3

Additional Site Photos

Effluent Pipe

Influent Pipe

SITE M3

Period Flow Summary: Daily Flow Totals

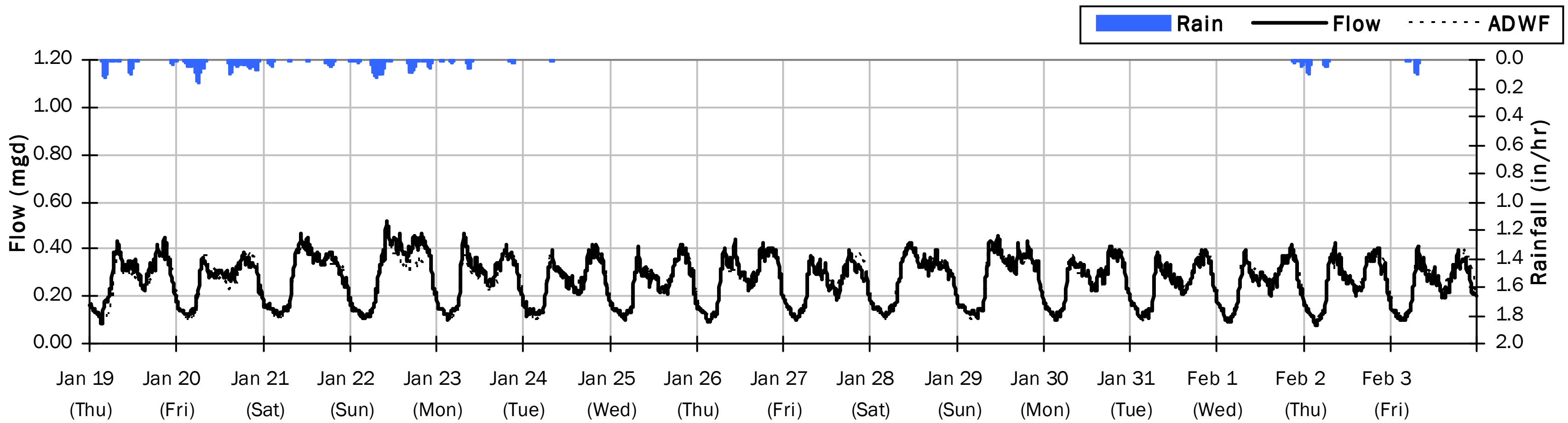
Avg Period Flow: 0.275 MGal **Peak Daily Flow: 0.328 MGal** **Min Daily Flow: 0.245 MGal**

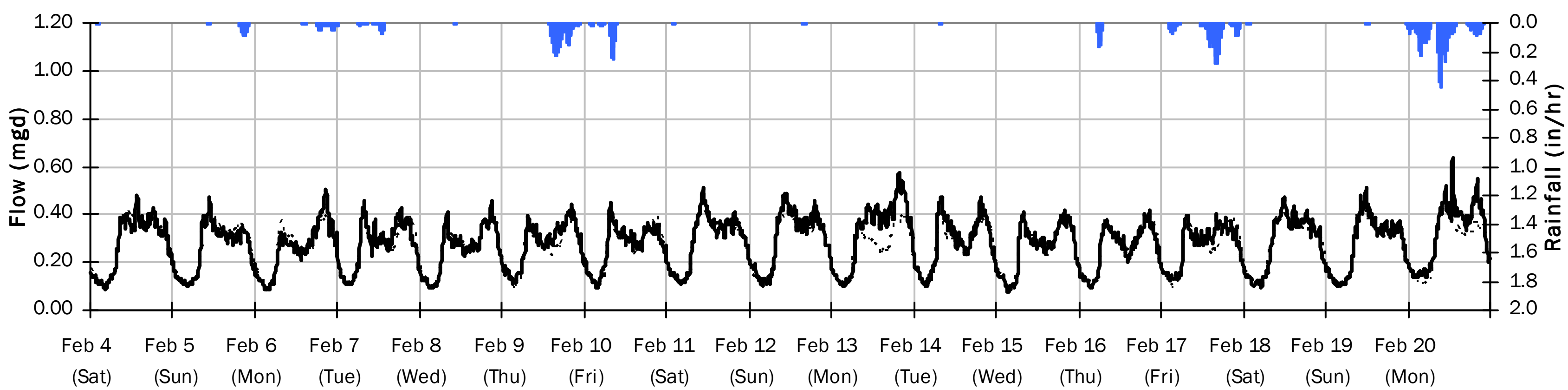
Total Period Rainfall: 7.11 inches

SITE M3

Flow Summary: 1/19/2017 to 2/20/2017

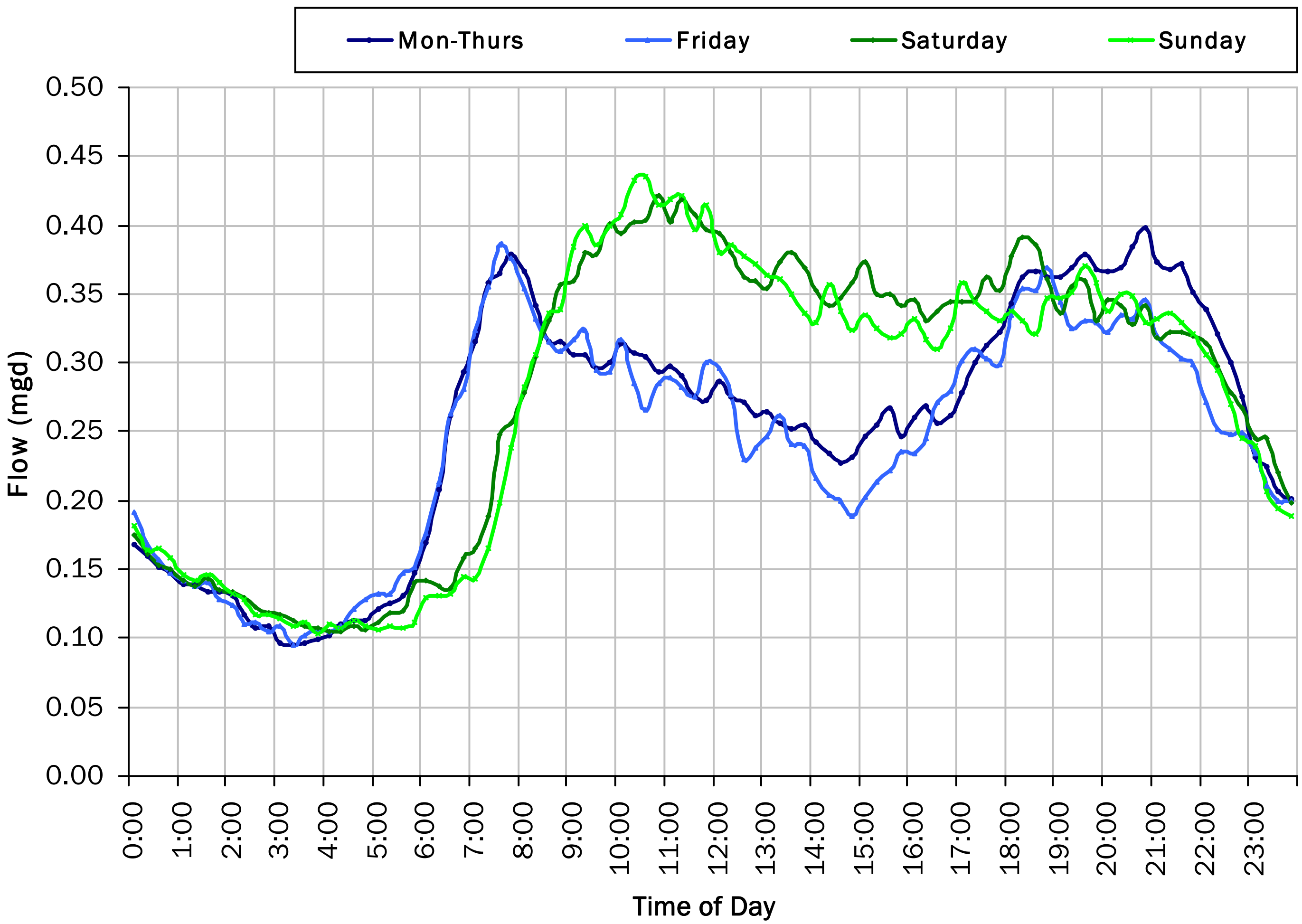
Total Period Rainfall: 7.11 inches   **Avg Flow: 0.275 mgd**   **Peak Flow: 0.634 mgd**   **Min Flow: 0.079 mgd**





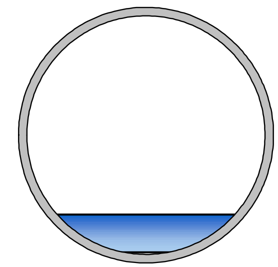
SITE M3

Average Dry Weather Flow Hydrographs



ADWF:

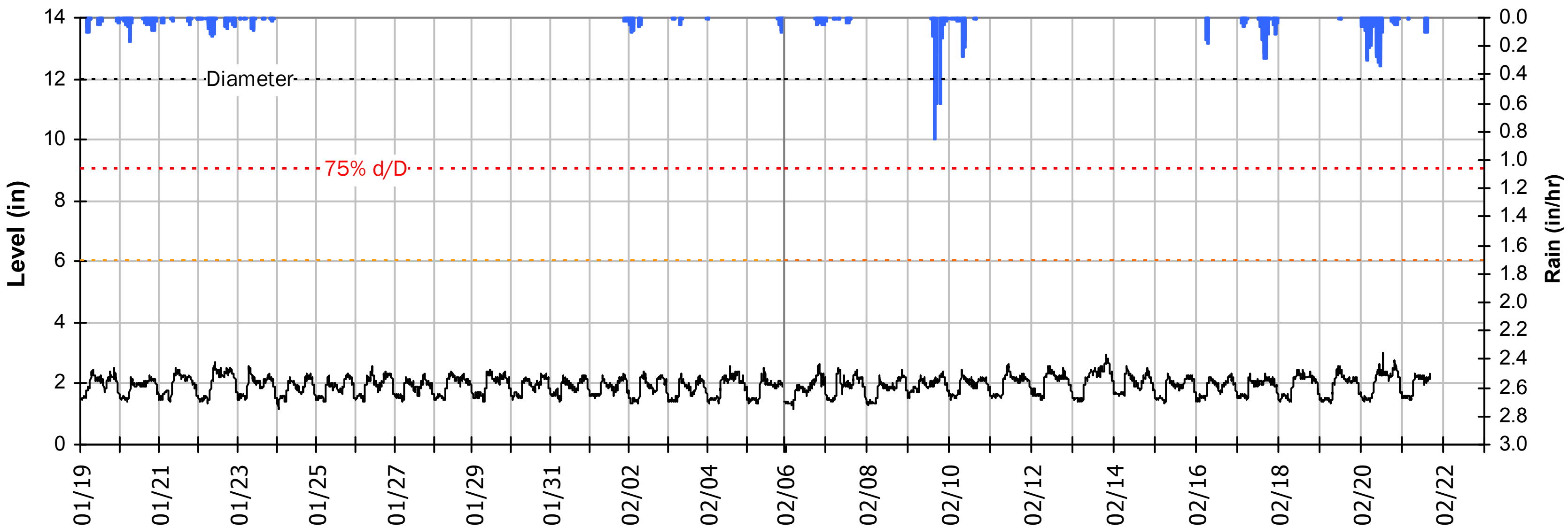
0.261 *mgd*

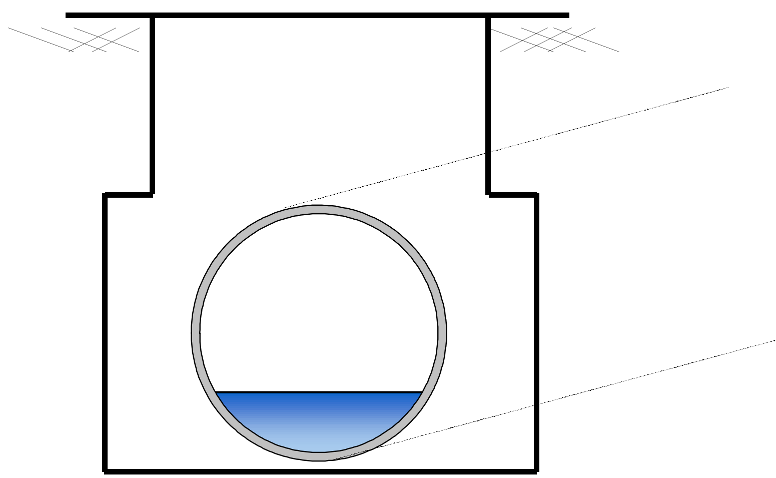


SITE M3

Site Capacity and Surcharge Summary

Realtime Flow Levels with Rainfall Data over Monitoring Period

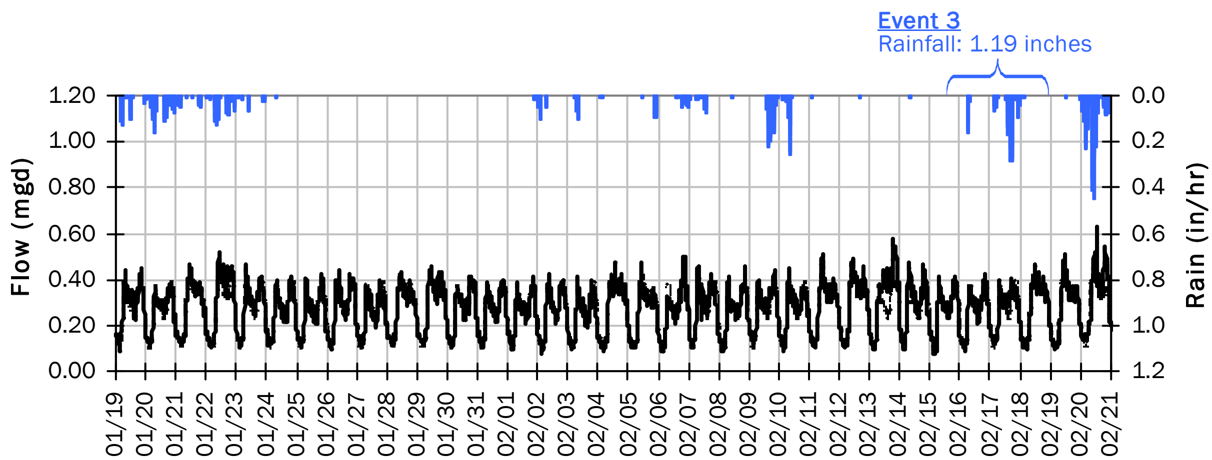




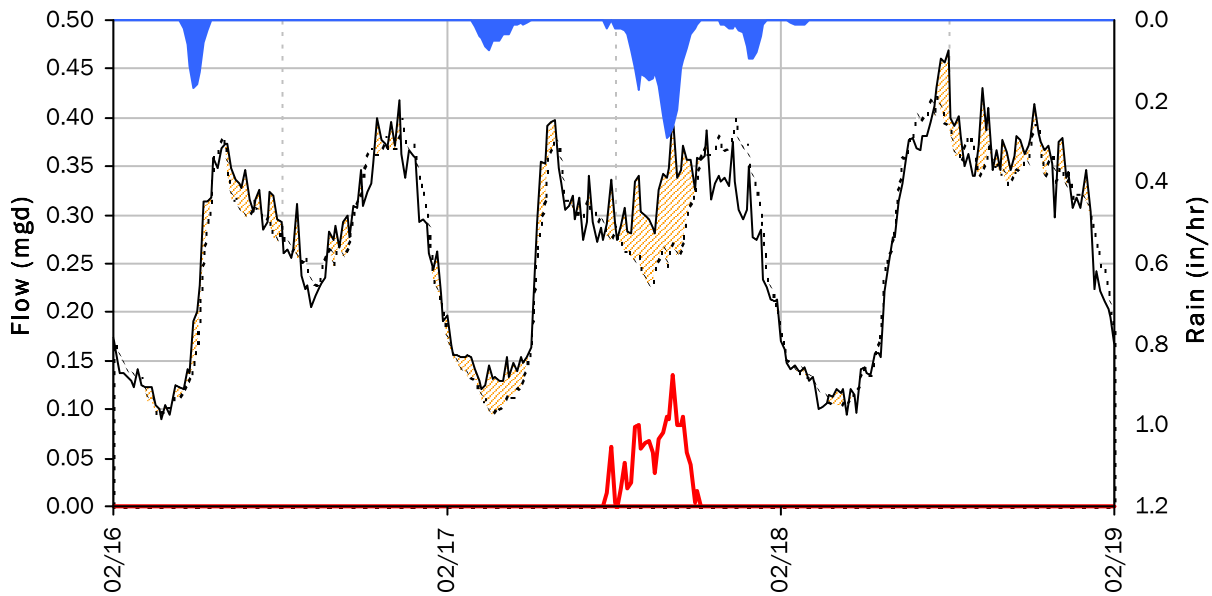
Pipe Diameter:	12	*inches*
Peak Measured Level:	3.01	*inches*
Peak d/D Ratio:	0.25	

SITE M3
I/I Summary: Event 3

Baseline and Realtime Flows with Rainfall Data over Monitoring Period



Event 3 Detail Graph

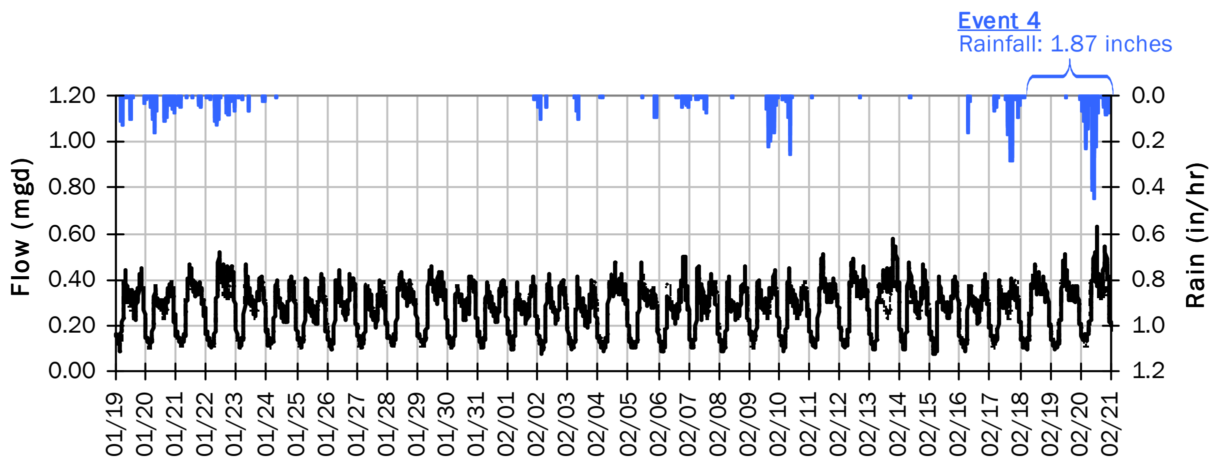


Storm Event I/I Analysis (Rain = 1.20 inches)

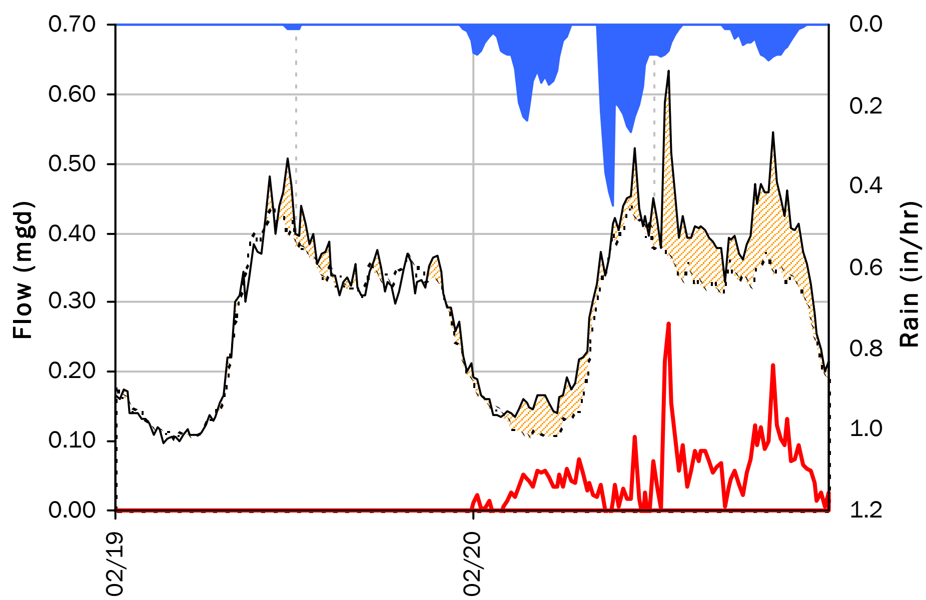
Capacity		Inflow / Infiltration	
Peak Flow:	0.40 *mgd*	**Peak I/I Rate:**	0.14 *mgd*
PF:	1.54	**Total I/I:**	15,000 *gallons*
Peak Level:	2.32 *in*		
d/D Ratio:	0.19		

SITE M3
I/I Summary: Event 4

Baseline and Realtime Flows with Rainfall Data over Monitoring Period



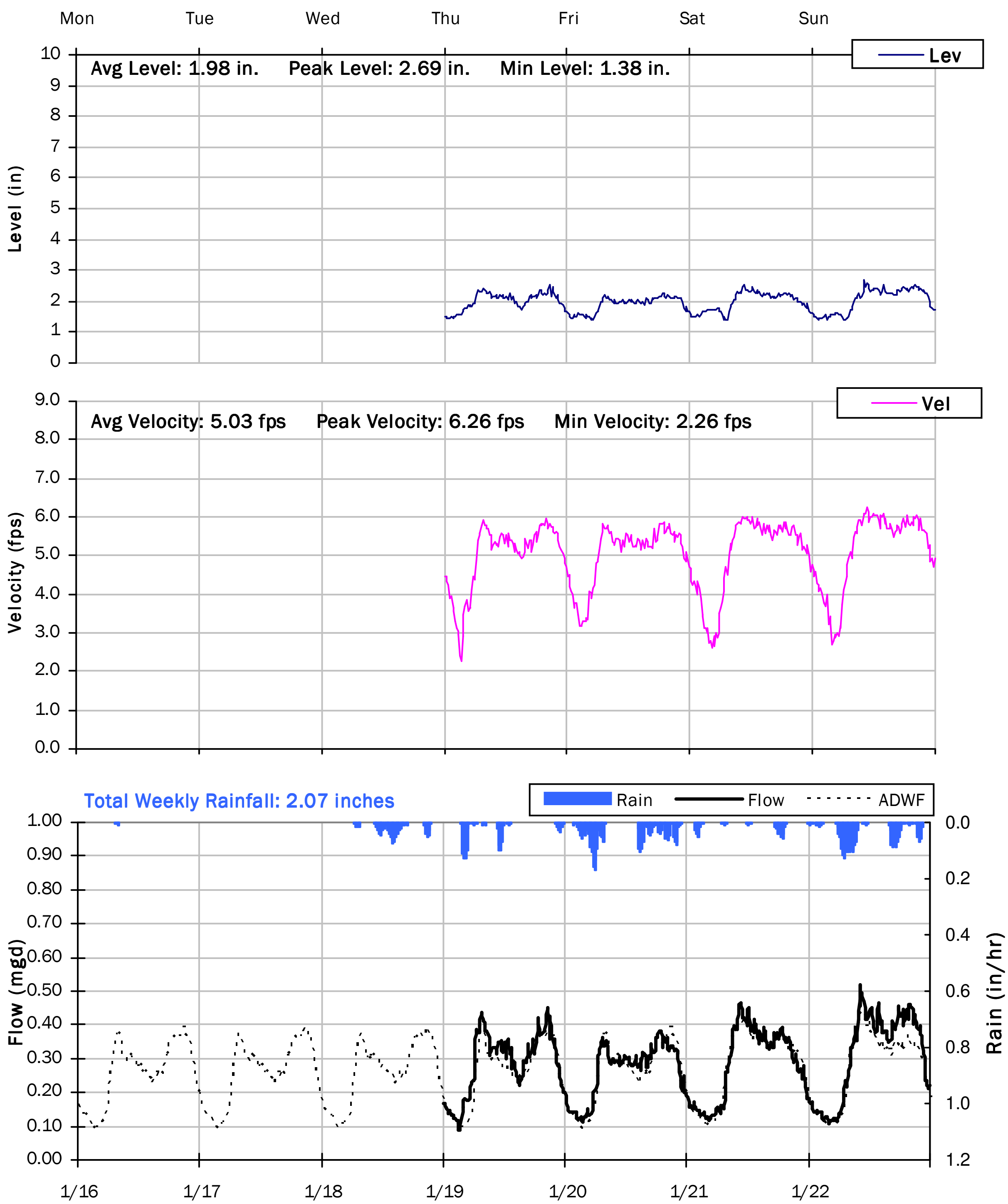
Event 4 Detail Graph



Storm Event I/I Analysis (Rain = 1.87 inches)

Capacity		Inflow / Infiltration	
Peak Flow:	0.63 *mgd*	**Peak I/I Rate:**	0.27 *mgd*
PF:	2.42	**Total I/I:**	53,000 *gallons*
Peak Level:	3.01 *in*		
d/D Ratio:	0.25		

SITE M3
Weekly Level, Velocity and Flow Hydrographs
1/16/2017 to 1/23/2017

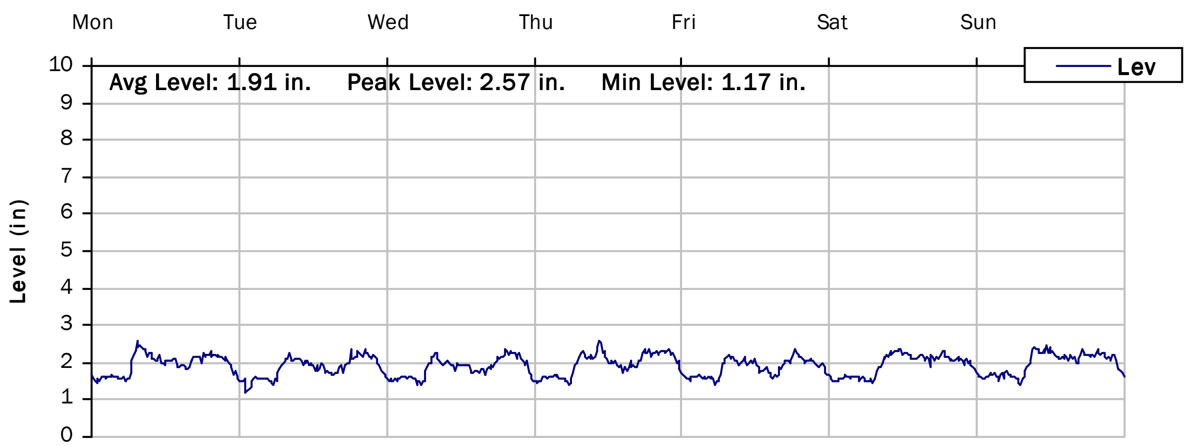


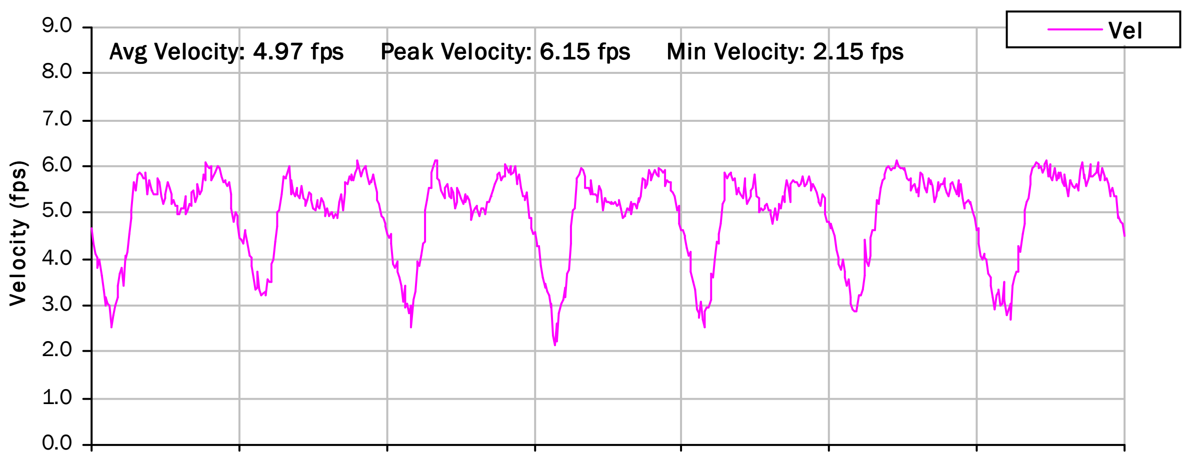
Avg Flow: 0.287 mgd **Peak Flow: 0.519 mgd** **Min Flow: 0.088 mgd**

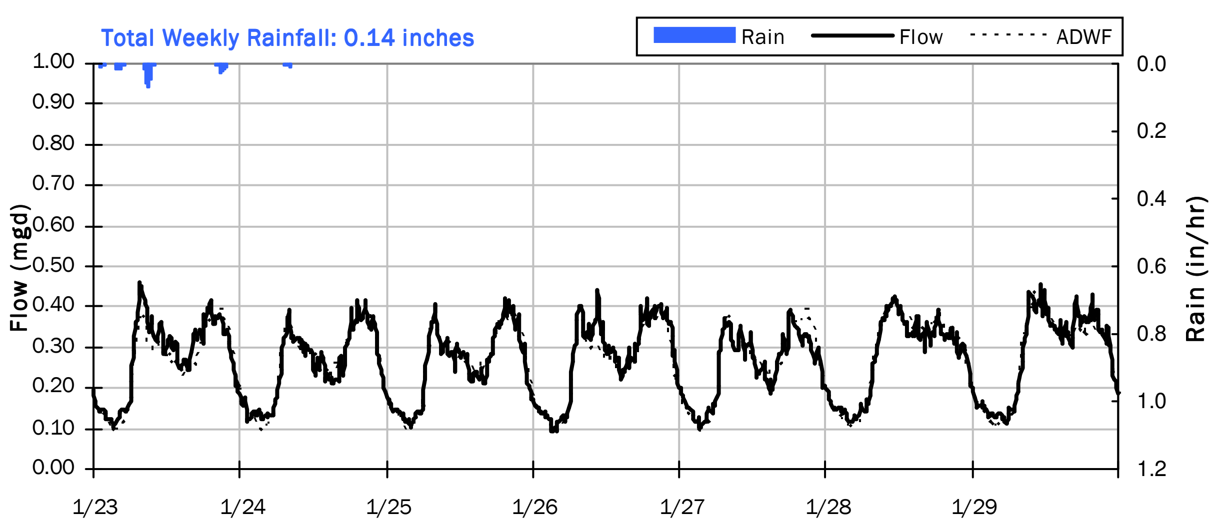
SITE M3

Weekly Level, Velocity and Flow Hydrographs

1/23/2017 to 1/30/2017

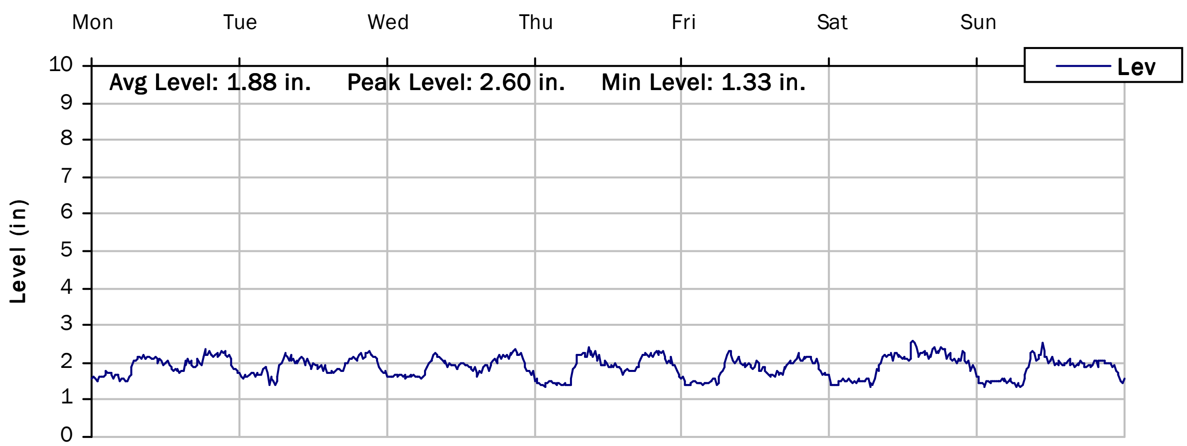


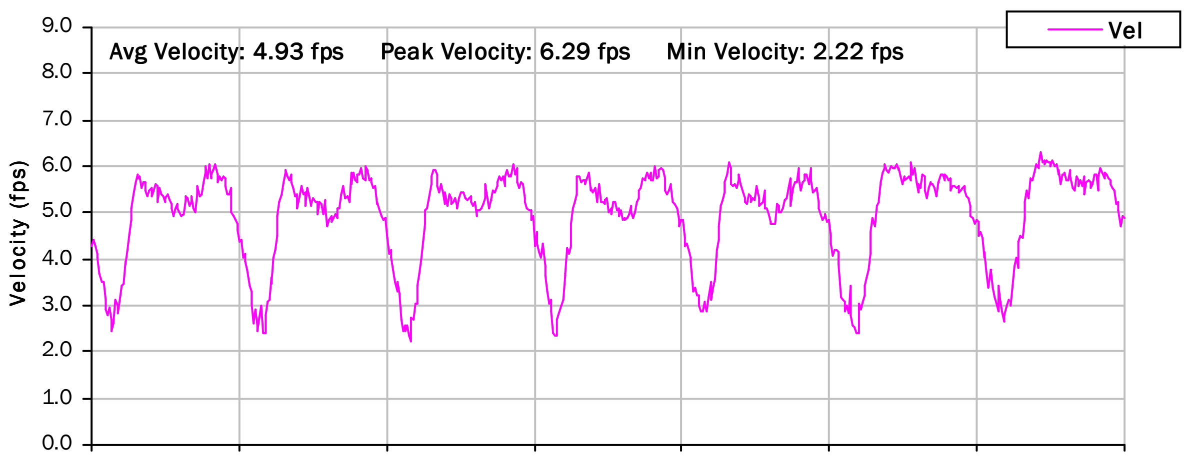


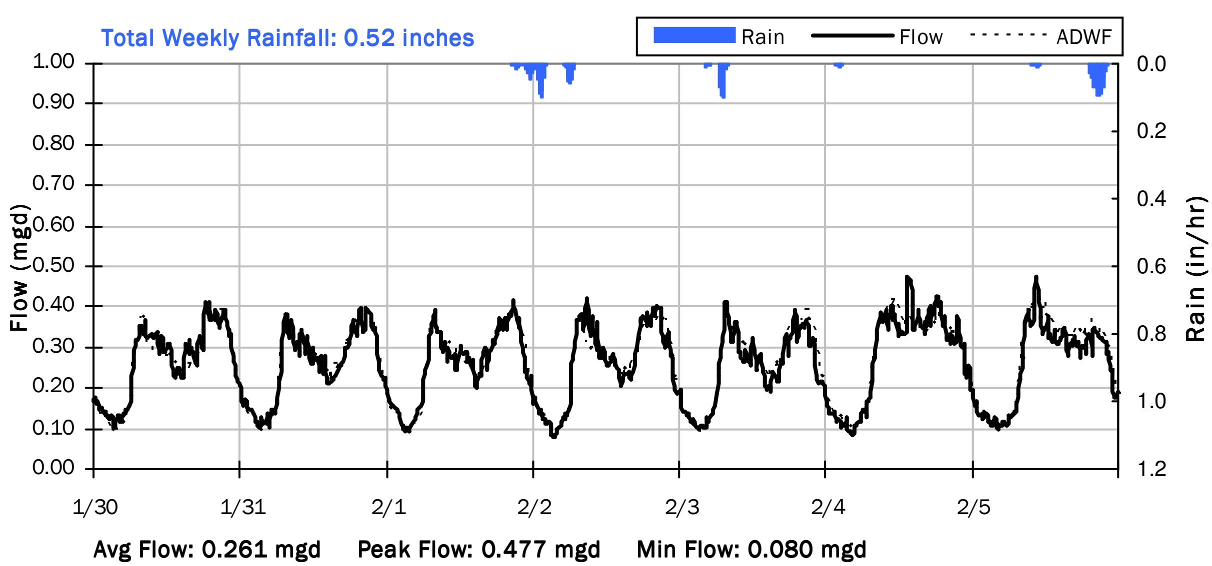


Avg Flow: 0.269 mgd **Peak Flow: 0.463 mgd** **Min Flow: 0.091 mgd**

SITE M3
Weekly Level, Velocity and Flow Hydrographs
1/30/2017 to 2/6/2017

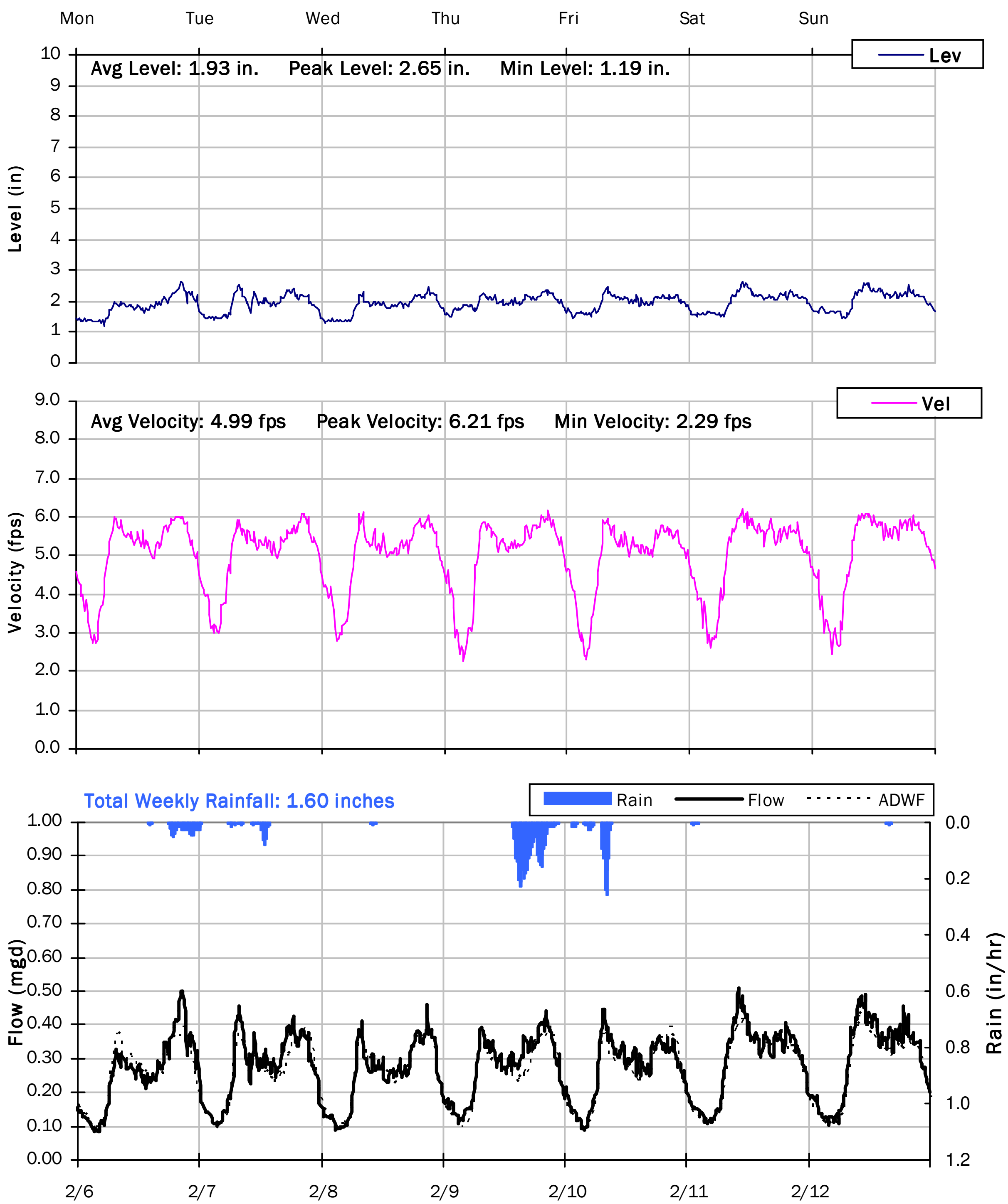






SITE M3

Weekly Level, Velocity and Flow Hydrographs
2/6/2017 to 2/13/2017

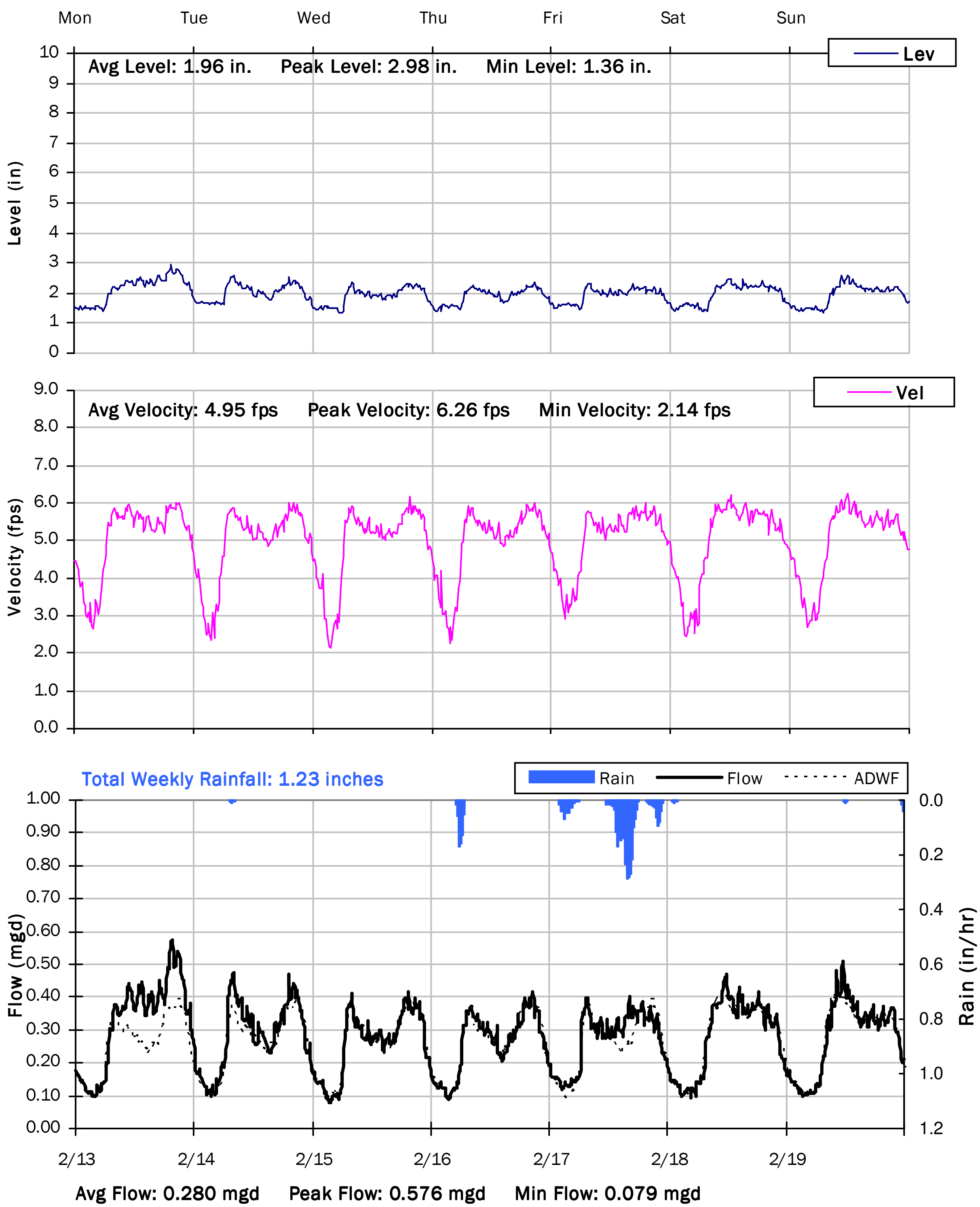


Avg Flow: 0.275 mgd **Peak Flow: 0.509 mgd** **Min Flow: 0.084 mgd**

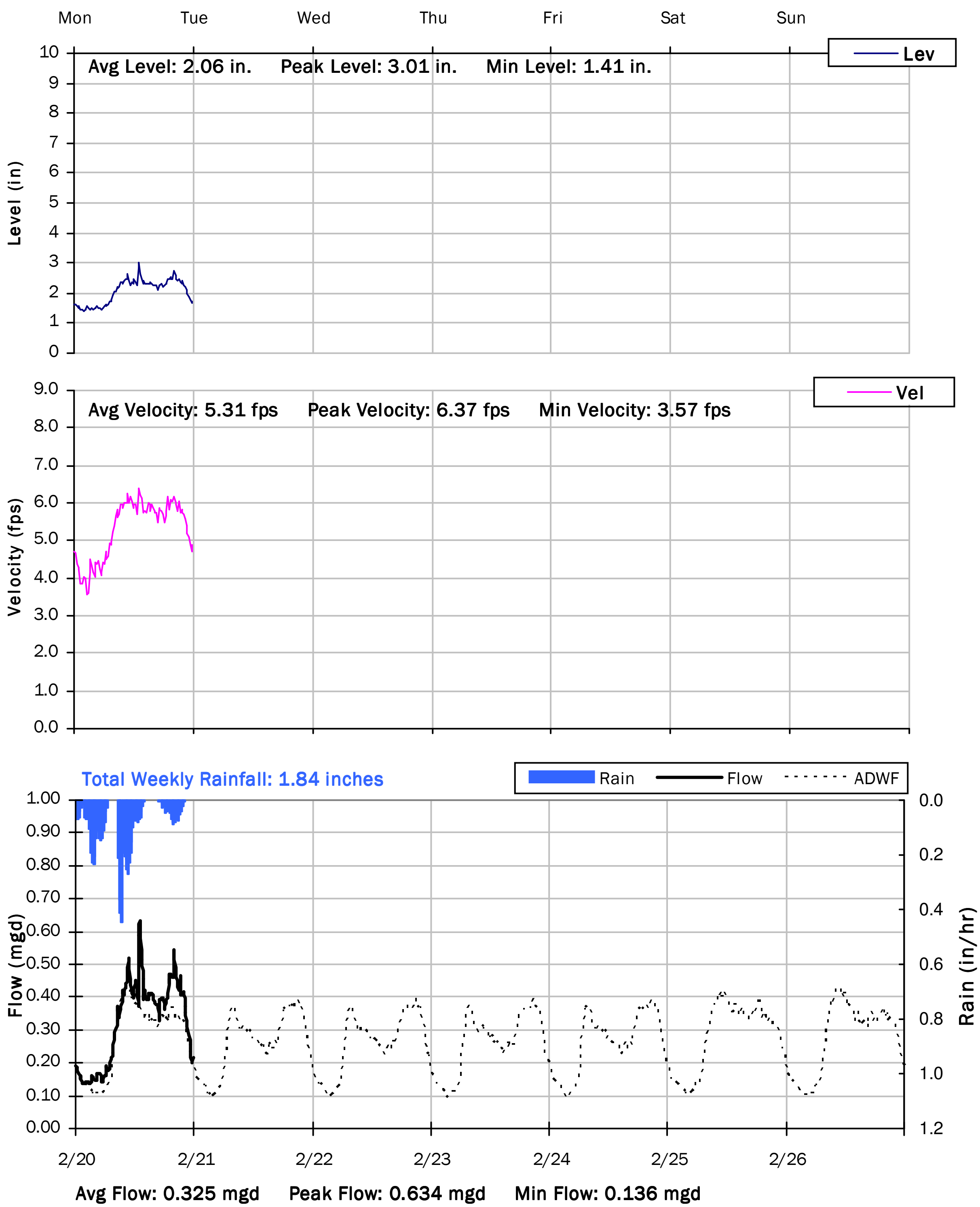
SITE M3

Weekly Level, Velocity and Flow Hydrographs

2/13/2017 to 2/20/2017



SITE M3
Weekly Level, Velocity and Flow Hydrographs
2/20/2017 to 2/27/2017



Marina Coast Water District

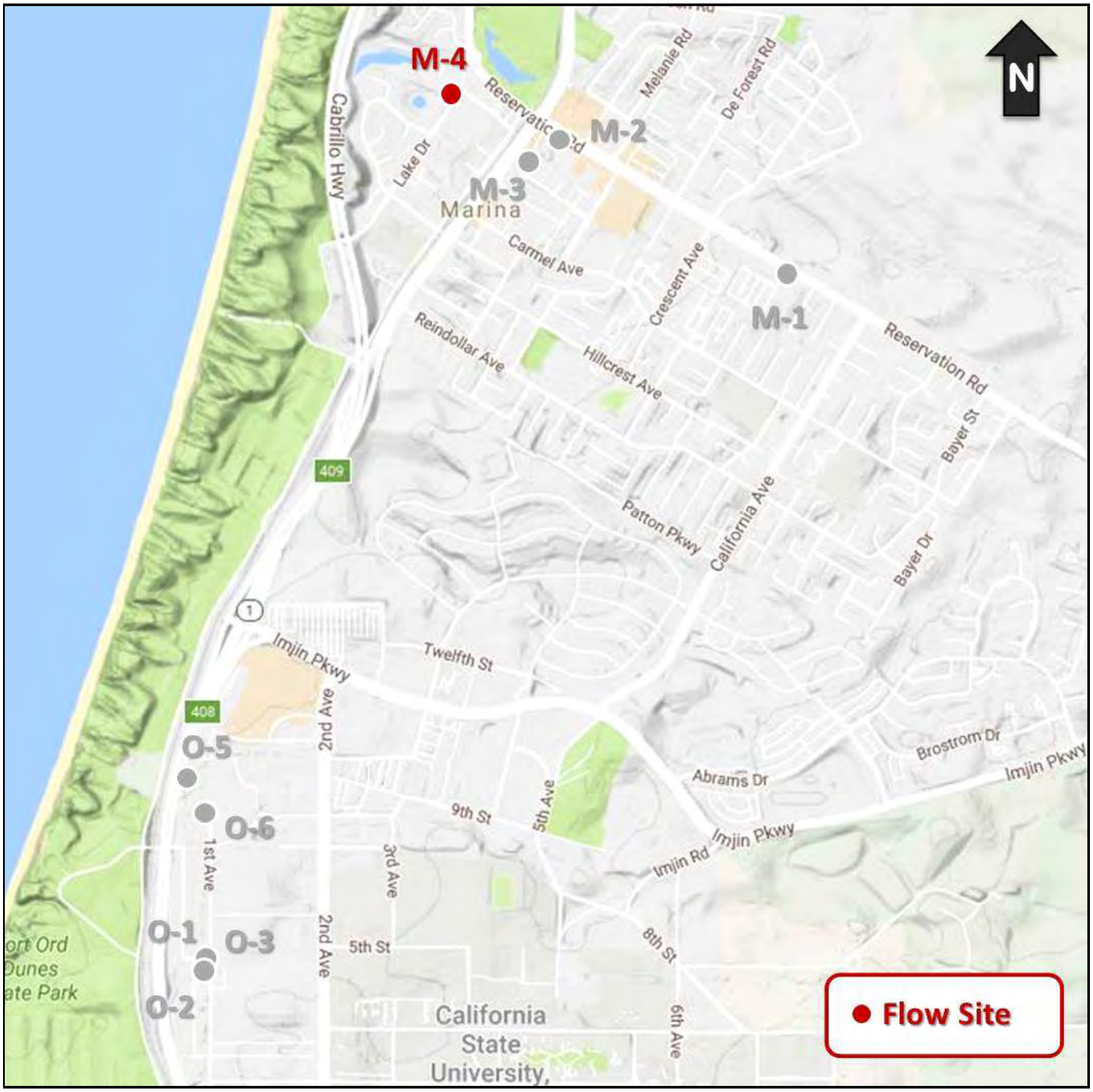
Sanitary Sewer Flow Monitoring

Temporary Monitoring: January 2017 - March 2017

Monitoring Site: Site M4

Location: Robin Drive at Hilo Avenue

Data Summary Report



Vicinity Map: Site M4

SITE M4

Site Information

Location: Robin Drive at Hilo Avenue

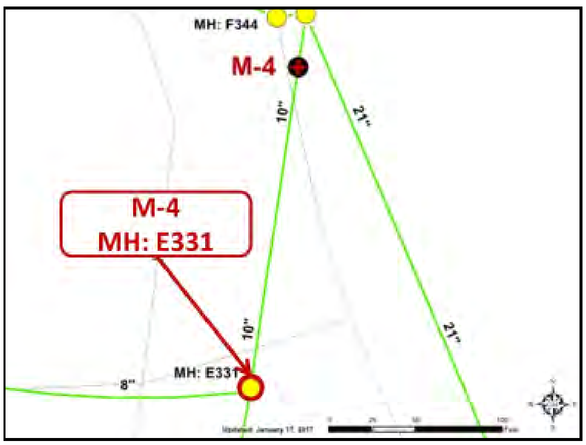
Coordinates: 121.8029° W, 36.6897° N

Pipe Diameter: 10 inches

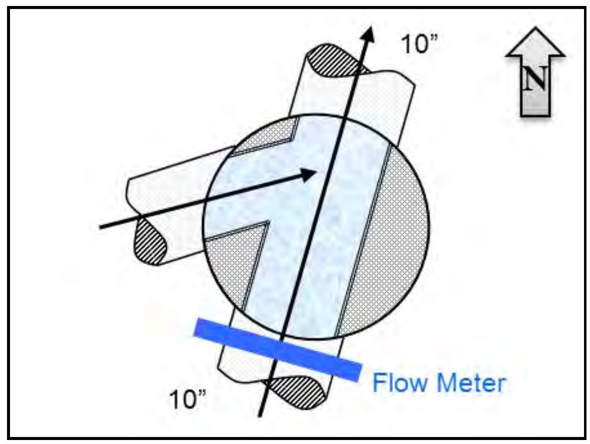
ADWF: 0.170 mgd

Peak Measured Flow: 0.330 mgd

Satellite Map



Sewer Map



Flow Sketch


Street View


Plan View

SITE M4

Additional Site Photos

Effluent Pipe

South Influent Pipe

SITE M4

Additional Site Photos

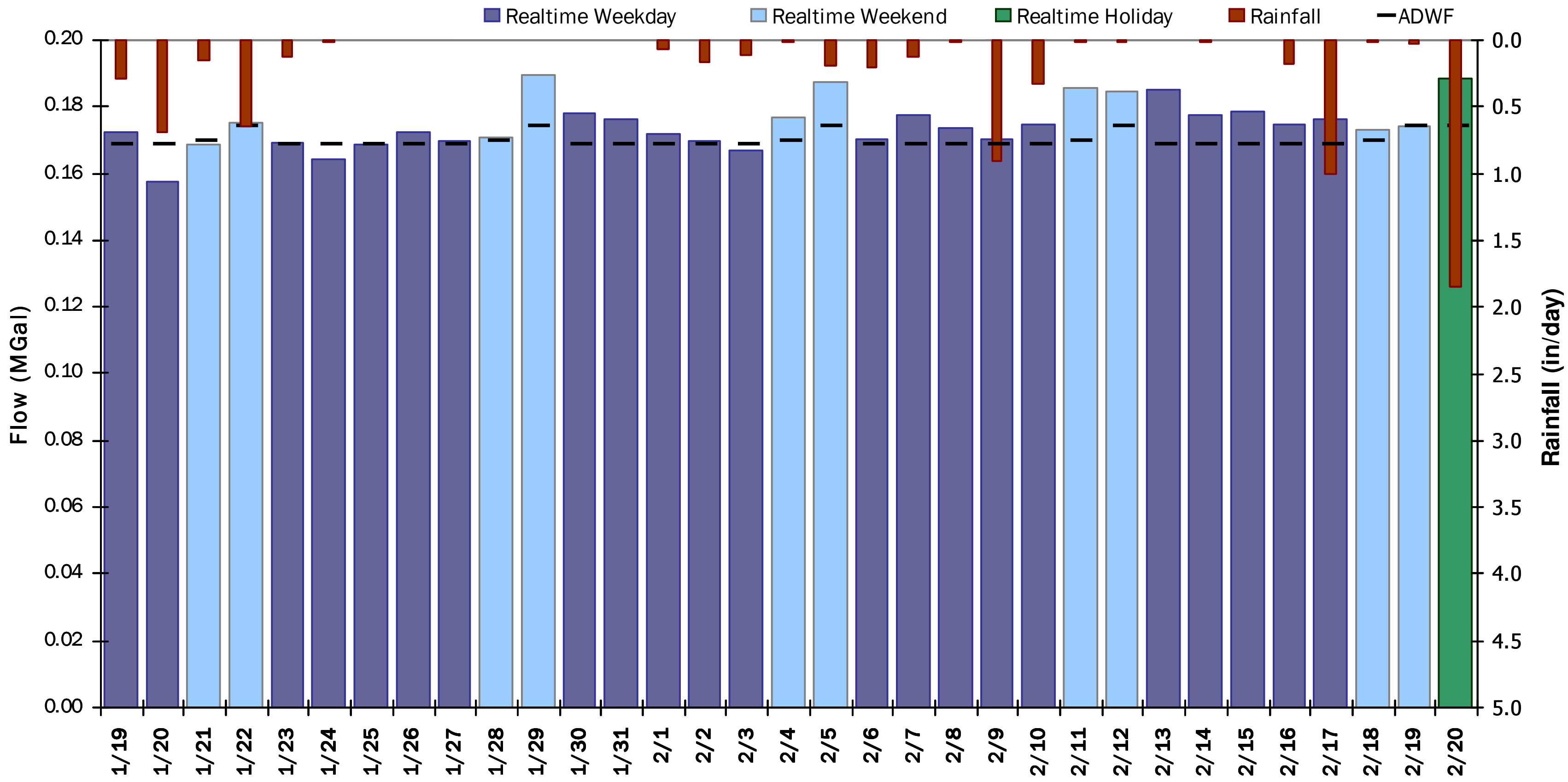
West Influent Pipe

SITE M4

Period Flow Summary: Daily Flow Totals

Avg Period Flow: 0.175 MGal **Peak Daily Flow: 0.190 MGal** **Min Daily Flow: 0.158 MGal**

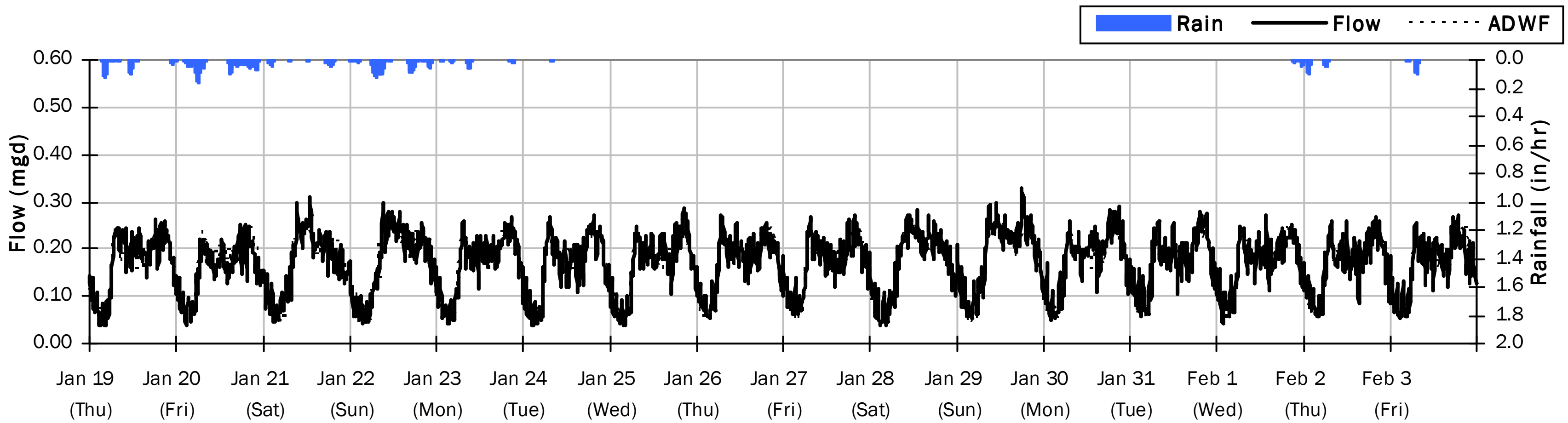
Total Period Rainfall: 7.11 inches

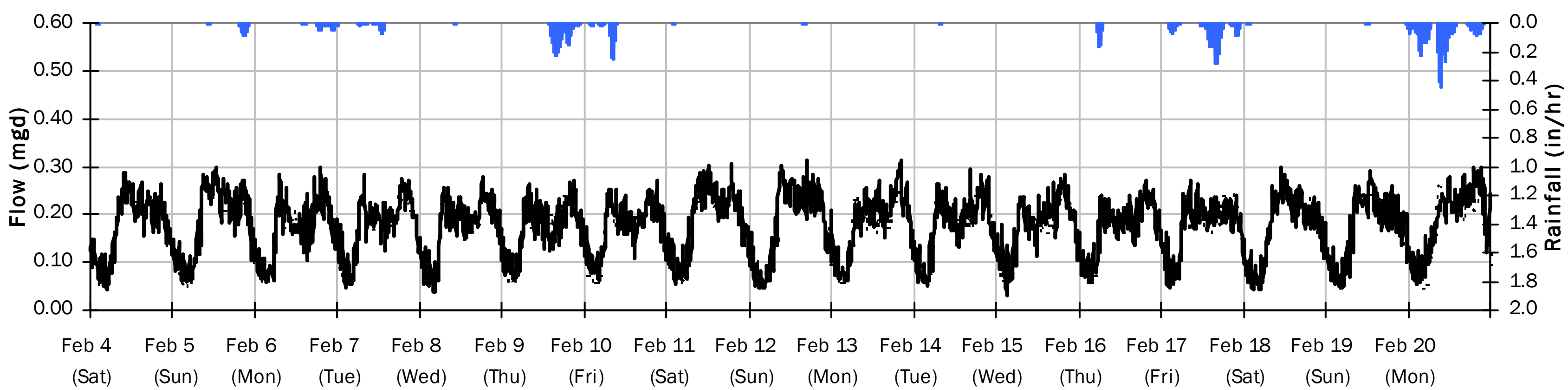


SITE M4

Flow Summary: 1/19/2017 to 2/20/2017

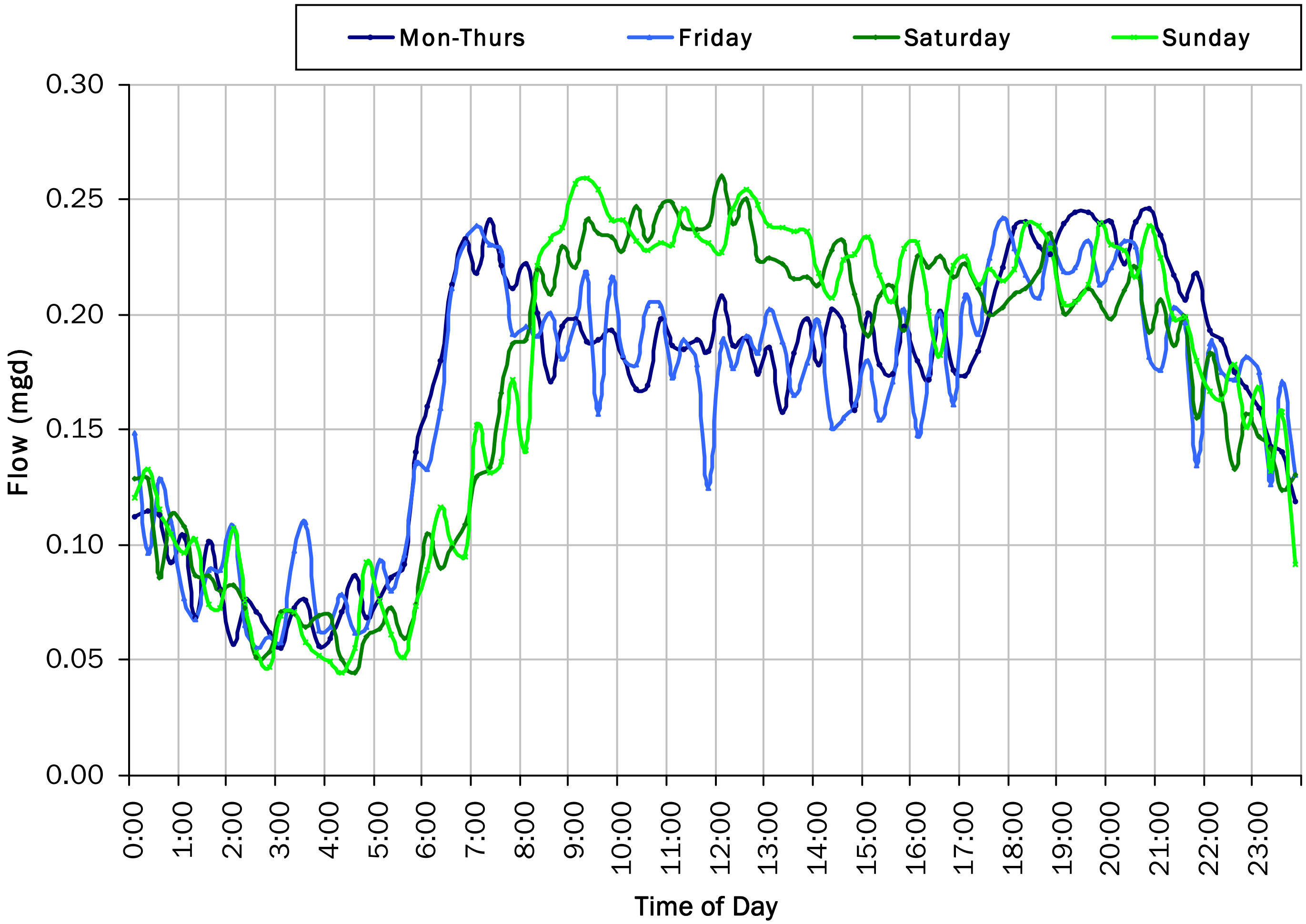
Total Period Rainfall: 7.11 inches   **Avg Flow: 0.175 mgd**   **Peak Flow: 0.330 mgd**   **Min Flow: 0.030 mgd**





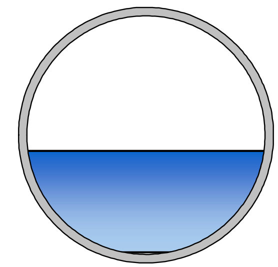
SITE M4

Average Dry Weather Flow Hydrographs



ADWF:

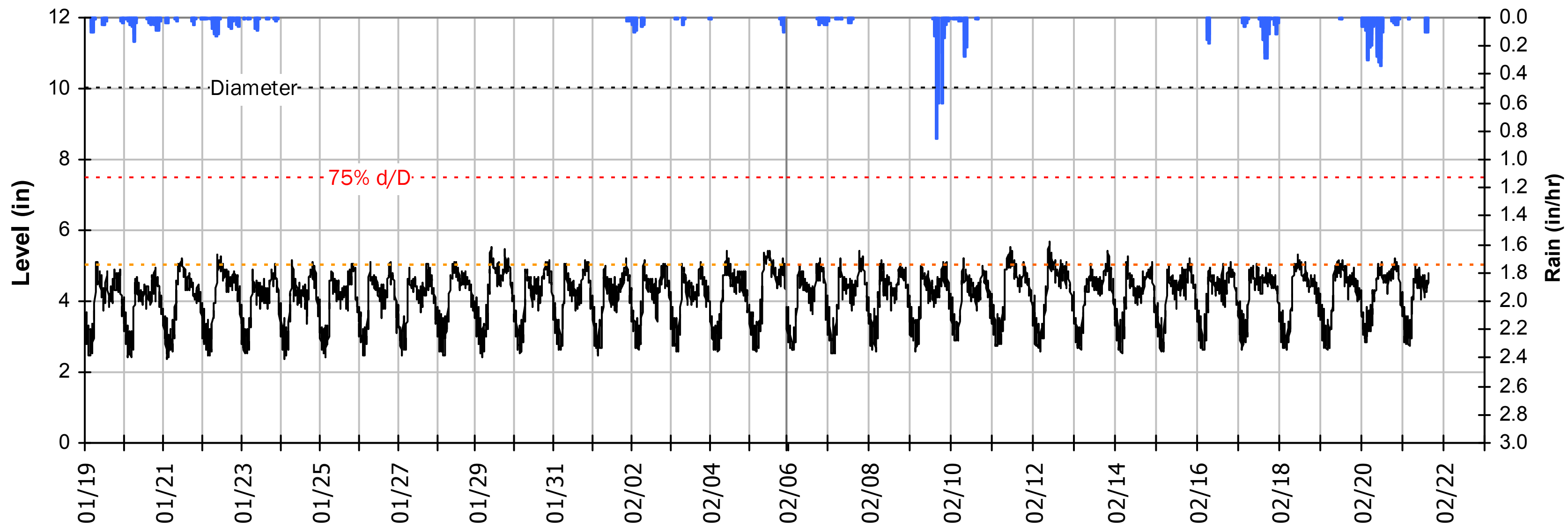
0.170 *mgd*

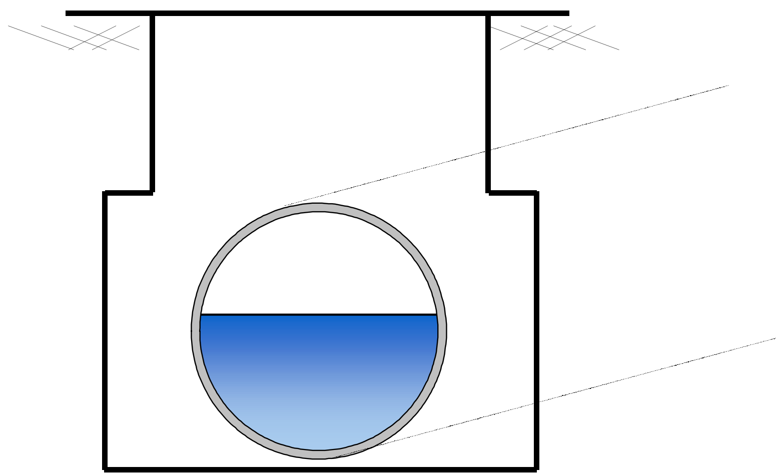


SITE M4

Site Capacity and Surcharge Summary

Realtime Flow Levels with Rainfall Data over Monitoring Period

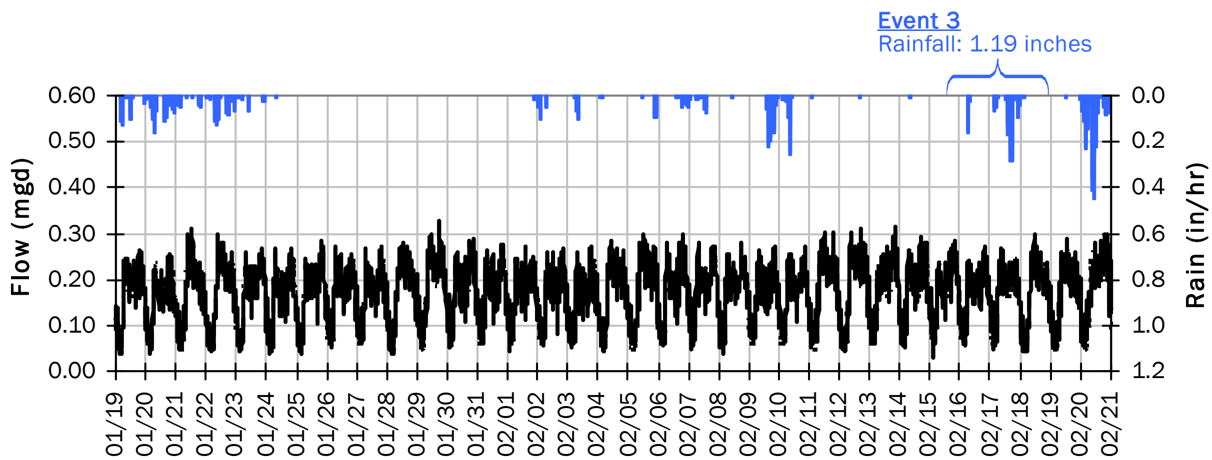




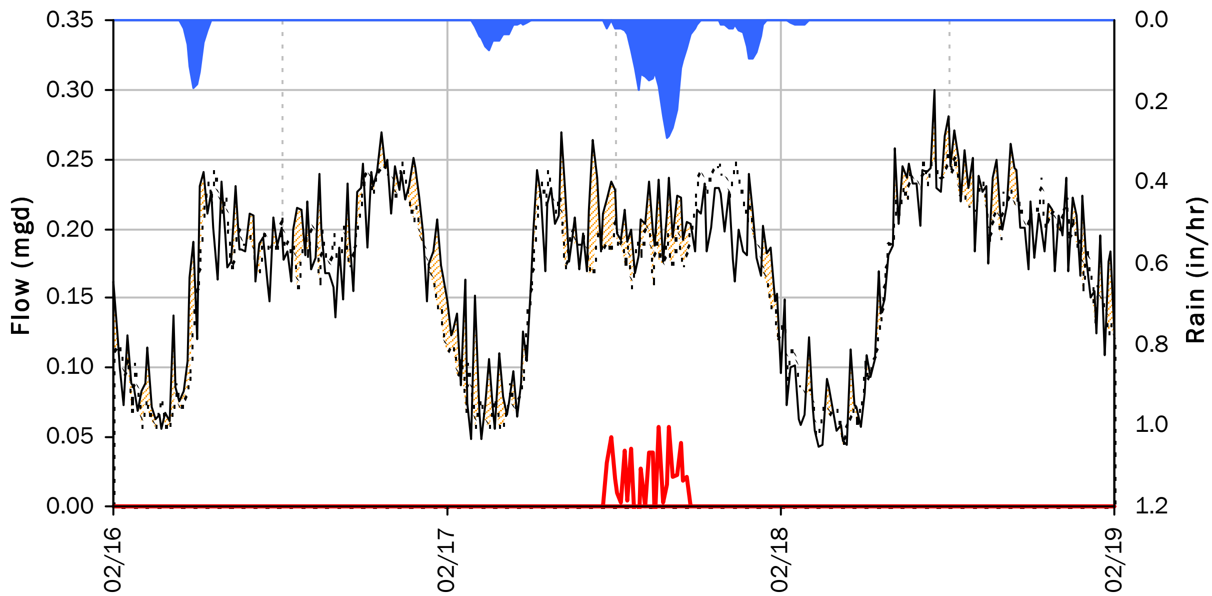
Pipe Diameter:	10	*inches*
Peak Measured Level:	5.67	*inches*
Peak d/D Ratio:	0.57	

SITE M4
I/I Summary: Event 3

Baseline and Realtime Flows with Rainfall Data over Monitoring Period



Event 3 Detail Graph



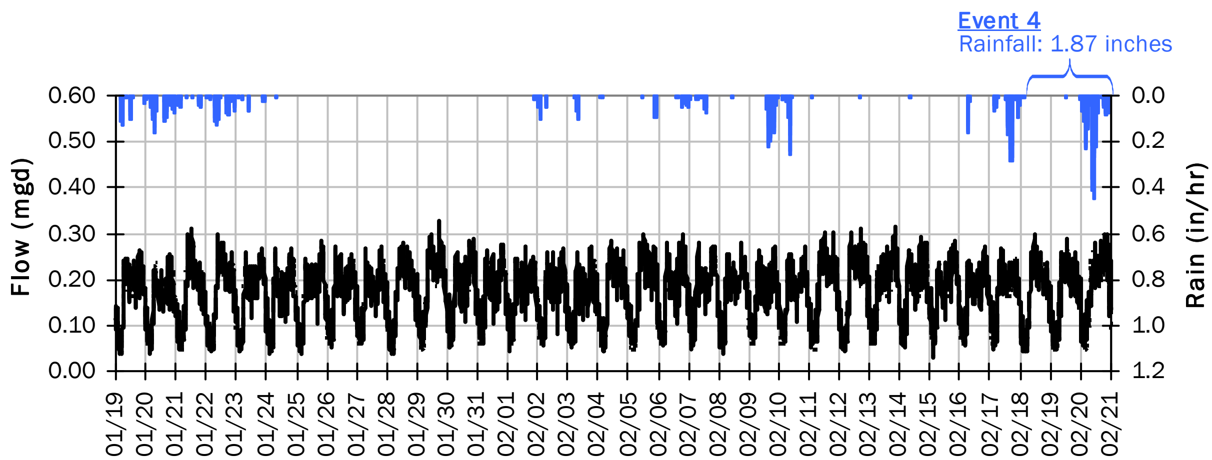
Storm Event I/I Analysis (Rain = 1.20 inches)

Capacity		Inflow / Infiltration	
Peak Flow:	0.24 *mgd*	**Peak I/I Rate:**	0.06 *mgd*
PF:	1.39	**Total I/I:**	5,000 *gallons*
Peak Level:	4.95 *in*		
d/D Ratio:	0.49		

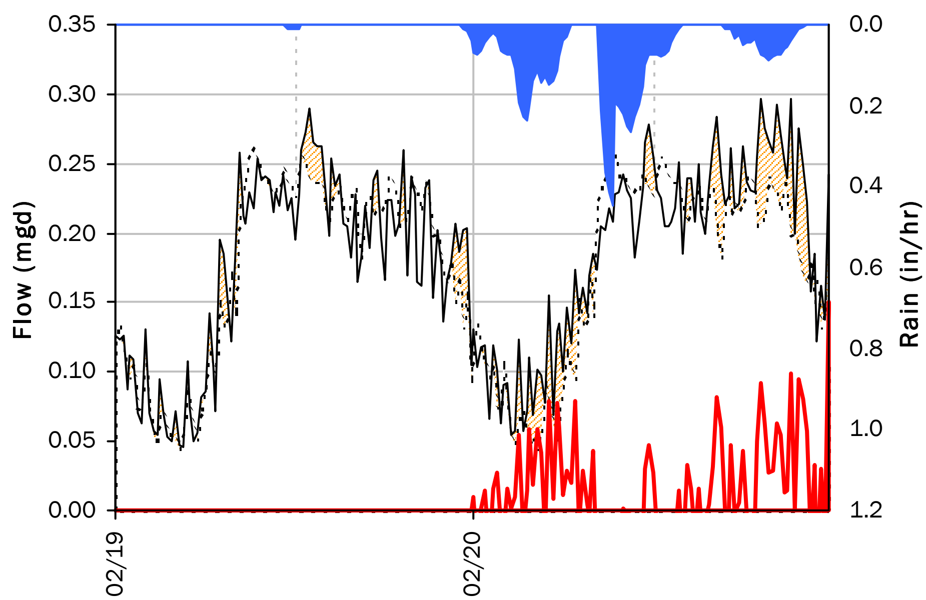
SITE M4

I/I Summary: Event 4

Baseline and Realtime Flows with Rainfall Data over Monitoring Period



Event 4 Detail Graph

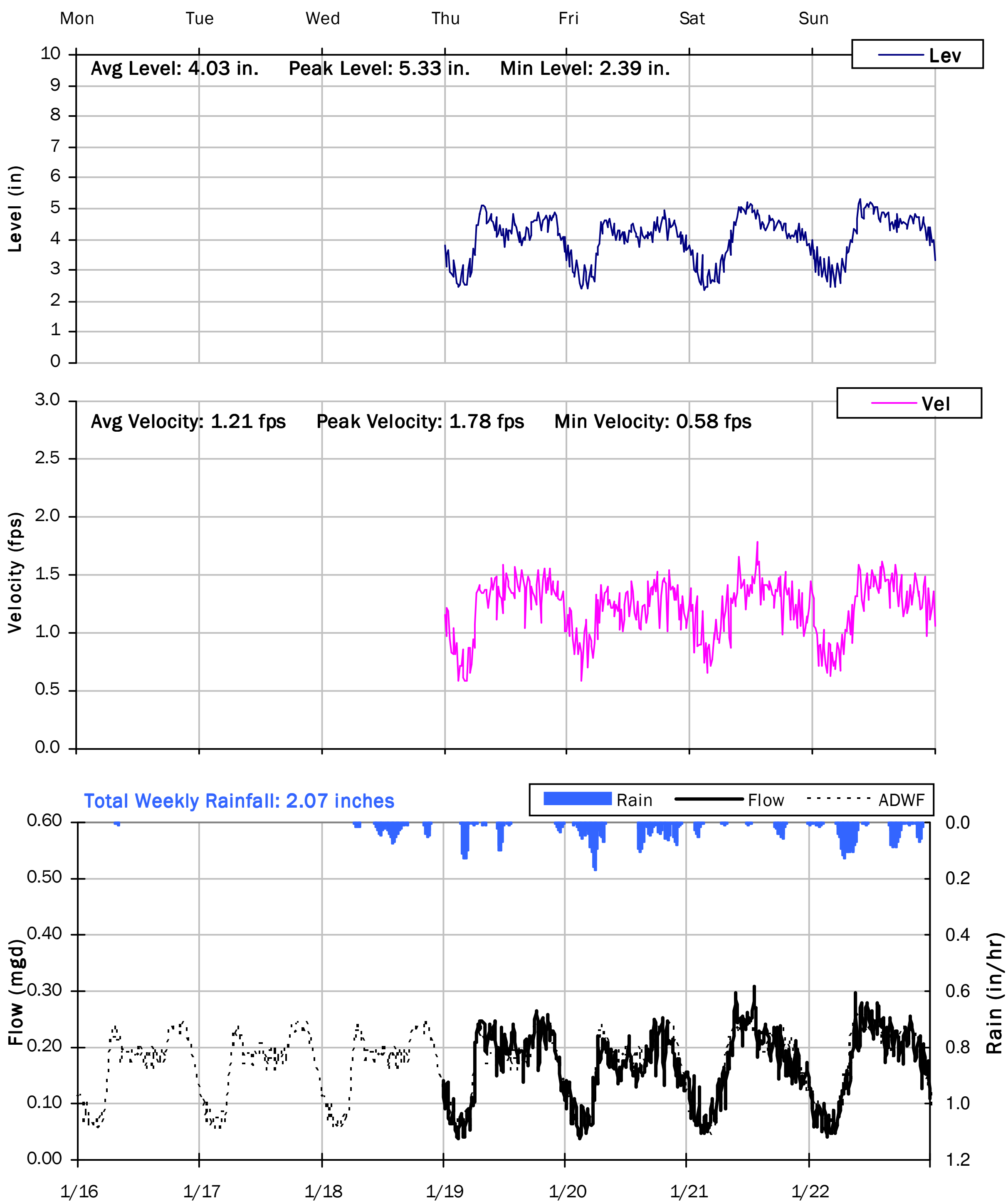


Storm Event I/I Analysis (Rain = 1.87 inches)

Capacity		Inflow / Infiltration	
Peak Flow:	0.30 *mgd*	**Peak I/I Rate:**	0.15 *mgd*
PF:	1.75	**Total I/I:**	15,000 *gallons*
Peak Level:	5.23 *in*		
d/D Ratio:	0.52		

SITE M4

Weekly Level, Velocity and Flow Hydrographs
1/16/2017 to 1/23/2017

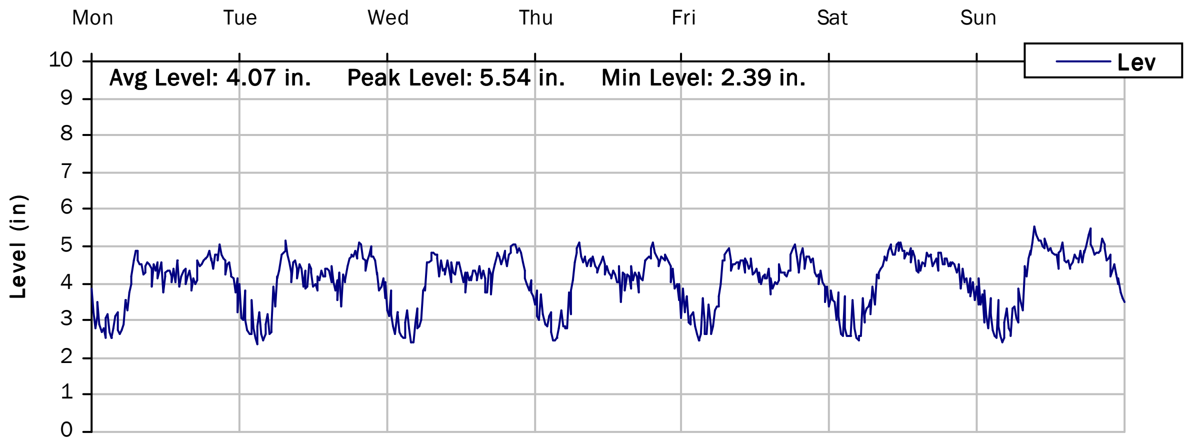


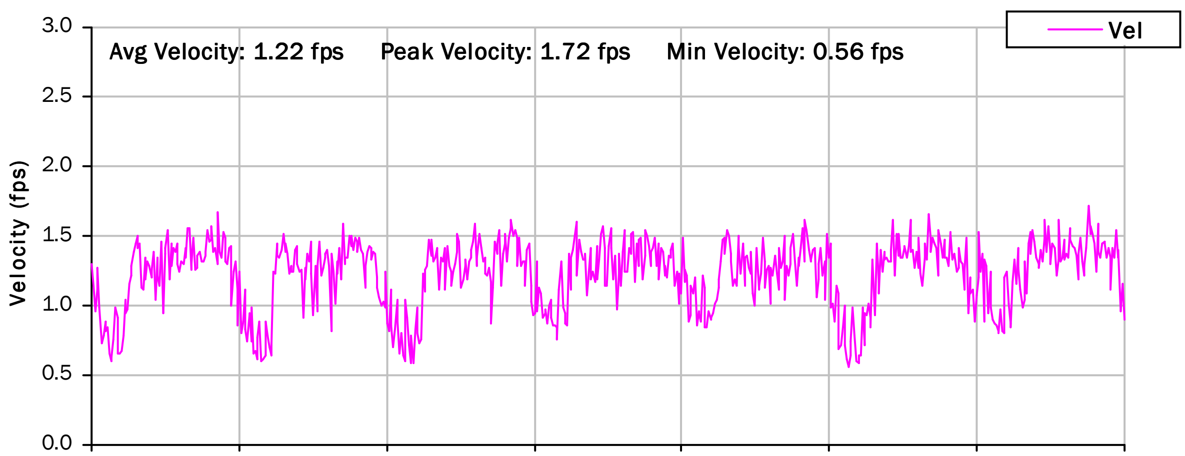
Avg Flow: 0.168 mgd **Peak Flow: 0.309 mgd** **Min Flow: 0.039 mgd**

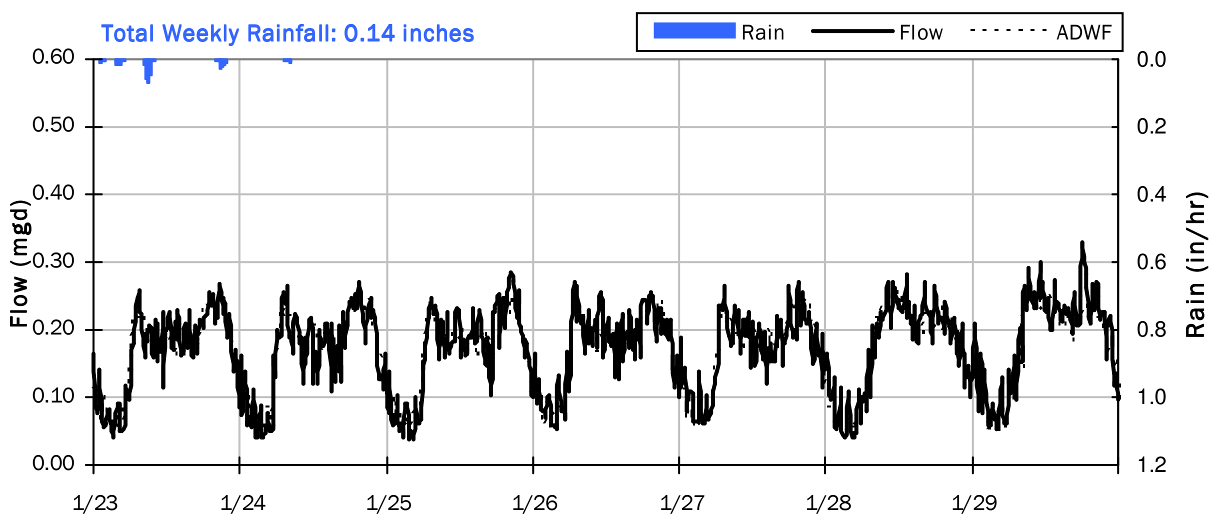
SITE M4

Weekly Level, Velocity and Flow Hydrographs

1/23/2017 to 1/30/2017





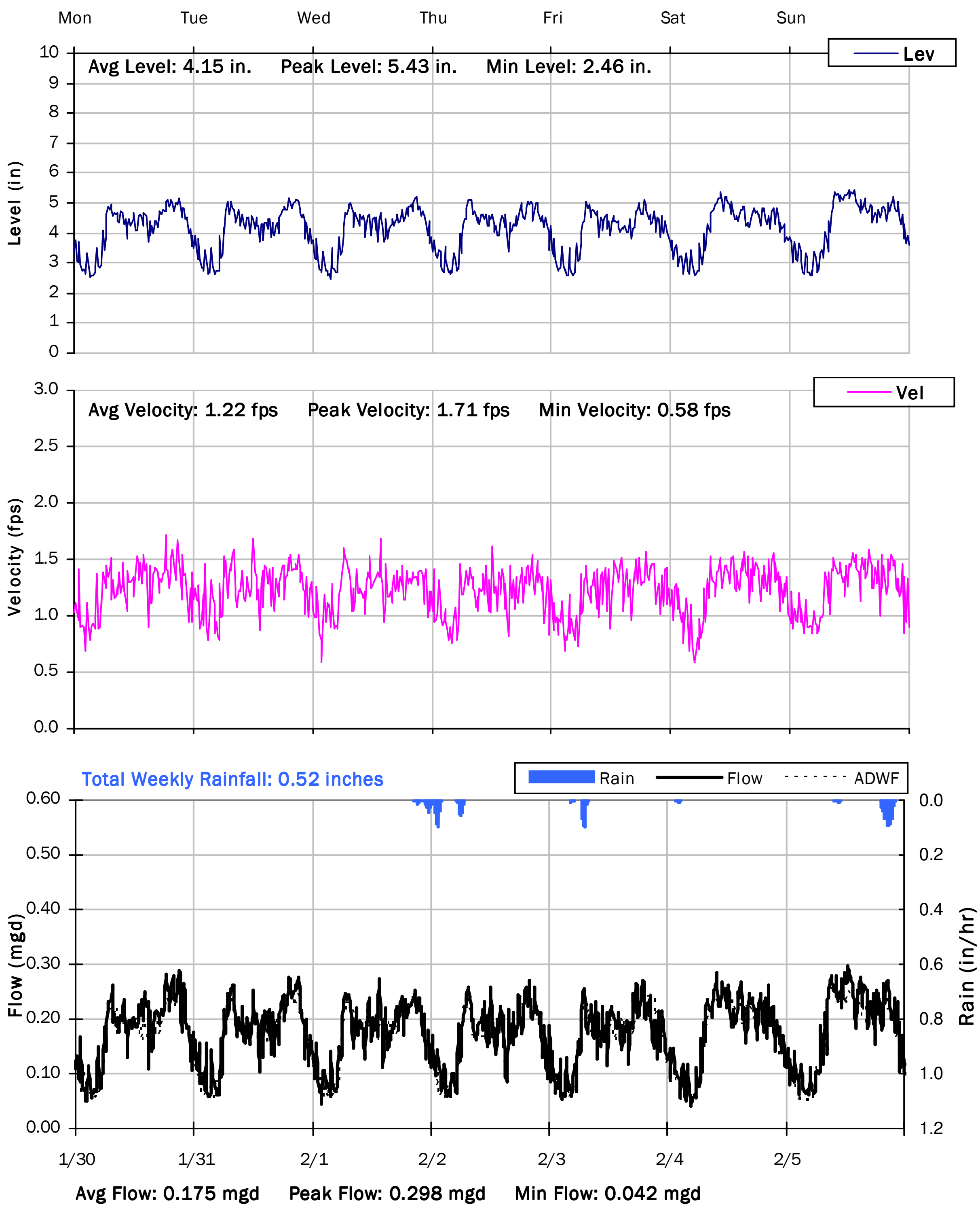


Avg Flow: 0.172 mgd **Peak Flow: 0.330 mgd** **Min Flow: 0.039 mgd**

SITE M4

Weekly Level, Velocity and Flow Hydrographs

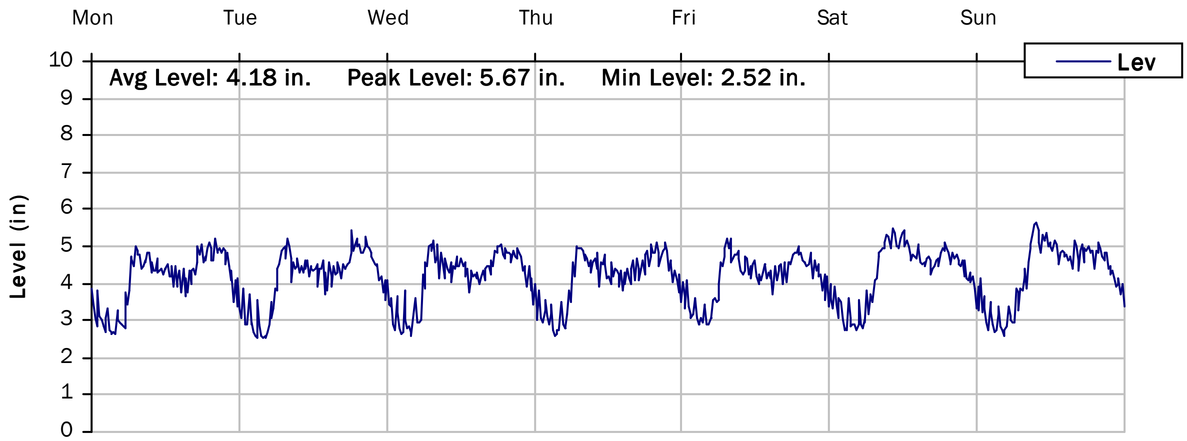
1/30/2017 to 2/6/2017

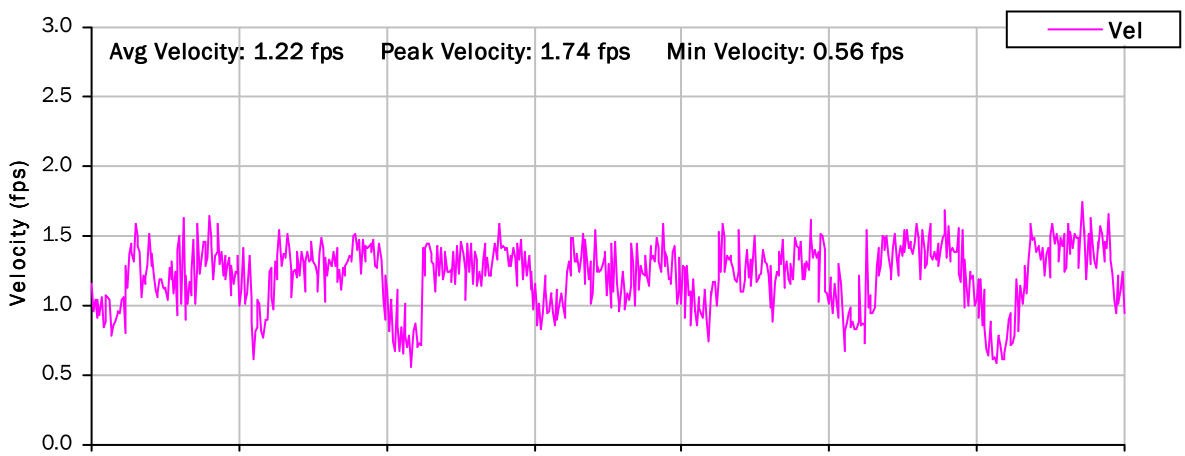


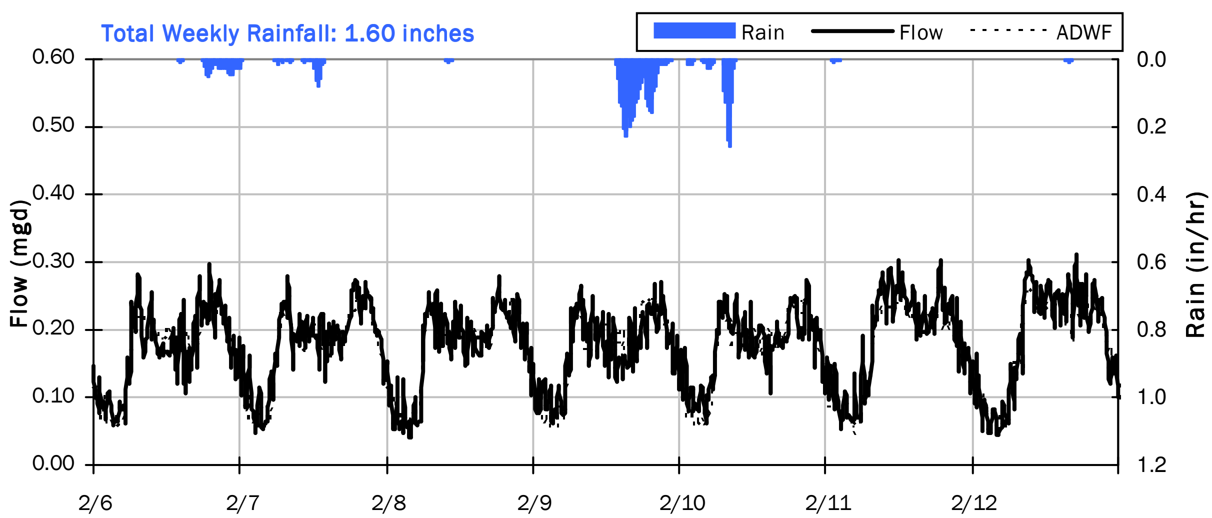
SITE M4

Weekly Level, Velocity and Flow Hydrographs

2/6/2017 to 2/13/2017

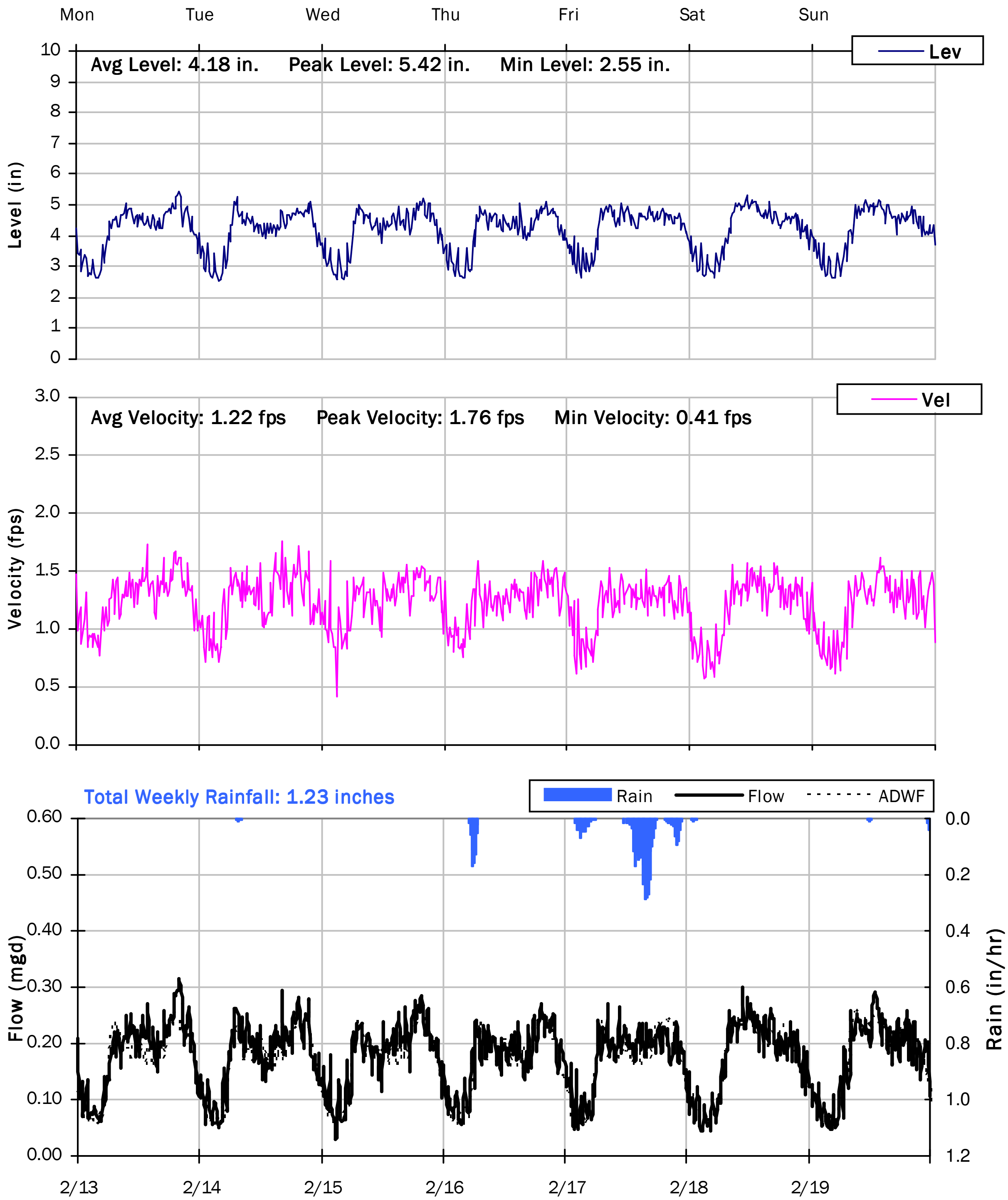






Avg Flow: 0.177 mgd **Peak Flow: 0.312 mgd** **Min Flow: 0.040 mgd**

SITE M4
Weekly Level, Velocity and Flow Hydrographs
2/13/2017 to 2/20/2017

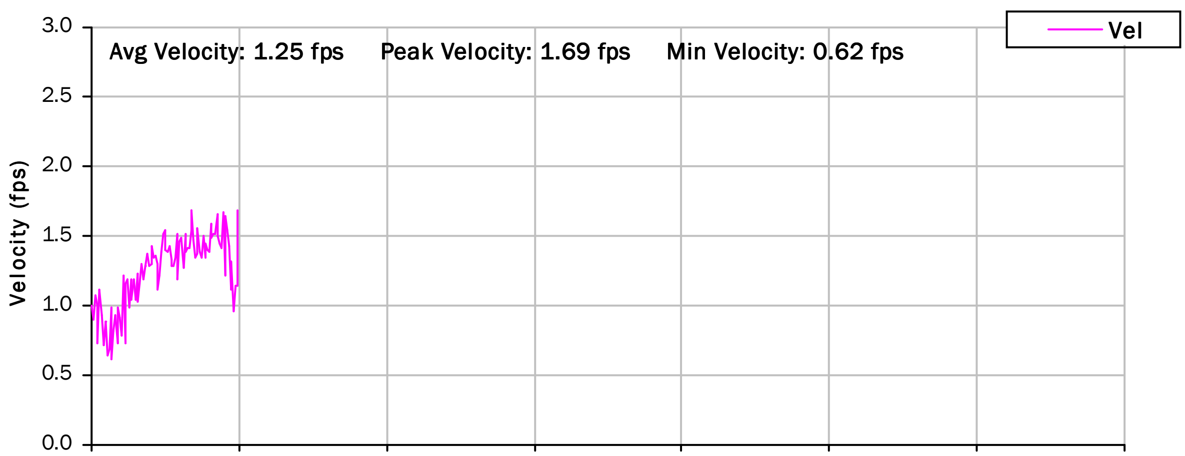


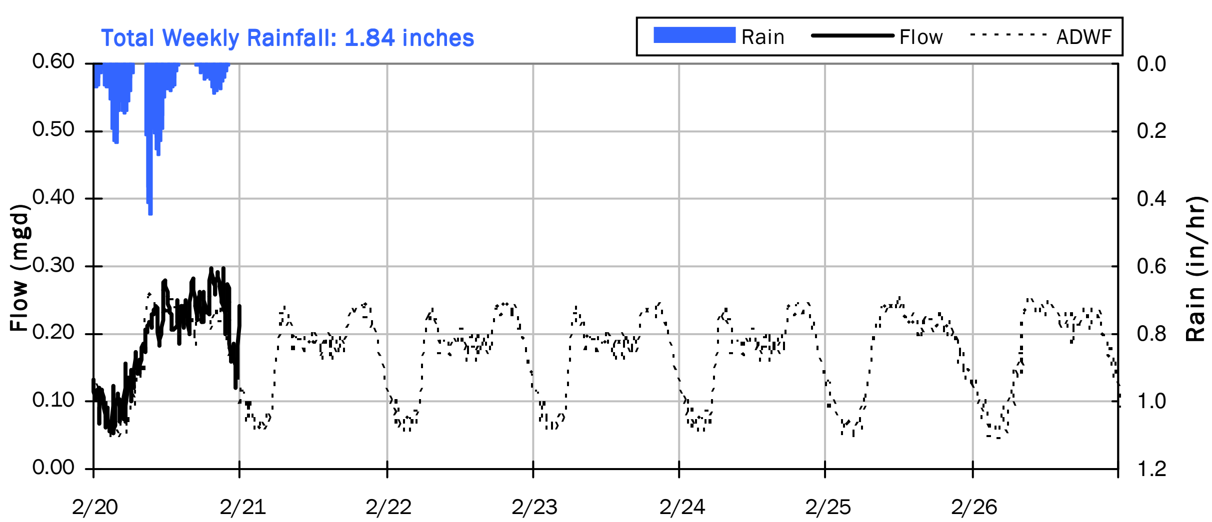
Avg Flow: 0.177 mgd **Peak Flow: 0.315 mgd** **Min Flow: 0.030 mgd**

SITE M4

Weekly Level, Velocity and Flow Hydrographs

2/20/2017 to 2/27/2017





Avg Flow: 0.189 mgd **Peak Flow: 0.297 mgd** **Min Flow: 0.055 mgd**

Marina Coast Water District

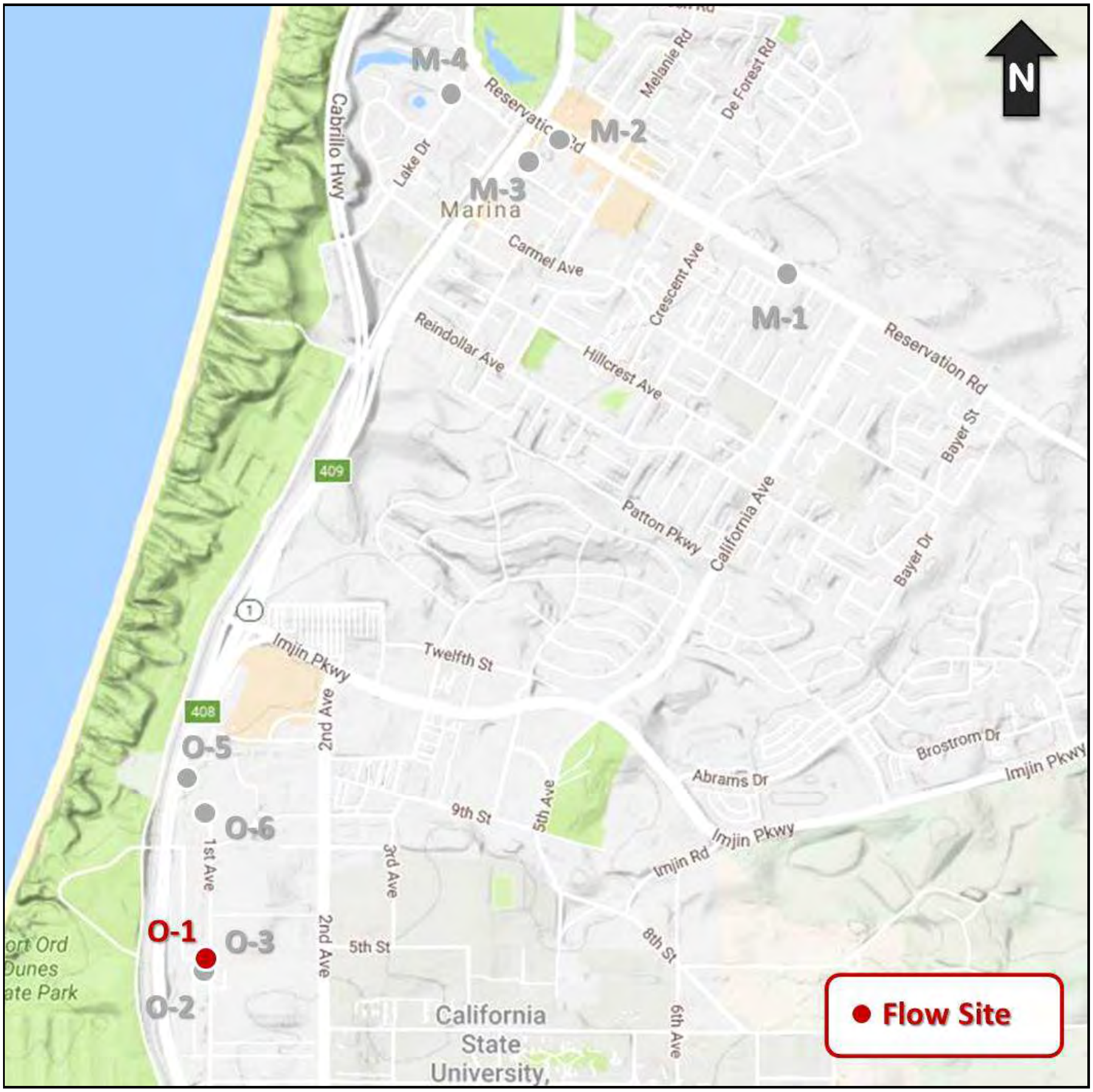
Sanitary Sewer Flow Monitoring

Temporary Monitoring: January 2017 - March 2017

Monitoring Site: Site 01

Location: Lot northwest of intersection of 1st Avenue and 5th Street

Data Summary Report

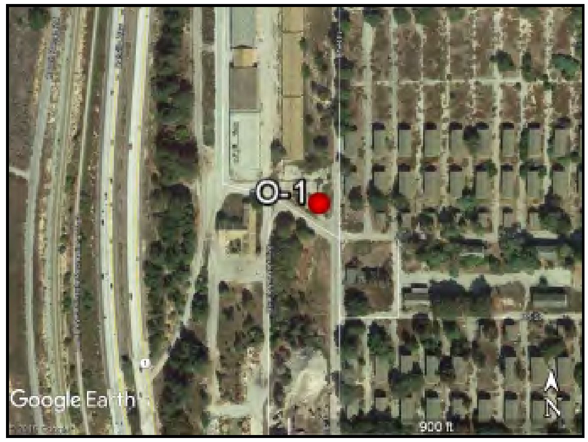


Vicinity Map: Site 01

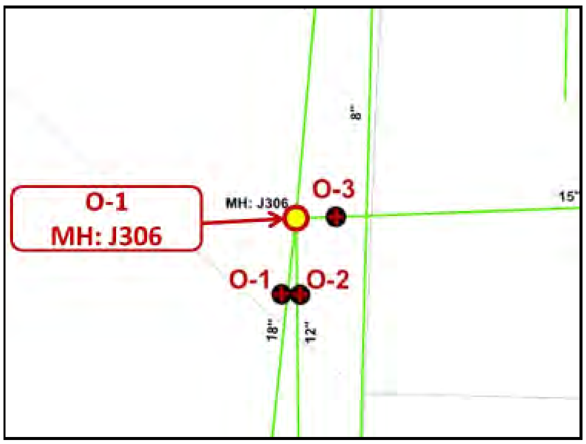
SITE 01

Site Information

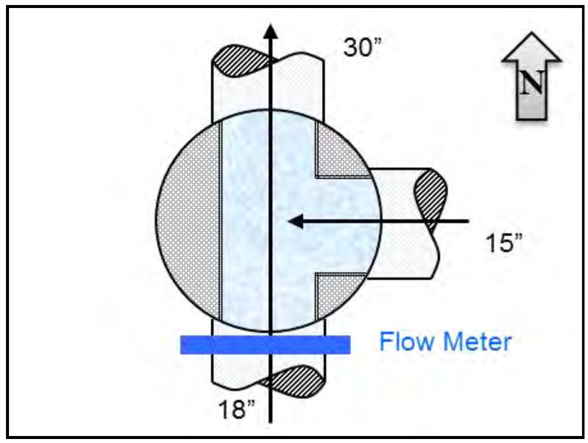
Location:	Lot northwest of intersection of 1st Avenue and 5th Street
Coordinates:	121.8145° W, 36.6573° N
Pipe Diameter:	18 inches
ADWF:	0.445 mgd
Peak Measured Flow:	1.384 mgd



Satellite Map



Sewer Map



Flow Sketch


Street View


Plan View

SITE 01

Additional Site Photos

Effluent Pipe

South Influent Pipe

SITE 01

Additional Site Photos

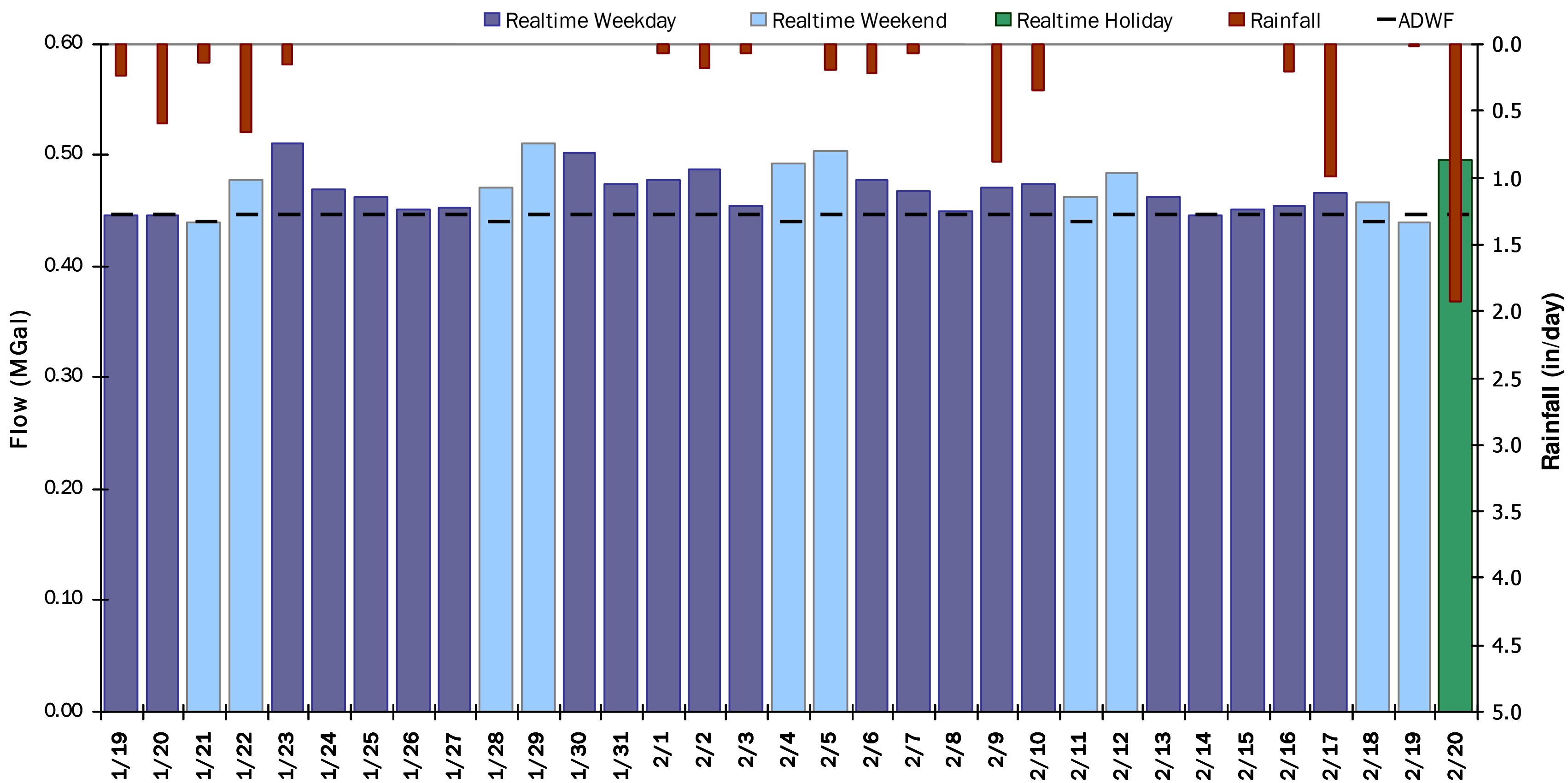
East Influent Pipe

SITE 01

Period Flow Summary: Daily Flow Totals

Avg Period Flow: 0.469 MGal **Peak Daily Flow: 0.512 MGal** **Min Daily Flow: 0.439 MGal**

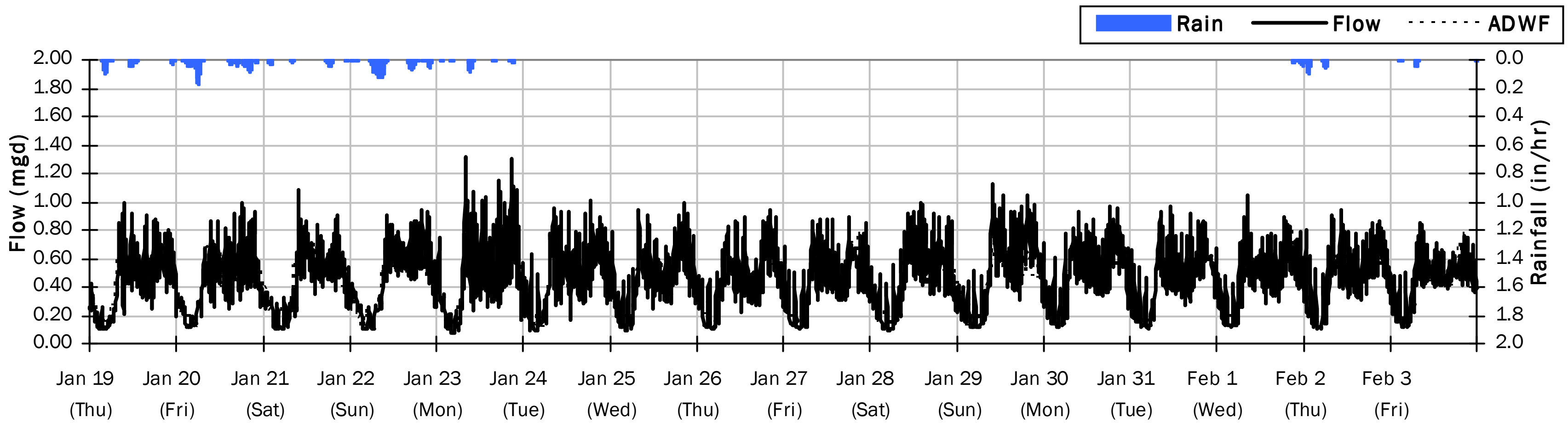
Total Period Rainfall: 6.93 inches

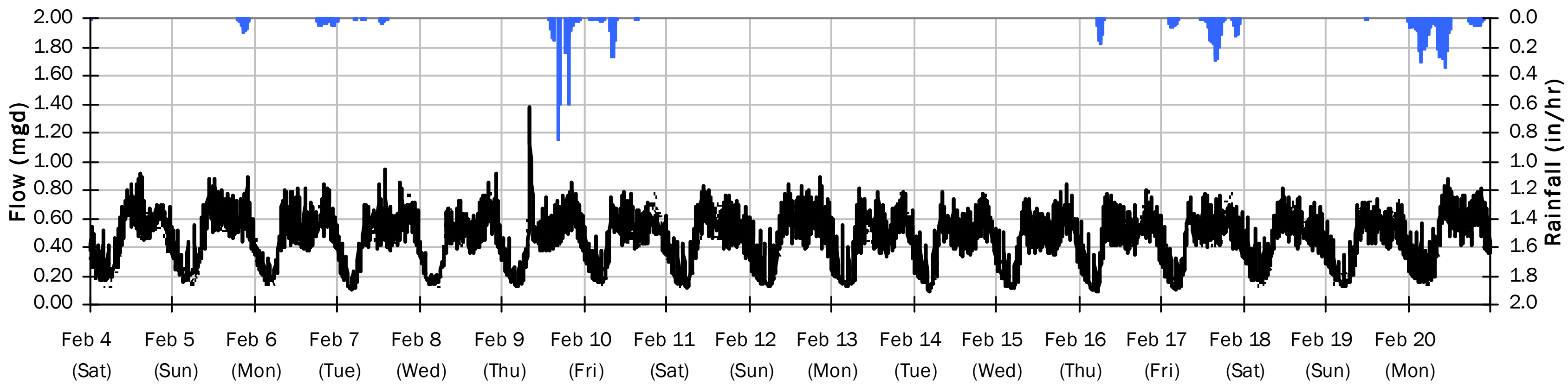


SITE 01

Flow Summary: 1/19/2017 to 2/20/2017

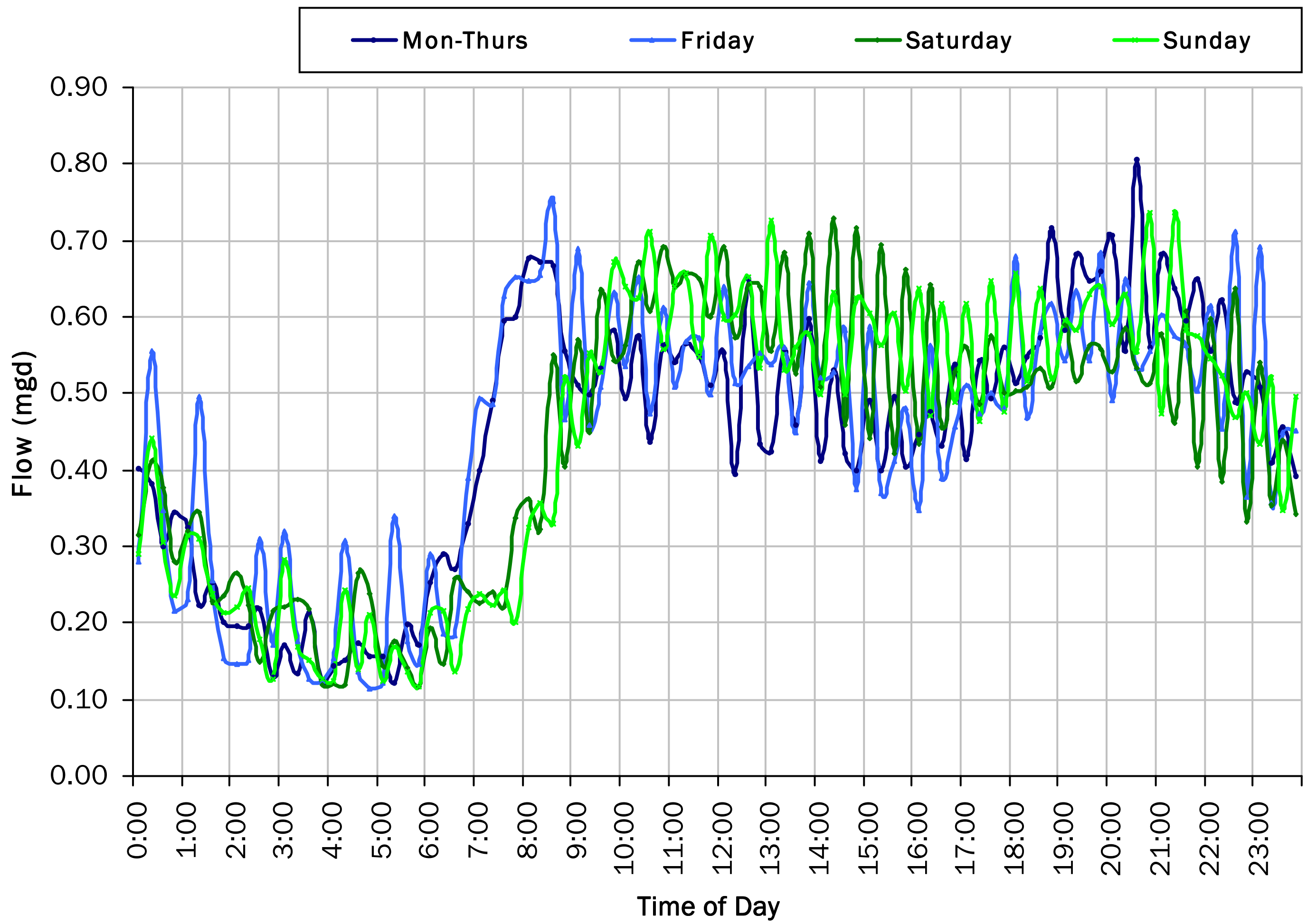
Total Period Rainfall: 6.93 inches   **Avg Flow: 0.469 mgd**   **Peak Flow: 1.384 mgd**   **Min Flow: 0.081 mgd**





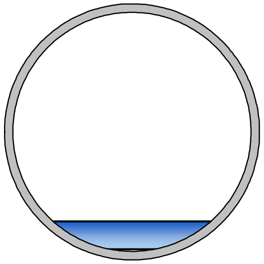
SITE 01

Average Dry Weather Flow Hydrographs



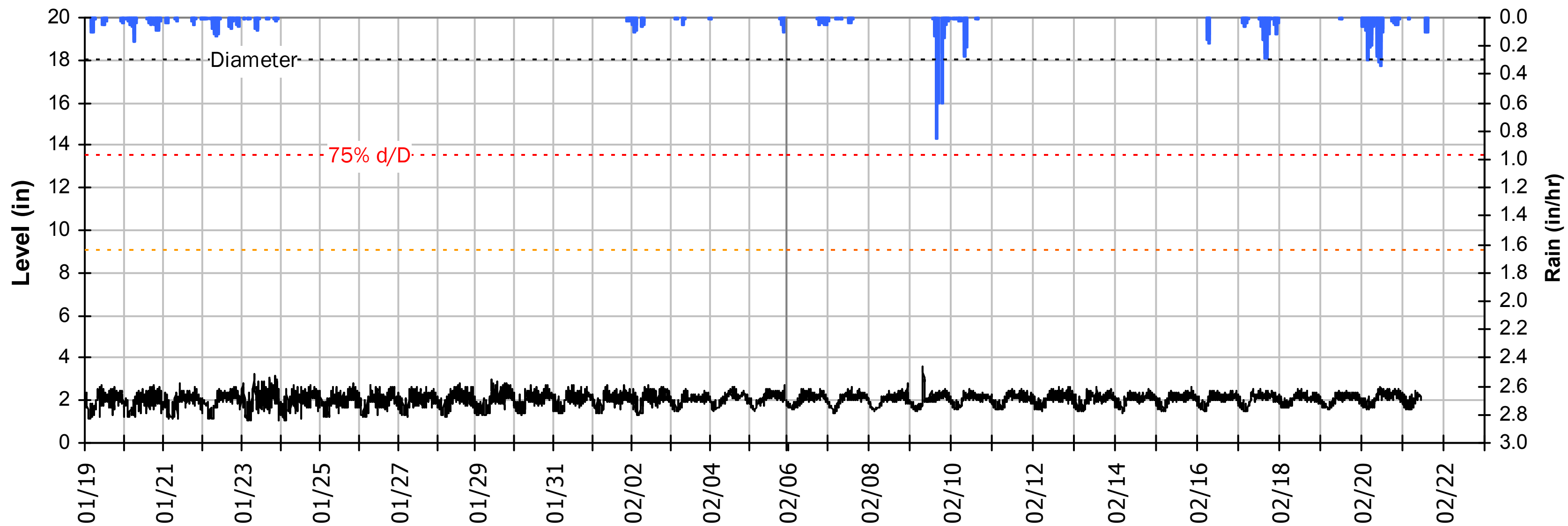
ADWF:

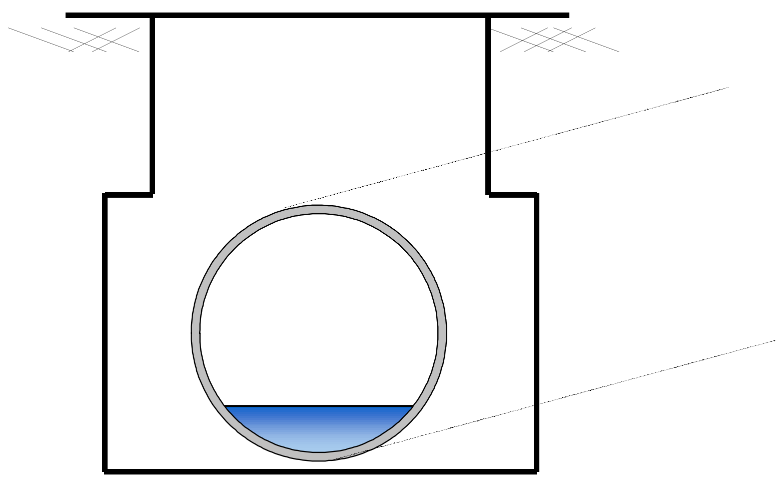
0.445 *mgd*



SITE 01
Site Capacity and Surcharge Summary

Realtime Flow Levels with Rainfall Data over Monitoring Period



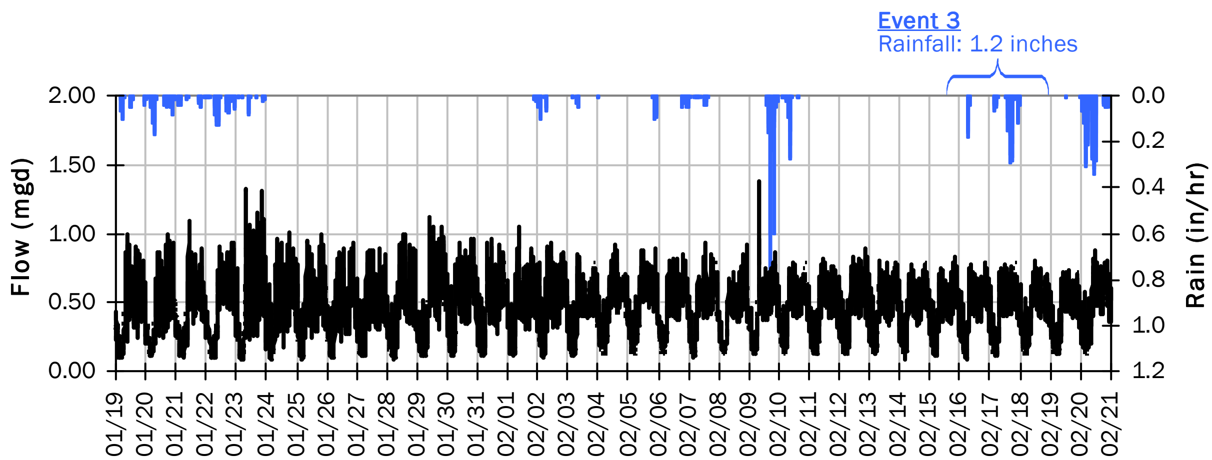


Pipe Diameter:	18	*inches*
Peak Measured Level:	3.61	*inches*
Peak d/D Ratio:	0.20	

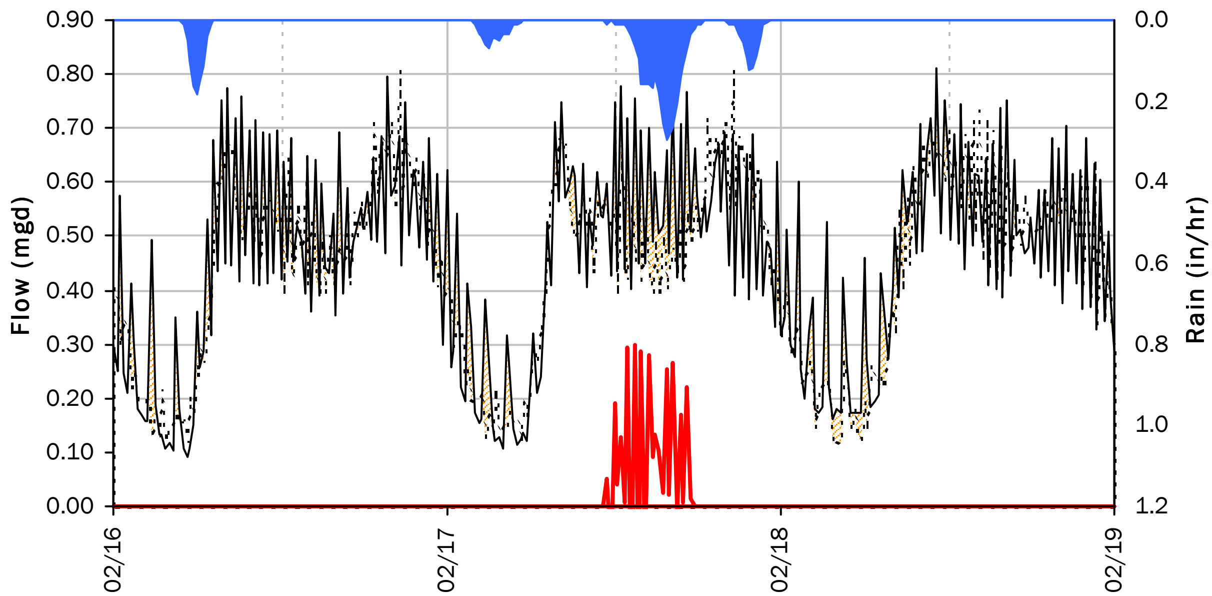
SITE 01

I/I Summary: Event 3

Baseline and Realtime Flows with Rainfall Data over Monitoring Period



Event 3 Detail Graph



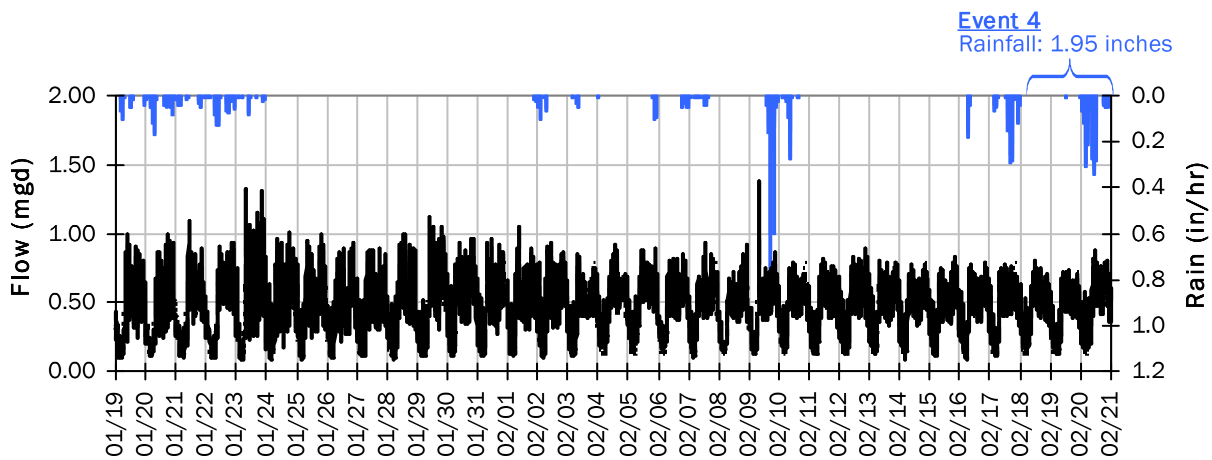
Storm Event I/I Analysis (Rain = 1.20 inches)

Capacity		Inflow / Infiltration	
Peak Flow:	0.78 *mgd*	**Peak I/I Rate:**	0.30 *mgd*
PF:	1.75	**Total I/I:**	25,000 *gallons*
Peak Level:	2.56 *in*		
d/D Ratio:	0.14		

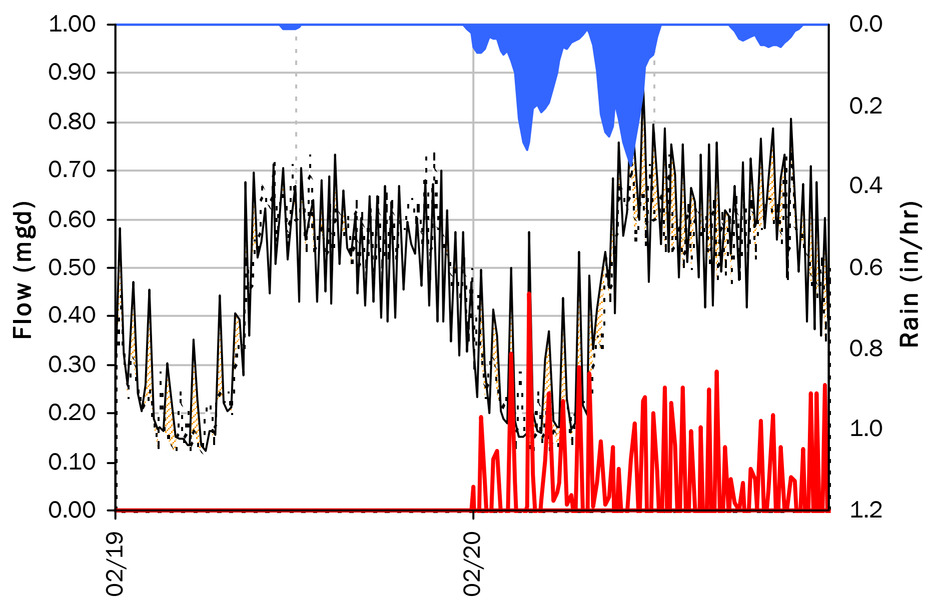
SITE 01

I/I Summary: Event 4

Baseline and Realtime Flows with Rainfall Data over Monitoring Period



Event 4 Detail Graph



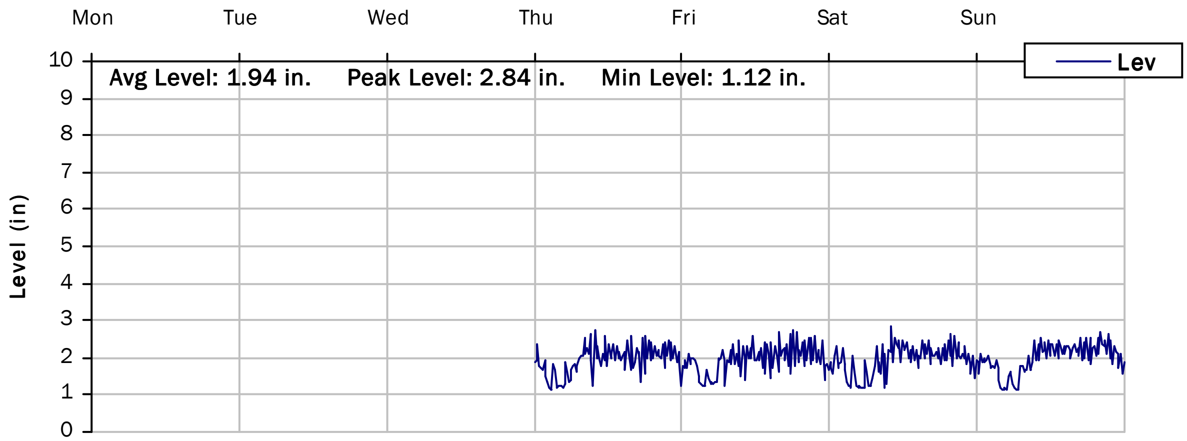
Storm Event I/I Analysis (Rain = 1.95 inches)

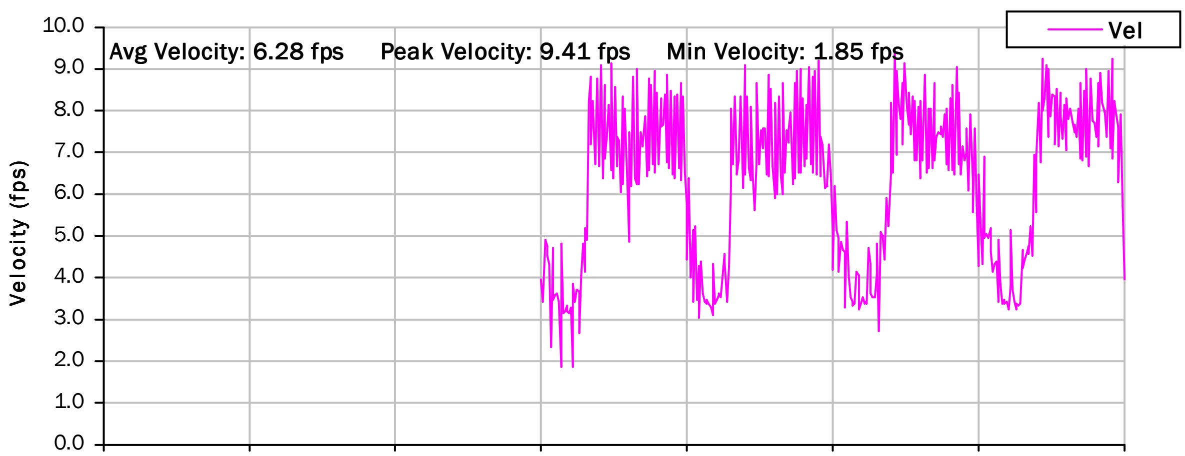
Capacity		**Inflow / Infiltration**	
Peak Flow:	0.88 *mgd*	**Peak I/I Rate:**	0.45 *mgd*
PF:	1.98	**Total I/I:**	49,000 *gallons*
Peak Level:	2.65 *in*		
d/D Ratio:	0.15		

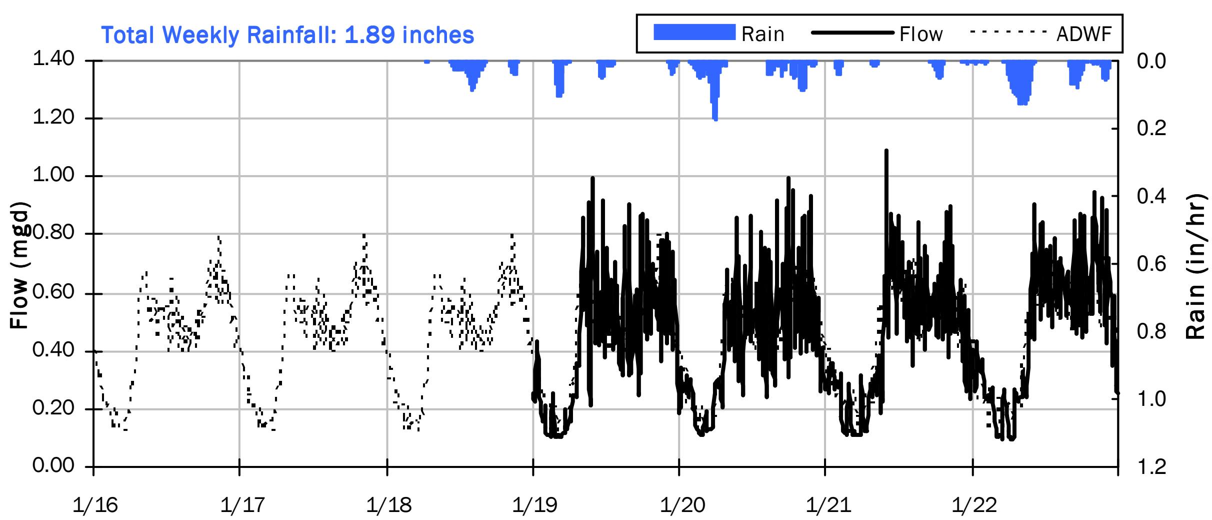
SITE 01

Weekly Level, Velocity and Flow Hydrographs

1/16/2017 to 1/23/2017





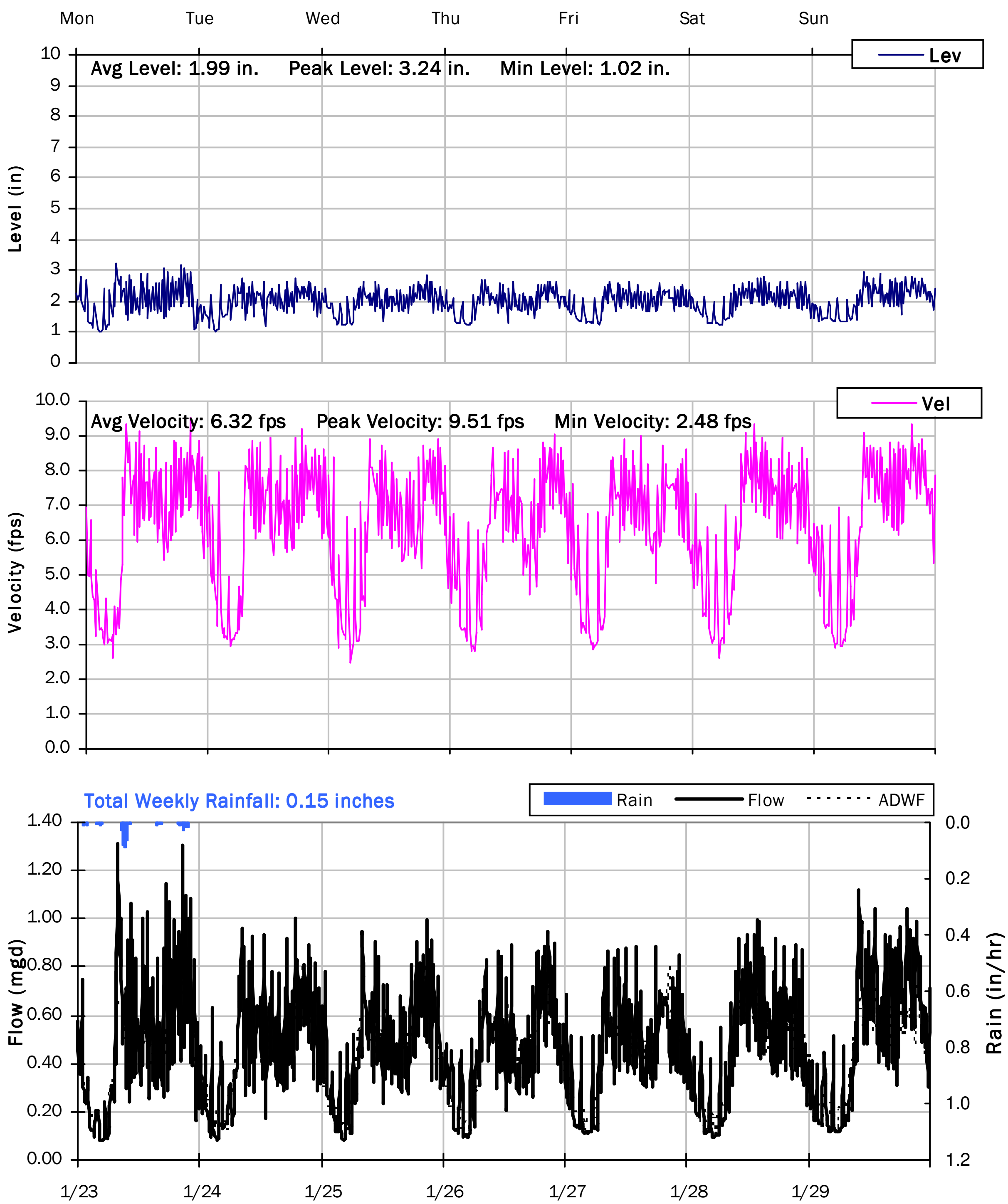


Avg Flow: 0.453 mgd **Peak Flow: 1.088 mgd** **Min Flow: 0.097 mgd**

SITE 01

Weekly Level, Velocity and Flow Hydrographs

1/23/2017 to 1/30/2017

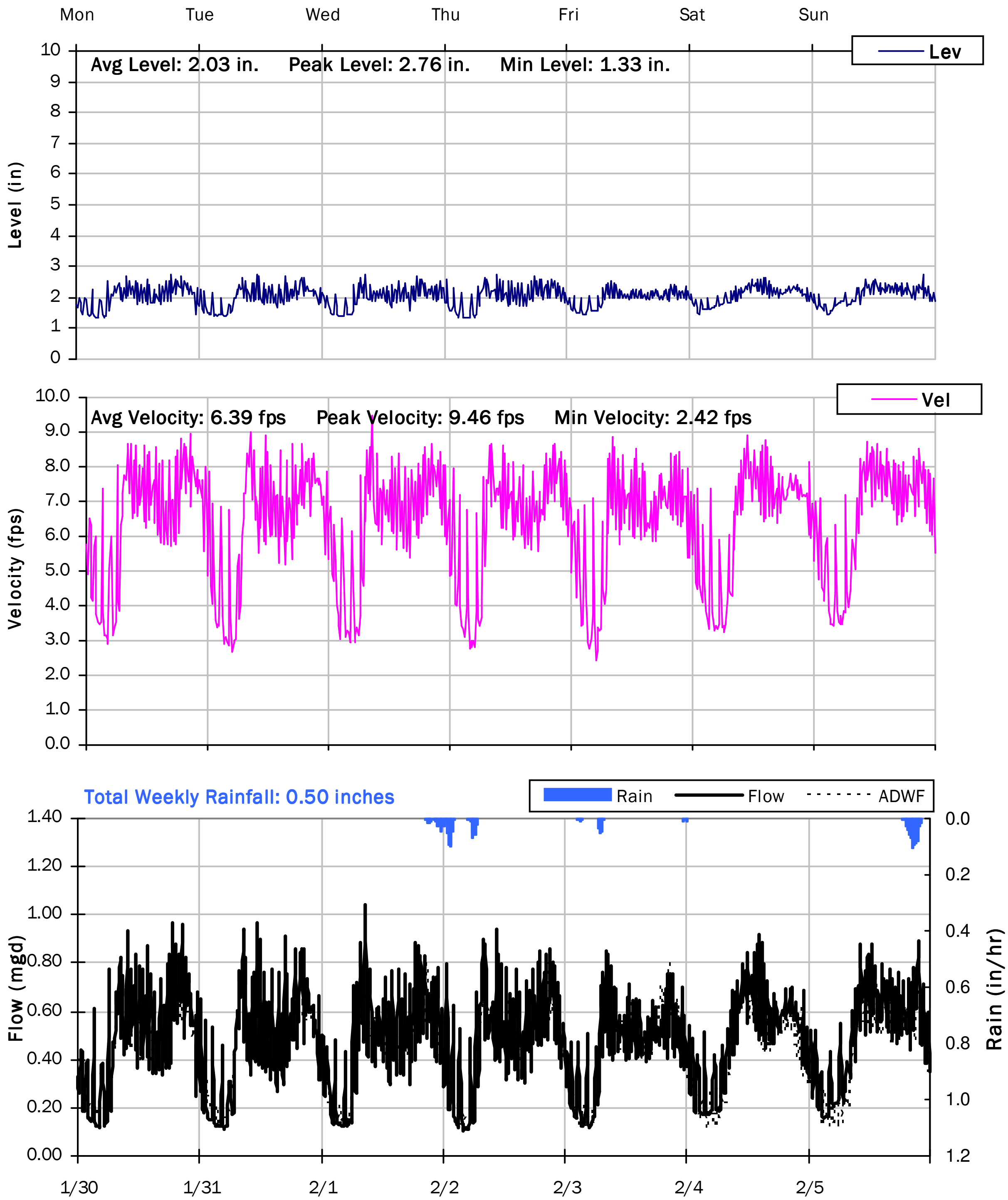


Avg Flow: 0.475 mgd Peak Flow: 1.304 mgd Min Flow: 0.081 mgd

SITE 01

Weekly Level, Velocity and Flow Hydrographs

1/30/2017 to 2/6/2017

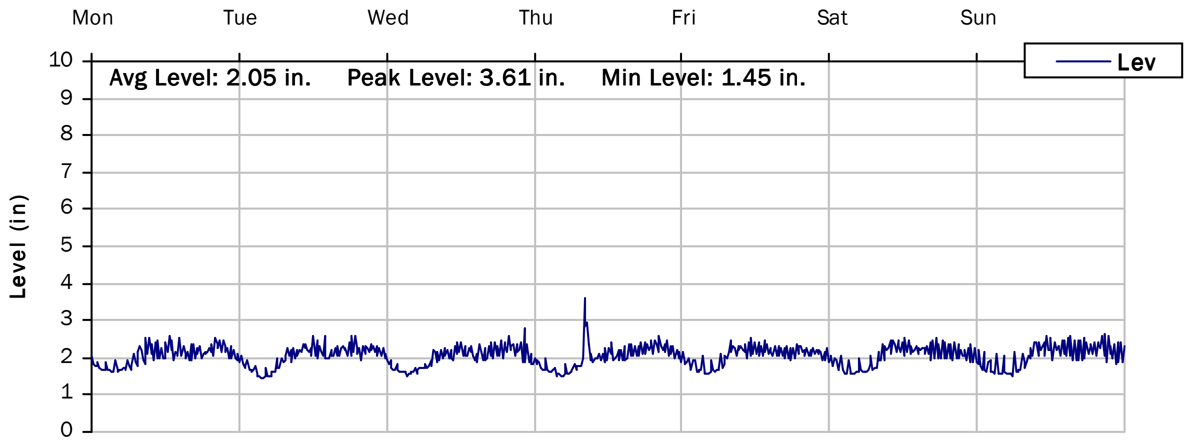


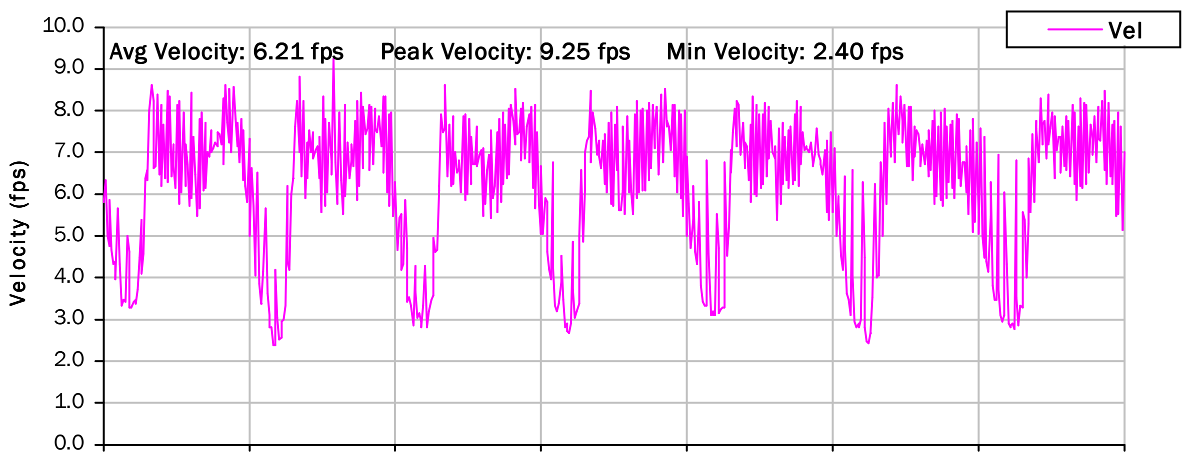
Avg Flow: 0.484 mgd **Peak Flow: 1.046 mgd** **Min Flow: 0.106 mgd**

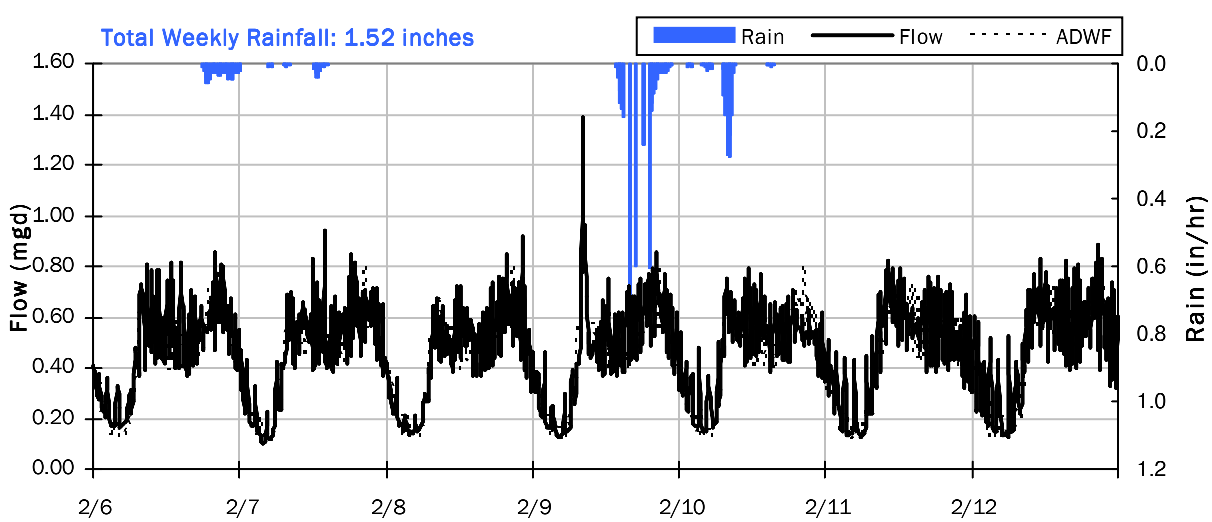
SITE 01

Weekly Level, Velocity and Flow Hydrographs

2/6/2017 to 2/13/2017





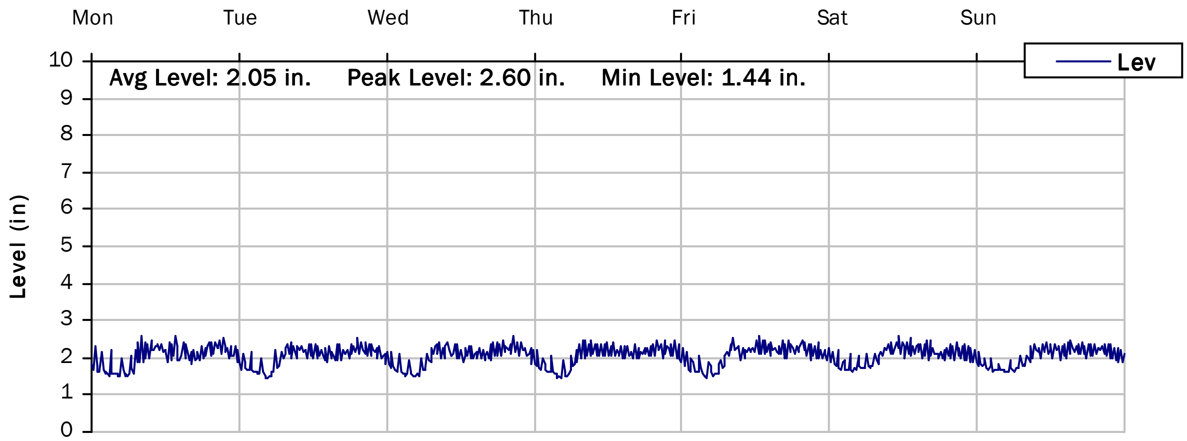


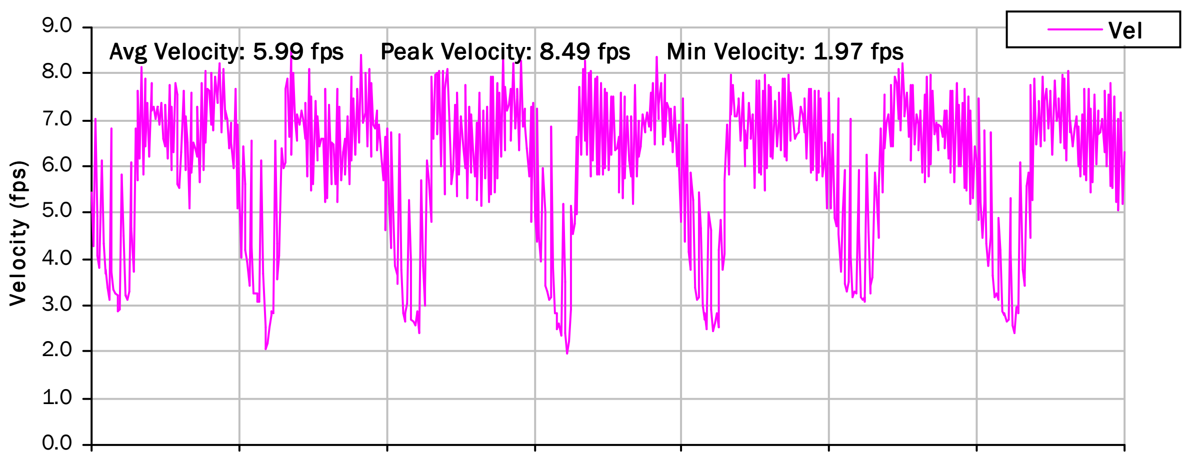
Avg Flow: 0.470 mgd **Peak Flow: 1.384 mgd** **Min Flow: 0.104 mgd**

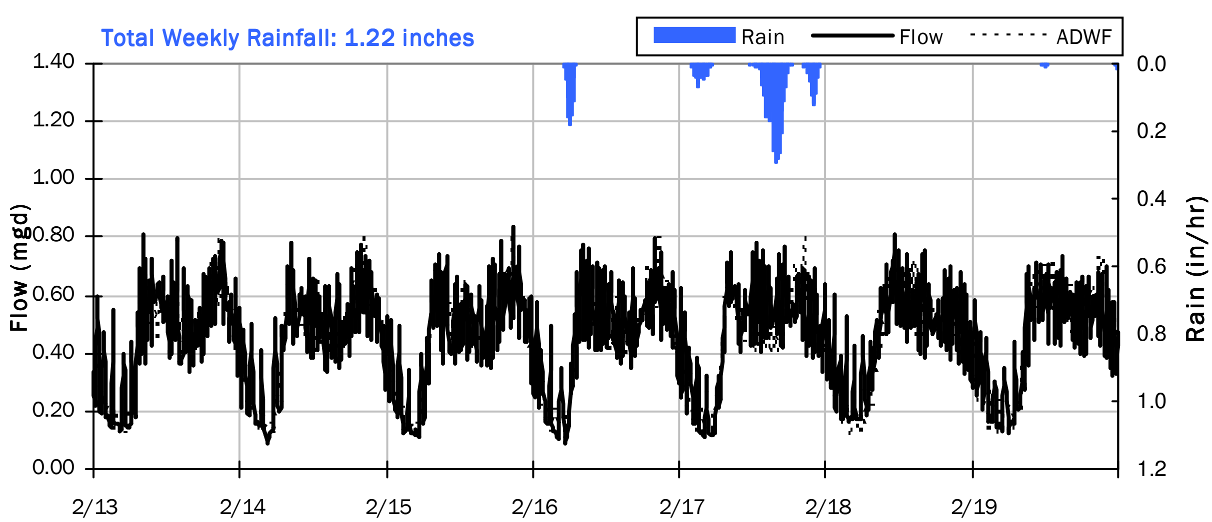
SITE 01

Weekly Level, Velocity and Flow Hydrographs

2/13/2017 to 2/20/2017

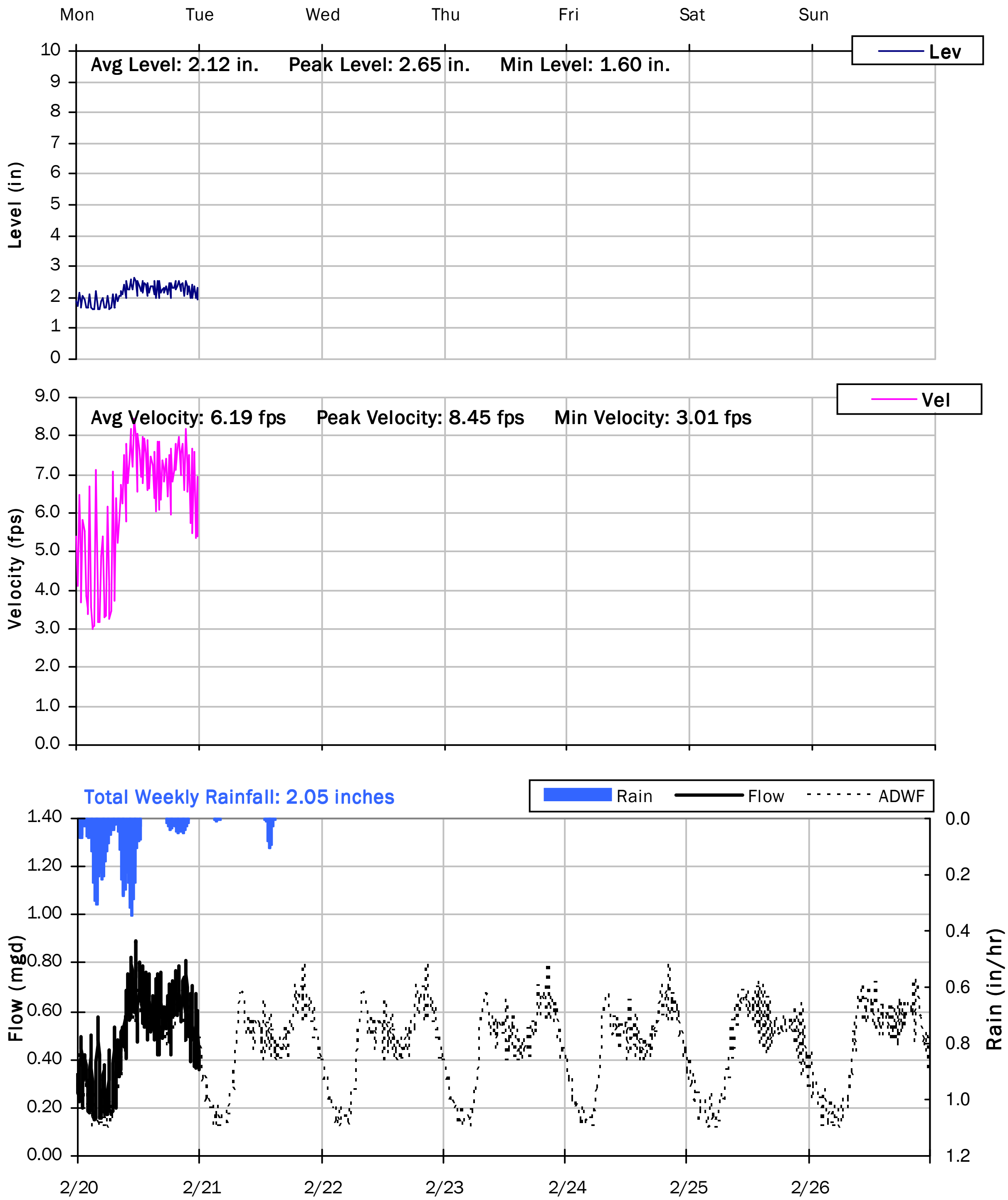






Avg Flow: 0.454 mgd **Peak Flow: 0.834 mgd** **Min Flow: 0.089 mgd**

SITE 01
Weekly Level, Velocity and Flow Hydrographs
2/20/2017 to 2/27/2017



Avg Flow: 0.495 mgd Peak Flow: 0.883 mgd Min Flow: 0.152 mgd

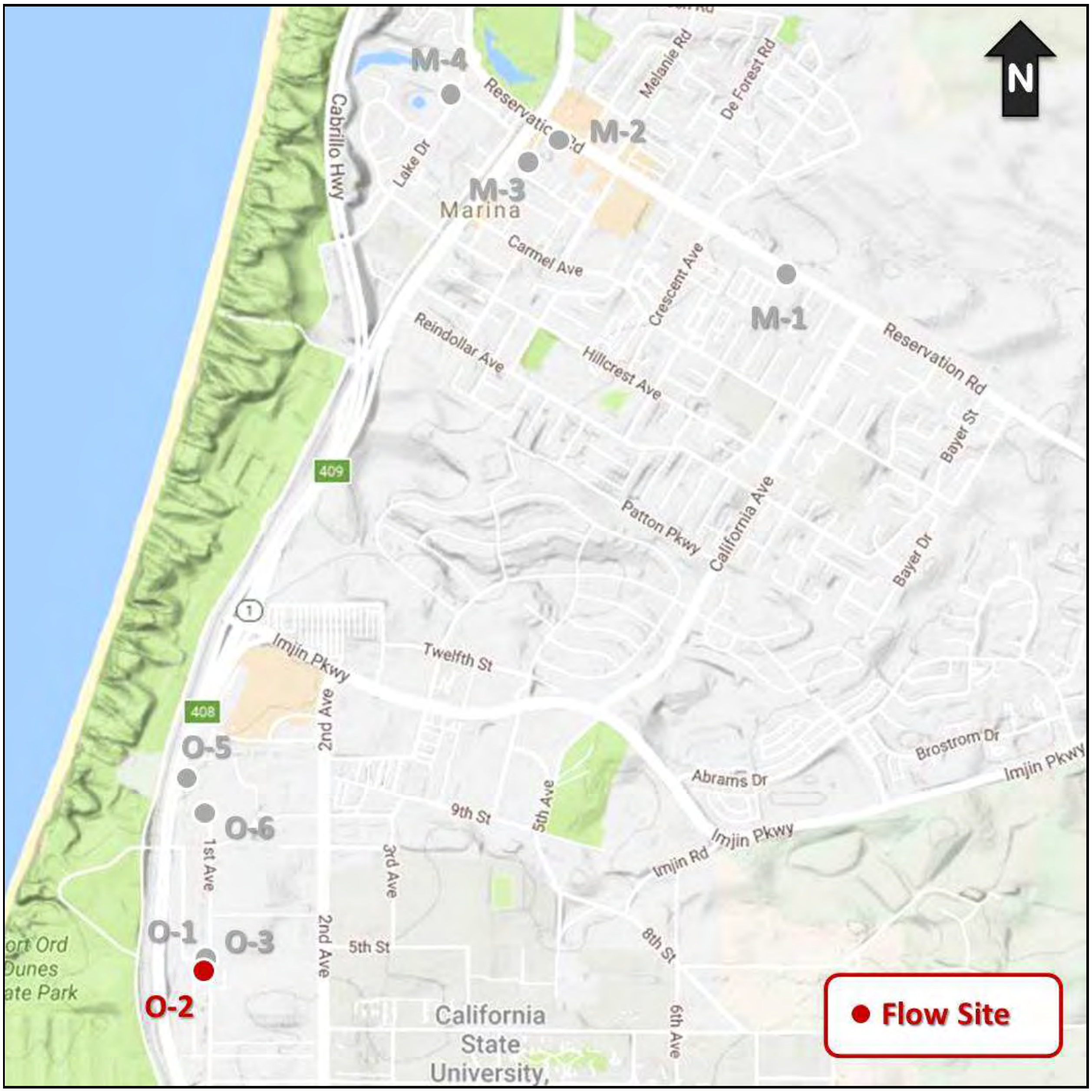
Marina Coast Water District

Sanitary Sewer Flow Monitoring
Temporary Monitoring: January 2017 - March 2017

Monitoring Site: Site 02

Location: Open space southwest of intersection of 1st Avenue and 5th

Data Summary Report



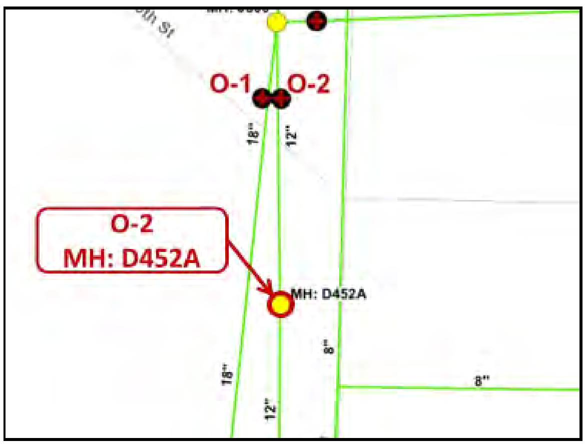
Vicinity Map: Site 02

SITE 02

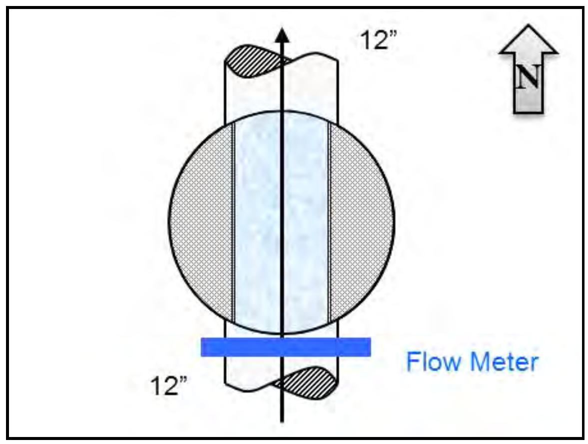
Site Information

Location:	Open space southwest of intersection of 1st Avenue and 5th Street
Coordinates:	121.8145° W, 36.6570° N
Pipe Diameter:	12 inches
ADWF:	0.075 mgd
Peak Measured Flow:	0.342 mgd

Satellite Map



Sewer Map



Flow Sketch

Street View

Plan View

SITE 02

Additional Site Photos

Effluent Pipe

Upper Influent Pipe

SITE 02

Additional Site Photos

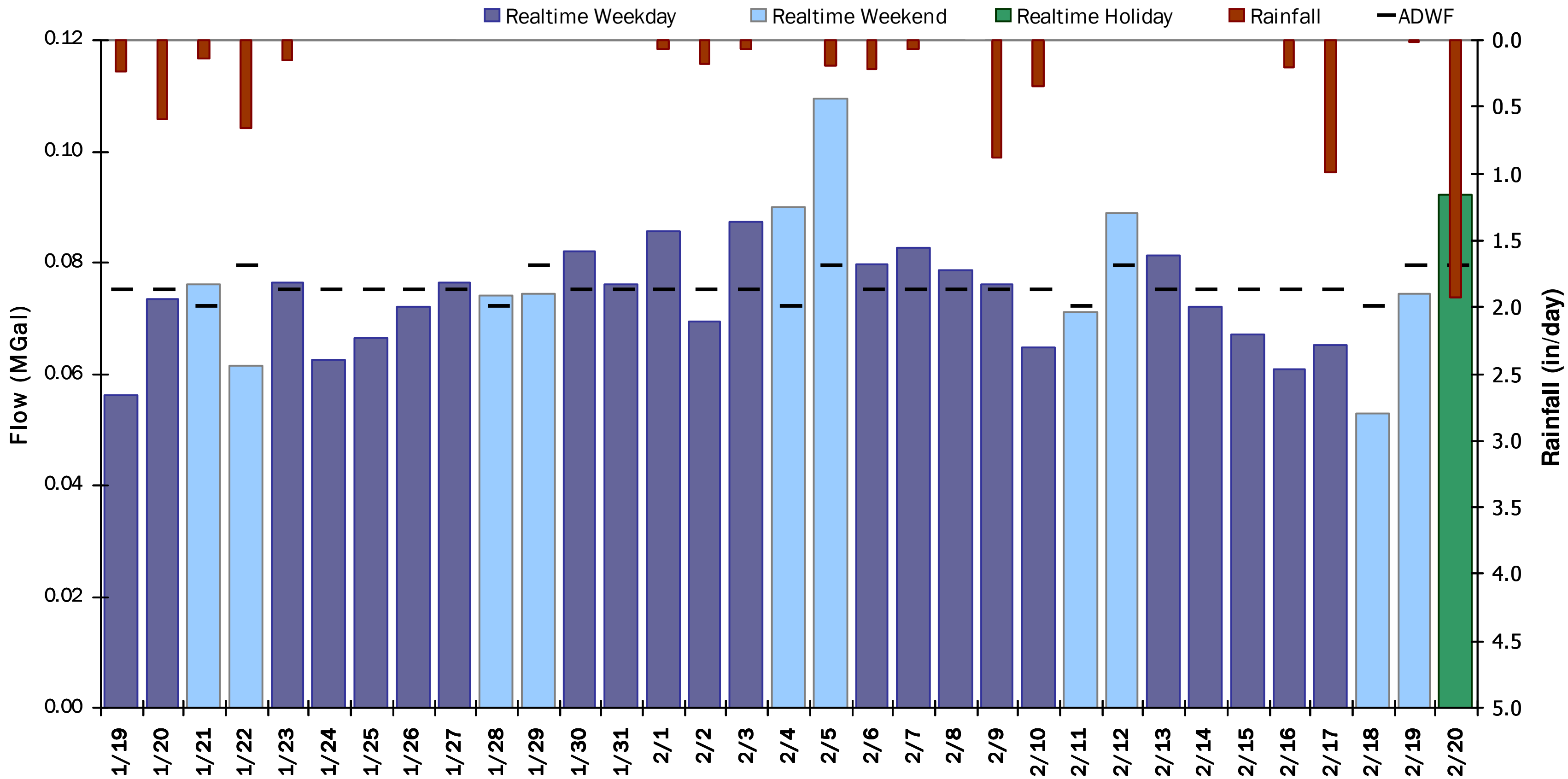
Lower Influent Pipe

SITE 02

Period Flow Summary: Daily Flow Totals

Avg Period Flow: 0.075 MGal **Peak Daily Flow: 0.109 MGal** **Min Daily Flow: 0.053 MGal**

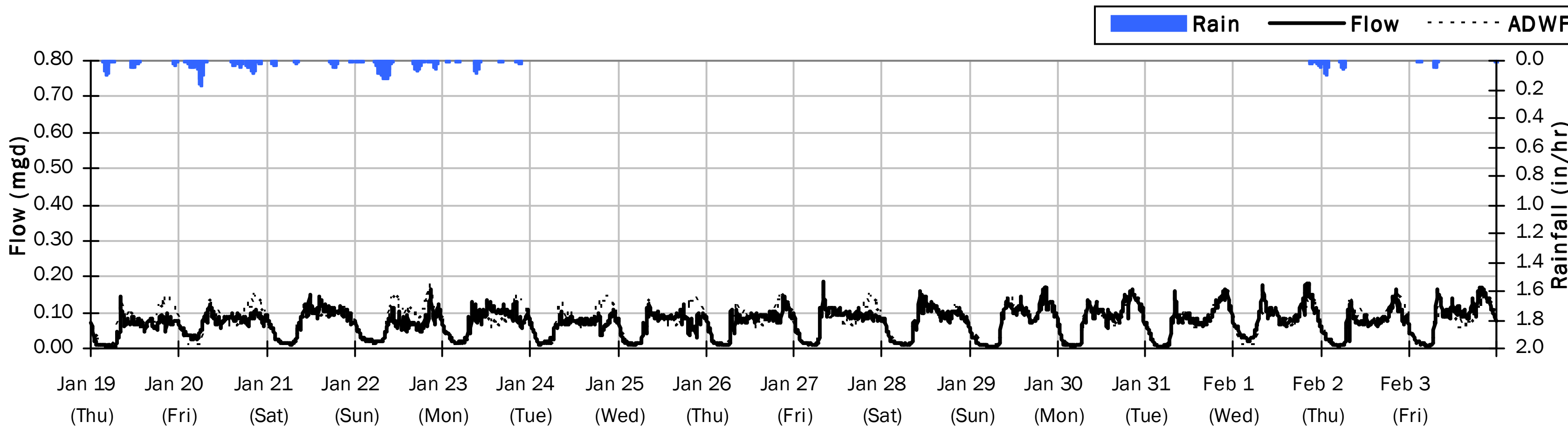
Total Period Rainfall: 6.93 inches

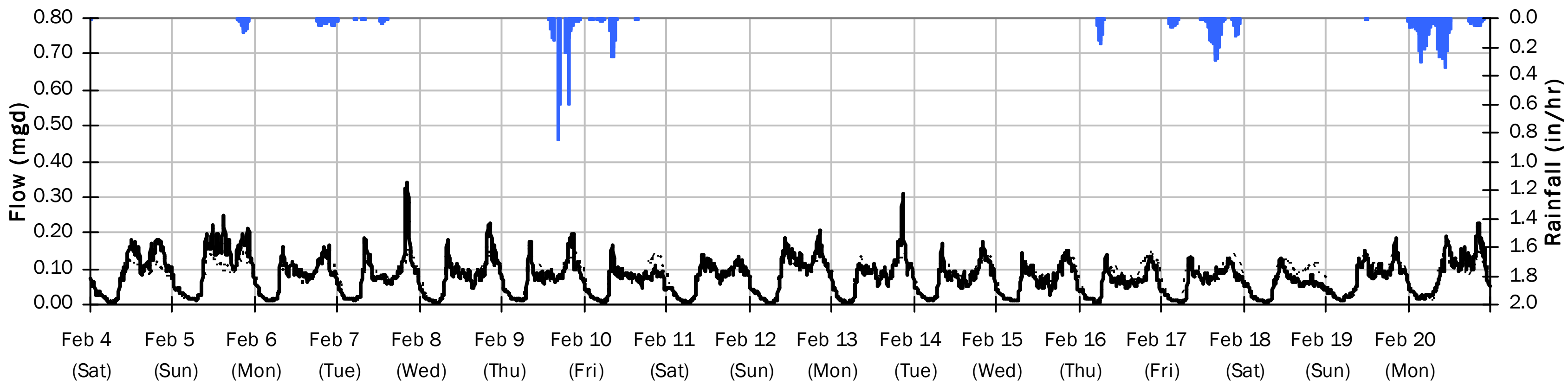


SITE 02

Flow Summary: 1/19/2017 to 2/20/2017

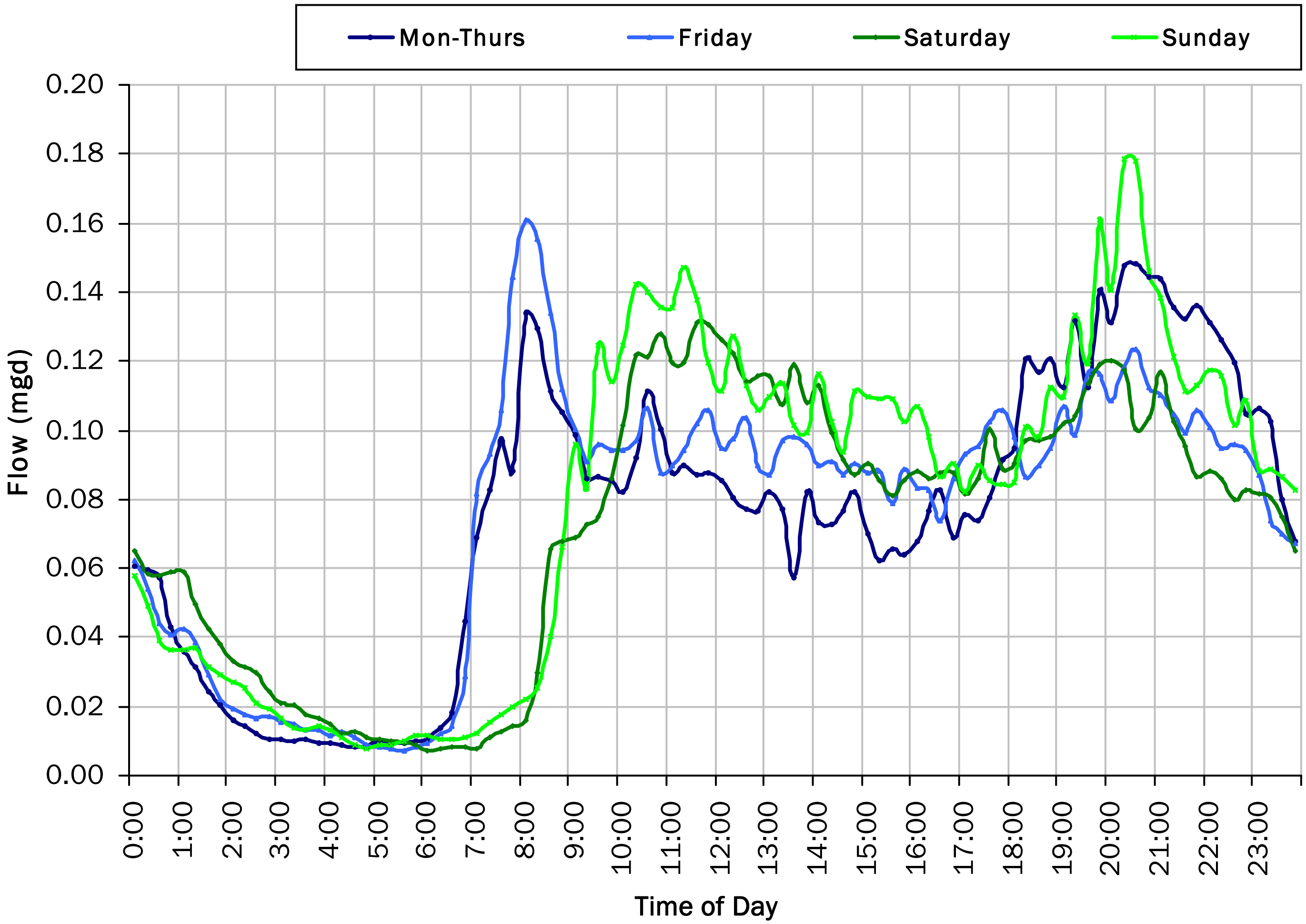
Total Period Rainfall: 6.93 inches   **Avg Flow: 0.075 mgd**   **Peak Flow: 0.342 mgd**   **Min Flow: 0.004 mgd**





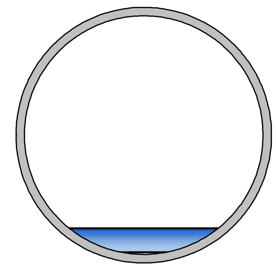
SITE 02

Average Dry Weather Flow Hydrographs



ADWF:

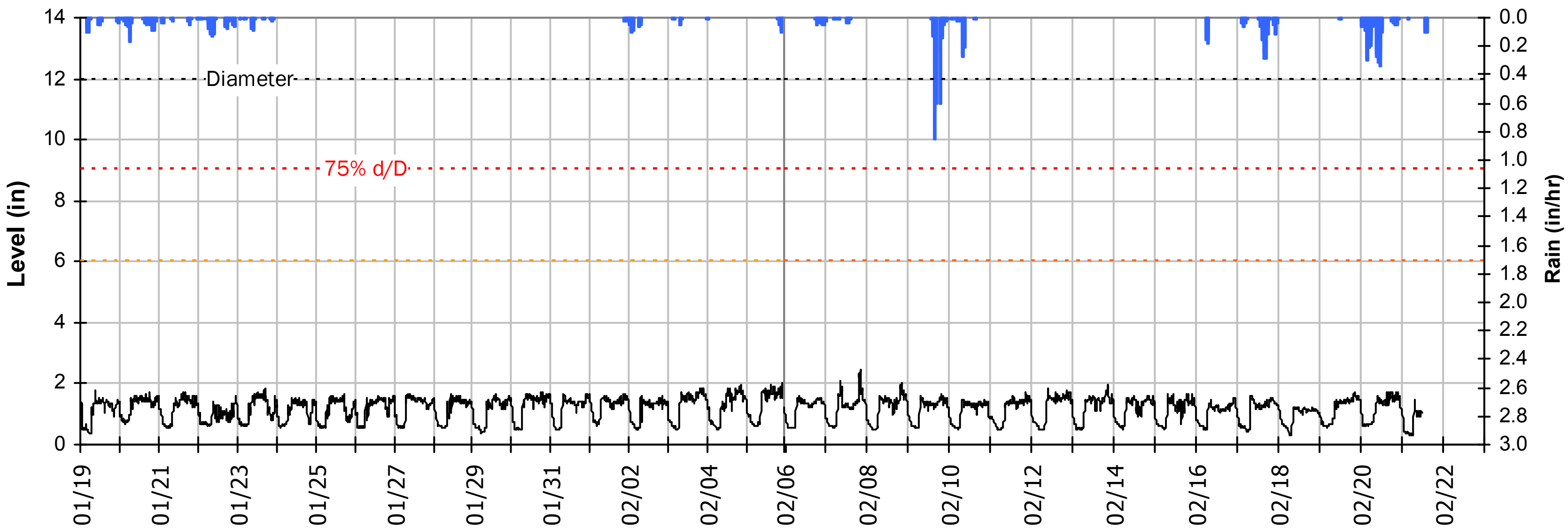
0.075 *mgd*

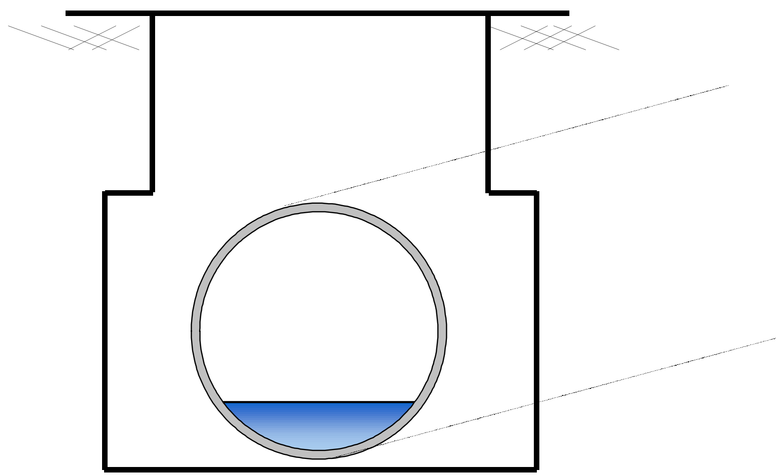


SITE 02

Site Capacity and Surcharge Summary

Realtime Flow Levels with Rainfall Data over Monitoring Period

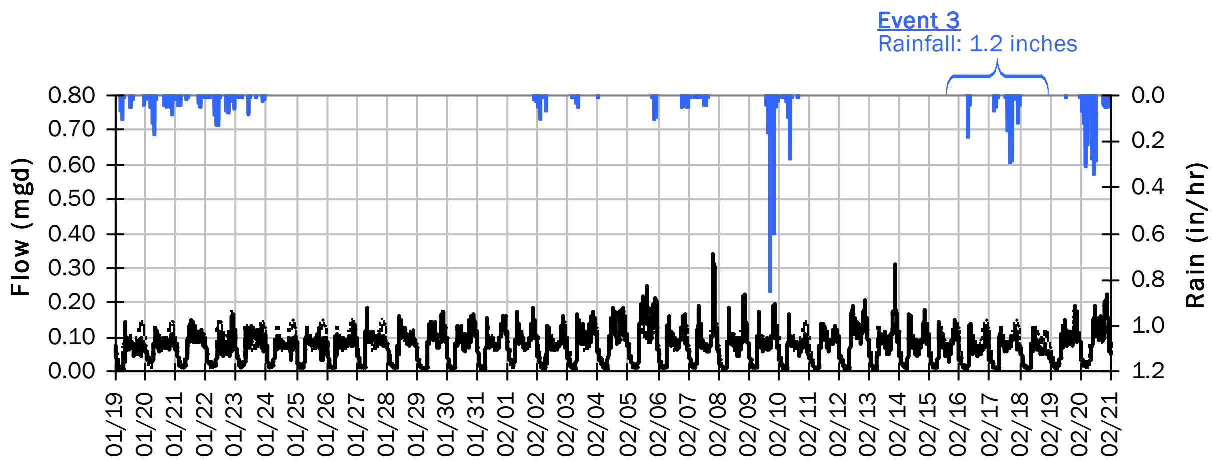




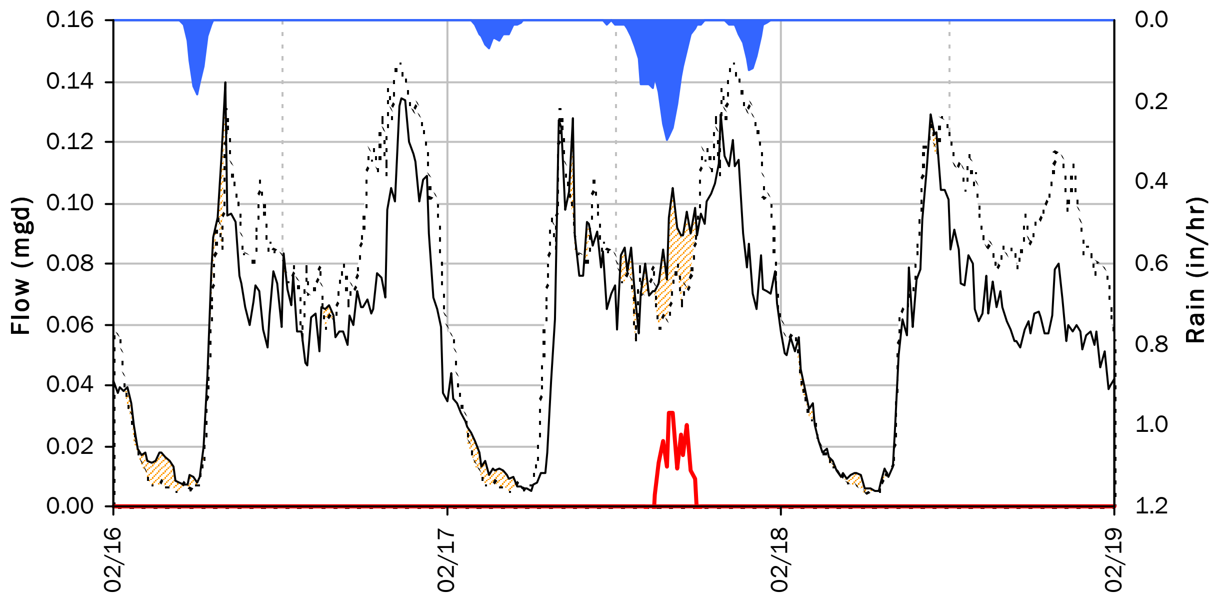
Pipe Diameter:	12	*inches*
Peak Measured Level:	2.46	*inches*
Peak d/D Ratio:	0.21	

SITE 02
I/I Summary: Event 3

Baseline and Realtime Flows with Rainfall Data over Monitoring Period



Event 3 Detail Graph

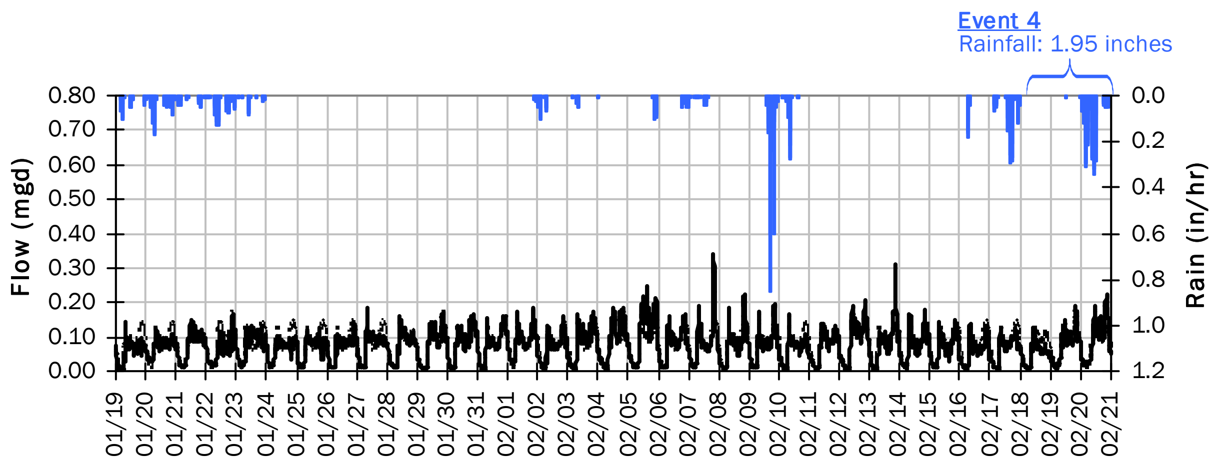


Storm Event I/I Analysis (Rain = 1.20 inches)

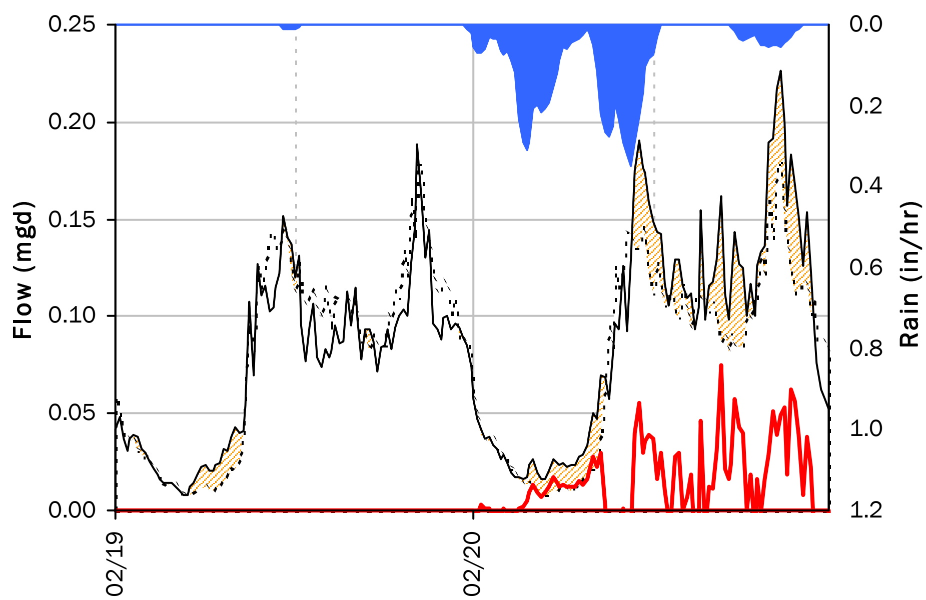
Capacity		Inflow / Infiltration	
Peak Flow:	0.10 *mgd*	**Peak I/I Rate:**	0.03 *mgd*
PF:	1.39	**Total I/I:**	2,000 *gallons*
Peak Level:	1.46 *in*		
d/D Ratio:	0.12		

SITE 02
I/I Summary: Event 4

Baseline and Realtime Flows with Rainfall Data over Monitoring Period



Event 4 Detail Graph



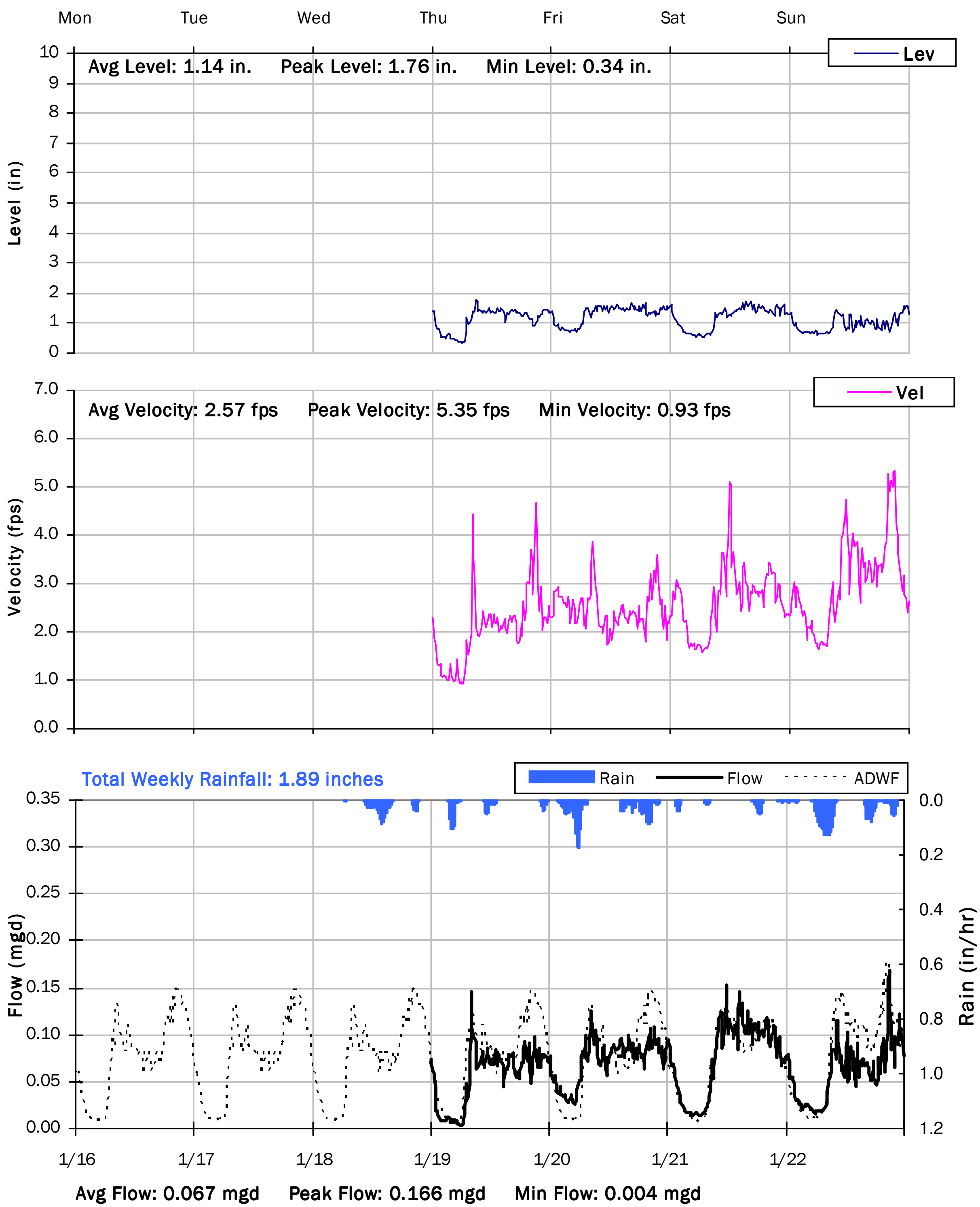
Storm Event I/I Analysis (Rain = 1.95 inches)

Capacity		**Inflow / Infiltration**	
Peak Flow:	0.23 *mgd*	**Peak I/I Rate:**	0.07 *mgd*
PF:	3.01	**Total I/I:**	13,000 *gallons*
Peak Level:	1.73 *in*		
d/D Ratio:	0.14		

SITE 02

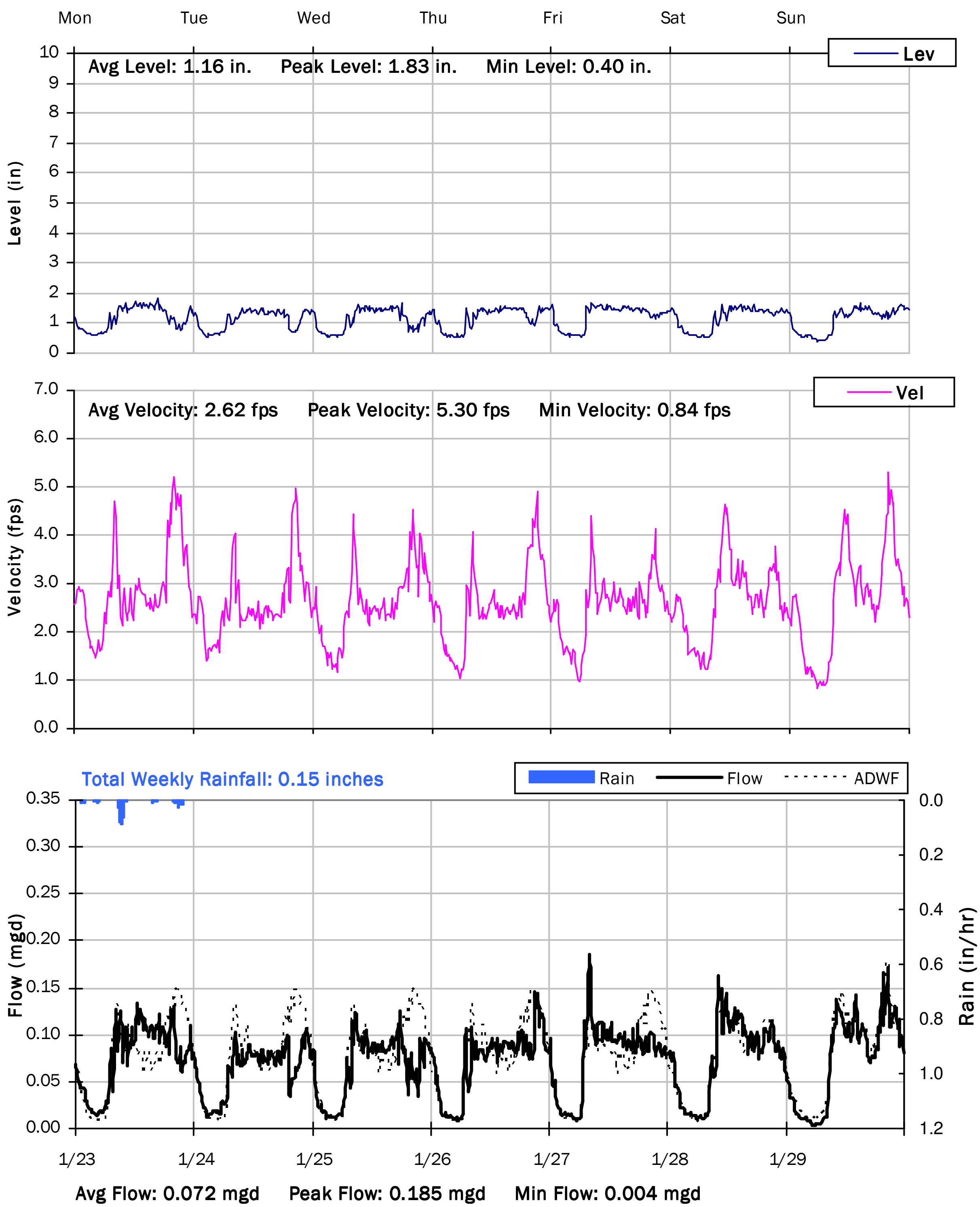
Weekly Level, Velocity and Flow Hydrographs

1/16/2017 to 1/23/2017

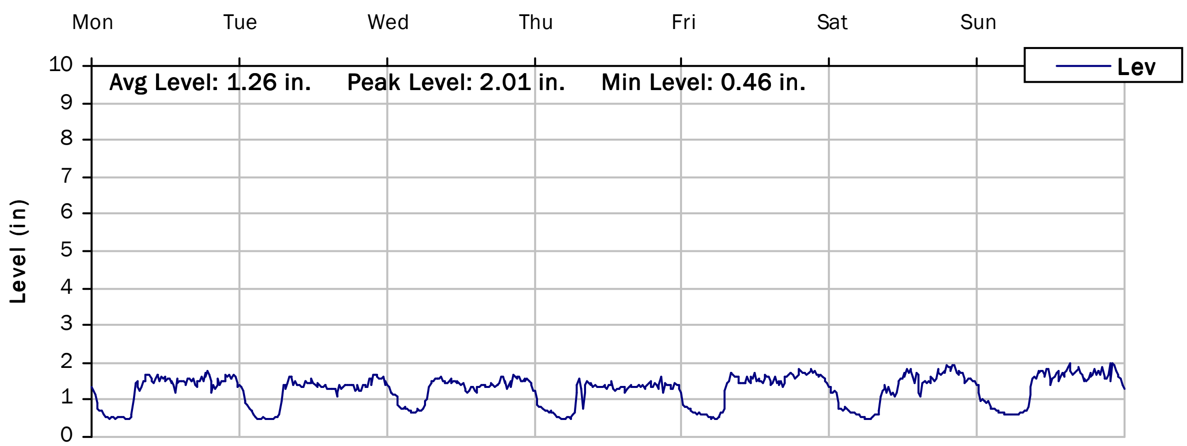


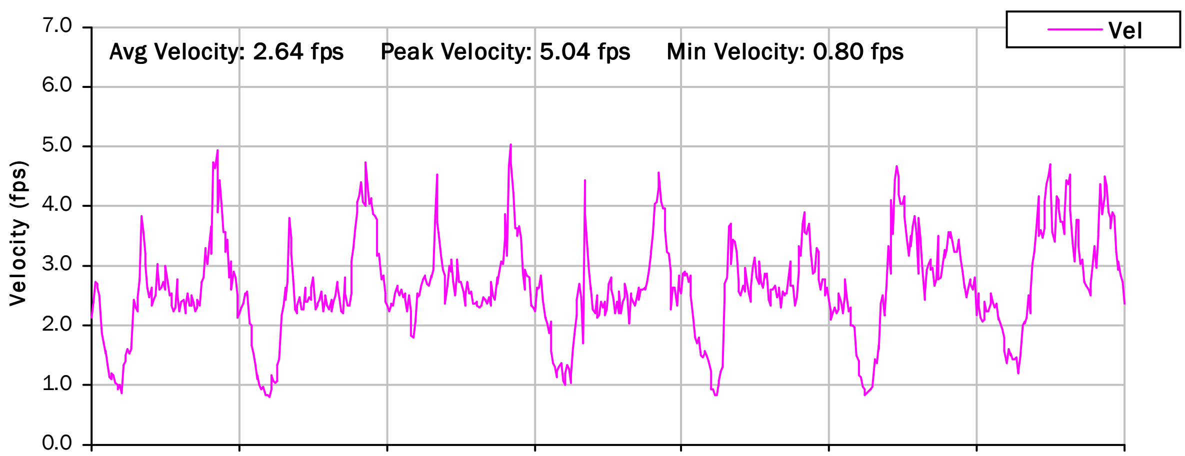
SITE 02

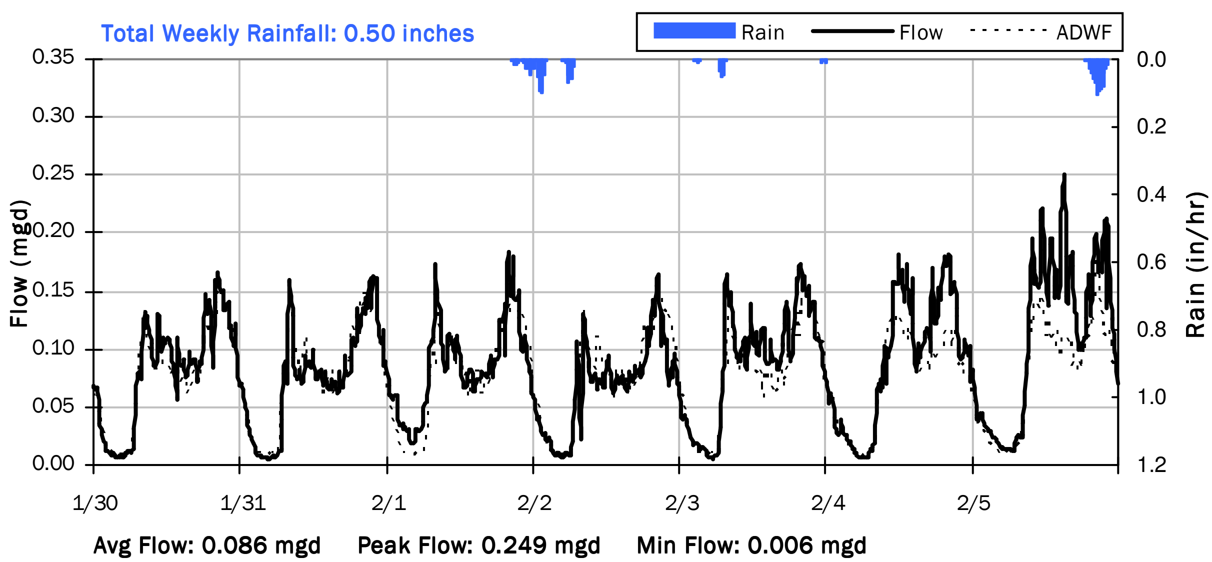
Weekly Level, Velocity and Flow Hydrographs
1/23/2017 to 1/30/2017



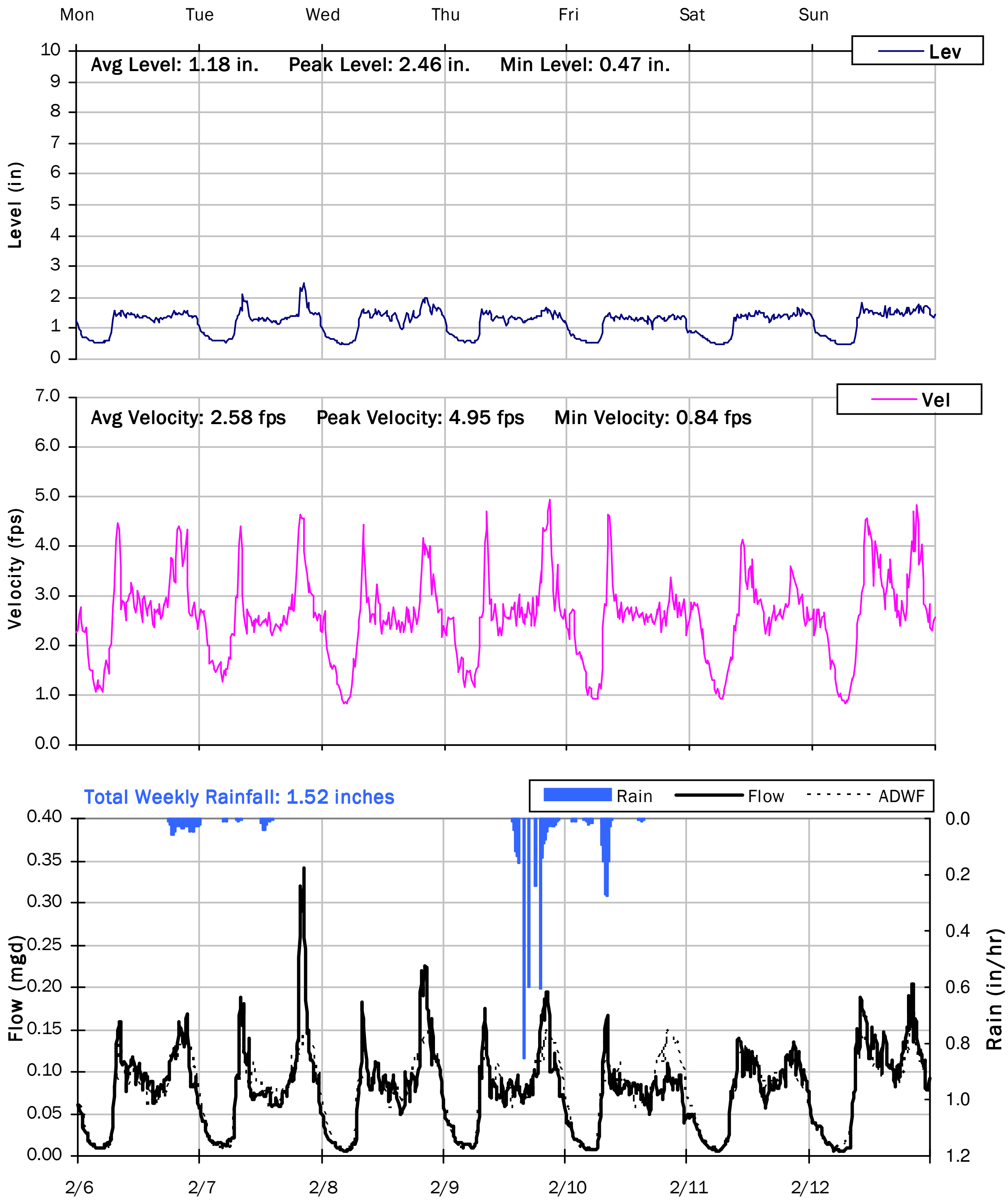
SITE 02
Weekly Level, Velocity and Flow Hydrographs
1/30/2017 to 2/6/2017





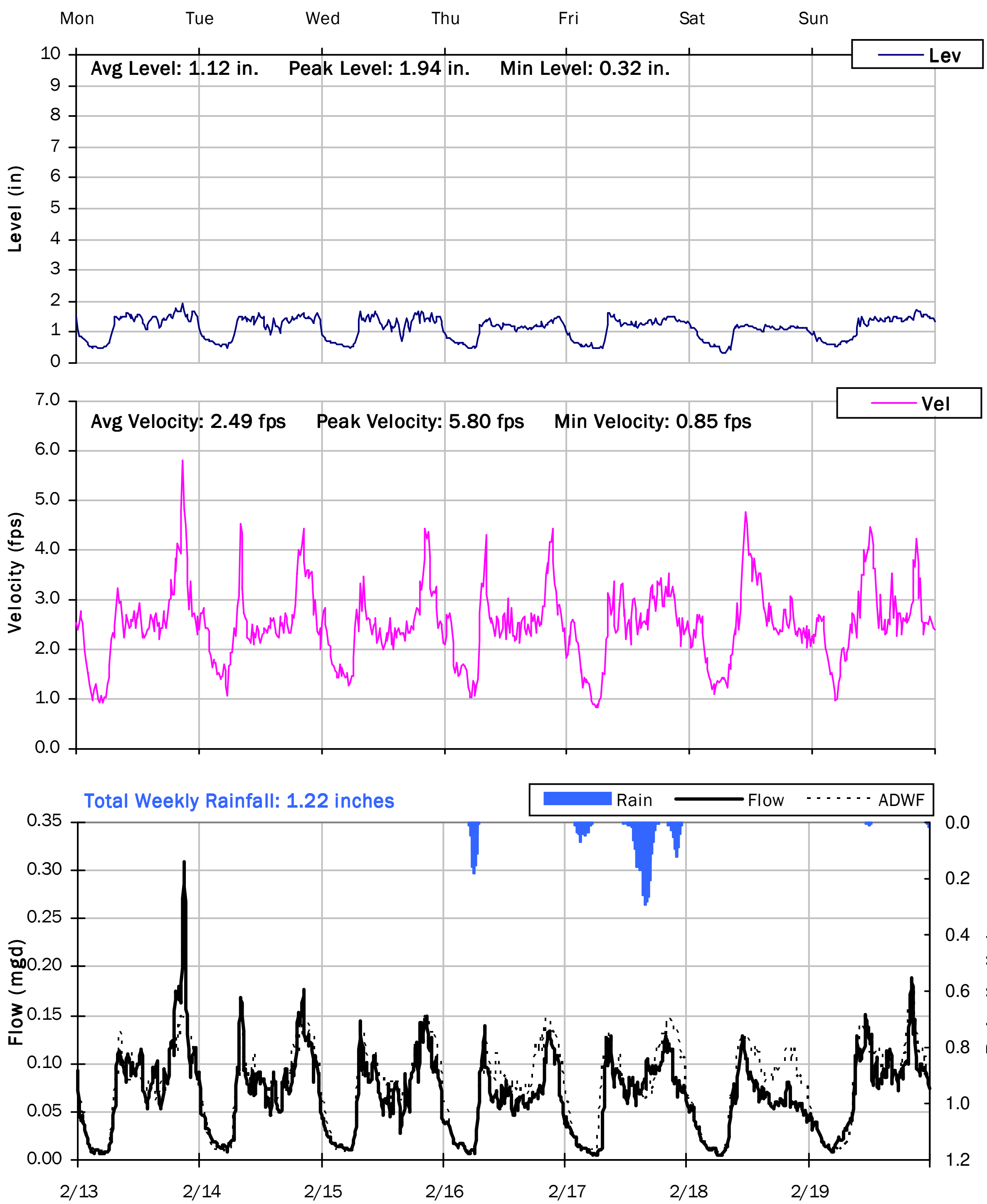


SITE 02
Weekly Level, Velocity and Flow Hydrographs
2/6/2017 to 2/13/2017



Avg Flow: 0.077 mgd Peak Flow: 0.342 mgd Min Flow: 0.006 mgd

SITE 02
Weekly Level, Velocity and Flow Hydrographs
2/13/2017 to 2/20/2017

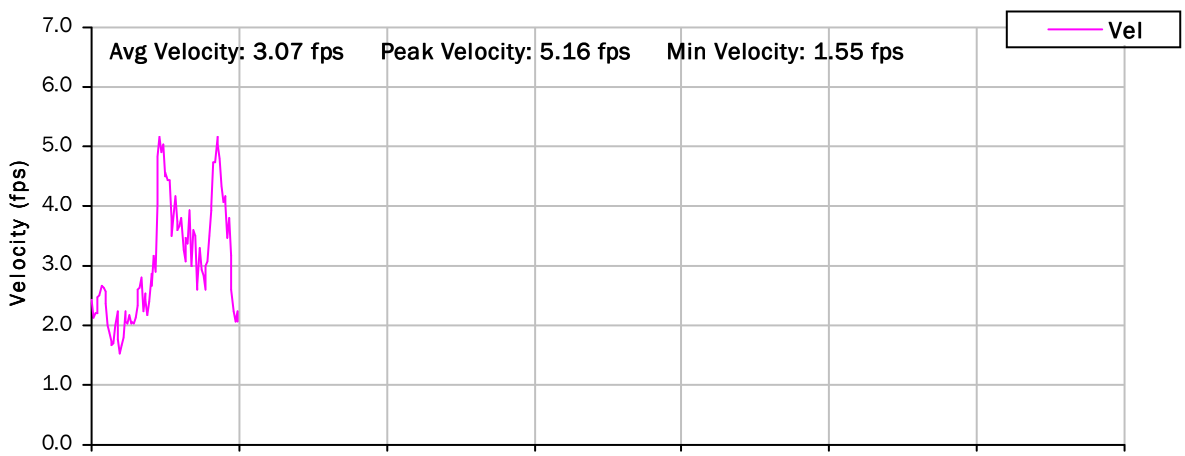


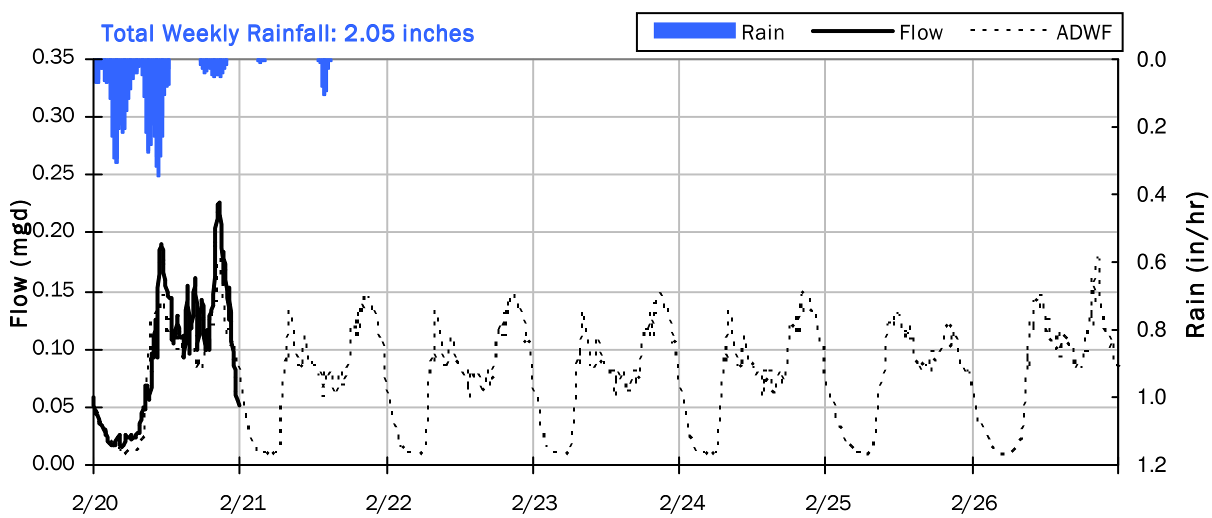
Avg Flow: 0.068 mgd **Peak Flow: 0.308 mgd** **Min Flow: 0.005 mgd**

SITE 02

Weekly Level, Velocity and Flow Hydrographs

2/20/2017 to 2/27/2017





Avg Flow: 0.092 mgd Peak Flow: 0.227 mgd Min Flow: 0.016 mgd

Marina Coast Water District

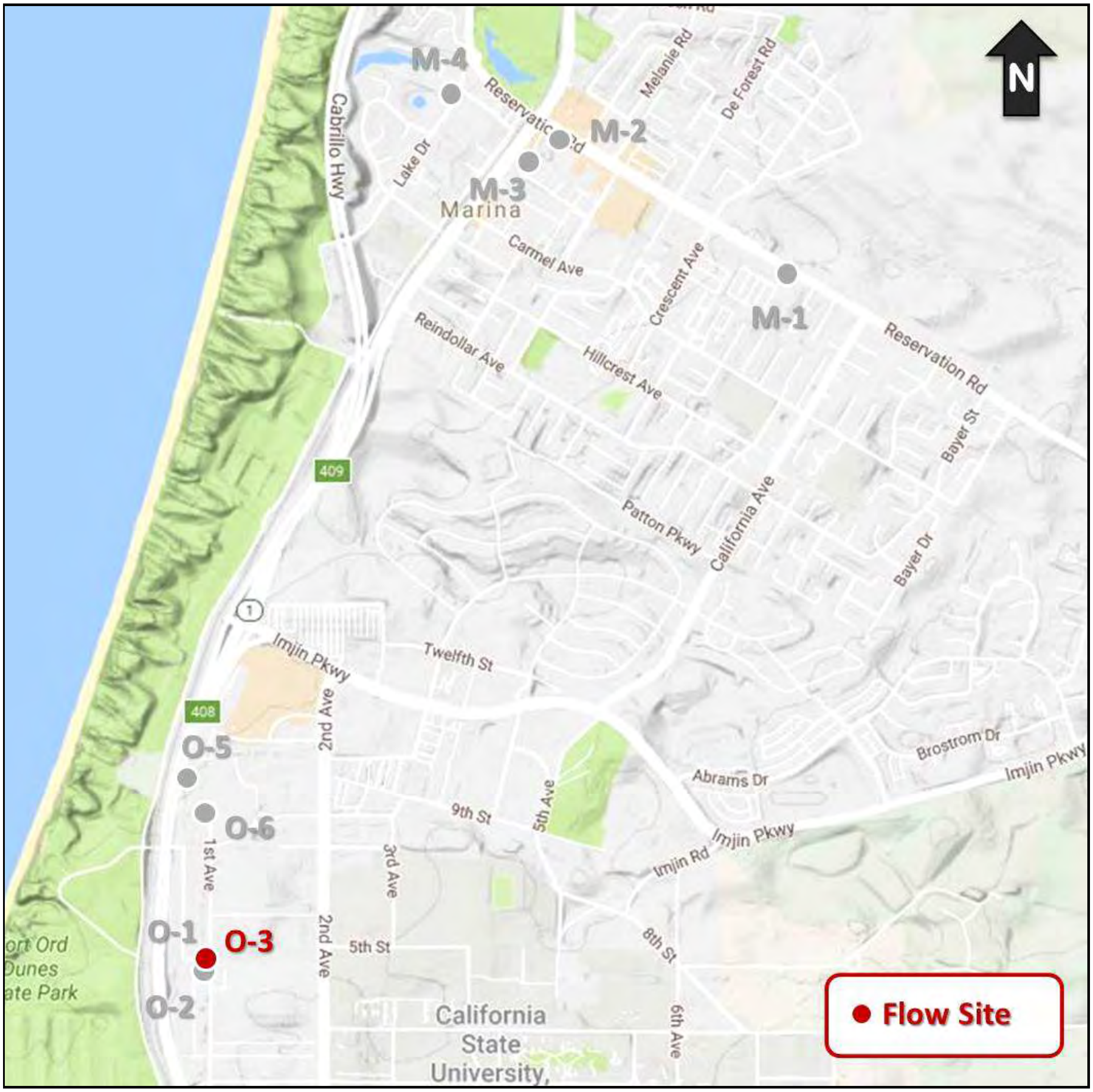
Sanitary Sewer Flow Monitoring

Temporary Monitoring: January 2017 - March 2017

Monitoring Site: Site 03

Location: Lot northwest of intersection of 1st Avenue and 5th Street

Data Summary Report



Vicinity Map: Site 03

SITE 03

Site Information

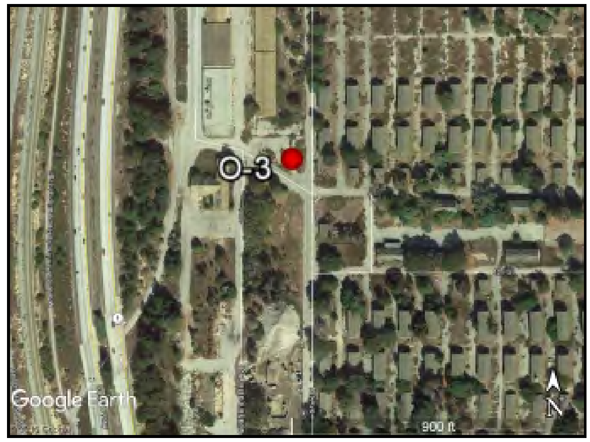
Location: Lot northwest of intersection of 1st Avenue and 5th Street

Coordinates: 121.8145° W, 36.6573° N

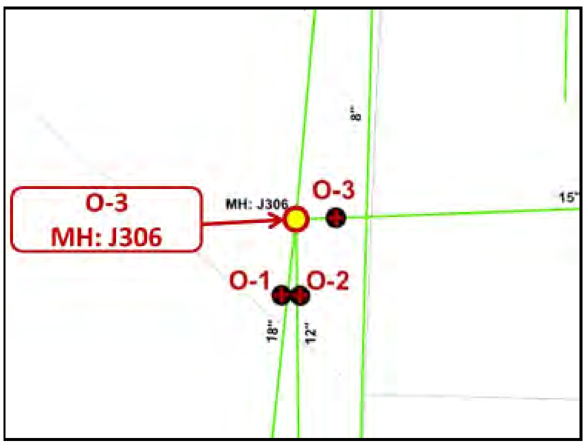
Pipe Diameter: 15 inches

ADWF: 0.172 mgd

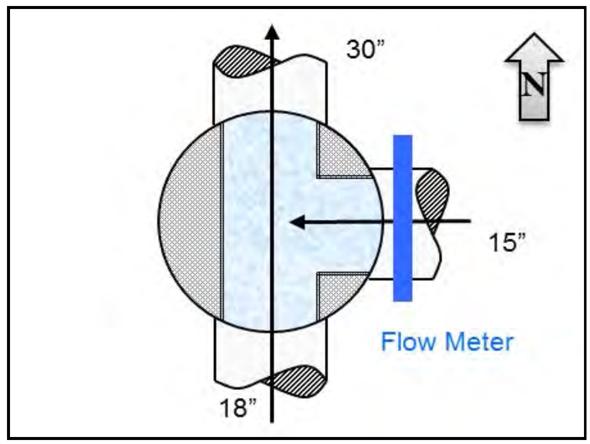
Peak Measured Flow: 1.068 mgd



Satellite Map



Sewer Map



Flow Sketch


Street View


Plan View

SITE 03

Additional Site Photos

Effluent Pipe

South Influent Pipe

SITE 03

Additional Site Photos

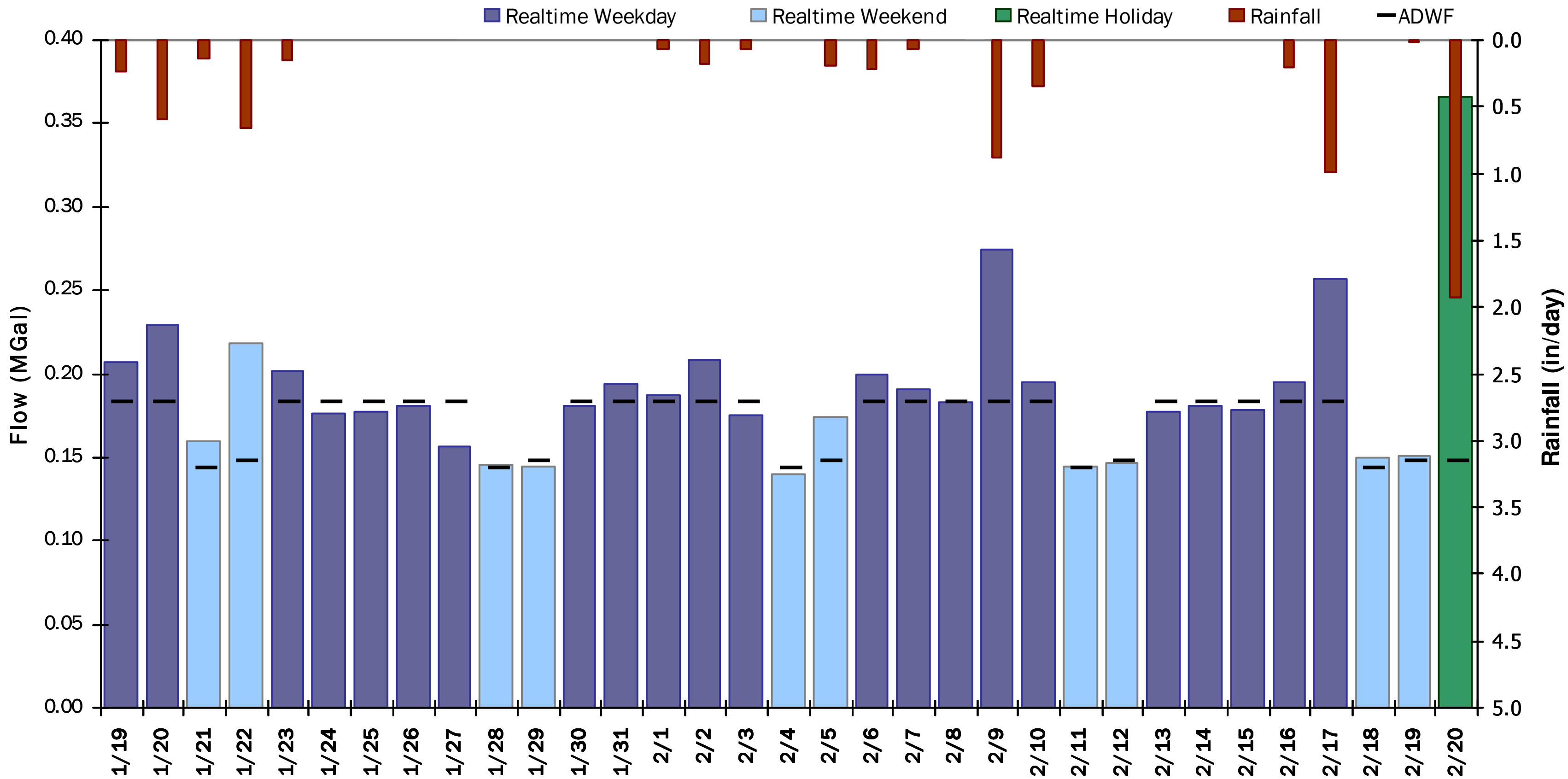
East Influent Pipe

SITE 03

Period Flow Summary: Daily Flow Totals

Avg Period Flow: 0.189 MGal **Peak Daily Flow: 0.366 MGal** **Min Daily Flow: 0.140 MGal**

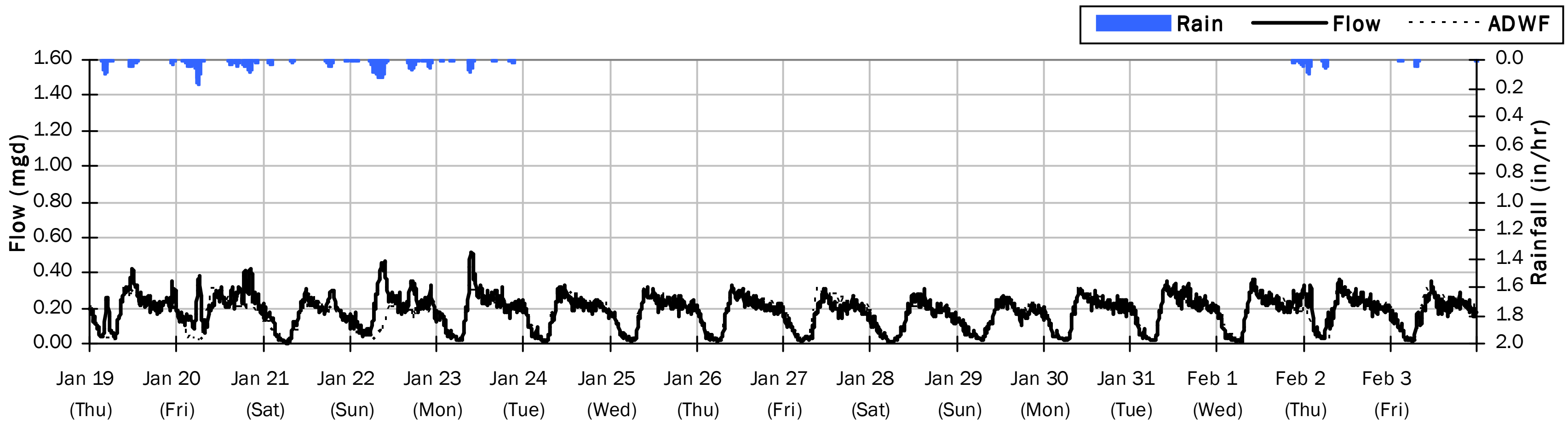
Total Period Rainfall: 6.93 inches

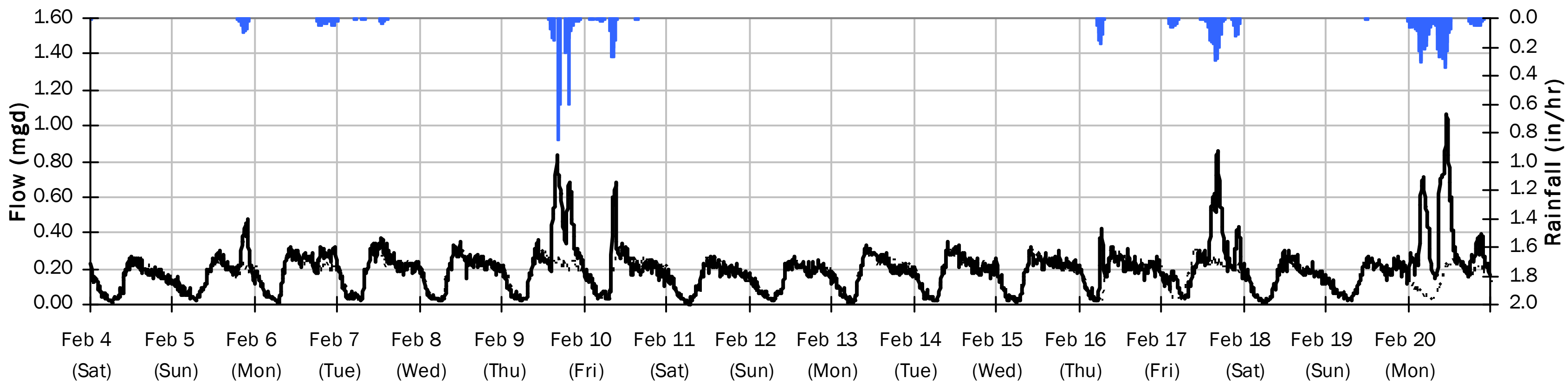


SITE 03

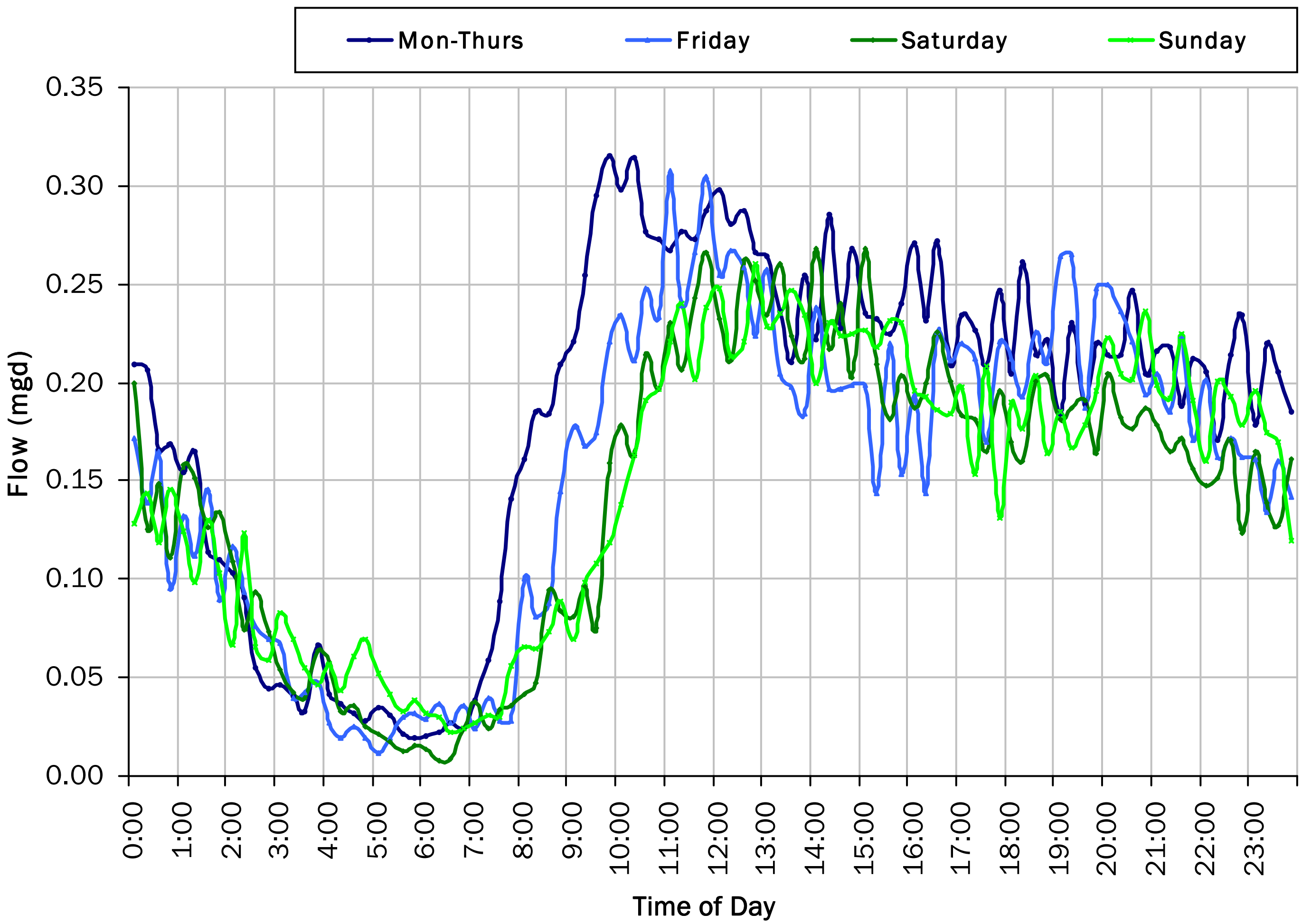
Flow Summary: 1/19/2017 to 2/20/2017

Total Period Rainfall: 6.93 inches   Avg Flow: 0.189 mgd   Peak Flow: 1.068 mgd   Min Flow: 0.003 mgd



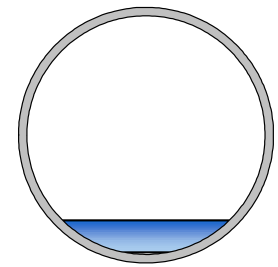


SITE 03
Average Dry Weather Flow Hydrographs



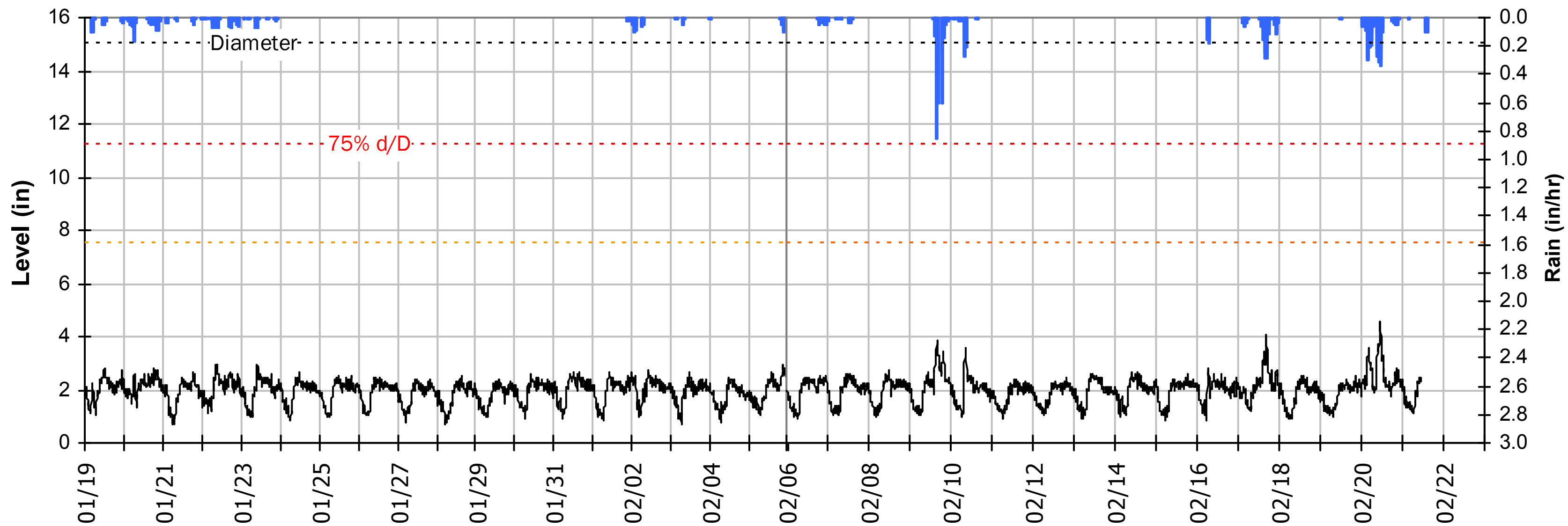
ADWF:

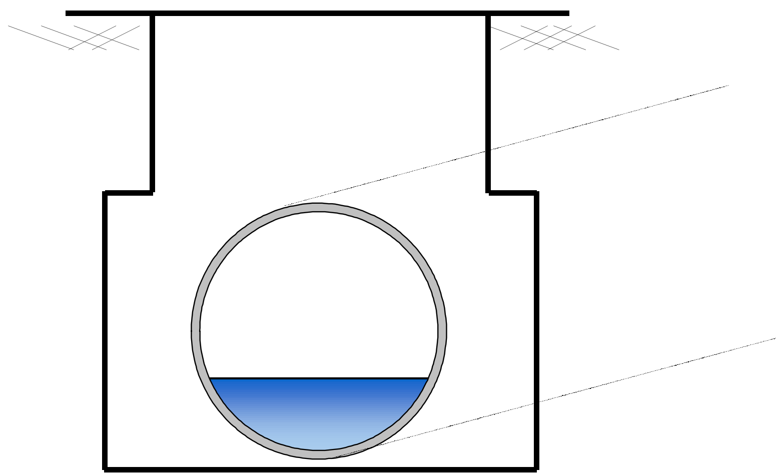
0.172 *mgd*



SITE 03
Site Capacity and Surcharge Summary

Realtime Flow Levels with Rainfall Data over Monitoring Period



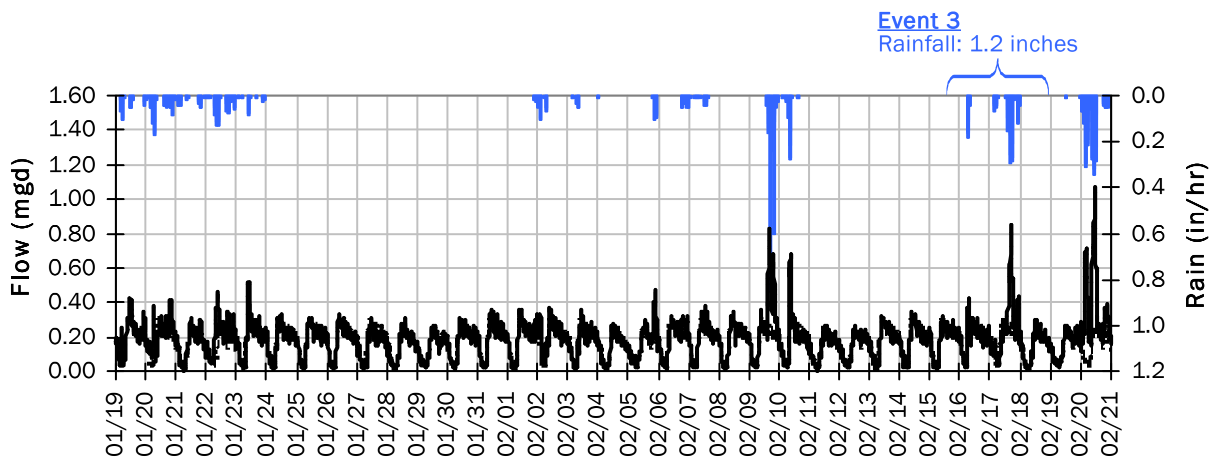


Pipe Diameter:	15	*inches*
Peak Measured Level:	4.58	*inches*
Peak d/D Ratio:	0.31	

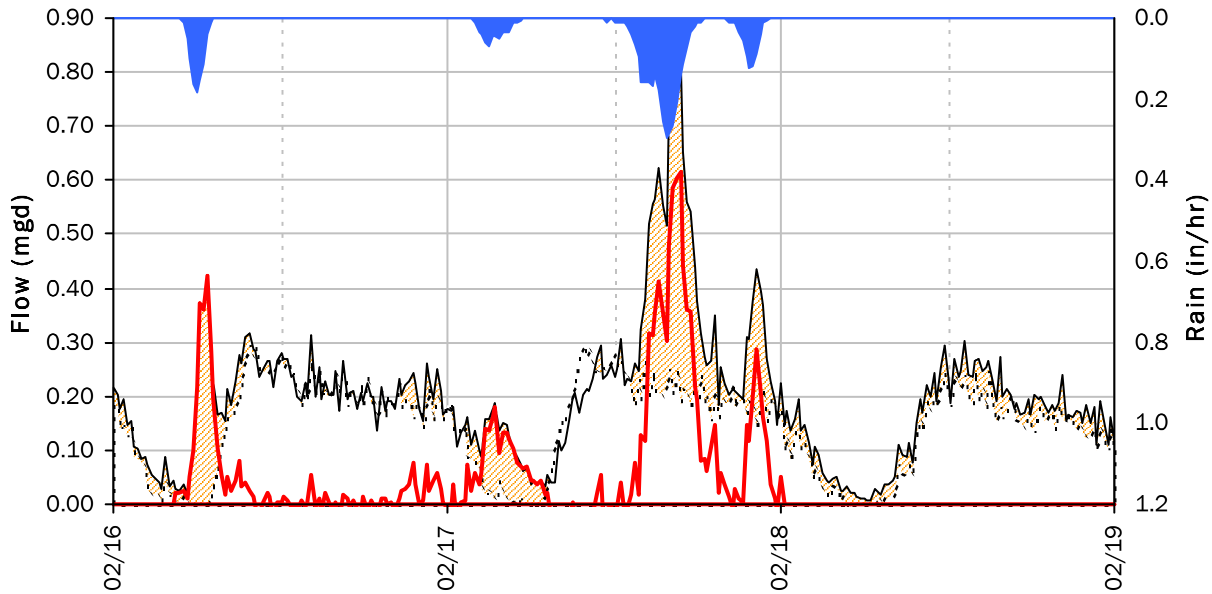
SITE 03

I/I Summary: Event 3

Baseline and Realtime Flows with Rainfall Data over Monitoring Period



Event 3 Detail Graph



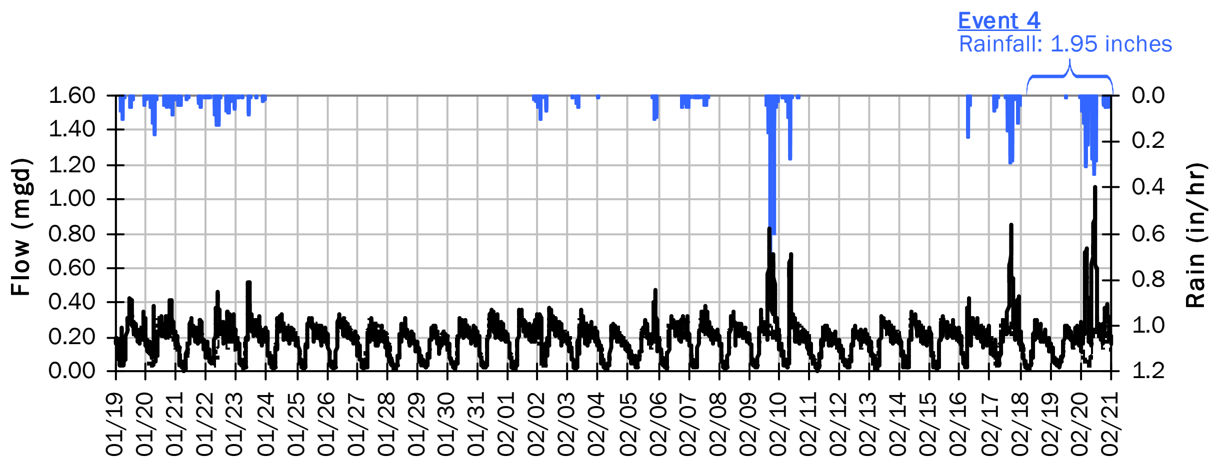
Storm Event I/I Analysis (Rain = 1.20 inches)

Capacity		Inflow / Infiltration	
Peak Flow:	0.85 *mgd*	**Peak I/I Rate:**	0.62 *mgd*
PF:	4.99	**Total I/I:**	132,000 *gallons*
Peak Level:	4.06 *in*		
d/D Ratio:	0.27		

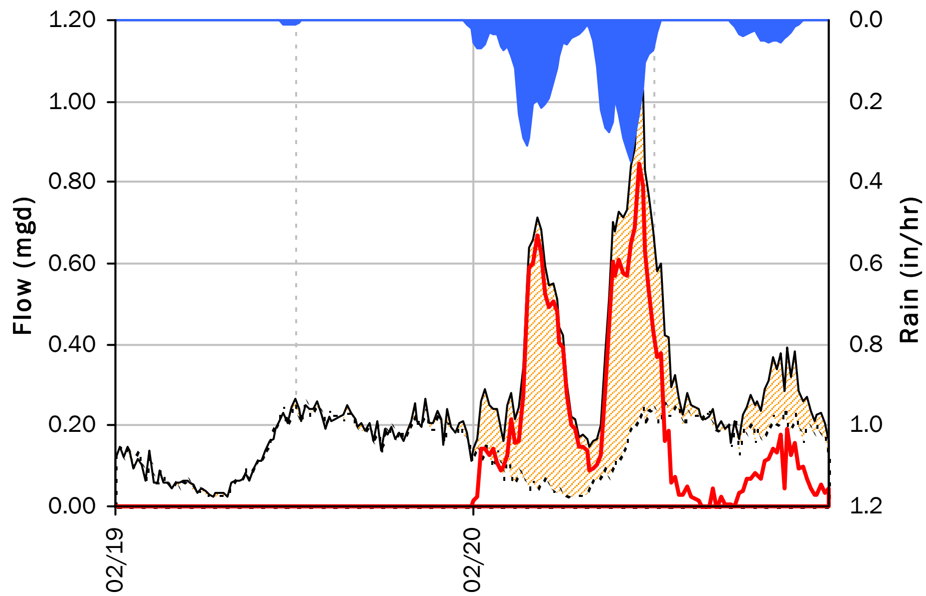
SITE 03

I/I Summary: Event 4

Baseline and Realtime Flows with Rainfall Data over Monitoring Period



Event 4 Detail Graph



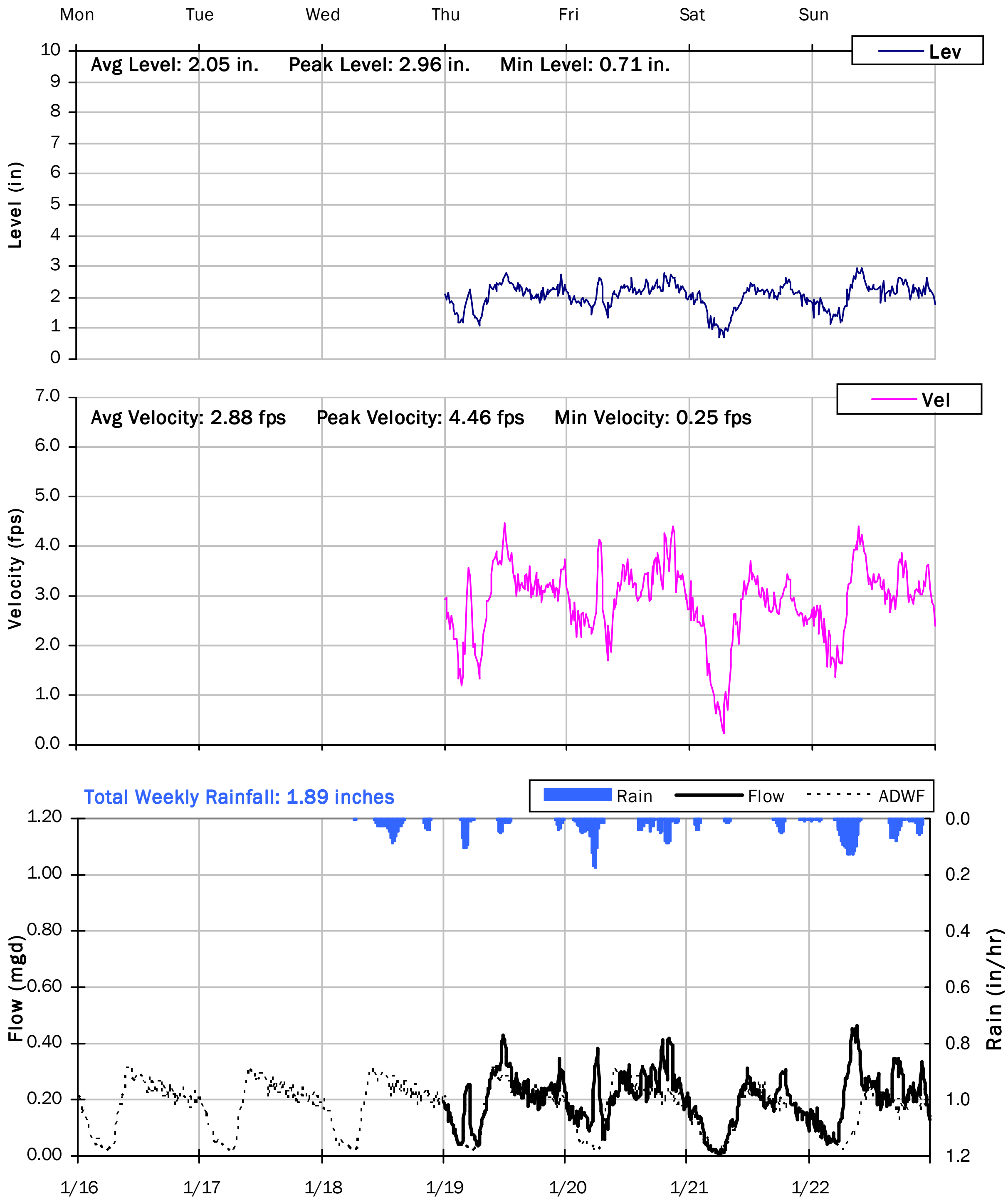
Storm Event I/I Analysis (Rain = 1.95 inches)

Capacity		Inflow / Infiltration	
Peak Flow:	1.07 *mgd*	**Peak I/I Rate:**	0.85 *mgd*
PF:	6.25	**Total I/I:**	219,000 *gallons*
Peak Level:	4.58 *in*		
d/D Ratio:	0.31		

SITE 03

Weekly Level, Velocity and Flow Hydrographs

1/16/2017 to 1/23/2017

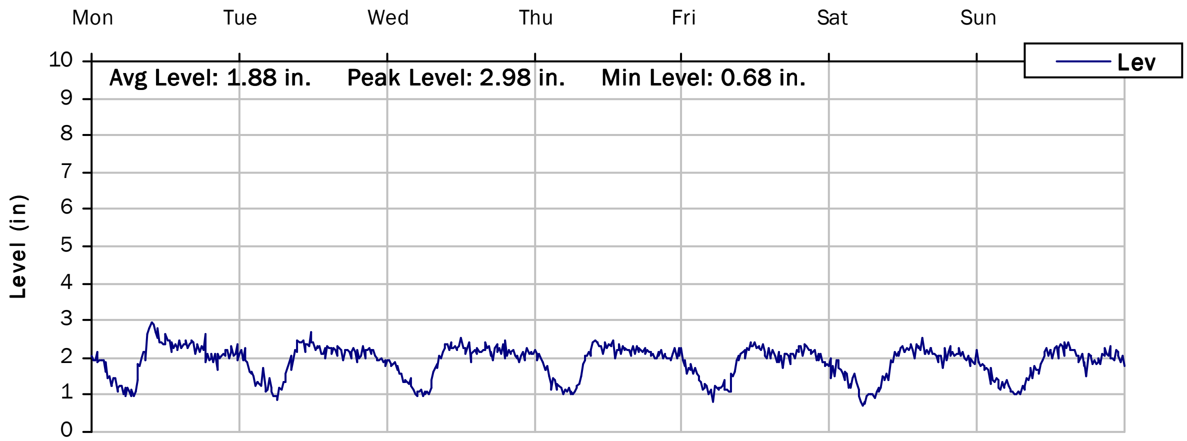


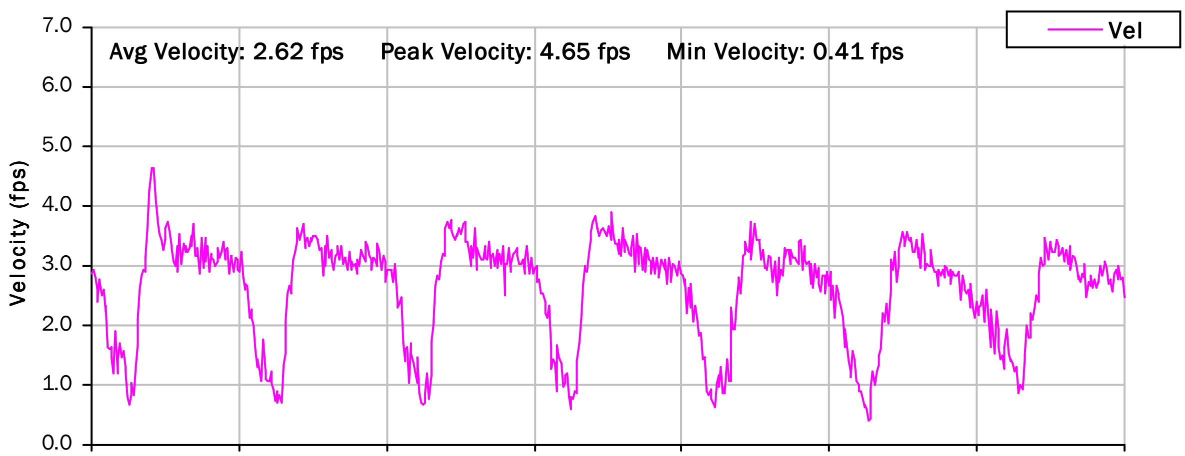
Avg Flow: 0.204 mgd **Peak Flow: 0.465 mgd** **Min Flow: 0.003 mgd**

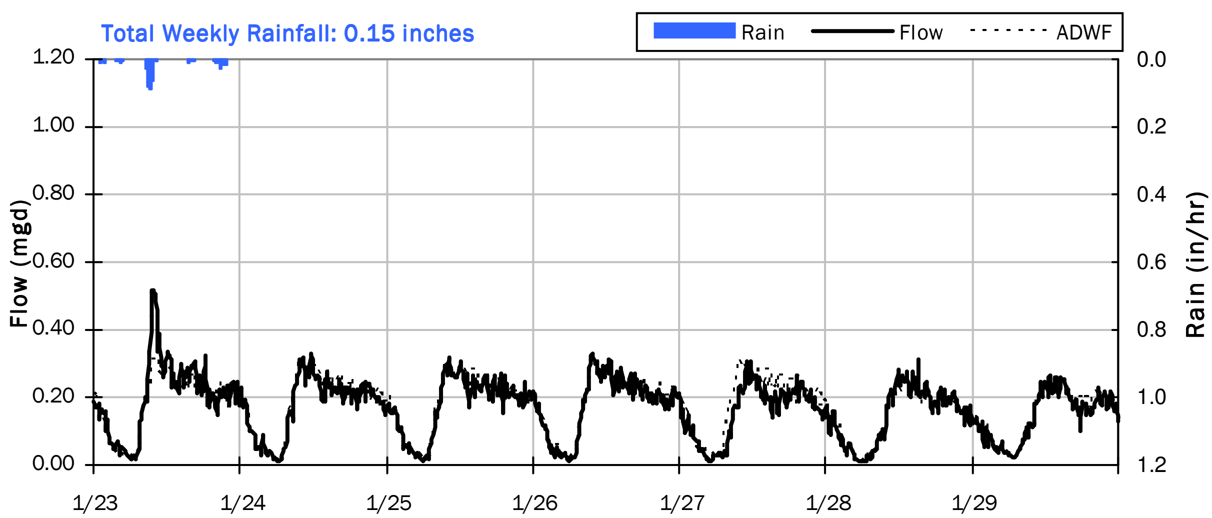
SITE 03

Weekly Level, Velocity and Flow Hydrographs

1/23/2017 to 1/30/2017

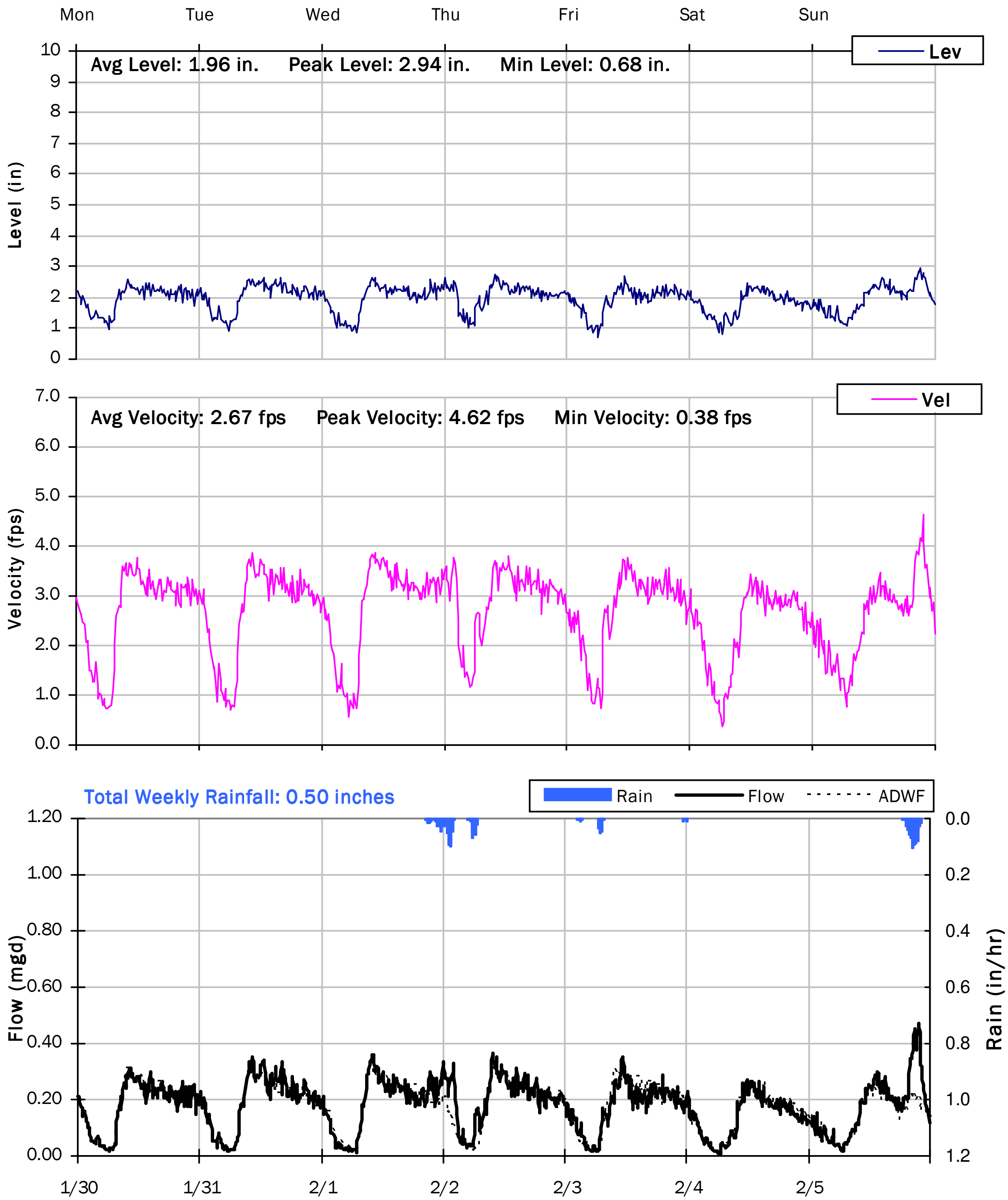






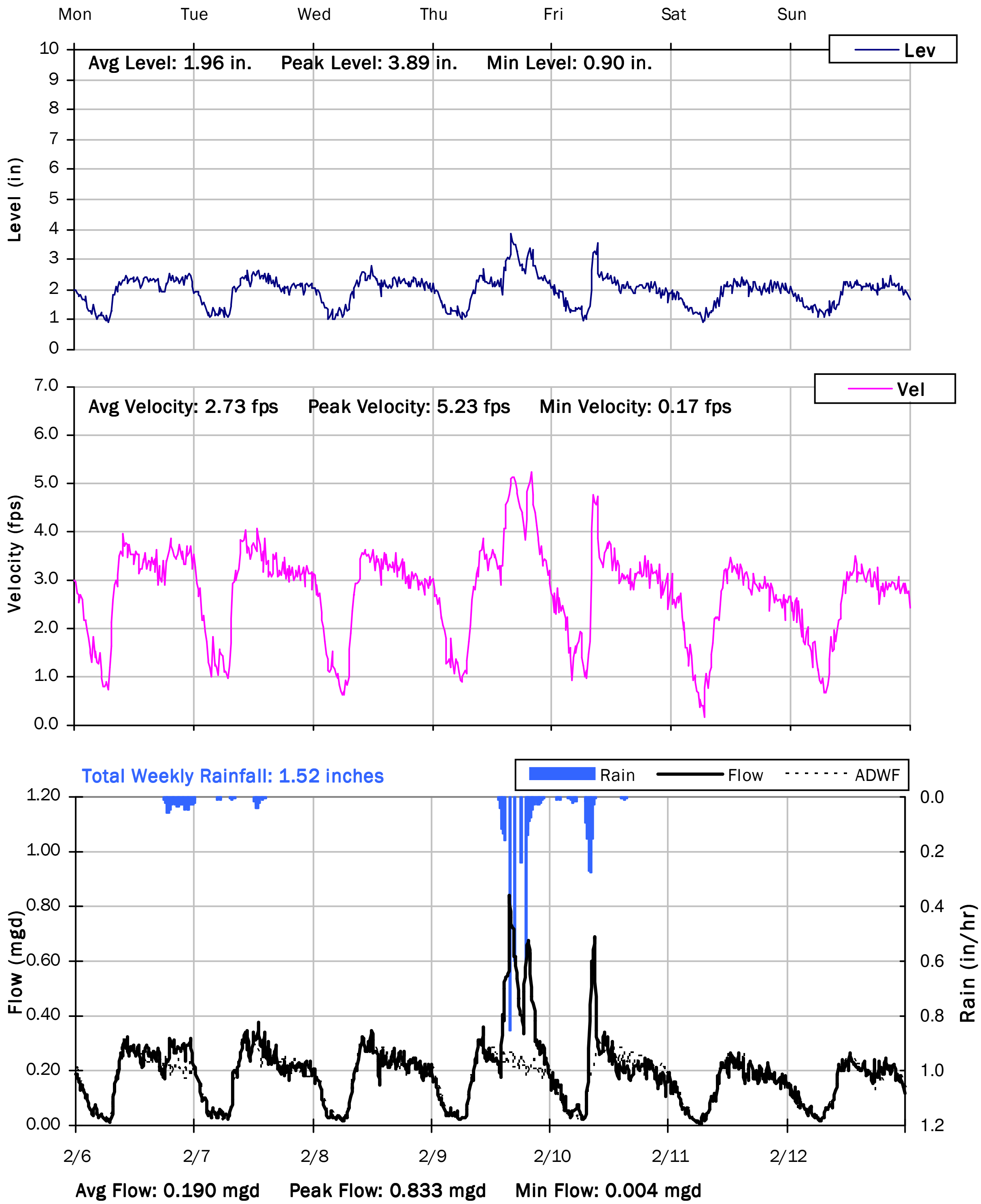
Avg Flow: 0.169 mgd **Peak Flow: 0.519 mgd** **Min Flow: 0.010 mgd**

SITE 03
Weekly Level, Velocity and Flow Hydrographs
1/30/2017 to 2/6/2017

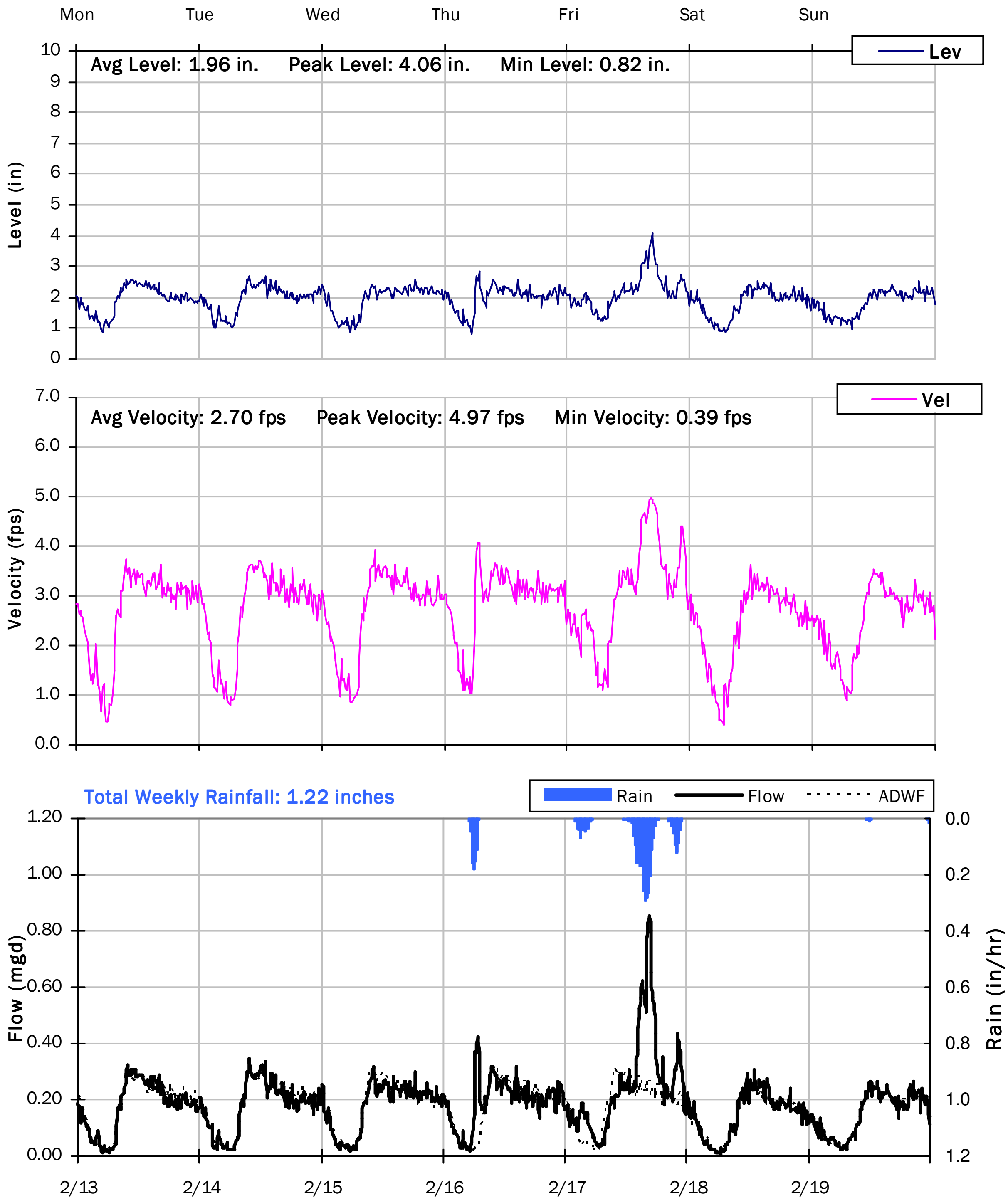


Avg Flow: 0.180 mgd Peak Flow: 0.472 mgd Min Flow: 0.006 mgd

SITE 03
Weekly Level, Velocity and Flow Hydrographs
2/6/2017 to 2/13/2017

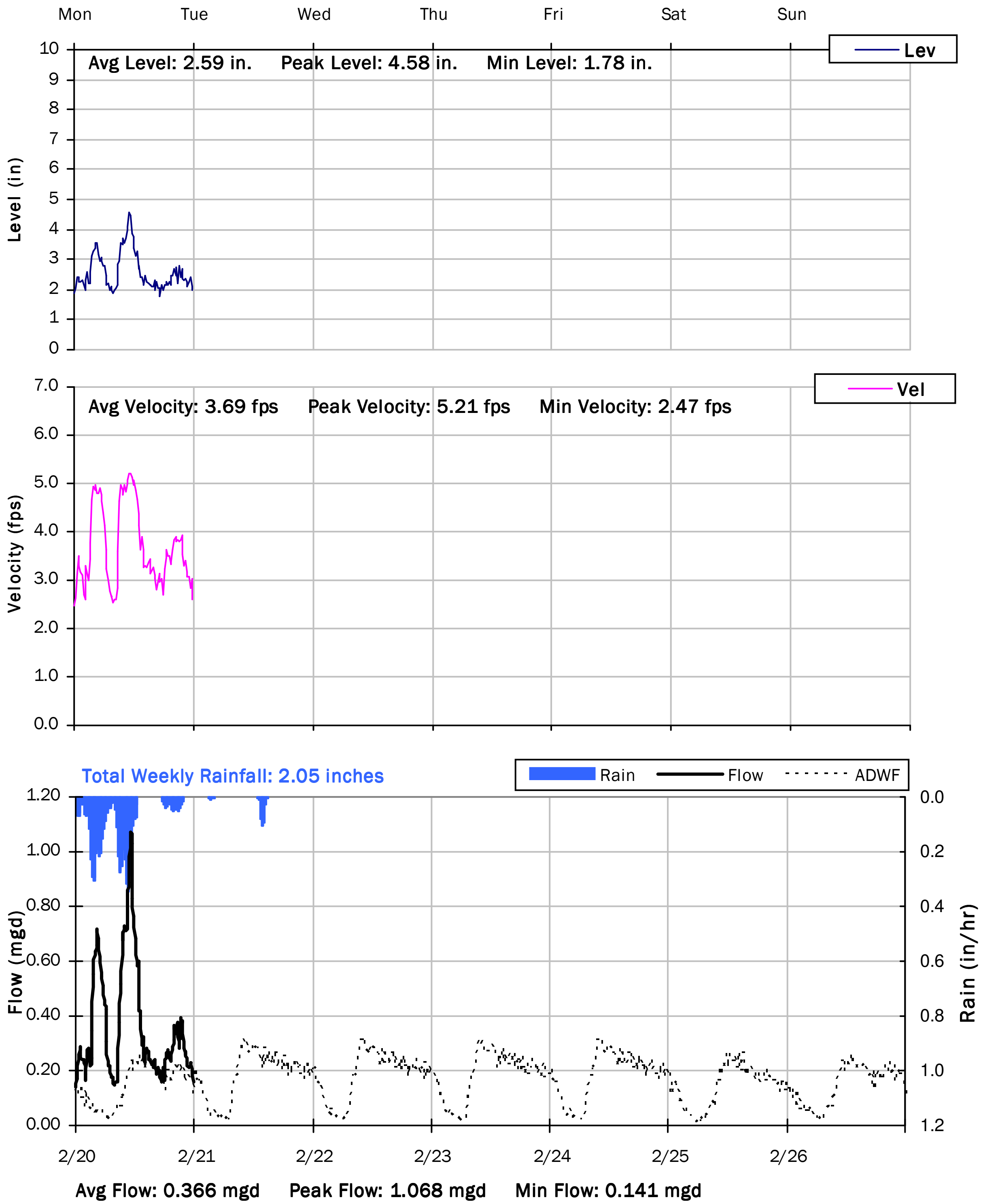


SITE 03
Weekly Level, Velocity and Flow Hydrographs
2/13/2017 to 2/20/2017



Avg Flow: 0.184 mgd Peak Flow: 0.853 mgd Min Flow: 0.009 mgd

SITE 03
Weekly Level, Velocity and Flow Hydrographs
2/20/2017 to 2/27/2017



Marina Coast Water District

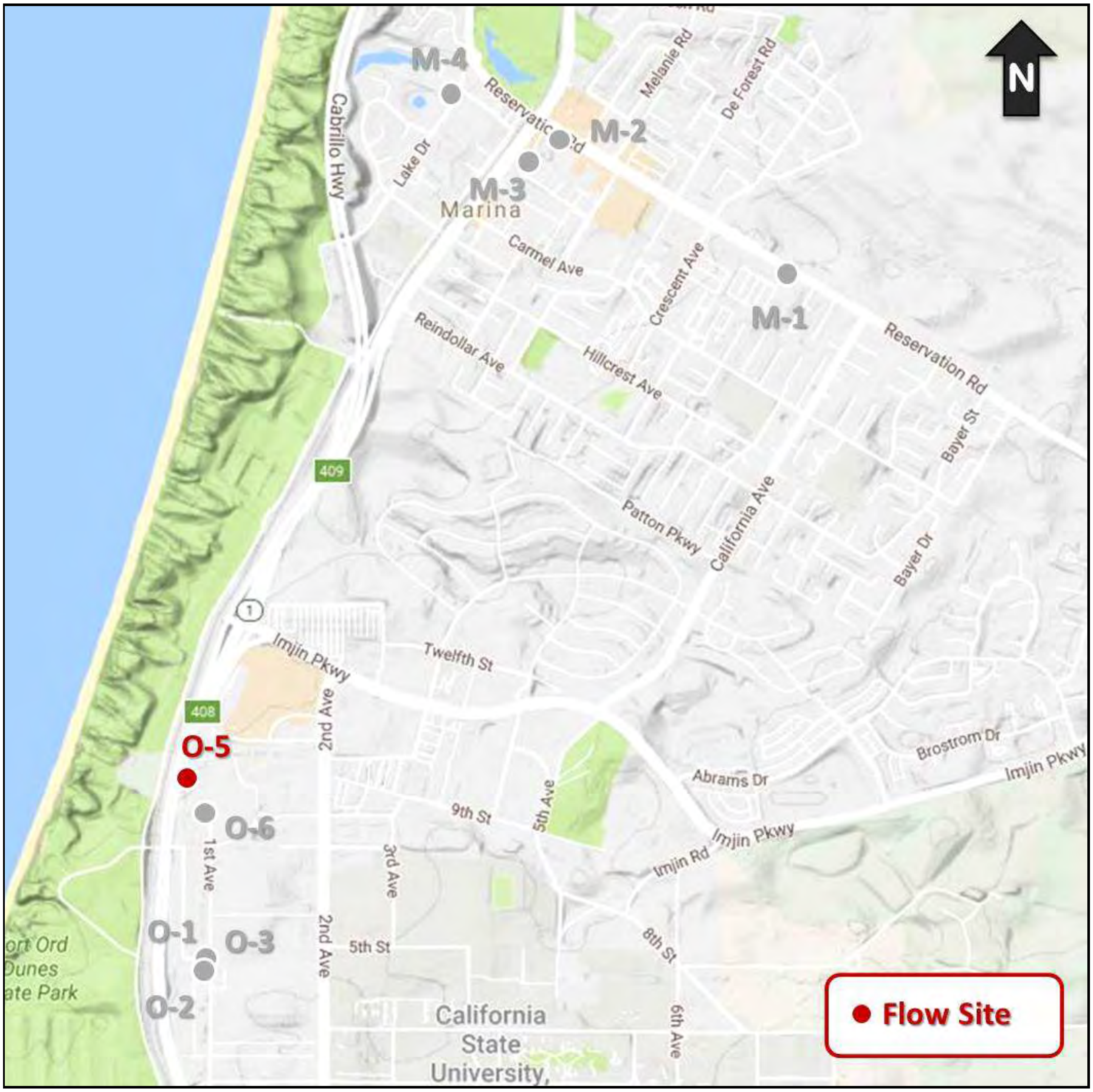
Sanitary Sewer Flow Monitoring

Temporary Monitoring: January 2017 - March 2017

Monitoring Site: Site 05

Location: Northwest corner VA Clinic parking lot

Data Summary Report



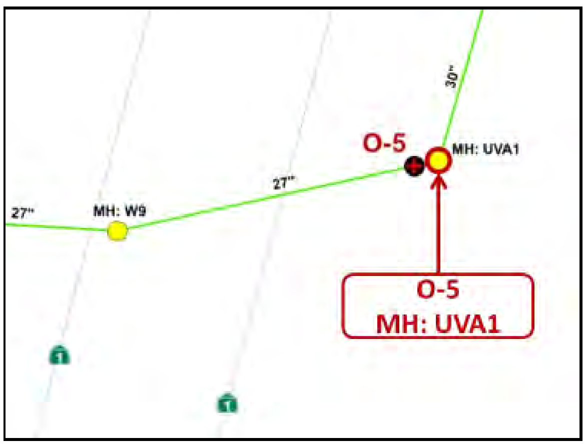
Vicinity Map: Site 05

SITE 05

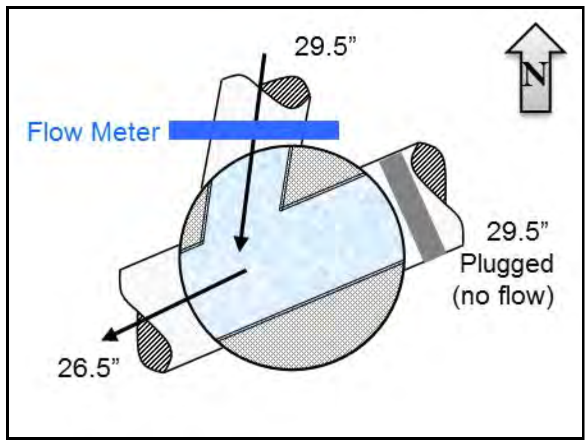
Site Information

Location:	Northwest corner VA Clinic parking lot
Coordinates:	121.8155° W, 36.6639° N
Pipe Diameter:	29.5 inches
ADWF:	0.344 mgd
Peak Measured Flow:	0.832 mgd

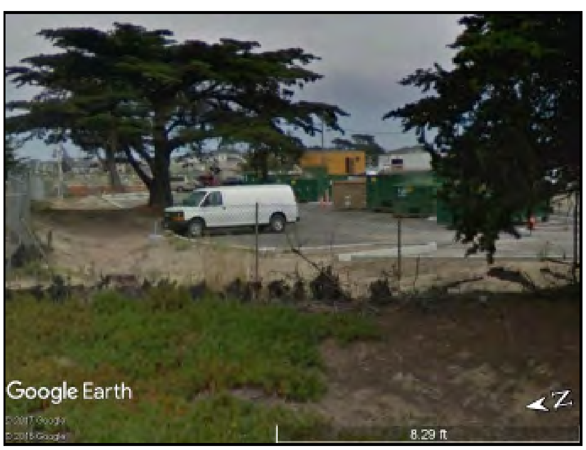
Satellite Map



Sewer Map



Flow Sketch



Street View


Plan View

SITE 05

Additional Site Photos

Effluent Pipe

North Influent Pipe

SITE 05

Additional Site Photos

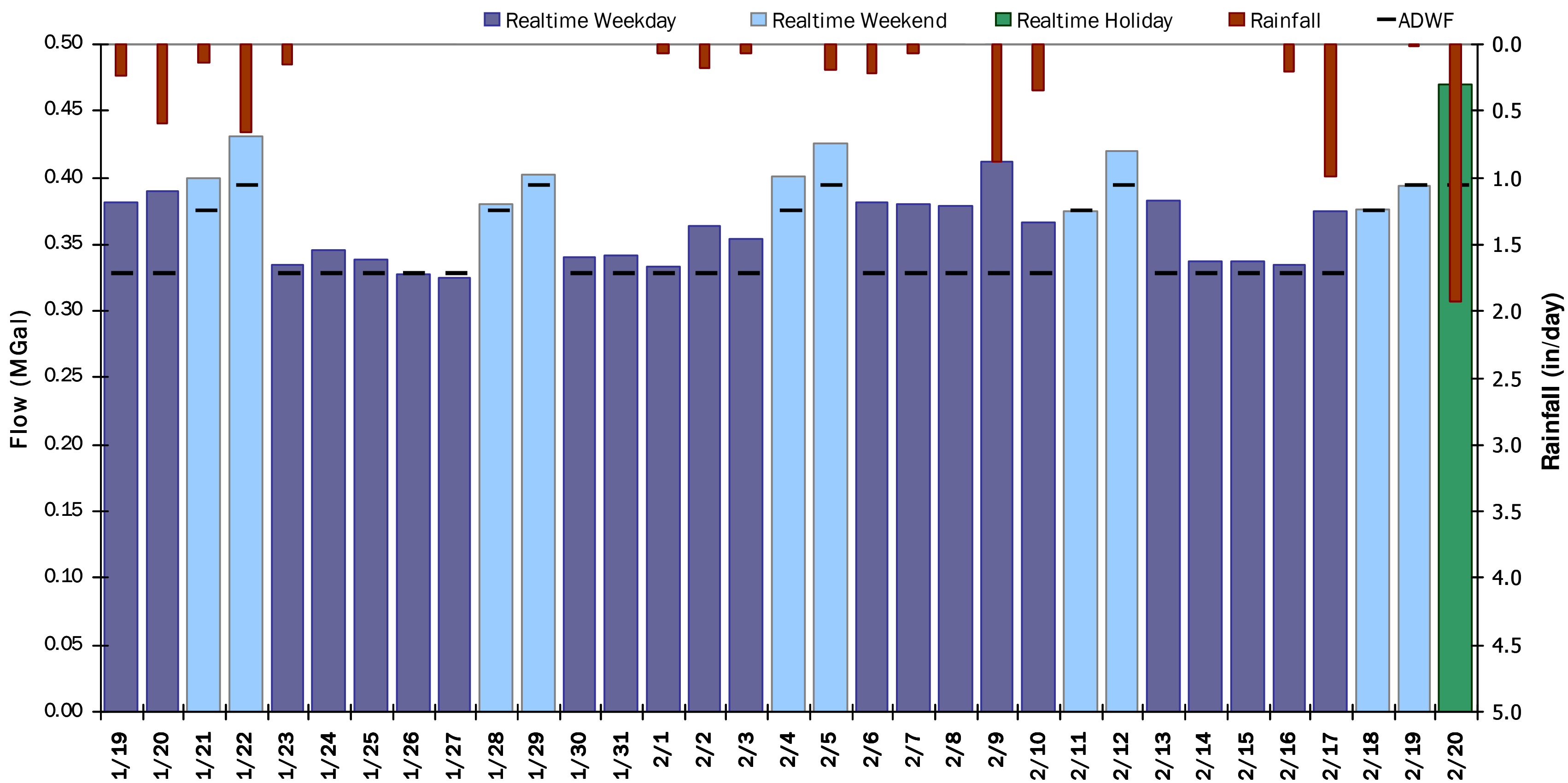
East Plugged Pipe

SITE 05

Period Flow Summary: Daily Flow Totals

Avg Period Flow: 0.374 MGal **Peak Daily Flow: 0.469 MGal** **Min Daily Flow: 0.326 MGal**

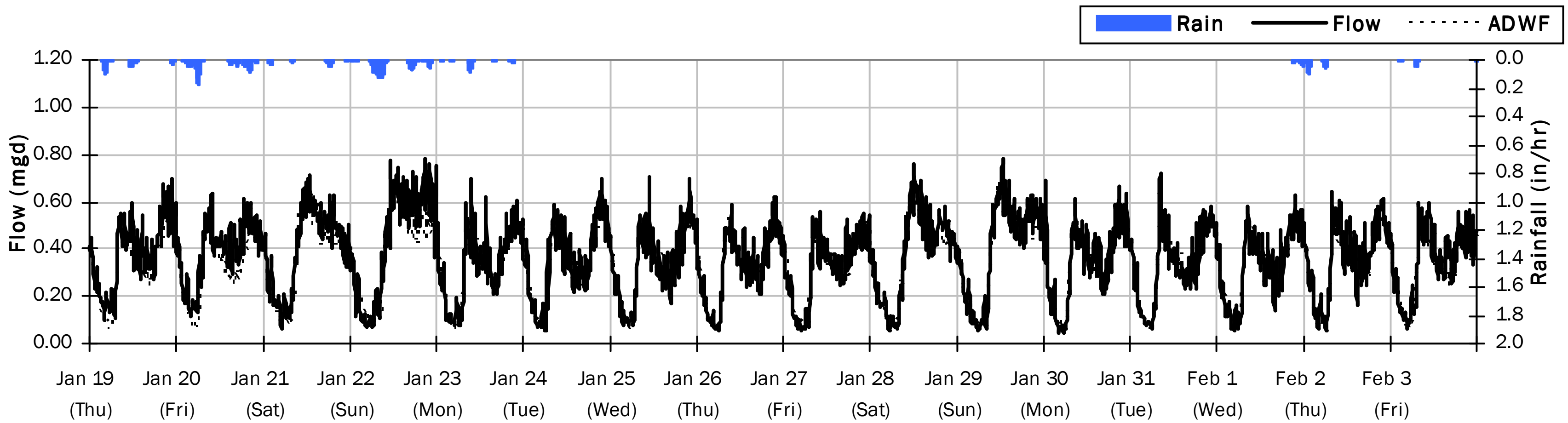
Total Period Rainfall: 6.93 inches

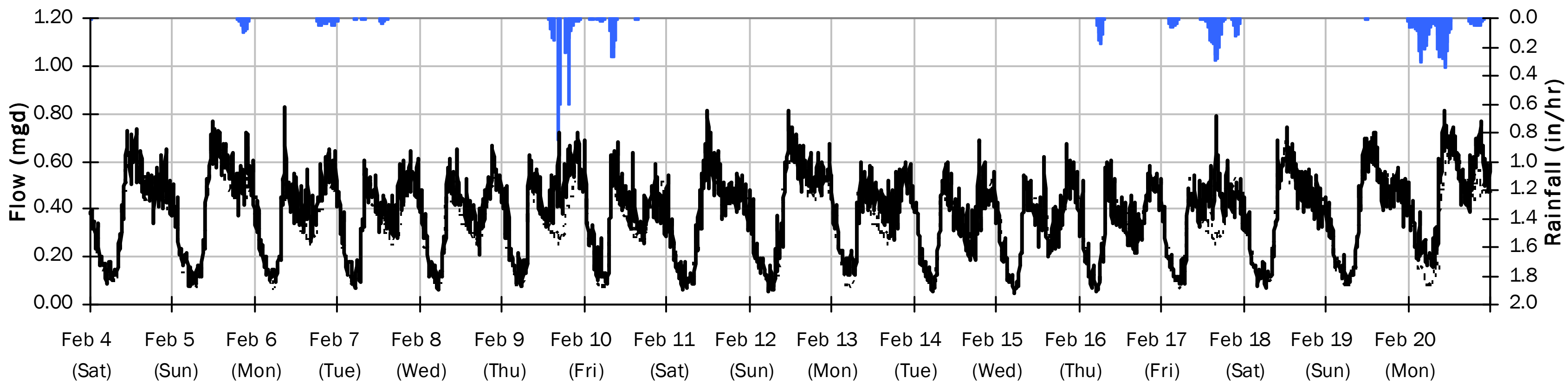


SITE 05

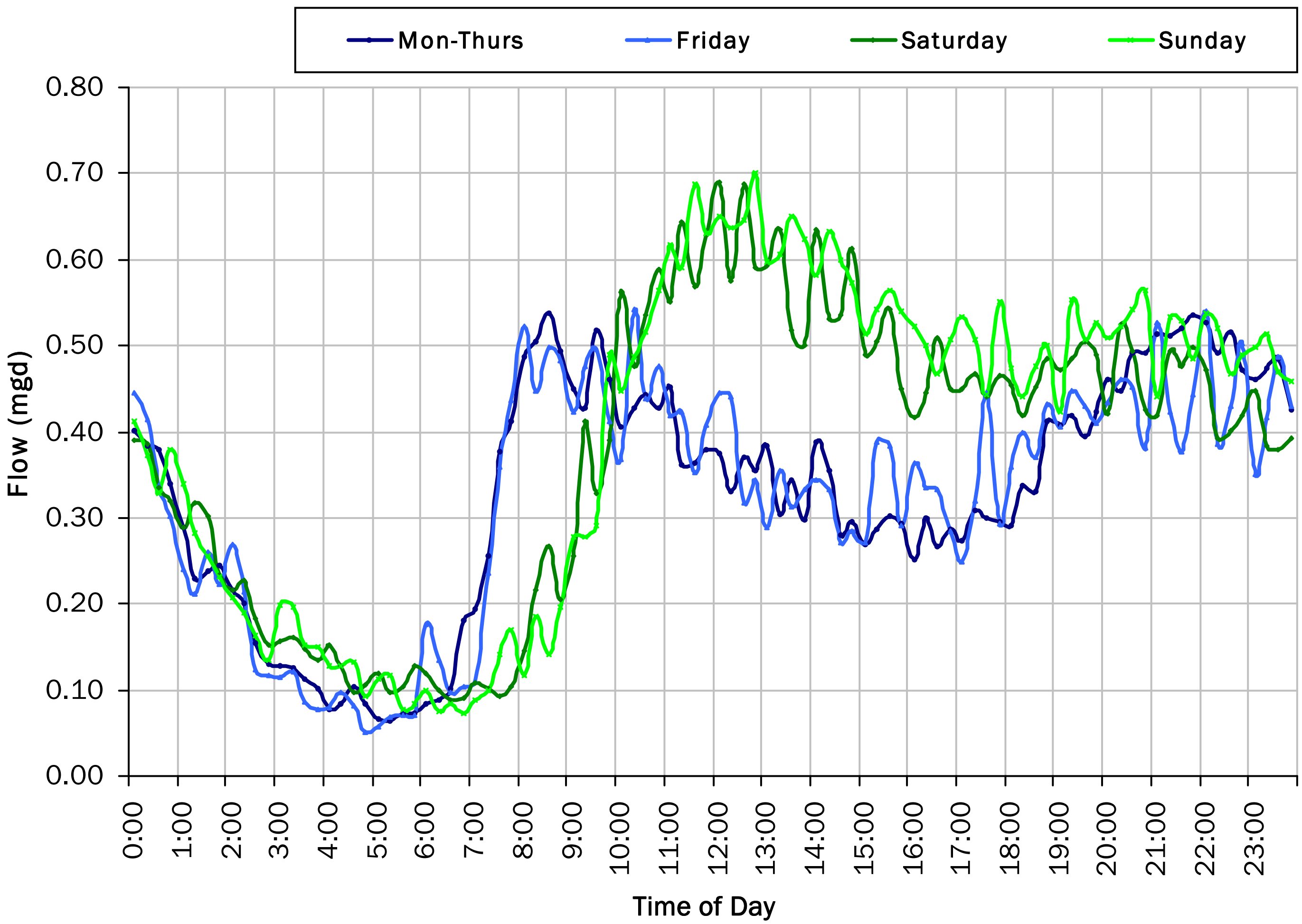
Flow Summary: 1/19/2017 to 2/20/2017

Total Period Rainfall: 6.93 inches   **Avg Flow: 0.374 mgd**   **Peak Flow: 0.832 mgd**   **Min Flow: 0.046 mgd**

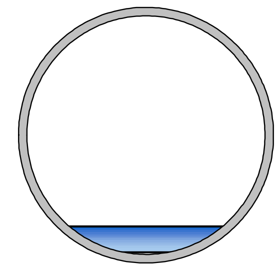




SITE 05
Average Dry Weather Flow Hydrographs

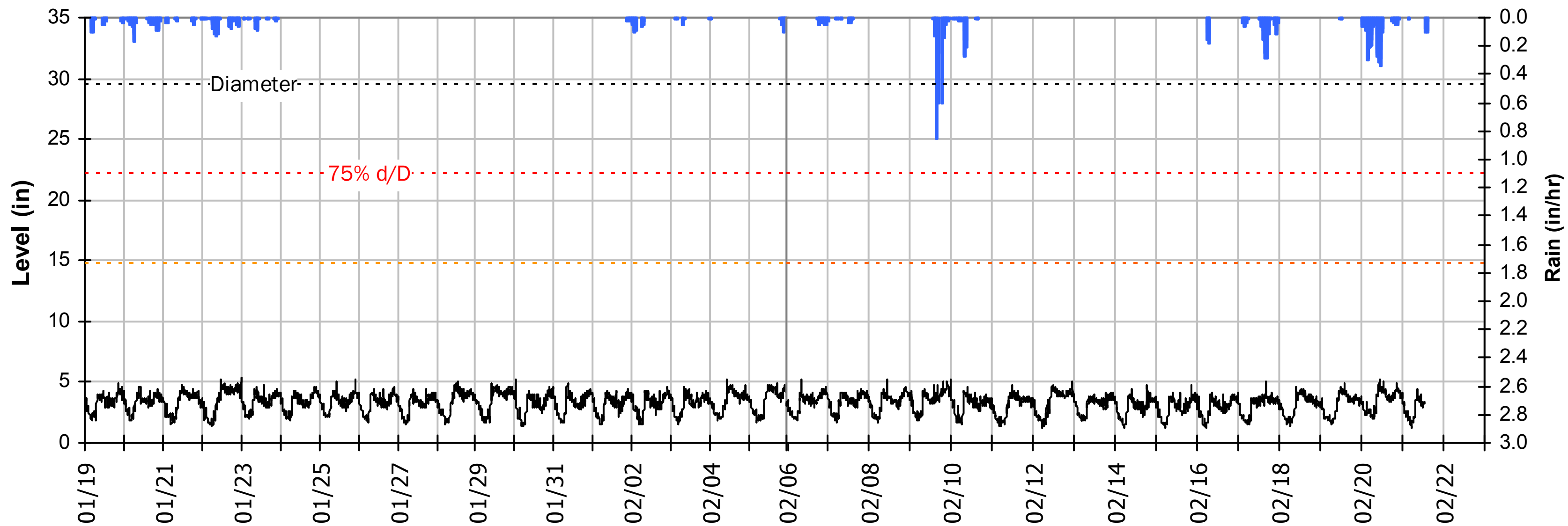


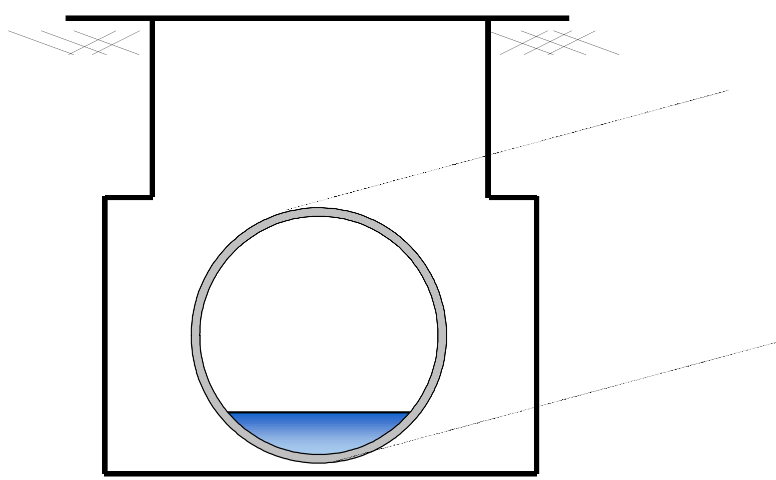
ADWF:
0.344 *mgd*



SITE 05
Site Capacity and Surcharge Summary

Realtime Flow Levels with Rainfall Data over Monitoring Period

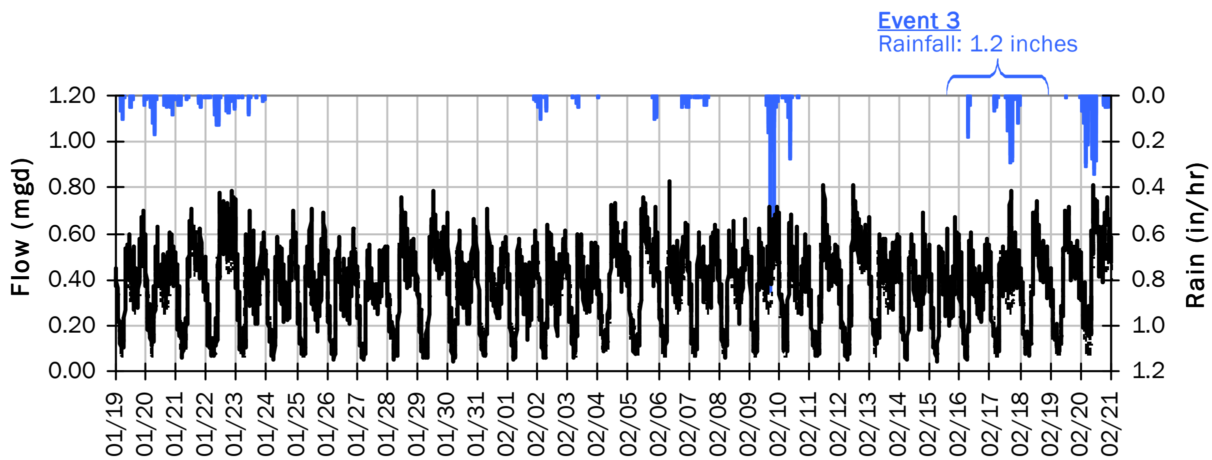




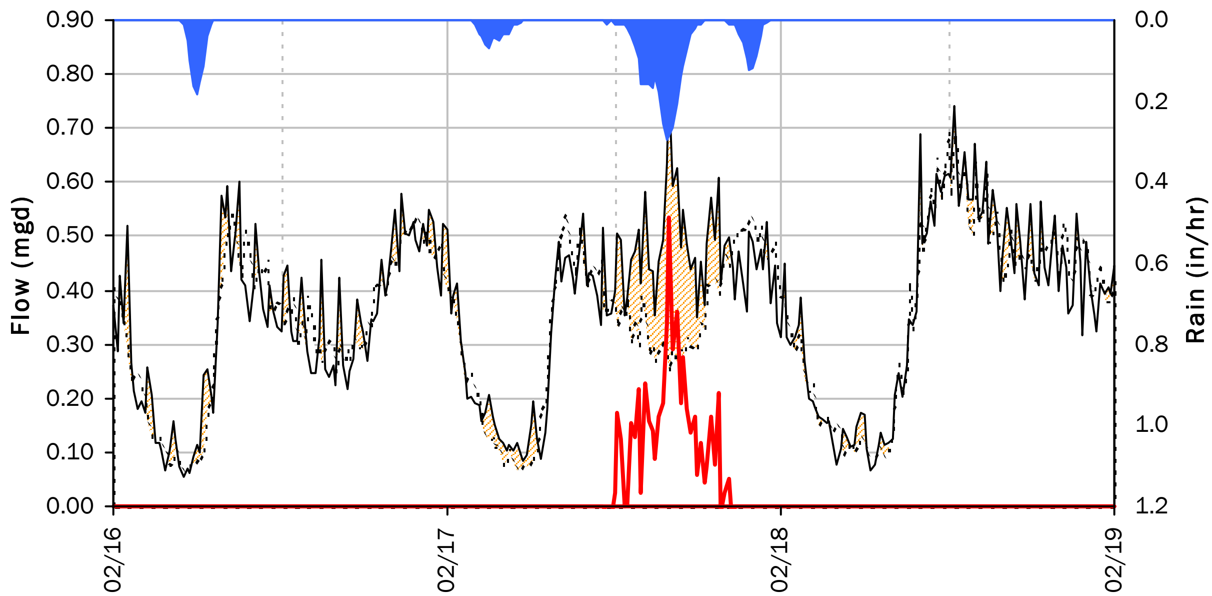
Pipe Diameter:	29.5	*inches*
Peak Measured Level:	5.35	*inches*
Peak d/D Ratio:	0.18	

SITE 05
I/I Summary: Event 3

Baseline and Realtime Flows with Rainfall Data over Monitoring Period



Event 3 Detail Graph

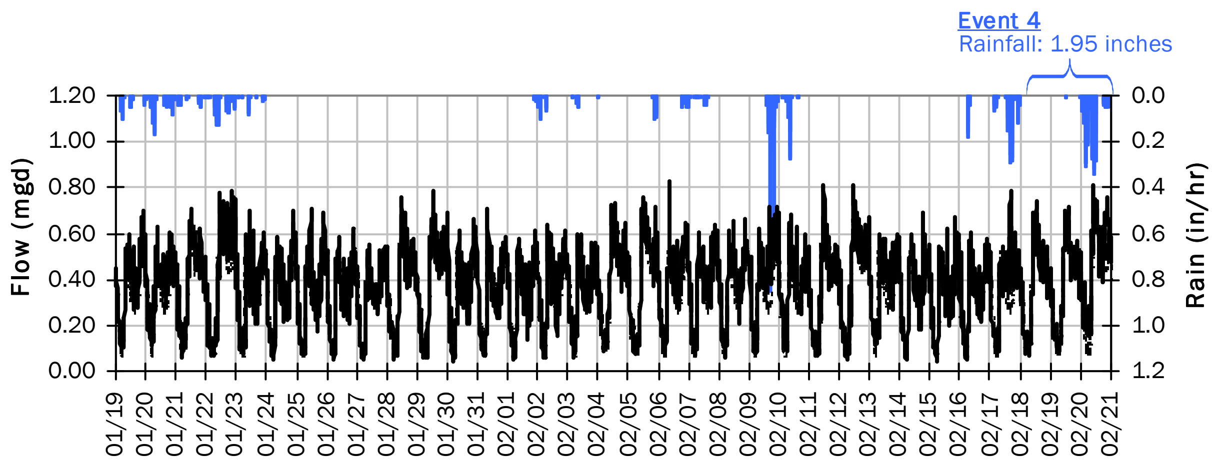


Storm Event I/I Analysis (Rain = 1.20 inches)

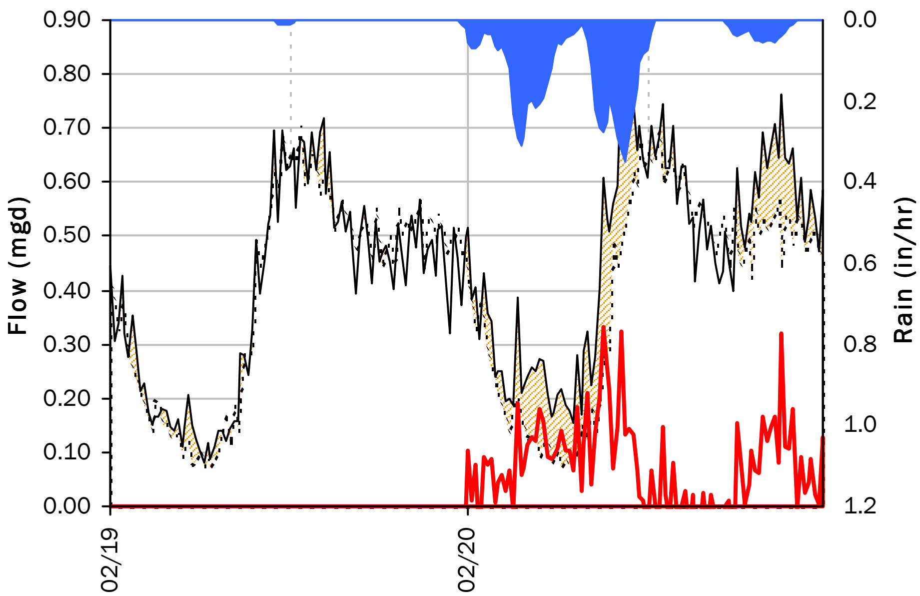
Capacity		**Inflow / Infiltration**	
Peak Flow:	0.79 *mgd*	**Peak I/I Rate:**	0.54 *mgd*
PF:	2.27	**Total I/I:**	53,000 *gallons*
Peak Level:	5.14 *in*		
d/D Ratio:	0.17		

SITE 05
I/I Summary: Event 4

Baseline and Realtime Flows with Rainfall Data over Monitoring Period



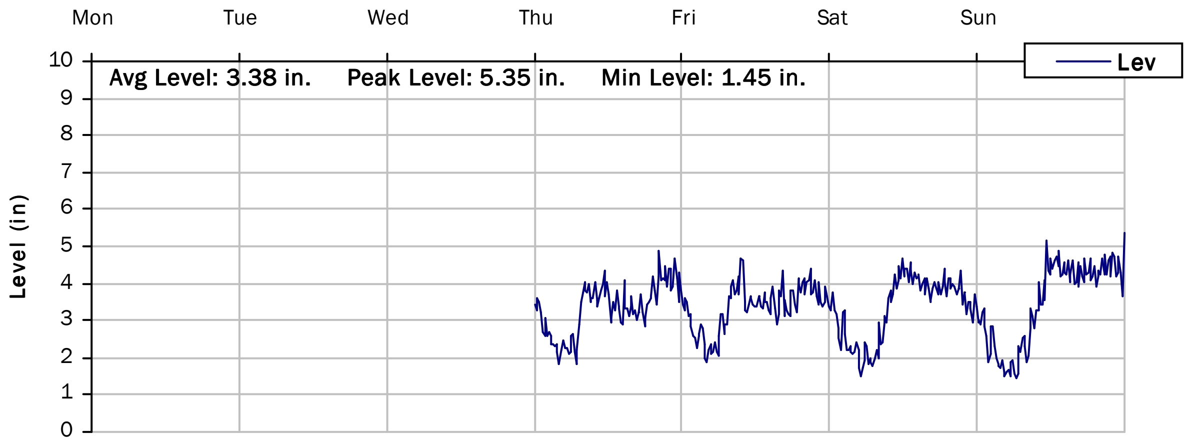
Event 4 Detail Graph

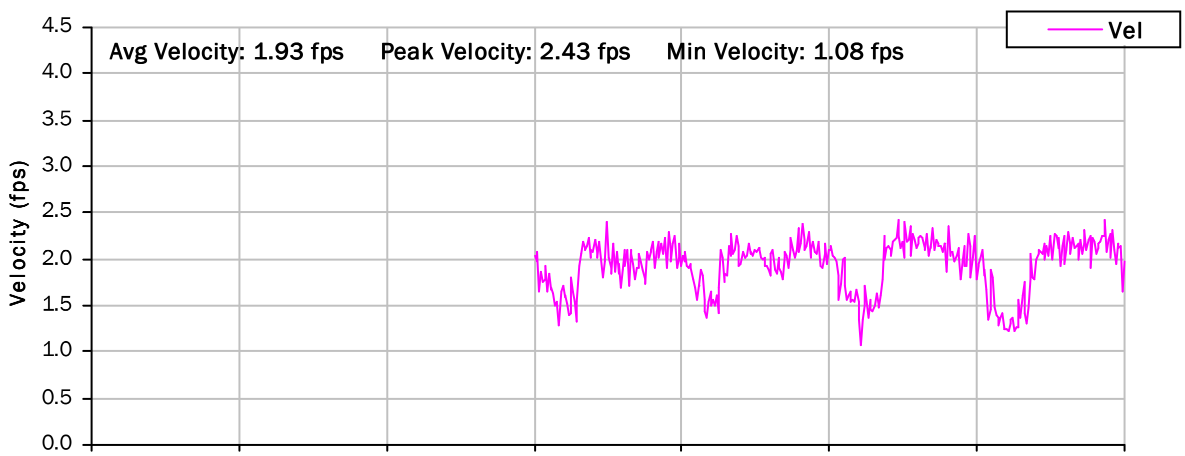


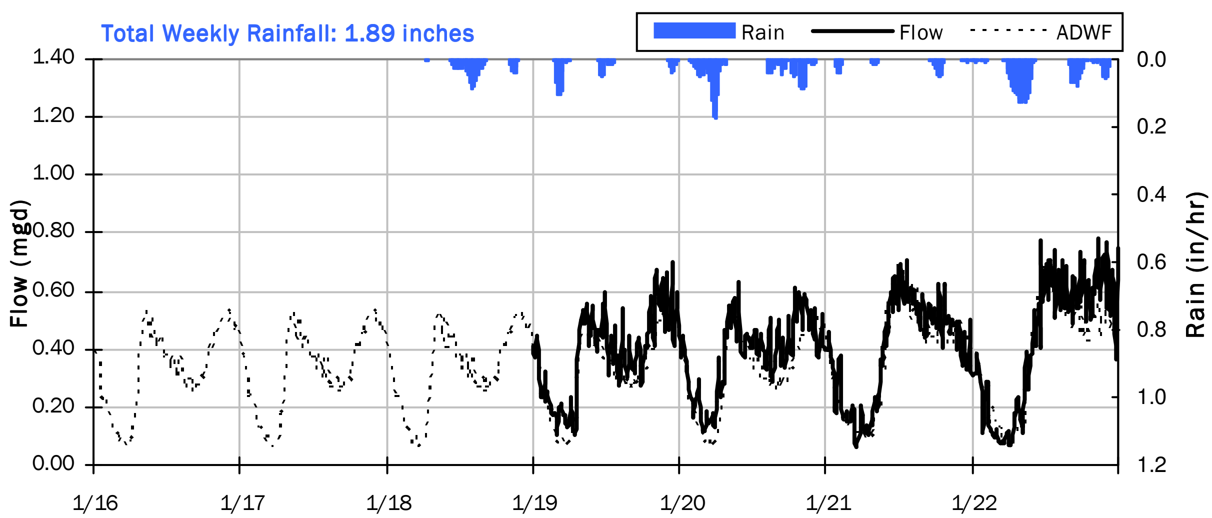
Storm Event I/I Analysis (Rain = 1.95 inches)

Capacity		Inflow / Infiltration	
Peak Flow:	0.81 *mgd*	**Peak I/I Rate:**	0.33 *mgd*
PF:	2.35	**Total I/I:**	75,000 *gallons*
Peak Level:	5.25 *in*		
d/D Ratio:	0.18		

SITE 05
Weekly Level, Velocity and Flow Hydrographs
1/16/2017 to 1/23/2017





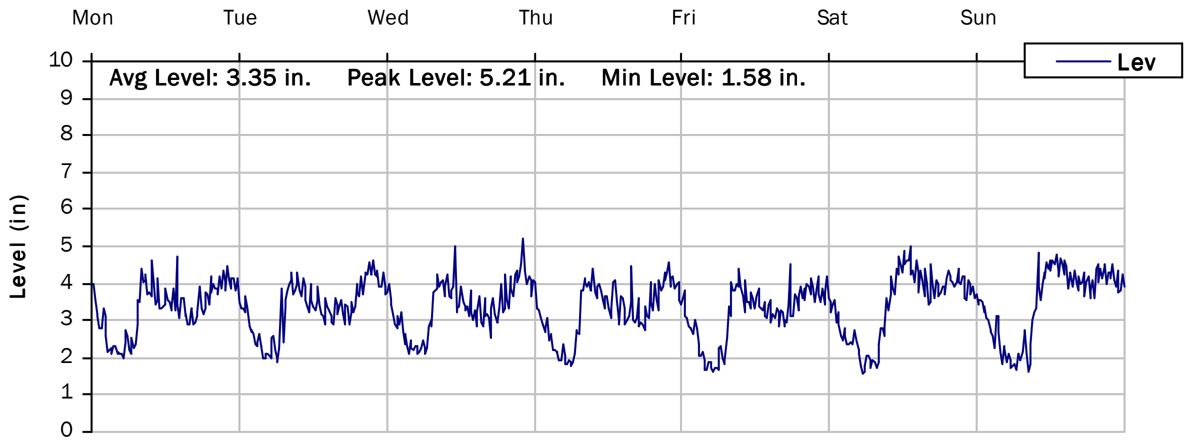


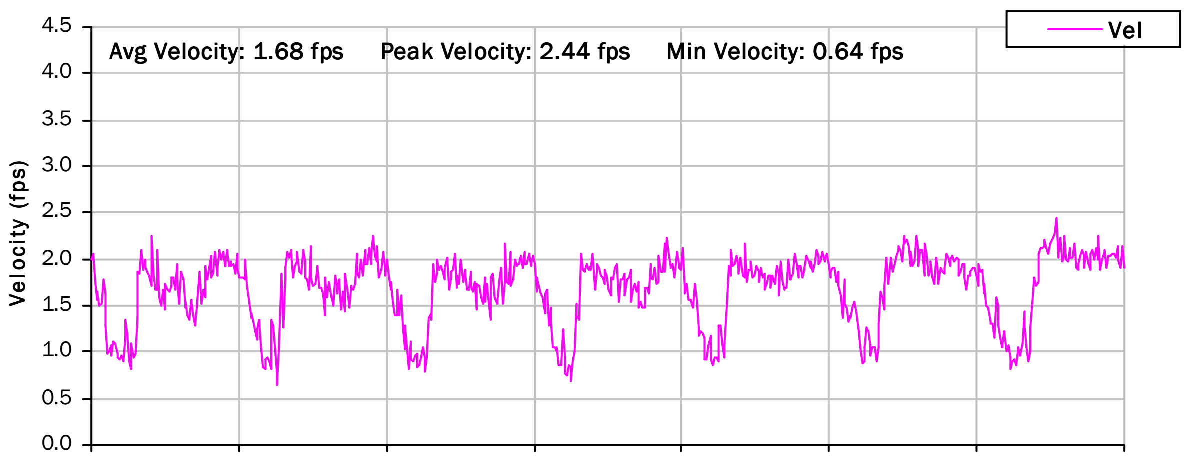
Avg Flow: 0.401 mgd **Peak Flow: 0.783 mgd** **Min Flow: 0.063 mgd**

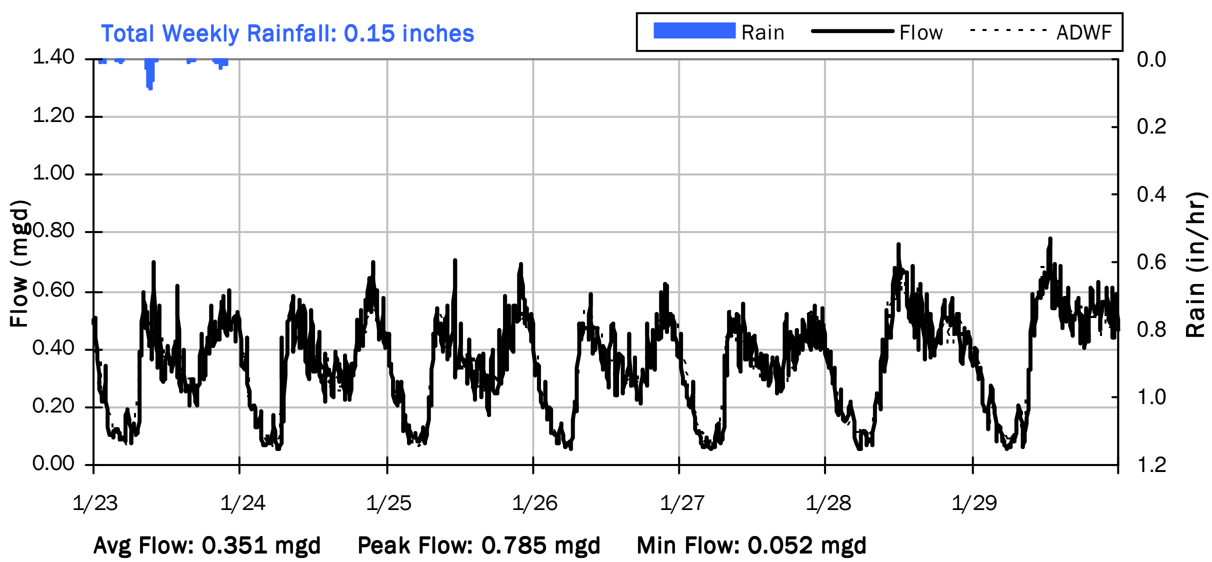
SITE 05

Weekly Level, Velocity and Flow Hydrographs

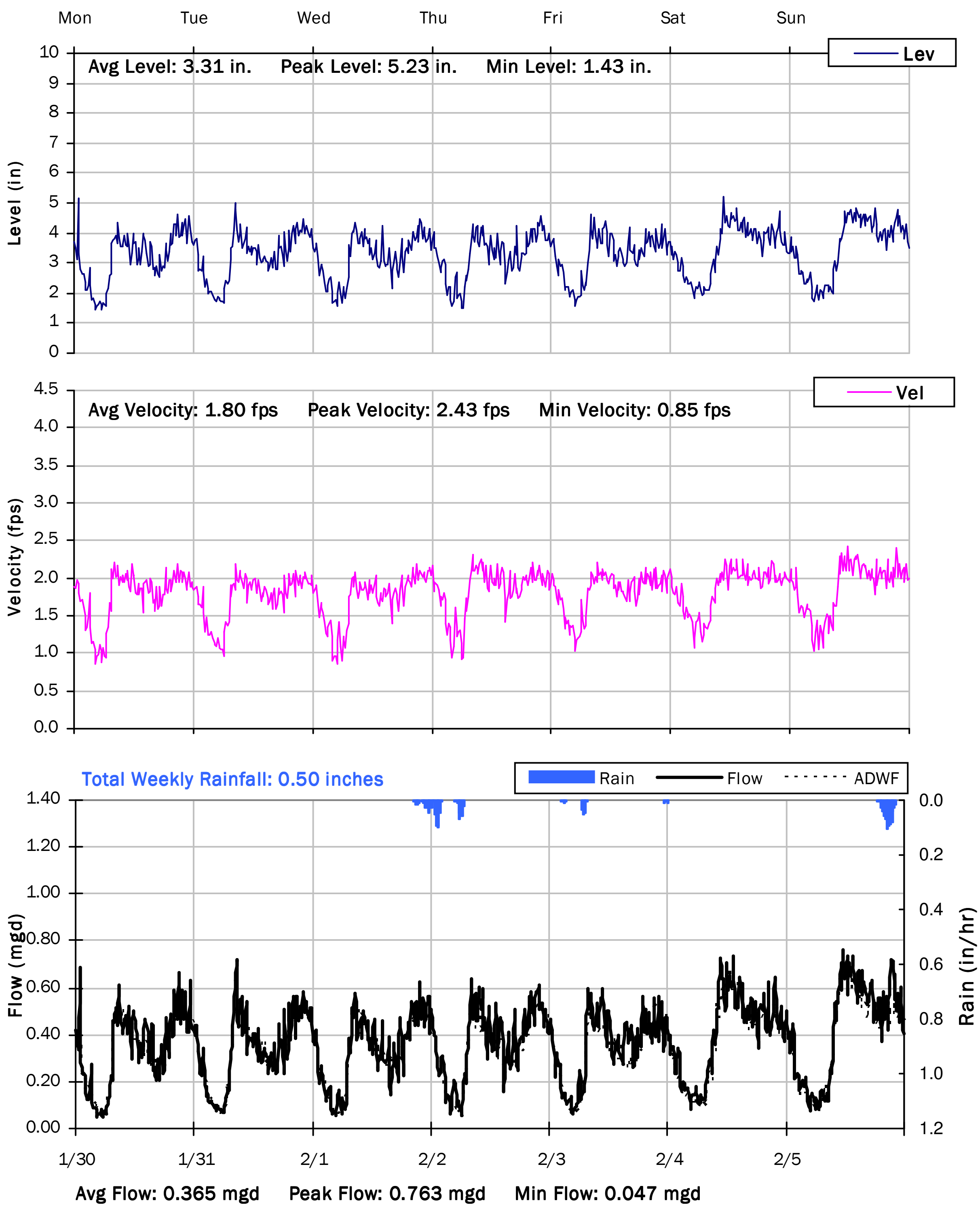
1/23/2017 to 1/30/2017



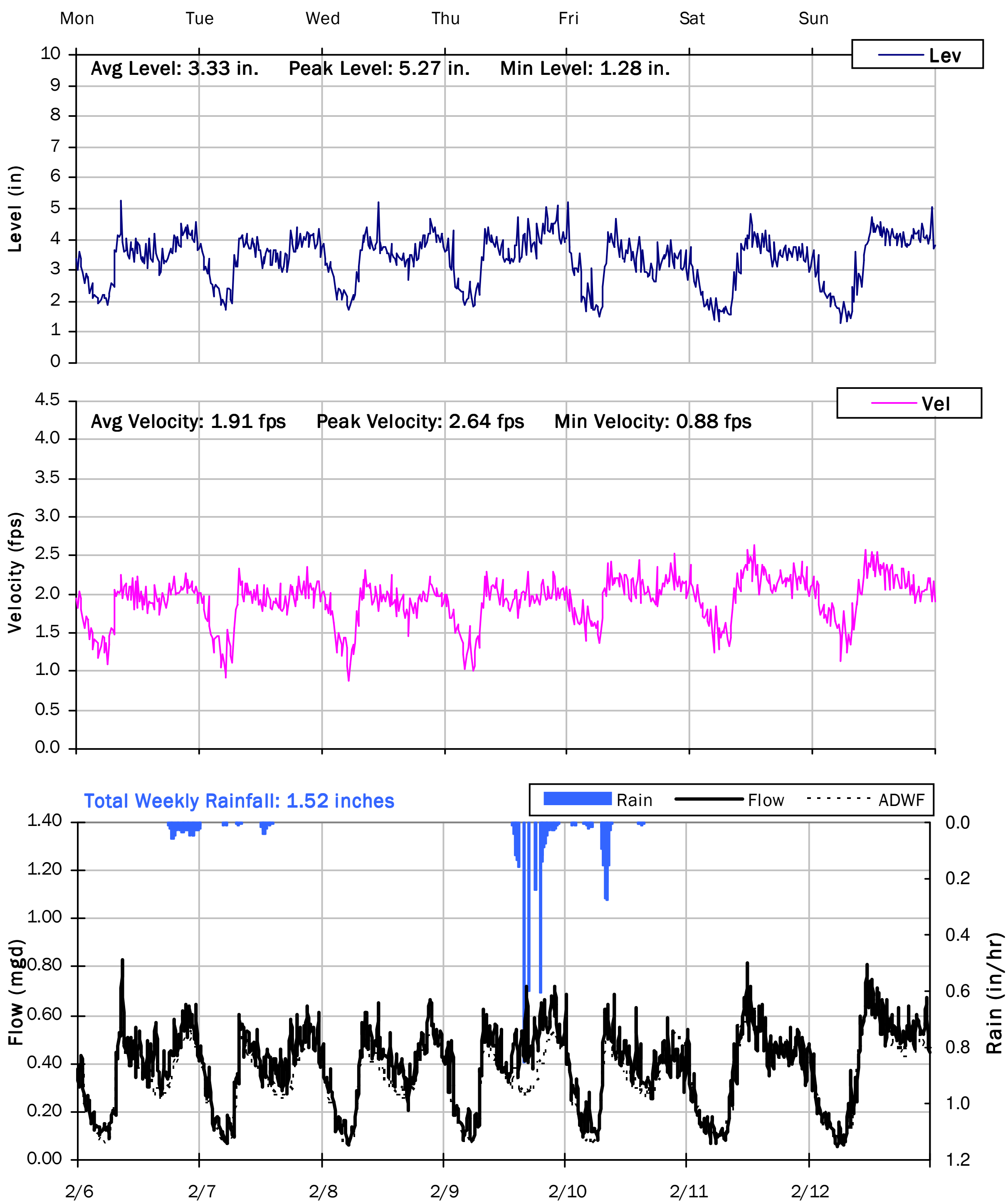




SITE 05
Weekly Level, Velocity and Flow Hydrographs
1/30/2017 to 2/6/2017



SITE 05
Weekly Level, Velocity and Flow Hydrographs
2/6/2017 to 2/13/2017

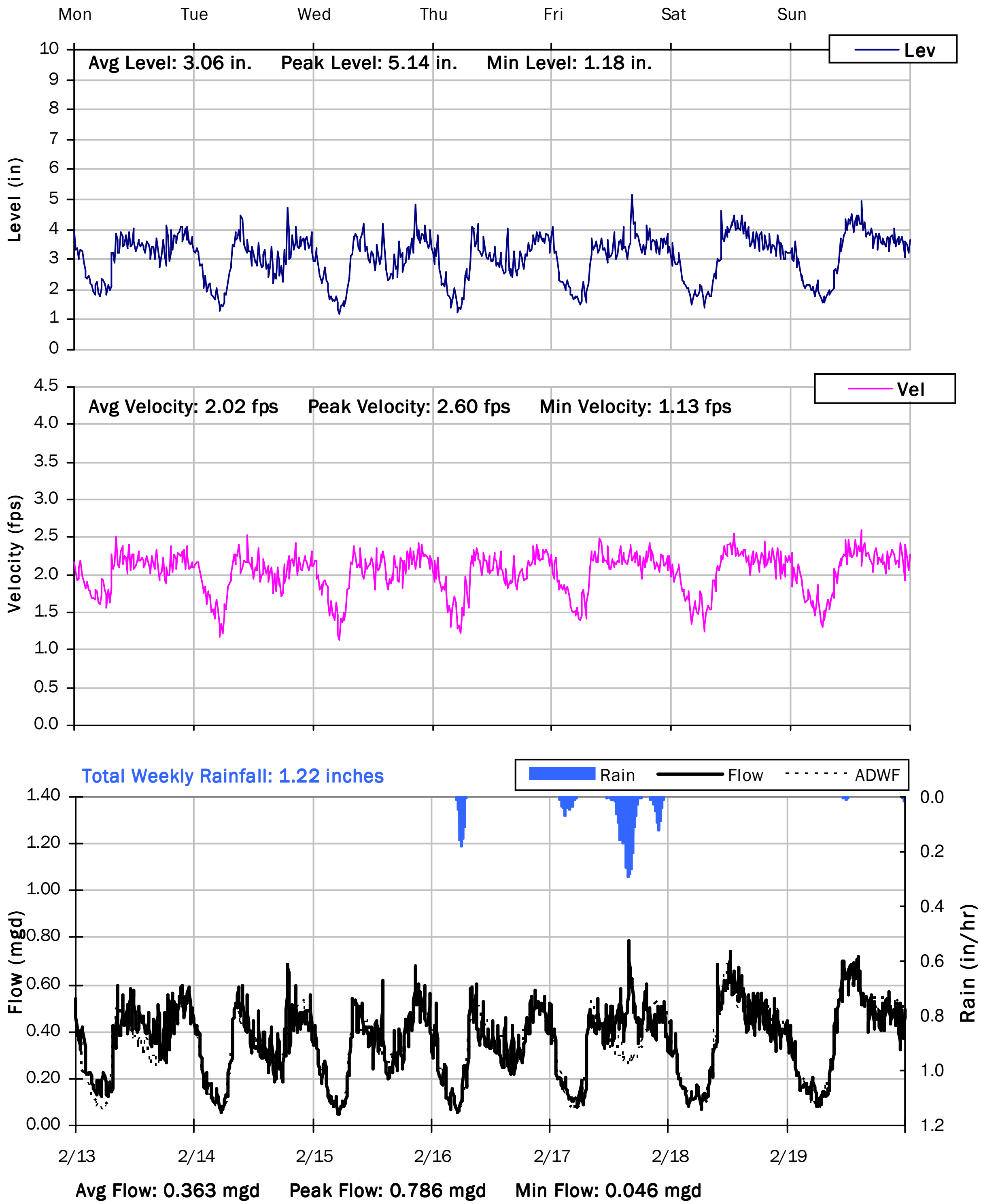


Avg Flow: 0.387 mgd **Peak Flow: 0.832 mgd** **Min Flow: 0.052 mgd**

SITE 05

Weekly Level, Velocity and Flow Hydrographs

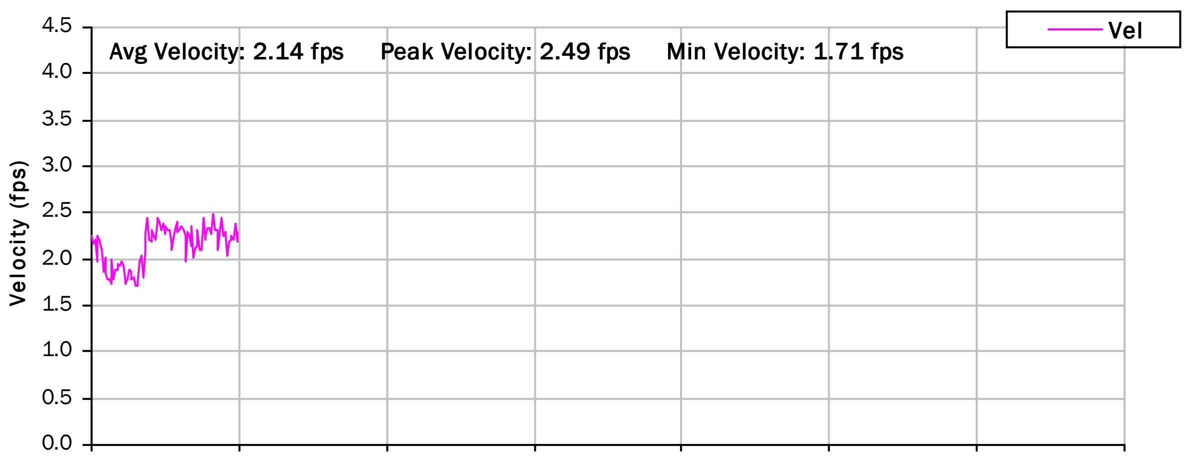
2/13/2017 to 2/20/2017

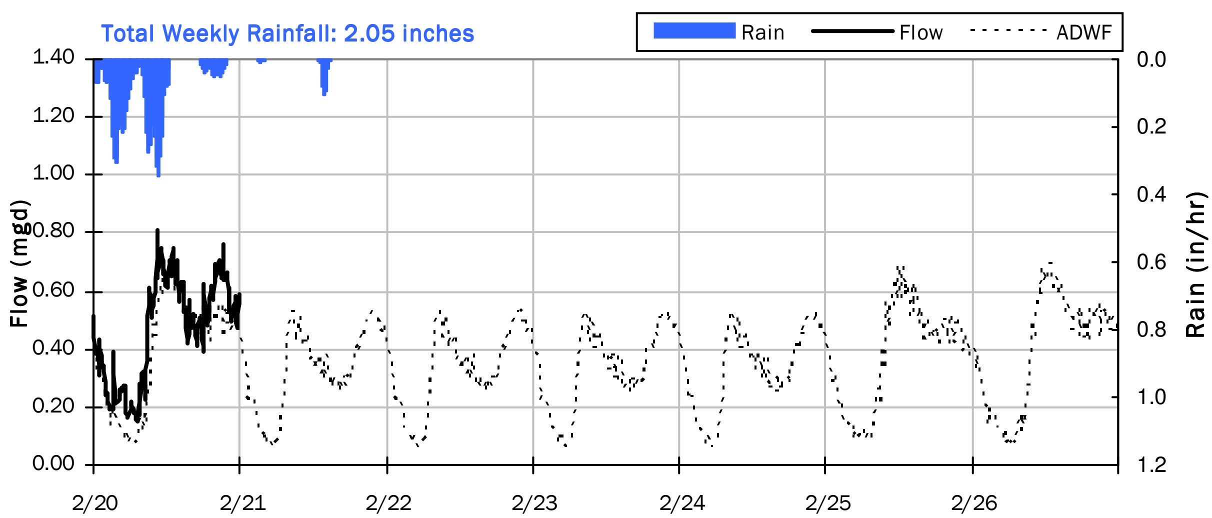


SITE 05

Weekly Level, Velocity and Flow Hydrographs

2/20/2017 to 2/27/2017





Avg Flow: 0.469 mgd **Peak Flow: 0.813 mgd** **Min Flow: 0.153 mgd**

Marina Coast Water District

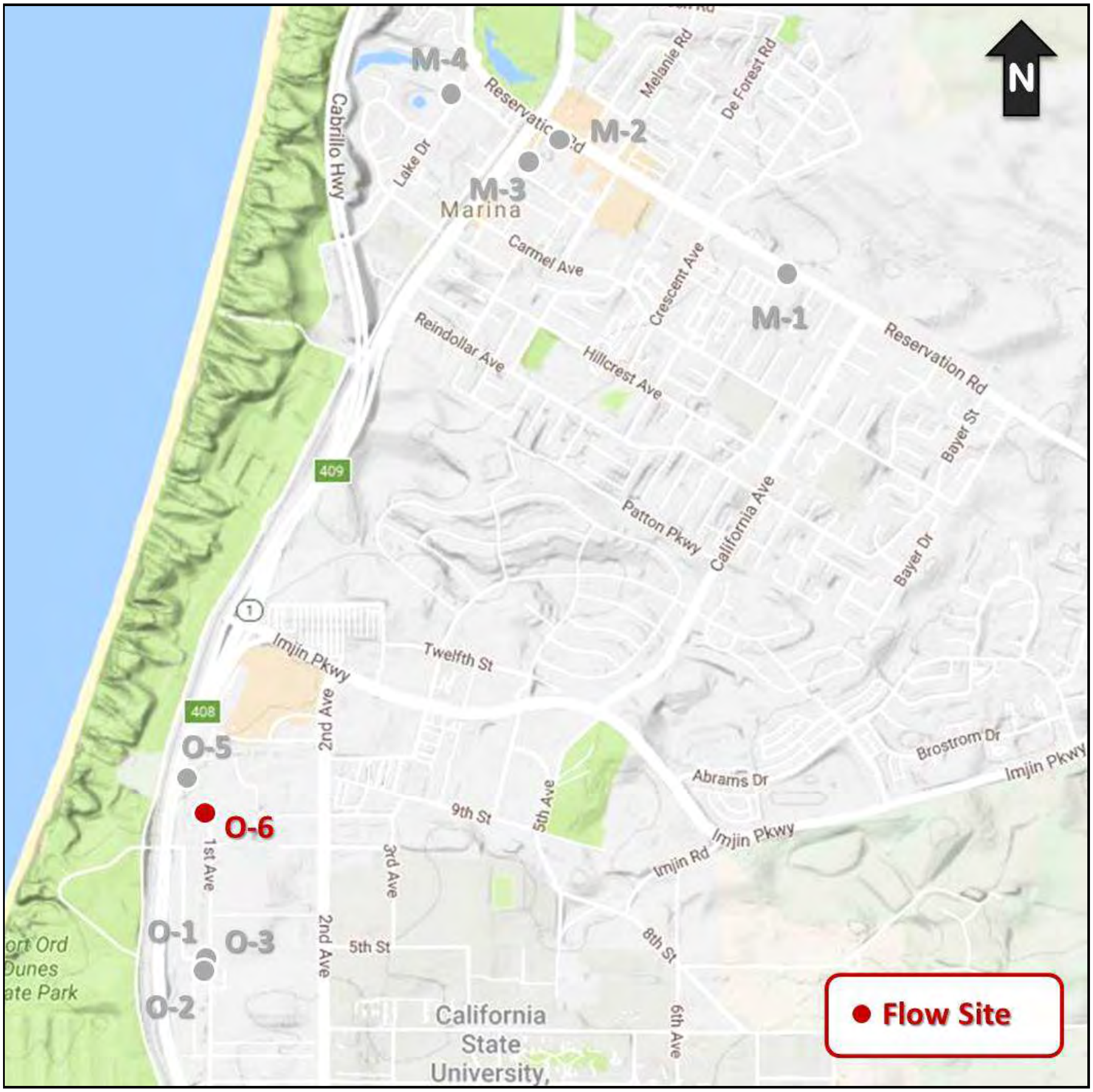
Sanitary Sewer Flow Monitoring

Temporary Monitoring: January 2017 - March 2017

Monitoring Site: Site 06

Location: VA Clinic parking lot, near motorcycle parking

Data Summary Report



Vicinity Map: Site 06

SITE 06

Site Information

Location: VA Clinic parking lot, near motorcycle parking

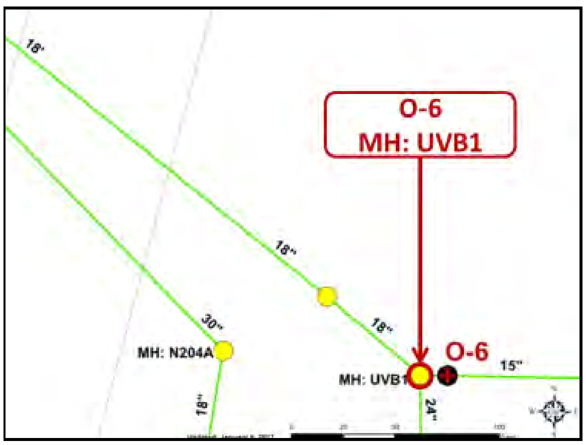
Coordinates: 121.8146° W, 36.6630° N

Pipe Diameter: 14.5 inches

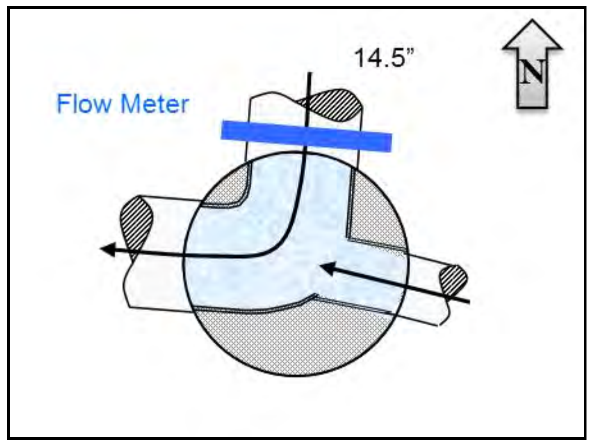
ADWF: 0.019 mgd

Peak Measured Flow: 0.199 mgd

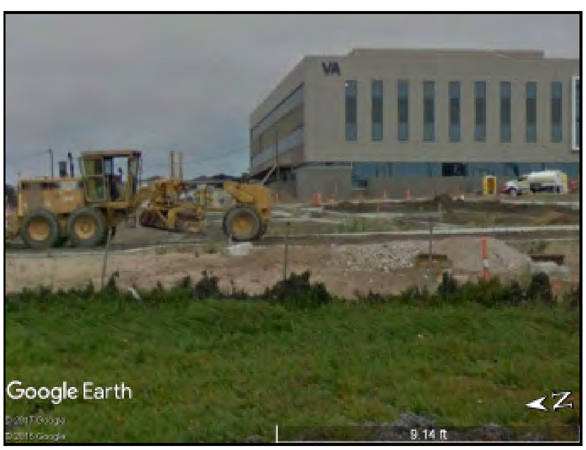
Satellite Map



Sewer Map



Flow Sketch



Street View

Plan View

SITE 06

Additional Site Photos

Effluent Pipe

North Influent Pipe

SITE 06

Additional Site Photos

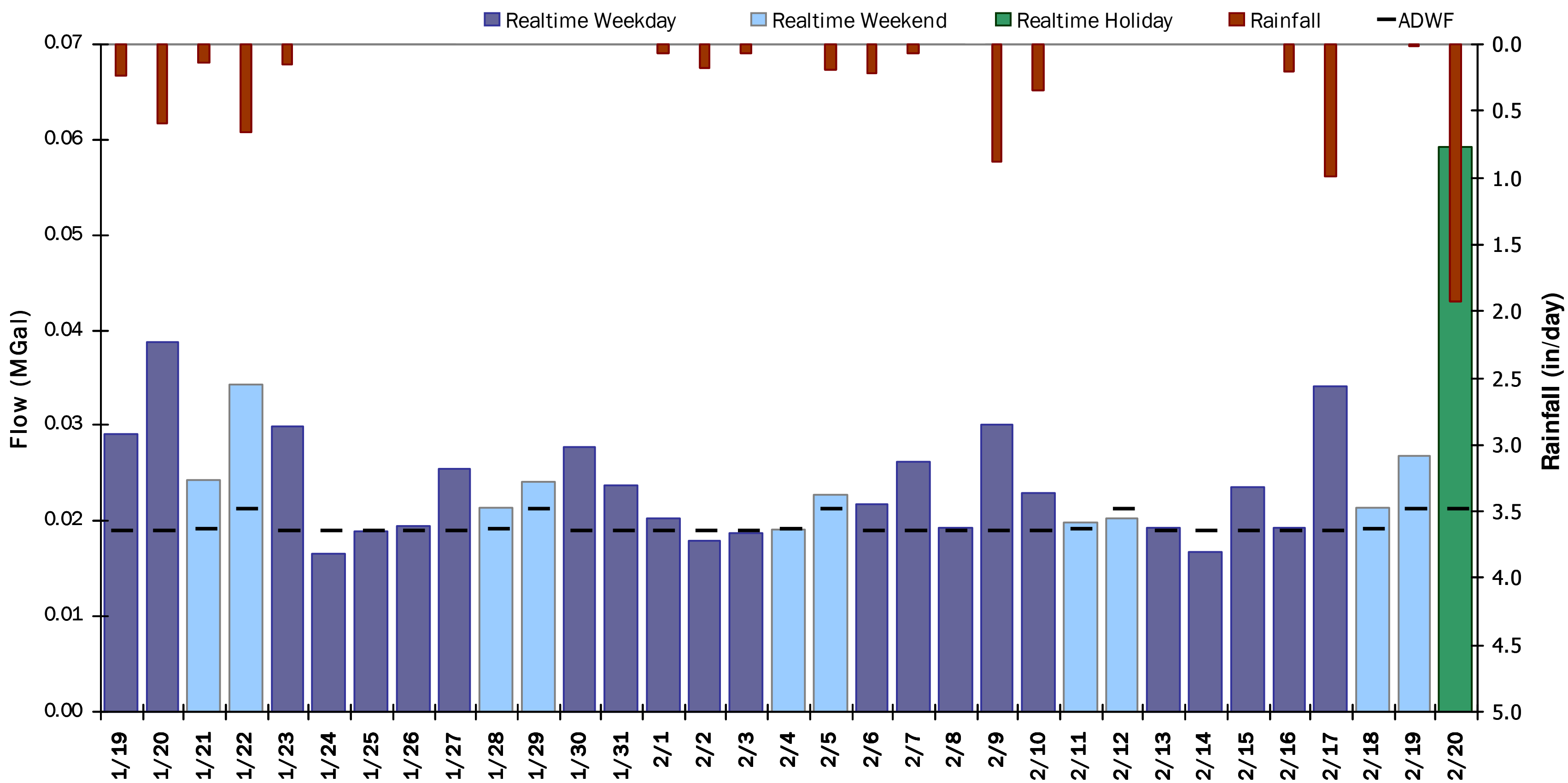
East Influent Pipe

SITE 06

Period Flow Summary: Daily Flow Totals

Avg Period Flow: 0.025 MGal **Peak Daily Flow: 0.059 MGal** **Min Daily Flow: 0.017 MGal**

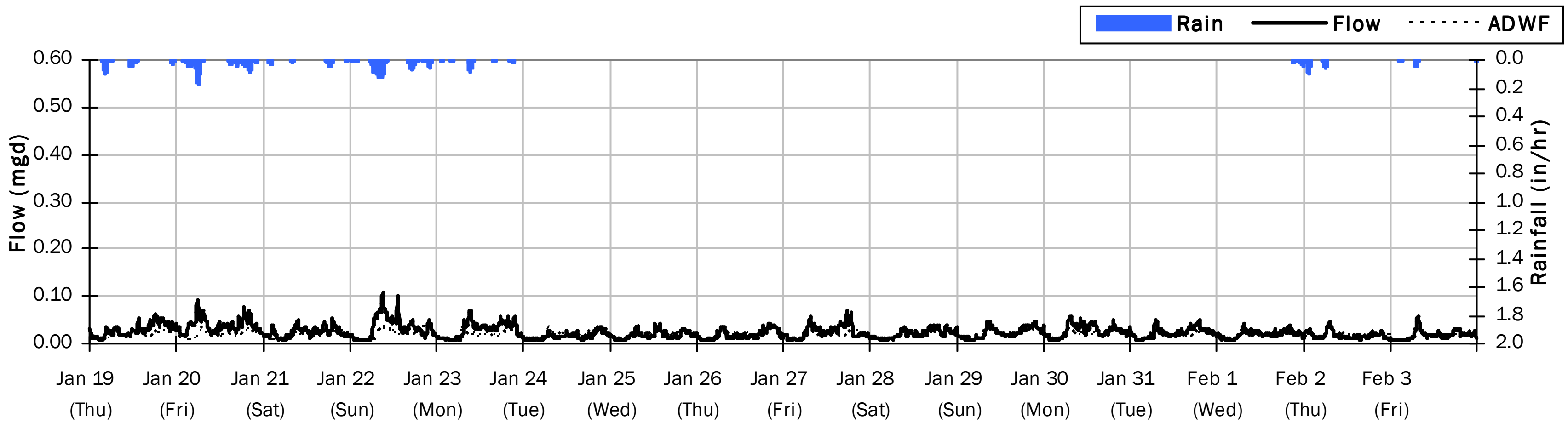
Total Period Rainfall: 6.93 inches

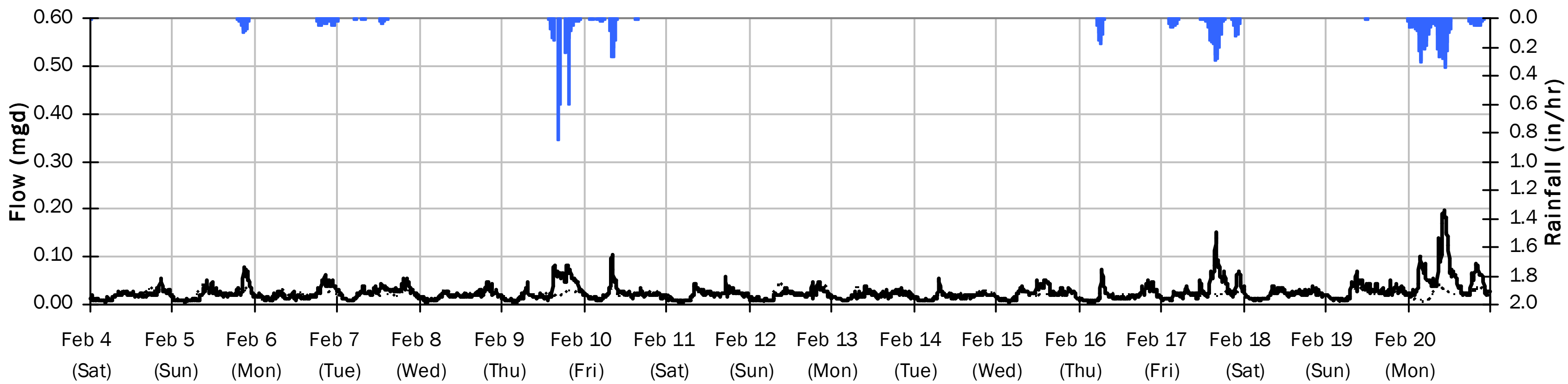


SITE 06

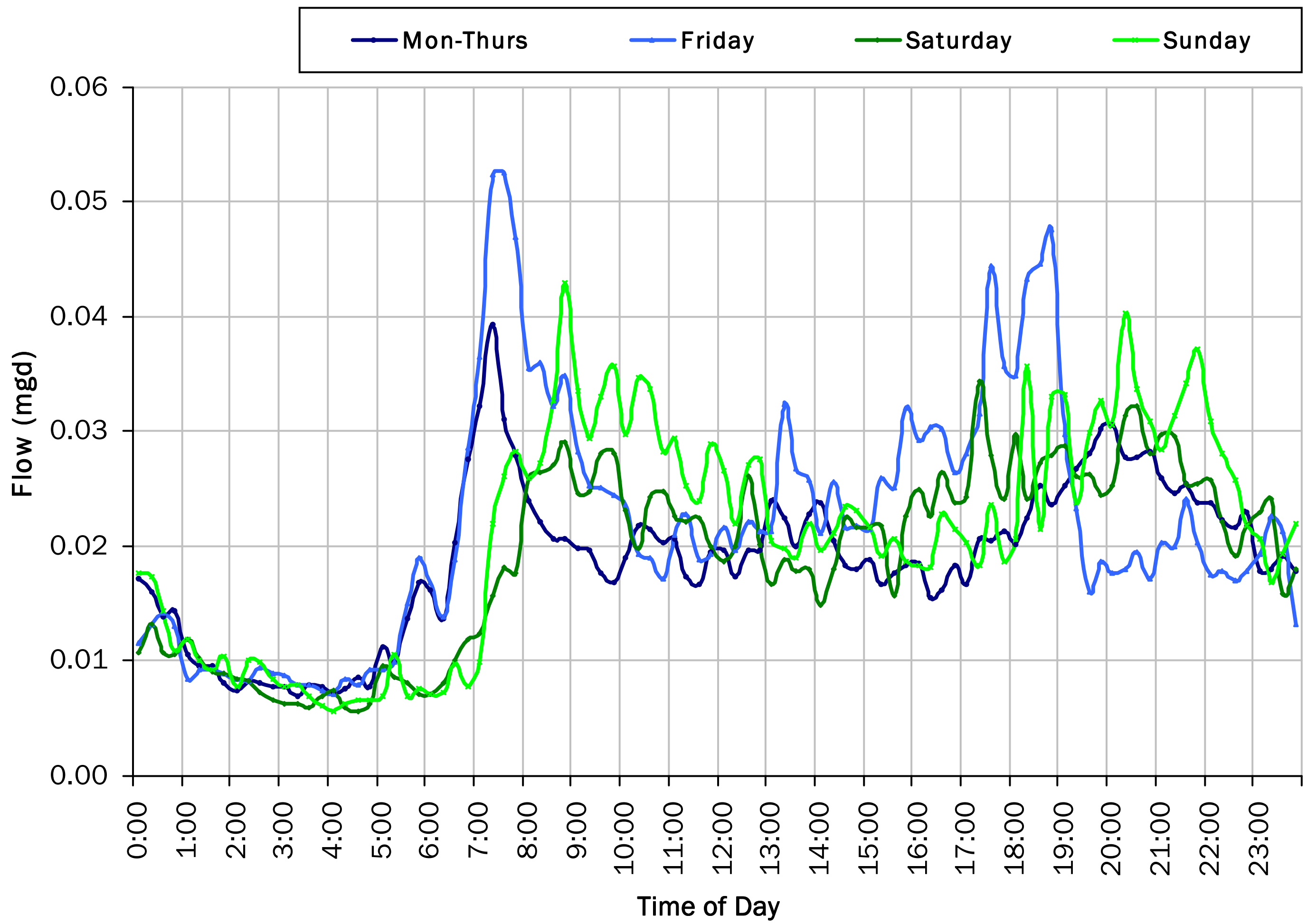
Flow Summary: 1/19/2017 to 2/20/2017

Total Period Rainfall: 6.93 inches   **Avg Flow: 0.025 mgd**   **Peak Flow: 0.199 mgd**   **Min Flow: 0.004 mgd**

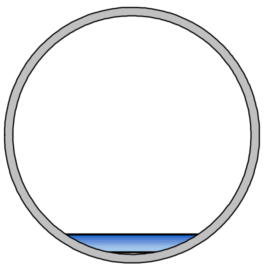




SITE 06
Average Dry Weather Flow Hydrographs



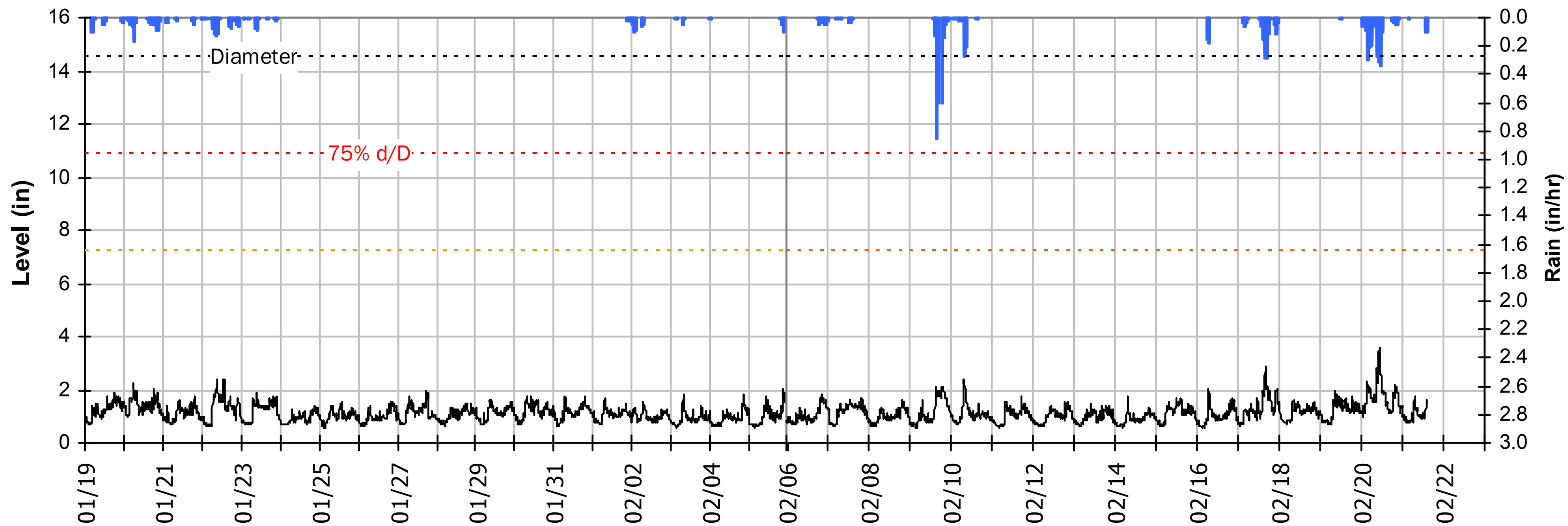
ADWF:
0.019 *mgd*

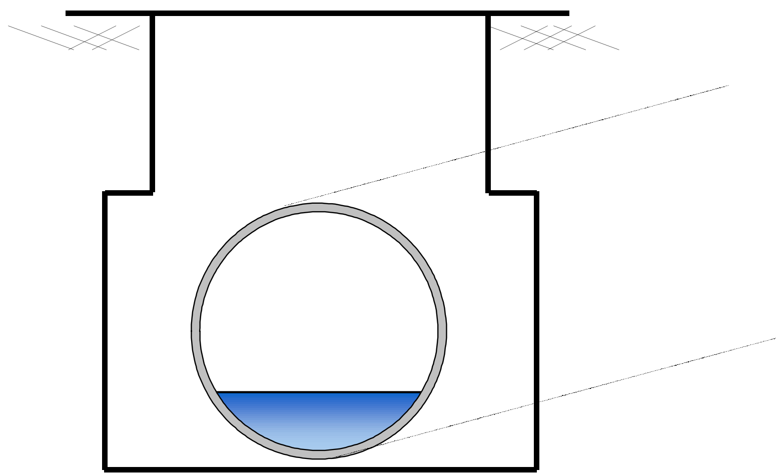


SITE 06

Site Capacity and Surcharge Summary

Realtime Flow Levels with Rainfall Data over Monitoring Period



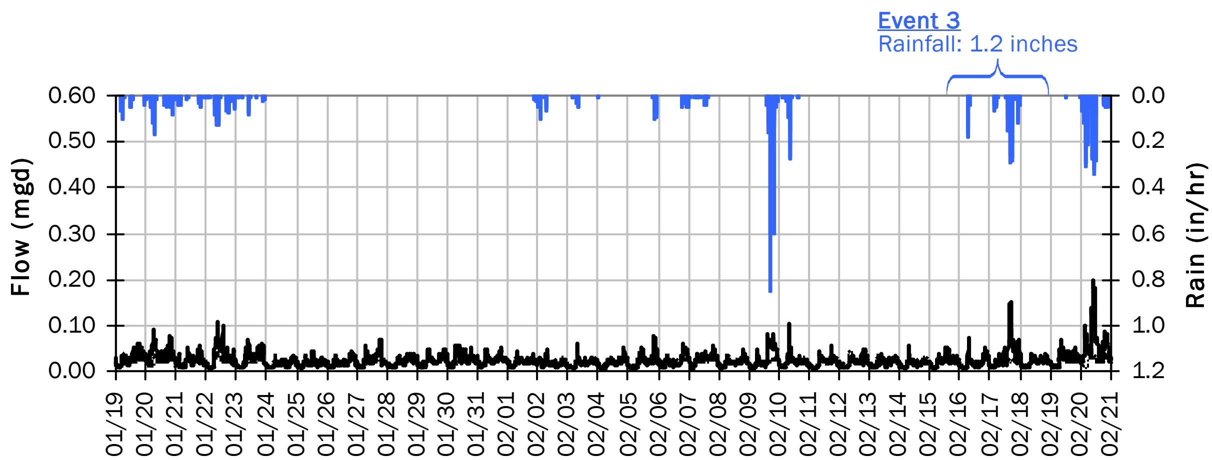


Pipe Diameter:	14.5	*inches*
Peak Measured Level:	3.54	*inches*
Peak d/D Ratio:	0.24	

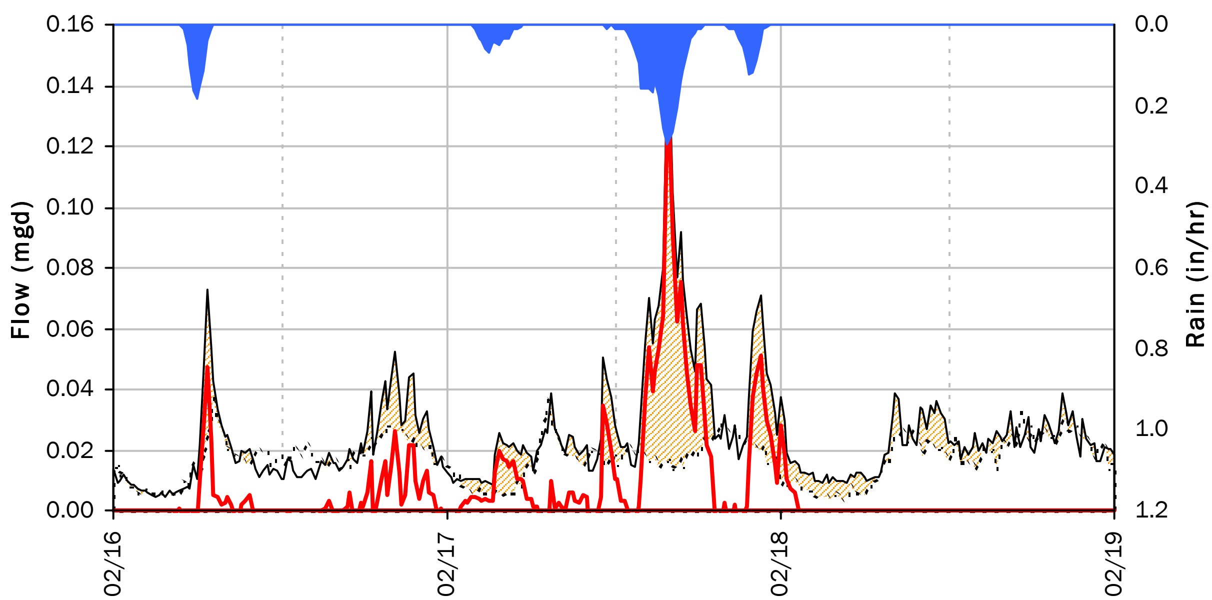
SITE 06

I/I Summary: Event 3

Baseline and Realtime Flows with Rainfall Data over Monitoring Period



Event 3 Detail Graph



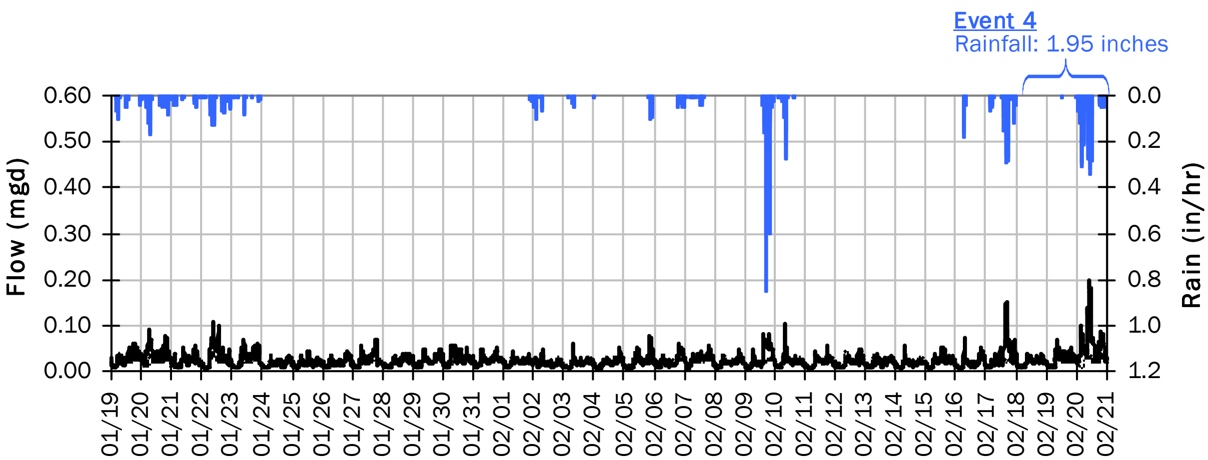
Storm Event I/I Analysis (Rain = 1.20 inches)

Capacity		Inflow / Infiltration	
Peak Flow:	0.15 *mgd*	**Peak I/I Rate:**	0.13 *mgd*
PF:	7.72	**Total I/I:**	20,000 *gallons*
Peak Level:	2.90 *in*		
d/D Ratio:	0.20		

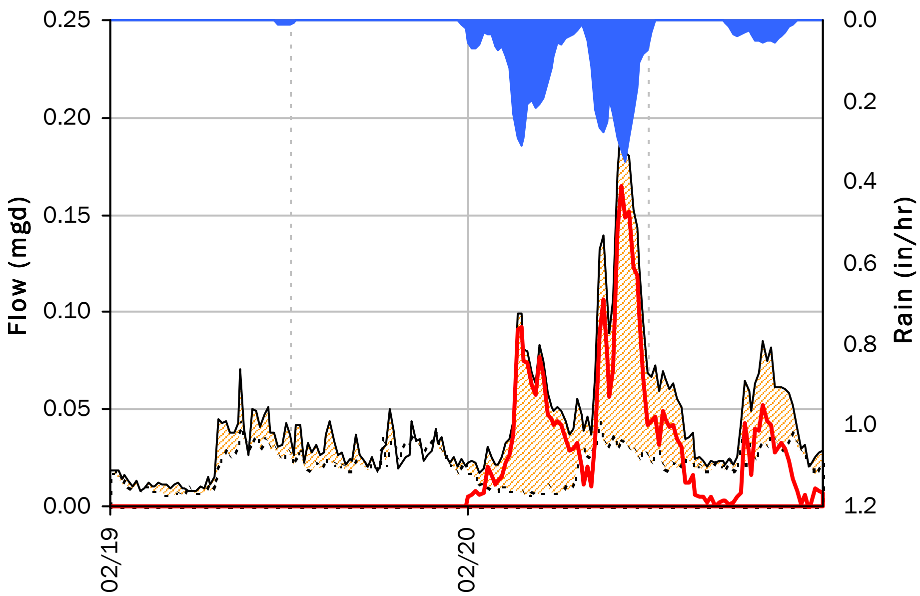
SITE 06

I/I Summary: Event 4

Baseline and Realtime Flows with Rainfall Data over Monitoring Period



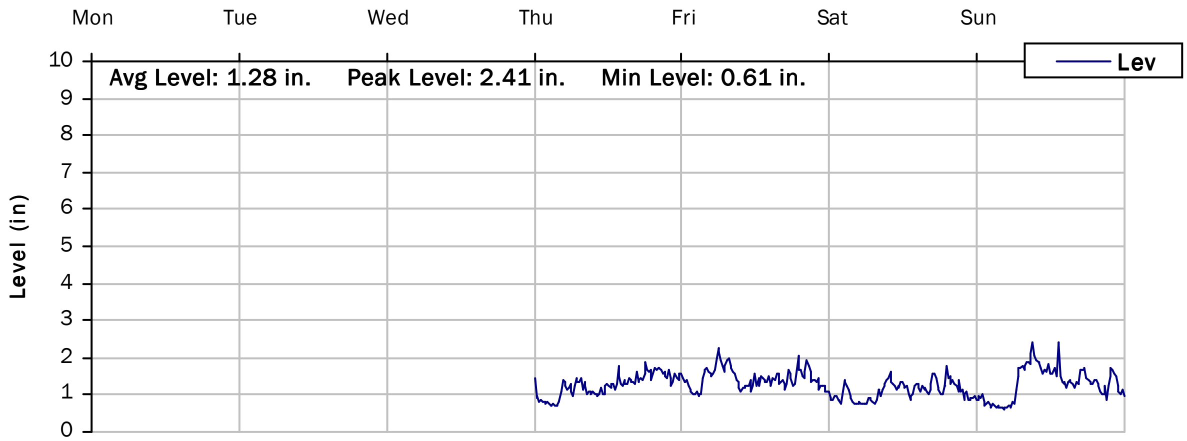
Event 4 Detail Graph

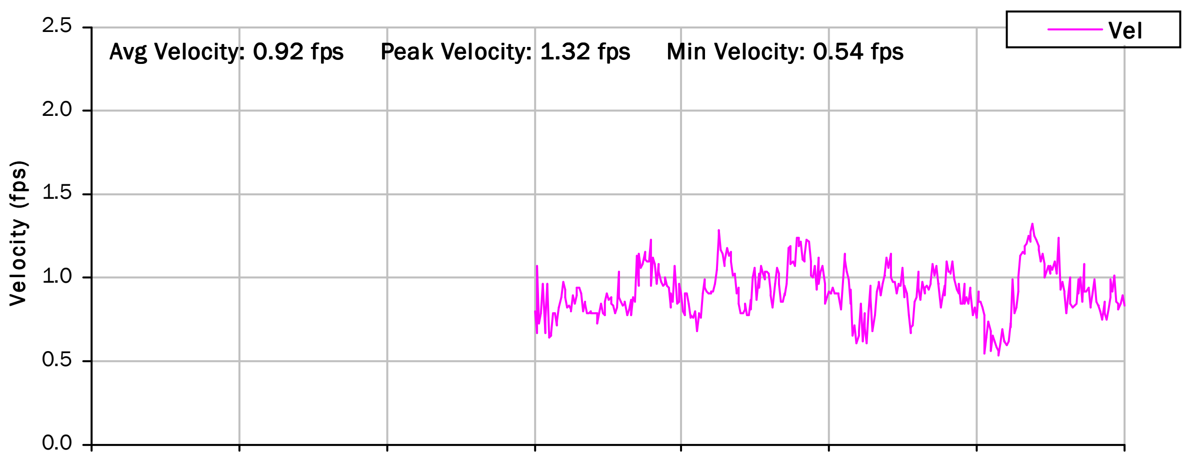


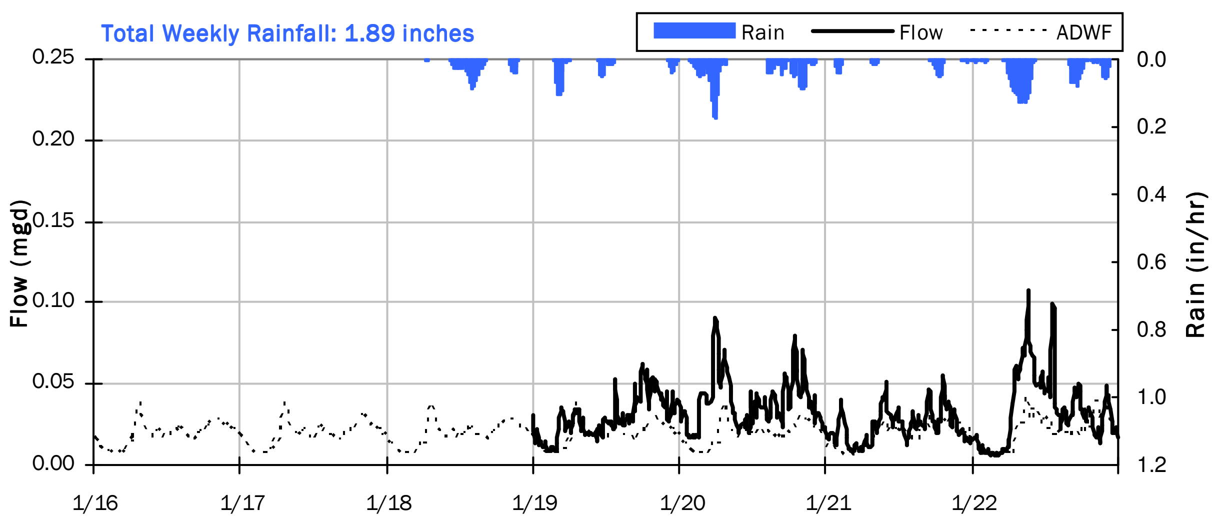
Storm Event I/I Analysis (Rain = 1.95 inches)

Capacity		**Inflow / Infiltration**	
Peak Flow:	0.20 *mgd*	**Peak I/I Rate:**	0.16 *mgd*
PF:	10.31	**Total I/I:**	38,000 *gallons*
Peak Level:	3.54 *in*		
d/D Ratio:	0.24		

SITE 06
Weekly Level, Velocity and Flow Hydrographs
1/16/2017 to 1/23/2017

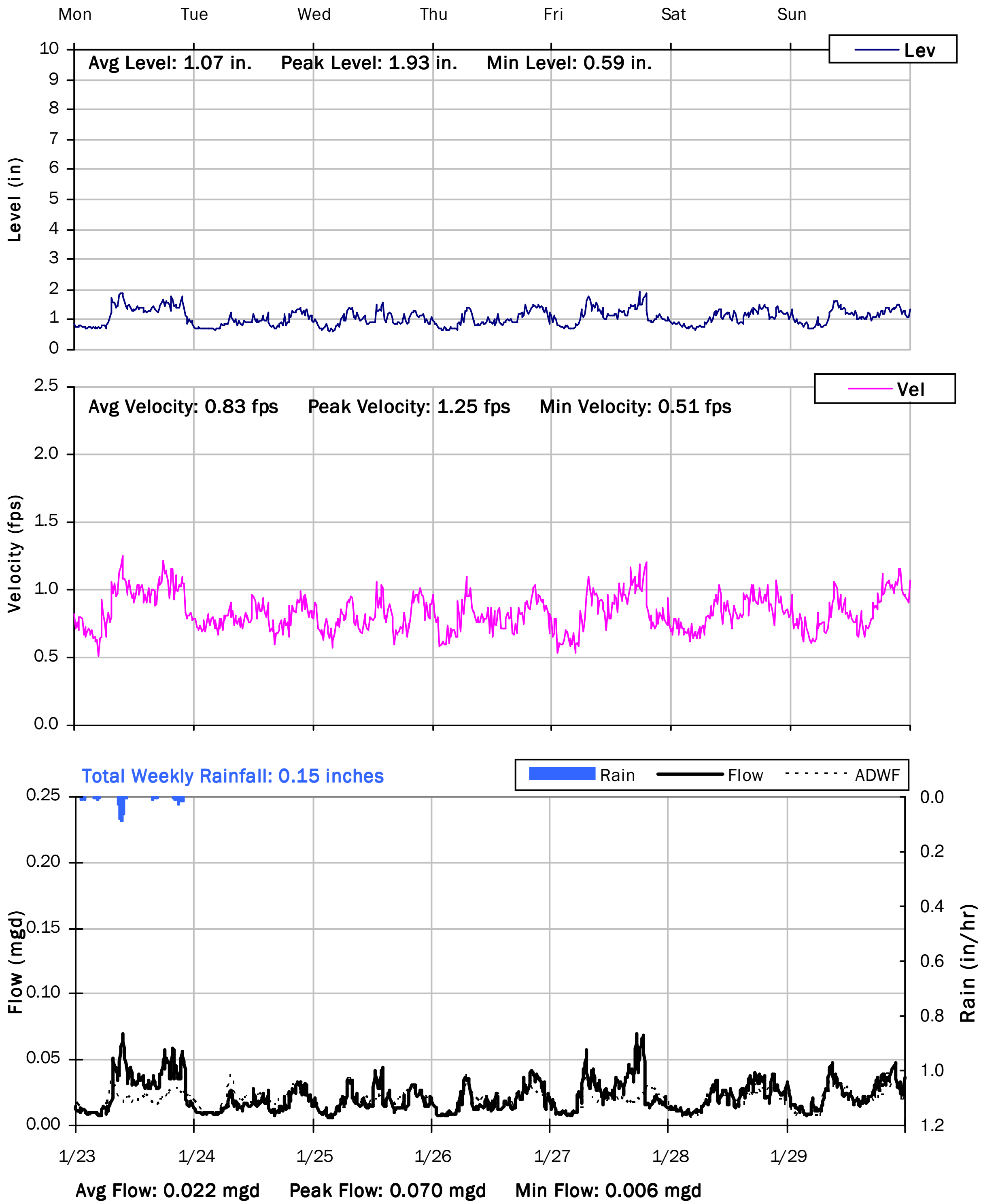






Avg Flow: 0.032 mgd **Peak Flow: 0.107 mgd** **Min Flow: 0.006 mgd**

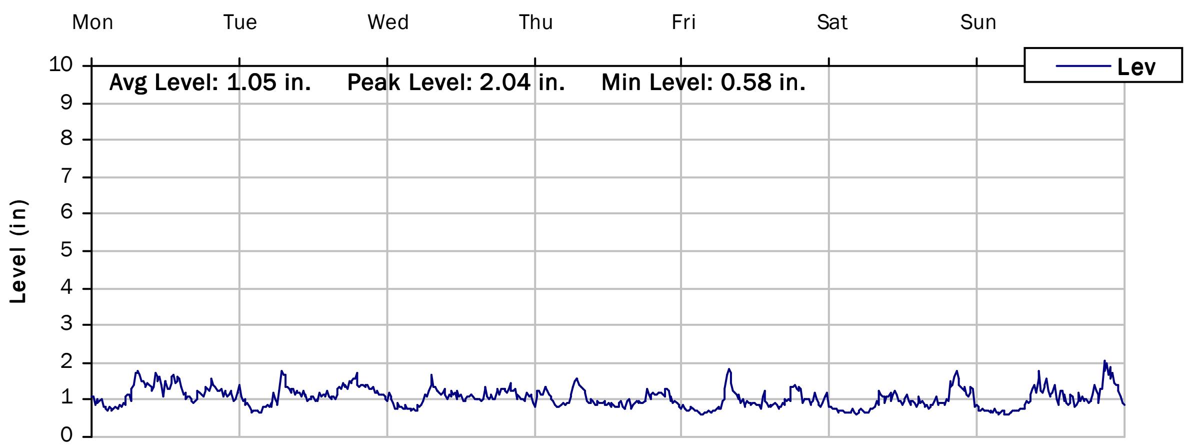
SITE 06
Weekly Level, Velocity and Flow Hydrographs
1/23/2017 to 1/30/2017

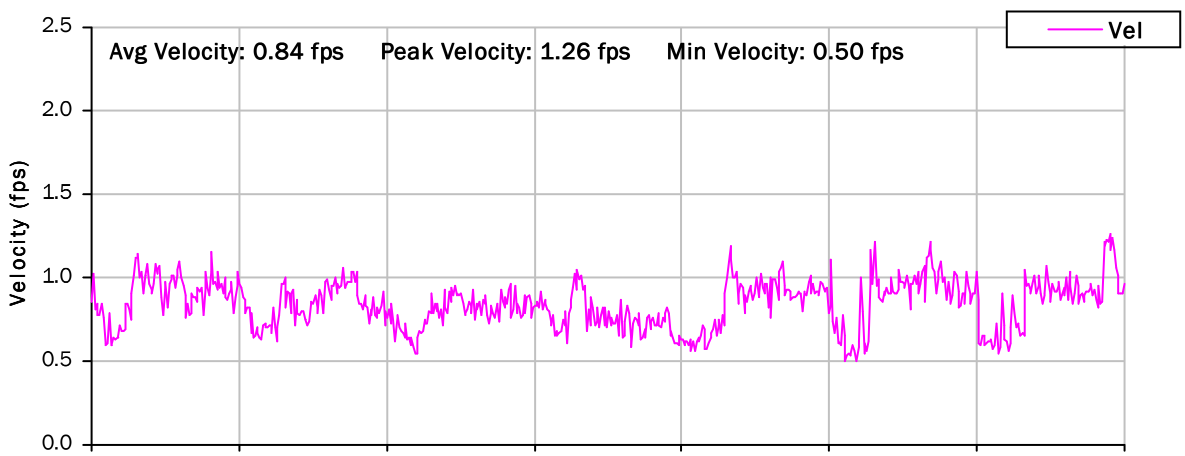


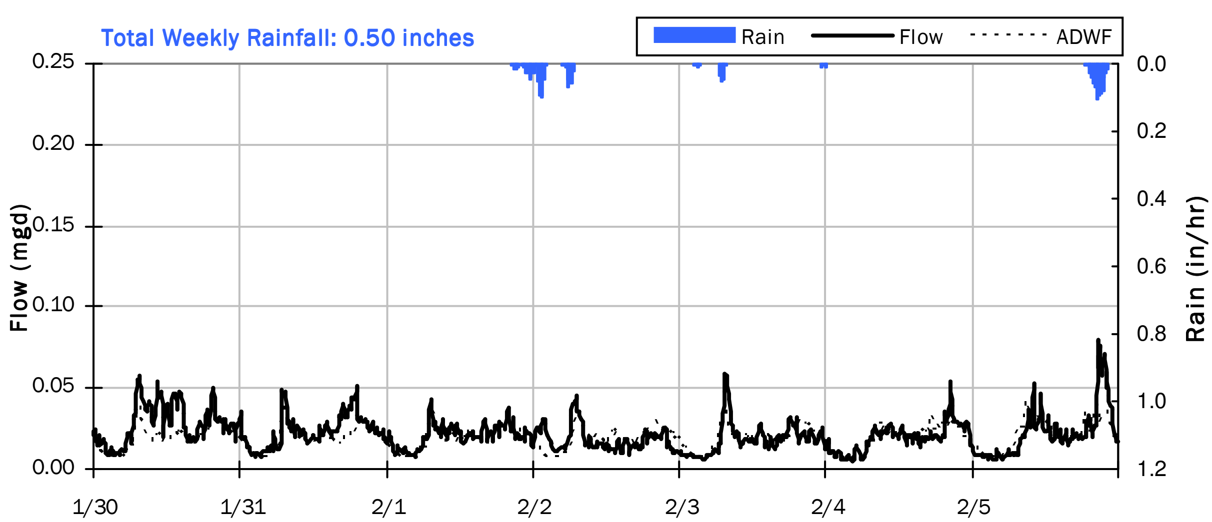
SITE 06

Weekly Level, Velocity and Flow Hydrographs

1/30/2017 to 2/6/2017

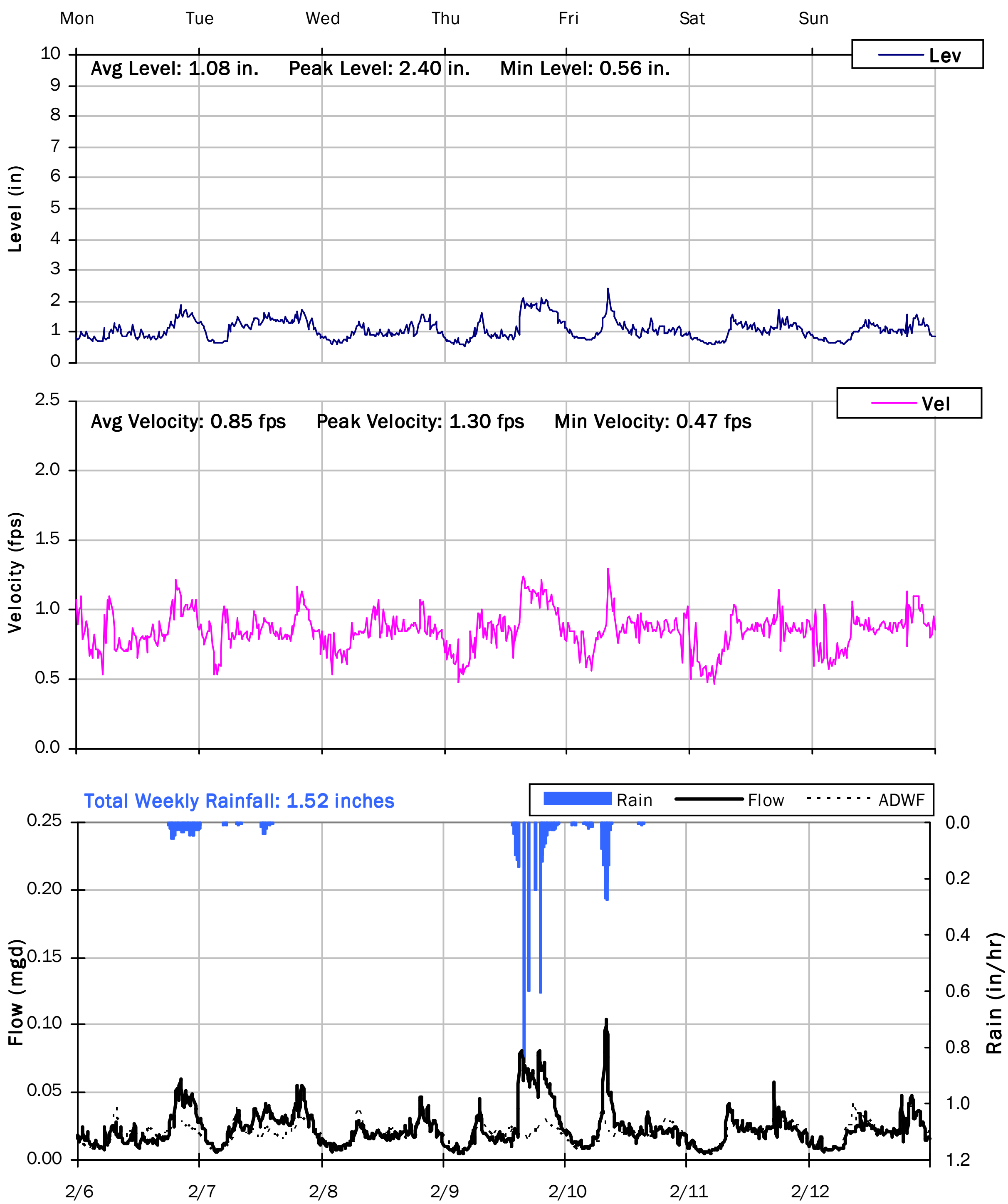






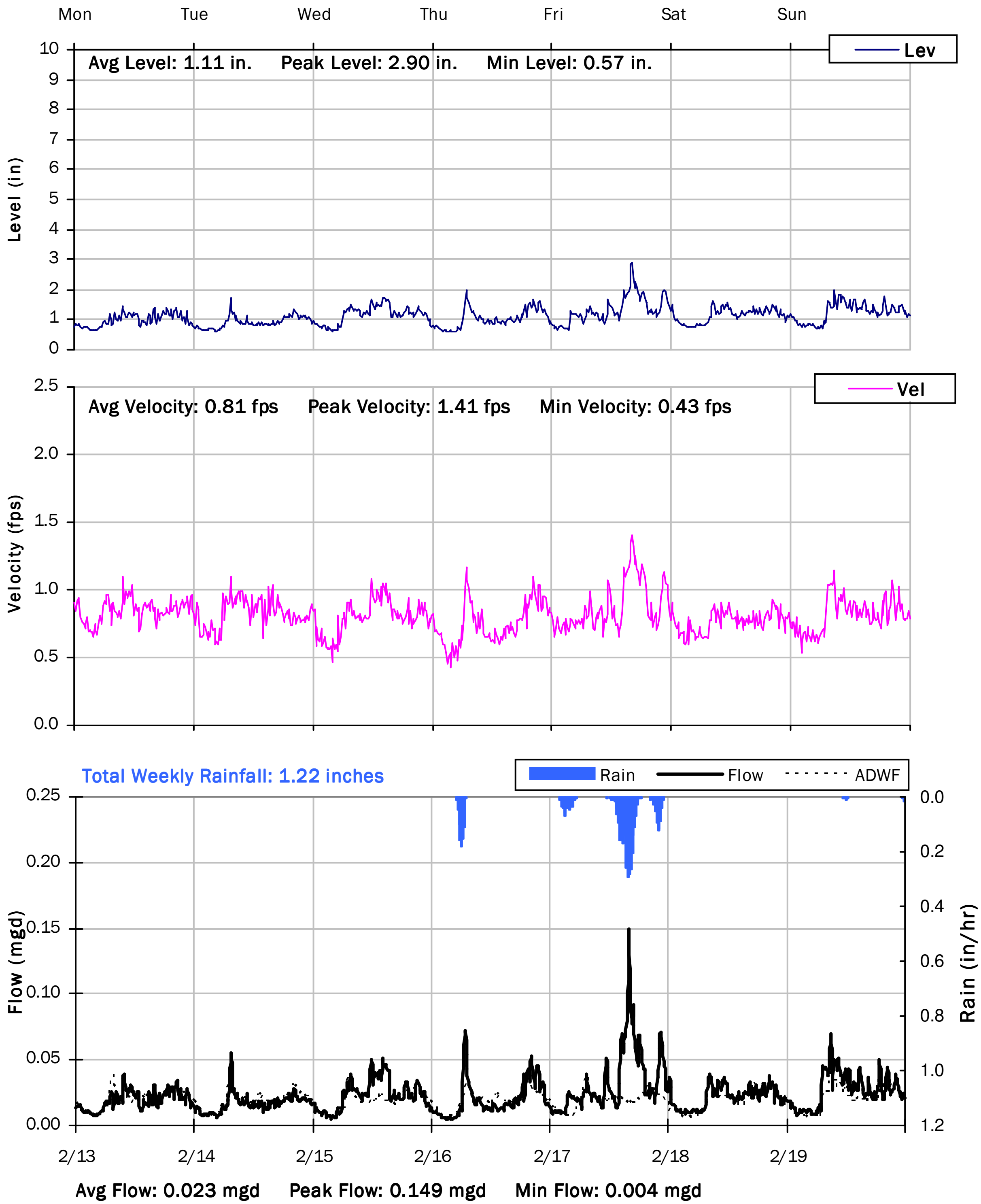
Avg Flow: 0.021 mgd **Peak Flow: 0.078 mgd** **Min Flow: 0.005 mgd**

SITE 06
Weekly Level, Velocity and Flow Hydrographs
2/6/2017 to 2/13/2017

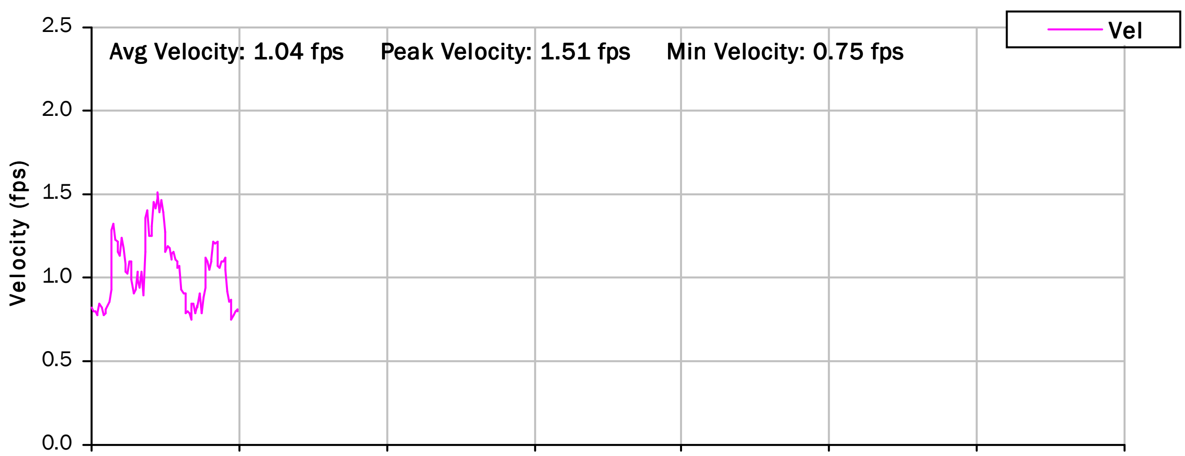


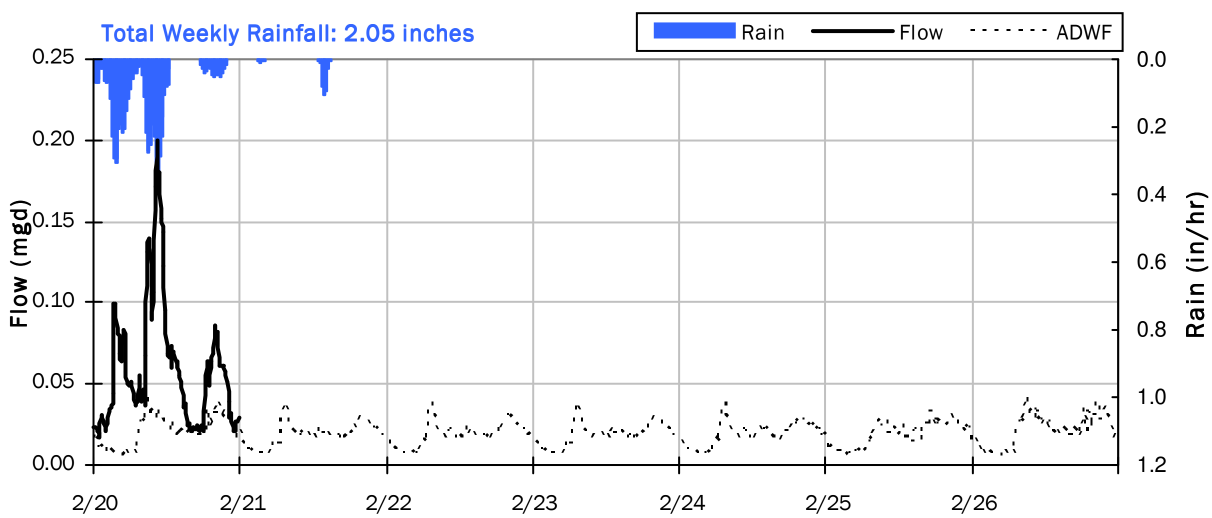
Avg Flow: 0.023 mgd Peak Flow: 0.104 mgd Min Flow: 0.005 mgd

SITE 06
Weekly Level, Velocity and Flow Hydrographs
2/13/2017 to 2/20/2017



SITE 06
Weekly Level, Velocity and Flow Hydrographs
2/20/2017 to 2/27/2017





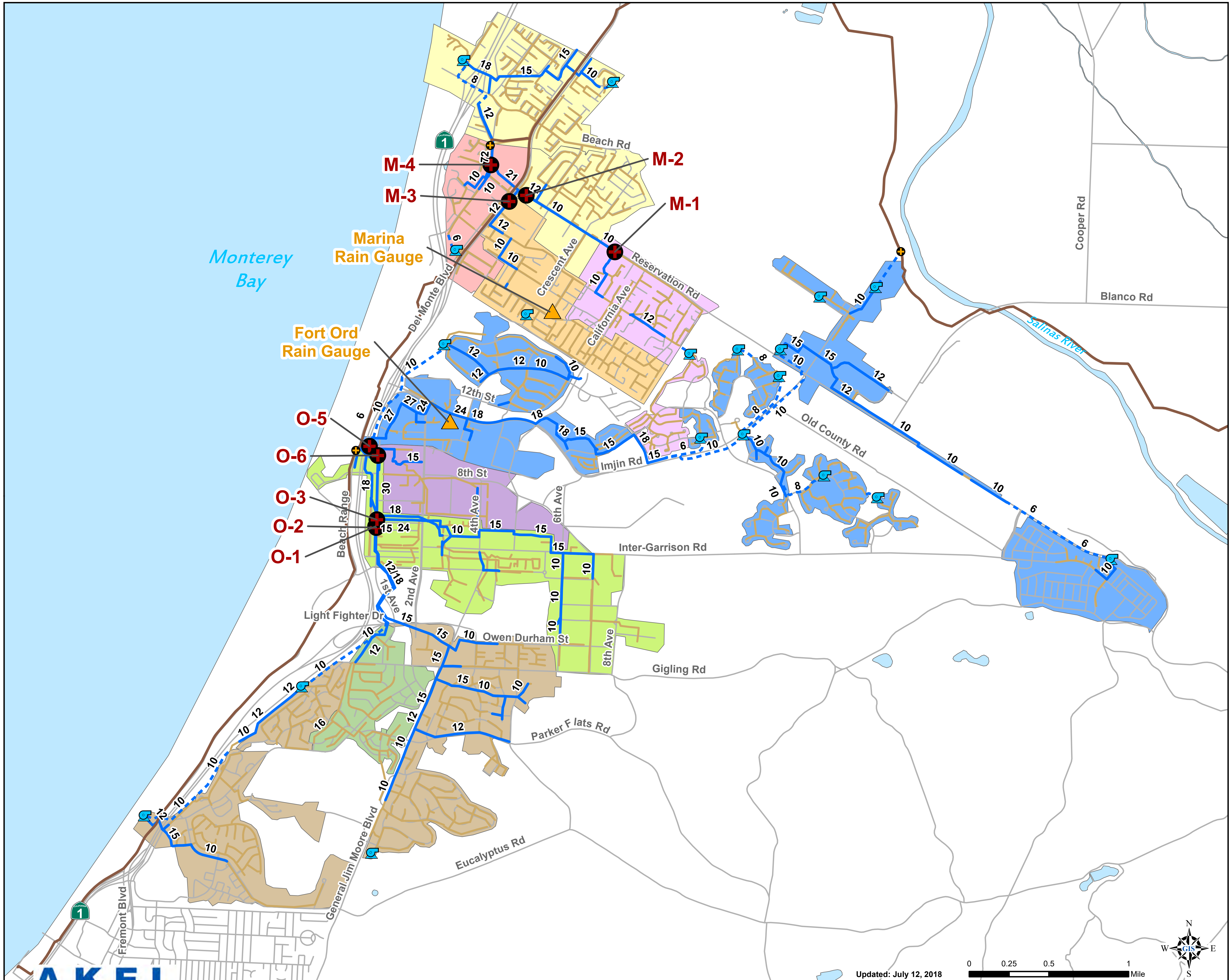
Avg Flow: 0.059 mgd **Peak Flow: 0.199 mgd** **Min Flow: 0.017 mgd**

V&A Project No. 16-0271

V&A
consulting engineers
1000 Broadway, Suite 230
Oakland, CA 94607
510.903.6600
510.903.6601, Fax

APPENDIX B

Hydraulic Model Calibration Exhibits



Legend

- Rain Gauge
- Flow Meters

Flow Meter Basins

- M-1
- M-2
- M-3
- M-4
- O-1
- O-2
- O-3
- O-5
- O-6

Existing Modeled Sytem

- Lift Stations
- Outfalls

Gravity Mains by Size

- 8" and Smaller
- 10" and Larger
- Force Mains
- Monterey One Water Interceptor
- Streets
- Waterbodies
- Rivers/Streams

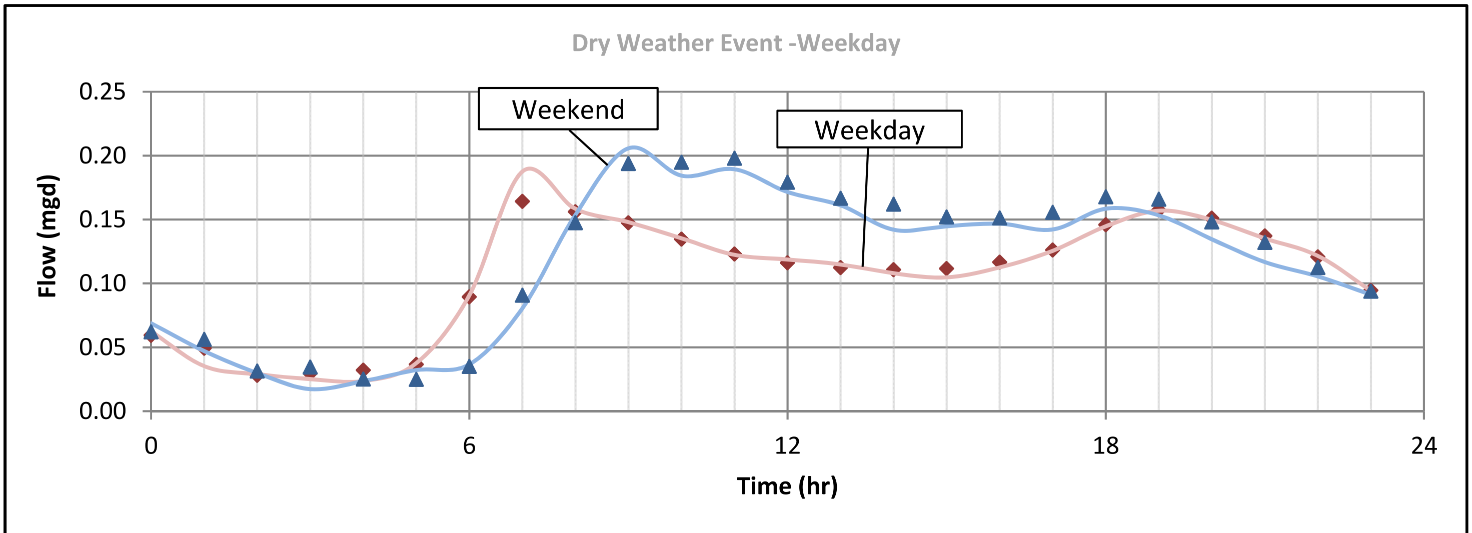
PRELIMINARY

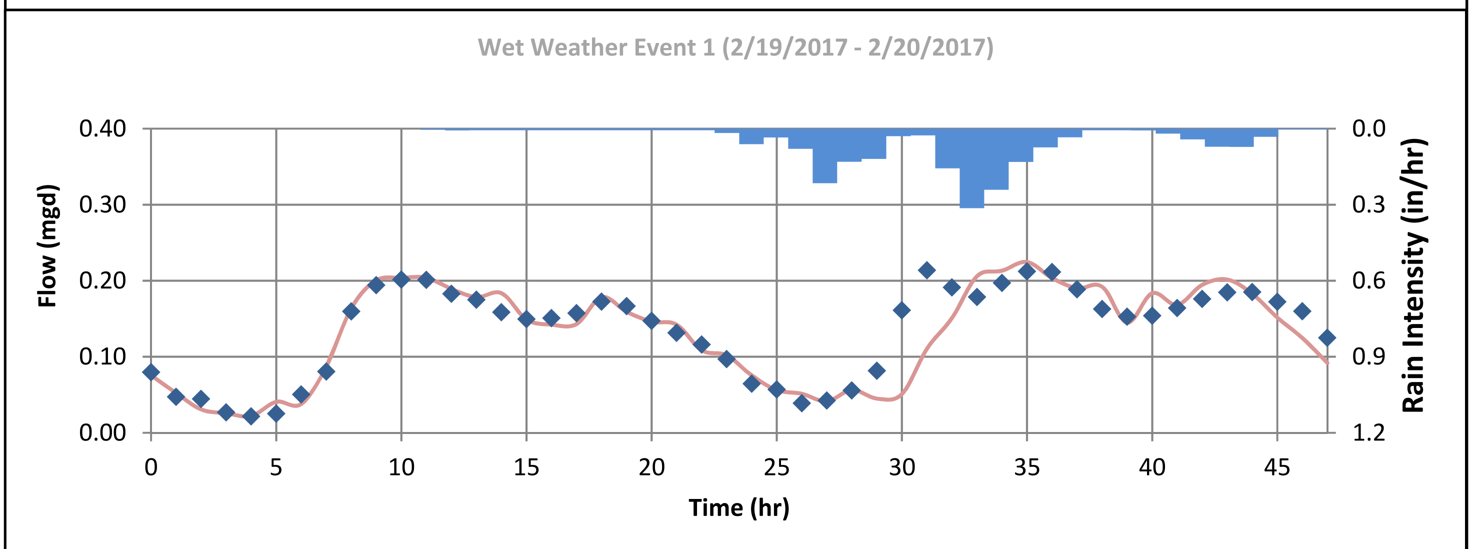
Figure 1
Flow Meter Locations
Sewer Master Plan
Marina Coast Water District

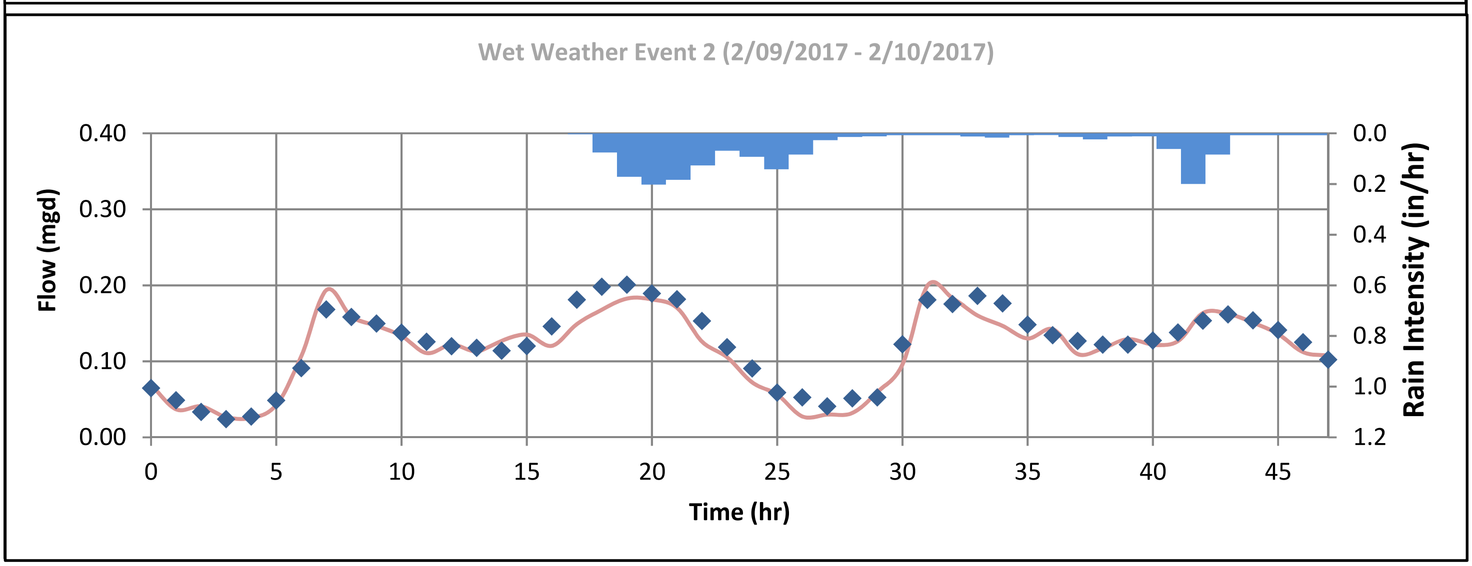
MARINA COAST WATER DISTRICT

AKEL ENGINEERING GROUP, INC.

File Path: P:\xGIS\GIS_Projects\Marina_Coast_WD\Sewer\Apdx\MCWD_Fig1_FlowMeters_071218.mxd







LEGEND

PRELIMINARY

Rain Event

Hydraulic Model

V&A Flow Monitoring

V&A Flow Monitoring

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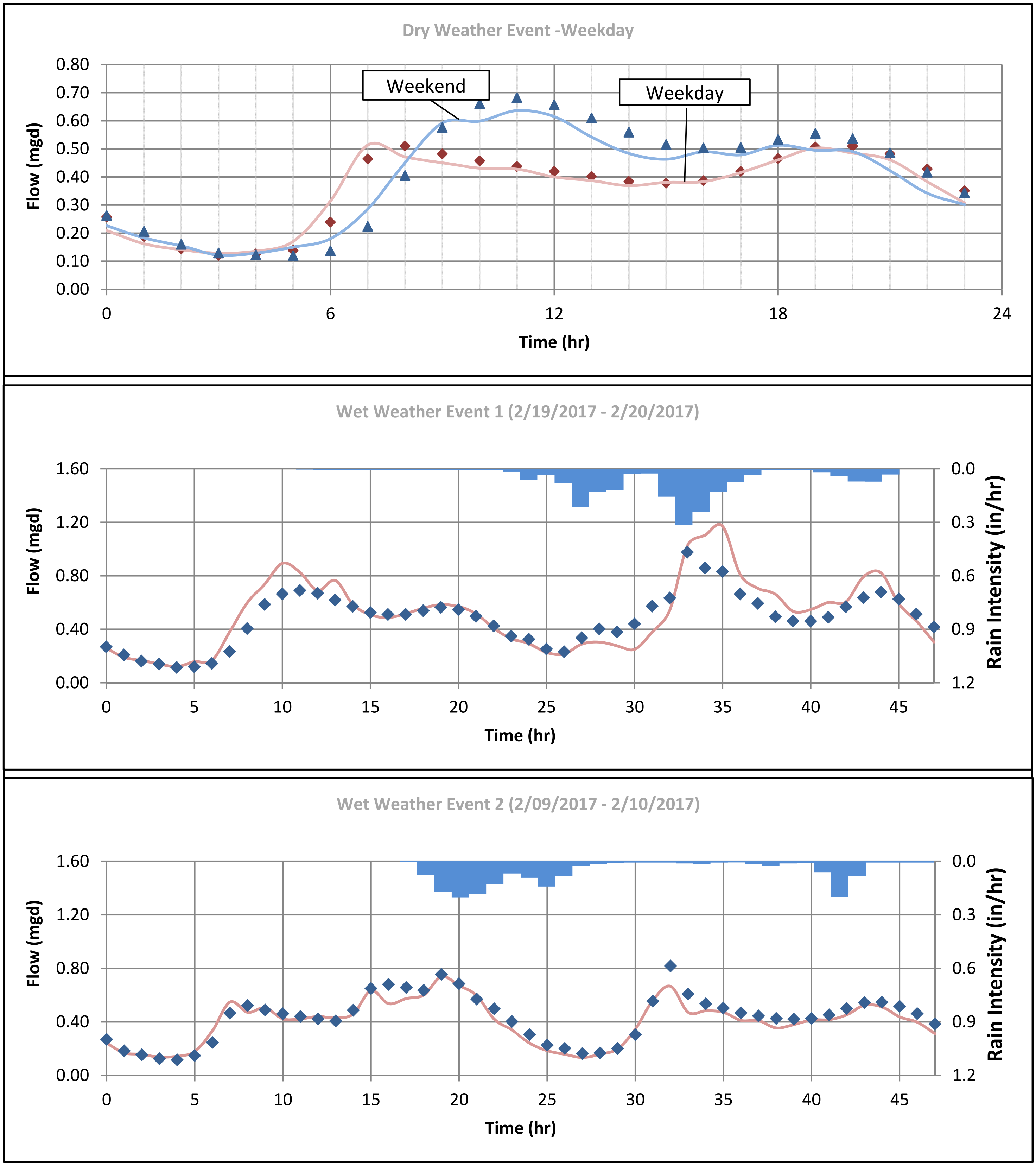
October 18, 2017

Figure 2

M-1 Marina

Sewer Master Plan
Marina Coast Water District



LEGEND

PRELIMINARY

Rain Event

Hydraulic Model

V&A Flow Monitoring

V&A Flow Monitoring

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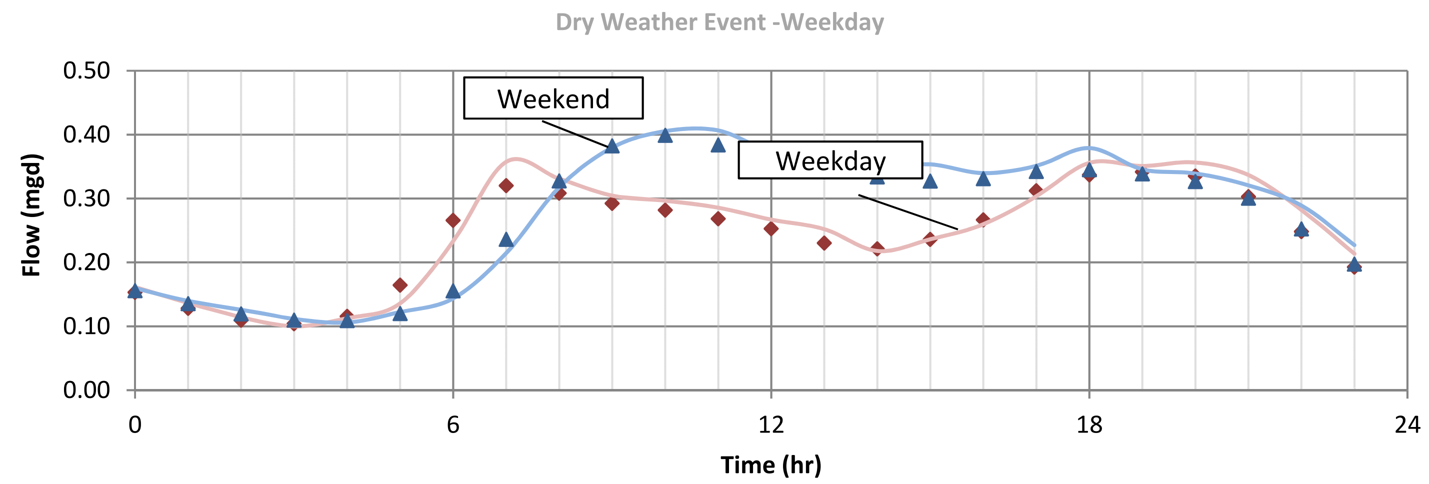
October 18, 2017

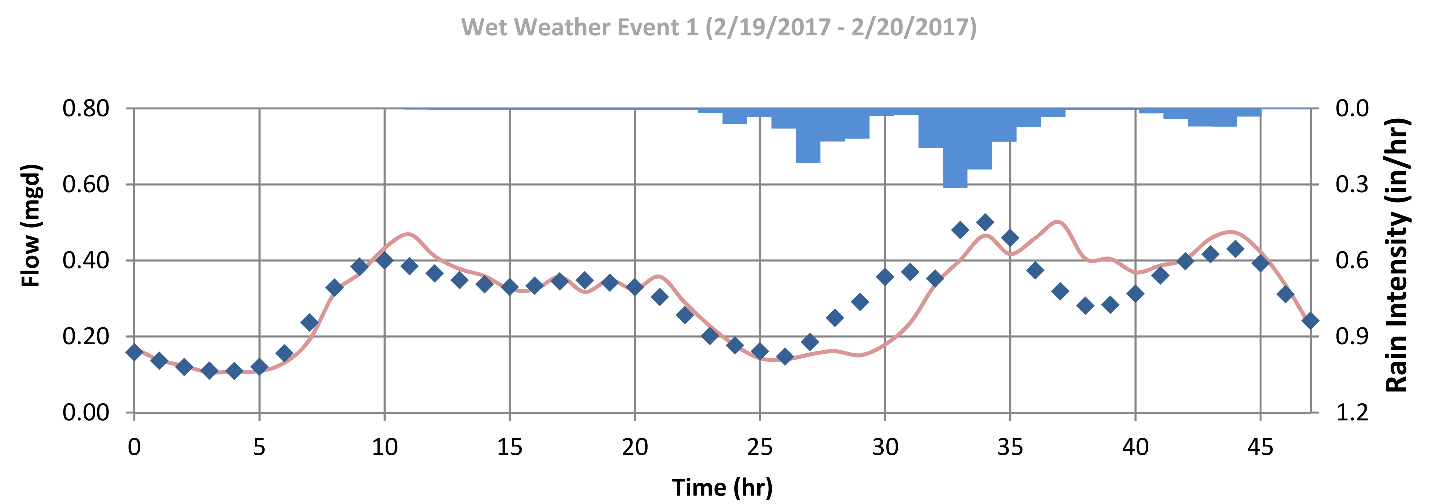
Figure 3

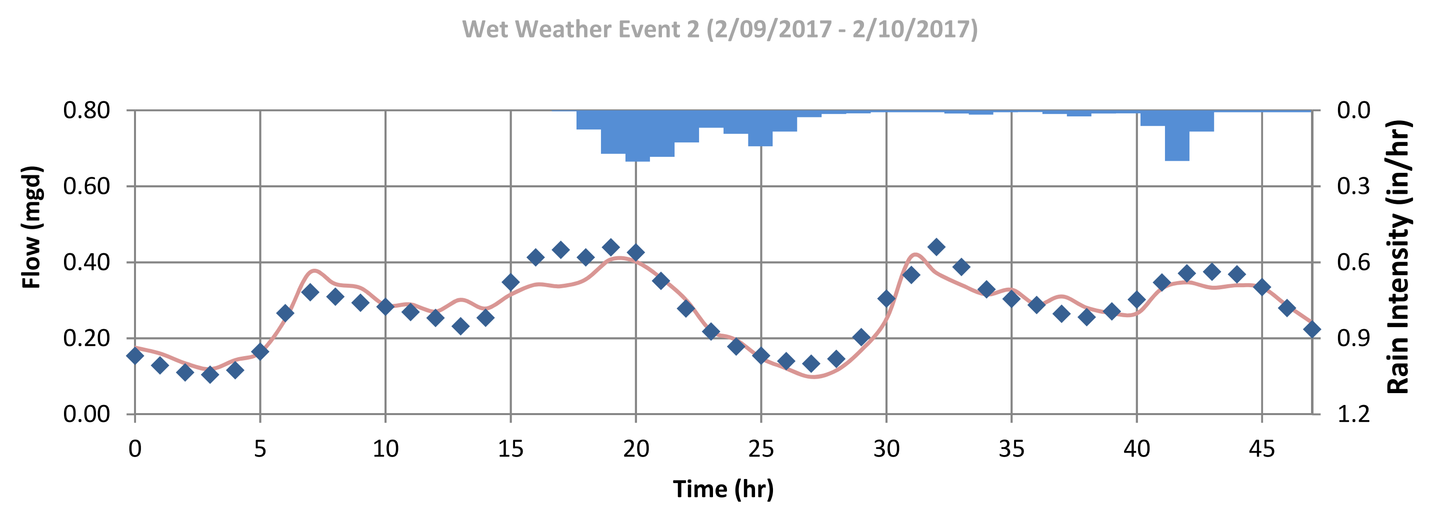
M-2 Marina

Sewer Master Plan

Marina Coast Water District







LEGEND

PRELIMINARY

Rain Event

Hydraulic Model

V&A Flow Monitoring

V&A Flow Monitoring

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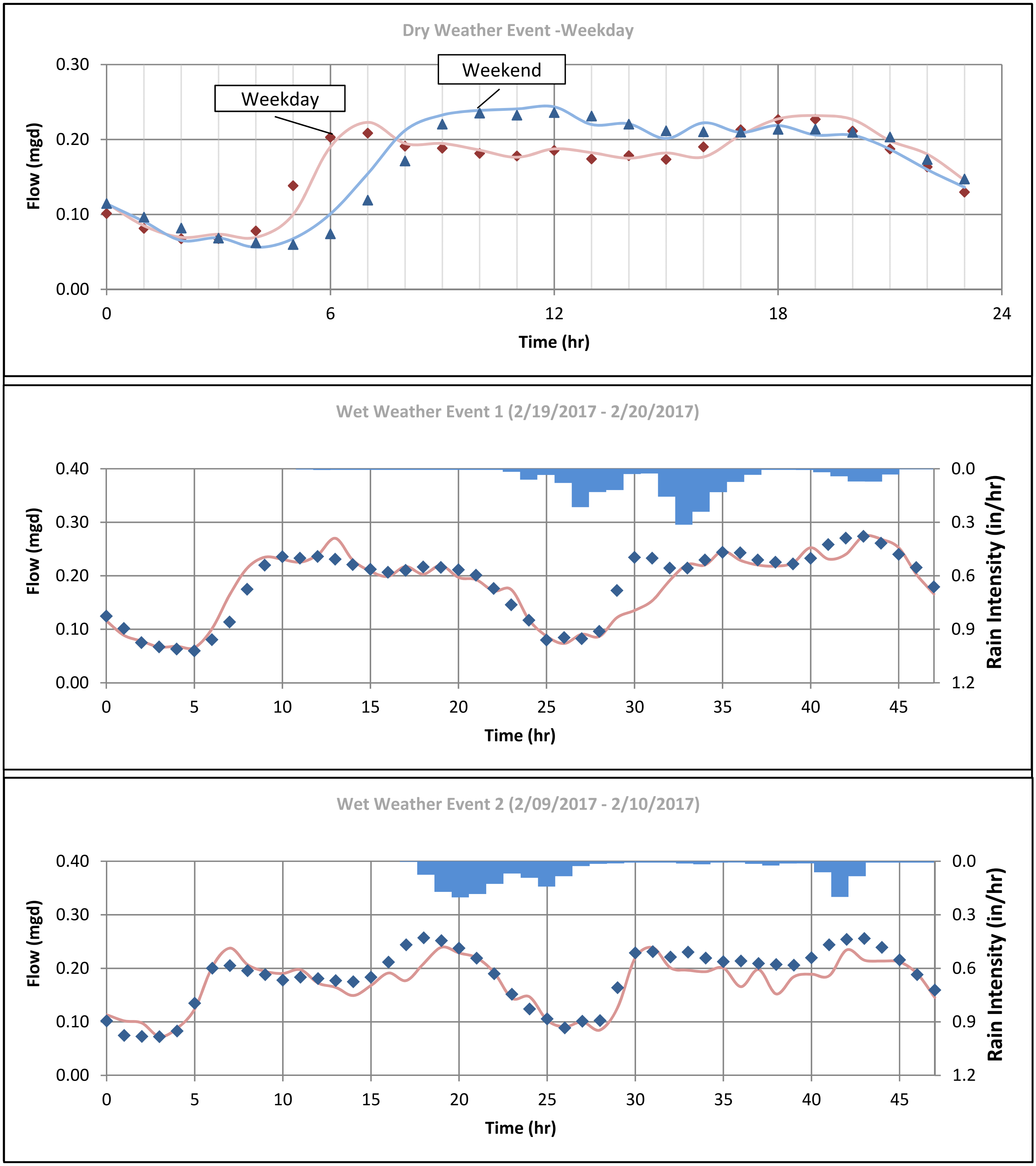
October 18, 2017

Figure 4

M-3 Marina

Sewer Master Plan

Marina Coast Water District



LEGEND

PRELIMINARY

Rain Event

Hydraulic Model

V&A Flow Monitoring

V&A Flow Monitoring

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October 18, 2017

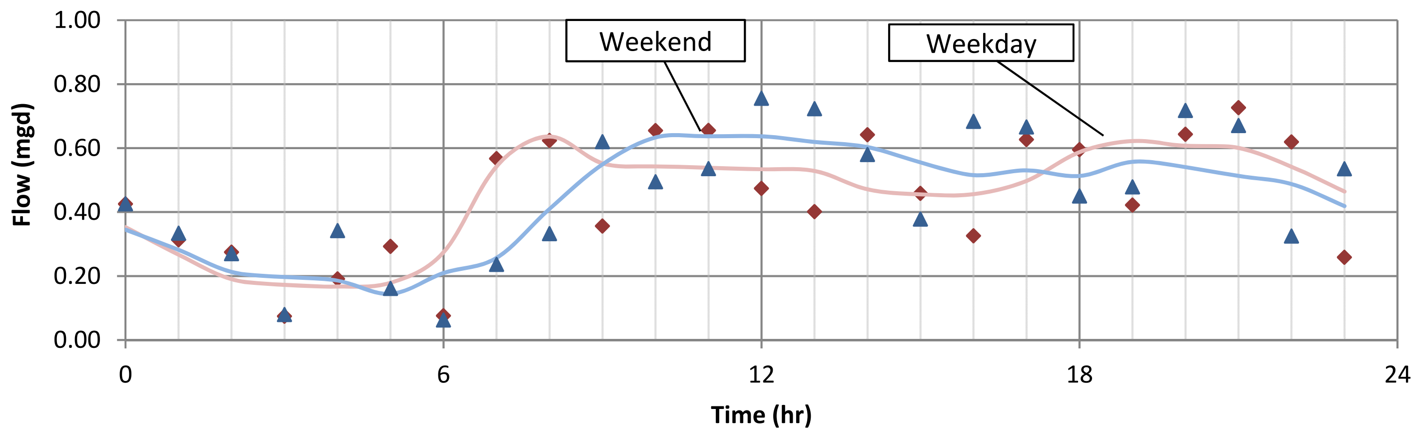
Figure 5

M-4 Marina

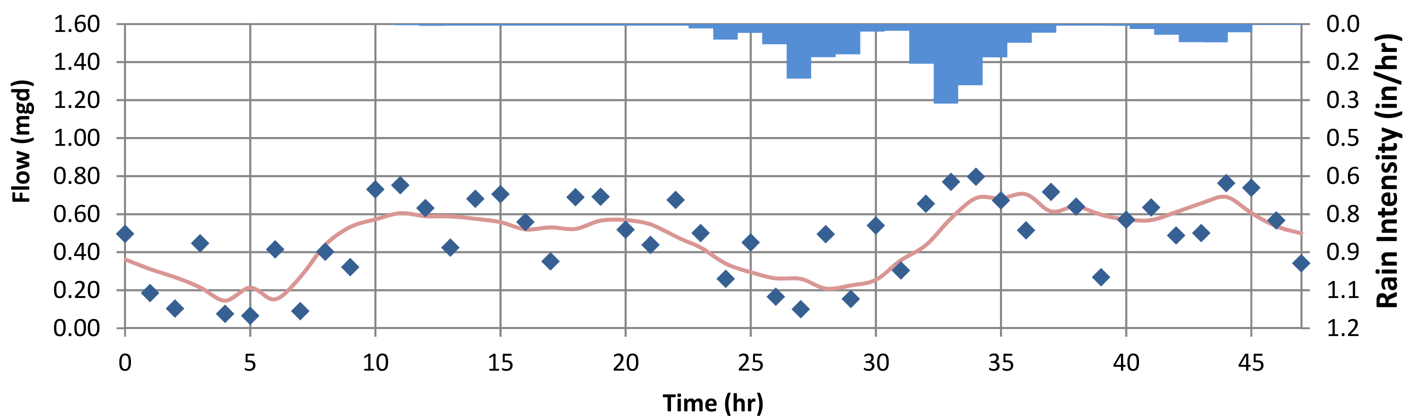
Sewer Master Plan

Marina Coast Water District

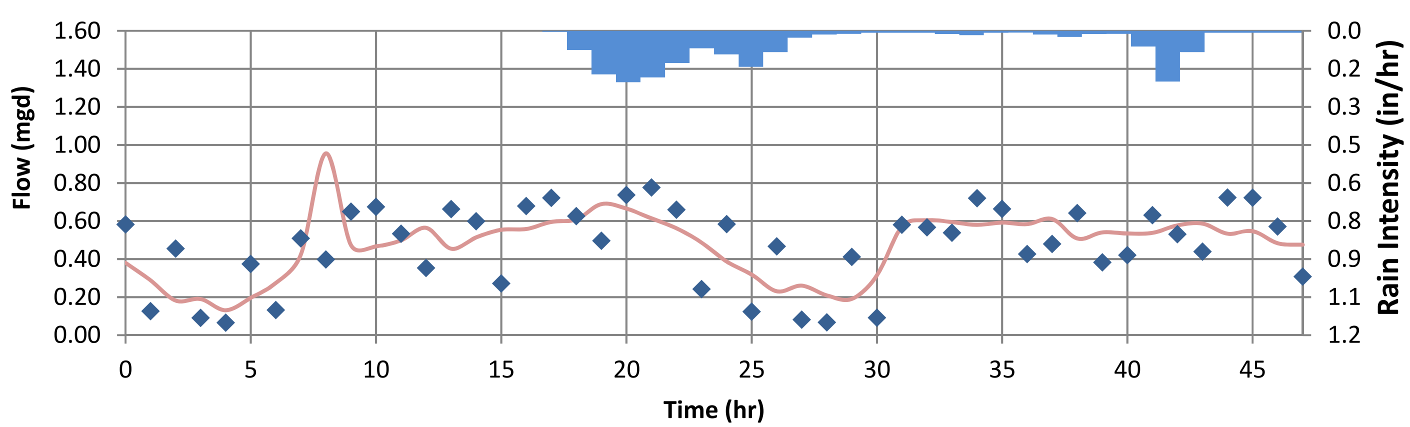
Dry Weather Event -Weekday



Wet Weather Event 1 (2/19/2017 - 2/20/2017)



Wet Weather Event 2 (2/09/2017 - 2/10/2017)



LEGEND

- Rain Event
- Hydraulic Model
- V&A Flow Monitoring
- V&A Flow Monitoring

PRELIMINARY

Note :
Flow Fluctuations are heavily influenced by the Ord Village Lift Station.

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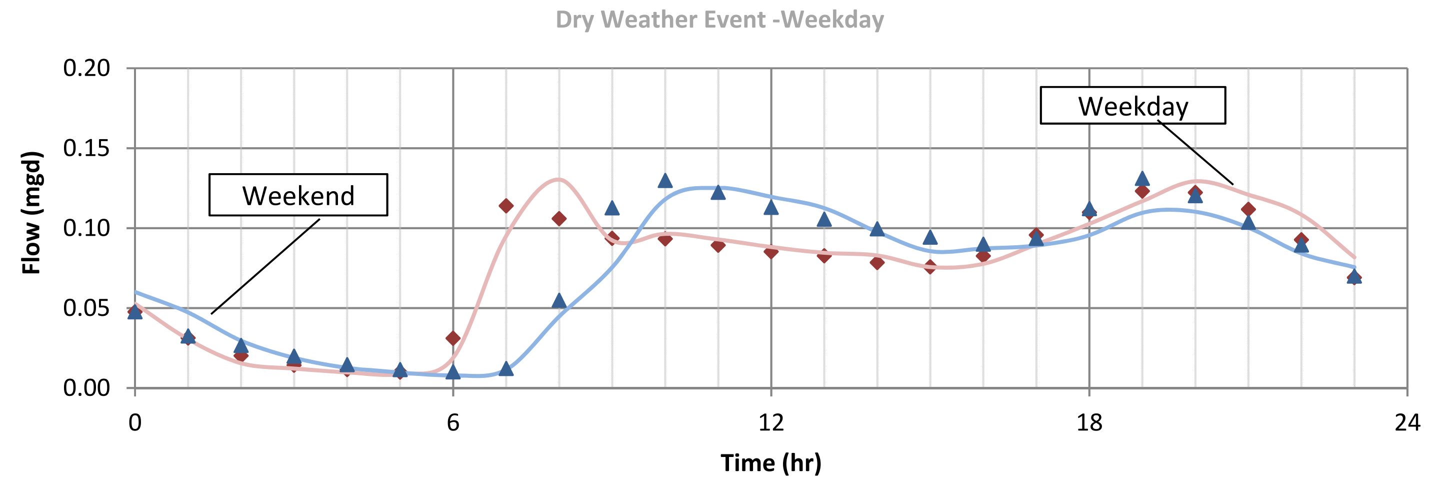
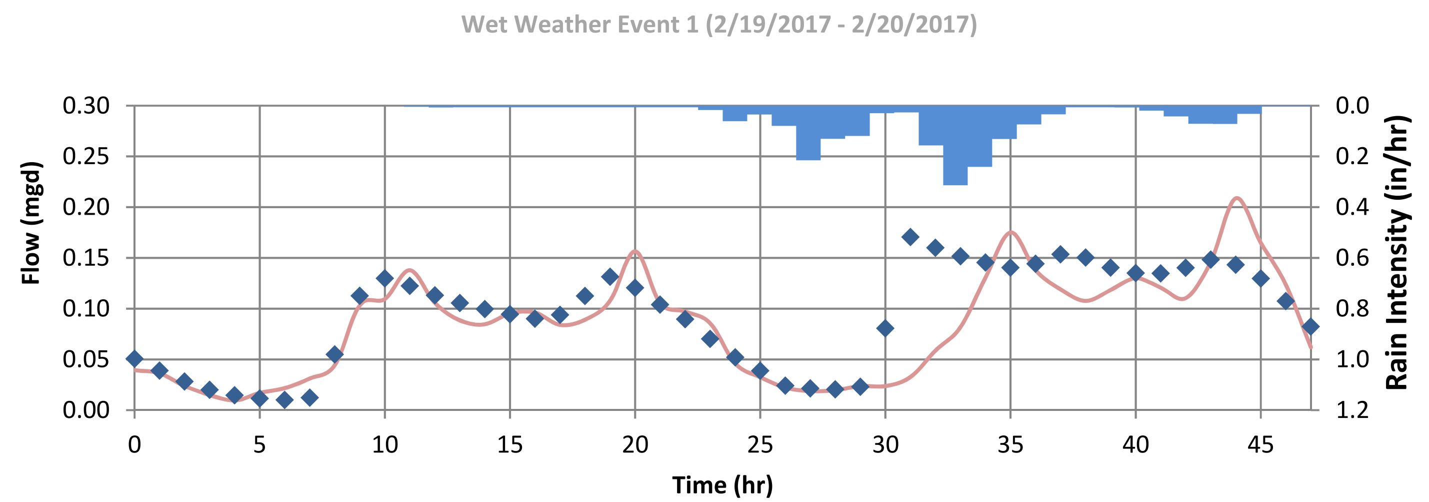
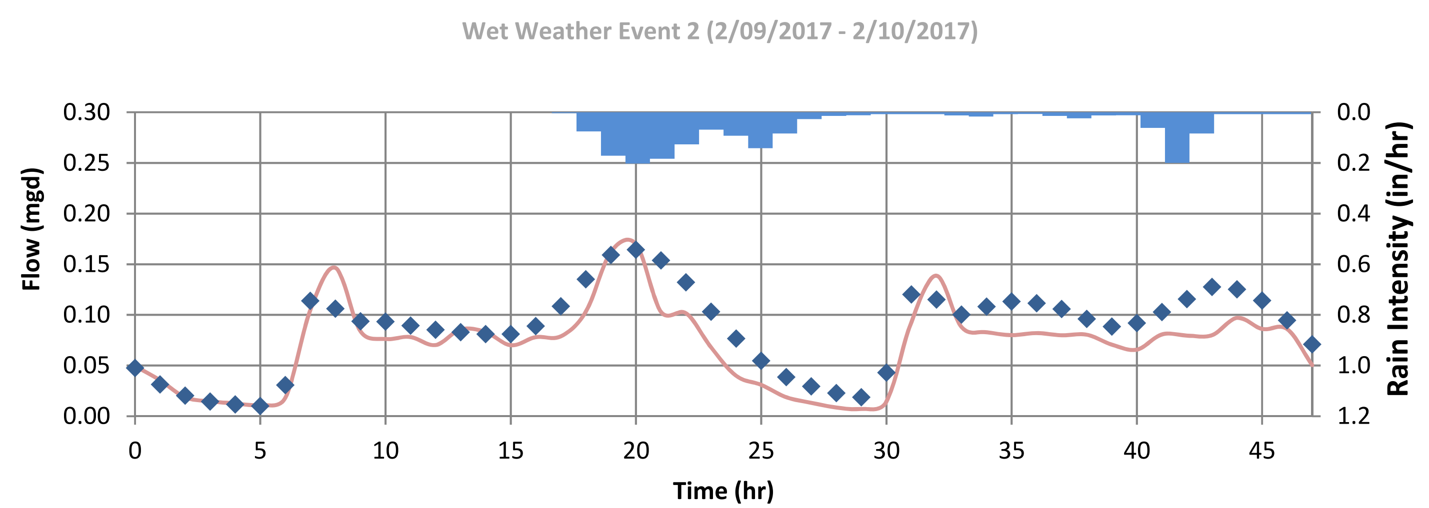
Figure 6

O-1 Fort Ord

Sewer Master Plan
Marina Coast Water District







LEGEND

PRELIMINARY

Rain Event

Hydraulic Model

V&A Flow Monitoring

V&A Flow Monitoring

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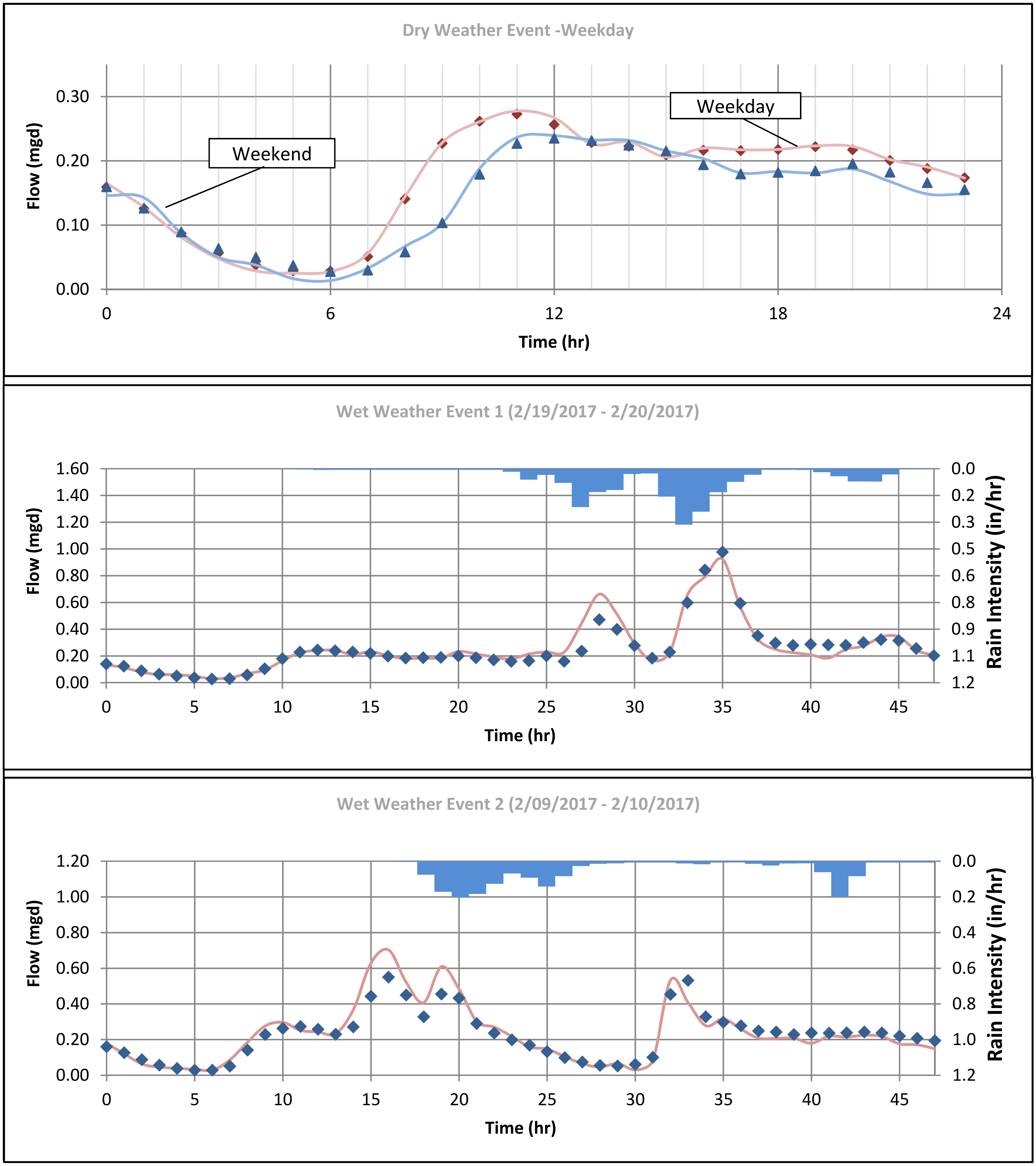
October 18, 2017

Figure 7

O-2 Fort Ord

Sewer Master Plan

Marina Coast Water District



LEGEND

PRELIMINARY

Rain Event

Hydraulic Model

V&A Flow Monitoring

V&A Flow Monitoring

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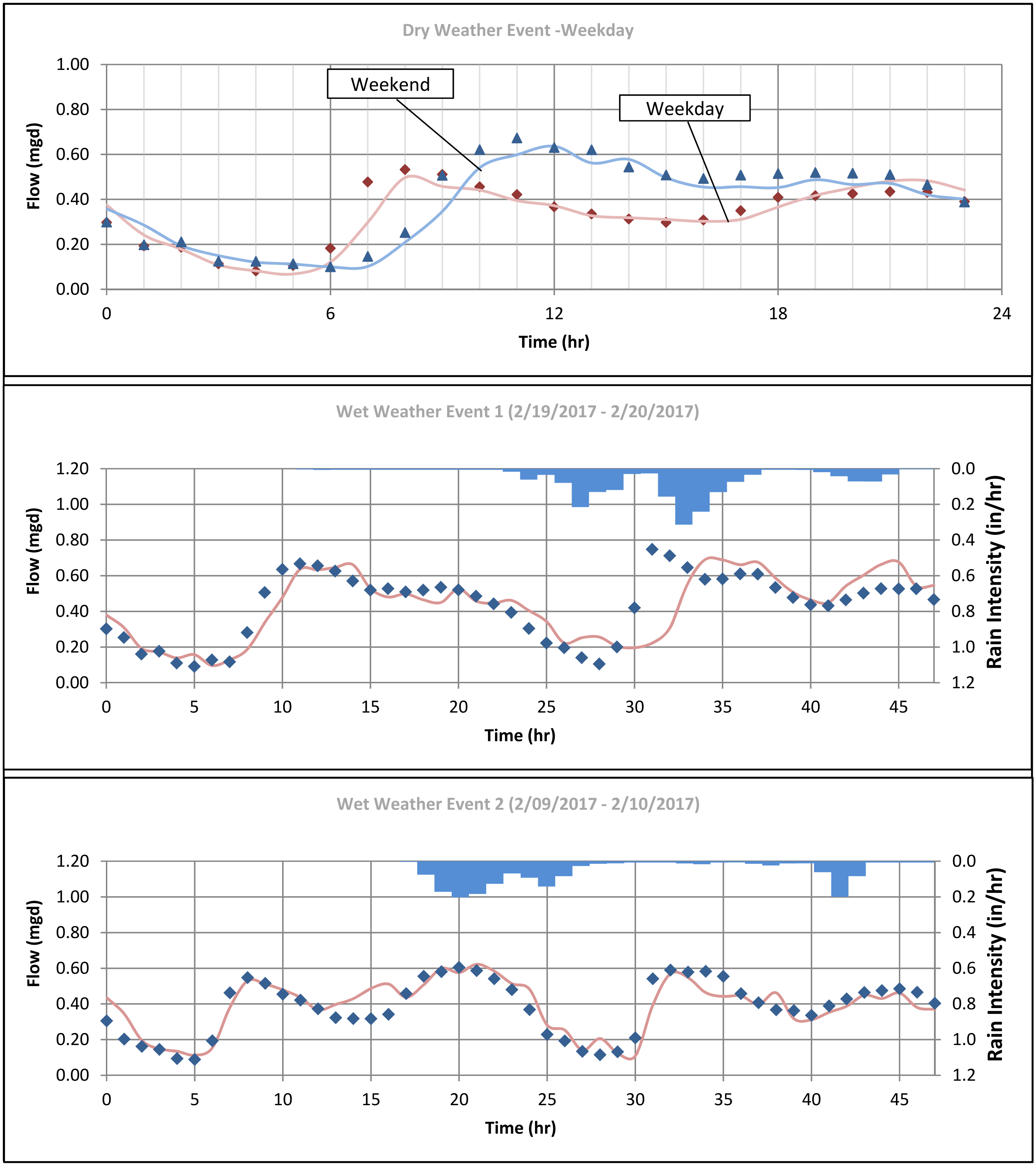
October 18, 2017

Figure 8

O-3 Fort Ord

Sewer Master Plan

Marina Coast Water District



LEGEND

PRELIMINARY

Rain Event

Hydraulic Model

V&A Flow Monitoring

V&A Flow Monitoring

AKEL ENGINEERING GROUP, INC.

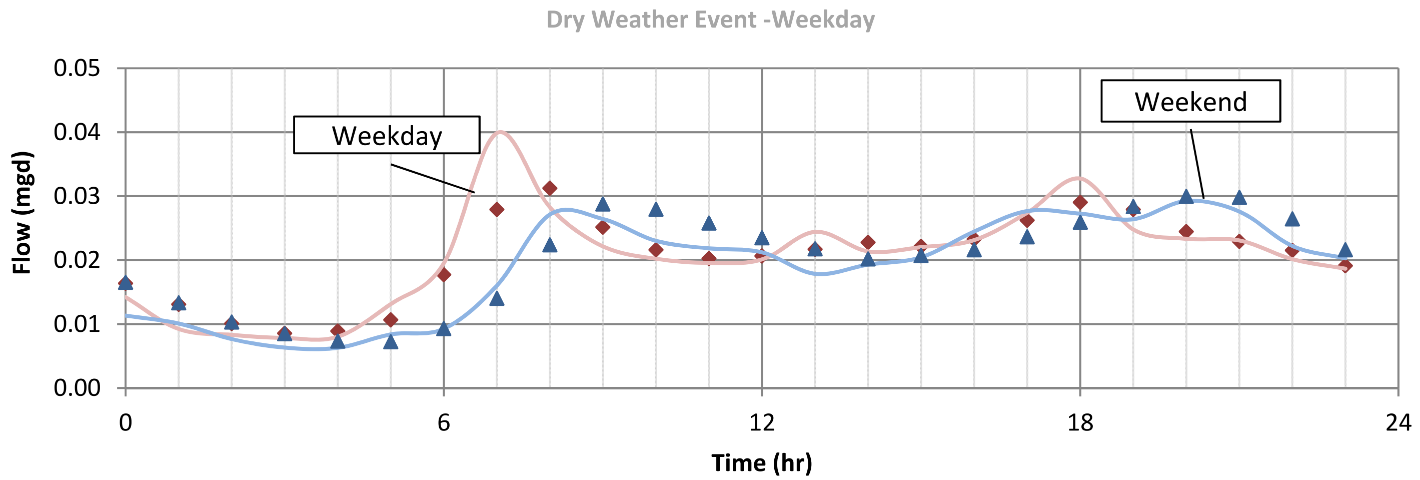
October 18, 2017

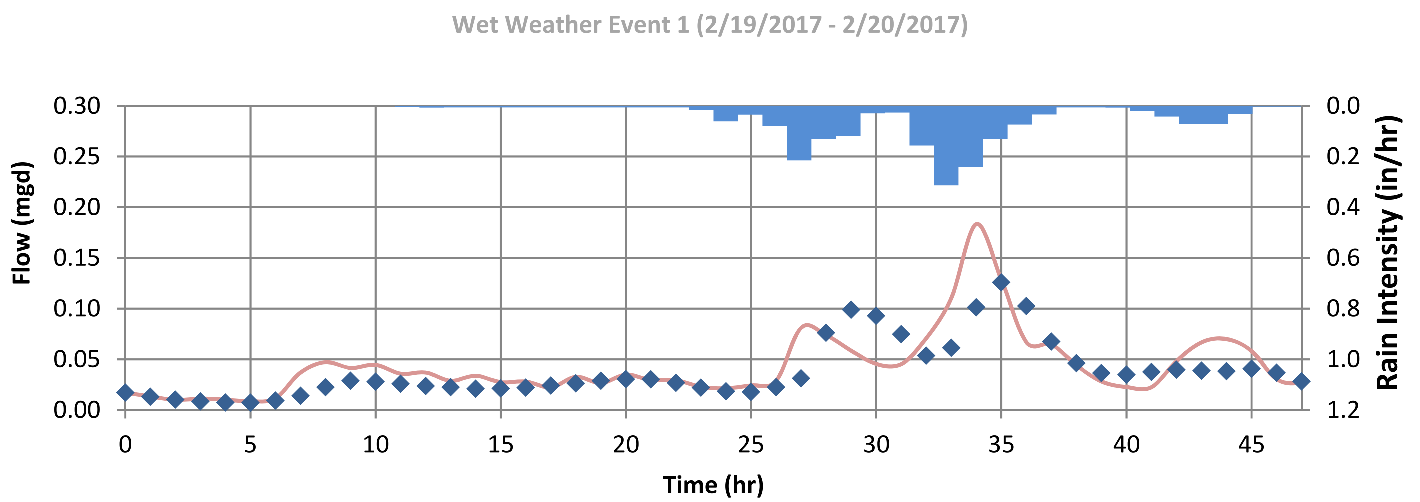
Figure 9

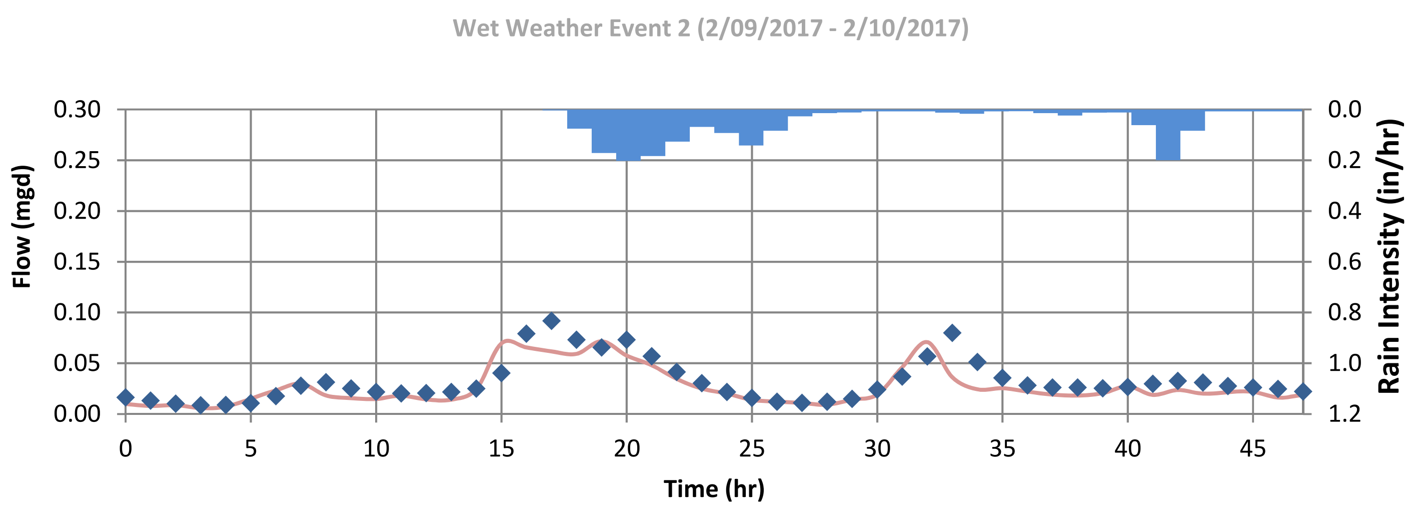
O-5 Fort Ord

Sewer Master Plan

Marina Coast Water District







LEGEND

Rain Event

Hydraulic Model

V&A Flow Monitoring

V&A Flow Monitoring

PRELIMINARY

AKEL ENGINEERING GROUP, INC.

October 18, 2017

Figure 10

O-6 Fort Ord

Sewer Master Plan

Marina Coast Water District

Table 1 Flow Monitor Locations
Sewer Master Plan
Marina Coast Water District

PRELIMINARY

Site ID	Location Description	Pipe Size (in)	Manhole ID
City of Marina			
M-1	1,000 ft e/o intersection of Reservation Rd and Crescent Ave	12" SW (In Pipe)	K606
M-2	Intersection of Reservation Rd and Del Monte Blvd	12" SE (In Pipe)	L368
M-3	Intersection of Reservation Rd and Del Monte Blvd	12" SW (In Pipe)	G421
M-4	Intersection of Robin Dr and Hilo Ave	10" N (Out Pipe)	E331
Ord Community			
O-1	Intersection of 5th St and 1st Ave	18" SW (In Pipe)	G451
O-2	Intersection of 5th St and 1st Ave	12" SE (In Pipe)	D452
O-3	Intersection of 5th St and 1st Ave	15" E (In Pipe)	J306
O-5	NW corner of VA Clinic Parking Lot	15" N (In Pipe)	UVA1
O-6	1st Ave n/o 8th St	15" E (In Pipe)	UVB6

Table 2 Calibration Results Summary

Sewer Master Plan
Marina Coast Water District

PRELIMINARY

Flow Monitoring ID		Units	Dry Period (Weekday)			Dry Period (Weekend)			Wet Weather (Event 1)			Wet Weather (Event 2)		
			Minimum	Maximum	Average	Minimum	Maximum	Average	Minimum	Maximum	Average	Minimum	Maximum	Average
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
M-1	Flow Monitored	(mgd)	0.0237	0.188	0.106	0.017	0.206	0.114	0.022	0.225	0.131	0.026	0.200	0.116
	Model	(mgd)	0.0281	0.164	0.106	0.025	0.198	0.120	0.022	0.214	0.135	0.024	0.201	0.122
	Difference	(mgd)	-0.0044	0.023	0.000	-0.0076	0.008	-0.006	0.0005	0.011	-0.004	0.0017	-0.001	-0.006
		(%)	**16**	**-14**	**0**	**30**	**-4**	**5**	**-3**	**-5**	**3**	**-7**	**0**	**5**
M-2	Flow Monitored	(mgd)	0.1286	0.514	0.354	0.122	0.636	0.389	0.120	1.170	0.514	0.134	0.738	0.401
	Model	(mgd)	0.1209	0.510	0.363	0.120	0.682	0.413	0.115	0.977	0.477	0.116	0.817	0.430
	Difference	(mgd)	0.0077	0.003	-0.009	0.0019	-0.045	-0.023	0.0058	0.194	0.037	0.0174	-0.080	-0.029
		(%)	**-6**	**-1**	**2**	**-2**	**7**	**6**	**-5**	**-20**	**-8**	**-15**	**10**	**7**
M-3	Flow Monitored	(mgd)	0.0999	0.357	0.250	0.106	0.407	0.278	0.106	0.500	0.302	0.098	0.416	0.274
	Model	(mgd)	0.1040	0.342	0.241	0.109	0.399	0.268	0.109	0.500	0.299	0.104	0.440	0.278
	Difference	(mgd)	-0.0040	0.016	0.009	-0.0028	0.008	0.010	-0.0032	0.000	0.003	-0.0059	-0.024	-0.004
		(%)	**4**	**-5**	**-4**	**3**	**-2**	**-4**	**3**	**0**	**-1**	**6**	**6**	**1**
M-4	Flow Monitored	(mgd)	0.0694	0.232	0.167	0.056	0.244	0.170	0.066	0.274	0.181	0.072	0.239	0.172
	Model	(mgd)	0.0676	0.227	0.164	0.060	0.236	0.167	0.060	0.274	0.185	0.072	0.257	0.183
	Difference	(mgd)	0.0018	0.005	0.002	-0.0036	0.008	0.002	0.0060	0.000	-0.004	0.0003	-0.017	-0.011
		(%)	**-3**	**-2**	**-1**	**6**	**-3**	**-1**	**-10**	**0**	**2**	**0**	**7**	**6**
O-1 [1]	Flow Monitored	(mgd)	0.1671	0.636	0.449	0.144	0.637	0.440	0.145	0.705	0.468	0.131	0.956	0.473
	Model	(mgd)	0.0746	0.726	0.446	0.062	0.755	0.452	0.065	0.796	0.480	0.065	0.776	0.470
	Difference	(mgd)	0.0925	-0.090	0.003	0.0821	-0.119	-0.013	0.0800	-0.092	-0.013	0.0653	0.180	0.003
		(%)	**-124**	**12**	**-1**	**-132**	**16**	**3**	**-123**	**12**	**3**	**-100**	**-23**	**-1**
O-2	Flow Monitored	(mgd)	0.0088	0.130	0.076	0.008	0.125	0.072	0.009	0.209	0.083	0.007	0.170	0.070
	Model	(mgd)	0.0100	0.123	0.075	0.010	0.131	0.076	0.010	0.171	0.093	0.010	0.164	0.086
	Difference	(mgd)	-0.0012	0.007	0.001	-0.0022	-0.006	-0.004	-0.0006	0.038	-0.010	-0.0027	0.006	-0.015
		(%)	**12**	**-6**	**-1**	**22**	**5**	**5**	**6**	**-22**	**10**	**28**	**-3**	**18**
O-3	Flow Monitored	(mgd)	0.0250	0.278	0.169	0.014	0.239	0.143	0.031	0.924	0.258	0.030	0.703	0.235
	Model	(mgd)	0.0283	0.273	0.169	0.028	0.235	0.146	0.028	0.977	0.251	0.028	0.550	0.225
	Difference	(mgd)	-0.0033	0.005	0.001	-0.0139	0.004	-0.002	0.0034	-0.053	0.007	0.0020	0.153	0.010
		(%)	**12**	**-2**	**0**	**51**	**-2**	**1**	**-12**	**5**	**-3**	**-7**	**-28**	**-5**
O-5	Flow Monitored	(mgd)	0.0679	0.497	0.327	0.099	0.636	0.375	0.097	0.690	0.432	0.109	0.622	0.389
	Model	(mgd)	0.0819	0.532	0.335	0.100	0.673	0.399	0.091	0.748	0.431	0.088	0.605	0.382
	Difference	(mgd)	-0.0139	-0.036	-0.008	-0.0005	-0.037	-0.024	0.0053	-0.058	0.001	0.0203	0.017	0.007
		(%)	**17**	**7**	**2**	**1**	**5**	**6**	**-6**	**8**	**0**	**-23**	**-3**	**-2**
O-6	Flow Monitored	(mgd)	0.0078	0.040	0.020	0.006	0.029	0.019	0.009	0.183	0.043	0.006	0.072	0.027
	Model	(mgd)	0.0085	0.031	0.021	0.007	0.030	0.020	0.007	0.126	0.038	0.009	0.092	0.032
	Difference	(mgd)	-0.0007	0.009	0.000	-0.0009	-0.001	-0.001	0.0013	0.057	0.005	-0.0028	-0.020	-0.005
		(%)	**9**	**-28**	**0**	**13**	**2**	**6**	**-19**	**-46**	**-14**	**32**	**22**	**17**

12/11/2017

Note:

1. Flow Fluctuations are heavily influenced by the Ord Village Lift Station at flow monitoring site O-1.

APPENDIX C
Lift Station Condition Assessment

Lift Station Condition Assessment Report

Marina Coast Water District

GHD | 2235 Mercury Way, Suite 150, Santa Rosa, California

11140005 | May 30, 2018

Marina Coast Water District

Lift Station Condition Assessment Report

Project No. 11140005

Prepared for:

AKEL ENGINEERING GROUP, INC
7433 N. First Street, #103
Fresno, CA 93720

Prepared by:

Luke Philbert
Project Engineer

Reviewed by:

Matt Winkelman, P.E.
Principal

2235 Mercury Way, Suite 150
Santa Rosa, CA 95407
(707) 523-1010

May 30, 2018

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Appendix Index

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1. Introduction

GHD civil and electrical engineers performed field inspections of 12 lift stations to determine existing physical conditions. This occurred during a two day field visit on June 20-21, 2017 accompanied by District staff. The following is a technical evaluation of each lift station observed through information provided by the District and physical observations. The evaluation addresses the following components of each lift station.

- **Civil/Mechanical/Structural**

  This includes the evaluation of pumps, discharge piping, pump lifting equipment, valves, valve pits, and lift station wet well and dry well configuration. It also includes a visual assessment for above- and below-grade structures and concrete slabs that support the electrical equipment.

- **Electrical and Instrumentation**

  The electrical and instrumentation evaluation includes: the power supply system, transfer switch, pump starters, power generator, backup generator receptacle, cable and conduits, electrical equipment enclosures, and other related components that are critical to a reliable power supply. The level control and pump control in each lift station were also evaluated.

- **Site**

  This section reviews the accessibility to the lift station and the ease to access equipment at the station for service or replacement. Adequacy of on-site supporting facilities such as lighting, fencing, security, and wash down hose bibbs are also evaluated. Also assessed are aspects of the adjacent area that are relevant to the lift station operation, such as curb site parking, noise, or other neighborhood issues.

The following items were not performed as part of this condition assessment:

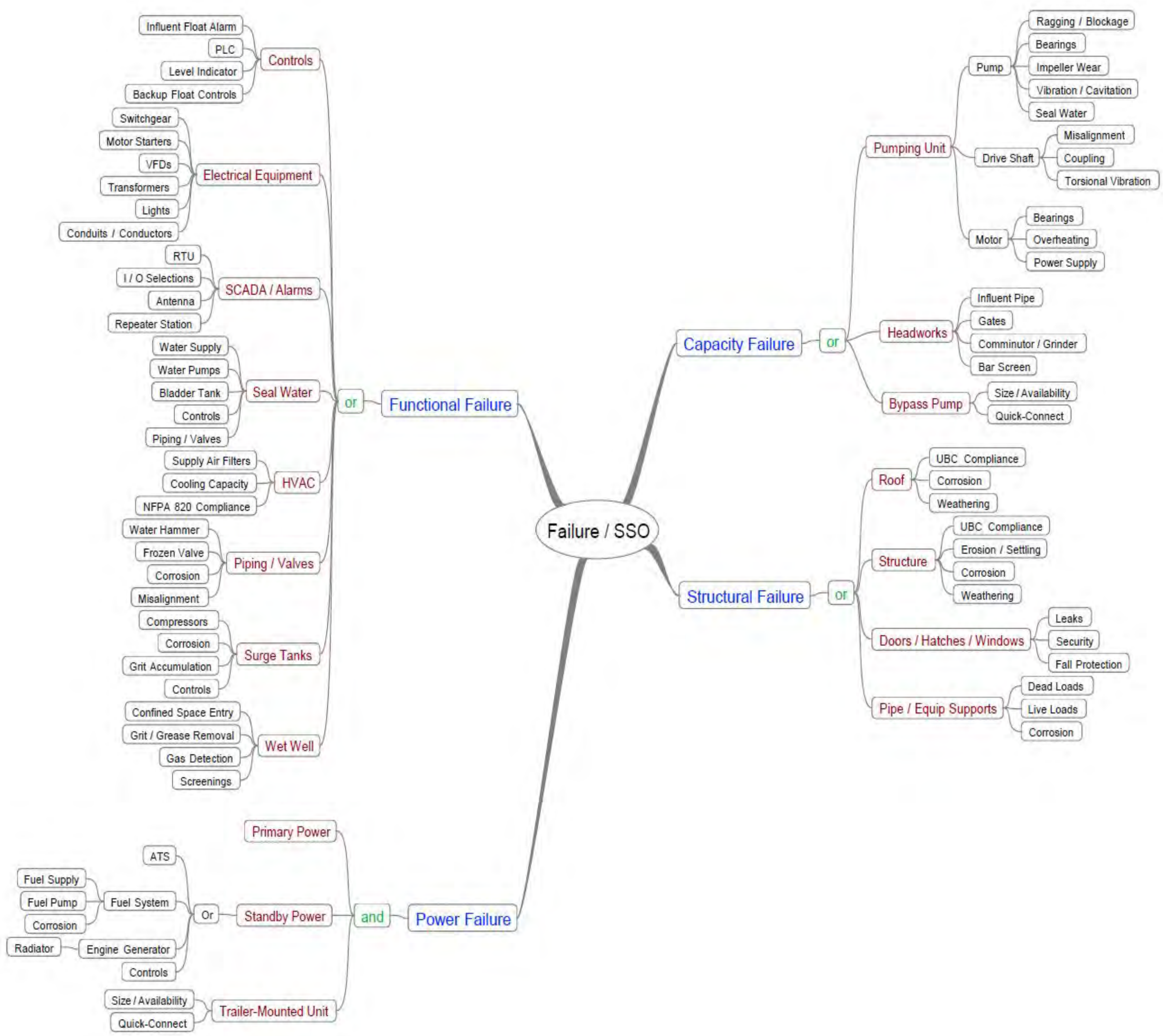
- Confined space entry and associated visual or physical testing for below-grade spaces.
- Review of maintenance records.
- Pump or physical tests performed in the field.
- Safety evaluation.
- Though some code compliance items were noted, this scope did not include a full inventory of code compliance.

The findings and conclusions in this report are intended to be used in conjunction with hydraulic evaluation and other planning for lift stations prepared by Akel Engineering for each of the lift stations. As such, some recommendations may be superseded. For example, a pump found to be in sound condition in this report may require replacement based on hydraulic deficiency.

2. Lift Station Facilities Approach

In order to maintain a thorough condition assessment, it is important to think about the lift station condition and criticality in the context of failure modes. Staff performed field inspections with a Fault Tree Diagram, presented in Figure 1, in order to encompass the variety of factors that could possibly contribute to failure.

Figure 1 – Fault Tree Diagram



Categories of failure include Functional, Power, Capacity, and Structural. The diagram flowchart shows how specific variables of the lift station (black text) contributes to a general variable (red text), which can lead to a type of failure (blue text) that ultimately can lead to a sanitary sewer overflow (SSO). As an example from the top left; failure with the influent float alarms could lead to the controls not turning the pumps on while the wet well water level rises, thus a functional failure is occurring that may lead to an SSO.

To address redundancy, the Fault Tree Diagram organizes the general variable (red text) into its position of contributing to failure in the context of and/or (green text). The “and” factor means there is redundancy. In the case of Power Failure, the primary power from the grid may fail, but a standby generator or trailer mounted unit prevents failure. The expression translates to “A power failure may occur if there is no primary power, and there is no standby power, and there is no trailer-mounted unit.” The “or” category is a signal that redundancy may not occur. In the case of controls, problems from influent float alarms could contribute to failure regardless of other variables. The expression translates to “A functional failure may occur if there are problems occurring with controls, or there are problems with piping / valves, or there are problems with the wet well, etc.”

All items from the Fault Tree Diagram were considered during the condition assessment. For each lift station, each general variable is mentioned within the write-up so long as it was relevant for the assessment. Variables that were not relevant for the write-up (e.g., no pump stations had seal water or surge tanks) were not discussed in Section 4 of this document.

Lift Station facility components were based on a quantitative condition score. Table 1-1 shows the condition rating score of 1 to 5 that is used to assess the condition of the component along with the description of each score.

Certain components are assigned a score even when the component is not necessarily a physical object. These are assigned with the same scoring factor (a component with a condition score of 1 does not need to be addressed in the near term, whereas a component with a condition score of 5 needs to be addressed immediately). The descriptions for each score will vary for these exceptions.

Where there are field observations available for a component, the information is used to assign the condition ratings. If the component has not been inspected, then its condition is estimated based on its age. If available, the age based condition rating is supplemented with information from historical work orders or equivalent history information. Depending on the level of detail and type of available work order information, work orders can serve as means to differentiate components with similar in-service years that for one reason or another have decayed at different rates, possibly due to differences in operating environments, manufacture quality, or design/installation issues. Work orders can provide operational history of a component giving a further indication of performance other than that based on age considerations only.

While a visual condition assessment was performed for each lift station, there were limits to the assessment and there may be unforeseen circumstances in the future. While one component may appear upon inspection to have a condition score of 2, there is no guarantee that the component will remain in acceptable condition for at least 5 years. For this reason it is recommended to assess components continually throughout the future.

Table 1-1 - Condition Rating Description

Condition Score	Definition	Description
1	Very Good	Sound physical condition to meet current standards. Operable and well maintained. Component likely to perform acceptably with routine maintenance for 10 years or more. No work required.
2	Good	Acceptable physical condition but not designed to current standard. Component shows minor wear. Deterioration has minimal impact on component performance. Minimal short-term failure risk but potential for deterioration or reduced performance in medium term (5-10 years). Only minor work required (if any).
3	Moderate / Fair	Functionally sound plant and components, but showing some wear with minor failures and some diminished efficiency. Minor parts or isolated sections of component require replacement or repair but asset still functions safely at acceptable level of service. Work required but still serviceable. For example, bearing and gland wear becoming evident and some corrosion present.
4	Poor	Parts function but require a high level of maintenance to remain operational. Likely to cause a noticeable deterioration in performance in short-term. No immediate risk to health or safety but work required to ensure asset remains safe. Substantial work required in short-term, asset barely serviceable.
5	Very Poor	Failed or failure imminent. Asset effective life exceeded and significant maintenance costs incurred. A high risk of breakdowns with a serious impact on component. No life expectancy. Health and safety hazards exist which preset a possible risk to public safety, or component cannot be serviced/operated without risk to personnel. Major work or replacement.

3. Lift Station Locations

A discussion occurred with the project team at the start of the June 20-21, 2017 field visit that agreed on pump stations to be included in the condition assessment. Appendix A shows a map of all Lift Stations under the Marina Coast Water District jurisdiction, with the lift stations chosen for condition assessment in yellow. Table 3-1 presents a summary of the chosen lift stations, with pump descriptions and capacity for each.

Table 3-1 – Lift Station Locations and Capacity

Lift Station Information			Pumps				Notes from Operator / Condition Assessment
Lift Station	Location	Type	Quantity	Capacity (mgd)	Capacity (gpm)	TDH (ft)	
Dunes	Dunes Drive – next to Marina Dunes Resort	Submersible	2	2 @ 0.79	2 @ 550		Operator - new pumps installed in last 5 years at same size
San Pablo	180 San Pablo Court	Submersible	2	2 @ 0.54	2 @ 375		Operator mentioned Flygt pumps were installed within last decade - may be referring to 2000 installation
Crescent	3009 Crescent Street	Submersible	2	2 @ 0.14	2 @ 100		Operator mentioned new pumps may have been installed since 2005
Neeson	Neeson Road/Marina Airport	Submersible	1	0.58	400		1 pump currently, previously 2
Gigling	Okinawa and Noumea Road	Dry Pit	4	3 @ 1.22 Sump @ 0.07	3 @ 850 Sump @ 50	3 @ 100	3 new pumps at 45 HP each; flow unknown for new pumps
Hatten	Hatten Road	Submersible	2	2 @ 0.06	2 @ 40		No upgrades since 2005
Imjin	Imjin at Abrams	Submersible	2	2 @ 2.15	2 @ 1490	33	Two Flygt pumps installed in 2003
Fort Ord Village	End of Beach Range Road	Dry Pit	4	3 @ 0.40 1 @ 0.07	3 @ 280 Sump @ 50	3 @ 110	
Booker	End of Booker Street	Dry Pit	3	2 @ 1.09 Sump @ 0.07	2 @ 760 Sump @ 50	2 @ 64	
Fritzche	Fritzsche Field North	Submersible	2	2 @ 0.23	2 @ 160		.
East Garrison	Inter-Garrison Road and Ord Ave	Submersible	2				Pump is now active. Pump type unknown from operator.
Reservatio n Road	Reservation Road 1125 feet NW of Imjin	Submersible	2	2 @ 1.3	2 @ 900	120	Visual showed 2 pumps that were not Flygt.

A write-up of each lift station evaluation is included in the next section.

4. Lift Station Facilities Evaluation

4.1 DUNES

The Dunes Lift Station is a wet well submersible lift station with no building. Valves and pipes are above grade. Electrical cabinets are also above grade. The entire lift station is fenced in.

The Dunes Lift Station is located at Dunes Drive, next to the Marina Dunes Resort, west of Highway 1. The lift station was originally built in 1969, with the pumps upgraded in 1987. Capacity with both pumps running is 0.79 MGD.

The lift station meets firm capacity according to District staff, with adequate capacity to convey peak flows with the largest pumping unit out of service and with available standby power, in this case a trailer mounted generator. This site is a critical facility when power is out. The operators will come to it first and hook up power.

4.1.1 Civil/Mechanical

Pumping Unit

Component	Score	Reason
Pumps	1	Flygt pumps installed in the last 5 years. No issues from operator.

For Photo - See Piping / Valves in Section 4.1.1.

The Dunes Lift Station was originally equipped with two Paco 4-inch AE type NCD submersible centrifugal wastewater pumps. These pumps were replaced in 1987 with two Flygt CP3152-454 pumps. These 20 hp submersible pumps provide 550 gpm of flow capacity at 77 ft of Total Dynamic Head (TDH).

According to the District's operator, the new pumps were installed in the last 5 years. These new pumps were the same size, at 2-20 HP, and most likely the Flygt model. The pumps alternate in a lead / lag mode. During wet weather flows, the operator is able to convey peak flows with only one pump.

Bypass Pump

Component	Score	Reason
Bypass Port	1	Located on the discharge header, no issues reported from operator.

For Photo – See Pipe / Equip Supports in Section 4.1.2.

Piping / Valves

Component
Discharge piping and valves
Score
2
Reason
Recently upgraded and functions well, though access is difficult to remove the valves with a lifting device.

Piping was replaced from the flange out of the wet well up to the ductile iron force main discharge at the intersection nearby. The original pipe routing went up to the old treatment plant, and came back down the hill to a gravity feed. When two pumps were on and stayed on too long it would end up flooding a cleanout near a residence, through the lateral. The piping was rerouted through check valves to a manhole approximately 40 feet near the wet well, which adds capacity.

The District implements a fats, oils, and grease (FOG) program which has prevented grease problems through the piping system.

Since the valves are located behind the wet well, access is difficult for O&M staff to remove the valves with a lifting device.

Wet Well

Component
Pump Guide Rails
Score
1
Reason
Appears to be in good condition with no signs of corrosion

Inside the wet well, the stainless steel pump lifting guide rails appear to be in good condition.

Component	Score
Discharge Pipes	3
Reason	
Pipes show signs of corrosion, though immediate replacement may not be necessary.	

For Photo - See Pump Guide Rails in Wet Well, Section 4.1.1.

Inside the wet well, while the stainless steel pump lifting guide rails appear to be in good condition, the cast iron discharge pipes show signs of corrosion.

4.1.2 Structural

Pipe / Equip Supports

Component
Pipe and Equipment Support
Score
1
Reason
Appear to be in good condition. No issues noted by the operator.

Pipe and equipment support appears to be new and in good working condition.

Wet Well

Component	Score	Reason
Concrete wall	3	Minor signs of surface deterioration.

For Photo – See Wet Well in Section 4.1.1.

The 7-ft diameter, 11-ft deep concrete wet well is unlined, and shows signs of some surface deterioration. Surface prep and coating is recommended to preserve the concrete and prevent spalling. Visual inspection of the wet well was performed solely from the ground level due to limited means of entry/exit. The wet well hatch cover also appears to show signs of age but the operator has not seen signs of infiltration and inflow (I&I). The wet well water marks noted at the time of inspection and the lack of overflows historically (unrelated to power outages) suggest that there is sufficient storage capacity in the existing wet well.

The top slab of the wet well and the slab for the electrical equipment are in good physical condition.

4.1.3 Electrical

Electrical Equipment

Component	Score	Reason
Meter	1	No issues observed.
Component	Score	Reason
Circuit Breaker	1	No issues observed.
Component	Score	Reason
Manual Transfer Switch	1	No issues observed.
Component	Score	Reason
Surge Protector	1	No issues observed.
Component	Score	Reason
Power Monitor	1	No issues observed.

No photo available.

A meter, circuit breaker (serving as the main service disconnect), manual transfer switch, surge protector, and a power monitor are located in one fiberglass enclosure mounted in the front corner of the pump station site.

Component	Score	Reason
100 Amp Receptacle for Portable Generator	1	No issues observed.
Component	Score	Reason
Pump Motor Starters	1	No issues observed.
Component	Score	Reason
Pump Control Panel	1	No issues observed.
Component	Score	Reason
480-240/120-volt step-down transformer	1	No issues observed.
Component	Score	Reason
240/120-volt lighting panel	1	No issues observed.
Component	Score	Reason
NEMA 3RX fiberglass enclosures	1	No issues observed.

A 100-amp receptacle for connecting a portable generator is mounted to the exterior of this enclosure. Two pump motor starters, a pump control panel, a 480-240/120-volt step-down transformer, and a 240/120-volt lighting panel are located in another fiberglass outer enclosure located on top of the wet well slab. While the

NEMA 3RX fiberglass enclosures are moderately weathered, the individual painted steel components inside show no signs of weathering or corrosion.

Component	Score	Reason
Grounding System	1	No issues observed.

No photo available.

The grounding system consists of two old ground rods, each in grounding wells on opposite sides of the wet well. A third, newer rod and ground well are located adjacent to the telemetry antenna mast at the rear of the site. This ground rod apparently is provided for lightning protection, and is bonded properly to the two older ground rods to form a coherent, code-compliant grounding electrode system for the site electrical system.

Component	Score	Reason
Power Cables	1	Appear to be in good condition

No photo available.

The power cables in the wet well to the pump motors appeared to be in good condition.

Component	Score	Reason
120 volt convenience receptacle	4	Provide GFCI Device for safety
Component	Score	Reason
Circuit Breaker on Receptacle Circuit	4	Provide GFCI Device for safety

No photo available

A single 120-volt convenience receptacle is located in a non-metallic weatherproof box (NEMA 3RX) on top of the concrete wet well slab. While the receptacle, box, and weatherproof cover appear to be in good condition, neither the receptacle nor the circuit breaker on the receptacle circuit have Ground Fault Circuit Interrupter (GFCI) functionality. While the electrical code does not currently call for a GFCI device for receptacles in this specific location, it is recommended to provide one for improved personnel safety.

Primary Power

Component	Score	Reason
Pole mount transformer	1	No issues observed.

No photo available.

The lift station electrical distribution system is fed from a pole-mount Pacific Gas & Electric (PG&E) transformer, located across the street from the lift station. The service is rated at 100-amps, 480/277 volts, three-phase, four-wire.

Backup Power

Component	Score	Reason
Trailer mounted unit	1	No issues observed.

No photo available.

There is no backup generator on site. Currently there are provisions for hookup of a portable emergency generator. A trailer-mounted unit is available.

4.1.4 Instrumentation

Controls

Component	Score	Reason
Ultrasonic level transducer	1	No issues observed.
Component	Score	Reason
Level Controller	1	No issues observed.
Component	Score	Reason
Float Switches	1	No issues observed.

No photo available

Level control is provided by a Zenith Pulsar ultrasonic level transducer, mounted in the wet well. The transducer is connected to Zenith Pulsar level controller, which provides output to the motor starters to control the wet well pumps in automatic mode. High-level and low-level float switches act as a backup in case of failure of the transducer.

SCADA / Alarms

Component	Score	Reason
PLC – 2.4 GHz radio link	1	No issues observed.
Component	Score	Reason
PLC – Yagi antenna	1	No issues observed.
Component	Score	Reason
PLC - Cabinet	1	New condition
Component	Score	Reason
PLC - Contents	1	New condition

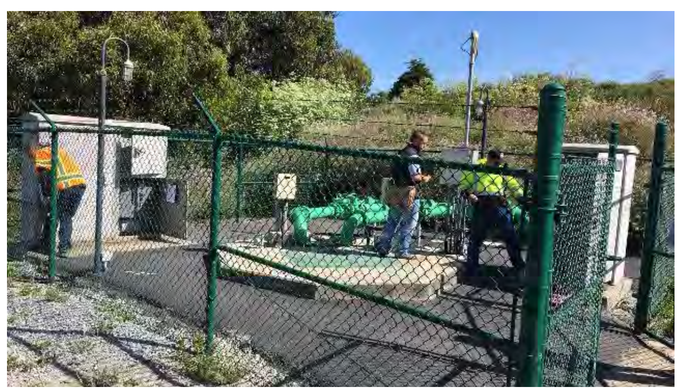
No photo available

The PLC provides status and alarms to the central SCADA monitoring station via a 2.4GHz radio link, using a Yagi antenna mounted on a mast. The PLC cabinet, contents, and antenna are in like-new condition.

4.1.5 Site

Security

Component
Fence
Score
1
Reason
Appear to be in good condition. No issues from operator.



Security issues have not been a problem at this site, either with theft or vandalism. The lift station is now screened by a coated chain linked fence and three strands of barbed wire at the top after corrosion issues addressed in the 2005 Wastewater Collection System Master Plan[1].

Access

Component
Road Space
Score
2
Reason
There is not sufficient space for vehicle turnaround, but the short length of the access road makes this a minor issue.

The site is paved and is adjacent to an existing storm water detention pond. There is no space for vehicle turnaround, requiring vehicles to exit in reverse, uphill along the access drive onto the street. There is no parking space other than the access road.

Water Supply

Component	Score	Reason
Water Supply	1	Appears to be in good condition. No issues from operator.

No Photo

Water supply is adequate, used for spray down at the wet well only.

4.1.6 Costs and Recommendations

Priority components with associated costs are organized in Table 4-1, based on a condition rating of 5 (Very Poor), 4 (Poor), and 3 (Moderate / Fair) as described in Table 1-1. Recommendations can be found for each component in their respective table in Section 4.1. Costs presented in this section are for construction only, and include a 30% contingency. Other soft costs (engineering, construction management, etc.) should be included for further project planning. General recommendations and observations are included at the end of this section.

[1] Marina Wastewater Collection System Master Plan. Winzler & Kelly Consulting Engineers. February 2005.

Table 4-1 – Dunes Lift Station - Critical Components and Associated Costs

Section	Factor	Component	Score	Cost
4.1.1	Wet Well	Discharge Pipes	3	$ 3,200
4.1.2	Wet Well	Concrete Wall	3	$ 19,900
4.1.3	Electrical Equipment	120 volt convenience receptacle	4	$ 500
			Total Cost - Parts	$ 23,600
			Total Cost – Parts with Contingency	$ 30,700

General Recommendations and Observations

The following are in addition to individual components.

- Since the valves are located behind the wet well, access is difficult for O&M staff to remove the valves with a lifting device (See Piping / Valves in Section 4.1.1).

4.2 SAN PABLO

The San Pablo Lift Station is a wet well submersible lift station with no building. Valves and pipes are below grade. Electrical cabinets are above grade. The entire lift station is fenced in.

The lift station is located next to 180 San Pablo Court. A two-story apartment building and some single family homes are located in close proximity to the lift station. The lift station was originally built in 1969 and had a major upgrade in 2000.

The lift station collects wastewater flow from the area bounded by Hillcrest Avenue, Sunset Avenue, and Del Monte Boulevard. In addition, wastewater flow in the vicinity of San Pablo Court is also conveyed to the San Pablo Lift Station. An 8-inch inlet pipe conveys all wastewater from the lift station service area to the wet well. A 6-inch force main conveys wastewater from the lift station to a 6-inch gravity sewer main along Lake Drive.

4.2.1 Civil/Mechanical

Pumping Unit

Component	Score	Reason
Pumps	1	Flygt pumps installed in the last 5 years. No issues from operator.

For Photo - See Wet Well in Section 4.2.1

The lift station was originally equipped with two Smith & Loveless 4B2A submersible, centrifugal pumps. They were replaced in 2000 with two Flygt CP3102-434 submersible pumps. These 5 hp submersible pumps provide 375 gpm of flow capacity at 26 ft TDH. The pumps run in lead / lag mode.

The pumps alternate and are used for redundancy. During wet weather flows, the operator is able to run one pump. The operator reported minor ragging and blockage but mentioned it could be cleaned out that day.

Piping / Valves

Component	Score	Reason
Piping	1	No apparent signs of corrosion.

The discharge pipes inside the wet well show no apparent signs of corrosion. The discharge pipes that extend to the valves pit located behind the wet well were not visible on the ground, but the pipes were installed in the 2000 lift station upgrade and are likely still in good condition.

Component
Valve Vault
Score
2
Reason
Valves and piping are in good condition, but valve vault has short clearance to fences.

Within the valve pit, a check valve and gate valve are provided on each discharge pipe. The discharge pipes then combine to form a common 6-inch force main leaving the lift station to the west. The valve pit is located behind the wet well at the rear of the site next to the generator, with very little clearance to the side fences.

Wet Well

Component
Guide Rails
Score
2
Reason
Minor surface deterioration.

Inside the 6-ft diameter, 13-ft deep concrete wet well, there is surface deterioration visible on the pump guide rails. There is no lifting device on site for pump removal.

From observed water marks and the history of lack of overflows, the wet well appears to provide sufficient storage capacity.

There is a gooseneck ventilation outlet on top of the wet well.

4.2.2 Structural

Pipe / Equip Supports

Component	Score	Reason
Support Structures	1	No problems observed.

For Photo - See Piping / Valves in Section 4.2.1

The pipe and equipment supports appear to be adequate.

Hatches

Component	Score	Reason
Structural Support	3	Wet well and valve pit hatches not strong enough to allow for truck access

The wet well hatch is not strong enough to support a service truck stopping on the top of wet well, making access to the valve pit difficult. It is recommended that the existing wet well and valve pit hatches are upgraded to improve truck access.

Wet Well

Component	Score	Reason
Concrete Walls	2	Minor surface deterioration

For Photo - See Wet Well in Section 4.2.1

There is surface deterioration visible on the wet well walls.

4.2.3 Electrical

Electrical Equipment

Component	Score	Reason
Utility revenue meter	1	No issues observed.
Component	Score	Reason
Circuit Breaker	1	No issues observed.
Component	Score	Reason
240/120-volt lighting panel	1	No issues observed.
Component	Score	Reason
Automatic transfer switch	1	No issues observed.
Component	Score	Reason
Level Controls	1	No issues observed.
Component	Score	Reason
Pump Motor Starters	1	No issues observed.
Component	Score	Reason
Telemetry	1	No issues observed.

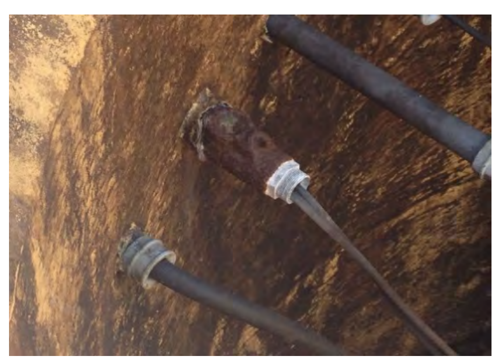
No photo available.

The equipment is housed in a low profile, weather-protective, painted steel switchgear lineup. The equipment consists of a utility revenue meter, circuit breaker (serving as the main service disconnect), a 240/120-volt lighting panel, automatic transfer switch, level controls, pump motor starters, and telemetry.

Component
NEMA 3R equipment enclosure
Score
3
Reason
Weathered, faded, and moderate rust.

The exterior surface of the NEMA 3R equipment enclosure is weathered and faded with a uniform layer of light rust on the top surface. The edges around the top of the enclosure and around the access doors have moderate rust, but the enclosure is otherwise in serviceable condition.

Component
Conduit
Score
3
Reason
Fittings show moderate corrosion, only one conduit has explosion proof fittings.



Only one conduit entering the wet well is terminated with explosion-proof fittings. The fitting shows moderate corrosion.

Primary Power

Component	Score	Reason
Pole mount transformer	1	No issues observed.

No photo available.

The lift station electrical distribution system is fed from a pole-mount Pacific Gas & Electric (PG&E) transformer, located across the street from the lift station. The service is rated at 100-amps, 240/120 volts, three-phase, four-wire.

Backup Power

Component	Score	Reason
Generator	3	Moderate to heavy rust

An Olympian model D20P2 diesel engine-generator set, rated at 20 kilowatts/ 25 kilovolt-amps, is located on an adjacent side of the valve pit at the rear of the site The generator is equipped with a 60-gallon, UL-listed dual-wall subbase tank, and a sound-attenuating enclosure. The generator enclosure and tank have localized areas of moderate-to-heavy rust.

4.2.4 Instrumentation

Controls

Component	Score	Reason
Ultrasonic level transducer	1	No issues observed.
Component	Score	Reason
Level Controller	1	No issues observed.
Component	Score	Reason
Float Switches	3	Low-level set point in the pump controller is set lower than the low level float.

No photo available

Level control is provided by a new Zenith Pulsar ultrasonic level transducer, mounted in the wet well. The transducer is connected to Zenith Pulsar level controller, which provides output to the motor starters to control the wet well pumps in automatic mode. High-level and low-level float switches act as a backup in case of failure of the transducer.

It appeared that the low-level set point in the pump controller is set lower than the low-level float, as it was observed that the low-level float appeared to be the element that stopped the pumps on low wet well level.

SCADA / Alarms

Component	Score	Reason
Allen Bradley MicroLogix 1400 PLC	1	No issues observed.
Component	Score	Reason
PLC – 2.4 GHz radio link	1	No issues observed.
Component	Score	Reason
PLC – Yagi antenna	1	No issues observed.
Component	Score	Reason
PLC - Cabinet	1	New condition
Component	Score	Reason
PLC - Contents	1	New condition

No photo available

An Allen-Bradley MicroLogix 1400 PLC provides status and alarms to the central SCADA monitoring station via a 2.4GHz radio link, using a Yagi antenna mounted on a mast. The PLC cabinet, contents, and antenna are in like-new condition.

4.2.5 Site

Access

Component
Road Space
Score
2
Reason
Access to valve pit and backup generator is difficult

For Additional Photo - See Overview Photo at the beginning of Section 4.2

The site is unpaved and is close to a residential area and San Pablo Court. Since there is adjacent open area to the lift station, there is adequate space for vehicle turnaround. However, access to the valve pit and backup generator is difficult since they are located behind the wet well. The wet well hatch is not strong enough to support a service vehicle (See Hatches in Section 4.2.2), and the gooseneck ventilation outlet on top of the wet well impedes truck access to the back of the site.

There is informal off-street parking adjacent to the pump station and along the street. A hose bibb, with backflow preventer, hose and hose rack, are provided for washdown water.

Security

Component	Score	Reason
Fence	1	Appears to be in good condition. No issues from operator.

For Photo - See Access in Section 4.2.5
For Additional Photo - See Overview Photo at the beginning of Section 4.2

The lift station is screened by 6-ft high chain link fence with redwood slats. A double-leaf gate with 15-ft opening provides access into the lift station site. The fence appears to be in good condition. There is no barbed wire, but given that apartments are nearby and there is adequate lighting, this may not be necessary.

Component	Score	Reason
Lighting	1	Appears to be in good condition. No issues from operator.

For Photo - See Overview Photo at the beginning of Section 4.2

Adequate lighting is provided by a pole-mounted light located in a corner of the fenced area, near the wet well and the access gate. The light is controlled by an integral photocell.

Effect on Residence

Component	Score	Reason
Visibility, Odor and Noise	2	Low visual impact, no apparent odors, noise disruption may occur when on site backup generator is running.

For Photo - See Access in Section 4.2.5

The lift station has medium to low visibility. The fence sits close to the road but the slats provide adequate privacy. The lift station has no apparent odors observed, however, noise disruption to the surrounding neighborhood may occur when the on-site backup generator is running.

4.2.6 Costs and Recommendations

Priority components with associated costs are organized in Table 4-2, based on a condition rating of 5 (Very Poor), 4 (Poor), and 3 (Moderate / Fair) as described in Table 1-1. Recommendations can be found for each component in their respective table in Section 4.2. Costs presented in this section are for construction only, and include a 30% contingency. Other soft costs (engineering, construction management, etc.) should be included for further project planning.

Table 4-2 – San Pablo Lift Station - Critical Components and Associated Costs

Section	Factor	Component	Score	Cost
4.2.2	Hatches	Structural Support	3	$ 4,000
4.2.3	Electrical Equipment	NEMA 3R equipment enclosure	3	$ 2,200
4.2.3	Electrical Equipment	Conduit	3	$ 2,000
4.2.3	Backup Power	Generator	3	$ 16,300
4.2.4	Controls	Float Switches	3	$ 100
			Total Cost - Parts	$ 24,600
			Total Cost – Parts with contingency	$ 32,000

4.3 CRESCENT

The Crescent Lift Station is a wet well submersible lift station with no building. Valves and pipes are below grade. Electrical cabinets are above grade. While the electrical cabinets are fenced off, the wet well and valve pit are located outside the fence near a residential sidewalk.

The Crescent Lift Station is located at 3009 Crescent Street, next to a storm water detention pond. The lift station was built in 1977 to serve the local residential area along Crescent Street and Vera Lane, where the low ground elevation prevents gravity flow to Reindollar Avenue.

4.3.1 Civil/Mechanical

Pumping Unit

Component	Score	Reason
Pumps	1	No issues from operator.

For Photo – See Wet Well in Section 4.3.1

The pump curve for this lift station is not available. However, previous studies for this lift station indicate that the lift station is equipped with two Flygt CG3065 submersible pumps. These 2 hp submersible pumps provide 100 gpm of flow capacity at 28 ft TDH. The pumps operate in lead / lag mode.

There is no on-site pump lifting device. However, since the wet well is close to the curb, pumps can be removed by a truck-mounted lifting device.

Piping / Valves

Component
Valve Pit
Score
4
Reason
Valve pit and components within need to be replaced.

The interior of the valve pit shows signs of cracking and surface damage. The valve pit hatch and the hatch rim are rusty. The bottom of the valve pit is filled with sand. The valve pit should be replaced.

Wet Well

Component
Discharge Pipe and Guide Rails
Score
2
Reason
Discharge pipes show signs of corrosion.

The discharge pipes inside the wet well show signs of corrosion, while the pump lifting guide rails appear to be in good condition.

Based on the watermarks at the side of the wet well, the storage in the wet well appears to be adequate.

4.3.2 Structural

Pipe / Equip Supports

Component	Score	Reason
Support Structures in Valve Pit	4	Valve Pit filled with sand / no proper support.

For Photo – See Piping / Valves in Section 4.3.1

The piping and valves lack proper support in the valve pit.

Wet Well

Component	Score	Reason
Concrete Wall	2	Minor deterioration on the unlined concrete wet well wall.

For Photo – See Wet Well in Section 4.3.1

There is some minor deterioration apparent on the unlined concrete wet well wall. The top slab of the wet well and the top slab of the valve pit are in good physical condition. The wet well is 5 feet in diameter and 11 feet deep.

4.3.3 Electrical

Electrical Equipment

Component	Score	Reason
Revenue meter	1	No issues observed.
Component	Score	Reason
Circuit breaker	1	No issues observed.
Component	Score	Reason
60 amp manual transfer switch	1	No issues observed.
Component	Score	Reason
100 amp receptacle for connecting a portable generator	1	No issues observed.
Component	Score	Reason
Pump Control Panel Enclosure	3	Steel – moderate rust around the edges, paint is heavily weathered
Component	Score	Reason
Transfer Switch Enclosure	3	Steel – moderate rust around the edges, paint is heavily weathered
Component	Score	Reason
Conduits entering the wet well	3	Conduits entering wet well are not sealed.

No photo available.

A revenue meter and a circuit breaker (serving as the main service disconnect) are located in a pedestal behind a fence, adjacent to the wet well access hatch. A 60-amp manual transfer switch is mounted to the side of the service pedestal, as is a 100-amp receptacle for connecting a portable generator. The steel pump control panel and transfer switch enclosures (NEMA 3R) have moderate rust around the edges, and the paint is heavily weathered. Conduits entering the wet well are not sealed.

Component
Pump Control Panel
Score
3
Reason
Lower corner of front door is rusted through.

The lower corner of the pump control panel front door is rusted through.

Component	Score	Reason
Telemetry cabinet	1	No issues observed.
Component	Score	Reason
Radio antenna	1	No issues observed.

No photo available.

A telemetry cabinet and radio antenna mast are located adjacent to the pedestal, and appear to be in excellent condition.

Primary Power

Component	Score	Reason
Pole mount transformer vault	1	No issues observed.

No photo available.

The lift station electrical distribution system is fed from a Pacific Gas & Electric (PG&E) transformer vault, located adjacent to the lift station. The service is rated at 100-amps, 240/120 volts, single-phase, three-wire.

Backup Power

Component	Score	Reason
Trailer mounted unit	1	No issues observed.

No photo available.

There is no on-site backup power generator, but a receptacle is provided to connect a portable trailer-mounted unit.

4.3.4 Instrumentation

Controls

Component	Score	Reason
Ultrasonic level transducer	2	Protection is provided by a round plastic valve box, which provides only minimal protection
Component	Score	Reason
Level Controller	1	No issues observed.

No photo available.

Level control is provided by a new Zenith Pulsar ultrasonic level transducer, mounted on the top slab of the wet well. A round plastic valve box, of a type typically found in landscaped areas, is fastened upside down over the top of the transducer to provide a minor degree of protection from physical damage. The transducer is connected to Zenith Pulsar level controller, located in the pump control panel, which provides output to the motor starters, also located in the pump control panel, to control the wet well pumps in automatic mode.

Component
Float Switches
Score
4
Reason
Cables are coiled up and hung above the wet well operating range.

High-level and low-level float switches are installed, but the cables are coiled up and hung on a hook well above the wet well operating range.

SCADA / Alarms

Component	Score	Reason
Allen Bradley MicroLogix 1400 PLC	1	No issues observed.
Component	Score	Reason
PLC – 2.4 GHz radio link	1	No issues observed.
Component	Score	Reason
PLC – Yagi antenna	1	No issues observed.
Component	Score	Reason
PLC - Cabinet	1	New condition
Component	Score	Reason
PLC - Contents	1	New condition

No photo available.

An Allen-Bradley MicroLogix 1400 PLC provides status and alarms to the central SCADA monitoring station via a 2.4GHz radio link, using a Yagi antenna mounted on a mast. The PLC cabinet, contents, and antenna are in like-new condition.

4.3.5 Site

Security

Component	Score	Reason
Theft or Vandalism	1	No security issues reported

For Photo - See Overview Photo at the beginning of Section 4.3

Security issues have not been a problem at this site, either with theft or vandalism.

Component	Score	Reason
Lighting	2	Lighting provided from nearby streetlight

No lighting is provided on-site. However, the street light in proximity to the lift station provides some lighting to the site. A hose bibb is provided for wash-down water. This station has low visibility since most of the station is below ground. No odor was detected at the time of inspection.

Access / Safety

Component	Score	Reason
Expanded Fence	5	Safety Concerns

For Photo - See Overview Photo at the beginning of Section 4.3

The site is unpaved and is in the middle of a residential area. Service vehicles can park along Crescent Street, which is a residential street with only minimal local traffic.

The lift station wet well and valve pit are located at the back of sidewalk along Crescent Street, with no fencing protection. The lift station electrical panels and the adjacent storm water detention pond are surrounded by a chain link fence with a double leaf gate and barbed wire. There is not enough space for a service vehicle to drive to the electrical panels. It is recommended to expand the fencing so that the wet well and the valve pit can be guarded by the fence. The operator expressed safety concerns with people walking along the sidewalk while the wet well and valve pit hatches are open. In addition, this would provide additional space for vehicle access to the electrical equipment.

4.3.6 Costs and Recommendations

Priority components with associated costs are organized in Table 4-3, based on a condition rating of 5 (Very Poor), 4 (Poor), and 3 (Moderate / Fair) as described in Table 1-1. Recommendations can be found for each component in their respective table in Section 4.3. Costs presented in this section are for construction only, and include a 30% contingency. Other soft costs (engineering, construction management, etc.) should be included for further project planning. General recommendations and observations are included at the end of this section.

Table 4-3 – Crescent Lift Station - Critical Components and Associated Costs

Section	Factor	Component	Score	Cost
4.3.1	Piping / Valves	Valve Pit, Valves, Piping, and Valve Pit Structure	4	$ 5,900
4.3.3	Electrical Equipment	Pump Control Panel Enclosure	3	$ 500
4.3.3	Electrical Equipment	Transfer Switch Enclosure	3	$ 300
4.3.3	Electrical Equipment	Conduits entering the wet well	3	$ 100
4.3.4	Controls	Float Switches	4	$ 17,800
4.3.5	Access / Safety	Expanded Fence	5	$ 25,100
			Total Cost - Parts	$ 25,100
			Total Cost – Parts with Contingency	$ 32,700

General Recommendations and Observations

The following are in addition to individual components. Costs associated with these recommendations would be provided in a future study or predesign effort.

- Since this lift station is located next to a storm water detention pond, the lift station failure could lead to sewer overflows to the pond, thus causing storm water contamination problems. Major lift station rehabilitation or replacement is recommended.

4.4 NEESON

The Neeson Lift Station is a wet well submersible lift station with no building. Valves and pipes are above grade. Electrical cabinets are above grade. The entire lift station is fenced in with limited space.

The Neeson Lift Station is a float actuated duplex package sump type lift station that has one pump and a total capacity of 0.58 MGD (400 gpm). It is recommended that a complete lift station replacement be performed.

4.4.1 Civil/Mechanical

Pumping Unit

Component	Score	Reason
Pumps	5	An additional pump is needed for redundancy

For Photo - See Bypass Pump in Section 4.4.1.

There is only one submersible pump at a capacity of 0.58 mgd (400 gpm). An additional submersible pump is recommended for redundancy. With a working system, the pumps operate with float controls.

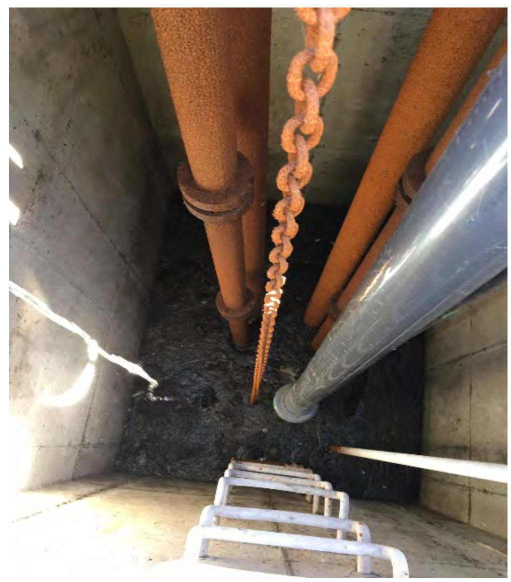
Bypass Pump

Component
Pump Bypass
Score
5
Reason
Bypass is permanent. Not recommended.

The lift station appears to be in permanent bypass, which is not recommended

Piping / Valves

Component
Piping / Valves
Score
4
Reason
Corrosion issues



Piping and valves show signs of corrosion both inside the well and on the discharge side (For Photo - See Bypass Pump in Section 4.4.1.) of the pump station.

The permanent bypass line is showing deterioration from ultraviolet radiation.

Component
Domestic Water Hose Bib
Score
1
Reason
Backflow Prevention Device was installed.

The domestic water hose bibb within the fence did not have a backflow prevention device accepted by the California Code; this was corrected as of the 2005 Wastewater Collection System Master Plan.

Wet Well

Component	Score	Reason
Lid	5	Heavy Corrosion
Component	Score	Reason
Piping / Valves	5	Heavy Corrosion

For Photo - See Bypass Pump in Section 4.4.1 and Piping / Valves in Section 4.4.1.

The coatings have severely deteriorated from corrosion on the lid as well as on all piping and valves.

4.4.2 Structural

Structure

Component	Score	Reason
Concrete Slab	4	Deteriorating slab. Needs to cover more area.

For Photo – See Bypass Pump in Section 4.4.1.

In addition to replacing this deteriorating concrete slab, it is recommended that a concrete slab is provided underneath all the piping and valves. The wet well is 6.6-ft long, 6-ft wide, and 16-ft deep.

Pipe / Equip Supports

Component	Score	Reason
Support for Pipes and Valves	4	Support is poor, pipes and valves appear to be slanted.

For Photo – See Bypass Pump in Section 4.4.1.

Piping and valves on the discharge side of the pump appear to be slanted.

Wet Well

Component	Score	Reason
Support for Pipes and Valves	4	Support is poor, pipes and valves appear to be slanted.

For Photo – See Piping / Valves in Section 4.4.1.

The wet well coating is in fair condition, but is recommended to be replaced along with the rest of the lift station.

4.4.3 Electrical

Electrical Equipment

Component
General Electrical Equipment
Score
5
Reason
In poor condition and not functioning.

Electrical equipment appears to be in poor condition and not functioning.

Primary Power

Component	Score	Reason
Pole mount transformer	1	No issues observed.

No photo available.

The lift station electrical distribution system is fed from a pole-mount Pacific Gas & Electric (PG&E) transformer, located somewhat adjacent to the lift station. The service is rated at 100-amps, 208/120 volts, three-phase, four-wire.

Backup Power

Component	Score	Reason
Backup Power	4	No backup power

No photo available.

There is no backup power.

4.4.4 Instrumentation

Controls

Component
Level Control
Score
4
Reason
Appear to be in poor condition and in need of replacement.

Level control is provided by a float on a vertical rod, which actuates a switch that is mounted above the wet well cover. The level control appears to be in poor condition and in need of replacement.

SCADA / Alarms

Component	Score	Reason
PLC/telemetry package	4	No equipment.
Component	Score	Reason
Alarm notification	4	No equipment

No photo available.

This site is not equipped with the PLC/telemetry package that is present at the other pump stations. There is not any apparent means of providing alarm notification.

4.4.5 Site

General Site

Component	Score	Reason
Access	3	Bare ground needs to be paved.
Component	Score	Reason
Security Lighting	3	No security lighting.

No photo available.

All vegetation from within the fence should be cleared and the site should be paved.

There is no security lighting. It is recommended that security lighting is installed.

4.4.6 Costs and Recommendations

Priority components with associated costs are organized in Table 4-4, based on a condition rating of 5 (Very Poor), 4 (Poor), and 3 (Moderate / Fair) as described in Table 1-1. Recommendations can be found for each component in their respective table in Section 4.4. Costs presented in this section are for construction only, and include a 30% contingency. Other soft costs (engineering, construction management, etc.) should be included for further project planning. While Neeson is recommended for a major replacement, packaged costs would be determined in a separate study or predesigned effort. General recommendations and observations are included at the end of this section.

Table 4-4 – Neeson Lift Station - Critical Components and Associated Costs

Section	Factor	Component	Score	Cost
4.4.1	Pumping Unit	Pumps	5	$ 94,600
4.4.1	Piping / Valves	Piping / Valves	4	$ 2,000
4.4.1	Wet Well	Lid	5	$ 2,500
4.4.1	Wet Well	Piping / Valves	5	$ 3,100
4.4.2	Structure	Concrete Slab	4	$ 2,200
4.4.2	Pipe / Equip Supports	Support for Pipes and Valves	4	$ 700
4.4.2	Wet Well	Support for Pipes and Valves	4	$ 700
4.4.3	Electrical Equipment	General Electric Equipment	5	$ 50,000
4.4.4	Controls	Level Control	4	$ 2,500
4.4.4	SCADA / Alarms	PLC/telemetry package	4	$ 10,000
4.4.4	SCADA / Alarms	Alarm Notification	4	$ 2,000
4.4.5	General Site	Access	3	$ 2,000
4.4.5	General Site	Security Lighting	3	$ 1,000
			Total Cost - Parts	$ 173,300
			Total Cost – Parts with Contingency	$ 225,290

General Recommendations and Observations

The following are in addition to individual components. Costs associated with these recommendations would be provided in a future study or predesign effort.

- It is recommended that the lift station be completely replaced to meet current standards for redundancy, communication, and access.

4.5 GIGLING

The Gigling Lift Station is a dry pit/wet well lift station with a building. Valves and pipes are in the dry pit below the building. Electrical cabinets are inside the building. The entire lift station is fenced in.

Maximum Capacity is 1.22 MGD (850 gpm).

4.5.1 Civil/Mechanical

Pumping Unit

Component
Pumps
Score
1
Reason
No issues observed.

The lift station has three pumps that together run at a maximum capacity of 1.22 MGD (850 gpm), and a TDH of 100 ft. The Flygt submersible pumps were converted to dry pit service. A sump pump in the dry pit has a capacity of 0.07 GPD (50 gpm).

HVAC

Component
Metal Ducts
Score
3
Reason
HVAC reported to work properly, but there are signs of corrosion.

Though the HVAC was reported to be working properly, there appears to be signs of corrosion.

Piping / Valves

Component	Score	Reason
Dry Pit – Piping / Valves	1	No issues observed.

For Photo - See Pumping Unit in Section 4.5.1.

Inside the dry pit, there are new check valves. The remaining piping appears to be in good working condition. The dry pit appears to be a non-corrosive atmosphere.

Component	Score	Reason
Access to pump removal	3	Though possible, pump removal is difficult.

For Photo - See Pumping Unit in Section 4.5.1.

Access to pump removal seems difficult. It is recommended that a landing be put in place for easier removal of pumps.

Component	Score	Reason
Air Lock issues - Piping / Valves	3	Force main causing air issues in piping

For Photo - See Pumping Unit in Section 4.5.1.

Due to problems in the force main on the discharge side of the lift station, the operators have a gauge to monitor air pressure. For this station and Fort Ord Village, even with new pumps installed, there are air lock issues. There is a lot of bleeding, and sometimes the District will have to lift up the check valve and backflush before it will prime again. Condition assessment of the force main is recommended to address the air lock issues in the piping at the lift station.

Wet Well

Component	Score	Reason
Wet Well – Piping / Valves	1	No issues observed.

For Photo – See Wet Well in Section 4.5.2.

The operator reported no issues with the suction side of the lift station.

4.5.2 Structural

Roof

Component	Score	Reason
Roof	1	Recently repaired

For Photo - See Overview Photo at the beginning of Section 4.7

Appears to be in good working condition. The roof had been attended to recently, with some of the planks replaced.

Structure

Component	Score	Reason
Concrete Slab	1	No issues observed.

For Photo, See Overview Photo at the beginning of Section 4.5.

The concrete slab under the generator appears to be in good condition.

Doors / Hatches

Component	Score	Reason
Door	1	No issues observed.

For Photo, See Overview Photo at the beginning of Section 4.5.

The door appears to have recent work done due to a change in paint color around the door versus the rest of the wall. It appears to be in good working condition.

Component	Score	Reason
Hatches	1	No issues observed.

No photos available.

Hatches appear to be in good working condition.

Pipe / Equip Supports

Component	Score	Reason
Dry Pit – Pipe / Equipment Support Structures	1	No issues observed.

No photo available.

Pipe and Equipment supports appear to be adequate.

Wet Well

Component
Wet Well Walls
Score
1
Reason
Appear to be in good condition, though covered with an epoxy coating.

The wet well was epoxy coated, and although there is a bumpy coating to the walls, the walls are in good condition, and may have had coating over rough aggregate. The wet well dimensions are 22-ft long, 8-ft wide, and 16-ft deep.

4.5.3 Electrical

Electrical Equipment

Component	Score	Reason
Service Entrance Switchboard	1	No issues observed.
Component	Score	Reason
Automatic Transfer Switch	1	No issues observed.
Component	Score	Reason
Motor Control Center	1	No issues observed.
Component	Score	Reason
480:208/120V stepdown transformer	1	No issues observed.
Component	Score	Reason
Breaker Panel	1	No issues observed.

No photo available.

The electrical equipment consists of a service entrance switchboard, automatic transfer switch, motor control center, 480:208/120V stepdown transformer, and breaker panel. The service entrance switchboard is a single section with PG&E utility compartment and the main breaker. The MCC contains three autotransformer-type reduced-voltage motor starters.

Primary Power

Component	Score	Reason
Pole mount transformer	1	No issues observed.

No photo available.

The lift station electrical distribution system is fed from a pole-mount Pacific Gas & Electric (PG&E) transformer, located adjacent to the lift station. The service is rated at 400-amps, 480/277 volts, three-phase, four-wire.

Backup Power

Component	Score	Reason
Generator	3	Subbase tank is wet with lube oil and fuel..

No photo available.

The site is equipped with a 110 kW Katolight diesel generator and an Olympian automatic transfer switch. The generator has a subbase fuel tank with a transfer pump that draws from an adjacent above-grade 500 gallon bulk tank. The generator is reportedly in good operating condition, but the top of the subbase tank is wet with lube oil and fuel, indicating that the generator engine has leaks.

Component
Bulk Tank
Score
3
Reason
Signs of paint deterioration observed.

Signs of paint deterioration were observed on the top of the bulk fuel tank.

4.5.4 Instrumentation

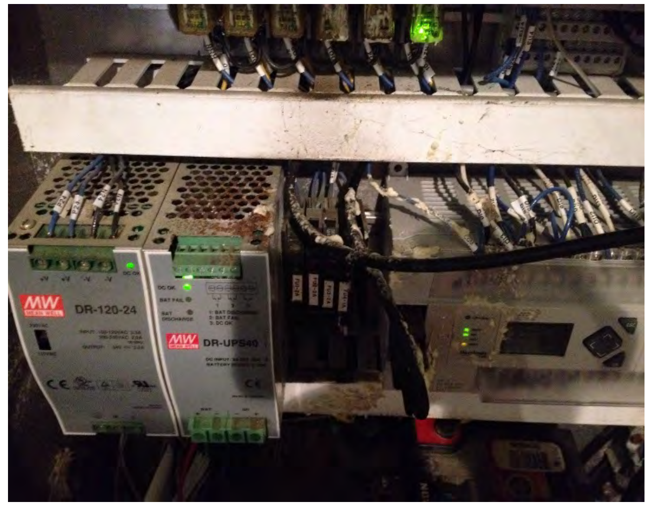
Controls

Component	Score	Reason
Ultrasonic level transducer	1	No issues observed.
Component	Score	Reason
Level Controller	1	No issues observed.
Component	Score	Reason
Float Switches	1	No issues observed.

Level control is provided by a Zenith Pulsar ultrasonic level transducer, mounted in the wet well. The transducer is connected to Zenith Pulsar level controller, which provides output to the motor starters to control the dry well pumps in automatic mode. High-level and low-level float switches act as a backup in case of failure of the transducer.

SCADA / Alarms

Component	Score	Reason
PLC – 2.4 GHz radio link	1	No issues observed.
Component	Score	Reason
PLC – Yagi antenna	1	No issues observed.
Component	Score	Reason
PLC - Cabinet	1	New condition
Component	Score	Reason
PLC - Contents	4	Rust and polyurethane foam on internal components.



The PLC provides status and alarms to the central SCADA monitoring station via a 2.4GHz radio link, using a Yagi antenna mounted on a rooftop mast. Some components in the SCADA enclosure showed minor signs of rust staining from water, due to rainwater dripping down from the antenna mast. The mast conduit has since been sealed with polyurethane foam, which is also splattered on some of the internal components.

4.5.5 Site

Access

Component	Score	Reason
Pavement	3	Access difficult with heavy rains

No photo available.

There is no paved access to the site. Without a paved path, weed growth, potholes, and heavy rains can inhibit access to the site.

Security

Component	Score	Reason
Barbed Wire Fence	3	Theft issues reported with generator.

For Photo - Overview Photo at the beginning of Section 4.7.

The operator mentioned there had been theft issues with the generator. It is recommended to replace barbed wire around the fence.

4.5.6 Costs and Recommendations

Priority components with associated costs are organized in Table 4-5, based on a condition rating of 5 (Very Poor), 4 (Poor), and 3 (Moderate / Fair) as described in Table 1-1. Recommendations can be found for each component in their respective table in Section 4.5. Costs presented in this section are for construction only, and include a 30% contingency. Other soft costs (engineering, construction management, etc.) should be included for further project planning.

Table 4-5 – Gigling Lift Station - Critical Components and Associated Costs

Section	Factor	Component	Score	Cost
4.5.1	HVAC	Metal Ducts	3	$ 2,100
4.5.1	Piping / Valves	Access to pump removal	3	$ 20,000
4.5.1	Piping / Valves	Air Lock Issues – Piping / Valves	3	$ 10,000
4.5.3	Primary Power	Generator	3	$ 46,400
4.5.3	Primary Power	Bulk Tank	3	$ 200,000
4.5.4	SCADA / Alarms	PLC – Contents	4	$ 500
4.5.5	Access	Pavement	3	$ 135,300
4.5.5	Security	Barbed Wire Fence	3	$ 30,000
			Total Cost - Parts	$ 444,300
			Total Cost – Parts with Contingency	$ 577,600

4.6 HATTEN

The Hatten Lift Station is a packaged duplex submersible lift station with no building. Valves and pipes are above grade. Electrical cabinets are above grade. The entire lift station has no fence, and is located at the end of the front yard of a residential home. The Hatten Lift Station was construction in 1966, and is controlled by a float system with a capacity of 40 gpm.

Complete lift station replacement is recommended.

4.6.1 Civil/Mechanical

Pumping Unit

Component	Score	Reason
Pumps	1	No issues observed.

No photo available.

The packaged unit is a duplex submersible pump lift station with a capacity of 0.06 GPD (40 gpm).

Piping / Valves

Component	Score	Reason
Piping / Valves	2	Minor corrosion

For Photo – See Overview Photo at the beginning of Section 4.6.

The pipes and valves appear to have minor corrosion.

4.6.2 Structural

Structure

Component
Base Support
Score
5
Reason
Panel is corroded at the base, in danger of falling over. No concrete slab

Structural support is inadequate. It is recommended to have a concrete slab for proper pipe support. In addition, the packaged lift station panel appears to be corroded at the base and is in danger of falling over.

Pipe / Equip Supports

Component	Score	Reason
Pipe / Valve Support	4	No pipe support

For photo - See Overview Photo at the beginning of Section 4.6.

There is no structural support for the piping / valves. It is recommended to have a concrete slab for proper pipe support.

Wet Well

Component	Score	Reason
Wet Well Lid	3	Appears to be corroded.

For Photo – See Structure in Section 4.6.2.

Wet well dimensions are 3-ft diameter and 10-ft deep. The metal wet well lid appears to be corroded.

4.6.3 Electrical

Electrical Equipment

Component	Score	Reason
Meter/main panel	1	No issues observed.
Component	Score	Reason
Breaker panel	1	No issues observed.
Component	Score	Reason
Control Panels	1	No issues observed.

The lift station electrical equipment consists of a meter/main panel, a separate breaker panel, and the packaged lift station control panels. It appears that the meter/main panel feeds the adjacent breaker panel, which, in turn, feeds the lift station and several other unidentified facilities. It appears that the breaker panel may have formerly served the adjacent residences, but that is merely conjecture. Other than the structural issues at the base of the control panel, the electrical equipment appears to be in satisfactory condition.

Primary Power

Component	Score	Reason
Pad mount transformer	1	No issues observed.

No photo available.

The Lift Station electrical distribution system is fed from a pad-mount PG&E transformer located adjacent to the meter/main panel. The service is rated at 200-amps, 240/120 volts, single-phase, three-wire.

Backup Power

Component	Score	Reason
Backup power	3	No backup power available

No photo available.

This lift station is not equipped with any means for backup power.

4.6.4 Instrumentation

Controls

Component	Score	Reason
SJE Rhombus Control Package	1	No issues observed.

See SCADA / Alarms in Section 4.6.4.

This lift station is equipped with an SJE-Rhombus control package that uses fixed floats for determining pump start and stop levels. This site does not use the Zenith Pulsar ultrasonic transducer and level controller that is used a nearly all of the other pump stations.

SCADA / Alarms

Component
PLC/Telemetry
Score
3
Reason
No PLC/telemetry package. No audible device for alarm notification.

This site is not equipped with the PLC/telemetry package that is present at the other pump stations. The control panel is equipped with two red lights for alarm notification. The presence of an audible device was not noted.

4.6.5 Site

Security

Component	Score	Reason
Fencing	3	No fencing or security measures.

For Photo – See Overview Photo at the beginning of Section 4.6.

The lift station is not secure. It is recommended that the site has fencing around the lift station.

Water Supply

Component	Score	Reason
Domestic Water Supply	1	New domestic water supply line.

A domestic water supply line was constructed to meet Title 22 requirements.

4.6.6 Costs and Recommendations

Priority components with associated costs are organized in Table 4-6, based on a condition rating of 5 (Very Poor), 4 (Poor), and 3 (Moderate / Fair) as described in Table 1-1. Recommendations can be found for each component in their respective table in Section 4.6. Costs presented in this section are for construction only, and include a 30% contingency. Other soft costs (engineering, construction management, etc.) should be included for further project planning. While Hatten is recommended for a major replacement, packaged costs would be determined in a separate study or predesigned effort. General recommendations and observations are included at the end of this section.

Table 4-6 – Hatten Lift Station - Critical Components and Associated Costs

Section	Factor	Component	Score	Cost
4.6.2	Structure	Base Support	5	$ 2,300
4.6.2	Structure	Pipe / Equip Support	4	$ 200
4.6.2	Wet Well	Wet Well Lid	3	$ 2,500
4.6.3	Backup Power	Generator or Trailer Mount Unit	3	$ 16,300
4.6.4	SCADA / Alarms	PLC/Telemetry	3	$ 11,000
4.6.5	Security	Fencing	3	$ 22,800
			Total Cost - Parts	$ 55,100
			Total Cost – Parts with Contingency	$ 71,700

General Recommendations and Observations

The following are in addition to individual components. Costs associated with these recommendations would be provided in a future study or predesign effort.

- Complete lift station replacement is recommended to meet current standards for redundancy, security, and communication.

4.7 IMJIN

The Imjin Lift Station is a wet well submersible lift station with no building. Valves and pipes are below grade. Electrical cabinets are above grade. The entire lift station is fenced in.

The Imjin Lift Station is currently the largest lift station in the Ord Community sanitary sewer system, and is projected to more than double in size in the future. This key lift station is a critical facility for proper system operation. The Imjin Lift Station was built in 1970, replaced in 1982, and renovated in 2003 with an upgrade of two new 1,490-gpm pumps and associated pump 7 control equipment [2]. It is located alongside Imjin Road east of Abrams Drive. The arrangement of multiple gravity and force main inlets make isolation of the wet well for cleaning or maintenance very difficult.

4.7.1 Civil/Mechanical

Pumping Unit

Component	Score
Pumps	2
Reason	
No issues from the operator, but Flygt pumps were installed over 15 years ago.	

For Photo – See Wet Well in Section 4.7.1

[2] Ord Community Sewer System Improvement Project, Final Technical Memorandum No. 1. Lift Stations Predesign Study. Winzler and Kelly. May 2004

Two Flygt pumps were installed in 2003 and the pump station has capacity of 1,490 gpm at 33-ft TDH each (Model NP3153-433, 18 hp pumps). The operators reported that the pumps worked fine during peak flows, and they operate in lead / lag mode with one as a duty and one as a standby.

Bypass Pump

Component	Score	Reason
Multiple Inlets	3	A single inlet allows for proper bypass

For Photo - See Wet Well in Section 4.7.1

An issue with the Imjin Lift Station is bypass pumping, due to the multiple inlets that come into the system. If the wet well were to be replaced, a tee could be added to it. If there were modifications to the pipes where they could be routed together and come through, then a single point could come in that allows for proper bypass. For this to happen, the old HOA electrical cabinet would have to be removed.

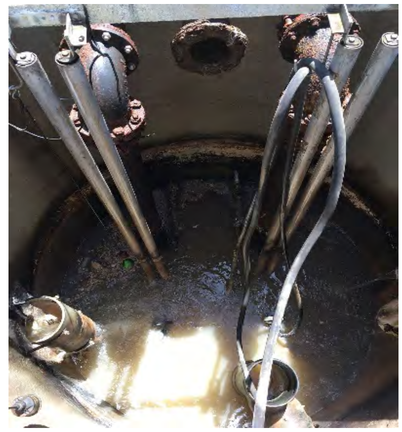
Piping / Valves

Component
Valve Vault Piping and Valves
Score
4
Reason
High amounts of corrosion. Recommended replacement.

Two new Flygt pumps have a 6-inch diameter ductile iron discharge pipe with a gate valve and a check valve. The discharge pipes combine in a valve pit, and a 10-inch diameter force main conveys flow to the Abrams Trunk Sewer. Only one of the discharge pipes are currently used, thus emergency bypass is not possible. The piping and valves in the valve vault show high amounts of corrosion, and it is recommended to replace all parts within the vault.

Wet Well

Component
Discharge Piping
Score
2
Reason
Minor signs of corrosion.



The discharge piping in the wet well shows signs of corrosion.

The operator has said there were no complaints with odor issues.

4.7.2 Structural

Structure - Concrete

Component	Score	Reason
Concrete Support	2	Concrete support for the entire lift station is recommended

For Photo - See Overview Photo at the beginning of Section 4.7

Concrete support for the entire lift station is recommended.

Wet Well

Component	Score	Reason
Concrete Wall	2	Minimal signs of surface deterioration

For Photo – See Wet Well in Section 4.7.1

The concrete wall appears to be in fair condition with minimal signs of corrosion. Wet well dimensions are a diameter of 8 feet and a depth of 12 feet.

Component
Fall Protection
Score
3
Reason
Fall Protection is recommended for safety.

The wet well hatch cover is in fair condition, but fall protection is recommended.

4.7.3 Electrical

Primary Power

Component	Score	Reason
Pad mount transformer	1	No issues observed.

No photo available.

The lift station electrical distribution system is fed from a pad-mount Pacific Gas & Electric (PG&E) transformer, located adjacent to the lift station. The service is rated at 200-amps, 480/277 volts, three-phase, four-wire.

Electrical Equipment

Component	Score	Reason
Meter/main panel	1	No issues observed.
Component	Score	Reason
Automatic Transfer Switch	1	No issues observed.
Component	Score	Reason
Pump Control Panel – prior to 2003 upgrades	3	Consider removing in favor of an underground pullbox or handhole.
Component	Score	Reason
Current Pump Control Panel	3	Conduits have rust where in contact with the soil.
Component	Score	Reason
480:208/120V unit power center	1	No issues observed.

The electrical equipment consists of a meter/main panel, automatic transfer switch, pump control panel, and a 480:208/120V unit power center with stepdown transformer and breaker panel. The pump control panel contains a Zenith Pulsar level controller and combination full-voltage, non-reversing two motor starters. The pump control panel is weathered, but in otherwise good condition. Galvanized conduits extending from underground were not properly wrapped during installation, causing the conduits to rust where in contact with soil.

The pump control panel that existed prior to the 2003 upgrades has been repurposed essentially as a pullbox for the generator and pump motor feeders. It is in fair-to-poor condition, but serves the current purpose. The District should consider removing this panel in favor of an underground pullbox or handhole.

Backup Power

Component	Score	Reason
Cummins generator	1	No issues observed.
Component	Score	Reason
400 gallon subbase fuel tank	1	No issues observed.

No photo available.

The site has a Cummins generator with weather-protective enclosure and 400-gallon subbase fuel tank. The generator was installed after the 2003 upgrades. The generator appears to be in good condition.

Component
Outer enclosure of the automatic transfer switch.
Score
3
Reason
Severe rust to the metal enclosures that protects the ATS control boards.

The outer enclosure of the automatic transfer switch is rusted through in two places at the drip edge above the door. Water is dripping inside, causing severe rust to the metal enclosure that protects the ATS control boards. It is a matter of time before the rusted metal no longer protects the control boards from the dripping water.

4.7.4 Instrumentation

Controls

Component	Score	Reason
Ultrasonic level transducer	1	No issues observed.
Component	Score	Reason
Level Controller	1	No issues observed.
Component	Score	Reason
Float Switches	1	No issues observed.

No photo available

Level control is provided by a Zenith Pulsar ultrasonic level transducer, mounted in the wet well. The transducer is connected to Zenith Pulsar level controller, which provides output to the motor starters to control the dry well pumps in automatic mode. High-level and low-level float switches act as a backup in case of failure of the transducer.

SCADA / Alarms

Component	Score	Reason
Allen Bradly MicroLogix 1400 PLC	1	No issues observed.
Component	Score	Reason
PLC – 2.4 GHz radio link	1	No issues observed.
Component	Score	Reason
PLC – Yagi antenna	1	No issues observed.
Component	Score	Reason
PLC - Cabinet	1	New condition
Component	Score	Reason
PLC - Contents	1	New condition

No photo available

An Allen-Bradley MicroLogix 1400 PLC provides status and alarms to the central SCADA monitoring station via a 2.4GHz radio link, using a Yagi antenna mounted on a mast. The PLC cabinet, contents, and antenna are in like-new condition.

Component
Second Antenna
Score
3
Reason
Unknown purpose from District personnel

A second antenna, appearing similar to a remote cellular antenna, is mounted at the top of the mast. Cabling from this antenna is routed in underground conduit, and could not be traced. The antenna cable was not observed in any of the equipment enclosures. District personnel also were unsure of its purpose.

4.7.5 Site

The Imjin Lift Station is a 0.25-acre site on a larger plot of land owned by the District. The lift station is reached from Imjin Road. Adequate room is available to pull off the roadside and turn large vehicles around. The surrounding soils, however, are very soft and rutted. A hose bibb is provided for wash-down water. Site lighting is adequate.

Paving

Component	Score	Reason
Road Access and LS Paving	2	Improved access and improved parking is a benefit without urgency

For Photo – See Overview Photo at the beginning of Section 4.7

Since Imjin Lift Station is a main District facility, it is recommended that a paved access road and adequate onsite parking be provided to allow vehicular access. It is recommended that the entire lift station site and access road be paved

4.7.6 Costs and Recommendations

Priority components with associated costs are organized in Table 4-7, based on a condition rating of 5 (Very Poor), 4 (Poor), and 3 (Moderate / Fair) as described in Table 1-1. Recommendations can be found for each component in their respective table in Section 4.7. Costs presented in this section are for construction only, and include a 30% contingency. Other soft costs (engineering, construction management, etc.) should be included for further project planning. General recommendations and observations are included at the end of this section.

Table 4-7 – Imjin Lift Station - Critical Components and Associated Costs

Section	Factor	Component	Score	Cost
4.7.1	Piping / Valves	Valve Vault Piping and Valves	4	$ 10,700
4.7.2	Wet Well	Fall Protection	3	$ 2,300
4.7.3	Electrical Equipment	Auto Transfer Switch	3	$ 6,000
4.7.3	Electrical Equipment	Conduit	3	$ 2,500
4.7.3	Electrical Equipment	Demo Control Panel/ New Pullbox	3	$ 7,500
			Total Cost - Parts	$ 29,000
			Total Cost – Parts with Contingency	$ 37,700

General Recommendations and Observations

The following are in addition to individual components. Costs associated with these recommendations would be provided in a future study or predesign effort.

- Perimeter fencing and site lighting is adequate. Since Imjin Lift Station is a main District facility, it is recommended that a paved access road and adequate onsite parking be provided to allow vehicular access. It is recommended that the entire lift station site and access road be paved.
- The arrangement of multiple gravity and force main inlets make isolation of the wet well for cleaning or maintenance very difficult. Reconfiguration of these pipelines is recommended to improve wet well isolation and bypass pumping capability.

4.8 ORD VILLAGE

The Ord Village Lift Station is a dry pit/wet well lift station with a building. Valves and pipes on the discharge side are outside the building. Electrical cabinets are both inside and outside of the building. The entire lift station is fenced in.

The Ord Village Lift Station is the only District lift station located on the west side of Highway 1, the Union Pacific Railroad (UPRR), and Beach Range Road. This lift station, which was initially a sewage treatment plant that provided wastewater treatment for Fort Ord and was constructed prior to 1960, is situated near the shoreline of Monterey Bay. Lift station reliability is critical because, if an overflow were to occur, untreated wastewater would quickly reach the sensitive ocean habitat.

4.8.1 Civil/Mechanical

Pumping Unit

Component
Pumps
Score
1
Reason
No issues related to pumps

The Ord Village Lift Station has three Flygt pumps that replaced three ABS submersible pumps (Model AFP1001-4P) with 58-hp motors. Each of these units has a rated capacity of 280 gpm at 110-ft TDH. A bimetallic thermal switch is provided in the upper portion of the stator winding of each pump to protect against damage caused by high temperatures. The pumps are designed to shut off at a temperature of 140° C ± 5° C. In addition, each pump has an electrical probe in the oil reservoir connected to a solid-state device mounted in the control panel. A low voltage, low amperage signal communicated between the solid-state device and the probe warns of water in the oil reservoir and provides an indication of early seal failure, resulting in activation of a warning light in the control panel and/or pump shutdown.

Normal operation of the pumps is a lead / lag mode.

A Meyers 1/2-hp sump pump, with a rated capacity of 50 gpm at 19-ft TDH, is provided in the dry well. The sump pump is used to keep the below ground areas dry.

Headworks

Component
Muffin Monster Comminutors
Score
3
Reason
One comminutor is highly corroded and recommended to be replaced.

Prior to being converted to a lift station, the Ord Village facility was a wastewater treatment plant. Two open influent channels enter the lift station wet well. Each influent channel is fitted with a Muffin Monster comminutor. The comminutors have 3-hp electric motors with 18-inch helical stack cutters to grind solids into smaller portions for easy passage through the pumps. One of these is highly corroded and is recommended to be replaced (see photo above).

HVAC

Component
Metal Ducting
Score
3
Reason
Signs of dampness and corrosion. Recommended replacement.

A heating, ventilation, and air conditioning (HVAC) system is also provided to provide ventilation in the below ground areas and to dehumidify the air within the lift station control building (to reduce corrosion and to increase personnel safety). The HVAC system includes a PACE F-1 supply fan, a Baldor 1/3-hp, 530 cfs motor, and a Penn EF-1 exhaust fan with 1/4-hp Marathon motor. Stainless steel ducting draws air from the dry well and the lift station control room and exhausts the air outside the building. In several locations, especially near the exit wall, the ducting shows signs of dampness and corrosion and is recommended to be replaced.

Piping / Valves

Component
Piping and Valves
Score
1
Reason
New pipes and valves

Piping and valves on the discharge side of the pump station are new.

Component
Pipe at end of discharge line
Score
3
Reason
Corrosion – recommended recoat or replacement.

In general, piping and valves appear to be adequate. There does, however, appear to be corrosion at the end of the discharge line, and it is recommended to recoat or replace this section. The extent of exterior corrosion on the pipe is unknown beyond the limits shown in the photo above.

Component
Air Lock issues - Piping / Valves
Score
3
Reason
Force main causing air issues in piping

For this station and for the Gigling Lift Station, even with new pumps installed, there are air lock issues due to problems with the force main. The District reported breaks in the force main. Due to this, the District has been monitoring pressure. There is a lot of bleeding, and sometimes the District will lift up the check valve and backflush before it will prime again. Problems with water hammer have been partially solved by the air release valve. Condition assessment of the force main will require flow handling or bypass. For cost efficiency, condition assessment should be coordinated with other activities at the lift station that necessitate flow handling or bypass.

Wet Well

Component	Score	Reason
Pipes in the wet well	1	No issues from operator

No photo available.

There were no visuals on pipes in the wet well. The operator mentioned there were no known issues. Condition assessment is recommended if/when other modifications are scheduled within the wet well.

4.8.2 Structural

Roof

Component	Score	Reason
Roof	1	No issues observed.

For Photo – See Doors / Hatches / Windows in Section 4.8.2.

The roof had been attended to recently, with some of the planks replaced.

Structure

Component
Concrete Slabs on grade
Score
1
Reason
Appear to be in good condition

Concrete slabs-on-grade are provided for the generator, fuel storage tank, and outdoor electrical facilities.

Component	Score	Reason
Drainage of Concrete Pad on West Side of Pump Station	5	Safety hazard.

For Photo – See Structure – Concrete Slabs on in Section 4.8.2

It is recommended that drainage be provided for the concrete pad on the west side of the pump building next to the generator basin to prevent standing water at the base of the main pullbox and meter. This condition presents a significant safety hazard and has resulted in damage to the enclosure.

Component	Score	Reason
Bulk Fuel Tank	4	In poor condition

A new bulk fuel tank is needed at this pump station.

Wall Penetrations

Component
Wall Penetration Replacement
Score
3
Reason
Wall appears to have a boarded up louver or duct penetration. Repair of this location is recommended.

One wall appears to have a boarded up louver or duct penetration with a wood plank and may need to be replaced.

Pipe / Equip Supports

Component	Score	Reason
Pipe / Equipment Supports	1	No issues observed.

For Photo – See Piping / Valves in Section 4.8.1.

Pipe and equipment supports appear to be adequate.

Wet Well

Component
Wet Well Hatch
Score
3
Reason
Operator mentioned wet well is difficult to clean. Larger hatch is recommended.

Dimensions of the wet well are 12-ft long, 6-ft wide, and 11-ft deep. The wet well structure appears to be in good condition, but the operator mentioned it is difficult to clean. A larger hatch is recommended.

4.8.3 Electrical

Electrical Equipment

Component	Score	Reason
Automatic Transfer Switch	1	No issues observed.
Component	Score	Reason
Motor Control Center	1	No issues observed.
Component	Score	Reason
480:208/120V stepdown transformer	1	No issues observed.
Component	Score	Reason
Breaker Panel	1	No issues observed.

No photo available.

The electrical equipment consists of a service entrance switchboard, automatic transfer switch, motor control center, 480:208/120V stepdown transformer, and breaker panel. The MCC contains three autotransformer-type reduced-voltage motor starters.

Component
Service entrance switchboard
Score
3
Reason
Heavily rusted

The service entrance switchboard consists of a utility underground pull section, and a PG&E metering compartment and main breaker. The switchboard, mounted on a pad outside the building, is heavily rusted. It is recommended to replace the rusted mild-steel main service entrance enclosure located on the west side of the pump building with a stainless steel enclosure.

Component
Fuel tank leak detection panel
Score
5
Reason
Heavily rusted. Functionality in doubt.

The fuel tank leak detection panel, also mounted outside, is very heavily rusted, and its functionality is in doubt. Exterior conduits and conduit supports are heavily rusted. Equipment that is mounted inside the building shows some minimal surface rust on up to 10% of the overall surface area.

Primary Power

Component	Score	Reason
Pad mount transformer	1	No issues observed.

No photo available.

The lift station electrical distribution system is fed from a pad-mount Pacific Gas & Electric (PG&E) transformer, located adjacent to the lift station. The service is rated at 400-amps, 480/277 volts, three-phase, four-wire.

Backup Power

Component
175 kW Caterpillar diesel generator
Score
3
Reason
Muffler is rusted through

The site is equipped with a 175 kW Caterpillar diesel generator and an Olympian automatic transfer switch. The generator is reportedly in good operating condition, but the muffler is rusted, and the straps that hold the muffler to the enclosure are rusted through.

Component
Alternator Housing
Score
4
Reason
Heavily rusted. Small pieces of rusty metal could short out the tank.

The exterior of the alternator housing is heavily rusted, causing one to hypothesize that the housing interior is also heavily rusted, perhaps to the point that small pieces of rusty metal could flake off and potentially short out the generator windings or cause other modes of failure. The fiberglass outer enclosure is heavily weathered. The spill basin on the diesel bulk tank is rusted through, and the paint on the tank is failing. As mentioned above, the leak detection panel is in poor condition, and likely does not function. These elements should be replaced to ensure reliability of the backup power system.

4.8.4 Instrumentation

Controls

Component	Score	Reason
Ultrasonic level transducer	1	No issues observed.
Component	Score	Reason
Level Controller	1	No issues observed.
Component	Score	Reason
Float Switches	1	No issues observed.

No photo available

Level control is provided by a Zenith Pulsar ultrasonic level transducer, mounted in the wet well. The transducer is connected to Zenith Pulsar level controller, which provides output to the motor starters to control the dry well pumps in automatic mode. High-level and low-level float switches act as a backup in case of failure of the transducer.

SCADA / Alarms

Component	Score	Reason
PLC – 2.4 GHz radio link	1	No issues observed.
Component	Score	Reason
PLC – Yagi antenna	1	No issues observed.
Component	Score	Reason
PLC – Cabinet	1	New condition
Component	Score	Reason
PLC – Contents	1	New condition

No photo available

The PLC provides status and alarms to the central SCADA monitoring station via a 2.4GHz radio link, using a Yagi antenna mounted on a rooftop mast. The PLC cabinet, contents, and antenna are in like-new condition.

4.8.5 Site

Security

Component	Score	Reason
Fencing and Site Lighting	3	Issues with Vandalism

For Photo – See Overview Photo at the beginning of Section 4.8.

Even though the lift station is surrounded by a fence and a locked gate, there have been issues with vandalism. It is recommended to upgrade the fence security and the limited site lighting that is available.

Access

Component	Score	Reason
Access	1	Large enough to allow truck access. No issues with access road.

For Photo – See Overview Photo at the beginning of Section 4.8.

The area is large enough to allow truck access. The access road is packed sand.

Water Supply

Component	Score	Reason
Hose bibb and wash-down water	1	Provided onsite.

No photo available.

A hose bibb and wash-down water is provided onsite.

4.8.6 Costs and Recommendations

Priority components with associated costs are organized in Table 4-8, based on a condition rating of 5 (Very Poor), 4 (Poor), and 3 (Moderate / Fair) as described in Table 1-1. Recommendations can be found for each component in their respective table in Section 4.8. Costs presented in this section are for construction only, and include a 30% contingency. Other soft costs (engineering, construction management, etc.) should be included for further project planning. General recommendations and observations are included at the end of this section.

Table 4-8 – Fort Ord Village Lift Station - Critical Components and Associated Costs

Section	Factor	Component	Score	Cost
4.8.1	Headworks	Muffin Monster Communitors	3	$ 42,700
4.8.1	HVAC	Metal Ducting	3	$ 2,400
4.8.1	Piping / Valves	Pipe at end of discharge line	3	$ 3,200
4.8.1	Piping / Valves	Air Lock Issues	3	$ 10,000
4.8.2	Structure	Drainage of Concrete Pad on West Side of Pump Station	5	$ 500
4.8.2	Structure	Bulk Fuel Tank	4	$ 20,000
4.8.2	Windows	Window Replacement	3	$ 500
4.8.2	Wet Well	Wet Well Hatch	3	$ 4,000
4.8.3	Electrical Equipment	Service entrance switchboard	3	$ 25,000
4.8.3	Electrical Equipment	Fuel tank leak detection panel	5	$ 2,000
4.8.3	Backup Power	175 kW Caterpillar diesel generator	3	$ 60,700
4.8.5	Security	Fencing and Site Lighting	3	$ 2,000
			Total Cost - Parts	$ 173,000
			Total Cost – Parts with Contingency	$ 224,900

General Recommendations and Observations

The following are in addition to individual components. Costs associated with these recommendations would be provided in a future study or predesign effort.

- The District is considering connecting the Ord Village force main directly to the Monterey One Water interceptor that parallels Beach Range Road. Any force main replacement and inspection should be coordinated with this potential project.

4.9 BOOKER

The Booker Lift Station is a dry pit/wet well lift station with a building. Valves and pipes on the discharge side are below the building. Electrical cabinets are both inside the building. The entire lift station is fenced in.

Booker Lift Station was constructed in approximately 1966 and was upgraded in 1997. The lift station has a total capacity of 760 gpm with two pumps, but only one operable pump was reported from District staff. It is a dry pit/wet well type lift station and is controlled by a sonic level sensor. The service area is planned to be redeveloped, and major rehabilitation or replacement of the lift station is recommended.

4.9.1 Civil/Mechanical

Pumping Unit

Component	Score	Reason
Additional Pump	4	Only one pump – no redundancy.

For Photo - See Wet Well / Dry Pit in Section 4.9.1.

Visuals of the dry pit were difficult due to no light and the inability to safely enter the space. According to District staff, there is only one operable pump, an RBS pump. The pump kicks on once every few hours. A small amount of flow comes from the high school and a few houses in the area.

Headworks

Component	Score	Reason
Muffin Monster Communitor	3	Needs visual.

No photo available.

According to the electrical panel labels, there is a Muffin Monster communitor that was not visualized onsite.

HVAC

Component
Redesign of HVAC system
Score
5
Reason
Exhaust fan discharges into the building. Strong odor inside the building. Potentially hazardous condition.

The wet well and dry well vents are connected via a single duct to an exhaust fan that is mounted inside the pump station building. The exhaust fan discharges into the building, not outside. This creates a strong odor problem inside the building, essentially negates the attempt to ventilate the dry well, and potentially creates a hazardous condition inside the pump station building. The ventilation system needs to be redesigned to effectively achieve the pump station's ventilation goals.

Piping / Valves

Component	Score	Reason
Gate valves	3	Stems are inconveniently long, making it difficult to turn

No photo available.

There are gate valves on the suction side of the pump. The stems for the gate valves are inconveniently long, making it difficult to turn.

Wet Well / Dry Pit

Component	Score	Reason
Dry Pit Dimensions	3	Too deep for valve stems and good access
Component	Score	Reason
Dry Pit Hatch Upgrade	3	Access Hatch too small
Component	Score	Reason
Dry Pit Stairs	3	Stairs preferred over ladder

For Photo of Wet Well – See Wet Well in Section 4.9.1.

Both the wet well and the dry pit are deep. If the line in the street is not as deep, it is recommended to build a shallower wet well and dry pit during an upgrade. Access is also limited. It is recommended to widen the access hatch during an upgrade, and construct stairs that lead down to the dry pit.

4.9.2 Structural

Roof

Component	Score	Reason
Roof	1	Appears to be in decent condition.

For Photo – See Overview Photo at the beginning of Section 4.9.

Appears to be in decent condition.

Structure

Component	Score	Reason
Concrete Slabs	3	Provide concrete slabs for the entire lift station during the recommended replacement.

For Photo – See Overview Photo at the beginning of Section 4.9.

Concrete slabs appear to be on grade and in decent condition, but it is recommended to provide concrete slabs for the entire lift station during the recommended replacement.

Doors / Hatches / Windows

Component
Door
Score
1
Reason
Appears to be in decent condition.

The door appears to be in decent condition. For information on hatches see Wet Well / Dry Pit in Section 4.9.1. There are no windows.

Pipe / Equip Supports

Component	Score	Reason
Pipe / Equip Support	1	Appears to be in decent condition.

No photo available.

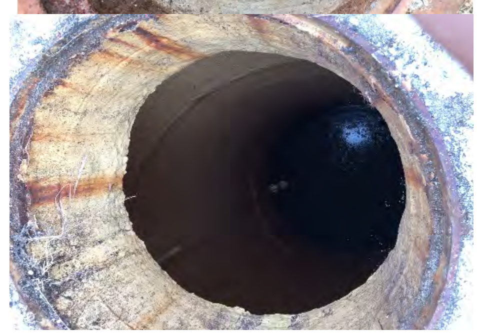
Though limited in observation, looking down the deep dry pit there appeared to be decent pipe and equipment support.

Wet Well / Dry Pit

Component
Wet well coating
Score
2
Reason
Appears to be in decent condition.

The coatings on the wall appear to be in good condition. Wet well dimensions are 13-ft long, 6-ft wide, and 20-ft deep.

Component
Manhole 1
Score
1
Reason
Walls appear to be in good working condition.
Component
Manhole 2
Score
1
Reason
Walls appear to be in good working condition.



On both sides of the wet well there are manholes. The walls appear to be in good working condition.

4.9.3 Electrical

Electrical Equipment

Component	Score	Reason
Meter/main panel	1	No issues observed.
Component	Score	Reason
Olympian automatic transfer switch	1	No issues observed.
Component	Score	Reason
Pump Control Panel	1	No issues observed.
Component	Score	Reason
480-240/120-volt step-down transformer	1	No issues observed.

No photo available.

The electrical equipment consists of a meter/main panel, Olympian automatic transfer switch, pump control panel, and a 480:208/120V unit power center with stepdown transformer and breaker panel. The pump control panel contains a Zenith Pulsar level controller and combination full-voltage, non-reversing two motor starters. The panels show some minor surface rusting, but are otherwise observed to be in serviceable condition.

Primary Power

Component
Pole mount transformer
Score
3
Reason
Electrical service should be upgraded to meet PG&E's current standard for a 480V system.

The lift station electrical distribution system is fed from three single-phase pole-mount PG&E transformers, located within the lift station fence. The service is rated at 200-amps, 480 volts, three-phase, three-wire. A surge protection capacitor is mounted at the service panel, perhaps as an attempt to provide capacitive grounding to the otherwise ungrounded system. The electrical service should be upgraded to meet PG&E's current standard for a 480V system and to create a safer system for District personnel to operate and maintain.

Backup Power

Component
Generator
Score
4
Reason
Reported to have engine valve problems and not in operating condition.
Component
250 gallon bulk diesel fuel tank
Score
4
Reason
Heavily rusted

The generator is reported to have engine valve problems and to not be in operating condition. The 250-gallon bulk diesel fuel tank site is heavily rusted. These elements should be replaced.

4.9.4 Instrumentation

Controls

Component	Score	Reason
Ultrasonic level transducer	1	No issues observed.
Component	Score	Reason
Level Controller	1	No issues observed.
Component	Score	Reason
Float Switches	1	No issues observed.

No photo available

Level control is provided by a Zenith Pulsar ultrasonic level transducer, mounted in the wet well. The transducer is connected to Zenith Pulsar level controller, which provides output to the motor starters to control the dry well pumps in automatic mode. High-level and low-level float switches act as a backup in case of failure of the transducer.

SCADA / Alarms

Component	Score	Reason
PLC –radio link	3	Trio 2.4 GHz radio onsite, presumably to replace the existing radio.
Component	Score	Reason
PLC - Cabinet	1	New condition
Component	Score	Reason
PLC - Contents	1	New condition

No photo available

The PLC provides status and alarms to the central SCADA monitoring station via a radio link, using a Yagi antenna mounted on a rooftop mast. The current radio is a Control Microsystems SCADAWave40, which appears to be incompatible with the upgraded radio system. A new Trio 2.4GHz radio is onsite, presumably to replace the existing radio. The PLC cabinet, contents, and antenna are otherwise in like-new condition.

4.9.5 Site

Security

Component	Score	Reason
Fencing	3	Site may be at risk due to abandoned areas surrounding the site.
Component	Score	Reason
Lighting	3	Site may be at risk due to abandoned areas surrounding the site.

For Photo – See Overview Photo at the beginning of Section 4.9.

There have not been issues with vandalism in the past, though the site is at risk due to the abandoned areas surrounding the site. It is recommended to have improved fencing, barbed wire, and lighting with the upgrade.

4.9.6 Costs and Recommendations

Priority components with associated costs are organized in Table 4-9, based on a condition rating of 5 (Very Poor), 4 (Poor), and 3 (Moderate / Fair) as described in Table 1-1. Recommendations can be found for each component in their respective table in Section 4.9. Costs presented in this section are for construction only, and include a 30% contingency. Other soft costs (engineering, construction management, etc.) should be included for further project planning. General recommendations and observations are included at the end of this section.

Table 4-9 – Booker Lift Station - Critical Components and Associated Costs

Section	Factor	Component	Score	Cost
4.9.1	Pumping Unit	Additional Pump	4	$ 10,000
4.9.1	Headworks	Muffin Monster Communitor	3	$ 40,700
4.9.1	HVAC	Redesign of HVAC System	5	$ 4,600
4.9.1	Piping / Valves	Gate Valves	3	$ 900
4.9.1	Wet Well / Dry Pit	Dry Pit Dimensions	3	$ 5,200
4.9.1	Wet Well / Dry Pit	Dry Pit Hatch Upgrade	3	$ 4,000
4.9.1	Wet Well / Dry Pit	Dry Pit Stairs	3	$ 1,500
4.9.2	Structure	Concrete Slab	3	$ 82,100
4.9.3	Primary Power	Pole mount transformer	3	$ 5,000
4.9.3	Backup Power	Generator	4	$ 32,100
4.9.3	Backup Power	250 gallon bulk diesel fuel tank	4	$ 18,000
4.9.4	SCADA / Alarms	PLC – radio link	3	$ 300
4.9.5	Security	Fencing	3	$ 22,800
4.9.5	Security	Lighting	3	$ 5,000
			Total Cost - Parts	$ 232,200
			Total Cost – Parts with Contingency	$ 301,900

General Recommendations and Observations

The following are in addition to individual components. Costs associated with these recommendations would be provided in a future study or predesign effort.

- Major rehabilitation or replacement of the lift station is recommended. Improvements should be coordinated with planning for the lift station service area.

4.10 FRITZCHE

The Fritzche Lift Station is a wet well submersible lift station with no building. Valves and pipes on the discharge side are below grade. Electrical cabinets are mounted at grade. The lift station is not fenced in, though it is inside an airfield, which has perimeter fencing and security.

4.10.1 Civil/Mechanical

Pumping Unit

Component	Score	Reason
Pumps	1	No issues observed.

No photo available.

There are two 160-gpm pumps located at this station. The operator did not know the model name or date of installation, but mentioned the pumps come on about twice a day. Pumps operate in lead / lag mode.

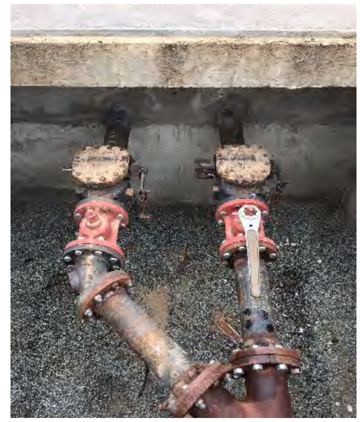
Headworks

Component
Oil Separator
Score
3
Reason
Needs to be cleaned on a regular basis.

There is an oil separator that appears to be clogged. Cleaning of the oil separator on a regular basis is recommended.

Piping / Valves

Component
Valve Vault Piping / Valves
Score
3
Reason
Corroded – recommended for replacement



Piping and valves appear to be corroded in the Valve Vault, and are recommended for replacement.

Wet Well

Component	Score
Pipes	3
Reason	
Corroded – recommended for replacement	

For Photo – See Wet Well in Section 4.10.2.

The pipes inside the wet well are corroded.

4.10.2 Structural

Structure

Component
Concrete Slabs
Score
2
Reason
Appear to be on grade and in decent condition

Concrete slabs appear to be on grade and in decent condition.

Hatches

Component	Score	Reason
Pneumatics and Fall Protection for wet well and valve vault hatches	3	Pneumatics and fall protection are recommended.

For Photo – See Structure in Section 4.10.2.

Wet well and valve vault hatches do not have pneumatics. These are recommended to stay in the upright position for convenience to the operator. Fall protection is also recommended.

Pipe / Equip Supports

Component	Score	Reason
Pipe Support inside Valve Vault	1	Support structures recommended.

For Photo – See Piping / Valves in Section 4.10.1.

Within the valve vault there is no support for the piping and valves. It is recommended to install support structures when replacing the corroded piping and valves.

Wet Well

Component
Wet well walls
Score
1
Reason
Appear to be in good condition.

The wet well walls appear to be in good condition. The wet well dimensions are 8-ft long, 8-ft wide, and 11-ft deep.

4.10.3 Electrical

Electrical Equipment

Component
Cabinet – Asco automatic transfer switch and breaker panel
Score
2
Reason
Moderate rusting
Component
Cabinet – Pump motor starters and a Milltronics Mini-Ranger level controller
Score
4
Reason
Evidence that components have overheated. Recommended replacement.

The electrical equipment consists of one cabinet with an Asco automatic transfer switch and a breaker panel, and another cabinet with pump motor starters and a Milltronics Mini-Ranger level controller. The panels show some moderate rusting. The pump control panel shows evidence that the components at one time had overheated. Existing components have a light layer of rust. These components should be replaced.

Primary Power

Component
Pad mount transformer
Score
1
Reason
Appear to be on grade and in decent condition

Drawings were not available to show the layout of the site electrical distribution system. Conclusions were drawn from what could be observed above ground. The lift station electrical distribution system is apparently fed from a 12kV distribution system that is owned by the airport, and likely feeds other adjacent equipment installations. The pump station appears to be fed by its own 208Y/120V, 3-phase, four-wire pad-mount transformer.

Backup Power

Component
Generator
Score
4
Reason
Enclosure and exposed exhaust system heavily rusted.

The generator enclosure and exposed exhaust system components are heavily rusted. The subbase fuel tank has minor-to-moderate rust. It is recommended for the generator to be replaced.

4.10.4 Instrumentation

Controls

Component	Score	Reason
Ultrasonic level transducer	1	No issues observed.
Component	Score	Reason
Level Controller	1	No issues observed.
Component	Score	Reason
Float Switches	2	Specific float functions are unclear.

No photo available

Level control is provided by an ultrasonic level transducer mounted in the wet well. The transducer is connected to a Milltronics Mini-Ranger level controller, which provides output to the motor starters to control the wet well pumps in automatic mode. Four (4) level float switches apparently act as a backup in case of failure of the transducer. Since a 4-float system is not typical of the level controls used at most of the other pump stations, the specific float functions are unclear.

SCADA / Alarms

Component	Score	Reason
PLC – 2.4 GHz radio link	1	No issues observed.
Component	Score	Reason
PLC – Yagi antenna	1	No issues observed.
Component	Score	Reason
PLC - Cabinet	1	Good condition
Component	Score	Reason
PLC - Contents	1	Good condition

No photo available

The PLC provides status and alarms to the central SCADA monitoring station via a 2.4GHz radio link, using a Yagi antenna mounted on a mast. The PLC cabinet, contents, and antenna are in good condition.

4.10.5 Site

The site location is far away and inconvenient to access. With improvements at upstream lift stations, the Fritzche Field lift station may not be necessary.

4.10.6 Costs and Recommendations

Priority components with associated costs are organized in Table 4-10, based on a condition rating of 5 (Very Poor), 4 (Poor), and 3 (Moderate / Fair) as described in Table 1-1. Recommendations can be found for each component in their respective table in Section 4.10. Costs presented in this section are for construction only, and include a 30% contingency. Other soft costs (engineering, construction management, etc.) should be included for further project planning. General recommendations and observations are included at the end of this section.

Table 4-10 – Fritzche Lift Station - Critical Components and Associated Costs

Section	Factor	Component	Score	Cost
4.10.1	Piping / Valves	Valve Vault Piping & Valves	3	$ 7,000
4.10.1	Wet Well	Pipes	3	$ 900
4.10.2	Hatches	Pneumatics and Fall Protection	3	$ 4,000
4.10.3	Electrical Equipment	Cabinet – Pump Motor Starters and Milltronics Mini-Ranger level controller	4	$ 35,000
4.10.3	Backup Power	Generator	4	$ 16,300
			Total Cost - Parts	$ 63,200
			Total Cost – Parts with Contingency	$ 82,200

General Recommendations and Observations

The following are in addition to individual components. Costs associated with these recommendations would be provided in a future study or predesign effort.

- Evaluate the possibility of decommissioning the lift station if upstream lift station improvements are made.

4.11 EAST GARRISON

The East Garrison Lift Station is a wet well submersible lift station with no building. Valves and pipes on the discharge side are below grade. Electrical cabinets are above grade. The lift station is fenced in.

4.11.1 Civil/Mechanical

Pumping Unit

Component	Score	Reason
Pumps	1	No issues observed.

No photo available.

There are two pumps with an unknown capacity. No issues were reported from the operator. Pumps operate in lead / lag mode.

Piping / Valves

Component
Valve Vault Drainage
Score
4
Reason
Standing water needs to be removed
Component
Valve Vault Pipes and Valves
Score
4
Reason
Piping and Valves heavily corroded.

On inspection the valve vault was seen to have standing water up to the piping. There appeared to be a drain that ran to the wet well, with a closed valve. It is recommended to open the valve and clean out the drain line in order to remove standing water at the valve vault. The piping and valves within the valve vault also appear to be corroded, and are recommended to be replaced.

Wet Well

Component
Piping in wet well
Score
4
Reason
Corrosion Issues. Recommended replacement.

Piping appears to have corrosion issues within the wet well, and it is recommended to be replaced.

4.11.2 Structural

Structure

Component	Score	Reason
Concrete pad	3	No issues observed.

For Photo – See Electrical Equipment in Section 4.11.3.

The concrete pad for one of the electrical panels appears to be shifting due to subgrade settlement (See Electrical Equipment in Section 4.11.3).

Pipe / Equip Supports

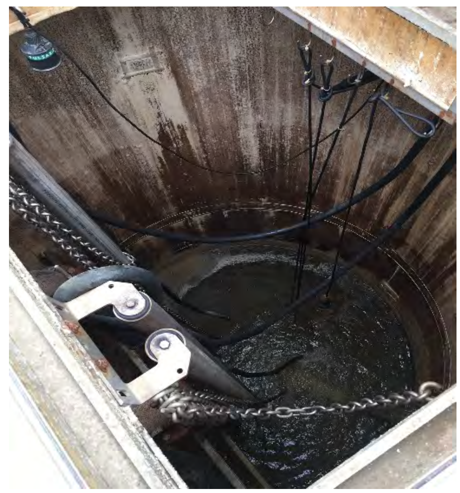
Component	Score	Reason
Concrete block under Y valve in valve vault	3	Install proper support when replacing piping and valves.

For Photo – See Piping / Valves in Section 4.11.1.

Within the valve vault there is a concrete block under the y valve. It is recommended to install proper support structures when replacing the corroded piping and valves.

Wet Well

Component
Wet well liner
Score
1
Reason
No issues observed.



The wet well appears to have a liner rather than coating. No issues observed. Wet well dimensions are 8-ft in diameter and 18-ft deep.

4.11.3 Electrical

Electrical Equipment

Component	Score	Reason
Meter/main panel	1	No issues observed.
Component	Score	Reason
Pump control panel	2	Shows minor weathering, otherwise appears to be in good condition.
Component	Score	Reason
PVC conduits between the electrical panels and the wet well	3	Appear to be shifting due to subgrade settlement.

The electrical equipment consists of a meter/main panel, and a pump control panel. The pump control panel contains a Zenith Pulsar level controller and combination full-voltage, non-reversing two motor starters. The panels show some minor weathering, but are otherwise appear to be in good condition. The concrete pad on which the electrical panels are mounted appears to be shifting due to subgrade settlement. The PVC conduits between the electrical panels and the wet well may be stressed or broken due to this settlement. It is recommended that the concrete pad and any broken conduits be replaced, and the electrical panels remounted.

Primary Power

Component	Score	Reason
Pad mount transformer	1	No issues observed.

No photo available.

The lift station electrical distribution system is fed from a pad-mount Pacific Gas & Electric (PG&E) transformer, located within the lift station fence. The service is rated at 200-amps, 480 volts, three-phase, four-wire.

Backup Power

Component	Score	Reason
Generator Receptacle	3	Recommended to install a generator on top of a new concrete pad.
Component	Score	Reason
Automatic Transfer Switch	3	Recommend to provide an automatic transfer switch along with the recommended new generator.

No photo available.

The pump station is equipped with a generator receptacle for connecting a portable generator. It is recommended to install a generator on top of a new concrete pad.

A manual transfer switch is built-in to the pump control panel. It is recommended that an automatic transfer switch be provided along with the recommended new generator.

4.11.4 Instrumentation

Controls

Component	Score	Reason
Ultrasonic level transducer	1	No issues observed.
Component	Score	Reason
Level Controller	1	No issues observed.
Component	Score	Reason
Float Switches	1	No issues observed.

No photo available

Level control is provided by a Zenith Pulsar ultrasonic level transducer, mounted in the wet well. The transducer is connected to Zenith Pulsar level controller, which provides output to the motor starters to control the dry well pumps in automatic mode. Four (4) level float switches apparently act as a backup in case of failure of the transducer. Since a 4-float system is not typical of the level controls used at most of the other pump stations, the specific float functions are unclear.

SCADA / Alarms

Component	Score	Reason
PLC – 2.4 GHz radio link	1	No issues observed.
Component	Score	Reason
PLC – Yagi antenna	1	No issues observed.
Component	Score	Reason
PLC - Cabinet	1	New condition
Component	Score	Reason
PLC - Contents	1	New condition

No photo available

The PLC provides status and alarms to the central SCADA monitoring station via a 2.4GHz radio link, using a Yagi antenna mounted on a rooftop mast. The PLC cabinet, contents, and antenna are in like-new condition.

4.11.5 Site

Component	Score	Reason
Bioxide tank	1	No issues observed.

For Photo – See Overview Photo at the beginning of Section 4.11

The site contains a bioxide tank from Evoqua Technologies in order to eliminate sewer odor, corrosion, and safety problems associated with hydrogen sulfide.

4.11.6 Costs and Recommendations

Priority components with associated costs are organized in Table 4-11, based on a condition rating of 5 (Very Poor), 4 (Poor), and 3 (Moderate / Fair) as described in Table 1-1. Recommendations can be found for each component in their respective table in Section 4.11. Costs presented in this section are for construction only, and include a 30% contingency. Other soft costs (engineering, construction management, etc.) should be included for further project planning.

Table 4-11 – East Garrison Lift Station - Critical Components and Associated Costs

Section	Factor	Component	Score	Cost
4.11.1	Piping / Valves	Valve Vault Pipes and Valves	4	$ 2,800
4.11.1	Wet Well	Piping in Wet Well	4	$ 2,600
4.11.2	Structure	Concrete Pad	3	$ 1,700
4.11.2	Pipe / Equip Supports	Concrete block under Y valve in valve vault	3	$ 400
4.11.3	Electrical Equipment	PVC conduits between the electrical panels and wet well	3	$ 5,000
4.11.3	Backup Power	Generator Receptacle	3	$ 19,200
4.11.3	Backup Power	Automatic Transfer Switch	3	$ 6,000
			Total Cost - Parts	$ 37,700
			Total Cost – Parts with Contingency	$ 49,100

4.12 RESERVATION

The Reservation Lift Station is a wet well submersible lift station with no building. Valves and pipes on the discharge side are below grade. Electrical cabinets are above grade. The lift station is fenced in.

4.12.1 Civil/Mechanical

Pumping Unit

Component
Pumps
Score
1
Reason
No issues observed.

There are two pumps with a maximum capacity of 900 gpm. The wet well water level was lowered for a visual on the pumps. It was confirmed that the pumps were not Flygt models. The operator mentioned that they may have O&M manuals for these pumps. Pumps operate in lead / lag mode.

Headworks

Component	Score	Reason
Muffin Monster Grinder	3	Taken out of service. May need to be reinstalled.

No photo available.

According to the operator, a Muffin Monster grinder was taken out of pumping system (directly in front of the inflow pipe) due to mechanical issues.

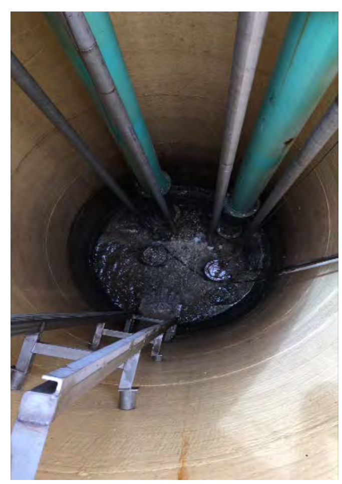
Piping / Valves

Component
Valve Vault Piping and Valves
Score
4
Reason
High amount of corrosion

Piping and valves within the valve vault appears corroded and in need of repair. Within the valve vault there is a strap on device to help bleed the air. It is recommended to conduct a condition assessment of the force main in order to resolve air lock issues at the lift station. Condition assessment of the force main will require flow handling or bypass. For cost efficiency, condition assessment should be coordinated with other activities at the lift station that necessitate flow handling or bypass.

Wet Well

Component
Stainless steel lifting guide rails
Score
1
Reason
No issues observed.
Component
Pipes
Score
1
Reason
No issues observed.



Inside the wet well, the stainless steel pump lifting guide rails appear to be in good condition. The pipes within the wet well also appear to be in good condition and are functioning properly.

4.12.2 Structural

Structure

Component	Score	Reason
Concrete slabs	1	No issues observed.

For Photo – See overview photo at the beginning of Section 4.12.

Concrete slabs appear to be on grade and in decent condition.

Hatches

Component	Score	Reason
Hatches	1	No issues observed.

No photo available.

Hatches appear to be structurally sound and function properly.

Pipe / Equip Supports

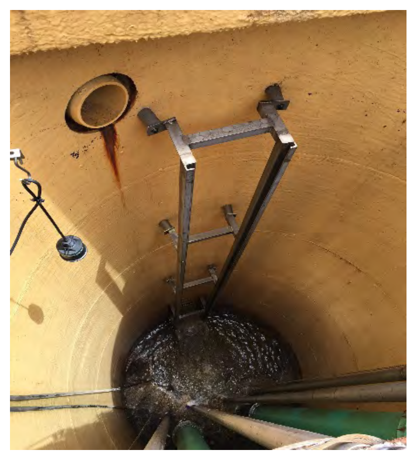
Component	Score	Reason
Pipe and Equipment Supports	1	No issues observed.

For Photo – See Piping / Valves in Section 4.12.

Pipe and equipment support appears to function properly.

Wet Well

Component
Wet Well Coating
Score
3
Reason
Rust bleed below a drain line



The wet well coating appears to be in good condition, though there is rust bleed below a drain line that is recommended to be recoated. The wet well is 8-ft in diameter and 24-ft deep.

4.12.3 Electrical

Electrical Equipment

Component	Score	Reason
Meter/main panel	1	No issues observed.
Component	Score	Reason
Automatic transfer switch	3	One area on the enclosure top surface that is rusted through.
Component	Score	Reason
Manual Transfer Switch	1	No issues observed.
Component	Score	Reason
Pump control panel	1	No issues observed.
Component	Score	Reason
480:208/120V unit power center	1	No issues observed.

The electrical equipment consists of a meter/main panel, automatic transfer switch, manual transfer switch, pump control panel, and a 480:208/120V unit power center with stepdown transformer and breaker panel. The pump control panel contains a Zenith Pulsar level controller and combination full-voltage, non-reversing two motor starters. The panels are individually mounted on a unistrut support structure. The panels are weathered, with small areas of light rust but in otherwise good condition. The exception is the automatic transfer switch, which has one area on the enclosure top surface that is rusted through.

Primary Power

Component	Score	Reason
Pad mount transformer	1	No issues observed.

No photo available.

The lift station electrical distribution system is fed from a pad-mount Pacific Gas & Electric (PG&E) transformer, located outside the lift station fence. The service is rated at 200-amps, 480Y/277 volts, three-phase, four-wire.

Backup Power

Component
100kW Olympian generator
Score
1
Reason
No issues observed.

The pump station is equipped with a 100kW Olympian generator, which is mounted inside a weather-protective fiberglass enclosure.

Component
Convault bulk tank
Score
1
Reason
No issues observed.

A Convault bulk tank is located next to the generator. Both the generator and tank appear to be in good condition.

4.12.4 Instrumentation

Controls

Component	Score	Reason
Ultrasonic level transducer	1	No issues observed.
Component	Score	Reason
Level Controller	1	No issues observed.
Component	Score	Reason
Float Switches	1	No issues observed.

No photo available

Level control is provided by a new Zenith Pulsar ultrasonic level transducer, mounted in the wet well. The transducer is connected to Zenith Pulsar level controller, which provides output to the motor starters to control the wet well pumps in automatic mode. High-level and low-level float switches act as a backup in case of failure of the transducer.

SCADA / Alarms

Component	Score	Reason
PLC – 2.4 GHz radio link	1	No issues observed.
Component	Score	Reason
PLC – Yagi antenna	1	No issues observed.
Component	Score	Reason
PLC - Cabinet	1	New condition
Component	Score	Reason
PLC - Contents	1	New condition

No photo available

An Allen-Bradley MicroLogix 1400 PLC provides status and alarms to the central SCADA monitoring station via a 2.4GHz radio link, using a Yagi antenna mounted on a mast. The PLC cabinet, contents, and antenna are in like-new condition.

4.12.5 Site

The site appears to have adequate space for truck access.

Security

Component	Score	Reason
Fencing	3	Improved barb wire fencing for increased security.

For Photo – See Overview Photo at the beginning of Section 4.12.

Though vandalism was not reported for this site, improved barbed wire would prevent an event.

4.12.6 Costs and Recommendations

Priority components with associated costs are organized in Table 4-12, based on a condition rating of 5 (Very Poor), 4 (Poor), and 3 (Moderate / Fair) as described in Table 1-1. Recommendations can be found for each component in their respective table in Section 4.12. Costs presented in this section are for construction only, and include a 30% contingency. Other soft costs (engineering, construction management, etc.) should be included for further project planning.

Table 4-12 – Reservation Lift Station - Critical Components and Associated Costs

Section	Factor	Component	Score	Cost
4.12.1	Headworks	Muffin Monster Grinder	3	$ 5,700
4.12.1	Piping / Valves	Valve Vault Piping and Valves	4	$ 2,900
4.12.2	Wet Well	Wet Well Coating	3	$ 2,500
4.12.3	Electrical Equipment	Automatic Transfer Switch	3	$ 6,000
4.12.5	Security	Fencing	3	$ 22,800
			Total Cost - Parts	$ 39,900
			Total Cost – Parts with Contingency	$ 51,900

5. Summary of Lift Station Recommendations

Table 5-1 provides a summary of the total costs, including contingency, for the rehabilitation of existing lift station components. Costs for major rehabilitation or replacement would be determined in a separate study or predesign effort.

Table 5-1 - Summary of Lift Station Recommendations

Lift Station	Section	Location	Total Costs (Contingency Included)	Summary of Lift Station Recommendations
Dunes	4.1	Dunes Drive – next to Marina Dunes Resort	$30,700	Various civil/mechanical, structural, and electrical recommendations.
San Pablo	4.2	180 San Pablo Court	$32,000	Various structural, electrical, and instrumentation recommendations.
Crescent	4.3	3009 Crescent Street	$32,700	Due to high civil/mechanical, structural, electrical, instrumentation, and site issues, major lift station rehabilitation or replacement is recommended.
Neeson	4.4	Neeson Road/Marina Airport	$225,300	Abandon existing pump station and construct new pump station.
Gigling	4.5	Okinawa and Noumea Road	$577,600	Various civil/mechanical, electrical, instrumentation, and site recommendations.
Hatten	4.6	Hatten Road	$71,700	Abandon existing pump station and construct new pump station.
Imjin	4.7	Imjin at Abrams	$37,700	Various civil/mechanical, structural, and electrical recommendations.
Fort Ord Village	4.8	End of Beach Range Road	$224,900	Various civil/mechanical, structural, electrical, and site recommendations.
Booker	4.9	End of Booker Street	$301,900	Due to high civil/mechanical, structural, electrical, instrumentation, and site issues, major lift station rehabilitation or replacement is recommended.
Fritzche	4.10	Fritzsche Field North	$82,200	In addition to various civil/mechanical, structural, and electrical recommendations, evaluate the possibility of decommissioning the lift station if upstream lift station improvements are made.
East Garrison	4.11	Inter-Garrison Road and Ord Ave	$49,100	Various civil/mechanical, structural, and electrical recommendations.
Reservation Road	4.12	Reservation Road 1,125 feet NW of Imjin	$51,900	Various civil/mechanical, structural, electrical, and security recommendations.

Appendix A – Lift Station Locations

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APPENDIX D

In-Tract Infrastructure Policy

Marina Coast Water District Water/Wastewater Systems

In-Tract Water and Wastewater Collection System Infrastructure Policy

By
Marina Coast Water District

January 2004

Marina Coast Water District
In-Tract Water and Wastewater Collection System Infrastructure Policy

Summary

During the last 10 to 15 years, an increasing number of studies nationwide have confirmed that water and sewer infrastructure replacement costs are soaring. Water pipe replacement costs alone are estimated to be $1.7 billion per year nationwide, and numerous other studies add to the sense of urgency to improve the nation's underground infrastructure. The infrastructure found on the former Fort Ord is no exception. Much of the water and wastewater collection systems infrastructure is estimated to be 50 years old and integrity and performance issues have already been documented.

Under the Water/Wastewater Facilities Agreement between the District and the FORA, the District is responsible for the successful operation and maintenance of the water and wastewater collection systems on the former Fort Ord, as well as improvements to the systems as FORA reasonably determines are necessary. In an effort to assure the successful redevelopment of the former Fort Ord, the District may cause to be planned, designed, and constructed any other facilities as the District reasonably determines may be needed to carry out the goals as established by FORA.

Systems Age

The former Fort Ord water and wastewater collection systems are on average estimated to be 40 to 50 years old and are nearing the end of their useful life. From this point forward, the systems will continue to deteriorate at an unpredictable pace. A majority of all valves are experiencing failure. Many of the service taps (laterals connecting to mains) have been found to be leaking due to poor construction. Pipelines will increasingly become more brittle over time.

The District implemented a preventative maintenance program to enable a systematic approach to pipeline maintenance. However, when operation and maintenance crews continue to repair or replace components of a system that continues to fail unpredictably, the success of a prudent preventative maintenance program cannot be realized.

Water Infrastructure System

FORA and the District depend on the ability to extract and deliver up to 6,600 afy of groundwater from the Salinas River groundwater basin in accordance with a FORA-approved water allocation plan for land use jurisdictions.

The majority of water use in the Ord Community service area is estimated because meters have not yet been installed on residences. Within the overall water allocation for all jurisdictions, 532 afy (or 8 percent of 6,600 afy) is presently estimated and assigned as water loss. (Industry standards for water loss range from 6% to 15% and include water lost due to water line breaks, fire hydrant use, construction water, etc.) The District accepts its responsibility as the steward of the significantly important water resources in support of FORA's redevelopment plan, and will work to minimize water loss. The District has established a water loss goal of 5 percent from water leaks. To achieve this goal, water use will need to be accurately measured and distributed through a watertight system

Wastewater Collection System

The District is responsible for maintaining a system free from sewage overflows. Much of the collection system was not constructed to current design standards and is showing signs of aging. It is difficult to determine the failure rate of an aging system as pipelines loose integrity over time. Sewage spills (overflows) is one of the symptoms of system failure. During 2002, the District experienced 15 sewage spills. Many of the spills occurred within redevelopment areas.

The District completed its Wastewater Master Plan for the Ord Community service area in 2001 which included visually inspecting (via video) many of the collection lines and connections. The Plan describes a system that requires an aggressive and costly collection pipe replacement program.

As the collection system continues to experience problems, the District is subject to increasingly tighter regulatory control that will not tolerate sewage spills. Per recent sewer system maintenance regulations promulgated by the California Regional Water Quality Control Board, the District is required to minimize sewage overflows. Given that the sewage system is not constructed to today's design standards, overflows are expected to continue to occur at an accelerated pace. By replacing components of the aging wastewater collection system, the District will be able to keep its permits in good standing and improve upon overall maintenance costs to customers.

Capital Improvement Program

The District is making every effort to keep rates affordable for our customers. With monthly water and wastewater collection rates already on the high end for this region, additional District-funded (in-tract) capital improvements would cause the rates to escalate further, adding to the burden on potentially low to middle income customers in an area where low-income housing is strongly encouraged. Requiring developers to be responsible for in-tract capital improvements to the water system and wastewater collection system would help contain District rates while ensuring the systems are progressively brought up to standard.

Pipelines Relocated from Planned Lots of Record and Planned Improvements

Upon conveyance, the District agreed to accept the systems "as-is" and "where-is". To address right of way issues to decrease District exposure to liabilities due to systems maintenance and/or repair, we must assure that new pipelines planned in redevelopment areas are not constructed to conflict with planned lots of record or planned improvements. Examples of planned improvements include structures, roads, landscape areas, walkways, parking facilities, etc. The District will work to relocate all systems within public easements, e.g. roadway easements. Better access to systems infrastructure will result in more cost effective repairs and reduced liability to the District.

In conclusion, an in-tract water and wastewater collection system infrastructure policy that clearly establishes requirements for developers to bring systems components to industry standards during redevelopment projects is supportive of District responsibilities to FORA and to our customers.

In-Tract Infrastructure Policy

For all proposed redevelopment projects in areas served by existing water and wastewater collection infrastructure, the developer will be required to implement one of the following procedures:

1. Where redevelopment will raze the existing buildings and streets:

   - Developer completes a subdivision water and sewer master plan per the District standards.
   - Developer replaces all existing water and wastewater collection pipelines and components within the project area to District standards, and replaces all existing water and wastewater collection pipelines and components adjacent to the project area to District standards, as project impacts necessitate.
   - Developer provides meter boxes for all structures and landscaping.
   - Developer provides for District's installation of remote read meters.

2. Where redevelopment will use existing buildings and infrastructure or will raze or remodel a portion or all of the existing buildings but streets and existing infrastructure will remain:

   - Developer completes a subdivision water and sewer master plan per the District standards. This subdivision master plan would include a physical and design standard condition assessment of the systems per District standards. The subdivision master plan must be approved by the District prior to receiving water and sewer service.
   - From the subdivision master plan, the Developer replaces components as required by the District.
   - Developer relocates the District's backbone water/sewer infrastructure (infrastructure that serves other upstream and downstream users) onto roadway right of way, as necessary.
   - When the Developer is planning to construct improvements, including, but not limited to, structures, landscape areas, walkways, parking facilities, etc., over existing water and sewer infrastructure, then the Developer is responsible to relocate existing water/sewer infrastructure away from under proposed improvements.
   - The developer will enter into a separate utility agreement with the District to provide for anticipated higher maintenance costs of the remaining older systems that will be left in place.
   - The separate utility agreement will include an annual water and wastewater collection inspection report to be completed by the Developer or its successor in accordance with District standards. That agreement will require the developer to provide an annual wastewater collection system, water system inspection report in accordance

with District standards and to provide master meters for the project. The water inspection report will include a water audit.

- Developer provides meter boxes for all structures and landscaping.
- Developer provides for District's installation of remote read meters.

APPENDIX E

Equivalent Dwelling Unit Analysis

APPENDIX F

Sewer System Capacity Fees
(Pending Finalization)

Return to Agenda

MARINA COAST WATER DISTRICT

2019

WATER MASTER PLAN

Final Draft
(Excluding Capacity Fees)

April 2019

AKEL ENGINEERING GROUP, INC.

AKEL ENGINEERING GROUP, INC.

Smart Planning Our Water Resources

April 12, 2019

Marina Coast Water District
2840 4th Avenue
Marina, CA 93933

Attention: Mike Wegley, P.E.
District Engineer

Subject: 2019 Water Master Plan – Draft Report

Dear Mike:

We are pleased to submit the draft report for the Marina Coast Water District Water Master Plan. This master plan is a standalone document, though it was prepared as part of the integrated infrastructure master plans for the water, sewer, and recycled water master plans. The master plan documents the following:

- Existing distribution system facilities, acceptable hydraulic performance criteria, and projected water demands consistent within the District service area.
- Development and calibration of the District's GIS-based water system hydraulic model.
- Capacity evaluation of the existing water 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; Keith Van Der Maaten, General Manager; Brian True, Senior Civil Engineer; and other District staff whose courtesy and cooperation were valuable components in completing this study.

Sincerely,

AKEL ENGINEERING GROUP, INC.

Tony Akel, P.E.
Principal

Enclosure: Report

7433 N. FIRST STREET, SUITE 103 • FRESNO, CALIFORNIA 93720 • (559) 436-0600 • FAX (559) 436-0622
www.akeleng.com

Acknowledgements

Board of Directors

Dr. Thomas P. Moore, Board President

Jan Shriner, Board Vice President

Herbert Cortez

Peter Le

Matt Zefferman

Management Personnel

Keith Van Der Maaten, General Manager

Michael Wegley, District Engineer

Kelly Cadiente, Director of Administrative Services

Derek Cray, Maintenance and Operations Manager

Brian True, Senior Civil Engineer

Jaron Hollida, Assistant Engineer

Andrew Racz, Associate Engineer

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APPENDICES

CHAPTER 1 - INTRODUCTION

This chapter provides a brief background of the Marina Coast Water District's (District) domestic 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 Marina Coast Water District (District) is located approximately 10 miles north of the City of Monterey, 8 miles east of the City of Salinas, and 3 miles south of the City of Castroville (**Figure 1.1**). The District provides potable water service to approximately 36,000 residents, as well as a myriad of commercial, industrial, and institutional establishments. The District operates a domestic water distribution system that consists of 7 active groundwater wells, more than 162 miles of pipelines, and 7 active storage tanks equating to 9.2 million gallons (MG). The District's water system serves two distinct service areas, Central Marina and the Ord Community.

For the District's Central Marina service area, a Water System Master Plan (WSMP) was developed in 2007 that identified capacity deficiencies in the existing water system and recommended improvements to alleviate existing deficiencies and serve future developments. A similar plan was developed for the District's Ord Community service area in 2004.

Recognizing the importance of planning, developing, and financing system facilities to provide reliable water service to existing customers and for servicing anticipated growth within the service area, the District initiated updating elements of the previous master plans to reflect current land use conditions, and to consolidate the plans into one comprehensive planning document.

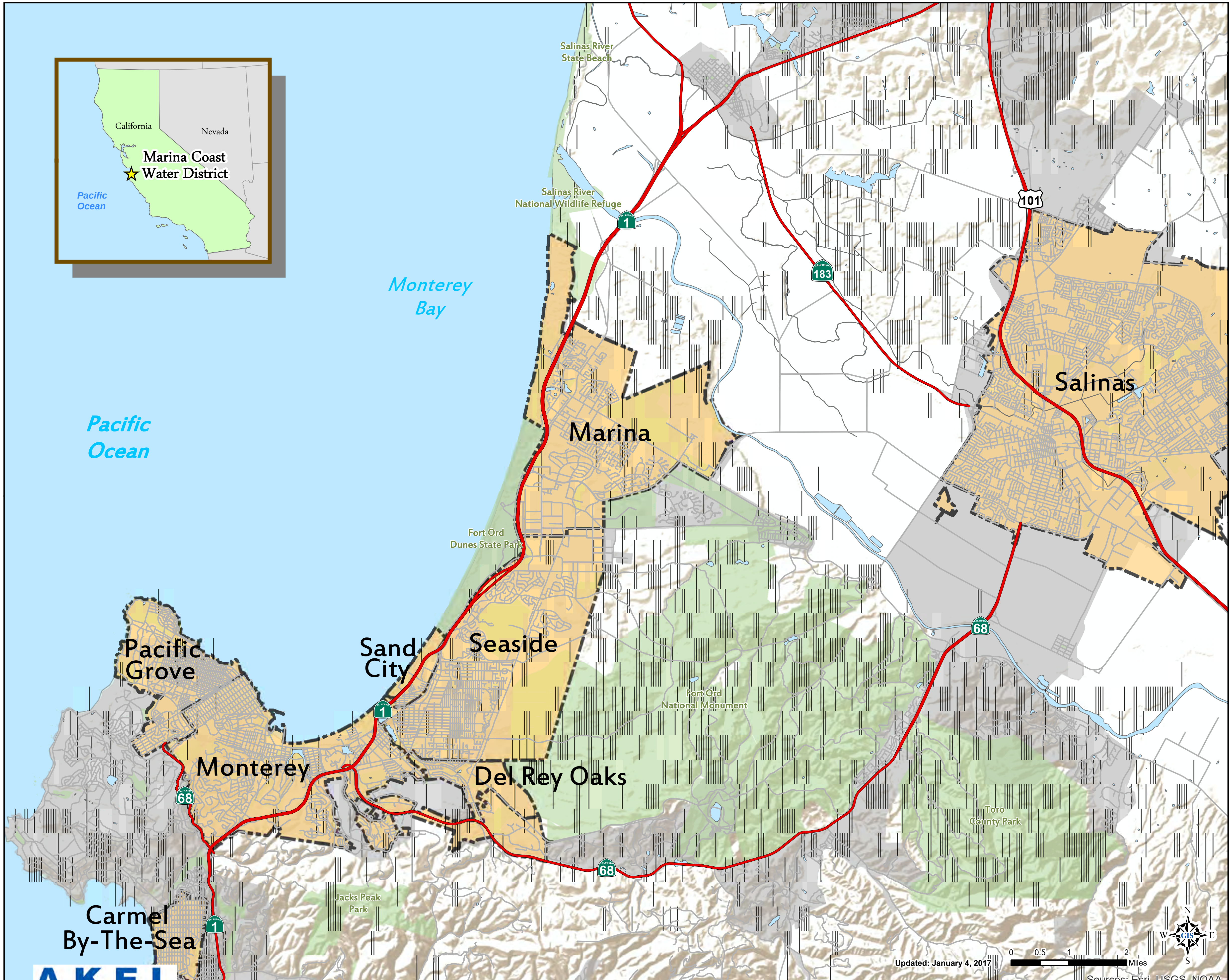
1.2 SCOPE OF WORK

Marina Coast Water District approved Akel Engineering Group Inc. to prepare this master plan in November of 2016. This 2019 Water Master Plan is intended to serve as a tool for planning and phasing the construction of future domestic water system infrastructure for the projected buildout of the Marina Coast Water District. The 2019 WMP evaluates the District's water system and recommends capacity improvements necessary to service the needs of existing users and for servicing the future growth of the District.

Should planning conditions change, and depending on their magnitude, adjustments to the master plan recommendations might be necessary.

This master plan includes the following tasks:

- Summarizing the District's existing domestic water system facilities
- Documenting growth planning assumptions and known future developments



Legend

- Major Highways
- City Limits
- Urbanized Area
- Protected Open Space
- Rivers/Streams
- Waterbodies

PRELIMINARY

Figure 1.1
Regional Location Map

Water Master Plan
Marina Coast Water District

AKEL ENGINEERING GROUP, INC.

File Path: P:\xGIS\GIS_Projects\Marina_Coast_WD\Water\MCWD_Fig1-1_RLM_010417.mxd

- Updating the domestic water system performance criteria
- Projecting future domestic water demands
- Updating and calibrating a new hydraulic model using Geographic Information Systems (GIS) data
- Evaluating the domestic water facilities to meet existing and projected demand requirements and fire flows
- Performing a capacity analysis for major distribution mains
- Performing a fire flow analysis
- Recommending a capital improvement program (CIP) with an opinion of probable costs
- Performing a capacity allocation analysis for cost sharing purposes
- Developing a 2019 Water Master Plan report

1.3 INTEGRATED APPROACH TO MASTER PLANNING

The District implemented an integrated master planning approach and contracted the services of Akel Engineering Group to prepare the following documents:

- Water Master Plan
- Sewer Master Plan
- Recycled Water Master Plan

While each of these reports is published as a standalone document, they have been coordinated for consistency with the various planning documents within the District's service area. Additionally, each document has been cross referenced to reflect relevant analysis results with the other documents.

1.4 PREVIOUS MASTER PLANS

The District's most recent water master plans were completed in 2007 for the combined City of Marina and Fort Ord Community service areas, with a standalone water master plan completed for the Fort Ord Community service area in 2004. These master plans included an evaluation of servicing growth to the planning boundaries, evaluated existing demands and projected future demands, and recommended phased improvements to the water system for a horizon year of 2025.

1.5 RELEVANT REPORTS

Various reports and special studies intended to evaluate localized growth have been completed for the various jurisdictions within the District's service area. These reports were referenced and used during this capacity analysis. The following lists relevant reports that were used in the completion of this master plan, as well as a brief description of each document:

- **Marina Coast Water System Master Plan, November 2006 (2007 WSMP).** This report documents the planning and performance criteria, evaluates the water system, recommends improvements, and provides an estimate of costs.

- **Ord Water System Master Plan, June 2004 (2004 WSMP).** This report documents the planning and performance criteria, evaluates the water system, recommends improvements, and provides an estimate of costs.

- **City of Marina General Plan, December 2006, (2006 General Plan).** The City's 2006 General Plan provides future land use planning, and growth assumptions for the planning areas. Additionally, this report establishes the planning horizon for improvements in this master plan.

- **County of Monterey General Plan, October 2010.** The County's 2010 General Plan addresses unincorporated areas of the County and considers the general plans of cities within the County to allow for cooperative planning. The Fort Ord Land Use Plan provided within the County's 2010 General Plan was used to assist in the development of the potential future land use within the District's service area.

- **City of Monterey General Plan, January 2005.** The City's 2005 General Plan provides future land use planning and growth assumptions. These growth assumptions were used to assist in the development of the potential future land use within the District's service area, generally along South Boundary Road.

- **City of Seaside General Plan, August 2004.** The City of Seaside's 2004 General Plan provides future land use planning and growth assumptions. These growth assumptions were used to assist in the development of the potential future land use within the District's service area, generally along General Jim Moore Boulevard south of Inter-Garrison Road.

- **City of Del Rey Oaks General Plan, January 1997.** The City of Del Rey Oaks' 1997 General Plan provides future land use planning and growth assumptions. These growth assumptions were used to assist in the development of the potential future land use within the District's service area, generally along South Boundary Road east of General Jim Moore Boulevard.

- **California State University, Monterey Bay Draft Campus Master Plan, June 2017.** The California State University, Monterey Bay's (CSUMB) Draft Campus Master Plan provides future land use planning and growth assumptions for the exiting campus. These growth assumptions were used to assist in the development of the planned future land use of the CSUMB campus within the District's service area.

- **Fort Ord Reuse Plan, June 1997 (1997 FORP).** The Fort Ord Reuse Plan, prepared by the Fort Ord Reuse Authority, provides future land use planning and development assumptions for lands that are part of the former Fort Ord.

- **Marina Coast Water District 2015 Urban Water Management Plan, (2015 UWMP).** The 2015 Urban Water Management Plan (UWMP) establishes a benchmark per capita water usage and targets in order to achieve higher levels of water conservation for the sustainability of water supply sources. This includes adopting an updated water shortage contingency plan, defining supply sources, addressing supply reliability, and projecting sustainable supply yields and future demands.

1.6 REPORT ORGANIZATION

The water system master plan report contains the following chapters:

Chapter 1 - Introduction. This chapter provides a brief background of the Marina Coast Water District's (District) domestic water 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 provides a description of the water service area and historical and projected population.

Chapter 3 - Existing Domestic Water Facilities. This chapter presents the District's performance and design criteria, which was used in this analysis for identifying current system capacity deficiencies and for sizing proposed distribution mains, storage reservoirs, and wells.

Chapter 4 - System Performance and Design Criteria. This chapter provides a description of the District's existing domestic water system facilities including the existing wells, pressure zones, distribution mains, storage reservoirs, and booster pump stations.

Chapter 5 - Water Demands and Supply Characteristics. This chapter summarizes existing domestic water demands and projects the future domestic water demands.

Chapter 6 - Hydraulic Model Development. This chapter describes the development and calibration of the District's domestic water distribution system hydraulic model. The hydraulic model was used to 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 section presents a summary of the domestic water 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 domestic water system improvements to mitigate existing capacity deficiencies and to accommodate 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.

Chapter 9 – Water System Capacity Fees. This chapter provides a summary of the review and update of the District's water system capacity fees. The Capacity Fee analysis was completed by Bartle Wells. This section was extracted directly from the Bartle Wells report.

1.7 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:

- Keith Van Der Maaten, General Manager
- Michael Wegley, District Engineer
- Derek Cray, Maintenance and Operations Manager
- Brian True, Senior Civil Engineer
- Jaron Hollida, Assistant Engineer
- Andrew Racz, Associate Engineer
- Andy Sterbenz, Consultant

1.8 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 domestic water distribution 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 water system terminologies and engineering units. A list of abbreviations and acronyms is included in **Table 1.2**.

1.9 GEOGRAPHIC INFORMATION SYSTEMS

This master planning effort made extensive use of Geographic Information Systems (GIS) technology, for completing the following tasks:

- Develop the physical characteristics of the hydraulic model (pipes and junctions, wells, and storage reservoirs)
- Allocate existing water demands, as extracted from the water billing records, and based on each user's physical address
- Calculate and allocating future water demands, based on future developments water use
- Extract ground elevations along the distribution mains from available contour maps
- Generate maps and exhibits used in this master plan

Table 1.1 Unit Conversions

Water Master Plan

Marina Coast Water District

PRELIMINARY

Volume Unit Calculations		
To Convert From:	**To:**	**Multiply by:**
acre feet	gallons	325,851
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	1,000,000
million gallons	gallons	1×10^{-6}
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

Water Master Plan

Marina Coast Water District

PRELIMINARY

Abbreviation	Expansion	Abbreviation	Expansion
2007 WSMP	2007 Water System Master Plan	gpm	Gallons per minute
2019 WMP	2019 Water Master Plan	GSA	Groundwater Sustainability Agency
AACE International	Association for the Advancement of Cost Engineering	hp	Horsepower
AC	Acre	HGL	Hydraulic grade line
ACP	Asbestos Cement Pipe	HWL	High water level
ADD	Average Day Demand	in	Inch
Akel	Akel Engineering Group, Inc.	LAFCO	Local Agency Formation Commission
CCI	Construction Cost Index	LF	Linear feet
CDPH	California Department of Public Health	MCWRA	Monterey County Water Resources Agency
cfs	Cubic feet per second	MDD	Maximum day demand
CI	Cast Iron Pipe	MG	Million gallons
CIB	Capital Improvement Budget	MGD	Million gallons per day
CIP	Capital Improvement Program	MMD	Maximum month demand
CSIP	Castroville Seawater Intrusion Project	MPWMD	Monterey Peninsula Water Management District
DIP	Ductile Iron Pipe	M1W	Monterey One Water
District / MCWD	Marina Coast Water District	NFPA	National Fire Protection Association
DDW	Division of Drinking Water	PHD	Peak hour demand
DU	Dwelling Unit	PRV	Pressure reducing valve
EDU	Equivalent Dwelling Unit	psi	Pounds per square inch
ENR	Engineering News Record	ROW	Right of Way
EPA	Environmental Protection Agency	SCADA	Supervisory Control and Data Acquisition
EPS	Extended Period Simulation	SOI	Sphere of Influence
FORA	Fort Ord Reuse Authority	SVGB	Salinas Valley Groundwater Basin
FRC	Facility Reserve Charge	SVWP	Salinas Valley Water Project
ft	Feet	SWRCB	State Water Resources Control Board
fps	Feet per second	TBD	To be determined
FY	Fiscal Year	ULL	Urban Limit Line
GIS	Geographic Information Systems	UWMP	Urban Water Management Plan
gpd	Gallons per day	WMP	Water Master Plan
gpdc	Gallons per day per capita	WTP	Water Treatment Plant

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 provides a description of the water service area and historical and projected population.

2.1 STUDY AREA DESCRIPTION

The Marina Coast Water District is located in Monterey County on the west coast of California, south of the City of San Francisco. The District is located approximately 10 miles north of the City of Monterey, 8 miles east of the City of Salinas, and 3 miles south of the City of Castroville. Pacific Coast Highway 101 runs from south to north near the District's western boundary. The District currently serves more than 36,000 customers and encompasses an area greater than 29,000 acres.

The District service area is generally bound to the north by Marina Green Drive, to the east by Reservation Road, to the west by Pacific Coast Highway 1, and to the south by Road 218. The topography generally slopes downward toward the ocean from west to east, with elevations ranging between 50 feet to more than 400 feet. Figure 2.1 displays the District's existing service area and the local municipal boundaries.

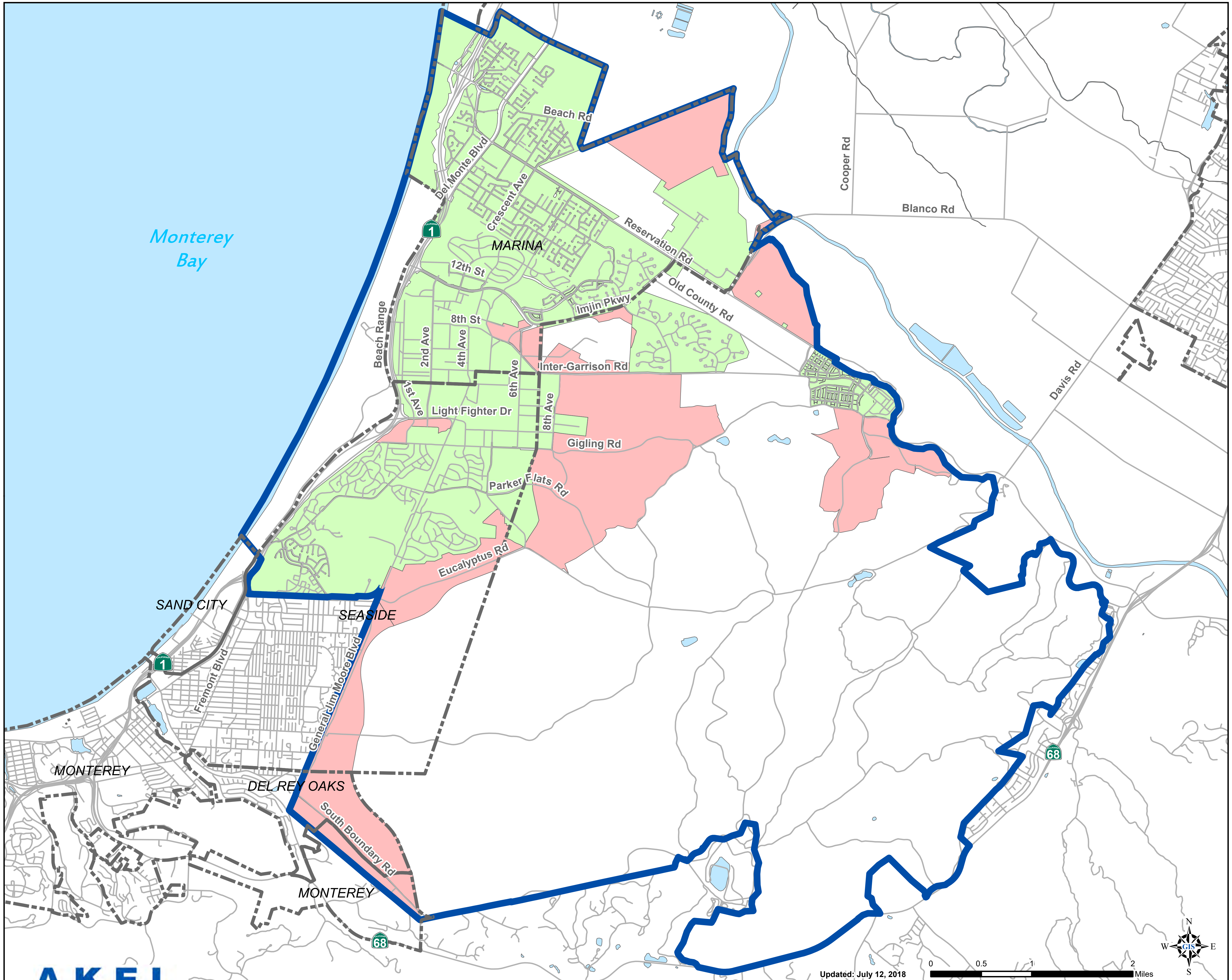
The District operates and maintains a domestic water system that extends from the City of Marina throughout the former Fort Ord area; currently, the domestic water system is supplied from groundwater wells generally located along Reservation Road.

2.2 WATER SERVICE AREA

The District's water system services residential and non-residential lands within the District limits, as shown on Figure 2.1. The District's water service area can generally be divided into two regions: Central Marina and the Fort Ord Community. The boundaries and planning area characteristics of these two regions are briefly described in the following sections:

2.2.1 Central Marina Service Area

The Central Marina service area region is the portion of the City of Marina outside of the Ord Community, generally north of Patton Parkway and west of Salinas Avenue. The future development within this service area region is generally comprised of the development of vacant parcels located throughout the city as well as one large area of potential development generally north of Beach Road.



Legend

- Planning Boundary
- Existing Service Area
- Future Study Area
- Municipal Boundaries
- Rivers/Streams
- Waterbodies

PRELIMINARY

Figure 2.1
Planning Area
Water Master Plan
Marina Coast Water District

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File Path: P:\xGIS\GIS_Projects\Marina_Coast_WD\Water\MCWD_Fig2-1_PlanningArea_071218.mxd

2.2.2 Ord Community Service Area

The Ord Community service area region includes developed, vacant, and designated open space lands within the former Fort Ord as well as portions of the County of Monterey, City of Seaside, City of Marina, the City of Monterey, and City of Del Rey Oaks. The potential future development within this area is generally comprised of the new development on currently vacant lands. For conservative planning purposes the master plan assumes the buildout development of potential developable lands, however the Fort Ord Reuse Authority (FORA) has established limits for growth within the former Fort Ord area, which are briefly summarized as follows:

2.2.2.1 15-Year Development Areas

In addition to outlining improvements, the FORA capital improvement plan specifies the allowable development within the former Fort Ord area. These allowable developments typically represent a portion of the potential developable lands and are summarized on **Table 2.1**. The potential acreages associated with these development limits, summarized on **Table 2.2**, were estimated for the purposes of establishing future water demands. These acreages were based on the following general assumptions:

- Residential: Future dwelling units were converted to acreages based on an average dwelling unit density of 8 du/acre
- Office, Industrial, Commercial: Future square feet of development were converted to acreages based on an average floor-area-ratio of 0.6.
- Hotel: Acreages for future hotels were estimated based on various planning documents and County of Monterey parcel database

2.2.2.2 Parker Flats Land Use Swap

The 1997 Fort Ord Installation-Wide Multi-Species Habitat Management Plan (1997 HMP) identified up to 6,300 acres throughout the Fort Ord base that could potentially develop from vegetation and habitat to a municipal-type use. As part of the 1997 HMP, East Garrison development was limited to 200 acres, with the majority of development slated for the Parker Flats are of Fort Ord. In 2002, FORA, the County of Monterey, and Monterey Peninsula College submitted a proposal to modify the 1997 HMP land use, specifically allowing for more development in the East Garrison area, while converting developable lands in Parker Flats to habitat reserve areas. This proposal was submitted as an official Land Swap Agreement (LSA) to the United States Army and the United States Fish and Wildlife Service.

The LSA ultimately allowed for an additional 210 acres of land to be developed at East Garrison, while converting approximately 447 acres of land within Parker Flats to habitat reserve. The Memorandum of Understanding (MOU) for the LSA was signed on October 14, 2003.

Table 2.1 Fort Ord Reuse Authority 10-Year Development Limits

Water Master Plan
Marina Coast Water District

PRELIMINARY

Development Areas[1]	Residential (du)	Office (sf)	Industrial (sf)	Commercial (sf)	Hotel Rooms
Campus Town Specific Plan					
26 Acre Parcel (Planned)	150	0	0	0	0
Campus Town / 26 Acre (Planned)	0	10,000	30,000	40,000	300
Campus Town / Surplus II (Planned)	0	10,000	40,000	50,000	0
Surplus II (Planned)	238	0	0	0	0
Subtotal	388	20,000	70,000	90,000	300
Cypress Knolls					
Cypress Knolls (Entitled)	712	0	0	0	0
Del Rey Oaks					
Del Rey Oaks (Planned)	691	0	0	0	0
Del Rey Oaks RV Park (Entitled)	0	400,000	0	0	0
Del Rey Oaks RV Park (Planned)	0	0	0	0	550
Subtotal	691	400,000	0	0	550
Dunes Phase 1, 2, & 3					
Dunes Phase 1 (Entitled)	187	69,000	0	80,000	0
Dunes Phase 2 (Entitled)	225	0	0	0	394
Dunes Phase 3 (Entitled)	435	450,000	450,000	0	0
Subtotal	847	519,000	450,000	80,000	394
East Garrison					
East Garrison I (Entitled)	721	68,000	0	34,000	0
Main Gate					
Main Gate	0	0	0	150,000	350
Main Gates (Planned)	145	0	0	0	0
Subtotal	145	0	0	150,000	350
City of Monterey					
Monterey (Planned)	0	721,524	216,276	0	0
Sea Haven					
Sea Haven A (Entitled)	802	0	0	0	0
Seahaven (Entitled)	127	0	0	0	0
Subtotal	929	0	0	0	0
Seaside East					
Seaside East (Planned)	310	30,000	30,000	30,000	0
Seaside Resort					
Seaside Resort (Entitled)	122	0	0	10,000	330
Seaside Resort TS (Entitled)	0	0	0	0	68
Subtotal	122	0	0	10,000	398
UC MBEST					
UC (Planned)	0	680,000	100,000	310,000	0
UC Blanco Triangle (Planned)	240	0	0	0	0
Subtotal	240	680,000	100,000	310,000	0
Development Total					
	5,105	**2,438,524**	**866,276**	**704,000**	**1,992**

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10/19/2018

Note:

1. Development Areas extracted from Development Forecasts documented in FORA "FY 2018-2019 Capital Improvement Program", Table 6 and Table 7.

Table 2.2 15-Year Development Summary

Water Master Plan

Marina Coast Water District

PRELIMINARY

Development Areas	Development Limits[1]			Estimated Development Area			
	Residential (du)	Office, Industrial, Commercial (sf)	Hotel (rooms)	Residential[2] (acres)	Office, Industrial, Commercial[3] (acres)	Hotel[4] (acres)	Total (acres)
1	2	3	4	5	6	7	8
Campus Town Specific Plan	388	180,000	300	48.5	6.9	2.5	57.9
Cypress Knolls	712	0	0	89.0	0.0	0.0	89.0
Del Rey Oaks	691	400,000	550	86.4	15.3	38.6	140.2
Dunes Phase 1, 2, & 3	847	1,049,000	394	105.9	40.1	12.9	158.9
East Garrison	721	102,000	0	90.1	3.9	0.0	94.0
Main Gate	145	150,000	350	18.1	5.7	7.8	31.6
City of Monterey	0	937,800	0	0.0	35.9	0.0	35.9
Sea Haven	929	0	0	116.1	0.0	0.0	116.1
Seaside East	310	90,000	0	38.8	3.4	0.0	42.2
Seaside Resort	122	10,000	398	15.3	0.4	16.8	32.4
UC MBEST	240	1,090,000	0	30.0	41.7	0.0	71.7
Total	**5,105**	**4,008,800**	**1,992**	**638.1**	**153.4**	**78.5**	**870.0**

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3/15/2019

Notes:

1. Development limits based on development Forecasts documented in FORA "FY 2018-2019 Capital Improvement Program", Table 6 and Table 7 and reflect remaining entitlements.
2. Residential acreage estimated based on average residential density of 8 dwelling units per acre.
3. Office, Industrial, and Commercial acreage estimated bsaed on average floor-area-ratio of 0.6.
4. Acreage for hotel development estimated based on available planning information and County of Monterey parcel database.

The tables and figures included in this Master Plan document the respective land use planning agency General Plan maps, with input from District staff. However, and in adherence to the LSA, developable acreages were adjusted to reflect the most recent planning data, and as provided by multiple jurisdictions within the District service area were consolidated into single residential and commercial categories.

The existing and future land use conditions are graphically summarized on **Figure 2.2** and **Figure 2.3.** It should be noted that **Figure 2.3** also includes the aforementioned Parker Flats – East Garrison LSA boundaries. The existing and future land use acreages, summarized on **Table 2.3**, can be broken down into the following categories:

- **Existing Development:** These acreages represent existing developed lands.
- **Existing Lands - Redeveloped:** These acreages represent existing developed lands expected to redevelop into other land use types under the buildout land use development condition.
- **Existing Development - Unchanged:** These acreages represent the total existing acreages expected to remain under the buildout land use development condition.
- **New Lands - Redevelopment:** These acreages represent lands that have redeveloped from a prior use and into a new respective category.
- **New Development:** These acreages represent gains from the development of existing vacant lands.

The total existing and future land use acreages are summarized below and shown on **Table 2.3**:

- 4,776 acres of developed lands inside the service area.
- 5,113 acres of undeveloped lands inside the service area.

2.3 HISTORICAL AND FUTURE GROWTH

According to the District's 2015 UWMP the 2015 service area population was approximately 32,375. The District's 2015 UWMP utilized varying annual growth rates and projected a 2035 population of 70,161. For the purpose of this master plan, District staff chose to utilize a set growth rate of 3.0 percent, which results in a 2035 population of 58,473. Assuming 3.0 percent growth, the District service area is not expected to reach the UWMP 2035 population until the year 2041.

Based on the land use estimated in this master plan, there is a population capacity of approximately 83,300 people, which is discussed in detail in Chapter 5. Based on an annual growth rate of 3.0 percent, the District service area will not reach the buildout population until the year 2047. The District's historical and projected population estimates are summarized on **Table 2.4**.

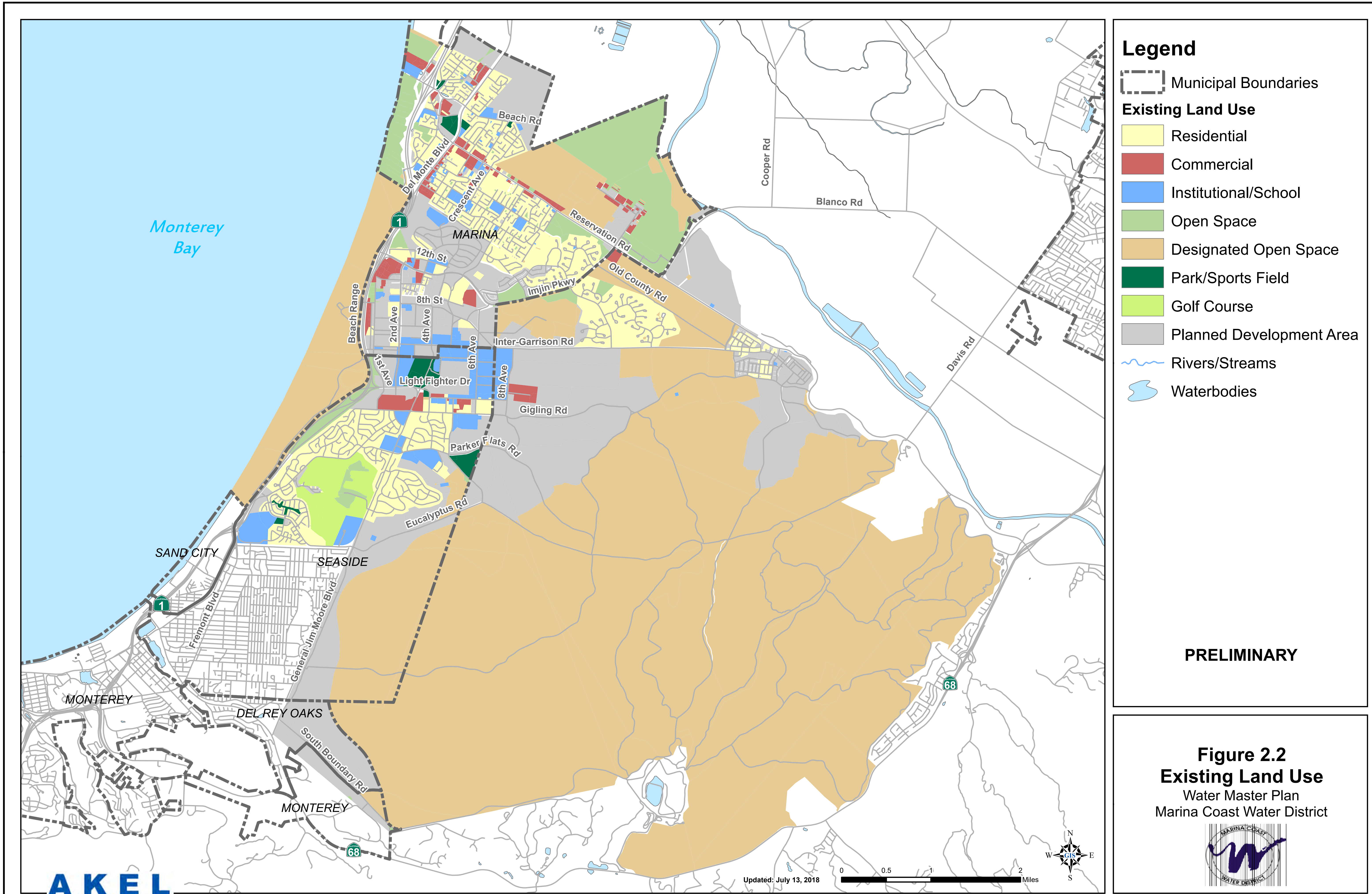

Figure 2.2
Existing Land Use
Water Master Plan
Marina Coast Water District

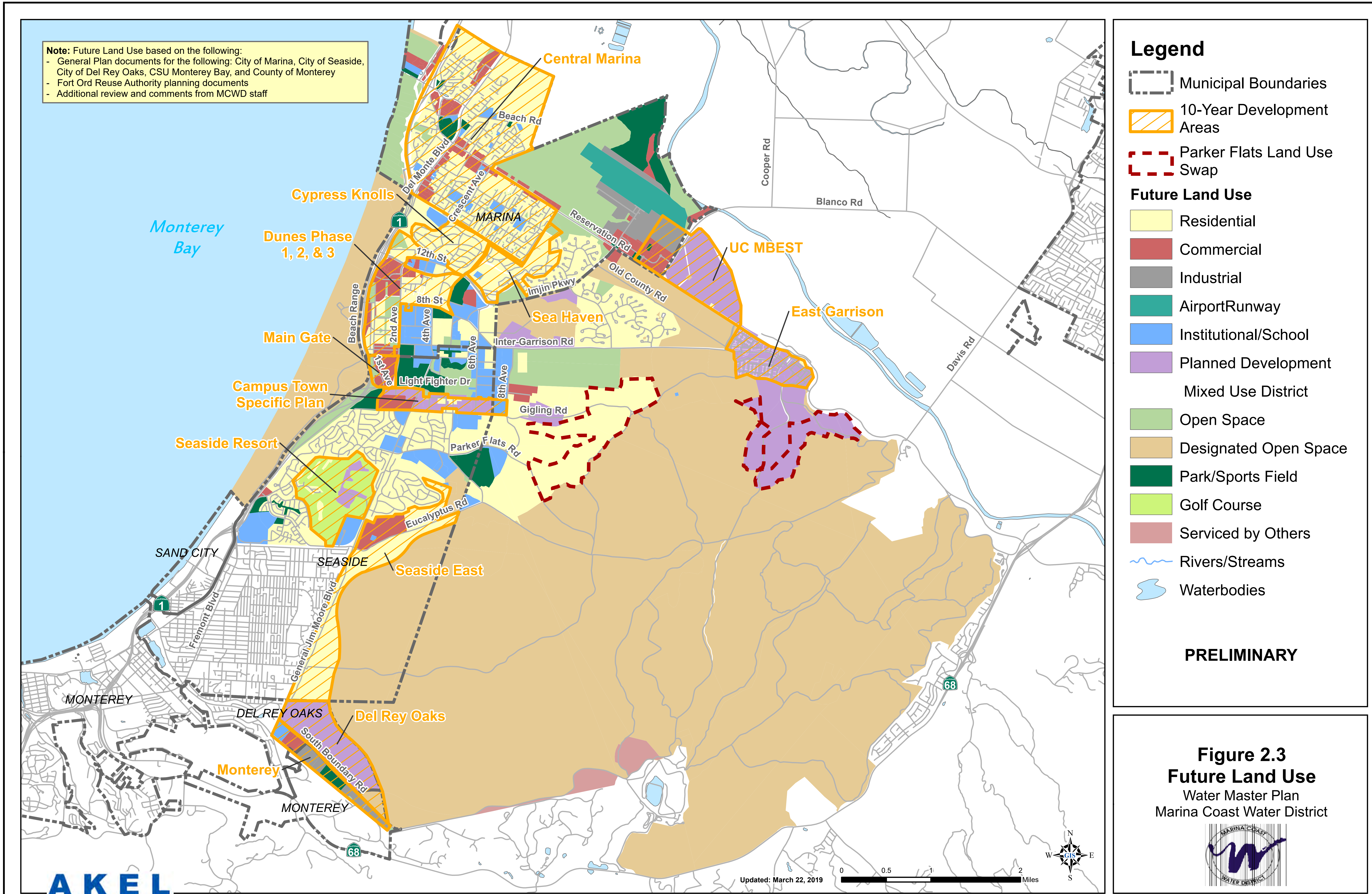

Figure 2.3
Future Land Use
Water Master Plan
Marina Coast Water District

Table 2.3 Existing and Future Service Areas

Water Master Plan

Marina Coast Water District

PRELIMINARY

Land Use Classification	Existing Development			Future Development				Total Development at Buildout of Study Area	Development Outside of Future Study Area	Planning Area Total
	Existing Development (acres)	Existing Lands - Redeveloped (acres)	Subtotal Existing Development - Unchanged (acres)	New Lands - Redevelopment (acres)	New Development: Inside Existing Service Area (acres)	New Development: Outside Existing Service Area (acres)	Subtotal Future Development (acres)	(acres)	(acres)	(acres)
Residential										
Residential	2,574	-196	2,378	85	1,167	1,033	2,285	4,663	0	4,663
Non-Residential										
Commercial	349	-40	309	21	235	139	395	704	1	705
Park	103	-5	98	103	156	222	481	579	0	579
Institutional	689	-148	541	23	191	58	272	813	1	814
Planned Development Mixed Use District	0	0	0	134	475	726	1,336	1,336	0	1,336
Other										
Bayonet Golf Course	322	-15	307	0	0	0	0	307	0	307
Open Space - Other	438	0	438	46	0	0	46	484	0	484
Designated Open Space[5]	45	0	45	0	0	0	0	45	17,754	17,799
ROW	33	-8	25	0	1	0	1	26	0	26
Airport Runway	224	0	224	0	0	0	0	224	0	0
Parker Flats LU Swap	0	0	0	0	0	709	709	709	0	0
Total										
	4,776	**-412**	**4,364**	**412**	**2,225**	**2,888**	**5,524**	**9,889**	**17,756**	**26,712**

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1/25/2019

Note:

1. Designated Open Space includes lands not planned for development, based on directions from District staff.

Table 2.4 Historical and Projected Population

Water Master Plan

Marina Coast Water District

PRELIMINARY

Year	Population[1,2]	Annual Growth (%)
Historical Population		
2005	29,477	-
2006	29,154	-1.1%
2007	29,065	-0.3%
2008	29,533	1.6%
2009	29,743	0.7%
2010	30,840	3.7%
2011	31,141	1.0%
2012	31,445	1.0%
2013	31,752	1.0%
2014	32,062	1.0%
2015	32,375	1.0%
2016	33,346	3.0%
2017	34,347	3.0%
2018	35,377	3.0%
Projected Population		
2019	36,438	3.0%
2020	37,531	3.0%
2021	38,657	3.0%
2022	39,817	3.0%
2023	41,012	3.0%
2024	42,242	3.0%
2025	43,509	3.0%
2026	44,815	3.0%
2027	46,159	3.0%
2028	47,544	3.0%
2029	48,970	3.0%
2030	50,439	3.0%
2031	51,952	3.0%
2032	53,511	3.0%
2033	55,116	3.0%
2034	56,770	3.0%
2035	58,473	3.0%
2036	60,227	3.0%
2037	62,034	3.0%
2038	63,895	3.0%
2039	65,812	3.0%
2040	67,786	3.0%
2041	69,820	3.0%
2042	71,914	3.0%
2043	74,072	3.0%
2044	76,294	3.0%
2045	78,583	3.0%
2046	80,940	3.0%
2047	83,368	3.0%

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Note:

1. Population for years 2005 - 2015 extracted from Marina Coast Water District 2015 Urban Water Management Plan
2. Population for years 2016 - 2047 calculated assuming annual growth rate of 3.0% as directed by District staff.

CHAPTER 3 - SYSTEM PERFORMANCE AND DESIGN CRITERIA

This chapter presents the District's performance and design criteria, which was used in this analysis for identifying current system capacity deficiencies and for sizing proposed distribution mains, storage reservoirs, and wells.

3.1 HISTORICAL WATER USE TRENDS

The historical domestic water consumption per capita was calculated to determine the average water use per capita per day. This was accomplished by dividing the District's historical water production, from groundwater production records and the previous master plan, by the historical population served for the respective year.

The District's historical per capita consumption factors, for the period 2005-2017, are listed in Table 3.1. The District's per capita consumption has varied annually since 2005, with a maximum per capita consumption of 140 gallons per day per capita (gpcd) in 2007 and a minimum of 80 gpcd in 2016. This recent decrease in per capita consumption is largely attributed to the District's effort of implementing water conservation measures in response to the recent state-wide drought. Table 3.2 lists three years (2014-2016) of monthly water production in the District, documenting the on-going impacts of the severe drought. This selection was chosen based on the initial impacts of the drought (2014), and what is generally considered the most severe impact (2016).

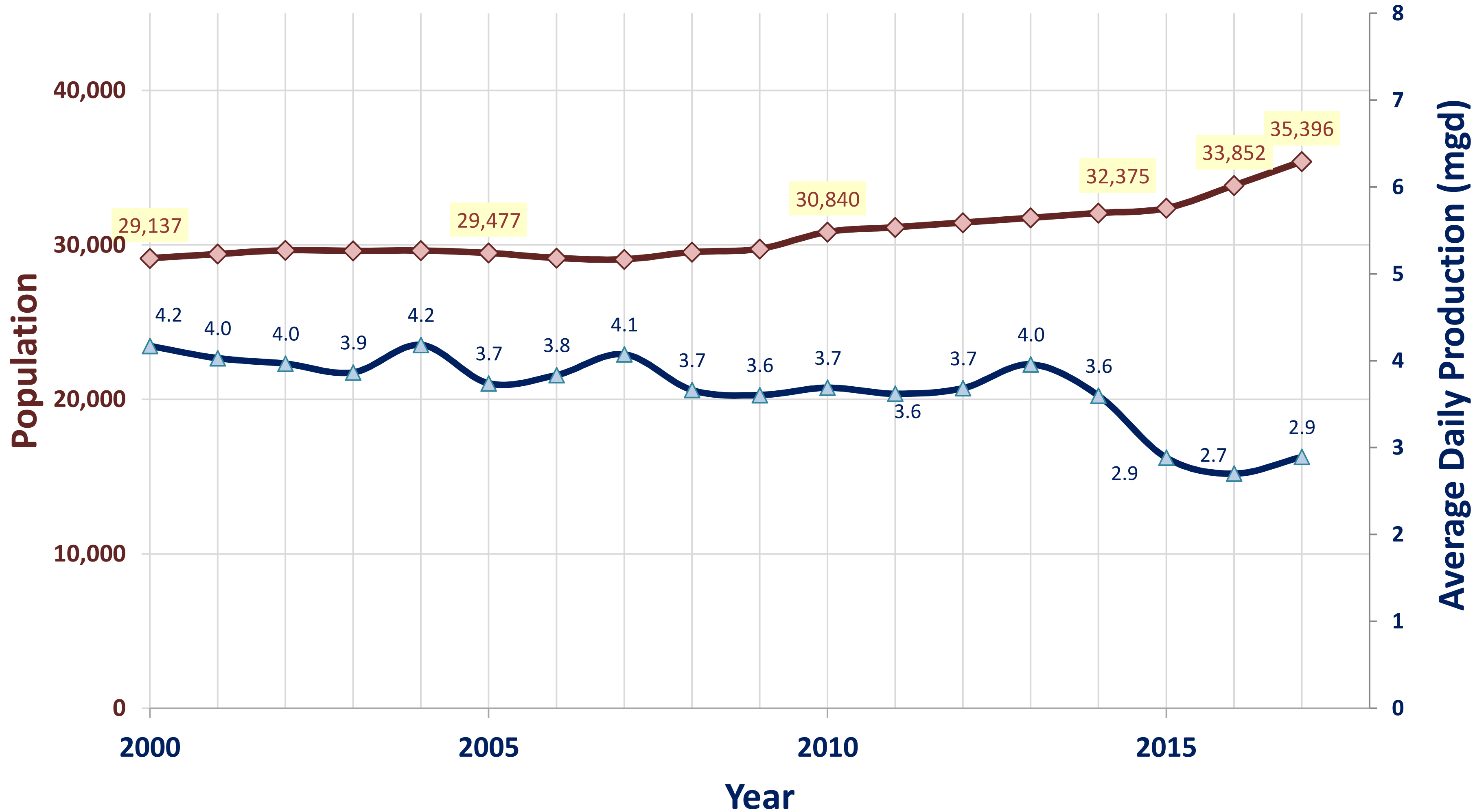
This master plan forecasts domestic water demands for residential and non-residential land uses based on net acreages. However, to generalize trends in the District's water use, per capita water use was documented. Figure 3.1 displays the historical population in relation to average daily water production. Figure 3.2 displays a comparison in the per capita water use and average daily water production.

3.2 SUPPLY CRITERIA

In determining the adequacy of the domestic water supply facilities, the source must be large enough to meet the varying water demand conditions, as well as provide sufficient water during potential emergencies such as power outages and natural or created disasters.

Ideally, a water distribution system should be operated at a constant water supply rate with consistent supply from the water source. On the day of maximum demand, it is desirable to maintain a water supply rate equal to the maximum day rate. Water required for peak hour demands or for fire flows would come from storage.

The District is currently utilizing groundwater as their sole source of supply. The existing storage in the system is expected to supply water during peak period usage, while supply wells should be capable of meeting maximum day demand with the largest supply well out of service. Consistent



LEGEND

Population

Average Daily Production (mgd)

PRELIMINARY

January 17, 2019

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Figure 3.1

Historical Population vs. Average Daily Production

Water Master Plan

Marina Coast Water District

LEGEND

PRELIMINARY

Water Use Per Capita (gpdc)

Average Daily Production (mgd)

January 17, 2019

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Figure 3.2

Water Use Per Capita vs. Average Daily Production

Water Master Plan

Marina Coast Water District

Table 3.1 Historical Annual Water Production and Peak Day Peaking Factors (2005-2017)

Water Master Plan

Marina Coast Water District

PRELIMINARY

Year	Population[1]	Annual Change	Historical Water Production: Annual Production[2,3,4]			Maximum Month Production: Maximum Monthly Production		Month of Occurrence	Max to Avg Ratio	Maximum Day Production: Total	Max to Avg Ratio	Average Per Capita Water Use
		(%)	(MG/year)	(mgd)	(gpm)	(MG/month)	(mgd)			(MGD)		(gpdc)
2005	29,477	-	1,365	3.74	2,596							127
2006	29,154	-1.1%	1,400	3.83	2,663							132
2007	29,065	-0.3%	1,487	4.07	2,829							140
2008	29,533	1.6%	1,337	3.66	2,543							124
2009	29,743	0.7%	1,316	3.60	2,503							121
2010	30,840	3.7%	1,347	3.69	2,562							123
2011	31,141	1.0%	1,321	3.62	2,514	148.4	4.95	July	1.37	6.39	1.76	118
2012	31,445	1.0%	1,344	3.68	2,558	148.2	4.94	July	1.34	7.56	2.05	121
2013	31,752	1.0%	1,444	3.96	2,748	147.1	4.90	May	1.24	6.33	1.60	128
2014	32,062	1.0%	1,313	3.60	2,498	139.1	4.64	July	1.29	6.36	1.77	115
2015	32,375	1.0%	1,053	2.88	2,003	99.1	3.30	April	1.15	4.59	1.59	89
2016	33,852	4.6%	986	2.70	1,875	94.0	3.13	September	1.16	3.92	1.45	80
2017	35,396	4.6%	1,056	2.89	2,008							
Historical Maximum Peaking Factors												
5-year Maximum			1,444	3.96	2,748	148	4.94		1.34	7.56	2.05	128
3-year Maximum			1,313	3.60	2,498	139	4.64		1.29	6.36	1.77	115
2016 Maximum			986	2.70	1,875	94	3.13		1.16	3.92	1.45	80
Recommended Criteria												
Current Design Criteria[5]											**2.00**	117[6]
Recommended Criteria									**1.30**		**2.00**	

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8/17/2017

Notes:

1. Source: 2015 Urban Water Management Plan
2. Year 2005-2010 : Annual production extracted from 2015 UWMP.
3. Year 2011-2016 : Annual production extracted from daily well production records provided by District staff.
4. Production for years 2010-2015 includes irrigation demands from the Bayonet golf course, which are met by a private well in other years.
5. Source: District "Procedures Guidelines and Design Requirements", Revised July 2015.
6. Source: 2020 water use target extracted from 2015 UWMP.

Table 3.2 Historical Monthly Water Production (2014-2016)

Water Master Plan

Marina Coast Water District

PRELIMINARY

Month	2014 Daily Production Average Day (mgd)	2014 Monthly Production (MGM)	2014 Monthly Percent of Annual (%)	2014 Peaking Factor Month to Avg Factor	2015 Daily Production Average Day (mgd)	2015 Monthly Production (MGM)	2015 Monthly Percent of Annual (%)	2015 Peaking Factor Month to Avg Factor	2016 Daily Production Average Day (mgd)	2016 Monthly Production (MGM)	2016 Monthly Percent of Annual (%)	2016 Peaking Factor Month to Avg Factor
January	3.44	107	8%	0.97	2.60	80.7	8%	0.92	2.23	69	7%	0.84
February	2.73	76	6%	0.70	2.81	78.7	7%	0.90	2.44	68	7%	0.83
March	3.07	95	7%	0.87	3.11	96.3	9%	1.10	2.24	69	7%	0.84
April	3.61	108	8%	0.99	3.30	99.1	9%	**1.13**	2.71	81	8%	0.99
May	4.48	139	11%	1.27	2.93	90.9	9%	1.04	2.79	87	9%	1.05
June	4.46	134	10%	1.22	2.96	88.9	8%	1.01	3.01	90	9%	1.10
July	4.49	139	11%	**1.27**	3.14	97.4	9%	1.11	2.98	92	9%	1.13
August	4.34	135	10%	1.23	3.11	96.4	9%	1.10	3.01	93	9%	1.14
September	3.97	119	9%	1.09	3.11	93.3	9%	1.06	3.13	94	10%	**1.14**
October	3.65	113	9%	1.04	2.87	88.8	8%	1.01	2.86	89	9%	1.08
November	2.68	80	6%	0.73	2.37	71.0	7%	0.81	2.77	83	8%	1.01
December	2.18	67	5%	0.62	2.30	71.2	7%	0.81	2.23	69	7%	0.84
Total		**1,313**				**1,053**				**986**		
Average Value	**3.59**	**109**			**2.88**	**88**			**2.70**	**82**		
Maximum Value		**139**		**1.27**		**99**		**1.13**		**94**		**1.14**

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Notes:

1. Source: 2014, 2015, and 2016 Production Extracted from Well Production records provided by District staff April 13, 2017.

with the MCWD 2007 WSMP for Central Marina, future system supply improvements are assumed to have a supply capacity of 1,500 gallons per minute (gpm) for planning purposes. Design criteria for water supply are documented on **Table 3.3**.

3.3 STORAGE CRITERIA

The intent of domestic water storage is to provide supply for operational equalization, fire protection, and other emergencies, such as power outages or supply outages. Operational or equalization storage provides the difference in quantity between the customer's peak hour demands and the system's available reliable supply.

3.3.1 Typical Storage Criteria

Typical storage criteria consist of three main elements: operational, emergency, and fire flow.

Operational Storage

Operational or equalization storage capacity is necessary to reduce the variations imposed on the supply system by daily demand fluctuations. Peak hour demands may require up to 2 times the amount of maximum day supply capacity. With storage in place, this increase in demand can be met by the operational storage rather than by increasing production from the supply sources.

Equalization storage also stabilizes system pressures for enhancing the service. Equalization storage requirements typically range from 25 percent to 50 percent of maximum day demand. The District criterion requires that 25 percent of the maximum day demand be reserved for operational storage.

Emergency Storage

Emergency storage is the volume of water stored to meet demand during emergency situations such as pipe failures, distribution main failures, pump failures, power outages, natural disasters, or other cases in which the supply sources are not able to meet the demand condition.

The amount of water reserved for emergencies is determined by policies adopted by the District and is based on an assessment of the costs and benefits including the desired degree of system reliability, risk during an emergency situation, economic considerations, and water quality concerns.

In California, the amount of emergency storage reserve in municipal water systems is usually between 50 percent and 100 percent of the maximum day demand. The District criterion requires that 50 percent of the maximum day demand be reserved for emergency storage.

Fire Storage

Fire storage is also needed to maintain acceptable service pressures within a pressure zone in the event of a fire flow, which may occur during the maximum day demand. The recommended

Table 3.3 Design and Planning Criteria Summary
Water Master Plan
Marina Coast Water District

PRELIMINARY

Design Parameter	Criteria	
Supply	Supply to meet Maximum Day Demand with largest unit out or service	
	Future groundwater wells are assumed to have a capacity of 1,500 gpm	
Storage	Total Required Storage = Operational + Fire + Emergency	
	Operational Storage	25% of Maximum Day Demand
	Emergency Storage	50% of Maximum Day Demand
	Fire Storage	
	Residential	0.18 MG (1,500 gpm for 2 hours)
	Light/Neighborhood Commercial	0.54 MG (3,000 gpm for 3 hours)
	Commercial/Industrial/Airport	0.96 MG (4,000 gpm for 4 hours)
Distribution Mains	Distribution mains should be designed to satisfy the following criteria:	
	Maximum Pipeline Velocity:	
	Peak Hour Demand	5 ft/s
	Maximum Day Demand + Fire Flow	7 ft/s
	Maximum Pipeline Headloss:	
	Pipeline diameter $\leq$ 16"	10 ft/kft
	Pipeline diameter > 16"	3 ft/kft
Pump Stations	Meet Maximum Day Demand with largest unit out of service	
	Hydropneumatic systems to meet Maximum Day Demand plus fire flow	
PRVs	PRVs should be designed to meet the greater of:	
	Peak Hour Demand, or Maximum Day Demand + Fire Flow	
Service Pressures	Maximum Pressure	100 psi
	Minimum Pressure	
	Maximum Day Demand	40 psi
	Peak Hour Demand	40 psi
	Fire Flows	20 psi
Demand Peaking Factors	Maximum Month Demand	1.5 x Average Day Demand
	Maximum Day Demand	2.0 x Average Day Demand
	Peak Hour Demand	3.5 x Average Day Demand
Fire Flows[1]	Residential	1,500 gpm for 2 hours
	Light/Neighborhood Commercial	3,000 gpm for 3 hours
	Commercial/Industrial/Airport	4,000 gpm for 4 hours

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8/1/2017

Notes:

1. Fire flow criteria reviewed and confirmed by local fire officials.

fire storage capacity varies by pressure zone and land use type, and is usually higher for commercial and industrial areas. Fire flow provisions for each pressure zone were calculated based on the governing (highest) land use type within a reservoir service area as follows:

- Residential: 1,500 gpm for 2 hours = 0.18 MG
- Light Commercial: 3,000 gpm for 3 hours = 0.30 MG
- Commercial/Industrial: 4,000 gpm for 4 hours = 0.96 MG

Total Storage Requirement

The total storage is the summation of operational (equalization), fire, and emergency storage requirements as follows:

$$Qs = 25\%\ MDD\ (operational) + 50\%\ MDD\ (emergency) + fire\ flow\ (varies)$$

where:

Qs is the Total Required Storage, in gallons

MDD is the Maximum Day Demand, in gallons

3.4 PRESSURE CRITERIA

Acceptable service pressures within distribution systems vary depending on District criteria and pressure zone topography. It is essential that the water pressure in a consumer's residence or place of business be maintained within an acceptable range. Low pressures below 30 psi can cause undesirable flow reductions when multiple faucets or water using appliances are used at once.

Excessively high pressures can cause faucets to leak and valve seats to wear out prematurely. Additionally, high service pressures can cause unnecessarily high flow rates, which can result in wasted water and high utility bills. The criteria for pressures in the domestic water system include the following:

- Maximum pressure, usually experienced during low demands and winter months
- Minimum pressure, usually experienced during peak hour demands and summer months
- Minimum pressure during fire flows and during the maximum day demand

The American Water Works Association Manual on Computer Modeling and Water Distribution System (AWWA M-32) indicates that maximum pressures are usually in the range of 90-110 pounds per square inch (psi). In some communities, the maximum pressure may be limited to 100 psi to mitigate the impact on internal plumbing. In this case, the distribution system is usually sized for the higher pressures, and individual pressure-reducing valves are installed on service lines where the pressure may be exceeded.

The minimum acceptable pressure is usually in the range of 40-50 psi, which generally provides for sufficient pressures for second story fixtures. When backflow preventers are required, they may reduce the pressures by approximately 5-15 psi. The recommended minimum pressure during fire flows is 20 psi, as established by the National Fire Protection Association (NFPA).

The District's pressure criteria are summarized as follows:

- **Maximum Pressure:** 100 psi
- **Minimum Pressure:**
    - Maximum Day Demand: 40 psi
    - Peak Hour Demand, Existing Development: 35 psi
    - Peak Hour Demand, Future Development: 40 psi
    - Maximum Day Demand + Fire Flow: 20 psi

3.5 UNIT FACTORS

Domestic water demand unit factors are coefficients commonly used in planning level analysis to estimate future average daily demands for areas with predetermined land uses. The unit factors are multiplied by the net acreages for residential categories and non-residential categories to yield the average daily demand projections.

There are several methods for developing the unit factors. This analysis relied on the District's 2016 water consumption billing records, which lists the monthly water consumption per customer account throughout the District, to estimate the unit factors within the District service area. The distribution of water demand and total demand by account type were extracted from these 2016 billing records. For planning purposes, and based on discussions with District staff, the total demand was adjusted to reflect 2014 production minus 10%. This adjustment was made due to the extreme drought having an undue influence on water consumption in the 2015-2017 time frame. However, **Figure 3.1** indicates demands are trending back up from the 2016 low. Thus, 2014 less 10% is considered a reasonable and conservative planning number. Additional adjustments were made to account for distribution system losses and vacancies in existing land uses.

The existing unit factor analysis is shown on **Table 3.4** and generally indicates that existing residential land uses have higher consumptive use factors than that of non-residential land uses. The water demand unit factors are summarized on **Table 3.5**.

Table 3.4 Water Demand Unit Factor Analysis

Water Master Plan

Marina Coast Water District

PRELIMINARY

Land Use Classification	Existing Development within Service Area	Existing Average Daily Water Demand Unit factors									
		Consumption[1,2]			Production (Consumption + 10% Losses)		Production at 100% Occupancy			Water Unit Factor	
		Annual Consumption	Unadjusted Unit Factor	Balance to Consumption			Vacancy Rate[3,4]	Projected Production at 100% Occupancy		Recommended Factor	Balance Using Recommended Unit Factor
	(acres)	(gpd)	(gpd/acre)		(gpd/acre)	(gpd)	(%)	(gpd/acre)	(gpd)	(gpd/acre)	(gpd)
Residential											
Residential	2,560	2,246,565	878	2,246,565	975	2,496,183	8.0%	1,053	2,695,878	1,060	2,713,123
Subtotal	2,560	2,246,565		2,246,565		2,496,183			2,695,878		2,713,123
Non-Residential											
Commercial	345	393,510	1,139	393,510	1,266	437,233	9.4%	1,385	478,333	1,390	480,168
Institutional	719	139,302	194	139,302	215	154,780	9.4%	236	169,329	240	172,542
Park	140	136,456	974	136,456	1,082	151,618	0.0%	1,082	151,618	1,090	152,771
Subtotal	1,205	669,268		669,268		743,631			799,280		805,481
Non-Demand Generating											
Open Space	0	0	0	0	0	0	0.0%	0	0	0	0
Designated Open Space	0	0	0	0	0	0	0.0%	0	0	0	0
Other[5]	362	0	0	0	0	0	0.0%	0	0	0	0
Subtotal	362	0		0		0			0		0
Totals											
	4,126	**2,915,832**		**2,915,832**		**3,239,814**			**3,495,157**		**3,518,604**

10/5/2017

Note:

1. Water demand distribution was based on the 2016 Water Billing Records. These demands were verified and their distribution does not vary greatly from year to year.
2. Consumption based on 2014 production minus 10%.
3. Residential vacancy rate extracted from California Department of Finance Sheet E-5 published 2016. (Average of City of Marina and City of Seaside : 8.0 % Vacancy Rate).
4. Commercial/Institutional vacancy rate extracted from market study by Cushman and Wakefield, dated first quarter of 2016. Vacancy rates shown are average of rates for the cities of Marina, Del Rey Oaks, Seaside, and Sand City.
5. Other Land use classification includes non-demand generating landuse types, including the Bayonet Golf Course and ROW.

Table 3.5 Water Demand Unit Factor

Water Master Plan

Marina Coast Water District

PRELIMINARY

Land Use Type	Water Demand Unit Factor (gpd/acre)
Residential	1,060
Commercial	1,390
Institutional	240
Planned Development Mixed Use District[1]	1,160
Park	1,090
Open Space	0
Designated Open Space	0

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11/6/2017

Note:

1. Water Demand Unit Factor assumes development consists of 70% Residential and 30% Commercial.

3.6 SEASONAL DEMANDS AND PEAKING FACTORS

Domestic water demands within municipal water systems vary with the time of day and month of the year. It is necessary to quantify this variability in demand so that the water distribution system can be evaluated and designed to provide reliable water service under these variable demand conditions.

Water use conditions that are of particular importance to water distribution systems include the average day demand (ADD), the maximum month demand (MMD), the maximum day demand (MDD), the peak hour demand (PHD), and the winter demand.

The average day demand represents the annual water demand, divided by 365 days, since it is expressed in daily units. The winter demand typically represents the low month water demands and is used for simulating water quality analysis.

3.6.1 Maximum Month Demand

The maximum month demand (MMD) is the highest demand that occurs within a calendar month during a year. The District's MMD usually occurs in the summer months in either July or August. The MMD is used primarily in the evaluation of supply capabilities.

Historical monthly water production records, obtained for the period between 2011 and 2016 (**Table 3.1**), indicate the maximum month to average month ratio ranging between 1.16 and 1.37. To appropriately characterize the historical maximum month demand, an MMD factor of 1.30 was deemed representative of District trends. The following equation is recommended for estimating the maximum month demand, given the average day demand:

Maximum Month Demand = **1.30** x Average Day Demand

3.6.2 Maximum Day Demand

The maximum day demand (MDD) is the highest demand that occurs within a 24 hour day during a year. The District's MDD, which usually occurs during the summer months, is typically used for the evaluation and design of storage facilities, distribution mains, pump stations, and pressure reducing valves. The MDD, when combined with fire flows, is one of the highest demands that these facilities should be able to service while maintaining acceptable pressures within the system.

The maximum day demands were obtained from the District's water production records. Groundwater well production records indicate the date of occurrence and magnitude of the maximum day demand for each calendar year, as listed in **Table 3.1**. The maximum day to average day demand ratios for the period between 2011 and 2016 ranged from 1.45 to 2.05 and occurred in July or August.

Consistent with District standards, a maximum day to average day ratio of 2.0 would be used in this master plan; this peaking factor is also consistent with the peaking factor used in the 2007

WSMP. The following equation is then used to estimate the maximum day demand, given the average day demand:

Maximum Day Demand = **2.0** x Average Day Demand

3.6.3 Peak Hour Demand

The peak hour demand (PHD) is another high demand condition that is used in the evaluation and design of water distribution systems. The peak hour demand is the highest demand that occurs within a one hour period during a year. The peak hour demand is considered to be the largest single measure of the maximum demand placed on the distribution system. The PHD is often compared to the MDD plus fire flow to determine the largest demand imposed on the system for the purpose of evaluating distribution mains.

The following equation is then used to estimate the peak hour demand, given the average day demand:

Peak Hour Demand = **3.5** x Average Day Demand

3.7 FIRE FLOWS

Fire flows are typically based on land use, with the potential for increased fire flow based on the building type. The following are the criteria for fire flows:

- **Category 1.** Fire flows for residential areas were calculated at 1,500 gpm for two hours.
- **Category 2.** Fire flows for light/neighborhood commercial areas were calculated at 3,000 gpm for three hours.
- **Category 3.** Fire flows for commercial/industrial areas were calculated at 4,000 gpm for four hours.

3.8 TRANSMISSION AND DISTRIBUTION MAIN CRITERIA

Transmission and distribution mains are usually designed to convey the maximum expected flow condition. In municipal water systems, this condition is usually the greater of either the peak hour demand or the maximum day demand plus fire flow. The hydrodynamics of pipe flow create two additional parameters that are taken into consideration when evaluating or sizing water mains: head loss and velocity.

Head loss is a loss of energy within pipes that is caused by the frictional effects of the inside surface of the pipe and friction within the moving fluid itself. This loss in energy is translated into a loss in pressure, which is undesirable in water distribution systems. Head loss, by itself, is not an important factor as long as the pressure criterion has not been violated. However, high head loss may be an indicator that the pipe is nearing the limit of its carrying capacity and may not have sufficient capacity to perform under stringent conditions. The criteria for maximum pipeline headloss are summarized as follows:

- Pipelines 16-inch diameter and smaller: 10 ft/kft
- Pipelines larger than 16-inch diameter: 3 ft/kft

Since high flow velocities can cause damage to pipes and lead to high head loss, it is desirable to keep the velocity below a predetermined limit. The criteria for maximum pipeline velocity are summarized as follows:

- Peak Hour Demand: 5 ft/s
- Maximum Day Demand + Fire Flow: 7 ft/s

CHAPTER 4 - EXISTING DOMESTIC WATER FACILITIES

This chapter provides a description of the District's existing domestic water system facilities including the existing wells, pressure zones, distribution mains, storage reservoirs, and booster pump stations.

4.1 EXISTING WATER SYSTEM OVERVIEW

The District's municipal water system consists of 7 active groundwater wells, 7 ground level storage tanks totaling 9.2 million gallons in storage, distribution mains, and fire hydrants. The District's topography generally slopes towards the coastline from east to west; based on this topography, the water distribution system is comprised of 5 pressure zones.

The District's existing domestic water distribution system is shown in **Figure 4.1**, which displays the existing system by pipe size. This figure provides a general color coding for the distribution mains, as well as labeling the existing wells and the storage reservoirs.

4.2 SOURCE OF SUPPLY

The District currently uses groundwater as the sole source of supply. There are 7 active groundwater wells that are used to supply water to existing customers (**Figure 4.1**). During the preparation of this Master Plan, District staff provided historical well pump tests for estimating the current well production capacity. It should be noted that, over time, well efficiencies may vary based on equipment conditions and groundwater levels. In periods of prolonged drought, well efficiency ratings may decrease due to a decline in groundwater levels. The opposite may occur in wet periods, as well efficiencies may increase as the groundwater levels recover. As such, the District should monitor the well efficiencies on a frequent basis to adequately manage the groundwater supply. If periods of prolonged drought persist, it may be necessary to construct additional wells to maintain adequate supply capacity.

Table 4.1 lists the District's current total rated supply at approximately 18.4 million gallons per day (mgd). Consistent with the system performance and design criteria, the firm capacity was calculated as the capacity with the largest well out of service. The firm capacity of the well supply is estimated at 14.9 mgd.

4.3 PRESSURE ZONES

The District's existing water system serves land ranging from sea level to more than 500 feet above mean sea level in elevation. To adequately provide water in this service area, the District is divided into five pressure zones; four of these pressure zones are served by ground level storage tanks while the highest zone, Zone E, is serviced by a pressure tank. **Figure 4.2** shows the

Legend

Existing Modeled System

- Tanks
- Wells
- Boosters
- PRV

Pipes by Diameter

- 8" and Smaller
- 10" - 12"
- 16" - 20"
- 24" - 48"

- Streets
- Rivers/Streams
- Waterbodies

PRELIMINARY

0 0.25 0.5 1 Mile

Update: April 11, 2019

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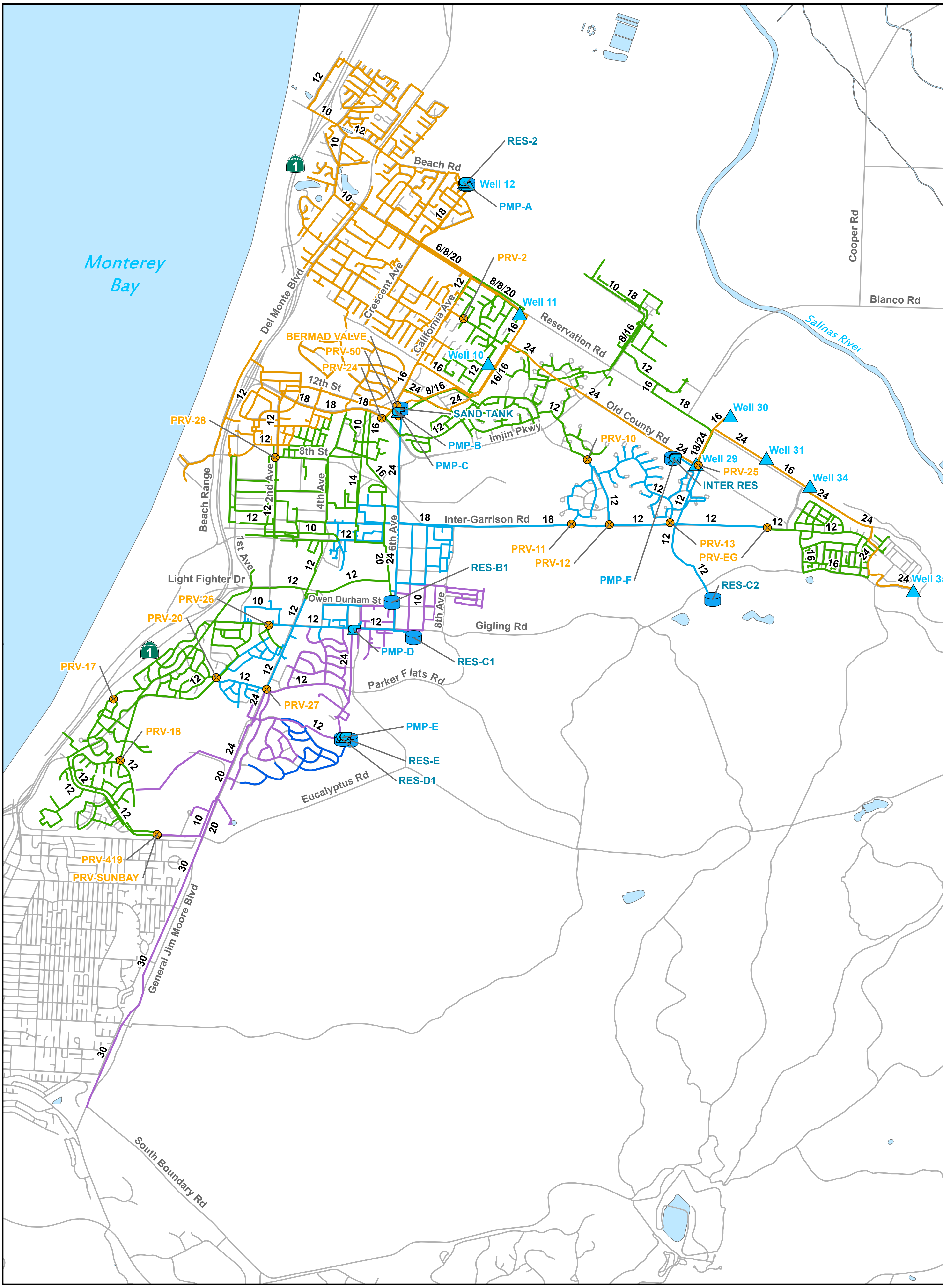
File Path: P:\xGIS\GIS_Projects\Marina_Coast_WD\Water\MCWD_Fig4-1ModeledSystem_041119.mxd

Figure 4.1
Existing Modeled Water System

Water Master Plan
Marina Coast Water District



Legend

Existing Modeled System

- Tanks
- Wells
- Boosters
- PRV

Pipes by Pressure Zone

- Zone A
- Zone B
- Zone C
- Zone D
- Zone E

- Streets
- Rivers/Streams
- Waterbodies

PRELIMINARY

0 0.25 0.5 1 Mile

Update: January 2, 2019

File Path: P:\xGIS\GIS_Projects\Marina_Coast_WD\Water\MCWD_Fig4-2_PipesPZ_010219.mxd

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Figure 4.2 Modeled Pipes by Pressure Zone

Water Master Plan

Marina Coast Water District

Table 4.1 Existing Wells

Water Master Plan

Marina Coast Water District

PRELIMINARY

Supply Well	Location	Design Capacity				Additional Information				Pump Test Capacity[1]			
		Rated		HP	Pump Depth	Well Depth	Date Drilled	Date Rehabilitated	NaClO Dosing	Flow Rate		Total Dynamic Head	Test Year
		(gpm)	(mgd)	(HP)	(ft)	(ft)	(Year)	(Year)	(mg/L)	(gpm)	(mgd)	(ft)	
Fort Ord													
Well 29	Old County Rd	1,500	2.16	200		555	1985		0.8	1,500	2.16	252	2017
Well 30	Reservation Rd	1,500	2.16	150	410	550	1985	2016	0.8	1,528	2.20	277	2018
Well 31	Reservation Rd	2,400	3.46	250		490	1985		0.8	2,315	3.33	225	2017
Well 34	Reservation Rd	2,000	2.88	350	460	1110	2011		0.8	2,480	3.57	380	2017
Well 35	Watkins Gate & Reservation Rd	2,000	2.88	350	502	675	2011		0.8	2,494	3.59	374	2016
City of Marina													
Well 10	Bayer Avenue and Ridgeview	1,350	1.94	250	480	1550	1993	2007	1.5	1,458	2.10	434	2017
Well 11	Reservation Rd & Salinas Ave	2,000	2.88	300		1660	1986	2014	1.5	2,025	2.92	348	2017
Well 12 (Inactive)	Top of Beach Rd	1,900	2.74	300		1970	1989		8.5	2,022	2.91	430	2008
System Well Supply Capacity													
	Total Well Capacity	**12,750**	**18.4**							**13,800**	**19.9**		
	Firm Well Capacity (largest unit out of service)	**10,350**	**14.9**							**11,306**	**16.3**		

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3/27/2019

Notes:

1. Source: Pump tests received from District staff

existing modeled system pipes categorized by existing pressure zone while **Figure 4.3** shows the boundaries and names for these pressure zones.

All of the District's groundwater wells are located in Zone A, with a majority of the service connections located in Zone A and Zone B. From Zone A, booster stations are used to supply water to the higher pressure zones serving the remainder of the District service area. It should be noted that some zones are served from higher pressure zones through pressure reducing valves (PRVs), which are summarized on **Table 4.2**.

A brief description of the different pressure zones in the District's service area is as follows:

4.3.1 Zone A

Zone A is the northernmost zone in the District's service area. It is generally bounded by Aaron Way to the north, Highway 1 to the west, California Avenue to the east, and Imjin Parkway to the south.

Elevations served in this pressure zone approximately range from sea level to 140 feet. This zone is supplied from 7 groundwater wells (Well 29, 30, 31, 34, 35, 10, and 11). Zone A has 2 active ground level storages tanks for a total storage capacity of 1.17 million gallons (MG). It should be noted that a portion of Zone A, generally south of Patton Parkway and west of California Avenue, relies on a PRV connection from Zone B as its sole source of supply.

4.3.2 Zone B

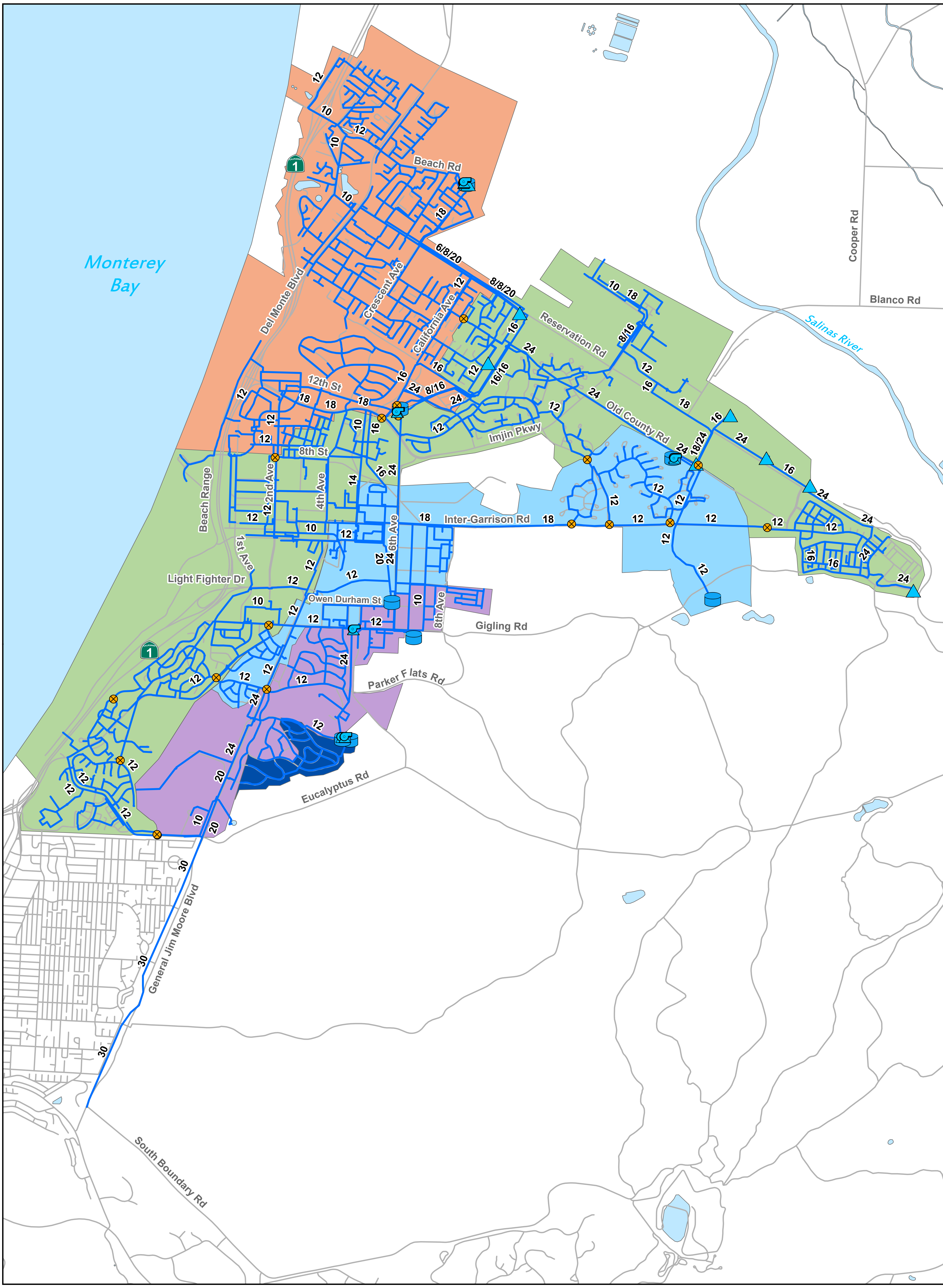
Zone B has the largest service area of the five District pressure zones. Zone B can generally be divided into a northern and western portion. The northern portion of Zone B is generally north of Imjin Road and east of California Avenue, serving development along Imjin Road and Reservation Road. The western portion of Zone B is generally west of California Avenue and serves development along California Avenue, General Jim Moore Boulevard, and Highway 1.

Elevations served in this pressure zone approximately range from 140 feet to 220 feet. This zone is supplied from Booster Station B, which pumps water from the Sand Tank located in Zone A. Zone B has one ground level storage tank for a total storage capacity of 2.0 MG.

It should be noted that a portion of Zone B, east of the intersection of Reservation Road and Inter-Garrison Road, relies on a PRV connection from Zone C as its sole source of supply. This service area is separately identified as Pressure Zone B-EG.

4.3.3 Zone C

Pressure Zone C is located in the center of the District's service area and encompasses the area generally bounded to the west by General Jim Moore Boulevard, to the east by Schnoover Road, to the north by Reservation Road and to the south by Gigling Road.



Legend

Existing Modeled System

- Tanks
- Wells
- Boosters
- PRV
- Pipes

Pressure Zones

- Zone A
- Zone B
- Zone C
- Zone D
- Zone E

- Streets
- Rivers/Streams
- Waterbodies

PRELIMINARY

0 0.25 0.5 1 Mile

Update: January 2, 2019

AKEL ENGINEERING GROUP, INC.

File Path: P:\xGIS\GIS_Projects\Marina_Coast_WD\Water\MCWD_Fig4-3PressureZones_010219.mxd

Figure 4.3
Existing Pressure Zones

Water Master Plan
Marina Coast Water District

Table 4.2 Existing Pressure Reducing Valves

Water Master Plan

Marina Coast Water District

PRELIMINARY

Location	PRV ID	Elevation (ft)	Pressure Zone Upstream	Pressure Zone Downstream	Valve Size (in)	Downstream Setpoint[2] (psi)
Sand Tank	Bermad Valve	141	A	Sand Tank		-
Carmel Ave at Crumpton Ln	PRV-2	126	B	A	8	43
12th St near DX Dr	PRV-24	167	B	A	10	30
8th St at 2nd Ave	PRV-28	110	B	A	10	47
Monterey Rd at Normandy Rd	PRV-20	190	C	B	8	53
8-inch pipeline s/o Sand Tank	PRV-50	110	C	B	6	66
Old County Rd near Well 29	PRV-25	175	C	B	10	35
					4	40
Gigling Rd at 6th Division Cir	PRV-26	228	C	B	8	38
Abrams Dr at Bunker Hill Dr	PRV-10	190	Schoonover Park	B	8	35
					3	37
Inter-Garrison Rd near Spotsylvania Ct	PRV-11	250	C	Schoonover Park	8	43
					3	44
Inter-Garrison Rd at Abrams Dr	PRV-12	241	C	Schoonover Park	6	43
Inter-Garrison Rd at Schoonover Dr	PRV-13	237	C	Schoonover Park	12	44
					3	48
Inter-Garrison Rd. to East Garrison	PRV-EG	216	C	B	12	50
		216	C	B	4	56
Kiska Rd at Buna Rd	PRV-17	178	C	Seaside Highlands	8	44
					4	49
Peninsula Point Dr at Bay Crest Cir	PRV-18	161	C	Seaside Highlands	12	46
					4	51
Coe Ave to Upper Seaside Highlands	PRV-19	233	C	Seaside Highlands	12	17
					4	20
General Jim Moore Blvd at Normandy Dr	PRV-27	310	D	C	8	20
Coe Ave to Sunbay Apartments	PRV-SUNBAY	233	D	Sunbay	8	40
					2	45

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3/27/2019

Notes:

1. Source: "MCWD EOC Charts", received from District staff on December 13, 2016
2. Source: "PRV Setpoints" received from District staff March 16, 2018.

Elevations served in this pressure zone approximately range from 230 feet to 305 feet. This zone is supplied from Booster Station C, which pumps water from the Sand Tank located in Zone A.

It should be noted that the existing Schoonover Park and a portion of Fredericks Park are served from Pressure Zone C by PRV along Inter-Garrison Road. This region includes service elevations that are between the bottom of Pressure Zone C and the top of Pressure Zone B

4.3.4 Zone D

Pressure Zone D is located in the southeastern portion of the District's service area and encompasses the area generally bounded by Gigling Road to the north and Coe Avenue to the south, serving development along General Jim Moore Boulevard.

Elevations served in this pressure zone approximately range from 310 feet to 410 feet. This zone is supplied from Pump Station D, which pumps water from Reservoir C1 located in Zone C. Zone D has one ground level storage tank for a total storage capacity of 2.0 MG.

4.3.5 Zone E

Pressure Zone E is the southernmost pressure zone in the District's service area and is currently the District's only operating hydropneumatic zone. It is generally bounded by Ardennes Circle to the north, Arloncourt Road to the east, and General Jim Moore Boulevard to the west.

Elevations served in this pressure zone approximately range from 410 to 505 feet. This zone is supplied from Booster Station E, which pumps water from Reservoir D1 located in Zone D. Zone E has a hydropneumatic tank located adjacent to Reservoir D1.

4.4 WATER DISTRIBUTION PIPELINES

Groundwater is pumped into the District's distribution system via more than 160 miles of pipeline. An inventory of existing modeled pipes, extracted from the GIS-based hydraulic model and used in this analysis, is included in **Table 4.3**. For each pipe diameter, the inventory lists the length in feet, as well as the total length in units of miles. It should be noted the hydraulic model went through an extensive vetting process, that included the following: a review of CMMS data, multiple reviews with District staff, a review of previous hydraulic modeling efforts, and a review of District maintained CAD maps.

4.5 STORAGE RESERVOIRS

Storage reservoirs are typically incorporated in the water system to provide water supply for operation during periods of high demand, for meeting fire flow requirements, and for other emergencies, as defined in the District's planning criteria.

The District's existing storage reservoirs are summarized in **Table 4.4**, along with their volumes, construction year and type, height, diameter, bottom elevations, and overflow height and

Table 4.3 Existing Model Pipe Inventory

Water Master Plan

Marina Coast Water District

PRELIMINARY

Pipe Diameter	Total Length by Diameter (ft)	(miles)
4	8,599	1.6
6	227,135	43.0
8	336,113	63.7
10	30,558	5.8
12	132,848	25.2
14	4,483	0.8
16	30,649	5.8
18	23,541	4.5
20	10,137	1.9
24	39,999	7.6
30	11,180	2.1
48	0	0.0
Total	**855,242**	**162.0**

AKEL ENGINEERING GROUP, INC.

3/27/2019

Note:

1. Length and Diameter information extracted from hydraulic model developed by Akel Engineering Group.

Table 4.4 Existing Storage Facilities

Water Master Plan
Marina Coast Water District

PRELIMINARY

Pressure Zone	Tank Name	Location	Installation Year (yr)	Volume (MG)	Tank HWL[2] (ft)	Construction Type	Diameter[3] (ft)	Overflow Elevation (ft)	Bottom Elevation[2] (ft)
A	Reservoir 2	Crescent Ave, Marina	1980	2.00	165	Steel	80	166	110
A	Intermediate	Above Schoonover Park	1984	0.17	221	Steel	30	224	190
A	Sand Tank	California Ave	1952	1.00	132	Concrete	120	132	120
B	B1	6th & Durham	1942	2.00	314	Concrete	117	314	296
C	C1	7th and Giggling	1964	2.00	400	Concrete	130	400	376
C	C2 (old F)	Off Watkins Gate Rd.	1990	2.00	400	Concrete	108	400	370
D	D1	Above Fitch Park	2008	2.00	510	Steel	132	501	475
D	Huffman	BLM- Huffman Ranch	1961	0.06	-	Steel	-	-	-
E	Hydropneumatic	Above Fitch Park	1961	0.01	-	Steel	-	-	-
			Total Storage Capacity (Active Facilities)	**9.2**	**MG**				

AKEL ENGINEERING GROUP, INC.

3/16/2018

Notes :

1. Unless noted otherwise, information extracted from "MCWD EOC Charts" received from District staff on December 13, 2016.
2. Source: Hydraulic profile received from District staff December 14, 2016.
3. Source: Previous water system hydraulic model received December 13, 2016.

elevations. These reservoirs are also shown on the existing system hydraulic profile schematic (**Figure 4.4**), with the HWL and bottom tank elevations.

4.6 BOOSTER STATIONS

Water is conveyed from the lower supply pressure zones to the higher pressure zones via a series of booster pump stations (**Table 4.5**). There are 4 active and 1 inactive booster stations in the District and **Table 4.5** lists their ground elevation, source and destination pressure zones, pump capacities, and additional station information.

4.7 PRESSURE REDUCING VALVES

The District has several areas that require pressure reducing valves as either the primary source or as reliability sources of supply. The pressure reducing valve locations are shown on **Figures 4.1** and **4.2**, and their zone interconnectivity is documented on **Figure 4.4**. **Table 4.2** documents the pressure reducing valve locations, identification number, approximate elevation, the pressure zone serviced, and the size and setpoint.

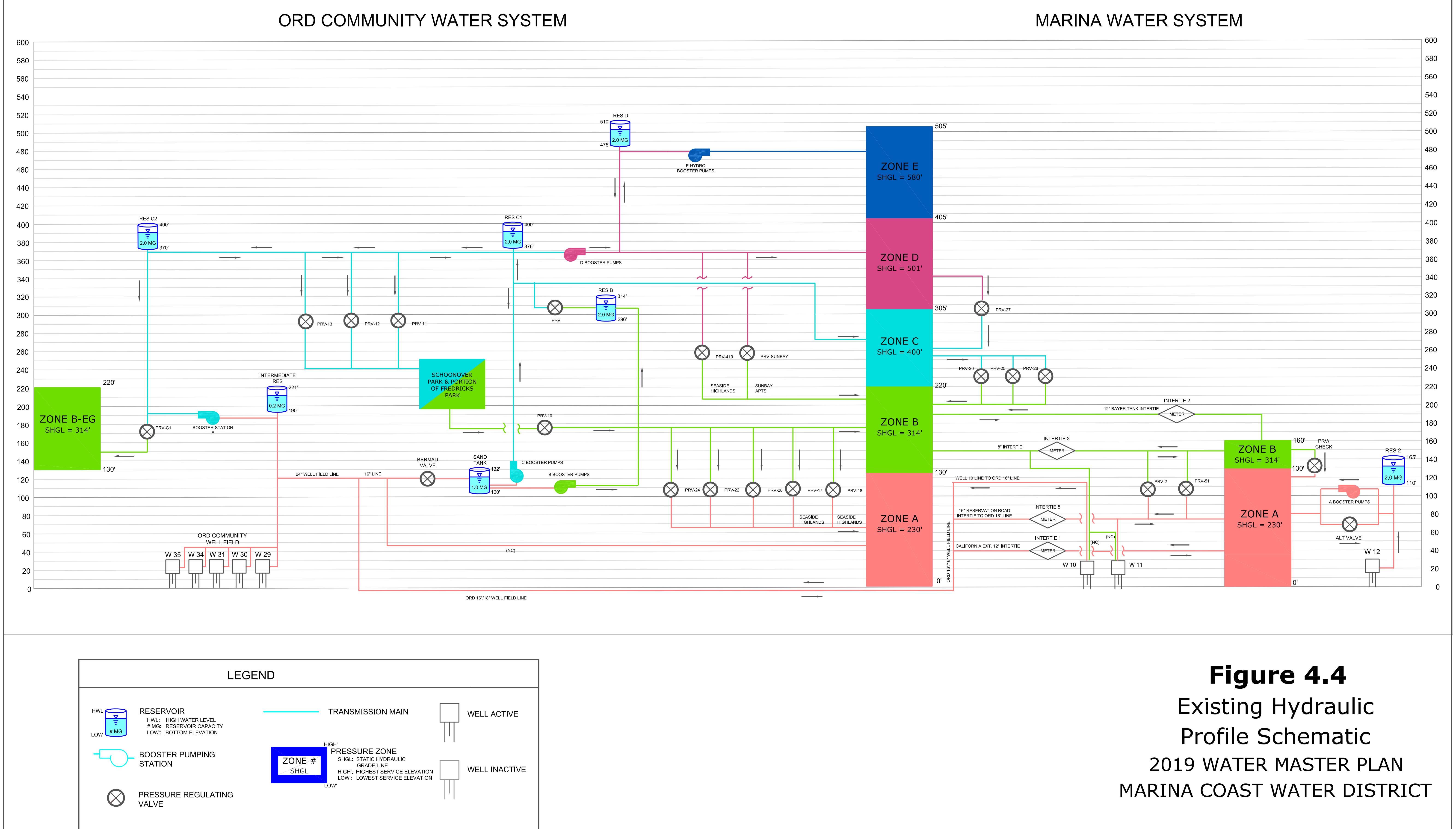

Figure 4.4

Existing Hydraulic Profile Schematic

2019 WATER MASTER PLAN

MARINA COAST WATER DISTRICT

AKEL ENGINEERING GROUP, INC.

Last Updated: 04/09/19

PRELIMINARY

Table 4.5 Existing Booster Pumping Stations

Water Master Plan

Marina Coast Water District

PRELIMINARY

Name	Location	Elevation	Source Pressure Zone	Destination Pressure Zone	Design Capacity[1]				Operational Capacity (Historical Pump Tests)[2]			
					Rated		Head	Individual Pump Horsepower	Flow	Head	Individual Pump Horsepower	Test Year
		(ft)			(gpm)	(mgd)	(ft)	(hp)	(gpm)	(ft)	(hp)	
City of Marina												
A-Booster[3]	Reservoir 2	109	A	A	1,500	2.2		100	1,799			2008
					1,500	2.2		100	1,718			2008
					1,500	2.2		100	1,805			2008
Fort Ord												
B-Booster	Sand Tank	110	A	B	2,800	4.0		125	1,660	181	119	2016
					2,800	4.0		125	1,593	192	115	2017
					2,800	4.0		125	1,561	190	125	2017
C-Booster	Sand Tank	110	A	C	2,000	2.9		125	1,127	218	121	2017
					1,800	2.6		125				
					1,800	2.6		125				
					1,800	2.6		125	1,344	263	142	2017
					1,800	2.6		125	982	278	135	2017
D-Booster	Intersection of Giggling Road and Parker Flats	300	C	D	4,800	6.9		100	2,120	113	110	2013
					2,000	2.9		50	1,051	106	48	2013
E-Booster	D1 Tank	475	D	E	120	0.2		10	95	171	6	2017
					120	0.2		10	93	137	6	2017
					120	0.2		10	115	111	6	2017
					2,150	3.1		125	2,180	116	87	2017
					2,150	3.1		125	2,189	117	87	2017
F-Booster[2] (Inactive)	Intermediate Tank	190	A	C	1,500	2.2		150	1,504			2008
					1,500	2.2		150	1,510			2008

1/23/2017

Notes:

1. "MCWD EOC Charts" received from District staff on December 13, 2016.
2. Unless noted otherwise, pump tests provided by District on June 15, 2017.

CHAPTER 5 –WATER DEMAND AND SUPPLY CONSTRAINTS

This chapter summarizes existing domestic water demands and projects the future domestic water demands.

5.1 EXISTING DOMESTIC WATER DEMANDS

The distribution of existing water demands used for this master plan was based on the District's 2016 water billing consumption records. For evaluation purposes these demands were adjusted to match 2014 total annual production minus 10%, which is expected to reflect the system-wide usage of the existing customers as growth continues. This adjustment also takes into account system losses that occur between the groundwater wells and the customer service connections. The existing average day domestic water demands used for evaluation are equal to 3.2 mgd and are summarized by pressure zone on Table 5.1.

To determine the existing demand distribution by pressure zone, GIS was used to geocode each customer account to its physical location. Based on this location the existing pressure zone of each account was identified; the accounts were then sorted by pressure zone and the total demand in each zone was calculated.

5.2 FUTURE DOMESTIC WATER DEMANDS

Future demands were projected using the unit factors for residential and non-residential land uses and included the developments within the Future Service Area, as identified in Chapter 2. These demands were used in sizing the future infrastructure facilities, including distribution mains, storage reservoirs, and booster stations. Demands were also used for allocating and reserving capacities in the existing or proposed facilities. The following sections document the future domestic water demands based on the development limits prepared by FORA as well as the buildout development horizon.

5.2.1 Near-Term Domestic Water Demands

The potential development area associated with the FORA development limits was previously summarized on Table 2.2. Using the water demand factors for residential and non-residential land uses the future average day demands for the near-term developments are summarized on Table 5.2. The total average day domestic water demands due to the near-term developments is estimated to be 1.0 mgd.

5.2.2 Buildout Domestic Water Demands

Table 5.3 organizes the future land use categories and their corresponding domestic water demands for the buildout development horizon. It should be noted that the water demands attributed to existing land uses in Table 5.3 were calculated using the recommended water unit

Table 5.1 Existing Demands by Pressure Zone

Water Master Plan

Marina Coast Water District

PRELIMINARY

Pressure Zone	Existing Demands		
	Average Day[1] (mgd)	Maximum Day[2] (mgd)	Peak Hour[3] (mgd)
A	1.6	3.1	5.5
B	1.0	2.0	3.5
B-EG[4]	0.1	0.1	0.2
C	0.3	0.6	1.0
D	0.3	0.5	0.9
E-HYD	0.1	0.1	0.2
Total	**3.2**	**6.5**	**11.3**

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11/2/2017

Notes:

1. Source: Consumption data received from District staff May 11, 2017
2. Maximum Day Demand = 2.0 x Average Day Demand
3. Peak Hour Demand = 3.5 x Average Day Demand
4. B-EG pressure zone represents East Garrison development area currently suppli Zone C via PRV on Inter-Garrison Rd.

Table 5.2 Near-Term Development Demands

Water Master Plan

Marina Coast Water District

PRELIMINARY

Development Areas	Development Limits[1]			Estimated Development Area				Estimated Average Day Demand[5]
	Residential (du)	Office, Industrial, Commercial (sf)	Hotel (rooms)	Residential[2] (acres)	Office, Industrial, Commercial[3] (acres)	Hotel[4] (acres)	Total (acres)	(mgd)
1	2	3	4	5	6	7	8	10
Campus Town Specific Plan	388	180,000	300	48.5	6.9	2.5	57.9	0.06
Cypress Knolls	712	0	0	89.0	0.0	0.0	89.0	0.09
Del Rey Oaks	691	400,000	550	86.4	15.3	38.6	140.2	0.17
Dunes Phase 1, 2, & 3	847	1,049,000	394	105.9	40.1	12.9	158.9	0.19
East Garrison	721	102,000	0	90.1	3.9	0.0	94.0	0.10
Main Gate	145	150,000	350	18.1	5.7	7.8	31.6	0.04
City of Monterey	0	937,800	0	0.0	35.9	0.0	35.9	0.05
Sea Haven	929	0	0	116.1	0.0	0.0	116.1	0.12
Seaside East	310	90,000	0	38.8	3.4	0.0	42.2	0.05
Seaside Resort	122	10,000	398	15.3	0.4	16.8	32.4	0.04
UC MBEST	240	1,090,000	0	30.0	41.7	0.0	71.7	0.09
Total	**5,105**	**4,008,800**	**1,992**	**638.1**	**153.4**	**78.5**	**870.0**	**1.00**

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3/15/2019

Notes:

1. Development limits based on development Forecasts documented in FORA “FY 2018-2019 Capital Improvement Program”, Table 6 and Table 7 and reflect remaining entitlements.
2. Residential acreage estimated based on average residential density of 8 dwelling units per acre.
3. Office, Industrial, and Commercial acreage estimated bsaed on average floor-area-ratio of 0.6.
4. Acreage for hotel development estimated based on available planning information and County of Monterey parcel database.
5. Estimated demand based on residential and non-residential unit factors consistent with master plan unit factors.

Table 5.3 Average Daily Water Demands
Water Master Plan
Marina Coast Water District

PRELIMINARY

Land Use Classifications	Buildout Water Demands															
	Existing Development			Future Development within Service Area								Future Development Outside of Future Service area			Total	
	Lands Retained by Existing Development	Water Unit Factor	Average Daily Demand	Lands Gained from Redevelopment	New Development		Subtotal Future Development	Water Unit Factor	Average Daily Demand	Total Development at Buildout of Service Area	Total Average Daily Demand	Development Outside of Future Service Area	Water Unit Factor	Average Daily Demand	Total Development within Planning Study Area	Average Daily Demand
					Inside Existing Service Area	Outside Existing Service Area										
	(acre)	(gpd/acre)	(gpd)	(acre)	(acre)	(acre)	(acre)	(gpd/acre)	(gpd)	(gpd/acre)	(gpd)	(acre)	(gpd/acre)	(gpd)	(acre)	(gpd)
Residential																
Residential	2,378	1,060	2,520,469	85	1,167	1,033	2,285	1,060	2,421,951	4,663	4,942,420	0	1,060	50	4,663	4,942,470
Subtotal Residential	2,378		2,520,469	85	1,167	1,033	2,285			4,663	4,942,420	0		50	4,663	4,942,470
Non-Residential																
Commercial	309	1,390	429,218	21	235	139	395	1,390	549,113	704	978,331	1	1,390	1,420	705	979,751
Park	98	1,090	106,302	103	156	222	481	1,090	524,525	579	630,827	0	1,090	0	579	630,827
Institutional	541	240	129,932	23	191	58	272	240	65,246	813	195,178	1	240	220	814	195,398
Planned Development Mixed Use District	0	1,160	0	134	475	726	1,336	1,160	1,549,438	1,336	1,549,438	0	1,160	0	1,336	1,549,438
Subtotal Non-Residential	948		665,453	280	1,058	1,146	2,484		2,688,322	3,432	3,353,774	2		1,640	3,433	3,355,415
Other																
Bayonet Golf Course	307	0	0	0	0	0	0	0	0	307	0	0	0	0	307	0
Open Space - Other	438	0	0	46	0	0	46	0	0	484	0	90	0	0	574	0
Designated Open Space	45	0	0	0	0	0	0	0	0	45	0	18,238	0	0	18,283	0
ROW	25	0	0	0	1	0	1	0	0	26	0	0	0	0	26	0
Airport Runway	224	0	0	0	0	0	0	0	0	224	0	0	0	0	224	0
Parker Flats LU Swap	0	0	0	0	0	709	709	0	0	709	0	0	0	0	709	0
Subtotal Other	1,039	0	0	46	1	709	756	0	0	1,794	0	18,328	0	0	20,122	0
Totals	4,364	431	**3,185,922**	412	2,225	2,888	5,524	0	0	9,889	**8,296,194**	18,330	0	1,690	28,218	**8,297,884**

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11/6/2017

Table 5.4 Average Annual Demand Projections
Water Master Plan
Marina Coast Water District

PRELIMINARY

Year	Population[1,2]	Annual Growth (%)	Average Annual Demand[3,4] (mgd)
Historical Population			
2005	29,477	-	3.74
2006	29,154	-1.1%	3.83
2007	29,065	-0.3%	4.07
2008	29,533	1.6%	3.66
2009	29,743	0.7%	3.60
2010	30,840	3.7%	3.69
2011	31,141	1.0%	3.62
2012	31,445	1.0%	3.68
2013	31,752	1.0%	3.96
2014	32,062	1.0%	3.60
2015	32,375	1.0%	2.88
2016	33,346	3.0%	2.70
2017	34,347	3.0%	2.89
2018	35,377	3.0%	3.57
Projected Population			
2019	36,438	3.0%	3.68
2020	37,531	3.0%	3.79
2021	38,657	3.0%	3.90
2022	39,817	3.0%	4.02
2023	41,012	3.0%	4.14
2024	42,242	3.0%	4.27
2025	43,509	3.0%	4.39
2026	44,815	3.0%	4.53
2027	46,159	3.0%	4.66
2028	47,544	3.0%	4.80
2029	48,970	3.0%	4.94
2030	50,439	3.0%	5.09
2031	51,952	3.0%	5.25
2032	53,511	3.0%	5.40
2033	55,116	3.0%	5.57
2034	56,770	3.0%	5.73
2035	58,473	3.0%	5.90
2036	60,227	3.0%	6.08
2037	62,034	3.0%	6.26
2038	63,895	3.0%	6.45
2039	65,812	3.0%	6.65
2040	67,786	3.0%	6.84
2041	69,820	3.0%	7.05
2042	71,914	3.0%	7.26
2043	74,072	3.0%	7.48
2044	76,294	3.0%	7.70
2045	78,583	3.0%	7.94
2046	80,940	3.0%	8.17
2047	83,368	3.0%	8.42

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2/7/2019

Note:

1. Population for years 2005 - 2015 extracted from Marina Coast Water District 2015 Urban Water Management Plan.
2. Population for years 2016 - 2047 calculated assuming annual growth rate of 3.0% as directed by District staff.
3. Average annual demand for 2018 - 2047 based on projected population and 2014 per capita water use less 10% (approximately 101 gpcd).

Table 5.5 Buildout Demands by Pressure Zone

Water Master Plan

Marina Coast Water District

PRELIMINARY

Pressure Zone	Future Demands		
	Average Day (mgd)	Maximum Day[1] (mgd)	Peak Hour[2] (mgd)
A	2.2	4.4	7.8
B	2.3	4.6	8.1
B-EG	0.2	0.4	0.6
C	1.4	2.7	4.8
D	1.8	3.6	6.3
E-HYD	0.3	0.6	1.1
EG-HYD	0.1	0.2	0.3
Total	**8.3**	**16.5**	**28.9**

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1/18/2019

1. Maximum Day Demand = 2.0 x Average Day Demand
2. Peak Hour Demand = 3.5 x Average Day Demand

factors and reflect an average day demand equal to 2014 production minus 10%. The total average day domestic water demands from existing and future developments is estimated to be 8.3 mgd.

Based on the buildout average day demand of 8.3 mgd, and the 2014 less 10% per capita water use factor of approximately 101 gpcd, the District's buildout population capacity is estimated to be approximately 83,300 people. Assuming a constant population growth rate of 3% as discussed in Chapter 2 it is estimated that the District will reach this buildout population capacity in the year 2047. **Table 5.4** documents the annual population estimates and includes estimated annual average water demand, based on projected population and a per capita water use of 101 gpcd.

Table 5.5 summarizes the buildout water demand for each pressure zone. It should be noted that **Table 5.5** includes demands for future pressure zone EG-HYD, which is a planned hydropneumatic pressure zone to serve potential future development south of the existing East Garrison development; this pressure zone is discussed in more detail in Chapter 7.

5.3 MAXIMUM DAY AND PEAK HOUR DEMANDS

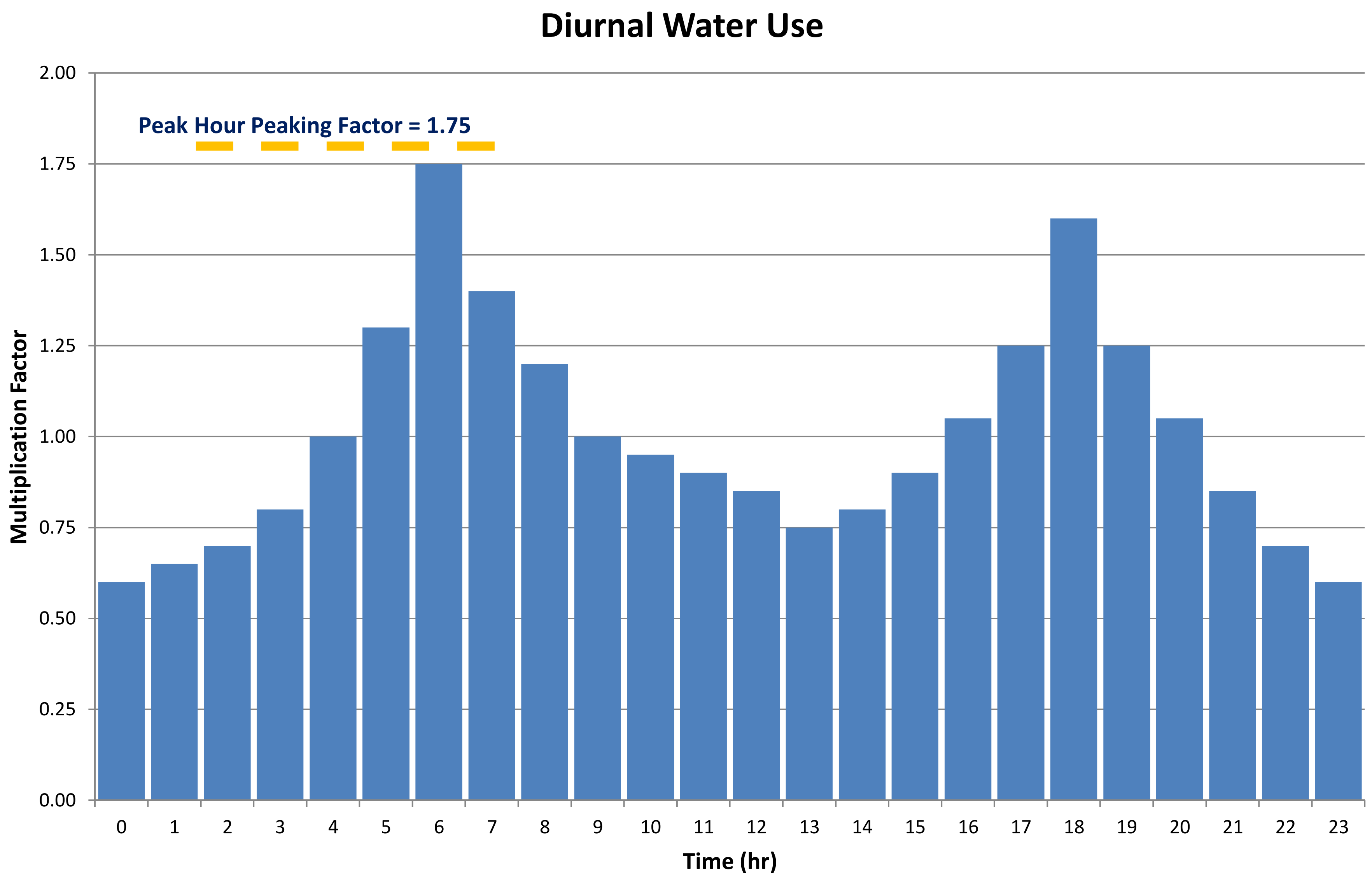
The maximum day and peak hour demands for the existing and future demands were calculated using the average day demands and District peaking factor criteria. The maximum day to average day ratio of 2.0, and peak hour to average day ratio of 3.5, were applied to the average day demands to obtain estimates of the higher demand conditions. The maximum day and peak hour demand estimates for the buildout of the Future Service Area are 16.6 mgd and 29.0 mgd, respectively.

5.4 DIURNAL DEMAND PATTERNS

Water demands vary with the time of day and by account type according to the land use designation. These fluctuations were accounted for in the modeling effort and evaluation of the water distribution system. The diurnal demand patterns affect the water levels in storage reservoirs and amount of flow through distribution mains. The diurnal demand pattern utilized in this master plan was based on the pattern developed as part of the 2007 WSMP, with an adjustment made to the peak hour factor for consistency with the District's design standards; the diurnal demand pattern is shown on **Figure 5.1**. The diurnal pattern was confirmed during the calibration effort of the District's hydraulic model and corresponding SCADA information.

5.5 GROUNDWATER SUPPLY

As documented in a previous section, the District currently utilizes groundwater as the sole source of supply. As a part of this Master Plan, GHD reviewed potential sources of groundwater contamination as well as documented the District's ongoing monitoring and testing practices. The following sections are intended to briefly summarize the report prepared by GHD, which is included in full in **Appendix A**.



LEGEND

PRELIMINARY

Note: Water system diurnal curve is consistent with 2007 Water Master Plan and has been adjusted to reflect updated Peak Hour Peaking Factor

March 28, 2018

Figure 5.1
Diurnal Pattern

Water Master Plan
Marina Coast Water District

AKEL ENGINEERING GROUP, INC.

5.5.1 Groundwater Quality and Contamination

The District actively monitors and mitigates groundwater contaminants that may adversely impact their supply reliability. Three of the District wells located in Marina draw from the deep (900 foot) aquifer, while the 5 wells located in Fort Ord draw from the various levels of the Salinas Valley Groundwater basin, and receive chlorination treatment. The following sections briefly discuss local water quality monitoring, known contaminations, and mitigation efforts.

5.5.2 Water Quality Monitoring

The District operates a state-certified laboratory for the purpose of monitoring the existing water quality of the City of Marina and Fort Ord water supplies. Monitoring and testing is performed in a manner consistent with Title 22 of the California Water Code, with 20 sampling sites in the City of

Marina and 20 sites in Fort Ord. Some of the constituents the District's laboratory monitors include chloride, fluoride, nitrate, bromide, and sulfate.

The District has four wells that are located in the Salinas Valley Groundwater Basin. This basin is listed as an impaired basin due to nitrate contamination and seawater intrusion. Additionally, the surface waters which help recharge the basin are listed as 303(d) impaired waters, including up to 19 impairments. Much of the contamination issues stem from agricultural sources, including toxicity, pesticides, nutrient loading and indicator bacteria.

5.5.3 Water Quality Mitigation Efforts

Current mitigation efforts include both regulatory and volunteer efforts to improve water quality impacts from agricultural practices in the region.

Regulatory

The Central Coast Regional Water Quality Control Board (RWQCB) adopted and subsequently updated their Irrigated Lands Order that prioritizes conditions controlling pollutant loading in areas where water quality impairment is documented on the 303(d) list. This order is managed by the RWCQB for all agricultural growers within the jurisdictional limit, and dischargers are required to implement management practices to maintain compliance.

Additionally, the State Water Resources Control Board (SWRCB) has adopted a Recycled Water Policy that requires local stakeholders to manage salt and nutrient management plans. Currently, no plan has been completed for this region.

Voluntary

The Greater Monterey Integrated Regional Water Management Plan (IRWMP) includes discussion regarding the Agriculture and Rural Lands Action Plan, which consists of agricultural industry groups, environmental groups, and resource agencies that provides six categories defining strategies for increasing water quality:

1) identification and adoption of more effective management practices through development of industry networks;
2) expansion and coordination of technical assistance/outreach;
3) public education and public relations;
4) regulatory coordination/permit streamlining for conservation measures;
5) improved funding mechanisms and tax incentives;
6) strategies for public lands and rural roads

The Agricultural Water Quality Alliance was formed in 1999 in an effort to implement the strategies included in the Agriculture and Rural Lands Action Plan. This group has worked to reduce nutrient loading, sedimentation of watersheds, and reduction in pesticide runoff. Examples of the accomplishments of this group are included in the GHD document.

5.5.4 Fort Ord Contamination Mitigation

Based on the discovery of groundwater contamination in 1990, the former Fort Ord area was designated as a National Priority List federal Superfund Site by the Environmental Protection Agency. The District actively monitors wells in the vicinity of the site for TCE and other contaminants. The District also tracks the plume migration and works with the US Army Corps of Engineers (USACE), who are responsible for the groundwater cleanup efforts. USACE published an update to their mitigation efforts in February of 2017, which documented the contamination plumes. Groundwater contaminations generally consist of trichloroethylene (TCE), Perchloroethylene (PCE), and Carbon Tetrachloride (CT).

The District and the USACE actively monitor the contamination sites and associated groundwater quality. Thus far, the Department of Public Health has not taken any additional action due to the contaminant levels being below the Maximum Contaminant Level (MCL).

5.5.5 Seawater Intrusion

While currently operational and meeting the demand requirements, the District has groundwater wells that may be adversely impacted by seawater intrusion if groundwater overdraft continues in the Salinas Valley Groundwater Basin. The average groundwater overdraft during non-drought years is estimated at 50,000 acre-feet (AF) per year, and during drought years has climbed to as much as 300,000 AF. Due to this overdraft, fresh water levels have declined and allowed seawater to intrude into the 180 foot and 400 foot groundwater aquifers.

Historically, the influence of the seawater intrusion front has been documented as areas where concentrations exceed 500 milligrams per liter (mg/L). This area of influence has been gradually moving farther inland, and into the deeper groundwater aquifers. While reductions in overdraft are expected over the next 10 years, seawater intrusion issues are expected to worsen. Furthermore, much of the groundwater modeling completed to date does not account for sea level rise due to global climate change. Sea levels have risen approximately 7 inches in the past 100 years, and are expected to rise 14 inches by 2050 and 55 inches by 2100. This sea level rise will greatly increase the pressure gradient, and is expected to increase seawater intrusion into the local aquifer.

As sea water intrusion has progressed, the District has continued to migrate wells into deeper aquifers. Currently, the Marina wells are located in the deep (900 foot) aquifer due to intrusion into the 180 foot and 400 foot aquifers. The Ord wells are generally located farther inland and have not experienced as much of an impact as the Marina wells due to seawater intrusion. On-going monitoring by the Monterey County Water Resources Agency (MCWRA) has noted that seawater influence has continued to migrate inland, in particular in the 180 foot aquifer. Some of the areas behind the front have improved water quality generally south of the Salinas River. The District currently owns a monitoring well located in the deep aquifer between the Marina wells and the Monterey Bay. If seawater intrusion is noted in the monitoring well, this will serve as an early warning sign for potential impacts to the Marina wells, and the District can begin projects to supplement supply should production be impacted.

Finally, the MCWRA published six recommendations in October 2017 that are intended as guidance for minimizing further intrusion of seawater in the Salinas Valley Groundwater Basin. The six recommendations were presented as follows:

1) Eliminate extractions in the area of impact within the 400 foot groundwater aquifer (shown in the appendix).

2) Enhance and expand the Castroville Seawater Intrusion Program (CSIP).

3) Once CSIP is expanded, eliminate all pumping in the 180 foot and 400 foot aquifer, with some exceptions.

4) Initiate and proceed with the destruction of wells in Agency Zone 2B (map included in appendix).

5) An immediate moratorium on new groundwater well extractions within the deep aquifer (below the 400 foot aquifer) until further investigation is completed and addition long-term viability has been explored for the deep aquifer.

6) Initiate and proceed with an investigation of the hydraulic properties and the long-term viability of the Deep Aquifer.

It should be noted that the District is currently participating in the 6 management practices set forth by MCWRA. Implementation of the Sustainable Groundwater Management Act will provide additional focus on the Marina and North Marina Subbasins, and in particular, the 180 and 400 foot aquifer zones.

CHAPTER 6 - HYDRAULIC MODEL DEVELOPMENT

This chapter describes the development and calibration of the District's domestic water distribution system hydraulic model. The 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 OVERVIEW

Hydraulic network analysis has become an effectively powerful tool in many aspects of water distribution planning, design, operation, management, emergency response planning, system reliability analysis, fire flow analysis, and water quality evaluations. The District's hydraulic model was used to evaluate the capacity adequacy of the existing system and to plan its expansion to service anticipated future growth.

6.2 MODEL SELECTION

The District's hydraulic model combines information on the physical characteristics of the water system (pipelines, groundwater wells, and storage reservoir) and operational characteristics (how they operate). The hydraulic model then performs calculations and solves series of equations to simulate flows in pipes and calculate pressures at nodes or junctions.

There are several network analysis software products that are released by different manufacturers, which can equally perform the hydraulic analysis satisfactorily. The selection of a software depends on user preferences, the distribution system's unique requirements, and the costs for purchasing and maintaining the software.

The District's previous model was developed using Innovyze's (previously MWHSoft) H20Map, which utilizes the effective EPANET hydraulic engine for processing the hydraulic calculations. As part of this master plan, the hydraulic model has been updated and redeveloped into the GIS-based hydraulic model InfoWater by Innovyze. The model has an intuitive graphical interface and is directly integrated with ESRI's ArcGIS (GIS).

6.3 HYDRAULIC MODEL DEVELOPMENT

Developing the hydraulic model included skeletonization, digitizing and quality control, developing pipe and node databases, and water demand allocation.

6.3.1 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, while reducing complexities of large systems, which will reduce the time of analysis while maintaining accuracy, but will also comply with limitations imposed by the computer program.

6.3.2 Pipes and Nodes

Computer modeling requires the compilation of large numerical databases that enable data input into the model. Detailed physical aspects, such as pipe size, pipe elevation, and pipe lengths, contribute to the accuracy of the model.

Pipes and nodes represent the physical aspect of the system within the model. A node is a computer representation of a place where demand may be allocated into the hydraulic system, while a pipe represents the distribution and transmission aspect of the water demand. In addition, reservoir dimensions and capacities, and groundwater well capacity and design head, were also included in the hydraulic model.

6.3.3 Digitizing and Quality Control

The District's existing domestic water distribution system was digitized in GIS using several sources of data and various levels of quality control. The data sources included the District's AutoCAD water system maps as maintained by District staff, as well as the previously developed hydraulic model and additional as-builts provided by District staff.

After reviewing the available data sources the hydraulic model was updated. Resolving discrepancies in data sources was accomplished by graphically identifying discrepancies and submitting it to engineering and operations staff for review and comments. District comments were incorporated in the verified model.

It should be noted that this hydraulic model underwent multiple efforts for validating the pipelines, and included reviews of planned subdivision mapping, a review of existing CAD mapping, a review of previous hydraulic models, and review of operations and maintenance GIS shapefiles. No GIS was available at the start of the project, and thus this team developed GIS for the District to integrate into their future management and review of the system.

6.3.4 Demand Allocation

Demand allocation consists of assigning water demand values to the appropriate nodes in the model. The goal is to distribute the demands throughout the model to best represent actual system response.

The existing demand distribution was obtained from the water billing records. Using GIS, each customer account was geocoded and spatially joined within its existing pressure zone. The accounts were then sorted by pressure zone and the total demand in each zone was calculated.

Domestic water demands from each anticipated future development, as presented in a previous chapter, were also allocated to the model for the purpose of sizing the required future facilities. The demands from the greater Future Study Area were allocated based on proposed land use and the land use acreages. As many of the areas were very large in size, demands were allocated evenly to the demand nodes within each area. Infill areas, redevelopment areas, and vacant lands were also included in the future demand allocation.

6.4 MODEL CALIBRATION

Calibration is intended to instill a level of confidence in the pressures and flows that are simulated. Calibration generally consists of comparing model predictions to field measured results and making necessary adjustments.

6.4.1 Calibration Plan and SCADA

In order to calibrate the hydraulic model pressure SCADA data was collected for points throughout the water distribution system, as well as water level data for the District's storage reservoirs. District staff provided flow and pump operational data for each groundwater well and booster station as well as 15-minute water level data for the District's storage reservoirs. The locations that were included in the calibration for tanks, booster stations, and wells are identified on **Figure 6.1**.

6.4.2 EPS Calibration

Calibration can be performed for steady state conditions or for extended period simulations (EPS). In steady state calibration, the model is compared to field monitoring results consisting of a single value, such as a single hydrant test. EPS calibration consists of comparing model predictions to diurnal operational changes in the water system.

The calibration process was iterative and resulted with satisfactory comparisons between the field measurements and the hydraulic model predictions at each well site and the water tank. The calibration results were graphically summarized for each site and included in **Appendix B**.

Representative extracts from **Appendix B** are shown on **Figure 6.2** for calibration points at the Zone B and Zone C tanks.

6.4.3 Use of the Calibrated Model

The calibrated hydraulic model was used as an established benchmark in the capacity evaluation of the existing water distribution system. The model was also used to identify improvements necessary for mitigating existing system deficiencies and for accommodating future growth. This valuable investment will continue to prove its value to the District as future planning issues or other operational conditions surface. It is recommended that the model be maintained and updated with recent construction to preserve its integrity.

Legend

PRELIMINARY

*Model Calibration Point

Existing Modeled System

- Tanks
- Wells
- Boosters
- PRV

Pipes by Diameter

- 8" and Smaller
- 10" - 12"
- 16" - 20"
- 24" - 48"

- Streets
- Rivers/Streams
- Waterbodies

Figure 6.1
Hydraulic Model Calibration Program

Water Master Plan
Marina Coast Water District

0 0.25 0.5 1 Mile

N S E W

Update: January 2, 2019

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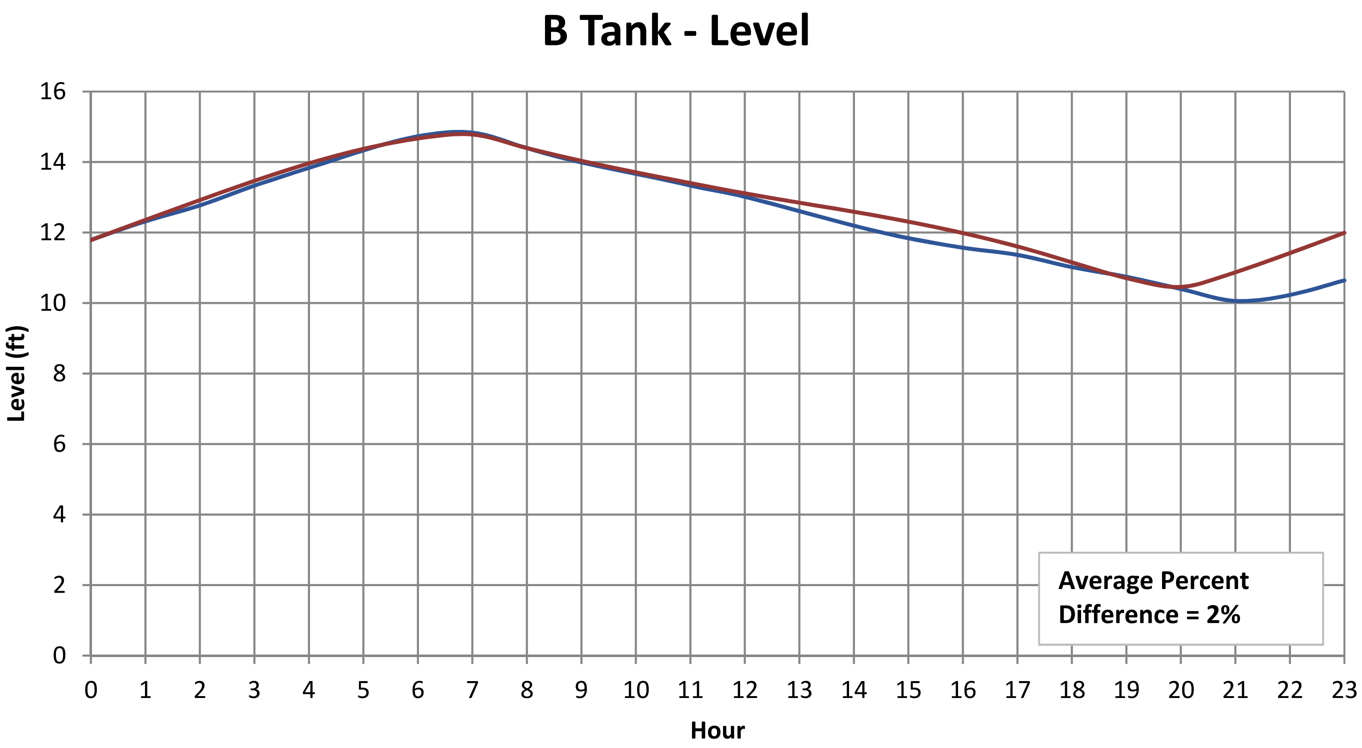
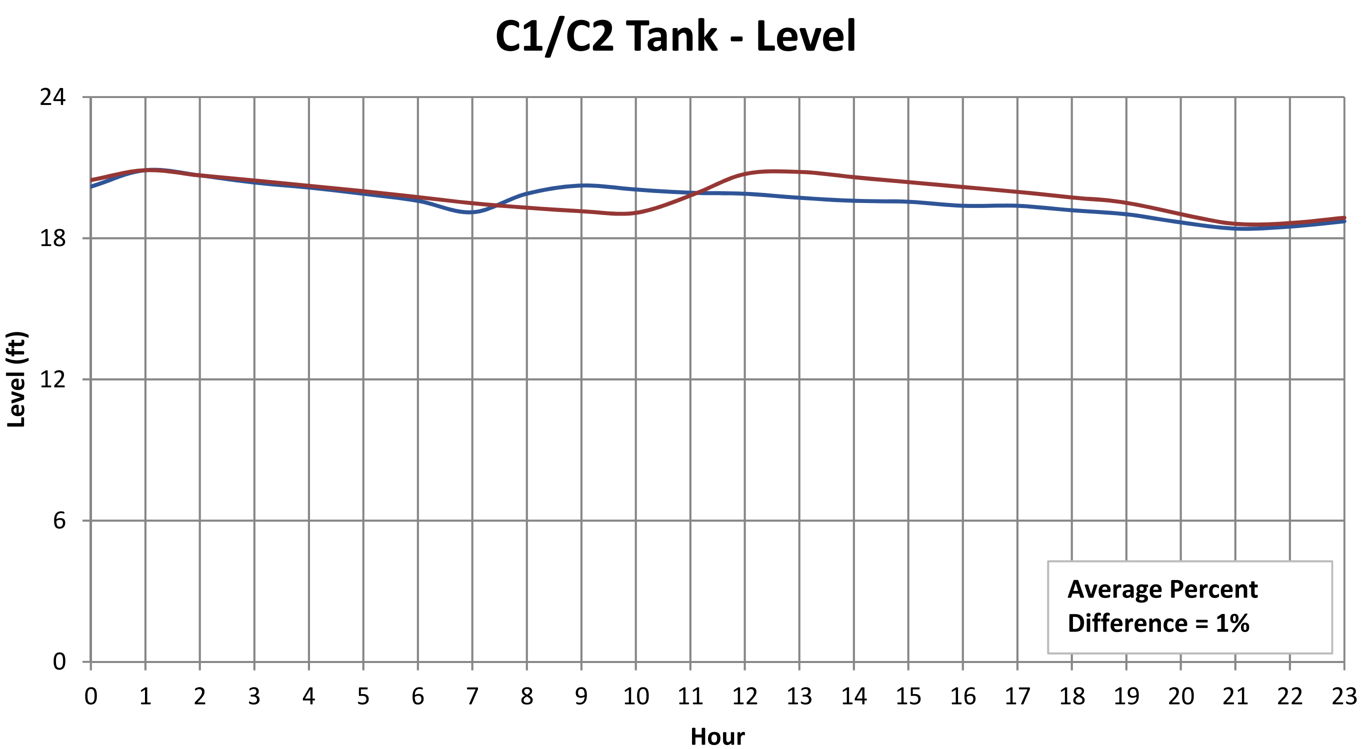
File Path: P:\xGIS\GIS_Projects\Marina_Coast_WD\Water\MCWD_Fig6-1ModelCalibration_010219.mxd





LEGEND

SCADA

Hydraulic Model

PRELIMINARY

Figure 6.1
Tank Calibration

Water Master Plan

Marina Coast Water District

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CHAPTER 7 - EVALUATION AND PROPOSED IMPROVEMENTS

This section presents a summary of the domestic water system evaluation and identifies improvements needed to mitigate existing deficiencies, as well as improvements needed to expand the system and service growth.

7.1 OVERVIEW

The calibrated hydraulic model was used for evaluating the distribution system for capacity deficiencies during peak hour demand and during maximum day demands in conjunction with fire flows. Since the hydraulic model was calibrated for extended period simulations, the analysis duration was established at 24 hours for analysis.

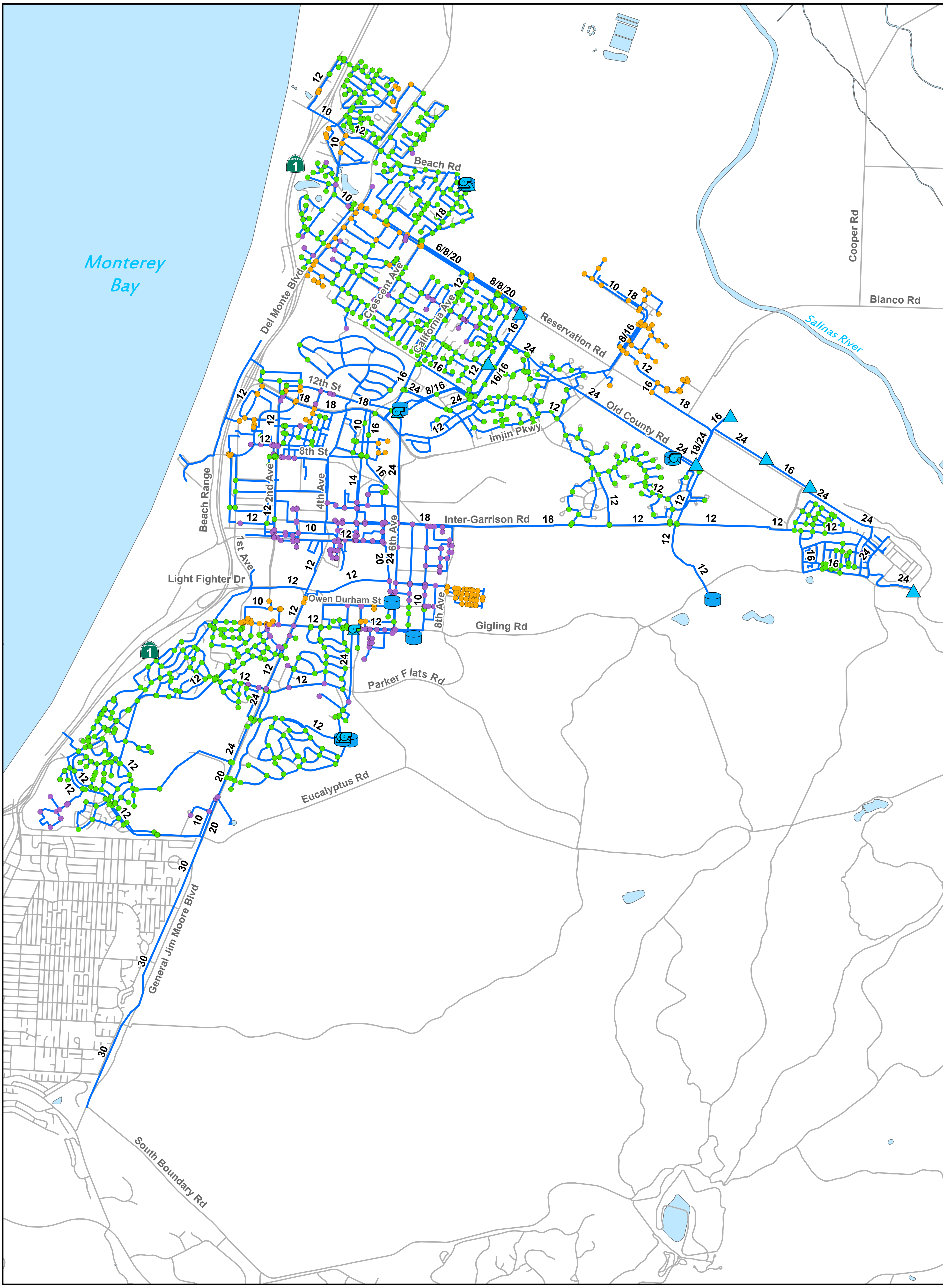
The criteria used for evaluating the capacity adequacy of the domestic water distribution system facilities (transmission mains, storage reservoirs, and booster stations) were discussed and summarized in the System Performance and Design Criteria chapter.

7.2 FIRE FLOW ANALYSIS

The fire flow analysis consisted of using the maximum day demand in the hydraulic model and applying hypothetical fire flows. The magnitude and duration of each fire flow was based on the governing land use type within proximity to the fire location. The criteria for fire flows were also summarized in the System Performance and Design Criteria chapter. **Figure 7.1** summarizes the hypothetical fire flow values simulated throughout the existing water system. Fire flows were assigned at model junctions in proximity to existing system hydrants and were assigned a flow value consistent with land use in close proximity to the hydrant.

Figure 7.2 documents the areas of the existing system with residual fire flow pressures less than 20 psi during the hypothetical fire flow as well as pipelines that are expected to exceed the maximum pipeline velocity of 7 feet per second (ft/s). **Figure 7.3** documents the available fire flows at the modeled junctions based on a minimum residual pressure of 20 psi and a maximum pipeline velocity of 7 ft/s. It should be noted that the results shown on **Figure 7.2** and **Figure 7.3** differentiate between deficiencies at modeled junctions at the end of cul-de-sac pipelines and on the gridded distribution system.

The hydraulic model identified several areas throughout the District's existing distribution system that experience minimum residual pressure less than 20 psi under fire flow conditions. A majority of these deficiencies are located within the City of Marina and are due to small diameter mains that are unable to carry the high flows during a fire event. Several improvements planned for construction in the near future, including a new 12-inch pipeline in the City of Marina's 2nd Avenue extension project as well as the construction of the new Pressure Zone A storage reservoirs, are expected to mitigate these fire flow deficiencies.



Legend

Fire Flow Requirement

- 1,500 gpm for 2 Hours
- 3,000 gpm for 3 Hours
- 4,000 gpm for 4 Hours

Existing Modeled System

- Tanks
- Wells
- Boosters
- Pipes

- Streets
- Rivers/Streams
- Waterbodies

PRELIMINARY

Figure 7.1
Existing Fire Flow Requirement

Water Master Plan
Marina Coast Water District

0 0.25 0.5 1 Mile

N S E W

Update: April 10, 2019

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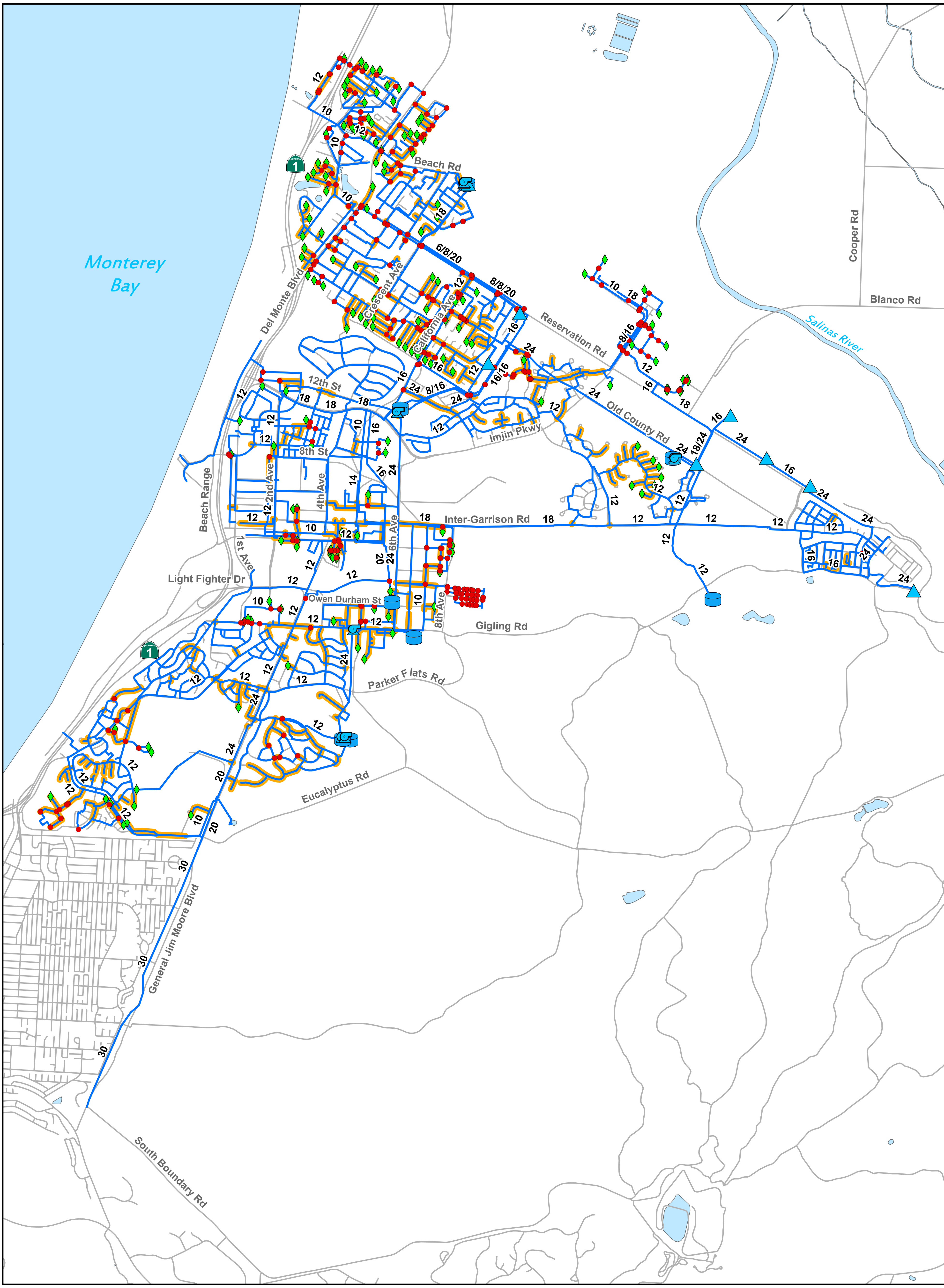

Legend

- Residual Pressure <20 psi
- Cul-de-sac Residual Pressure <20 psi
- Pipe Velocities >7 ft/sec

Existing Modeled System

- Tanks
- Wells
- Boosters
- Pipes
- Streets
- Rivers/Streams
- Waterbodies

PRELIMINARY

0 0.25 0.5 1 Mile

N E S W

Update: April 10, 2019

File Path: P:\xGIS\GIS_Projects\Marina_Coast_WD\Water\MCWD_Fig7-2_FireFlowAnalysis_041019.mxd

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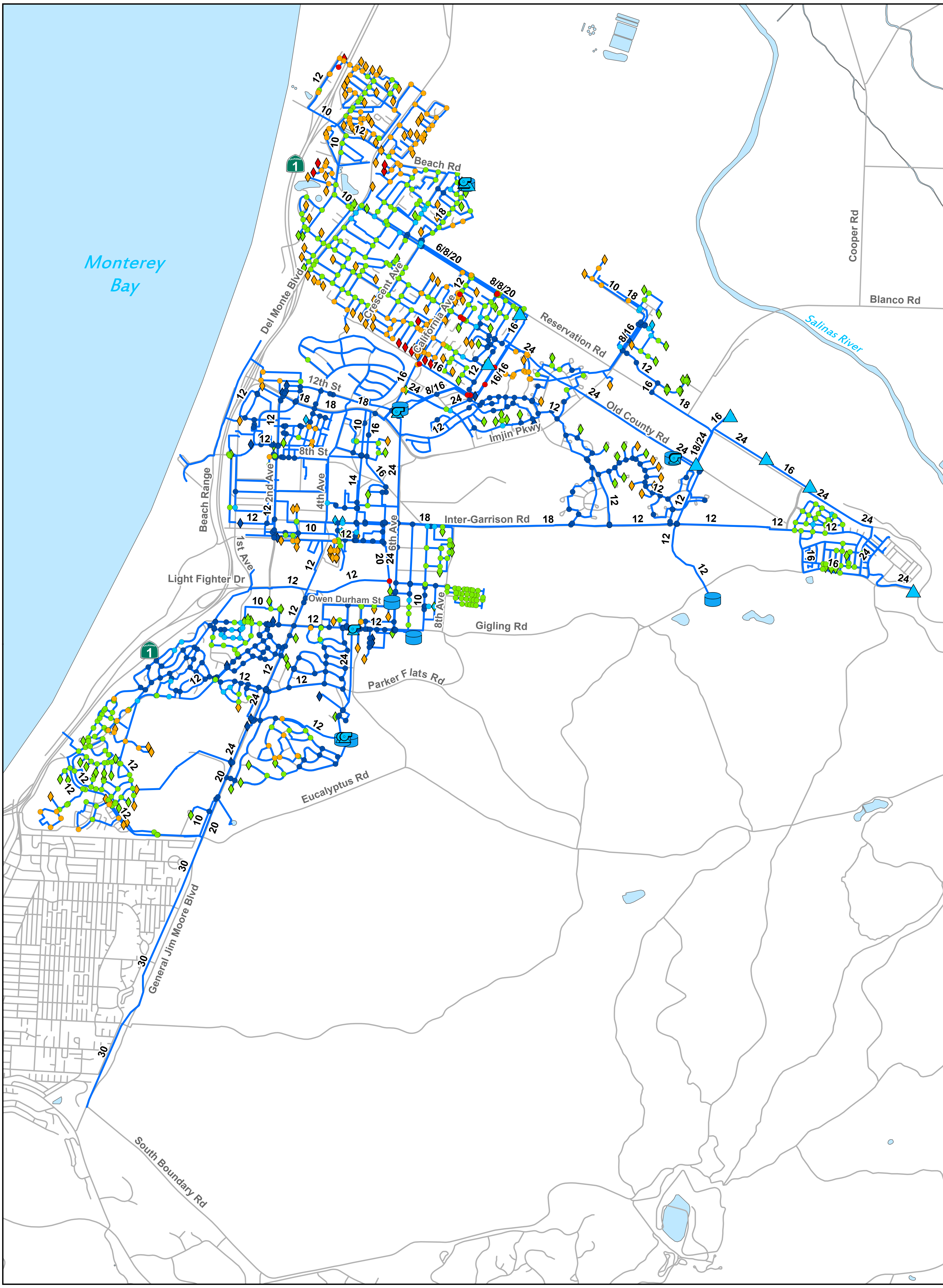
Figure 7.2
Fire Flow Analysis

Water Master Plan
Marina Coast Water District



Legend

PRELIMINARY

Available Flow (gpm)
- < 500
- 500 - 1,500
- 1,500 - 3,000
- 3,000 - 3,400
- > 3,400

Cul-de-sac Available Flow (gpm)
- < 500
- 500 - 1,500
- 1,500 - 3,000
- 3,000 - 3,400
- > 3,400

Existing Modeled System
- Tanks
- Wells
- Boosters
- Pipes
- Streets
- Rivers/Streams
- Waterbodies

0 0.25 0.5 1 Mile

Update: April 10, 2019

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Figure 7.3
Available Fire Flow

Water Master Plan
Marina Coast Water District

7.3 LOW PRESSURES ANALYSIS

The hydraulic model was also used to determine if the existing domestic water distribution system meets the District's System Performance and Design Criteria for maximum day and peak hour pressures, as discussed in a previous chapter. During maximum day demands the minimum pressure requirement is 40 psi, while during the peak hour demand, the minimum pressure requirement is 35 psi. The hydraulic analysis indicated the District's existing system performed reasonably well during under maximum day (**Figure 7.4**) and peak hour (**Figure 7.5**) operating conditions.

7.4 FUTURE SYSTEM ANALYSIS

The Master Plan evaluated the water system infrastructure requirements to service potential future development at the buildout of the District service. Two alternatives were evaluated to serve the buildout of the District's service area. These alternatives are discussed in the following:

7.4.1 Alternative 1 – Develop Eastern Well Field

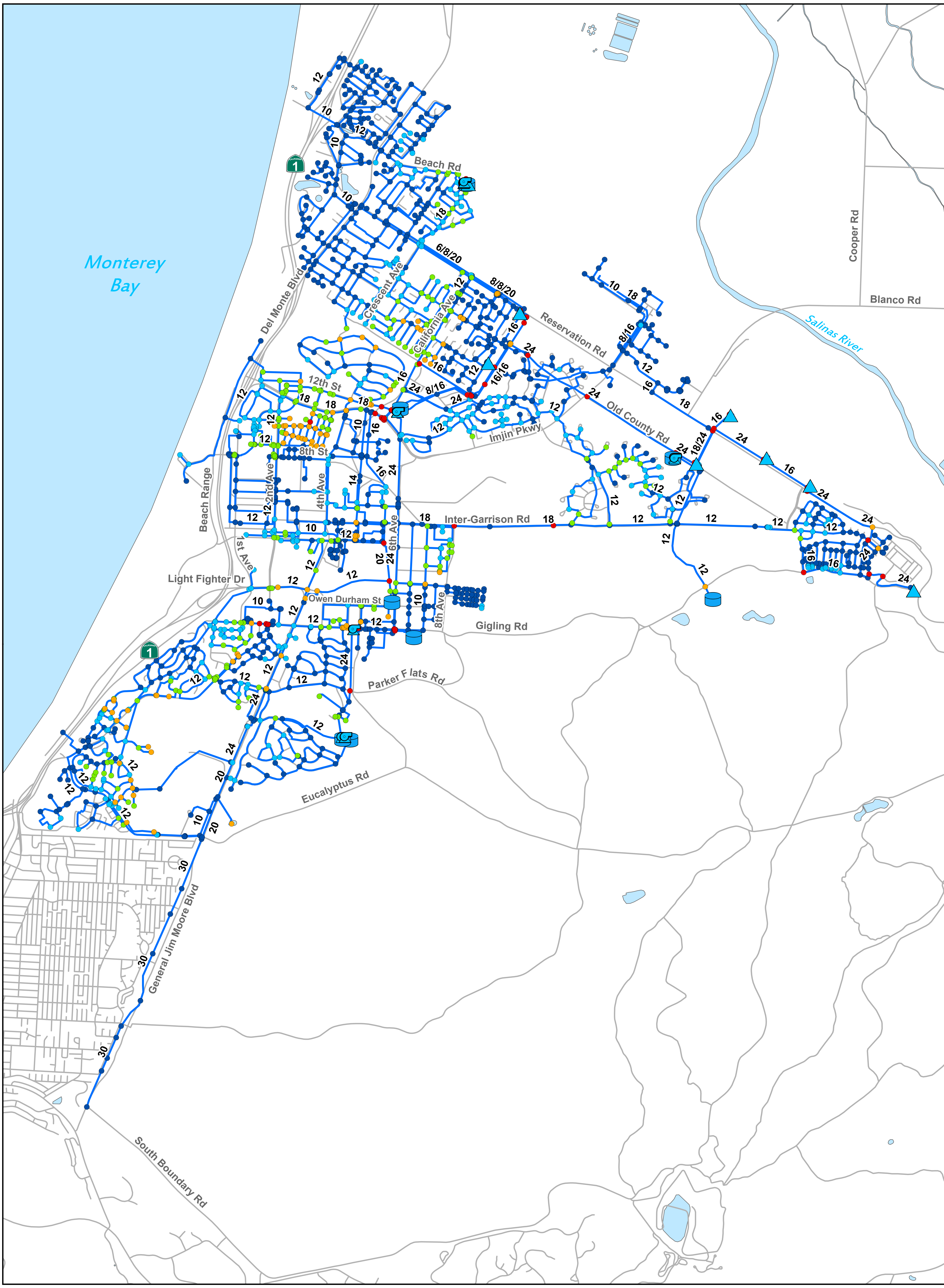
As discussed in a previous chapter, there are ongoing concerns about the intrusion of seawater into the shallow aquifers, and the potential for eventual intrusion into the deep aquifer. This seawater intrusion would likely render the existing wells inoperable due to total dissolved solid and salinity issues. The District has historically planned In order to mitigate this issue by abandoning the existing wells and constructing a new well field east of the existing service area, also known as the Eastern Well Field.

This Eastern Well Field would convey water to a future forebay reservoir at the existing East Garrison development before being pumped to Pressure Zone A and Pressure Zone B by new pump station facilities. This would require substantial transmission main improvements along Inter-Garrison Road, as well as large pumping facilities located within the East Garrison community. Additionally, this alternative would require the abandonment of existing well facilities and the construction of all new wells in the Eastern Well Field. The improvement recommendations for this alternative are shown graphically on **Figure 7.6**

This alternative will require the following general improvements:

- 35.4 miles of new pipeline ranging in size from 12 to 36 inches in diameter.
- 8.5 million gallons of new storage.
- 8 new water supply wells.
- 34,700 gpm of new boosting capacity.

As a part of this master plan, preliminary costs were prepared as a means of comparing infrastructure improvement alternatives. The total estimated cost for this alternative is estimated at 140 million dollars.



Legend

Junction Pressures
- < 35
- 35 - 45
- 45 - 55
- 55 - 65
- > 65

Existing Modeled System
- Tanks
- Wells
- Boosters
- Pipes

- Streets
- Rivers/Streams
- Waterbodies

PRELIMINARY

0 0.25 0.5 1 Mile

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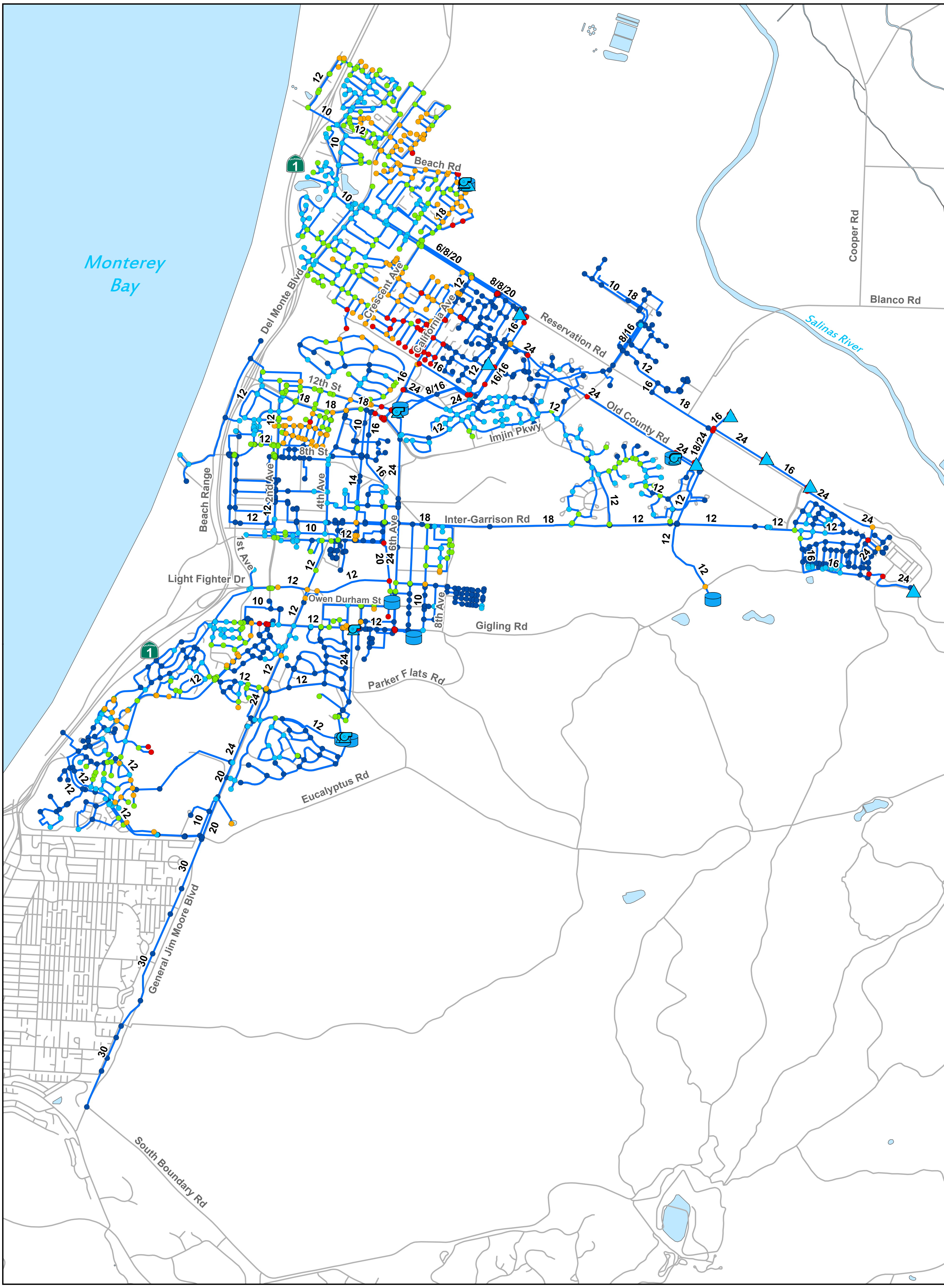
Figure 7.4
Maximum Day Pressures

Water Master Plan
Marina Coast Water District



Legend

Junction Pressures

- < 35
- 35 - 45
- 45 - 55
- 55 - 65
- > 65

Existing Modeled System

- Tanks
- Wells
- Boosters
- Pipes

- Streets
- Rivers/Streams
- Waterbodies

PRELIMINARY

0 0.25 0.5 1 Mile

Update: April 10, 2019

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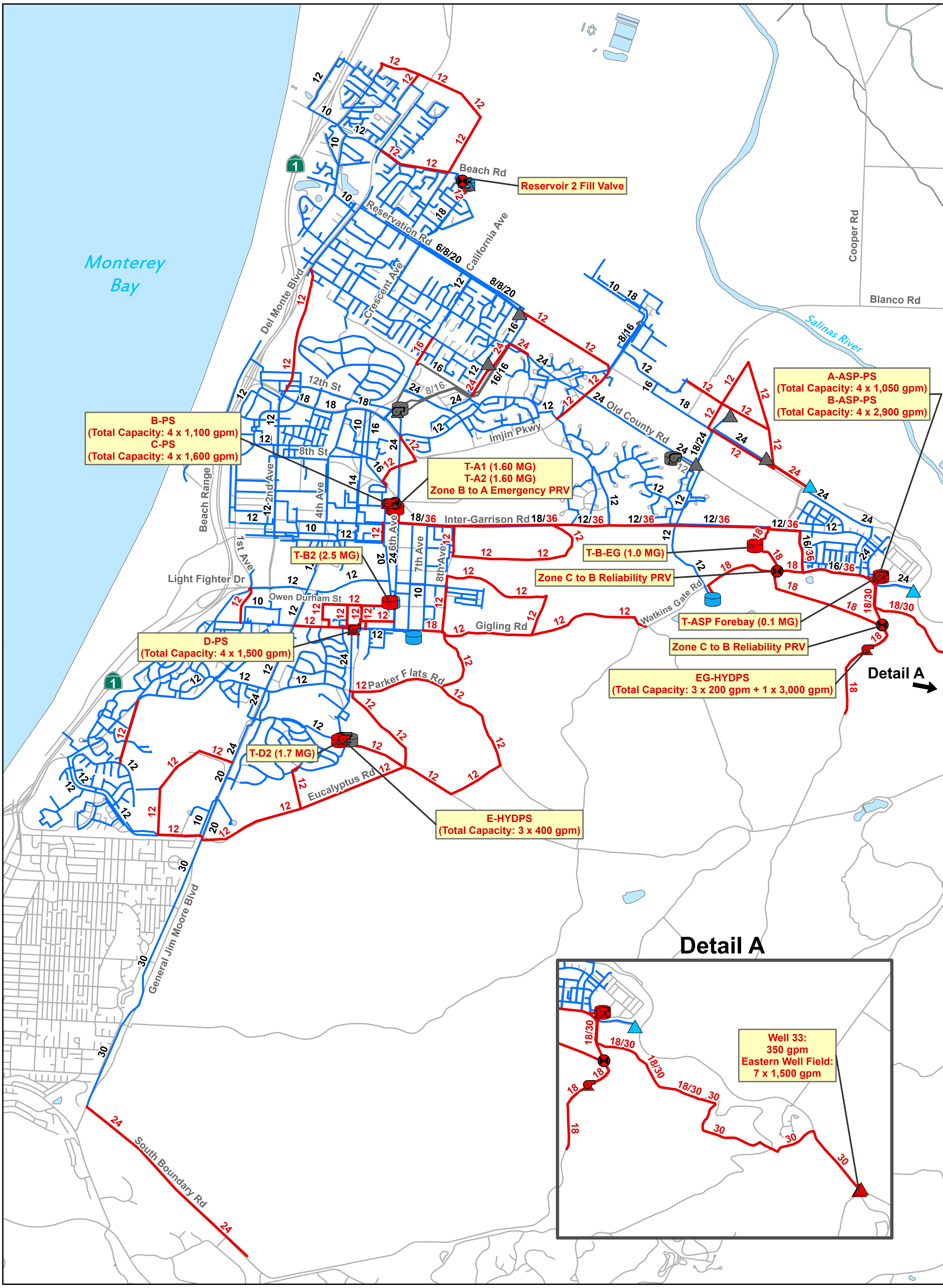
Figure 7.5 Peak Hour Pressures

Water Master Plan
Marina Coast Water District



Legend

Future Improvements
- Tanks
- Wells
- Boosters
- Valves
- Pipes

Future to be Abandoned
- Tanks
- Wells
- Boosters
- Pipes

Existing Modeled System
- Tanks
- Wells
- Boosters
- Pipes

- Streets
- Rivers/Streams
- Waterbodies

PRELIMINARY

0 0.25 0.5 1 Mile

Update: March 29, 2019

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File Path: P:\xGIS\GIS_Projects\Marina_Coast_WD\Water\MCWD_Fig7-6_FutureSystem-Alt1_032919.mxd

Figure 7.6
Future System Improvements Alternative 1
Water Master Plan
Marina Coast Water District

7.4.2 Alternative 2 – Construct New Groundwater Wells

As an alternative to the Eastern Well Field, and assuming seawater intrusion does not adversely impact the existing water supply wells, the District chose to explore the option of utilizing the existing wells and rehabilitating them as necessary to service future growth.

This alternative utilizes the existing transmission system to convey the supply to the City of Marina in Pressure Zone A where booster stations will convey water to the higher pressure zones. The current transmission system capacity is limited due to a single 24-inch and the buildout supply requirement will exceed the available capacity by more than 4,000 gpm under peak demand conditions. In an effort to avoid costly transmission main parallel or replacement improvements, this alternative recommends constructing a new booster station at the Intermediate Reservoir, and pumping water to the C-2 tank. From there, water is conveyed via a new pump station to Pressure Zone D through a new 18-inch transmission main along Watkins Gate Road. These improvements eliminate the need for significant transmission main improvements from Zone A to Zone D, as well as improving water quality in the existing storage reservoir C2. The improvement recommendations for this alternative are shown graphically on **Figure 7.7**

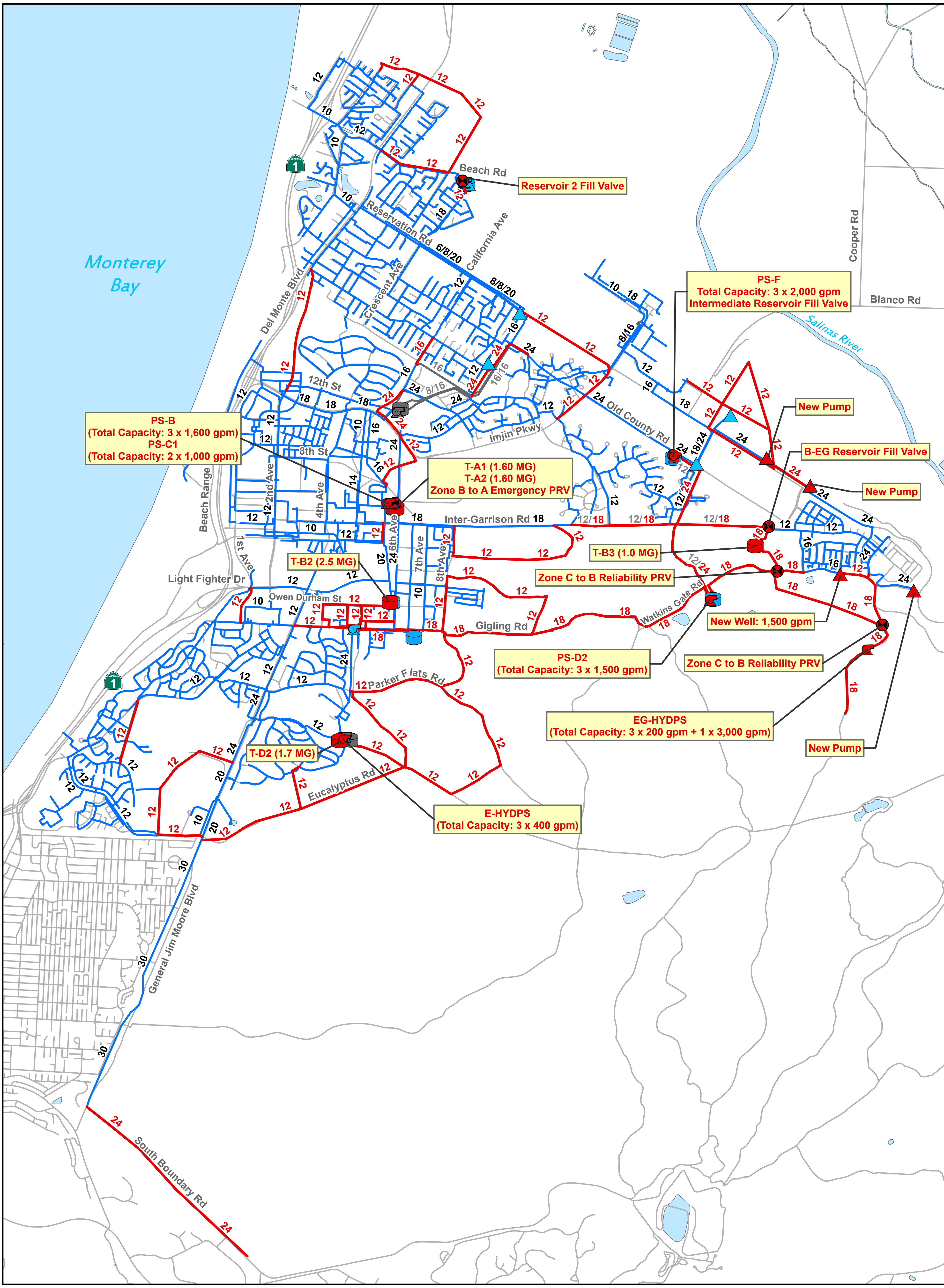
This alternative will require the following general improvements:

- 33.5 miles of new pipeline ranging in size from 12 to 24 inches in diameter.
- 8.4 million gallons of new storage.
- 1 new water supply well.
- 20,600 gpm of new boosting capacity.

As a part of this master plan, preliminary costs were prepared as a means of comparing infrastructure improvement alternatives. The total estimated cost for this alternative is estimated at 90 million dollars.

Due to lower capital improvement costs and construction feasibility, this alternative was selected by District staff for further evaluation and detailed capital improvement recommendations. The following sections evaluate the supply, pump station, and pipeline improvements for this future system alternative. A hydraulic profile is included on **Figure 7.8** to document the schematic representation of the system operations, the proposed pressure zone connectivity, and the booster station and tank improvements.

It should be noted that improvements recommended in this master plan expanded and altered the existing pressure zone boundaries. As such, the proposed pipelines by pressure zone are documented in **Figure 7.9** and the boundaries of the pressure zones are shown in **Figure 7.10**. This master plan also included a new future pressure zone called the East Garrison Hydropneumatic zone. This is a small area south of East Garrison that will be served by a small hydropneumatic pump station.



Legend

PRELIMINARY

Future Improvements	Future to be Abandoned	Existing Modeled System	
Tanks	Tanks	Tanks	Streets
Wells	Boosters	Wells	Rivers/Streams
Boosters	Pipes	Boosters	Waterbodies
Valves		Pipes	
Pipes			

0 0.25 0.5 1 Mile

Update: March 29, 2019

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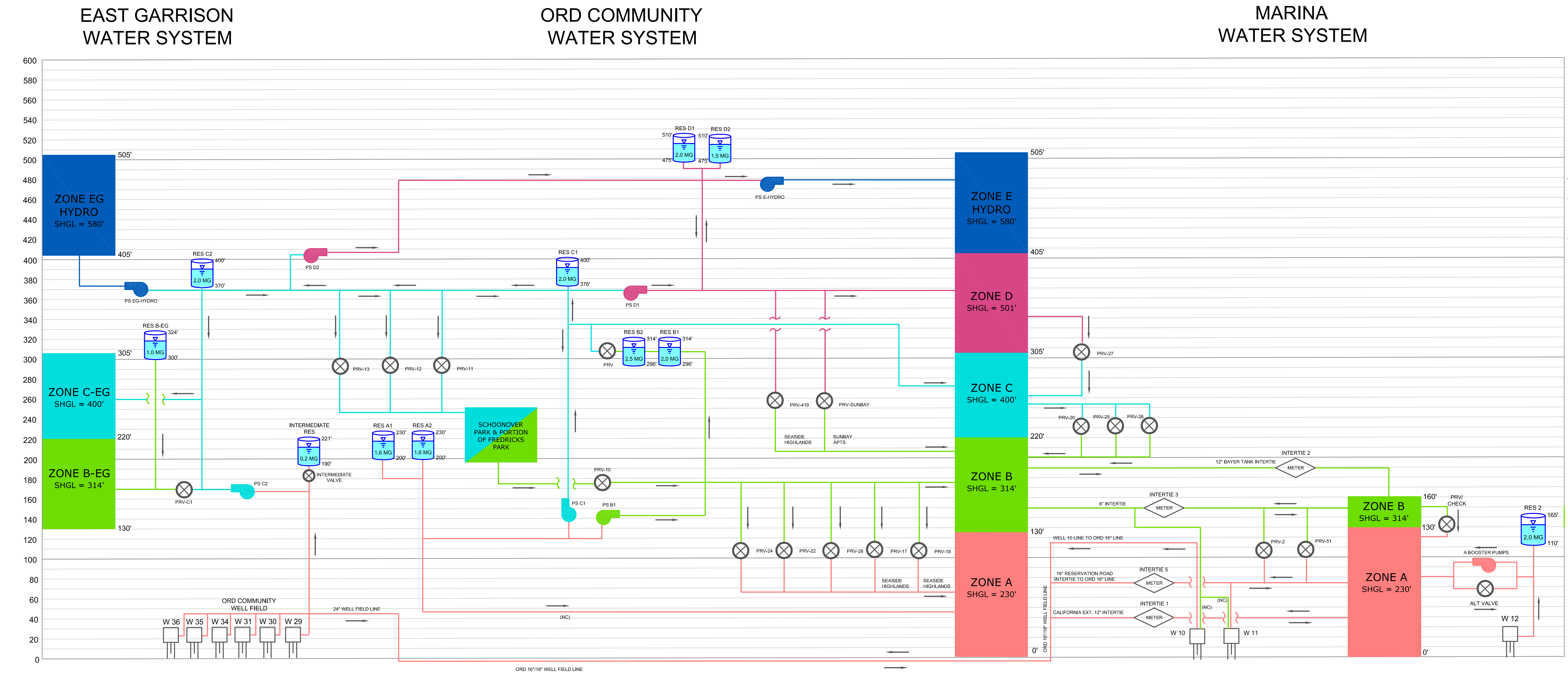
File Path: P:\xGIS\GIS_Projects\Marina_Coast_WD\Water\MCWD_Fig7-7_FutureSystem-Alt2_032919.mxd

Figure 7.7
Future System Improvements Alternative 2

Water Master Plan
Marina Coast Water District



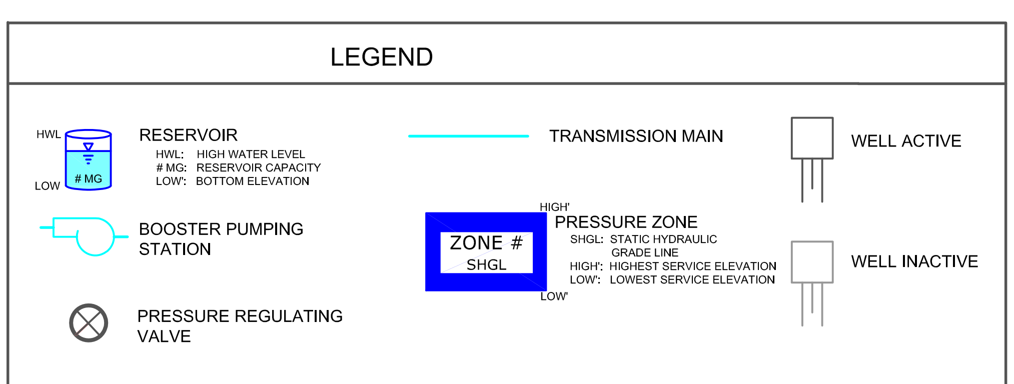


Figure 7.8

Proposed Hydraulic Profile Schematic

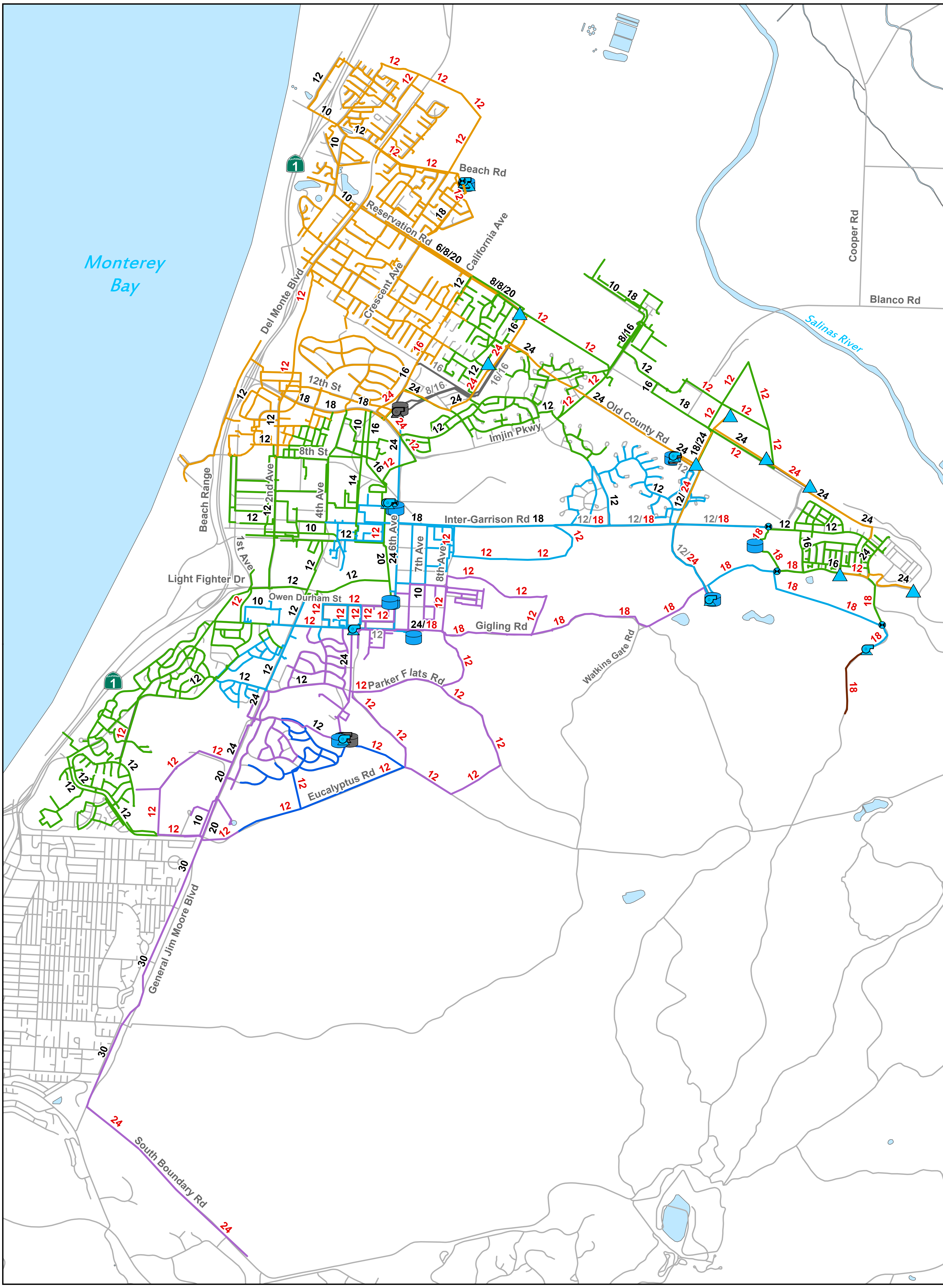
2019 WATER MASTER PLAN

MARINA COAST WATER DISTRICT

AKEL ENGINEERING GROUP, INC.

Last Updated: 04/09/19

PRELIMINARY



Legend

Future to be Abandoned
- Tanks
- Boosters
- Pipes

Potential Future Existing System
- Tanks
- Wells
- Boosters
- Valves

Pipes by Pressure Zone
- Zone A
- Zone B
- Zone C
- Zone D
- Zone E
- EG Hydro

- Streets
- Rivers/Streams
- Waterbodies

PRELIMINARY

0 0.25 0.5 1 Mile

Update: April 12, 2019

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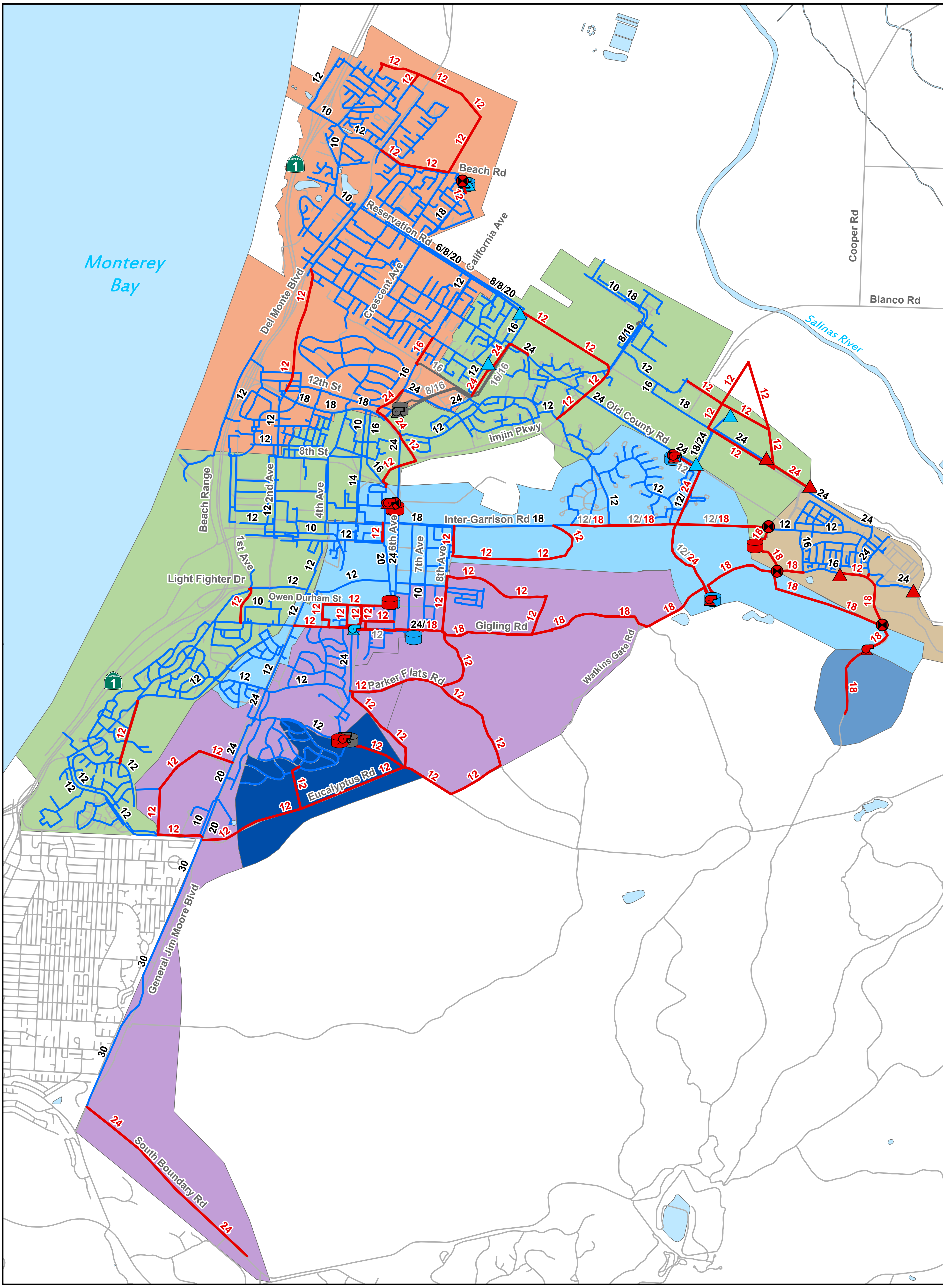
File Path: P:\xGIS\GIS_Projects\Marina_Coast_WD\Water\MCWD_Fig7-9_FutPipesbyPZ_041219.mxd

Figure 7.9
Future System Pipelines by Pressure Zone

Water Master Plan
Marina Coast Water District



Legend

Future Improvements
- Tanks
- Wells
- Boosters
- Valves
- Pipes

Future Pressure Zones
- Zone A
- Zone B
- Zone B-EG
- Zone C
- Zone D
- Zone E
- Zone EG-HYD

Future to be Abandoned
- Tanks
- Boosters
- Pipes

Existing Modeled System
- Tanks
- Wells
- Boosters
- Pipes

- Streets
- Rivers/Streams
- Waterbodies

PRELIMINARY

0 0.25 0.5 1 Mile

N W E S

Update: January 25, 2019

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File Path: P:\xGIS\GIS_Projects\Marina_Coast_WD\Water\MCWD_Fig7-10_FutPressureZones-Alt2_012519.mxd

Figure 7.10
Future System Pressure Zones

Water Master Plan
Marina Coast Water District

7.5 STORAGE ANALYSIS

This section documents the District's existing domestic water storage capacity. Additionally, this section identifies the existing and future storage requirements to meet the storage capacity criteria for each pressure zone.

7.5.1 Storage Requirements

The following sections summarize the storage requirements under existing and buildout development conditions. The storage requirements for each zone are calculated based on criteria discussed in the System Performance and Design Criteria chapter and are summarized for existing and buildout development conditions on **Table 7.1** and **Table 7.2**, respectively.

Existing Development

Existing storage requirements were identified for each pressure zone and are summarized on **Table 7.1**. The table lists the existing domestic water demands as well as the operational, emergency and fire flow storage requirements for each pressure zone. As summarized on this table the total required storage for existing domestic water demands is 8.46 MG.

Buildout Development

The storage requirements due to the buildout development of the District service area are summarized by pressure zone on **Table 7.2**. The table lists the additional domestic water demands due to buildout development as well as the operational, emergency, and fire flow storage requirements for each pressure zone. As summarized on **Table 7.2** the total required storage for buildout domestic water demands at 16.2 MG, which includes the demands due to existing development.

7.5.2 Storage Analysis and Recommended New Storage Facilities

The existing and future storage requirements, shown on **Table 7.1** and **Table 7.2**, were compared with existing storage facilities in each pressure zone to identify required storage facility improvements for the buildout development horizon, as summarized on **Table 7.3**. The following sections summarize the recommended storage facilities.

Pressure Zone A

Under existing conditions, the storage requirements for Pressure Zone A are provided by Reservoir 2 and the Sand Tank. Well 12 pumps directly into Reservoir 2 as an at-grade storage tank and Pump Station A discharges from the tank and pressurizes Zone A within Central Marina. For storage planning purposes it is assumed Pump Station A will operate at 3,000 gpm for 6 hours during peak demand conditions, providing a water volume of approximately 1.1 MG.

Under buildout conditions, two new storage tanks are planned to replace the existing Sand Tank and are intended to meet the storage requirements of both existing and buildout development. These tanks also mitigate existing peak hour pressure deficiencies that are shown on **Figure 7.5**.

Table 7.1 Existing Storage Requirements

Water Master Plan
Marina Coast Water District

PRELIMINARY

Pressure Zone	Existing Water Demands		Existing Water Storage Requirements			
	Average Day Demand (mgd)	Maximum Day Demand[1] (mgd)	Operational at 25% (MG)	Emergency at 50% (MG)	Fire Protection[2] (MG)	Total, By Pressure Zone (MG)
A	1.56	3.12	0.78	1.56	0.96	3.30
B	0.99	1.99	0.50	0.99	0.96	2.45
B-EG[3]	0.06	0.12	0.03	0.06	0.18	0.27
C	0.30	0.60	0.15	0.30	0.96	1.41
D	0.26	0.52	0.13	0.26	0.54	0.93
E-HYD[4]	0.06	0.13	0.03	0.06	0	0.10
Total Existing Storage Requirements						
	3.24	**6.48**	**1.62**	**3.24**	**3.60**	**8.46**

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Notes:

1. Maximum Day Demand = 2.0 x Average Day Demand
2. Fire Protection requirement represents largest fire requirement for each zone, based on account types listed in water billing records
3. B-EG pressure zone represents East Garrison development area currently supplied from Zone C via PRV on Inter-Garrison Rd.
4. Hydropneumatic zone storage requirements to be provided by source pressure zone.

Table 7.2 Buildout Storage Requirements

Water Master Plan
Marina Coast Water District

PRELIMINARY

Pressure Zone	Water Demands for Future Growth		Water Storage Requirements for Future Growth			
	Average Day Demand (mgd)	Maximum Day Demand[1] (mgd)	Operational at 25% (MG)	Emergency at 50% (MG)	Fire Protection[2] (MG)	Total, By Pressure Zone (MG)
A	2.22	4.43	1.11	2.22	0.96	4.28
B	2.31	4.61	1.15	2.31	0.96	4.42
B-EG	0.18	0.36	0.09	0.18	0.54	0.81
C	1.36	2.72	0.68	1.36	0.96	3.00
D	1.80	3.60	0.90	1.80	0.54	3.24
E-HYD[3]	0.32	0.64	0.16	0.32	0	0.48
EG-HYD[3]	0.09	0.17	0.04	0.09	0	0.13
Total Existing Storage Requirements						
	8.18	**16.36**	**4.09**	**8.18**	**3.96**	**16.23**

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Notes:

1. Maximum Day Demand = 2.0 x Average Day Demand
2. Fire Protection requirement represents largest fire requirement for each zone, based on account types listed in water billing records.
3. Hydropneumatic zone storage requirements to be provided by source pressure zone.

Table 7.3 Storage Capacity Analysis by Pressure Zone

Water Master Plan

Marina Coast Water District

PRELIMINARY

Pressure Zone	Existing Water Storage Requirements					Future Water Storage Requirements					Total Existing and Future Storage Requirement (MG)	Existing Storage Reservoirs									Storage Balance for Existing Demands (MG)	Proposed New Storage Reservoirs						Total Storage (MG)	Existing and Future Storage Balance (MG)
	Existing Average Day Demand (MGD)	Existing Maximum Day Demand (MGD)	Operational (25%) + Emergency (50%) (MG)	Fire Protection (MG)	Total (MG)	Future Average Day Demand (MGD)	Future Maximum Day Demand (MGD)	Operational + Emergency (MG)	Fire Protection (MG)	Total (MG)		Reservoir 2 (MG)	Intermediate Reservoir (MG)	Sand Tank[1] (MG)	B1 (MG)	C1 (MG)	C2 (MG)	D1 (MG)	Huffman (MG)	Total (MG)		A1 (MG)	A2 (MG)	B2 (MG)	B-EG (MG)	D2 (MG)	Total (MG)		
A	1.56	3.12	2.34	0.96	3.30	0.65	1.31	0.98	0.96	1.94	4.28	1.1[2]	0.2	1.0						2.25	-1.05	1.60	1.60				3.20	4.28	0.00
B	0.99	1.99	1.49	0.96	2.45	1.31	2.63	1.97	0.96	2.93	4.42				2.0					2.00	-0.45			2.50			2.50	4.50	0.08
B-EG	0.06	0.12	0.09	0.18	0.27	0.12	0.24	0.18	0.54	0.72	0.81	*East Garrison Supplied by Zone C Tanks[2]*								-	-				1.00		1.00	1.00	0.19
C	0.30	0.60	0.45	0.96	1.50	1.15	2.30	1.72	0.96	2.68	3.13					2.0	2.0			4.00	2.50						0.00	4.00	0.87
D[3]	0.32	0.65	0.49	0.54	1.03	1.80	3.59	2.69	0.54	3.23	3.72							2.0	0.1	2.06	1.03					1.70	1.70	3.76	0.04
Total	**3.24**	**6.48**			**8.55**	**5.03**	**10.06**			**11.51**	**16.36**									**10.31**	**2.03**						**8.40**	**17.54**	1.18

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Notes:

1. Existing tank planned for abandonment.
2. Existing Reservoir 2 storage volume equal to 2.0 MG. Due to pumping limitations the reservoir's useable capacity is defined based on the following assumptions as approved by District staff:
   - Pump Station A to operate at firm capacity (3,000 gpm) for 6 hours during maximum day demand conditions, providing a daily volume of 1.1 MG under peak demand conditions.
3. Pressure Zone D required to provide storage requirements for Pressure Zone E.

Pressure Zone B

Under existing conditions, the storage requirements for Pressure Zone B are provided by reservoir B1. Based on the storage requirements for the existing demand, Pressure Zone has a 0.5 MG storage deficit. In order to mitigate this deficiency and meet the storage requirements for buildout development in the pressure zone, a new 2.5 MG storage reservoir is recommended.

Pressure Zone B-EG

Under existing conditions, the storage requirements for Pressure Zone B-EG are provided by Pressure Zone C through a PRV along Inter-Garrison Road. In order to meet the buildout development requirements, and to eliminate reliance on Zone C storage, a new 1.0 MG storage reservoir is recommended to service Zone B East Garrison.

Pressure Zone D

Under existing conditions the storage requirements for Pressure Zone D are provided by reservoir D2, which is sufficient to meet the existing storage requirements. In order to meet the storage requirements of the buildout development a new 1.7 MG storage tank is recommended.

The proposed storage reservoirs are summarized on **Table 7.4** and briefly described as follows:

- **G-T-A1, G-T-A2:** Construct two new 1.6 MG storage reservoirs northwest of the intersection of Inter-Garrison Road and 3rd Avenue.
- **G-T-B2:** construct one new 2.5 MG storage tank adjacent to the existing B1 reservoir.
- **O-B-EG:** Construct one new 1.0 MG storage reservoir on the existing Camp Tank Site south of Inter-Garrison Road.
- **O-T-D2:** Construct one new 1.7 MG storage reservoir adjacent to the existing D1 reservoir.

7.6 WATER SUPPLY REQUIREMENTS

The District's existing domestic water system supply capacity is identified in this section. Additionally, this section identifies the additional supply capacity required to meet the supply requirement, and consistent with the District's System Performance and Design Criteria.

7.6.1 Existing Supply Requirements

Existing supply requirements were identified for the District and are summarized on **Table 7.5**. The District's existing water supply requirement, based on the existing land use and recommended water demand factors, is approximately 6.5 mgd. The existing firm supply capacity is approximately 16.1 mgd, which results in a supply surplus of 9.6 mgd. It should be noted that Well 12, located within the Central Marina service area, is currently out of service due to water quality issues. For planning purposes it is assumed that this well remain out of service under

Table 7.4 Proposed Storage Reservoirs

Water Master Plan

Marina Coast Water District

PRELIMINARY

Tank ID	Pressure Zone	Volume (MG)	Height (ft)	Diameter (ft)	Bottom Elevation (ft)
A1	A	**1.60**	30	95	200
A2	A	**1.60**	30	95	200
B2	B	**2.50**	18	153	296
B-EG	B (East Garrison)	**1.00**	24	84	300
D2	D	**1.70**	30	113	475
Total		**8.40**			

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Table 7.5 Supply Capacity Analysis

Water Master Plan

Marina Coast Water District

PRELIMINARY

Demand and Supply	Year 2018 (MGD)	2020 (MGD)	2025 (MGD)	2030 (MGD)	2035 (MGD)	2040 (MGD)	2045 (MGD)	2047 (MGD)
Projected Demands								
Average Day Demands	3.2	3.6	4.5	5.3	6.2	7.1	7.9	8.3
Maximum Day Demands	6.5	7.2	8.9	10.7	12.4	14.2	15.9	16.6
Peak Hour Demands	11.3	12.6	15.6	18.7	21.7	24.8	27.8	29.0
Supply vs. Demand Analysis								
Available Supply								
Available Total Supply	19.87	-	-	-	-	-	-	-
Available Firm Supply	16.28	-	-	-	-	-	-	-
Required Supply								
Meet Maximum Day Demand with Firm Supply	6.5	7.2	8.9	10.7	12.4	14.2	15.9	16.6
Surplus / Deficiency								
With Existing Firm Supply	9.8	9.1	7.4	5.6	3.9	2.1	0.4	-0.3
With Recommended Total Supply	9.8	9.1	7.4	5.6	3.9	2.1	2.5	1.8
Recommended New Supply								
Recommended Staged Upgrade							1 New Well	
Recommended Total Supply	16.3	16.28064	16.3	16.3	16.3	16.3	18.4	18.4

existing and future conditions. However, District staff may rehabilitate this well in the future in order to increase the District-wide supply capacity.

7.6.1 Future Supply Requirements

A supply verses demand comparison was completed to document the well capacity needs from existing conditions to 2047. Buildout average day demands are estimated based on future land use conditions and water demand unit factors discussed in a previous chapter.

Based on this analysis of supply and demand, one additional well is needed by the year 2045 (**Table 7.5**). Please note that this does not account for well rehabilitation and improvements required to meet the new hydraulic grade lines of the pressure zones. The new required well is described as follows:

- **G-W36:** Construct a new 1,500 gpm groundwater well on Watkins Gate Road approximately 1,000 feet west of Camp Street. This facility will be located approximately 6,000 feet northeast of Monterey Avenue.

7.6.2 Recommended Well Pump Upgrades

Due to the current groundwater supply surplus as summarized on **Table 7.5**, the District cycles its groundwater wells to avoid premature pump burnout. As development occurs, it will ultimately require the continuous operation of the groundwater wells that are currently able to cycle. The concurrent operations are anticipated to increase the downstream head condition of the existing groundwater wells due to increased flows in the transmission system. In order to maintain efficient operations, it is recommended that the pumps at groundwater wells 31, 34, and 35 be replaced as development occurs, and in order to accommodate the increased pumping heads.

7.7 PUMP STATION CAPACITY ANALYSIS

This section identifies the District's existing pump station capacity, the existing and future pump station capacity requirements, and the recommended pump station improvements.

7.7.1 Existing Pump Station Capacity Requirements

Existing pump station capacity requirements were identified for each existing pump station and are summarized on **Table 7.6**. The table lists the existing pump station capacities and identifies

the required capacity based on the District criteria. The existing pump station capacity analysis indicates the District's existing pump stations have sufficient capacity to meet the requirements.

7.7.2 Future Pump Station Capacity Requirements

A booster station analysis was completed to document the impact of future development on the existing stations, and to document the capacity improvement requirements to meet those demands (**Table 7.7**). The booster station upgrades are summarized on **Table 7.8** and discussed in the following sections.

Table 7.6 Existing Pump Station Capacity Analysis

Water Master Plan

Marina Coast Water District

PRELIMINARY

Name	Elevation (ft)	Pressure Zones: Source	Pressure Zones: Destination	Pressure Zone Demands: Destination Zone (gpm)	Pressure Zone Demands: Supply Dependent Zones (gpm)	Pressure Zone Demands: Total[1] (gpm)	Pump Station Capacity: Total (gpm)	Pump Station Capacity: Firm (gpm)	Required Capacity[1]: Operational (gpm)	Required Capacity[1]: Fire Flow (gpm)	Required Capacity[1]: Total (gpm)	Surplus/ Deficiency (gpm)
Existing Pump Stations												
City of Marina												
A-Booster[2]	109	Reservoir 2	A	*Pump station to operate during peak demand conditions*								
Ord Community[3]												
B-Booster	110	A	B	1,378	0	1,378	4,814	3,154	1,378	0	1,378	**1,776**
C-Booster	110	A	C	414	535	948	3,453	2,109	948	0	948	**1,161**
D-Booster	300	C	D	362	89	451	3,171	1,051	451	0	451	**600**
E-Booster	475	D	E	155	0	155	4,672	2,483	155	1,500	1,655	**828**

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Notes:

1. Required firm pump station capacity equal to total Maximum Day Demand of all supply dependent zones. Required firm hydropneumatic pump station capacity also required to include fire flow requirement.
2. Pump Station A to operate at firm capacity (3,000 gpm) for 6 hours during maximum day demand conditions, providing a daily volume of 1.1 MG under peak demand conditions.
3. Pumping Capacity provided by Booster Station F is not including in this pump station analysis and is assumed to be used for emergency purposes only.

Table 7.7 Future Pump Station Capacity Analysis
Water Master Plan
Marina Coast Water District

PRELIMINARY

Name	Elevation (ft)	Pressure Zones: Source	Pressure Zones: Destination	Pressure Zone Demands: Destination (gpm)	Pressure Zone Demands: Supply Dependent (gpm)	Pressure Zone Demands: Total (gpm)	Pump Station Capacity: Total (gpm)	Pump Station Capacity: Firm (gpm)	Required Capacity[1]: MDD[2] (gpm)	Required Capacity[1]: Fire Flow (gpm)	Required Capacity[1]: Total (gpm)	Surplus/ Deficiency (gpm)	Recommended Improvement
City of Marina													
A-Booster[2]	109	Reservoir 2	A				*Pump station to operate during peak demand conditions*						
Fort Ord													
B-Booster[4]	110	A	B	3,202	0	3,202	0	0	3,202	0	3,202	-3,202	Construct New Pump Station: 3 x 1,600 gpm (2 Duty + 1 Standby)
C-Booster[4]	110	A	C	1,891	3,282	5,173	0	0	5,173	0	5,173	-5,173	Construct two new pump stations:
		A	C										2 x 1,000 gpm (1 Duty and 1 Standby)
		A	C										3 x 2,000 gpm (2 Duty and 1 Standby)
D Booster	300	C	D	2,498	784	3,282	1,660	1,660	3,282	0	3,282	-1,622	Construct new pump station: 2 x 1,500 gpm (1 Duty + 1 Standby)
E Hydro Booster[5]	475	D	E	784	0	784	303	188	784	0	784	-596	Replace Operational Pumps: 3 x 400 gpm (2 Duty + 1 Standby)
EG Hydro Booster		C	EG-HYD	408	0	408	0	0	408	3,000	3,408	-3,408	Construct new pump station: 3 x 200 gpm, 1 x 3,000 gpm (2 Duty + 1 Standby, 1 Fire Pump)

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Notes:

1. Required firm pump station capacity equal to total Maximum Day Demand of all supply dependent zones. Required firm hydropneumatic pump station capacity also required to include fire flow requirement.

2. Demand requirement for hydropneumatic zones equal to Peak Hour Demand.

Table 7.8 Proposed Pump Stations

Water Master Plan

Marina Coast Water District

PRELIMINARY

Name	Elevation (ft)	Source Pressure Zone	Destination Pressure Zone	Pump Station Capacity Total (gpm)	Pump Station Capacity Firm (gpm)	No. of New Pumps (gpm)	Pump Status (gpm)	Design Capacity (gpm)
Pump Station Improvements								
B Booster	200	A	B	4,800	3,200	3	Duty	1,600
							Duty	1,600
							Standby	1,600
C1 Booster	200	A	C	2,000	1,000	2	Duty	1,000
							Standby	1,000
C2 Booster	192	A	C	6,000	4,000	3	Duty	2,000
							Duty	2,000
							Standby	2,000
D Booster	300	C	D	6,000	4,500	4	Duty	1,500
							Standby	1,500
E Hydro Booster	475	D	E-HYD	1,200	800	3	Duty	400
							Duty	400
							Standby	400
EG Hydro Booster	305	C	EG-HYD	3,600	3,400	4	Duty	200
							Duty	200
							Standby	200
							Fire	3,000

7.7.2.1 Pressure Zone B

The existing Booster Station B is located at the existing Sand Tank site. This booster station is planned for abandonment with the decommissioning of the Sand Tank, and the subsequent construction of the future Pressure Zone A reservoir site. A new B Booster Station will be constructed at the Zone A tank site, and will be sized to meet the booster station capacity requirements of Pressure Zone B. It should be noted that this booster station does not have any supply dependent pressure zones. The improvement description is as follows:

- **G-PS-B:** Construct one new booster station northwest of the intersection of Inter-Garrison Road and 3rd Avenue. This booster station is planned to include three 1,600 gpm boosters, three duty and one standby, for a total and firm capacity of 4,800 gpm and 3,200 gpm respectively

7.7.2.2 Pressure Zone C

The existing Booster Station C is also located at the existing Sand Tank site. This booster station is planned for abandonment with the decommissioning of the Sand Tank, and the subsequent construction of the future Pressure Zone A reservoir site. Due to the large increase in demands in Pressure Zones C, D, and E, as well as new East Garrison demands, two new C Zone booster stations will be required to meet the requirements of this Pressure Zone and it's supply dependent pressure zone, and discussed as follows:

- **O-PS-C1:** This booster station will replace the C Booster Station that will be abandoned as part of the Sand Tank demolition project. This booster station will be located at the new A Zone tank site and is planned to include two 1,000 gpm boosters, one duty and one standby, for a total and firm capacity of 2,000 gpm and 1,000 gpm respectively.

- **O-PS-C2:** This booster station will provide additional capacity to meet future demand needs in the expanded C, D, and E pressure zones. This station will be located at the existing Intermediate Reservoir site and is planned to include three 2,000 gpm boosters, two duty and one standby, for a total and firm capacity of 6,000 gpm and 4,000 gpm respectively. The Intermediate Reservoir will act as a forebay for the booster station, and water will be boosted via a new transmission main to the C-2 tank. It should be noted that this booster station accounts for reducing the demand on the existing Pressure Zone A 24-inch transmission main, and is thus slightly oversized for the pressure zone pumping needs. The additional capacity alleviates the need to parallel or replace the 24-inch main.

7.7.2.3 Pressure Zone D

In order to meet the future booster station capacity requirements of Pressure Zone D a new booster station is planned for construction at the existing reservoir C2 site. This booster station will serve future growth within areas of allowable development in Parker Flats, as well as the supply dependent Pressure Zone E. Additionally, this booster station will help to increase turnover in the C-2 tank and improve water age for Pressure Zone C.

O-PS-D1: Construct one new booster station at the existing C-2 Tank site. This booster station is planned to include two 1,500 gpm boosters, two duty and one standby, for a total and firm capacity of 3,000 gpm and 1,500 gpm respectively.

7.7.2.4 Pressure Zone E

In order to meet the future booster station capacity requirements of Pressure Zone E the existing operational boosters are planned for replacement with larger capacity pumps.

- **O-PS-EHYD:** Replace the existing 250 gpm operational boosters at the Pressure Zone E hydropneumatic booster station with three 400 gpm boosters, two duty and one standby, for a total and firm operational capacity of 1,200 gpm and 800 gpm respectively.

7.7.2.5 Pressure Zone East Garrison Hydropneumatic

In order to serve additional development in the southernmost portion of East Garrison, a new booster pump station and pressure zone are required to meet District service criteria. This pressure zone is generally within the Pressure Zone D hydraulic grade, however, no interconnections are planned, and thus, this area is planned for service by a new hydropneumatic system, with a fire pump to meet the commercial fire flow criteria.

- **O-PS-EGHYD:** Construct one new booster station on Barloy Canyon Road approximately 1,600 feet southwest of Crescent Bluff Road. This booster station is planned to include three 200 gpm operational pumps, two duty and one standby, for a total and firm capacity of 600 gpm and 400 gpm respectively. This booster station is also planned include one 3,000 gpm fire pump, which is intended to meet the commercial fire flow requirement.

7.8 RECOMMENDED VALVE IMPROVEMENTS

In order to manage pressures and regulate flow at various locations within the District's future water distribution system the following valve improvements, also summarized on **Table 7.9**, are recommended:

- **M-FILLV-A1:** Construct a new fill valve adjacent to the existing Reservoir 2 in Pressure Zone A. This valve is intended to regulate flow into the existing Reservoir 2 following the operation of the existing Pump Station A and is to be sized for a flow approximately equal to the firm capacity of Pump Station A.

- **G-PRV-B1:** This PRV is located at the new Pressure Zone A tank site, and is intended to reduce pressure from Pressure Zone B to Pressure Zone A and provide additional supply to Pressure Zone A in the event of an emergency. This PRV is located between 18-inch Pressure Zone B discharge line, and the 24-inch Pressure Zone A suction line.

- **O-FILLV-INTRES:** Construct a new fill valve adjacent to the existing Intermediate Reservoir. This valve is intended to regulate flow into the existing Intermediate Reservoir

Table 7.9 Proposed Valves

Water Master Plan

Marina Coast Water District

PRELIMINARY

Valve ID	Valve Type	Pressure Zone		Preliminary Elevation	Preliminary Valve Size	Preliminary Downstream Setpoint
		Upstream	Downstream	(ft)	(in)	(psi)
M-FILLV-A1	Level Control	A	Reservoir 2	110	8	-
G-PRV-B1	Pressure Reducing	B	A	185	8	10
O-FILLV-INTRES	Level Control	A	Intermediate Reservoir	190	8	-
O-FILLV-B-EG	Level Control	A	Reservoir 2	109	8	40
O-PRV-C1	Pressure Reducing	C	B-EG	220	8	35
O-PRV-C2	Pressure Reducing	C	B-EG	235	8	28

following the operation of future Pump Station C2 and is to be sized for a flow approximately equal to the firm capacity of Pump Station C2.

- **O-FILLV-B-EG:** Construct a new pressure reducing fill valve on Inter-Garrison Road. This valve is intended to reduce pressure from Pressure Zone C to Pressure Zone B-EG and maintain the level in future storage reservoir B-EG.
- **O-PRV-C1:** Construct a new pressure reducing valve on Watkins Gate Road. This valve is intended to reduce pressure from Pressure Zone C to Pressure Zone B-EG and provide additional supply to Pressure Zone B-EG in the event of an emergency.
- **O-PRV-C2:** Construct a new pressure reducing valve on Barloy Canyon Road. This valve is intended to reduce pressure from Pressure Zone C to Pressure Zone B-EG and provide additional supply to Pressure Zone B-EG in the event of an emergency.

7.9 PIPELINE IMPROVEMENTS TO SERVE FUTURE GROWTH

The buildout of the District's service area includes development outside of the extents of the existing water distribution system. Distribution pipelines are recommended to serve future growth as well as increase the hydraulic reliability of the water system. Each pipeline improvement is assigned a uniquely coded identifier, which is intended to aid in defining the location of the improvements for mapping purposes. The identifiers reflect the pressure zone, improvement type, and sequence in the improvement schedule. The pipeline improvements are summarized on Table 7.10 and described in detail on the following pages.

7.9.1 Central Marina Water System

This section documents pipeline improvements within the Central Marina water service area.

- **M-P1:** Construct a new 12-inch pipeline in the right-of-way from the existing Reservoir 2 Site to Crescent Avenue.
- **M-P2:** Construct a parallel 12-inch pipeline in Beach Road from De Forest Road to Del Monte Boulevard.
- **M-P3:** Construct a new 12-inch pipeline in within the Future Armstrong Ranch Development.
- **M-P4:** Replace the existing 12-with a new 16-inch pipeline along California Avenue from 3rd Avenue to Reindollar Avenue.

7.9.2 Ord Community Water System

This section documents pipeline improvements within the Ord Community water service area.

Table 7.10 Schedule of Improvements

Water Master Plan

Marina Coast Water District

PRELIMINARY

Improvement No.	Improv. Type	Pressure Zone	Alignment	Limits	Improvement Details			
Central Marina Water System								
Pipeline Improvements					Existing Diameter (in)	New/Parallel/ Replace	Diameter (in)	Length (ft)
M-P1	Reliability	Zone A	ROW	From existing Reservoir 2 Site to Crescent Ave	-	New	12	425
M-P2	Reliability	Zone A	Beach Rd	From De Forest Rd to Del Monte Blvd	8	Parallel	12	2,725
M-P3	Development	Zone A	Armstrong Ranch	Future Armstrong Ranch Development	-	New	12	7,575
M-P4	Capacity	Zone A	California Ave	From approximately 500' n/o 3rd Ave to Reindollar Ave	12	Replace	16	1,225
Valve Improvements					New/Replace	Size (in)		
M-FILLV-A1	Operational	Zone A	Existing Reservoir 2 Site		New	8		
M-PRV-B1	Reliability	Zone B	Planned A1/A2 tank site, nw/o the intersection of Inter-Garrison Rd and 6th Avenue		New	8		
Ord Community Water System								
Pipeline Improvements					Existing Diameter (in)	New/Parallel/ Replace	Diameter (in)	Length (ft)
O-P1	Fire Flow	Zone C	5th St	From 3rd Rd to 1st St	8	Replace	12	750
O-P2	Reliability	Zone B	First Ave	From Lightfighter Dr to Gigling Ave	-	New	12	1,500
O-P3	Condition	Zone C	Gigling Rd	From General Jim Moore Blvd to Zone D Pump Station	12	Replace	12	2,300
O-P4	Fire Flow	Zone C	Planned Mixed Use Development	N/o Gigling Ave, between Malmedy Rd and Parker Flats Rd	6, 8	Replace	12	4,775
O-P5	Fire Flow	Zone D	Planned Mixed Use Development	N/o Gigling Ave, between Parker Flats Rd and 6th Ave	6, 8	Replace	12	3,500
O-P6	Fire Flow	Zone B	Existing ROW	From Monterey Rd to Leinbach Ave	8	Replace	12	2,425
O-P7	Development	Zone D	McClure Rd and ROW	From the intersection of General Jim Moore Blvd and McClure Rd to Coe Ave	-	New	12	5,325
O-P8	Capacity	Zone D	Coe Ave	From General Jim Moore Blvd to approx. 1,700' w/o General Jim Moore Blvd	8	Replace	12	1,725
O-P9	Development	Zone D	Eucalyptus Rd	From General Jim Moore Blvd to approx. 1,500' e/o General Jim More Blvd	-	New	12	1,350
O-P10	Development	Zone E	Eucalyptus Rd and Future ROW	Future Commercial Development, along and n/o Eucalyptus Rd	-	New	12	10,900
O-P11	Development	Zone D	Normandy Rd and Parker Flats Cutoff Rd	From Parker Flats Rd to Future ROW	-	New	12	5,750
O-P12	Development	Zone D	Parker Flats Cutoff Rd and Eucalyptus Rd	From Normandy Rd to Future ROW	-	New	12	7,525
O-P13	Development	Zone D	8th Ave	From Gigling Rd to Parker Flats Cutoff Rd	-	New	12	2,850
O-P14	Development	Zone D	Gigling Rd	From 8th Ave to existing C2 reservoir	-	New	18	15,275
O-P15	Development	Zone D	Future ROW	From Eucalyptus Rd to Parker Flats Rd	-	New	12	2,175
O-P16	Development	Zone D	Future Residential Development	E/o 8th Ave and n/o Gigling Rd	-	New	12	7,875
O-P17	Development	Zone C	Future Residential Development	E/o 8th Ave and s/o Inter-Garrison Rd	-	New	12	7,025
O-P18	Development	Zone C	Inter-Garrison Rd, Future ROW	From approx. 1,400' w/o Abrams Dr to future Reservoir B-EG (O-T-B-EG)	12	Replace	18	8,600
O-P19	Development	Zone C	Existing ROW	From existing Intermediate Reservoir to Inter-Garrison Rd	-	New	24	3,300
O-P20	Development	Zone C	Existing ROW	From Inter-Garrison Rd to existing C2 reservoir	12	Replace	18	3,625
O-P21	Development	Zone C	Watkins Gate Rd, Future ROW	From existing C2 Reservoir to future Barloy Canyon Rd	-	New	18	9,625

Table 7.10 Schedule of Improvements

Water Master Plan

Marina Coast Water District

PRELIMINARY

Improvement No.	Improv. Type	Pressure Zone	Alignment	Limits	Improvement Details			
O-P22	Development	Zone B-EG	Watkins Gate Rd	From future B-EG reservoir (O-T-B-EG) to to Watkins Gate Rd	-	New	18	2,375
O-P23	Development	Zone B-EG/ Zone C	Barloy Canyon Rd	From Watkins Gate Rd to future East Garrison Hydropneumatic Pump Station	-	New	18	2,050
O-P24	Development	Zone EG-HYD	Barloy Canyon Rd	From future East Garrison Hydropneumatic Pump Station to approx. 4,700' n/o Eucalyptus Rd	-	New	18	2,800
O-P25	Development	Zone B	Planned Mixed Use Development	N/o Reservation Rd and e/o Blanco Rd	-	New	12	13,525
O-P26	Reliability	Zone B	Imjin Rd, Neeson Rd	From Reservation Rd to approx. 700' ne/o Abrams Dr	-	New	12	2,725
O-P27	Development	Zone D	South Boundary Rd	From General Jim Blvd to approx. 8,300' se/o South Boundary Rd	-	New	24	8,275
Tank Improvements					**New/Replace**	**Capacity** (MG)		
O-T-B-EG	New Capacity	Zone B-EG	Existing Travel Camp tank site, s/o Inter-Garrison Rd approximately 1,700' w/o Camp St		New	1.00		
O-T-D2	New Capacity	Zone D	Existing D1 tank site		New	1.70		
Pump Station Improvements					**New/Upgrade/ Replace**	**Total Capacity** (gpm)		
O-PS-C1	New Capacity	Zone C	Planned A1/A2 tank site, nw/o the intersection of Inter-Garrison Rd and 6th Avenue		New	2,000		
O-PS-C2	New Capacity	Zone C	Existing Intermediate Reservoir site		New	6,000		
O-PS-D	New Capacity	Zone D	Existing C2 reservoir site		New	3,000		
O-PS-EHYD	Replace Capacity	Zone E	Existing PS-EHYD Pump Station Site		Replace	1,200		
O-PS-EGHYD	New Capacity	Zone EG-HYD	Barloy Canyon Rd, approximately 1,600' sw/o Crescent Bluff Rd		New	3,600		
Valve Improvements					**New/Replace**	**Size** (in)		
O-FILLV-INTRES	Operational	Zone C	Intermediate Reservoir		New	8		
O-FILLV-B-EG	Supply Capacity	Zone B-EG	Inter-Garrison Road		New	8		
O-PRV-C1	Reliability	Zone C	Watkins Gate Rd		New	8		
O-PRV-C2	Reliability	Zone C	Barloy Canyon Rd		New	8		
Combined Water System (General)								
Pipeline Improvements					**Existing Diameter** (in)	**New/Parallel/ Replace**	**Diameter** (in)	**Length** (ft)
G-P1	Capacity	Zone A	Future 2nd Ave Extension	From Imjin Rd to Reindollar Ave	-	New	12	4,775
G-P2	Capacity	Zone B	Planned Zone A Tank Site	From future PS-B to existing Zone B transmission main.	-	New	18	300
G-P3	Capacity	Zone C	Planned Zone A Tank Site	From future PS-C to existing Zone C transmission main.	-	New	24	300
G-P4	Capacity	Zone A	Planned Zone A Tank Site	From future Zone A tanks to future Zone A (existing Zone C) transmission main.	-	New	24	300
G-P5	Capacity	Zone A	Planned Zone A Tank Site	From future Zone A tanks to future Zone A (existing Zone C) transmission main.	-	New	24	300
G-P6	Reliability	Zone B	Imjin Road and Imjin Parkway	From the 8th St Cut-off to Abrams Dr	-	New	12	2,950
G-P7	Capacity	Zone A	Imjin Parkway	From Abrams Dr to Marina Heights Dr	-	New	24	2,550
G-P8	Capacity	Zone A	Marina Heights Development	From California Dr to approximately 600' n/o MacArthur Dr	-	New	24	3,300
G-P9	Development	Zone B	Reservation Rd	From Imjin Pwy to Salinas Ave	-	New	12	4,050

Table 7.10 Schedule of Improvements
Water Master Plan
Marina Coast Water District

PRELIMINARY

Improvement No.	Improv. Type	Pressure Zone	Alignment	Limits	Improvement Details			
G-P10	Capacity	Zone A	Reservation Rd	From existing Well 34 discharge to existing Well 31 discharge	16	Replace	24	2,000
G-P11	Capacity	Zone A	Watkins Gate Rd	From future Well 36 to Camp St	-	New	12	1,225
Tank Improvements					**New/Replace**	**Capacity** (MG)		
G-T-A1	Capacity	Zone A	Nw/o the intersection of Inter-Garrison Rd and 6th Avenue		Replace	1.6		
G-T-A2	Capacity	Zone A	Nw/o the intersection of Inter-Garrison Rd and 6th Avenue		Replace	1.6		
G-T-B2	New Capacity	Zone B	Existing B1 Tank site		New	2.50		
Pump Station Improvements					**New/Upgrade/ Replace**	**Total Capacity** (gpm)		
G-PS-B	New Capacity	Zone B	Planned A1/A2 tank site, nw/o the intersection of Inter-Garrison Rd and 6th Avenue		New	4,800		
Supply Improvements					**New/Replace**	**Total Capacity** (gpm)		
G-W31	Capacity	Zone A	Existing Well 31 site		Replace Pump			
G-W34	Capacity	Zone A	Existing Well 34 site		Replace Pump			
G-W35	Capacity	Zone A	Existing Well 35 site		Replace Pump			
G-W36	Capacity	Zone A	Watkins Gate Rd approx. 1,000' w/o Camp St		New Well	1,500 gpm		

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- **O-P1:** Replace the existing 8-inch pipeline with a new 12-inch pipeline along 5th Street from 3rd Road to 1st Street.
- **O-P2:** Construct a new 12-inch pipeline along First Avenue from Lightfighter Drive to Gigling Avenue.
- **O-P3:** Replace the existing 12-inch pipeline with a new 12-inch pipeline along Gigling Road from General Jim Moore Blvd to the Zone D pump Station. This improvement is intended to mitigate existing pipeline condition issues.
- **O-P4:** Replace the existing 6-inch and 8-inch pipeline with a new 12-inch pipeline in the planned mixed use development North of Gigling Avenue between Malmedy Road and Parker Flats Road.
- **O-P5:** Replace the existing 6-inch and 8-inch pipeline with a new 12-inch pipeline in planned mixed use development North of Gigling Avenue between Parker Flats Road and 6th Avenue.
- **O-P6:** Replace the existing 8-inch pipeline with a new 12-inch pipeline in the existing right-of-way from Monterey Road to Leinbach Avenue.
- **O-P7:** Construct a new 12-inch pipeline along McClure Road and right-of-way from the intersection of General Jim Moore Boulevard and McClure Road to Coe Avenue.
- **O-P8:** Replace the existing 8-inch pipeline with a new 12-inch pipeline along Coe Avenue from General Jim Moore Boulevard to approximately 1,700 feet west of General Jim Moore Boulevard.
- **O-P9:** Construct a new 12-inch pipeline along Eucalyptus Road from General Jim Moore Boulevard to approximately 1,500 feet east of General Jim Moore Boulevard.
- **O-P10:** Construct a new 12-inch pipeline along Eucalyptus Road and the future right-of-way east of General Jim Moore Boulevard
- **O-P11:** Construct a new 12-inch pipeline along Normandy Road and Parker Flats Cutoff Road from Normandy Road to the future right-of-way.
- **O-P12:** Construct a new 12-inch pipeline along Parker Flats Cutoff Road and Eucalyptus Road from Normandy Road to the future right-of-way.
- **O-P13:** Construct a new 12-inch pipeline along 8th Avenue from Gigling Road to Parker Flats Cutoff Road.
- **O-P14:** Construct a new 18-inch pipeline along Gigling Road from 8th Avenue to the existing C2 Reservoir.

- **O-P15:** Construct a new 12-inch pipeline along future right-of-way from Eucalyptus Road to Parker Flats Road.
- **O-P16:** Construct a new 12-inch pipeline to within the future residential development east of 8th Avenue and North of Gigling Road.
- **O-P17:** Construct a new 12-inch pipeline within the future residential development east of 8th Avenue and South of Inter-Garrison Road.
- **O-P18:** Replace the existing 12-inch pipeline with a new 18-inch pipeline along Inter-Garrison Road and the future right-of-way from approximately 1,400 feet West of Abrams Drive to the future Reservoir O-T-B-EG .
- **O-P19:** Construct a new 24-inch pipeline along the existing right-of-way from the existing Intermediate Reservoir to Inter-Garrison Road.
- **O-P20:** Replace the existing 12-inch pipeline with a new 24-inch pipeline along the existing right-of-way from Inter-Garrison Road to the existing C2 Reservoir.
- **O-P21:** Construct a new 18-inch pipeline along Watkins Gate Road and the future right-of-way from the existing C2 Reservoir to future Barloy Canyon Road.
- **O-P22:** Construct a new 18-inch pipeline along Watkins Gate Road from the future O-T-B-EG Reservoir to Watkins Gate Road.
- **O-P23:** Construct a new 18-inch pipeline along Barloy Canyon Road from Watkins Gate Road to the future Pressure Zone C-B reliability PRV.
- **O-P24:** Construct a new 18-inch pipeline along Barloy Canyon Road from the future East Garrison Hydropneumatic Pump Station to approximately 4,700 feet north of Eucalyptus Road.
- **O-P25:** Construct a new 12-inch pipeline along the planned mixed-use development from North of Reservation Road to East of Blanco Road.
- **O-P26:** Construct a new 12-inch pipeline along Imjin Road and Neeson Road from Reservation Road to approximately 700 feet Northeast of Abrams Drive.
- **O-P27:** Construct a new 24-inch pipeline along South Boundary Road from General Jim Boulevard to approximately 8,300 feet Southeast of South Boundary Road.

7.9.3 General Water System

This section documents pipeline improvements within the Fort Ord water service area.

- **G-P1:** Construct a new 12-inch pipeline along future 2nd Avenue extension from Imjin Road to Reindollar Avenue.

- **G-P2:** Construct a new 18-inch transmission main from the future Pressure Zone B pump station to the existing Zone B transmission main.
- **G-P3:** Construct a new 24-inch transmission main from the future Pressure Zone C pump station to the existing Zone C transmission main.
- **G-P4:** Construct a new 24-inch transmission main from the future Pressure Zone A tank to the existing Zone A transmission main.
- **G-P5:** Construct a new 24-inch transmission main from the future Pressure Zone A tank to the existing Zone A transmission main.
- **G-P6:** Construct a new 12-inch pipeline along Imjin Road and Imjim Parkway, from the 8th Street Cut-off to Abrams Drive.
- **G-P7:** Construct a new 24-inch transmission along Imjin Parkway from Abrams Drive to Marina Heights Drive.
- **G-P8:** Construct a new 24-inch transmission main within the future Marina Heights development from California Drive to approximately 600 feet north of MacArthur Drive.
- **G-P9:** Construct a new 12-inch pipeline along Reservation Road from Imjin Road to Salinas Avenue.
- **G-P10:** Replace the existing 16-inch transmission main with a new 24-inch transmission main from the existing Well 34 discharge to the existing Well 31 discharge.
- **G-P11:** Construct a 12-inch transmission main in Watkins Gate Road from the planned Well 36 to Camp Street.

CHAPTER 8 – CAPITAL IMPROVEMENT PROGRAM

This chapter provides a summary of the recommended domestic water system improvements to mitigate existing capacity deficiencies and to accommodate 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 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, Akel experience on other master planning projects, and input from District staff on the development of public and private cost sharing. 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**. Domestic water pipeline unit costs are based on length of pipes, in feet. Storage reservoir unit costs are based on capacity, per million gallons (MG). Pump Station costs are based on an equation that replaces the pump curve.

The unit costs are intended for developing the Order of Magnitude estimate and do not account for site specific conditions, labor and material costs during the time of construction, final project scope, implementation schedule, detailed utility and topography surveys for reservoir sites, investigation of alternative routings for pipes, and other various factors. The capital improvement program included in this report accounts for construction and project-related contingencies as described in this chapter. It should be noted that some of the unit costs were updated to reflect recent construction projects completed by the District. These include both pipelines and storage reservoirs, and the costs are updated to reflect the bid tabs received.

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 Water Master Plan were benchmarked using a 20-City national average ENR CCI of 11,089, reflecting a date of June 2018.

8.2.3 Construction Contingency Allowance

Knowledge about site-specific conditions for each proposed project is limited at the master planning stage; therefore, construction contingencies were used. The estimated construction costs in this master plan include a **48.5 percent** contingency allowance to account for unforeseen events and unknown field conditions.

Table 8.1 Unit Costs

Water Master Plan
Marina Coast Water District

PRELIMINARY

Pipelines	
Pipe Size (in)	**Cost**[1,2] ($/lineal foot)
12	$213
16	$256
18	$276
20	$316
24	$346
30	$383
36	$451
Pump Stations	
Estimated Pumping Station Unit Cost ($/gpm), where Q is equal to the total station capacity in gpm	
Construct New Pump Station	Unit Cost ($/gpm) = 191.99 x $e^{-0.0001 \times Q}$
Upgrade Existing Pump Station	Unit Cost ($/gpm) = 160.97 x $e^{-0.00008 \times Q}$
Pressure Reducing Valves	
	Cost ($)
PRV	$73,000
Storage Reservoirs[3]	
≤1.0 MG	$2.92
1.1 MG-3.0 MG	$2.33
3.1 MG - 5.0 MG	$1.68
> 5 MG	$1.25
Groundwater Wells	
Replace Pump	$55,000
1,500 gpm Capacity	$3,016,000

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Notes:

1. Construction costs estimated using June 2018 ENR CCI of 11,089
2. Construction costs are based on Bid Tabs Results received from District staff on October 18, 2018.
3. Tank costs were adjusted to reflect recent construction for a 1.5 MG tank, as provided by District staff on 2/7/2019.

8.2.4 Project Related Costs

The capital improvement costs also account for project-related costs, comprising of engineering design, project administration (developer and District staff), construction management and inspection, and legal costs. The project related costs in this master plan were estimated by applying an additional **25 percent** to the estimated construction costs.

8.3 CAPITAL IMPROVEMENT PROGRAM

The schedule of improvements for the projects identified in this master plan for mitigating existing system deficiencies and for serving anticipated buildout future growth throughout the District are summarized on **Table 8.2**. Each improvement was assigned a unique coded identifier associated with the improvement type and is summarized graphically on **Figure 8.1**.

8.3.1 Near-Term Development Infrastructure Requirements

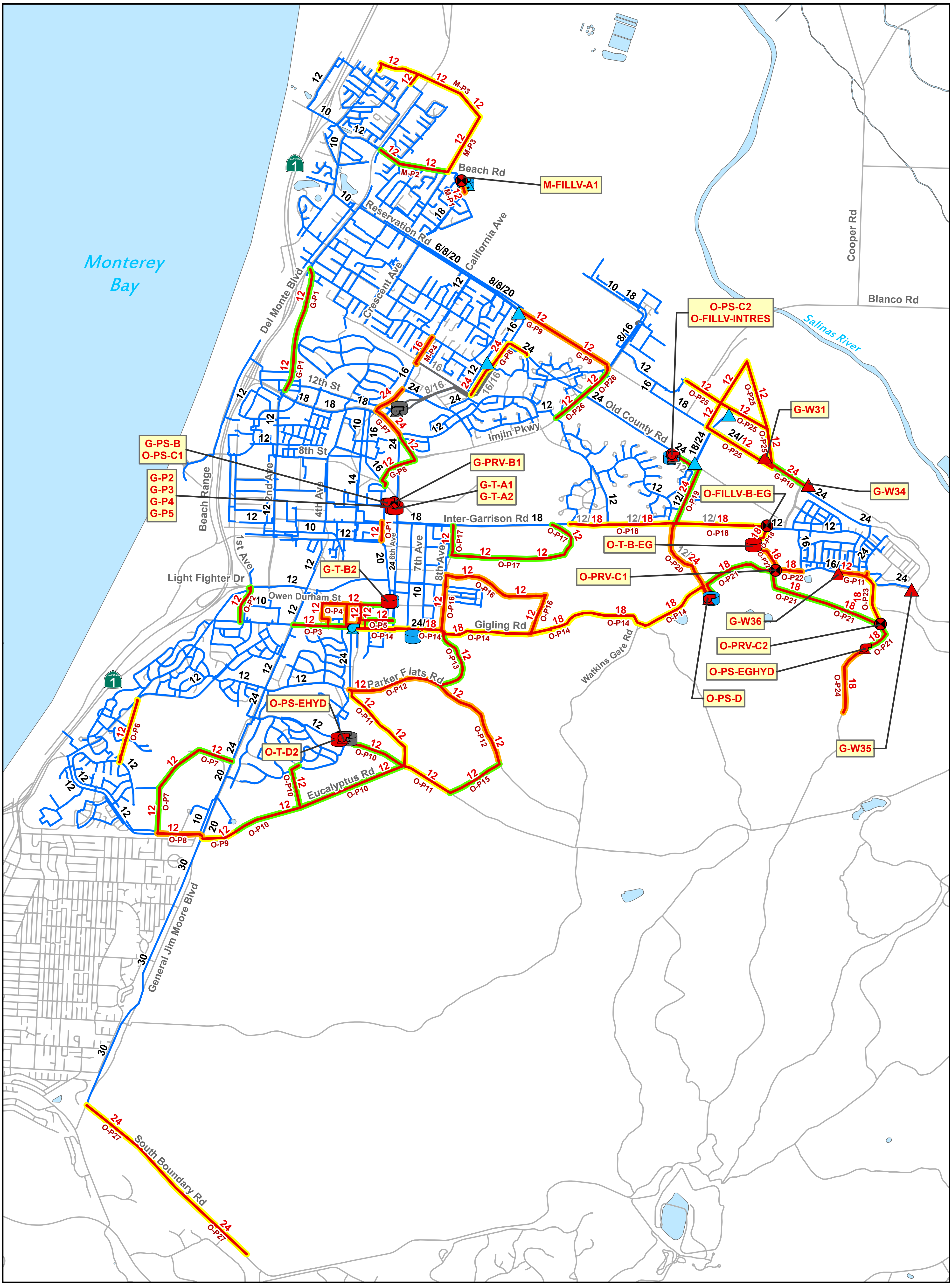
For the purposes of this master plan, and based on District staff input on the potential for buildout development to occur over an extended period of time, the Capital Improvement Program parallels the FORA development limit horizon and evaluates the improvements required in the next 15 years. These improvements and their associated costs are included on **Table 8.3** and shown graphically on **Figure 8.2**, reflect the water system infrastructure necessary to mitigate existing system deficiencies and serve the 15-year development.

It should be noted that some improvements are required for buildout development only and are not included in this Capital Improvement Program. Additionally, the capacities of recommended tanks and pump stations may be reduced based on the limited development within the near-term horizon. District staff may, at their prerogative and based on the approval of the District Engineer, require the construction of the buildout improvement. Thus, capacity sharing for the buildout improvements are documented on **Table 8.2**.

8.3.2 Recommended Cost Allocation Analysis and “In-Tract” Development

Cost allocation analysis is needed to identify improvement funding sources, and to establish a nexus between development impact fees and improvements needed to service growth. In compliance with the provisions of Assembly Bill AB 1600, the analysis differentiates between the project needs of servicing existing users and for those required to service anticipated future developments. The cost responsibility is based on model parameters for existing and future land use, and may change depending on the nature of development. **Table 8.2** and **Table 8.3** list each improvement, and separates the cost by responsibility between existing and future users.

It should be noted that the District adopted an “In-Tract” policy in January 2004, and as related to development, and redevelopment, within the Fort Ord Cost Center. This policy was adopted in an effort to fulfill obligations to the Fort Ord Reuse Authority, as well as avoiding undue cost burden to the existing customers within the Ord community. This policy is a result of inadequate design, age, and aggressive deterioration of the facilities located within the Fort Ord Cost Center. The full



Legend

Future Improvements
- Tanks
- Wells
- Boosters
- Valves
- Pipes

Future to be Abandoned
- Tanks
- Boosters
- Pipes

Existing Modeled System
- Tanks
- Wells
- Boosters
- Pipes

- Streets
- Rivers/Streams
- Waterbodies

PRELIMINARY

0 0.25 0.5 1 Mile

Update: March 29, 2019

File Path: P:\xGIS\GIS_Projects\Marina_Coast_WD\Water\MCWD_Fig8-1_FutureCIP-Alt2_032919.mxd

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Figure 8.1
Capital Improvement Program Alternative 2

Water Master Plan
Marina Coast Water District

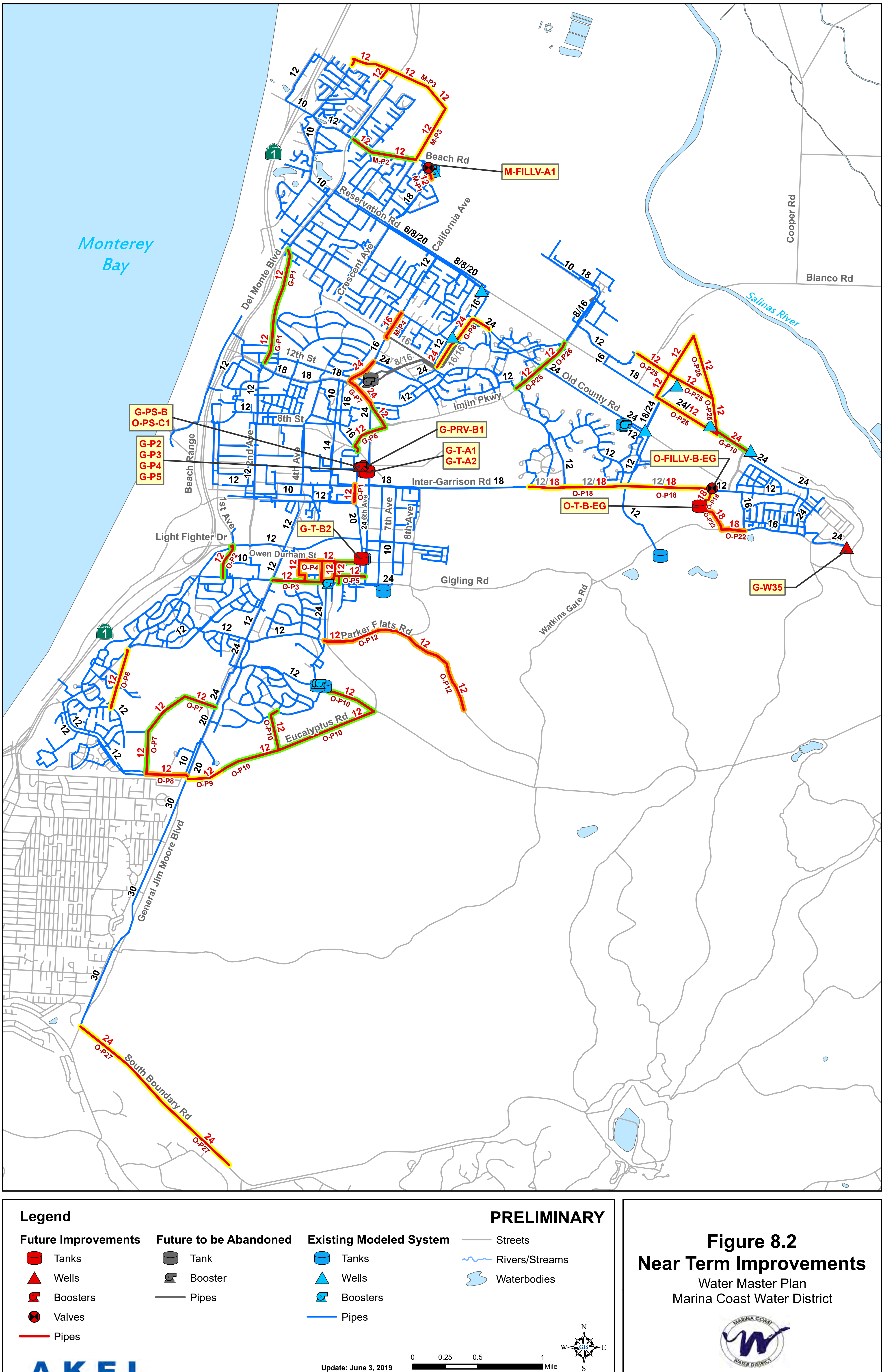

Figure 8.2
Near Term Improvements
Water Master Plan
Marina Coast Water District

Table 8.2 Buildout Capital Improvement Program

Water Master Plan

Marina Coast Water District

PRELIMINARY

Improv. No.	Improv. Type	Pressure Zone	Alignment	Limits	Improvement Details				Suggested Cost Allocation		Included in 15-Year CIP
									Existing Users	Future Users	
Central Marina Water System											
Pipeline Improvements					Existing Diameter (in)	New/Parallel /Replace	Diameter (in)	Length (ft)			
M-P1	Reliability	Zone A	ROW	From existing Reservoir 2 Site to Crescent Ave	-	New	12	425	100%	0%	Yes
M-P2	Reliability	Zone A	Beach Rd	From De Forest Rd to Del Monte Blvd	8	Parallel	12	2,725	100%	0%	Yes
M-P3	Development	Zone A	Armstrong Ranch	Future Armstrong Ranch Development	-	New	12	7,575	0%	100%	Yes
M-P4	Capacity	Zone A	California Ave	From approximately 500' n/o 3rd Ave to Reindollar Ave	12	Replace	16	1,225	50%	50%	Yes
Valve Improvements					New/Replace	Size (in)					
M-FILLV-A1	Operational	Zone A	Existing Reservoir 2 Site		New	8			100%	0%	-
M-PRV-B1	Reliability	Zone B	Planned A1/A2 tank site, nw/o the intersection of Inter-Garrison Rd and 6th Avenue		New	8			70%	30%	Yes
Ord Community Water System											
Pipeline Improvements					Existing Diameter (in)	New/Parallel /Replace	Diameter (in)	Length (ft)			
O-P1	Fire Flow	Zone C	5th St	From 3rd Rd to 1st St	8	Replace	12	750	100%	0%	Yes
O-P2	Reliability	Zone B	First Ave	From Lightfighter Dr to Gigling Ave	-	New	12	1,500	50%	50%	Yes
O-P3	Condition	Zone C	Gigling Rd	From General Jim Moore Blvd to Zone D Pump Station	12	Replace	12	2,300	100%	0%	Yes
O-P4	Fire Flow	Zone C	Planned Mixed Use Development	N/o Gigling Ave, between Malmedy Rd and Parker Flats Rd	6, 8	Replace	12	4,775	100%	0%	Yes
O-P5	Fire Flow	Zone D	Planned Mixed Use Development	N/o Gigling Ave, between Parker Flats Rd and 6th Ave	6, 8	Replace	12	3,500	100%	0%	Yes
O-P6	Fire Flow	Zone B	Existing ROW	From Monterey Rd to Leinbach Ave	8	Replace	12	2,425	100%	0%	Yes
O-P7	Development	Zone D	McClure Rd and ROW	From the intersection of General Jim Moore Blvd and McClure Rd to Coe Ave	-	New	12	5,325	0%	100%	Yes
O-P8	Capacity	Zone D	Coe Ave	From General Jim Moore Blvd to approx. 1,700' w/o General Jim Moore Blvd	8	Replace	12	1,725	50%	50%	Yes
O-P9	Development	Zone D	Eucalyptus Rd	From General Jim Moore Blvd to approx. 1,500' e/o General Jim More Blvd	-	New	12	1,350	0%	100%	Yes
O-P10	Development	Zone E	Eucalyptus Rd and Future ROW	Future Commercial Development, along and n/o Eucalyptus Rd	-	New	12	10,900	0%	100%	Yes
O-P11	Development	Zone D	Normandy Rd and Parker Flats Cutoff Rd	From Parker Flats Rd to Future ROW	-	New	12	5,750	0%	100%	-
O-P12	Development	Zone D	Parker Flats Cutoff Rd and Eucalyptus Rd	From Normandy Rd to Future ROW	-	New	12	7,525	0%	100%	Yes
O-P13	Development	Zone D	8th Ave	From Gigling Rd to Parker Flats Cutoff Rd	-	New	12	2,850	0%	100%	-
O-P14	Development	Zone D	Gigling Rd	From 8th Ave to existing C2 reservoir	-	New	18	15,275	0%	100%	-
O-P15	Development	Zone D	Future ROW	From Eucalyptus Rd to Parker Flats Rd	-	New	12	2,175	0%	100%	-
O-P16	Development	Zone D	Future Residential Development	E/o 8th Ave and n/o Gigling Rd	-	New	12	7,875	0%	100%	-
O-P17	Development	Zone C	Future Residential Development	E/o 8th Ave and s/o Inter-Garrison Rd	-	New	12	7,025	0%	100%	-
O-P18	Development	Zone C	Inter-Garrison Rd, Future ROW	From approx. 1,400' w/o Abrams Dr to future Reservoir B-EG (O-T-B-EG)	12	Replace	18	8,600	0%	100%	Yes
O-P19	Development	Zone C	Existing ROW	From existing Intermediate Reservoir to Inter-Garrison Rd	-	New	24	3,300	0%	100%	Yes
O-P20	Development	Zone C	Existing ROW	From Inter-Garrison Rd to existing C2 reservoir	12	Replace	18	3,625	0%	100%	-
O-P21	Development	Zone C	Watkins Gate Rd, Future ROW	From existing C2 Reservoir to future Barloy Canyon Rd	-	New	18	9,625	0%	100%	-
O-P22	Development	Zone B-EG	Watkins Gate Rd	From future B-EG reservoir (O-T-B-EG) to to Watkins Gate Rd	-	New	18	2,375	0%	100%	Yes
O-P23	Development	Zone B-EG/ Zone C	Barloy Canyon Rd	From Watkins Gate Rd to future East Garrison Hydropneumatic Pump Station	-	New	18	2,050	0%	100%	-
O-P24	Development	Zone EG-HYD	Barloy Canyon Rd	From future East Garrison Hydropneumatic Pump Station to approx. 4,700' n/o Eucalyptus Rd	-	New	18	2,800	0%	100%	-
O-P25	Development	Zone B	Planned Mixed Use Development	N/o Reservation Rd and e/o Blanco Rd	-	New	12	13,525	0%	100%	Yes
O-P26	Reliability	Zone B	Imjin Rd, Neeson Rd	From Reservation Rd to approx. 700' ne/o Abrams Dr	-	New	12	2,725	0%	100%	Yes

Table 8.2 Buildout Capital Improvement Program

Water Master Plan

Marina Coast Water District

PRELIMINARY

Improv. No.	Improv. Type	Pressure Zone	Alignment	Limits	Improvement Details				Suggested Cost Allocation Existing Users	Suggested Cost Allocation Future Users	Included in 15-Year CIP
O-P27	Development	Zone D	South Boundary Rd	From General Jim Blvd to approx. 8,300' se/o South Boundary Rd	-	New	24	8,275	0%	100%	Yes
Tank Improvements					New/Replace	Capacity (MG)					
O-T-B-EG	New Capacity	Zone B-EG	Existing Travel Camp tank site, s/o Inter-Garrison Rd approximately 1,700' w/o Camp St		New	1.00			25%	75%	Modified
O-T-D2	New Capacity	Zone D	Existing D1 tank site		New	1.70			0%	100%	-
O-T-SAND	Demolition	Zone A	Existing Sand Tank Facility						100%	0%	Yes
Pump Station Improvements					New/Upgrade /Replace	Total Capacity (gpm)					
O-PS-C1	New Capacity	Zone C	Planned A1/A2 tank site, nw/o the intersection of Inter-Garrison Rd and 6th Avenue		New	2,000			20%	80%	Modified
O-PS-C2	New Capacity	Zone C	Existing Intermediate Reservoir site		New	6,000			20%	80%	-
O-PS-D	New Capacity	Zone D	Existing C2 reservoir site		New	3,000			15%	85%	-
O-PS-EHYD	Replace Capacity	Zone E	Existing PS-EHYD Pump Station Site		Replace	1,200			20%	80%	-
O-PS-EGHYD	New Capacity	Zone EG-HYD	Barloy Canyon Rd, approximately 1,600' sw/o Crescent Bluff Rd		New	3,600			0%	100%	-
Valve Improvements					New/Replace	Size (in)					
O-FILLV-INTRES	Operational	Zone C	Intermediate Reservoir		New	8			20%	80%	-
O-FILLV-B-EG	Supply Capacity	Zone B-EG	Inter-Garrison Road		New	8			25%	75%	Yes
O-PRV-C1	Reliability	Zone C	Watkins Gate Rd		New	8			30%	70%	-
O-PRV-C2	Reliability	Zone C	Barloy Canyon Rd		New	8			30%	70%	-
Combined Water System (General)											
Pipeline Improvements					Existing Diameter (in)	New/Parallel /Replace	Diameter (in)	Length (ft)			
G-P1	Capacity	Zone A	Future 2nd Ave Extension	From Imjin Rd to Reindollar Ave	-	New	12	4,775	100%	0%	Yes
G-P2	Capacity	Zone B	Planned Zone A Tank Site	From future PS-B to existing Zone B transmission main.	-	New	18	300	50%	50%	Yes
G-P3	Capacity	Zone C	Planned Zone A Tank Site	From future PS-C to existing Zone C transmission main.	-	New	24	300	20%	80%	Yes
G-P4	Capacity	Zone A	Planned Zone A Tank Site	From future Zone A tanks to future Zone A (existing Zone C) transmission main.	-	New	24	300	100%	0%	Yes
G-P5	Capacity	Zone A	Planned Zone A Tank Site	From future Zone A tanks to future Zone A (existing Zone C) transmission main.	-	New	24	300	40%	60%	Yes
G-P6	Reliability	Zone B	Imjin Road and Imjim Parkway	From the 8th St Cut-off to Abrams Dr	-	New	12	2,950	100%	0%	Yes
G-P7	Capacity	Zone A	Imjin Parkway	From Abrams Dr to Marina Heights Dr	-	New	24	2,550	0%	100%	Yes
G-P8	Capacity	Zone A	Marina Heights Development	From California Dr to approximately 600' n/o MacArthur Dr	-	New	24	3,300	0%	100%	Yes
G-P9	Development	Zone B	Reservation Rd	From Imjin Pwy to Salinas Ave	-	New	12	4,050	0%	100%	-
G-P10	Capacity	Zone A	Reservation Rd	From existing Well 34 discharge to existing Well 31 discharge	16	Replace	24	2,000	0%	100%	Yes
G-P11	Capacity	Zone A	Watkins Gate Rd	From future Well 36 to Camp St	-	New	12	1,225	0%	100%	-
Tank Improvements					New/Replace	Capacity (MG)					
G-T-A1	Capacity	Zone A	Nw/o the intersection of Inter-Garrison Rd and 6th Avenue		Replace	1.60			100%	0%	Modified
G-T-A2	Capacity	Zone A	Nw/o the intersection of Inter-Garrison Rd and 6th Avenue		Replace	1.60			40%	60%	Modified
G-T-B2	Capacity	Zone B	Existing B1 Tank site		New	2.50			20%	80%	Modified
Pump Station Improvements					New/Upgrade /Replace	Total Capacity (gpm)					
G-PS-B	Capacity	Zone B	Planned A1/A2 tank site, nw/o the intersection of Inter-Garrison Rd and 6th Avenue		New	4,800			50%	50%	Modified

Table 8.2 Buildout Capital Improvement Program

Water Master Plan

Marina Coast Water District

PRELIMINARY

Improv. No.	Improv. Type	Pressure Zone	Alignment	Limits	Improvement Details		Suggested Cost Allocation		Included in 15-Year CIP
							Existing Users	Future Users	
Supply Improvements					New/Replace	Total Capacity (gpm)			
G-W31	Capacity	Zone A	Existing Well 31 site		Replace Pump		0%	100%	-
G-W34	Capacity	Zone A	Existing Well 34 site		Replace Pump		0%	100%	-
G-W35	Capacity	Zone A	Existing Well 35 site		Replace Pump		0%	100%	Yes
G-W36	Capacity	Zone A	Watkins Gate Rd approx. 1,000' w/o Camp St		New Well	1,500 gpm	0%	100%	-
G-W1	Water Quality	Zone A	Existing Well 30, 31, 34, 35		Wellhead Treatment		100%	0%	Yes
Miscellaneous Improvements					New/Replace	Total Capacity (gpm)			
G-WD1	Other	-	Corporation Yard Demolition and Rehab				100%	0%	Yes

AKEL ENGINEERING GROUP, INC.

4/10/2019

Table 8.3 Near-Term Capital Improvement Program
Water Master Plan
Marina Coast Water District

PRELIMINARY

Improv. No.	Improv. Type	Pressure Zone	Alignment	Limits	Improvement Details				Infrastructure Costs		Baseline Construction Cost	Estimated Construction Cost[1]	Capital Improvement Cost[2,3,4]	Suggested Cost Allocation		Cost Sharing	
									Unit Cost ($/unit)	Infr. Cost ($)	($)	($)	($)	Existing Users	Future Users	Existing Users ($)	Future Users ($)
Central Marina Water System																	
Pipeline Improvements					Existing Diameter (in)	New/Parallel /Replace	Diameter (in)	Length (ft)									
M-P1	Reliability	Zone A	ROW	From existing Reservoir 2 Site to Crescent Ave	-	New	12	425	213	90,525	91,000	136,000	170,000	100%	0%	170,000	0
M-P2	Reliability	Zone A	Beach Rd	From De Forest Rd to Del Monte Blvd	8	Parallel	12	2,725	213	580,425	581,000	863,000	1,079,000	100%	0%	1,079,000	0
M-P3	Development	Zone A	Armstrong Ranch	Future Armstrong Ranch Development	-	New	12	7,575	213	1,613,475	1,614,000	2,397,000	2,997,000	0%	100%	0	2,997,000
M-P4	Capacity	Zone A	California Ave	From approximately 500' n/o 3rd Ave to Reindollar Ave	12	Replace	16	1,225	256	313,600	314,000	467,000	584,000	50%	50%	292,000	292,000
					Subtotal - City of Marina Pipeline Improvements					**2,598,025**	**2,600,000**	**3,863,000**	**4,830,000**			**1,541,000**	**3,289,000**
Valve Improvements					New/Replace	Size (in)											
M-FILLV-A1	Operational	Zone A	Existing Reservoir 2 Site		New	8				73,000	73,000	109,000	137,000	100%	0%	137,000	0
					Subtotal - City of Marina Valve Improvements					**73,000**	**73,000**	**109,000**	**137,000**			**137,000**	**0**
Total Central Marina Improvement Costs																	
					Pipeline Improvements					**2,598,025**	**2,600,000**	**3,863,000**	**4,830,000**			**1,541,000**	**3,289,000**
					Valve Improvements					**73,000**	**73,000**	**109,000**	**137,000**			**137,000**	**0**
					Total - Central Marina Improvements					**2,671,025**	**2,673,000**	**3,972,000**	**4,967,000**			**1,678,000**	**3,289,000**
Ord Community Water System																	
Pipeline Improvements					Existing Diameter (in)	New/Parallel /Replace	Diameter (in)	Length (ft)									
O-P1	Fire Flow	Zone C	5th St	From 3rd Rd to 1st St	8	Replace	12	750	213	159,750	160,000	238,000	298,000	100%	0%	298,000	0
O-P2	Reliability	Zone B	First Ave	From Lightfighter Dr to Gigling Ave	-	New	12	1,500	213	319,500	320,000	476,000	595,000	50%	50%	297,500	297,500
O-P3	Condition	Zone C	Gigling Rd	From General Jim Moore Blvd to Zone D Pump Station	12	Replace	12	2,300	213	489,900	490,000	728,000	910,000	100%	0%	910,000	0
O-P4	Fire Flow	Zone C	Planned Mixed Use Development	N/o Gigling Ave, between Malmedy Rd and Parker Flats Rd	6, 8	Replace	12	4,775	213	1,017,075	1,018,000	1,512,000	1,890,000	100%	0%	1,890,000	0
O-P5	Fire Flow	Zone D	Planned Mixed Use Development	N/o Gigling Ave, between Parker Flats Rd and 6th Ave	6, 8	Replace	12	3,500	213	745,500	746,000	1,108,000	1,385,000	100%	0%	1,385,000	0
O-P6	Fire Flow	Zone B	Existing ROW	From Monterey Rd to Leinbach Ave	8	Replace	12	2,425	213	516,525	517,000	768,000	960,000	100%	0%	960,000	0
O-P7	Development	Zone D	McClure Rd and ROW	From the intersection of General Jim Moore Blvd and McClure Rd to Coe Ave	-	New	12	5,325	213	1,134,225	1,135,000	1,686,000	2,108,000	0%	100%	0	2,108,000

Table 8.3 Near-Term Capital Improvement Program
Water Master Plan
Marina Coast Water District

PRELIMINARY

Improv. No.	Improv. Type	Pressure Zone	Alignment	Limits	Improvement Details				Infrastructure Costs		Baseline Construction Cost	Estimated Construction Cost[1]	Capital Improvement Cost[2,3,4]	Suggested Cost Allocation		Cost Sharing	
									Unit Cost ($/unit)	Infr. Cost ($)	($)	($)	($)	Existing Users	Future Users	Existing Users ($)	Future Users ($)
O-P8	Capacity	Zone D	Coe Ave	From General Jim Moore Blvd to approx. 1,700' w/o General Jim Moore Blvd	8	Replace	12	1,725	213	367,425	368,000	547,000	684,000	50%	50%	342,000	342,000
O-P9	Development	Zone D	Eucalyptus Rd	From General Jim Moore Blvd to approx. 1,500' e/o General Jim More Blvd	-	New	12	1,350	213	287,550	288,000	428,000	535,000	0%	100%	0	535,000
O-P10	Development	Zone E	Eucalyptus Rd and Future ROW	Future Commercial Development, along and n/o Eucalyptus Rd	-	New	12	10,900	213	2,321,700	2,322,000	3,449,000	4,312,000	0%	100%	0	4,312,000
O-P12	Development	Zone D	Parker Flats Cutoff Rd and Eucalyptus Rd	From Normandy Rd to Future ROW	-	New	12	7,525	213	1,602,825	1,603,000	2,381,000	2,977,000	0%	100%	0	2,977,000
O-P18	Development	Zone C	Inter-Garrison Rd, Future ROW	From approx. 1,400' w/o Abrams Dr to future Reservoir B-EG (O-T-B-EG)	12	Replace	18	8,600	276	2,373,600	2,374,000	3,526,000	4,408,000	0%	100%	0	4,408,000
O-P22	Development	Zone B-EG	Watkins Gate Rd	From future B-EG reservoir (O-T-B-EG) to to Watkins Gate Rd	-	New	18	2,375	276	655,500	656,000	975,000	1,219,000	0%	100%	0	1,219,000
O-P25	Development	Zone B	Planned Mixed Use Development	N/o Reservation Rd and e/o Blanco Rd	-	New	12	13,525	213	2,880,825	2,881,000	4,279,000	5,349,000	0%	100%	0	5,349,000
O-P26	Reliability	Zone B	Imjin Rd, Neeson Rd	From Reservation Rd to approx. 700' ne/o Abrams Dr	-	New	12	2,725	213	580,425	581,000	863,000	1,079,000	0%	100%	0	1,079,000
O-P27	Development	Zone D	South Boundary Rd	From General Jim Blvd to approx. 8,300' se/o South Boundary Rd	-	New	24	8,275	346	2,863,150	2,864,000	4,254,000	5,318,000	0%	100%	0	5,318,000
					Subtotal - Fort Ord Pipeline Improvements					**18,315,475**	**18,323,000**	**27,218,000**	**34,027,000**			**6,082,500**	**27,944,500**
Tank Improvements					New/Replace	Capacity (MG)											
O-T-B-EG	New Capacity	Zone B-EG	Existing Travel Camp tank site, s/o Inter-Garrison Rd approximately 1,700' w/o Camp St		New	0.80			2.92	2,336,000	2,336,000	3,469,000	4,337,000	20%	80%	867,400	3,469,600
O-T-SAND	Demolition	Zone A	Existing Sand Tank Facility							-	-	-	552,000	100%	0%	552,000	0
					Subtotal - Fort Ord Tank Improvements					**2,336,000**	**2,336,000**	**3,469,000**	**4,889,000**			**1,419,400**	**3,469,600**
Pump Station Improvements					New/Upgrade /Replace	Total Capacity (gpm)											
O-PS-C1	New Capacity	Zone C	Planned A1/A2 tank site, nw/o the intersection of Inter-Garrison Rd and 6th Avenue		New	2,250			153	344,933	345,000	513,000	642,000	60%	40%	385,200	256,800
					Subtotal - Fort Ord Pump Station Improvements					**344,933**	**345,000**	**513,000**	**642,000**			**385,200**	**256,800**
Valve Improvements					New/Replace	Size (in)											
O-FILLV-B-EG	Supply Capacity	Zone B-EG	Inter-Garrison Road		New	8				73,000	73,000	109,000	137,000	20%	80%	27,400	109,600
					Subtotal - Fort Ord Valve Improvements					**73,000**	**73,000**	**109,000**	**137,000**			**27,400**	**109,600**

Table 8.3 Near-Term Capital Improvement Program
Water Master Plan
Marina Coast Water District

PRELIMINARY

Improv. No.	Improv. Type	Pressure Zone	Alignment	Limits	Improvement Details				Infrastructure Costs Unit Cost ($/unit)	Infrastructure Costs Infr. Cost ($)	Baseline Construction Cost ($)	Estimated Construction Cost[1] ($)	Capital Improvement Cost[2,3,4] ($)	Suggested Cost Allocation Existing Users	Suggested Cost Allocation Future Users	Cost Sharing Existing Users ($)	Cost Sharing Future Users ($)
Total Ord Community Improvement Costs																	
					Pipeline Improvements					**18,315,475**	**18,323,000**	**27,218,000**	**34,027,000**			**6,082,500**	**27,944,500**
					Tank Improvements					**2,336,000**	**2,336,000**	**3,469,000**	**4,889,000**			**1,419,400**	**3,469,600**
					Pump Station Improvements					**344,933**	**345,000**	**513,000**	**642,000**			**385,200**	**256,800**
					Valve Improvements					**73,000**	**73,000**	**109,000**	**137,000**			**27,400**	**109,600**
					Total - Fort Ord Improvements					**21,069,408**	**21,077,000**	**31,309,000**	**39,695,000**			**7,914,500**	**31,780,500**
Combined Water System (General)																	
Pipeline Improvements					Existing Diameter (in)	New/Parallel /Replace	Diameter (in)	Length (ft)									
G-P1	Capacity	Zone A	Future 2nd Ave Extension	From Imjin Rd to Reindollar Ave	-	New	12	4,775	213	1,017,075	1,018,000	1,512,000	1,890,000	100%	0%	1,890,000	0
G-P2	Capacity	Zone B	Planned Zone A Tank Site	From future PS-B to existing Zone B transmission main.	-	New	18	300	276	82,800	83,000	124,000	155,000	75%	25%	116,250	38,750
G-P3	Capacity	Zone C	Planned Zone A Tank Site	From future PS-C to existing Zone C transmission main.	-	New	24	300	346	103,800	104,000	155,000	194,000	60%	40%	116,400	77,600
G-P4	Capacity	Zone A	Planned Zone A Tank Site	From future Zone A tanks to future Zone A (existing Zone C) transmission main.	-	New	24	300	346	103,800	104,000	155,000	194,000	100%	0%	194,000	0
G-P5	Capacity	Zone A	Planned Zone A Tank Site	From future Zone A tanks to future Zone A (existing Zone C) transmission main.	-	New	24	300	346	103,800	104,000	155,000	194,000	75%	25%	145,500	48,500
G-P6	Reliability	Zone B	Imjin Road and Imjim Parkway	From the 8th St Cut-off to Abrams Dr	-	New	12	2,950	213	628,350	629,000	935,000	1,169,000	100%	0%	1,169,000	0
G-P7	Capacity	Zone A	Imjin Parkway	From Abrams Dr to Marina Heights Dr	-	New	24	2,550	346	882,300	883,000	1,312,000	1,640,000	0%	100%	0	1,640,000
G-P8	Capacity	Zone A	Marina Heights Development	From California Dr to approximately 600' n/o MacArthur Dr	-	New	24	3,300	346	1,141,800	1,142,000	1,696,000	2,120,000	0%	100%	0	2,120,000
G-P10	Capacity	Zone A	Reservation Rd	From existing Well 34 discharge to existing Well 31 discharge	16	Replace	24	2,000	346	692,000	692,000	1,028,000	1,285,000	0%	100%	0	1,285,000
					Subtotal - Combined Pipeline Improvements					**4,755,725**	**4,759,000**	**7,072,000**	**8,841,000**			**3,631,150**	**5,209,850**
Tank Improvements					New/Replace	Capacity (MG)											
G-T-A1	Capacity	Zone A	Nw/o the intersection of Inter-Garrison Rd and 6th Avenue		Replace	1.25			2.33	2,912,500	2,913,000	4,326,000	5,841,000	100%	0%	5,841,000	0
G-T-A2	Capacity	Zone A	Nw/o the intersection of Inter-Garrison Rd and 6th Avenue		Replace	1.25			2.33	2,912,500	2,913,000	4,326,000	5,841,000	75%	25%	4,380,750	1,460,250
G-T-B2	Capacity	Zone B	Existing B1 Tank site		New	0.90			2.33	2,097,000	2,097,000	3,115,000	3,894,000	50%	50%	1,947,000	1,947,000
					Subtotal - Combined Tank Improvements					**7,922,000**	**7,923,000**	**11,767,000**	**15,576,000**			**12,168,750**	**3,407,250**
Pump Station Improvements					New/Upgrade /Replace	Total Capacity (gpm)											
G-PS-B	Capacity	Zone B	Planned A1/A2 tank site, nw/o the intersection of Inter-Garrison Rd and 6th Avenue		New	2,700			147	395,706	396,000	589,000	737,000	75%	25%	552,750	184,250
					Subtotal - Combined Pump Station Improvements					**395,706**	**396,000**	**589,000**	**737,000**			**552,750**	**184,250**

Table 8.3 Near-Term Capital Improvement Program
Water Master Plan
Marina Coast Water District

PRELIMINARY

Improv. No.	Improv. Type	Pressure Zone	Alignment	Limits	Improvement Details		Infrastructure Costs		Baseline Construction Cost	Estimated Construction Cost[1]	Capital Improvement Cost[2,3,4]	Suggested Cost Allocation		Cost Sharing	
							Unit Cost ($/unit)	Infr. Cost ($)	($)	($)	($)	Existing Users	Future Users	Existing Users ($)	Future Users ($)
Supply Improvements					New/Replace	Total Capacity (gpm)									
G-W35	Capacity	Zone A	Existing Well 35 site		Replace Pump		55,000	55,000	55,000	82,000	103,000	0%	100%	0	103,000
G-W1	Water Quality	Zone A	Existing Well 30, 31, 34, 35		Wellhead Treatment		-	-	-	-	2,801,000	100%	0%	2,801,000	0
					Subtotal - Combined Supply Improvements			**55,000**	**55,000**	**82,000**	**2,904,000**			**2,801,000**	**103,000**
Valve Improvements					New/Replace	Size (in)									
G-PRV-B1	Reliability	Zone B	Planned A1/A2 tank site, nw/o the intersection of Inter-Garrison Rd and 6th Avenue		New	8		73,000	73,000	109,000	137,000	75%	25%	102,750	34,250
					Subtotal - City of Marina Valve Improvements			**73,000**	**73,000**	**109,000**	**137,000**			**102,750**	**34,250**
Miscellaneous Improvements															
G-WD1	Other	-	Corporation Yard Demolition and Rehab				-	-	-	-	465,000	100%	0%	465,000	0
					Subtotal - Combined Miscellaneous Improvements			**0**	**0**	**0**	**465,000**			**465,000**	**0**
Total Combined Improvement Costs															
					Pipeline Improvements			**4,755,725**	**4,759,000**	**7,072,000**	**8,841,000**			**3,631,150**	**5,209,850**
					Tank Improvements			**7,922,000**	**7,923,000**	**11,767,000**	**15,576,000**			**12,168,750**	**3,407,250**
					Pump Station Improvements			**395,706**	**396,000**	**589,000**	**737,000**			**552,750**	**184,250**
					Supply Improvements			**55,000**	**55,000**	**82,000**	**2,904,000**			**2,801,000**	**103,000**
					Valve Improvements			**73,000**	**73,000**	**109,000**	**137,000**			**102,750**	**34,250**
					Miscellaneous Improvements			**0**	**0**	**0**	**465,000**			**465,000**	**0**
					Total - Combined Improvements			**13,201,431**	**13,206,000**	**19,619,000**	**28,660,000**			**19,721,400**	**8,938,600**
Total Water System Improvement Costs															
					Pipeline Improvements			**25,669,225**	**25,682,000**	**38,153,000**	**47,698,000**			**11,254,650**	**36,443,350**
					Supply Improvements			**55,000**	**55,000**	**82,000**	**2,904,000**			**2,801,000**	**103,000**
					Tank Improvements			**10,258,000**	**10,259,000**	**15,236,000**	**20,465,000**			**13,588,150**	**6,876,850**
					Valve Improvements			**146,000**	**146,000**	**218,000**	**411,000**			**267,150**	**143,850**
					Pump Station Improvements			**740,639**	**741,000**	**1,102,000**	**1,379,000**			**937,950**	**441,050**
					Miscellaneous Improvements			**0**	**0**	**0**	**465,000**			**465,000**	**0**
					Total - Combined Improvements			**36,868,864**	**36,883,000**	**54,791,000**	**73,322,000**			**29,313,900**	**44,008,100**

Notes:

6/3/2019

1. Estimated Construction costs include 48.5 percent of baseline construction costs to account for unforeseen events and unknown field conditions, and for Contractor's overhead and profit, general conditions, and sales tax, consistent with 2007 Water Master Plan.
2. Capital Improvement Costs also include an additional 25 percent of the estimated construction costs to account for administration, construction management, and legal costs.
3. The Capital Improvement Costs for storage tank improvements G-T-A1 and G-T-A2 also include an additional 10 percent of the estimated construction cost to account for California State University Architectural Requirements.
4. Projects only including a Capital Improvement Cost are based on capital improvement information received from District staff and are assumed to include planning contingencies.

“In-Tract” policy is included in **Appendix C**. The following is directly from the District’s “In-Tract” policy:

For all proposed redevelopment projects in areas served by existing water and wastewater collection infrastructure, the developer will be required to implement one of the following procedures:

1. *Where redevelopment will raze the existing buildings and streets:*
   - *Developer completes a subdivision water and sewer master plan per the District standards.*
   - *Developer replaces all existing water and wastewater collection pipelines and components within the project area to District standards, and replaces all existing water and wastewater collection pipelines and components adjacent to the project area to District standards, as project impacts necessitate.*
   - *Developer provides meter boxes for all structures and landscaping.*
   - *Developer provides for District’s installation of remote read meters.*
2. *Where redevelopment will use existing buildings and infrastructure or will raze or remodel a portion or all of the existing buildings but streets and existing infrastructure will remain:*
   - *Developer completes a subdivision water and sewer master plan per the District standards. This subdivision master plan would include a physical and design standard condition assessment of the systems per District standards. The subdivision master plan must be approved by the District prior to receiving water and sewer service.*
   - *From the subdivision master plan, the Developer replaces components as required by the District.*
   - *Developer relocates the District’s backbone water/sewer infrastructure (infrastructure that serves other upstream and downstream users) onto roadway right of way, as necessary.*
   - *When the Developer is planning to construct improvements, including, but not limited to, structures, landscape areas, walkways, parking facilities, etc., over existing water and sewer infrastructure, then the Developer is responsible to relocate existing water/sewer infrastructure away from under proposed improvements.*
   - *The developer will enter into a separate utility agreement with the District to provide for anticipated higher maintenance costs of the remaining older systems that will be left in place.*
   - *The separate utility agreement will include an annual water and wastewater collection inspection report to be completed by the Developer or its successor in accordance with District standards. That agreement will require the developer to provide an annual wastewater collection system, water system inspection report in accordance with District standards and to provide master meters for the project. The water inspection report will include a water audit.*
   - *Developer provides meter boxes for all structures and landscaping.*
   - *Developer provides for District’s installation of remote read meters.*

8.3.3 Construction Triggers

As a part of this Master Planning process, construction triggers were developed in an effort to orderly plan the expansion of the water system. These construction triggers are based on equivalent dwelling units (EDU), which are defined as *insert information from Bartle Wells.* It should be noted that Bartle Wells and Associates prepared an updated analysis of EDUs for the District, and based on industry standards and approved by District staff. This analysis is included in **Appendix D**, and summarized as follows:

To be finalized pending MCWD staff approval

Summarize EDU Analysis from Bartle Wells

APPENDICES

APPENDIX A

Water System Planning and Design Criteria
- Prepared by GHD

Water System Planning and Design Criteria

Marina Coast Water District

GHD | 2235 Mercury Way, Suite 150, Santa Rosa, California

11140005 **|** November 6, 2017

Marina Coast Water District

Water System Planning and Design Criteria

Project No. 11140005

Prepared for:

AKEL
ENGINEERING GROUP, INC.
7433 N. First Street, #103
Fresno, CA 93720

Prepared by:

Luke Philbert
Project Engineer

Reviewed by:

Matt Winkelman, P.E.
Principal

2235 Mercury Way, Suite 150
Santa Rosa, CA 95407
(707) 523-1010

November 6, 2017

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1. Water System Planning & Design Criteria

The following section provides planning and design criteria for surface water quality, groundwater quality and contamination, and saltwater intrusion. Criteria were evaluated from Marina Coast Water District (MCWD) and similar agencies and provide a basis for decision making for the master plan.

1.1 Surface Water Quality

Currently, MCWD receives all of its source water solely from groundwater, and plans to diversify its water supply portfolio in upcoming years. MCWD does not currently have surface water quality criteria. Groundwater quality and contamination monitoring programs are discussed in Section 1.2. Saltwater intrusion is discussed at length in Section 1.3. MCWD maintains active monitoring of intrusion and contamination status and participates in the analytical and management efforts undertaken by the Monterey County Water Resources Agency (MCWRA) with respect to seawater intrusion remediation actions and by the U. S. Army Corps of Engineers relative to groundwater cleanup on the former Fort Ord.

1.2 Groundwater Quality and Contamination

Groundwater quality and contamination problems are well monitored and mitigated in the MCWD service area to meet state and federal standards. Groundwater supply is provided from eight wells (See Figure 1) and delivered through a distribution system network of seven storage tanks and nearly 250 miles of pipeline. Three deep supply wells (10, 11, and 12) located in Central Marina draw groundwater from the 900-foot aquifer of the Salinas Valley Groundwater Basin. The groundwater is treated at each well site for disinfection and to remove naturally occurring hydrogen sulfide that can cause odor.

Five supply wells (29, 30, 31, 34 and “Watkins Gate” 35) located in the Ord Community, draw groundwater from the Salinas Valley Groundwater Basin 900-foot, 400-foot, and lower 180-foot Aquifers. Groundwater from these supply wells is disinfected in the Ord Community chlorination treatment plant.

In 2005, the Central Marina and Ord Community water systems were connected to allow water to flow between the systems to meet peak demands and improve overall service.

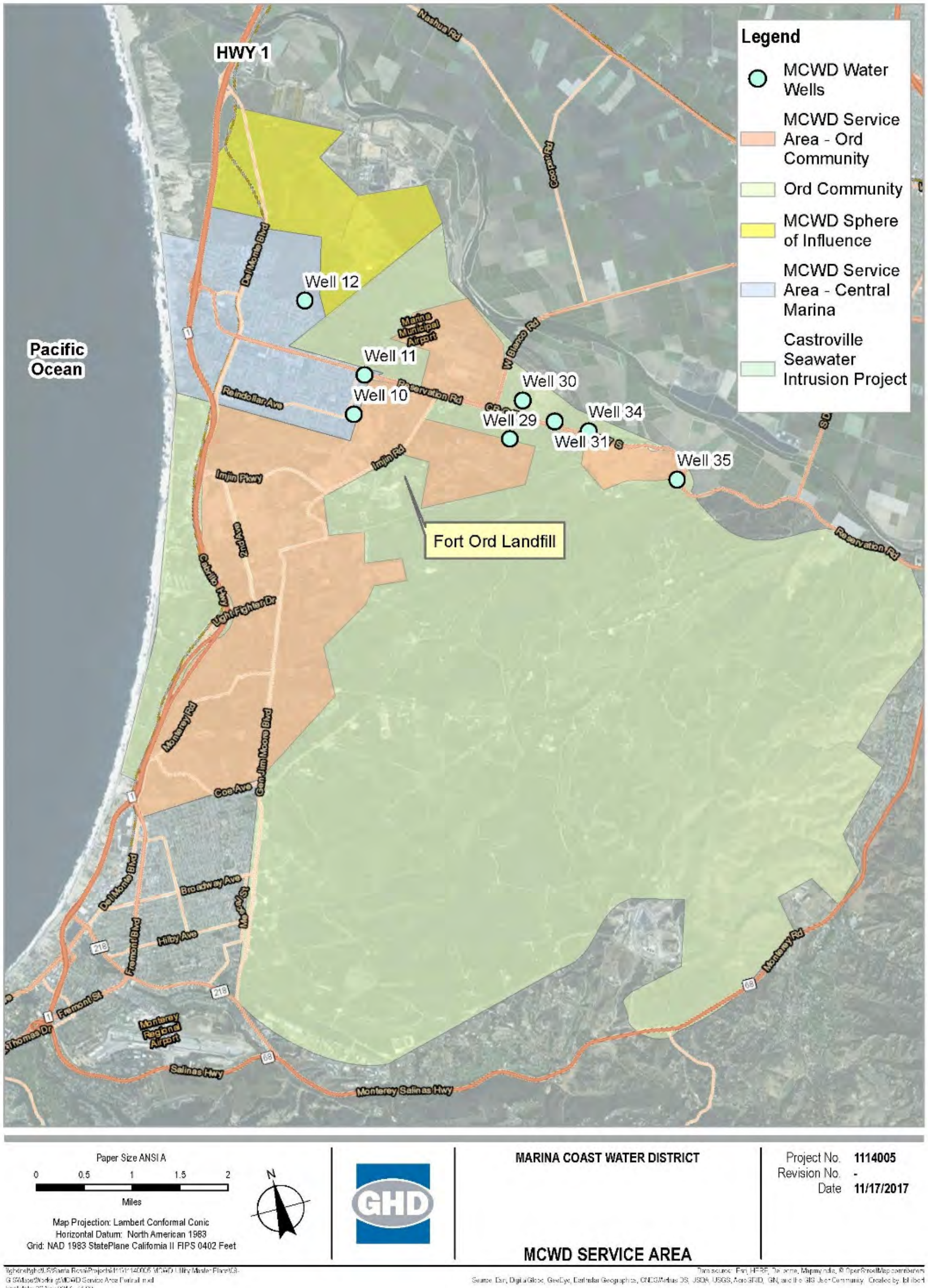

Figure 1 - MCWD Service Area

1.2.1 GeoTracker Water Quality Assessment

GHD reviewed GeoTracker data to identify hazardous materials sites within a 0.25-mile radius of each supply well. Results are summarized in Table 1.1. GeoTracker is the State Water Resources Control Board's (SWRCB) data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater. GeoTracker contains records for sites that require cleanup, such as Leaking Underground Storage Tank (LUST) Sites, Department of Defense Sites, and Cleanup Program Sites. GeoTracker also contains records for various unregulated projects as well as permitted facilities including: Irrigated Lands, Oil and Gas production, operating Permitted USTs, and Land Disposal Sites.

Table 1.1 - Open Cleanup Sites within 0.25 mile radius of wells

Well ID	1/4 Mile GeoTracker Open Cases	Comments	Links
Well 10	0	3/4 mile from Fort Ord Landfill.	http://geotracker.waterboards.ca.gov/profile_report.asp?global_id=L10006198832
Well 11	1	Open case, Fort Ord.	http://geotracker.waterboards.ca.gov/profile_report.asp?global_id=DOD100196800
Well 12	1	Open case, Fort Ord - offsite plume 0.2 miles southeast.	http://geotracker.waterboards.ca.gov/profile_report.asp?global_id=DOD100220600
Well 12	1	Dry cleaning solvents plume in soil and GW 0.6 miles to the southwest, open case.	http://geotracker.waterboards.ca.gov/profile_report.asp?global_id=SLT3S2061339
Well 29	0	Closed case, water district LUST site. Also, 1 mile from Fort Ord Landfill.	
Well 30	0	Irrigation lands to the east are part of Irrigated Lands Regulatory Program.	
Well 31	0	Irrigation lands to the east are part of Irrigated Lands Regulatory Program.	
Well 34	0	Fort Ord Superfund site closed March 2017 for Lead in soil 0.7 miles east. Irrigation lands to the east are part of Irrigated Lands Regulatory Program.	http://www.envirostor.dtsc.ca.gov/public/profile_report.asp?global_id=80001196
Well 35	0	Fort Ord Superfund site closed March 2017 for Lead in soil 0.25 miles west. Irrigation lands to the east are part of Irrigated Lands Regulatory Program.	http://www.envirostor.dtsc.ca.gov/public/profile_report.asp?global_id=80001196

1.2.2 State and Federal Standards

Water quality monitoring and lab analysis is performed by MCWD lab staff and under contract with state certified laboratories. Water samples from wells, water treatment plants, and point-of-use locations are collected and tested to assure water delivered to customers meets both state and federal standards.

Results from water quality testing are published annually in MCWD's annual Consumer Confidence Report, with the latest from 2016.[1] Currently the District has water quality reporting through October 2017.[2] The following is an analysis based on this publicly available data.

State drinking water quality regulations include drinking water standards at maximum contaminant levels (MCLs). MCLs are found in Title 22 of the California Code of Regulations. Specific constituents mentioned in this section are summarized in Table 1.2. Reported levels of contaminants are included in MCWD's annual Consumer Confidence Report[1], with the latest year at 2016.

Table 1.2 - MCWD Constituent Limits under Title 22

Constituent	Maximum Contaminant Level	Recommended Level	Upper Level	Short Term Level	Units	Section Number
arsenic	0.01				mg/L	64431
chloride		250	500	600	mg/L	64449
chromium	0.05				mg/L	64431
color	15				units	64449
copper	1				mg/L	64449
fluoride	2				mg/L	64431
nitrate	10					64431
haloacetic acids	0.06				mg/L	64533
magnesium		10			mg/L	64536
odor - threshold	3				units	64449
specific conductance		900	1,600	2,200	uS/cm	64449
sulfate		250	500	600	mg/L	64449
total dissolved solids		500	1000	1500	mg/L	64449
total trihalomethanes	0.08				mg/L	64533
trichloroethylene	0.005				mg/L	64444
turbidity	5				units	64449

Federal drinking water quality regulations are maintained under the Safe Drinking Water Act (SDWA). The Environmental Protection Agency (EPA) sets standards for drinking water quality, and with its partners implements various technical and financial programs to ensure a safe drinking water supply.

In addition, the California Department of Public Health (CDPH) implemented the Federal Groundwater Rule (GWR); compliance started on December 1, 2009. The purpose of the GWR is to reduce the risk of illness caused by microbial contamination in public groundwater systems. MCWD reported that

[1] http://www.mcwd.org/gsa_ccr.html

[2] http://www.mcwd.org/gsa_water_quality.html

coliforms were not detected in all but four of the required 532 distribution system samples collected in Central Marina and Ord Community[1].

The Regional Water Quality Control Boards (RWQCBs) located throughout California are responsible for assessing the water quality of all water bodies in their regions. This information is compiled into a statewide Water Quality Assessment, a database that lists water bodies alphabetically by water type (lakes, streams, wetlands, groundwater, etc.) and assesses each water body as having "good," "intermediate," "impaired," or "unknown" water quality. Formally, an impaired water body is one that does not meet water quality standards even after technology based discharge limits on point sources are implemented (i.e., water quality standards are not attainable even with Best Available Treatment/Best Control Technology).

Section 303(d) of the federal Clean Water Act requires each State to maintain a list of impaired water bodies and to develop total maximum day loads (TMDLs) for all impaired water bodies. A TMDL estimates the maximum amount of a pollutant that a water body can receive and still meet water quality standards. A TMDL must be developed for each stressor or pollutant for each water body threatened or impaired. Establishing a TMDL includes gathering data about the sources of the pollutant, including both point and nonpoint sources, and allocating the pollutant loads from the various identified sources. Once a TMDL is established, an implementation plan must be developed to describe how that water body will meet water quality standards.

The Central Coast RWQCB is the State agency responsible for identifying impaired water bodies within the Central Coast region. On August 4, 2010, the SWRCB approved the 2010 Integrated Report, which California's 2008-2010 Section 303(d) list of impaired waters requiring TMDLs and 305(b) report on the quality of the State's waters, and on November 12, 2010 the Integrated Report was approved by the US EPA.

Within the Greater Monterey County Integrated Regional Water Management (IRWM) region, 29 water bodies have been determined by the RWQCB to be impaired under Section 303(d) of the Clean Water Act. These water bodies are shown in the Greater Monterey Integrated Regional Water Management Plan (IRWMP)[3]. The 2010 California 303(d) List of Water Quality Limited Segments for water bodies within the Greater Monterey County IRWM region is also included as Appendix G of the IRWMP report, with the identified pollutants.[4]

The entire Salinas Valley Groundwater Basin, which includes four sub-basins, is listed as impaired and as only partially supporting beneficial uses due to nitrate contamination and seawater intrusion[5]. The water bodies in the lower Salinas Valley have some of the worst pollutant impairments on the Central Coast. The Lower Salinas River (from the estuary to Gonzales Road) has the most pollutant impairments identified on the 303(d) list of any other water body on the Central Coast, with 19 impairments. Second

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[3] Integrated Regional Water Management Plan for the Greater Monterey County Region. Regional Water Management Group. Adopted April 2013.

[4] To see the Section 303(d) List of water bodies for all of California, go to the RWQCB's website: http://www.waterboards.ca.gov/water_issues/programs/tmdl/integrated2010.shtml

[5] California Regional Water Quality Control Board, Central Coast Region (RWQCB). 2002. Watershed Management Initiative Chapter (January 2002). Prepared by Alison Jones.

is Orcutt Creek in Santa Maria (Santa Barbara County) with 15 impairments, but tied for third are the Salinas Reclamation Ditch and Tembladero Slough, each with 14 pollutant impairments. In addition, the Old Salinas River Channel and Quail Creek are both listed for 11 impairments.[6] More important than the number of pollutant impairments identified are the magnitude of the problems. Each of these water segments is impaired for toxicity and high levels of pesticides, nutrients and indicator bacteria. Moss Landing Harbor, which lies at the bottom of the Salinas Reclamation Ditch (Gabilan) watershed, is listed for 10 pollutant impairments, including pesticides, toxicity, pathogens, and sediment.

1.2.3 Efforts to Improve Water Quality in the Greater Monterey Area

Both regulatory and voluntary approaches are being employed in the effort to improve water quality from agricultural sources in the region.

Regulatory

In July 2004, the Central Coast RWQCB adopted an order known as the "Conditional Waiver of Waste Discharge Requirements for Discharges from Irrigated Lands (Irrigated Agricultural Order R3-2010-0040)." The Central Coast RWQCB extended the 2004 Agricultural Order multiple times, and on March 15, 2012 voted to adopt an updated Irrigated Lands Order (Order No. R3-2012-0011), replacing the order that was approved in 2004.[7] The 2012 Irrigated Lands Agricultural Order prioritizes conditions to control pollutant loading in area where water quality impairment is documented in the 2010 Clean Water Act section 303(d) List of Impaired Waterbodies, and specifically addresses the growing problem of nitrate contamination in the region's drinking water. The Agricultural Order mandates all growers within the RWQCB's jurisdiction who discharge runoff from irrigated agricultural lands to comply with the conditions of the Order. Dischargers are required to implement, and where appropriate update or improve, management practices, which may include local or regional control or treatment practices and changes in farming practices to effectively control discharges, meet water quality standards, and achieve compliance with the Order. Dischargers must also comply with other conditions of the Agricultural Order, including monitoring and reporting requirements. For farms that pose the greatest risk to water quality, growers are required to develop certified Irrigation and Nutrient Management Plans, Water Quality Buffer Plans if they are adjacent to the most critical creeks, and monitor their individual discharge.

The SWRCB adopted a Recycled Water Policy in February 2009, which requires local stakeholders, such as local water and wastewater entities, and members of the public to develop salt and nutrient management plans for groundwater basins. The Policy mandated completion of the salt and nutrient management plans by May 14, 2014, although it allows the Central Coast RWQCB to permit a two-year extension (until May 14, 2016) if the stakeholders demonstrate substantial progress toward completion of the plan. As of the April 2013 adoption of the IRWMP Plan, no entity has as of yet initiated the salt and nutrient management planning process within the Greater Monterey County IRWM planning region.

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[6] To see the fact sheets for each of these water segments, go to the following link:
http://www.waterboards.ca.gov/water_issues/programs/tmdl/2010state_ir_reports/category5_report.shtml

[7] The 2012 Irrigated Lands Agricultural Order can be viewed at:
http://www.waterboards.ca.gov/centralcoast/water_issues/programs/ag_waivers/ag_order.shtml

According to a Spring 2015 publication by the Monterey County Farm Bureau[8] only 3 agencies in the Central Coast RWQCB met the May 14, 2014 date (Llagas (Southern Santa Clara), San Benito and Seaside). For the Salinas Basin, the MCWRA had not begun this plan.

The Central Coast RWQCB has included the following in the City of Salinas Stormwater Permit (RWQCB 2012d, pp. 86-87):

> b) Salt and Nutrient Management
>
> i) Within 2 years of adoption of this Order, the Permittee shall coordinate with local water and wastewater entities, together with local salt/nutrient contributing stakeholders, to fund locally driven and controlled, collaborative processes open to all stakeholders that will prepare salt and nutrient management plans for groundwater basins underlying the Permit coverage area, per State Water Board Recycled Water Policy (State Water Board Resolution No. 2009-0011).
>
> ii) Within 4 years of adoption of this Order, the Permittee shall evaluate opportunities to include a significant stormwater use and recharge component within the salt/nutrient management plan(s). At a minimum, the Permittee shall coordinate with other stakeholders to include stormwater recharge/use goals and objectives in salt and nutrient management plan(s).

When the salt and nutrient management planning effort for the Salinas Valley Groundwater Basin is initiated, either by the City of Salinas or some other entity, the Regional Water Management Group (RWMG) will be sure to coordinate that planning effort with the IRWM Plan.

Voluntary

According to the Greater Monterey IRWMP, the Agriculture and Rural Lands Action Plan (Ag Plan), developed with input from agriculture industry groups, resource agencies, and environmental groups, offers voluntary strategies for protecting water quality and the productivity of Central Coast agricultural lands through a stewardship approach. These strategies fall into six general categories: 1) identification and adoption of more effective management practices through development of industry networks; 2) expansion and coordination of technical assistance/outreach; 3) public education and public relations; 4) regulatory coordination/permit streamlining for conservation measures; 5) improved funding mechanisms and tax incentives; and 6) strategies for public lands and rural roads.

The Agriculture Water Quality Alliance (AWQA) was initiated in 1999 to carry out the strategies of the Ag Plan.[9] AWQA is a unique regional partnership that brings together farmers, ranchers, resource conservation agencies, researchers, and agricultural and environmental organizations. Since 1999, AWQA partners have worked together to reduce the runoff of sediments, nutrients, and pesticides from agricultural and rural lands through education and outreach, technical and financial assistance, research and monitoring, permit streamlining, and watershed coordination. AWQA's regional approach focuses on industry-led initiatives and voluntary, collaborative solutions to tackling water quality problems, and as such offers an important non-regulatory approach to improving water quality in the region. AWQA

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[8] Monterey County Farm Bureau. Farm Focus. Spring 2015

[9] See AWQA website at: http://www.awqa.org/index.html

partners meet monthly to discuss emerging issues and coordinate projects. The process has led to improved coordination and collaboration of agencies, researchers, non-profits, and industry groups.

With a mix of federal, state, and private funding, AWQA partners have made great strides towards implementing the Ag Plan. Some examples include:

- *Watershed Working Groups*: Through AWQA, farmers and ranchers throughout the region have been establishing management practices on their properties to reduce runoff in the form of sediments, nutrients and pesticides. The Central Coast Agricultural Water Quality Coalition, which represents six County Farm Bureaus whose watersheds drain to the Sanctuary, has been organizing Watershed Working Groups comprised of agricultural landowners and managers along local streams and rivers. These groups work together to identify local water quality issues and implement conservation projects.
- *Irrigation and Nutrient Management Program*: AWQA and a broad suite of partners developed the Central Coast Irrigation and Nutrient Management Program to help farmers implement irrigation and nutrient management practices to address water quantity and water quality concerns in the region. Led by the Central Coast Resource Conservation & Development Council, AWQA has secured millions of dollars in federal financial cost-share assistance under the National Resource Conservation Service (NRCS) Agricultural Water Enhancement Program (AWEP) to support implementation of irrigation and nutrient management practices in Central Coast watersheds. These practices include irrigation system and nutrient management evaluations, improved sprinkler systems, conversion to microirrigation, and installation of flow meters, among many others. AWEP is a non-regulatory program; participation is voluntary and confidential.
- *Permit Coordination Programs*: The time, cost, and complexity of navigating the permit process with a host of regulatory agencies can be daunting for landowners seeking to implement conservation projects on their properties. To help farmers, ranchers and other rural landowners overcome these barriers and to encourage implementation of conservation and restoration projects across Sanctuary watersheds, AWQA partners have worked to develop permit coordination programs. Led by Sustainable Conservation, Resource Conservation Districts, and the Natural Resource Conservation Service, the Partners in Restoration Permit Coordination Programs help landowners to quickly and effectively obtain permits from multiple agencies, and provides technical and cost-share assistance for the installation of certain conservation practices.
- *Education and Outreach*: AWQA developed a Farm Water Quality Planning Short Course through which 70 percent of growers in the region have developed farm water quality management plans for their properties.
- *Confidential Technical and Financial Assistance*: Over the past 10 years the NRCS has assisted growers in the region to voluntarily implement conservation practices through $18M in Farm Bill support dollars, matched by $15M of farmer investment in these same practices.

1.2.4 Pajaro Valley Water Management Agency Groundwater Management Projects

The Pajaro Valley Water Management Agency (PVWMAGMP) is a neighboring water agency that deals with similar issues with groundwater contamination as MCWD. The agency must meet similar requirements as MCWD as mentioned in Section 1.2.2. Key constituents of concern for water quality in the Pajaro Valley include nitrates, salinity, sodium, toxicity from chloride and sodium, and crop pathogens, primarily phytophthora. The following projects are addressed to halt groundwater contamination and seawater intrusion, as reported in the Agency's February 2014 Basin Management Plan (BMP) update[10]

- Watsonville Recycled Water Treatment Facility.
  - Completed in 2008, this facility was designed to deliver 4,000 acre feet per year (AFY) of recycled water during the irrigation season. That amount has not been fully utilized due to insufficient supply during peak demand times (daytime summer irrigation).
  - Two million gallons of additional storage is estimated to allow an additional 750 AFY of recycled water to be supplied to meet daytime demand.
- Harkins Slough Recharge Facilities Upgrades
  - The Harkins Slough Recharge Facilities were constructed in 2002 and seasonally store wet weather flows from Harkins Slough in the shallow aquifers near the coast. The average annual yield from the extraction wells to the Coastal Distribution System[11] (CDS) was estimated to be 1,100 AFY at the time the project was constructed.
  - The goal of upgrades is to increase the project's yield of recovered water by approximately 1,000 AFY on average, in addition to the current recovered water yield of approximately 200 AFY.
- Watsonville Slough with Recharge Basins
  - The Watsonville Slough with Recharge Basins Project is planned to divert Watsonville Slough water during winter high flows from December to May. The water would be stored in the surficial groundwater aquifer at the proposed North Dunes Recharge Basin and/or at alternative locations near the existing Harkins Slough Recharge Basin (the Southeast Recharge Basin and the Monitoring Well #7 Recharge Basin).
  - The proposed project would yield approximately 1,200 AFY. The yield is lower than the maximum diversion of 2,000 AFY due to years when the maximum diversion is not possible because of water quality and flows.

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[10] Pajaro Valley Water Management Agency. Basin Management Plan Update. Carollo Engineers. February 2014.

[11] The Coastal Distribution System (CDS) is the pipeline that delivers supplies from the Harkins Slough Project, Recycled Water Facility (RWF), supplemental wells for the City of Watsonville. Cost of these combined projects is over $60 million with State and federal grants paying for a majority of the project costs.

- College Lake with Inland Pipeline to the Coastal Distribution System
  - The project would increase the capacity of College Lake and send water during the summer through a new pipeline either to the Recycled Water Facility (RWF) storage tank to supply the Coastal Distribution System (CDS), or directly to the CDS, with provisions to supply inland users along the new water main pipeline.
  - The proposed project would provide a yield of approximately 2,100 to 2,400 AFY. The estimated yield includes the volume of the lake of 1,700 acre feet, plus an estimated inflow of 700 to 1,000 acre feet during the irrigation season, minus an estimated outflow of 300 acre feet to satisfy minimum flow requirements downstream for steelhead habitat.
- Murphy Crossing with Recharge Basins
  - The Murphy Crossing with Recharge Basins Project would divert water from the Pajaro River between December and May. The project includes the construction of an infiltration gallery, pump station, monitoring wells, recharge basins, and a connector pipeline from pump station to recharge basins.
  - The proposed Murphy Crossing Project would provide approximately 500 AFY.

1.2.5 MCWD Criteria for Addressing Groundwater Contamination

Water Quality Monitoring and Mitigation

MCWD's state-certified laboratory performs extensive water quality monitoring of the Marina and Ord drinking water supply. Regulations require weekly monitoring for coliform bacteria in the distribution system, which has been reported in the latest 2017 Water Quality Data. The presence of coliform bacteria may indicate the presence of disease-causing organisms. One water sample from each of five sampling sites in Marina and from each of five in Ord is collected and analyzed each week. A different set of five is analyzed each week in a month for each water system. There are a total of 20 different sample sites in Marina and 20 different sample sites in the Ord Community from which water samples are collected. Bacteriological Quality Monitoring methods are found in the Title 22, Section 64212 of the California Water Code.[12]

Chapter 14 – Water Permits
§64212. Bacteriological Quality Monitoring.

(a) A water supplier operating a state small water system shall collect a minimum of one routine sample from the distribution system at least once every three months. The sample shall be analyzed for the presence of total coliform bacteria by a laboratory certified by the State Board for bacteriological analyses pursuant to Article 3, commencing with section 100825, of Chapter 4 of Part 1 of Division 101, Health and Safety Code. The results of the analyses shall be reported to the local health officer no later than the 10th day of the month following receipt of the results by the state small water system.

(b) If any routine sample is total coliform-positive, the water supplier shall collect a repeat sample from the same location within 48 hours of being notified of the positive result. If the repeat sample is also total coliform-positive, the sample shall also be analyzed for the presence of fecal coliforms or Escherichia coli (E. coli). The water supplier shall notify the local health officer within 48 hours from the time the results are received and shall take corrective actions as directed by the local health officer to eliminate the cause of the positive samples.

(c) A local health office may require a state small water system to sample the distribution system each month, in lieu of the requirements of subsection (a), if the system has bacteriological contamination problems indicated by more than one total-coliform positive sample during the most recent 24 months of operation. The monthly sample shall be analyzed for the presence of total coliform bacteria by a laboratory certified by the State Board for bacteriological analyses pursuant to Article 3, commencing with section 100825, of Chapter 4 of Part 1 of Division 101, Health and Safety Code. The results of the analyses shall be reported to the local health officer no later than the 10th day of the month following receipt of the results by the state small water system.

To make sure that water quality is maintained from source to delivery, MCWD's laboratory also performs weekly monitoring of general physical and chemical parameters. Each week five water samples are collected from the Marina and Ord coliform sampling sites, from the Marina and Ord source wells and from the water reservoir in Marina. The water samples are tested for color, odor, turbidity, temperature, pH, conductivity, free chlorine residual and sulfides. This is provided per Title 22 of the California Code of Regulations.[12]

Article 2 - General Requirements

§64415. Laboratory and Personnel

(b) Sample collection, and field tests including color, odor, turbidity, pH, temperature, and disinfectant residual shall be performed by personnel trained to perform such sample collections and/or tests by:

(1) The State Board;

(2) A laboratory certified pursuant to subsection (a); or

(3) An operator, certified by the State Board pursuant to section 106875(a) or (b) of the Health and Safety Code and trained by an entity in paragraph (1) or (2) to perform such sample collections and/or tests.

In addition, the Marina and Ord source wells are also tested for chloride, fluoride, nitrate, bromide and sulfate. The purpose of this monitoring is to detect any abnormal concentrations that might indicate problems within the system.

According to the Greater Monterey Integrated Regional Water Management Plan[19], the two major water quality problems affecting the Salinas Valley Groundwater Basin are nitrate contamination and seawater intrusion. Nitrate contamination in the Salinas Valley is due primarily to use of nitrogen-based synthetic fertilizers for irrigated agriculture, and commonly occurs in the unconfined and semi-confined aquifers that underlie areas of intense agricultural activity. There are many wells in the Salinas Valley that have tested high above the MCL requirement of 10 mg/L, but according to the 2016 MCWD Annual Consumer Confidence Report[1], MCWD's low to high range was between non detect and 5.8 mg/L. It is worth noting that nitrate contamination can also be caused from septic system failures, from wastewater treatment ponds located in floodplains that convey sewage during flood events, and from livestock waste.

[12] California Regulations Related to Drinking Water. TITLES 17 AND 22 of the California Code of Regulations. Last updated September 23, 2016.

When in operation, the State requires MCWD to monitor water quality at different stages of the Marina Desalination Plant treatment processes. Water samples are collected from the ocean (Monterey Bay), at the plant's seawater intake well and from its finished product water on a daily, weekly, monthly and quarterly schedule. Water samples are tested for coliform organisms, free chlorine residual, pH, turbidity, conductivity, total dissolved solids, temperature, chloride, sulfate, alkalinity, hardness and corrosive index. This monitoring program ensures that the desalination plant is operating properly and is producing water that meets or exceeds state and federal standards. As mentioned in Section 1.3, this plant is not currently in operation.

MCWD monitors for compliance of over 110 constituents in drinking water in varying schedules. Many of these constituents are naturally occurring substances. The Marina and Ord source wells, Marina's reservoir and the desalination plant are tested for general minerals such as calcium, magnesium, hardness; inorganic chemicals such as arsenic, chromium and other metals; organic chemicals such as solvents, pesticides and herbicides; radioactivity including radon; asbestos and other chemicals that are still not regulated and have no state or federal standards. Regulations also require that MCWD test for disinfection (chlorination) by-products such as total trihalomethanes and haloacetic acids in the distribution system. Lead and copper are tested from indoor water samples to check if materials used in home or building plumbing contribute to levels of lead and copper.

Fort Ord Mitigation for Groundwater Contamination

The former Fort Ord was identified by the U.S. Environmental Protection Agency (EPA) as a National Priority List federal Superfund site on the basis of groundwater contamination discovered on the installation in 1990. The facility was listed "fenceline to fenceline," covering all 28,000 acres. Initial investigations pinpointed 39 sites of concern in addition to two Operable Units (the Fritzsche Army Airfield Fire Drill Pit and the Fort Ord landfill) which had been investigated during the 1980s. The sites of concern included motor pools, vehicle maintenance areas, dry cleaners, sewage treatment plants, firing ranges, hazardous waste storage areas, and unregulated disposal areas. An additional two sites were added during the investigation process: one, a defueling area located at Fritzsche Army Airfield; the other, a fire drill burn pit in East Garrison. In all, 43 sites were investigated.[13]

MCWD continues to monitor the affected well, and all other wells, for TCE and other contaminants on a regular basis. Any changes in contaminant plume migration due to increased MCWD pumping will be monitored and appropriate actions taken. MCWD maintains close coordination with the U.S. Army Corps of Engineers, who manages groundwater cleanup efforts on the former Fort Ord. The Corps of Engineers recently published an update to their mitigation program in February 2017, which provides a current and historical extent of the groundwater contamination, depicted in Figure 2.

[13] www.fortordcleanup.com

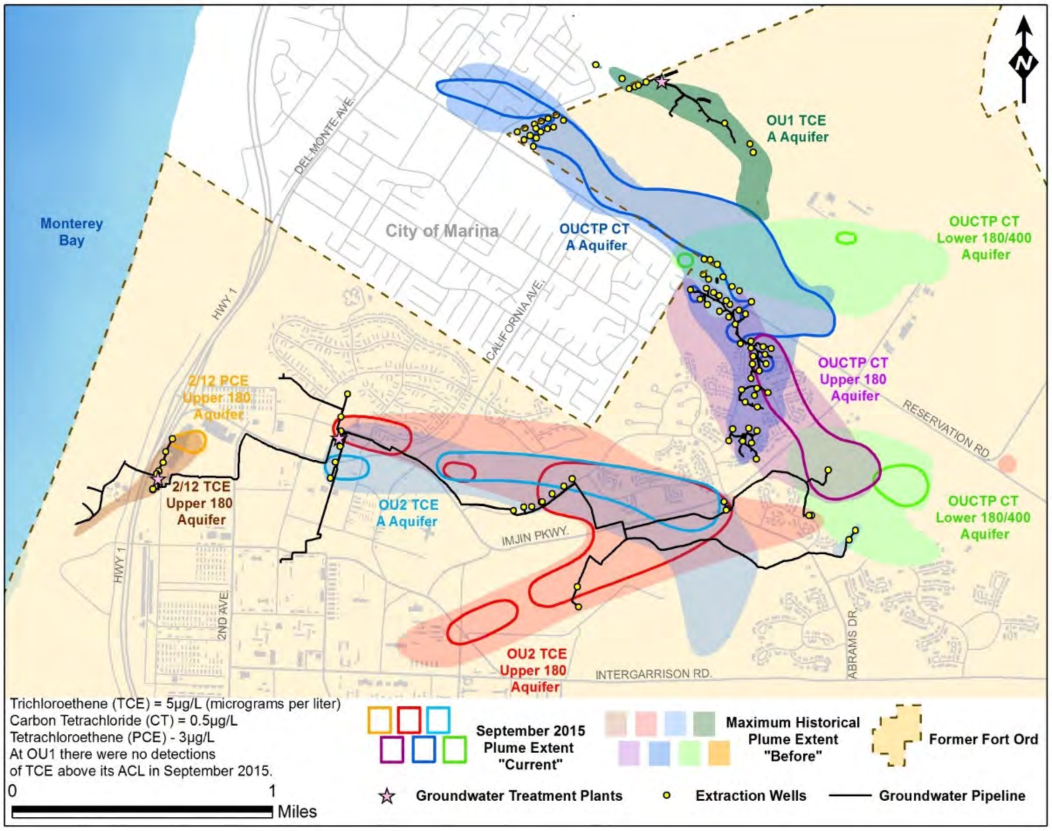

Figure 2 – Groundwater Contamination Plume[14]

The following groundwater plume contamination sites depicted in Figure 2 are described below.

- **OU1 -** Groundwater at this site was contaminated by former fire-fighting training in an area near the Marina Municipal Airport. Training ceased in 1985. The primary chemical of concern was Trichloroethyene (TCE), an industrial solvent used for degreasing, dry cleaning, and cleaning of mechanical parts. Contaminated soil was removed in 1988, and as of September 2014, all sampling results from monitoring wells have been below the Aquifer Cleanup Level (the cleanup goal for a COC in groundwater identified in a Record of Decision, typically the same as the MCL or lower). Groundwater treatment has ceased. Evaluation for site closeout is in progress.
- **OU2** - A landfill southwest of the intersection of Imjin Parkway and Abrams Road caused groundwater contamination. An impermeable cover placed over the landfill now prevents rainwater from draining through the buried materials. A gas extraction and treatment system removes methane gas and chemicals of concern. Groundwater extraction for TCE, the main chemical of concern, from the A-Aquifer and the Upper 180-Foot Aquifer and treatment with Granular Activated Carbon began in 1995. The plume has shrunk significantly, and to optimize cleanup, the treatment

[14] Source: Community Involvement Workshop Information – Fort Ord Groundwater. February 2017

plant will be relocated nearer to the center of the plume. Relocation construction activities are in progress.

- **Sites 2/12** – A former maintenance facility in the current location of "The Dunes on Monterey Bay" shopping center (south of Imjin Parkway and east of Highway 1) caused groundwater contamination from improperly disposed solvents. Contaminated soil was removed in the 1990s. Tetra Chloroethene (PCE) and TCE are primary chemicals of concern. Groundwater extraction and treatment with Granular Activated Carbon began in 1999 and is ongoing. The army also used a cleanup method called in-situ biodegradation. Treatment by soil vapor extraction has been added to enhance groundwater remediation and shorten cleanup time.
- **OUCTP** - Groundwater located north of Imjin Parkway and Abrams Road and along Reservation Road was contaminated by improperly disposed solvents. Carbon Tetrachloride (CT) is the primary chemical of concern and cleanup includes enhanced *in situ* bio-remediation (A-Aquifer), groundwater extraction and treatment with Granular Actived Carbon (Upper 180-Foot Aquifer), and monitored natural attenuation (with well-head treatment as a contingency measure) (Lower 180-Foot Aquifer). Remediation began in 2009 for the A-Aquifer and in 2011 for the Upper and Lower 180-Foot Aquifers. Additional enhanced *in situ* bioremediation is currently underway.

State and federal safe drinking water MCL standards for TCE are set at 5.0 parts per billion, or approximately ten times higher than detected. Detection of TCE, even at the low concentration levels, was reported by MCWD, as required by law, to the California Department of Public Health (DPH). No additional action was deemed necessary by DPH because the concentration levels are well below the MCL of 5.0 parts per billion. Both MCWD and the Army regularly monitor the former Fort Ord wells to assess concentration changes. The 2015 TCE detections in the Ord Community wells ranged from non-detect to 1.8 parts per billion[15]. TCE detections have been intermittent since the initial detection in 2001.

The Defense Department is required by law to clean up contamination to below allowable contaminant levels set by the State Department of Public Health as a public health protection measure. Groundwater samples are taken quarterly and compiled in annual status reports. Additionally, all data is summarized in documents known as five-year reviews.

The Army will continue to treat known contaminated groundwater sites until the chemicals of concern are at or below the accepted contamination levels. Due to the amount of water that must be pumped and treated, the concentrations of contaminants decline slowly over time. As of February 2017, OU1 has met its ACLs and Site 2/12 is expected to meet the Accepted Contaminant Level in the next few years. Removal of sufficient contamination to meet Accepted Contaminant Levels at OUCTP could take up to 20 years and at OU2 it could take up to 30 years. Additional information on groundwater cleanup and other base contamination remediation actions can be found at www.fortordcleanup.com.

Because Fort Ord is on the National Priority List, section 9604(i) of the federal Superfund law (Comprehensive Environmental Response Compensation and Liability Act, or "CERCLA") requires the federal Agency for Toxic Substances and Disease Registry ("ATSDR") to complete an assessment of whether any hazardous substances at the site pose a threat to human health. ATSDR analyzed whether

[15] EPA test method 524.2 is accurate to +/- 20%.

hazardous substances released at Fort Ord might threaten human health by contaminating drinking water wells serving Marina and Ord Community. ATSDR's final health assessment[16] concludes as follows:

- There are no detections of groundwater contaminants at levels of health concern in the presently "active" drinking water wells on Ord Community. The water at Ord Community is safe to drink. Because the drinking water wells currently in use in the Ord Community are located far from sources of contamination, drilled to deep aquifers that are not likely to be contaminated, and monitored regularly, the Ord Community's drinking water supply should be safe to drink in the future.
- Because the concentration of groundwater contamination detected in the past in the Ord Community and Marina drinking water wells was low and the duration of exposure was short, adverse health effects will not likely result.
- The water supplied by drinking water wells presently used by Marina is safe to drink. Further, because Marina's drinking water wells are drilled to deep aquifers and the quality of the water is monitored regularly, Marina's drinking water should be safe to drink in the future.
- Additional Mitigation for Groundwater Contamination
- Groundwater from the Marina and Ord water supply wells is disinfected with chlorine as a safeguard against microorganisms. In Marina, chlorine is also used to treat the naturally occurring sulfides at Well 12 (See Figure 1) that can cause odors.

In July 2001, the California Department of Public Health (CDPH) completed a source water assessment of each groundwater supply well in Central Marina, which concluded they are most vulnerable to historic waste dumps, landfill activities and military installations.

For the Ord Community, in February 2002, a source water assessment was completed for each groundwater supply well. The assessment determined that the wells are most vulnerable to known volatile organic contaminant plumes from the closed landfill on the former Fort Ord, as well as to saltwater intrusion, sewer collection system, above ground storage tanks, irrigated crops, transportation corridors, farm machinery repairs and septic systems. In November 2012, a completed source assessment for Watkins Gate well (Well 35) determined the well to be most vulnerable to groundwater contamination from Military Installations. In February 2014, a completed assessment for Well 34 determined the well most vulnerable to Military installations (former Fort Ord), agricultural drainage, salt water intrusion, and sewer collection systems.

1.3 Saltwater Intrusion

While sufficient production capacity (versus water availability) can be provided to meet the projected ultimate demand within MCWD's service areas, there is concern that seawater intrusion may eventually

[16] See ATSDR Public Health Assessment, Fort Ord, Marina, Monterey County, California (Community Health Concerns and Potential Pathways of Exposure).

degrade water quality in the Marina Area Subbasin where MCWD's wells are located and render all or a number of them unfit for domestic water supplies without further treatment, such as desalination.

1.3.1 Current and Predicted Conditions

It is estimated that the Salinas Valley Groundwater Basin has an average annual non-drought overdraft of approximately 50,000 acre feet (AF)[17], though during the last drought the annual overdraft was estimated at 150,000–300,000 acre-feet/year (AFY)[18]. As a result of this consistent overdraft, groundwater levels in the Salinas Valley Groundwater Basin have dropped below sea level, allowing seawater to intrude from Monterey Bay into aquifers located 180 and 400 feet below ground surface. The East Side and Pressure Subareas of the Salinas Valley Groundwater Basin are most impacted by overdraft (MCWRA 1997). The East Side and Pressure Subareas of the Salinas Valley Groundwater Basin are the most impacted by lack of recharge.

Seawater intrusion into 180-Foot and 400-Foot aquifers was identified along the coast over 50-years ago. The areas of seawater intrusion may be tracked using chloride concentration. A chloride concentration of 500 milligrams per liter (mg/L) is the upper California Department of Public Health Secondary Drinking Water Standard for chloride (250 mg/L is recommended) and is used as a measure of impairment of drinking water (water above 500 mg/L may still be suitable for non-potable uses). The line of chloride concentration (isohaline) of 500 mg/L water is used as the basis for determining the seawater intrusion front as shown on Figure 3 and Figure 4. Wells within the intruded areas were progressively moved further inland or into deeper aquifers. Note that these maps trace the timing and location of the "intrusion front" and do not reflect the current condition of groundwater behind the intrusion front.

The Greater Monterey Integrated Regional Water Management Plan identifies that while basin overdraft conditions are expected to improve by the year 2030, recent groundwater modeling (from the Salinas Valley Integrated Ground and Surface Water Model, or SVIGSM) predicts seawater intrusion to continue to worsen, though at a decreased rate. The SVIGSM modeling did not take into account, however, expected sea level rise due to climate change.[19]

Sea level rose approximately seven inches (18 cm) over the past century (1900–2005) along most of the California coast[20]. Currently, the State of California is using estimates of global sea level rise produced by Rahmstorf (2007)[21] and Cayan et al. (2008)[20] for coastal adaptation planning purposes. These projections suggest possible sea level rise of approximately 14 inches (36 cm) by 2050 and up

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[17] California Water Service Company (Cal Water). 2010 Urban Water Management Plan, King City District. Adopted June 2011.

[18]California Water Service Company (Cal Water). 2010 Urban Water Management Plan, Salinas District. Adopted June 2011.

[19] Integrated Regional Water Management Plan for the Greater Monterey County Region. Regional Water Management Group. Adopted April 2013.

[20] Cayan, D., P. Bromirski, K. Hayhoe, M. Tyree, M. Dettinger, and R. Flick. 2008. Climate change projections of sea level extremes along the California coast. Climatic Change, 87(0), 57-73.

[21] Rahmsotrf, S. 2001. A semi-empirical approach to projecting future sea-level rise. Science, 315(5810), 368-370.

to approximately 55 inches (140 cm) by 2100. Sea level rise will significantly increase the pressure of saltwater on the coastal Salinas Valley Groundwater Basin aquifers, causing increased seawater intrusion in critical groundwater supplies.

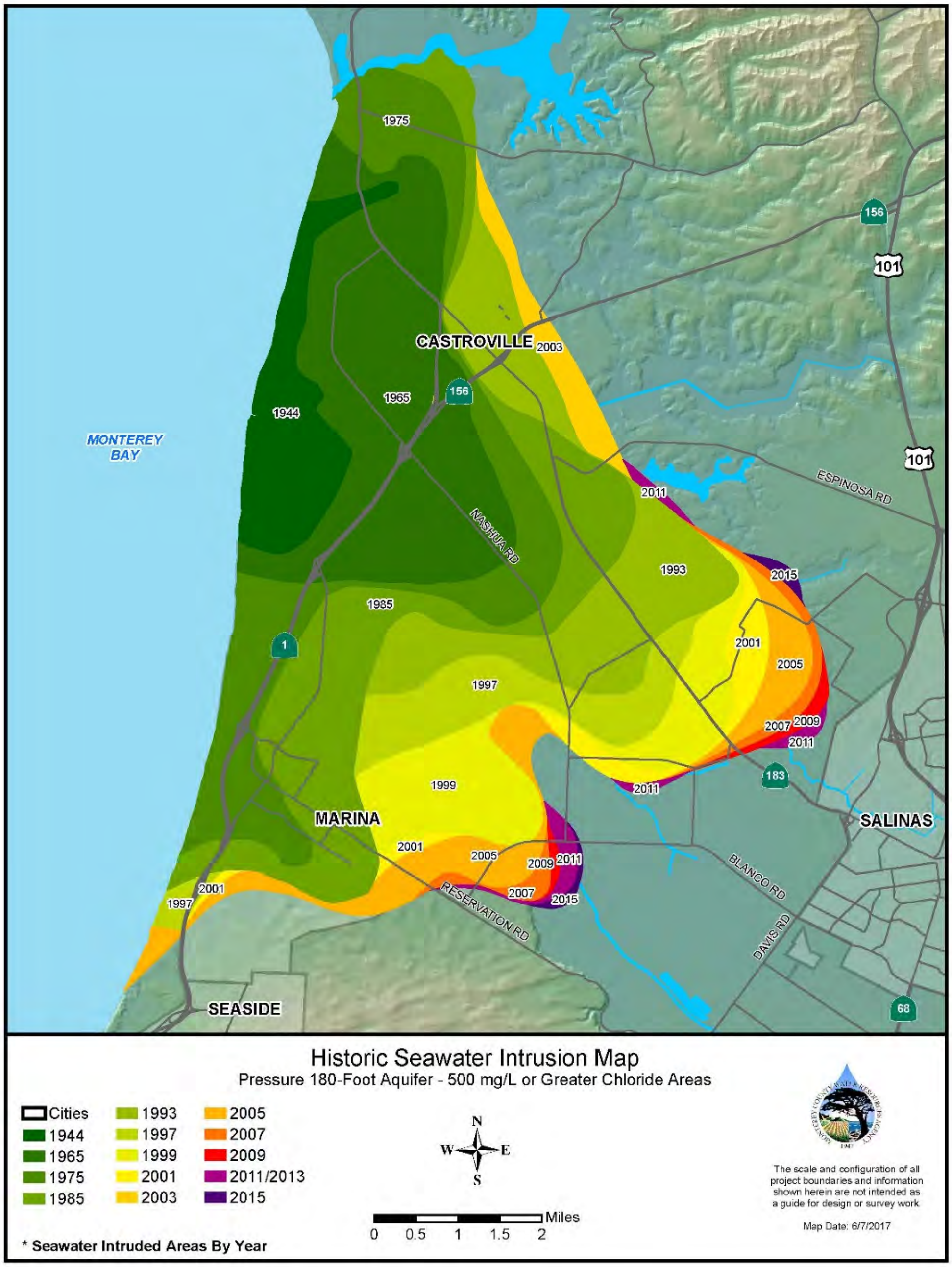

Figure 3 - Historic Seawater Intrusion in the 180-ft Aquifer[22]

[22] Source: MCWRA website

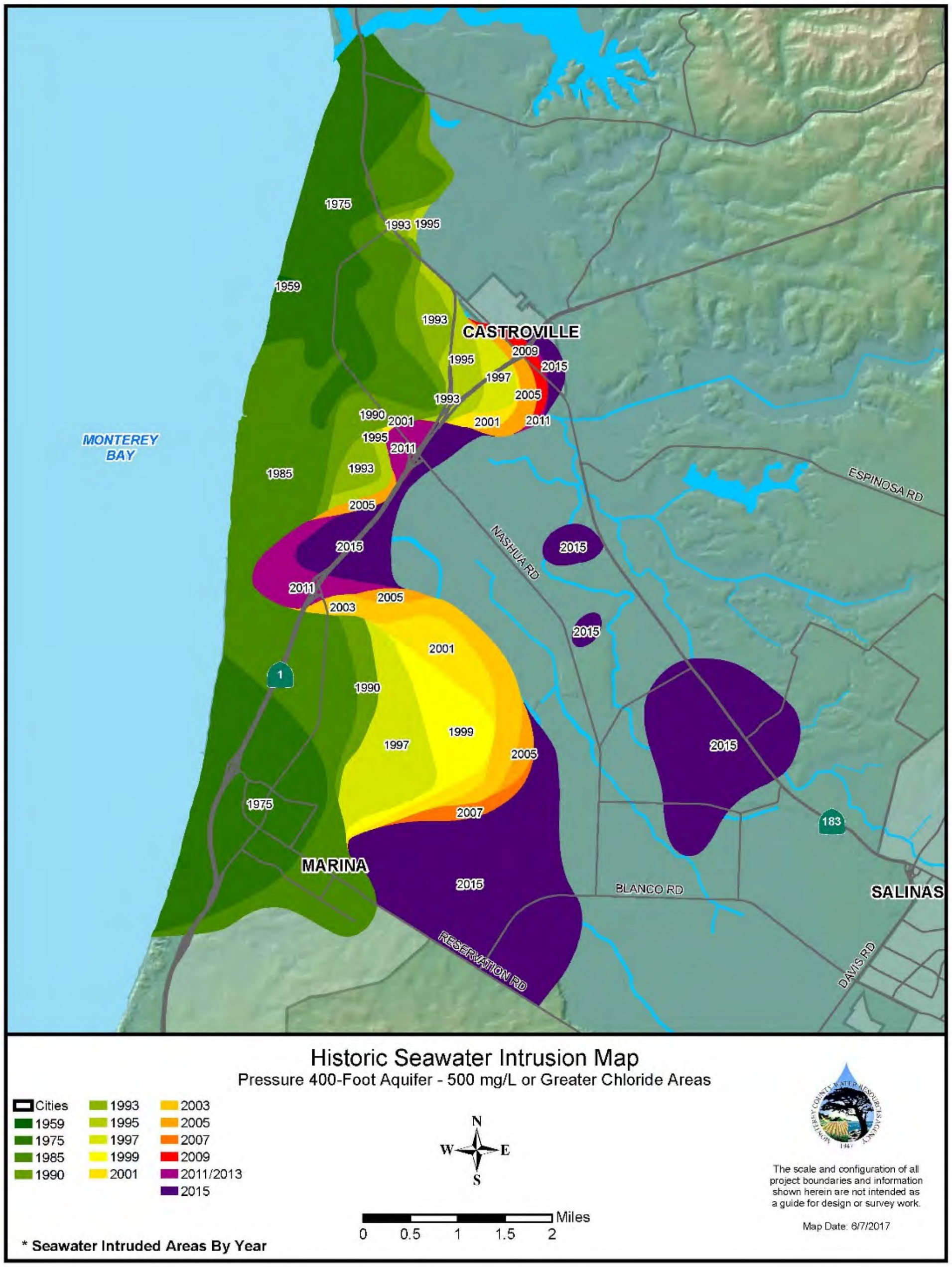

Figure 4 - Historic Seawater Intrusion in the 400-ft Aquifer[23]

Historically, MCWD supplied its Marina service area with water from 11 wells (MCWD-1 through MCWD-9, and two replacement wells) screened in the 180-Foot and 400-Foot aquifers. According to September 2017 groundwater trends[24], the Pressure 180-Foot Aquifer depth to water was 58 ft, up 11 ft since the

[23] Source: MCWRA Website

[24] Monterey County Water Resource Agency. Quarterly Salinas Valley Water Conditions. September 2017.

previous year and down 6 ft from 1985. At the Pressure 400-Foot Aquifer, the depth to water was 49 ft, up 8 ft since the previous year and up 7 ft since 1985. Between 1960 and 1992, some of those wells indicated varying degrees of seawater intrusion and were replaced, first moving from the 180-Foot aquifer to the 400-Foot aquifer, and later moving to the Deep Aquifer, a 900 foot aquifer that MCWD has used to replace groundwater in the shallower aquifers. The District currently has three Central Marina wells in the Deep Aquifer, MCWD-10, MCWD-11 and MCWD-12, constructed in 1983, 1986 and 1989 respectively. These wells are depicted in Figure 1.

The U.S. Army's original wells serving the former Fort Ord were located in the Main Garrison area near Marina. When wells indicated varying degrees of seawater intrusion, the Army in 1985 installed four wells further inland. Located near the intersection of Reservation and Blanco Roads in Marina (Figure 1), the wells draw from the 180-Foot and 400-Foot Aquifers (well numbers FO-29, FO-30, FO-31 and FO-32). Well FO-32 suffered a screen failure and was shut down in the late 1990s. The District added Wells 34 (in the Deep Aquifer) and Well 35 (in the 400-ft Aquifer) in 2011.

Ongoing monitoring by MCWRA indicates that the seawater intrusion front continues to migrate inland, particularly in the 180-Foot Aquifer, but groundwater conditions behind the front appear to be improving in some areas south of the Salinas River. Based upon the information available at the time, MCWD's 2007 Water System Master Plan[25] identified the need for a phased replacement of wells in the threatened area. Additional data on the migration and extent of seawater contamination can be found in the Final Report Hydrogeologic Investigation of the Salinas Valley Basin in the Vicinity of Fort Ord and Marina, Salinas Valley California, April 2001.[26]

Recent investigations being conducted in and around the North Marina Area as part of the Monterey Peninsula Water Supply Project[27] The Monterey Peninsula Water Supply Project (MPWSP) would include a 9.6 million gallon per day (mgd) desalination plant and facility improvements to the existing Seaside Groundwater Basin ASR system to secure water supplies for the approximately 40,000 customers in CalAm's Monterey District service area. The project has identified an occurrence of freshwater within the shallow dune sand aquifer and the underlying 180-Foot aquifer within the area delineated as first experiencing seawater intrusion between 1975 and 1985. Water level data from wells in the shallow dune sand aquifer appear to show protective water levels that are sufficiently above sea level to prevent seawater intrusion in the shallower sediments. This condition, combined with the reduction in pumping in the 180-Foot aquifer in the North Marina Area, appears to have slowed seawater intrusion in this portion of the coastline. Water quality test results for chloride concentrations in the Dune Sand (A-Aquifer) and the 180-Foot Aquifer zones is shown in Figure 5.

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[25] Carollo Engineers, Marina Water Systems Master Plan, February 2007.

[26] Final Report, Hydrogeologic Investigation of the Salinas Valley Basin in the Vicinity of Fort Ord and Marina, Salinas Valley, California, prepared by Harding ESE, April 2001

[27] State of California Public Utilities Commission. Monterey Peninsula Water Supply Project Description. http://www.cpuc.ca.gov/Environment/info/esa/mpwsp/PD.html 1/12/2017

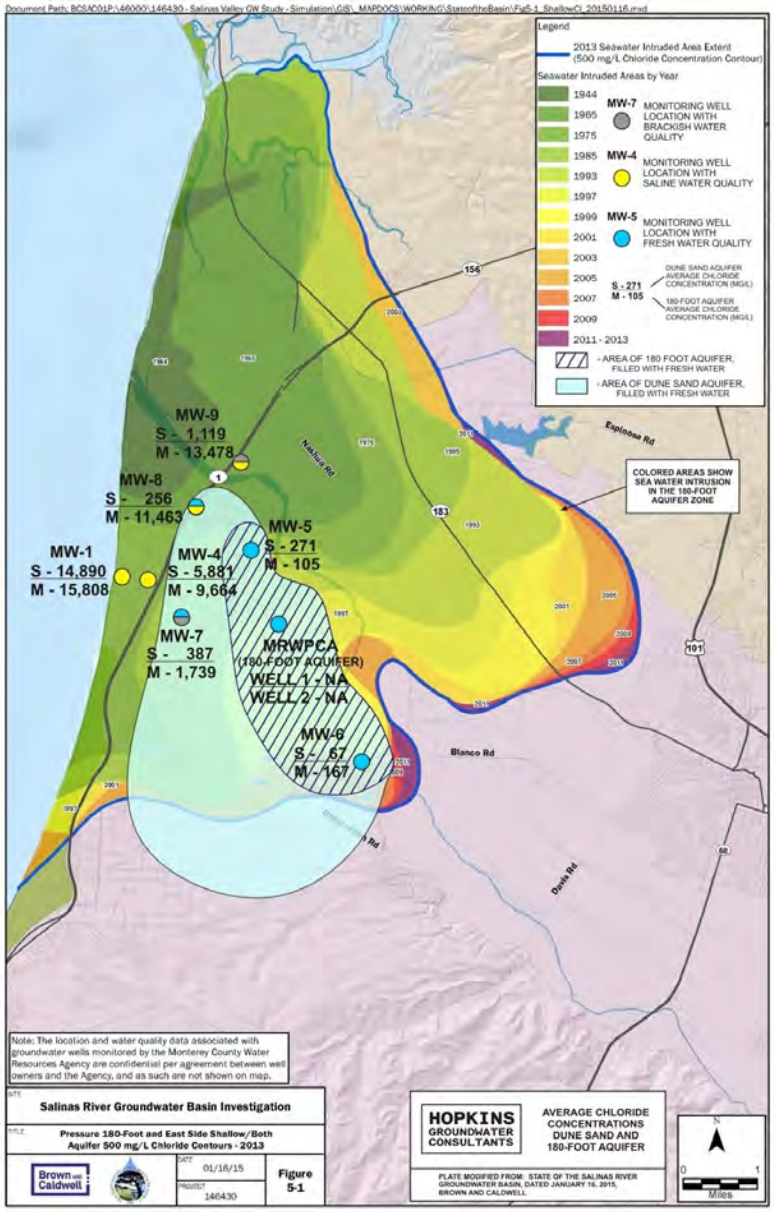


Figure 5 –Dune Sand Aquifer and 180-Foot Aquifer Chloride Concentration Data[28]

This recent data may suggest a change of groundwater conditions in this coastal section of the 180-Foot Aquifer or they may just reveal the groundwater conditions in an area previously lacking in data. While the freshwater in this area contains salts and nutrients that are derived from overlying land uses that include agriculture, landfill, and wastewater treatment plant and composting facilities, the chemical character is not sodium chloride, which is indicative of seawater. Instead, the chemical character of groundwater in these new wells is calcium chloride and calcium bicarbonate[28]. Future use of this area for a potable groundwater supply may be unlikely; however, these conditions do show a retardation of

[28] Hopkins Groundwater Consultants. North Marina Area Groundwater Data and Conditions. May 26, 2016

seawater intrusion in these shallower aquifer zones in this coastal portion of the Salinas Valley Groundwater Basin, which provides some protection for inland uses of the 180-Foot Aquifer.

There is some concern that the Deep Aquifer may become affected by seawater intrusion. MCWD operates a monitoring well installed between the Monterey Bay and the Marina production wells. That monitoring well serves as an early warning system to identify any seawater intrusion that might later affect MCWD's production wells, located further inland. Once identified, MCWD can install or begin operating one or more back-up wells to replace any potential future loss of production capacity.

It should be noted that water from the deep wells contains acceptable levels of chloride and total dissolved solids, which should not be misinterpreted as a sign of seawater intrusion. This natural salinity does not prevent the use of this water for municipal demands. The levels of chloride (average 99 mg/L) and total dissolved solids (average 386 mg/L) have not increased in the 25 years MCWD has operated the deep wells.

Another concern is that the Deep Aquifer may be connected to, and affect seawater intrusion in, the upper aquifers. Preliminary findings regarding the Deep Aquifer in the Ord Community area indicate that there is some vertical connectivity between the Deep Aquifer and the overlying aquifers. According to the Deep Aquifer Investigative Study, WRIME, May 2003, increased pumping of the Deep Aquifer would be expected to increase the rate of seawater intrusion in the middle and upper aquifers, but to a lesser extent than if the increased pumping occurred in the middle or upper aquifers. In that report, WRIME modeled the effect of increasing groundwater pumping from the Deep Aquifer by two to five times the baseline rate of 4,800 AFY. The model predicted that, in the absence of other actions to control seawater intrusion, the landward flow of groundwater would increase as a result.

1.3.2 MCWRA Recommendations to Minimize Seawater Intrusion

In October 2017, MCWRA released a special report of recommendations to prevent Seawater Intrusion in the Salinas Valley Groundwater Basin.[29] In this report, staff made six recommendations with the aim to slow or halt seawater intrusion in the Salinas Valley Groundwater Basin. In no particular order of priority, the following recommendations were:

1) An immediate moratorium on groundwater extractions from new wells in the Pressure 400-Foot Aquifer within an identified Area of Impact (See Figure 6), except for the following use categories:

    a. Wells operating under the auspices of the Castroville Seawater Intrusion Project (CSIP).

    b. Monitoring wells owned and maintained by the Agency or other water management agencies.

[29] MCWRA. Recommendations to Address the Expansion of Seawater Intrusion in the Salinas Valley Groundwater Basin. October 2017. Special Report Series 17-01.

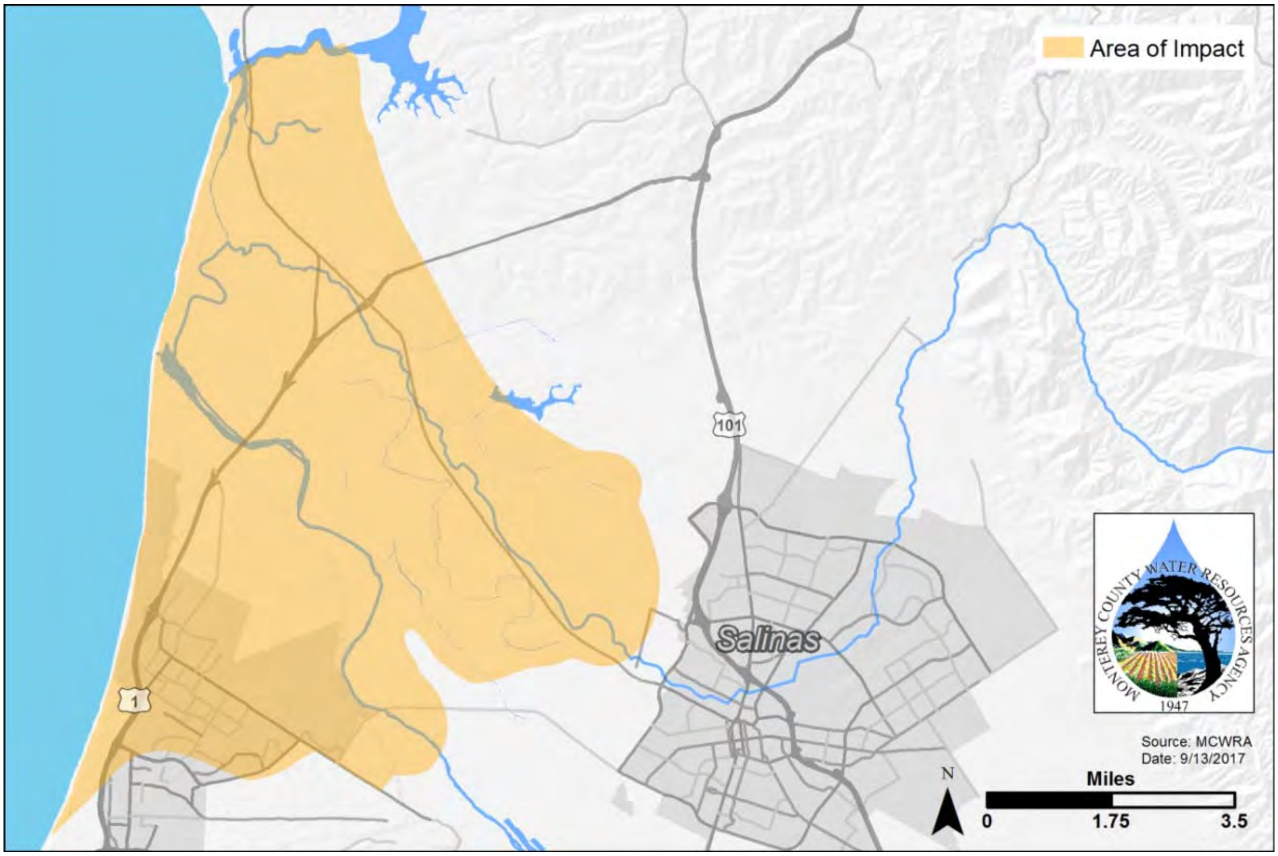


Figure 6 –Saltwater Intrusion Area of Impact[29]

2) Enhancement and expansion of the CSIP Service Area. The expansion should include, at a minimum, lands served by wells currently extracting groundwater within the Area of Impact.

3) Following expansion of the CSIP Service Area, termination of all pumping from existing wells Pressure 180-Foot or Pressure 400-Foot Aquifer wells within the Area of Impact, except for the following use categories:

   a. Municipal water supply wells;

   b. Wells operating under the auspices of the Castroville Seawater Intrusion Project;

   c. Monitoring wells owned and maintained by MCWRA or other water management agencies.

4) Initiate and diligently proceed with destruction of wells in Agency Zone 2B, in accordance with MCWRA Ordinance No. 3790, to protect the Salinas Valley Groundwater Basin against further seawater intrusion.

Figure 7 gives a map of wells prioritized for termination in the CSIP area.

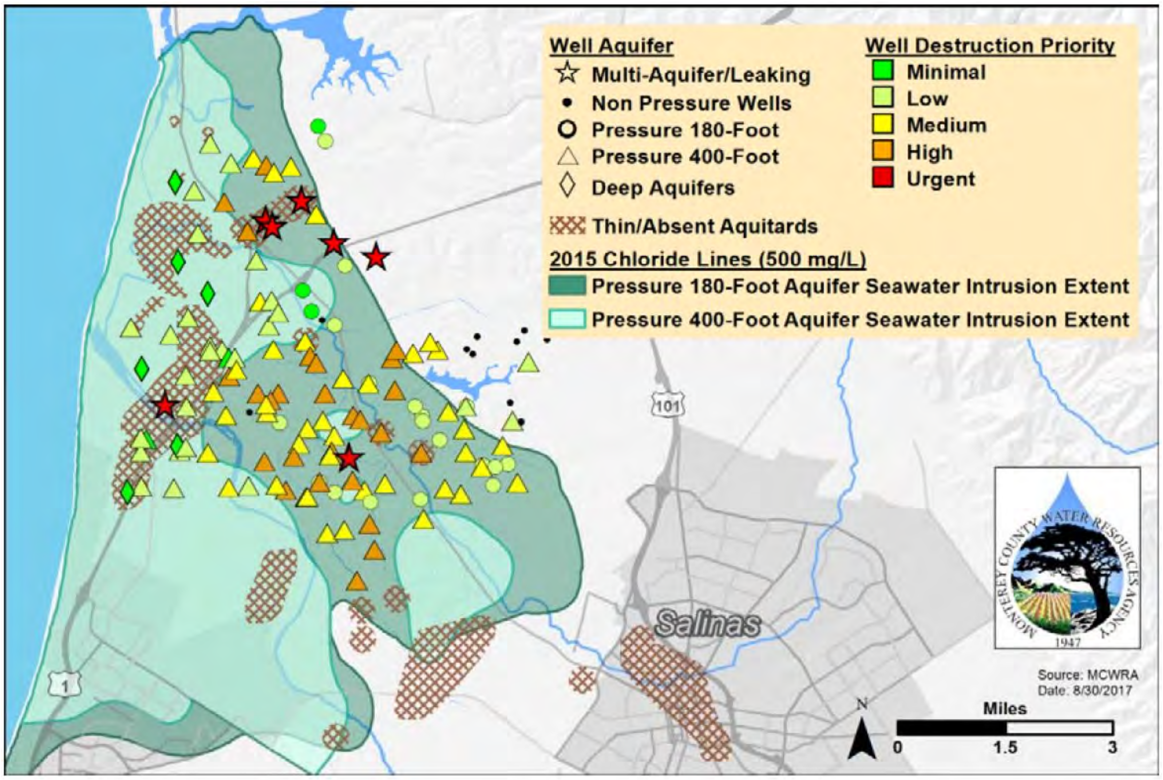


Figure 7 – Map of Wells Prioritized for Destruction in the Castroville Seawater Intrusion Project Service Area[29]

5) An immediate moratorium on groundwater extractions from new wells within the entirety of the Deep Aquifers below the 180/400 Foot Aquifer and Monterey Subbasins until such time as an investigation of the Deep Aquifers is completed and data pertaining to the hydraulic properties and long-term viability of the Deep Aquifers are available for knowledge-based water resource planning and decision making.

   a. Monitoring wells, public agency wells, municipal water supply wells, wells for which a construction permit has already been issued, and well repairs should be considered for exemption from this recommendation.

   b. The moratorium should include a prohibition of:

      i. Replacement wells, unless it can be demonstrated that the installation of such a well will not result in further expansion of the seawater intrusion front.

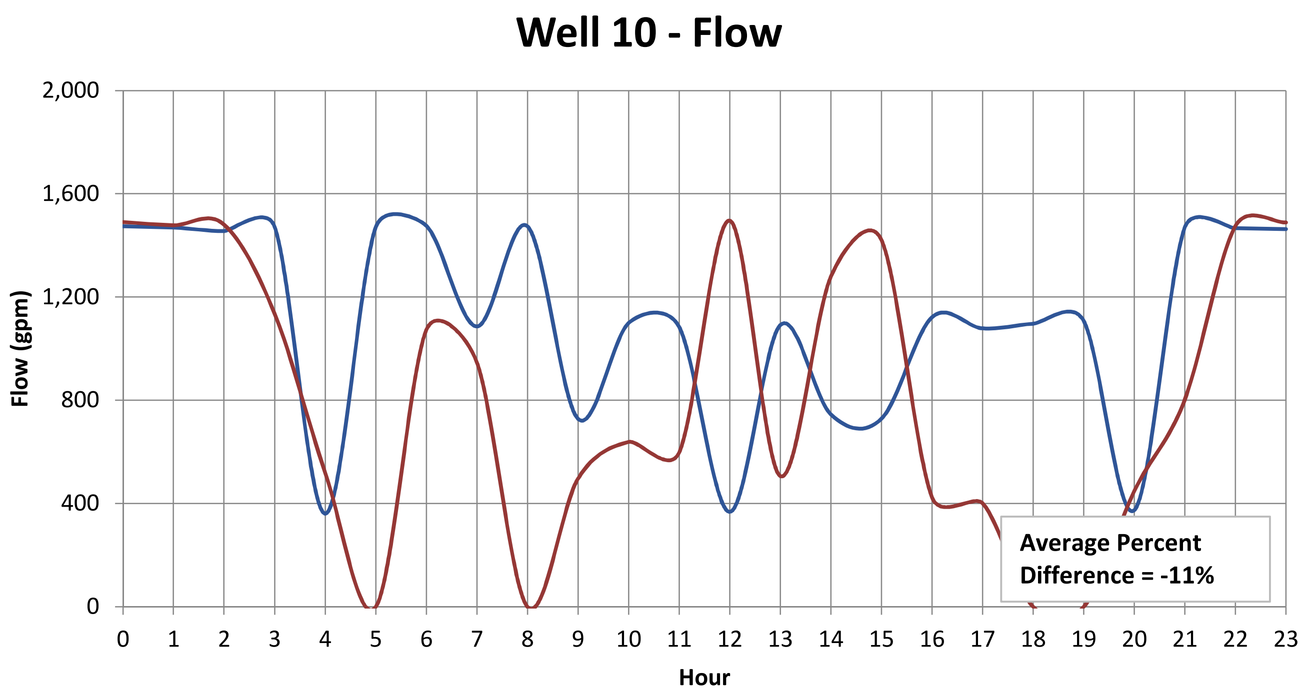
      ii. Deepening of wells from overlying aquifers into the Deep Aquifers, deepening of wells within the Deep Aquifers, and other activities that would expand the length, depth, or capacity of an existing well.

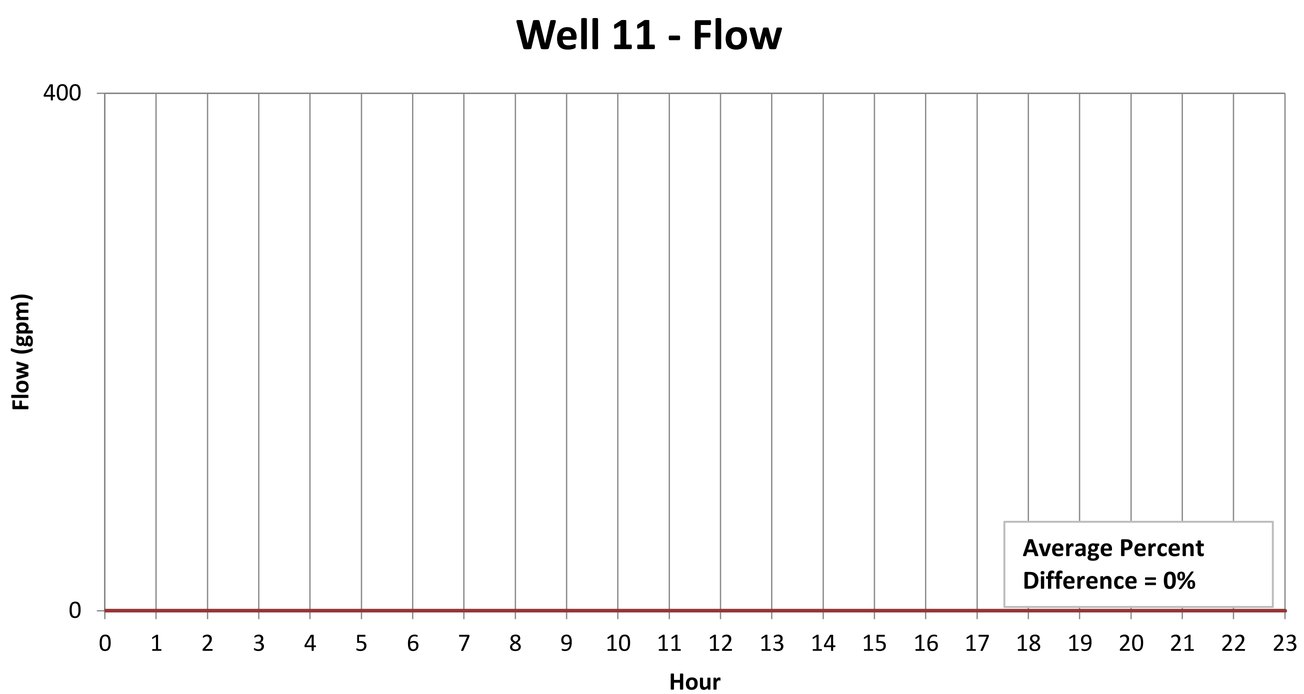
6) Initiate and diligently proceed with an investigation to determine the hydraulic properties and long-term viability of the Deep Aquifers.

7) MCWD is fully cooperating with the MCWRA's program to actively manage and protect the long-term availability of the Salinas Valley groundwater resource. Existing management efforts, reviewed above, include the successful implementation of the CSIP and implementation of the annexation agreements that limit groundwater pumping and provide assessment revenue supporting MCWRA's activities to augment basin water supplies. Those activities include ongoing operation of Nacimiento and San Antonio reservoirs to maximize groundwater recharge through dry-season storage releases that percolate through the Salinas River's streambed. As described in more detail in Section 2.1.4 (references separate deliverable Water Supply and Storage Evaluation) those activities also include the MCWRA's development, approval and implementation of the Salinas Valley Water Project. Implementation of the Sustainable Groundwater Management Act (SGMA) will also better focus groundwater management activities in the Marina Area Subbasin and the adjoining North Marina Area of the 180/400 Foot Aquifer Subbasin.

APPENDIX B

Hydraulic Model Calibration





LEGEND

SCADA

Hydraulic Model

PRELIMINARY

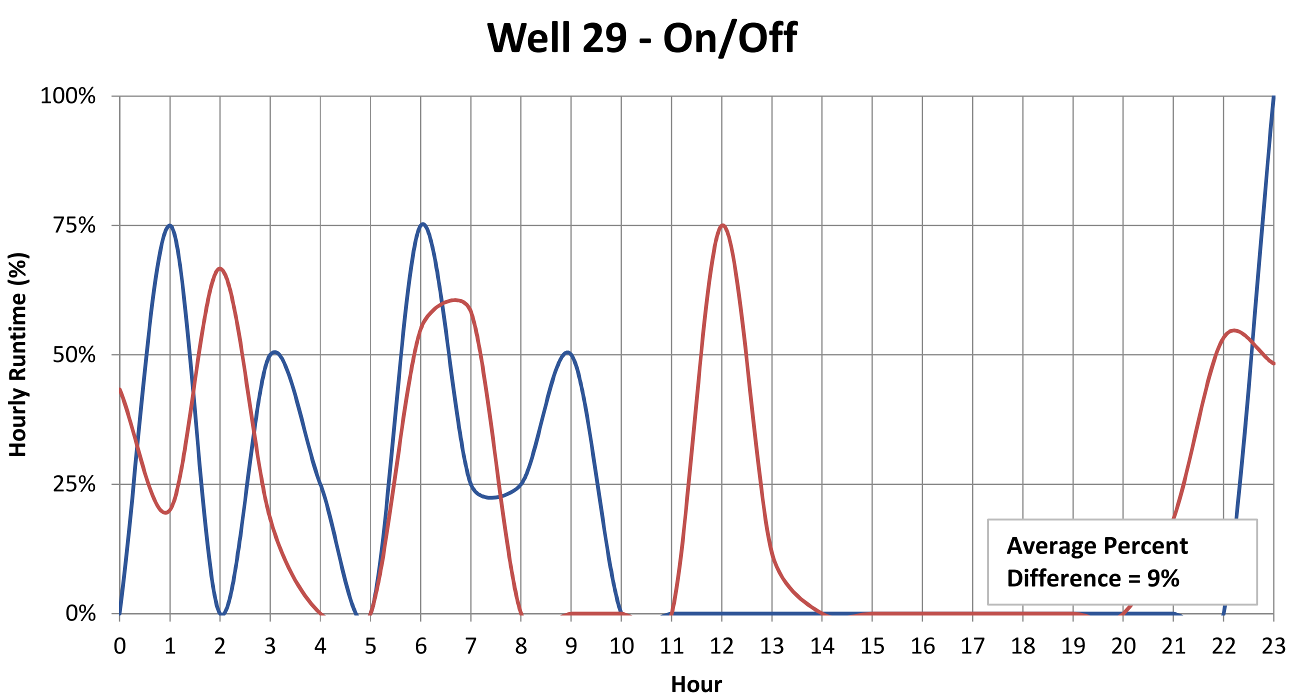
December 5, 2017

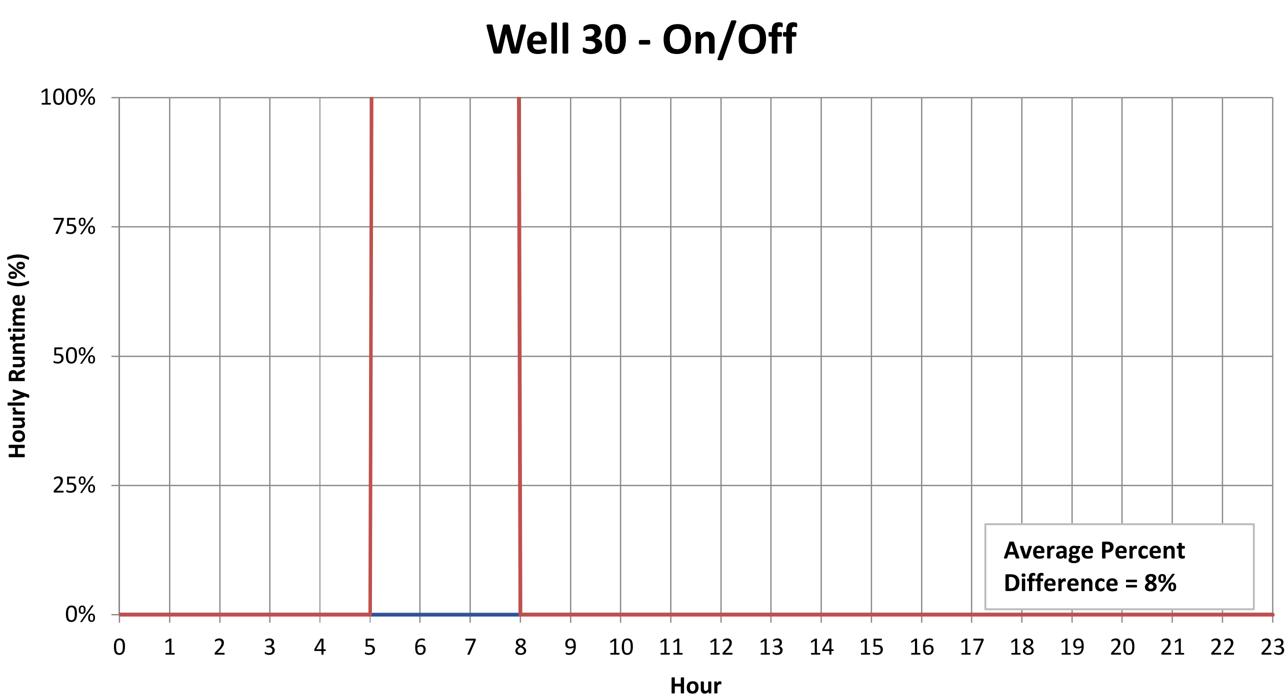
Figure 1
Well Calibration

Water System Master Plan

Marina Coast Water District

AKEL ENGINEERING GROUP, INC.





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SCADA

Hydraulic Model

PRELIMINARY

December 5, 2017

Figure 2
Well Calibration

Water System Master Plan
Marina Coast Water District

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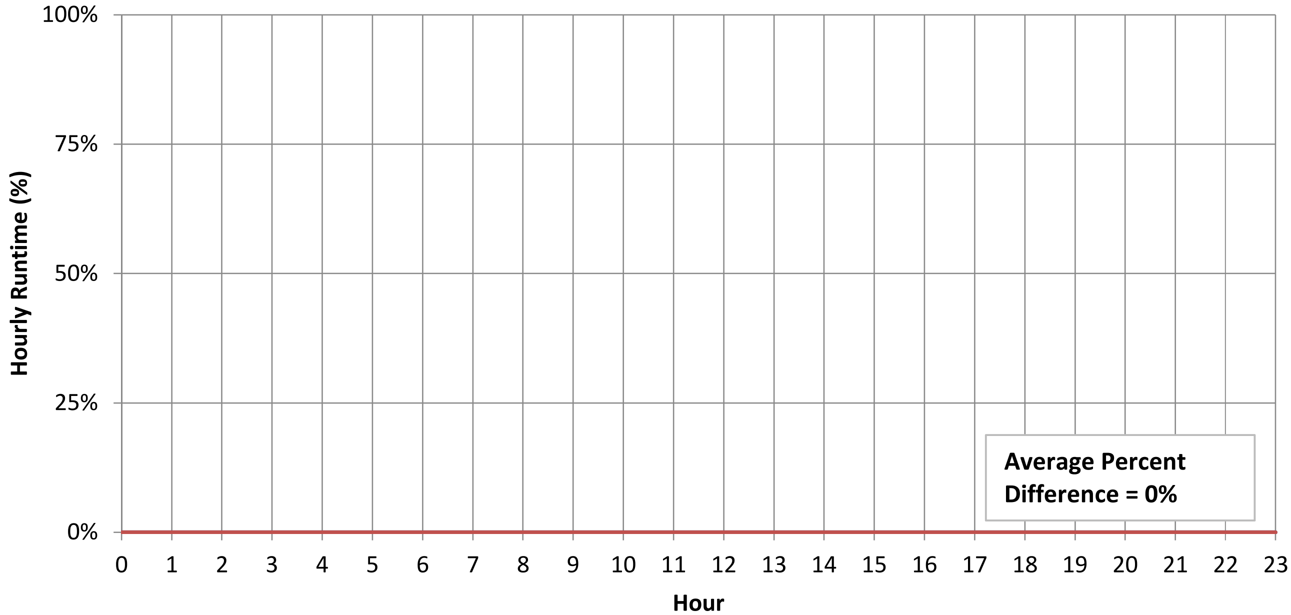
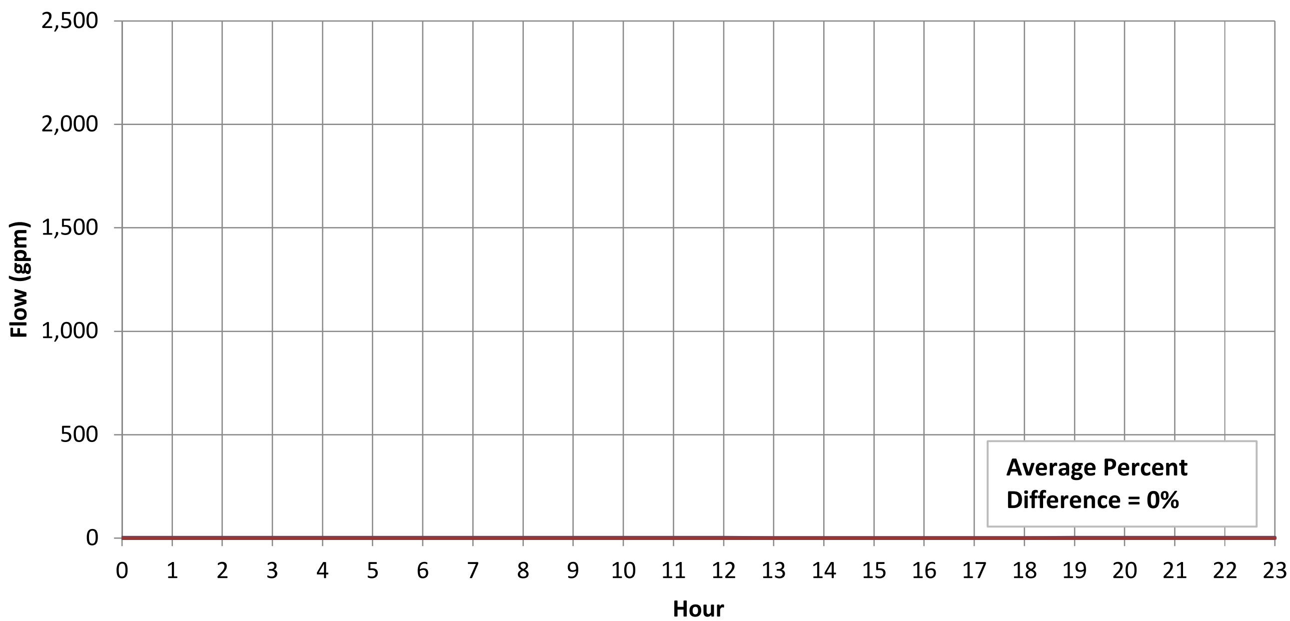
Well 31 - On/Off



Well 34 - Flow



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Hydraulic Model

PRELIMINARY

December 5, 2017

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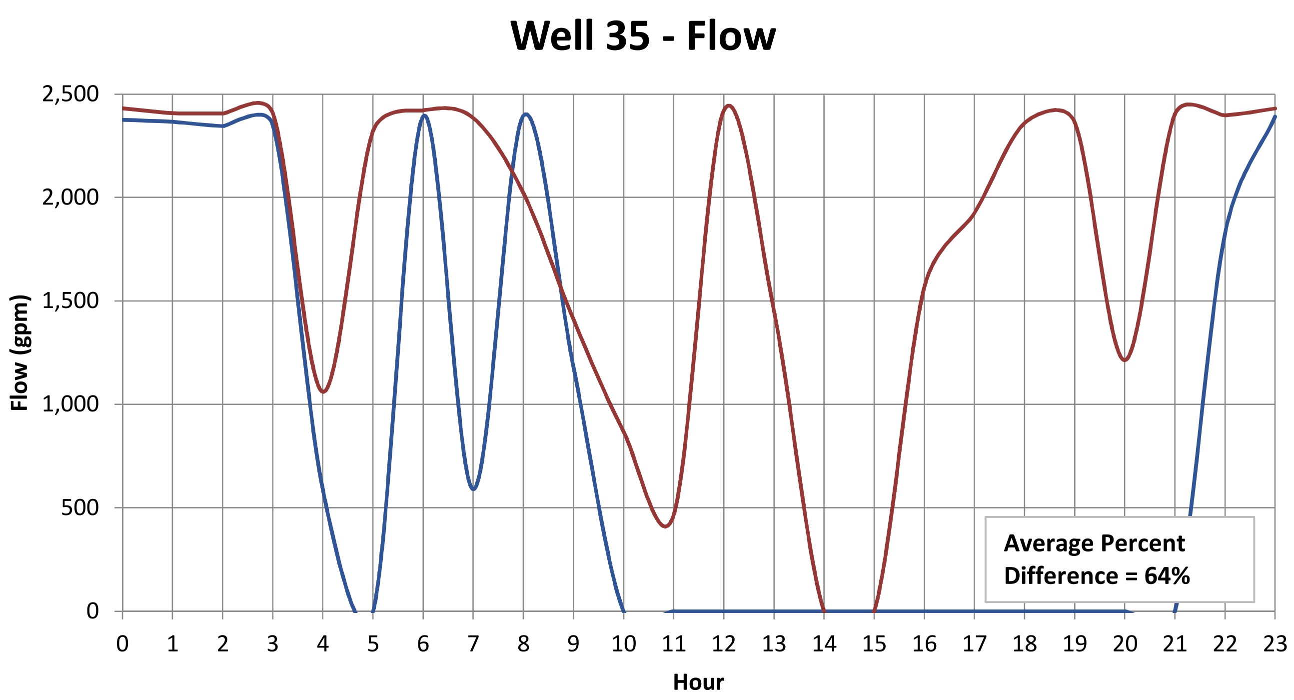
Figure 3
Well Calibration

Water System Master Plan
Marina Coast Water District



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Hydraulic Model

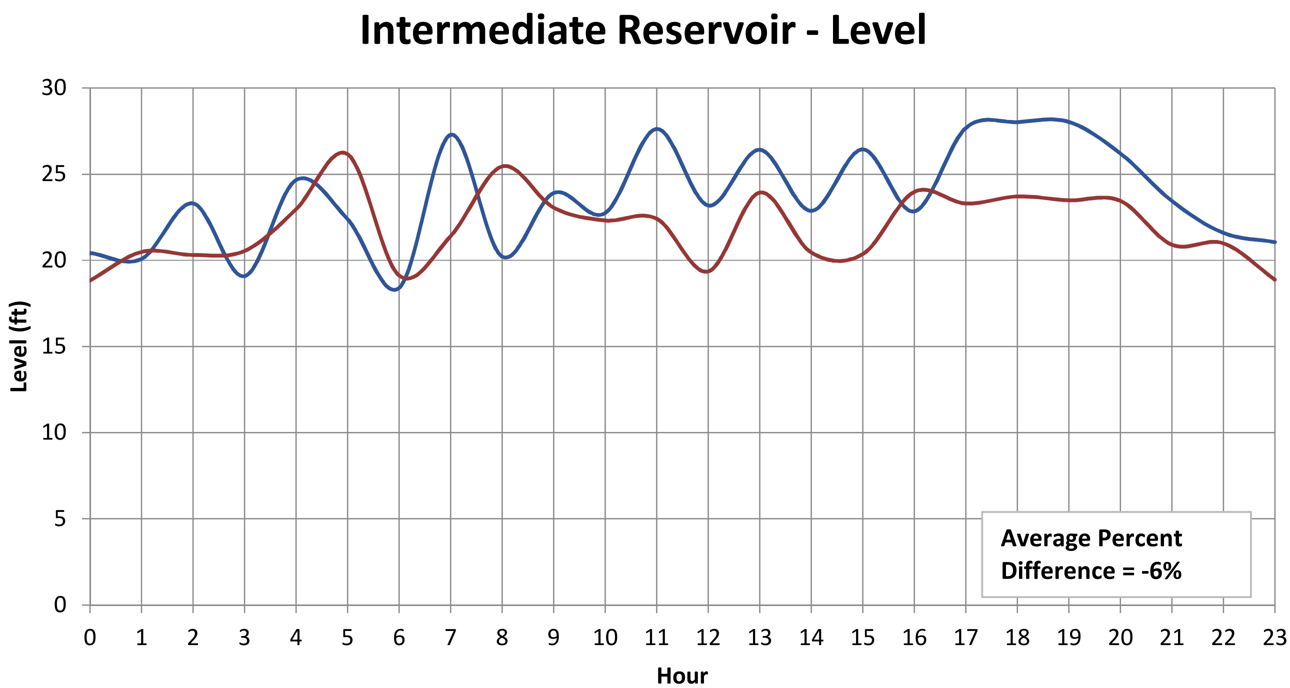
PRELIMINARY

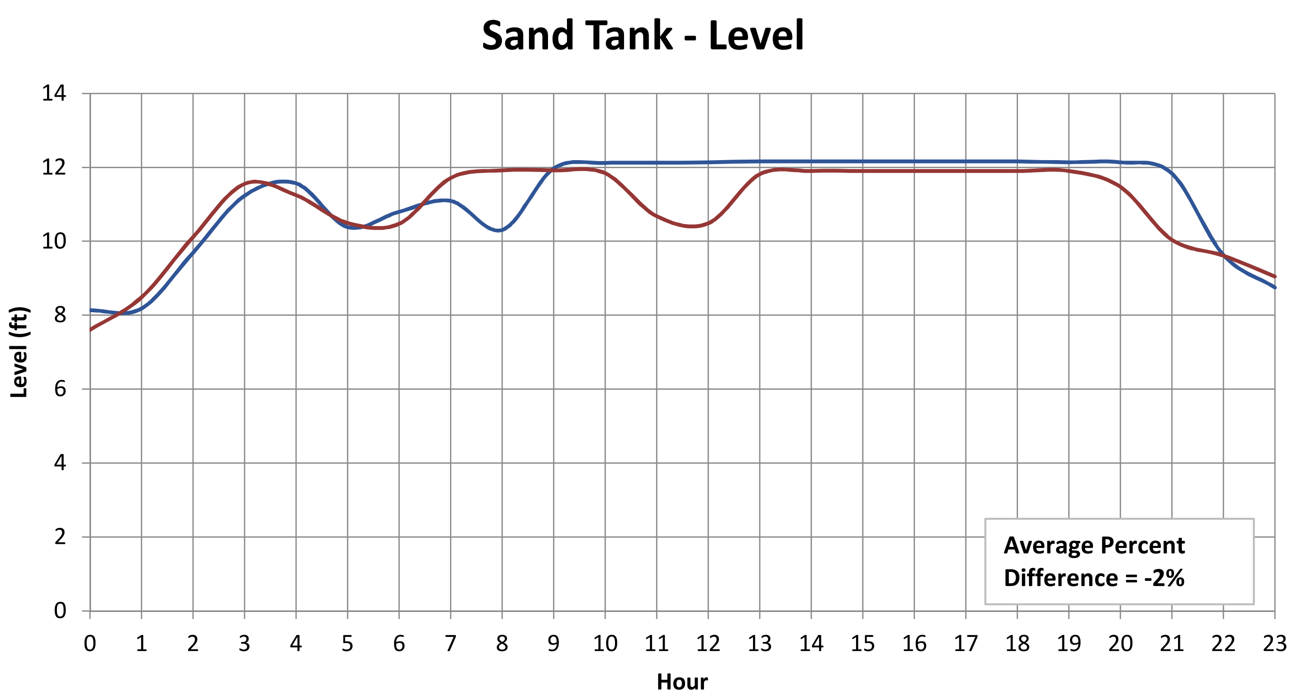
December 5, 2017

Figure 4
Well Calibration

Water System Master Plan
Marina Coast Water District

AKEL ENGINEERING GROUP, INC.





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Hydraulic Model

PRELIMINARY

December 5, 2017

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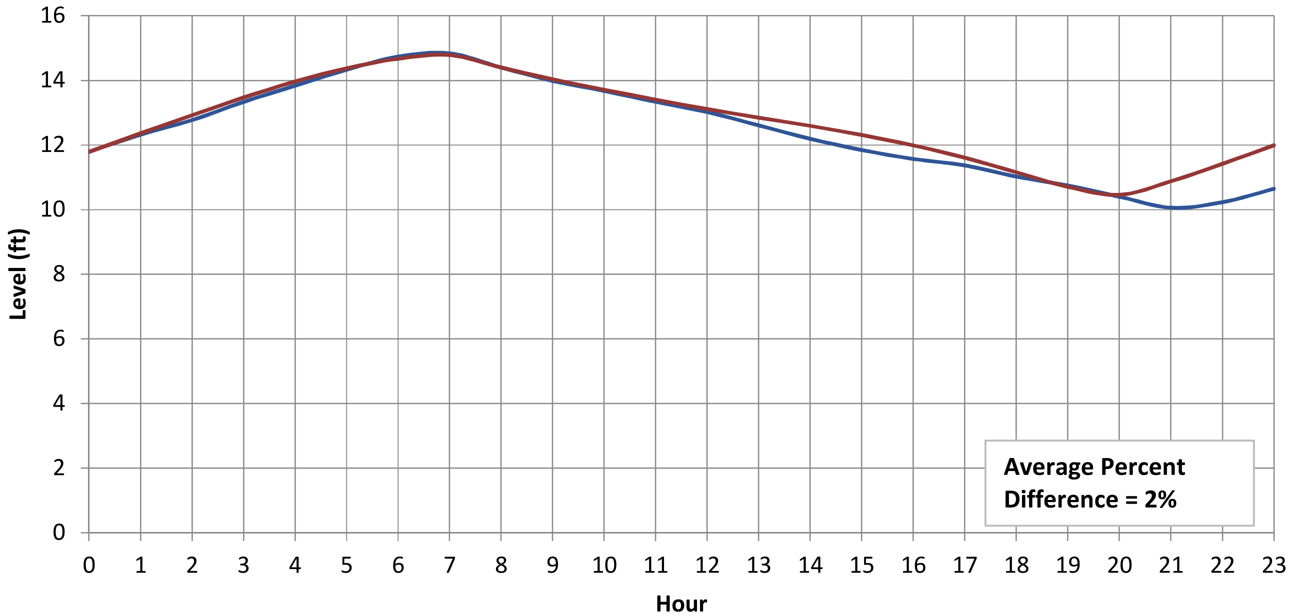
Figure 5
Tank Calibration

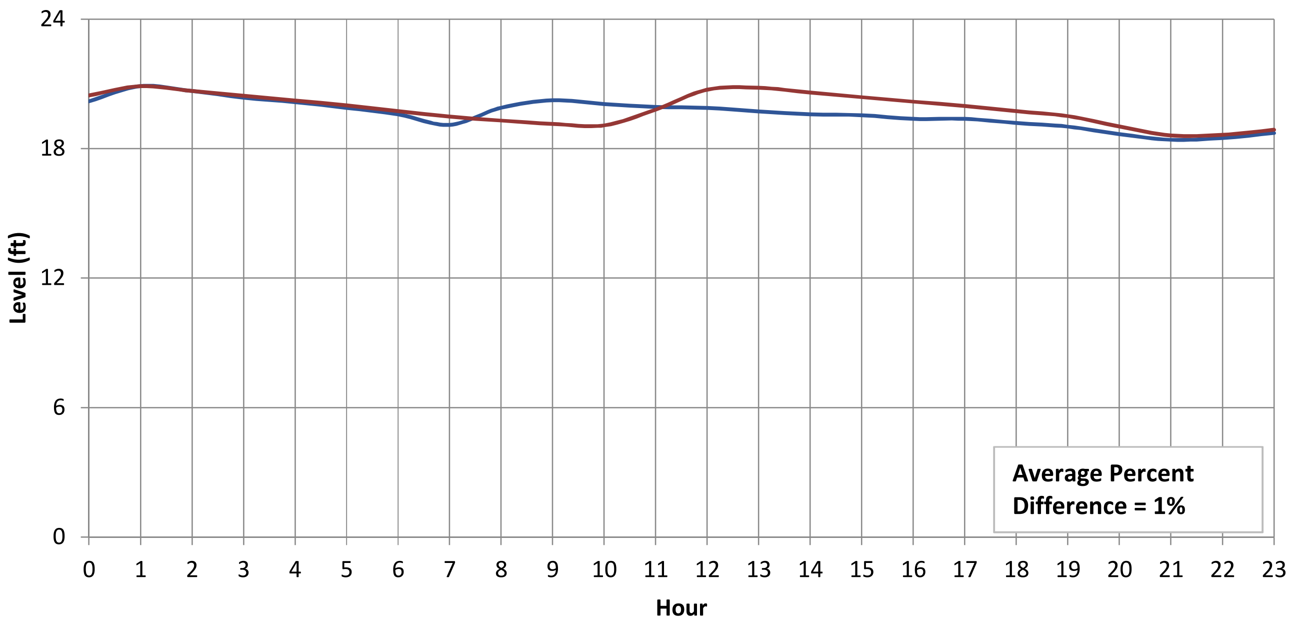
Water System Master Plan

Marina Coast Water District

B Tank - Level



C1/C2 Tank - Level



LEGEND

SCADA

Hydraulic Model

PRELIMINARY

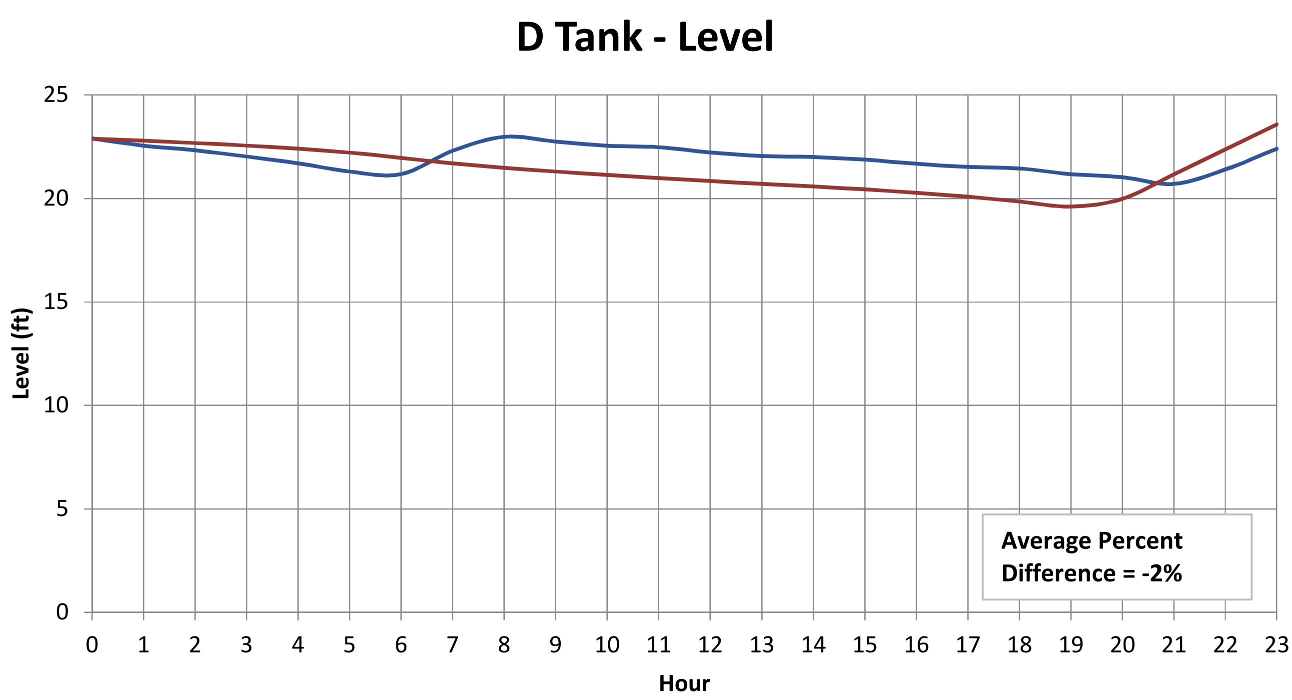
December 5, 2017

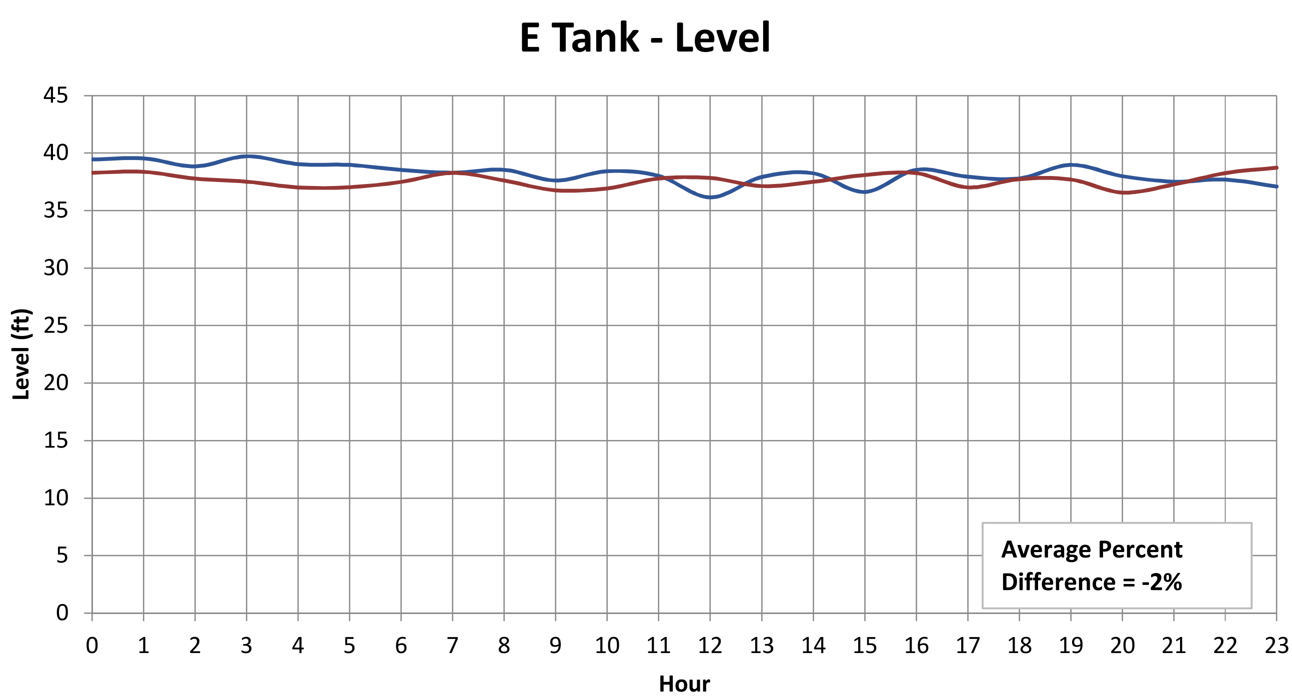
Figure 6
Tank Calibration

Water System Master Plan

Marina Coast Water District

AKEL ENGINEERING GROUP, INC.





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SCADA

Hydraulic Model

PRELIMINARY

December 5, 2017

Figure 7
Tank Calibration

Water System Master Plan
Marina Coast Water District

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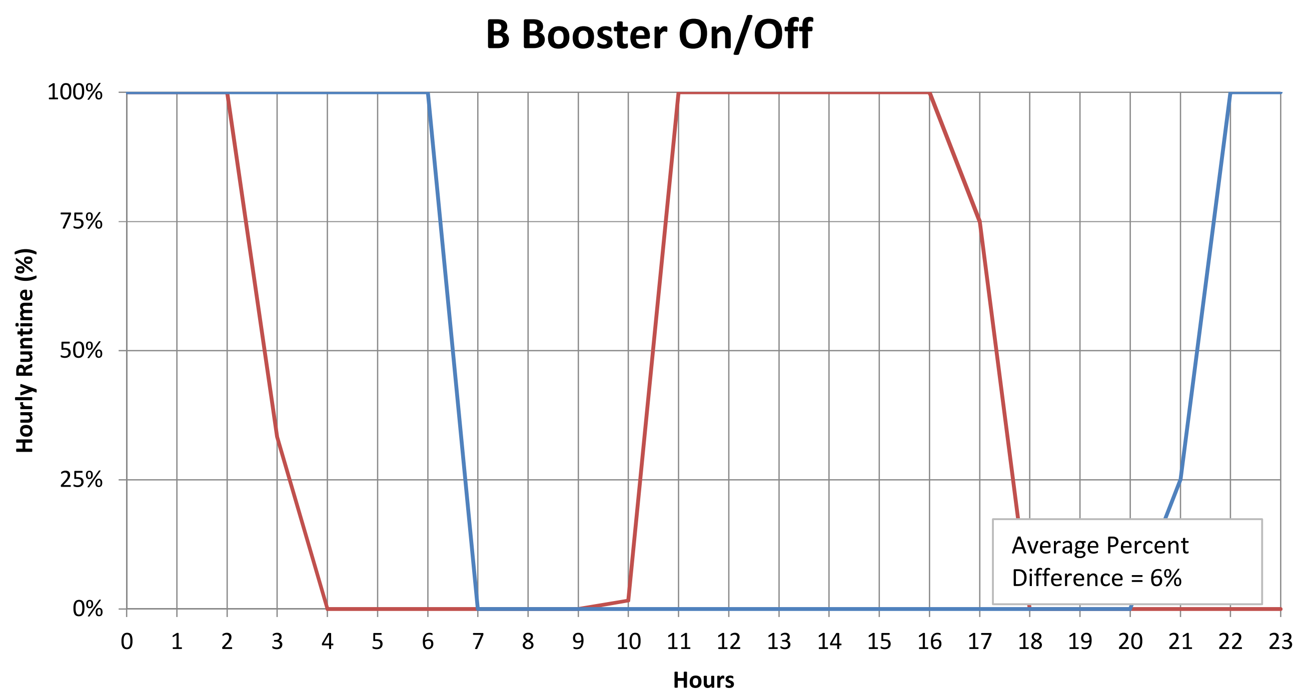

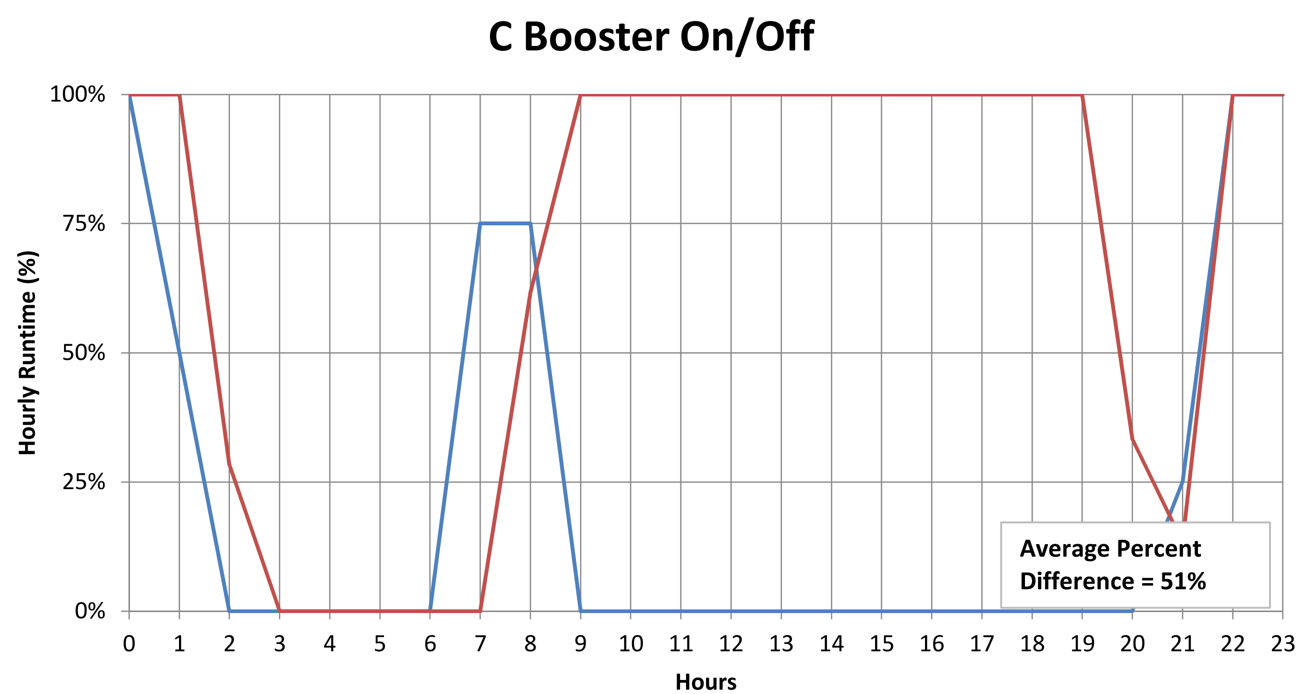

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Hydraulic Model

PRELIMINARY

December 5, 2017

Figure 8

Booster Station Calibration

Water System Master Plan

Marina Coast Water District

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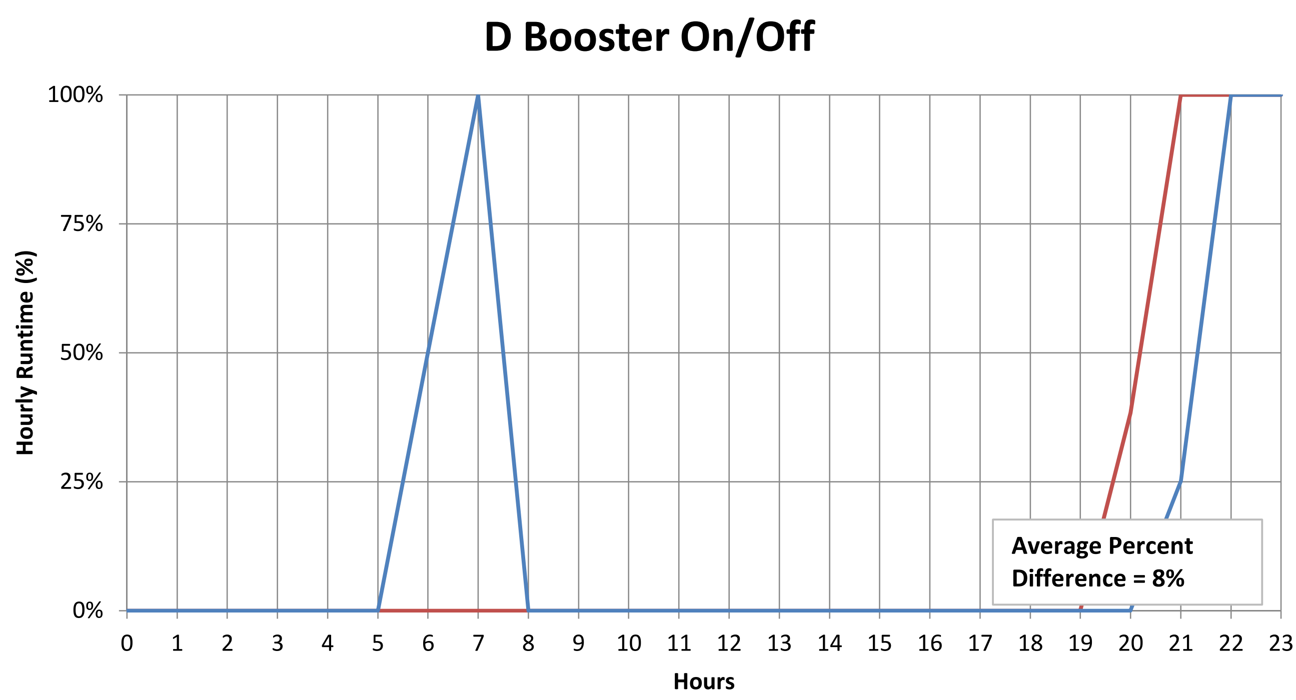

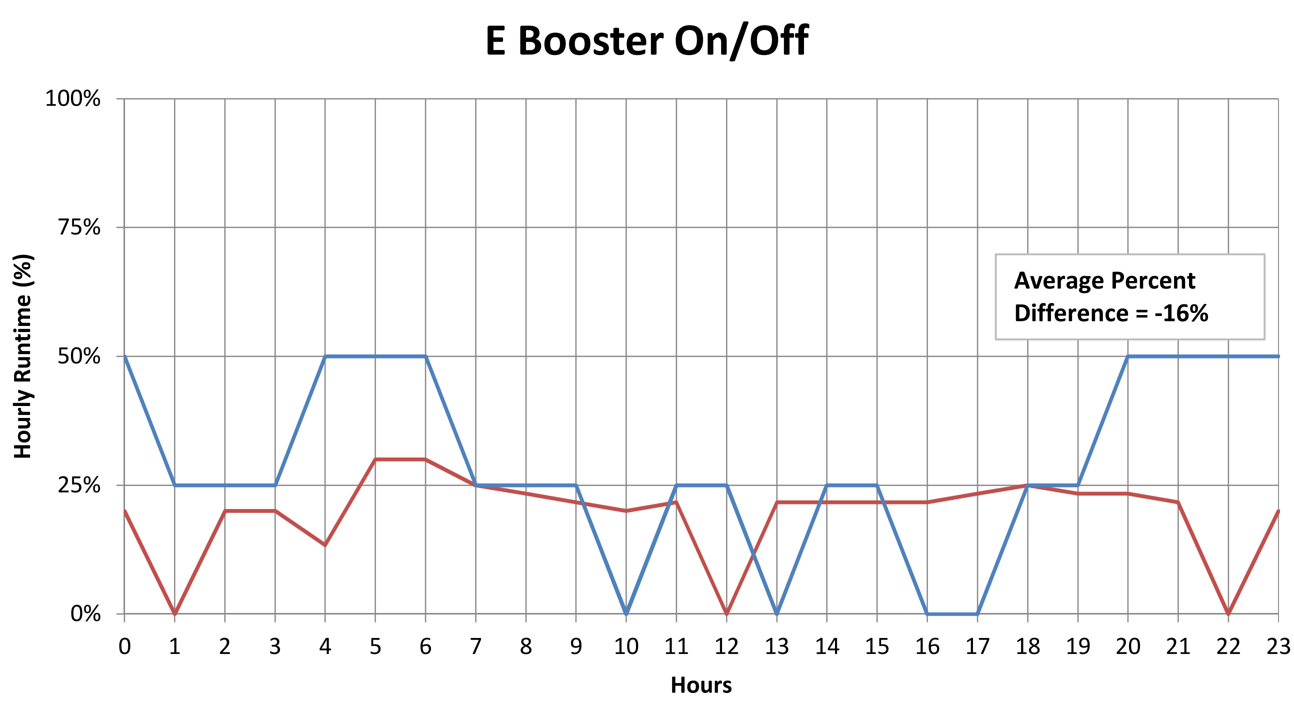

LEGEND

SCADA

Hydraulic Model

PRELIMINARY

December 5, 2017

Figure 9

Booster Station Calibration

Water System Master Plan

Marina Coast Water District

AKEL ENGINEERING GROUP, INC.

APPENDIX C

In-Tract Infrastructure Policy

Marina Coast Water District Water/Wastewater Systems

In-Tract Water and Wastewater Collection System Infrastructure Policy

By
Marina Coast Water District

January 2004

Marina Coast Water District
In-Tract Water and Wastewater Collection System Infrastructure Policy

Summary

During the last 10 to 15 years, an increasing number of studies nationwide have confirmed that water and sewer infrastructure replacement costs are soaring. Water pipe replacement costs alone are estimated to be $1.7 billion per year nationwide, and numerous other studies add to the sense of urgency to improve the nation's underground infrastructure. The infrastructure found on the former Fort Ord is no exception. Much of the water and wastewater collection systems infrastructure is estimated to be 50 years old and integrity and performance issues have already been documented.

Under the Water/Wastewater Facilities Agreement between the District and the FORA, the District is responsible for the successful operation and maintenance of the water and wastewater collection systems on the former Fort Ord, as well as improvements to the systems as FORA reasonably determines are necessary. In an effort to assure the successful redevelopment of the former Fort Ord, the District may cause to be planned, designed, and constructed any other facilities as the District reasonably determines may be needed to carry out the goals as established by FORA.

Systems Age

The former Fort Ord water and wastewater collection systems are on average estimated to be 40 to 50 years old and are nearing the end of their useful life. From this point forward, the systems will continue to deteriorate at an unpredictable pace. A majority of all valves are experiencing failure. Many of the service taps (laterals connecting to mains) have been found to be leaking due to poor construction. Pipelines will increasingly become more brittle over time.

The District implemented a preventative maintenance program to enable a systematic approach to pipeline maintenance. However, when operation and maintenance crews continue to repair or replace components of a system that continues to fail unpredictably, the success of a prudent preventative maintenance program cannot be realized.

Water Infrastructure System

FORA and the District depend on the ability to extract and deliver up to 6,600 afy of groundwater from the Salinas River groundwater basin in accordance with a FORA-approved water allocation plan for land use jurisdictions.

The majority of water use in the Ord Community service area is estimated because meters have not yet been installed on residences. Within the overall water allocation for all jurisdictions, 532 afy (or 8 percent of 6,600 afy) is presently estimated and assigned as water loss. (Industry standards for water loss range from 6% to 15% and include water lost due to water line breaks, fire hydrant use, construction water, etc.) The District accepts its responsibility as the steward of the significantly important water resources in support of FORA's redevelopment plan, and will work to minimize water loss. The District has established a water loss goal of 5 percent from water leaks. To achieve this goal, water use will need to be accurately measured and distributed through a watertight system

Wastewater Collection System

The District is responsible for maintaining a system free from sewage overflows. Much of the collection system was not constructed to current design standards and is showing signs of aging. It is difficult to determine the failure rate of an aging system as pipelines loose integrity over time. Sewage spills (overflows) is one of the symptoms of system failure. During 2002, the District experienced 15 sewage spills. Many of the spills occurred within redevelopment areas.

The District completed its Wastewater Master Plan for the Ord Community service area in 2001 which included visually inspecting (via video) many of the collection lines and connections. The Plan describes a system that requires an aggressive and costly collection pipe replacement program.

As the collection system continues to experience problems, the District is subject to increasingly tighter regulatory control that will not tolerate sewage spills. Per recent sewer system maintenance regulations promulgated by the California Regional Water Quality Control Board, the District is required to minimize sewage overflows. Given that the sewage system is not constructed to today's design standards, overflows are expected to continue to occur at an accelerated pace. By replacing components of the aging wastewater collection system, the District will be able to keep its permits in good standing and improve upon overall maintenance costs to customers.

Capital Improvement Program

The District is making every effort to keep rates affordable for our customers. With monthly water and wastewater collection rates already on the high end for this region, additional District-funded (in-tract) capital improvements would cause the rates to escalate further, adding to the burden on potentially low to middle income customers in an area where low-income housing is strongly encouraged. Requiring developers to be responsible for in-tract capital improvements to the water system and wastewater collection system would help contain District rates while ensuring the systems are progressively brought up to standard.

Pipelines Relocated from Planned Lots of Record and Planned Improvements

Upon conveyance, the District agreed to accept the systems "as-is" and "where-is". To address right of way issues to decrease District exposure to liabilities due to systems maintenance and/or repair, we must assure that new pipelines planned in redevelopment areas are not constructed to conflict with planned lots of record or planned improvements. Examples of planned improvements include structures, roads, landscape areas, walkways, parking facilities, etc. The District will work to relocate all systems within public easements, e.g. roadway easements. Better access to systems infrastructure will result in more cost effective repairs and reduced liability to the District.

In conclusion, an in-tract water and wastewater collection system infrastructure policy that clearly establishes requirements for developers to bring systems components to industry standards during redevelopment projects is supportive of District responsibilities to FORA and to our customers.

In-Tract Infrastructure Policy

For all proposed redevelopment projects in areas served by existing water and wastewater collection infrastructure, the developer will be required to implement one of the following procedures:

1. Where redevelopment will raze the existing buildings and streets:

- Developer completes a subdivision water and sewer master plan per the District standards.
- Developer replaces all existing water and wastewater collection pipelines and components within the project area to District standards, and replaces all existing water and wastewater collection pipelines and components adjacent to the project area to District standards, as project impacts necessitate.
- Developer provides meter boxes for all structures and landscaping.
- Developer provides for District's installation of remote read meters.

2. Where redevelopment will use existing buildings and infrastructure or will raze or remodel a portion or all of the existing buildings but streets and existing infrastructure will remain:

- Developer completes a subdivision water and sewer master plan per the District standards. This subdivision master plan would include a physical and design standard condition assessment of the systems per District standards. The subdivision master plan must be approved by the District prior to receiving water and sewer service.
- From the subdivision master plan, the Developer replaces components as required by the District.
- Developer relocates the District's backbone water/sewer infrastructure (infrastructure that serves other upstream and downstream users) onto roadway right of way, as necessary.
- When the Developer is planning to construct improvements, including, but not limited to, structures, landscape areas, walkways, parking facilities, etc., over existing water and sewer infrastructure, then the Developer is responsible to relocate existing water/sewer infrastructure away from under proposed improvements.
- The developer will enter into a separate utility agreement with the District to provide for anticipated higher maintenance costs of the remaining older systems that will be left in place.
- The separate utility agreement will include an annual water and wastewater collection inspection report to be completed by the Developer or its successor in accordance with District standards. That agreement will require the developer to provide an annual wastewater collection system, water system inspection report in accordance

with District standards and to provide master meters for the project. The water inspection report will include a water audit.

- Developer provides meter boxes for all structures and landscaping.
- Developer provides for District's installation of remote read meters.

APPENDIX D

Equivalent Dwelling Unit Analysis

APPENDIX E

Water System Capacity Fees
(Pending Finalization)

Return to Agenda

MARINA COAST WATER DISTRICT

2019

RECYCLED WATER MASTER PLAN

Draft
(Excluding Capacity Fees)

April 2019

AKEL ENGINEERING GROUP, INC.

AKEL ENGINEERING GROUP, INC.

Smart Planning Our Water Resources

April 12, 2019

Marina Coast Water District
2840 4th Avenue
Marina, CA 93933

Attention: Michael Wegley, P.E.
District Engineer

Subject: 2019 Recycled Water Master Plan – Draft Report

Dear Michael:

We are pleased to submit the draft report for the Marina Coast Water District Recycled Water Master Plan. This master plan is a standalone document, though it was prepared as part of the integrated infrastructure master plans for the water, sewer, and recycled master plans. The master plan documents the following:

- Existing distribution system facilities, acceptable hydraulic performance criteria, potential future recycled water demands.
- Development of the District's GIS-based recycled water model.
- Recommendation of improvements to serve future recycled water customers.
- 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; Keith Van Der Maaten, General Manager; Brian True, Senior Civil Engineer; and other District staff whose courtesy and cooperation were valuable components in completing this study.

Sincerely,

AKEL ENGINEERING GROUP, INC.

Tony Akel, P.E.
Principal

Enclosure: Report

7433 N. FIRST STREET, SUITE 103 • FRESNO, CALIFORNIA 93720 • (559) 436-0600 • FAX (559) 436-0622
www.akeleng.com

Acknowledgements

Board of Directors

Dr. Thomas P. Moore, Board President

Jan Shriner, Board Vice President

Herbert Cortez

Peter Le

Matt Zefferman

Management Personnel

Keith Van Der Maaten, General Manager

Michael Wegley, District Engineer

Kelly Cadiente, Director of Administrative Services

Derek Cray, Maintenance and Operations Manager

Brian True, Senior Civil Engineer

Jaron Hollida, Assistant Engineer

Andrew Racz, Associate Engineer

Marina Coast Water District
Recycled Water Master Plan

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APPENDICES

CHAPTER 1 - INTRODUCTION

This chapter provides a brief background of the District's recycled 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 Marina Coast Water District (District) is located approximately 10 miles north of the City of Monterey, 8 miles east of the City of Salinas, and 3 miles south of the City of Castroville (**Figure 1.1**). The District provides potable water service to approximately 36,000 residents, as well as a myriad of commercial, industrial, and institutional establishments. The District entered into an agreement with the Monterey One Water (M1W), formerly known as the Monterey Regional Water Pollution Control Agency, to deliver up to 1,427 acre-feet per year (AFY) of product water from the Advanced Water Treatment Facility (AWTF) north of the City of Marina. This will be delivered through the newly constructed Pure Water Monterey (PWM) delivery pipeline, which also conveys approximately 3,500 AFY of product water to the Seaside Injection Wells project. MCWD will receive water from the PWM pipeline and deliver it to their planned customers through the Regional Urban Water Augmentation Program.

There have been several studies related to the planning, design, and implementation of the AWTF; corresponding pump station, pipeline and storage reservoir; as well as the distribution pipelines connecting to the recycled water users located within the District's service area. These reports served as the roadmap for documenting the hydraulic improvements, and the recommendations for connecting to the Pure Water Monterey transmission main.

Recognizing the importance of planning, developing, and financing system facilities to provide reliable recycled water service to customers within the service area, the District initiated updating elements of the previous studies to reflect current planning and design conditions, and to consolidate the documents into one comprehensive planning document.

1.2 SCOPE OF WORK

Marina Coast Water District approved Akel Engineering Group Inc. to prepare this master plan in November of 2016. This 2019 Recycled Water Master Plan (RWMP) is intended to serve as a tool for planning and phasing the construction of future recycled water distribution system infrastructure. The 2019 RWMP identifies the District's potential recycled water use and recommends improvements necessary to serve potential future recycled water users.

Should planning conditions change, and depending on their magnitude, adjustments to the master plan recommendations might be necessary.

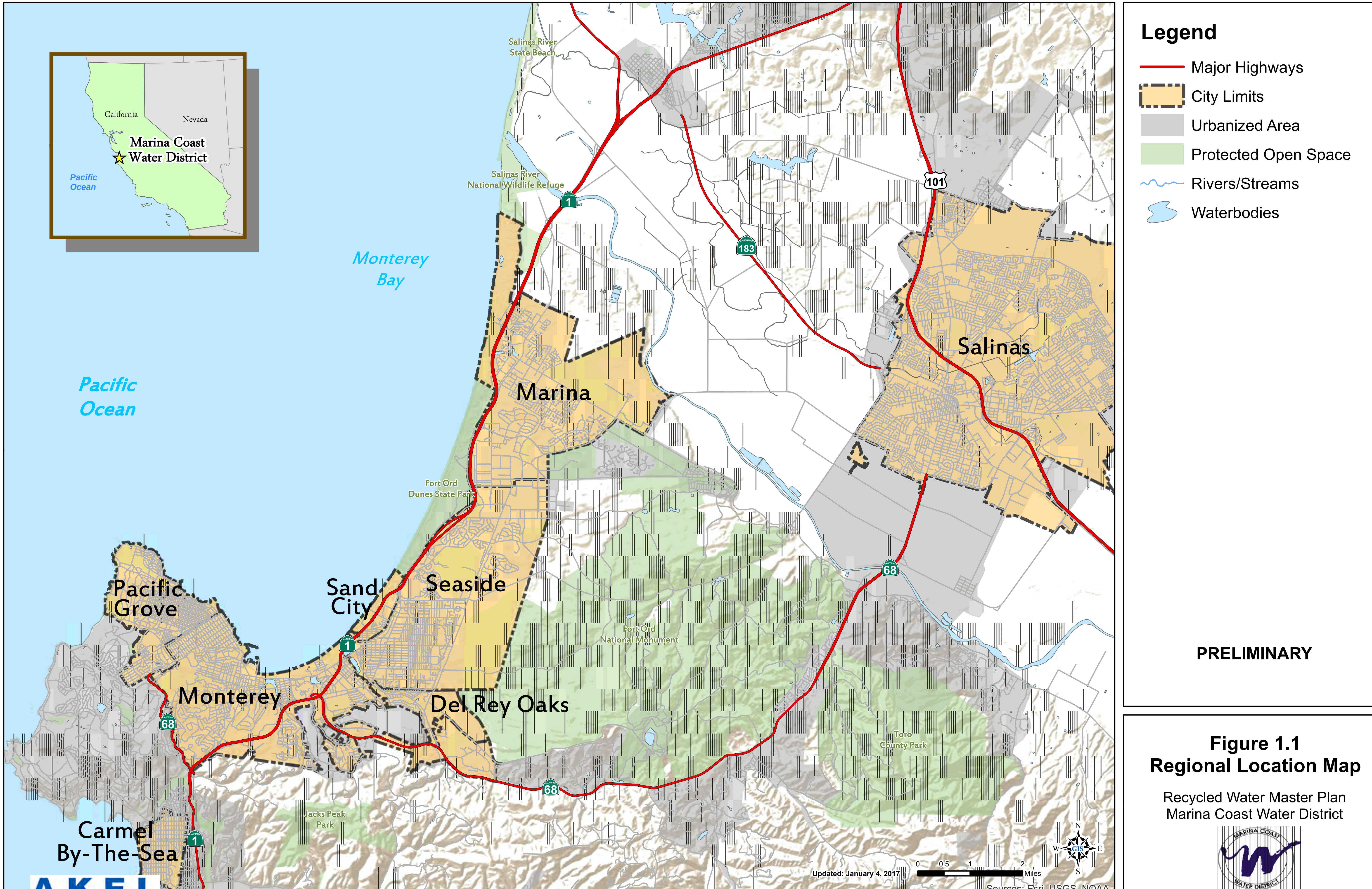

Figure 1.1
Regional Location Map

Recycled Water Master Plan
Marina Coast Water District

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This master plan included the following tasks:

- Summarizing the District's existing land use conditions
- Documenting growth planning assumptions
- Updating the recycled water system performance criteria
- Projecting future recycled water demands
- Updating and calibrating a new hydraulic model using Geographic Information Systems (GIS) data
- Evaluating the proposed improvements and the improvements necessary to connect to the regional Pure Water Monterey transmission main
- Performing a capacity analysis for major distribution mains
- Recommending a capital improvement program (CIP) with an opinion of probable costs
- Performing a capacity allocation analysis for cost sharing purposes
- Developing a 2019 Recycled Water Master Plan report

1.3 INTEGRATED APPROACH TO MASTER PLANNING

The District implemented an integrated master planning approach and contracted the services of Akel Engineering Group to prepare the following documents:

- Water Master Plan
- Sewer Master Plan
- Recycled Water Master Plan

While each of these reports is published as a standalone document, they have been coordinated for consistency with the various planning documents within the District's service area. Additionally, each document has been cross referenced to reflect relevant analysis results with the other documents.

1.4 PREVIOUS MASTER PLANS

The District does not have a previous master plan for the recycled water system. The intent of this master plan is to document the existing planning and design documents produced as part of the joint Monterey One Water – Marina Coast Water District recycled program, and which is subject to agreements and recycled water allocations. The relevant reports referenced as part of this master plan are included in the following section.

1.5 RELEVANT REPORTS

Multiple special studies have been completed by the District and other agencies evaluating recycled water supply, potential recycled water use, and transmission and distribution system infrastructure. These reports were referenced and used during this capacity analysis. The following lists relevant reports that were used in the completion of this master plan, as well as a brief description of each document:

- **Pure Water Delivery and Supply Project Agreement Between Monterey Regional Water Pollution Control Agency and Marina Coast Water District, April 2016. (2016 PWD Agreement).** This agreement documents the recycled water supply availability for non-potable reuse under the Regional Urban Water Augmentation Project, as well as the Pure Water Monterey Groundwater Replenishment Project. This agreement documents quantities of water to be delivered and where the deliveries should be provided.

- **Pure Water Monterey Groundwater Replenishment Project Final Engineering Report, September 2016 (2016 PWM FER).** This report summarizes the Pure Water Monterey Groundwater Replenishment Project, which is a water supply project intended to provide purified recycled water for the replenishment of the Seaside Groundwater Basin. Facilities used to convey the recycled water from the treatment facility to the injection site will also be used to provide water to potential District recycled water customers.

- **Regional Urban Water Augmentation MCWD Recycled Water Project Amendment to Basis of Design Report, October 2006.** This document includes discussion on the proposed users, the pipeline alignments and criteria, and the pump station and storage improvements. The demands included in this report are updates to demands previously prepared in the 2003 Regional Urban Recycled Water Distribution Pipeline study prepared by RBF Consulting and the 1996 Monterey Peninsula Reclaimed Water Urban Reuse Feasibility Study prepared by CH2MHill. This report has been updated periodically and served as the basis for the demands included in the master plan.

- **City of Marina General Plan, December 2006, (2006 General Plan).** The City's 2006 General Plan provides future land use planning, and growth assumptions for the planning areas. Additionally, this report establishes the planning horizon for improvements in this master plan.

- **County of Monterey General Plan, October 2010.** The County's 2010 General Plan addresses unincorporated areas of the County and considers the general plans of cities within the County to allow for cooperative planning. The Fort Ord Land Use Plan provided within the County's 2010 General Plan was used to assist in the development of the potential future land use within the District's service area.

- **City of Monterey General Plan, January 2005.** The City's 2005 General Plan provides future land use planning and growth assumptions. These growth assumptions were used to assist in the development of the potential future land use within the District's service area, generally along South Boundary Road.

- **City of Seaside General Plan, August 2004.** The City of Seaside's 2004 General Plan provides future land use planning and growth assumptions. These growth assumptions were used to assist in the development of the potential future land use within the District's service area, generally along General Jim Moore Boulevard south of Inter-Garrison Road.

- **City of Del Rey Oaks General Plan, January 1997.** The City of Del Rey Oaks' 1997 General Plan provides future land use planning and growth assumptions. These growth assumptions were used to assist in the development of the potential future land use within the District's service area, generally along South Boundary Road east of General Jim Moore Boulevard.

- **California State University, Monterey Bay Draft Campus Master Plan, June 2017.** The California State University, Monterey Bay's (CSUMB) Draft Campus Master Plan provides future land use planning and growth assumptions for the exiting campus. These growth assumptions were used to assist in the development of the planned future land use of the CSUMB campus within the District's service area.

- **Fort Ord Reuse Plan, June 1997 (1997 FORP).** The Fort Ord Reuse Plan, prepared by the Fort Ord Reuse Authority, provides future land use planning and development assumptions for lands that are part of the former Fort Ord.

- **Marina Coast Water District 2015 Urban Water Management Plan, (2015 UWMP).** The 2015 Urban Water Management Plan (UWMP) establishes a benchmark per capita water usage and targets in order to achieve higher levels of water conservation for the sustainability of water supply sources. This includes adopting an updated water shortage contingency plan, defining supply sources, addressing supply reliability, and projecting sustainable supply yields and future demands. This report also addresses potential recycled water demands.

- **Marina Coast Water District 2016 Title 22 Engineering Report, November 2016.** This Engineering Report was prepared in accordance with Title 22 of the California Code of Regulations for submittal to the State of California Department of Public Health as well as the Regional Water Quality Control Board as part of the project permitting process. This report describes the facilities initially required to serve recycled water to the recycled water customers.

1.6 REPORT ORGANIZATION

The water system master plan report contains the following chapters:

Chapter 1 - Introduction. This chapter provides a brief background of the District's recycled water 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 provides a description of the expected recycled water service area and historical and projected population.

Chapter 3 - System Performance and Design Criteria. This chapter presents the District's performance and design criteria, which was used in this analysis for evaluating existing and proposed distribution mains, storage reservoirs, and pump stations

Chapter 4 - Existing Recycled Water System. This chapter provides a description of the District's existing recycled water system facilities and the recycled water supply quality.

Chapter 5 - Recycled Water Demands. This chapter summarizes the potential recycled water demands identified within the District's service area, the maximum day and peak hour demands for the potential future users, and demand diurnal patterns.

Chapter 6 - Hydraulic Model Development. This chapter describes the development and calibration of the District's recycled water distribution system hydraulic model. The hydraulic model was used to evaluate the capacity adequacy of the planned users.

Chapter 7 - Evaluation and Proposed Improvements. This section presents a summary of the recycled water system evaluation and identifies improvements necessary to serve future users.

Chapter 8 - Capital Improvement Program. This chapter provides a summary of the recommended recycled water system improvements to accommodate anticipated users within the 2016 PWD Agreement. 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.

1.7 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:

- Keith Van Der Maaten, General Manager
- Michael Wegley, District Engineer
- Kelly Cadiente, Director of Administrative Services
- Derek Cray, Maintenance and Operations Manager
- Brian True, Senior Civil Engineer
- Jaron Hollida, Assistant Engineer
- Andrew Racz, Associate Engineer
- Andy Sterbenz, Consultant

1.8 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 recycled 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 water system terminologies and engineering units. A list of abbreviations and acronyms is included in **Table 1.2**.

1.9 GEOGRAPHIC INFORMATION SYSTEMS

This master planning effort made extensive use of Geographic Information Systems (GIS) technology, for completing the following tasks:

- Develop the physical characteristics of the hydraulic model (pipes and junctions, wells, and storage reservoirs)
- Calculate and allocating future water demands, based on future developments water use
- Extract ground elevations along the existing and proposed pipelines from available contour maps
- Generate maps and exhibits used in this master plan

Table 1.1 Unit Conversions

Recycled Water Master Plan
Marina Coast Water District

PRELIMINARY

Volume Unit Calculations

To Convert From:	To:	Multiply by:
acre feet	gallons	325,851
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

Recycled Water Master Plan

Marina Coast Water District

PRELIMINARY

Abbreviation	Expansion	Abbreviation	Expansion
2017 RWMP	2007 Water System Master Plan	gpm	Gallons per minute
AACE International	Association for the Advancement of Cost Engineering	hp	Horsepower
AC	Acre	HGL	Hydraulic grade line
ACP	Asbestos Cement Pipe	HWL	High water level
ADD	Average Day Demand	in	Inch
Akel	Akel Engineering Group, Inc.	LAFCO	Local Agency Formation Commission
CCI	Construction Cost Index	LF	Linear feet
CDPH	California Department of Public Health	MDD	Maximum day demand
cfs	Cubic feet per second	MG	Million gallons
CI	Cast Iron Pipe	MGD	Million gallons per day
CIB	Capital Improvement Budget	MMD	Maximum month demand
CIP	Capital Improvement Program	MPWMD	Monterey Peninsula Water Management District
CSIP	Castroville Seawater Intrusion Project	MRWPCA	Monterey Regional Water Pollution Control Agency
DIP	Ductile Iron Pipe	NFPA	National Fire Protection Association
District/ MCWD	Marina Coast Water District	PHD	Peak hour demand
DU	Dwelling Unit	PRV	Pressure reducing valve
EDU	Equivalent Dwelling Unit	psi	Pounds per square inch
ENR	Engineering News Record	ROW	Right of Way
EPA	Environmental Protection Agency	SCADA	Supervisory Control and Data Acquisition
EPS	Extended Period Simulation	SOI	Sphere of Influence
FORA	Fort Ord Reuse Authority	SVWP	Salinas Valley Water Project
FRC	Facility Reserve Charge	SWRCB	State Water Resources Control Board
ft	Feet	TBD	To be determined
fps	Feet per second	ULL	Urban Limit Line
FY	Fiscal Year	UWMP	Urban Water Management Plan
GIS	Geographic Information Systems	WSMP	Water Master Plan
gpd	Gallons per day	WTP	Water Treatment Plant
gpdc	Gallons per day per capita		

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 provides a description of the expected recycled water service area and historical and projected population.

2.1 STUDY AREA DESCRIPTION

The Marina Coast Water District is located in Monterey County on the west coast of California, south of the City of San Francisco. The District is located approximately 10 miles north of the City of Monterey, 8 miles east of the City of Salinas, and 3 miles south of the City of Castroville. Pacific Coast Highway 1 runs from south to north near the District's western boundary. The District's overall service area currently includes more than 36,000 domestic water and sewer customers and encompasses an area greater than 29,000 acres. Portions of this larger service area will be served by the recycled water system.

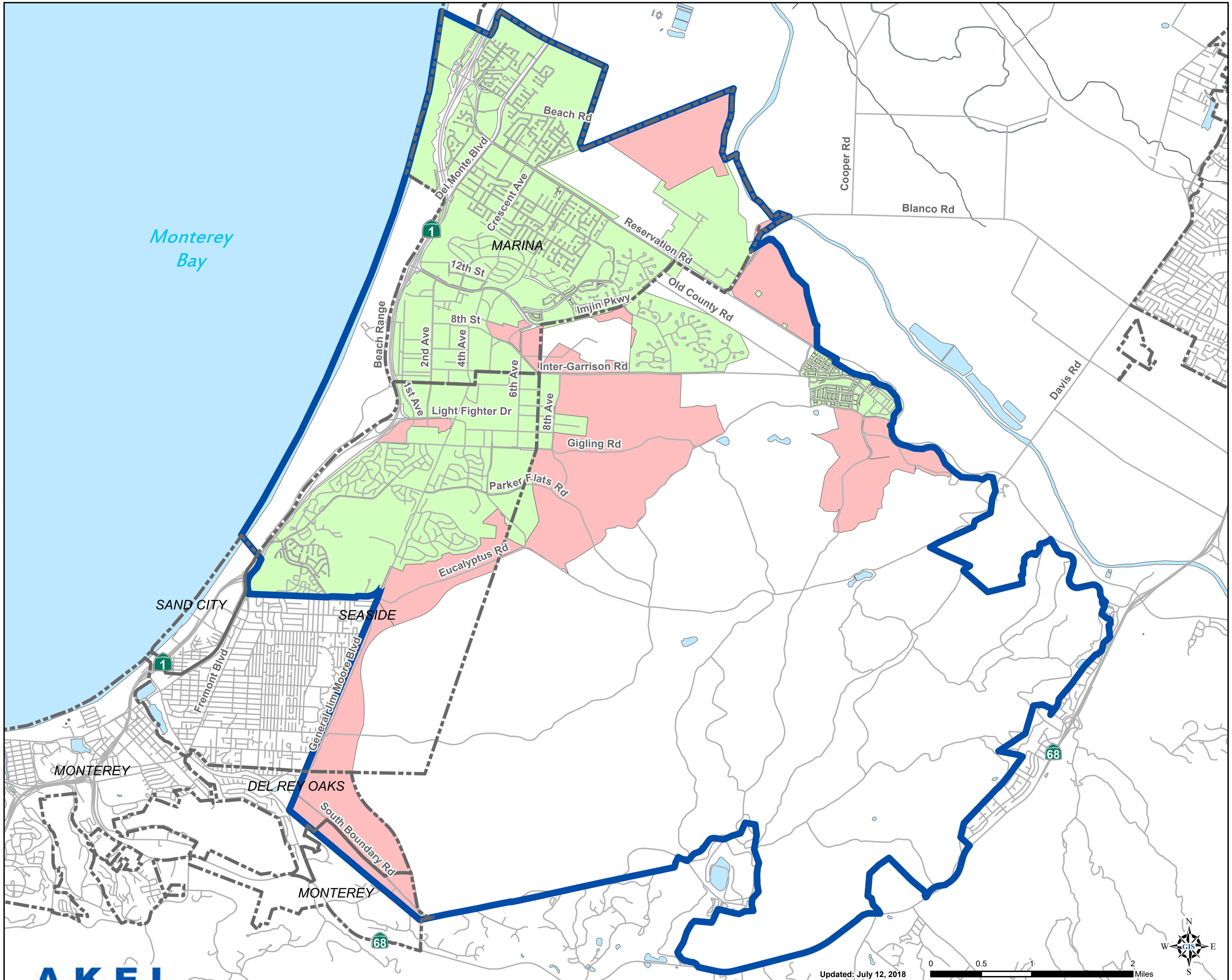
The District service area is generally bound to the north by Marina Green Drive, to the east by Reservation Road, to the west by Pacific Coast Highway 1, and to the south by South Boundary Road. The topography generally slopes downward toward the ocean from west to east, with elevations ranging between 50 feet to more than 400 feet. **Figure 2.1** displays the District's existing service area and the local municipal boundaries.

The recycled water service area is generally defined by users that were initially developed as part of the Pure Water Monterey Project, and which was updated and further defined in the Regional Urban Water Augmentation Project (RUWAP). These studies and agreements identified pipelines, users, cost sharing agreements and projected recycled water deliveries for non-potable reuse customers, as well as indirect potable reuse groundwater projects.

2.2 RECYCLED WATER SERVICE AREA AND LAND USE

The District's recycled water system is planned to service irrigated areas within the District limits for certain land use areas shown on **Figure 2.1**. These areas will consist of parks, medians, schools, golf courses, and other potential users, and which are location within the two distinct regions within MCWD: Central Marina and the Ord Community. While the recycled water lands that are serviced are much smaller than the total service area of MCWD, this section briefly describes the land uses that are within the MCWD service area, and consistent with the Water Master Plan and Sewer Master Plan, which were prepared concurrent to this Plan.

The boundaries and planning area characteristics of these two regions are briefly described in the following sections:



Legend

- Planning Boundary
- Existing Service Area
- Future Study Area
- Municipal Boundaries
- Rivers/Streams
- Waterbodies

PRELIMINARY

Figure 2.1
Planning Area
Recycled Water Master Plan
Marina Coast Water District

AKEL ENGINEERING GROUP, INC.

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2.2.1 Central Marina Service Area

The Central Marina service area region is within the city limits generally north of Patton Parkway and west of Salinas Avenue. The future development within this service area region is generally comprised of the development of vacant parcels located throughout the city as well as one large area of potential development generally north of Beach Road.

2.2.2 Ord Community Service Area

The Ord Community service area region includes developed, vacant, and designated open space lands within portions of the County of Monterey, City of Del Rey Oaks, City of Marina, City of Seaside, and the City of Monterey within the former Fort Ord.. The potential future development within this area is generally comprised of the redevelopment of the former Fort Ord and new development on currently vacant lands.

For conservative planning purposes the master plan assumes the buildout development of potential developable lands, however the Fort Ord Reuse Authority (FORA) has established limits for growth within the former Fort Ord area, which are briefly summarized as follows:

2.2.2.1 10-Year Development Areas

In addition to outlining improvements, the FORA capital improvement plan specifies the allowable development within the former Fort Ord area. These allowable developments typically represent a portion of the potential developable lands and are summarized on **Table 2.1**.

2.2.2.2 Parker Flats Land Use Swap

The 1997 Fort Ord Installation-Wide Multi-Species Habitat Management Plan (1997 HMP) identified up to 6,300 acres throughout the Fort Ord base that could potentially develop from vegetation and habitat to a municipal-type use. As part of the 1997 HMP, East Garrison development was limited to 200 acres, with the majority of development slated for the Parker Flats are of Fort Ord. In 2002, FORA, the County of Monterey, and Monterey Peninsula College submitted a proposal to modify the 1997 HMP land use, specifically allowing for more development in the East Garrison area, while converting developable lands in Parker Flats to habitat reserve areas. This proposal was submitted as an official Land Swap Agreement (LSA) to the United States Army and the United States Fish and Wildlife Service.

The LSA ultimately allowed for an additional 210 acres of land to be developed at East Garrison, while converting approximately 447 acres of land within Parker Flats to habitat reserve. The Memorandum of Understanding (MOU) for the LSA was signed on October 14, 2003.

The tables and figures included in this Master Plan document the respective land use planning agency General Plan maps, with input from District staff. However, and in adherence to the LSA, developable acreages were adjusted to reflect the most recent planning data, and as provided by FORA staff. This included utilizing FORA GIS information to determine on a parcel by parcel basis what lands are included in the LSA.

Table 2.1 Fort Ord Reuse Authority 10-Year Development Limits

Recycled Water Master Plan
Marina Coast Water District

PRELIMINARY

Development Areas[1]	Residential (du)	Office (sf)	Industrial (sf)	Commercial (sf)	Hotel Rooms
Campus Town Specific Plan					
26 Acre Parcel (Planned)	150	0	0	0	0
Campus Town / 26 Acre (Planned)	0	10,000	30,000	40,000	300
Campus Town / Surplus II (Planned)	0	10,000	40,000	50,000	0
Surplus II (Planned)	238	0	0	0	0
Subtotal	388	20,000	70,000	90,000	300
Cypress Knolls					
Cypress Knolls (Entitled)	712	0	0	0	0
Del Rey Oaks					
Del Rey Oaks (Planned)	691	0	0	0	0
Del Rey Oaks RV Park (Entitled)	0	400,000	0	0	0
Del Rey Oaks RV Park (Planned)	0	0	0	0	550
Subtotal	691	400,000	0	0	550
Dunes Phase 1, 2, & 3					
Dunes Phase 1 (Entitled)	187	69,000	0	80,000	0
Dunes Phase 2 (Entitled)	225	0	0	0	394
Dunes Phase 3 (Entitled)	435	450,000	450,000	0	0
Subtotal	847	519,000	450,000	80,000	394
East Garrison					
East Garrison I (Entitled)	721	68,000	0	34,000	0
Main Gate					
Main Gate	0	0	0	150,000	350
Main Gates (Planned)	145	0	0	0	0
Subtotal	145	0	0	150,000	350
City of Monterey					
Monterey (Planned)	0	721,524	216,276	0	0
Sea Haven					
Sea Haven A (Entitled)	802	0	0	0	0
Seahaven (Entitled)	127	0	0	0	0
Subtotal	929	0	0	0	0
Seaside East					
Seaside East (Planned)	310	30,000	30,000	30,000	0
Seaside Resort					
Seaside Resort (Entitled)	122	0	0	10,000	330
Seaside Resort TS (Entitled)	0	0	0	0	68
Subtotal	122	0	0	10,000	398
UC MBEST					
UC (Planned)	0	680,000	100,000	310,000	0
UC Blanco Triangle (Planned)	240	0	0	0	0
Subtotal	240	680,000	100,000	310,000	0
Development Total					
	5,105	**2,438,524**	**866,276**	**704,000**	**1,992**

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10/19/2018

Note:

1. Development Areas extracted from Development Forecasts documented in FORA "FY 2018-2019 Capital Improvement Program", Table 6 and Table 7.

2.3 EXISTING AND FUTURE LAND USE

The existing and future land use for the District service area is based on a combination of planning documents that includes the following sources: City of Marina, City of Seaside, City of Del Rey Oaks, City of Monterey, CSU Monterey Bay, County of Monterey, FORA, and District staff. For planning purposes, the various residential and commercial land use types across the multiple jurisdictions within the District service area were consolidated into single residential and commercial categories.

The existing and future land use conditions are graphically summarized on Figure 2.2 and Figure 2.3. It should be noted that Figure 2.3 also includes the aforementioned Parker Flats – East Garrison LSA boundaries. The existing and future land use acreages, summarized on Table 2.2, can be broken down into the following categories:

- **Existing Development:** These acreages represent existing developed lands.
- **Existing Lands - Redeveloped:** These acreages represent existing developed lands expected to redevelop into other land use types under the buildout land use development condition.
- **Existing Development - Unchanged:** These acreages represent the total existing acreages expected to remain under the buildout land use development condition.
- **New Lands - Redevelopment:** These acreages represent lands that have redeveloped from a prior use and into a new respective category.
- **New Development:** These acreages represent gains from the development of existing vacant lands.

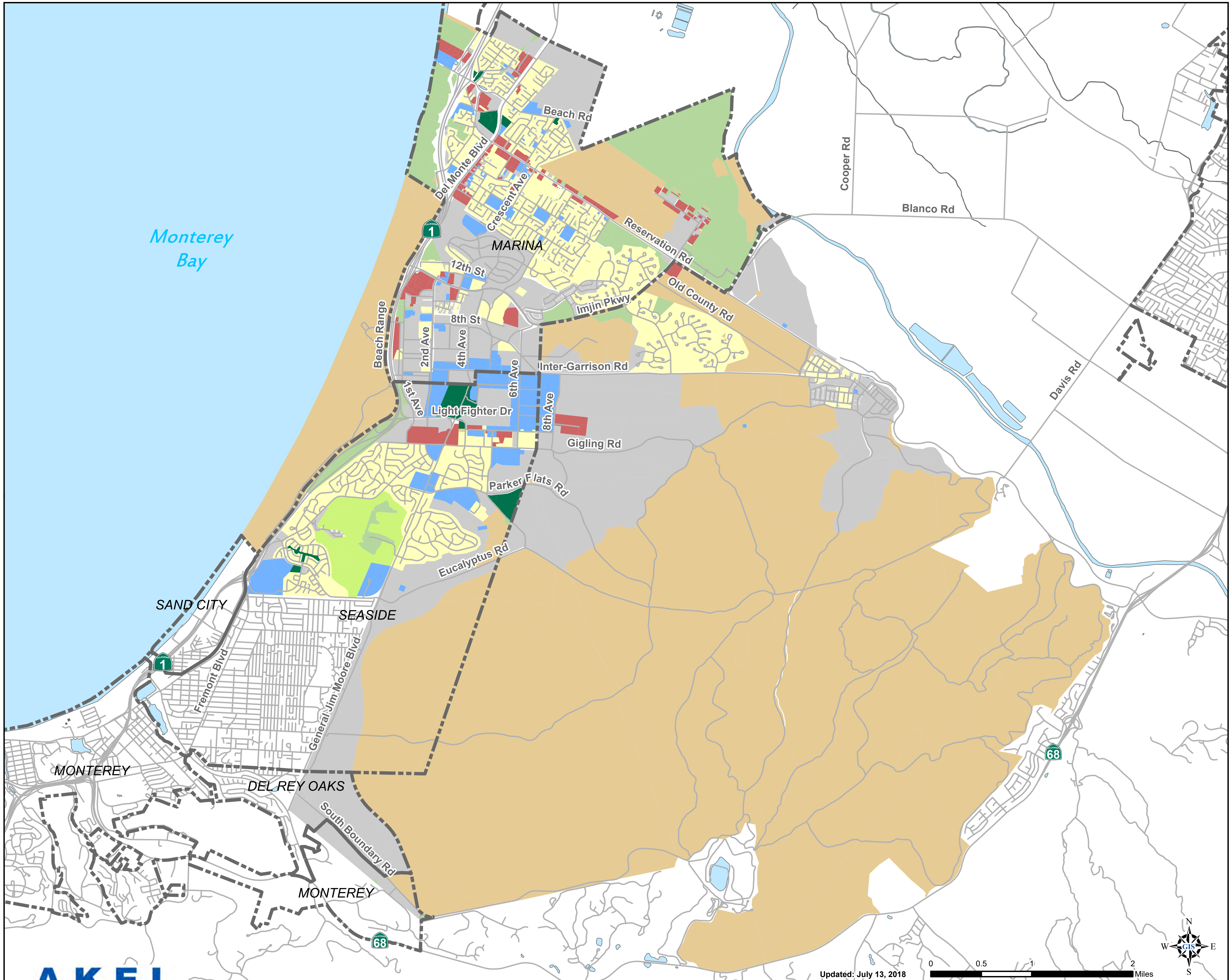
The total existing and future land use acreages are summarized below and shown on Table 2.2:

- 4,776 acres of developed lands inside the service area.
- 5,113 acres of undeveloped lands inside the service area.

2.4 HISTORICAL AND FUTURE GROWTH

According to the District's 2015 UWMP the 2015 service area population was approximately 32,375. The District's 2015 UWMP utilized varying annual growth rates and projected a 2035 population of 70,161. For the purpose of this master plan, District staff chose to utilize a set growth rate of 3.0 percent, which results in a 2035 population of 58,473. Assuming 3.0 percent growth, the District service area is not expected to reach the UWMP 2035 population until the year 2041.

Based on the land use estimated in this master plan, there is a population capacity of approximately 83,300 people, which is discussed in detail in Chapter 5. Based on an annual growth rate of 3.0 percent, the District service area will not reach the buildout population until the year 2047. The District's historical and projected population estimates are summarized on Table 2.3.



Legend

- Municipal Boundaries

Existing Land Use

- Residential
- Commercial
- Institutional/School
- Open Space
- Designated Open Space
- Park/Sports Field
- Golf Course
- Planned Development Area
- Rivers/Streams
- Waterbodies

PRELIMINARY

Figure 2.2
Existing Land Use
Recycled Water Master Plan
Marina Coast Water District

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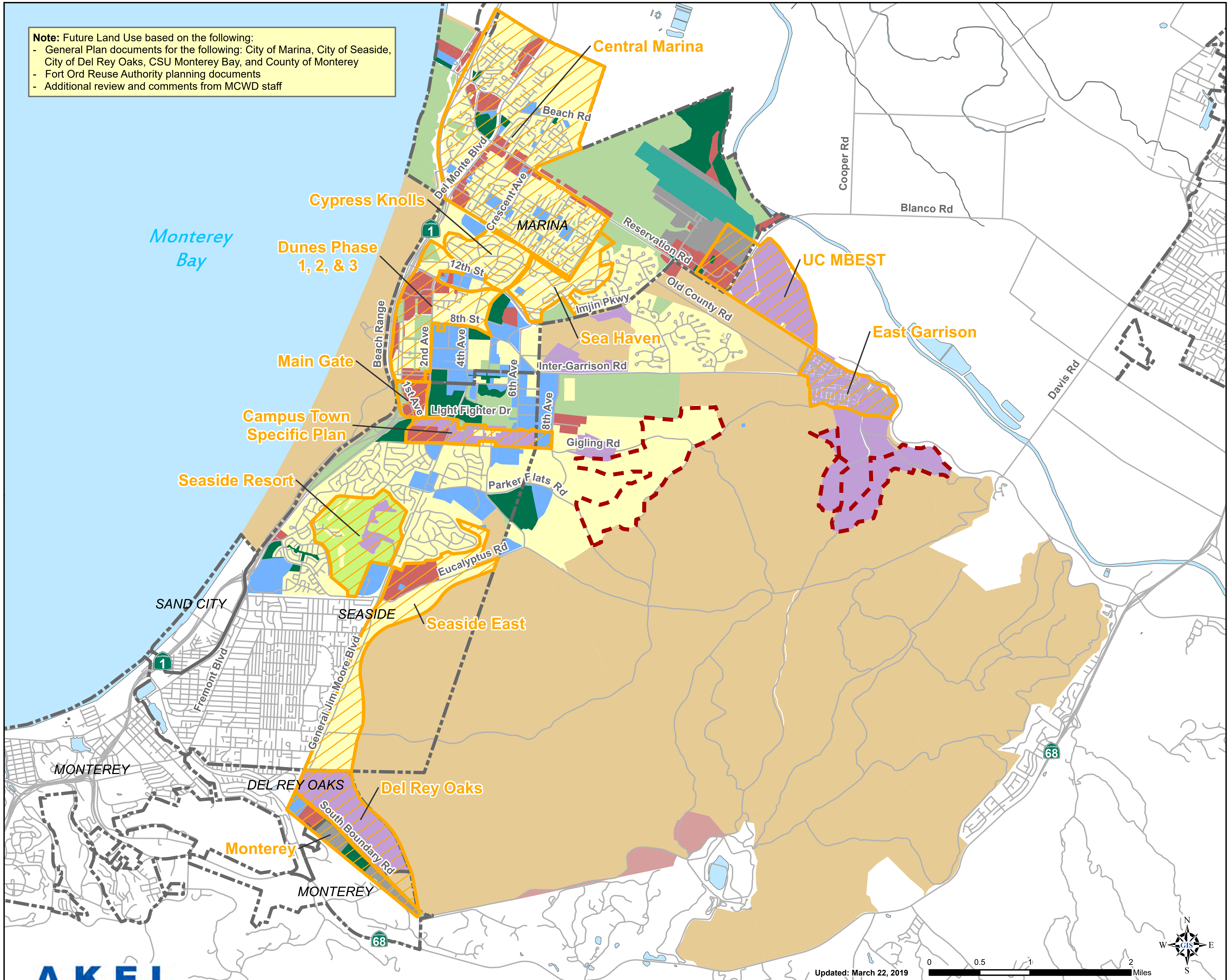

Legend

- Municipal Boundaries
- 10-Year Development Areas
- Parker Flats Land Use Swap

Future Land Use

- Residential
- Commercial
- Industrial
- AirportRunway
- Institutional/School
- Planned Development
- Mixed Use District
- Open Space
- Designated Open Space
- Park/Sports Field
- Golf Course
- Serviced by Others
- Rivers/Streams
- Waterbodies

PRELIMINARY

Figure 2.3
Future Land Use
Recycled Water Master Plan
Marina Coast Water District

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Table 2.2 Existing and Future Service Areas

Recycled Water Master Plan

Marina Coast Water District

PRELIMINARY

Land Use Classification	Existing Development		Subtotal	Future Development			Subtotal	Total Development at Buildout of Study Area	Development Outside of Future Study Area	Planning Area Total
	Existing Development (acres)	Existing Lands - Redeveloped (acres)	Existing Development - Unchanged (acres)	New Lands - Redevelopment (acres)	New Development: Inside Existing Service Area (acres)	New Development: Outside Existing Service Area (acres)	Future Development (acres)	(acres)	(acres)	(acres)
Residential										
Residential	2,574	-196	2,378	85	1,167	1,033	2,285	4,663	0	4,663
Non-Residential										
Commercial	349	-40	309	21	235	139	395	704	1	705
Park	103	-5	98	103	156	222	481	579	0	579
Institutional	689	-148	541	23	191	58	272	813	1	814
Planned Development Mixed Use District	0	0	0	134	475	726	1,336	1,336	0	1,336
Other										
Bayonet Golf Course	322	-15	307	0	0	0	0	307	0	307
Open Space - Other	438	0	438	46	0	0	46	484	0	484
Designated Open Space[5]	45	0	45	0	0	0	0	45	17,754	17,799
ROW	33	-8	25	0	1	0	1	26	0	26
Airport Runway	224	0	224	0	0	0	0	224	0	0
Parker Flats LU Swap	0	0	0	0	0	709	709	709	0	0
Total										
	4,776	**-412**	**4,364**	**412**	**2,225**	**2,888**	**5,524**	**9,889**	**17,756**	**26,712**

1/25/2019

Note:

1. Designated Open Space includes lands not planned for development, based on directions from District staff.

Table 2.3 Historical and Projected Population

Recycled Water Master Plan

Marina Coast Water District

PRELIMINARY

Year	Population[1,2]	Annual Growth (%)
Historical Population		
2005	29,477	-
2006	29,154	-1.1%
2007	29,065	-0.3%
2008	29,533	1.6%
2009	29,743	0.7%
2010	30,840	3.7%
2011	31,141	1.0%
2012	31,445	1.0%
2013	31,752	1.0%
2014	32,062	1.0%
2015	32,375	1.0%
2016	33,346	3.0%
2017	34,347	3.0%
2018	35,377	3.0%
Projected Population		
2019	36,438	3.0%
2020	37,531	3.0%
2021	38,657	3.0%
2022	39,817	3.0%
2023	41,012	3.0%
2024	42,242	3.0%
2025	43,509	3.0%
2026	44,815	3.0%
2027	46,159	3.0%
2028	47,544	3.0%
2029	48,970	3.0%
2030	50,439	3.0%
2031	51,952	3.0%
2032	53,511	3.0%
2033	55,116	3.0%
2034	56,770	3.0%
2035	58,473	3.0%
2036	60,227	3.0%
2037	62,034	3.0%
2038	63,895	3.0%
2039	65,812	3.0%
2040	67,786	3.0%
2041	69,820	3.0%
2042	71,914	3.0%
2043	74,072	3.0%
2044	76,294	3.0%
2045	78,583	3.0%
2046	80,940	3.0%
2047	83,368	3.0%

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Note:

1. Population for years 2005 - 2015 extracted from Marina Coast Water District 2015 Urban Water Management Plan
2. Population for years 2016 - 2047 calculated assuming annual growth rate of 3.0% as directed by District staff.

CHAPTER 3 - SYSTEM PERFORMANCE AND DESIGN CRITERIA

This chapter presents the District's performance and design criteria, which was used in this analysis for evaluating existing and proposed distribution mains, storage reservoirs, and pump stations.

3.1 SUPPLY AVAILABILITY

The available recycled water supply for potential users within the District service area is based on supply agreements between M1W (formerly known as the Monterey Regional Water Pollution Control Agency) and the District, known as the Pure Water Delivery and Supply Project Agreement Between Monterey Regional Water Pollution Control Agency and Marina Coast Water District, which was adopted in April 2016 (2016 PWD Agreement). The agreement allocated water supplies for non-potable reuse with the District service area, and includes other uses as follows:

- **Advanced Water Treatment Facility (AWTF) Phase 1:** AWTF Phase 1 includes the expansion of the AWTF facility to produce an additional 600 acre-feet per year (AFY) of purified recycled water to for delivery to Fort Ord Reuse Authority land use jurisdiction members, in addition to the 3,700 AFY of purified recycled water delivery to the Seaside Groundwater Basin, for a total purified water production capacity of 4,300 AFY.

- **Advanced Water Treatment Facility (AWTF) Phase 2:** AWTF Phase 2 includes an additional 827 AFY, for a total delivery of 1,427 AFY, of purified recycled water to for delivery to Fort Ord Reuse Authority land use jurisdiction members, in addition to the 3,700 AFY of purified recycled water delivery to the Seaside Groundwater Basin, for a total purified water production capacity of 5,127 AFY.

Under the 2016 PWD Agreement, MCWD was responsible for the following:

- Securing right-of-way for the transmission main segment that traverses the District's service area.
- Conducting CEQA for the transmission main
- Completing design documents and construction contracts for the transmission main
- Finance, construct and install the transmission main facilities

3.2 STORAGE CRITERIA

The District recently completed the construction of the Blackhorse Reservoir, a 2.0 million gallon (MG) reservoir, and is connected to the transmission main constructed as part of the Pure Water Monterey Project. This storage reservoir is intended to provide operational equalization during peak demand periods or provide a limited source of recycled water supply when the M1W Pump Station in non-operational.

It is generally recommended that storage reservoirs be sized, at a minimum, to meet the difference between maximum day and peak hour demand. If opportunities arise for additional storage, the District may explore the option of providing more large scale storage reservoirs, which are capable providing supplemental supplies during high use periods of the year.

3.3 PRESSURE CRITERIA

Acceptable service pressures within distribution systems vary depending on various criteria and pressure zone topography. It is essential that the water pressure at the point of delivery be maintained within an acceptable range. Low pressures below 30 psi can cause undesirable flow reductions during high use periods, and especially when directly connecting irrigation systems to the recycled water system.

Excessively high pressures can cause delivery components to leak and valve seats to wear out prematurely. Additionally, high service pressures can cause unnecessarily high flow rates, which can result in wasted water. The District criteria for pressures in the recycled water delivery system, shown on Table 3.1, are summarized as follows:

- Maximum Delivery Pressure: 100 psi
- Minimum Delivery Pressure: 40 psi

It should be noted that due to the topography between the M1W pump station and the Blackhorse Reservoir, pressures in the transmission main are expected to exceed 100 psi. Therefore, any delivery connections directly connected to the transmission main, or any delivery turnouts intended to serve multiple customers, shall be fitted with a pressure reducing valve to ensure delivery pressure remain within the acceptable range.

3.4 PEAKING FACTORS AND DIURNAL CURVE

Recycled water demands vary seasonally, as they are typically heat dependent irrigation uses. Additionally, special regulations imposed by the Department of Public Health regulate irrigation times allowed for surfaces that may be contacted by people. Thus, irrigation peaking factors can be significant in recycled systems, as many users require the same time period and seasonal use period.

Water use conditions that are of particular importance to the recycled water distribution system include the average day demand (ADD), the maximum day demand (MDD), and the peak hour demand (PHD). The average day demand represents the annual water demand, divided by 365 days, since it is expressed in daily units. The winter demand typically represents the low month water demands and is used for simulating water quality analysis.

Table 3.1 Design and Planning Criteria Summary
Recycled Water Master Plan
Marina Coast Water District

PRELIMINARY

Design Parameter	Criteria	
Supply[1]	AWTF Phase 1: Maximum available recycled water supply equal to 600 afy	
	AWTF Phase 2: Maximum available recycled water supply equal to 1,427 afy	
Distribution Mains[2]	Distribution mains should be designed to satisfy the following criteria:	
	Maximum Pipeline Velocity:	8.5 ft/s
	Minimum Pipeline Velocity:	2.0 ft/s
	Maximum Pipeline Headloss:	8 ft/kft
	Minimum Acceptable Pipeline Diameter:	4-inch
Pump Stations	Replenish 2.0 MG Reservoir During Off-Demand Periods (15 hours)	
Pressure Reducing Valves	PRVs should be designed to meet Peak Hour Demand	
Demand Peaking Factors	Maximum Day Demand = 2.5 x Average Day Demand	
Service Pressure[3]	Maximum Delivery Pressure	100 psi
	Minimum Delivery Pressure	40 psi

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2/4/2019

Notes:
1. Source: "Pure Water Delivery and Supply Project Agreement" received from District staff April 7, 2017.
2. Source: 2006 Basis of Design Report, Table 5-1
3. Source: Recycled water operations plan received from District staff January 11, 2018.

3.4.1 Delivery Operations

District criteria stipulate that the use of recycled water for irrigation purposes must not exceed nine hours a day, specifically between the hours 9 PM and 6 AM unless otherwise approved by the district. For planning purposes it is assumed that the future recycled water customers will directly connect to the distribution system and receive the daily demand over a period of nine hours, as summarized on **Figure 3.1**.

It should be noted that some users may receive recycled water deliveries to onsite storage facilities, which would allow recycled water deliveries over a period greater than nine hours. For conservative planning purposes, it was assumed all users will receive deliveries over nine hours.

3.4.2 Maximum Day Demand

The maximum day demand (MDD) is the highest demand that occurs within a 24 hour day during a year and usually occurs during the summer months. This demand condition is typically used to evaluate storage and pumping conditions. Due to the lack of available daily demand data for the future recycled water system customers, a planning factor was assumed to develop the maximum day demands. This factor is generally consistent with previous planning efforts completed by the District and was approved by District staff.

The following equation is then used to estimate the maximum day demand, given the average day demand:

Maximum Day Demand = **2.5** x Average Day Demand

3.4.3 Peak Hour Demand

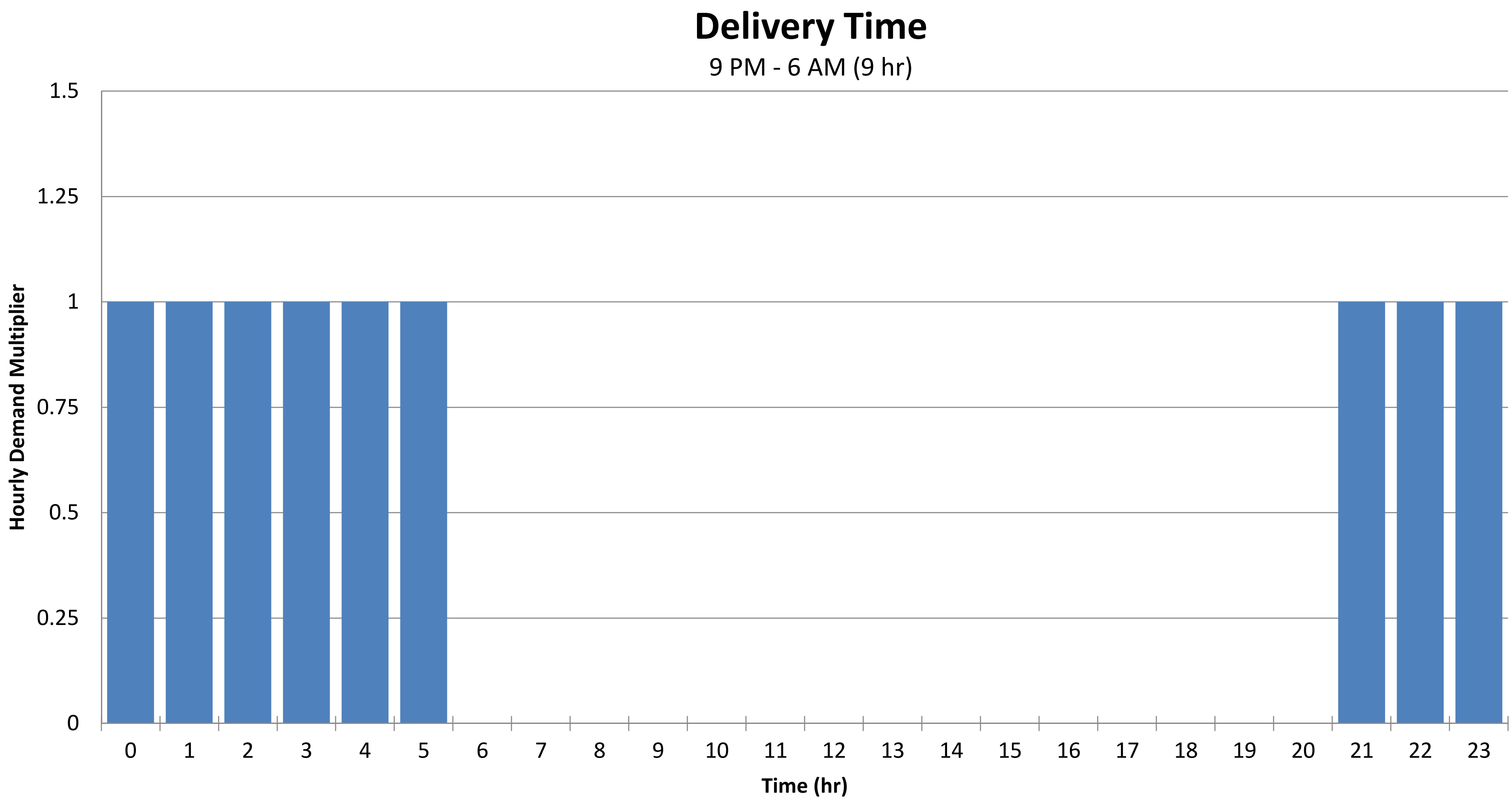
The peak hour demand (PHD) is another high demand condition that is used in the evaluation and design of distribution systems. The peak hour demand is the highest demand that occurs within a one hour period during a year, and is considered to be the largest single measure of the maximum demand placed on the distribution system.

The peak hour demand factor used for planning purposes is based on delivering the daily demand requirement over a period of nine hours. Based on this assumption the peak hour demand can then be calculated using the maximum day demand and the following equation:

Peak Hour Demand = **2.7** x Maximum Day Demand

3.5 TRANSMISSION AND DISTRIBUTION MAIN CRITERIA

Transmission and distribution mains are usually designed to convey the maximum expected flow condition. In municipal water systems, this condition is usually the greater of either the peak hour demand or the maximum day demand plus fire flow. The hydrodynamics of pipe flow create two additional parameters that are taken into consideration when evaluating or sizing water mains: head loss and velocity.



LEGEND **PRELIMINARY**

Note: Recycled water delivery hours based on 9 hour delivery schedule specified in "MCWD Recycled Water Project User's Handbook"

December 1, 2017

Figure 3.1
Proposed Delivery Pattern

Recycled Water Master Plan
Marina Coast Water District

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Head loss is a loss of energy within pipes that is caused by the frictional effects of the inside surface of the pipe and friction within the moving fluid itself. Head loss creates a loss in pressure which is undesirable in water distribution systems. Head loss, by itself, is not an important factor as long as the pressure criterion has not been violated. However, high head loss may be an indicator that the pipe is nearing the limit of its carrying capacity and may not have sufficient capacity to perform under stringent conditions.

The pipeline criteria that was used to size and evaluate the recycled water infrastructure is as follows:

- Maximum Headloss: 8 feet per 1,000 feet of pipeline
- Maximum Velocity: 8.5 feet per second
- Minimum Velocity: 2.0 feet per second
- Minimum Acceptable Pipeline Diameter: 4-inches

CHAPTER 4 – EXISTING RECYCLED WATER SYSTEM

This chapter provides a description of the District's existing recycled water system facilities and the recycled water supply quality.

4.1 EXISTING RECYCLED WATER SYSTEM INFRASTRUCTURE

The District's existing recycled water system consists of inactive areas of distribution and transmission pipeline that were constructed in anticipation of the delivery of recycled water. The District has required newer developments to install dual pipeline systems, with backflow prevention devices connected to the potable water system in the near term. As recycled water is made available to these developments, the systems will be switched to recycled water delivery, and potable water will only be used during periods of shortfall of recycled water.

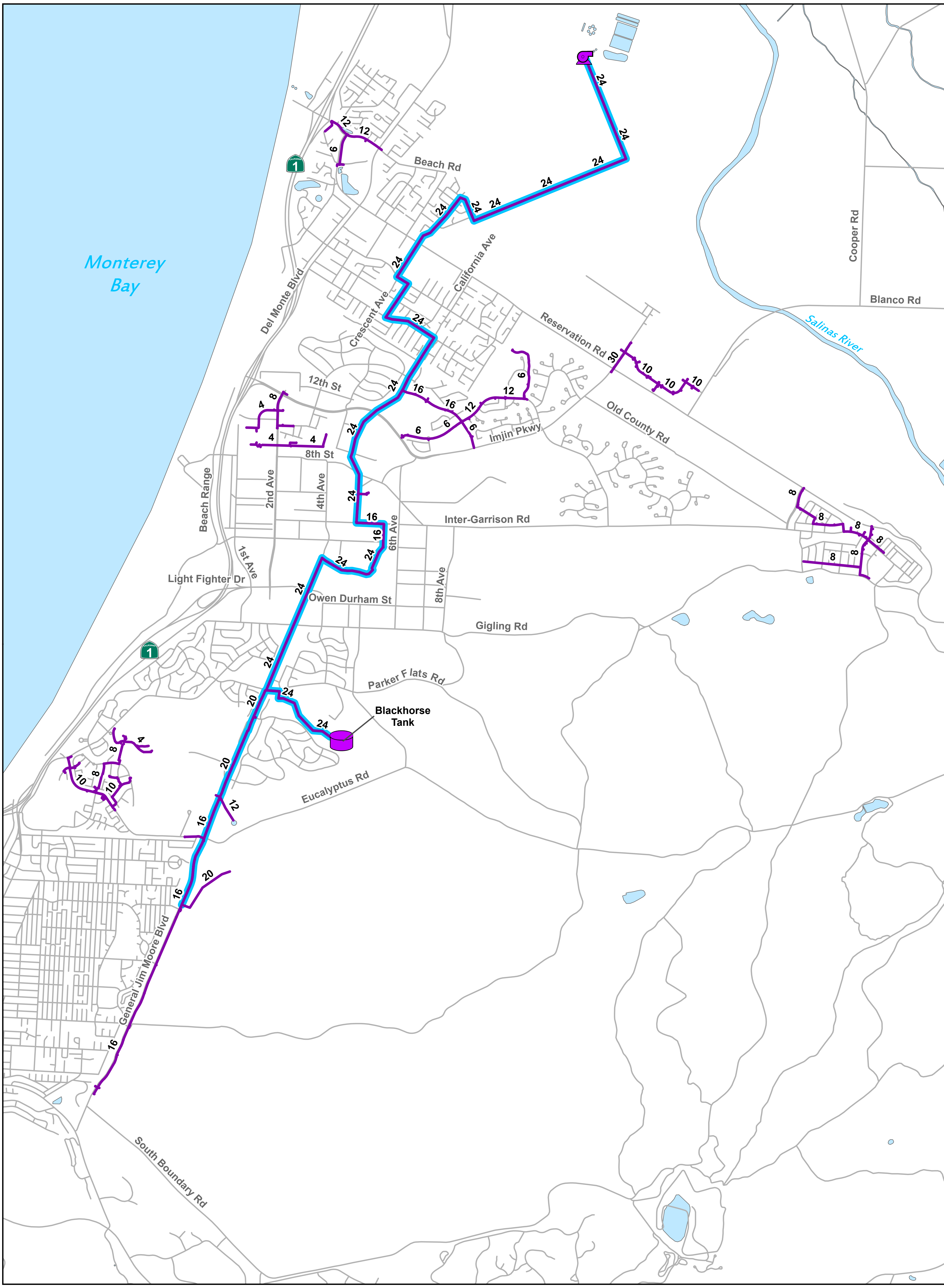
As shown on **Figure 4.1**, the District has constructed recycled water pipelines in proximity to areas of potential recycled water use in anticipation of future recycled water deliveries. Additionally, a portion of the PWM transmission main has been constructed along General Jim Moore Boulevard, generally south of Parker Flats Road.

4.2 SOURCE OF SUPPLY AND WATER QUALITY

As outlined in the 2016 Pure Water Delivery Supply Project Agreement, the District is allocated 600 AFY of initial recycled water supply from Phase 1 of the Pure Water Monterey project, with an increase of 827 AFY as part of Phase 2. Thus, the total agreement allocation of recycled water deliveries are estimated at 1,427 AFY. This supply will be treated at the Advanced Water Treatment Facility (AWTF) at the Monterey One Water (M1W) regional wastewater treatment plant. A pump station will deliver the District's allocated supply to the planned transmission and distribution system.

As part of this Master Plan, GHD performed a water quality review of the existing MCWD and Monterey One Water agreements (**Appendix A**). Their report, in part, summarizes the agreement that Monterey One Water has committed to delivering recycled water to MCWD that meets the applicable standards of water quality in accordance with State of California law, including but not limited to the Title 22 Standards set forth by the California Department of Public Health. As the MCWD municipal uses include landscape irrigation, Title 22 requires that the recycled wastewater meets the minimum disinfected tertiary treatment standards.

It should be noted that, as the recycled water produced at the Monterey One Water WWTP is processed through the Advanced Water Treatment Plant, and thus exceeds the tertiary effluent requirements. This is memorialized in the 2016 PWD Agreement and acknowledged by MCWD and Monterey One Water. The water used for landscape irrigation and other authorized users will meet the regulations consistent with Indirect Potable Reuse at the Seaside Groundwater Injection



Legend

Existing Modeled System

- Tank
- AWTF Pump Station
- Pipes
- PWM Transmission Main
- Streets
- Rivers/Streams
- Waterbodies

PRELIMINARY

0 0.25 0.5 1 Mile

Update: March 5, 2019

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File Path: P:\xGIS\GIS_Projects\Marina_Coast_WD\RecycledWater\MCWD_Fig4-1_ExistingSystem_030519.mxd

Figure 4.1
Existing Recycled Water System

Recycled Water Master Plan
Marina Coast Water District

Wells. This water meets turbidity requirements such that was quality does not exceed 0.2 NTU more than 5% of the time within a 24 hour period, and does not exceed 0.5 NTU at any time.

4.3 PUMP STATION

Monterey One Water has recently completed the Product Water Pump Station, which was sized to deliver approximately 5.0 million gallons per day at firm capacity via three 1,160 gallon per minute (gpm) pumps. There is a fourth pump at the station that is dedicated as standby capacity. The minimum capacity of the pump station is approximately 833 gpm. This pump station was designed to deliver water directly to the MCWD Blackhorse Reservoir and Groundwater Injection Wells in Seaside, thus the rated head of the pump station is approximately 470 feet.

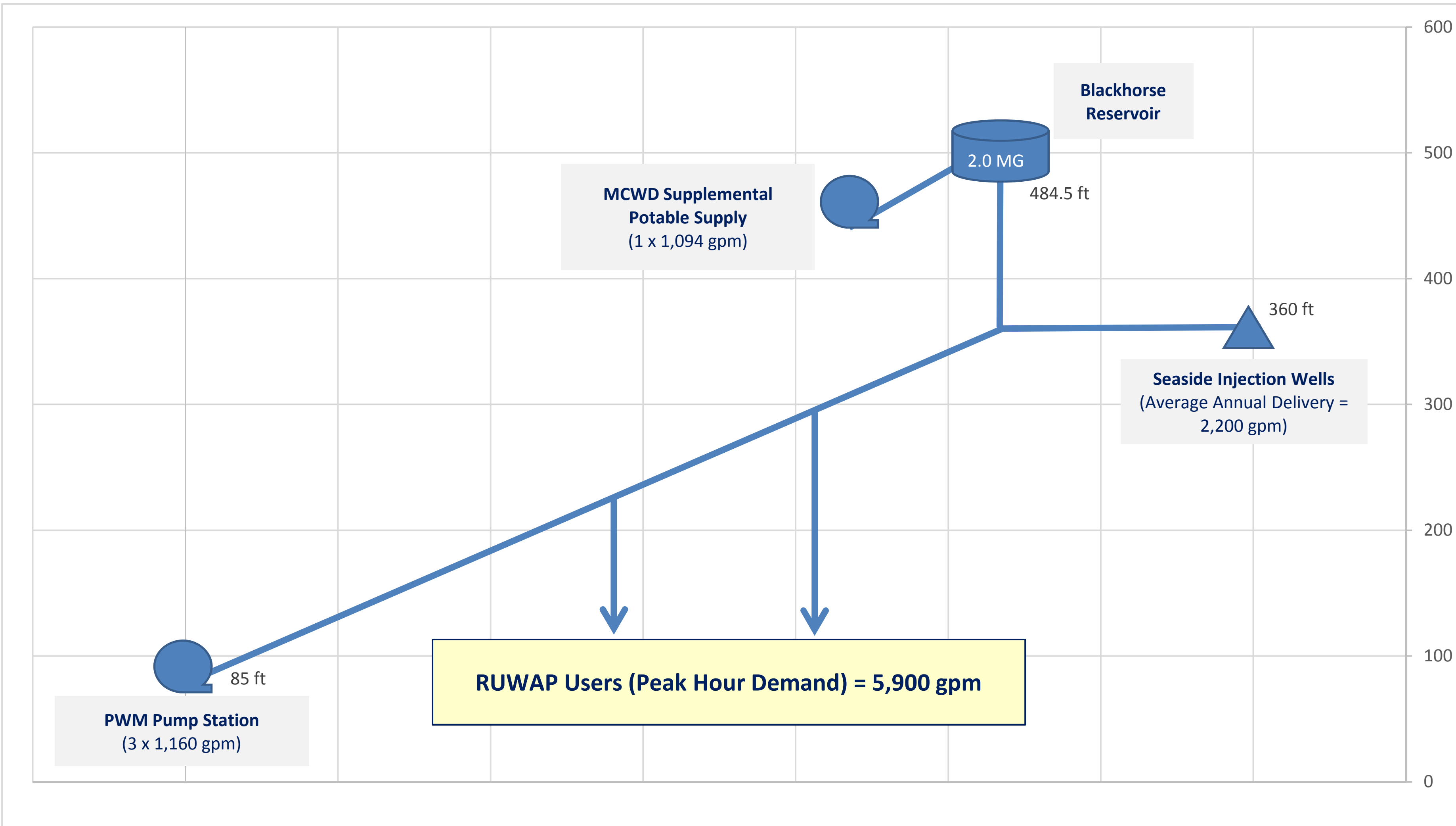
It should be noted that this pump station is designed to meet the average daily demand for the Seaside Groundwater Injection Wells (3,700 AFY) and of the MCWD recycled water demand allocation (1,427 AFY). To supplement the maximum day demands for peak night time irrigation at full buildout of Phase 2 of the MCWD recycled water users, a manual operated potable water connection to the Blackhorse Reservoir was constructed, that is capable of delivering 1,000 gpm to the delivery system. The connection will be supplied by a pump rated at 1,094 gpm and 39 feet of head. A connectivity schematic is shown on **Figure 4.2**, and which documents the interconnectivity between the PWM pipeline and pump station, the RUWAP users, Blackhorse Reservoir, and the Seaside Injection Wells.

4.4 WATER DISTRIBUTION PIPELINES

There are two critical components to the recycled water pipeline network, and which deliver water from the Advanced water Treatment Facility pump station and to the customers: the Pure Water Monterey Delivery Pipeline and the Regional Urban Water Augmentation Project Pipelines. These projects are discussed as follows:

- **Pure Water Monterey Delivery Pipeline:** This pipeline is 24-inches in diameter, with a small portion of constructed 16-inch pipeline, and was recently completed by MCWD as part of the 2016 PWM Agreement. This pipeline, nearly 8-miles in length, traverses the MCWD service area, through Central Marina and the Ord Community, before discharging at the Blackhorse Reservoir and continuing to the Seaside Groundwater Injection Wells. This pipeline capacity was planned for delivery of 3,700 AFY of groundwater injection demand, and 1,427 AFY of MCWD recycled water demand, as part of this Master Plan. The PWM delivery pipeline, consisting of nearly 10 miles of 16, 20, and 24-inch pipe is shown on **Figure 4.1**.

- **Regional Urban Water Augmentation Project (RUWAP):** MCWD has been proactively planning their recycled water delivery network as part of the RUWAP program, and which includes extending recycled water delivery pipelines from the PWM transmission main to the customers. Existing pipelines constructed as part of the RUWAP program are shown on **Figure 4.1** The pipelines were inventoried as part of this Master Plan and documented



LEGEND

PRELIMINARY

Blackhorse Tank

Planned Ground Water Recharge

Pump Stations

February 8, 2019

AKEL ENGINEERING GROUP, INC.

Figure 4.2
Connectivity Schematic

Recycled Water Master Plan

Marina Coast Water District

on **Table 4.1**. For each pipe diameter, the inventory lists the length in feet, as well as the total length in units of miles. This system has approximately 11.0 miles of pipeline.

4.5 STORAGE RESERVOIRS

Storage reservoirs are typically incorporated in the water system to provide water supply for operation during periods of high demand and for other emergencies. The District recently completed construction on the new 2.0 MG Blackhorse storage reservoir, located east of General Jim Moore Boulevard. This storage reservoir is intended to provide operational storage volume for the recycled water system during peak hour demand periods. The reservoir is 67 feet in diameter and has a floor elevation of 484.5 feet.

As discussed in a previous section, this reservoir is capable of supplemental fill off of the MCWD potable water system via a manual 1,094 gpm pump station at the tank site.

Table 4.1 Existing Recycled Water Pipeline Inventory

Recycled Water Master Plan

Marina Coast Water District

PRELIMINARY

Pipeline Diameter (in)	Length (ft)	(mi)	Percent of Total (%)
4	7,276	1.4	6.6%
6	7,914	1.5	7.1%
8	14,201	2.7	12.8%
10	9,862	1.9	8.9%
12	7,193	1.4	6.5%
14	1,658	0.3	1.5%
16	16,651	3.2	15.0%
20	4,433	0.8	4.0%
24	40,290	7.6	36.4%
30	1,334	0.3	1.2%
Total	**110,813**	**21.0**	100.0%

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2/4/2019

Notes:

1. Pipeline information based on CAD drawings provided by District Staff December 14, 2016.

CHAPTER 5 – RECYCLED WATER DEMANDS

This chapter summarizes the potential recycled water demands identified within the District's service area, the maximum day and peak hour demands for the potential future users, and demand diurnal patterns.

5.1 RECYCLED WATER DEMANDS

The following sections document the future recycled water demands for the Pure Water Monterey project and the future RUWAP users.

5.1.1 Pure Water Monterey Project

The total volume of recycled water delivered to the Seaside Groundwater Injection Well site as part of the Pure Water Monterey Project is anticipated to vary seasonally; these seasonal volumes are summarized as follows:

- Average Annual Delivery: 3.1 mgd (3,500 AFY)
- Maximum Winter Delivery: 4.3 mgd
- Minimum Summer Delivery: 1.4 mgd

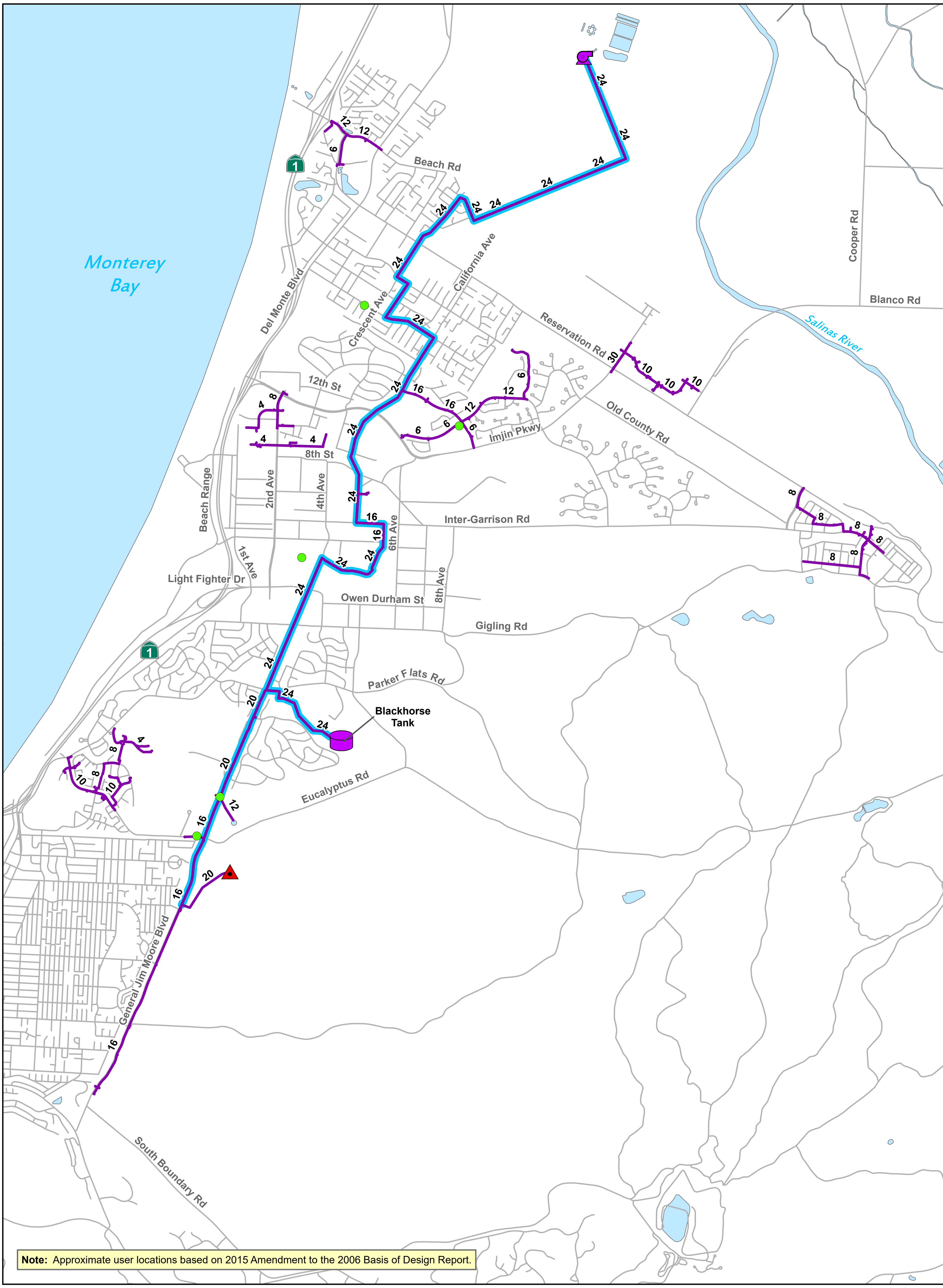
For evaluation purposes the average annual delivery rate of 3.1 mgd is included in the future system evaluation discussed in a later chapter. This delivery volume is assumed to be delivered concurrently with the RUWAP deliveries.

5.1.2 Regional Urban Water Augmentation Project

The 2006 Recycled Water Basis of Design Report (BODR) incorporates the potential recycled water users identified as part of the 2003 Regional Urban Recycled Water Distribution Pipeline study prepared by RBF Consulting and the 1996 Monterey Peninsula Reclaimed Water Urban Reuse Feasibility Study prepared by CH2MHill. These potential recycled water users were updated in 2015 and generally include landscape irrigation for parkstrips and medians, parks and play fields, schools, and golf courses. Additionally, the list of potential users includes demand estimates for future development, such as planned golf courses and schools.

The 2015 update to the BODR categorizes potential recycled water users into a long-term phasing plan for connecting future users. For the purposes of this master plan, and based on comments revising the phasing of the 2015 timeline for customers to come online, the RUWAP recycled water demands have been separated into three demand tiers and are summarized as follows:

- **Tier 1 (Imminent):** The Tier 1 users are planned for imminent connection to the recycled water system and are shown graphically on Figure 5.1 and summarized on Table 5.1. These users will utilize the entirety of the District's AWTF Phase 1 supply of 600 AFY.



Legend

- Tier 1 Users
- Planned Groundwater Recharge Location

Existing Modeled System

- Tank
- AWTF Pump Station
- Pipes
- PWM Transmission Main

- Streets
- Rivers/Streams
- Waterbodies

PRELIMINARY

0 0.25 0.5 1 Mile

N E S W

Update: March 5, 2019

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Figure 5.1
Future Users
Tier 1 (Imminent)

Recycled Water Master Plan
Marina Coast Water District

MARINA COAST WATER DISTRICT

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Table 5.1 Tier 1 (Imminent) Recycled Water Demands

Recycled Water Master Plan
Marina Coast Water District

PRELIMINARY

Customer Name	Use Location	Use Type	Estimated Annual Usage[1]	Delivery Information			
				Maximum Daily Usage[2]	Delivery Time[3]	Estimated Delivery Flow	
			(afy)	(gpd)	(hours)	(gpd)	(gpm)
Los Arboles	Marina	Play Field	25.6	57,084	9	152,224	106
Marina Heights	Marina - Fort Ord	Landscape	10.0	22,318	9	59,513	41
Bayonet/Blackhorse Golf Course	Seaside	Golf Course	491.4	1,096,613	9	2,924,302	2,031
Fitch School	Seaside	Play Field	11.0	24,552	9	65,473	45
CSUMB - Main Campus	CSUMB	Play Field	69.8	155,674	9	415,131	288
		Subtotal - Tier 1	**607.7**	**1,356,241**		**3,616,644**	**2,512**
Total Recycled Water Demands							
		Total - Tier 1	**607.7**	**1,356,241**		**3,616,644**	**2,512**

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3/4/2019

Notes:
1. Customer information and estimated daily usage extracted from Basis of Design Report inventory provided by MCWD staff September 4, 2018.
2. Maximum Daily Usage estimated assuming Maximum Day Demand = 2.5 x Average Daily Usage
3. Delivery Time of 9-hour assumes overnight flow delivery, from 9 PM to 6 AM.

- **Tier 2 (Near Term):** The users planned for service within the near term (5-year) horizon are shown graphically on **Figure 5.2** and summarized on **Table 5.2**. These users will utilize a portion of the District AWTF Phase 2 recycled water allocation of 827 AFY.

- **Tier 3 (Intermediate Term):** These users are planned for the intermediate (10-year) horizon, and are shown graphically on **Figure 5.3** and summarized on **Table 5.3**. These users are planned to utilize the remaining AWTF Phase 2 water supply allocation of 827 AFY. It should be noted that currently identified Tier 3 users exceed the allocation, and thus additional allocation would be required, or portions of these users will be excluded pending the expanded allocation.

- **Tier 4 (Long Term):** These users are planned for the long-term (15-year and beyond) horizon, and are summarized on **Table 5.4**. These users are in excess of the current capacity allocation agreement with M1W, and will require additional recycled water entitlements and improvements prior to service.

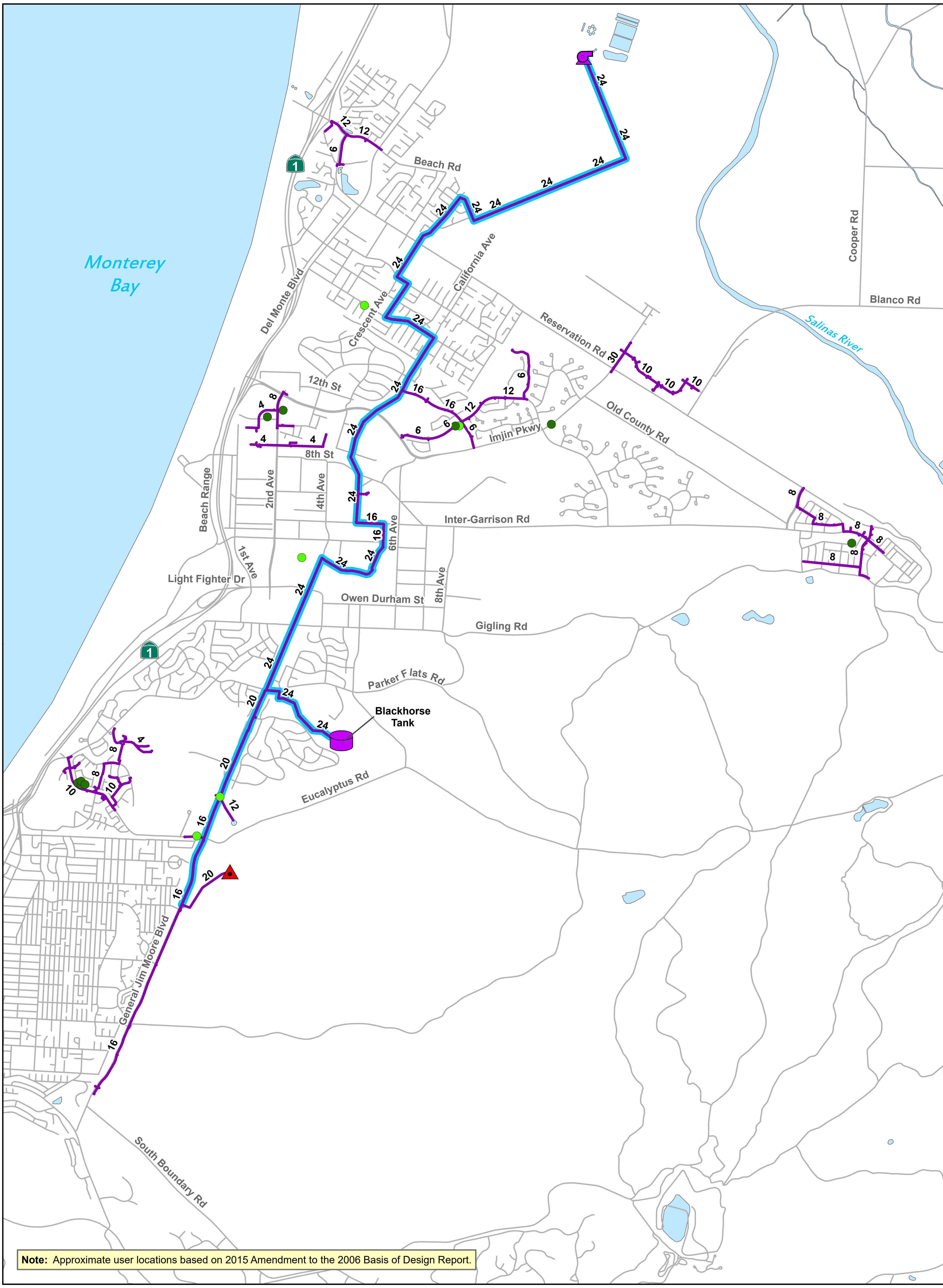
In addition to the average annual usage for each potential recycled water customer, **Table 5.1** through **Table 5.4** include two additional demand conditions that are summarized as follows:

- **Maximum Daily Delivery:** The maximum daily delivery represents the maximum volume of water delivered on the highest demand day of the year. This volume is based on the maximum day peaking factor of 2.5 applied to the average annual usage, as discussed in a previous chapter.

- **Estimated Delivery Flow:** The estimated delivery flow represents the total flow rate required to deliver the maximum daily delivery volume over the 9-hour delivery period.

5.2 DIURNAL DEMAND PATTERNS

As discussed in a previous chapter the District's criteria stipulate that recycled water must be applied between the hours of 9 P.M. and 5 A.M., which results in the application of a user's daily water volume over a nine hour period. Some users receiving recycled water deliveries to onsite storage facilities such as lakes or ponds may be able to receive deliveries over a 24-hour period. However, for evaluation purposes it was assumed that the users currently planned for service with the District's recycled water allocation will operate on a nine hour delivery schedule.



Legend

- Tier 1 Users
- Tier 2 Users
- Planned Groundwater Recharge Location

Existing Modeled System

- Tank
- AWTF Pump Station
- Pipes
- PWM Transmission Main

- Streets
- Rivers/Streams
- Waterbodies

PRELIMINARY

0 0.25 0.5 1 Mile

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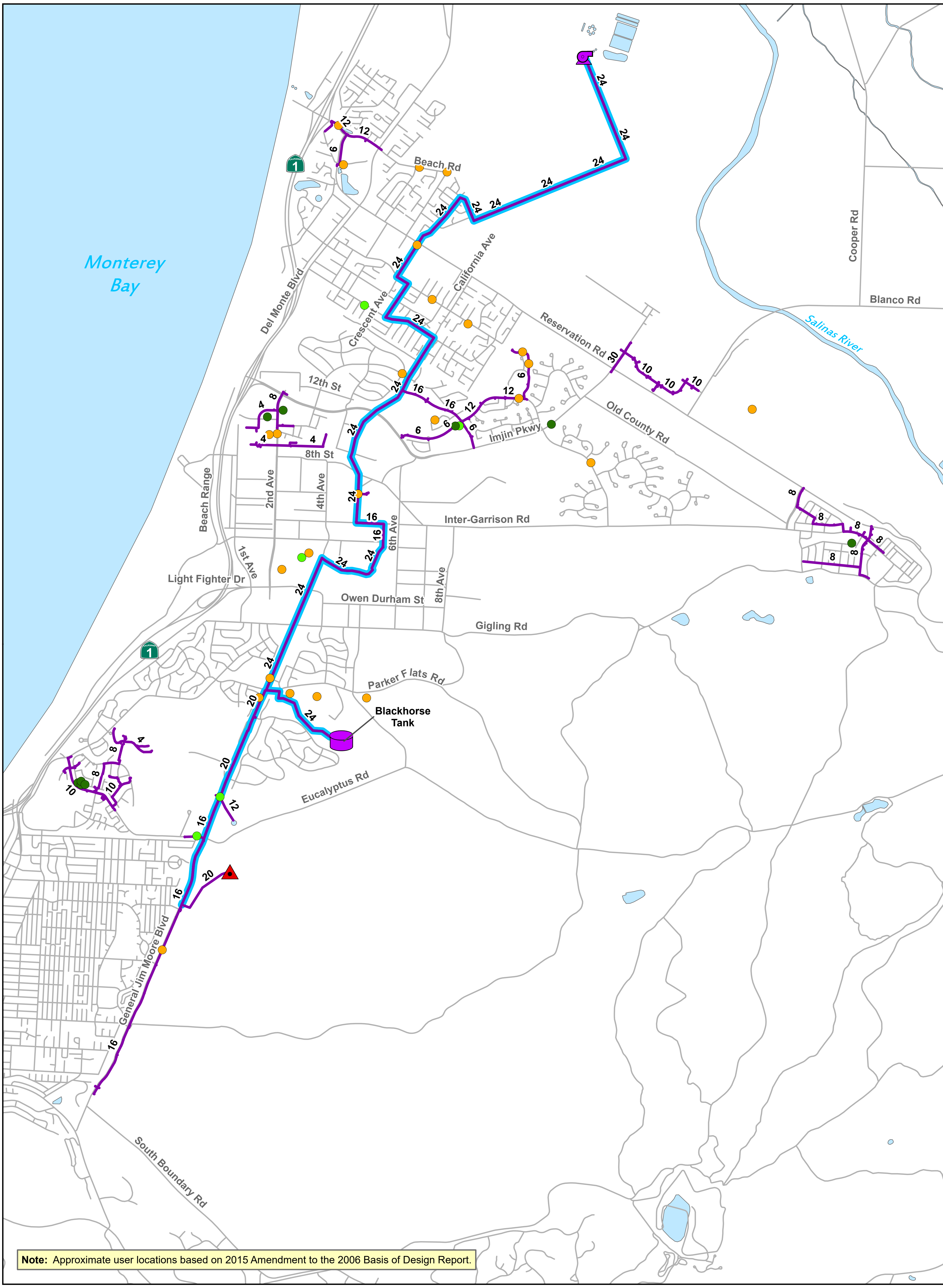
Figure 5.2
Future Users
Tier 2 (Near Term)

Recycled Water Master Plan
Marina Coast Water District

File Path: P:\xGIS\GIS_Projects\Marina_Coast_WD\RecycledWater\MCWD_Fig5-2_FutUsersTier2_030519.mxd



Note: Approximate user locations based on 2015 Amendment to the 2006 Basis of Design Report.

Legend

- Tier 1 Users
- Tier 2 Users
- Tier 3 Users
- Planned Groundwater Recharge Location

Existing Modeled System

- Tank
- AWTF Pump Station
- Pipes
- PWM Transmission Main

- Streets
- Rivers/Streams
- Waterbodies

PRELIMINARY

Update: March 5, 2019

0 0.25 0.5 1 Mile

N S W E

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Figure 5.3
Future Users
Tier 3 (Intermediate)

Recycled Water Master Plan
Marina Coast Water District

MARINA COAST WATER DISTRICT

File Path: P:\xGIS\GIS_Projects\Marina_Coast_WD\RecycledWater\MCWD_Fig5-3_FutUsersTier3_030519.mxd

Table 5.2 Tier 2 (Near Term) Recycled Water Demands

Recycled Water Master Plan
Marina Coast Water District

PRELIMINARY

Customer Name	Use Location	Use Type	Estimated Annual Usage[1] (afy)	Maximum Daily Usage[2] (gpd)	Delivery Information: Delivery Time[3] (hours)	Delivery Information: Estimated Delivery Flow (gpd)	Delivery Information: Estimated Delivery Flow (gpm)
Marina Heights	Marina - Fort Ord	Landsacpe	50.0	111,588	9	297,567	207
Median Landscaping	Marina - Fort Ord	Landsacpe	12.9	28,767	9	76,711	53
Dunes on Monterey Bay	Marina - Fort Ord	Landscape	30.0	66,953	9	178,540	124
East Garrison Housing	Monterey County	Landscape	75.6	168,691	9	449,842	312
Hayes School	Seaside	Play Field	5.5	12,276	9	32,736	23
Seaside Highlands	Seaside	Landscape/Play Field	89.7	200,175	9	533,800	371
Soper Field	Seaside	Play Field	8.3	18,414	9	49,105	34
		Subtotal - Tier 2	**271.9**	**606,863**		**1,618,301**	**1,124**
Total Recycled Water Demands							
		Tier 1 Demand Subtotal	**607.7**	**1,356,241**		**3,616,644**	**2,512**
		Total - (Tier 1 & 2)	**879.6**	**1,963,104**		**5,234,944**	**3,635**

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Notes:
1. Customer information and estimated daily usage extracted from Basis of Design Report inventory provided by MCWD staff September 4, 2018.
2. Maximum Daily Usage estimated assuming Maximum Day Demand = 2.5 x Average Daily Usage
3. Delivery Time of 9-hour assumes overnight flow delivery, from 9 PM to 6 AM.

Table 5.3 Tier 3 (Intermediate Term) Recycled Water Demands
Recycled Water Master Plan
Marina Coast Water District

PRELIMINARY

Customer Name	Use Location	Use Type	Estimated Annual Usage[1]	Maximum Daily Usage[2]	Delivery Information		
					Delivery Time[3]	Estimated Delivery Flow	
			(afy)	(gpd)	(hours)	(gpd)	(gpm)
Crumpton School	Marina	Play Field	12.9	28,849	9	76,930	53
Marina Vista School	Marina	Play Field	11.0	24,552	9	65,473	45
Olson School	Marina	Play Field	7.7	17,187	9	45,831	32
Reservation Road Medians	Marina	Landscape	3.0	6,748	9	17,994	12
Marina Landing Shopping	Marina	Landscape	4.7	10,543	9	28,115	20
Tate Park	Marina	Play Field	6.9	15,345	9	40,920	28
Windy Hill Park	Marina	Play Field	4.7	10,435	9	27,826	19
Marina Heights Development	Marina - Fort Ord	Landsacpe	173.4	386,884	9	1,031,692	716
Preston Park	Marina - Fort Ord	Landscape/Play Field	19.6	43,843	9	116,915	81
Future High School	Marina - Fort Ord	Play Field	44.0	98,209	9	261,891	182
Dunes on Monterey Bay	Marina - Fort Ord	Landscape/Play Field	37.2	83,114	9	221,638	154
Equestrian Center	Marina - Fort Ord	Landsacpe	10.0	22,318	9	59,513	41
Future Elementary School	Marina - Fort Ord	Play Field	13.8	30,690	9	81,841	57
CSUMB East Campus	CSUMB	Play field	52.3	116,623	9	310,996	216
CSUMB - Main Campus	CSUMB	Play field	151.2	337,542	9	900,113	625
CSUMB - Other	CSUMB	Landsacpe	37.8	84,345	9	224,921	156
UCMBEST	UCMBEST	Landscape	58.6	130,735	9	348,628	242
Veteran's Cemetery -- PHASE 1	Seaside/Monterey County	Cemetery	42.5	94,889	9	253,036	176
Parkway/Visitor/Retail Areas	Seaside	Landscape	52.9	118,084	9	314,890	219
Shea's Gym Athletic Field	Seaside	Landscape/Play Field	8.3	18,414	9	49,105	34
Stilwell Housing Area	Seaside	Landscape	47.2	105,432	9	281,151	195
Stilwell School	Seaside	Play Field	5.5	12,276	9	32,736	23
Marshall School	Seaside	Play Field	5.5	12,276	9	32,736	23
Chartwell School	Seaside	Play Field	5.5	12,276	9	32,736	23
		Subtotal - Tier 3	**816.2**	**1,821,611**	**9**	**4,857,629**	**3,373**
Cumulative Recycled Water Demands							
		Tier 1 & 2 Subtotal	**879.6**	**1,963,104**		**5,234,944**	**3,635**
		Total - Tier 1, 2, & 3	**1,695.9**	**3,784,715**		**10,092,573**	**7,009**

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Notes:
1. Customer information and estimated daily usage extracted from Basis of Design Report inventory provided by MCWD staff September 4, 2018.
2. Maximum Daily Usage estimated assuming Maximum Day Demand = 2.5 x Average Daily Usage
3. Delivery Time of 9-hour assumes overnight flow delivery, from 9 PM to 6 AM.

Table 5.4 Tier 4 (Long Term) Recycled Water Demands

Recycled Water Master Plan
Marina Coast Water District

PRELIMINARY

Customer Name	Use Location	Use Type	Estimated Annual Usage[1] (afy)	Delivery Information: Maximum Daily Usage[2] (gpd)	Delivery Time[3] (hours)	Estimated Delivery Flow (gpd)	Estimated Delivery Flow (gpm)
2030 Customers							
Library	Marina	Landscape	1.0	2,232	9	5,951	4
Del Mar School	Marina	Play Field	8.0	17,800	9	47,468	33
Locke Paddon Park	Marina	Landscape	1.0	2,232	9	5,951	4
Vince Di Maggio Park	Marina	Landscape	10.4	23,195	9	61,853	43
Median Landscaping	Marina	Landscape	2.8	6,326	9	16,869	12
Marina Station	Marina	Landscape	39.7	88,563	9	236,167	164
Cypress Knolls	Marina - Fort Ord	Landscape	9.4	21,086	9	56,230	39
Patton School	Marina - Fort Ord	Play Field	11.0	24,552	9	65,473	45
First Tee Golf Course	Seaside	Golf Course	209.2	466,820	9	1,244,854	864
Del Rey Oaks Golf Course	Del Rey Oaks	Golf Course	305.0	680,618	9	1,814,983	1,260
MPC Training Center	Monterey County	Landscape	21.6	48,288	9	128,767	89
Monterey Horse Park	Monterey County	Landscape	75.6	168,691	9	449,842	312
Youth Camp	Monterey County	Play Field	30.3	67,519	9	180,050	125
		Subtotal - Tier 3 (2030)	**725.0**	**1,617,922**		**4,314,459**	**2,996**
2035 Customers							
Marina Golf Course	Marina - Fort Ord	Golf Course	243.8	544,163	9	1,451,102	1,008
UCMBEST	UCMBEST	Landscape	68.8	153,452	9	409,205	284
State Park Wetlands	State Parks	Landscape	4.7	10,543	9	28,115	20
Future Parks	Army	Landscape	37.8	84,345	9	224,921	156
		Subtotal - Tier 3 (2035)	**355.1**	**792,504**		**2,113,343**	**1,468**
Cumulative Recycled Water Demands							
		Tier 1, 2, & 3 Subtotal	**1,695.9**	**3,784,715**		**10,092,573**	**7,009**
		Total - Tier 1, 2, 3, & 4	**2,775.9**	**6,195,141**		**16,520,376**	**11,472**

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Notes:
1. Customer information and estimated daily usage extracted from Basis of Design Report inventory provided by MCWD staff September 4, 2018.
2. Maximum Daily Usage estimated assuming Maximum Day Demand = 2.5 x Average Daily Usage
3. Delivery Time of 9-hour assumes overnight flow delivery, from 9 PM to 6 AM.

CHAPTER 6 - HYDRAULIC MODEL DEVELOPMENT

This chapter describes the development and calibration of the District's recycled water distribution system hydraulic model. The hydraulic model was used to evaluate the capacity adequacy of the planned users.

6.1 OVERVIEW

Hydraulic network analysis has become an effectively powerful tool in many aspects of water distribution planning, design, operation, management, emergency response planning, system reliability analysis, fire flow analysis, and water quality evaluations. The District's hydraulic model was used to evaluate the capacity adequacy of the existing system and to plan its expansion to service anticipated future growth.

6.2 MODEL SELECTION

The District's hydraulic model combines information on the physical characteristics of the water system (pipelines, pump station, valves, and the storage reservoir) and operational characteristics (how they operate). The hydraulic model then performs calculations and solves series of equations to simulate flows in pipes and calculate pressures at nodes or junctions.

There are several network analysis software products that are released by different manufacturers, which can equally perform the hydraulic analysis satisfactorily. The selection of a software depends on user preferences, the distribution system's unique requirements, and the costs for purchasing and maintaining the software.

The District's does not have a previous model for the combined RUWAP and PWM systems. As part of the PWM design and construction effort, a baseline model was developed in Bentley's WaterGems. As the design report was available, and the District elected to utilize the InfoWater model by Innovyze, the hydraulic model was redeveloped using available design and mapping documents. The model has an intuitive graphical interface and is directly integrated with ESRI's ArcGIS (GIS).

6.3 HYDRAULIC MODEL DEVELOPMENT

Developing the hydraulic model included skeletonization, digitizing and quality control, developing pipe and node databases, and water demand allocation.

6.3.1 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, while reducing complexities of large systems, which will reduce the time of analysis while maintaining accuracy, but will also comply with limitations imposed by the computer program. Due to the small nature of the recycled water system, there was not a need to skeletonize the model.

6.3.2 Pipes and Nodes

Computer modeling requires the compilation of large numerical databases that enable data input into the model. Detailed physical aspects, such as pipe size, pipe elevation, and pipe lengths, contribute to the accuracy of the model.

Pipes and nodes represent the physical aspect of the system within the model. A node is a computer representation of a place where demand may be allocated into the hydraulic system, while a pipe represents the distribution and transmission aspect of the water demand. In addition, reservoir dimensions and capacities, and pump station capacity and design head, and pressure reducing valve settings were also included in the hydraulic model.

6.3.3 Digitizing and Quality Control

The District's existing recycled water distribution system was digitized in GIS using several sources of data and various levels of quality control. The data sources included the District's existing CAD database, and various planning and design documents related to the PWM and RUWAP program.

After reviewing the available data sources, the hydraulic model was developed and verified by District staff. Using the existing GIS version of the system, as well as the existing hydraulic model, this project developed the recycled water system in GIS. Resolving discrepancies in data sources was accomplished by graphically identifying identified discrepancies and submitting it to engineering and public works staff for review and comments. District comments were incorporated in the verified model.

6.3.4 Demand Allocation

Demand allocation consists of assigning recycled water demand values to the appropriate nodes in the model. The goal is to distribute the demands throughout the model to best represent actual system response.

The existing demand distribution was obtained from mapping provided by District staff and demands from the Basis of Design Report. The Basis of Design Report itemized each of the potential users by a numbered identifier and the corresponding mapping had points with the number. Based on that data, each point represented a user, and the corresponding demand was allocated to the nearest recycled water infrastructure in the model.

6.4 MODEL CALIBRATION

The recycled water infrastructure is new and users are in the process of connection to the PWM pipeline. As connections are made, and the system begins to operate under typical demand loading, and the Seaside Groundwater Injection Wells are utilized, it is recommended that the hydraulic model undergo a calibration effort to accurately reflect the constructed system conditions. The hydraulic model developed as part of this master plan is considered planning level, and reflects the design documents referenced as part of the model development process.

CHAPTER 7 - EVALUATION AND PROPOSED IMPROVEMENTS

This section presents a summary of the recycled water system evaluation and identifies improvements necessary to serve future users.

7.1 OVERVIEW

The hydraulic model was used for evaluating the distribution system and determining the capacity adequacy of the RUWAP pipelines. This included evaluating the existing pipelines to determine if any deficiencies were present, and sizing the connections to the PWM transmission main.

The criteria used for evaluating the capacity adequacy of the recycled water distribution system facilities (transmission mains, storage reservoirs, and booster stations) was discussed and summarized in the System Performance and Design Criteria chapter.

The demands included for the hydraulic model, and used as a part of this master plan evaluation are as follows:

- **Seaside Groundwater Injection Wells:** The groundwater injection facility demand was assumed at average annual usage (approximately 3,500 AFY) during the hydraulic analysis. While the 2016 PWD Agreement stipulates the injection facility may receive a maximum day delivery of up to nearly 4,500 AFY, it is assumed this delivery will occur in months when the District's recycled water demands are lowest.
- **RUWAP Distribution System:** Under the AWTF Phase 1 supply conditions, it is assumed the recycled water distribution system is conveying a peak delivery flow of approximately 2,500 gpm. Under the AWTF Phase 2 supply conditions, it is assumed the recycled water distribution system is conveying a peak delivery flow of approximately 5,900 gpm. These demands are equivalent to the previously allocated 2016 PWD Agreement, and peaked for seasonal usage.

A recycled water supply capacity analysis for the AWTF Phase 1 and AWTF Phase 2 is summarized on Table 7.1. This capacity analysis documents the peak delivery requirements for both AWTF phasing, available pump station supply capacities, and required storage volume from Blackhorse Reservoir. As is shown on Table 7.1 the existing Blackhorse reservoir is appropriately sized to meet the difference between peak delivery demands and the available pumping capacity, which includes the AWTF pump station and the connection to the potable water system.

7.2 PLANNED IMPROVEMENTS

This master plan evaluated the deliveries to the RUWAP identified users, which were included in the 2006 BODR. This report identified the users, quantified their demands, and proposed connection projects to meet the needs of the users. MCWD staff provided the BODR report to

Table 7.1 Recycled Water Capacity Analysis

Recycled Water Master Plan
Marina Coast Water District

PRELIMINARY

	AWTF Phase 1 Supply	AWTF Phase 2 Supply	
Peak Delivery Requirements			
RUWAP Peak Delivery Requirement[1]	2,484	5,908	gpm
Seaside Groundwater Injection Wells[2]	2,174	2,174	gpm
Total Delivery Requirement	4,658	8,081	gpm
Pump Station Supply Capacities			
AWTF Pump Station Firm Capacity (3 x 1,160 gpm)	3,480	3,480	gpm
Potable System Connection	1,000	1,000	gpm
Total Available Pumping Capacity	4,480	4,480	gpm
Capacity Analysis			
Peak Delivery Requirement	4,658	8,081	gpm
Available Pumping Capacity	4,480	4,480	gpm
Supply Required from Storage	**-178**	**-3,601**	gpm
Storage Requirement[3]	**0.10**	**1.94**	MG

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Notes:

1. RUWAP peak delivery requirements based on the following:
   AWTF Phase 1: Deliver 1,500 AFY (600 AFY x 2.5) over 9 hours
   AWTF Phase 1: Deliver 3,568 AFY (1,427 AFY x 2.5) over 9 hours
2. Delivery requirement equal to average annual volume of 3,500 AFY
3. Volume supplied assumes 9-hour discharge at required flow rate

Akel Engineering Group, Inc, and was incorporated into this master plan. The demands for the recycled water system were integrated into the hydraulic model, and improvements were documented to connect up to 1,427 AFY of average recycled water demands.

The improvement recommendations are shown on **Figure 7.1**, and documented on **Table 7.2**. A discussion of the pipeline and pressure reducing valve improvements are included in the following sections.

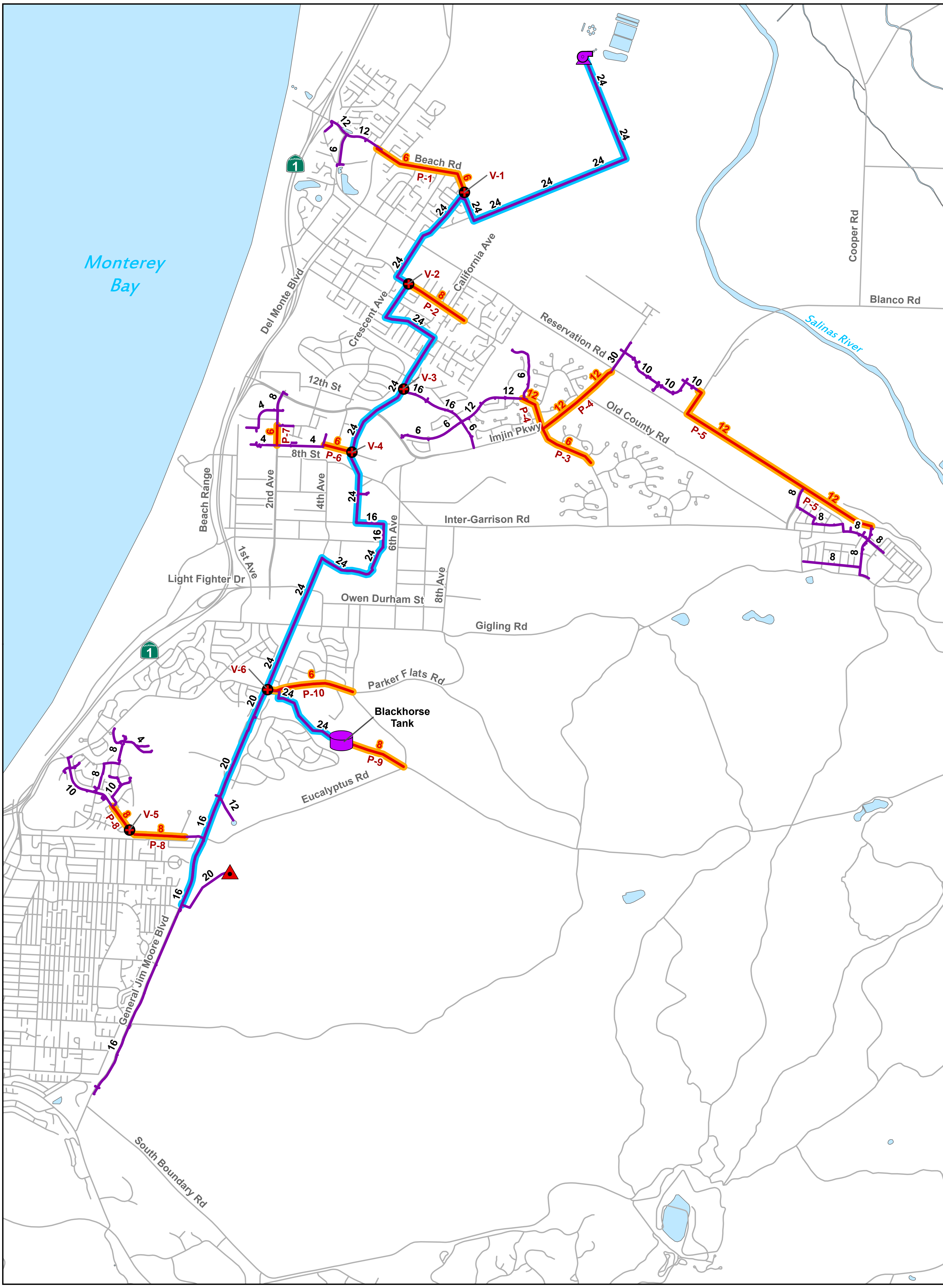
7.2.1 Pipeline Improvements

This section documents pipeline improvements within the Marina Coast recycled water service area.

- **P-1**: Construct a new 6-inch pipeline in Beach Road from Del Monte to Crescent Avenue.
- **P-2:** Construct a new 8-inch pipeline in Carmel Avenue from Vaughn Avenue to Crumpton Lane.
- **P-3:** Construct a new 6-inch pipeline in Abrams Road from Imjin Parkway to Bunker Hill Drive.
- **P-4:** Construct a new 12-inch pipeline in Abrams Road and Imjin Parkway from MacArthur Drive to Reservation Road.
- **P-5:** Construct a new 12-inch pipeline in Reservation Road from Blanco Road to East Garrison.
- **P-6:** Construct a new 12-inch pipeline in 9th Street from Sea Glass Avenue to 5th Avenue.
- **P-7:** Construct a new 6-inch pipeline in 2nd Avenue from 10th Street to 9th Street.
- **P-8:** Construct a new 8-inch pipeline in Coe Avenue from Pacific Crest Drive to Paralta Avenue.
- **P-9:** Construct a new 8-inch pipeline in the future right-of-way from Blackhorse Reservoir to Eucalyptus Road. It should be noted that this pipeline includes demands from the potential City of Seaside First Tee Golf Course Project. Service of this golf course will require further hydraulic analysis pending finalized delivery location and may require the construction of an additional pump station.
- **P-10:** Construct a new 8-inch pipeline in Normandy Road from General Jim Moore Boulevard to the Veteran's Cemetery.

7.2.2 Pressure Reducing Valves

This section documents pressure reducing valve improvements for the recycled water distribution system. It should be noted that for planning purposes this evaluation assumed a minimum



Legend

Planned Groundwater Recharge Location

Future Improvements

- Valves
- Distribution Pipelines

Existing Modeled System

- Tank
- AWTF Pump Station
- Pipes
- PWM Transmission Main

- Streets
- Rivers/Streams
- Waterbodies

PRELIMINARY

0 0.25 0.5 1 Mile

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File Path: P:\xGIS\GIS_Projects\Marina_Coast_WD\RecycledWater\MCWD_Fig8-1_CapitalImp_030519.mxd

Figure 7.1 Future Recycled Water System

Recycled Water Master Plan
Marina Coast Water District

Table 7.2 Schedule of Improvements

Recycled Water Master Plan

Marina Coast Water District

PRELIMINARY

Improvement No.	Improv. Type	Alignment	Limits	Improvement Details			
Distribution Pipeline Improvements				Existing Diameter (in)	New/Parallel/ Replace	Diameter (in)	Length (ft)
P-1	Pipeline	Beach Rd	From Del Monte to Crescent Ave	-	New	6	4,000
P-2	Pipeline	Carmel Ave	From Vaughn Ave to Crumpton Ln	-	New	8	2,500
P-3	Pipeline	Abrams Dr	From Imjin Rd to Bunker Hill Dr	-	New	6	2,300
P-4	Pipeline	Abrams Rd, Imjin Rd	From MacArthur Dr to Reservation Rd	-	New	12	4,875
P-5	Pipeline	Reservation Road	From Blanco Rd to East Garrison	-	New	12	9,100
P-6	Pipeline	9th St	From Sea Glass Ave to 5th Ave	-	New	6	1,050
P-7	Pipeline	2nd Ave	From 10th St to 9th St	-	New	6	750
P-8	Pipeline	Coe Ave	From Pacific Crest Dr to Paralta Ave	-	New	8	1,500
P-9	Pipeline	Future ROW	From Blackhorse Reservoir to Eucalyptus Rd	-	New	8	2,550
P-10	Pipeline	Normandy Rd	From General Jim Moore Blvd to Parker Flats Rd	-	New	6	3,250
Valve Improvements				New/Replace	Prelminary Size (in)		
PRV-1	PRV	Intersection of Beach Rd and Crescent Ave		New	4		
PRV-2	PRV	Intersection of Carmel Ave and Vaughn Ave		New	4		
PRV-3	PRV	California Ave s/o 3rd Ave		New	6		
PRV-4	PRV	Intersection of 9th St and 5th Ave		New	4		
PRV-5	PRV	Intersection of Coe Ave and Buttercup Blvd		New	4		
PRV-6	PRV	Intersection of General Jim Moore Blvd and Normandy Rd		New	4		

pressure reducing valve size of 4-inches. However, District staff may evaluate reduced valve sizes during design of the distribution system when peak delivery requirements are finalized.

- **PRV-1**: Construct a new 4-inch pressure reducing valve at the intersection of Beach Road and Crescent Avenue.
- **PRV-2**: Construct a new 4-inch pressure reducing valve at the Intersection of Carmel Avenue and Vaughn Avenue.
- **PRV-3**: Construct a new 6-inch pressure reducing valve at California Avenue south of 3rd Avenue.
- **PRV-4**: Construct a new 4-inch pressure reducing valve at the intersection of 9th Street and 5th Avenue.
- **PRV-5**: Construct a new 4-inch pressure reducing valve at the intersection of Coe Avenue and Buttercup Boulevard.
- **PRV-6**: Construct a new 4-inch pressure reducing valve at the intersection of General Jim Moore Boulevard and Normandy Road.

7.3 LONG-TERM SUPPLY AND DELIVERY NEEDS

This section is intended to address the potential long-term supply and delivery needs for the MCWD recycled water system. This includes impacts to the recycled water supply from Monterey One Water, and potential for future expansion of the MCWD recycled water system.

7.3.1 Long-Term Recycled Water Supply and Demand

The District is currently entitled to approximately 1,427 AFY under the 2016 PWD Agreement. This agreement is satisfied under 2 phases of expansion at the Advanced Water Treatment Facility for Monterey One Water, and under the Phase 1 demands for the RUWAP. According to the 2019 Sewer Master Plan (2019 SMP), the District averages approximately 1,200 AFY discharge of flow to the Central Marina outfall, and an additional 950 AFY at the Ord Community outfall. The total discharge of approximately 2,150 AFY exceeds the current recycled water agreement allocation of 1,427 AFY. Additionally, as development occurs within the MCWD service area, the 2019 SMP anticipates flows will increase to approximately 5,600 AFY at buildout.

As discussed in the GHD report, MCWD has adopted development code that requires the installation of recycled water pipelines to serve all recreational and common irrigated open space areas within new developments, subject to the Monterey County Department of Environmental Health and State Department of Public Health approval. The City of Seaside has adopted even more stringent requirements, which stipulate that residential front yards require plumbing for potential future recycled water, in addition to recreational and common areas. As sewer flows are expected to increase, and MCWD has committed to using recycled water as an in-lieu source of supply, it is recommended that the District continue to explore opportunities to increase their recycled water entitlements at the Monterey One Water Advanced Water Treatment Plant.

7.3.2 Impacts to Recycled Water Infrastructure

Currently, the District's recycled water infrastructure was designed and has been constructed in accordance with the PWM and RUWAP findings. As flows continue to increase to the Monterey One Water Treatment Plant, and the need for supplemental water supply increases, the District should continue to explore the expansion of its recycled water facilities. This will likely include an agreement similar to the 2016 PWD Agreement, and include the following:

- Construction of additional advanced water treatment capacity at the treatment plant
- Construction of additional pumping capacity at the Product Water Pumping Facility
- Construction of new pipeline conveyance and storage facilities to meet the additional demand needs

It should be noted that the BODR identified demands that exceed the current MCWD entitlements, and thus there is a current market for additional supplemental recycled water. If additional entitlements are secured and new facilities are constructed to deliver recycled water to MCWD users, it is recommended that additional capacity be constructed in the new booster station at the Product Water Pumping Facility.

7.3.3 Groundwater Injection Barrier Project

As part of ongoing efforts to mitigate seawater intrusion in the groundwater aquifers from which the District's existing domestic water wells supply the potable water system, the District has reviewed the possible construction of groundwater injection facilities in the Central Marina service area. This project is currently in the conceptual phase and would potentially include the expansion of the AWTF, a new AWTF booster pump station, pipelines from the transmission facilities to the injection site, and multiple monitoring wells.

CHAPTER 8 – CAPITAL IMPROVEMENT PROGRAM

This chapter provides a summary of the recommended recycled water system improvements to accommodate anticipated users within the 2016 PWD Agreement. 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 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, Akel experience on other master planning projects, and input from District staff. 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**. Recycled water pipeline unit costs are based on length of pipes, in feet. Storage reservoir unit costs are based on capacity, per million gallons (MG). Pump Station costs are based on an equation that replaces the pump curve.

The unit costs are intended for developing the Order of Magnitude estimate and do not account for site specific conditions, labor and material costs during the time of construction, final project scope, implementation schedule, detailed utility and topography surveys for reservoir sites, investigation of alternative routings for pipes, and other various factors. The capital improvement program included in this report accounts for construction and project-related contingencies as described in this 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 Recycled Water Master Plan were benchmarked using a 20-City national average ENR CCI of 11,089 reflecting a date of June 2018.

8.2.3 Construction Contingency Allowance

Knowledge about site-specific conditions for each proposed project is limited at the master planning stage; therefore, construction contingencies were used. The estimated construction costs in this master plan include a **48.5 percent** contingency allowance to account for unforeseen events and unknown field conditions.

Table 8.1 Unit Costs

Recycled Water Master Plan
Marina Coast Water District

PRELIMINARY

Pipelines	
Pipe Size (in)	**Cost**[2] ($/lineal foot)
6	$107
8	$142
12	$213
16	$256
18	$276
20	$316
24	$346
30	$383
36	$451
Pump Stations	
Estimated Pumping Station Unit Cost ($/gpm), where Q is equal to the total station capacity in gpm	
Construct New Pump Station	Unit Cost ($/gpm) = 191.99 x $e^{-0.0001 \times Q}$
Upgrade Existing Pump Station	Unit Cost ($/gpm) = 160.97 x $e^{-0.00008 \times Q}$
Pressure Reducing Valves	
Size (in)	**Cost** ($)
PRV	$73,000
Storage Reservoirs[2]	
≤1.0 MG	$2.92
1.1 MG-3.0 MG	$2.33
3.1 MG - 5.0 MG	$1.68
> 5 MG	$1.25

AKEL ENGINEERING GROUP, INC.

3/1/2019

Notes:

1. Construction costs estimated using June 2018 ENR CCI of 11,089
2. Tank costs were adjusted to reflect recent construction for a 1.5 MG tank, as provided by District staff on 2/7/2019.

8.2.4 Project Related Costs

The capital improvement costs also account for project-related costs, comprising of engineering design, project administration (developer and District staff), construction management and inspection, and legal costs. The project related costs in this master plan were estimated by applying an additional **25 percent** to the estimated construction costs.

8.3 CAPITAL IMPROVEMENT PROGRAM

The Capital Improvement Program costs for the projects identified in this master plan for mitigating existing system deficiencies and for serving anticipated future growth throughout the District are summarized on **Table 8.2**.

Each improvement was assigned a unique coded identifier associated with the improvement type and is summarized graphically on **Figure 8.1**. The estimated construction costs include the baseline costs plus **48.5 percent** contingency allowance to account for unforeseen events and unknown field conditions, as described in a previous section. Capital improvement costs include the estimated construction costs plus **25 percent** project-related costs (engineering design, project administration, construction management and inspection, and legal costs).

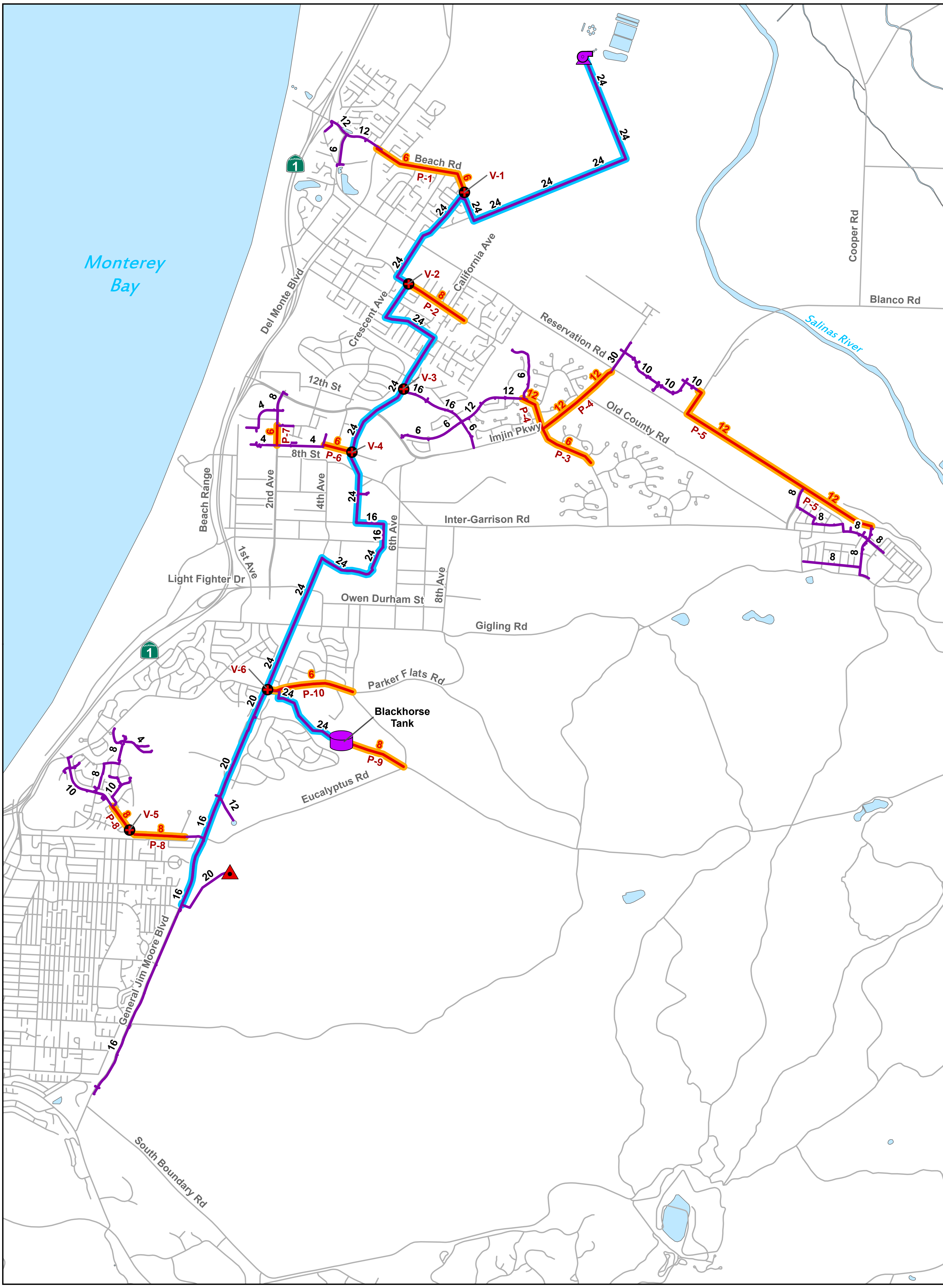
The AWTF pump station, PWM transmission mains, and Blackhorse reservoir were recently constructed and are subject to a cost sharing agreement with Monterey One Water, and as such, they are included in the Capital Improvement Program table at this time. The costs shown on **Table 8.2** were provided by District staff and are assumed to include any associated planning contingencies.

8.3.1 Recommended Cost Allocation Analysis

Cost allocation analysis is needed to identify improvement funding sources, and to establish a nexus between development impact fees and improvements needed to service growth. In compliance with the provisions of Assembly Bill AB 1600, the analysis differentiates between the project needs of servicing existing users and for those required to service anticipated future developments. The cost responsibility is based on model parameters for existing and future land use, and may change depending on the nature of development. **Table 8.2** lists each improvement, and separates the cost by responsibility between existing and future users.

8.3.2 Construction Triggers

Construction triggers for the users are generally based on the Phase of the Advanced Water Treatment Facility, and thus have been included accordingly in **Table 8.2**. It should be noted that District staff have been proactively constructing recycled water pipeline, and many of the users require a connection to the PWM transmission main, with distribution piping in place. Thus, it is recommended that as the AWTF upgrades are completed, the pipeline connections be completed thereafter.



Legend

- Planned Groundwater Recharge Location

Future Improvements

- Valves
- Distribution Pipelines

Existing Modeled System

- Tank
- AWTF Pump Station
- Pipes
- PWM Transmission Main

- Streets
- Rivers/Streams
- Waterbodies

PRELIMINARY

0 0.25 0.5 1 Mile

Update: March 5, 2019

AKEL ENGINEERING GROUP, INC.

File Path: P:\xGIS\GIS_Projects\Marina_Coast_WD\RecycledWater\MCWD_Fig8-1_CapitalImp_030519.mxd

Figure 8.1 Capital Improvement Program

Recycled Water Master Plan
Marina Coast Water District

Table 8.2 Capital Improvement Program
Recycled Water Master Plan
Marina Coast Water District

PRELIMINARY

Improv. No.	Improv. Type	Alignment	Limits	Improvement Details				Infrastructure Costs		Baseline Construction Cost	Estimated Construction Cost[1]	Capital Improvement Cost[2]	Suggested Cost Allocation				Cost Sharing	
								Unit Cost ($/unit)	Infr. Cost ($)	($)	($)	($)	Existing Users	Future Users	Central Marina	Fort Ord Community	Central Marina	Fort Ord Community
Distribution Pipeline Improvements[3]				Existing Diameter (in)	New/Parallel /Replace	Diameter (in)	Length (ft)											
P-1	Pipeline	Beach Rd	From Del Monte to Crescent Ave	-	New	6	4,000	107	428,000	428,000	635,600	794,500	0%	100%	100%	0%	794,500	0
P-2	Pipeline	Carmel Ave	From Vaughn Ave to Crumpton Ln	-	New	8	2,500	142	355,000	355,000	527,200	659,000	0%	100%	100%	0%	659,000	0
P-3	Pipeline	Abrams Dr	From Imjin Rd to Bunker Hill Dr	-	New	6	2,300	107	246,100	246,100	365,500	456,900	0%	100%	0%	100%	0	456,900
P-4	Pipeline	Abrams Rd, Imjin Rd	From MacArthur Dr to Reservation Rd	-	New	12	4,875	213	1,038,375	1,038,400	1,542,100	1,927,700	0%	100%	0%	100%	0	1,927,700
P-5	Pipeline	Reservation Road	From Blanco Rd to East Garrison	-	New	12	9,100	213	1,938,300	1,938,300	2,878,400	3,598,000	0%	100%	0%	100%	0	3,598,000
P-6	Pipeline	9th St	From Sea Glass Ave to 5th Ave	-	New	6	1,050	107	112,350	112,400	167,000	208,800	0%	100%	0%	100%	0	208,800
P-7	Pipeline	2nd Ave	From 10th St to 9th St	-	New	6	750	107	80,250	80,300	119,300	149,200	0%	100%	0%	100%	0	149,200
P-8	Pipeline	Coe Ave	From Pacific Crest Dr to Paralta Ave	-	New	8	1,500	142	213,000	213,000	316,400	395,500	0%	100%	0%	100%	0	395,500
P-9	Pipeline	Normandy Rd	From Blackhorse Reservoir to Eucalyptus Rd	-	New	8	2,350	142	333,700	333,700	495,600	619,500	0%	100%	0%	100%	0	619,500
P-10	Pipeline	Normandy Rd	From General Jim Moore Blvd to Parker Flats Rd	-	New	6	2,350	107	251,450	251,500	373,500	466,900	0%	100%	0%	100%	0	466,900
				Subtotal - Distribution System Improvements					**4,996,525**	**4,996,700**	**7,420,600**	**9,276,000**					**1,453,500**	**7,822,500**
Pressure Reducing Valve Improvements				New/Replace	Size (in)													
PRV-1	PRV	Intersection of Beach Rd and Crescent Ave		New	4				73,000	73,000	108,500	135,700	0%	100%	100%	0%	135,700	0
PRV-2	PRV	Intersection of Carmel Ave and Vaughn Ave		New	4				73,000	73,000	108,500	135,700	0%	100%	100%	0%	135,700	0
PRV-3	PRV	California Ave s/o 3rd Ave		New	6				73,000	73,000	108,500	135,700	0%	100%	0%	100%	0	135,700
PRV-4	PRV	Intersection of 9th St and 5th Ave		New	4				73,000	73,000	108,500	135,700	0%	100%	0%	100%	0	135,700
PRV-5	PRV	Intersection of Coe Ave and Buttercup Blvd		New	4				73,000	73,000	108,500	135,700	0%	100%	0%	100%	0	135,700
PRV-6	PRV	Intersection of General Jim Moore Blvd and Normandy Rd		New	4				73,000	73,000	108,500	135,700	0%	100%	0%	100%	0	135,700
				Subtotal - Pressure Reducing Valve Improvements					**438,000**	**438,000**	**651,000**	**814,200**					**271,400**	**542,800**

Table 8.2 Capital Improvement Program
Recycled Water Master Plan
Marina Coast Water District

PRELIMINARY

Improv. No.	Improv. Type	Alignment	Limits	Improvement Details		Infrastructure Costs Unit Cost ($/unit)	Infrastructure Costs Infr. Cost ($)	Baseline Construction Cost ($)	Estimated Construction Cost[1] ($)	Capital Improvement Cost[2] ($)	Suggested Cost Allocation Existing Users	Suggested Cost Allocation Future Users	Suggested Cost Allocation Central Marina	Suggested Cost Allocation Fort Ord Community	Cost Sharing Central Marina	Cost Sharing Fort Ord Community
Pump Station and AWTF Improvements[4,5]																
PS-1	New Pump Station and AWTF	M1W Regional Wastewater Treatment Plant								9,210,000	0%	100%	5%	95%	460,500	8,749,500
				Subtotal - Pump Station and AWTF Improvements			**0**	**0**	**0**	**9,210,000**					**460,500**	**8,749,500**
Planned RUWAP Improvements[4,5]				**New/Replace**	**Pipe Length** (ft)											
TM-1	Pipeline	Various	From AWTF Pump Station to Blackhorse Reservoir	New 24" Pipeline			-	-	-	-						
Blackhorse Tank	Tank	Existing Water System Tank D-1 Site		New 2.0 MG Storage Tank	-		-	-	-	-						
				Subtotal - Planned RUWAP Improvements			**-**	**-**	**-**	**10,620,000**	0%	100%	5%	95%	**531,000**	**10,089,000**
Groundwater Injection Barrier Project[6,7]																
GIB	Various	Includes AWTF expansion, injection facilities, distribution pipelines, and other miscellaneous improvements					-	-	-	-						
				Subtotal - Groundwater Injection Barrier Project			**-**	**-**	**-**	**20,000,000**	69%	31%	53%	47%	**10,600,000**	**9,400,000**
Total Costs																
				Distribution Pipeline Improvements			**4,996,525**	**4,996,700**	**7,420,600**	**9,276,000**					**1,453,500**	**7,822,500**
				Pressure Reducing Valve Improvements			**438,000**	**438,000**	**651,000**	**814,200**					**271,400**	**542,800**
				Pump Station and AWTF Improvements			**0**	**0**	**0**	**9,210,000**					**460,500**	**8,749,500**
				Planned RUWAP Improvements			**-**	**-**	**-**	**10,620,000**					**531,000**	**10,089,000**
				Groundwater Injection Barrier Project			**-**	**-**	**-**	**20,000,000**					**10,600,000**	**9,400,000**
				Total - Recycled Water System Improvements			**5,434,525**	**5,434,700**	**8,071,600**	**49,920,200**					**13,316,400**	**36,603,800**

5/28/2019

Notes:
1. Estimated Construction costs include 48.5 percent of baseline construction costs to account for unforeseen events and unknown field conditions, and for Contractor's overhead and profit, general conditions, and sales tax, consistent with 2007 Water Master Plan.
2. Capital Improvement Costs also include an additional 25 percent of the estimated construction costs to account for administration, construction management, and legal costs.
3. Distribution pipeline improvemnents consist of improvements necessary to connect existing distribution infrastructure to planned transmisison pipeline. This does not include cost for improvements necessary to connect potential users directly to the planned transmission pipeline.
4. Improvement cost based on information received from District staff January 15, 2019.
5. Suggested cost center cost allocation based on estimated recycled water demands within each cost center.
6. Improvement cost based on information received from District staff May 28, 2019.
7. Suggested cost center cost allocation based on near-term water demands documented in the in-progress Water Master Plan, which includes the buildout of Central Marina and near-term development limits of the Fort Ord Community.

APPENDICES

APPENDIX A

Recycled Water System Evaluation

Recycled Water System Evaluation

Marina Coast Water District

GHD | 2235 Mercury Way, Suite 150, Santa Rosa, California

11140005 **|** January 9, 2017

GHD

Marina Coast Water District

Recycled Water System

Project No. 11140005

Prepared for:

AKEL
ENGINEERING GROUP, INC.
7433 N. First Street, #103
Fresno, CA 93720

Prepared by:

Luke Philbert
Project Engineer

Reviewed by:

Matt Winkelman, P.E.
Principal

GHD
2235 Mercury Way, Suite 150
Santa Rosa, CA 95407
(707) 523-1010

January 9, 2017

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Table Index

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1. Objective

This document provides a report of the following:

- Historic and projected recycled water availability from the Monterey One Water (M1W) Wastewater Treatment Plant (WWTP).
- An evaluation of the availability and quantity and quality compared to the Marina Coast Water District (MCWD) customer needs.
- An evaluation for the impacts of improvements to the M1W WWTP and the Pure Water Monterey Project.

2. Recycled Water System

2.1 Historic and Projected Recycled Water Availability from the M1W WWTP

MCWD collects wastewater in its two wastewater collection systems serving the City of Marina and the Ord Community, and conveys it to an interceptor pipeline operated by M1W, formerly the Monterey Regional Water Pollution Control Agency (MRWPCA). The wastewater is then conveyed to the M1W Regional Treatment Plant (RTP) north of Marina. In 2015, MCWD contributions to the RTP were about 11%. The RTP has an average dry weather flow design treatment capacity of 33.200 acre feet per year (AFY) and a peak wet weather design capacity of 84,700 AFY, with an outfall ultimate wet weather capacity of 91,000 AFY. The RTP currently receives and treats approximately 18,000-19,000 AFY[1]. Currently, 100% of wastewater flow is available for Ag users from the M1W RTP during the summertime.

Wastewater is treated to secondary treatment standards at the M1W RTP facilities and effluent not designated for further treatment and recycling is discharged via an ocean outfall. Effluent designated for further treatment is conveyed to the onsite Salinas Valley Reclamation Plant (SVRP) that currently produces about 14,000 AFY of tertiary-treated recycled water meeting the standards of Title 22 of the California Code of Regulations. The recycled water is delivered to the Castroville Seawater Intrusion Project (CSIP) where it is used for irrigating farmland in the greater Castroville area thereby reducing demands on Salinas Valley groundwater and retarding seawater intrusion in that area. In 2015, 14,250 acre-feet of tertiary-treated water was delivered for crop irrigation. While MCWD has senior rights to recycled water through its agreement with the M1W, MCWD does not currently use recycled water within its two service areas.[2] The M1W regional treatment plant is shown in Figure 1, relative to the MCWD service areas.

[1] Pure Water Monterey Groundwater Replenishment Project. Final Engineering Report. Nellor Environmental Associates, Inc., Trussel Technologies Inc., Todd Groundwater. Revised November 2017.

[2] MCWD was the first agency to contract for recycled water with M1W, preceding subsequent contracts by others for recycled water supply.

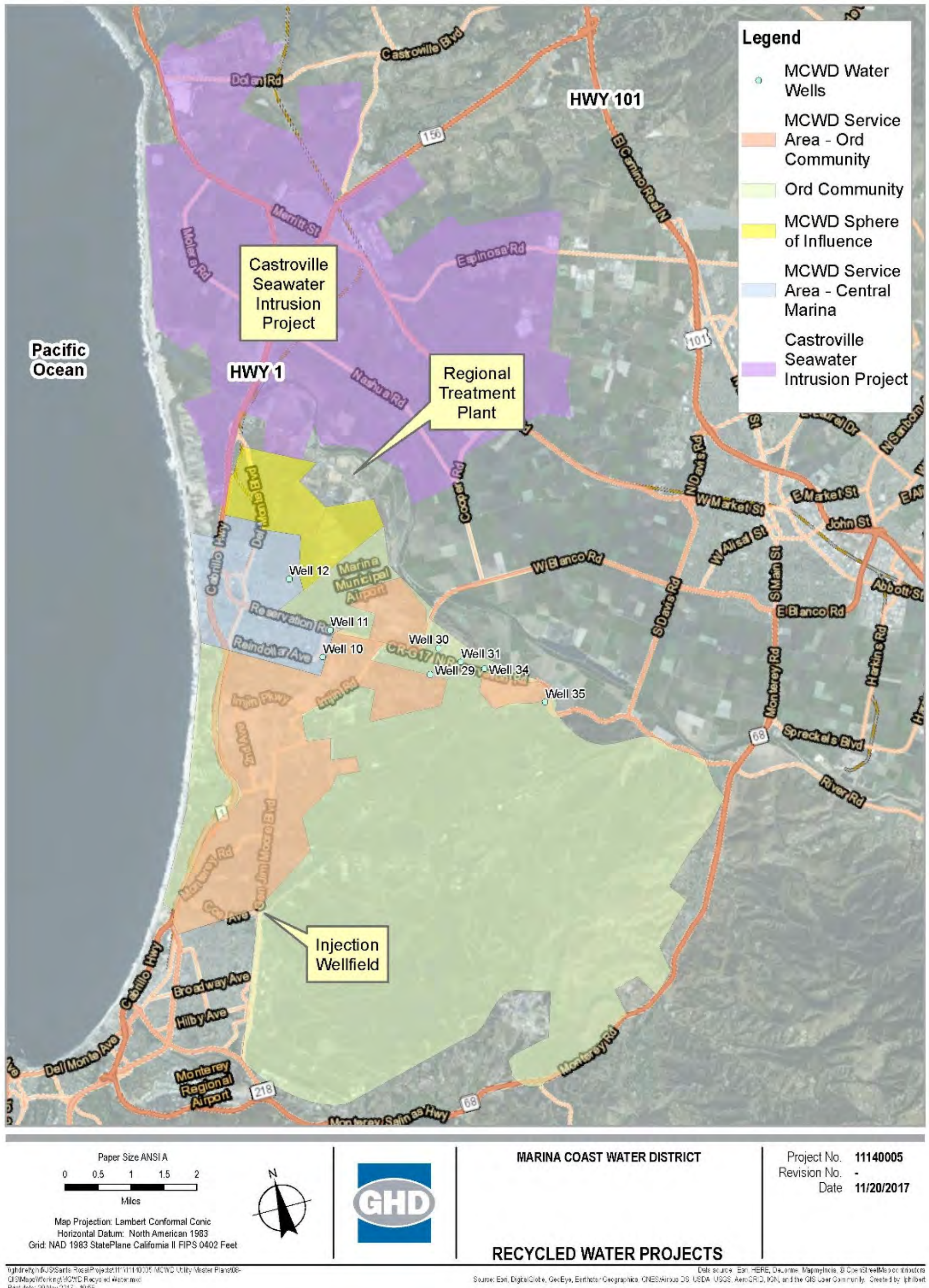

Figure 1 – Planned and Existing Recycled Water Systems

The Pure Water Monterey Project (PWM Project), further described in Section 2.3, will add 5 million gallons per day (MGD) of advanced treated water, or approximately 5,600 AFY, that can be used for indirect potable reuse throughout the year. As wastewater flows increase due to urban development, additional recycled water might also be produced. Under plans from the PWM, additional source waters will be provided to the SVRP. It is anticipated that in normal and wet years approximately 4,500 to 4,750

AFY of additional recycled water supply could be created for agricultural irrigation purposes. In drought conditions, the PWM Project could provide up to 5,900 AFY for crop irrigation.

According to the MCWD 2015 Urban Water Management Plan[3], the SVRP is capable of producing an average of 29.6 MGD of recycled water or approximately 33,000 AFY. However, as agricultural demands are seasonal, this capacity cannot be fully utilized year round. To increase recycled water yield based on current wastewater flows, storage capacity to capture winter flows for summertime use would be required.

2.2 Available Quantity and Quality compared to the MCWD customer needs

2.2.1 Quantity

MCWD current and future recycled water demands projections are summarized in the following Table 2.1, as described in the 2016 Pure Water Delivery and Supply Project Agreement[4] between MCWD and MRWPCA (now M1W).

Table 2.1 – MCWD Projected Demand for Recycled Water

	2015	2020	2025	2030	2035
Recycled Water (MGD)	0	0.66	1.57	1.57	1.57
Recycled Water (AFY)	0	741	1,762	1,762	1,762

Note: Table 2.1 shows MCWD's projected recycled water demands, i.e., needed recycled water supply. M1W's Advanced Water Purification (AWP) Facility, currently under construction, will provide a portion of MCWD's needed recycled water. Per the MCWD-M1W Pure Water Delivery and Supply Project Agreement First Amendment5, dated 12-18-17, 600 AFY of purified recycled water will be provided to MCWD from AWP Phase 1. Under planning, yet to be scheduled, AWP Phase 2 will provide 1,427 AFY of purified recycled water to MCWD.

In 1989, when MCWD entered into an annexation agreement with M1W. This agreement established MCWD's first right to receive tertiary treated wastewater from the SVRP. MCWD has the right to obtain treated wastewater from M1W's regional treatment plan equal in volume to that of the volume of MCWD wastewater treated by M1W and additional quantities not otherwise committed to other uses. Although several methods of delivering recycled water from M1W to Central Marina have been studied, no designs have been produced. Detailed plans for the Ord Community recycled water delivery have been developed.

MCWD has two points of connection to the regional wastewater collection system. Central Marina connects through a dedicated pump station. The total flow at that station was approximately 1,200 AFY in 2015. The Ord Community connects through a gravity pipeline with a metering flume. The total flow at the flume was just under 900 AFY in 2015. This total MCWD flow of 2,100 AFY should be entitled as

3 Marina Coast Water District 2015 Urban Water Management Plan. Prepared by Schaaf & Wheeler. June 2016.

4 Pure Water Delivery and Supply Project Agreement Between Monterey Regional Water Pollution Control Agency and Marina Coast Water District. April 8, 2016

5 First Amendment to Pure Water Delivery and Supply Project Agreement between Monterey Regional Water Pollution Control Agency and Marina Coast Water District. December 18, 2017

recycled water to MCWD by M1W, and is only expected to increase in the future. Since the MCWD projected recycled water demand is 1,762 AFY by 2035, MCWD entitlements should meet their future recycled water needs.

MCWD's right to purchase recycled water has a contractual upper limit in the summer months, so providing this volume of recycled water supply requires the commitment of summertime flows from M1W and the Monterey County Water Resources Authority (MCWRA). Seasonal storage would allow recycled water, for which there would otherwise be little demand during the winter, to be made available for irrigation demands in warmer months, rather than discharging secondary effluent from the RTP to the ocean. Projected Phase II demands that could be served through additional distribution lines and seasonal storage facilities could bring the total recycled water demand to 1,762 AFY.

In 2006, MCWD began design of the recycled water system. In the Basis of Design Report[6], potential AWP Phase 1 uses generally included planned or existing landscapes along the recycled trunk main alignment, such as the existing Bayonet/Blackhorse Golf Course in Seaside, the sports fields at CSUMB, and the proposed golf resort in Del Rey Oaks. The total of existing irrigation demands exceeds the size of the AWP Phase 1 project, which targets customers along the main pipeline route. Potential AWP Phase 2 uses generally included planned or existing landscapes that required construction of lateral pipelines from the trunk main. Potential customers identified but not included in the AWP Phase 1 project may be included in the future Phase 2. Construction of a recycled water distribution system was estimated to cost $34 million in the 2006 Basis of Design Report. Therefore, full use of the project capacity is required to minimize the per customer costs.

MCWD, in coordination with the M1W and MCWRA as part of its Regional Urban Water Augmentation Project (RUWAP), has designed a transmission line through Marina, the Ord Community, and into the City of Seaside. MCWD has constructed approximately four miles of recycled pipeline, taking advantage of opportunities to install pipelines while roads were being reconstructed by the Fort Ord Reuse Authority. MCWD has designed the remainder of the recycled water distribution system.

Subject to Monterey County Department of Environmental Health and State Department of Public Health approval, MCWD requires the installation of recycled water pipelines to serve all recreational and common irrigated open space areas within new developments (MCWD Code § 4.28.030, Recycled Water Service Availability). This requirement is waived only when the land use jurisdiction indicates that future recycled water will not be allocated to a project. The City of Seaside has adopted a more restrictive standard, requiring residential front yards to be plumbed for future recycled water in addition to recreational and common areas.

2.2.2 Quality

According to the April 8, 2016, MCWD and M1W Pure Water Delivery and Supply Project Agreement[7], all water produced and delivered to MCWD will meet the applicable standards of quality prescribed by

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[6] RMC Water and Environment, MCWD Recycled Water Project Basis of Design Report, 2006

[7] Pure Water Delivery and Supply Project Agreement Between Monterey Regional Water Pollution Control Agency and Marina Coast Water District. April 8, 2016.

the State of California (including, but not limited to, the regulations from the State Health Department and set in the California Code of Regulations, Title 22).

Title 22 Criteria - (Section 60304(a)) - specify use of “disinfected tertiary recycled water” for surface irrigation of food crops, parks and playgrounds, school yards, residential landscaping, and unrestricted access golf courses. The recycled water quality under this criteria is less strict than as required for indirect potable reuse and groundwater replenishment and the Project’s Waste Discharge Requirements (WDRs) and /Water Recycling Requirements (WRRs) include monitoring to ensure compliance with requirements for disinfected tertiary recycled water. Relevant Title 22 Criteria for production of disinfected tertiary recycled water are presented as follows.

- **Recycled Water for Irrigation -** Per Section 60304(a), recycled water used for irrigation of food crops and areas with unrestricted access shall be disinfected tertiary recycled water. This quality of recycled water can also be used for cooling and all other non-potable purposes listed in the Title 22 Criteria. Use of disinfected tertiary recycled water for nonrestricted recreational impoundments that has not received conventional treatment requires additional pathogen monitoring.
- **Disinfected Tertiary Recycled Water -** Per Section 60301.230, disinfected tertiary recycled water, as it relates to the M1W WWTP, is filtered wastewater that is disinfected with a process that, combined with filtration, inactivates or removes 5 logs of MS2 bacteriophage or poliovirus, as well as achieves total coliform limits. The total coliform limits are a median of 2.2 MPN/100 mL for the last seven days of sampling results, 23 MPN/100 mL in no more than one sample in any 30-day period, and 240 MPN/100 mL all of the time.
- **Filtered Wastewater -** Per Section 60301.320, filtered wastewater, as it relates to the M1W WWTP, is oxidized wastewater that has been passed through microfiltration, ultrafiltration, or reverse osmosis such that the turbidity does not exceed 0.2 NTU more than 5% of the time within a 24-hour period and does not exceed 0.5 NTU at any time.

2.3 Evaluating the Impacts of Improvements to the M1W WWTP and the Pure Water Monterey Project

The Pure Water Monterey Groundwater Replenishment Project (PWM) is currently being implemented by M1W and the Monterey Peninsula Water Management District (MPWMD), with cooperation from MCWD, MCWRA and the City of Salinas. It will provide: (1) purified recycled water (product water) for replenishment of the Seaside Groundwater Basin (Seaside Basin) that serves as a drinking water supply; (2) purified recycled water (product water) for landscape irrigation by MCWD; and (3) recycled water to augment the existing Castroville Seawater Intrusion Project’s (CSIP’s) agricultural irrigation supply[8]. The planned date for Project startup is 2019 and is expected to provide an advanced treated water capacity of 5 MGD.

- **Replenishment of the Seaside Basin.** The PWM Project will enable the California American Water Company (CalAm) to reduce its diversions from the Carmel River system by up to 3,500 AFY by

[8]Pure Water Monterey Groundwater Replenishment Project. Final Engineering Report. Nellor Environmental Associates, Inc., Trussel Technologies Inc., Todd Groundwater. Revised November 2017.

injecting the same amount of product water into the Seaside Basin. The product water will be produced at the new AWP Facility at M1W's RTP and will be conveyed to and injected into the Seaside Basin via a new pipeline and new well facilities. The injected water will then mix with the existing groundwater and be stored for future urban use (including use as a potable source of supply) by CalAm.

- **Landscape irrigation by MCWD**. The Project will provide up to 600 AFY of Phase 1 AWP Facility product water for landscape irrigation by MCWD customers. The product water will be diverted from the AWP Facility product water conveyance pipeline. The quality of the product water will meet all recycled water quality requirements for landscape irrigation, as it will be treated to the higher water quality standards required for groundwater replenishment. Treatment and production by M1W are further described in the 2017 PWM Engineering Report. A separate Engineering Report will be submitted by MCWD to describe the recycled water distribution system, recycled water uses, and recycled water program administration. MCWD will also separately submit a Notice of Intent for recycled water program coverage under the Statewide General Order Water Reclamation Requirements for Recycled Water Use (Order WQ 2016-0068-DDW).
- **Additional recycled water for agricultural irrigation in northern Salinas Valley**. As part of the PWM Project, the existing tertiary recycled water facility at the RTP will provide additional source waters to the SVRP (treated first at the RTP) in order to provide supplementary tertiary recycled water for use in the CSIP agricultural irrigation system. It is anticipated that in normal and wet years approximately 4,500 to 4,750 AFY of additional recycled water supply could be created for agricultural irrigation purposes. In drought conditions, the PWM Project could provide up to 5,900 AFY for crop irrigation.

Figure 2 shows areas receiving recycled water through the M1W facility.

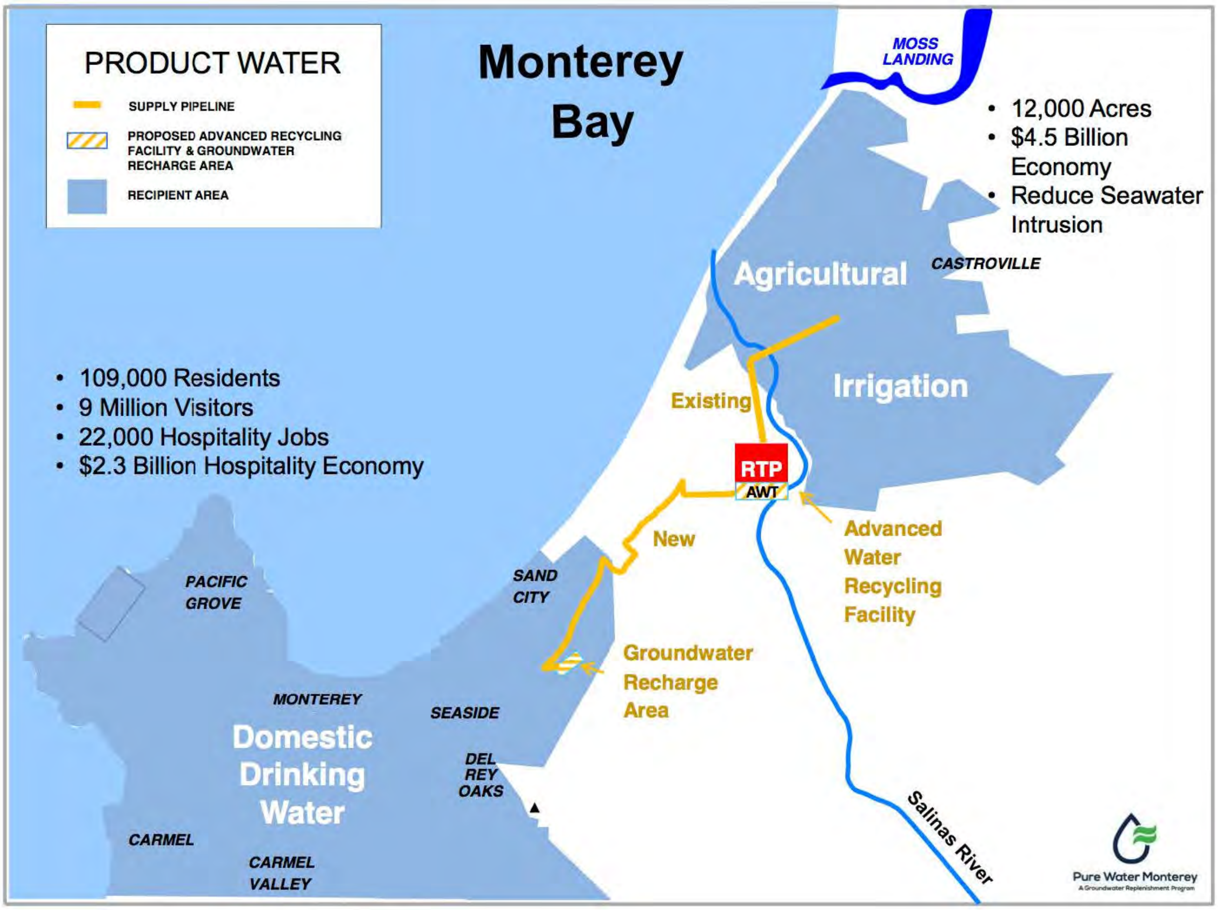

Figure 2 – Recycled Water Areas receiving M1W Recycled Water[8]

The PWM Project will also include a drought reserve component to support greater use of the new supply for crop irrigation during dry years. The PWM Project will provide an additional 200 AFY of product water that will be injected in the Seaside Basin in wet and normal years for up to five consecutive years. This will result in a "banked" drought reserve totaling up to 1,000 acre-feet (AF). During dry years, the PWM Project will provide less than 3,500 AF of water to the Seaside Basin; however, CalAm will be able to extract the banked water to make up the difference to its supplies, such that its extractions and deliveries will not fall below 3,500 AFY. The source waters that are not sent to the AWP Facility during these dry years when water from the drought bank is being used by CalAm will be sent to the SVRP to increase supplies for CSIP.

The PWM Project components include: conveyance of three types of source waters to the RTP for treatment; the new AWP Facility and other improvements to the RTP; a treated water conveyance system, including pipeline, a pump station, a reservoir, and connections to the pipeline for landscape irrigation; groundwater injection and monitoring wells; and potable water distribution system improvements. Construction of the PWM Project is anticipated to require approximately 18 months, plus three months of testing and start-up.

The sources of supply identified in the PWM Project include: secondary-treated municipal wastewater which is currently discharged to the ocean outfall (i.e., winter flows); agricultural wash water from vegetable processing, which is currently treated at the Salinas Industrial Wastewater Treatment Facility (SIWTF); urban run-off from the City of Salinas and City of Monterey; and surface water diversions from the Blanco Drain, Reclamation Ditch and Tembladero Slough, which primarily carry agricultural tile drainage during the summer months. All of these flows would be conveyed to the RTP, most using available capacity in the existing wastewater interceptor system and at the Salinas Pump Station (SAPS). A simplified diagram of the project is provided in Figure 3. A visual of source water amounts for for various inputs are included in Figure 4.

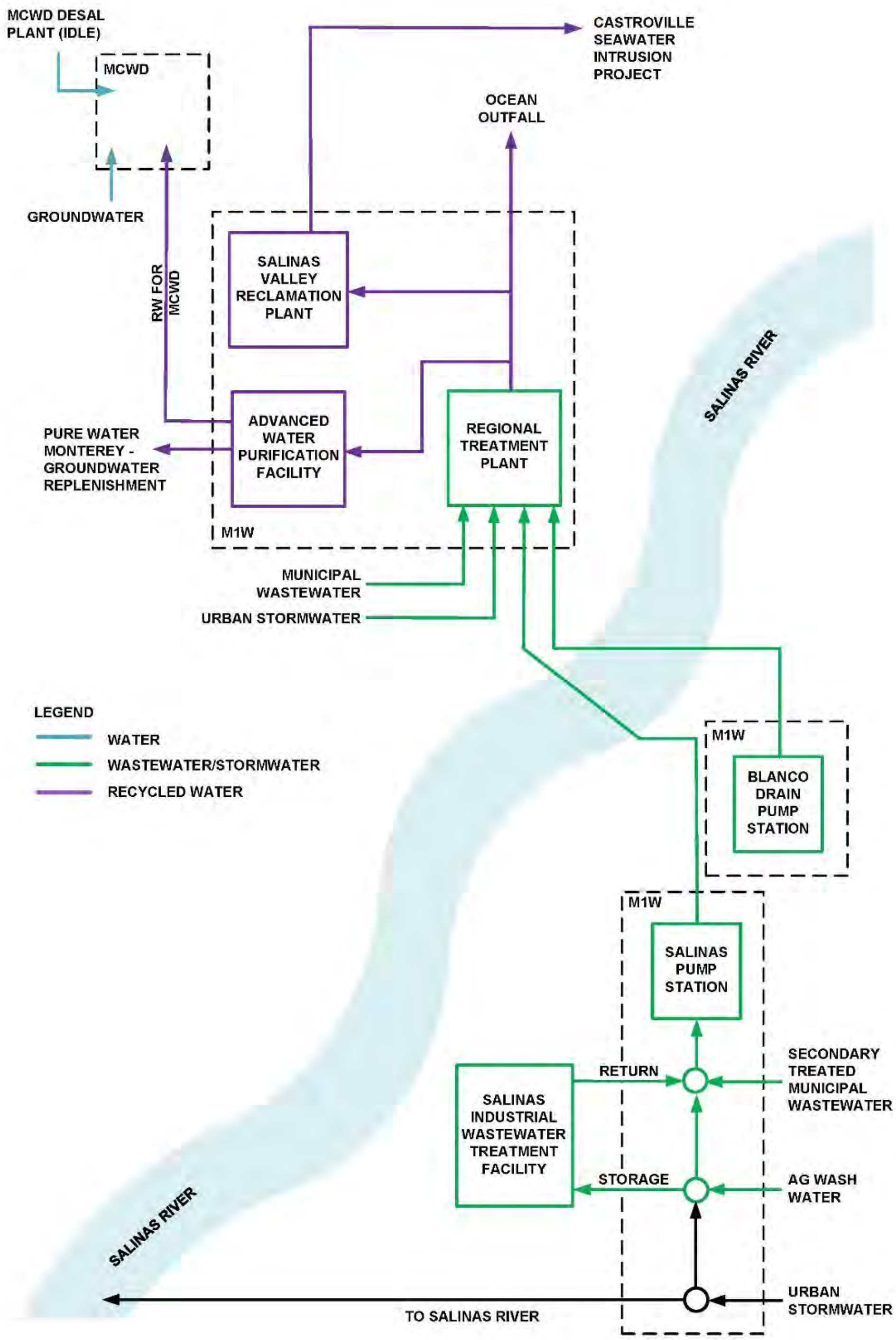

Figure 3 – MCWD and M1W System Schematic

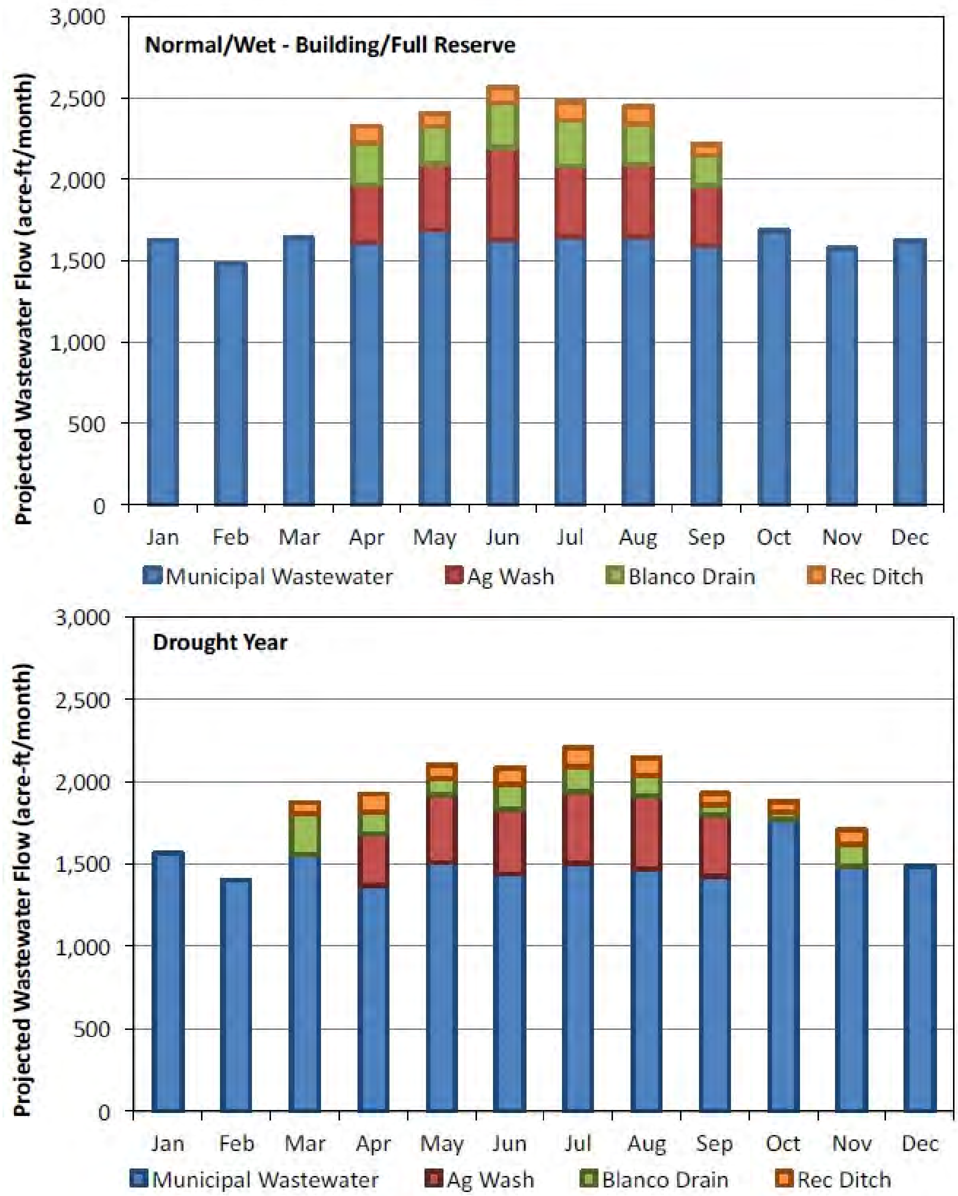

Figure 4 – Estimated Availabilities for Source Waters Entering the RTP, using wastewater flowrates from 2012 through 2016[9]

Most of these new source waters will be combined within the existing wastewater collection system before arriving at the RTP; water from Blanco Drain will be conveyed directly to the headworks of the RTP. As part of the California Environmental Quality Act (CEQA) adopted Environmental Impact Report (EIR) for the PWM Project, the assessment included these new sources as well as agricultural drainage water from Tembladero Slough and storm water diversions from the Lake El Estero facility in Monterey.

[9] Pure Water Monterey Groundwater Replenishment Project. Final Engineering Report. Nellor Environmental Associates, Inc., Trussel Technologies Inc., Todd Groundwater. Revised November 2017.

Neither grant, loan financing, design, engineering, nor permitting are currently being pursued for Tembladero Slough, but may be reconsidered in the future. The Lake El Estero source is not planned for diversion for the Project, but may be reassessed in the future.

The proposed alignment for the PWM advanced treated water pipeline is the same as for the MCWD RUWAP recycled water trunk main. The two agencies have agreed to share a single pipeline, and to deliver advanced treated water for urban irrigation instead of tertiary-treated recycled water as originally planned in order to meet the more stringent requirements for indirect potable reuse and groundwater replenishment. Due to the size and length of the trunk main, combining the two projects results in a significant cost savings. The approved water pipeline can be seen in Figure 5.

Figure 5 – Product Water Transmission Facilities[8]

On April 8, 2016, MCWD and M1W entered into the Pure Water Delivery and Supply Project Agreement[10] wherein the Product Water Conveyance Facilities will be designed, constructed, owned, and operated by MCWD with a capacity and right to utilize a net 1,427 AFY of the AWP Facility's treatment capacity to serve the Ord Community and to implement the recycled water portion of the RUWAP. The project is expected to provide 600 AFY (Phase 1) in 2020, and increase to 1,427 AFY (Phase 2) in 2025. The project functions as an in-lieu groundwater recharge project and will be a major component of any groundwater sustainability plan for the Marina Area.

In December 2017, the first amendment to the Pure Water Delivery and Supply Project Agreement between the M1W (formerly MRWPCA) and MCWD was enacted[11]. The amendment allows for the possibility of their own groundwater injection under the following conditions:

- The CEQA work completed and approved by the M1W Board in October, 2017 describes a MCWD project that applies this water for irrigation. Any change to that CEQA work, from irrigation to injection and sale shall be at the sole expense of MCWD and M1W shall not be responsible for any delays that any such change might cause in the timing of delivery of water for injection to MCWD.
- If MCWD elects to inject, it will be responsible for permitting at its injection site, but M1W agrees to help by providing all of the work product it completed for its injection well project, e.g., engineering report for the drinking water permit, to MCWD for its use.
- M1W injection well field and infrastructure will not be used for MCWD injection unless and until there is a future separate agreement between the parties hereto.
- Any costs for a change from irrigation to injection, e.g. CEQA, engineering, permitting, test well construction, modeling, etc. shall be the sole responsibility of MCWD. To the extent that M1W agrees to do work to assist MCWD, MCWD agrees to pay any such invoices to M1W within the time period for payment specified by the service provider.
- The portion of the summer delivery water that is not used by MCWD for the AWP Facility Phase 1 will be available for use by M1W. For the AWP Facility Phase 2, the entire amount of the 650 acre feet of summer delivery will be needed and used by MCWD and will no longer be available to M1W.

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[10] Pure Water Delivery and Supply Project Agreement Between Monterey Regional Water Pollution Control Agency and Marina Coast Water District. April 8, 2016.

[11] First Amendment to Pure Water Delivery and Supply Project Agreement between Monterey Regional Water Pollution Control Agency and Marina Coast Water District. December 18, 2017

APPENDIX B

Recycled Water Capacity Fees
(Pending Finalization)

Return to Agenda

Marina Coast Water District
Agenda Transmittal

Agenda Item: 8-B Meeting Date: June 25, 2019

Prepared By: Michael Wegley Approved By: Keith Van Der Maaten

Agenda Title: Receive Presentation on the Draft Capacity Fees for the Marina and Ord Community Service Areas and Provide Direction Regarding Preparation of the Final Documents

Staff Recommendation: The Board of Directors receives the presentation on the draft Capacity Fees Study. The Board provides direction to staff regarding preparation of the final documents.

Background: *5-Year Strategic Plan Mission Statement – To provide our customers with high quality water, wastewater collection and conservation services at a reasonable cost, through planning, management and the development of water resources in an environmentally sensitive manner.*

A capacity charge is a one-time charge paid by new or expanded development to recover the costs associated with providing additional water and wastewater capacity to new users. Currently, it is paid just prior to setting a water meter as a separate charge from connection fees and monthly rates and charges. Water and sewer capacity fees are governed by California Government Code Section 66013, which states that the fees cannot exceed the estimated reasonable cost of providing the service for which the fee is imposed.

Discussion/Analysis: Akel Engineering was retained to prepare master plans for proposed sewer, water and recycled water infrastructure improvements required to support development. The master plans include engineering estimates of probable project cost for the improvements.

Bartle Wells and Associates (BWA) was retained as subconsultants to Akel to review and update the capacity fees based on the new master plans maintaining separate cost centers for the Central Marina and Ord Community. Key objectives of the study include:

- Provide independent review of the District's capacity fees;
- Develop an appropriate approach/methodology for updating the District's capacity fees;
- Develop updated capacity fees that:
    - Are designed to equitably recover the costs of infrastructure and assets benefiting new development.
    - Are consistent with industry-standard practices and methodologies;
    - Comply with the government code.

The District's capacity fees are designed to ensure that the District's ratepayers are not required to subsidize new development. The District's current capacity fees do not recover the costs for future water supplies to augment groundwater necessary to meet the Fort Ord Reuse Authority's (FORA) Base Reuse Plan as that is currently a part of FORA's CFD fees. With the pending termination of FORA and transition of all water/wastewater responsibilities to MCWD, it is proposed with these new Capacity Fees that Water Augmentation costs be included within MCWD Capacity fees and therefore FORA will no longer be collecting fees for Water Augmentation as part of their CFD.

MCWD's proposed capacity fees ensure that water supply augmentation improvements necessary for new development will be funded by fees recovered from new development.

BWA will present proposed new capacity fees for four cost centers, Marina Water, Marina Sewer, Ord Water and Ord Sewer. Comparisons with other coastal communities will be provided. The presentation will also include a proposed update of the assigned water use factors for determining water capacity charges.

Environmental Review Compliance: None required.

Financial Impact: ______Yes ___X___No Funding Source/Recap: Funding for this project comes from the Engineering Professional Services Budget.

Other Considerations: None.

Material Included for Information/Consideration: Draft Water, Wastewater and Recycled Water Capacity Fee Study.

Action Required: _______Resolution ________Motion ___X___Review

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Board Action

Motion By______________ Seconded By________________ No Action Taken______________

Ayes___________________________ Abstained_____________________________

Noes___________________________ Absent_______________________________

Return to Agenda

Marina Coast Water District
Agenda Transmittal

Agenda Item: 9 | Meeting Date: June 25, 2019

Prepared By: Paula Riso | Approved By: Keith Van Der Maaten

Agenda Title: Consent Calendar

Staff Recommendation: The Board of Directors approve the Consent Calendar as presented.

Background: *5-Year Strategic Plan Mission Statement – We provide our customers with high quality water, wastewater collection and conservation services at a reasonable cost, through planning, management and the development of water resources in an environmentally sensitive manner.*

Consent calendar consisting of:

A) Receive and File the Check Register for the Month of May 2019
B) Approve the Draft Minutes of the Joint Board/GSA Meeting of May 20, 2019
C) Consider Adoption of Resolution No. 2019-41 to Approve a Contract with Fieldman Rolapp & Associates to Provide Financial Advisory Services to the District
D) Consider Adoption of Resolution No. 2019-42 to Approve a Memorandum of Understanding between the Marina Coast Water District and the Monterey Peninsula Unified School District Regarding the In-School Water Conservation Education Program
E) Consider Adoption of Resolution No. 2019-43 to Authorize a Notice of Completion for the Watkins Gate RISD Rehab Project to be filed with the Monterey County Recorder

Discussion/Analysis: See individual transmittals.

Environmental Review Compliance: None required.

Other Considerations: The Board of Directors can approve these items together or they can pull them separately for discussion.

Material Included for Information/Consideration: Check Register for May 2019; draft minutes of May 20, 2019; Resolution No. 2019-41; a copy of the Rolapp & Associates contract; Resolution No. 2019-42; a copy of the MOU with MPUSD; Resolution No. 2019-43; and, Notice of Completion for the Watkins Gate RISD Rehab Project.

Action Required: ______Resolution ___X___Motion ______Review
(Roll call vote is required.)

Board Action

Motion By______________ Seconded By________________ No Action Taken______________

Ayes__________________________ Abstained____________________________

Noes__________________________ Absent______________________________

Return to Agenda

Marina Coast Water District
Agenda Transmittal

Agenda Item: 9-A | Meeting Date: June 25, 2019

Prepared By: Kelly Cadiente | Approved By: Keith Van Der Maaten

Agenda Title: Receive and File the Check Register for the Month of May 2019

Staff Recommendation: The Board of Directors receive and file the May 2019 expenditures totaling $4,044,414.26.

Background: *5-Year Strategic Plan, Objective No. 3 – Our objective is to manage public funds to assure financial stability, prudent rate management and demonstrate responsible stewardship. Our fiscal strategy is to forecast, control and optimize income and expenditures in an open and transparent manner. We will efficiently use our financial resources to assure availability to fund current and future demands.*

Discussion/Analysis: These expenditures were paid in May 2019 and the Board is requested to receive and file the check register.

Environmental Review Compliance: None required.

Financial Impact: _____Yes __X__No Funding Source/Recap: Expenditures are allocated across the six cost centers; 01-Marina Water, 02-Marina Sewer, 03- Ord Water, 04- Ord Sewer, 05-Recycled Water, 06-Regional Water.

Other Consideration: None.

Material Included for Information/Consideration: May 2019 Summary Check Register.

Action Required: ______Resolution __X__Motion ______Review
(Roll call vote is required.)

Board Action

Motion By______________ Seconded By________________ No Action Taken______________

Ayes__________________________ Abstained______________________________

Noes__________________________ Absent________________________________

May 2019 SUMMARY CHECK REGISTER

DATE	CHECK #	CHECK DESCRIPTION	AMOUNT
05/02/2019	WIRE	Law Offices of Rachelle Chong	5,625.00
05/02/2019	67561 - 67562	Check Register	985.20
05/06/2019	67563 - 67649	Check Register	523,820.14
05/20/2019	67650 - 67710	Check Register	178,919.21
05/22/2019	WIRE	Union Bank of California	2,511,001.26
05/22/2019	67711 - 67713	Check Register	202,596.08
05/03/2019	500337 - 500341	Payroll Checks and Direct Deposit	96,078.16
05/03/2019	500342 - 500343	Payroll Withholdings, Period Ended 04/26/19	1,660.23
05/03/2019	ACH	Internal Revenue Service	41,570.86
05/03/2019	ACH	State of California - EDD	9,345.84
05/03/2019	ACH	MassMutual Retirement Services, LLC	8,499.65
05/03/2019	ACH	CalPERS	21,781.34
05/10/2019	500344 - 500350	Check Register	5,072.02
05/17/2019	500351 - 500355	Payroll Checks and Direct Deposit	97,630.77
05/17/2019	500356 - 500358	Payroll Withholdings, Period Ended 05/10/19	895.97
05/17/2019	ACH	MassMutual Retirement Services, LLC	8,574.65
05/17/2019	ACH	Internal Revenue Service	41,178.07
05/17/2019	ACH	State of California - EDD	9,256.72
05/17/2019	ACH	CalPERS	22,503.65
05/20/2019	500359 - 500362	Check Register	69,640.22
05/31/2019	500363 - 500367	Payroll Checks and Direct Deposit	102,404.44
05/31/2019	500368	Payroll Withholdings, Period Ended 05/24/19	619.23
05/31/2019	ACH	MassMutual Retirement Services, LLC	8,574.65
05/31/2019	ACH	Internal Revenue Service	43,968.14
05/31/2019	ACH	State of California - EDD	9,932.86
05/31/2019	ACH	CalPERS	22,279.90
		TOTAL DISBURSEMENTS	**4,044,414.26**

Check No	Invoice Date	Check Date	Vendor Name	Description	Amount
WIRE	03/16/2019	05/02/2019	Law Offices of Rachelle Chong	CPUC Expert Report Case	5,625.00
67561	04/09/2019	05/02/2019	Pitney Bowes (Lease)	Postage Machine Lease 02/2019 - 04/2019	649.44
67562	04/19/2019	05/02/2019	NEC Financial Services, Inc.	Phone Equipment Lease 04/2019	335.76
67563	04/18/2019	05/06/2019	Alhambra and Sierra Springs	Lab Grade Water	123.84
67564	04/12/2019	05/06/2019	Monterey Peninsula Unified School District	Water Conservation Education 03/2019	1,804.02
67565	04/04/2019	05/06/2019	Denise Duffy & Associates, Inc.	RUWAP - Construction Phase, Permit Coordination, Compliance Verification, Project Management, Planning Support	12,062.07
67566	04/12/2019	05/06/2019	PG&E	Gas and Electric Service 03/2019	50,657.08
67567	03/28/2019	05/06/2019	Home Depot Credit Services	3/4" Fittings - Wells 30/ 31 Fuel Lines, Light Bulbs/ LED Tubes - Reservoir 2/ Intermediate Reservoir, 52" Industrial Drawer/ Tools - O&M	2,287.29
67568	04/10/2019	05/06/2019	Jane's Answering Service	Answering Service 03/2019	139.00
67569	03/31/2019	05/06/2019	Schaaf & Wheeler	Staff Meetings; Review Distributions Plans - RUWAP; Pump Sizing - Neeson, Booker, Ord Village Lift Stations; LAFCO MSR; Master Plan Review; Developers (Wathens-Castanos Homes, Marina Dr/ Beach Town Apts) 03/2019	11,808.75
67570	04/24/2019	05/06/2019	MBS Business Systems	Copier Maintenance (C754e, 454e) 01/2019 - 04/2019	2,366.17
67571	04/05/2019	05/06/2019	Staples Credit Plan	Office Supplies	181.00
67572	04/18/2019	05/06/2019	Verizon Wireless	Cell Phones Service 04/2019	1,795.09
67573	04/16/2019	05/06/2019	Harris & Associates	Developer Inspection Services (CSUMB Academic III, Dunes, Junsay Oaks, CSUMB Student Union, East Garrison) 03/2019	30,502.15
67574	04/09/2019	05/06/2019	Cypress Coast Ford	Front/ Rear Brake Pads and Rotors, Oil Change - Vehicle #1235	767.88
67575	04/29/2019	05/06/2019	Maynard Group	Install Cisco Meraki Security Hardware	1,440.00
67576	11/19/2018	05/06/2019	Conservation Rebate Program	3022 Ellen Ct - Toilet Rebate (Re-Issue Check#66962)	125.00
67577	04/23/2019	05/06/2019	Conservation Rebate Program	3214 Deforest Rd - (3) Toilet Rebates	375.00
67578	04/11/2019	05/06/2019	Carollo Engineers, Inc.	USBR WIIN Grant Application - RUWAP Transmission, RWQCB NOI, Design Clarifications, Construction Meetings, Project Administration, Design Plans/ Specifications, Project Management, Utility Investigations/ Potholing - RUWAP Distribution Mains	32,889.94
67579	04/28/2019	05/06/2019	O'Reilly Automotive Stores, Inc.	Auto/ General Supplies	153.73
67580	04/12/2019	05/06/2019	Associated Services Company	Coffee Supplies	301.89
67581	04/23/2019	05/06/2019	Conservation Rebate Program	Cypress Gates, Inc. - (2) Toilet Rebates	228.00
67582	04/22/2019	05/06/2019	Integrity Print & Design LLC	(1,000) Business Cards - O&M, IT Administrator, (500) Letterhead	247.29
67583	03/31/2019	05/06/2019	Kimley-Horn and Associates, Inc.	Professional Services - Imjin Pkwy Pipeline	7,760.34
67584	04/09/2019	05/06/2019	CCOI Gate & Fence	Gate Repair/Service - BLM Building	150.00
67585	04/23/2019	05/06/2019	Power Engineers, Inc.	Cityworks/ ESRI Support Services 03/2019	504.50
67586	04/26/2019	05/06/2019	Conservation Rebate Program	3114 Bayer St - Landscape Rebate	292.50
67587	04/18/2019	05/06/2019	Sturdy Oil Company	Clear Diesel - O&M Yard Tank	1,885.90
67588	03/21/2019	05/06/2019	Conservation Rebate Program	Marina Beach Inn, Inc. - (4) Toilet Rebates	396.00
67589	04/09/2019	05/06/2019	Conservation Rebate Program	721 Brown Ct - Washer Rebate	100.00
67590	04/15/2019	05/06/2019	Conservation Rebate Program	3007 King Circle - Toilet Rebate	125.00
67591	04/16/2019	05/06/2019	Conservation Rebate Program	231 McCulloch Cir - Washer Rebate	125.00

Check No	Invoice Date	Check Date	Vendor Name	Description	Amount
67592	04/08/2019	05/06/2019	Monterey County Petroleum	(25) Pails of Food Grade Well Oil	2,250.55
67593	04/06/2019	05/06/2019	Graniterock Company	Concrete Dobies - Line Repair 215 Reservation Rd	6.34
67594	04/08/2019	05/06/2019	U.S. Bank Corporate Payment Systems	Employee Training/ Travel Expenses: UESI Pipeline Conference (ACSE) Airfare - Wegley; Accounting Tech Test - Candidates; Advertisement - O&M Supervisor, System Operator I/ II; Grade III Collection System Certification/ Membership - Correa; Subscription - Remote Desktop Access; Remote Login Security - SCADA; Cloud Hosted Server - CityWorks/ ESRI; General Supplies	7,390.38
67595	04/08/2019	05/06/2019	Della Mora Heating Sheet Metal & Air Conditioning	Service AC Unit - Beach Office	217.50
67596	04/09/2019	05/06/2019	Marina Tire & Auto Repair	Oil Change - Vehicle #1238	38.00
67597	04/16/2019	05/06/2019	Friedman & Springwater LLP	MCWD v CPUC Legal Fees, RDP Superior Court Damages Cases 03/2019	100,041.49
67598	04/17/2019	05/06/2019	Richards, Watson & Gershon	Regional Project Litigation 03/2019	75,841.75
67599	04/05/2019	05/06/2019	Remy Moose Manley, LLP	CPUC, RAMCO Well 03/2019	19,822.00
67600	04/29/2019	05/06/2019	Monterey Bay Technologies, Inc.	IT Support Services 05/2019, MS Small Business Server 2011 Migration to New FILES Server, StorageCraft ShadowProtect - FILES Hyper-V M Server, (2) 27" Monitors/ Speakers - O&M Manager, Wireless Keyboard/ Mouse - Accountant I, Mp3Doctor PRO2 Software Download - Executive Assistant	5,766.64
67601	04/26/2019	05/06/2019	ICONIX Waterworks (US), Inc.	Couplers - 215 Reservation Rd Repairs, 8" End Plug - Booker LS, 8"/ 6" MJ Sets, 6" Hymax Couplers, Romac Clamp	5,502.40
67602	04/25/2019	05/06/2019	Eurofins Eaton Analytical, Inc.	Lab Water - Total Organic Carbon and Organic Nitrogen	100.00
67603	04/05/2019	05/06/2019	Griffith & Masuda	General Matters, FORA, Groundwater, PRA Request, CSUMB, Regional Desalination Project Litigation, Groundwater, Shea Homes, Bay View Mobile Home Park, Conflict of Interest, Annexation, Joint Cal-AM Pipeline 03/2019	20,920.00
67604	03/29/2019	05/06/2019	GHD, Inc.	Professional Services/ Design Phase - Imjin LS	28,949.75
67605	04/16/2019	05/06/2019	James Heitzman	04/05 Preparation Meeting and Hotel (Last Minute Cancellation of Deposition)	4,356.76
67606	04/16/2019	05/06/2019	Aleshire & Wynder, LLP	Opinion for Bay View Community vs MCWD 03/2019	28,808.98
67607	04/26/2019	05/06/2019	Dataflow Business Systems, Inc.	Ord Copier Maintenance (5551ci) 04/2019	792.22
67608	03/27/2019	05/06/2019	Chi Fung Plastics, Inc.	(2,268) 32 oz Bottles and Caps	1,252.29
67609	04/18/2019	05/06/2019	Conservation Rebate Program	4444 Ocean Heights Ct - Washer Rebate	100.00
67610	04/15/2019	05/06/2019	AT&T	Beach Alarm 04/2019	80.39
67611	05/01/2019	05/06/2019	Simpler Systems, Inc.	UB Datapp Maintenance 05/2019	500.00
67612	04/17/2019	05/06/2019	Applied Best Practices, LLC	Consulting Services - Continuing Disclosure Annual Report (CDAR)	1,232.50
67613	05/01/2019	05/06/2019	Pure Janitorial, LLC	BLM Janitorial Services 04/2019	4,650.00
67614	04/30/2019	05/06/2019	Conservation Rebate Program	Frederick Park Apts - (120) Toilet Rebates	15,000.00
67615	04/15/2019	05/06/2019	Conservation Rebate Program	3062 Bostick Ave - Toilet Rebate	125.00
67616	04/16/2019	05/06/2019	EKI Environment & Water, Inc.	Water Supply Augmentation Study - Fort Ord	3,224.55
67617	04/15/2019	05/06/2019	Akel Engineering Group, Inc.	Master Plans/Capacity Fees Study - Water, Sewer, Recycled Water	30,152.81
67618	04/24/2019	05/06/2019	Ferguson Enterprises, Inc #686	Parts - Irrigation Meter at D Reservoir Tank	92.57

Check No	Invoice Date	Check Date	Vendor Name	Description	Amount
67619	04/01/2019	05/06/2019	Greenwaste Recovery, Inc.	Garbage Collection and Recycling Services 04/2019	697.75
67620	04/22/2019	05/06/2019	Customer Service Refund	Refund Check - 324 Arloncourt Rd	35.00
67621	04/22/2019	05/06/2019	Customer Service Refund	Refund Check - Hydrant Meter	1,523.48
67622	04/22/2019	05/06/2019	Customer Service Refund	Refund Check - 3039 Kennedy Ct	33.01
67623	04/22/2019	05/06/2019	Customer Service Refund	Refund Check - Hydrant Meter	1,546.77
67624	04/22/2019	05/06/2019	Customer Service Refund	Refund Check - 3005 Jean St	21.48
67625	04/22/2019	05/06/2019	Customer Service Refund	Refund Check - 3016 Lexington Ct #206	31.60
67626	04/22/2019	05/06/2019	Customer Service Refund	Refund Check - 67 Wisteria Way	47.17
67627	04/22/2019	05/06/2019	Customer Service Refund	Refund Check - 21639 Ord Ave	78.83
67628	04/22/2019	05/06/2019	Customer Service Refund	Refund Check - 3254 Fitzgerald Cir	18.00
67629	04/22/2019	05/06/2019	Customer Service Refund	Refund Check - 19135 Fallingwater Ln	25.81
67630	04/22/2019	05/06/2019	Customer Service Refund	Refund Check - 15113 Breckinridge Ave	77.44
67631	04/22/2019	05/06/2019	Customer Service Refund	Refund Check - 139 Okinawa Rd	38.79
67632	04/22/2019	05/06/2019	Customer Service Refund	Refund Check - 3067 Bayer Dr	6.05
67633	04/22/2019	05/06/2019	Customer Service Refund	Refund Check - 3370 Greenbook Pl	39.46
67634	04/22/2019	05/06/2019	Customer Service Refund	Refund Check - 205 Sicily Rd	8.27
67635	04/22/2019	05/06/2019	Customer Service Refund	Refund Check - 19127 Fallingwater Ln	41.30
67636	04/22/2019	05/06/2019	Customer Service Refund	Refund Check - 414 Windsor Ct	45.79
67637	04/22/2019	05/06/2019	Customer Service Refund	Refund Check - 220 Normandy Rd	35.00
67638	04/22/2019	05/06/2019	Customer Service Refund	Refund Check - 314 Ardennes Cir	101.52
67639	04/22/2019	05/06/2019	Customer Service Refund	Refund Check - 323 Normandy Rd	7.61
67640	04/22/2019	05/06/2019	Customer Service Refund	Refund Check - 21627 Ord Ave	75.41
67641	04/22/2019	05/06/2019	Customer Service Refund	Refund Check - 137 Dolphin Cir	2.65
67642	04/22/2019	05/06/2019	Customer Service Refund	Refund Check - 19106 Fallingwater Ln	41.30
67643	04/22/2019	05/06/2019	Customer Service Refund	Refund Check - 19114 Fallingwater Ln	48.01
67644	04/22/2019	05/06/2019	Customer Service Refund	Refund Check - 19134 Fallingwater Ln	46.46
67645	04/22/2019	05/06/2019	Customer Service Refund	Refund Check - 18246 Caldwell St	145.59
67646	04/22/2019	05/06/2019	Customer Service Refund	Refund Check - 13977 Sherman Blvd	77.44
67647	04/22/2019	05/06/2019	Customer Service Refund	Refund Check - 3084 Elm Ave	25.30
67648	04/22/2019	05/06/2019	Customer Service Refund	Refund Check - 415 Jerry Ct	53.55
67649	04/22/2019	05/06/2019	Customer Service Refund	Refund Check - 596 Braden Way	35.00
67650	05/10/2019	05/20/2019	Ace Hardware	General Supplies	1,375.57
67651	04/19/2019	05/20/2019	Quinn Company	PM Service - Forklift #9802	213.75
67652	04/10/2019	05/20/2019	Denise Duffy & Associates, Inc.	Final LAFCO Application Package	1,321.50
67653	04/23/2019	05/20/2019	Fisher Scientific	Thermo Scientific Laboratory Refrigerator	7,293.07
67654	04/28/2019	05/20/2019	Home Depot Credit Services	Fence Materials - Beach Office, 4x8 Plywood - Booker LS, Cable Ties/ Screening - Reservoirs, Parts - Ord Village LS Fuel Tanks	683.68
67655	05/08/2019	05/20/2019	Jane's Answering Service	Answering Service 04/2019	139.00
67656	04/26/2019	05/20/2019	3T Equipment Company, Inc.	Parts - Jetter 0801	575.67
67657	04/30/2019	05/20/2019	Peninsula Welding Supply	Gas Cylinder Tank Rental Fee - Welding Supplies	12.90
67658	04/16/2019	05/20/2019	Monterey Sanitary Supply, Inc.	(32) gals 12.5% Chlorine - Watkins Gate Well	235.54
67659	04/24/2019	05/20/2019	Monterey One Water	FY 2018/2019 Grease Disposal Education Program	1,557.43

Check No	Invoice Date	Check Date	Vendor Name	Description	Amount
67660	05/05/2019	05/20/2019	Staples Credit Plan	Office Supplies	1,457.41
67661	04/30/2019	05/20/2019	FBM Holdings LLC	Annual OSHA Safety Updates	565.26
67662	05/01/2019	05/20/2019	Maynard Group	NEC Phone Equipment Maintenance, AT&T Wireless Backup, eMVS Cloud, VoIP Services 05/2019	2,866.96
67663	04/29/2019	05/20/2019	USABluebook	Submersible Pump - O&M Equipment	610.31
67664	04/30/2019	05/20/2019	DataProse, LLC	Customer Billing Statements 04/2019	4,227.33
67665	05/01/2019	05/20/2019	CSC of Salinas	Hydraulic Hose - Jetter #0801	98.47
67666	05/07/2019	05/20/2019	Carollo Engineers, Inc.	Design Plans/Specification, Project Management - RUWAP Distribution, RWQCB NOI, Submittal Review, Construction Meetings, Project Administration	23,303.00
67667	04/23/2019	05/20/2019	Dilbeck & Sons, Inc.	Building Repairs - BLM	577.50
67668	05/10/2019	05/20/2019	Val's Plumbing & Heating, Inc.	Plumbing Repair - BLM	222.71
67669	04/09/2019	05/20/2019	Scelzi Enterprises, Inc.	Crane - Vehicle #0503	16,734.10
67670	04/25/2019	05/20/2019	Whitson Engineers	Design Engineering Services - Inter Garrison Water Line	4,302.20
67671	03/30/2019	05/20/2019	Calcon Systems, Inc.	Altitude Valve Controls - Marina Booster Station	6,280.00
67672	05/02/2019	05/20/2019	Koraleen Enterprises	Sampling Stations - Marina/ Ord	1,942.31
67673	04/11/2019	05/20/2019	Frank A. Olsen Company	4" Surge Valve - Ord Village LS	9,682.56
67674	03/31/2019	05/20/2019	West Yost Associates	Well Rehabilitation/ Project Management - Watkins Gate Well	18,663.83
67675	04/29/2019	05/20/2019	Identity Links, Inc.	(500) Dew Drop Rain Gauges with MCWD Logo	1,187.87
67676	05/14/2019	05/20/2019	Conservation Rebate Program	2707 3rd Ave - Washer Rebate	100.00
67677	05/14/2019	05/20/2019	Conservation Rebate Program	3003 Shorebird Pl - Washer Rebate	100.00
67678	05/07/2019	05/20/2019	Conservation Rebate Program	304 Carmel Ave #15 - Toilet Rebate	99.00
67679	05/14/2019	05/20/2019	Conservation Rebate Program	2963 Abrams Dr - Washer Rebate	150.00
67680	05/14/2019	05/20/2019	Conservation Rebate Program	3120 Bradley Cir - Toilet Rebate	125.00
67681	05/14/2019	05/20/2019	Conservation Rebate Program	3061 Vaughn Ave - (2) Toilet Rebates, Washer Rebate	350.00
67682	05/15/2019	05/20/2019	Conservation Rebate Program	189 Starfish Ct - Toilet Rebate	125.00
67683	05/08/2019	05/20/2019	esri - Environmental Systems Research Institute	ArcEditor/ ArcGIS Software 11/2018 - 06/2019	5,020.82
67684	04/24/2019	05/20/2019	Voyager Fleet Systems, Inc.	Fleet Gasoline	3,021.22
67685	04/08/2019	05/20/2019	Green Rubber-Kennedy AG, LP	1" Hose - Cosky LS	141.33
67686	04/16/2019	05/20/2019	Marina Tire & Auto Repair	Oil Change - Vehicle #1802, Oil Change/ Tires - Vehicle #1302	816.72
67687	05/06/2019	05/20/2019	Conservation Rebate Program	292 Costa Del Mar Rd - (3) Toilet Rebates	375.00
67688	05/09/2019	05/20/2019	ICONIX Waterworks (US), Inc.	Pack Joints/ Flanges - Stock	2,819.05
67689	04/24/2019	05/20/2019	Evoqua Water Technologies, LLC	(2,501) gals Bioxide - East Garrison LS	8,030.58
67690	04/09/2019	05/20/2019	Lou's Gloves, Inc.	Nitrile Gloves	456.00
67691	05/06/2019	05/20/2019	Conservation Rebate Program	3128 Shoemaker Pl - Hot Water Recirculation Pump Rebate	250.00
67692	04/30/2019	05/20/2019	Western Exterminator Company	Pest Control - Beach Office 04/2019	86.50
67693	05/06/2019	05/20/2019	TIAA Commercial Finance, Inc.	(3) Office Copiers (C754E, 454E, 5551ci), eCopy ScanStation Leases 05/2019	912.39
67694	04/30/2019	05/20/2019	Iron Mountain, Inc.	Shredding Service 04/2019	114.52
67695	05/15/2019	05/20/2019	AT&T	Modem Line, Main Frame Computer, IOP Fire Alarm, Beach/ Ord Alarms 05/2019	197.50
67696	05/01/2019	05/20/2019	PR Diamond Products, Inc.	16" Diamond Chain Speed - Hatten, Booker, Neeson Lift Stations	540.00

Check No	Invoice Date	Check Date	Vendor Name	Description	Amount
67697	04/30/2019	05/20/2019	Marina Coast Water District (BLM)	BLM Water, Sewer, Fire Service 04/2019	350.15
67698	04/30/2019	05/20/2019	Johnson Electronics	BLM Fire Alarm Monitoring 04/2019 - 06/2019	84.00
67699	05/02/2019	05/20/2019	Aqua Geo Frameworks LLC	Consulting Fee - 04/30 Marina City Council Board Meeting	4,020.85
67700	04/25/2019	05/20/2019	EKI Environment & Water, Inc.	Groundwater Planning Sustainability Study, City of Marina Permitting of CalAm Project Wells - Environmental	35,172.44
67701	05/14/2019	05/20/2019	Conservation Rebate Program	LV44 LP - (14) Toilet Rebates	1,315.94
67702	05/14/2019	05/20/2019	Conservation Rebate Program	LV44 LP - (15) Toilet Rebates	1,356.76
67703	05/02/2019	05/20/2019	Community Printers, Inc.	(12,000) 2018 Consumer Confidence Reports	2,364.54
67704	05/01/2019	05/20/2019	Verizon Connect NWF, Inc.	GPS Service - (2) Meter Reader Trucks	38.00
67705	05/06/2019	05/20/2019	Alameda Electrical Distributors, Inc.	Electrical Wire/ Conduit - Ord Office Trailer, GE Lamps	142.12
67706	05/02/2019	05/20/2019	Pollardwater/ Ferguson Enterprises Inc #3325	Liquid DChlorine Solution - Watkins Gate Well	312.23
67707	05/01/2019	05/20/2019	Greenwaste Recovery, Inc.	Garbage Collection and Recycling Services 05/2019	697.75
67708	09/26/2018	05/20/2019	Customer Service Refund	Refund Check - 186 Hibiscus Heights (Re-Issue Check #66730)	53.43
67709	12/20/2018	05/20/2019	Customer Service Refund	Refund Check - 300 Park Cir (Re-Issue Check #67123)	3.44
67710	04/26/2019	05/20/2019	Insight Planners	Web Development/ Maintenance 04/2019	3,047.00
WIRE	05/17/2019	05/22/2019	Union Bank of California	2010 Refunding Bonds, 2015 Series A Bond Payments	2,511,001.26
67711	05/13/2019	05/22/2019	PG&E	Gas and Electric Service 03/2019	53,846.08
67712	04/29/2019	05/22/2019	Aqua Geo Frameworks LLC	Hydrogeologic Framework	144,250.00
67713	05/22/2019	05/22/2019	GovInvest, Inc.	Benefit Study	4,500.00
500337-500341	05/03/2019	05/03/2019	Payroll Checks and Direct Deposit	Payroll Ending 04/26/19	96,078.16
500342	05/03/2019	05/03/2019	General Teamsters Union	Payroll Ending 04/26/19	1,041.00
500343	05/03/2019	05/03/2019	WageWorks, Inc.	Payroll Ending 04/26/19	619.23
ACH	05/03/2019	05/03/2019	State of California - EDD	Payroll Ending 04/26/19	9,345.84
ACH	05/03/2019	05/03/2019	CalPERS	Payroll Ending 04/26/19	21,781.34
ACH	05/03/2019	05/03/2019	Internal Revenue Service	Payroll Ending 04/26/19	41,570.86
ACH	05/03/2019	05/03/2019	MassMutual Retirement Services, LLC	Payroll Ending 04/26/19	8,499.65
500344	04/25/2019	05/10/2019	AFLAC	Employee Paid Benefits 04/2019	2,698.30
500345	05/05/2019	05/10/2019	LegalShield	Employee Paid Benefits 05/2019	25.90
500346	04/26/2019	05/10/2019	Pinnacle Medical Group, Inc.	Pre-Employment Physical - New Hire	100.00
500347	04/30/2019	05/10/2019	Justifacts Credential Verification, Inc.	Background Checks - (2) New Hires	278.00
500348	03/15/2019	05/10/2019	WageWorks, Inc.	FSA Admin Fees 02/2019	128.00
500349	04/17/2019	05/10/2019	Transamerica Employee Benefits	Employee Paid Benefits 04/2019	1,205.30
500350	04/30/2019	05/10/2019	Cintas Corporation No. 630	Towels, Rugs, Uniforms 04/2019	636.52
500351-500355	05/17/2019	05/17/2019	Payroll Checks and Direct Deposit	Payroll Ending 05/10/19	97,630.77
500356	05/17/2019	05/17/2019	General Teamsters Union	Payroll Ending 05/10/19	264.00
500357	05/17/2019	05/17/2019	WageWorks, Inc.	Payroll Ending 05/10/19	619.23
ACH	05/17/2019	05/17/2019	MassMutual Retirement Services, LLC	Payroll Ending 05/10/19	8,574.65
ACH	05/17/2019	05/17/2019	CalPERS	Payroll Ending 05/10/19	22,503.65
ACH	05/17/2019	05/17/2019	Internal Revenue Service	Payroll Ending 05/10/19	41,178.07

Check No	Invoice Date	Check Date	Vendor Name	Description	Amount
ACH	05/17/2019	05/17/2019	State of California - EDD	Payroll Ending 05/10/19	9,256.72
500358	03/31/2019	05/20/2019	Payroll Check	Payroll Ending 05/10/19	12.74
500359	05/02/2019	05/20/2019	ACWA/ JPIA	Medical, Dental, Vision, EAP Insurance 06/2019	68,638.22
500360	05/07/2019	05/20/2019	American Public Works Association	Monterey Chapter General Meeting - Wilcox, Wegley, Racz, True	132.00
500361	05/10/2019	05/20/2019	Rose Gill	Longevity Gift Cards - 35 Years (Kiefert), 20 Years (Barkhurst)	660.00
500362	03/05/2019	05/20/2019	Teodulfo Espero	2019 Springbrook User's Conference Per Diem Meals	210.00
500363-500367	05/31/2019	05/31/2019	Payroll Checks and Direct Deposit	Payroll Ending 05/24/19	102,404.44
500368	05/31/2019	05/31/2019	WageWorks, Inc.	Payroll Ending 05/24/19	619.23
ACH	05/31/2019	05/31/2019	CalPERS	Payroll Ending 05/24/19	22,279.90
ACH	05/31/2019	05/31/2019	MassMutual Retirement Services, LLC	Payroll Ending 05/24/19	8,574.65
ACH	05/31/2019	05/31/2019	Internal Revenue Service	Payroll Ending 05/24/19	43,968.14
ACH	05/31/2019	05/31/2019	State of California - EDD	Payroll Ending 05/24/19	9,932.86
				Total Disbursements for May 2019	**4,044,414.26**

Return to Agenda

Marina Coast Water District
Agenda Transmittal

Agenda Item: 9-B

Meeting Date: June 25, 2019

Prepared By: Paula Riso

Approved By: Keith Van Der Maaten

Agenda Title: Approve the Draft Minutes of the Joint Board/GSA Meeting of May 20, 2019

Staff Recommendation: The Board of Directors approve the draft minutes of the May 20, 2019 joint Board meeting.

Background: *5-Year Strategic Plan, Mission Statement – We Provide high quality water, wastewater collection and conservation services at a reasonable cost, through planning, management and the development of water resources in an environmentally sensitive manner.*

Discussion/Analysis: The draft minutes of May 20, 2019 are provided for the Board to consider approval.

Environmental Review Compliance: None required.

Financial Impact: _____Yes __X__No Funding Source/Recap: None

Other Considerations: The Board can suggest changes/corrections to the minutes.

Material Included for Information/Consideration: Draft minutes of May 20, 2019.

Action Required: ______Resolution __X__Motion ______Review

Board Action

Motion By______________ Seconded By________________ No Action Taken______________

Ayes__________________________ Abstained____________________________

Noes__________________________ Absent______________________________

Marina Coast Water District
Regular Board Meeting/Groundwater Sustainability Agency Board Meeting
May 20, 2019

Draft Minutes

1. Call to Order:

President Moore called the meeting to order at 6:30 p.m. on May 20, 2019 at the Marina Council Chambers, 211 Hillcrest Avenue, Marina, California.

2. Roll Call:

Board Members Present:

Thomas P. Moore – President
Jan Shriner – Vice President
Herbert Cortez
Matt Zefferman

Board Members Absent:

Peter Le

Staff Members Present:

Keith Van Der Maaten, General Manager
David Hobbs, District Counsel
Kelly Cadiente, Director of Administrative Services
Derek Cray, Operations and Maintenance Manager
Michael Wegley, District Engineer
Rose Gill, HR/Risk Administrator
Patrick Breen, Water Resources Manager
Brian True, Senior Engineer
Andrew Racz, Associate Engineer
Paula Riso, Executive Assistant/Clerk to the Board

Audience Members:

Andrew Sterbenz, Schaaf & Wheeler
Philip Clark, Seaside Resident, WCC Member
Brian McMinn, American Public Works Assoc.
Vera Nelson, EKI Environment and Water
Ken Nishi, Marina Resident
Tony Kelsey, MCWD Employee
Kurt Gonzalez, MCWD Employee
Jose Rodriguez, MCWD Employee
Candace Cuisinier, MCWD Employee
Barbara Montante, MCWD Employee
Thomas Barkhurst, MCWD Employee
Susan Kiefert, MCWD Employee

3. Public Comment on Closed Session Items:

There were no public comments.

The Board entered into closed session at 6:31 p.m. to discuss the following items:

4. Closed Session:

   A. Pursuant to Government Code 54956.9
      Conference with Legal Counsel – Existing Litigation

      1) In the Matter of the Application of California-American Water Company (U210W) for Approval of the Monterey Peninsula Water Supply Project and Authorization to Recover All Present and Future Costs in Rates, California Public Utilities Commission Application ("A.") 12-04-019

      2) In the Matter of the Application of California-American Water Company (U 210 W) for an Order (1) Approving a Settlement Agreement with the County of Monterey and the Monterey County Water Resources Agency to Settle and Resolve Claims and Issues Between the Parties and to Promote the Development, Construction and Operation of a Water Supply Project for Monterey County on an Expedited Basis, and (2) Authorizing the Transfer of Authorized Costs Related to the Settlement Agreement to Its Special Request 1 Surcharge Balancing Account, California Public Utilities Commission Application ("A.") 13-05-017, and related California Supreme Court petition for writ of review.

      3) City of Marina and Marina Coast Water District, Petitioners v. Public Utilities Commission of the State of California, Respondent (California-American Water Company, et al., Real Parties in Interest), Petitions for Writ of Review, California Supreme Court Case No. S253585

      4) Marina Coast Water District vs California-American Water Company, Monterey County Water Resources Agency; and, California-American Water Company, Monterey County Water Resources Agency vs Marina Coast Water District, San Francisco Superior Court Case Nos. CGC-15-547125, CGC-15-546632 (Complaint for Damages, Breach of Warranties, etc.)

      5) Marina Coast Water District v, California Coastal Commission (California-American Water Company, Real Party in Interest), Santa Cruz County Superior Court Case No. 15CV00267, Sixth Appellate District Court of Appeals Case No. H045468

Agenda Item 4-A (continued):

6) Bay View Community DE, LLC; Bryan Taylor; Greg Carter; and Brooke Bilyeu vs Marina Coast Water District; Board of Directors of Marina Coast Water District; County of Monterey and Does 1-25, inclusive, Monterey County Superior Court Case No. 18CV000765 (Petition for Writ of Mandate or Administrative Mandate, and Complaint for Declaratory and Injunctive Relief and Breach of Contract)

7) Marina Coast Water District, and Does 1-100 v, County of Monterey, County of Monterey Health Department Environmental Health Bureau, and Does 101-110, Monterey County Superior Court Case No. 18CV000816 (Petition for Writ of Mandate and Complaint for Injunctive Relief)

B. Pursuant to Government Code 54957.6
Conference with Labor Negotiators
Agency Negotiators (Keith Van Der Maaten, Jan Shriner)
Employee Organization: Marina Coast Water District Employees Association

C. Pursuant to Government Code 54957.6
Conference with Labor Negotiators
Agency Negotiators (Keith Van Der Maaten, Jan Shriner)
Employee Organization: Teamsters Local 890

The Board ended closed session at 7:02 p.m.

President Moore reconvened the meeting to open session at 7:03 p.m.

5. Reportable Actions Taken during Closed Session:

Mr. David Hobbs, District Counsel, stated that there were no reportable actions taken during Closed Session and direction was given.

6. Pledge of Allegiance:

Director Zefferman led everyone present in the pledge of allegiance.

7. Oral Communications:

There were no public comments.

8. Presentations:

   A. Consider Adoption of Resolution No. 2019-27 in Recognition of Thomas Barkhurst, Laboratory Supervisor, for 20 Years of Service to the Marina Coast Water District:

Director Cortez made a motion to adopt Resolution No. 2019-27 recognizing Thomas Barkhurst for 20 years of services to the Marina Coast Water District and presenting him with a gift certificate. Vice President Shriner seconded the motion. The motion was passed.

Director Zefferman	-	Yes	Vice President Shriner	-	Yes
Director Le	-	Absent	President Moore	-	Yes
Director Cortez	-	Yes			

President Moore read the narration and presented Mr. Barkhurst with a gift certificate.

   B. Consider Adoption of Resolution No. 2019-28 in Recognition of Susan Kiefert, Customer Service/Billing Representative II, for 35 Years of Service to the Marina Coast Water District:

President Moore made a motion to adopt Resolution No. 2019-28 recognizing Susan Kiefert for 35 years of services to the Marina Coast Water District and presenting her with a gift certificate. Director Zefferman seconded the motion. The motion was passed.

Director Zefferman	-	Yes	Vice President Shriner	-	Yes
Director Le	-	Absent	President Moore	-	Yes
Director Cortez	-	Yes			

President Moore read the narration and presented Ms. Kiefert with a gift certificate.

   C. Consider Adoption of Resolution No. 2019-29 Proclaiming the Week of May 19-25, 2019 2019 National Public Works Week:

Mr. Michael Wegley, District Engineer, introduced this item and Mr. Brian McMinn who was there as Vice President of the Monterey Bay Chapter of the American Public Works Association. Mr. McMinn thanked the Board for recognizing District employees and Public Works Week.

Vice President Shriner made a motion to adopt Resolution No. 2019-29 proclaiming May 19-25, 2019 National Public Works Week. Director Zefferman seconded the motion. The motion was passed.

Director Zefferman	-	Yes	Vice President Shriner	-	Yes
Director Le	-	Absent	President Moore	-	Yes
Director Cortez	-	Yes			

9. Marina Coast Water District Groundwater Sustainability Agency Matters:

   A. Staff Report:

      1. Receive an Update on the 180/400 Foot Aquifer Groundwater Sustainability Planning Process:

Mr. Patrick Breen, Water Resources Manager, introduced this item and Ms. Vera Nelson, EKI Environmental and Water. Ms. Nelson gave a brief presentation on the progress of the Groundwater Sustainability Plan. The Board asked clarifying questions. Director Cortez questions who authors the chapters in the Plan. Ms. Nelson clarified that the Salinas Valley Basin Groundwater Sustainability Agency is the author of the 180/400 Foot Aquifer chapter, the Marina Coast Water District Groundwater Sustainability Agency is the author of the Monterey Subbasin chapter.

10. Return to Marina Coast Water District Matters:

11. Consent Calendar:

Director Zefferman asked to pull item E, and Director Cortez asked to pull item G from the Consent Calendar.

Vice President Shriner made a motion to approve the Consent Calendar consisting of: A) Receive and File the Check Register for the Month of April 2019; B) Receive the Quarterly Financial Statements for January 1, 2019 to March 31, 2019; C) Approve the Draft Minutes of the Joint Board/GSA Meeting of April 15, 2019; D) Approve the Draft Minutes of the Special Joint Board/GSA Meeting of May 1, 2019; F) Consider Adoption of Resolution No. 2019-31 to Amend the On-Call Engineering Services Agreement with Schaaf & Wheeler for the A1/A2 Reservoirs and B/C Booster Pump Station Design Services; H) Consider Adoption of Resolution No. 2019-33 to Approve Amendment No. 1 to the Professional Services Agreement with GHD, INC. for Design and Construction Support Services for the Imjin Lift Station Improvement Project; and I) Consider Adoption of Resolution No. 2019-34 to Approve Task Order 10 for Inspection and Construction Support Services for the Sea Haven Development Phase 5A as Part of the On-Call Professional Services Agreement with Harris & Associates. Director Cortez seconded the motion. The motion was passed by the following vote:

Director Zefferman	-	Yes	Vice President Shriner	-	Yes
Director Le	-	Absent	President Moore	-	Yes
Director Cortez	-	Yes			

   E. Consider Adoption of Resolution No. 2019-30 to Award a Contract to Don Chapin Company, Inc. for Construction On-Call Services:

Director Zefferman noted that there was only one submittal and asked if there were any others the District could ask. Mr. Derek Cray, Operations and Maintenance Manager, said that he sent the request to five companies qualified for this work, but only one responded.

Agenda Item 11- E (continued):

Director Cortez made a motion to adopt Resolution No. 2019-30 to award a contract to Don Chapin Company, Inc. for construction on-call services. Vice President Shriner seconded the motion. The motion was passed by the following vote:

Director Zefferman	-	Yes	Vice President Shriner	-	Yes
Director Le	-	Absent	President Moore	-	Yes
Director Cortez	-	Yes			

G. Consider Adoption of Resolution No. 2019-32 to Approve a Tree Replacement Funding Agreement between Marina Coast Water District and California State University at Monterey Bay:

Director Cortez voiced his exasperation that CSUMB, following difficult negotiations, is reserving the right to plant the trees wherever they see fit and asked if that was a stipulation that was added at the last minute. Mr. Wegley answered that the agreement didn't specify where the trees were going to be planted but they did provide a plot map showing were they were planning on planting them. He said the map was difficult to read so it wasn't included in the packet. Mr. Wegley added that it didn't really matter where they were planted as long as they weren't planted within the District's easement.

Vice President Shriner made a motion to adopt Resolution No. 2019-32 to approve a Tree Replacement Funding Agreement between Marina Coast Water District and California State University at Monterey Bay. President Moore seconded the motion. The motion was passed by the following vote:

Director Zefferman	-	Yes	Vice President Shriner	-	Yes
Director Le	-	Absent	President Moore	-	Yes
Director Cortez	-	No			

12. Action Items:

A. Consider Adoption of Resolution No. 2019-35 to Approve Amendment 1 with Monterey One Water for NPDES Permitting Work on the Pure Water Advanced Water Treatment and Outfall Wastewater Disposal for the Regional Urban Water Augmentation Project:

Mr. Wegley introduced this item.

Vice President Shriner made a motion to adopt Resolution No. 2019-35 to approve Amendment 1 with Monterey One Water for NPDES Permitting Work on the Pure Water Advanced Water Treatment and Outfall Wastewater Disposal for the Regional Urban Water Augmentation Project. Director Zefferman seconded the motion. The motion was passed by the following vote:

Director Zefferman	-	Yes	Vice President Shriner	-	Yes
Director Le	-	Absent	President Moore	-	Yes
Director Cortez	-	Yes			

B. Consider Adoption of Resolution No. 2019-36 to Authorize the General Manager to Submit an Application and Execute a Grant Agreement with the United States Bureau of Reclamation for a WaterSMART: Title XVI Water Reclamation and Reuse Program Grant for the Regional Urban Water Augmentation Project:

Mr. Wegley introduced this item. Vice President Shriner asked if the grant would be approximately $3 million. Mr. Wegley answered that it looks like the District would be eligible for somewhere between $3 million to $3.5 million.

Director Zefferman made a motion to adopt Resolution No. 2019-36 to authorize the General Manager to submit an application and execute a Grant Agreement with the United States Bureau of Reclamation for a WaterSMART: Title XVI Water Reclamation and Reuse Program Grant for the Regional Urban Water Augmentation Project. Vice President Shriner seconded the motion. The motion was passed by the following vote:

Director Zefferman	-	Yes	Vice President Shriner	-	Yes
Director Le	-	Absent	President Moore	-	Yes
Director Cortez	-	Yes			

C. Consider Adoption of Resolution No. 2019-37 to Approve the 2018 Memorandum of Understanding Update with the Monterey Peninsula, Carmel Bay, and South Monterey Bay Integrated Regional Water Management Group and Approve a Reimbursement to the Monterey Peninsula Water Management District for Prop 1 Funding Grant Preparation Costs:

Mr. Andrew Racz, Associate Engineer, introduced this item. The Board asked clarifying questions.

Vice President Shriner made a motion to adopt Resolution No. 2019-37 to approve the 2018 Memorandum of Understanding update with the Monterey Peninsula, Carmel Bay, and South Monterey Bay Integrated Regional Water Management Group and approve a reimbursement to the Monterey Peninsula Water Management District for Prop 1 Funding Grant Preparation Costs. President Moore seconded the motion. The motion was passed by the following vote:

Director Zefferman	-	Yes	Vice President Shriner	-	Yes
Director Le	-	Absent	President Moore	-	Yes
Director Cortez	-	Yes			

D. Discuss, Consider, and Determine Action on Vice President Jan Shriner's Request for Censure as to Director Peter Le:

Mr. David Hobbs, District Counsel, introduced this item. Director Cortez questioned what "censure" meant and if it pertained to what was described on Page 199 of the Board packet. Mr. Hobbs answered that there were two requests of the Board: 1) does what was presented warrant moving forward with a formal investigation; and, 2) if so, what manner of investigation would the Board want to take.

Agenda Item 12- D (continued):

Director Zefferman stated that he appreciates the effort Vice President Shriner put into this request and can see some of the issues that were raised, but he was not sure about the exhibits from 2014 which showed that the Board already took action. As to the Social Media items Director Le posted, Director Zefferman said he was not comfortable moving forward on those items because Director Le hadn't been elected to the Board when those were made. He added that although he felt the tone of Director Le's comments were negative towards the District, he didn't read them as being personal attacks on staff. Director Zefferman commented that he wasn't comfortable moving forward with an investigation on Director Le's conduct with Director Le being absent and not able to speak to these measures.

Director Cortez made a motion table this item until the June meeting. Director Zefferman seconded the motion.

Mr. Ken Nishi, Marina Resident, commented that he was impressed with the two new Board members as it shows they care. He said he was glad to see they weren't getting buffaloed. Mr. Nishi suggested that an unbiased approach was to take the redacted information to a class at CSUMB and let them investigate and see what they come up with. He commented that everyone needed to be treated fairly.

Vice President Shriner commented that her biggest concern was returning to the challenges that the Board experienced in the previous years when Director Le was on the Board and the negative impacts in the morale of the staff and the increasing absenteeism on the Board. She agreed that Social Media was not the best place to collect evidence, and he was not on the Board at the time, but she said she wanted to learn from the past and avoid repeating the pattern.

The motion was passed by the following vote:

Director Zefferman	-	Yes	Vice President Shriner	-	Yes
Director Le	-	Absent	President Moore	-	Yes
Director Cortez	-	Yes			

E. Discuss, Consider, and Determine Action on Director Peter Le's Harassment Complaint against Vice President Jan Shriner:

Mr. Hobbs introduced this item.

Director Zefferman suggested that they consider tabling this item until Director Le is back before considering any kind of an investigation.

Vice President Shriner commented that there was an allegation of claims in 1995 but no record or evidence was provided.

Agenda Item 12- E (continued):

Director Cortez commented that the Board just went through harassment training in which there was a specific definition of harassment and when he reads Vice President Shriner's emails, he fails to see what is defined as harassment. He stated that he wasn't sure what the role of the Vice President was, but he didn't see the emails as harassing.

Director Cortez made a motion to dismiss this claim of harassment and to hold additional training for workplace harassment. Director Zefferman seconded the motion.

Mr. Nishi commented that he was impressed with the new Board members and the leadership and character they were showing.

President Moore commented that there were ways to block unwanted emails and suggested that Director Le can block any sender whose emails he doesn't want to receive. He added that he supports the additional harassment training.

The motion was passed by the following vote:

Director Zefferman	-	Yes	Vice President Shriner	-	Yes
Director Le	-	Absent	President Moore	-	Yes
Director Cortez	-	Yes			

13. Informational Items:

A. General Manager's Report:

Mr. Van Der Maaten stated that the AEM 2.0 was recently completed and he has received the initial report showing that they were able to gather all the data they were hoping to get. He said that now the interpretation of the data was underway and would take several months.

B. Counsel's Report:

No report was given.

C. Committee and Board Liaison Reports:

1. Water Conservation Commission:

Vice President Shriner gave a brief update and noted the next meeting is June 6th.

2. Joint City District Committee:

President Moore said they would be meeting on June 26th.

3. Executive Committee:

President Moore noted that no meeting would be held in June.

4. Community Outreach Committee:

Director Zefferman gave a brief update.

5. Budget and Personnel Committee:

Director Cortez gave a brief update.

6. M1W Board Member:

President Moore gave a brief update and noted the next meeting is on May 23rd.

7. LAFCO Liaison:

Director Cortez gave a brief update.

8. FORA:

Director Zefferman gave a brief update.

9. WWOC:

Mr. Van Der Maaten gave a brief update.

10. JPIA Liaison:

No update was given.

11. Special Districts Association Liaison:

President Moore stated the next meeting is scheduled for July 16th.

12. SVGSA Liaison:

Mr. Van Der Maaten gave a brief update and noted they would be meeting again on May 21st.

14. Board Member Requests for Future Agenda Items:

President Moore noted that the tabled item would be brought back as well as harassment training. He said they can also email in their requests.

15. Director's Comments:

Director Cortez, Vice President Shriner, and President Moore made comments.

President Moore recessed the meeting from 8:35 to 8:40 p.m.

4. Closed Session:

The Board reentered into closed session at 8:40 p.m. to discuss the following items:

B. Pursuant to Government Code 54957.6
Conference with Labor Negotiators
Agency Negotiators (Keith Van Der Maaten, Jan Shriner)
Employee Organization: Marina Coast Water District Employees Association

C. Pursuant to Government Code 54957.6
Conference with Labor Negotiators
Agency Negotiators (Keith Van Der Maaten, Jan Shriner)
Employee Organization: Teamsters Local 890

The Board ended closed session at 9:46 p.m.

President Moore reconvened the meeting to open session at 9:46 p.m.

5. Reportable Actions Taken during Closed Session:

Mr. Hobbs stated that there were no reportable actions taken during Closed Session and direction was given.

16. Adjournment:

The meeting was adjourned at 9:47 p.m.

APPROVED:

____
Thomas P. Moore, President

ATTEST:

____
Paula Riso, Deputy Secretary

Return to Agenda

Marina Coast Water District
Agenda Transmittal

Agenda Item: 9-C　　　　Meeting Date: June 25, 2019

Prepared By: Kelly Cadiente　　　　Approved By: Keith Van Der Maaten

Agenda Title: Consider Adoption of Resolution No. 2019-41 to Approve a Contract with Fieldman Rolapp & Associates to Provide Financial Advisory Services to the District

Staff Recommendation: The Board of Directors adopt Resolution No. 2019-41 to approve a contract with Fieldman Rolapp & Associates (FRA) to provide financial advisory services to the District.

Background: *5-Year Strategic Plan, Mission Statement – We provide our customers with high quality water, wastewater collection and conservation services at a reasonable cost, through planning, management and the development of water resources in an environmentally sensitive manner.*

On April 20, 2015, the Board adopted Resolution No. 2015-18 authorizing the District to refund (refinance) the Outstanding 2006 Certificates of Participation in the amount of $35,170,000 with BOSC, Inc. as underwriter, Jones Hall as bond counsel and directed staff to issue a Request for Proposals (RFP) for a Financial Advisor for the refunding and potential future transactions. Staff issued the RFP and on May 18, 2015 the Board approved a 3-year contract with FRA to serve as financial advisor on the refinancing transaction as well as to provide financial advisory services on an on-call basis.

Discussion/Analysis: A financial advisor is necessary for a transaction of this size to provide advice on structure of the transaction, review legal and disclosure documentation, and provide independent pricing evaluation. FRA provided this service on the 2015 Revenue Refunding Bonds transaction which resulted in approximately $2.6 million on a net present value savings or 7.52% of refunded bonds. In terms of cash flow savings, the District is saving approximately $220,000 per year (through 2036) in bond interest; with the exception of 2020 when the District will save approximately $698,000.

Throughout the contract period with the District, FRA has assisted the District in establishing/updating a Debt Management Policy, Reserve Policy and Investment Policy as well as provided continued disclosure reporting services required for the District's debt issues. FRA provided analysis and funding strategies during the securing of the State Revolving Fund (SRF) loan process for the Regional Urban Water Augmentation Project (RUWAP) funding process. Further, FRA provided great assistance to District staff in securing enough bridge financing for the RUWUP which has proven invaluable with the stall in reimbursements from SRF and Monterey One Water.

Financial advisors are bound to a fiduciary standard that is regulated by the Securities Exchange Commission (SEC) or state securities regulators, both of which hold advisors to a fiduciary standard that requires them to put their clients interests above their own. They are to give recommendations that are solely and completely in the best of interest of their clients. Similar to District Counsel, an in depth understanding of the District and an ongoing relationship is beneficial to the District. Staff therefore recommends an open-ended contract with FRA. The District's Professional Services Agreement provides for a 30-day termination clause for each party in case either party chooses to discontinue the relationship.

Environmental Review Compliance: None.

Financial Impact: __X__ Yes ____ No Funding Source/Recap: Services performed will be funded based on what project the services pertain.

Material Included for Information/Consideration: Resolution No. 2019-41; and, Professional Services Agreement with FRA.

Action Required: ___X___ Resolution ________ Motion ________ Review
(Roll call vote is required.)

Board Action

Resolution No____ Motion By________________ Seconded By____________________

Ayes____________________________ Abstained____________________________________

Noes____________________________ Absent______________________________________

June 25, 2019

Resolution No. 2019-41
Resolution of the Board of Directors
Marina Coast Water District
Approving a Contract with Fieldman Rolapp & Associates to Provide
Financial Advisory Services to the District

RESOLVED by the Board of Directors ("Directors") of the Marina Coast Water District ("District"), at a regular meeting duly called and held on June 25, 2019 at 11 Reservation Road, Marina, California as follows:

WHEREAS, on April 20, 2015 the Board adopted Resolution No. 2015-18 authorizing the District to refund (refinance) the Outstanding 2006 Certificates of Participation in the amount of $35,170,000 with BOSC, Inc. as underwriter, Jones Hall as bond counsel and directed staff to issue a RFP for a Financial Advisor for the refunding and potential future transactions; and,

WHEREAS, a financial advisor is necessary for a transaction of this size to provide advice on structure of the transaction, review legal and disclosure documentation and provide independent pricing evaluation; and,

WHEREAS, financial advisors are bound to a fiduciary standard that is regulated by the Securities Exchange Commission (SEC) or state securities regulators, both of which hold advisors to a fiduciary standard that requires them to put their clients' interests above their own; and,

WHEREAS, staff issued an RFP and on May 18, 2015 the Board approved a 3-year contract with Fieldman Rolapp & Associates (FRA) to provide financial advisory services on the refunding of the outstanding 2006 Certificates of Participation and on-call financial services for the District; and,

WHEREAS, throughout the contract period, FRA has assisted the District in establishing/updating financial policies as well as provided continued disclosure reporting services required for the District's debt issues. FRA provided analysis and funding strategies during the securing of the State Revolving Fund (SRF) loan process for the Regional Urban Water Augmentation Project (RUWAP) funding process including providing great assistance to District staff in securing sufficient bridge financing for the RUWUP.

NOW, THEREFORE, BE IT RESOLVED, that the Board of Directors of the Marina Coast Water District does hereby adopt Resolution No. 2019-41, to approve a contract with Fieldman Rolapp & Associates for on call financial advisory services based on FRA's hourly rate schedule.

BE IT FURTHER RESOLVED, that the Board authorizes the General Manager to take all actions and execute all documents as may be necessary or appropriate to give effect to this resolution.

PASSED AND ADOPTED on June 25, 2019, by the Board of Directors of the Marina Coast Water District by the following roll call vote:

Ayes: Directors____

Noes: Directors____

Absent: Directors____

Abstained: Directors____

____
Jan Shriner, Vice President

ATTEST:

____
Keith Van Der Maaten, Secretary

CERTIFICATE OF SECRETARY

The undersigned Secretary of the Board of the Marina Coast Water District hereby certifies that the foregoing is a full, true and correct copy of Resolution No. 2019-41 adopted June 25, 2019.

____
Keith Van Der Maaten, Secretary

PROFESSIONAL SERVICES AGREEMENT FOR
CONSULTING SERVICES
BETWEEN
MARINA COAST WATER DISTRICT
AND
Fieldman Rolapp & Associates

Some of the important terms of this Agreement are printed on Page 2. For your protection, make sure that you read and understand all provisions before signing. The terms on Page 2 are incorporated in this document and will constitute a part of the Agreement between the parties when signed.

TO: Marina Coast Water District DATE: June 26, 2019

11 Reservation Road

Marina, CA 93933

The undersigned Consultant offers to furnish the following:

MCWD wishes to engage Fieldman Rolapp & Associates to perform financial advisory services for the District. The scope of services is included as Attachment A.

Contract price $ On-Call Contract rate schedule per Attachment B + out-of-pocket expenses

Completion date ____________________

Instructions: Sign and return two originals. Upon acceptance by the Marina Coast Water District, a copy will be signed by its authorized representative and promptly returned to you.

Accepted: Marina Coast Water District	Fieldman Rolapp & Associates
By ____________________	By ____________________
Name Keith Van Der Maaten	Name ____________________
Title General Manager	Title ____________________

Consultant agrees with the Marina Coast Water District that:

1. When the law establishes a professional standard of care for Consultant's services, to the fullest extent permitted by law, Consultant will defend, indemnify and hold harmless the Marina Coast Water District, its directors, officers, employees, or authorized volunteers from all claims and demands of all persons that arise out of, pertain to, or relate to the Consultant's negligence, recklessness, or willful misconduct in the performance (or actual or alleged non-performance) of the work under this agreement. Consultant shall defend itself against any and all liabilities, claims, losses, damages, and costs arising out of or alleged to arise out of Consultant's performance or non-performance of the work hereunder, and shall not tender such claims to District nor to its directors, officers, employees, or authorized volunteers, for defense or indemnity.

2. Other than in the performance of professional services, to the fullest extent permitted by law, Consultant will defend, indemnify and hold harmless the Marina Coast Water District, its directors, officers, employees, and authorized volunteers from all claims and demands of all persons arising out of the performance of the work; including but not limited to claims by the Consultant or Consultant's employees for damages to persons or property except for the sole negligence or willful misconduct or active negligence of the Marina Coast Water District, its directors, officers, employees, or authorized volunteers.

3. By his/her signature hereunder, Consultant certifies that he/she is aware of the provisions of Section 3700 of the California Labor Code which requires every employer to be insured against liability for workers' compensation or to undertake self-insurance in accordance with the provisions of that code, and that Consultant will comply with such provisions before commencing the performance of the professional services under this Agreement. Consultant will keep workers' compensation insurance for their employees in effect during all work covered by this Agreement and shall file with the Marina Coast Water District the certificate required by Labor Code Section 3700.

4. This paragraph is part of the contract. Yes or No (Circle One) [This section applies in most cases except for laboratory work.] Consultant will file with the Marina Coast Water District, before beginning professional services, a certificate of insurance satisfactory to the District evidencing professional liability coverage of not less than $1,000,000 per claim and annual aggregate, requiring 30 days notice of cancellation (10 days for non-payment of premium) to the Marina Coast Water District. Coverage is to be placed with a carrier with an A.M. Best rating of no less than A-:VII, or equivalent, or as otherwise approved by the District. The retroactive date (if any) is to be no later than the effective date of this Agreement. Consultant shall maintain such coverage continuously for a period of at least Three years after the completion of the contract work. Consultant shall purchase a one-year extended reporting period i) if the retroactive date is advanced past the effective date of this Agreement; ii) if the policy is canceled or not renewed; or iii) if the policy is replaced by another claims-made policy with a retroactive date subsequent to the effective date of this Agreement.

5. This paragraph is part of the contract. Yes or No (Circle One) Consultant will file with the Marina Coast Water District before beginning professional services, certificates of insurance satisfactory to the Marina Coast Water District evidencing general liability coverage of not less than $1,000,000 per occurrence ($2,000,000 general and products-completed operations aggregate (if used)) for bodily injury, personal injury and property damage; auto liability of at least $1,000,000 for bodily injury and property damage each accident limit; workers' compensation (statutory limits) and employer's liability ($1,000,000) (if applicable); requiring 30 days (10 days for

non-payment of premium) notice of cancellation to the Marina Coast Water District. The general liability coverage is to state or be endorsed to state "such insurance shall be primary and any insurance, self-insurance or other coverage maintained by the Marina Coast Water District, its officers, directors, employees, or authorized volunteers shall not contribute to it". The general liability insurance shall give Marina Coast Water District, its officers, directors, employees and its authorized representatives and volunteers insured status using ISO endorsement CG2010, CG2033 or equivalent. Coverage is to be placed with a carrier with an A.M. Best rating of no less than A- :VII or as otherwise approved by the Marina Coast Water District.

6. If any of the required coverages expire during the term of this agreement, the Consultant shall deliver the renewal certificate(s) to the District at least ten (10) days prior to the expiration date.

7. Consultant shall only accept direction or orders from the General Manager or his designee or from the Board of Directors.

8. The terms of this agreement shall commence on June 26, 2019 and continue in full force unless terminated by a 30-day written notice by either party to the other.

9. Any change in the scope of the professional services to be done, method of performance, nature of materials or price thereof, or to any other matter materially affecting the performance or nature of the professional services will not be paid for or accepted unless such change, addition or deletion be approved in advance, in writing by a supplemental agreement by the Marina Coast Water District. Consultant's "authorized representative(s)" has (have) the authority to execute such written change for Consultant.

ATTACHMENT A: SCOPE OF SERVICES

Financial Advisor may be expected to be available as needed by the District to provide financial advice from inception of a financing until its completion.

The District will require future financing for its capital improvement plan. The scope of work for financings includes, but not limited to,

- Review the overall financial status of the District and review for appropriate financial policies
- Provide information, judgments, and forecasts regarding economic, capital market and money market conditions
- Manage sales process including reviewing spreads, analyzing market levels, and clarifying syndicated roles with selected underwriter(s)
- Advise on the timing, method and structure of bond sales
- Assist and advise in evaluating opportunities to refinance and restructure outstanding debt
- Evaluate and advise on the use of complex debt structures
- Assist in negotiating contracts related to financings of the District
- Assist staff in reviewing RFPs in the selection of financing teams
- Assist the District in preparation for any presentation before rating agencies
- Assist in reviewing and analyzing legislation that may have a financial impact on the District
- Solicit bids related to escrow funds, insurance and other bids District may request
- Review of legal documentation including closing documents and transcripts
- Participate in meetings, as requested, relating to the issuance of bonds or notes
- Assist the District with implementing a rating strategy to optimize the District's credit ratings including preparing any presentation before rating agencies, or other parties as appropriate
- Provide ongoing information to MCWD staff regarding the activity status of the financing.

The financial advisory firm selected will not be permitted to underwrite any of the District's obligations.

In addition, the Financial Advisor will provide assistance in developing long-range financial plans, debt management policies, as well as updating existing investment and reserve policies of the District.

ATTACHMENT B – RATE SCHEDULE

FIELDMAN | ROLAPP & ASSOCIATES

SCHEDULE OF FEES Effective January 1, 2019	
Executive Officer	$365 Per Hour
Principals	$335 Per Hour
Senior Vice President	$320 Per Hour
Vice President	$265 Per Hour
Assistant Vice President	$225 Per Hour
Senior Associate	$190 Per Hour
Associate	$170 Per Hour
Analyst	$105 Per Hour
Administrative Assistants	$80 Per Hour

Fees subject to change every 2 years based on an inflationary rate of 2% per year.

Return to Agenda

Marina Coast Water District
Agenda Transmittal

Agenda Item: 9-D Meeting Date: June 25, 2019

Prepared By: Paul Lord Approved By: Keith Van Der Maaten

Agenda Title: Consider Adoption of Resolution No. 2019-42 to Authorize the General Manager to Sign a Memorandum of Understanding between Marina Coast Water District and the Monterey Peninsula Unified School District Regarding the In-School Water Conservation Education Program

Staff Recommendation: The Board of Directors adopt Resolution No. 2019-42 to authorize the General Manager to sign a memorandum of understanding between Marina Coast Water District and the Monterey Peninsula Unified School District regarding the in-school water conservation education program for the 2019-2020 school year.

Background: *5-Year Strategic Plan, Strategic Goal 1.7 – Review and update our water conservation program.*

The MPUSD and MCWD have worked together for more than seventeen years to bring water conservation education to students in the district's service area. This agreement continues this long-standing relationship between the two partners and provides the means to plan and integrate water conservation instruction into the curriculum at local schools for the 2019-2020 fiscal year.

Teacher surveys, and feedback from school administrators, students, and their families, indicate that the unique, professional classroom instruction provided is desired, appreciated, and very effective. The program is tremendously valued by staff, school faculty, and the community because it is successful in achieving the most important goal: getting the local children to understand more about earth science, the properties of water, and the importance of practicing water conservation every day.

The Water Conservation Commission reviewed this item at their June 6, 2019 meeting and recommended Board approval.

Discussion/Analysis: MCWD will reimburse MPUSD for hourly classroom instruction and program development work at a minimum hourly rate plus statutory benefits, not-to-exceed $38,750. This maximum expenditure amount is based upon reimbursements paid during previous years when as many as 160 classroom presentations were performed. A certified, experienced, MPUSD Teacher has been hired and tasked with providing targeted instruction to students, and the school staff. Simultaneously, the teacher will help the District develop water conservation related curricula designed to meet the state academic curriculum standards. All instruction and educational material presented will be age appropriate for the children taught.

Environmental Review Compliance: None required.

Financial Impact: __X__ Yes ______No Funding Source/Recap: This item is funded through the FY 2019/2020 Conservation Budget of the Central Marina and Ord Community cost centers.

Other Considerations: None.

Material Included for Information/Consideration: Resolution No. 2019-42, and, MOU between MCWD and Monterey Peninsula Unified School District.

Action Required: ___X___Resolution ______Motion ______Review
(Roll call vote is required)

Board Action

Motion By________________ Seconded By____________ No Action Taken______________

Ayes___________________________ Abstained_____________________________

Noes___________________________ Absent_______________________________

June 25, 2019

Resolution No. 2019 - 42
Resolution of the Board of Directors
Marina Coast Water District
Authorizing the General Manager to Sign a Memorandum of Understanding
Between Marina Coast Water District and the Monterey Peninsula Unified School District
Regarding the In-School Water Conservation Education Program

RESOLVED by the Board of Directors ("Directors") of the Marina Coast Water District ("MCWD"), at a regular meeting duly called and held on June 25, 2019, at 11 Reservation Road, Marina, California as follows:

WHEREAS, MCWD has developed a Memorandum of Understanding (MOU) with the Monterey Peninsula Unified School District regarding the In-School Water Conservation Education Program that will facilitate program development and the teaching of water conservation education; and,

WHEREAS, the MOU will be an agreement to formalize planning and execution of the In-School Water Conservation Education Program; and,

WHEREAS, water conservation is within the District's Mission and the funding for this MOU is included in the District's budget for FY 2019/2020 under Conservation Education with a not-to-exceed amount of $38,750.

NOW, THEREFORE, BE IT RESOLVED, that the Board of Directors of the Marina Coast Water District does hereby approve of the proposed Memorandum of Understanding regarding the In-School Water Conservation Education Program with wage and benefit reimbursements.

BE IT FURTHER RESOLVED, that the Board of Directors does hereby authorize the General Manager to sign the MOU.

PASSED AND ADOPTED on June 25, 2019 by the Board of Directors of the Marina Coast Water District by the following roll call vote:

Ayes: Directors____

Noes: Directors____

Absent: Directors____

Abstained: Directors____

____
Jan Shriner, Vice President

ATTEST:

____
Keith Van Der Maaten, Secretary

CERTIFICATE OF SECRETARY

The undersigned Secretary of the Board of the Marina Coast Water District hereby certifies that the foregoing is a full, true and correct copy of Resolution No. 2019-42 adopted June 25, 2019.

____
Keith Van Der Maaten, Secretary

MEMORANDUM OF UNDERSTANDING

Between

MONTEREY PENINSULA UNIFIED SCHOOL DISTRICT

And

MARINA COAST WATER DISTRICT

This agreement is between the Monterey Peninsula Unified School District (MPUSD) and the Marina Coast Water District (MCWD) for the 2019-2020 Fiscal Year.

The terms and conditions set forth in this document shall constitute the entire agreement between MPUSD and MCWD and may not be amended except by a written document signed by both parties.

The parties agree to the following:

1. MCWD agrees to fully fund a part time Water Science/Conservation Teacher position, not-to-exceed a total of $38,750.
2. This teacher will provide water science and water conservation awareness education to all the MPUSD schools within the MCWD service area.
3. MPUSD will send a monthly invoice of the science teacher's monthly salary and benefit costs for reimbursement to the MCWD, Attn. Paul Lord, 11 Reservation Rd., Marina, 93933. (Email: plord@mcwd.org, Tel: (831) 883-5905, FAX: (831) 384-0197) The final invoice is to be processed prior to July 1, 2020.
4. The MCWD shall submit a check within 30 days of invoice receipt made payable to the Monterey Peninsula Unified School District and sent to: Attn. Connie Avila, P.O. Box 1031, Monterey, CA 93942-1031.
5. The payment will be deposited in an account dedicated for this purpose only.
6. The position shall be filled through MPUSD's established hiring process and shall be an employee of MPUSD and shall be entitled to the same rights, privileges and applicable benefits as other MPUSD employees.

MARINA COAST WATER DISTRICT

____

Keith Van Der Maaten
General Manager
11 Reservation Road
Marina, CA 93933

MONTEREY PENINSULA UNIFIED SCHOOL DISTRICT

____

Ryan Altemeyer
Associate Superintendent, Business Services
P.O. Box 1031
Monterey, CA 93942-1031

Return to Agenda

Marina Coast Water District
Agenda Transmittal

Agenda Item: 9-E Meeting Date: June 25, 2019

Prepared By: Derek Cray Approved By: Keith Van Der Maaten

Agenda Title: Consider Adoption of Resolution No. 2019-43 to Authorize a Notice of Completion for the Watkins Gate RISD Rehab Project to be filed with the Monterey County Recorder

Staff Recommendation: The Board of Directors adopt Resolution No. 2019-43 to authorize a Notice of Completion for the Watkins Gate RISD Rehab Project to be filed with the Monterey County Recorder.

Background: *Strategic Plan, Element No. 2 Infrastructure – Our objective is to provide a high quality water distribution system and an efficiently operating wastewater collection system to serve existing and future customers. Through the master planning process, our infrastructure strategy is to carefully maintain our existing systems and ensure future additions and replacements will meet District standards*.

On January 29, 2019, District staff conducted a bid opening for the Watkins Gate Radical Injection and Surge Development (RISD) rehabilitation project. This project consisted of chemical injections, surging, swabbing, and developing of the Watkins Gate potable water well.

On February 19, 2019, the Board adopted Resolution No. 2019-14 awarding the contract to the lowest bidder, Maggiora Bros. Drilling, Inc. in the amount of $120,212.44, plus a 10% contingency for a total not-to-exceed of $132,233.68.

Discussion/Analysis: Maggiora Bros. Drilling, Inc. completed the rehabilitation on the well on May 28, 2019. The project included deep surging methods to break up any fine grain sands and get chemical deep out past the gravel pack, and aggressive chemical swabbing of a mud remover and chlorine to thoroughly clean and disinfect the well.

The table below represents the authorized amount compared to the contracted amount.

Watkins Gate RISD Rehab Project		
	Board Authorized Amount	Actual Amount
Bid Price (Maggiora Bros.)	$120,212.44	$101,413.56
Total	$120,212.44	$101,413.56

The project was completed at approximately 15 percent under budget. This was due to a reduction in the number of hours in the surging of Watkins Well. The characteristics of the water were closely watched during the entire duration and it was determined that further surging would not result in better results, as turbidity levels were not declining with further surging sessions.

Unfortunately, the rehabilitation did not completely eradicate the coliform issue. Tests, after the completion and flushing to waste, still show low counts of coliform bacteria within the well.

Currently, the District is looking at alternative means and is working with the Department of Drinking Water (DDW) on possible well head treatment to provide a 4-log virus inactivation.

The project was completed pursuant to the plans and specification; therefore, staff is recommending a Notice of Completion be filed with the Monterey County Recorder.

Environmental Review Compliance: None required.

Financial Impact: ______Yes ____X___No Funding Source/Recap: None

Other considerations: None.

Material Included for Information/Consideration: Resolution No. 2019-43; and, Notice of Completion.

Action Required: ___X___Resolution ________Motion _______Review
(Roll call vote is required.)

Board Action

Motion By______________ Seconded By________________ No Action Taken______________

Ayes__________________________ Abstained____________________________

Noes__________________________ Absent______________________________

June 25, 2019

Resolution No. 2019-43
Resolution of the Board of Directors
Marina Coast Water District
Authorize a Notice of Completion for the Watkins Gate RISD Rehab Project

RESOLVED by the Board of Directors ("Directors") of the Marina Coast Water District ("District"), at a regular meeting duly called and held on June 25, 2019, at 11 Reservation Road, Marina, California as follows:

WHEREAS, Watkins Gate well has been experiencing Coliform Bacteria issues, was offline, and in need of an extensive rehabilitation to try to eradicate the bacteria; and,

WHEREAS, the Board approved Resolution No. 2019-14 and awarded the contract to the lowest bidder, Maggiora Bros. Drilling, Inc., for the rehabilitation of Watkins Gate Well through Radical Injection and Surge Development in the amount of $120,212.44, plus a 10 % contingency for a total not-to-exceed of $132,233.68; and,

WHEREAS, the project was completed for a total of $101,413.56; and,

WHEREAS, staff is recommending a Notice of Completion be filed with the Monterey County Recorder as the work was completed pursuant to the plans and specification and contract obligations.

NOW, THEREFORE, BE IT RESOLVED, that the Board of Directors of the Marina Coast Water District does hereby authorize the General Manager or his designee to file a Notice of Completion for the Watkins Gate RISD Rehab Project with the Monterey County Recorder.

PASSED AND ADOPTED on June 25, 2019 by the Board of Directors of the Marina Coast Water District by the following roll call vote:

Ayes: Directors____

Noes: Directors____

Absent: Directors____

Abstained: Directors____

____
Jan Shriner, Vice President

ATTEST:

____
Keith Van Der Maaten, Secretary

CERTIFICATE OF SECRETARY

The undersigned Secretary of the Board of the Marina Coast Water District hereby certifies that the foregoing is a full, true and correct copy of Resolution No. 2019-43 adopted June 25, 2019.

____

Keith Van Der Maaten, Secretary

After recording, return to
MARINA COAST WATER DISTRICT
11 RESERVATION ROAD
MARINA, CA 93933

NOTICE OF COMPLETION
(Public Works - Civil Code 3093)
(California Government-Code 27383)

NOTICE IS HEREBY GIVEN:

That the project described as the Watkins Gate RISD Rehab project which consisted of the chemical application and rehabilitation of a deep potable water well located at 13330 Reservation Road Marina, CA 93933 is complete. The project was constructed or undertaken pursuant to a contract between, the MARINA COAST WATER DISTRICT, Owner, a public entity, located at 11 Reservation Road, Marina, CA 93933, and MAGGIORA BROS. DRILLING, INC, a corporation located at 595 Airport Blvd. Watsonville, CA 95076 as the contractor, and that the date of completion of said work was May 28, 2019 which was the date said public entity accepted the completeness of said work.

MARINA COAST WATER DISTRICT

By: ___________________________________
Derek Cray, Operations & Maintenance Manager

Dated: _________________________________

VERIFICATION OF SIGNATURE

I, Derek Cray, do hereby certify under penalty of perjury that I am the OPERATIONS AND MAINTENANE MANAGER of the public entity named above; that I am authorized to verify the foregoing notice; that I have read the same, and that it is true to my own knowledge.

By: ___________________________________
Derek Cray, Operations & Maintenance Manager

Dated: _________________________________

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

CERTIFICATE OF ACKNOWLEDGEMENT

STATE OF CALIFORNIA)
) ss.
COUNTY OF MONTEREY)

On _______________, 2019, before me, _____________________, a Notary Public, personally appeared _____________________________, who proved to me on the basis of satisfactory evidence, to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument, the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PURJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

____
Notary Public in and for said State

Return to Agenda

Marina Coast Water District
Agenda Transmittal

Agenda Item: 10-A | Meeting Date: June 25, 2019

Submitted By: Kelly Cadiente | Approved By: Keith Van Der Maaten

Agenda Title: Consider Adoption of Resolution No. 2019-44 to Approve the Marina Coast Water District Budget for FY 2019-2020

Staff Recommendation: The Board of Directors adopt Resolution No. 2019-44 approving the Marina Coast Water District Budget for FY 2019-2020.

Background: *5-Year Strategic Plan, Objective No. 3 – To manage public funds to assure financial stability, prudent rate management, and demonstrate responsible stewardship. Our fiscal strategy is to forecast, control and optimize income and expenditures in an open and transparent manner. We will efficiently use our financial resources to assure availability to fund current and future demands.*

On December 17, 2018, the Board originally set the date for the FY 2019-2020 Budget Workshop for March 4, 2019. Per staff's request, the workshop was re-scheduled to March 11, 2019. Staff made a presentation on the Draft FY 2019-2020 Budget to the Board at the workshop.

Based on Board discussion and review from the March 11th Budget Workshop, items from staff, and a request made by the Water and Wastewater Oversight Committee (WWOC) at its March 13th meeting, staff revised the Draft FY 2019-2020 Budget and presented it to the Board at its April 14th regular meeting. No changes to the Revised Draft Budget have been made since.

Discussion/Analysis: The Ord Community portion of the Draft FY 2019-2020 District Budget was presented to the Fort Ord Reuse Authority's (FORA) WWOC on March 13, 2019 for discussion, and further reviewed at its March 28th meeting, however that discussion was moved to the WWOC's April 11th meeting. Once clarifications and responses were provided to the WWOC from their April 11th meeting, the WWOC voted unanimously to recommend approval of Budget to the FORA Board.

On May 10, 2019, the FORA Board voted unanimously to approve the Ord Community and RUWAP portions of the District's FY 2019-2020 Budget and Five-year Capital Improvement Plan.

Environmental Review Compliance: None.

Financial Impact: ______Yes ___X___No Funding Source/Recap: None

Materials Included for Information/Consideration: FY 2019-2020 Revised Budget Document dated June 25, 2019.

Action Required: ___X___Resolution ______Motion ______Review
(Roll call vote is required.)

Board Action

______Resolution No____ Motion By________________ Seconded By______________

Ayes___________________________ Abstained_____________________________

Noes___________________________ Absent________________________________

June 25, 2019

Resolution No. 2019 - 44
Resolution of the Board of Directors
Marina Coast Water District
Adopting the Marina Coast Water District Budget for FY 2019-2020

RESOLVED by the Board of Directors ("Directors") of the Marina Coast Water District ("District"), at a regular meeting duly called and held on June 25, 2019 at 11 Reservation Road, Marina, California as follows:

WHEREAS, staff prepared and presented the draft FY 2019-2020 Budget that includes projected revenues, expenditures and capital improvement projects for the six cost centers of the District's Water and Wastewater systems; and,

WHEREAS, the District Board reviewed the proposed FY 2019-2020 Budget on March 11, 2019 and April 15, 2019; and,

WHEREAS, rates, fees, and charges; excluding capacity fees for Central Marina service area were adopted by the Board in Ordinances 60; and,

WHEREAS, rates, fees, and charges; excluding capacity fees for the Ord Community service area were adopted by the Board in Resolution No. 2018-12; and,

WHEREAS, on June 10, 2019, the FORA Board adopted Resolution No. 2019-06 approving the Ord Community and RUWAP portions of the FY 2019-2020 District Budget.

NOW, THEREFORE, BE IT RESOLVED, the Board of Directors of the Marina Coast Water District does hereby approve and adopt the FY 2019-2020 Budget of the Marina Coast Water District.

PASSED AND ADOPTED on June 25, 2019, by the Board of Directors of the Marina Coast Water District by the following roll call vote:

Ayes: Directors____

Noes: Directors____

Absent: Directors____

Abstained: Directors____

____
Jan Shriner, Vice President

ATTEST:

____
Keith Van Der Maaten, Secretary

CERTIFICATE OF SECRETARY

The undersigned Secretary of the Board of the Marina Coast Water District hereby certifies that the foregoing is a full, true and correct copy of Resolution No. 2019-44 adopted June 25, 2019.

____
Keith Van Der Maaten, Secretary

Marina Coast Water District

Marina Water & Wastewater
Ord Community Water & Wastewater
RUWAP
Regional Desalination Project

REVISED DRAFT

FY 2019-2020
Budget

June 25, 2019

TABLE OF CONTENTS

Marina Coast Water District
FY 2019/2020 Draft Budget Calendar
(Includes Marina & Ord Community)
Revised 05/10/2019

DATE	**RP**	**MCWD**	**WWOC**	**FORA**	**DESCRIPTION**
12/17/2018	DAS/GM	X			Distribute 2019-2020 Draft Budget Schedule to MCWD Board
12/19/2018	DAS/GM		X		Distribute 2019-2020 Draft Budget Schedule to FORA
02/12/2019	DAS/DH	X			Distribute 2019-2020 Budget Worksheets to Department Heads
02/19/2019	DAS/GM	X			Present 2017-2018 Mid-Year Report to MCWD Board. PUBLIC MEETING
02/19/2019	DAS/DH	X			2019-2020 Budget Worksheets due from Department Heads
02/27/2019	DAS/GM	X	X		Present 2018-2019 Mid-Year Report and Draft 2019-2020 5-Year CIP Plan to WWOC. PUBLIC MEETING
03/11/2019	DAS/GM	X			Budget Workshop Meeting (Department Heads/Board). PUBLIC MEETING
03/13/2019	DAS/GM	X	X		Present 2019-2020 Ord Community Draft Budget to WWOC. PUBLIC MEETING
03/28/2019 Special Meeting	DAS/GM		X		Q&A with WWOC on 2019-2020 Ord Community Draft Budget and provide WWOC with updates from the Budget Workshop. PUBLIC MEETING
04/11/2019	DAS/GM		X		Further discussion 2019-2020 Ord Community Revised Draft Budget with WWOC. Possible WWOC recommendation to FORA Board. PUBLIC MEETING
04/15/2019	DAS/GM	X			Present Revised 2016-2020 Draft Budget to the Board. PUBLIC MEETING
04/25/2019 Special Meeting	DAS/GM		X		Further discussion 2019-2020 Ord Community Revised Draft Budget with WWOC. Possible WWOC recommendation to FORA Board. PUBLIC MEETING
05/10/2019	DAS/GM FORAStaff	X		X	FORA Board first vote to adopt 2019-2020 Ord Community Budgets. PUBLIC MEETING
06/25/2019	DAS//GM	X			MCWD Board adopts 2019-2020 District Budget. PUBLIC MEETING

GM= General Manager; DAS= Director of Administrative Services; DH=Department Heads

MEMORANDUM

Marina Coast Water District

DATE: June 25, 2019

TO: Board of Directors

FROM: Kelly Cadiente, Director of Administrative Services

SUBJECT: Budget Summary

Introduction.

On behalf of the District staff, I am pleased to present the Fiscal Year 2019-2020 Budget. This budget was developed with a focus on cost containment of system operations and infrastructure needs and is designed to assist in meeting the strategic goals of the Board.

The purpose of this Budget Summary is to provide an overview of the FY 2019–2020 Draft Budget document and the key assumptions used in developing this Budget.

The Draft Budget includes 6 separate cost centers:

- Marina Water
- Marina Wastewater Collection (Sewer)
- Ord Community Water
- Ord Community Wastewater Collection (Sewer)
- Regional Urban Water Augmentation Project (RUWAP)
- Regional Desalination Project

In accordance with Article 7 of the Water Wastewater Facilities Agreement between Marina Coast Water District (MCWD) and Fort Ord Reuse Authority (FORA), the District maintains separate cost centers to ensure that revenues and expenses are appropriately segregated and maintained for the Marina systems, the Ord Community systems, and the accruing costs for the Regional Urban Water Augmentation Project (RUWAP). 0n October 25, 2006, the Board adopted Ordinance No. 43 which also requires the cost centers remain separate after the expiration of the Agreement between MCWD and FORA.

District costs that are not dedicated to a specific cost center are shared among the four primary cost centers - Marina Water, Marina Sewer, Ord Community Water, and Ord Community Sewer. Sharing of these expenses, in turn, creates efficiencies and cost savings for administrative functions for the two service areas that would otherwise not be realized. The District uses the expense ratio method to allocate these shared expenses which represent approximately 15% of the District's Operating Expenses. This approach is also referred to by "as all others" – essentially that general benefit functions mirror how the first 85% of the District's costs are accrued. These costs include Admin salaries and benefit costs, Board related costs, information technology related costs, accounting services, rate study costs etc. These functions serve the District as a whole and cannot be reasonably allocated on a direct basis or by one of the above metrics. The District contracted with Carollo Engineers in 2017 to review the District's cost

allocation methods and provide a Cost Allocation Plan that can be found on the District's website at following link:
http://www.mcwd.org/docs/financials/MCWD%20Cost%20Allocation%20Plan%20(f)%2026Feb.pdf

For FY 2019-2020, the assigned percentages are as follows:

Marina Water	23%	Ord Community Water	57%
Marina Sewer	6%	Ord Community Sewer	14%

Over the past several years, direct operating expenses throughout the Ord Community has increased causing its allocation percentages of shared expenses to increase. These expenses include the administrative costs associated with fulfilling the District's responsibilities under the Facilities Agreement with the FORA and the operations and maintenance costs on the large and aged systems within the Ord Community.

The following tables are historical and current calculations of general allocation percentages:

[1]Total Operating Expenses less depreciation/amortization. RUWAP operating expenses are included in Ord Water cost center for % allocation purposes for FY 2015-16 through FY 2019-20.

All Cost Centers	FY 2013-14 Operating Costs[1]	FY 2015-16 Allocation %	FY 2014-15 Operating Costs[1]	FY 2016-17 Allocation %	FY 2015-16 Operating Costs[1]	FY 2017-18 Allocation %	FY 2016-17 Operating Costs[1]	FY 2018-19 Allocation %	FY 2017-18 Operating Costs[1]	FY 2019-20 Allocation %
Marina Water	$2,039,492	27%	$2,015,266	26%	$2,111,909	25%	$2,277,038	24%	$2,374,800	23%
Marina Sewer	$526,952	7%	$550,054	7%	$528,332	7%	$621,365	7%	$603,516	6%
Ord Water	$4,155,620	54%	$4,294,101	54%	$4,540,636	54%	$5,236,646	54%	$6,032,725	57%
Ord Sewer	$893,864	12%	$1,002,451	13%	$1,187,678	14%	$1,476,337	15%	$1,453,937	14%
Total	$7,615,928	100%	$7,861,872	100%	$8,368,555	100%	$9,611,386	100%	$10,464,978	100%
Marina Only Cost Centers	FY 2013-14 Operating Costs[1]	FY 2015-16 Allocation %	FY 2014-15 Operating Costs[1]	FY 2016-17 Allocation %	FY 2015-16 Operating Costs[1]	FY 2017-18 Allocation %	FY 2016-17 Operating Costs[1]	FY 2018-19 Allocation %	FY 2017-18 Operating Costs[1]	FY 2019-20 Allocation %
Marina Water	$2,039,492	79%	$2,015,266	79%	$2,111,909	80%	$2,277,038	79%	$2,374,800	80%
Marina Sewer	$526,952	21%	$550,054	21%	$528,332	20%	$621,365	21%	$603,516	20%
Ord Only Cost Centers	FY 2013-14 Operating Costs[1]	FY 2015-16 Allocation %	FY 2014-15 Operating Costs[1]	FY 2016-17 Allocation %	FY 2015-16 Operating Costs[1]	FY 2017-18 Allocation %	FY 2016-17 Operating Costs[1]	FY 2018-19 Allocation %	FY 2017-18 Operating Costs[1]	FY 2019-20 Allocation %
Ord Water	$4,155,620	82%	$4,294,101	81%	$4,540,636	79%	$5,236,646	78%	$6,032,725	81%
Ord Sewer	$893,864	18%	$1,002,451	19%	$1,187,678	21%	$1,476,337	22%	$1,453,937	19%

Water Only Cost Centers	FY 2013-14 Operating Costs[1]	FY 2015-16 Allocation %	FY 2014-15 Operating Costs[1]	FY 2016-17 Allocation %	FY 2015-16 Operating Costs[1]	FY 2017-18 Allocation %	FY 2016-17 Operating Costs[1]	FY 2018-19 Allocation %	FY 2017-18 Operating Costs[1]	FY 2019-20 Allocation %
Marina Water	$2,039,492	33%	$2,015,266	32%	$2,111,909	32%	$2,277,038	30%	$2,374,800	28%
Ord Water	$4,155,620	67%	$4,294,101	68%	$4,540,636	68%	$5,236,646	70%	$6,032,725	72%
Sewer Only Cost Centers	**FY 2013-14 Operating Costs[1]**	**FY 2015-16 Allocation %**	**FY 2014-15 Operating Costs[1]**	**FY 2016-17 Allocation %**	**FY 2015-16 Operating Costs[1]**	**FY 2017-18 Allocation %**	**FY 2016-17 Operating Costs[1]**	**FY 2018-19 Allocation %**	**FY 2017-18 Operating Costs[1]**	**FY 2019-20 Allocation %**
Marina Sewer	$526,952	37%	$550,054	35%	$528,332	31%	$621,365	30%	$603,516	29%
Ord Sewer	$893,864	63%	$1,002,451	65%	$1,187,678	69%	$1,476,337	70%	$1,453,937	71%

Assumptions. The key assumptions used to build this Budget include:

- Projected revenues in Marina and Ord Systems are based on current customer accounts and projected development activity. In addition, the District conducted a 5-year rate study which proposed a 6% water rate increase and a 7% sewer rate increase for Marina customers and a 5% water rate increase and 6% sewer rate increase for Ord customers.

- Proposed monthly rates are based on the 5-year rate study conducted in 2017-2018 and approved by the Board January 22, 2018. Water rates consist of a fixed charge and commodity rates.
    - o The fixed charge generates the needed revenue to cover the District's fixed costs which include:
        - ▪ Base Costs – operating and capital costs incurred by the water system to provide a basic level of service to each customer.
        - ▪ Peak Costs – those operating costs incurred to meet peak demands in excess of base demand which include basic water supply and distribution costs.
        - ▪ Customer Costs – Fixed expenditures that relate to operational support such as accounting, billing, customer services, administrative and technical support.
        - ▪ Service Costs – Meter maintenance costs and capacity related costs including debt service.
    - o The commodity rates generate revenue to cover base, peak and customer costs directly related to the production and distribution of water production. The rate study included the change from a 3-tier system to a 2-tier system for commodity rates. The rate study can be accessed on the District's website by clicking on the following link: http://www.mcwd.org/docs/financials/MCWD%202018%20CoS%20Rate%20Study%20Final%20Report.pdf.

- Wastewater collection rates consist of fixed costs to collect and transmit to the Monterey One Water Agency (M1W). The rate is calculated based on the total projected costs of the collection system (Base Costs and Customer Costs) divided by the projected equivalent dwelling units (edu) of the District.

- Proposed monthly rates with the proposed rate increases for the Marina customers and for Ord Community customers as follows:

Effective January 1, 2020

Water Rate (monthly)		Marina	Ord Community
Meter Service Charge		$25.21	$43.62
Tier 1	(0 - 10 hcf)	3.25	4.37
Tier 2	(10+ hcf)	4.95	8.51
Flat Rate Billing		N/A	172.75
Average monthly bill (10 hcf)		$59.01	$87.32

Wastewater Collection Rate (monthly)	Marina	Ord Community
Flat Rate	$15.99	$34.85

- The average combined water and wastewater collection monthly invoice increased 2.6% for Central Marina and 5% for the Ord Community respectively.

- Projected revenues and funding sources of $43.613 million for all cost centers; Marina Water $7.036 million, Marina Sewer $2.761 million, Ord Community Water $13.923 million, Ord Community Sewer $7.422 million, and RUWAP $12.471 million which includes contributions from FORA of $1.000 million and $11.440 million of loan proceeds from the State Revolving Fund which funded in April 2018.

- Projected expenses and CIP of $42.855 million for all cost centers; Marina Water $5.966 million, Marina Sewer $1.784 million, Ord Community Water $16.469 million, Ord Community Sewer $6.122 million, and $12.514 million for RUWAP.

- Scheduled debt (principal/interest) payments on the 2010 $8 million bond that refinanced the Armstrong Ranch Promissory Note. June 1, 2020 will be the final payment on this debt.

- Scheduled debt (principal/interest) payments on the 2015 $29.840 million bond for Marina and Ord Community service area that advance refunded the 2006 bond to take advantage of lower interest rates.

- Scheduled debt (principal/interest) payments on the $2.800 million 2017 Santa Cruz County Bank Loan for the conversion of the Rabobank N.A. Construction Loan for the construction of the building leased to the Bureau of Land Management (BLM). Lease revenues from BLM will fund the debt service over the life of the loan.

- Capital replacement reserve funding for Marina and Ord Systems per Board Policy $0.200 million for Marina Water, $0.100 million for Marina Sewer, $0.200 million for Ord Water and $0.100 million for Ord Sewer.

- $25.991 million of Capital Improvement Projects; Marina Water $2.112 million, Marina Sewer $0.778, Ord Community Water $7.126 million, Ord Community Sewer $3.851 million and RUWAP $12.124 million.

- New Debt will need to be issued for approximately $8.605 million in order to fund the needed capital equipment replacement as well as the scheduled capital improvement projects.

- Salaries adjusted 4.0% for Cost of Living Adjustment (COLA). MOU agreements with District employee groups require the COLA be based on the April Consumer Price Index.

- Support for a staff of 42 positions:
  - Administration – 16
  - Operations & Maintenance – 16
  - Laboratory – 1
  - Conservation – 1
  - Engineering – 6
  - Water Resources - 2

- Increased healthcare costs based on information received as of February 2019 (a 15% increase has been included).

- Continuation of various conservation rebate program costs.

- Cost of new technology (upgrades per the District's Technology Plan).

- Annual maintenance of facilities for Operations & Maintenance.

<u>Prior Year Accomplishments.</u> In FY 2018-2019 the District recognized the following accomplishments:

- MCWD's 2017 Comprehensive Annual Financial Report (CAFR) was awarded the Certificate of Achievement for Excellence in Financial Reporting from the Government Finance Officers Association (GFOA). The Certificate of Achievement is the highest form of recognition in governmental accounting and financial reporting. This marks the tenth consecutive award for MCWD, indicative of our efforts to be transparent and prudent with our financial reporting. The District is confident that the 2018 CAFR, submitted to the GFOA in December 2018, will also receive the award.

- In December 2018, the District presented its second Year in Review for FY 2017-2018 as part of the District's ongoing commitment to communication, transparency and collaboration with the community.

- On February 20, 2018, the District held its groundbreaking of the RUWAP Transmission Pipeline. MCWD awarded the construction contract to Mountain Cascade, Inc. in the amount of $22,648,480 to build the RUWAP pipeline and the Blackhorse Recycled Water Reservoir. Construction is substantially complete and awaits the completion of M1W's Pure Water Monterey Advanced Water Treatment Plant in order to provide advanced treated water to our customers as well as to the Pure Water Monterey.

- On April 28, 2018 The District received an additional $11.4 million Proposition 1 (the Water Quality, Supply, and Infrastructure Improvement Act of 2014 and the Clean Water State Revolving Fund) low-interest loan and grant for the RUWAP distribution system.

- In April 2018, the District submitted an application to the Local Agency Formation Commission ("LAFCO) for annexation of the current service area of MCWD known as Central Marina and the Ord Community service areas within the former Fort Ord. The Municipal Services Review was conducted in February/March 2019. Once annexation is complete, ratepayers within the Ord Community will have the ability to vote for the District's Board of Directors and thereby receive direct representation from the Board. Currently, Ord Community ratepayers receive indirect representation via the FORA Board through a facilities contract between the District and FORA.

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MARINA
WATER & WASTEWATER SYSTEM
RATES, FEES and CHARGES
FY 2019 - 2020
Effective July 1, 2019 and January 1, 2020

		Current Rates July 1, 2019				January 1, 2020	
Water Consumption Charge							
0 - 10 hcf	First Tier	3.25	per hcf	0 - 10 hcf	First Tier	3.38	per hcf
10+ hcf	Second Tier	4.95	per hcf	10+ hcf	Second Tier	5.15	per hcf

Monthly Minimum Water Charges

Size	Fee		Fee	
5/8" or 3/4"	24.24	per month	25.21	per month
1"	32.69	per month	33.99	per month
1 1/2"	53.80	per month	55.95	per month
2"	79.14	per month	82.30	per month
3"	146.72	per month	152.57	per month
4"	222.74	per month	231.62	per month
6"	433.91	per month	451.22	per month
8"	856.25	per month	890.40	per month

Monthly Minimum Sewer Charges

Monthly Wastewater Charge	15.37	per EDU	15.99	per EDU

Temporary Water Service

Meter Deposit Fee	676.00		704.00	
Hydrant Meter Fee (Set/Remove Fee)	146.00	one time fee	152.00	one time fee
Hydrant Meter Fee (Relocate Fee)	146.00	per occurrence	152.00	per occurrence
Minimum Monthly Service Charge	102.25	per month	106.35	per month
Estimated Water Consumption Deposit	1,144.00	minimum	1,190.00	minimum

Private Fire Meter Charge

Size	Fee		Fee	
1"	1.73	per month	1.80	per month
1 1/2"	5.02	per month	5.22	per month
2"	10.70	per month	11.13	per month
2 1/2"	19.25	per month	20.01	per month
3"	31.09	per month	32.33	per month
4"	66.25	per month	68.90	per month
6"	192.43	per month	200.13	per month
8"	410.08	per month	426.48	per month

Capacity Charges

Water	$4,526.00	per edu	$4,526.00	per edu
Sewer	$2,333.00	per edu	$2,333.00	per edu

ORD COMMUNITY
WATER & WASTEWATER SYSTEM
RATES, FEES and CHARGES
FY 2019 - 2020
Effective July 1, 2019 and January 1, 2020

		Current Rates July 1, 2019				January 1, 2020	
Water Consumption Charge							
0 - 10 hcf	First Tier	4.13	per hcf	0 - 10 hcf	First Tier	4.37	per hcf
10+ hcf	Second Tier	8.04	per hcf	10+ hcf	Second Tier	8.51	per hcf
	Monthly Capital Surcharge (Connections after June 30, 2005 & before July 5, 2014)	20.00	per EDU			20.00	per EDU
	Flat Rate	162.95	per unit			172.75	per unit

Monthly Minimum Water Charges

Size	Fee		Fee	
5/8" or 3/4"	41.20	per month	43.62	per month
1"	57.88	per month	61.28	per month
1 1/2"	99.57	per month	105.43	per month
2"	149.61	per month	158.41	per month
3"	283.05	per month	299.68	per month
4"	433.16	per month	458.62	per month
6"	850.15	per month	900.12	per month
8"	1,684.12	per month	1,783.11	per month

Monthly Minimum Sewer Charges

Monthly Wastewater Charge	33.80	per EDU	34.85	per EDU
Monthly Capital Surcharge (Connections after June 30, 2005 & before July 5, 2014)	5.00	per EDU	5.00	per EDU

Temporary Water Service

Meter Deposit Fee	702.00		745.00	
Hydrant Meter Fee (Set/Remove Fee)	152.00	one time fee	162.00	one time fee
Hydrant Meter Fee (Relocate Fee)	152.00	per occurrence	162.00	per occurrence
Minimum Monthly Service Charge	163.70	per month	173.55	per month
Estimated Water Consumption Deposit	1,188.00	minimum	1,260.00	minimum

Private Fire Meter Charge

Size	Fee		Fee	
1"	2.44	per month	2.94	per month
1 1/2"	7.08	per month	7.51	per month
2"	15.11	per month	16.02	per month
2 1/2"	27.16	per month	28.79	per month
3"	43.88	per month	46.51	per month
4"	93.51	per month	99.12	per month
6"	271.61	per month	287.91	per month
8"	578.82	per month	613.54	per month

Capacity Charges

Water	$8,010.00	per edu	$8,010.00	per edu
Sewer	$3,322.00	per edu	$3,322.00	per edu

MARINA & ORD COMMUNITY
WATER & WASTEWATER SYSTEM
RATES, FEES and CHARGES
FY 2019 - 2020
Effective July 1, 2019

General Manager	$176.00 per hour
District Engineer	$138.00 per hour
Director of Administrative Services	$126.00 per hour
Senior Engineer	$110.00 per hour
Associate Engineer	$80.00 per hour
Engineering Administrative Assistant	$77.00 per hour
Engineering Assistant	$61.00 per hour
Lab Supervisor	$103.00 per hour
O&M Manager	$123.00 per hour
O&M Supervisor	$112.00 per hour
O&M Electrical/Mechanical Supervisor	$112.00 per hour
Operations & Maintenance System Operator 3	$108.00 per hour
Operations & Maintenance System Operator 2/Backflow Specialist	$100.00 per hour
Operations & Maintenance System Operator 2	$96.00 per hour
Operations & Maintenance System Operator 1	$61.00 per hour
Conservation Specialist	$87.00 per hour
Water Resources Manager	$103.00 per hour
Water Resources Analyst	$77.00 per hour

Work Truck	$20.00 per hour
Backhoe Tractor	$30.00 per hour
Front Loader Tractor	$58.00 per hour
Vactor Truck	$30.00 per hour
Dump Truck	$30.00 per hour
Ground Penetrating Radar Uit	$10.00 per hour
CCTV Camera	$65.00 per hour

Photocopy Charges	$0.20 per copy

Size	Meter Installation Fee
5/8" or 3/4"	$350.00
1"	$400.00
1 1/2"	$450.00
2"	$700.00
3" or Larger	Actual direct and indirect cost to district. Advance payment to be based on estimated cost.

Preliminary Project Review Fee (large projects)	$500.00
Plan Review Fees:	
Existing Residential Modifications	$200.00 per unit plus additional fees
Existing Commercial Modifications	$400.00 per unit plus additional fees
Plan Review	$500.00 per unit plus additional fees
Water/Sewer Permit Fee	$30.00 each
Small Project Inspection Fee (single lot)	$400.00 per unit
Large Project Inspection Fee (large projects)	$500.00 per unit plus 3% of water & sewer construction cost
Building Modification/Addition Fee	$200.00 per unit
Deposit for a Meter Relocation	$200.00 deposit, plus actual costs
Mark and Locate Fee (USA Markings)	$100.00 first mark and locate at no-charge, each additional for $100
Backflow/Cross Connection Control Fee	$45.00 per device
Additional Backflow/Cross Connection Device	$30.00 per device
Deposit for New Account/Re-Establish Account	$35.00 per edu
Meter Test Fee	$15.00 for 3/4" meter, actual cost for 1" and larger
Returned Check Fee	$15.00 per returned item
Basic Penalty	10% of the delinquent amount
Additional Penalty	1.50% per month of the delinquent amount

Marina Coast Water District
Budget Summary
Budget FY 2019-2020

1	2	3	4	5	6	7	8	9	10
Ln		MARINA		ORD COMMUNITY					Ln
#	REVENUE AND OTHER SOURCES	WATER	SEWER	WATER	SEWER	RUWAP	RDP	TOTAL	#
1	WATER SALES	4,095,244	-	7,599,670	-	-	-	11,694,914	1
2	FLAT RATE ACCOUNTS	-	-	50,000	-	-	-	50,000	2
3	OTHER WATER SALES	-	-	9,756	-	-	-	9,756	3
4	SEWER SALES	-	1,441,786	-	2,963,074	-	-	4,404,861	4
5	FIRE SYSTEM CHARGE	99,345	-	241,308	-	-	-	340,652	5
6	HYDRANT METER WATER SALES			243,613				243,613	6
7	BACKFLOW PREVENTION	22,000	-	30,000	-	-	-	52,000	7
8	LATE CHARGES	18,000	-	100,000	-	-	-	118,000	8
9	PERMITS/PLAN CHECK	3,000	1,500	25,000	11,000	-	-	40,500	9
10	WHEELING CHARGE			24,000				24,000	10
11	DEVELOPER FEES	-	-	400,000	105,000	-	-	505,000	11
12	METER FEES	1,500	-	300,000	-	-	-	301,500	12
13	CAPACITY FEES/CAPITAL SURCHARGE	416,750	284,905	1,999,290	717,588			3,418,533	13
14	OTHER INCOME	4,600	1,200	11,400	2,800	-	-	20,000	14
15	INTEREST INCOME	60,566	26,540	84,500	25,085	200	-	196,891	15
16	DEFD REVENUE - BONDS	14,071	7,720	71,090	23,395	31,355	-	147,631	16
17	GRANT REVENUE	153,132	-	303,758	-	-	-	456,890	17
18	IOP RENTAL REVENUE	51,503	14,715	91,969	25,751			183,938	18
19	BLM RENTAL REVENUE	96,078	27,451	171,568	48,039			343,136	19
20	ARMSTRONG RANCH RENTAL REVENUE	-	-	-	-			-	20
21	GAIN OR LOSS ON ASSET SALES	-	-	16,200	-	-	-	16,200	21
22	FORA RUWAP CONTRIBUTION	-	-	-	-	1,000,000	-	1,000,000	22
23	MIW RUWAP REIMBURSEMENT					-		-	
23	LOAN PROCEEDS - STATE REVOLVING FUND[1]	-	-	-	-	11,440,000	-	11,440,000	23
24	NEW DEB T PROCEEDS[2]	2,000,000	955,000	2,150,000	3,500,000	-		8,605,000	24
25	TOTAL REVENUE AND OTHER SOURCES	7,035,788	2,760,817	13,923,123	7,421,733	12,471,555	-	43,613,015	25
	EXPENSES AND OTHER USES								
26	SALARIES & BENEFITS	1,664,244	544,930	3,671,883	992,910	-	-	6,873,967	26
27	DEPT. EXPENSE	1,867,727	202,891	4,017,715	632,961	1,200	-	6,722,494	27
28	INTEREST EXPENSE	166,251	81,541	719,737	233,629	388,454	-	1,589,612	28
29	FRANCHISE & ADMIN FEES	-	-	485,864	175,700	-	-	661,564	29
30	TOTAL C I P/CAPITALIZED EQUIPMENT	2,267,565	954,620	7,574,126	4,086,980	12,124,582	-	27,007,873	30
31	PRINCIPAL DEBT SERVICE	589,703	195,494	1,388,499	414,252	228,850	-	2,816,797	31
32	TRANSFER TO CAP REPLACEMENT FUND	200,000	100,000	200,000	100,000	-	-	600,000	32
33	TRANSFER TO/(FROM) RESERVES NET	280,297	681,342	(4,134,700)	785,300	(271,531)	-	(2,659,293)	33
34	TOTAL EXPENSES AND OTHER USES	7,035,788	2,760,818	13,923,123	7,421,732	12,471,555	-	43,613,015	34
35	BALANCE	0	0	0	0	0	0	0	35

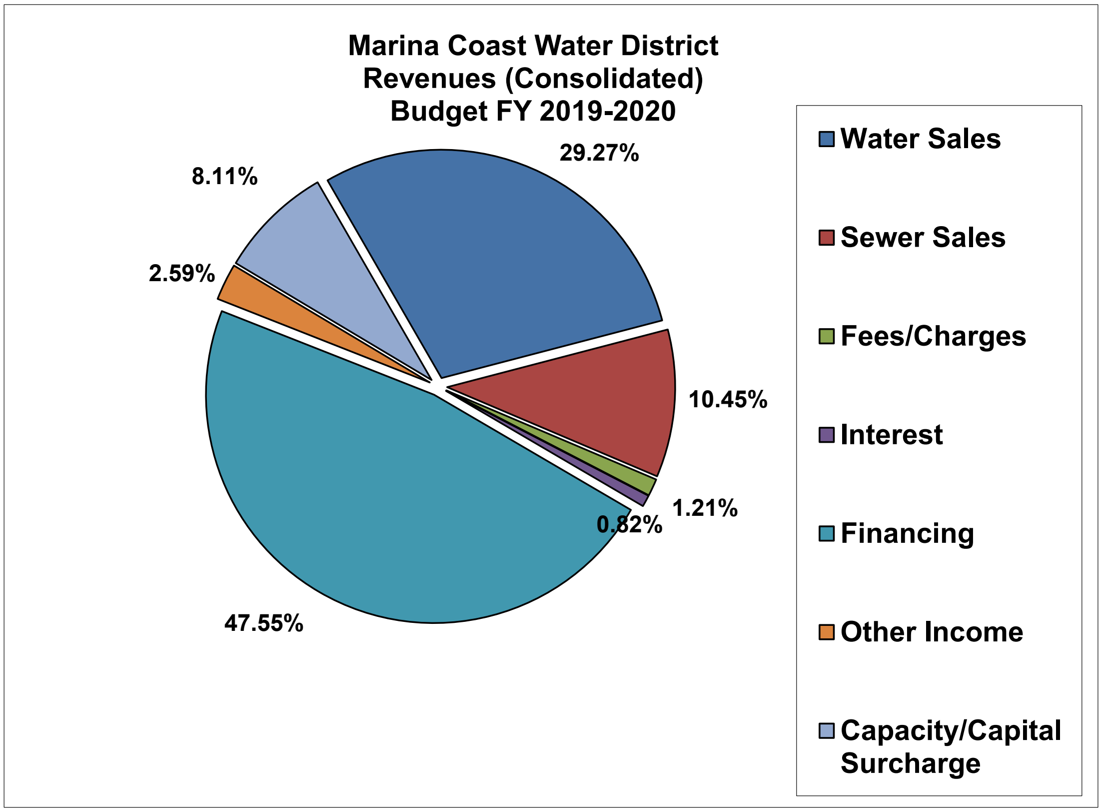
[1]Includes proceeds from the State Revolving Fund to be obtained for the RUWAP Distribution System Project
[2]Includes proceeds from New Debt to be issued in FY 2019-2020

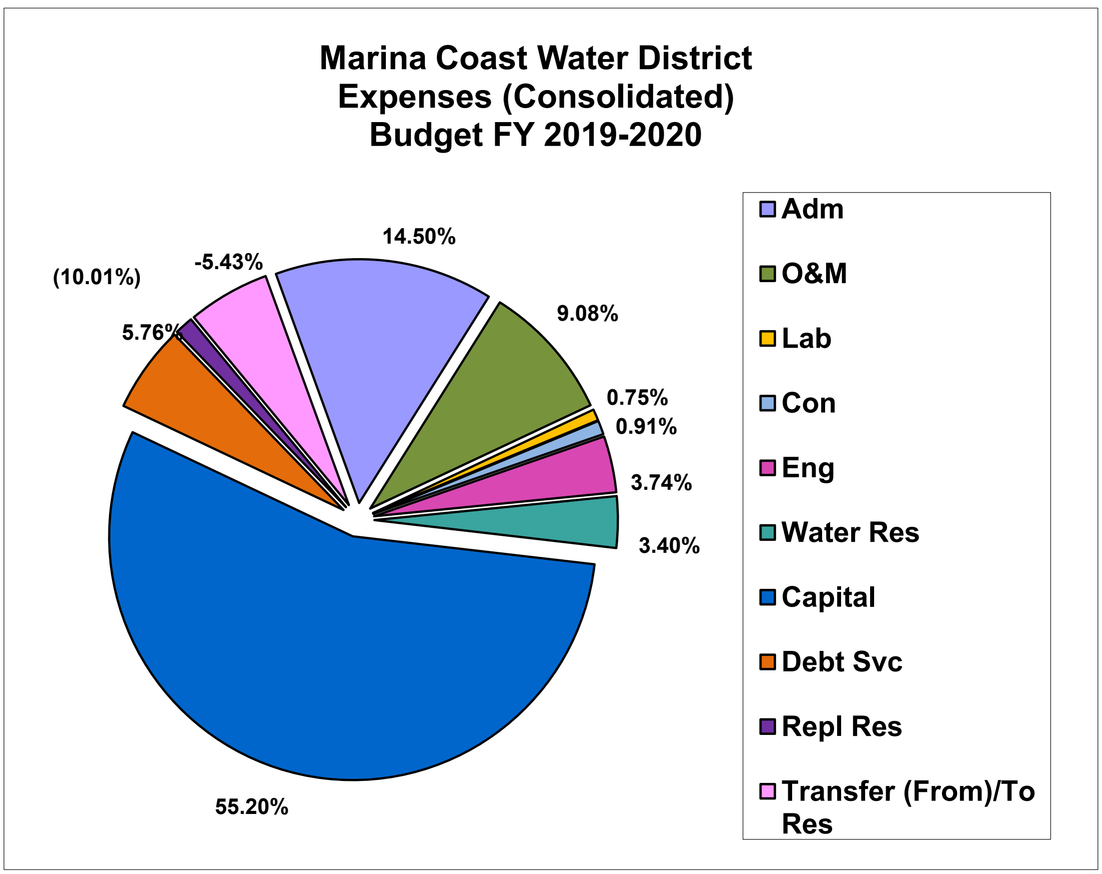
Marina Coast Water District
Budget Expense Summary by Department
Budget FY 2019-2020

1	2	3	4	5	6	7	8	9	10
Ln		MARINA		ORD COMMUNITY					Ln
#	EXPENSES	WATER	SEWER	WATER	SEWER	RUWAP	RDP	TOTAL	#
1	ADMIN								1
2	SALARIES & BENEFITS	576,112	150,245	1,427,556	350,572			2,504,485	2
3	DEPT. EXPENSE	568,885	80,845	1,477,263	208,922	1,200		2,337,115	3
4	INTEREST EXPENSE	166,251	81,541	719,737	233,629	388,454		1,589,612	4
5	FRANCHISE & ADMIN FEE	-	-	485,864	175,700			661,564	5
6	TOTAL - ADMINISTRATION EXP	1,311,248	312,631	4,110,420	968,823	389,654	-	7,092,776	6
7	O & M								7
8	SALARIES & BENEFITS	615,225	337,397	1,195,054	502,002			2,649,679	8
9	DEPT. EXPENSE	537,803	93,846	939,957	224,039			1,795,645	9
10	TOTAL - OPER & MAINT EXP	1,153,028	431,243	2,135,011	726,041	-	-	4,445,324	10
11	LABORATORY								11
12	SALARIES & BENEFITS	63,158		162,408				225,566	12
13	DEPT. EXPENSE	38,397		104,731				143,128	13
14	TOTAL - LABORATORY EXP	101,555	-	267,139	-	-	-	368,694	14
15	CONSERVATION								15
16	SALARIES & BENEFITS	57,095		146,813				203,908	16
17	DEPT. EXPENSE	93,080		150,170				243,250	17
18	TOTAL - CONSERVATION EXP	150,175	-	296,983	-	-	-	447,158	18
19	ENGINEERING								19
20	SALARIES & BENEFITS	233,768	57,288	561,726	140,336			993,118	20
21	DEPT. EXPENSE	82,500	28,200	525,000	200,000			835,700	21
22	TOTAL - ENGINEERING EXP	316,268	85,488	1,086,726	340,336	-	-	1,828,818	22
23	WATER RESOUCES								23
24	SALARIES & BENEFITS	118,886		178,325				297,211	24
25	DEPT. EXPENSE	547,062		820,594				1,367,656	25
26	TOTAL - WATER RESOURCES EXP	665,948	-	998,919	-	-	-	1,664,867	26
27	TOTAL EXPENSES	3,698,222	829,362	8,895,199	2,035,200	389,654	-	15,847,637	27
28	CAPITAL COSTS								28
29	CAPITAL IMPROVEMENT PROJ.	2,111,625	778,400	7,125,710	3,850,800	12,124,582	-	25,991,117	29
30	CAPITALIZED EQUIPMENT	155,940	176,220	438,660	236,180	-	-	1,007,000	30
31	SEASIDE LAND TRANSFER	-	-	9,756	-	-	-	9,756	31
32	TOTAL CIP/CAPITALIZED EQUIPMENT	2,267,565	954,620	7,574,126	4,086,980	12,124,582	-	27,007,873	32
33	TOTAL EXPENSES & CIP	5,965,787	1,783,982	16,469,325	6,122,180	12,514,236	-	42,855,510	33
34	PRINCIPAL DEBT SERVICE								34
35	PRINCIPAL (2010 Bond)	485,800	138,800	867,500	242,900			1,735,000	35
36	PRINCIPAL (2015 Bond)	79,600	49,750	477,600	159,200	228,850		995,000	36
37	SANTA CRUZ COUNTY BANK LOAN (BLM)	24,303	6,944	43,399	12,152			86,797	37
38	TOTAL - PRINCIPAL DEBT SERVICE	589,703	195,494	1,388,499	414,252	228,850	-	2,816,797	38
39	TRANSFER TO CAPITAL REPL FUND	200,000	100,000	200,000	100,000			600,000	39
40	TRANSFER (FROM)/TO DEBT RES	(237,866)	(67,961)	(424,740)	(118,933)	-		(849,500)	40
41	TRANSFER (FROM)/TO CAP REPL RES, NET	117,215	60,210	304,209	238,713	-		720,347	41
42	TRANSFER (FROM)/TO CAP CHG RES, NET	31,971	225,075	(4,161,921)	(385,200)	(586,949)	-	(4,877,025)	42
43	TRANSFER (FROM)/TO OPERATING RES, NET	368,977	464,018	147,752	1,050,720	315,418	-	2,346,885	43
44	TOTAL - TRANSFERS (FROM)/TO RES, NET	280,297	681,342	(4,134,700)	785,300	(271,531)	-	(2,659,293)	44
45	TOTAL EXPENSES & USES	7,035,787	2,760,818	13,923,123	7,421,732	12,471,555	-	43,613,015	45

Marina Coast Water District
Budget Summary Comparison
Budget FY 2019-2020

		2017-2018 ACTUALS	2018-2019 EST. ACTUALS	2018-2019 ADOPTED	2019-2020 PROPOSED	BUD vs. BUD % CHANGE	BUD vs. EST % CHANGE	
	REVENUE							
1	WATER SALES	9,903,576	10,471,043	10,633,468	11,938,527	12.3%	14.0%	1
2	FLAT RATE ACCOUNTS	925,653	151,777	50,000	50,000	0.0%	-67.1%	2
3	OTHER WATER SALES	8,836	9,204	8,575	9,756	-	6.0%	3
4	SEWER SALES	3,828,160	4,196,952	4,135,506	4,404,861	6.5%	5.0%	4
5	FIRE SYSTEM CHARGE	293,489	323,173	268,635	340,652	26.8%	5.4%	5
6	BACKFLOW PREVENTION	51,306	50,000	49,000	52,000	6.1%	4.0%	6
7	LATE CHARGES	178,806	117,775	68,000	118,000	73.5%	0.2%	7
8	PERMITS/PLAN CHECK	34,500	39,930	49,000	40,500	-17.3%	1.4%	8
9	WHEELING CHARGE	24,000	24,000	24,000	24,000	0.0%	0.0%	9
10	DEVELOPER FEES	536,021	407,993	582,500	505,000	-13.3%	23.8%	10
11	METER FEES	657,748	302,309	276,700	301,500	9.0%	-0.3%	11
12	CAPACITY FEES/CAPITAL SURCHARGE	5,151,848	4,136,345	5,040,502	3,418,533	-32.2%	-17.4%	12
13	OTHER INCOME	82,008	29,652	20,000	20,000	0.0%	-32.6%	13
14	INTEREST INCOME	132,982	196,908	52,531	196,891	274.8%	0.0%	14
15	DEFD REVENUE - BONDS	147,629	147,629	60,381	147,631	144.5%	0.0%	15
16	RENTAL REVENUE	519,024	495,613	527,074	527,074	0.0%	6.3%	16
17	GRANT REVENUE	-	543,110	617,170	456,890	0.0%	0.0%	17
18	GAIN OR LOSS ON ASSET SALES	30,013	-	-	16,200	0.0%	0.0%	18
19	GAIN OR LOSS BOND ACCOUNTS	3	-	-	-	0.0%	0.0%	19
20	FORA RUWAP CONTRIBUTION	3,596,221	1,200,000	1,200,000	1,000,000	-16.7%	-16.7%	20
21	MIW RUWAP CAPACITY SHARE CONTRIBUTION	7,079,937	3,560,063	10,464,000	-	-100.0%	-100.0%	21
22	LOAN PROCEEDS - ST REV FUND	-	9,057,011	6,000,000	11,440,000	90.7%	0.0%	22
23	LINE OF CREDIT PROCEEDS	6,562,695	-					23
24	NEW DEBT PROCEEDS	-	-	-	8,605,000	0%	0.0%	24
25	TOTAL REVENUE	39,744,454	35,460,485	40,127,042	43,613,015	8.7%	23.0%	25
	EXPENSES							
26	SALARIES & BENEFITS	5,321,920	5,576,647	6,251,537	6,873,967	10.0%	23.3%	26
27	DEPT. EXPENSE	4,984,792	4,712,856	5,222,739	6,722,494	28.7%	42.6%	27
28	INTEREST EXPENSE	1,658,569	1,689,757	1,442,000	1,589,612	10.2%	-5.9%	28
29	FRANCHISE & ADMIN FEES	758,267	637,081	808,484	661,564	-18.2%	3.8%	29
30	TOTAL C IP/CAPITALIZED EQUIPMENT	26,132,429	14,499,370	25,351,440	27,007,873	6.5%	86.3%	30
31	PRINCIPAL DEBT SERVICE	1,827,493	1,892,013	1,965,375	2,816,797	43.3%	48.9%	31
32	TRANSFER TO CAP REPLACEMENT FUND	600,000	400,000	600,000	600,000	100.0%	100.0%	32
33	TRANSFER (FROM)/TO RESERVES	(1,539,016)	6,052,762	(1,514,535)	(2,659,293)	75.6%	-143.9%	33
34	TOTAL EXPENSES	39,744,453	35,460,485	40,127,042	43,613,015	8.7%	23.0%	34
35	BALANCE	0	0	0	0	0	0%	35


Marina Coast Water District
Revenues (Consolidated)
Budget FY 2019-2020
29.27%
8.11%
2.59%
10.45%
1.21%
0.82%
47.55%
Water Sales
Sewer Sales
Fees/Charges
Interest
Financing
Other Income
Capacity/Capital Surcharge


Marina Coast Water District
Expenses (Consolidated)
Budget FY 2019-2020
14.50%
-5.43%
(10.01%)
5.76%
9.08%
0.75%
0.91%
3.74%
3.40%
55.20%
Adm
O&M
Lab
Con
Eng
Water Res
Capital
Debt Svc
Repl Res
Transfer (From)/To Res

MARINA COAST WATER DISTRICT
REVENUE BUDGET FOR FY 2019-2020

ACCOUNT NAME	2016-2017 ACTUAL	2017-2018 ACTUAL	2018-2019 ADOPTED	MARINA WATER 2018-2019 ESTIMATED	2019-2020 PROPOSED	BUD vs BUD % CHANGE	BUD vs EST % CHANGE
WATER SALES RESIDENTIAL	1,777,522	1,910,538	2,054,567	2,013,450	2,039,081	-0.8%	1.3%
WATER SALES BUSINESS	644,959	770,233	611,172	665,525	674,066	10.3%	1.3%
WATER SALES SCHOOLS	-	-	-	-	-	-	-
WATER SALES MULTIPLES	991,292	1,039,753	1,070,671	1,105,369	1,129,167	5.5%	2.2%
WATER SALES GOVERMENT	38,145	44,210	176,324	59,606	252,930	43.4%	324.3%
FIRE SYSTEM CHARGE	86,619	91,476	91,274	95,524	99,345	8.8%	4.0%
HYDRANT METER WATER SALES	-	-	-	-	-	-	-
OTHER WATER SALES	-	-	-	-	-	-	-
LATE CHARGE FEES	16,218	18,479	18,000	18,213	18,000	0.0%	-1.2%
BACKFLOW REVENUE	20,878	21,975	21,000	22,000	22,000	4.8%	0.0%
FLAT RATE ACCOUNTS	-	-	-	-	-	-	-
RECLAIMED WATER SALES	37	-	-	-	-	-	-
PLAN CHECK/PERMIT FEES	6,090	3,405	6,000	2,900	3,000	-50.0%	3.4%
MAINTENANCE REVENUE	-	-	-	-	-	-	-
METER FEES	1,550	1,150	1,700	1,700	1,500	-11.8%	-11.8%
WHEELING CHARGE	-	-	-	-	-	-	-
DEVELOPER FEES	-	35,567	-	10,412	-	-	-
SEWER SALES BUSINESS	-	-	-	-	-	-	-
SEWER SALES RESIDENTIAL	-	-	-	-	-	-	-
TOTAL OPERATING REVENUES	**3,583,310**	**3,936,787**	**4,050,708**	**3,994,699**	**4,239,088**	**4.7%**	**6.1%**
CAPITAL SURCHARGE	-	-	-	-	-	-	-
CAPACITY CHARGES	4,526	14,505	258,888	15,796	416,750	61.0%	2538.4%
INTEREST INCOME	19,977	36,968	5,000	56,002	56,000	1020.0%	0.0%
INTEREST INCOME - 2010 BOND	844	2,778	2,125	4,556	4,500	111.8%	-1.2%
INTEREST INCOME - 2015 BONDS	10	72	28	66	66	135.7%	-0.2%
OTHER INCOME	28,910	28,794	5,000	14,629	4,600	-8.0%	-68.6%
INSURANCE REFUNDS	2,015	10,407	-	3,919	-	-	-
DEFD REVENUE -2010 SERIES BOND	3,165	3,165	3,165	3,165	3,165	0.0%	0.0%
DEFERRED REVENUE - 2015 A BOND	10,906	10,906	10,906	10,906	10,906	0.0%	0.0%
IOP RENTAL REVEUE	61,707	51,629	51,503	51,755	51,503	0.0%	-0.5%
BLM RENTAL REVEUE	95,858	92,875	96,078	86,468	96,078	0.0%	11.1%
ARMSTRONG RANCH RENTAL REVENUE	1,098	823	-	549	-	-	-
GRANT REVENUE	-	-	246,868	246,868	153,132	-38.0%	-38.0%
GAIN/LOSS ON ASSET SALES	1,690	7,498	-	-	-	-	-
GAIN/LOSS 2010 BOND	1	1	-	-	-	-	-
FORA RUWAP REIMBURSEMENT	-	-	-	-	-	-	-
M1W RUWAP REIMBURSEMENT							
LOAN PROCEEDS - STATE REVOLVING FUND[1]	-	-	-	-	-	-	-
NEW DEBT PROCEEDS	-	-	-	-	2,000,000		
TOTAL NON OPERATING REVENUES	**230,707**	**260,420**	**679,561**	**494,678**	**796,700**	**17.2%**	**61.1%**
TOTAL REVENUE	**3,814,018**	**4,197,207**	**4,730,269**	**4,489,377**	**5,035,788**	**6.5%**	**12.2%**

MARINA COAST WATER DISTRICT
REVENUE BUDGET FOR FY 2019-2020

ACCOUNT NAME	2016-2017 ACTUAL	2017-2018 ACTUAL	2018-2019 ADOPTED	MARINA SEWER 2018-2019 ESTIMATED	2019-2020 PROPOSED	BUD vs BUD APPROVED	BUD vs EST % CHANGE
WATER SALES RESIDENTIAL	-	-	-	-	-	-	-
WATER SALES BUSINESS	-	-	-	-	-	-	-
WATER SALES SCHOOLS	-	-	-	-	-	-	-
WATER SALES MULTIPLES	-	-	-	-	-	-	-
WATER SALES GOVERMENT	-	-	-	-	-	-	-
FIRE SYSTEM CHARGE	-	-	-	-	-	-	-
HYDRANT METER WATER SALES	-	-	-	-	-	-	-
OTHER WATER SALES	-	-	-	-	-	-	-
LATE CHARGE FEES	-	-	-	-	-	-	-
BACKFLOW REVENUE	-	-	-	-	-	-	-
FLAT RATE ACCOUNTS	-	-	-	-	-	-	-
RECLAIMED WATER SALES	-	-	-	-	-	-	-
PLAN CHECK/PERMIT FEES	4,260	4,005	4,000	1,450	1,500	-62.5%	3.4%
MAINTENANCE REVENUE	-	-	-	-	-	-	-
METER FEES	-	-	-	-	-	-	-
WHEELING CHARGE	-	-	-	-	-	-	-
DEVELOPER FEES	-	14,215	-	2,725	-	-	-
SEWER SALES BUSINESS	167,115	183,378	210,427	195,514	203,335	-3.4%	4.0%
SEWER SALES RESIDENTIAL	953,821	1,057,448	1,192,422	1,157,431	1,238,452	3.9%	7.0%
TOTAL OPERATING REVENUES	**1,125,195**	**1,259,047**	**1,406,849**	**1,357,120**	**1,443,286**	**2.6%**	**6.3%**
CAPITAL SURCHARGE	-	-	-	-	-	-	-
CAPACITY CHARGES	2,333	8,166	186,640	-	284,905	52.6%	-
INTEREST INCOME	10,813	20,688	17,000	25,201	25,200	48.2%	0.0%
INTEREST INCOME - 2010 BOND	241	794	606	1,302	1,300	114.5%	-0.1%
INTEREST INCOME - 2015 BONDS	6	45	18	41	40	122.2%	-3.2%
OTHER INCOME	472	137	1,400	65	1,200	-14.3%	1759.6%
INSURANCE REFUNDS	543	2,914	-	-	-	-	-
DEFD REVENUE -2010 SERIES BOND	904	904	904	904	904	0.0%	0.0%
DEFERRED REVENUE - 2015 A BOND	6,816	6,816	6,816	6,816	6,816	0.0%	0.0%
IOP RENTAL REVEUE	17,630	14,751	14,715	14,787	14,715	0.0%	-0.5%
BLM RENTAL REVEUE	27,388	26,536	27,451	24,705	27,451	0.0%	11.1%
ARMSTRONG RANCH RENTAL REVENUE	314	235	-	157	-	-	-
GRANT REVENUE	-	-	-	-	-	-	-
GAIN/LOSS ON ASSET SALES	455	2,099	-	-	-	-	-
GAIN/LOSS 2010 BOND	0	0	-	-	-	-	-
FORA RUWAP REIMBURSEMENT	-	-	-	-	-	-	-
M1W RUWAP REIMBURSEMENT							
LOAN PROCEEDS - STATE REVOLVING FUND[1]	-	-	-	-	-	-	-
NEW DEBT PROCEEDS	-	-	-	-	955,000	-	-
TOTAL NON OPERATING REVENUES	**67,916**	**84,084**	**255,550**	**73,978**	**362,531**	**41.9%**	**390.1%**
TOTAL REVENUE	**1,193,112**	**1,343,130**	**1,662,399**	**1,431,098**	**1,805,817**	**8.6%**	**26.2%**

MARINA COAST WATER DISTRICT
REVENUE BUDGET FOR FY 2019-2020

ACCOUNT NAME	2016-2017 ACTUAL	2017-2018 ACTUAL	2018-2019 ADOPTED	ORD WATER 2018-2019 ESTIMATED	2019-2020 PROPOSED	BUD vs BUD % CHANGE	BUD vs EST % CHANGE
WATER SALES RESIDENTIAL	2,941,605	4,095,467	4,519,695	4,308,914	4,524,360	0.1%	5.0%
WATER SALES BUSINESS	717,425	932,959	1,098,292	1,192,183	2,114,108	92.5%	77.3%
WATER SALES SCHOOLS	282,966	312,332	376,960	359,821	385,008	2.1%	7%
WATER SALES MULTIPLES	366,390	420,277	463,234	433,565	463,915	0.1%	7.0%
WATER SALES GOVERMENT	63,737	90,909	112,553	104,934	112,279	-0.2%	7.0%
FIRE SYSTEM CHARGE	184,522	202,013	177,361	227,649	241,308	36.1%	6.0%
HYDRANT METER WATER SALES	172,977	286,897	150,000	227,676	243,613	62.4%	7.0%
OTHER WATER SALES	8,336	8,836	8,575	9,204	9,756	13.8%	6.0%
LATE CHARGE FEES	93,481	160,326	50,000	99,561	100,000	100.0%	0.4%
BACKFLOW REVENUE	27,818	29,331	28,000	28,000	30,000	7.1%	7.1%
FLAT RATE ACCOUNTS	1,382,768	925,653	50,000	151,777	50,000	0.0%	-67.1%
RECLAIMED WATER SALES	-	-	-	-	-	-	-
PLAN CHECK/PERMIT FEES	14,220	14,650	25,000	24,850	25,000	0.0%	0.6%
MAINTENANCE REVENUE	-	-	-	-	-	-	-
METER FEES	295,857	656,598	275,000	300,609	300,000	9.1%	-0.2%
WHEELING CHARGE	24,000	24,000	24,000	24,000	24,000	0.0%	0.0%
DEVELOPER FEES	448,935	369,551	472,500	272,219	400,000	-15.3%	46.9%
SEWER SALES BUSINESS	-	-	-	-	-	-	-
SEWER SALES RESIDENTIAL	-	-	-	-	-	-	-
TOTAL OPERATING REVENUES	**7,025,036**	**8,529,799**	**7,831,170**	**7,764,961**	**9,023,348**	**15.2%**	**16.2%**
CAPITAL SURCHARGE	167,052	167,971	166,300	163,351	165,000	-0.8%	1.0%
CAPACITY CHARGES	4,008,223	3,429,782	3,236,040	3,236,354	1,834,290	-43.3%	-43.3%
INTEREST INCOME	23,123	51,396	24,000	75,922	76,000	216.7%	0.1%
INTEREST INCOME - 2010 BOND	1,507	4,961	1,900	8,137	8,100	326.3%	-0.4%
INTEREST INCOME - 2015 BONDS	61	431	100	397	400	300.0%	0.8%
OTHER INCOME	4,676	2,666	10,800	498	11,400	5.6%	2190.3%
INSURANCE REFUNDS	4,185	22,479	-	1,894	-	-	-
DEFD REVENUE -2010 SERIES BOND	5,652	5,652	5,652	5,652	5,652	0.0%	0.0%
DEFERRED REVENUE - 2015 A BOND	65,436	65,436	-	65,436	65,436	-	0.0%
IOP RENTAL REVEUE	110,190	92,194	91,969	92,419	91,969	0.0%	-0.5%
BLM RENTAL REVEUE	171,176	165,848	171,568	154,407	171,568	0.0%	11.1%
ARMSTRONG RANCH RENTAL REVENUE	1,960	1,470	-	980	-	-	-
GRANT REVENUE	-	-	370,302	296,242	303,758	-18.0%	2.5%
GAIN/LOSS ON ASSET SALES	3,510	16,211	-	-	16,200	-	-
GAIN/LOSS 2010 BOND	2	2	-	-	2	-	-
FORA RUWAP REIMBURSEMENT	-	-	-	-	-	-	-
M1W RUWAP REIMBURSEMENT							
LOAN PROCEEDS - STATE REVOLVING FUND[1]	-	-	-	-	-	-	-
NEW DEBT PROCEEDS	-	-	-	-	2,150,000	-	-
TOTAL NON OPERATING REVENUES	**4,566,754**	**4,026,499**	**4,078,631**	**4,101,688**	**2,749,775**	**-32.6%**	**-33.0%**
TOTAL REVENUE	**11,591,790**	**12,556,299**	**11,909,801**	**11,866,649**	**11,773,123**	**-1.1%**	**-0.8%**

MARINA COAST WATER DISTRICT
REVENUE BUDGET FOR FY 2019-2020

ACCOUNT NAME	2016-2017 ACTUAL	2017-2018 ACTUAL	2018-2019 ADOPTED	ORD SEWER 2018-2019 ESTIMATED	2019-2020 PROPOSED	BUD vs BUD % CHANGE	BUD vs EST % CHANGE
WATER SALES RESIDENTIAL	-	-	-	-	-	-	-
WATER SALES BUSINESS	-	-	-	-	-	-	-
WATER SALES SCHOOLS	-	-	-	-	-	-	-
WATER SALES MULTIPLES	-	-	-	-	-	-	-
WATER SALES GOVERMENT	-	-	-	-	-	-	-
FIRE SYSTEM CHARGE	-	-	-	-	-	-	-
HYDRANT METER WATER SALES	-	-	-	-	-	-	-
OTHER WATER SALES	-	-	-	-	-	-	-
LATE CHARGE FEES	-	-	-	-	-	-	-
BACKFLOW REVENUE	-	-	-	-	-	-	-
FLAT RATE ACCOUNTS	-	-	-	-	-	-	-
RECLAIMED WATER SALES	-	-	-	-	-	-	-
PLAN CHECK/PERMIT FEES	13,830	12,440	14,000	10,730	11,000	-21.4%	2.5%
MAINTENANCE REVENUE	-	-	-	-	-	-	-
METER FEES	-	-	-	-	-	-	-
WHEELING CHARGE	-	-	-	-	-	-	-
DEVELOPER FEES	123,056	116,689	110,000	122,638	105,000	-4.5%	-14.4%
SEWER SALES BUSINESS	2,329,203	2,587,333	783,367	530,748	557,285	-28.9%	5.0%
SEWER SALES RESIDENTIAL	-	-	1,949,290	2,313,258	2,405,789	23.4%	4.0%
TOTAL OPERATING REVENUES	**2,466,089**	**2,716,461**	**2,856,657**	**2,977,374**	**3,079,074**	**7.8%**	**3.4%**
CAPITAL SURCHARGE	39,847	39,867	39,900	39,930	39,900	0.0%	-0.1%
CAPACITY CHARGES	1,281,657	1,491,557	1,152,734	680,914	677,688	-41.2%	-0.5%
INTEREST INCOME	6,951	13,111	1,572	22,684	22,700	1344.0%	0.1%
INTEREST INCOME - 2010 BOND	422	1,389	145	2,278	2,250	1451.7%	-1.2%
INTEREST INCOME - 2015 BONDS	20	144	20	132	135	575.0%	2.1%
OTHER INCOME	9,387	8,783	2,800	8,648	2,800	0.0%	-67.6%
INSURANCE REFUNDS	1,008	5,828	-	-	-	-	-
DEFD REVENUE -2010 SERIES BOND	1,583	1,583	1,583	1,583	1,583	0.0%	0.0%
DEFERRED REVENUE - 2015 A BOND	21,812	21,812	-	21,812	21,812	-	0.0%
IOP RENTAL REVEUE	30,853	25,814	25,751	25,877	25,751	0.0%	-0.5%
BLM RENTAL REVEUE	47,929	46,437	48,039	43,234	48,039	0.0%	11.1%
ARMSTRONG RANCH RENTAL REVENUE	549	412	-	274	-	-	-
GRANT REVENUE	-	-	-	-	-	-	-
GAIN/LOSS ON ASSET SALES	845	4,205	-	-	-	-	-
GAIN/LOSS 2010 BOND	1	0	-	-	-	-	-
FORA RUWAP REIMBURSEMENT	-	-	-	-	-	-	-
M1W RUWAP REIMBURSEMENT							
LOAN PROCEEDS - STATE REVOLVING FUND[1]	-	-	-	-	-	-	-
NEW DEBT PROCEEDS					3,500,000	-	-
TOTAL NON OPERATING REVENUES	**1,442,862**	**1,660,943**	**1,272,544**	**847,367**	**842,658**	**-33.8%**	**-0.6%**
TOTAL REVENUE	**3,908,951**	**4,377,404**	**4,129,201**	**3,824,741**	**3,921,733**	**-5.0%**	**2.5%**

MARINA COAST WATER DISTRICT
REVENUE BUDGET FOR FY 2019-2020

ACCOUNT NAME	2016-2017 ACTUAL	2017-2018 ACTUAL	2018-2019 ADOPTED	RUWAP 2018-2019 ESTIMATED	2019-2020 PROPOSED	BUD vs BUD % CHANGE	BUD vs EST % CHANGE
WATER SALES RESIDENTIAL	-	-	-	-	-	-	-
WATER SALES BUSINESS	-	-	-	-	-	-	-
WATER SALES SCHOOLS	-	-	-	-	-	-	-
WATER SALES MULTIPLES	-	-	-	-	-	-	-
WATER SALES GOVERMENT	-	-	-	-	-	-	-
FIRE SYSTEM CHARGE	-	-	-	-	-	-	-
HYDRANT METER WATER SALES	-	-	-	-	-	-	-
OTHER WATER SALES	-	-	-	-	-	-	-
LATE CHARGE FEES	-	-	-	-	-	-	-
BACKFLOW REVENUE	-	-	-	-	-	-	-
FLAT RATE ACCOUNTS	-	-	-	-	-	-	-
RECLAIMED WATER SALES	-	-	-	-	-	-	-
PLAN CHECK/PERMIT FEES	-	-	-	-	-	-	-
MAINTENANCE REVENUE	-	-	-	-	-	-	-
METER FEES	-	-	-	-	-	-	-
WHEELING CHARGE	-	-	-	-	-	-	-
DEVELOPER FEES	-	-	-	-	-	-	-
SEWER SALES BUSINESS	-	-	-	-	-	-	-
SEWER SALES RESIDENTIAL	-	-	-	-	-	-	-
TOTAL OPERATING REVENUES	**-**	**-**	**-**	**-**	**-**	**-**	**-**
CAPITAL SURCHARGE	-	-	-	-	-	-	-
CAPACITY CHARGES	-	-	-	-	-	-	-
INTEREST INCOME	-	-	-	-	-	-	-
INTEREST INCOME - 2010 BOND	-	-	-	-	-	-	-
INTEREST INCOME - 2015 BONDS	29	206	35	190	200	471.4%	5.2%
OTHER INCOME	-	-	-	-	-	-	-
INSURANCE REFUNDS	-	-	-	-	-	-	-
DEFD REVENUE -2010 SERIES BOND	-	-	-	-	-	-	-
DEFERRED REVENUE - 2015 A BOND	31,355	31,355	31,355	31,355	31,355	0.0%	0.0%
IOP RENTAL REVEUE	-	-	-	-	-	-	-
BLM RENTAL REVEUE	-	-	-	-	-	-	-
ARMSTRONG RANCH RENTAL REVENUE	-	-	-	-	-	-	-
GRANT REVENUE	-	-	-	-	-	-	-
GAIN/LOSS ON ASSET SALES	-	-	-	-	-	-	-
GAIN/LOSS 2010 BOND	-	-	-	-	-	-	-
FORA RUWAP REIMBURSEMENT	555,104	3,596,221	1,200,000	1,200,000	1,000,000	-16.7%	-16.7%
M1W RUWAP REIMBURSEMENT	-	7,079,937	10,464,000	3,560,063	-	-	-
LOAN PROCEEDS - STATE REVOLVING FUND[1]	-	-	6,000,000	9,057,011	11,440,000	90.7%	26.3%
NEW DEBT PROCEEDS	-	-	-	-	-	-	-
TOTAL NON OPERATING REVENUES	**586,488**	**10,707,719**	**17,695,390**	**13,848,619**	**12,471,555**	**-29.5%**	**-9.9%**
TOTAL REVENUE	**586,488**	**10,707,719**	**17,695,390**	**13,848,619**	**12,471,555**	**-29.5%**	**-9.9%**

MARINA COAST WATER DISTRICT
REVENUE BUDGET FOR FY 2019-2020

ACCOUNT NAME	REGIONAL DESALINATION PROJECT 2016-2017 ACTUAL	2017-2018 ACTUAL	2018-2019 ADOPTED	2018-2019 ESTIMATED	2019-2020 PROPOSED	BUD vs BUD % CHANGE	BUD vs EST % CHANGE
WATER SALES RESIDENTIAL	-	-	-	-	-	-	-
WATER SALES BUSINESS	-	-	-	-	-	-	-
WATER SALES SCHOOLS	-	-	-	-	-	-	-
WATER SALES MULTIPLES	-	-	-	-	-	-	-
WATER SALES GOVERMENT	-	-	-	-	-	-	-
FIRE SYSTEM CHARGE	-	-	-	-	-	-	-
HYDRANT METER WATER SALES	-	-	-	-	-	-	-
OTHER WATER SALES	-	-	-	-	-	-	-
LATE CHARGE FEES	-	-	-	-	-	-	-
BACKFLOW REVENUE	-	-	-	-	-	-	-
FLAT RATE ACCOUNTS	-	-	-	-	-	-	-
RECLAIMED WATER SALES	-	-	-	-	-	-	-
PLAN CHECK/PERMIT FEES	-	-	-	-	-	-	-
MAINTENANCE REVENUE	-	-	-	-	-	-	-
METER FEES	-	-	-	-	-	-	-
WHEELING CHARGE	-	-	-	-	-	-	-
DEVELOPER FEES	-	-	-	-	-	-	-
SEWER SALES BUSINESS	-	-	-	-	-	-	-
SEWER SALES RESIDENTIAL	-	-	-	-	-	-	-
TOTAL OPERATING REVENUES	**-**	**-**	**-**	**-**	**-**	**-**	**-**
CAPITAL SURCHARGE	-	-	-	-	-	-	-
CAPACITY CHARGES	-	-	-	-	-	-	-
INTEREST INCOME	-	-	-	-	-	-	-
INTEREST INCOME - 2010 BOND	-	-	-	-	-	-	-
INTEREST INCOME - 2015 BONDS	-	-	-	-	-	-	-
OTHER INCOME	-	-	-	-	-	-	-
INSURANCE REFUNDS	-	-	-	-	-	-	-
DEFD REVENUE -2010 SERIES BOND	-	-	-	-	-	-	-
DEFERRED REVENUE - 2015 A BOND	-	-	-	-	-	-	-
IOP RENTAL REVEUE	-	-	-	-	-	-	-
BLM RENTAL REVEUE	-	-	-	-	-	-	-
ARMSTRONG RANCH RENTAL REVENUE	-	-	-	-	-	-	-
GRANT REVENUE	-	-	-	-	-	-	-
GAIN/LOSS ON ASSET SALES	-	-	-	-	-	-	-
GAIN/LOSS 2010 BOND	-	-	-	-	-	-	-
FORA RUWAP REIMBURSEMENT	-	-	-	-	-	-	-
M1W RUWAP REIMBURSEMENT							
LOAN PROCEEDS - STATE REVOLVING FUND[1]	-	-	-	-	-	-	-
NEW DEBT PROCEEDS	-	-	-	-	-	-	-
TOTAL NON OPERATING REVENUES	**-**	**-**	**-**	**-**	**-**	**-**	**-**
TOTAL REVENUE	**-**	**-**	**-**	**-**	**-**	**-**	**-**

MARINA COAST WATER DISTRICT
REVENUE BUDGET FOR FY 2019-2020

ACCOUNT NAME	2016-2017 ACTUAL	2017-2018 ACTUAL	2018-2019 ADOPTED	TOTAL 2018-2019 ESTIMATED	2019-2020 PROPOSED	BUD vs BUD % CHANGE	BUD vs EST % CHANGE
WATER SALES RESIDENTIAL	4,719,126	6,006,006	6,574,262	6,322,364	6,563,441	-0.2%	3.8%
WATER SALES BUSINESS	1,362,385	1,703,192	1,709,464	1,857,708	2,788,174	63.1%	50.1%
WATER SALES SCHOOLS	282,966	312,332	376,960	359,821	385,008	2.1%	7%
WATER SALES MULTIPLES	1,357,682	1,460,030	1,533,905	1,538,934	1,593,081	3.9%	3.5%
WATER SALES GOVERMENT	101,882	135,119	288,877	164,540	365,210	26.4%	122.0%
FIRE SYSTEM CHARGE	271,141	293,489	268,635	323,173	340,652	26.8%	5.4%
HYDRANT METER WATER SALES	172,977	286,897	150,000	227,676	243,613	62.4%	7.0%
OTHER WATER SALES	8,336	8,836	8,575	9,204	9,756	13.8%	6.0%
LATE CHARGE FEES	109,699	178,806	68,000	117,775	118,000	73.5%	0.2%
BACKFLOW REVENUE	48,695	51,306	49,000	50,000	52,000	6.1%	4.0%
FLAT RATE ACCOUNTS	1,382,768	925,653	50,000	151,777	50,000	0.0%	-67.1%
RECLAIMED WATER SALES	37	-	-	-	-	-	-
PLAN CHECK/PERMIT FEES	38,400	34,500	49,000	39,930	40,500	-17.3%	1.4%
MAINTENANCE REVENUE	-	-	-	-	-	-	-
METER FEES	297,407	657,748	276,700	302,309	301,500	9.0%	-0.3%
WHEELING CHARGE	24,000	24,000	24,000	24,000	24,000	0.0%	0.0%
DEVELOPER FEES	571,991	536,021	582,500	407,993	505,000	-13.3%	23.8%
SEWER SALES BUSINESS	2,496,318	2,770,711	993,794	726,262	760,620	-23.5%	4.7%
SEWER SALES RESIDENTIAL	953,821	1,057,448	3,141,712	3,470,690	3,644,240	16.0%	5.0%
TOTAL OPERATING REVENUES	**14,199,630**	**16,442,094**	**16,145,384**	**16,094,154**	**17,784,796**	**10.2%**	**10.5%**
CAPITAL SURCHARGE	206,899	207,838	206,200	203,281	204,900	-0.6%	0.8%
CAPACITY CHARGES	5,296,738	4,944,010	4,834,302	3,933,064	3,213,633	-33.5%	-18.3%
INTEREST INCOME	60,865	122,163	47,572	179,809	179,900	278.2%	0.1%
INTEREST INCOME - 2010 BOND	3,015	9,922	4,776	16,273	16,150	238.1%	-0.8%
INTEREST INCOME - 2015 BONDS	128	898	201	827	841	318.4%	1.8%
OTHER INCOME	43,444	40,380	20,000	23,839	20,000	0.0%	-16.1%
INSURANCE REFUNDS	7,751	41,628	-	5,813	-	-	-
DEFD REVENUE -2010 SERIES BOND	11,304	11,304	11,304	11,304	11,304	0.0%	0.0%
DEFERRED REVENUE - 2015 A BOND	136,325	136,325	49,077	136,325	136,325	177.8%	0.0%
IOP RENTAL REVEUE	220,380	184,388	183,938	184,838	183,938	0.0%	-0.5%
BLM RENTAL REVEUE	342,351	331,695	343,136	308,814	343,136	0.0%	11.1%
ARMSTRONG RANCH RENTAL REVENUE	3,920	2,940	-	1,960	-	-	-
GRANT REVENUE	-	-	617,170	543,110	456,890	-26.0%	-15.9%
GAIN/LOSS ON ASSET SALES	6,500	30,013	-	-	16,200	-	-
GAIN/LOSS 2010 BOND	4	3	-	-	2	-	-
FORA RUWAP REIMBURSEMENT	555,104	3,596,221	1,200,000	1,200,000	1,000,000	-16.7%	-16.7%
M1W RUWAP REIMBURSEMENT	-	7,079,937	10,464,000	3,560,063	-	-	-
LOAN PROCEEDS - STATE REVOLVING FUND[1]		-	6,000,000	9,057,011	11,440,000	90.7%	26.3%
NEW DEBT PROCEEDS	-	-	-	-	8,605,000	-	-
TOTAL NON OPERATING REVENUES	**6,894,728**	**16,739,664**	**23,981,676**	**19,366,330**	**25,828,219**	**7.7%**	**33.4%**
TOTAL REVENUE	**21,094,359**	**33,181,759**	**40,127,060**	**35,460,485**	**43,613,015**	**8.7%**	**23.0%**

MARINA COAST WATER DISTRICT
ADMIN BUDGET FOR FY 2019-2020

ACCOUNT NAME	2016-2017 ACTUAL	2017-2018 ACTUAL	2018-2019 ADOPTED	MARINA WATER 2018-2019 ESTIMATED	2019-2020 PROPOSED	BUD vs BUD % CHANGE	BUD vs EST % CHANGE
WAGES - ADM	349,503	366,752	361,609	361,071	364,663	0.8%	1.0%
WAGES ALLOCATED TO CAPITAL	-	-	-	-	-	-	-
OVERTIME	13,057	15,577	9,661	14,671	11,612	20.2%	-20.8%
FICA EXPENSE	19,281	20,547	21,324	19,585	21,494	0.8%	9.7%
MEDI EXPENSE	4,946	5,177	5,383	5,526	5,456	1.4%	-1.3%
MEDICAL INSURANCE EXPENSE	40,757	49,407	72,238	54,081	81,483	12.8%	50.7%
DENTAL INSURANCE EXPENSE	3,160	3,373	3,005	3,000	3,366	12.0%	12.2%
VISION INSURANCE EXPENSE	820	880	1,127	817	1,112	-1.4%	36.0%
WORKERS COMP. INSURANCE	3,558	3,545	4,361	4,555	4,304	-1.3%	-5.5%
LIFE INSURANCE EXPENSE	1,143	1,322	1,300	1,499	1,299	-0.1%	-13.4%
UNIFORM BENEFIT	610	424	468	460	449	-4.2%	-2.5%
BOOT BENEFIT	163	176	184	193	172	-6.5%	-11.0%
SUI EXPENSE	1,077	757	942	304	903	-4.1%	197.5%
ETT EXPENSE	37	31	29	13	27	-5.6%	114.2%
CAR ALLOWANCE EXPENSE	1,406	1,350	1,296	1,405	1,242	-4.2%	-11.6%
DISABILITY PLAN	1,239	1,287	978	1,113	987	0.9%	-11.3%
CALPERS RETIREMENT (ER) - Classic Plan	27,818	28,986	32,835	30,906	34,229	4.2%	10.8%
CALPERS RETIREMENT (EE) - Classic Plan	19,272	18,671	18,480	17,606	16,705	-9.6%	-5.1%
CALPERS-62 RETIREMENT (ER)	3,887	6,025	8,333	8,857	9,476	100.0%	7.0%
CALPERS-62 RETIREMENT (EE)	-	-	-	-	-	100.0%	-
PENSION EXPENSE	51,100	2,966	-	-	-	100.0%	-
PARS RETIREMENT	33,562	32,271	-	-	-	-	-
OPEB EXPENSE	17,107	31,660	15,600	12,960	16,100	3.2%	24.2%
TUITION REIMBURSEMENT	2,219	981	-	-	-	-	-
BOARD COMPENSATION	1,066	1,138	900	876	1,035	15.0%	18.2%
TOTAL SALARY & BENEFIT	**596,788**	**593,302**	**560,053**	**539,498**	**576,112**	**2.9%**	**6.8%**
LIABILITY INSURANCE	26,926	24,852	2,520	21,874	21,850	767.1%	-0.1%
LIABILITY CLAIMS	-	-	-	-	-	-	-
PROPERTY INSURANCE	5,083	5,133	6,480	5,280	5,980	-7.7%	13.3%
AUTO INSURANCE	1,521	1,501	1,560	1,395	1,380	-11.5%	-1.1%
OFFICE POWER/GAS	4,609	4,098	3,600	3,541	3,450	-4.2%	-2.6%
BUILDING SECURITY	597	605	1,200	1,249	1,196	-0.3%	-4.3%
TRASH SERVICES	2,244	2,396	2,640	2,240	2,300	-12.9%	2.7%
ANSWERING SERVICE	811	680	720	560	690	-4.2%	23.2%
PHONE	12,911	12,725	12,000	9,976	9,890	-17.6%	-0.9%
RENT/LEASE EQUIPMENT	6,676	4,778	4,680	4,112	6,831	46.0%	66.1%
POSTAGE	11,905	12,582	10,800	11,118	10,810	0.1%	-2.8%
PRINTING	5,871	7,998	6,000	6,602	6,900	15.0%	4.5%
OFFICE SUPPLY	2,639	1,669	2,160	1,845	2,070	-4.2%	12.2%
GENERAL SUPPLY	2,989	4,200	2,640	2,805	2,760	4.5%	-1.6%
COMPUTERS/DATA PROCESSING	8,561	6,461	2,640	3,383	3,450	30.7%	2.0%
SOFTWARE AND LICENSING	6,147	14,639	24,000	13,953	26,703	11.3%	91.4%
ADVERTISEMENT	5,316	6,217	2,400	2,942	3,450	43.8%	17.3%
MAINTENANCE AGREEMENTS	16,226	10,555	3,132	9,514	10,546	236.7%	10.8%
HOSPITALITY & AWARDS	871	619	960	974	920	-4.2%	-5.5%
BOARD MEETING VIDEO RECORDING	1,537	1,580	1,440	1,250	1,380	-4.2%	10.4%
ACCOUNTING SERVICES	9,197	6,466	8,880	6,940	8,510	-4.2%	22.6%
CONSULTING SERVICES	67,852	112,491	66,720	46,622	69,000	3.4%	48.0%
LEGAL FEES	73,797	90,309	60,000	230,694	200,000	233.3%	-13.3%
CONFERENCE ATTENDANCE	2,062	905	2,873	2,499	3,077	7.1%	23.1%
CONFERENCE (BOD)	86	187	600	29	575	-4.2%	1896.5%
EDUCATION EXPENSES	2,368	3,033	3,873	2,170	4,123	6.5%	90.0%
TRAVEL	3,273	3,026	3,732	5,459	4,848	29.9%	-11.2%

MARINA COAST WATER DISTRICT
ADMIN BUDGET FOR FY 2019-2020

ACCOUNT NAME	2016-2017 ACTUAL	2017-2018 ACTUAL	2018-2019 ADOPTED	MARINA WATER 2018-2019 ESTIMATED	2019-2020 PROPOSED	BUD vs BUD % CHANGE	BUD vs EST % CHANGE
SAFETY	253	441	600	430	575	-4.2%	33.8%
MEMBERSHIPS & DUES	5,423	6,947	7,300	7,570	7,600	4.1%	0.4%
PERMITS	17,007	10,512	9,600	9,620	9,200	-4.2%	-4.4%
MISCELLANEOUS	-	-	-	-	-	-	-
BANK & ADMINISTRATION FEE	24,654	28,616	22,800	32,362	31,050	36.2%	-4.1%
BANK FEE - 2010 BOND	-	-	288	288	276	-4.2%	-4.2%
INTEREST EXPENSE	83	35	48	22	46	-4.2%	113.7%
BLM INTEREST EXP - HCC LOAN	19,938	44,220	4,800	41,830	41,583	766.3%	-0.6%
2010 BOND INTEREST EXPENSE	55,730	46,713	36,190	36,190	24,290	-32.9%	-32.9%
2015 BOND INTEREST EXPENSE	104,297	102,120	103,404	103,404	100,332	-3.0%	-3.0%
LEASED EQUIPMENT INTEREST	-	-	-	-	-	-	-
BLM INT EXP LINE OF CREDIT	972	-	-	-	-	-	-
BLM INT EXP COMMERCIAL LOAN	2,106	-	-	-	-	-	-
BLM INT EXP CONSTRUCTION LOAN	18,936	-	-	-	-	-	-
BLM LOAN FEES	7,125	-	-	-	-	-	-
RUWAP LOC INTEREST EXPENSE	-	-	-	-	-	-	-
METER READER GEN MAINT/EQUIP	2,237	605	345	399	860	149.3%	115.5%
METERS (METER READER ONLY)	53,023	66,657	46,000	33,931	79,550	72.9%	134.4%
IOP GENERAL EXPENSES	902	851	1,050	719	725	-31.0%	0.8%
IOP EXPENSE	3,080	3,080	3,080	3,080	3,080	0.0%	0.0%
IOP PERMITS	201	-	350	-	-	-	-
IOP MAINTENANCE	2,391	760	300	721	750	150.0%	4.1%
BLM GENERAL EXPENSES	11,804	12,034	12,000	12,551	12,600	5.0%	0.4%
BLM ASSOCIATION FEES	3,080	3,080	3,080	3,080	3,080	0.0%	0.0%
BLM MAINTENANCE	4,231	6,515	1,890	1,077	1,100	-41.8%	2.2%
FRANCHISE FEE	-	-	-	-	-	-	-
FORA ADMIN./LIAISON FEES	-	-	-	-	-	-	-
MEMBERSHIP ON FORA BOARD	-	-	-	-	-	-	-
BAD DEBT EXPENSE	-	-	6,000	6,000	5,750	-4.2%	-4.2%
RW-0156 RECYCLED WATER EXPENSE	-	-	-	-	-	-	-
TOTAL DEPARTMENT EXPENSE	**621,068**	**674,526**	**497,615**	**692,298**	**735,136**	**47.7%**	**6.2%**
TOTAL EXPENSE	**1,217,856**	**1,267,829**	**1,057,668**	**1,231,796**	**1,311,248**	**24.0%**	**6.5%**

MARINA COAST WATER DISTRICT
ADMIN BUDGET FOR FY 2019-2020

ACCOUNT NAME	2016-2017 ACTUAL	2017-2018 ACTUAL	2018-2019 ADOPTED	MARINA SEWER 2018-2019 ESTIMATED	2019-2020 PROPOSED	BUD vs BUD % CHANGE	BUD vs EST % CHANGE
WAGES - ADM	81,367	89,670	105,469	98,820	95,130	-9.8%	-3.7%
WAGES ALLOCATED TO CAPITAL	-	-	-	-	-	-	-
OVERTIME	3,417	4,291	2,818	4,144	3,029	7.5%	-26.9%
FICA EXPENSE	4,468	4,992	6,220	5,346	5,607	-9.9%	4.9%
MEDI EXPENSE	1,163	1,272	1,570	1,526	1,423	-9.3%	-6.7%
MEDICAL INSURANCE EXPENSE	12,480	14,451	21,069	16,984	21,256	0.9%	25.2%
DENTAL INSURANCE EXPENSE	548	588	876	712	878	0.2%	23.2%
VISION INSURANCE EXPENSE	175	193	329	212	290	-11.9%	36.8%
WORKERS COMP. INSURANCE	512	563	1,272	1,037	1,123	-11.7%	8.3%
LIFE INSURANCE EXPENSE	308	370	379	437	339	-10.6%	-22.5%
UNIFORM BENEFIT	105	-	137	97	117	-14.6%	20.8%
BOOT BENEFIT	-	-	-	-	-	-	-
SUI EXPENSE	208	168	275	64	236	-14.3%	266.2%
ETT EXPENSE	7	7	8	3	7	-10.8%	163.5%
CAR ALLOWANCE EXPENSE	378	378	378	410	324	-14.3%	-21.0%
DISABILITY PLAN	333	360	285	325	257	-9.7%	-20.7%
CALPERS RETIREMENT (ER) - Classic Plan	7,423	7,474	9,577	8,916	8,929	-6.8%	0.1%
CALPERS RETIREMENT (EE) - Classic Plan	4,628	4,639	5,390	5,050	4,358	-19.2%	-13.7%
CALPERS-62 RETIREMENT (ER)	718	1,334	2,430	2,223	2,472	100.0%	11.2%
CALPERS-62 RETIREMENT (EE)	-	-	-	-	-	100.0%	-
PENSION EXPENSE	13,758	831	-	-	-	100.0%	-
PARS RETIREMENT	9,036	9,036	-	-	-	-	-
OPEB EXPENSE	3,989	8,865	4,550	3,780	4,200	-7.7%	11.1%
TUITION REIMBURSEMENT	-	-	-	-	-	-	-
BOARD COMPENSATION	287	319	263	256	270	2.7%	5.7%
TOTAL SALARY & BENEFIT	**145,310**	**149,800**	**163,295**	**150,343**	**150,245**	**-8.0%**	**-0.1%**
LIABILITY INSURANCE	7,184	6,886	735	6,310	5,700	675.5%	-9.7%
LIABILITY CLAIMS	-	150	-	-	-	-	-
PROPERTY INSURANCE	772	779	1,890	1,228	1,560	-17.5%	27.1%
AUTO INSURANCE	418	424	455	407	360	-20.9%	-11.5%
OFFICE POWER/GAS	1,188	1,092	1,050	1,003	900	-14.3%	-10.3%
BUILDING SECURITY	161	170	350	364	312	-10.9%	-14.4%
TRASH SERVICES	604	671	770	653	600	-22.1%	-8.1%
ANSWERING SERVICE	218	191	210	163	180	-14.3%	10.2%
PHONE	2,625	3,143	3,500	2,874	2,580	-26.3%	-10.2%
RENT/LEASE EQUIPMENT	1,798	1,338	1,365	1,199	1,782	30.5%	48.6%
POSTAGE	11,321	12,005	3,150	7,157	2,820	-10.5%	-60.6%
PRINTING	5,486	6,892	1,750	3,808	1,800	2.9%	-52.7%
OFFICE SUPPLY	856	467	630	538	540	-14.3%	0.3%
GENERAL SUPPLY	809	1,176	770	818	720	-6.5%	-12.0%
COMPUTERS/DATA PROCESSING	1,568	1,808	770	987	900	16.9%	-8.8%
SOFTWARE AND LICENSING	1,507	4,213	7,000	3,545	6,970	-0.4%	96.6%
ADVERTISEMENT	1,301	2,523	700	784	900	28.6%	14.8%
MAINTENANCE AGREEMENTS	5,382	3,136	914	3,675	2,751	201.0%	-25.1%
HOSPITALITY & AWARDS	230	199	280	284	240	-14.3%	-15.5%
BOARD MEETING VIDEO RECORDING	414	442	420	365	360	-14.3%	-1.3%
ACCOUNTING SERVICES	2,436	1,800	2,590	2,016	2,220	-14.3%	10.1%
CONSULTING SERVICES	13,964	26,045	19,460	13,598	18,000	-7.5%	32.4%
LEGAL FEES	10,894	6,924	17,500	4,288	4,500	-74.3%	4.9%
CONFERENCE ATTENDANCE	212	36	84	520	727	765.5%	39.8%
CONFERENCE (BOD)	23	21	175	8	150	-14.3%	1685.7%
EDUCATION EXPENSES	480	700	1,589	1,108	1,797	13.1%	62.2%
TRAVEL	308	595	1,018	959	1,294	27.1%	34.9%

MARINA COAST WATER DISTRICT
ADMIN BUDGET FOR FY 2019-2020

ACCOUNT NAME	MARINA SEWER 2016-2017 ACTUAL	2017-2018 ACTUAL	2018-2019 ADOPTED	2018-2019 ESTIMATED	2019-2020 PROPOSED	BUD vs BUD % CHANGE	BUD vs EST % CHANGE
SAFETY	72	123	175	288	150	-14.3%	-47.9%
MEMBERSHIPS & DUES	1,451	1,945	1,500	1,865	1,900	26.7%	1.9%
PERMITS	731	647	2,800	2,453	2,400	-14.3%	-2.2%
MISCELLANEOUS	-	-	-	-	-	-	-
BANK & ADMINISTRATION FEE	6,644	8,015	6,650	9,437	8,100	21.8%	-14.2%
BANK FEE - 2010 BOND	-	-	84	84	72	-14.3%	-14.3%
INTEREST EXPENSE	22	10	14	6	12	-14.3%	91.1%
BLM INTEREST EXP - HCC LOAN	5,697	12,634	1,350	11,951	11,881	780.1%	-0.6%
2010 BOND INTEREST EXPENSE	15,923	13,347	10,340	10,340	6,940	-32.9%	-32.9%
2015 BOND INTEREST EXPENSE	65,439	64,078	64,628	64,628	62,708	-3.0%	-3.0%
LEASED EQUIPMENT INTEREST	-	-	-	-	-	-	-
BLM INT EXP LINE OF CREDIT	278	-	-	-	-	-	-
BLM INT EXP COMMERCIAL LOAN	602	-	-	-	-	-	-
BLM INT EXP CONSTRUCTION LOAN	5,410	-	-	-	-	-	-
BLM LOAN FEES	2,036	-	-	-	-	-	-
RUWAP LOC INTEREST EXPENSE	-	-	-	-	-	-	-
METER READER GEN MAINT/EQUIP	-	-	-	-	-	-	-
METERS (METER READER ONLY)	-	-	-	-	-	-	-
IOP GENERAL EXPENSES	258	245	300	206	250	-16.7%	21.6%
IOP EXPENSE	880	880	880	880	880	0.0%	0.0%
IOP PERMITS	57	-	100	-	-	-	-
IOP MAINTENANCE	683	217	100	206	100	0.0%	-51.4%
BLM GENERAL EXPENSES	3,373	3,439	3,400	3,586	3,600	5.9%	0.4%
BLM ASSOCIATION FEES	880	880	880	880	880	0.0%	0.0%
BLM MAINTENANCE	1,209	1,861	540	308	350	-35.2%	13.8%
FRANCHISE FEE	-	-	-	-	-	-	-
FORA ADMIN./LIAISON FEES	-	-	-	-	-	-	-
MEMBERSHIP ON FORA BOARD	-	-	-	-	-	-	-
BAD DEBT EXPENSE	-	-	1,750	1,750	1,500	-14.3%	-14.3%
RW-0156 RECYCLED WATER EXPENSE	-	-	-	-	-	-	-
TOTAL DEPARTMENT EXPENSE	**183,970**	**192,346**	**164,686**	**167,526**	**162,386**	**-1.4%**	**-3.1%**
TOTAL EXPENSE	**329,280**	**342,146**	**327,981**	**317,869**	**312,631**	**-4.7%**	**-1.6%**

MARINA COAST WATER DISTRICT
ADMIN BUDGET FOR FY 2019-2020

ACCOUNT NAME	2016-2017 ACTUAL	2017-2018 ACTUAL	2018-2019 ADOPTED	ORD WATER 2018-2019 ESTIMATED	2019-2020 PROPOSED	BUD vs BUD % CHANGE	BUD vs EST % CHANGE
WAGES - ADM	686,800	746,476	813,620	787,354	903,730	11.1%	14.8%
WAGES ALLOCATED TO CAPITAL	-	-	-	-	-	-	-
OVERTIME	27,270	33,972	21,738	32,220	28,779	32.4%	-10.7%
FICA EXPENSE	37,381	41,675	47,979	42,649	53,267	11.0%	24.9%
MEDI EXPENSE	9,648	10,549	12,113	12,102	13,522	11.6%	11.7%
MEDICAL INSURANCE EXPENSE	122,625	145,366	162,535	143,463	201,936	24.2%	40.8%
DENTAL INSURANCE EXPENSE	5,451	6,038	6,761	6,002	8,341	23.4%	39.0%
VISION INSURANCE EXPENSE	1,537	1,714	2,535	1,718	2,755	8.7%	60.4%
WORKERS COMP. INSURANCE	5,754	6,124	9,813	9,121	10,665	8.7%	16.9%
LIFE INSURANCE EXPENSE	2,375	2,855	2,926	3,373	3,219	10.0%	-4.6%
UNIFORM BENEFIT	1,278	901	1,053	1,046	1,112	5.6%	6.3%
BOOT BENEFIT	346	374	216	364	228	5.6%	-37.4%
SUI EXPENSE	1,927	1,474	2,121	580	2,238	5.5%	285.7%
ETT EXPENSE	66	61	64	24	68	6.0%	177.9%
CAR ALLOWANCE EXPENSE	2,916	2,916	2,916	3,162	3,078	5.6%	-2.7%
DISABILITY PLAN	2,572	2,781	2,200	2,503	2,445	11.2%	-2.3%
CALPERS RETIREMENT (ER) - Classic Plan	55,586	60,346	73,879	69,242	84,827	14.8%	22.5%
CALPERS RETIREMENT (EE) - Classic Plan	38,002	38,262	41,579	39,360	41,399	-0.4%	5.2%
CALPERS-62 RETIREMENT (ER)	6,763	11,615	18,748	18,399	23,483	100.0%	27.6%
CALPERS-62 RETIREMENT (EE)	-	-	-	-	-	100.0%	-
PENSION EXPENSE	106,131	6,404	-	-	-	100.0%	-
PARS RETIREMENT	69,706	69,706	-	-	-	-	-
OPEB EXPENSE	33,668	68,385	35,100	29,160	39,900	13.7%	36.8%
TUITION REIMBURSEMENT	4,716	2,084	-	-	-	-	-
BOARD COMPENSATION	2,214	2,457	2,025	1,971	2,565	26.7%	30.1%
TOTAL SALARY & BENEFIT	**1,224,730**	**1,262,535**	**1,259,921**	**1,203,812**	**1,427,556**	**13.3%**	**18.6%**
LIABILITY INSURANCE	55,419	53,117	5,670	48,674	54,150	855.0%	11.3%
LIABILITY CLAIMS	-	-	-	-	-	-	-
PROPERTY INSURANCE	16,405	16,363	14,580	14,366	14,820	1.6%	3.2%
AUTO INSURANCE	3,222	3,273	3,510	3,138	3,420	-2.6%	9.0%
OFFICE POWER/GAS	9,383	8,691	8,100	7,870	8,550	5.6%	8.6%
BUILDING SECURITY	1,239	1,307	2,700	2,811	2,964	9.8%	5.4%
TRASH SERVICES	4,660	5,174	5,940	5,039	5,700	-4.0%	13.1%
ANSWERING SERVICE	1,684	1,470	1,620	1,260	1,710	5.6%	35.7%
PHONE	21,314	25,431	27,000	22,436	24,510	-9.2%	9.2%
RENT/LEASE EQUIPMENT	13,866	10,320	10,530	9,252	16,929	60.8%	83.0%
POSTAGE	7,629	10,655	24,300	17,611	26,790	10.2%	52.1%
PRINTING	5,507	8,352	13,500	11,567	17,100	26.7%	47.8%
OFFICE SUPPLY	5,336	3,604	4,860	4,152	5,130	5.6%	23.6%
GENERAL SUPPLY	6,228	9,072	5,940	6,311	6,840	15.2%	8.4%
COMPUTERS/DATA PROCESSING	17,912	13,956	5,940	7,613	8,550	43.9%	12.3%
SOFTWARE AND LICENSING	12,843	31,604	54,000	31,543	66,278	22.7%	110.1%
ADVERTISEMENT	11,065	10,647	5,400	6,641	8,550	58.3%	28.7%
MAINTENANCE AGREEMENTS	34,129	21,843	7,047	21,407	26,135	270.9%	22.1%
HOSPITALITY & AWARDS	1,854	1,334	2,160	2,191	2,280	5.6%	4.1%
BOARD MEETING VIDEO RECORDING	3,191	3,413	3,240	2,813	3,420	5.6%	21.6%
ACCOUNTING SERVICES	17,225	13,742	19,980	15,498	21,090	5.6%	36.1%
CONSULTING SERVICES	143,193	233,735	150,120	104,900	171,000	13.9%	63.0%
LEGAL FEES	183,605	294,266	135,000	738,337	675,000	400.0%	-8.6%
CONFERENCE ATTENDANCE	4,343	1,927	6,647	5,810	7,100	6.8%	22.2%
CONFERENCE (BOD)	178	400	1,350	65	1,425	5.6%	2099.1%
EDUCATION EXPENSES	5,002	6,538	8,889	4,969	9,415	5.9%	89.5%
TRAVEL	6,930	6,438	8,572	12,678	11,208	30.8%	-11.6%

MARINA COAST WATER DISTRICT

ADMIN BUDGET FOR FY 2019-2020

ACCOUNT NAME	2016-2017 ACTUAL	2017-2018 ACTUAL	2018-2019 ADOPTED	ORD WATER 2018-2019 ESTIMATED	2019-2020 PROPOSED	BUD vs BUD % CHANGE	BUD vs EST % CHANGE
SAFETY	529	952	1,350	969	1,425	5.6%	47.0%
MEMBERSHIPS & DUES	11,265	15,006	16,000	16,483	16,500	3.1%	0.1%
PERMITS	20,185	17,900	21,600	20,737	22,800	5.6%	10.0%
MISCELLANEOUS	-	-	-	-	-	-	-
BANK & ADMINISTRATION FEE	51,092	61,671	51,300	72,639	76,950	50.0%	5.9%
BANK FEE - 2010 BOND	-	-	648	648	684	5.6%	5.6%
INTEREST EXPENSE	182	74	108	48	114	5.6%	135.2%
BLM INTEREST EXP - HCC LOAN	35,604	78,962	8,600	74,698	74,256	763.4%	-0.6%
2010 BOND INTEREST EXPENSE	99,517	83,416	64,625	64,625	43,375	-32.9%	-32.9%
2015 BOND INTEREST EXPENSE	626,633	613,571	620,424	620,424	601,992	-3.0%	-3.0%
LEASED EQUIPMENT INTEREST	-	-	-	-	-	-	-
BLM INT EXP LINE OF CREDIT	1,735	-	-	-	-	-	-
BLM INT EXP COMMERCIAL LOAN	3,762	-	-	-	-	-	-
BLM INT EXP CONSTRUCTION LOAN	33,814	-	-	-	-	-	-
BLM LOAN FEES	12,723	-	-	-	-	-	-
RUWAP LOC INTEREST EXPENSE	-	-	-	-	-	-	-
METER READER GEN MAINT/EQUIP	4,755	1,286	405	801	1,140	181.5%	42.3%
METERS (METER READER ONLY)	29,547	105,511	54,000	68,175	105,450	95.3%	54.7%
IOP GENERAL EXPENSES	1,611	1,529	2,000	1,284	1,500	-25.0%	16.8%
IOP EXPENSE	5,500	5,500	5,500	5,500	5,500	0.0%	0.0%
IOP PERMITS	359	-	650	-	-	-	-
IOP MAINTENANCE	4,270	1,358	500	1,287	500	0.0%	-61.2%
BLM GENERAL EXPENSES	21,079	21,484	22,000	22,413	23,000	4.5%	2.6%
BLM ASSOCIATION FEES	5,500	5,500	5,500	5,500	5,500	0.0%	0.0%
BLM MAINTENANCE	7,555	11,634	3,715	1,922	2,000	-46.2%	4.0%
FRANCHISE FEE	349,363	471,602	537,463	381,214	396,463	-26.2%	4.0%
FORA ADMIN./LIAISON FEES	25,000	25,000	25,000	25,000	25,000	0.0%	0.0%
MEMBERSHIP ON FORA BOARD	37,000	77,301	60,710	61,924	64,401	6.1%	4.0%
BAD DEBT EXPENSE	-	-	13,500	13,500	14,250	5.6%	5.6%
RW-0156 RECYCLED WATER EXPENSE	-	-	-	-	-	-	-
TOTAL DEPARTMENT EXPENSE	**1,983,272**	**2,397,501**	**2,052,733**	**2,568,746**	**2,682,864**	**30.7%**	**4.4%**
TOTAL EXPENSE	**3,208,002**	**3,660,037**	**3,312,654**	**3,772,558**	**4,110,420**	**24.1%**	**9.0%**

MARINA COAST WATER DISTRICT
ADMIN BUDGET FOR FY 2019-2020

ACCOUNT NAME	2016-2017 ACTUAL	2017-2018 ACTUAL	2018-2019 ADOPTED	ORD SEWER 2018-2019 ESTIMATED	2019-2020 PROPOSED	BUD vs BUD % CHANGE	BUD vs EST % CHANGE
WAGES - ADM	154,972	180,862	226,006	211,755	221,969	-1.8%	4.8%
WAGES ALLOCATED TO CAPITAL	-	-	-	-	-	-	-
OVERTIME	6,349	8,586	6,038	8,880	7,068	17.1%	-20.4%
FICA EXPENSE	8,309	10,002	13,328	11,455	13,083	-1.8%	14.2%
MEDI EXPENSE	2,161	2,547	3,365	3,270	3,321	-1.3%	1.6%
MEDICAL INSURANCE EXPENSE	23,041	28,907	45,149	36,395	49,598	9.9%	36.3%
DENTAL INSURANCE EXPENSE	1,012	1,175	1,878	1,526	2,049	9.1%	34.2%
VISION INSURANCE EXPENSE	322	385	704	454	677	-3.9%	48.9%
WORKERS COMP. INSURANCE	958	1,129	2,726	2,222	2,620	-3.9%	17.9%
LIFE INSURANCE EXPENSE	572	740	813	937	791	-2.8%	-15.6%
UNIFORM BENEFIT	195	-	293	208	273	-6.8%	31.5%
BOOT BENEFIT	-	-	-	-	-	-	-
SUI EXPENSE	387	337	589	138	550	-6.7%	298.9%
ETT EXPENSE	13	14	18	6	17	-7.4%	189.7%
CAR ALLOWANCE EXPENSE	700	756	810	878	756	-6.7%	-13.9%
DISABILITY PLAN	619	721	611	695	601	-1.7%	-13.6%
CALPERS RETIREMENT (ER) - Classic Plan	12,780	14,947	20,522	19,106	20,835	1.5%	9.0%
CALPERS RETIREMENT (EE) - Classic Plan	8,595	9,282	11,550	10,822	10,168	-12.0%	-6.0%
CALPERS-62 RETIREMENT (ER)	1,334	2,668	5,208	4,763	5,768	100.0%	21.1%
CALPERS-62 RETIREMENT (EE)	-	-	-	-	-	100.0%	-
PENSION EXPENSE	25,550	1,660	-	-	-	100.0%	-
PARS RETIREMENT	16,781	18,072	-	-	-	-	-
OPEB EXPENSE	7,614	17,729	9,750	8,100	9,800	0.5%	21.0%
TUITION REIMBURSEMENT	-	-	-	-	-	-	-
BOARD COMPENSATION	533	637	563	548	630	11.9%	15.1%
TOTAL SALARY & BENEFIT	**272,796**	**301,157**	**349,921**	**322,159**	**350,572**	**0.2%**	**8.8%**
LIABILITY INSURANCE	13,099	13,510	1,575	13,280	13,300	744.4%	0.2%
LIABILITY CLAIMS	-	4,610	-	-	-	-	-
PROPERTY INSURANCE	3,475	3,698	4,050	3,684	3,640	-10.1%	-1.2%
AUTO INSURANCE	806	863	975	872	840	-13.8%	-3.6%
OFFICE POWER/GAS	2,204	2,184	2,250	2,150	2,100	-6.7%	-2.3%
BUILDING SECURITY	298	339	750	781	728	-2.9%	-6.8%
TRASH SERVICES	1,122	1,341	1,650	1,400	1,400	-15.2%	0.0%
ANSWERING SERVICE	406	381	450	350	420	-6.7%	20.0%
PHONE	4,875	6,661	7,500	6,163	6,020	-19.7%	-2.3%
RENT/LEASE EQUIPMENT	3,338	2,676	2,925	2,570	4,158	42.2%	61.8%
POSTAGE	6,345	9,455	6,750	8,518	6,580	-2.5%	-22.8%
PRINTING	4,680	6,038	3,750	5,157	4,200	12.0%	-18.6%
OFFICE SUPPLY	1,320	934	1,350	1,153	1,260	-6.7%	9.3%
GENERAL SUPPLY	1,507	2,352	1,650	1,753	1,680	1.8%	-4.2%
COMPUTERS/DATA PROCESSING	2,911	3,616	1,650	2,115	2,100	27.3%	-0.7%
SOFTWARE AND LICENSING	2,799	8,481	15,000	7,595	16,300	8.7%	114.6%
ADVERTISEMENT	2,416	2,626	1,500	1,679	2,100	40.0%	25.1%
MAINTENANCE AGREEMENTS	11,236	6,511	1,958	8,046	6,419	227.8%	-20.2%
HOSPITALITY & AWARDS	427	301	600	609	560	-6.7%	-8.0%
BOARD MEETING VIDEO RECORDING	768	885	900	782	840	-6.7%	7.5%
ACCOUNTING SERVICES	4,136	3,638	5,550	4,305	5,180	-6.7%	20.3%
CONSULTING SERVICES	25,926	50,795	41,700	29,139	42,000	0.7%	44.1%
LEGAL FEES	23,443	40,359	37,500	40,308	35,000	-6.7%	-13.2%
CONFERENCE ATTENDANCE	394	71	175	1,200	1,643	838.9%	36.9%
CONFERENCE (BOD)	43	42	375	18	350	-6.7%	1844.4%
EDUCATION EXPENSES	892	1,339	3,605	2,522	4,056	12.5%	60.8%
TRAVEL	571	1,305	2,287	2,198	2,950	29.0%	34.2%

MARINA COAST WATER DISTRICT
ADMIN BUDGET FOR FY 2019-2020

ACCOUNT NAME	2016-2017 ACTUAL	2017-2018 ACTUAL	2018-2019 ADOPTED	ORD SEWER 2018-2019 ESTIMATED	2019-2020 PROPOSED	BUD vs BUD % CHANGE	BUD vs EST % CHANGE
SAFETY	134	247	375	650	350	-6.7%	-46.2%
MEMBERSHIPS & DUES	2,696	3,890	2,900	3,811	3,900	34.5%	2.3%
PERMITS	1,357	1,441	6,000	5,256	5,600	-6.7%	6.5%
MISCELLANEOUS	-	-	-	-	-	-	-
BANK & ADMINISTRATION FEE	12,327	16,005	14,250	20,181	18,900	32.6%	-6.3%
BANK FEE - 2010 BOND	-	-	180	180	168	-6.7%	-6.7%
INTEREST EXPENSE	41	19	30	13	28	-6.7%	108.2%
BLM INTEREST EXP - HCC LOAN	9,969	22,109	2,400	20,916	20,792	766.3%	-0.6%
2010 BOND INTEREST EXPENSE	27,864	23,357	18,095	18,095	12,145	-32.9%	-32.9%
2015 BOND INTEREST EXPENSE	207,741	203,387	206,808	206,808	200,664	-3.0%	-3.0%
LEASED EQUIPMENT INTEREST	-	-	-	-	-	-	-
BLM INT EXP LINE OF CREDIT	486	-	-	-	-	-	-
BLM INT EXP COMMERCIAL LOAN	1,053	-	-	-	-	-	-
BLM INT EXP CONSTRUCTION LOAN	9,468	-	-	-	-	-	-
BLM LOAN FEES	3,562	-	-	-	-	-	-
RUWAP LOC INTEREST EXPENSE	-	-	-	-	-	-	-
METER READER GEN MAINT/EQUIP	-	-	-	-	-	-	-
METERS (METER READER ONLY)	-	-	-	-	-	-	-
IOP GENERAL EXPENSES	451	434	550	360	400	-27.3%	11.2%
IOP EXPENSE	1,540	1,540	1,540	1,540	1,540	0.0%	0.0%
IOP PERMITS	101	-	200	-	-	-	-
IOP MAINTENANCE	1,196	380	150	360	150	0.0%	-58.4%
BLM GENERAL EXPENSES	5,902	6,017	5,900	6,276	6,300	6.8%	0.4%
BLM ASSOCIATION FEES	1,540	1,540	1,540	1,540	1,540	0.0%	0.0%
BLM MAINTENANCE	2,115	3,257	945	538	750	-20.6%	39.3%
FRANCHISE FEE	136,450	158,337	159,094	142,200	147,888	-7.0%	4.0%
FORA ADMIN./LIAISON FEES	-	-	-	-	-	-	-
MEMBERSHIP ON FORA BOARD	-	26,026	26,218	26,742	27,812	6.1%	4.0%
BAD DEBT EXPENSE	-	-	3,750	3,750	3,500	-6.7%	-6.7%
RW-0156 RECYCLED WATER EXPENSE	-	-	-	-	-	-	-
TOTAL DEPARTMENT EXPENSE	**545,759**	**643,422**	**599,500**	**607,563**	**618,251**	**3.1%**	**1.8%**
TOTAL EXPENSE	**818,555**	**944,579**	**949,421**	**929,722**	**968,823**	**2.0%**	**4.2%**

MARINA COAST WATER DISTRICT
ADMIN BUDGET FOR FY 2019-2020

ACCOUNT NAME	2016-2017 ACTUAL	2017-2018 ACTUAL	2018-2019 ADOPTED	RUWAP 2018-2019 ESTIMATED	2019-2020 PROPOSED	BUD vs BUD % CHANGE	BUD vs EST % CHANGE
WAGES - ADM	-	-	-	-	-	-	-
WAGES ALLOCATED TO CAPITAL	-	-	-	-	-	-	-
OVERTIME	-	-	-	-	-	-	-
FICA EXPENSE	-	-	-	-	-	-	-
MEDI EXPENSE	-	-	-	-	-	-	-
MEDICAL INSURANCE EXPENSE	-	-	-	-	-	-	-
DENTAL INSURANCE EXPENSE	-	-	-	-	-	-	-
VISION INSURANCE EXPENSE	-	-	-	-	-	-	-
WORKERS COMP. INSURANCE	-	-	-	-	-	-	-
LIFE INSURANCE EXPENSE	-	-	-	-	-	-	-
UNIFORM BENEFIT	-	-	-	-	-	-	-
BOOT BENEFIT	-	-	-	-	-	-	-
SUI EXPENSE	-	-	-	-	-	-	-
ETT EXPENSE	-	-	-	-	-	-	-
CAR ALLOWANCE EXPENSE	-	-	-	-	-	-	-
DISABILITY PLAN	-	-	-	-	-	-	-
CALPERS RETIREMENT (ER) - Classic Plan	-	-	-	-	-	-	-
CALPERS RETIREMENT (EE) - Classic Plan	-	-	-	-	-	-	-
CALPERS-62 RETIREMENT (ER)	-	-	-	-	-	-	-
CALPERS-62 RETIREMENT (EE)	-	-	-	-	-	-	-
PENSION EXPENSE	-	-	-	-	-	-	-
PARS RETIREMENT	-	-	-	-	-	-	-
OPEB EXPENSE	-	-	-	-	-	-	-
TUITION REIMBURSEMENT	-	-	-	-	-	-	-
BOARD COMPENSATION	-	-	-	-	-	-	-
TOTAL SALARY & BENEFIT	**-**	**-**	**-**	**-**	**-**	**-**	**-**
LIABILITY INSURANCE	-	-	-	-	-	-	-
LIABILITY CLAIMS	-	-	-	-	-	-	-
PROPERTY INSURANCE	-	-	-	-	-	-	-
AUTO INSURANCE	-	-	-	-	-	-	-
OFFICE POWER/GAS	-	-	-	-	-	-	-
BUILDING SECURITY	-	-	-	-	-	-	-
TRASH SERVICES	-	-	-	-	-	-	-
ANSWERING SERVICE	-	-	-	-	-	-	-
PHONE	-	-	-	-	-	-	-
RENT/LEASE EQUIPMENT	-	-	-	-	-	-	-
POSTAGE	-	-	-	-	-	-	-
PRINTING	-	-	-	-	-	-	-
OFFICE SUPPLY	-	-	-	-	-	-	-
GENERAL SUPPLY	-	-	-	-	-	-	-
COMPUTERS/DATA PROCESSING	-	-	-	-	-	-	-
SOFTWARE AND LICENSING	-	-	-	-	-	-	-
ADVERTISEMENT	-	-	-	-	-	-	-
MAINTENANCE AGREEMENTS	-	-	-	-	-	-	-
HOSPITALITY & AWARDS	-	-	-	-	-	-	-
BOARD MEETING VIDEO RECORDING	-	-	-	-	-	-	-
ACCOUNTING SERVICES	-	-	-	-	-	-	-
CONSULTING SERVICES	-	-	-	-	-	-	-
LEGAL FEES	-	-	-	-	-	-	-
CONFERENCE ATTENDANCE	-	-	-	-	-	-	-
CONFERENCE (BOD)	-	-	-	-	-	-	-
EDUCATION EXPENSES	-	-	-	-	-	-	-
TRAVEL	-	-	-	-	-	-	-

MARINA COAST WATER DISTRICT
ADMIN BUDGET FOR FY 2019-2020

ACCOUNT NAME	2016-2017 ACTUAL	2017-2018 ACTUAL	2018-2019 ADOPTED	RUWAP 2018-2019 ESTIMATED	2019-2020 PROPOSED	BUD vs BUD % CHANGE	BUD vs EST % CHANGE
SAFETY	-	-	-	-	-	-	-
MEMBERSHIPS & DUES	-	-	-	-	-	-	-
PERMITS	-	-	-	-	-	-	-
MISCELLANEOUS	-	-	-	-	-	-	-
BANK & ADMINISTRATION FEE	-	75	-	180	200	-	11.1%
BANK FEE - 2010 BOND	-	-	-	-	-	-	-
INTEREST EXPENSE	-	-	-	-	-	-	-
BLM INTEREST EXP - HCC LOAN	-	-	-	-	-	-	-
2010 BOND INTEREST EXPENSE	-	-	-	-	-	-	-
2015 BOND INTEREST EXPENSE	306,252	299,993	297,286	297,286	288,454	-3.0%	-3.0%
LEASED EQUIPMENT INTEREST	-	-	-	-	-	-	-
BLM INT EXP LINE OF CREDIT	-	-	-	-	-	-	-
BLM INT EXP COMMERCIAL LOAN	-	-	-	-	-	-	-
BLM INT EXP CONSTRUCTION LOAN	-	-	-	-	-	-	-
BLM LOAN FEES	-	-	-	-	-	-	-
RUWAP LOC INTEREST EXPENSE	-	50,524	20,000	118,471	100,000	400.0%	-15.6%
METER READER GEN MAINT/EQUIP	-	-	-	-	-	-	-
METERS (METER READER ONLY)	-	-	-	-	-	-	-
IOP GENERAL EXPENSES	-	-	-	-	-	-	-
IOP EXPENSE	-	-	-	-	-	-	-
IOP PERMITS	-	-	-	-	-	-	-
IOP MAINTENANCE	-	-	-	-	-	-	-
BLM GENERAL EXPENSES	-	-	-	-	-	-	-
BLM ASSOCIATION FEES	-	-	-	-	-	-	-
BLM MAINTENANCE	-	-	-	-	-	-	-
FRANCHISE FEE	-	-	-	-	-	-	-
FORA ADMIN./LIAISON FEES	-	-	-	-	-	-	-
MEMBERSHIP ON FORA BOARD	-	-	-	-	-	-	-
BAD DEBT EXPENSE	-	-	-	-	-	-	-
RW-0156 RECYCLED WATER EXPENSE	-	1,033	4,000	59	1,000	-75.0%	1587.5%
TOTAL DEPARTMENT EXPENSE	**306,252**	**351,625**	**321,286**	**415,996**	**389,654**	**21.3%**	**-6.3%**
TOTAL EXPENSE	**306,252**	**351,625**	**321,286**	**415,996**	**389,654**	**21.3%**	**-6.3%**

MARINA COAST WATER DISTRICT
ADMIN BUDGET FOR FY 2019-2020

ACCOUNT NAME	2016-2017 ACTUAL	2017-2018 ACTUAL	2018-2019 ADOPTED	2018-2019 ESTIMATED	2019-2020 PROPOSED	BUD vs BUD % CHANGE	BUD vs EST % CHANGE
	REGIONAL DESALINATION PROJECT						
WAGES - ADM	-	-	-	-	-	-	-
WAGES ALLOCATED TO CAPITAL	-	-	-	-	-	-	-
OVERTIME	-	-	-	-	-	-	-
FICA EXPENSE	-	-	-	-	-	-	-
MEDI EXPENSE	-	-	-	-	-	-	-
MEDICAL INSURANCE EXPENSE	-	-	-	-	-	-	-
DENTAL INSURANCE EXPENSE	-	-	-	-	-	-	-
VISION INSURANCE EXPENSE	-	-	-	-	-	-	-
WORKERS COMP. INSURANCE	-	-	-	-	-	-	-
LIFE INSURANCE EXPENSE	-	-	-	-	-	-	-
UNIFORM BENEFIT	-	-	-	-	-	-	-
BOOT BENEFIT	-	-	-	-	-	-	-
SUI EXPENSE	-	-	-	-	-	-	-
ETT EXPENSE	-	-	-	-	-	-	-
CAR ALLOWANCE EXPENSE	-	-	-	-	-	-	-
DISABILITY PLAN	-	-	-	-	-	-	-
CALPERS RETIREMENT (ER) - Classic Plan	-	-	-	-	-	-	-
CALPERS RETIREMENT (EE) - Classic Plan	-	-	-	-	-	-	-
CALPERS-62 RETIREMENT (ER)	-	-	-	-	-	-	-
CALPERS-62 RETIREMENT (EE)	-	-	-	-	-	-	-
PENSION EXPENSE	-	-	-	-	-	-	-
PARS RETIREMENT	-	-	-	-	-	-	-
OPEB EXPENSE	-	-	-	-	-	-	-
TUITION REIMBURSEMENT	-	-	-	-	-	-	-
BOARD COMPENSATION	-	-	-	-	-	-	-
TOTAL SALARY & BENEFIT	**-**	**-**	**-**	**-**	**-**	**-**	**-**
LIABILITY INSURANCE	-	-	-	-	-	-	-
LIABILITY CLAIMS	-	-	-	-	-	-	-
PROPERTY INSURANCE	-	-	-	-	-	-	-
AUTO INSURANCE	-	-	-	-	-	-	-
OFFICE POWER/GAS	-	-	-	-	-	-	-
BUILDING SECURITY	-	-	-	-	-	-	-
TRASH SERVICES	-	-	-	-	-	-	-
ANSWERING SERVICE	-	-	-	-	-	-	-
PHONE	-	-	-	-	-	-	-
RENT/LEASE EQUIPMENT	-	-	-	-	-	-	-
POSTAGE	-	-	-	-	-	-	-
PRINTING	-	-	-	-	-	-	-
OFFICE SUPPLY	-	-	-	-	-	-	-
GENERAL SUPPLY	-	-	-	-	-	-	-
COMPUTERS/DATA PROCESSING	-	-	-	-	-	-	-
SOFTWARE AND LICENSING	-	-	-	-	-	-	-
ADVERTISEMENT	-	-	-	-	-	-	-
MAINTENANCE AGREEMENTS	-	-	-	-	-	-	-
HOSPITALITY & AWARDS	-	-	-	-	-	-	-
BOARD MEETING VIDEO RECORDING	-	-	-	-	-	-	-
ACCOUNTING SERVICES	-	-	-	-	-	-	-
CONSULTING SERVICES	-	-	-	-	-	-	-
LEGAL FEES	-	-	-	-	-	-	-
CONFERENCE ATTENDANCE	-	-	-	-	-	-	-
CONFERENCE (BOD)	-	-	-	-	-	-	-
EDUCATION EXPENSES	-	-	-	-	-	-	-
TRAVEL	-	-	-	-	-	-	-

MARINA COAST WATER DISTRICT
ADMIN BUDGET FOR FY 2019-2020

ACCOUNT NAME	2016-2017 ACTUAL	2017-2018 ACTUAL	2018-2019 ADOPTED	2018-2019 ESTIMATED	2019-2020 PROPOSED	BUD vs BUD % CHANGE	BUD vs EST % CHANGE
	REGIONAL DESALINATION PROJECT						
SAFETY	-	-	-	-	-	-	-
MEMBERSHIPS & DUES	-	-	-	-	-	-	-
PERMITS	-	-	-	-	-	-	-
MISCELLANEOUS	-	-	-	-	-	-	-
BANK & ADMINISTRATION FEE	-	-	-	-	-	-	-
BANK FEE - 2010 BOND	-	-	-	-	-	-	-
INTEREST EXPENSE	-	-	-	-	-	-	-
BLM INTEREST EXP - HCC LOAN	-	-	-	-	-	-	-
2010 BOND INTEREST EXPENSE	-	-	-	-	-	-	-
2015 BOND INTEREST EXPENSE	-	-	-	-	-	-	-
LEASED EQUIPMENT INTEREST	-	-	-	-	-	-	-
BLM INT EXP LINE OF CREDIT	-	-	-	-	-	-	-
BLM INT EXP COMMERCIAL LOAN	-	-	-	-	-	-	-
BLM INT EXP CONSTRUCTION LOAN	-	-	-	-	-	-	-
BLM LOAN FEES	-	-	-	-	-	-	-
RUWAP LOC INTEREST EXPENSE	-	-	-	-	-	-	-
METER READER GEN MAINT/EQUIP	-	-	-	-	-	-	-
METERS (METER READER ONLY)	-	-	-	-	-	-	-
IOP GENERAL EXPENSES	-	-	-	-	-	-	-
IOP EXPENSE	-	-	-	-	-	-	-
IOP PERMITS	-	-	-	-	-	-	-
IOP MAINTENANCE	-	-	-	-	-	-	-
BLM GENERAL EXPENSES	-	-	-	-	-	-	-
BLM ASSOCIATION FEES	-	-	-	-	-	-	-
BLM MAINTENANCE	-	-	-	-	-	-	-
FRANCHISE FEE	-	-	-	-	-	-	-
FORA ADMIN./LIAISON FEES	-	-	-	-	-	-	-
MEMBERSHIP ON FORA BOARD	-	-	-	-	-	-	-
BAD DEBT EXPENSE	-	-	-	-	-	-	-
RW-0156 RECYCLED WATER EXPENSE	-	-	-	-	-	-	-
TOTAL DEPARTMENT EXPENSE	**-**	**-**	**-**	**-**	**-**	**-**	**-**
TOTAL EXPENSE	**-**	**-**	**-**	**-**	**-**	**-**	**-**

MARINA COAST WATER DISTRICT
ADMIN BUDGET FOR FY 2019-2020

ACCOUNT NAME	2016-2017 ACTUAL	2017-2018 ACTUAL	2018-2019 ADOPTED	TOTAL 2018-2019 ESTIMATED	2019-2020 PROPOSED	BUD vs BUD % CHANGE	BUD vs EST % CHANGE
WAGES - ADM	1,272,643	1,383,760	1,506,704	1,459,000	1,585,492	5.2%	8.7%
WAGES ALLOCATED TO CAPITAL	-	-	-	-	-	-	-
OVERTIME	50,093	62,426	40,255	59,915	50,489	25.4%	-15.7%
FICA EXPENSE	69,440	77,217	88,851	79,036	93,451	5.2%	18.2%
MEDI EXPENSE	17,919	19,545	22,431	22,424	23,722	5.8%	5.8%
MEDICAL INSURANCE EXPENSE	198,902	238,131	300,991	250,924	354,274	17.7%	41.2%
DENTAL INSURANCE EXPENSE	10,171	11,172	12,520	11,240	14,633	16.9%	30.2%
VISION INSURANCE EXPENSE	2,854	3,172	4,695	3,202	4,833	2.9%	51.0%
WORKERS COMP. INSURANCE	10,781	11,361	18,172	16,934	18,711	3.0%	10.5%
LIFE INSURANCE EXPENSE	4,397	5,287	5,418	6,246	5,647	4.2%	-9.6%
UNIFORM BENEFIT	2,188	1,325	1,951	1,810	1,950	-0.1%	7.7%
BOOT BENEFIT	509	550	400	558	400	0.0%	-28.3%
SUI EXPENSE	3,598	2,735	3,927	1,086	3,927	0.0%	261.5%
ETT EXPENSE	123	114	119	46	119	0.0%	160.7%
CAR ALLOWANCE EXPENSE	5,400	5,400	5,400	5,856	5,400	0.0%	-7.8%
DISABILITY PLAN	4,764	5,149	4,074	4,636	4,290	5.3%	-7.5%
CALPERS RETIREMENT (ER) - Classic Plan	103,608	111,754	136,813	128,170	148,820	8.8%	16.1%
CALPERS RETIREMENT (EE) - Classic Plan	70,497	70,854	76,999	72,838	72,629	-5.7%	-0.3%
CALPERS-62 RETIREMENT (ER)	12,702	21,642	34,719	34,242	41,198	100.0%	20.3%
CALPERS-62 RETIREMENT (EE)	-	-	-	-	-	100.0%	-
PENSION EXPENSE	196,539	11,861	-	-	-	100.0%	-
PARS RETIREMENT	129,085	129,085	-	-	-	-	-
OPEB EXPENSE	62,378	126,638	65,000	54,000	70,000	7.7%	29.6%
TUITION REIMBURSEMENT	6,935	3,065	-	-	-	-	-
BOARD COMPENSATION	4,100	4,550	3,751	3,650	4,500	20.0%	23.3%
TOTAL SALARY & BENEFIT	**2,239,623**	**2,306,794**	**2,333,190**	**2,215,812**	**2,504,485**	**7.3%**	**13.0%**
LIABILITY INSURANCE	102,628	98,365	10,500	90,137	95,000	804.8%	5.4%
LIABILITY CLAIMS	-	4,760	-	-	-	-	-
PROPERTY INSURANCE	25,735	25,973	27,000	24,557	26,000	-3.7%	5.9%
AUTO INSURANCE	5,968	6,060	6,500	5,812	6,000	-7.7%	3.2%
OFFICE POWER/GAS	17,384	16,065	15,000	14,565	15,000	0.0%	3.0%
BUILDING SECURITY	2,295	2,421	5,000	5,206	5,200	4.0%	-0.1%
TRASH SERVICES	8,629	9,582	11,000	9,332	10,000	-9.1%	7.2%
ANSWERING SERVICE	3,119	2,722	3,000	2,334	3,000	0.0%	28.5%
PHONE	41,724	47,960	50,000	41,449	43,000	-14.0%	3.7%
RENT/LEASE EQUIPMENT	25,679	19,111	19,500	17,134	29,700	52.3%	73.3%
POSTAGE	37,200	44,698	45,000	44,404	47,000	4.4%	5.8%
PRINTING	21,543	29,280	25,000	27,133	30,000	20.0%	10.6%
OFFICE SUPPLY	10,150	6,675	9,000	7,689	9,000	0.0%	17.1%
GENERAL SUPPLY	11,534	16,800	11,000	11,687	12,000	9.1%	2.7%
COMPUTERS/DATA PROCESSING	30,952	25,841	11,000	14,098	15,000	36.4%	6.4%
SOFTWARE AND LICENSING	23,296	58,937	100,000	56,636	116,251	16.3%	105.3%
ADVERTISEMENT	20,098	22,013	10,000	12,046	15,000	50.0%	24.5%
MAINTENANCE AGREEMENTS	66,972	42,045	13,051	42,642	45,851	251.3%	7.5%
HOSPITALITY & AWARDS	3,382	2,453	4,000	4,057	4,000	0.0%	-1.4%
BOARD MEETING VIDEO RECORDING	5,910	6,320	6,000	5,210	6,000	0.0%	15.2%
ACCOUNTING SERVICES	32,993	25,646	37,000	28,758	37,000	0.0%	28.7%
CONSULTING SERVICES	250,935	423,067	278,000	194,260	300,000	7.9%	54.4%
LEGAL FEES	291,739	431,857	250,000	1,013,627	914,500	265.8%	-9.8%
CONFERENCE ATTENDANCE	7,011	2,938	9,779	10,029	12,547	28.3%	25.1%
CONFERENCE (BOD)	330	650	2,500	120	2,500	0.0%	1983.3%
EDUCATION EXPENSES	8,742	11,610	17,956	10,769	19,391	8.0%	80.1%
TRAVEL	11,081	11,364	15,609	21,294	20,300	30.1%	-4.7%

MARINA COAST WATER DISTRICT
ADMIN BUDGET FOR FY 2019-2020

ACCOUNT NAME	2016-2017 ACTUAL	2017-2018 ACTUAL	2018-2019 ADOPTED	TOTAL 2018-2019 ESTIMATED	2019-2020 PROPOSED	BUD vs BUD % CHANGE	BUD vs EST % CHANGE
SAFETY	987	1,763	2,500	2,337	2,500	0.0%	7.0%
MEMBERSHIPS & DUES	20,835	27,788	27,700	29,729	29,900	7.9%	0.6%
PERMITS	39,280	30,500	40,000	38,065	40,000	0.0%	5.1%
MISCELLANEOUS	-	-	-	-	-	-	-
BANK & ADMINISTRATION FEE	94,717	114,382	95,000	134,798	135,200	42.3%	0.3%
BANK FEE - 2010 BOND	-	-	1,200	1,200	1,200	0.0%	0.0%
INTEREST EXPENSE	329	138	200	90	200	0.0%	122.9%
BLM INTEREST EXP - HCC LOAN	71,208	157,925	17,150	149,396	148,512	766.0%	-0.6%
2010 BOND INTEREST EXPENSE	199,034	166,833	129,250	129,250	86,750	-32.9%	-32.9%
2015 BOND INTEREST EXPENSE	1,310,362	1,283,149	1,292,550	1,292,550	1,254,150	-3.0%	-3.0%
LEASED EQUIPMENT INTEREST	-	-	-	-	-	-	-
BLM INT EXP LINE OF CREDIT	3,471	-	-	-	-	-	-
BLM INT EXP COMMERCIAL LOAN	7,523	-	-	-	-	-	-
BLM INT EXP CONSTRUCTION LOAN	67,628	-	-	-	-	-	-
BLM LOAN FEES	25,446	-	-	-	-	-	-
RUWAP LOC INTEREST EXPENSE	-	50,524	20,000	118,471	100,000	400.0%	-15.6%
METER READER GEN MAINT/EQUIP	6,992	1,891	750	1,200	2,000	166.7%	66.6%
METERS (METER READER ONLY)	82,570	172,168	100,000	102,106	185,000	85.0%	81.2%
IOP GENERAL EXPENSES	3,222	3,059	3,900	2,569	2,875	-26.3%	11.9%
IOP EXPENSE	11,000	11,000	11,000	11,000	11,000	0.0%	0.0%
IOP PERMITS	718	-	1,300	-	-	-	-
IOP MAINTENANCE	8,541	2,715	1,050	2,574	1,500	42.9%	-41.7%
BLM GENERAL EXPENSES	42,158	42,973	43,300	44,826	45,500	5.1%	1.5%
BLM ASSOCIATION FEES	11,000	11,000	11,000	11,000	11,000	0.0%	0.0%
BLM MAINTENANCE	15,111	23,267	7,090	3,845	4,200	-40.8%	9.2%
FRANCHISE FEE	485,813	629,940	696,557	523,414	544,351	-21.9%	4.0%
FORA ADMIN./LIAISON FEES	25,000	25,000	25,000	25,000	25,000	0.0%	0.0%
MEMBERSHIP ON FORA BOARD	37,000	103,327	86,928	88,667	92,213	6.1%	4.0%
BAD DEBT EXPENSE	-	-	25,000	25,000	25,000	0.0%	0.0%
RW-0156 RECYCLED WATER EXPENSE	-	1,033	4,000	59	1,000	-75.0%	1587.5%
TOTAL DEPARTMENT EXPENSE	**3,640,322**	**4,259,421**	**3,635,820**	**4,452,130**	**4,588,291**	**26.2%**	**3.1%**
TOTAL EXPENSE	**5,879,945**	**6,566,215**	**5,969,010**	**6,667,942**	**7,092,776**	**18.8%**	**6.4%**

MARINA COAST WATER DISTRICT
OPER & MAINT BUDGET FOR FY 2019-2020

ACCOUNT NAME	2016-2017 ACTUAL	2017-2018 ACTUAL	2018-2019 ADOPTED	MARINA WATER 2018-2019 ESTIMATED	2019-2020 PROPOSED	BUD vs BUD % CHANGE	BUD vs EST % CHANGE
WAGES - OPM	264,048	272,889	308,753	301,769	366,555	18.7%	21.5%
WAGES ALLOCATED TO CAPITAL	-	(91)	-	-	-	-	-
OVERTIME	5,762	2,406	11,087	2,160	13,366	20.6%	518.8%
STANDBY WAGES	10,899	10,920	9,931	10,120	11,832	19.1%	16.9%
FICA - SS EXPENSE	17,162	17,399	20,192	18,635	23,923	18.5%	28.4%
FICA - MEDI EXPENSE	4,029	4,075	4,782	4,426	5,680	18.8%	28.3%
MEDICAL INSURANCE	69,161	69,536	74,378	71,441	90,109	21.1%	26.1%
DENTAL INSURANCE	3,370	3,097	3,146	3,169	3,885	23.5%	22.6%
VISION INSURANCE	655	631	643	629	753	17.1%	19.6%
WORKERS COMP. INSURANCE	8,282	8,895	13,229	12,688	15,891	20.1%	25.2%
LIFE INSURANCE EXPENSE	1,230	1,136	1,183	1,301	1,404	18.7%	8.0%
UNIFORM BENEFIT	2,001	953	2,546	1,163	2,972	16.7%	155.6%
BOOT BENEFIT	579	586	637	693	743	16.6%	7.2%
SUI EXPENSE	575	583	720	9	842	17.0%	8980.5%
ETT EXPENSE	20	24	22	0	26	16.1%	100.0%
DISABILITY PLAN	1,304	1,073	849	950	1,008	18.8%	6.2%
CALPERS RETIREMENT (ER) - Classic Plan	28,648	34,460	39,120	38,900	49,019	25.3%	26.0%
CALPERS RETIREMENT (EE) - Classic Plan	19,179	19,315	22,017	21,315	23,923	8.7%	12.2%
OPEB EXPENSE	13,054	-	14,050	13,800	-	-	-
TOTAL SALARY & BENEFIT	**449,957**	**447,904**	**528,298**	**503,460**	**615,225**	**16.5%**	**22.2%**
BOOKS & REF. MATERIALS	272	387	360	-	345	-4.2%	-
OFFICE SUPPLY	10	-	-	-	-	-	-
COMPUTERS/DATA PROCESSING	-	-	-	-	-	-	-
CONSULTING SERVICES	-	-	-	-	5,000	-	-
MEMBERSHIPS & DUES	1,024	904	992	999	1,100	10.9%	10.1%
SAFETY EXPENSE	1,135	1,373	1,200	1,116	1,495	24.6%	34.0%
SUPPLIES	1,072	1,614	1,344	1,262	1,288	-4.2%	2.1%
GENERAL O&M MAINT & EQUIP	31,055	16,657	75,000	39,456	73,850	-1.5%	87.2%
CLARK PROJ - METERS AND PARTS							
TANK MAINTENANCE - 5 YEAR	-	-	-	-	-	-	-
O&M POWER/GAS	-	-	-	-	-	-	-
REGULATORY FEES	-	-	-	-	3,850	-	-
LUBRICANTS	2,142	3,188	2,280	2,743	3,220	41.2%	17.4%
GENERAL O&M CHEMICALS	-	-	7,500	11,260	13,000	73.3%	15.5%
PHONE	2,679	(170)	1,440	99	345	-76.0%	249.6%
MAINTENANCE MANAGEMENT SYSTEM	3,662	140	2,400	2,169	2,300	-4.2%	6.0%
ANNUAL MAINTENANCE PROGRAM	2,906	646	10,000	6,966	10,000	0.0%	43.6%
REAL PROPERTY MAINT.	6,556	4,678	4,800	5,657	5,290	10.2%	-6.5%
FLEET MAINT. & REPAIR	11,026	10,687	13,200	14,273	15,640	18.5%	9.6%
TELEMETRY SYSTEM	6,898	2,087	8,400	8,683	12,650	50.6%	45.7%
METERS	9,400	5,005	4,000	4,000	4,000	0.0%	0.0%
INTERTIE #2 MAINT & EQUIP	-	-	500	-	500	0.0%	-
INTERTIE #2 POWER	409	387	410	416	430	4.9%	3.3%
WELL #10 MAINT & EQUIP	1,945	4,833	15,000	13,539	15,000	0.0%	100.0%
WELL #10 POWER	110,247	112,158	117,000	122,712	127,000	8.5%	3.5%
WELL #11 MAINT & EQUIP	2,611	2,889	15,000	13,516	15,000	0.0%	11.0%
WELL #11 POWER	95,795	116,352	119,000	136,714	141,000	18.5%	3.1%
WELL #12 MAINT & EQUIP	1,678	949	10,000	1,511	3,500	-65.0%	131.7%
WELL #12 POWER	1,621	1,768	40,000	1,386	5,000	-87.5%	260.7%
WELL #2 MAINT & EQUIP	-	-	-	-	-	-	-
DESAL POWER	17,501	16,859	17,510	16,088	17,000	-2.9%	5.7%
MARINA BOOSTER MAINT & EQUIP	-	1,126	2,000	7,275	20,000	900.0%	100.0%
MARINA BOOSTER POWER	978	1,134	15,000	7,074	40,000	166.7%	465.4%
L/S 2 MAINT & EQUIP	-	-	-	-	-	-	-
L/S 2 POWER	-	-	-	-	-	-	-
L/S 3 MAINT & EQUIP	-	-	-	-	-	-	-
L/S 3 POWER	-	-	-	-	-	-	-
L/S 5 MAINT & EQUIP	-	-	-	-	-	-	-
L/S 5 POWER	-	-	-	-	-	-	-
L/S 6 MAINT & EQUIP	-	-	-	-	-	-	-

MARINA COAST WATER DISTRICT
OPER & MAINT BUDGET FOR FY 2019-2020

ACCOUNT NAME	2016-2017 ACTUAL	2017-2018 ACTUAL	2018-2019 ADOPTED	MARINA WATER 2018-2019 ESTIMATED	2019-2020 PROPOSED	BUD vs BUD % CHANGE	BUD vs EST % CHANGE
L/S 6 POWER	-	-	-	-	-	-	-
WELL #29 MAINT & EQUIP	-	-	-	-	-	-	-
WELL #29 POWER	-	-	-	-	-	-	-
WELL #30 MAINT & EQUIP	-	-	-	-	-	-	-
WELL #30 POWER	-	-	-	-	-	-	-
WELL #31 MAINT & EQUIP	-	-	-	-	-	-	-
WELL #31 POWER	-	-	-	-	-	-	-
B/C BOOSTER MAINT & EQUIP	-	-	-	-	-	-	-
B/C BOOSTER POWER	-	-	-	-	-	-	-
D BOOSTER MAINT & EQUIP	-	-	-	-	-	-	-
D BOOSTER POWER	-	-	-	-	-	-	-
E BOOSTER MAINT & EQUIP	-	-	-	-	-	-	-
E BOOSTER POWER	-	-	-	-	-	-	-
F BOOSTER MAINT & EQUIP	-	-	-	-	-	-	-
F BOOSTER POWER	-	-	-	-	-	-	-
BOOSTER/SANDTANK MAINT & EQUIP	-	-	-	-	-	-	-
BOOSTER/SANDTANK POWER	-	-	-	-	-	-	-
WATKINS GATE WELL MAINT & EQUI	-	-	-	-	-	-	-
WATKINS GATE WELL POWER	-	-	-	-	-	-	-
WELL #34 MAINT & EQUIP	-	-	-	-	-	-	-
WELL #34 POWER	-	-	-	-	-	-	-
L/S RESERVATION MAINT & EQUIP	-	-	-	-	-	-	-
L/S RESERVATION POWER	-	-	-	-	-	-	-
L/S 528 A/FIELD MAINT & EQUIP	-	-	-	-	-	-	-
L/S 528 A/FIELD POWER	-	-	-	-	-	-	-
L/S 530 A/FIELD MAINT & EQUIP	-	-	-	-	-	-	-
L/S 530 A/FIELD POWER	-	-	-	-	-	-	-
L/S 4906 POWER	-	-	-	-	-	-	-
L/S 5398 W/MEYER MAINT & EQUIP	-	-	-	-	-	-	-
L/S 5398 W/MEYER POWER	-	-	-	-	-	-	-
L/S 5447 LANDRUM MAINT & EQUIP	-	-	-	-	-	-	-
L/S 5447 LANDRUM POWER	-	-	-	-	-	-	-
L/S 5713 S/OVER MAINT & EQUIP	-	-	-	-	-	-	-
L/S 5713 S/OVER POWER	-	-	-	-	-	-	-
L/S 5790 HODGES MAINT & EQUIP	-	-	-	-	-	-	-
L/S 5790 HODGES POWER	-	-	-	-	-	-	-
L/S 5871 IMJIN MAINT & EQUIP	-	-	-	-	-	-	-
L/S 5871 IMJIN POWER	-	-	-	-	-	-	-
L/S 5990 ORD/V MAINT & EQUIP	-	-	-	-	-	-	-
L/S 5990 ORD/V POWER	-	-	-	-	-	-	-
L/S 6143 CLARK MAINT & EQUIP	-	-	-	-	-	-	-
L/S 6143 CLARK POWER	-	-	-	-	-	-	-
L/S 6225 S/PABLO MAINT & EQUIP	-	-	-	-	-	-	-
L/S 6225 S/PABLO POWER	-	-	-	-	-	-	-
L/S 6634 HATTEN MAINT & EQUIP	-	-	-	-	-	-	-
L/S 6634 HATTEN POWER	-	-	-	-	-	-	-
L/S 7698 GIGLING MAINT & EQUIP	-	-	-	-	-	-	-
L/S 7698 GIGLING POWER	-	-	-	-	-	-	-
L/S 8775 BOOKER MAINT & EQUIP	-	-	-	-	-	-	-
L/S 8775 BOOKER POWER	-	-	-	-	-	-	-
L/S 514 CARMEL MAINT & EQUIP	-	-	-	-	-	-	-
L/S 514 CARMEL POWER	-	-	-	-	-	-	-
EG LIFT STATION MAINT & EQUIP	-	-	-	-	-	-	-
EG LIFT STATION POWER	-	-	-	-	-	-	-
PROMONTORY LS MAINT & EQUIP	-	-	-	-	-	-	-
PROMONTORY LS POWER	-	-	-	-	-	-	-
TOTAL DEPARTMENT EXPENSE	**312,622**	**305,651**	**484,336**	**418,914**	**537,803**	**11.0%**	**28.4%**
TOTAL EXPENSE	**762,580**	**753,555**	**1,012,634**	**922,374**	**1,153,028**	**13.9%**	**25.0%**

ACCOUNT NAME	2016-2017 ACTUAL	2017-2018 ACTUAL	MARINA SEWER 2018-2019 ADOPTED	2018-2019 ESTIMATED	2019-2020 PROPOSED	BUD vs BUD % CHANGE	BUD vs EST % CHANGE
WAGES - OPM	162,456	149,655	189,961	195,571	201,023	5.8%	2.8%
WAGES ALLOCATED TO CAPITAL	-	(33)	-	-	-	-	-
OVERTIME	2,194	993	6,821	780	7,330	7.5%	839.5%
STANDBY WAGES	10,899	10,920	6,110	8,223	6,489	6.2%	-21.1%
FICA - SS EXPENSE	10,652	9,731	12,423	12,185	13,119	5.6%	7.7%
FICA - MEDI EXPENSE	2,496	2,279	2,942	2,878	3,115	5.9%	8.3%
MEDICAL INSURANCE	40,535	44,649	45,762	50,632	49,417	8.0%	-2.4%
DENTAL INSURANCE	1,971	2,015	1,936	2,238	2,130	10.0%	-4.8%
VISION INSURANCE	394	388	396	452	413	4.2%	-8.6%
WORKERS COMP. INSURANCE	4,950	4,724	8,139	7,882	8,715	7.1%	10.6%
LIFE INSURANCE EXPENSE	331	318	728	759	770	5.8%	1.4%
UNIFORM BENEFIT	539	267	1,567	689	1,630	4.0%	136.5%
BOOT BENEFIT	156	164	392	310	407	3.9%	31.6%
SUI EXPENSE	461	293	443	5	462	4.3%	8618.3%
ETT EXPENSE	16	12	13	0	14	7.7%	100.0%
DISABILITY PLAN	351	300	523	554	553	5.7%	-0.3%
CALPERS RETIREMENT (ER) - Classic Plan	16,940	16,451	24,069	24,443	26,883	11.7%	10.0%
CALPERS RETIREMENT (EE) - Classic Plan	11,910	10,620	13,546	13,649	13,120	-3.1%	-3.9%
OPEB EXPENSE	7,894	-	8,644	8,400	-	-	-
TOTAL SALARY & BENEFIT	**275,146**	**253,763**	**325,038**	**330,078**	**337,397**	**3.8%**	**2.2%**
BOOKS & REF. MATERIALS	152	40	105	-	90	-14.3%	-
OFFICE SUPPLY	-	-	-	-	-	-	-
COMPUTERS/DATA PROCESSING	-	-	-	-	-	-	-
CONSULTING SERVICES	-	-	-	-	2,000	-	-
MEMBERSHIPS & DUES	1,733	1,568	1,520	1,303	1,600	5.3%	22.8%
SAFETY EXPENSE	302	379	350	325	390	11.4%	19.8%
SUPPLIES	290	623	392	368	336	-14.3%	-8.7%
GENERAL O&M MAINT & EQUIP	8,676	5,018	20,000	12,239	30,800	54.0%	151.6%
CLARK PROJ - METERS AND PARTS							
TANK MAINTENANCE - 5 YEAR							
O&M POWER/GAS	-	-	-	-	-	-	-
REGULATORY FEES	-	-	-	-	800	-	-
LUBRICANTS	675	728	665	800	840	26.3%	5.0%
GENERAL O&M CHEMICALS	-	-	-	-	-	-	-
PHONE	-	-	420	29	90	-78.6%	212.6%
MAINTENANCE MANAGEMENT SYSTEM	917	39	700	633	600	-14.3%	-5.2%
ANNUAL MAINTENANCE PROGRAM	913	181	4,000	2,404	4,000	0.0%	66.4%
REAL PROPERTY MAINT.	1,767	302	1,400	1,033	1,380	-1.4%	33.6%
FLEET MAINT. & REPAIR	6,142	3,702	3,850	4,614	4,080	6.0%	-11.6%
TELEMETRY SYSTEM	173	584	2,450	2,533	3,300	34.7%	30.3%
METERS	-	-	-	-	-	-	-
INTERTIE #2 MAINT & EQUIP	-	-	-	-	-	-	-
INTERTIE #2 POWER	-	-	-	-	-	-	-
WELL #10 MAINT & EQUIP	-	-	-	-	-	-	-
WELL #10 POWER	-	-	-	-	-	-	-
WELL #11 MAINT & EQUIP	-	-	-	-	-	-	-
WELL #11 POWER	-	-	-	-	-	-	-
WELL #12 MAINT & EQUIP	-	-	-	-	-	-	-
WELL #12 POWER	-	-	-	-	-	-	-
WELL #2 MAINT & EQUIP	-	-	-	-	-	-	-
DESAL POWER	-	-	-	-	-	-	-
MARINA BOOSTER MAINT & EQUIP	-	-	-	-	-	-	-
MARINA BOOSTER POWER	-	-	-	-	-	-	-
L/S 2 MAINT & EQUIP	11,510	-	1,000	500	1,500	50.0%	100.0%
L/S 2 POWER	7,976	8,094	8,320	7,852	8,200	-1.4%	4.4%
L/S 3 MAINT & EQUIP	1,231	-	1,000	902	1,500	50.0%	66.3%
L/S 3 POWER	1,095	1,037	1,150	930	1,100	-4.3%	18.3%
L/S 5 MAINT & EQUIP	-	-	1,000	-	1,500	50.0%	-
L/S 5 POWER	672	783	655	1,184	1,300	98.5%	9.8%
L/S 6 MAINT & EQUIP	-	-	1,000	578	27,500	2650.0%	4654.8%

MARINA COAST WATER DISTRICT
OPER & MAINT BUDGET FOR FY 2019-2020

ACCOUNT NAME	MARINA SEWER 2016-2017 ACTUAL	2017-2018 ACTUAL	2018-2019 ADOPTED	2018-2019 ESTIMATED	2019-2020 PROPOSED	BUD vs BUD % CHANGE	BUD vs EST % CHANGE
L/S 6 POWER	642	1,003	940	892	940	0.0%	5.4%
WELL #29 MAINT & EQUIP	-	-	-	-	-	-	-
WELL #29 POWER	-	-	-	-	-	-	-
WELL #30 MAINT & EQUIP	-	-	-	-	-	-	-
WELL #30 POWER	-	-	-	-	-	-	-
WELL #31 MAINT & EQUIP	-	-	-	-	-	-	-
WELL #31 POWER	-	-	-	-	-	-	-
B/C BOOSTER MAINT & EQUIP	-	-	-	-	-	-	-
B/C BOOSTER POWER	-	-	-	-	-	-	-
D BOOSTER MAINT & EQUIP	-	-	-	-	-	-	-
D BOOSTER POWER	-	-	-	-	-	-	-
E BOOSTER MAINT & EQUIP	-	-	-	-	-	-	-
E BOOSTER POWER	-	-	-	-	-	-	-
F BOOSTER MAINT & EQUIP	-	-	-	-	-	-	-
F BOOSTER POWER	-	-	-	-	-	-	-
BOOSTER/SANDTANK MAINT & EQUIP	-	-	-	-	-	-	-
BOOSTER/SANDTANK POWER	-	-	-	-	-	-	-
WATKINS GATE WELL MAINT & EQUI	-	-	-	-	-	-	-
WATKINS GATE WELL POWER	-	-	-	-	-	-	-
WELL #34 MAINT & EQUIP	-	-	-	-	-	-	-
WELL #34 POWER	-	-	-	-	-	-	-
L/S RESERVATION MAINT & EQUIP	-	-	-	-	-	-	-
L/S RESERVATION POWER	-	-	-	-	-	-	-
L/S 528 A/FIELD MAINT & EQUIP	-	-	-	-	-	-	-
L/S 528 A/FIELD POWER	-	-	-	-	-	-	-
L/S 530 A/FIELD MAINT & EQUIP	-	-	-	-	-	-	-
L/S 530 A/FIELD POWER	-	-	-	-	-	-	-
L/S 4906 POWER	-	-	-	-	-	-	-
L/S 5398 W/MEYER MAINT & EQUIP	-	-	-	-	-	-	-
L/S 5398 W/MEYER POWER	-	-	-	-	-	-	-
L/S 5447 LANDRUM MAINT & EQUIP	-	-	-	-	-	-	-
L/S 5447 LANDRUM POWER	-	-	-	-	-	-	-
L/S 5713 S/OVER MAINT & EQUIP	-	-	-	-	-	-	-
L/S 5713 S/OVER POWER	-	-	-	-	-	-	-
L/S 5790 HODGES MAINT & EQUIP	-	-	-	-	-	-	-
L/S 5790 HODGES POWER	-	-	-	-	-	-	-
L/S 5871 IMJIN MAINT & EQUIP	-	-	-	-	-	-	-
L/S 5871 IMJIN POWER	-	-	-	-	-	-	-
L/S 5990 ORD/V MAINT & EQUIP	-	-	-	-	-	-	-
L/S 5990 ORD/V POWER	-	-	-	-	-	-	-
L/S 6143 CLARK MAINT & EQUIP	-	-	-	-	-	-	-
L/S 6143 CLARK POWER	-	-	-	-	-	-	-
L/S 6225 S/PABLO MAINT & EQUIP	-	-	-	-	-	-	-
L/S 6225 S/PABLO POWER	-	-	-	-	-	-	-
L/S 6634 HATTEN MAINT & EQUIP	-	-	-	-	-	-	-
L/S 6634 HATTEN POWER	-	-	-	-	-	-	-
L/S 7698 GIGLING MAINT & EQUIP	-	-	-	-	-	-	-
L/S 7698 GIGLING POWER	-	-	-	-	-	-	-
L/S 8775 BOOKER MAINT & EQUIP	-	-	-	-	-	-	-
L/S 8775 BOOKER POWER	-	-	-	-	-	-	-
L/S 514 CARMEL MAINT & EQUIP	-	-	-	-	-	-	-
L/S 514 CARMEL POWER	-	-	-	-	-	-	-
EG LIFT STATION MAINT & EQUIP	-	-	-	-	-	-	-
EG LIFT STATION POWER	-	-	-	-	-	-	-
PROMONTORY LS MAINT & EQUIP	-	-	-	-	-	-	-
PROMONTORY LS POWER	-	-	-	-	-	-	-
TOTAL DEPARTMENT EXPENSE	**44,867**	**24,080**	**50,917**	**39,119**	**93,846**	**84.3%**	**139.9%**
TOTAL EXPENSE	**320,012**	**277,843**	**375,955**	**369,197**	**431,243**	**14.7%**	**16.8%**

ACCOUNT NAME	2016-2017 ACTUAL	2017-2018 ACTUAL	2018-2019 ADOPTED	ORD WATER 2018-2019 ESTIMATED	2019-2020 PROPOSED	BUD vs BUD % CHANGE	BUD vs EST % CHANGE
WAGES - OPM	437,551	530,077	511,631	552,603	712,021	39.2%	28.8%
WAGES ALLOCATED TO CAPITAL	-	(97)	-	-	-	-	-
OVERTIME	6,897	3,934	18,372	5,569	25,964	41.3%	366.2%
STANDBY WAGES	10,899	10,920	16,456	13,283	22,984	39.7%	73.0%
FICA - SS EXPENSE	27,100	30,749	33,459	33,560	46,469	38.9%	38.5%
FICA - MEDI EXPENSE	6,366	7,199	7,924	7,935	11,034	39.2%	39.0%
MEDICAL INSURANCE	110,982	125,847	123,252	133,322	175,034	42.0%	31.3%
DENTAL INSURANCE	5,429	5,805	5,214	5,878	7,546	44.7%	28.4%
VISION INSURANCE	1,028	1,093	1,066	1,159	1,462	37.2%	26.2%
WORKERS COMP. INSURANCE	13,488	15,755	21,922	23,007	30,868	40.8%	34.2%
LIFE INSURANCE EXPENSE	2,555	2,454	1,960	2,210	2,727	39.1%	23.4%
UNIFORM BENEFIT	4,155	2,059	4,219	1,955	5,773	36.8%	195.3%
BOOT BENEFIT	1,203	1,266	1,055	1,357	1,443	36.8%	6.4%
SUI EXPENSE	881	896	1,192	23	1,636	37.2%	6907.0%
ETT EXPENSE	30	37	36	1	50	37.8%	100.0%
DISABILITY PLAN	2,708	2,317	1,408	1,614	1,959	39.1%	21.4%
CALPERS RETIREMENT (ER) - Classic Plan	45,283	52,601	64,826	68,242	95,218	46.9%	39.5%
CALPERS RETIREMENT (EE) - Classic Plan	30,747	35,081	36,484	38,627	46,469	27.4%	20.3%
OPEB EXPENSE	21,489	-	23,283	22,800	-	-	-
TOTAL SALARY & BENEFIT	**728,790**	**828,282**	**875,437**	**913,923**	**1,195,054**	**36.5%**	**30.8%**
BOOKS & REF. MATERIALS	565	827	810	-	855	5.6%	-
OFFICE SUPPLY	-	-	-	-	-	-	-
COMPUTERS/DATA PROCESSING	-	-	-	-	-	-	-
CONSULTING SERVICES	-	-	-	40,000	5,000	-	-87.5%
MEMBERSHIPS & DUES	2,161	1,931	2,108	2,011	2,200	4.4%	9.4%
SAFETY EXPENSE	2,358	2,965	2,700	2,511	3,705	37.2%	47.6%
SUPPLIES	2,235	3,483	3,024	2,840	3,192	5.6%	12.4%
GENERAL O&M MAINT & EQUIP	68,506	30,937	155,000	87,222	159,650	3.0%	83.0%
CLARK PROJ - METERS AND PARTS	86,885	228,906	150,000	36,290	-	-	-
TANK MAINTENANCE - 5 YEAR	-	-	-	-	-	-	-
O&M POWER/GAS	-	-	-	-	-	-	-
REGULATORY FEES	-	-	-	-	9,650	-	-
LUBRICANTS	4,449	6,866	5,130	6,172	7,980	55.6%	29.3%
GENERAL O&M CHEMICALS	-	-	8,000	7,330	8,000	0.0%	9.1%
PHONE	10,192	6,059	3,240	222	855	-73.6%	285.1%
MAINTENANCE MANAGEMENT SYSTEM	7,618	302	5,400	4,880	5,700	5.6%	16.8%
ANNUAL MAINTENANCE PROGRAM	20,064	1,395	18,000	12,496	18,000	0.0%	44.0%
REAL PROPERTY MAINT.	15,958	2,328	10,800	9,020	13,110	21.4%	45.3%
FLEET MAINT. & REPAIR	23,087	22,977	29,700	32,232	38,760	30.5%	20.3%
TELEMETRY SYSTEM	10,417	4,508	18,900	19,537	31,350	65.9%	60.5%
METERS	6,718	10,636	4,000	4,000	4,000	0.0%	0.0%
INTERTIE #2 MAINT & EQUIP	-	-	-	-	-	-	-
INTERTIE #2 POWER	-	-	-	-	-	-	-
WELL #10 MAINT & EQUIP	-	-	-	-	-	-	-
WELL #10 POWER	-	-	-	-	-	-	-
WELL #11 MAINT & EQUIP	-	-	-	-	-	-	-
WELL #11 POWER	-	-	-	-	-	-	-
WELL #12 MAINT & EQUIP	-	-	-	-	-	-	-
WELL #12 POWER	-	-	-	-	-	-	-
WELL #2 MAINT & EQUIP	-	-	-	-	-	-	-
DESAL POWER	-	-	-	-	-	-	-
MARINA BOOSTER MAINT & EQUIP	-	-	-	-	-	-	-
MARINA BOOSTER POWER	-	-	-	-	-	-	-
L/S 2 MAINT & EQUIP	-	-	-	-	-	-	-
L/S 2 POWER	-	-	-	-	-	-	-
L/S 3 MAINT & EQUIP	-	-	-	-	-	-	-
L/S 3 POWER	-	-	-	-	-	-	-
L/S 5 MAINT & EQUIP	-	-	-	-	-	-	-
L/S 5 POWER	-	-	-	-	-	-	-
L/S 6 MAINT & EQUIP	-	-	-	-	-	-	-

MARINA COAST WATER DISTRICT
OPER & MAINT BUDGET FOR FY 2019-2020

ACCOUNT NAME	2016-2017 ACTUAL	2017-2018 ACTUAL	2018-2019 ADOPTED	ORD WATER 2018-2019 ESTIMATED	2019-2020 PROPOSED	BUD vs BUD % CHANGE	BUD vs EST % CHANGE
L/S 6 POWER	-	-	-	-	-	-	-
WELL #29 MAINT & EQUIP	-	-	15,000	4,604	15,000	0.0%	100.0%
WELL #29 POWER	13,163	15,881	42,500	24,744	35,000	-17.6%	41.5%
WELL #30 MAINT & EQUIP	2,762	415	15,000	3,072	15,000	0.0%	388.2%
WELL #30 POWER	18,883	35,604	42,000	38,272	41,000	-2.4%	7.1%
WELL #31 MAINT & EQUIP	1,507	302	15,000	3,233	15,000	0.0%	363.9%
WELL #31 POWER	26,630	40,197	40,000	52,956	54,000	35.0%	2.0%
B/C BOOSTER MAINT & EQUIP	-	-	500	-	1,000	100.0%	100.0%
B/C BOOSTER POWER	375	381	450	400	450	0.0%	12.4%
D BOOSTER MAINT & EQUIP	13,051	402	5,000	2,106	5,000	0.0%	137.4%
D BOOSTER POWER	13,086	14,307	16,600	15,478	16,000	-3.6%	3.4%
E BOOSTER MAINT & EQUIP	1,600	402	1,000	1,106	2,000	100.0%	80.8%
E BOOSTER POWER	6,151	7,980	8,400	8,660	9,000	7.1%	3.9%
F BOOSTER MAINT & EQUIP	18,181	654	1,000	6,652	2,000	100.0%	-69.9%
F BOOSTER POWER	5,206	5,486	6,700	4,172	4,300	-35.8%	3.1%
BOOSTER/SANDTANK MAINT & EQUIP	88	6,300	15,000	6,075	15,000	0.0%	100.0%
BOOSTER/SANDTANK POWER	150,029	176,275	191,500	193,346	199,200	4.0%	3.0%
WATKINS GATE WELL MAINT & EQUI	2,000	79,402	7,000	22,354	10,000	42.9%	-55.3%
WATKINS GATE WELL POWER	83,257	54,821	85,000	59,347	85,000	0.0%	43.2%
WELL #34 MAINT & EQUIP	-	-	7,000	2,378	10,000	42.9%	100.0%
WELL #34 POWER	64,160	82,678	88,500	90,764	94,000	6.2%	3.6%
L/S RESERVATION MAINT & EQUIP	-	-	-	-	-	-	-
L/S RESERVATION POWER	-	-	-	-	-	-	-
L/S 528 A/FIELD MAINT & EQUIP	-	-	-	-	-	-	-
L/S 528 A/FIELD POWER	-	-	-	-	-	-	-
L/S 530 A/FIELD MAINT & EQUIP	-	-	-	-	-	-	-
L/S 530 A/FIELD POWER	-	-	-	-	-	-	-
L/S 4906 POWER	-	-	-	-	-	-	-
L/S 5398 W/MEYER MAINT & EQUIP	-	-	-	-	-	-	-
L/S 5398 W/MEYER POWER	-	-	-	-	-	-	-
L/S 5447 LANDRUM MAINT & EQUIP	-	-	-	-	-	-	-
L/S 5447 LANDRUM POWER	-	-	-	-	-	-	-
L/S 5713 S/OVER MAINT & EQUIP	-	-	-	-	-	-	-
L/S 5713 S/OVER POWER	-	-	-	-	-	-	-
L/S 5790 HODGES MAINT & EQUIP	-	-	-	-	-	-	-
L/S 5790 HODGES POWER	-	-	-	-	-	-	-
L/S 5871 IMJIN MAINT & EQUIP	-	-	-	-	-	-	-
L/S 5871 IMJIN POWER	-	-	-	-	-	-	-
L/S 5990 ORD/V MAINT & EQUIP	-	-	-	-	-	-	-
L/S 5990 ORD/V POWER	-	-	-	-	-	-	-
L/S 6143 CLARK MAINT & EQUIP	-	-	-	-	-	-	-
L/S 6143 CLARK POWER	-	-	-	-	-	-	-
L/S 6225 S/PABLO MAINT & EQUIP	-	-	-	-	-	-	-
L/S 6225 S/PABLO POWER	-	-	-	-	-	-	-
L/S 6634 HATTEN MAINT & EQUIP	-	-	-	-	-	-	-
L/S 6634 HATTEN POWER	-	-	-	-	-	-	-
L/S 7698 GIGLING MAINT & EQUIP	-	-	-	-	-	-	-
L/S 7698 GIGLING POWER	-	-	-	-	-	-	-
L/S 8775 BOOKER MAINT & EQUIP	-	-	-	-	-	-	-
L/S 8775 BOOKER POWER	-	-	-	-	-	-	-
L/S 514 CARMEL MAINT & EQUIP	-	-	-	-	-	-	-
L/S 514 CARMEL POWER	-	-	-	-	-	-	-
EG LIFT STATION MAINT & EQUIP	-	-	-	-	-	-	-
EG LIFT STATION POWER	-	-	-	-	-	-	-
PROMONTORY LS MAINT & EQUIP	-	-	-	-	-	-	-
PROMONTORY LS POWER	-	-	-	-	-	-	-
TOTAL DEPARTMENT EXPENSE	**681,340**	**845,606**	**1,019,962**	**806,481**	**939,957**	**-7.8%**	**16.6%**
TOTAL EXPENSE	**1,410,130**	**1,673,888**	**1,895,399**	**1,720,405**	**2,135,011**	**12.6%**	**24.1%**

MARINA COAST WATER DISTRICT
OPER & MAINT BUDGET FOR FY 2019-2020

ACCOUNT NAME	2016-2017 ACTUAL	2017-2018 ACTUAL	2018-2019 ADOPTED	ORD SEWER 2018-2019 ESTIMATED	2019-2020 PROPOSED	BUD vs BUD % CHANGE	BUD vs EST % CHANGE
WAGES - OPM	297,357	222,668	347,701	327,733	299,096	-14.0%	-8.7%
WAGES ALLOCATED TO CAPITAL	-	(55)	-	-	-	-	-
OVERTIME	1,618	1,201	12,485	1,620	10,907	-12.6%	573.3%
STANDBY WAGES	10,899	10,920	11,183	10,542	9,655	-13.7%	-8.4%
FICA - SS EXPENSE	18,373	14,018	22,739	20,133	19,520	-14.2%	-3.0%
FICA - MEDI EXPENSE	4,305	3,281	5,385	4,773	4,635	-13.9%	-2.9%
MEDICAL INSURANCE	70,672	56,653	83,761	73,176	73,526	-12.2%	0.5%
DENTAL INSURANCE	3,522	2,567	3,543	3,229	3,170	-10.5%	-1.8%
VISION INSURANCE	704	508	724	631	614	-15.2%	-2.6%
WORKERS COMP. INSURANCE	8,510	6,800	14,898	13,244	12,966	-13.0%	-2.1%
LIFE INSURANCE EXPENSE	615	636	1,332	1,366	1,146	-14.0%	-16.1%
UNIFORM BENEFIT	1,000	534	2,868	1,237	2,425	-15.4%	96.0%
BOOT BENEFIT	290	328	717	590	606	-15.4%	2.8%
SUI EXPENSE	729	540	810	9	687	-15.2%	7618.8%
ETT EXPENSE	25	23	25	0	21	-16.6%	100.0%
DISABILITY PLAN	652	601	957	998	823	-14.0%	-17.5%
CALPERS RETIREMENT (ER) - Classic Plan	29,410	25,272	44,055	41,824	39,998	-9.2%	-4.4%
CALPERS RETIREMENT (EE) - Classic Plan	21,375	15,705	24,794	22,779	19,520	-21.3%	-14.3%
OPEB EXPENSE	14,590	-	15,823	15,000	-	-	-
TOTAL SALARY & BENEFIT	**484,646**	**362,267**	**594,940**	**539,529**	**502,002**	**-15.6%**	**-7.0%**
BOOKS & REF. MATERIALS	283	79	225	-	210	-6.7%	-
OFFICE SUPPLY	-	-	-	-	-	-	-
COMPUTERS/DATA PROCESSING	-	-	-	-	-	-	-
CONSULTING SERVICES	-	-	-	-	2,500	-	-
MEMBERSHIPS & DUES	3,219	3,472	3,381	2,754	3,000	-11.3%	8.9%
SAFETY EXPENSE	561	757	750	697	910	21.3%	30.5%
SUPPLIES	542	1,289	840	789	784	-6.7%	-0.6%
GENERAL O&M MAINT & EQUIP	32,538	10,489	35,000	19,889	55,000	57.1%	176.5%
CLARK PROJ - METERS AND PARTS							
TANK MAINTENANCE - 5 YEAR							
O&M POWER/GAS	-	-	-	-	-	-	-
REGULATORY FEES	-	-	-	-	15,000	-	-
LUBRICANTS	1,254	1,457	1,425	1,715	1,960	37.5%	14.3%
GENERAL O&M CHEMICALS	-	-	15,000	15,653	17,000	13.3%	8.6%
PHONE	-	-	900	62	210	-76.7%	240.5%
MAINTENANCE MANAGEMENT SYSTEM	1,703	78	1,500	1,356	1,400	-6.7%	3.3%
ANNUAL MAINTENANCE PROGRAM	9,489	362	9,500	5,438	9,500	0.0%	74.7%
REAL PROPERTY MAINT.	3,278	603	3,000	2,189	3,220	7.3%	47.1%
FLEET MAINT. & REPAIR	11,407	7,756	8,250	10,052	9,520	15.4%	-5.3%
TELEMETRY SYSTEM	16,163	1,190	5,250	5,789	7,700	46.7%	33.0%
METERS	-	-	-	-	-	-	-
INTERTIE #2 MAINT & EQUIP	-	-	-	-	-	-	-
INTERTIE #2 POWER	-	-	-	-	-	-	-
WELL #10 MAINT & EQUIP	-	-	-	-	-	-	-
WELL #10 POWER	-	-	-	-	-	-	-
WELL #11 MAINT & EQUIP	-	-	-	-	-	-	-
WELL #11 POWER	-	-	-	-	-	-	-
WELL #12 MAINT & EQUIP	-	-	-	-	-	-	-
WELL #12 POWER	-	-	-	-	-	-	-
WELL #2 MAINT & EQUIP	-	-	-	-	-	-	-
DESAL POWER	-	-	-	-	-	-	-
MARINA BOOSTER MAINT & EQUIP	-	-	-	-	-	-	-
MARINA BOOSTER POWER	-	-	-	-	-	-	-
L/S 2 MAINT & EQUIP	-	-	-	-	-	-	-
L/S 2 POWER	-	-	-	-	-	-	-
L/S 3 MAINT & EQUIP	-	-	-	-	-	-	-
L/S 3 POWER	-	-	-	-	-	-	-
L/S 5 MAINT & EQUIP	-	-	-	-	-	-	-
L/S 5 POWER	-	-	-	-	-	-	-
L/S 6 MAINT & EQUIP	-	-	-	-	-	-	-

MARINA COAST WATER DISTRICT
OPER & MAINT BUDGET FOR FY 2019-2020

ACCOUNT NAME	2016-2017 ACTUAL	2017-2018 ACTUAL	2018-2019 ADOPTED	ORD SEWER 2018-2019 ESTIMATED	2019-2020 PROPOSED	BUD vs BUD % CHANGE	BUD vs EST % CHANGE
L/S 6 POWER	-	-	-	-	-	-	-
WELL #29 MAINT & EQUIP	-	-	-	-	-	-	-
WELL #29 POWER	-	-	-	-	-	-	-
WELL #30 MAINT & EQUIP	-	-	-	-	-	-	-
WELL #30 POWER	-	-	-	-	-	-	-
WELL #31 MAINT & EQUIP	-	-	-	-	-	-	-
WELL #31 POWER	-	-	-	-	-	-	-
B/C BOOSTER MAINT & EQUIP	-	-	-	-	-	-	-
B/C BOOSTER POWER	-	-	-	-	-	-	-
D BOOSTER MAINT & EQUIP	-	-	-	-	-	-	-
D BOOSTER POWER	-	-	-	-	-	-	-
E BOOSTER MAINT & EQUIP	-	-	-	-	-	-	-
E BOOSTER POWER	-	-	-	-	-	-	-
F BOOSTER MAINT & EQUIP	-	-	-	-	-	-	-
F BOOSTER POWER	-	-	-	-	-	-	-
BOOSTER/SANDTANK MAINT & EQUIP	-	-	-	-	-	-	-
BOOSTER/SANDTANK POWER	-	-	-	-	-	-	-
WATKINS GATE WELL MAINT & EQUI	-	-	-	-	-	-	-
WATKINS GATE WELL POWER	-	-	-	-	-	-	-
WELL #34 MAINT & EQUIP	-	-	-	-	-	-	-
WELL #34 POWER	-	-	-	-	-	-	-
L/S RESERVATION MAINT & EQUIP	2,500	402	1,000	2,261	1,500	50.0%	-33.7%
L/S RESERVATION POWER	2,169	3,064	2,900	3,708	3,820	31.7%	3.0%
L/S 528 A/FIELD MAINT & EQUIP	-	1,458	2,000	-	3,000	50.0%	-
L/S 528 A/FIELD POWER	290	273	300	290	600	100.0%	106.7%
L/S 530 A/FIELD MAINT & EQUIP	1,600	402	1,000	9,443	2,000	100.0%	-78.8%
L/S 530 A/FIELD POWER	2,509	2,727	2,700	2,638	2,760	2.2%	4.6%
L/S 4906 POWER	-	-	-	-	-	-	-
L/S 5398 W/MEYER MAINT & EQUIP	1,507	7,504	1,000	1,101	2,000	100.0%	81.7%
L/S 5398 W/MEYER POWER	1,989	1,637	2,050	1,170	1,550	-24.4%	32.5%
L/S 5447 LANDRUM MAINT & EQUIP	1,507	302	1,000	991	1,500	50.0%	51.4%
L/S 5447 LANDRUM POWER	2,193	2,391	2,400	2,170	2,300	-4.2%	6.0%
L/S 5713 S/OVER MAINT & EQUIP	1,507	477	1,000	991	1,500	50.0%	51.4%
L/S 5713 S/OVER POWER	3,968	3,779	3,900	3,642	3,900	0.0%	7.1%
L/S 5790 HODGES MAINT & EQUIP	1,600	720	1,000	1,106	1,500	50.0%	35.6%
L/S 5790 HODGES POWER	2,064	2,104	2,150	1,994	2,150	0.0%	7.8%
L/S 5871 IMJIN MAINT & EQUIP	8,470	561	2,000	1,684	3,500	75.0%	107.8%
L/S 5871 IMJIN POWER	7,624	8,160	8,300	8,066	8,350	0.6%	3.5%
L/S 5990 ORD/V MAINT & EQUIP	8,826	859	28,000	28,375	5,000	-82.1%	-82.4%
L/S 5990 ORD/V POWER	11,141	10,398	11,000	9,884	11,000	0.0%	11.3%
L/S 6143 CLARK MAINT & EQUIP	2,003	539	1,000	1,106	1,500	50.0%	35.6%
L/S 6143 CLARK POWER	1,744	2,042	2,100	2,222	2,300	9.5%	3.5%
L/S 6225 S/PABLO MAINT & EQUIP	-	669	-	-	-	-	-
L/S 6225 S/PABLO POWER	-	-	-	-	-	-	-
L/S 6634 HATTEN MAINT & EQUIP	-	-	1,000	-	1,000	0.0%	100.0%
L/S 6634 HATTEN POWER	153	154	165	160	170	3.0%	6.1%
L/S 7698 GIGLING MAINT & EQUIP	7,369	435	28,000	13,184	5,000	-82.1%	-62.1%
L/S 7698 GIGLING POWER	11,332	11,329	11,900	11,046	11,900	0.0%	7.7%
L/S 8775 BOOKER MAINT & EQUIP	1,600	402	1,000	1,184	1,500	50.0%	26.6%
L/S 8775 BOOKER POWER	858	903	950	908	950	0.0%	4.7%
L/S 514 CARMEL MAINT & EQUIP	5,190	-	1,000	730	1,500	50.0%	100.0%
L/S 514 CARMEL POWER	1,433	1,464	1,500	1,454	1,505	0.3%	3.5%
EG LIFT STATION MAINT & EQUIP	15,801	14,970	1,000	902	2,000	100.0%	121.7%
EG LIFT STATION POWER	2,420	3,685	3,500	4,240	4,370	24.9%	3.1%
PROMONTORY LS MAINT & EQUIP	1,565	402	1,000	1,106	1,500	50.0%	100.0%
PROMONTORY LS POWER	2,505	2,565	2,550	2,898	3,000	17.6%	100.0%
TOTAL DEPARTMENT EXPENSE	**195,872**	**114,308**	**215,386**	**187,037**	**224,039**	**4.0%**	**19.8%**
TOTAL EXPENSE	**680,517**	**476,574**	**810,326**	**726,566**	**726,041**	**-10.4%**	**-0.1%**

MARINA COAST WATER DISTRICT
OPER & MAINT BUDGET FOR FY 2019-2020

ACCOUNT NAME	2016-2017 ACTUAL	2017-2018 ACTUAL	2018-2019 ADOPTED	TOTAL 2018-2019 ESTIMATED	2019-2020 PROPOSED	BUD vs BUD % CHANGE	BUD vs EST % CHANGE
WAGES - OPM	1,161,413	1,175,289	1,358,046	1,377,677	1,578,696	16.2%	14.6%
WAGES ALLOCATED TO CAPITAL	-	(277)	-	-	-	-	-
OVERTIME	16,471	8,534	48,765	10,129	57,567	18.0%	468.3%
STANDBY WAGES	43,596	43,680	43,680	42,168	50,960	16.7%	20.8%
FICA - SS EXPENSE	73,288	71,897	88,813	84,513	103,031	16.0%	21.9%
FICA - MEDI EXPENSE	17,195	16,834	21,033	20,012	24,465	16.3%	22.2%
MEDICAL INSURANCE	291,350	296,684	327,153	328,571	388,085	18.6%	18.1%
DENTAL INSURANCE	14,292	13,484	13,839	14,514	16,730	20.9%	15.3%
VISION INSURANCE	2,781	2,619	2,829	2,871	3,242	14.6%	12.9%
WORKERS COMP. INSURANCE	35,230	36,174	58,188	56,821	68,440	17.6%	20.4%
LIFE INSURANCE EXPENSE	4,732	4,545	5,203	5,636	6,047	16.2%	7.3%
UNIFORM BENEFIT	7,695	3,813	11,200	5,044	12,800	14.3%	153.8%
BOOT BENEFIT	2,228	2,344	2,801	2,949	3,200	14.2%	8.5%
SUI EXPENSE	2,645	2,312	3,165	47	3,627	14.6%	7646.7%
ETT EXPENSE	90	96	96	2	110	14.6%	100.0%
DISABILITY PLAN	5,014	4,291	3,737	4,116	4,343	16.2%	5.5%
CALPERS RETIREMENT (ER) - Classic Plan	120,280	128,784	172,070	173,409	211,117	22.7%	21.7%
CALPERS RETIREMENT (EE) - Classic Plan	83,210	80,720	96,841	96,370	103,032	6.4%	6.9%
OPEB EXPENSE	57,027	-	61,800	60,000	-	-	-
TOTAL SALARY & BENEFIT	**1,938,538**	**1,892,216**	**2,323,713**	**2,286,990**	**2,649,679**	**14.0%**	**15.9%**
BOOKS & REF. MATERIALS	1,272	1,332	1,500	-	1,500	0.0%	-
OFFICE SUPPLY	10	-	-	-	-	-	-
COMPUTERS/DATA PROCESSING	-	-	-	-	-	-	-
CONSULTING SERVICES	-	-	-	40,000	14,500	-	-63.8%
MEMBERSHIPS & DUES	8,137	7,875	8,001	7,067	7,900	-1.3%	11.8%
SAFETY EXPENSE	4,356	5,474	5,000	4,649	6,500	30.0%	39.8%
SUPPLIES	4,139	7,008	5,600	5,259	5,600	0.0%	6.5%
GENERAL O&M MAINT & EQUIP	140,775	63,100	285,000	158,807	319,300	12.0%	101.1%
CLARK PROJ - METERS AND PARTS	86,885	228,906	150,000	36,290	-	-	-
TANK MAINTENANCE - 5 YEAR	-	-	-	-	-	-	-
O&M POWER/GAS	-	-	-	-	-	-	-
REGULATORY FEES	-	-	-	-	29,300	-	-
LUBRICANTS	8,521	12,239	9,500	11,430	14,000	47.4%	22.5%
GENERAL O&M CHEMICALS	-	-	30,500	34,244	38,000	24.6%	11.0%
PHONE	12,871	5,889	6,000	411	1,500	-75.0%	264.8%
MAINTENANCE MANAGEMENT SYSTEM	13,900	560	10,000	9,037	10,000	0.0%	10.7%
ANNUAL MAINTENANCE PROGRAM	33,372	2,583	41,500	27,304	41,500	0.0%	52.0%
REAL PROPERTY MAINT.	27,559	7,910	20,000	17,899	23,000	15.0%	28.5%
FLEET MAINT. & REPAIR	51,661	45,122	55,000	61,172	68,000	23.6%	11.2%
TELEMETRY SYSTEM	33,652	8,370	35,000	36,541	55,000	57.1%	50.5%
METERS	16,118	15,642	8,000	8,000	8,000	0.0%	0.0%
INTERTIE #2 MAINT & EQUIP	-	-	500	-	500	0.0%	-
INTERTIE #2 POWER	409	387	410	416	430	4.9%	3.3%
WELL #10 MAINT & EQUIP	1,945	4,833	15,000	13,539	15,000	0.0%	100.0%
WELL #10 POWER	110,247	112,158	117,000	122,712	127,000	8.5%	3.5%
WELL #11 MAINT & EQUIP	2,611	2,889	15,000	13,516	15,000	0.0%	11.0%
WELL #11 POWER	95,795	116,352	119,000	136,714	141,000	18.5%	3.1%
WELL #12 MAINT & EQUIP	1,678	949	10,000	1,511	3,500	-65.0%	131.7%
WELL #12 POWER	1,621	1,768	40,000	1,386	5,000	-87.5%	260.7%
WELL #2 MAINT & EQUIP	-	-	-	-	-	-	-
DESAL POWER	17,501	16,859	17,510	16,088	17,000	-2.9%	5.7%
MARINA BOOSTER MAINT & EQUIP	-	1,126	2,000	7,275	20,000	900.0%	100.0%
MARINA BOOSTER POWER	978	1,134	15,000	7,074	40,000	166.7%	465.4%
L/S 2 MAINT & EQUIP	11,510	-	1,000	500	1,500	50.0%	100.0%
L/S 2 POWER	7,976	8,094	8,320	7,852	8,200	-1.4%	4.4%
L/S 3 MAINT & EQUIP	1,231	-	1,000	902	1,500	50.0%	66.3%
L/S 3 POWER	1,095	1,037	1,150	930	1,100	-4.3%	18.3%
L/S 5 MAINT & EQUIP	-	-	1,000	-	1,500	50.0%	-
L/S 5 POWER	672	783	655	1,184	1,300	98.5%	9.8%
L/S 6 MAINT & EQUIP	-	-	1,000	578	27,500	2650.0%	4654.8%

MARINA COAST WATER DISTRICT
OPER & MAINT BUDGET FOR FY 2019-2020

ACCOUNT NAME	2016-2017 ACTUAL	2017-2018 ACTUAL	2018-2019 ADOPTED	TOTAL 2018-2019 ESTIMATED	2019-2020 PROPOSED	BUD vs BUD % CHANGE	BUD vs EST % CHANGE
L/S 6 POWER	642	1,003	940	892	940	0.0%	5.4%
WELL #29 MAINT & EQUIP	-	-	15,000	4,604	15,000	0.0%	100.0%
WELL #29 POWER	13,163	15,881	42,500	24,744	35,000	-17.6%	41.5%
WELL #30 MAINT & EQUIP	2,762	415	15,000	3,072	15,000	0.0%	388.2%
WELL #30 POWER	18,883	35,604	42,000	38,272	41,000	-2.4%	7.1%
WELL #31 MAINT & EQUIP	1,507	302	15,000	3,233	15,000	0.0%	363.9%
WELL #31 POWER	26,630	40,197	40,000	52,956	54,000	35.0%	2.0%
B/C BOOSTER MAINT & EQUIP	-	-	500	-	1,000	100.0%	100.0%
B/C BOOSTER POWER	375	381	450	400	450	0.0%	12.4%
D BOOSTER MAINT & EQUIP	13,051	402	5,000	2,106	5,000	0.0%	137.4%
D BOOSTER POWER	13,086	14,307	16,600	15,478	16,000	-3.6%	3.4%
E BOOSTER MAINT & EQUIP	1,600	402	1,000	1,106	2,000	100.0%	80.8%
E BOOSTER POWER	6,151	7,980	8,400	8,660	9,000	7.1%	3.9%
F BOOSTER MAINT & EQUIP	18,181	654	1,000	6,652	2,000	100.0%	-69.9%
F BOOSTER POWER	5,206	5,486	6,700	4,172	4,300	-35.8%	3.1%
BOOSTER/SANDTANK MAINT & EQUIP	88	6,300	15,000	6,075	15,000	0.0%	100.0%
BOOSTER/SANDTANK POWER	150,029	176,275	191,500	193,346	199,200	4.0%	3.0%
WATKINS GATE WELL MAINT & EQUI	2,000	79,402	7,000	22,354	10,000	42.9%	-55.3%
WATKINS GATE WELL POWER	83,257	54,821	85,000	59,347	85,000	0.0%	43.2%
WELL #34 MAINT & EQUIP	-	-	7,000	2,378	10,000	42.9%	100.0%
WELL #34 POWER	64,160	82,678	88,500	90,764	94,000	6.2%	3.6%
L/S RESERVATION MAINT & EQUIP	2,500	402	1,000	2,261	1,500	50.0%	-33.7%
L/S RESERVATION POWER	2,169	3,064	2,900	3,708	3,820	31.7%	3.0%
L/S 528 A/FIELD MAINT & EQUIP	-	1,458	2,000	-	3,000	50.0%	-
L/S 528 A/FIELD POWER	290	273	300	290	600	100.0%	106.7%
L/S 530 A/FIELD MAINT & EQUIP	1,600	402	1,000	9,443	2,000	100.0%	-78.8%
L/S 530 A/FIELD POWER	2,509	2,727	2,700	2,638	2,760	2.2%	4.6%
L/S 4906 POWER	-	-	-	-	-	-	-
L/S 5398 W/MEYER MAINT & EQUIP	1,507	7,504	1,000	1,101	2,000	100.0%	81.7%
L/S 5398 W/MEYER POWER	1,989	1,637	2,050	1,170	1,550	-24.4%	32.5%
L/S 5447 LANDRUM MAINT & EQUIP	1,507	302	1,000	991	1,500	50.0%	51.4%
L/S 5447 LANDRUM POWER	2,193	2,391	2,400	2,170	2,300	-4.2%	6.0%
L/S 5713 S/OVER MAINT & EQUIP	1,507	477	1,000	991	1,500	50.0%	51.4%
L/S 5713 S/OVER POWER	3,968	3,779	3,900	3,642	3,900	0.0%	7.1%
L/S 5790 HODGES MAINT & EQUIP	1,600	720	1,000	1,106	1,500	50.0%	35.6%
L/S 5790 HODGES POWER	2,064	2,104	2,150	1,994	2,150	0.0%	7.8%
L/S 5871 IMJIN MAINT & EQUIP	8,470	561	2,000	1,684	3,500	75.0%	107.8%
L/S 5871 IMJIN POWER	7,624	8,160	8,300	8,066	8,350	0.6%	3.5%
L/S 5990 ORD/V MAINT & EQUIP	8,826	859	28,000	28,375	5,000	-82.1%	-82.4%
L/S 5990 ORD/V POWER	11,141	10,398	11,000	9,884	11,000	0.0%	11.3%
L/S 6143 CLARK MAINT & EQUIP	2,003	539	1,000	1,106	1,500	50.0%	35.6%
L/S 6143 CLARK POWER	1,744	2,042	2,100	2,222	2,300	9.5%	3.5%
L/S 6225 S/PABLO MAINT & EQUIP	-	669	-	-	-	-	-
L/S 6225 S/PABLO POWER	-	-	-	-	-	-	-
L/S 6634 HATTEN MAINT & EQUIP	-	-	1,000	-	1,000	0.0%	100.0%
L/S 6634 HATTEN POWER	153	154	165	160	170	3.0%	6.1%
L/S 7698 GIGLING MAINT & EQUIP	7,369	435	28,000	13,184	5,000	-82.1%	-62.1%
L/S 7698 GIGLING POWER	11,332	11,329	11,900	11,046	11,900	0.0%	7.7%
L/S 8775 BOOKER MAINT & EQUIP	1,600	402	1,000	1,184	1,500	50.0%	26.6%
L/S 8775 BOOKER POWER	858	903	950	908	950	0.0%	4.7%
L/S 514 CARMEL MAINT & EQUIP	5,190	-	1,000	730	1,500	50.0%	100.0%
L/S 514 CARMEL POWER	1,433	1,464	1,500	1,454	1,505	0.3%	3.5%
EG LIFT STATION MAINT & EQUIP	15,801	14,970	1,000	902	2,000	100.0%	121.7%
EG LIFT STATION POWER	2,420	3,685	3,500	4,240	4,370	24.9%	3.1%
PROMONTORY LS MAINT & EQUIP	1,565	402	1,000	1,106	1,500	50.0%	100.0%
PROMONTORY LS POWER	2,505	2,565	2,550	2,898	3,000	17.6%	100.0%
TOTAL DEPARTMENT EXPENSE	**1,234,701**	**1,289,645**	**1,770,601**	**1,451,551**	**1,795,645**	**1.4%**	**23.7%**
TOTAL EXPENSE	**3,173,239**	**3,181,861**	**4,094,314**	**3,738,542**	**4,445,324**	**8.6%**	**18.9%**

MARINA COAST WATER DISTRICT
LAB BUDGET FOR FY 2019-2020

ACCOUNT NAME	2016-2017 ACTUAL	2017-2018 ACTUAL	2018-2019 ADOPTED	MARINA WATER 2018-2019 ESTIMATED	2019-2020 PROPOSED	BUD vs BUD % CHANGE	BUD vs EST % CHANGE
WAGES - LAB	39,013	41,799	45,538	40,543	43,380	-4.7%	7.0%
WAGES ALLOCATED TO CAPITAL	-	-	-	-	-	-	-
OVERTIME	450	214	271	-	259	-4.4%	100.0%
FICA - SS EXPENSE	2,488	2,577	2,840	2,506	2,706	-4.7%	8.0%
FICA - MEDI EXPENSE	582	603	664	586	633	-4.7%	8.0%
MEDICAL INSURANCE	4,008	3,788	4,733	4,319	4,269	-9.8%	-1.2%
DENTAL INS. EXPENSE	171	145	174	172	152	-12.6%	-11.8%
VISION INS. EXPENSE	72	70	79	68	69	-12.7%	1.3%
WORKERS COMP. EXPENSE	1,319	1,351	2,024	1,792	1,940	-4.2%	8.2%
LIFE INSURANCE EXPENSE	137	146	159	148	153	-3.8%	3.3%
UNIFORM BENEFIT	127	92	208	78	182	-12.5%	133.9%
BOOT BENEFIT	-	-	64	-	56	-12.5%	100.0%
SUI EXPENSE	71	114	155	26	136	-12.3%	429%
ETT EXPENSE	2	5	5	2	4	-20.0%	156.4%
DISABILITY PLAN	142	137	115	108	110	-4.3%	1.7%
CALPERS RETIREMENT (ER) - Classic Plan	3,874	4,274	5,529	5,052	6,122	10.7%	21.2%
CALPERS RETIREMENT (EE) - Classic Plan	2,786	2,777	3,112	2,908	2,987	-4.0%	2.7%
CALPERS-62 RETIREMENT (ER)	-	-	-	-	-	-	-
CALPERS-62 RETIREMENT (EE)	-	-	-	-	-	-	-
OPEB EXPENSE	1,916	-	2,318	1,890	-	-	100.0%
TOTAL SALARY & BENEFIT	**57,158**	**58,093**	**67,988**	**60,198**	**63,158**	**-7.1%**	**4.9%**
CHEMICALS	1,741	2,974	3,318	3,111	2,885	-13.1%	-7.3%
GLASSWARE	632	1,154	1,279	1,200	1,113	-13.0%	-7.3%
BOOKS & REF. MATERIAL	-	140	182	170	158	-13.2%	-7.1%
CONTRACT TESTING	10,085	6,911	16,681	14,834	13,440	-19.4%	-9.4%
GENERAL SUPPLY	1,462	1,455	3,155	2,957	2,742	-13.1%	-7.3%
QUALITY CONTROL PROGRAM	1,295	2,095	5,235	4,907	4,551	-13.1%	-7.3%
POSTAGE	99	11	428	368	379	-11.4%	3.0%
PRINTING	1,612	1,513	3,023	2,834	2,628	-13.1%	-7.3%
OFFICE SUPPLY	-	-	201	188	175	-12.9%	-6.9%
MEMBERSHIPS & DUES	690	709	780	732	676	-13.3%	-7.6%
LAB PERMITS	1,573	1,966	4,655	4,365	4,047	-13.1%	-7.3%
CERTIFICATION	-	-	169	158	147	-13.0%	-7.0%
DESAL - MONITORING	-	-	-	-	-	-	-
LAB MAINT. & REPAIR	4,523	2,757	5,487	5,144	5,456	-0.6%	6.1%
TOTAL DEPARTMENT EXPENSE	**23,711**	**21,684**	**44,593**	**40,967**	**38,397**	**-13.9%**	**-6.3%**
TOTAL EXPENSE	**80,869**	**79,777**	**112,581**	**101,166**	**101,555**	**-9.8%**	**0.4%**

MARINA COAST WATER DISTRICT
LAB BUDGET FOR FY 2019-2020

ACCOUNT NAME	2016-2017 ACTUAL	2017-2018 ACTUAL	2018-2019 ADOPTED	ORD WATER 2018-2019 ESTIMATED	2019-2020 PROPOSED	BUD vs BUD % CHANGE	BUD vs EST % CHANGE
WAGES - LAB	86,818	89,531	96,769	94,601	111,550	15.3%	17.9%
WAGES ALLOCATED TO CAPITAL	-	-	-	-	-	-	-
OVERTIME	956	455	576	-	665	15.5%	100.0%
FICA - SS EXPENSE	5,334	5,521	6,036	5,848	6,957	15.3%	19.0%
FICA - MEDI EXPENSE	1,248	1,291	1,412	1,368	1,627	15.2%	19.0%
MEDICAL INSURANCE	8,660	8,123	10,058	10,078	10,979	9.2%	8.9%
DENTAL INS. EXPENSE	372	311	369	404	391	6.0%	-3.1%
VISION INS. EXPENSE	155	150	169	160	179	5.9%	12.2%
WORKERS COMP. EXPENSE	2,840	2,895	4,302	4,181	4,990	16.0%	19.3%
LIFE INSURANCE EXPENSE	290	309	338	346	393	16.3%	13.7%
UNIFORM BENEFIT	271	196	442	182	468	5.9%	157.5%
BOOT BENEFIT	-	-	136	-	144	5.9%	100.0%
SUI EXPENSE	152	244	330	59	349	5.8%	495%
ETT EXPENSE	5	10	10	2	11	10.0%	400.0%
DISABILITY PLAN	301	292	243	253	282	16.0%	11.3%
CALPERS RETIREMENT (ER) - Classic Plan	8,298	9,123	11,749	11,789	15,741	34.0%	33.5%
CALPERS RETIREMENT (EE) - Classic Plan	5,980	5,941	6,612	6,784	7,682	16.2%	13.2%
CALPERS-62 RETIREMENT (ER)	-	-	-	-	-	-	-
CALPERS-62 RETIREMENT (EE)	-	-	-	-	-	-	-
OPEB EXPENSE	4,260	-	4,927	4,410	-	-	100.0%
TOTAL SALARY & BENEFIT	**125,940**	**124,393**	**144,478**	**140,464**	**162,408**	**12.4%**	**15.6%**
CHEMICALS	3,700	6,320	7,050	7,257	7,419	5.2%	2.2%
GLASSWARE	1,342	2,452	2,719	2,799	2,861	5.2%	2.2%
BOOKS & REF. MATERIAL	-	296	386	398	406	5.2%	2.0%
CONTRACT TESTING	21,513	15,995	35,447	37,294	34,560	-2.5%	-7.3%
GENERAL SUPPLY	3,108	3,091	6,703	6,901	7,052	5.2%	2.2%
QUALITY CONTROL PROGRAM	2,751	4,453	11,123	11,451	11,703	5.2%	2.2%
POSTAGE	193	73	910	970	975	7.1%	0.5%
PRINTING	3,128	3,425	6,425	6,614	6,756	5.2%	2.1%
OFFICE SUPPLY	-	-	427	440	449	5.2%	2.0%
MEMBERSHIPS & DUES	1,465	1,506	1,658	1,707	1,738	4.8%	1.8%
LAB PERMITS	3,344	4,179	9,893	10,184	10,407	5.2%	2.2%
CERTIFICATION	-	-	359	370	377	5.0%	1.9%
DESAL - MONITORING	-	-	6,000	6,000	6,000	0.0%	0.0%
LAB MAINT. & REPAIR	9,256	5,858	11,661	12,004	14,028	20.3%	16.9%
TOTAL DEPARTMENT EXPENSE	**49,799**	**47,647**	**100,761**	**104,388**	**104,731**	**3.9%**	**0.3%**
TOTAL EXPENSE	**175,738**	**172,041**	**245,239**	**244,852**	**267,139**	**8.9%**	**9.1%**

MARINA COAST WATER DISTRICT
LAB BUDGET FOR FY 2019-2020

ACCOUNT NAME	2016-2017 ACTUAL	2017-2018 ACTUAL	2018-2019 ADOPTED	TOTAL 2018-2019 ESTIMATED	2019-2020 PROPOSED	BUD vs BUD % CHANGE	BUD vs EST % CHANGE
WAGES - LAB	125,832	131,330	142,307	135,144	154,930	8.9%	14.6%
WAGES ALLOCATED TO CAPITAL	-	-	-	-	-	-	-
OVERTIME	1,405	669	847	-	924	9.1%	100.0%
FICA - SS EXPENSE	7,822	8,098	8,876	8,354	9,663	8.9%	15.7%
FICA - MEDI EXPENSE	1,829	1,894	2,076	1,954	2,260	8.9%	15.7%
MEDICAL INSURANCE	12,668	11,912	14,791	14,396	15,248	3.1%	5.9%
DENTAL INS. EXPENSE	543	456	543	576	543	0.0%	-5.7%
VISION INS. EXPENSE	227	220	248	228	248	0.0%	8.9%
WORKERS COMP. EXPENSE	4,159	4,247	6,326	5,974	6,930	9.5%	16.0%
LIFE INSURANCE EXPENSE	426	455	497	494	546	9.9%	10.6%
UNIFORM BENEFIT	398	288	650	260	650	0.0%	150.4%
BOOT BENEFIT	-	-	200	-	200	0.0%	100.0%
SUI EXPENSE	223	358	485	84	485	0.0%	475%
ETT EXPENSE	8	15	15	4	15	0.0%	298.9%
DISABILITY PLAN	444	430	358	362	392	9.5%	8.4%
CALPERS RETIREMENT (ER) - Classic Plan	12,172	13,397	17,278	16,842	21,863	26.5%	29.8%
CALPERS RETIREMENT (EE) - Classic Plan	8,766	8,719	9,724	9,692	10,669	9.7%	10.1%
CALPERS-62 RETIREMENT (ER)	-	-	-	-	-	-	-
CALPERS-62 RETIREMENT (EE)	-	-	-	-	-	-	-
OPEB EXPENSE	6,176	-	7,245	6,300	-	-	100.0%
TOTAL SALARY & BENEFIT	**183,098**	**182,486**	**212,466**	**200,662**	**225,566**	**6.2%**	**12.4%**
CHEMICALS	5,441	9,294	10,368	10,368	10,304	-0.6%	-0.6%
GLASSWARE	1,973	3,606	3,998	3,999	3,974	-0.6%	-0.6%
BOOKS & REF. MATERIAL	-	436	568	568	564	-0.7%	-0.7%
CONTRACT TESTING	31,598	22,906	52,128	52,129	48,000	-7.9%	-7.9%
GENERAL SUPPLY	4,570	4,546	9,858	9,858	9,794	-0.6%	-0.6%
QUALITY CONTROL PROGRAM	4,045	6,548	16,358	16,358	16,254	-0.6%	-0.6%
POSTAGE	292	84	1,338	1,338	1,354	1.2%	1.2%
PRINTING	4,740	4,938	9,448	9,448	9,384	-0.7%	-0.7%
OFFICE SUPPLY	-	-	628	628	624	-0.6%	-0.6%
MEMBERSHIPS & DUES	2,155	2,215	2,438	2,439	2,414	-1.0%	-1.0%
LAB PERMITS	4,917	6,145	14,548	14,548	14,454	-0.6%	-0.6%
CERTIFICATION	-	-	528	528	524	-0.8%	-0.8%
DESAL - MONITORING	-	-	6,000	6,000	6,000	0.0%	0.0%
LAB MAINT. & REPAIR	13,779	8,614	17,148	17,148	19,484	13.6%	13.6%
TOTAL DEPARTMENT EXPENSE	**73,510**	**69,331**	**145,354**	**145,356**	**143,128**	**-1.5%**	**-1.5%**
TOTAL EXPENSE	**256,608**	**251,818**	**357,820**	**346,018**	**368,694**	**3.0%**	**6.6%**

MARINA COAST WATER DISTRICT
CON BUDGET FOR FY 2019-2020

ACCOUNT NAME	2016-2017 ACTUAL	2017-2018 ACTUAL	2018-2019 ADOPTED	MARINA WATER 2018-2019 ESTIMATED	2019-2020 PROPOSED	BUD vs BUD % CHANGE	BUD vs EST % CHANGE
WAGES - CON	47,003	41,977	35,282	29,029	36,899	4.6%	27.1%
OVERTIME	1,064	1,086	5,598	1,710	1,703	-69.6%	-0.4%
FICA - SS EXPENSE	2,868	2,579	2,535	1,912	2,393	-5.6%	25.1%
FICA - MEDI EXPENSE	671	603	593	448	560	-5.6%	25.1%
MEDICAL INSURANCE	8,331	5,904	4,210	3,489	4,080	-3.1%	16.9%
DENTAL INS. EXPENSE	339	315	146	122	137	-6.2%	12.6%
VISION INS. EXPENSE	129	114	68	62	64	-5.9%	3.3%
WORKERS COMP. EXPENSE	333	309	418	308	408	-2.4%	32.6%
LIFE INSURANCE EXPENSE	176	172	121	116	128	5.8%	10.3%
UNIFORM BENEFIT	82	-	60	-	56	-6.7%	-
SUI EXPENSE	205	139	152	30	142	-6.6%	380.5%
ETT EXPENSE	7	6	5	1	4	-20.0%	100.0%
DISABILITY PLAN	183	167	87	84	92	5.7%	9.0%
CALPERS RETIREMENT (ER) - Classic Plan	3,062	3,113	4,197	3,886	5,127	22.2%	31.9%
CALPERS RETIREMENT (EE) - Classic Plan	1,906	1,978	2,362	2,154	2,502	5.9%	16.1%
CALPERS-62 RETIREMENT (ER)	1,177	936	-	-	-	-	-
CALPERS-62 RETIREMENT (EE)	-	-	-	-	-	-	-
OPEB EXPENSE	2,293	-	2,880	2,880	2,800	-2.8%	-2.8%
TOTAL SALARY & BENEFIT	**69,829**	**59,397**	**58,714**	**46,230**	**57,095**	**-2.8%**	**23.5%**
BOOKS & REF. MATERIAL	-	-	60	60	56	-6.7%	-6.7%
PRINTING	2,849	2,793	5,700	5,681	6,400	12.3%	12.7%
GENERAL SUPPLY	101	1,286	150	144	280	86.7%	94.4%
COMPUTERS/DATA PROCESSING	237	250	300	301	140	-53.3%	-53.4%
ADVERTISEMENT	1,690	75	2,500	2,309	2,500	0.0%	8.3%
CONSULTING SERVICES	-	-	750	750	1,540	105.3%	100.0%
MEMBERSHIPS & DUES	1,824	1,761	1,800	1,800	1,834	1.9%	1.9%
TOILET REBATE	19,657	17,606	29,250	29,250	29,000	-0.9%	-0.9%
WASHING MACHINE REBATE	8,750	3,950	3,840	2,650	2,660	-30.7%	0.4%
CONSERVATION EDUCATION	4,800	11,776	28,050	20,617	28,050	0.0%	36.0%
LANDSCAPE REBATE	8,191	7,005	20,000	8,254	15,000	-25.0%	81.7%
HOT WATER RECIR REBATE	3,272	1,747	2,700	3,347	2,700	0.0%	-19.3%
SHOWER HEADS AND AERATORS	4,323	1,638	2,500	2,717	2,500	0.0%	-8.0%
LANDSCAPE DEMONSTRATION	90	426	450	441	420	-6.7%	-4.7%
TOTAL DEPARTMENT EXPENSE	**55,784**	**50,313**	**98,050**	**78,320**	**93,080**	**-5.1%**	**18.8%**
TOTAL EXPENSE	**125,614**	**109,710**	**156,764**	**124,550**	**150,175**	**-4.2%**	**20.6%**

MARINA COAST WATER DISTRICT
CON BUDGET FOR FY 2019-2020

ACCOUNT NAME	2016-2017 ACTUAL	2017-2018 ACTUAL	2018-2019 ADOPTED	ORD WATER 2018-2019 ESTIMATED	2019-2020 PROPOSED	BUD vs BUD % CHANGE	BUD vs EST % CHANGE
WAGES - CON	102,219	89,298	82,326	67,733	94,884	15.3%	40.1%
OVERTIME	2,262	2,307	13,061	3,991	4,378	-66.5%	9.7%
FICA - SS EXPENSE	6,092	5,487	5,914	4,463	6,155	4.1%	37.9%
FICA - MEDI EXPENSE	1,425	1,283	1,382	1,044	1,439	4.1%	37.8%
MEDICAL INSURANCE	17,613	12,545	9,824	8,141	10,491	6.8%	28.9%
DENTAL INS. EXPENSE	717	669	342	283	351	2.6%	24.2%
VISION INS. EXPENSE	273	242	159	144	163	2.5%	13.0%
WORKERS COMP. EXPENSE	713	657	975	717	1,049	7.6%	46.4%
LIFE INSURANCE EXPENSE	372	365	282	270	329	16.7%	21.8%
UNIFORM BENEFIT	174	-	140	-	144	2.9%	-
SUI EXPENSE	436	296	356	68	366	2.8%	437.4%
ETT EXPENSE	15	12	11	3	11	0.0%	308.9%
DISABILITY PLAN	388	355	203	198	236	16.3%	19.3%
CALPERS RETIREMENT (ER) - Classic Plan	6,507	6,616	9,794	9,066	13,183	34.6%	45.4%
CALPERS RETIREMENT (EE) - Classic Plan	4,049	4,202	5,512	5,027	6,434	16.7%	28.0%
CALPERS-62 RETIREMENT (ER)	2,500	1,989	-	-	-	-	-
CALPERS-62 RETIREMENT (EE)	-	-	-	-	-	-	-
OPEB EXPENSE	4,982	-	6,721	6,721	7,200	7.1%	7.1%
TOTAL SALARY & BENEFIT	**150,736**	**126,324**	**137,002**	**107,869**	**146,813**	**7.2%**	**36.1%**
BOOKS & REF. MATERIAL	-	-	140	140	144	2.9%	2.9%
PRINTING	2,247	2,048	4,300	4,288	3,600	-16.3%	-16.0%
GENERAL SUPPLY	215	2,733	350	336	720	105.7%	114.3%
COMPUTERS/DATA PROCESSING	503	530	700	701	360	-48.6%	-48.6%
ADVERTISEMENT	538	-	2,500	2,366	2,500	0.0%	5.7%
CONSULTING SERVICES	-	-	1,750	1,750	3,960	126.3%	100.0%
MEMBERSHIPS & DUES	3,874	3,741	4,200	4,200	4,716	12.3%	12.3%
TOILET REBATE	5,469	40,620	68,250	68,250	97,250	42.5%	42.5%
WASHING MACHINE REBATE	8,250	4,400	3,160	4,275	4,340	37.3%	1.5%
CONSERVATION EDUCATION	2,800	8,680	14,700	14,549	18,700	27.2%	28.5%
LANDSCAPE REBATE	949	459	1,000	500	10,000	900.0%	1900.0%
HOT WATER RECIR REBATE	-	-	300	300	300	0.0%	0.0%
SHOWER HEADS AND AERATORS	2,953	1,004	2,500	2,717	2,500	0.0%	-8.0%
LANDSCAPE DEMONSTRATION	190	906	1,050	1,028	1,080	2.9%	5.1%
TOTAL DEPARTMENT EXPENSE	**27,988**	**65,121**	**104,900**	**105,399**	**150,170**	**43.2%**	**42.5%**
TOTAL EXPENSE	**178,724**	**191,445**	**241,902**	**213,268**	**296,983**	**22.8%**	**39.3%**

MARINA COAST WATER DISTRICT
CON BUDGET FOR FY 2019-2020

ACCOUNT NAME	2016-2017 ACTUAL	2017-2018 ACTUAL	2018-2019 ADOPTED	TOTAL 2018-2019 ESTIMATED	2019-2020 PROPOSED	BUD vs BUD % CHANGE	BUD vs EST % CHANGE
WAGES - CON	149,222	131,275	117,608	96,762	131,783	12.1%	36.2%
OVERTIME	3,327	3,393	18,659	5,702	6,081	-67.4%	6.7%
FICA - SS EXPENSE	8,960	8,066	8,449	6,375	8,548	1.2%	34.1%
FICA - MEDI EXPENSE	2,096	1,886	1,975	1,492	1,999	1.2%	34.0%
MEDICAL INSURANCE	25,944	18,449	14,034	11,630	14,571	3.8%	25.3%
DENTAL INS. EXPENSE	1,056	984	488	404	488	0.0%	20.7%
VISION INS. EXPENSE	403	356	227	206	227	0.0%	10.1%
WORKERS COMP. EXPENSE	1,046	966	1,393	1,024	1,457	4.6%	42.2%
LIFE INSURANCE EXPENSE	547	537	403	386	457	13.4%	18.3%
UNIFORM BENEFIT	256	-	200	-	200	0.0%	-
SUI EXPENSE	641	435	508	98	508	0.0%	420.2%
ETT EXPENSE	22	18	16	4	15	-6.3%	273.1%
DISABILITY PLAN	571	522	290	282	328	13.1%	16.2%
CALPERS RETIREMENT (ER) - Classic Plan	9,569	9,730	13,991	12,952	18,310	30.9%	41.4%
CALPERS RETIREMENT (EE) - Classic Plan	5,955	6,180	7,874	7,182	8,936	13.5%	24.4%
CALPERS-62 RETIREMENT (ER)	3,677	2,924	-	-	-	-	-
CALPERS-62 RETIREMENT (EE)	-	-	-	-	-	-	-
OPEB EXPENSE	7,275	-	9,601	9,601	10,000	4.2%	4.2%
TOTAL SALARY & BENEFIT	**220,565**	**185,721**	**195,716**	**154,099**	**203,908**	**4.2%**	**32.3%**
BOOKS & REF. MATERIAL	-	-	200	200	200	0.0%	0.0%
PRINTING	5,096	4,841	10,000	9,969	10,000	0.0%	0.3%
GENERAL SUPPLY	316	4,019	500	480	1,000	100.0%	108.3%
COMPUTERS/DATA PROCESSING	740	780	1,000	1,001	500	-50.0%	-50.0%
ADVERTISEMENT	2,228	75	5,000	4,675	5,000	0.0%	7.0%
CONSULTING SERVICES	-	-	2,500	2,500	5,500	120.0%	100.0%
MEMBERSHIPS & DUES	5,698	5,502	6,000	6,000	6,550	9.2%	9.2%
TOILET REBATE	25,127	58,226	97,500	97,500	126,250	29.5%	29.5%
WASHING MACHINE REBATE	17,000	8,350	7,000	6,925	7,000	0.0%	1.1%
CONSERVATION EDUCATION	7,600	20,456	42,750	35,167	46,750	9.4%	32.9%
LANDSCAPE REBATE	9,139	7,463	21,000	8,754	25,000	19.0%	185.6%
HOT WATER RECIR REBATE	3,272	1,747	3,000	3,647	3,000	0.0%	-17.7%
SHOWER HEADS AND AERATORS	7,276	2,643	5,000	5,434	5,000	0.0%	-8.0%
LANDSCAPE DEMONSTRATION	280	1,332	1,500	1,469	1,500	0.0%	2.1%
TOTAL DEPARTMENT EXPENSE	**83,773**	**115,434**	**202,950**	**183,719**	**243,250**	**19.9%**	**32.4%**
TOTAL EXPENSE	**304,337**	**301,154**	**398,666**	**337,818**	**447,158**	**12.2%**	**32.4%**

MARINA COAST WATER DISTRICT
ENG BUDGET FOR FY 2019-2020

ACCOUNT NAME	2016-2017 ACTUAL	2017-2018 ACTUAL	2018-2019 ADOPTED	MARINA WATER 2018-2019 ESTIMATED	2019-2020 PROPOSED	BUD vs BUD % CHANGE	BUD vs EST % CHANGE
WAGES - ENG	124,861	135,178	161,438	120,841	162,651	0.8%	34.6%
WAGES-ALLOCATED TO CAPITAL	(5,571)	(857)	(5,000)	(3,953)	(5,000)	-100.0%	-100.0%
WAGE/BENEFITS TO OTHER CC PROJ	-	-	-	-	-	-100.0%	-100.0%
OVERTIME	-	32	137	-	137	0.0%	100.0%
FICA - SS EXPENSE	6,822	7,303	9,131	5,959	9,438	3.4%	58.4%
FICA - MEDI EXPENSE	1,743	1,841	2,343	1,699	2,360	0.7%	38.9%
MEDICAL INSURANCE	19,753	19,428	33,540	18,013	29,187	-13.0%	62.0%
DENTAL INSURANCE	1,083	921	1,392	735	1,235	-11.3%	67.9%
VISION INSURANCE	240	259	297	234	285	-4.0%	21.7%
WORKERS COMP. INSURANCE	901	967	1,641	1,188	1,647	0.4%	38.6%
LIFE INSURANCE EXPENSE	485	541	606	527	606	0.0%	15.0%
BOOTS BENEFIT	96	49	240	240	230	-4.2%	-4.2%
SUI EXPENSE	369	252	333	333	319	-4.2%	-4.2%
ETT EXPENSE	13	10	10	9	10	0.0%	11.1%
DISABILITY PLAN	515	524	444	386	448	0.9%	16.1%
CALPERS RETIREMENT (ER) - Classic Plan	11,564	12,174	15,693	11,915	18,119	15.5%	52.1%
CALPERS RETIREMENT (EE) - Classic Plan	7,533	7,146	8,832	6,493	8,843	0.1%	36.2%
CALPERS-62 RETIREMENT (ER)	1,325	2,364	2,977	2,735	3,115	4.6%	13.9%
CALPERS-62 RETIREMENT (EE)	-	-	-	-	-	-	-
OPEB EXPENSE	6,496	-	8,832	7,680	-	-	-
TOTAL SALARY & BENEFIT	**178,310**	**188,132**	**243,030**	**175,034**	**233,768**	**-3.8%**	**33.6%**
BOOKS & REF MATERIALS	-	41	72	-	-	-	-
POSTAGE	6	-	48	-	-	-	-
PRINTING/ SCANNING SERVICES	292	372	120	-	-	-	-
OFFICE SUPPLY	-	-	120	-	-	-	-
GENERAL SUPPLY	-	37	-	-	-	-	-
MEMBERSHIPS & DUES	382	383	240	-	-	-	-
MAPPING SERVICES	-	-	5,000	5,000	6,000	20.0%	20.0%
ENGINEERING CONSULTANTS	112,982	139,026	46,000	51,996	55,000	19.6%	5.8%
DEVELOPER EXPENSES (NOT MCWD)	209	29,023	6,000	21,397	21,500	258.3%	100.0%
DEVELOPER EXPENSES - METERS	-	-	4,000	-	-	-	100.0%
TOTAL DEPARTMENT EXPENSE	**113,871**	**168,883**	**61,600**	**78,392**	**82,500**	**33.9%**	**5.2%**
TOTAL EXPENSE	**292,181**	**357,015**	**304,630**	**253,426**	**316,268**	**3.8%**	**24.8%**

MARINA COAST WATER DISTRICT
ENG BUDGET FOR FY 2019-2020

ACCOUNT NAME	2016-2017 ACTUAL	2017-2018 ACTUAL	2018-2019 ADOPTED	MARINA SEWER 2018-2019 ESTIMATED	2019-2020 PROPOSED	BUD vs BUD % CHANGE	BUD vs EST % CHANGE
WAGES - ENG	65,981	48,895	47,085	34,813	42,430	-9.9%	21.9%
WAGES-ALLOCATED TO CAPITAL	(46,174)	(16,064)	(25,000)	-	(5,000)	-100.0%	-100.0%
WAGE/BENEFITS TO OTHER CC PROJ	-	-	-	-	-	-100.0%	-100.0%
OVERTIME	-	9	40	-	36	-10.0%	100.0%
FICA - SS EXPENSE	3,836	2,721	2,663	1,711	2,462	-7.5%	43.9%
FICA - MEDI EXPENSE	939	674	683	489	616	-9.8%	25.9%
MEDICAL INSURANCE	12,348	7,544	9,783	5,202	7,614	-22.2%	46.4%
DENTAL INSURANCE	676	357	406	212	322	-20.7%	51.6%
VISION INSURANCE	122	91	87	67	74	-14.9%	9.8%
WORKERS COMP. INSURANCE	495	344	479	342	430	-10.2%	25.9%
LIFE INSURANCE EXPENSE	255	196	177	152	158	-10.7%	4.1%
BOOTS BENEFIT	26	14	70	70	60	-14.3%	-14.3%
SUI EXPENSE	100	71	97	97	83	-14.4%	-14.4%
ETT EXPENSE	3	3	3	3	3	0.0%	0.0%
DISABILITY PLAN	269	192	130	111	117	-10.0%	5.4%
CALPERS RETIREMENT (ER) - Classic Plan	5,755	4,299	4,577	3,464	4,727	3.3%	36.4%
CALPERS RETIREMENT (EE) - Classic Plan	4,454	2,817	2,576	1,884	2,307	-10.4%	22.4%
CALPERS-62 RETIREMENT (ER)	357	662	868	777	813	-6.3%	4.6%
CALPERS-62 RETIREMENT (EE)	-	-	-	-	-	-	-
OPEB EXPENSE	3,184	-	2,576	2,240	-	-	-
TOTAL SALARY & BENEFIT	**52,648**	**52,824**	**47,342**	**51,635**	**57,288**	**21.0%**	**10.9%**
BOOKS & REF MATERIALS	-	-	21	-	-	-	-
POSTAGE	2	-	14	-	-	-	-
PRINTING/ SCANNING SERVICES	83	104	35	-	-	-	-
OFFICE SUPPLY	-	-	35	-	-	-	-
GENERAL SUPPLY	-	10	-	-	-	-	-
MEMBERSHIPS & DUES	20	21	70	-	-	-	-
MAPPING SERVICES	-	-	2,000	2,000	4,000	100.0%	100.0%
ENGINEERING CONSULTANTS	12,684	15,515	17,000	22,090	22,000	29.4%	-0.4%
DEVELOPER EXPENSES (NOT MCWD)	-	5,120	2,000	2,142	2,200	10.0%	100.0%
DEVELOPER EXPENSES - METERS	-	-	-	-	-	-	100.0%
TOTAL DEPARTMENT EXPENSE	**12,789**	**20,771**	**21,175**	**26,232**	**28,200**	**33.2%**	**7.5%**
TOTAL EXPENSE	**65,437**	**73,596**	**68,517**	**77,868**	**85,488**	**24.8%**	**9.8%**

MARINA COAST WATER DISTRICT
ENG BUDGET FOR FY 2019-2020

ACCOUNT NAME	2016-2017 ACTUAL	2017-2018 ACTUAL	2018-2019 ADOPTED	ORD WATER 2018-2019 ESTIMATED	2019-2020 PROPOSED	BUD vs BUD % CHANGE	BUD vs EST % CHANGE
WAGES - ENG	254,609	308,883	363,235	280,218	403,091	11.0%	43.8%
WAGES-ALLOCATED TO CAPITAL	-	(21,925)	(30,000)	(29,794)	(30,000)	-100.0%	-100.0%
WAGE/BENEFITS TO OTHER CC PROJ	-	-	-	-	-	-100.0%	-100.0%
OVERTIME	-	69	309	-	339	9.7%	100.0%
FICA - SS EXPENSE	13,695	16,762	20,545	13,923	23,389	13.8%	68.0%
FICA - MEDI EXPENSE	3,508	4,206	5,271	3,942	5,850	11.0%	48.4%
MEDICAL INSURANCE	39,237	43,677	75,466	41,348	72,334	-4.2%	74.9%
DENTAL INSURANCE	2,146	2,051	3,133	1,684	3,061	-2.3%	81.8%
VISION INSURANCE	483	593	669	541	706	5.5%	30.5%
WORKERS COMP. INSURANCE	1,821	2,304	3,692	2,823	4,081	10.5%	44.6%
LIFE INSURANCE EXPENSE	976	1,104	1,362	1,221	1,502	10.3%	23.0%
BOOTS BENEFIT	199	106	540	540	570	5.6%	5.6%
SUI EXPENSE	767	544	748	748	790	5.6%	5.6%
ETT EXPENSE	26	23	23	21	25	8.7%	19.0%
DISABILITY PLAN	1,035	1,179	1,000	893	1,109	10.9%	24.1%
CALPERS RETIREMENT (ER) - Classic Plan	23,376	26,375	35,309	26,793	44,902	27.2%	67.6%
CALPERS RETIREMENT (EE) - Classic Plan	15,057	15,506	19,873	14,598	21,915	10.3%	50.1%
CALPERS-62 RETIREMENT (ER)	2,751	6,071	6,699	6,721	7,720	15.2%	14.9%
CALPERS-62 RETIREMENT (EE)	-	-	-	-	-	-	-
OPEB EXPENSE	13,312	-	19,872	17,280	-	-	-
TOTAL SALARY & BENEFIT	**373,166**	**407,529**	**528,070**	**383,500**	**561,726**	**6.4%**	**46.5%**
BOOKS & REF MATERIALS	-	88	162	-	-	-	-
POSTAGE	12	-	108	-	-	-	-
PRINTING/ SCANNING SERVICES	521	804	270	-	-	-	-
OFFICE SUPPLY	-	-	270	-	-	-	-
GENERAL SUPPLY	-	80	-	-	-	-	-
MEMBERSHIPS & DUES	809	817	540	-	-	-	-
MAPPING SERVICES	-	-	20,000	20,000	25,000	25.0%	25.0%
ENGINEERING CONSULTANTS	212,418	298,195	94,000	141,176	140,000	48.9%	-0.8%
DEVELOPER EXPENSES (NOT MCWD)	381,989	307,805	320,000	246,986	250,000	-21.9%	1.2%
DEVELOPER EXPENSES - METERS	96,382	94,916	60,000	105,345	110,000	83.3%	4.4%
TOTAL DEPARTMENT EXPENSE	**692,131**	**702,704**	**495,350**	**513,507**	**525,000**	**6.0%**	**2.2%**
TOTAL EXPENSE	**1,065,298**	**1,110,233**	**1,023,420**	**897,007**	**1,086,726**	**6.2%**	**21.2%**

MARINA COAST WATER DISTRICT
ENG BUDGET FOR FY 2019-2020

ACCOUNT NAME	2016-2017 ACTUAL	2017-2018 ACTUAL	2018-2019 ADOPTED	ORD SEWER 2018-2019 ESTIMATED	2019-2020 PROPOSED	BUD vs BUD % CHANGE	BUD vs EST % CHANGE
WAGES - ENG	95,361	82,940	100,899	75,969	99,005	-1.9%	30.3%
WAGES-ALLOCATED TO CAPITAL	(43,402)	(9,832)	(20,000)	(3,523)	(5,000)	-100.0%	-100.0%
WAGE/BENEFITS TO OTHER CC PROJ	-	-	-	-	-	-100.0%	-100.0%
OVERTIME	-	18	86	-	83	-3.5%	100.0%
FICA - SS EXPENSE	5,354	4,494	5,707	3,752	5,745	0.7%	53.1%
FICA - MEDI EXPENSE	1,328	1,125	1,464	1,068	1,437	-1.8%	34.6%
MEDICAL INSURANCE	16,898	12,182	20,963	11,278	17,766	-15.3%	57.5%
DENTAL INSURANCE	909	581	870	461	752	-13.6%	63.3%
VISION INSURANCE	176	156	186	146	173	-7.0%	18.4%
WORKERS COMP. INSURANCE	701	585	1,026	748	1,002	-2.3%	34.0%
LIFE INSURANCE EXPENSE	356	329	378	331	369	-2.4%	11.6%
BOOTS BENEFIT	48	28	150	150	140	-6.7%	-6.7%
SUI EXPENSE	196	141	208	208	194	-6.7%	-6.7%
ETT EXPENSE	7	6	6	6	6	0.0%	0.0%
DISABILITY PLAN	375	321	278	242	272	-2.2%	12.5%
CALPERS RETIREMENT (ER) - Classic Plan	8,352	7,340	9,808	7,479	11,029	12.4%	47.5%
CALPERS RETIREMENT (EE) - Classic Plan	6,127	4,480	5,520	4,087	5,383	-2.5%	31.7%
CALPERS-62 RETIREMENT (ER)	662	1,324	1,861	1,713	1,896	1.9%	10.7%
CALPERS-62 RETIREMENT (EE)	-	-	-	-	-	-	-
OPEB EXPENSE	4,649	-	5,520	4,800	-	-	-
TOTAL SALARY & BENEFIT	**98,137**	**106,218**	**135,020**	**108,914**	**140,336**	**3.9%**	**28.9%**
BOOKS & REF MATERIALS	-	-	45	-	-	-	-
POSTAGE	37	-	30	-	-	-	-
PRINTING/ SCANNING SERVICES	146	209	75	-	-	-	-
OFFICE SUPPLY	-	-	75	-	-	-	-
GENERAL SUPPLY	-	21	-	-	-	-	-
MEMBERSHIPS & DUES	37	42	150	-	-	-	-
MAPPING SERVICES	-	-	10,000	10,000	15,000	50.0%	50.0%
ENGINEERING CONSULTANTS	26,464	82,188	38,000	74,328	80,000	110.5%	7.6%
DEVELOPER EXPENSES (NOT MCWD)	109,066	92,980	90,000	104,477	105,000	16.7%	0.5%
DEVELOPER EXPENSES - METERS	-	-	-	-	-	-	-
TOTAL DEPARTMENT EXPENSE	**135,750**	**175,439**	**138,375**	**188,805**	**200,000**	**44.5%**	**5.9%**
TOTAL EXPENSE	**233,887**	**281,657**	**273,395**	**297,719**	**340,336**	**24.5%**	**14.3%**

MARINA COAST WATER DISTRICT
ENG BUDGET FOR FY 2019-2020

ACCOUNT NAME	2016-2017 ACTUAL	2017-2018 ACTUAL	2018-2019 ADOPTED	RUWAP 2018-2019 ESTIMATED	2019-2020 PROPOSED	BUD vs BUD % CHANGE	BUD vs EST % CHANGE
WAGES - ENG	-	-	-	-	-	-	-
WAGES-ALLOCATED TO CAPITAL	-	-	-	-	-	-	-
WAGE/BENEFITS TO OTHER CC PROJ	-	-	-	-	-	-	-
OVERTIME	-	-	-	-	-	-	-
FICA - SS EXPENSE	-	-	-	-	-	-	-
FICA - MEDI EXPENSE	-	-	-	-	-	-	-
MEDICAL INSURANCE	-	-	-	-	-	-	-
DENTAL INSURANCE	-	-	-	-	-	-	-
VISION INSURANCE	-	-	-	-	-	-	-
WORKERS COMP. INSURANCE	-	-	-	-	-	-	-
LIFE INSURANCE EXPENSE	-	-	-	-	-	-	-
BOOTS BENEFIT	-	-	-	-	-	-	-
SUI EXPENSE	-	-	-	-	-	-	-
ETT EXPENSE	-	-	-	-	-	-	-
DISABILITY PLAN	-	-	-	-	-	-	-
CALPERS RETIREMENT (ER) - Classic Plan	-	-	-	-	-	-	-
CALPERS RETIREMENT (EE) - Classic Plan	-	-	-	-	-	-	-
CALPERS-62 RETIREMENT (ER)	-	-	-	-	-	-	-
CALPERS-62 RETIREMENT (EE)	-	-	-	-	-	-	-
OPEB EXPENSE	-	-	-	-	-	-	-
TOTAL SALARY & BENEFIT	**-**	**-**	**-**	**-**	**-**	**-**	**-**
BOOKS & REF MATERIALS	-	-	-	-	-	-	-
POSTAGE	-	-	-	-	-	-	-
PRINTING/ SCANNING SERVICES	-	-	-	-	-	-	-
OFFICE SUPPLY	-	-	-	-	-	-	-
GENERAL SUPPLY							
MEMBERSHIPS & DUES	-	-	-	-	-	-	-
MAPPING SERVICES	-	-	-	-	-	-	-
ENGINEERING CONSULTANTS	-	-	-	-	-	-	-
DEVELOPER EXPENSES (NOT MCWD)	-	-	-	-	-	-	-
DEVELOPER EXPENSES - METERS	-	-	-	-	-	-	-
TOTAL DEPARTMENT EXPENSE	**-**	**-**	**-**	**-**	**-**	**-**	**-**
TOTAL EXPENSE	**-**	**-**	**-**	**-**	**-**	**-**	**-**

MARINA COAST WATER DISTRICT
ENG BUDGET FOR FY 2019-2020

ACCOUNT NAME	2016-2017 ACTUAL	2017-2018 ACTUAL	2018-2019 ADOPTED	2018-2019 ESTIMATED	2019-2020 PROPOSED	BUD vs BUD % CHANGE	BUD vs EST % CHANGE
	REGIONAL DESALINATION PROJECT						
WAGES - ENG	-	-	-	-	-	-	-
WAGES-ALLOCATED TO CAPITAL	-	-	-	-	-	-	-
WAGE/BENEFITS TO OTHER CC PROJ	-	-	-	-	-	-	-
OVERTIME	-	-	-	-	-	-	-
FICA - SS EXPENSE	-	-	-	-	-	-	-
FICA - MEDI EXPENSE	-	-	-	-	-	-	-
MEDICAL INSURANCE	-	-	-	-	-	-	-
DENTAL INSURANCE	-	-	-	-	-	-	-
VISION INSURANCE	-	-	-	-	-	-	-
WORKERS COMP. INSURANCE	-	-	-	-	-	-	-
LIFE INSURANCE EXPENSE	-	-	-	-	-	-	-
BOOTS BENEFIT	-	-	-	-	-	-	-
SUI EXPENSE	-	-	-	-	-	-	-
ETT EXPENSE	-	-	-	-	-	-	-
DISABILITY PLAN	-	-	-	-	-	-	-
CALPERS RETIREMENT (ER) - Classic Plan	-	-	-	-	-	-	-
CALPERS RETIREMENT (EE) - Classic Plan	-	-	-	-	-	-	-
CALPERS-62 RETIREMENT (ER)	-	-	-	-	-	-	-
CALPERS-62 RETIREMENT (EE)	-	-	-	-	-	-	-
OPEB EXPENSE	-	-	-	-	-	-	-
TOTAL SALARY & BENEFIT	**-**	**-**	**-**	**-**	**-**	**-**	**-**
BOOKS & REF MATERIALS	-	-	-	-	-	-	-
POSTAGE	-	-	-	-	-	-	-
PRINTING/ SCANNING SERVICES	-	-	-	-	-	-	-
OFFICE SUPPLY	-	-	-	-	-	-	-
GENERAL SUPPLY							
MEMBERSHIPS & DUES	-	-	-	-	-	-	-
MAPPING SERVICES	-	-	-	-	-	-	-
ENGINEERING CONSULTANTS	-	-	-	-	-	-	-
DEVELOPER EXPENSES (NOT MCWD)	-	-	-	-	-	-	-
DEVELOPER EXPENSES - METERS	-	-	-	-	-	-	-
TOTAL DEPARTMENT EXPENSE	**-**	**-**	**-**	**-**	**-**	**-**	**-**
TOTAL EXPENSE	**-**	**-**	**-**	**-**	**-**	**-**	**-**

MARINA COAST WATER DISTRICT
ENG BUDGET FOR FY 2019-2020

ACCOUNT NAME	2016-2017 ACTUAL	2017-2018 ACTUAL	2018-2019 ADOPTED	TOTAL 2018-2019 ESTIMATED	2019-2020 PROPOSED	BUD vs BUD % CHANGE	BUD vs EST % CHANGE
WAGES - ENG	540,812	575,896	672,657	511,841	707,177	5.1%	38.2%
WAGES-ALLOCATED TO CAPITAL	(95,146)	(48,677)	(80,000)	(37,269)	(45,000)	-100.0%	-100.0%
WAGE/BENEFITS TO OTHER CC PROJ	-	-	-	-	-	-100.0%	-100.0%
OVERTIME	-	128	572	-	595	4.0%	100.0%
FICA - SS EXPENSE	29,707	31,280	38,046	25,346	41,034	7.9%	61.9%
FICA - MEDI EXPENSE	7,518	7,846	9,761	7,198	10,263	5.1%	42.6%
MEDICAL INSURANCE	88,237	82,831	139,752	75,840	126,901	-9.2%	67.3%
DENTAL INSURANCE	4,814	3,910	5,801	3,093	5,370	-7.4%	73.6%
VISION INSURANCE	1,020	1,100	1,239	989	1,238	-0.1%	25.2%
WORKERS COMP. INSURANCE	3,918	4,199	6,838	5,100	7,160	4.7%	40.4%
LIFE INSURANCE EXPENSE	2,072	2,170	2,523	2,230	2,635	4.4%	18.2%
BOOTS BENEFIT	368	197	1,000	1,000	1,000	0.0%	0.0%
SUI EXPENSE	1,432	1,008	1,386	1,386	1,386	0.0%	0.0%
ETT EXPENSE	49	42	42	39	44	4.8%	12.8%
DISABILITY PLAN	2,194	2,216	1,852	1,632	1,946	5.1%	19.2%
CALPERS RETIREMENT (ER) - Classic Plan	49,047	50,188	65,387	49,652	78,777	20.5%	58.7%
CALPERS RETIREMENT (EE) - Classic Plan	33,170	29,948	36,801	27,062	38,448	4.5%	42.1%
CALPERS-62 RETIREMENT (ER)	5,094	10,422	12,405	11,946	13,544	9.2%	13.4%
CALPERS-62 RETIREMENT (EE)	-	-	-	-	-	-	-
OPEB EXPENSE	27,642	-	36,800	32,000	-	-	-
TOTAL SALARY & BENEFIT	**702,262**	**754,703**	**953,462**	**719,084**	**993,118**	**4.2%**	**38.1%**
BOOKS & REF MATERIALS	-	129	300	-	-	-	-
POSTAGE	56	-	200	-	-	-	-
PRINTING/ SCANNING SERVICES	1,042	1,490	500	-	-	-	-
OFFICE SUPPLY	-	-	500	-	-	-	-
GENERAL SUPPLY	-	149	-	-	-	-	-
MEMBERSHIPS & DUES	1,248	1,263	1,000	-	-	-	-
MAPPING SERVICES	-	-	37,000	37,000	50,000	35.1%	35.1%
ENGINEERING CONSULTANTS	364,549	534,923	195,000	289,590	297,000	52.3%	2.6%
DEVELOPER EXPENSES (NOT MCWD)	491,264	434,928	418,000	375,001	378,700	-9.4%	1.0%
DEVELOPER EXPENSES - METERS	96,382	94,916	64,000	105,345	110,000	71.9%	4.4%
TOTAL DEPARTMENT EXPENSE	**954,542**	**1,067,797**	**716,500**	**806,936**	**835,700**	**16.6%**	**3.6%**
TOTAL EXPENSE	**1,656,803**	**1,822,500**	**1,669,962**	**1,526,020**	**1,828,818**	**9.5%**	**19.8%**

MARINA COAST WATER DISTRICT
WATER RESOURCES BUDGET FOR FY 2018-2019

ACCOUNT NAME	2016-2017 ACTUAL	2017-2018 ACTUAL	2018-2019 ADOPTED	MARINA WATER 2018-2019 ESTIMATED	2019-2020 PROPOSED	BUD vs BUD % CHANGE	BUD vs EST % CHANGE
WAGES - ENG	-	-	60,819	34,953	76,461	25.7%	118.8%
WAGES-ALLOCATED TO CAPITAL	-	-	-	-	-	-	-
OVERTIME	-	-	-	-	-	-	-
FICA - SS EXPENSE	-	-	3,771	2,013	4,741	25.7%	135.5%
FICA - MEDI EXPENSE	-	-	882	471	1,109	25.7%	135.5%
MEDICAL INSURANCE	-	-	14,927	6,357	20,859	39.7%	228.2%
DENTAL INSURANCE	-	-	578	217	855	47.9%	293.5%
VISION INSURANCE	-	-	116	54	157	35.3%	191.1%
WORKERS COMP. INSURANCE	-	-	544	350	683	25.6%	95.4%
LIFE INSURANCE EXPENSE	-	-	214	147	274	28.0%	86.6%
UNIFORM BENEFIT	-	-	80	-	80	0.0%	-
BOOTS BENEFIT	-	-	160	-	160	0.0%	-
SUI EXPENSE	-	-	185	-	185	0.0%	-
ETT EXPENSE	-	-	6	-	6	0.0%	-
DISABILITY PLAN	-	-	41	107	79	92.7%	-26.0%
CALPERS RETIREMENT (ER) - Classic Plan	-	-	6,404	5,264	7,643	19.3%	45.2%
CALPERS RETIREMENT (EE) - Classic Plan	-	-	3,604	2,602	3,748	4.0%	44.0%
CALPERS-62 RETIREMENT (ER)	-	-	869	-	1,846	112.4%	-
CALPERS-62 RETIREMENT (EE)	-	-	-	-	-	-	-
OPEB EXPENSE	-	-	-	-	-	-	-
TOTAL SALARY & BENEFIT	**-**	**-**	**93,200**	**52,533**	**118,886**	**27.6%**	**126.3%**
BOOKS & REFERNCE MATERIALS	-	-	200	200	2,000	900.0%	900.0%
MEMBERSHIPS & DUES	-	-	600	600	600	0.0%	0.0%
ENGINEERING CONSULTANTS	-	-	400,000	244,202	544,462	36.1%	123.0%
TOTAL DEPARTMENT EXPENSE	**-**	**-**	**400,800**	**245,002**	**547,062**	**36.5%**	**123.3%**
TOTAL EXPENSE	**-**	**-**	**494,000**	**297,535**	**665,948**	**34.8%**	**123.8%**

MARINA COAST WATER DISTRICT
WATER RESOURCES BUDGET FOR FY 2018-2019

ACCOUNT NAME	2016-2017 ACTUAL	2017-2018 ACTUAL	2018-2019 ADOPTED	ORD WATER 2018-2019 ESTIMATED	2019-2020 PROPOSED	BUD vs BUD % CHANGE	BUD vs EST % CHANGE
WAGES - ENG	-	-	91,228	64,912	114,692	25.7%	76.7%
WAGES-ALLOCATED TO CAPITAL	-	-	-	-	-	-	-
OVERTIME	-	-	-	-	-	-	-
FICA - SS EXPENSE	-	-	5,656	3,740	7,111	25.7%	90.2%
FICA - MEDI EXPENSE	-	-	1,323	875	1,663	25.7%	90.0%
MEDICAL INSURANCE	-	-	22,390	11,660	31,289	39.7%	168.4%
DENTAL INSURANCE	-	-	867	405	1,282	47.9%	216.7%
VISION INSURANCE	-	-	173	100	235	35.8%	135.8%
WORKERS COMP. INSURANCE	-	-	815	648	1,025	25.8%	58.2%
LIFE INSURANCE EXPENSE	-	-	322	272	410	27.3%	51.0%
UNIFORM BENEFIT	-	-	120	-	120	0.0%	-
BOOTS BENEFIT	-	-	240	-	240	0.0%	-
SUI EXPENSE	-	-	277	-	277	0.0%	-
ETT EXPENSE	-	-	8	-	8	0.0%	-
DISABILITY PLAN	-	-	61	198	118	93.4%	-40.3%
CALPERS RETIREMENT (ER) - Classic Plan	-	-	9,605	9,776	11,465	19.4%	17.3%
CALPERS RETIREMENT (EE) - Classic Plan	-	-	5,406	4,832	5,622	4.0%	16.4%
CALPERS-62 RETIREMENT (ER)	-	-	1,304	-	2,768	112.3%	-
CALPERS-62 RETIREMENT (EE)	-	-	-	-	-	-	-
OPEB EXPENSE	-	-	-	-	-	-	-
TOTAL SALARY & BENEFIT	**-**	**-**	**139,795**	**97,415**	**178,325**	**27.6%**	**83.1%**
BOOKS & REFERNCE MATERIALS	-	-	300	300	3,000	900.0%	900.0%
MEMBERSHIPS & DUES	-	-	900	900	900	0.0%	0.0%
ENGINEERING CONSULTANTS	-	-	600,000	366,302	816,694	36.1%	123.0%
TOTAL DEPARTMENT EXPENSE	**-**	**-**	**601,200**	**367,502**	**820,594**	**36.5%**	**123.3%**
TOTAL EXPENSE	**-**	**-**	**740,995**	**464,918**	**998,919**	**34.8%**	**114.9%**

MARINA COAST WATER DISTRICT
WATER RESOURCES BUDGET FOR FY 2018-2019

ACCOUNT NAME	2016-2017 ACTUAL	2017-2018 ACTUAL	2018-2019 ADOPTED	TOTAL 2018-2019 ESTIMATED	2019-2020 PROPOSED	BUD vs BUD % CHANGE	BUD vs EST % CHANGE
WAGES - ENG	-	-	152,047	99,864	191,153	25.7%	91.4%
WAGES-ALLOCATED TO CAPITAL	-	-	-	-	-	-	-
OVERTIME	-	-	-	-	-	-	-
FICA - SS EXPENSE	-	-	9,427	5,752	11,852	25.7%	106.0%
FICA - MEDI EXPENSE	-	-	2,205	1,346	2,772	25.7%	106.0%
MEDICAL INSURANCE	-	-	37,317	18,016	52,148	39.7%	189.5%
DENTAL INSURANCE	-	-	1,445	622	2,137	47.9%	243.5%
VISION INSURANCE	-	-	289	154	392	35.6%	155.2%
WORKERS COMP. INSURANCE	-	-	1,359	998	1,708	25.7%	71.2%
LIFE INSURANCE EXPENSE	-	-	536	418	684	27.6%	63.5%
UNIFORM BENEFIT	-	-	200	-	200		
BOOTS BENEFIT	-	-	400	-	400	0.0%	-
SUI EXPENSE	-	-	462	-	462	0.0%	-
ETT EXPENSE	-	-	14	-	14	0.0%	-
DISABILITY PLAN	-	-	102	304	197	93.1%	-35.3%
CALPERS RETIREMENT (ER) - Classic Plan	-	-	16,009	15,040	19,108	19.4%	27.0%
CALPERS RETIREMENT (EE) - Classic Plan	-	-	9,010	7,434	9,370	4.0%	26.0%
CALPERS-62 RETIREMENT (ER)	-	-	2,173	-	4,614	112.3%	-
CALPERS-62 RETIREMENT (EE)	-	-	-	-	-	-	-
OPEB EXPENSE	-	-	-	-	-	-	-
TOTAL SALARY & BENEFIT	**-**	**-**	**232,995**	**149,949**	**297,211**	**27.6%**	**98.2%**
	-	-	-	-	-		
BOOKS & REFERNCE MATERIALS	-	-	500	500	5,000	900.0%	900.0%
MEMBERSHIPS & DUES	-	-	1,500	1,500	1,500	0.0%	0.0%
ENGINEERING CONSULTANTS	-	-	1,000,000	610,504	1,361,156	36.1%	123.0%
TOTAL DEPARTMENT EXPENSE	**-**	**-**	**1,002,000**	**612,504**	**1,367,656**	**36.5%**	**123.3%**
TOTAL EXPENSE	**-**	**-**	**1,234,995**	**762,453**	**1,664,867**	**34.8%**	**118.4%**

MARINA COAST WATER DISTRICT
CAPTITALIZED EQUIPMENT BUDGET FOR FY 2019-2020

	MARINA WATER					MARINA SEWER				
ACCOUNT NAME	2016-2017 ACTUAL	2017-2018 ACTUAL	2018-2019 ADOPTED	2018-2019 ESTIMATED	2019-2020 PROPOSED	2016-2017 ACTUAL	2017-2018 ACTUAL	2018-2019 ADOPTED	2018-2019 ESTIMATED	2019-2020 PROPOSED
LABORATORY	-	-	-	-	-	-	-	-	-	-
NETWORK COMPUTER SYSTEM	721	2,500	11,750	-	7,360	194	700	3,290	-	1,920
VEHICLES	32,594	19,422	-	-	11,500	3,717	5,438	-	-	3,000
O&M EQUIPMENT	3,381	8,616	22,541	22,000	137,080	910	2,412	22,339	22,000	171,300
TOTAL EXPENSE	36,696	30,538	34,291	22,000	155,940	4,821	8,550	25,629	22,000	176,220

	ORD WATER					ORD SEWER				
ACCOUNT NAME	2016-2017 ACTUAL	2017-2018 ACTUAL	2018-2019 ADOPTED	2018-2019 ESTIMATED	2019-2020 PROPOSED	2016-2017 ACTUAL	2017-2018 ACTUAL	2018-2019 ADOPTED	2018-2019 ESTIMATED	2019-2020 PROPOSED
LABORATORY	-	-	-	-	-	-	-	-	-	-
NETWORK COMPUTER SYSTEM	1,499	5,400	25,380	-	18,240	361	1,400	6,580	-	4,480
VEHICLES	36,726	41,952	-	-	28,500	6,903	10,877	-	-	7,000
O&M EQUIPMENT	7,022	25,032	48,689	48,000	391,920	1,691	16,626	48,296	48,296	224,700
TOTAL EXPENSE	45,247	72,384	74,069	48,000	438,660	8,955	28,903	54,876	48,296	236,180

	TOTAL						
ACCOUNT NAME	2016-2017 ACTUAL	2017-2018 ACTUAL	2018-2019 ADOPTED	2018-2019 ESTIMATED	2019-2020 **PROPOSED**	BUD vs BUD %CHANGE	BUD vs EST % CHANGE
LABORATORY	-	-	-	-	-	0.0%	0.0%
NETWORK COMPUTER SYSTEM	2,775	10,000	47,000	-	32,000	-31.9%	0.0%
VEHICLES	79,940	77,689	-	-	50,000	0.0%	0.0%
O&M EQUIPMENT	13,004	52,686	141,865	140,296	925,000	552.0%	0.0%
TOTAL EXPENSE	95,719	140,375	188,865	140,296	1,007,000	433.2%	617.8%

Network Computer System		
Human Resource Software	12,000	
File/AD Controller Server Replacement	20,000	32,000
Vehicles		
Variance from Board Vehicle Replacement Policy @ $100,000/year		50,000
O&M Equipment		
(3) Hypo Tank Replacements	40,000	
East Garrison Double Wall Chemical Tank	20,000	
Vactor	480,000	
(2) Diesel Tank Replacements (Giggling & Booker)	30,000	
(5) Conductivity Analyzers (Wells 29,30,31,34,WG)	40,000	
(3) Standby Generators (2-Marina/1-Ord)	250,000	
Dump Truck	65,000	925,000
TOTAL		1,007,000

MARINA COAST WATER DISTRICT
CAPITAL IMPROVEMENT PROJECT BUDGET FOR FY 2019-2020

Project No.	Project Name		Amount
MW-0111	Beach Road Pipeline	existing	$ 494,815
MW-0302	Crescent Ave Connector to Reservoir 2	existing	$ 216,000
MS-0143	Replace Lift Station No. 6 (Crescent)	existing	$ 700,000
OW-0206	Inter-Garrison Road Pipeline Up-Sizing	East Garrison	$ 650,000
OW-0193	Imjin Parkway Pipeline, Resv. Rd to Abrams Dr	existing	$ 800,000
OW-0202	South Boundary Road Pipeline	DRO and Monterey	$ 2,660,000
OW-0306	D-Zone Booster Pump Replacement	existing	$ 80,000
OS-0147	Ord Village LS & Force Main Improvements	existing	$ 2,500,000
OS-0205	Imjin Lift Station Improvements - Phase 1	East Garrison and UCMBEST	$ 675,000
OS-0152	Hatten, Booker Neeson LS Improvements	existing	$ 525,000
GW-0112	A1 & A2 Zone Tanks& B/C Booster Station	Ord & Marina	$ 3,644,720
GW-0305	Calif. Ave & Imjin Pkwy Pipeline - Abrams to Marina Heights	Ord & Marina	$ 200,000
GW-0307	Intertie Meter Replacement	existing	$ 81,000
GS-0200	Odor Control Project	Ord & Marina	$ 120,000
WD-0106	Ord Remodel, Demolition and Rehab	existing - District Wide	$ 520,000
RW-0306	RUWAP - Imjin Pkwy Reservation Rd to Abrams Dr	FORA	$ 885,000
RW-0174	RUWAP - Distribution System	SRF	$ 11,239,582
RD-0101	Regional Desal		$ -
		Total:	**$ 25,991,117**

Summary by Cost Center

			Existing	Development/Other
01 - Marina Water		$ 2,111,625	$ 1,814,363	$ 297,262
02 - Marina Sewer		$ 778,400	$ 778,400	
03 - Ft Ord Water		$ 7,125,710	$ 1,826,982	$ 5,298,728
04 - Ft Ord Sewer		$ 3,850,800	$ 3,175,800	$ 675,000
05 - Recycled Water		$ 12,124,582		$ 12,124,582
	Total:	$ 25,991,117	$ 7,595,545	$ 18,395,572

Capital Improvement Project Sheet

Project:	**Beach Road Pipeline**
Project No:	**MW-0163**
Cost Center	**Marina Water**

Project Description

This project entails the construction of a new 12" parallel pvc pipeline in Beach Road from De Forest Road to Del Monte Blvd.

Project Justification

The pipeline is needed to improve reliability for existing fire flow deficiencies in Central Marina.

PROJECT COSTS:	**FY 18/19**	**FY 19/20**	**FY 20/21**	**FY 21/22**	**FY 21/22**	**FY 22/23**	**OUT YEARS**	**Total**
Cost Category / Phasing								
Planning								
External Services								0
Internal Services								0
Design								
External Services		70,000						70,000
Internal Services		14,815						14,815
Construction								
External Services	0	400,000						400,000
Internal Services	0	10,000						10,000
Property / Easement Acquisitions								
								0
Other Project Costs								
								0
Estimated Cost By Fiscal Year	**0**	**494,815**	**0**	**0**	**0**	**0**	**0**	**494,815**

Project Funding / Cost Centers	**G L Code**	**% Cost**	**FY 18/19**	**FY 19/20**	**FY 20/21**	**FY 21/22**	**FY 21/22**	**FY 22/23**	**OUT YEARS**	**Total**
01 - Marina Water		100%	0	494,815	0	0	0	0	0	494,815
03 - Ft Ord Water		0%	0	0	0	0	0	0	0	0
			0	0	0	0	0	0	0	
			0	0	0	0	0	0	0	0
			0	0	0	0	0	0	0	0
Funding By Fiscal Year			**0**	**494,815**	**0**	**0**	**0**	**0**	**0**	**494,815**

Estimated Project Expenditures for FY 19/20:		**Budget**	**Special Notes**
"Class "2" Cost Opinion: Estimated Range varies (-10%→+25%)"			
Project: Beach Road Pipeline			
1- Design & Planning Costs:			
	Internal Services : MCWD Staff time (Eng, O&M,Finances)	$ 14,815	Manage contract
	External Services: (Attorneys, Consultants)	$ 70,000	Design
Total Design & Planning Cost:		**$ 84,815**	
2- Construction & Installation Costs:			
	Internal Services : MCWD Staff time (Eng, O&M,Finances)	$ 10,000	Project/Construction Management
	External Services: (Contractors)	$ 400,000	Construction Contract(Labor/Material)
Total Construction & Installation Costs:		**$ 410,000**	
Property / Easement Acquisition: NA			

Capital Improvement Project Sheet

Project:	**Crescent Avenue Connector to Reservoir 2**
Project No:	**MW-0302**
Cost Center	**Marina Water**

Project Description

This project entails the construction of a new 12" pvc pipeline From Reservoir 2 to Crescent Avenue.

Project Justification

The pipeline is needed to improve reliability for existing fire flow deficiencies in Central Marina.

PROJECT COSTS:	**FY 18/19**	**FY 19/20**	**FY 20/21**	**FY 21/22**	**FY 21/22**	**FY 22/23**	**OUT YEARS**	**Total**
Cost Category / Phasing								
Planning								
External Services								0
Internal Services								0
Design								
External Services		40,000						40,000
Internal Services		6,000						6,000
Construction								
External Services	0	160,000						160,000
Internal Services	0	10,000						10,000
Property / Easement Acquisitions								
								0
Other Project Costs								
								0
Estimated Cost By Fiscal Year	**0**	**216,000**	**0**	**0**	**0**	**0**	**0**	**216,000**

Project Funding / Cost Centers	**G L Code**	**% Cost**	**FY 18/19**	**FY 19/20**	**FY 20/21**	**FY 21/22**	**FY 21/22**	**FY 22/23**	**OUT YEARS**	**Total**
01 - Marina Water		100%	0	216,000	0	0	0	0	0	216,000
03 - Ft Ord Water		0%	0	0	0	0	0	0	0	0
			0	0	0	0	0	0	0	
			0	0	0	0	0	0	0	0
			0	0	0	0	0	0	0	0
Funding By Fiscal Year			**0**	**216,000**	**0**	**0**	**0**	**0**	**0**	**216,000**

Estimated Project Expenditures for FY 19/20:				**Budget**		**Special Notes**				
"Class "3" Cost Opinion: Estimated Range varies (-20%→+35%)"										
Crescent Avenue Connector to Reservoir 2										
1- Design & Planning Costs:										
	Internal Services : MCWD Staff time (Eng, O&M,Finances)			$ 6,000		Manage contract				
	External Services: (Attorneys, Consultants)			$ 40,000		Design				
Total Design & Planning Cost:				**$ 46,000**						
2- Construction & Installation Costs:										
	Internal Services : MCWD Staff time (Eng, O&M,Finances)			$ 10,000		Project/Construction Management				
	External Services: (Contractors)			$ 160,000		Construction Contract(Labor/Material)				
Total Construction & Installation Costs:				**$ 170,000**						
Property / Easement Acquisition: NA										

Capital Improvement Project Sheet

Project:	**Replace Lift Station No. 6 (Crescent)**
Project No:	**MS-0143**
Cost Center	**Marina Sewer**

Project Description

Located on Crescent Drive in Central Marina, this project will replace the current sanitary sewer lift station (LS) with a concrete below-grade wet-well/dual submersible pump/valve vault LS facility.
A back-up generator, new electrical service, and electrical code up-grades are included to ensure reliable service.

Project Justification

This project is needed because the existing LS is beyond its' useful life. In order to maintain operation, the facility requires frequent attention and and specially trained personnel to enter (confined space).
Replacement of this facility will result in lower operational expenses.

PROJECT COSTS:	**FY 18/19**	**FY 19/20**	**FY 20/21**	**FY 21/22**	**FY 21/22**	**FY 22/23**	**OUT YEARS**	**Total**
Cost Category / Phasing								
Planning								
External Services								0
Internal Services		2,000						2,000
Design								
External Services		80,000						80,000
Internal Services		8,000						8,000
Construction								
External Services	0	600,000						600,000
Internal Services	0	10,000						10,000
Property / Easement Acquisitions								
								0
Other Project Costs								
								0
Estimated Cost By Fiscal Year	**0**	**700,000**	**0**	**0**	**0**	**0**	**0**	**700,000**

Project Funding / Cost Centers	**G L Code**	**% Cost**	**FY 18/19**	**FY 19/20**	**FY 20/21**	**FY 21/22**	**FY 21/22**	**FY 22/23**	**OUT YEARS**	**Total**
02 - Marina Sewer		100%	0	700,000	0	0	0	0	0	700,000
04 - Ft Ord Sewer		0%	0	0	0	0	0	0	0	0
			0	0	0	0	0	0	0	
			0	0	0	0	0	0	0	0
			0	0	0	0	0	0	0	0
Funding By Fiscal Year			**0**	**700,000**	**0**	**0**	**0**	**0**	**0**	**700,000**

Estimated Project Expenditures for FY 19/20:		**Budget**	**Special Notes**
"Class "2" Cost Opinion: Estimated Range varies (-10%→+25%)"			
Replace Lift Station Number 6 (Crescent)			
1- Design & Planning Costs:			
	Internal Services : MCWD Staff time (Eng, O&M,Finances)	$ 10,000	Manage contract
	External Services: (Attorneys, Consultants)	$ 80,000	Design
Total Design & Planning Cost:		**$ 90,000**	
2- Construction & Installation Costs:			
	Internal Services : MCWD Staff time (Eng, O&M,Finances)	$ 10,000	Project/Construction Management
	External Services: (Contractors)	$ 600,000	Construction Contract(Labor/Material)
Total Construction & Installation Costs:		**$ 610,000**	
Property / Easement Acquisition: NA			

Capital Improvement Project Sheet

Project:	**Inter-Garrison Road Pipeline Up-Sizing**
Project No:	**OW-0206**
Cost Center	**Ord Community Water**

Project Description

This project entails the construction of approximately 1700-LF of 18-inch potable water pipeline in InterGarrison Road between Abrahms Drive and East Garrison to replace the existing 12-inch main. This will allow the District to meet commercial zone fire flows in East Garrison prior to building a B-Zone reservoir.

Project Justification

The East Garrison Developer has completed construction of the Phase 3 infrastructure and is building homes in the area. Commercial development will begin this fiscal year.

PROJECT COSTS:	**FY 18/19**	**FY 19/20**	**FY 20/21**	**FY 21/22**	**FY 21/22**	**FY 22/23**	**OUT YEARS**	**Total**
Cost Category / Phasing								
Planning								
External Services								0
Internal Services								0
Design								
External Services	45,000							45,000
Internal Services	5,000							5,000
Construction								
External Services		635,000						635,000
Internal Services		15,000						15,000
Property / Easement Acquisitions								
								0
Other Project Costs								
								0
Estimated Cost By Fiscal Year	**50,000**	**650,000**	**0**	**0**	**0**	**0**	**0**	**700,000**

Project Funding / Cost Centers	**G L Code**	**% Cost**	**FY 18/19**	**FY 19/20**	**FY 20/21**	**FY 21/22**	**FY 21/22**	**FY 22/23**	**OUT YEARS**	**Total**
01 - Marina Water		0%	0	0	0	0	0	0	0	0
03 - Ft Ord Water		100%	51,000	650,000	0	0	0	0	0	701,000
			0	0	0	0	0	0	0	
			0	0	0	0	0	0	0	0
			0	0	0	0	0	0	0	0
Funding By Fiscal Year			**51,000**	**650,000**	**0**	**0**	**0**	**0**	**0**	**701,000**

Estimated Project Expenditures for FY 19/20:		**Budget**		**Special Notes**
"Class "2" Cost Opinion: Estimated Range varies (-10%→+25%)"				
Project: Inter-Garrison Road Pipeline Up-sizing				
1- Design & Planning Costs:				
	Internal Services : MCWD Staff time (Eng, O&M,Finances)	$ -		Manage contract
	External Services: (Attorneys, Consultants)	$ -		Design
Total Design & Planning Cost:		**$ -**		
2- Construction & Installation Costs:				
	Internal Services : MCWD Staff time (Eng, O&M,Finances)	$ 15,000		Const. Mgt
	External Services: (Contractors)	$ 635,000		Construction
Total Construction & Installation Costs:		**$ 650,000**		
Property / Easement Acquisition: In ROW				

Capital Improvement Project Sheet

Project:	**Imjin Parkway Pipeline, Reservation Rd to Abrams Drive**
Project No:	**OW-0193**
Cost Center	**Ord Community Water**

Project Description

This project entails the construction of approximately 2,800-LF of 12-inch PVC potable water pipeline in Imjin Parkway to improve connectivity within the B-Zone.

Project Justification

This project is sequenced to coincide with the City of Marina Project to widen Imjin Parkway.

PROJECT COSTS:	**FY 18/19**	**FY 19/20**	**FY 20/21**	**FY 21/22**	**FY 21/22**	**FY 22/23**	**OUT YEARS**	**Total**
Cost Category / Phasing								
Planning								
External Services								0
Internal Services								0
Design								
External Services	46,000							46,000
Internal Services	5,000							5,000
Construction								
External Services		780,000						780,000
Internal Services		20,000						20,000
Property / Easement Acquisitions								
								0
Other Project Costs								
								0
Estimated Cost By Fiscal Year	**51,000**	**800,000**	**0**	**0**	**0**	**0**	**0**	**851,000**

Project Funding / Cost Centers	**G L Code**	**% Cost**	**FY 18/19**	**FY 19/20**	**FY 20/21**	**FY 21/22**	**FY 21/22**	**FY 22/23**	**OUT YEARS**	**Total**
01 - Marina Water		0%	0	0	0	0	0	0	0	0
03 - Ft Ord Water		100%	51,000	800,000	0	0	0	0	0	851,000
			0	0	0	0	0	0	0	
			0	0	0	0	0	0	0	0
			0	0	0	0	0	0	0	0
Funding By Fiscal Year			**51,000**	**800,000**	**0**	**0**	**0**	**0**	**0**	**851,000**

Estimated Project Expenditures for FY 19/20:		**Budget**	**Special Notes**
"Class "2" Cost Opinion: Estimated Range varies (-10%→+25%)"			
Project: Imjin Parkway Pipeline, Reservation Rd to Abrams Drive			
1- Design & Planning Costs:			
	Internal Services : MCWD Staff time (Eng, O&M,Finances)	$ -	Manage contract
	External Services: (Attorneys, Consultants)	$ -	Design
Total Design & Planning Cost:		**$ -**	
2- Construction & Installation Costs:			
	Internal Services : MCWD Staff time (Eng, O&M,Finances)	$ 20,000	Const. Mgt
	External Services: (Contractors)	$ 780,000	Construction
Total Construction & Installation Costs:		**$ 800,000**	
Property / Easement Acquisition: In ROW			

Capital Improvement Project Sheet

Project:	**South Boundary Road Pipeline**
Project No:	**OW-0202**
Cost Center	**Ord Community Water**

Project Description

This project entails the construction of approximately 7,300-LF of 24-inch potable water pipeline in South Boundary Road to serve Del Rey Oaks and Monterey.

Project Justification

This project is sequenced to coincide with the FORA project to widen South Boundary Road.

PROJECT COSTS:	FY 18/19	FY 19/20	FY 20/21	FY 21/22	FY 21/22	FY 22/23	OUT YEARS	Total
Cost Category / Phasing								
Planning								
External Services	37,000							37,000
Internal Services	3,000							3,000
Design								
External Services		150,000						150,000
Internal Services		10,000						10,000
Construction								
External Services		2,460,000						2,460,000
Internal Services		40,000						40,000
Property / Easement Acquisitions								
								0
Other Project Costs								
								0
Estimated Cost By Fiscal Year	**40,000**	**2,660,000**	**0**	**0**	**0**	**0**	**0**	**2,700,000**

Project Funding / Cost Centers	G L Code	% Cost	FY 18/19	FY 19/20	FY 20/21	FY 21/22	FY 21/22	FY 22/23	OUT YEARS	Total
01 - Marina Water		0%	0	0	0	0	0	0	0	0
03 - Ft Ord Water		100%	40,000	2,660,000	0	0	0	0	0	2,700,000
			0	0	0	0	0	0	0	
			0	0	0	0	0	0	0	0
			0	0	0	0	0	0	0	0
Funding By Fiscal Year			**40,000**	**2,660,000**	**0**	**0**	**0**	**0**	**0**	**2,700,000**

Estimated Project Expenditures for FY 19/20:	**Budget**		**Special Notes**
"Class "4" Cost Opinion: Estimated Range varies (-30%→+50%)"			
Project: South Boundary Road Pipeline			
1- Design & Planning Costs:			
Internal Services : MCWD Staff time (Eng, O&M,Finances)	$	10,000	Coordinate contracts
External Services: (Attorneys, Consultants)	$	150,000	Contract with roadway designer
Total Design & Planning Cost:	**$**	**160,000**	
2- Construction & Installation Costs:			
Internal Services : MCWD Staff time (Eng, O&M,Finances)	$	40,000	Const. Mgt
External Services: (Contractors)	$	2,460,000	Construction
Total Construction & Installation Costs:	**$**	**2,500,000**	
Property / Easement Acquisition: FORA ROW			

Capital Improvement Project Sheet

Project:	**D-Zone Booster Pump Replacement**
Project No:	**OW-0306**
Cost Center	**Ord Community Water**

Project Description

Replace one undersized D-Zone booster pump with a larger pump, new motor and motor control center.

Project Justification

Currently one of the D-Zone pumps is undersized and near the end of its usefule life. Replacing it with a larger pump and motor will also extend the life of the other existing pump.
The motor control center is also in need of replacement.

PROJECT COSTS:	FY 18/19	FY 19/20	FY 20/21	FY 21/22	FY 21/22	FY 22/23	OUT YEARS	Total
Cost Category / Phasing								
Planning								
External Services								0
Internal Services								0
Design								
External Services								0
Internal Services		0						0
Construction								
External Services		65,000						65,000
Internal Services		15,000						15,000
Property / Easement Acquisitions								
								0
Other Project Costs								
								0
Estimated Cost By Fiscal Year	**0**	**80,000**	**0**	**0**	**0**	**0**	**0**	**80,000**

Project Funding / Cost Centers	G L Code	% Cost	FY 18/19	FY 19/20	FY 20/21	FY 21/22	FY 21/22	FY 22/23	OUT YEARS	Total
01 - Marina Water		0%	0	0	0	0	0	0	0	0
03 - Ft Ord Water		100%	0	80,000	0	0	0	0	0	80,000
			0	0	0	0	0	0	0	
			0	0	0	0	0	0	0	0
			0	0	0	0	0	0	0	0
Funding By Fiscal Year			**0**	**80,000**	**0**	**0**	**0**	**0**	**0**	**80,000**

Estimated Project Expenditures for FY 19/20:		**Budget**		**Special Notes**
"Class "2" Cost Opinion: Estimated Range varies (-10%→+25%)"				
Project: D-Zone Booster Pump Replacement				
1- Design & Planning Costs:				
	Internal Services : MCWD Staff time (Eng, O&M,Finances)	$ -		Coordinate contracts
	External Services: (Attorneys, Consultants)	$ -		Contract with roadway designer
Total Design & Planning Cost:		**$ -**		
2- Construction & Installation Costs:				
	Internal Services : MCWD Staff time (Eng, O&M,Finances)	$ 15,000		Const. Mgt
	External Services: (Contractors)	$ 65,000		Construction
Total Construction & Installation Costs:		**$ 80,000**		
Property / Easement Acquisition: Existing Easement				

Capital Improvement Project Sheet

Project:	**Ord Village LS & Force Main Improvements**
Project Number:	**OS-0147**
Cost Center:	**Ord Community Sewer**

Project Description

This project includes reconstructing a the force main in a new alignment and relocating the existing lift station to a location east of Highway 1.

Project Justification:

The exisiting lift station & force main has burst many times causing spills and necessitating point repairs. The existing lift station, located west of Highway 1 use to be on Army controlled land that was transferred to the CA State Parks and is now considered environmentally sensitive land. Additionally, relocating the lift station will eliminate two Highway 1 pipeline crossings.
The existing pumps were replaced with Flygt pumps in 2016.

PROJECT COSTS:	FY 18/19	FY 19/20	FY 20/21	FY 21/22	FY 21/22	FY 22/23	OUT YEARS	Total
Cost Category / Phasing								
Planning								
External Services	5,000	22,000						27,000
Internal Services	1,000	1,000						2,000
Design								
External Services	37,000	193,000						230,000
Internal Services	2,000	14,000						16,000
Construction								
External Services		2,240,000	0					2,240,000
Internal Services		30,000	0					30,000
Property / Easement Acquisitions								
								0
Other Project Costs								
								0
Estimated Cost By Fiscal Year	**45,000**	**2,500,000**	**0**	**0**	**0**	**0**	**0**	**2,545,000**

Project Funding / Cost Centers	G L Code	% Cost	FY 18/19	FY 19/20	FY 20/21	FY 21/22	FY 21/22	FY 22/23	OUT YEARS	Total
02 - Marina Sewer		0%	0	0	0	0	0	0	0	0
04 - Ft Ord Sewer		100%	45,000	2,500,000	0	0	0	0	0	2,545,000
			0	0	0	0	0	0	0	
			0	0	0	0	0	0	0	0
			0	0	0	0	0	0	0	0
Funding By Fiscal Year			**45,000**	**2,500,000**	**0**	**0**	**0**	**0**	**0**	**2,545,000**

Estimated Project Expenditures for FY 19/20:		**Budget**	**Special Notes**
"Class "4" Cost Opinion: Estimated Range varies (-30%→+50%)"			
Project: Ord Village LS & Force Main Improvements			
1- Design & Planning Costs:			
	Internal Services : MCWD Staff time (Eng, O&M,Finances)	$ 15,000	Coordinate Contracts and permitting
	External Services: (Attorneys, Consultants)	$ 215,000	Design, environmental clearance and easements
Total Design & Planning Cost:		**$ 230,000**	
2- Construction & Installation Costs:			
	Internal Services : MCWD Staff time (Eng, O&M,Finances)	$ 30,000	Project/Construction Management
	External Services: (Contractors)	$ 2,240,000	Construction Contract, Management, Testing and Inspection
Total Construction & Installation Costs:		**$ 2,270,000**	
Property / Easement Acquisition: Lift Station Easement from City of Seaside			

Capital Improvement Project Sheet

Project:	**Imjin LS & Force Main Improvements - Phase I**
Project Number:	**OS-0205**
Cost Center:	**Ord Community Sewer**

Project Description

The first phase of this project includes constructing another wetwell, installing two Flygt pumps with all accessories and appurtenances and space to add a third pump.
The second Phase will be to install the third pump and replace the forcemain in conjunction with the Imjin Road widening project.

Project Justification:

The exisitng lift station and forcemain can't handle all the anticipated wastewater flows from East Garrison, UCMBEST, Marina Airport, Existing Marina lift Station as was stated in the Ord Community Wastewater Master Plan; the project will be split into two phases and is necessary to accommodate near to long term future development

PROJECT COSTS:	FY 18/19	FY 19/20	FY 20/21	FY 21/22	FY 21/22	FY 22/23	OUT YEARS	Total
Cost Category / Phasing								
Planning								
External Services								**0**
Internal Services								**0**
Design								
External Services	36,000	4,000						**40,000**
Internal Services	4,000	1,000						**5,000**
Construction								
External Services		640,000						**640,000**
Internal Services		30,000						**30,000**
Property Easement / Acquisitions								**0**
Other Project Costs								**0**
Estimated Cost By Fiscal Year	**40,000**	**675,000**	**0**	**0**	**0**	**0**	**0**	**715,000**

Project Funding / Cost Centers	G L CODE	% Cost	FY 18/19	FY 19/20	FY 20/21	FY 21/22	FY 21/22	FY 22/23	OUT YEARS	Total
02 - Marina Sewer		0%	0	0	0	0	0	0	0	0
04 - Ft Ord Sewer		100%	40,000	675,000	0	0	0	0	0	715,000
			0	0	0	0	0	0	0	0
			0	0	0	0	0	0	0	0
			0	0	0	0	0	0	0	0
Funding By Fiscal Year			**40,000**	**675,000**	**0**	**0**	**0**	**0**	**0**	**715,000**

		Budget	Special Notes
Estimated Project Expenditures for FY 19/20:		**Budget**	**Special Notes**
"Class "2" Cost Opinion: Estimated Range varies (-10%→+25%)"			
Project: Imjin LS & Force Main Improvements - Phase I			
1- Design & Planning Costs:			
	Internal Services : MCWD Staff time (Eng, O&M,Finances)	$ 1,000	Master plan integration, scope, conceptual design
	External Services: (Attorneys, Consultants)	$ 4,000	commencing design/ plans preparation
Total Design & Planning Cost:		**$ 5,000**	
2- Construction & Installation Costs:			
	Internal Services : MCWD Staff time (Eng, O&M,Finances)	$ 30,000	Project/Construction Management
	External Services: (Contractors)	$ 640,000	Construction Contract(Labor/Material)
Total Construction & Installation Costs:		**$ 670,000**	
Property / Easement Acquisition:			

Capital Improvement Project Sheet

Project:	**Hatten, Booker, Neeson LS Improvements**
Project Number:	**OS-0152**
Cost Center:	**Ord Community Sewer**

Project Description
Replacement of Hatten, Booker and Neeson wastewater lift stations.
Hatten and Neeson Lift Stations will be replaced in 2018/19. Booker will be addressed in later years.

Project Justification:
The existing lift stations are reaching the end of their service life. Capacity increases are not required.

PROJECT COSTS:	**FY 18/19**	**FY 19/20**	**FY 20/21**	**FY 21/22**	**FY 21/22**	**FY 22/23**	**OUT YEARS**	**Total**
Cost Category / Phasing								
Planning								
External Services								**0**
Internal Services								**0**
Design								
External Services		50,000					30,000	**80,000**
Internal Services		5,000					3,000	**8,000**
Construction								
External Services		460,000					362,000	**822,000**
Internal Services		10,000					5,000	**15,000**
Property Easement / Acquisitions								**0**
Other Project Costs								**0**
Estimated Cost By Fiscal Year	**0**	**525,000**	**0**	**0**	**0**	**0**	**400,000**	**925,000**

Project Funding / Cost Centers	**G L CODE**	**% Cost**	**FY 18/19**	**FY 19/20**	**FY 20/21**	**FY 21/22**	**FY 21/22**	**FY 22/23**	**OUT YEARS**	**Total**
02 - Marina Sewer		0%	0	0	0	0	0	0	0	0
04 - Ft Ord Sewer		100%	0	525,000	0	0	0	0	400,000	925,000
			0	0	0	0	0	0	0	0
			0	0	0	0	0	0	0	0
			0	0	0	0	0	0	0	0
Funding By Fiscal Year			**0**	**525,000**	**0**	**0**	**0**	**0**	**400,000**	**925,000**

Estimated Project Expenditures for FY 19/20:		Budget	Special Notes
"Class "2" Cost Opinion: Estimated Range varies (-10%→+25%)"			
Project: Hatten, Booker, Neeson LS Improvements			
1- Design & Planning Costs:			
	External Services: (Attorneys, Consultants)	$ 50,000	Design Plans & Specs
Total Design & Planning Cost:		**$ 55,000**	
2- Construction & Installation Costs:			
	Internal Services : MCWD Staff time (Eng, O&M,Finances)	$ 10,000	Project/Construction Management/Inspection
	External Services: (Contractors)	$ 460,000	Construction Contract(Labor/Material)
Total Construction & Installation Costs:		**$ 470,000**	
Property / Easement Acquisition: NA			

Capital Improvement Project

Project:	**A1 & A2 Zone Tanks & B/C Booster Station**
Project Number:	**GW-0112**
Cost Center:	**Ord Community Water; Marina Water**

Project Description

Two A-Zone storage tanks with a total usable storage capacity of 3.2 Million Gallons, B-Zone and C-Zone Booster Pump Station, and associated piping and facilities. The project location is on the CSUMB main campus northwest of the interesection of Inter-Garrison Rd and 6th Ave. CSUMB will require architectural treatments not to exceed 10% of the cost of the tanks and buildings. Tank construction is assumed to be steel. A prestressed concrete tank would entail a 33% increase in cost.

Project Justification

The District has minimal "A" Zone storage capacity. The A1/A2 Zone Tanks are to provide operational, fire, and emergency water storage for Zone A in the Ord Community and Central Marina.
The B and C booster pumps will pump water from the A zone tanks to Zones B and C. The facilities currently serving these functions are over sixty years old and are approaching the end of their useful life.

PROJECT COSTS:	**FY 18/19**	**FY 19/20**	**FY 20/21**	**FY 21/22**	**FY 21/22**	**FY 22/23**	**OUT YEARS**	**Total**
Cost Category / Phasing								
Planning								
External Services	36,000	125,000						**161,000**
Internal Services	4,000	14,000						**18,000**
Design								
External Services		250,720	30,000	30,000				**310,720**
Internal Services		25,000	5,000	10,000				**40,000**
Construction								
External Services		3,200,000	3,200,000	3,300,000				**9,700,000**
Internal Services		30,000	30,000	30,000				**90,000**
Property Easement / Acquisitions								**0**
Property rights have been paid for through a settelment agreement with CSUMB								
Other Project Costs								**0**
Estimated Cost By Fiscal Year	**40,000**	**3,644,720**	**3,265,000**	**3,370,000**	**0**	**0**	**0**	**10,319,720**

Project Funding / Cost Centers	**G L CODE**	**% Cost**	**FY 18/19**	**FY 19/20**	**FY 20/21**	**FY 21/22**	**FY 21/22**	**FY 22/23**	**OUT YEARS**	**Total**
01 - Marina Water		32%	12,800	1,166,310	1,044,800	1,078,400	0	0	0	3,302,310
02 - Marina Sewer		0%	0	0	0	0	0	0	0	0
03 - Ft Ord Water		68%	27,200	2,478,410	2,220,200	2,291,600	0	0	0	7,017,410
04 - Ft Ord Sewer		0%	0	0	0	0	0	0	0	0
			0	0	0	0	0	0	0	0
Funding By Fiscal Year			**40,000**	**3,644,720**	**3,265,000**	**3,370,000**	**0**	**0**	**0**	**10,319,720**

Estimated Project Expenditures for FY 19/20:				Budget		Special Notes
"Class "4" Cost Opinion: Estimated Range varies (-30%→+50%)"						
A1 & A2 Zone Tanks & B/C Booster Pump Station						
1- Design Planning Costs:						
	Internal Services: MCWD Staff Time (Eng. O&M, Fi			**$ 4,000**	$ 39,000	Civil Design, Architecture & Permitting
	External Services: (Attorney, Consultants)			**$ 36,000**	$ 375,720	Survey & Mapping, CEQA & Civil Design
Total Design and Planning Cost:				**$ 40,000**	**$ 414,720**	
2- Construction & Installation Costs:						
	Internal Services: MCWD Staff Time (Eng. O&M, Fi			**$ -**	$ 30,000	Construction Award, Management & Oversight
	External Services: (Contractors)			**$ -**	$ 3,200,000	Construction Contract (Equipment, Materials & Labor)
Total Construction and Installation Cost				**$ -**	**$ 3,230,000**	
Property / Easement Acquisition		**CSUMB**				

Capital Improvement Project

Project:	**California Avenue and Imjin Pkwy Pipeline - Abrams Dr to Marina Heights Dr**
Project Number:	**GW-0305**
Cost Center:	**Ord Community Water; Marina Water**

Project Description

This project entails the construction of approximately 2,550 feet of 24" diameter pipeline in Imjin Parkway and California Avenue from Abrams Drive to Marina-Heights Drive.

Project Justification

This project identified in the Marina Heights Master Plan will reroute A zone transmission around the Sand Tank and existing B/C booster pump station to feed the new A1/A2 tanks and new B and C booster pumps that will serve the B and C pressure zones.

PROJECT COSTS:	FY 18/19	FY 19/20	FY 20/21	FY 21/22	FY 21/22	FY 22/23	OUT YEARS	Total
Cost Category / Phasing								
Planning								
External Services		20,000						**20,000**
Internal Services		2,000						**2,000**
Design								
External Services		168,000	18,000					**186,000**
Internal Services		10,000	2,000					**12,000**
Construction								
External Services			2,140,000					**2,140,000**
Internal Services			40,000					**40,000**
Property Easement / Acquisitions								**0**
Property rights have been paid for through a settelment agreement with CSUMB								
Other Project Costs								**0**
Estimated Cost By Fiscal Year	**0**	**200,000**	**2,200,000**	**0**	**0**	**0**	**0**	**2,400,000**

Project Funding / Cost Centers	G L CODE	% Cost	FY 18/19	FY 19/20	FY 20/21	FY 21/22	FY 21/22	FY 22/23	OUT YEARS	Total
01 - Marina Water		32%	0	64,000	704,000	0	0	0	0	768,000
02 - Marina Sewer		0%	0	0	0	0	0	0	0	0
03 - Ft Ord Water		68%	0	136,000	1,496,000	0	0	0	0	1,632,000
04 - Ft Ord Sewer		0%	0	0	0	0	0	0	0	0
			0	0	0	0	0	0	0	0
Funding By Fiscal Year			**0**	**200,000**	**2,200,000**	**0**	**0**	**0**	**0**	**2,400,000**

Estimated Project Expenditures for FY 19/20:			**Budget**		**Special Notes**	
"Class "4" Cost Opinion: Estimated Range varies (-30%→+50%)"						
Project: California Avenue and Imjin Parkway Pipeline - Abrams Dr to Marina-Heights Drive						
1- Design Planning Costs:						
	Internal Services: MCWD Staff Time (Eng. O&M, Fi		$ -	$ 12,000	Civil Design & Permitting	
	External Services: (Attorney, Consultants)		$ -	$ 188,000	Survey & Mapping, CEQA & Civil Design	
Total Design and Planning Cost:			**$ -**	**$ 200,000**		
2- Construction & Installation Costs:						
	Internal Services: MCWD Staff Time (Eng. O&M, Fi		$ -	$ -	Construction Award, Management & Oversight	
	External Services: (Contractors)		$ -	$ -	Construction Contract (Equipment, Materials & Labor)	
Total Construction and Installation Cost			**$ -**	**$ -**		
Property / Easement Acquisition	**CSUMB**					

Capital Improvement Project

Project:	**Intertie Meter Replacement**
Project Number:	**GW-0307**
Cost Center:	**Ord Community Water; Marina Water**

Project Description

Replace the existing propeller meters with new Mag Meters and modbus

Project Justification

Replacement of the existing propeller meters with nes mag meters will allow totalizer information to be collected by SCADA

PROJECT COSTS:	FY 18/19	FY 19/20	FY 20/21	FY 21/22	FY 21/22	FY 22/23	OUT YEARS	Total
Cost Category / Phasing								
Planning								
External Services								**0**
Internal Services								**0**
Design								
External Services								**0**
Internal Services								**0**
Construction								
External Services		66,000						**66,000**
Internal Services		15,000						**15,000**
Property Easement / Acquisitions								**0**
Property rights have been paid for through a settelment agreement with CSUMB								
Other Project Costs								**0**
Estimated Cost By Fiscal Year	**0**	**81,000**	**0**	**0**	**0**	**0**	**0**	**81,000**

Project Funding / Cost Centers	G L CODE	% Cost	FY 18/19	FY 19/20	FY 20/21	FY 21/22	FY 21/22	FY 22/23	OUT YEARS	Total
01 - Marina Water		50%	0	40,500	0	0	0	0	0	40,500
02 - Marina Sewer		0%	0	0	0	0	0	0	0	0
03 - Ft Ord Water		50%	0	40,500	0	0	0	0	0	40,500
04 - Ft Ord Sewer		0%	0	0	0	0	0	0	0	0
			0	0	0	0	0	0	0	0
Funding By Fiscal Year			**0**	**81,000**	**0**	**0**	**0**	**0**	**0**	**81,000**

Estimated Project Expenditures for FY 19/20:				**Budget**		**Special Notes**					
"Class "2" Cost Opinion: Estimated Range varies (-10%→+25%)"											
Project: Intertie Meter Replacement											
1- Design Planning Costs:											
	Internal Services: MCWD Staff Time (Eng. O&M, Fi			$ -	$ -	Civil Design & Permitting					
	External Services: (Attorney, Consultants)			$ -	$ -	Survey & Mapping, CEQA & Civil Design					
Total Design and Planning Cost:				**$ -**	**$ -**						
2- Construction & Installation Costs:											
	Internal Services: MCWD Staff Time (Eng. O&M, Fi			$ -	$ 15,000	Construction Award, Management & Oversight					
	External Services: (Contractors)			$ -	$ 66,000	Construction Contract (Equipment, Materials & Labor)					
Total Construction and Installation Cost				**$ -**	**$ 81,000**						
Property / Easement Acquisition		**CSUMB**									

Capital Improvement Project

Project:	**Odor Control Project**
Project Number:	**GS-0200**
Cost Center:	**Ord Community Water; Marina Water**

Project Description

Installation of an odor control system to reduce or eliminate offensive odors eminating from lift stations.

Project Justification

Lift Stations can emit nauseous odors including methane, ammonia and hydrogen sulfide. Installation of an odor control system can reduce or eliminate the offensive odors.

PROJECT COSTS:	FY 18/19	FY 19/20	FY 20/21	FY 21/22	FY 21/22	FY 22/23	OUT YEARS	Total
Cost Category / Phasing								
Planning								
External Services								**0**
Internal Services								**0**
Design								
External Services		18,000						**18,000**
Internal Services		1,000						**1,000**
Construction								
External Services		95,000						**95,000**
Internal Services		6,000						**6,000**
Property Easement / Acquisitions								**0**
Property rights have been paid for through a settelment agreement with CSUMB								
Other Project Costs								**0**
Estimated Cost By Fiscal Year	**0**	**120,000**	**0**	**0**	**0**	**0**	**0**	**120,000**

Project Funding / Cost Centers	G L CODE	% Cost	FY 18/19	FY 19/20	FY 20/21	FY 21/22	FY 21/22	FY 22/23	OUT YEARS	Total
01 - Marina Water		0%	0	0	0	0	0	0	0	0
02 - Marina Sewer		35%	0	42,000	0	0	0	0	0	42,000
03 - Ft Ord Water		0%	0	0	0	0	0	0	0	0
04 - Ft Ord Sewer		65%	0	78,000	0	0	0	0	0	78,000
			0	0	0	0	0	0	0	0
Funding By Fiscal Year			**0**	**120,000**	**0**	**0**	**0**	**0**	**0**	**120,000**

Estimated Project Expenditures for FY 19/20:			**Budget**		**Special Notes**
"Class "4" Cost Opinion: Estimated Range varies (-30%→+50%)"					
Project: Odor Control Project					
1- Design Planning Costs:					
	Internal Services: MCWD Staff Time (Eng. O&M, Fi		$ -	$ 1,000	Civil Design & Permitting
	External Services: (Attorney, Consultants)		$ -	$ 18,000	Survey & Mapping, CEQA & Civil Design
Total Design and Planning Cost:			**$ -**	**$ 19,000**	
2- Construction & Installation Costs:					
	Internal Services: MCWD Staff Time (Eng. O&M, Fi		$ -	$ 6,000	Construction Award, Management & Oversight
	External Services: (Contractors)		$ -	$ 95,000	Construction Contract (Equipment, Materials & Labor)
Total Construction and Installation Cost			**$ -**	**$ 101,000**	
Property / Easement Acquisition	**CSUMB**				

Capital Improvement Project

Project:	**Corporation Yard Demolition and Rehab**
Project Number:	**WD - 0106**
Cost Center:	**Water District Wide**

Project Description

This project includes demolishing 2 buildings, installing a storage building and remodeling the Ord office for technology and work space.

Project Justification

Equipment stored outside exposed to the elements deteriorates and rusts long before the useful life

PROJECT COSTS:	**FY 18/19**	**FY 19/20**	**FY 20/21**	**FY 21/22**	**FY 21/22**	**FY 22/23**	**OUT YEARS**	**Total**
Cost Category / Phasing								
Planning								
External Services								**0**
Internal Services								**0**
Design								
External Services		50,000		40,000	265,000			**355,000**
Internal Services		10,000		10,000	25,000			**45,000**
Construction								
External Services	22,000	450,000		440,000	2,670,000		2,000,000	**5,582,000**
Internal Services	2,000	10,000		10,000	40,000			**62,000**
Property Easement / Acquisitions								**0**
Other Project Costs								**0**
Estimated Cost By Fiscal Year	**24,000**	**520,000**	**0**	**500,000**	**3,000,000**	**0**	**2,000,000**	**6,044,000**

Project Funding / Cost Centers	**G L CODE**	**% Cost**	**FY 18/19**	**FY 19/20**	**FY 20/21**	**FY 21/22**	**FY 21/22**	**FY 22/23**	**OUT YEARS**	**Total**
01 - Marina Water		25%	6,000	130,000	0	125,000	750,000	0	500,000	1,511,000
02 - Marina Sewer		7%	1,680	36,400	0	35,000	210,000	0	140,000	423,080
03 - Ft Ord Water		54%	12,960	280,800	0	270,000	1,620,000	0	1,080,000	3,263,760
04 - Ft Ord Sewer		14%	3,360	72,800	0	70,000	420,000	0	280,000	846,160
			0	0	0	0	0	0	0	0
Funding By Fiscal Year			**24,000**	**520,000**	**0**	**500,000**	**3,000,000**	**0**	**2,000,000**	**6,044,000**

Estimated Project Expenditures for FY 19/20:		Budget		Special Notes
"Class "4" Cost Opinion: Estimated Range varies (-30%→+50%)"				
Project: Corporation Yard Demolition and Rehab				
1- Design Planning Costs:				
	Internal Services: MCWD Staff Time (Eng. O&M, Fi	$ -	$ 10,000	Design
	External Services: (Attorney, Consultants)	$ -	$ 50,000	Architectural Design and Permitting
Total Design and Planning Cost:		**$ -**	**$ 60,000**	
2- Construction & Installation Costs:				
	Internal Services: MCWD Staff Time (Eng. O&M, Fi	**$ 2,000**	$ 10,000	Construction Award, Management & Oversight
	External Services: (Contractors)	**$ 22,000**	$ 450,000	Abatement & Construction (Eqiupment, Materials & Labor)
Total Construction and Installation Cost		**$ 24,000**	**$ 460,000**	
Property / Easement Acquisition				**None**

Capital Improvement Project Sheet

Project:	**Recycled Urban Water Augmentation Project - Imjin Parkway from Reservation Rd. to Abrams Dr.**
Project No:	**RW-0306**
Cost Center:	**Recycled Water**

Project Description

This project entails the construction of approximately 2,800 LF of 12-inch PVC recycled water pipeline in Imjin Parkway .

Project Justification

This project is sequenced to coincide with the City of Marina Project to widen Imjin Parkway.

PROJECT COSTS:	**FY 18/19**	**FY 19/20**	**FY 20/21**	**FY 21/22**	**FY 21/22**	**FY 22/23**	**OUT YEARS**	**Total**
Cost Category / Phasing								
Planning								
External Services								**0**
Internal Services								**0**
Design								
External Services		40,000						**40,000**
Internal Services		5,000						**5,000**
Construction								
External Services		810,000						**810,000**
Internal Services		30,000						**30,000**
Property Easement / Acquisitions								**0**
Other Project Costs								**0**
Estimated Cost By Fiscal Year	**0**	**885,000**	**0**	**0**	**0**	**0**	**0**	**885,000**

Project Funding / Cost Centers	**G L CODE**	**% Cost**	**FY 18/19**	**FY 19/20**	**FY 20/21**	**FY 21/22**	**FY 21/22**	**FY 22/23**	**OUT YEARS**	**Total**
05 - Recycled Water		100%	0	885,000	0	0	0	0	0	885,000
			0	0	0	0	0	0	0	
			0	0	0	0	0	0	0	
Funding By Fiscal Year			**0**	**885,000**	**0**	**0**	**0**	**0**	**0**	**885,000**

Estimated Project Expenditures for FY 19/20:		Budget	Special Notes
"Class "2" Cost Opinion: Estimated Range varies (-10%→+25%)"			
Project: Recycled Trunk Main and Booster, MRWPCA to Normandy			
1- Design & Planning Costs:			
	Internal Services : MCWD Staff time (Eng, O&M,Finances)	$ 5,000	Design Review/coordination
	External Services: (Attorneys, Consultants)	$ 40,000	Design updates-possible rerouting.
Total Design & Planning Cost:		**$ 45,000**	
2- Construction & Installation Costs:			
	Internal Services : MCWD Staff time (Eng, O&M,Finances)	$ 30,000	Permitting, Construction Award, Coordination & Oversight
	External Services: (Contractors)	$ 810,000	Construction (Equipment, Materials and Labor), Const. Management & Environmental
Total Construction & Installation Costs:		**$ 840,000**	
Property / Easement Acquisition:		**Pending CSUMB**	

Capital Improvement Project Sheet

Project:	**Recycled Urban Water Augmentation Project - Distribution System**
Project No:	**RW-0174**
Cost Center:	**Recycled Water**

Project Description
This project is for completing the Recycled Water distribution laterals off of the transmission main at Coe Ave., Ninth Ave, Abrams Dr., Imjin Rd., Reservation Rd. Carmel Ave., and Beach Rd. To tie in existing irrigation systems ready for recycled water.

Project Justification
The design and construction needs to be completed in order to implement Recycled Water as a water source to meet the needs of MCWDs' customers and to augment the current groundwater supply source for FORA.

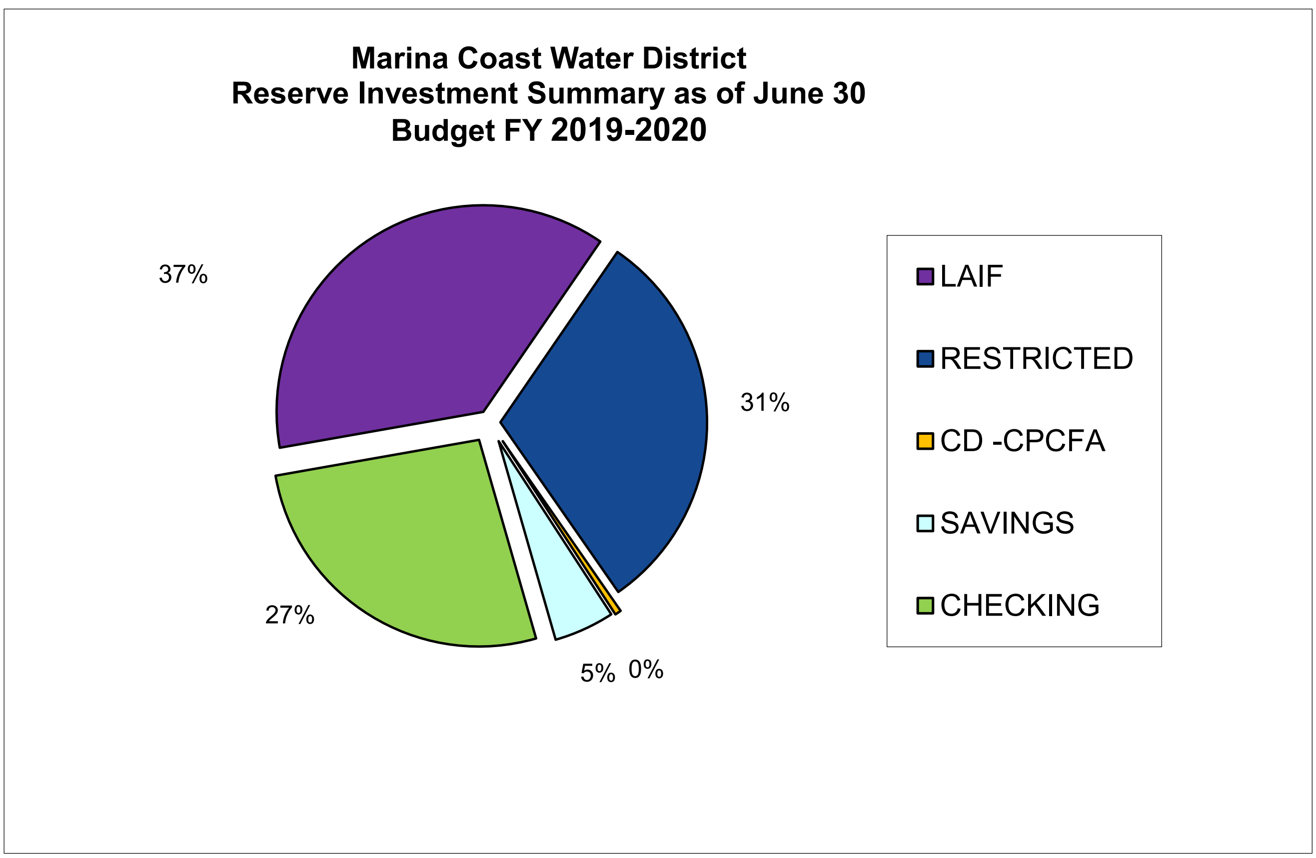
PROJECT COSTS:	FY 18/19	FY 19/20	FY 20/21	FY 21/22	FY 21/22	FY 22/23	OUT YEARS	Total
Cost Category / Phasing								
Planning								
External Services								**0**
Internal Services								**0**
Design								
External Services	190,000	210,000						**400,000**
Internal Services	10,000	10,000						**20,000**
Construction								
External Services		11,000,000						**11,000,000**
Internal Services		19,582						**19,582**
Property Easement / Acquisitions								**0**
Other Project Costs								**0**
Estimated Cost By Fiscal Year	**200,000**	**11,239,582**	**0**	**0**	**0**	**0**	**0**	**11,439,582**

Project Funding / Cost Centers	G L CODE	% Cost	FY 18/19	FY 19/20	FY 20/21	FY 21/22	FY 21/22	FY 22/23	OUT YEARS	Total
05 - Recycled Water		100%	200,000	11,239,582	0	0	0	0	0	11,439,582
			0	0	0	0	0	0	0	
			0	0	0	0	0	0	0	
Funding By Fiscal Year			**200,000**	**11,239,582**	**0**	**0**	**0**	**0**	**0**	**11,439,582**

Estimated Project Expenditures for FY 19/20:		**Budget**	**Special Notes**
"Class "3" Cost Opinion: Estimated Range varies (-20%→+35%)"			
Project: Recycled Urban Water Augmentation Project - Distribution System			
1- Design & Planning Costs:			
	Internal Services : MCWD Staff time (Eng, O&M,Finances)	$ 10,000	Design Review/coordination
	External Services: (Attorneys, Consultants)	$ 210,000	Complete Design
Total Design & Planning Cost:		**$ 220,000**	
2- Construction & Installation Costs:			
	Internal Services : MCWD Staff time (Eng, O&M,Finances)	$ 19,582	Construction Award, Management & Oversight
	External Services: (Contractors)	$ 11,000,000	Construction (Equipment, Materials and Labor), Const. Management & Environmental
Total Construction & Installation Costs:		**$ 11,019,582**	
Property / Easement Acquisition:		**Yet to be determined, pending negotations.**	

MARINA COAST WATER DISTRICT
DISTRICT INVESTMENTS
BUDGET FY 2019-2020

BANK		BALANCE AS OF 12/31/2018 AMOUNT	PROJECTED BALANCE AS OF 6/30/2019 AMOUNT
LOCAL AGENCY INVESTMENT FUND (LAIF)		$ 7,689,190	$ 7,699,185
MARINA CAPITAL REPL RESERVE FUND	1,290,009		
MARINA CAPACITY FEE	684,401		
MARINA GENERAL RESERVE	1,863,429		
ORD COMMUNITY CAPITAL REPL RESERVE FUND	71,781		
ORD COMMUNITY CAPACITY FEE	3,679,258		
ORD COMMUNITY GENERAL RESERVE	100,312		
RABOBANK N.A.			
RESTRICTED FUNDS		6,330,051	6,338,280
MARINA CAPACITY FEES	558,356		
ORD CAPACITY FEES	5,771,695		
CERTIFICATE OF DEPOSIT - CPCFA		100,356	100,370
SAVINGS ACCOUNT		973,357	974,622
CHECKING ACCOUNT		5,468,058	5,497,069
TOTAL - DISTRICT INVESTMENT		$ 20,561,012	$ 20,609,526



MARINA COAST WATER DISTRICT
RESERVE DETAIL
PROJECTED FOR JUNE 30, 2018

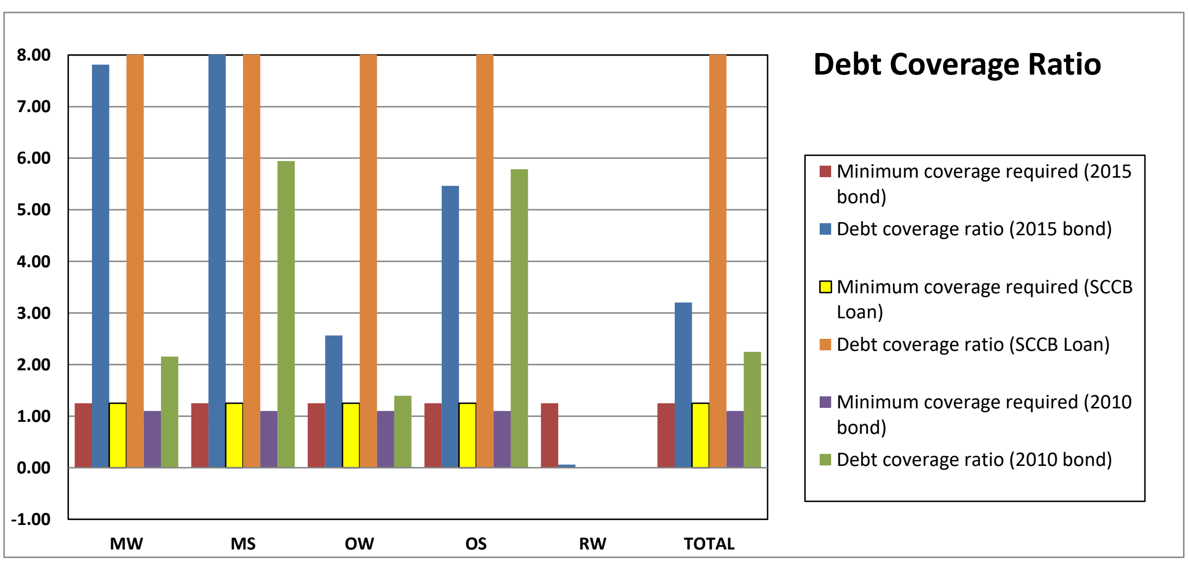
	Description	MW	MS	OW	OS	RUWAP	RDP	TOTAL
1	**Debt Reserve Fund***							
2	Debt Reserve Fund (2010 Bond)*	237,866	67,961	424,740	118,933	-	-	849,500
3	Final 2010 Bond Payment	(237,866)	(67,961)	(424,740)	(118,933)	-	-	(849,500)
4	CPCFA*						100,370	100,370
5	**Total Debt Reserve Fund***	-	-	-	-	-	100,370	100,370
6	**Capital Reserve Fund**	-	-	-	-	-	-	-
6	**Capacity Charge/Capital Surcharge Fund****	1,146,806	113,363	10,136,272	2,667,154	-	-	14,063,595
7	**Capital Replacement & Improvement Fund****	1,289,718	1,968	70,183	1,691	-	-	1,363,560
8	**Administrative Reserve Fund**	50,000	50,000	50,000	50,000	-	-	200,000
9	**Operating Reserve Fund**	1,370,737	324,769	2,065,418	1,121,078	-	-	4,882,001
10	**Total Projected Reserve at 06-30-2019**	**3,857,261**	**490,100**	**12,321,873**	**3,839,922**	**-**	**100,370**	**20,609,526**
11	**FY 2018-2019 Capital Reserve Fund**							
12	Beginning Balance	-	-	-	-	-	-	-
13	Proposed transfers from operations - [A]	-	-	-	-	-	-	-
14	Proposed transfers to operations - [B]	-	-	-	-	-	-	-
15	Proposed Capital Costs	-	-	-	-	-	-	-
16	Due to/(Due From) Interfund Transfers	-	-	-	-	-	-	-
17	**Proposed Ending Balance as of 06-30-2020**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
18	**FY 2018-2019 Capacity Charge/Capital Surcharge Fund**							
19	Beginning Balance	1,146,806	113,363	10,136,272	2,667,154	-	-	14,063,595
20	Proposed Capacity Fees/Capital Surcharges [C]	329,233	225,075	1,579,439	566,895		-	2,700,642
21	Proposed Capital Costs [D]	(297,262)	-	(5,298,728)	(675,000)	-	-	(6,270,990)
22	Annual Debt Service Share [E]	-	-	(442,633)	(277,095)	(586,949)	-	(1,306,677)
23	Intrafund Transfers					315,418		315,418
24	Due to/(Due From) Interfund Transfers	-	-	(271,531)	-	271,531	-	-
25	**Proposed Ending Balance as of 06-30-2020**	**1,178,777**	**338,438**	**5,702,820**	**2,281,953**	**-**	**-**	**9,501,988**
	FY 2018-2019 Capital Replacement & Improvement Fund							
26	Beginning Balance	1,289,718	1,968	70,183	1,691	-	-	1,363,560
27	Proposed transfers from operations per Board Policy	200,000	100,000	200,000	100,000	-	-	600,000
28	Proposed transfers from operations - [A]	-	-	-	-	-	-	-
29	Proposed transfers to operations - [B]	-	-	-	-	-	-	-
30	Proposed Capacity Fees/Capital Surcharges [C]	87,518	59,830	419,851	150,693		-	717,892
31	Proposed Capital Costs [D]	(1,970,303)	(954,620)	(2,265,642)	(3,411,980)	-	-	(8,602,545)
31	New Debt Proceeds [F]	2,000,000	955,000	2,150,000	3,500,000			8,605,000
32	Intrafund Transfers	-	-	-	-	-	-	-
33	Due to/(Due From) Interfund Transfers	-	-	-	-	-	-	-
34	**Proposed Ending Balance as of 06-30-2020**	**1,606,933**	**162,178**	**574,392**	**340,404**	**-**	**-**	**2,683,907**
35	**FY 2018-2019 Administrative Reserve Fund**	**50,000**	**50,000**	**50,000**	**50,000**	**-**	**-**	**200,000**
36	**FY 2018-2019 Operating Reserve**							
37	Beginning operating reserve	1,370,737	324,769	2,065,418	1,121,078	-	-	4,882,001
38	Proposed transfers from operations - [A]	368,977	464,018	147,752	1,050,720	315,418	-	2,346,885
39	Proposed transfers to operations - [B]	-	-	-	-	-	-	-
40	Intrafund Transfers	-	-	-	-	(315,418)	-	(315,418)
41	Due to/(Due From) Interfund Transfers		-	-	-	-	-	-
42	**Proposed Ending Balance as of 06-30-2020**	**1,739,714**	**788,787**	**2,213,170**	**2,171,798**	**-**	**-**	**6,913,468**
43	6 mths avg operating expenses required by Board***	1,849,111	414,681	4,447,599	1,017,600	-	-	7,728,991
44	**Operating Reserve Balance over/(under) per Board Policy as of 06-30-2020**	**(109,397)**	**374,106**	**(2,234,430)**	**1,154,197**	**-**	**-**	**(815,523)**
45	**TOTAL PROPOSED ENDING RESERVE BALANCE AS OF 06-30-2020**	**4,575,423**	**1,339,403**	**8,540,382**	**4,844,155**	**-**	**-**	**19,299,363**
46	***Transfer (From)/To Reserves A+B+C +D+E+F Net***	***280,297***	***681,342***	***(4,134,700)***	***785,300***	***(271,531)***	***-***	***(2,659,293)***
	* Held by external Agencies							
	** Restricted to only capital spending							
	***Per Board Policy							
	Operating Expenses plus Interest & Bond Amortization	3,698,222	829,362	8,895,199	2,035,200	389,654	-	15,847,637

MARINA COAST WATER DISTRICT
DEBT SERVICE
BUDGET FY 2019-2020

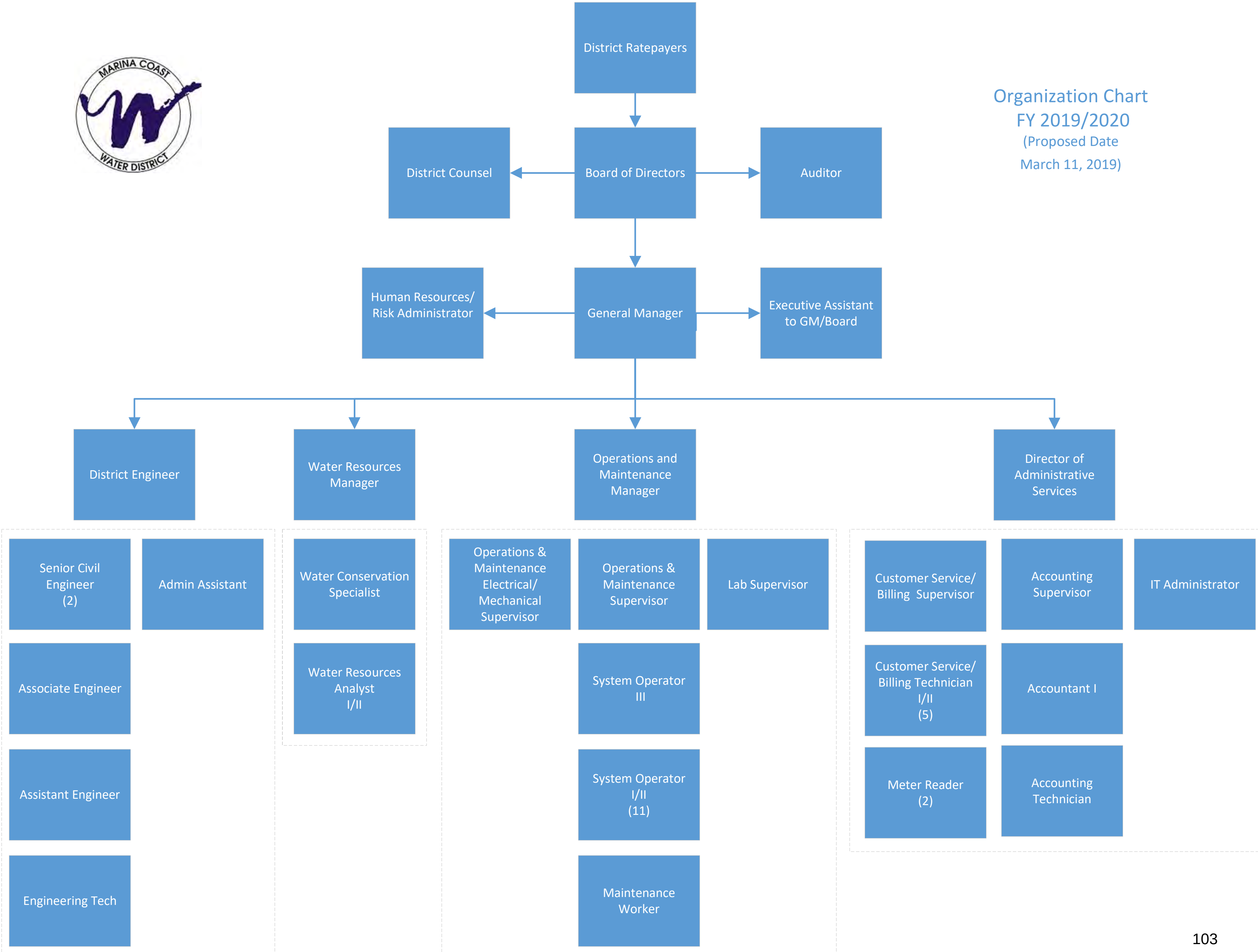
DESCRIPTION	PRINCIPAL AMOUNT	LOAN DATE	FINAL PAYMENT	REMAINING PRINCIPAL	PRINCIPAL AMOUNT	TOTAL
2010 SERIES BOND	8,495,000	12/23/2010	6/1/2020	1,735,000	1,735,000	-
2015 SERIES A BOND	29,840,000	7/15/2015	6/1/2037	27,045,000	995,000	26,050,000
SANTA CRUZ COUNTY BANK LOAN	2,799,880	1/20/2017	1/20/2037	2,640,374	86,797	2,553,577
CURRENT LOAN				31,420,374	2,816,797	28,603,577

MARINA COAST WATER DISTRICT
DEBT SERVICE COVERAGE
BUDGET FY 2019-2020

	MW	MS	OW	OS	RW	RP	TOTAL
GROSS REVENUES							
Water sales	$ 4,095,244	$ -	$ 7,649,670	$ -	$ -	$ -	$ 11,744,914
Sewer sales	-	1,441,786	-	2,963,074	-	-	4,404,861
Other water sales	-	-	9,756		-	-	9,756
Capacity/capital fee	416,750	284,905	1,999,290	717,588	-	-	3,418,533
Interest revenue	60,566	26,540	84,500	25,085	200	-	196,891
Other revenue	212,518	25,135	894,767	62,946	31,355	-	1,226,721
Grant revenue	153,132	-	303,758	-	-	-	456,890
Revenue adjustment	-	-	-	-			-
Total gross revenues	$ 4,938,210	$ 1,778,366	$ 10,941,741	$ 3,768,694	$ 31,555	$ -	$ 21,458,566
OPEARTING EXPENSES							
Salaries	1,664,244	544,930	3,671,883	992,910	-	-	6,873,967
Dept. expenses	1,867,727	202,891	4,017,715	632,961	1,200	-	6,722,494
Franchise & admin fees	-	-	485,864	175,700	-	-	661,564
Expense adjustment	-	-	-	-			-
Total operating expenses	3,531,971	747,821	8,175,462	1,801,571	1,200	-	14,258,025
Net available revenues	1,406,239	1,030,546	2,766,280	1,967,122	30,355	-	7,200,541
2015 BOND COVERAGE REQUIREMENT - SENIOR DEBT							
Debt service (principal)	79,600	49,750	477,600	159,200	228,850	-	995,000
Debt service (interest)	100,332	62,708	601,992	200,664	288,454	-	1,254,150
Debt coverage ratio (2015 bond)	7.82	9.16	2.56	5.47	0.06	0.00	3.20
Minimum coverage required (2015 bond)	1.25	1.25	1.25	1.25	1.25	0.00	1.25
SANTA CRUZ COUNTY BANK LOAN COVERAGE REQUIREMENT - SENIOR DEBT							
Debt service (principal)	24,303	6,944	43,399	12,152	-	-	86,797
Debt service (interest)	41,583	11,881	74,256	20,792			148,512
2015 Debt service + 1.25 covenant	224,915	140,573	1,349,490	449,830	646,630	-	2,811,438
Net revenues available for SCCB Loan	1,181,324	889,973	1,416,790	1,517,292	(616,275)	-	4,389,104
Debt coverage ratio (SCCB Loan)	17.93	47.28	12.04	46.06	0.00	0.00	18.65
Minimum coverage required (SCCB Loan)	1.25	1.25	1.25	1.25	-	-	1.25
2010 BOND COVERAGE REQUIREMENT - SUBORDINATE DEBT							
Debt service (principal)	485,800	138,800	867,500	242,900	-	-	1,735,000
Debt service (interest)	24,290	6,940	43,375	12,145	-	-	86,750
Senior Debt service + 1.25 covenant	307,273	164,103	1,496,558	491,009	646,630	-	3,105,574
Net revenues available for 2010 bond	1,098,966	866,442	1,269,722	1,476,113	(616,275)		4,094,967
Debt coverage ratio (2010 bond)	2.15	5.95	1.39	5.79	0.00	0.00	2.25
Minimum coverage required (2010 bond)	1.10	1.10	1.10	1.10	0.00	0.00	1.10



Organization Chart
FY 2019/2020
(Proposed Date
March 11, 2019)



Marina Coast Water District
Authorized and Proposed Staff Positions and Salary Range Schedule
For FY 2019-2020

Job Title	Department	Authorized Position(s)	Funded Position(s)	Approved Salary Range
Authorized & Funded				
General Manager	Administration	1	1	Contract
Director of Administrative Services	Administration	1	1	Range T41
Human Reources/Risk Administrator	Administration	1	1	Range U32
Executive Assistant to GM/Board	Administration	1	1	Range T21
IT Administrator	Administration	1	1	RangeT29
Accounting Supervisor	Administration	1	1	Range 31
Accountant I	Administration	1	1	Range 17
Accounting Technician	Administration	1	1	Range 13
Customer Service/Billing Supervisor	Administration	1	1	Range 28
Customer Service/Billing Technician II	Administration	4	4	Range 10
Customer Service/Billing Technician I	Administration	0	1	Range 6
Meter Reader	Administration	2	2	Range 8
Water Conservation Specialist III	Conservation	1	1	Range 23
District Engineer	Engineering	1	1	Range T44
Senior Civil Engineer	Engineering	1	1	Range T33
Associate Engineer	Engineering	1	2	Range T29
Assistant Engineer	Engineering	1	1	Range 21
Administrative Assistant	Engineering	1	1	Range 14
Lab Supervisor	Laboratory	1	1	Range 29
O&M Manager	Oper & Maint	1	1	Range T37
O&M Supervisor	Oper & Maint	1	1	Range 30
Electrical/Mechanical Field Supervisor	Oper & Maint	1	1	Range 30
System Operator III	Oper & Maint	1	1	Range 23
System Operator II	Oper & Maint	8	8	Range 19
System Operator I	Oper & Maint	3	3	Range 15
Maintenance Worker	Oper & Maint	1	1	Range 8
Water Resources Manager	Water Resources	1	1	Range T34
Water Resources Analyst I/II	Water Resources	1	1	Range 10
	Total Authorized & Funded	40	42	
Authorized but not Funded				
Accountant II	Administration	1	0	Range 27
District Counsel	Administration	1	0	Range U49
Director of Finance	Administration	1	0	Range T27
Management Services Administrator	Administration	1	0	Range U34
HR/Customer Relations Manager	Administration	1	0	Range U37
Water Conservation Coordinator	Conservation	1	0	Range T20
Deputy General Manager/District Engineer	Engineering	1	0	Range U49
Project Manager	Engineering	1	0	Range T31
Engineering Technician	Engineering	1	0	Range 14
Water Quality Manager	Laboratory	1	0	Range T27
	Total Authorized but not Funded	9	0	
Total Positions		49	42	

Percentage between Ranges = 2.5%
Percentage between Steps = 5.0%

Marina Coast Water District - Unrepresented (Exempt)
Management Classification and Salary Schedule for FY2019/2020

CLASSIFICATION	RANGE	STEP 1	STEP 2	STEP 3	STEP 4	STEP 5	STEP 6
							7/1/19
HR/Risk Administrator	U32	99,677.69782	104,661.58271	109,894.66185	115,389.39494	121,158.86468	127,216.80792
		8,306.47482	8,721.79856	9,157.88849	9,615.78291	10,096.57206	10,601.40066
		3,833.75761	4,025.44549	4,226.71776	4,438.05365	4,659.95633	4,892.95415
		47.92197	50.31807	52.83397	55.47567	58.24945	61.16193
	U33	102,169.64026	107,278.12228	112,642.02839	118,274.12981	124,187.83630	130,397.22812
		8,514.13669	8,939.84352	9,386.83570	9,856.17748	10,348.98636	10,866.43568
		3,929.60155	4,126.08163	4,332.38571	4,549.00499	4,776.45524	5,015.27800
		49.12002	51.57602	54.15482	56.86256	59.70569	62.69098
	U34	104,723.88127	109,960.07533	115,458.07910	121,230.98306	127,292.53221	133,657.15882
		8,726.99011	9,163.33961	9,621.50659	10,102.58192	10,607.71102	11,138.09657
		4,027.84159	4,229.23367	4,440.69535	4,662.73012	4,895.86662	5,140.65995
		50.34802	52.86542	55.50869	58.28413	61.19833	64.25825
	U35	107,341.97830	112,709.07722	118,344.53108	124,261.75763	130,474.84551	136,998.58779
		8,945.16486	9,392.42310	9,862.04426	10,355.14647	10,872.90379	11,416.54898
		4,128.53763	4,334.96451	4,551.71273	4,779.29837	5,018.26329	5,269.17645
		51.60672	54.18706	56.89641	59.74123	62.72829	65.86471
	U36	110,025.52776	115,526.80415	121,303.14436	127,368.30157	133,736.71665	140,423.55248
		9,168.79398	9,627.23368	10,108.59536	10,614.02513	11,144.72639	11,701.96271
		4,231.75107	4,443.33862	4,665.50555	4,898.78083	5,143.71987	5,400.90586
		52.89689	55.54173	58.31882	61.23476	64.29650	67.51132
	U37	112,776.16595	118,414.97425	124,335.72296	130,552.50911	137,080.13457	143,934.14130
		9,398.01383	9,867.91452	10,361.31025	10,879.37576	11,423.34455	11,994.51177
		4,337.54484	4,554.42209	4,782.14319	5,021.25035	5,272.31287	5,535.92851
		54.21931	56.93028	59.77679	62.76563	65.90391	69.19911
	U38	115,595.57010	121,375.34861	127,444.11604	133,816.32184	140,507.13793	147,532.49483
		9,632.96418	10,114.61238	10,620.34300	11,151.36015	11,708.92816	12,294.37457
		4,445.98347	4,668.28264	4,901.69677	5,146.78161	5,404.12069	5,674.32672
		55.57479	58.35353	61.27121	64.33477	67.55151	70.92908
	U39	118,485.45936	124,409.73232	130,630.21894	137,161.72989	144,019.81638	151,220.80720
		9,873.78828	10,367.47769	10,885.85158	11,430.14416	12,001.65137	12,601.73393
		4,557.13305	4,784.98970	5,024.23919	5,275.45115	5,539.22371	5,816.18489
		56.96416	59.81237	62.80299	65.94314	69.24030	72.70231
	U40	121,447.59584	127,519.97563	133,895.97441	140,590.77313	147,620.31179	155,001.32738
		10,120.63299	10,626.66464	11,157.99787	11,715.89776	12,301.69265	12,916.77728
		4,671.06138	4,904.61445	5,149.84517	5,407.33743	5,677.70430	5,961.58951
		58.38827	61.30768	64.37306	67.59172	70.97130	74.51987

Percentage between Ranges = 2.5%
Percentage between Steps = 5.0%

Marina Coast Water District - Unrepresented (Exempt)
Management Classification and Salary Schedule for FY2019/2020

CLASSIFICATION	RANGE	STEP 1	STEP 2	STEP 3	STEP 4	STEP 5	7/1/19 STEP 6
	U41	124,483.78574	130,707.97502	137,243.37377	144,105.54246	151,310.81959	158,876.36056
		10,373.64881	10,892.33125	11,436.94781	12,008.79521	12,609.23497	13,239.69671
		4,787.83791	5,027.22981	5,278.59130	5,542.52086	5,819.64691	6,110.62925
		59.84797	62.84037	65.98239	69.28151	72.74559	76.38287
	U42	127,595.88038	133,975.67440	140,674.45812	147,708.18102	155,093.59007	162,848.26958
		10,632.99003	11,164.63953	11,722.87151	12,309.01509	12,924.46584	13,570.68913
		4,907.53386	5,152.91055	5,410.55608	5,681.08389	5,965.13808	6,263.39498
		61.34417	64.41138	67.63195	71.01355	74.56423	78.29244
	U43	130,785.77739	137,325.06626	144,191.31957	151,400.88555	158,970.92983	166,919.47632
		10,898.81478	11,443.75552	12,015.94330	12,616.74046	13,247.57749	13,909.95636
		5,030.22221	5,281.73332	5,545.81998	5,823.11098	6,114.26653	6,419.97986
		62.87778	66.02167	69.32275	72.78889	76.42833	80.24975
	U44	134,055.42182	140,758.19291	147,796.10256	155,185.90769	162,945.20307	171,092.46323
		11,171.28515	11,729.84941	12,316.34188	12,932.15897	13,578.76692	14,257.70527
		5,155.97776	5,413.77665	5,684.46548	5,968.68876	6,267.12320	6,580.47935
		64.44972	67.67221	71.05582	74.60861	78.33904	82.25599
	U45	137,406.80737	144,277.14774	151,491.00512	159,065.55538	167,018.83315	175,369.77481
		11,450.56728	12,023.09564	12,624.25043	13,255.46295	13,918.23610	14,614.14790
		5,284.87721	5,549.12107	5,826.57712	6,117.90598	6,423.80127	6,744.99134
		66.06097	69.36401	72.83221	76.47382	80.29752	84.31239
	U46	140,841.97755	147,884.07643	155,278.28025	163,042.19426	171,194.30398	179,754.01918
		11,736.83146	12,323.67304	12,939.85669	13,586.84952	14,266.19200	14,979.50160
		5,416.99914	5,687.84909	5,972.24155	6,270.85363	6,584.39631	6,913.61612
		67.71249	71.09811	74.65302	78.38567	82.30495	86.42020
	U47	144,363.02699	151,581.17834	159,160.23726	167,118.24912	175,474.16158	184,247.86966
		12,030.25225	12,631.76486	13,263.35310	13,926.52076	14,622.84680	15,353.98914
		5,552.42412	5,830.04532	6,121.54759	6,427.62497	6,749.00621	7,086.45653
		69.40530	72.87557	76.51934	80.34531	84.36258	88.58071
	U48	147,972.10267	155,370.70780	163,139.24319	171,296.20535	179,861.01562	188,854.06640
		12,331.00856	12,947.55898	13,594.93693	14,274.68378	14,988.41797	15,737.83887
		5,691.23472	5,975.79645	6,274.58628	6,588.31559	6,917.73137	7,263.61794
		71.14043	74.69746	78.43233	82.35394	86.47164	90.79522
Deputy GM/DE	U49	151,671.40523	159,254.97549	167,217.72427	175,578.61048	184,357.54101	193,575.41806
(Unfilled)		12,639.28377	13,271.24796	13,934.81036	14,631.55087	15,363.12842	16,131.28484

Percentage between Ranges = 2.5%
Percentage between Steps = 5.0%

Marina Coast Water District Teamsters Unit (Management & Confidential) - Classification and Salary Schedule for FY2019/2020

CLASSIFICATION	RANGE	STEP 1	STEP 2	STEP 3	STEP 4	STEP 5	STEP 6
							7/1/2019
Conservation Coordinator	T20	76,710.19271	80,545.70235	84,572.98747	88,801.63684	93,241.71868	97,903.80462
(Vacant)		6,392.51606	6,712.14186	7,047.74896	7,400.13640	7,770.14322	8,158.65038
		2,950.39203	3,097.91163	3,252.80721	3,415.44757	3,586.21995	3,765.53095
		36.87990	38.72390	40.66009	42.69309	44.82775	47.06914
Executive Assistant to GM/	T21	78,627.94753	82,559.34491	86,687.31215	91,021.67776	95,572.76165	100,351.39973
Board		6,552.32896	6,879.94541	7,223.94268	7,585.13981	7,964.39680	8,362.61664
		3,024.15183	3,175.35942	3,334.12739	3,500.83376	3,675.87545	3,859.66922
		37.80190	39.69199	41.67659	43.76042	45.94844	48.24587
	T22	80,593.64622	84,623.32853	88,854.49496	93,297.21971	97,962.08069	102,860.18473
		6,716.13718	7,051.94404	7,404.54125	7,774.76831	8,163.50672	8,571.68206
		3,099.75562	3,254.74341	3,417.48058	3,588.35460	3,767.77233	3,956.16095
		38.74695	40.68429	42.71851	44.85443	47.09715	49.45201
	T23	82,608.48738	86,738.91174	91,075.85733	95,629.65020	100,411.13271	105,431.68934
		6,884.04061	7,228.24265	7,589.65478	7,969.13752	8,367.59439	8,785.97411
		3,177.24951	3,336.11199	3,502.91759	3,678.06347	3,861.96664	4,055.06497
		39.71562	41.70140	43.78647	45.97579	48.27458	50.68831
	T24	84,673.69956	88,907.38454	93,352.75376	98,020.39145	102,921.41103	108,067.48158
		7,056.14163	7,408.94871	7,779.39615	8,168.36595	8,576.78425	9,005.62346
		3,256.68075	3,419.51479	3,590.49053	3,770.01506	3,958.51581	4,156.44160
		40.70851	42.74393	44.88113	47.12519	49.48145	51.95552
	T25	86,790.54205	91,130.06915	95,686.57261	100,470.90124	105,494.44630	110,769.16862
		7,232.54517	7,594.17243	7,973.88105	8,372.57510	8,791.20386	9,230.76405
		3,338.09777	3,505.00266	3,680.25279	3,864.26543	4,057.47870	4,260.35264
		41.72622	43.81253	46.00316	48.30332	50.71848	53.25441
	T26	88,960.30560	93,408.32088	98,078.73692	102,982.67377	108,131.80746	113,538.39783
		7,413.35880	7,784.02674	8,173.22808	8,581.88948	9,010.98395	9,461.53315
		3,421.55022	3,592.62773	3,772.25911	3,960.87207	4,158.91567	4,366.86146
		42.76938	44.90785	47.15324	49.51090	51.98645	54.58577
		46.05794	48.36084	50.77888	53.31782	55.98372	58.78290
	T30	98,195.53208	103,105.30868	108,260.57411	113,673.60282	119,357.28296	125,325.14711
		8,182.96101	8,592.10906	9,021.71451	9,472.80023	9,946.44025	10,443.76226
		3,776.75123	3,965.58880	4,163.86824	4,372.06165	4,590.66473	4,820.19797
		47.20939	49.56986	52.04835	54.65077	57.38331	60.25247
	T31	100,650.42038	105,682.94140	110,967.08847	116,515.44289	122,341.21503	128,458.27579
		8,387.53503	8,806.91178	9,247.25737	9,709.62024	10,195.10125	10,704.85632
		3,871.17001	4,064.72852	4,267.96494	4,481.36319	4,705.43135	4,940.70291
		48.38963	50.80911	53.34956	56.01704	58.81789	61.75879

Marina Coast Water District Teamsters Unit (Management & Confidential) - Classification and Salary Schedule for FY2019/2020

Percentage between Ranges = 2.5%
Percentage between Steps = 5.0%

CLASSIFICATION	RANGE	STEP 1	STEP 2	STEP 3	STEP 4	STEP 5	7/1/2019 STEP 6
	T32	103,166.68089	108,325.01493	113,741.26568	119,428.32896	125,399.74541	131,669.73268
		8,597.22341	9,027.08458	9,478.43881	9,952.36075	10,449.97878	10,972.47772
		3,967.94926	4,166.34673	4,374.66406	4,593.39727	4,823.06713	5,064.22049
		49.59937	52.07933	54.68330	57.41747	60.28834	63.30276
Senior Civil Engineer	T33	105,745.84791	111,033.14030	116,584.79732	122,414.03719	128,534.73904	134,961.47600
		8,812.15399	9,252.76169	9,715.39978	10,201.16977	10,711.22825	11,246.78967
		4,067.14800	4,270.50540	4,484.03067	4,708.23220	4,943.64381	5,190.82600
		50.83935	53.38132	56.05038	58.85290	61.79555	64.88532
Water Resources Manager	T34	108,389.49411	113,808.96881	119,499.41725	125,474.38811	131,748.10752	138,335.51290
		9,032.45784	9,484.08073	9,958.28477	10,456.19901	10,979.00896	11,527.95941
		4,168.82670	4,377.26803	4,596.13143	4,825.93800	5,067.23490	5,320.59665
		52.11033	54.71585	57.45164	60.32423	63.34044	66.50746
	T35	111,099.23146	116,654.19303	122,486.90268	128,611.24782	135,041.81021	141,793.90072
		9,258.26929	9,721.18275	10,207.24189	10,717.60398	11,253.48418	11,816.15839
		4,273.04736	4,486.69973	4,711.03472	4,946.58645	5,193.91578	5,453.61157
		53.41309	56.08375	58.88793	61.83233	64.92395	68.17014
	T36	113,876.71225	119,570.54786	125,549.07525	131,826.52901	138,417.85546	145,338.74824
		9,489.72602	9,964.21232	10,462.42294	10,985.54408	11,534.82129	12,111.56235
		4,379.87355	4,598.86723	4,828.81059	5,070.25112	5,323.76367	5,589.95186
		54.74842	57.48584	60.36013	63.37814	66.54705	69.87440
O&M Manager	T37	116,723.63005	122,559.81155	128,687.80213	135,122.19224	141,878.30185	148,972.21694
		9,726.96917	10,213.31763	10,723.98351	11,260.18269	11,823.19182	12,414.35141
		4,489.37039	4,713.83891	4,949.53085	5,197.00739	5,456.85776	5,729.70065
		56.11713	58.92299	61.86914	64.96259	68.21072	71.62126
	T38	119,641.72080	125,623.80684	131,904.99719	138,500.24704	145,425.25940	152,696.52237
		9,970.14340	10,468.65057	10,992.08310	11,541.68725	12,118.77162	12,724.71020
		4,601.60465	4,831.68488	5,073.26912	5,326.93258	5,593.27921	5,872.94317
		57.52006	60.39606	63.41586	66.58666	69.91599	73.41179
	T39	122,632.76382	128,764.40201	135,202.62211	141,962.75322	149,060.89088	156,513.93543
		10,219.39699	10,730.36683	11,266.88518	11,830.22944	12,421.74091	13,042.82795
		4,716.64476	4,952.47700	5,200.10085	5,460.10589	5,733.11119	6,019.76675
		58.95806	61.90596	65.00126	68.25132	71.66389	75.24708
	T40	125,698.58292	131,983.51206	138,582.68767	145,511.82205	152,787.41315	160,426.78381
		10,474.88191	10,998.62601	11,548.55731	12,125.98517	12,732.28443	13,368.89865
		4,834.56088	5,076.28893	5,330.10337	5,596.60854	5,876.43897	6,170.26092
		60.43201	63.45361	66.62629	69.95761	73.45549	77.12826

Percentage between Ranges = 2.5%
Percentage between Steps = 5.0%

Marina Coast Water District Teamsters Unit (Management & Confidential) - Classification and Salary Schedule for FY2019/2020

							7/1/2019
CLASSIFICATION	**RANGE**	**STEP 1**	**STEP 2**	**STEP 3**	**STEP 4**	**STEP 5**	**STEP 6**
Director of Admin Svcs	T41	128,841.04749	135,283.09987	142,047.25486	149,149.61760	156,607.09848	164,437.45341
		10,736.75396	11,273.59166	11,837.27124	12,429.13480	13,050.59154	13,703.12112
		4,955.42490	5,203.19615	5,463.35596	5,736.52375	6,023.34994	6,324.51744
		61.94281	65.03995	68.29195	71.70655	75.29187	79.05647
	T42	132,062.07368	138,665.17736	145,598.43623	152,878.35804	160,522.27594	168,548.38974
		11,005.17281	11,555.43145	12,133.20302	12,739.86317	13,376.85633	14,045.69915
		5,079.31053	5,333.27605	5,599.93986	5,879.93685	6,173.93369	6,482.63037
		63.49138	66.66595	69.99925	73.49921	77.17417	81.03288
	T43	135,363.62552	142,131.80680	149,238.39714	156,700.31699	164,535.33284	172,762.09949
		11,280.30213	11,844.31723	12,436.53309	13,058.35975	13,711.27774	14,396.84162
		5,206.29329	5,466.60795	5,739.93835	6,026.93527	6,328.28203	6,644.69613
		65.07867	68.33260	71.74923	75.33669	79.10353	83.05870
District Engineer	T44	138,747.71616	145,685.10197	152,969.35707	160,617.82492	168,648.71616	177,081.15197
		11,562.30968	12,140.42516	12,747.44642	13,384.81874	14,054.05968	14,756.76266
		5,336.45062	5,603.27315	5,883.43681	6,177.60865	6,486.48908	6,810.81354
		66.70563	70.04091	73.54296	77.22011	81.08111	85.13517

Marina Coast Water District Employees Association -
Classification and Salary Schedule for FY2019/2020

Percentage between Ranges = 2.5%
Percentage between Steps = 5.0%

CLASSIFICATION	RANGE	STEP 1	STEP 2	STEP 3	STEP 4	STEP 5	STEP 6 **7/1/19**
	1	43,250.59689	45,413.12673	47,683.78307	50,067.97222	52,571.37083	55,199.93937
		3,604.21641	3,784.42723	3,973.64859	4,172.33102	4,380.94757	4,599.99495
		1,663.48450	1,746.65872	1,833.99166	1,925.69124	2,021.97580	2,123.07459
		20.79356	21.83323	22.92490	24.07114	25.27470	26.53843
	2	44,331.86181	46,548.45490	48,875.87764	51,319.67152	53,885.65510	56,579.93786
		3,694.32182	3,879.03791	4,072.98980	4,276.63929	4,490.47126	4,714.99482
		1,705.07161	1,790.32519	1,879.84145	1,973.83352	2,072.52520	2,176.15146
		21.31340	22.37906	23.49802	24.67292	25.90656	27.20189
	3	45,440.15835	47,712.16627	50,097.77458	52,602.66331	55,232.79648	57,994.43630
		3,786.67986	3,976.01386	4,174.81455	4,383.55528	4,602.73304	4,832.86969
		1,747.69840	1,835.08332	1,926.83748	2,023.17936	2,124.33833	2,230.55524
		21.84623	22.93854	24.08547	25.28974	26.55423	27.88194
	4	46,576.16231	48,904.97043	51,350.21895	53,917.72990	56,613.61639	59,444.29721
		3,881.34686	4,075.41420	4,279.18491	4,493.14416	4,717.80137	4,953.69143
		1,791.39086	1,880.96040	1,975.00842	2,073.75884	2,177.44678	2,286.31912
		22.39239	23.51201	24.68761	25.92199	27.21808	28.57899
	5	47,740.56637	50,127.59469	52,633.97442	55,265.67314	58,028.95680	60,930.40464
		3,978.38053	4,177.29956	4,386.16454	4,605.47276	4,835.74640	5,077.53372
		1,836.17563	1,927.98441	2,024.38363	2,125.60281	2,231.88295	2,343.47710
		22.95220	24.09981	25.30480	26.57004	27.89854	29.29346
Customer Service Rep I	6	48,934.08053	51,380.78455	53,949.82378	56,647.31497	59,479.68072	62,453.66476
		4,077.84004	4,281.73205	4,495.81865	4,720.60958	4,956.64006	5,204.47206
		1,882.08002	1,976.18402	2,074.99322	2,178.74288	2,287.68003	2,402.06403
		23.52600	24.70230	25.93742	27.23429	28.59600	30.02580
	7	50,157.43254	52,665.30417	55,298.56938	58,063.49785	60,966.67274	64,015.00637
		4,179.78605	4,388.77535	4,608.21411	4,838.62482	5,080.55606	5,334.58386
		1,929.13202	2,025.58862	2,126.86805	2,233.21146	2,344.87203	2,462.11563
		24.11415	25.31986	26.58585	27.91514	29.31090	30.77645
Maintenance Worker	8	51,411.36835	53,981.93677	56,681.03361	59,515.08529	62,490.83956	65,615.38153
Meter Reader		4,284.28070	4,498.49473	4,723.41947	4,959.59044	5,207.56996	5,467.94846
		1,977.36032	2,076.22834	2,180.03975	2,289.04174	2,403.49383	2,523.66852
		24.71700	25.95285	27.25050	28.61302	30.04367	31.54586
	9	52,696.65256	55,331.48519	58,098.05945	61,002.96242	64,053.11055	67,255.76607
		4,391.38771	4,610.95710	4,841.50495	5,083.58020	5,337.75921	5,604.64717
		2,026.79433	2,128.13405	2,234.54075	2,346.26779	2,463.58117	2,586.76023
		25.33493	26.60168	27.93176	29.32835	30.79476	32.33450

Marina Coast Water District Employees Association - Classification and Salary Schedule for FY2019/2020

Percentage between Ranges = 2.5%
Percentage between Steps = 5.0%

CLASSIFICATION	RANGE	STEP 1	STEP 2	STEP 3	STEP 4	STEP 5	STEP 6
							7/1/19
Customer Service Rep II	10	54,014.06888	56,714.77232	59,550.51094	62,528.03648	65,654.43831	68,937.16022
Water Resources Analyst I		4,501.17241	4,726.23103	4,962.54258	5,210.66971	5,471.20319	5,744.76335
		2,077.46419	2,181.33740	2,290.40427	2,404.92448	2,525.17070	2,651.42924
		25.96830	27.26672	28.63005	30.06156	31.56463	33.14287
	11	55,364.42060	58,132.64163	61,039.27371	64,091.23740	67,295.79927	70,660.58923
		4,613.70172	4,844.38680	5,086.60614	5,340.93645	5,607.98327	5,888.38244
		2,129.40079	2,235.87083	2,347.66437	2,465.04759	2,588.29997	2,717.71497
		26.61751	27.94839	29.34580	30.81309	32.35375	33.97144
	12	56,748.53111	59,585.95767	62,565.25555	65,693.51833	68,978.19425	72,427.10396
		4,729.04426	4,965.49647	5,213.77130	5,474.45986	5,748.18285	6,035.59200
		2,182.63581	2,291.76760	2,406.35598	2,526.67378	2,653.00747	2,785.65784
		27.28295	28.64710	30.07945	31.58342	33.16259	34.82072
Accounting Technician	13	58,167.24439	61,075.60661	64,129.38694	67,335.85629	70,702.64910	74,237.78156
		4,847.27037	5,089.63388	5,344.11558	5,611.32136	5,891.88743	6,186.48180
		2,237.20171	2,349.06179	2,466.51488	2,589.84063	2,719.33266	2,855.29929
		27.96502	29.36327	30.83144	32.37301	33.99166	35.69124
Administrative Assistant	14	59,621.42550	62,602.49678	65,732.62162	69,019.25270	72,470.21533	76,093.72610
Water Resources Analyst II		4,968.45213	5,216.87473	5,477.71847	5,751.60439	6,039.18461	6,341.14384
		2,293.13175	2,407.78834	2,528.17775	2,654.58664	2,787.31597	2,926.68177
		28.66415	30.09735	31.60222	33.18233	34.84145	36.58352
Engineering Technician	15	61,111.96114	64,167.55920	67,375.93716	70,744.73401	74,281.97072	77,996.06925
System Operator I		5,092.66343	5,347.29660	5,614.66143	5,895.39450	6,190.16423	6,499.67244
		2,350.46004	2,467.98305	2,591.38220	2,720.95131	2,856.99887	2,999.84882
		29.38075	30.84979	32.39228	34.01189	35.71249	37.49811
	16	62,639.76017	65,771.74818	69,060.33559	72,513.35237	76,139.01998	79,945.97098
		5,219.98001	5,480.97901	5,755.02797	6,042.77936	6,344.91833	6,662.16425
		2,409.22154	2,529.68262	2,656.16675	2,788.97509	2,928.42385	3,074.84504
		30.11527	31.62103	33.20208	34.86219	36.60530	38.43556
Accountant I	17	64,205.75417	67,416.04188	70,786.84398	74,326.18617	78,042.49548	81,944.62026
		5,350.47951	5,618.00349	5,898.90366	6,193.84885	6,503.54129	6,828.71835
		2,469.45208	2,592.92469	2,722.57092	2,858.69947	3,001.63444	3,151.71616
		30.86815	32.41156	34.03214	35.73374	37.52043	39.39645
	18	65,810.89803	69,101.44293	72,556.51507	76,184.34083	79,993.55787	83,993.23576
		5,484.24150	5,758.45358	6,046.37626	6,348.69507	6,666.12982	6,999.43631
		2,531.18839	2,657.74780	2,790.63520	2,930.16695	3,076.67530	3,230.50907
		31.63985	33.22185	34.88294	36.62709	38.45844	40.38136

Marina Coast Water District Employees Association - Classification and Salary Schedule for FY2019/2020

Percentage between Ranges = 2.5%
Percentage between Steps = 5.0%

CLASSIFICATION	RANGE	STEP 1	STEP 2	STEP 3	STEP 4	STEP 5	STEP 6
							7/1/19
System Operator II	19	67,456.17048	70,828.97900	74,370.42795	78,088.94935	81,993.39682	86,093.06666
		5,621.34754	5,902.41492	6,197.53566	6,507.41245	6,832.78307	7,174.42222
		2,594.46810	2,724.19150	2,860.40108	3,003.42113	3,153.59219	3,311.27179
		32.43085	34.05239	35.75501	37.54276	39.41990	41.39090
	20	69,142.57474	72,599.70348	76,229.68865	80,041.17308	84,043.23174	88,245.39332
		5,761.88123	6,049.97529	6,352.47405	6,670.09776	7,003.60264	7,353.78278
		2,659.32980	2,792.29629	2,931.91110	3,078.50666	3,232.43199	3,394.05359
		33.24162	34.90370	36.64889	38.48133	40.40540	42.42567
Assistant Engineer	21	70,871.13911	74,414.69606	78,135.43087	82,042.20241	86,144.31253	90,451.52816
System Operator II-Cross		5,905.92826	6,201.22467	6,511.28591	6,836.85020	7,178.69271	7,537.62735
Connection Control Specialist		2,725.81304	2,862.10369	3,005.20888	3,155.46932	3,313.24279	3,478.90493
		34.07266	35.77630	37.56511	39.44337	41.41553	43.48631
	22	72,642.91759	76,275.06347	80,088.81664	84,093.25747	88,297.92034	92,712.81636
		6,053.57647	6,356.25529	6,674.06805	7,007.77146	7,358.16003	7,726.06803
		2,793.95837	2,933.65629	3,080.33910	3,234.35606	3,396.07386	3,565.87755
		34.92448	36.67070	38.50424	40.42945	42.45092	44.57347
System Operator III	23	74,458.99053	78,181.94005	82,091.03705	86,195.58891	90,505.36835	95,030.63677
Water Conservation Specialist III		6,204.91588	6,515.16167	6,840.91975	7,182.96574	7,542.11403	7,919.21973
		2,863.80733	3,006.99769	3,157.34758	3,315.21496	3,480.97571	3,655.02449
		35.79759	37.58747	39.46684	41.44019	43.51220	45.68781
	24	76,320.46529	80,136.48855	84,143.31298	88,350.47863	92,768.00256	97,406.40269
		6,360.03877	6,678.04071	7,011.94275	7,362.53989	7,730.66688	8,117.20022
		2,935.40251	3,082.17264	3,236.28127	3,398.09533	3,568.00010	3,746.40010
		36.69253	38.52716	40.45352	42.47619	44.60000	46.83000
	25	78,228.47692	82,139.90077	86,246.89581	90,559.24060	95,087.20263	99,841.56276
		6,519.03974	6,844.99173	7,187.24132	7,546.60338	7,923.93355	8,320.13023
		3,008.78757	3,159.22695	3,317.18830	3,483.04772	3,657.20010	3,840.06011
		37.60984	39.49034	41.46485	43.53810	45.71500	48.00075
	26	80,184.18884	84,193.39829	88,403.06820	92,823.22161	97,464.38269	102,337.60183
		6,682.01574	7,016.11652	7,366.92235	7,735.26847	8,122.03189	8,528.13349
		3,084.00726	3,238.20763	3,400.11801	3,570.12391	3,748.63010	3,936.06161
		38.55009	40.47760	42.50148	44.62655	46.85788	49.20077
	27	82,188.79357	86,298.23324	90,613.14491	95,143.80215	99,900.99226	104,896.04187
		6,849.06613	7,191.51944	7,551.09541	7,928.65018	8,325.08269	8,741.33682
		3,161.10744	3,319.16282	3,485.12096	3,659.37701	3,842.34586	4,034.46315
		39.51384	41.48954	43.56401	45.74221	48.02932	50.43079

Marina Coast Water District Employees Association -
Classification and Salary Schedule for FY2019/2020

Percentage between Ranges = 2.5%
Percentage between Steps = 5.0%

CLASSIFICATION	RANGE	STEP 1	STEP 2	STEP 3	STEP 4	STEP 5	STEP 6
							7/1/19
CS/Billing Supervisor	28	84,243.51340	88,455.68907	92,878.47353	97,522.39720	102,398.51706	107,518.44292
		7,020.29278	7,371.30742	7,739.87279	8,126.86643	8,533.20976	8,959.87024
		3,240.13513	3,402.14189	3,572.24898	3,750.86143	3,938.40450	4,135.32473
		40.50169	42.52677	44.65311	46.88577	49.23006	51.69156
Laboratory Supervisor	29	86,349.60124	90,667.08130	95,200.43537	99,960.45713	104,958.47999	110,206.40399
		7,195.80010	7,555.59011	7,933.36961	8,330.03809	8,746.54000	9,183.86700
		3,321.13851	3,487.19543	3,661.55521	3,844.63297	4,036.86462	4,238.70785
		41.51423	43.58994	45.76944	48.05791	50.46081	52.98385
O&M Supervisor	30	88,508.34127	92,933.75833	97,580.44625	102,459.46856	107,582.44199	112,961.56409
		7,375.69511	7,744.47986	8,131.70385	8,538.28905	8,965.20350	9,413.46367
		3,404.16697	3,574.37532	3,753.09409	3,940.74879	4,137.78623	4,344.67554
		42.55209	44.67969	46.91368	49.25936	51.72233	54.30844
Accounting Supervisor	31	90,721.04980	95,257.10229	100,019.95741	105,020.95528	110,272.00304	115,785.60319
		7,560.08748	7,938.09186	8,334.99645	8,751.74627	9,189.33359	9,648.80027
		3,489.27115	3,663.73470	3,846.92144	4,039.26751	4,241.23089	4,453.29243
		43.61589	45.79668	48.08652	50.49084	53.01539	55.66616
	32	92,989.07605	97,638.52985	102,520.45634	107,646.47916	113,028.80312	118,680.24327
		7,749.08967	8,136.54415	8,543.37136	8,970.53993	9,419.06693	9,890.02027
		3,576.50292	3,755.32807	3,943.09447	4,140.24920	4,347.26166	4,564.62474
		44.70629	46.94160	49.28868	51.75311	54.34077	57.05781
	33	95,313.80295	100,079.49310	105,083.46775	110,337.64114	115,854.52320	121,647.24935
		7,942.81691	8,339.95776	8,756.95565	9,194.80343	9,654.54360	10,137.27078
		3,665.91550	3,849.21127	4,041.67184	4,243.75543	4,455.94320	4,678.74036
		45.82394	48.11514	50.52090	53.04694	55.69929	58.48425
	34	97,696.64802	102,581.48042	107,710.55444	113,096.08217	118,750.88627	124,688.43059
		8,141.38734	8,548.45670	8,975.87954	9,424.67351	9,895.90719	10,390.70255
		3,757.56339	3,945.44155	4,142.71363	4,349.84931	4,567.34178	4,795.70887
		46.96954	49.31802	51.78392	54.37312	57.09177	59.94636

Return to Agenda

Marina Coast Water District
Agenda Transmittal

Agenda Item: 10-B | Meeting Date: June 25, 2019

Prepared By: Michael Wegley | Approved By: Keith Van Der Maaten

Agenda Title: Consider Adoption of Resolution No. 2019-45 to Approve the District Five-Year Capital Improvements Program Budget

Staff Recommendation: The Board of Directors is requested to consider adopting Resolution No. 2019-45 approving the District Five-Year Capital Improvements Program (CIP) Budget.

Background: *5-Year Strategic Plan, Goal No. 2 – To provide a high quality water distribution system and an efficiently operating wastewater collection system to serve existing and future customers. Through the master planning process, our infrastructure strategy is to carefully maintain our existing systems and ensure future additions and replacements will meet District standards.*

Each year, the District follows a budget development process for Board approval of the annual budget. Annual update of the District's one-year and five-year CIP program follows the same schedule. The current CIP budget was adopted on June 18, 2018. The draft five-year CIP for Fiscal Year (FY) 2019-2020 was presented to the Board for review and direction on March 11, 2019.

The Ord Community portion of the draft five-year CIP Budget was included with the Draft FY 2019-2020 MCWD Budget and Compensation Plan delivered to the Fort Ord Reuse Authority (FORA) on March 13, 2019. The Water and Wastewater Oversight Committee (WWOC) met March 13, 2019 and recommended the MCWD FY 2019-2020 budget and five-year CIP to the FORA Board. The WWOC met again March 28, 2019 and recommended the MCWD FY 2019-2020 budget to the FORA Board. The FORA Board approved the Draft MCWD Budget and Compensation Plan on May 10, 2019.

Discussion/Analysis: The Draft FY 2019-2020 District Budget was distributed to the Board of Directors with the Five-Year CIP for review in preparation for the budget workshop. On March 11, 2019, the Board held its budget workshop and provided direction to staff for preparation of the final budget documents and the Five-Year CIP.

The attached Five-Year CIP project list includes projects in progress in FY 2019-2020 and those required in future years. Projects needed in the next five years are shown with funding in the proposed FY, and the remaining projects are shown in "Out Years" (beyond FY 2023-2024). The Category column in the table indicates the project addresses an existing deficiency (E), a single development project (S), or multiple development projects (M). The majority of the projects needed address existing deficiencies (aging equipment requiring replacement, service mains which have failed in recent years, and water storage tanks).

Environmental Review Compliance: None.

Financial Impact: _____Yes ___X___No Funding Source/Recap: None

Materials Included for Information/Consideration: Resolution No. 2019-45; and, Draft Five-Year Capital Improvement Program dated March 7, 2018.

Action Required: __X__ Resolution ______ Motion ______ Review
(Roll call vote is required.)

Board Action

Motion By________________ Seconded By____________ No Action Taken_______________

Ayes___________________________ Abstained_____________________________

Noes___________________________ Absent________________________________

June 25, 2019

Resolution No. 2019-45
Resolution of the Board of Directors
Marina Coast Water District
Approving the District Five-Year Capital Improvements Program Budget
for the Central Marina and Ord Community Service Areas

RESOLVED by the Board of Directors ("Directors") of the Marina Coast Water District ("District"), at a regular meeting duly called and held on June 25, 2019, at 11 Reservation Road, Marina, California as follows:

WHEREAS, Marina Coast Water District ("District") staff prepared and presented the draft FY 2019-2020 Budget which includes projected revenues, expenditures and capital improvement projects for Central Marina and the Ord Community Water, Recycled Water and Wastewater systems; and,

WHEREAS, the Five-Year Capital Improvement Projects Budget for the Central Marina and Ord Community provides for funds necessary to meet capital expenses for sound operation and provision of the water, recycled water and wastewater facilities and to enable the District to provide continued water, recycled water and sewer services within the existing service areas in Central Marina and in the Ord Community; and,

WHEREAS, the Water/Wastewater Oversight Committee of FORA and the District's full Board have reviewed the proposed Five-Year Capital Improvement Projects Budget; and,

WHEREAS, after a public meeting and based upon staff's recommendations, the Board has determined that the Five-Year Capital Improvement Projects Budget should be adopted.

NOW, THEREFORE, BE IT RESOLVED that the Board of Directors of the Marina Coast Water District does hereby approve and adopt the Five-Year Capital Improvement Projects budget for Central Marina and the Ord Community.

PASSED AND ADOPTED on June 25, 2019, by the Board of Directors of the Marina Coast Water District by the following roll call vote:

Ayes: Directors______________________________

Noes: Directors______________________________

Absent: Directors______________________________

Abstained: Directors______________________________

____
Jan Shriner, Vice President

ATTEST:

____
Keith Van Der Maaten, Secretary

CERTIFICATE OF SECRETARY

The undersigned Secretary of the Board of the Marina Coast Water District hereby certifies that the foregoing is a full, true and correct copy of Resolution No. 2019-45 adopted June 25, 2019.

____
Keith Van Der Maaten, Secretary

Marina Coast Water District
DRAFT Five-Year CIP

CIP No.	PROJECT DESCRIPTION	FY 2018-19 Estimated	FY 2019-20 Proposed	FY 2020-21 Proposed	FY 2021-22 Proposed	FY 2022-23 Proposed	FY 2023-24 Proposed	OUT YEARS	TOTAL	CATEGORY
	Marina Water									
MW-0163	Repair & Recoat Reservoir 2	$601,307	$0	$0	$0	$0	$0	$0	$601,307	E
MW-0111	Beach Road Pipeline	$0	$494,815	$0	$0	$0	$0	$0	$494,815	E
MW-0302	Crescent Ave Connector to Reservoir 2	$0	$216,000	$0	$0	$0	$0	$0	$216,000	E
MW-0303	Reindollar Replacement from Calif. Ave to Vaughn Ave	$0	$0	$0	$0	$0	$382,000	$0	$382,000	M
MW-0304	Armstrong Ranch Development	$0	$0	$0	$0	$0	$0	$1,384,000	$1,384,000	S
MW-0109	Lake Court Waterline Extension	$0	$0	$0	$0	$0	$0	$500,000	$500,000	S
	Subtotal	$601,307	$710,815	$0	$0	$0	$382,000	$1,884,000	$3,578,122	
	Marina Sewer									
MS-0133	Replace Lift Station No. 5 (Cosky)	$688,545	$0	$0	$0	$0	$0	$0	$688,545	E
MS-0143	Replace Lift Station No. 6 (Crescent)	$0	$700,000	$0		$0	$0	$0	$700,000	E
MS-0202	Carmel Ave Sewer Main Imp Project	$0	$0	$60,000	$330,000	$0	$0	$0	$390,000	E
MS-0138	Hillcrest Ave/Sunset Ave Sewer Main Imp. Project	$0	$0	$0	$60,000	$300,000	$0	$0	$360,000	E
MS-0141	Reservation Rd from Nicklas Lane to Crescent Ave.	$0	$0	$0		$598,000	$0	$0	$598,000	E
MS-0172	Reservation Rd from Crescent to Seacrest	$0	$0	$0	$0	$0	$654,000	$0	$654,000	E
MS-0203	Abdy Way & Paul Davis Dr Sewer Main Imps Project	$0	$0	$0	$0	$0	$0	$1,116,000	$1,116,000	S
MS-0205	Del Monte/Reservation Road Sewer Main Imp. Project I	$0	$0	$0	$0	$0	$0	$240,000	$240,000	M
MS-0137	Del Monte/Reservation Road Sewer Main Imp. Project II	$0	$0	$0	$0	$0	$0	$375,000	$375,000	M
MS-0201	Armstrong Ranch Sewer Improvements	$0	$0	$0	$0	$0	$0	$5,428,600	$5,428,600	M
MS-0207	Marina WWTP Demolition	$0	$0	$0	$0	$0	$0	$883,300	$883,300	E
	Subtotal	$688,545	$700,000	$60,000	$390,000	$898,000	$654,000	$8,042,900	$11,433,445	

Category Legend

E=	CIP supports existing Infrastructure
EDS=	Eastern Distribution System (inland well-field)
S=	CIP supports a single parcel's or owner's project
M=	CIP supports projects for multiple parcels or owners

Marina Coast Water District
DRAFT Five-Year CIP

CIP No.	PROJECT DESCRIPTION	FY 2018-19 Estimated	FY 2019-20 Proposed	FY 2020-21 Proposed	FY 2021-22 Proposed	FY 2022-23 Proposed	FY 2023-24 Proposed	OUT YEARS	TOTAL	CATEGORY
	Ord Water									
OW-0206	Inter-Garrison Road Pipeline Up-Sizing	$50,000	$650,000	$0	$0	$0	$0	$0	$700,000	M
OW-0193	Imjin Parkway Pipeline, Reservation Rd to Abrams Drive	$51,000	$800,000	$0	$0	$0	$0	$0	$851,000	E
OW-0202	South Boundary Road Pipeline	$40,000	$2,660,000	$0	$0	$0	$0	$0	$2,700,000	M
OW-0306	D-Zone Booster Pump Replacement	$0	$80,000	$0	$0	$0	$0	$0	$80,000	E
OW-0201	Gigling Transmission from D Booster to JM Blvd	$0	$0	$125,000	$400,000	$0	$0	$0	$525,000	E
OW-0230	Wellfield Main 2B -Well 31 to Well 34	$0	$0	$170,000	$0	$200,000	$540,000	$0	$910,000	E
OW-0127	CSUMB Pipeline Up-Sizing -Commercial Fireflow	$0	$0	$100,000	$0	$100,000	$0	$150,000	$350,000	E
OW-0203	7th Avenue and Gigling Rd	$0	$0	$0	$70,000	$200,000	$0	$0	$270,000	E
OW-0129	Rehabilitate Well 31	$0	$0	$0	$0	$1,710,000	$0	$0	$1,710,000	E
OW-0211	D-Zone pipeline in Eastside Parkway Alignment	$0	$0	$0	$0	$420,000	$2,500,000	$0	$2,920,000	M
OW-0209	Pipeline Up-Sizing -between Dunes & MainGate	$0	$0	$0	$0	$0	$300,000	$0	$300,000	M
OW-0210	Sand Tank Demolition	$0	$0	$0	$0	$0	$540,000	$0	$540,000	E
OW-0122	Replace D & E Reservoir Off-Site Piping	$0	$0	$0	$0	$0	$0	$1,100,000	$1,100,000	E
OW-0167	2nd Ave extension to Gigling Rd	$0	$0	$0	$0	$0	$0	$275,000	$275,000	E
OW-0118	B4" Zone Tank @ East Garrison "	$0	$0	$0	$0	$0	$0	$3,100,000	$3,100,000	S
OW-0212	Reservoir D2" + D-BPS Up-Size "	$0	$0	$0	$0	$0	$0	$4,000,000	$4,000,000	E
OW-0208	Pipeline Up-Sizing -to Stockade	$0	$0	$0	$0	$0	$0	$710,000	$710,000	S
OW-0204	2nd Ave Connection, Reindollar to Imjin Pkwy	$0	$0	$0	$0	$0	$0	$1,215,000	$1,215,000	E
OW-0214	Imjin Road, 8th St. to Imjin Pkwy	$0	$0	$0	$0	$0	$0	$1,100,000	$1,100,000	E
OW-0121	C2" to "B4" Pipeline and PRV Station "	$0	$0	$0	$0	$0	$0	$1,410,000	$1,410,000	S
OW-0171	Eucalyptus Rd Pipeline	$0	$0	$0	$0	$0	$0	$2,350,000	$2,350,000	M
OW-0213	Reservoir B4/B5 to East Garrison Pipeline	$0	$0	$0	$0	$0	$0	$260,000	$260,000	S
OW-0216	UCMBEST Pipeline	$0	$0	$0	$0	$0	$0	$762,500	$762,500	S
OW-0217	Reservation Road, Imjin to MBEST Drive	$0	$0	$0	$0	$0	$0	$727,000	$727,000	M
OW-0218	Golf Boulevard Transmission Line	$0	$0	$0	$0	$0	$0	$1,100,000	$1,100,000	M
OW-0219	B5" Zone Tank @ East Garrison " & Pipeline	$0	$0	$0	$0	$0	$0	$3,600,000	$3,600,000	S
OW-0231	Wellfield Main 3A -Intergarrison to ASP Bldg	$0	$0	$0	$0	$0	$0	$3,550,000	$3,550,000	E
OW-0232A	Install Well 36 -Retire Well 29	$0	$0	$0	$0	$0	$0	$3,000,000	$3,000,000	E
OW-0232B	Wellfield Main 1B -between Wells 36 and 35	$0	$0	$0	$0	$0	$0	$3,200,000	$3,200,000	E
OW-0233	Wellfield Main 1C (Parallel) Well 36 to ASP Bldg	$0	$0	$0	$0	$0	$0	$3,750,000	$3,750,000	M
OW-0234	B-BPS at ASP Bldg	$0	$0	$0	$0	$0	$0	$1,355,000	$1,355,000	M
OW-0235	Ord Well-head Disinfection	$0	$0	$0	$0	$0	$0	$2,750,000	$2,750,000	M
	Subtotal	$141,000	$4,190,000	$395,000	$470,000	$2,630,000	$3,880,000	$39,464,500	$51,170,500	

Marina Coast Water District
DRAFT Five-Year CIP

CIP No.	PROJECT DESCRIPTION	FY 2018-19 Estimated	FY 2019-20 Proposed	FY 2020-21 Proposed	FY 2021-22 Proposed	FY 2022-23 Proposed	FY 2023-24 Proposed	OUT YEARS	TOTAL	CATEGORY
	Ord Sewer									
OS-0147	Ord Village Sewer Pipeline & Lift Station Impr Project	$45,000	$2,500,000	$0	$0	$0	$0	$0	$2,545,000	E
OS-0205	Imjin LS & Force Main Improvements-Phase 1	$40,000	$675,000	$0	$0	$0	$0	$0	$715,000	M
OS-0152	Hatten, Booker, Neeson LS Improvements Project	$0	$525,000	$0	$0	$0	$0	$400,000	$925,000	E
OS-0203	Gigling LS and FM Improvements	$0	$0	$2,125,000	$0	$0	$0	$0	$2,125,000	E
OS-0153	Misc. Lift Station Improvements	$0	$0	$561,000	$505,000	$424,000	$0	$0	$1,490,000	E
OS-0154	Del Rey Oaks-Collection System Planning	$0	$0	$70,000	$0	$0	$0	$0	$70,000	S
OS-0202	Sewer Improvements-DRO	$0	$0	$0	$502,454	$0	$0	$1,537,510	$2,039,964	S
OS-0204	CSUMB Developments	$0	$0	$0	$625,000	$0	$0	$0	$625,000	S
OS-0209	Imjin LS & Force Main Improvements-Phase 2	$0	$0	$0	$0	$1,500,000	$0	$0	$1,500,000	E
OS-0207	Seaside Resort Sewer Imps. Project	$0	$0	$0	$0	$330,000	$0	$0	$330,000	S
OS-0215	Demolish Ord Main Garrison WWTP	$0	$0	$0	$0	$0	$1,625,000	$0	$1,625,000	E
OS-0148	Marina Heights Sewer Pipeline Improvements Project	$0	$0	$0	$0	$0	$830,000	$0	$830,000	M
OS-0149	Dunes Sewer Pipeline Replacement Projects	$0	$0	$0	$0	$0	$0	$465,000	$465,000	M
OS-0208	Parker Flats Collection System	$0	$0	$0	$0	$0	$0	$105,000	$105,000	M
OS-0151	Cypress Knolls Sewer Pipeline Improvements Project	$0	$0	$0	$0	$0	$0	$100,000	$100,000	S
OS-0150	East Garrison Lift Station Improvements	$0	$0	$0	$0	$0	$0	$550,000	$550,000	E
OS-0206	Fitch Park Sewer Improvements	$0	$0	$0	$0	$0	$0	$127,071	$127,071	S
OS-0210	1st Ave Sewer Pipeline Replacement Project	$0	$0	$0	$0	$0	$0	$410,000	$410,000	M
OS-0211	Gen'l Jim Moore Sewer Pipeline Replacement Project	$0	$0	$0	$0	$0	$0	$50,000	$50,000	M
OS-0212	Gen'l Jim Moore Sewer Pipeline Replacement Project III	$0	$0	$0	$0	$0	$0	$185,000	$185,000	M
OS-0214	Intergarrison/8th Ave SS (for Eastside Pkwy developments)	$0	$0	$0	$0	$0	$0	$1,035,300	$1,035,300	M
OS-0213	MOW Capacity Buy-In Beyond 2.2 MGD	$0	$0	$0	$0	$0	$0	$11,100,000	$11,100,000	M
OS-0216	Sewer Improvements-Seaside East	$0	$0	$0	$0	$0	$0	$6,500,000	$6,500,000	S
OS-0217	Sewer Improvements-City of Monterey	$0	$0	$0	$0	$0	$0	$1,400,000	$1,400,000	S
	Subtotal	$85,000	$3,700,000	$2,756,000	$1,632,454	$2,254,000	$2,455,000	$23,964,881	$36,847,335	

Category Legend

E=	CIP supports existing Infrastructure
EDS=	Eastern Distribution System (inland well-field)
S=	CIP supports a single parcel's or owner's project
M=	CIP supports projects for multiple parcels or owners

Marina Coast Water District DRAFT Five-Year CIP										
CIP No.	**PROJECT DESCRIPTION**	**FY 2018-19 Estimated**	**FY 2019-20 Proposed**	**FY 2020-21 Proposed**	**FY 2021-22 Proposed**	**FY 2022-23 Proposed**	**FY 2023-24 Proposed**	**OUT YEARS**	**TOTAL**	**CATEGORY**
	General Water (32% Marina, 68% Ord)									
GW-0112	A1 & A2 Zone Tanks & B/C Booster Station	$40,000	$3,644,720	$6,635,000	$3,370,000	$0	$0	$0	$13,689,720	M
GW-0305	California Ave & Imjin Pkwy Pipeline - Abrams to Marina Heights	$0	$200,000	$2,200,000	$0	$0	$0	$0	$2,400,000	M
GW-0307	Intertie Meter Replacement	$0	$81,000	$0	$0	$0	$0	$0	$81,000	E
GW-0123	B2" Zone Tank @ CSUMB "	$0	$0	$0	$1,230,000	$1,185,000	$0	$0	$2,415,000	M
GW-0210	Reservoir A3 (1.6 MG)	$0	$0	$0	$0	$0	$0	$3,470,000	$3,470,000	M
GW-0231	Install Well 37 -Retire well 12	$0	$0	$0	$0	$0	$0	$6,250,000	$6,250,000	EDS
GW-0232	Install Well 38 -Retire well 10	$0	$0	$0	$0	$0	$0	$6,250,000	$6,250,000	EDS
GW-0233	A-BPS at ASP Bldg + Forebay Tank	$0	$0	$0	$0	$0	$0	$1,670,000	$1,670,000	EDS
GW-0234	Install Well 39 -Retire Well 30	$0	$0	$0	$0	$0	$0	$6,250,000	$6,250,000	EDS
GW-0235	B-BPS Expansion and Transmission to A1/A2 Tanks	$0	$0	$0	$0	$0	$0	$13,100,000	$13,100,000	EDS
GW-0236	Install Well 40 -Retire Well 11	$0	$0	$0	$0	$0	$0	$6,250,000	$6,250,000	EDS
GW-0237	Install Well 41 -Retire Well 31	$0	$0	$0	$0	$0	$0	$6,250,000	$6,250,000	EDS
	Subtotal	$40,000	$3,925,720	$8,835,000	$4,600,000	$1,185,000	$0	$49,490,000	$68,075,720	
	General Sewer (35% Marina, 65% Ord)									
GS-0200	Odor Control Project	$0	$120,000	$0	$0	$0	$0	$0	$120,000	E
GS-0201	Del Monte/Reservation Road Sewer Main Improvements	$0	$0	$0	$275,000	$0	$0	$0	$275,000	E
	Subtotal	$0	$120,000	$0	$275,000	$0	$0	$0	$395,000	
	Water District-Wide (25% MW, 7%MS, 54%OW, 14%OS)									
WD-0106	Corp Yard Demolition & Rehab	$24,000	$520,000	$500,000	$0	$3,000,000	$0	$2,000,000	$6,044,000	E
WD-0110	Asset Management Program -Phase II	$0	$0	$0	$250,000	$0	$0	$0	$250,000	E
WD-0110A	Asset Management Program --Phase III	$0	$0	$0	$0	$0	$250,000	$0	$250,000	E
WD-0115A	SCADA System Improvements (Security + RD integration)	$0	$0	$0	$0	$0	$0	$410,000	$410,000	E
	Subtotal	$24,000	$520,000	$500,000	$250,000	$3,000,000	$250,000	$2,410,000	$6,954,000	
	Shared Project Costs									
	Marina Water Cost Center Share	$18,800	$1,386,230	$2,952,200	$1,534,500	$1,129,200	$62,500	$16,439,300	$23,522,730	
	Marina Sewer Cost Center Share	$1,680	$78,400	$35,000	$113,750	$210,000	$17,500	$168,700	$625,030	
	Ord Water Cost Center Share	$40,160	$2,950,290	$6,277,800	$3,263,000	$2,425,800	$135,000	$34,954,600	$50,046,650	
	Ord Sewer Cost Center Share	$3,360	$150,800	$70,000	$213,750	$420,000	$35,000	$289,200	$1,182,110	
	Total Costs									
	Marina Water	$620,107	$2,097,045	$2,952,200	$1,534,500	$1,129,200	$444,500	$18,323,300	$27,100,852	
	Marina Sewer	$690,225	$778,400	$95,000	$503,750	$1,108,000	$671,500	$8,211,600	$12,058,475	
	Ord Water	$181,160	$7,140,290	$6,672,800	$3,733,000	$5,055,800	$4,015,000	$74,419,100	$101,217,150	
	Ord Sewer	$88,360	$3,850,800	$2,826,000	$1,846,204	$2,674,000	$2,490,000	$24,254,081	$38,029,445	
	Total	**$1,579,852**	**$13,866,535**	**$12,546,000**	**$7,617,454**	**$9,967,000**	**$7,621,000**	**$125,208,081**	**$178,405,922**	

Marina Coast Water District
DRAFT Five-Year CIP

CIP No.	PROJECT DESCRIPTION	FY 2018-19 Estimated	FY 2019-20 Proposed	FY 2020-21 Proposed	FY 2021-22 Proposed	FY 2022-23 Proposed	FY 2023-24 Proposed	OUT YEARS	TOTAL	CATEGORY
	Water Augmentation									
RW-0156	RUWAP ATW - Normandy to MRWPCA	$10,510,327	$0	$0	$0	$0	$0	$0	$10,510,327	
RW-0306	RUWAP - Imjin Parkway Reservation Rd. to Abrams Dr.	$0	$885,000	$0	$0	$0	$0	$0	$885,000	
RW-0174	RUWAP - Distribution System	$300,000	$11,139,582	$0	$0	$0	$0	$0	$11,439,582	
	Subtotal	$10,810,327	$12,024,582	$0	$0	$0	$0	$0	$22,834,909	

Return to Agenda

Marina Coast Water District
Agenda Transmittal

Agenda Item: 10-C | Meeting Date: June 25, 2019

Prepared By: Paula Riso | Approved By: Keith Van Der Maaten

Agenda Title: Consider Adoption of Resolution No. 2019-46 Placing a Director in Nomination as a Member of the Association of California Water Agencies Region 5 Position

Staff Recommendation: The Board of Directors adopt Resolution No. 2019-46 placing a Director in nomination as a member of the Association of California Water Agencies (ACWA) Region 5 Position.

Background: *5-Year Strategic Plan, Mission Statement – We Provide high quality water, wastewater collection and conservation services at a reasonable cost, through planning, management and the development of water resources in an environmentally sensitive manner.*

Discussion/Analysis: The ACWA Region 5 Board is looking for ACWA members who are interested in leading the direction of ACWA Region 5 for the 2020-2021 term. The Chair and Vice Chair of Region 5 serve on ACWA's Statewide Board of Directors and recommend all committee appointments for Region 5. The members of the Region 5 Board determine the direction and focus of region issues and activities, and support the fulfillment of ACWA's goals on behalf of members.

The nomination form and Resolution must be submitted to ACWA by June 28, 2019. The Region 5 Nominating Committee will announce their recommended slate by July 31, 2019. The election will be completed on September 30, 2019.

Environmental Review Compliance: None required.

Financial Impact: ______Yes ___X___No Funding Source/Recap: None

Other Considerations: The Board can elect to not nominate a Director to the ACWA Region 5 Board.

Material Included for Information/Consideration: Resolution No. 2019-46; ACWA Region 5 Rules & Regulations; and, Nomination Form.

Action Required: ___X___Resolution _______Motion ______Review
(Roll call vote is required.)

Board Action

Motion By______________ Seconded By________________ No Action Taken______________

Ayes__________________________ Abstained____________________________

Noes__________________________ Absent______________________________

June 25, 2018

Resolution No. 2019 - 46
Resolution of the Board of Directors
Marina Coast Water District
Placing in Nomination __________________ as a Member of the
Association of California Water Agencies Region 5 Board

RESOLVED by the Board of Directors ("Directors") of the Marina Coast Water District ("District"), at a regular meeting duly called and held on June 25, 2019 at 11 Reservation Road, Marina, California as follows:

WHEREAS, the Board of Directors of the Marina Coast Water District does encourage and support the participation of its members in the affairs of the Association of California Water Agencies (ACWA); and,

WHEREAS, _______________ has indicated a desire to serve as a Board Member of ACWA Region 5.

NOW, THEREFORE, BE IT RESOLVED, that the Board of Directors of the Marina Coast Water District does place its full and unreserved support in the nomination of ________________ as a Board Member of ACWA Region 5.

BE IT FURTHER RESOLVED, that the expenses attendant with the service of ______________ in ACWA Region 5 shall be borne by the Marina Coast Water District.

PASSED AND ADOPTED on June 25, 2019, by the Board of Directors of the Marina Coast Water District by the following roll call vote:

Ayes: Directors____

Noes: Directors____

Absent: Directors____

Abstained: Directors____

____
Jan Shriner, Vice President

ATTEST:

____
Keith Van Der Maaten, Secretary

CERTIFICATE OF SECRETARY

The undersigned Secretary of the Board of the Marina Coast Water District hereby certifies that the foregoing is a full, true and correct copy of Resolution No. 2019-46 adopted June 25, 2019.

____

Keith Van Der Maaten, Secretary

ACWA

MEMORANDUM

Date: May 2, 2019

To: ACWA REGION 5 MEMBER AGENCY PRESIDENTS AND GENERAL MANAGERS
(sent via e-mail)

From: ACWA REGION 5 NOMINATING COMMITTEE
Bette Boatmun, Contra Costa County Water District
Brian Lockwood, Pajaro Valley Water Management Agency
Robert McDonald, Carpinteria Valley Water District

The Region 5 Nominating Committee is looking for ACWA members who are interested in leading the direction of ACWA Region 5 for the 2020-2021 term. The Nominating Committee is currently seeking candidates for the Region 5 Board, which is comprised of Chair, Vice Chair and up to five Board Member positions.

The leadership of ACWA's ten geographical regions is integral to the leadership of the Association as a whole. The Chair and Vice Chair of Region 5 serve on ACWA's Statewide Board of Directors and recommend all committee appointments for Region 5. The members of the Region 5 Board determine the direction and focus of region issues and activities. Additionally, they support the fulfillment of ACWA's goals on behalf of members and serve as a key role in ACWA's grassroots outreach efforts.

If you, or someone within your agency, are interested in serving in a leadership role within ACWA by becoming a Region 5 Board Member, please familiarize yourself with the Role of the Regions and Responsibilities; the Election Timeline; and the Region 5 Rules and Regulations and complete the following steps:

- **Complete the attached Region Board Candidate Nomination Form** HERE
- **Obtain a Resolution of Support from your agency's Board of Directors** (Sample Resolution HERE)
- **Submit the requested information to ACWA as indicated by Friday, June 28, 2019**

The Region 5 Nominating Committee will announce their recommended slate by July 31, 2019. On August 1, 2019 the election will begin with ballots sent to General Managers and Board Presidents. One ballot per agency will be counted. The election will be completed on September 30, 2019. On October 4, 2019, election results will be announced. The newly elected Region 5 Board Members will begin their two-year term of service on January 1, 2020.

If you have any questions, please contact Regional Affairs Representative Brian Sanders, at brians@acwa.com or (916) 441-4545.

ACWA

ACWA Region Election Timeline

2019 ACWA Region Election Timeline
2020-2021 Term

February 28: **NOMINATING COMMITTEES APPOINTED**
- With concurrence of the region board, the region chairs appoint at least three region members to serve as the respective region's Nominating Committee
- Those serving on nominating committees are ineligible to seek region offices
- Nominating Committee members are posted online at www.acwa.com

March 1-31: **NOMINATING COMMITTEE TRAINING**
- Nominating Committee packets will be e-mailed out to each committee member
- ACWA staff will hold a training session via conference call with each nominating committee to educate them on their specific role and duties
  - o Regions 1-10 Nominating Committees: via Go-to-Meeting

May 13: **CALL FOR CANDIDATES**
- The call for candidate nominations packet will be e-mailed to ACWA member agency Board Presidents and General Managers

June 28: **DEADLINE FOR COMPLETED NOMINATION FORMS**
- Deadline to submit all Nomination Forms and board resolutions of support for candidacy for region positions
- Nominating Committee members may need to solicit additional candidates in person to achieve a full complement of nominees for the slate

July 10: **CANDIDATE INFORMATION TO NOMINATING COMMITTEES**
- All information submitted by candidates will be forwarded from ACWA staff to the respective region Nominating Committee members with a cover memo explaining their task

Updated January 15, 2019

ACWA

ACWA Region Election Timeline

July 11 - 31: **RECOMMENDED SLATES SELECTED**

- Nominating Committees will meet to determine the recommended individuals for their region. The slate will be placed on the election ballot.
- Nominating Committee Chairs will inform their respective ACWA Regional Affairs Representative of their recommended slate by July 24
- Candidates will be notified of the recommended slate by August 1
- The Nominating Committee Chair will approve the official region ballot

August 1: **ELECTIONS BEGIN**

- All 10 official electronic ballots identifying the recommended slate and any additional candidates for consideration for each region will be produced and e-mailed to ACWA member agencies only
- Only one ballot per agency will be counted

September 30: **ELECTION BALLOTS DUE**

- ***Deadline for all region elections. All region ballots must be received by ACWA by September 30, 2019***

October 4: **ANNOUNCEMENT OF ELECTION RESULTS**

- Newly-elected members of the region boards will be contacted accordingly
- An ACWA Advisory will be distributed electronically to all members reporting the statewide region election results
- Results will be posted at acwa.com and will be published in the October issue of ACWA News

ACWA Region 5
Rules & Regulations

Each region shall organize and adopt rules and regulations for the conduct of its meetings and affairs not inconsistent with the Articles of Incorporation or bylaws of the Association (ACWA Bylaw V, 6.).

Officers

Region officers must be a local agency board member.
The chair shall appoint a secretary to the Board if one is deemed necessary.

Attendance

If a region chair or vice chair is no longer allowed to serve on the Board of Directors due to his / her attendance, the region board shall appoint from the existing region board a new region officer. (ACWA Policy & Guideline Q, 1.)

If a region chair or vice chair misses three consecutive region board / membership meetings, the same process shall be used to backfill the region officer position. (ACWA Policy & Guideline Q, 1.)

If a region board member has three consecutive unexcused absences from a region board meeting or general membership business meeting, the region board will convene to discuss options for removal of the inactive board member. If the vacancy causes the board to fail to meet the minimum requirement of five board members, the region must fill the vacancy according to its rules and regulations. (ACWA Policy & Guideline Q, 3.)

Vacancy

The vice chair position shall automatically ascend to the chair position in the event that a vacancy occurs in the chair position during the regular term cycle.

Elections

All nominations received for the region chair, vice chair and board positions must be accompanied by a resolution of support from each sponsoring member agency, signed by an authorized representative of the Board of Directors. Only one individual may be nominated from a given agency to run for election to a region board. Agencies with representatives serving on the nominating committees should strive not to submit nominations for the region board from their agency. (ACWA Policy & Guideline P, 2.)
Election ballots will be e-mailed to ACWA member agency general managers and presidents.

The nominating committee shall consist of three to five members.

In an effort to preserve objectivity during the nominating committee process, candidates other than nominating committee members shall be nominated for election.

The nominating committee should pursue qualified members within the region to run for the region board, and should consider geographic diversity, agency size and focus in selecting a slate.

See the current region election timeline for specific dates.

ACWA

Endorsements
ACWA, as a statewide organization, may endorse potential nominees and nominees for appointment to local, regional, and statewide commissions and boards. ACWA's regions may submit a recommendation for consideration and action to the ACWA Board of Directors to endorse a potential nominee or nominee for appointment to a local, regional or statewide commission or board. (ACWA Policy & Guideline P, 3.)

Committee Recommendations & Representation
All regions are given equal opportunity to recommend representatives of the region for appointment to a standing or regular committee of the Association. If a region fails to provide full representation on all ACWA committees, those committee slots will be left open for the remainder of the term or until such time as the region designates a representative to complete the remainder of the term. (ACWA Policy & Guideline P, 4. A.)

At the first region board / membership meeting of the term, regions shall designate a representative serving on each of the standing and regular committees to serve as the official reporter to and from the committee on behalf of the region to facilitate input and communication. (ACWA Policy & Guideline P, 4. B.)

Tours
ACWA may develop and conduct various tours for the regions. All tour attendees must sign a "release and waiver" to attend any and all region tours. Attendees agree to follow environmental guidelines and regulations in accordance with direction from ACWA staff; and will respect the rights and privacy of other attendees. (ACWA Policy & Guideline P, 6.)

Finances
See "Financial Guidelines for ACWA Region Events" document.

Amending the Region Rules & Regulations
ACWA policies and guidelines can be amended by approval of the ACWA Board of Directors.
The Region 5 Rules & Regulations can be amended by a majority vote of those present at any Region 5 meeting as long as a quorum is present.

THE ROLE OF THE REGIONS

Mission:
ACWA Regions will provide the grassroots support to advance ACWA's legislative and regulatory agenda.

Background:
As a result of ACWA's 1993 strategic planning process, known as Vision 2000, ACWA modified its governance structure from one that was based on sections to a regional-based configuration. Ten regions were established to provide geographic balance and to group agencies with similar interests.

The primary charge of regions:

- To provide a structure where agencies can come together and discuss / resolve issues of mutual concern and interest and based on that interaction, provide representative input to the ACWA board.
- To assist the Outreach Task Force in building local grassroots support for the ACWA Outreach Program in order to advance ACWA's legislative and regulatory priorities as determined by the ACWA Board and the State Legislative, Federal Affairs or other policy committees.
- To provide a forum to educate region members on ACWA's priorities and issues of local and statewide concern.
- To assist staff with association membership recruitment at the regional level.
- To recommend specific actions to the ACWA Board on local, regional, state and federal issues as well as to recommend endorsement for various government offices and positions.
    - *Individual region boards CANNOT take positions, action or disseminate communication on issues and endorsements without going through the ACWA Board structure.*

Region chairs and vice chairs, with support from their region boards, provide the regional leadership to fulfill this charge.

GENERAL DUTIES / RESPONSIBILITIES FOR REGION OFFICERS

Region Chair:

- Serves as a member of the ACWA Board of Directors at bimonthly meetings at such times and places as the Board may determine. The Chair will also call at least two Region membership meetings to be held at each of the ACWA Conferences and periodic Region Board meetings.
- Is a member of ACWA's Outreach Program, and encourages region involvement.
    - Appoints Outreach Captain to help lead outreach effort within the region.

- Presides over all region activities and ensures that such activities promote and support accomplishment of ACWA's Goals.
- Makes joint recommendations to the ACWA President regarding regional appointments to all ACWA committees.
- Appoints representatives in concurrence of the region board, to serve on the region's nominating committee with the approval of the region board.
- Facilitates communication from the region board and the region membership to the ACWA board and staff.

Region Vice Chair:

- Serves as a member of the ACWA Board of Directors at bimonthly meetings at such times and places as the Board may determine. The Vice Chair will also participate in at least two Region membership meetings to be held at each of the ACWA Conferences and periodic Region Board meetings.
- In the absence of the chair and in partnership with the chair, exercises the powers and performs duties of the region chair.
- Is a member of ACWA's Outreach Program, and encourages region involvement.
- Makes joint recommendations to the ACWA president regarding regional appointments to all ACWA committees.

Region Board Member:

- May serve as alternate for the chair and/or vice chair in their absence (if appointed) to represent the region to the ACWA Board.
- Will participate in at least two Region membership meetings to be held at each of the ACWA Conferences and periodic Region Board meetings.
- Supports program planning and activities for the region.
- Actively participates and encourages region involvement in ACWA's Outreach Program.

ACWA
Association of California Water Agencies

REGION BOARD CANDIDATE NOMINATION FORM

Name of Candidate: ______________________________

Agency: ______________________ Title: ______________________

Agency Phone: ______________________ Direct Phone: ______________________

E-mail: ______________________ ACWA Region: ______ County: ______________________

Address: ______________________________

Region Board Position Preference: (If you are interested in more than one position, please indicate priority - 1st, 2nd and 3rd choice)

☐ Chair____ ☐ Vice Chair ____ ☐ Board Member ____

In the event, you are not chosen for the recommended slate, would you like to be listed on the ballot's individual candidate section? (If neither is selected, your name will **NOT** appear on the ballot.)

☐ Yes ☐ No

Agency Function(s): (check all that apply)

☐ Wholesale ☐ Sewage Treatment ☐ Flood Control
☐ Urban Water Supply ☐ Retailer ☐ Groundwater Management / Replenishment
☐ Ag Water Supply ☐ Wastewater Reclamation ☐ Other: ______________________

Describe your ACWA-related activities that help qualify you for this office:

____

____

____

In the space provided, please write or attach a brief, half-page bio summarizing the experience and qualifications that make you a viable candidate for ACWA Region leadership. Please include the number of years you have served in your current agency position, the number of years you have been involved in water issues and in what capacity you have been involved in the water community.

____

____

____

____

____

I acknowledge that the role of a region board member is to actively participate on the Region Board during my term, including attending region board and membership meetings, participating on region conference calls, participating in ACWA's Outreach Program, as well as other ACWA functions to set an example of commitment to the region and the association.

I hereby submit my name for consideration by the Nominating Committee.
(Please attach a copy of your agency's resolution of support/sponsorship for your candidacy.)

______________________ ______________________ ______________________
Signature Title Date

Submit completed form by **June 28, 2019** to **regionelections@acwa.com**

Return to Agenda

Marina Coast Water District
Agenda Transmittal

Agenda Item: 10-D Meeting Date: June 25, 2019

Prepared By: Paula Riso Approved By: Keith Van Der Maaten

Agenda Title: Consider Adoption of Resolution No. 2019-47 to Approve an Addition to the Board Procedures Manual

Staff Recommendation: The Board of Directors approve the latest addition to the Board Procedures Manual (BPM).

Background: *5-Year Strategic Plan Mission Statement – We provide our customers with high quality water, wastewater collection and conservation services at a reasonable cost, through planning, management and the development of water resources in an environmentally sensitive manner.*

Discussion/Analysis: On June 1, 2019, Director Zefferman requested to make a small addition to the Board Procedures Manual to help the Board and staff be more efficient with non-substantive corrections and/or changes to agenda items.

Staff has added the requested language to Section 18 – Director's Preparation for Board Meetings as follows:

> Board members may propose non-substantive changes to any item in the agenda by contacting the General Manager by [(time) the day of/before the meeting] where the agenda item will be considered before the Board. Non-substantive changes include typos, misspellings, changes in punctuation, substitutions of words or phrases for clarity without changing the meaning of the agenda item, correcting dates or other minor changes. A District staff member will read these proposed items to the board and into the record before discussion of the agenda item. For items on the consent agenda, a District staff member will read all of these changes to all items on the consent agenda at the beginning of the consent agenda. Approving the consent agenda item will also approve these non-substantive changes.

Environmental Review Compliance: None required.

Financial Impact: ______Yes ___X___No Funding Source/Recap: None

Other Considerations: The Board of Directors can approve the suggested changes, or they can request that the BPM be brought back for further revisions.

Material Included for Information/Consideration: Resolution No. 2019-47; and, the BPM with revisions in track change.

Action Required: ___X___Resolution ______Motion ______Review
(Roll call vote is required.)

Board Action

Motion By_________________ Seconded By_____________ No Action Taken_______________

Ayes____________________________ Abstained______________________________

Noes____________________________ Absent_________________________________

June 25, 2019

Resolution No. 2019-47
Resolution of the Board of Directors
Marina Coast Water District
Amending the Board Procedures Manual

RESOLVED by the Board of Directors ("Directors") of the Marina Coast Water District ("District"), at a regular meeting duly called and held on June 25, 2019 at 11 Reservation Road, Marina, California as follows:

WHEREAS, the Board Procedures Manual is periodically revised and the last revision was made on April 15, 2019; and,

WHEREAS, a Director has requested adding language regarding making non-substantive corrections or changes to agenda items to help Board meetings run more efficiently; and,

WHEREAS, the suggested revisions to the BPM have been reviewed and approved by Legal Counsel.

NOW, THEREFORE, BE IT RESOLVED, that the Board of Directors of the Marina Coast Water District does hereby approve the suggested revisions and updates to the Board Procedures Manual and directs staff to finalize the revisions.

PASSED AND ADOPTED on June 25, 2019 by the Board of Directors of the Marina Coast Water District by the following roll call vote:

Ayes: Directors______________________________

Noes: Directors______________________________

Absent: Directors______________________________

Abstained: Directors______________________________

____
Jan Shriner, Vice President

ATTEST:

____
Keith Van Der Maaten, Secretary

CERTIFICATE OF SECRETARY

The undersigned Secretary of the Board of the Marina Coast Water District hereby certifies that the foregoing is a full, true and correct copy of Resolution No. 2019-47 adopted June 25, 2019.

____
Keith Van Der Maaten, Secretary

Marina Coast Water District

Board Procedures Manual

Amended ~~April 15~~June 25, 2019

Marina Coast Water District
Board Procedures Manual

Table of Contents

Board Procedures Manual Revision Record

08-28-02 Added Section 11-E

"Absence from a Committee: If a committee member's schedule in any given month precludes that Director from attending a regularly scheduled committee meeting, that Director will ask the alternate committee member to attend the meeting. If the alternate committee member can not attend the regularly scheduled meeting, the two primary committee members will then select a special committee meeting date and time. If the two primary committee members' schedules can not accommodate the scheduling of a special meeting date/time, the committee chair will contact the alternate committee member in an attempt to have two Directors available for the meeting."

03-10-09 Revisions were made to Sections 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 16, 20, 21, 27, 28, 30, 32, 33, 34, 35, 37, 39, 45, and 46.

Sections 11 – 46 were renumbered.

Section 14 was moved to Section 11.

Section 12 was moved to Section 43.

Section 13 was moved to Section 44.

Sections 21, 33, and 34 were removed.

09-13-11 Revisions to Sections 3, 5, 7P, 9, 9G, 9I, 9J, 11, 12A, 14, 14D, 16, 17, 27, and 40.

Section 17 was removed.

Sections 18 – 43 were renumbered.

An Appendix with Resolution No. 98-1 was added to the end of the document.

11-08-11 Revision was made to Section 1.

Section 43 was added.

11-13-12 Revision was made to Section 12-B1 Water Conservation Commission.

12-02-13	Revision was made to Section 16 including title.
06-02-14	Revision was made to Section 42.
01-05-15	Revision was made to Section 12-B1 Water Conservation Commission.
04-20-15	Revisions were made to Sections 2, 4, 5, 6, 7, 8, 9, 10, 11, 12, 14, 15, 16, 17, 18, 20, 21, 23, 24, 25, 26, 28, 29, 30, 31, 32, 33, 34, 37, 38, 39, 40, 41, 42 – Section 31 was deleted and the subsequent Sections were renumbered.
07-05-16	Revisions were made to Sections 1, 2, 3, 4, 6, 7, 9, 10, 11, 12, 14, 15, 16, 17, 18, 19, 22, 23, 24, 25, 28, 29, 30, 31, 32, 33, 34, 37, 40, 41, 42 – Section 31 was deleted and the subsequent Sections were renumbered.
03-18-19	Revisions were made to Section 12-B1 Water Conservation Commission; and, Section 12-B2.
04-15-19	Revisions were made to Sections 11, 16.A and D; and Section 23
06-25-19	Adding language to Section 18 regarding non-substantive changes to agenda items.

1. Purpose of Board Procedures Manual.

The purpose of this Board Procedures Manual is to describe the procedures approved by the Board of Directors to be used in the conduct of Board business. The intent of these procedures is to:

- Provide for the fair and efficient consideration of board decisions;
- To ensure that the public is informed of the matters coming before the Board;
- To ensure that the public has an opportunity to witness and comment upon the deliberations of the Board; and
- To encourage proper public involvement in the Board's decision making.

Each Director, upon assuming office, shall be given a copy of this Board Procedures Manual, and shall be asked to comply with the policies and procedures in this Board Procedures Manual.

2. District Mission.

The Marina Coast Water District Board of Directors has adopted the following mission statement:

> *We provide our customers with high quality water, wastewater collection and conservation services at a reasonable cost, through planning, management and the development of water resources in an environmentally sensitive manner.*

3. Authority.

The Board of Directors is the governing body of the District. It derives its authority from the County Water District Law (Division 12, Part 3 sections 30000 et seq. of the Water Code of the State of California; and, Division 2, Part 1, Chapter 4, Article 2, sections 53630 et seq. of the Government Code of the State of California). The District was formed in 1960 and has provided water and wastewater services within its service area since that time.

Apart from his/her normal function as a member of the Board, a Director have no individual authority. As single individuals, Directors may not commit the District to any policy, act, or expenditure.

Directors do not represent any fractional segment of the community but represent the entire service area as a whole.

4. Governing Laws and Rules.

The Board of Directors will conduct all meetings of the Board and meetings of committees of the Board in accordance with the Ralph M. Brown Act, California's Open Meeting Law. The Board conducts its meetings "guided but not bound by" Rosenberg's Rules of Order (as published by the California League of Cities) as to those situations not specifically addressed by an applicable law or statute. Directors must become familiar with the Brown Act, Rosenberg's Rules of Order, the conflict of interest laws, the County Water District Law, and all other laws applicable to the District, in order to effectively execute their duties.

5. Harassment-Free Work Environment.

Each Director shall act to provide a District work environment and a Boardroom free of harassment, disrespectful or other unprofessional conduct. The District's policy is more fully set forth in the Marina Coast Water District Employee Handbook, and each Director should become familiar with the Employee Handbook and the harassment rules contained therein.

6. Attendance at Board and Committee Meetings.

Directors are expected to carry out their responsibilities to the best of their abilities. In order to accomplish this goal, Directors should be present for scheduled meetings of the Board, special meetings, meetings of board committees, and District events. If a Director cannot attend a regular Board meeting for any one of the following reasons, that absence shall be deemed excused: illness or injury, family emergencies, or a Director's regular job duties. If a Director does not attend a regular Board meeting for any other reason unless the Director's absence is approved by vote of the other Directors, then the Director's absence shall be deemed an unexcused absence. A Director having three (3) or more consecutive unexcused absences shall be deemed to be in violation of Board Policy and subject to Board action pursuant to Section 42.

7. Duties of the Directors Acting as Members of the District Board of Directors.

The duties of the Directors include:

A. setting policies, procedures, goals, directions, and adopting rules and regulations for the governance of the District;

B. taking action only by the affirmative vote of at least a majority of the Directors on ordinances, resolutions and motions;

C. safeguarding the assets of the District and maintaining the District's financial stability;

D. assuring that the District is well managed;

E. assuring the District is responsive to the interests of the voters and the needs of the persons served by the District;

F. assuring that the actions of the Board and of each Director and the actions of all employees of the District conform to all federal, state, and local statutes and ordinances, and to the ordinances, rules, regulations and policies of the District;

G. assuring that each employee of the District and each constituent of the District is treated courteously and fairly by the District, and that privacy rights of District employees and constituents are safeguarded in accordance with law;

H. making reasonable and diligent inquiry of competent, qualified and reliable advisors and other sources to obtain sufficient information for informed and timely decisions and judgments;

I. assisting the General Manager by looking at problems from broader points of view, and providing outside perspective and guidance;

J. appointing the persons to serve as the District's General Manager and Secretary to the Board, the District's Legal Counsel, the independent Auditor, and such other attorneys, and consultants as the Board determines are necessary or convenient to be appointed by the Board for the business of the District. Each such appointed person shall serve at the pleasure of the Board;

K. establishing rules for and assuring the effective conduct of the Board's proceedings, and adjourning meetings of the Board by 10 p.m. unless the meeting is extended by Board action;

L. preparing for and attending all regular and special meetings of the Board and assigned committees of the Board, unless excused by the Board for good reason;

M. appointing persons to the District's Joint District-City Committee, Water Conservation Commission, and such other committees as the Board determines;

N. nominating and electing representatives and alternates to outside boards, committees, and other bodies for which the District is entitled to appoint one or more representatives;

O. preparing for and attending all regular and special meetings of boards, committees, and other bodies to which the Board elects a Director as the District's representative, or arranging for attendance by an alternate, if the Director cannot attend and if the Board has selected an alternate;

P. assuring that the conduct of the District's business is open and public and that actions and records of the District are taken and held in confidence only as permitted by law, including: Article I, Section 3 of the California Constitution; the Ralph M. Brown Act, Govt. Code sections 54950 and following; the Public Records Act; Govt. Code sections 6250 and following; and as necessary to safeguard the assets of the District and to protect the rights of the District's employees;

Q. protecting confidential information of the District, its officers and employees from unauthorized disclosure and dissemination;

R. reporting any question or doubt about the possibility of the creation of the perception of a conflict of interest to the District Counsel and avoiding any possible conflicts of interest; and,

S. completing and documenting training for Directors in: exercising oversight and supervision of management; the roles and responsibilities of Directors; how to understand budgets; how to monitor budget compliance; and how to work together as a team in problem solving.

8. Prohibited Service.

A Director is prohibited by law from being employed by or entering into any contract with the District while serving on the Board. Water Code Section 30541 also prohibits a Director from serving as the General Manager, Secretary, Treasurer, or Auditor.

9. Duties of the President.

The Board of Directors shall have a President who is elected by the Board from among the five Directors. The President shall be elected annually in the month of December but not before any newly elected or reelected Director(s) have taken office. No Director shall serve more than three (3) consecutive years as President. If a majority of the Directors cannot agree on who should be the new President, then the existing President shall remain President until the issue can be resolved. The President's responsibilities include:

A. presiding over all meetings of the Board, with guidance from Rosenberg's Rules of Order, including:

(1). announcing each item of business on the agenda and the action recommended by staff;

(2). calling for motions;

(3). calling for public participation during meetings when appropriate;

(4). determining questions of order and enforcing rules of the Board;

(5). stating the motion and announcing its passage or failure;

(6). adjourning any regular or special Board meeting which is still in progress at 10 p.m., unless the meeting is extended by Board action; and,

(7). reviewing and approving the agenda in conjunction with the Vice President and the General Manager or Secretary of the Board. The final approval shall be made by the President (when there is not consensus on the agenda items). However, a majority of the Board may also order the placement of an item on the agenda.

B. appointing members to Ad Hoc Committees of the Board;

C. serving on committees and commissions as appointed by the Board;

D. setting the time and place for any special meeting of the Board, except a special meeting called by a majority of the Board;

E. adjourning meetings of the Board;

F. representing the District at public events;

G. serving as public spokesperson of the District, along with the General Manager;

H. signing all contracts on behalf of the District, except as the Board alternatively authorizes the General Manager or other person, subject to limitations and conditions as the Board may determine;

I. assist with the orientation of new Board members as they are elected or appointed to the Board of Directors; and,

J. upon advice from District Legal Counsel, and approved by the Board, gives direction to outside legal counsel on matters where the General Manager should not direct counsel as he or she is the subject of a legal issue.

10. Duties of the Vice-President.

This Board of Directors shall have one Vice-President who shall be elected by the Board from among the five (5) Directors at the same time as the President is elected. The Vice-President shall be elected annually in the month of December but not before any newly elected or reelected Director(s) have taken office. It is the Board's policy to rotate the office of Vice-President among the Board members. However, no Director shall serve more than three (3) consecutive years as Vice President. If a majority of the Directors cannot agree on who should be the new Vice President, then the existing Vice President shall continue in office until the issue can be resolved. The Vice-President's responsibilities include:

A. performing all the duties of the President during any absence of the President; and,

B. if for any reason the office of President is vacant, acting in the place of the President until a new President is elected.

11. Orientation, Training and Preparation of Directors.

Each new Director, upon assuming his or her duties, will be provided a comprehensive District orientation by the General Manager and Board President. The Board shall strive to develop and maintain a superior level of competence and preparation among its members through a process of continuing training, education and preparation.

Upon the swearing in of a new Director or due to a change in the President/Vice President, the General Manager or designee will make the necessary changes to the official listing of its Board Members on its website and letterhead such that the Board is listing in the following order: President, Vice President, and then the remaining members of the Board in alphabetical order by last name.

Directors may schedule to attend, on behalf of the District, such educational programs, conferences, and meetings to the extent funds are allocated in annual Budgets. Attendance will be scheduled through the General Manager. Travel done by Directors will comply with the District's travel policies. Directors shall endeavor to be reasonably frugal with their expenditures of District travel funds.

Any Director may request attendance either by email, phone or written requests, preferably three weeks before the deadline for early registration or accommodation discount. If funds are budgeted and available, the Management Services Administrator shall register the Director for attendance, book travel, accommodation and meals and pay all costs accordingly. If funds are not available, the General Manager shall place an item on the earliest possible Board agenda (and preferably before the deadline(s) for early registration discount(s)) to request the Board approval for such expenditure. Within 72 hours after the registration is complete, the Management Services Administrator shall email the Director(s) all the completed registration forms, and accommodation and traveling details. After these travel arrangements are made, if the Director(s) can no longer attend the meeting or conference, the Director(s) shall notify the General Manager within 24 hours of such event so that the Management Services Administrator can cancel the registration, accommodation and traveling arrangements. If such cancellation is not possible, the General Manager shall inform the Board to determine if it is possible that another Director could attend. The District will not pay for training or conferences that the Director personally pays up for but does not attend. If the Director(s) prefers to personally pay for some or all of the costs related to the trip, the General Manager shall, upon request of the Director(s), promptly reimburse the Director(s) for those costs authorized in the District's travel policy. Receipts for all travel, meal, hotel expenses shall be given to the Management Services Administrator as soon as possible upon return.

The General Manager will from time to time provide the Directors with a list of such conferences or meetings so that the Board may consider individual or collective attendance.

12. Board Committees, Commissions and Negotiators.

A. Committee and Commission Actions. Committee and Commission actions shall be governed by the provisions of the California Water Code and all other applicable California Codes as well as District policies, rules, and regulations. The Board may adopt rules for the governance of any committee consistent with the provisions of the California Codes. Committees have no legal authority to act for the Board or the District except with prior Board approval, but shall report their findings and recommendations to the Board for action. All committees and commissions of the Board are advisory in nature and are authorized only to provide recommendations to the whole Board. Committees and commissions are evaluated periodically by the Board based on their necessity and value to District business.

B. Standing Committees. District standing committees shall be the Water Conservation Commission, the Joint City-District Committee, the Executive Committee, the Budget and Personnel Committee, and the Community Outreach Committee. Each committee shall consist of two Directors and such other persons as the Board may appoint. The Water Conservation Committee shall have one Director appointed as a liaison and one appointed as an alternate. Standing Committees constitute legislative bodies for the purposes of the Brown Act. Public members of the Water Conservation Commission shall be appointed for terms of two years. Public members of committees shall not receive confidential information of the District and shall not participate in closed meetings except upon advice from Legal Counsel. Each Director shall serve on one or more standing committees.

(1). Water Conservation Commission: The Board will select one Director to serve as a Board Liaison to the Water Conservation Commission, and one Director as an alternate.

The Board will appoint five (5) members of the public from within the area served by the District (either annexed or served by contract), for terms of two years. The members of the Water Conservation Commission shall have the duties and responsibilities to:

(a) Review water conservation ordinances and policies and advise the Board in matters related to conservation and water usage by customers of the District;

(b) Review and advise the Board concerning refinements/adjustments to the water conservation program, specifically conservation Best Management Practice implementation, outreach and educational programs, the conservation budget, and water loss programs and conservation within the larger Water Resources Programs;

(c) Review and advise the Board on the District's Water Shortage Contingency Plan, Conservation Ordinance, and conservation provisions of the District Code;

(d) Review and advise the Board on equipment and technologies that promote water conservation;

(e) Review conservation outreach activities and get Board approval on an annual event calendar for actions to inform the public about the District’s conservation activities.

(2). Joint City-District Committee: The Board President or Vice President shall serve on this committee along with another Director. The duties and responsibilities of the Joint District - City Committee shall be:

(a) Communicating with the Land Use Jurisdictions and maintaining a harmonious working relationship between the Board and the City officials and staff; and,

(b) Reporting to the Board its findings and recommend appropriate action with respect to any inter-agency matters.

(3). Executive Committee: The Board President and Vice President shall serve on this committee. This committee shall meet on an as-needed-basis to discuss topics of a general nature with the General Manager. The purpose of the Executive Committee is to provide the President and Vice President with a routine opportunity to discuss ideas, information flows, current and potential future projects and future agenda items with the General Manager and any staff members that the General Manager deems appropriate.

(4). Community Outreach Committee: The Board President shall select two Directors to serve on this committee. This committee shall meet on an as-needed-basis. The duties and responsibilities of the Community Outreach Committee shall be:

(a) Provide ideas and recommendations to the Board regarding public information activities beyond the routine activities and reports required by law or existing District ordinances and policies;

(b) Receive periodic reports from staff and consultants regarding District public information activities; and

(c) Provide comments and recommendations to staff regarding draft public information products created by staff or consultants.

C. Ad Hoc Committees: An ad hoc committee is an advisory committee composed of less than a quorum of the Board. An ad hoc committee serves a limited or single purpose, is not perpetual, and will be dissolved once its specific task is completed, and whose meetings are not fixed by formal action of the Board. In accordance with Government Code Section 54952(b) ad hoc committees are not legislative bodies subject to the Brown Act. No staff or public members may be appointed to an ad hoc committee. The Director or two Directors comprising an ad hoc committee shall be appointed by the President of the Board. An ad hoc committee shall limit its activities to the accomplishment of the task for which it is appointed and shall have no power to act on behalf of the Board and the District except such as specifically conferred by action of the Board.

D. Special Committees: Special committees are committees other than standing or ad hoc committees. Special committees are legislative bodies subject to the Brown Act. Special committees may be established by and its members may be appointed by the President of the Board or the Board for such special tasks as circumstances warrant. A special committee shall limit its activities to the accomplishment of the task for which it is appointed and shall have no power to act on behalf of the Board and the District except such as specifically conferred by action of the Board. Upon completion of the task for which appointed, a special committee shall be dissolved. Staff and public members may be appointed to a special committee.

E. Board-Appointed Negotiators: Under the Brown Act, the Board has the authority to appoint property negotiators, labor negotiators, and litigation representatives, which may include one or two Directors or staff members. Such negotiators are authorized to meet in closed session with the Board. Property and labor negotiators are appointed in public session by the Board. Private meetings of such negotiators are not subject to the Brown Act. The negotiators may meet in closed session with the Board subject to compliance with applicable provisions of the Brown Act. See also Section 16.G. The role of the negotiator does not directly replace, limit, or change the administrative and operational responsibilities of the General Manager and staff to meet with staff from other agencies and to prepare the analysis, documentation, draft agreements, and other administrative tasks necessary to support the current and/or future negotiations and to represent the District as it's General Manager in the process.

F. Attendance and Vacancies: Any person serving on a standing or special committee must be prepared for and attend all committee meetings, unless excused for good reason. If a committee member fails to attend meetings of a committee and is not excused for good reason for two consecutive meetings, his or her position as a committee member shall be deemed vacant. In any committee, vacancies shall be filled for the unexpired portion of the term in the same manner as provided in the case of original appointment.

G. Absence from a Committee: If a committee member's schedule in any given month precludes that Director from attending a regularly scheduled committee meeting, that Director will ask the alternate committee member to attend the meeting. If the alternate committee member cannot attend the regularly scheduled meeting, the two primary committee members will then select a special meeting date and time. If the two primary committee members' schedules cannot accommodate the scheduling of a special meeting date/time, the committee chair will contact the alternate committee member in an attempt to have two Directors available for the meeting.

H. Referral to Committee: Matters may be referred to any committee through the Chair of the committee by the Board, by any Director, or by any other person. Each Committee Chair shall discuss each referred matter with the committee.

13. Communications.

The Board and the individual board members will be committed to establishing and maintaining an environment that encourages the open exchange of ideas and information among Board members, the staff and the public, that is positive, honest, respectful, concise, understandable, responsive, and cost-efficient.

14. Code of Ethics.

AB 1234 requires agencies to provide mandatory ethics training and develop compensation and reimbursement regulations for their agencies. Board members are required to complete an ethics training course every two (2) years. Newly elected and/or appointed Board members are required to complete the course within one (1) year of being sworn in and then follow the two (2) year refresher course time frame. The District encourages training as soon as reasonably possible.

The Board of Directors is committed to providing excellence in legislative leadership that results in the provision of the highest quality services to its customers. The Board and its individual members are expected to maintain the highest ethical standards, to follow District policies and procedures, and to abide by all applicable local, state, and federal laws. Board member conduct should at all times enhance the integrity and Mission of the District, and the confidence the public has in the District. In order to assist in the governance of the behavior between and among members of the Board, the following rules shall be observed:

A. The dignity, style, values and opinions of each Director shall be respected.
B. Responsiveness and attentive listening in communications is encouraged.
C. The needs of the District's customers should be the priority of the Board.
D. The primary responsibility of the Board is the formulation and evaluation of policy. All operational aspects of the District are the responsibility of the General Manager.
E. Directors should commit themselves to emphasizing the positive.
F. Directors shall commit themselves to focusing on issues and not on personalities.
G. Differing viewpoints are healthy in the decision-making process. Individuals have the right to disagree about ideas and opinions, but without being disagreeable. Once the Board takes action, Directors shall commit to supporting said action and not to creating barriers to the implementation of the action. Board approved committee members must take action in support of the Board's decision and not take action based on an individual

view, position, or prior voting history on a matter, or any other reason in conflict with the Board's direction.

H. Any concerns regarding a safety hazard should be reported to the General Manager at the earliest possible moment. Emergency situations should be dealt with immediately by seeking appropriate assistance.

I. In seeking clarification for policy-related concerns, especially those involving issues related to personnel matters, legal actions, property, finance, projects or programs, a Director should confer directly with the General.

J. When approached by an employee of the District concerning specific District management or operations, Board members should direct all inquiries to the General Manager.

K. The work of the District is a team effort. All individuals should work together in a collaborative way, assisting each other in the conduct of the District's affairs.

L. Directors should develop a working relationship with the General Manager so that current issues, concerns and District projects can be discussed comfortably and openly. However, a Director does not have the power to individually direct the work of the General Manager or the District staff. Only the Board itself has the power to direct the work of the General Manager and only the General Manager has the power to direct the work of the District staff.

M. Directors should function as part of the whole. Issues should be brought to the attention of the Board as a whole, rather than to individual members selectively.

N. The Board as a whole is responsible for setting goals and objectives for the District in part by doing periodic strategic planning. Each Director is responsible for monitoring the District's progress in attaining these goals and objectives.

O. Harassment, in any form, will not be tolerated.

P. Directors shall protect confidential information of the District, its officers, employees, and customers from unauthorized disclosure or dissemination.

Q. Directors shall avoid and report conflicts of interest.

R. Directors should periodically avail themselves of available training for the exercise of oversight and supervision of management, the roles and responsibilities of Directors, how to understand budgets, how to monitor budget compliance, and how to work together as a team to solve problems.

15. Comments by Directors Concerning District Staff Members.

Board members shall refrain from publicly censuring or criticizing members of the District staff. Such criticism shall be given in private communications through the General Manager. Directors should also be aware that their free speech rights may be limited when it comes to certain information related to District staff. Examples of such information include employee medical information, employee disciplinary actions and specific compensation information regarding an employee. Directors should check with the General Manager before publicly revealing any information regarding specific District staff members that might be considered negative, slanderous, disrespectful or discriminatory.

16. Board and Individual Director Consultations with, and Directions to, General Manager and Attorneys. Relationship and Authorities between General Manager and Legal Counsel and Special Legal Counsels.

A. The Board and its members shall deal with the administrative services of the District only through the General Manager, and neither the Board nor any individual Director shall give orders or instructions to any subordinate of the General Manager. All individual Director questions relating to an open session item shall be directed to the General Manager.

B. Legal Counsel: Duties: The Board shall employ an individual or firm of attorneys licensed to practice law in the State of California, to advise and represent the District and to assure full compliance with the requirements of the District Enabling Act and applicable laws. Legal counsel shall serve at the pleasure and direction of the Board of Directors. The resolution appointing the Legal Counsel shall include terms of an agreed upon fee schedule. Legal Counsel shall be responsible for:

(1) Reviewing, preparing documents as requested by the Board, or by the General Manager pursuant to Water Code Section 30580, and making appropriate comment on matters or recommendations presented in written or oral form;
(2) Reviewing and preparing documents as requested by the Board in advance of meetings. The General Manager will request that Legal Counsel or Special Legal Counsel review and/or prepare notices, agendas, resolutions, ordinances, minutes, agreements, contracts and supporting materials pursuant to Water Code Section 30580;
(3) Attending each meeting of the Board, unless excused, in advance or during a meeting; and attending other meetings as authorized by the Board or directed by the General Manager; and,
(4) Attending Board Committee meetings, upon request of the General Manager or the Board, as well as attending other business meetings of the District as requested by the Board.

C. The Board of Directors shall appoint Special Legal Counsel to assist the Board and District when the Board determines that attorneys with specialized legal expertise are needed to represent or advise the Board and District staff. The legal services agreement with each Special Legal Counsel shall specify the scope of legal services to be provided.

D. The Legal Counsel and Special Legal Counsels report to the Board as a whole. However, the Legal Counsel is available to each individual Director for consultation regarding legal matters particular to that individual Director's participation in matters where the individual Director may have a conflict of interest. However, no attorney-client relationship shall be established with the individual Director as a result of such consultation. An individual Director (1) may not give direction to the Legal Counsel or any Special Legal Counsel without prior concurrence of the Board, but (2) may email Legal Counsel or any Special Legal Counsel a question or questions on any closed session item before a Board meeting but such Counsel is not required to respond to any such question or questions unless and until (a) directed by the Board in closed session or (b) directed by the General Manager or the Board President or (c) unless the request relates to questions regarding that individual Director's participation in any board decision. The Board President and General Manager shall be copied on all such messages to Legal Counsel or Special Legal Counsel. with a copy to the Board President and Legal Counsel. The Legal Counsel and Special Legal Counsels shall be available to the General Manager and District staff to the extent authorized by the Board or authorized by the General Manager pursuant to Water Code Section 30580, for consultation on applicable issues and activities within the scope of the applicable legal services agreement approved by the Board. The General Manager may approve legal work on urgent items that require legal action, wherein a Special meeting cannot be promptly scheduled, and then ratified at the next closed session by the Board, provided the costs incurred up to the Board closed session are less than $3,000.

E. Legal Counsel and Special Legal Counsels shall report directly to the Board and General Manager all potential legal problems and liabilities they notice or discover during their employment by the District. If the subject of the potential legal problem or liability is a Director or the General Manager, then the report shall be made to other than that Director or General Manager.

F. Legal Counsel and Special Legal Counsels shall be available to answer questions from the Board during closed sessions. The General Manager shall copy all correspondences and communications to and from Legal Counsel and Special Counsels to the Board on all closed session items.

G. The President or the Board may appoint one or two Directors to an Ad Hoc Committee for each legal case. The Board may grant limited authority to the Ad Hoc Committees to direct Legal Counsel and Special Legal Counsels. The limited authority will be assigned and described by the Board in a resolution when any such Ad Hoc Committee is created. The Ad Hoc Committee shall report in closed session (if permitted) to the Board at the next Board meeting following any direction given by the Ad Hoc Committee to Legal Counsel and Special Legal Counsels and any other actions taken. See also Section 12.E.

H. Legal Counsel and Special Legal Counsels shall notify the Board and the General Manager about important events, rulings or decisions made regarding the District's case(s). Legal Counsel and Special Legal Counsel shall endeavor to do so within 72 hours of such events, rulings or decisions.

I. Legal Counsel and Special Legal Counsels shall email the entire Board and the General Manager, if the General Manager is not subject of the case, copies of all briefs, dockets, applicable court calendars, motions and filings submitted to the Court and all documents and notices received from the Court and opposing parties.

J. Legal Counsel and Special Legal Counsels shall only perform work that has been authorized by the Board, or by the General Manager pursuant to Water Code Section 30580.

17. Conduct of Business.

A. The Board of Directors shall comply with the Ralph M. Brown Act (Brown Act) that requires meetings of the Board of Directors to be open and public.

B. Regular District Board meetings shall be held at the City of Marina's Council Chambers at 211 Hillcrest Avenue, Marina, CA, unless otherwise specified.

C. The notice and agenda for each meeting of the Board or committees of the Board shall be posted at the District offices at 11 Reservation Road, Marina, CA, and the City of Marina offices at 211 Hillcrest Avenue, Marina, CA in accordance with the Brown Act.

D. The General Manager shall submit the draft Board agenda to the Board President and Vice President for review and approval before posting such agenda. Either the Board President or Vice President can add any items to the final Board agenda. No item on the final Board agenda can be deleted without the approval of both the Board President and Vice President. If there is not consensus on the items, the President shall have the final say. Emergency matters can be added to the agenda without advanced request or notice.

E. The agenda and agenda package for regular board meetings will be distributed to the Board and made available to the public on Wednesday in advance of the Board meeting on Monday or Tuesday if Monday is a holiday. The General Manager shall include all copies of contracts, proposals, agreements, plans, specifications, exhibits, attachments, test results, investigation reports, etc. in the agenda packet for the Board to review and approve.

F. The General Manager shall request District Legal Counsel and/or Special Legal Counsel to review all proposed contracts, agreements, employment agreements, etc. and approve them before including in the Board agenda package. All staff reports shall contain background information, previous Board actions, adopted goals and objectives, concerned issues, recommendations by staff, funding sources and available fund in the adopted budget. If options were evaluated, they should be included in the background, but not required for all staff reports.

G. Teleconferencing may be used for any meeting if such request is made sufficiently in advance of the meeting to permit compliance with posting requirements under Government Code section 54953(b)(3). Agendas shall be posted at teleconference locations in a place most likely to be seen by the public and also at the specific area or areas where the meeting will be held.

H. Any Board member may place a non-emergency item on the agenda by submitting it, in writing, to the General Manager, at least ten (10) days before the meeting, to provide enough time to include it in the agenda. Such requests shall explain the issue and provide a recommendation for Board action.

18. Directors Preparation for Meetings.

Board members are to prepare for all Board meetings. In preparing for meetings, Directors shall identify the need to obtain any supplemental or clarifying information in order to better prepare or enhance their knowledge to improve the legislative decision-making process and communicate same to the General Manager. Board members are encouraged to do so as far in advance of the Board meeting as possible, to allow the General Manager time to provide the requested additional information. Any Director may elect NOT to receive materials or documents requested by any other Director.

Board members may propose non-substantive changes to any item in the agenda by contacting the General Manager by [(time) the day of/before the meeting] where the agenda item will be considered before the Board. Non-substantive changes include typos, misspellings, changes in punctuation, substitutions of words or phrases for clarity without changing the meaning of the agenda item, correcting dates or other minor changes. A District staff member will read these proposed items to the board and into the record before discussion of the agenda item. For items on the consent agenda, a District staff member will read all of these changes to all items on the consent agenda at the beginning of the consent agenda. Approving the consent agenda item will also approve these non-substantive changes.

19. Quorums.

In order to constitute a quorum of the Board, a majority of the Board members (three of the five directors) must be present at the designated meeting location authorized by the Brown Act. If a quorum is not present, no meeting shall take place. For quorums of board committees, a majority of committee members is required. For committees of two (2), both members are required to be present to constitute a quorum and hold a committee meeting. If a committee quorum is not present, the committee meeting can be adjourned to another time and the lack of a quorum will be reported to the Board.

20. Adjourned Meetings.

The Board of Directors may adjourn any regular, special or adjourned special meeting to a time and place specified in the order of adjournment. Less than a quorum may adjourn a meeting. If all members are absent, then the Secretary or the Secretary's designee shall comply with the procedure specified in the Brown Act. When an order of adjournment fails to state the hour at which the adjourned meeting is to be held, it shall be held at 6:00 p.m.

21. Special Meetings.

An emergency or special meeting may be called in accordance with the Brown Act.

22. Parliamentary Procedure.

A. Rules of Order. The presiding officer shall preserve order and decorum and shall decide on questions of order, subject to appeal to the Board. District Legal Counsel shall advise the President as Parliamentarian. The Board shall use Rosenberg's Rules of Order and this Board procedures manual.

B. Non-Roll Call Votes. Following any non-roll call vote, the President shall announce the results of the vote, including the vote or abstention of each Director present unless the vote is unanimous.

C. Roll Call Votes. After a motion has been made and duly seconded, any Board member may call for a roll call vote. Additionally, action on all District resolutions and ordinances and items that expend District funds shall be taken by a roll call vote.

23. Order of Business.

The regular order of business of the Board shall contain any or all of the following items:

Call to Order
Roll Call
Public Comment on Closed Session Items
Closed Session Items
Reportable Actions Taken During Closed Session
Pledge of Allegiance
Oral Communications from the Public
Special Presentations
Public Hearings
Consent Calendar
Action Items
Correspondence Received by the District, Directors and General Manager
Informational Items
Board Member Requests for Future Agenda Items
Directors Comments
Additional Closed Session (If Necessary)
Adjournment

The regular order of business may be changed by the President subject to the Board determining otherwise.

If there is insufficient time to cover closed session items prior to the open session, the Board, through a simple majority vote, may decide during closed session to adjourn to an additional closed session after the conclusion of the open session.

24. Board Actions.

All actions of the Board shall be in the form of an ordinance, resolution or motion.

A. Ordinances. The Board shall enact as ordinances any items of business presented to the Board and approved by the Board which:

1) Are required by law to be enacted as ordinances;

2) Repeal, supersede or amend an existing ordinance, except that the Board may adopt an ordinance authorizing that an existing ordinance may be repealed, superseded or amended by resolution;
3) Adopt a policy, rule or regulation to be enforced as a misdemeanor;
4) Relate to any other item of business which could be adopted as a resolution or motion which the Board determines to enact as an ordinance.
5) Each ordinance shall state whether it amends the District Code and, if so, which part or parts of the District Code the ordinance amends.

B. Resolutions. The Board shall adopt as resolutions, any items of business presented to the Board and approved by the Board which:

1) Are required by law to be adopted by resolution;
2) Supersede or amend an item previously adopted by resolution;
3) Interpret any ordinance;
4) Establish or change a policy, rule or regulation which does not need to be enforced as an ordinance;
5) Adopt procedures for the Board, Officers or Staff to use in implementing any ordinance;
6) Make a determination (Determination of Exemption, Negative Declaration or Environmental Impact Report) under the California Environmental Quality Act; 7) Adopt or amend a budget;
8) Approve any written contract;
9) Approve the acquisition or disposition of real property;
10) Approve the acquisition of personal property with a value of $5,000 or more;
11) Approve the disposition of personal property;
12) Adopt or amend any plan for the District;
13) Adopt or amend authorized positions for the District; and
14) Relate to any other item of business which could be adopted as a motion and which the Board determines to adopt as a resolution.
15) All resolutions shall state whether the contents of the resolution will become a policy, rule or regulation of the Marina Coast Water District.

C. Motions. The Board shall adopt as motions, any items of business presented to the Board and approved by the Board which:

1) Are not required by law to be approved as an ordinance or resolution;
2) Are not enacted as ordinances or adopted as resolutions by the Board; and
3) Require an action of the Board.
4) If the Board so directs in its motion, a motion shall become a rule and regulation of the District; however, most rules and regulations of the District should be adopted either by resolution or ordinance.

D. Ordinances, Resolutions and Motions. All ordinances and resolutions shall be adopted by roll call vote. All motions to approve the expenditure or transfer of District funds and to approve personnel actions shall be adopted by roll call vote. All motions shall be reflected in the minutes of the Board, which shall state the contents of the motion, who made the motion, who seconded the motion and the ayes and noes on the vote.

25. Procedure for Action Items.

The Board shall act only by ordinance, resolution or motion. Except where action is taken by the unanimous vote of all Directors present and voting, the ayes, noes, and abstentions shall be taken upon the passage of all ordinances, resolutions or motions and shall be entered in the minutes. Any member of the Board, including the President, can make a motion. Motions require a second. The President may vote on all motions unless disqualified or abstaining. The President shall not call for a vote on any motion until sufficient time has been allowed to permit any member of the Board to speak. Complex motions should generally be prepared in writing, and if it is necessary for the full understanding of the matter before the Board, the President shall restate the question prior to the vote. Common motions may be stated in abbreviated form and will be put into complete form in the minutes. Until the President states the question, the maker of the motion may modify their motion or withdraw it completely. It shall be the procedure of the Board, when considering all action items, to:

(1) Receive a staff report on the item from the General Manager or the responsible staff person;
(2) Allow Board members to ask clarifying questions of staff, through the President;
(3) Receive public comment of the item;
(4) Seek a motion and a second on a proposed action for the item;
(5) Provide for Board discussion of the item; and
(6) Conclude discussion/debate and consider taking action on the item through an appropriate motion. See also Section 28.B below if there is an applicant at the meeting.

26. Closed Sessions.

Closed sessions shall be agendized and conducted in accordance with the Brown Act. The most common purpose of a closed session is to avoid revealing confidential information that may, in specified circumstances, prejudice the legal or negotiating position of the Board or compromise the privacy interests of employees. Directors have a fiduciary duty to protect the confidentiality of closed session discussions. The California Attorney General has issued an opinion that includes sanctions that could apply to a person who discloses closed session information. For more detailed information on closed sessions see the *California Attorney General's web site and publications.*

27. Orderly Discussion.

In order to promote discussion of the issues before the Board, each member shall be recognized by the President before speaking. Notwithstanding any provision of this procedures manual, however, each member of the Board shall have the right to be heard within reason on any issue before the Board.

28. Process for Public Comment.

A. The public will always be afforded the opportunity to be heard on any item not on the Board's agenda, at each meeting during the period provided for Public Comment. Unless otherwise authorized by a majority of the Board, speakers will be limited to four

(4) minutes during Public Comment unless the majority of the Board authorizes a shorter or longer time limit depending upon the circumstances.

B. For all items being considered by the Board on the agenda, after the staff presentation for any public hearing, action item, information item, or consent item, and after staff responds to any clarifying questions from Board members but prior to discussion by the Board, the President shall seek public input. If there is an applicant, the President shall first call upon the applicant to comment on the staff recommendation and to present additional information concerning the application. The President shall then ask for comments from the public. Unless otherwise authorized by a majority of the Board, speakers will be limited to four (4) minutes. The President may, in the interest of facilitating the business of the Board, and avoidance of repetition, limit the amount of time a person may use to address the Board. The President may close public comment at any time restricting further discussion to the Board level unless a majority of the Board wishes to hear from other persons. At the conclusion of the public comment, if there is an applicant, he/she shall be given the opportunity to respond to the comments received. All questions of staff from the public and Board members shall be addressed to the President. Staff responses to questions from the public shall ordinarily be made only after the public comment period has ended.

29. Limitations on Board/Staff Reports.

At each regular Board meeting, reports or comments by Board members shall be made under the Director's Comments and Reports. Reports or comments by staff members shall be made under Staff Reports or Informational Items. Any written report from a Board member shall be placed on the meeting agenda with prior consent of the President. Unless authorized by the President, each Director's reports and comments shall not exceed five (5) minutes. The President, with consensus of the Board, may defer some or all Board reports until after the Board has taken action on any Deferred Consent Calendar Items. This may be done in the interest of facilitating the business of the Board, or as a courtesy to members of the public desiring to participate in Public Hearings or other Action Items which are also on the agenda.

30. Referrals.

Any matter coming before the Board may, if deemed necessary, be referred by the President, without Board action, to the General Manager, District Legal Counsel, Special Legal Counsel, or to any standing or special committee of the District. The matter shall be reported back to the Board at the next Board meeting by the General Manager, District Legal Counsel, Special Legal Counsel, or to any standing or special committee of the District on the status, responses, recommendations and/or plans to address the matter.

31. Conflict of Interest.

A Director who has a disqualifying conflict of interest on any matter before the Board shall declare the nature of the conflict and it shall be reflected in the Board minutes. The Director shall not participate in the discussion of that agenda item; shall leave the Board chamber after making the declaration and before any discussion on the matter occurs; and shall not cast a vote on that matter.

The minutes shall record a Director's absence for any circumstance when a Director is not seated at the dais.

32. Minutes of Board and Board Committee Meetings.

The minutes of meetings of the Board and of board committees shall be action minutes that will accurately reflect actions of the Board and the committees and the vote taken on such actions and shall not be verbatim minutes of all matters discussed and comments made at Board or committee meetings. The minutes shall summarize the concerns and questions expressed by the public during public comment periods.

33. Notification of Absences of Directors.

If any member of the Board is unable to attend a meeting, that member shall, if possible, notify the Board President and the General Manager prior to the meeting.

34. Annual Meeting Schedule.

The Board shall determine at the beginning of each calendar year the dates for regular Board meetings and regular board committee meetings. Such annual schedule shall include vacation periods, if any, during which no regular meetings will be held.

35. Director's Legal Liabilities.

The District shall defend and indemnify Directors from any claim, liability or demand that arises out of a Director's performance of his/her duties or responsibilities as a Director or officer of the District to the fullest extent permitted by law.

36. General Provisions.

Any of the policies or procedures in this procedures manual not required by law may be suspended by a majority of the Board. Any policy or procedure not required by law may be altered, amended or repealed by a majority of the Board at a duly authorized and noticed meeting.

37. Gifts.

Each Director shall comply with the Gift provision in the MCWD Employee Handbook. In addition, each Director shall comply with the limitations and restrictions on gifts, honoraria, travel, and loans as prescribed by the Political Reform Act (Gov. C. 81000 et seq.) and by the Fair Political Practices Commission (Title 2, CCR 18110 et seq.). If the MCWD Employee Handbook and the Political Reform Act/FPPC regulations conflict, the Director shall comply with the more restrictive requirement. The General Manager shall provide newly elected Director with the latest version of the Employee Handbook. Additionally, the General Manager shall provide all Directors with newly updated version of the Employee Handbook whenever it is updated.

38. Board Member Compensation.

Each member of the Board of Directors will receive compensation for his/her services at a rate of $50 for attending each Board meeting. No compensation will be paid to any Director for attending other types of meetings such as standing, special or ad-hoc committees. Directors shall be reimbursed for actual necessary expenses incurred in the performance of official business of the District pursuant to assignment of the Board consistent with the reimbursement schedules and policies of the District.

39. Political Activity.

It is the policy of the District to prohibit Directors from engaging in political activities on the premises of the District, and to prohibit Directors, from using any District property equipment, machines or tools for any political activities or purposes except as a part of their duties as a member of the Board of Directors. All permitted political activities shall comply with all current Federal, State and local laws and regulations and District policies and procedures.

40. Payment of Bills.

By approving the fiscal year District Budget, the Board of Directors approves the categories and types of goods and services (including public works) that will be acquired or used by the District for that fiscal year. The actual purchase of those goods and services will comply with the District Procurement Policy that has been approved by the Board of Directors.

41. Director's Violation of Policies.

Whenever the District, a Director or the General Manager receives a complaint or concern regarding potential or alleged violation of policies by a Director or Directors, the matter shall be reported immediately to the Board President. If the President is the subject of the complaint, the matter shall be reported immediately to the Vice President. The Board President or Vice President shall immediately place the matter on the Board agenda for the Board to discuss the alleged violation(s) and take appropriate action. If the matter(s) is serious, the Board President or Vice President may call a special meeting to address the complaint. If a Director breaches any of the policies contained in Sections 5, 6, 8, 13, 14, 15, 16, 26, 38, and 40 the Board may, in addition to other consequences provided by law, publicly censure the offending Director and may as part of the censure take any or all of the following other actions, to be effective for a time determined by the Board:

a) Remove the offending Director from committees and representative positions to which the Director has been appointed or designated by the Board or by the President,

b) Prevent the offending Director from placing items on the agenda without the specific, advance authorization of the Board.

Appendix

Resolution No. 98-1 and Amendments

Return to Agenda

Marina Coast Water District
Agenda Transmittal

Agenda Item: 10-E | Meeting Date: June 25, 2019

Prepared By: David Hobbs, Legal Counsel | Approved By: Keith Van Der Maaten

Agenda Title: Discuss, Consider and Determine Action on Vice President Jan Shriner's Request for Censure as to Director Peter Le

Staff Recommendation: The Board of Directors discuss, consider, and determine action on Vice President Jan Shriner's request for censure as to Director Peter Le.

Background: *5-Year Strategic Plan Mission Statement – We provide our customers with high quality water, wastewater collection and conservation services at a reasonable cost, through planning, management and the development of water resources in an environmentally sensitive manner.*

On April 19, 2019, Vice President Shriner emailed President Moore requesting an agenda item be placed on the MCWD Board agenda "to consider censure for Director Le for expectations described by Board Procedures Manual." (See Attachment No. 1.) In response to that request, President Moore sent Vice President Shriner a letter dated May 1, 2019. (See Attachment No. 2.) The May 1, 2019 letter requested that Vice President Shriner provide specificity with regards to the basis of the request, along with any documents or facts she alleges would support her request such that the Board could make an informed decision. On May 8, 2019, Vice President Shriner provided an email explanation and documents she believes relevant to her request. (See Attachment No. 3.)

On May 20, 2019, the Board voted to table this item until the June 25th meeting when Director Le would be present. With regards to the back-up for Attachment No. 3, please refer to the documents that were provided in the May 20, 2019 Board packet.

Discussion/Analysis: Board Procedures Manual ("BPM") Section 41 (Director's Violations of Policies) states:

> Whenever the District, a Director or the General Manager receives a complaint or concern regarding potential or alleged violation of policies by a Director or Directors, the matter shall be reported immediately to the Board President. If the President is the subject of the complaint, the matter shall be reported immediately to the Vice President. The Board President or Vice President shall immediately place the matter on the Board agenda for the Board to discuss the alleged violation(s) and take appropriate action. If the matter(s) is serious, the Board President or Vice President may call a special meeting to address the complaint. If a Director breaches any of the policies contained in Sections 5, 6, 8, 13, 14, 15, 16, 26, 38, and 40 the Board may, in addition to other consequences provided by law, publicly censure the offending Director and may as part of the censure take any or all of the following other actions, to be effective for a time determined by the Board:

a) Remove the offending Director from committees and representative positions to which the Director has been appointed or designated by the Board or by the President,

b) Prevent the offending Director from placing items on the agenda without the specific, advance authorization of the Board.

Vice President Shriner's May 8, 2019 email states that her request for censure is predicated on her allegations that Director Le's conduct violates BPM Sections 13 [**Communications**], 14 [**Code of Ethics**] or 15 [**Comments by Directors Concerning District Staff Members**].

Recommended Action: The Board should vote on whether or not Vice President Shriner's request for censure warrants an investigation by the Board and, if an investigation is warranted, what form that investigation should take, i.e., hiring of an independent firm to investigate and provide a determination to the Board. In the event the Board determines to hire an independent investigator, the Board should consider holding a special meeting in the future in order to expedite the process, which is expected to take several months.

Environmental Review Compliance: None required.

Financial Impact: ______Yes ___X___No Funding Source/Recap: None

Other Considerations: The Board may suggest changes to the response or provide additional direction on how to respond.

Material Included for Information/Consideration: Attachment No. 1; Attachment No. 2; and, Attachment No. 3 sans the back up.

Action Required: _______Resolution ___X___Motion _______Review
(Roll call vote is required.)

Board Action

Motion By________________ Seconded By_____________ No Action Taken______________

Ayes__________________________ Abstained____________________________

Noes__________________________ Absent______________________________

Attachment 1

From: Jan Shriner <DirectorShriner@mcwd.org>
Sent: Friday, April 19, 2019 6:07 PM
To: Thomas Moore <directormoore@mcwd.org>
Cc: Keith Van Der Maaten <KVanDerMaaten@mcwd.org>; Roger Masuda <rmasuda@calwaterlaw.com>
Subject: Request for agenda item for consideration

I would like to place on a Board agenda the Board to consider censure for Director Le for expectations described by Board Procedures Manual.
Jan

Attachment 2

MARINA COAST WATER DISTRICT

11 RESERVATION ROAD, MARINA, CA 93933-2099
Home Page: www.mcwd.org
TEL: (831) 384-6131 FAX: (831) 883-5995

May 1, 2019

Dear Vice President Shriner,

As President of the Board of Directors, I have received your April 19, 2019 email, subject: "Request for agenda item for consideration," wherein your requested "to place on a Board agenda the Board to consider censure for Director Le for expectations described by Board Procedures Manual." As you know, the Board treats all requests for censure of a director very seriously, but the party seeking the censure against a sitting director must provide the Board with sufficient evidence supporting the request in order for the Board to determine whether an investigation is warranted. If an investigation is authorized by the Board, then the Board will consider the final investigation report and act on your censure request.

Please provide me as Board President the following:

1. A statement setting forth the specific sections of the Board Procedures Manual upon which you base your request, and any other basis for your request.
2. Copies of all documentary evidence in support of your request.
3. All other evidence you believe supports your request.

Please provide all of the above to me by not later than 5 PM, Thursday, May 9, 2019. All materials and information you provide me will in turn be provided to the other Board members, including Director Le. If you need an extension of time to provide all of the above, please don't hesitate to write me requesting an extension and your requested extension date.

This letter also informs you that, as Board President, I have received an April 20, 2019 email, "Re: Complaint of Harassment" from Director Le against you. It is anticipated that your request and his complaint will be handled in parallel or jointly as determined by the Board.

Please be advised that because both matters are against sitting directors that all evidence and statements are public records and must be publicly disclosed.

Very truly yours,

Thomas P. Moore

Thomas P. Moore
President, Board of Directors

cc: Directors Cortez, Le, and Zefferman
Roger Masuda, Legal Counsel
Keith Van Der Maaten, Board Secretary

From: Jan Shriner
Sent: Wednesday, May 8, 2019 8:09:32 PM
To: Thomas Moore; Roger Masuda
Subject: Supporting evidence consideration of censure Le

Please confirm you received this email.

At the time I first requested the agenda item on April 19, 2019, I was thinking that the behavior of Director Le has been deteriorating to poor behavior choices of 2013-2015. I do not want to return to challenges associated with impacting morale of the staff and increasing absenteeism of the Board.

During his previous term Director Le was serving as an officer of the Board while I was not. He had been elected Vice President by the Board to serve with President Gustafson. At that time, I was more cautious about criticising or offering guidance to the Board officers. Now, I am attempting to offer some guidelines and reminders as an officer of the Board with 8 years of experience.

The Board majority recently negotiated the contract for the current General Manager. He is generally held in high regards as a fair minded, intelligent, and reasonable representative of the District. He has treated me, the same way he treats other members of the Board, with respect. The Executive Assistant is also highly regarded in the community of public agencies of our region. Any criticism of the GM or any other District Staff work needs to be handled within the District process. The Board has the ultimate responsibility for the direction and policies of the District. Therefore, any criticism of Board decisions, such as lack of policy for letterhead, should stay with the Board.

The Board Procedures Manual (BPM) was again updated by the Board on April 15, 2019 Sections (13 Communications, 14 Code of Ethics, as well as 15 Comments by Directors Concerning District Staff Members) are clearly being tested by Director Le while the Board is in Open Session. The BPM states that censure is possible for any breaches of policies contained in Sections 13, 14 or 15.

Due to the allegations about me made by Director Le dating back to 1995, I will include the evidence collected by investigators dating back to 2013 for complaints about Director Le's behavior toward staff during open public meetings. The allegation of bullying and racism that the few emails I have sent (with the intent to offer guidance from the Board Vice President to a new Boardmember) is in itself a breach of 14.

There was also a 2013 allegation of a Brown Act violation with the idea of making Director Le the General Manager. I will include the communications and findings of the alleged Brown Act violation with the evidence of his behavior toward District Staff.

I have reviewed the digital recordings for the 2019 Board meetings and located approximate timings for the following recordings for criticisms of staff and occasional insults from Dir Le. The recordings can be found through the District website, https://mcwd.org/governance_meetings.html

February 19, 2019:
Two Consent Agenda Items are pulled by Dir. Le.
60 minutes, item 9D. Dir. Le: Well failure before you came on with the District or after you came on? Why wait so long? If process doesn't work? BPM Section 15

70 minutes, item 9E. Dir. Le: Anything in writing from City of Seaside? Spend money, nothing in writing? We spend money, they say "oh sorry." (staff explain process) Dir Le: Willing to sell? (He interrupts answer) to say So I read through staff report. I didn't see any mention of standby generator. (Staff explain.) Dir Le: concern for something in writing, on new lift station need a standby generator. Fifty year working no surprise fill up pond. Pond only designed for 10 year. Either do it right (trails off) BPM Section 14E

94 minutes Dir Le makes a motion after clarifications by President Moore. Motion Dir Le: Obtain easement from City of Seaside before proceeding. Look at why you didn't negotiate with City. Stop hours. Additional planning for perc pond. Standby generator. Wording corrections. (Staff clarify that the motion is what they do, President Moore says this kind of motion just makes the direction for the work sound more explicit by the Board Members.) BPM Section 14D

124 minutes Director Comments, Dir. Le states he has a matter for Board to address, give it to President. It is not seen by camera but apparently a letter in a sealed envelope marked confidential is passed from Dir. Le to Board President. BPM Section 13

March 18, 2019:
No consent agenda items pulled

16 minutes, Dir Le corrects speaker without waiting to be recognized by presiding chair. BPM Sections 13, 14B, and 27.

83 minutes, 9B Maintenance Management Plan, Dir Le: So looking one year out, CIP replacement in draft budget we reserve so little (laughing) 100 to 200 thousand not meet the uh (trails off) BPM Sections 13, 14 E and 14G

100 minutes, RUWAP construction contract amendment agenda item, Dir Le: What consultant do to submit final report to State or who will do it? When to file Notice of Condition (Completion)? Consultant and Sub-Consultant what report of labor compliance? So by the time they leave we're supposed to have 100% right? (A question from a different Director is being responded to by Staff but Dir Le interrupts to correct staff.) BPM Sections 13, 14 D and J, 27

107 minutes, BPM Agenda Item
Dir Le: I request changes two months ago. My requested items not included. Can discuss my items and request manual to August. Very disappointed my requests on this item and now it's not, can not be discussed, restricted to this changes only so have to bring it back again.

Dir Le: (for 5 more minutes) Page 8 Joint City District couple options but current format do we have a section on meeting of Board but I tried to find it so I didn't want to conflict with MSR so I didn't want to bring it up. (VP Shriner had mentioned it during MSR discussion) I don't know Staff can look in MSR I don't think it is correct. (VP starts to explain and is interrupted) Dir Le: I have request in January request in writing, Staff bring back. That's two-three months waiting for just two items. BPM Sections 14 B and E, 27.

120 minutes same BPM
Dir Le: Ask question in January in written format. Closed session 30 minutes is not enough, Four to five minutes per item not enough. My request for one hour. Not enough. Section 38 email about Board

compensation $50 to $100. Waiting very long already that is my second request. BPM Sections 13, 14 C and E

154 minutes Strategic Plan update
Dir Le: page 175 first paragraph last sentence doesn't make any sense, re-work it. Page 181 Section 1.2 target complete date that same question I asked on MSR. (During the clarifying comments Dir Le interrupts Keith 195, 196, 197 Keith tries to continue to explain but Dir Le interrupts Section 3, 4, 5, 6 update. Dir Le is dissmissive.) BPM Sections 13, 14 B, E, L and 27

There needs to be a motion to go beyond 10 pm

168 minutes Request for future agenda items
Dir Cortez 2 items for Dir Le
Dir Le: two items pending since January same two items on BPM. (no acknowledgement of hearing Dir Cortez.)

April 15, 2019:
Dir Le pulled consent agenda A-E, leaving one item on consent and the took 69 minutes to complete consent agenda.

17 minutes, Check Register, Dir Le starts by asking about water conservation incentive rebates and then switches to ask about staff processing methods for all invoices. BPM Section 14 D

19 minutes, Approval of Minutes, Dir Le: Submit written questions at previous Board meeting so Board not surprised so decision of Board.(Pres Moore interrupts for clarification for Minutes?) Dir Le: Review questions of letter and discuss in closed session then consider the minutes after discussion. Closed session Item 4A I submitted to you. I made disclosure submitted questions last week after March 18.

(Agency Counsel, Board President, and Dir Cortez all try to clarify for the Agenda Item to approve minutes of March 18.)

Dir Le: No after March 18 have question emailed to District now disclosing. BPM Sections 13, 14 , 15 and 32.

24 minutes, Consumer Confidence Report
Dir Le: So well 12 never worked never source of water? CCR shows 2 tests (out of several hundred) positive what location? Copper and lead when test again? Uranium when next test? 2013 in table. On the Radon 222 when the next test and last question for hardness what numerical value defines hardness? BPM Section 14

35 minutes, 9E, Employee Handbook
Dir Le: Was a personnel attorney consulted for Handbook? Ask question and no one can answer (laughs) postpone to next meeting. Quickly 52 section 9 why delete "10 minutes" how do you have consistency? Supervisor 5 minutes etc. Several questions more complicated, move to next meeting.

(Discussion by other Board Members to limit the comments to 15 minutes.)

Dir Le: Handbook approve two meetings ago for update on harassment, comment from Shriner smoking or something. Those are my questions. If we don't have staff here, to through my questions. What does Board want? I can go through all my questions. February approve certain conditions. I mentioned harassment training, Dir Shriner something smoking. This version include changes? I don't know where the changes. Staff report doesn't refer to the pages. Page 52 boss say late, I can sue the District, Maintenance can be 20 minutes late, how address no standard? One boss its ok another supervisor write it up. That's my first question.

Page 91 Section13 explain 15 days changed to 5 days. (appeal process)

Page 93 staff report page 31, first paragraph, upon retirement employee get a plaque but no mention of plaque. Those are all of my questions.

(Some discussion of questions.)

44 minutes, same item, Employee Handbook
Dir Le: not to my satisfaction. I don't know which page is the smoking. Missing the latest California law, I don't have the latest bill number. I read it and I don't have the number with me. The way I read the article, they amend and adopt last month or so.

82 minutes, Allegations by Dir Le for the placement of names on letterhead and delay with website content as symptoms of racism.
Dir Le: Light on for one minute for original complaint amend to include two employees, General Manager and Executive Assistant and request Board hire investigator.

Dir Le: Allegations very serious.Staff involved are top level.Only thing to end this will be investigation to make a decision. Hire investigator, when you read the report, eye open for you. Not end tonight. Hire investigator, interview, you think you know everything. Quick way to make decision will not end. Public can read this finding.

110-118 minutes, Agenda Item BPM Four changes,
Dir Le: GM says I can have some question before I come here. Page 5 something about GM, GM make necessary changes. No revise order Staff to make someone responsible for this. Add one word staff. Need specific and clear who responsible. GM will direct staff to make changes. (Keith clarifies, for website, GM or designee) Dir Le: I want to skip 16D to come back later fairly complicated. Section 26 page 17 Closed Session, Brown Act, my question one time for closed session, one item, can three directors discuss the one item outside closed session? (not recommended) Dir Le: for example, Cal Am closed session, not allowed? (attorney clarifies only 2) Dir Le: Section 23 page 15 ok I look at agenda for M1W, City of Marina, FORA, MPWMD, they very smart. Two item In closed session.Time to discuss important item. Marina one item, 2.5 hours, one item, one hour, they smart. We have 9 item, 30 minute, never never enough time. MPWMD smart, real smart. One item, one-hour. That item very important. Other city thinking ahead. We just fixed. We vote to extend. We do what you want, not as smart as other cities. Arrange to have enough time.

120 minutes, still BPM
Dir Le: as counsel said, we have very restrictive compensation, $100 make it simple. Hourly increase $1/hour now $1.60/hour, nothing complicated. (other discussion regarding justification) Only justification we discussed a couple of times before more candidate for office only justification we discussed a couple of times before.

134 minutes, still BPM but now the Section 16 regarding recusal, attorney communications
Dir Le: page 11, item c someone explain to me what it means. Page 12 start at second sentence open session questions GM, President, Legal Counsel give examples I believe if question need to be ask of counsel then President and GM then cost to District. Say I have a question: 7 wells or 10 wells? Then I email that to GM and President. I don't need legal counsel. Do you pay X company $10,000 or $15,000? No need legal counsel. (others respond) Dir Le: I can keep going on and on. Should copy to Board President because you need to know before the meeting. Right now, no flexibility. You have started. You have urgency. GM may not know. You the only one. Go back to page 11. Some circumstance hard to work with. We can adopt way it is. Come back later. Today board meeting, I received three documents from attorney. But only has 5 pages of 15. I ask email other pages. Is that direction? Attorney say Board must agree. (he laughs) Go with current version but some exception. We don't have full input. BPM Sections 13 and 14.

165 minutes, BPM letterhead
Dir Le: first of all is very odd. Look at 100,000 organizations In California normally list members, who are the members what they do, very odd. BPM Section 14 A

209 minutes, Director Comments
Dir Le: As I mentioned I like to see budget for RUWAP. See millions M1W, loans, pay to M1W, budget O & M. I like to see somehow I can find In budget. BPM Section 14

In addition to these recordings, please review the attached documents. These are submitted as evidence to support assertion of a pattern of breaching BPM Sections 13, 14 and 15.

For the behavior described in closed session or for emails received from Director Le with content that should be only discussed in closed session, I will not be submitting any evidence to support what I have stated earlier via email.

Although some of us remember the negative social media campaigning, I have looked at "Next door" and not found the postings of 2018 campaign of Peter Le for Director. I have no evidence to offer about that comment in open Session.
Jan

From: Paula Riso
Sent: Friday, March 1, 2019 8:49:49 AM
To: Jan Shriner
Subject: Peter Le Documents

Hi Jan,

Here are the documents surrounding Peter Le’s censure and the investigations related to the harassment claims.

Thank you,
Paula

Paula Riso
Executive Assistant
Marina Coast Water District
11 Reservation Road, Marina, CA 93933
Direct 831-883-5910
Fax 831-883-5960