APPENDIX A - LOG OF SEWER SYSTEM MANAGEMENT PLAN CHANGES

APPENDIX B - RECORD OF SEWER SYSTEM MANAGEMENT PLAN AUDITS

APPENDIX C - PORT RESOLUTION ADOPTING SSMP PLAN AND SCHEDULE

12/4/07
0-15
MH/psb MH

BOARD OF PORT COMMISSIONERS
CITY OF OAKLAND

RESOLUTION NO. 07324

RESOLUTION APPROVING A SEWER SYSTEM MANAGEMENT PLAN ("SSMP") DEVELOPMENT PLAN AND SCHEDULE.

WHEREAS on May 2, 2006 the State Water Resources Control Board ("State Water Board") adopted Statewide General Waste Discharge Requirements for Sanitary Sewer Systems, Water Resources Control Board Order No. 2006-0003 ("Sanitary Sewer Order"); and

WHEREAS municipalities, counties, districts, and other public entities that own or operate sanitary sewer systems greater than one mile in length that collect and/or convey untreated or partially treated wastewater to a publicly-owned treatment facility in the State of California are required to comply with the Sanitary Sewer Order; and

WHEREAS the Port of Oakland owns, operates and maintains approximately 20 miles of sewer mains and laterals that serve an estimated population of 8,700 at seaport and airport facilities and their tenants and therefore is required by the State Water Board to develop and implement a SSMP; and

WHEREAS the Sanitary Sewer Order requires the Board of Port Commissioners ("Board") to approve the SSMP Development Plan and Schedule and that once the SSMP is prepared the Board must approve the SSMP at a public meeting; now, therefore, be it

RESOLVED that the Board hereby approves the proposed SSMP Development Plan and Schedule as required by the Sanitary Sewer Order, as more fully set forth in Agenda Report Item 0-15 dated December 4, 2007; and be it

FURTHER RESOLVED that this resolution is not evidence of and does not create or constitute (a) a contract, or the grant of any right, entitlement or property interest, or (b) any obligation or liability on the part of the Board or any officer or employee of the Board. This resolution approves and authorizes the execution of an agreement in accordance with the terms of this resolution. Unless and until a separate written agreement is duly executed on behalf of the Board as authorized by this resolution, is signed as approved as to form and legality by the Port Attorney, and is delivered to the other contracting parties, there shall be no valid or effective agreement.

At a Regular Meeting held on December 4, 2007

Passed by the following vote:

Ayes: Commissioners Ayers-Johnson, Gordon, Katzoff, McClure, Scates, Uno and President Batarse – 7

Noes: None

APPENDIX D - ORGANIZATIONAL CHART CONTACT INFORMATION

PORT SSMP ORGANIZATION CHART CONTACT INFORMATION
Port-Wide Sewer System Management Plan Port of Oakland

Position	Name	Phone
Executive		
Executive Director	Chris Lytle	(510) 627-1210
Port Attorney	Danny Wan	(510) 627-1340
Chief Audit Officer	Arnel Atienza	(510) 627-1257
Chief Financial Officer (CFO)	Sara Lee	(510) 627-1668
Aviation		
Director of Aviation (Acting)	Kristi McKenney	(510) 627-1133
Aviation Planning and Development Manager	Joan Zatopek	(510) 627-1335
Aviation Facilities Maintenance Manager	Craig Simon	(510) 207-5147
Utilities Supervisor	Valerie Zabb-Parmley	(510) 715-9905
Utilities Foreman	Wilson Kung	(510) 773-9963
Equipment Systems Superintendent	Ted Getchell	(510) 385-5800
Maintenance/Construction Supervisor	Eddie Villasenor	(510) 385-5566
Maintenance Foreman	Dejon Iglehart Darryl Edwards	(510) 774-5961 (510) 774-5277
Facilities Support Supervisor	Vanessa Valderrama	(510) 385-4150
Commercial/Real Estate		
Director of Commercial Real Estate	Pam Kershaw	(510) 627-1168
Commercial Real Estate Manager	Dorin Tuitin	(925) 352-4846
Commercial Real Estate Representatives	Julie Braun Rina Morningstar	(510) 627-1144 (510) 627-1165
Maritime		
Director of Maritime	John Driscoll	(510) 627-1243
Chief Wharfinger	Chris Peterson	(510) 719-8024
Wharfingers	Robert Cathey Ralph Reynoso Richard Taylor Justin Taschek	(510) 719-8026 (510) 384-3163 (925) 451-6119 (805) 443-7341
Administrative and Financial Services	Delphine Prevost	(510) 627-1141
Harbor Facilities Maintenance Manager	Bill Morrison	(510) 773-9981
Utilities Supervisor	Ernest Richmond	(510) 773-9964
Utilities Foreman	Mike Ringbom	(510) 772-9113
Maintenance/Construction Supervisor	Bill Morrison	(510) 773-9981
Maintenance Foreman	Kenneth Taylor	(510) 427-2242

Facilities Support Supervisor	Eric Fan	(510) 627-1298
Engineering		
Director of Engineering/Chief Engineer	Chris Chan	(510) 627-1331
Utilities Administration Manager	Nico Procos	(510) 627-1167
Port Principal Engineer - Aviation	Frank Lobedan	(510) 466-7896
Port Principal Engineer - Maritime	Imee Osantowski	(510) 627-1479
Port Principal Engineer - Engineering	Ana Ward	(510) 627-1253
Port Supervising Engineer	Thanh Vuong	(510) 627-1266
Water Systems Engineer	Liem Nguyen	(510) 627-1636
Environmental Programs and Planning		
Director of Environmental Programs and	Richard Sinkoff	(510) 627-1182
Environmental Health & Safety Specialist	Desmond DeMoss	(510) 773-9991
Human Resources		
Director of Human Resources	Christopher Boucher	(510) 627-1202

APPENDIX E - PORT SEWER USE ORDINANCE

BOARD OF PORT COMMISSIONERS
CITY OF OAKLAND

PORT ORDINANCE 4113

ORDINANCE ESTABLISHING DESIGN, CONSTRUCTION, TESTING, AND INSPECTION STANDARDS FOR SANITARY SEWER FACILITIES, AND LIMITS ON THE TYPE, CHARACTER, AND VOLUME OF ALLOWABLE DISCHARGES TO THE SANITARY SEWER SYSTEM

BE IT ORDAINED by the Board of Port Commissioners of the City of Oakland as follows:

SECTION 1 - DEFINTIONS. As used in this ordinance:

"Board" means the Board Port of Commissioners.

"City" means the City of Oakland.

"Contamination" means an impairment of the quality of the waters of the State by waste to a degree which creates a hazard to the public health through poisoning or through the spread of disease. Contamination shall include any equivalent effect resulting from the disposal of wastewater, whether or not waters of the state are affected.

"Director" means the Executive Director, or his or her designated representative.

"EBMUD" means the East Bay Municipal Utility District.

"Engineer" means the Chief Engineer, or his or her designated representative.

"Lateral" means the particular sanitary sewer which lies between the building or structure it serves, to and including its connection with the sanitary sewer system and which carries wastewater and liquid wastes from the serviced building or structure to the sanitary sewer system.

"Misfeasor" means any person or entity, or their agents, assigns, designees, employees, or successors, who causes or allows to be caused a Nuisance under this ordinance.

"Nuisance" shall have the meaning set forth in California Water Code Section 13050(m), as it may be amended from time to time. Any violation of, noncompliance with, or refusal to comply with any of

the provisions of this ordinance, or any of the provisions incorporated herein, is deemed a "Nuisance" under this ordinance..

"Pollution" means an alteration of the quality of the waters of the State by waste to a degree which unreasonably affects (1) such waters for beneficial use or (2) facilities which serve such beneficial uses.

"Port" means the Port of Oakland.

"Private Sewer" means a pipe, conduit, or channel, not maintained by the Port, used to carry wastewater.

"Public Sewer" means a pipe, conduit, or channel, maintained by the Port and used to carry wastewater.

"Sanitary Sewer" means any building sewer, private sewer, or public sewer used to carry wastewater.

"Sanitary Sewer System" means either the entire network or a portion of that network of publicly and privately maintained pipes, conduits, channels, manholes, pump stations, and all appurtenances thereto, under the jurisdiction of the Port, used to collect, store, and transport wastewater.

"Wastewater" means water carrying waste from residences, commercial, and industrial establishments, or any combination of such wastes, but excluding storm water when conveyed in a separate storm water system.

"Wastewater Control Ordinance" means EBMUD Ordinance Number 311A.03, or any subsequent amendment thereof.

"Wastewater Treatment Plant" means the EBMUD Main Wastewater Treatment Plant.

SECTION 2 - PURPOSE. The purpose of this ordinance is to regulate the design, construction, inspection, testing, and abandonment of the sanitary sewer system, and to define the allowable and prohibited discharges to the sanitary sewer system. This ordinance shall not supersede any existing or future statute, rule, regulation, or ordinance of any public agency, State, or Federal regulatory body governing wastewater and water discharges into the sanitary sewer system.

SECTION 3 - AUTHORITY TO DEVELOP DESIGN, CONSTRUCTION, INSPECTION, TESTING STANDARDS. The Board hereby approves, and authorizes the Engineer for and on behalf of the Board to develop, publish, and enforce standards for the design, construction, inspection, testing and abandonment of the sanitary sewer system and for updating the standards from time to time. Such standards shall apply to all sanitary sewers under Port jurisdiction regardless of whether they are public sewers or private sewers.

SECTION 4 - ALLOWABLE DISCHARGES. Wastewater may be discharged into the Port sanitary sewer system provided that it does not violate the limitations established in this ordinance and further provided that the discharger obtains permission of the Port, EBMUD, and City, as applicable, to discharge into the sanitary sewer system.

SECTION 5 - PROHIBITED DISCHARGES.

(A) General Prohibition. The discharge of wastewater into the Port sanitary sewer system that results in contamination, pollution, or a nuisance is prohibited.

(B) Prohibited Effects. Wastewater or a substance of any kind shall not be discharged or otherwise deposited into the Port sanitary sewer system in such quantities or qualities which, either alone or by interaction with other wastewater, cause or threaten to cause:

1. Danger to the life or safety of any person.

2. Damage to Port facilities.

3. Interference with the operation or capacity of the Port sanitary sewer system.

4. Obstruction of flow in sanitary sewers.

5. Interference with the wastewater treatment and disposal process.

6. Flammable or explosive conditions.

7. Interference with the ability for reclamation and reuse of wastewater.

8. Any noxious or malodorous gas or substance capable of creating a public nuisance.

9. Violation of receiving water quality limitations.

10. Violation of any statute, rule, regulation, or ordinance of any public agency, State, or Federal regulatory body governing wastewater and water discharges into the sanitary sewer system.

11. The presence of toxic gases, fumes, or vapors in quantities that endanger the health and safety of Port personnel.

(C) Prohibited Substances. No person shall discharge, by either direct or indirect means, any of the following into the Port sanitary sewer system, or any substance for which discharge is prohibited by the City Municipal Code or by the current EBMUD Wastewater Control Ordinance:

1. Any storm water or other unpolluted water that meets the requirements for and is acceptable for discharge to storm drains or receiving waters of the State.

2. Any unpolluted industrial process water.

3. Any substance which creates a fire or explosion hazard.

4. Any liquid or vapor having a temperature detrimental to the Port sanitary sewer system.

5. Any water or waste, which contains excessive amounts of fats, oil, and/or grease.

6. Any garbage, except garbage from dwellings and establishments where food is prepared and consumed on the premises, and which has been ground to such a degree that all particles will be carried freely under the flow conditions prevailing in the sanitary sewer system.

7. Any heavy solid, viscous substance, or other matter of such a nature as to obstruct the flow in sanitary sewers or cause interference with the proper operation of the sanitary sewer system, including but not limited to sand, cement, lime, plaster, cinders, ashes, metal, glass, straw, shavings, animal hair, feathers, paunch manure, fibrous matter, tar, asphalt, resins, or plastics.

8. Any substance having a corrosive property capable of causing damage or other hazard to structure, equipment, or personnel.

9. Any toxic or poisonous substances in sufficient quantity to constitute a hazard to humans, animals, or fish, or to create a hazard in the waters receiving effluent from the wastewater treatment plant.

10. Any waters or wastes containing suspended solids or dissolved matter of such character and quantity that unusual attention or expense is required to handle such materials in the sanitary sewer system or at the wastewater treatment plant.

(D) Prohibition on Dilution Waters. No user shall increase the use of process water, or in any other way attempt to dilute a discharge in order to meet applicable pretreatment standards or to comply with this or any other applicable resolution or ordinance, unless otherwise permitted to do so.

(E) Radioactive Limits. No person shall discharge or cause to be discharged any radioactive wastewater into any sewer, unless the person is authorized to use radioactive material by the Nuclear Regulatory Commission or other governmental agency empowered to regulate the use of radioactive materials, the wastewater is discharged in strict conformity with Nuclear Regulatory Commission regulations and recommendations for safe disposal, and the discharge is in compliance with all rules and regulations of State and local regulatory agencies.

(F) Wastewater Strength Limits. No user shall discharge wastewater into a sewer lateral or otherwise introduce into the Port sanitary sewer system wastewater that exceeds the numerical limits established in EBMUD Ordinance Number 311A.03, or any subsequent amendment thereof, or the City Municipal Code, whichever is more stringent.

(G) Wastewater Flow Rate Limits. No person shall discharge wastewater into any sewer in such a quantity or at such a rate of flow as to overload or have a harmful or adverse impact on Port facilities or the wastewater treatment plant.

SECTION 6 - RIGHT OF ENTRY. Duly authorized representatives of the Director may enter and inspect any building, structure, or premises with Port jurisdiction to secure compliance with, or prevent a violation of, any provision of this ordinance under the following conditions:

(A) Whenever the Director shall have reasonable cause to believe that conditions which do not conform to this ordinance exist in a particular building, structure, or premises.

(B) Whenever the Director authorizes and directs the inspection of all buildings, structures, or premises subject to the provisions of this ordinance in a defined area of the Port.

(C) Whenever the Director shall authorize and direct inspections of buildings, structures, or premises as a part of a routine spot check.

(D) Whenever the Director authorizes the performance of needed maintenance or repair activities.

(E) No premises shall be inspected until a reasonable notice is given to the discharger or occupant, or to the agent of either.

SECTION 7 - POLICIES FOR VIOLATION.

(A) Notice of violation. Whenever the Director finds that any Misfeasor is causing or allowing to be caused a Nuisance, the Director shall serve notice on the Misfeasor stating the existence of the Nuisance, requiring abatement of the Nuisance, and specifying the measures necessary for abatement. Such notice shall be served personally on the Misfeasor or by mailing such notice to the Misfeasor by U.S. Mail , and by posting a copy of such notice on the property whereupon the Nuisance is being caused.

(B) Abatement by Misfeasor. It shall be the duty of the Misfeasor to abate the Nuisance within one hundred eighty days of personal service or mailing of such notice.

(C) Abatement by the Port. If the Misfeasor should neglect or refuse to abate the Nuisance pursuant to such notice, the Director may

abate the Nuisance at the expense of the Port and the Port may recover the amount of such expense, including the costs of inspection, enforcement and correction to the full extent permitted by Government Code Section 54988 as it may be amended from time to time.

(D) Recovery of attorneys fees and costs. The Port may in its discretion commence legal actions and/or equitable proceedings in a court of competent jurisdiction to abate the Nuisance and/or to collect and recover Port abatement costs. If the Port prevails in such action and/or proceeding, it shall be entitled to recover costs and attorneys' fees in addition to any taxes, fees, assessments, penalties and interest. The remedies provided for herein shall be cumulative and not exclusive, and shall not preclude the Port from any other relief which otherwise is available.

(E) Abatement costs made nuisance abatement lien or special assessment lien. Notwithstanding any other provision of this ordinance to the contrary, the costs incurred by the Port in the abatement of a Nuisance subject to the provisions of this ordinance may be placed against any privately owned and affected property as either a nuisance abatement lien or a special assessment lien pursuant to Government Code Section 38771, et seq. as amended from time to time or a lien pursuant to Government Code Section 54988 as amended from time to time. The Port may enforce a lien under this chapter in any manner permitted by law, including filing a civil action to either foreclose on its liens or to obtain a money judgment or both, or pursuing non-judicial foreclosure. The Port may elect, upon 30 days notice to all known and record owners of the privately owned and affected property, to convert any nuisance abatement lien authorized by this chapter to a special assessment lien, or vice versa. Costs recoverable under this ordinance shall include those categories of costs and fees set forth in Civil Code Section 3496, regardless of the type of nuisance involved.

(D) Protest filing procedure. Any alleged Misfeasor desiring to protest against the Director's determination that the alleged Misfeasor is causing or allowing to be caused a Nuisance may file with the Director's office a protest in writing within ten days after receiving notice to abate the Nuisance. Any Misfeasor desiring to protest against the costs incurred by the Port in abating a Nuisance may file with the Director's office a protest in writing within ten days after receiving notice of the cost incurred by the Port in abating the Nuisance.

(F) Protest hearing. Upon the filing of a protest, the Director shall conduct a public hearing. At such hearing, the Director may affirm, modify, or reverse the prior determination. The Director's decision at the end of such hearing shall be final.

(G) Criminal penalties. Every person or persons, firm, company or corporation, who shall violate, disobey, or refuse to comply with any of the provisions of this ordinance, or any of the provisions

incorporated therein, shall, upon conviction, be punishable by fine and penalty, not exceeding Five Hundred Dollars ($500.00) or six (6) months imprisonment, or both. Each day constitutes a separate violation.

The Board of Port Commissioners, Oakland, California, November 3, 2009. Passed to print for one day by the following vote: Ayes: Commissioners Batarse, Calloway, Gonzales, Gordon, Head, Katzoff, and President Uno - 7. Noes: None.

John T. Betterton
Secretary of the Board

Adopted at a regular meeting held November 17, 2009
by the following vote:

Ayes: Commissioners Gonzales, Gordon, Head, Katzoff, and President Uno – 5
Excused: Commissioners Batarse, and Calloway – 2
Noes: None

President.

Attest: _____
Secretary.

Approved as to form and legality:

_____
Port Attorney

APPENDIX F - CITY OF OAKLAND SEWER USE ORDINANCE

Chapter 13.02 SEWER SYSTEM

Sections:

13.02.010 Definitions.

As used in this chapter:

"Building sewer" means the sewer or sewers defined and described in Chapter 13.08.

"City" means the city of Oakland.

"Engineer" means the professional civil engineer, licensed to practice engineering by the State of California, designated by the City Administrator to manage the city's sewer system.

"Private sewer" means a pipe, conduit or channel, not maintained by the city, used to carry sewage.

"Public sewer" means a pipe, conduit or channel, maintained by the city and used to carry sewage.

"Sanitary sewer" means any building sewer, private sewer or public sewer used to carry sewage.

"Sewage" means water carrying waste from residences, commercial and industrial establishments, or any combination of such wastes, but excluding storm water when conveyed in a separate storm water system.

"Sewer System" means either the entire network or a portion of that network of publicly and privately maintained pipes, conduits, channels, manholes, pump stations and all appurtenances thereto, under the jurisdiction of the city, used to collect, store and transport sewage.

(Ord. 12886 § 1 (part), 2008)

13.02.020 Purpose.

The purpose of this chapter is to regulate the design, construction, operation, maintenance, and abandonment of the sewer system (except building sewers).

(Ord. 12886 § 1 (part), 2008)

13.02.030 Responsibilities.

The Engineer shall be responsible for developing, publishing and enforcing standards for the design, construction, and abandonment of the sewer system (except for building sewers) and for updating the standards from time to time. Such standards shall apply to all sewers regardless of whether they are public sewers or private sewers.

The Director of Public Works shall be responsible for operation and maintenance of the public sewer system.

(Ord. 12886 § 1 (part), 2008)

Chapter 13.04 SEWER SYSTEM FUNDING

Sections:

13.04.010 Definitions.

As used in this chapter:

"City" means the city of Oakland.

"District" means the East Bay municipal utility district.

"Person" means and includes any person, firm, association, organization, partnership, corporation, public corporation, political subdivision, (including the city of Oakland and the Port of Oakland), county, district, the state of California, or the United States of America, or any department or agency thereof.

"Sewer facilities" means and includes both the sanitary sewer collection system and the storm sewer collection system. For purposes of this chapter, storm drain system shall have the same meaning as storm sewer system.

(Ord. 11801 § 2, 1995; prior code § 6-7.01)

13.04.020 Imposition of sewer service charge.

Every party in whose name sewage disposal service of the East Bay Municipal Utility District (District) is granted shall pay a sewer service charge according to the rates as follows, beginning with the first billing period following January 1, 2004:

A. A monthly charge of thirteen dollars and twenty cents ($13.20) is established and assessed for the use of sewer facilities for every single family residence as defined by the District's Business Classification Code 8800, Private Residence.

B. For multiple family dwellings, as defined by the District's Business Classification Code 6513, Multiple Dwelling, the following monthly charges are established and assessed for the use of sewer facilities:

a. Duplexes: fourteen dollars and eighty one cents ($14.81) per month;

b. Triplexes: twenty two dollars and twenty two cents ($22.22) per month;

c. Fourplexes: twenty nine dollars and sixty three cents ($29.63) per month.

C. For residential premises not included in subsection A or B of this section, a charge based upon the cubic feet of water used on the premises will be made for the use of sewer facilities, which charge shall be computed and levied as follows:

a. Ninety cents ($0.90) per one hundred (100) cubic feet per month.

In no case shall the total monthly charge be less than thirteen dollars and twenty cents ($13.20).

D. For premises in the district's "commercial," "industrial," and "public authority" business certifications, a charge based on cubic feet of water used upon the premises will be made for the use of sewer facilities, which charge shall be computed and levied as specified below:

a. Industrial accounts: eighty two cents ($0.82) per one hundred (100) cubic feet per month;

b. Commercial accounts: ninety cents ($0.90) per one hundred cubic feet per month;

c. Restaurants/hotels: ninety four cents ($0.94) per one hundred cubic feet per month;

d. Hospitals: one dollar ($1.00) per one hundred (100) cubic feet per month;

e. Laundromats/car washes: one dollar and five cents ($1.05) per one hundred (100) cubic feet per month.

In no case shall the total monthly charge be less than thirteen dollars and twenty cents ($13.20).

E. For premises with a sewage meter for measuring actual sewage flow from such premises, a charge based on cubic feet of measured sewage flow from the premises, and applicable to all buildings for water consumption cycles commencing on and after January 1, 2004, will be made for the use of sewer facilities, which charge shall be computed and levied as follows:

a. One dollar and ten cents ($1.10) per one hundred cubic feet of sewage flow per month.

In no case shall the total monthly charge be less than thirteen dollars and twenty cents ($13.20).

F. The sewer service charges established and assessed in subsections C and D of this section shall be applicable to premises where no meter is installed or available in said premises for measuring the volume of sewage from such premises into sewers. The sewer service charge for these premises shall be based upon the total amount of water used from all sources, as ascertained by the district, for sewage disposal service charges imposed by such district within the City.

G. The sewer service charge established and assessed in subsection E of this section shall be applicable to premises where a portion of the water received from any source does not flow into sewers because of manufacturing or removal by other means and a meter is installed or available in said premises for measuring the volume of sewage from such premises into sewers. The sewer

service charge for these premises shall be based upon the volume of sewage discharging from such premises into the sewers, as ascertained by the district for sewage disposal service charges imposed by the district within the City.

H. The charges established and assessed in subsections A through E of this section shall become due and payable on receipt of bill therefore. Such charges shall be paid directly to the City or to the district, as directed upon the bill.

I. Beginning with annual billing period that begins on or after January 1, 2005, the sewer service charge rates established above shall be increased by eleven percent (11%) annually through the annual billing period that begins on or after January 1, 2009.

J. For the annual billing period that begins on or after January 1, 2010, the sewer service charge rates shall be increased at an annual rate equal to but not to exceed the prior years percentage change in the Consumer Price Index for the San Francisco Bay Area, compiled by the United States Department of Labor, Bureau of Labor Statistics, or successor thereto, between such Index as of June in the year prior to the year in which rates are being increased and June twelve (12) months earlier, as provided for the use of sewer facilities owned and operated by the City.

(Ord. 12540 § 1, 2003; Ord. 11801 § 1 Attachment A, 1995: prior code § 6-7.02)

ATTACHMENT A

SEWER SERVICE CHARGE VOLUME RATES BASED ON WATER CONSUMPTION

EFFECTIVE JANUARY 01, 2004

TABLE INSET:

BCC (1)	Description	Per ccf (2)
_____		
0100	Agriculture	$0.82
0700	Veterinarian Services	$0.90
1200	Mining and Quarrying	$0.82
1500	Construction	$0.82
2010	Meat Products/Process/Packaging	$0.82
2020	Dairy Product Processing	$0.82
2030	Fruit & Vegetable Canning	$0.82
2040	Grain Mills	$0.82
2050	Bakeries (including pastries)	$0.82
2051	Bakeries--Bread Only	$0.82
2060	Sugar Processing	$0.82

2070	Fats and Oils	$0.82
2077	Rendering Tallow	$0.82
2080	Beverage Mfg.	$0.82
2090	Specialty Food Mfg.	$0.82
2091	Seafood Processing	$0.82
2300	Textile Goods Mfg.	$0.82
2400	Lumber & Wood Mfg.	$0.82
2500	Furniture	$0.82
2600	Pulp & Paper Prod Mfg	$0.82
2700	Printing Publishing	$0.82
2810	Inorganic Chemicals Mfg.	$0.82
2820	Synthetic Material Mfg.	$0.82
2830	Drugs Mfg.	$0.82
2840	Clean & Sanitary Prod Mfg.	$0.82
2850	Paint Mfg.	$0.82
2860	Organic Chemicals Mfg.	$0.82
2870	Agricultural & Chemical Mfg.	$0.82
2891	Adhesive & Gelatin Mfg.	$0.82
2893	Ink & Pigment Mfg.	$0.82
2900	Petroleum Prod Mfg.	$0.82
3000	Rubber Products	$0.82
3110	Leather Tanning	$0.82
3200	Earthenware Mfg.	$0.82
3300	Primary Metals Mfg.	$0.82
3400	Metal Prod Fabrication	$0.82
3410	Drum & Barrels Mfg.	$0.82
3470	Metal Finishing	$0.82
3500	Machinery Mfg.	$0.82
3590	Machine Shop Repair	$0.82
3600	Electric Machine Mfg.	$0.82
3700	Trans Equip Mfg.	$0.82
3730	Shipbuilding	$0.82

3800	Precision Equip Mfg.	$0.82
3900	Miscellaneous Mfg.	$0.82
4000	Railroad Transportation	$0.82
4100	Local/Suburb Transportation	$0.82
4200	Warehousing	$0.82
4400	Water Transportation	$0.82
4500	Air Transportation	$0.82
4700	Transportation Services	$0.82
4800	Elect Communications	$0.82
4900	Elec., Steam, Nat Gas	$0.82
4950	Sanitary Collection & Disposal	$0.82
5000	Wholesale Trade	$0.90
5300	Retail Trade	$0.90
5400	Food Sales	$0.90
5540	Gas/Oil Dealers	$0.90
5811	Restaurant--Fast Food	$0.94
5812	Restaurant	$0.94
5813	Drinking Bar/Club	$0.94
6500	Cemeteries	$0.90
6513	Apt Bldg--5 or More	$0.90
6800	Offices	$0.90
7000	Hotels with Food	$0.94
7001	Hotels without Food	$0.94
7020	Boarding Houses	$0.94
7200	Personal Services	$0.90
7210	Commercial Laundries	$1.05
7215	Coin Laundromats	$1.05
7216	Clean & Dye Fabrics	$1.05
7218	Industrial Laundries	$1.05
7260	Crematory, Funeral Homes	$0.90
7300	Laboratories	$0.90
7342	Fumigating	$0.90

7500	Automobile Repair Services	$0.90
7539	Battery Services	$0.90
7542	Auto Laundries	$1.05
7600	Misc. Repair Services	$0.90
7699	Septic Tank Cleaning	$0.90
7900	Amusement Services	$0.90
7940	Equestrian Activities	$0.90
7950	Irrigation Use Only	EXEMPT
7990	Parks and Gardens	$0.90
8000	Health Services	$0.90
8060	Hospitals	$1.00
8200	Schools	$0.90
8600	Non-Profit Organizations	$0.90

(1) EBMUD's Business Classification Cost Number

(2) Hundred cubic feet

13.04.030 When due.

Upon the expiration of fifteen (15) days after billing for sewer service charges as herein provided, the charges shall become delinquent if the bill, or that portion thereof which is not in bona fide dispute, remains unpaid.

(Prior code § 6-7.03)

13.04.040 Imposition of lien.

Delinquent sewer service charges which are payable directly to the city are made a lien upon the real property served by a connection to the city sewer system and such lien shall continue until the charges thereon are fully paid.

(Prior code § 6-7.04)

13.04.050 Remedies.

In addition to other remedies provided by law including the discontinuance of water service in accordance with district procedure, an action may be brought in the name of the city in any court of competent jurisdiction for the collection of delinquent charges and to enforce the lien of the charges thereon. The remedies herein established shall be cumulative and in addition to any or all other remedies available to the city for the collection of said charges.

(Prior code § 6-7.05)

13.04.060 Sewer service charge fund.

A. The fund theretofore established and known as the "sewer service charge fund" is continued. All moneys received from the charges established by this chapter shall be deposited in such fund. The moneys in this fund shall be used only for the payment of the costs in connection with acquisition, construction, reconstruction, relocation, maintenance, operation, and repair of the sewer facilities of the city and for the administration of this chapter; provided, however, that the moneys in said fund shall not be used for the acquisition or construction of new sewer facilities in unsewered areas.

B. The moneys received from the charges established by this chapter, after deposit in the sewer service charge fund, shall be distributed as follows:

At least ninety-five (95) percent shall be for the sanitary sewer system; and, up to five percent shall be for the storm sewer system.

The intent of this provision is to have the distribution made on the basis of the amount collected. For accounting purposes, the division of moneys collected may occur at the time that such moneys are deposited in said fund. However, the establishment of separate funds or accounts shall not be required.

(Prior code § 6-7.06)

13.04.070 Payment, enforcement.

The sewer service charges herein established shall be paid to the Treasurer of the city or to any other person authorized by the Council to receive payment thereof. It shall be the duty of the Treasurer to enforce collection of said sewer service charges, and to act as the representative of the city for liaison with the district in the disposition of disputed accounts and other matters relating to billing and collecting the sewer service charge by district.

(Prior code § 6-7.07)

Chapter 13.08 BUILDING SEWERS

Sections:

13.08.010 Purpose.

The purpose of this chapter is to regulate the size, extent, use, construction, maintenance, and abandonment of building sewers, sometimes referred to elsewhere in this code and other codes and ordinances of the city as "building sewer," "house sewer," "side sewer," "sewer lateral," or "building sewer lateral," and to provide for the administration of such regulations by the Director of Public Works.

(Prior code § 6-6.020)

13.08.020 Definitions.

The following words and phrases, wherever used in this chapter, shall be construed as defined in this section unless otherwise required by the context. The singular shall be taken to mean the plural and the plural shall mean the singular when required by the context of this chapter. The following definitions will not necessarily apply to other portions of this code:

"Building sewer" means that particular sanitary sewer which lies between a point two feet from the building or structure it serves, to and including its connection with the sewer system or other point of discharge and which carries sewage and liquid wastes from public or

private premises to a public or private sewer system, individual sewage disposal system or other point of discharge or point of disposal.

"Common private sewer" means any privately owned and maintained sewer which serves as the disposal point for two or more building sewers. A common private sewer is either a sanitary sewer or a storm water sewer, but it cannot be used as a combination of both.

"Inflow/infiltration correction program" (also called "I/I correction program" and "infiltration/inflow correction program") means those particular projects being designed, or designed and being constructed, constructed or proposed to be constructed by the city of Oakland and/or its agents for the purpose of complying with the requirements of that certain order issued by the California Regional Water Quality Control Board and being Order No. 84-67 and any other state, federal, or local legislation related thereto.

"Lower building sewer lateral" means all that portion of the building sewer lateral which lies within a public right-of-way or lies within an easement granted for the purpose of constructing or maintaining a sanitary sewer or some such other similar purpose.

"Manhole" means an underground structure large enough to be physically entered by a person for the purpose of inspecting and maintaining a sewer or a portion thereof.

"New sewer connection" means a connection to a public sewer or common private sewer which has not previously existed. This does not include reconnection, repair, or replacement of an existing sewer lateral either at the same or at a different location. An existing sewer lateral which would be going to a higher use (such as an increased number of dwelling units) would be subject to an increased sewer service charge and/or sewer connection fee for the increase in use.

"Point of discharge" (also called "discharge point") means that point at which the materials conveyed by a sewer leave a specific section or length of sewer.

"Point of disposal" (also called "disposal point") means the point at which any material conveyed by a sewer enters any facility for treatment or processing or otherwise leaves the sewer system by design.

"Point of origin" means that particular point on a building sewer which lies closest to the building or other structure which it serves.

"Project" means any portion of work including, but not limited to, the repair, construction and/or replacement of parts of the sewer system subject to the inflow/infiltration correction program which are accomplished under a specific project number issued by the Office of Public Works.

"Sanitary sewer" means any building sewer, private sewer or public sewer used to carry sewage.

"Sewage" means water carrying waste from residences, commercial and industrial establishments, or any combination of such wastes, but excluding storm water when conveyed in a separate storm water system.

"Sewer" means any pipe conduit or channel, being either open or closed, the purpose of which is to convey sewage, liquid waste, other liquids or water from a collection point to or toward discharge point.

"Sewer main" means (also commonly called "main sewer") means any public sewer or portion thereof which conveys sewage between the point or discharge of a building sewer and the point of disposal of said public sewer.

"Sewer System" means either the entire network or a portion of that network of publicly and privately maintained pipes, conduits, channels, manholes, pump stations and all appurtenances thereto, under the jurisdiction of the city, used to collect, store and transport sewage.

"Storm sewer" means (also commonly called "storm drain" or "storm water conduit") means any public or private sewer designed and/or constructed for the purpose of conveying rainwater or other waters deposited by natural causes, but not including sewage and wastewater.

"Upper building sewer lateral" means all that portion of the building sewer as hereinabove defined which lies within the privately owned property abutting a public right-of-way or easement.

(Ord. 12886 § 1 (part), 2008; prior code § 6-6.030)

13.08.030 Application.

The provisions of this chapter shall supersede all conflicting provisions of this code and other codes in effect and shall apply to all building sewers existing or hereafter constructed.

(Prior code § 6-6.040)

13.08.040 Building sewers and building sewer connections--Permit required, to whom issued, exceptions.

It is unlawful for any person to make, cause or permit to be made, any work required for the construction, reconstruction, repair or abandonment of any building sewers or any portion thereof or for the re-use of existing building sewers or any building sewer connection, for the purpose of discharging sewage into the city's sewer system without first obtaining from the Director of Public Works a written permit to do such work and paying the fee required by this chapter. Provided, however, that:

A. No building sewer permit shall be required for the clearance of sewer stoppages which do not involve excavation in the street.

B. Provided further, however, that permits for building sewer work regulated by this chapter shall be issued only to persons entitled thereto under state law.

(Prior code § 6-6.050)

13.08.050 Form and conditions of the permit.

The permit, when signed by the Director of Public Works or his or her authorized representative, shall constitute permission to do the work.

The permit shall be void if the work is not commenced and completed within the period specified on the permit unless an extension of time is granted in writing by the Director of Public Works.

Permit shall not be transferable.

(Prior code § 6-6.060)

13.08.060 Notice of commencement of work.

At least forty-eight (48) hours before the work is started, the permittee shall give notice of time of commencement of the work to the Director of Public Works. Similar notice shall be given to the Police Department, Fire Department, and utility companies if required on the permit.

(Prior code § 6-6.070)

13.08.070 Emergency work.

Nothing in Section 13.08.060, or elsewhere in this chapter, shall prevent any responsible person from doing such work and making such excavation as may be necessary for the preservation of life or property when such necessity arises; provided, however, that the person doing such work or excavations shall make application to obtain a permit therefor on the next working day.

(Prior code § 6-6.080)

13.08.080 Authority of the Director of Public Works.

The Director of Public Works is authorized to enforce the provisions of this chapter and to approve deviations consistent with good practice under unusual circumstances where standard requirements are impractical in his or her opinion.

(Prior code § 6-6.090)

13.08.090 Revocation of permit.

Any permit granted hereunder may be revoked by the Director of Public Works for noncompliance with any applicable laws or regulations.

(Prior code § 6-6.100)

13.08.100 Emergency abatement, dangerous condition.

A. Order of Abatement. If after issuance of sewer permit an emergency condition exists or could develop because of the connection of a private sewer lateral to the public sewer, the Director of Public Works, or his or her designee, is authorized to order the separation of any lateral determined dangerous, or likely to become dangerous if not disconnected, from any public sewer main or from any private common sewer. An "emergency condition" is defined, for the purposes of this section, as any event, act, or occurrence, either natural or otherwise, which is contributory to, or could contribute to, a land stability problem or is an eminent threat to the public health, welfare, and safety. If circumstances permit, the Director's order of separation shall be delivered either personally or by certified mail, postage pre-paid to the property owner. Where the order is delivered to the property owner, the latter must comply with the order within the period

established by the Director. If the property owner does not comply, the Director, or his or her designee, is authorized to have the work done at the expense of the property owner. Also, the work of emergency abatement shall be done at the property owner's expense, where circumstances do not permit prior notice.

B. Confirmation Hearing. The Director or his or her designee shall keep an itemized account of the costs of the abatement work. A report of the costs shall be submitted to the Council for confirmation. The property owner shall be given written notice of the confirmation hearing in the manner provided in Section 13.08.270.

Upon the date and at the place and hour fixed for the confirmation hearing, the Council of the city shall receive the report and hear such evidence as may be presented by the property owner, including evidence that no emergency existed. Such hearing may be continued from time to time by the City Council. Upon completion of such hearing, the City Council shall either overrule the Director's report or shall confirm it; provided that the City Council, if good cause exists, may adjust downward the costs of abatement. After the assessment is made and confirmed, it shall be a lien on the said real property.

Such lien attaches upon recordation in the Office of the County Recorder, Alameda County, by certified copy of the resolution of the confirmation. After confirmation of the report, a certified copy shall be filed with the County Auditor, Alameda County, on or before August 10th. The description of the parcel reported shall be that used for the same parcel as the County Assessor's map books for the current year. The County Assessor shall enter each assessment on the county tax roll opposite the parcel of land. The amount of the assessment shall be collected at the same time and in the same manner as ordinary municipal taxes are collected, and shall be subject to the same penalties and the same procedure for foreclosure and sale in case of delinquencies as provided for ordinary municipal taxes.

(Prior code § 6-6.110)

13.08.110 Reimbursement to city--Responsibility determined after repairs made.

Whenever the location of a malfunction in a building sewer and the responsibility for the protection, repair, and/or reconstruction thereof shall be the subject of dispute between the city and a property owner or owners, the city may proceed to expose such parts of said building sewer as shall be necessary to determine the cause of said malfunction, and said city shall perform all necessary work thereon, and shall thereupon determine the person or persons responsible for said malfunction which said person or persons shall be liable, or jointly liable, respectively, for all costs necessarily incurred by the city in the performance of the work. Provided, however, that before the city undertakes the work herein mentioned, it shall give notice in writing to all persons concerned of its intentions. Provided, further, that the remedy provided in this section shall be independent of and shall not supersede those provisions in this chapter relating to dangerous and unsanitary conditions and to emergency work by the city.

(Prior code § 6-6.130)

13.08.120 Responsibility of property owner.

The size, extent, construction, operation, use, maintenance, and abandonment of building sewers and common private sewers and the connections thereto shall be in accordance

with the provisions of this chapter and shall be the responsibility of the owner of the property served or servable by the sewer system.

(Prior code § 6-6.140)

13.08.130 Use of public sanitary sewers.

Use of the sanitary sewer system is limited to the discharge of sewage and/or industrial wastes in such a quantity and of such a quality as shall not endanger the condition, operation, or capacity of the system.

(Prior code § 6-6.150)

13.08.140 Prohibited use of public sanitary sewers and any private sanitary sewer or building sewer discharging, directly or indirectly, into said public sanitary sewers.

A. Illegal Connections. It shall be illegal for any person to discharge or permit the discharge of any storm water, surface water, ground water, roof runoff, yard drainage, or subsurface drainage into any building sewer, private sanitary sewer, or public sanitary sewer by either direct or indirect means.

B. Notification of Illegal Connection. When a connection permitting illegal discharge as defined in subsection A of this section has been detected and confirmed, the Director of Public Works or his or her authorized agent shall notify the owner of the property from which the discharge occurs to remove the connection within thirty days of said notification. Notification shall proceed in accordance with the provisions of Section 13.08.240.

C. Abatement of Illegal Connection. The illegal connection shall be abated in accordance with the published standards and specifications in this code for the plugging and abandoning of a sewer line with the work to be accomplished under the proper permit and subject to the inspection and approval of the city prior to the filling of the trench containing the exposed pipe(s).

D. No New Illegal Connections. No new connections shall be made to any public sanitary sewer which shall discharge, directly or indirectly, any effluent prohibited by federal, state or local statutes.

(Prior code § 6-6.160)

13.08.150 Prohibited uses generally--Wastewater.

No person shall discharge, deposit, throw, or cause, allow, or permit to be discharged, deposited, or thrown, into a building sewer or the sanitary sewer system, any substance of any kind whatsoever which shall cause or tend to cause an obstruction or damages to the sewer system, or which shall cause or tend to cause a nuisance or hazard, or which will in any manner obstruct or tend to obstruct the efficient operation or maintenance of the sewer system. Wastewater may not be discharged to the collection system that would cause a violation of the water quality limitations or preclude the selection of the most cost-effective alternative for wastewater treatment and sludge disposal.

Federal and state statutes governing wastewater and water discharges into the collection system supersede all requirements and provisions of this section and Sections 13.08.160 through 13.08.180, therefore, the Director of Public Works shall neither approve nor permit any wastewater discharges into the collection systems that are in violation of these statutes, notwithstanding any provisions in this chapter to the contrary.

(Prior code § 6-6.170)

13.08.160 Additional prohibited uses--Waters and wastes.

No person shall discharge, or permit the discharge of, any of the following waters or wastes into a building sewer or the sanitary sewer system without prior written approval of the Director of Public Works:

A. Any unpolluted industrial process water;

B. Any liquid or vapor having a temperature detrimental to the sewer system;

C. Any gasoline, benzine, naphtha, fuel oil, or other flammable or explosive liquid, solid, or gas;

D. Any water or waste which contains excessive amounts of grease, oil, or fats as hereinafter defined by this code;

E. Any garbage, except garbage from dwellings and establishments where food is prepared and consumed on the premises, and which has been ground to such a degree that all particles will be carried freely under the flow conditions prevailing in the public sewers. No particle shall in any event be greater than three-eighths inch in any dimension;

F. Any sand, cement, lime, plaster, cinders, ashes, metal, glass, or other heavy solids; any straw, shavings, animal hair, feathers, paunch manure, or other fibrous matter; any tar, asphalt, resins, plastics or other viscous substance; or any other matter of such a nature as to obstruct the flow in sewers or cause other interference with the proper operations of the sewer system;

G. Any water or waste containing excessive amounts of acid, alkali, or dissolved sulfide, or having any other corrosive property capable of causing damage or hazard to structures, equipment or personnel;

H. Any waters or wastes containing a toxic or poisonous substance in sufficient quantity to injure or interfere with any sewer treatment process, to constitute a hazard to humans, animals, or fish, or to create a hazard in the waters receiving effluent from the sewage treatment plant;

I. Any waters or wastes containing suspended solids or dissolved matter of such character and quantity that unusual attention or expense is required to handle such materials in the sewer or at the sewage treatment plant;

J. Any noxious or malodorous gas or substance capable of creating a public nuisance;

K. Any radioactive wastes, except as hereinafter provided.

(Prior code § 6-6.171)

13.08.170 Additional prohibited uses--Excessive volume.

No person shall discharge, or permit the discharge into a building sewer or the sanitary sewer system, without prior written approval of the Director of Public Works, and the agency providing sewage treatment facilities, any waters or wastes having an average daily flow greater than 0.75 million gallons per day and having any of the following characteristics:

A. Temperature in excess of one hundred fifty (150) degrees Fahrenheit;

B. Suspended solids, or matter which upon dilution with water or sewage results in the formation of suspended solids, in excess of five hundred (500) milligrams per liter and which adversely affects any part of the sewer system;

C. Biochemical Oxygen Demand in excess of four hundred (400) milligrams per liter;

D. Oils and greases of animal, vegetable, or mineral origin floating, dispersed, or emulsified in excess of one hundred (100) milligrams per liter or in any amount as to adversely affect any part of the sewer system;

E. A pH of less than five and five-tenths (5.5) or more than ten and five-tenths (10.5);

F. Dissolved sulfides in excess of one milligram per liter.

(Prior code § 6-6.172)

13.08.180 Additional prohibited uses--Radioactive wastes.

A. Liability. No person shall discharge, or permit the discharge of, any radioactive wastes into the sewer system or appurtenances thereof, except where:

1. The waste is discharged in strict conformity with current Nuclear Regulatory Commission recommendations for safe disposal of radio-active wastes; and

2. The person discharging the radioactive wastes shall assume all liability for any injury to personnel or damage to the sewer system that may result from such discharge.

B. Reports. Any person discharging, or permitting the discharge of, a radioactive waste into the sewer system in accordance with the provisions of subsection A of this section shall submit such reports as the Director of Public Works may deem necessary. In the event of an accidental spilling or depositing of any radioactive material into the sewer system, the person who causes such occurrence, or who is responsible therefor, shall:

1. Immediately notify the Director of Public Works; and

2. Render such technical or other assistance as may be required to avoid any hazard from the radioactivity.

(Prior code §§ 6-6.173, 6-6.174)

13.08.190 Special agreements.

Notwithstanding any provision of this chapter to the contrary, the city, the agency providing sewage treatment facilities, and any individual or industrial concern discharging any water or waste of unusual strength, character, composition, or volume into the sanitary sewers may enter into a contract permitting such discharge. In the event that any such discharge shall involve additional or extraordinary expenses to the city, such individual or industrial concern shall be required to reimburse the city therefor and shall be required to post with the city a bond or other guarantee in a form satisfactory to the City Attorney. Such agreements or contracts shall not be made when the provisions thereof would allow inflow sources or be in violation of state or federal categorical pretreatment standards.

(Prior code § 6-6.180)

13.08.200 The right to limit discharge.

The Director of Public Works shall have the right to limit the rate of discharge of sewage from any premises into the sewer system when required for the protection of public or private property and to provide for the public health and safety.

(Prior code § 6-6.190)

13.08.210 Sampling structures.

The City Council by resolution upon the recommendation of the Director of Public Works shall have the right to require any property owner to construct and maintain, at his or her own expense, a sampling structure in an accessible location for the purpose of sampling sewage or industrial wastes. The structure shall have a minimum diameter of 10,' and shall be acceptable to the Director of Public Works.

(Prior code § 6-6.200)

13.08.220 Right of entry--Suspected dangerous and insanitary condition.

Whenever the Director of Public Works shall have reasonable cause to believe that conditions which do not conform to this chapter exist in a particular building, structure or premises, or whenever the Director of Public Works authorizes and directs the inspection of all buildings, structures or premises subject to the provisions of this chapter in a defined area of the city, or whenever said Director of Public Works shall authorize and direct inspections of buildings, structures or premises as a part of a routine spot check, duly authorized representatives of the Director of Public Works of the city may enter and inspect any such building, structure or premises to secure compliance with, or prevent a violation of, any provision of this chapter.

No premises shall be inspected until a reasonable notice is given to the owner or occupant, or to the agent of either.

The owner or authorized agent of the owner of any building structure or premises may enter the building, structure or premises whenever necessary to carry out any instructions or perform any work required to be done pursuant to this chapter.

No person authorized by this section to enter and inspect any building, structure, or premises shall enter any dwelling unit between the hours of five p.m. of any day and eight-thirty a.m. of the succeeding day without the consent of the owner or the occupants of the dwelling unit or enter any dwelling unit in the absence of the occupants, except when the structure is in such condition as to place in jeopardy the life or limb of the public, in which case entry may be made at any time.

If entry is refused, the Director of Public Works or such duly authorized representative of the Director of Public Works of the city shall have recourse to every remedy provided by law to secure entry.

(Prior code § 6-6.210)

13.08.230 Right of entry--Inflow/infiltration correction program.

Whenever a building sewer lateral or common private sewer has a point of discharge into a public sanitary sewer which has undergone, is undergoing or will undergo rehabilitation or replacement pursuant to the requirements of the inflow/infiltration correction program, it may be tested, including the portions of the sewer or private property, without prior notice to the property owner or other persons having rights to the property, when such tests can be conducted solely from the public right-of-way without disturbance to persons having the right to enjoy the premises.

The tests conducted shall be standard tests adopted by the Office of Public Works specifically for testing with regard to the I/I correction program and the procedures and the record of tests shall be kept on file at said office.

(Prior code § 6-6.211)

13.08.240 Dangerous and insanitary sewer conditions--Order to abate--Sewers not subject to the inflow/infiltration correction program.

The Director of Public Works or the Alameda County Health Officer, or their designee, shall investigate, or cause to be investigated, all dangerous and insanitary conditions existing in or about building sewers or connections thereto. If such a condition is a menace to life, health, safety, or property, or is in violation of law, the Director of Public Works or the Alameda County Health Officer shall, in writing, order the owner of the premises upon which said condition exists to discontinue the use of said sewer, or, when appropriate under the circumstances, to discontinue all construction work with respect thereto, and to abate said condition in such manner as shall comply with the law. Any stoppage in the building sewer or break in the watertight integrity of the building sewer shall be conclusively presumed to be a menace to life, health, safety or property for purposes of requiring abatement of such a condition. The order shall specify the dangerous and insanitary condition, the manner in which the same shall be abated, and the period within which such abatement shall be accomplished. In determining said period within which said owner shall abate said dangerous and insanitary condition, the Director of Public Works or the Alameda County Health Officer shall consider the nature of said condition and its effect on life, health, safety, and property, together with the time reasonably required by said owner to comply with such order of the Director of Public Works or the Alameda County Health Officer. It is unlawful for any owner to fail or neglect to comply with such order of the Director of Public Works or the Alameda County Health Officer. In the event the owner shall not promptly proceed to abate said dangerous and insanitary condition, as ordered by the Director

of Public Works or the Alameda County Health Officer, the following abatement procedures will be undertaken.

(Prior code § 6-6.220)

13.08.250 Dangerous and insanitary sewer conditions--Order to abate--Sewers subject to inflow/infiltration correction program.

Any building sewer or common private sanitary sewer found to have an existing dangerous or insanitary condition as a result of the testing performed as a part of the inflow/infiltration correction program shall be abated according to the order and procedure established by the Director of Public Works; provided that:

A. The property owner shall be notified in writing, by the Director of Public Works or his or her duly authorized representative of the existing condition and of the method by which the city determined that condition.

B. The written notification shall further state that the owner has eighteen (18) months to abate the problem which is existing on the upper lateral portion of the building sewer at his or her own expense.

C. The notification shall also make reference to financing methods and availability of same to low income property owners.

D. The notice shall contain such other information deemed necessary by the Director of Public Works or his or her duly authorized representative to fully inform the property owner of his or her rights and obligations.

(Prior code § 6-6.221)

13.08.260 Dangerous and insanitary sewer condition--Notice of hearing, hearing, and appeal.

A. Notice of Hearing. The Director of Public Works or the Alameda County Health Officer, upon the failure of the owner to promptly proceed to abate said dangerous and insanitary condition as ordered, may forthwith fix a time and place for an administrative hearing of the matter. In all such cases, the Director of Public Works or the Alameda County Health Officer shall serve, or cause to be served, notice of said hearing upon the person in possession of such premises, or upon the owner thereof, not less than five days prior to the time fixed for such hearing. The notice shall specify the hour, date and place of the hearing and the dangerous and insanitary condition that is the subject of the hearing. Service of said notice may be made by delivery to the owner or person in possession personally or by enclosing the same in a sealed envelope, postage prepaid, addressed to the occupant at such premises, or to the owner at his or her last known address as the same appears on the last equalized assessment rolls of the city, and depositing same in the United States mail. Service shall be deemed complete at the time of the deposit in the United States mail.

B. Hearing. At the time and place set for the hearing, the Director of Public works or the Alameda County Health Officer, or a designee, shall hear such evidence as may be presented by said owner, person in possession or their representative. Such hearing may be continued from time to time by the Director of the Public Works or the Alameda

County Health Officer, provided that notice is given to said owner or person in possession in the manner described in Section subsection A of this section. The findings of the Director of Public Works or the Alameda County Health Officer, or the designee, shall be rendered at the time of such hearing and thereupon shall be announced to such owner, person in possession or their representative, provided that such person(s) appears at the hearing.

C. Appeal. Within three days of hearing, the announced findings of the Director of Public Works or the Alameda County Health Officer or a designee, said owner or person in possession may notify the Director of Public Works that he or she wishes to appeal such findings to the City Council. Failure to give the required notice within the three-day period or failure to appear at the administrative hearing shall constitute, unless good cause is shown, a waiver of the right to appeal to the City Council. Upon timely receipt of notice of an intent to appeal, the Director of Public Works or Alameda County Health Officer shall give the appellant not less than three days' prior written notice of the date, place and hour of the appeal to the City Council. Service shall be made in the manner described in subsection A of this section.

The foregoing items apply except where they conflict with requirements for sewers subject to the inflow/infiltration correction program. In those instances, any requirements imposed by the I/I correction program supersede all other requirements, except those imposed by the code for public health and safety.

(Prior code § 6-6.222)

13.08.270 Notice and hearing of dangerous and insanitary sewer condition--Confirmation of proceedings, abatement, prospective notice of lien.

A. Nonappearance and Untimely Appeals. In those cases where the owner or person in possession either does not appear for the administrative hearing or appears for the hearing but does not give timely notice of an intent to appeal, and there is no good cause shown, the Director of Public Works or the Alameda County Public Health Officer may present his or her report and findings to the City Council for confirmation at the earliest available City Council meeting after the date for the administrative hearing. Said reports and findings shall be placed on the City Council's Consent Calendar and be confirmed or overruled by the Council. If the reports and findings are confirmed, the City Council shall direct that the dangerous and insanitary condition be abated.

Thereafter the Director of Public Works or Alameda County Public Health Officer shall forthwith give or cause to be given, written notice in the manner provided in Section 13.08.260A, to the owner or person in possession of said premises to abate the condition. If such abatement is not commenced within five days thereafter, and diligently prosecuted to completion, the Director of Public Works or Alameda County Public Health Officer shall, at the owner's expense, cause the same to be abated.

B. Hearing of Appeal. Upon the date and at the place and hour fixed for the hearing of appeal and findings of the Director of Public Works or Alameda County Public Health Officer, the Council of the city shall hear such evidence as may be presented by said owner, person in possession or other representative. Such hearing may be continued from time to time by the City Council. Upon the completion of such hearing, the City Council shall either overrule the findings or shall direct that the dangerous and insanitary condition be abated.

The Director of Public Works shall give written notice, in the manner provided in Section 13.08.260A, to the owner or person in possession of said premises to abate such condition forthwith. If such abatement is not commenced within five days thereafter and diligently prosecuted to completion, the Director of Public Works shall at the owner's expense, cause the same to be abated.

C. Abatement. The Council shall order to be paid by the owner of said premises all sums which may be necessarily expended by the Director of Public Works in abating such condition. Said sums shall be in accordance with the master fee schedule. Prior to the commencement of said work by the city, a prospective notice of lien may be filed by the Director of Public Works with the Alameda County Recorder against the property. In lieu of employing a contractor or other person to abate such condition, the Director of Public Works may call upon the maintenance services or other departments of the city to abate such condition.

D. Prospective Notice of Lien. The prospective notice of lien referenced in subsection C of this section shall take the following form:

PROSPECTIVE NOTICE OF LIEN

Pursuant to Chapter 13.08 of the Oakland Municipal Code, I caused a notice to repair a dangerous and insanitary sewer condition to be personally delivered or mailed to the subject property owner notifying the property owner of their responsibility to repair a dangerous and insanitary sewer. The owner of said property has failed to diligently and without interruption prosecute same to completion, nor has the property owner entered into an Agreement to allow the City and for its contractor to perform the necessary work. The estimated cost of said repairs, including collection costs, is $_____ and said amount has not been paid. The City of Oakland does hereby give public notice of its claim in said amount against subject property and of pending City action to record a lien against said property when the repairs have been completed. The real property herein referenced and upon which a prospective notice of lien is claimed, is that certain parcel of land lying and being in the City of Oakland, County of Alameda, State of California, and particularly described as follows, to-wit:

(insert Description of Property)

Dated this _____ day of _____, 19_____.

_____

Director of Public Works

City of Oakland

(Prior code § 6-6.223)

13.08.280 Expense of mandatory abatement against property.

The costs outlined in Section 13.08.270 shall constitute a special assessment against that real property abated. The Director of Public Works shall cause a copy of the report of assessment to be served upon the owner of said property not less than five days prior to the time fixed for confirmation of said assessment; service may be by enclosing a copy of the report

of assessment in a sealed envelope, postage prepaid, addressed to the owner at his or her last known address as the same appears on the last equalized assessment rolls of the city, and depositing the same in the United States mail; and service shall be deemed completed at the time of deposit in the United States mail.

A copy of the report of assessment shall be posted in the Office of the City Clerk at least three days prior to the time when the report will be submitted to the City Council. After the assessment is made and confirmed, it shall be a lien on the said real property.

Such lien attaches upon recordation in the Office of the County Recorder, Alameda County, by certified copy of the resolution of confirmation. After confirmation of the report, a certified copy shall be filed with the County Auditor, Alameda County, on or before August 10th. The description of the parcel reported shall be that used for the same parcel as the County Assessor's map books for the current year. The County Assessor shall enter each assessment on the county tax roll opposite the parcel of land. The amount of the assessment shall be collected at the same time and in the same manner as ordinary municipal taxes are collected, and shall be subject to the same penalties and the same procedure for foreclosure and sale in case of delinquencies as provided for ordinary municipal taxes.

(Prior code § 6-6.224)

13.08.290 Notice of lien--Mandatory agreement.

The lien mentioned in Section 13.08.280 shall take the following form:

NOTICE OF LIEN

Pursuant to authority vested in me by Resolution No. _____ C.M.S., of the Council of the City of Oakland, passed on the _____ day of _____, 19_____, and the provisions of Chapter 13.08 of the Oakland Municipal Code, I did, on the _____ day of _____, 19_____, cause a dangerous (insanitary) condition located upon the hereinafter described real property to be abated at the expense of the owners thereof, in the amount of $_____, and that said amount has not been paid nor any part thereof, and the City of Oakland does hereby claim a lien upon the hereinafter described real property in Said amount; the same shall be a lien upon the said real property until said sum with interest thereon at the legally allowable rate from the date of the recordation of this lien in the Office of the County Recorder of the County of Alameda, State of California, has been paid in full. The real property hereinabove mentioned and upon which a lien is claimed is that certain parcel of land lying and being in the City of Oakland, County of Alameda, State of California, and particularly described as follows, to wit:

(insert Description of Property)

Dated this _____ day of _____, 19_____.

_____

Director of Public Works

CITY OF OAKLAND

(Prior code § 6-6.225)

13.08.300 Expense of voluntary abatement.

In order to fulfill the responsibility outlined in Section 13.08.270, owners may elect to have the city abate the dangerous or insanitary condition. The Director of Public Works is authorized and directed to execute an agreement on behalf of the city with such persons which would include the following conditions:

A. Agreement to allow city and/or its contractor to enter the property and perform the necessary work;

B. Agreement to pay the actual abatement cost, plus an additional charge to cover the city's cost of contract administration, engineering and inspection, plus interest; the interest rate shall be in accordance with the master fee schedule; the Director of Public Works may establish a program and eligibility requirements for low income property owners who reside at the location where the repair work is performed; the interest rate for persons qualifying for said program shall be in accordance with the master fee schedule;

C. Option to pay these costs in annual installments not to exceed five years with the ability to pay the balance at any time before the five-year period is completed;

D. A notice of lien will be filed by the Director of Public Works with the Alameda County Recorder against the property and will be released only when the charges have been paid in full. Such lien will take the form set forth herein; and

E. A waiver of all rights under Sections 13.08.240, 13.08.260 and 13.08.270.

(Prior code § 6-6.226)

13.08.310 Notice of lien--Voluntary abatement.

The lien mentioned in Section 13.08.300 shall take the following form:

NOTICE OF LIEN

Pursuant to the provisions of Chapter 13.08 of the Oakland Municipal Code, I did on the _____ day of _____, 19_____, cause a dangerous (insanitary) condition located upon the hereinafter described real property to be abated at the expense of the owner thereof, in the amount of $_____ and that said amount has not been paid nor any part thereof, and the city does hereby claim a lien upon the hereinafter described real property in said amount; the same shall be a lien upon the said real property until said sum with interest thereon at the rate of _____ per annum from the date of the recordation of this lien in the Office of the County Recorder of the County of Alameda, State of California, has been paid in full. The real property hereinabove mentioned and upon which a lien is claimed, is that certain parcel of land lying and being in the city, County of Alameda, State of California, and particularly described as follows, to wit:

(insert Description of Property)

Dated this _____ day of _____, 19_____.

_____

Director of Public Works

CITY OF OAKLAND

(Prior code § 6-6.227)

13.08.320 Failure to make payments.

An owner shall be deemed to be delinquent in the payment of voluntary abatement if said owner fails to make a required payment within three months of the due date. At the time of delinquency, the Director of Public Works shall proceed pursuant to Section 13.08.280.

(Prior code § 6-6.228)

13.08.330 Notice of lien--Emergency work.

The lien mentioned in Section shall take the following form:

NOTICE OF LIEN

Pursuant to authority vested in me by Section 13.08.280 of the Oakland Municipal Code, I did on _____ day of _____, 19_____, cause a dangerous and insanitary condition located upon the hereinafter described real property to be abated at the expense of the owners thereof, in the amount of $_____, and that said amount has not been paid nor any part thereof, and the City of Oakland does hereby claim a lien on the hereinafter described real property in said amount; the same shall be a lien upon the said real property until said sum with interest thereon at the legally allowable rate from the date of the recordation of this lien in the office of the Recorder of Alameda County, State of California has been paid in full. The real property hereinabove mentioned and upon which a lien is claimed is that certain parcel of land lying and being in the City of Oakland, County of Alameda, State of California, and particularly described as follows, to wit:

_____

_____

_____

Dated this _____ day of _____, 19_____.

_____

Director of Public Works

CITY OF OAKLAND

(Prior code § 6-6.229)

13.08.340 Connection to public sanitary sewer required.

Every building in which plumbing fixtures are installed and every premises having wastewater, liquid waste, or sewage piping thereon shall have connection to a public sanitary sewer or a private common sewer which has its point of discharge in a public sanitary sewer.

Whenever a public sanitary sewer is extended to within two hundred (200) feet of any premises having a private sewage disposal system thereon, said private disposal system shall be abandoned in accordance with the requirements of this code, and the building sewer connected to the public sanitary sewer within thirty (30) days of receipt of notice from the Director of Public Works.

Where the public sanitary sewer is in a street, alley, avenue or other public right-of-way upon which a premises abuts, the building sewer shall be installed in a direct line at right angles or radial to the centerline of right-of-way from the right-of-way line to the connection with the public sanitary sewer.

(Prior code § 6-6.230)

13.08.350 Repair of lower lateral required--Right of the city to construct private laterals at city's expense--Inflow/infiltration correction program only.

Pursuant to the requirements of the inflow/infiltration correction program and for the general public health, safety and welfare, the city is empowered to repair and/or replace for one time only and at the expense of said city, every lower building sewer lateral within the public right-of-way on any rehabilitation project performed on a public sewer main for the purpose of compliance with the requirements of the I/I Correction Program. Such repair and/or replacement and expenses shall include a two-way cleanout or test-wye as required by other sections of this code. This one-time repair in no way abrogates the property owner's responsibility for maintaining his/her building sewer lateral in the future, nor does it obligate the city to perform any future maintenance on said private laterals repaired in compliance with this code section and the hereinabove mentioned program. The hereinabove repair shall include the construction of a two-way cleanout, when required, at the location(s) specified by other sections of this code.

(Prior code § 6-6.231)

13.08.360 Two-way cleanout required--Point of discharge in public right-of-way.

Every building sewer and every private common sewer being constructed as the initial connection to any building, structure, or premises which shall have its point of discharge within a public right-of-way shall contain a two-way cleanout. The two-way cleanout required shall be located in the vicinity of the right-of-way line adjacent to the property being improved.

(Prior code § 6-6.240)

13.08.370 Test-wye required--Point of discharge in easement.

Every new building sewer and every new private common sanitary sewer having its point of discharge in an easement shall have a test-wye located within the easement.

(Prior code § 6-6.241)

13.08.380 Two-way cleanout test-wye not required.

No two-way clean-out shall be required for any portion of any building sewer or any private common sanitary sewer which conveys wastes by means of a pressurized line (i.e., material is pumped rather than flowing due to the force of gravity).

The Director of Public Works or his or her duly authorized representative is authorized to delete the requirement for a two-way cleanout or test-wye when in his or her judgement no purpose would be served by the construction of same. This provision in no way affects the requirements imposed by this code for other cleanouts or other appurtenances.

(Prior code § 6-6.242)

13.08.390 Two-way cleanout required--Reduction in size of building sewer.

Existing five-inch diameter building sewer may be reduced to four-inch diameter pipe when building sewer replacement occurs downstream and a new connection is made to the sanitary sewer main. A two-way cleanout shall be constructed between the dissimilar pipes to the specifications and standards of the city (unless this requirement is waived by the Director of Public Works or his or her authorized representative). This requirement is in addition to any other requirement for two-way cleanouts specified in this code. No two-way cleanout is required when there is an enlargement of pipe downstream for the existing building sewer.

(Prior code § 6-6.243)

13.08.400 Two-way cleanout required--Replacement of existing building sewers or portion(s) thereof.

Whenever an existing building sewer or common private sewer with existing connection to any building, structure or premises which has its point of discharge within the public right-of-way is wholly or partially replaced, a two-way cleanout shall be constructed in the vicinity of the right-of-way line adjacent to the property wherefrom the building sewer originates.

Partial replacement under this section shall mean the replacement of either the upper or lower sewer lateral, as said upper and lower sewer laterals are defined under Section 13.08.020.

Partial replacement shall also mean the replacement of any portion(s) of the building sewer, combined length of which exceeds ten feet.

(Prior code § 6-6.244)

13.08.410 Two-way cleanout required--Rehabilitation of existing building sewers or portion(s) thereof.

Whenever an existing building sewer or common private sewer with existing connection to any building, structure or premises which has its point or discharge within the public right-of-way is wholly or partially rehabilitated, a two-way cleanout shall be constructed in the vicinity of the right-of-way line adjacent to the property wherefrom the building sewer originates.

Partial rehabilitation under this section shall mean the rehabilitation of either the upper or lower sewer lateral, as said upper and lower sewer laterals are defined under Section 13.08.020.

Partial rehabilitation shall also mean the rehabilitation of any portion(s) of the building sewer, combined length of which exceeds ten feet.

(Prior code § 6-6.245)

13.08.420 Connections to public or common private sewers to be made in presence of Director of Public Works.

All connections to public or common private sewers shall be made in the presence of the Director of Public Works or his or her authorized representative, and shall be made by using a Wye branch, Tee branch, or drilled tap. Other connections may be allowed or required by the Director of Public Works to meet specific conditions of a project.

The diameter of drilled taps shall not exceed two-thirds the outside diameter of the pipe tapped, except that a tap for a six-inch pipe will be permitted on an eight-inch sewer.

(Prior code § 6-6.250)

13.08.430 Manholes required.

Manholes are required for connecting building sewers to the public or common private sewer if the building sewer has the same, or larger, diameter as the public or private sewer.

(Prior code § 6-6.260)

13.08.440 Common private sanitary sewer.

Building sewers from a building court may be connected to a public sewer through a common private sewer, provided that such common private sewer be not less than eight inches in diameter and shall be constructed to alignment, grades, and standards satisfactory to the Director of Public Works. Building sewers connecting to common private sewers shall meet the same requirements as building sewers connecting to public sewers. A common private sewer and the use thereof shall be subject to all of the provisions of this chapter pertaining to building sewers.

(Prior code § 6-6.270)

13.08.450 Each building to have its own sanitary sewer--Exception.

Where real property is parceled or subdivided pursuant to the provisions of the Subdivision Map Act of the state of California and local ordinances or codes applicable thereto, each parcel created shall have direct access for the connection of a sewer lateral to a public sewer or may have access to said public sewer through a public sanitary sewer easement for private purposes where approved in writing by the Director of Public Works.

Exception. When additional buildings are to be placed on a parcel of land that is already being served by a building sewer and when the Director of Public Works determines that the parcel of land will not or cannot be divided into separate ownerships at a later date, then the additional buildings may be sewered by connecting them to the existing building sewer at some point within the parcel of land.

(Prior code § 6-6.280)

13.08.460 Temporary building sewer connection--Revocation.

The Director of Public Works may, upon application containing such information as is required by him or her, issue a permit for a temporary building sewer. Said permit may be revoked by the Director of Public Works at any time upon thirty (30) days' notice posted upon the premises and mailed to the owner of the premises; and in the event said sewer is not disconnected in thirty (30) days, the Director of Public Works may disconnect the same and the owner shall be liable for the cost thereof. Such temporary permit shall contain an agreement signed by the applicant to hold the city and its officers and employees harmless from all damages caused by reason of such temporary sewer.

(Prior code § 6-6.290)

13.08.470 Permission to use existing building sewers--Uncovering for inspection purposes.

A permit to use an existing building sewer or building sewer connection shall only be granted subject to the condition that said building sewer and building sewer connection conform to the standards of construction and quality of materials set forth in this chapter, as determined by the Director of Public Works. When required by the Director of Public Works, an existing building sewer or building sewer connection shall be exposed by the owner to permit inspection and testing of it before the re-use of said building sewer is permitted.

(Prior code § 6-6.300)

13.08.480 Damaging existing building sewer--Authority of Director of Public Works.

Any person disturbing or damaging an existing building sewer shall protect and shall be responsible for the repair and/or reconstruction of said building sewer in the manner provided by this code. The Director of Public Works shall specify the materials, methods, and extent of such protection, repairs, and/or reconstruction. This provision shall not relieve the property owner of his or her obligations as set forth elsewhere in this chapter.

(Prior code § 6-6.310)

13.08.490 Abandonment of existing building sewers and sewage disposal facilities--Exception.

An existing building sewer or its connection which is to be abandoned shall be sealed with a permanent, water-tight plug at the connection to the public sewer in a manner satisfactory

to the Director of Public Works. All open ends of the abandoned building sewer shall also be similarly sealed.

Exception. Upon the approval of the Director of Public Works, an existing building sewer meeting all of the requirements of this chapter pertaining to re-use may be plugged at the property line if the size, condition, and location of said existing building sewer permit re-use.

Every cesspool, septic tank and seepage pit which has been abandoned or has been discontinued otherwise from further use or to which no waste or soil pipe from a plumbing fixture is connected shall have the sewage removed therefrom and be completely filled with earth, sand, gravel, concrete or other approved material.

The top cover or arch over the cesspool, septic tank, or seepage pit shall be removed before filling and the filling shall not extend above the top of the vertical portions of the sidewalls or above the level of any outlet pipe until inspection has been called and the cesspool, septic tank or seepage pit has been inspected. After such inspection, the cesspool, septic tank or seepage pit shall be filled to the level of the top of the ground.

No person owning or controlling any cesspool, septic tank, or seepage pit on the premises of such person or in that portion of any public street, alley or other public property abutting such premises, shall fail, refuse or neglect to comply with the provisions of this section or upon receipt of notice so to comply from the department having jurisdiction.

Where disposal facilities are abandoned consequent to connecting any premises with the public sewer, the permittee making the connection shall fill all abandoned facilities as required by the Director of Public Works within thirty (30) days from the time of connecting to the public sewer.

(Prior code § 6-6.320)

13.08.500 Inspection and testing--Building sewer permits.

The Director of Public Works or his or her authorized representative shall make or require such inspections and tests as he or she deems necessary to be made before granting final approval of the work authorized by the building sewer permit. The equipment, material, power, and labor necessary for inspection and test shall be furnished by the applicant.

All measurements, tests, and analyses of the characteristics of liquids to which reference is made in this chapter shall be performed and determined in accordance with the standards prescribed in the latest edition of "Standard Methods for Examination of Water and Sewage," published jointly by the American Public Health Association, the American Water Works Association, and the American Society for Testing Materials.

Air Pressure Test. The building sewer may be tested in its entirety or in sections. The test shall consist of measuring the time interval necessary for a loss in air pressure, through a defined range in pressures, from the building sewer. The allowable rate of pressure loss and the detailed test procedure shall be established by the Director of Public Works, and if any building sewer or part thereof shall be covered or concealed before said inspection, testing, and approval as herein prescribed, it shall be uncovered, upon request of the Director of Public Works. Before granting final approval, further inspection and testing will be made after the sewer is backfilled to ascertain all requirements of the Director of Public Works have been met.

Water Test. The building sewer may be tested in its entirety or in sections. The building sewer will be completely filled with water under a head of five feet at the portions being tested

and maintain a constant level for fifteen (15) minutes without further addition of water or showing of leaks. The provisions of this section are not intended to prevent the use of any other building sewer pipe test procedure not specifically prescribed in this section; provided, however, that such substitute test procedure shall be first approved by the Director of Public Works.

The testing required hereinabove shall not be applicable to laterals for which repair or replacement is required as part of the inflow/infiltration correction program which shall be subject to such testing and inspection as specifically required by that program.

(Prior code § 6-6.330)

13.08.510 Inspection and testing--Inflow/ infiltration correction program--Building sewer laterals and common private sewers.

Inspection and testing of the upper building sewer laterals and private common sanitary sewers subject to correction under the requirements of the I/I correction program may occur at the time of, or subsequent to, each rehabilitation project. Such testing and inspection shall be standard tests approved by the Office of Public Works for said program.

(Prior code § 6-6.331)

13.08.520 Requirement for standard cleanout adjacent to building--Inflow/infiltration correction program.

When the repair/replacement of any portion of an upper sewer lateral is necessary pursuant to the findings of testing required by Section 13.08.510, a standard cleanout shall be inserted into the upper sewer lateral in the vicinity of the building drain. The exact location of the cleanout is subject to the approval of the Director of Public Works or his or her duly authorized representative. (This section does not apply to any building sewer or private common sanitary sewer which conveys wastes by means of a pressurized line.)

(Prior code § 6-6.332)

13.08.530 Standards of quality of materials and methods of construction.

A. General. All materials used and all joints made in, or entering into, the construction of sewer systems or parts thereof shall be water-tight and free from defects. The materials and joints specified in this code are the minimum approved standards that shall be used. Building sewer joints shall be of such design as will permit sealing and placement without appreciable irregularities in flow lines.

The provisions of this code are not intended to prevent the use of any material not specifically prescribed by this code; provided, however, that such substitute material shall be first approved by the Director of Public Works.

B. Materials. Pipe for building sewers shall be vitrified clay, cast iron, polyvinyl chloride plastic pipe or any other material approved by the Director of Public Works.

Vitrified clay pipe and fittings shall conform to ASTM Standard Specifications for "Extra Strength Unglazed Clay Pipe," Serial Designation C-700 as amended.

Cast iron soil pipe and fittings shall conform to ASTM Standard Specifications for "Cast Iron Soil Pipe and Fittings," ASTM Designation A 74, as amended, or by the United States Department of Commerce standard for service weight "Cast Iron Soil Pipe and Fittings," Designation Commercial Standard CS 188-59, as amended.

Polyvinyl Chloride plastic pipe shall conform to all of the standards set forth in Section 207-17, POLYVINYL CHLORIDE PLASTIC PIPE, as that particular section appears in the "Standard Specifications for Public Works Construction", as adopted by the city of Oakland.

C. Size of Pipe for Building Sewers.

1. Pipe Sizes, General. Pipe sizes mentioned within this chapter refer to the interior diameters of the pipes. The sizes of any building sewer shall be at least as large as the size of the sanitary building drain to which it will connect, but in no case less than four inches. Where more than one building drain connects to the building sewer, the size of the building sewer shall be determined by the Director of Public Works.

2. Pipe Sizes, Replacement of Existing Five-Inch Diameter Building Sewer. Where any premises is served by an existing five-inch diameter building sewer, the five-inch diameter sewer may be reduced to four-inch diameter pipe when building sewer replacement occurs and a new connection is made to the sanitary sewer main. A two-way cleanout shall be required in accordance with Section 13.08.390, two-way cleanout required--reduction in size of building sewer, when the downstream size of the pipe is reduced.

D. Excavation, Backfilling, and the Protection of Building Sewer Trenches. Unless otherwise provided, the excavation, backfilling, and protection of building sewer trenches in public streets, sidewalks, alleys, or other public places shall be made in compliance with all the applicable requirements of this title.

All building sewers, other than metallic pipe, in private property shall be installed so that there will be at least twelve (12) inches of cover over the top of the pipe.

Tunneling of building sewer trenches, other than under concrete curb and gutter, will not be allowed without the prior approval of the Director of Public Works.

E. Construction of Building Sewers and Their Connections, Bends Prohibited, Cleanouts, Passage Through or Under Walls, Corrosive Materials. All building sewers shall be laid in a straight line with no horizontal or vertical bends. The horizontal alignment of the portion of any building sewer within a street area shall be perpendicular or radial to the centerline of the street right-of-way. Bends authorized or directed by the Director of Public Works shall be constructed as hereinafter described.

Sewer cleanouts shall be required at the connection of the building drain to the building sewer, grade changes, horizontal changes in direction in excess of twenty-two and one-half (22-1/2) degrees, and at intervals not to exceed one hundred (100) feet in straight runs. The minimum size of cleanouts shall be four inches and they shall be so placed as to be accessible at all times.

All building sewers passing through or under walls shall be protected from breakage in a manner approved by the Director of Public Works.

All building sewer pipes passing through corrosive materials shall be protected from external corrosion in a manner approved by the Director of Public Works.

Any cleanouts or other appurtenances required by this section are in addition to the two-way cleanouts required by another section in this code.

F. Protection of Piping. No building sewer piping other than cast iron or an approved equal shall be installed within two feet of any bearing or foundation wall. All building sewers installed below the footing of any building and paralleling the footing must be encased in concrete unless located outside the range of excessive footing pressure.

G. Construction of Building Sewers and Their Connection, Joints, Slope, Laying in Filled Ground, Depth at Curb. Vitrified clay or asbestos-cement pipe for building sewers shall be connected by flexible compression type joints or an approved equal.

Cast iron pipe for building sewers shall be connected only in the manner permitted for connections of case iron pipe under buildings.

The minimum slope of any building sewer shall be one-fourth inch per foot toward the public sewer or point of disposal; provided that where it is impractical due to the depth of the street sewer or to the structural features or to the arrangement of any building or structure, to obtain a slope of one-fourth of an inch per foot, any such building sewer may have a slope of not less than one-eighth of an inch per foot when approved by the Director of Public Works.

Where laid in filled ground with less than ninety (90) percent relative compaction, the building sewer shall be of cast iron or asbestos-cement; however, pipe may be of vitrified clay if approved flexible joints are used or if laid on a bed of approved material.

At the curbline, the outside top of the building sewer pipe shall be at least thirty-six (36) inches below the existing or proposed top of curb grade, whichever grade shall be lower.

(Prior code §§ 6-6.340--6-6.346)

13.08.540 Emergency work by city--Notice--Liability for cost of work.

Whenever, in the opinion of the Director of Public Works, the public health, safety, or welfare shall require that repairs or protective measures to a building sewer be made or instituted immediately, he or she is authorized to proceed with all necessary work to abate the condition and may enter upon private property for such purposes. He or she may erect and maintain all necessary barricades, warning lights, and other protective devices upon public or private property. He or she shall give the owner of the premises upon which the repairs are to be made, or the protective measures to be instituted, such notice, if any, and by such means as the circumstances shall permit.

The owner of the property upon which the condition exists and the person creating such condition shall be jointly and severally liable to the city for all costs incurred by it in abating said emergency condition and erecting and maintaining said protective devices.

The cost of abating such condition shall constitute a special assessment against that real property on which said condition was abated. The special assessment shall be made in the manner set forth in Section 13.08.280 using the notice of lien as found in Section 13.08.330.

(Prior code § 6-6.360)

13.08.550 Pressurized building sewer or common pressurized common sanitary sewer.

When, in the opinion of the Director of Public Works, it shall be impossible or impractical to extend a public sewer main to provide for gravity flow service from a building sewer or common private sanitary sewer, the private sewer may be pressurized (i.e., sewage may be pumped through them to a private gravity flow sewer which will connect with the public sanitary sewer main).

The pressurized system shall conform to all requirements set forth in the appropriate section of the Plumbing Code and the gravity building sewer portion shall conform to all the requirements herein set forth for sewer laterals.

(Prior code § 6-6.370)

13.08.560 Rehabilitation of damaged or defective building sewer by sliplining--Exceptions.

A. Rehabilitation of any building sewer in the city by sliplining shall only be allowed with the prior approval of the Director of Public Works. The property owner or his or her agent, at the time of requesting said permission, shall provide the Director of Public Works with video recording(s) of a television inspection of the section of the building sewer under the improved area of the public right-of-way. The Director shall not grant such permission to slipline the building sewer if, in his or her opinion based on the aforementioned video of television inspection or visual evidence of surficial subsidence or cracks in the vicinity of the building sewer, sliplining may not properly correct the existing dangerous and insanitary condition of the building sewer or may pose future dangerous and/or insanitary condition in or about the building sewers or any property in the vicinity of the building sewer.

B. Said requirement for the provision of video recordings of the television inspection of the building sewer by the contractor/owner to the Director of Public Works may be waived if the pipe section proposed to be sliplined measures twenty (20) feet or less and can be directly inspected with the "naked eye" to detect any obstruction or defects that may exist in said pipe section. Only the Director of Public Works or his or her representatives shall have the authority to determine if a pipe section can indeed be inspected effectively with the "naked eye."

(Prior code §§ 6-6.380, 6-6.381)

13.08.570 Rehabilitation of damaged or defective building sewer by sliplining--Standards and quality of materials and method of construction--Exceptions.

A. Said rehabilitation by sliplining permitted pursuant to Section 13.08.560A shall be done in accordance with Sections 207-19 and 306-8 of the current Council adopted standard specifications for public works construction, pertinent sections of the modification thereof, and the following conditions:

1. If, in the opinion of the Director of Public Works, the video of the television inspection of the building sewer reveals any damage or defects in the building sewer that cannot be sufficiently repaired by sliplining alone or reveals any obstruction that may deter the proper installation of the liner, a point repair excavation to uncover and repair or remove said defect and obstructions, respectively, shall be made.

2. The connections at both ends of the building sewer shall be water tight and free of defects.

3. Inspections and testing as required under Section 13.08.500 shall be conducted upon the completion of the sliplining and prior to the final approval of said sliplining.

B. Contrary to the requirement under Section 306-8 of the Standard Specifications for Public Works Construction and/or its modification, the contractor/owner shall not be required to submit shop drawings of construction details to the City Engineer, prior to liner installation.

C. Materials for Sliplining Building Sewers. In addition to polyethylene (PE) wall pipe and resin impregnated polyester felt pipe liner allowed for use for sliplining by the standard specifications and its modification, polyvinyl chloride (PVC) plastic and cast iron pipes may be used for sliplining defective building sewers, when approved by the Director of Public Works.

(Prior code §§ 6-6.382--6-6.384)

13.08.580 Violations--A continuing infraction.

The failure to comply with any of the provisions of this chapter is an infraction, and each day that said failure to comply continues shall be deemed a separate offense.

(Prior code § 6-6.350)

APPENDIX G - EBMUD ORDINANCE NO. 311A-03

EBMUD Ordinance No. 311A-03
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ORDINANCE NO. 311A-03

AN ORDINANCE AMENDING ORDINANCE NO. 311, ESTABLISHING REGULATIONS FOR THE INTERCEPTION, TREATMENT, AND DISPOSAL OF WASTEWATER AND INDUSTRIAL WASTES AND THE CONTROL OF WASTEWATER, REQUIRING CHARGES TO BE MADE THEREFOR, AND FIXING PENALTIES FOR THE VIOLATION OF SAID REGULATIONS

Introduced by Director Foulkes ; Seconded by Director Richardson

WHEREAS, the East Bay Municipal Utility District administers a wastewater control program pursuant to Ordinance No. 311, entitled, "AN ORDINANCE ESTABLISHING REGULATIONS FOR THE INTERCEPTION, TREATMENT, AND DISPOSAL OF WASTEWATER AND INDUSTRIAL WASTES AND THE CONTROL OF WASTEWATER, REQUIRING CHARGES TO BE MADE THEREFOR, AND FIXING PENALTIES FOR THE VIOLATION OF SAID REGULATIONS;" and

WHEREAS, the U.S. Environmental Protection Agency and the Regional Water Quality Control Board required the District to conduct an ordinance review and submit proposed ordinance revisions, as part of their periodic reviews of the District's Pretreatment and Pollution Prevention Program; and

WHEREAS, in response to this request, staff conducted a review of the Ordinance No. 311 and has recommended that the Board of Directors amend the Ordinance incorporating specific regulatory mandated language to codify the District's legal authority to implement and enforce pretreatment regulations from the Code of Federal Regulations (40 CFR 403), adding language to provide enforcement authority for the Resource Recovery Program and clarifying the method to calculate wastewater capacity fees and wastewater treatment charges for multi-use facilities;

NOW, THEREFORE, BE IT ENACTED by the Board of Directors that Ordinance No. 311, as amended from time to time, is hereby further amended to read as follows:

TITLE I – GENERAL

Section 1 - Short Title

This Ordinance shall be known as the “WASTEWATER CONTROL ORDINANCE”.

Section 2 - Purpose

Special District No. 1 of the EAST BAY MUNICIPAL UTILITY DISTRICT was formed and exists under the provisions of the Municipal Utility District Act (Public Utilities Code of the State of California, Division 6) for wastewater disposal service within its boundaries. Wastewater disposal facilities have been constructed for the interception, treatment, and disposal of wastewater and industrial wastes originating within its boundaries. The purpose of this Ordinance is to regulate the interception of wastewater and industrial wastes and to control wastewater to provide the maximum public benefit of the wastewater disposal facilities of the District. The regulations shall include provisions for source control in order to monitor and control quantity, quality, and flow of wastewater and industrial waste. The regulations shall require charges for use of wastewater disposal facilities of the District which are designed to achieve an equitable recovery of the capital and operating costs of such facilities. The regulations shall include provisions for enforcement and penalties for violations.

Section 3 - Definitions

For the purposes of this Ordinance, unless the context specifically indicates otherwise, the meaning of terms used shall be as follows:

a. "Business Classification Code" (BCC) - A classification of dischargers based on the 1987 Standard Industrial Classification Manual, Office of Management and Budget of the United States of America.

b. “Bypass” – The intentional diversion of wastestreams from any portion of a discharger’s treatment facility.

c. “Categorical Pretreatment Standards” - Any regulations containing pollutant discharge limits promulgated by the EPA in accordance with Section 307(b) and (c) of the Act (33 U.S.C. 1317) and which apply to a specific category of industrial user and which appear in Title 40 of the Code of Federal Regulations (40 CFR) Chapter I, Subchapter N, Parts 405-471.

d. “Chemical Oxygen Demand, Filtered” - The amount of Chemical Oxygen Demand passing through a glass filter as measured in conformance with the District's approved method. Chemical oxygen demand is the measure of the oxygen equivalent of the organic matter of a sample that is susceptible to oxidation by a strong chemical oxidant.

e. “Community Sewer System” - The sewers owned and operated by public agencies within the boundaries of the District which are connected to an interceptor of the District.

A “community sewer” is that portion of a community sewer system which receives wastewater from the side sewer of a discharger.

f. “Contamination” - An impairment of the quality of the waters of the State by waste to a degree which creates a hazard to the public health through poisoning or through the spread of disease. Contamination shall include any equivalent effect resulting from the disposal of wastewater, whether or not waters of the state are affected.

g. “Critical Industry” - A discharger whose wastewater requires special regulations or contains industrial wastes requiring source control or whose average wastewater strength cannot be established on a business classification basis.

h. “Director” – Director of the Wastewater Department of the East Bay Municipal Utility District, or his designated representative.

i. “Discharger” - Any person who discharges or causes the discharge of wastewater to a community sewer system.

j. "District" - Special District No. 1 of the East Bay Municipal Utility District.

k. “Federal Act, Clean Water Act, or Act” - The Federal Water Pollution Control Act, PL 92-500, and any amendments thereto; as well as any guidelines, limitations, and standards promulgated by the Environmental Protection Agency.

l. “General Manager” - The General Manager of the East Bay Municipal Utility District.

m. “General Pretreatment Regulations” - Any regulations promulgated by EPA in accordance with Sections 307(b) and (c), and 402(b)(8) of the Act (33 U.S.C. 1317) for the implementation, administration and enforcement of pretreatment standards.

n. “Industrial Waste” - Includes any nondomestic liquid or semisolid wastes from any producing, manufacturing, or processing operation of whatever nature.

o. “Interceptor” - An intercepting sewer found and determined by the Board of Directors of the District to be such and owned and operated by the District.

p. “Interference” - A discharge which, alone or in conjunction with discharges from other sources, both:

(1) inhibits or disrupts the POTW, its treatment processes or operations, or its sludge processes, use or disposal; and

(2) therefore is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation) or of the prevention of sewage sludge use or disposal in compliance with the following statutory provisions and regulations or permits issued thereunder (or more stringent

state or local regulations): Section 405 of the Clean Water Act, the Solid Waste Disposal Act (SWDA) (including Title II, more commonly referred to as the Resource Conservation and Recovery Act (RCRA), and including state regulations contained in any state sludge management plan prepared pursuant to subtitle D of the SWDA), the Clean Air Act, the Toxic Substances Control Act, and the Marine Protection, Research and Sanctuaries Act.

q. "National Pretreatment Standard, Pretreatment Standard, or Standard" - Any regulation containing pollutant discharge limits promulgated by the EPA in accordance with section 307 (b) and (c) of the Act, which applies to industrial users. This term includes prohibitive discharge limits established pursuant to 40 CFR 403.5.

r. "New Source" - Any building, structure, facility, or installation from which there is or may be a discharge of pollutants, the construction of which commenced after the publication of proposed pretreatment standards which will be applicable to such source if such standards are thereafter promulgated, provided that:

(1) The building, structure, facility or installation is constructed at a site at which no other source is located; or

(2) The building, structure, facility or installation totally replaces the process or production equipment that causes the discharge of pollutants at an existing source; or

(3) The production or wastewater generating processes of the building, structure, facility or installation are substantially independent of an existing source at the same site. In determining whether these are substantially independent, factors such as the extent to which the new facility is integrated with the existing plant, and the extent to which the new facility is engaged in the same general type of activity as the existing source should be considered.

s. "Nuisance" - A discharge of wastewater in violation of District regulations or orders, or which is or could be harmful to or unreasonably affect the wastewater disposal facilities of the District, or which impairs or unreasonably affects the operation and maintenance of such facilities, or which violates quantity, quality, or flow standards adopted by the District, and all wastewater discharges which unreasonably affect the quality of the District's treatment plant effluent in such a manner that receiving water quality requirements established by law cannot be met by the District.

t. "Order" – A mechanism to control the contribution to the POTW by each discharger or trucked waste permitee to ensure compliance with applicable pretreatment standards and requirements and other wastewater discharge requirements. Includes but is not limited to Wastewater Discharge Permits, Pollution Prevention Permits, Cease and Desist Orders, Administrative or other orders.

u. “Pass Through” - A discharge which exits the POTW into waters of the State in quantities or concentrations which, alone or in conjunction with a discharge or discharges from other sources, is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation).

v. “Person” - Any individual, partnership, firm, association, corporation, or public agency, including the State of California and the United States of America.

w. “Pollution” - An alteration of the quality of the waters of the State by waste to a degree which unreasonably affects (1) such waters for beneficial use or (2) facilities which serve such beneficial uses.

x. “Premises” - A parcel of real property, or portion thereof, including any improvements thereon, which is determined by the District to be a single unit for purposes of receiving, using, and paying for wastewater disposal service. In making this determination, the District shall take into consideration such factors as whether the unit could reasonably be subdivided, number and location of side sewers, and whether the unit is being used for a single activity and, if not, what is the principal activity for wastewater disposal services, but in any case the District determination shall be final.

y. “Pretreatment Requirement” - Any substantive or procedural pretreatment requirement other than a national pretreatment standard.

z. “Public Agency” - A city or a sanitary district or other public entity located within the boundaries of a special district.

aa. “Receiving Water Quality Requirements” - Requirements for District's treatment plant effluent established by law or by State or Federal regulatory agencies for the protection of receiving water quality. "Requirements" shall include effluent limitations, and waste discharge standards, requirements, limitations, or prohibitions which may be established or adopted from time to time by State or Federal laws or regulatory agencies.

bb. “Severe Property Damage” – Substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

cc. “Sewage” - The water-borne wastes derived from human habitation and use of buildings for residential, business, commercial, institutional, and industrial purposes.

dd. “Side Sewer” - A sewer conveying the wastewater of a discharger from a residence, building, or other structure to a community sewer, including direct connections to a community sewer where permitted by the public agency.

ee. "Significant Industrial User"

(1) A user subject to Categorical Pretreatment Standards; or

(2) A user that:

(i) Discharges an average of twenty-five thousand (25,000) gallons per day or more of process wastewater to the POTW (excluding sanitary, noncontact cooling, and boiler blowdown wastewater);

(ii) Contributes a process wastestream which makes up five (5) percent or more of the average dry weather hydraulic or organic capacity of the POTW treatment plant; or

(iii) Is designated as such by the District on the basis that it has a reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement.

(3) Upon a finding that a user meeting the criteria in Subsection (2) above has no reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement, the District may at any time, on its own initiative or in response to a petition received from a user, determine that such user should not be considered a significant industrial user.

ff. "Significant Noncompliance" - An industrial user is in significant noncompliance with applicable pretreatment requirements if any violation meets one or more of the following criteria:

(1) Chronic violations of wastewater discharge limits, defined here as those in which sixty-six percent or more of all of the measurements taken during a six month period exceed (by any magnitude) the daily maximum limit or the average limit for the same pollutant parameter.

(2) Technical Review Criteria (TRC) violations, defined here as those in which thirty-three percent or more of all of the measurements for each pollutant parameter taken during a six-month period are equal to or exceed the product of the daily maximum limit or the average limit multiplied by the applicable TRC (TRC = 1.4 for BOD, TSS, fats, oil and grease and 1.2 for all other pollutants except pH.)

(3) Any other violations of a pretreatment effluent limit (daily maximum or longer term average) that the Agency determines has caused, alone or in combination with other discharges, interference or pass through (including endangering the health of POTW personnel or the general public).

(4) Any discharge of a pollutant that has caused imminent endangerment to human health, welfare or to the environment or has resulted in the POTW's exercise of its emergency authority to halt or prevent such a discharge.

(5) Failure to meet, within 90 days after the due date, a compliance schedule milestone contained in a local control mechanism or enforcement order for starting construction, completing construction or attaining final compliance.

(6) Failure to provide, within 30 days after the due date, required reports such as baseline monitoring reports, 90-day compliance reports, periodic self-monitoring reports and reports on compliance with compliance schedules.

(7) Failure to accurately report noncompliance.

(8) Any other violation or group of violations which the District determines will adversely affect the operation or implementation of the local pretreatment program.

gg. "Slug Discharge" - Any discharge of a non-routine, episodic nature, including but not limited to an accidental spill or non-customary batch discharge.

hh. "Suspended Solids" - The concentration of nonfilterable residue dried at 103^{o} to 105^{o}C on a filter in conformance with the District's approved method.

ii. "User" – Any person who discharges, causes, or permits the discharge of wastewater into a community sewer. Same as "Discharger".

jj. "Waste" - Includes sewage and any and all other waste substances, liquid, solid, gaseous, or radioactive, associated with human habitation, or of human or animal origin, or from any producing, manufacturing, or processing operation of whatever nature.

kk. "Wastewater" - All sewage, industrial, and other wastes and waters, whether treated or untreated, discharged into or permitted to enter a community sewer system connected to a District interceptor, for treatment in wastewater disposal facilities of a special district. As used in this Ordinance, unless the context specifically indicates otherwise, "wastewater" shall mean sewage, industrial, and other wastes discharged to a community sewer by any person.

ll. "Wastewater Capacity Fee" - A charge to each new customer, or customer who increases his demand for capacity for wastewater treatment measured by flow and strength, which reasonably reflects the District cost for providing wastewater treatment capacity.

mm. "Wastewater Disposal Purposes" - The acquisition, construction, enlargement, operation, and maintenance of intercepting sewers, wastewater treatment works, pumping plants, outfall sewers, and appurtenances by a special district.

nn. "Wastewater Disposal Facilities" - Includes intercepting sewers, wastewater treatment works, pumping plants, outfall sewers, and appurtenances constructed, operated, and maintained by a special district created for wastewater disposal purposes. As used in this Ordinance, unless the context specifically indicates otherwise, "District Facilities" shall mean wastewater disposal facilities of a special district.

oo. "Wastewater Strength" - The quality of wastewater discharged as measured by its elements, including constituents and characteristics.

Section 4 - Connection to Interceptor

The District will not permit direct connections of or accept direct contributions of wastewater from sewers other than community sewers. Before any connection of a community sewer is made to an interceptor, there shall be filed with the District, in duplicate, an application signed by the public agency owning the community sewer to be connected. The application shall be in a form approved and supplied by the District, and shall contain such information and data as may be required from time to time by the District. The connecting of community sewers will be performed by the public agency at its expense in accordance with District requirements and subject to approval and inspection by the District.

Section 5 - Storm, Drainage, and Groundwater Prohibition - Interim Provisions

Existing District regulations prohibit the discharge of storm, drainage, and groundwater to community sewer systems and are intended to complement similar existing public agency rules, regulations, and ordinances which prohibit such discharges. The District and public agencies are cooperating to develop a joint program to eliminate the maximum feasible wet weather flow from community sewer systems. The District storm water prohibitions set forth in District Resolution No. 14979 shall remain in force as interim provisions until the completion, adoption, and implementation of said joint storm water program.

Section 6 - Unusual Conditions

Notwithstanding any provision of this Ordinance to the contrary, District and any discharger or public agency may enter into an agreement where unusual conditions compel special terms and conditions and charges for the interception, treatment, and disposal of the wastewater by the District. However, this Section does not pertain to the waiver of Federal or State standards or requirements.

TITLE II - REGULATION OF THE WASTEWATER DISCHARGES

Section 1 - Permissible Discharges

Wastewater may be discharged into community sewers for interception, treatment, and disposal by the District provided that such wastewater does not contain substances prohibited, or exceed limitations of wastewater strength, set forth in this Ordinance; and provided further that the

discharger pays all District wastewater disposal charges and is in compliance with all terms of this Ordinance, including the permit provisions if applicable.

Section 2 - Prohibited Discharges

a. General Prohibition. No person shall discharge wastewater into a community sewer which will result in contamination, pollution, or a nuisance.

b. Prohibited Effects. No person shall discharge wastewater into a community sewer if it contains substances or has characteristics which, either alone or by interaction with other wastewaters, cause or threaten to cause:

(1) Damage to District facilities.

(2) Interference with or impairment of the operation or maintenance of District facilities.

(3) Obstruction of flow in sewers or interceptors.

(4) Danger to life or safety of any person.

(5) Interference with, or overloading of, treatment or disposal processes.

(6) Flammable or explosive conditions at or near District facilities.

(7) Wastewater or any other by-products of the treatment process to be unsuitable for reclamation and reuse, or interfere with any processes for reclamation.

(8) Noxious or malodorous gases or odors at or near District facilities.

(9) Discoloration or any other condition in the quality of the District's treatment plant effluent in such a manner that receiving water quality requirements established by law cannot be met by the District.

(10) Conditions at or near District facilities which violate any statute or any rule, regulation, or ordinance of any public agency or State or Federal regulatory body, including the general prohibitions contained in Federal General Pretreatment Regulations.

(11) The presence of toxic gases, fumes, or vapors in quantities injurious to the health and safety of District personnel.

(12) Pass-through of the District’s treatment plant, causing a violation of any requirement of the District’s NPDES permit.

c. Prohibited Substances. No person shall discharge the following to a community sewer:

(1) Wastewater which is not polluted and meets requirements for and is acceptable for discharge to storm sewers or to receiving waters of the State; provided that the Director may grant permission for the discharge of unpolluted wastewaters which comply with regulations of the public agency owning the community sewer.

(2) Wastewater which creates a fire or explosion hazard including, but not limited to, discharges with a closed cup flashpoint of less than 140° F (60° C) using the test methods specified in 40 CFR 261.21.

(3) Garbage, except ground garbage from residential and commercial premises where food is prepared and consumed.

d. Prohibited Locations. Except for sewer construction and maintenance by public agencies and contractors, no person shall discharge any wastewater directly into a manhole or other opening in a community sewer system other than through side sewers approved by the public agency owning the system; provided that the Director may grant permission for such direct discharges, upon written application, at locations approved by the public agency and upon payment of applicable sewage disposal charges to the District.

e. Prohibition on Use of Dilution**.** Except where expressly authorized to do so by an applicable pretreatment standard or requirement, no user shall increase the use of process water, or in any other way attempt to dilute a discharge as a partial or complete substitute for adequate pretreatment to achieve compliance with a pretreatment standard, requirement or discharge limitation. The District may impose mass limitations on the users which are using dilution to meet applicable Pretreatment Standards or requirements, or in other cases where the imposition of mass limitations is appropriate.

f. Prohibition on Slug Discharges**.** No user shall discharge any pollutant, including oxygen-demanding pollutants, at a flow rate and/or pollutant concentration which causes or threatens to cause interference with the wastewater treatment process. For the purposes of this section, any discharge at a flow rate or concentration which could cause a violation of the prohibited discharge standards or limitations in Title II, Sections 2 and 3 of this ordinance shall be deemed a slug discharge.

g. Bypass Prohibited.

(1) Bypass of pretreatment equipment and/or discharge points is prohibited and the District may take enforcement action against any user for bypass unless:

(i) bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;

(ii) there were no feasible alternatives to the bypass, as described in 40 CFR 403.17(d) and the industrial user submits the notifications required in 40 CFR 403.17(c).

(2) The District may approve an anticipated bypass, after considering its adverse effects, if the District determines that it will meet the conditions specified in part g(1) of this prohibition.

h. Discharge of Petroleum or Mineral Oil Causing Pass-through or Interference Prohibited. Notwithstanding the provisions of Section 3.a., no user may discharge petroleum oil, non-biodegradable cutting oil or other products of mineral origin in any amount that causes interference or pass-through.

i. Discharge of Trucked or Hauled Wastes Prohibited. No user shall discharge any trucked or otherwise hauled wastes to the community sewer or to any District facilities unless a permit has been issued by the District.

Section 3 - Limitations on Discharges

a. Wastewater Strength Limits. No person shall discharge wastewater from a side sewer into a community sewer if the strength of the wastewater exceeds the following:

Arsenic	2	mg/L
Cadmium	1	mg/L
Chlorinated Hydrocarbons (total identifiable)	0.5	mg/L
Chromium (total)	2	mg/L
Copper	5	mg/L
Cyanide	5	mg/L
Iron	100	mg/L
Lead	2	mg/L
Mercury	0.05	mg/L
Nickel	5	mg/L
Oil and Grease	100	mg/L
pH	not less than 5.5	S.U.
Phenolic compounds	100	mg/L
Silver	1	mg/L
Temperature	150[(1)]	ºF
Zinc	5	mg/L

[(1)] 150°F (65.5°C), or any thermal discharge which as a result of temperature and/or volume causes the influent of the wastewater treatment plant to exceed 104°F (40°C)

b. Additional Wastewater Strength Limits. Wastewater strength limits for constituents not listed in Section 3a may be established in a wastewater discharge permit based on available

treatment technology, existing wastewater conditions in the District's facilities or other factors as determined by the Director. The Director may also establish wastewater strength limits on the wastewater discharge permits at locations within a premises whenever non-process water may dilute the wastewater discharging from side sewers.

c. Quantity and Rate of Flow Limits. No person shall discharge wastewater into a community sewer in quantities or at rates of flow which may have an adverse or harmful effect on or overload District facilities or cause excessive or additional District treatment costs. The Director may establish mass discharge limits in wastewater discharge permits to control the quantity and rate of flow of wastewater discharges.

d. Radioactive Limits. No person shall discharge or cause to be discharged any radioactive wastewater into a community sewer except when the person is authorized to use radioactive material by the Nuclear Regulatory Commission or other governmental agency empowered to regulate the use of radioactive materials and when the wastewater is discharged in strict conformity with current Nuclear Regulatory Commission regulations and recommendations for safe, disposal and in compliance with all rules and regulations of State and local regulatory agencies.

e. Deny or Condition New or Increased Contributions. The Director may deny or condition new or increased contributions of pollutants, or changes in the nature of pollutants, to the District's wastewater treatment facility by Industrial Users where such contributions do not meet applicable Pretreatment Standards and Requirements or where such contributions would cause the District to violate its NPDES permit.

Section 4 - Federal Pretreatment Standards

Upon promulgation of the Federal General and Categorical Pretreatment Standards, the Federal Standards, if more stringent than limitations imposed under the Ordinance for dischargers, shall supersede the limitations imposed under this Ordinance. The Director shall notify all affected dischargers of the applicable standards and other requirements. National Categorical Standards, found in 40 CFR Chapter I, Subchapter N, Parts 405-471, are hereby incorporated into these regulations. Effluent limitations promulgated by the Federal Act shall apply in any instance where they are more stringent than those in these regulations.

Section 5 - District Pretreatment Program

The Director shall implement a pretreatment program in accordance with General Pretreatment Regulations adopted by EPA and in accordance with this Ordinance.

Section 6 - Permits for Federal Categorical Pretreatment Standards

The Director shall issue permits to dischargers subject to Federal Categorical Pretreatment Standards and require compliance in accordance with dates established by EPA. The Permits shall be issued in accordance with the provisions of Title IV of this Ordinance but pretreatment permits

may be issued with renewal dates from twelve to sixty months after issuance of the initial pretreatment permits.

Section 7 - Confidential Information - Federal Categorical Pretreatment Standards

All information and data obtained from a discharger in connection with Federal Pretreatment Standards shall be available to the public or other governmental agencies without restriction unless the discharger specifies that the release of such information would divulge information, processes or methods of production entitled to protection as trade secrets, in which case the discharger shall be solely responsible for taking any action necessary to prevent the release of such information. Wastewater constituents and characteristics will not be recognized as confidential information.

TITLE III - DISCHARGER CLASSIFICATION AND CALCULATION OF WASTEWATER DISPOSAL CHARGES

Section 1 - Classification

All dischargers shall be classified for wastewater disposal purposes in accordance with the principal activity conducted upon the premises, or in accordance with the use of the premises, for purposes of wastewater treatment, as determined by the District in case multiple tenants or activities are on the premises. The purpose of classification is to facilitate the regulation of wastewater dischargers based on quality, quantity and flow, to provide an effective means of industrial waste source control, and to establish a system of wastewater disposal service charges based upon flow and waste strength which will insure an equitable recovery of District capital and operating costs.

Section 2 - Calculation of Wastewater Disposal Charge

All dischargers shall pay a use charge for District wastewater disposal services. The charges will reflect the quantity, quality, and flow of the wastewater of the dischargers and will be based on District capital and operating costs to intercept, treat and dispose of wastewater. All dischargers shall also pay all other charges, fees, tolls, rentals or taxes as from time to time established or adopted by the District. Flat charges, unit charges and classification charges shall be established from time to time and set forth in a schedule of rates and charges. Unit charges will be established for each element of wastewater strength which incurs District costs of interception, treatment and disposal. The total wastewater disposal charge for each discharger shall be calculated as set forth herein:

a. Dischargers from Residential Premises with Four or Less Dwelling Units. Dischargers of wastewater in this class shall pay a total wastewater disposal charge, regardless of the source of water, which shall be the sum of a uniform flat monthly charge per dwelling unit for wastewater strength and the unit charge for volume multiplied by the volume of water used, subject to a maximum volume established by the District from time to time and set forth in a schedule of rates and charges. This wastewater disposal methodology was

established on November 26, 1982 and shall apply to all billing periods commencing on and after November 1, 1982.

b. Dischargers from Residential Premises with Five or More Dwelling Units and Dischargers from Nonresidential Premises. All dischargers of wastewater in this class will be assigned a business classification code depending on the principal activity conducted on the premises or the use of the premises for purposes of wastewater treatment, as determined by the District in case multiple tenants or activities are on the premises. All dischargers conducting the same principal activity will receive the same business classification code. The Director shall determine the typical wastewater strength for each business classification code, and each discharger within that classification will be assumed, for wastewater disposal charge purposes, to have the same typical wastewater strength. The Director shall also subclassify within each business classification code those dischargers who discharge primarily segregated domestic wastes or wastes from sanitary conveniences. A classification charge shall be established by the District for each business classification code and subclassification, which will be based on unit charges for the elements of wastewater strength, including volume, as applied to the typical wastewater strength of the particular classification. The wastewater disposal charge to a discharger in this class will be calculated by multiplying the classification charge by the volume of water used by the discharger. Any discharger in this class who is issued a wastewater discharge permit will thereafter pay a wastewater disposal charge as a permitted discharger.

c. Permitted Dischargers. Dischargers of wastewater who are required to obtain a permit under the provisions of this Ordinance, excluding permits issued solely for flow estimation, shall pay a wastewater disposal charge which shall be the sum of the products of the following: The unit charge for each element of wastewater strength multiplied by the allowable limits of each element set forth in the permit multiplied by the volume of water used; and the unit charge for volume multiplied by the volume of water used as determined herein. The wastewater disposal charge for permitted dischargers, including both wastewater strength and water use, shall be calculated by an apportionment by the Director of strength and use to each side sewer at the discharger's premises. Dischargers requiring permits who have seasonal variations in operations shall have the capital cost element adjusted in the calculation of wastewater disposal charges to ensure equitable recovery of capital costs of design capacity from such dischargers. Dischargers requiring permits solely for flow estimation shall pay a wastewater disposal charge calculated by multiplying the classification charge by the volume of water determined by the estimation. In addition to a wastewater disposal charge, the permitted discharger shall pay all applicable District permit charges. Commencing on the effective date of this Ordinance, all dischargers required to obtain a permit shall pay a wastewater disposal charge in accordance with their business classification code until a permit is issued.

d. Capacity fee. A wastewater capacity fee shall be paid as established from time to time by the District and which reasonably reflects the cost of providing wastewater treatment capacity. The wastewater capacity fee shall be payable prior to the time a new discharger commences a use of the community sewer system, or connection to the District interceptor system. The District will calculate the wastewater capacity fee based on the best available

estimated information for the proposed business, based on the flow, strength, and other pertinent design information at the time the new discharger applies for the District's service. Once the business is fully established, within 24 months from commencement of discharge, the District may review the actual flow and/or strength to verify the estimated demand for wastewater treatment capacity. If the review indicates that the actual measured flow or strength of the business is greater than the initially estimated information, the District will collect an additional wastewater capacity fee. The wastewater capacity fee was made effective September 11, 1984 and the wastewater capacity fee shall apply to all dischargers who increased demand for wastewater treatment capacity on or after July 1, 1984.

An existing discharger pays a capacity fee when the District determines that the discharger has increased their demand for wastewater treatment capacity. An increased demand for wastewater treatment capacity may also be reviewed when an existing business significantly increases their wastewater treatment capacity demand or changes the nature of business (e.g., BCC, ownership). An increased demand for wastewater treatment capacity can occur even if estimating parameters (e.g., square footage, fixtures) for the business may not have changed.

Section 3 - Determination of Water Used

The applicable volume of water upon which wastewater disposal charges shall be based will be determined as follows:

a. Water Discharged to Community Sewer. For premises where no portion of the water received from any source is consumed in the principal activity of the discharger or is removed from the premises by means other than community sewers, the wastewater disposal charge shall be applied against the total amount of water used from all sources. The amount of East Bay Municipal Utility District water received will be determined by registration on an East Bay Municipal Utility District meter. The amount of water used from other sources will be determined by means of a meter installed at the expense of the discharger and approved by the District or by an estimate prepared by the District, after the discharger obtains a permit in accordance with this Ordinance. The discharger shall report to the District the sources of all water used at his premises other than that supplied by the East Bay Municipal Utility District and shall notify the District of any changes in such sources.

b. Water Not Discharged to Community Sewer. For premises where a portion of the water received from any source does not flow into community sewers, because of the principal activity of the discharger or removal by other means, the charge for wastewater disposal service will be applied against the volume of water discharging from such premises into community sewers. Written notification and proof of the diversion of water must be provided by the discharger if he is to avoid application of the wastewater disposal charge against the total amount of water used from all sources. He may be required to install a meter, of a type and at a location approved by the District and at his own expense, to determine the quantity of water flowing into community sewers. However, where it is

impractical to install meters and where the quantity of water diverted from the sewers amounts to more than 20 percent of the total water used, then the charge for wastewater disposal service may be based upon an estimate prepared by the District, after the discharger obtains a permit in accordance with this Ordinance.

TITLE IV - WASTEWATER DISCHARGE PERMITS

Section 1 - Permit Requirement

All dischargers, other than residential, whose wastewater requires special regulation or contains industrial wastes requiring source control and all dischargers requiring an estimation of water use shall secure a wastewater discharge permit.

a. Mandatory Permits. All dischargers in the following categories must obtain a wastewater discharge permit:

(1) Significant Industrial Users, as defined in Title I, Section 3 of this Ordinance.

(2) Critical Industries, as defined in Title I, Section 3 of this Ordinance.

(3) Dischargers whose average wastewater strength cannot be established on a business classification basis, because of seasonal or other variations in operations.

(4) Dischargers whose wastewater strength exceeds the normal range of wastewater strength for the business classification code to which the discharger is assigned.

(5) Dischargers using an unmetered source of water.

(6) Other dischargers determined by the Director to require special regulations or source control.

b. Optional Permits. The Director may issue wastewater discharge permits to any discharger after application in accordance with the terms of this Title, in the following categories:

(1) A discharger who requests a District estimation of wastewater flow because more than 20 percent of the metered water consumption is not being discharged to a community sewer.

(2) Any person whose discharge is less than the normal range of wastewater strength for the business classification code to which he is assigned because of pretreatment, process changes, or other reasons.

Section 2 - Application

Dischargers seeking a wastewater discharge permit shall complete and file with the Director a District application form, accompanied by the applicable District fees. New dischargers shall file applications 60 days prior to commencement of discharges and existing dischargers shall file applications within 30 days of notification by the Director, unless such time is extended for good cause. The application may require the following information:

a. name, site address, and mailing address (if different than site address) of business;
b. estimated wastewater strength;
c. estimated wastewater flow, average and peak wastewater discharge flow for each side sewer;
d. locations of side sewers, sampling points, and pretreatment facilities;
e. description of activity, facilities, and plant process on the premises, including raw materials, processes and types of materials which are or could be discharged;
f. total product produced, by type;
g. number and type of employees;
h. days and hours of operation and days and hours of discharge;
i. slug control plan which outlines discharge practices (including non-routine batch discharges), describes stored chemicals, and contains procedures both to notify the district immediately of slug discharges and to prevent adverse impacts from any accidental spill; and
j. any other information the Director shall deem necessary to evaluate the permit application.

Section 3 - Terms and Conditions of Permit

a. Terms. All wastewater discharge permits shall be subject to all provisions of this Ordinance and all rates and charges established by the District. All permits shall be issued for a specified time period, not to exceed five (5) years. The Director may establish renewal dates up to sixty months. Applications for permit renewal shall be submitted to the District at a minimum of 60 days prior to expiration. All permits, except those issued solely for estimation of water used, shall contain the following terms:

(1) The typical wastewater strength and water use for the flow in each side sewer.

(2) Average and maximum limits on the elements of the discharger's wastewater strength and flow, apportioned to each side sewer.

b. Conditions. Wastewater discharge permits may contain any or all of the following conditions:

(1) Limits on rate and time of discharge or requirements for flow regulation and equalization.

(2) Requirements for inspection and sampling facilities, including District access to such facilities.

(3) Monitoring program which may include: Sampling locations; frequency and method of sampling; number, types and standard of tests; and establishing a reporting schedule. The discharger assigned a monitoring program in conformance with this Ordinance shall pay all applicable District charges.

(4) Submission of technical reports or discharge reports, including, but not limited to, reports described in Title V, Section 2. of this Ordinance, or any report required by 40 CFR 403.12.

(5) Maintenance of plant records relating to wastewater discharges, as specified by the Director, and affording District access thereto.

(6) A statement of applicable penalties for violation of pretreatment standards and requirements, and any applicable compliance schedule.

(7) Requirements for the development and implementation of pollution prevention plans to reduce the amount of pollutants discharged to the District's treatment plant.

(8) Notification requirements.

(9) Requirements for the development and implementation of spill control plans or other special conditions including management practices necessary to adequately prevent accidental, unanticipated, or nonroutine discharges.

(10) Installation of technology, as specified by the Director.

(11) Other conditions as deemed appropriate by the Director to ensure compliance with this Ordinance or the terms and conditions of the permit.

Section 4 - Change of Permit Terms and Conditions

The District may change the terms and conditions of a wastewater discharge permit, including changing the average limits on the elements of wastewater strength, from time to time as circumstances may require. The District shall allow a discharger reasonable time to comply with any District required changes in the permit except that a change in average limits of wastewater strength shall immediately affect calculation of the wastewater disposal charge.

Section 5 - Transfer of Permit Prohibited

A wastewater discharge permit shall not be assigned or transferred.

Section 6 - Termination

The Director may terminate any wastewater discharge permit for violation of the terms and conditions of the permit or the provisions of this Ordinance. A discharger whose permit has been terminated shall apply for a new permit within 30 days of notice of termination. Any discharger whose permit has been terminated shall pay wastewater disposal charges based upon his former permit or on his assigned business classification code, whichever is higher, until a new permit has been applied for, approved, and issued.

TITLE V - ADMINISTRATION

Section 1 - Authority of Director

The Director is charged with responsibility for District's wastewater control program and the administration and enforcement of the provisions of this Ordinance.

Section 2 - Wastewater Source Control Requirements

In order to effectively administer and enforce the provisions of these regulations, the Director may require any discharger to comply with any or all the following requirements:

a. Discharge Reports. The Director may require discharge reports, including but not limited to questionnaires, technical reports, sampling reports, and test analyses, and periodic reports of wastewater discharge. When a report filed by a person pursuant to this section is not adequate in the judgment of the Director, he may require such person to supply such additional information as the Director deems necessary. The discharge report may include, but not be limited to, nature of the process, volume and rates of wastewater flow, elements, constituents, and characteristics of the wastewater, together with any information required in an application for wastewater discharge permit.

b. Baseline Monitoring Report. Each categorical industrial user shall submit a baseline monitoring report (BMR). The requirements for a BMR, as described in 40 CFR 403.12(b) are hereby incorporated into these regulations. A BMR, if required, shall be reviewed by an authorized representative of the user, and certified to by a qualified professional, indicating whether pretreatment standards are being met on a consistent basis, and if not, whether additional operation and maintenance and/or additional pretreatment is required for the user to meet the pretreatment standards and requirements.

c. Periodic Report of Continued Compliance. Any categorical industrial user shall submit to the District twice annually, a report indicating the nature and concentration of the pollutants which are regulated by the user’s federal pretreatment standards. The report shall include the average and maximum daily flows. The District may determine during which months the discharger shall submit these reports.

d. Compliance Schedule for the Installation of Technology. The District may require each user to develop a compliance schedule for the installation of technology to meet applicable

pretreatment standard or requirement. The compliance schedule for the installation of technology is not conditioned on the determination of violations. Progress reports for the compliance schedule shall be considered a requirement.

e. Report on Compliance with Categorical Deadline. Each categorical user shall submit a report within 90 days after the final date for compliance, or upon commencement of discharge, whichever comes later, which contains flow and pollutant measurements, a certification of whether pretreatment standards are being met consistently, and if not, a description of needed additional operations and maintenance or pretreatment. The report on compliance with categorical deadline, if required, shall be reviewed by an authorized representative of the user, and certified to by a qualified professional, indicating whether pretreatment standards are being met on a consistent basis, and, if not, whether additional operation and maintenance and/or additional pretreatment is required for the user to meet the pretreatment standards and requirements.

f. Notice of Violation/ Resampling Report. If sampling by a user indicates a violation, the user shall notify the District within 24 hours of becoming aware of the violation. The user shall also repeat the sampling and analysis and submit the results of the repeat analysis to the District within 30 days of becoming aware of the violation, unless the District samples the user between the time of the initial sampling and the time when the user receives the results of this sampling. Within five (5) days of detecting such violation , the user shall, unless waived by the District, submit a detailed written report describing the cause(s) of the discharge and the measures to be taken by the user to prevent similar future occurrences. Such notification shall not relieve the user of any expense, loss, damage, or other liability which may be incurred as a result of damage to the POTW, natural resources, or any other damage to person or property; nor shall such notification relieve the user of any fines, penalties, or other liability which may be imposed pursuant to this ordinance.

g. Slug Control Plan. The District may require a plan which outlines discharge practices, including non-routine batch discharges, describes stored chemicals, and contains procedures both to notify the District immediately of slug discharges and to prevent adverse impacts from any accidental spill.

h. Notice of Potential Problems**.** All categorical and non-categorical industrial users shall notify the District immediately of all discharges that could cause problems to its wastewater treatment facility, including any slug loadings, as defined by 40 CFR 403.5 (b), by the industrial user.

i. Notification of Changed Conditions. All industrial users shall promptly notify the District in advance of any substantial change in the volume or character of pollutants in their discharge, including the listed or characteristic hazardous wastes for which the industrial user has submitted initial notification under 40 CFR 403.12 (p).

j. Notification of Hazardous Waste Discharge.

(1) All industrial users discharging any substance which, if otherwise disposed of, would be a hazardous or acutely hazardous waste under 40 CFR 261, must comply with the reporting requirements of 40 CFR 403.12(p)(1) and (3) unless exempted under the provisions of 40 CFR 403.12(p)(2).

(2) In the case of any notification made under section (1) above, the industrial user shall certify that it has a program in place to reduce the volume and toxicity of hazardous wastes generated to the degree it has determined to be economically practical. The District may accept a copy of a hazardous waste reduction or minimization plan otherwise required by law, as compliance with this requirement.

k. Monitoring Programs. The Director may require of dischargers such technical or monitoring programs, including the submission of periodic reports, as he deems necessary, provided that the burden, including costs, of such programs and reports shall bear a reasonable relationship to the need for the report and the benefits to be obtained therefrom. The discharger shall pay the applicable District charge for the monitoring program, in addition to the wastewater disposal and other charges established by the District. The monitoring program may require the discharger to conduct a sampling and analysis program of a frequency and type specified by the Director or as required by the Federal General Pretreatment Regulations (40 CFR 403.5) to demonstrate compliance with prescribed wastewater discharge limits. The discharger may either:

(1) Conduct his own sampling and analysis program provided he demonstrates to the Director that he has the necessary qualifications and facilities to perform the work; or

(2) Engage a private consulting firm or laboratory, certified by the State of California, Department of Public Health.

l. Inspection Facilities. The Director may require any non-residential discharger to construct, at his own expense, a sampling facility or inspection manhole together with necessary related measuring and sampling equipment, in accordance with construction standards and specifications of the public agency owning the community sewer. The sampling facility or inspection manhole shall be constructed on the side sewer of the discharger and within the public right of way at a location approved by the District and the public agency owning the community sewer; provided that the Director may permit the installation of such facilities on the premises of the discharger at a location which will permit District access to the facility at all times. Construction shall be completed within 60 days of written notification from the Director, unless such time is extended by the Director for good cause. The Director may require the discharger to install such sampling facilities or inspection manholes on each side sewer.

m. Pretreatment. Pretreatment systems or devices may be required by the Director to treat wastewater prior to discharge to the community sewer when it is necessary to restrict or prevent the discharge to the community sewer of wastewater having strength in violation of the prohibitions or exceeding the limits established by this Ordinance, or to distribute wastewater discharges over a period of time. All pretreatment systems or devices shall be approved by the Director but such approval shall not relieve a discharger of the responsibility for taking all steps necessary to comply with wastewater limitations established by the District. All required pretreatment equipment shall be installed and operated at the discharger's expense. Any subsequent changes in the pretreatment facilities or method of operation shall be reported to and be acceptable to the District.

n. Protection From Accidental Discharge. Each discharger shall provide protection from accidental discharge of prohibited materials or other wastes regulated by this Ordinance. Such facilities shall be provided and maintained at the discharger's expense. These facilities shall be approved by the Director but such approval shall not relieve the discharger from the responsibility of modifying the facilities to provide the protection necessary to meet the requirements of this section.

o. Any other reports, as deemed necessary by the District, to determine a user's compliance status with local, state and federal limits or requirements.

Section 3 - Signature Requirement

a. All reports and/or permit applications received and/or required under these regulations, including BMR, reports on compliance with categorical standard deadlines (90-day compliance reports) and periodic reports on continued compliance, shall be signed:

(1) by a responsible corporate officer, if the user submitting the reports is a corporation. For the purpose of this paragraph, a responsible corporate officer means:

(i) a president, secretary, treasurer, or vice president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation; or

(ii) the manager of one or more manufacturing, production, or operation facilities employing more than 250 persons or having gross annual sales or expenditures exceeding $25 million (in second quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.

(2) by a general partner or proprietor if the user submitting the reports is a partnership or sole proprietorship, respectively;

(3) by a duly authorized representative of the individual designated in paragraph (1) or (2) of this section if:

(i) The authorization is made in writing by the individual designated in paragraph (1) or (2);

(ii) The authorization specifies either an individual or a position having responsibility for the overall operation of the facility from which the industrial discharge originates, such as the position of plant manager, operator of a well, or well field superintendent, or a position of equivalent responsibility, or having overall responsibility for environmental matters for the company; and

(iii) The written authorization is submitted to the District.

(4) If an authorization under paragraph (a)(3) of this section is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, or overall responsibility for environmental matters for the company, a new authorization satisfying the requirements of paragraph (a)(3) of this section must be submitted to the District prior to or together with any reports to be signed by an authorized representative.

b. Reports and applications must include the following certification statement:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Section 4 - Retention of Records

All records, including but not limited to all information resulting from any monitoring activities, discharge reports, permits, self-monitoring data, pretreatment system process control logs, and relevant correspondence (whether or not required by these regulations) must be maintained by the user for a period of not less than three years. Monitoring records shall be included for all samples as specified in 40 CFR 403.12 (o) (1). All such records shall be made available for inspection and copying by a duly authorized representative of the District or any other governmental entity having jurisdiction. The retention period may be extended in the case of unresolved litigation or at any time at the request of the District, the State or U.S. EPA.

Section 5 - Analytical and Sampling Methodology and Procedures

(a) The method and procedures utilized for all analyses which are reported under the requirements of these regulations shall be as specified by the provisions of 40 CFR Part 136.

(b) The methods and procedures utilized for all sampling performed and/or reported under the requirements of this regulation shall be as specified by the provisions of 40 CFR Part 136.

(c) If 40 CFR Part 136 does not contain sampling or analytical techniques for the pollutant in question, sampling and analyses must be performed in accordance with procedures approved by U.S. EPA.

Section 6 - Public Notification of Dischargers Found to be in Significant Non-Compliance

At an interval of not less than once per year, the District will publish the identities of any user(s) which is (are) found to be in significant non-compliance of any national pretreatment standard, discharge limitation or prohibition, or any other requirement of these regulations. The definition of significant non-compliance shall be as specified in Title I, Section 3, The publication shall occur in the newspaper having the largest daily circulation within the service area of the District.

Section 7- Trade Secrets

When requested by the person furnishing a report or permit application or questionnaire, the portions of the report, or other document, which might disclose trade secrets or secret processes shall not be made available for inspection by the public but shall be made available to governmental agencies including the U.S. EPA, the State, and the District in judicial review or enforcement proceedings involving the person furnishing the report. All confidential information in connection with Federal Pretreatment Standards shall comply with Title II, Section 7 of this ordinance.

Section 8 - District Inspection

The District may inspect the facilities of any discharger to ascertain whether the provisions of this Ordinance are being met and the wastewater discharge limits are being complied with. Dischargers shall allow the District or its representatives ready access at all reasonable times to all parts of the premises for the purposes of inspection or sampling or in the performance of any of their duties. Where a discharger has security measures which would require proper identification and clearance before entry into their premises, the user shall make arrangements with their security personnel so that, upon presentation of proper identification, District personnel will be permitted to enter without delay for the purposes of performing their specific responsibilities. Such inspection shall be made with the consent of the owner or possessor of such facilities. If the District has been refused access to any part of a discharger's facility, and is able to demonstrate probable cause to believe that there may be a violation of this Ordinance, or that there is a need to inspect and/or

sample as part of the routine inspection and sampling program of the District, then the Director may seek issuance of an inspection warrant or a search warrant, duly issued pursuant to the procedures set forth in Title 13 (commencing with Section 18222.5) of Part 3 of Code of Civil Procedure; provided, however, that in the event of an emergency affecting the public health or safety such inspection may be made without consent or the issuance of a warrant. To verify the wastewater flows and strengths reported by dischargers or to determine compliance with this Ordinance, inspection, measurement, and sampling may be conducted from time to time by the District. The District shall have the right to install, maintain, and operate necessary sampling and measuring equipment on the premises of discharger.

Section 9 - New Connections

Dischargers will be assigned a business classification code and informed of the applicable prohibitions, limits or conditions, and the applicable rates and charges, governing wastewater disposal service at the time of application for water service from East Bay Municipal Utility District. All nonresidential dischargers seeking a new side sewer connection to a community sewer and any new discharger requiring information prior to applying for water service should contact the Director. The Director will inform the discharger of the regulations governing wastewater disposal service and the applicability of requirements for inspection, sampling, or pretreatment facilities.

TITLE VI - ENFORCEMENT AND PENALTIES

Section 1 - Director's Orders

The Director may adopt procedures and rules for the implementation and administration of this Ordinance. The Director shall enforce the provisions of this Ordinance, including requirements established or permits issued hereunder, as provided herein.

a. Requiring Discharger to Submit Schedule of Remedial or Preventive Measures. When the Director finds that a discharge of wastewater is taking place or threatening to take place that violates or will violate prohibitions or limits prescribed by this Ordinance or wastewater source control requirements or the provisions of a wastewater discharge permit, the Director may require the discharger to submit for approval of the Director, with such modifications as he deems necessary, a detailed time schedule of specific actions the discharger shall take in order to correct or prevent a violation of requirements.

b. Issuance of Cease and Desist Orders. When the Director finds that a discharge of wastewater is taking place or threatening to take place in violation of prohibitions or limits of this Ordinance or wastewater source control requirements or the provisions of a wastewater discharge permit, the Director may issue an order to cease and desist and direct that those persons not complying with such prohibitions, limits, requirements, or provisions (1) comply forthwith, (2) comply in accordance with a time schedule set by the Director, or (3) in the event of a threatened violation, take appropriate remedial or preventative action.

c. Damage to Facilities. When the discharge of wastewater causes an obstruction, damage, or other impairment to District disposal facilities, the Director may recover costs from the discharger to correct the problem caused by the discharger.

d. Termination of Service. The District may terminate or cause to be terminated wastewater disposal or water service to any premises if a violation of any provision of this Ordinance pertaining to control of wastewater is found to exist or if a discharge of wastewater causes or threatens to cause a condition of contamination, pollution, or nuisance, as defined in this Ordinance. This provision is in addition to other statutes, rules, or regulations authorizing termination of service for delinquency in payment, or for any other reason.

e. Appeal Procedures for Director's Orders. Any permit applicant, permit holder, or other discharger affected by any decision, action, or determination, including cease and desist orders, made by the Director in interpreting or implementing the provisions of this Ordinance, or any permit issued hereunder, may file with the Director a written request for reconsideration within 10 days of such decision, action, or determination, setting forth in detail the facts supporting the request. The Director may elect to hold a hearing on the request. The request for reconsideration shall be acted upon by the Director within 10 days from the date of filing or the close of the reconsideration hearing. The decision, action, or determination shall remain in effect during such period of review by the Director. If the ruling made by the Director is unsatisfactory to the person requesting reconsideration, he may, within 10 days after notice of the action by the Director, file a written appeal to the General Manager. The written appeal shall state all pertinent aspects of the matter and shall include the hearing record if one was requested. Within 30 days after the written appeal is received, the General Manager shall hold a hearing after due notice to the appellant. The General Manager may establish rules and regulations governing the hearings of such appeals. The General Manager shall make a final ruling on the appeal within 10 days after close of the hearing. The decision, action, or determination shall remain in effect during such period of review by the General Manager. If the decision of the General Manager is unsatisfactory to the person appealing, he may file a written appeal to the Board of Directors of the District within 10 days after receipt of the decision. The Board of Directors may hear the appeal or refer the matter to a neutral hearing officer for an advisory opinion. The Board of Directors shall make a final ruling on the appeal within 10 days of the close of the hearing or receipt of the advisory opinion. The decision, action, or determination shall remain in effect during such period of review by the Board of Directors. The Director may adopt rules and regulations to implement the provisions of this section.

Section 2 - Director's Enforcement Remedies and Penalties

The Director may administratively impose penalties, up to specified maximums, against any person who violates the provisions of this Ordinance. For purposes of this section of the Ordinance, the Director or his/her designee shall be the hearing officer.

a. Issuance of Complaints.

(1) The Director may issue a complaint to any person on whom civil liability may be imposed pursuant to this article. The complaint shall allege the act or failure to act that constitutes a violation of law, the provision of law authorizing civil liability to be imposed pursuant to this article, and the proposed civil liability.

(2) The complaint shall be served by personal notice or certified mail on the person subject to the District's discharge and reporting requirements, and shall inform the party served that a hearing shall be conducted within 60 days after the party has been served.

b. Civil Liability Penalties. Civil liability may be imposed by the Director as follows:

(1) In an amount which does not exceed one thousand dollars ($l,000) for each day for knowingly or willfully failing or refusing to furnish technical or monitoring reports.

(2) In an amount which does not exceed five thousand dollars ($5,000) for each day of intentionally or negligently discharging hazardous waste, as defined in Section 25117 of the Health and Safety Code, knowingly falsifying any information provided in any furnished technical or monitoring report.

(3) In an amount which does not exceed ten dollars ($10) per gallon for discharges in violation of any of the District's cease and desist or other orders, or prohibitions issued, reissued, or adopted by the District.

(4) Unless appealed, orders setting administrative civil liability shall become effective and final upon issuance thereof, and payment shall be made within 30 days.

c. Appeal.

(1) The person who has been issued a complaint may waive the right to a hearing, in which case the District shall not conduct a hearing. A person dissatisfied with the decision of the Director may appeal to the Board of Directors within 30 days of notice of the Director's decision.

(2) Any party aggrieved by a final order issued by the Board after granting review of a hearing officer order, may obtain review of the order of the board in the superior court by filing in the court a petition for writ of mandate within 30 days following the issuance of the order by the board. Any party aggrieved by a final order of a Director issued pursuant to Title VI, Section 2 of this Ordinance for which the board denies review may obtain review of the order of the Director in the superior court by filing in the court a petition of writ of mandate within 30 days following the denial of review by the board.

Section 3 - Criminal Penalties

a. Any person who intentionally discharges wastewater in any manner, in violation of any order issued by the Director, which results in contamination, pollution, or a nuisance, as defined in this Ordinance, is guilty of a misdemeanor and may be subject to criminal penalties of not more than $1,000 per day for each such violation, including, but not limited to, any violation of pretreatment standards or requirements.

b. Any person who knowingly makes any false statement or representation in any record, report, plan, or other document filed with the District, or who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required by the District, shall be punished by a fine of not more than twenty-five thousand dollars ($25,000) or by imprisonment in the county jail for not more than six months, or by both.

Section 4 - Civil Enforcement Remedies and Penalties

The District may pursue any of the alternative civil remedies herein against any discharger who violates the provisions of this Ordinance.

a. Civil Enforcement Penalties.

(1) Any person who fails to comply with any order issued by the District, including orders related to pretreatment standards or requirements, shall be subject to a civil penalty not to exceed ten thousand dollars ($10,000) for each day in which the discharge, violation, or refusal occurs.

(2) Any person who intentionally or negligently violates any order issued by the District for violation of rules regulating or prohibiting discharge of wastewater which causes or threatens to cause a condition of contamination, pollution or nuisance, as defined in this article, may be liable civilly in a sum not to exceed twenty-five thousand dollars ($25,000) for each day in which the violation occurs. The attorney of the District, upon request of the Board of Directors of the District, shall petition the Superior Court to impose, assess, and recover such sums.

b. Injunction. Whenever a discharge of wastewater is in violation of the provisions of this Ordinance, including but not limited to violation of a pretreatment standard or requirement, or otherwise causes or threatens to cause a condition of contamination, pollution, or nuisance, or whenever non-discharge violations occur including failure to submit a required report or failure to allow the District's inspectors access to an industrial facility, the District may petition the Superior Court for the issuance of a preliminary or permanent injunction, or both, as may be appropriate, restraining the continuance of such violations.

TITLE VII - RESOURCE RECOVERY (TRUCKED WASTE) PROGRAM

Section 1 – Purpose

The Resource Recovery program was established under the authority of the Municipal Utility District Act to utilize excess capacity at the District's Main Wastewater Treatment Plant by accepting permitted trucked waste. The provisions of this title do not regulate discharges to community sewers.

Section 2 – Regulation of Discharges

Permitted wastes may be discharged into identified receiving stations at District wastewater facilities provided that such wastewater has been deemed acceptable by the District under Resource Recovery waste acceptance procedures and has been permitted by the District. It is entirely within the District's discretion to accept or reject any waste or any hauler. The District maintains full discretion on the issuance, terms and conditions, and revocation of trucked waste permits.

No person shall discharge wastewater through the Resource Recovery Program as described in title II Prohibited Discharges, Section 2b Prohibited Effects.

Section 3 – Permit requirements

All trucked waste haulers shall secure a trucked waste permit. The permitting process may include collection of information about the waste stream and generator; collection and laboratory analysis of samples; and an evaluation of potential impacts including worker health and safety, plant process impacts, and regulatory impacts to air, liquid and solid waste permits. Persons seeking a trucked waste permit shall complete and file a District application form accompanied by the applicable District Permit fee. The application requires information on waste characterization including, but not limited to, origin of the waste, estimated waste quantity, waste characteristics including pH, organic analysis, and analysis for other potential pollutants including metals. The application also includes a certification of liability insurance. All permitting decisions shall rest with the Director.

All trucked waste permits shall be subject to all provisions of this title and all applicable rates and charges established by the District. All permits shall be issued for a specific time period, not to exceed five (5) years. The Director may establish renewal frequencies of up to sixty months. Permit conditions may contain any and all of the following: Limits on rate, time and location of discharge; Monitoring and audit program which may include random and unannounced inspections and sampling; Other conditions as deemed appropriate by the Director to insure compliance with this Ordinance and/or terms and conditions of the permit. A trucked waste discharger is prohibited from discharging waste except as expressly provided in the trucked waste discharge permit.

Section 4 – Administration and Enforcement

The Director is charged with responsibility for District's wastewater control program and the administration and enforcement of the provisions of this ordinance. In order to effectively administer and enforce the provisions of these regulations, the Director may require any trucked waste hauler to comply with any or all of the requirements described in Title V Administration, section 2 Wastewater Source Control Requirements.

The Director may adopt procedures and rules for the implementation and administration of this Title. The Director shall enforce the provisions of this Title, including requirements established or permits issued hereunder as provided herein.

a. Requiring Permitee to Submit Schedule of Remedial or Preventive Measures. Trucked waste permittees shall be subject to Title VI Enforcement and Penalties, section 1a of this Ordinance.
b. Discharge in Violation of Permit. No person shall discharge any substance under the Resource Recovery Program into a District facility without a Trucked Waste Permit.
c. Violation of Permit Terms and Conditions. When the Director finds that a discharge of waste is taking place or about to take place in violation of prohibitions or limits of this Ordinance or a trucked waste permit, the Director may direct those persons not complying with such prohibitions, limits, requirements, or provisions to (1) comply forthwith, (2) comply in accordance with a time schedule set by the Director, or (3) in the event of a threatened violation, take appropriate remedial or preventative action. Discharges in violation of a trucked waste permit may be fined an amount not to exceed $10/gallon.
d. Damage to facilities. Trucked waste permittees shall be subject to Title VI Enforcement and Penalties, section 1c of this Ordinance.
e. Termination of Permit The District may terminate or cause to be terminated trucked waste disposal to any facility if a violation of this Ordinance pertaining to control of wastewater is found to exist or if a discharge of waste causes or threatens to cause a condition of contamination, pollution, or nuisance, as defined in this Ordinance. This provision is in addition to other statutes, rules, or regulations authorizing termination of service for delinquency in payment, or for any other reason.
f. Civil Liability Penalties. Civil liability may be imposed by the Director as described in Title VI Enforcement and Penalties, Section 2b Civil Liability Penalties.
g. Criminal Penalties. Criminal liability may be imposed by the Director as described in Title VI Enforcement and Penalties, Section 3a & 3b Criminal Penalties.
h. Civil Enforcement Remedies and Penalties. The District may pursue any of the alternative civil remedies herein against any discharger who violates the provisions of this Ordinance as described in Title VI Enforcement and Penalties, Section 4a Civil Enforcement Penalties.

TITLE VIII - SEVERABILITY

If any provision of this Ordinance, or the application thereof to any person or circumstance, is held invalid, the remainder of the Ordinance, or the application of such provision to other persons or circumstances, shall not be affected thereby.

TITLE IX - EFFECTIVE DATE

This Ordinance shall become effective on July 24, 2003. All resolutions in conflict herewith are hereby rescinded, with the express exception that Paragraph No. 3 of Resolution No. 14979, prohibiting the discharge of storm water, shall remain in full force and effect. This Ordinance supersedes Ordinance No. 270 and all amendments thereto, including Ordinance Nos. 279, 293, 296, and 300.

FRANK MELLON

_____

President

I HEREBY CERTIFY that the foregoing Ordinance was duly and regularly introduced at a regular meeting of the Board of Directors of East Bay Municipal Utility District held on June 10, 2003 at the offices of said District, 375 – 11th Street, Oakland, California, and thereupon, after being read, further action was scheduled for the regular meeting of said Board of Directors held at the same place on June 24, 2003, at which time the same was finally adopted by the following vote:

AYES: Directors Coleman, Foulkes, Linney, McIntosh, Patterson, and President Mellon.

NOES: None.

ABSENT: Director Richardson.

ABSTAIN: None.

ATTEST:

LYNELLE M. LEWIS

_____

Secretary

APPROVED AS TO FORM AND PROCEDURE:

ROBERT C. HELWICK

_____

General Counsel

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APPENDIX H - COLLECTION SYSTEM MAP

Appendix H intentionally left blank.

APPENDIX I - EQUIPMENT AND REPLACEMENT PARTS INVENTORY

PORT OF OAKLAND

EQUIPMENT AND REPLACMENT PARTS INVENTORY
Port-Wide Sewer System Management Plan
Port of Oakland

Equipment	Quantity
Backhoe	2
10 Wheel Dump Truck	2
Pipes (4" - 6", up to 24")	Various
Pneumatic Air Compressor	2
Spare Pump/Motor	1
Trash Pumps	2
Emergency Generators	2
Fleet Vehicles	Several
Forklifts	2

PORT OF OAKLAND

EQUIPMENT AND REPLACMENT PARTS INVENTORY
Port-Wide Sewer System Management Plan
Port of Oakland

Equipment	Quantity
Backhoe	2
10 Wheel Dump Truck	3
Pipes (4" - 6", up to 24")	Various
Pneumatic Air Compressor	1
Spare Pump/Motor	1
Trash Pumps	Several
Emergency Generators	By Rental
Fleet Vehicles	Several

APPENDIX J - SANITARY SEWER DESIGN AND CONSTRUCTION STANDARDS

PORT OF OAKLAND

530 Water Street
Oakland, CA 94607
(510) 627-1100

SANITARY SEWER DESIGN AND CONSTRUCTION STANDARDS

May 2010

Prepared By

Carollo Engineers, P.C.
7580 North Ingram Avenue
Fresno, CA 93711
(559) 436-6616

carollo
Engineers...Working Wonders With Water™

PORT OF OAKLAND

SANITARY SEWER DESIGN AND CONSTRUCTION STANDARDS

May 2010

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APPENDIX B City of Oakland Standard Details for Sanitary Sewer Facilities

LIST OF TABLES

SANITARY SEWER DESIGN AND CONSTRUCTION STANDARDS

1.0 INTRODUCTION

Sanitary sewers located in areas under the jurisdiction of the Port of Oakland (Port) shall be designed and constructed in accordance with the requirements of this document. Industry standards and accepted engineering principals shall also be followed. In new development areas, redevelopment areas, or any other areas where new sanitary sewers are required, the design shall include provisions such that the sewer system is capable of accommodating the ultimate anticipated design flows. Any type or any form of storm drain system shall not be connected to any sanitary sewer system.

2.0 CITY OF OAKLAND DESIGN STANDARDS

The design and construction standards discussed in this document are in large part based on the City of Oakland (City) Sanitary Sewer Design Guidelines. Therefore, the City's standards are incorporated into the Port's standards by reference. A copy of the City's current standards is provided as an appendix to this document. It is the responsibility of the user of this document to obtain the most current copy of the City's standards. The user should also reference the City's standard details for use in design, and verify that the details are up to date.

3.0 DESIGN AND CONSTRUCTION STANDARDS

3.1 Flow Calculations

3.1.1 Average Flow Calculation

The average wastewater flow shall be estimated in accordance with accepted industry standards and shall be submitted to the Port engineering department for review and approval. The average wastewater flow shall be calculated based on site specific information for the proposed development/project and shall take into account the following as appropriate:

- Tributary areas
- Estimate of population
- Land use
- Per capita flow for
  - Residential flow

  - Commercial flow
  - Industrial flow
- Major point source discharge
- Groundwater infiltration
- Infiltration and Inflow (shall be applied to design flow, see Section 3.1.2)
- Allowances for future development

The tributary area of a sewer shall include all areas that will contribute flow to the sewer system. It shall include flows from the developed area to the point of connection to the main line. Population estimates for proposed developments shall be as accurate as possible and subject to Port approval.

Land use contributes and defines the densities of population and the type of users contributing to the flow within the tributary areas. To verify that the projection is reasonable, zoning maps and field review may be used.

Industrial flow may vary significantly per industry type, size and the way wastewater is being discharged. The Design Engineer shall determine the magnitude of the industries' wastewater contribution in the area.

Typical wastewater flow rates for different developments/users are presented in Table 1. The average flow rates shall be used to calculate the total flow for a development.

Table 1 Typical Wastewater Flow Rates
Sanitary Sewer Design and Construction Standards
Port of Oakland

Development/User	Unit	Average Daily Flow, gpd/unit
Auditorium	Seat	5
Automobile parking	1,000 Gross square feet	25
Automobile repair garage	1,000 Gross square feet	100
Bakery	1,000 Gross square feet	300
Bar	Seat	20
Cafeteria	Seat	50
Carwash – coin operated	Stall	206
Carwash – in bay	5 gallons per minute (peak)	412
Commercial	1,000 Gross square feet	100
Community center	Occupant	5
Gymnasium	1,000 Gross square feet	300
Industrial	Gallons per minute (peak)	412
Jail	Inmate	85

Table 1	Typical Wastewater Flow Rates Sanitary Sewer Design and Construction Standards Port of Oakland	
Development/User	**Unit**	**Average Daily Flow, gpd/unit**
Laboratory - commercial	1,000 Gross square feet	300
Laundromat - industrial	Gallons per minute (peak)	412
Laundromat	Washer	220
Manufacturing - industry	1,000 Gross square feet	100
Medical building	1,000 Gross square feet	300
Motel	Room	150
Office building	1,000 Gross square feet	200
Restaurant – fixed seat	Seat	50
Restaurant – take out	1,000 Gross square feet	300
Retail area	1,000 Gross square feet	100
Theater – fixed seat	Seat	5
Source: City of Oakland Sanitary Sewer Design Guidelines, November 2004.		

3.1.2 Design Flow Calculation

A Port specific design flow standard or calculation cannot be generated until the wet weather flow-monitoring program has been completed. This section, therefore, will be completed at a later date. Infiltration/Inflow shall be added to the design total flow.

3.2 Gravity Sewers

3.2.1 Maximum Flow Depth to Pipe Diameter (d/D) Ratio

Gravity sewer pipes shall be designed to handle the total design flow defined in Section 3.1. The maximum flow depth to pipe diameter (d/D) ratio under the design flow condition depends on the pipe diameter and shall not exceed the value provided in Table 2.

Table 2	Maximum Allowable d/D Ratio Sanitary Sewer Design and Construction Standards Port of Oakland
Pipe Diameter (in.)	**Maximum d/D Ratio (at Design Flow)**
Less than 12	≤ 0.50
12 to 18	≤ 0.67
Larger than 18	≤ 1.00

3.2.2 Velocity Constraints

Gravity sewer pipes shall be designed for a minimum velocity of two (2) feet per second (ft/s). The design flow velocity shall not exceed ten (10) ft/s without approval of the Director of Engineering or his designated representative.

3.2.3 Minimum Slope

In order to minimize the settlement of solids, gravity sewer pipes shall be designed to meet or exceed the minimum slope requirements provided in Table 3. Approval of the Director of Engineering or his designated representative is required for slopes less than those provided in Table 3. If a flatter slope is proposed, the pipe shall be designed to prevent the settlement of solids in the pipe.

Table 3 Minimum Slope for New Sewer Pipes
Sanitary Sewer Design and Construction Standards
Port of Oakland

Pipe Diameter (in.)	Minimum Slope [1],[2] (ft/ft)	Calculated Flow at Maximum d/D Criterion [2],[3]		
		d/D	(cfs)	(mgd)
8	0.0033	0.50	0.35	0.23
10	0.0025	0.50	0.55	0.35
12	0.0019	0.67	1.23	0.80
15	0.0014	0.67	1.92	1.24
18	0.0011	0.67	2.77	1.79
21	0.0009	1.00	4.81	3.11
24	0.0008	1.00	6.28	4.06
27	0.0007	1.00	7.95	5.14
30	0.0006	1.00	9.82	6.35
36	0.0006	1.00	16.38	10.59
42	0.0006	1.00	24.71	15.97

Notes:
1. Recommended minimum slope for design flow at maximum d/D and at minimum velocity of 2 ft/s.
2. Manning's n = 0.013
3. Calculated flow is determined using the minimum slope and the maximum allowable d/D presented in Table 2.

3.2.4 Manning's Roughness Coefficient (n)

The Manning's roughness coefficient shall be 0.013 or the pipe manufacturer's design recommendation, whichever is greater.

3.2.5 Minimum Pipe Size

The minimum pipe size for sanitary sewer pipes is 8-inches (inside diameter).

3.2.6 Port Easement Requirements

A minimum of ten (10) feet wide easement shall be required for sewer pipelines within private properties.

3.2.7 Acceptable Materials

The following pipe materials are permitted for sanitary sewers. Roughness coefficient shall be the greater of 0.013 or the pipe manufacturer's design recommendation.

- Vitrified Clay Pipe (VCP) – extra strength or high strength per ASTM C700
- Ductile Iron Pipe (DIP), Class 52 with approved lining/coating
- High Density Polyethylene (HDPE) Pipe SDR 17 with smooth interior (engineering pipe design calculation shall be required)
- Reinforced Concrete Pipe (RCP) with an approved lining/coating
- Cast Iron Pipe (CIP) with an approved lining/coating

The following pipe materials shall not be used for sanitary sewer construction.

- ABS (Acrylonitrile Butadiene Styrene) Pipes
- PVC (Poly Vinyl Chloride) Pipes
- CMP (Corrugated Metal Pipe) Pipes

3.2.8 Manhole Installation Requirements and Spacing

Manholes shall not be spaced more than 300 feet apart. In addition, manholes shall be installed at the following locations:

- All changes in sewer slope;
- Changes in vertical and horizontal alignments;
- Main sewer junctions;
- When an 8-inch or larger diameter sewer lateral is connected into a sewer main.

Cleanouts shall be installed at the end of all sewer lines.

3.2.9 Pipe Cover

All pipes shall be designed to withstand an H-20 highway loading and existing sub-surface conditions.

For rigid pipes, desired minimum cover to sub-grade in locations where the pipe is subject to vehicular loads is three (3) feet. Where the depth of the sewer main is such that the three (3) feet minimum depth below the top of grade elevation cannot be attained, refer to City Standard Detail D-1, the sewer shall be covered with at least four (4) inches of concrete or shall be Ductile Iron Pipe Class 52 or Reinforced Concrete Pipe, Class V with an approved coating.

For rigid pipes, the maximum depth of cover shall be not more than 13.5 feet. For depth of cover more than 13.5 feet refer to City Standard Detail D-1. Class IV reinforced concrete pipe with approved coating or ductile iron pipe Class 52 may be acceptable with design calculation.

Shoring is required for all trenches over five (5) feet deep. This is required for work on private property as well as street work (refer to Cal/OSHA regulations).

For sewer construction trench detail, back-fill material and compaction requirements, refer to City Standard Detail D-22.

Prior to acceptance, all new or completely replaced sewers and sewer structures shall be water and/or air tested, and closed circuit televised in accordance with Section 6.0 of this document.

3.2.10 Miscellaneous Gravity Sewer Standards

Sanitary sewer mains shall be located in the street along the centerline whenever possible and shall not be located underneath the sidewalk area or along the curb and gutter area. Sanitary sewer pipes shall run in a straight alignment and no curved or deflected pipes shall be installed.

The main sewer lines may be connected into a manhole at a maximum distance of 18 inches above the flow line of the manhole without a drop connection. Connections made over 18 inches will be required to have a drop connection. Refer to City of Oakland Standard Detail D-2.

The last two laterals shall be connected to the sanitary sewer main with the use of a wye-connection. All other laterals may be connected with the use of a T-connector or wye-connection. The wye shall be located in the direction of flow. The minimum distance to the first lateral from a sewer structure shall be 3 feet, and from the last lateral to a cleanout shall be 5 feet.

For pipe crossing and clearance requirements, see City of Oakland Standard Detail D-23 and the appropriate health and safety guidelines. Load calculation shall be submitted for approval.

3.2.11 Sewer Laterals

Newly constructed sewer laterals shall conform with the following:

- Sewer laterals shall have a minimum of 2 percent slope
- The minimum size of the 2-way cleanout shall be four (4) inches and shall be placed as to be accessible at all times

3.3 Lift Stations and Force Mains

The use of sewer pump stations or lift stations shall be avoided to the extent possible. When projects constraints dictate that a pump station or lift station be installed, however, it shall be designed in accordance with the provisions outlined in this section.

3.3.1 Pre-Design Engineering Report

When a pump station or lift station is proposed, the engineer shall prepare and submit a detailed pre-design report to the Director of Engineering or his designated representative for approval prior to design. The Pre-Design Engineering Report shall be prepared, stamped, and signed by a Professional Engineer currently licensed to practice within the State of California.

3.3.2 Design Flow

The design flow tributary to a proposed lift station shall be determined in accordance with the provisions established in Section 3.1 and shall take into account the ultimate design flow of the list station. Additionally, the engineer shall account for low flow conditions in the lift station.

3.3.3 Wastewater Pumps

A minimum of two (2) non-clog, submersible pumps specifically designed for conveying raw wastewater shall be installed in each lift station. If two pumps are to be installed, each shall be capable of independently conveying the design flow with the second pump serving as standby. If three or more pumps are to be installed, the firm capacity of the lift station, which is defined as the total pumping capacity of the lift station less the capacity of the largest pump, shall be sufficient to convey the design flow.

3.3.4 Wet Wells

Wet wells shall be designed to provide an operational storage volume sufficient to provide a maximum of six (6) starts per hour. Operational maximum high water levels shall not

exceed the invert elevation of the lowest influent pipe. Additionally, where the wet well extends below the groundwater level, the wet well structure shall be designed to eliminate any possibility of floating and prevent groundwater infiltration.

3.3.5 Force Mains

- Sanitary sewer force mains shall be pressure rated pipes, subject to approval by the Port.
- Sanitary sewer force mains shall be sized such that the pipeline velocity is at least three (3) feet per second (ft/s), but not greater than eight (8) ft/s.
- The Hazen Williams roughness coefficient (C) shall be 100 or the pipe manufacturer's design recommendation, whichever is less.

3.3.6 Other Considerations

Odor control and onsite standby power shall be required by the Port at the discretion of the Director of Engineering or his designated representative.

3.4 Miscellaneous Standards

3.4.1 Geotechnical Investigations and Reports

A site-specific Geotechnical Report shall be prepared and submitted to the Port for all sanitary sewer construction projects. The Geotechnical Report shall be prepared, stamped, and signed by a Professional Geotechnical Engineer currently licensed to practice within the State of California. Borings and in-situ tests along the trench alignments shall be located where recommended by the geotechnical consultant, and at a minimum of every 1,000 feet. Borings shall extend a minimum of ten (10) feet below the anticipated depth of manholes and five (5) feet below the anticipated depth of the pipe.

3.4.2 Groundwater/Dewatering Requirements

3.4.2.1 Trench Foundation

When groundwater is encountered or expected to be encountered during construction, the engineer shall make appropriate provisions to ensure that the trench has been adequately dewatered, over-excavated, and recompacted to provide an adequate foundation for sanitary sewer facilities. These provisions shall be included in the Geotechnical Report and shall be followed through construction. The geotechnical consultant shall be required to verify that the trench foundation is suitable during construction.

3.4.2.2 Dewatering

When groundwater is encountered or expected to be encountered during construction, the engineer shall include information necessary for the contractor to construct the appropriate

temporary dewatering facilities. Dewatering shall commence when groundwater is first encountered and shall be continuous through construction, backfill, and testing of the pipe. The dewatering facilities shall be left in place and turned off during leakage testing, as necessary.

3.4.2.3 Trench Dams

Trench dams shall be installed whenever the expected or known groundwater elevation is higher than the pipe invert. The trench dams shall be located and spaced in accordance with the requirements of the Geotechnical Report.

3.4.3 Railroad Crossing Requirements

All sanitary sewer gravity and force mains that cross under railroad tracks shall be designed in accordance with the requirements of the governing railroad company, including railroad tracks that are privately owned/operated or Port owned/operated.

3.4.4 Sanitary Sewers in Bay Mud

The engineer shall make special provisions for the construction of sanitary sewer facilities in Bay Mud. The special provisions shall be made in accordance with the recommendations of the site-specific Geotechnical Report.

3.5 Submittal Drawing Standards

Sewer design drawings shall be developed and submitted in accordance with the Port's CAD standards and drawing scales, and shall include engineering plan/profile, lots to be serviced, laterals, property lines, and existing or proposed lines that may be close to or crossing the proposed sewer main. Sewer lines in paths, reserves or easements must indicate all existing improvements such as buildings, fences, trees, etc., including any watercourse. Show the width of the easement and relative location of sewer line within the easement. The minimum easement width shall be ten (10) feet unobstructed. The engineer shall submit final drawings in hard copy and electronic format.

All elevations shall be based on the City of Oakland datum and shall be on the plans at all points having a change of grade. Cuts to the nearest one-half foot shall be shown on the plans at all structures and at other significant points.

4.0 STANDARD DETAILS

The design engineer may, at his/her discretion, reference and use the City of Oakland Standard Details for Public Works Construction in the preparation of sanitary sewer design plan drawings without modification. The standards need not be reproduced on the plans, provided that a specific reference is made to each standard detail that is used. As an example, for sewer manholes, an acceptable reference to the City standard detail would read as follows:

"All sanitary sewer manholes shall conform to City of Oakland Standard Detail Drawing No. D-11, except where otherwise indicated."

Applicable City of Oakland standard details are included as attachment to this document. It is the responsibility of the design engineer to verify that the standard details are up to date.

5.0 STANDARD SPECIFICATIONS

All construction work related to the sanitary sewer system shall be performed in accordance with the most recently published edition of the Standard Specifications for Public Works Construction (commonly known as the "Greenbook").

6.0 TESTING AND INSPECTION STANDARDS

All construction work related to the sanitary sewer system shall be inspected by the Director of Engineering's designated representative in accordance with the most recently published edition of the Standard Specifications for Public Works Construction (Greenbook). Prior to acceptance by the Port, all new or replaced sewers and sewer structures shall be water tested, and closed circuit televised by the contractor.

7.0 SUBMITTALS AND FINAL AS-BUILT PRIOR TO ACCEPTANCE

For any new development, engineering calculations used for the design of all proposed sanitary sewer systems shall be submitted to the Port engineering department for review. The calculations shall include the following items:

- A plan showing proposed street system, existing and future tributary areas, current zoning, projected land use and any feature affecting the system design.
- Design flows including flows coming from outside the project limits.
- Pipe capacities, design flow and the percent of full pipe capacity used for each sanitary sewer reach, hydraulic profile for each pipe.
- Pipe size, length, slope, Manning's roughness coefficient (n), rim and invert elevations of all proposed lines and locations of manholes and cleanouts.
- Analysis of the impact of the proposed development on the existing sanitary sewer system capacity. If the existing sewer system is under capacity, the developer is responsible for repairing or replacing the sanitary sewer pipes as a part of the conditions of approval.

- Prior to acceptance, the final as-built sanitary sewer improvement plans shall be submitted to the Port engineering department in accordance with current Port CAD standards.

8.0 IMPACT ANALYSIS

All new development or redevelopment projects will require an impact analysis to ensure that the existing system has enough hydraulic capacity to accommodate the proposed development. Pipe capacity, in all cases, shall be adequate to carry design flow from the entire tributary area, even if the entire tributary area is not within the project boundaries. No sewer facilities in which proposed design flows exceed the pipeline wet weather flow capacity will be approved.

Mitigation fees may be assessed to new developments or redevelopment projects based on the results of the impact analysis. The fee represents the development's buy-in for the cost of the improvements required to provide sufficient capacity in the existing sewer system for the proposed project.

APPENDIX A - CITY OF OAKLAND SANITARY SEWER DESIGN GUIDELINES

City of Oakland

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Public Works Agency Standards

Sanitary Sewer Design Guidelines

Engineering Design & ROW Management Division

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City of Oakland
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1. Introduction

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All sanitary sewers shall be designed in accordance with these Design Guidelines and to accepted engineering principles. In all newly developed area and/or in all existing area where new sanitary sewers are required, the design shall include the provisions that the sewer system size and capacity can adequately accommodate the ultimate anticipated conditions. **Any type or any form of storm drain system shall not be connected to any sanitary sewer system.**

2. Design Criteria

TOC

These criteria have been collected from various resources and they are meeting accepted standards for sanitary sewer design in the City of Oakland. The Design Engineer shall use these criteria to estimate design flows as accurate as possible and shall be submitted to the City of Oakland for approval.

These criteria shall be considered to determine the projected flow:

- Tributary areas
- Estimate of population
- Land use
- Per capita flow for
    - Residential flow
    - Commercial flow
    - Industrial flow
- Major point source discharge
- Ground water
- Infiltration and Inflow

Tributary area of a sewer shall include all areas that will contribute flow to the sewer system. It shall include flows from the developed area to the point of connection to main line.

Estimate of population shall be for the proposed development and shall be as accurate as possible.

Land use contributes and defines the densities of population and the type of users contributing to the flow within the tributary areas. To verify that the projection is reasonable, zoning maps and field review may be used.

Where uses are planned for an area, the average flow rates shown in Table 1 shall be used to estimate flows.

Industrial flow may vary significantly per industry type, size and the way wastewater is being discharged. The Design Engineer shall determine the magnitude of the industries' wastewater contribution in the area.

Major discharges from future point sources shall be incorporated in the design flow. Future development of major establishments should be ascertained from the available information, including the City's General Plan, Zoning and Land Use maps.

Infiltration/Inflow shall be added to the design total flow.

3. Design Flow Calculation

TOC

The design sewage flow rate (Q) is computed by the following:

$$Q = [gADM]_{peak} + [IA]_{infiltration}$$

Where: Q = total flow
A = tributary area, in acres*****
D = future population density, persons per acre*****
g = average flow rate*****
M = coefficient for Peak Flow

$$= 1 + \frac{14}{4 + (\text{population in } 1000\text{s})^{1/2}} \text{ , where } 3.75 \geq M \geq 2.00$$

I = infiltration rate = 1000 gallons / day / acre

***** For specific occupancy development, use Table 1 and apply the appropriate average daily flows.

4. Pipe Flow

TOC

- Pipes shall be of sufficient size to handle the total design flow, Q.
- Main sewers and local collectors shall be designed with sewers flowing 2/3 full, $d/D \leq 2/3$.
- Trunk sewers shall be designed with sewers flowing full without surcharge, $d/D \leq 1.0$
- For locations of Sewer Trunk Lines, refer to List of Figures taken from Sewer System Evaluation Survey (SSES) for North Oakland and South Oakland.

5. Pipe Design

TOC

- Sewer pipes shall be designed for minimum velocity of 2 feet per second.
- The minimum pipe size for sanitary sewer is 8" inside diameter.
- If a flatter slope is proposed, the pipe shall be designed to prevent settlement of solids in the pipe.
- The design flow velocity shall not exceed 10 feet per second unless warranted by special conditions.
- A minimum of 10 feet wide easement shall be required for sewer within private properties.

6. Pipe Materials (minimum standard)

TOC

The following pipe materials are permitted for sanitary sewers. Roughness coefficient shall be the greater of 0.013 or the pipe manufacturer's design recommendation.

- Vitrified Clay Pipe (VCP) – extra strength or high strength per ASTM C700
- Ductile Iron Pipe (DIP), Class 52 with approved lining/coating
- High Density Polyethylene (HDPE) Pipe SDR 17 with smooth interior (engineering pipe design calculation shall be required)
- Reinforced Concrete Pipe (RCP) with an approved lining/coating
- Cast Iron Pipe (CIP) with an approved lining/coating

The following pipe materials shall not be used for sanitary sewer construction.

- ABS (Acrylonitrile Butadiene Styrene) Pipes
- PVC (Poly Vinyl Chloride) Pipes
- CMP (Corrugated Metal Pipe) Pipes

7. Connections

TOC

Sanitary sewer mains shall be located in the street along the centerline whenever possible and shall not be located underneath the sidewalk area or along the curb and gutter area.

Sanitary sewer pipes shall run in a straight alignment and no curved or deflected pipes shall be installed.

The main sewer lines may be connected into a manhole at a maximum distance of 18" above the flow line of the manhole without a drop connection. Connections made over 18" will be required to have a drop connection. Refer to Standard Detail D-2.

A manhole is required when an 8" and larger sewer lateral is connected into a sewer main.

The last two laterals shall be connected to the sanitary sewer main with the use of a wye-connection. All other laterals may be connected with the use of a T-connector or wye-connection. The wye shall be located in the direction of flow. The minimum distance to the first lateral from a sewer structure shall be 3 feet, and from the last lateral to a cleanout shall be 5 feet.

For pipe crossing and clearance requirements, see Standard Detail D-23 and the appropriate health and safety guidelines. Load calculation shall be submitted for approval.

8. Sewer Structures (manholes & cleanouts)

TOC

- Manholes shall not be placed more than 300 feet apart.
- Manholes shall be placed at junctions of lines and shall be used at changes in vertical and horizontal alignments.
- Cleanout shall be installed at the end of all sewer lines.

9. Pipe Cover

TOC

All pipes shall be designed to withstand an H-20 highway loading and existing sub-surface conditions.

For rigid pipes, desired minimum cover to sub-grade in locations where the pipe is subject to vehicular loads is three (3') feet. Where the depth of the public sewer main is such that the three (3') feet minimum depth below the top of grade elevation cannot be attained, refer to Standard Detail D-1, the sewer shall be covered with at least four (4") inches of concrete or shall be Ductile Iron Pipe Class 52 or Reinforced Concrete Pipe, Class V with an approved coating.

For rigid pipes, the maximum depth of cover shall be not more than 13.5 feet. For depth of cover more than 13.5 feet refer to Standard Detail D-1. Class IV reinforced concrete pipe with approved coating or ductile iron pipe Class 52 may be acceptable with design calculation.

Shoring is required for all trenches over five (5') feet deep. This is required for work on private property as well as street work (refer to Cal/OSHA regulations).

For sewer construction trench detail, back-fill material and compaction requirements, refer to Standard Detail D-22.

If flexible pipes are proposed, the design engineer shall submit detailed load calculations for pipe design for the approval of the City.

Prior to acceptance, all new or completely replaced sewers and sewer structures shall be water and/or air tested, and closed circuit televised in accordance with the current City of Oakland Standard Specifications.

10. Sewer Laterals

TOC

- Laterals shall have a minimum of 2% slope
- The minimum size of the 2-way cleanout shall be 4 inches and shall be placed as to be accessible at all times

11. Permitting

TOC

Permits are required for all sewer work, including but not limited to the following:

- Excavation
- Obstruction
- Traffic control
- Other as necessary

12. Sewer Lines in Unusual Conditions

TOC

Where sewer pipe is exposed, a properly supported casing and carrier pipe system may be used with proper erosion control measures. For slopes exceeding 20 degrees or where pipe is to be installed in an unstable ground or soil conditions, the City requires stabilization of the area in accordance with geotechnical reports with specific design recommendations to support the proposal and all maintenance activities by the City. Geotechnical reports and design recommendations are subject to peer review.

For creek side properties or any area that may be categorized as such, the entire development and the proposed facility shall be subject to the requirements stated in the City's Creek Ordinance. For information, refer to: to http://www.oaklandpw.com/creeks/guide.htm. For information regarding drainage issues, refer to the City's Storm Drainage Design Guidelines: http://www.oaklandpw.com/engineering/storm_drainage_design_guidelines.htm

13. Submittals and Drawing Standards

TOC

Sewer drawing submittals shall include engineering plan/profile, lots to be serviced, laterals, property lines, and existing or proposed lines that may be close to or crossing the proposed sewer main. Sewer lines in paths, reserves or easements must indicate all existing improvements such as buildings, fences, trees, etc., including any watercourse. Sewer lines crossing watercourses will be required to have erosion control measures constructed along the watercourse and over the proposed sewer lines. Show the width of the easement and relative location of sewer line within the easement. Minimum easement width shall be 10 feet unobstructed, without encroachment of any improvement.

Distances between structures are to be shown as ± to the nearest foot (even if field measured). Tie structures and lines to monument lines, if available. Otherwise, tie to street lines, curb, points or easement lines with exact distances.

Construction drawing scales shall be 1:40 horizontally and 1:4 vertically, or 1:20 and 1:5, 1:50 and 1:5. The scales used shall be so indicated on the plan sheets.

All elevations shall be based upon the City of Oakland datum and shall be shown on the plans at all points having a change of grade. Cuts to the nearest one-half foot shall be shown on the plans at all structures and at other significant points.

14. Pump Systems

TOC

Special design of sewer force mains or other unusual features or structures require individual study and approval by the City Engineer.

All proposed sanitary sewer pump systems shall be submitted to the City Engineer/Public Works Director for determination of any circumstances to necessitate the pump design and its usage.

Submersible pump system proposed for residential use may be considered if the installation as a whole will be in conformance with the California Electrical Code and the California Division of Industrial Safety or any codes that may be applicable. In general, a raw sewage sump is classified as a hazardous location, which requires explosion proof equipment with UL label or equivalent construction. Float control equipment must have positive level control to preclude exposing the motor if the motor is not explosion proof. Where electrical devices are immersed in the sewage, controls must be safe with redundant controls and positive cutoff to avoid automatic total pump down that would expose motor where motor is not explosion proof.

15. Source Control

TOC

Use of sanitary sewer system is regulated by Oakland Municipal Code 13.08.130 to 13.08.200. Wasterwater discharge is monitored by EBMUD.

16. Submittals and Final As-Built Prior to Acceptance

TOC

For any new development, engineering calculations used for the design of all proposed sanitary sewer systems shall be submitted to the City of Oakland's Public Works Agency Engineering Design and Right-of-Way Management Division for review. The calculations shall include the following items:

- A plan showing proposed street system, existing and future tributary areas, current zoning, projected land use and any feature affecting the system design.
- Design flows including flows coming from outside the project limits.
- Pipe capacities, design flow and the percent of full pipe capacity used for each sanitary sewer reach, hydraulic profile for each pipe.
- Pipe size, length, slope, Manning's roughness coefficient (n), rim and invert elevations, based on the City of Oakland datum, of all proposed lines and locations of manholes and cleanouts.
- Analysis of the impact of the proposed development on the existing sanitary sewer system capacity. If the existing sewer system is under capacity, the developer is responsible for repairing or replacing the sanitary sewer pipes as a part of the conditions of approval on the building permit.
- Prior to acceptance, the final as-built sanitary sewer improvement plans shall be submitted to the City of Oakland's Public Works Agency Engineering Design and Right-of-Way Management Division in AutoCad™ files (unprotected, not read only, or password protected).

17. Impact Analysis and Mitigation Fee

TOC

The City of Oakland's infiltration/inflow correction program consists of a 25-year capital improvement program to rehabilitate the existing system in cost-effective areas and add capacity where needed. This program anticipated a 20% growth rate throughout Oakland.

With the completion of the City's 25-year program (rehabilitation of cost-effective subbasins and construction of additional relief sewers) the City's wastewater collection system will be sized to accommodate the anticipated growth and the resulting increase in wastewater flows.

If growth rate were to exceed projections, the capacity of the system has to be increased along with the capacity of other transport and treatment facilities.

A. Impact Analysis for New Development

All new development or redevelopment projects will require an impact analysis to ensure that the existing system has enough hydraulic capacity to accommodate the proposed development.

The City's collection system is comprised of local collection mains and a network of trunk system. The entire system is divided into drainage basins and subbasins. See List of Figures. The City's capacity improvement program has focused only on the trunk system assuming that the remainder of the system--local mains--have sufficient capacity. If the net increase in wastewater flow does not exceed projections, then impact analysis may be limited to the study of local mains serving the development. Otherwise, if the net increase in wastewater flow exceeds projections, the impact analysis must include both systems and it should analyze the impact of the additional wastewater from the development on the trunk system and local mains.

B. Mitigation Fee for Certain Development

Mitigation fee is assessed to all new development or redevelopment in sub-basins that have a growth rate greater than 20%. The fee represents the development's buy-in for the cost of the improvements identified by the 25-year plan in anticipation of the greater-than-20% development.

The City of Oakland Master Fee Schedule includes a reference to the sewer mitigation and is specific to each development based on an engineering analysis. In general, it represents the development's share of the growth-induced improvement costs in proportion to the development's net contribution of additional wastewater.

18. Tables

TOC

Table 1 – Average Flow Rate on Specific Developments

Development	Ave Daily Flow, gpd/unit	Unit
Auditorium	5	Seat
Automobile parking	25	1000 Gross square feet
Automobile repair garage	100	1000 Gross square feet
Bakery	300	1000 Gross square feet
Bar	20	Seat
Cafeteria	50	Seat
Carwash – coin operated	206	Stall
Carwash – in bay	412	5 gallons per minute (peak)
Church – fixed seat	5	Seat
Commercial	100	1000 Gross square feet
Community center	5	Occupant
Gymnasium	300	1000 Gross square feet
Hospital - Convalescent	85	Bed
Hospital – dog and cat	300	1000 Gross square feet
Hospital – non-profit	85	Bed
Hospital - surgical	500	Bed
Industrial	412	Gallons per minute (peak)
Jail	85	Inmate
Dog kennel / open	100	1000 Gross square feet
Laboratory - commercial	300	1000 Gross square feet
Laundromat - industrial	412	Gallons per minute (peak)
Laundromat	220	Washer
Manufacturing - industry	100	1000 Gross square feet
Medical building	300	1000 Gross square feet
Motel	150	Room
Office building	200	1000 Gross square feet
Dormitory – college or residential	85	Student
Residential – townhouses, set grade	330	Dwelling unit
Residential – bachelor/single	100	Dwelling unit
Residential – 1 bedroom apartment or condominium	150	Dwelling unit
Residential – 2 bedrooms apartment or condominium	200	Dwelling unit
Residential – 3 bedrooms apartment of condominium	250	Dwelling unit
Residential – boarding house	85	Bed
Residential - duplex	300	Dwelling unit
Residential – mobile home	200	Home space
Residential – single family dwelling	330	Dwelling unit
Residential – artist dwelling (2/3 area)	300	1000 Gross square feet
Residential – artist dwelling	100	Dwelling unit

Table 1 – Average Flow Rate on Specific Developments (cont'd)

Development	Ave Daily Flow, gpd/unit	Unit
Residential – guest house with kitchen	330	Dwelling unit
Rest home	85	Bed
Restaurant – fixed seat	50	Seat
Restaurant – take out	300	1000 Gross square feet
Retail area	100	1000 Gross square feet
School – day care center	10	Child
School – elementary / junior high	10	Student
School – high school	15	Student
School - kindergarten	10	35 Gross square feet
Theater – fixed seat	5	Seat

Conversion Factors:

cfs = 449 gpm

MGD = 1.55 cfs = 695 gpm

cu ft = 7.48 gal

19. List of Figures

TOC

For North Oakland:

For South Oakland:

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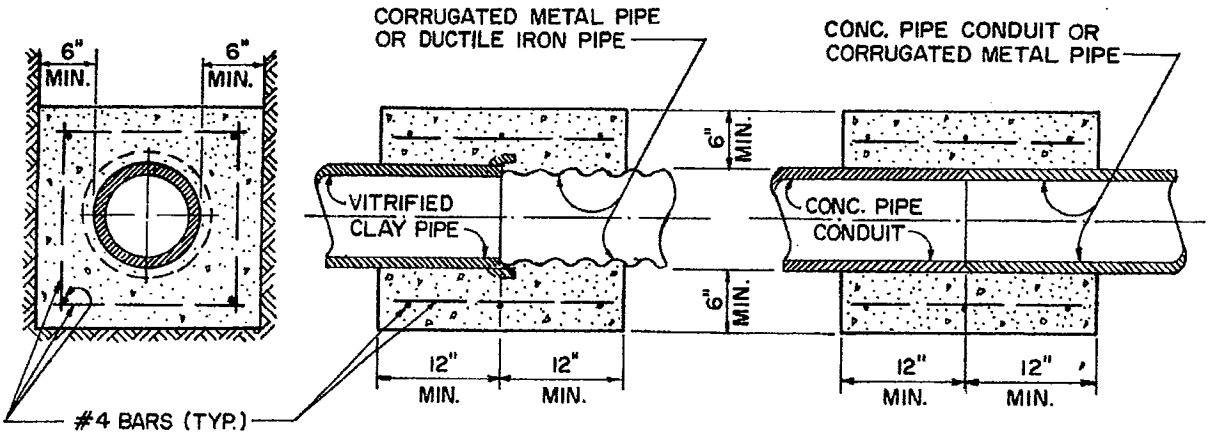
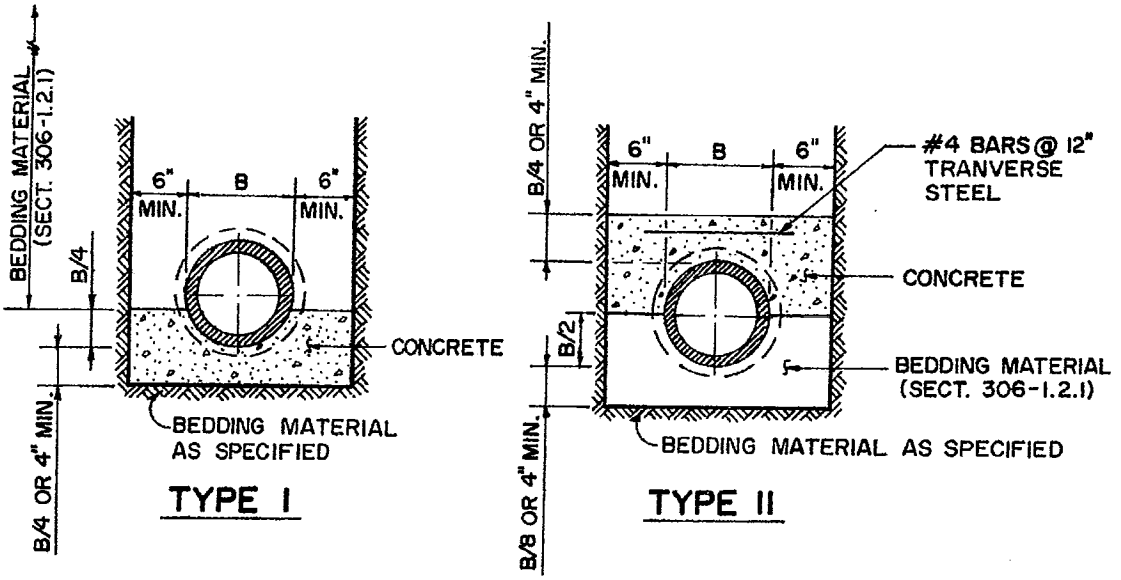
APPENDIX B - CITY OF OAKLAND STANDARD DETAILS FOR SANITARY SEWER FACILITIES



CONCRETE COLLAR DETAILS

NTS

NOTE: NOT ACCEPTABLE FOR SANITARY SEWERS.



CONCRETE BEDDING DETAILS

NTS

NOTES:

1. ALL CONCRETE FOR BEDDING AND COLLARS SHALL BE CLASS 450-B-2000 AS SPECIFIED IN SUBSECTION 201-1 OF THE STANDARD SPECIFICATIONS.
2. USE TYPE I CONCRETE BEDDING WHERE CUTS ARE 13.5' (4.1M) OR GREATER; TYPE II CONCRETE BEDDING WHERE PIPE COVER IS 3' (0.9I) OR LESS IN PAVED STREET AREAS.
3. USE REINFORCING STEEL WHEN DESIGNATED ON THE PLANS.
4. UNLESS OTHERWISE SPECIFIED, CONCRETE BEDDING AND COLLARS SHALL BE PAID FOR AS PART OF THE CONSTRUCTION OF PIPE SEWER OR CONDUITS.
5. CONVERSION TO METRIC EQUIVALENTS SHALL BE IN CONFORMANCE WITH ASTM E 380.

CITY OF OAKLAND | DESIGN AND CONSTRUCTION SERVICES DEPARTMENT

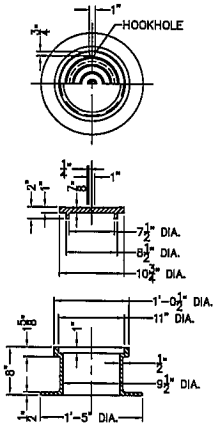
CONCRETE COLLAR AND BEDDING

ENGINEERING DESIGN MANAGER

DATE: JANUARY 2002

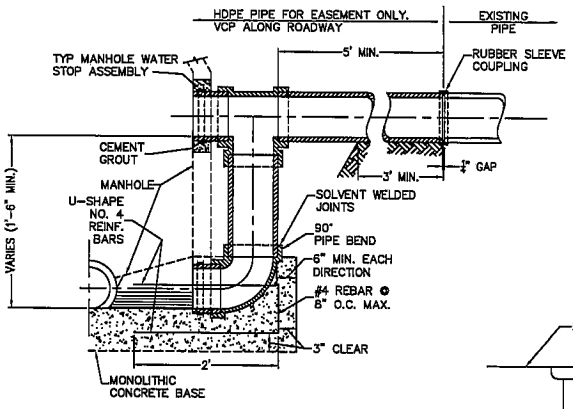
REV. DATE: _____

DWG. D-1

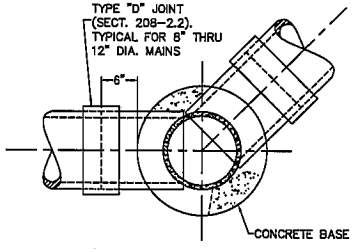


FRAME AND COVER

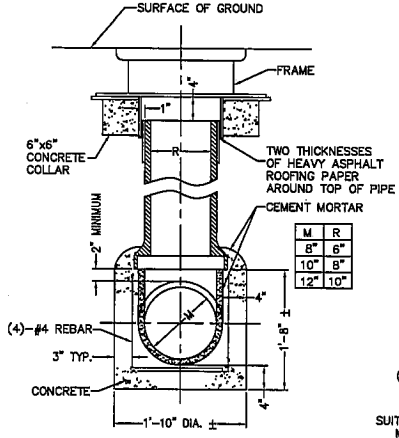
LAMPHOLE AND CLEANOUT



DROP CONNECTION



SECTIONAL PLAN

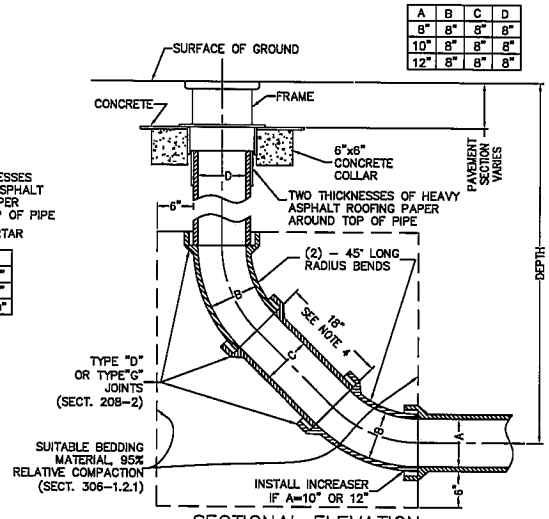


SECTIONAL ELEVATION

LAMPHOLE

DROP CONNECTION

1. COVERS, PANS AND FRAMES TO CONFORM TO SECTION 206-3.
2. ALL CONTACT AND BEARING SURFACES OF BOTH FRAME AND COVER SHALL BE MACHINED TO FIT ACCURATELY.
3. PANS SHALL BE PLACED IN ALL LAMPHOLES.
4. FOR CLEANOUT LESS THAN 4' DEEP, OMIT 18" SECTION.



SECTIONAL ELEVATION

CLEANOUT

CITY OF OAKLAND

DESIGN AND CONSTRUCTION SERVICES DEPARTMENT

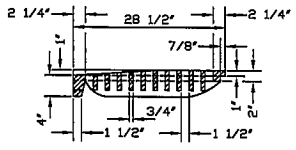
LAMPHOLE, CLEANOUT AND DROP CONNECTION

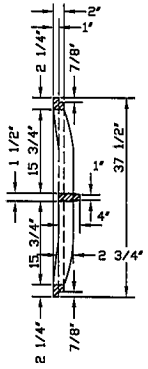
ENGINEERING DESIGN MANAGER

DATE : FEBRUARY 2002

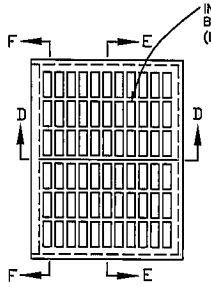
REV. DATE :

DRAWING D-2





SECTION E–E



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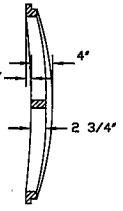
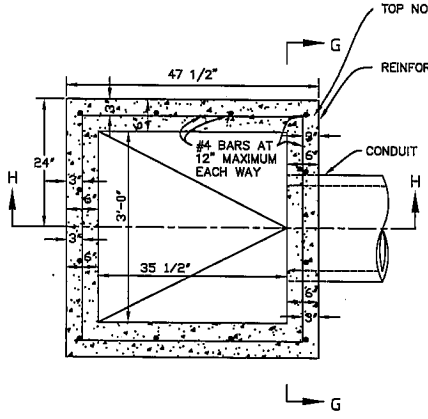
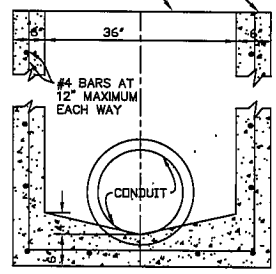


SECTION F–F



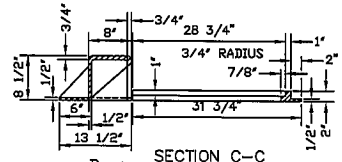


SECTION G–G

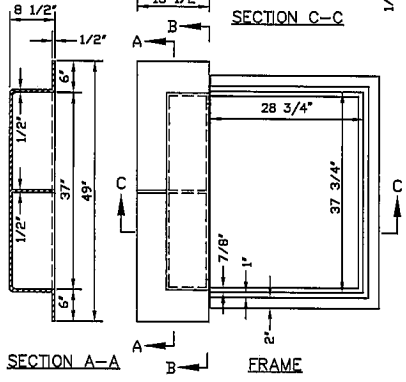
SYMMETRICAL ABOUT CENTER LINE

GENERAL NOTES

1. TYPE "A" INLET IS NO LONGER USED ON NEW CONSTRUCTION
2. INSTALL NEW GRATE DETAIL TO RETROFIT TYPE "A" INLET – BIKE PROOF GRATE PER GRATE DETAIL
3. LOCATION AND DIRECTION OF CONDUITS ENTERING OR LEAVING INLETS TO BE SHOWN ON GENERAL PLANS.
4. GRATE AND FRAME SHALL BE ASSEMBLED AND MADE TO FIT BEFORE DELIVERY.
5. THE GRATE SHALL BE HOT–DIP GALVANIZED IN ACCORDANCE WITH ASTM A–123.
6. ALL BEARING BARS AND CROSS BARS OF GRATE SHALL BE RESISTANCE WELDED OR ELECTROFORGED INTO A ONE PIECE CONSTRUCTION.
7. ALL METAL SHALL BE STRUCTURAL GRADE STEEL IN ACCORDANCE WITH ASTM A–36.
8. A VEE CHANNEL 4" DEEP SHALL JOIN TWO OR MORE CONDUITS ENTERING AN INLET.
9. CONSTRUCT STEPS IN INLETS WITH A DEPTH OF 4' OR GREATER



SECTION C–C



SECTION A–A

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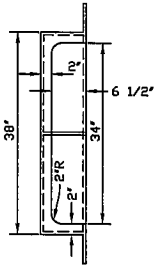
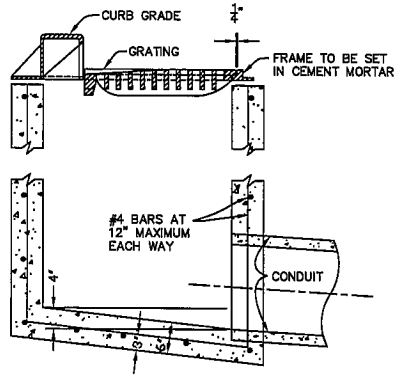


ELEVATION B–B



SECTION H–H

NOTE: THIS PLAN IS NOT A LEGAL ENGINEERING DOCUMENT BUT AN ELECTRONIC DUPLICATE. THE SIGNED CITY OF OAKLAND STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION IS AVAILABLE FOR PURCHASE FROM THE CONTRACT ADMINISTRATION DEPARTMENT.

CITY OF OAKLAND

DESIGN AND CONSTRUCTION SERVICES DEPARTMENT

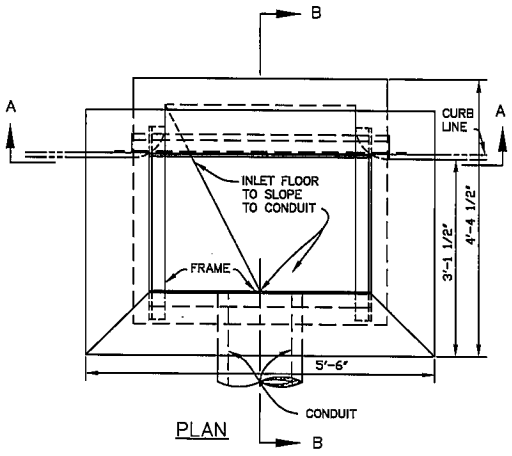
TYPE "A" INLET

ENGINEERING DESIGN MANAGER

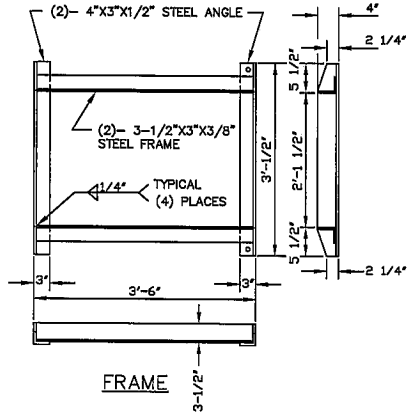
DATE : JANUARY 2002

REV. DATE :

DRAWING D-3



PLAN



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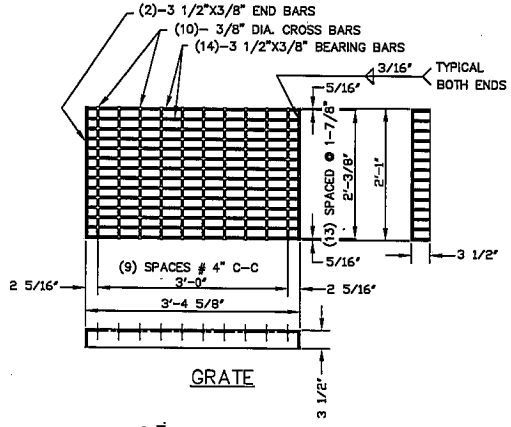
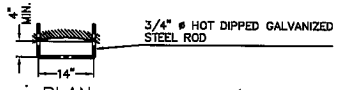


GRATE



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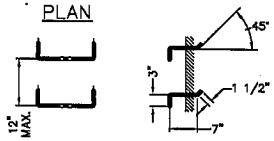
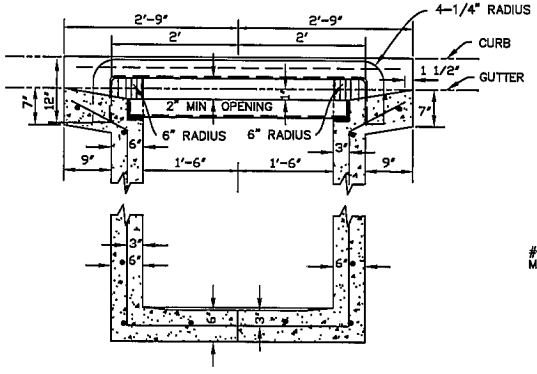
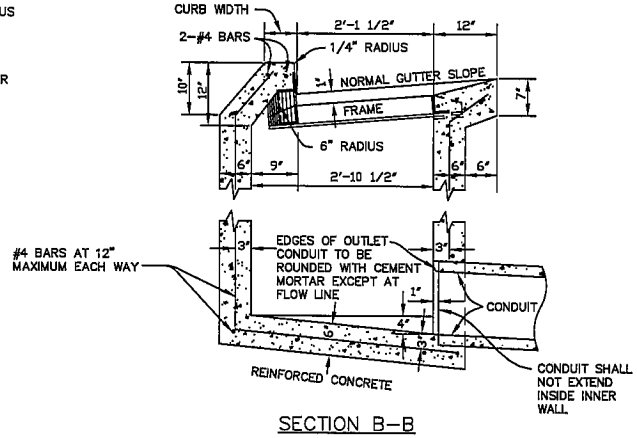


PROFILE SECTION

STEP DETAILS



SECTION A-A



SECTION B-B

GENERAL NOTES

1. LOCATION AND DIRECTION OF CONDUITS ENTERING OR LEAVING INLETS TO BE SHOWN ON GENERAL PLANS.
2. GRATE AND FRAME SHALL BE ASSEMBLED AND MADE TO FIT BEFORE DELIVERY.
3. THE GRATE SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH ASTM A-123.
4. ALL BEARING BARS AND CROSS BARS OF GRATE SHALL BE RESISTANCE WELDED OR ELECTROFORGED INTO A ONE PIECE CONSTRUCTION.
5. ALL METAL SHALL BE STRUCTURAL GRADE STEEL IN ACCORDANCE WITH ASTM A-36.
6. A VEE CHANNEL 4" DEEP SHALL JOIN TWO OR MORE CONDUITS ENTERING AN INLET.
7. CONSTRUCT STEPS IN INLETS WITH A DEPTH OF 4' OR GREATER

CITY OF OAKLAND

DESIGN AND CONSTRUCTION SERVICES DEPARTMENT

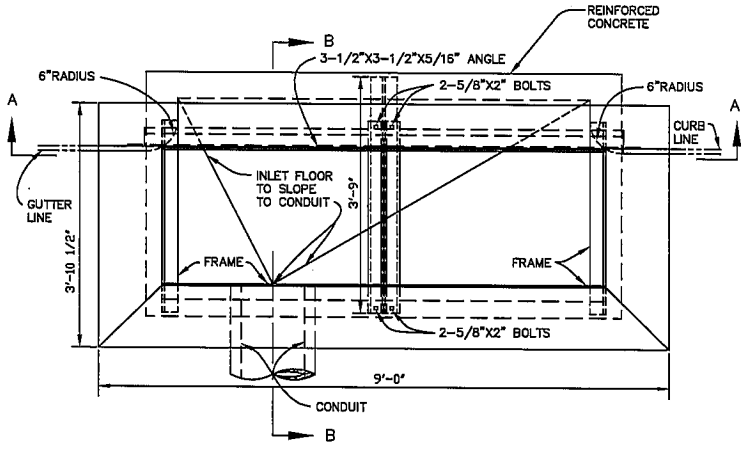
TYPE "B" INLET

ENGINEERING DESIGN MANAGER

DATE : JANUARY 2002

REV. DATE :

DRWG. D-4



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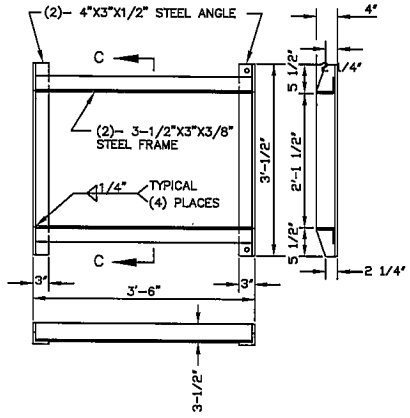

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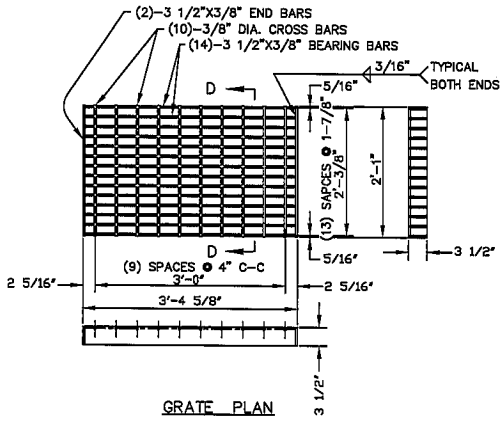

GRATE PLAN

GENERAL NOTES

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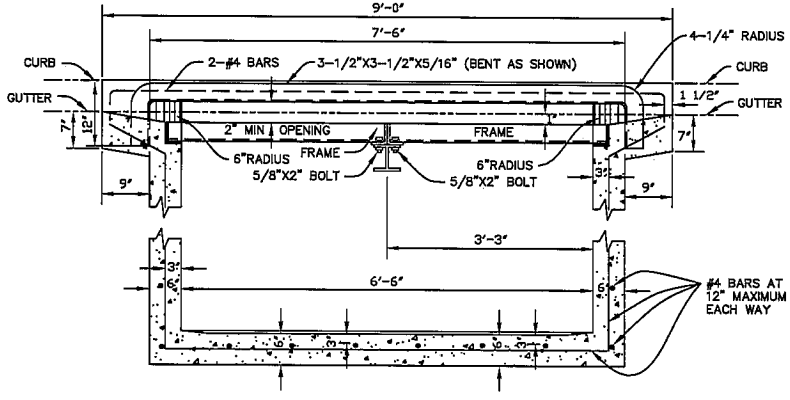
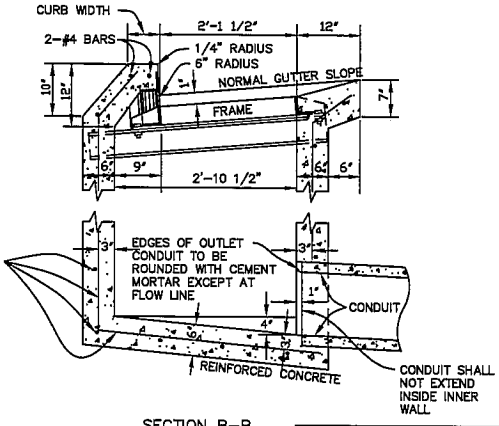
7. CONSTRUCT STEPS IN INLETS WITH A DEPTH OF 4' OR GREATER



SECTION A-A



SECTION B-B

CITY OF OAKLAND

DESIGN AND CONSTRUCTION SERVICES DEPARTMENT

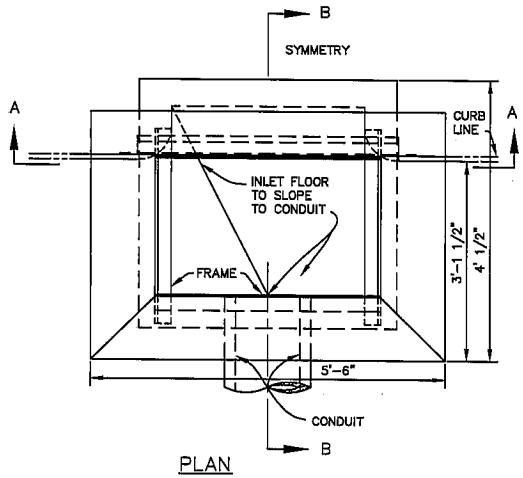
TYPE "C" INLET

ENGINEERING DESIGN MANAGER

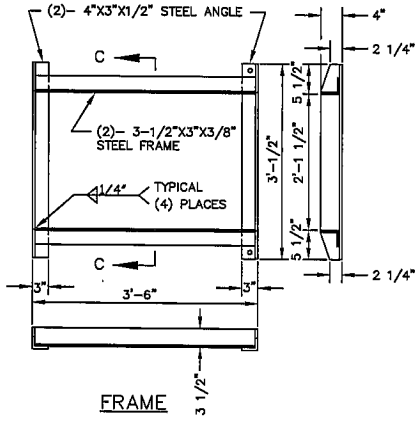
DATE : JANUARY 2002

REV. DATE :

DRAWING D-5



PLAN



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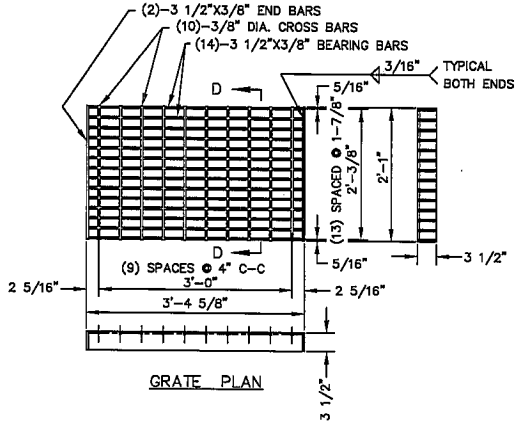
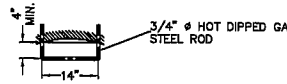


GRATE PLAN



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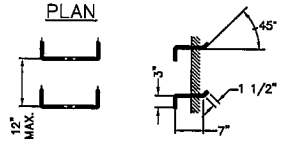
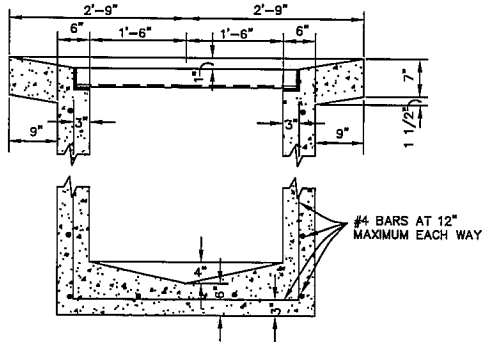


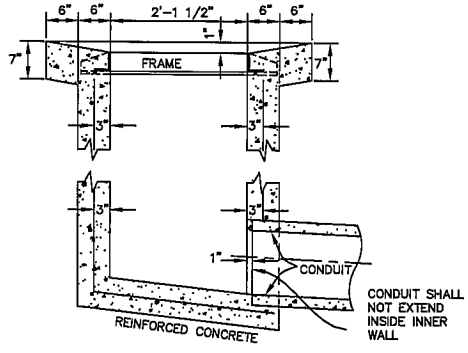
PROFILE SECTION

STEP DETAILS

NOTE: THIS PLAN IS NOT A LEGAL ENGINEERING DOCUMENT BUT AN ELECTRONIC DUPLICATE. THE SIGNED CITY OF OAKLAND STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION IS AVAILABLE FOR PURCHASE FROM THE CONTRACT ADMINISTRATION DEPARTMENT.



SECTION A-A



SECTION B-B

GENERAL NOTES

1. LOCATION AND DIRECTION OF CONDUITS ENTERING OR LEAVING INLETS TO BE SHOWN ON GENERAL PLANS.
2. GRATE AND FRAME SHALL BE ASSEMBLED AND MADE TO FIT BEFORE DELIVERY.
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6. A VEE CHANNEL 4" DEEP SHALL JOIN TWO OR MORE CONDUITS ENTERING AN INLET.
7. CONSTRUCT STEPS IN INLETS WITH A DEPTH OF 4' OR GREATER

CITY OF OAKLAND

DESIGN AND CONSTRUCTION SERVICES DIVISION

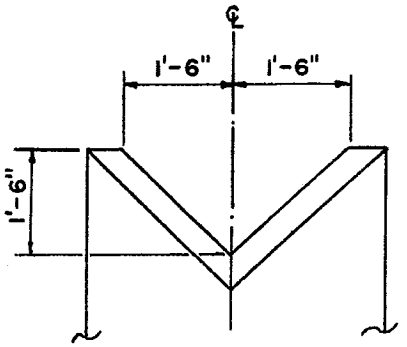
TYPE "D" INLET

ENGINEERING DESIGN MANAGER

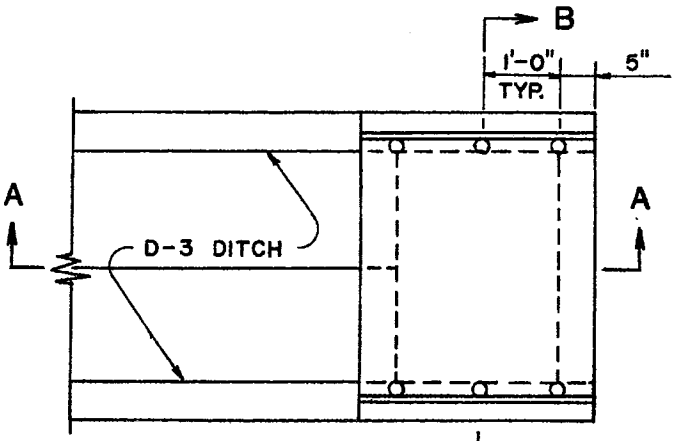
DATE : JANUARY 2002

REV. DATE :

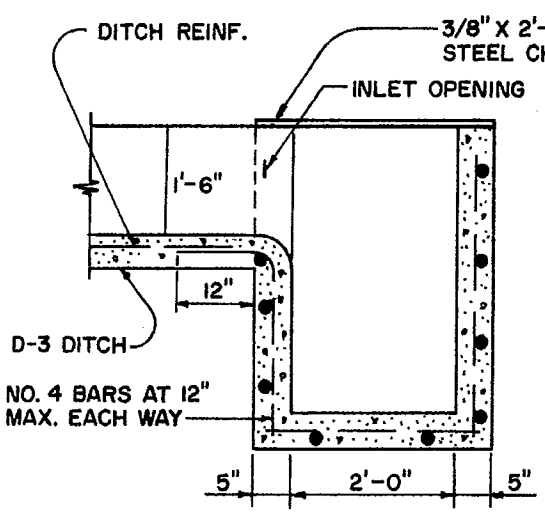
DRAWING D-6



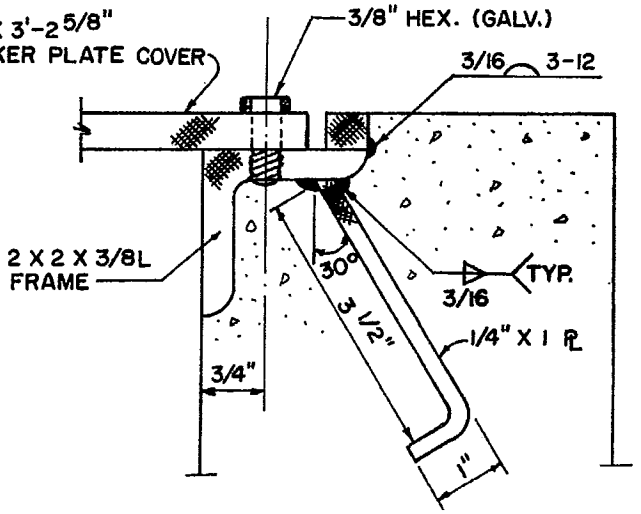
INLET OPENING



PLAN

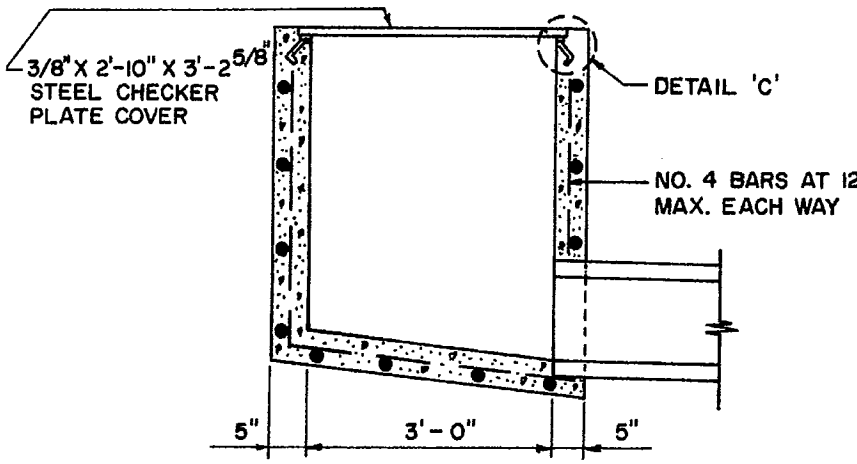


SECTION A-A



DETAIL 'C'

FRAME, COVER AND BOLTS
SHALL BE HOT - DIP GALVINIZED



SECTION B-B

NOTE: THIS PLAN IS NOT A LEGAL ENGINEERING DOCUMENT BUT AN ELECTRONIC DUPLICATE. THE SIGNED CITY OF OAKLAND STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION IS AVAILABLE FOR PURCHASE FROM THE CONTRACT ADMINISTRATION DEPARTMENT.

CITY OF OAKLAND | DESIGN AND CONSTRUCTION SERVICES DEPARTMENT

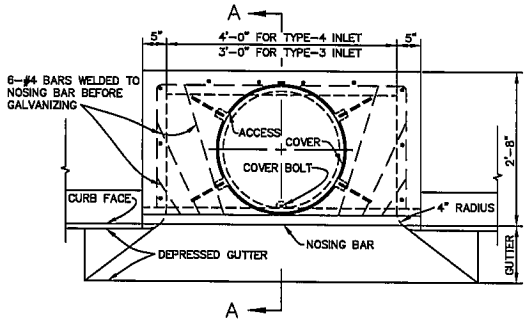
D-3 INLET DETAILS

ENGINEERING DESIGN MANAGER

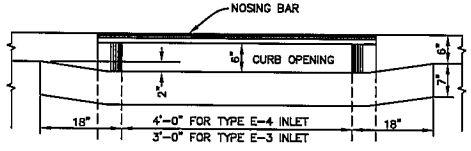
DATE: JANUARY 2002

REV. DATE: _____

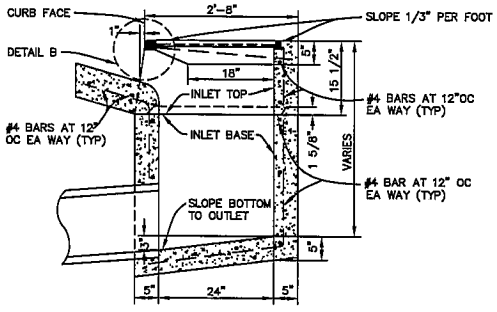
DWG. D-7



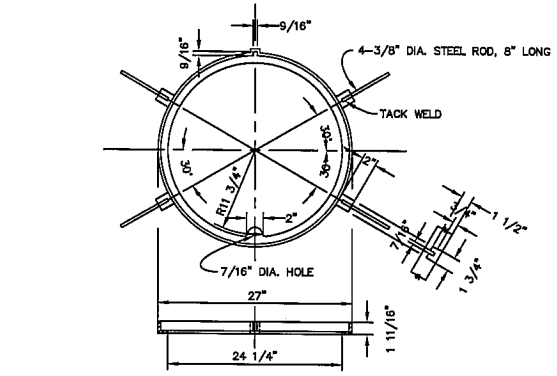
PLAN



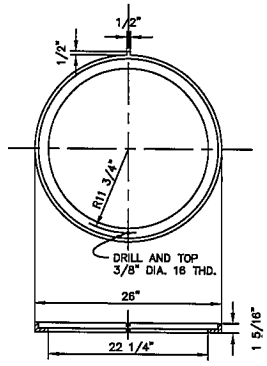
ELEVATION



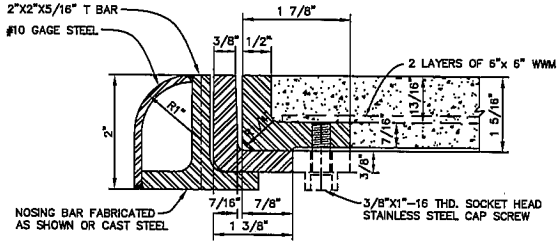
SECTION A–A



CAST IRON
ACCESS OPENING RING



CAST IRON
ACCESS COVER RING



DETAIL B

GENERAL NOTES

1. LOCATION AND DIRECTION OF CONDUITS ENTERING OR LEAVING INLETS TO BE SHOWN ON GENERAL PLANS.
2. GRATE AND FRAME SHALL BE ASSEMBLED AND MADE TO FIT BEFORE DELIVERY.
3. THE GRATE SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH ASTM A-123.
4. ALL BEARING BARS AND CROSS BARS OF GRATE SHALL BE RESISTANCE WELDED OR ELECTROFORGED INTO A ONE PIECE CONSTRUCTION.
5. ALL METAL SHALL BE STRUCTURAL GRADE STEEL IN ACCORDANCE WITH ASTM A-36.
6. A VEE CHANNEL 4" DEEP SHALL JOIN TWO OR MORE CONDUITS ENTERING AN INLET.
7. CONSTRUCT STEPS IN INLETS WITH A DEPTH OF 4' OR GREATER

CITY OF OAKLAND

DESIGN AND CONSTRUCTION SERVICES DEPARTMENT

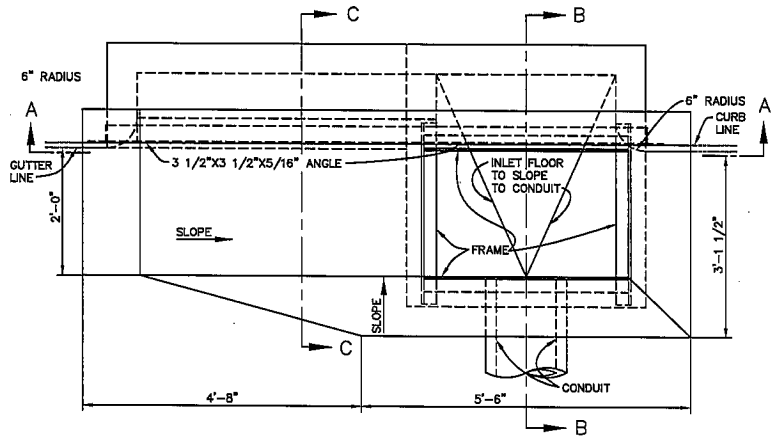
TYPE "E-3" INLET AND TYPE "E-4" INLET

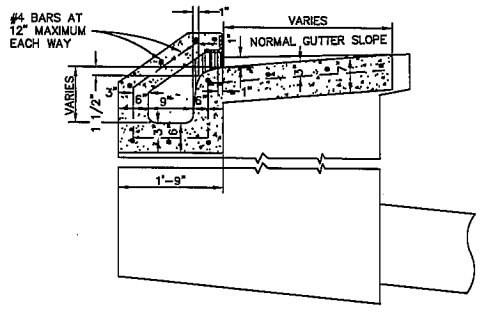
ENGINEERING DESIGN MANAGER

DATE : JANUARY 2002

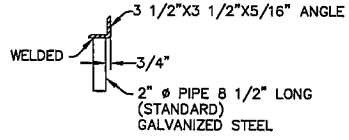
REV. DATE :

D-8

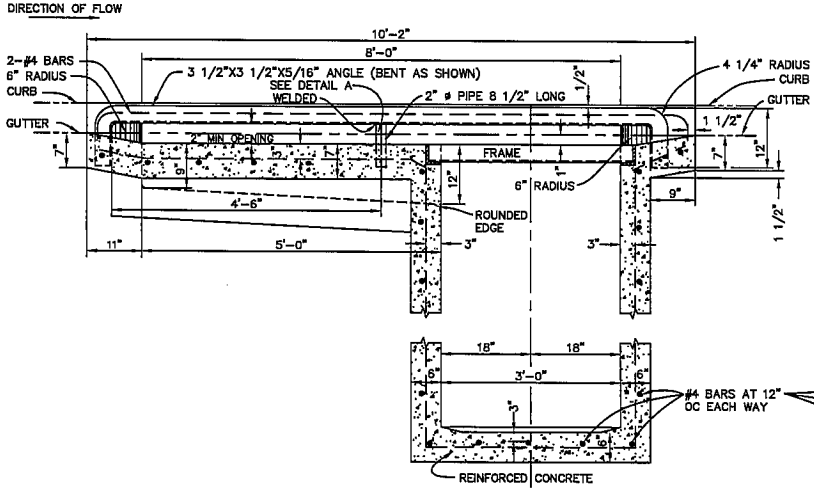




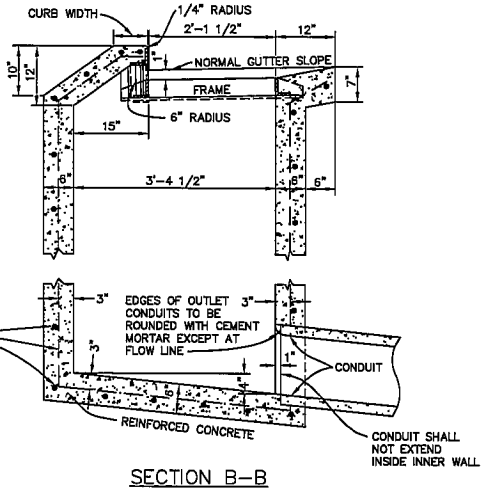
SECTION C–C



DETAIL A



SECTION A–A



SECTION B–B

GENERAL NOTES

1. LOCATION AND DIRECTION OF CONDUITS ENTERING OR LEAVING INLETS TO BE SHOWN ON GENERAL PLANS.
2. GRATE AND FRAME SHALL BE ASSEMBLED AND MADE TO FIT BEFORE DELIVERY.
3. THE GRATE SHALL BE HOT–DIP GALVANIZED IN ACCORDANCE WITH ASTM A–123.
4. ALL BEARING BARS AND CROSS BARS OF GRATE SHALL BE RESISTANCE WELDED OR ELECTROFORGED INTO A ONE PIECE CONSTRUCTION.
5. ALL METAL SHALL BE STRUCTURAL GRADE STEEL IN ACCORDANCE WITH ASTM A–36.
6. A VEE CHANNEL 4" DEEP SHALL JOIN TWO OR MORE CONDUITS ENTERING AN INLET.
7. CONSTRUCT STEPS IN INLETS WITH A DEPTH OF 4' OR GREATER

CITY OF OAKLAND

DESIGN AND CONSTRUCTION SERVICES DEPARTMENT

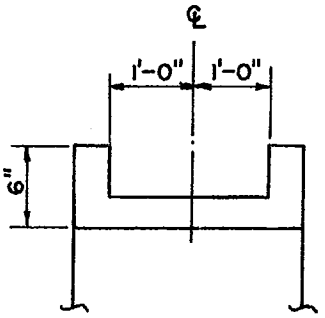
TYPE "F" INLET

ENGINEERING DESIGN MANAGER

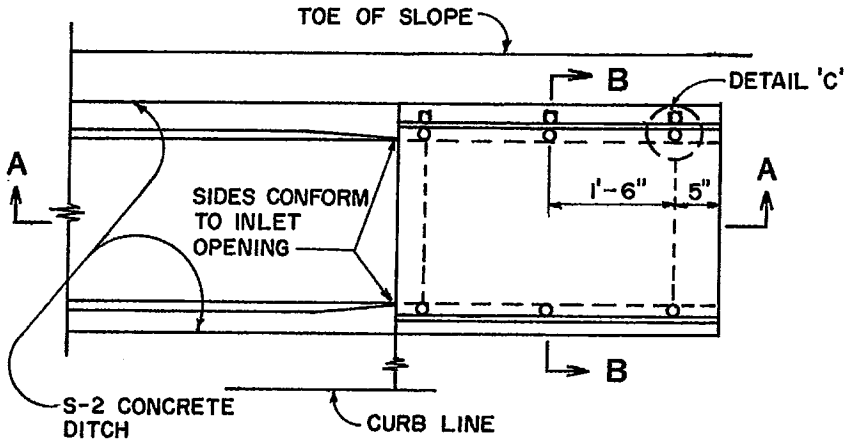
DATE : JANUARY 2002

REV. DATE :

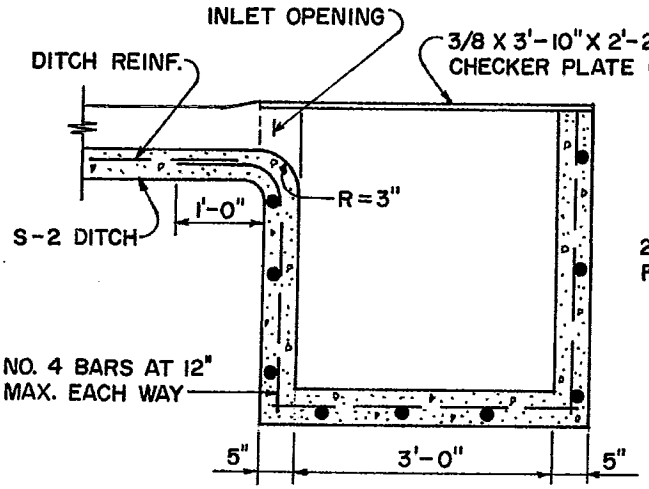
D-9



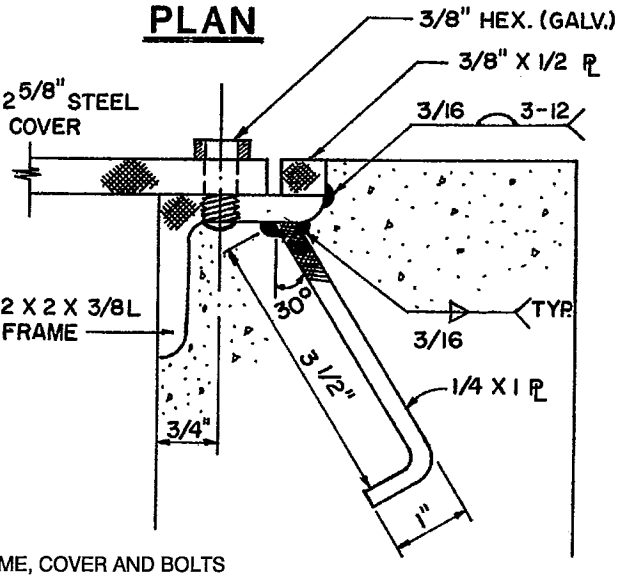
INLET OPENING



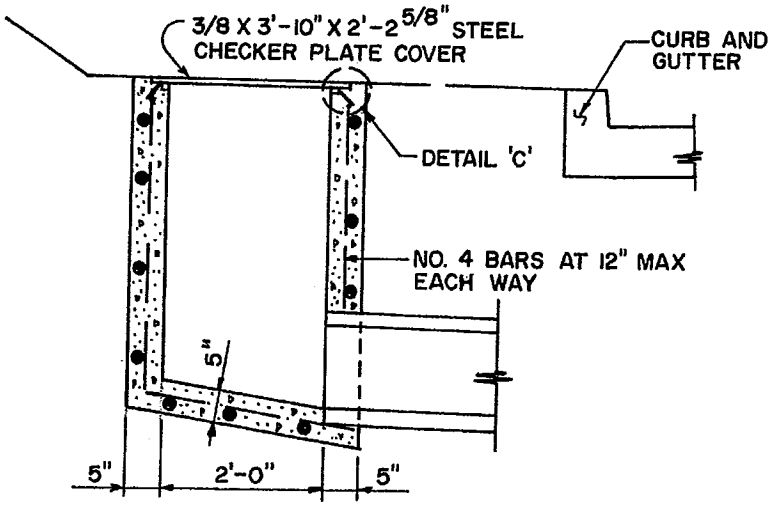
PLAN



SECTION A-A



FRAME, COVER AND BOLTS SHALL BE HOT - DIP GALVINIZED



SECTION B-B

DETAIL 'C'

FRAME, COVER AND BOLTS SHALL BE HOT - DIP GALVINIZED

NOTE: THIS PLAN IS NOT A LEGAL ENGINEERING DOCUMENT BUT AN ELECTRONIC DUPLICATE. THE SIGNED CITY OF OAKLAND STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION IS AVAILABLE FOR PURCHASE FROM THE CONTRACT ADMINISTRATION DEPARTMENT.

CITY OF OAKLAND | DESIGN AND CONSTRUCTION SERVICES DEPARTMENT

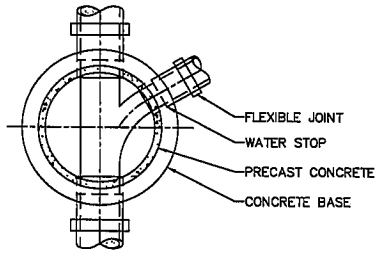
S-2 INLET
(REINFORCED CONCRETE)

ENGINEERING DESIGN MANAGER

DATE: JANUARY 2002

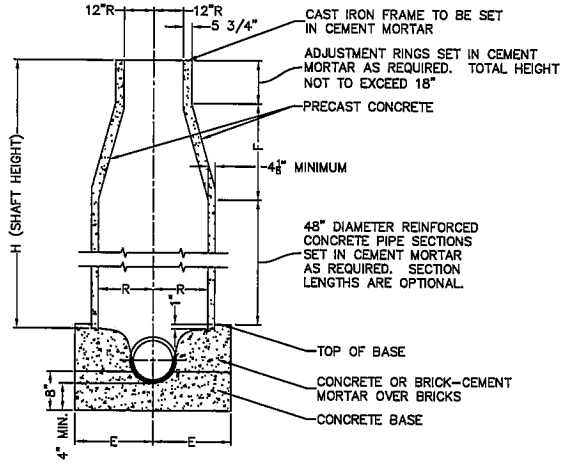
REV. DATE: _____

DWG. D-10



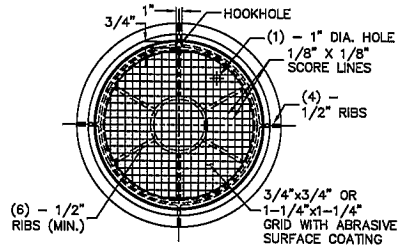
SECTIONAL PLAN

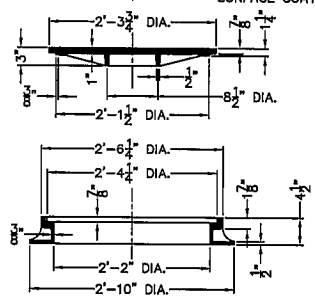
H	R	E	F
3'-6" OR LESS	1'-6"	2'-3"	2'-6" MAXIMUM
OVER 3'-6"	2'-0"	2'-9"	3'-0" MAXIMUM



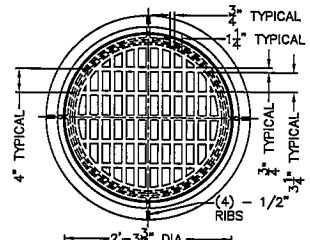
SECTIONAL ELEVATION

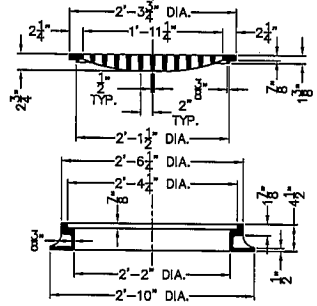
SHAFT AND BASE DETAILS





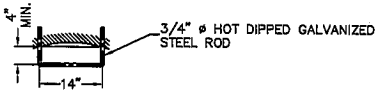
TYPE H



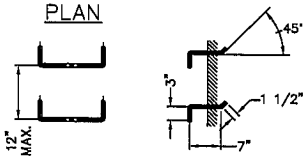


TYPE K

FRAME AND COVER DETAILS



PLAN



PROFILE SECTION

STEP DETAILS

GENERAL NOTES

1. FRAMES AND COVERS TO CONFORM TO SECTION 206-3.
2. ALL CONTACT AND BEARING SURFACES OF BOTH FRAME AND COVER SHALL BE MACHINED TO FIT ACCURATELY
3. TYPE H FRAME AND COVER ARE USED ON MANHOLES IN PUBLIC STREETS, DRIVEWAYS, PATHS, RESERVES AND RIGHTS-OF-WAY AND WHERE INDICATED ON PLANS (TYPE I-H MANHOLES).
   TYPE K FRAME AND COVER ARE USED ON MANHOLES WHERE INDICATED ON PLANS (TYPE I-K MANHOLES).
4. CONVERSION TO METRIC EQUIVALENTS SHALL BE IN CONFORMANCE WITH ASTM A-380.
5. STEPS SHALL BE 3/4" DIA. HOT DIPPED GALVANIZED STEEL ROD AND OF THE DROP TYPE.
6. THE CONTRACTOR SHALL HAVE THE OPTION TO USE POLYPROPYLENE PLASTIC STEPS IN PRECAST MANHOLES (PS2-PF MANHOLE STEPS MANUFACTURED BY M. A. INDUSTRIES INC. OR APPROVED EQUAL).

CITY OF OAKLAND

DESIGN AND CONSTRUCTION SERVICES DEPARTMENT

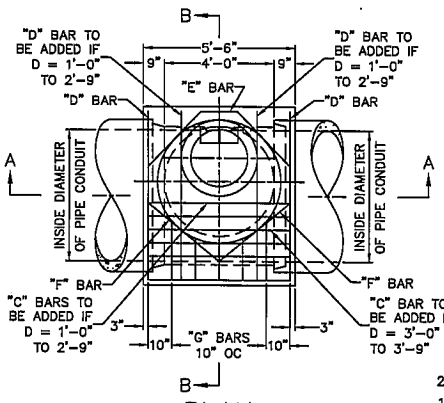
MANHOLE TYPE 1

ENGINEERING DESIGN MANAGER

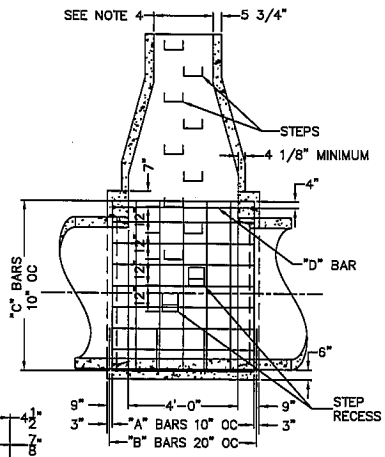
DATE : FEBRUARY 2002

REV. DATE :

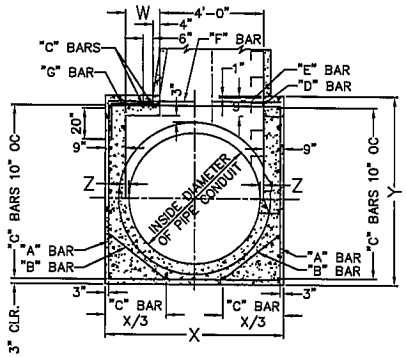
DRAWING D-11



PLAN



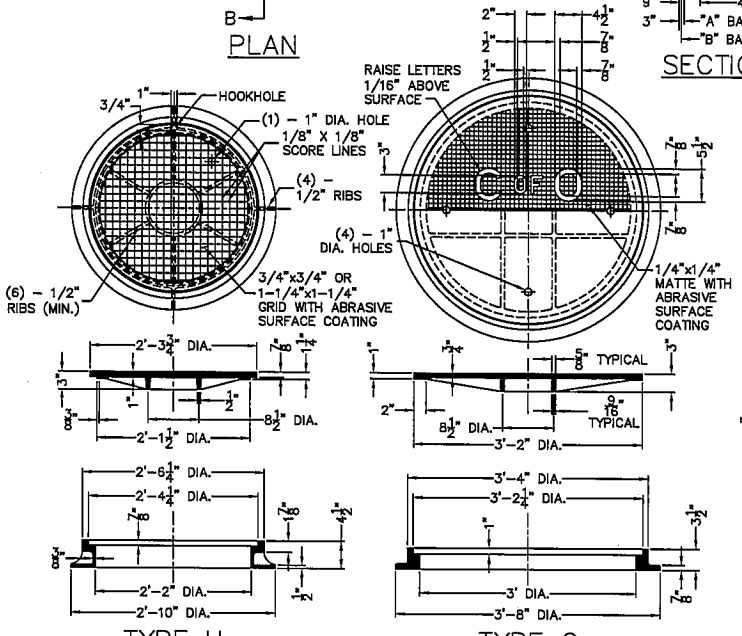
SECTION A–A



SECTION B–B

GENERAL NOTES

1. PRECAST CONCRETE SHAFT IS OPTIONAL WHEN "D" IS 4'–0" OR GREATER.
2. ALL CONTACT AND BEARING SURFACES OF BOTH FRAME AND COVER SHALL BE MACHINED TO FIT ACCURATELY.
3. CONVERSION TO METRIC EQUIVALENTS SHALL BE IN ACCORDANCE WITH ASTM A–380.
4. SHAFT OPENING FOR TYPE "H" FRAMES AND COVERS SHALL BE 2'–0" DIAMETER.
5. STEPS SHALL BE 3/4" DIAM. HOT DIPPED GALVANIZED STEEL ROD OR FIBERGLASS. SEE SHEET D–11 FOR STEP DETAILS.
6. ALL STEEL A305 REINFORCING STEEL NO. 4 BARS.
7. REINFORCING STEEL MAY BE SPREAD TO ADMIT SMALL PIPES ENTERING MANHOLE SIDES.
8. WHERE TWO SIZES OF PIPE ENTER AND LEAVE A MANHOLE, USE DIMENSIONS AND QUANTITIES FOR THE LARGER SIZE PIPE.



FRAME AND COVER DETAILS

INSIDE DIAMETER OF PIPE CONDUIT	MANHOLE DIMENSIONS				CUBIC YARDS OF CONCRETE	"A" BAR		1'–10" "B" BAR		5'–2" "C" BAR		"D" BAR		2'–1" "E" BAR		"F" BAR		1'–8" "G" BAR		POUNDS OF REINFORCING STEEL
	W	X	Y	Z		NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	
36"		5'–6"	4'–9"	6"	2.88	7	14'–0"	4	7'–8"	17	5'–2"			2	6'–10"					153.8
39"		5'–6"	5'–1/2"	4 1/2"	2.93	7	14'–7"	4	7'–4"	19	5'–2"			2	6'–10"					164.0
42"		5'–6"	5'–4"	3"	2.97	7	15'–2"	4	7'–0"	19	5'–2"			2	6'–10"					164.4
45"		5'–6"	5'–7 1/2"	1 1/2"	3.00	7	15'–9"	4	6'–8"	19	5'–2"			2	6'–10"					166.5
48"	4"	5'–10"	6'–2"	2"	3.30	7	17'–2"	4	7'–0"	19	5'–2"	2	5'–6"	2	6'–10"	SEE	"E" BAR			181.1
51"	7"	6'–1"	6'–5 1/2"	2"	3.60	7	18'–0"	4	7'–2"	19	5'–2"	2	5'–9"	2	6'–10"	SEE	"E" BAR	5	2'–9"	193.9
54"	10"	6'–4"	6'–9"	2"	3.80	7	18'–10"	4	7'–5"	23	5'–2"	2	6'–0"	1	6'–10"	2	2'–9"	5	3'–0"	206.9
57"	1'–1"	6'–7"	7'–1/2"	2"	4.10	7	19'–8"	4	7'–7"	23	5'–2"	2	6'–3"	1	6'–10"	2	3'–4"	5	3'–3"	213.2
60"	1'–4"	6'–10"	7'–4"	2"	4.20	7	20'–6"	4	7'–10"	23	5'–2"	2	6'–6"	1	6'–10"	2	3'–9"	5	3'–6"	219.5
63"	1'–7"	7'–1"	7'–7 1/2"	2"	4.50	7	21'–4"	4	8'–1"	25	5'–2"	2	6'–9"	1	6'–10"	2	4'–1"	5	3'–9"	239.2
66"	1'–10"	7'–4"	7'–11"	2"	4.90	7	22'–2"	4	8'–3"	25	5'–2"	2	7'–0"	1	6'–10"	2	4'–5"	5	4'–0"	245.3
69"	2'–1"	7'–7"	8'–2 1/2"	2"	5.20	7	23'–0"	4	8'–5"	26	5'–2"	2	7'–3"	1	6'–10"	2	4'–9"	5	4'–3"	254.6
72"	2'–4"	7'–10"	8'–6"	2"	5.30	7	23'–10"	4	8'–8"	28	5'–2"	2	7'–6"	1	6'–10"	2	5'–1"	5	4'–6"	267.7
75"	2'–7"	8'–1"	8'–9 1/2"	2"	5.70	7	24'–8"	4	8'–11"	28	5'–2"	2	7'–9"	1	6'–10"	2	5'–4"	5	4'–9"	273.7

CITY OF OAKLAND

DESIGN AND CONSTRUCTION SERVICES DEPARTMENT

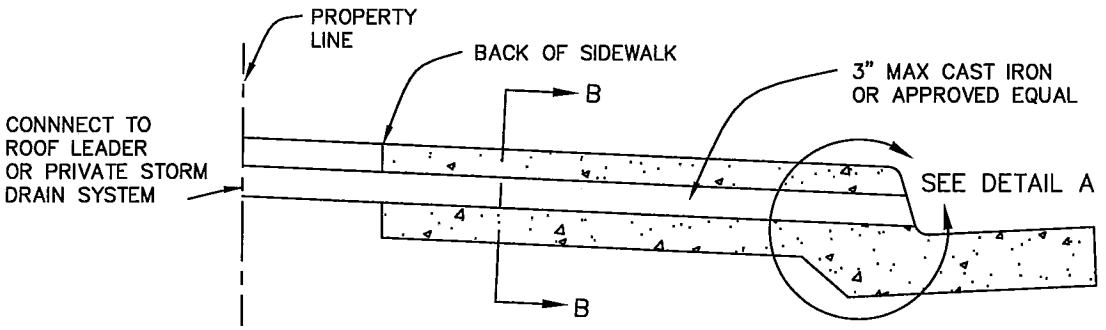
MANHOLE TYPE 2
(FOR 36" TO 75" DIA. PIPE CONDUIT)

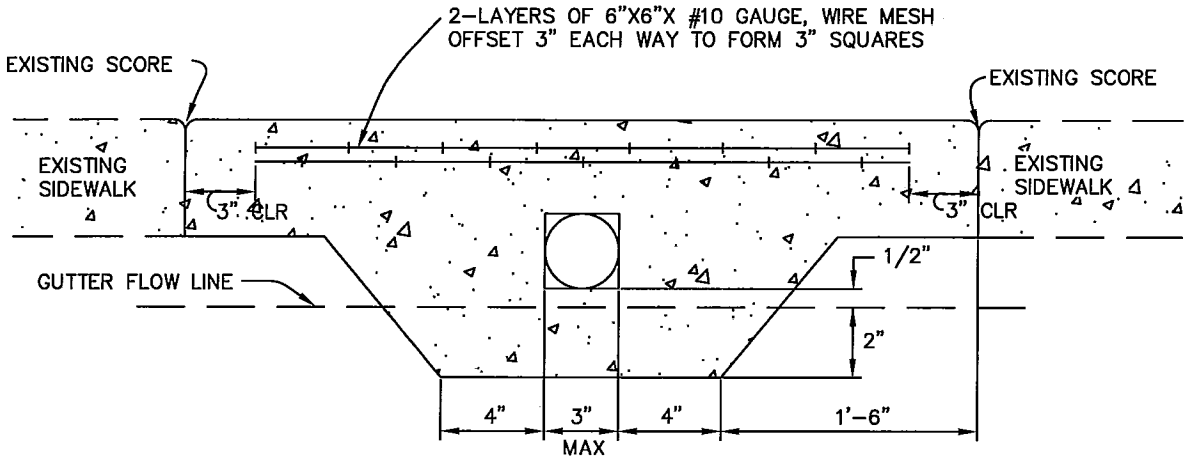
ENGINEERING DESIGN MANAGER

DATE : FEBRUARY 2002

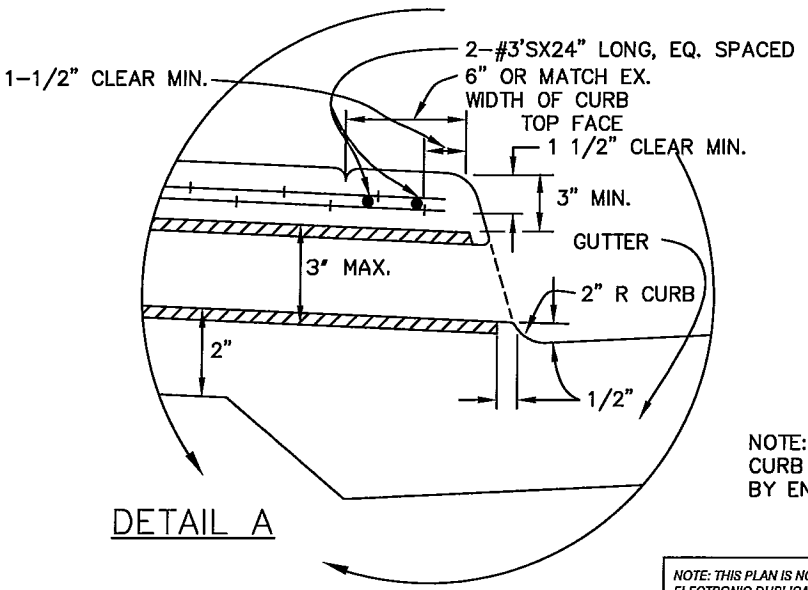
REV. DATE :

DRAWING D-12





SECTION B–B



DETAIL A

NOTE: BORING THROUGH CURB ONLY AS APPROVED BY ENGINEER.

NOTE: THIS PLAN IS NOT A LEGAL ENGINEERING DOCUMENT BUT AN ELECTRONIC DUPLICATE. THE SIGNED CITY OF OAKLAND STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION IS AVAILABLE FOR PURCHASE FROM THE CONTRACT ADMINISTRATION DEPARTMENT.

CITY OF OAKLAND | DESIGN AND CONSTRUCTION SERVICES DEPARTMENT

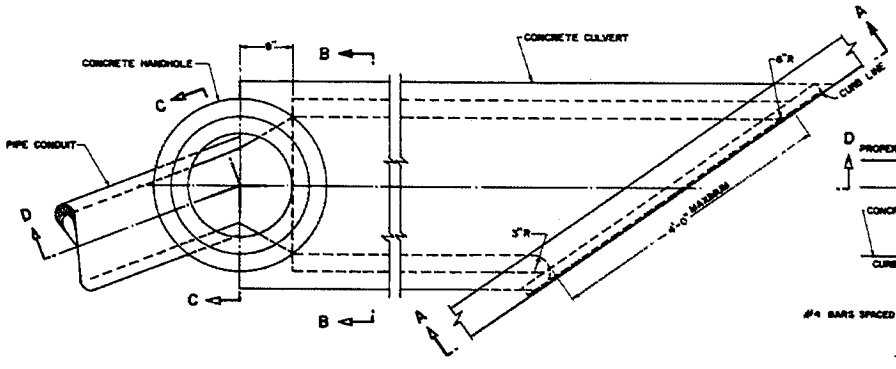
SIDEWALK UNDERDRAIN

ENGINEERING DESIGN MANAGER

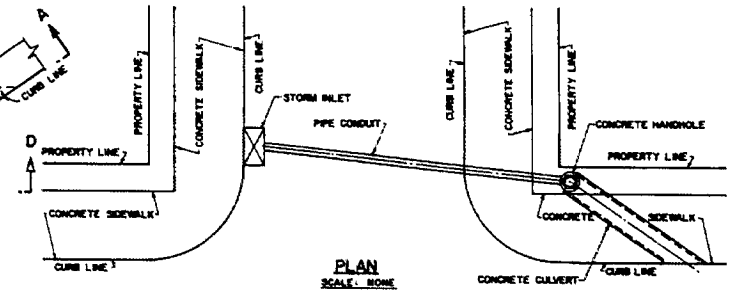
DATE: JANUARY 2002

REV. DATE: _____

DWG. D-13



PLAN



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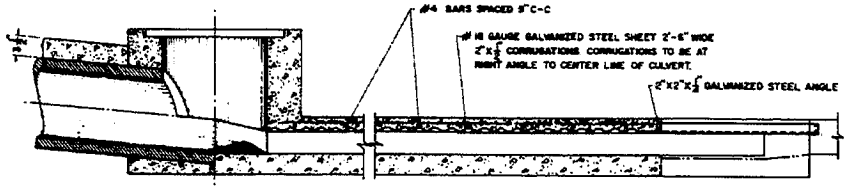
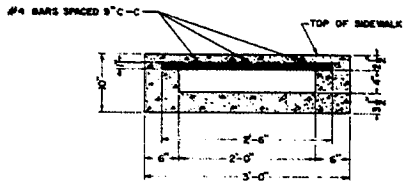
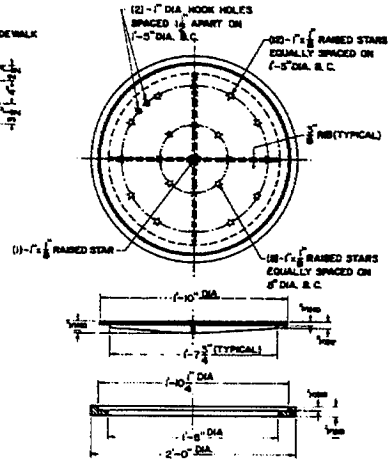
SCALE: NONE



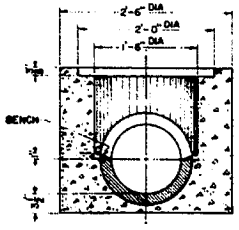
SECTION D-D



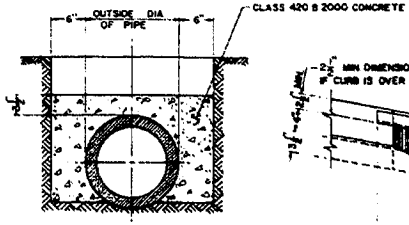
SECTION B-B



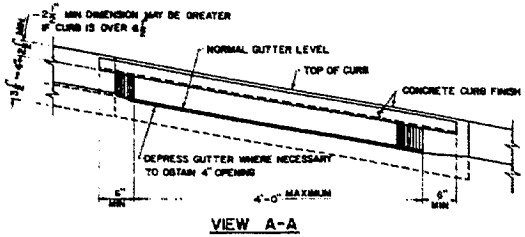
FRAME AND COVER DETAILS



SECTION C-C



TYPICAL TRENCH BACKFILL IN SIDEWALK AREA



VIEW A-A

NOTE

ALL CONCRETE TO BE CLASS 470 C 2500 IN ACCORDANCE WITH SUB-SECTION 201-1 UNLESS OTHERWISE NOTED

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CITY OF OAKLAND

DESIGN AND CONSTRUCTION SERVICES DEPARTMENT

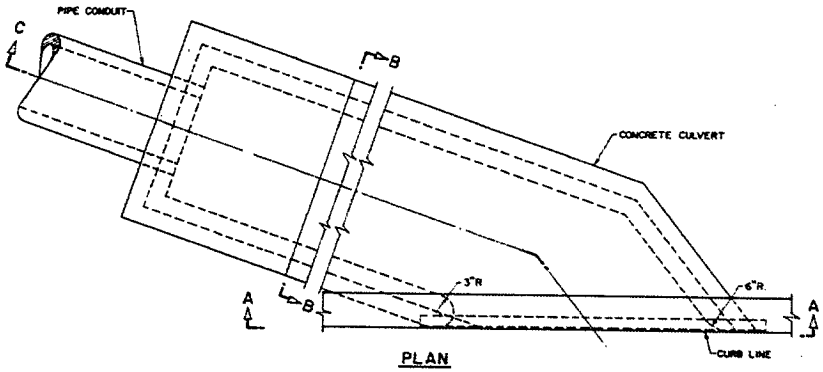
STORM WATER DRAIN
(WITH HANDHOLE)

ENGINEERING DESIGN MANAGER

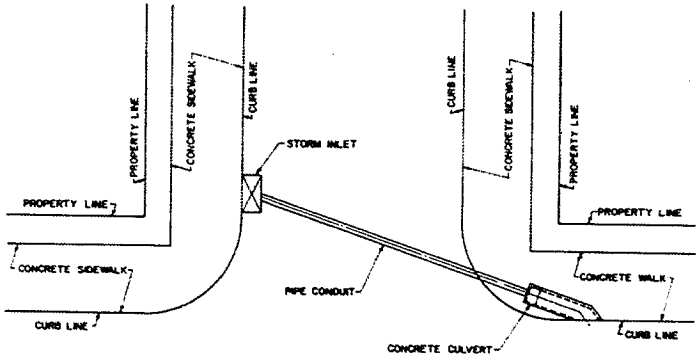
DATE : JANUARY 2002

REV. DATE :

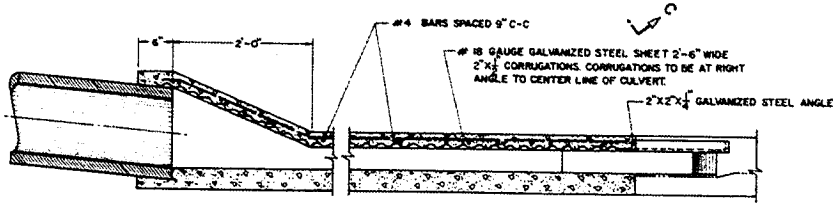
DRWG. D-14



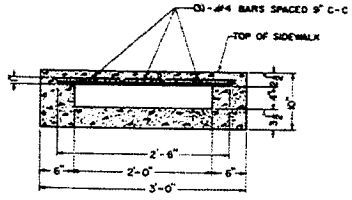
PLAN



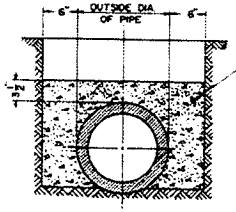
PLAN
SCALE : NONE



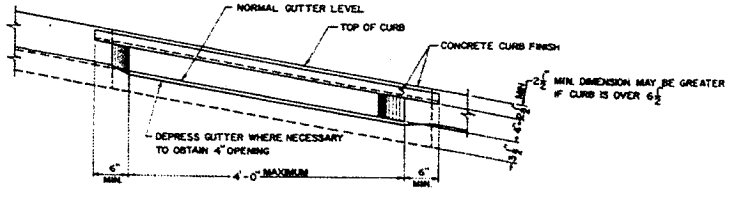
SECTION C-C



SECTION B-B



TYPICAL TRENCH BACKFILL
IN SIDEWALK AREA



VIEW A-A

NOTES

ALL CONCRETE TO BE CLASS 470 C 2500 IN ACCORDANCE WITH SUB-SECTION 201-1 UNLESS OTHERWISE NOTED

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CITY OF OAKLAND

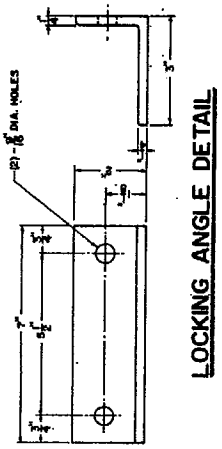
DESIGN AND CONSTRUCTION SERVICES DEPARTMENT

STORM WATER DRAIN
(WITHOUT HANDHOLE)

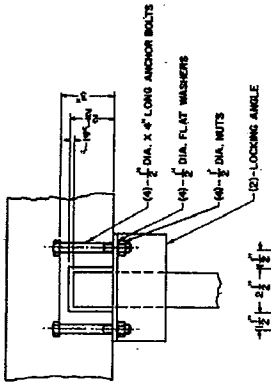
ENGINEERING DESIGN MANAGER

DATE : JANUARY 2002
REV. DATE :

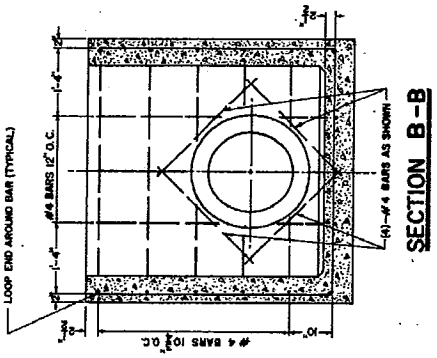
DRWG. D-15



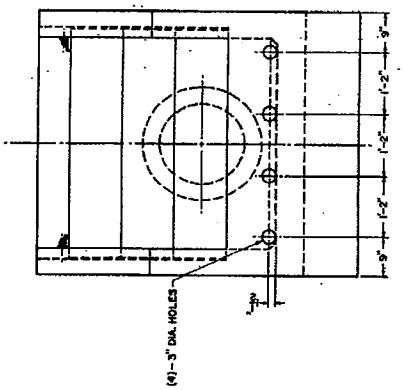
LOCKING ANGLE DETAIL



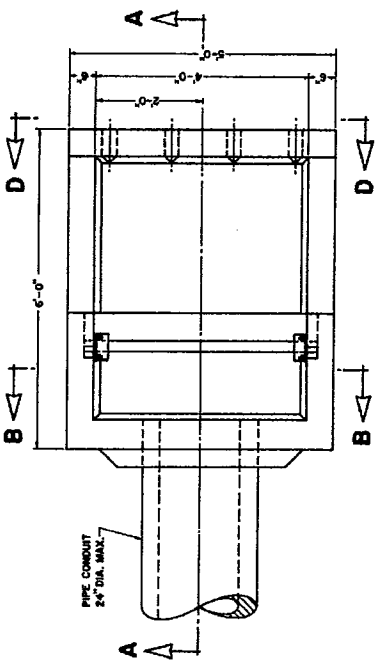
DETAIL "C"



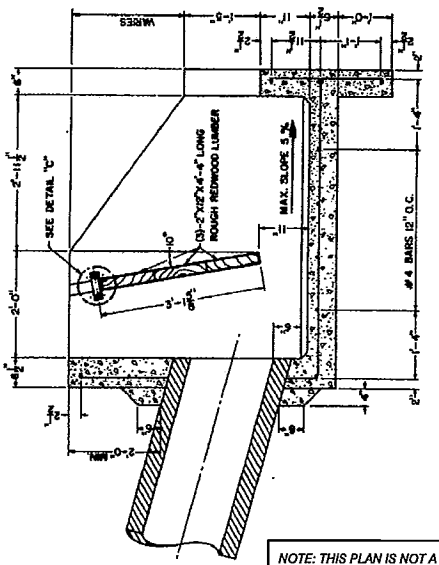
SECTION B-B



VIEW D-D



PLAN



SECTION A-A

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CITY OF OAKLAND | DESIGN AND CONSTRUCTION SERVICES DEPARTMENT

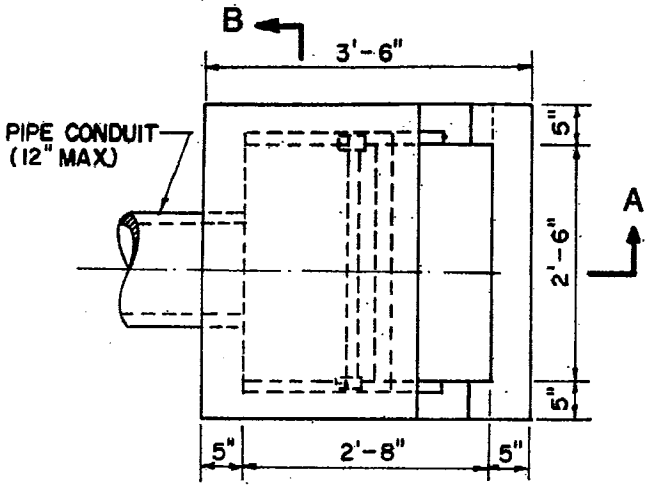
ENERGY DISSIPATOR 1

ENGINEERING DESIGN MANAGER

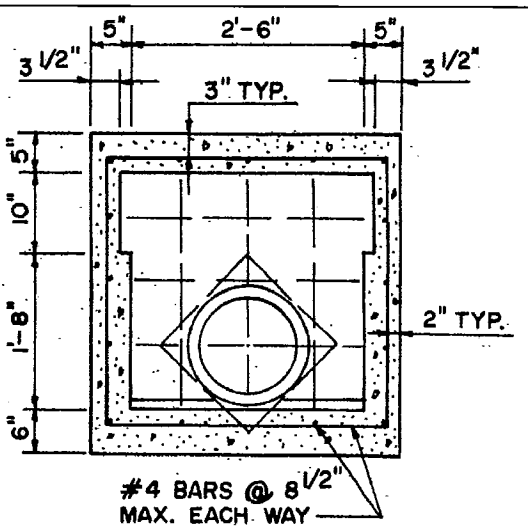
DATE: JANUARY 2002

REV. DATE: _____

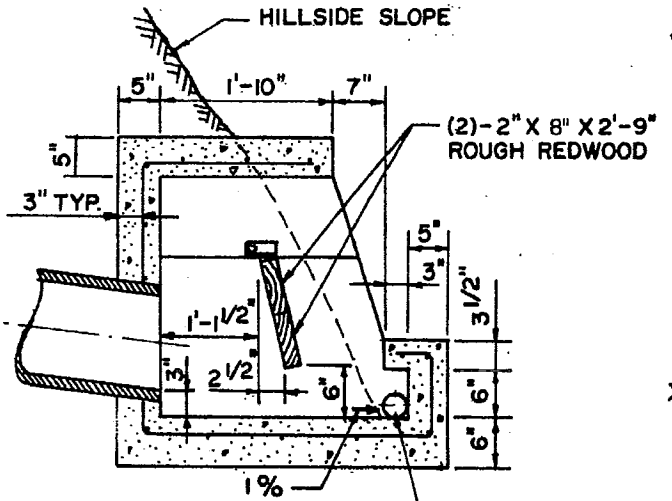
DWG. D-16



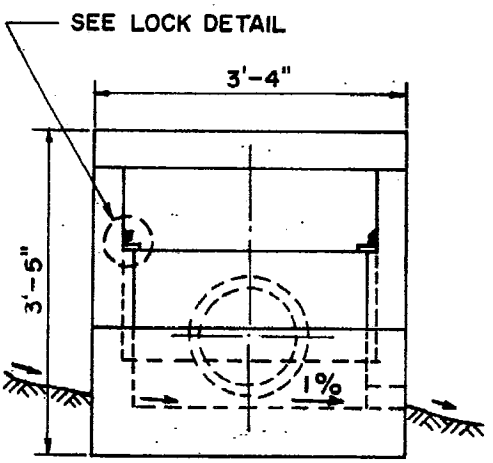
PLAN



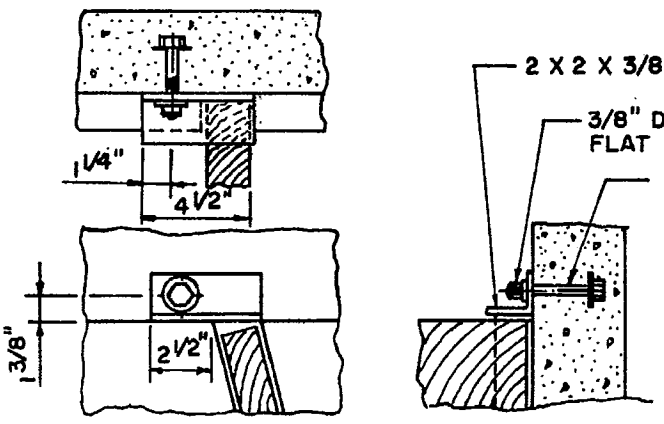
SECTION B



SECTION A



FRONT VIEW



LOCK DETAIL

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NOTES:

1. ALL PART OF LOCK TO BE GALVANIZED.
2. FRONT VIEW PARALLEL TO ROAD.
3. DRAIN HOLE ELEVATION TO MATCH THE EXISTING LOW POINT.

CITY OF OAKLAND | DESIGN AND CONSTRUCTION SERVICES DEPARTMENT

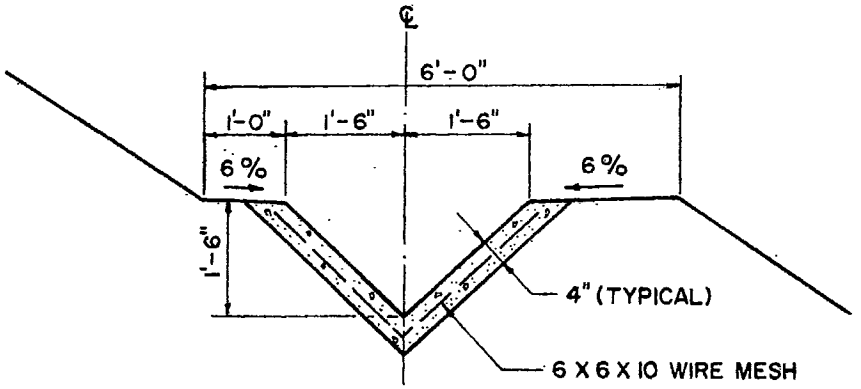
ENERGY DISSIPATOR 2

ENGINEERING DESIGN MANAGER

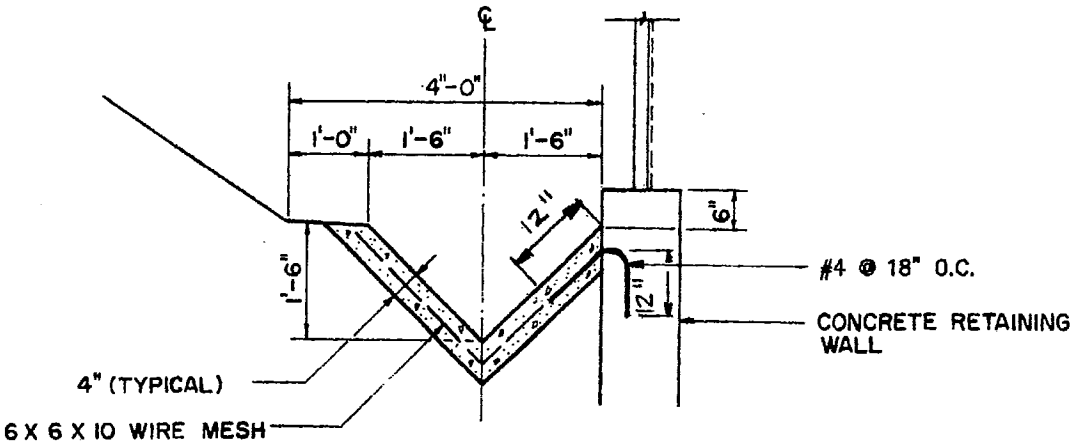
DATE: JANUARY 2002

REV. DATE: _____

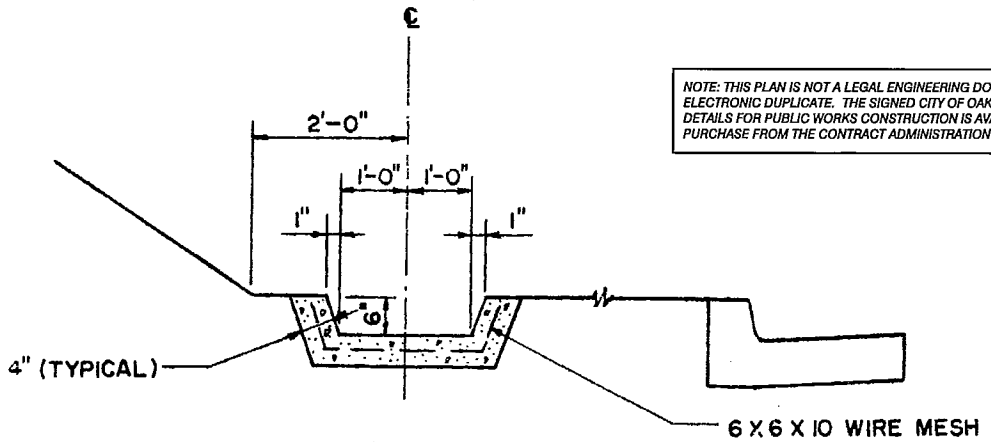
DWG. D-17



6-FOOT BENCH WITH D-3 CONCRETE DITCH



D-3 DITCH AT TOP OF RETAINING WALL



S-2 CONCRETE DITCH

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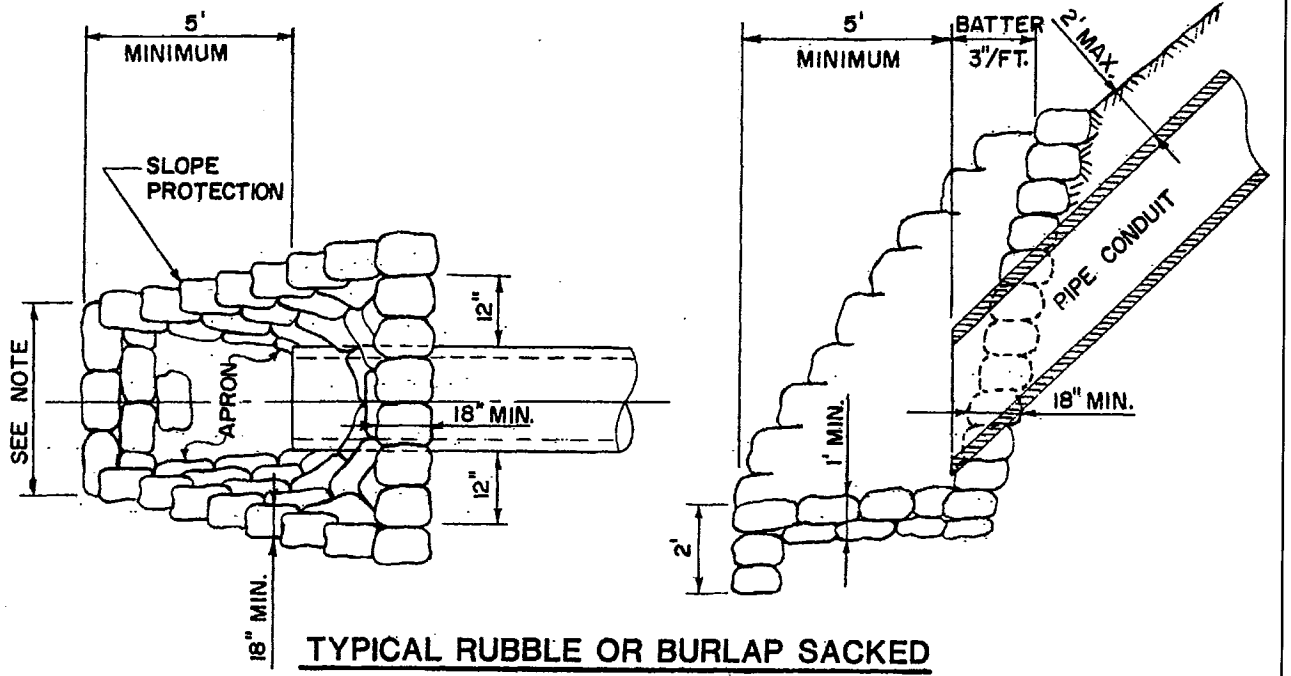
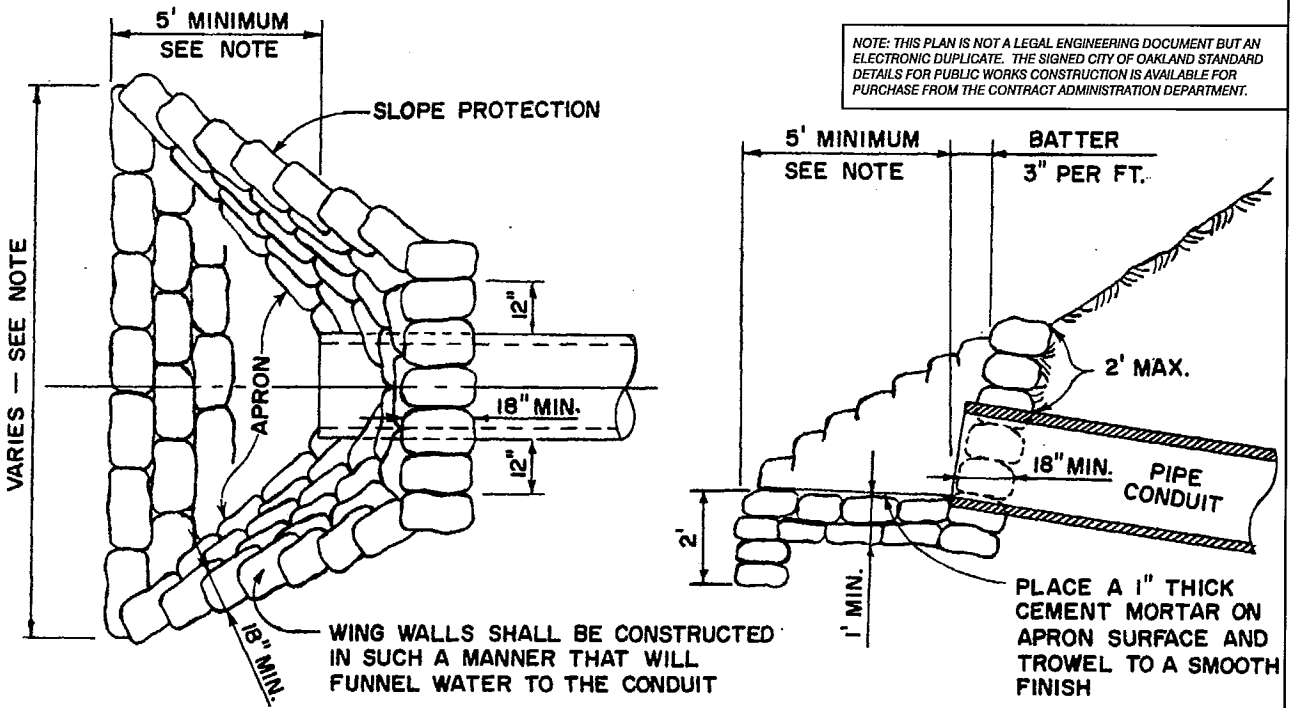
CITY OF OAKLAND	DESIGN AND CONSTRUCTION SERVICES DEPARTMENT

REINFORCED CONCRETE DITCH

ENGINEERING DESIGN MANAGER	
DATE: JANUARY 2002 REV. DATE:	DWG. D-18



TYPICAL RUBBLE OR BURLAP SACKED CONCRETE ENDWALL DETAIL



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TYPICAL RUBBLE OR BURLAP SACKED CONCRETE HEADWALL DETAIL

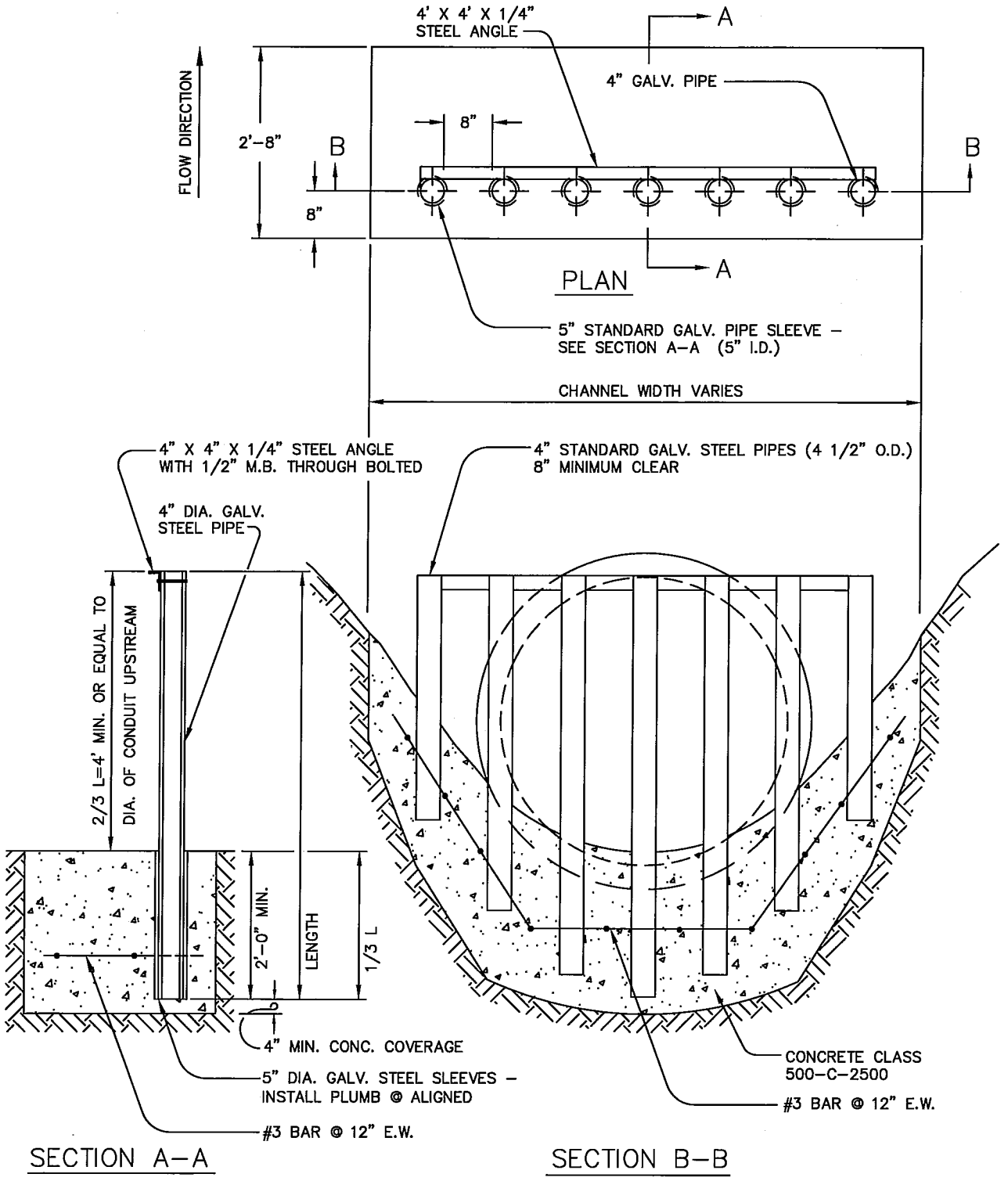
NOTE:

DIMENSIONS MAY BE VARIED TO SUIT CONDITIONS AT THE JOB SITE.

CITY OF OAKLAND	DESIGN AND CONSTRUCTION SERVICES DEPARTMENT

RUBBLE OR BURLAP SACKED CONCRETE ENDWALL AND HEADWALL

ENGINEERING DESIGN MANAGER	
DATE: JANUARY 2002 REV. DATE:	DWG. D-19



NOTE: TRASH RACK SHALL BE CONSTRUCTED UP-STREAM AT A DISTANCE OF 10' MINIMUM FROM HEADWALL, OR AS DIRECTED BY THE ENGINEER

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CITY OF OAKLAND | ENGINEERING AND DESIGN SERVICES DIVISION

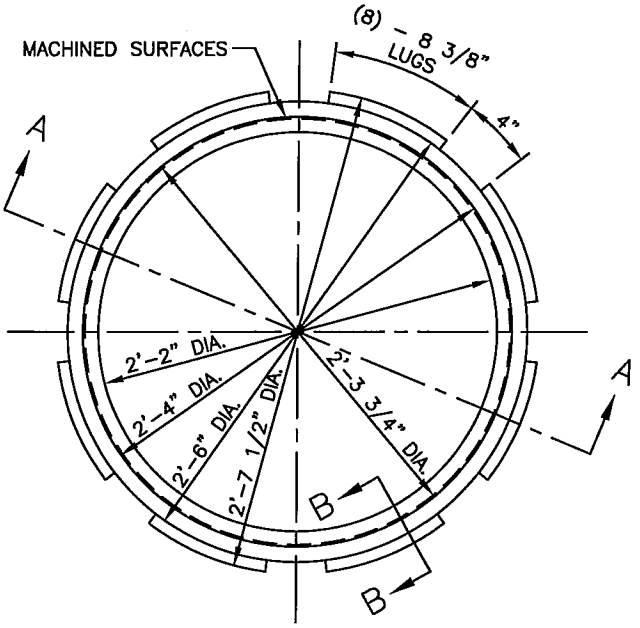
TRASH RACK

ENGINEERING DESIGN MANAGER

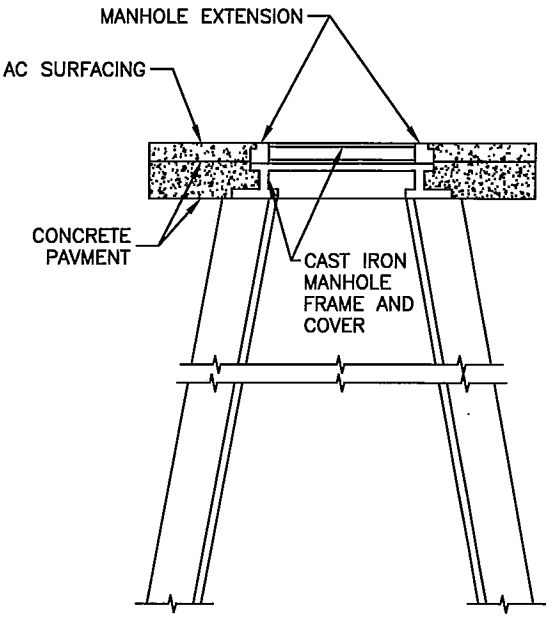
DATE : JANUARY 2002

REV. DATE :

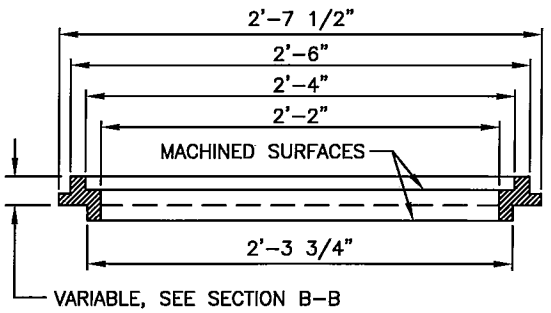
DRWG. D-20



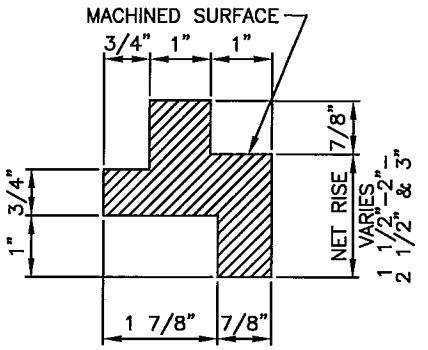
PLAN
NTS



TYPICAL INSTALLATION



SECTION A–A
NTS



SECTION B–B
NTS

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CITY OF OAKLAND | DESIGN AND CONSTRUCTION SERVICES DEPARTMENT

MANHOLE EXTENSION RINGS
(CAST IRON)

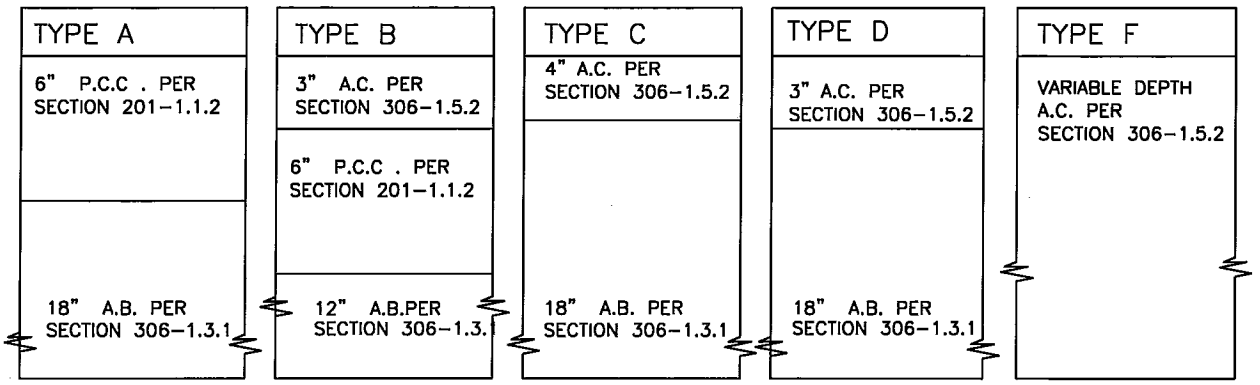
ENGINEERING DESIGN MANAGER

DATE : FEBRUARY 2002

REV. DATE :

DWG. D-21

PAVEMENT TYPES



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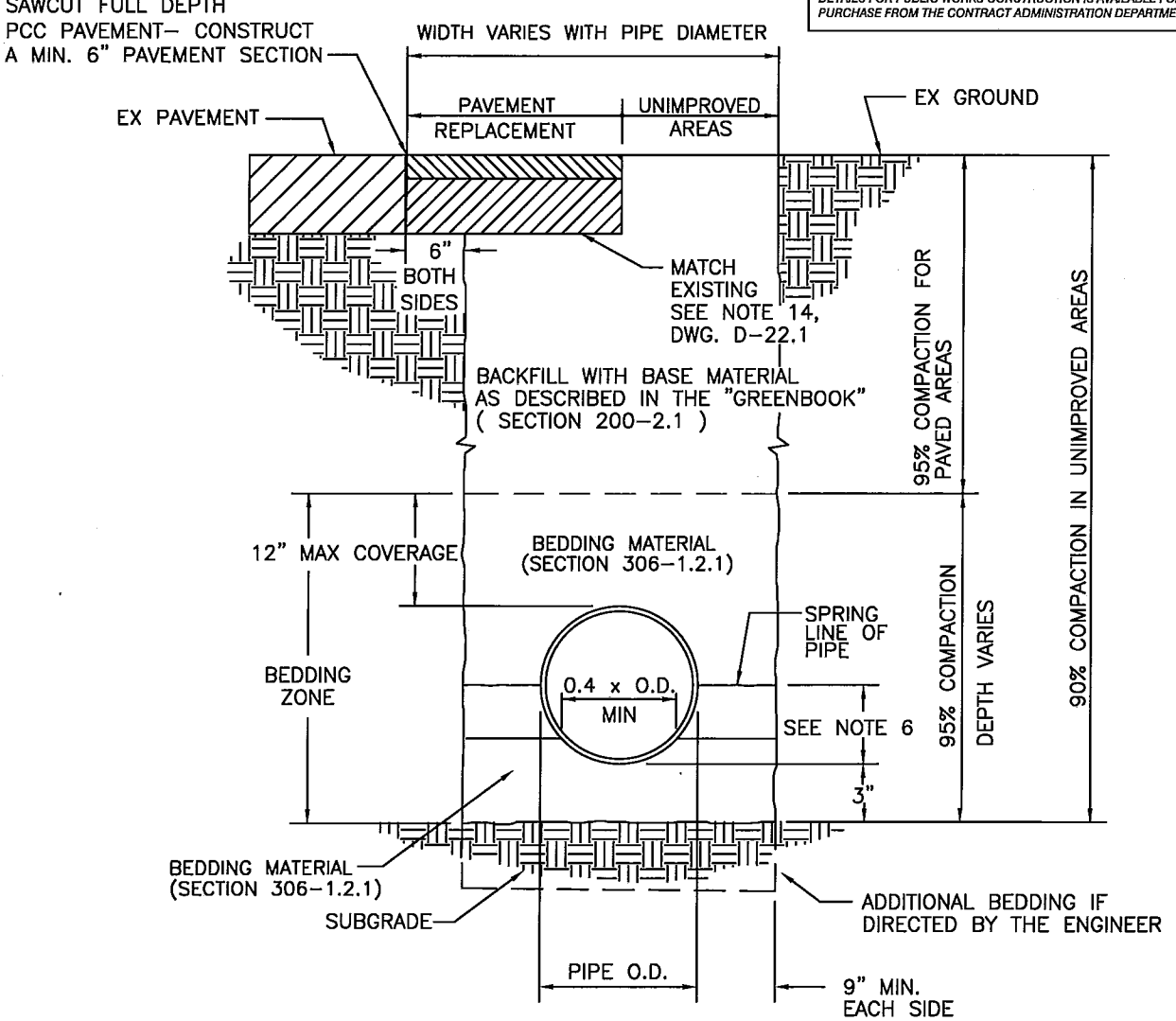


CITY OF OAKLAND | DESIGN AND CONSTRUCTION SERVICES DEPARTMENT

TRENCH DETAIL

ENGINEERING DESIGN MANAGER

DATE: JANUARY 2002 | REV. DATE: _____ | DWG. D-22.0

NOTES:

1. Excavated material shall not be used to fill voids caused by overexcavation; such voids shall be filled with compacted bedding material. Unless directed by the Engineer, no separate payment will be made for overexcavation.

2. Import backfill material shall conform to Subsection 306–1.31

3. Aggregate base shall conform to crushed miscellaneous base (Section 200–2.4) or better. The base material must be approved by the Engineer.

4. The streets of Oakland are generally paved with either AC, PCC, or a combination of the two. The existing pavement may differ from the replacement Pavement Type (A to F) indicated on the plans.

5. Compaction by jetting is not permitted.

6. When flexible pipe (HDPE, etc.) is used, pipe shall be backfilled to the spring line, compacted and backfill tested prior to completing initial backfill.

7. The compacted temporary resurfacing shall be a minimum of 2" thick placed on the required base, and shall be removed prior to placing the permanent paving.

8. Backfill testing is required and results shall be approved by the Engineer prior to paving.

9. No longitudinal joints or seams are allowed in bike lanes. If a longitudinal joint is constructed due to the Contractor's work or this requirement, the Contractor shall remove a minimum of 2" of asphalt from the pavement across the entire bike lane using a method approved by the City and then resurface the bike lane to the Engineer's satisfaction.

10. During backfill operations, the trench shall be backfilled, compacted, and tested to the spring line of any utilities crossing the trench before proceeding with further backfill.

11. Unless specified otherwise, measurement for payment of additional bedding, imported backfill and temporary paving (when listed as separate pay items) shall be based upon the trench widths defined on this detail. The lower trench width for 8" pipe shall be 30".

12. Clean and tackcoat sides of excavation and between paving courses with spray application of SS–1 emulsion before placing asphalt–concrete pavement section.

13. If the distance to the edge of gutter is less than 3' from one trench edge, the pavement replacement shall extend to the edge of existing gutter.

14. In areas where existing paving consists of rubberized AC, the trench area should be repaved with the equivalent pavement section of rubberized AC. As an alternate, a dense graded AC section equivalent to two–times the the thickness of the rubberized AC may be substituted.

CITY OF OAKLAND | DESIGN AND CONSTRUCTION SERVICES DEPARTMENT

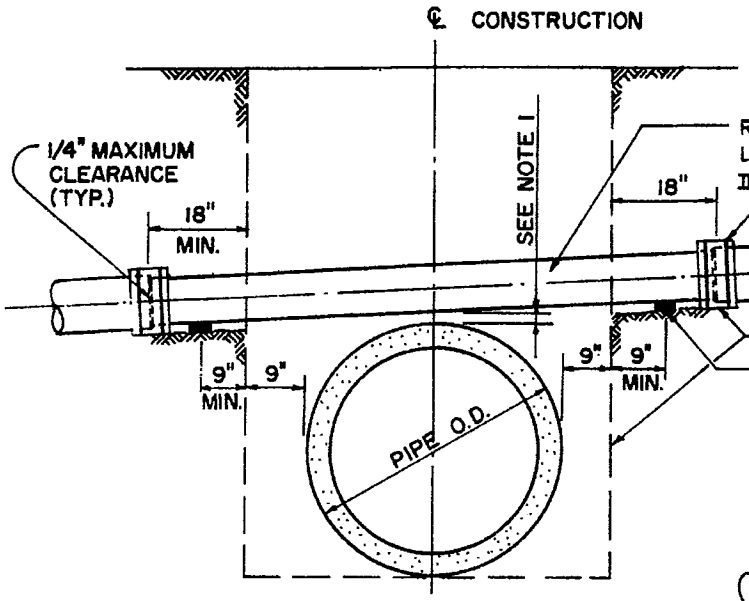
TRENCH DETAIL

ENGINEERING DESIGN MANAGER

DATE: JANUARY 2002

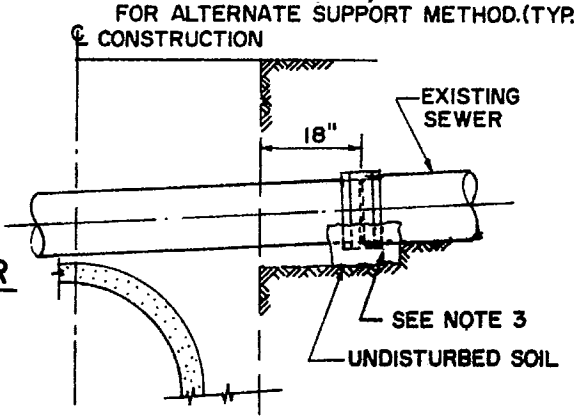
REV. DATE: _____

DWG. D-22.1



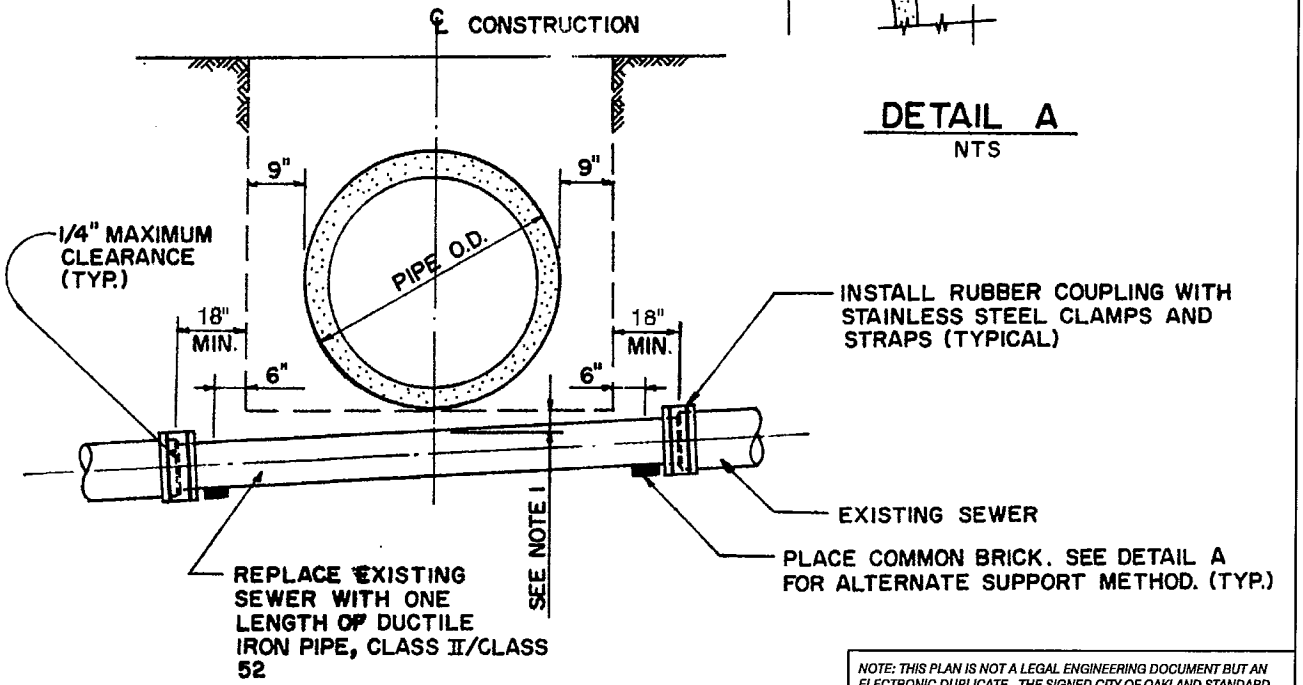
CROSSING UNDER SANITARY SEWER

NTS



DETAIL A

NTS



CROSSING OVER SANITARY SEWER

NTS

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NOTES:

1. PROVIDE MINIMUM CLEARANCE OF 6". IF LESS THAN 6", USE LAYERS OF STYROFOAM.
2. THE WORK SHALL BE DONE TO THE SATISFACTION OF THE ENGINEER.
3. PLACE 450-B-2000 CONCRETE SUPPORT UNDER COUPLINGS.

CITY OF OAKLAND | DESIGN AND CONSTRUCTION SERVICES DEPARTMENT

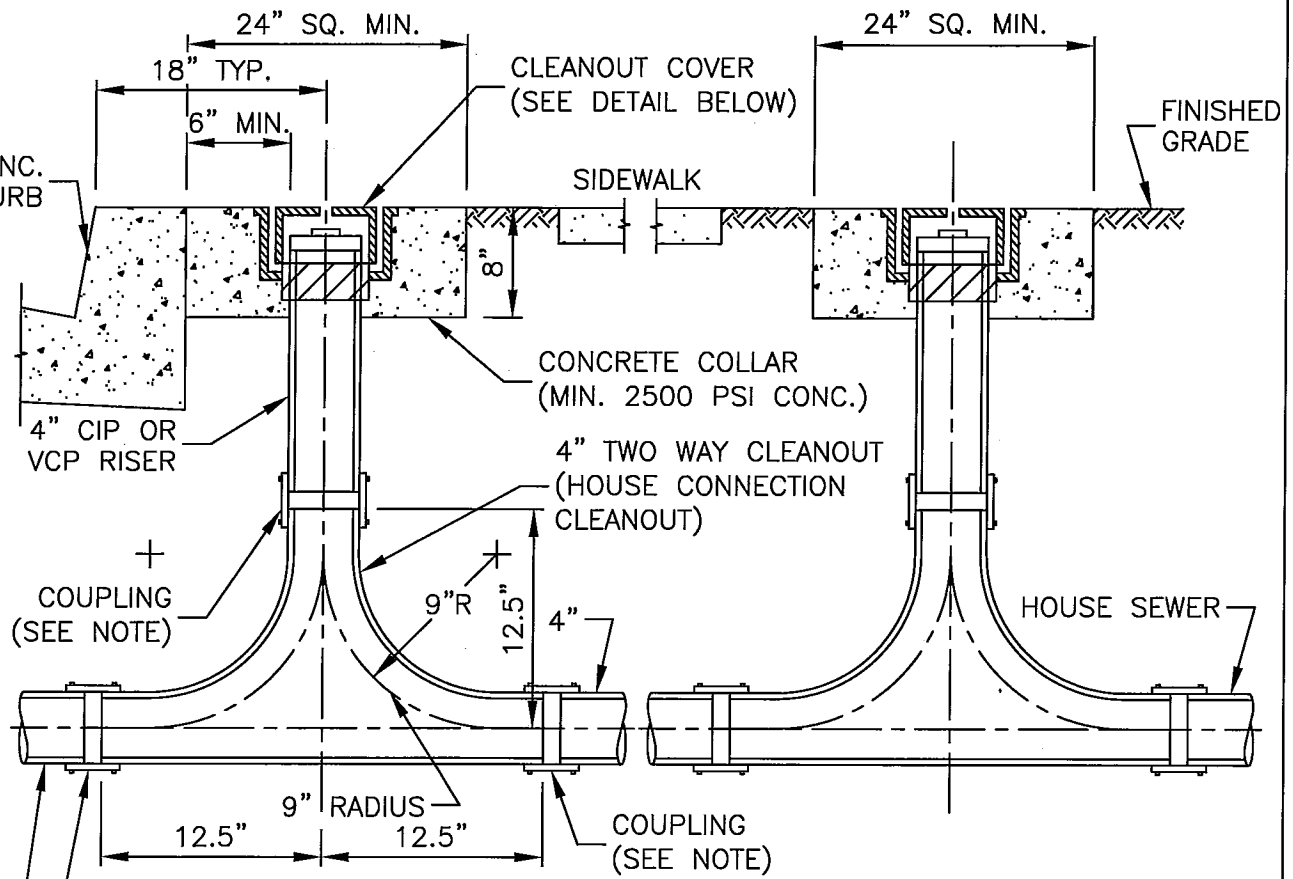
SEWER CROSSING DETAIL

ENGINEERING DESIGN MANAGER

DATE: JANUARY 2002

REV. DATE: _____

DWG. D-23



SECTIONAL ELEVATION

NTS

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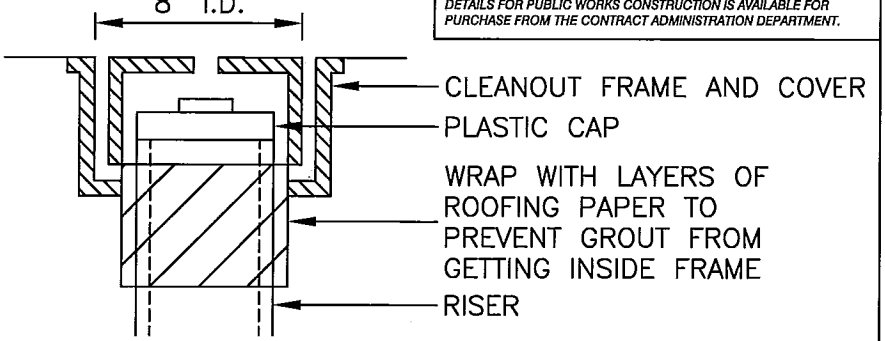


CLEANOUT COVER DETAIL

NTS

NOTE:

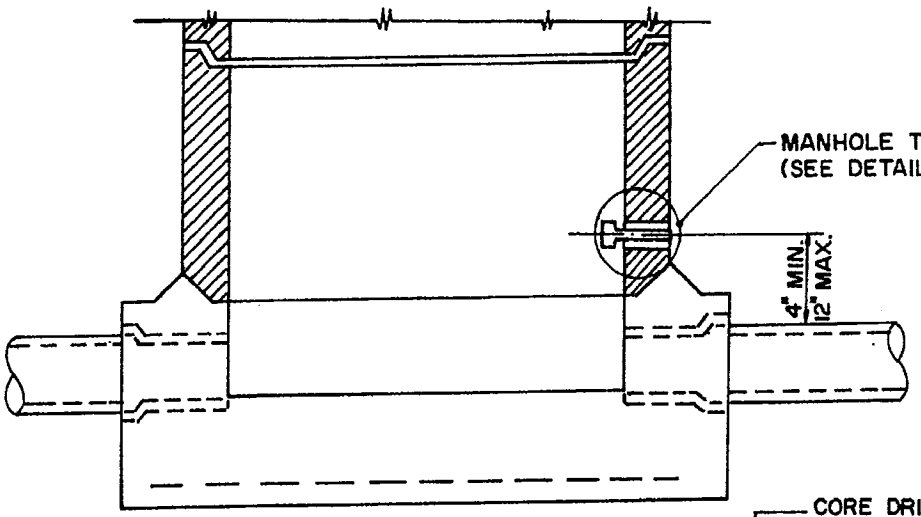
COUPLING SHALL BE RUBBER COUPLING WITH 2 STAINLESS STEEL BANDS. RIGID COUPLING SHALL BE USED WITH CAST IRON PIPE.

CITY OF OAKLAND	DESIGN AND CONSTRUCTION SERVICES DEPARTMENT

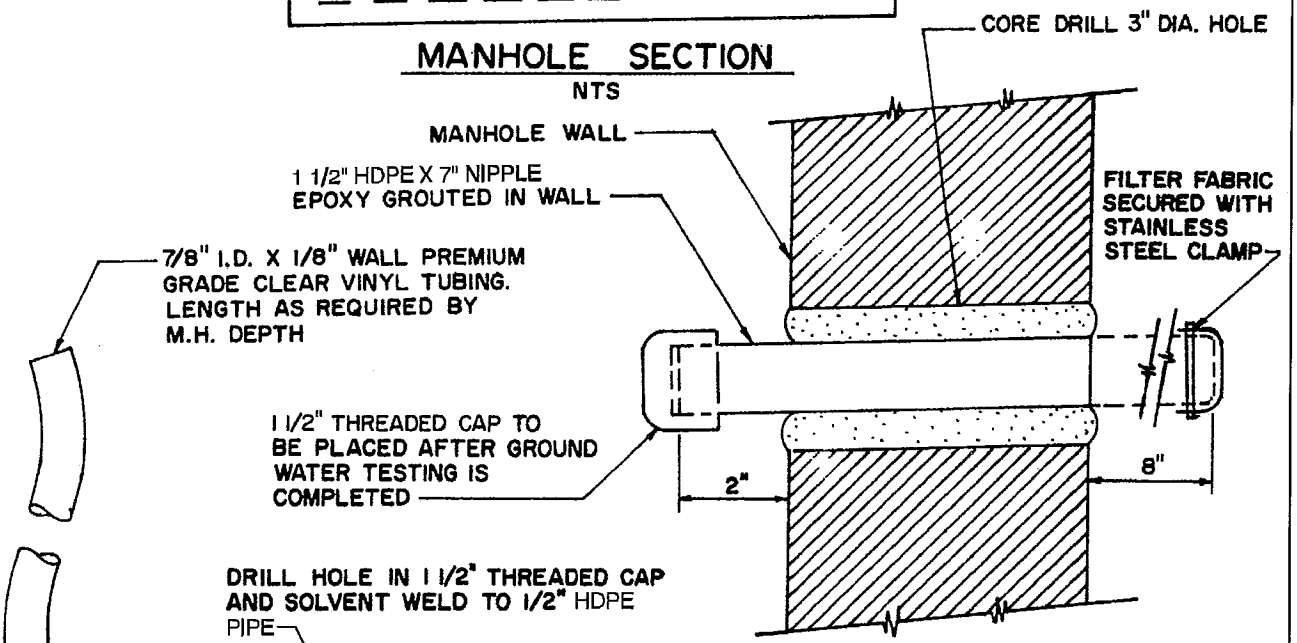
HOUSE CONNECTION CLEANOUT

(2-WAY CLEANOUT)

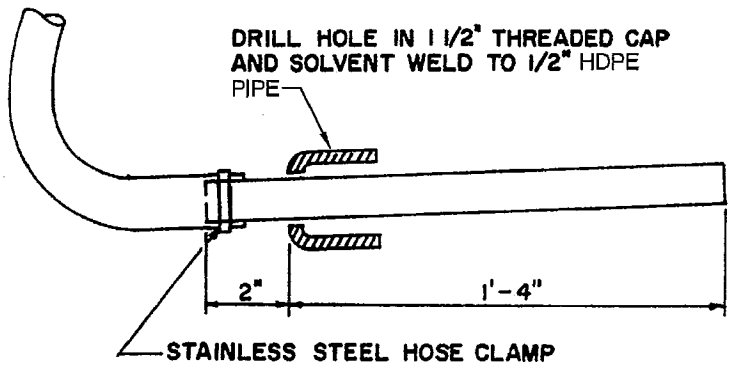
ENGINEERING DESIGN MANAGER	
DATE : FEBRUARY 2002	DWG.
REV. DATE :	D-24



MANHOLE SECTION
NTS



TAP DETAIL
NTS



GAGE DETAIL
NTS

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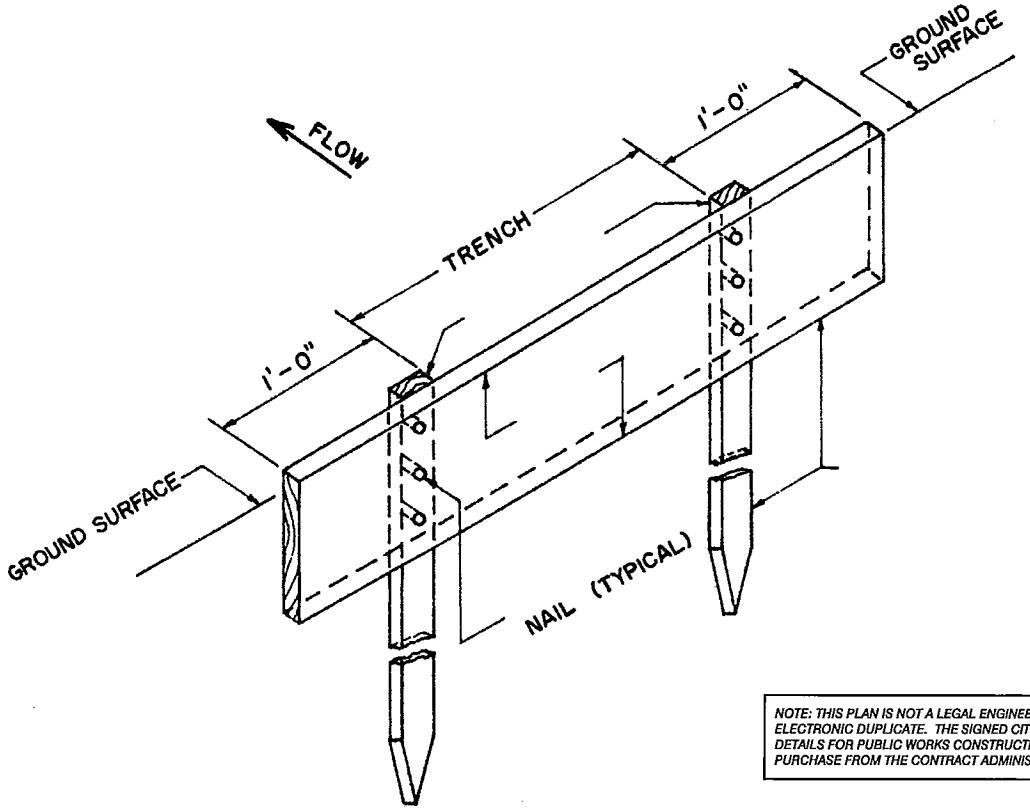
CITY OF OAKLAND | DESIGN AND CONSTRUCTION SERVICES DEPARTMENT

GROUND WATER GAGE DETAILS

ENGINEERING DESIGN MANAGER

DATE: JANUARY 2002
REV. DATE: _____

DWG. D-25



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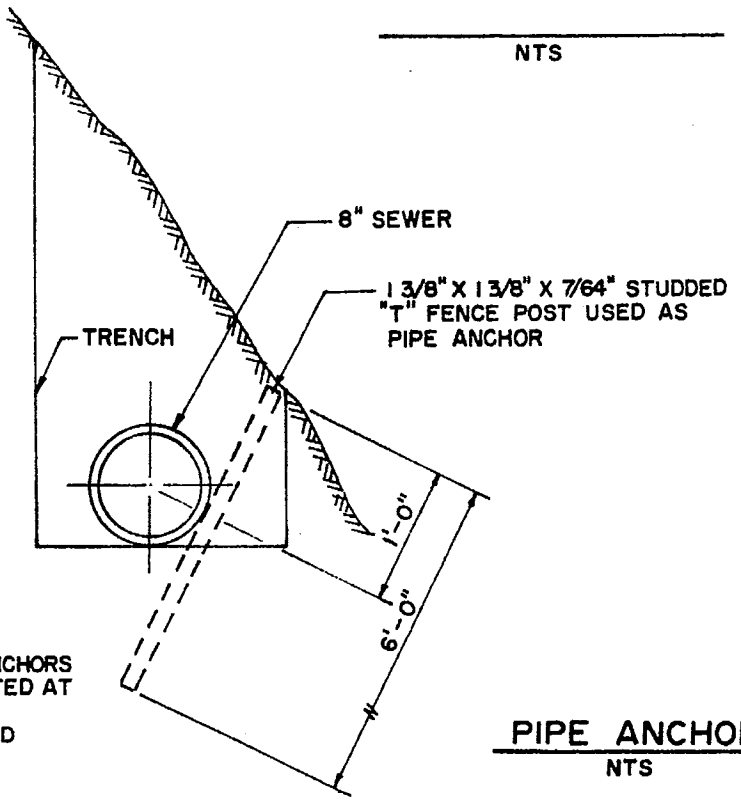


NOTE:

CHECKDAM AND PIPE ANCHORS ARE TO BE CONSTRUCTED AT 25' INTERVALS OR AT LOCATIONS DESIGNATED BY THE ENGINEER.

PIPE ANCHOR
NTS

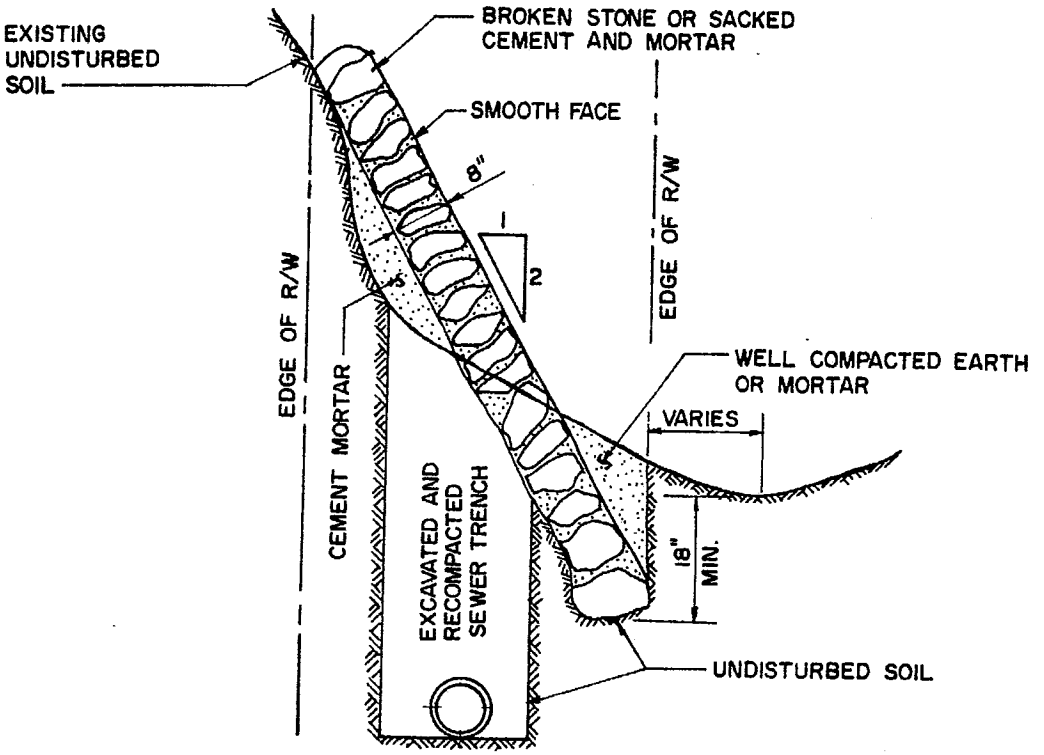
CITY OF OAKLAND | DESIGN AND CONSTRUCTION SERVICES DEPARTMENT

CHECKDAM AND PIPE ANCHOR DETAILS

ENGINEERING DESIGN MANAGER

DATE: JANUARY 2002
REV. DATE:

DWG. D-26



SLOPE SECTION
NTS

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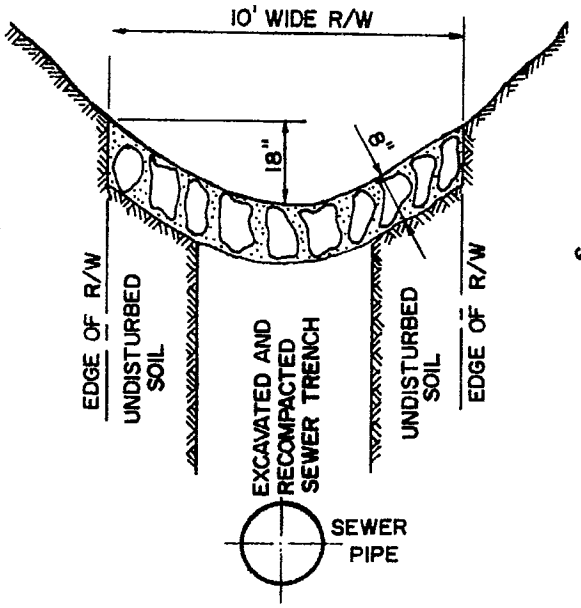
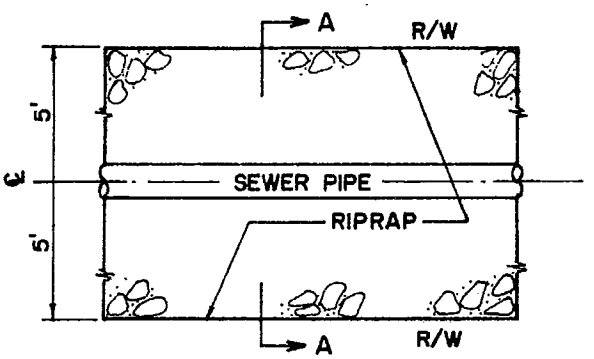


SECTION A-A
NTS



PLAN
NTS

NOTE:

CONSTRUCTION OF CONCRETE EROSION PROTECTION TO BE AS SHOWN ON THE PLANS OR AS DESIGNATED BY THE ENGINEER.

CITY OF OAKLAND | DESIGN AND CONSTRUCTION SERVICES DEPARTMENT

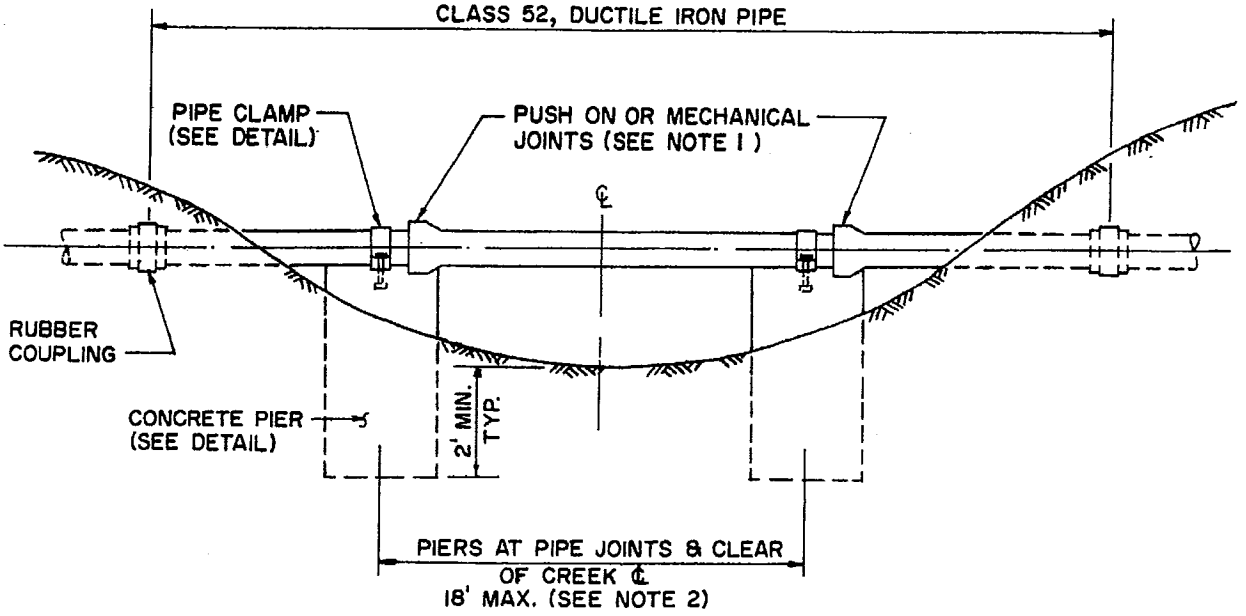
CONCRETE EROSION ANCHOR DETAILS

ENGINEERING DESIGN MANAGER

DATE: JANUARY 2002

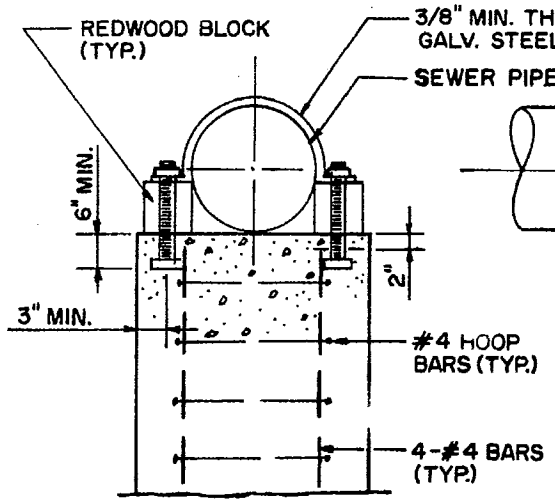
REV. DATE: _____

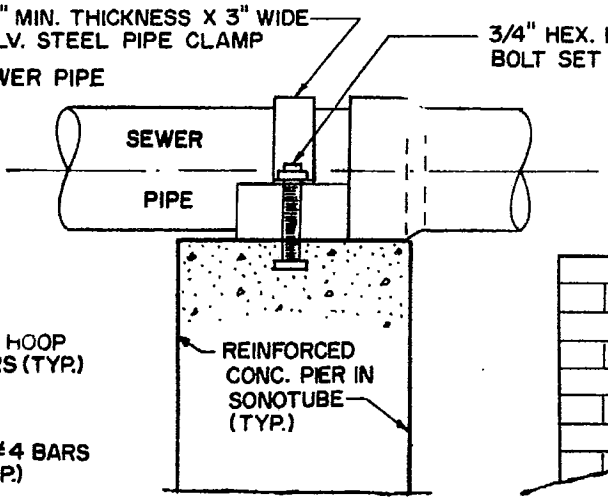
DWG. D-27



SEWER CROSSING DETAIL

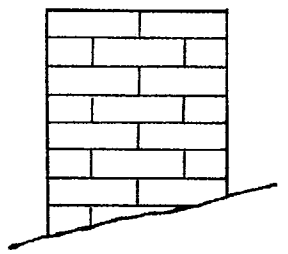
NTS





PIER – CLAMP DETAIL

NTS



HOLLOW CONCRETE BLOCKS FILLED WITH CONCRETE AND REINFORCED BARS

PIER OPTION

NTS

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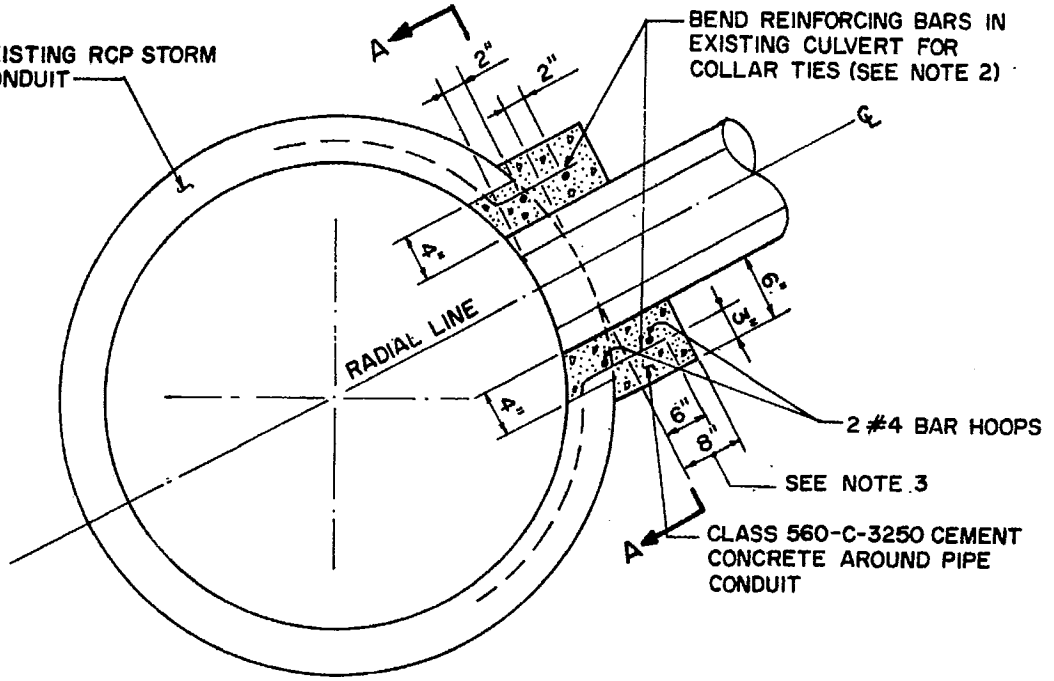
NOTES:

1. RUBBER COUPLINGS ON EXPOSED JOINTS NOT PERMITTED.
2. A STEEL CHANNEL BEAM TO SUPPORT PIPE FOR LONGER SPANS MAY BE USED AS AN ALTERNATE, SUBJECT TO APPROVAL BY THE ENGINEER.

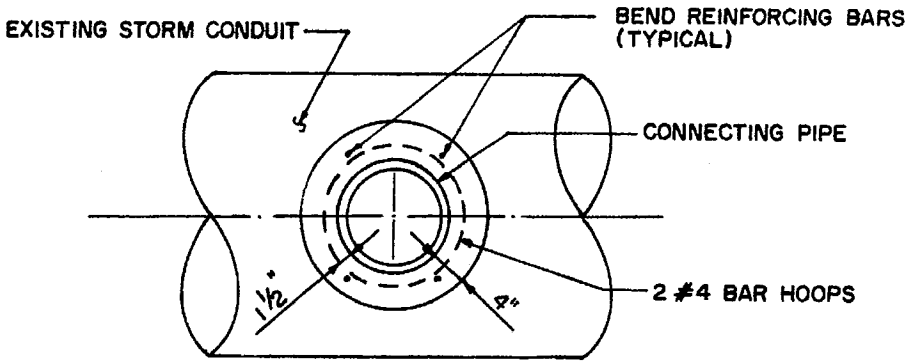
CITY OF OAKLAND	DESIGN AND CONSTRUCTION SERVICES DEPARTMENT

TRESTLED SEWER DETAILS

ENGINEERING DESIGN MANAGER	
DATE: JANUARY 2002 REV. DATE: _____	DWG. D-28



CONNECTION DETAIL
NTS



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NTS

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NOTES:

1. A CONCRETE COLLAR CONNECTION TO A STORM LINE IS PERMITTED ONLY IF APPROVED BY THE CITY AND IF EXISTING STORM LINE IS TWICE OR LARGER THAN THE DIAMETER OF THE PROPOSED CONNECTING LINE, OTHERWISE MANHOLE IS REQUIRED.
2. FOR PLAIN CONCRETE PIPE USE DOWELLED #4 BARS.
3. TWELVE INCHES (12") WHEN PIPE BEING CONNECTED TO IS FORTY EIGHT INCHES (48") OR LARGER.

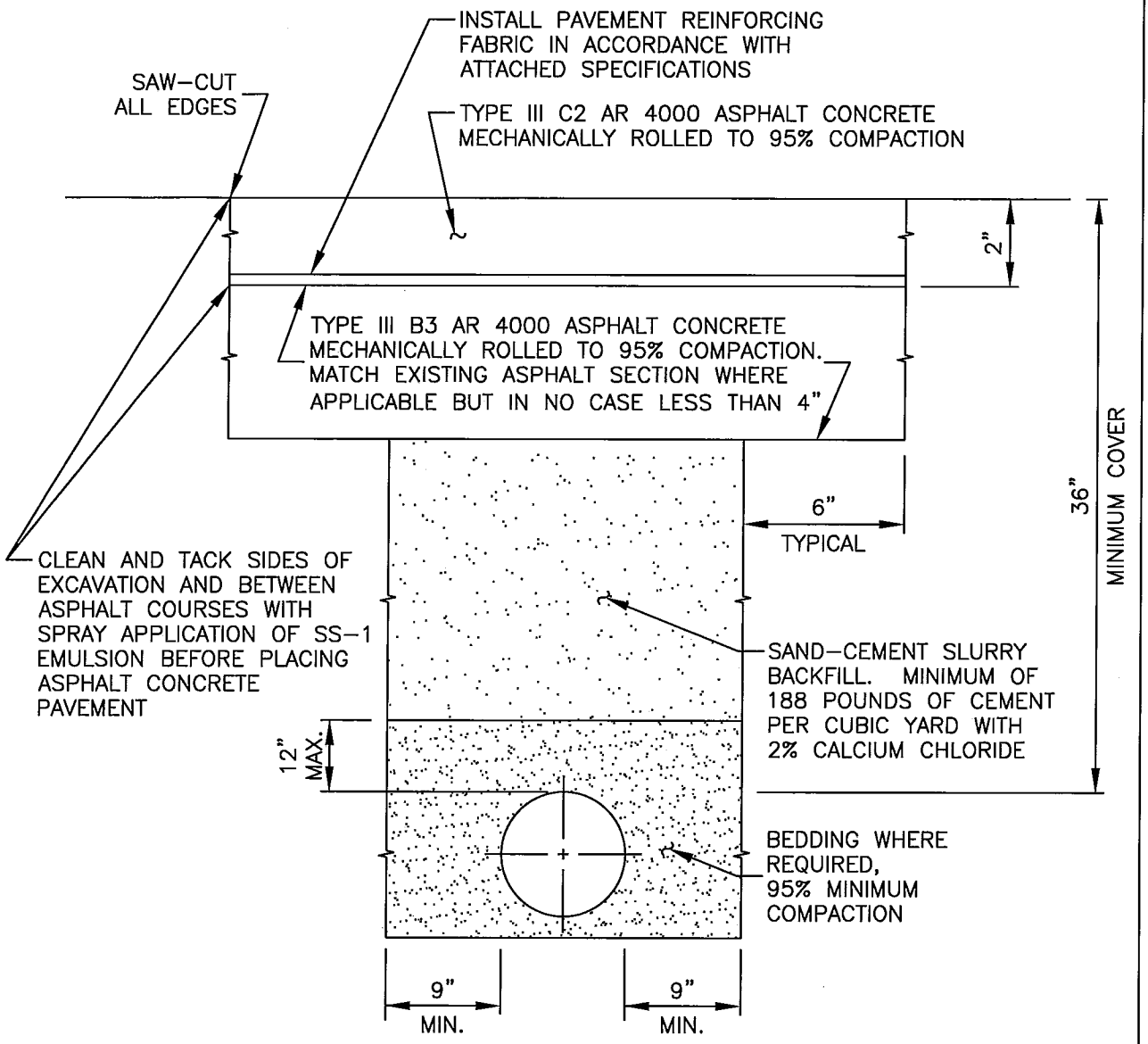
CITY OF OAKLAND	DESIGN AND CONSTRUCTION SERVICES DEPARTMENT

STORM CONDUIT CONNECTION DETAIL

ENGINEERING DESIGN MANAGER

DATE: JANUARY 2002
REV. DATE: _____

DWG. D-29



GENERAL REQUIREMENTS:

1. DELIVERY TAGS FOR ASPHALT CONCRETE AND BACKFILL MATERIAL SHALL BE SUBMITTED TO THE ENGINEER ON DEMAND. ASPHALT CONCRETE DELIVERY TAGS SHALL INDICATE THE MATERIAL SPECIFIED.
2. FINAL ASPHALT CONCRETE COURSE TO BE ROLLED WITH CERTIFIED EIGHT TON TANDEM ROLLER.

CITY OF OAKLAND | DESIGN AND CONSTRUCTION SERVICES DEPARTMENT

SPECIAL TRENCH PAVING DETAIL

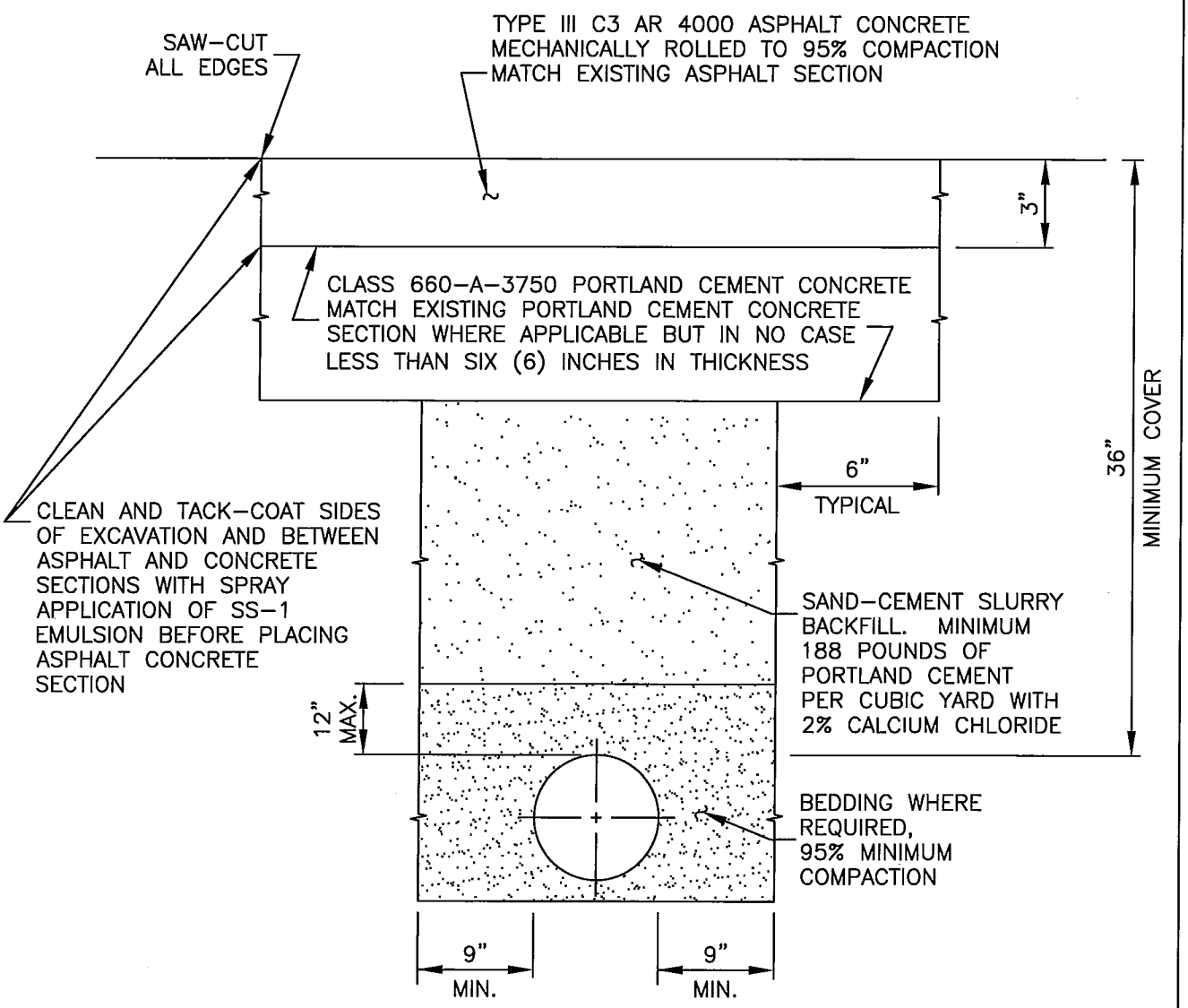
ASPHALT CONCRETE STREET

ENGINEERING DESIGN MANAGER

DATE : FEBRUARY 2002

REV. DATE :

DWG. D-30



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GENERAL REQUIREMENTS:

1. DELIVERY TAGS FOR ASPHALT CONCRETE, PORTLAND CEMENT CONCRETE AND BACKFILL MATERIAL SHALL BE SUBMITTED TO THE ENGINEER ON DEMAND. DELIVERY TAGS SHALL INDICATE THE MATERIAL SPECIFIED.

2. FINAL CONCRETE SURFACE COURSE SHALL BE ROLLED WITH CERTIFIED EIGHT–TON TANDEM ROLLER.

3. INSTALL 12" DOWELS (#4 BAR) AT 18" OC HORIZONTALLY @ CENTER OF VERTICAL FACE OF EX. PCC SECTION. EMBED 6" INTO EX. PCC W/ EPOXY GROUT – STAGGER DOWELS

CITY OF OAKLAND | DESIGN AND CONSTRUCTION SERVICES DEPARTMENT

SPECIAL TRENCH PAVING DETAIL

PORTLAND CEMENT CONCRETE STREET WITH ASPHALT OVERLAY OR TYPE B STREET

ENGINEERING DESIGN MANAGER

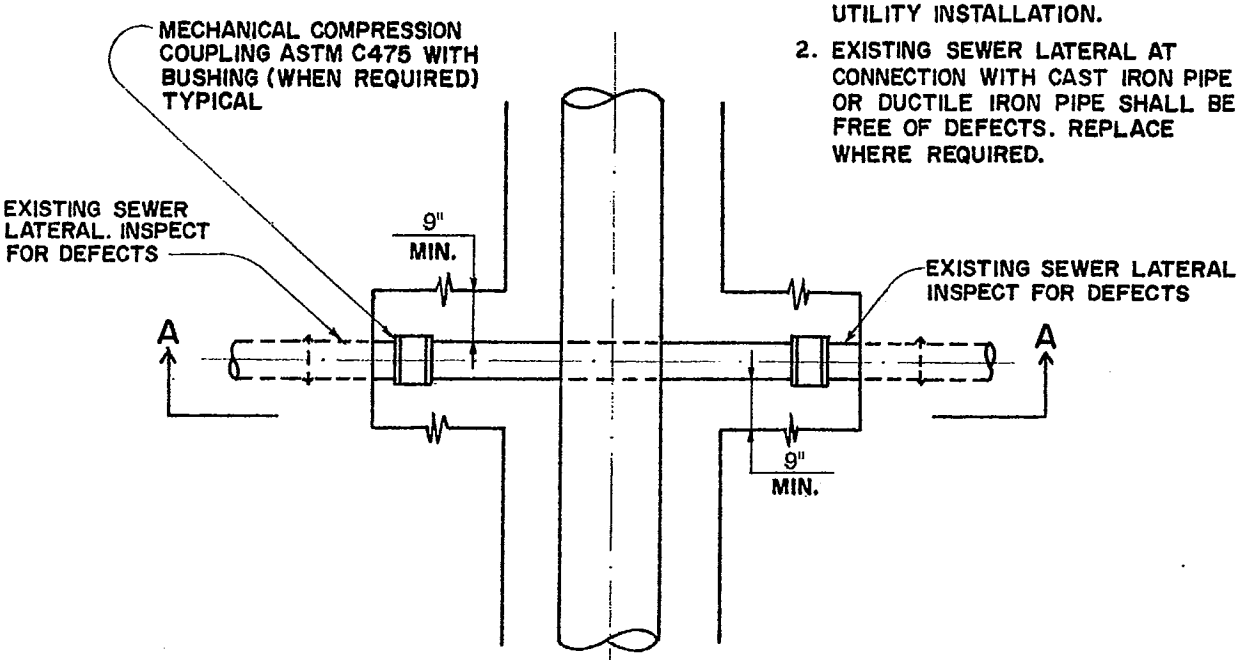
DATE : FEBRUARY 2002

REV. DATE :

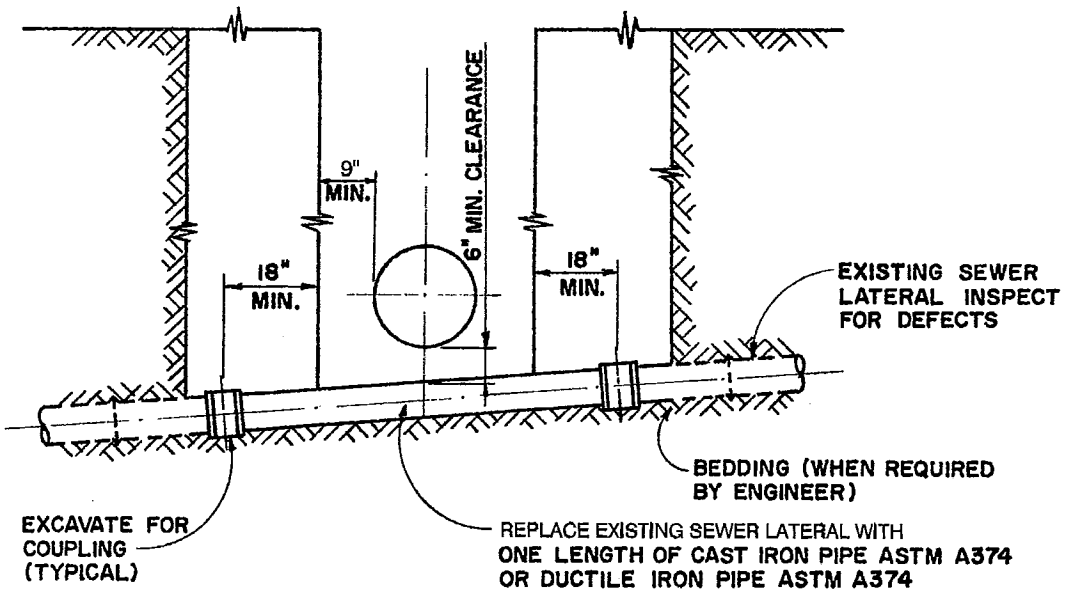
DWG. D-31

NOTES

1. PROVIDE 6" MIN. VERTICAL CLEARANCE BETWEEN SEWER LATERAL AND UTILITY INSTALLATION.
2. EXISTING SEWER LATERAL AT CONNECTION WITH CAST IRON PIPE OR DUCTILE IRON PIPE SHALL BE FREE OF DEFECTS. REPLACE WHERE REQUIRED.



PLAN



SECTION A-A

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CITY OF OAKLAND | DESIGN AND CONSTRUCTION SERVICES DEPARTMENT

UTILITY CROSSING OVER SEWER LATERAL

ENGINEERING DESIGN MANAGER

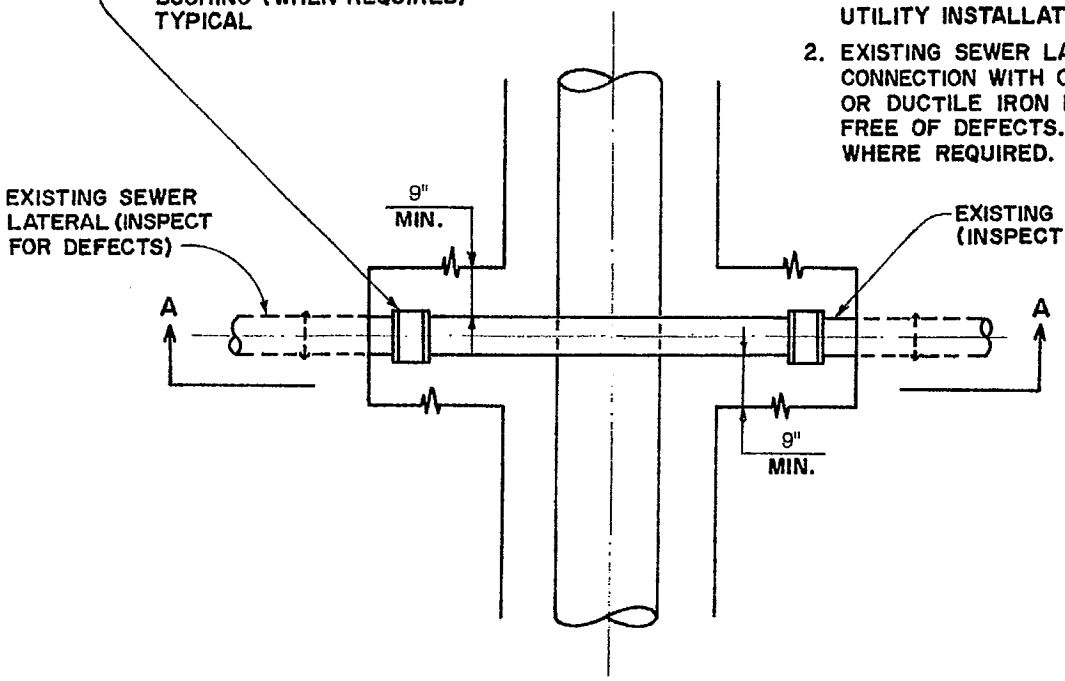
DATE: JANUARY 2002

REV. DATE: _____

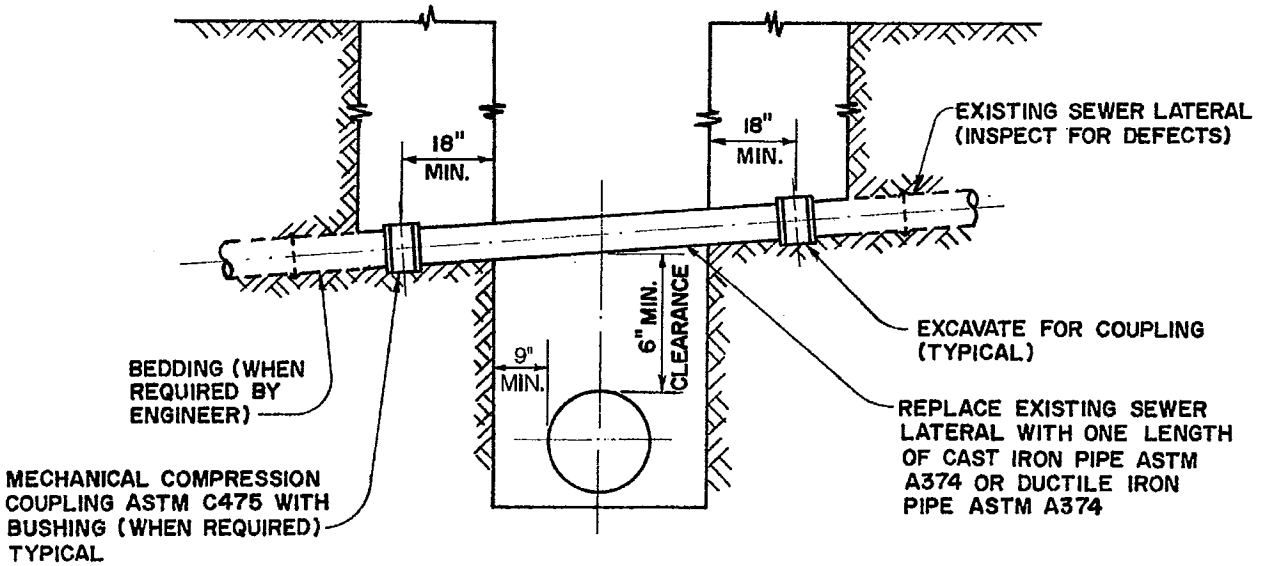
DWG. D-32

NOTES:

1. PROVIDE 6" MIN. VERTICAL CLEARANCE BETWEEN SEWER LATERAL AND UTILITY INSTALLATION.
2. EXISTING SEWER LATERAL AT CONNECTION WITH CAST IRON PIPE OR DUCTILE IRON PIPE SHALL BE FREE OF DEFECTS. REPLACE WHERE REQUIRED.



PLAN



SECTION A-A

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CITY OF OAKLAND | DESIGN AND CONSTRUCTION SERVICES DEPARTMENT

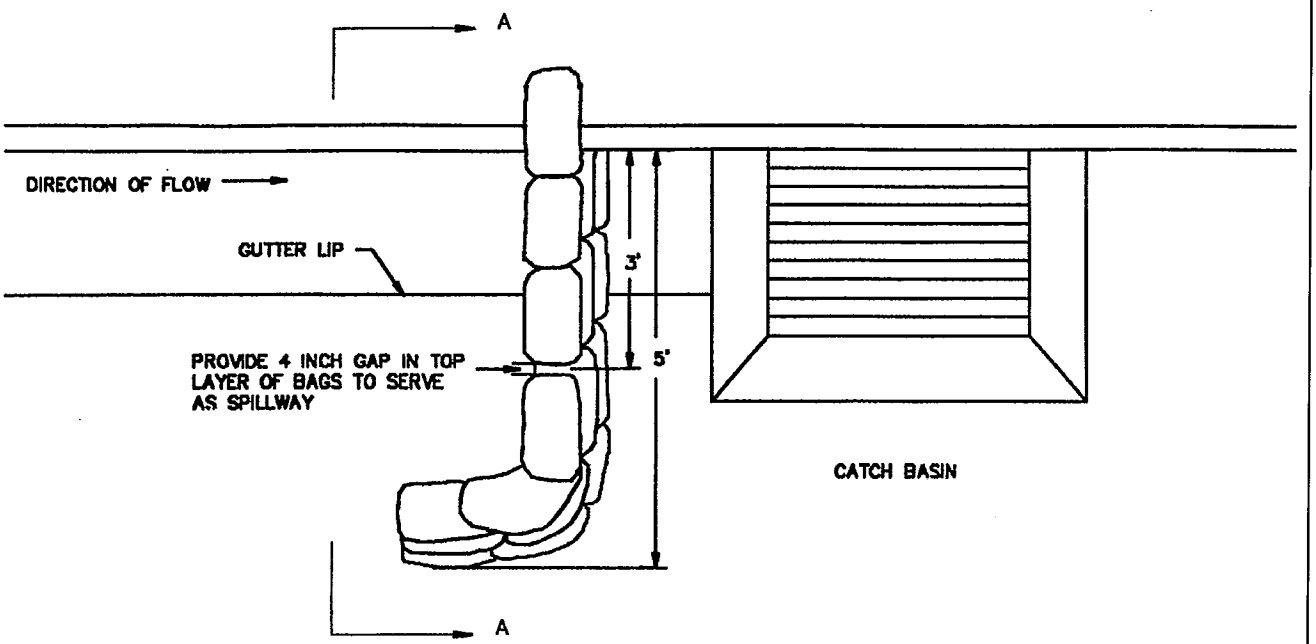
UTILITY CROSSING UNDER SEWER LATERAL

ENGINEERING DESIGN MANAGER

DATE: JANUARY 2002

REV. DATE: _____

DWG. D-33



PLAN
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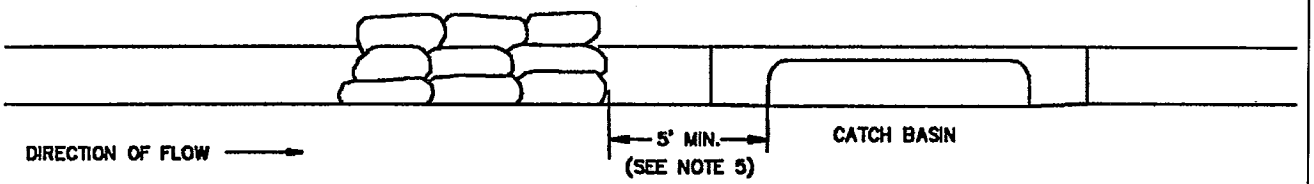
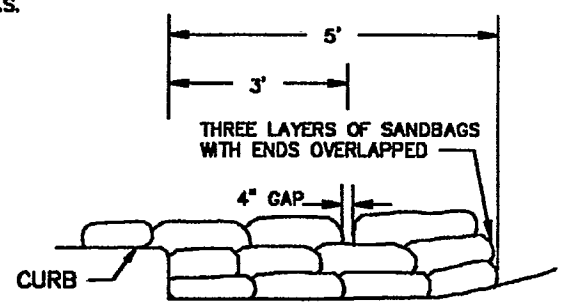


ELEVATION
N.T.S.

NOTES

1. BAGS SHALL BE BURLAP OR WOVEN POLYESTER, FILLED WITH SAND, OVERLAPPED AND TIGHTLY BUTTED TOGETHER.
2. SILT MATERIAL TRAPPED BY SANDBAG SEDIMENT BARRIER SHALL BE REMOVED FROM JOB SITE AS PART OF SAWCUTTING OPERATION.
3. WHEN APPROVED BY THE ENGINEER, SCALE OF SANDBAG SEDIMENT BARRIER MAY BE REDUCED WHERE SAWCUTTING DOES NOT EXCEED 50 LINEAR FEET PER CATCH BASIN.
4. CATCH BASIN SHALL BE CHECKED FOR SILT GENERATED FROM SAWCUTTING OPERATION. EXCESS SILT SHALL BE REMOVED IMMEDIATELY.
5. WHERE SAWCUTTING OPERATION EXCEEDS 300 LINEAR FEET FROM CATCH BASIN, AND WHEN APPROVED BY THE ENGINEER, SANDBAG SEDIMENT BARRIER MAY BE PLACED ADJACENT TO DOWNSTREAM PORTION OF WORKSITE.



SECTION A–A
N.T.S.

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CITY OF OAKLAND | DESIGN AND CONSTRUCTION SERVICES DEPARTMENT

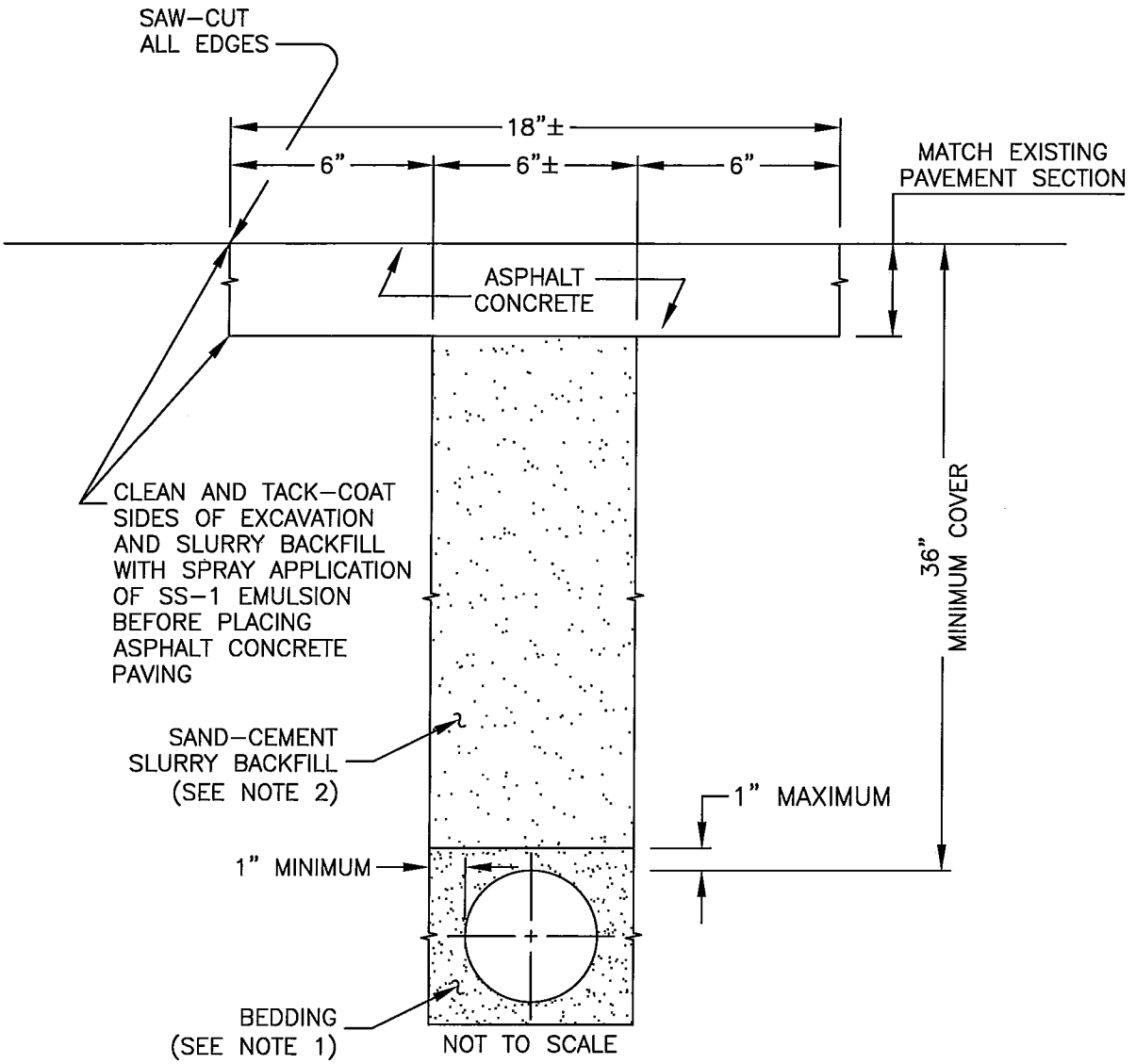
CATCH BASIN SANDBAG SEDIMENT BARRIER

ENGINEERING DESIGN MANAGER

DATE: JANUARY 2002

REV. DATE:

DWG. D-34



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NOTES:

1. BEDDING FOR CONDUIT SHALL BE SAND CONFORMING TO THE GRADATION FOR MORTAR AS SPECIFIED UNDER SECTION 200–1.5 OF THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, CURRENT EDITION. PERMITTEE MAY ELECT TO ELIMINATE SAND BEDDING AND ENCASE CONDUIT IN SLURRY–CONCRETE BACKFILL.

2. BACKFILL MATERIAL SHALL BE CLASS 280–E–200 SAND SLURRY CONCRETE CONFORMING TO SECTION 201–1 OF THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, CURRENT EDITION.

4. THIS TRENCH DETAIL IS FOR THE ELECTRICAL UTILITIES AND RELATED FACILITIES ONLY

CITY OF OAKLAND | DESIGN AND CONSTRUCTION SERVICES DEPARTMENT

SPECIAL TRENCH DETAIL
FOR ROCKSAW METHOD OF TRENCH EXCAVATION

ENGINEERING DESIGN MANAGER

DATE : FEBRUARY 2002

REV. DATE :

DWG. D-35

APPENDIX K - OVERFLOW EMERGENCY RESPONSE PLAN

PORT OF OAKLAND

530 Water Street
Oakland, CA 94607
(510) 627-1100

OVERFLOW EMERGENCY RESPONSE PLAN

July 2015

In Consultation With:

Causey Consulting
733 Cree Ct
Walnut Creek, CA 94598
(925) 323-6520
causeywc@comcast.net

PORT OF OAKLAND

OVERFLOW EMERGENCY RESPONSE PLAN

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OVERFLOW EMERGENCY RESPONSE PLAN

1.0 INTRODUCTION

The Port of Oakland (Port) is committed to the effective management, operation, and maintenance of its sanitary sewer system, providing world-class infrastructure facilities to serve its airport, seaport, and commercial real estate tenants and customers.

Wastewater flows generated within the Port service area are conveyed through the Port collection system to the City of Oakland (City) sanitary sewer system or directly to sewer interceptors owned and maintained by the East Bay Municipal Utility District (EBMUD). All Port wastewater flow is treated at EBMUD's Main Wastewater Treatment Plant (MWWTP).

This Overflow Emergency Response Plan (OERP) has been developed as part of the Port-Wide Sewer System Management Plan (SSMP), which focuses on the reduction of sanitary sewer overflows (SSOs). The effective date of this plan is May 2010.

1.1 Background

SSOs are overflows from sanitary sewer systems of domestic, commercial, or industrial wastewater. SSOs often cause a public nuisance, particularly when raw untreated wastewater is discharged to areas with high public exposure, such as streets or surface waters used for drinking, fishing, or body contact recreation. SSOs may pollute surface or ground waters, threaten public health, adversely affect aquatic life, and impair the recreational use and aesthetic enjoyment of surface waters.

In an effort to reduce SSOs in the State of California, the State Water Resources Control Board (SWRCB), as part of State General Waste Discharge Requirements Order No. 2006-0003 (GWDRs), has established that all municipalities and districts with over one mile of sanitary sewer pipelines develop an SSMP. As part of the requirements for the completion of an SSMP, the SWRCB has required that municipalities and districts develop a site-specific OERP. Similar requirements have also been established by the San Francisco Bay Area Regional Water Quality Control Board (RWQCB).

1.2 Technical Definition of a Sanitary Sewer Overflow

A SSO is defined as any overflow, release, discharge, or diversion of untreated or partially treated wastewater from a sanitary sewer system. There are four categories of SSOs as established by the MRP revisions of September 9, 2013:

Category 1: Discharges of untreated or partially treated sewage of any volume resulting from the Enrollee's sanitary sewer system failure or flow condition that:

a. Reach surface water and/or reach a drainage channel tributary to a surface water; or
b. Reach a MS4 and are not fully captured and returned to the sanitary sewer system or not otherwise captured and disposed of properly. Any volume of wastewater not recovered from the MS4 is considered to have reached surface water unless the storm drain system discharges to a dedicated storm water or groundwater infiltration basin (e.g., infiltration pit, percolation pond).

Category 2: Discharges of untreated or partially treated wastewater greater than or equal to 1,000 gallons resulting from an enrollee's sanitary sewer system failure or flow condition that does not reach a surface water, a drainage channel, or the MS4 unless the entire SSO volume discharged to the storm drain system is fully recovered and disposed of properly.

Category 3: All other discharges of untreated or partially treated wastewater resulting from an enrollee's sanitary sewer system failure or flow condition.

As part of the GWDRs, all agencies that own or operate sanitary systems greater than one mile in length that collect and/or convey untreated or partially treated wastewater to a publicly owned treatment facility are required to report Category 1, 2, and 3 SSOs. There are no privately owned laterals within the Port. Therefore, the reporting of Private Lateral Sewage Discharges is not applicable to the Port.

1.3 Objectives

This report is intended to serve as a Port specific OERP. The primary objectives of the OERP are to protect public health and the environment and to establish procedures to streamline and optimize the Port's SSO response activities.

Additional objectives of the OERP are as follows:

- Establish a formalized SSO reporting procedure for Port staff to follow in the event of any SSO, regardless of its size;
- Provide appropriate customer service;
- Protect collection system personnel;
- Minimize the risk of enforcement actions against the Port;
- Protect the collection system and all appurtenances; and
- Protect private and public property beyond the collection system.

This plan should be updated and modified as necessary to more closely reflect operating conditions and changes that may occur in SSO response and remediation procedures.

Additionally, this plan has been developed to meet the GWDRs requirements. This plan shall not supersede existing standard operating procedures, unless otherwise specified by the Executive Director or his designated representative.

1.4 Organization

The key elements of the OERP are addressed individually as follows:

- Section 1: Introduction
- Section 2: Regulatory Requirements
- Section 3: Overflow Response Procedure
- Section 4: Public Advisory Procedure
- Section 5: Regulatory Agency Notification Procedure
- Section 6: Media Notification Procedure
- Section 7: Distribution and Maintenance of OERP

Certain aspects or provisions of this OERP, such as SSO clean up procedures, are specific to each of the Port's three major divisions, while others apply to the entire Port regardless of division. Individual sections of this document are organized by Port division, where applicable.

1.5 Key Personnel

The report contains references to specific Port personnel as applicable to overflow response procedures. References are made to job titles, rather than individual names. The purpose of this is to simplify the process of updating the document as staff changes occur. Appendix A contains a list of the key personnel identified in this report and their contact information. This list should be updated as necessary.

1.6 Safety Provisions

When responding to the reported location of a potential SSO, Port staff may encounter emergency situations requiring immediate action. Specific actions to be taken will vary greatly depending on the type of overflow and its underlying cause (e.g., main blockage, lift station failure, etc.). While swift action may be required to mitigate the negative impacts associated with an overflow, it is important to perform these actions in a safe and competent manner that is consistent with existing standard operating procedures.

1.7 Abbreviations

To conserve space and to improve readability, the following abbreviations are used in this report. The abbreviations are spelled out in the text the first time the phrase or title is used in each chapter and subsequently identified by abbreviation only.

City	City of Oakland
EBMUD	East Bay Municipal Utility District
gpm	gallons per minute
GWDRs	General Waste Discharge Requirements Order No. 2006-0003
MRP	Monitoring Reporting Program
MWWTP	Main Wastewater Treatment Plant
NPDES	National Pollutant Discharge Elimination Program
OERP	Overflow Emergency Response Plan
Port	Port of Oakland
RWQCB	San Francisco Bay Area Regional Water Quality Control Board
SSMP	Sewer System Management Plan
SSO	Sanitary Sewer Overflow
SWRCB	State Water Resources Control Board
WDR	Waste Discharge Requirements

1.8 Reference Material

The following documents were referenced primarily in the preparation of this report:

- City of Oakland, Sanitary Sewer Management Plan, August 2008.
- EBMUD, Sewer System Management Plan, May 2008.

2.0 REGULATORY REQUIREMENTS

SWRCB Requirements

The GWDRs specify that an Enrollee shall develop and implement an Overflow Emergency Response Plan (OERP) that identifies measures to protect public health and the environment. At a minimum, the plan must include the following:

a. Proper notification procedures so that the primary responders and regulatory agencies are informed of all SSO in a timely manner;

b. A program to ensure an appropriate response to all overflows;

c. Procedures to ensure prompt notification to appropriate regulatory agencies and other potentially affected entities (e.g. health agencies, Regional Water Boards, water suppliers, etc.) of all SSOs that potentially affect public health or reach the waters of the State in accordance with the monitoring reporting program (MRP), the California Water Code, other State Law, and other applicable Regional Water Board waste discharge requirements (WDR) or National Pollutant Discharge Elimination Program (NPDES) permit requirements. The SSMP should identify the officials who will receive immediate notification;

d. Procedures to ensure that appropriate staff, tenants/lease holders and contractor personnel are aware of and follow the Overflow Emergency Response Plan and are appropriately trained;

e. Procedures to address emergency operations, such as traffic and crowd control and other necessary response activities; and

f. A program to ensure that all reasonable steps are taken to contain and prevent discharge of untreated or partially treated wastewater to waters of the United States and to minimize or correct any adverse impact of the environment resulting from the SSOs, including such accelerated or additional monitoring as may be necessary to determine the nature and impact of the discharge.

3.0 OVERFLOW RESPONSE PROCEDURE

This section presents a strategy for Port staff to mobilize labor, materials, tools, and equipment to mitigate any condition, which may cause or contribute to an SSO. The plan considers a wide range of potential system failures that could create an overflow to surface waters, land, or buildings.

3.1 Receipt of Information Regarding a SSO

An overflow may be detected by the general public, Port tenants, Port staff through routine maintenance activities, other public agencies, or by others. This section summarizes the

various ways in which Port staff may become aware of a potential SSO, and how the information is documented and transferred to the appropriate Port personnel.

To effectively respond to calls regarding potential SSOs, operators should obtain all relevant information regarding the potential spill from the caller. This includes in general, the following:

a. Time and date call was received;

b. Specific location;

c. Description of problem;

d. Time possible overflow was noticed by the caller;

e. Caller's name and phone number;

f. Observations of the caller (e.g., odor, duration, back, or front of property); and

g. Other relevant information that will enable the responding Port staff and crews, if required, to quickly locate, assess, and stop the overflow.

Until verified by Port staff, the report of a possible overflow should not be referred to as a "sanitary sewer overflow."

More specific information related to the Aviation, Maritime, and Commercial/Real Estate divisions is provided below.

3.1.1 Aviation Division

Calls from Port tenants or the public regarding potential overflows in the vicinity of the Oakland International Airport are generally received through the Airport Airside Operations Department (Operations Department) at (510) 563-3361. The Operations Department is staffed 24 hours per day, every day of the year (including weekends, non-business hours, and holidays).

The Airport Operations Dispatch at the Operations Department or his/her designated representative then records the overflow information and forwards it to the Aviation Facilities Maintenance Department (Aviation Facilities Manager) and to the Port's SSO Responder, the Environmental Health & Safety Specialist, when appropriate. From time to time, representatives of the maritime or commercial/real estate divisions may not be available to field calls regarding potential overflows. For this reason, the Aviation Operations Department may also receive calls regarding potential overflows in the vicinity of the harbor or commercial/real estate areas. In this case, the Airport Operations Dispatch (or Manager on Duty or his/her representative) will record the relevant information and forward it to the Port Wharfinger or Port Commercial/Real Estate Representative.

Sewer overflows in the vicinity of the Oakland International Airport detected by Port staff in the course of their normal duties shall be reported immediately to the Aviation Facilities

Maintenance Department. Dispatching personnel in the aviation division should record all relevant overflow information and dispatch response crews, as needed (see Section 3.2).

3.1.2 Maritime Division

Calls from Port tenants or the public regarding potential overflows in the maritime area are generally received through the Port Wharfinger. Should the Port Wharfinger be unavailable, all calls regarding potential overflows are routed through the Airport Operations Department (see Section 3.1.1).

The Port Wharfinger (or the Manager on Duty at the Airport Operations Department or his/her representative) then records the overflow information and forwards it to the Harbor Facilities Maintenance Department and to the Port's SSO Responder, the Environmental Health & Safety Specialist, when appropriate.

Sewer overflows in the maritime area detected by Port staff in the course of their normal duties shall be reported immediately to the Port Wharfinger or Harbor Facilities Maintenance Manager if the Wharfinger is unavailable. Dispatching personnel in the maritime division should record all relevant overflow information and dispatch response crews, as needed (see Section 3.2).

3.1.3 Commercial/Real Estate Division

Calls from Port tenants or the public regarding potential overflows in Jack London Square or other commercial/real estate areas are generally received through the Commercial/Real Estate Representative. Should the Commercial/Real Estate Representative be unavailable, all calls regarding potential overflows are routed through the Operations Department (see Section 3.1.1).

The Airport Operations Dispatch (or the Manager on Duty at the Airport Operations Department or his/her representative) then records the overflow information and forwards it to the Harbor Facilities Maintenance Department and to the Port's SSO Responder, the Environmental Health & Safety Specialist, when appropriate.

Sewer overflows in Jack London Square or other commercial/real estate areas detected by Port staff in the course of their normal duties shall be reported immediately to the Port Commercial/Real Estate Representative. Dispatching personnel in the maritime division should record all relevant overflow information and dispatch response crews, as needed (see Section 3.2).

3.2 Dispatch of Appropriate Crews to Site of Sanitary Sewer Overflow

Failure of any element within the Port sewer system that threatens to cause or causes a SSO will trigger an immediate response to isolate and correct the problem. Crews and equipment shall be available to respond to any SSO location and shall be dispatched to the site of a reported SSO immediately. Also, additional maintenance and contract personnel

shall be “on call” should extra crews be needed. Figure 1 summarizes the Aviation SSO Field Response Action Plan, while Figure 2 summarizes the Maritime and Commercial/Real Estate SSO Field Response Action Plan.

Figure 1 Airport Facilities SSO Field Response Action Flow Chart

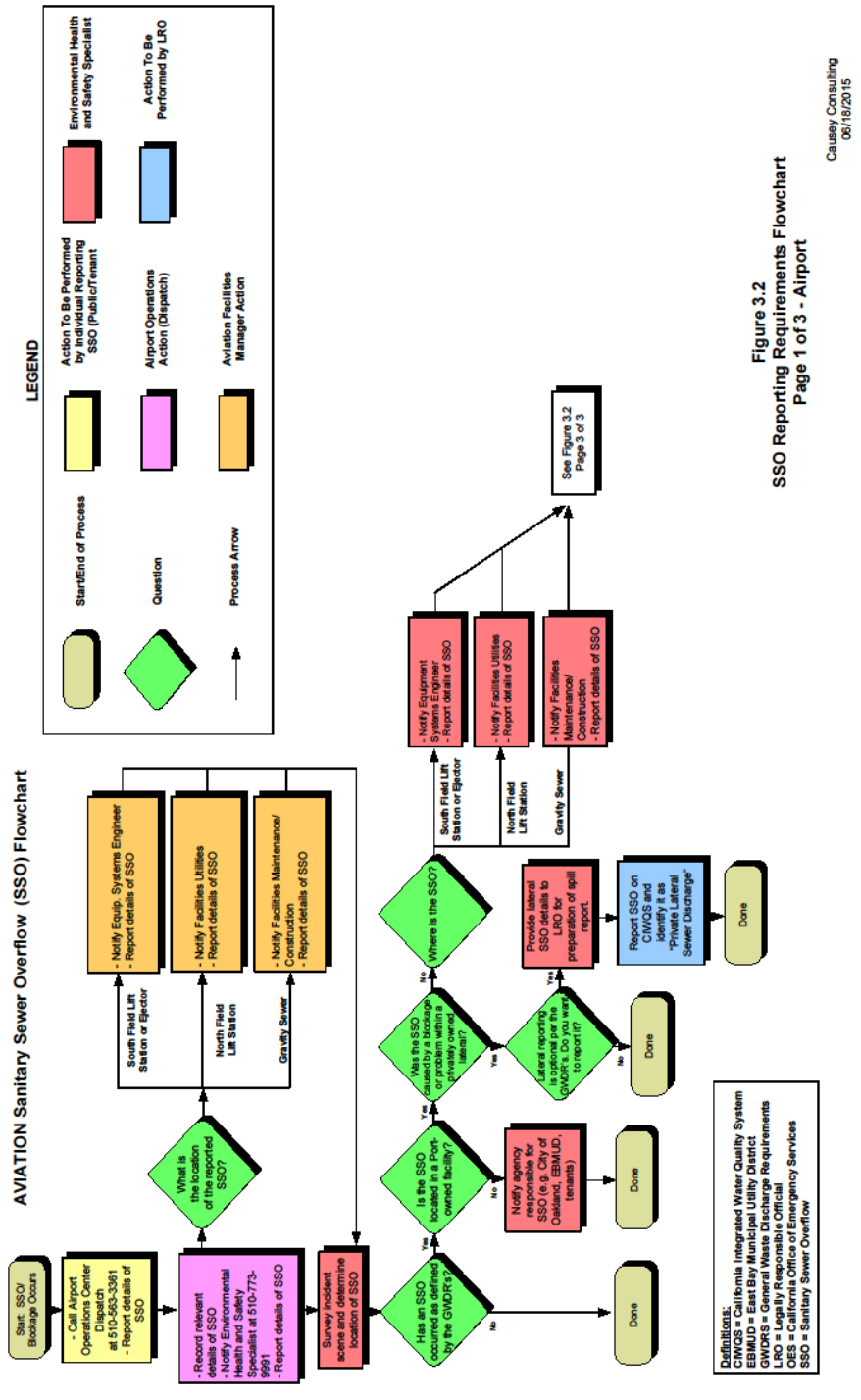
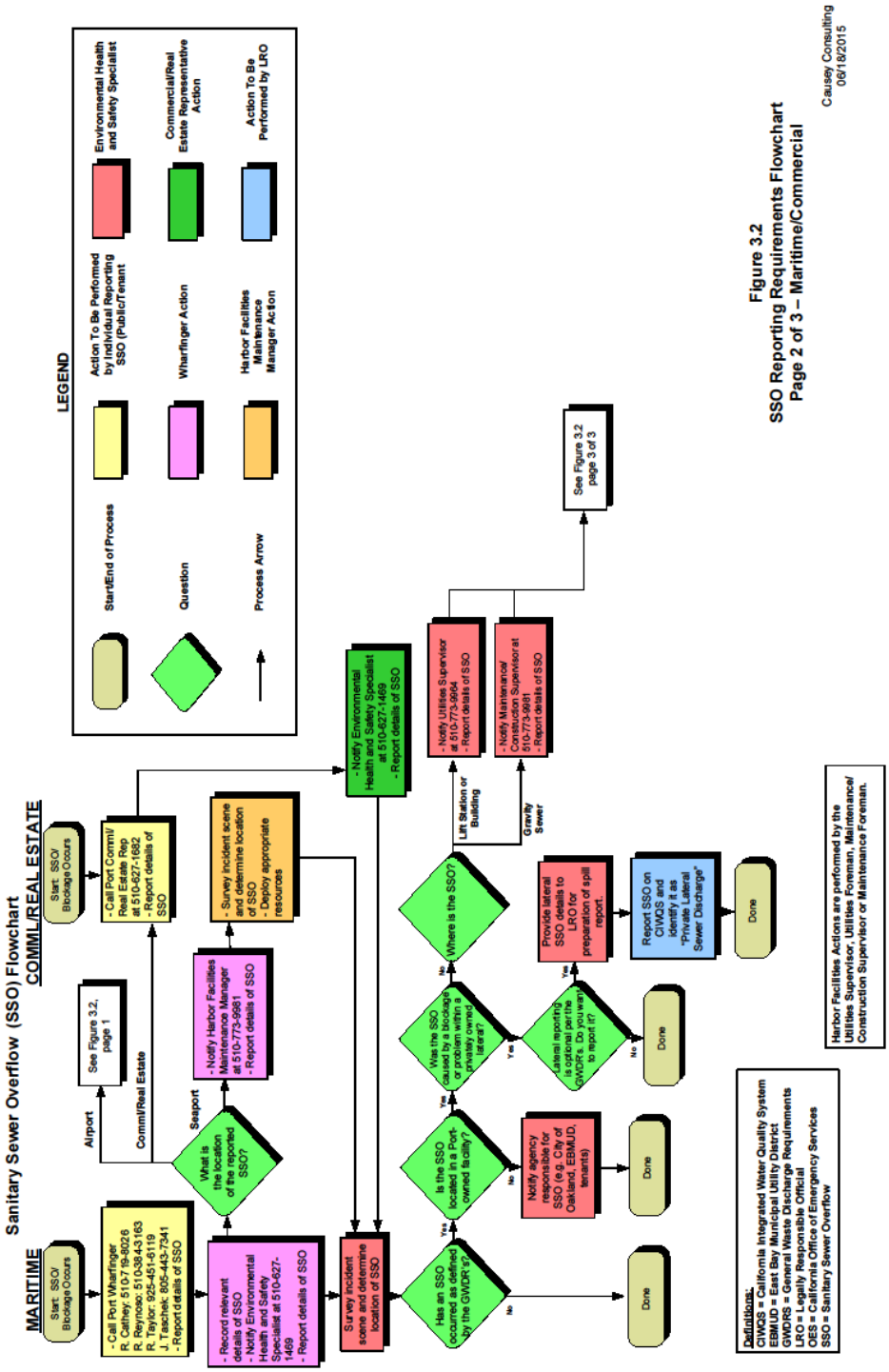


Figure 3.2
SSO Reporting Requirements Flowchart
Page 1 of 3 - Airport

Causey Consulting
06/18/2015

Figure 2 Maritime/Comm. Facilities SSO Field Response Action Flow Chart



3.2.1 Dispatching Duties

Dispatchers should receive notification of SSOs as outlined in Section 3.1 and dispatch the Environmental Health & Safety Specialist , who will assess the situation and request that appropriate crews and resources as required are dispatched. Dispatching duties are assigned based on the division responsible for maintaining the sewers where the SSO occurred (e.g., Aviation, Maritime), as summarized below.

In the Port, the dispatcher is also responsible for the coordination of the spill response activities, and shall maintain frequent contact with the response crew throughout the SSO response and mitigation process.

3.2.1.1 Aviation Division

The Aviation Maintenance/Construction Supervisor, Utilities Supervisor, or Senior Equipment Systems Engineer normally performs dispatching duties for overflows in Aviation sewer facilities, depending on the nature of the problem.

3.2.1.2 Maritime Division

The Maritime Maintenance/Construction Supervisor or Utilities Supervisor normally performs dispatching duties for overflows in Maritime sewer facilities, depending on the nature of the problem.

3.2.1.3 Commercial/Real Estate Division

The Maritime Maintenance/Construction Supervisor or Utilities Supervisor normally performs dispatching duties for overflows in Commercial/Real Estate sewer facilities, depending on the nature of the problem.

3.2.2 Crew Instructions and Work Orders

Response crews should receive instructions regarding appropriate materials, supplies, and equipment needed by the designated dispatcher noted in Section 3.2.1. The dispatcher will inform the response crew of all pertinent information regarding the spill.

Dispatchers shall verify that the entire message has been received and acknowledged by the crews who were dispatched. All standard communications procedures should be followed. All employees being dispatched to the site of a SSO shall proceed immediately to the site of the overflow. Any delays or conflicts in assignments must be immediately reported to the dispatcher for resolution. Work orders are coordinated through the Port's computerized maintenance management system (CMMS) software.

Response crews should report their findings, including possible damage to private and public property, to the dispatcher immediately upon making their investigation. If the

dispatcher has not received findings from the field crew within a reasonable amount of time, he shall contact the response crew to determine the status of the investigation.

The dispatcher shall also refer all pertinent information to the next shift, including any details of the problems described by customers.

3.2.3 Additional Resources

The dispatcher should receive and shall convey to appropriate parties within the Port requests for additional personnel, material, supplies, and equipment from crews working at the site of a SSO. If outside SSO response assistance is necessary, the Port's designated SSO Responder shall be notified by the dispatcher and shall immediately contact the Port's Hazardous Material Contractor.

3.2.4 Preliminary Assessment of Damage to Private and Public Property

The focus of the field response is to resolve the problem in an efficient manner and to protect the public health and welfare. The response crews should use discretion in assisting individual tenants/property owners as reasonably as they can for SSOs in sewers not owned or maintained by the Port. The Port should be aware that it could face increased liability for any further damages inflicted to private property during such assistance. Appropriate still photographs and video footage, if possible, should be taken of the outdoor area of the SSO and impacted area in order to thoroughly document the nature and extent of impacts. Available photographs are to be forwarded to the appropriate department below for filing with the Sanitary Sewer Overflow Field Report:

- **Aviation Sewer System:** Aviation Facilities Maintenance Department
- **Maritime Sewer System:** Harbor Facilities Maintenance Department
- **Commercial/Real Estate Sewer System:** Harbor Facilities Maintenance Department

3.2.5 Field Supervision and Inspection

The supervisor/superintendent appropriate to the spill site location and type may visit the site of the overflow, if necessary, to verify that the provisions of this overflow response plan and other directives are met. He is responsible for confirming that the Sanitary Sewer Overflow Field Report is completed and that the available information is forwarded to the Port's Environmental Health & Safety Specialist for reporting to the SWRCB and other applicable regulatory as established in the GWDRs (see Section 5.0). The Environmental Health & Safety Specialist is also responsible for coordinating with the Port's "Legally Responsible Official" (Water Systems Engineer) and will certify all SSO reports submitted to the SWRCB.

3.2.6 Coordination with Hazardous Material Response

In the event of an SSO, the Environmental Health & Safety Specialist or designated SSO Responder should be notified and consulted and will then determine if the Port's Hazardous Material Contractor should be utilized. This is of particular importance if a suspicious substance (e.g., oil sheen, foamy residue) is found on the ground surface, or should a suspicious odor (e.g., gasoline) not common to the sewer system be detected, the response crew should immediately contact the dispatcher and the SSO Responder for guidance before taking further action.

Should the Port's SSO Responder determine the need to alert the Port's Hazardous Material Contractor, the response crew shall await their arrival. Any vehicle engine, portable pump, or open flame (e.g., cigarette lighter) that can provide the ignition for an explosion or fire should flammable fluids or vapors be present shall be put out and not operated. The response crew should maintain a safe distance and observe caution until assistance arrives. In this instance, the Operations Department should also be notified so that refueling activities in the area can be suspended until the fuel cleanup is completed.

Upon arrival of the Port's Hazardous Material Contractor, the response crew will take direction from the person with the lead authority of that team and from the Port's SSOSpill Responder. Only when that authority determines it is safe and appropriate for the response crew to proceed or assist with SSO response actions can they then proceed with containment (as needed), clean-up activities, and correction. These actions, however, may be performed by the Port's Hazardous Material Contractor, depending on the size and nature of the event.

3.2.7 Crowd Control, Traffic Diversion, and Other Emergency Operations

Should a SSO be of such a size or at such a location as to cause major disruptions to the flow of traffic at any point in the Port, the responding crew shall notify the dispatcher as soon as possible. The dispatcher will then coordinate with the appropriate Port staff to set up a traffic diversion to move motorists away from the SSO location.

Steps should be taken to barricade off the site of a SSO to eliminate the potential of large crowds to inhibit the response crew's ability to effectively work. If necessary, additional assistance may be required (from the City of Oakland Police Department or other appropriate City/Port departments).

3.3 Overflow Correction, Containment, and Clean-Up

SSOs of various volumes occur from time to time, in spite of concerted prevention efforts. Spills may result from blocked sewers, pipe failures, or mechanical malfunctions, among other natural or man-made causes. The Port should be ready to respond upon notification and confirmation of an overflow. This section describes specific actions to be performed by the crews during a SSO.

The objectives of these actions are:

- To protect public health, environment, and property from sewage overflows and restore surrounding area back to normal as soon as possible;
- To establish perimeters and control zones with appropriate traffic cones and barricades, vehicles or use of natural topography (e.g., hills, berms);
- To promptly notify appropriate regulatory agencies, including the SWRCB;
- To contain the SSO to the maximum extent possible including preventing the discharge of sewage into surface waters; and
- To minimize the Port's exposure to any regulatory agency penalties and fines.

An important issue with respect to an emergency response is to make sure that the temporary actions necessary to divert flows and repair the problem do not produce a problem elsewhere in the system. For example, repair of a force main could require the temporary shutdown of the pump station and diversion of the flow at an upstream location. If the closure is not handled properly, sewage system back-ups may create other overflows.

Although the Port is staffed with individuals capable of responding efficiently to overflows, the Port does not currently own the equipment necessary to fully mitigate large SSOs that occur. For this reason, the Port typically contracts with a Hazardous Material Contractor when conditions warrant such assistance.

3.3.1 Responsibilities of Response Crew upon Arrival

It is the responsibility of the first personnel who arrive at the site of a SSO to protect the health and safety of the public by mitigating the impact of the overflow to the extent possible. Should the overflow not be the responsibility of the Port, but there is imminent danger to public health, public or private property, or to the quality of waters of the United States, then prudent emergency action should be taken until the responsible party assumes responsibility and provides actions. Upon arrival at a SSO, the response crew should do the following:

- Isolate and secure all sources of spill materials to mitigate the spill volume, such as securing any bathrooms that may be added to the spill;
- Determine the cause of the overflow, e.g. sewer line blockage, pump station mechanical or electrical failure, sewer line break, etc.;
- Identify and request, if necessary, assistance or additional resources to correct the overflow or to assist in the determination of its cause;
- Determine if private property is impacted;

- Take immediate steps to stop the overflow if possible (e.g., relieve pipeline blockage, manually operate pump station controls, repair pipe, etc.) Extraordinary steps may be considered where overflows from private property threaten public health and safety (e.g., an overflow running off of private property into the public right-of-way);
- Notify the Port's SSO Responder for guidance on how to proceed; and
- Request additional personnel, materials, supplies, or equipment that will expedite and minimize the impact of the overflow.

3.3.2 Initial Measures for Containment

The response crew shall initiate measures to contain the overflowing sewage and recover sewage that has already been discharged. Appropriate steps should be taken to minimize the impact to public health or the environment, including the following:

- Determine the immediate destination of the overflow (e.g. storm drain, street curb gutter, body of water, creek bed, etc.);
- Identify and request the necessary materials and equipment to contain or isolate the overflow, if not readily available; and
- Take immediate steps to contain the overflow (e.g., block or bag storm drains, divert into downstream manhole, etc.)

3.3.3 Additional Measures Under Potentially Prolonged Overflow Conditions

In the event of a prolonged sewer line blockage or a sewer line collapse, a determination should be made to set up a portable by-pass pumping operation around the obstruction. This may require the Port to seek assistance from an outside contractor (e.g., Rain for Rent).

- Appropriate measures shall be taken to determine the proper size and number of pumps required to effectively handle the sewage flow.
- Continuous or periodic monitoring of the by-pass pumping operation shall be implemented as required.
- Regulatory agency issues shall be addressed in conjunction with emergency repairs.

3.3.4 Cleanup

Sewer overflow sites are to be thoroughly cleaned after an overflow. No readily identified residue (e.g., sewage solids, papers, rags, plastics, rubber products) is to remain. Appropriate cleanup actions that shall be addressed, as applicable, are discussed in this section.

In many cases, the Port utilizes the services of a Hazardous Material Contractor for clean up and disinfection. Actions performed by the contractor include:

- Where practical, the area is to be thoroughly flushed and cleaned of any sewage or wash-down water. Solids and debris are to be flushed, swept, raked, picked-up, and transported for proper disposal.
- Where appropriate, the overflow site is to be disinfected and deodorized.
- Where sewage has resulted in ponding, the pond should be pumped dry and the residue disposed of in accordance with applicable regulations and policies.
- If a pond area contains sewage, which cannot be pumped dry, it may be treated with bleach. If sewage has discharged into a body of water that may contain fish or other aquatic life, bleach or other appropriate disinfectant should not be applied and the California Department of Fish and Game should be contacted for specific instructions.
- Use of portable aerators may be required where complete recovery of sewage is not practical and where severe oxygen depletion in existing surface water is expected.

The overflow site is to be secured to prevent contact by members of the public until the site has been thoroughly cleaned. Posting, if required, should be undertaken pursuant to Section 4.1.

3.3.4.1 Water Quality Monitoring

When it is determined to be feasible and safe, the Port shall collect and analyze samples of the receiving water for those SSOs that are 50,000 gallons or greater. Samples taken in the receiving waters at appropriate locations shall be analyzed for ammonia, dissolved oxygen, and an indicator of bacteria such as total coliform, fecal coliform, or enterococcus.

A complete water quality monitoring plan (WQMP) that fully complies with the 2013 State MRP will be developed and approved within ninety (90) days of Commission approval of the July 2015 SSMP revision.

3.3.4.2 Aviation Division

Following initial attempts for overflow correction and containment, Aviation personnel should contact the Port's Spill Responder for guidance on how to proceed. For smaller wastewater spills, Aviation staff may be able to use wash-down water to direct wastewater collected in the spill area back into a sanitary sewer manhole and into the collection system. For larger spills, the Port's Spill Responder typically contacts a Hazardous Material Contractor to clean up and disinfect the affected area.

3.3.4.3 Maritime Division

Following initial attempts for overflow correction and containment, Maritime personnel should contact the Port's SSO Responder for guidance on how to proceed. For spills in the maritime area, the Port's SSO Responder typically contacts a Hazardous Material Contractor to clean up and disinfect the affected area.

3.3.4.4 Commercial/Real Estate Division

Following initial attempts for overflow correction and containment, Maritime personnel should contact the Port's SSO Responder for guidance on how to proceed. For spills in the commercial/real estate area, the Port's Spill Responder typically contacts a Hazardous Material Contractor to clean up and disinfect the affected area.

3.4 Overflow Report

A Sanitary Sewer Overflow Field Report (Appendix B) shall be completed by response crews and designated Port staff whenever there is a sanitary sewer overflow (SSO) on Port property. The appropriate dispatcher shall be promptly notified when the overflow is eliminated. Information regarding the SSO should include the following:

- Indication that the sewage overflow has reached surface waters (i.e., all overflows where sewage was observed running to surface waters, or there was obvious indication (e.g. sewage residue) that sewage flowed to surface waters); or

- Indication that the sewage overflow has not reached surface waters. SSOs in the Port do not typically reach surface waters (e.g., San Francisco Bay). The Port's aviation storm drainage collection system is serviced entirely by retention basins and does not include direct discharges to San Francisco Bay. Common characteristics of an SSO that has not reached surface water include:
  - Sewage overflows to covered storm drains (with no public access) where personnel verify, by inspection, that the entire volume is contained in a sump or impoundment and where complete clean-up occurs leaving no residue.
  - Preplanned or emergency maintenance jobs involving bypass pumping if access by the public to a bypass channel is restricted and subsequent complete clean-up occurs leaving no residue (Any preplanned bypass under these circumstances will not be considered an overflow); and
  - Overflows where observation or on-site evidence clearly indicates all sewage was retained on land and did not reach surface water and where complete cleanup occurs leaving no residue.

- Determination of the start time of the sewer overflow by one of the following methods:
  - Date and time information received and/or reported to have begun and later substantiated by a response crew;

  - Visual observation; or
  - Pump station and lift station flow charts and other recorded data;

- Determination of the stop time of the sewer overflow by one of the following methods:
  - When the blockage is cleared or flow is controlled or contained; or
  - The arrival time of the response crew, if the overflow stopped between the time it was reported and the time of arrival;

- Visual observations;

- An estimation of the rate of sewer overflow in gallons per minute (gpm) by one of the following criteria:
  - Direct observations of the overflow; or
  - Measurement of actual overflow from the sewer main;

- Determination of the volume of the sewer overflow (Appendix C contains guidance for the estimation of SSO volumes and flow rates):
  - When the rate of overflow is known, multiply the duration of the overflow by the overflow rate; or
  - When the rate of overflow is not known, investigate the surrounding area for evidence of ponding or other indications of overflow volume.

- Photographs of the event, when possible.

- Assessment of any damage to the exterior areas of public/private property.

3.4.1 Technical Report

Technical reports are required by the State 2013 MRP for any SSOs that are 50,000 gallons or greater that reach waters. An outline for these technical reports will be included as part of the WQMP previously noted in section 3.3.4.1. The Technical Report shall be certified to the CIWQS system.

3.5 Customer Satisfaction

As a customer service gesture, the dispatcher or response crew confirming the overflow should follow-up in person or by telephone with the citizen(s) or tenant(s) reporting the overflow. The cause of the overflow and its resolution should be disclosed.

4.0 PUBLIC ADVISORY PROCEDURE

This section describes the actions the Port should take to limit public access to areas potentially impacted by unpermitted discharges of pollutants to surface water bodies from the wastewater collection system.

4.1 Temporary Signage

The Port has primary responsibility for determining when to post notices of polluted surface water bodies or ground surfaces that result from uncontrolled wastewater discharges from its facilities. The postings do not necessarily prohibit use of recreational areas, unless posted otherwise, but provide a warning of potential public health risks due to sewage contamination. Sample warning signs for use by the Port are provided in Appendix D.

Figure 3 on page 20 outlines the proposed decision process for personnel to recommend that posting of a confirmed overflow be undertaken or that there is reasonable potential for an overflow to occur (thus the need to post in advance). If posting is deemed necessary, the appropriate local health agency shall be notified.

4.2 Other Public Notification

Should the posting of surface water bodies or ground surfaces subjected to a sewer overflow be deemed necessary by the Aviation or Harbor Facilities Manager, he shall also determine the need for further public notification through the use of pre-scripted notices made available to the printed or electronic news media for immediate publication or airing, or by other measures (e.g., front door hangers). These measures shall be coordinated through the Port's designated Public Information Officer.

5.0 REGULATORY AGENCY NOTIFICATION PLAN

This section summarizes the procedures that Port staff shall follow to provide formal notice to the appropriate regulatory agencies as necessary in the event of an SSO. Agency notifications shall be performed in parallel with other internal notifications. The procedures for providing notification of an SSO to the media are presented in Section 6.0. Internal notification and mobilization of personnel are detailed in Section 3.0.

The regulatory agency that must be notified if an SSO occurs varies depending on the type of discharge. Likewise, the time frame in which the appropriate agencies must be notified depends on the type of discharge. The GWDRs define three categories of main line SSOs, as summarized in Section 1.2 of this document. For the reporting of SSOs, however, there are four main types of SSOs where specific reporting time frames are required, as summarized, in order of severity, below:

1. **Category 1 SSOs that Reach Surface Waters and are 1000 Gallons or Greater.** This SSO type includes those of volume 1000 gallons or greater that result in a

discharge to a drainage channel and/or surface water, or a discharge in a location where it will probably be discharged to a surface water, or discharges to a storm drain pipe that are not captured and returned to the sanitary sewer system such that less than 1000 gallons reaches surface waters.

2. **Category 1 SSOs that are Not 1000 Gallons or Greater, and Category 2 SSOs.** This SSO type includes SSOs that result in a discharge to a drainage channel and/or surface water or discharges to a storm drain pipe that are not fully captured and returned to the sanitary sewer system and are not 1000 gallons or greater (Category 1 SSOS), and SSOs that are 1000 gallons or greater that do not reach surface waters, unless the entire SSO volume discharged to a storm drain system is fully recovered and disposed of properly (Category 2 SSOs).

3. **Category 3 SSOs.** This SSO type includes all other SSOs other than Category 1 or 2 as described above.

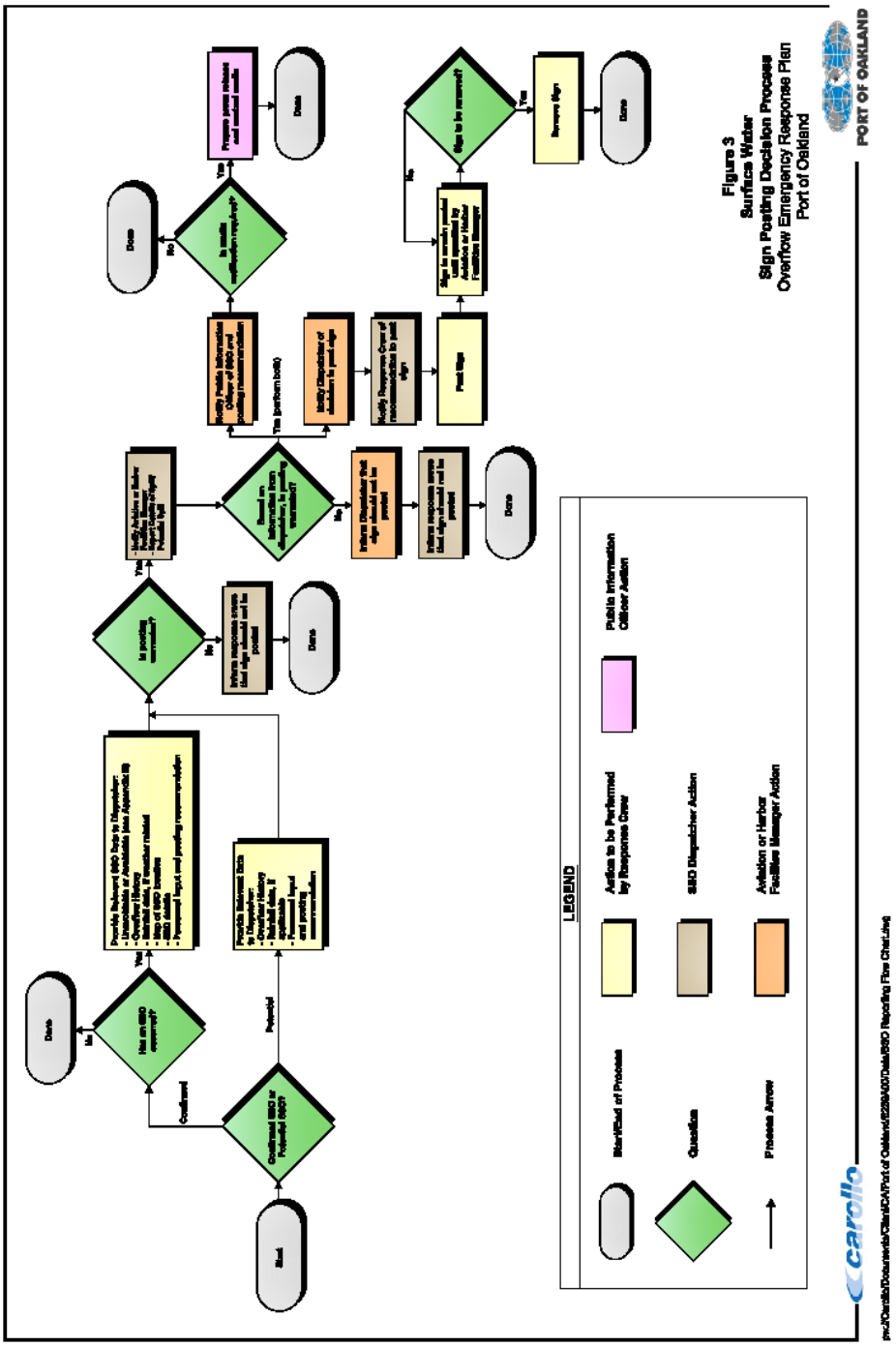
4. **Private Lateral Sewage Discharges.** This SSO type includes discharges that are caused by blockages or other problems within a lateral sewer that is not owned by the Port. Privately owned laterals typically service residential, commercial, and industrial customers and extend from either the sewer main connection or the publicly owned right-of-way to the building connection. Because all of the sanitary sewers in the Port, including service laterals, are owned by the Port, City, or EBMUD, this type of discharge is not applicable to the Port.

Table 1 summarizes the regulatory agency notification plan for each type of discharge. The requirements for which regulatory agencies must be notified and under what conditions are the same regardless of the responsible Port division. Figure 4 summarizes actions that follow Figures 1 and 2, and are required by the State CIWQS for any Port division that has an SSO.

6.0 MEDIA NOTIFICATION PROCEDURE

When an overflow has been confirmed and is a threat to public health, actions should be taken, if necessary, to notify the media in accordance with this section.

Figure 3 SSO Posting Decision Process



NOTE: Due to the highly condensed – and somewhat difficult to read - manner that Microsoft Word uses to display major changes to tables, both versions of Table 3.1 (2010 and 2015) are displayed below for comparison.

2010 Version:

Table 3.1	**Regulatory Agency Notification Plan Sewer System Management Plan Port of Oakland**		
Agency	**Contact Information**	**Action**	**Criteria**
Category 1 Spills That Reach a Drainage Channel or Surface Water			
State Office of Emergency Services	Phone: (800) 852-7550	Contact within 2 Hours	When spill reaches drainage channel or surface water
Alameda County Health Department	Phone: (510) 267-8000	Contact within 2 Hours	When spill reaches drainage channel or surface water
San Francisco Bay Area RWQCB	http://www.wbers.net/ (1)	- Complete Online Report SSO within 2 Hours - Within 24 hours, certify online that State OES and County Health Department were notified.	When spill reaches drainage channel or surface water
SWRCB	https://ciwqs.waterboards.ca.gov/	- Initial CIWQs report within 3 business days - Final CIWQs report within 15 calendar days	Category 1 SSO
National Response Center (United States Coast Guard)	http://www.nrc.uscg.mil/nrchp.html	As soon as possible	Whenever a sewage spill threatens bay water quality

Table 3.1 Regulatory Agency Notification Plan Sewer System Management Plan Port of Oakland			
Agency	**Contact Information**	**Action**	**Criteria**
Category 1 SSOs that Do Not Reach Drainage Channels or Surface Water			
SWRCB	https://ciwqs.waterboards.ca.gov/	- Complete Initial Online SSO Report within 3 business days - Final Online SSO Report within 15 calendar days	Category 1 SSO
State Office of Emergency Services	Phone: (800) 852-7550	As soon as possible	Category 1 SSO (Non Surface Water)
Alameda County Health Department	Phone: (510) 267-8000	As soon as possible	Category 1 SSO (Non Surface Water)
Category 2 SSOs			
SWRCB	https://ciwqs.waterboards.ca.gov/	- Final Online SSO Report within 30 days of the end of the calendar month	Category 2 SSO
Private Lateral Sewage Discharges			
SWRCB	https://ciwqs.waterboards.ca.gov/	- Final Online SSO Report within 30 days of the end of the calendar month	Reporting is **Optional**

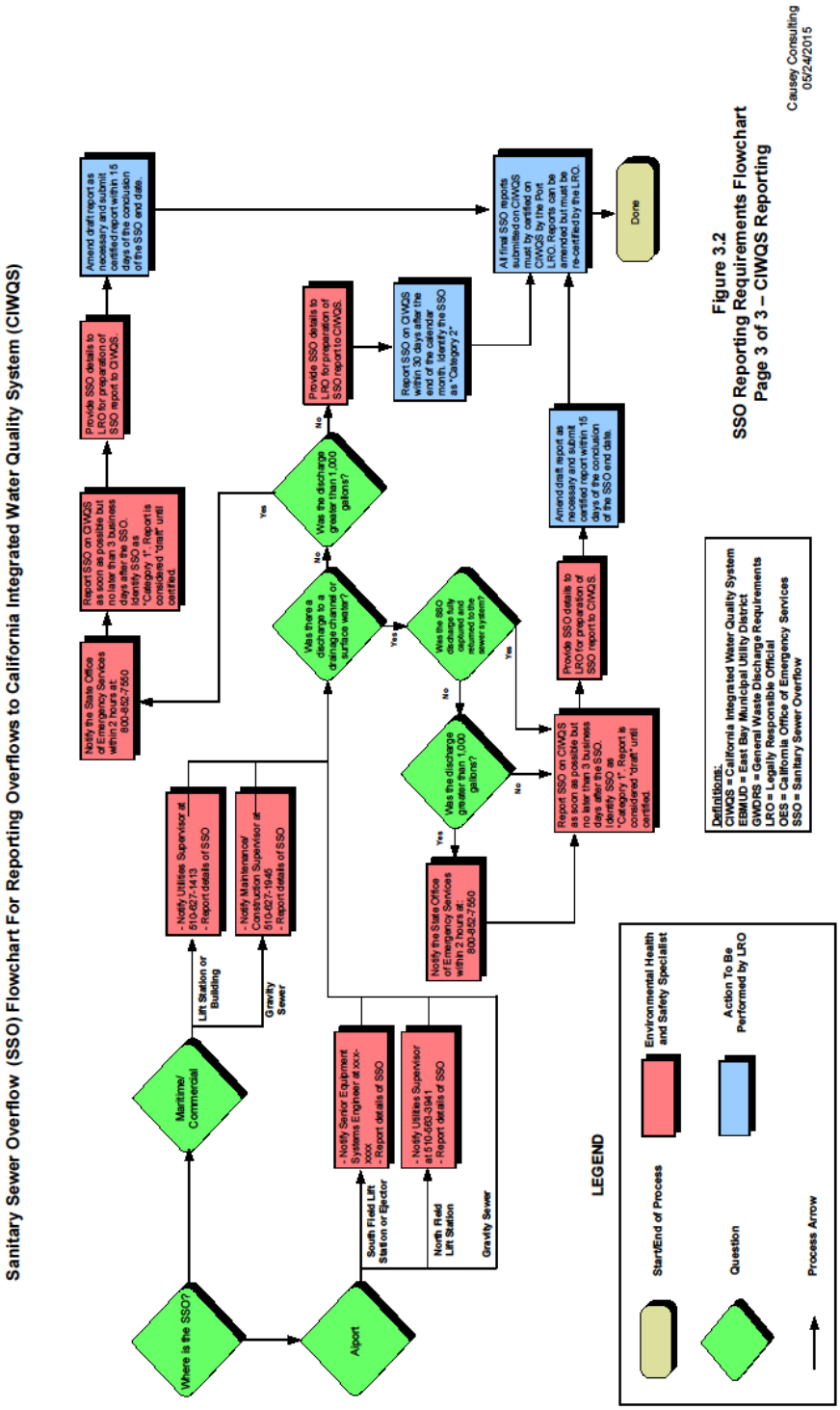
Notes:

1. The RWQCB online reporting system encompasses both the 2 hour notification and the 24 hour notification requirement.

2015 Version:

Table 3.1 Regulatory Agency Notification Port of Oakland SSMP			
Agency	**Contact Information**	**Action**	**Criteria Requires LRO certification**
State Office of Emergency Services	Phone: 800-852-7550	Within 2 hours of becoming aware of SSO obtain notification control number	Discharge > 1000 gallons to Waters or where probably will reach Waters
SWRCB - CIWQS	(http://ciwqs.waterboards.ca.gov/)	Draft report - 3 days Certify w/in 15 days	Categories 1 and 2 SSOs
SWRCB - CIWQS	(http://ciwqs.waterboards.ca.gov/)	Submit certified report w/in 30 calendar days after end of month in which SSO occurred	Category 3 SSO
SWRCB - CIWQS	(http://ciwqs.waterboards.ca.gov/)	Submit certified Technical Report	SSO equal/greater than 50,000 gallons
SWRCB - CIWQS	(http://ciwqs.waterboards.ca.gov/)	Water Quality Sampling	Initiated within 48 hours after initial OES notification
SWRCB - CIWQS	(http://ciwqs.waterboards.ca.gov/)	"No Spill Certification"	Within 30 days following end of month when no spills occur
SWRCB - CIWQS	(http://ciwqs.waterboards.ca.gov/)	Annual Collection System Questionnaire	LRO Certified Every 12 months
SWRCB - CIWQS	(http://ciwqs.waterboards.ca.gov/)	Private Sewer Lateral Discharges (PLSD) - Final SSO Report in CIWQS within 30 days after end of month	Reporting is voluntary

Figure 4 All Facilities SSO CIWQS Action Flow Chart



6.1 Aviation Division

For confirmed overflows in the aviation sewer system requiring media notification, the following steps should be taken:

- Response crew verifies overflow and reports back to the aviation dispatcher, who informs the Aviation Facilities Manager.
- The Aviation Facilities Manager confirms with his superiors and contacts the Port's Public Information Officer.
- Calls received by the dispatcher from the media at any time are to be referred to the Port's Public Information Officer.
- Only specified personnel shall conduct interviews with the media.

6.2 Maritime Division

For confirmed overflows in the maritime sewer system requiring media notification, the following steps should be taken:

- Response crew verifies overflow and reports back to the maritime dispatcher, who informs the Harbor Facilities Manager.
- The Harbor Facilities Manager confirms with his superiors and contacts the Port's Public Information Officer.
- Calls received by the dispatcher from the media at any time are to be referred to the Port's Public Information Officer.
- Only specified personnel shall conduct interviews with the media.

6.3 Commercial/Real Estate Division

For confirmed overflows in the commercial/real estate sewer system requiring media notification, the following steps should be taken:

- Response crew verifies overflow and reports back to the maritime dispatcher, who informs the Harbor Facilities Manager.
- The Harbor Facilities Manager confirms with his superiors and contacts the Port's Public Information Officer.
- Calls received by the dispatcher from the media at any time are to be referred to the Port's Public Information Officer.

- Only specified personnel shall conduct interviews with the media.

7.0 DISTRIBUTION AND MAINTENANCE OF OERP

This plan was prepared in conjunction with and is an important element of the Port-Wide SSMP. As such, the OERP should be periodically reviewed and modified as necessary to reflect operational and policy changes. Audits of the plan should also be performed in conjunction with the larger SSMP program audits, as outlined in Chapter 11 of the Port SSMP.

7.1 Submittal and Availability of OERP

Copies of the OERP and any amendments should be distributed to all of the departments, divisions, and personnel that are heavily involved with the SSMP or OERP programs. All other personnel who may become incidentally involved in responding to overflows should be familiar with the OERP. A program to annually train such personnel on the provisions of this plan should also be established by the Port as part of the anticipated 2016 SSMP audit.

7.2 Review and Update of OERP

The Port is ultimately responsible for keeping the OERP up to date. The OERP should be reviewed at a predefined time interval for outdated material and should be updated whenever:

- Specified by the Executive Director or his designated representative;
- The SSMP plan audit indicates that material needs to be revised or added;
- Responsibilities of personnel involved in SSO response, mitigation or reporting change for various reasons; or
- Governing laws, rules or regulations change.

APPENDIX A - KEY PERSONNEL

PORT OF OAKLAND

PORT SSMP ORGANIZATION CHART CONTACT INFORMATION
Port-Wide Sewer System Management Plan Port of Oakland

Position	Name	Phone
Executive		
Executive Director	Chris Lytle	(510) 627-1210
Port Attorney	Danny Wan	(510) 627-1340
Chief Audit Officer	Arnel Atienza	(510) 627-1257
Chief Financial Officer (CFO)	Sara Lee	(510) 627-1668
Aviation		
Director of Aviation (Acting)	Kristi McKenney	(510) 627-1133
Aviation Planning and Development Manager	Joan Zatopek	(510) 627-1335
Aviation Facilities Maintenance Manager	Craig Simon	(510) 207-5147
Utilities Supervisor	Valerie Zabb-Parmley	(510) 715-9905
Utilities Foreman	Wilson Kung	(510) 773-9963
Equipment Systems Superintendent	Ted Getchell	(510) 385-5800
Maintenance/Construction Supervisor	Eddie Villasenor	(510) 385-5566
Maintenance Foreman	Dejon Iglehart Darryl Edwards	(510) 774-5961 (510) 774-5277
Facilities Support Supervisor	Vanessa Valderrama	(510) 385-4150
Commercial/Real Estate		
Director of Commercial Real Estate	Pam Kershaw	(510) 627-1168
Commercial Real Estate Manager	Dorin Tuitin	(925) 352-4846
Commercial Real Estate Representatives	Julie Braun Rina Morningstar	(510) 627-1144 (510) 627-1165
Maritime		
Director of Maritime	John Driscoll	(510) 627-1243
Chief Wharfinger	Chris Peterson	(510) 719-8024
Wharfingers	Robert Cathey Ralph Reynoso Richard Taylor Justin Taschek	(510) 719-8026 (510) 384-3163 (925) 451-6119 (805) 443-7341
Administrative and Financial Services	Delphine Prevost	(510) 627-1141
Harbor Facilities Maintenance Manager	Bill Morrison	(510) 773-9981
Utilities Supervisor	Ernest Richmond	(510) 773-9964

Utilities Foreman	Mike Ringbom	(510) 772-9113
Maintenance/Construction Supervisor	Bill Morrison	(510) 773-9981
Maintenance Foreman	Kenneth Taylor	(510) 427-2242
Facilities Support Supervisor	Eric Fan	(510) 627-1298
Engineering		
Director of Engineering/Chief Engineer	Chris Chan	(510) 627-1331
Utilities Administration Manager	Nico Procos	(510) 627-1167
Port Principal Engineer - Aviation	Frank Lobedan	(510) 466-7896
Port Principal Engineer - Maritime	Imee Osantowski	(510) 627-1479
Port Principal Engineer - Engineering	Ana Ward	(510) 627-1253
Port Supervising Engineer	Thanh Vuong	(510) 627-1266
Water Systems Engineer	Liem Nguyen	(510) 627-1636
Environmental Programs and Planning		
Director of Environmental Programs and	Richard Sinkoff	(510) 627-1182
Environmental Health & Safety Specialist	Desmond DeMoss	(510) 773-9991
Human Resources		
Director of Human Resources	Christopher Boucher	(510) 627-1202

APPENDIX B - SANITARY SEWER OVERFLOW FIELD REPORT

PORT OF OAKLAND

SANITARY SEWER OVERFLOW FIELD REPORT

FOR DISPATCH USE:

DATE: _____ CALL RECEIVED: _____ AM/PM

RECEIVED BY: _____ CALLER'S NAME: _____

CALLER'S PHONE NUMBER: _____

CALLER'S ADDRESS: _____

LOCATION OF OVERFLOW: _____ CROSS ST: _____

TIME & NAMES OF CREW MEMBERS DISPATCHED: _____

DESCRIPTION OF COMPLAINT: _____

FIELD REPORT (FOR RESPONSE CREW USE):

TIME ARRIVED AT SITE: _____ CREW: _____

TIME OVERFLOW STARTED: _____ TIME OVERFLOW STOPPED: _____

OVERFLOW DURATION: _____ MIN. OVERFLOW FLOW: _____ GAL/MIN

UPSTREAM MH#: _____ DOWNSTREAM MH#: _____

SIZE OF LINE: _____ LENGTH OF LINE: _____

FINDINGS: _____

COMPLETE REMAINDER OF FORM IF AN OVERFLOW HAS OCCURRED:

DESCRIBE CAUSE OF OVERFLOW:

_____

_____

DESCRIBE CLEANUP METHOD AND HOW OVERFLOW VOLUME WAS DETERMINED:

RECEIVING WATERS: YES ☐ NO ☐ LOCATION:

TYPE OF PROBLEM:

PICTURES TAKEN: YES ☐ NO ☐

SAMPLES TAKEN BY: LOCATION OF SAMPLES:

DESCRIBE PROPERTY DAMAGE AND AFFECTED AREA:

SIGN POSTED: YES ☐ NO ☐ BARRICADED: YES ☐ NO ☐

NEIGHBORS NOTIFIED: YES ☐ NO ☐

REGULATORY AGENCIES NOTIFIED:

OES	YES ☐ NO ☐	DATE/TIME		SPILL #
RWQCB	YES ☐ NO ☐	DATE/TIME		
COUNTY HEALTH	YES ☐ NO ☐	DATE/TIME		
OTHER	YES ☐ NO ☐	DATE/TIME		

CONTACTS/DETAILS:

FOLLOWUP MEASURES:

WORK ORDER NO: _____

FREQUENCY OF EXISTING PM PROGRAM: _____

LAST DATE PM WAS PERFORMED: _____

RECOMENDATIONS ON HOW TO PREVENT FUTURE PROBLEMS:

_____

_____

REPORT COMPLETED BY: _____ DATE: _____

SKETCH OF AREA: (Include manholes, intersections, location of stoppage, etc.)

ATTACH PHOTOS AS AVAILABLE

APPENDIX C - METHODS TO ESTIMATE SSO FLOW RATES AND VOLUMES

METHODS FOR ESTIMATING SPILL VOLUME

A variety of approaches exist for estimating the volume of a sanitary sewer spill. This appendix documents the three methods that are most often employed. The person preparing the estimate should use the method most appropriate to the sewer overflow in question and use the best information available.

Method 1: Eyeball Estimate

The volume of small spills can be estimated using an “eyeball estimate”. To use this method imagine the amount of water that would spill from a bucket or a barrel. A bucket contains 5 gallons and a barrel contains 50 gallons. If the spill is larger than 50 gallons, try to break the standing water into barrels and then multiply by 50 gallons. This method is useful for contained spills up to approximately 200 gallons.

Method 2: Measured Volume

The volume of most small spills that have been contained can be estimated using this method. The shape, dimensions, and the depth of the contained wastewater are needed. The shape and dimensions are used to calculate the area of the spills and the depth is used to calculate the volume.

Step 1 Sketch the shape of the contained sewage (see Figure 1).

Step 2 Measure or pace off the dimensions.

Step 3 Measure the depth at several locations and select an average.

Step 4 Convert the dimensions, including depth, to feet.

Step 5 Calculate the area in square feet using the following formulas:

Rectangle:Area = length (feet) x width (feet)

Circle:Area = diameter (feet) x diameter (feet) x 3.14

Triangle:Area = base (feet) x height (feet) x 0.5

Step 6 Multiply the area (square feet) times the depth (in feet) to obtain the volume in cubic feet.

Step 7 Multiply the volume in cubic feet by 7.5 to convert it to gallons

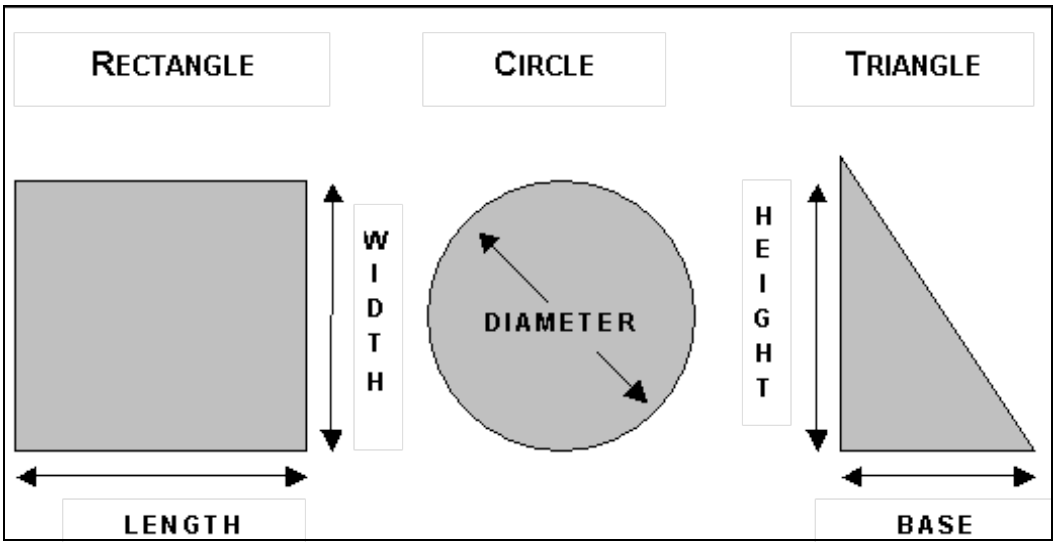


Figure 1: Common Shapes and Dimensions

Method 3: Duration and Flowrate

Calculating the volume of larger spills, where it is difficult or impossible to measure the area and depth, requires a different approach. In this method, the separate estimates are made of the duration of the spill and the flowrate. The methods of estimating duration and flowrate are:

Duration: The duration is the elapsed time from the time the spill started to the time that the flow was restored.

Start time: The start time is sometimes difficult to establish. Here are some approaches:

- Local residents can be used to establish start time. Inquire as to their observations. Spills that occur in rights-of-way are usually observed and reported promptly. Spills that occur out of the public view can go on longer. Sometimes observations like odors or sounds (e.g. water running in a normally dry creek bed) can be used to estimate the start time.

- Changes in flow on a downstream flowmeter can be used to establish the start time. Typically, the daily flow peaks are “cut off” or flattened by the loss of flow. This can be identified by comparing hourly flow data during the spill event with flow data from prior days.

- Conditions at the spill site change over time. Initially there will be limited deposits of toilet paper and other sewage solids. After a few days to a week, the sewage solids form a light-colored residue. After a few weeks to a month, the sewage solids turn dark. The quantity of toilet paper and other materials of sewage origin increase over time. These observations can be used to estimate the start time in the absence of

other information. Taking photographs to document the observations can be helpful if questions arise later in the process.

- It is important to remember that spills may not be continuous. Blockages are not usually complete (some flow continues). In this case, the spill would occur during the peak flow periods (typically 10:00 to 12:00 and 13:00 to 16:00 each day). Spills that occur due to peak flows in excess of capacity will occur only during, and for a short period after, heavy rainfall.

End time: The end time is usually much easier to establish. Field crews on-site observe the "blow down" that occurs when the blockage has been removed. The "blow down" can also be observed in downstream flowmeters.

Flow Rate: The flowrate is the average flow that left the sewer system during the time of the spill. There are three common ways to estimate the flowrate:

- The San Diego Manhole Flowrate Chart: This chart, included as Appendix VII-G, shows sewage flowing from manhole covers at a variety of flowrates. The observations of the field crew can be used to select the appropriate flowrate from the chart. If possible, photographs are useful in documenting basis for the flowrate estimate.

- Flowmeter: Changes in flows in downstream flowmeters can be used to estimate the flowrate during the spill.

- Counting Connections: Once the location of the spill is known, the number of upstream connections can be determined from the sewer maps. Multiply the number of connections by 200 to 250 gallons per day per connection or 8 to 10 gallons per hour per connection.

  For example: 22 upstream connections x 9 gallons per hour per connection

  = 198 gallons per hour / 60 minutes per hour

  = 3.3 gallons per minute

Spill Volume: Once duration and flowrate have been estimated, the volume of the spill is the product of the duration in hours or days and the flowrate in gallons per hour or gallons per day.

For example:

Spill start time = 11:00

Spill end time = 14:00

Spill duration = 3 hours

3.3 gallons per minute X 3 hours X 60 minutes per hour = 594 gallons

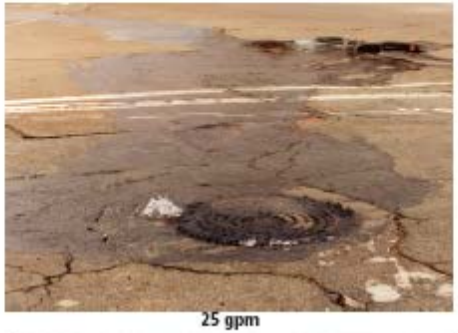
City of San Diego
Metropolitan Wastewater Department

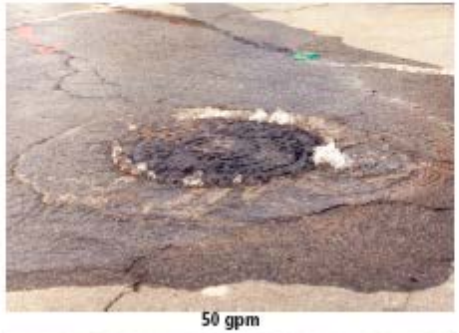
Reference Sheet for Estimating Sewer Spills from Overflowing Sewer Manholes

All estimates are calculated in gallons per minute (gpm)

Wastewater Collection Division
(619) 654-4160


5 gpm


25 gpm


50 gpm


100 gpm


150 gpm


200 gpm


225 gpm


250 gpm


275 gpm

All photos were taken during a demonstration using metered water from a hydrant in cooperation with the City of San Diego's Water Department.

rev. 4/99

APPENDIX D - SANITARY SEWER OVERFLOW WARNING SIGNS

KEEP OUT

SEWAGE
CONTAMINATED
WATER

EXPOSURE
MAY CAUSE ILLNESS

FOR MORE INFORMATION, CONTACT
THE PORT OF OAKLAND

(510) 563-3361

PORT OF OAKLAND

KEEP OUT

SANITARY SEWER OVERFLOW

EXPOSURE MAY CAUSE ILLNESS

FOR MORE INFORMATION, CONTACT THE PORT OF OAKLAND

(510) 563-3361

PORT OF OAKLAND

pw://Carollo/Documents/Client/CA/Port of Oakland/8239A00/Deliverables/OERPAppB

APPENDIX E - SUGGESTED CRITERIA FOR DEMONSTRATING THAT A SSO WAS UNAVOIDABLE

SSOs can be demonstrated as unavoidable by showing the discharge meets each of the following criteria:

- The discharge resulted from a temporary, exceptional incident that was either:
    a) Necessary to prevent loss of life, personal injury, or severe property damage; or
    b) Beyond the reasonable control of the operator. Incidents beyond the reasonable control of the operator include:
        i. Exceptional acts of nature;
        ii. Third party actions that could not be reasonably prevented, including vandalism that could not be avoided by reasonable measures;
        iii. Blockages that could not be prevented by reasonable measures; and
        iv. Unforeseeable sudden structural, mechanical, or electrical failure that could not be avoided by reasonable measures.
- The discharge had no feasible alternative;
- The discharge was not caused by any of the following:
    a) Operational error;
    b) Improperly designed or constructed collection facilities;
    c) Inadequate collection system facilities or components;
    d) The lack of appropriate preventative maintenance; or
    e) Careless or improper oversight;
- Steps to stop the discharge, address the source of the problem, and mitigate potential impacts from the discharge were taken as soon as possible after becoming aware of the release.

APPENDIX L - FOG CONTROL PLAN

PORT OF OAKLAND

530 Water Street
Oakland, CA 94607
(510) 627-1100

FOG CONTROL PLAN

May 2010

Prepared By

Carollo Engineers, P.C.
7580 North Ingram Avenue
Fresno, CA 93711
(559) 436-6616

carollo
Engineers...Working Wonders With Water™

PORT OF OAKLAND

FOG CONTROL PLAN

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1.0 INTRODUCTION

The Port of Oakland (Port) is committed to the effective management, operation, and maintenance of its sanitary sewer system, and to provide world-class infrastructure facilities to serve its airport, seaport, and commercial real estate tenants and customers. This Fats, Oil, and Grease (FOG) Control Plan has been developed as part of the Port-Wide Sewer System Management Plan (SSMP), which focuses on the reduction of sanitary sewer overflows (SSOs). The effective date of this plan is May 2010.

1.1 Background

FOG is commonly generated from residential, industrial, and commercial sources, particularly from food service facilities (FSFs). FOG is a viscous liquid when discharged into the sanitary sewer system. However, FOG often coagulates inside sewer pipelines and causes flow restrictions or blockages, which may lead to SSOs and significant public health hazards and property damage.

FOG has been identified as one of the most prevalent causes of SSOs nationwide. For this reason, many agencies and municipalities have established their own best management practices (BMPs) and control plans for the reduction of FOG.

The State Water Resources Control Board (SWRCB), as part of State General Waste Discharge Requirements Order No. 2006-0003 (GWDRs), has established that all municipalities and districts with over one mile of sanitary sewer pipelines develop an SSMP. As part of the requirements for the completion of an SSMP, the SWRCB has required that municipalities and districts examine the extent of their FOG problem. If, during that evaluation, FOG is deemed a significant problem, a FOG Source Control Plan is required to be developed. Similar requirements have also been established by the San Francisco Bay Area Regional Water Quality Control Board (RWQCB).

1.2 Objectives

The Port is covered under the East Bay Municipal Utilities District (EBMUD) FOG Control Program. Therefore, the Port will not develop a separate FOG control program. In lieu of developing a Port specific FOG Control Plan, this report summarizes the EBMUD FOG control program as relevant to the Port. EBMUD developed a district wide FOG control program, and references to EBMUD policies and procedures are presented throughout this report. This report should be updated and modified as necessary to more closely reflect operating conditions and changes that may occur in FOG control procedures.

Additionally, this plan has been developed to meet the GWDRs and RWQCB requirements and to protect the public health and welfare. This plan shall not supersede existing standard operating procedures, unless otherwise specified by the Executive Director or his designated representative.

1.3 EBMUD FOG Control Program

Wastewater from the Port sanitary sewer collection system is discharged into either the City of Oakland (City) collection system, which in turn discharges into EBMUD sewer interceptors, or directly into EBMUD sewer interceptors. All wastewater discharged to the Port sanitary sewer system is treated at the EBMUD Main Wastewater Treatment Plant (MWWTP).

As part of its pollution prevention plan, EBMUD established a regional FOG control program in coordination with, and primarily funded by, the satellite community collection systems it services. The regional FOG control program consists of permitting, inspections, enforcement procedures, public education, and public outreach throughout EBMUD's wastewater service area. EBMUD will continue to support these efforts as long as the satellite communities continue to request these services and provide funding for the program.[1] The EBMUD FOG control program is focused on reducing FOG discharges into the sewer system from both residential and non-residential sources (primarily FSFs).

It is recommended that the Port continue to partner with EBMUD to take full advantage of the existing EBMUD program as much as possible in the implementation of the Port's FOG control program. This will minimize Port staff time spent in implementing control measures while raising awareness throughout the Port of the issues related to FOG.

1.4 Organization

The key elements of the FOG Control Plan are addressed individually as follows:

- Section 1: Introduction
- Section 2: Regulatory Requirements
- Section 3: Legal Authority
- Section 4: Service Area FOG Evaluation
- Section 5: FOG Problem Areas
- Section 6: Compliance Requirements
- Section 7: Best Management Practices

[1] Source: EBMUD Sewer System Management Plan, May 2008.

- Section 8: Public Outreach Materials
- Section 9: FOG Disposal
- Section 10: Inspection and Enforcement Procedures
- Section 11: Distribution and Maintenance of FOG Control Plan

1.5 Abbreviations

To conserve space and to improve readability, the following abbreviations are used in this report. The abbreviations are spelled out in the text the first time the phrase or title is used in each chapter and subsequently identified by abbreviation only.

BMPs	Best Management Practices
CCTV	Closed-Circuit Television
City	City of Oakland
EBMUD	East Bay Municipal Utility District
FAQ	Frequently Asked Questions
FOG	Fats, Oil, and Grease
FSFs	Food Service Facilities
GWDRs	State General Waste Discharge Requirements Order No. 2006-0003
I/I	Infiltration and Inflow
MWWTP	Main Wastewater Treatment Plant
Port	Port of Oakland
RWQCB	San Francisco Bay Area Regional Water Quality Control Board
SSMP	Sewer System Management Plan
SSO	Sanitary Sewer Overflow
SWRCB	State Water Resources Control Board
WDP	Wastewater Discharge Permit

1.6 Reference Material

The following documents were referenced primarily in the preparation of this report:

- City of Oakland, Sanitary Sewer Management Plan, August 2008.
- EBMUD, Sewer System Management Plan, May 2008.

2.0 REGULATORY REQUIREMENTS

2.1 San Francisco Bay Area RWQCB Requirements

The RWQCB requires that each wastewater collection system agency shall evaluate its service area to determine whether a FOG control program is needed. If so, a FOG control program shall be developed as part of the SSMP. If an agency determines that a FOG program is not needed, the agency must provide justification for why it is not needed.

2.2 SWRCB Requirements

The GDWRs specify that each SSMP must include an evaluation of the Port service area to determine whether a FOG control program is needed. If no FOG program is needed, justification for why it is not needed must be provided. If FOG is considered a problem, a FOG source control program must be prepared and implemented, including the following as appropriate:

a. An implementation plan and schedule for a public education outreach program that promotes the proper disposal of FOG;
b. A plan and schedule for the disposal of FOG generated within the sanitary sewer system service area. This may include a list of acceptable disposal facilities and/or additional facilities needed to adequately dispose of FOG generated within a sanitary sewer system service area;
c. The legal authority to prohibit discharges into the system and identify measures to prevent SSOs and blockages caused by FOG;
d. Requirements to install grease removal devices (such as traps or interceptors), design standards for the removal devices, maintenance requirements, Best Management Practice requirements, record keeping and reporting requirements;
e. Authority to inspect grease producing facilities, enforcement authorities, and whether the Enrollee has sufficient staff to inspect and enforce the FOG ordinance;
f. An identification of sanitary sewer system sections subject to FOG blockages and establishment of a cleaning maintenance schedule for each section; and
g. Development and implementation of source control measures for all sources of FOG discharged into the sanitary sewer system for each section identified in (f) above.

3.0 LEGAL AUTHORITY

Currently, the Port does not have any ordinances restricting the type, volume, and character of wastewater discharged into the Port collection system. EBMUD and the City, however, do have legally binding ordinances limiting certain discharges. As part of the

SSMP, the Board of Port Commissions adopted a Port specific sewer use ordinance (Port Ordinance 4113) (See Chapter 4 of the Port SSMP for more detailed information). However, since the programs and activities recommended in this plan rely on a utilization of the existing EBMUD FOG control program, the legal authority to implement (and continue to implement) the majority of the measures described in this FOG Control Plan is currently available through the existing EBMUD sewer use ordinances. Appendix A contains a copy of EBMUD Ordinance No. 311A-03, which is known as the "Wastewater Control Ordinance," for reference. In addition, Port Ordinance 4113 is included in Appendix B for reference.

3.1 FOG Discharge Prohibitions

EBMUD Ordinance No. 311A-03 establishes prohibitions on wastewater discharges with strengths that exceed 100 mg/L of FOG. In addition, EBMUD prohibits, generally, any discharge into a "community sewer" (a sewer within the EBMUD service area that is not owned by EBMUD) "which will result in contamination, pollution, or a nuisance." This can be applied to FOG if a wastewater discharge causes blockage in a pipeline leading to SSOs or other "nuisances."

Section 4, Part C-5 of the proposed Port "Ordinance Establishing Limits on the Type, Character, and Volume of Allowable Discharges to the Sewer System" (Appendix B) prohibits the discharge, by either direct or indirect means, of any water or waste, which contains excessive amounts of FOG. Furthermore, Section 4, Part F of the proposed Port "Ordinance Establishing Limits on the Type, Character, and Volume of Allowable Discharges to the Sewer System" (Appendix B) establishes a numerical limit of 100 mg/L for the concentration of FOG that is permitted to be discharged into the Port sewer system.

4.0 SERVICE AREA FOG EVALUATION

As part of the Port-wide SSMP, a service area FOG evaluation was performed, consisting of the following four main elements:

- Discussion with Port operating staff to identify any known FOG problem areas (or "hot spots") within the Port;
- Airport Terminal site visit
- Closed-Circuit Television (CCTV) inspection of selected sanitary sewer lines within the Port collection system.

This section summarizes the service area FOG evaluation.

4.1 Consultation of Operational Staff

The initial step in conducting a FOG service area evaluation for the Port was to seek input from Port operations staff regarding any known FOG "hot spots" or other issues related to FOG. Examples of these issues are areas of historical FOG related overflows and sewer lines that frequently exhibit FOG buildup.

Based on information provided by Port staff, the majority of sewers that exhibit blockages associated with FOG buildup are attributable to FSFs located within the Oakland International Airport. In fact, of the three sanitary sewer "hot spots" identified by Port staff, two are attributable to FOG and are near or adjacent to the airport terminals (see Section 5.0).

4.2 Airport Terminal Site Visit

A site visit was conducted at the Oakland International Airport terminals to identify which FSFs operate in the airport and to verify which FSFs are served or are planned to be served by grease interceptors. It was discovered during the site visit that the Port is becoming very proactive in requiring new FSFs in the airport to install large grease interceptors. A large grease interceptor for the new Chile's Too was recently installed. Additionally, grease interceptors will be constructed to service two new food courts and the new Silver Dragon restaurant.

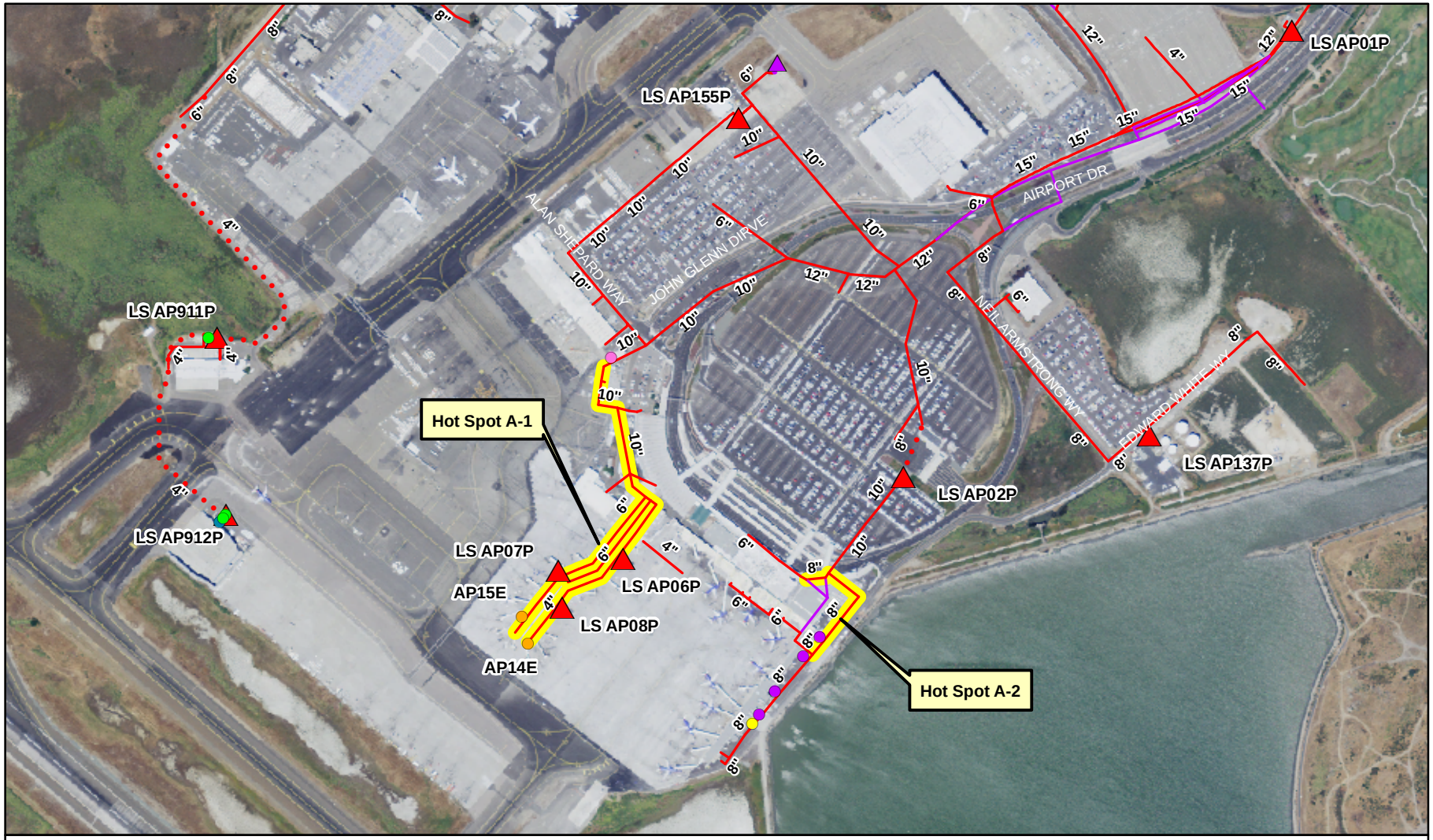
4.3 CCTV Inspection

As part of the Port-Wide SSMP project, CCTV inspections were performed on selected sanitary sewer lines within the Port collection system. The primary purpose of these inspections was to identify pipeline or manholes with condition problems (e.g., cracked pipes, tree roots, adverse slope conditions) and to help identify areas with potential infiltration and inflow (I/I) issues. However, the inspections also helped to determine where FOG buildup is a problem in the sewers, which may be indicative of an issue with a FSF located upstream of the blockage. As the Port performs additional CCTV inspections, additional FOG problem areas may be identified.

5.0 FOG PROBLEM AREAS

Based on the preliminary results of the service area FOG evaluation summarized in Section 4.0, two FOG related "hot spots" were identified. These "hot spots" are illustrated in Figure 1 as well as Table 1.

The first "hot spot" (No. A-1) is located in a series of 6-inch to 10-inch diameter sewers that service the FSFs located in Airport Terminal 1. The second is located in a series of 8-inch and 10-inch diameter sewers that serve Airport Terminal 2.



Legend

- Diversion Structure
- Grease Interceptor/Trap
- Triturator
- Sewer Ejector
- Oil Interceptor
- Oil/Water Separator
- FOG Hot Spots

Owner and Maintenance

Port Owned, Port Maintained

- Lift Station
- Gravity Main
- Force Main

Port Owned, Port Maintained, Out of Service

- Lift Station
- Gravity Main
- Force Main

N

0 500 1,000 Feet

Figure 1
FOG Related Sanitary Sewer "Hot Spots"
FOG Control Plan
Port of Oakland

PORT OF OAKLAND carollo

Revision Date: May 13, 2010

Table 1 FOG Related Sanitary Sewer "Hot Spots" Port-Wide Sewer System Management Plan Port of Oakland						
Hot Spot No.(1)	**Division**	**Street Name**	**Location Description**	**Pipeline Diameter (in.)**	**Suspected Cause of Problem**	**Recommended Cleaning Frequency**
A-1	Aviation	n/a	Terminal 1	6 – 10	FOG	Annually
A-2	Aviation	n/a	s/o Terminal 2	8 – 10	FOG	Annually

Notes:
1. Hot Spot Number corresponds to that shown in Figure 1.

6.0 COMPLIANCE REQUIREMENTS

As previously mentioned, the legal authority to implement/continue to implement the measures identified in this report will be primarily provided through existing EBMUD ordinances, since this plan is heavily based on the EBMUD FOG control program. Specific compliance requirements are summarized in this section.

6.1 Best Management Practices

EBMUD provides a list of BMPs to FSFs that are issued WDPs in their permit package. The BMPs are also provided on the EBMUD website for reference[2]. Section 7.0 describes the BMPs in greater detail. While EBMUD has not established specific compliance requirements for the BMPs, EBMUD does inspect FSFs from time to time to inspect grease traps and interceptors and to see if the BMPs are being implemented.

6.2 FOG Database

EBMUD provided a list of FSFs within the Port service area, which have been issued wastewater discharge permits (WDPs) and currently are required to operate and maintain grease traps or grease interceptors.

A list of the FSFs with WDPs, as well as all other known FSFs that have grease traps/interceptors is provided in Table 2. As indicated in Table 2, a large percentage of FSFs and tenants on the list are located in the airport. However, there are other Port tenants in the Northfield and harbor that use oil/water separators to avoid discharging oils related to airplane and ship maintenance into the collection system. The locations of all existing oil/water separators in the Port is currently not known, however they are thought to be located at all wash racks.

[2] http://www.ebmud.com/wastewater/industrial_&_commercial_permits_&_fees/pollution_prevention_program/FOG/default.htm

Table 2 List of Known FSFs and FOG Dischargers
FOG Control Plan
Port of Oakland

FSF/Tenant Name	Management	Location	Phone Number	EBMUD WDP	Grease Interceptor	Grease Trap
Airport - Terminal 1						
360º Gourmet Burrito (future U-Food)	Separate	Gate 7	(510) 633-1585	X		X
Chili's Too	Host	Gate 6	(510) 563-3865		X	
Snack Bar (Pyramid Ale, Hein Holds)	Host	Main Entrance	?	X		
Max's Eatz	Host	Gate 8a	?			
Starbucks	Host	Gate 4	(510) 563-3203	X		X
Starbucks	Host	Gate 9	(510) 563-3202	X		X
Training Grounds	Separate	Main Entrance	(510) 562-0600	X		
U Food		Gate 7		X		
Silver Dragon (Future)	Host	Gate 9a			X	
8 Bar		Gate 9				
Airport - Terminal 2						
Andalé Mexican Restaurant/Peet's Coffee and Teas	Separate	Gate 28	(510) 638-6000	X	X	
Auntie Anne's Pretzels	Host	Gate 26	(510) 563-3249	X		
California Pizza Kitchen	Host	Gate 28	(510) 563-2830		X	
F11 Food Court		Gate 24			X	
F14 Food Court		Gate 28		X	X	
Fenton's Ice Cream	Host	Gate 28	?		X	
Gordon Biersch	Host	Gate 29	(510) 635-2511	X	X	
Max's Eatz	Host	Gate 28	?	X	X	
Pete's Coffee And Tea		Gate 28		X	X	
Pyramid Ale Taproom	Host	Gate 24	?	X		X
Snack Bar	Host	Gate 25	?			
Starbucks	Host	Gate 22	(510) 563-3203	X		X
Starbucks	Host	Gate 26	(510) 563-6556			
Training Grounds	Separate	Main Entrance	(510) 568-3714	X		
Firewood Pizza (Future)	Separate				X	
Vino Volo (Future)	Separate				X	
San Francisco Soup Co. (Future)	Separate					
Airport - Inflight Meal Provider						
Building M-111 (vacant)		50 Neil Armstrong Way	(510) 562-9141			
Building M-112	Separate	50 Neil Armstrong Way	(510) 562-9141			
Business Jet Center (caterer)		OIA - Hanger 4				
FAA Office	Separate					
Hilton Oakland Airport		1 Hegenberger Rd		X		
Kaiser Air Business Jet (caterer)	Separate	OIA - Hanger 5				
Earhart Café @ Rolls Royce (employee cafeteria)	Separate	7200 Earhart Rd		X		X
Jack London Square						
Barnes & Noble Cafe	JLS Partners	98 Broadway	(510) 272-0120			
Ben & Jerry's	Separate	505 Embarcadero	(510) 663-3477	X		
Beverages & More		525 Embarcadero		X		
Cocina Poblana	JLS Partners	499 Embarcadero	(510) 451-4700	X		X
Edible Arrangements		431 Water St		X		
Hahn's Hibachi	JLS Partners	63 Jack London Square	(510) 628-0717	X		X
Heinold's		48 Webster St		X		
Il Pescatore	Separate	57 Jack London Square	(510) 465-2188	X	X	
Kincaid's Bayhouse	Separate	1 Franklin Street	(510) 835-8600	X		X
Miss Pearl's Jam House	Separate	1 Broadway	(510) 444-7171	X		X
Scott's Seafood Restaurant	Separate	2 Broadway	(510) 444-3456	X	X	
Starbucks @ Barnes & Noble		98 Broadway				
Subway at Jack London Square	Separate	515 Embarcadero	(510) 663-3030	X		
Yack London Cinema 9		100 Washington St		X		
Yoshi's At Jack London Square	Separate	510 Embarcadero	(510) 238-9200	X		X
Future restaurant	JLS Partners					
Future restaurant	JLS Partners					
Future bakery	JLS Partners					
Southeast of Alice Street						
Executive Inn		1755 Embarcodero		X		
Homewood Suites By Hilton		1103 Embarcodero		X		
Oyster Reef Seafood Restaurant	Separate	1000 Embarcadero	(510) 836-2519	X		
Quinn's Lighthouse		191 Embarcodero		X		
Quizno's	Grey & Reynolds	1211 Embarcodero		X		
Starbucks	Grey & Reynolds	1211 Embarcadero	(510) 533-8287			

Therefore, it should be noted that the FOG discharger list presented in Table 2 should be considered a “working” list. It is recommended that the Port devote time to actively investigate the locations of all oil/water separators and which tenants are responsible for maintaining them. Table 2 can then be expanded to become a more comprehensive database that will be useful in identifying potential FOG problem areas.

6.3 Grease Interceptors

EBMUD requires FSFs to install grease interceptors (if not already installed) if any of the following three conditions are met:

1. The facility is newly constructed or converted from a non-food handling facility to a food handling facility.

2. The facility submits plans to perform remodels, additions, alterations, or repairs valued a $75,000 or more.

3. The facility has caused or contributed to collection system blockages resulting in maintenance requirements or sewage spills.

Each FSF with a grease interceptor is required through their WDP and EBMUD Ordinance No. 311A-03 to clean their interceptor on a regular basis to ensure its proper operation. At a minimum, each interceptor must be cleaned once every three months and the grease must be disposed by an EBMUD approved grease hauler (see Section 9.0).

As previously noted, the Port is becoming more proactive in requiring new FSFs in the airport to install grease interceptors. This approach is consistent with the EBMUD interceptor requirements and the intent of the GWDRs.

7.0 BEST MANAGEMENT PRACTICES

EBMUD has developed nine separate BMPs related to FOG. The BMPs are summarized in Table 3 and are developed primarily for FSFs, which are the primary discharges of FOG within the Port service area. Certain BMPs, however, do have a more universal applicability. A flyer developed by EBMUD containing the information presented in Table 3 is included in Appendix C.

Table 3 Best Management Practices for Fats, Oil, and Grease FOG Control Plan Port of Oakland		
BMP	**Reason For BMP**	**Benefits of BMP**
Train all staff on BMPs.	People are more willing to support an effort if they understand its basis.	Trained staff will be more likely to implement BMPs and work to reduce grease discharges to the sewer.
Post "No Grease" signs above sinks and on the front of dishwashers.	Signs serve as a constant reminder for staff working in kitchens.	Reminders help minimize grease discharge to the sewer or grease removal device.
Check grease interceptor solids depth routinely. The combined thickness of the floating grease and the bottom solids should be not more than 25% of the total interceptor depth.	Grease interceptor will not meet performance standards when solids and floating grease levels exceed 25%.	This will keep grease interceptor working at peak performance.
Collect and recycle waste cooking oil.	These actions reduce grease loading on grease removal devices and the sewer.	This will reduce the frequency and maintenance costs for grease removal devices and reduce the amount of grease entering the drain.
"Dry wipe" pots, pans, and kitchen equipment before cleaning.	"Dry wiping" will reduce the grease loading on grease removal devices and the sewer.	This will reduce the frequency and maintenance costs for grease removal devices and reduce the amount of grease entering the drain.
Maintain a routine grease trap cleaning schedule.	If grease traps are not routinely cleaned, they do not work properly and do not prevent grease from entering the sewer. If a grease trap is not providing adequate protection, a grease interceptor may be required.	This reduces the amount of grease entering the drain, and protects sewers from grease blockages and overflows.
Use absorbent paper under fryer baskets.	This reduces the amount of grease during clean up.	This reduces the amount of grease entering the drain, and protects sewers from grease blockages and overflows.
Use absorbents such as cat litter or paper towels to pick up oil and grease spills before mopping.	Decreases the amount of grease that will be put down the drain.	This reduces the amount of grease entering the drain; and protects sewers from grease blockages and overflows.
Do not use emulsifiers or solvents other than typical dish washing detergents.	Emulsifiers and solvents will break down grease causing a problem in the sewer downstream.	Allows for proper removal of grease.
Notes: 1. Source: http://www.ebmud.com		

8.0 PUBLIC OUTREACH MATERIALS

EBMUD has developed several useful public outreach materials for controlling FOG discharges into the sanitary sewer system, focused on both FSFs as well as residential customers. The outreach materials relevant to the Port and its tenants are those pertaining to FSFs. The outreach materials are included in Appendix C for reference and are available in several languages (English, Spanish, Chinese, Korean, and Vietnamese). The FSF outreach material includes the following:

- **Program Brochure.** This document describes the EBMUD FOG control program, and explains what FOG is, the issues related to FOG, introduces the BMPs, describes grease interceptors and EBMUD's interceptor requirements.
- **List of Approved Grease Haulers.** This document is a list of grease haulers in the area that are approved by EBMUD.
- **Grease Interceptor Maintenance Brochure.** This document summarizes the maintenance requirements for facilities required by EBMUD to use a grease interceptor.
- **BMP Brochure.** This document summarizes the FOG BMPs included in Table 3.
- **FAQ.** A list of frequently asked questions (FAQ) is available for FSFs describing the program requirements.
- **Permit Forms.** Various permit documents are included to describe the program terms and conditions and provide documents that must be completed and signed by the discharger.
- **Grease Trap Maintenance Form.** This form is to be completed by each establishment and keeps a log of when a grease interceptor was cleaned, who cleaned it, amount of grease removed, and where the grease was disposed of. Each FSF is required to keep a copy of this log on file should an EBMUD inspector wish to review it.
- **"No Grease" Sign.** This sign should be posted near sinks and drains to remind workers not to dispose of FOG into the sanitary sewer system.

9.0 FOG DISPOSAL

The EBMUD MWWTP serves as one of the main receiving facilities for waste grease in the vicinity of the Port[3]. The address and contact information for the MWWTP is listed below:

[3] For a more comprehensive list of grease receiving facilities in the region, refer to http://baywise.org. Note that most of the receiving facilities have residency restrictions.

EBMUD MWWTP
2020 Wake Avenue
Oakland, CA 94607
Alameda County
Phone: 510-287-1651

Residents within the EBMUD service area may drop off small amounts of grease (15 gallons or less) themselves at the MWWTP between the hours of 7:00 AM and 7:00 PM. However, since the Port consists of non-residential users, use of the drop on site is not allowed. However, EBMUD does maintain a list of "approved haulers," which dischargers with an EBMUD WDP are required to use. Table 4 provides a list of the "approved haulers," as well as contact information. Individuals should contact the hauler ahead of time to determine their specific requirements.

10.0 INSPECTION AND ENFORCEMENT PROCEDURES

In order to avoid redundancy and save time and cost to the Port, it is recommended that all FOG inspection and enforcement actions be completed by EBMUD through their existing FOG control program. A partnership with Port personnel may be required at the Airport and Maritime Facilities since security clearance requirements could hinder EBMUD personnel from performing this function. Port staff could take responsibility for inspecting faculties at the Airport and Maritime areas, or escort EBMUD staff on these inspections.

10.1 Inspection

The inspection procedures are based on a system-wide monitoring approach with increased monitoring targeted at known "hot spot" areas, as summarized below:

- **Hot spot areas.** For this group of inspections, the Port identifies the locations of grease-related SSOs or blockages to EBMUD. EBMUD then schedules targeted inspections for dischargers upstream of the "hot spot" to identify the most likely source of the problem. Accelerated interceptor maintenance schedules or interceptor installations are then required as necessary to mitigate the issue.

- **Non-hotspot areas.** Inspection is performed routinely at all FSFs during the permit period (at least once during each permit period). EBMUD inspectors verify that required routine maintenance for grease traps and interceptors is being performed in accordance with program standards. If FSFs are not in compliance with the terms of their WDP, accelerated interceptor maintenance schedules or interceptor installations may then be required as necessary to mitigate the issue.

Table 4 EBMUD Approved Grease Haulers FOG Control Plan Port of Oakland	
Name of Hauler	**Phone Number**
A-1 Septic Tank Service, Inc.	(510) 886-4455
A-1 Septic – Little River	(707) 937-0496
Able Septic Tank Service	(408) 377-9990
All Valley Environmental, Inc.	(559) 498-8378 or (559) 217-5949
Ameriguard Maintenance Services	(800) 347-7876
Blue Sky Bio-Fuels(3)	(510) 868-9229
Burr Plumbing and Pumping	(408) 287-2877
Coast Environmental	(800) 588-7762
Darling International, Inc.	(415) 647-4890
Ernie's Plumbing	(925) 228-5242
Joe's Farmers Septic and Grease Service	(707) 546-3236
Liquid Environmental Solutions of California	(866) 694-7327
North Coast Sanitary	(707) 884-1095
Pioneer Liquid Transport	(800) 366-6808
Portosan – Santa Rosa	(707) 566-2000
R & D Grease Trap Cleaning	(707) 632-5827
Roto Rooter Plumbing	(510) 483-2324
SRC Pumping Company	(916) 363-1342
Trap Recyclers	(800) 994-7867

Notes:
1. Source: http://www.ebmud.com
2. As of February 27, 2008.
3. The Port uses Blue Sky Bio-Fuels to clean and dispose of grease collected in its grease interceptors at the Oakland International Airport.

10.2 Enforcement Actions

Enforcement actions for non-compliance are defined in Title VI of EBMUD Ordinance No. 311A-03 (Appendix A), which is based on an escalating (progressive) enforcement structure. Enforcement actions vary depending on the nature of the violation, and can consist of the following:

- Requiring discharger to submit time schedule for completion of remedial or preventive measures;

- Issuance of cease and desist orders;
- Cost recovery for damage of facilities;
- Termination of service;
- Issuance of complaints;
- Criminal penalties;
- Civil penalties.

In addition, Ordinance No. 311A-03 provides an appeals process for a discharger who is subject to the aforementioned enforcement actions.

10.3 Grease Interceptor Maintenance Records

As part of the EBMUD issued WDPs, each discharger with a grease trap or grease interceptor is required to keep a record of when the grease interceptor was cleaned, who cleaned it, the volume of grease disposed, and where the grease was disposed. These records should be up to date, saved on file for three years, and be made available to an EBMUD inspector upon request. Figure 2 shows an example grease interceptor maintenance sheet.

11.0 DISTRIBUTION AND MAINTENANCE OF FOG CONTROL PLAN

The SSMP report specifies that the SSMP be reviewed at some pre-determined interval, such as annually, to determine where improvements can be made. This FOG Control Plan should be updated in conjunction with the SSMP evaluations. Updates to the plan should be made to reflect all changes in policies and procedures as may be required to achieve its objectives.

11.1 Submittal and Availability of FOG Control Plan

Copies of the FOG Control Plan and any amendments should be distributed to all of the departments, divisions, and personnel that are heavily involved with the SSMP or FOG control programs. Refer to Chapter 3 of the SSMP for more information as to the roles of individual Port personnel as related to the SSMP.

11.2 Review and Update of FOG Control Plan

- The Port is responsible for keeping the FOG Control Plan up to date. The FOG Control Plan should be reviewed at a predefined time interval, such as annually, for outdated material and should be updated whenever:

EBMUD

EAST BAY MUNICIPAL UTILITY DISTRICT

Environmental Services Division
(510) 287-1651

Grease Trap Maintenance Log

For

_____
(establishment name)

Date Cleaned	Cleaned By	Where was grease disposed of?	Amount of grease removed (Record in inches)

Figure 2
Sample Grease
Interceptor Maintenance Sheet
Port of Oakland
FOG Control Plan

carollo

PORT OF OAKLAND

- Specified by the Executive Director or his designated representative;
- The SSMP plan audit indicates that material needs to be revised or added; or
- Applicable governing laws, rules, or regulations change.

APPENDIX A - EBMUD ORDINANCE NO. 311A-03

EBMUD Ordinance No. 311A-03
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ORDINANCE NO. 311A-03

AN ORDINANCE AMENDING ORDINANCE NO. 311, ESTABLISHING REGULATIONS FOR THE INTERCEPTION, TREATMENT, AND DISPOSAL OF WASTEWATER AND INDUSTRIAL WASTES AND THE CONTROL OF WASTEWATER, REQUIRING CHARGES TO BE MADE THEREFOR, AND FIXING PENALTIES FOR THE VIOLATION OF SAID REGULATIONS

Introduced by Director Foulkes ; Seconded by Director Richardson

WHEREAS, the East Bay Municipal Utility District administers a wastewater control program pursuant to Ordinance No. 311, entitled, "AN ORDINANCE ESTABLISHING REGULATIONS FOR THE INTERCEPTION, TREATMENT, AND DISPOSAL OF WASTEWATER AND INDUSTRIAL WASTES AND THE CONTROL OF WASTEWATER, REQUIRING CHARGES TO BE MADE THEREFOR, AND FIXING PENALTIES FOR THE VIOLATION OF SAID REGULATIONS;" and

WHEREAS, the U.S. Environmental Protection Agency and the Regional Water Quality Control Board required the District to conduct an ordinance review and submit proposed ordinance revisions, as part of their periodic reviews of the District's Pretreatment and Pollution Prevention Program; and

WHEREAS, in response to this request, staff conducted a review of the Ordinance No. 311 and has recommended that the Board of Directors amend the Ordinance incorporating specific regulatory mandated language to codify the District's legal authority to implement and enforce pretreatment regulations from the Code of Federal Regulations (40 CFR 403), adding language to provide enforcement authority for the Resource Recovery Program and clarifying the method to calculate wastewater capacity fees and wastewater treatment charges for multi-use facilities;

NOW, THEREFORE, BE IT ENACTED by the Board of Directors that Ordinance No. 311, as amended from time to time, is hereby further amended to read as follows:

TITLE I – GENERAL

Section 1 - Short Title

This Ordinance shall be known as the “WASTEWATER CONTROL ORDINANCE”.

Section 2 - Purpose

Special District No. 1 of the EAST BAY MUNICIPAL UTILITY DISTRICT was formed and exists under the provisions of the Municipal Utility District Act (Public Utilities Code of the State of California, Division 6) for wastewater disposal service within its boundaries. Wastewater disposal facilities have been constructed for the interception, treatment, and disposal of wastewater and industrial wastes originating within its boundaries. The purpose of this Ordinance is to regulate the interception of wastewater and industrial wastes and to control wastewater to provide the maximum public benefit of the wastewater disposal facilities of the District. The regulations shall include provisions for source control in order to monitor and control quantity, quality, and flow of wastewater and industrial waste. The regulations shall require charges for use of wastewater disposal facilities of the District which are designed to achieve an equitable recovery of the capital and operating costs of such facilities. The regulations shall include provisions for enforcement and penalties for violations.

Section 3 - Definitions

For the purposes of this Ordinance, unless the context specifically indicates otherwise, the meaning of terms used shall be as follows:

a. "Business Classification Code" (BCC) - A classification of dischargers based on the 1987 Standard Industrial Classification Manual, Office of Management and Budget of the United States of America.

b. “Bypass” – The intentional diversion of wastestreams from any portion of a discharger’s treatment facility.

c. “Categorical Pretreatment Standards” - Any regulations containing pollutant discharge limits promulgated by the EPA in accordance with Section 307(b) and (c) of the Act (33 U.S.C. 1317) and which apply to a specific category of industrial user and which appear in Title 40 of the Code of Federal Regulations (40 CFR) Chapter I, Subchapter N, Parts 405-471.

d. “Chemical Oxygen Demand, Filtered” - The amount of Chemical Oxygen Demand passing through a glass filter as measured in conformance with the District's approved method. Chemical oxygen demand is the measure of the oxygen equivalent of the organic matter of a sample that is susceptible to oxidation by a strong chemical oxidant.

e. “Community Sewer System” - The sewers owned and operated by public agencies within the boundaries of the District which are connected to an interceptor of the District.

A “community sewer” is that portion of a community sewer system which receives wastewater from the side sewer of a discharger.

f. “Contamination” - An impairment of the quality of the waters of the State by waste to a degree which creates a hazard to the public health through poisoning or through the spread of disease. Contamination shall include any equivalent effect resulting from the disposal of wastewater, whether or not waters of the state are affected.

g. “Critical Industry” - A discharger whose wastewater requires special regulations or contains industrial wastes requiring source control or whose average wastewater strength cannot be established on a business classification basis.

h. “Director” – Director of the Wastewater Department of the East Bay Municipal Utility District, or his designated representative.

i. “Discharger” - Any person who discharges or causes the discharge of wastewater to a community sewer system.

j. "District" - Special District No. 1 of the East Bay Municipal Utility District.

k. “Federal Act, Clean Water Act, or Act” - The Federal Water Pollution Control Act, PL 92-500, and any amendments thereto; as well as any guidelines, limitations, and standards promulgated by the Environmental Protection Agency.

l. “General Manager” - The General Manager of the East Bay Municipal Utility District.

m. “General Pretreatment Regulations” - Any regulations promulgated by EPA in accordance with Sections 307(b) and (c), and 402(b)(8) of the Act (33 U.S.C. 1317) for the implementation, administration and enforcement of pretreatment standards.

n. “Industrial Waste” - Includes any nondomestic liquid or semisolid wastes from any producing, manufacturing, or processing operation of whatever nature.

o. “Interceptor” - An intercepting sewer found and determined by the Board of Directors of the District to be such and owned and operated by the District.

p. “Interference” - A discharge which, alone or in conjunction with discharges from other sources, both:

(1) inhibits or disrupts the POTW, its treatment processes or operations, or its sludge processes, use or disposal; and

(2) therefore is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation) or of the prevention of sewage sludge use or disposal in compliance with the following statutory provisions and regulations or permits issued thereunder (or more stringent

state or local regulations): Section 405 of the Clean Water Act, the Solid Waste Disposal Act (SWDA) (including Title II, more commonly referred to as the Resource Conservation and Recovery Act (RCRA), and including state regulations contained in any state sludge management plan prepared pursuant to subtitle D of the SWDA), the Clean Air Act, the Toxic Substances Control Act, and the Marine Protection, Research and Sanctuaries Act.

q. "National Pretreatment Standard, Pretreatment Standard, or Standard" - Any regulation containing pollutant discharge limits promulgated by the EPA in accordance with section 307 (b) and (c) of the Act, which applies to industrial users. This term includes prohibitive discharge limits established pursuant to 40 CFR 403.5.

r. "New Source" - Any building, structure, facility, or installation from which there is or may be a discharge of pollutants, the construction of which commenced after the publication of proposed pretreatment standards which will be applicable to such source if such standards are thereafter promulgated, provided that:

(1) The building, structure, facility or installation is constructed at a site at which no other source is located; or

(2) The building, structure, facility or installation totally replaces the process or production equipment that causes the discharge of pollutants at an existing source; or

(3) The production or wastewater generating processes of the building, structure, facility or installation are substantially independent of an existing source at the same site. In determining whether these are substantially independent, factors such as the extent to which the new facility is integrated with the existing plant, and the extent to which the new facility is engaged in the same general type of activity as the existing source should be considered.

s. "Nuisance" - A discharge of wastewater in violation of District regulations or orders, or which is or could be harmful to or unreasonably affect the wastewater disposal facilities of the District, or which impairs or unreasonably affects the operation and maintenance of such facilities, or which violates quantity, quality, or flow standards adopted by the District, and all wastewater discharges which unreasonably affect the quality of the District's treatment plant effluent in such a manner that receiving water quality requirements established by law cannot be met by the District.

t. "Order" – A mechanism to control the contribution to the POTW by each discharger or trucked waste permitee to ensure compliance with applicable pretreatment standards and requirements and other wastewater discharge requirements. Includes but is not limited to Wastewater Discharge Permits, Pollution Prevention Permits, Cease and Desist Orders, Administrative or other orders.

u. “Pass Through” - A discharge which exits the POTW into waters of the State in quantities or concentrations which, alone or in conjunction with a discharge or discharges from other sources, is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation).

v. “Person” - Any individual, partnership, firm, association, corporation, or public agency, including the State of California and the United States of America.

w. “Pollution” - An alteration of the quality of the waters of the State by waste to a degree which unreasonably affects (1) such waters for beneficial use or (2) facilities which serve such beneficial uses.

x. “Premises” - A parcel of real property, or portion thereof, including any improvements thereon, which is determined by the District to be a single unit for purposes of receiving, using, and paying for wastewater disposal service. In making this determination, the District shall take into consideration such factors as whether the unit could reasonably be subdivided, number and location of side sewers, and whether the unit is being used for a single activity and, if not, what is the principal activity for wastewater disposal services, but in any case the District determination shall be final.

y. “Pretreatment Requirement” - Any substantive or procedural pretreatment requirement other than a national pretreatment standard.

z. “Public Agency” - A city or a sanitary district or other public entity located within the boundaries of a special district.

aa. “Receiving Water Quality Requirements” - Requirements for District's treatment plant effluent established by law or by State or Federal regulatory agencies for the protection of receiving water quality. "Requirements" shall include effluent limitations, and waste discharge standards, requirements, limitations, or prohibitions which may be established or adopted from time to time by State or Federal laws or regulatory agencies.

bb. “Severe Property Damage” – Substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

cc. “Sewage” - The water-borne wastes derived from human habitation and use of buildings for residential, business, commercial, institutional, and industrial purposes.

dd. “Side Sewer” - A sewer conveying the wastewater of a discharger from a residence, building, or other structure to a community sewer, including direct connections to a community sewer where permitted by the public agency.

ee. "Significant Industrial User"

(1) A user subject to Categorical Pretreatment Standards; or

(2) A user that:

(i) Discharges an average of twenty-five thousand (25,000) gallons per day or more of process wastewater to the POTW (excluding sanitary, noncontact cooling, and boiler blowdown wastewater);

(ii) Contributes a process wastestream which makes up five (5) percent or more of the average dry weather hydraulic or organic capacity of the POTW treatment plant; or

(iii) Is designated as such by the District on the basis that it has a reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement.

(3) Upon a finding that a user meeting the criteria in Subsection (2) above has no reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement, the District may at any time, on its own initiative or in response to a petition received from a user, determine that such user should not be considered a significant industrial user.

ff. "Significant Noncompliance" - An industrial user is in significant noncompliance with applicable pretreatment requirements if any violation meets one or more of the following criteria:

(1) Chronic violations of wastewater discharge limits, defined here as those in which sixty-six percent or more of all of the measurements taken during a six month period exceed (by any magnitude) the daily maximum limit or the average limit for the same pollutant parameter.

(2) Technical Review Criteria (TRC) violations, defined here as those in which thirty-three percent or more of all of the measurements for each pollutant parameter taken during a six-month period are equal to or exceed the product of the daily maximum limit or the average limit multiplied by the applicable TRC (TRC = 1.4 for BOD, TSS, fats, oil and grease and 1.2 for all other pollutants except pH.)

(3) Any other violations of a pretreatment effluent limit (daily maximum or longer term average) that the Agency determines has caused, alone or in combination with other discharges, interference or pass through (including endangering the health of POTW personnel or the general public).

(4) Any discharge of a pollutant that has caused imminent endangerment to human health, welfare or to the environment or has resulted in the POTW's exercise of its emergency authority to halt or prevent such a discharge.

(5) Failure to meet, within 90 days after the due date, a compliance schedule milestone contained in a local control mechanism or enforcement order for starting construction, completing construction or attaining final compliance.

(6) Failure to provide, within 30 days after the due date, required reports such as baseline monitoring reports, 90-day compliance reports, periodic self-monitoring reports and reports on compliance with compliance schedules.

(7) Failure to accurately report noncompliance.

(8) Any other violation or group of violations which the District determines will adversely affect the operation or implementation of the local pretreatment program.

gg. "Slug Discharge" - Any discharge of a non-routine, episodic nature, including but not limited to an accidental spill or non-customary batch discharge.

hh. "Suspended Solids" - The concentration of nonfilterable residue dried at 103^{o} to 105^{o}C on a filter in conformance with the District's approved method.

ii. "User" – Any person who discharges, causes, or permits the discharge of wastewater into a community sewer. Same as "Discharger".

jj. "Waste" - Includes sewage and any and all other waste substances, liquid, solid, gaseous, or radioactive, associated with human habitation, or of human or animal origin, or from any producing, manufacturing, or processing operation of whatever nature.

kk. "Wastewater" - All sewage, industrial, and other wastes and waters, whether treated or untreated, discharged into or permitted to enter a community sewer system connected to a District interceptor, for treatment in wastewater disposal facilities of a special district. As used in this Ordinance, unless the context specifically indicates otherwise, "wastewater" shall mean sewage, industrial, and other wastes discharged to a community sewer by any person.

ll. "Wastewater Capacity Fee" - A charge to each new customer, or customer who increases his demand for capacity for wastewater treatment measured by flow and strength, which reasonably reflects the District cost for providing wastewater treatment capacity.

mm. "Wastewater Disposal Purposes" - The acquisition, construction, enlargement, operation, and maintenance of intercepting sewers, wastewater treatment works, pumping plants, outfall sewers, and appurtenances by a special district.

nn. "Wastewater Disposal Facilities" - Includes intercepting sewers, wastewater treatment works, pumping plants, outfall sewers, and appurtenances constructed, operated, and maintained by a special district created for wastewater disposal purposes. As used in this Ordinance, unless the context specifically indicates otherwise, "District Facilities" shall mean wastewater disposal facilities of a special district.

oo. "Wastewater Strength" - The quality of wastewater discharged as measured by its elements, including constituents and characteristics.

Section 4 - Connection to Interceptor

The District will not permit direct connections of or accept direct contributions of wastewater from sewers other than community sewers. Before any connection of a community sewer is made to an interceptor, there shall be filed with the District, in duplicate, an application signed by the public agency owning the community sewer to be connected. The application shall be in a form approved and supplied by the District, and shall contain such information and data as may be required from time to time by the District. The connecting of community sewers will be performed by the public agency at its expense in accordance with District requirements and subject to approval and inspection by the District.

Section 5 - Storm, Drainage, and Groundwater Prohibition - Interim Provisions

Existing District regulations prohibit the discharge of storm, drainage, and groundwater to community sewer systems and are intended to complement similar existing public agency rules, regulations, and ordinances which prohibit such discharges. The District and public agencies are cooperating to develop a joint program to eliminate the maximum feasible wet weather flow from community sewer systems. The District storm water prohibitions set forth in District Resolution No. 14979 shall remain in force as interim provisions until the completion, adoption, and implementation of said joint storm water program.

Section 6 - Unusual Conditions

Notwithstanding any provision of this Ordinance to the contrary, District and any discharger or public agency may enter into an agreement where unusual conditions compel special terms and conditions and charges for the interception, treatment, and disposal of the wastewater by the District. However, this Section does not pertain to the waiver of Federal or State standards or requirements.

TITLE II - REGULATION OF THE WASTEWATER DISCHARGES

Section 1 - Permissible Discharges

Wastewater may be discharged into community sewers for interception, treatment, and disposal by the District provided that such wastewater does not contain substances prohibited, or exceed limitations of wastewater strength, set forth in this Ordinance; and provided further that the

discharger pays all District wastewater disposal charges and is in compliance with all terms of this Ordinance, including the permit provisions if applicable.

Section 2 - Prohibited Discharges

a. General Prohibition. No person shall discharge wastewater into a community sewer which will result in contamination, pollution, or a nuisance.

b. Prohibited Effects. No person shall discharge wastewater into a community sewer if it contains substances or has characteristics which, either alone or by interaction with other wastewaters, cause or threaten to cause:

(1) Damage to District facilities.

(2) Interference with or impairment of the operation or maintenance of District facilities.

(3) Obstruction of flow in sewers or interceptors.

(4) Danger to life or safety of any person.

(5) Interference with, or overloading of, treatment or disposal processes.

(6) Flammable or explosive conditions at or near District facilities.

(7) Wastewater or any other by-products of the treatment process to be unsuitable for reclamation and reuse, or interfere with any processes for reclamation.

(8) Noxious or malodorous gases or odors at or near District facilities.

(9) Discoloration or any other condition in the quality of the District's treatment plant effluent in such a manner that receiving water quality requirements established by law cannot be met by the District.

(10) Conditions at or near District facilities which violate any statute or any rule, regulation, or ordinance of any public agency or State or Federal regulatory body, including the general prohibitions contained in Federal General Pretreatment Regulations.

(11) The presence of toxic gases, fumes, or vapors in quantities injurious to the health and safety of District personnel.

(12) Pass-through of the District’s treatment plant, causing a violation of any requirement of the District’s NPDES permit.

c. Prohibited Substances. No person shall discharge the following to a community sewer:

(1) Wastewater which is not polluted and meets requirements for and is acceptable for discharge to storm sewers or to receiving waters of the State; provided that the Director may grant permission for the discharge of unpolluted wastewaters which comply with regulations of the public agency owning the community sewer.

(2) Wastewater which creates a fire or explosion hazard including, but not limited to, discharges with a closed cup flashpoint of less than 140° F (60° C) using the test methods specified in 40 CFR 261.21.

(3) Garbage, except ground garbage from residential and commercial premises where food is prepared and consumed.

d. Prohibited Locations. Except for sewer construction and maintenance by public agencies and contractors, no person shall discharge any wastewater directly into a manhole or other opening in a community sewer system other than through side sewers approved by the public agency owning the system; provided that the Director may grant permission for such direct discharges, upon written application, at locations approved by the public agency and upon payment of applicable sewage disposal charges to the District.

e. Prohibition on Use of Dilution**.** Except where expressly authorized to do so by an applicable pretreatment standard or requirement, no user shall increase the use of process water, or in any other way attempt to dilute a discharge as a partial or complete substitute for adequate pretreatment to achieve compliance with a pretreatment standard, requirement or discharge limitation. The District may impose mass limitations on the users which are using dilution to meet applicable Pretreatment Standards or requirements, or in other cases where the imposition of mass limitations is appropriate.

f. Prohibition on Slug Discharges**.** No user shall discharge any pollutant, including oxygen-demanding pollutants, at a flow rate and/or pollutant concentration which causes or threatens to cause interference with the wastewater treatment process. For the purposes of this section, any discharge at a flow rate or concentration which could cause a violation of the prohibited discharge standards or limitations in Title II, Sections 2 and 3 of this ordinance shall be deemed a slug discharge.

g. Bypass Prohibited.

(1) Bypass of pretreatment equipment and/or discharge points is prohibited and the District may take enforcement action against any user for bypass unless:

(i) bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;

(ii) there were no feasible alternatives to the bypass, as described in 40 CFR 403.17(d) and the industrial user submits the notifications required in 40 CFR 403.17(c).

(2) The District may approve an anticipated bypass, after considering its adverse effects, if the District determines that it will meet the conditions specified in part g(1) of this prohibition.

h. Discharge of Petroleum or Mineral Oil Causing Pass-through or Interference Prohibited. Notwithstanding the provisions of Section 3.a., no user may discharge petroleum oil, non-biodegradable cutting oil or other products of mineral origin in any amount that causes interference or pass-through.

i. Discharge of Trucked or Hauled Wastes Prohibited. No user shall discharge any trucked or otherwise hauled wastes to the community sewer or to any District facilities unless a permit has been issued by the District.

Section 3 - Limitations on Discharges

a. Wastewater Strength Limits. No person shall discharge wastewater from a side sewer into a community sewer if the strength of the wastewater exceeds the following:

Arsenic	2	mg/L
Cadmium	1	mg/L
Chlorinated Hydrocarbons (total identifiable)	0.5	mg/L
Chromium (total)	2	mg/L
Copper	5	mg/L
Cyanide	5	mg/L
Iron	100	mg/L
Lead	2	mg/L
Mercury	0.05	mg/L
Nickel	5	mg/L
Oil and Grease	100	mg/L
pH	not less than 5.5	S.U.
Phenolic compounds	100	mg/L
Silver	1	mg/L
Temperature	150[(1)]	ºF
Zinc	5	mg/L

[(1)] 150°F (65.5°C), or any thermal discharge which as a result of temperature and/or volume causes the influent of the wastewater treatment plant to exceed 104°F (40°C)

b. Additional Wastewater Strength Limits. Wastewater strength limits for constituents not listed in Section 3a may be established in a wastewater discharge permit based on available

treatment technology, existing wastewater conditions in the District's facilities or other factors as determined by the Director. The Director may also establish wastewater strength limits on the wastewater discharge permits at locations within a premises whenever non-process water may dilute the wastewater discharging from side sewers.

c. Quantity and Rate of Flow Limits. No person shall discharge wastewater into a community sewer in quantities or at rates of flow which may have an adverse or harmful effect on or overload District facilities or cause excessive or additional District treatment costs. The Director may establish mass discharge limits in wastewater discharge permits to control the quantity and rate of flow of wastewater discharges.

d. Radioactive Limits. No person shall discharge or cause to be discharged any radioactive wastewater into a community sewer except when the person is authorized to use radioactive material by the Nuclear Regulatory Commission or other governmental agency empowered to regulate the use of radioactive materials and when the wastewater is discharged in strict conformity with current Nuclear Regulatory Commission regulations and recommendations for safe, disposal and in compliance with all rules and regulations of State and local regulatory agencies.

e. Deny or Condition New or Increased Contributions. The Director may deny or condition new or increased contributions of pollutants, or changes in the nature of pollutants, to the District's wastewater treatment facility by Industrial Users where such contributions do not meet applicable Pretreatment Standards and Requirements or where such contributions would cause the District to violate its NPDES permit.

Section 4 - Federal Pretreatment Standards

Upon promulgation of the Federal General and Categorical Pretreatment Standards, the Federal Standards, if more stringent than limitations imposed under the Ordinance for dischargers, shall supersede the limitations imposed under this Ordinance. The Director shall notify all affected dischargers of the applicable standards and other requirements. National Categorical Standards, found in 40 CFR Chapter I, Subchapter N, Parts 405-471, are hereby incorporated into these regulations. Effluent limitations promulgated by the Federal Act shall apply in any instance where they are more stringent than those in these regulations.

Section 5 - District Pretreatment Program

The Director shall implement a pretreatment program in accordance with General Pretreatment Regulations adopted by EPA and in accordance with this Ordinance.

Section 6 - Permits for Federal Categorical Pretreatment Standards

The Director shall issue permits to dischargers subject to Federal Categorical Pretreatment Standards and require compliance in accordance with dates established by EPA. The Permits shall be issued in accordance with the provisions of Title IV of this Ordinance but pretreatment permits

may be issued with renewal dates from twelve to sixty months after issuance of the initial pretreatment permits.

Section 7 - Confidential Information - Federal Categorical Pretreatment Standards

All information and data obtained from a discharger in connection with Federal Pretreatment Standards shall be available to the public or other governmental agencies without restriction unless the discharger specifies that the release of such information would divulge information, processes or methods of production entitled to protection as trade secrets, in which case the discharger shall be solely responsible for taking any action necessary to prevent the release of such information. Wastewater constituents and characteristics will not be recognized as confidential information.

TITLE III - DISCHARGER CLASSIFICATION AND CALCULATION OF WASTEWATER DISPOSAL CHARGES

Section 1 - Classification

All dischargers shall be classified for wastewater disposal purposes in accordance with the principal activity conducted upon the premises, or in accordance with the use of the premises, for purposes of wastewater treatment, as determined by the District in case multiple tenants or activities are on the premises. The purpose of classification is to facilitate the regulation of wastewater dischargers based on quality, quantity and flow, to provide an effective means of industrial waste source control, and to establish a system of wastewater disposal service charges based upon flow and waste strength which will insure an equitable recovery of District capital and operating costs.

Section 2 - Calculation of Wastewater Disposal Charge

All dischargers shall pay a use charge for District wastewater disposal services. The charges will reflect the quantity, quality, and flow of the wastewater of the dischargers and will be based on District capital and operating costs to intercept, treat and dispose of wastewater. All dischargers shall also pay all other charges, fees, tolls, rentals or taxes as from time to time established or adopted by the District. Flat charges, unit charges and classification charges shall be established from time to time and set forth in a schedule of rates and charges. Unit charges will be established for each element of wastewater strength which incurs District costs of interception, treatment and disposal. The total wastewater disposal charge for each discharger shall be calculated as set forth herein:

a. Dischargers from Residential Premises with Four or Less Dwelling Units. Dischargers of wastewater in this class shall pay a total wastewater disposal charge, regardless of the source of water, which shall be the sum of a uniform flat monthly charge per dwelling unit for wastewater strength and the unit charge for volume multiplied by the volume of water used, subject to a maximum volume established by the District from time to time and set forth in a schedule of rates and charges. This wastewater disposal methodology was

established on November 26, 1982 and shall apply to all billing periods commencing on and after November 1, 1982.

b. Dischargers from Residential Premises with Five or More Dwelling Units and Dischargers from Nonresidential Premises. All dischargers of wastewater in this class will be assigned a business classification code depending on the principal activity conducted on the premises or the use of the premises for purposes of wastewater treatment, as determined by the District in case multiple tenants or activities are on the premises. All dischargers conducting the same principal activity will receive the same business classification code. The Director shall determine the typical wastewater strength for each business classification code, and each discharger within that classification will be assumed, for wastewater disposal charge purposes, to have the same typical wastewater strength. The Director shall also subclassify within each business classification code those dischargers who discharge primarily segregated domestic wastes or wastes from sanitary conveniences. A classification charge shall be established by the District for each business classification code and subclassification, which will be based on unit charges for the elements of wastewater strength, including volume, as applied to the typical wastewater strength of the particular classification. The wastewater disposal charge to a discharger in this class will be calculated by multiplying the classification charge by the volume of water used by the discharger. Any discharger in this class who is issued a wastewater discharge permit will thereafter pay a wastewater disposal charge as a permitted discharger.

c. Permitted Dischargers. Dischargers of wastewater who are required to obtain a permit under the provisions of this Ordinance, excluding permits issued solely for flow estimation, shall pay a wastewater disposal charge which shall be the sum of the products of the following: The unit charge for each element of wastewater strength multiplied by the allowable limits of each element set forth in the permit multiplied by the volume of water used; and the unit charge for volume multiplied by the volume of water used as determined herein. The wastewater disposal charge for permitted dischargers, including both wastewater strength and water use, shall be calculated by an apportionment by the Director of strength and use to each side sewer at the discharger's premises. Dischargers requiring permits who have seasonal variations in operations shall have the capital cost element adjusted in the calculation of wastewater disposal charges to ensure equitable recovery of capital costs of design capacity from such dischargers. Dischargers requiring permits solely for flow estimation shall pay a wastewater disposal charge calculated by multiplying the classification charge by the volume of water determined by the estimation. In addition to a wastewater disposal charge, the permitted discharger shall pay all applicable District permit charges. Commencing on the effective date of this Ordinance, all dischargers required to obtain a permit shall pay a wastewater disposal charge in accordance with their business classification code until a permit is issued.

d. Capacity fee. A wastewater capacity fee shall be paid as established from time to time by the District and which reasonably reflects the cost of providing wastewater treatment capacity. The wastewater capacity fee shall be payable prior to the time a new discharger commences a use of the community sewer system, or connection to the District interceptor system. The District will calculate the wastewater capacity fee based on the best available

estimated information for the proposed business, based on the flow, strength, and other pertinent design information at the time the new discharger applies for the District's service. Once the business is fully established, within 24 months from commencement of discharge, the District may review the actual flow and/or strength to verify the estimated demand for wastewater treatment capacity. If the review indicates that the actual measured flow or strength of the business is greater than the initially estimated information, the District will collect an additional wastewater capacity fee. The wastewater capacity fee was made effective September 11, 1984 and the wastewater capacity fee shall apply to all dischargers who increased demand for wastewater treatment capacity on or after July 1, 1984.

An existing discharger pays a capacity fee when the District determines that the discharger has increased their demand for wastewater treatment capacity. An increased demand for wastewater treatment capacity may also be reviewed when an existing business significantly increases their wastewater treatment capacity demand or changes the nature of business (e.g., BCC, ownership). An increased demand for wastewater treatment capacity can occur even if estimating parameters (e.g., square footage, fixtures) for the business may not have changed.

Section 3 - Determination of Water Used

The applicable volume of water upon which wastewater disposal charges shall be based will be determined as follows:

a. Water Discharged to Community Sewer. For premises where no portion of the water received from any source is consumed in the principal activity of the discharger or is removed from the premises by means other than community sewers, the wastewater disposal charge shall be applied against the total amount of water used from all sources. The amount of East Bay Municipal Utility District water received will be determined by registration on an East Bay Municipal Utility District meter. The amount of water used from other sources will be determined by means of a meter installed at the expense of the discharger and approved by the District or by an estimate prepared by the District, after the discharger obtains a permit in accordance with this Ordinance. The discharger shall report to the District the sources of all water used at his premises other than that supplied by the East Bay Municipal Utility District and shall notify the District of any changes in such sources.

b. Water Not Discharged to Community Sewer. For premises where a portion of the water received from any source does not flow into community sewers, because of the principal activity of the discharger or removal by other means, the charge for wastewater disposal service will be applied against the volume of water discharging from such premises into community sewers. Written notification and proof of the diversion of water must be provided by the discharger if he is to avoid application of the wastewater disposal charge against the total amount of water used from all sources. He may be required to install a meter, of a type and at a location approved by the District and at his own expense, to determine the quantity of water flowing into community sewers. However, where it is

impractical to install meters and where the quantity of water diverted from the sewers amounts to more than 20 percent of the total water used, then the charge for wastewater disposal service may be based upon an estimate prepared by the District, after the discharger obtains a permit in accordance with this Ordinance.

TITLE IV - WASTEWATER DISCHARGE PERMITS

Section 1 - Permit Requirement

All dischargers, other than residential, whose wastewater requires special regulation or contains industrial wastes requiring source control and all dischargers requiring an estimation of water use shall secure a wastewater discharge permit.

a. Mandatory Permits. All dischargers in the following categories must obtain a wastewater discharge permit:

(1) Significant Industrial Users, as defined in Title I, Section 3 of this Ordinance.

(2) Critical Industries, as defined in Title I, Section 3 of this Ordinance.

(3) Dischargers whose average wastewater strength cannot be established on a business classification basis, because of seasonal or other variations in operations.

(4) Dischargers whose wastewater strength exceeds the normal range of wastewater strength for the business classification code to which the discharger is assigned.

(5) Dischargers using an unmetered source of water.

(6) Other dischargers determined by the Director to require special regulations or source control.

b. Optional Permits. The Director may issue wastewater discharge permits to any discharger after application in accordance with the terms of this Title, in the following categories:

(1) A discharger who requests a District estimation of wastewater flow because more than 20 percent of the metered water consumption is not being discharged to a community sewer.

(2) Any person whose discharge is less than the normal range of wastewater strength for the business classification code to which he is assigned because of pretreatment, process changes, or other reasons.

Section 2 - Application

Dischargers seeking a wastewater discharge permit shall complete and file with the Director a District application form, accompanied by the applicable District fees. New dischargers shall file applications 60 days prior to commencement of discharges and existing dischargers shall file applications within 30 days of notification by the Director, unless such time is extended for good cause. The application may require the following information:

a. name, site address, and mailing address (if different than site address) of business;
b. estimated wastewater strength;
c. estimated wastewater flow, average and peak wastewater discharge flow for each side sewer;
d. locations of side sewers, sampling points, and pretreatment facilities;
e. description of activity, facilities, and plant process on the premises, including raw materials, processes and types of materials which are or could be discharged;
f. total product produced, by type;
g. number and type of employees;
h. days and hours of operation and days and hours of discharge;
i. slug control plan which outlines discharge practices (including non-routine batch discharges), describes stored chemicals, and contains procedures both to notify the district immediately of slug discharges and to prevent adverse impacts from any accidental spill; and
j. any other information the Director shall deem necessary to evaluate the permit application.

Section 3 - Terms and Conditions of Permit

a. Terms. All wastewater discharge permits shall be subject to all provisions of this Ordinance and all rates and charges established by the District. All permits shall be issued for a specified time period, not to exceed five (5) years. The Director may establish renewal dates up to sixty months. Applications for permit renewal shall be submitted to the District at a minimum of 60 days prior to expiration. All permits, except those issued solely for estimation of water used, shall contain the following terms:

(1) The typical wastewater strength and water use for the flow in each side sewer.

(2) Average and maximum limits on the elements of the discharger's wastewater strength and flow, apportioned to each side sewer.

b. Conditions. Wastewater discharge permits may contain any or all of the following conditions:

(1) Limits on rate and time of discharge or requirements for flow regulation and equalization.

(2) Requirements for inspection and sampling facilities, including District access to such facilities.

(3) Monitoring program which may include: Sampling locations; frequency and method of sampling; number, types and standard of tests; and establishing a reporting schedule. The discharger assigned a monitoring program in conformance with this Ordinance shall pay all applicable District charges.

(4) Submission of technical reports or discharge reports, including, but not limited to, reports described in Title V, Section 2. of this Ordinance, or any report required by 40 CFR 403.12.

(5) Maintenance of plant records relating to wastewater discharges, as specified by the Director, and affording District access thereto.

(6) A statement of applicable penalties for violation of pretreatment standards and requirements, and any applicable compliance schedule.

(7) Requirements for the development and implementation of pollution prevention plans to reduce the amount of pollutants discharged to the District's treatment plant.

(8) Notification requirements.

(9) Requirements for the development and implementation of spill control plans or other special conditions including management practices necessary to adequately prevent accidental, unanticipated, or nonroutine discharges.

(10) Installation of technology, as specified by the Director.

(11) Other conditions as deemed appropriate by the Director to ensure compliance with this Ordinance or the terms and conditions of the permit.

Section 4 - Change of Permit Terms and Conditions

The District may change the terms and conditions of a wastewater discharge permit, including changing the average limits on the elements of wastewater strength, from time to time as circumstances may require. The District shall allow a discharger reasonable time to comply with any District required changes in the permit except that a change in average limits of wastewater strength shall immediately affect calculation of the wastewater disposal charge.

Section 5 - Transfer of Permit Prohibited

A wastewater discharge permit shall not be assigned or transferred.

Section 6 - Termination

The Director may terminate any wastewater discharge permit for violation of the terms and conditions of the permit or the provisions of this Ordinance. A discharger whose permit has been terminated shall apply for a new permit within 30 days of notice of termination. Any discharger whose permit has been terminated shall pay wastewater disposal charges based upon his former permit or on his assigned business classification code, whichever is higher, until a new permit has been applied for, approved, and issued.

TITLE V - ADMINISTRATION

Section 1 - Authority of Director

The Director is charged with responsibility for District's wastewater control program and the administration and enforcement of the provisions of this Ordinance.

Section 2 - Wastewater Source Control Requirements

In order to effectively administer and enforce the provisions of these regulations, the Director may require any discharger to comply with any or all the following requirements:

a. Discharge Reports. The Director may require discharge reports, including but not limited to questionnaires, technical reports, sampling reports, and test analyses, and periodic reports of wastewater discharge. When a report filed by a person pursuant to this section is not adequate in the judgment of the Director, he may require such person to supply such additional information as the Director deems necessary. The discharge report may include, but not be limited to, nature of the process, volume and rates of wastewater flow, elements, constituents, and characteristics of the wastewater, together with any information required in an application for wastewater discharge permit.

b. Baseline Monitoring Report. Each categorical industrial user shall submit a baseline monitoring report (BMR). The requirements for a BMR, as described in 40 CFR 403.12(b) are hereby incorporated into these regulations. A BMR, if required, shall be reviewed by an authorized representative of the user, and certified to by a qualified professional, indicating whether pretreatment standards are being met on a consistent basis, and if not, whether additional operation and maintenance and/or additional pretreatment is required for the user to meet the pretreatment standards and requirements.

c. Periodic Report of Continued Compliance. Any categorical industrial user shall submit to the District twice annually, a report indicating the nature and concentration of the pollutants which are regulated by the user’s federal pretreatment standards. The report shall include the average and maximum daily flows. The District may determine during which months the discharger shall submit these reports.

d. Compliance Schedule for the Installation of Technology. The District may require each user to develop a compliance schedule for the installation of technology to meet applicable

pretreatment standard or requirement. The compliance schedule for the installation of technology is not conditioned on the determination of violations. Progress reports for the compliance schedule shall be considered a requirement.

e. Report on Compliance with Categorical Deadline. Each categorical user shall submit a report within 90 days after the final date for compliance, or upon commencement of discharge, whichever comes later, which contains flow and pollutant measurements, a certification of whether pretreatment standards are being met consistently, and if not, a description of needed additional operations and maintenance or pretreatment. The report on compliance with categorical deadline, if required, shall be reviewed by an authorized representative of the user, and certified to by a qualified professional, indicating whether pretreatment standards are being met on a consistent basis, and, if not, whether additional operation and maintenance and/or additional pretreatment is required for the user to meet the pretreatment standards and requirements.

f. Notice of Violation/ Resampling Report. If sampling by a user indicates a violation, the user shall notify the District within 24 hours of becoming aware of the violation. The user shall also repeat the sampling and analysis and submit the results of the repeat analysis to the District within 30 days of becoming aware of the violation, unless the District samples the user between the time of the initial sampling and the time when the user receives the results of this sampling. Within five (5) days of detecting such violation , the user shall, unless waived by the District, submit a detailed written report describing the cause(s) of the discharge and the measures to be taken by the user to prevent similar future occurrences. Such notification shall not relieve the user of any expense, loss, damage, or other liability which may be incurred as a result of damage to the POTW, natural resources, or any other damage to person or property; nor shall such notification relieve the user of any fines, penalties, or other liability which may be imposed pursuant to this ordinance.

g. Slug Control Plan. The District may require a plan which outlines discharge practices, including non-routine batch discharges, describes stored chemicals, and contains procedures both to notify the District immediately of slug discharges and to prevent adverse impacts from any accidental spill.

h. Notice of Potential Problems**.** All categorical and non-categorical industrial users shall notify the District immediately of all discharges that could cause problems to its wastewater treatment facility, including any slug loadings, as defined by 40 CFR 403.5 (b), by the industrial user.

i. Notification of Changed Conditions. All industrial users shall promptly notify the District in advance of any substantial change in the volume or character of pollutants in their discharge, including the listed or characteristic hazardous wastes for which the industrial user has submitted initial notification under 40 CFR 403.12 (p).

j. Notification of Hazardous Waste Discharge.

(1) All industrial users discharging any substance which, if otherwise disposed of, would be a hazardous or acutely hazardous waste under 40 CFR 261, must comply with the reporting requirements of 40 CFR 403.12(p)(1) and (3) unless exempted under the provisions of 40 CFR 403.12(p)(2).

(2) In the case of any notification made under section (1) above, the industrial user shall certify that it has a program in place to reduce the volume and toxicity of hazardous wastes generated to the degree it has determined to be economically practical. The District may accept a copy of a hazardous waste reduction or minimization plan otherwise required by law, as compliance with this requirement.

k. Monitoring Programs. The Director may require of dischargers such technical or monitoring programs, including the submission of periodic reports, as he deems necessary, provided that the burden, including costs, of such programs and reports shall bear a reasonable relationship to the need for the report and the benefits to be obtained therefrom. The discharger shall pay the applicable District charge for the monitoring program, in addition to the wastewater disposal and other charges established by the District. The monitoring program may require the discharger to conduct a sampling and analysis program of a frequency and type specified by the Director or as required by the Federal General Pretreatment Regulations (40 CFR 403.5) to demonstrate compliance with prescribed wastewater discharge limits. The discharger may either:

(1) Conduct his own sampling and analysis program provided he demonstrates to the Director that he has the necessary qualifications and facilities to perform the work; or

(2) Engage a private consulting firm or laboratory, certified by the State of California, Department of Public Health.

l. Inspection Facilities. The Director may require any non-residential discharger to construct, at his own expense, a sampling facility or inspection manhole together with necessary related measuring and sampling equipment, in accordance with construction standards and specifications of the public agency owning the community sewer. The sampling facility or inspection manhole shall be constructed on the side sewer of the discharger and within the public right of way at a location approved by the District and the public agency owning the community sewer; provided that the Director may permit the installation of such facilities on the premises of the discharger at a location which will permit District access to the facility at all times. Construction shall be completed within 60 days of written notification from the Director, unless such time is extended by the Director for good cause. The Director may require the discharger to install such sampling facilities or inspection manholes on each side sewer.

m. Pretreatment. Pretreatment systems or devices may be required by the Director to treat wastewater prior to discharge to the community sewer when it is necessary to restrict or prevent the discharge to the community sewer of wastewater having strength in violation of the prohibitions or exceeding the limits established by this Ordinance, or to distribute wastewater discharges over a period of time. All pretreatment systems or devices shall be approved by the Director but such approval shall not relieve a discharger of the responsibility for taking all steps necessary to comply with wastewater limitations established by the District. All required pretreatment equipment shall be installed and operated at the discharger's expense. Any subsequent changes in the pretreatment facilities or method of operation shall be reported to and be acceptable to the District.

n. Protection From Accidental Discharge. Each discharger shall provide protection from accidental discharge of prohibited materials or other wastes regulated by this Ordinance. Such facilities shall be provided and maintained at the discharger's expense. These facilities shall be approved by the Director but such approval shall not relieve the discharger from the responsibility of modifying the facilities to provide the protection necessary to meet the requirements of this section.

o. Any other reports, as deemed necessary by the District, to determine a user's compliance status with local, state and federal limits or requirements.

Section 3 - Signature Requirement

a. All reports and/or permit applications received and/or required under these regulations, including BMR, reports on compliance with categorical standard deadlines (90-day compliance reports) and periodic reports on continued compliance, shall be signed:

(1) by a responsible corporate officer, if the user submitting the reports is a corporation. For the purpose of this paragraph, a responsible corporate officer means:

(i) a president, secretary, treasurer, or vice president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation; or

(ii) the manager of one or more manufacturing, production, or operation facilities employing more than 250 persons or having gross annual sales or expenditures exceeding $25 million (in second quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.

(2) by a general partner or proprietor if the user submitting the reports is a partnership or sole proprietorship, respectively;

(3) by a duly authorized representative of the individual designated in paragraph (1) or (2) of this section if:

(i) The authorization is made in writing by the individual designated in paragraph (1) or (2);

(ii) The authorization specifies either an individual or a position having responsibility for the overall operation of the facility from which the industrial discharge originates, such as the position of plant manager, operator of a well, or well field superintendent, or a position of equivalent responsibility, or having overall responsibility for environmental matters for the company; and

(iii) The written authorization is submitted to the District.

(4) If an authorization under paragraph (a)(3) of this section is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, or overall responsibility for environmental matters for the company, a new authorization satisfying the requirements of paragraph (a)(3) of this section must be submitted to the District prior to or together with any reports to be signed by an authorized representative.

b. Reports and applications must include the following certification statement:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Section 4 - Retention of Records

All records, including but not limited to all information resulting from any monitoring activities, discharge reports, permits, self-monitoring data, pretreatment system process control logs, and relevant correspondence (whether or not required by these regulations) must be maintained by the user for a period of not less than three years. Monitoring records shall be included for all samples as specified in 40 CFR 403.12 (o) (1). All such records shall be made available for inspection and copying by a duly authorized representative of the District or any other governmental entity having jurisdiction. The retention period may be extended in the case of unresolved litigation or at any time at the request of the District, the State or U.S. EPA.

Section 5 - Analytical and Sampling Methodology and Procedures

(a) The method and procedures utilized for all analyses which are reported under the requirements of these regulations shall be as specified by the provisions of 40 CFR Part 136.

(b) The methods and procedures utilized for all sampling performed and/or reported under the requirements of this regulation shall be as specified by the provisions of 40 CFR Part 136.

(c) If 40 CFR Part 136 does not contain sampling or analytical techniques for the pollutant in question, sampling and analyses must be performed in accordance with procedures approved by U.S. EPA.

Section 6 - Public Notification of Dischargers Found to be in Significant Non-Compliance

At an interval of not less than once per year, the District will publish the identities of any user(s) which is (are) found to be in significant non-compliance of any national pretreatment standard, discharge limitation or prohibition, or any other requirement of these regulations. The definition of significant non-compliance shall be as specified in Title I, Section 3, The publication shall occur in the newspaper having the largest daily circulation within the service area of the District.

Section 7- Trade Secrets

When requested by the person furnishing a report or permit application or questionnaire, the portions of the report, or other document, which might disclose trade secrets or secret processes shall not be made available for inspection by the public but shall be made available to governmental agencies including the U.S. EPA, the State, and the District in judicial review or enforcement proceedings involving the person furnishing the report. All confidential information in connection with Federal Pretreatment Standards shall comply with Title II, Section 7 of this ordinance.

Section 8 - District Inspection

The District may inspect the facilities of any discharger to ascertain whether the provisions of this Ordinance are being met and the wastewater discharge limits are being complied with. Dischargers shall allow the District or its representatives ready access at all reasonable times to all parts of the premises for the purposes of inspection or sampling or in the performance of any of their duties. Where a discharger has security measures which would require proper identification and clearance before entry into their premises, the user shall make arrangements with their security personnel so that, upon presentation of proper identification, District personnel will be permitted to enter without delay for the purposes of performing their specific responsibilities. Such inspection shall be made with the consent of the owner or possessor of such facilities. If the District has been refused access to any part of a discharger's facility, and is able to demonstrate probable cause to believe that there may be a violation of this Ordinance, or that there is a need to inspect and/or

sample as part of the routine inspection and sampling program of the District, then the Director may seek issuance of an inspection warrant or a search warrant, duly issued pursuant to the procedures set forth in Title 13 (commencing with Section 18222.5) of Part 3 of Code of Civil Procedure; provided, however, that in the event of an emergency affecting the public health or safety such inspection may be made without consent or the issuance of a warrant. To verify the wastewater flows and strengths reported by dischargers or to determine compliance with this Ordinance, inspection, measurement, and sampling may be conducted from time to time by the District. The District shall have the right to install, maintain, and operate necessary sampling and measuring equipment on the premises of discharger.

Section 9 - New Connections

Dischargers will be assigned a business classification code and informed of the applicable prohibitions, limits or conditions, and the applicable rates and charges, governing wastewater disposal service at the time of application for water service from East Bay Municipal Utility District. All nonresidential dischargers seeking a new side sewer connection to a community sewer and any new discharger requiring information prior to applying for water service should contact the Director. The Director will inform the discharger of the regulations governing wastewater disposal service and the applicability of requirements for inspection, sampling, or pretreatment facilities.

TITLE VI - ENFORCEMENT AND PENALTIES

Section 1 - Director's Orders

The Director may adopt procedures and rules for the implementation and administration of this Ordinance. The Director shall enforce the provisions of this Ordinance, including requirements established or permits issued hereunder, as provided herein.

a. Requiring Discharger to Submit Schedule of Remedial or Preventive Measures. When the Director finds that a discharge of wastewater is taking place or threatening to take place that violates or will violate prohibitions or limits prescribed by this Ordinance or wastewater source control requirements or the provisions of a wastewater discharge permit, the Director may require the discharger to submit for approval of the Director, with such modifications as he deems necessary, a detailed time schedule of specific actions the discharger shall take in order to correct or prevent a violation of requirements.

b. Issuance of Cease and Desist Orders. When the Director finds that a discharge of wastewater is taking place or threatening to take place in violation of prohibitions or limits of this Ordinance or wastewater source control requirements or the provisions of a wastewater discharge permit, the Director may issue an order to cease and desist and direct that those persons not complying with such prohibitions, limits, requirements, or provisions (1) comply forthwith, (2) comply in accordance with a time schedule set by the Director, or (3) in the event of a threatened violation, take appropriate remedial or preventative action.

c. Damage to Facilities. When the discharge of wastewater causes an obstruction, damage, or other impairment to District disposal facilities, the Director may recover costs from the discharger to correct the problem caused by the discharger.

d. Termination of Service. The District may terminate or cause to be terminated wastewater disposal or water service to any premises if a violation of any provision of this Ordinance pertaining to control of wastewater is found to exist or if a discharge of wastewater causes or threatens to cause a condition of contamination, pollution, or nuisance, as defined in this Ordinance. This provision is in addition to other statutes, rules, or regulations authorizing termination of service for delinquency in payment, or for any other reason.

e. Appeal Procedures for Director's Orders. Any permit applicant, permit holder, or other discharger affected by any decision, action, or determination, including cease and desist orders, made by the Director in interpreting or implementing the provisions of this Ordinance, or any permit issued hereunder, may file with the Director a written request for reconsideration within 10 days of such decision, action, or determination, setting forth in detail the facts supporting the request. The Director may elect to hold a hearing on the request. The request for reconsideration shall be acted upon by the Director within 10 days from the date of filing or the close of the reconsideration hearing. The decision, action, or determination shall remain in effect during such period of review by the Director. If the ruling made by the Director is unsatisfactory to the person requesting reconsideration, he may, within 10 days after notice of the action by the Director, file a written appeal to the General Manager. The written appeal shall state all pertinent aspects of the matter and shall include the hearing record if one was requested. Within 30 days after the written appeal is received, the General Manager shall hold a hearing after due notice to the appellant. The General Manager may establish rules and regulations governing the hearings of such appeals. The General Manager shall make a final ruling on the appeal within 10 days after close of the hearing. The decision, action, or determination shall remain in effect during such period of review by the General Manager. If the decision of the General Manager is unsatisfactory to the person appealing, he may file a written appeal to the Board of Directors of the District within 10 days after receipt of the decision. The Board of Directors may hear the appeal or refer the matter to a neutral hearing officer for an advisory opinion. The Board of Directors shall make a final ruling on the appeal within 10 days of the close of the hearing or receipt of the advisory opinion. The decision, action, or determination shall remain in effect during such period of review by the Board of Directors. The Director may adopt rules and regulations to implement the provisions of this section.

Section 2 - Director's Enforcement Remedies and Penalties

The Director may administratively impose penalties, up to specified maximums, against any person who violates the provisions of this Ordinance. For purposes of this section of the Ordinance, the Director or his/her designee shall be the hearing officer.

a. Issuance of Complaints.

(1) The Director may issue a complaint to any person on whom civil liability may be imposed pursuant to this article. The complaint shall allege the act or failure to act that constitutes a violation of law, the provision of law authorizing civil liability to be imposed pursuant to this article, and the proposed civil liability.

(2) The complaint shall be served by personal notice or certified mail on the person subject to the District's discharge and reporting requirements, and shall inform the party served that a hearing shall be conducted within 60 days after the party has been served.

b. Civil Liability Penalties. Civil liability may be imposed by the Director as follows:

(1) In an amount which does not exceed one thousand dollars ($l,000) for each day for knowingly or willfully failing or refusing to furnish technical or monitoring reports.

(2) In an amount which does not exceed five thousand dollars ($5,000) for each day of intentionally or negligently discharging hazardous waste, as defined in Section 25117 of the Health and Safety Code, knowingly falsifying any information provided in any furnished technical or monitoring report.

(3) In an amount which does not exceed ten dollars ($10) per gallon for discharges in violation of any of the District's cease and desist or other orders, or prohibitions issued, reissued, or adopted by the District.

(4) Unless appealed, orders setting administrative civil liability shall become effective and final upon issuance thereof, and payment shall be made within 30 days.

c. Appeal.

(1) The person who has been issued a complaint may waive the right to a hearing, in which case the District shall not conduct a hearing. A person dissatisfied with the decision of the Director may appeal to the Board of Directors within 30 days of notice of the Director's decision.

(2) Any party aggrieved by a final order issued by the Board after granting review of a hearing officer order, may obtain review of the order of the board in the superior court by filing in the court a petition for writ of mandate within 30 days following the issuance of the order by the board. Any party aggrieved by a final order of a Director issued pursuant to Title VI, Section 2 of this Ordinance for which the board denies review may obtain review of the order of the Director in the superior court by filing in the court a petition of writ of mandate within 30 days following the denial of review by the board.

Section 3 - Criminal Penalties

a. Any person who intentionally discharges wastewater in any manner, in violation of any order issued by the Director, which results in contamination, pollution, or a nuisance, as defined in this Ordinance, is guilty of a misdemeanor and may be subject to criminal penalties of not more than $1,000 per day for each such violation, including, but not limited to, any violation of pretreatment standards or requirements.

b. Any person who knowingly makes any false statement or representation in any record, report, plan, or other document filed with the District, or who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required by the District, shall be punished by a fine of not more than twenty-five thousand dollars ($25,000) or by imprisonment in the county jail for not more than six months, or by both.

Section 4 - Civil Enforcement Remedies and Penalties

The District may pursue any of the alternative civil remedies herein against any discharger who violates the provisions of this Ordinance.

a. Civil Enforcement Penalties.

(1) Any person who fails to comply with any order issued by the District, including orders related to pretreatment standards or requirements, shall be subject to a civil penalty not to exceed ten thousand dollars ($10,000) for each day in which the discharge, violation, or refusal occurs.

(2) Any person who intentionally or negligently violates any order issued by the District for violation of rules regulating or prohibiting discharge of wastewater which causes or threatens to cause a condition of contamination, pollution or nuisance, as defined in this article, may be liable civilly in a sum not to exceed twenty-five thousand dollars ($25,000) for each day in which the violation occurs. The attorney of the District, upon request of the Board of Directors of the District, shall petition the Superior Court to impose, assess, and recover such sums.

b. Injunction. Whenever a discharge of wastewater is in violation of the provisions of this Ordinance, including but not limited to violation of a pretreatment standard or requirement, or otherwise causes or threatens to cause a condition of contamination, pollution, or nuisance, or whenever non-discharge violations occur including failure to submit a required report or failure to allow the District's inspectors access to an industrial facility, the District may petition the Superior Court for the issuance of a preliminary or permanent injunction, or both, as may be appropriate, restraining the continuance of such violations.

TITLE VII - RESOURCE RECOVERY (TRUCKED WASTE) PROGRAM

Section 1 – Purpose

The Resource Recovery program was established under the authority of the Municipal Utility District Act to utilize excess capacity at the District's Main Wastewater Treatment Plant by accepting permitted trucked waste. The provisions of this title do not regulate discharges to community sewers.

Section 2 – Regulation of Discharges

Permitted wastes may be discharged into identified receiving stations at District wastewater facilities provided that such wastewater has been deemed acceptable by the District under Resource Recovery waste acceptance procedures and has been permitted by the District. It is entirely within the District's discretion to accept or reject any waste or any hauler. The District maintains full discretion on the issuance, terms and conditions, and revocation of trucked waste permits.

No person shall discharge wastewater through the Resource Recovery Program as described in title II Prohibited Discharges, Section 2b Prohibited Effects.

Section 3 – Permit requirements

All trucked waste haulers shall secure a trucked waste permit. The permitting process may include collection of information about the waste stream and generator; collection and laboratory analysis of samples; and an evaluation of potential impacts including worker health and safety, plant process impacts, and regulatory impacts to air, liquid and solid waste permits. Persons seeking a trucked waste permit shall complete and file a District application form accompanied by the applicable District Permit fee. The application requires information on waste characterization including, but not limited to, origin of the waste, estimated waste quantity, waste characteristics including pH, organic analysis, and analysis for other potential pollutants including metals. The application also includes a certification of liability insurance. All permitting decisions shall rest with the Director.

All trucked waste permits shall be subject to all provisions of this title and all applicable rates and charges established by the District. All permits shall be issued for a specific time period, not to exceed five (5) years. The Director may establish renewal frequencies of up to sixty months. Permit conditions may contain any and all of the following: Limits on rate, time and location of discharge; Monitoring and audit program which may include random and unannounced inspections and sampling; Other conditions as deemed appropriate by the Director to insure compliance with this Ordinance and/or terms and conditions of the permit. A trucked waste discharger is prohibited from discharging waste except as expressly provided in the trucked waste discharge permit.

Section 4 – Administration and Enforcement

The Director is charged with responsibility for District's wastewater control program and the administration and enforcement of the provisions of this ordinance. In order to effectively administer and enforce the provisions of these regulations, the Director may require any trucked waste hauler to comply with any or all of the requirements described in Title V Administration, section 2 Wastewater Source Control Requirements.

The Director may adopt procedures and rules for the implementation and administration of this Title. The Director shall enforce the provisions of this Title, including requirements established or permits issued hereunder as provided herein.

a. Requiring Permitee to Submit Schedule of Remedial or Preventive Measures. Trucked waste permittees shall be subject to Title VI Enforcement and Penalties, section 1a of this Ordinance.
b. Discharge in Violation of Permit. No person shall discharge any substance under the Resource Recovery Program into a District facility without a Trucked Waste Permit.
c. Violation of Permit Terms and Conditions. When the Director finds that a discharge of waste is taking place or about to take place in violation of prohibitions or limits of this Ordinance or a trucked waste permit, the Director may direct those persons not complying with such prohibitions, limits, requirements, or provisions to (1) comply forthwith, (2) comply in accordance with a time schedule set by the Director, or (3) in the event of a threatened violation, take appropriate remedial or preventative action. Discharges in violation of a trucked waste permit may be fined an amount not to exceed $10/gallon.
d. Damage to facilities. Trucked waste permittees shall be subject to Title VI Enforcement and Penalties, section 1c of this Ordinance.
e. Termination of Permit The District may terminate or cause to be terminated trucked waste disposal to any facility if a violation of this Ordinance pertaining to control of wastewater is found to exist or if a discharge of waste causes or threatens to cause a condition of contamination, pollution, or nuisance, as defined in this Ordinance. This provision is in addition to other statutes, rules, or regulations authorizing termination of service for delinquency in payment, or for any other reason.
f. Civil Liability Penalties. Civil liability may be imposed by the Director as described in Title VI Enforcement and Penalties, Section 2b Civil Liability Penalties.
g. Criminal Penalties. Criminal liability may be imposed by the Director as described in Title VI Enforcement and Penalties, Section 3a & 3b Criminal Penalties.
h. Civil Enforcement Remedies and Penalties. The District may pursue any of the alternative civil remedies herein against any discharger who violates the provisions of this Ordinance as described in Title VI Enforcement and Penalties, Section 4a Civil Enforcement Penalties.

TITLE VIII - SEVERABILITY

If any provision of this Ordinance, or the application thereof to any person or circumstance, is held invalid, the remainder of the Ordinance, or the application of such provision to other persons or circumstances, shall not be affected thereby.

TITLE IX - EFFECTIVE DATE

This Ordinance shall become effective on July 24, 2003. All resolutions in conflict herewith are hereby rescinded, with the express exception that Paragraph No. 3 of Resolution No. 14979, prohibiting the discharge of storm water, shall remain in full force and effect. This Ordinance supersedes Ordinance No. 270 and all amendments thereto, including Ordinance Nos. 279, 293, 296, and 300.

FRANK MELLON

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President

I HEREBY CERTIFY that the foregoing Ordinance was duly and regularly introduced at a regular meeting of the Board of Directors of East Bay Municipal Utility District held on June 10, 2003 at the offices of said District, 375 – 11th Street, Oakland, California, and thereupon, after being read, further action was scheduled for the regular meeting of said Board of Directors held at the same place on June 24, 2003, at which time the same was finally adopted by the following vote:

AYES: Directors Coleman, Foulkes, Linney, McIntosh, Patterson, and President Mellon.

NOES: None.

ABSENT: Director Richardson.

ABSTAIN: None.

ATTEST:

LYNELLE M. LEWIS

_____

Secretary

APPROVED AS TO FORM AND PROCEDURE:

ROBERT C. HELWICK

_____

General Counsel

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APPENDIX B - PORT SEWER USE ORDINANCE

BOARD OF PORT COMMISSIONERS
CITY OF OAKLAND

PORT ORDINANCE 4113

ORDINANCE ESTABLISHING DESIGN, CONSTRUCTION, TESTING, AND INSPECTION STANDARDS FOR SANITARY SEWER FACILITIES, AND LIMITS ON THE TYPE, CHARACTER, AND VOLUME OF ALLOWABLE DISCHARGES TO THE SANITARY SEWER SYSTEM

BE IT ORDAINED by the Board of Port Commissioners of the City of Oakland as follows:

SECTION 1 - DEFINTIONS. As used in this ordinance:

"Board" means the Board Port of Commissioners.

"City" means the City of Oakland.

"Contamination" means an impairment of the quality of the waters of the State by waste to a degree which creates a hazard to the public health through poisoning or through the spread of disease. Contamination shall include any equivalent effect resulting from the disposal of wastewater, whether or not waters of the state are affected.

"Director" means the Executive Director, or his or her designated representative.

"EBMUD" means the East Bay Municipal Utility District.

"Engineer" means the Chief Engineer, or his or her designated representative.

"Lateral" means the particular sanitary sewer which lies between the building or structure it serves, to and including its connection with the sanitary sewer system and which carries wastewater and liquid wastes from the serviced building or structure to the sanitary sewer system.

"Misfeasor" means any person or entity, or their agents, assigns, designees, employees, or successors, who causes or allows to be caused a Nuisance under this ordinance.

"Nuisance" shall have the meaning set forth in California Water Code Section 13050(m), as it may be amended from time to time. Any violation of, noncompliance with, or refusal to comply with any of

the provisions of this ordinance, or any of the provisions incorporated herein, is deemed a "Nuisance" under this ordinance..

"Pollution" means an alteration of the quality of the waters of the State by waste to a degree which unreasonably affects (1) such waters for beneficial use or (2) facilities which serve such beneficial uses.

"Port" means the Port of Oakland.

"Private Sewer" means a pipe, conduit, or channel, not maintained by the Port, used to carry wastewater.

"Public Sewer" means a pipe, conduit, or channel, maintained by the Port and used to carry wastewater.

"Sanitary Sewer" means any building sewer, private sewer, or public sewer used to carry wastewater.

"Sanitary Sewer System" means either the entire network or a portion of that network of publicly and privately maintained pipes, conduits, channels, manholes, pump stations, and all appurtenances thereto, under the jurisdiction of the Port, used to collect, store, and transport wastewater.

"Wastewater" means water carrying waste from residences, commercial, and industrial establishments, or any combination of such wastes, but excluding storm water when conveyed in a separate storm water system.

"Wastewater Control Ordinance" means EBMUD Ordinance Number 311A.03, or any subsequent amendment thereof.

"Wastewater Treatment Plant" means the EBMUD Main Wastewater Treatment Plant.

SECTION 2 - PURPOSE. The purpose of this ordinance is to regulate the design, construction, inspection, testing, and abandonment of the sanitary sewer system, and to define the allowable and prohibited discharges to the sanitary sewer system. This ordinance shall not supersede any existing or future statute, rule, regulation, or ordinance of any public agency, State, or Federal regulatory body governing wastewater and water discharges into the sanitary sewer system.

SECTION 3 - AUTHORITY TO DEVELOP DESIGN, CONSTRUCTION, INSPECTION, TESTING STANDARDS. The Board hereby approves, and authorizes the Engineer for and on behalf of the Board to develop, publish, and enforce standards for the design, construction, inspection, testing and abandonment of the sanitary sewer system and for updating the standards from time to time. Such standards shall apply to all sanitary sewers under Port jurisdiction regardless of whether they are public sewers or private sewers.

SECTION 4 - ALLOWABLE DISCHARGES. Wastewater may be discharged into the Port sanitary sewer system provided that it does not violate the limitations established in this ordinance and further provided that the discharger obtains permission of the Port, EBMUD, and City, as applicable, to discharge into the sanitary sewer system.

SECTION 5 - PROHIBITED DISCHARGES.

(A) General Prohibition. The discharge of wastewater into the Port sanitary sewer system that results in contamination, pollution, or a nuisance is prohibited.

(B) Prohibited Effects. Wastewater or a substance of any kind shall not be discharged or otherwise deposited into the Port sanitary sewer system in such quantities or qualities which, either alone or by interaction with other wastewater, cause or threaten to cause:

1. Danger to the life or safety of any person.

2. Damage to Port facilities.

3. Interference with the operation or capacity of the Port sanitary sewer system.

4. Obstruction of flow in sanitary sewers.

5. Interference with the wastewater treatment and disposal process.

6. Flammable or explosive conditions.

7. Interference with the ability for reclamation and reuse of wastewater.

8. Any noxious or malodorous gas or substance capable of creating a public nuisance.

9. Violation of receiving water quality limitations.

10. Violation of any statute, rule, regulation, or ordinance of any public agency, State, or Federal regulatory body governing wastewater and water discharges into the sanitary sewer system.

11. The presence of toxic gases, fumes, or vapors in quantities that endanger the health and safety of Port personnel.

(C) Prohibited Substances. No person shall discharge, by either direct or indirect means, any of the following into the Port sanitary sewer system, or any substance for which discharge is prohibited by the City Municipal Code or by the current EBMUD Wastewater Control Ordinance:

1. Any storm water or other unpolluted water that meets the requirements for and is acceptable for discharge to storm drains or receiving waters of the State.

2. Any unpolluted industrial process water.

3. Any substance which creates a fire or explosion hazard.

4. Any liquid or vapor having a temperature detrimental to the Port sanitary sewer system.

5. Any water or waste, which contains excessive amounts of fats, oil, and/or grease.

6. Any garbage, except garbage from dwellings and establishments where food is prepared and consumed on the premises, and which has been ground to such a degree that all particles will be carried freely under the flow conditions prevailing in the sanitary sewer system.

7. Any heavy solid, viscous substance, or other matter of such a nature as to obstruct the flow in sanitary sewers or cause interference with the proper operation of the sanitary sewer system, including but not limited to sand, cement, lime, plaster, cinders, ashes, metal, glass, straw, shavings, animal hair, feathers, paunch manure, fibrous matter, tar, asphalt, resins, or plastics.

8. Any substance having a corrosive property capable of causing damage or other hazard to structure, equipment, or personnel.

9. Any toxic or poisonous substances in sufficient quantity to constitute a hazard to humans, animals, or fish, or to create a hazard in the waters receiving effluent from the wastewater treatment plant.

10. Any waters or wastes containing suspended solids or dissolved matter of such character and quantity that unusual attention or expense is required to handle such materials in the sanitary sewer system or at the wastewater treatment plant.

(D) Prohibition on Dilution Waters. No user shall increase the use of process water, or in any other way attempt to dilute a discharge in order to meet applicable pretreatment standards or to comply with this or any other applicable resolution or ordinance, unless otherwise permitted to do so.

(E) Radioactive Limits. No person shall discharge or cause to be discharged any radioactive wastewater into any sewer, unless the person is authorized to use radioactive material by the Nuclear Regulatory Commission or other governmental agency empowered to regulate the use of radioactive materials, the wastewater is discharged in strict conformity with Nuclear Regulatory Commission regulations and recommendations for safe disposal, and the discharge is in compliance with all rules and regulations of State and local regulatory agencies.

(F) Wastewater Strength Limits. No user shall discharge wastewater into a sewer lateral or otherwise introduce into the Port sanitary sewer system wastewater that exceeds the numerical limits established in EBMUD Ordinance Number 311A.03, or any subsequent amendment thereof, or the City Municipal Code, whichever is more stringent.

(G) Wastewater Flow Rate Limits. No person shall discharge wastewater into any sewer in such a quantity or at such a rate of flow as to overload or have a harmful or adverse impact on Port facilities or the wastewater treatment plant.

SECTION 6 - RIGHT OF ENTRY. Duly authorized representatives of the Director may enter and inspect any building, structure, or premises with Port jurisdiction to secure compliance with, or prevent a violation of, any provision of this ordinance under the following conditions:

(A) Whenever the Director shall have reasonable cause to believe that conditions which do not conform to this ordinance exist in a particular building, structure, or premises.

(B) Whenever the Director authorizes and directs the inspection of all buildings, structures, or premises subject to the provisions of this ordinance in a defined area of the Port.

(C) Whenever the Director shall authorize and direct inspections of buildings, structures, or premises as a part of a routine spot check.

(D) Whenever the Director authorizes the performance of needed maintenance or repair activities.

(E) No premises shall be inspected until a reasonable notice is given to the discharger or occupant, or to the agent of either.

SECTION 7 - POLICIES FOR VIOLATION.

(A) Notice of violation. Whenever the Director finds that any Misfeasor is causing or allowing to be caused a Nuisance, the Director shall serve notice on the Misfeasor stating the existence of the Nuisance, requiring abatement of the Nuisance, and specifying the measures necessary for abatement. Such notice shall be served personally on the Misfeasor or by mailing such notice to the Misfeasor by U.S. Mail , and by posting a copy of such notice on the property whereupon the Nuisance is being caused.

(B) Abatement by Misfeasor. It shall be the duty of the Misfeasor to abate the Nuisance within one hundred eighty days of personal service or mailing of such notice.

(C) Abatement by the Port. If the Misfeasor should neglect or refuse to abate the Nuisance pursuant to such notice, the Director may

abate the Nuisance at the expense of the Port and the Port may recover the amount of such expense, including the costs of inspection, enforcement and correction to the full extent permitted by Government Code Section 54988 as it may be amended from time to time.

(D) Recovery of attorneys fees and costs. The Port may in its discretion commence legal actions and/or equitable proceedings in a court of competent jurisdiction to abate the Nuisance and/or to collect and recover Port abatement costs. If the Port prevails in such action and/or proceeding, it shall be entitled to recover costs and attorneys' fees in addition to any taxes, fees, assessments, penalties and interest. The remedies provided for herein shall be cumulative and not exclusive, and shall not preclude the Port from any other relief which otherwise is available.

(E) Abatement costs made nuisance abatement lien or special assessment lien. Notwithstanding any other provision of this ordinance to the contrary, the costs incurred by the Port in the abatement of a Nuisance subject to the provisions of this ordinance may be placed against any privately owned and affected property as either a nuisance abatement lien or a special assessment lien pursuant to Government Code Section 38771, et seq. as amended from time to time or a lien pursuant to Government Code Section 54988 as amended from time to time. The Port may enforce a lien under this chapter in any manner permitted by law, including filing a civil action to either foreclose on its liens or to obtain a money judgment or both, or pursuing non-judicial foreclosure. The Port may elect, upon 30 days notice to all known and record owners of the privately owned and affected property, to convert any nuisance abatement lien authorized by this chapter to a special assessment lien, or vice versa. Costs recoverable under this ordinance shall include those categories of costs and fees set forth in Civil Code Section 3496, regardless of the type of nuisance involved.

(D) Protest filing procedure. Any alleged Misfeasor desiring to protest against the Director's determination that the alleged Misfeasor is causing or allowing to be caused a Nuisance may file with the Director's office a protest in writing within ten days after receiving notice to abate the Nuisance. Any Misfeasor desiring to protest against the costs incurred by the Port in abating a Nuisance may file with the Director's office a protest in writing within ten days after receiving notice of the cost incurred by the Port in abating the Nuisance.

(F) Protest hearing. Upon the filing of a protest, the Director shall conduct a public hearing. At such hearing, the Director may affirm, modify, or reverse the prior determination. The Director's decision at the end of such hearing shall be final.

(G) Criminal penalties. Every person or persons, firm, company or corporation, who shall violate, disobey, or refuse to comply with any of the provisions of this ordinance, or any of the provisions

incorporated therein, shall, upon conviction, be punishable by fine and penalty, not exceeding Five Hundred Dollars ($500.00) or six (6) months imprisonment, or both. Each day constitutes a separate violation.

The Board of Port Commissioners, Oakland, California, November 3, 2009. Passed to print for one day by the following vote: Ayes: Commissioners Batarse, Calloway, Gonzales, Gordon, Head, Katzoff, and President Uno - 7. Noes: None.

John T. Betterton
Secretary of the Board

Adopted at a regular meeting held November 17, 2009
by the following vote:

Ayes: Commissioners Gonzales, Gordon, Head, Katzoff, and President Uno – 5
Excused: Commissioners Batarse, and Calloway – 2
Noes: None

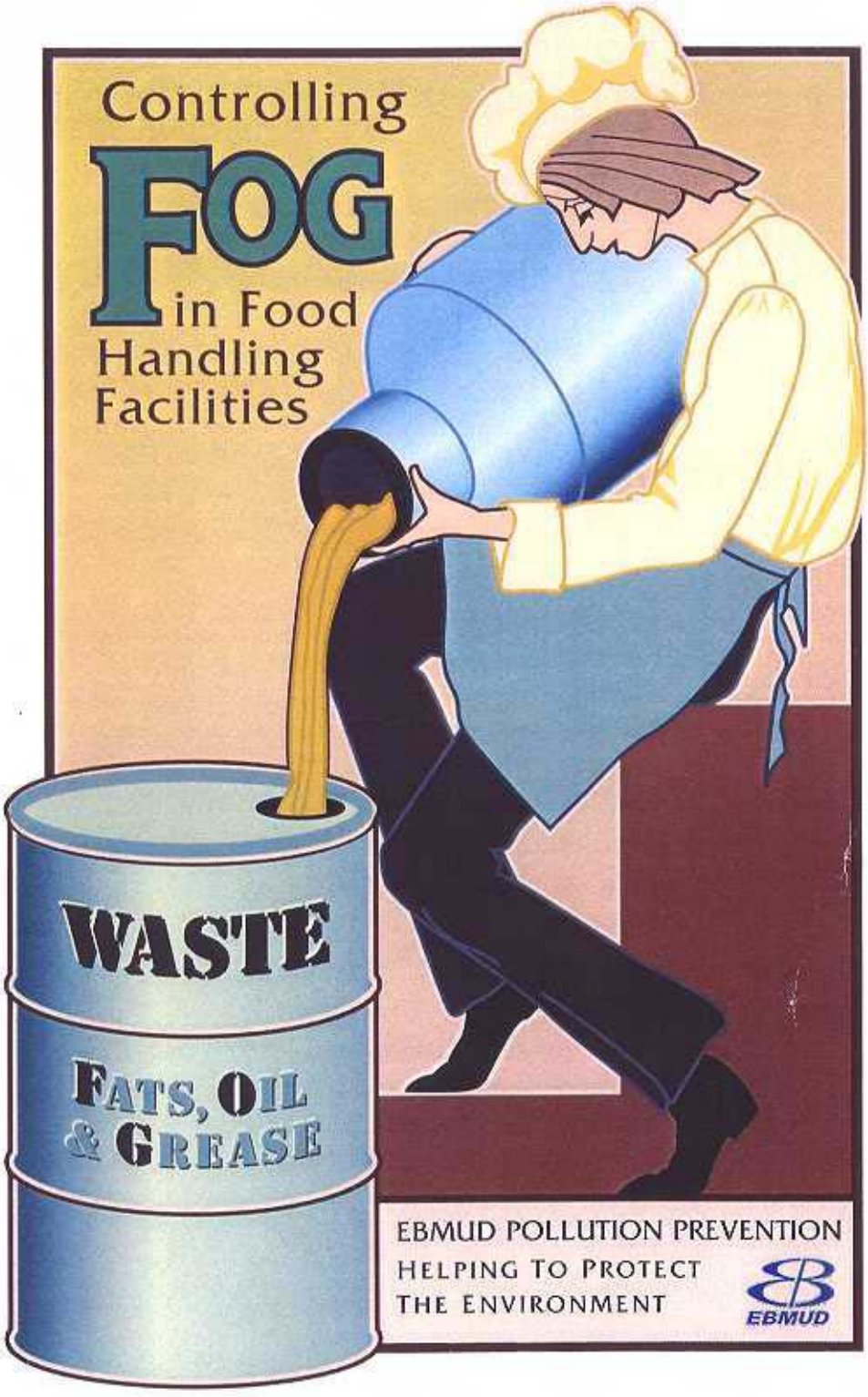
President.

Attest: _____
Secretary.

Approved as to form and legality:

_____
Port Attorney

APPENDIX C - EBMUD FOG OUTREACH MATERIALS


Controlling
FOG
in Food
Handling
Facilities
WASTE
FATS, OIL
& GREASE
EBMUD POLLUTION PREVENTION
HELPING TO PROTECT
THE ENVIRONMENT
EBMUD

CONTROLLING FOG FROM FOOD HANDLING FACILITIES

WHAT IS FOG?

FOG refers to Fats, Oils, and Grease from food preparation, food service, and kitchen clean up. It is generated in most types of restaurant and food service establishment kitchens.

WHY IS FOG A PROBLEM?

When poured down the drain, FOG can build up in pipes, pumps, and equipment, causing significant problems in the community sewer collection system and the wastewater treatment plant. Problems include sewer line blockages that can lead to sewer overflows and spills that cause environmental and health hazards.

WHY SHOULD I CARE ABOUT FOG?

Restaurants and food service establishments contribute greatly to the build up of FOG in the sewer lines because of the amount of grease produced during cooking, food preparation, and kitchen cleanup. If your establishment is found to cause sanitary sewer overflows because you have not controlled grease discharge, you may be responsible for cleanup costs and property damage. In addition, you will be required to put in a grease interceptor and maintain it on a regular schedule as required by your EBMUD permit.

WHAT ARE WAYS TO DECREASE THE AMOUNT OF GREASE THAT GOES DOWN THE DRAIN?

It is the responsibility of each food-handling establishment to develop an effective FOG management program for recyclable grease (yellow), interceptor and grease trap waste (brown) and solid food waste.

A list of Best Management Practices (BMPs) is included with your permit package. Following these BMPs and your permit requirements will reduce the amount of FOG entering your drain lines.

WHAT IS A GREASE INTERCEPTOR?

A grease interceptor is a large partitioned vault installed to remove floating grease and food waste. Usually interceptors are installed underground outside food service establishments. These differ from grease traps, which are small grease removal devices installed in under counter drain lines.

IS MY FACILITY REQUIRED TO HAVE A GREASE INTERCEPTOR?

At this time, your facility will not be required to install an interceptor unless one or more of the following occurs:

1. Your facility is newly constructed
2. Your facility submits plans to perform remodels, additions, alterations or repairs valued at $75,000 or more
3. Your facility has caused or contributed to collection system blockages resulting in maintenance requirements or sewage spills

WHAT IF I CANNOT INSTALL A GREASE INTERCEPTOR DUE TO SPACE OR SLOPE RESTRICTIONS OR BECAUSE MY BUSINESS DOES NOT GENERATE GREASE?

A business may apply for a waiver or variance, which may be granted depending upon specific circumstances at the establishment.

EBMUD will be working with the City and Sanitary District agencies in our service area to determine grease interceptor installation needs and sizing criteria. EBMUD will be performing inspections at facilities to determine if pumping frequencies established in your permit are adequate, if BMPs are being implemented, and to respond to grease related overflows.

East Bay Municipal Utility District
Environmental Services Division
Telephone (510) 287-1651

EBMUD APPROVED GREASE HAULERS

- A-1 Septic Tank Service, Inc. (510) 886-4455
- A-1 Septic – Little River (707) 937-0496
- Able Septic Tank Service (408) 377-9990
- All Valley Environmental, Inc. (559) 498-8378 or (559) 217-5949
- Ameriguard Maintenance Services (800) 347-7876
- Blue Sky Bio-Fuels (510) 868-9229
- Burr Plumbing and Pumping (408) 287-2877
- Coast Environmental (800) 588-7762
- Darling International, Inc. (415) 647-4890
- Ernie's Plumbing (925) 228-5242
- Joe's Farmers Septic and Grease Service (707) 546-3236
- Liquid Environmental Solutions of California (866) 694-7327
- North Coast Sanitary (707) 884-1095
- Pioneer Liquid Transport (800) 366-6808
- Portosan – Santa Rosa (707) 566-2000
- R & D Grease Trap Cleaning (707) 632-5827
- Roto Rooter Plumbing (510) 483-2324
- SRC Pumping Company (916) 363-1342
- Trap Recyclers (800) 994-7867

Effective February 27, 2008

EBMUD

Helping to Protect the Environment

Grease Interceptor Maintenance

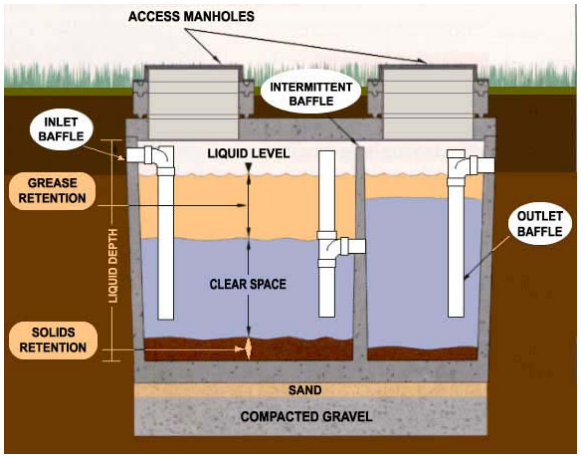
Maintenance of your grease interceptors is required as a condition of your permit and to assure that the unit works properly.

Why do you need a grease interceptor?

A grease interceptor removes fats, oils, and grease that coat city sewer lines and cause sewer overflows. If an overflow occurs, you may be responsible for clean-up costs and property damage.

How does a grease interceptor work?

Wastewater enters the unit after leaving the kitchen. Most of the floating grease remains at the top and the solids settle at the bottom of the first chamber of the unit (see diagram). Water flows into the second chamber where more solids and grease separate out. The remaining water then flows out of the unit to the community sewer.



How often do I need to clean my grease interceptor?

Your permit requires that you clean your interceptor a minimum of every 3 months. It must be cleaned more frequently if the amount of grease discharged causes or contributes to a blockage or overflow in the city collection system. Be sure that your hauler is doing a complete pump out of the unit and checking for repairs at the time of every service. Also be sure that your hauler leaves you a receipt to document that your interceptor has been pumped.

What will an EBMUD inspector look for during an inspection of my grease interceptor?

An EBMUD inspector will look to see that you are maintaining and pumping your grease interceptor frequently enough to comply with your permit and to keep grease from discharging to the city sewer. They will ask to see your pumping records, including the dates that the grease interceptor was pumped and by what hauler. Have these records available for the inspectors to review.

EBMUD

EBMUD Pollution Prevention
Environmental Services Hotline (510) 287-1651
Helping To Protect the Environment

El Mantenimiento del Interceptor de Grasa

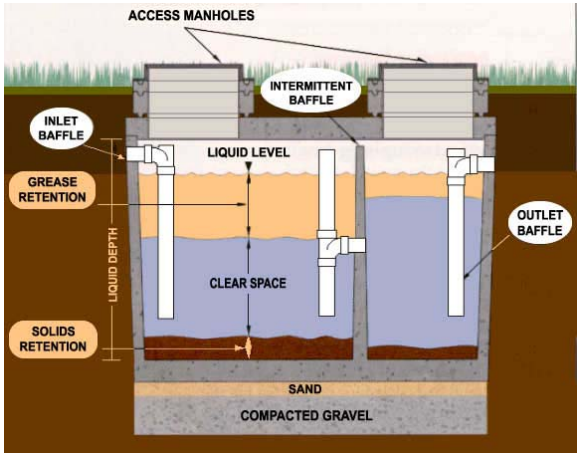
El mantenimiento de su interceptor de grasa es un requisito para continuar con su permiso y para asegurar que el aparato trabaje correctamente.

¿Por qué se necesita un interceptor de grasa?

Un interceptor de grasa impide la entrada de grasa y aceite al sistema de alcantarillado de la ciudad. La grasa y aceite se pegan en las tuberías y causan desbordamientos de las alcantarillas. Si ocurre un desbordamiento, usted puede ser responsable por los costos de limpieza y los daños a propiedad.

¿Cómo funciona un interceptor de grasa?

El agua residual de la cocina entra al primer compartimiento del aparato. Allí la mayor parte de la grasa permanece flotando y los sólidos se asientan en el fondo (vea el diagrama). Después el agua fluye al segundo compartimiento donde se separan más sólidos y grasa. Al final el agua fluye fuera del aparato a las alcantarillas de la ciudad.



¿Con qué frecuencia necesito limpiar mi interceptor de grasa?

Su permiso requiere que usted limpie su interceptor por lo menos cada 3 meses. Debe ser más frecuente si la cantidad de grasa descargada causa o contribuye a una obstrucción o un desbordamiento en el sistema de alcantarillado. Cada vez que venga su transportador de grasa, asegúrese que el servicio incluya bombeo completo del interceptor y una revisión para saber si hay reparaciones necesarias. También asegúrese que el transportador le deje un recibo para comprobar que su interceptor fue bombeado.

¿Qué revisará un inspector de EBMUD durante una inspección de mi interceptor de grasa?

Un inspector de EBMUD va a ver si está manteniendo y bombeando el interceptor suficientemente para cumplir con los requisitos de su permiso. Le pedirá que muestre los comprobantes de bombeo, incluyendo la fecha de bombeo y el nombre de la compañía transportadora. Tenga estos documentos listos para ser revisados por el inspector.

East Bay Municipal Utility District
Línea Directa de Servicios Ambientales
(510) 287-1651
Ayudando a Proteger el Medio Ambiente

식당 폐유지 처리시설 (Grease Interceptor) 정비요령

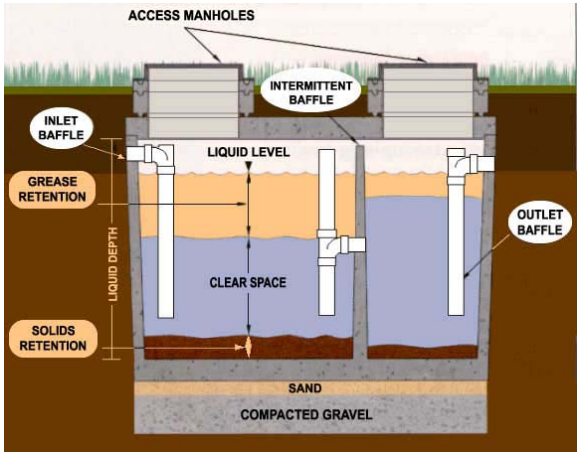
식당 폐유지 처리시설의 정기적인 정비는 이스트베이 상하수도 공사(EBMUD)의 배출허가의 조건으로, 또 시설의 정상가동을 위해 꼭 시행해야되는 요구사항입니다.

왜 폐유지 처리시설을 설치해야 하는가?

식당에서 폐유지가 아무 처리 없이 하수도로 방출되면 시의 하수도을 막아 비가 올 때 하수구가 넘쳐나는 사태가 일어납니다. 폐유지 처리시설은 폐유지를 하수도로 방출하기 전에 제거하여 그런 사태를 방지 해 줍니다. 만약 하수구가 넘쳐나는 사태가 발생하면, 귀하의 업소가 청소비용과 재산 피해를 보상할 책임을 집니다.

폐유지 처리시설은 어떻게 작동하는가?

식당에서 배출되는 폐수가 일단 처리시설로 들어갑니다. 시설의 첫 방에서는 대부분 기름은 뜨고 무거운 고체 찌꺼기 부분은 갈아 앉습니다. 둘째 방으로 처리된 물이 흘러가면서 폐유지와 고체물들은 분리됩니다. 처리된 물은 처리시설에서 배출돼 시의 하수도로 나갑니다.



얼마나 자주 폐유지 처리시설을 청소해 주어야 하는가?

귀 업소의 EBMUD 배출허가서는 적어도 매 3개월에 한번씩 정비해 주도록 규정하고 있습니다. 만약 귀 업소의 폐유지 양이 많아 시의 하수도를 막는다던가 하수구가 넘쳐나는 사태가 발생했다면 더 자주 청소해 주어야 합니다. 처리운반 전담회사(Hauler) 들이 처리시설을 청소할 때 내용물을 완전히 퍼내고 수리해야 할 곳을 수리해야 합니다. 또한 처리운반 전담회사들로부터 영수증을 꼭 받아 정기적으로 처리시설을 퍼내고 있다는 기록을 보관해야합니다.

이스트베이 상하수도공사(EBMUD)의 점검반이 귀 업소의 폐유지 처리시설을 점검할 때 어떤 사항들을 검사하게 되는가?

점검반은 귀 업소가 처리시설을 배출허가서에 따라 정기적으로 정비하고 폐유지를 퍼내어 시 하수도로 배출되는 것을 사전에 막고 있는가를 검사합니다. 점검반은 귀 업소에 비치된 정비기록, 즉 처리시설을 퍼낸 날자와 처리운반 전담회사의 이름 등을 체크합니다. 비치된 기록들을 점검반에게 보여주셔야 됩니다.

이스트베이 상하수도 공사(EBMUD)
환경관리과 핫라인: (510) 287-1651
환경을 보호합시다

保養油脂阻截機

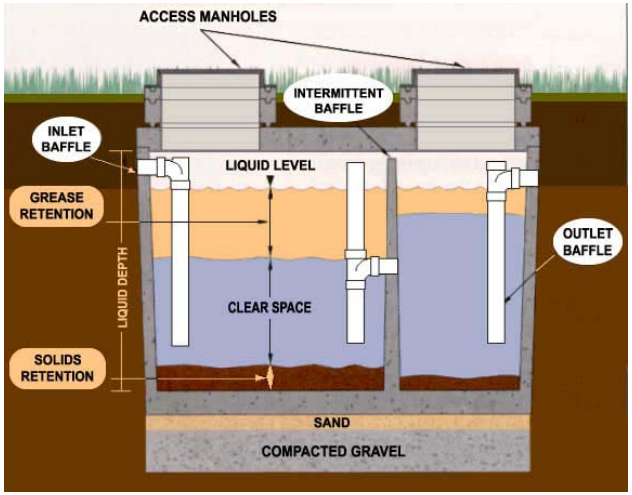
保養油脂阻截機是你的許可證內條件之一。

爲什麼你需要一個油脂阻截機?

油脂阻截機是用作除掉脂肪、油、及各種油膩物體，如這些物體粘滿在市內的暗溝裡，便會造成溝渠氾濫。如有氾濫情況出現，你將要負責清理的費用，並會損壞物業。

油脂阻截機是怎樣運作的?

廢水從廚房流出然後進入機內，大部份浮於水面的油脂會擱留在水面，而固體物則沉澱於底層的第一個箱穴內(請看圖)，水流入第二個箱穴時，油脂及固體物會再度分隔，然後流出，再流入社區內的溝渠。



我的油脂阻截機每隔多久需要清理一次?

你的許可證要你<u>最少</u>每三個月清理一次你的油脂阻截機。如果流出的油脂量構成或加重區內的水渠綜合系統堵塞或氾濫，你便要增加清理的次數。你要確定拖運員完全抽清此單位。每次清理時要檢查是否有修補的必要，同時要拖運員留給你收據以便證明你的油脂阻截機已經抽清。

東灣水務局的檢查員在檢查你的油脂阻截機時視察什麼呢?

東灣水務局的檢查員會視察你是否依據你的許可證所規定去按時保養及抽取油脂以防止油脂流入市內的溝渠。他(她)們會要求查看你的抽油紀錄，抽油的日期及是由那一家拖運公司抽取及清理。請提供紀錄給檢查員檢閱。

EBMUD

防止污染計劃
東灣水務局環境保護部熱線電話:(510)287-1651
請幫助保護環境

Bảo Trì Máy Vòm Chắn Dầu Mỡ

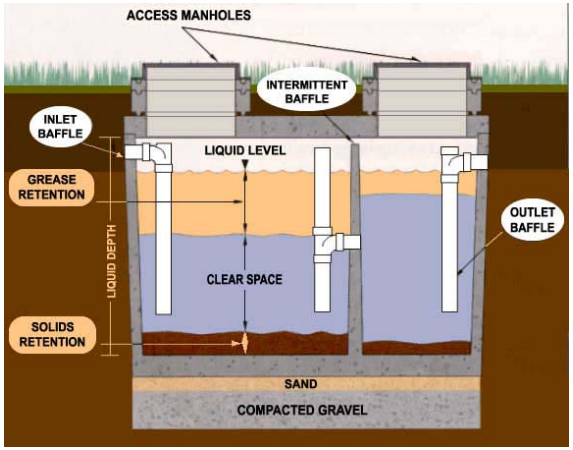
Một trong những điều kiện được cấp giấy phép hành nghề là phải bảo trì hệ thống lọc chắn dầu mỡ và bảo đảm rằng hệ thống này sẽ hoạt động bình thường.

Tại sao quý vị cần có hệ thống lọc chắn dầu mỡ?

Hệ thống lọc chắn dầu mỡ giúp loại bỏ chất béo, dầu, mỡ. Những chất này, nếu đổ vào cống rãnh, sè bám vào các đường ống thoát nước trong thành phố và gây ra hiện tượng nước đổ tràn ra ngoài cống rãnh. Nếu có trường hợp nước tràn ra ngoài, quý vị có thể phải trả các khoản chi phí để lau dọn và đền bù thiệt hại tài sản.

Hệ thống lọc chắn dầu mỡ hoạt động như thế nào?

Nước thải chảy vào hệ thống này sau khi rời nhà bếp. Hầu hết lượng mỡ nổi tiếp tục nổi trên bề mặt và các chất rắn lắng xuống đáy của khoang đầu tiên của hệ thống này (xem sơ đồ). Nước chảy vào trong khoang thứ hai, nơi phân loại thêm các chất rắn và dầu mỡ. Sau đó lượng nước còn lại thoát ra khỏi hệ thống này và chảy vào hệ thống thoát nước trong cộng đồng.



Tôi cần lau chùi hệ thống lọc chắn dầu mỡ thường xuyên bao lâu một lần?

Giấy phép của quý vị yêu cầu quý vị phải lau chùi hệ thống lọc chắn dầu mỡ ít nhất ba tháng một lần. Hệ thống này phải được lau chùi thường xuyên hơn nếu số lượng dầu mỡ gây ra hoặc góp phần gây ra hiện tượng tắc nghẽn hoặc nước tràn ra ngoài hệ thống nước thải của thành phố. Mỗi khi bảo trì máy, xin bảo đảm rằng thợ sửa đường ống bơm hết hoàn toàn dầu mỡ ra khỏi hệ thống và kiểm tra xem có chỗ nào cần sửa chữa hay không. Đồng thời, bảo đảm rằng thợ sửa đường ống đưa cho quý vị biên lai để ghi nhận rằng hệ thống của quý vị đã được bơm xả.

Nhân viên kiểm tra EBMUD sẽ xem xét những gì trong khi kiểm tra hệ thống lọc chắn dầu mỡ của tôi?

Nhân viên kiểm tra EBMUD sẽ kiểm tra xem quý vị có bảo trì và bơm hệ thống lọc chắn dầu mỡ thường xuyên theo đúng qui định trong giấy phép hành nghề của quý vị và có tránh thải dầu mỡ vào hệ thống thoát nước của thành phố hay không. Họ sẽ đề nghị xem hồ sơ ghi chép về việc bơm nước của quý vị, trong đó bao gồm những ngày hệ thống lọc chắn dầu mỡ được bơm và thợ sửa đường ống thực hiện những gì. Xin chuẩn bị sẵn các hồ sơ này cho các kiểm tra viên xem xét.

EBMUD

Chương Trình Ngăn Ngừa Ô Nhiễm của EBMUD
Số Điện Thoại Khẩn Cấp Cho Dịch Vụ về Môi Trường
(510) 287-1651
Giúp Bảo Vệ Môi Trường

BEST MANAGEMENT PRACTICES (BMPs) FOR FOOD RELATED FATS, OILS AND GREASE

BMP's	REASON FOR	BENEFITS
Train all staff on BMPs.	People are more willing to support an effort if they understand its basis.	Trained staff will be more likely to implement BMPs and work to reduce grease discharges to the sewer.
Post "No Grease" signs above sinks and on the front of dishwashers.	Signs serve as a constant reminder for staff working in kitchens.	Reminders help minimize grease discharge to the sewer or grease removal device.
Check grease interceptor solids depth routinely. The combined thickness of the floating grease and the bottom solids should not be more than 25% of the total interceptor depth.	Grease interceptor will not meet performance standards when solids and floating grease levels exceed 25%.	This will keep grease interceptor working at peak performance.
Collect and recycle waste cooking oil.	These actions reduce grease loading on grease removal devices and the sewer.	This will reduce cleaning frequency and maintenance costs for grease removal devices and reduce the amount of grease entering the drain.
"Dry wipe" pots, pans, and kitchen equipment, before cleaning.	"Dry wiping" will reduce the grease loading on grease removal devices and the sewer.	This will reduce cleaning frequency and maintenance costs for grease removal devices and reduce the amount of grease entering the drain.
Maintain a routine grease trap cleaning schedule.	If grease traps are not routinely cleaned, they do not work properly and do not prevent grease from entering the sewer. If the grease trap is not providing adequate protection, a grease interceptor may be required.	This reduces amount of grease entering the drain and protects sewers from grease blockages and overflows.
Use absorbent paper under fryer baskets.	This reduces the amount of grease during cleanup.	This reduces amount of grease entering the drain and protects sewers from grease blockages and overflows.
Use absorbents such as cat litter or paper towels to pick up oil and grease spills before mopping.	Decreases the amount of grease that will be put down the drain.	This reduces amount of grease entering the drain and protects sewers from grease blockages and overflows.
Do not use emulsifiers or solvents other than typical dishwashing detergents.	Emulsifiers and solvents will break down grease causing a problem in the sewer downstream.	Allows for proper removal of grease.

CALIFORNIA Restaurant ASSOCIATION

East Bay Municipal Utility District
Environmental Services Hotline: 510-287-1651
Helping to Protect the Environment.

EBMUD

Los Métodos Apropiados para Controlar Grasas y Aceites Provenientes de la Comida

MÉTODO DE CONTROL	RAZÓN	BENEFICIOS
Entrene a todo el personal sobre los métodos para controlar grasas y aceites.	El personal estará más dispuesto a apoyar un esfuerzo si entiende el motivo.	El personal entrenado estará más dispuesto a aplicar los métodos de control para prevenir la descarga de grasa a la alcantarilla.
Coloque letreros que digan "No Grasa" arriba de los fregaderos y sobre la parte delantera del lavaplatos.	Los letreros sirven como recordatorio constante para el personal que trabaja en la cocina.	Los letreros ayudan a minimizar la descarga de grasa a la alcantarilla o al aparato para eliminar grasa.
Revise la profundidad de los sólidos en el interceptor de grasa rutinariamente. Los niveles de sólidos y grasa flotante no deben exceder el 25% de profundidad.	El interceptor de grasa no cumplirá con los estándares de desempeño cuando los niveles de sólidos y grasa flotante exceden el 25%.	Mantendrá el interceptor de grasa funcionando al máximo nivel.
Junte y recicle el aceite usado en la cocina.	Estas acciones reducirán la carga de grasa en el aparato para eliminar grasa y en la alcantarilla.	Reducirá la frecuencia de limpieza y el costo de mantenimiento del aparato para eliminar grasa. También reducirá la cantidad de grasa que llegue al desagüe.
Antes de lavarlos, "limpie en seco" las ollas, cacerolas y equipo de cocina.	La "limpieza en seco" reducirá la carga de grasa en el aparato para eliminar grasa y en la alcantarilla.	Reducirá la frecuencia de limpieza y el costo de mantenimiento del aparato para eliminar grasa. También reducirá la cantidad de grasa que llegue al desagüe.
Mantenga un plan rutinario de limpieza para las trampas de grasa.	Si las trampas de grasa no son limpiadas rutinariamente, no trabajan bien y no previenen que la grasa entre a la alcantarilla. Si la trampa no proporciona la protección adecuada, un interceptor de grasa podría ser requerido.	Reduce la cantidad de grasa al desagüe y protege las alcantarillas contra obstrucciones de grasa y desbordamientos.
Use papel absorbente debajo de las canastas para freír.	Reduce la cantidad de grasa durante la limpieza.	Reduce la cantidad de grasa al desagüe y protege las alcantarillas contra obstrucciones de grasa y desbordamientos.
Antes de trapear, use absorbentes como arena para gatos o toallas de papel para recoger derrames de aceite y grasa.	Reduce la cantidad de grasa al desagüe.	Reduce la cantidad de grasa al desagüe y protege las alcantarillas contra obstrucciones de grasa y desbordamientos.
No use emulsionadores o solventes que no sean los detergentes típicos para lavar platos.	Los emulsionadores y solventes dispersan la grasa pero pueden causar problemas en las cañerías de otras zonas.	Permite eliminar la grasa apropiadamente.

CALIFORNIA Restaurant ASSOCIATION SINCE 1906

East Bay Municipal Utility District
Línea Directa de Servicios Ambientales: 510-287-1651
Ayudando a Proteger el Medio Ambiente

EBMUD

1/04

食物的脂肪，油及油脂的良好管理措施 (BMPs)

良好管理措施	原因	利益
訓練員工有關良好管理措施。	一般人都會比較願意支持一個他們了解的運作。	曾受訓的員工多會行使良好管理措施及會盡力減少油脂流入下水道。
把 " 不能有油脂 " 的告示貼於水槽之上及洗碗機前。	告示可經常提醒在廚房工作的員工。	提示有助於減少油脂流入下水道及油脂阻截機。
要按時查看留在油脂阻截機內的固體，浮面的油脂及沉底的固體一起不可超過阻截機之四分之一的深度。	在固體及浮面的油脂水平超越四分之一時，油脂阻截機會失去標準的功能。	這樣會防礙油脂阻截機的最佳操作。
收集及回收烹飪用過的油。	此舉可減少對油脂阻截機及下水道的負荷。	這樣可減低阻截機清理的次數及保養費，並可減少油脂流入排水道。
在清洗煲、鍋及各廚具前，先要 " 乾抹 " 。	" 乾抹 " 可減少對油脂阻截機及下水道的負荷。	這樣可減低阻截機清理的次數及保養費，並可減少油脂流入排水道。
保持定時清理油脂截納箱。	油脂截納箱如果不定時清理便會失去操作效果而不能阻止油脂流入下水道，如果油脂截納箱不能提供足夠的防止措施，你必要裝設一個油脂阻截機。	這樣可減少油脂流入排水渠以防止油脂堵塞下水道及氾濫。
放吸收紙在油炸籃底。	此舉可減低油脂的清理。	這樣可減少油脂流入排水渠以防止油脂堵塞下水道及氾濫。
在楷抹傾倒的油及油脂前要先用吸收物體如貓盤沙或紙巾吸乾。	此舉可減低放入排水渠的油脂。	這樣可減少油脂流入排水渠以防止油脂堵塞下水道及氾濫。
除了常用的洗碗劑外不可用其他乳劑化或溶解劑。	乳劑化及溶解劑會把油脂分解而導致下水道下流出現問題。	會適當地把油脂移去。

식당 폐유지의 최적 관리방법(Best Management Practices – BMP)

최적관리방법	이유	혜택
모든 종업원들에게 최적관리 방법을 훈련시킬 것.	종업원들이 그 기본취지를 이해하면 더욱 자발적으로 협조함.	훈련된 종업원들은 더 적극적으로 최적관리방법을 적용해 폐유지의 하수구 방출량을 줄이려 노력할 것임.
싱크대 위와 접시 세척기 앞에 "폐유지 금지" 사인을 붙일 것.	사인표는 부엌에서 일하는 종업원들을 계속 상기시켜 줌.	이러한 상기 내용은 폐유지의 하수구 방출을 줄이는데 도움을 줌.
폐유지 처리시설(Grease interceptor)의 찌꺼기 깊이를 정기적으로 점검할 것. 부유 폐유지와 바닥 찌꺼기의 합한 두께가 처리시설 두께의 25%가 넘지 말아야 함.	부유 폐유지와 바닥 찌꺼기를 합한 두께가 25%를 넘으면 폐유지 처리시설의 효과적 작동기준에 미달됨.	이 기준은 폐유지 처리시설을 최적상태로 작동하게 함.
쓰고난 쿡킹 오일을 수거해 재활용할 것.	이것은 폐유지 처리시설 또는 하수구로 나가는 폐유지의 방출량을 줄여줌.	이는 폐유지 처리시설의 청소 빈도수와 관리비용을 줄여주고 하수구로 방출되는 폐유지양을 감소시킴.
냄비나 후라이팬등 식당집기를 씻기전에 마른 휴지나 행주로 닦을 것.	이러한 닦기 방법은 폐유지 처리시설 또는 하수구로 나가는 폐유지의 방출량을 줄여줌.	이는 폐유지 처리시설의 청소 빈도수와 정비비용을 줄여주고 하수구로 방출되는 폐유지양을 감소시킴.
정기적으로 폐유지 걸름통(grease trap)을 청소하고 관리할 것.	폐유지 걸름통을 정기적으로 관리하지 않으면, 원활하게 작동하지 못하며 하수구에 버려지는 폐유지를 걸르지 못함. 만약 폐유지 걸름통이 정상적으로 작동하지 않으면 폐유지 처리시설(grease interceptor)이 필요함.	이는 폐유지 방출량을 줄여주고 하수구가 막히거나 넘치지 않게 해 줌.
프라이 팬 밑을 흡수종이(페이퍼 타월)로 닦을 것.	청소시 폐유지양을 줄여줌.	이는 폐유지 방출량을 줄여주고 하수구가 막히거나 넘치지 않게 해 줌.
폐유지가 쏟아졌을 때 물로 닦기 전에 고양이 청소모래(cat litter)나 페이퍼 타월같은 마른 흡착제를 쓸 것.	하수구로 버려지는 폐유지양을 줄여줌.	이는 폐유지 방출량을 줄여주고 하수구가 막히지 않게 해 줌.
기름 용해제나 솔벤트를 쓰지 말고 보통 접시닦기 세척제를 쓸 것	기름 용해제나 솔벤트는 기름을 용해해 하수구 하류에서 문제를 일으킴.	접시닦기 세척제는 폐유지를 올바르게 제거해 줌.

CALIFORNIA Restaurant ASSOCIATION SINCE 1906

이스트베이 상하수도 공사(EBMUD)
환경관리과 핫라인: (510) 287-1651
환경을 보호합시다.

EBMUD

Các Biện Pháp Kiểm Soát Hữu Hiệu Nhất (BMP) Đối Với Thực Phẩm Có Chất Béo, Dầu Và Mỡ.

BMP's	LÝ DO	LỢI ÍCH
Huấn luyện tất cả các nhân viên về BMP.	Thông thường mọi người hay ủng hộ một nỗ lực nếu họ hiểu được lý do của nỗ lực đó.	Nhân viên được huấn luyện sẽ có khả năng áp dụng các BMP và cố gắng giảm bớt việc thải dầu mỡ vào hệ thống cống rãnh.
Dáng biển báo "Đừng Đổ Dầu Mỡ" trên các bồn rửa và ở trước máy rửa chén.	Các biển báo là sự nhắc nhở thường xuyên cho các nhân viên làm việc trong nhà bếp.	Những lời nhắc nhở giúp giảm thiểu lượng dầu mỡ bị thải vào hệ thống cống rãnh hoặc thiết bị loại bỏ dầu mỡ.
Kiểm tra độ sâu của các chất cặn trong hệ thống lọc chắn dầu mỡ theo định kỳ. Tổng cộng độ dày của dầu mỡ nổi và chất cặn ở dưới đáy không được vượt quá 25% chiều sâu của hệ thống lọc.	Hệ thống lọc chắn dầu mỡ sẽ không có đủ các tiêu chuẩn để hoạt động khi chất cặn và mức dầu mỡ nổi trên bề mặt vượt quá 25%.	Việc này sẽ giúp hệ thống lọc chắn dầu mỡ tiếp tục làm việc ở mức tối đa.
Thu và tái chế dầu ăn đã dùng.	Các hoạt động này giúp giảm bớt lượng dầu mỡ đóng vô các thiết bị loại bỏ dầu mỡ và hệ thống thoát nước.	Việc này sẽ giúp giảm bớt cường độ lau chùi và chi phí bảo trì cho các thiết bị loại bỏ dầu mỡ và giảm bớt lượng dầu mỡ xâm nhập vào hệ thống cống rãnh.
"Lau khô" nồi, chảo, và các dụng cụ nấu bếp, trước khi rửa.	"Lau khô" sẽ giúp giảm bớt lượng dầu mỡ đóng vô các thiết bị loại bỏ dầu mỡ và ống thoát nước.	Việc này sẽ giảm bớt cường độ lau chùi và chi phí bảo trì các thiết bị loại bỏ dầu mỡ và giảm bớt lượng dầu mỡ xâm nhập vào cống rãnh.
Duy trì lịch lau chùi tấm chắn dầu mỡ theo thông lệ.	Nếu không được lau chùi theo định kỳ, các tấm chắn dầu mỡ không hoạt động bình thường và không ngăn chặn được dầu mỡ xâm nhập vào hệ thống cống rãnh. Nếu tấm chắn dầu mỡ không có tác dụng bảo vệ thích hợp, có thể phải lắp hệ thống lọc chắn dầu mỡ.	Việc này giảm bớt lượng dầu mỡ xâm nhập vào cống rãnh và bảo vệ các ống thoát nước tránh bị đổ tràn và tắc ngẽn do dầu mỡ gây ra.
Dùng giấy thấm dưới các giỏ chiên đồ.	Việc này giúp giảm bớt lượng dầu mỡ trong khi lau rửa.	Việc này giúp giảm bớt lượng dầu mỡ xâm nhập vào cống rãnh và bảo vệ các đường ống thoát nước tránh hiện tượng đổ tràn và tắc ngẽn do dầu mỡ gây ra.
Dùng các chất ngấm, thí dụ cát trộn phân cho mèo hoặc khăn giấy để thấm dầu và mỡ đổ ra ngoài trước khi lau.	Giảm bớt lượng dầu mỡ đổ vào cống rãnh.	Việc này giúp giảm bớt lượng dầu mỡ xâm nhập vào cống rãnh và bảo vệ các ống thoát nước tránh hiện tượng đổ tràn và tắc ngẽn do dầu mỡ gây ra.
Không dùng chất chuyển thể sữa hoặc chất dung môi khác ngoài các loại xà bông rửa chén thông thường.	Chất chuyển thể sữavà các chất hoà tan sẽ làm phân hủy chất dầu mỡ, gây ra rắc rối trong hệ thống cống rãnh.	Giúp loại bỏ dầu mỡ một cách thích hợp.

CONTROLLING FOG at FOOD HANDLING FACILITIES

WHAT IS FOG?

FOG refers to Fats, Oils, and Grease from food preparation, food service, and kitchen clean up. It is generated in most types of restaurant and food service establishment kitchens.

WHY IS FOG A PROBLEM?

When poured down the drain, FOG can build up in pipes, pumps, and equipment, causing significant problems in the community sewer collection system and the wastewater treatment plant. Problems include sewer line blockages that can lead to sewer overflows and spills that cause environmental and health hazards.

WHY SHOULD I CARE ABOUT FOG?

Restaurants and food service establishments contribute greatly to the build up of FOG in the sewer lines because of the amount of grease produced during cooking, food preparation, and kitchen cleanup. If your establishment is found to cause sanitary sewer overflows because you have not controlled grease discharge, you may be responsible for cleanup costs and property damage. In addition, you will be required to put in a grease interceptor and maintain it on a regular schedule as required by your EBMUD permit.

WHAT ARE WAYS TO DECREASE THE AMOUNT OF GREASE THAT GOES DOWN THE DRAIN?

It is the responsibility of each food-handling facility to develop an effective FOG management program for recyclable grease (yellow), interceptor and grease trap waste (brown) and solid food waste.

A list of Best Management Practices (BMPs) is included with your permit package. Following these BMPs and your permit requirements will reduce the amount of FOG entering your drain lines.

WHAT IS A GREASE INTERCEPTOR?

A grease interceptor is a large partitioned vault installed to remove floating grease and food waste. Usually interceptors are installed underground outside food service establishments. These differ from grease traps, which are small grease removal devices installed in under counter drain lines.

IS MY FACILITY REQUIRED TO HAVE A GREASE INTERCEPTOR?

At this time, your facility will not be required to install an interceptor unless one or more of the following occurs:

1. Your facility is newly constructed or converts from a non-food handling facility to a food handling facility
2. Your facility submits plans to perform remodels, additions, alterations or repairs valued at $75,000 or more
3. Your facility has caused or contributed to collection system blockages resulting in maintenance requirements or sewage spills

WHAT IF I CANNOT INSTALL A GREASE INTERCEPTOR DUE TO SPACE OR SLOPE RESTRICTIONS OR BECAUSE MY BUSINESS DOES NOT GENERATE GREASE?

A business may apply for a waiver or variance, which may be granted depending upon specific circumstances at the establishment.

EBMUD will be working with the City and Sanitary District agencies in our service area to determine grease interceptor installation needs and sizing criteria. EBMUD will be performing inspections at facilities to determine if pumping frequencies established in your permit are adequate, if BMPs are being implemented, and to respond to grease related overflows.

Controlando "FOG" en los Negocios Donde se Manejan los Alimentos

¿Qué es "FOG"?

Las siglas "FOG" se refieren a Fats, Oils, and Grease (Aceites y Grasas) que son producidos durante la preparación de alimentos y la limpieza de cocina. Aceites y grasas provienen de casi todos los tipos de restaurantes y negocios con servicio de alimentos.

¿Por qué es un problema el "FOG"?

El "FOG" vertido al desagüe puede pegarse dentro las tuberías, bombas y equipo causando serios problemas en el sistema de alcantarillado de la comunidad y la planta de tratamiento de aguas residuales. Los problemas incluyen obstrucciones en las alcantarillas que pueden causar rebalses y derrames con consecuencias peligrosas para el medio ambiente y la salud pública.

¿Por qué me debe importar el "FOG"?

Los restaurantes y negocios con servicio de alimentos contribuyen mucho a la acumulación de "FOG" en las cañerías del alcantarillado debido a la cantidad de grasa producida al preparar y cocinar alimentos y al limpiar la cocina. Si su negocio causa rebalses de alcantarillas por falta de controlar la descarga de grasa, usted puede ser responsable por los costos de limpieza y daño a propiedad. Además, se le requerirá instalar un interceptor de grasa y mantenerlo regularmente de acuerdo con su permiso de EBMUD.

¿Cómo reducir la cantidad de grasa que va al desagüe?

Cada negocio donde se maneja los alimentos tiene la responsabilidad de desarrollar un plan efectivo para controlar "FOG" reciclable (grasa amarilla), grasa del interceptor y de la trampa (grasa marrón), y restos de comida.

Una lista de las Mejores Prácticas Preventivas [Best Management Practices (BMPs)] está incluido con el permiso. Siguiendo estos "BMPs" y los requisitos de su permiso, reducirá la cantidad de "FOG" que entra las tuberías de desagüe.

¿Qué es un interceptor de grasa?

Un interceptor de grasa es una bóveda grande con compartimientos instalada para separar físicamente la grasa y los desperdicios sólidos de comida en las aguas residuales. Generalmente los interceptores son instalados en el subterráneo fuera del local. Estos son diferentes de las trampas de grasa cuáles son chicas e instaladas bajo el mostrador de cocina, en los conductos de desagüe de los fregaderos.

¿Se requiere que mi negocio tenga un interceptor de grasa?

En este momento, su negocio no será requerido instalar un interceptor a menos que ocurra uno o más de lo siguiente:

1. Su negocio es recién construido o convertido de un negocio sin manejo de alimentos a uno que sí maneja alimentos.
2. Su negocio somete planes para remodelar, hacer adiciones, modificaciones o reparaciones valoradas en $75,000 o más.
3. Su negocio ha causado o contribuido a obstrucciones en el sistema de alcantarillado resultando en requisitos de mantenimiento o derrames de aguas residuales.

¿Qué si no puedo instalar un interceptor de grasa debido a las restricciones de espacio o declive o porque mi negocio no genera grasa?

Puede solicitar un "waiver" (medida de excepción) o variación (un cambio a los requisitos bajo ciertas circunstancias), cuál se puede conceder dependiendo de circunstancias específicas de su negocio.

EBMUD estará trabajando con las agencias de las ciudades y el distrito sanitario en nuestra área de servicio para determinar la necesidad de instalar interceptores de grasa y los criterios de tamaño. EBMUD realizará inspecciones de negocios para determinar si la frecuencia de bombeo establecida en su permiso es adecuada, y si está siguiendo las Mejores Prácticas Preventivas (BMPs), y para responder a los rebalses relacionados con la grasa.

食品制作場地的油脂(FOG)控制

FOG是什麼?

FOG是油脂，油及脂肪的簡稱，是從食品制作場地，餐館及廚房清埋時產生的。

爲什麼FOG成爲一個問題?

當倒入排水道時，FOG會積聚在水渠，抽水機及用具裡，構成社區內水渠綜合系統及廢水處理廠嚴重的問題，包括廢水道堵塞而導至滿溢及氾濫，因而危害環境及健康。

爲什麼要關注FOG?

餐館及食品制作場在烹煮，制作及清理時大量油脂流入溝渠而使油脂積聚在內，如果你的制作場被發現因你沒有控制油脂的排放而構成下水道氾濫，你將要負責清理及物業損壞的費用，並且你會被指定安裝一個油脂阻截機，並要依據由東灣水務局所發的許可證所規定去按時修理。

如何去減少油脂流入排水道?

每個食品制作所有責任去設立一個有效的油脂管理程序去循環油脂(黃色)，及從油脂阻截機或油脂截納箱的廢物(啡色)，及剩餘的食物固體。

你的許可證文件內附有一系列的良好管理措施(BMPs)，如果能依從這些良好管理措施及許可證的條例，便可減低油脂進入排水道。

什麼是油脂阻截機?

油脂阻截機是一個大箱內有若干分隔箱穴，用作除去浮面的油脂及食品廢物。通常油脂阻截機是放於食品制作場外的地底下，與油脂阻截箱不同，阻截箱是小型器具，設於櫃檯下的排水路線，用以隔除油脂。

我的制作場是否須要裝設一個油脂阻截機?

現時你的制作場不須裝設油脂阻截機，除非有下列情況:

1．你的制作場是新建或從別類商業改作食品制作場。
2．你曾呈交計劃方案申請裝修，費用超過七萬五千元。
3．你的制作場曾導至或構成水渠綜合系統堵塞而要維修或構成下水道氾濫。

如果因爲業務不產油脂或面積及斜度的限制而不能裝設油脂阻截機又怎樣?

如有此情況，商戶可申請括免或不設定之許可證，在特殊情況下可獲批準。

東灣水務局與市府及水務局服務區內各衛生處會一同審定是否有必要安裝油脂阻截機及機的大小。東灣水務局會到各場地檢查以確定商戶的許可證內規定的抽油次數是否足夠，有否實行良好管理，及在油脂滿溢時是否作妥善處理。

식당 폐유지(기름 지꺼기) 처리에 관하여

식당 폐유지(Fats, Oils, and Grease)란 무엇인가?

식당 폐유지란 음식 준비, 음식 제공, 그리고 주방 청소 때 생기는 동물성 기름및 기름 찌꺼기를 말한다. 이는 대부분의 식당업체 또는 음식 만드는 부엌에서 생성된다.

왜 식당 폐유지가 문제가 되는가?

폐유지를 하수구에 버리게 되면, 이들은 하수관, 펌프, 그리고 하수운반 시설들에 엉겨서 도시 하수관과 하수처리장에 심각한 문제를 일으킨다. 예를 들면, 하수관이 막혀 생활하수가 거리로 넘쳐나 환경오염과 건강문제를 일으킨다.

왜 식당 폐유지 문제를 내가 우려해야 하는가?

식당과 요식업체들이 요리, 음식 준비, 식당 청소 때 생기는 폐유지를 그냥 버림으로 하수구가 막히는 사태를 빈번히 초래하고 있다. 만약 귀하의 식당이 폐유지를 제대로 관리하지 않고 방출함으로 하수구가 막혀 하수가 거리로 범람하는 사태가 일어나면, 귀하가 그 청소비용과 재산피해를 보상해야한다. 이 뿐 아니라 폐유지 처리시설(Grease interceptor)을 설치하고 이스트베이 상하수도 공사(EBMUD)의 배출 허가서에 명시된 대로 이 시설을 정기적으로 정비해야 한다.

하수구로 방출되는 식당 폐유지의 양을 줄이는 방법은 어떤 것들이 있는가?

재생 가능한 폐유지(연황색), 버려야할 폐유지(갈색), 그리고 고체 음식찌꺼기들을 다루는 효과적인 식당 폐유지 관리 프로그램을 수립하는 것이 각 요식업체의 책임이다.

EBMUD의 배출허가서에 보면 최적 관리 방법(Best Management Practices)의 목록이 있다. 이 관리사항들과 배출허가서 준수사항들을 지키면 식당폐유지의 방출양을 줄일 수 있다.

이스트베이 상하수도 공사(EBMUD)
환경관리과 핫라인: (510) 287-1651
환경을 보호합시다.

폐유지 처리시설(Grease Interceptor)이란 무엇인가?

이 시설은 표면에 뜨는 폐유지와 음식 찌꺼기를 분리 제거하기 위해 몇 개의 방으로 나뉜 큰 탱크이다. 이 처리시설은 보통 식당 바깥 땅속에 묻는다. 이 폐유지 처리시설은 폐유지 걸름 장치(grease trap)하고는 다른데 이 걸름 장치는 크기가 작고 보통 주방 하수 싱크대 아래 설치해서 쓴다.

내 업소에 폐유지 처리시설을 꼭 설치해야 하는가?

귀하의 식당이 아래 사항에 해당되면 설치해야 한다.

1. 새로 신축되었거나 비 요식업체에서 요식업체로 전환된 경우
2. $75,000 에 상당하는 리모델링, 평수 늘리기, 변경 또는 보수작업을 하기 위해 청사진을 제출했을 경우.
3. 귀하의 업체가 이전에 하수시설을 막히게 하여 정비 요구를 받았거나 하수도 범람을 초래했을 경우.

만일 협소한 장소나 경사문제 때문에 폐유지 처리시설을 설치할 수 없거나, 또 폐유지를 만들지 않기 때문에 폐유지 처리시설이 불필요할 경우는?

귀하의 식당에서 예외 신청을 할 수 있다. 그 승인 여부는 귀 식당의 특수한 제반여건에 따라 결정된다.

이스트베이 상하수도 공사(EBMUD)는 관할 구역내의 시(市)들과 하수전담 공사들과 폐유지 처리시설 설치필요성 및 규격 기준을 결정하기 위해 긴밀히 협조하고 있다. EBMUD는 귀 업소 배출하가서에 명시된 처리시설을 정기적으로 퍼내는 빈도수가 적절한지, 또 최적관리 방법(BMP)들이 잘 시행되고 있는지를 결정하기 위해, 그리고 하수구 범람 문제등에 신속히 대처하기 위해 귀 업소를 방문 조사하게 된다.

이스트베이 상하수도 공사(EBMUD)

환경관리과 핫라인: (510) 287-1651

환경을 보호합시다.

KIỂM SOÁT "FOG" tại CÁC CƠ SỞ XỬ LÝ THỰC PHẨM

"FOG" LÀ GÌ?

"FOG" là Fats (Chất Béo), Oils (Dầu), và Grease (Mỡ) chế biến từ thực phẩm, phục vụ ăn uống và lau dọn nhà bếp. "FOG" phát sinh tại hầu hết các loại bếp nấu của nhà hàng và cơ sở phục vụ ăn uống.

TẠI SAO FOG LẠI GÂY RẮC RỐI?

Khi quý vị đổ "FOG" xuống cống rãnh, các chất này có thể tích tụ trong đường ống, hệ thống bơm, và dụng cụ, gây ra nhiều rắc rối trong hệ thống thu nước thải của thành phố và cơ sở xử lý nước thải. "FOG" có thể làm cho đường ống thoát nước bị tắc, nước thải tràn ra ngoài hệ thống cống rãnh, do đó gây ra các mối nguy hiểm trong môi trường và sức khỏe.

TẠI SAO TÔI CẦN LƯU Ý TỚI "FOG"?

Các nhà hàng và cơ sở phục vụ ăn uống gây nên sự đáng kể về vấn đề làm "FOG" tích tụ trong các đường ống thoát nước do lượng dầu mỡ tạo ra trong khi nấu, chế biến thực phẩm, và lau chùi nhà bếp. Nếu cơ sở của quý vị làm nước tràn ra khỏi hệ thống thoát nước vệ sinh vì quý vị không kiểm soát dầu mỡ, quý vị có thể phải chịu các chi phí lau chùi và lãnh trách nhiệm đối với thiệt hại tài sản. Ngoài ra, quý vị sẽ phải lắp tấm vòm chặn dầu mỡ và bảo trì bộ phận này thường xuyên theo yêu cầu trong giấy phép EBMUD của quý vị.

TÔI CÓ THỂ ÁP DỤNG NHỮNG CÁCH NÀO ĐỂ GIẢM BỚT LƯỢNG DẦU MỠ BỊ ĐỔ VÀO CỐNG RÃNH?

Mỗi cơ sở xử lý thực phẩm có trách nhiệm thiết lập một chương trình kiểm soát "FOG" hiệu quả cho chất dầu mỡ có thể tái chế được (màu vàng), tấm vòm chặn dầu mỡ và rác chặn dầu mỡ (màu nâu) và rác thực phẩm dạng rắn.

Gửi kèm theo giấy phép này là một danh sách Những Cách Thức Kiểm Soát Hiệu Quả Nhất (Best Management Practices - BMPs). Nếu quý vị làm theo các biện pháp BMP này và các yêu cầu về giấy phép hành nghề của quý vị, quý vị sẽ có thể giảm bớt lượng "FOG" đổ vào đường ống thoát nước tại cơ sở của quý vị.

TẤM VÒM CHẶN DẦU MỠ LÀ GÌ?

Tấm vòm chặn dầu mỡ là một bộ phận hình vòm lớn có tấm ngăn, lắp để loại bỏ rác thức ăn bẩn và dầu mỡ. Các tấm chặn thường được lắp ở dưới mặt đất bên ngoài cơ sở phục vụ ăn uống. Các loại khung vòm chặn dầu mỡ này khác với các tấm chặn dầu mỡ. Các tấm chặn dầu mỡ là các dụng cụ loại bỏ dầu mỡ cỡ nhỏ được lắp đặt trong các đường ống thoát nước dưới tủ bếp.

CƠ SỞ CỦA TÔI CÓ PHẢI LẮP TẤM VÒM CHẶN DẦU MỠ HAY KHÔNG?

Hiện tại, cơ sở của quý vị không phải bắt buộc lắp tấm vòm chặn dầu mỡ trừ khi một hoặc những tình trạng sau đây xảy ra:

1. Cơ sở của quý vị vừa mới được xây hoặc chuyển từ một cơ sở không bán thực phẩm thành cơ sở bán thực phẩm
2. Cơ sở của quý vị nộp các đề án để tiến hành tu bổ, xây thêm, thay đổi hoặc sửa chữa, có giá trị từ $75, 000 trở lên
3. Cơ sở của quý vị đã gây hoặc tạo ra tình trạng tắc hệ thống nước thải, do đó dẫn tới các trường hợp nước tràn trong hệ thống thoát nước hoặc cần phải sửa chữa

VIỆC GÌ XẢY RA NẾU TÔI KHÔNG THỂ LẮP TẤM VÒM CHẶN DẦU MỠ DO CÓ CÁC GIỚI HẠN VỀ KHÔNG GIAN HOẶC ĐỘ DỐC HOẶC CƠ SỞ KINH DOANH CỦA TÔI KHÔNG TẠO RA DẦU MỠ?

Một cơ sở kinh doanh có thể xin miễn hoặc thay đổi yêu cầu, và có thể được chấp thuận tùy thuộc vào các tình trạng cụ thể tại cơ sở đó.

EBMUD sẽ làm việc với các cơ quan Thành Phố và cơ quan Vệ Sinh Quận trong khu vực phục vụ của EBMUD để xác định các nhu cầu lắp tấm vòm chặn dầu mỡ và các tiêu chuẩn về định cỡ. EBMUD sẽ tiến hành các cuộc kiểm tra tại cơ sở để xác định xem mức độ thường xuyên bơm nước được ghi trong giấy phép hành nghề của quý vị có thích hợp hay không, các cơ sở có tuân theo các BMP hay không và xử lý các trường hợp nước tràn ra ngoài tại vì dầu mỡ.

FOOD HANDLING FACILITY WASTEWATER DISCHARGE PERMIT

Effective Date:
Expiration Date:

Terms and Conditions

I. Grease interceptors are required for food handling facilities that meet any of the following criteria:
- New construction
- Remodels, additions, alterations or repairs valued at or greater than $75,000
- Has caused or contributed to a grease related collection system blockage resulting in maintenance requirements and/or a sewage spill

II. A food handling facility may be granted a waiver or conditional variance from grease interceptor installation and pumping requirements if conditions in *Standard Terms and Conditions for Food Handling Facilities, Section D. and E.* are met.

III. All new grease interceptors shall be designed, constructed and installed in accordance with the California Plumbing Code, Title 24, Part 5 (current version) and shall have a sampling access point located downstream of the interceptor.

IV. Each grease interceptor shall be maintained
- By removing the entire contents of the interceptor each time the interceptor is pumped.
- To ensure proper operation, maintenance and performance.
- At a minimum pumping frequency of once per three-month period, or more frequently to ensure that the facility discharge does not cause or contribute to a grease related collection system blockage resulting in maintenance requirements and/or a sewage spill.
- Through pumping by an EBMUD approved food handling facility waste grease hauler.

V. The Permit Holder shall retain maintenance records with the following information for each grease removal device located on the premises. The records shall be kept a minimum of three years and provided to EBMUD upon request.
- Date of service
- Volume pumped (gallons)
- Name of EBMUD approved food handling facility waste grease hauler
- Approved waste grease disposal location

VI. The Permit Holder shall notify EBMUD-Environmental Services Division at (510) 287- 1651 of any
- Sale, lease, or transfer of the operation for which the permit was issued
- Change of facility name
- Changes to a grease removal device(s).
- Remodels, additions, alterations or repairs valued at or greater than $75,000

VII. Access to the facility shall be granted to EBMUD personnel to conduct wastewater compliance inspections and to collect wastewater discharge samples.

VIII. EBMUD will conduct random, unannounced inspections to verify compliance with the terms and conditions of this Food Handling Facilities Wastewater Discharge Permit.

IX. EBMUD will pursue enforcement and penalties as authorized by EBMUD Ordinance No. 311A-03, Title VI.

AUTHORIZATION

The above named Permit Holder is hereby authorized to discharge wastewater to the community sewer, subject to Permit Holder's compliance with these Permit Terms and Conditions, EBMUD Ordinance No. 311A-03, and the Food Handling Facility Wastewater Discharge Permit Standard Terms and Conditions. EBMUD may amend this Permit to include revisions during the term of the Permit.

_____

DAVID R. WILLIAMS, Director of Wastewater
EBMUD, P.O. Box 24055, MS 702, Oakland, CA 94623-1055

PERMISO DE DESCARGA DE AGUAS RESIDUALES PARA INSTALACIONES QUE MANEJAN ALIMENTOS

Fecha de inicio de vigencia: _____

Fecha de vencimiento: _____

Términos y Condiciones

I. Se requiere el uso de interceptores de grasa en las instalaciones de manejo de alimentos que satisfagan alguno de los siguientes criterios:
- Nueva edificación
- Remodelaciones, adiciones, alteraciones o reparaciones con un valor de $75,000 o más
- Ha ocasionado o contribuido a una obstrucción relacionada con la grasa en el sistema de alcantarillado, lo que ha resultado en requerimientos de mantenimiento y/o en un derrame de aguas cloacales

II. Las instalaciones de manejo de alimentos podrían recibir una excepción o una varianza condicional a la instalación de un interceptor de grasa y a los requisitos de bombeo si se cumplen las condiciones estipuladas en las *Secciones D y E de los Términos y Condiciones Estándar para Instalaciones de Manejo de Alimentos (Standard Terms and Conditions for Food Handling Facilities).*

III. Todos los nuevos interceptores de grasa deberán ser diseñados, manufacturados e instalados de conformidad con el Título 24, Parte 5 de la versión actual del Código de Plomería de California (California Plumbing Code) y deberán tener un punto de acceso para el muestreo ubicado corriente abajo del interceptor.

IV. Todos los interceptores de grasa deberán recibir mantenimiento
- Eliminando el total del contenido del interceptor cada vez que el interceptor sea bombeado
- A fin de asegurar la operación, mantenimiento y rendimiento apropiados
- A una frecuencia mínima de bombeo de una vez por periodo de tres meses, o con mayor frecuencia a fin de asegurar que las descargas de las instalaciones no ocasionen ni contribuyan a una obstrucción relacionada con la grasa en el sistema de alcantarillado que resulte en requerimientos de mantenimiento y/o en un derrame de aguas cloacales
- Realizado a través del bombeo por parte de un transportista de desechos grasos de instalaciones de manejo de alimentos autorizado por EBMUD

V. El Tenedor del Permiso deberá conservar un registro con la siguiente información de cada dispositivo para la eliminación de grasa ubicado en las instalaciones. Este registro deberá ser conservado un mínimo de tres años y ser suministrado a EBMUD cuando lo solicite.
- Fecha de servicio
- Volumen bombeado (galones)
- Nombre del transportista de desechos grasos de instalaciones de manejo de alimentos autorizado por EBMUD
- Lugar autorizado para desechos grasos

VI. El Tenedor del Permiso deberá notificar a la División de Servicios Ambientales (Environmental Services Division) de EBMUD llamando al (510) 287- 1651 en caso de cualquier
- Venta, arrendamiento o transferencia de la operación para la que fue emitido el permiso
- Cambio de nombre de las instalaciones
- Cambio a un dispositivo para la eliminación de grasa
- Remodelación, adición, alteración o reparación con un valor de $75,000 o más

VII. Se le dará acceso a las instalaciones al personal de EBMUD a fin de que lleve a cabo inspecciones para determinar el cumplimiento de las disposiciones sobre aguas residuales y recolectar muestras de la descarga de aguas residuales.

VIII. EBMUD llevará acabo inspecciones aleatorias sin previo aviso a fin de verificar el cumplimiento de los términos y condiciones de este Permiso de Descarga de Aguas Residuales para Instalaciones de Manejo de Alimentos.

IX. EBMUD se encargará de hacer cumplir y aplicar las multas autorizadas y dispuestas en el Estatuto No. 311A-03, Título VI de EBMUD (EBMUD Ordinance No. 311A-03, Title VI).

AUTORIZACIÓN

A través del presente, se le autoriza al Tenedor del Permiso mencionado anteriormente la descarga de aguas residuales al sistema cloacal de la comunidad, sujeto al cumplimiento por parte del Tenedor del Permiso de los Términos y Condiciones de este Permiso, del Estatuto No. 311A-03 de EBMUD y de los Términos y Condiciones Estándar para la Descarga de Aguas Residuales por parte de Instalaciones de Manejo de Alimentos. EBMUD podría enmendar este Permiso a fin de que incluya modificaciones durante el periodo de vigencia del Permiso.

_____

DAVID R. WILLIAMS, Director de Aguas Residuales
EBMUD, P.O. Box 24055, MS 702, Oakland, CA 94623-1055

食品處理場所廢水排放牌照

生效日期: _____

有效期限: _____

條款及規定

I. 符合下列任何一項標準的食品處理場所皆須依規定使用油脂截留器：
- 新建築
- 總值相當於或超過 $75,000的重新裝修、增建、改造或修復工程
- 曾直接或間接引起油脂阻塞搜集系統的問題，而導致需要維修及/或污水溢出的情形

II. 若符合*「食品處理場所的標準條款及規定」*內的 *D 及 E 條款*，則該食品處理場所可免除或有條件免除安裝及抽取油脂截留器的規定。

III. 所有新油脂截留器需依加州配管法規 (California Plumbing Code) 標題24 第5部份 (目前版本) 的規定來設計、施工及安裝，且在截留器下截處要有採樣取用點。

IV. **每個油脂截留器都需進行維修**：
- 方法是每次在截留器經抽取後就立刻移除裡面的全部截留物。
- 目的是要確定截留器可妥善運作、維修及供使用。
- 至少每三個月就需抽取一次或越常越好，以確定該場所的排放物不會直接或間接引起油脂阻塞搜集系統的問題，而導致需要維修及/或污水溢出的情形。
- 以 EBMUD 核准的食品處理場所廢油搬運商進行抽取作業。

V. 持有許可者應保留場所內每個油脂移除設施的維修記錄及下列資訊。該場所應至少保存三年的記錄，且要應 EBMUD 的要求提供資料。
- 檢修日期
- 抽取容量 (加崙)
- EBMUD 核准的食品處理場所廢油搬運商的名稱
- 經核准的廢油處理地點

VI. 若有下列情況，則持有許可者應致電 (510) 287- 1651 通知 EBMUD-環境服務部 (Environmental Services Division)：
- 售出、出租或轉讓領有許可的營業處
- 場所名稱有變更
- 油脂移除設施 (一或多個) 有變動
- 總值相當於或超過 $75,000的重新裝修、增建、改造或修復工程

VII. 需充許 EBMUD 人員進入場所，以便進行廢水規定檢驗及採取廢水排放樣本。

VIII. EBMUD 將不定期地進行檢驗且不會事先通知，以確認該場所是否遵守「食品處理場所的廢水排放許可」的條款及規定。

IX. EBMUD 會根據 EBMUD 第 311A-03 條例標題VI的授權而採取執法行動及處以罰款。

授權

上述姓名的持有許可者於此獲得授權，可將廢水排放至社區地下污水管。許可內容會因持有許可者是否遵守後述法規的情況而有變動：EBMUD 第 311A-03 條例的許可條款及規定、食品處理場所的廢水排放許可標準條款及規定。EBMUD 可能更正此份許可，以納入許可有效期限內的修訂內容。

_____

DAVID R. WILLIAMS，廢水處理主任

EBMUD，P. O. Box 24055，MS 702，Oakland，CA 94623-1055

식당 업소 폐수 배출 허가서

EBMUD

발효일: _____

만기일: _____

준수 조항

I. 폐유지 걸름 처리 시설(Grease Interceptor)을 설치해야 되는 식당업소는 아래와 같습니다.
- 신규 업소
- $75,000 이상의 가치가 있는 리모델링, 추가, 변경 또는 수리를 진행하는 업소
- 폐유지로 인해 하수도가 막혀 하수도 보수를 했거나 하수도가 넘쳤던 업소

II. *식당 업소 표준 약정 D 와 E 항*을 준수하는 업소들은 폐유지 걸름 처리 시설 설치 및 펌핑 약관에서 조건부로 예외 조치나 면제 혜택을 받을 수 있습니다.

III. 모든 신규 폐유지 걸름 처리 시설은 캘리포니아 상하수도 설비 지침서(California Plumbing Code) 24 장 5 항(현재 판)에 따라 설계, 제조 및 설치해야 하며, 걸름 처리 시설의 하단부에 표본 추출 지점이 있어야 합니다.

IV. 각 폐유지 걸름 처리 시설을 아래와 같이 관리해야 합니다.
- 걸름 처리 시설을 퍼낼 때마다 전체 내용물을 제거
- 적절한 작동, 유지보수 및 성능을 보장
- 시설의 폐수 배출로 인해 폐유지 집유 시스템이 막히거나 하수도가 넘치는 일이 발생하지 않도록 적어도 3 개월에 한 번 이상 펌핑
- EBMUD 에서 승인한 식당 폐유 수거 회사를 사용

V. 허가서 소지자는 구내에 위치한 각 기름 제거 장치에 대해 다음 정보가 포함된 유지보수 기록을 보유해야 합니다. 이 기록은 최소 3 년 간 보유해야 하며, 요청이 있을 시 EBMUD 에 제공해야 합니다.
- 서비스 날짜
- 펌핑 용량(갤런)
- EBMUD 에서 승인한 식당 폐유지 수거 회사의 이름
- 승인된 폐유지를 버린 장소

VI. 허가서 소지자는 다음과 같은 경우, 전화 (510) 287- 1651 로 EBMUD 환경 관리과에 통보해야 합니다.
- 허가된 식당 업소의 판매, 임대 또는 양도 시
- 식당 이름의 변경 시
- 폐유지 제거 장치의 변경 시
- $75,000 이상의 가치가 있는 리모델링, 추가, 변경 또는 수리를 할 시

VII. EBMUD 직원에게 시설에 대한 접근을 허용하여 폐수 처리 약관의 준수 여부를 조사하고, 폐수 배출 표본을 추출할 수 있도록 해야 합니다.

VIII. EBMUD 는 불시에 식당 업체 폐수 배출 허가 약정의 준수 여부를 조사할 수 있습니다.

IX. EBMUD 는 EBMUD 조례 번호 311A-03 VI 장에서 인증된 법률의 집행 및 처벌 방식을 따를 것입니다.

허가서

상기한 허가 소지자는 본 허가서의 조항, EBMUD 조례 번호 311A-03 및 식당 업체 폐수 방출 허가 표준 약정을 준수하는 조건으로, 공공 하수 시설에 폐수를 방출할 수 있음을 허가합니다. EBMUD 는 약정 기간 중에 본 허가서를 개정할 수 있습니다.

_____

DAVID R. WILLIAMS, 하수국장

EBMUD, P.O. Box 24055, MS 702, Oakland, CA 94623-1055

GIAÁY PHEÙP ÑEÅ XÖÛ LYÙ NÖÔÙC THAÛI DAØNH CHO CÔ SÔÛ XÖÛ LYÙ THÖÏC PHAÅM

Coù hieäu löïc töø ngaøy: _____

Heát haïn vaøo ngaøy: _____

Caùc Ñieàu Khoaûn vaø Ñieàu Kieän

I. Phaûi coù heä thoáng loïc chaén daàu môõ cho caùc cô sôû xöû lyù thöïc phaåm vôùi baát kyø tieâu chuaån naøo sau ñaây:
- Cô sôû môùi xaây
- Caùc coâng trình tu boå, xaây theâm, söûa ñoåi hoaëc söûa chöõa coù giaù trò töø $75,000 trôû leân
- Gaây ra hoaëc goùp phaàn gaây ra tình traïng taéc heä thoáng thaûi daàu môõ, khieán phaûi baûo trì vaø/hoaëc laøm traøn coáng thoaùt nöôùc

II. Moät cô sôû xöû lyù thöïc phaåm coù theå ñöôïc mieãn hoaëc thay ñoåi moät soá ñieàu kieän trong vieäc tuaân theo caùc yeâu caàu veà bôm vaø laép heä thoáng loïc chaén daàu môõ neáu hoäi ñuû caùc ñieàu kieän trong *Caùc Ñieàu Khoaûn vaø Ñieàu Kieän Tieâu Chuaån daønh cho Caùc Cô Sôû Xöû Lyù Thöïc Phaåm, Muïc D vaø E.*

III. Taát caû heä thoáng loïc chaén daàu môõ môùi phaûi ñöôïc thieát keá, cheá taïo vaø laép ñaët theo ñuùng yeâu caàu cuûa Saéc Luaät Veà Ñöôøng OÁng Nöôùc Cuûa Tieåu Bang California (California Plumbing Code), Tieâu Ñeà 24, Phaàn 5 (baûn hieän taïi) vaø phaûi coù moät ñieåm tieáp caän laáy maãu kieåm nghieäm nöôùc thaûi naèm ôû cuoái doøng chaûy cuûa heä thoáng ñoù.

IV. Moãi heä thoáng loïc chaén daàu môõ phaûi ñöôïc baûo trì
- Baèng caùch loaïi boû taát caû raùc baån cuûa heä thoáng chaén moãi khi bôm heä thoáng ñoù.
- Ñeå baûo ñaûm tình traïng hoaït ñoäng, baûo trì vaø hieäu naêng thích hôïp.
- Phaûi bôm toái thieåu ba thaùng moät laàn, hoaëc thöôøng xuyeân hôn ñeå baûo ñaûm raèng raùc thaûi cuûa cô sôû khoâng gaây ra hoaëc goùp phaàn gaây ra tình traïng taéc heä thoáng thu raùc do daàu môõ, khieán phaûi baûo trì vaø/hoaëc laøm traøn coáng thoaùt nöôùc.
- Bôm baèng maùy xöû lyù daàu môõ cuûa cô sôû xöû lyù thöïc phaåm ñaõ ñöôïc EBMUD chaáp thuaän.

V. Cô Sôû Coù Giaáy Pheùp phaûi löu giöõ hoà sô veà vieäc baûo trì vôùi caùc thoâng tin sau ñaây cho moãi boä phaän loaïi boû daàu môõ trong cô sôû. Phaûi löu giöõ hoà sô toái thieåu ba naêm vaø phaûi cung caáp cho EBMUD khi coù yeâu caàu.
- Ngaøy baûo trì
- Khoái löôïng bôm (gallons)
- Teân cuûa maùy xöû lyù daàu môõ cuûa cô sôû xöû lyù thöïc phaåm ñaõ ñöôïc EBMUD chaáp thuaän
- Ñòa ñieåm boû daàu môõ ñaõ ñöôïc chaáp thuaän

VI. Cô Sôû Coù Giaáy Pheùp phaûi thoâng baùo cho Ban Dòch Vuï Moâi Tröôøng – EBMUD taïi soá (510) 287- 1651 veà baát kyø tröôøng hôïp
- Baùn, cho thueâ hoaëc chuyeån nhöôïng hoaït ñoäng maø tröôùc ñoù ñaõ ñöôïc caáp giaáy pheùp
- Thay ñoåi teân cuûa cô sôû
- Thay ñoåi (caùc) thieát bò loaïi boû daàu môõ.
- Caùc coâng trình tu boå, xaây theâm, söûa ñoåi hoaëc söûa chöõa coù giaù trò töø $75,000 trôû leân

VII. Phaûi cho pheùp nhaân vieân cuûa EBMUD vaøo cô sôû ñeå tieán haønh kieåm tra tình traïng tuaân haønh quy ñònh veà xöû lyù raùc thaûi vaø laáy maãu nöôùc thaûi ñeå kieåm nghieäm.

VIII. EBMUD seõ tieán haønh caùc cuoäc kieåm tra ngaãu nhieân khoâng baùo tröôùc ñeå xaùc ñònh tình traïng tuaân haønh caùc ñieàu khoaûn vaø ñieàu kieän trong Giaáy Pheùp Xöû Lyù Nöôùc Thaûi daønh cho Caùc Cô Sôû Xöû Lyù Thöïc Phaåm naøy.

IX. EBMUD seõ thi haønh vaø aùp duïng caùc hình phaït theo quy ñònh cuûa Saéc Leänh EBMUD Soá 311A-03, Tieâu Ñeà VI.

CHO PHEÙP

Theo ñaây Cô Sôû Coù Giaáy Pheùp noùi treân ñöôïc pheùp ñoå nöôùc thaûi vaøo trong heä thoáng coáng raõnh coâng coäng neáu Cô Sôû Coù Giaáy Pheùp tuaân theo Caùc Ñieàu Khoaûn vaø Ñieàu Kieän veà Giaáy Pheùp, Saéc Leänh EBMUD Soá 311A-03, vaø Caùc Ñieàu Khoaûn vaø Ñieàu Kieän Tieâu Chuaån veà Giaáy Pheùp Xöû Lyù Nöôùc Thaûi daønh cho Cô Sôû Xöû Lyù Thöïc Phaåm. EBMUD coù theå tu chænh Giaáy Pheùp naøy ñeå boå sung theâm caùc thoâng tin söûa ñoåi trong thôøi gian Giaáy Pheùp naøy coù hieäu löïc.

_____

DAVID R. WILLIAMS, Giaùm Ñoác Phuï Traùch Vaán Ñeà Nöôùc Thaûi
EBMUD, P.O. Box 24055, MS 702, Oakland, CA 94623-1055

FOOD HANDLING FACILITY WASTEWATER DISCHARGE PERMIT STANDARD TERMS AND CONDITIONS

TABLE OF CONTENTS

INTRODUCTION

This document contains definitions, as well as waiver, and conditional variance information pertaining to Food Handling Facility Wastewater Discharge Permits (Permit) issued by the East Bay Municipal Utility District (EBMUD). Permits are issued pursuant to EBMUD Ordinance No. 311A-03. All food-handling facilities are required to obtain a Food Handling Facility Permit from EBMUD.

The purpose of this program is to set forth uniform requirements for food handling facilities in the EBMUD Wastewater Service Area to enable compliance with applicable State and Federal laws for community sewer overflows and to control the discharge of fats, oil, and grease (FOG) to the community sewer.

SECTION A. DEFINITIONS

Best Management Practices (BMPs) – Practices that will help to reduce the quantity of FOG discharged to grease removal devices and the community sewer during food handling operations.

Community sewer – The sewer owned and operated by public agencies within the boundaries of the District, which are connected to an interceptor of the District. A "community sewer" is a portion of a community sewer system that receives wastewater from the side sewer of a discharger.

Director – Director refers to the Director of the EBMUD Wastewater Department, or his designated representative.

District – Refers to Special District No. 1 (SD-1) of EBMUD.

EBMUD approved waste hauler – Hauler of grease removal device contents who has participated in an EBMUD training class for waste haulers. Haulers receive a letter of completion demonstrating that they agree to implement proper pumping, documentation and grease disposal practices and that they are aware of penalties for non-compliance.

EBMUD Ordinance 311A-03 – EBMUD Ordinance that regulates the interception, treatment, and disposal of wastewater and industrial waste.

Fats, Oil, and Grease (FOG) – Fats, oil and grease generated from food preparation, food service, and kitchen clean up. Most types of restaurant and food service establishment kitchens generate FOG.

Food handling facility – Includes but is not limited to any facility preparing and/or serving food for commercial use or sale. This includes restaurants, cafes, lunch counters, cafeterias, hotels, hospitals, convalescent homes, factory or school kitchens, catering kitchens, bakeries, grocery stores with food preparation and packaging, and meat cutting and preparation (excluding grocery stores with only food warming operations), meat packing facilities and other food handling

facilities not listed above where fats, oil and grease may be introduced into the community sewer system and cause line blockages and sewer overflows.

Grease interceptor – A large, partitioned vault made of various materials, installed to remove grease and food waste by trapping floatables and settleable solids so that they can be separated and removed before discharge to the community sewer. It is usually installed underground, outside of the food handling establishment.

Grease removal device – A device used to remove and/or separate out fat, oil and grease from kitchen wastes discharged to the community sewer, i.e. grease interceptor, grease trap or other mechanical device.

Grease trap – A device designed to retain grease before it enters plumbing lines. It is usually installed indoors in kitchen floors or under counters.

Newly constructed food handling facility– A facility for which a construction (plumbing, building, electrical, or mechanical) permit is issued on or after the effective date of a Food Handling Facility Wastewater Discharge Permit. This includes all facilities that are newly constructed or converted from a non-food handling facility to a food handling facility.

Permit Holder – Owner or operator of the food handling business to which the Food Handling Facility Wastewater Discharge Permit is issued.

Wastewater Service Area – Areas served by SD-1 including Alameda, Albany, Berkeley, Emeryville, Oakland, Piedmont, and the Stege Sanitary District, which serves El Cerrito, Kensington, and the Richmond annex.

SECTION B. GENERAL PROVISIONS

I. Duty to Comply

The Permit Holder shall comply with all terms and conditions of the Food Handling Facility Wastewater Discharge Permit, these Food Handling Facility Standard Terms and Conditions and EBMUD Ordinance 311A-03 (available at: www.ebmud.com/water_&_environment/wastewater/industrial_&_commercial_permits_&_fees/wastewater_control_ordinance/default.htm).

II. Availability of Permit

The Permit Holder shall maintain a copy of the current Permit at the permitted site and make the Permit available to both facility and EBMUD staff at all times.

III. Continuation of Expired Permits

An expired Permit will continue to be effective and enforceable until the Permit is reissued.

SECTION B. GENERAL PROVISIONS (continued)

IV. Permit Termination

The District may terminate the Permit for violation of the terms and conditions of the Permit or for violation of the provisions of EBMUD Ordinance 311A-03, unless waived by the Permit.

V. Transfer of Permit Prohibition

The Permit Holder shall not assign or transfer the Permit.

VI. Severability

If any provision of the Permit, these Standard Terms and Conditions, EBMUD Ordinance 311A-03, or the application thereof to any person or circumstance, is held invalid, the remainder of the Permit, these Standard Terms and Conditions, EBMUD Ordinance 311A-03, or the application of such provisions to other persons or circumstances, shall not be affected.

SECTION C. REPORTING AND RECORD KEEPING

I. Falsifying Information

Knowingly making any false statement on any report or other document required by the Permit or knowingly rendering any monitoring device or method inaccurate, is a crime, and may result in administrative, civil, and criminal enforcement action.

SECTION D. WAIVERS

A food handling facility determined to have no immediate adverse impact on the collection system because of business type may be granted a waiver from grease interceptor installation requirements.

The Director may, at any time, revoke a waiver and require the food handling facility to install a grease interceptor.

I. Waiver for Grease Interceptor Requirement Due to Business Type

A grease interceptor may not be required for business types listed below:

a) Establishments serving only beverages
b) Establishments serving beverages and/or ready to eat, packaged or unpackaged items (with or without food warming)
c) Ice cream parlors without any baking or other food preparation
d) Snack bar with no food preparation other than food warming
e) Bakeries with no food preparation other than food warming
f) Other establishments serving only ready to eat foods with or without food warming

SECTION D. WAIVERS (continued)

To obtain a waiver, a *Grease Interceptor Installation Waiver* application form must be completed and submitted, and then approved by the EBMUD Environmental Services Division and the Building Department of Alameda, Albany, Berkeley, Emeryville, Oakland, or Piedmont, or the Stege Sanitary District which serves, El Cerrito, Kensington, and the Richmond Annex.

Please call (510) 287-1651 for an application form.

SECTION E. CONDITIONAL VARIANCE

The Director may, at any time, revoke a variance and require the food handling facility to install a grease interceptor.

I. Variance for Grease Interceptor Requirement Due to Installation Restrictions

A food handling facility determined to have grease interceptor installation restrictions and that has no immediate adverse impact on the collection system may be granted a conditional variance from grease interceptor installation requirements.

A grease interceptor may not be required at a food service establishment if one or both of the following occur:

a) Adequate slope cannot be provided for gravity flow between plumbing fixtures and the grease interceptor or from the interceptor to the sewer
b) Adequate space cannot be provided, at the site, for installation and/or maintenance of a grease interceptor

To obtain a variance, a *Grease Interceptor Installation Conditional Variance* application form must be completed, submitted, and then approved by the EBMUD Environmental Services Division and the Building Department of Alameda, Albany, Berkeley, Emeryville, Oakland or Piedmont or the Stege Sanitary District which serves, El Cerrito, Kensington, and the Richmond Annex.

Please call (510) 287-1651 for an application form.

II. Variance for Grease Interceptor Requirement Due to Grease Generating Capabilities

A grease interceptor may not be required if a facility can demonstrate that food preparation and service do not generate fats, oil, and grease in a quantity sufficient to require a grease interceptor due to menu and number of meals served, or a combination of the two.

To obtain a variance, a *Grease Interceptor Installation Conditional Variance* application form must be completed, submitted, and then approved by the EBMUD Environmental Services Division and the Building Department of Alameda, Albany, Berkeley, Emeryville, Oakland, or Piedmont or the Stege Sanitary District which serves, El Cerrito, Kensington, and the Richmond Annex.

Please call (510) 287-1651 for an application form.

SECTION E. CONDITIONAL VARIANCE (continued)

If at any time the grease generating capabilities of the facility increase, the Permit Holder must notify EBMUD Environmental Services Division at (510) 287-1651.

III. Variance for Grease Interceptor Pumping Frequency

The pumping frequency determined in the Food Handling Facility Wastewater Discharge Permit may be decreased for a grease interceptor upon approval from the EBMUD Environmental Services Division.

The following conditions must be met in order to apply for a conditional variance of pumping frequencies from permit requirements:

1) At no time can the discharge from the interceptor exceed 100 mg/l total oil and grease concentration and
2) The interceptor continues to operate properly

To obtain a variance, a *Grease Interceptor Pumping Frequency Conditional Variance* application form must be completed, submitted, and then approved by the EBMUD Environmental Services Division.

Please call (510) 287-1651 for an application form.

East Bay Municipal Utility District Environmental Services Division
P.O. Box 24055, MS 702 Oakland, CA 94623-1055
Telephone (510) 287-1727 Fax (510) 287-0621

Grease Interceptor Installation Conditional Variance for Installation Restrictions

I, _____
(Business Representative's Name Printed)

Representing _____
(Business Name and Address Printed)

certify that the facility named above cannot install a grease interceptor because at least one the following conditions apply (please check appropriate box). Supporting documentation must be submitted with the application and plans.

☐ Inadequate slope ☐ Inadequate space

I certify that at no time shall any fats, oil, grease, or solids be discharged to the community sewer collection system in quantities that impair wastewater flow. I agree to put into effect the East Bay Municipal Utility District Food Handling Facility Best Management Practices. If at any time the business listed above is found to discharge fats, oil, grease, or solids in quantities that impair wastewater flow, I understand that I must implement an alternative grease removal method(s) acceptable to East Bay Municipal Utility District, the collection system owner and the regulating Health Department.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

The grease interceptor installation conditional variance is not transferable to a new owner or occupant.

The person signing this variance warrants that it has or has obtained the necessary consent and authority to execute this variance and to make this variance binding upon itself.

SIGNED _____ DATE _____

CONTACT PHONE NUMBER _____

Do Not Write Below This Line

APPROVAL: _____ (CITY/AGENCY REP.)
PRINT SIGNATURE

DATE _____ CITY/AGENCY NAME _____ CONTACT NO. _____

COMMENTS: _____

_____

EBMUD REP _____ DATE _____

REJECTED: _____ (CITY/AGENCY REP.)
PRINT SIGNATURE

DATE _____ CITY/AGENCY NAME _____ CONTACT NO. _____

COMMENTS: _____

EBMUD REP _____ DATE _____

East Bay Municipal Utility District Environmental Services Division
P.O. Box 24055, MS 702
Oakland, CA 94623-1055
Telephone (510) 287-1727 Fax (510) 287-0621

Grease Interceptor Installation Conditional Variance for facility grease generating capabilities

I, _____
(Business Representative's Name Printed)

Representing _____
(Business Name and Address Printed)
certify that at no time shall any fats, oil, grease, or solids be discharged to the community sewer collection system in quantities that impair wastewater flow. I agree to contact EBMUD Environmental Services Division if operational changes occur that result in the increase of fats, oil, grease, or solids discharge to the community sewer collection system at the business named above. If at any time the business listed above is found to discharge fats, oil, grease, or solids in quantities that impair wastewater flow, I understand that I must install, within ninety (90) days of receipt of notification from EBMUD, a grease interceptor of sufficient size and design to be acceptable to EBMUD, the collection system owner and the regulating Health Department.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

The grease interceptor installation conditional variance is not transferable.

The person signing this variance warrants that it has or has obtained the necessary consent and authority to execute this variance and to make this variance binding upon itself.

SIGNED _____DATE _____

CONTACT PHONE NUMBER _____

Supporting documentation including but not limited to menus and kitchen practices to limit grease discharge to the sewer must be submitted with this application form.

Applicant Please Do Not Write Below This Line

APPROVAL: _____(AGENCY REP.)
PRINT SIGNATURE

DATE _____ CITY/AGENCY NAME _____ CONTACT NO. _____

REASON FOR APPROVAL: _____

_____

EBMUD REP _____ DATE _____

REJECTED: _____(AGENCY REP.)
PRINT SIGNATURE

DATE _____ CITY/AGENCY NAME _____ CONTACT NO. _____

REASON FOR REJECTION: _____

EBMUD REP _____ DATE _____

East Bay Municipal Utility District
Environmental Services Division
P.O. Box 24055, MS 702
Oakland, CA 94623-1055
Telephone (510) 287-1651 Fax (510) 287-0621

Grease Interceptor Pumping Frequency Conditional Variance

I, _____
(Business Representative's Name Printed)

Representing _____
(Business Name and Address Printed)
certify that at no time shall any fats, oil, grease, or solids be discharged to the community sewer collection system in quantities that impair wastewater flow. I also certify that the food handling operations taking place at the above named business and address do not generate fats, oil and grease in quantities to require interceptor pumping at the frequency required in the Food Handling Facility Wastewater Discharge Permit (Permit). I understand that the above named business will pump at a schedule that allows all conditions in Standard Terms and Conditions for Food Handling Facilities, Section E. III. to be met at all times. If at any time non-compliance with conditions defined in Standard Terms and Conditions, E. III. occurs, the above named business will immediately resume the pumping frequency established in my Permit.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

The grease interceptor pumping frequency conditional variance is not transferable.

The person signing this variance warrants that it has or has obtained the necessary consent and authority to execute this variance and to make this variance binding upon itself.

SIGNED _____DATE _____

CONTACT PHONE NUMBER _____

Supporting documentation must be submitted with application form.

Please Do Not Write Below This Line

APPROVAL: _____(AGENCY REP.)
PRINT SIGNATURE

DATE _____ CITY/AGENCY NAME _____ CONTACT NO. _____

REASON FOR APPROVAL: _____

_____

EBMUD REP _____ DATE _____

REJECTED: _____(AGENCY REP.)
PRINT SIGNATURE

DATE _____ CITY/AGENCY NAME _____ CONTACT NO. _____

REASON FOR REJECTION: _____

EBMUD REP _____ DATE _____

East Bay Municipal Utility District Environmental Services Division
P.O. Box 24055, MS 702
Oakland, CA 94623-1055
Telephone (510) 287-1727 Fax (510) 287-0621

Grease Interceptor Installation Conditional Waiver

I, _____
(Business Representative's Name Printed)

Representing _____
(Business Name and Address Printed)

certify that the business named above does not require a grease interceptor installation because it meets the definitions set forth in the *Food Handling Facility Wastewater Discharge Permit Standard Terms and Conditions, Section D. I.* If at any time non-compliance is detected with the Food Handling Facility Wastewater Discharge Permit issued to the business listed above, I understand that I must install, within ninety (90) days of receipt of notification by EBMUD, a grease interceptor of sufficient size and design to be acceptable to East Bay Municipal Utility District, the collection system owner, and the regulating Health Department.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

The Grease Interceptor waiver is not transferable.

The person signing this waiver warrants that it has or has obtained the necessary consent and authority to execute this waiver and to make this waiver binding upon itself.

SIGNED _____DATE _____

CONTACT PHONE NUMBER _____

Supporting documentation of business type must be submitted with application form

---

Please Do Not Write Below This Line

APPROVAL: _____(AGENCY REP.)
PRINT SIGNATURE

DATE _____ CITY/AGENCY NAME _____ CONTACT NO. _____

REASON FOR APPROVAL: _____

_____

EBMUD REP _____ DATE _____

REJECTED: _____(AGENCY REP.)
PRINT SIGNATURE

DATE _____ CITY/AGENCY NAME _____ CONTACT NO. _____

REASON FOR REJECTION: _____

EBMUD REP _____ DATE _____

EAST BAY MUNICIPAL UTILITY DISTRICT

Environmental Services Division
(510) 287-1651

Grease Trap Maintenance Log

For

_____

(establishment name)

Date Cleaned	Cleaned By	Where was grease disposed of?	Amount of grease removed (Record in inches)

DO NOT

POUR FATS, OILS OR GREASE DOWN THE DRAIN

HELPING TO PROTECT THE ENVIRONMENT

EAST BAY MUNICIPAL UTILITY DISTRICT ENVIRONMENTAL SERVICES HOTLINE: 510-287-1651

EBMUD

NO

VIERTA GRASAS O ACEITES AL DESAGÜE

AYUDANDO A PROTEGER EL MEDIO AMBIENTE

Línea Directa de Servicios Ambientales de EBMUD: 510-287-1651

EBMUD

不要

倒脂肪、油或油脂等物
下排水道

請幫助保護環境

東灣水務局環境保護部熱線電話：(510) 287-1651

EBMUD

기름 찌꺼기를
하수구에
버리지 맙시다

환경을 보호합시다.

이스트베이 상하수도 공사 (EBMUD) 환경관리과 핫라인 : 510-287-1651

EBMUD

ĐỪNG

ĐỔ CHẤT BÉO, DẦU HOẶC MỠ XUỐNG CỐNG RÃNH

GIÚP BẢO VỆ MÔI TRƯỜNG

SỐ ĐIỆN THOẠI KHẨN CẤP CHO DỊCH VỤ VỀ MÔI TRƯỜNG : 510-287-1651

EBMUD

APPENDIX M - SYSTEM EVALUATION AND CAPACITY ASSURANCE PLAN

PORT OF OAKLAND

530 Water Street
Oakland, CA 94607
(510) 627-1100

SYSTEM EVALUATION AND CAPACITY ASSURANCE PLAN

May 2010

Prepared By

Carollo Engineers, P.C.
7580 North Ingram Avenue
Fresno, CA 93711
(559) 436-6616

carollo
Engineers...Working Wonders With Water™

PORT OF OAKLAND

SYSTEM EVALUATION AND CAPACITY ASSURANCE PLAN

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SYSTEM EVALUATION AND CAPACITY ASSURANCE PLAN

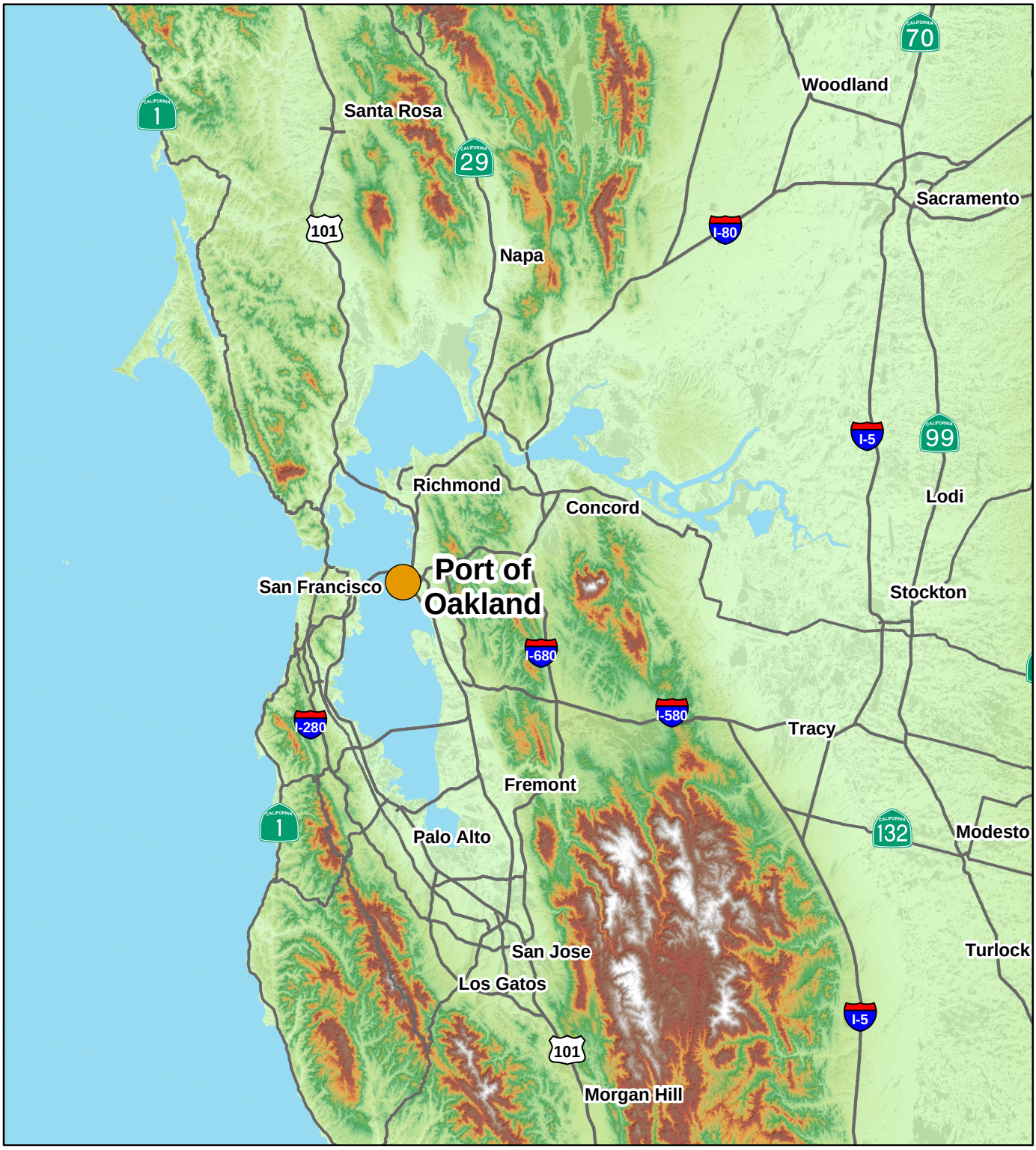
1.0 INTRODUCTION

In 1927, the Charter of the City of Oakland (City) established the Port of Oakland (Port) as a fully autonomous City department. The Port is located on the eastern mainland shore of San Francisco Bay in the City, as shown on Figure 1. Under the City Charter, exclusive control and management of the Port is vested in the Port Board of Commissioners, which is a board consisting of seven members nominated by the Mayor of Oakland and appointed by the Oakland City Council.

The Port is broken down into three major revenue divisions: Maritime, Aviation, and Commercial/Real Estate.

- **Maritime Division.** The Port owns and manages seaport facilities on the San Francisco Bay and the Oakland Estuary, which consist of ten marine container terminals, two intermodal rail facilities, and maritime support areas. The Port also leases and rents facilities used in cargo transport.
- **Aviation Division.** The Aviation Division consists of two main areas: the Southfield and the Northfield.
  - Airport Southfield. The Southfield consists primarily of the Oakland International Airport (OAK) main terminals, as well as other privately operated airport support facilities. OAK consists of two terminals and 29 boarding gates. The airport includes eight domestic airlines, two international airlines, and three cargo airlines. Food, beverage, retail, and duty free concessions are provided primarily through Host International, as well as a few other concessionaires.
  - Airport Northfield. The Northfield consists primarily of fixed base operators (e.g., Business Jet Center, KaiserAir, etc.), providing fueling, maintenance, and charter flight services. Rental Car services are also located in the Northfield.
- **Commercial/Real Estate Division.** The Commercial/Real Estate Division owns and manages roughly 900 acres of developable land located west of Embarcadero and south of the Port of Oakland office building. The centerpiece of the Commercial/Real Estate Division is Jack London Square, although other development areas are owned by the Port. Jack London Square consists of several waterfront bars/restaurants, hotels, and other retail establishments. These buildings are leased out by the Port to individual tenants, who are responsible for building and facility maintenance through their lease agreements with the Port.

In addition to the three revenue divisions, the Port also operates several administrative or support divisions (e.g., Engineering, Finance, Environmental Programs and Planning, etc.).



Elevation

High : 3,500 Feet

Low : Sea Level

Major Roads

Figure 1
Regional Location Map
System Evaluation and
Capacity Assurance Plan
Port of Oakland

PORT OF OAKLAND

carollo

Revision Date: April 23, 2010

1.1 Scope and Authorization

On May 8, 2009, the Port approved a professional service agreement with Carollo Engineers, P.C. (Carollo) to prepare a Port-Wide Sewer System Management Plan (SSMP), which included the following main tasks:

- Information gathering and records review;
- Condition assessment, system inspection, evaluation, mapping, and hydraulic modeling;
- SSMP development.

This System Evaluation and Capacity Assurance Plan (SECAP) is a key aspect of the Port-wide SSMP, and has been developed under the approved professional service agreement identified above. The purpose of the SECAP is to identify capacity deficiencies in the wastewater collection system, develop feasible alternatives to correct these deficiencies, and plan the infrastructure that accommodates future wastewater flows.

1.2 Regulatory Requirements

1.2.1 San Francisco Bay Area RWQCB Requirements

The San Francisco Bay Area Regional Water Quality Control Board (RWQCB) requires the following:

a. Each wastewater collection system agency shall establish a process to assess the current and future capacity requirements for the collection system facilities.

b. Each wastewater collection system agency shall prepare and implement a CIP to provide hydraulic capacity of key sewer system elements under peak flow conditions.

The RWQCB allows for this element to be waived for collection systems that serve a population of 10,000 or less. However, the State Water Resources Control Board (SWRCB) requirements do not allow for such a waiver. Therefore, the Port must prepare a Port specific SECAP.

1.2.2 SWRCB Requirements

State General Waste Discharge Requirements Order No. 2006-0003 (GWDRs), issued by the SWRCB, requires that the Port prepare and implement a CIP that will provide hydraulic capacity for peak dry weather flows as well as the appropriate design storm or wet weather event. The SSMP must address, at a minimum, the following:

a. **Evaluation**. Actions needed to evaluate those portions of the sanitary sewer system that are experiencing or contributing to a sanitary sewer overflow (SSO) discharge caused by hydraulic deficiency. The evaluation must provide estimates of peak flows (including flows from SSOs that escape from the system) associated with conditions similar to those causing overflow events,

estimates of the capacity of key system components, hydraulic deficiencies (including components of the system with limiting capacity) and the major sources that contribute to the peak flows associated with overflow events;

b. **Design Criteria**. Where design criteria do not exist or are deficient, undertake the evaluation identified in (a) above to establish appropriate design criteria;

c. **Capacity Enhancement Measures**. The steps needed to establish a short- and long-term CIP to address identified hydraulic deficiencies, including prioritization, alternatives analysis, and schedules. The CIP may include increases in pipe size, infiltration and inflow (I/I) reduction programs, increases and redundancy in pumping capacity, and storage facilities. The CIP shall include an implementation schedule and shall identify sources of funding; and

d. **Schedule**. The Enrollee shall develop a schedule of completion dates for all portions of the capital improvement program developed in (a) - (c) above. The schedule shall be reviewed and updated consistent with the SSMP review and update requirements as described in Section D.14 (of the GWDRs).

1.3 Organization

This SECAP report contains seven sections, followed by appendices that provide supporting documentation for the information presented in the report. The section are organized as follows:

- Section 1 - Introduction
- Section 2 - Study Area Description
- Section 3 - Planning Criteria
- Section 4 - Wastewater Design Flows
- Section 5 - Wastewater Collection System Facilities and Hydraulic Model
- Section 6 - Capacity Evaluation and Proposed Improvements
- Section 7 - Capital Improvement Project Costs

1.4 Abbreviations

To conserve space and to improve readability, the following abbreviations are used in this report. The abbreviations are spelled out in the text the first time the phrase or title is used and subsequently identified by abbreviation only.

AACE	Association for the Advancement of Cost Engineering
ADF	Average Day Flow
ADWF	Average Dry Weather Flow
BWF	Base Wastewater Flow

City	City of Oakland
Carollo	Carollo Engineers, P.C.
CCTV	Closed Circuit Television
CIP	Capital Improvement Projects
d/D	Flow Depth to Pipe Diameter Ratio
DWF	Dry Weather Flow
EBMUD	East Bay Municipal Utility District
ENR CCI	Engineering News Record Construction Cost Index
EPA	United States Environmental Protection Agency
FOG	Fats, Oil, and Grease
fps	Feet per Second
GIS	Geographic Information System
gpd	Gallons per Day
GWDRs	General Waste Discharge Requirements Order No. 2006-0003
GWI	Groundwater Infiltration
I/I	Infiltration and Inflow
MWWTP	Main Wastewater Treatment Plant
NOAA	National Oceanic and Atmospheric Administration
NRCS	Natural Resources Conservation Service
OAK	Oakland International Airport
Port	Port of Oakland
PWWF	Peak Wet Weather Flow
ROW	Right-of-Way
RWQCB	San Francisco Bay Area Regional Water Quality Control Board
SECAP	System Evaluation and Capacity Assurance Plan
SSMP	Sewer System Management Plan

SSO	Sanitary Sewer Overflow
SWRCB	State Water Resources Control Board
USDA	United States Department of Agriculture
WWF	Wet Weather Flow

1.5 Reference Material

The following documents were referenced primarily in the preparation of this report:

- City of Oakland, Sanitary Sewer Management Plan, August 2008.
- EBMUD, Sewer System Management Plan, May 2008.
- Port of Oakland Sanitary Sewer Flow Monitoring and Inflow/Infiltration Study, April 2010, V&A

2.0 STUDY AREA DESCRIPTION

This chapter presents a description of the study area and identifies areas serviced by sanitary sewers within the Port.

2.1 Study Area

Figure 2 illustrates the Port's sanitary sewer service area, which is synonymous with the study area for this SECAP. Wastewater flows generated within the study area are conveyed through the Port collection system to the City's sanitary sewer system or directly to sewer interceptors owned and maintained by the East Bay Municipal Utility District (EBMUD). All Port wastewater flow is treated at EBMUD's Main Wastewater Treatment Plant (MWWTP).

Sanitary sewer facilities in the study area can be divided into five primary ownership or maintenance categories, as outlined below (see Chapter 5 of the SSMP for more information on the sewer maintenance responsibilities):

- **Port Owned, Port Maintained.** These facilities are located on Port property, and are owned and maintained by Port operations staff. Approximately 30 miles of sewer lines ranging in diameter from 3 to 36-inches fall into this category. Twenty-one lift stations and two sewer ejectors also fit into this category.
- **City Owned, Port Maintained.** These facilities are located within the Port's boundaries, are located within City right-of-way and are also owned by the City, but are maintained by Port operations staff. Approximately 4 miles of sewer lines ranging in diameter from 6 to 30-inches fall into this category. Three lift stations also fit into this category.

Legend

Service Area

Feet

0 2,500 5,000

Figure 2
Current Sanitary Sewer Service Area
System Evaluation and Capacity Assurance Plan
Port of Oakland

PORT OF OAKLAND carollo

Revision Date: April 23, 2010

- **Port Owned, Privately Maintained.** These facilities are located on Port property, but are maintained by private non-Port property managers, for example the Jack London Square area. Approximately 3 miles of sewer fall into this category and in 2011 an additional 1.5 miles of 8-inch diameter sewer lines will be added. One lift station also fits into this category.
- **City Owned, City Maintained.** These facilities are located on Port property within City easements, and are owned and maintained by the City. Therefore, the Port is not responsible for maintaining these facilities or for responding to and reporting SSOs within these facilities.
- **Port Owned, Port Maintained, Out of Service.** These facilities are owned by the Port on existing Port property, but are currently not in service. The majority of these facilities are located at the Oakland Army base, which is planned for redevelopment. Most of the sewer laterals or mains in this area are currently plugged.

2.2 Planning Period

The study area is intended to include areas within the Port's jurisdiction which could be serviced by sanitary sewers through the year 2030. Existing and projected wastewater flows are discussed in Section 4.0.

2.3 Occupied Buildings Serviced by Sanitary Sewer

Maps identifying Port owned building footprints were reviewed with Port staff to determine which buildings are currently occupied and served by the sanitary sewer system. These buildings are shown on Figure 3 for reference.

3.0 PLANNING CRITERIA

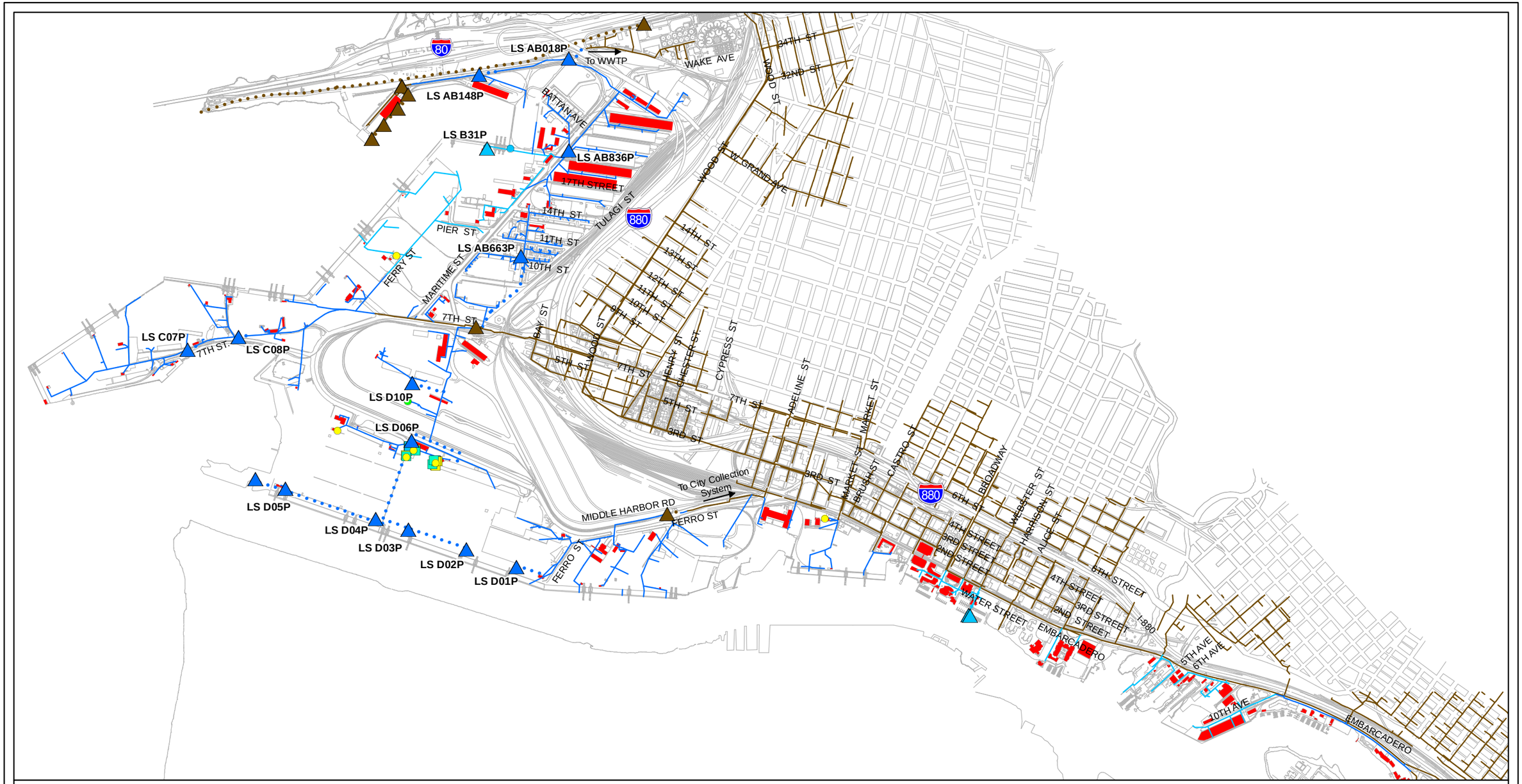
Capacity analysis of the wastewater collection system was performed in accordance with the criteria established in this section. These criteria are consistent with the Port's sanitary sewer design standards, as well as the City of Oakland's design standards.

3.1 Gravity Sewers

Sewer pipe capacities are dependent on many factors, including roughness of the pipe, the maximum allowable depth of flow, minimum velocity, and slope of pipe.

3.1.1 Manning Coefficient (n)

The Manning coefficient 'n' is a friction coefficient and varies with respect to pipe material, size of pipe, depth of flow, smoothness of pipe and joints. For sewer pipes, the Manning coefficient typically ranges between 0.011 and 0.017, with 0.013 being a typical value used for sewer system planning.



Legend

- Clarifier
- Drain Box
- Diverter Box
- Diversion Structure
- Grease Interceptor/Trap
- Grinder Pump
- Trench Drain
- Triturator
- Sewer Ejector
- Oil Interceptor
- Oil/Water Separator
- Valve Box

Existing Port Owned and/or Maintained Sewer System

- Lift Station

Pipelines

- Gravity Main
- Force Main

Privately Maintained Facilities

- Lift Station
- Gravity Main
- Force Main

City of Oakland/ EBMUD Facilities

- Lift Station
- Gravity Main
- Force Main

- Occupied Buildings Serviced by Sanitary Sewer
- Base Map

N

0 1,500 3,000 Feet

Figure 3
Occupied Buildings Serviced by Sanitary Sewer (1 of 2)
System Evaluation and Capacity Assurance Plan
Port of Oakland

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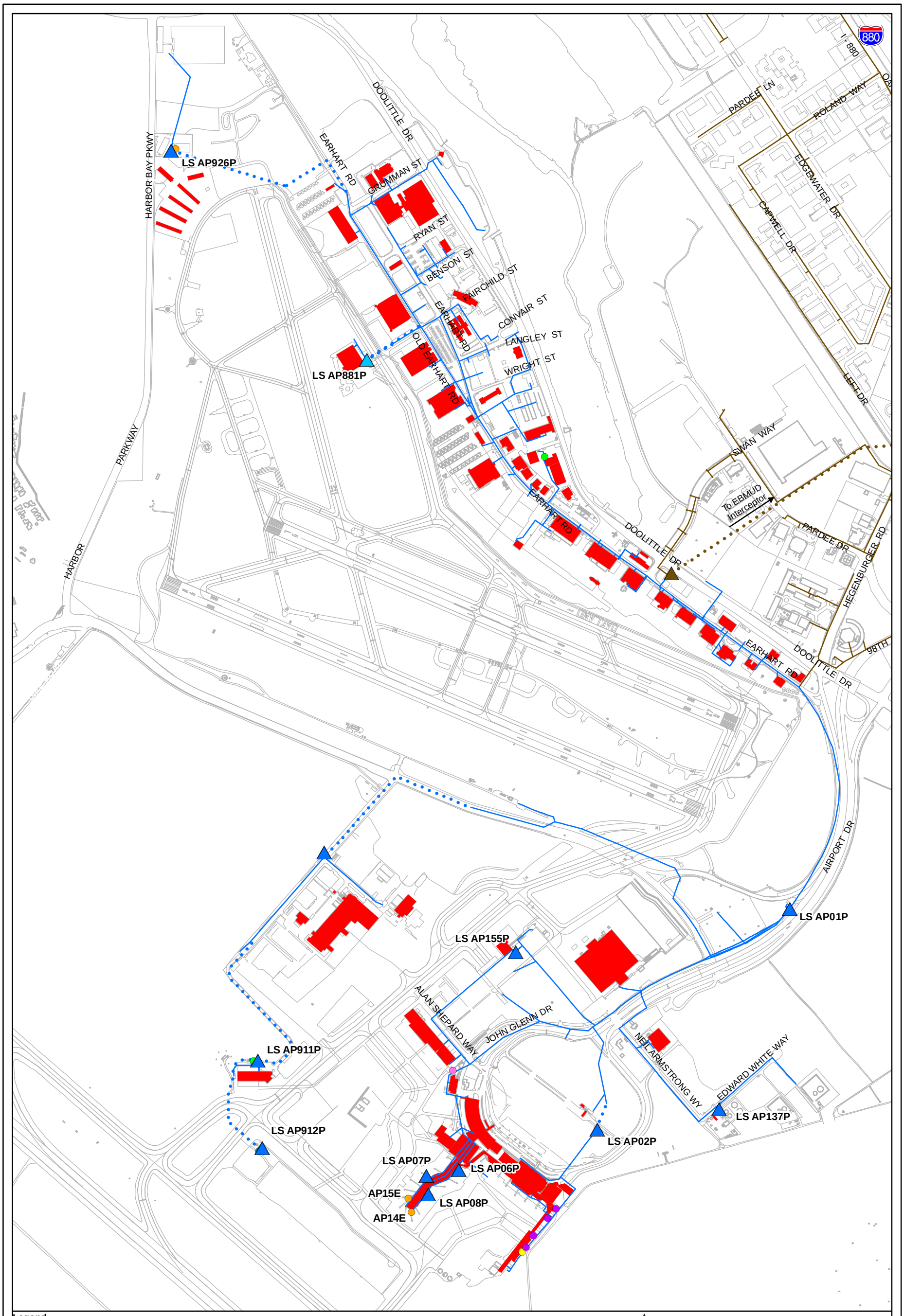


Figure 3
Occupied Buildings Serviced by Sanitary Sewer (2 of 2)
System Evaluation and Capacity Assurance Plan
Port of Oakland

Revision Date: April 23, 2010

3.1.2 Flow Depth Criteria (d/D)

The primary criterion used to identify capacity deficient trunk sewers or to size new improvements is the maximum flow depth to pipe diameter ratio (d/D). The d/D value is defined as the depth (d) of flow in a pipe during peak flow conditions divided by the pipe's diameter (D).

3.1.2.1 Flow Depth for Existing Sewers

Using a conservative d/D ratio when evaluating existing sewers may lead to unnecessary replacement of existing pipelines. Therefore, a d/D ratio of 1.0 was used to evaluate the existing sewer system for peak wet weather flow (PWWF) (this is typically the maximum hourly flow in the collection system). If the flow depth was greater than the maximum allowed, then the sewer was deemed deficient and a larger sewer was proposed to provide greater flow capacity.

3.1.2.2 Flow Depth for New Sewers

When designing new sewers, it is common practice to adopt variable flow depth criteria for different pipe sizes. Design d/D ratios typically range from 0.5 to 0.92, with the lower values used for smaller pipes, which may experience flow peaks greater than design flow or may experience blockages from debris, paper or rags.

The maximum d/D ratio corresponding to a certain design flow condition depends on the pipe diameter as shown in Table 1.

Table 1 Maximum Allowable d/D Ratio for New Sewers
System Evaluation and Capacity Assurance Plan
Port of Oakland

Pipe Diameter (in.)	Maximum d/D Ratio (at Design Flow)
Less than 12	≤ 0.50
12 to 18	≤ 0.67
Larger than 18	≤ 1.00

3.1.3 Design Velocities and Minimum Slopes

In order to minimize the settlement of sewage solids, gravity sewers should be designed for a minimum velocity of 2 feet per second (fps) (based on roughness coefficient of 0.013). At this velocity, the sewer flow will typically provide self-cleaning for the pipe. Table 2 lists the recommended minimum slopes and their corresponding maximum flows for maintaining self-cleaning velocities (equal to or greater than 2 fps) when the pipe is flowing at its maximum depth.

Table 2 Minimum Slope for New Sewer Pipes System Evaluation and Capacity Assurance Plan Port of Oakland				
Pipe Diameter (in.)	Minimum Slope [1][2] (ft/ft)	Calculated Flow at Maximum d/D Criterion [2][3]		
		d/D	(cfs)	(mgd)
8	0.0033	0.50	0.35	0.23
10	0.0025	0.50	0.55	0.35
12	0.0019	0.67	1.23	0.80
15	0.0014	0.67	1.92	1.24
18	0.0011	0.67	2.77	1.79
21	0.0009	1.00	4.81	3.11
24	0.0008	1.00	6.28	4.06
27	0.0007	1.00	7.95	5.14
30	0.0006	1.00	9.82	6.35
36	0.0006	1.00	16.38	10.59
42	0.0006	1.00	24.71	15.97

Notes:
1. Recommended minimum slope for design flow at maximum d/D and at minimum velocity of 2 ft/s.
2. Manning's n = 0.013
3. Calculated flow is determined using the minimum slope and the maximum allowable d/D presented in Table 1.

3.1.4 Changes in Pipe Size

When a smaller sewer joins a large one, the soffit elevation of both pipes is matched to maintain the same energy gradient.

3.2 Lift Stations and Force Mains

A minimum of two (2) non-clog, submersible pumps specifically designed for conveying raw wastewater should be installed in each lift station. If two pumps are to be installed, each should be capable of independently conveying the design flow with the second pump serving as standby. If three or more pumps are to be installed, the firm capacity of the lift station, which is defined as the total pumping capacity of the lift station less the capacity of the largest pump, should be sufficient to convey the design flow.

Force main piping should be sized to provide a minimum velocity of 3 fps at the design flow rate of the lift station and no more than 8 fps.

For the determination of head loss, the Hazen Williams Equation was used with a C factor of 100.

4.0 SEWER DESIGN FLOWS

This section summarizes the flow monitoring program and presents the calculation of the design flows used to model the existing and future sewer system.

4.1 Flow Monitoring Program

Temporary flow monitoring was conducted to assist in the development of design flow criteria, and to correlate actual sewer system flows to the hydraulic model predicted flows. Flow monitoring data are used to calibrate the wastewater collection system hydraulic model for dry weather and wet weather flow. The "Sanitary Sewer Flow Monitoring, and Inflow/Infiltration Study" prepared by V&A Consulting Engineers, Inc. summarizes the flow monitoring program and is included in Appendix A for reference.

The primary purpose of flow monitoring is to measure flow contributions from different areas of the collection system. The flow monitoring period was conducted for approximately eight weeks from December 10, 2009 through January 26, 2010 at 8 monitoring sites, at locations selected by Carollo. Figure 4 illustrates the flow meter locations. The meter sites were selected to best model the sewer areas and multiple sub-areas within the sewer system.

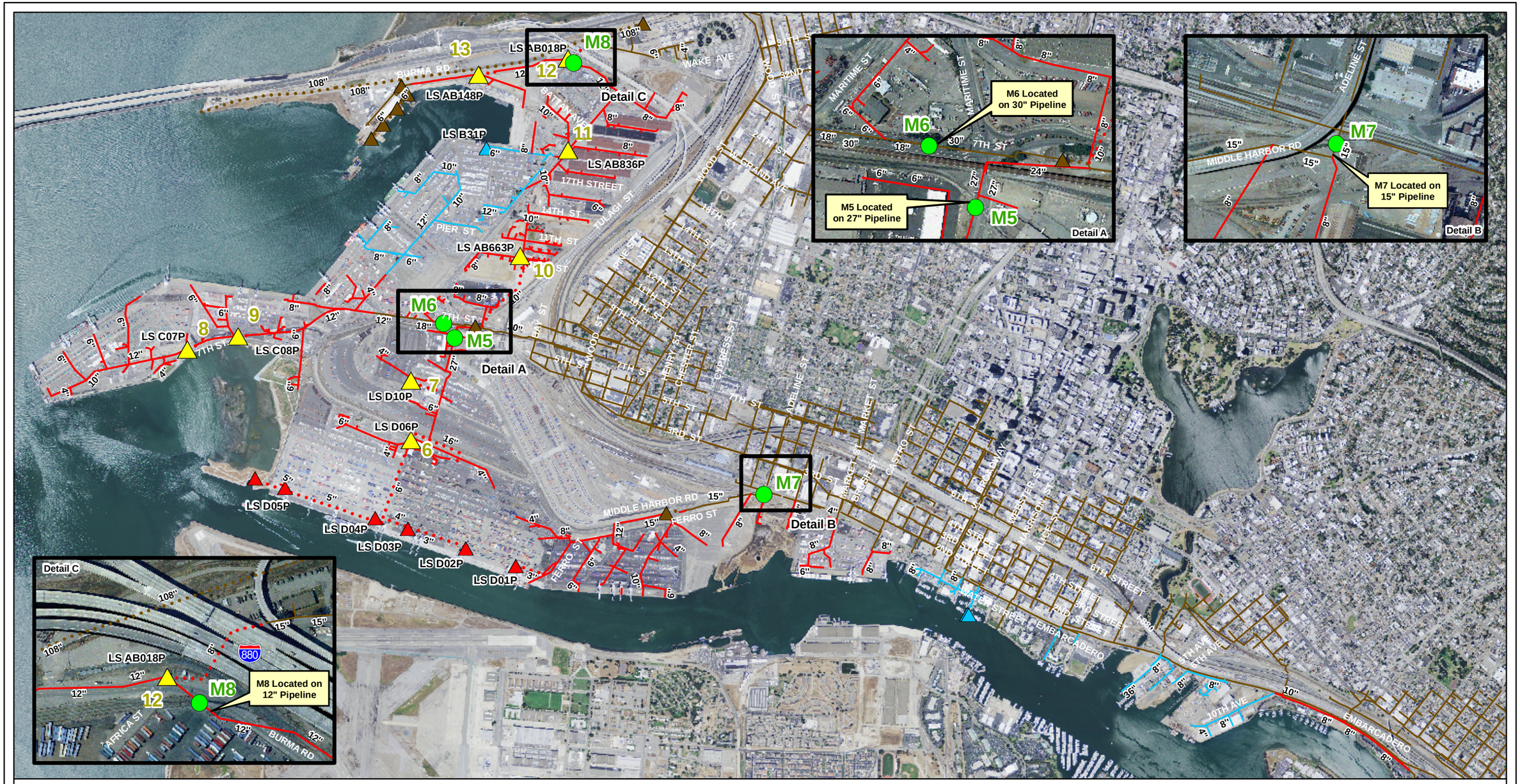
4.2 Flow Monitoring Results

4.2.1 Average Day Flow Data

During the flow monitoring period, depth and velocity data were collected at each meter at 5-minute intervals. The 5-minute data was then aggregated to 15-minute and hourly data for the dry weather flow calibration effort. Characteristic dry weather 24-hour diurnal flow patterns for each site were developed based on the hourly data. This hourly flow data was then used to calibrate the hydraulic model for average day flow (ADF). A summary of the ADF for the eight flow meters is presented in Table 3. The flow data indicated that the average weekday flows were generally similar to the average weekend flows; however, the diurnal patterns occasionally differed. For this study, the weekday flow averages and diurnal patterns were used for calibration and analysis.

4.2.2 Rainfall Data

One rain gauge was installed within the Port to record rainfall data during the flow monitoring period. The most significant rainfall events were captured from January 16 through January 26, 2010. During that time period, a total of 4.48-inches of rainfall were measured. The largest daily rainfall total was 1.22-inches, which occurred on January 20, 2010.



Legend

- Flow Meter
- Lift Station Meter

Existing Port Owned and/or Maintained Sewer System

- Lift Station

Pipelines

- Gravity Main
- Force Main

Privately Maintained Facilities

- Lift Station
- Gravity Main
- Force Main

City of Oakland/ EBMUD Facilities

- Lift Station
- Gravity Main
- Force Main

N

0 1,500 3,000 Feet

Figure 4
Flow Monitoring Locations (1 of 2)
System Evaluation and Capacity Assurance Plan
Port of Oakland

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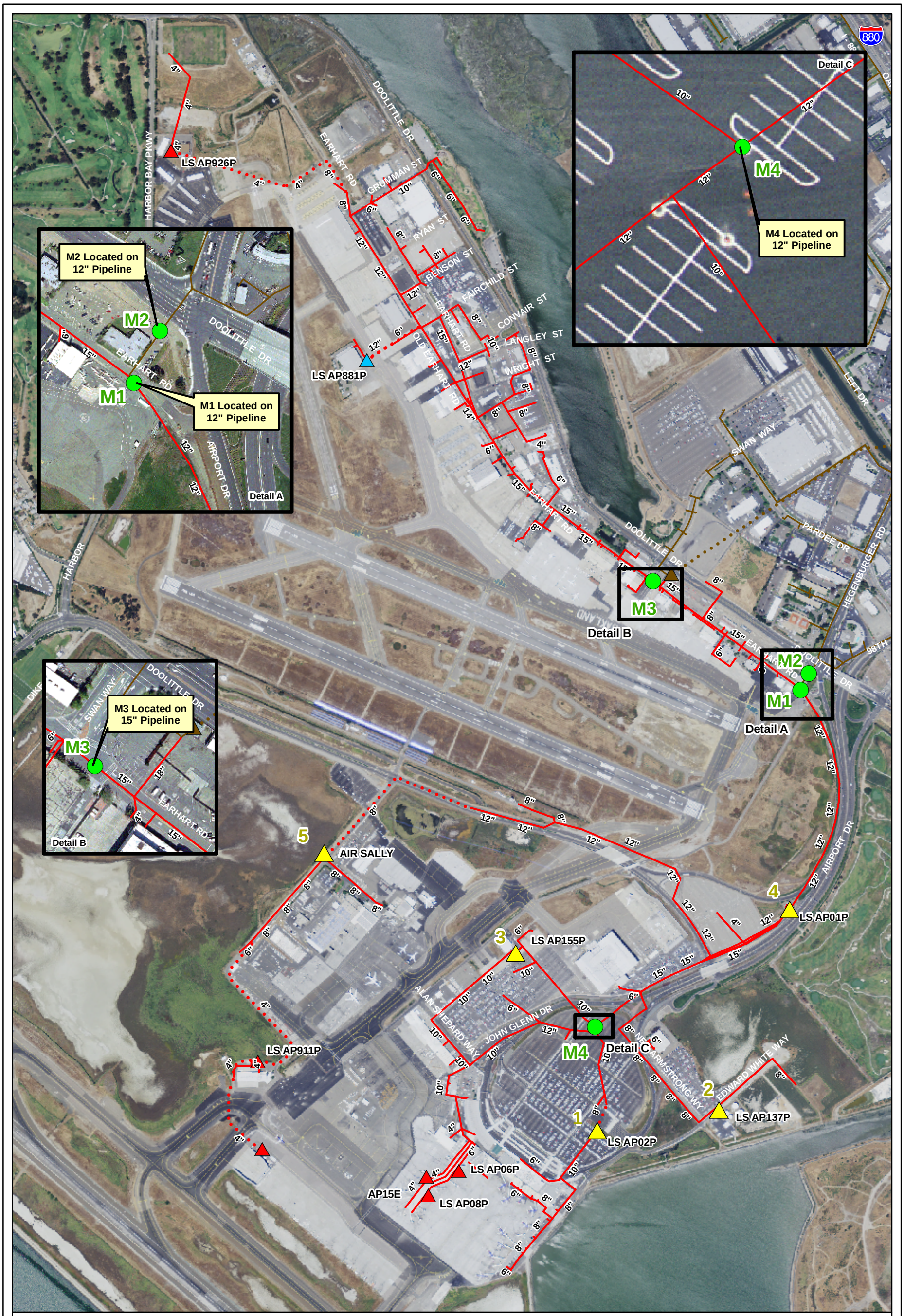


Legend

- Flow Meter
- Lift Station Meter

Existing Port Owned and/or Maintained Sewer System

- Lift Station

Pipelines

- Gravity Main
- Force Main

Privately Maintained Facilities

- Lift Station
- Gravity Main
- Force Main

City of Oakland/ EBMUD Facilities

- Lift Station
- Gravity Main
- Force Main

N

0 500 1,000 Feet

Figure 4
Flow Monitoring Locations (2 of 2)
System Evaluation and Capacity Assurance Plan
Port of Oakland

PORT OF OAKLAND carollo

Revision Date: April 23, 2010

Table 3 Average Day Flow Summary System Evaluation and Capacity Assurance Plan Port of Oakland						
	Average Weekday Flow (mgd)			Average Weekend Flow (mgd)		
Meter Site	Daily Min.[3]	Daily Average[2]	Daily Max.[3]	Daily Min.[3]	Daily Average[2]	Daily Max.[3]
1	0.040	0.113	0.189	0.040	0.093	0.141
2	0.046	0.088	0.119	0.047	0.073	0.094
3	0.063	0.103	0.147	0.063	0.080	0.102
4	0.019	0.078	0.110	0.012	0.073	0.111
5	0.004	0.013	0.026	0.004	0.007	0.010
6	0.055	0.078	0.100	0.074	0.086	0.096
7	0.050	0.062	0.087	0.049	0.056	0.064
8	0.054	0.054	0.054	0.054	0.055	0.056

Notes:
1. Source: Sanitary Sewer Flow Monitoring and Inflow/Infiltration Study
2. Average daily flows calculated from data.
3. Average of the daily minimum and peak flows. Values represent hourly values (not instantaneous values).

4.2.3 Wet Weather Flow Data

Flow monitoring data was also evaluated to determine how the collection system responds to wet weather events. As mentioned above, the largest rainfall events occurred from January 16 through January 27, 2010. These events caused a sufficient I/I response to be used for I/I analysis. Table 4 provides a summary of the I/I measured from January 16 through January 27, 2010. Based on this data, it appears that sewers tributary to Meter 5 experience the greatest contribution from I/I, when compared to the ADF.

4.2.4 Design Storm Data

Design storms are rainfall events used to analyze the performance of a collection system under peak flows and volumes, and have specific recurrence intervals and rainfall duration. The development of a design storm can be accomplished in different ways. If data is not available, a synthetic design storm can be developed. A 10-year, 24-hour design storm is typical for modeling collection systems. For this study, a 10-year, 24-hour design storm was developed based on the Type 1A synthetic rainfall distribution established by the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS, formerly the Soil Conservation Service). The 10-year, 24-hour Rainfall depth was estimated to be 3.5-inches using precipitation-frequency maps published by the National Oceanic and Atmospheric Administration (NOAA). Figure 5 shows the distribution of the 10-year, 24-hour design storm.

Table 4	I/I Results Summary System Evaluation and Capacity Assurance Plan Port of Oakland			
Meter	ADF[(2)] (mgd)	Estimated I/I (gal)	Peak I/I Rate (mgd)	Peak I/I Rate to ADF Ratio
1	0.11	601,000	0.56	5.25
2	0.08	530,000	0.33	3.93
3	0.10	1,089,000	0.66	6.87
4	0.08	83,000	0.11	1.40
5	0.01	163,000	0.42	37.21
6	0.08	848,000	1.04	12.95
7	0.06	890,000	0.70	11.58
8	0.06	1,136,000	0.30	5.57

Notes:
1. Source: Sanitary Sewer Flow Monitoring and Inflow/Infiltration Study
2. Average daily flows calculated from data.

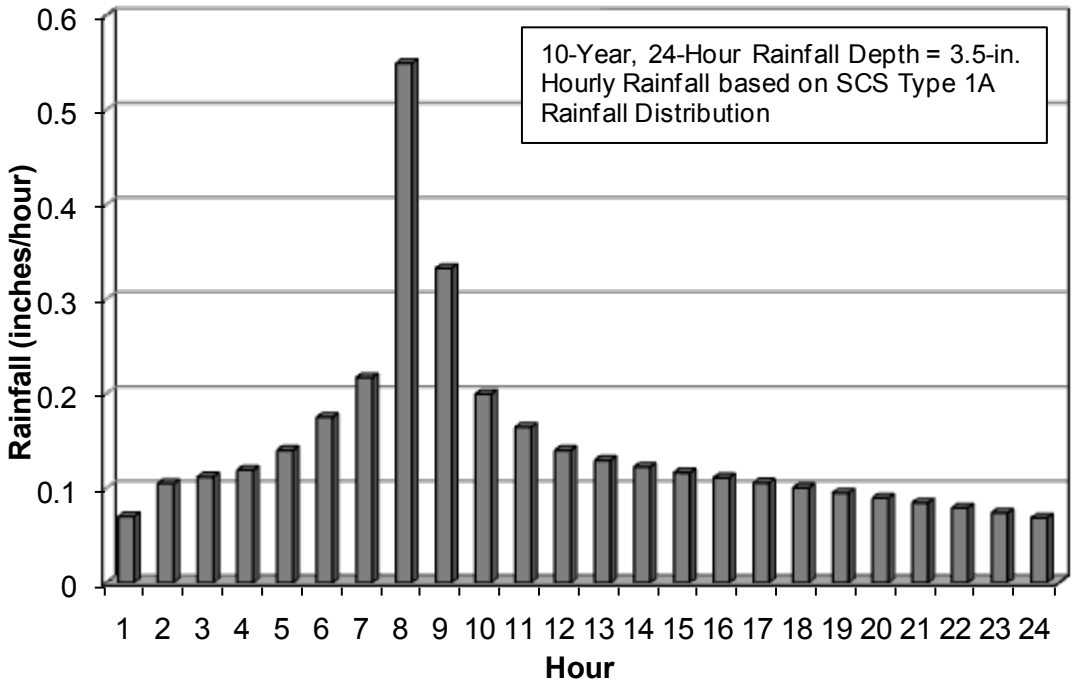


Figure 5 10-Year, 24-Hour Design Storm

Additional items to note regarding the temporary flow-monitoring program include the following:

- **Sediment Deposits:** Meters 5 and 6 both had deposited sediment. It was estimated that Meter 6 had roughly 2.25-inches of deposited sediment, and Meter 5 had roughly 7.6-inches of deposited sediment. Solids deposition reduces the effective area of a given pipeline, which tends to reduce pipeline capacity and increase flow depths (d/D).

- **Tidal Infiltration:** Meter 8 exhibited a clear trend of increased flow once or twice daily that appears to be attributable to tidal infiltration. The flow monitoring data indicate that sea water infiltrates the collection system upstream of Meter 8 whenever the tide level exceeds roughly 4.2 feet. The amount of tidal infiltration measured during the flow monitoring period has been estimated at approximately 19,000 gallons per day (gpd) within the sewers tributary to Meter 8.

- **Surcharged Conditions:** During the flow monitoring period, three of the eight flow meters experienced surcharged conditions (i.e. flow depth greater than the pipe crown), as outlined below:
  - Meter 3. The maximum flow depth observed at Meter 3 was 7.7-inches over the pipe crown. This was caused by the operational controls of EBMUD's Lift Station G.
  - Meter 7. Meter 7 also surcharged up to 5.7-inches over the pipe crown. Based on the pipeline's capacity and compared to the flow rates measured during the flow monitoring period, it appears that the observed surcharged condition is attributable to backwater effects from sewers located downstream of Meter 7, which are not owned or maintained by the Port.
  - Meter 8. The most severe flow backup was observed at Meter 8. On January 18, 2010, the flow depth at Meter 8 increased rapidly. The following day (January 19, 2010), the flow depth briefly receded back to normal. A few hours later, the flow depth increased again and remained surcharged for a period of roughly 5 days before dropping back to normal levels. The maximum depth of flow observed during this period at Meter 8 was about 98-inches, or 8.1 feet, above the pipe crown. The most likely cause of the surcharged condition was a failure or blockage at Lift Station AB018P, which is located downstream of Meter 8.

4.3 Wastewater Flow Components

Wastewater consists of dry weather flow (DWF) and wet weather flow (WWF). DWF (or base flow) is flow generated by routine water usage in the various sectors of the sewer system. The other component of DWF is the contribution of dry weather groundwater infiltration (GWI) into the sewer system. Dry weather GWI will enter the sewer system when

the relative depth of the groundwater table is higher than the depth of the pipeline and when the susceptibility of the sanitary sewer pipe allows infiltration through defects such as cracks, misaligned joints and broken pipelines. In the Port's sewer service area, dry weather GWI may be considerable because of the shallow depth to groundwater and its vicinity to the bay.

WWF includes storm water inflow, trench infiltration, and GWI. The storm water inflow and trench infiltration comprise the WWF component termed infiltration and inflow (I/I). The response in the sewer system to rainfall is seen immediately (as with inflow) or within hours after the storm (as with infiltration).

The third element of WWF is GWI, which is not specific to a single rainfall event, but rather to the effects on the sewer system over the entire wet weather season. The depth of the groundwater table rising above the pipe invert elevation causes GWI.

Sewer pipes within close proximity to a body of water can be greatly influenced by groundwater effects. As the groundwater table fluctuates over the wet weather season, this fluctuation is seen as a mounding effect in flow monitoring data. A description of each flow component is detailed in the following sections.

4.3.1 Base Wastewater Flow

The base wastewater flow (BWF) is the flow generated by the Port's customers. The flow has a diurnal pattern that varies depending on the type of use. Commercial and industrial patterns, though they vary depending on the type of use, typically have more consistent higher flows during business hours, and lower flows at night. Furthermore, the diurnal flow pattern experienced during a weekend may vary from the diurnal flow experienced during a weekday.

4.3.2 Groundwater Infiltration

GWI, one of the components of I/I, is associated with extraneous water entering the sewer system through defects in pipes and manholes. GWI is related to the condition of the sewer pipes, manholes, and groundwater levels. GWI may occur throughout the year, although rates are typically higher in the late winter and early spring. Dry weather GWI (or base infiltration) cannot easily be separated from BWF by flow measurement techniques. Therefore, dry weather GWI is typically grouped with BWF.

4.3.3 Average Dry Weather Flow

Average Dry weather flow (ADWF) is the average flow that occurs on a daily basis during the dry weather season, typically measured from June through September. The ADWF includes the BWF generated by the Port's customers, plus the dry weather GWI component. Since historical wastewater flow data are not available for the dry weather season, this study assumes that the ADWF condition would be similar to the average day flows measured during the flow monitoring period (see Table 3).

4.3.4 Infiltration and Inflow

Infiltration is defined as storm water flows that enter the sewer system by percolating through the soil and then through defects in pipelines, manholes, and joints. Examples of infiltration entry points are cracks in pipelines, misaligned joints, and root penetration. Inflow is defined as storm water that enters the sewer system via a storm drain cross connection to the sewer system. Examples of inflow entry points are roof drain and downspout connections, leaky manhole covers, and illegal storm drain connections.

The adverse effects of I/I entering the sewer system is that it increases both the flow volume and peak flows such that the sewer system is operating at or above its capacity. If too much I/I enters the sewer system, SSOs could occur. The flow monitoring and modeling results indicate that the Port's collection system does experience high rates of I/I.

4.3.5 Peak Wet Weather Flow (Design Flow)

Peak wet weather flow is the highest observed hourly flow that occurs following the design storm event. Wet weather I/I causes flows in the collection system to increase. PWWF is typically used for designing sewers and lift stations. Therefore, PWWF will be referred to as the design flow in this study. Port sewers and lift stations were evaluated based on their capacity to convey the design flow (PWWF). If the sewers violated the flow depth criterion, then they were considered capacity deficient for which improvements were proposed.

The WEF Manual of Practice FD-6 and ASCE Manual No. 62 recommends maintaining design flow to ADWF ratios below 3 to 4, with higher values indicative of pronounced I/I. The Port does not measure hourly flow variations throughout the system, however, based on the modeling results, we were able to derive peak flows throughout the system. This was accomplished by routing the 10-year, 24-hour design storm through the hydraulic model, which was calibrated to both dry weather and wet weather conditions (see Section 5.2.3).

4.4 Wastewater Flow Rates

Wastewater flow rates can be expressed in several ways. Typically, wastewater flows rates are expressed in terms of an average flow rate per gross or net land use area, or alternatively in terms of an average flow rate per equivalent dwelling unit. For the Port specifically, it is more appropriate to express wastewater flow rates in terms of the average flow per occupied building area, in the units of gallons per day per 1,000 gross square feet (gpd/1,000 sf). Table 5 summarizes the average flow per occupied building area for each of the eight flow monitoring points.

It is also useful to develop relationships between average flow from airport terminal and the number of passengers at OAK. During the months of December 2009 and January 2010 (corresponding to the flow monitoring period), the total passenger traffic at OAK was

1,528,868[1]. This equates to 24,659 passengers per day for the two month period. During this same period, the average wastewater flow from the terminal was roughly 68,950 gallons per day (gpd). Therefore, each passenger at the terminal is estimated to contribute roughly 2.8 gallons of wastewater.

Table 5 Wastewater Flow Coefficients
System Evaluation and Capacity Assurance Plan
Port of Oakland

Meter	Average Day Flow[(1)] (gpd)	Occupied Building Area, Tributary To Meter[(2)] (thousand square feet)	Flow Coefficient[(3)] (gpd/1,000 sf)
1	34,926	1,030	34
2	87,227	--[(4)]	--[(4)]
3	102,886	1,041	99
4	77,851	590	--
Terminal[(5)]	68,950	500	138
Bldg. M106/M112[(6)]	8,900	90	99
5	12,748	276	46
6	78,053	150	519
7	85,919	233	369
8	54,271	996	54

Notes:
1. Based on flow-monitoring data collected during Dec. 2009 and Jan. 2010. Values presented exclude flows from upstream meters, as applicable.
2. Values refer the gross floor area of active buildings serviced by sanitary sewer.
3. Flow Coefficient = ADF / (Building Area/1,000).
4. Meter 2 measures flow from the City of Oakland. Flows from this area are included in the hydraulic model as a point load.
5. Terminal Flow = Meter 4 Flow - Bldg. M106/M112 Flow (see Note 6).
6. Building M106 and M112 flows estimated using flow coefficient from Meter 3.

4.5 Average Day Flow Projections

Developing an accurate estimate of the quantity of wastewater is an important step in maintaining and sizing sewer system facilities, for both existing and future conditions. Existing wastewater flow rates are based on actual field measurements recorded during the flow-monitoring period (December 10, 2009 through January 26, 2010).

Future ADF projections were developed based on the following assumptions:

[1] Source: http://www.flyoakland.com/

- OAK passenger traffic will grow roughly 3 percent per year from 2010 through 2030[2];
- The ADF from OAK will grow at a rate of 3 percent per year, similar to the projected increase in passenger traffic; and
- The ADF associated with the Airport Northfield and Maritime areas will also increase at a rate of 3 percent per year through 2030.

Table 6 summarizes the year 2030 ADF, which was developed based on the aforementioned assumptions.

Table 6 Average Day Flow Projections
System Evaluation and Capacity Assurance Plan
Port of Oakland

Meter Site	Average Day Flow (mgd)	
	Existing(1)	Future(2)
1	0.113	0.210
2	0.088	0.162
3	0.103	0.192
4	0.078	0.145
5	0.013	0.024
6	0.078	0.145
7	0.062	0.160
8	0.054	0.100

Notes:
1. Source: Sanitary Sewer Flow Monitoring and Inflow/Infiltration Study
2. Future condition refers to year 2030.

4.6 Design Flows

The design flow is the maximum hourly flow rate under selected design storm and growth conditions. The design flow includes the ADF and the peak I/I rate. Typically, a design storm is routed through a hydraulic model to estimate the PWWF in a sewer system and to quantify the system's capacity. This study utilized the 10-year, 24-hour design storm rainfall pattern for generating the design flow in the sewer system ("design flow" is synonymous to peak wet weather flow).

As part of the wet weather calibration process (see Section 5.2.3), I/I parameters were established for each flow monitoring tributary area to match the I/I response that was

[2] Personal conversation with Port staff (Mr. Hugh Johnson) resulted in an assumed growth rate at OAK of three percent.

observed during the flow monitoring period. These parameters were also utilized to simulate the design flow for existing conditions.

On November 19, 2009, the United States Environmental Protection Agency (EPA) issued an administrative order requiring the City of Oakland, and therefore the Port, to take certain actions regarding their sewer collection systems. To meet the requirements of the administrative order, the Port will be required to identify and eliminate cross connections to the sanitary sewer system as part of an I/I reduction program. Implementation of such a program should reduce the amount and peak rate of I/I that enters the collection system. However, the amount of I/I reduction that could be achieved cannot be quantified at this point. Therefore, this study assumes that the future peak I/I rates will be similar to those simulated during existing design flow conditions. Based on this assumption, Table 7 summarizes the design flow for each flow meter tributary for both existing and future conditions.

In summary, the design flow consists of two components:

- Average day flow
- Wet weather inflow and infiltration

Table 7 Design Flow Summary
System Evaluation and Capacity Assurance Plan
Port of Oakland

Meter Site	ADF (mgd)		Design Flow (mgd)		Design Flow/ADF Peaking Factor	
	Existing[1]	Future[2]	Existing	Future[2]	Existing	Future[2]
1	0.11	0.21	0.87	1.01	7.7	4.8
2	0.09	0.16	0.59	0.69	6.8	4.2
3	0.10	0.19	0.86	0.97	8.3	5.1
4	0.08	0.15	0.28	0.37	3.6	2.6
5	0.01	0.02	0.65	0.67	50.0	27.9
6	0.08	0.15	1.43	1.49	18.3	10.2
7	0.09	0.16	0.82	0.88	9.6	5.5
8	0.05	0.10	0.96	1.01	17.7	10.0

Notes:
1. Based on meter data from Sanitary Sewer Flow Monitoring and Inflow/Infiltration Study
2. Future condition refers to year 2030.

5.0 COLLECTION SYSTEM FACILITIES AND HYDRAULIC MODEL

This section describes the development and calibration of the Port's wastewater collection system hydraulic model. This model was used to identify the sewer system's capacity deficiencies and to develop improvements to correct those deficiencies.

5.1 Wastewater Collection System Overview

The Port's sanitary sewer collection system consists of approximately 41 miles of active sewer pipelines ranging in size from 3-inches to 36-inches in diameter, 25 sewer lift stations, two (2) sewer ejectors, a triturator, several grease traps/interceptors, and several oil/water separators. The collection system is divided into three main subsystems: Aviation, Maritime, and Commercial/Real Estate. This section provides a brief overview of these three subsystems and Table 8 provides a summary of the sanitary sewer facilities in each subsystem.

Table 8 Sanitary Sewer Collection System Summary
System Evaluation and Capacity Assurance Plan
Port of Oakland

	Collection System			
	Aviation	**Maritime**	**Commercial/ Real Estate**	**Total**
Gravity Mains[(1)]				
Length (mi.)	13.0	22.1	3.9	39.0
Pipe Diameter Range (in.)	3" – 18"	4" – 30"	3" – 36"	3" – 36"
Force Mains[(1)]				
Length (mi.)	1.7	2.4	0.1	4.1
Pipe Diameter Range (in.)	4" – 12"	3" – 16"	2" – 3"	2" – 16"
No. of Lift Stations	11	14	0	25
No. of Sewer Ejectors	2	0	0	2

Note:
1. Lengths presented do not include abandoned sewers.

- **Aviation Collection System.** The Aviation sewer collection system serves OAK and associated facilities. Sewage from the airport terminal and other facilities located in the Southfield area of the system is ultimately routed north and west through 12-inch and 15-inch diameter gravity mains, into an EBMUD lift station located near Doolittle Drive and Swan Way. Sewage from the Northfield area, which primarily serves private airfields, is ultimately routed through a 15-inch diameter gravity main into the EBMUD lift station at Doolittle Drive and Swan Way.

- **Maritime Collection System.** The Maritime sewer collection system serves the Oakland seaport and other tenants in and near the former Oakland Army Base. The majority of sewage from the Maritime collection system is conveyed through a series of gravity sewers and sewer lift stations to the EBMUD lift station located near the intersection of 7th Street and Maritime Street. Sewage from a smaller area located in the northeast Maritime area is conveyed to Port lift station AB018P, which discharges into an EBMUD sewer main. Sewage from Port Berths 60 - 63 and 67 - 68 is ultimately discharged into the City sewer collection system at several points.

- **Commercial/Real Estate Collection System.** The Port owns, but does not operate, a small number of 6-inch, 8-inch, and 10-inch diameter sanitary sewer pipelines in Jack London Square and areas southeast of Jack London Square along Embarcadero. These pipes discharge into either the City collection system or directly into the EBMUD interceptor that runs parallel to Embarcadero.

5.1.1 Sewer Tributary Areas

As part of this study, the Port service area were divided into eight major sewer tributaries, corresponding to the flow monitoring locations identified in Section 4.1. Figure 6 presents the sewer tributaries for the Port collection system as defined in this study.

5.2 Sewer System Hydraulic Model

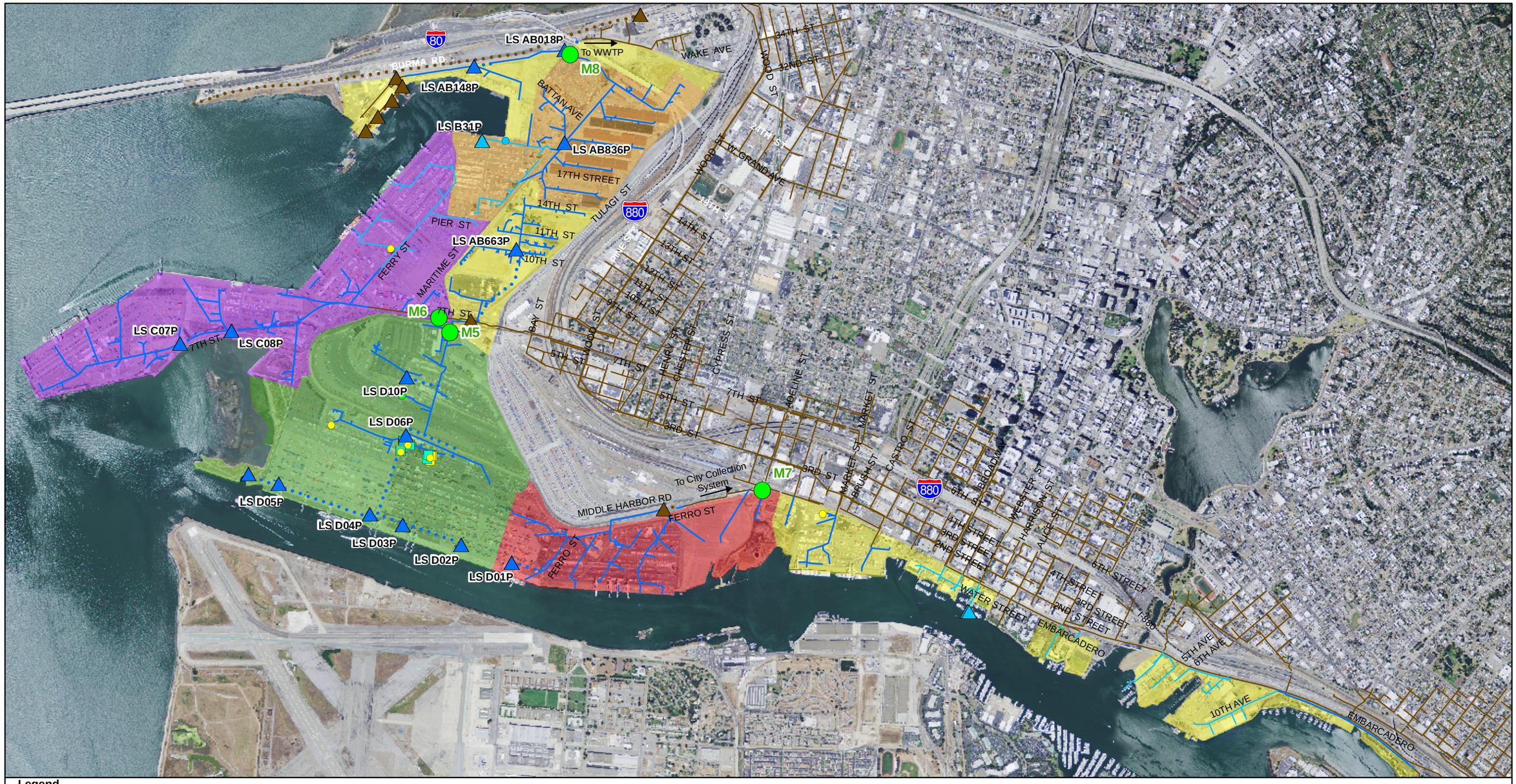
A wastewater collection system model is a simplified representation of the real sewer system. Sewer system models can assess the conveyance capacity for a collection system. Also, sewer system models can perform “what if” scenarios to assess the impacts of additional flows or modifications to the collection system.

5.2.1 Hydraulic Model Construction

The Port’s hydraulic model combines information on the physical and operational characteristics of the wastewater system, and performs calculations to solve a series of mathematical equations to simulate flows in pipes. The hydraulic model was developed based on available data collected from the Port’s, City’s, and EBMUD’s utility maps, design drawings, lift station summaries, field surveys, and appropriate assumptions.

Computer modeling requires gathering information of the sewer system, such as pipe diameters, lengths; invert elevations at the upstream and downstream manholes, pipe slope, manhole rim elevations, and wet well dimensions.

To construct the model, the wastewater collection system pipes, manholes, and lift stations were digitized in a geographic information system (GIS) format. The GIS platform allows physical attribute data for each pipeline and manhole to be stored in a database file that integrates with the hydraulic modeling software. Known pipe, manhole, and lift station characteristics were input into the GIS database and imported into the hydraulic model.



Legend

- Flow Meter
- Clarifier
- Drain Box
- Diverter Box
- Diversion Structure
- Grease Interceptor/Trap
- Grinder Pump
- Trench Drain
- Triturator
- Sewer Ejector
- Oil Interceptor
- Oil/Water Separator
- Valve Box

Existing Port Owned and/or Maintained Sewer System
- Lift Station

Pipelines
- Gravity Main
- Force Main

Privately Maintained Facilities
- Lift Station
- Gravity Main
- Force Main

City of Oakland/ EBMUD Facilities
- Lift Station
- Gravity Main
- Force Main

Sewer Tributary Areas
- 5
- 6
- 7
- 8
- Unmetered

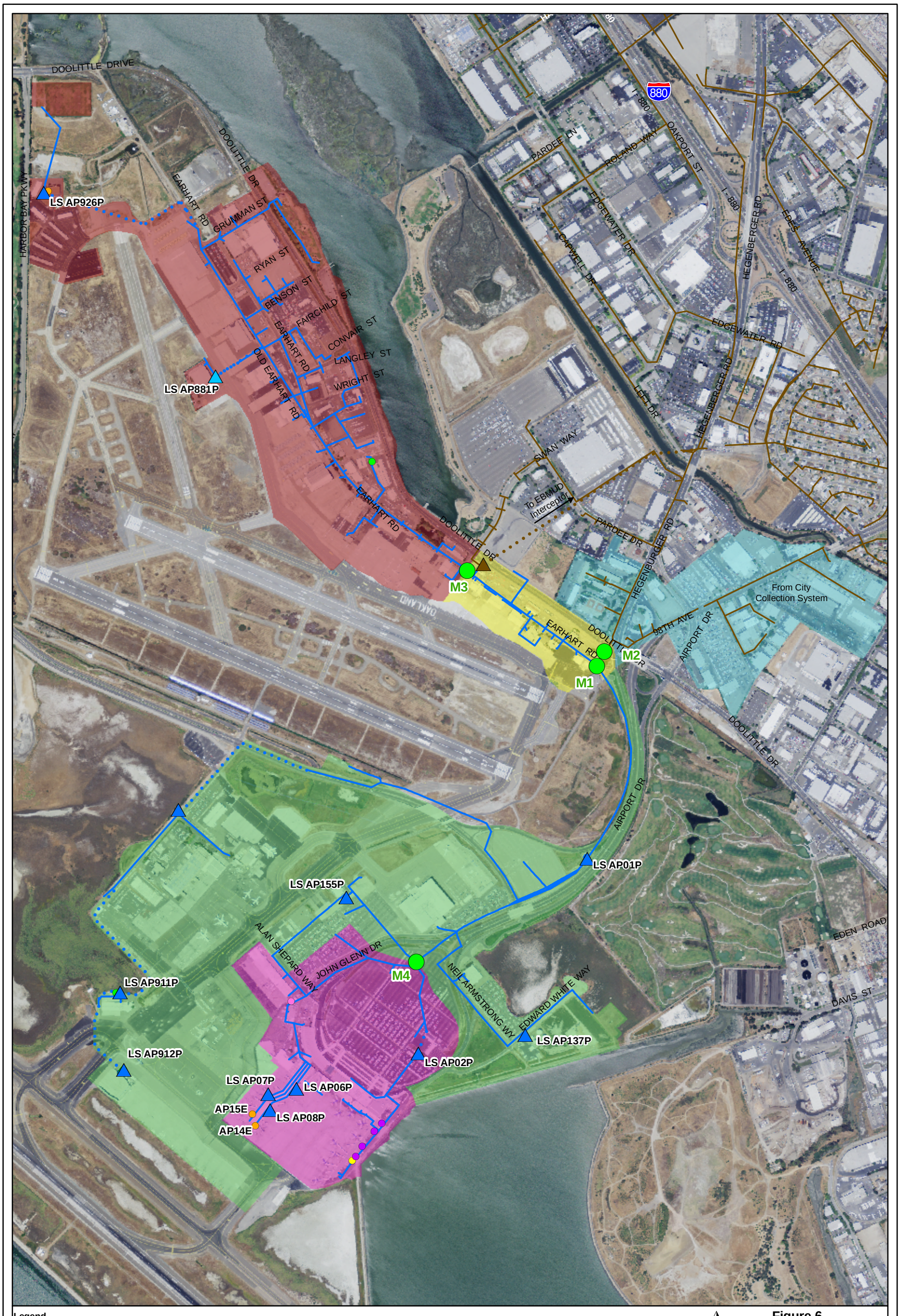
N

0 1,500 3,000 Feet

Figure 6
Sewer Tributary Areas (1 of 2)
System Evaluation and Capacity Assurance Plan
Port of Oakland

PORT OF OAKLAND carollo

Revision Date: April 23, 2010



Revision Date: April 23, 2010

5.2.2 Wastewater Load Allocation

Adequately estimating the volume of wastewater for a particular area or building is an important process in maintaining and sizing sewer system facilities, both for present and future conditions. For the Port, dry weather wastewater loads were calculated for each occupied building and assigned to the appropriate model node. The loads were calculated in the GIS software program by multiplying the appropriate flow coefficient in Table 5 by the occupied building area. The hydraulic model's load allocation feature assigned the calculated ADF to the appropriate node in the sewer system model.

5.2.3 Model Calibration

Model calibration is a crucial component of the hydraulic modeling effort. Calibrating the model to match data collected during the flow monitoring program ensures the most accurate results possible.

The calibration process consists of calibrating to both dry and wet weather conditions. For this project, both dry and wet weather flow monitoring were conducted. DWF calibration ensures an accurate depiction of base wastewater flow generated within the study area. The WWF calibration consists of calibrating the hydraulic model to a specific storm event to quantify the peak and volume of I/I into the sewer system. The amount of I/I is essentially the difference between the WWF and DWF components.

5.2.3.1 Dry Weather Flow Calibration

The dry weather flow calibration consists of several elements: 1) dividing the sewer system into areas tributary to each of the flow meter stations; 2) defining the flow volumes within each area; and 3) creating diurnal patterns to match the temporal distribution of flow. The diurnal curve is the variation of flow throughout the day.

The first step in the calibration process was to divide the Port service area into flow meter tributary areas. Eight tributary areas were created, one for each flow meter, as summarized in Section 5.1.1. The next step was to define the flow volumes within each area, which was accomplished in the flow-loading step discussed in Section 5.2.2 above. Diurnal curves based on the flow monitoring data were created for nodes tributary to a specific flow meter. Figure 7 displays the diurnal curve for the area tributary to Meter 4, which measured flows from OAK. Similar diurnal curves were developed for each of the meters and its tributary area. These additional curves are available in Appendix B.

The calibration process compared the meter data with the model output. Comparisons were made for minimum, maximum, and average flows as well as the temporal distribution of flow. Table 9 summarizes the DWF calibration using minimum, maximum, and average flow results.

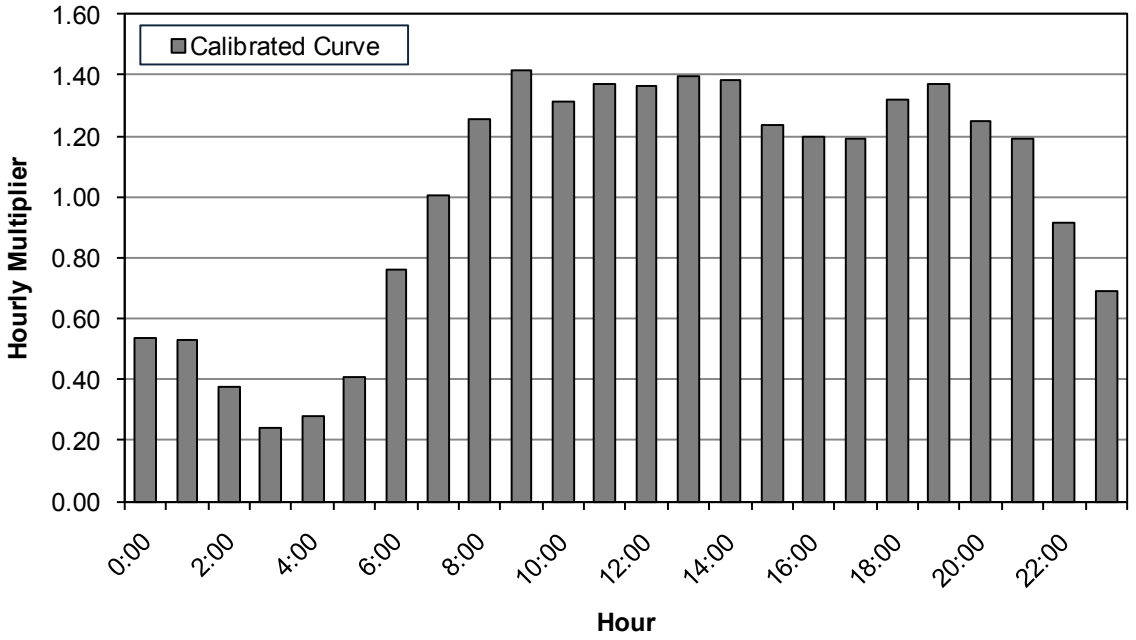


Figure 7 Flow Meter 4 Diurnal Pattern

Table 9 Dry Weather Flow Calibration Summary
System Evaluation and Capacity Assurance Plan
Port of Oakland

	Meter Average Day Flow[1,2]			Model Average Day Flow			
Meter Site	Average (mgd)	Max. (mgd)	Min. (mgd)	Average (mgd)	Max. (mgd)	Min. (mgd)	Percent Diff.[3]
1	0.113	0.189	0.040	0.113	0.171	0.050	0%
2	0.087	0.119	0.046	0.087	0.119	0.046	0%
3	0.103	0.147	0.063	0.103	0.146	0.064	0%
4	0.078	0.110	0.019	0.078	0.109	0.020	0%
5	0.013	0.026	0.004	0.013	0.025	0.003	0%
6	0.078	0.100	0.055	0.078	0.096	0.058	0%
7	0.086	0.096	0.074	0.086	0.093	0.076	0%
8	0.054	0.054	0.054	0.054	0.054	0.054	0%

Notes:
1. Source: Meter data from Sanitary Sewer Flow Monitoring and Inflow/Infiltration Study.
2. Average flow calculated from weekday flow monitoring data.
3. Percent difference between the average flow for the meter collected and model derived results.

A sample of the DWF calibration for Meter 3 is presented in Figure 8. This figure shows the measured flow at the meter versus the model predicted flows over a 24-hour period. The

remaining DWF calibration plots are provided in Appendix B. As shown in Appendix B, the correlation between the modeled and the measured results is good.

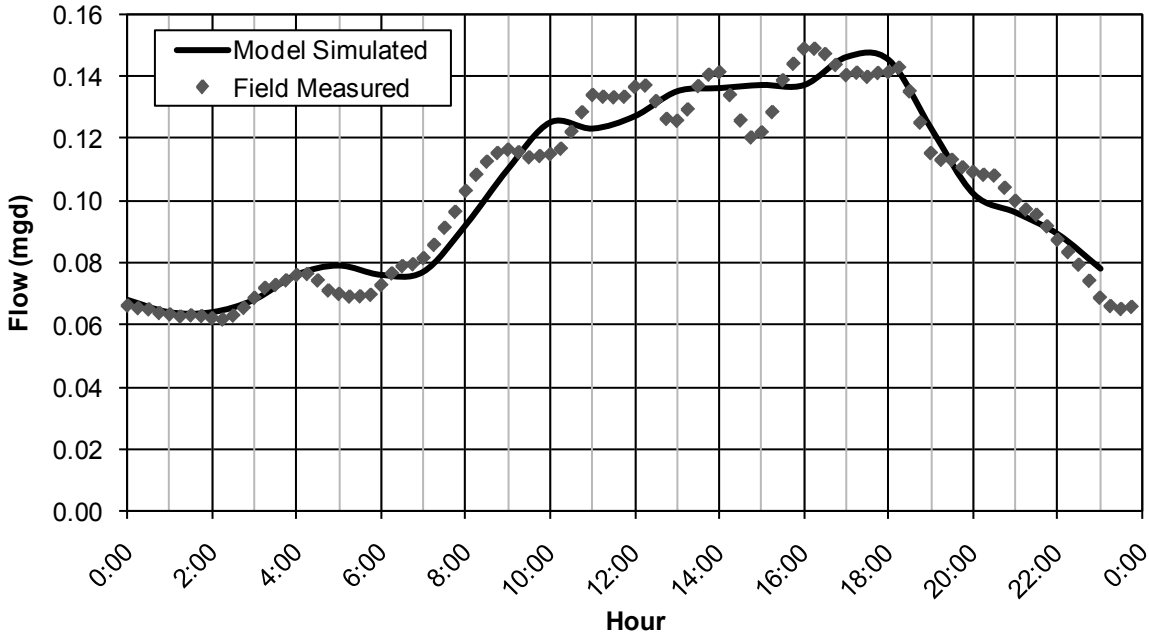


Figure 8 Flow Meter 3 Dry Weather Flow Calibration

5.2.3.2 Wet Weather Flow Calibration

The WWF calibration enables the hydraulic model to accurately measure I/I entering a sewer system during a large storm. WWF calibration consists of two steps: 1) determining a rainfall event that characterizes the most significant impact on the sewer system facilities, preferably during wet antecedent soil moisture conditions; and 2) creating a database of I/I parameters for this rainfall event. The January 18 - 23rd, 2010 rainfall events were used to characterize the system's response to wet weather events. The hydraulic model was calibrated to these series of rainfall events. No other significant rainfall events were captured during the flow monitoring period.

The wet weather calibration process involves creating custom unit hydrographs for each flow meter tributary. The hydrographs utilize the R-Values (percent of rainfall that enters collection system) to simulate I/I. The R-Values are input into the model and the parameters are adjusted until the peak I/I rate measured during the flow monitoring program are simulated for each of the series of rainfall events. Figure 9 illustrates the results for the wet weather calibration for Meter 6. The remaining WWF calibration plots are provided in Appendix C. As shown in Appendix C, the correlation between the modeled and the measured results is good.

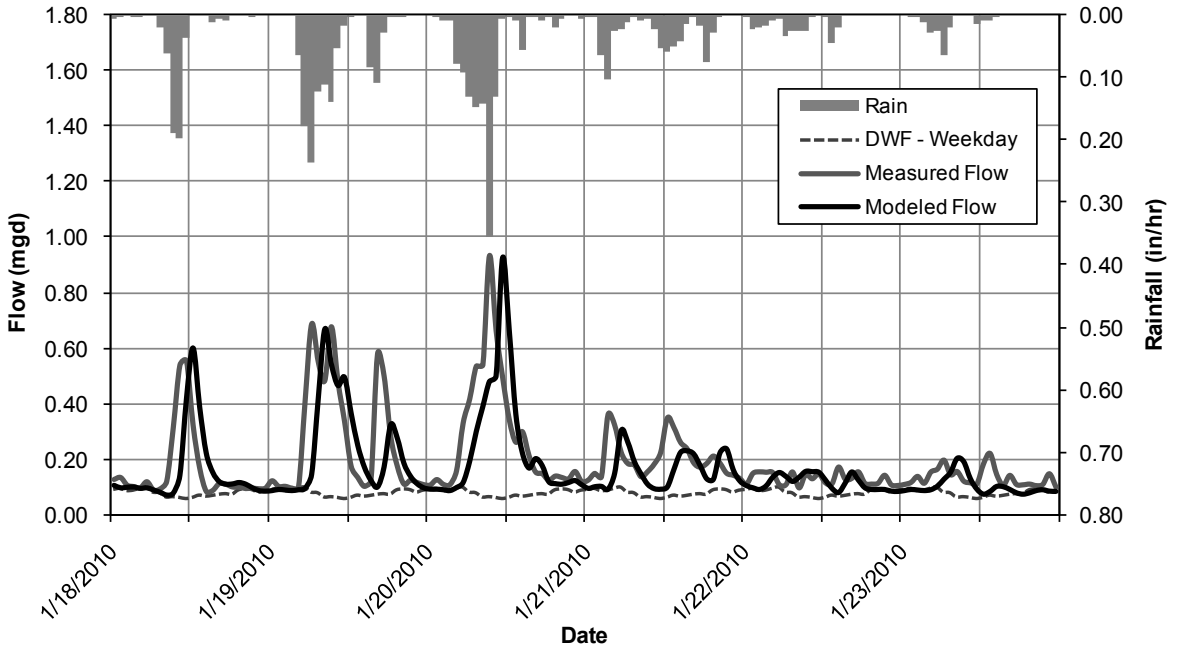


Figure 9 Flow Meter 6 Wet Weather Calibration

An exception to this was the Meter 8 wet weather calibration. As noted in Section 4.2.5, Meter 8 experienced significant surcharge conditions during the time period used for the wet weather calibration, which were likely attributable to a failure of List Station AB018P. As a result of the apparent lift station failure, flow backed up at Meter Site 8, restricting the amount of flow that could otherwise be conveyed through the pipeline. Therefore, the flow peaks at this location were significantly attenuated. The I/I parameters for this site were developed in the hydraulic model recognizing that flow peaks greater than those observed during the flow monitoring period would have been experienced if the apparent lift station failure had not occurred. For this reason, the hydraulic model simulated a peak flow into Meter 8 that was greater than the observed peak flow during the wet weather calibration period (see Appendix C).

As shown in Appendix C, the model simulated flows at Meter 7 matched well with the actual measured flows. However, the observed data indicated that the meter surcharged up to 5.7-inches over the pipe crown during the wet weather calibration period. However, based on the pipe capacity and the measured flows at this location, we believe that the observed surcharge at this location was likely attributable to backwater effects from downstream collection system facilities, rather than a capacity deficiency in the pipeline itself. Further investigation would be required to determine the exact cause of the observed surcharge conditions.

6.0 CAPACITY EVALUATION AND PROPOSED IMPROVEMENTS

This section discusses the hydraulic evaluation of the wastewater collection system and the proposed projects that correct capacity deficiencies and accommodate future growth.

6.1 Capacity Evaluation

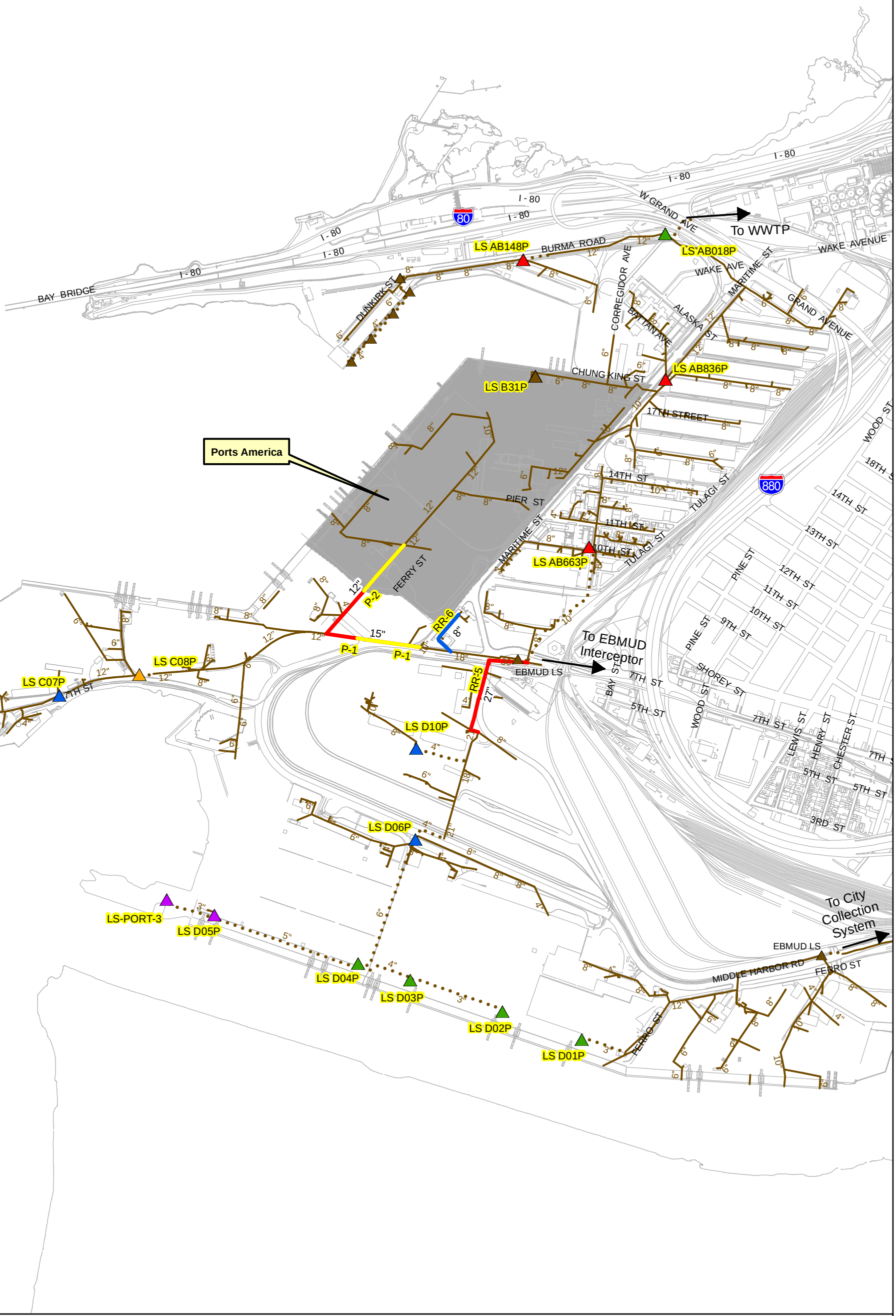
Following the dry and wet weather flow calibration, a capacity analysis of the Port collection system was performed. The capacity analysis entailed identifying areas in the sewer system where flow restrictions occur or where pipe capacity is insufficient to convey design flows. Sewers that lack sufficient capacity to convey design flows could produce backwater effects in the collection system and potentially cause sanitary sewer overflows (SSOs). The sewer system was evaluated based on planning criteria presented in Section 3.0.

For existing conditions, the capacity analysis consisted of applying the 10-year, 24-hour design storm to the existing ADF to simulate the peak wet weather, or design, flow condition. This is the maximum hourly flow that is expected to occur in the collection system. Sewers with flows exceeding the maximum d/D criterion under design flow conditions were identified and improvement projects to mitigate existing capacity deficiencies were developed. This process was then repeated for the anticipated flow conditions at year 2030 and improvement projects needed to address future capacity deficiencies, if any, were developed.

There is a significant I/I response throughout the Port's wastewater collection system, which leads to design flow peaking factors greater than the industry standard in most locations. In general, the majority of sewers in the Port are currently sized with sufficient capacity to convey existing design flows, even with the significant I/I response. This assumes, however, that the existing sewers are free of fats, oil, and grease (FOG) build up, sediment build up, large debris, and other capacity limiting factors. Excessive build up in a sewer will restrict flow, which can lead to sewer backups and SSOs.

6.2 Collection System Improvements

Figure 10 illustrates the proposed sewer improvements required to correct existing deficiencies and to accommodate future growth in the Port. The proposed pipeline diameter is also shown on the figures. Other projects that will benefit existing users are discussed in this section. Table 10 was created to show more detail of each improvement. For sewer improvements, the proposed diameter is shown along with the length of sewer. This table also shows the improvement figure number. Both Figure 10 and Table 10 should be used together to locate the proposed improvement on the map and to gain details of the improvement (length, diameter, street location, etc.). The improvement figure number links the figure and table. For example, P-1 in Table 9 refers to the proposed 7th Street sewer upgrade, which will increase the existing 12-inch diameter sewer main to a 15-inch diameter sewer, and can be found in Figure 10.



Legend

Existing Collection System
- Lift Station

Pipelines*
- Gravity Main
- Force Main

*Note: Only Port modeled sewers are shown.

Proposed Improvements

Lift Station
- Phase 1 (2010 - 2015)
- Phase 2 (2016 - 2020)
- Phase 3 (2021 - 2025)
- Phase 4 (2026 - 2030)
- Phase 5 (2030 +)

Pipelines
- Phase 1 (2010 - 2015)
- Phase 2 (2016 - 2020)

Required Improvements by Others
- Phase 1 (2010 - 2015)

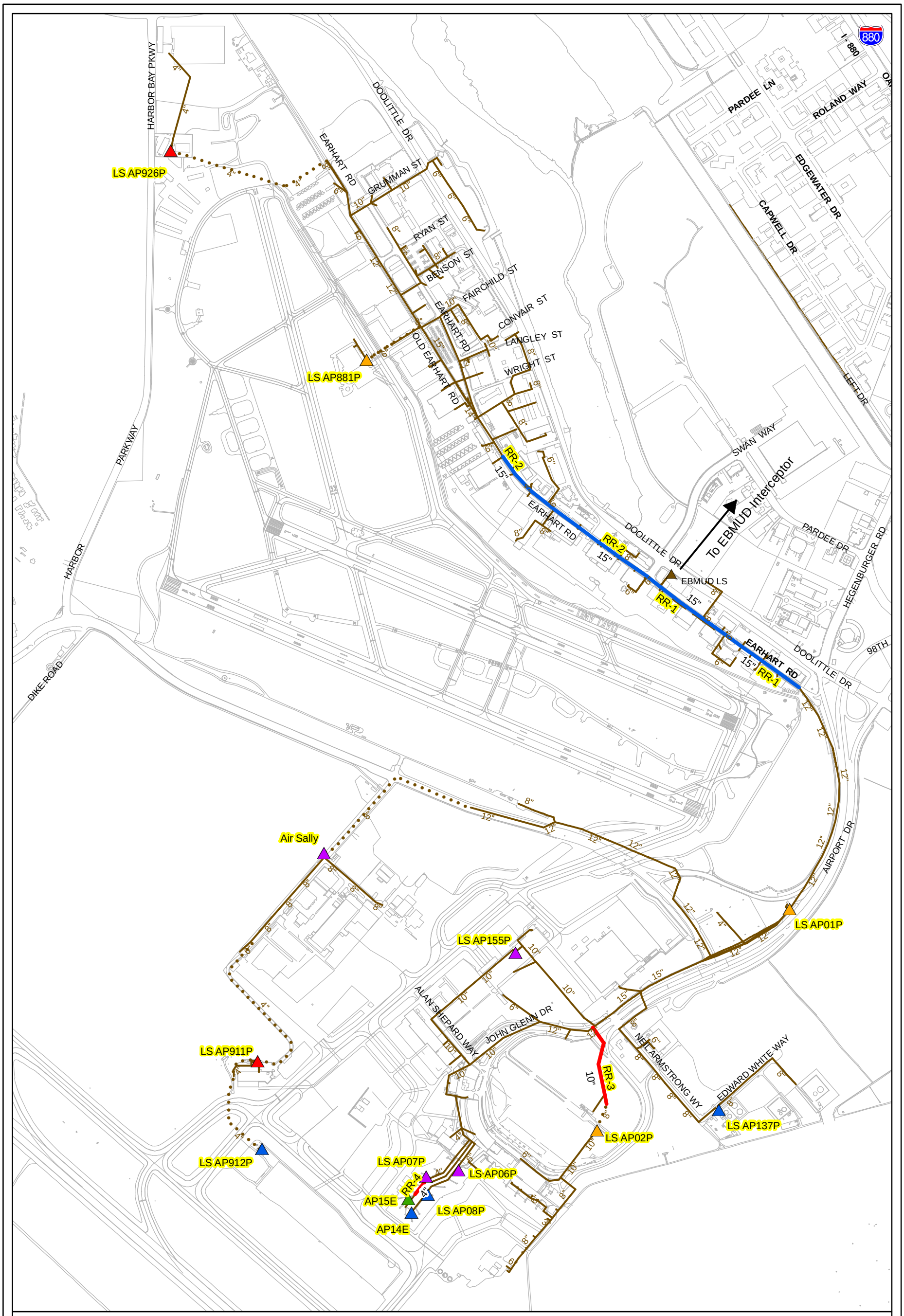
- Base Map
- Ports America

Feet
0 750 1,500

Figure 10
Proposed Capital Improvements (1 of 2)
System Evaluation and Capacity Assurance Plan
Port of Oakland

PORT OF OAKLAND carollo

Revision Date: April 23, 2010



Legend

Existing Collection System

- Lift Station
- **Pipelines***
  - Gravity Main
  - Force Main

Proposed Improvements

Lift Station

- Phase 1 (2010 - 2015)
- Phase 2 (2016 - 2020)
- Phase 3 (2021 - 2025)
- Phase 4 (2026 - 2030)
- Phase 5 (2030 +)

Pipelines

- Phase 1 (2010 - 2015)
- Phase 2 (2016 - 2020)
- Base Map

Feet

0 500 1,000

*Note: Only Port modeled sewers are shown.

Figure 10
Proposed Capital Improvements (2 of 2)
System Evaluation and Capacity Assurance Plan
Port of Oakland

PORT OF OAKLAND carollo

Revision Date: April 23, 2010

Table 10 Capital Improvement Projects
System Evaluation and Capacity Assurance Plan
Port of Oakland

Improv. ID	Type of Improvement	Description/Street	Description/Limits	Project Length/Size and Cost: Ex. Size/ Diam. (in)	New Size/ Diam. (in)	Replace/ New	Length (ft)	Capital Improvement Cost[2],[3] ($)	Capital Improvement Phasing: Phase 1 2011-2015 ($)	Phase 2 2016-2020 ($)	Phase 3 2021-2025 ($)	Phase 4 2026-2030 ($)	Phase 5 2030 + ($)
Aviation Collection System Improvements													
Lift Station Rehabilitation and Replacement													
LS-AIRSALLY	Lift Station	LS-Air Sally Rehab./Replac. Project	Firm Capacity = 0.17 mgd	-	0.34 mgd	Replace	-	$ 653,000					$ 653,000
LS-AP01P	Lift Station	LS-AP01P Rehab./Replac. Project	Firm Capacity = 1.0 mgd	-	1.50 mgd	Replace	-	$ 1,188,000				$ 1,188,000	
LS-AP02P	Lift Station	LS-AP02P Rehab./Replac. Project	Firm Capacity = 0.17 mgd	-	0.34 mgd	Replace	-	$ 653,000				$ 653,000	
LS-AP06P	Lift Station	LS-AP06P Rehab./Replac. Project	Capacity to be Determined in Preliminary Design Phase[4]	-	Note 4	Replace	-	$ 350,000					$ 350,000
LS-AP07P	Lift Station	LS-AP07P Rehab./Replac. Project	Capacity to be Determined in Preliminary Design Phase[4]	-	Note 4	Replace	-	$ 350,000					$ 350,000
LS-AP08P	Lift Station	LS-AP08P Rehab./Replac. Project	Capacity to be Determined in Preliminary Design Phase[4]	-	Note 4	Replace	-	$ 350,000		$ 350,000			
LS-AP14E	Lift Station	LS-AP14E Rehab./Replac. Project	Capacity to be Determined in Preliminary Design Phase[4]	-	Note 4	Replace	-	$ 350,000		$ 350,000			
LS-AP15E	Lift Station	LS-AP15E Rehab./Replac. Project	Capacity to be Determined in Preliminary Design Phase[4]	-	Note 4	Replace	-	$ 350,000			$ 350,000		
LS-AP137P	Lift Station	LS-AP137P Rehab./Replac. Project	Capacity to be Determined in Preliminary Design Phase[4]	-	Note 4	Replace	-	$ 350,000		$ 350,000			
LS-AP155P	Lift Station	LS-AP155P Rehab./Replac. Project	Capacity to be Determined in Preliminary Design Phase[4]	-	Note 4	Replace	-	$ 350,000					$ 350,000
LS-AP881P	Lift Station	LS-AP881P Rehab./Replac. Project	Capacity to be Determined in Preliminary Design Phase[4]	-	Note 4	Replace	-	$ 350,000				$ 350,000	
LS-AP911P	Lift Station	LS-AP911P Rehab./Replac. Project	Capacity to be Determined in Preliminary Design Phase[4]	-	Note 4	Replace	-	$ 350,000	$ 350,000				
LS-AP912P	Lift Station	LS-AP912P Rehab./Replac. Project	Capacity to be Determined in Preliminary Design Phase[4]	-	Note 4	Replace	-	$ 350,000		$ 350,000			
LS-AP926P	Lift Station	LS-AP926P Rehab./Replac. Project	Capacity to be Determined in Preliminary Design Phase[4]	-	Note 4	Replace	-	$ 350,000	$ 350,000				
Pipeline Rehabilitation and Replacement													
RR-1	Pipe	Earhart Road	Swan Way to Hegenberger Road	15	15	Replace	1,800	$ 580,000		$ 580,000			
RR-2	Pipe	Earhart Road	Swan Way to Cooke Street	15	15	Replace	2,200	$ 709,000		$ 709,000			
RR-3	Pipe	Oakland Airport Parking Lot	Airport Road to LS AP02P force main	10	10	Replace	900	$ 193,000	$ 193,000				
RR-4	Pipe	Terminal 1 at Gate 9	Terminal 1 Gate 9 Pipeline Replacement	3	4	Replace	145	$ 28,000	$ 28,000				
-	Pipe	Various Locations	Sewer Main Rehab./Replac. Program. Average Size is 10".	10	10	Replace	35,300	$ 7,587,000	$ 1,517,400	$ 1,517,400	$ 1,517,400	$ 1,517,400	$ 1,517,400
Infiltration/Inflow Reduction													
-	Pipe	I/I Reduction Program	Assumed 13,200 LF of 24" Pipe Constructed	-	24	New	13,200	$ 5,571,000	$ 1,114,200	$ 1,114,200	$ 1,114,200	$ 1,114,200	$ 1,114,200
				Aviation Collection System Subtotal				**$ 21,012,000**	**$ 3,552,600**	**$ 5,320,600**	**$ 2,981,600**	**$ 4,822,600**	**$ 4,334,600**
Maritime Collection System Improvements													
Pipeline Capacity Improvements													
P-1	Pipe	7th Street	Navy Roadway to Ferry Street	12	15	Replace	450	$ 145,000	$ 145,000				
P-2	Pipe	Ferry Street	7th Street to Ports America Boundary	8	12	Replace	700	$ 180,000	$ 180,000				
Lift Station Rehabilitation and Replacement													
LS-AB018P	Lift Station	LS-AB018P Rehab./Replac. Project	Firm Capacity = 1.3 mgd	-	1.90 mgd	Replace	-	$ 1,383,000			$ 1,383,000		
LS-AB148P	Lift Station	LS-AB148P Rehab./Replac. Project	Firm Capacity = 0.16 mgd	-	0.32 mgd	Replace	-	$ 644,000	$ 644,000				
LS-AB663P	Lift Station	LS-AB663P Rehab./Replac. Project	Firm Capacity = 0.25 mgd	-	0.50 mgd	Replace	-	$ 725,000	$ 725,000				
LS-AB836P	Lift Station	LS-AB836P Rehab./Replac. Project	Capacity to be Determined in Preliminary Design Phase[4]	-	Note 4	Replace	-	$ 350,000	$ 350,000				
LS-C07P	Lift Station	LS-C07P Rehab./Replac. Project	Firm Capacity = 0.35 mgd	-	0.70 mgd	Replace	-	$ 814,000		$ 814,000			
LS-C08P	Lift Station	LS-C08P Rehab./Replac. Project	Firm Capacity = 0.60 mgd	-	1.20 mgd	Replace	-	$ 1,047,000				$ 1,047,000	

Table 10 Capital Improvement Projects
System Evaluation and Capacity Assurance Plan
Port of Oakland

Improv. ID	Type of Improvement	Description/Street	Description/Limits	Project Length/Size and Cost: Ex. Size/ Diam. (in)	New Size/ Diam. (in)	Replace/ New	Length (ft)	Capital Improvement Cost[2],[3] ($)	Capital Improvement Phasing: Phase 1 2011-2015 ($)	Phase 2 2016-2020 ($)	Phase 3 2021-2025 ($)	Phase 4 2026-2030 ($)	Phase 5 2030 + ($)
LS-D01P	Lift Station	LS-D01P Rehab./Replac. Project	Capacity to be Determined in Preliminary Design Phase[4]	-	Note 4	Replace	-	$ 350,000			$ 350,000		
LS-D02P	Lift Station	LS-D02P Rehab./Replac. Project	Capacity to be Determined in Preliminary Design Phase[4]	-	Note 4	Replace	-	$ 350,000			$ 350,000		
LS-D03P	Lift Station	LS-D03P Rehab./Replac. Project	Capacity to be Determined in Preliminary Design Phase[4]	-	Note 4	Replace	-	$ 350,000			$ 350,000		
LS-D04P	Lift Station	LS-D04P Rehab./Replac. Project	Capacity to be Determined in Preliminary Design Phase[4]	-	Note 4	Replace	-	$ 350,000			$ 350,000		
LS-D05P	Lift Station	LS-D05P Rehab./Replac. Project	Capacity to be Determined in Preliminary Design Phase[4]	-	Note 4	Replace	-	$ 350,000					$ 350,000
LS-D06P	Lift Station	LS-D06P Rehab./Replac. Project	Firm Capacity = 0.40 mgd	-	0.80 mgd	Replace	-	$ 860,000		$ 860,000			
LS-D10P	Lift Station	LS-D10P Rehab./Replac. Project	Capacity to be Determined in Preliminary Design Phase[4]	-	Note 4	Replace	-	$ 350,000		$ 350,000			
LS-PORT-3	Lift Station	LS-PORT-3 Rehab./Replac. Project	Capacity to be Determined in Preliminary Design Phase[4]	-	Note 4	Replace	-	$ 350,000					$ 350,000
Pipeline Rehabilitation and Replacement													
RR-5	Pipe	Maritime Street	7th Street to 1,000' south of 7th Street	24/27	27	Replace	1,500	$ 791,000	$ 791,000				
RR-5A	Pipe/Casing[1]	Maritime Street	Casing under Railroad Tracks	27	27/48	Replace	200	$ 657,000	$ 657,000				
RR-6	Pipe	Near 7th Street	6" Pipe Serving Buildings D-501, D-502, and D-504	6	8	Replace	600	$ 102,000		$ 102,000			
-	Pipe	Various Locations	Sewer Main Rehab./Replac. Program. Average Size is 10".	10	10	Replace	71,700	$ 15,412,000	$ 3,082,400	$ 3,082,400	$ 3,082,400	$ 3,082,400	$ 3,082,400
Infiltration/Inflow Reduction													
-	Pipe	I/I Reduction Program	Assumed 26,800 LF of 24" Pipe Constructed	-	24	New	26,800	$ 11,312,000	$ 2,262,400	$ 2,262,400	$ 2,262,400	$ 2,262,400	$ 2,262,400
							Maritime Collection System Subtotal	**$ 36,872,000**	**$ 8,836,800**	**$ 7,470,800**	**$ 8,127,800**	**$ 6,391,800**	**$ 6,044,800**
							CIP Total	**$ 57,884,000**	**$ 12,389,400**	**$ 12,791,400**	**$ 11,109,400**	**$ 11,214,400**	**$ 10,379,400**

Notes:

1. Proposed casings size and carrier pipe size.
2. Baseline Construction Cost plus 25% to account for unforeseen events and unknown conditions.
3. Estimated Construction Cost plus 30% to cover other costs including Engineering, Construction Management, and Project Administration.
4. To account for site specific factors that are beyond the scope of this planning level study, the required capacity for the Port's small lift stations should be determined in the preliminary design phase of each rehabilitation/replacement project.
5. Lift station capacities refer to the total capacity unless noted otherwise.
6. Costs are based on the Engineering News Record Construction Cost Index for San Francisco of 9,728 (March 2010).

6.2.1 Pipeline Capacity Improvements

The majority of sewers within the Port contain sufficient capacity to accommodate existing and future design flows without exceeding the established capacity criteria. There are a few exceptions where existing sewers will need to be replaced by larger diameter sewers, or parallel sewers will need to be constructed to bypass flow around hydraulically deficient sewers. The decision as to whether a particular sewer should be replaced or a parallel sewer constructed should be made during the preliminary design phase. This study assumes that deficient sewers will be replaced.

6.2.2 Sewer Main Rehabilitation and Replacement

Closed circuit television (CCTV) inspection of selected sewers in the Aviation and Maritime collection systems were performed as part of this study. Appendix D summarizes the results of the CCTV inspections, including the National Association of Sewer Service Companies (NASSCO) Pipeline Assessment Certification Program (PACP) rating for each pipe segment as well as relevant photographs. The inspections revealed certain reaches of sanitary sewers with structural deficiencies requiring condition upgrades.

Figure 10 shows the locations of sewers targeted as rehabilitation and replacement projects based on the results of the CCTV inspections. Depending on the structural condition of each pipeline, slip lining or cured-in-place pipe lining could be installed, or the pipeline could be replaced. The decision to rehabilitate or replace a given pipeline should be determined during the preliminary design phase. For the purposes of this study, we assumed that each pipeline requiring a condition upgrade would be replaced.

As the Port performs CCTV inspection of sewers not performed as part of this study, additional pipelines will likely be identified as candidates for rehabilitation or replacement. We assumed that in addition to those pipelines identified in Figure 10, the Port would implement various rehabilitation and replacement projects through the year 2030 and beyond. Based on the results of the initial CCTV work performed as part of this study, approximately 56-percent of the pipelines inspected were targeted as candidates for condition upgrades. Assuming that the remaining sewers in the collection system that will be inspected will require condition upgrades at the same rate as those inspected in this study (about 56 percent), roughly 107,000 feet (20.3 miles) of sewers in the Port could conceivably require condition upgrades.

For this reason, the capital projects assumed that the Port would replace approximately 107,000 feet (20.3 miles) of sewers through year 2030 and beyond, distributed to the Aviation and Maritime divisions based on the total length of pipe within each division (e.g. Maritime received the greatest allocation of rehabilitation and replacement projects). It was assumed that the designated master developer would complete all rehabilitation and replacement work within the Commercial/Real Estate division. Therefore, no sewer projects are assumed for Commercial/Real Estate. The weighted average diameter of all sewers in

the Port is approximately 10-inches. Therefore, in order to develop the capital program costs, we assumed that 107,000 feet of 10-inch diameter sewer would be replaced through 2030 and beyond.

6.2.3 Lift Station Rehabilitation and Replacement

Visual inspection of the Port's sanitary sewer lift stations was performed on March 5 and 6, 2010 as part of this study. Appendix E contains a summary of the major findings of the inspection, as well as photographs of from the visual inspection.

Lift station replacement or rehabilitation will be necessary to maintain proper operation of existing facilities and to meet the requirements of the EPA's Administrative Order. Therefore, we assumed that each lift station in the Port would be rehabilitated or replaced by the year 2030 and beyond. The rehabilitation and replacement projects were phased considering the findings of the visual inspections such that the costs associated with these projects were distributed as evenly as possible through year 2030 and beyond. Required capacities for each lift station are identified for each lift station in Table 10, based on the requirement that each lift station be equipped with sufficient firm capacity to pump the design flow.

6.2.4 Infiltration/Inflow Reduction Program

The flow monitoring data indicate that there is a significant I/I response throughout the Port collection system. To meet the requirements of the EPA's administrative order, it is recommended that the Port implement an I/I reduction program, focused on identifying the main sources of runoff into the collection system. Disconnecting storm drain cross connections and eliminating other I/I sources will reduce peak flows into the system.

Costs associated with an I/I reduction program can vary greatly and are difficult to estimate in the planning stage. Projects could range from closing open clean-outs to constructing new storm drain pipelines to disconnect storm drain inlets from the sanitary sewer. To develop the capital improvement projects associated with an I/I reduction program, we assumed that roughly 40,000 feet (7.6 miles) of 24-inch diameter storm drain pipes would be constructed through year 2030 and beyond. As with the sewer main rehabilitation and replacement projects, the I/I reduction projects were distributed to the Aviation and Maritime divisions based on the total length of pipe within each division.

6.2.5 Operations and Maintenance (Sewer Main Cleaning/CCTV)

CCTV inspection and surveys of selected sewers in the Port have revealed that there are locations in the Port where sediment, FOG, large debris, and other materials have been deposited. This is primarily a maintenance issue; however, a significant amount of sediment build up or the presence of objects (e.g. concrete material) can reduce the capacity of a sewer mains, which may clog sewers and result in SSOs. To reduce this potential, it is

recommended that the Port increase the cleaning frequency of those pipelines which have been identified to have sediment deposits, root intrusions, or other maintenance issues.

As discussed in Chapter 5 of the Port SSMP, a reasonable goal for the Port is to proactively clean roughly 20 percent of the total length of its gravity sewers each year, thus providing a rotation in which every sewer main is cleaned at least once every five (5) years. This equates to roughly 7 miles of sewer mains cleaned annually.

It is further recommended that sewer mains and manholes receive a CCTV inspection every ten (10) years, following cleaning. Since sewer cleaning should occur every 5 years and CCTV work every 10 years, the CCTV work should happen every other occasion that a sewer is cleaned. This will help to verify that the cleaning was properly performed and to identify structural and condition problems in the sewers and manholes.

To develop the maintenance cost impacts associated with a sewer main cleaning/CCTV program, we assumed that the Port would spend roughly $300,000 per year in the first, third, and fifth round of sewer main cleaning and CCTV program. This equates to $1,500,000 per phase for the first, third, and fifth round of sewer cleaning (Phase 1, 3, and 5). Because CCTV inspections are recommended on a ten (10) year schedule, we assumed that the Port would spend roughly $200,000 per year for the second and fourth rounds of sewer main cleaning (not accompanied by CCTV). This equates to $1,000,000 per phase for the second and fourth round of sewer cleaning (Phase 2 and 4). The operations and maintenance costs were distributed to each division (e.g., Aviation, Maritime, and Commercial/Real Estate) based on the total length of pipe within each. The sewer cleaning and CCTV costs are included in Chapter 5 of the SSMP.

6.3 Project Prioritization

The improvement projects outlined in this report are prioritized based on their urgency to mitigate existing deficiencies and to correct pipeline or lift station condition problems. It is recommended that improvements to mitigate existing deficiencies be constructed as soon as possible. The projects were grouped into the following timeframes:

- Years 2011 through 2015
- Years 2016 through 2020
- Years 2021 through 2025
- Years 2026 through 2030
- Post 2030

6.3.1.1 Phase 1 Projects (2011 – 2015)

The highest priority improvements were targeted for implementation within the first improvement phase, including the following:

- **7Th Street Sewer Upgrade (P-1 and P-2).** Results from the capacity evaluation indicated that the existing 8-inch and 12-inch sewers on Ferry Street and 7th Street in the Maritime area were unable to convey the existing and future design flow without exceeding the established flow depth criterion. Installing new 12-inch and 15-inch diameter sewers to replace the deficient sewers will mitigate the capacity deficiency.

- **Lift Station Rehabilitation and Replacement.** The following lift station rehabilitation and replacement projects have been targeted for implementation in Phase 1:
  - Lift Station AB148P. As noted in Appendix E, Lift Station AB148P has only one operating pump, as the second pump has burnt out. Should the remaining pump fail during a significant storm event, a SSO could occur. In addition, the outgoing pipes and valves located in a dry pit on the side of the pump building are severely corroded (Photo No. 1).

Photo No. 1

  - Lift Station AB663P. This lift station consists of two submersible pumps. One pump currently runs at 65 amps, which is too high so it has been taken off line. In the past, vandals cut and stole wire from the lift station. Repairs were subsequently made; however, the auto control system still does not work. Because of this, O&M staff comes out once a week to the lift station and manually turns on the one working pump until the water level in the wet well drops to its low level.
  - Lift Station AB836P. The discharge pipe for this lift station is separated from the pump due to a corroded base and is currently supported by a few pieces of lumber (Photo No. 2). The effluent pipe shows a significant amount of decay and corrosion (Photo No. 3).

Photo No. 2

Photo No. 3

– Lift Station AP911P. Both pumps/motors in this lift station experience bearing problems approximately every 2 years. There is a significant amount of corrosion under the gas jumper, which was installed to allow the hydrogen sulfide gas to escape the structure. The placement of the jumper is causing the structure's lid to corrode. One of the effluent pipes above ground and the pipes in the dry well have a large amount of noticeable corrosion (Photo No. 4 and 5). It appears that the dry well during wet weather can fill with water, which is causing rust buildup.

Photo No. 4

Photo No. 5

– Lift Station AP926P. The structure's lid and pipes show signs of corrosion (Photo 6). The lid has no vent and had to be replaced two years ago. A vent needs to be added as the lid already shows a significant amount of corrosion.

Photo No. 6

- **Sewer Main Rehabilitation and Replacement.** The following sewer main rehabilitation and replacement projects have been targeted for implementation in Phase 1:
  - Improvement No. RR-3. CCTV inspection of the 10-inch diameter sewer underneath the OAK terminal parking lot revealed several locations with pipeline fractures or voids with visible soil (see examples in Photos 7 and 8).

Photo No. 7

Photo No. 8

– Improvement No. RR-4. In 2009, there was a SSO located near Gate 9 within OAK, which was released from an overhead exterior (not buried) sanitary sewer line when a cleanout was opened to clear a clog. The sanitary sewer line is a 3-inch diameter, cast iron pipe that is approximately 145 feet long. The sewer line has been found to lack adequate fall and also appears to be flat or has reverse grade in certain reaches. Consequently, the line does not scour well and needs to be cleared periodically. Maintenance is difficult because the sewer line hangs nine feet in the air and there are no clean outs from the terminal floor above the line. Maintenance work requires climbing a ladder to pull a clean out plug to drain the line before it can be cleared.

  To mitigate the issues mentioned above, the Port has planned to replace the existing 3-inch diameter sewer line with a 4-inch diameter cast iron pipe that meets minimum slope requirements and has clean-outs every 35 feet for service from the floor area above.

– Improvement No. RR-5. CCTV inspection of the 27-inch diameter trunk sewer in Maritime Street south of 7th Street in the harbor area revealed severe structural deficiencies that should be addressed as a very high priority condition upgrade project. In several locations throughout the pipeline segment, the pipeline has experienced interior lining deterioration to a point where the structural reinforcing steel has become visible (Photo No. 9).

Photo No. 9

  - Additional rehabilitation and replacement projects not specifically identified in this study.

- **Ongoing Infiltration/Inflow Reduction Program**

- **Ongoing Sewer Main Line Cleaning/CCTV Inspection**

6.3.1.2 Phase 2 Projects (2016 – 2020)

Lower priority system improvements were grouped in Phases 2 through 5. The Phase 2 projects include the following:

- **Lift Station Rehabilitation and Replacement.** The following lift station rehabilitation and replacement projects have been targeted for implementation in Phase 2:
  - Lift Station AP08P
  - Lift Station AP14E
  - Lift Station AP137P
  - Lift Station AP912P
  - Lift Station C07P
  - Lift Station D06P
  - Lift Station D10P

- **Sewer Main Rehabilitation and Replacement.** The following sewer main rehabilitation and replacement projects have been targeted for implementation in Phase 2:

- Improvement No. RR-1 and RR-2. CCTV inspections of the 15-inch diameter sewer on Earhart Road from Hegenberger to Cooke Street have been shown to have several structural deficiencies, as identified in Appendix E.
- Improvement No. RR-6. A 6-inch diameter pipeline near 7th Street in the harbor area that services buildings D-501, D-502, and D-504 has been a frequent maintenance issue for the Port, leading to several blockages in the past. CCTV inspection of this pipeline revealed that the blockages have been caused by significant root intrusion. Considering this, we recommend that the Port replace the existing 6-inch pipe with a larger 8-inch pipe, which would be less susceptible to blockages.
- Additional rehabilitation and replacement projects not specifically identified in this study.

- **Ongoing Infiltration/Inflow Reduction Program**
- **Ongoing Sewer Main Line Cleaning (without CCTV inspection for Phase 2)**

6.3.1.3 Phase 3 Projects (2021 – 2025)

Improvement projects targeted for improvement Phase 3 include the following:

- **Lift Station Rehabilitation and Replacement.** The Phase 3 lift station rehabilitation and replacement projects include the following:
  - Lift Station AP15E
  - Lift Station AP018P
  - Lift Station D01P
  - Lift Station D02P
  - Lift Station D03P
  - Lift Station D04P
- **Ongoing Infiltration/Inflow Reduction Program**
- **Ongoing Sewer Main Line Cleaning/CCTV Inspection**

6.3.1.4 Phase 4 Projects (2026 – 2030)

Improvement projects targeted for improvement Phase 4 include the following:

- **Lift Station Rehabilitation and Replacement.** The Phase 4 lift station rehabilitation and replacement projects include the following:
  - Lift Station AP01P
  - Lift Station AP02P
  - Lift Station AP881P

  - Lift Station C08P

- **Ongoing Infiltration/Inflow Reduction Program**

- **Ongoing Sewer Main Line Cleaning (without CCTV inspection for Phase 4)**

6.3.1.5 Phase 5 Projects (2030 +)

Improvement projects targeted for improvement Phase 5 include the following:

- **Lift Station Rehabilitation and Replacement.** The Phase 5 lift station rehabilitation and replacement projects include the following:
  - Lift Station Air Sally
  - Lift Station AP06P
  - Lift Station Ap07P
  - Lift Station AP155P
  - Lift Station D05P
  - Lift Station PORT-3

- **Ongoing Infiltration/Inflow Reduction Program**

- **Ongoing Sewer Main Line Cleaning/CCTV Inspection**

7.0 CAPITAL IMPROVEMENT PROJECT COSTS

This section presents the recommended capital improvement projects (CIP) for the Port sewer system, a summary of the capital costs, and a basic assessment of the possible financial impacts on the Port. The CIP is based on the evaluation of the Port's sewer system, as detailed in the recommended projects described in the previous Section 6.0.

7.1 Capital Improvement Project Costs

The capacity upgrades and projects to accommodate future growth set the foundation for the Port's sewer system CIP. The cost estimates presented in this study are opinions developed from bid tabulations, cost curves, information obtained from previous studies, and Carollo experience on other projects. The costs are based on an Engineering News Record Construction Cost Index (ENR CCI) for San Francisco of 9,728 (March 2010).

7.2 Cost Estimating Accuracy

The cost estimates presented in the CIP have been prepared for general planning purposes and for guidance in project evaluation and implementation. Final costs of a project will depend on actual labor and material costs, competitive market conditions, final project scope, implementation schedule, and other variable factors such as: preliminary alignment generation, investigation of alternative routings, and detailed utility and topography surveys.

The Association for the Advancement of Cost Engineering (AACE) defines an Order of Magnitude Estimate, deemed appropriate for master plan studies, as an approximate estimate made without detailed engineering data. It is normally expected that an estimate of this type would be accurate within plus 50 percent to minus 30 percent. This section presents the assumptions used in developing order of magnitude cost estimates for recommended facilities.

7.3 Construction Unit Costs

The construction costs are representative of sewer system facilities under normal construction conditions and schedules. Costs have been estimated for public works construction, either as new construction in existing developed areas, or new construction in undeveloped areas.

7.3.1 Sewer Trunk Unit Costs

Sewer main line improvements range in size from 8-inches to 27-inches in diameter. Pipe casings up to 48-inches in diameter are included for major crossings (e.g. creeks, canals, highways, railroad) of the trunk sewers. Pipeline unit costs are shown in Table 11. The construction cost estimates are based upon these unit costs. The unit costs are for “typical” field conditions with construction in stable soil at a depth ranging between 10 to 15 feet.

7.3.2 Lift and Pump Station Costs

Lift station improvements include increasing the firm capacity to convey design flows. The lift station cost versus capacity curve shown in Figure 11 was developed based on projects of similar size in California. Costs were generated by inputting the appropriate capacity and calculating the corresponding costs.

7.3.3 Land Acquisition Costs

Acquisition of property, easements, and right-of-way (ROW) will likely not be required for the recommended projects, because the majority of land within the study area is owned by the Port. For this reason, costs associated with land acquisition are not included in the CIP.

7.4 Project Costs and Contingencies

7.4.1 Baseline Construction Cost

This is the total estimated construction cost, in dollars, of the proposed improvement. Pipeline and lift station Baseline Construction Costs were developed using the following criteria:

- Pipeline: Calculated by multiplying the estimated length by the unit cost.
- Lift and Pump Stations: Calculated by using the total capacity in the cost curve equation.

7.4.2 Estimated Construction Cost

Contingency costs must be reviewed on a case-by-case basis because they will vary considerably with each project. Consequently, it is appropriate to allow for uncertainties associated with the preliminary layout of a project. Such factors as unexpected construction conditions, the need for unforeseen mechanical items, and variations in final quantities are a few of the items that can increase project costs for which it is wise to make allowances in preliminary estimates. To assist the Port in making financial decisions for these future construction projects, contingency costs will be added to the planning budget as percentages of the total construction cost, divided into two categories: Estimated Construction Cost and Capital Improvement Cost.

Since knowledge about site-specific conditions of each proposed project is limited at the planning stage, a 25 percent contingency was applied to the Baseline Construction Cost to account for unforeseen events and unknown conditions. A 25 percent contingency to account for unknown site conditions such as poor soils, unforeseen conditions, environmental mitigations, and other unknowns is typical for planning projects. The Estimated Construction Cost for the proposed sewer system improvement consists of the Baseline Construction Cost plus the 25 percent construction contingency.

Table 11 Pipeline Construction Unit Costs
System Evaluation and Capacity Assurance Plan
Port of Oakland

Pipe Size (inches)	Unit Cost ($/Linear Foot)
8	106
10	132
12	159
15	198
18	216
21	253
24	289
27	325
30	361
33	397
36	433
39	469
42	505
Pipeline Casing for Major Crossings	
27/48	2,020

Note:
1. ENR CCI used for estimating (San Francisco, March 2010) = 9,728

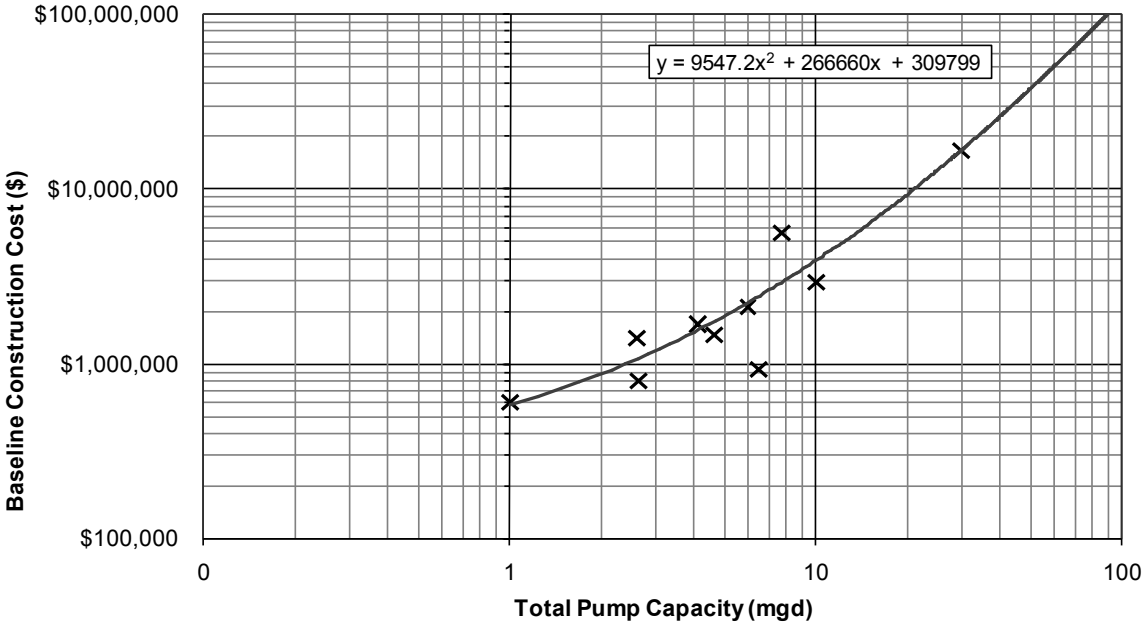


Figure 11 Lift Station Cost Versus Capacity Curve

7.4.3 Capital Improvement Cost

Other project construction contingency costs are divided into three subcategories, totaling 30 percent: 10 percent engineering, 10 percent construction phase professional services, and 10 percent project administration. Engineering services associated with new facilities include preliminary investigations and reports, ROW acquisition, foundation explorations, preparation of drawings and specifications during construction, surveying and staking, sampling of testing material, and start-up services. For this study, engineering costs are assumed to equal 10 percent of the Estimated Construction Cost.

Construction phase professional services covers such items as construction management, engineering services, materials testing, and inspection during construction. The cost of these items can also vary, but for the purpose of this study, it is assumed that construction phase professional services expenses will equal approximately 10 percent of the Estimated Construction Cost.

Finally, there are project administration costs, which cover such items as legal fees, environmental/CEQA compliance requirements, financing expenses, administrative costs, and interest during construction. The cost of these items can also vary, but for the purpose of this Master Plan, it is assumed that project administration costs will equal 10 percent of the Estimated Construction Cost.

The Capital Improvement Cost is the total of the Estimated Construction Cost (including contingency) plus the other costs discussed in the previous paragraphs.

As shown in the following sample calculation of the Capital Improvement Cost, the total cost of all project construction contingencies (construction, engineering services, construction management, and project administration) is 62.5 percent of the Baseline Construction Cost. Note that contingencies were not applied to land acquisition costs. Calculation of the 62.5 percent is the overall mark-up on the baseline construction cost to arrive at the capital improvement cost. It is not an additional contingency.

Example:

Baseline Construction Cost	$1,000,000
Construction Contingency (25%)	250,000
Estimated Construction Cost	1,250,000
Engineering Cost (10%)	125,000
Construction Management (10%)	125,000
Project Administration (10%)	125,000
Capital Improvement Cost	$1,625,000

A summary of the capital project costs is presented in Table 10. This table identifies the projects, provides a brief description of the project, identifies facility size (e.g. pipe diameter and length), and the capital improvement cost. The table also shows the probable phase in which the project would be implemented. The implementation timeframe was based on the priority of each project to correct existing deficiencies or to serve future users.

7.5 Capital Improvement Implementation

As discussed in Section 6, the CIPs are prioritized based on their urgency to mitigate existing deficiencies and for servicing anticipated growth. It is recommended that improvements to mitigate existing deficiencies be constructed as soon as possible.

The implementation phases are separated into 5-year increments, except for the first phase, which runs from 2010 through 2015. Each project is itemized by phase in Table 10 and a summary by phase is provided in Table 12.

Table 12 Capital Improvement Cost Summary System Evaluation and Capacity Assurance Plan Port of Oakland						
	Implementation Phase					
Improvement Type	**2011-15 ($, mill.)**	**2016-20 ($, mill.)**	**2021-25 ($, mill.)**	**2026-30 ($, mill.)**	**2030 + ($, mill.)**	**Total ($, mill.)**
Pipeline Capacity	0.3	0.0	0.0	0.0	0.0	0.3
Lift Station Rehab./Replace.	2.4	3.4	3.1	3.2	2.4	14.6
Pipeline Rehab./Replace.	6.3	6.0	4.6	4.6	4.6	26.1
Infiltration/Inflow Reduction	3.4	3.4	3.4	3.4	3.4	16.9
Total	**12.4**	**12.8**	**11.1**	**11.2**	**10.4**	**57.9**

Notes:
1. Costs are based on the Engineering News Record Construction Cost Index for San Francisco of 9,728 (March 2010).

APPENDIX A - SANITARY SEWER FLOW MONITORING AND INFLOW/INFILTRATION STUDY

SANITARY SEWER FLOW MONITORING AND INFLOW / INFILTRATION STUDY

Port of Oakland

April 2010

V&A

FLOW MONITORING AND INFLOW / INFILTRATION STUDY

PORT OF OAKLAND

Prepared for

carollo
Engineers...Working Wonders With Water™

Prepared by

V&A

April 2010

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EXECUTIVE SUMMARY

V&A has completed sanitary sewer flow monitoring, rainfall monitoring and inflow and infiltration (I&I) analysis within the Port of Oakland, California. Flow and rainfall monitoring occurred over a 7-week period from December 10, 2009 to January 26, 2010 at eight open channel flow monitoring sites.

Table 1 summarizes the flow monitoring and infiltration and inflow results for the flow monitoring sites.

Table 1
Flow Monitoring and I&I Results Summary

Location	ADWF (mgd)	Peak Flow (mgd)	Peak I&I Rate (mgd)	Total Infiltration[1] (gallons)	Peaking Factor	d/D Ratio	Surcharged Level above Pipe Crown (in)
M1	0.107	0.75	0.56	546,000	6.96	0.62	n/a
M2	0.083	0.44	0.33	412,000	5.29	0.47	n/a
M3	0.096	0.78	0.66	902,000	8.06	1.51	37.7
M4	0.077	0.21	0.11	64,000	2.78	0.28	n/a
M5	0.011	0.43	0.42	144,000	38.66	0.46	n/a
M6	0.080	1.12	1.04	732,000	13.95	0.32	n/a
M7	0.060	0.76	0.70	714,000	12.60	1.38	35.7
M8	0.055	0.49	0.30	965,000	9.06	9.14	121.6

The following additional results from this project are noted:

- **Inflow:** Sites M5, M6 and M7, respectively, have the highest normalized inflow.
- **Groundwater Infiltration:** Sites M2, M3, M4, M7 and M8 may have groundwater infiltration rates above typical groundwater infiltration standards as set forth by WPCF.
- **Rain Dependent Infiltration:** Sites M7, M8 and M3, respectively, have the highest normalized infiltration.
- **Combined Infiltration / Inflow:** Sites M8, M5 and M7, respectively, have the highest normalized combined infiltration / inflow.
- **Peaking Factor:** All sites except Site M4 were above the typical design threshold limit for peak flow to average dry weather flow ratio.
- **d/D Ratio:** Sites M3, M7 and M8 surcharged during the study. Site M8 surcharged to a level over 10 feet above the pipe crown; it is noted that Site M8 is upstream from a pump station.

[1] January 17 - 26, 2010.

- **Tidal Inflow:** Site M8 has a strong tidal inflow component. Over the course of the flow monitoring period, it is estimated that approximately 900,000 gallons of tidal bay water entered the basin upstream from Site M8.

V&A strongly cautions that results summarized above are listed with a perspective to flow monitoring and I&I analysis. V&A emphasizes that there are multiple other factors that require consideration before making future CIP planning decisions.

Recommendations

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

1. **Determine I&I Reduction Program:** The Port 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.
   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.
2. **I&I Investigation Methods:** Potential I&I investigation methods include the following:
   a. smoke testing
   b. mini-basin flow monitoring
   c. night-time reconnaissance work to (1) investigate and determine direct point sources of inflow, and (2) determine the areas and/or pipe reaches responsible for high levels of infiltration contribution.
   d. CCTV inspection
3. **I&I Reduction Cost Effective Analysis:** The Port should conduct a study to determine which is more cost-effective: (1) locating the sources of infiltration and inflow and systematically rehabilitating or replacing the faulty pipelines; or (2) continued treatment of the additional storm water I&I flow.

INTRODUCTION

V&A has completed sanitary sewer flow monitoring, rainfall monitoring and inflow and infiltration (I&I) analysis within the Port of Oakland (Port), California. Flow monitoring occurred over a 7-week period from December 10, 2009 to January 26, 2010 at eight open channel flow monitoring sites. The flow monitoring sites are listed in Table 2 and illustrated in Figure 1. Detailed descriptions of the individual flow monitoring sites, including photographs, are included in *Appendix A*.

Table 2.
List of Flow Monitoring and Rainfall Monitoring Sites

Monitoring Site	Diameter (in)	Location
M1	12	Earhart Road, just west of John Glen Drive; Oakland International Airport
M2	12	Doolittle Drive, just west of Hegenberger Road; Oakland International Airport
M3	15	Intersection of Earhart Road and De Havilland Street; Oakland International Airport
M4	12	Northeast corner of Oakland International Airport Parking Lot
M5	27	Maritime Street; south of 7th Street, south of railroad track
M6	30	7th Street, between Navy Roadway and Maritime Street
M7	15	Between railroad tracks; under Adeline Street Overpass, north of 1st Street, west of Chestnut Street
M8	12	Wake Avenue/Algiers Street, west of Maritime Street

Figure 1. Port of Oakland Flow and Rain Monitoring Locations

METHODS AND PROCEDURES

Confined Space Entry

A confined space (Photo 1) is defined as any space that is large enough and so configured that a person can bodily enter and perform assigned work, has limited or restricted means for entry or exit and is not designed for continuous employee occupancy. Title 8, Section 5158 of the California Code of Regulations provides the guidelines and rules for working in these environments. In general, the atmosphere must be constantly monitored for sufficient levels of oxygen (19.5 to 23.0%), and the absence of Hydrogen Sulfide (H_2S) gas, Carbon Monoxide (CO) gas and LEL levels. A typical confined space entry crew has at least three members: the entrant, the attendant and the supervisor. The entrant is the individual performing the work. He/she is equipped with the necessary personal protective equipment needed to perform the job safely, including a personal 4-gas monitor (Photo 2). If it is not possible to maintain line-of-sight with the entrant, then more entrants are required until line-of-sight can be maintained. The attendant is responsible for maintaining contact with the entrant(s) to monitor the atmosphere on another 4-gas monitor and maintaining records of all entrants, if there is more than one.

Photo 1. Confined Space Entry

Photo 2. Typical Personal 4-Gas Monitor

Flow Meter Installation

Eight Isco 2150 flow meters were installed by V&A in the sewer lines shown in Figure 1. Isco meters use a pressure transducer to collect depth readings and ultrasonic Doppler sensors on the probe to determine the average fluid velocity. Figure 2 shows a sketch of a typical flow meter installation.

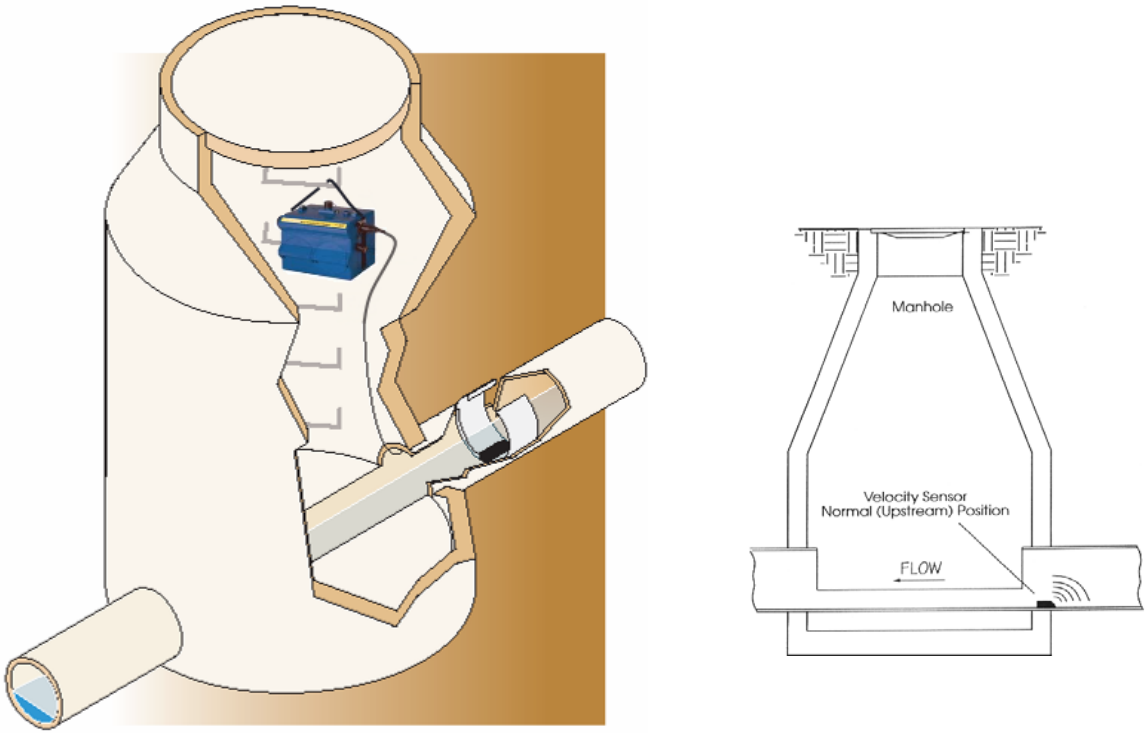


Figure 2. Typical Flow Meter Installation

Continuous depth and velocity readings were recorded by the flow meters in 15-minute increments and downloaded into a computer spreadsheet program where the data could be analyzed and made report ready. Manual level and velocity readings were taken in the field during the flow meter installation and again when the flow meters were removed. These readings were compared to the readings of the flow meters to ensure proper calibration and accuracy.

RAINFALL RESULTS

Figure 3 graphically displays the rainfall events recorded over the flow monitoring period. Figure 4 shows the rain accumulation plot, as well as the historical average rainfalls[2] during the project duration. The January 18 through 25, 2010 rainfall event was used for I&I analyses in this study. Rainfall totals were at approximately 101% of normal levels during this time period.

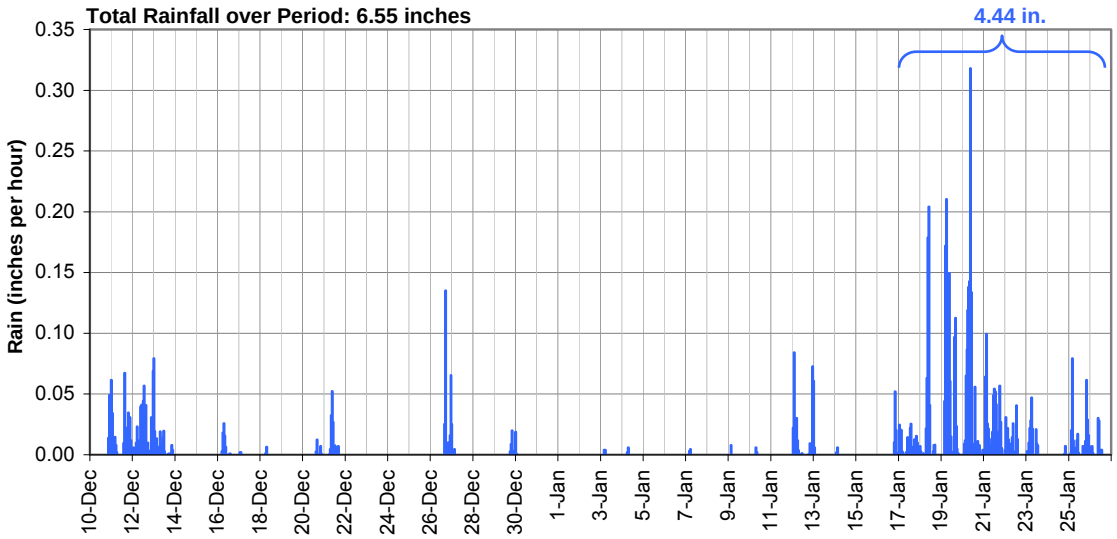


Figure 3. Rainfall Activity over Flow Monitoring Period

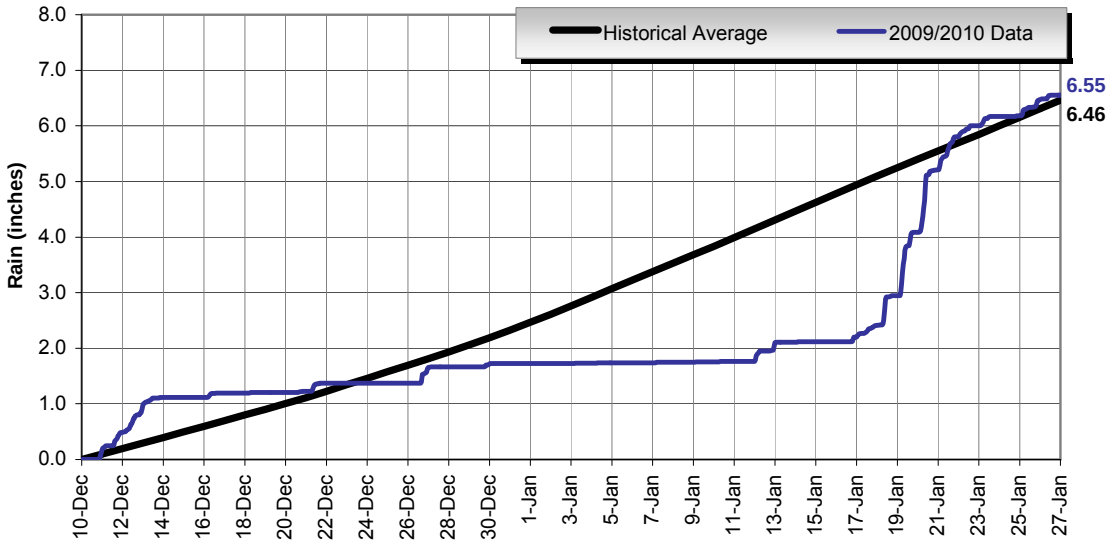


Figure 4. Rainfall Accumulation Plots

[2] The historical data was taken from the WRCC at Station 046336 in Oakland, California. Rainfall data for the site can be viewed at the following website location: http://www.wrcc.dri.edu/summary/climsmnca.html

STORM EVENT CLASSIFICATION

It is important to classify the relative size of the major storm event that occurs over the course of a flow monitoring period[3]. Storm events are classified by intensity and duration. Based on historical data, frequency contour maps for given intensity and duration storm events have been developed by the National Oceanic and Atmospheric Administration (NOAA) for all areas within the continental United States. For example, the NOAA Rainfall Frequency Atlas[4] classifies a 10-year, 24-hour storm event as 3.83 inches (Figure 5). This means that in any given year, there is a 10% chance that 3.83 inches of rain will fall in any 24-hour period.

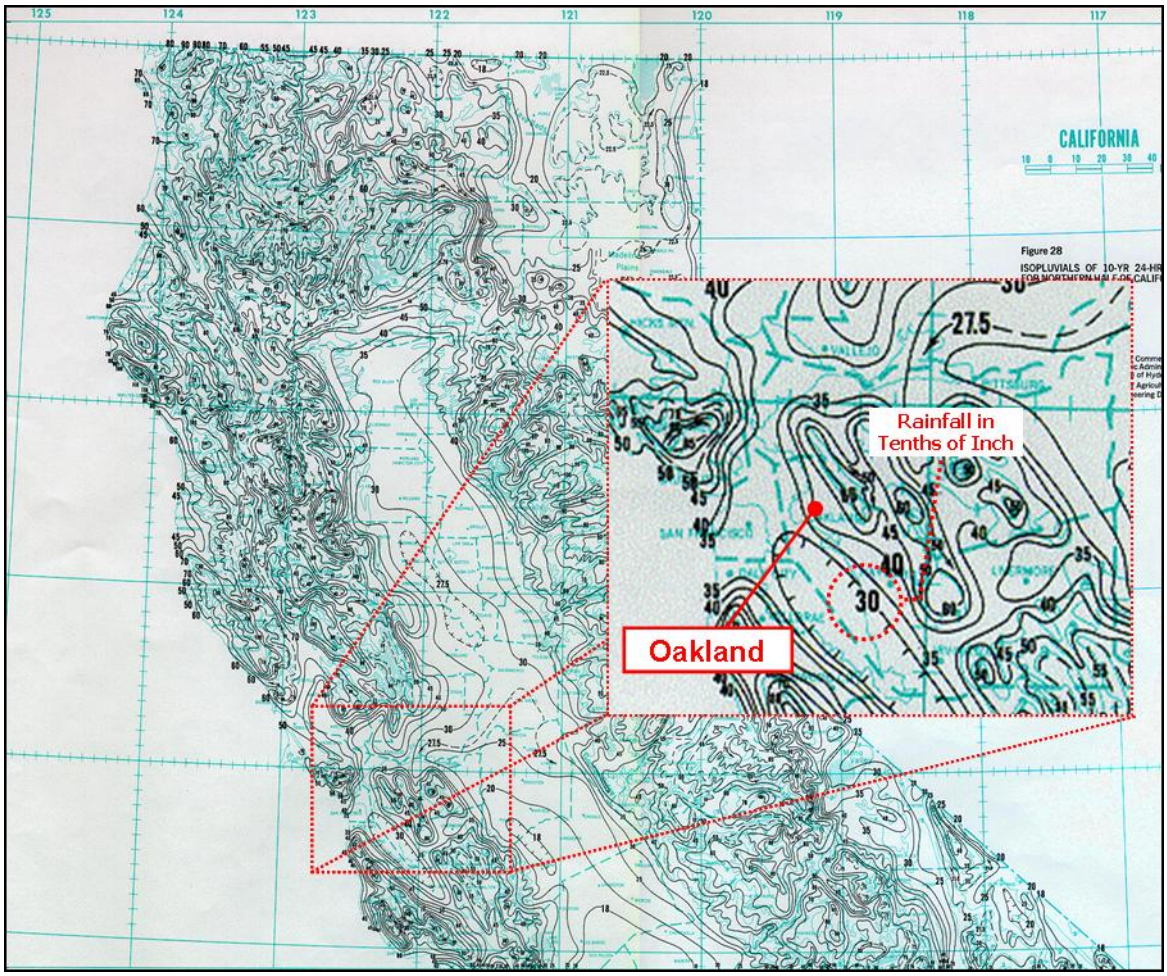


Figure 5. NOAA Northern California Rainfall Frequency Map

From the NOAA frequency maps, the rainfall totals for 1-hour, 6-hour and 24-hour period durations, and 2-year, 5-year, 10-year, 25-year, 50-year, and 100-year period intensities, were plotted to develop a rain event frequency map specific to the rainfall monitoring site, shown in Figure 6.

[3] Sanitary sewers are often designed to withstand I&I contribution to sanitary flows for specific sized "design" storm events.

[4] NOAA Western U.S. Precipitation Frequency Maps Atlas 2, 1973 <http://www.wrcc.dri.edu/pcpnfreq.html>.

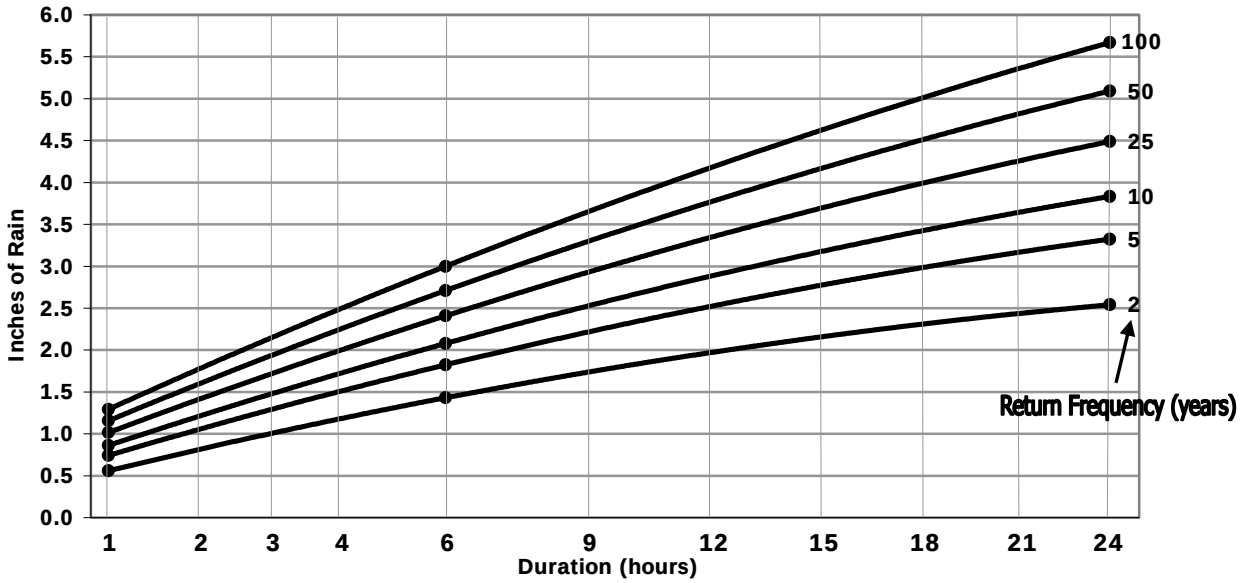


Figure 6. Rain Event Frequency Map

The peak measured densities per hourly periods were calculated for the January 16 through 27, 2010 rainfall event and were superimposed on the Rainfall Storm Event Classification Chart, shown in Figure 7. The rainfall events of this study are classified as less than 2-year storm events.

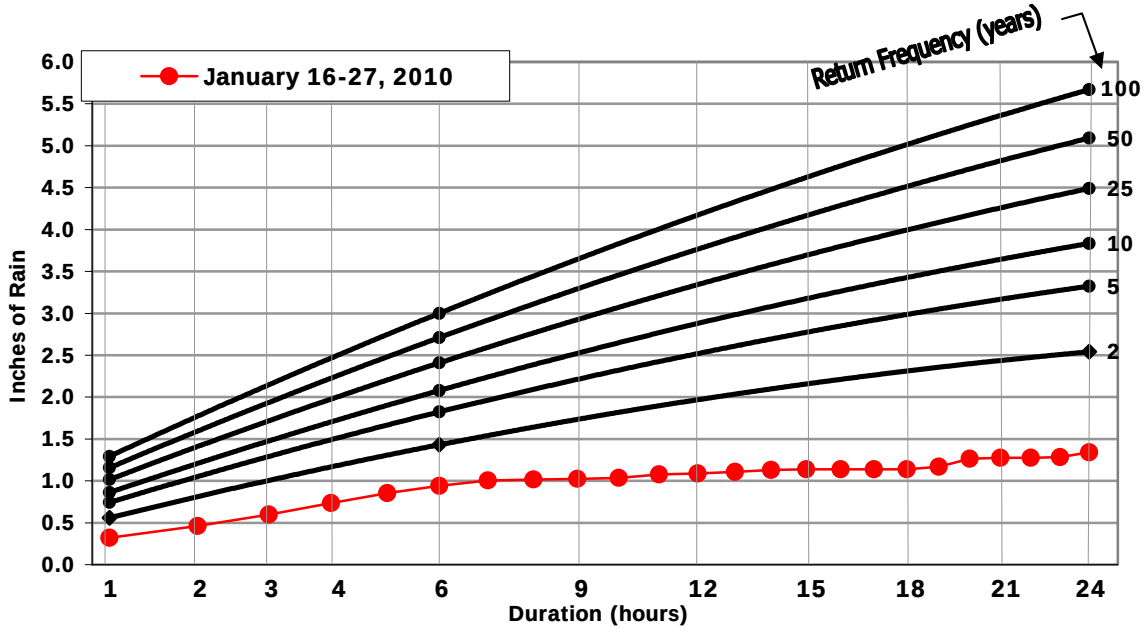


Figure 7. Storm Event Classification

FLOW MONITORING RESULTS

Average Dry Weather Flows

Weekday and weekend flow patterns vary and must be separated when determining average dry weather flows. For this project, the following days were least affected by rainfall and holidays, and were used to estimate weekend and weekday average flows:

- Weekdays: December 9, 15 – 18, 2009, and January 4 – 8, 10, 2010
- Weekends: December 5, 6, 19, 20, 2009 and January 2, 3, 9, 10, 2010

Figure 8 shows a sample of the average dry weather flow graph that was generated for Site M1. Similar graphs were generated for each site and are located in *Appendix A*.

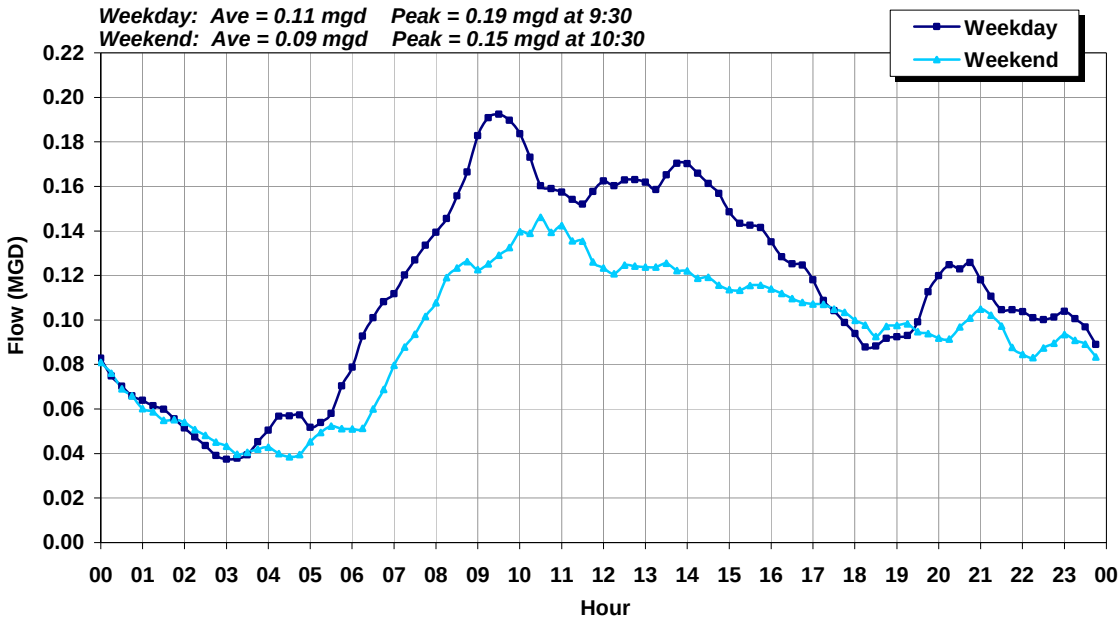


Figure 8. Site M1: Average Dry Weather Flow

Table 3 lists the average dry weather flow (ADWF) and average peak dry weather flows (PDWF) recorded during this study for the sites that were directly monitored.

Table 3.
Dry Weather Flow Summary

Location	Average Dry Weather Flow (MGD)		Weekend/ Weekday Ratio	Average Peak Dry Weather Flow (MGD)		PDWF/ADWF Ratio	
	Weekday	Weekend		Weekday	Weekend	Weekday	Weekend
M1	0.113	0.093	0.83	0.192	0.146	1.71	1.57
M2	0.087	0.073	0.84	0.120	0.107	1.37	1.46
M3	0.103	0.080	0.77	0.149	0.107	1.44	1.34
M4	0.078	0.073	0.94	0.112	0.114	1.44	1.56
M5	0.013	0.007	0.58	0.030	0.014	2.32	1.85
M6	0.078	0.086	1.10	0.102	0.106	1.31	1.24
M7	0.062	0.056	0.89	0.094	0.066	1.50	1.19
M8	0.054	0.055	1.02	0.055	0.056	1.01	1.02

Inflow/Infiltration: Methods

Inflow / Infiltration (I&I) consists of storm water and groundwater which enters the sewer system through pipe defects and improper storm drainage connections, defined as follows:

Inflow

- **Definition:** Storm water inflow is defined as water discharged into the sewer system, including private sewer laterals, from direct connections such as downspouts, yard and area drains, holes in manhole covers, cross connections from storm drains, or catch basins.
- **Impact:** This component of I&I creates a peak flow problem in the sewer system and often dictates the required capacity of downstream pipes and transport facilities to carry these peak instantaneous flows. Because the response and magnitude of inflow is tied closely to the intensity of the storm event, the short-term peak instantaneous flows may result in surcharging and overflows within a collection system. Severe inflow may result in sewage dilution, resulting in upsetting the biological treatment (secondary treatment) at the treatment facility.
- **Cost of Source Identification and Removal:** Inflow locations are usually less difficult to find and less expensive to correct. These sources include direct and indirect cross connections with storm drainage systems, roof downspouts, and various types of surface drains. Generally, the costs to identify and remove sources of inflow are low compared to potential benefits to public health and safety, or the costs of building new facilities to convey and treat the resulting peak flows.
- **Graphical Identification:** Inflow is usually recognized graphically by large magnitude, short duration spikes immediately following a rain event.

Infiltration

- **Definition:** Infiltration is defined as water entering the sanitary sewer system through defective pipes, pipe joints, and manhole walls, and may include cracks, offset joints, root intrusion points, and broken pipes.
- **Impact:** Infiltration typically creates long-term annual volumetric problems. The major impact is the cost of pumping and treating the additional volume of water, and of paying for treatment (for municipalities that are billed strictly on flow volume).
- **Cost of Source Detection and Removal:** Infiltration sources are usually harder to find and more expensive to correct than inflow sources. Infiltration sources include defects in deteriorated sewer pipes and/or manholes, and may include cracks, offset joints, root intrusion points, and broken pipes. The sources may be wide-spread throughout a sanitary sewer system.
- **Graphical Identification:** Infiltration is often recognized graphically by a gradual increase in flow after a wet weather event. The increased flow typically sustains for a period after rainfall has stopped and then gradually drops off as soils become less saturated, and as groundwater levels recede to normal levels.

Infiltration Components

Infiltration can be further subdivided into components as follows:

- **Groundwater Infiltration** – Groundwater infiltration depends on the depth of the groundwater table above the pipelines as well as the percentage of the system submerged.

The variation on groundwater levels and subsequent groundwater infiltration rates are seasonal by nature. On a day-to-day basis, groundwater infiltration rates are relatively steady and will not fluctuate greatly.

- **Rainfall Dependent Infiltration –** This component occurs as a result of storm water and enters the sewer system through pipe defects similar to 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 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. Note: this type of infiltration can have a quick response and graphically can look very similar to inflow.

Figure 9 illustrates the possible locations and components of I&I.

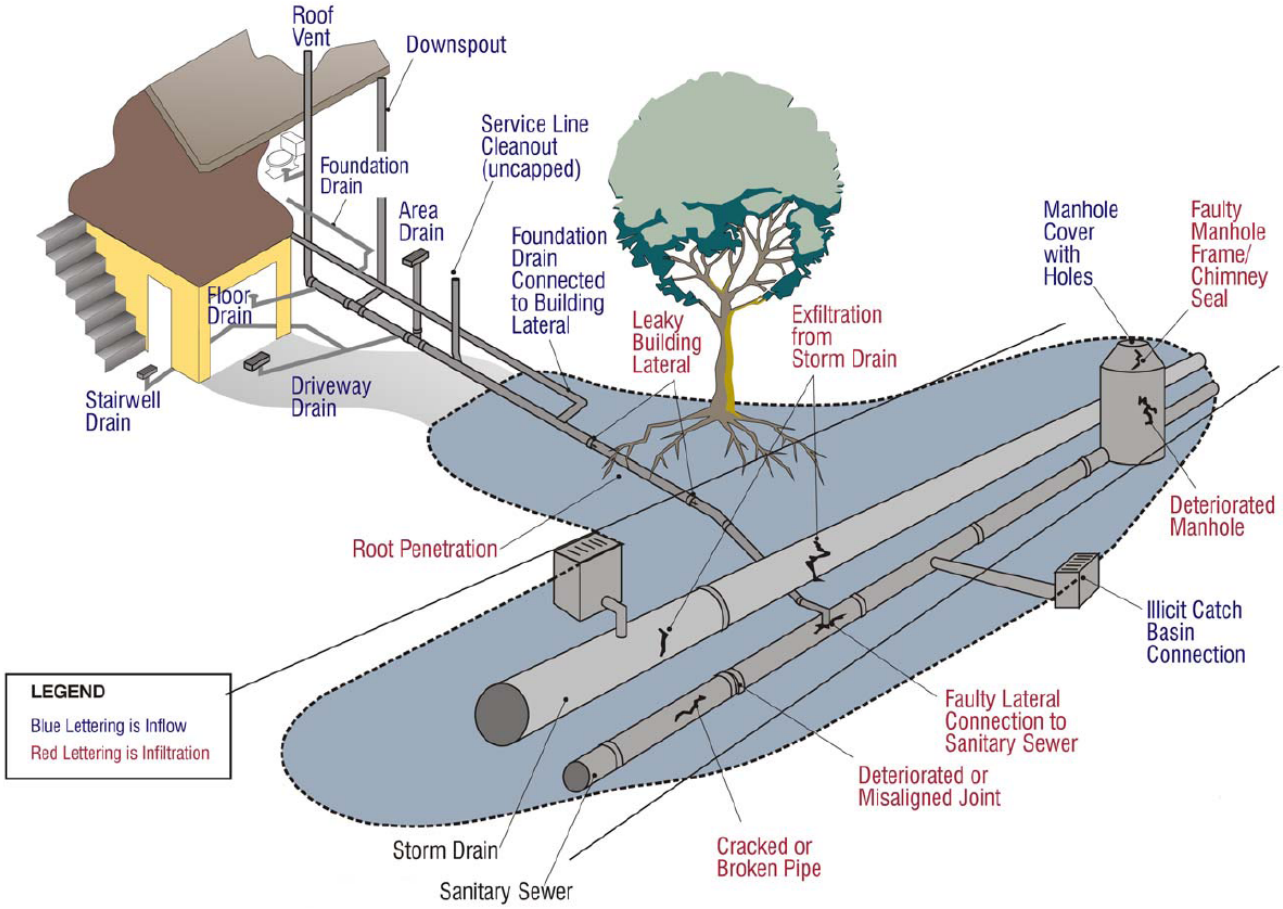


Figure 9. Typical Sources of Infiltration and Inflow

Graphical Identification of I&I Components

Figure 10 shows sample graphs indicating the typical graphical response patterns for Inflow / Infiltration.

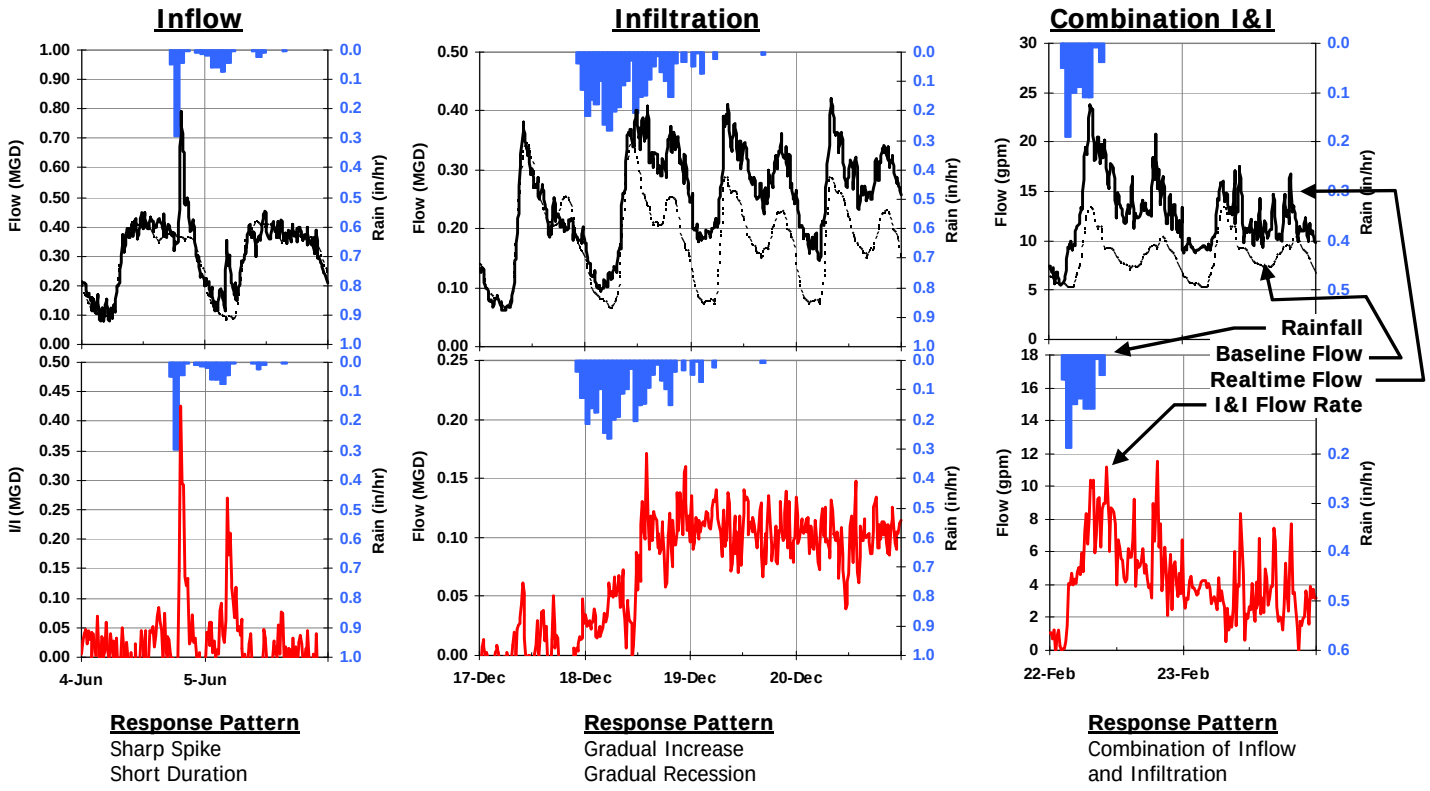


Figure 10. Inflow / Infiltration Graphical Response Patterns

Analysis Techniques

After differentiating I&I flows from baseline flows, various calculations can be made to determine which I&I component is more prevalent at a particular site, and to compare the relative magnitude of the I&I components between drainage basins and between storm events, summarized as follows:

Inflow Indicators

Peak I&I Flow Rate: It is preferable for I&I analysis to look strictly at I&I flow rates rather than peak flow rates; peak flow rates can be skewed higher or lower depending on whether the storm event I&I response occurs during low flow or high flow hours. After determining the peak I&I flow rate for a given site, and for a given storm event, there are three ways to *normalize* the peak I&I rates for an "apples-to-apples" comparison amongst the different drainage basins:

- **Peak I&I Flow Rate to ADWF Ratio:** Peak measured I&I rate divided by average dry weather flow (ADWF). This is a ratio and is expressed without units.

Infiltration Indicators

Dry Weather Groundwater Infiltration: GWI analysis is conducted by looking at minimum dry weather flow to average dry weather flow ratios and comparing them to established standards, which may result in quantifying the rate of excess ground water infiltration. These methods are discussed in further detail in the *Groundwater Analysis* section later in this report.

Rainfall Dependent Infiltration: Infiltration occurring 24 hours or more after the conclusion of a storm event is typically classified as rainfall dependent infiltration. Analysis is conducted by looking at the infiltration rates at set periods after the conclusion of a storm event. Depending on the system and the time required for flows to return to ADWF levels, different set periods may be examined to determine the basins with the greatest or most sustained rainfall dependent infiltration rates.

Combined I&I Indicators

Total Infiltration: The total inflow and infiltration is measured in gallons per site and per storm event. Because it is based on total I&I volume, it is an indicator of combined Inflow / Infiltration and is used to identify the overall volumetric influence of I&I within the monitoring basin. Similar to Inflow, pipe length, basin area and dry weather flow are used to normalize combined I&I for basin comparison:

- **Combined I&I Flow Rate per ADWF:** Total infiltration (gallons) divided by the ADWF (gpd) and divided by storm event rainfall (inches of rain). Final units are gallons (x 10^6) per MGD of ADWF per inch-rain.

Figure 11 below shows the I&I graph with I&I analysis calculations produced for Site M3. Similar graphs for each site are located in *Appendix A*.

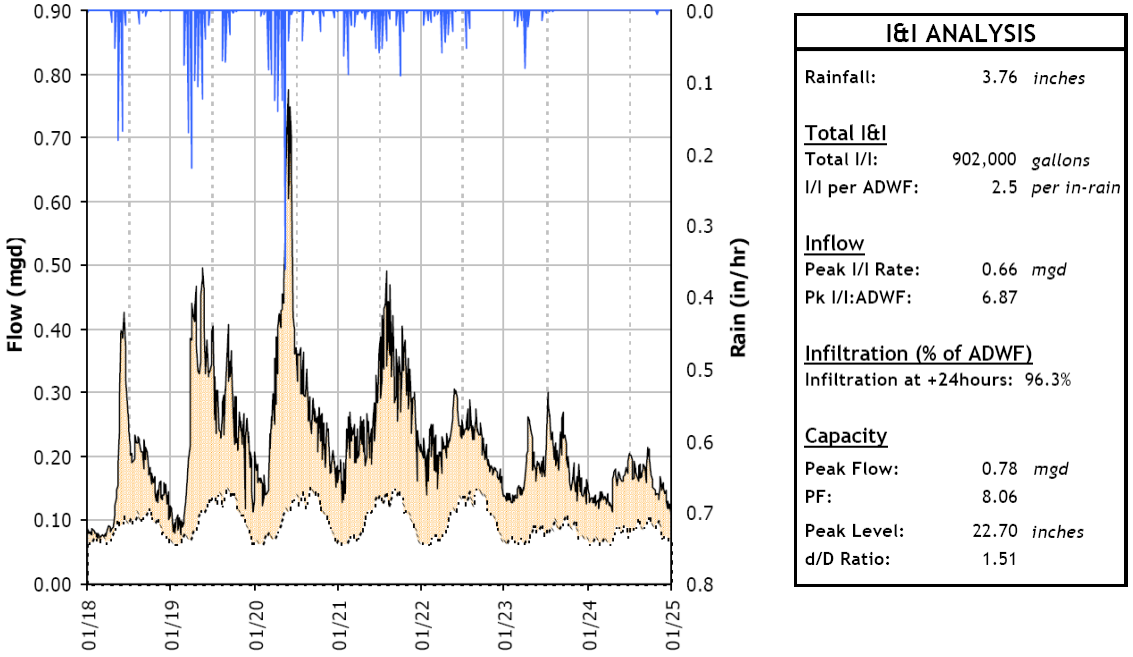


Figure 11. I&I Analysis Graph and Calculations: Site M3

Inflow Analysis

Table 4 summarizes the peak I&I flows and inflow analysis results for the flow monitoring locations. Data from the January 17 through 26 rainfall event was used for this analysis. Figure 12 shows bar graphs of the inflow indicators.

Table 4.
Inflow Analysis Summary

Location	ADWF (mgd)	Peak I&I Rate (mgd)	Peak I&I to ADWF Ratio
M1	0.107	0.56	5.25
M2	0.083	0.33	3.93
M3	0.096	0.66	6.87
M4	0.077	0.11	1.40
M5	0.011	0.42	37.21
M6	0.080	1.04	12.95
M7	0.060	0.70	11.58
M8	0.055	0.30	5.57

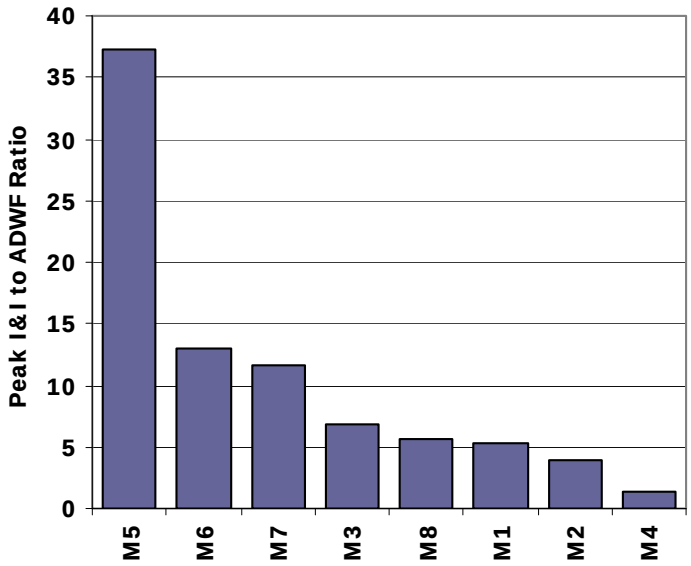


Figure 12. Inflow Indicators by Site

- Sites M5, M6 and M7, respectively, have the highest normalized inflow.

RDI (Infiltration) Analysis

Table 5 summarizes the RDI analysis results for the flow monitoring locations. RDI analysis was conducted after the conclusion of rainfall falling on January 23, 2010. Infiltration rates at 24 hours post rainfall were calculated and are shown as a percentage of the average dry weather flow. Figure 13 shows a bar graph of the RDI analysis results.

Table 5.
RDI Analysis Summary

Location	ADWF (mgd)	Infiltration Rate as % of ADWF on 1/25/2010 (+24 hrs)
M1	0.107	18%
M2	0.083	70%
M3	0.096	96%
M4	0.077	2%
M5	0.011	0%
M6	0.080	28%
M7	0.060	150%
M8	0.055	115%

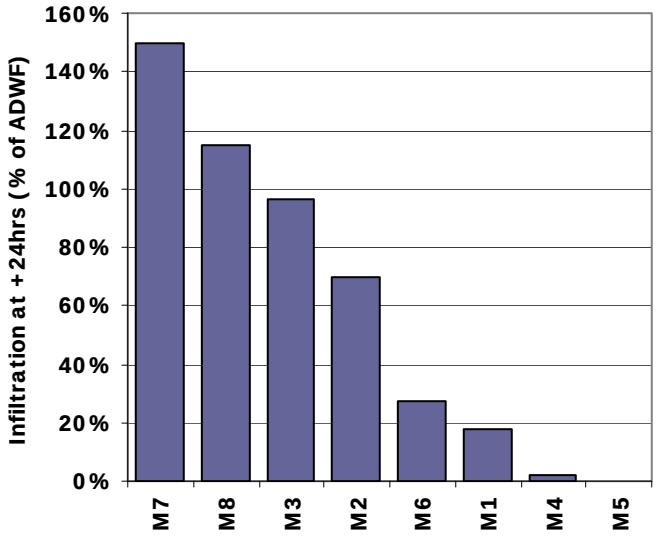


Figure 13. Infiltration Rankings by Site

- Sites M7, M8 and M3, respectively, have the highest normalized infiltration.

GWI Analysis

Dry weather (baseline) flow can be expected to have a predictable diurnal flow pattern. While each site is unique, experience has shown that, given a reasonable volume of flow and typical loading conditions, the daily peaks and lows fall into a predictable range when compared to the daily average flow. If a site has a large percentage of groundwater infiltration occurring during the periods of dry weather flow measurement, the amplitudes of the peak and low flows will be dampened[5]. Figure 14 shows a sample of two flow monitoring sites, both with nearly the same average daily flow, but with considerably different peak and low flows. In this *sample* case, Site B1 may have a considerable volume of groundwater infiltration.

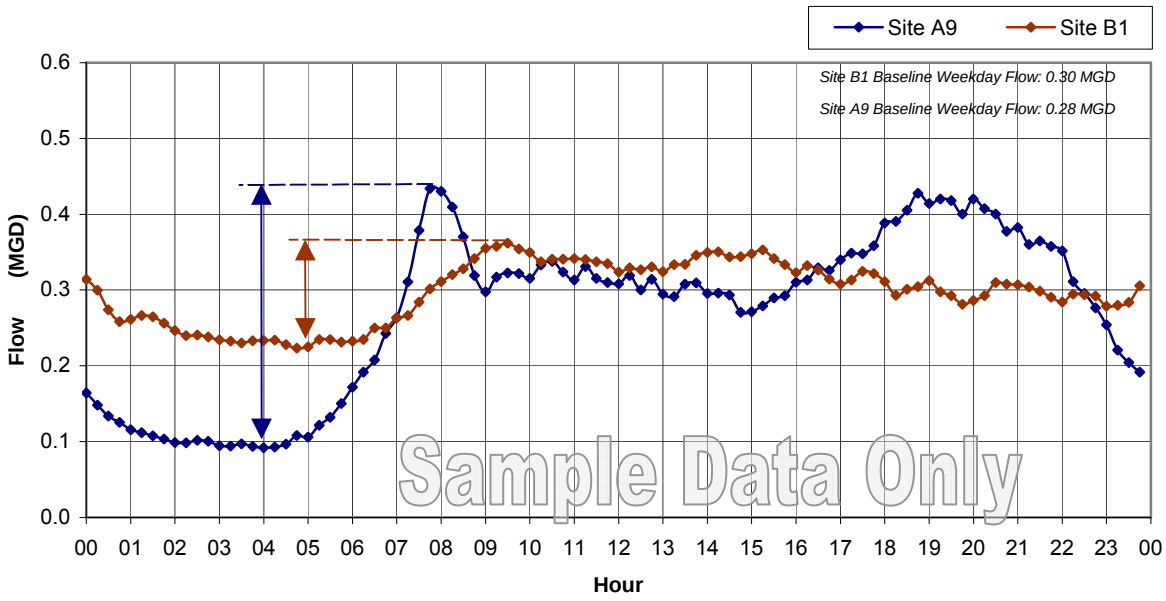


Figure 14. Groundwater Infiltration Sample Figure

It can be useful to compare the peak-to-baseline and low-to-baseline flow ratios for all flow metering sites. A site with abnormal ratios, and with no other reasons to suspect abnormal flow patterns (such as proximity to pump station, treatment facilities, etc.), has a distinct possibility of higher levels of groundwater infiltration in comparison to the rest of the collection system. Figure 15 plots the peak-to-baseline and min-to-baseline flow ratios against the baseline flows for all sites monitored during this study. The dotted line shows "typical" min-to-baseline flow ratios per the Water Pollution Control Federation[6]. There are no established peak-to-baseline ratios, but a system trendline has been drawn to better distinguish sites that fall outside the system trends. The min-to-baseline ratio should be taken with more weight as low flows during early morning hours are generally more predictable than peak flows.

[5] Theoretically imagining an extreme case, if there were 0.2 MGD of baseline flow and 2.0 MGD of groundwater infiltration, the peaks and lows would be barely recognizable; the baseline flow would be nearly a straight line.

[6] WPCF Manual of Practice No. 9 "Design and Construction of Sanitary and Storm Sewers".

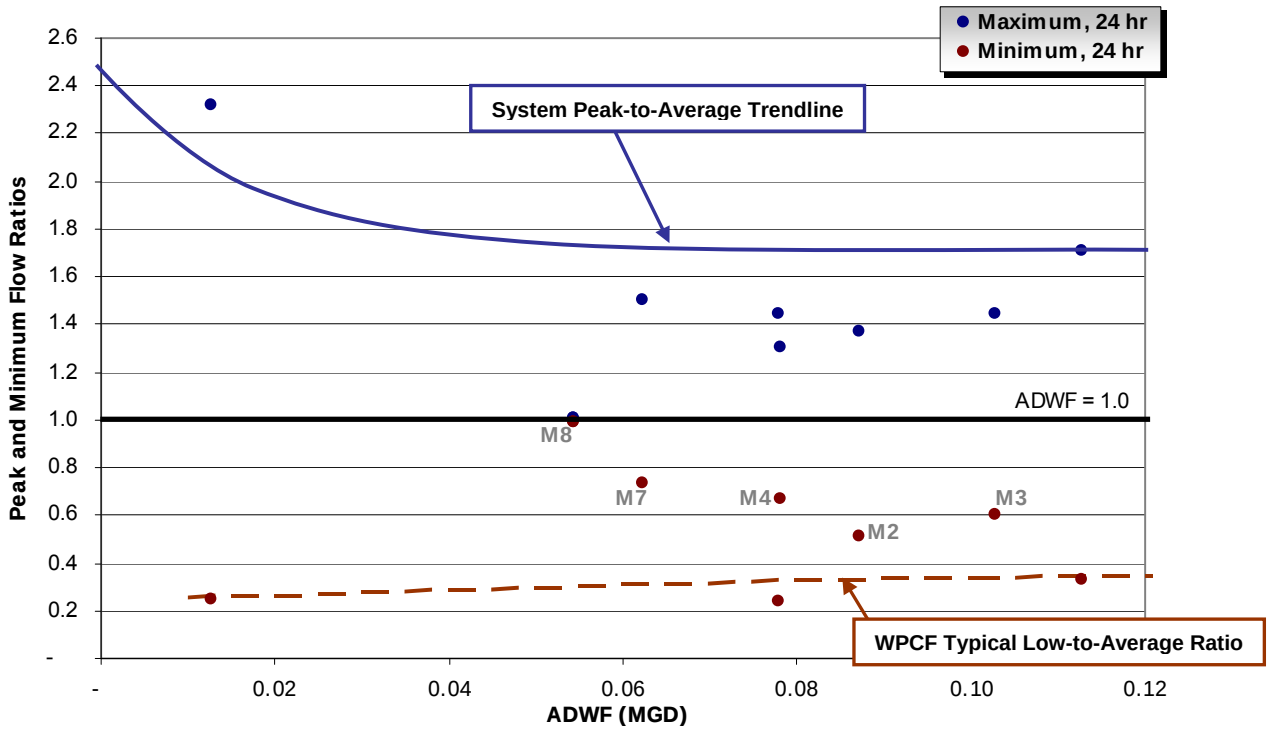


Figure 15. Peak and Minimum Flow Ratios vs. ADWF[7]

Sites M2, M3, M4, M7 and M8 may have groundwater infiltration rates above typical groundwater infiltration standards as set forth by WPCF. Table 6 calculates the amount of groundwater infiltration required to bring these sites to the WPCF standard. Please note: the stated groundwater rates are not **total** groundwater infiltration rates, but groundwater rates above typical rates.

Table 6.
Excess Groundwater Infiltration Rates above Typical Rates

Location	Excess Groundwater Infiltration Rate (mgd)	Excess Groundwater Infiltration Rate (% of ADWF)
M2	0.025	39%
M3	0.043	72%
M4	0.041	110%
M7	0.039	169%
M8	unknown	unknown

*Note: the WPCF standards are set assuming typical residential sanitary sewer usage. Port flows are completely **non-residential**; this analysis is presented as information for review, but should not be assumed to be valid for this application.*

[7] Due to attenuation, it should be expected that sites with larger flow volumes should not have quite the peak-to-average and low-to-average flow ratios as sites with lesser flow volumes, which is why the typical and system trend lines slope closer to 1.0 as the ADWF increases, as shown in the figure.

Combined I&I Results Summary

Table 7 summarizes the total I&I analysis results for the flow monitoring locations for the January 17 through 26 rainfall event. Figure 16 shows a bar graph of the combined I&I indicator.

Table 7.
Total I&I Analysis Summary

Location	ADWF (mgd)	Combined I&I (gallons)	Combined I&I to ADWF Factor
M1	0.107	546,000	1.36
M2	0.083	412,000	1.32
M3	0.096	902,000	2.49
M4	0.077	64,000	0.22
M5	0.011	144,000	3.58
M6	0.080	732,000	2.55
M7	0.060	714,000	3.30
M8	0.055	965,000	4.94

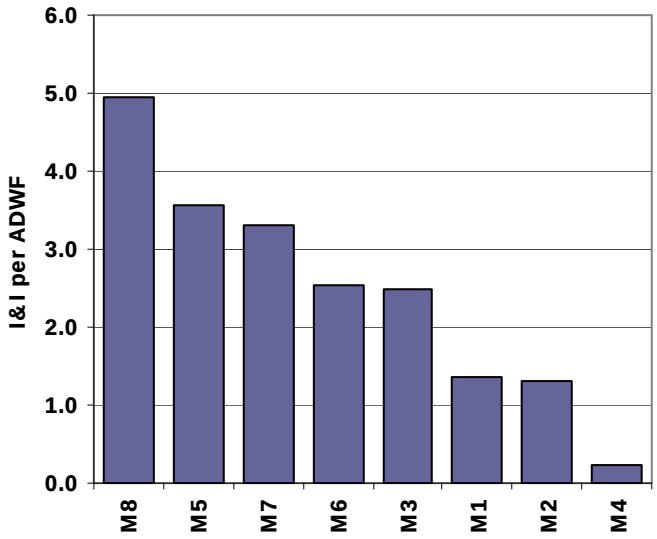


Figure 16. Combined I&I Indicators by Site

- Sites M8, M5 and M7, respectively, have the highest normalized combined infiltration / inflow.

Pipeline Capacity Analysis

Peaking Factor: Peaking Factor is defined as the Peak Wet Weather Flow divided by the Average Dry Weather Flow. A peaking factor threshold value of 3.0 is commonly used for sanitary sewer design.

d/D Ratio: The d/D ratio is the peak measured depth of flow divided by the pipe diameter. A d/D ratio less than 0.75 is a common threshold value used for pipe design. The d/D ratio for each site was computed based on the maximum depth of flow during the rainfall events.

Table 8 summarizes the peak recorded d/D ratios and Peaking Factors per site during the flow monitoring period. Figure 17 shows a bar graph of the capacity results.

Table 8.
Capacity Analysis Summary: Port of Oakland

Location	Peak Measured Flow (mgd)	Peaking Factor	Peak Measured Depth (in)	d/D Ratio	Surcharged Level above Pipe Crown (in)
M1	0.75	6.96	7.38	0.62	n/a
M2	0.44	5.29	5.62	0.47	n/a
M3	0.78	8.06	22.7	1.51	37.7
M4	0.21	2.78	3.3	0.28	n/a
M5	0.43	38.66	12.4	0.46	n/a
M6	1.12	13.95	9.53	0.32	n/a
M7	0.76	12.60	20.7	1.38	35.7
M8	0.49	9.06	109.7	9.14	121.6

n/a = pipe did not surcharge

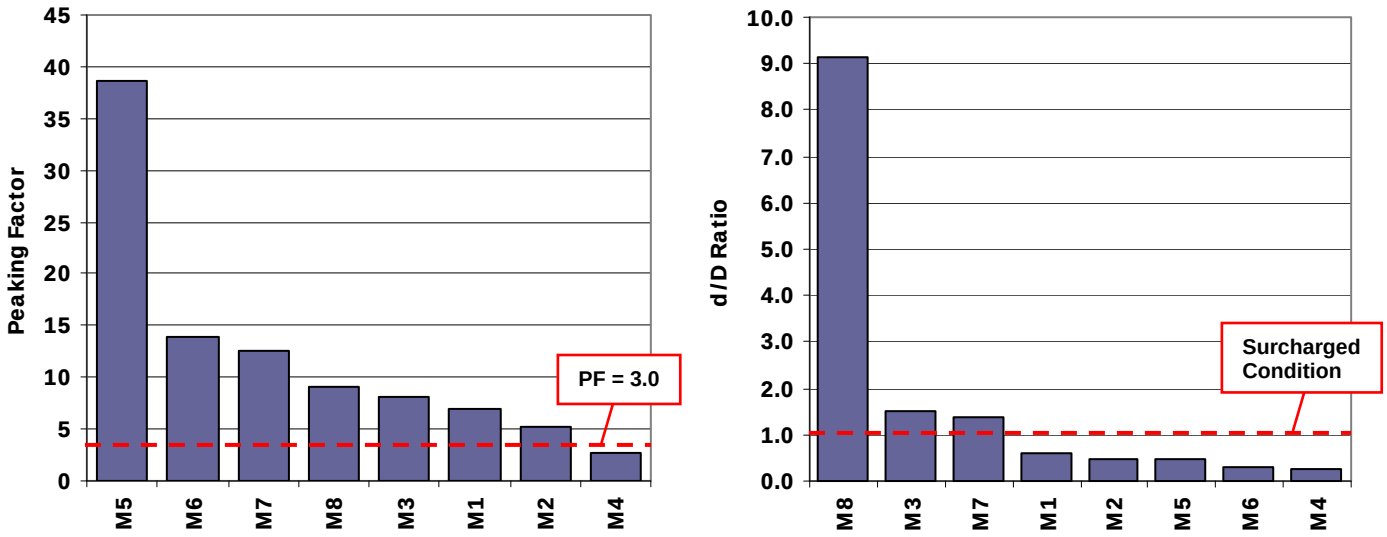


Figure 17. Capacity: Peaking Factor and d/D Ratio

The following capacity analysis results are noted:

- **Peaking Factor**
  - All sites except Site M4 were above the typical design threshold limit for peak flow to average dry weather flow ratio.
- **d/D Ratio**
  - Sites M3, M7 and M8 surcharged during the study. Site M8 surcharged to a level over 10 feet above the pipe crown; it is noted that Site M8 is upstream from a pump station.

RECOMMENDATIONS

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

1. **Determine I&I Reduction Program:** The Port 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 the program can be prioritized to investigate and reduce sources of inflow within the basins with the greatest inflow problems.
    b. If total infiltration and general pipeline deterioration are of greater concern, then priority can be given to investigate and reduce sources of infiltration within the basins with the greatest infiltration problems.
2. **I&I Investigation Methods:** Potential I&I investigation methods include the following:
    a. smoke testing
    b. mini-basin flow monitoring
    c. night-time reconnaissance work to (1) investigate and determine direct point sources of inflow, and (2) determine the areas and/or pipe reaches responsible for high levels of infiltration contribution.
    d. CCTV inspection

I&I Reduction Cost Effective Analysis: The Port should conduct a study to determine which is more cost-effective: (1) locating the sources of infiltration and inflow and systematically rehabilitating or replacing the faulty pipelines; or (2) continued treatment of the additional storm water I&I flow.

APPENDIX A
FLOW MONITORING SITES: DATA, GRAPHS, INFORMATION

PORT OF OAKLAND

Temporary Flow Monitoring Study

Sanitary Sewer Collection System

Monitoring Site: Site M1

Location: Earhart Road, just west of John Glen Drive; Oakland International Airport

Size/Type Line: 12-inch Sanitary Sewer Pipe

Data Summary Report

V&A

PORT OF OAKLAND

Site Information Report

Monitoring Site: Site M1

Location: Earhart Road, just west of John Glen Drive; Oakland International Airport

Latitude: 37.7260°

Longitude: -122.2025°

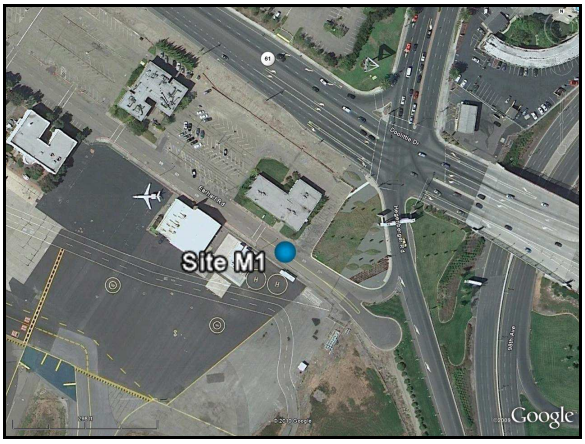
Rim Elevation: 6 *feet*

Diameter: 12 *inches*

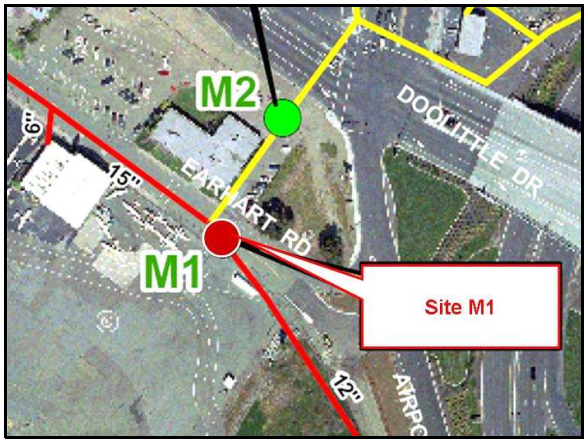
Average Dry Weather Flow: 0.107 *mgd*

Peak Measured Flow: 0.747 *mgd*

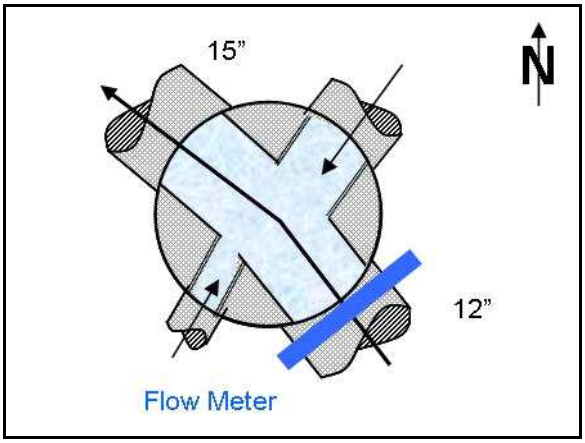
Satellite Map



Sanitary Map



Flow Diagram



Street View Photo

Plan View Photo

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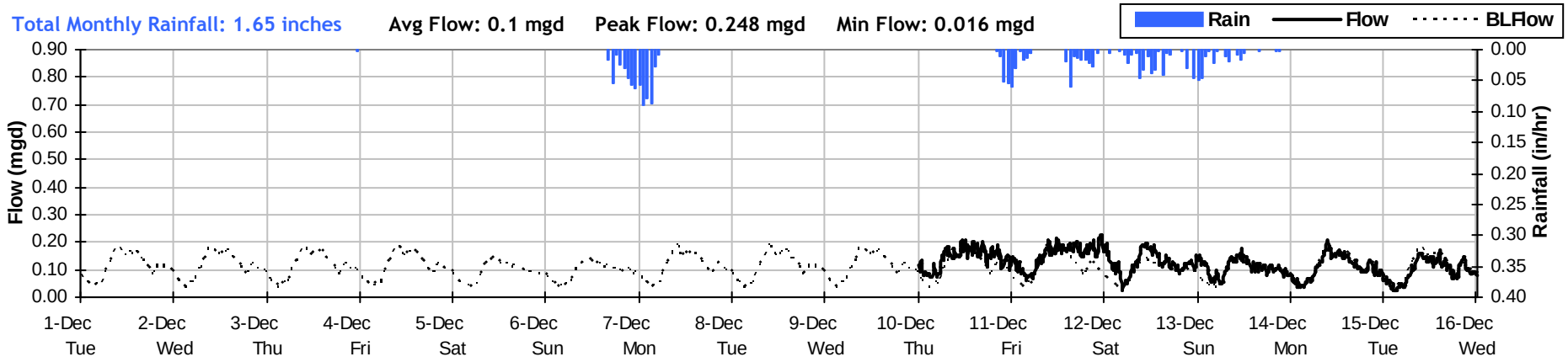
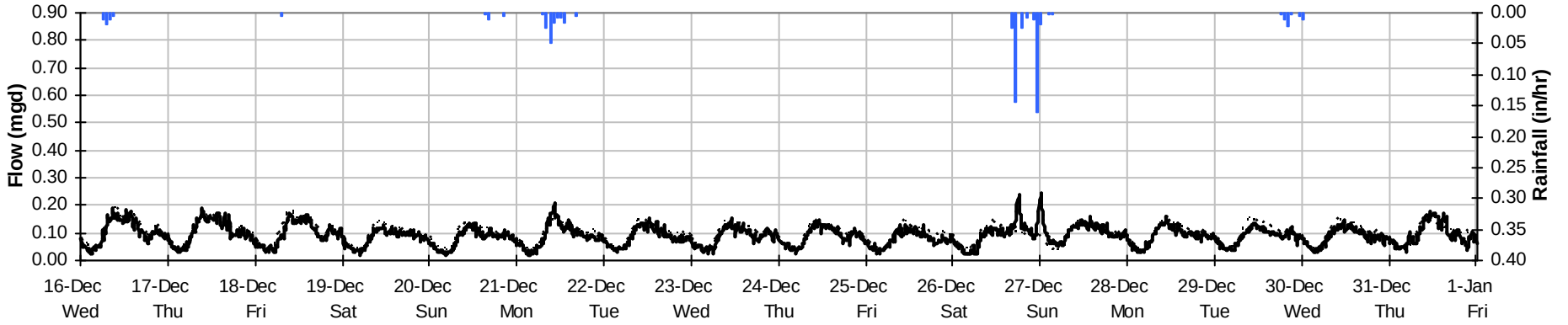
PORT OF OAKLAND

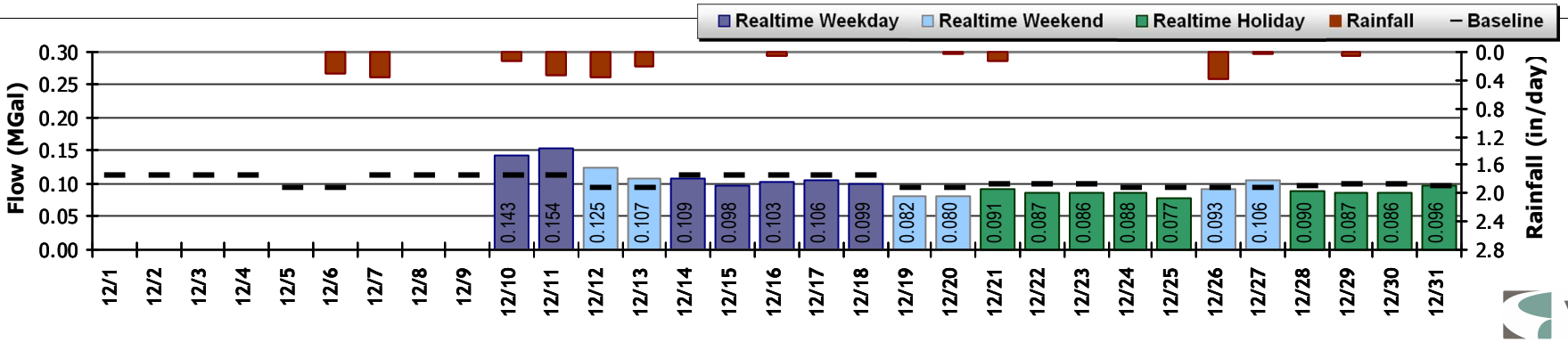
Period Flow Summary
December, 2009

Monitoring Site:
Site M1

Total Monthly Rainfall: 1.65 inches Avg Flow: 0.1 mgd Peak Flow: 0.248 mgd Min Flow: 0.016 mgd







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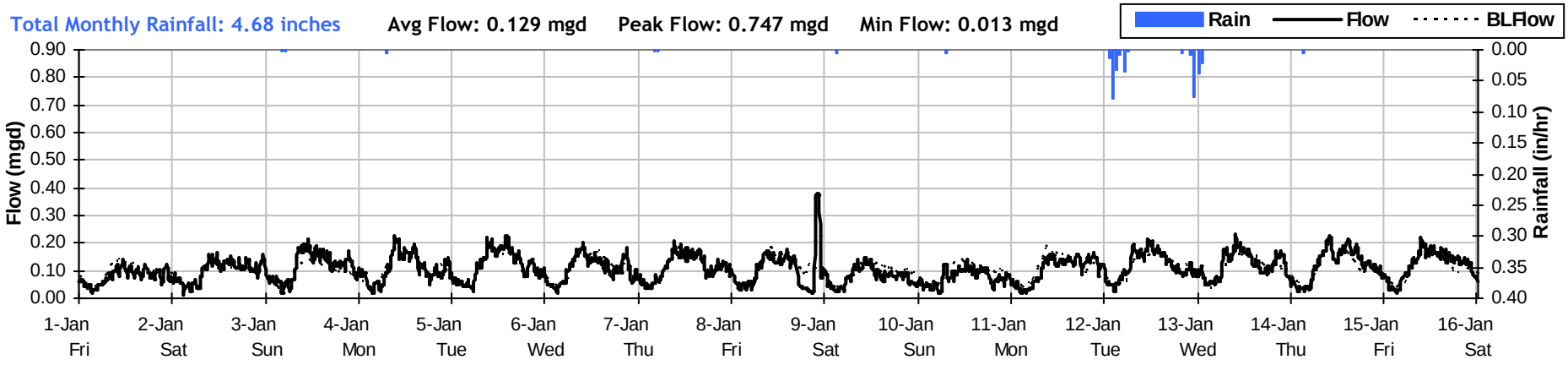
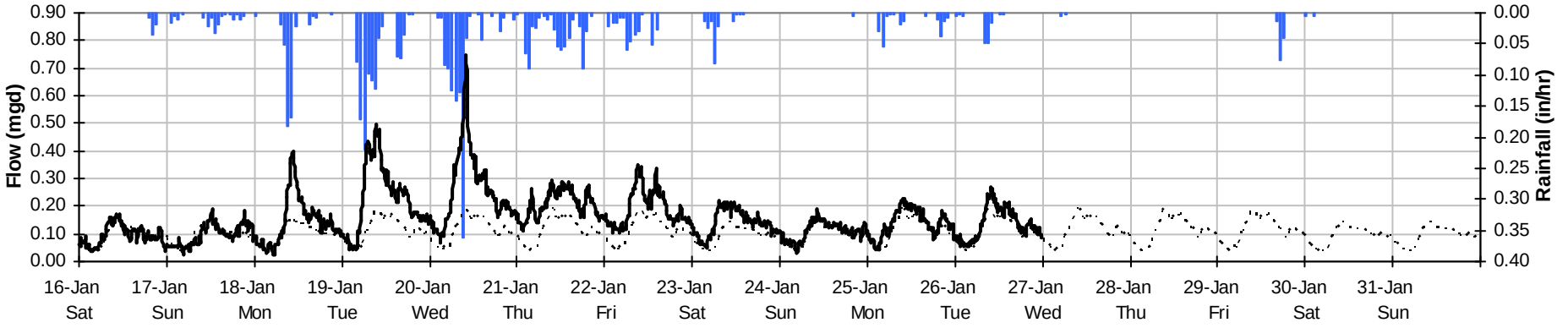
PORT OF OAKLAND

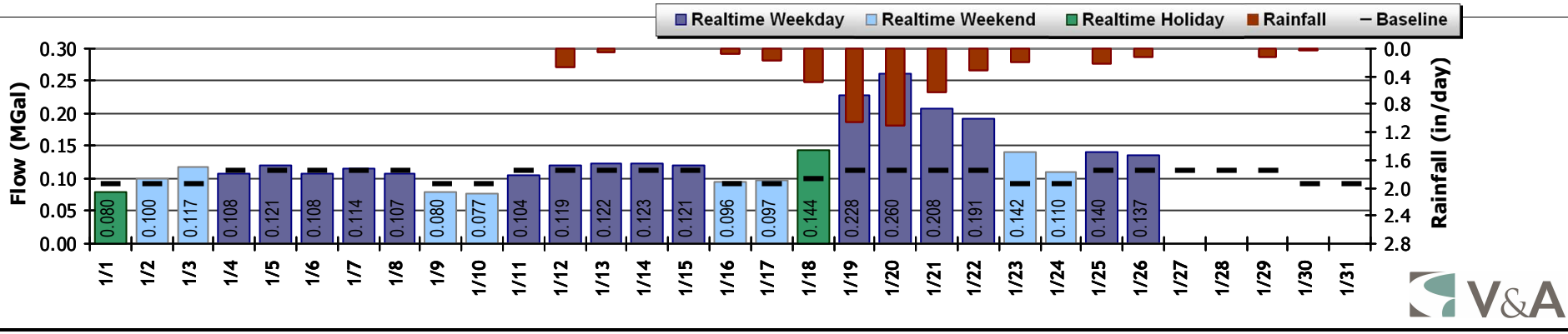
Period Flow Summary
January, 2010

Monitoring Site:
Site M1

Total Monthly Rainfall: 4.68 inches Avg Flow: 0.129 mgd Peak Flow: 0.747 mgd Min Flow: 0.013 mgd







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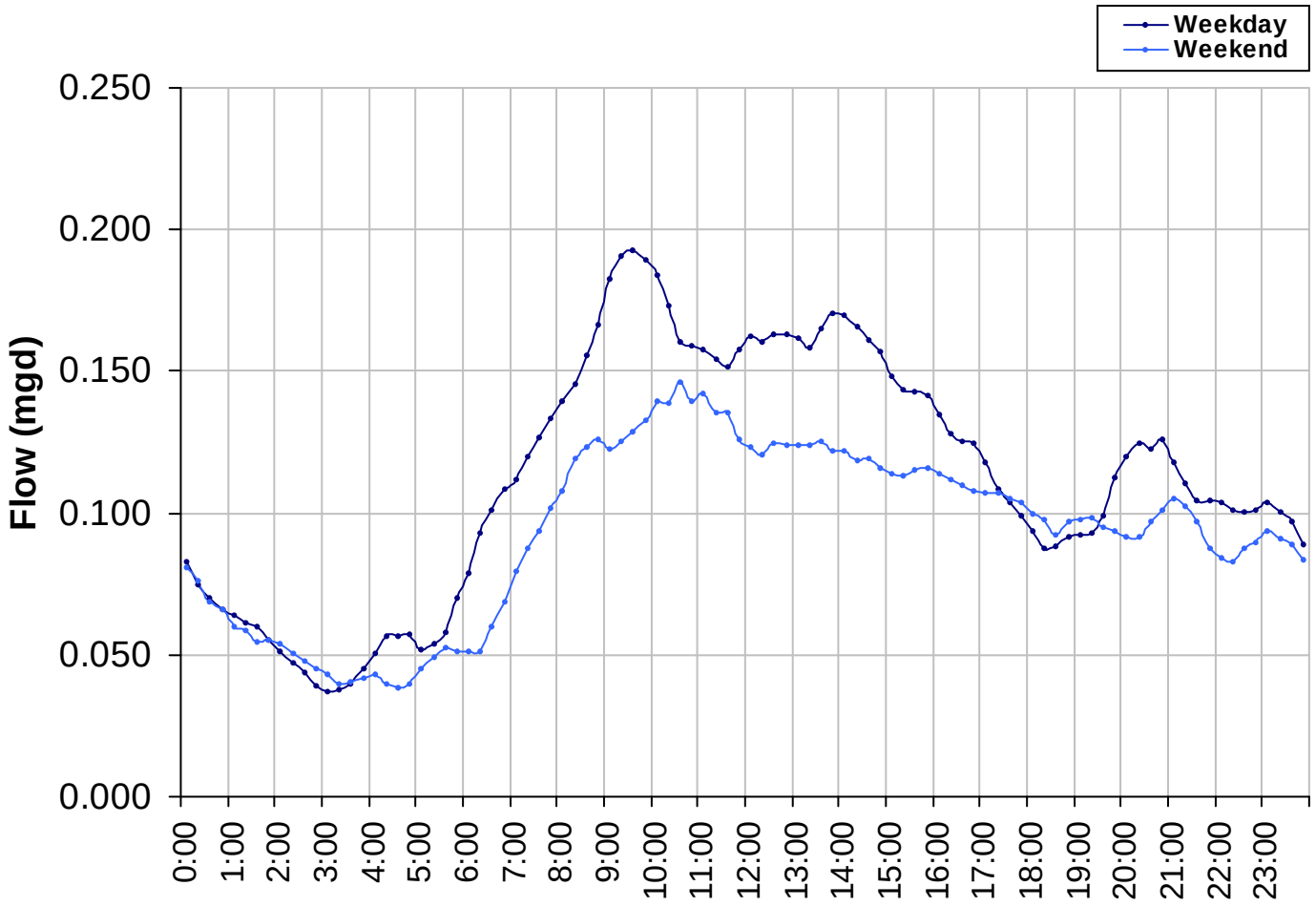
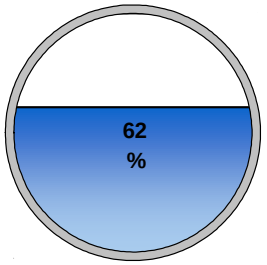
Average Dry Weather Flow

Monitoring Site:
Site M1

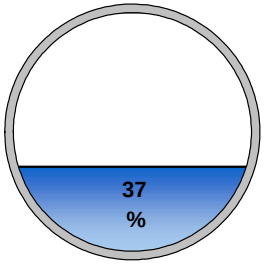


Peak Measured Flow:
0.747 *mgd*



Peak measured flow shown in weekly graphs on following pages

Average Dry Weather Flow:
0.107 *mgd*



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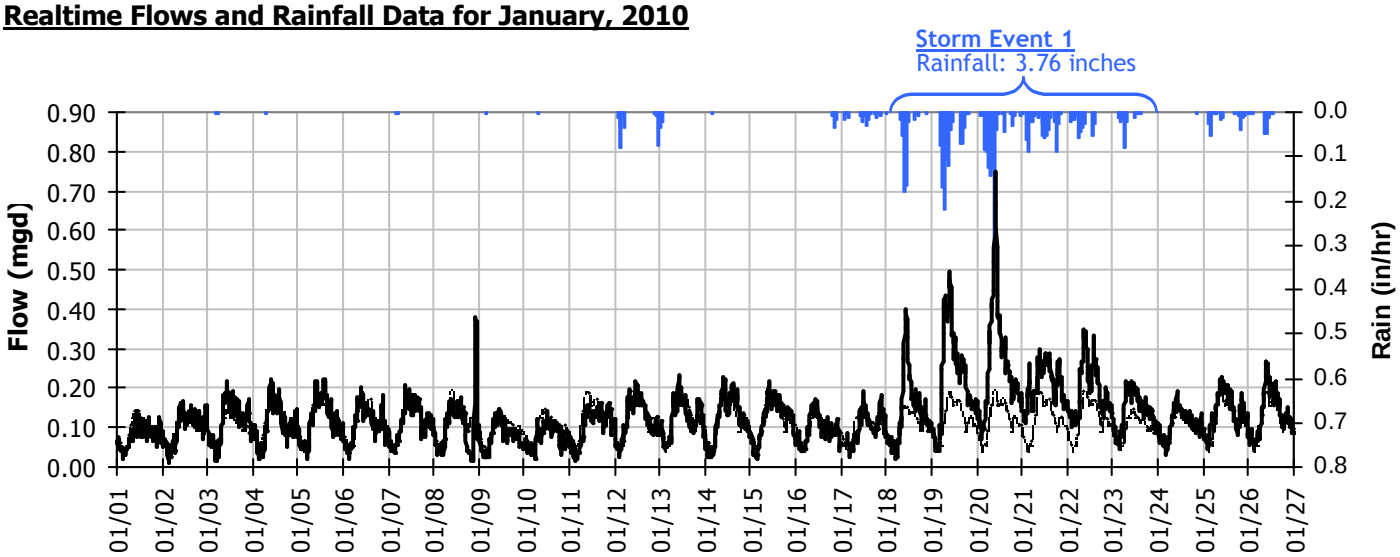
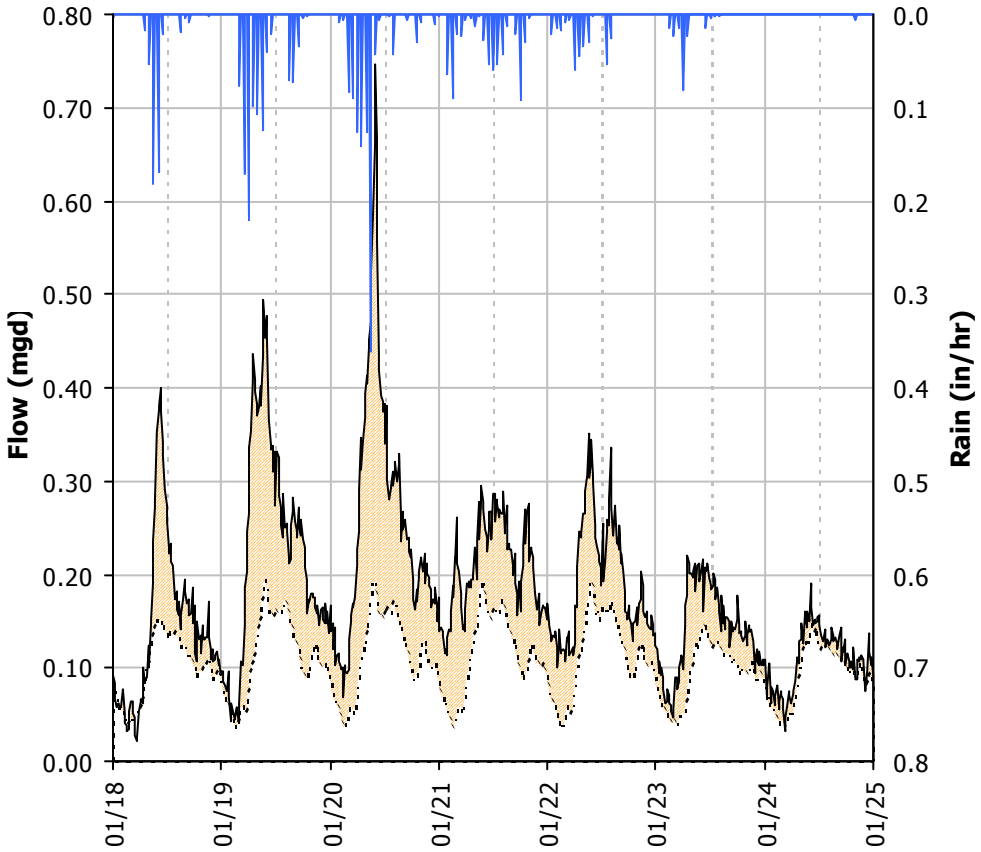
I/I Summary

Monitoring Site:
Site M1

Realtime Flows and Rainfall Data for January, 2010



Storm Event #1 Detail I/I Graph



I&I ANALYSIS		
Rainfall:	3.76	*inches*
Total I&I		
Total I/I:	546,000	*gallons*
I/I per ADWF:	1.4	*per in-rain*
Inflow		
Peak I/I Rate:	0.56	*mgd*
Pk I/I:ADWF:	5.25	
Infiltration (% of ADWF)		
Infiltration at +24hours:	17.8%	
Capacity		
Peak Flow:	0.75	*mgd*
PF:	6.96	
Peak Level:	7.38	*inches*
d/D Ratio:	0.62	

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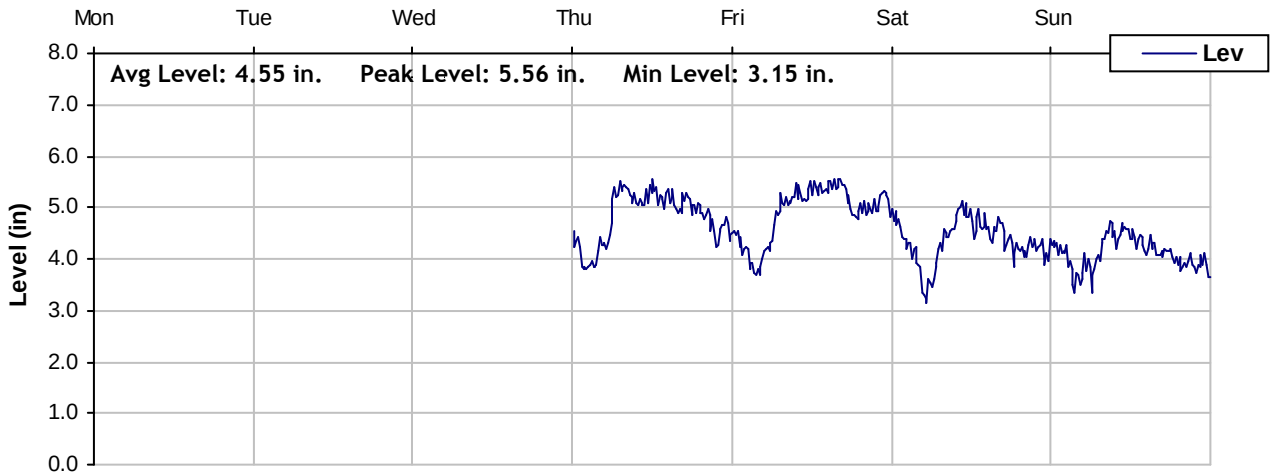
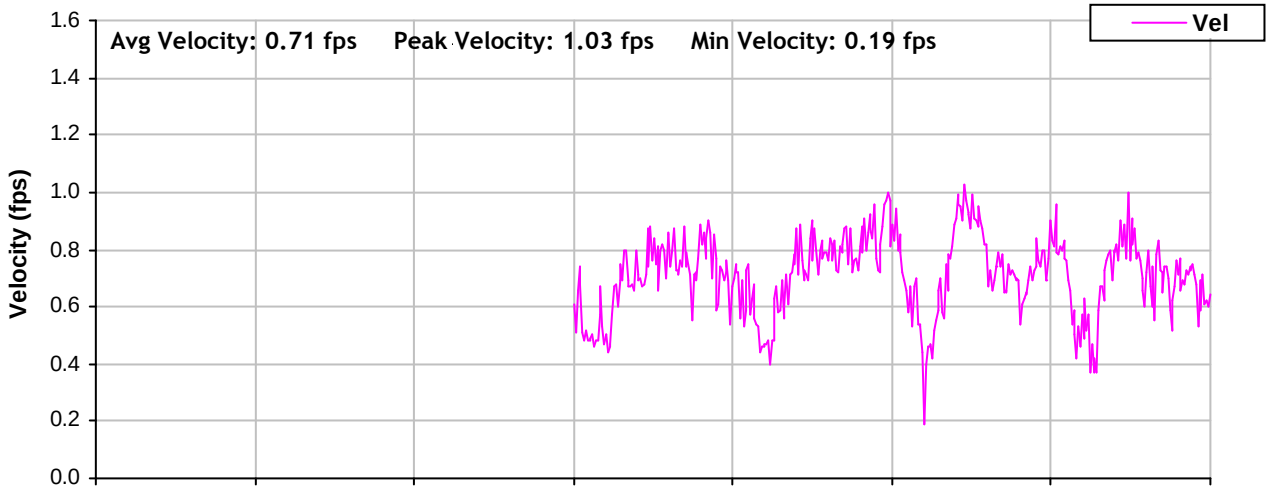
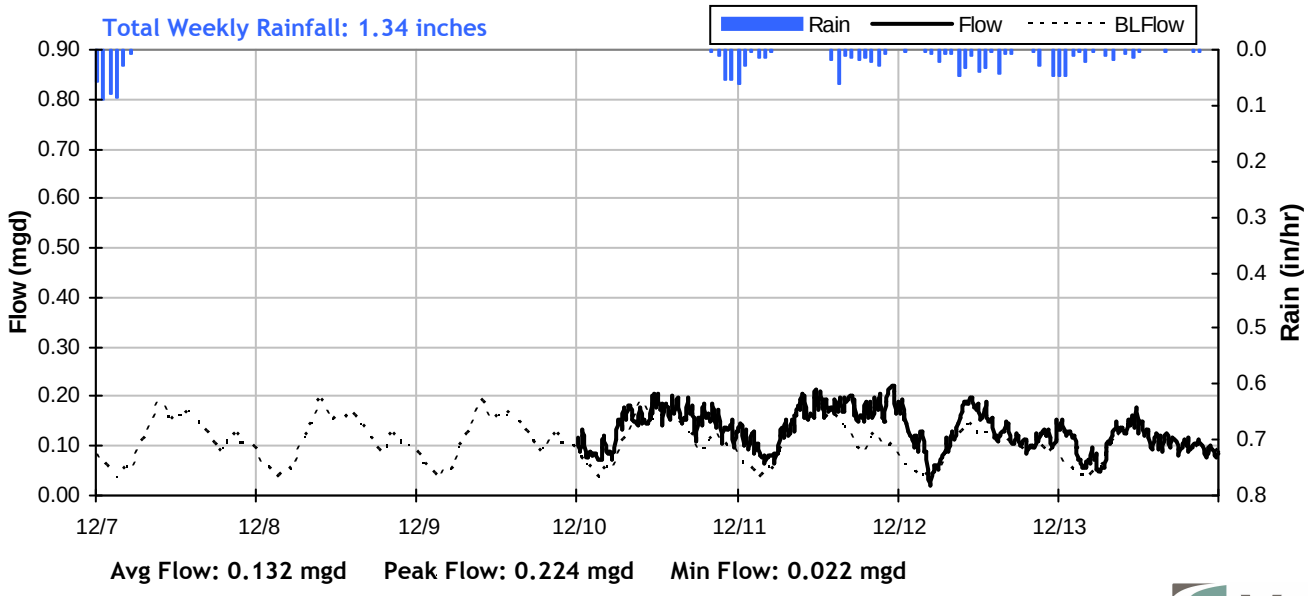
Level, Velocity and Flow
From 12/7/2009 to 12/14/2009

Monitoring Site:
Site M1







Avg Flow: 0.132 mgd Peak Flow: 0.224 mgd Min Flow: 0.022 mgd

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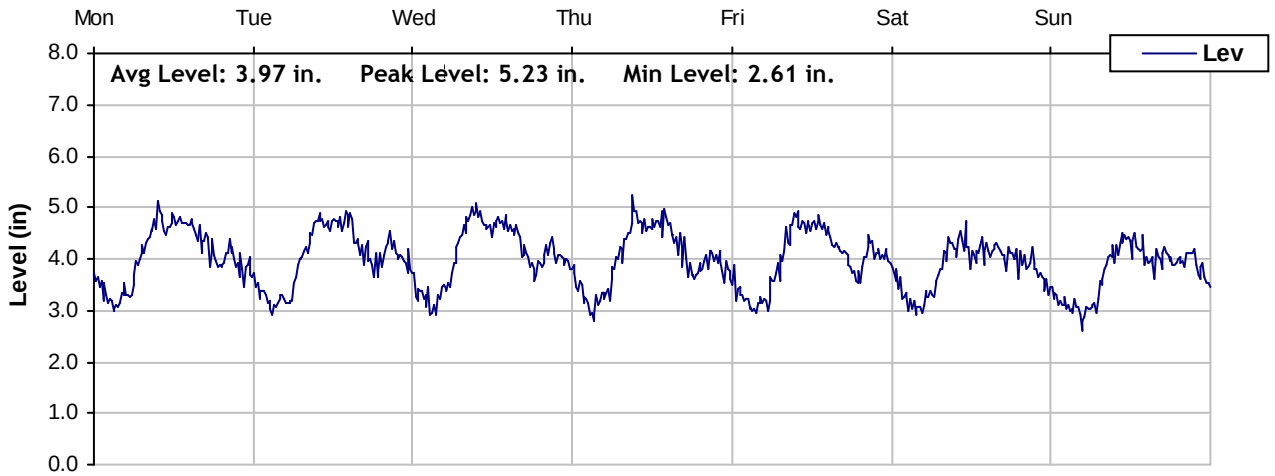
PORT OF OAKLAND

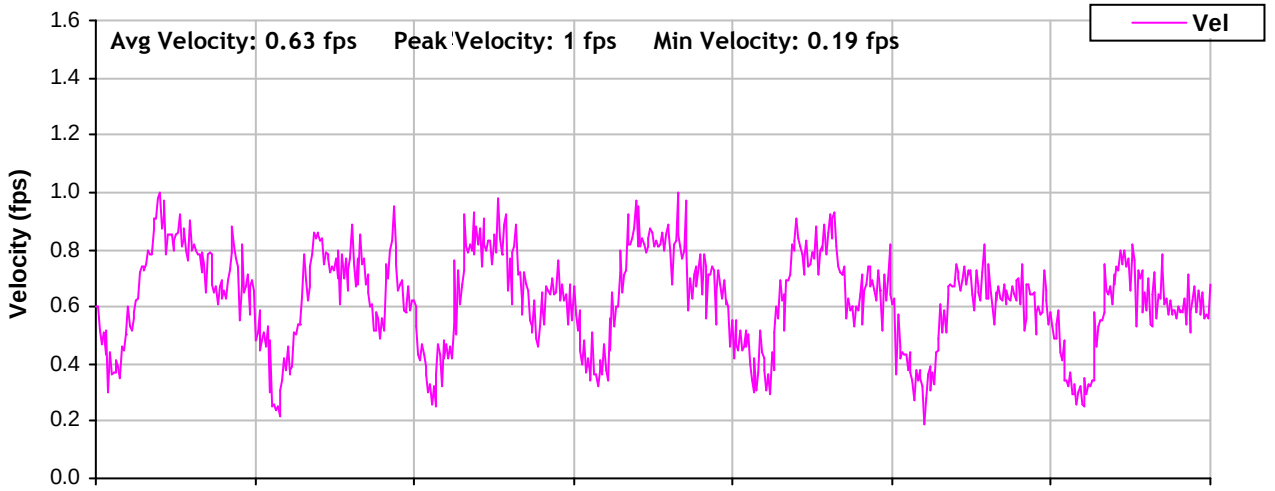
Level, Velocity and Flow

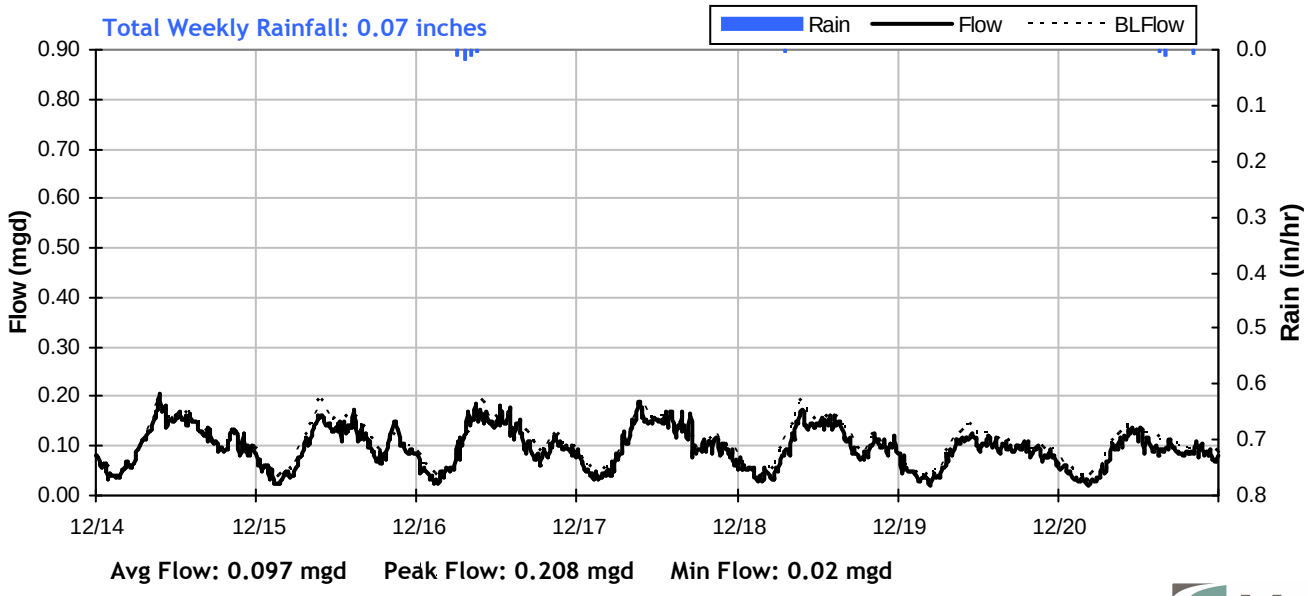
From 12/14/2009 to 12/21/2009

Monitoring Site:

Site M1







Avg Flow: 0.097 mgd Peak Flow: 0.208 mgd Min Flow: 0.02 mgd

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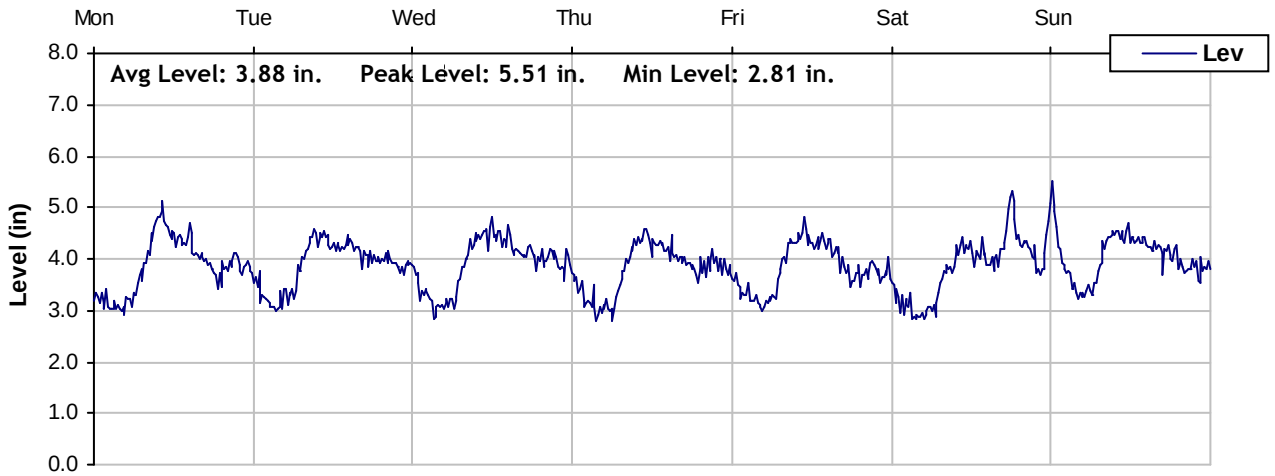
PORT OF OAKLAND

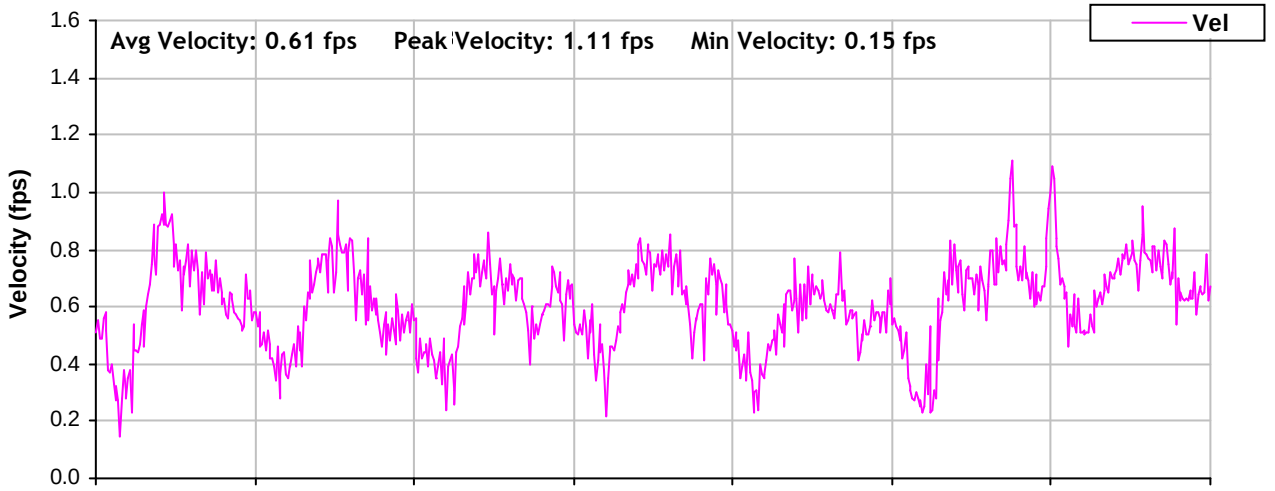
Level, Velocity and Flow

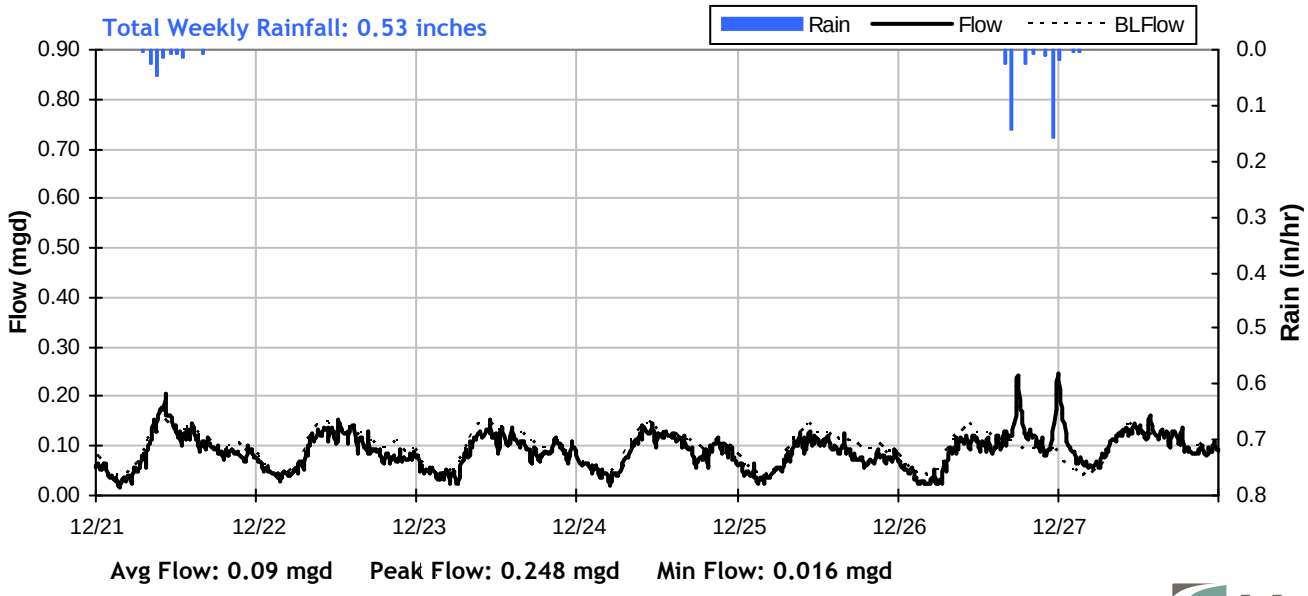
From 12/21/2009 to 12/28/2009

Monitoring Site:

Site M1







Avg Flow: 0.09 mgd Peak Flow: 0.248 mgd Min Flow: 0.016 mgd

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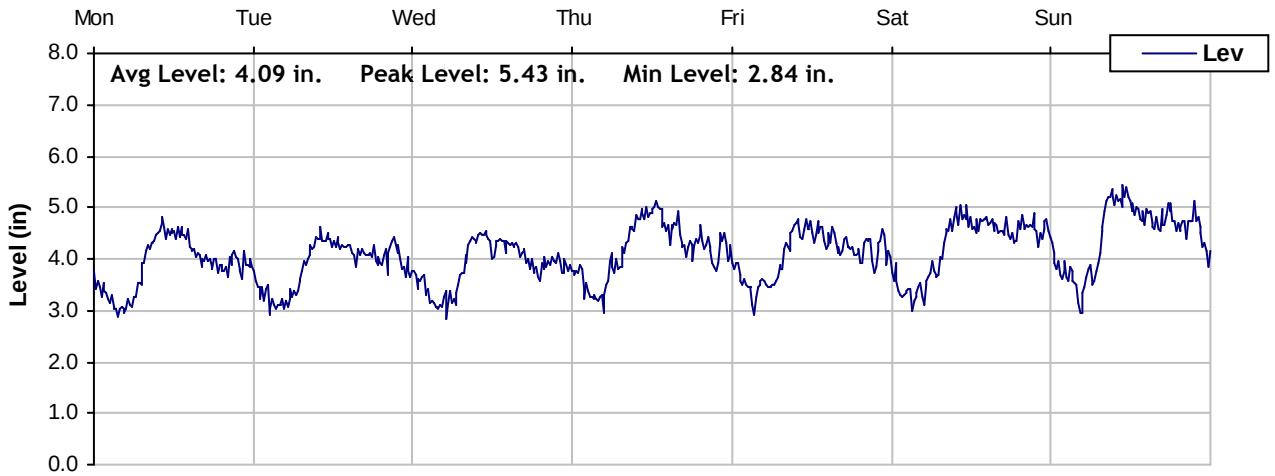
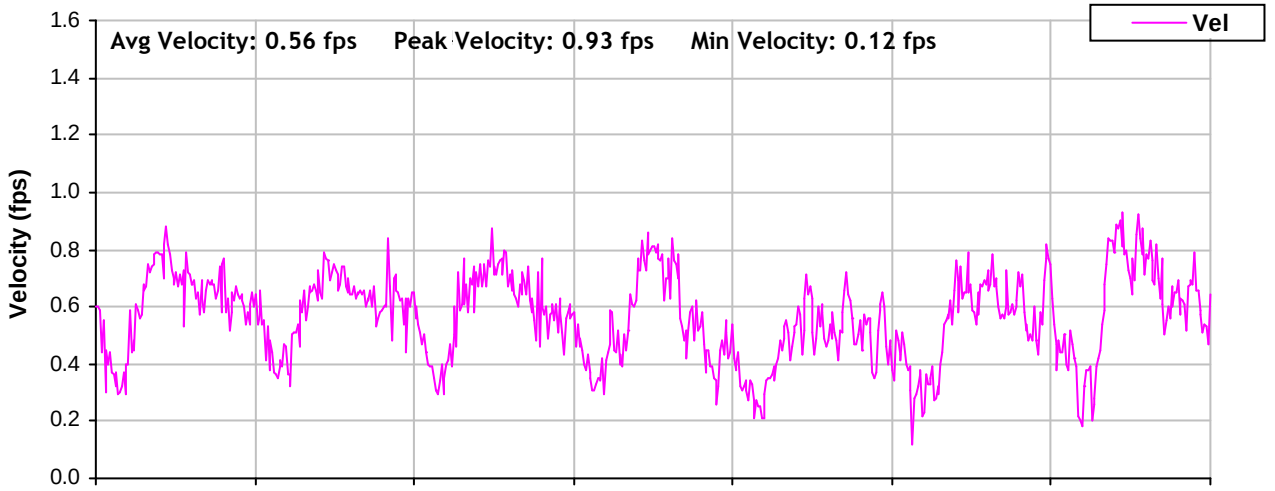
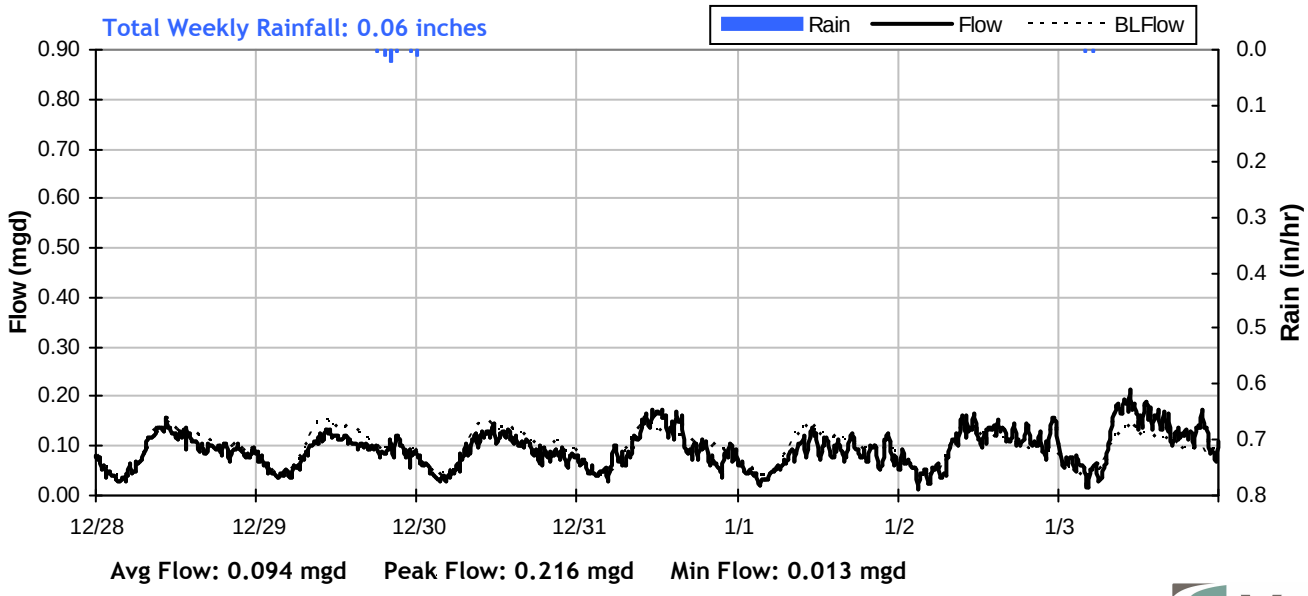
PORT OF OAKLAND

Level, Velocity and Flow
From 12/28/2009 to 1/4/2010

Monitoring Site:
Site M1







Avg Flow: 0.094 mgd Peak Flow: 0.216 mgd Min Flow: 0.013 mgd

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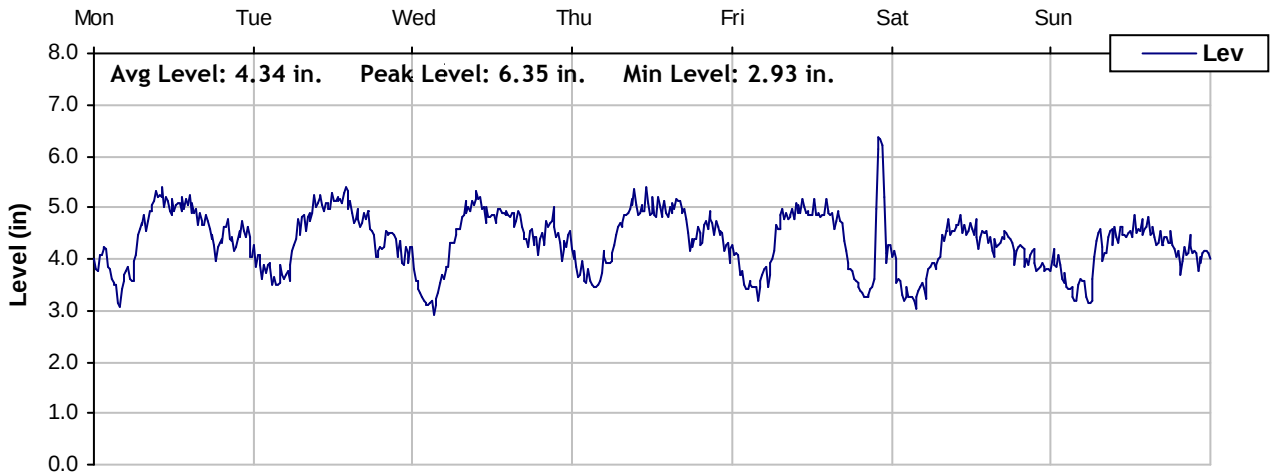
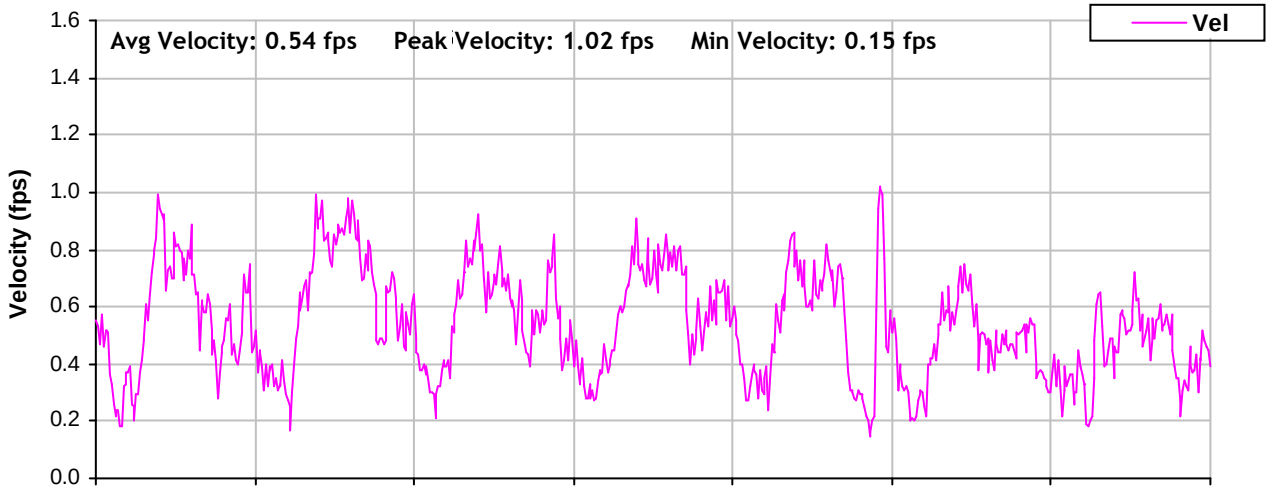
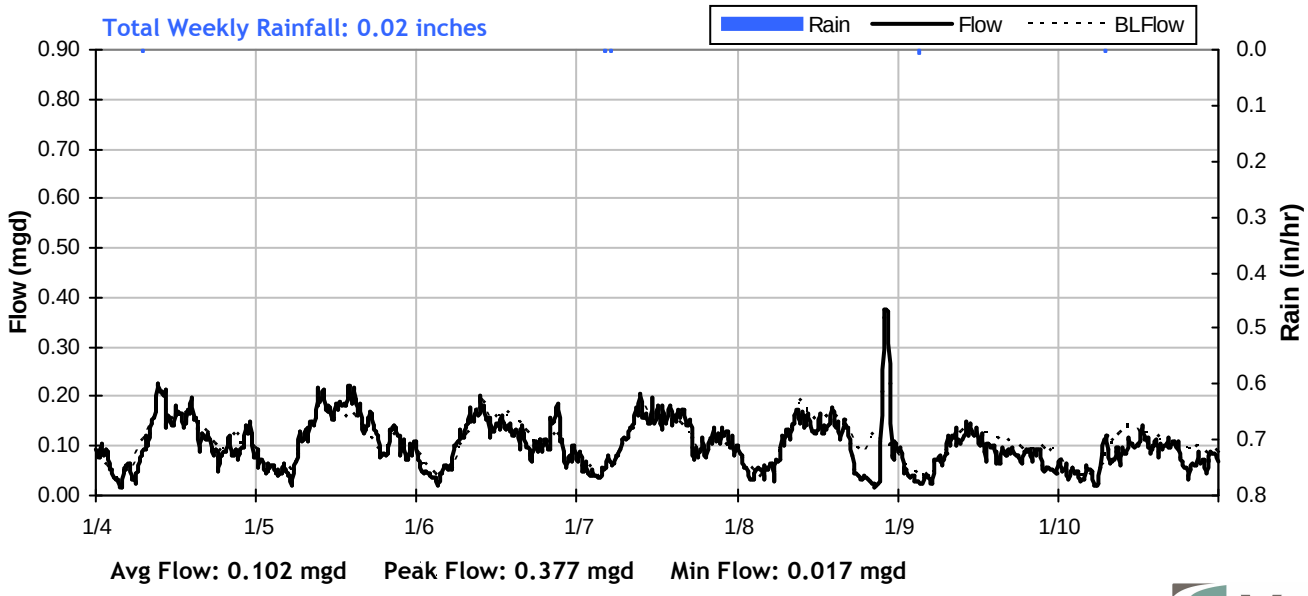
PORT OF OAKLAND

Level, Velocity and Flow
From 1/4/2010 to 1/11/2010

Monitoring Site:
Site M1







Avg Flow: 0.102 mgd Peak Flow: 0.377 mgd Min Flow: 0.017 mgd

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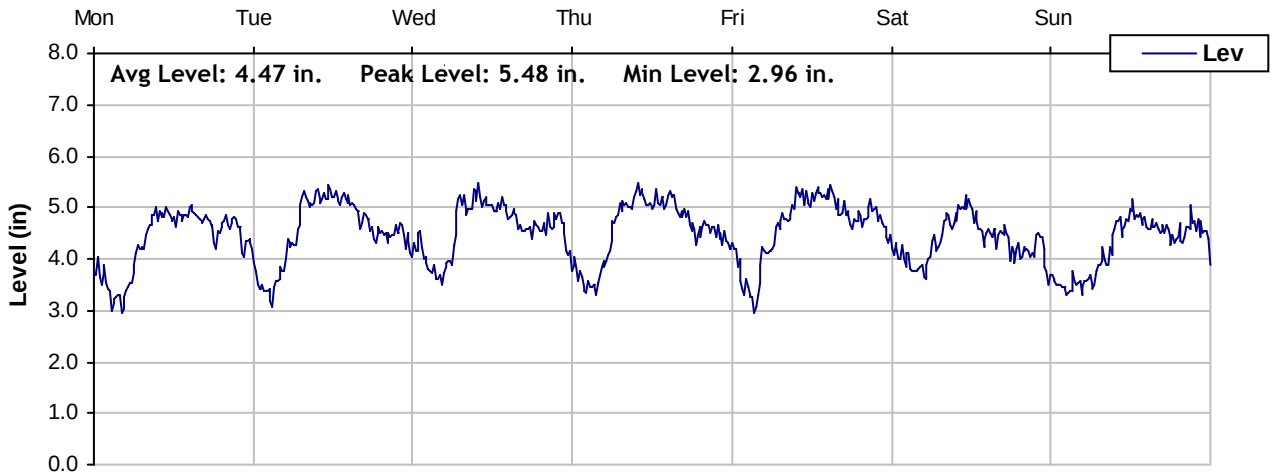
PORT OF OAKLAND

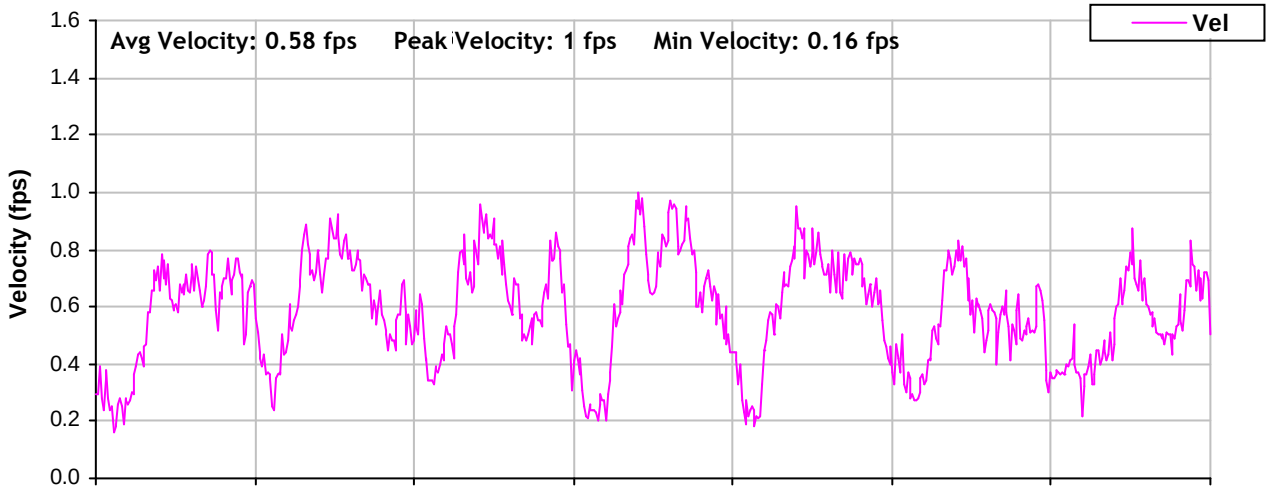
Level, Velocity and Flow

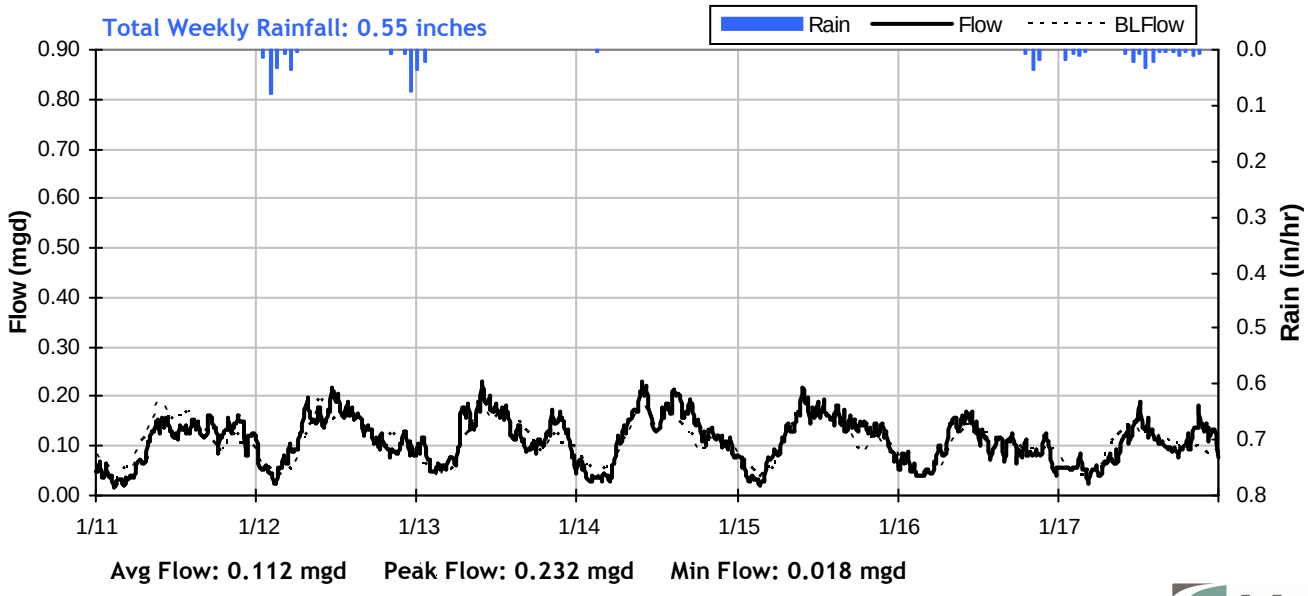
From 1/11/2010 to 1/18/2010

Monitoring Site:

Site M1







Avg Flow: 0.112 mgd Peak Flow: 0.232 mgd Min Flow: 0.018 mgd

V&A

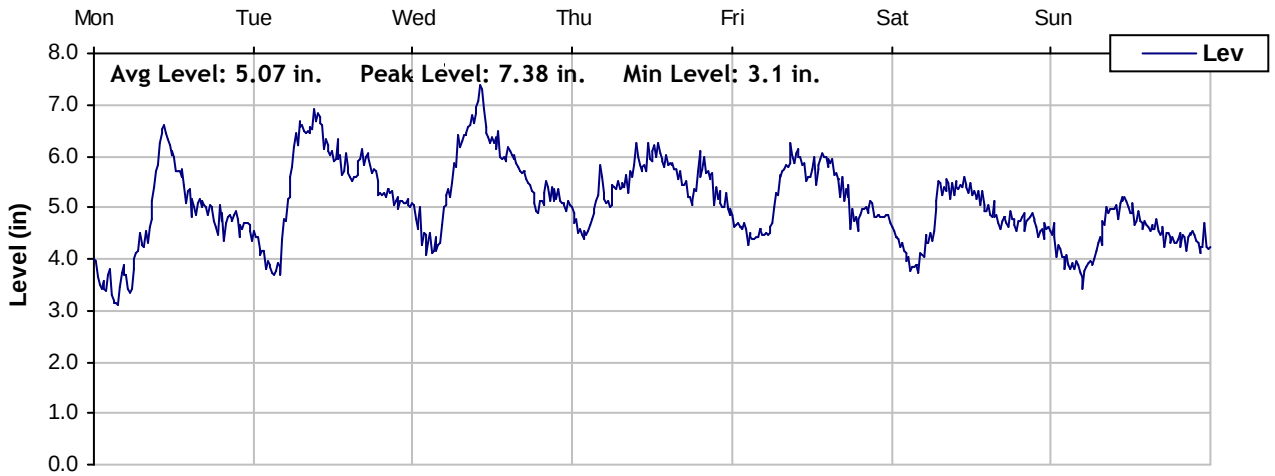
PORT OF OAKLAND

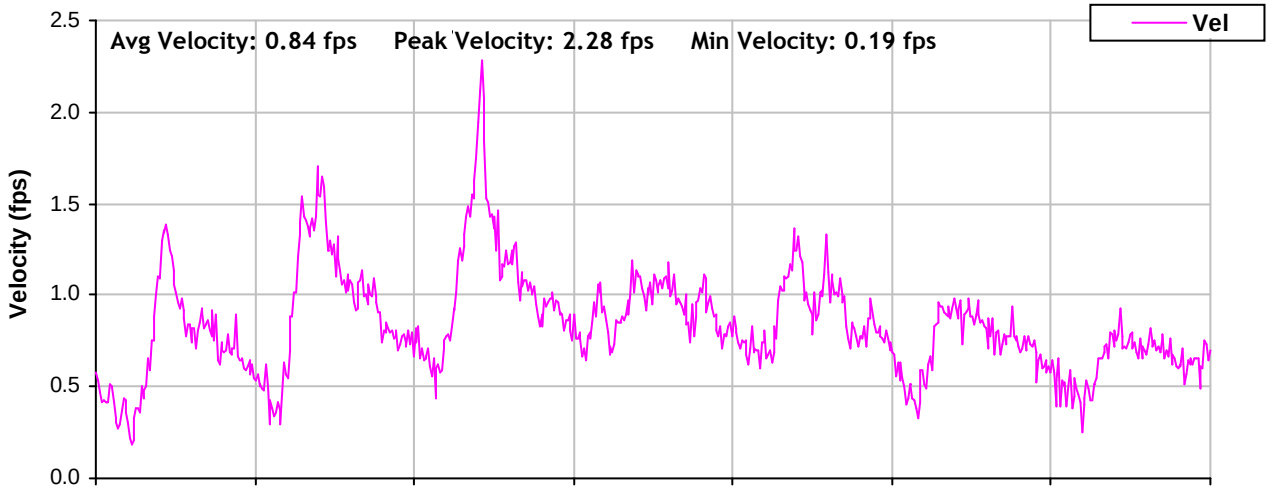
Level, Velocity and Flow

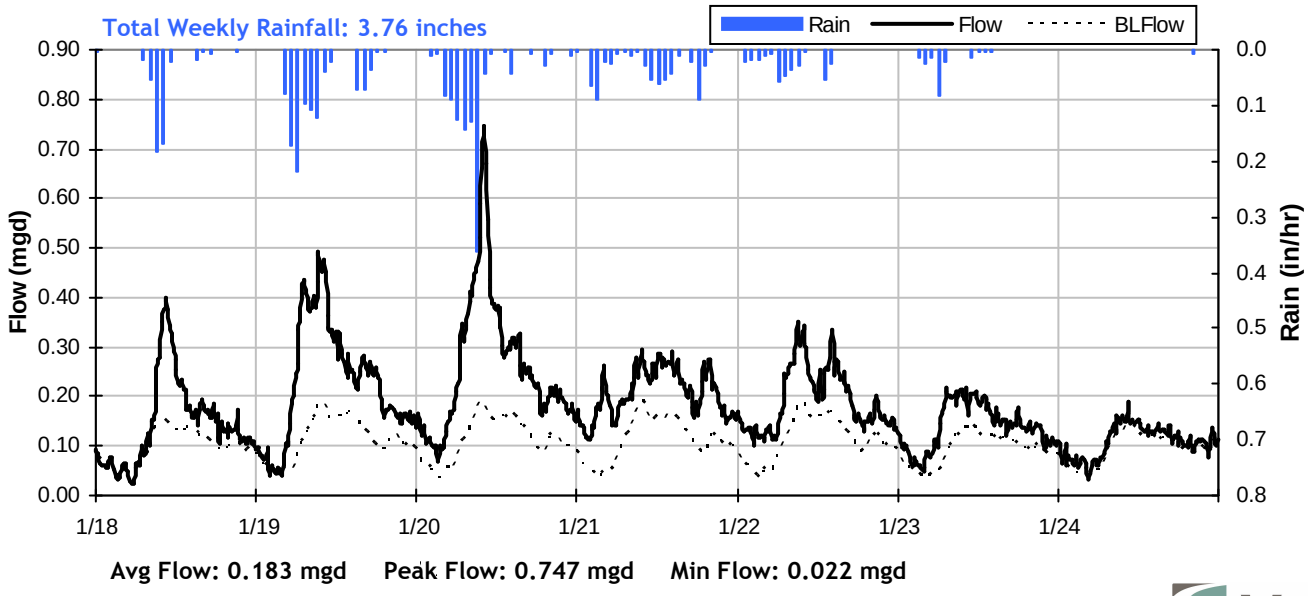
From 1/18/2010 to 1/25/2010

Monitoring Site:

Site M1







Avg Flow: 0.183 mgd Peak Flow: 0.747 mgd Min Flow: 0.022 mgd

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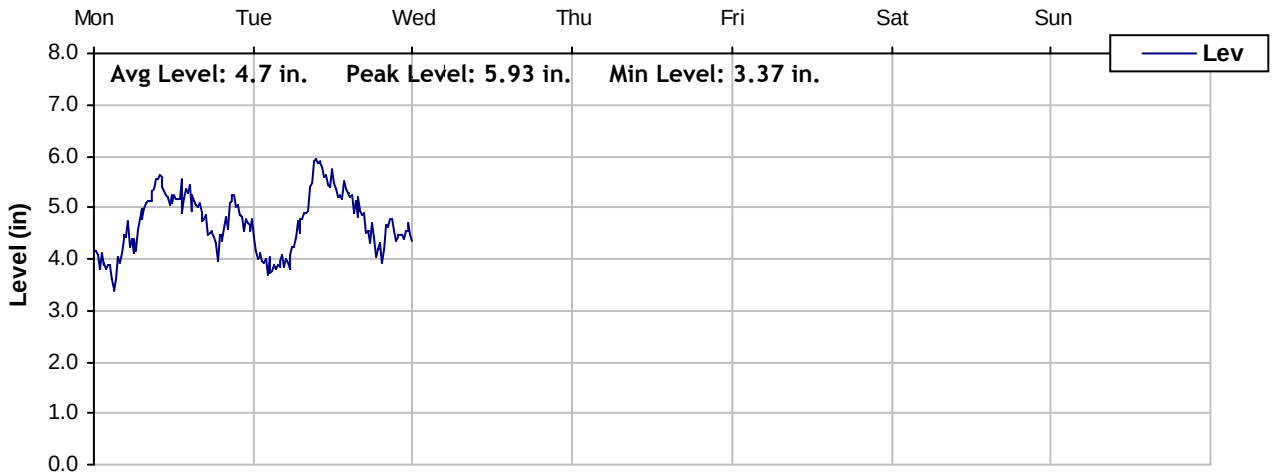
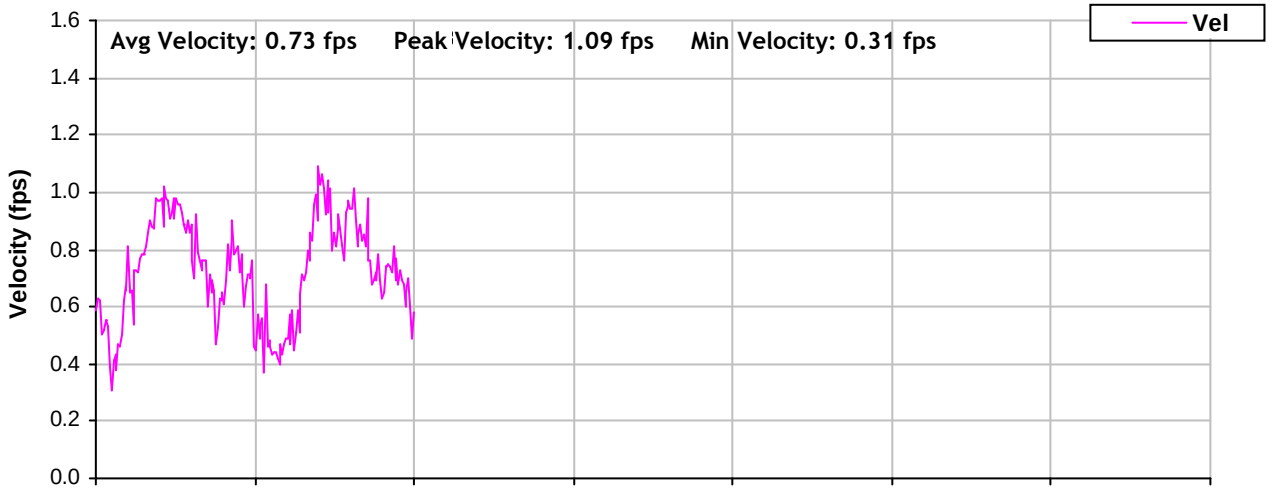
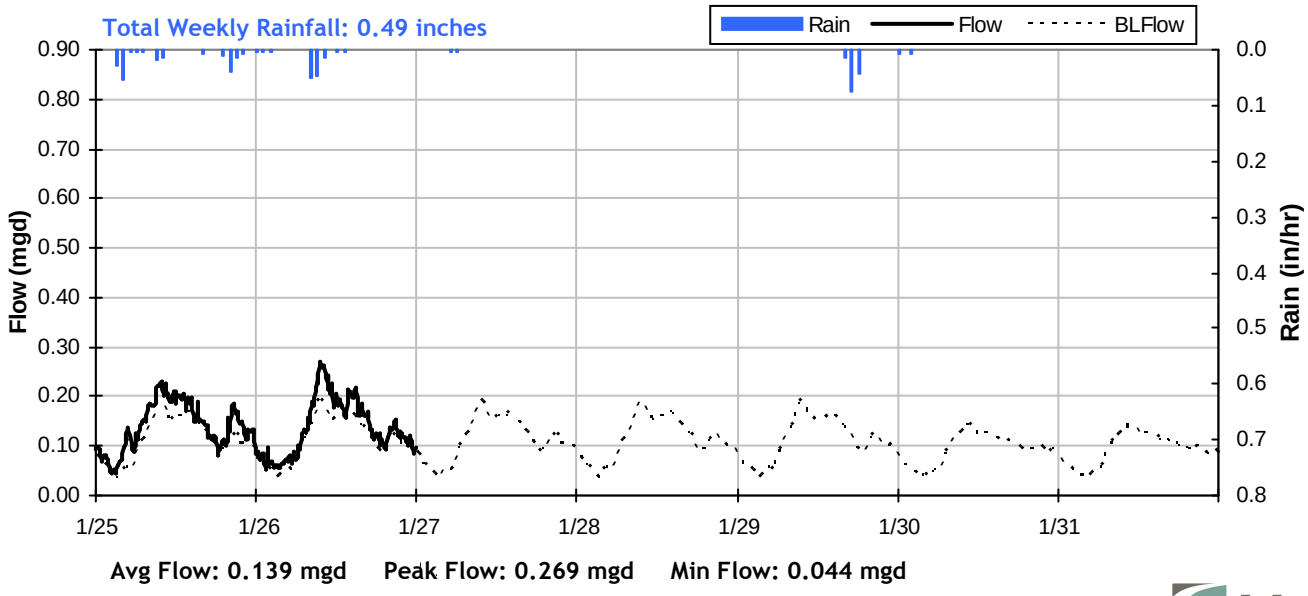
PORT OF OAKLAND

Level, Velocity and Flow
From 1/25/2010 to 2/1/2010

Monitoring Site:
Site M1







Avg Flow: 0.139 mgd Peak Flow: 0.269 mgd Min Flow: 0.044 mgd

V&A

PORT OF OAKLAND

Temporary Flow Monitoring Study

Sanitary Sewer Collection System

Monitoring Site: Site M2

Location: Doolittle Drive, just west of Hegenberger Road; Oakland International Airport

Size/Type Line: 12-inch Sanitary Sewer Pipe

Data Summary Report

V&A

PORT OF OAKLAND

Site Information Report

Monitoring Site: Site M2

Location: Doolittle Drive, just west of Hegenberger Road; Oakland International Airport

Latitude: 37.7265°

Longitude: -122.2020°

Rim Elevation: 9 *feet*

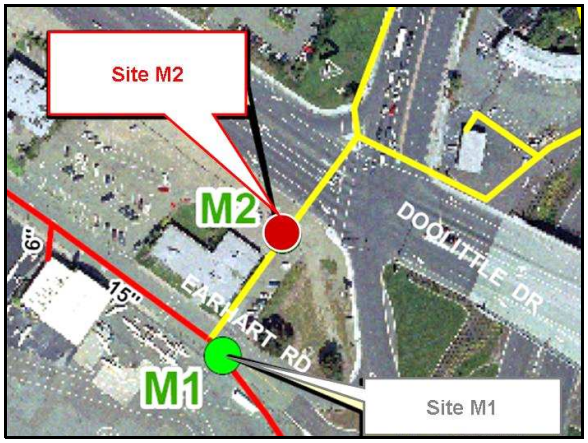
Diameter: 12 *inches*

Average Dry Weather Flow: 0.083 *mgd*

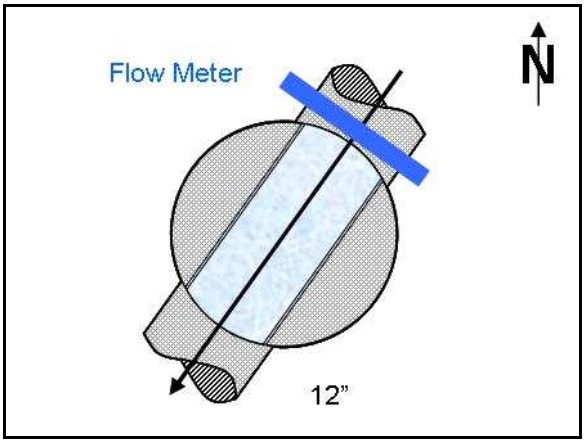
Peak Measured Flow: 0.440 *mgd*

Satellite Map

Sanitary Map



Flow Diagram



Street View Photo

Plan View Photo

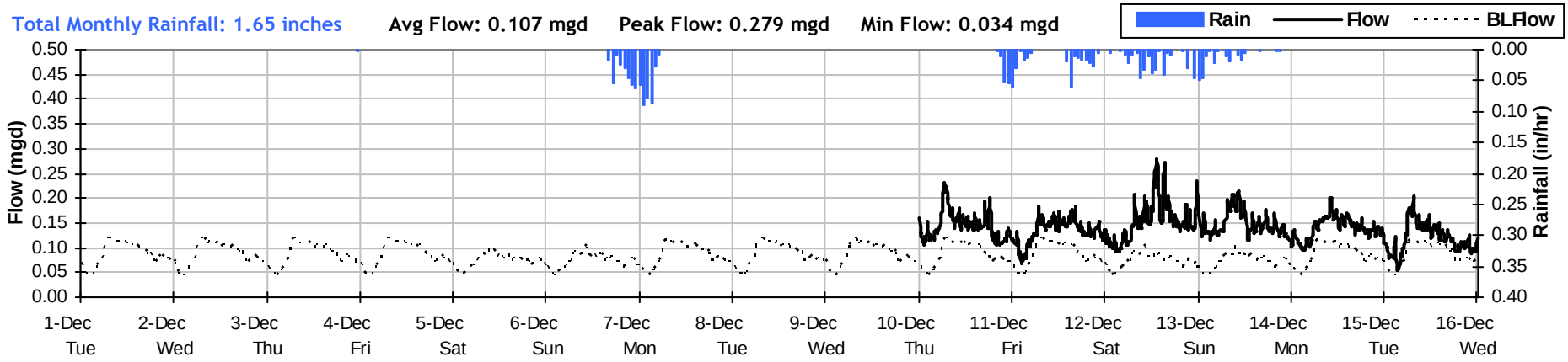
V&A

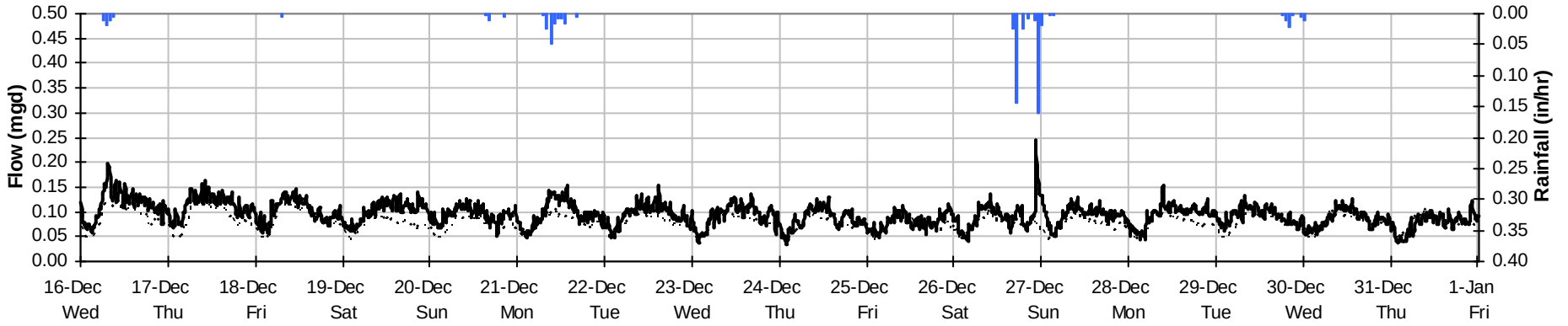
PORT OF OAKLAND

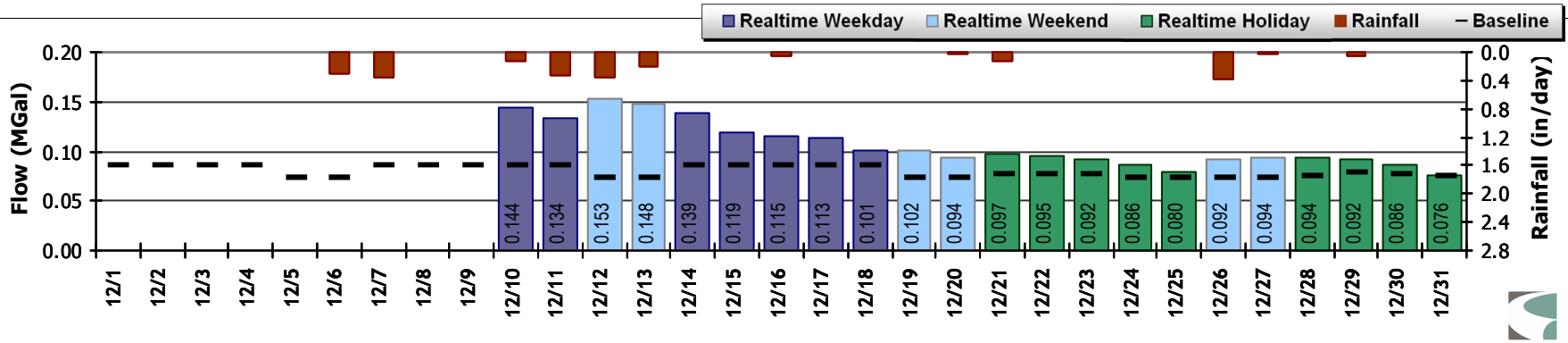
Period Flow Summary
December, 2009

Monitoring Site:
Site M2

Total Monthly Rainfall: 1.65 inches Avg Flow: 0.107 mgd Peak Flow: 0.279 mgd Min Flow: 0.034 mgd







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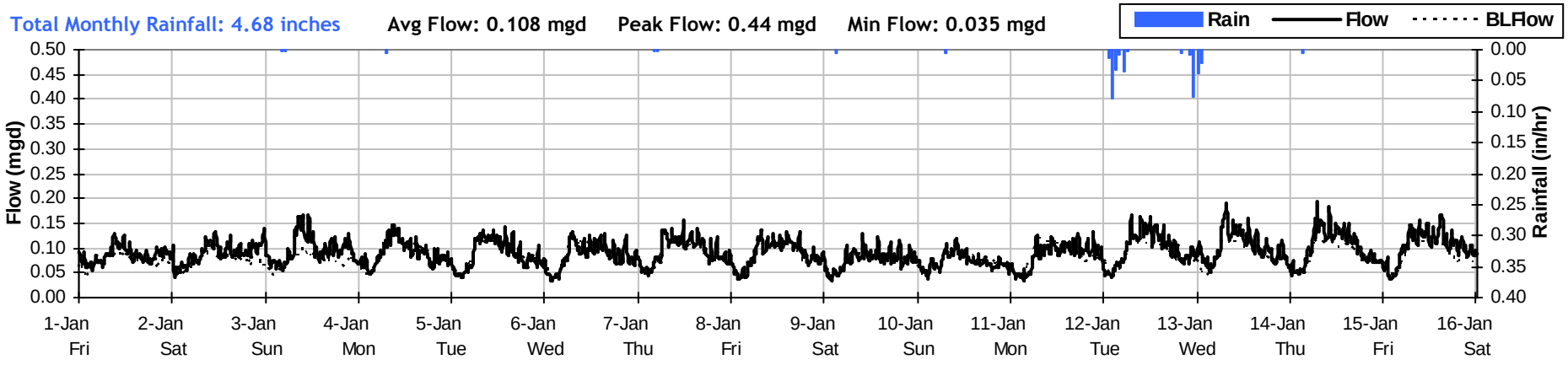
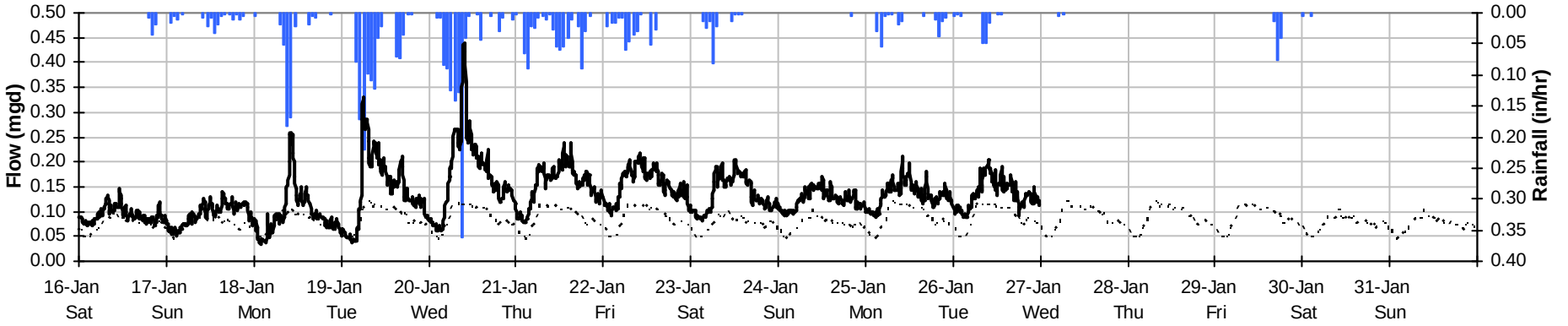
PORT OF OAKLAND

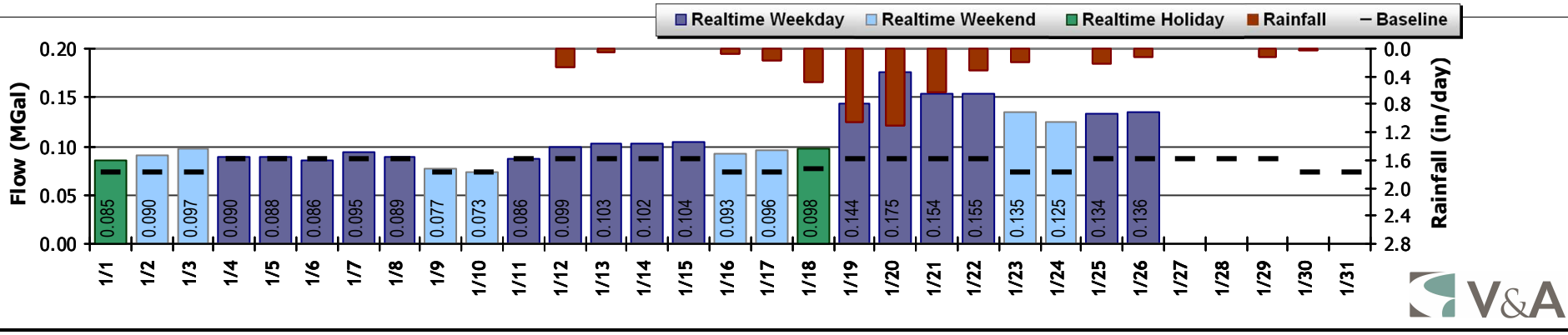
Period Flow Summary
January, 2010

Monitoring Site:
Site M2

Total Monthly Rainfall: 4.68 inches Avg Flow: 0.108 mgd Peak Flow: 0.44 mgd Min Flow: 0.035 mgd







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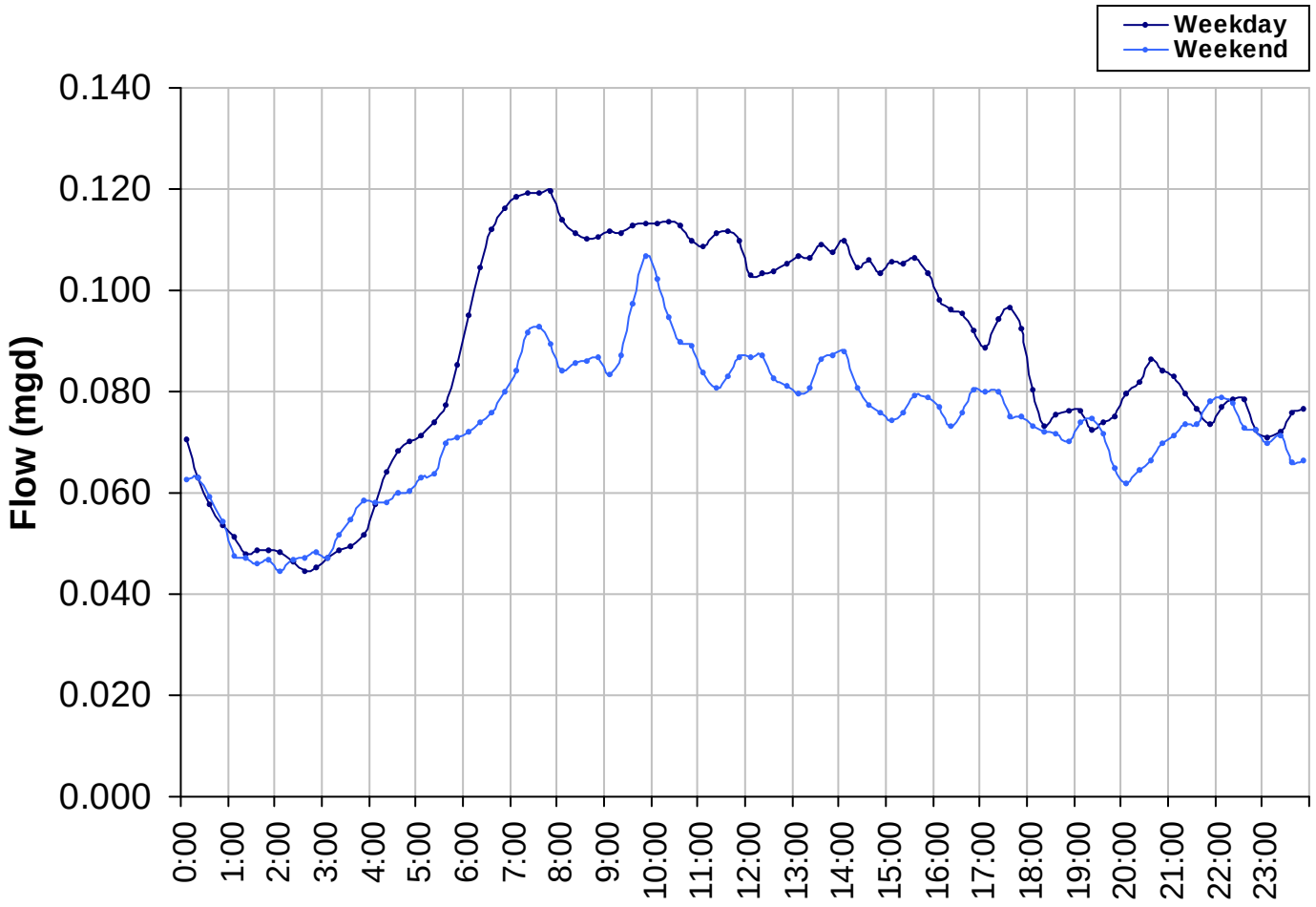
PORT OF OAKLAND

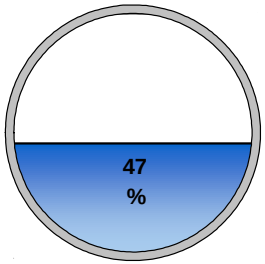
Average Dry Weather Flow

Monitoring Site:
Site M2



Peak Measured Flow:

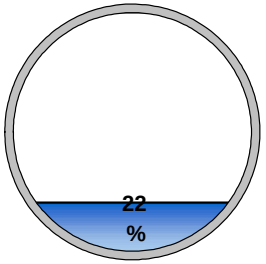
0.440 *mgd*



Peak measured flow shown in weekly graphs on following pages

Average Dry Weather Flow:

0.083 *mgd*



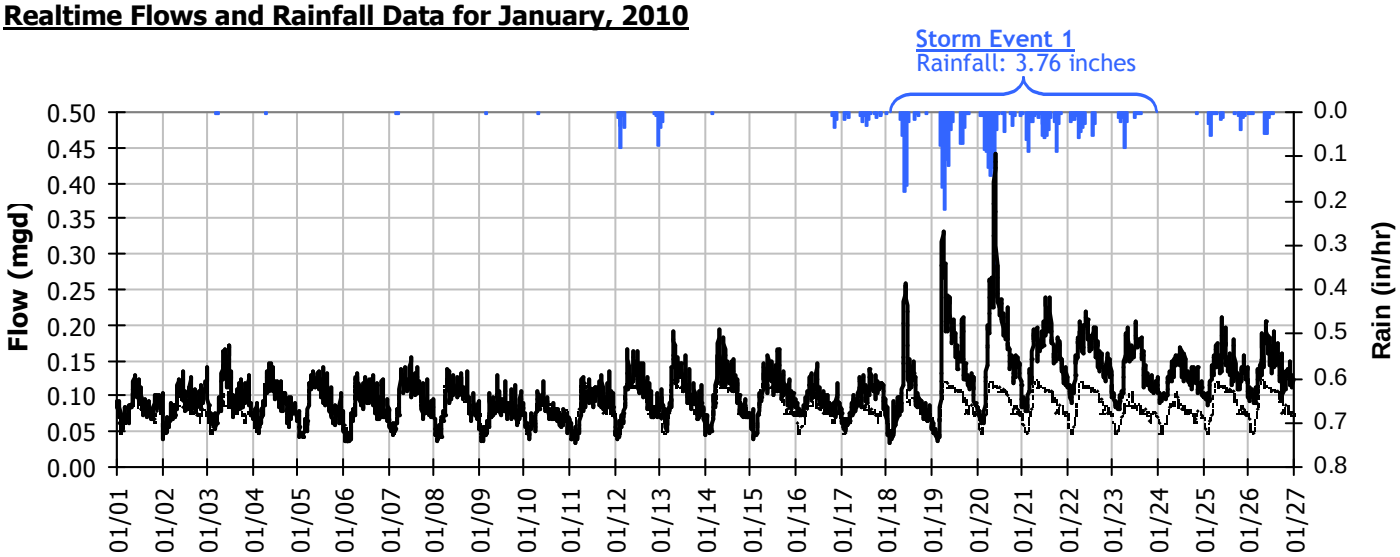
V&A

PORT OF OAKLAND

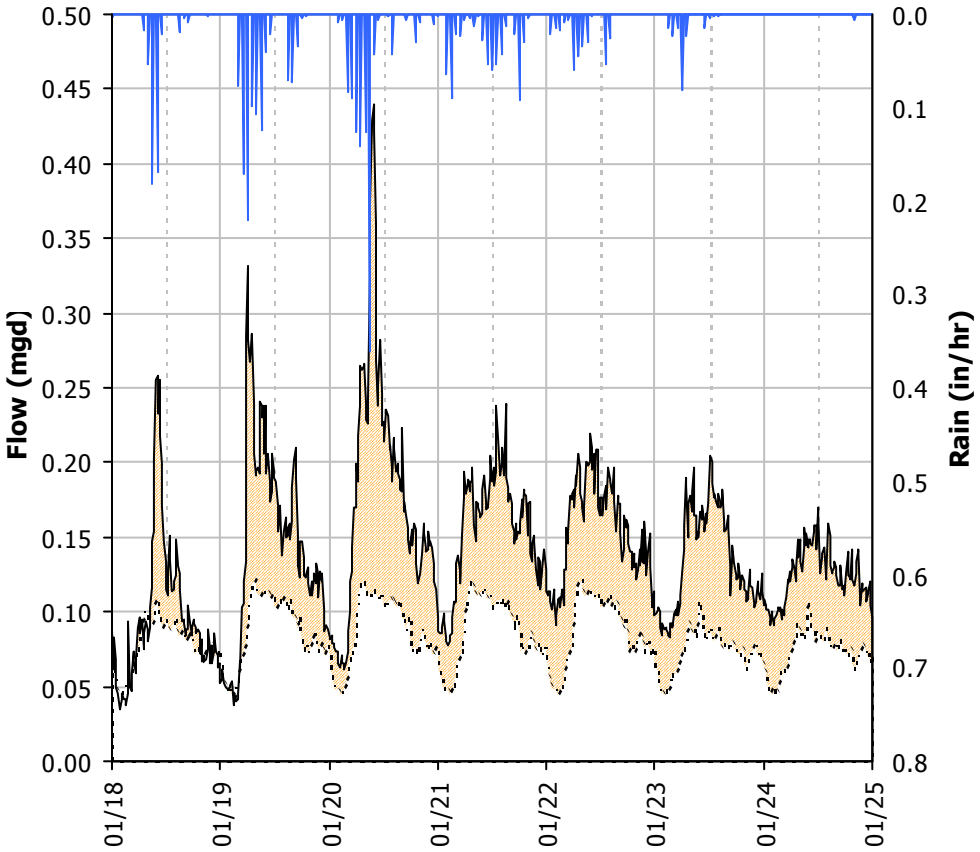
I/I Summary

Monitoring Site:
Site M2

Realtime Flows and Rainfall Data for January, 2010



Storm Event #1 Detail I/I Graph



I&I ANALYSIS		
Rainfall:	3.76	*inches*
Total I&I		
Total I/I:	412,000	*gallons*
I/I per ADWF:	1.3	*per in-rain*
Inflow		
Peak I/I Rate:	0.33	*mgd*
Pk I/I:ADWF:	3.93	
Infiltration (% of ADWF)		
Infiltration at +24hours:	69.6%	
Capacity		
Peak Flow:	0.44	*mgd*
PF:	5.29	
Peak Level:	5.62	*inches*
d/D Ratio:	0.47	

V&A

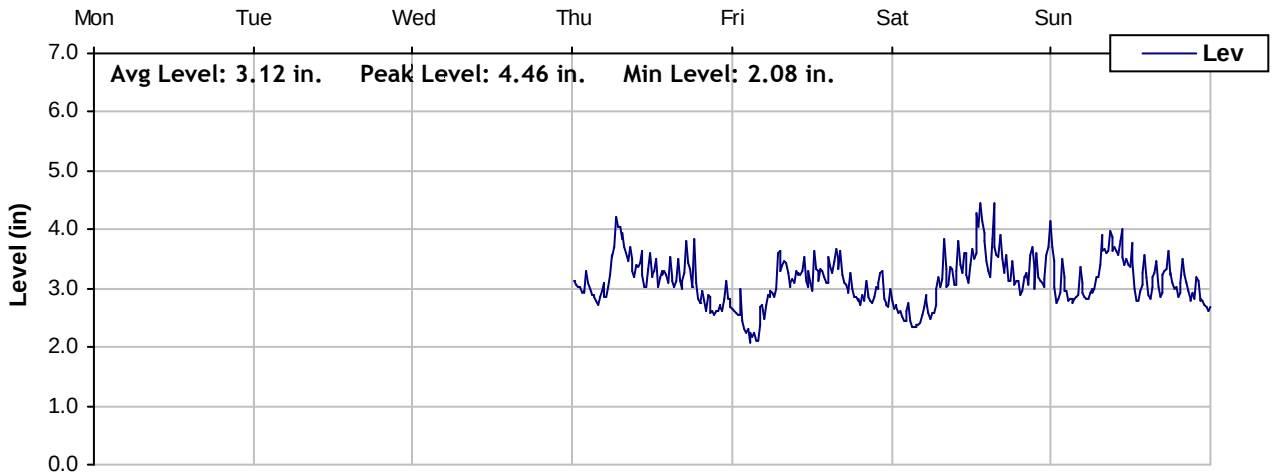
PORT OF OAKLAND

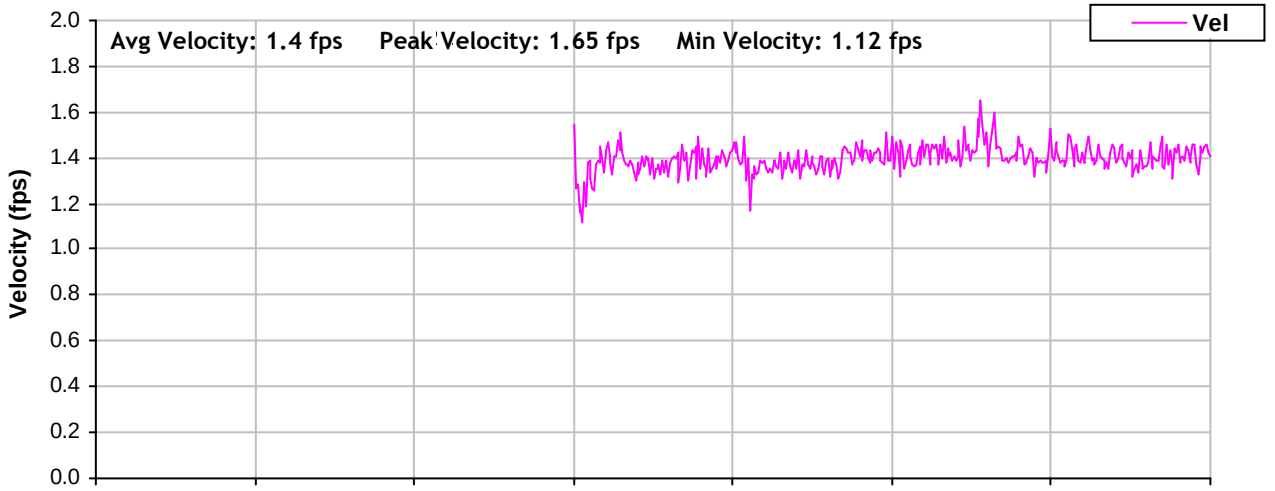
Level, Velocity and Flow

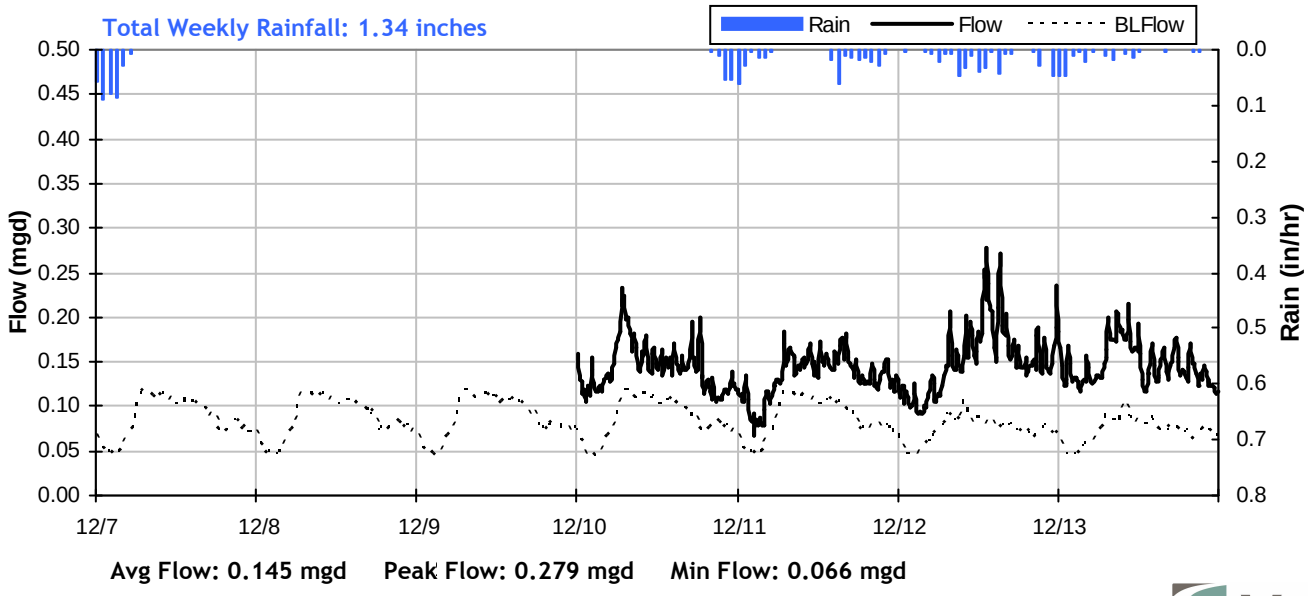
From 12/7/2009 to 12/14/2009

Monitoring Site:

Site M2







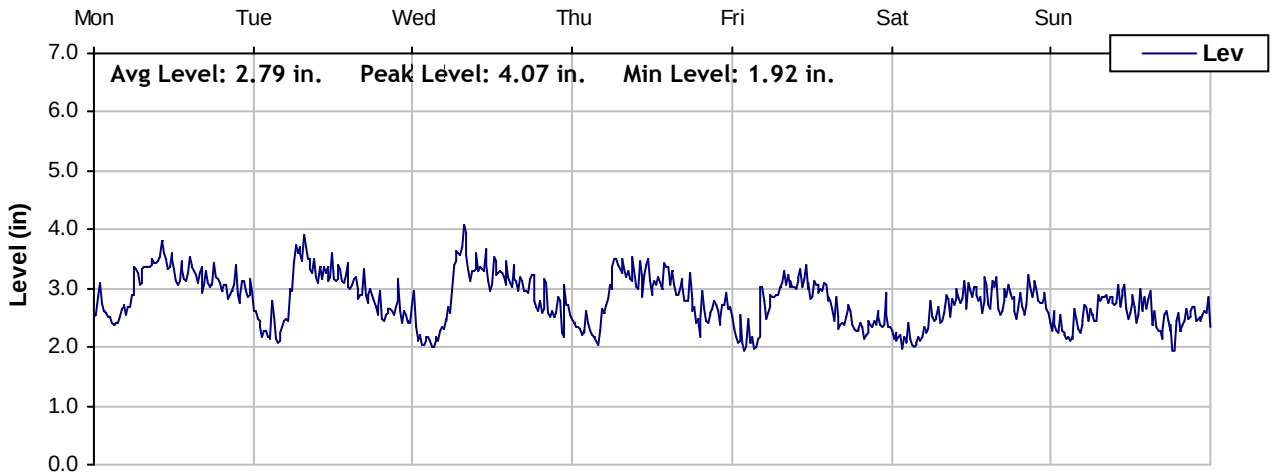
Avg Flow: 0.145 mgd Peak Flow: 0.279 mgd Min Flow: 0.066 mgd

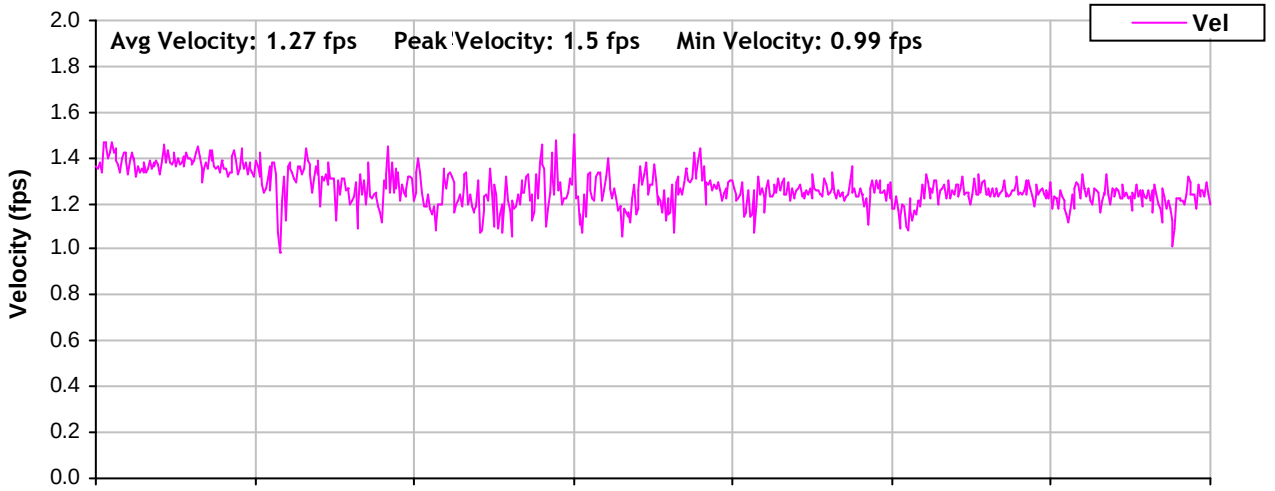
V&A

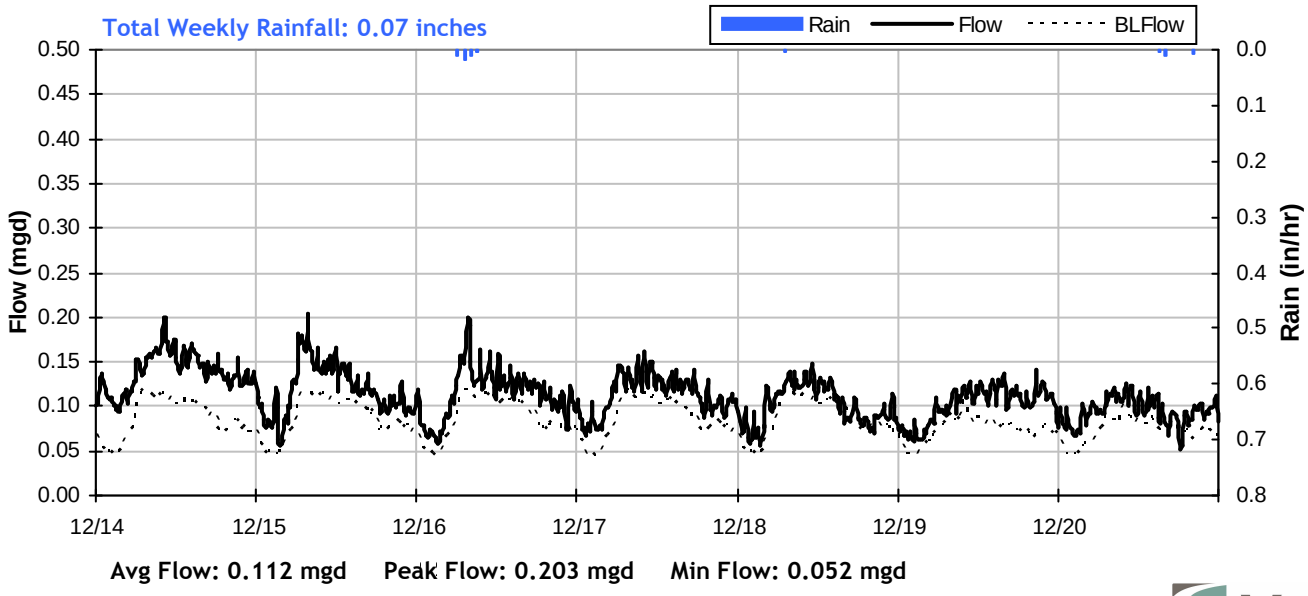
PORT OF OAKLAND

Level, Velocity and Flow
From 12/14/2009 to 12/21/2009

Monitoring Site:
Site M2







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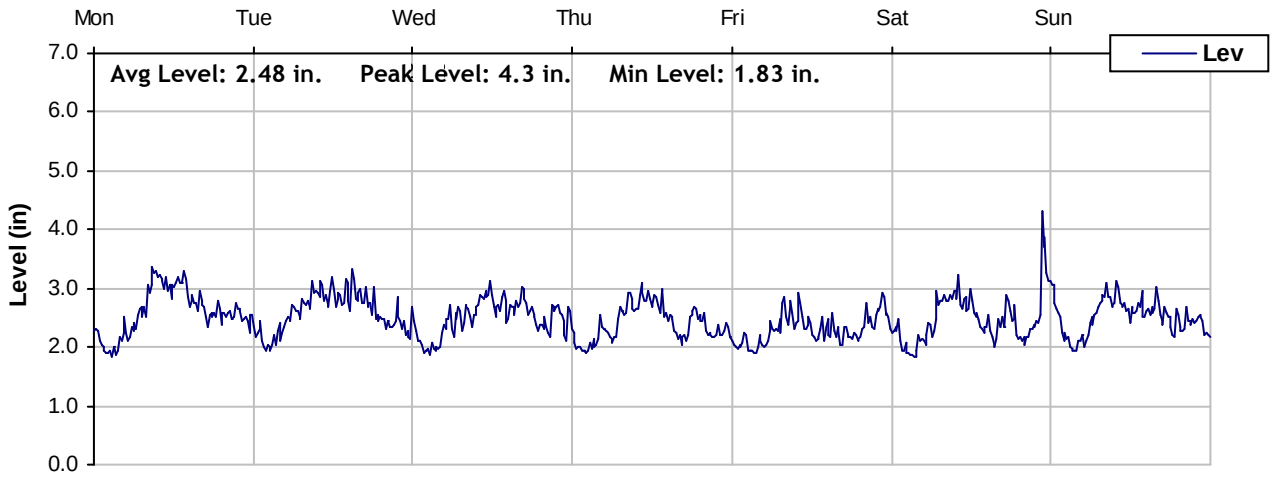
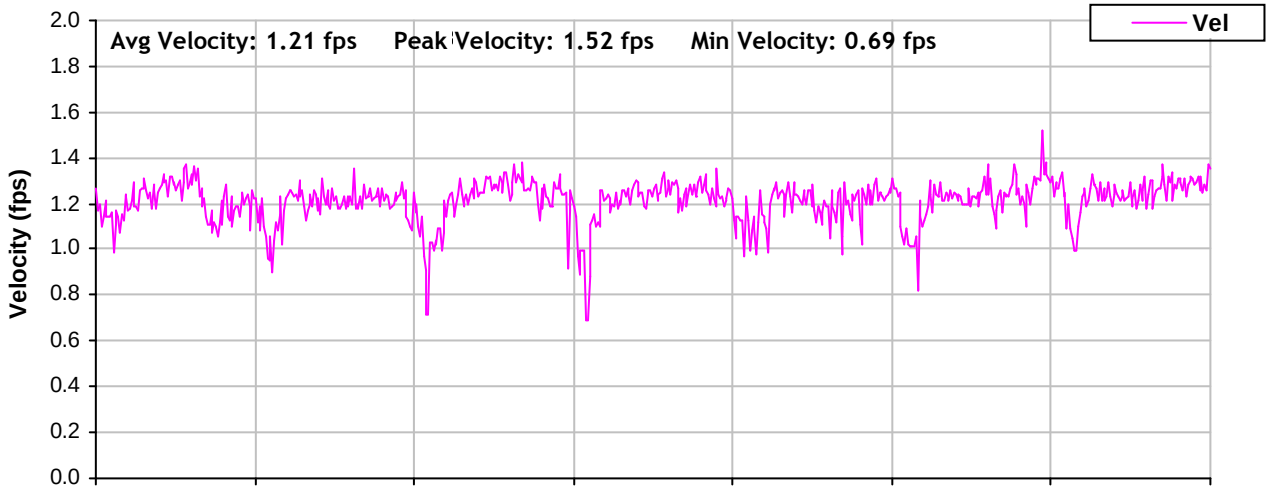
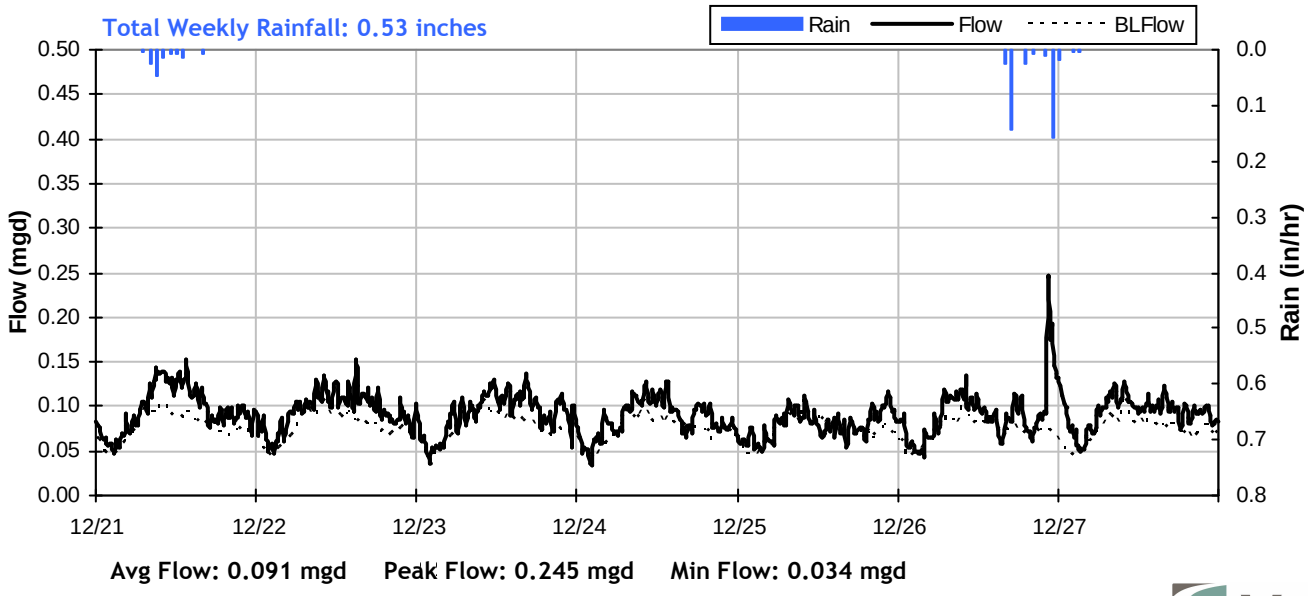
PORT OF OAKLAND

Level, Velocity and Flow
From 12/21/2009 to 12/28/2009

Monitoring Site:
Site M2







Avg Flow: 0.091 mgd Peak Flow: 0.245 mgd Min Flow: 0.034 mgd

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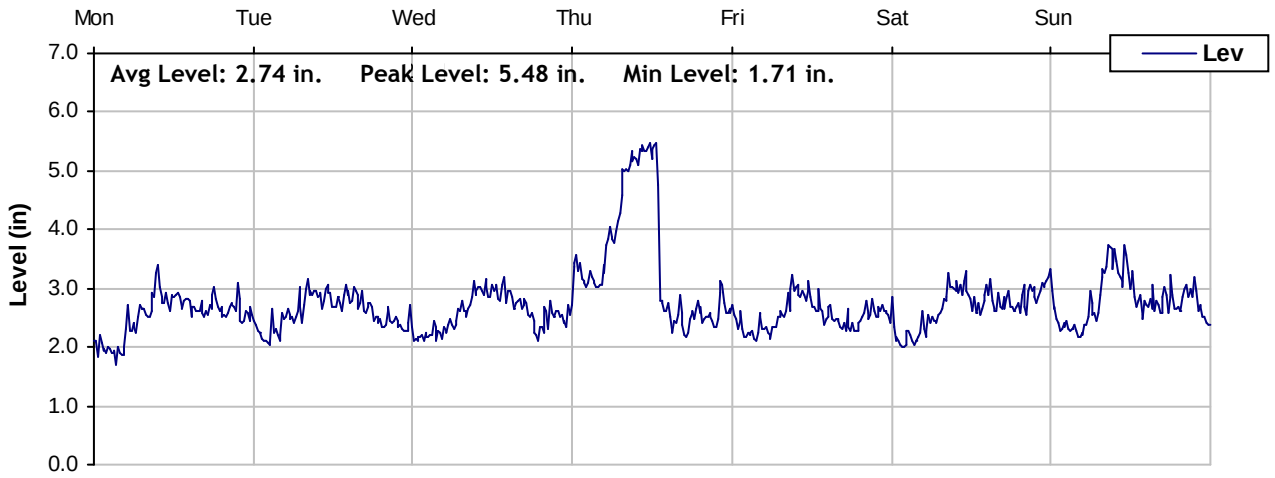
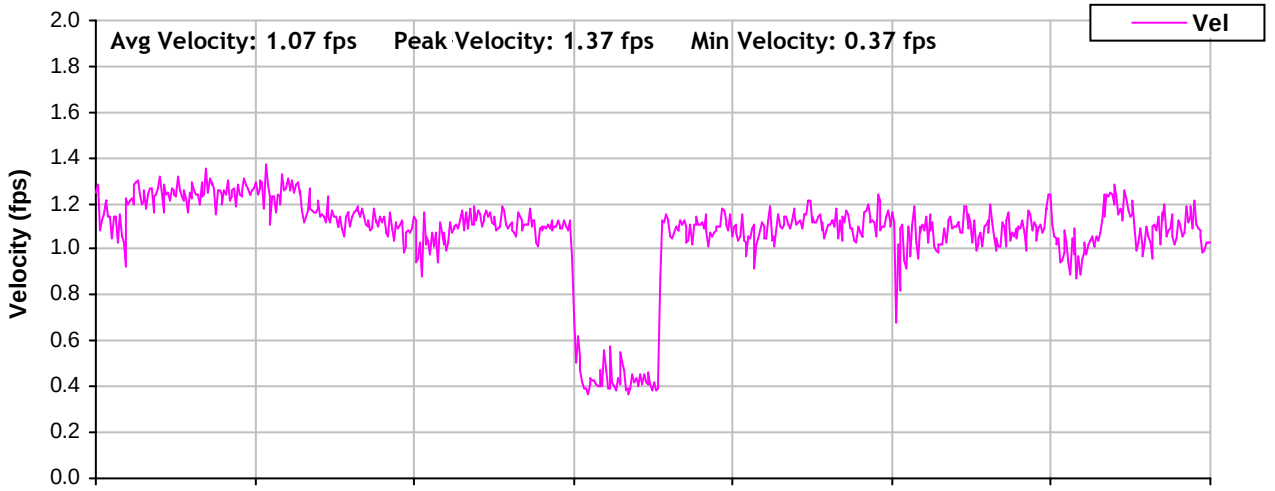
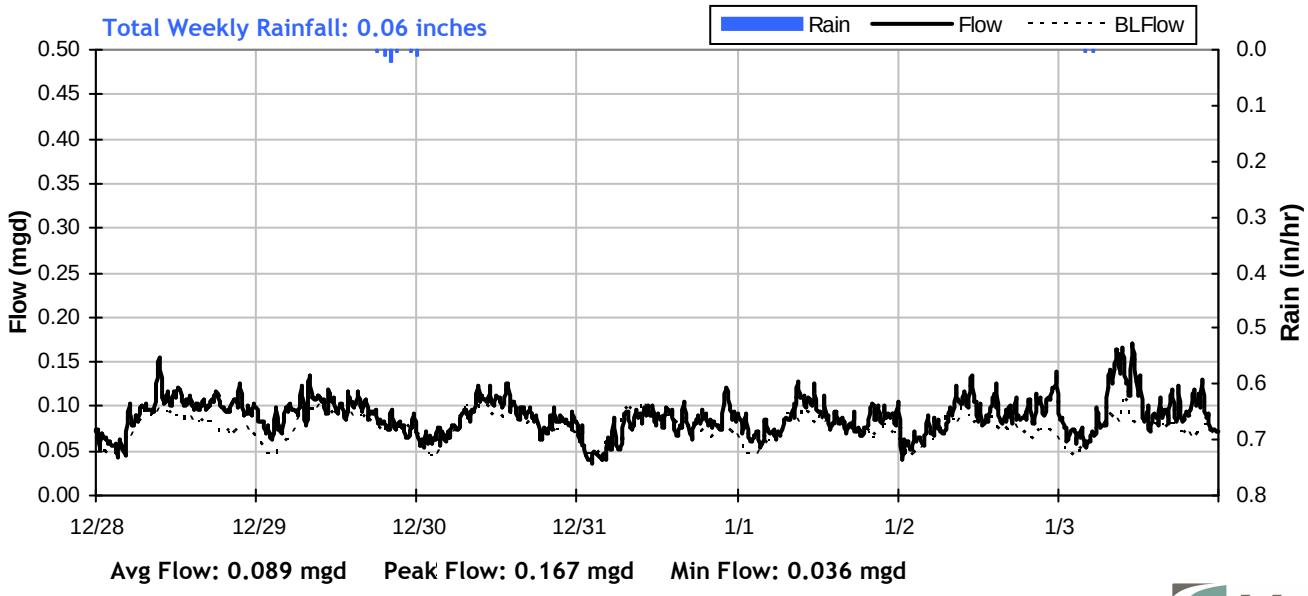
PORT OF OAKLAND

Level, Velocity and Flow
From 12/28/2009 to 1/4/2010

Monitoring Site:
Site M2







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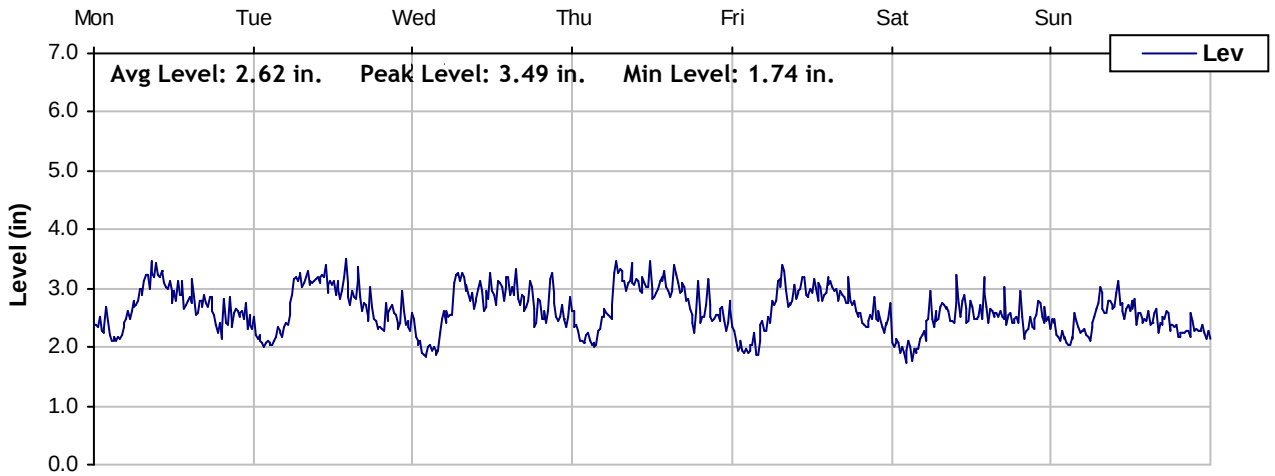
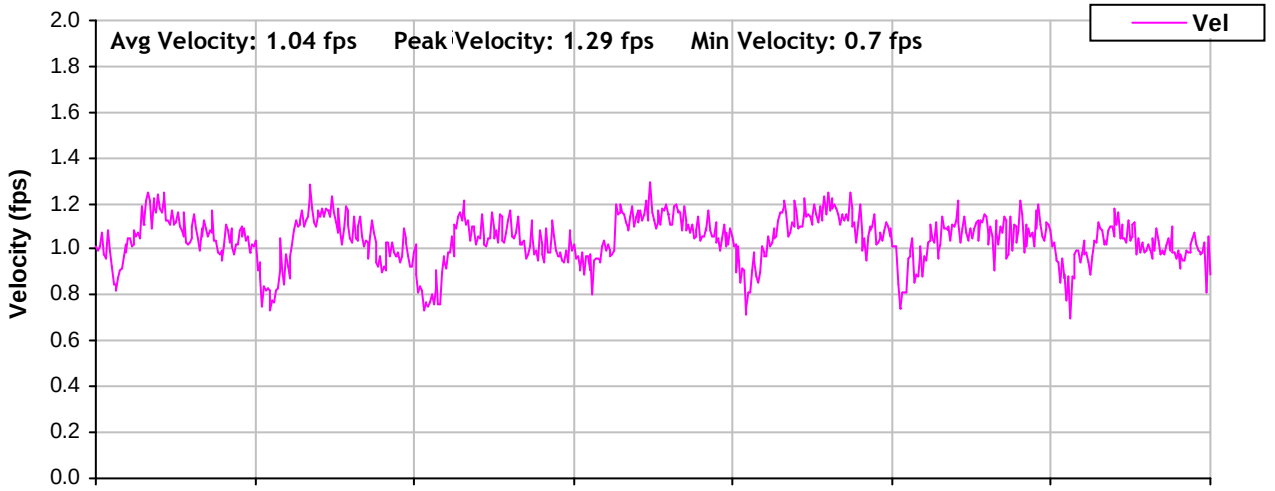
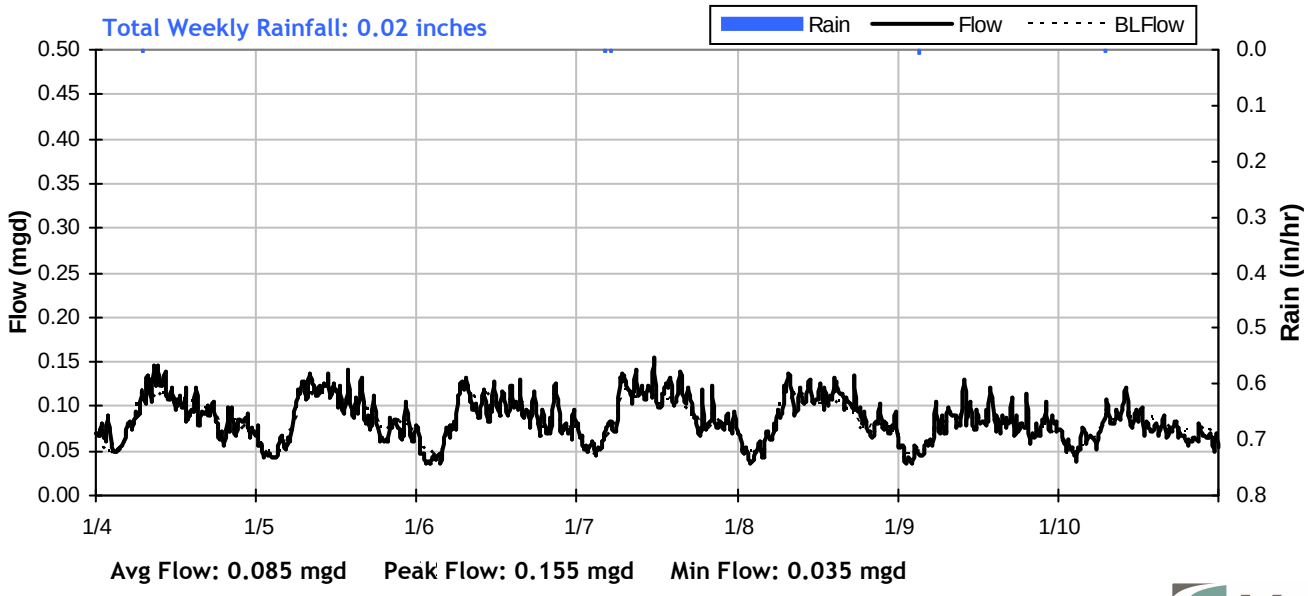
PORT OF OAKLAND

Level, Velocity and Flow
From 1/4/2010 to 1/11/2010

Monitoring Site:
Site M2







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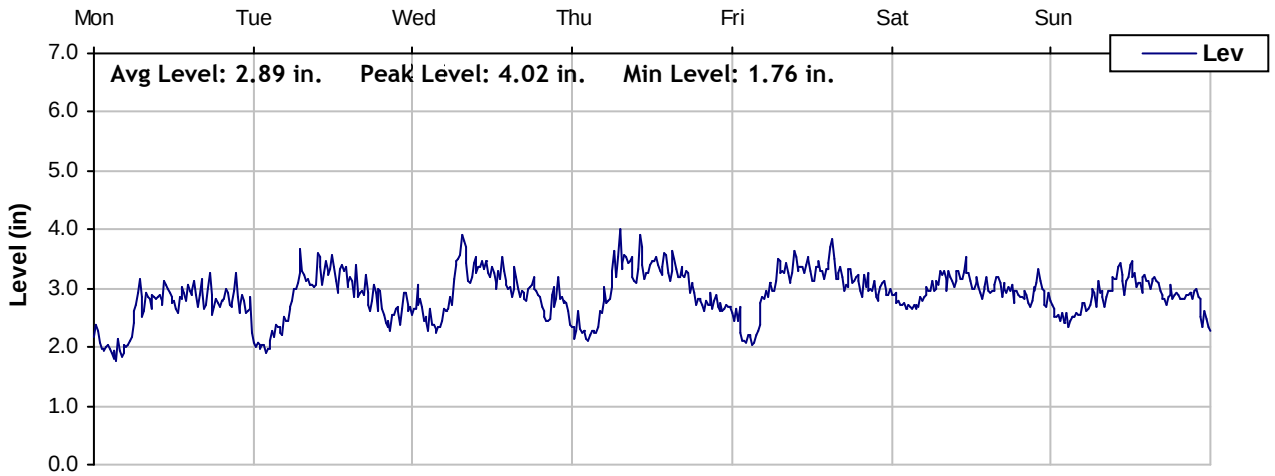
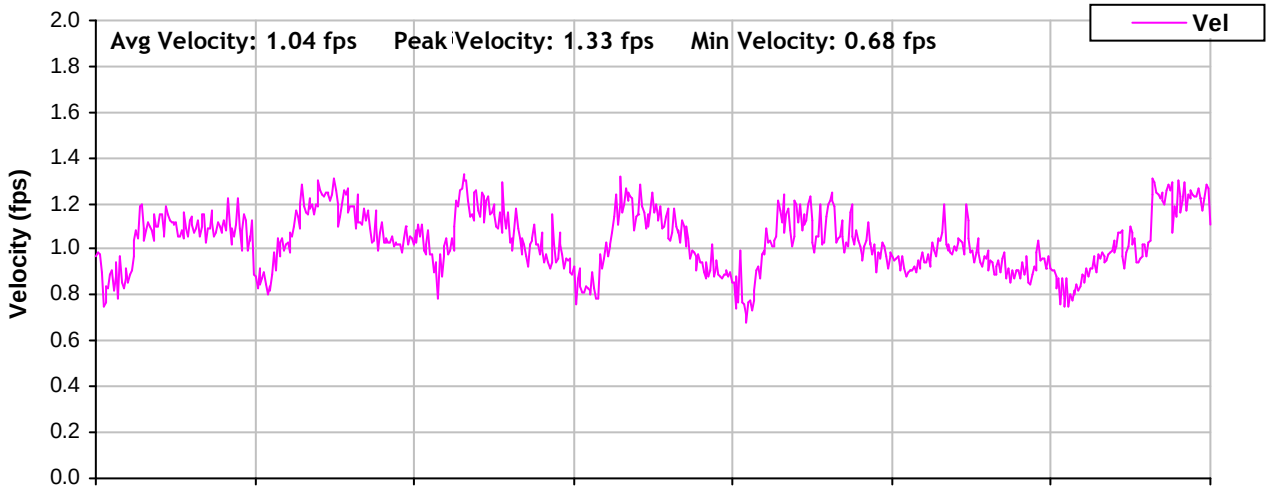
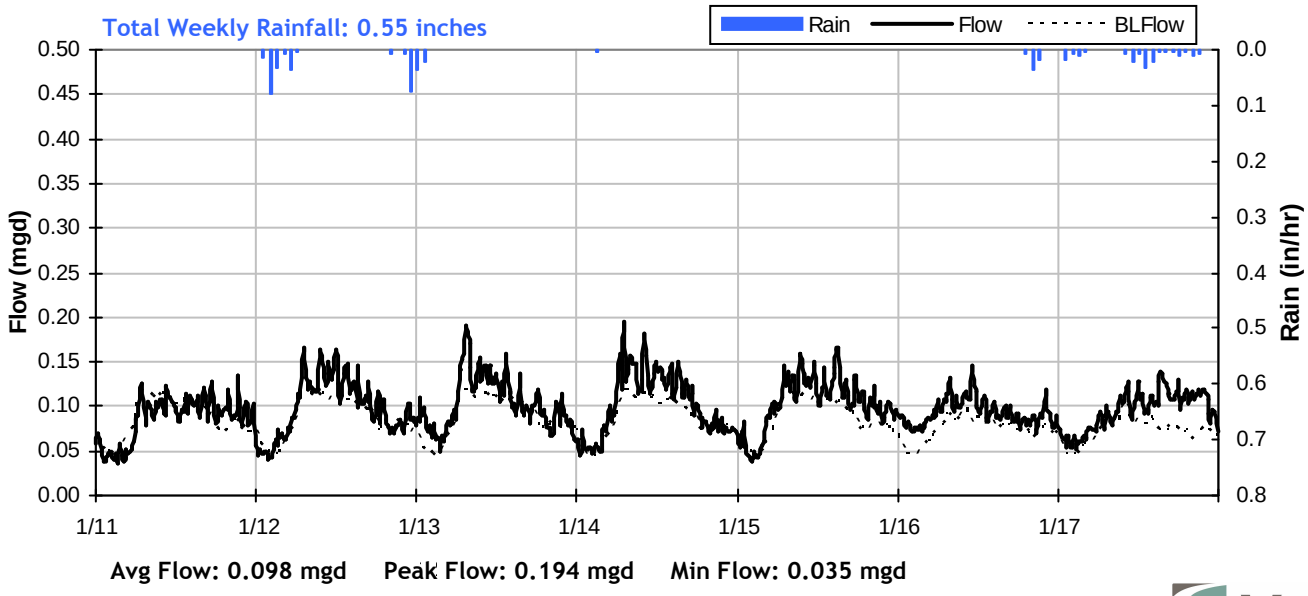
PORT OF OAKLAND

Level, Velocity and Flow
From 1/11/2010 to 1/18/2010

Monitoring Site:
Site M2







Avg Flow: 0.098 mgd Peak Flow: 0.194 mgd Min Flow: 0.035 mgd

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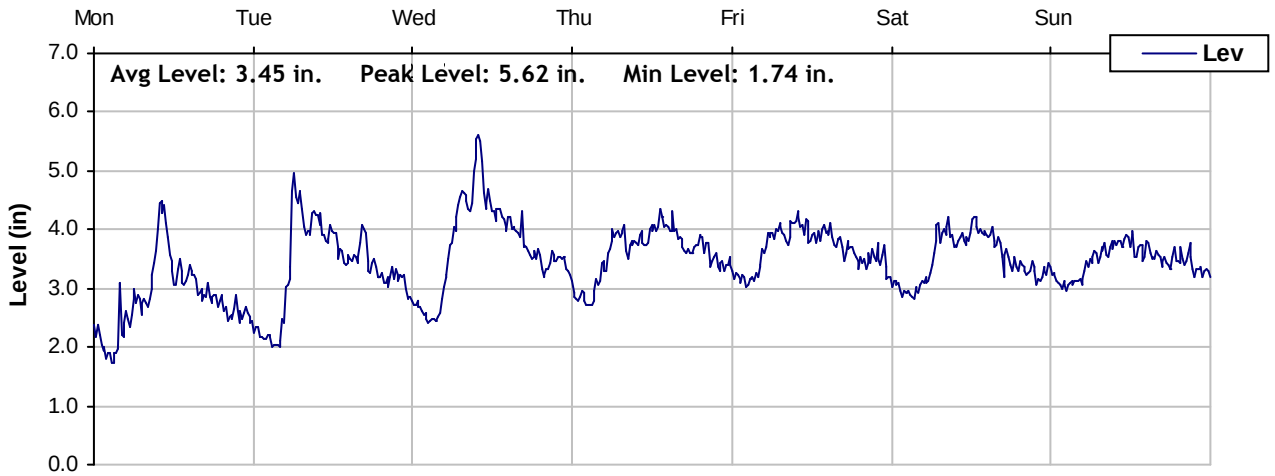
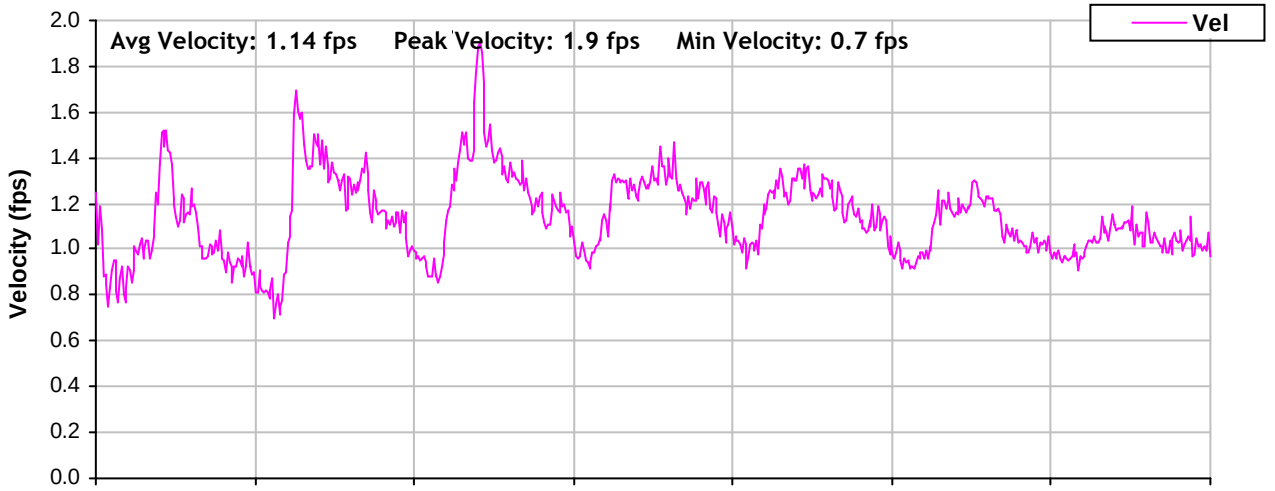
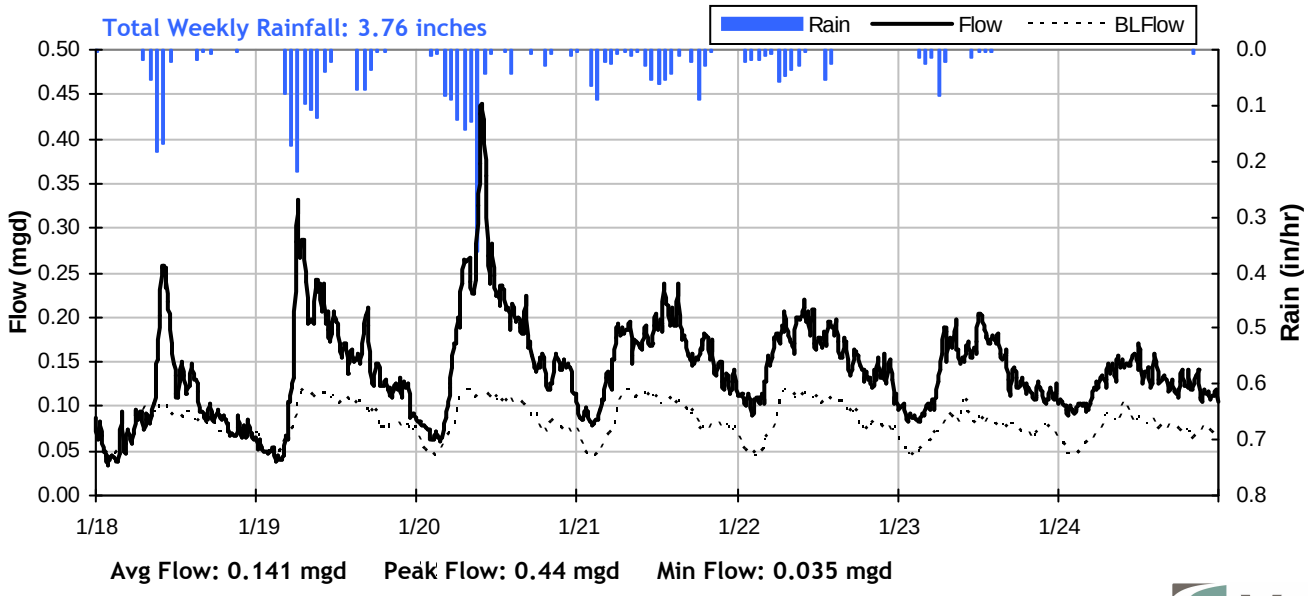
PORT OF OAKLAND

Level, Velocity and Flow
From 1/18/2010 to 1/25/2010

Monitoring Site:
Site M2







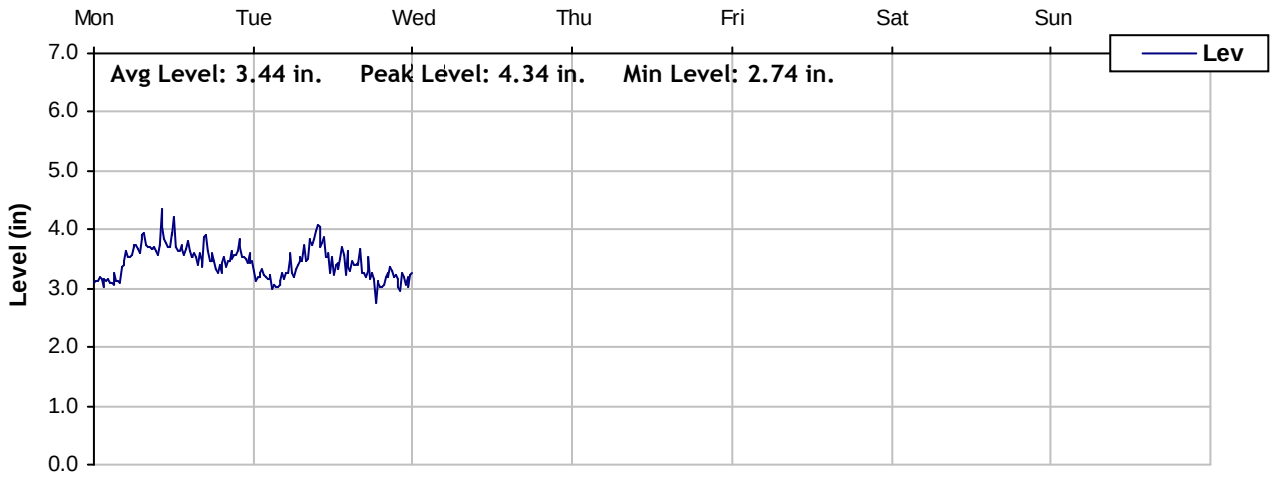
Avg Flow: 0.141 mgd Peak Flow: 0.44 mgd Min Flow: 0.035 mgd

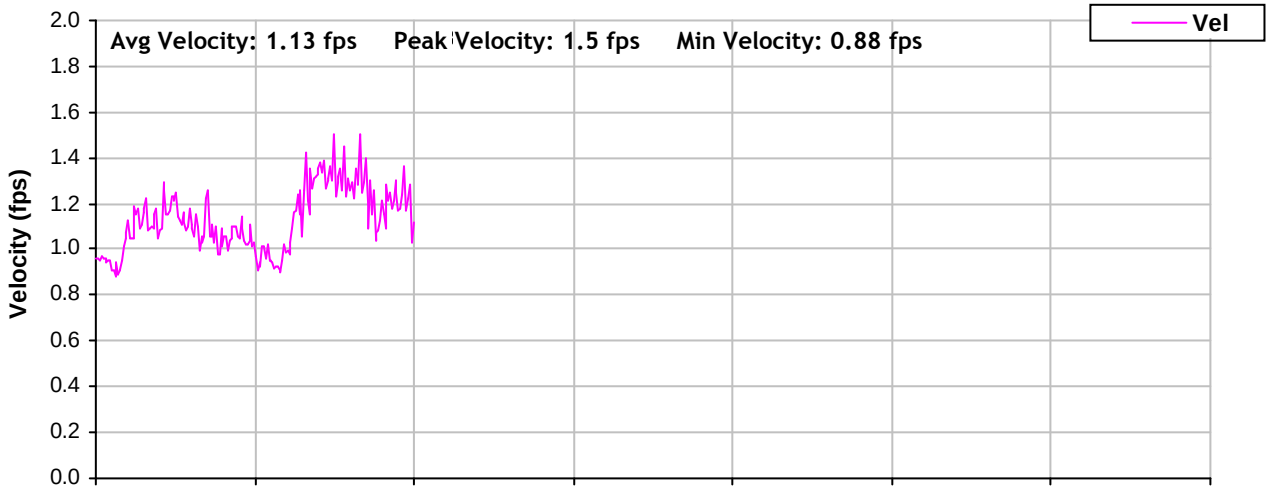
V&A

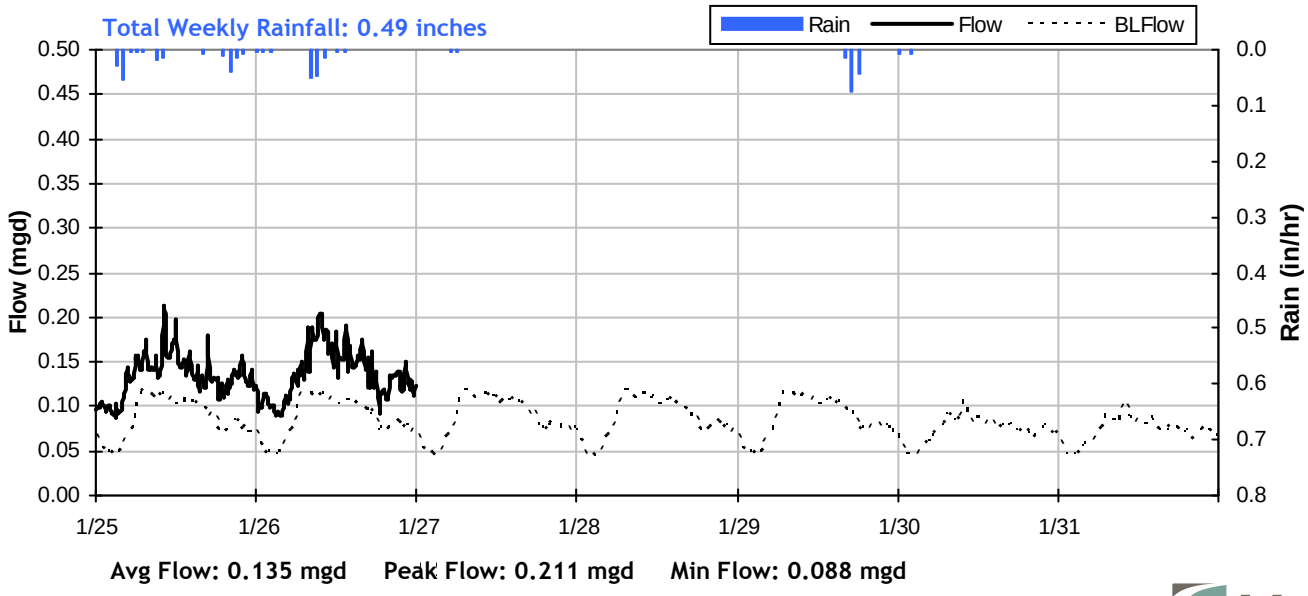
PORT OF OAKLAND

Level, Velocity and Flow
From 1/25/2010 to 2/1/2010

Monitoring Site:
Site M2







V&A

PORT OF OAKLAND

Temporary Flow Monitoring Study

Sanitary Sewer Collection System

Monitoring Site: Site M3

Location: Intersection of Earhart Road and De Havilland Street; Oakland International Airport

Size/Type Line: 15-inch Sanitary Sewer Pipe

Data Summary Report

V&A

PORT OF OAKLAND

Site Information Report

Monitoring Site: Site M3

Location: Intersection of Earhart Road and De Havilland Street; Oakland International Airport

Latitude: 37.7291°

Longitude: -122.2081°

Rim Elevation: 4 *feet*

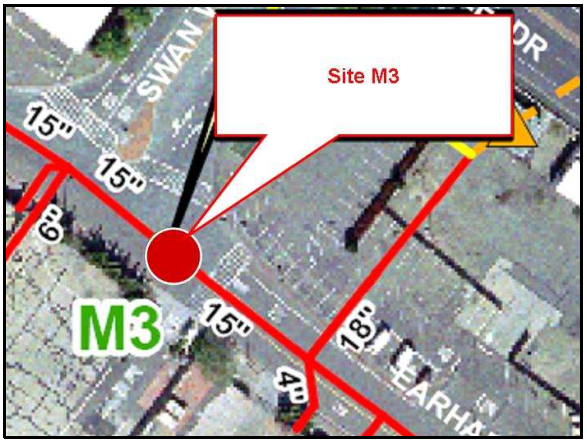
Diameter: 15 *inches*

Average Dry Weather Flow: 0.096 *mgd*

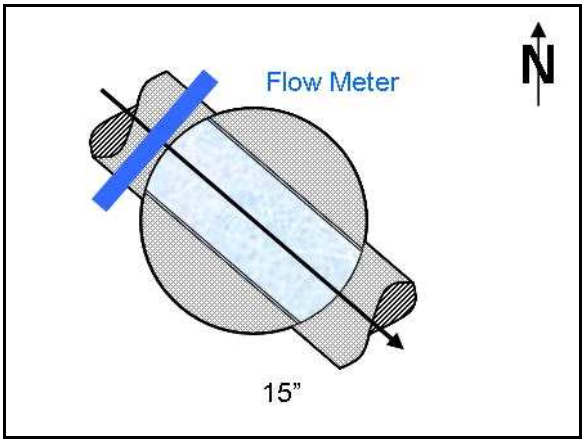
Peak Measured Flow: 0.776 *mgd*

Satellite Map

Sanitary Map



Flow Diagram



Street View Photo

Plan View Photo

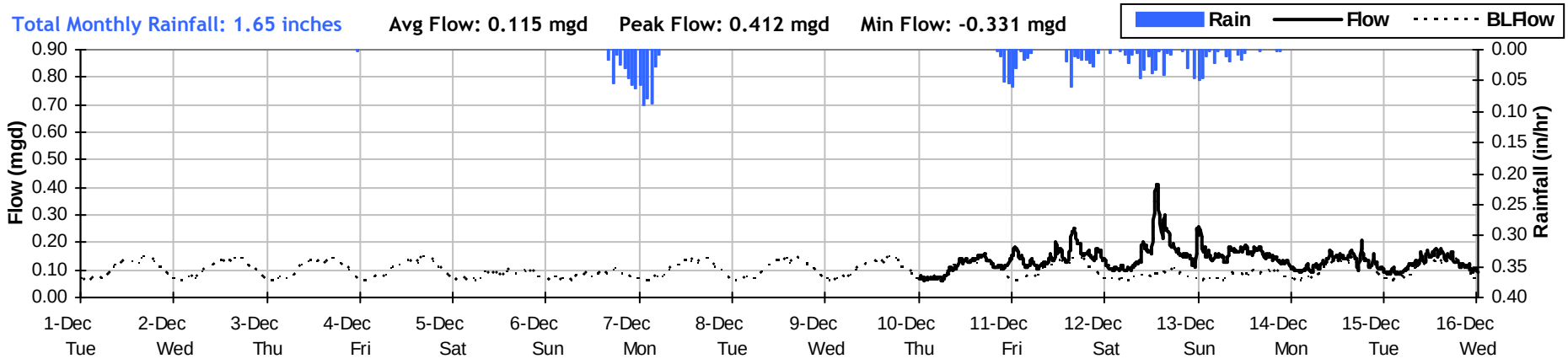
V&A

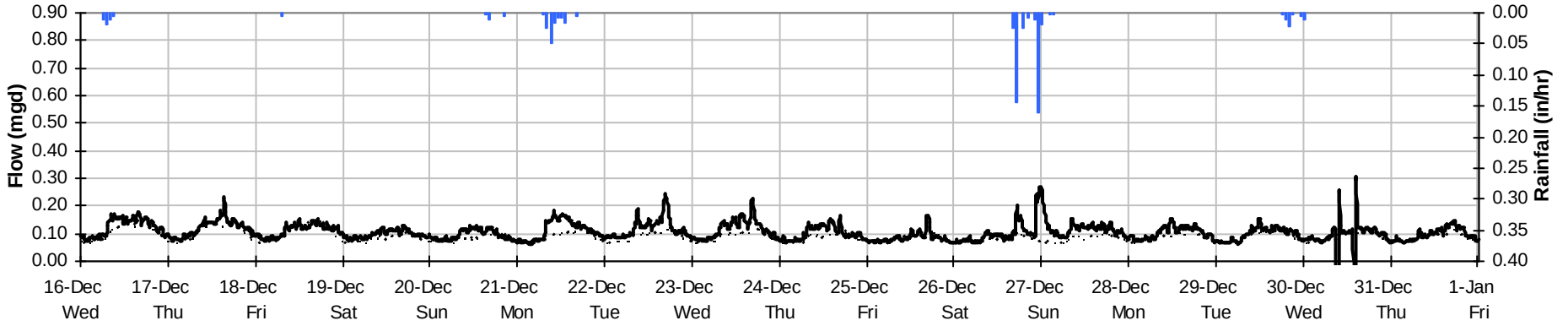
PORT OF OAKLAND

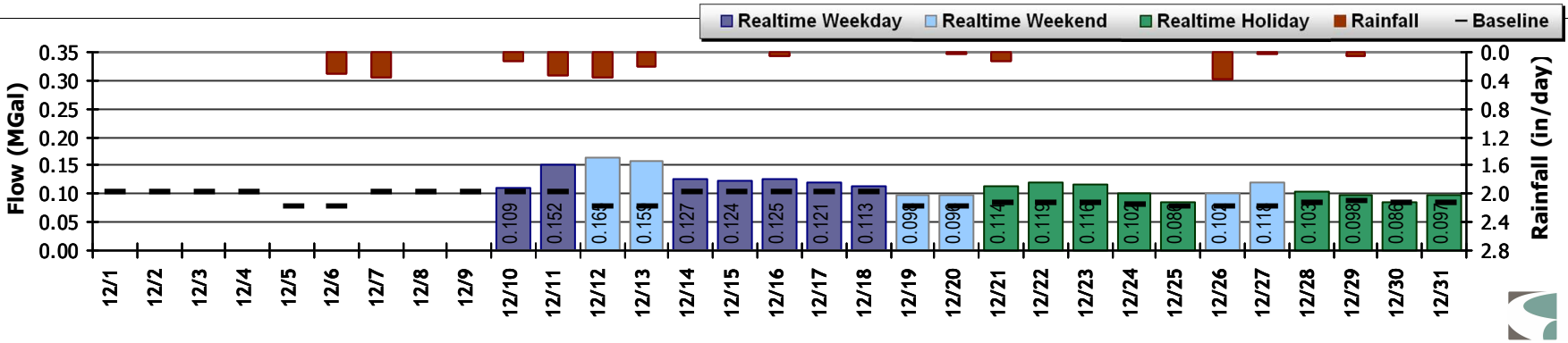
Period Flow Summary
December, 2009

Monitoring Site:
Site M3

Total Monthly Rainfall: 1.65 inches Avg Flow: 0.115 mgd Peak Flow: 0.412 mgd Min Flow: -0.331 mgd







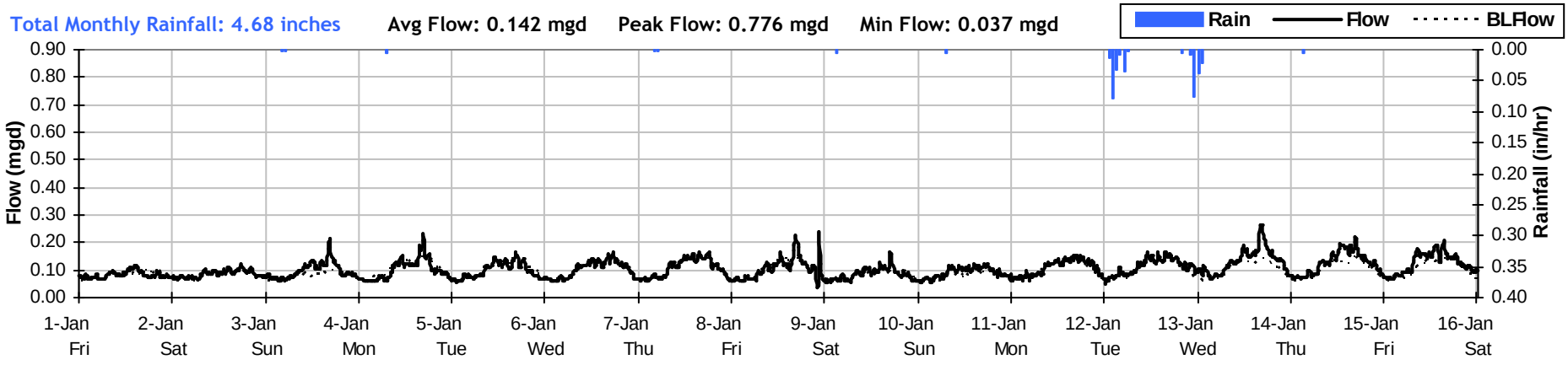
V&A

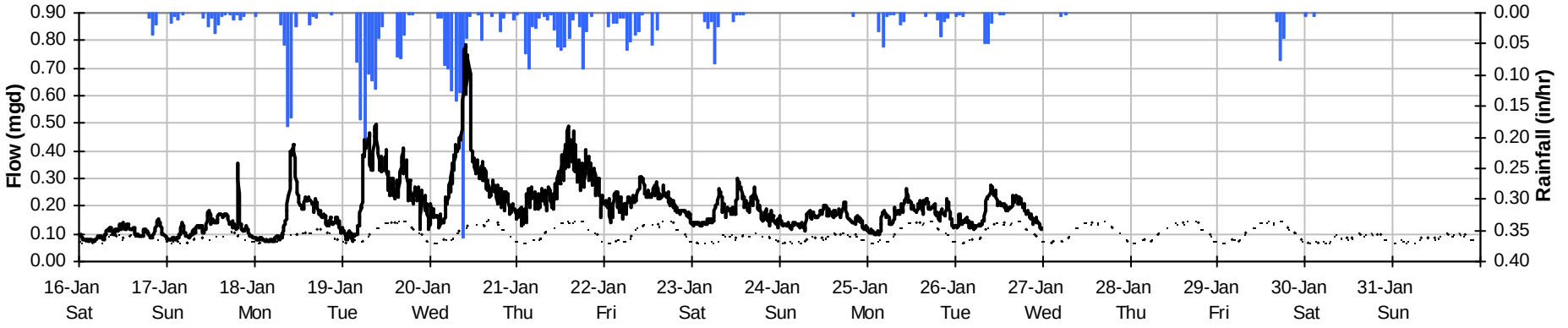
PORT OF OAKLAND

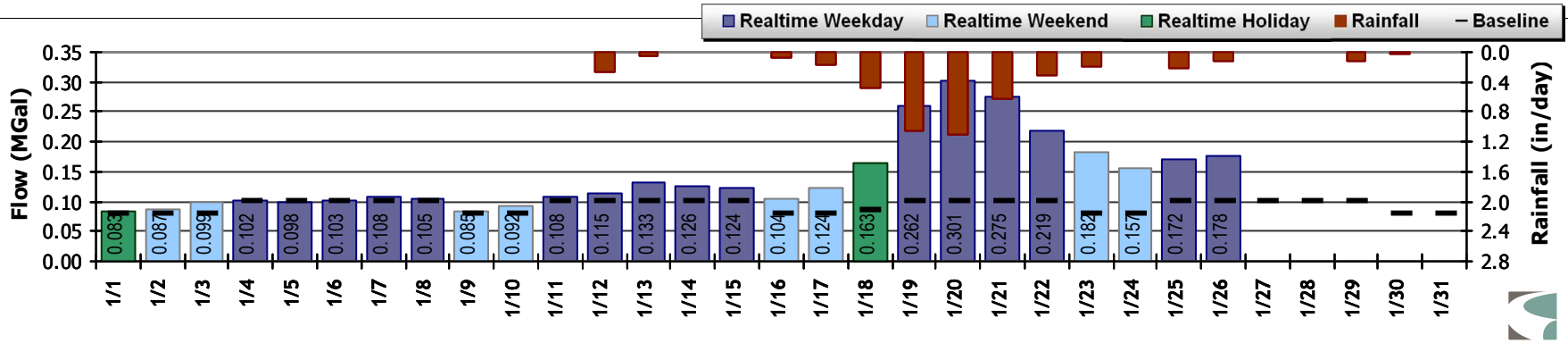
Period Flow Summary
January, 2010

Monitoring Site:
Site M3

Total Monthly Rainfall: 4.68 inches Avg Flow: 0.142 mgd Peak Flow: 0.776 mgd Min Flow: 0.037 mgd







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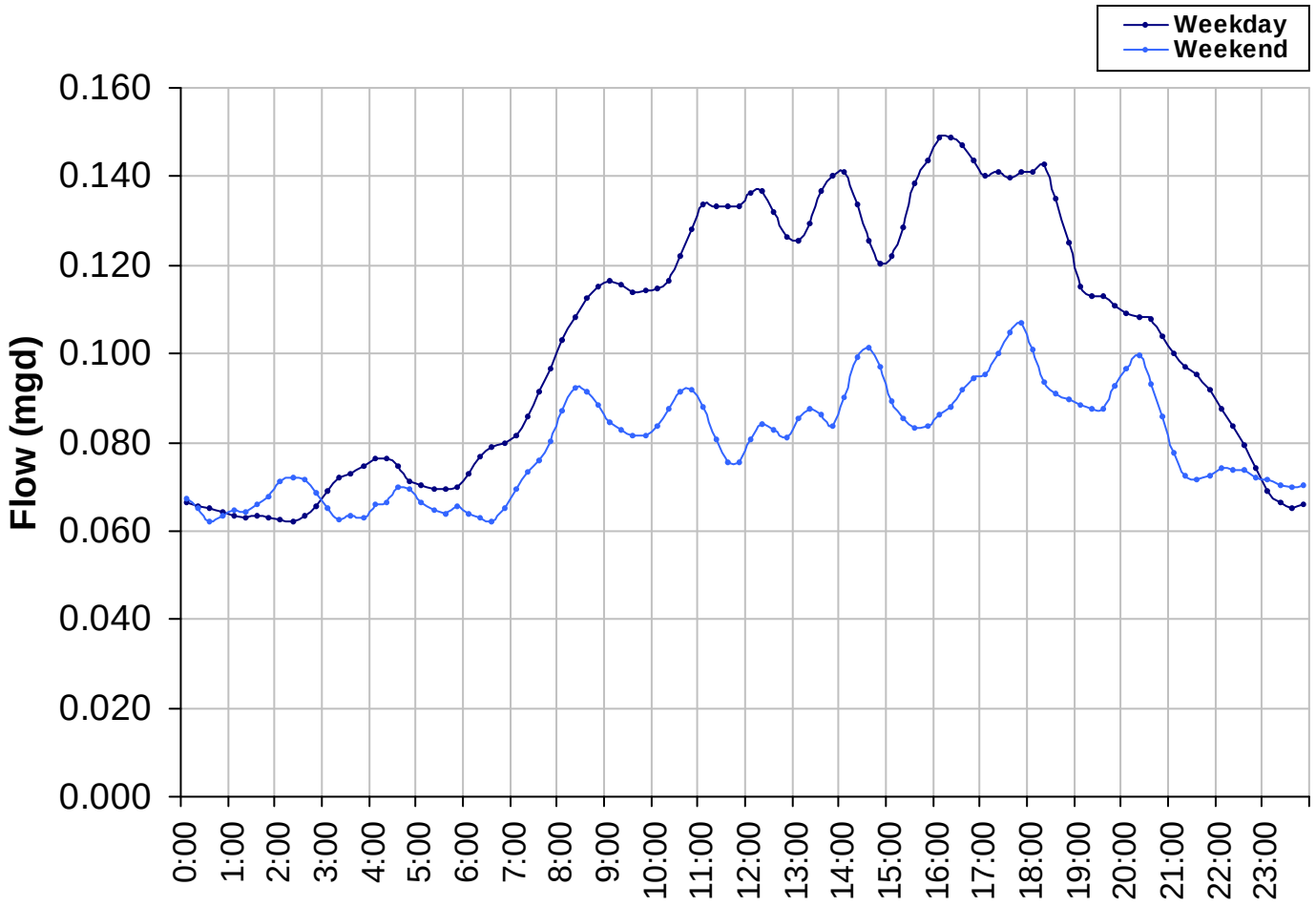
PORT OF OAKLAND

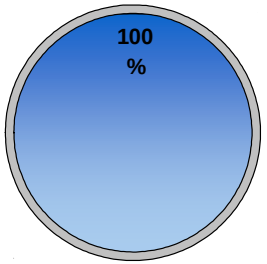
Average Dry Weather Flow

Monitoring Site:
Site M3



Peak Measured Flow:

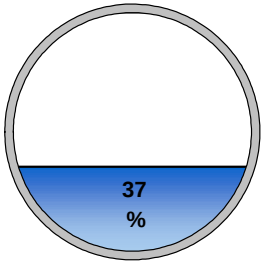
0.776 *mgd*



Peak measured flow shown in weekly graphs on following pages

Average Dry Weather Flow:

0.096 *mgd*



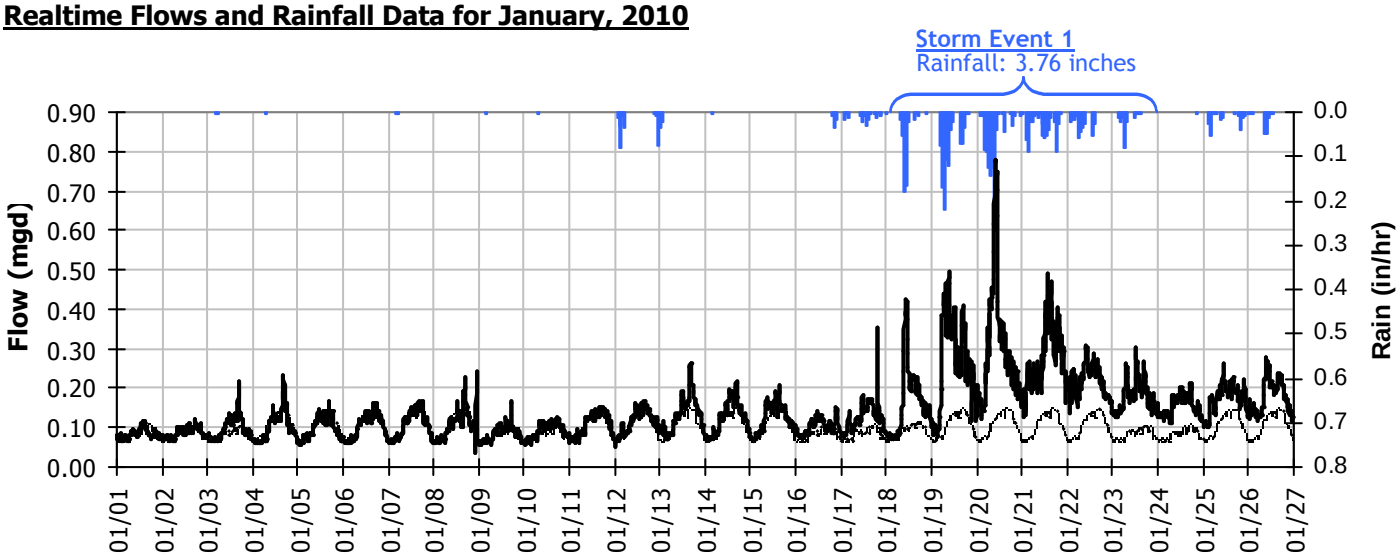
V&A

PORT OF OAKLAND

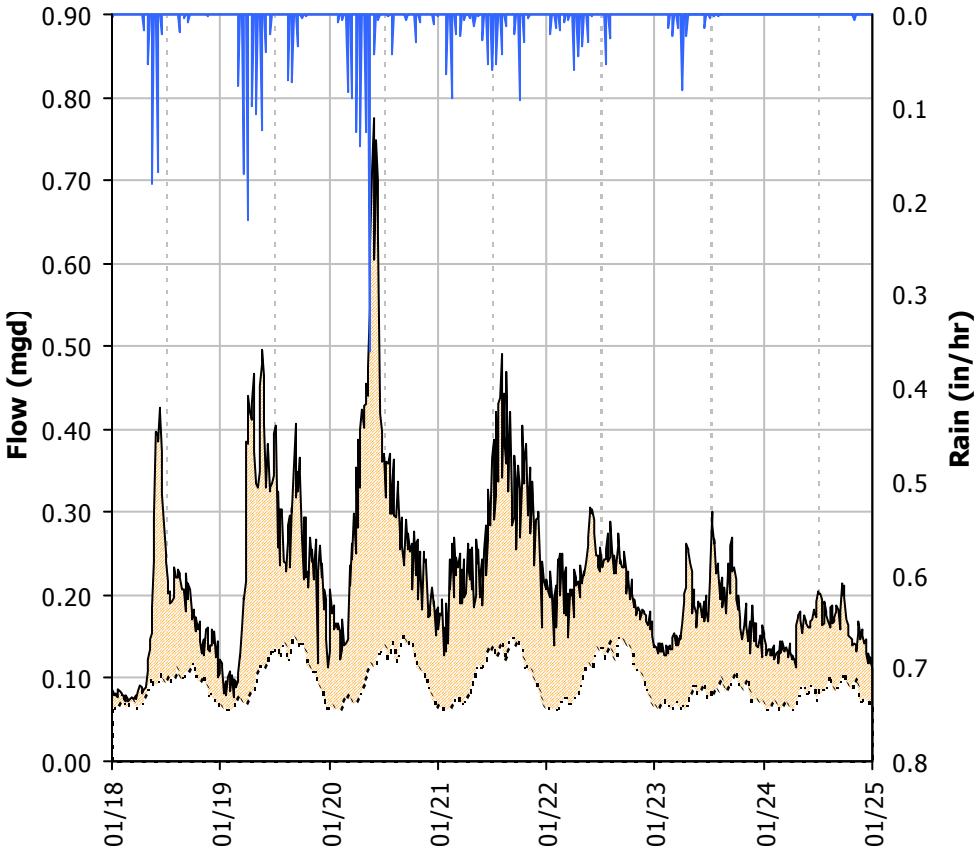
I/I Summary

Monitoring Site:
Site M3

Realtime Flows and Rainfall Data for January, 2010



Storm Event #1 Detail I/I Graph



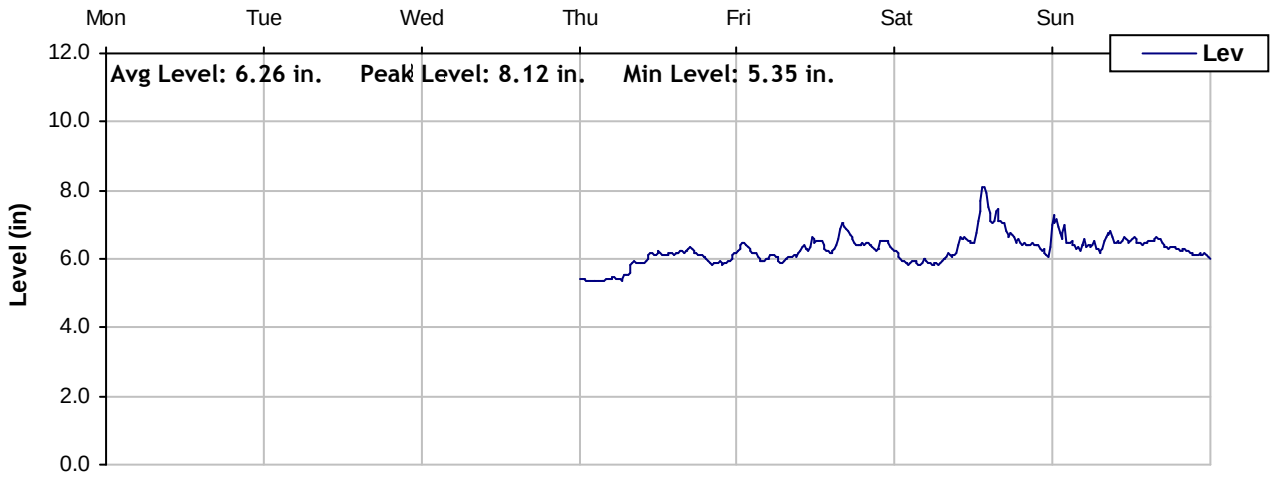
I&I ANALYSIS		
Rainfall:	3.76	*inches*
Total I&I		
Total I/I:	902,000	*gallons*
I/I per ADWF:	2.5	*per in-rain*
Inflow		
Peak I/I Rate:	0.66	*mgd*
Pk I/I:ADWF:	6.87	
Infiltration (% of ADWF)		
Infiltration at +24hours:	96.3%	
Capacity		
Peak Flow:	0.78	*mgd*
PF:	8.06	
Peak Level:	22.70	*inches*
d/D Ratio:	1.51	

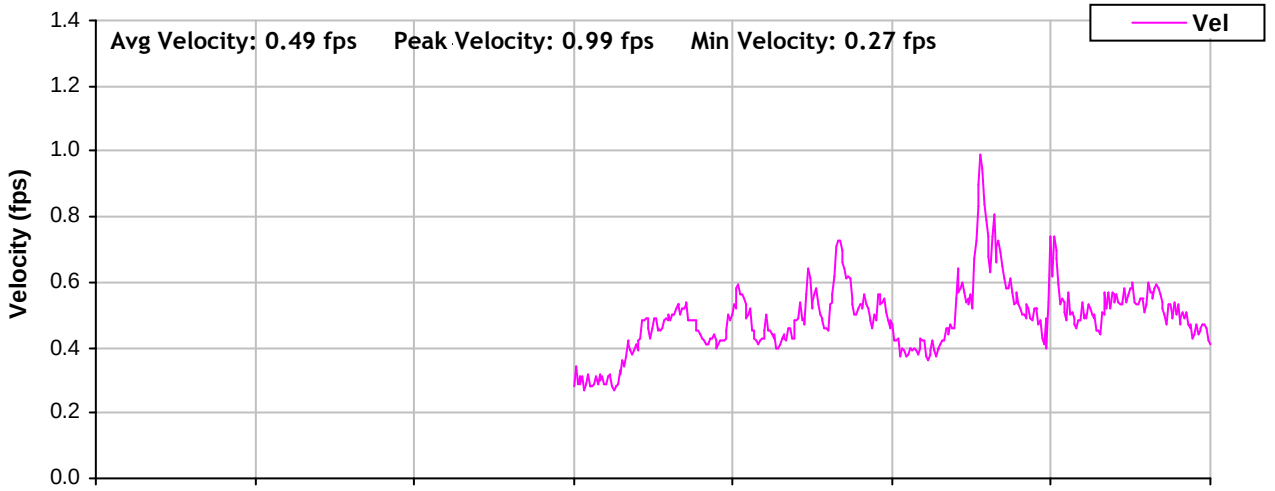
V&A

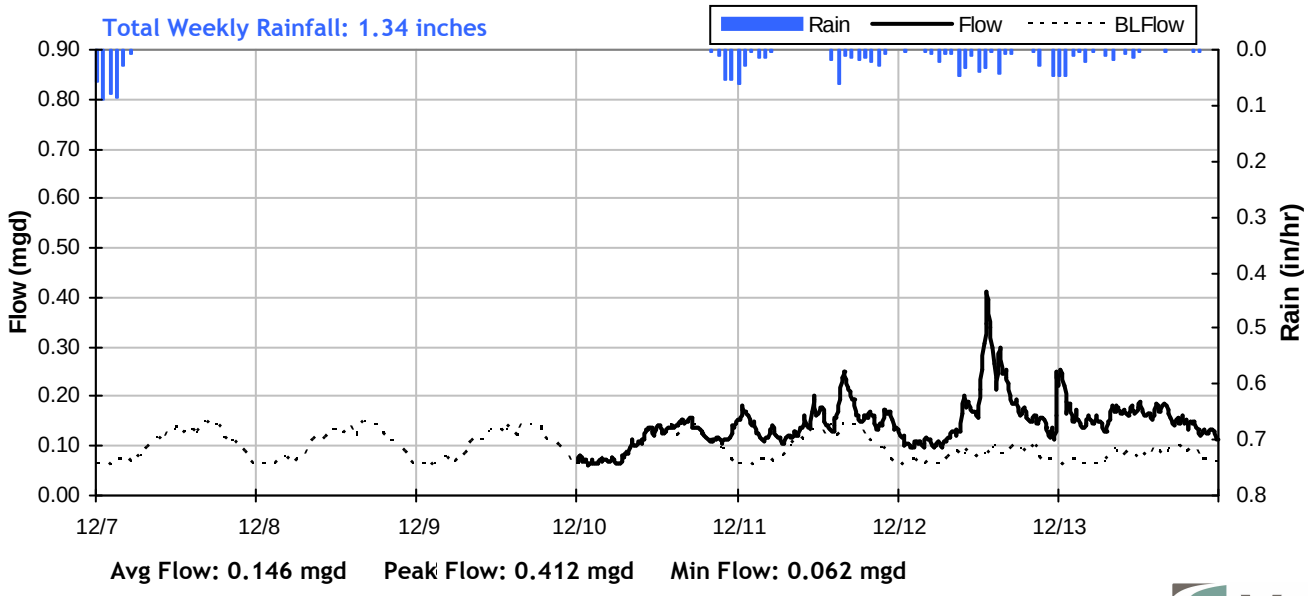
PORT OF OAKLAND

Level, Velocity and Flow
From 12/7/2009 to 12/14/2009

Monitoring Site:
Site M3







Avg Flow: 0.146 mgd Peak Flow: 0.412 mgd Min Flow: 0.062 mgd

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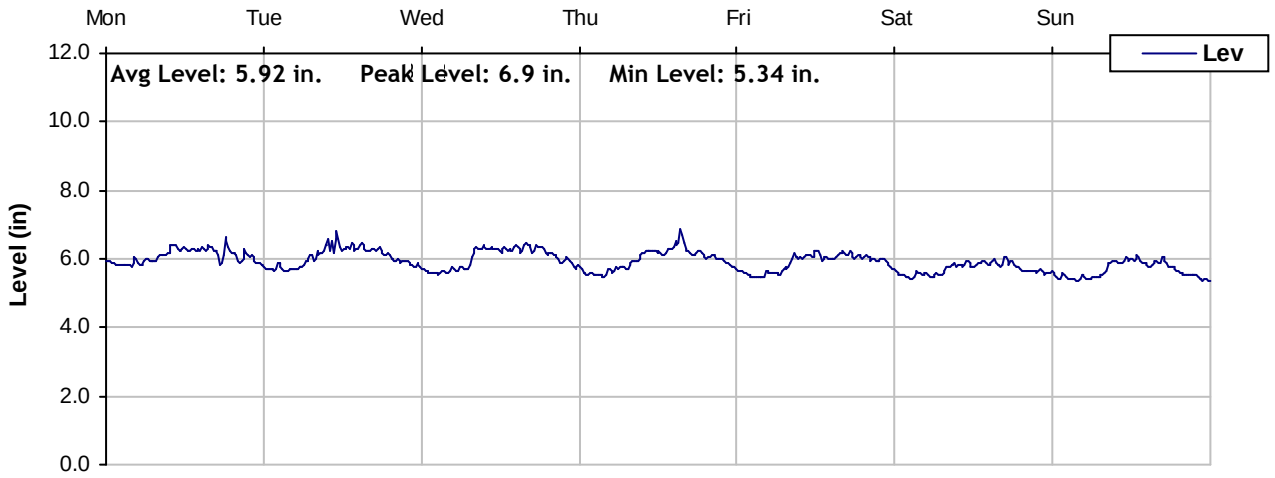
PORT OF OAKLAND

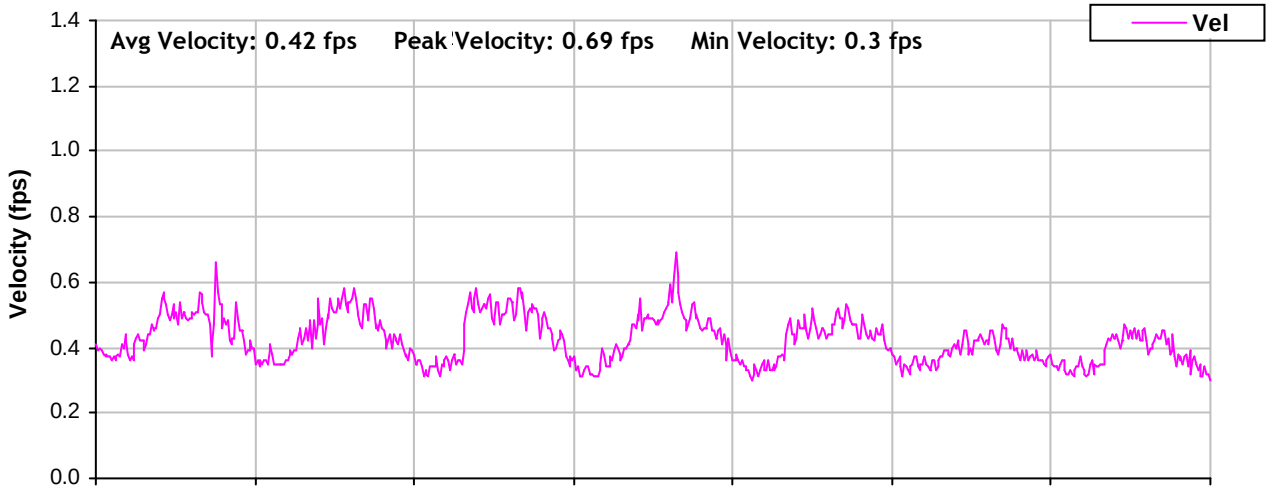
Level, Velocity and Flow

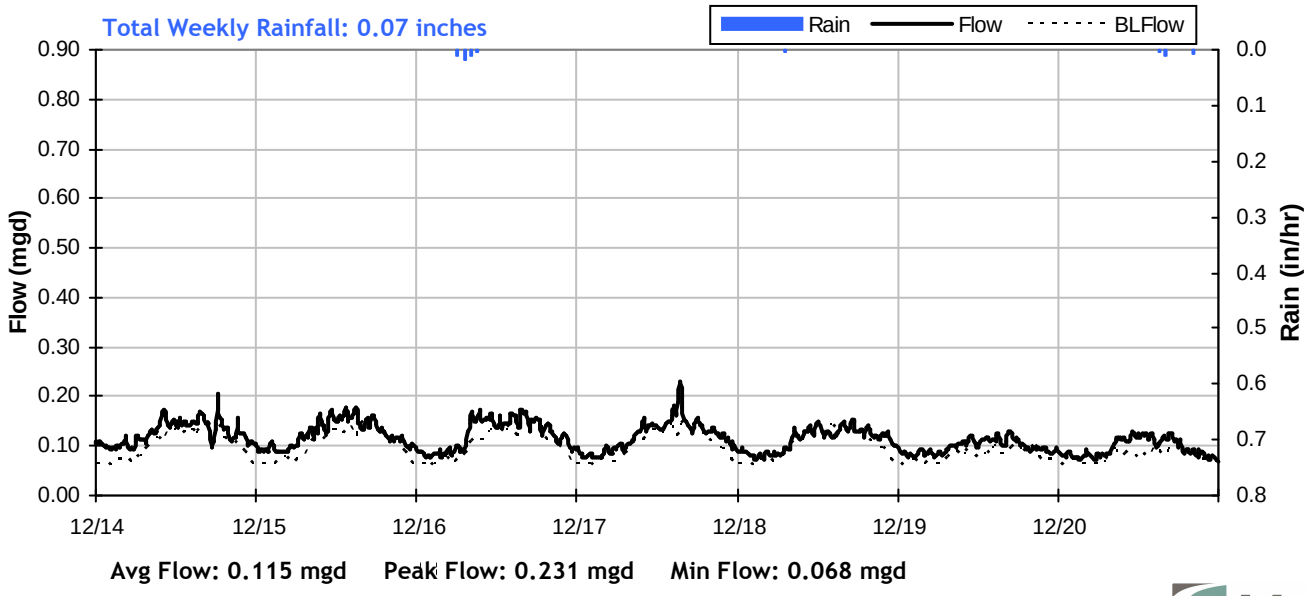
From 12/14/2009 to 12/21/2009

Monitoring Site:

Site M3







Avg Flow: 0.115 mgd Peak Flow: 0.231 mgd Min Flow: 0.068 mgd

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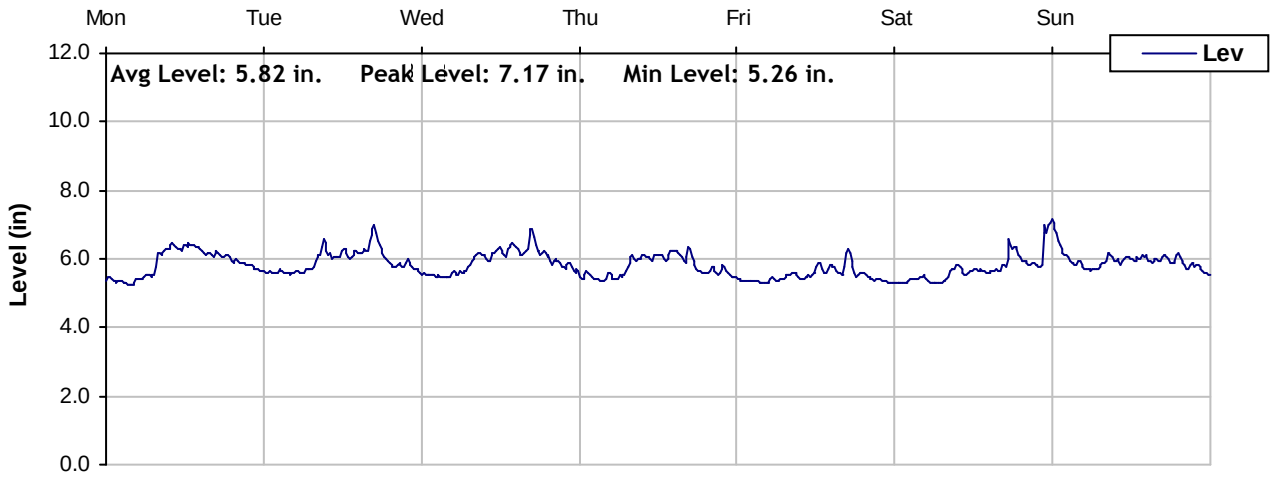
PORT OF OAKLAND

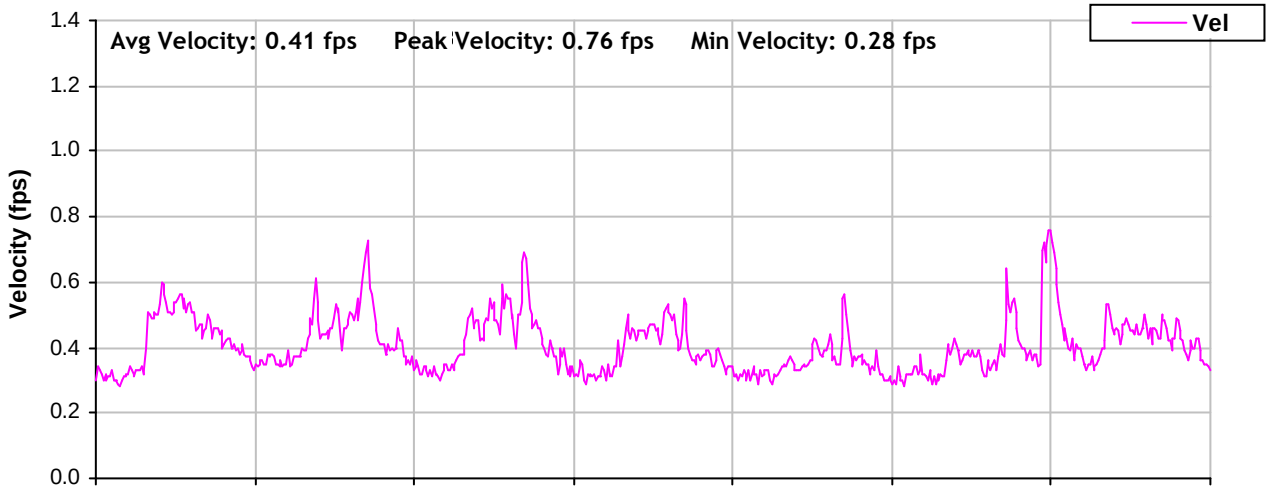
Level, Velocity and Flow

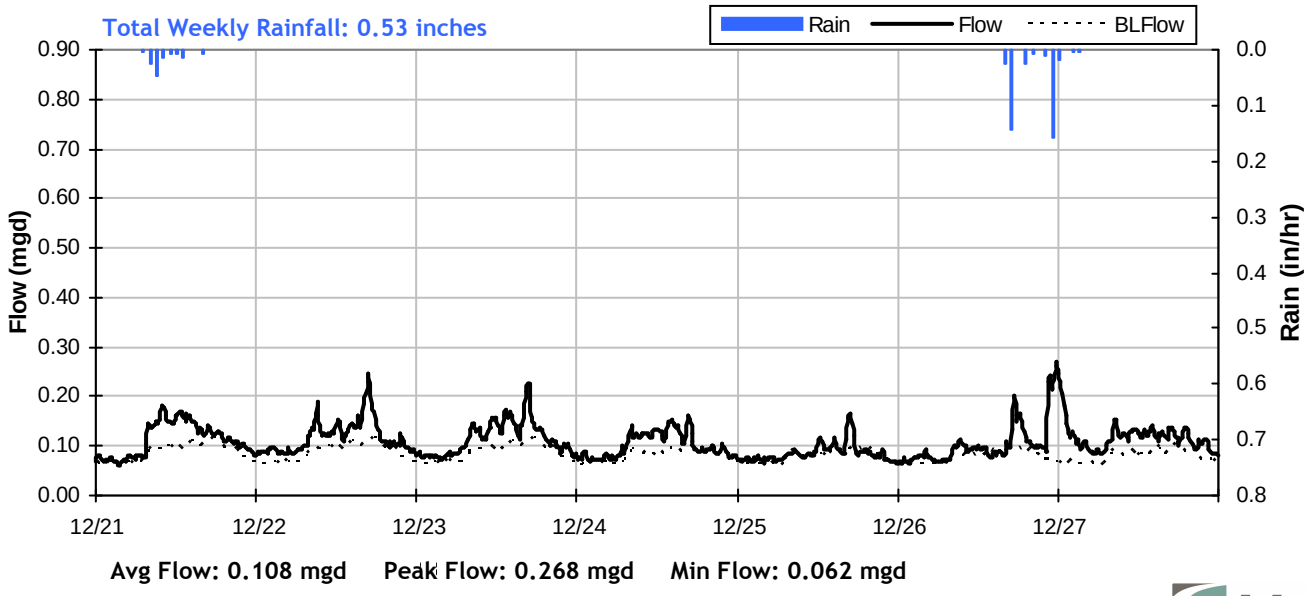
From 12/21/2009 to 12/28/2009

Monitoring Site:

Site M3







Avg Flow: 0.108 mgd Peak Flow: 0.268 mgd Min Flow: 0.062 mgd

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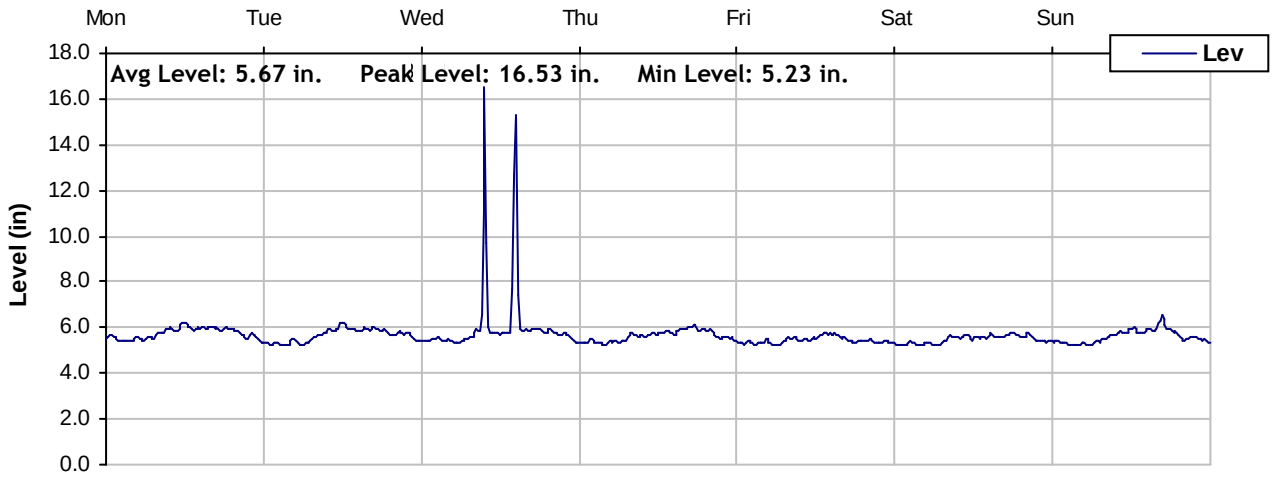
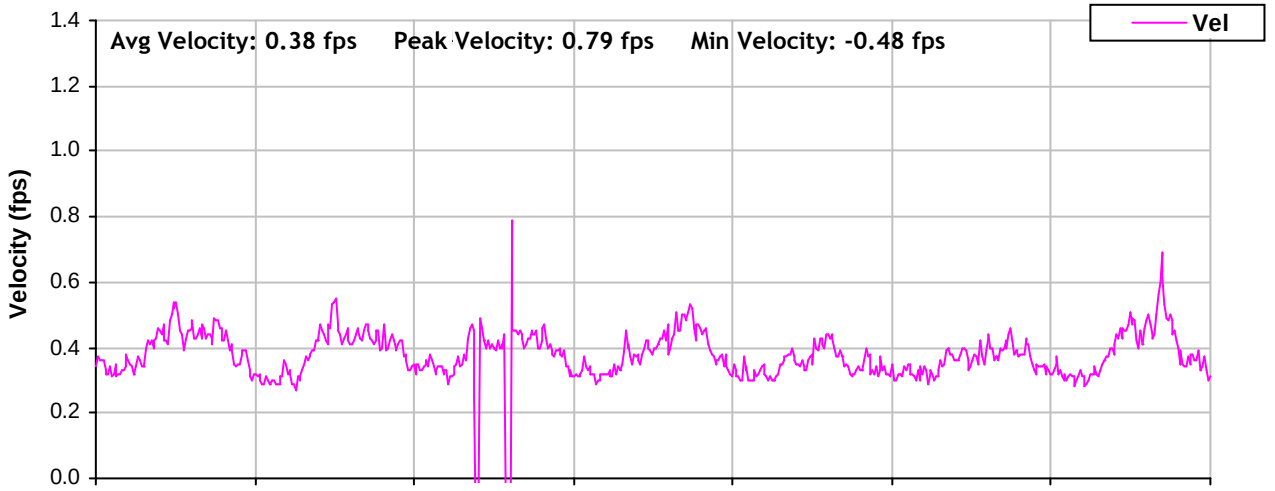
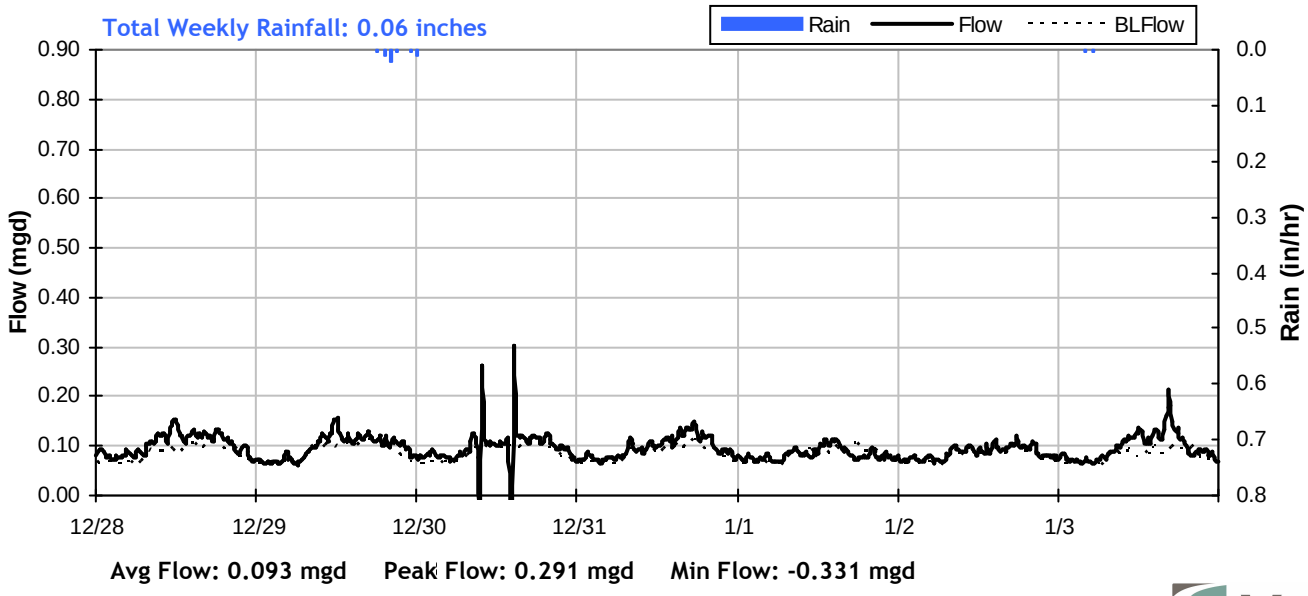
PORT OF OAKLAND

Level, Velocity and Flow
From 12/28/2009 to 1/4/2010

Monitoring Site:
Site M3







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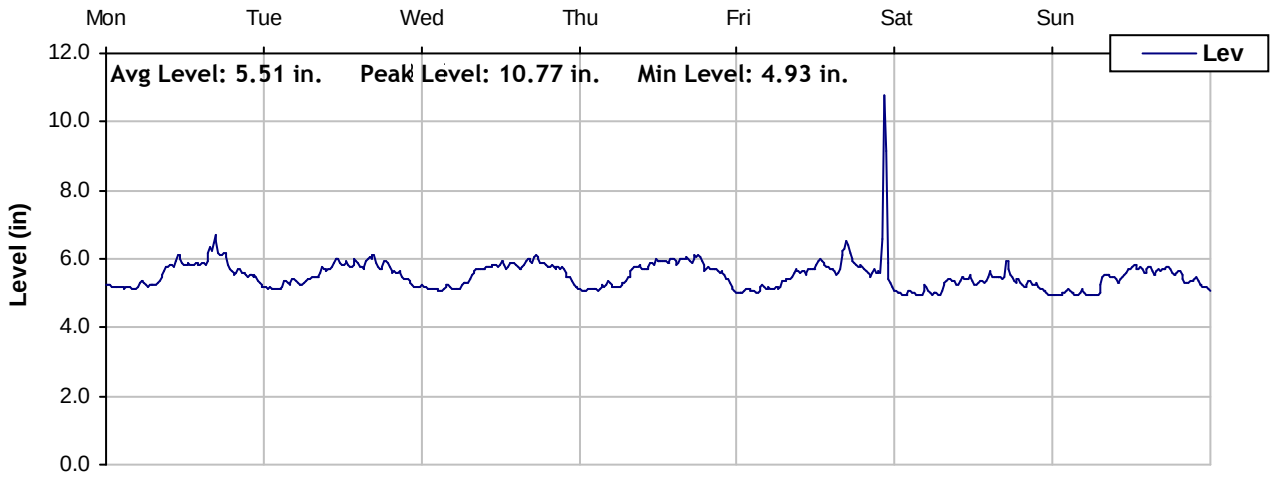
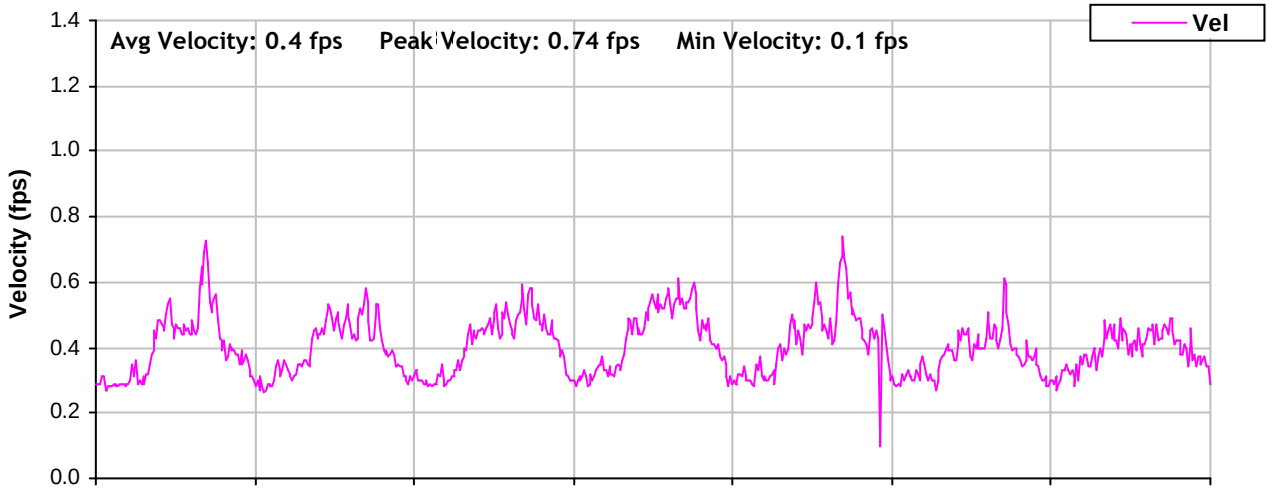
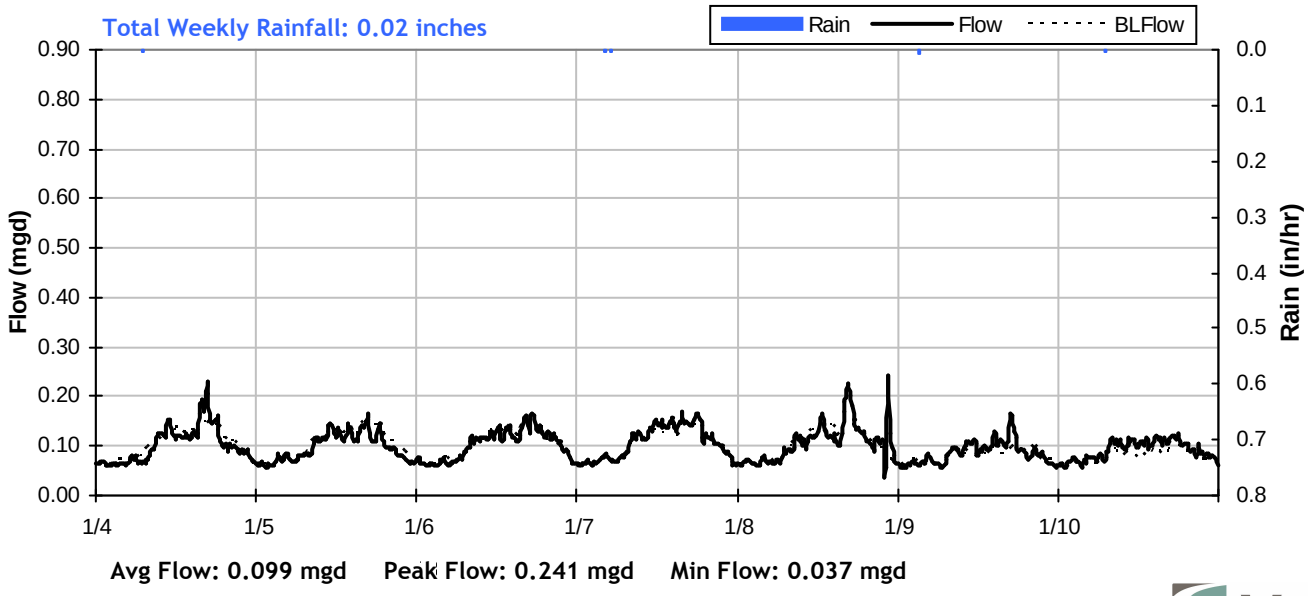
PORT OF OAKLAND

Level, Velocity and Flow
From 1/4/2010 to 1/11/2010

Monitoring Site:
Site M3







Avg Flow: 0.099 mgd Peak Flow: 0.241 mgd Min Flow: 0.037 mgd

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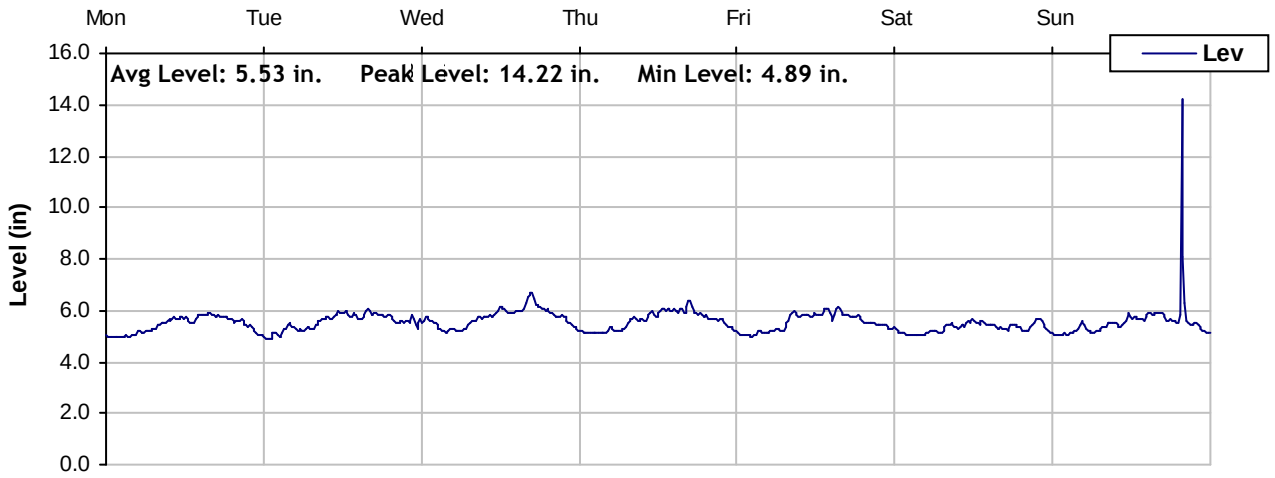
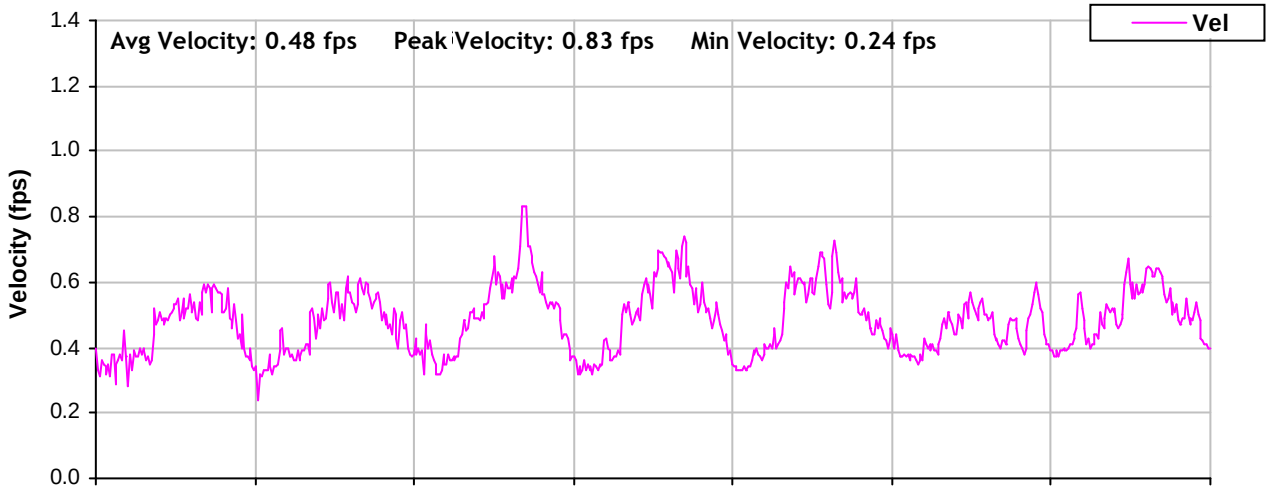
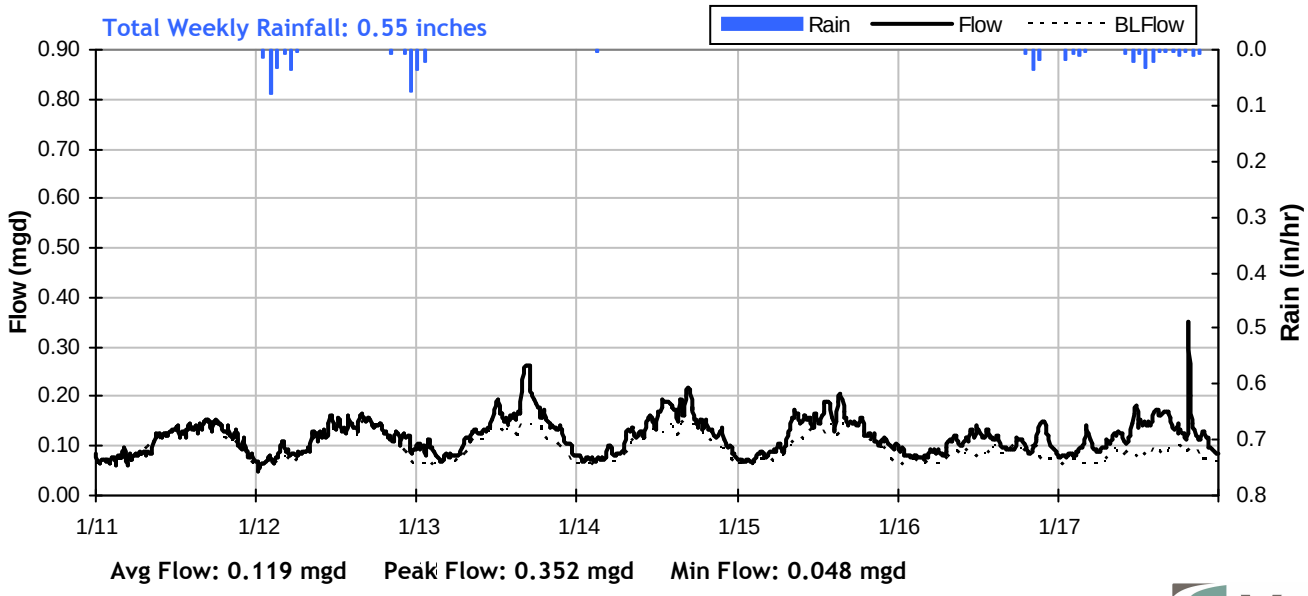
PORT OF OAKLAND

Level, Velocity and Flow
From 1/11/2010 to 1/18/2010

Monitoring Site:
Site M3







Avg Flow: 0.119 mgd Peak Flow: 0.352 mgd Min Flow: 0.048 mgd

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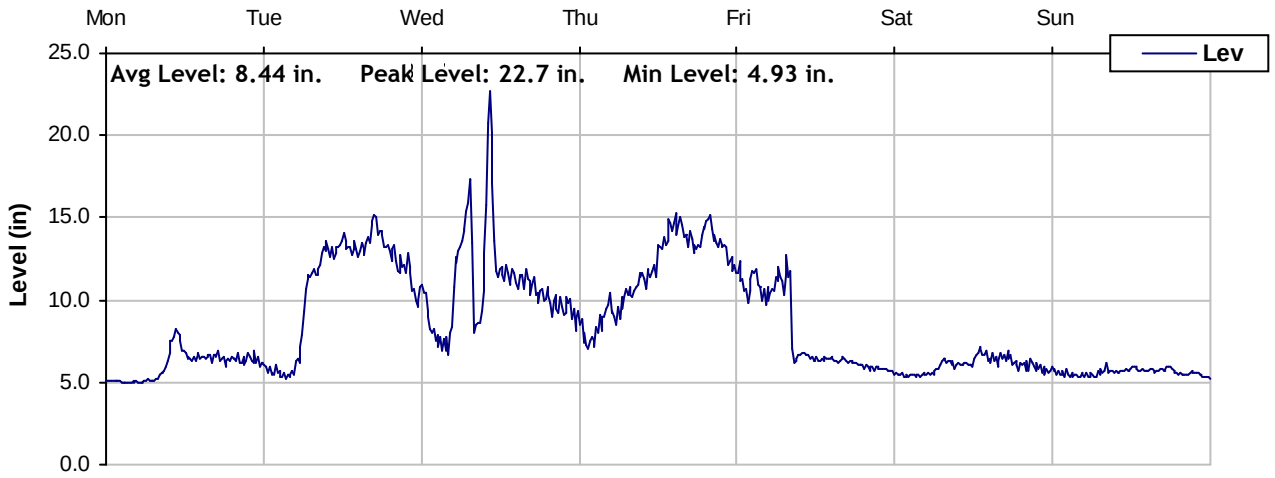
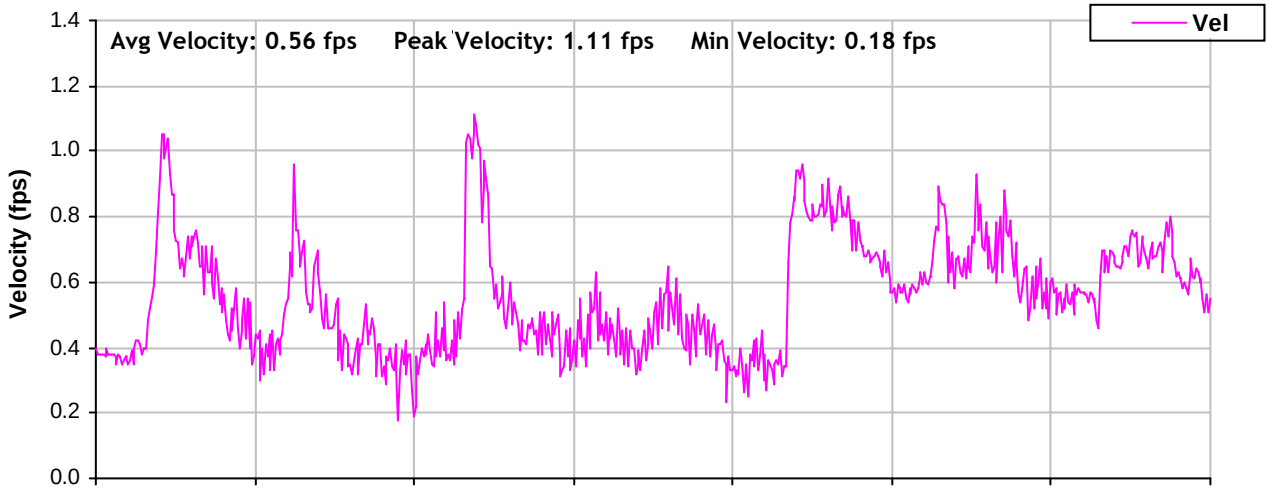
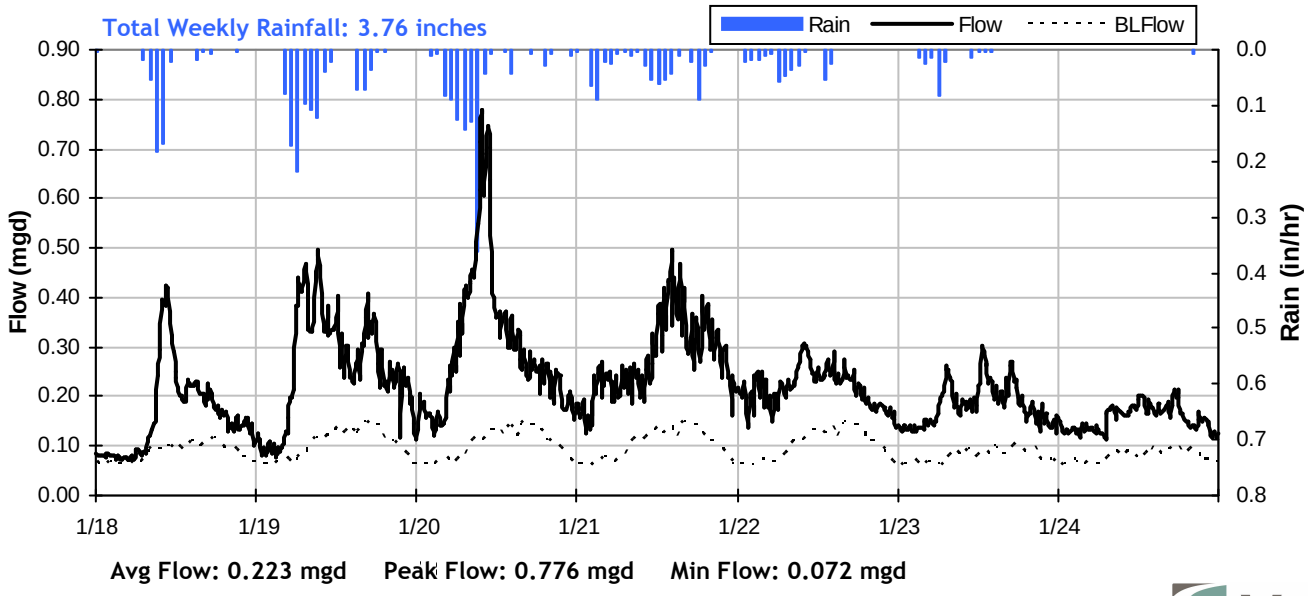
PORT OF OAKLAND

Level, Velocity and Flow
From 1/18/2010 to 1/25/2010

Monitoring Site:
Site M3







Avg Flow: 0.223 mgd Peak Flow: 0.776 mgd Min Flow: 0.072 mgd

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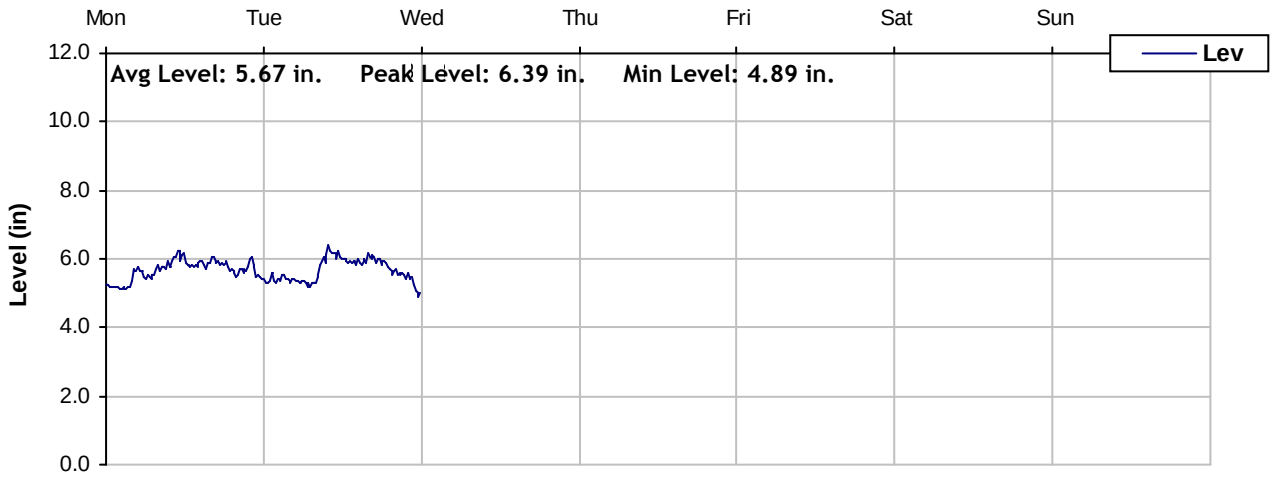
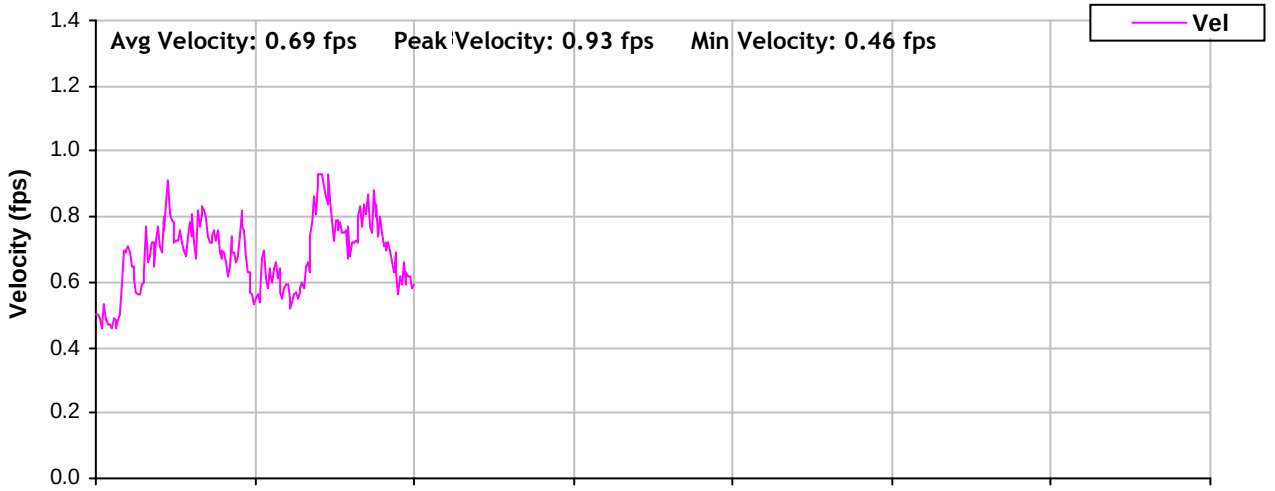
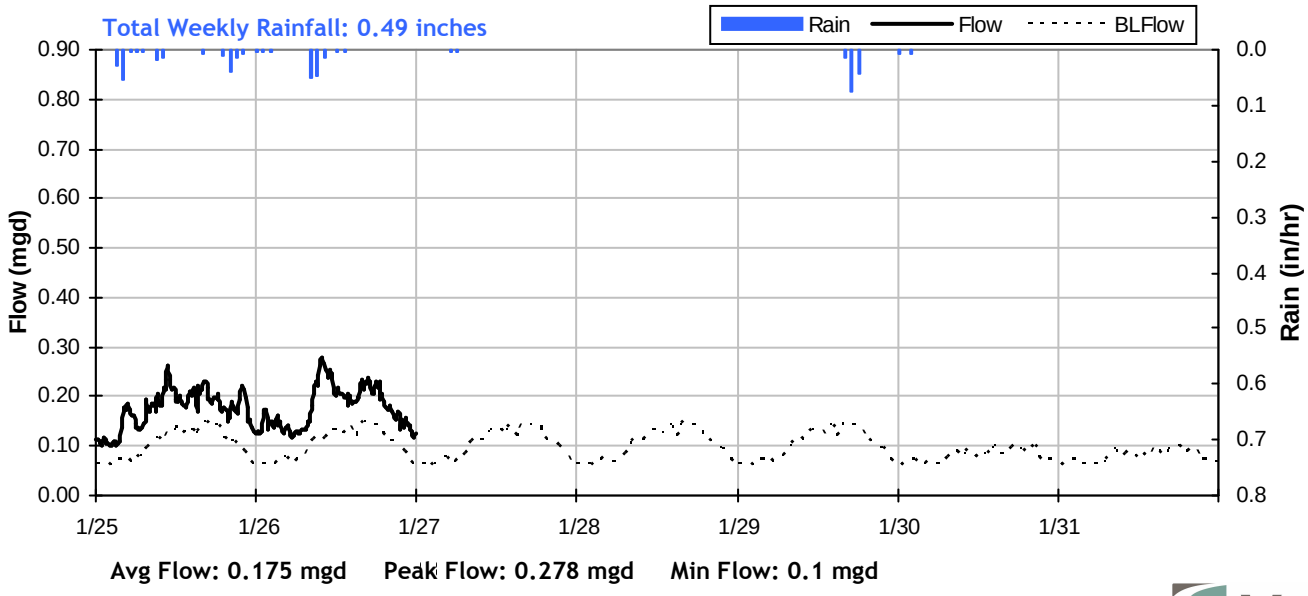
PORT OF OAKLAND

Level, Velocity and Flow
From 1/25/2010 to 2/1/2010

Monitoring Site:
Site M3







Avg Flow: 0.175 mgd Peak Flow: 0.278 mgd Min Flow: 0.1 mgd

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PORT OF OAKLAND

Temporary Flow Monitoring Study

Sanitary Sewer Collection System

Monitoring Site: Site M4

Location: Northeast corner of Oakland International Airport Parking Lot

Size/Type Line: 12-inch Sanitary Sewer Pipe

Data Summary Report

V&A

PORT OF OAKLAND

Site Information Report

Monitoring Site: Site M4

Location: Northeast corner of Oakland International Airport Parking Lot

Latitude: 37.7159°

Longitude: -122.2098°

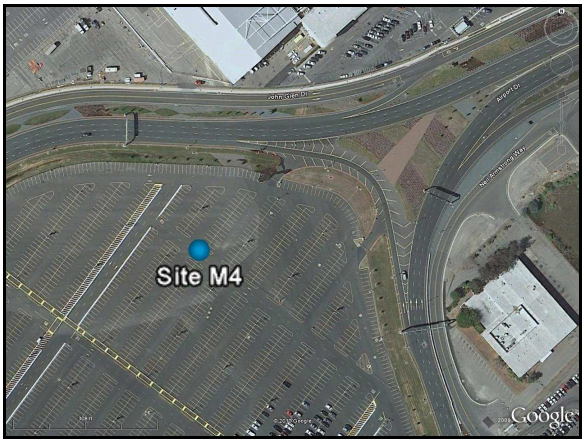
Rim Elevation: 7 *feet*

Diameter: 12 *inches*

Average Dry Weather Flow: 0.077 *mgd*

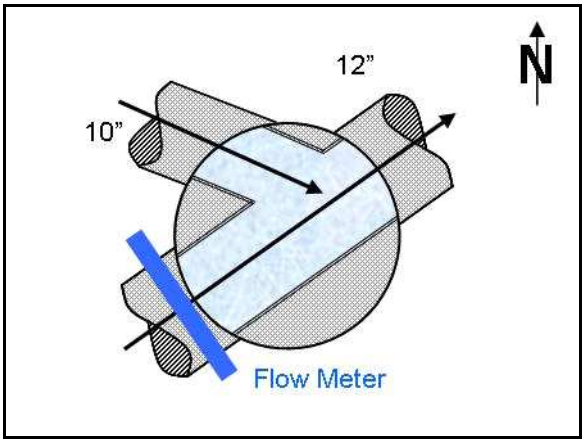
Peak Measured Flow: 0.213 *mgd*

Satellite Map

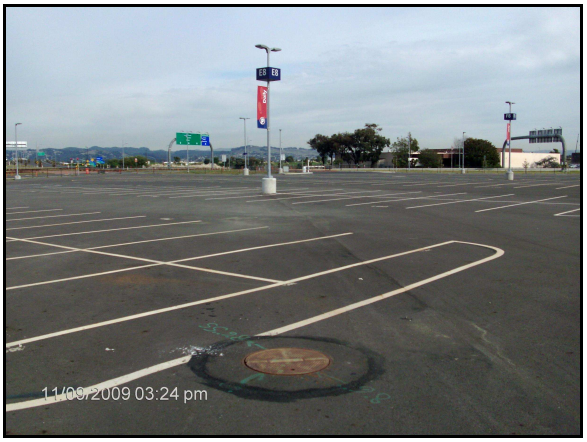


Sanitary Map

Flow Diagram



Street View Photo



Plan View Photo

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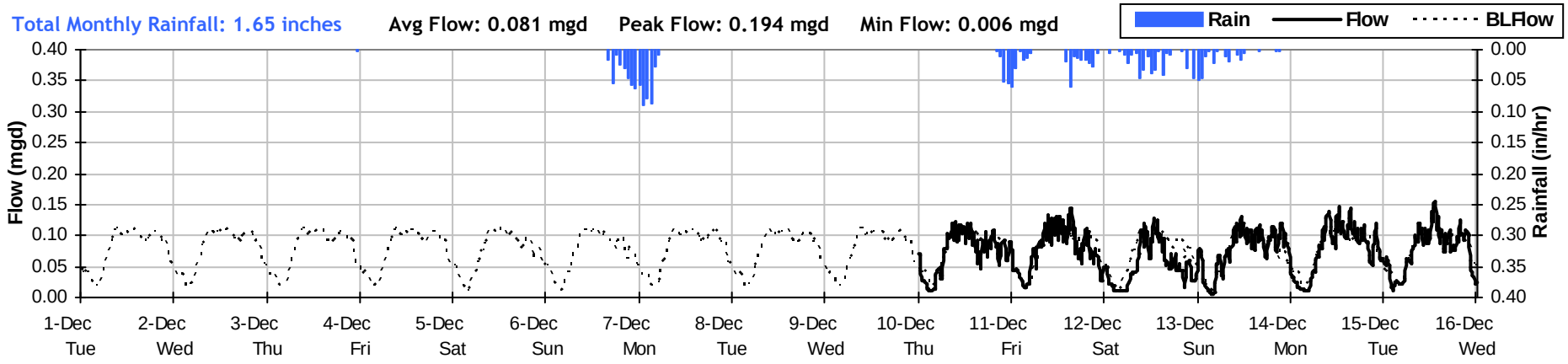
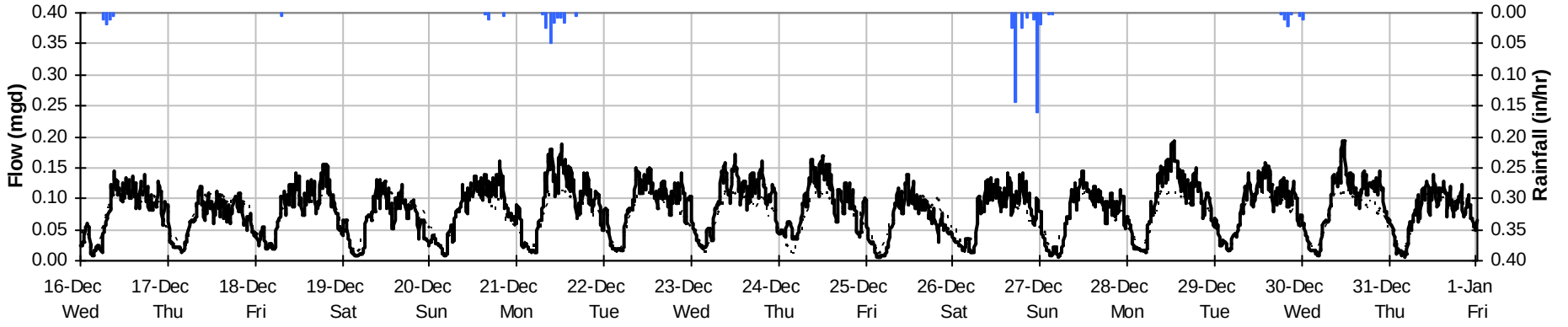
PORT OF OAKLAND

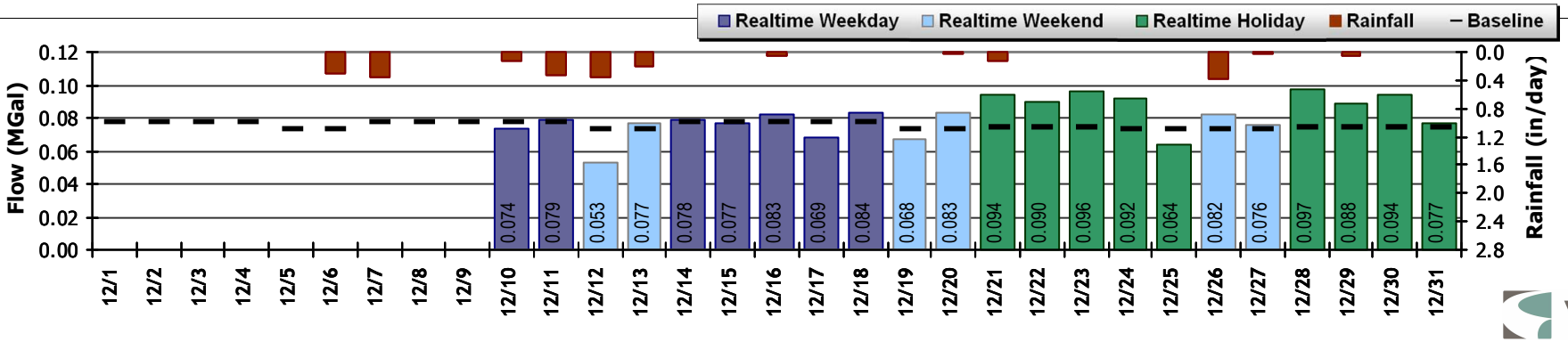
Period Flow Summary
December, 2009

Monitoring Site:
Site M4

Total Monthly Rainfall: 1.65 inches Avg Flow: 0.081 mgd Peak Flow: 0.194 mgd Min Flow: 0.006 mgd







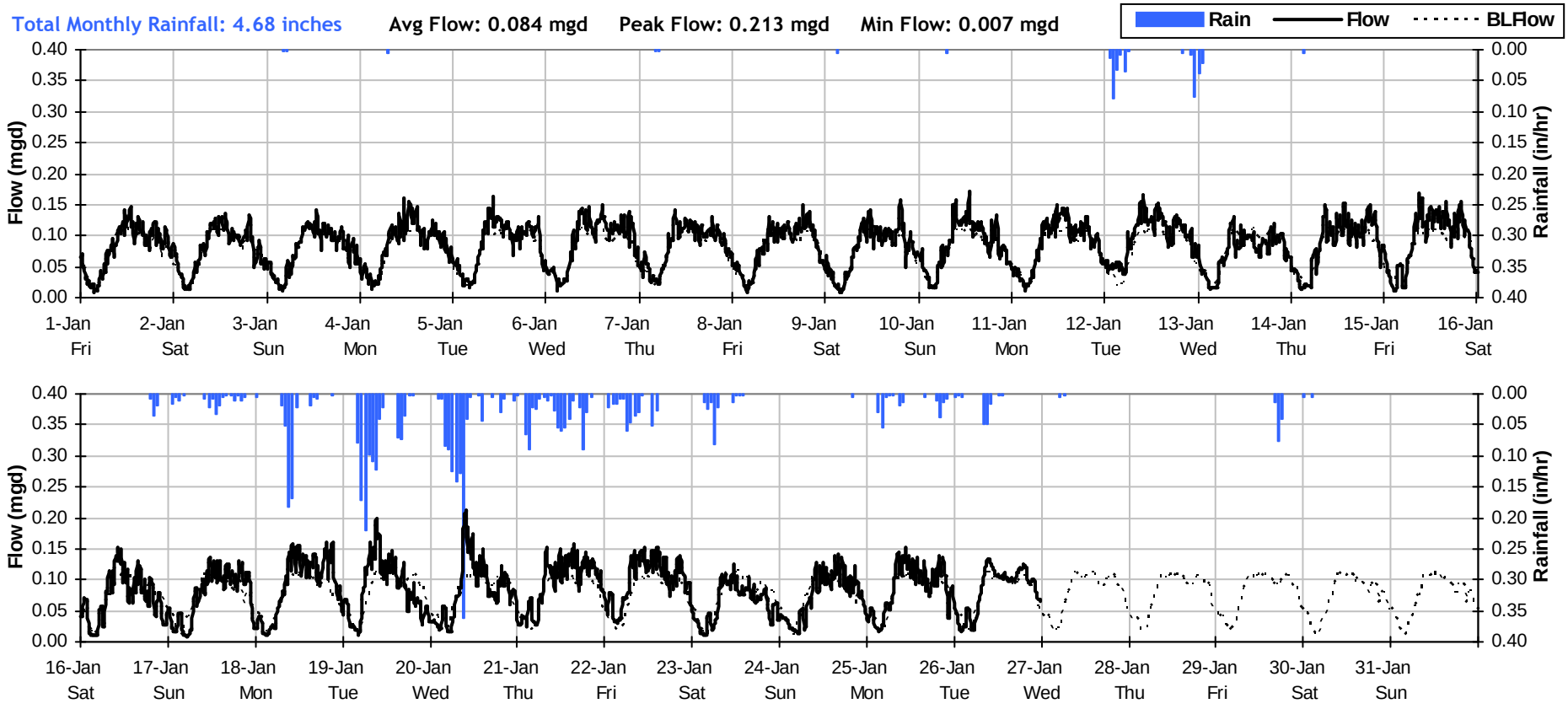
V&A

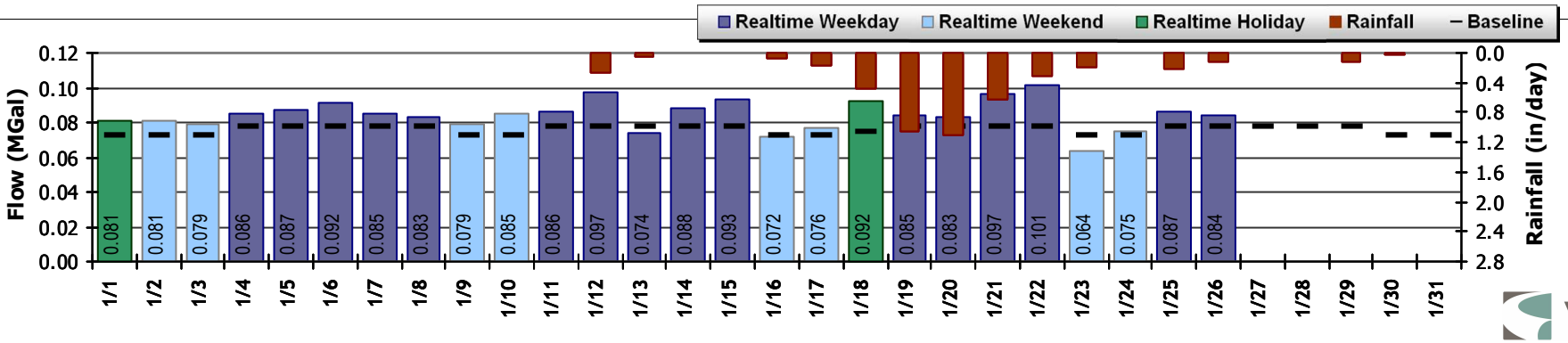
PORT OF OAKLAND

Period Flow Summary
January, 2010

Monitoring Site:
Site M4

Total Monthly Rainfall: 4.68 inches Avg Flow: 0.084 mgd Peak Flow: 0.213 mgd Min Flow: 0.007 mgd





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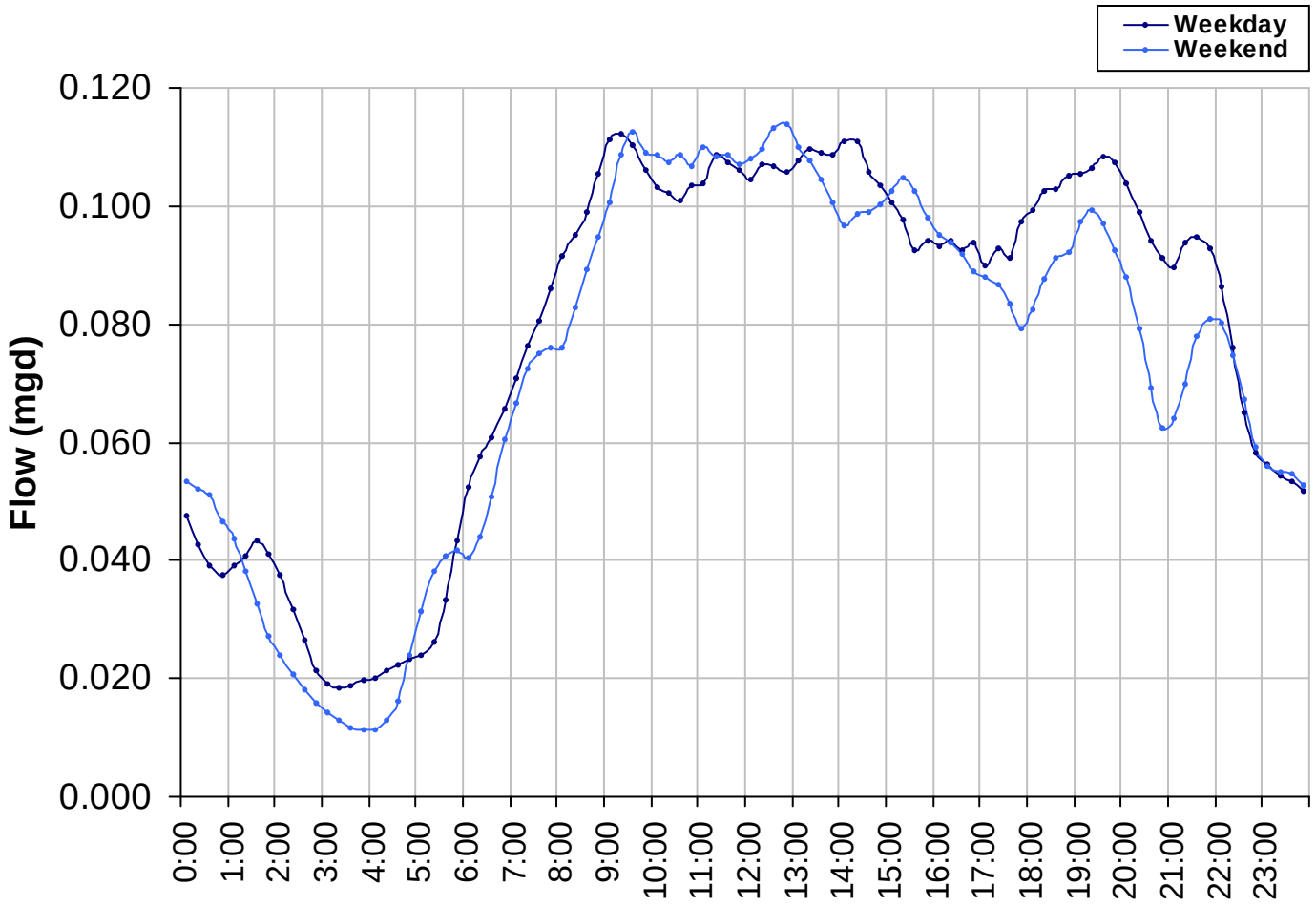
PORT OF OAKLAND

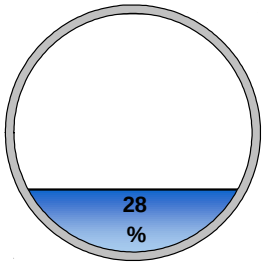
Average Dry Weather Flow

Monitoring Site:
Site M4



Peak Measured Flow:

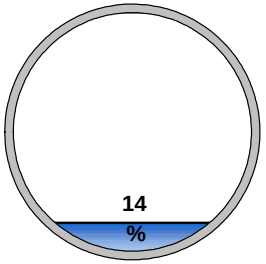
0.213 *mgd*



Peak measured flow shown in weekly graphs on following pages

Average Dry Weather Flow:

0.077 *mgd*



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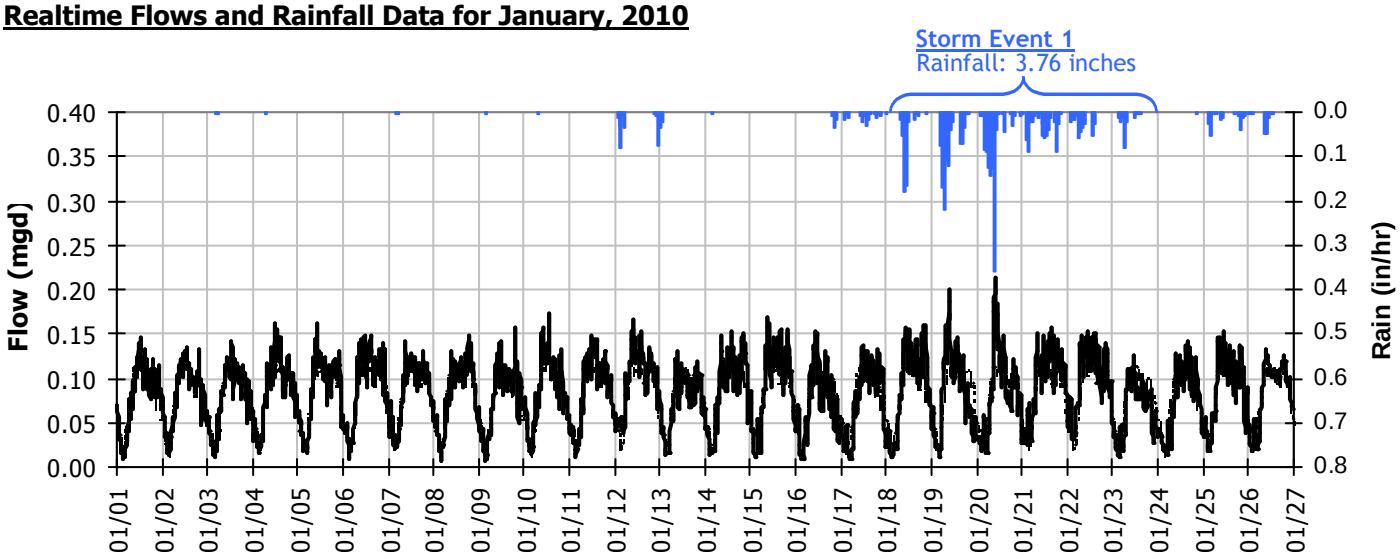
PORT OF OAKLAND

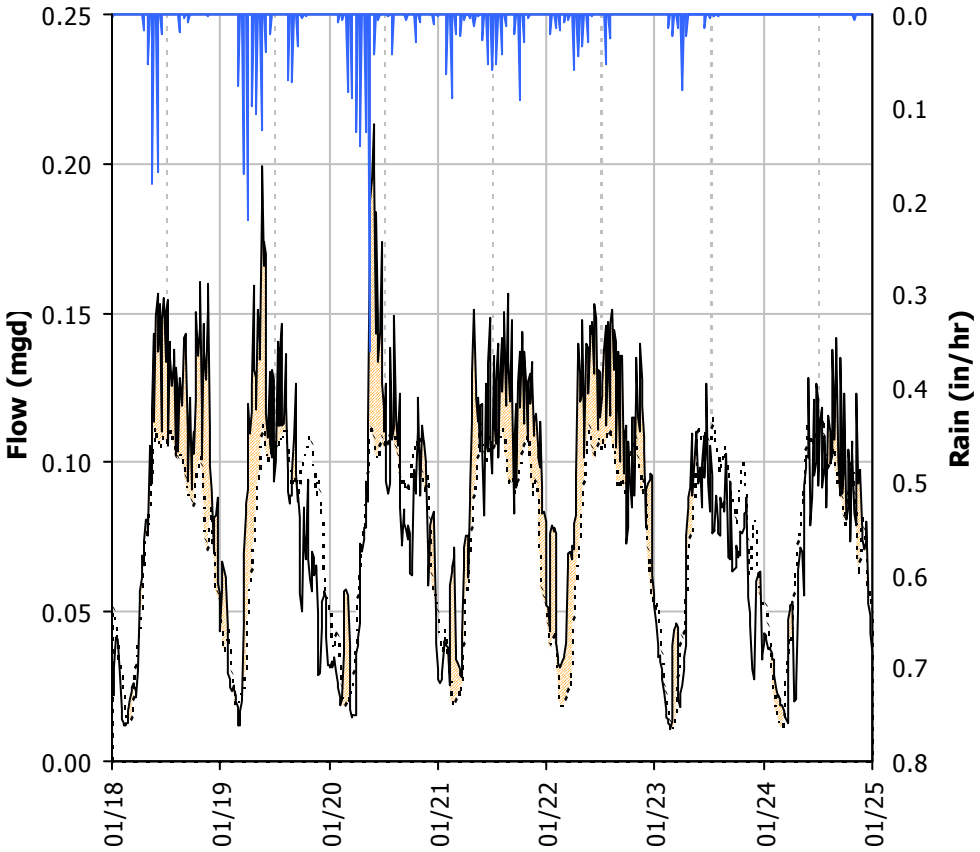
I/I Summary

Monitoring Site:
Site M4

Realtime Flows and Rainfall Data for January, 2010



Storm Event #1 Detail I/I Graph



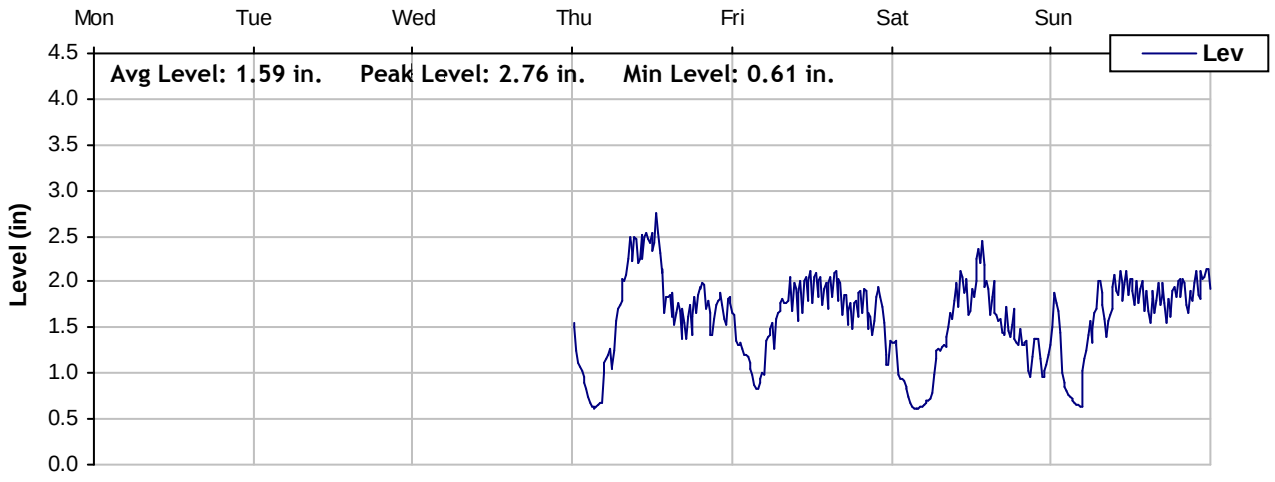
I&I ANALYSIS		
Rainfall:	3.76	*inches*
Total I&I		
Total I/I:	64,000	*gallons*
I/I per ADWF:	0.2	*per in-rain*
Inflow		
Peak I/I Rate:	0.11	*mgd*
Pk I/I:ADWF:	1.40	
Infiltration (% of ADWF)		
Infiltration at +24hours:	1.9%	
Capacity		
Peak Flow:	0.21	*mgd*
PF:	2.78	
Peak Level:	3.30	*inches*
d/D Ratio:	0.28	

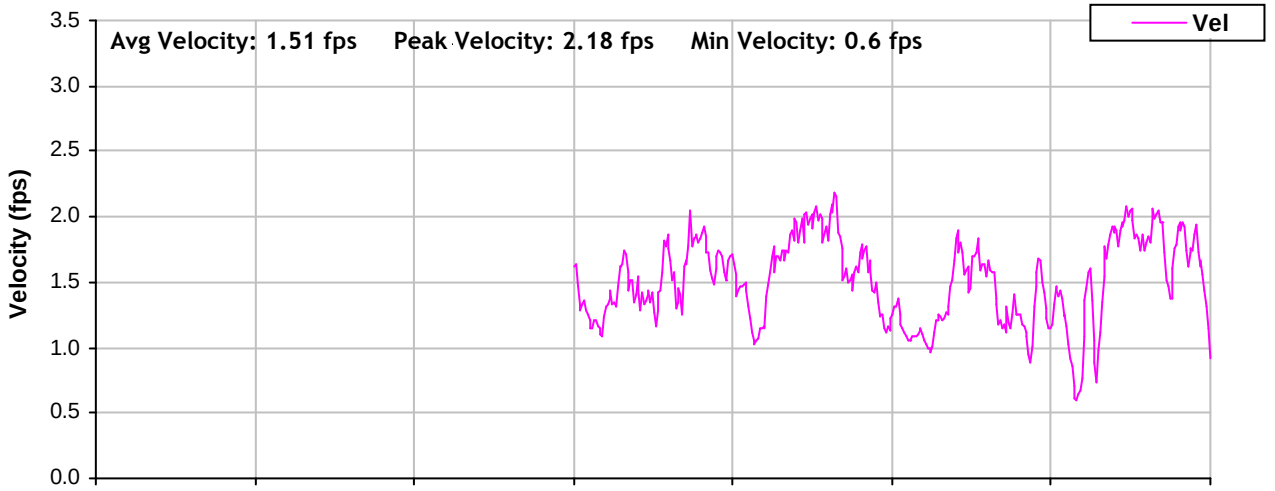
V&A

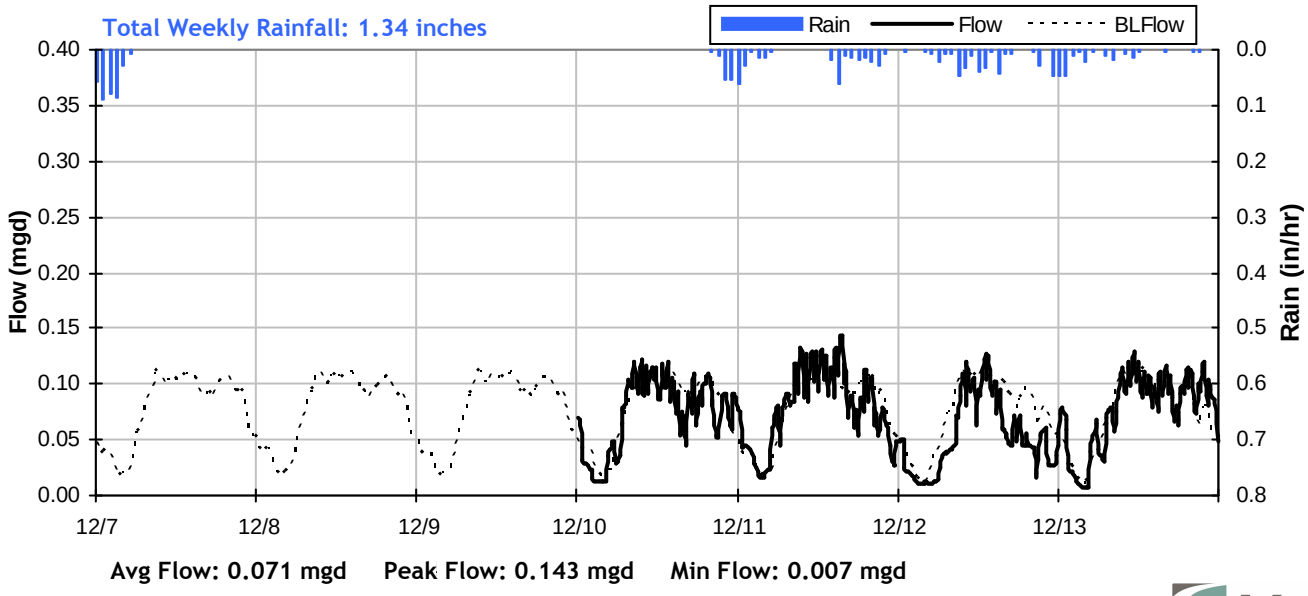
PORT OF OAKLAND

Level, Velocity and Flow
From 12/7/2009 to 12/14/2009

Monitoring Site:
Site M4







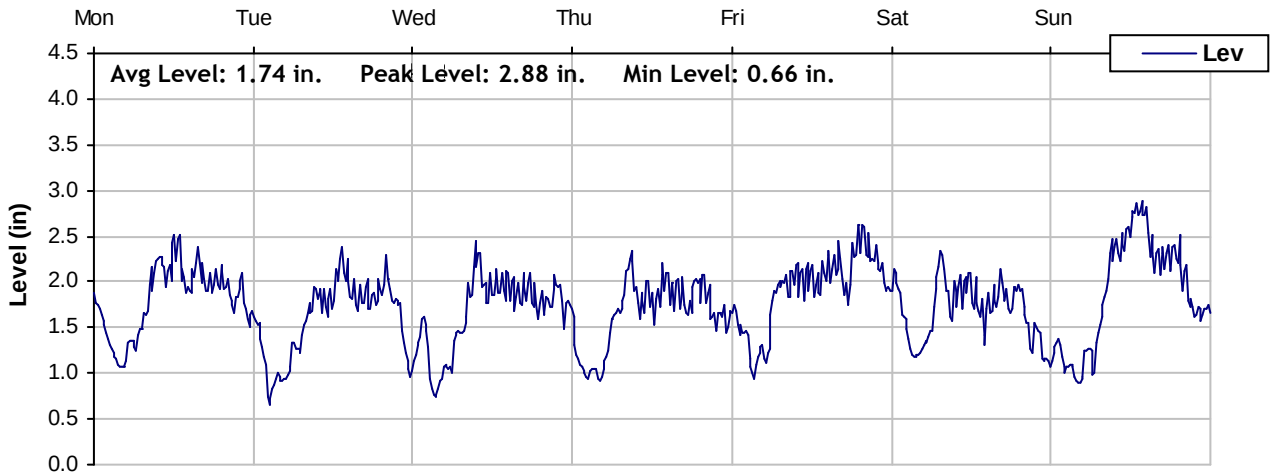
Avg Flow: 0.071 mgd Peak Flow: 0.143 mgd Min Flow: 0.007 mgd

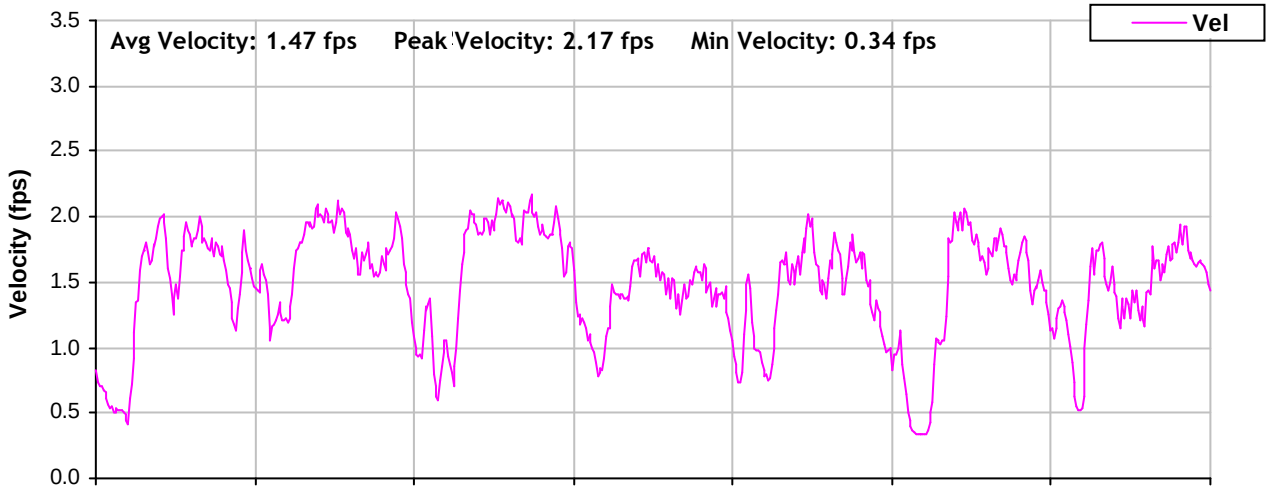
V&A

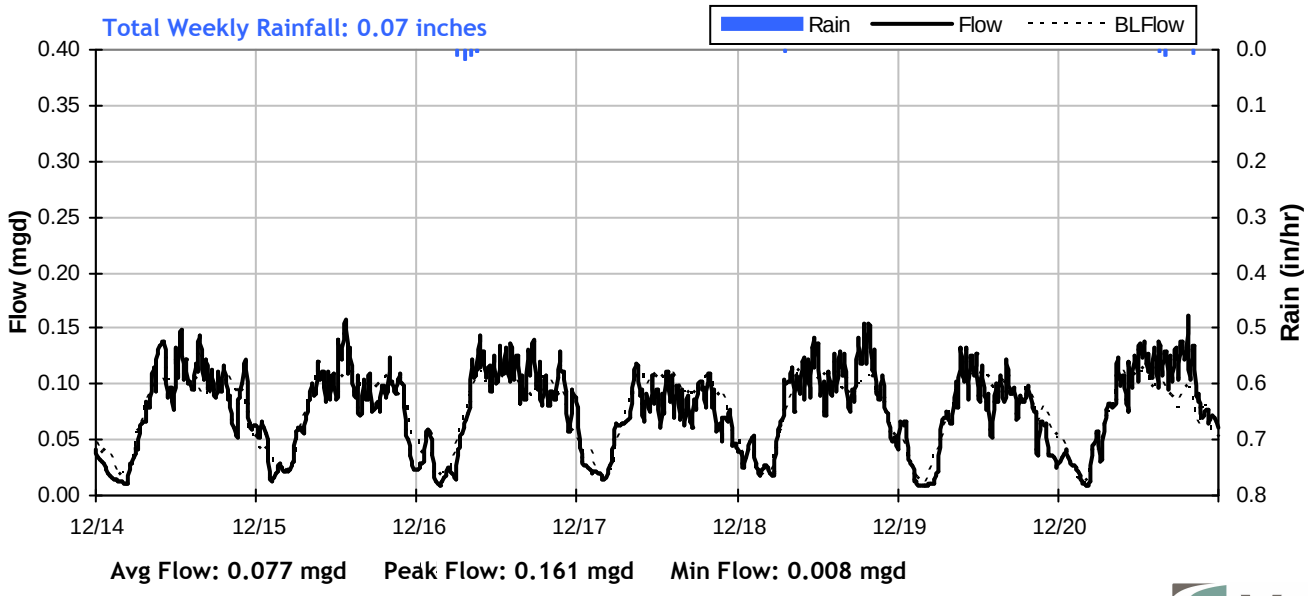
PORT OF OAKLAND

Level, Velocity and Flow
From 12/14/2009 to 12/21/2009

Monitoring Site:
Site M4







Avg Flow: 0.077 mgd Peak Flow: 0.161 mgd Min Flow: 0.008 mgd

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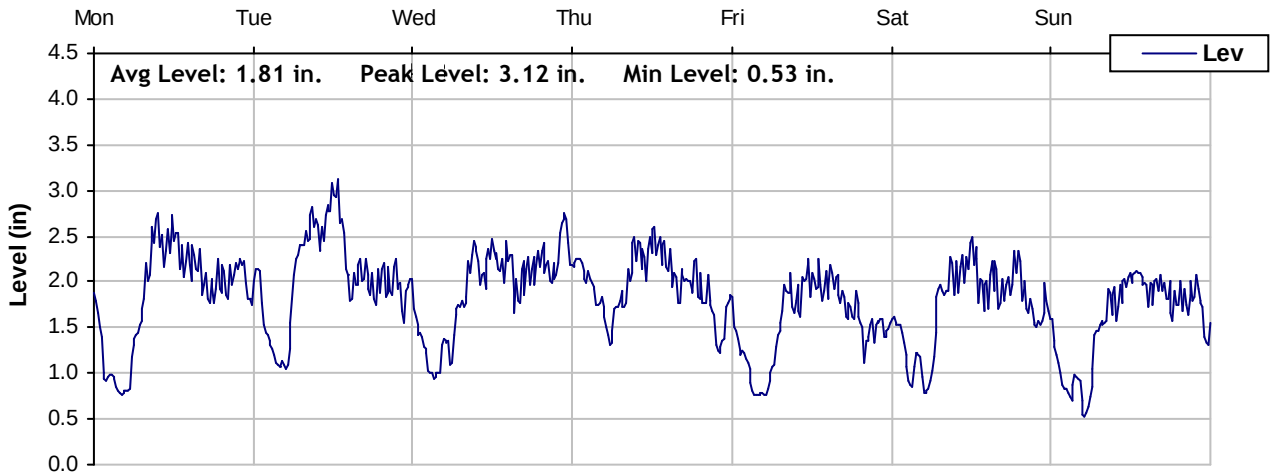
PORT OF OAKLAND

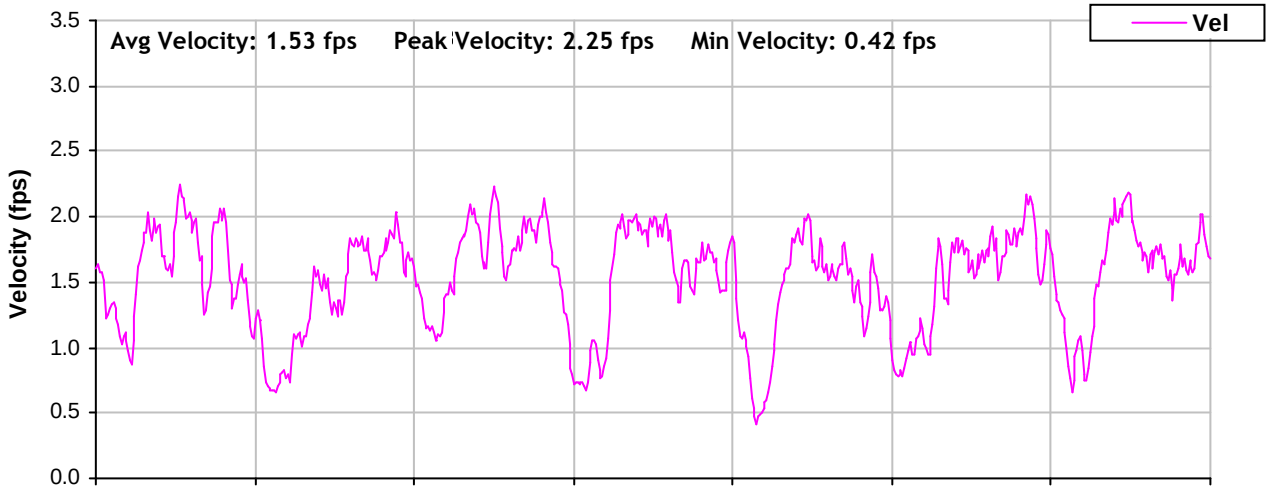
Level, Velocity and Flow

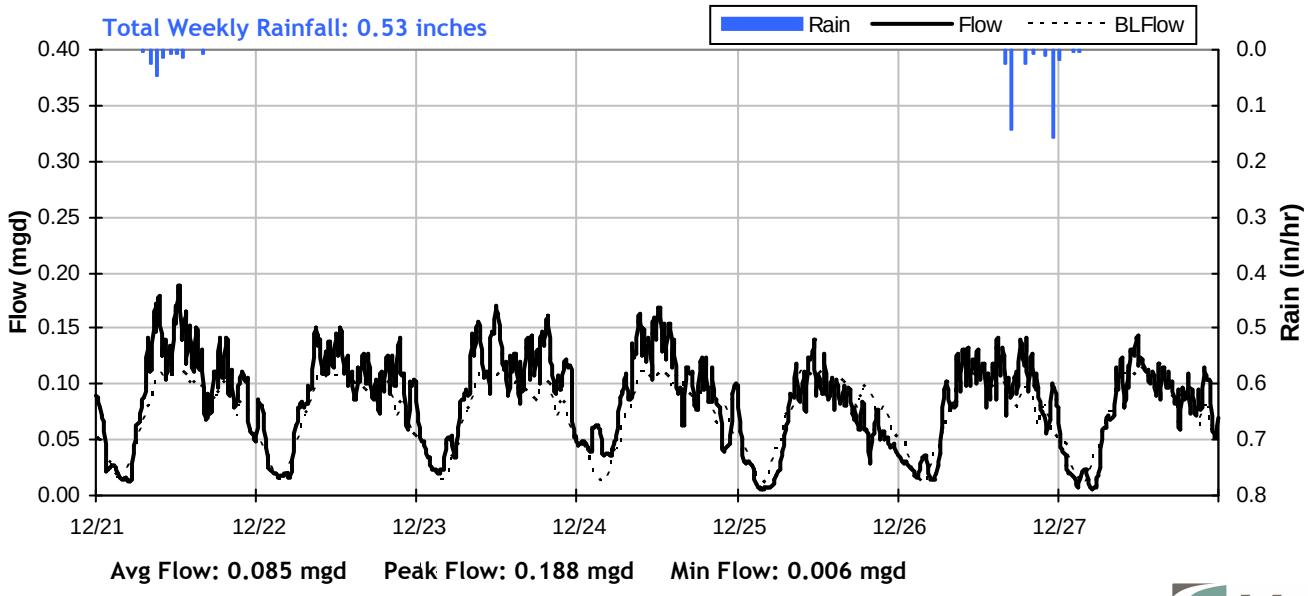
From 12/21/2009 to 12/28/2009

Monitoring Site:

Site M4







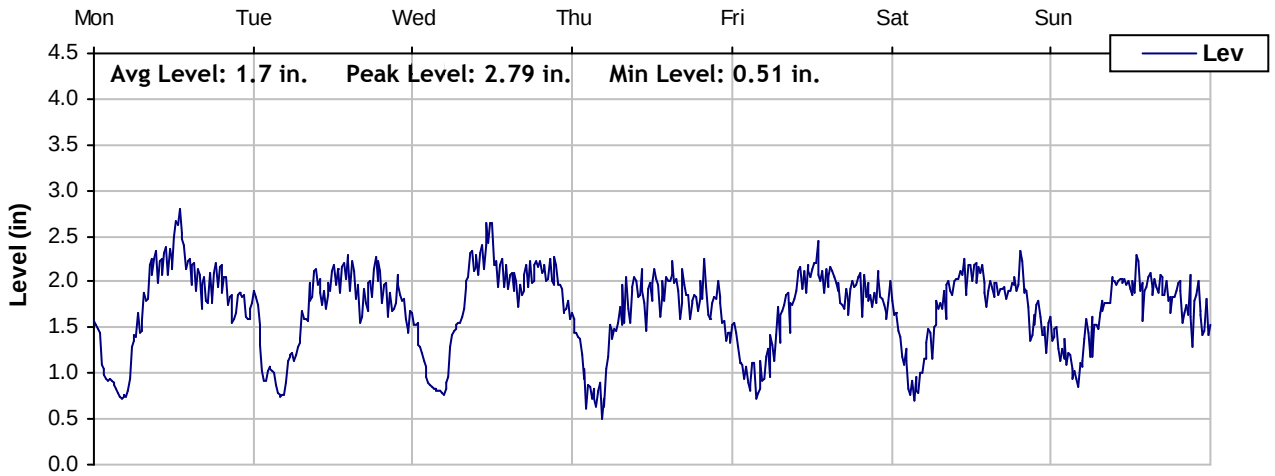
Avg Flow: 0.085 mgd Peak Flow: 0.188 mgd Min Flow: 0.006 mgd

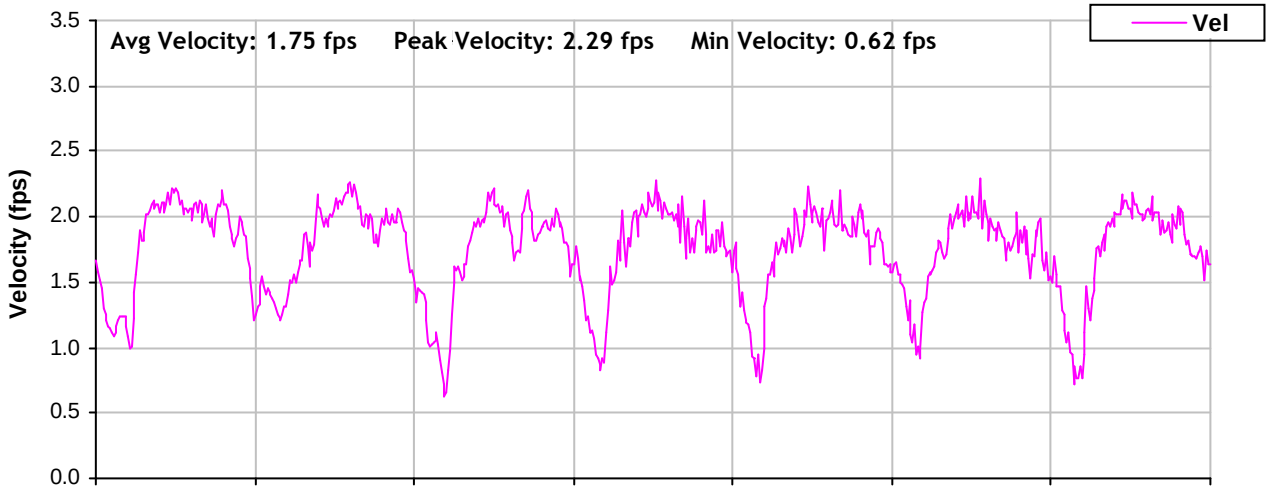
V&A

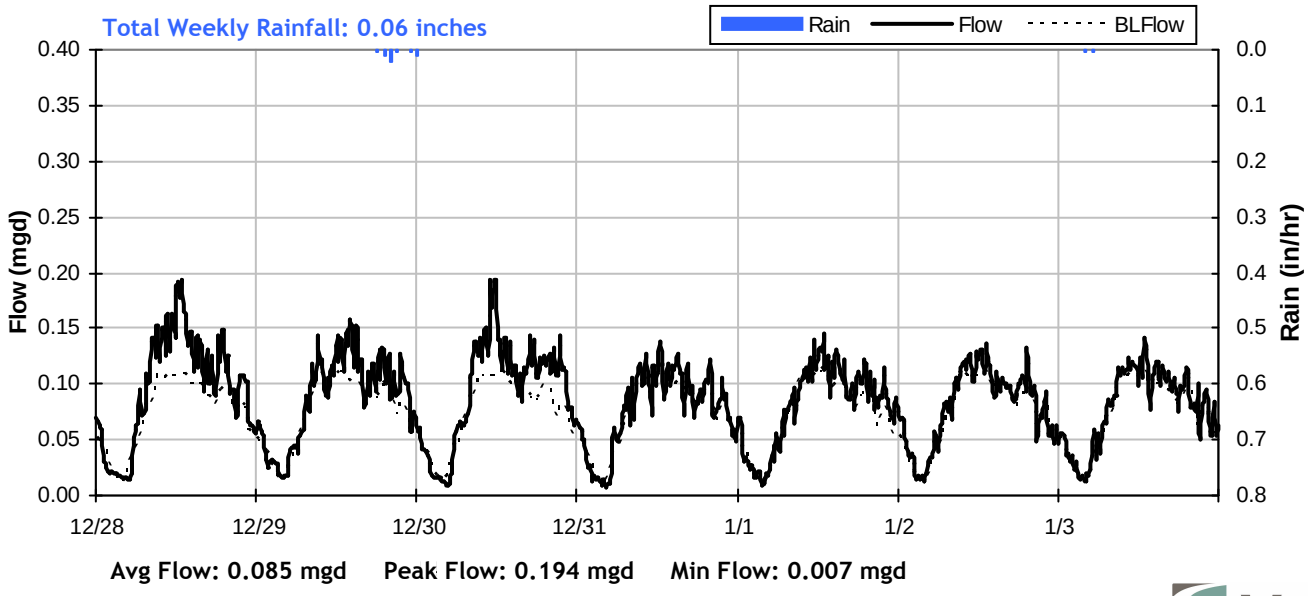
PORT OF OAKLAND

Level, Velocity and Flow
From 12/28/2009 to 1/4/2010

Monitoring Site:
Site M4







Avg Flow: 0.085 mgd Peak Flow: 0.194 mgd Min Flow: 0.007 mgd

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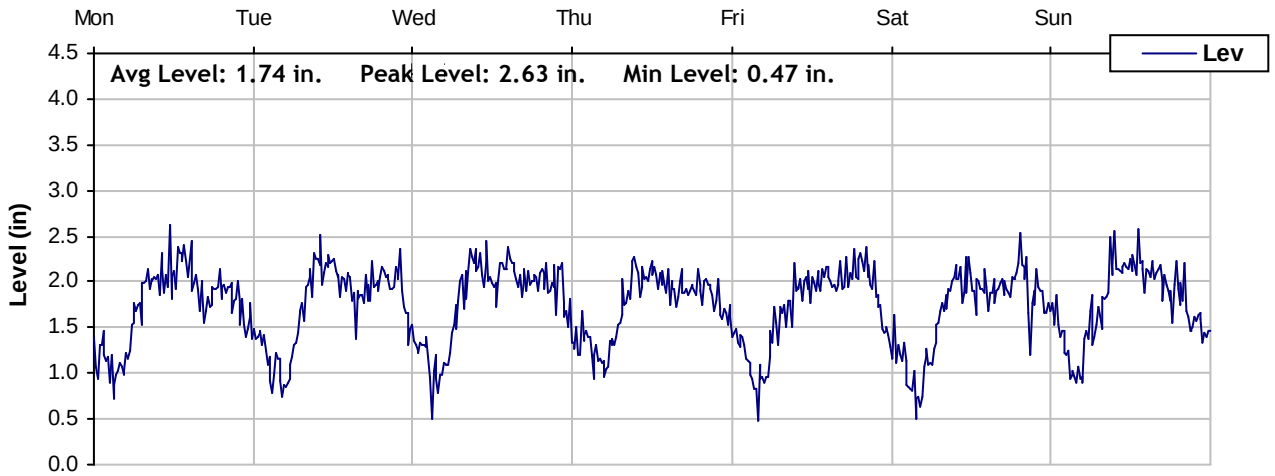
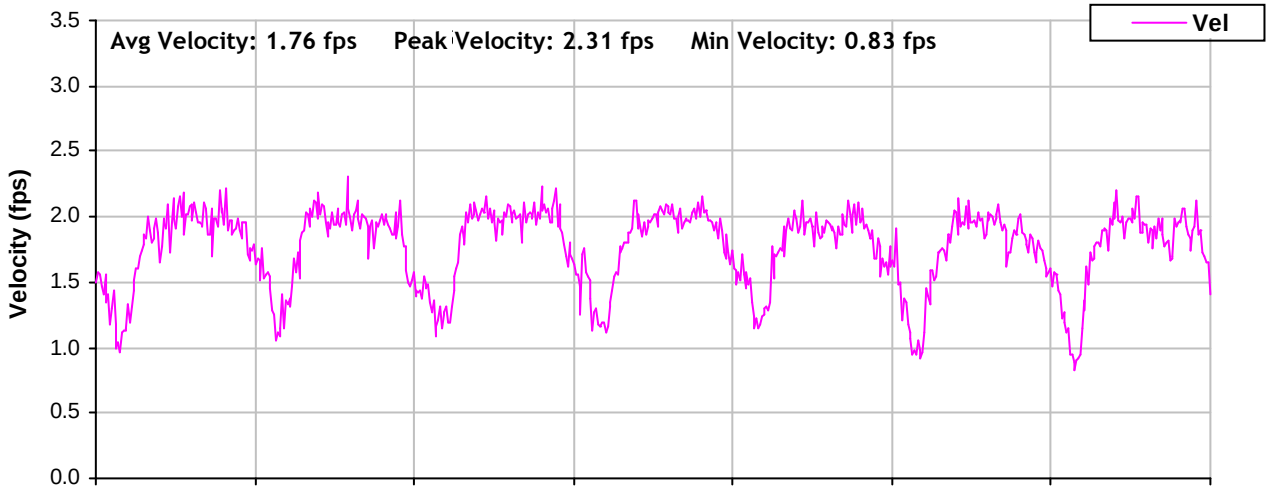
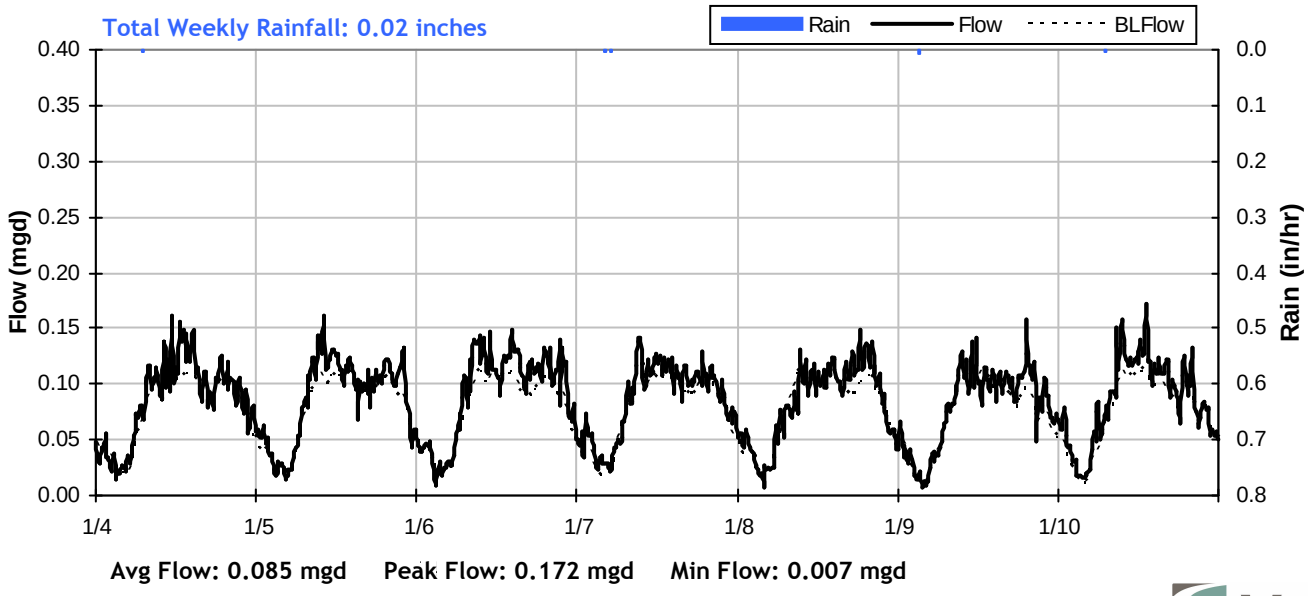
PORT OF OAKLAND

Level, Velocity and Flow
From 1/4/2010 to 1/11/2010

Monitoring Site:
Site M4







Avg Flow: 0.085 mgd Peak Flow: 0.172 mgd Min Flow: 0.007 mgd

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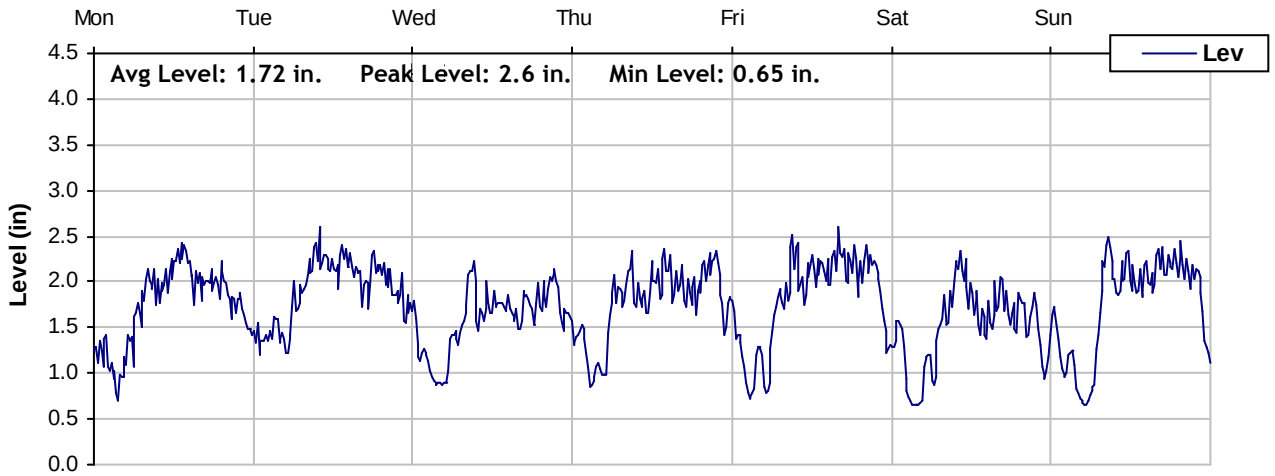
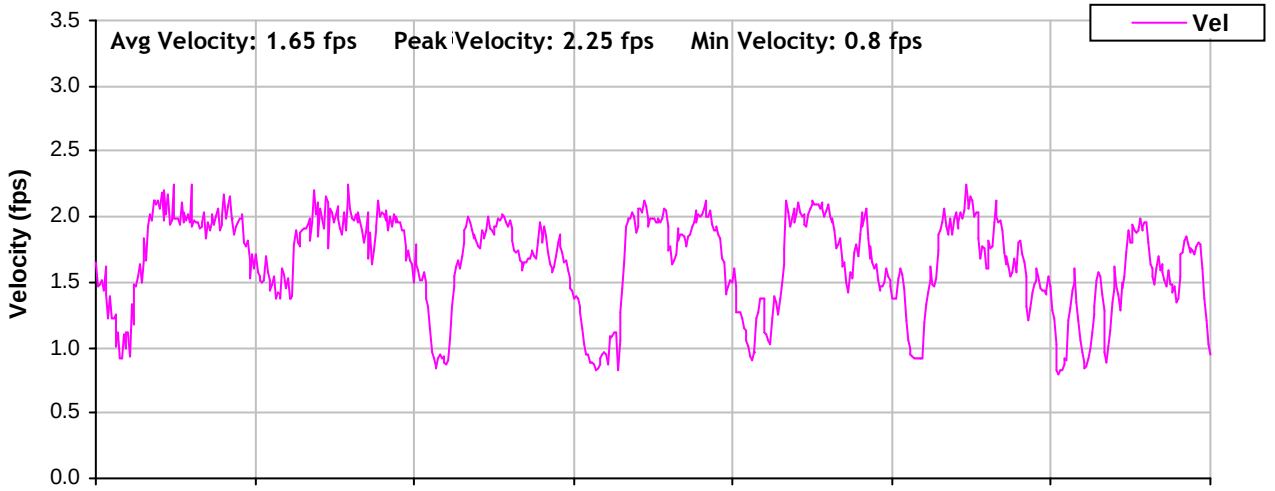
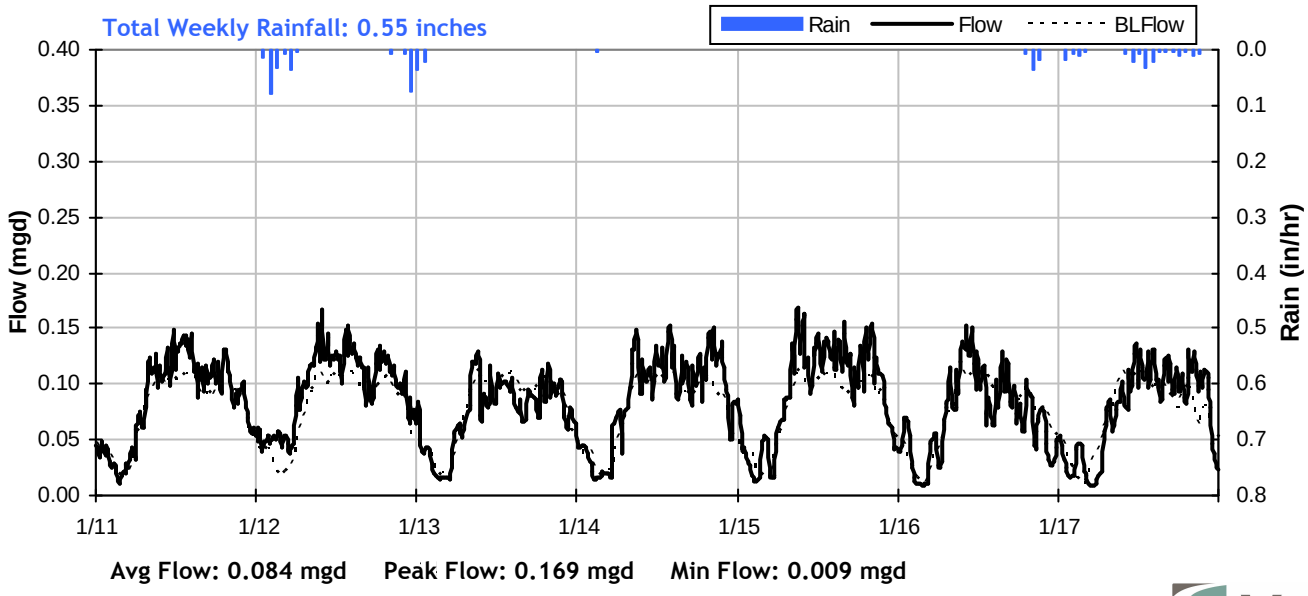
PORT OF OAKLAND

Level, Velocity and Flow
From 1/11/2010 to 1/18/2010

Monitoring Site:
Site M4







Avg Flow: 0.084 mgd Peak Flow: 0.169 mgd Min Flow: 0.009 mgd

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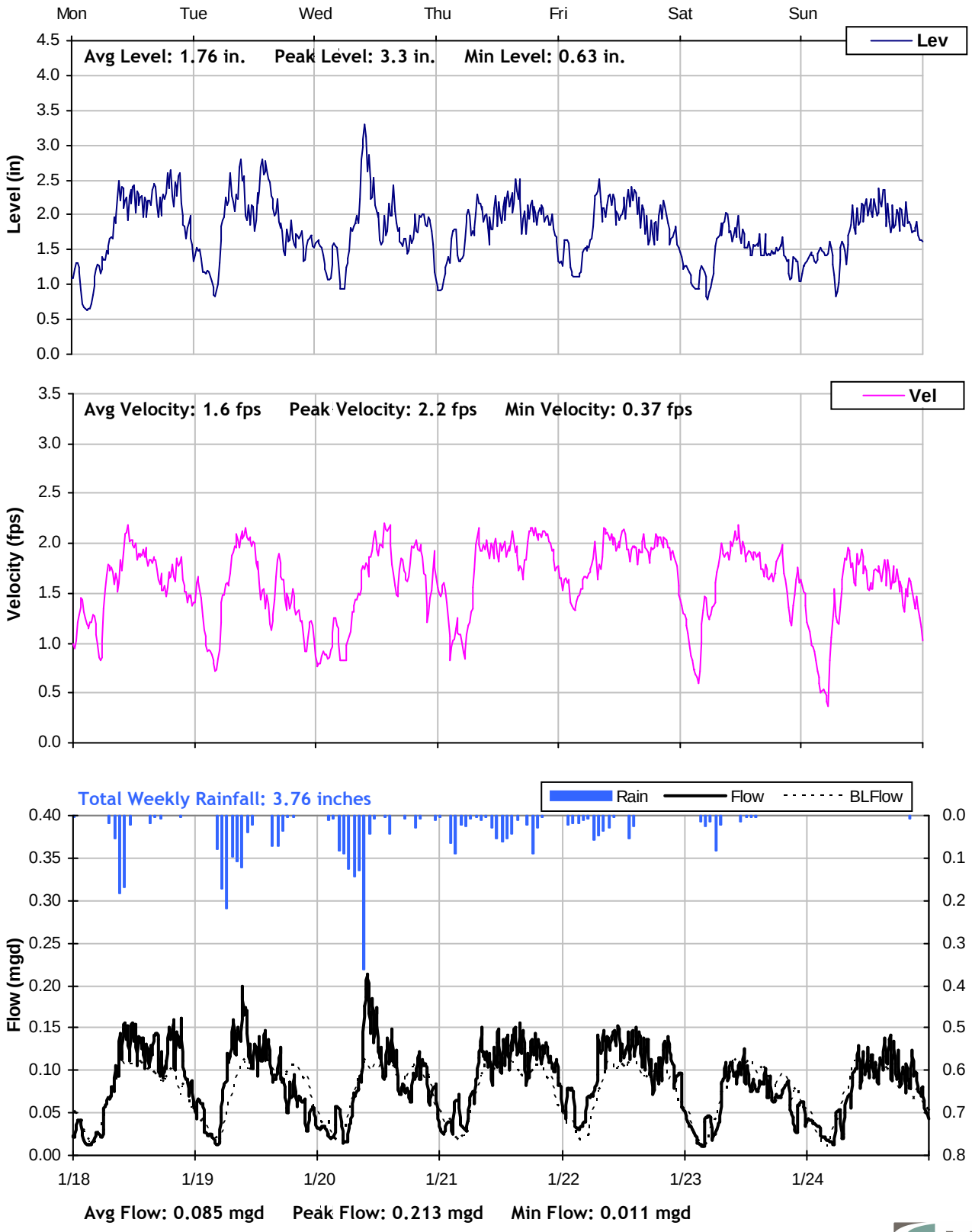
PORT OF OAKLAND

Level, Velocity and Flow
From 1/18/2010 to 1/25/2010

Monitoring Site:
Site M4



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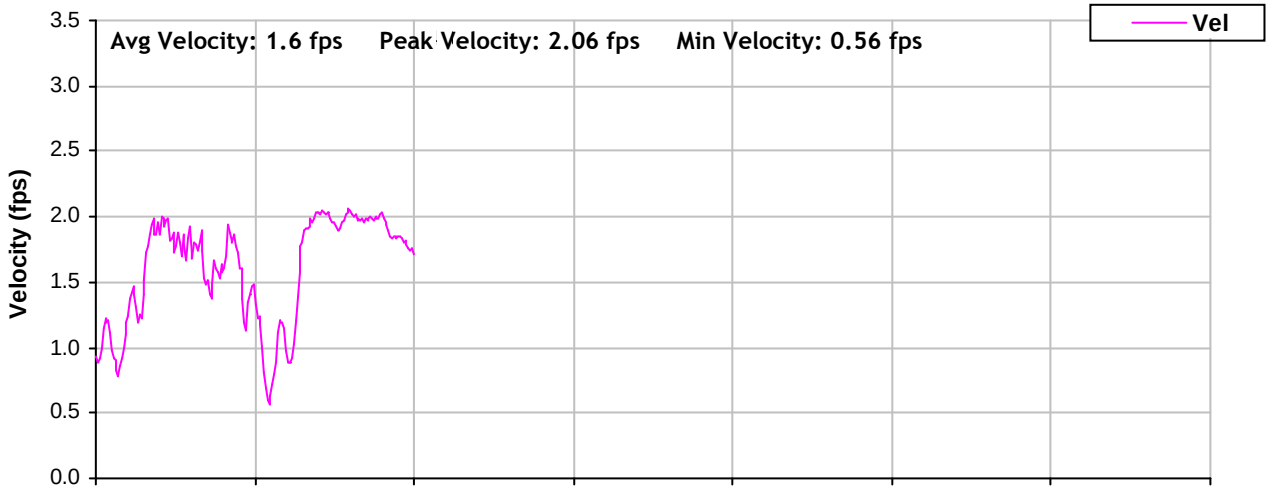
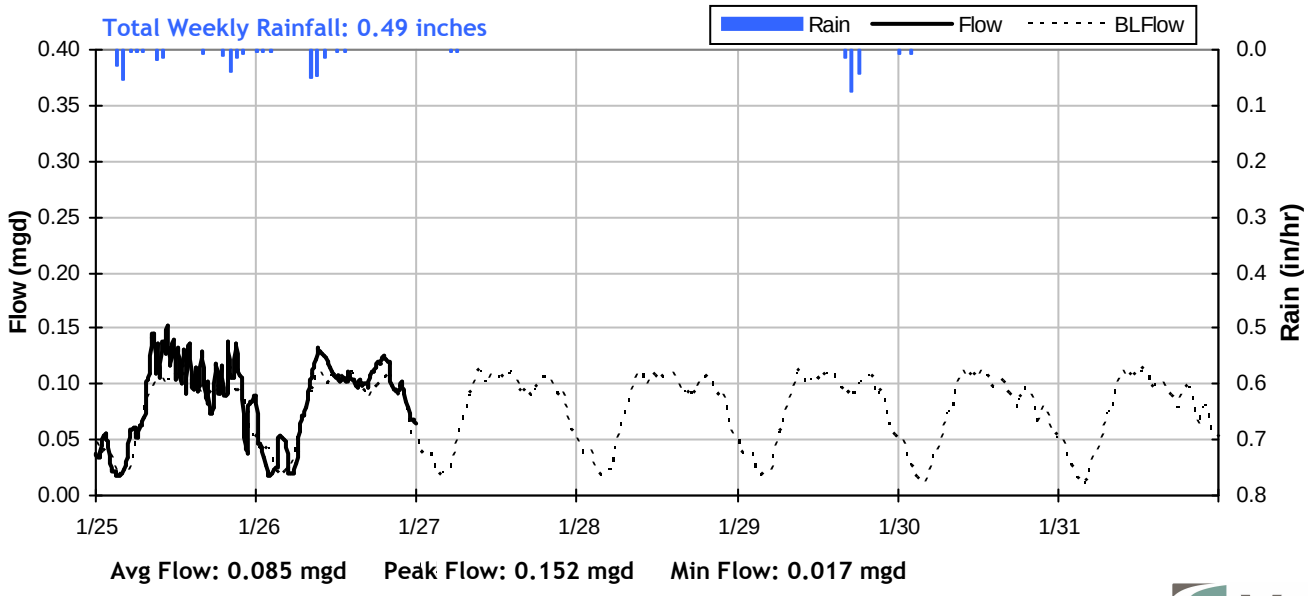
PORT OF OAKLAND

Level, Velocity and Flow
From 1/25/2010 to 2/1/2010

Monitoring Site:
Site M4





Avg Flow: 0.085 mgd Peak Flow: 0.152 mgd Min Flow: 0.017 mgd

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PORT OF OAKLAND

Temporary Flow Monitoring Study

Sanitary Sewer Collection System

Monitoring Site: Site M5

Location: Maritime Street; south of 7th Street, south of railroad track

Size/Type Line: 27-inch Sanitary Sewer Pipe

Data Summary Report

V&A

PORT OF OAKLAND	**Site Information Report**	**Monitoring Site:** Site M5

Location: Maritime Street; south of 7th Street, south of railroad track

Latitude: 37.8074°

Longitude: -122.3124°

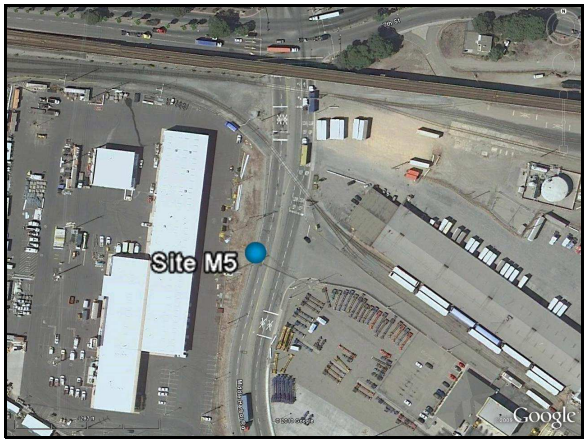
Rim Elevation: 15 *feet*

Diameter: 27 *inches*

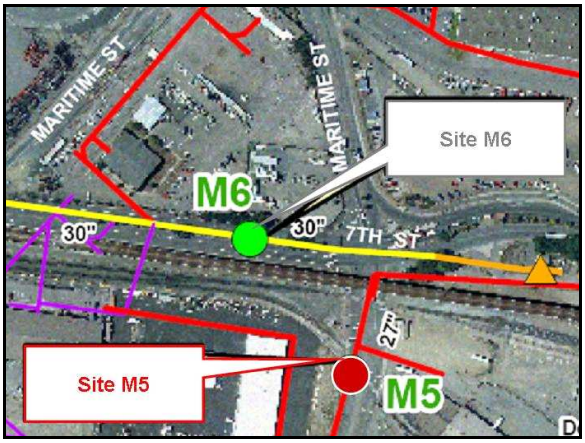
Average Dry Weather Flow: 0.011 *mgd*

Peak Measured Flow: 0.434 *mgd*

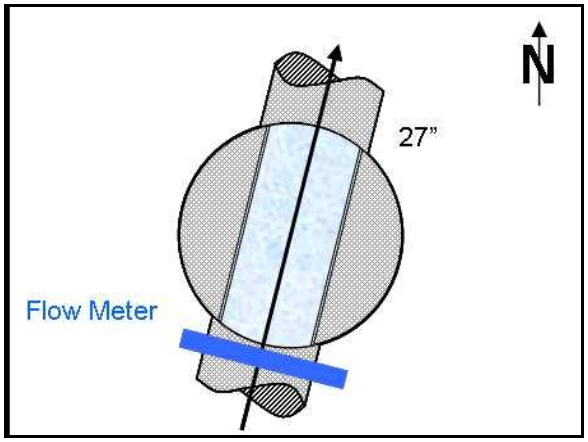
Satellite Map



Sanitary Map



Flow Diagram



Street View Photo

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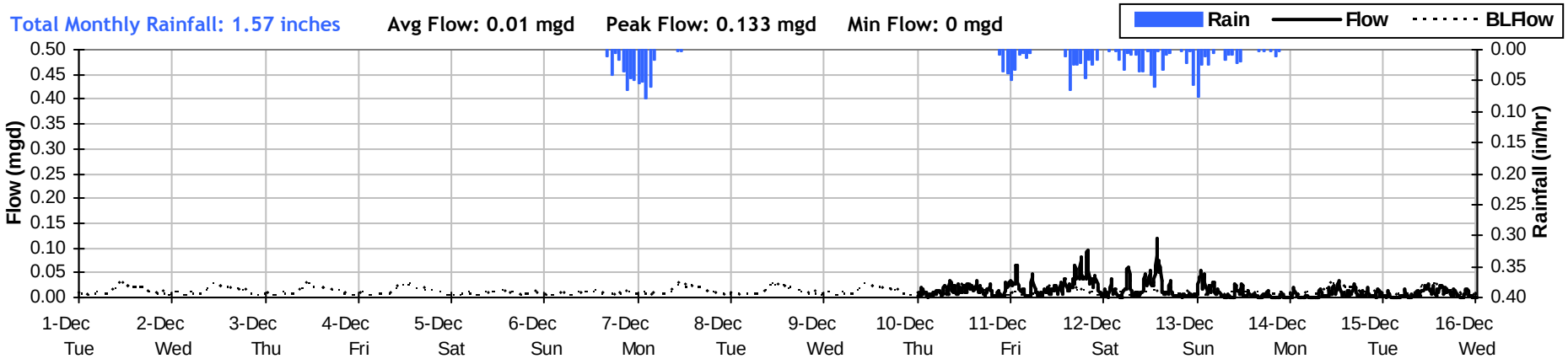
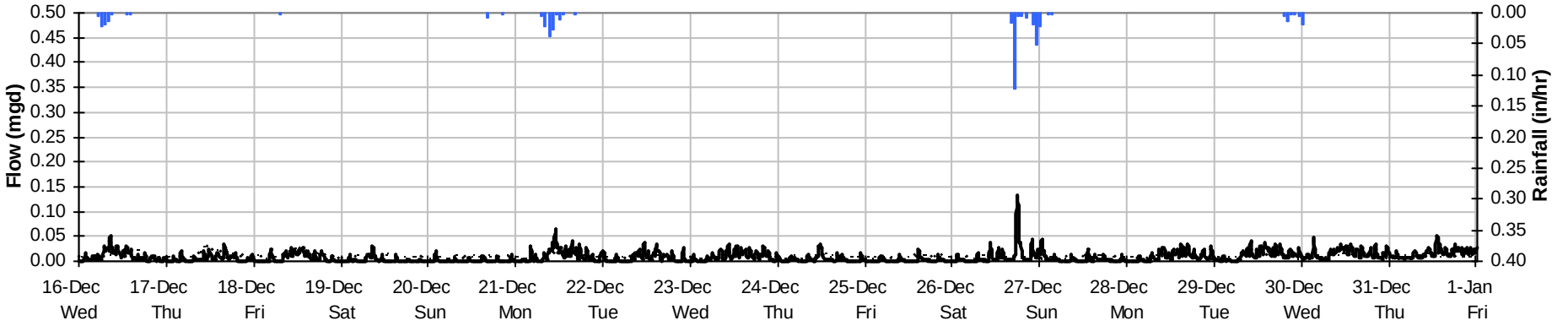
PORT OF OAKLAND

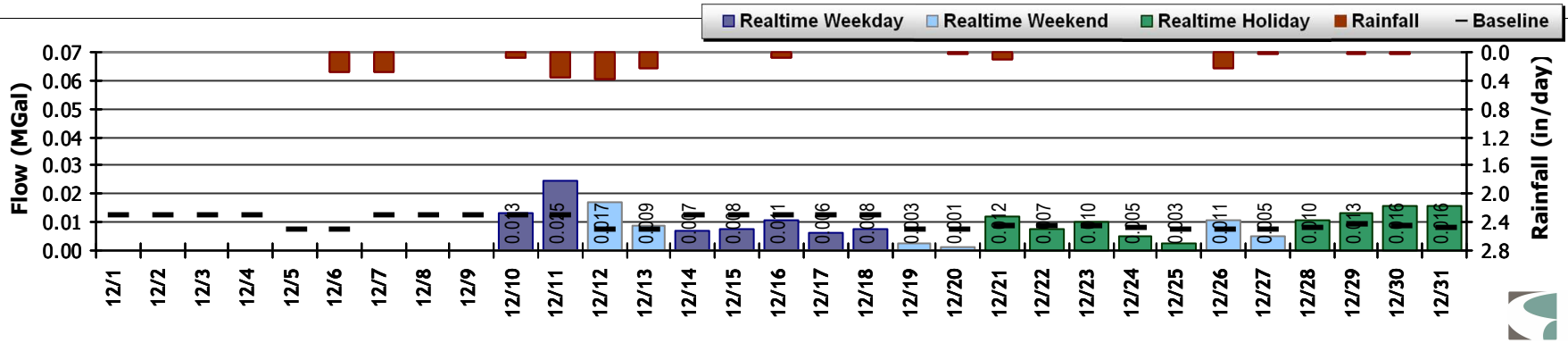
Period Flow Summary
December, 2009

Monitoring Site:
Site M5

Total Monthly Rainfall: 1.57 inches Avg Flow: 0.01 mgd Peak Flow: 0.133 mgd Min Flow: 0 mgd







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PORT OF OAKLAND

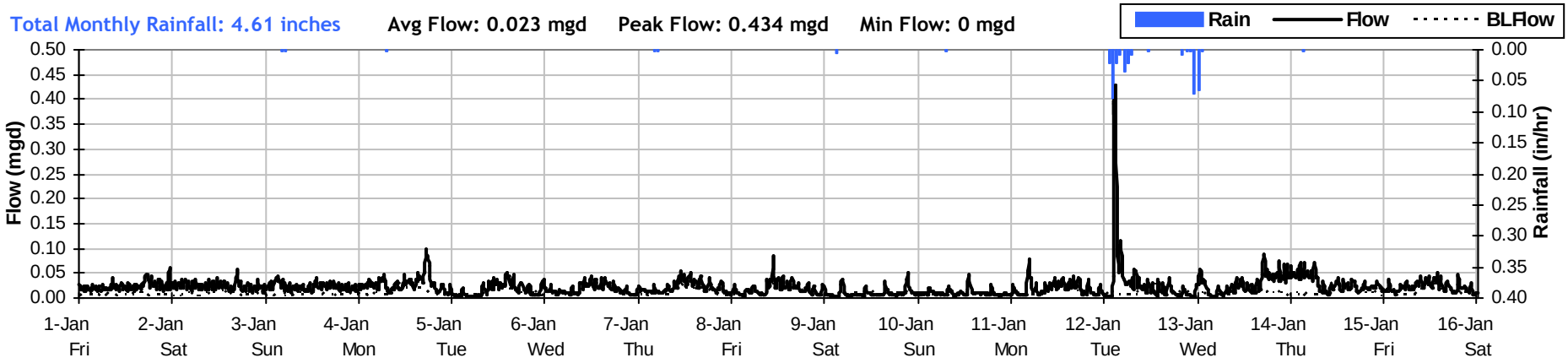
Period Flow Summary

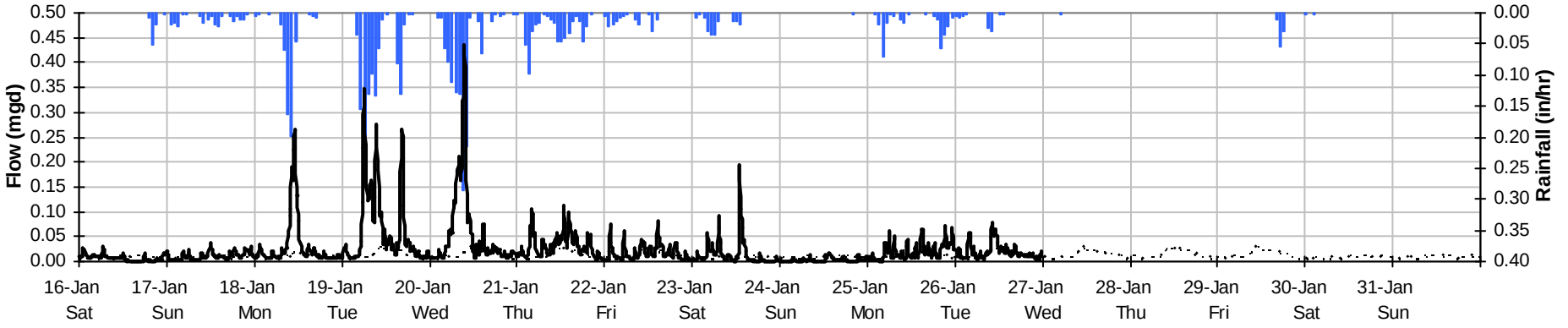
January, 2010

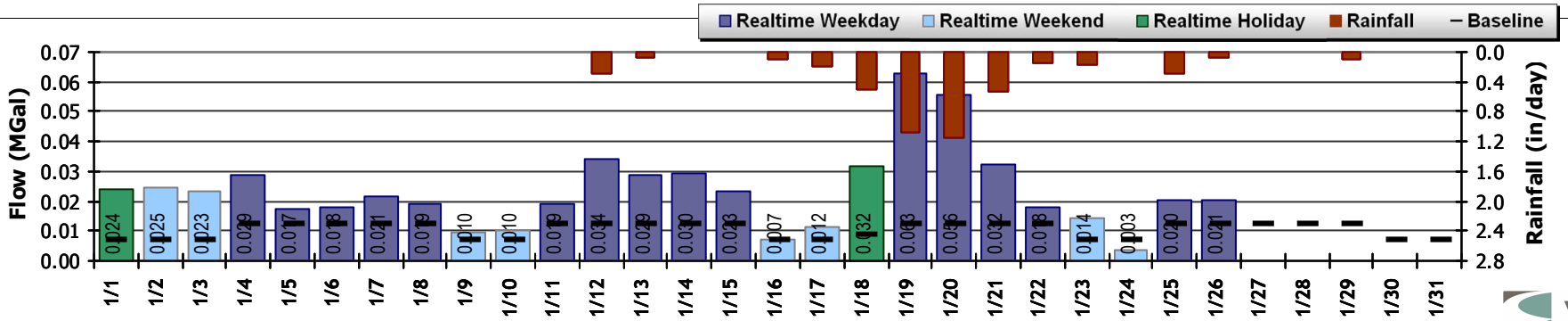
Monitoring Site:

Site M5

Total Monthly Rainfall: 4.61 inches Avg Flow: 0.023 mgd Peak Flow: 0.434 mgd Min Flow: 0 mgd







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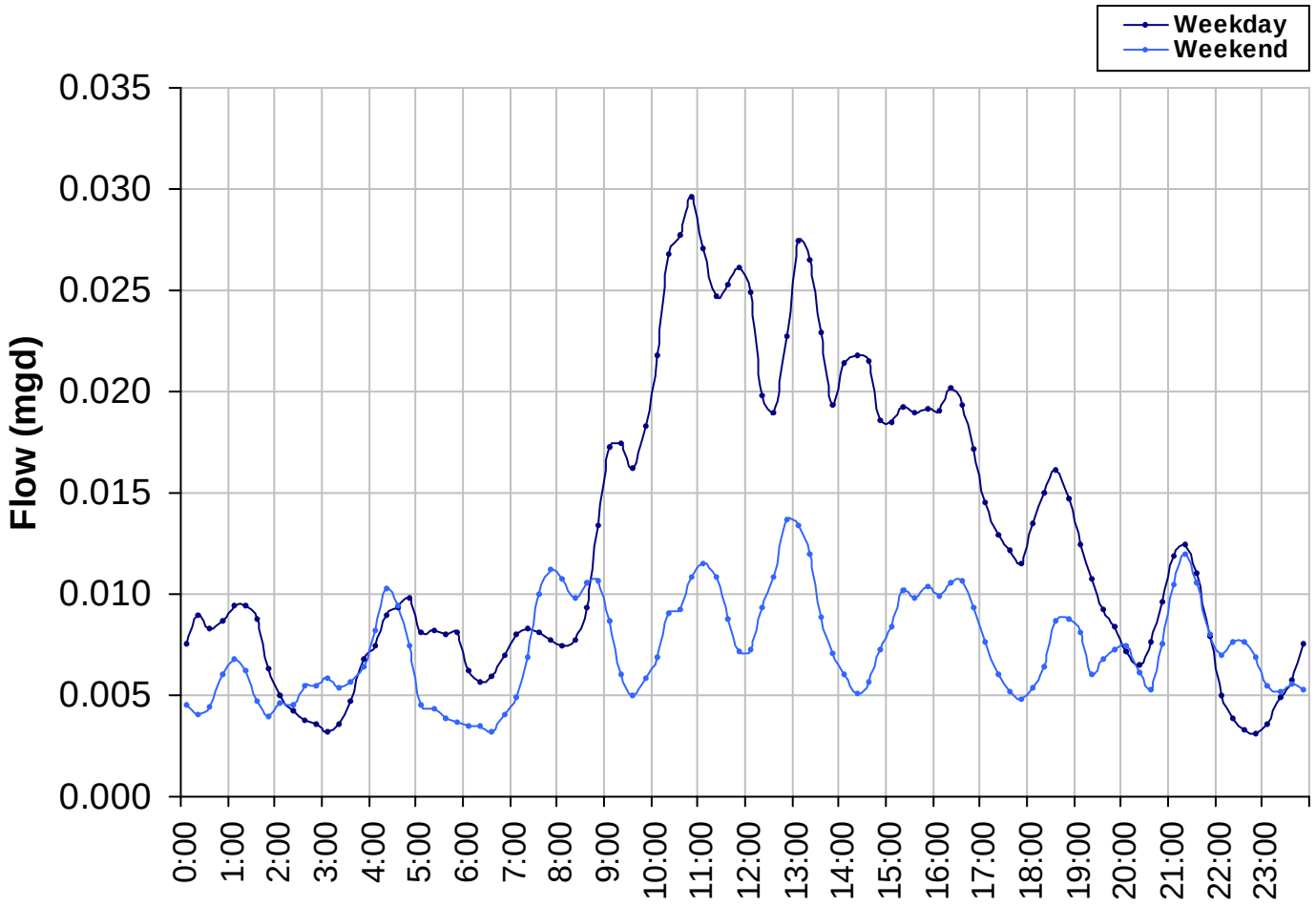
PORT OF OAKLAND

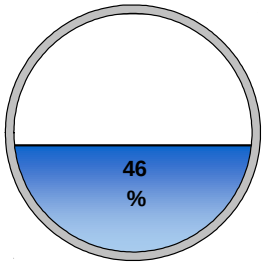
Average Dry Weather Flow

Monitoring Site:
Site M5



Peak Measured Flow:

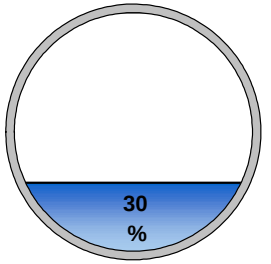
0.434 *mgd*



Peak measured flow shown in weekly graphs on following pages

Average Dry Weather Flow:

0.011 *mgd*



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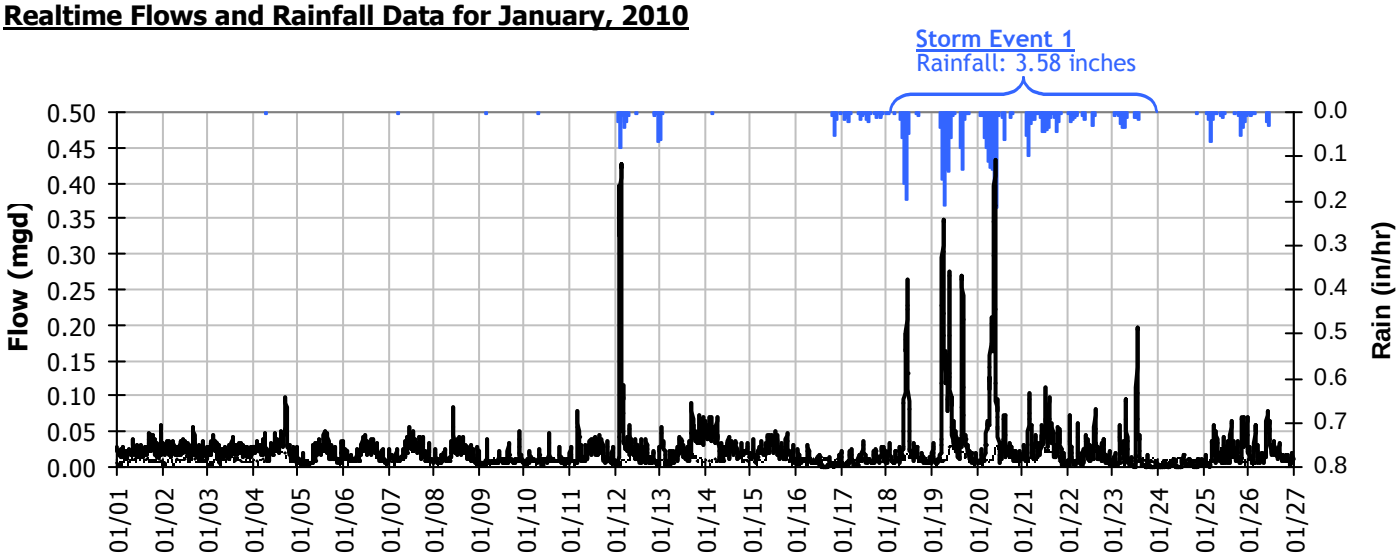
PORT OF OAKLAND

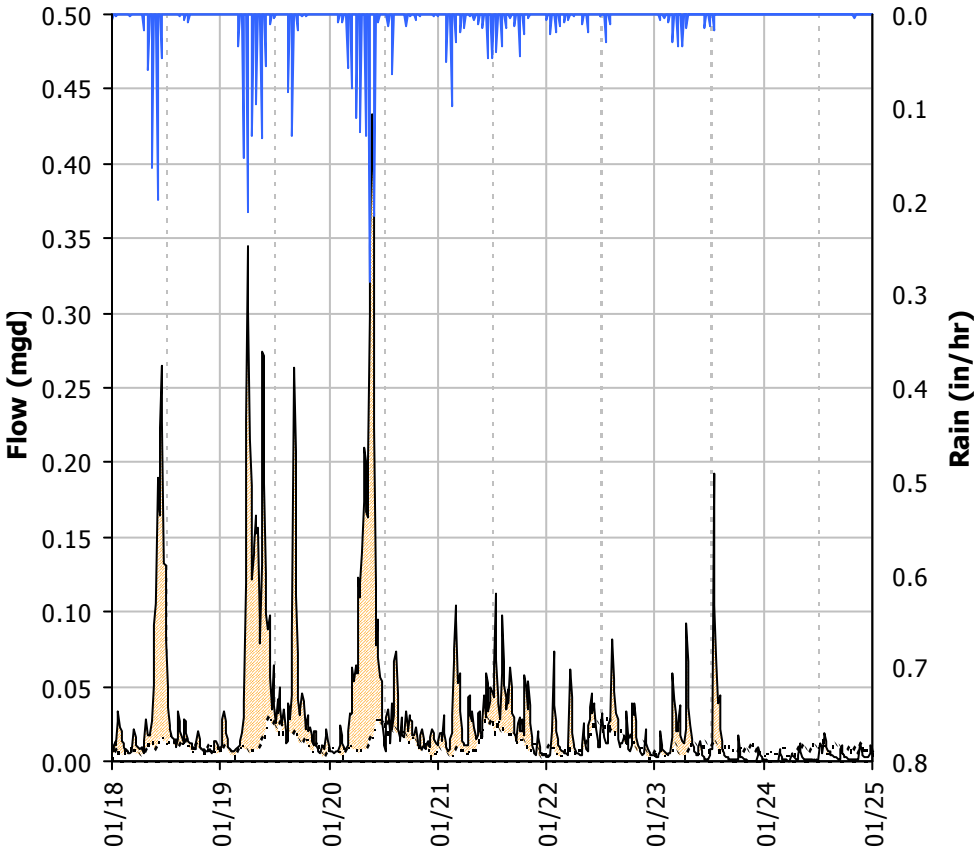
I/I Summary

Monitoring Site:
Site M5

Realtime Flows and Rainfall Data for January, 2010



Storm Event #1 Detail I/I Graph



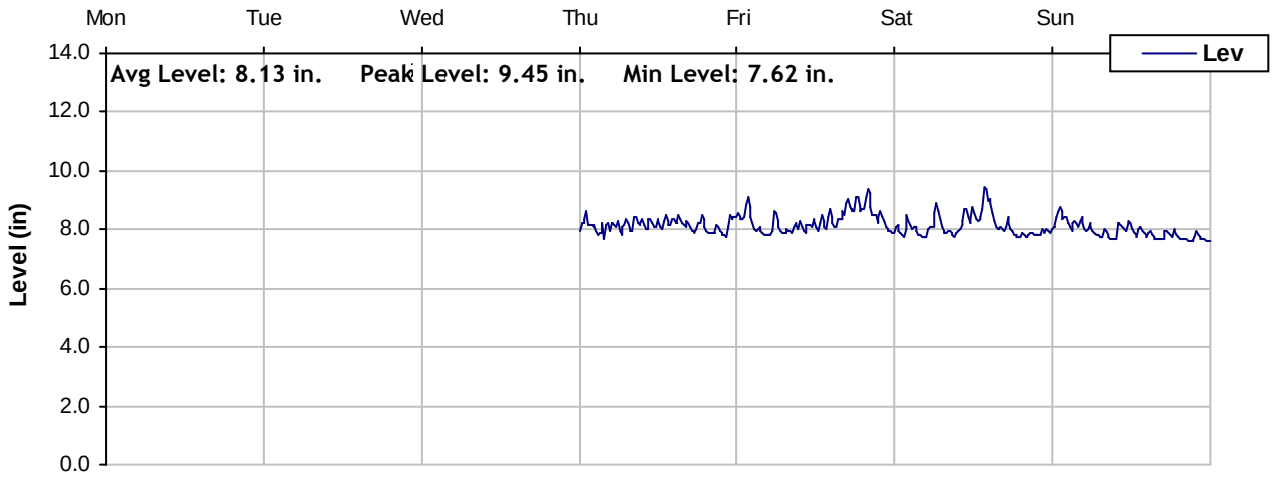
I&I ANALYSIS		
Rainfall:	3.58	*inches*
Total I&I		
Total I/I:	144,000	*gallons*
I/I per ADWF:	3.6	*per in-rain*
Inflow		
Peak I/I Rate:	0.42	*mgd*
Pk I/I:ADWF:	37.21	
Infiltration (% of ADWF)		
Infiltration at +24hours:	-54.0%	
Capacity		
Peak Flow:	0.43	*mgd*
PF:	38.66	
Peak Level:	12.42	*inches*
d/D Ratio:	0.46	

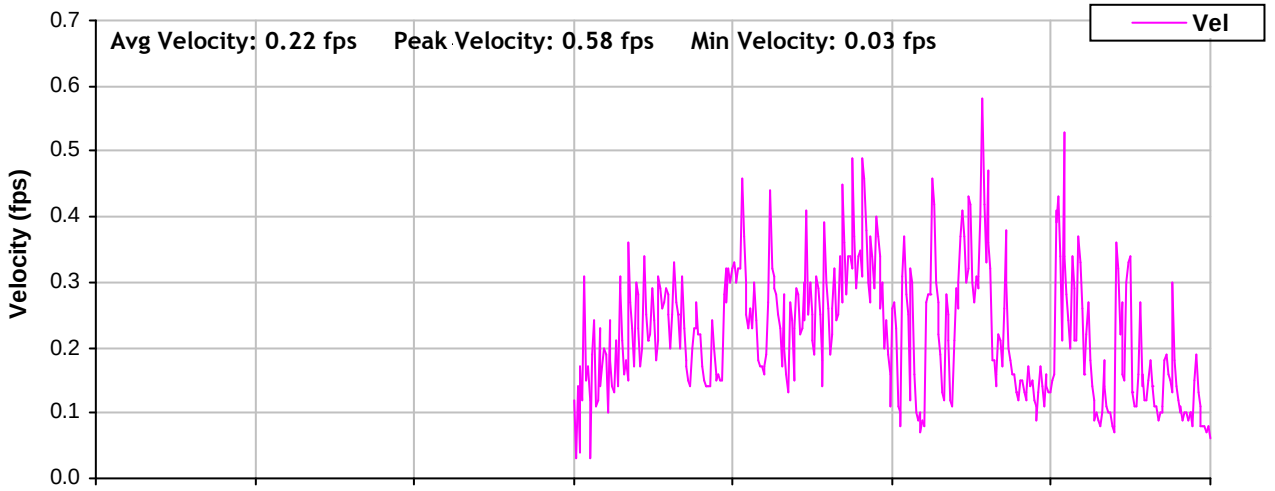
V&A

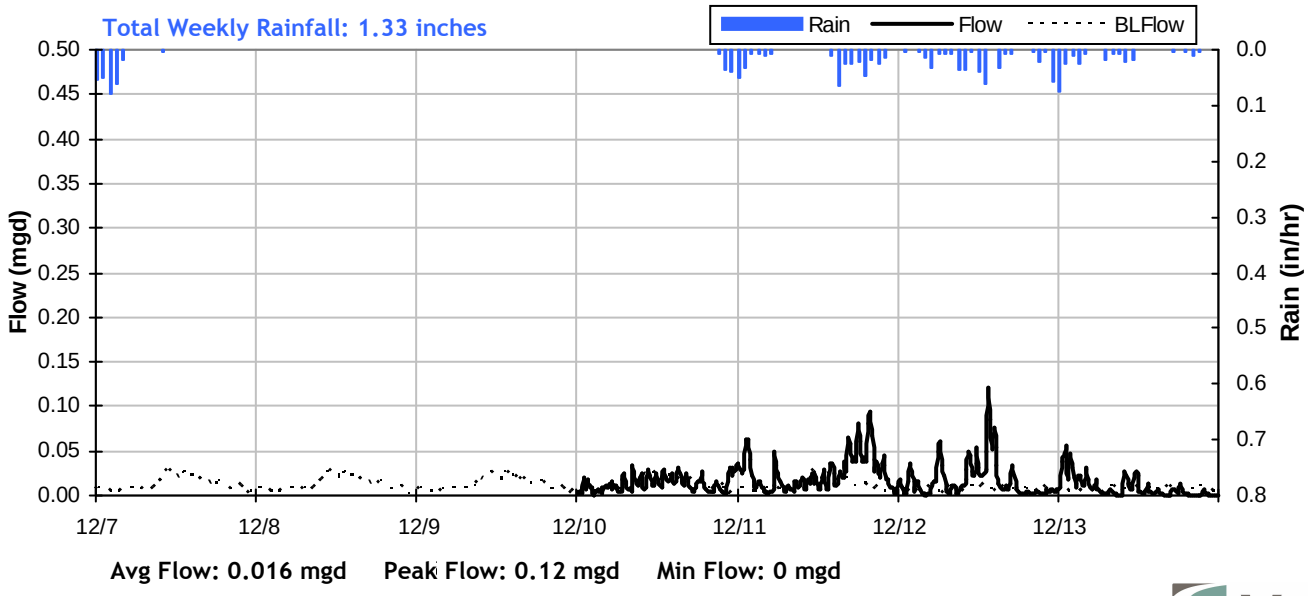
PORT OF OAKLAND

Level, Velocity and Flow
From 12/7/2009 to 12/14/2009

Monitoring Site:
Site M5





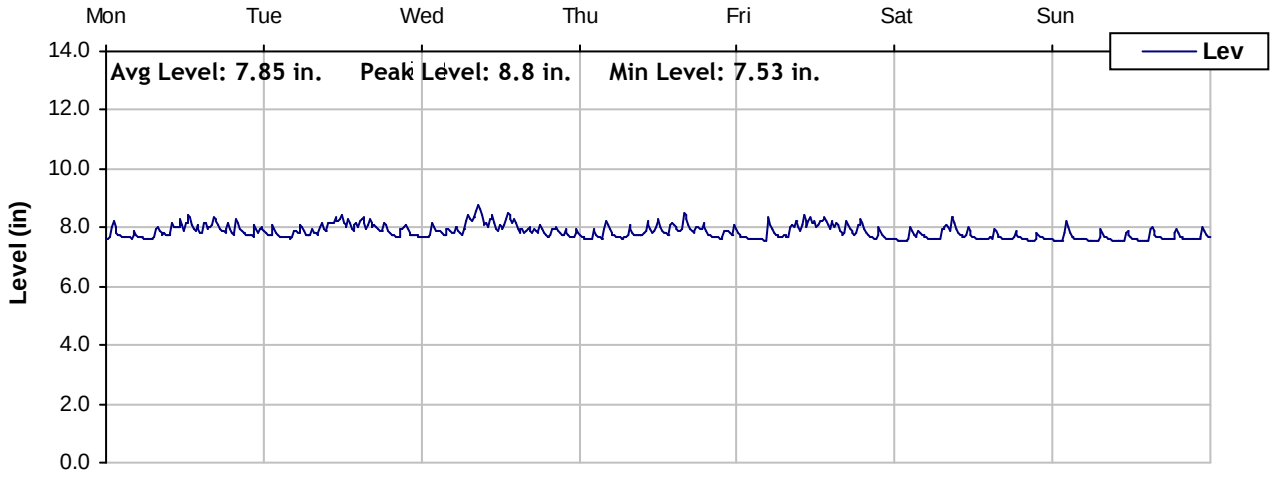


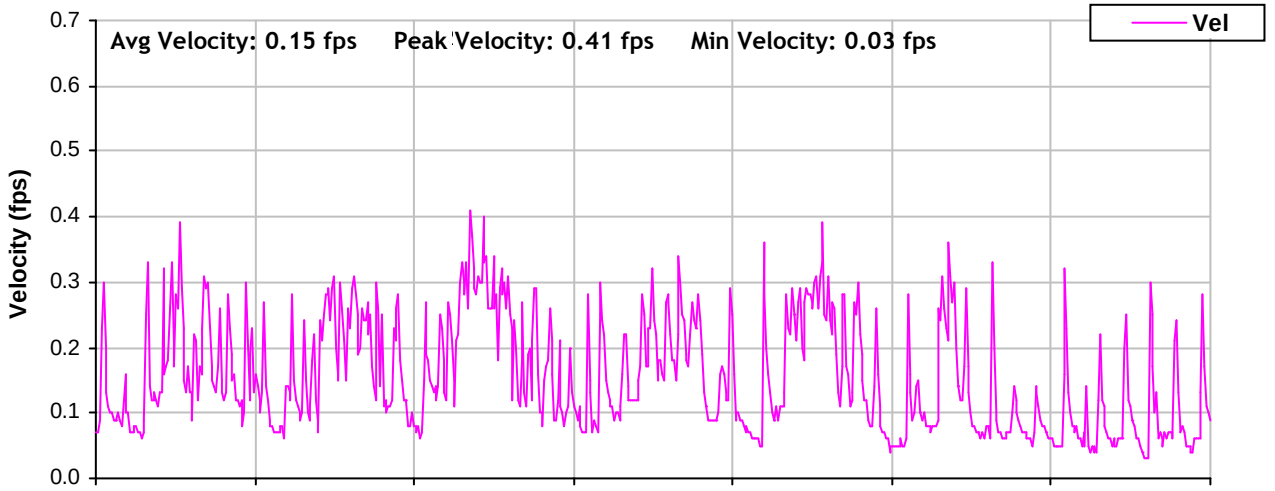
V&A

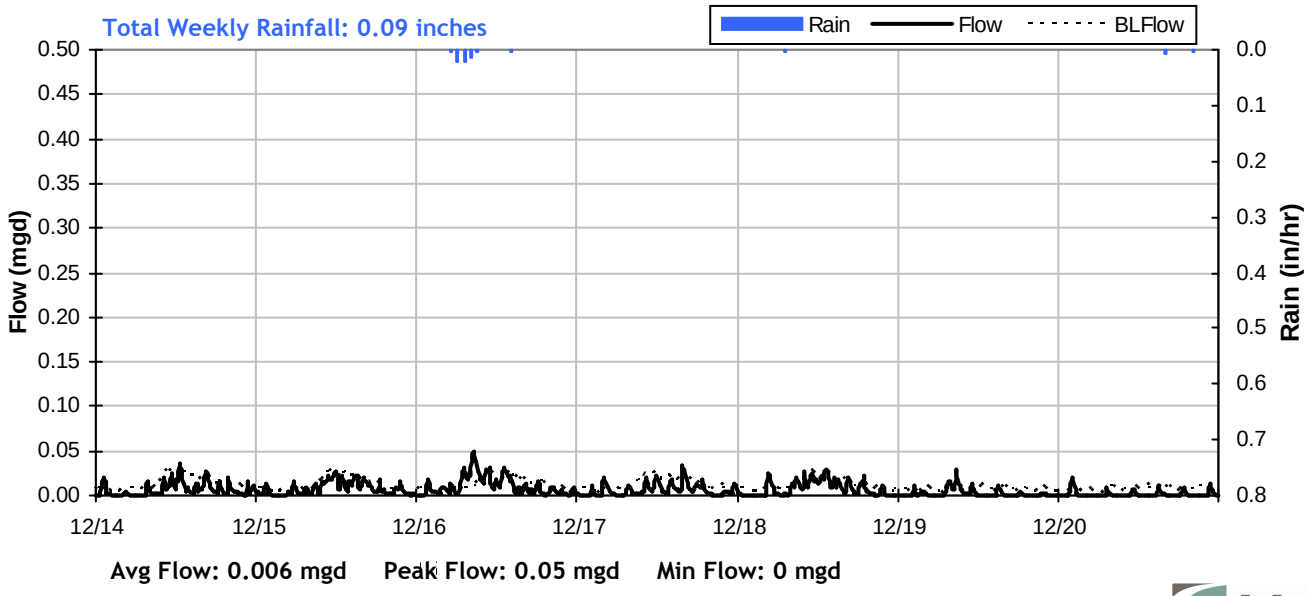
PORT OF OAKLAND

Level, Velocity and Flow
From 12/14/2009 to 12/21/2009

Monitoring Site:
Site M5







Avg Flow: 0.006 mgd Peak Flow: 0.05 mgd Min Flow: 0 mgd

V&A

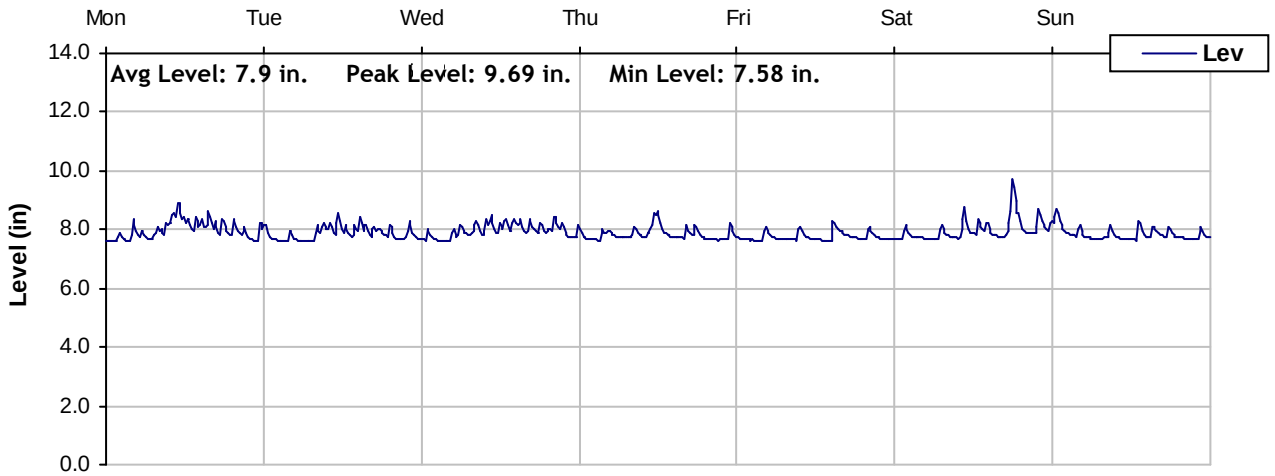
PORT OF OAKLAND

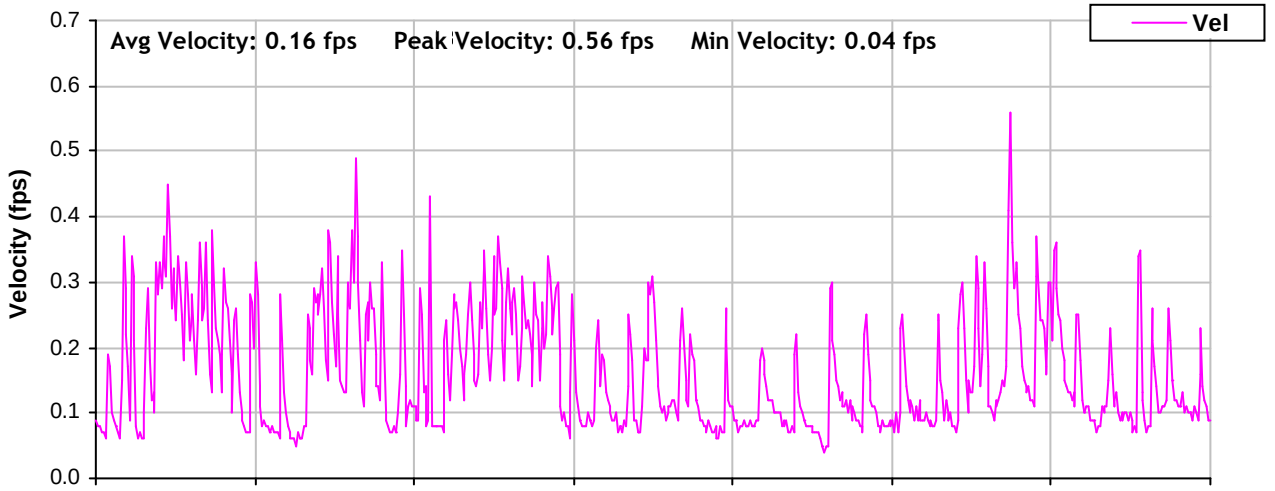
Level, Velocity and Flow

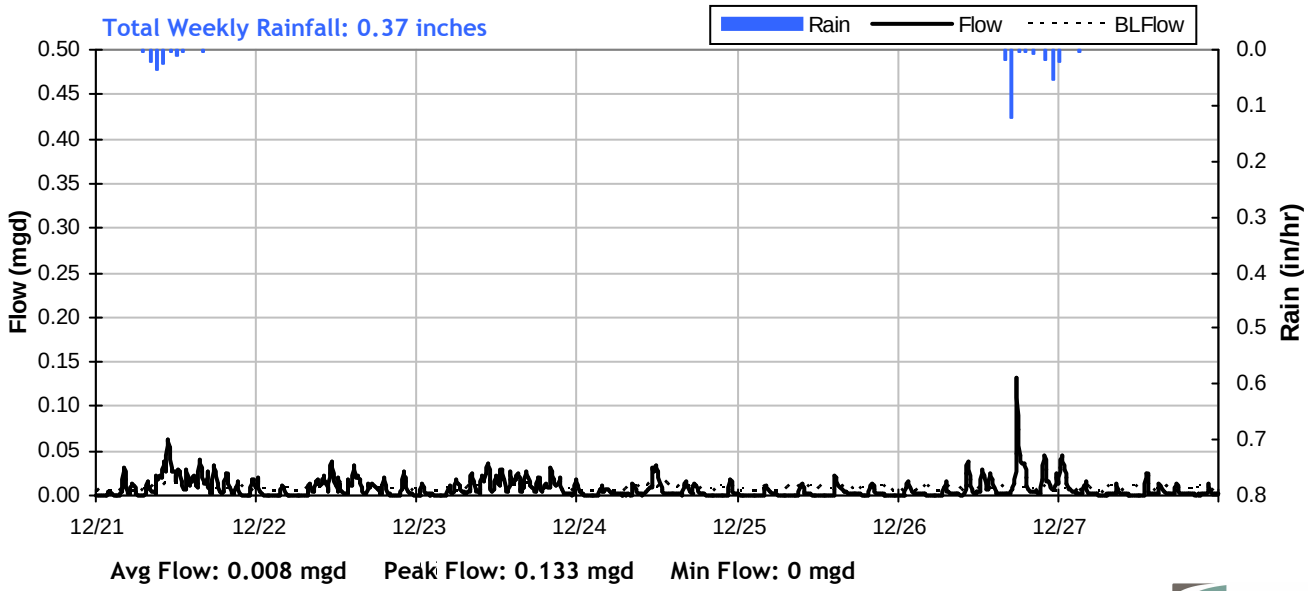
From 12/21/2009 to 12/28/2009

Monitoring Site:

Site M5







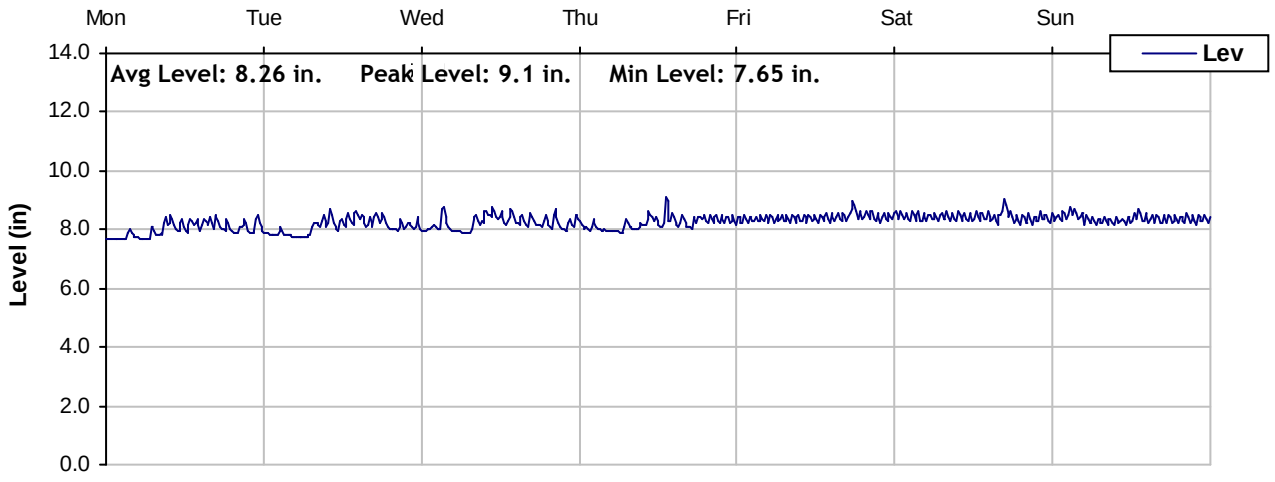
Avg Flow: 0.008 mgd Peak Flow: 0.133 mgd Min Flow: 0 mgd

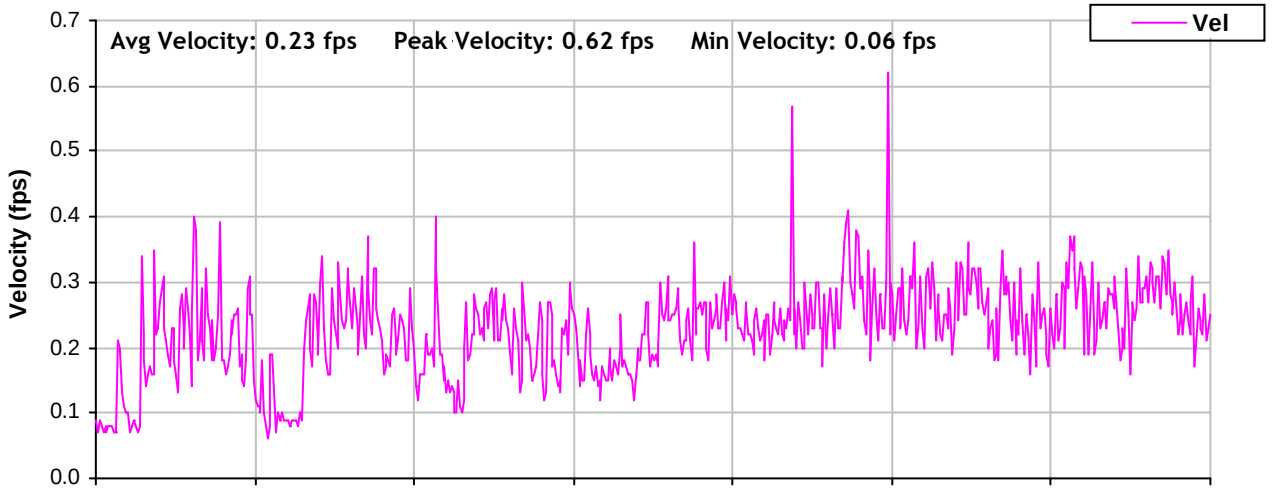
V&A

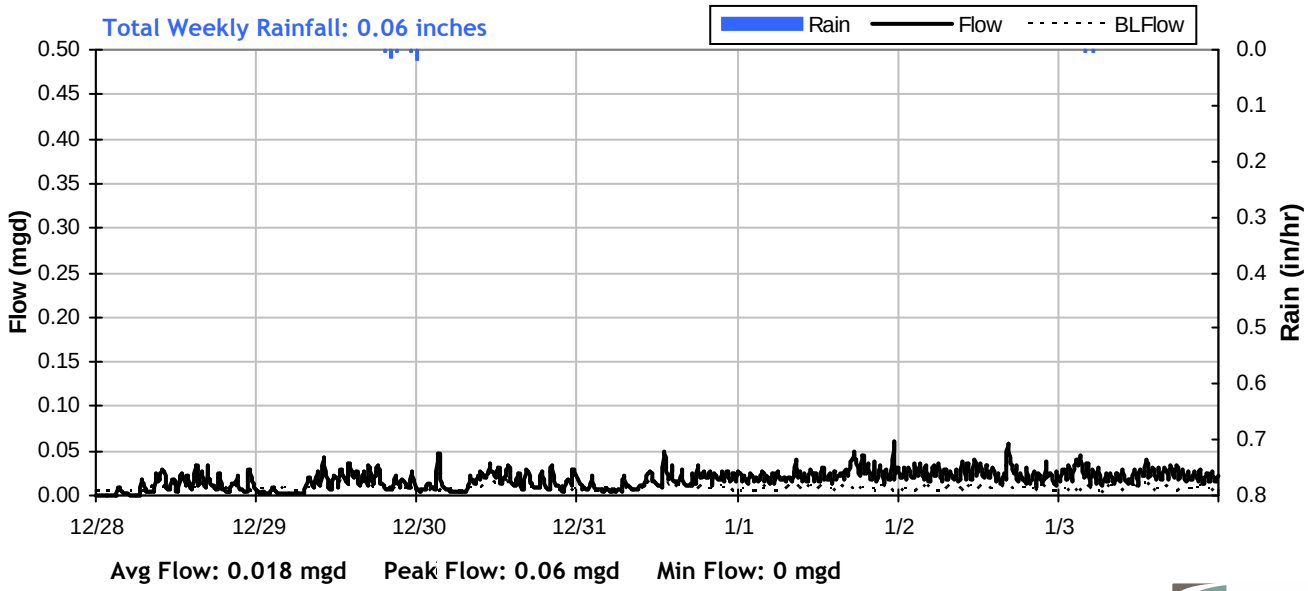
PORT OF OAKLAND

Level, Velocity and Flow
From 12/28/2009 to 1/4/2010

Monitoring Site:
Site M5







Avg Flow: 0.018 mgd Peak Flow: 0.06 mgd Min Flow: 0 mgd

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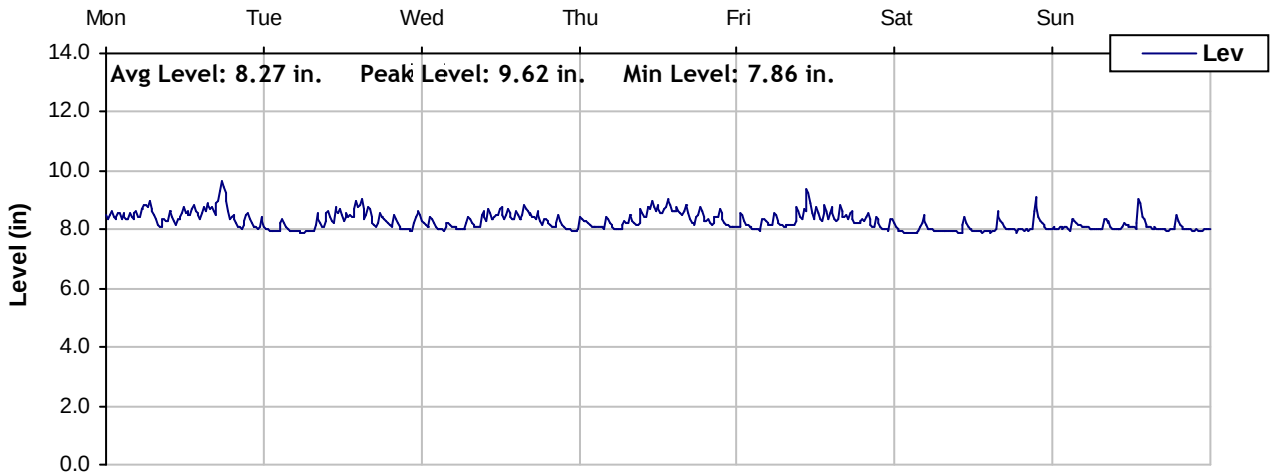
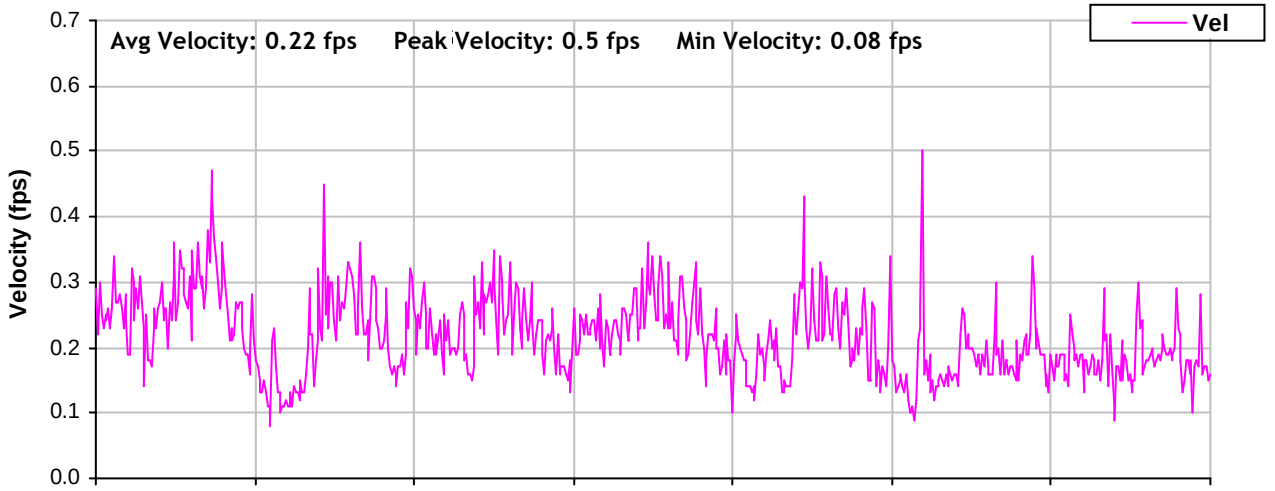
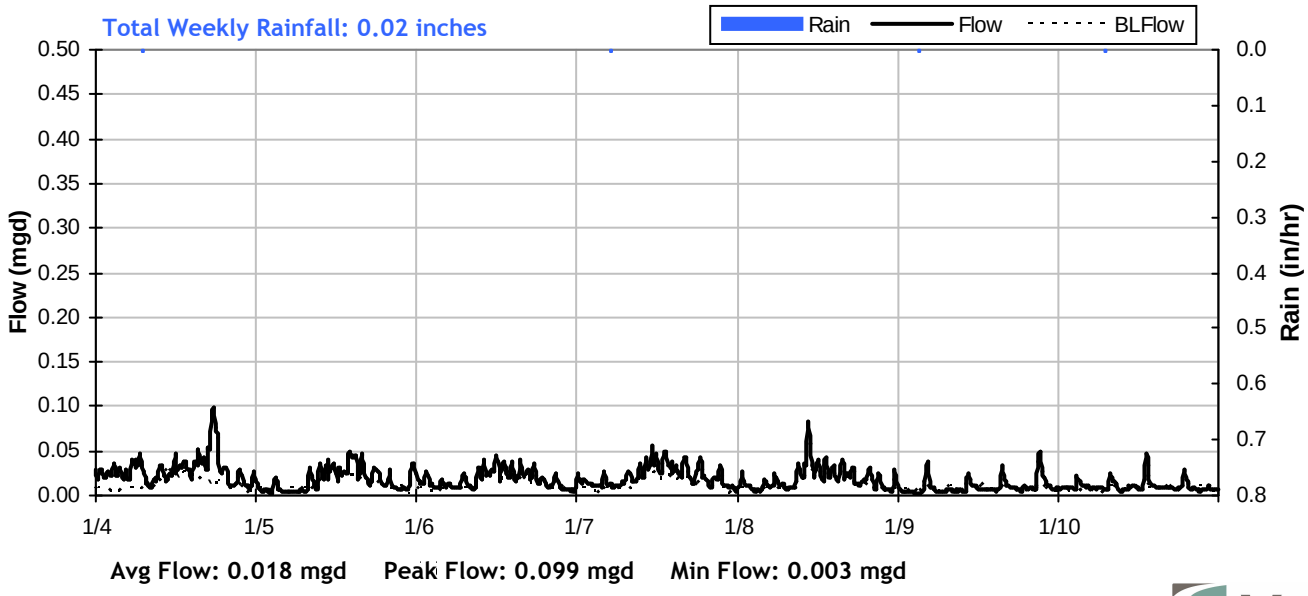
PORT OF OAKLAND

Level, Velocity and Flow
From 1/4/2010 to 1/11/2010

Monitoring Site:
Site M5





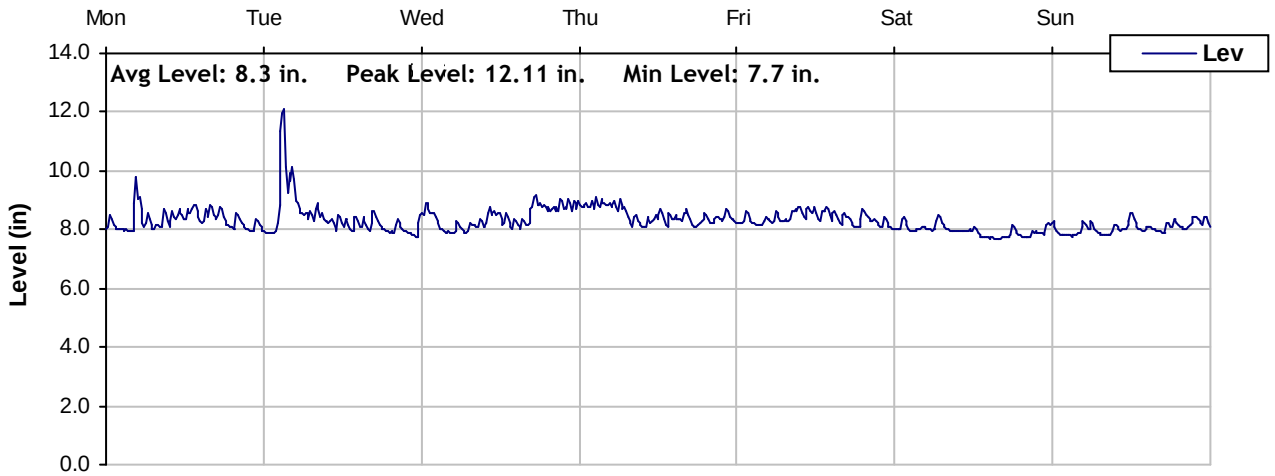


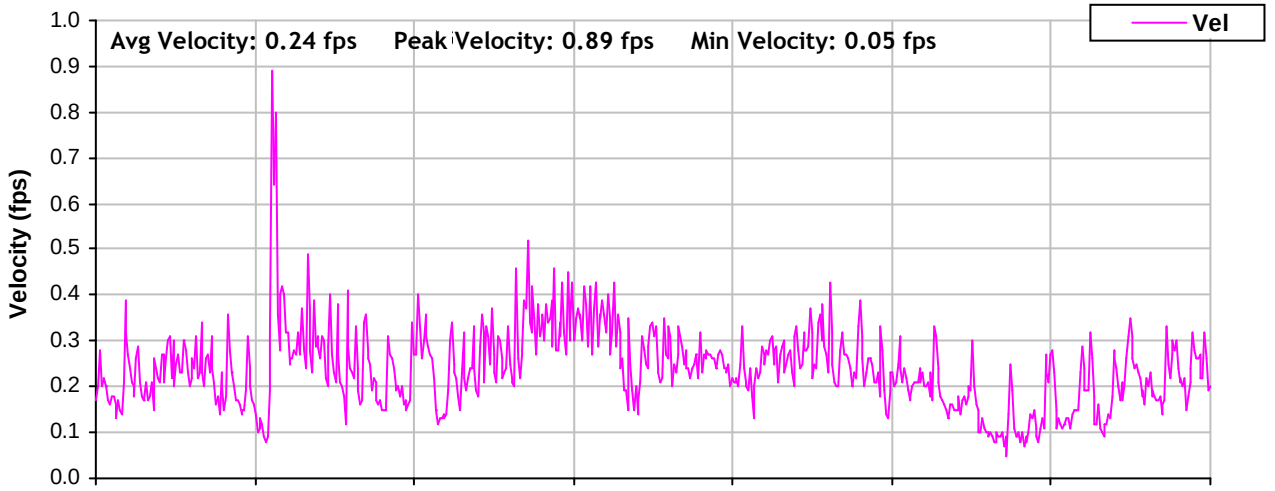
V&A

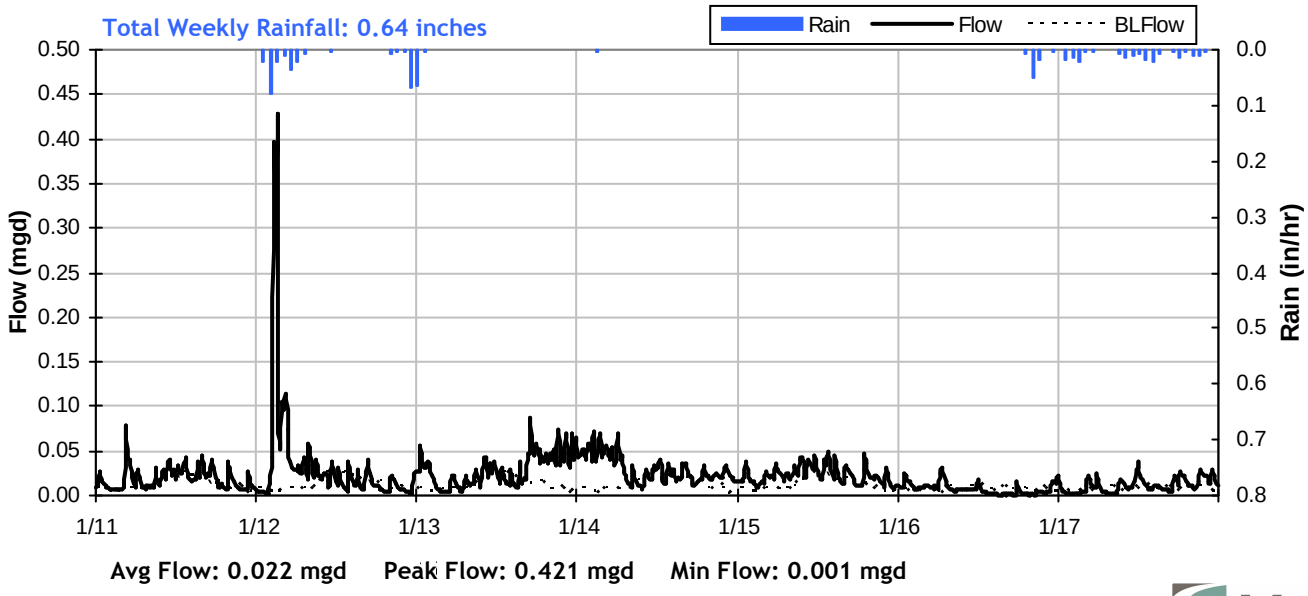
PORT OF OAKLAND

Level, Velocity and Flow
From 1/11/2010 to 1/18/2010

Monitoring Site:
Site M5







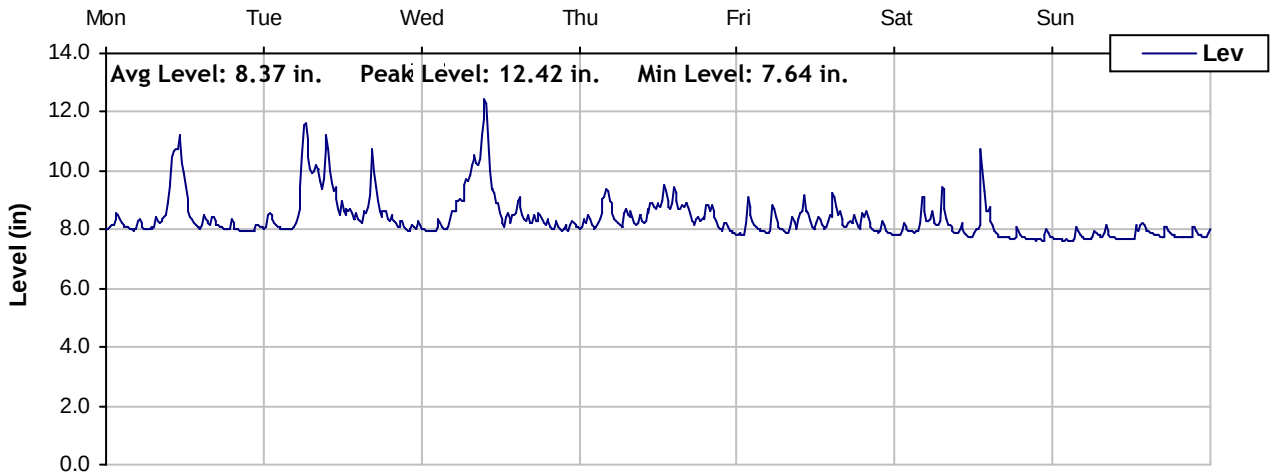
Avg Flow: 0.022 mgd Peak Flow: 0.421 mgd Min Flow: 0.001 mgd

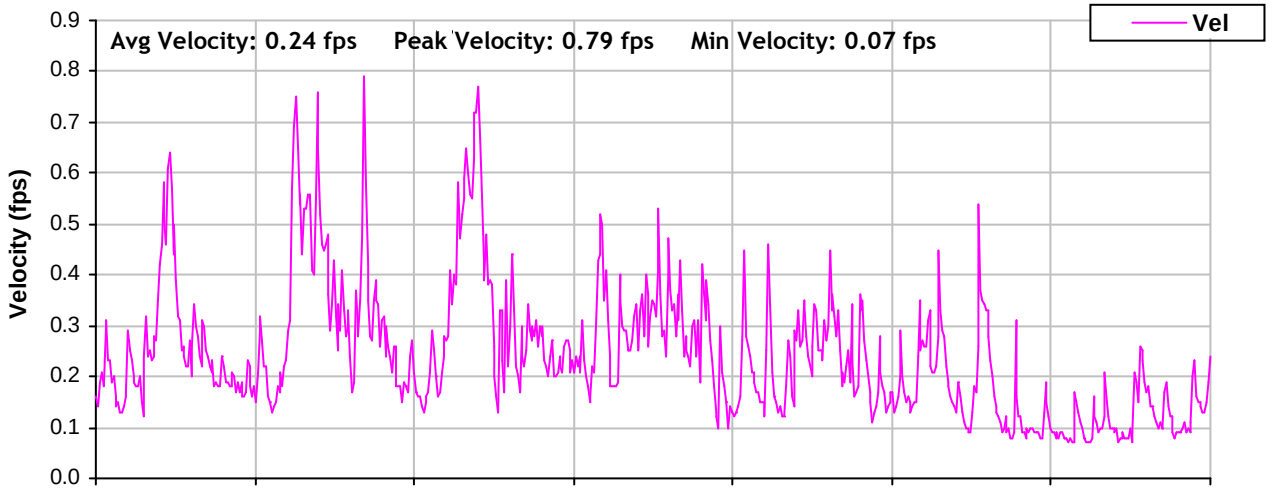
V&A

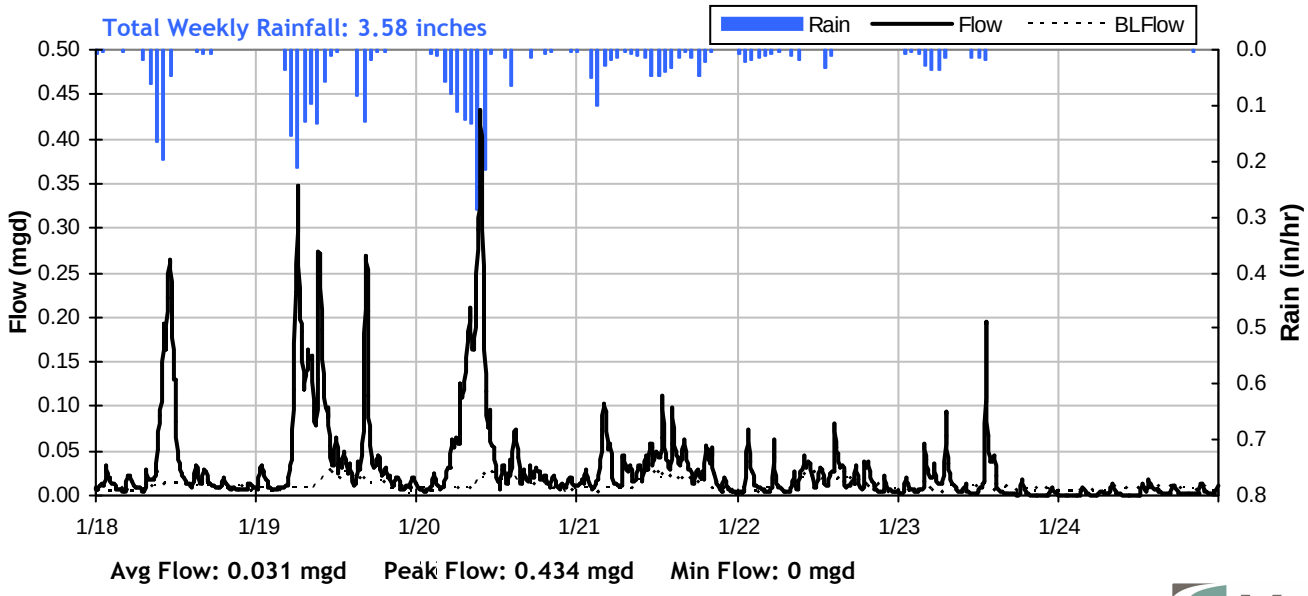
PORT OF OAKLAND

Level, Velocity and Flow
From 1/18/2010 to 1/25/2010

Monitoring Site:
Site M5







Avg Flow: 0.031 mgd Peak Flow: 0.434 mgd Min Flow: 0 mgd

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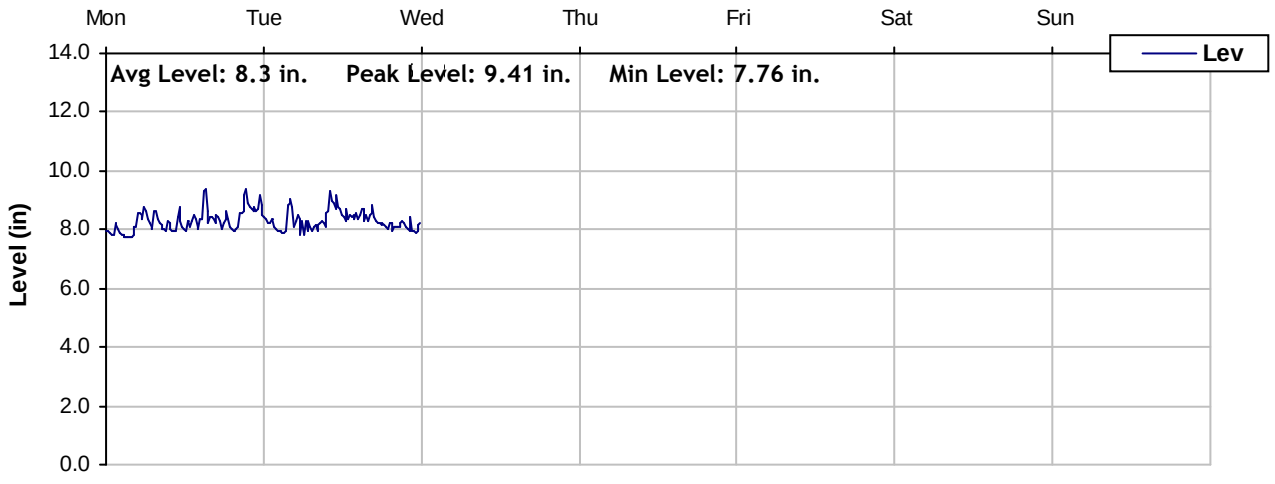
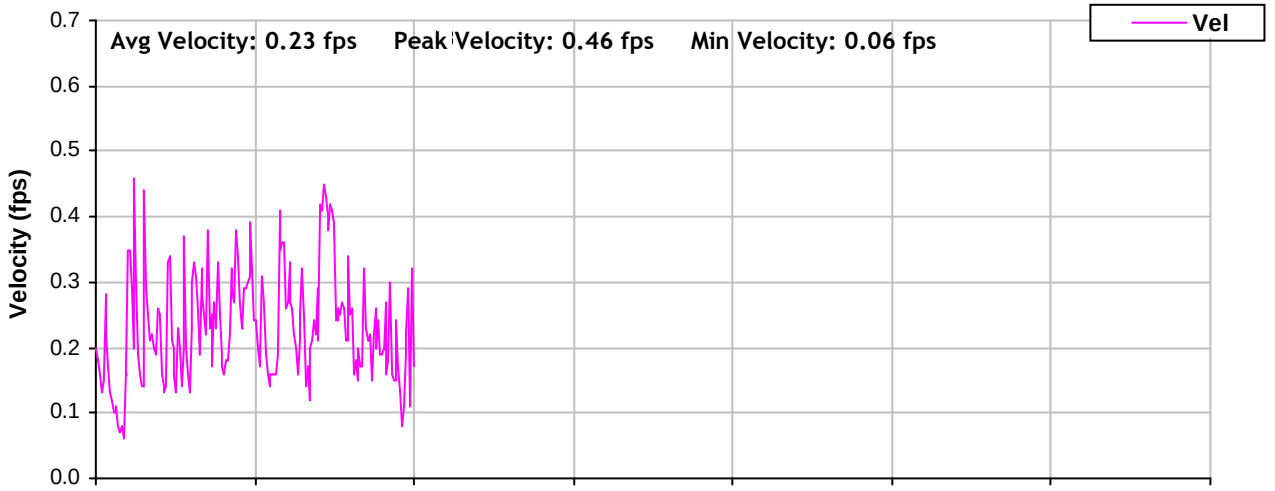
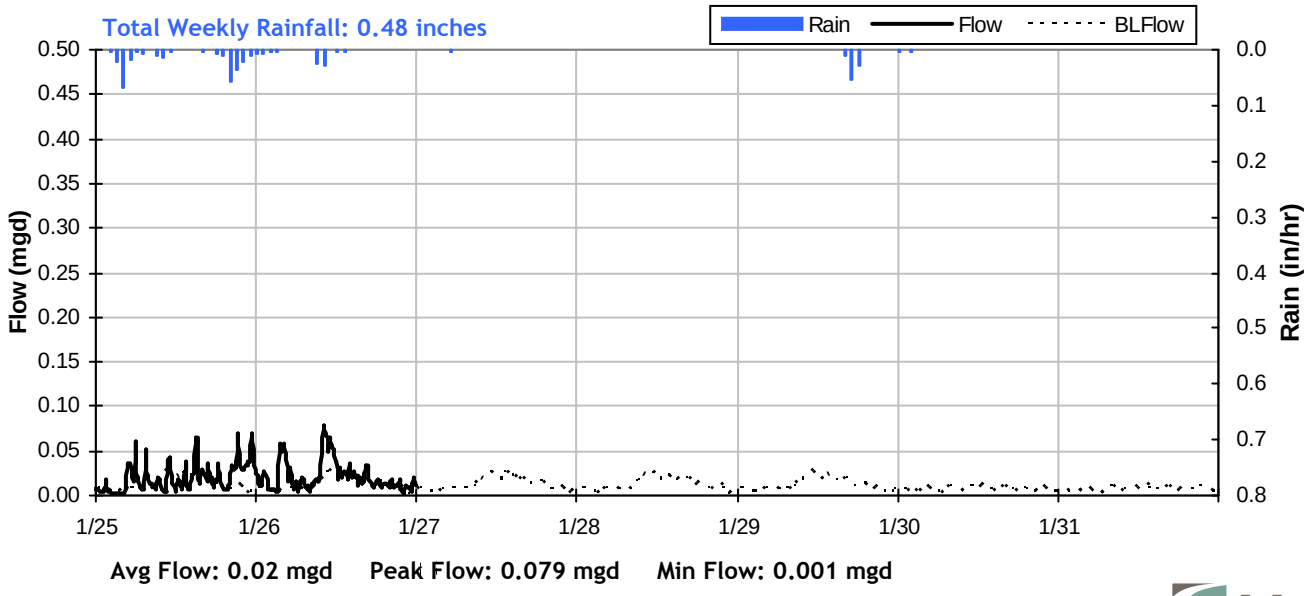
PORT OF OAKLAND

Level, Velocity and Flow
From 1/25/2010 to 2/1/2010

Monitoring Site:
Site M5







Avg Flow: 0.02 mgd Peak Flow: 0.079 mgd Min Flow: 0.001 mgd

V&A

PORT OF OAKLAND

Temporary Flow Monitoring Study

Sanitary Sewer Collection System

Monitoring Site: Site M6

Location: 7th Street, between Navy Roadway and Maritime Street

Size/Type Line: 30-inch Sanitary Sewer Pipe

Data Summary Report

V&A

PORT OF OAKLAND

Site Information Report

Monitoring Site: Site M6

Location: 7th Street, between Navy Roadway and Maritime Street

Latitude: 37.8087°

Longitude: -122.3131°

Rim Elevation: 14 *feet*

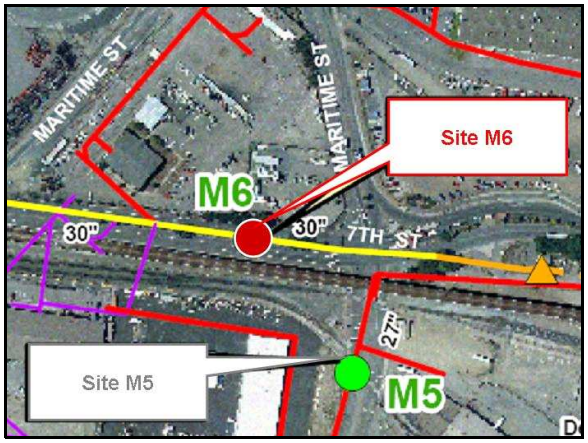
Diameter: 30 *inches*

Average Dry Weather Flow: 0.080 *mgd*

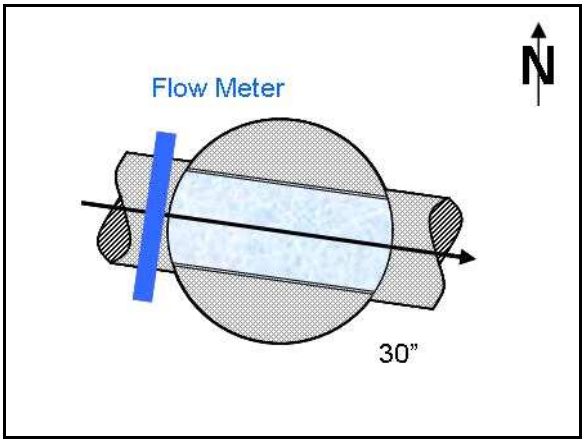
Peak Measured Flow: 1.120 *mgd*

Satellite Map

Sanitary Map



Flow Diagram



Street View Photo

Plan View Photo

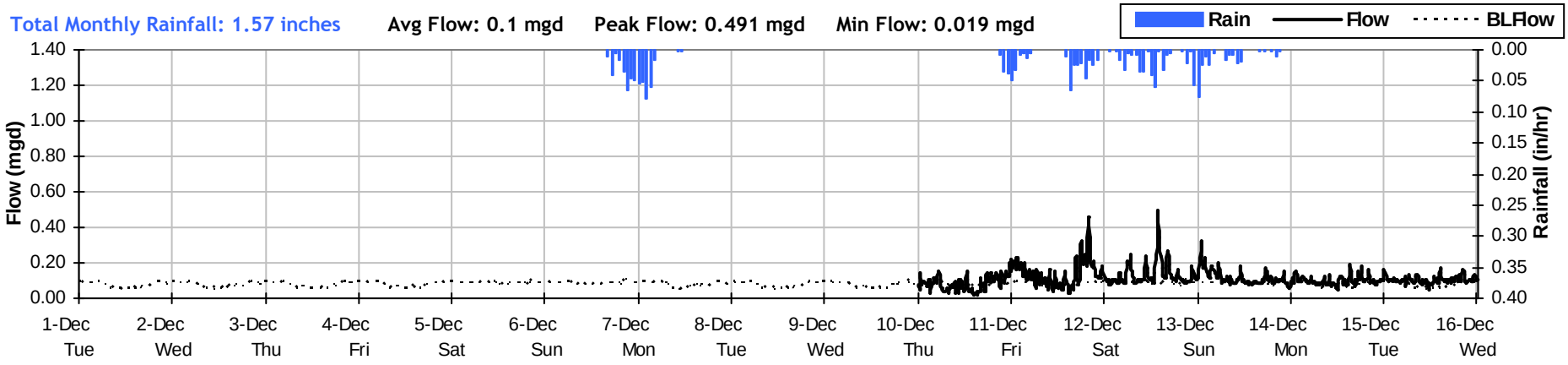
V&A

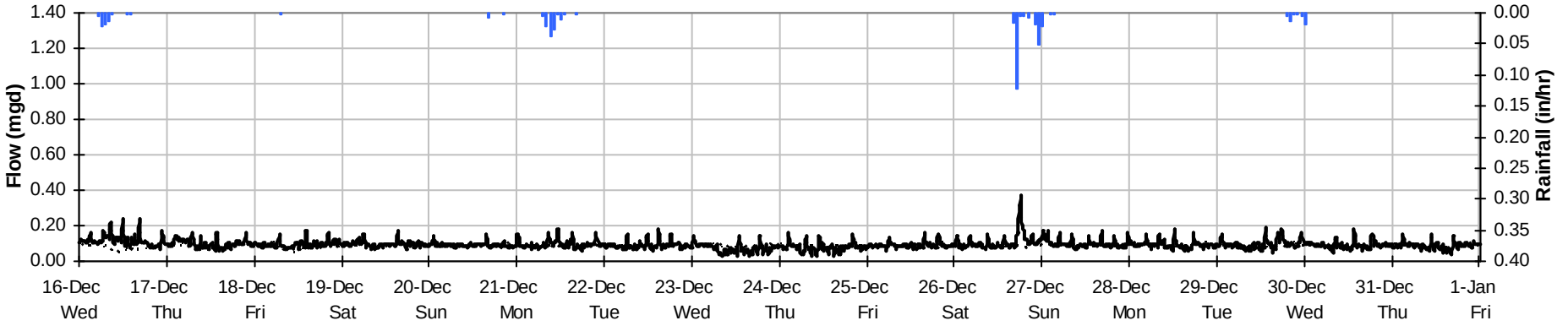
PORT OF OAKLAND

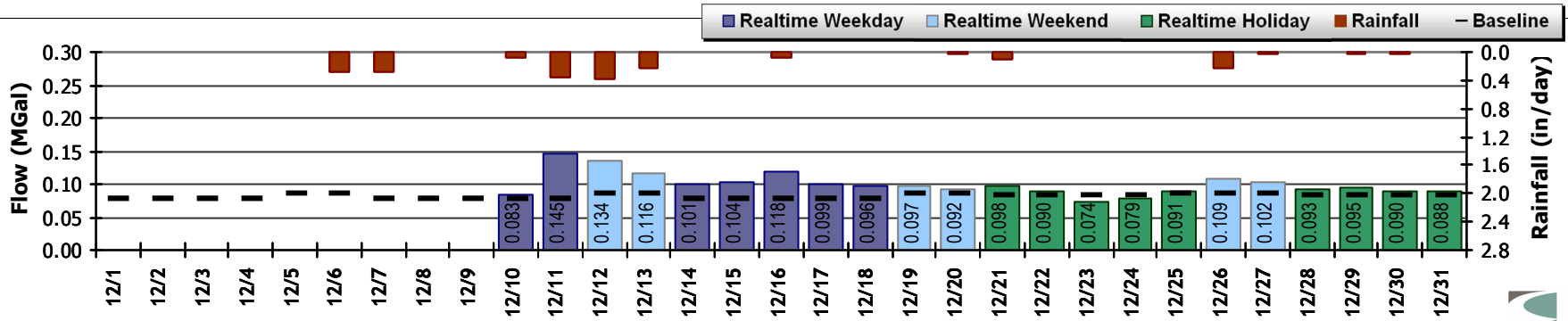
Period Flow Summary
December, 2009

Monitoring Site:
Site M6

Total Monthly Rainfall: 1.57 inches Avg Flow: 0.1 mgd Peak Flow: 0.491 mgd Min Flow: 0.019 mgd







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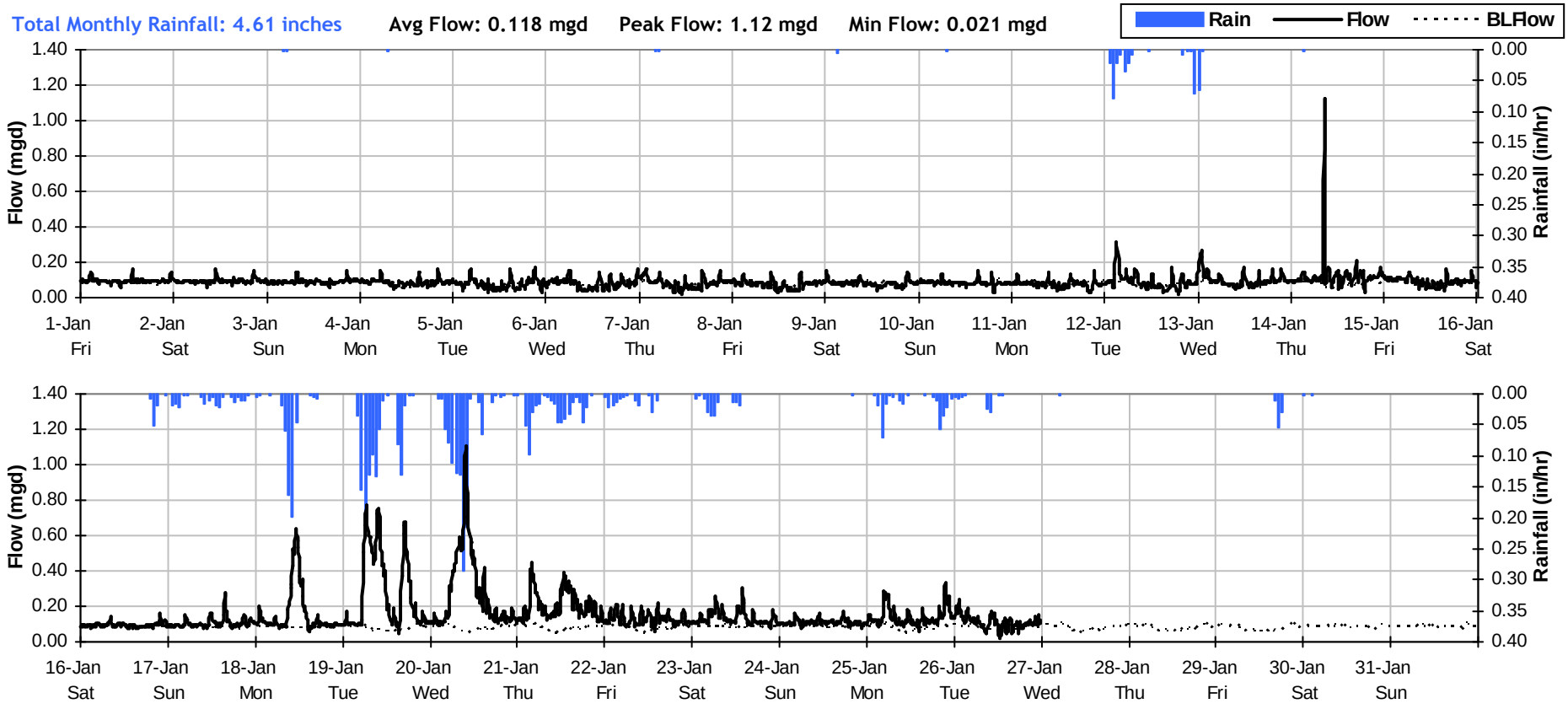
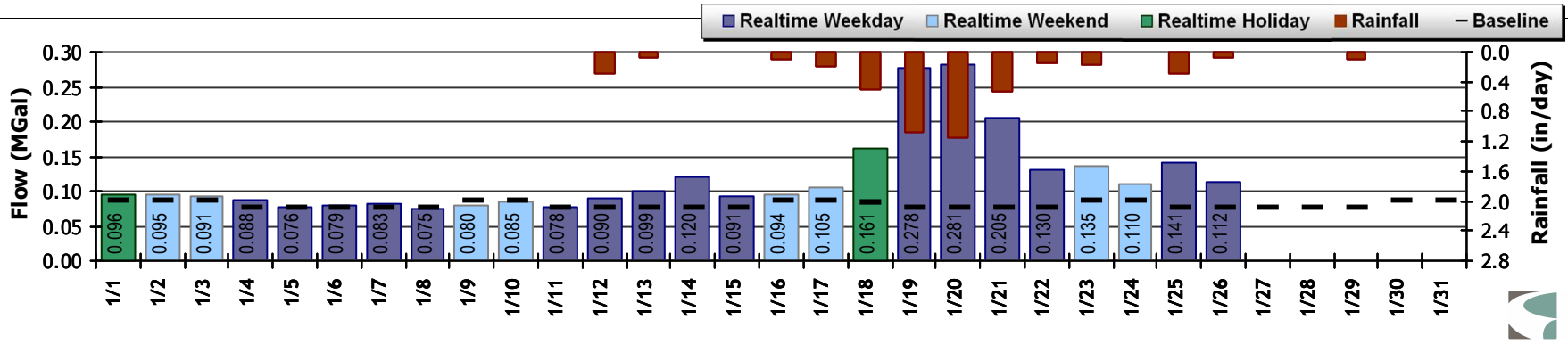
PORT OF OAKLAND

Period Flow Summary
January, 2010

Monitoring Site:
Site M6

Total Monthly Rainfall: 4.61 inches Avg Flow: 0.118 mgd Peak Flow: 1.12 mgd Min Flow: 0.021 mgd





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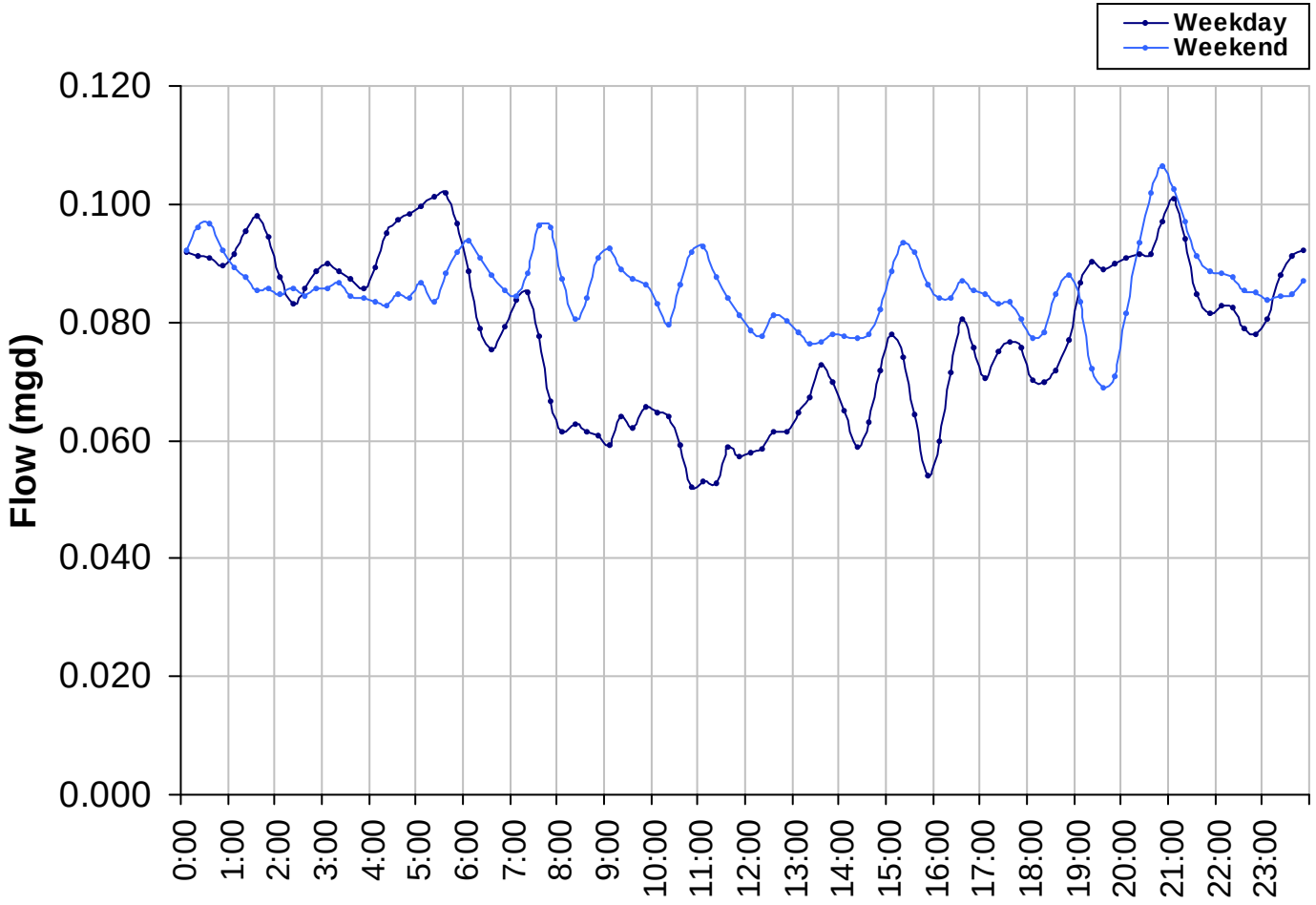
PORT OF OAKLAND

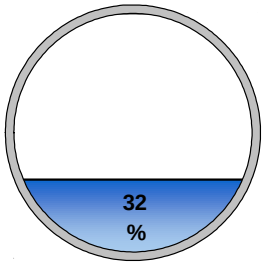
Average Dry Weather Flow

Monitoring Site:
Site M6



Peak Measured Flow:

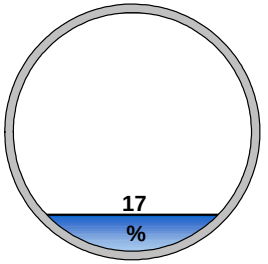
1.120 *mgd*



Peak measured flow shown in weekly graphs on following pages

Average Dry Weather Flow:

0.080 *mgd*



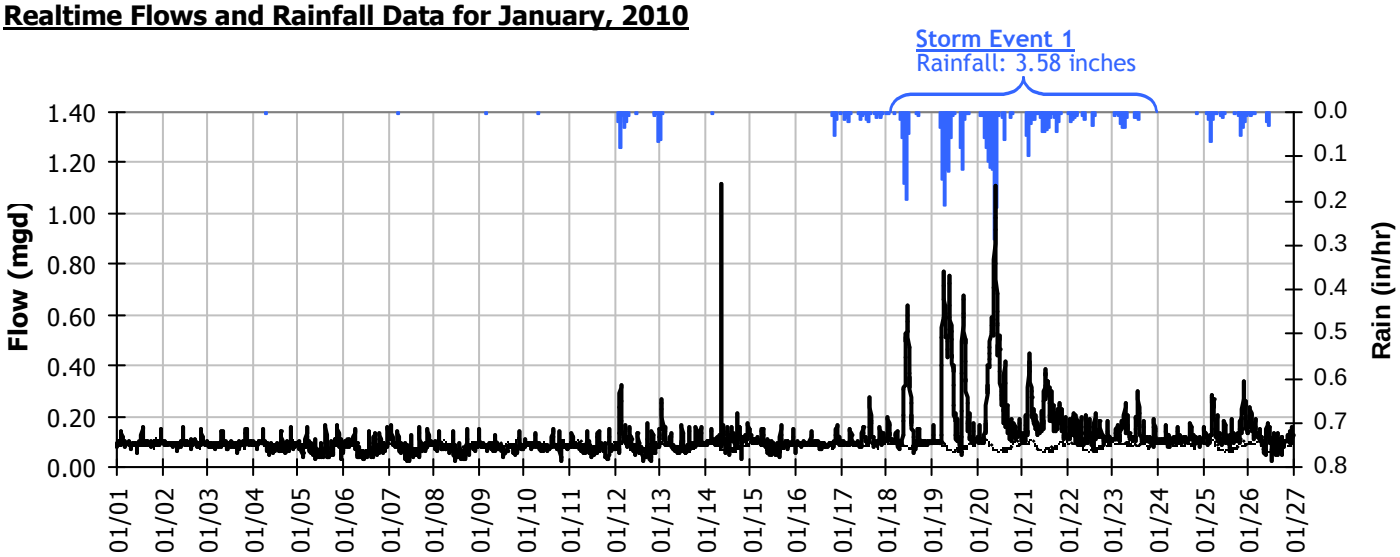
V&A

PORT OF OAKLAND

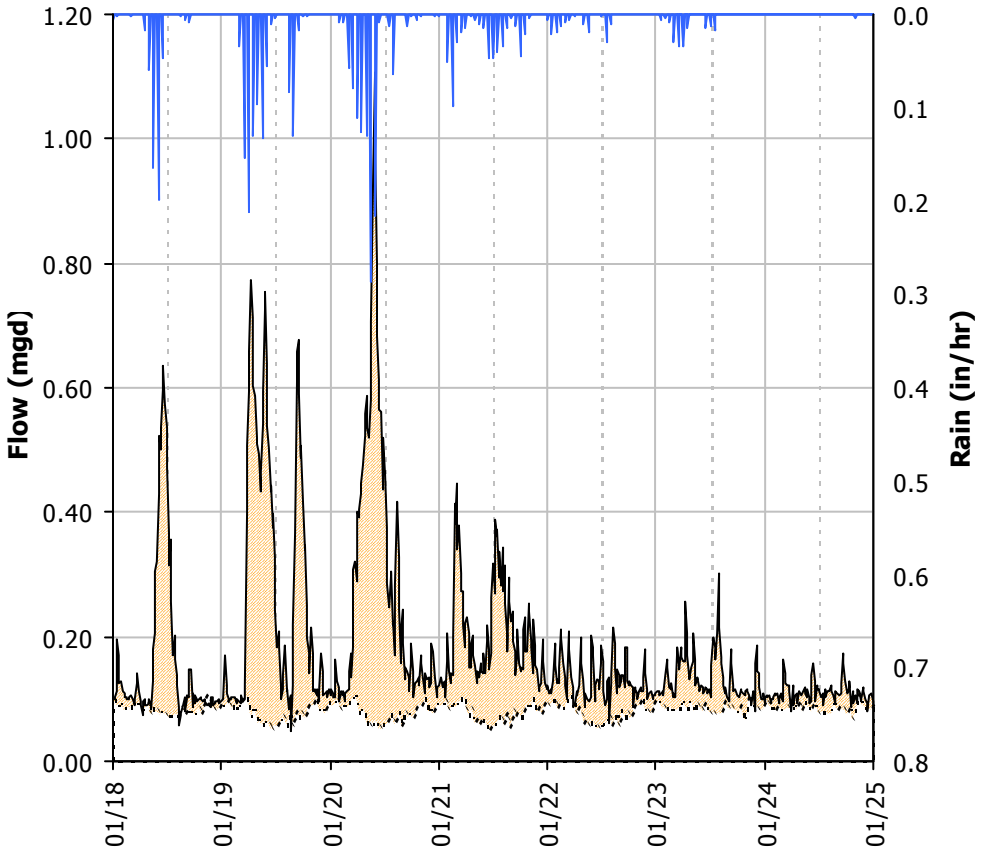
I/I Summary

Monitoring Site:
Site M6

Realtime Flows and Rainfall Data for January, 2010



Storm Event #1 Detail I/I Graph



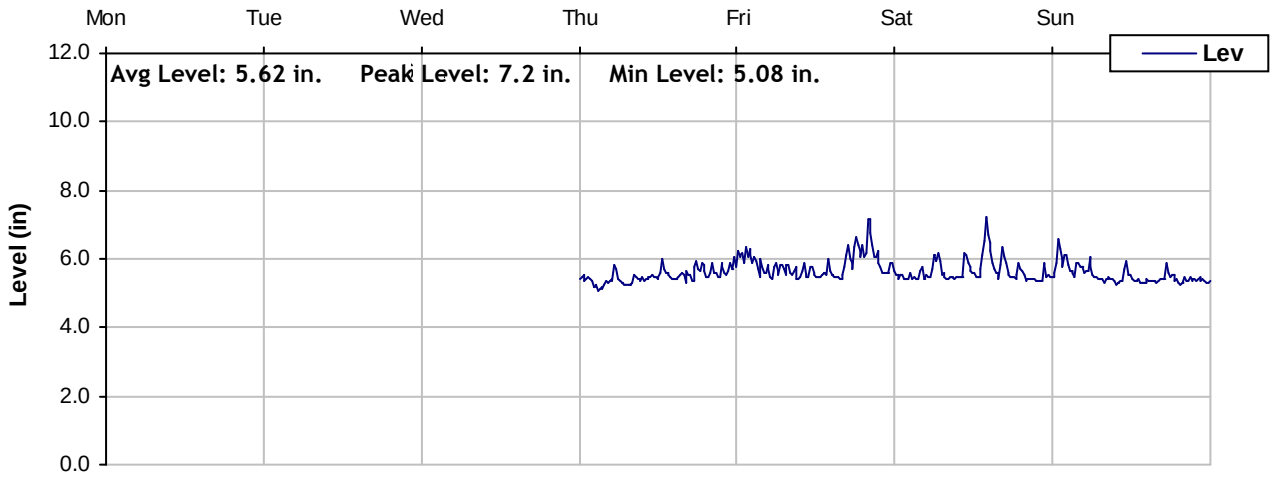
I&I ANALYSIS		
Rainfall:	3.58	*inches*
Total I&I		
Total I/I:	732,000	*gallons*
I/I per ADWF:	2.5	*per in-rain*
Inflow		
Peak I/I Rate:	1.04	*mgd*
Pk I/I:ADWF:	12.95	
Infiltration (% of ADWF)		
Infiltration at +24hours:	27.6%	
Capacity		
Peak Flow:	1.11	*mgd*
PF:	13.77	
Peak Level:	8.71	*inches*
d/D Ratio:	0.29	

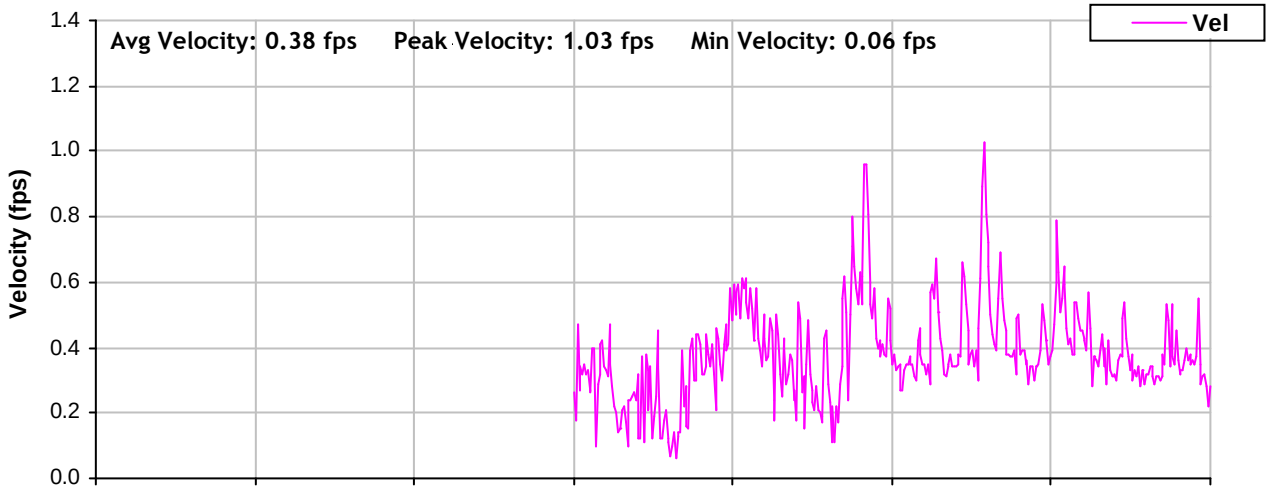
V&A

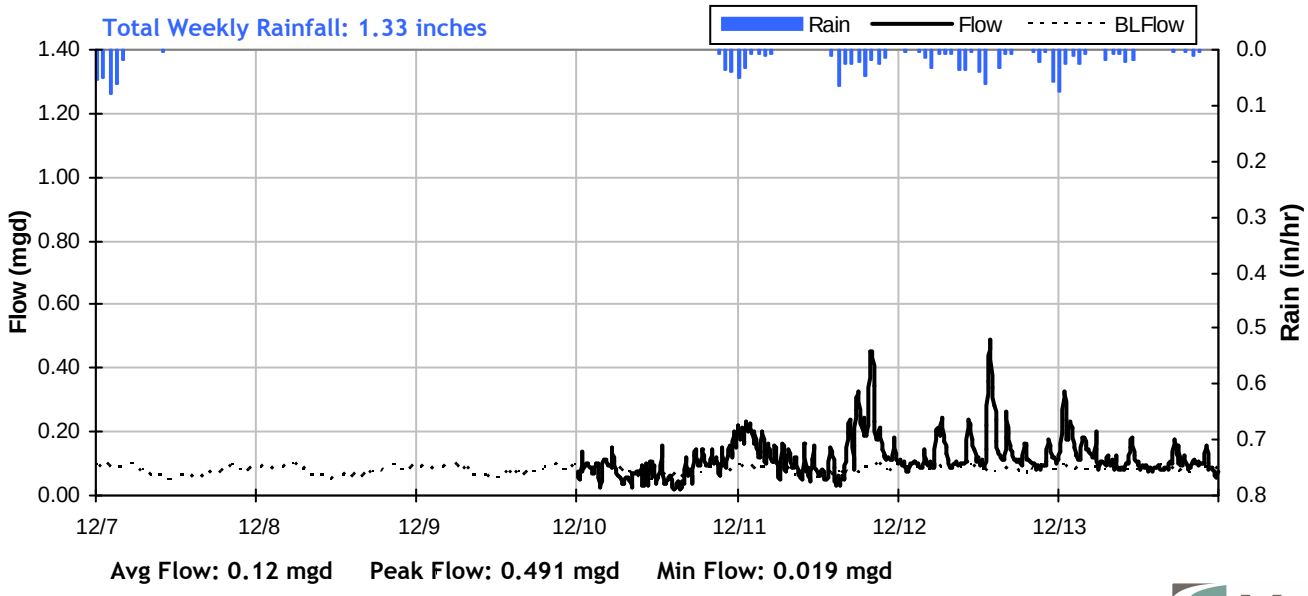
PORT OF OAKLAND

Level, Velocity and Flow
From 12/7/2009 to 12/14/2009

Monitoring Site:
Site M6







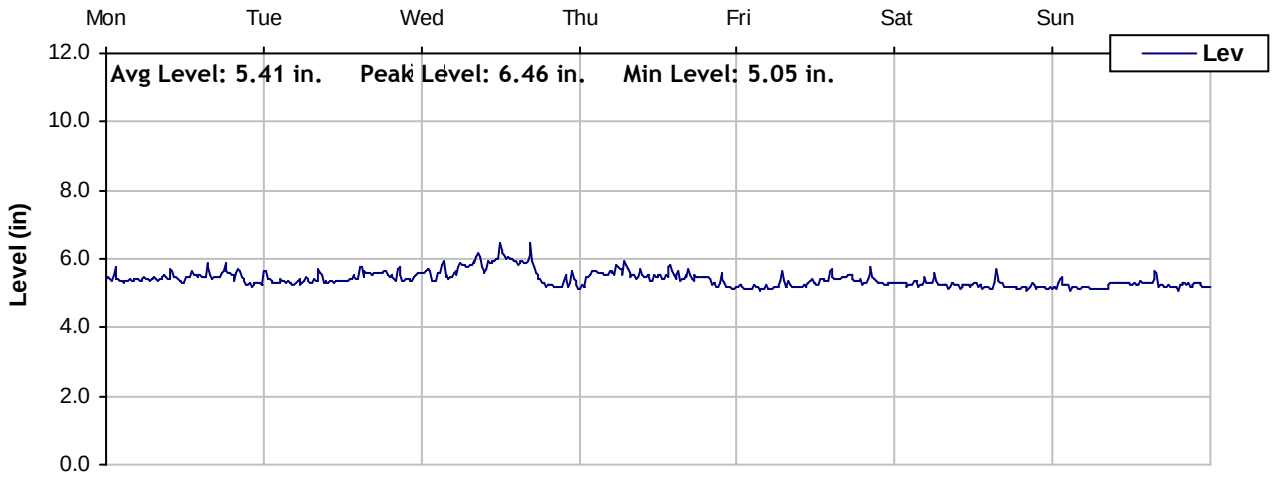
Avg Flow: 0.12 mgd Peak Flow: 0.491 mgd Min Flow: 0.019 mgd

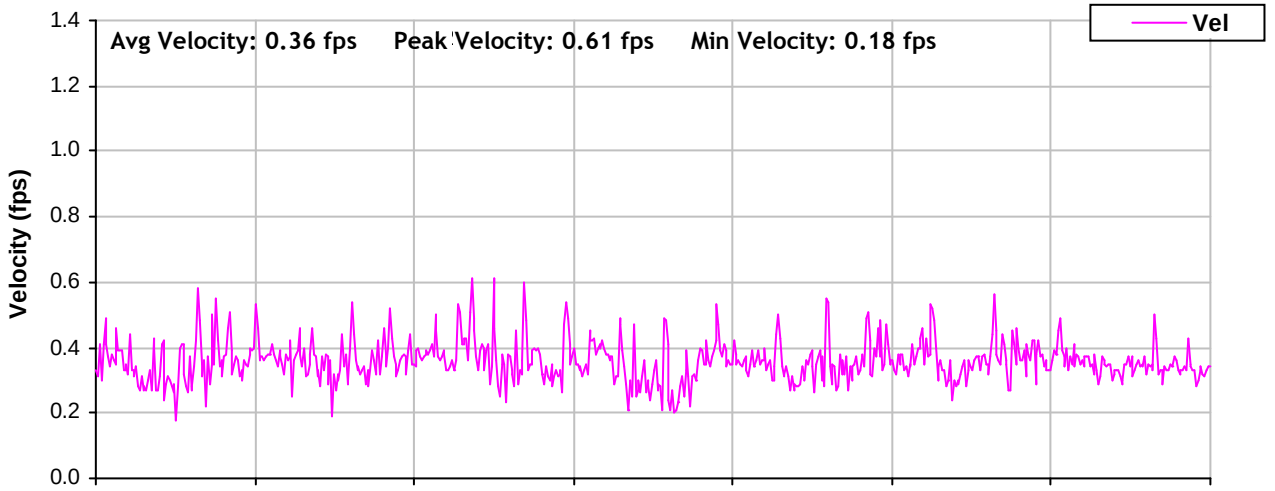
V&A

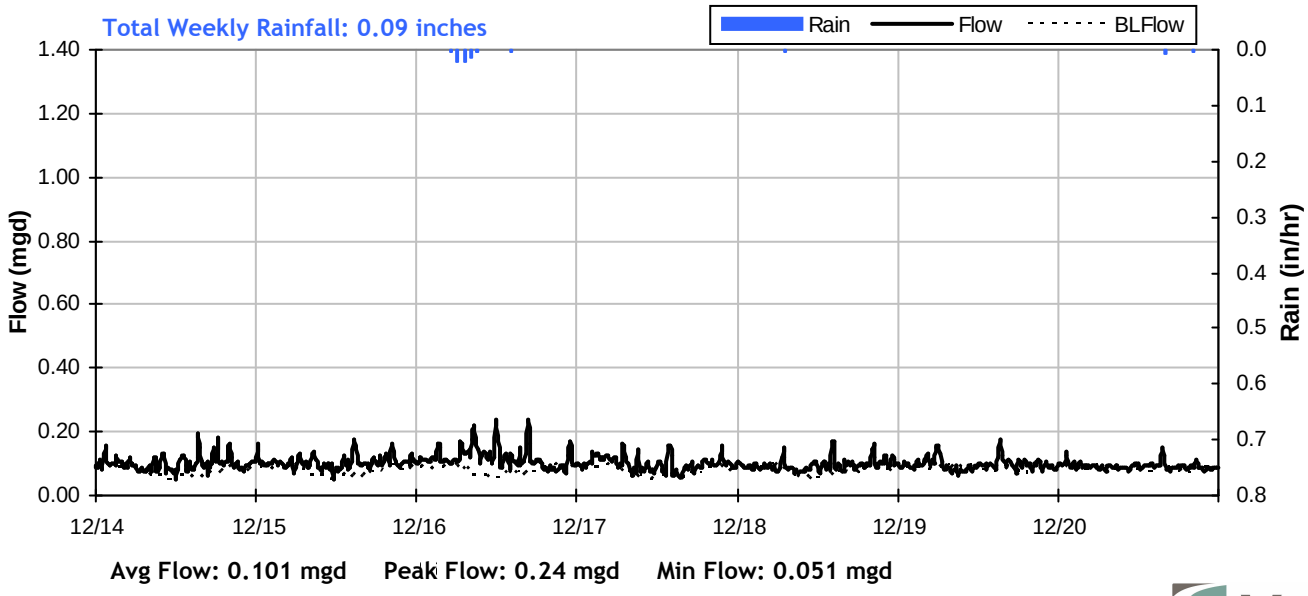
PORT OF OAKLAND

Level, Velocity and Flow
From 12/14/2009 to 12/21/2009

Monitoring Site:
Site M6







Avg Flow: 0.101 mgd Peak Flow: 0.24 mgd Min Flow: 0.051 mgd

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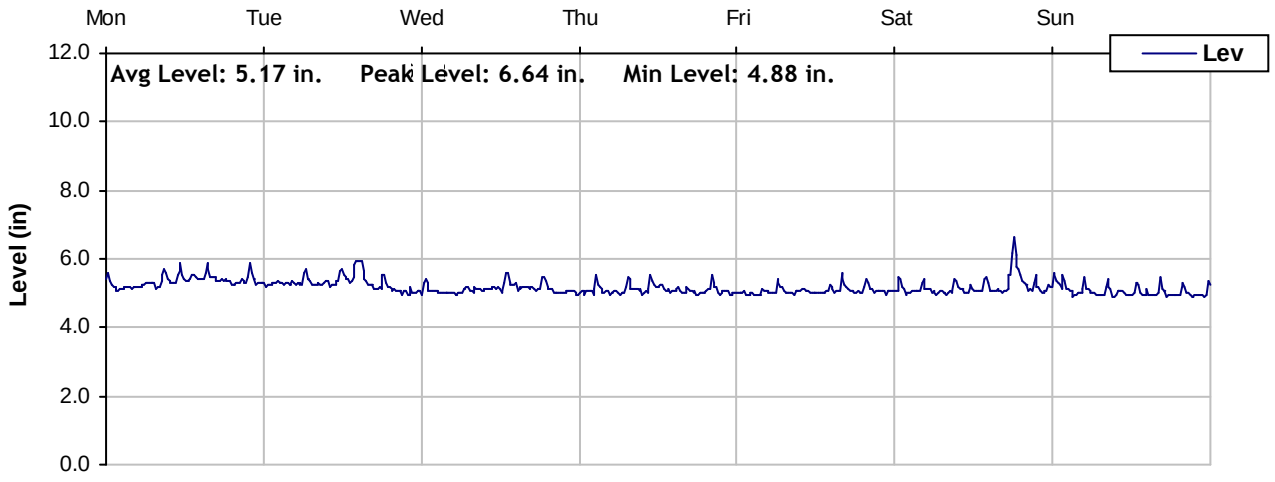
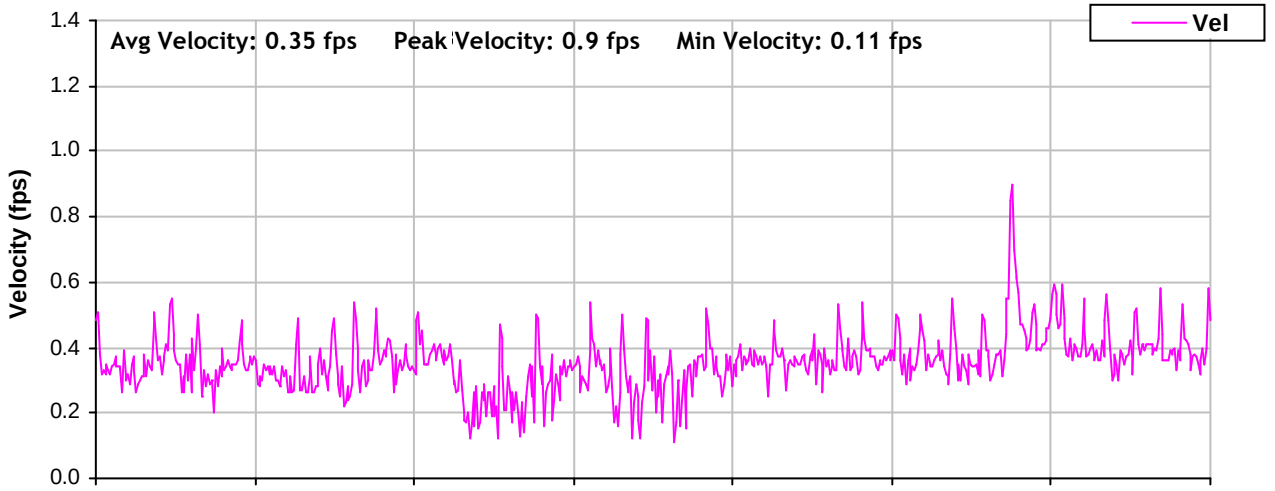
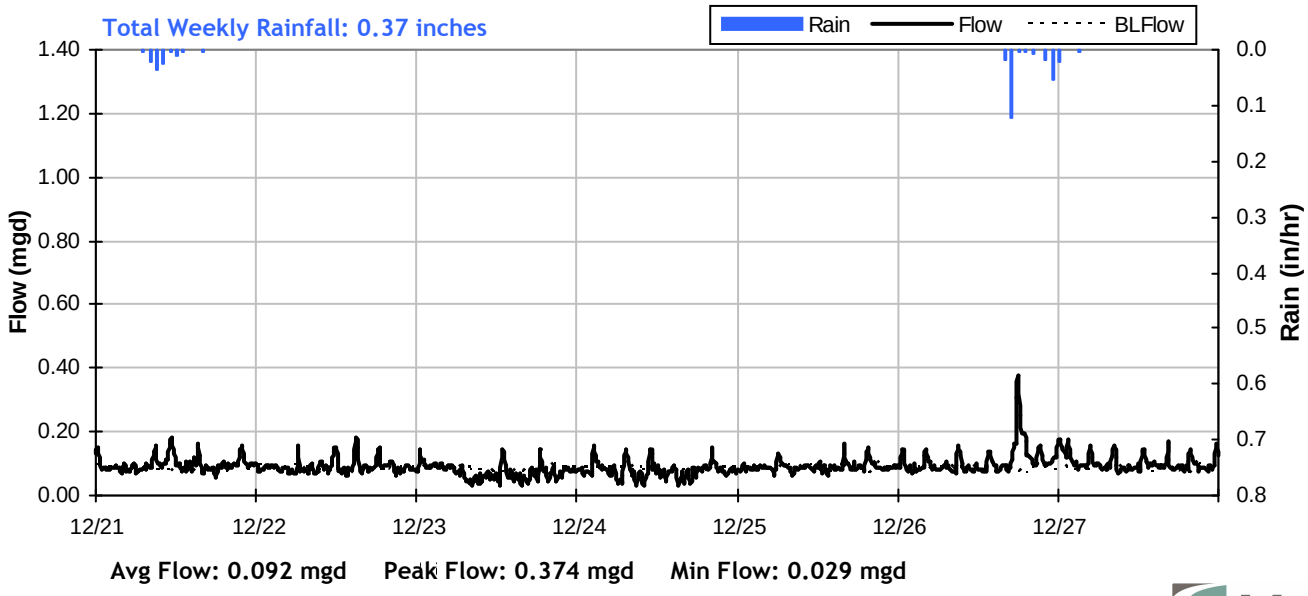
PORT OF OAKLAND

Level, Velocity and Flow
From 12/21/2009 to 12/28/2009

Monitoring Site:
Site M6







Avg Flow: 0.092 mgd Peak Flow: 0.374 mgd Min Flow: 0.029 mgd

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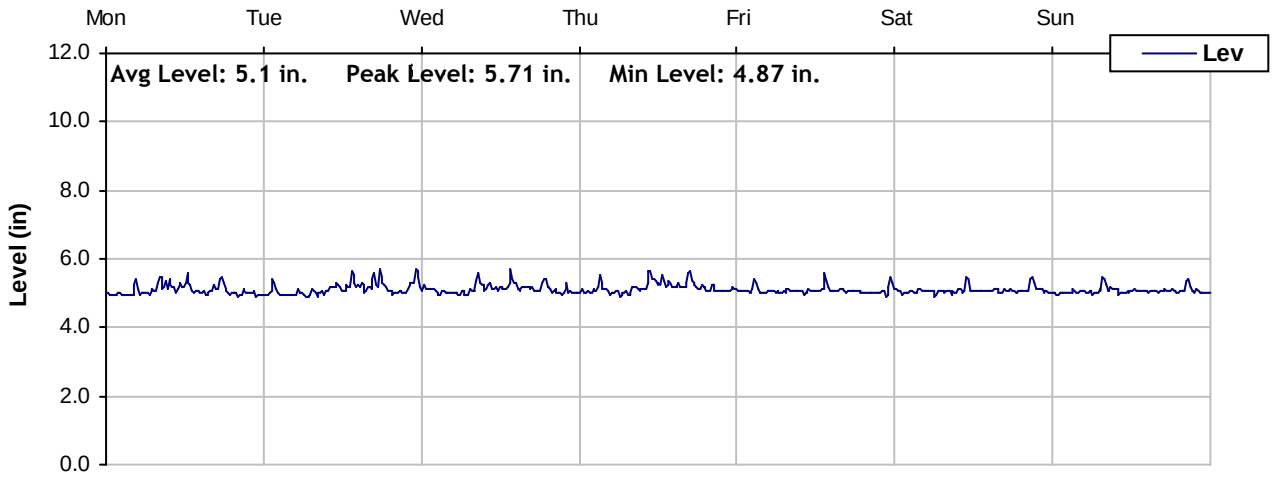
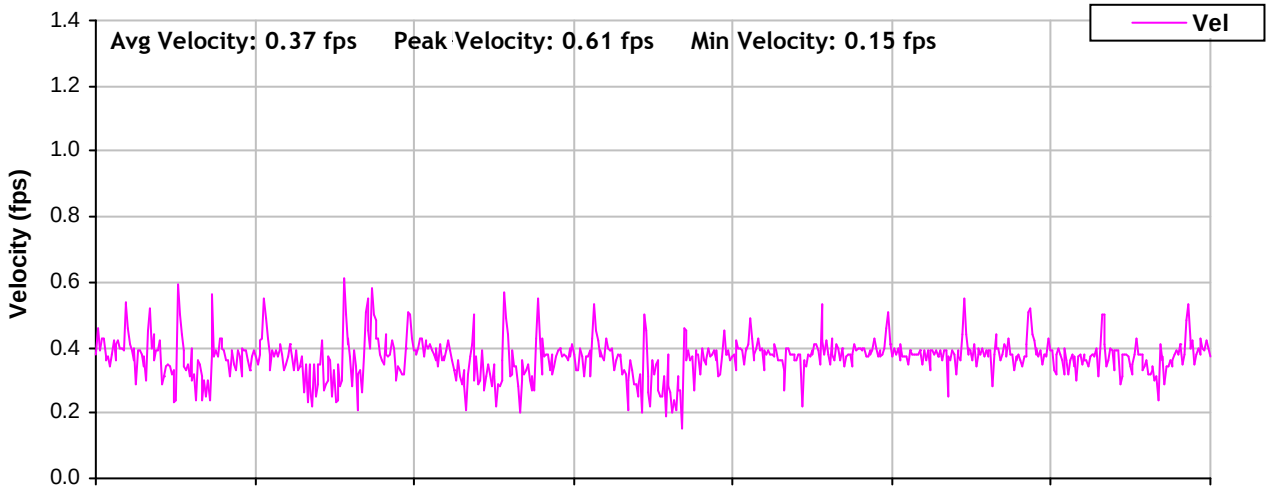
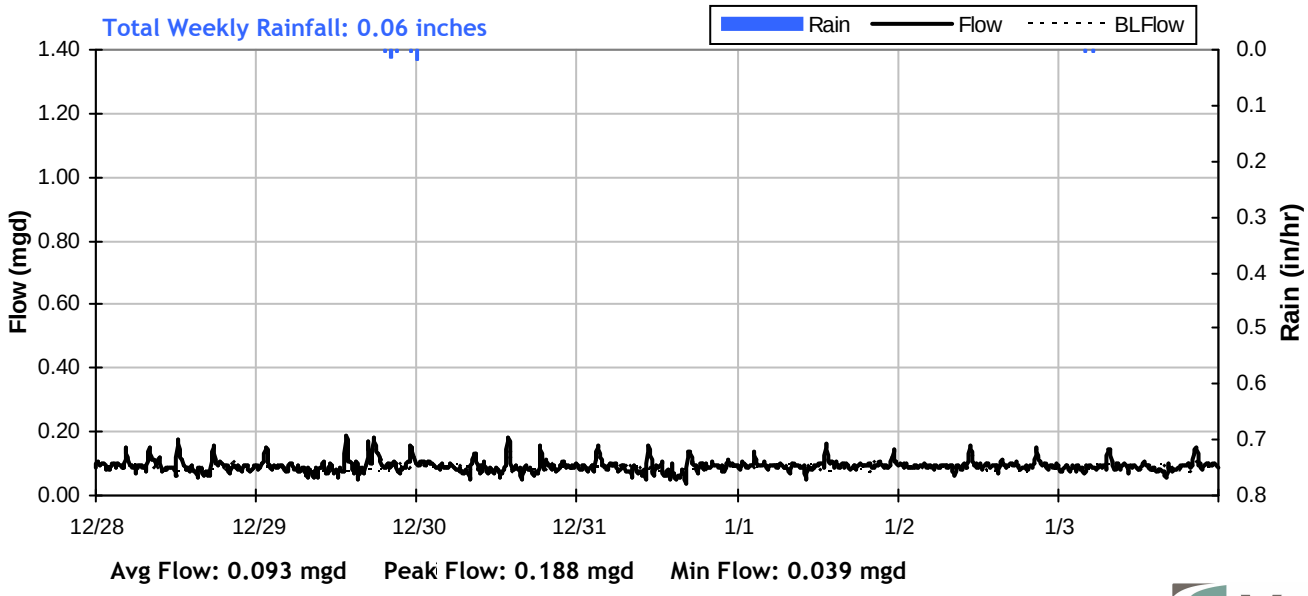
PORT OF OAKLAND

Level, Velocity and Flow
From 12/28/2009 to 1/4/2010

Monitoring Site:
Site M6







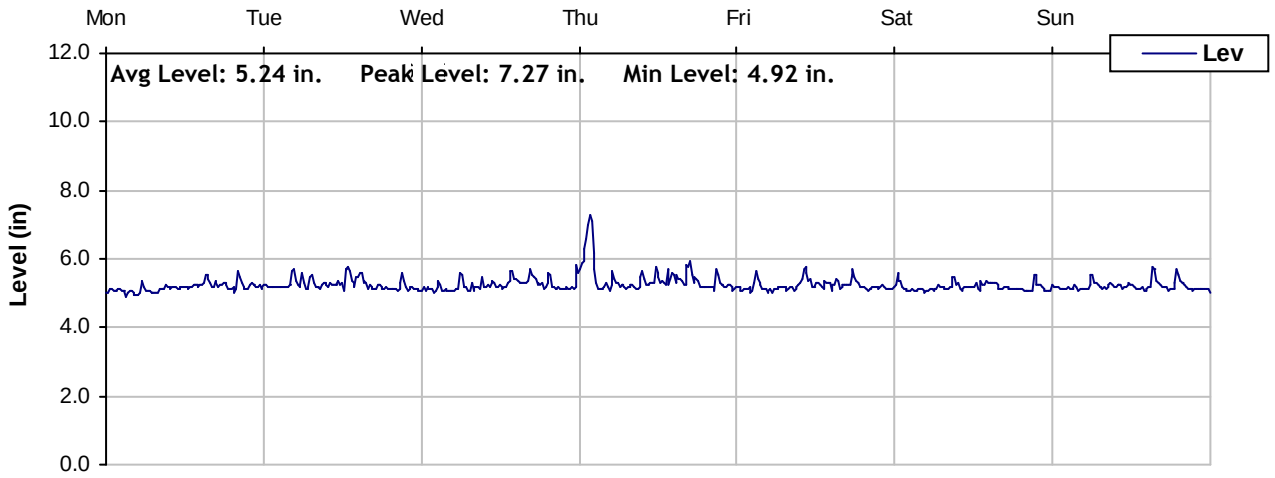
Avg Flow: 0.093 mgd Peak Flow: 0.188 mgd Min Flow: 0.039 mgd

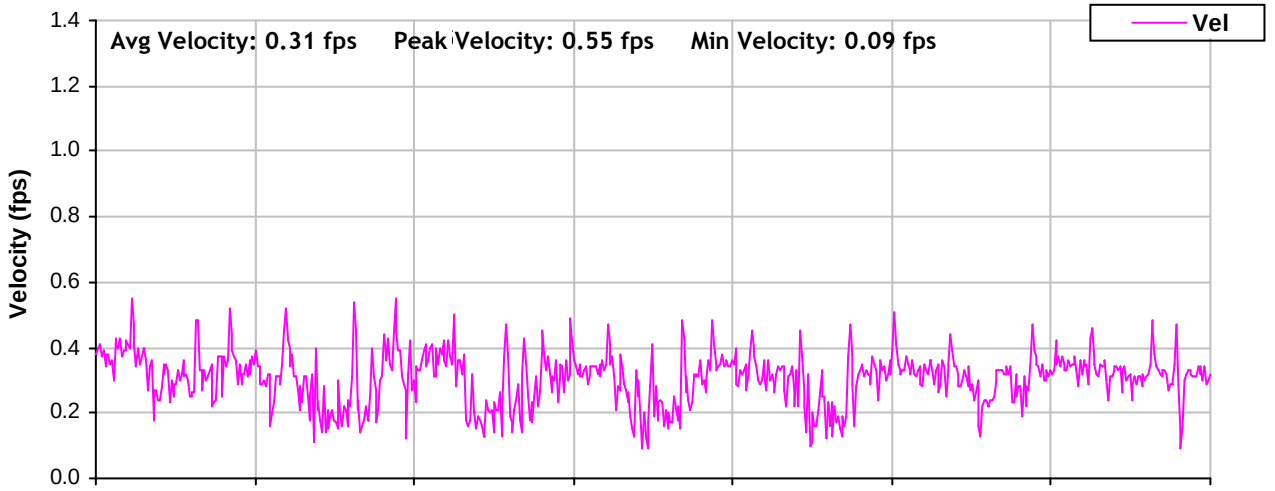
V&A

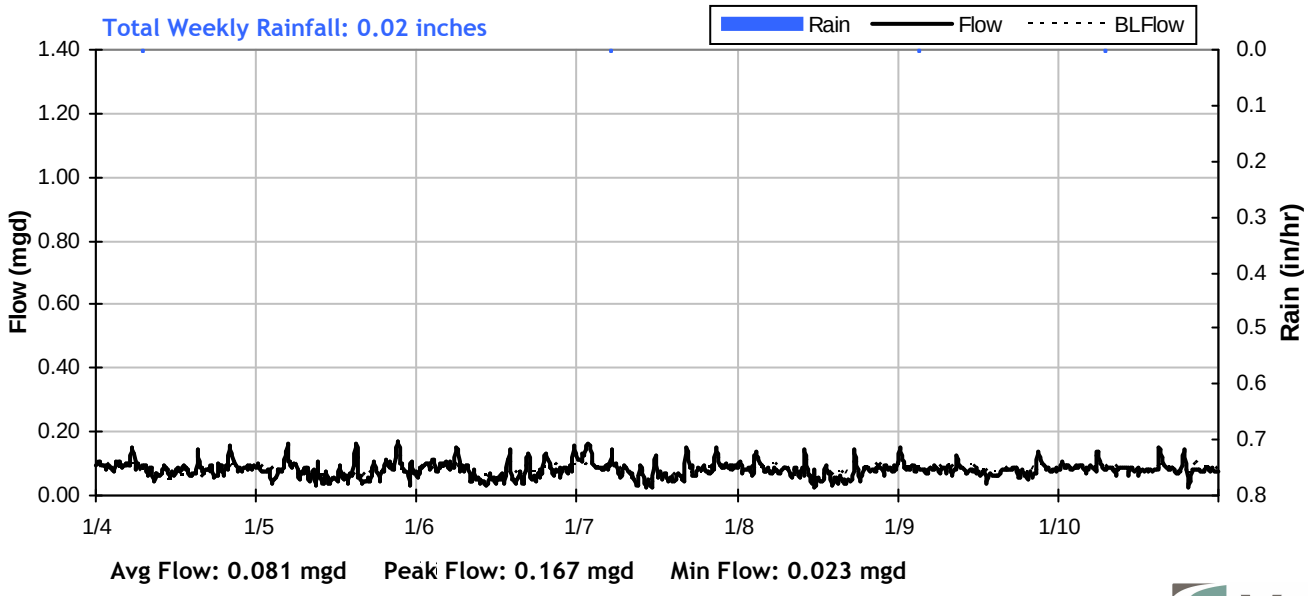
PORT OF OAKLAND

Level, Velocity and Flow
From 1/4/2010 to 1/11/2010

Monitoring Site:
Site M6







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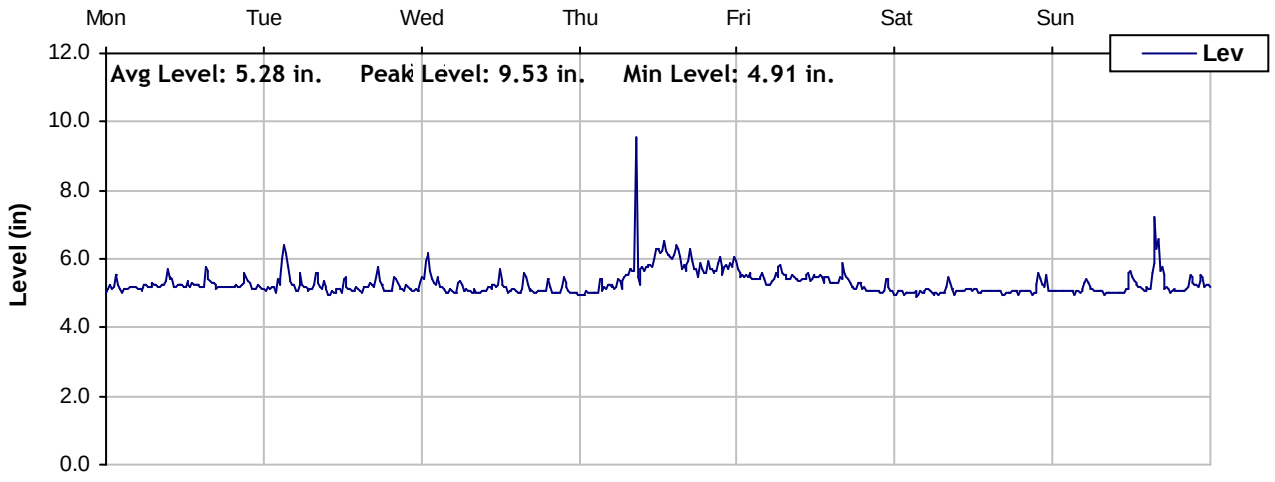
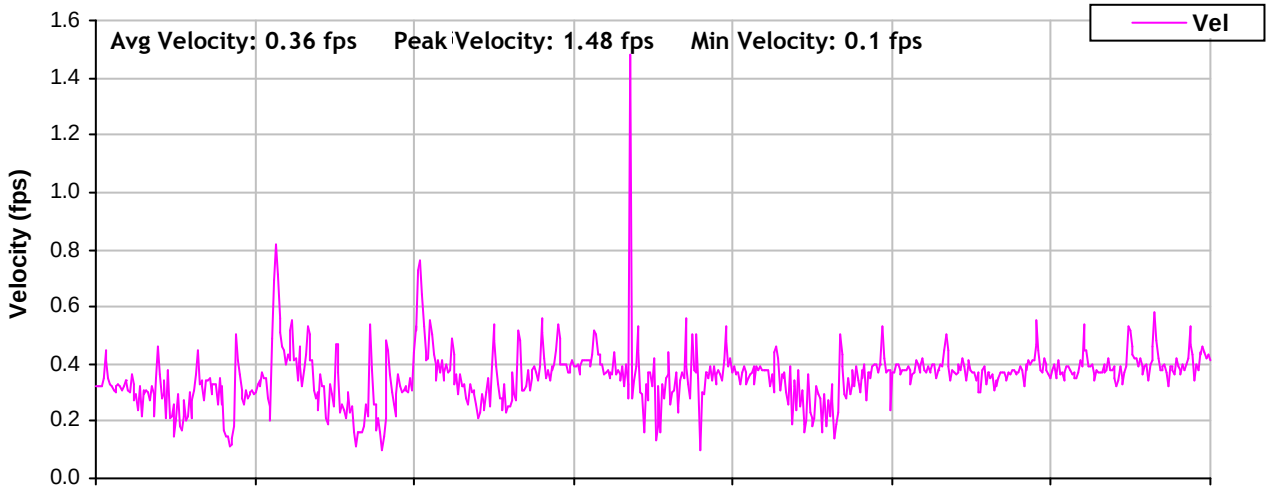
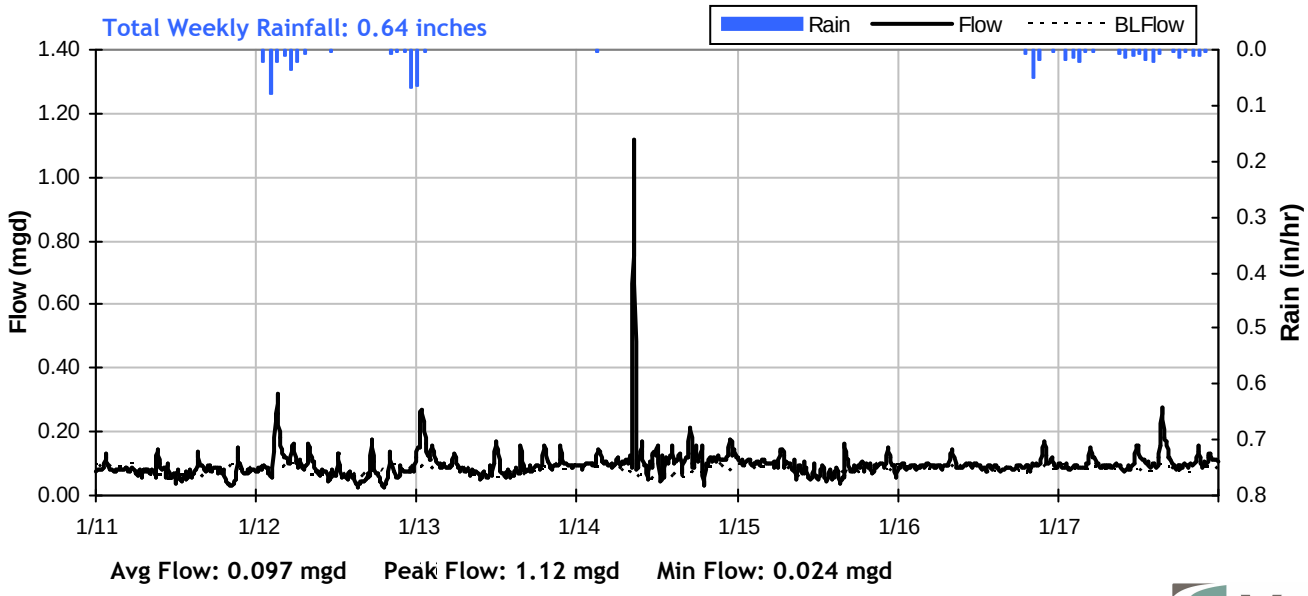
PORT OF OAKLAND

Level, Velocity and Flow
From 1/11/2010 to 1/18/2010

Monitoring Site:
Site M6







Avg Flow: 0.097 mgd Peak Flow: 1.12 mgd Min Flow: 0.024 mgd

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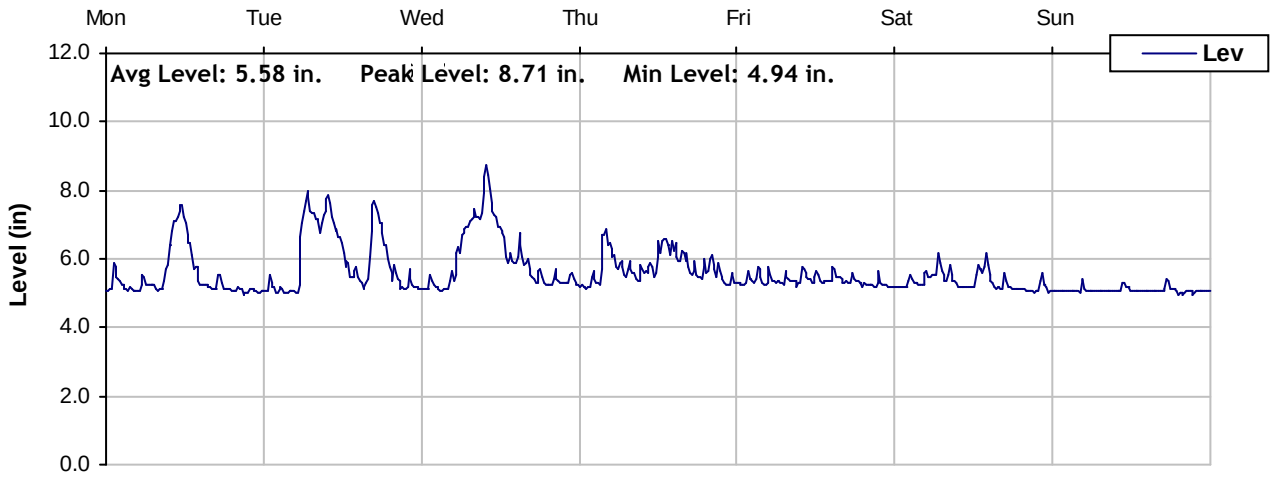
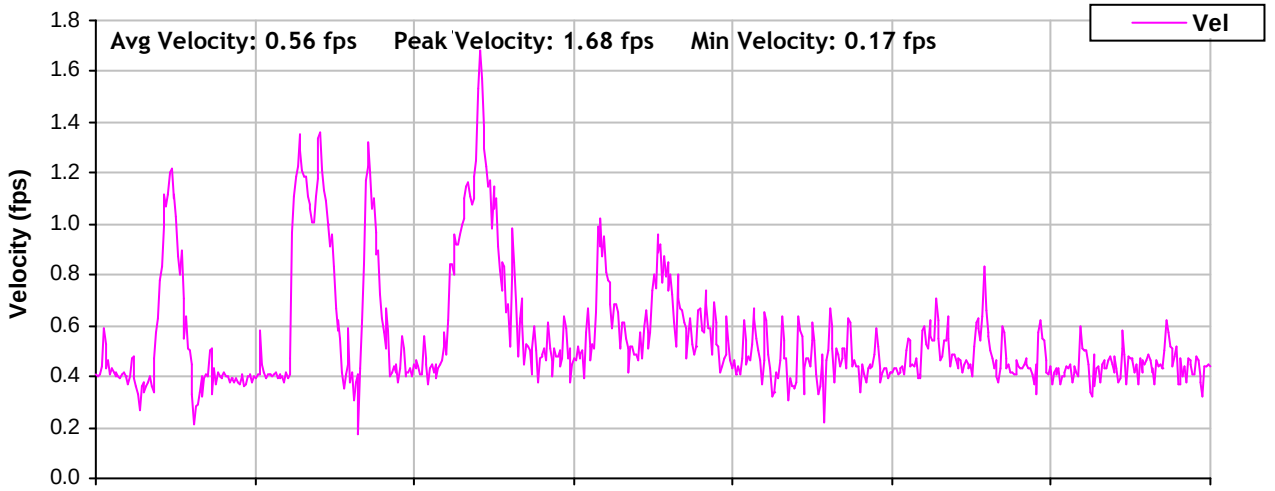
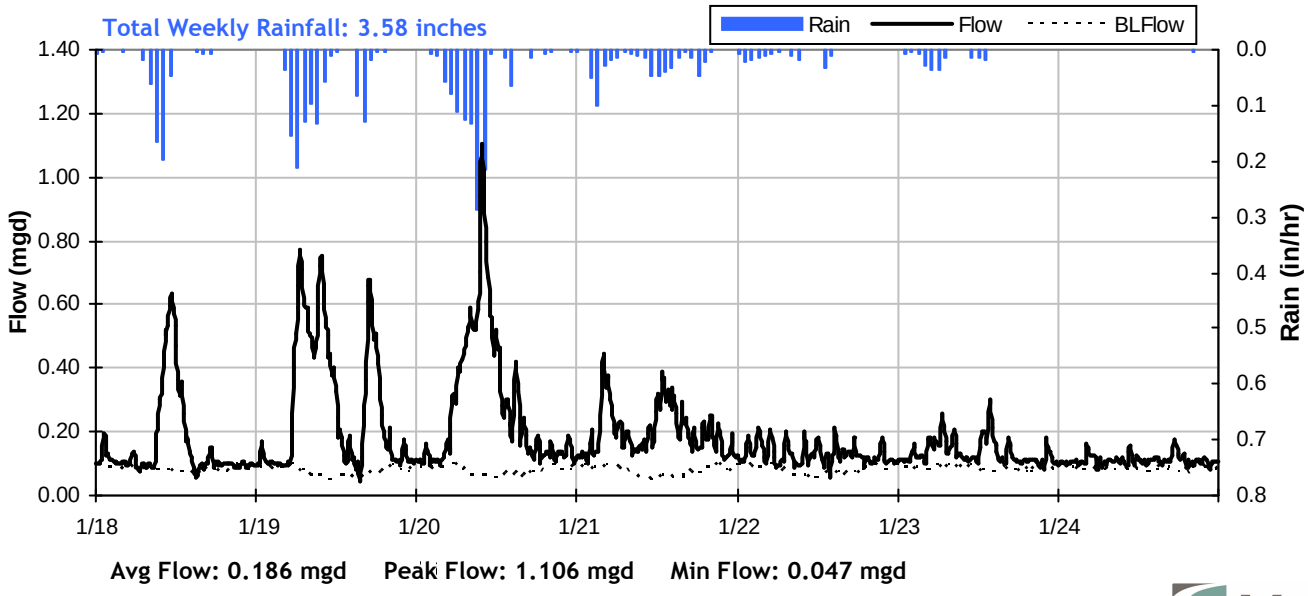
PORT OF OAKLAND

Level, Velocity and Flow
From 1/18/2010 to 1/25/2010

Monitoring Site:
Site M6







Avg Flow: 0.186 mgd Peak Flow: 1.106 mgd Min Flow: 0.047 mgd

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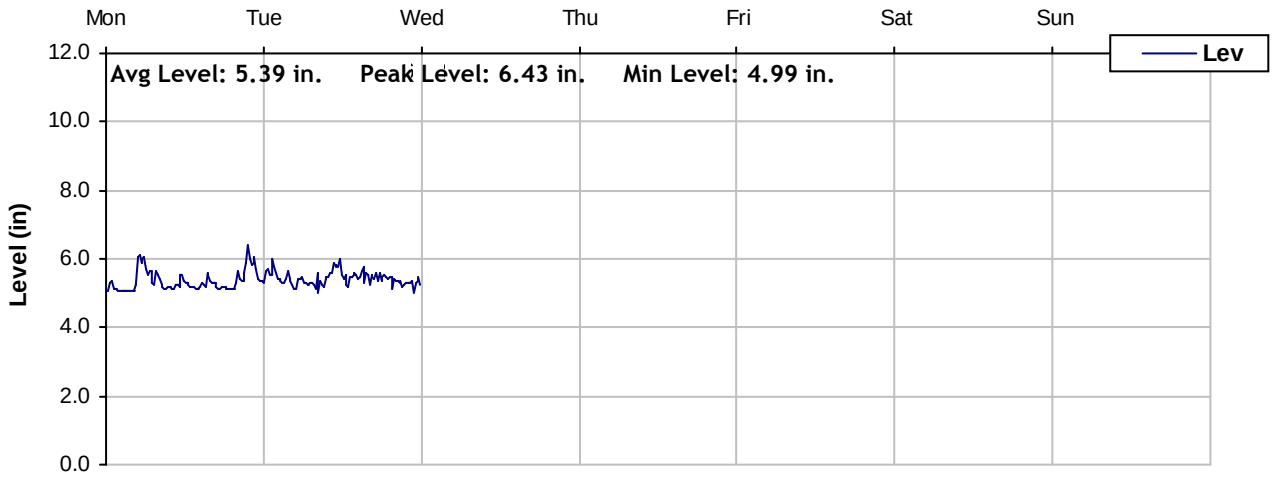
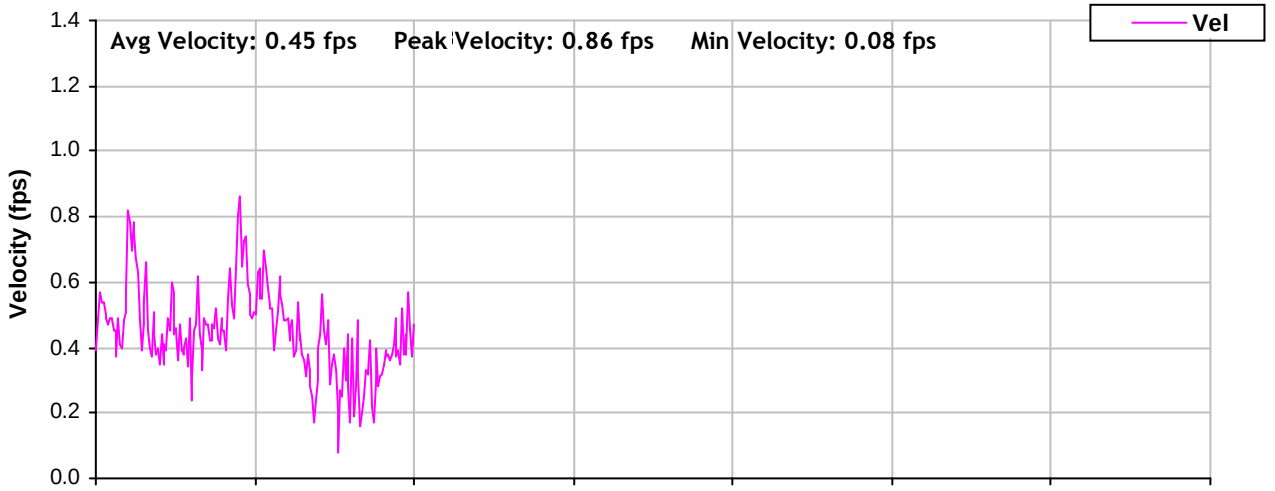
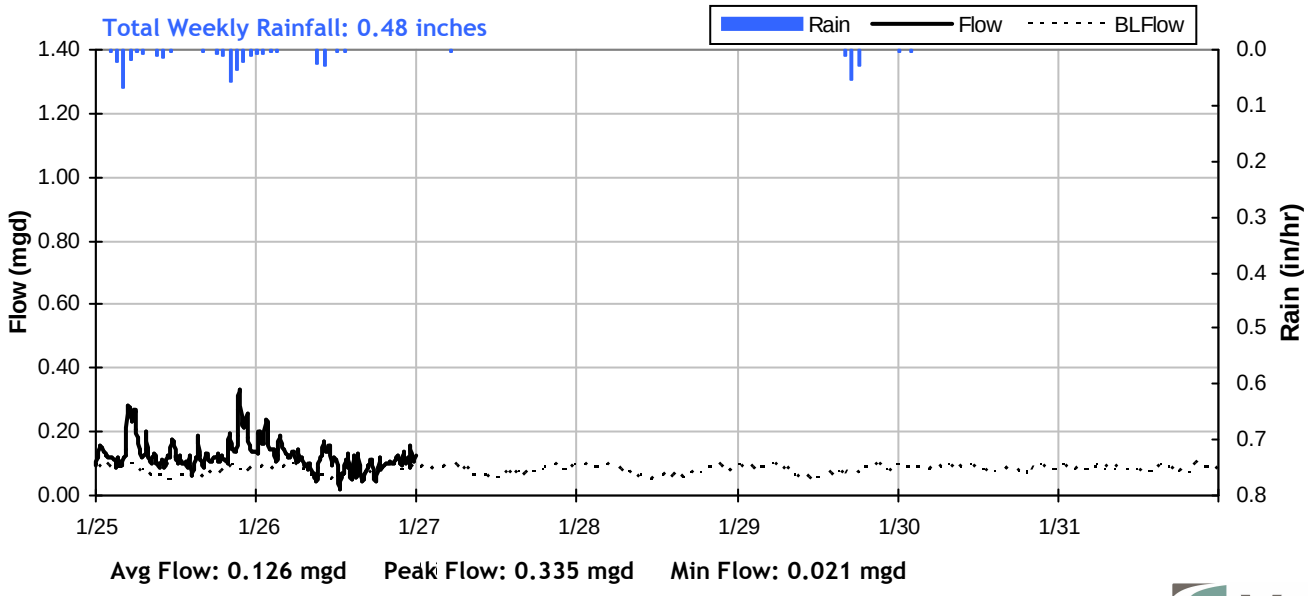
PORT OF OAKLAND

Level, Velocity and Flow
From 1/25/2010 to 2/1/2010

Monitoring Site:
Site M6







V&A

PORT OF OAKLAND

Temporary Flow Monitoring Study

Sanitary Sewer Collection System

Monitoring Site: Site M7

Location: Between railroad tracks; under Adeline Street Overpass, north of 1st Street, west of Chestnut Street

Size/Type Line: 15-inch Sanitary Sewer Pipe

Data Summary Report

V&A

PORT OF OAKLAND

Site Information Report

Monitoring Site: Site M7

Location: Between railroad tracks; under Adeline Street Overpass, north of 1st Street, west of Chestnut Street

Latitude: 37.7997°

Longitude: -122.2896°

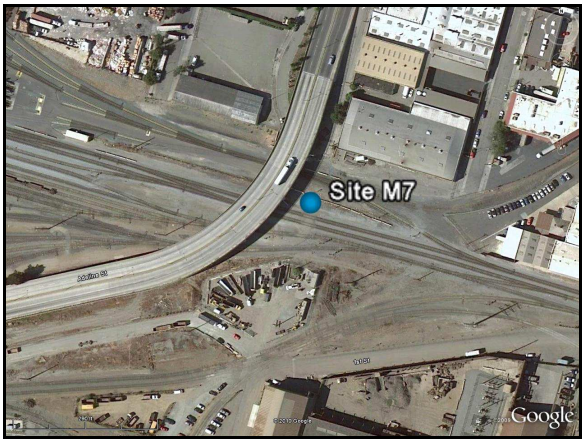
Rim Elevation: 10 *feet*

Diameter: 15 *inches*

Average Dry Weather Flow: 0.060 *mgd*

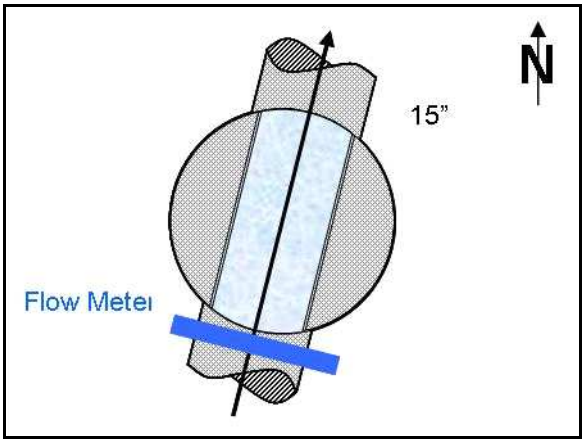
Peak Measured Flow: 0.762 *mgd*

Satellite Map



Sanitary Map

Flow Diagram



Street View Photo

Plan View Photo

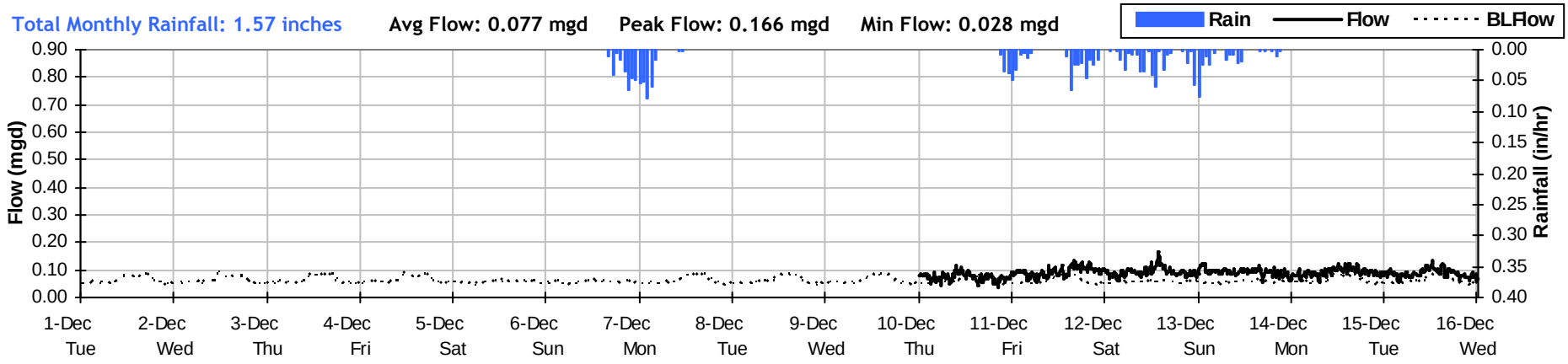
V&A

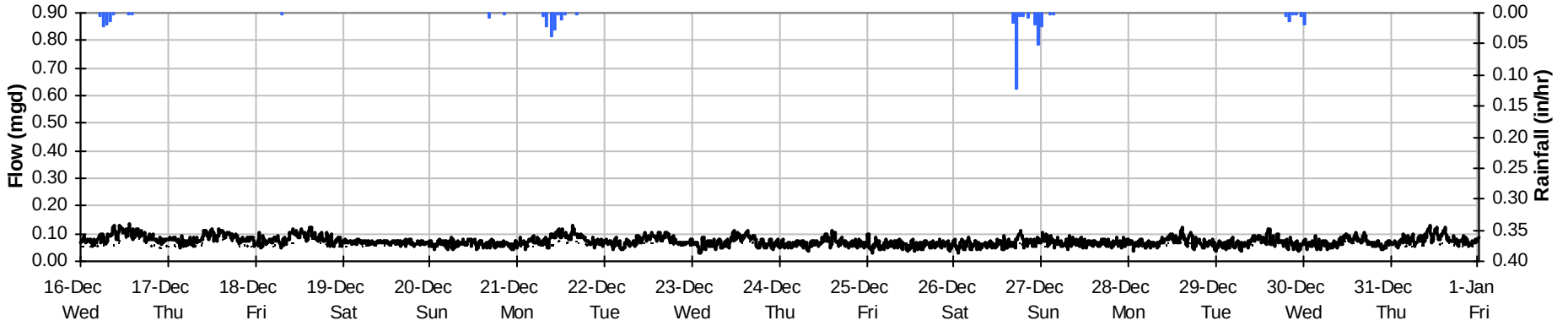
PORT OF OAKLAND

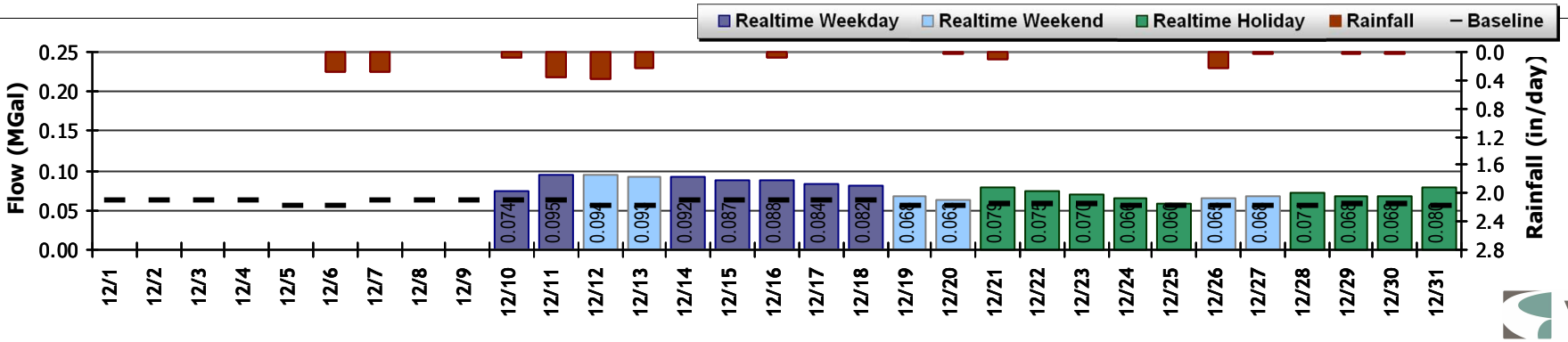
Period Flow Summary
December, 2009

Monitoring Site:
Site M7

Total Monthly Rainfall: 1.57 inches Avg Flow: 0.077 mgd Peak Flow: 0.166 mgd Min Flow: 0.028 mgd







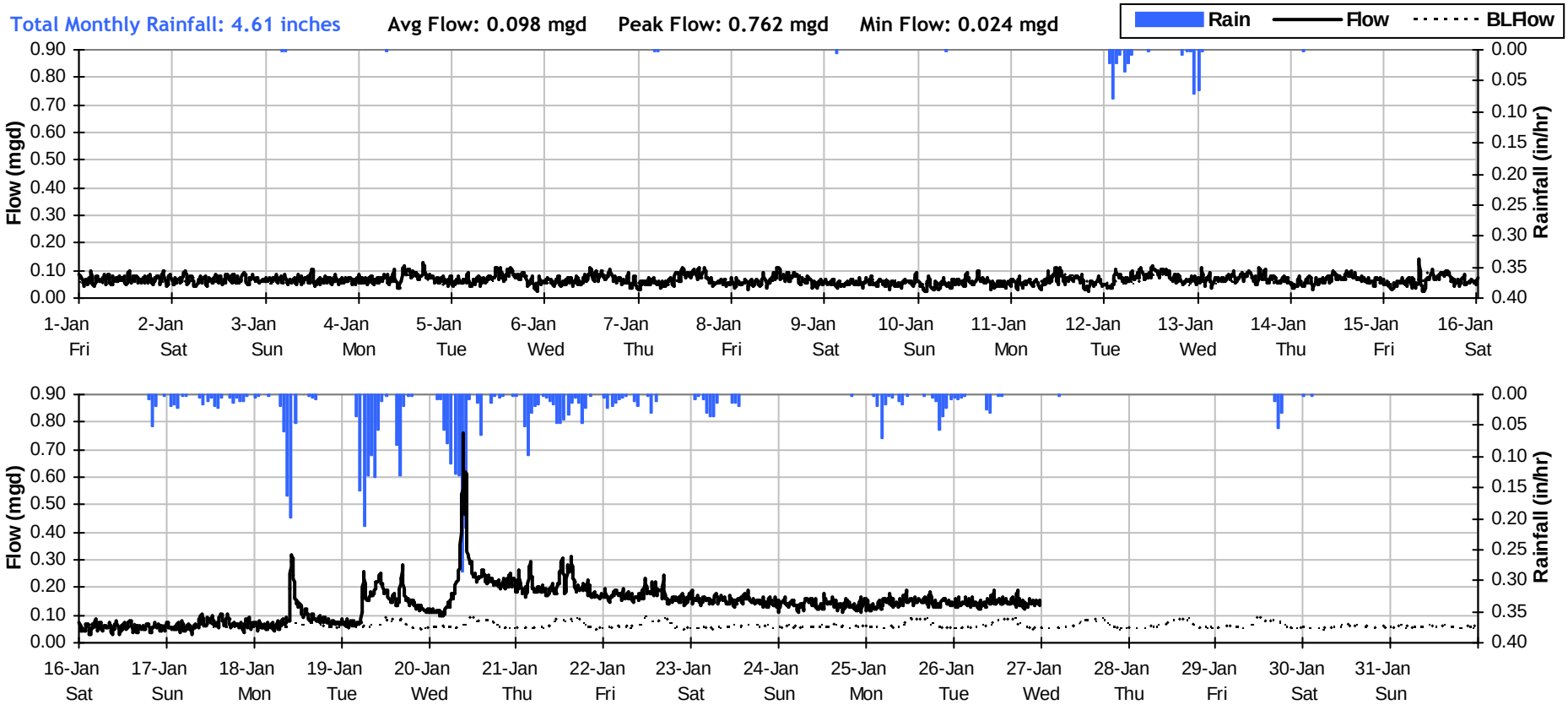
V&A

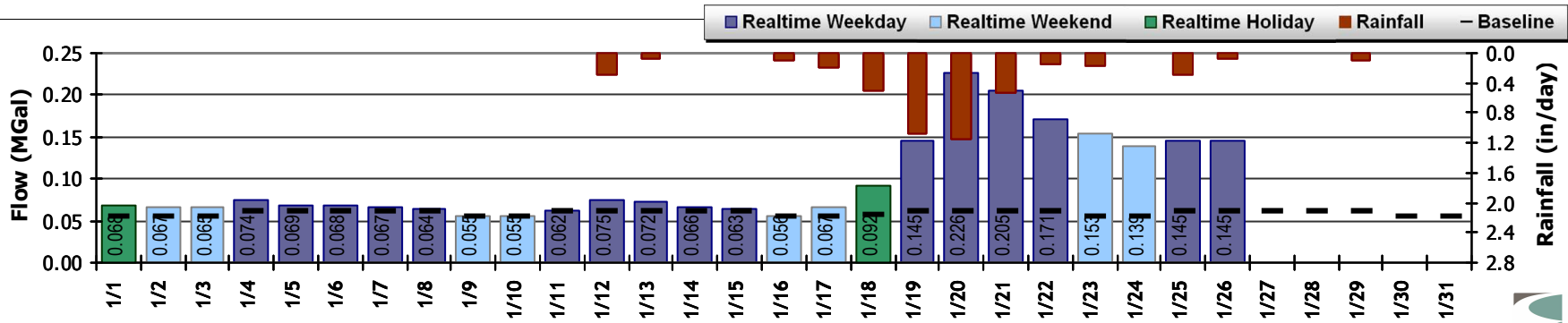
PORT OF OAKLAND

Period Flow Summary
January, 2010

Monitoring Site:
Site M7

Total Monthly Rainfall: 4.61 inches Avg Flow: 0.098 mgd Peak Flow: 0.762 mgd Min Flow: 0.024 mgd





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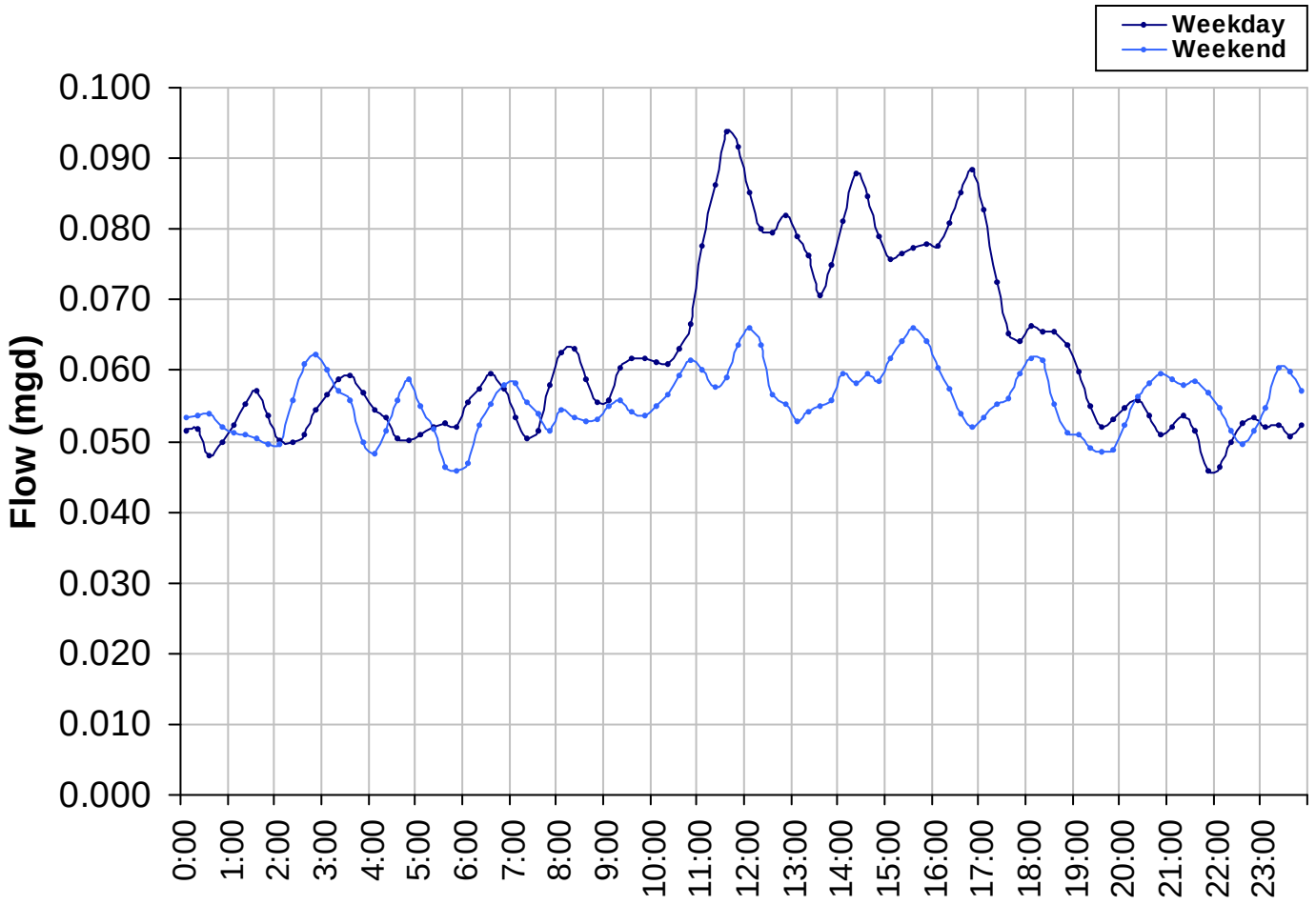
PORT OF OAKLAND

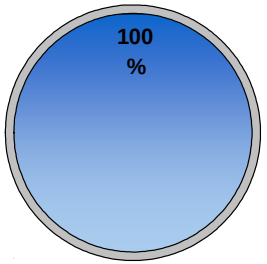
Average Dry Weather Flow

Monitoring Site:
Site M7



Peak Measured Flow:

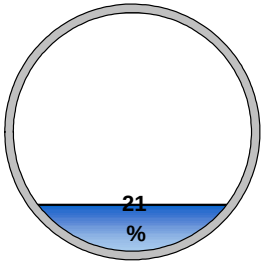
0.762 *mgd*



Peak measured flow shown in weekly graphs on following pages

Average Dry Weather Flow:

0.060 *mgd*



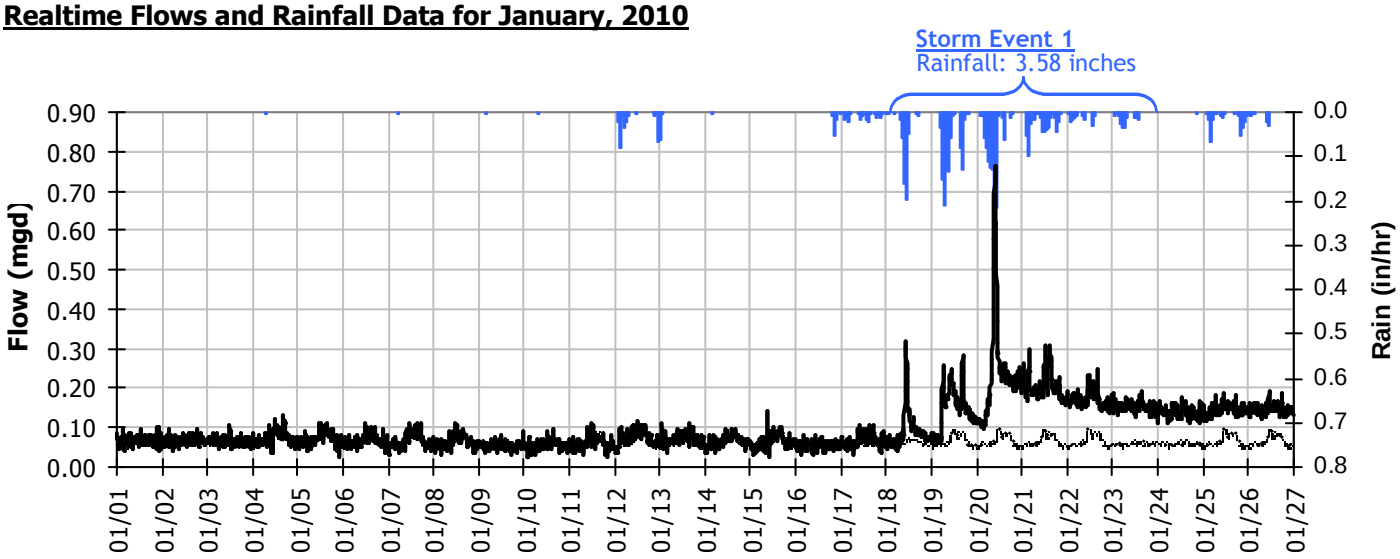
V&A

PORT OF OAKLAND

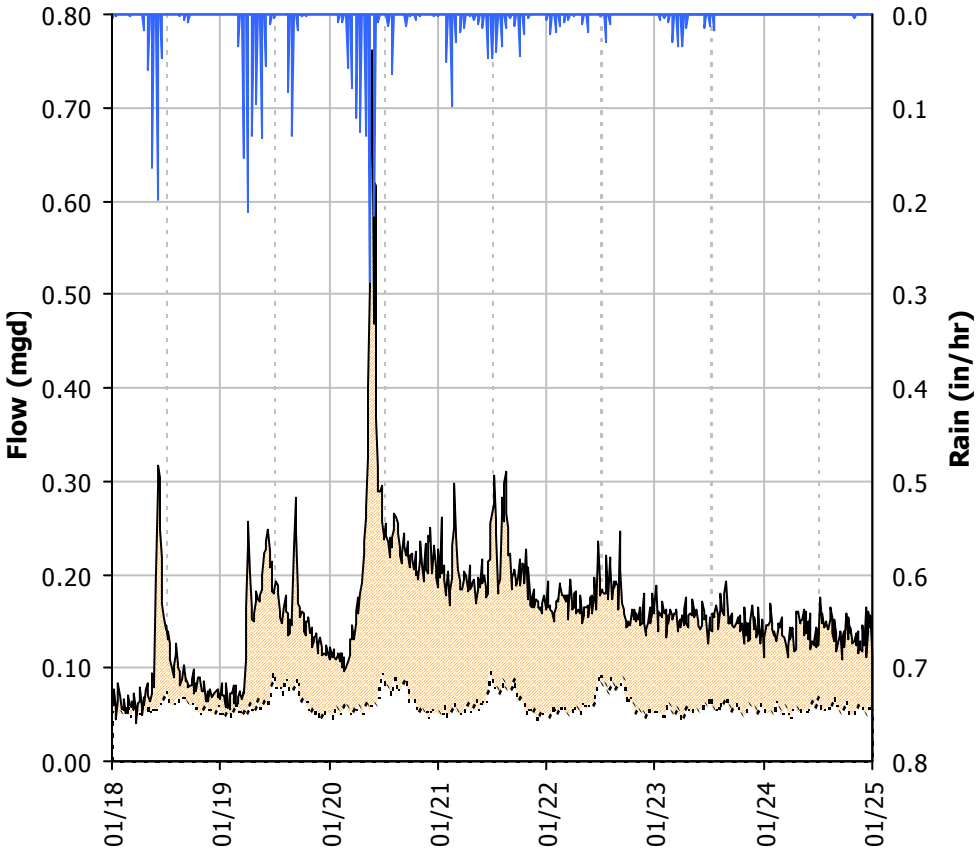
I/I Summary

Monitoring Site:
Site M7

Realtime Flows and Rainfall Data for January, 2010



Storm Event #1 Detail I/I Graph



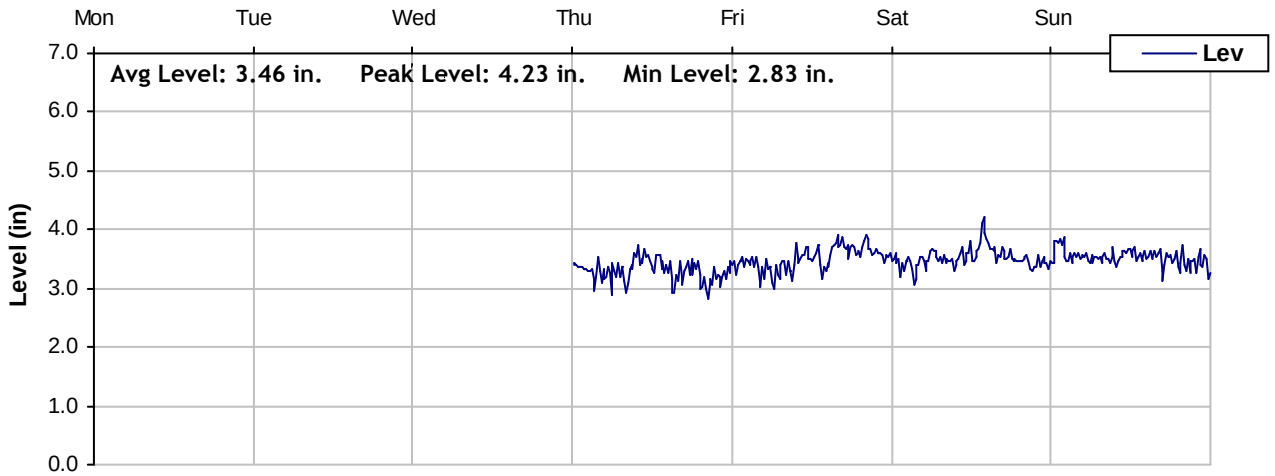
I&I ANALYSIS		
Rainfall:	3.58	*inches*
Total I&I		
Total I/I:	714,000	*gallons*
I/I per ADWF:	3.3	*per in-rain*
Inflow		
Peak I/I Rate:	0.70	*mgd*
Pk I/I:ADWF:	11.58	
Infiltration (% of ADWF)		
Infiltration at +24hours:	150.0%	
Capacity		
Peak Flow:	0.76	*mgd*
PF:	12.60	
Peak Level:	20.69	*inches*
d/D Ratio:	1.38	

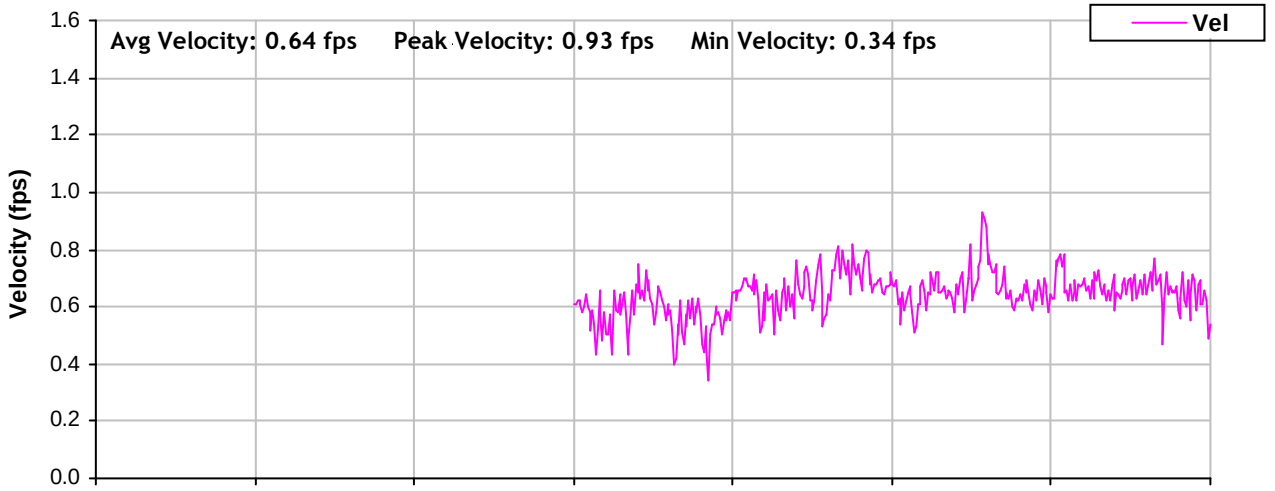
V&A

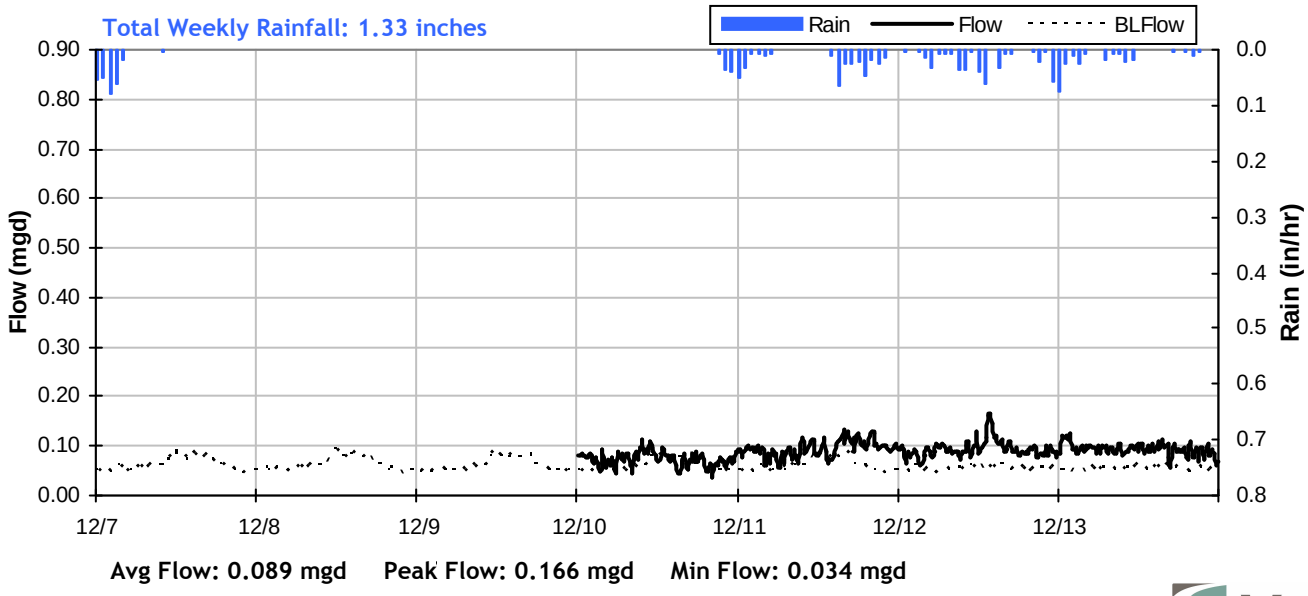
PORT OF OAKLAND

Level, Velocity and Flow
From 12/7/2009 to 12/14/2009

Monitoring Site:
Site M7







Avg Flow: 0.089 mgd Peak Flow: 0.166 mgd Min Flow: 0.034 mgd

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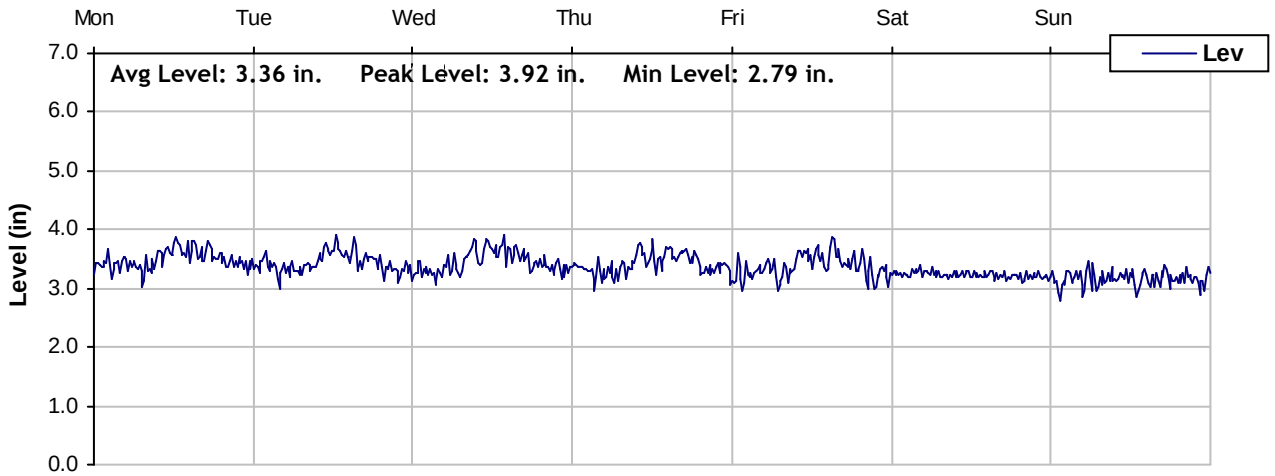
PORT OF OAKLAND

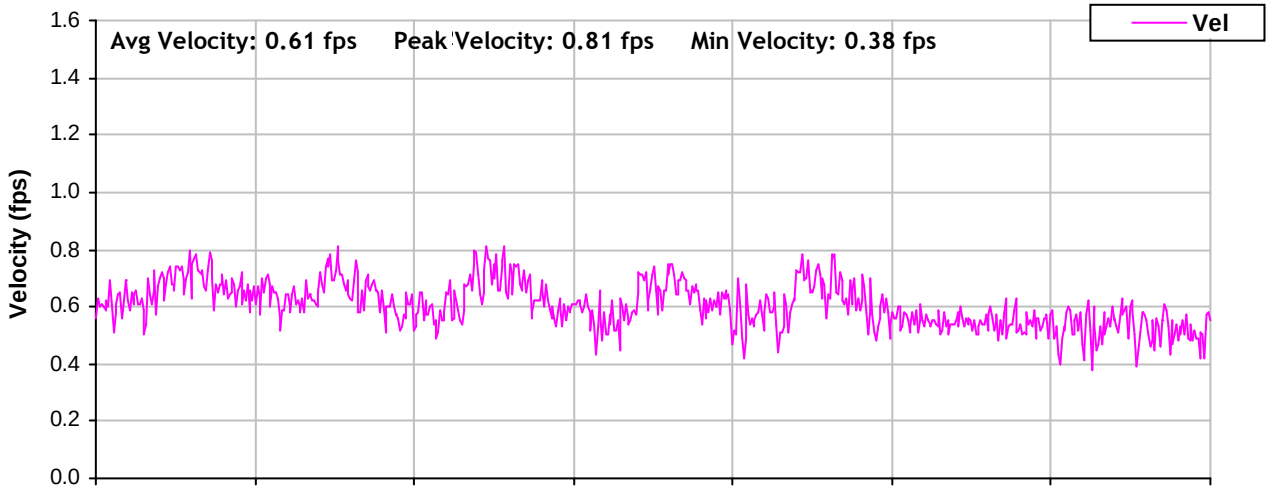
Level, Velocity and Flow

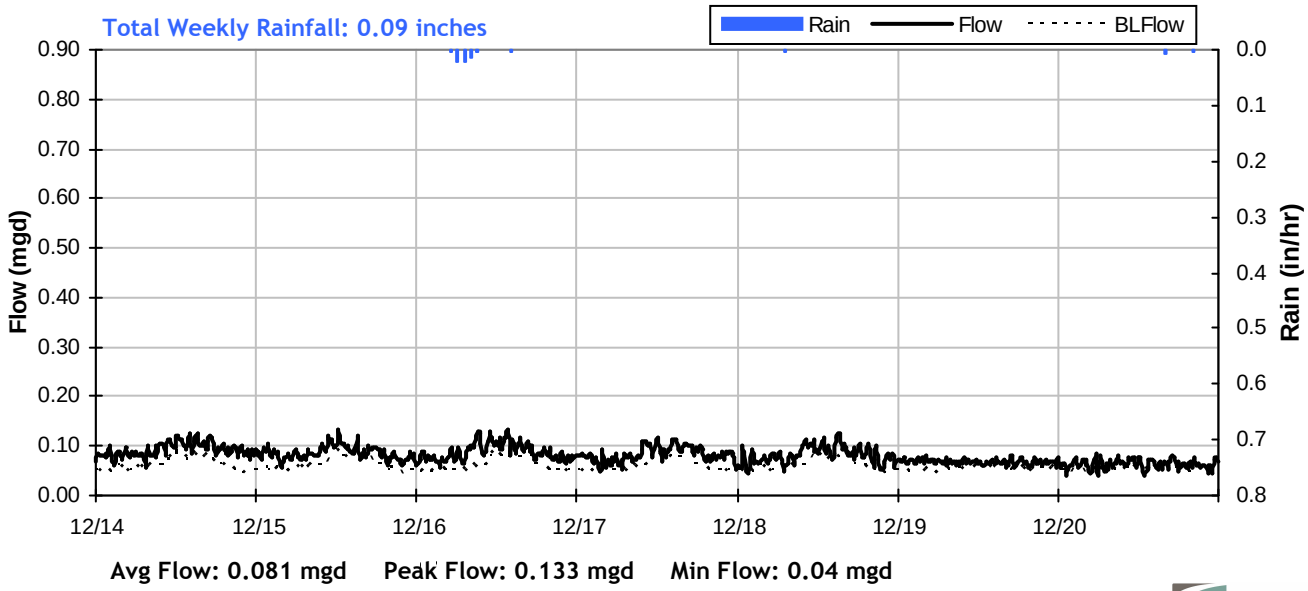
From 12/14/2009 to 12/21/2009

Monitoring Site:

Site M7







Avg Flow: 0.081 mgd Peak Flow: 0.133 mgd Min Flow: 0.04 mgd

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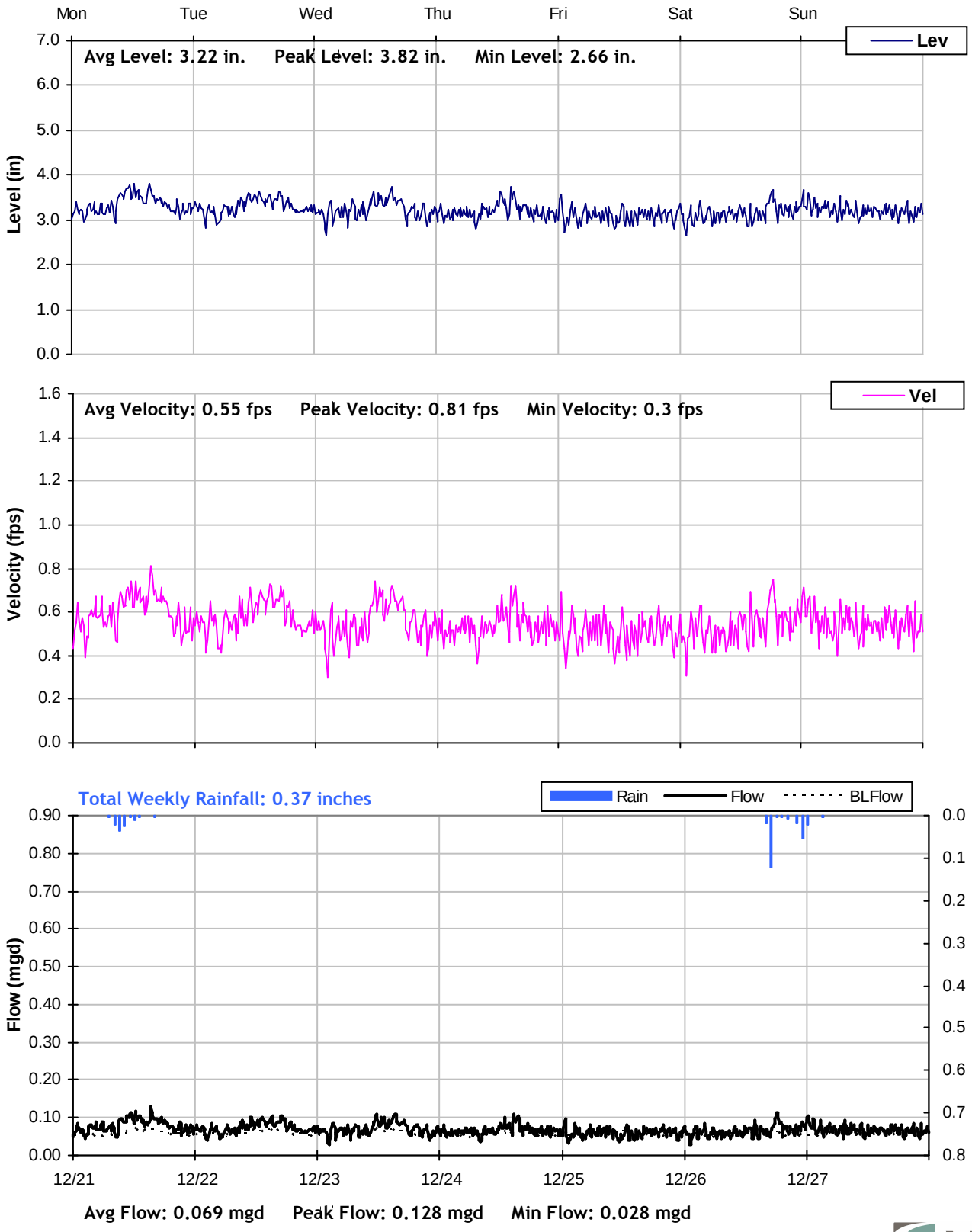
PORT OF OAKLAND

Level, Velocity and Flow
From 12/21/2009 to 12/28/2009

Monitoring Site:
Site M7



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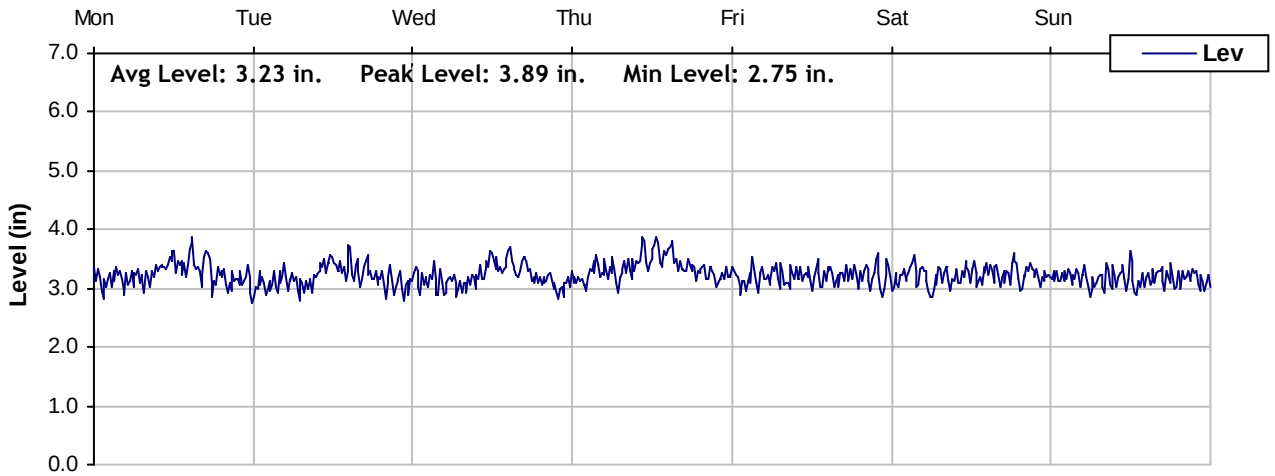
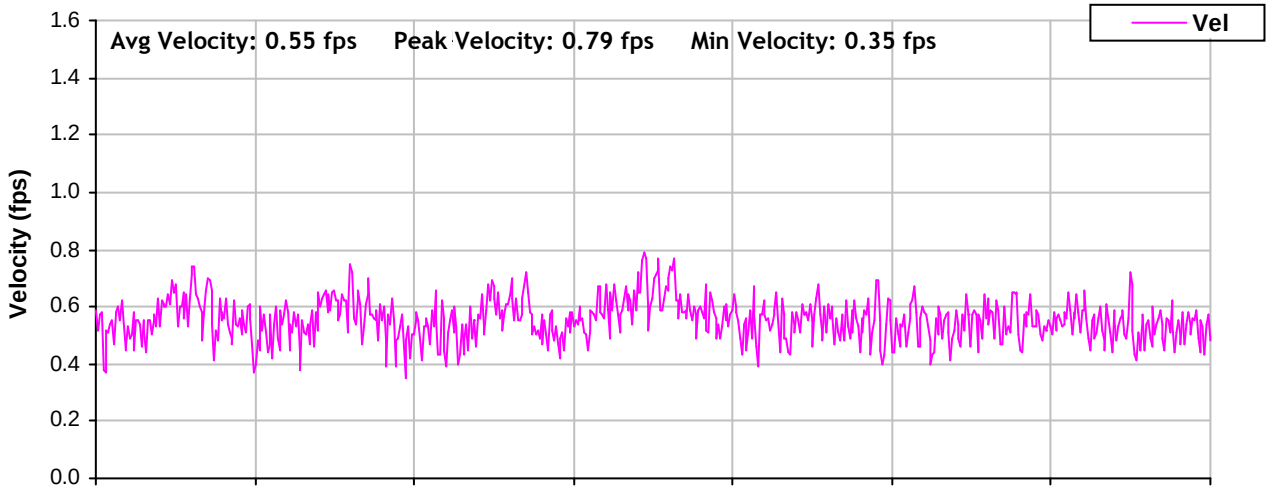
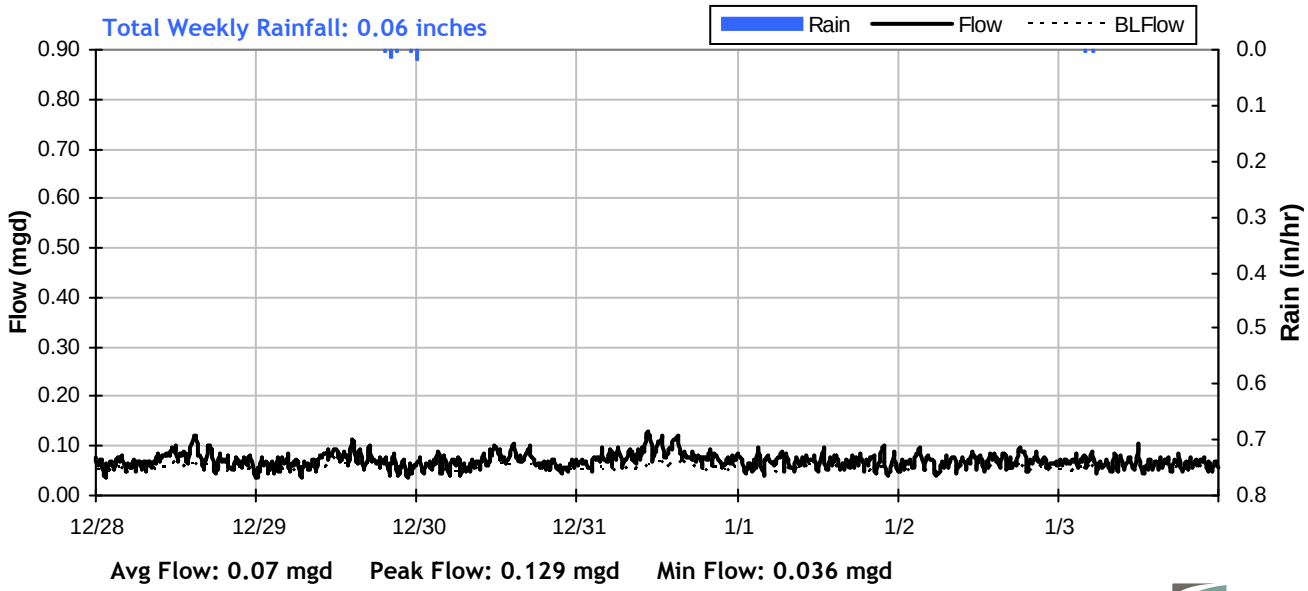
PORT OF OAKLAND

Level, Velocity and Flow
From 12/28/2009 to 1/4/2010

Monitoring Site:
Site M7







Avg Flow: 0.07 mgd Peak Flow: 0.129 mgd Min Flow: 0.036 mgd

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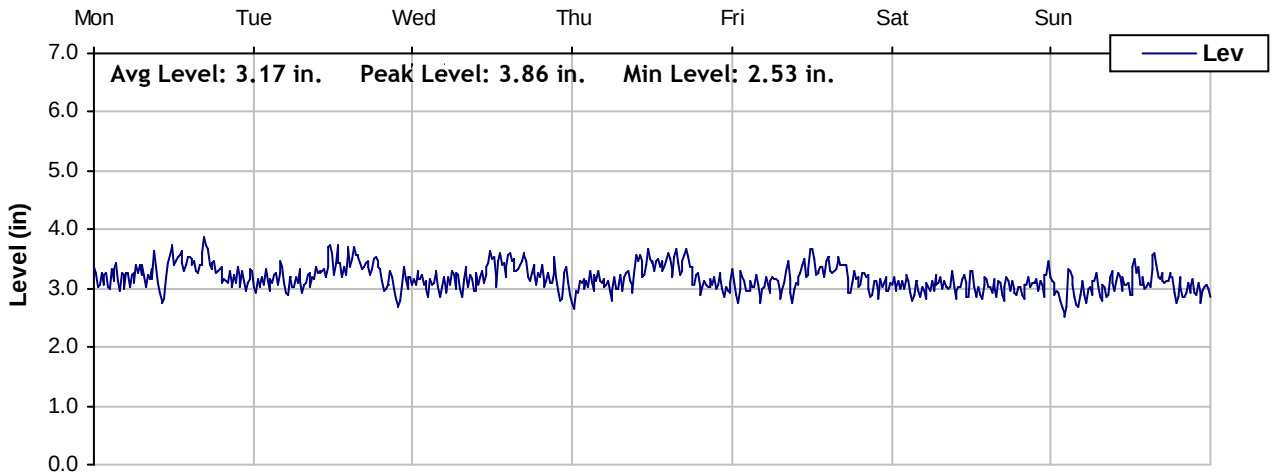
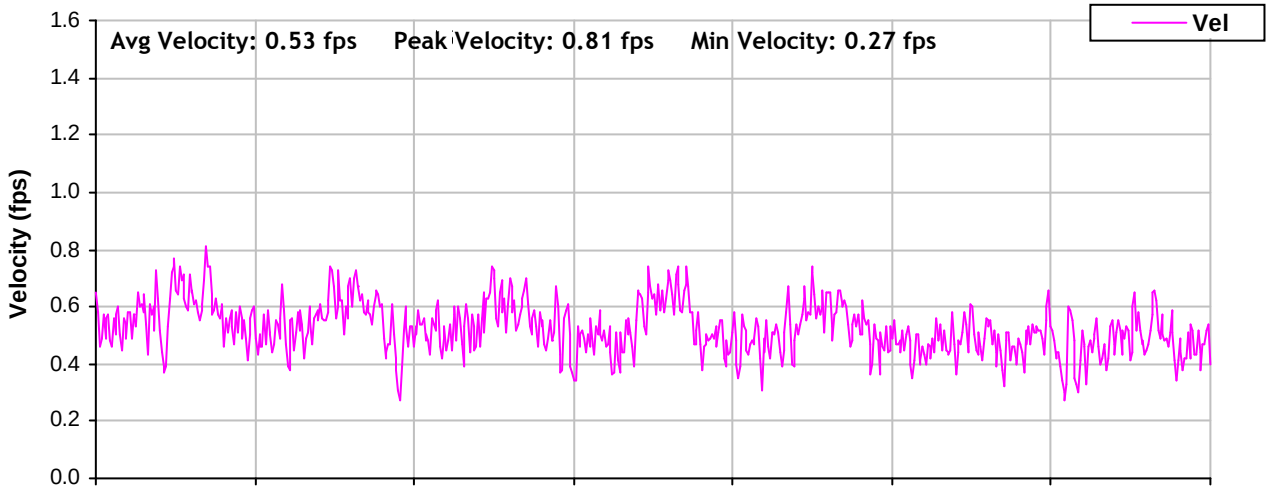
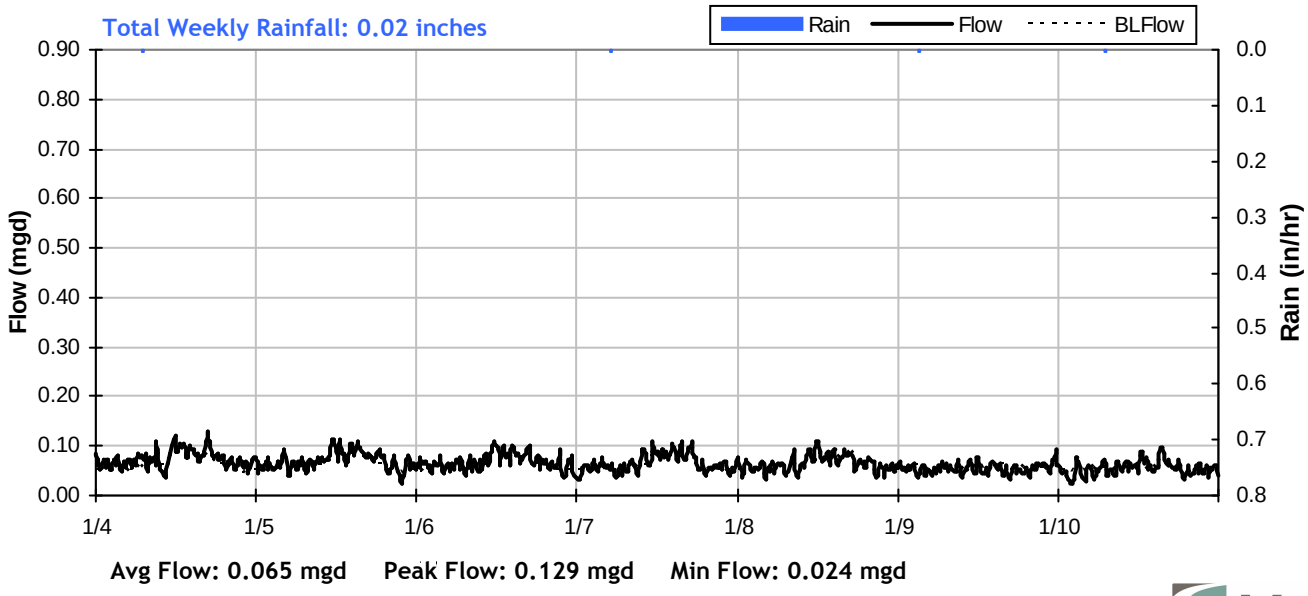
PORT OF OAKLAND

Level, Velocity and Flow
From 1/4/2010 to 1/11/2010

Monitoring Site:
Site M7







Avg Flow: 0.065 mgd Peak Flow: 0.129 mgd Min Flow: 0.024 mgd

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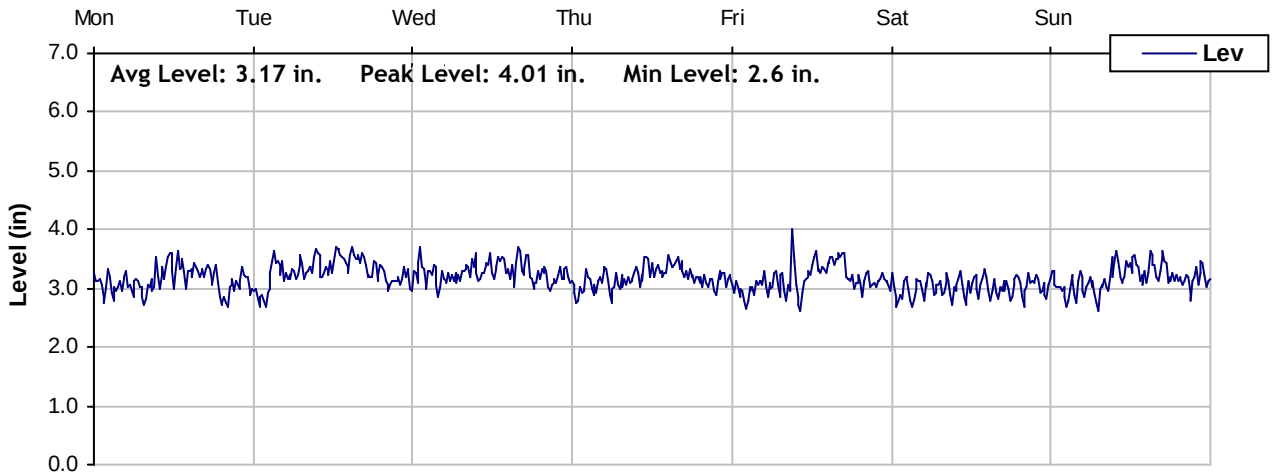
PORT OF OAKLAND

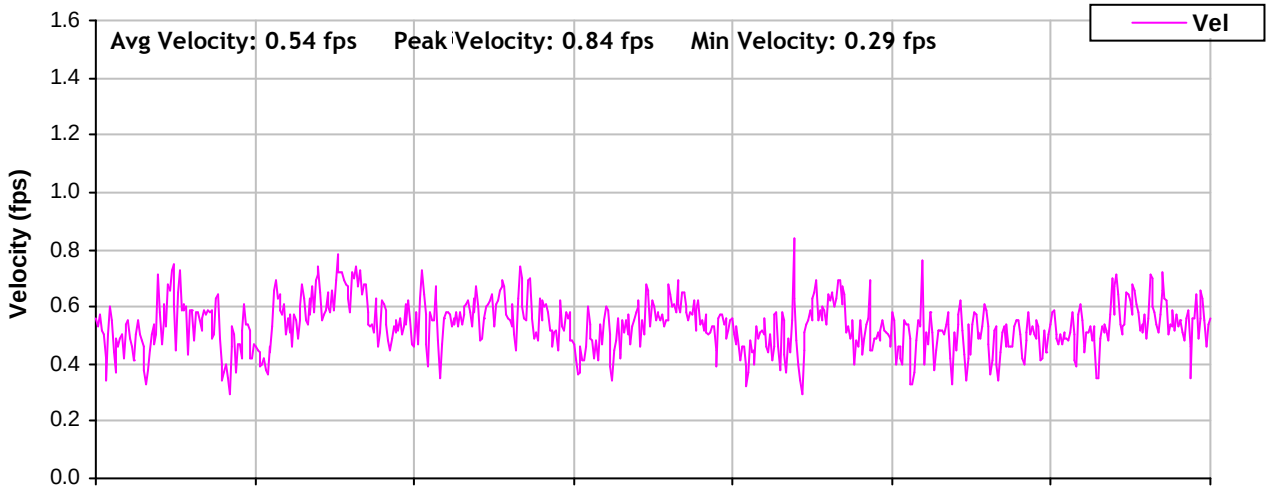
Level, Velocity and Flow

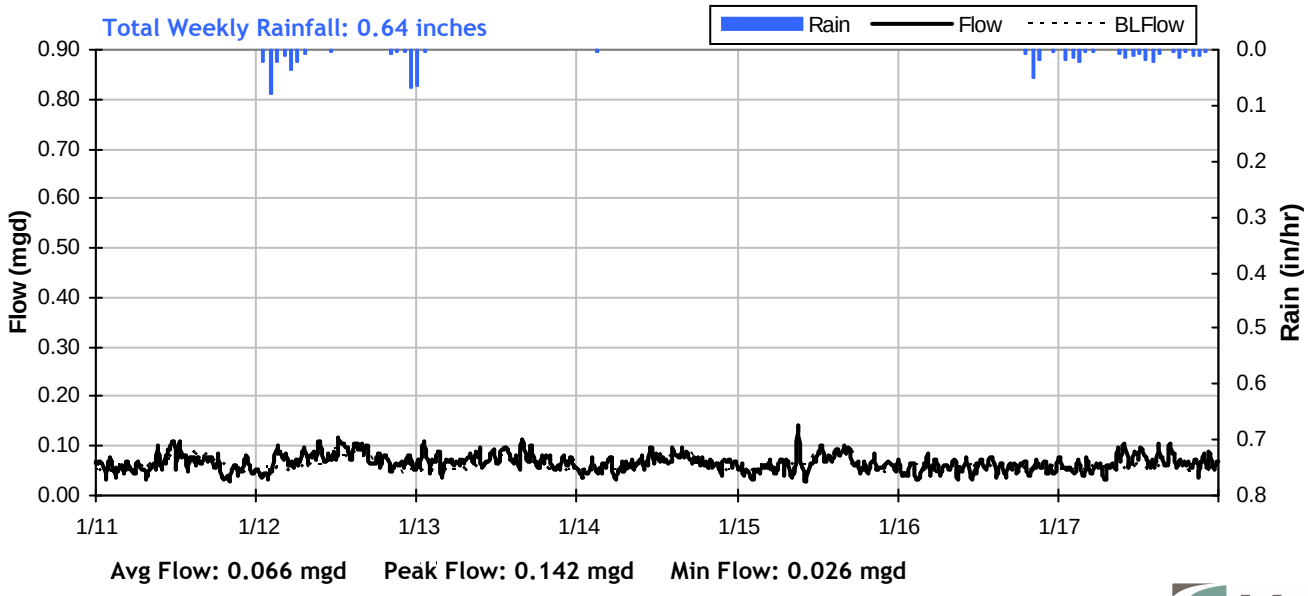
From 1/11/2010 to 1/18/2010

Monitoring Site:

Site M7







Avg Flow: 0.066 mgd Peak Flow: 0.142 mgd Min Flow: 0.026 mgd

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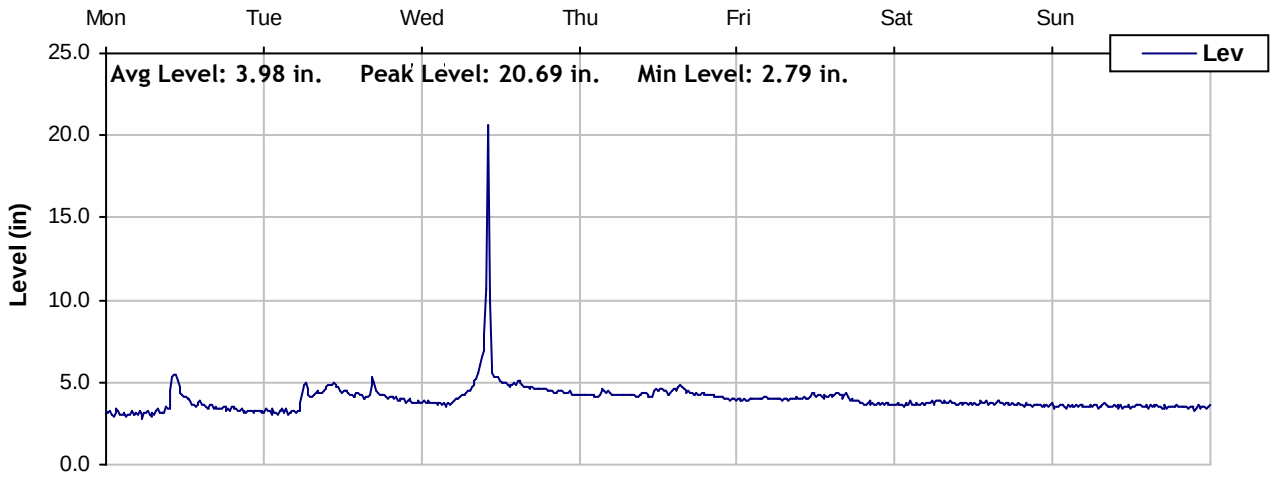
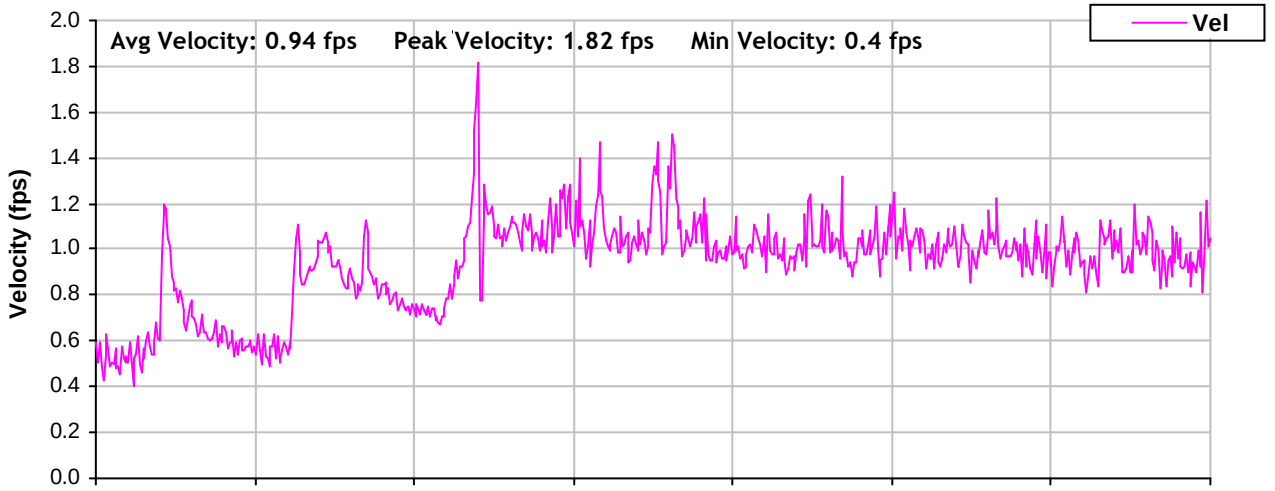
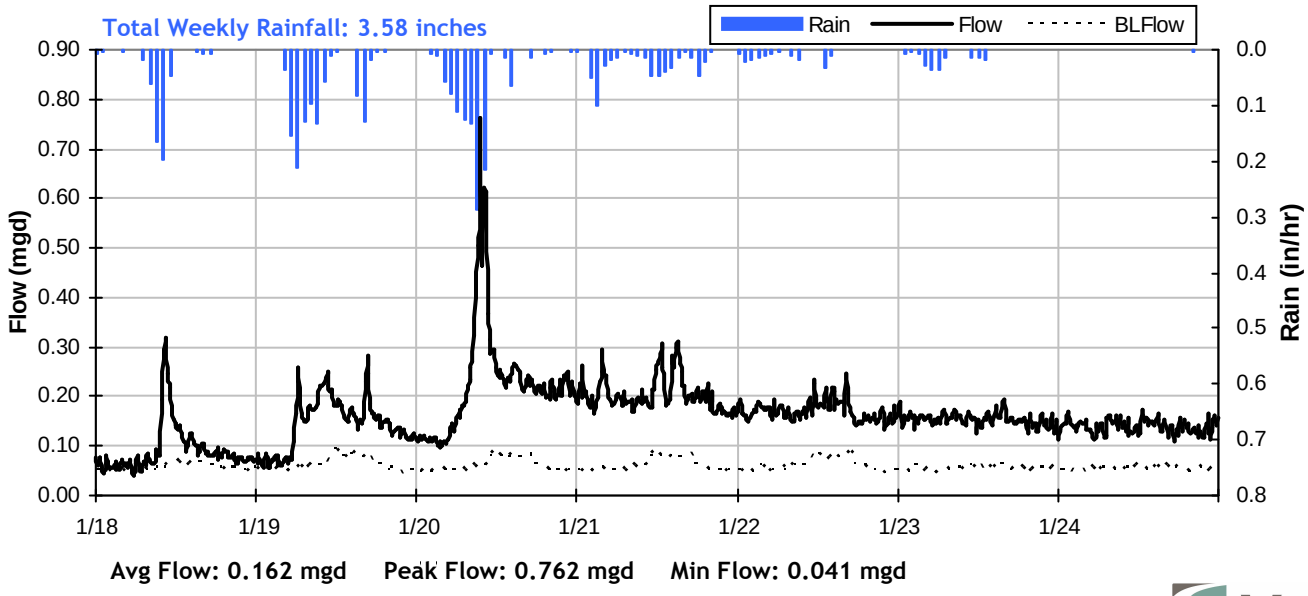
PORT OF OAKLAND

Level, Velocity and Flow
From 1/18/2010 to 1/25/2010

Monitoring Site:
Site M7







Avg Flow: 0.162 mgd Peak Flow: 0.762 mgd Min Flow: 0.041 mgd

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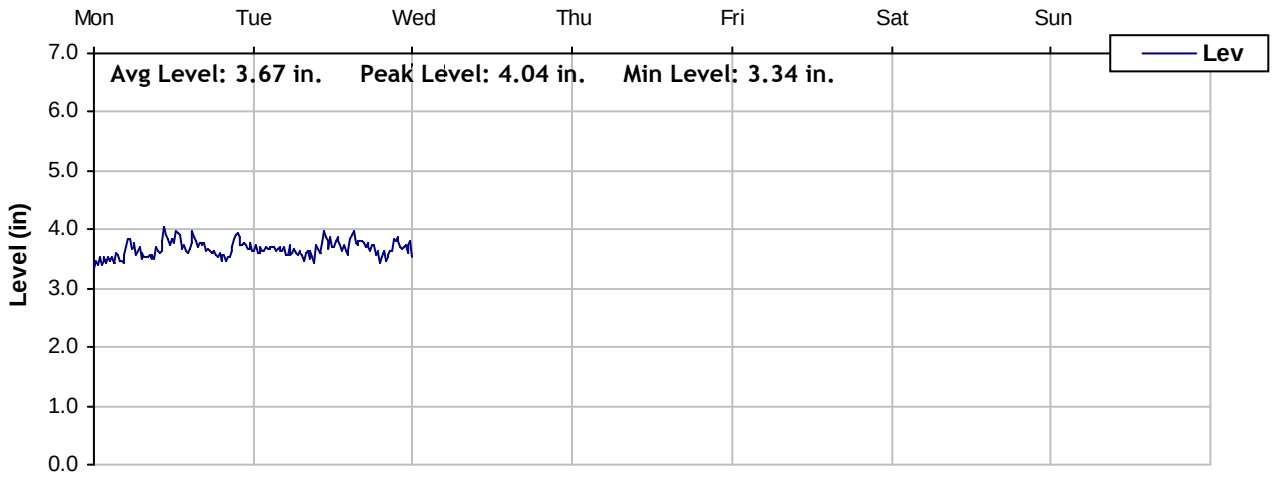
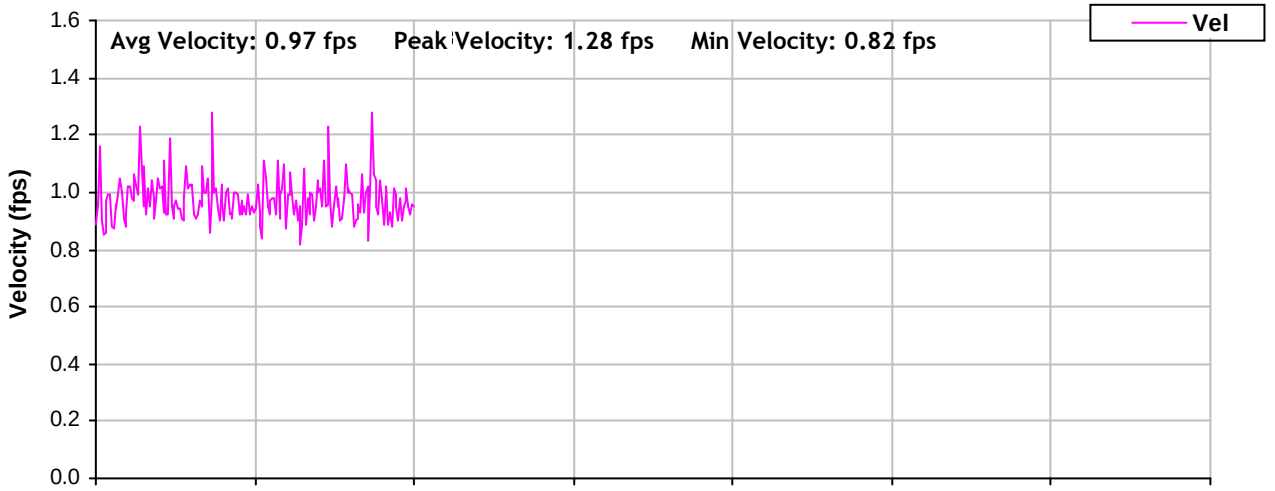
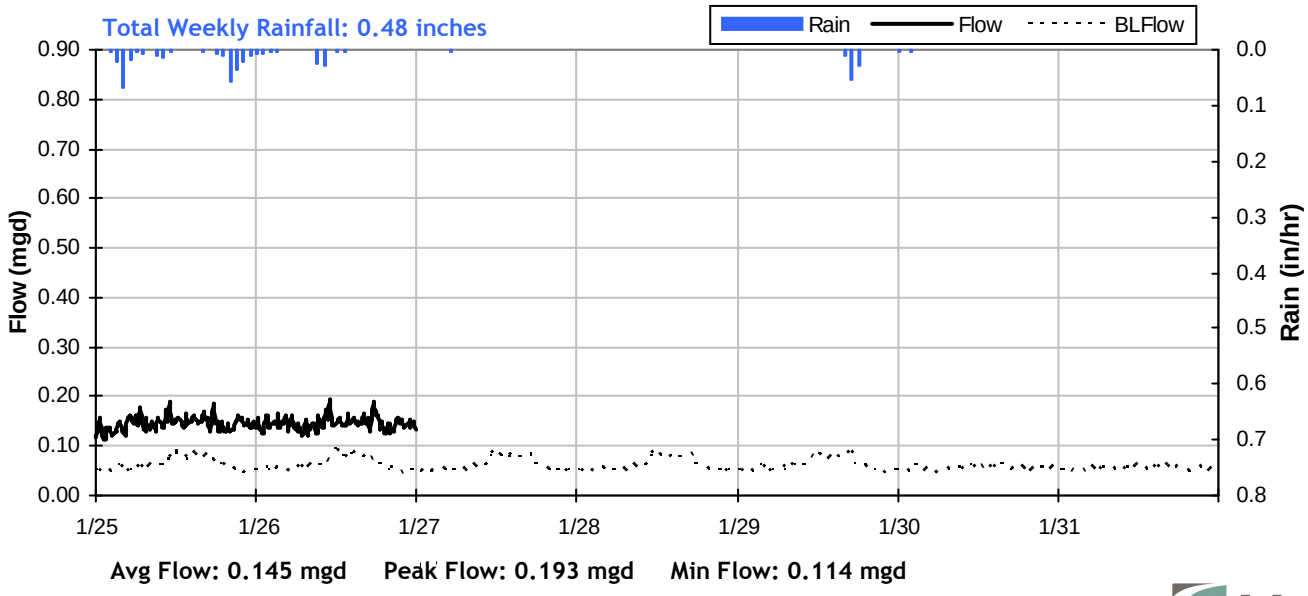
PORT OF OAKLAND

Level, Velocity and Flow
From 1/25/2010 to 2/1/2010

Monitoring Site:
Site M7







Avg Flow: 0.145 mgd Peak Flow: 0.193 mgd Min Flow: 0.114 mgd

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PORT OF OAKLAND

Temporary Flow Monitoring Study

Sanitary Sewer Collection System

Monitoring Site: Site M8

Location: Wake Avenue/Algiers Street, west of Maritime Street

Size/Type Line: 12-inch Sanitary Sewer Pipe

Data Summary Report

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PORT OF OAKLAND

Site Information Report

Monitoring Site: Site M8

Location: Wake Avenue/Algiers Street, west of Maritime Street

Latitude: 37.8231°

Longitude: -122.3030°

Rim Elevation: 9 *feet*

Diameter: 12 *inches*

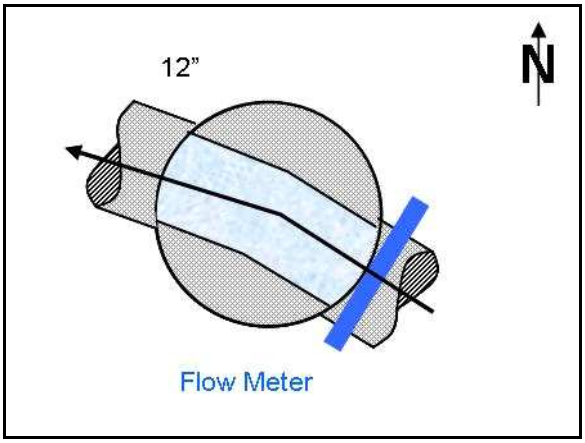
Average Dry Weather Flow: 0.055 *mgd*

Peak Measured Flow: 0.494 *mgd*

Satellite Map

Sanitary Map

Flow Diagram



Street View Photo

Plan View Photo

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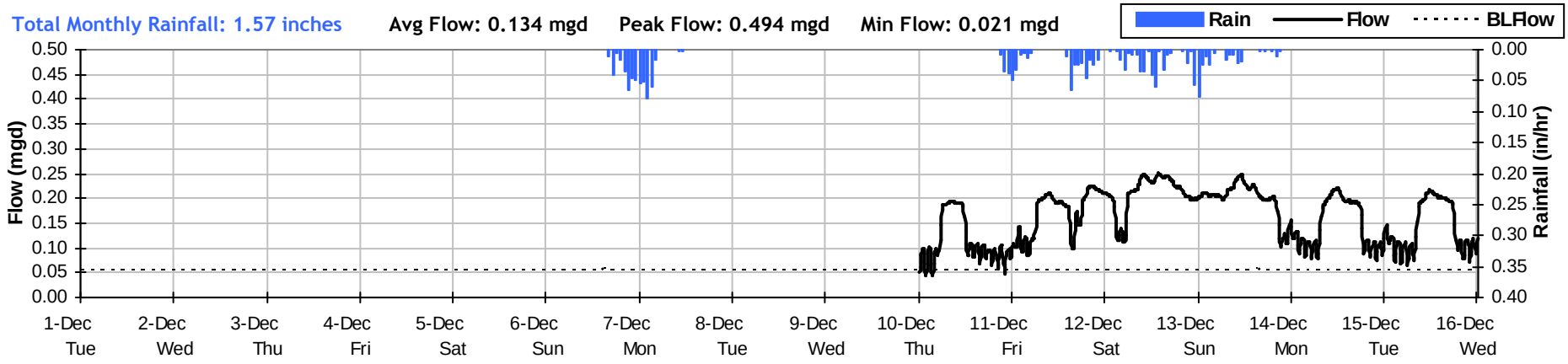
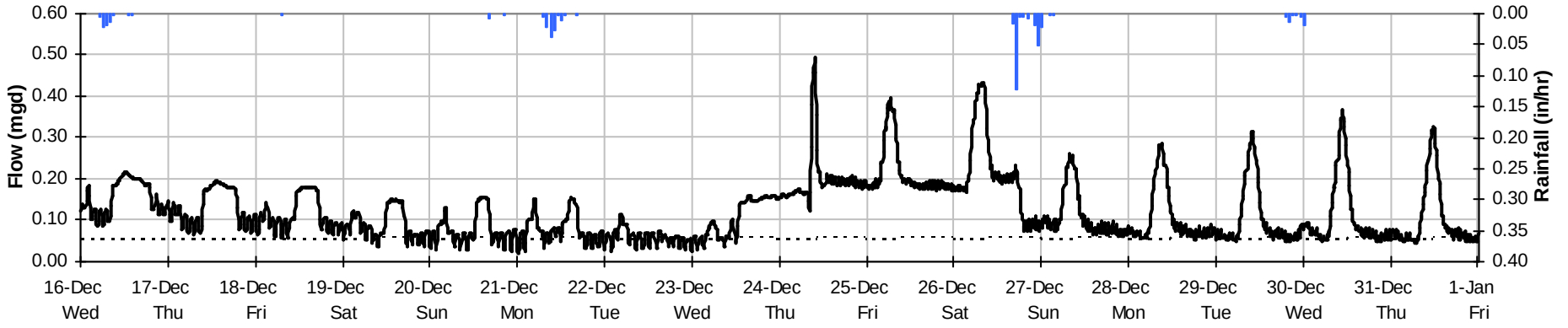
PORT OF OAKLAND

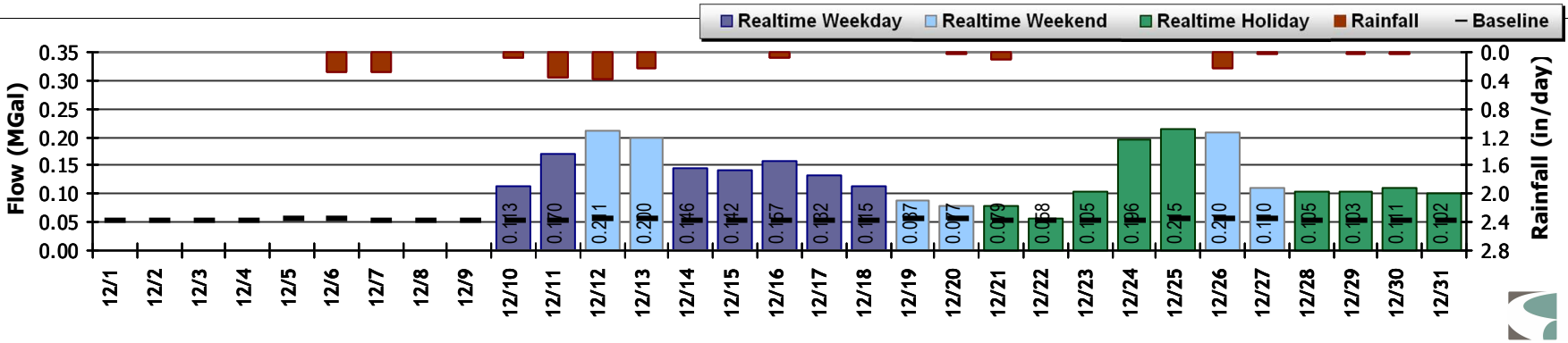
Period Flow Summary
December, 2009

Monitoring Site:
Site M8

Total Monthly Rainfall: 1.57 inches Avg Flow: 0.134 mgd Peak Flow: 0.494 mgd Min Flow: 0.021 mgd







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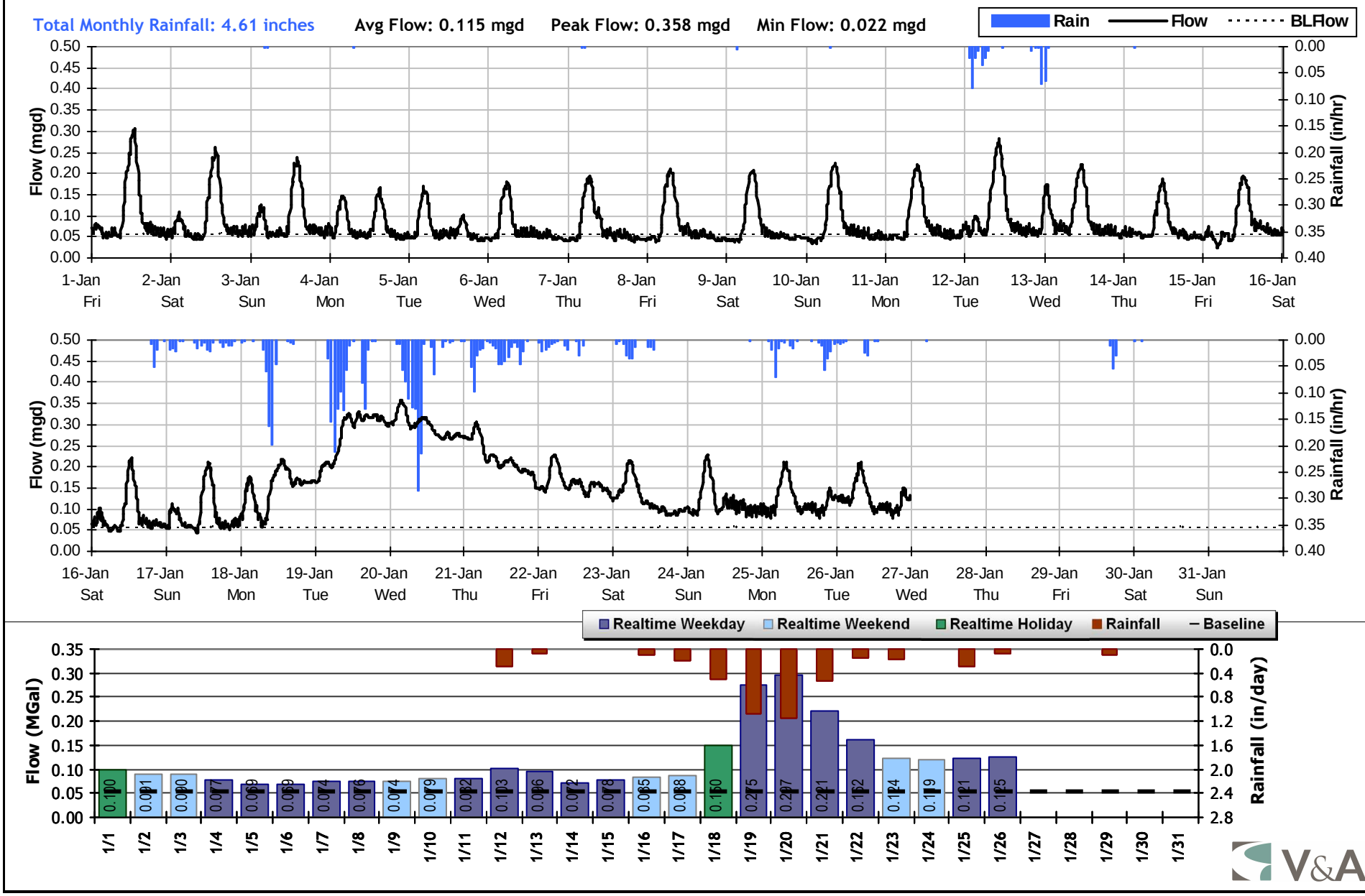
PORT OF OAKLAND

Period Flow Summary

January, 2010

Monitoring Site:

Site M8



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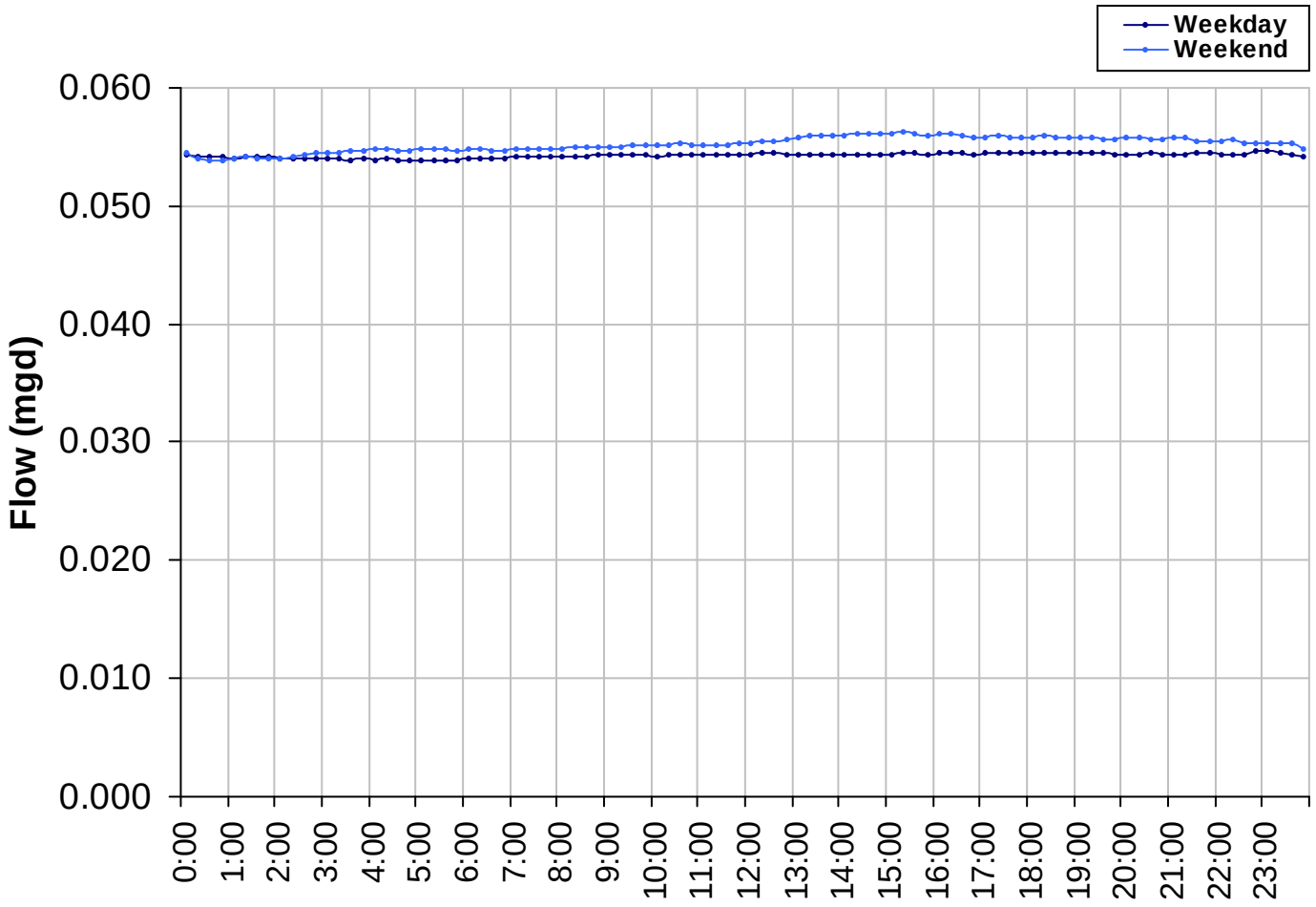
PORT OF OAKLAND

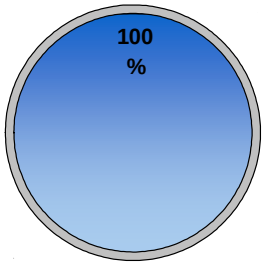
Average Dry Weather Flow

Monitoring Site:
Site M8



Peak Measured Flow:

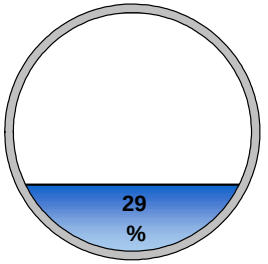
0.494 *mgd*



Peak measured flow shown in weekly graphs on following pages

Average Dry Weather Flow:

0.055 *mgd*



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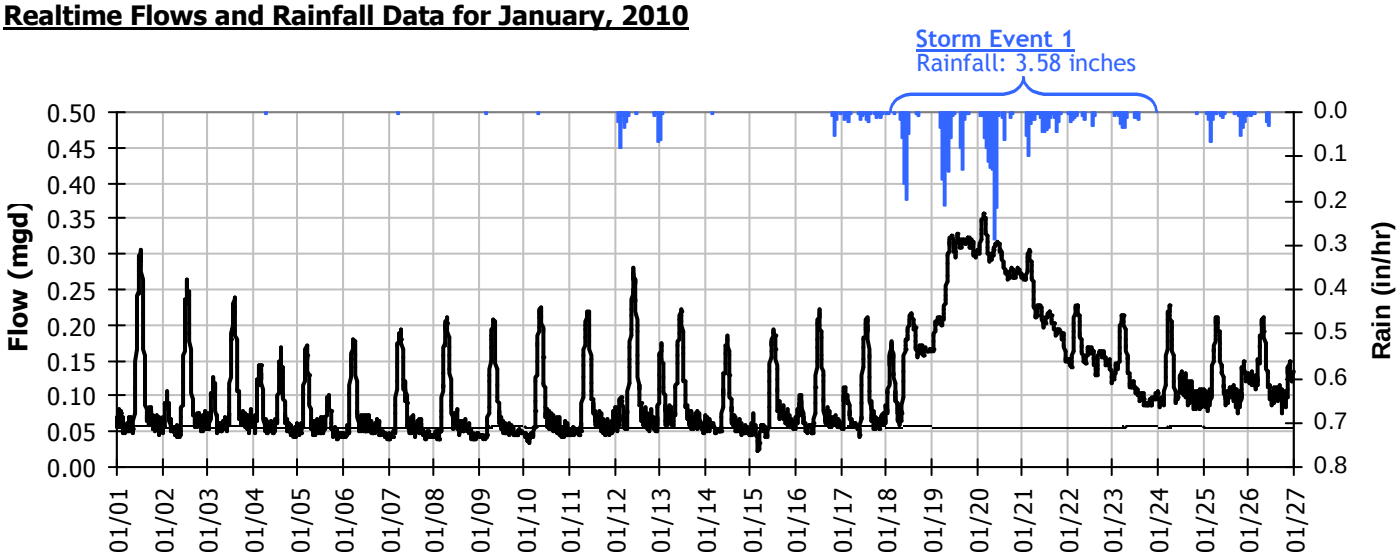
PORT OF OAKLAND

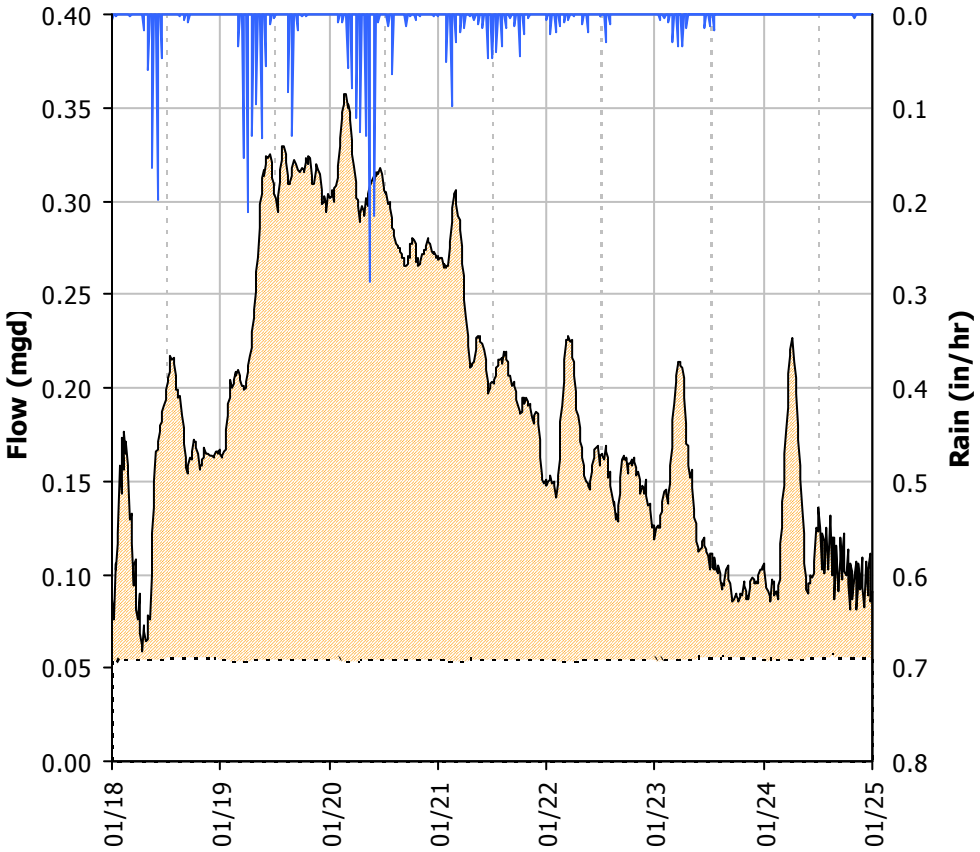
I/I Summary

Monitoring Site:
Site M8

Realtime Flows and Rainfall Data for January, 2010



Storm Event #1 Detail I/I Graph



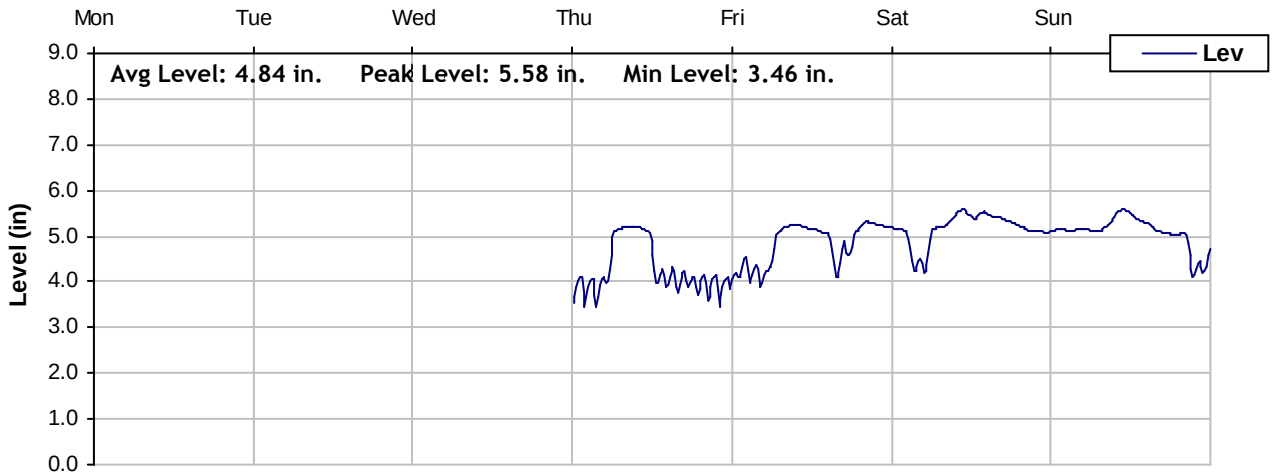
I&I ANALYSIS		
Rainfall:	3.58	*inches*
Total I&I		
Total I/I:	965,000	*gallons*
I/I per ADWF:	4.9	*per in-rain*
Inflow		
Peak I/I Rate:	0.30	*mgd*
Pk I/I:ADWF:	5.57	
Infiltration (% of ADWF)		
Infiltration at +24hours:	114.8%	
Capacity		
Peak Flow:	0.36	*mgd*
PF:	6.55	
Peak Level:	109.65	*inches*
d/D Ratio:	9.14	

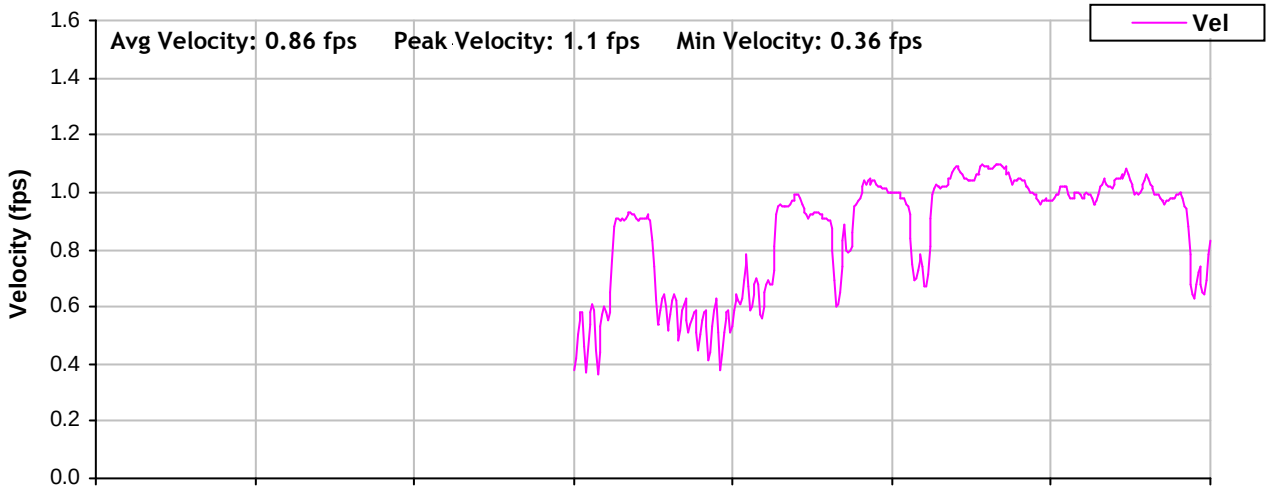
V&A

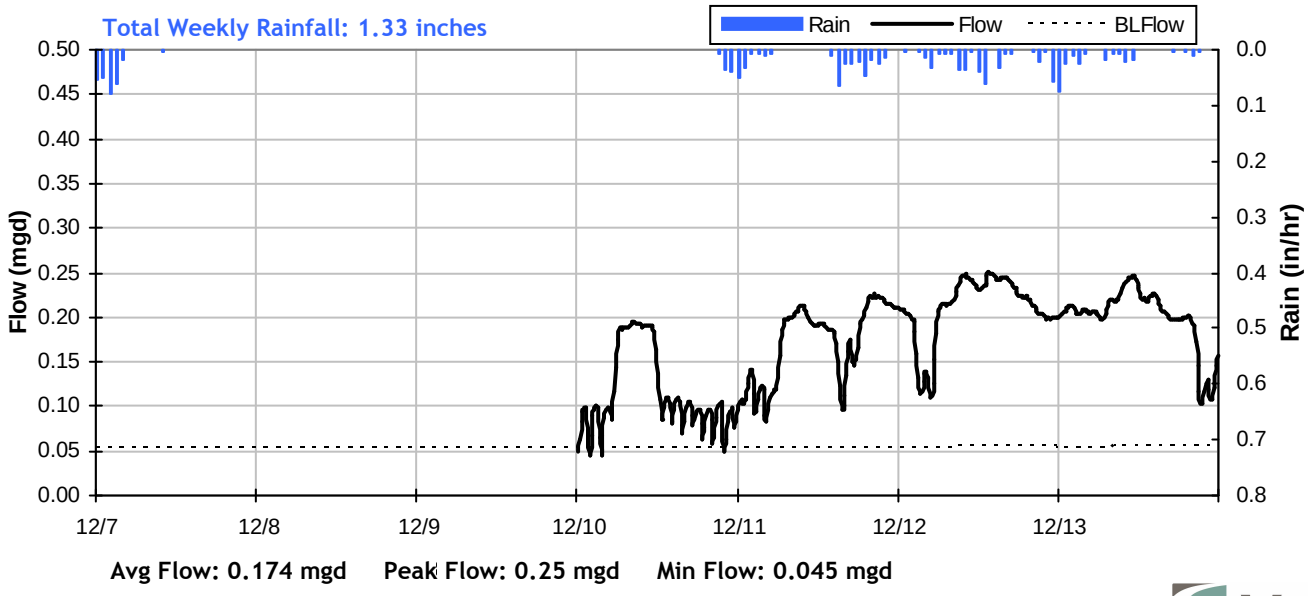
PORT OF OAKLAND

Level, Velocity and Flow
From 12/7/2009 to 12/14/2009

Monitoring Site:
Site M8







Avg Flow: 0.174 mgd Peak Flow: 0.25 mgd Min Flow: 0.045 mgd

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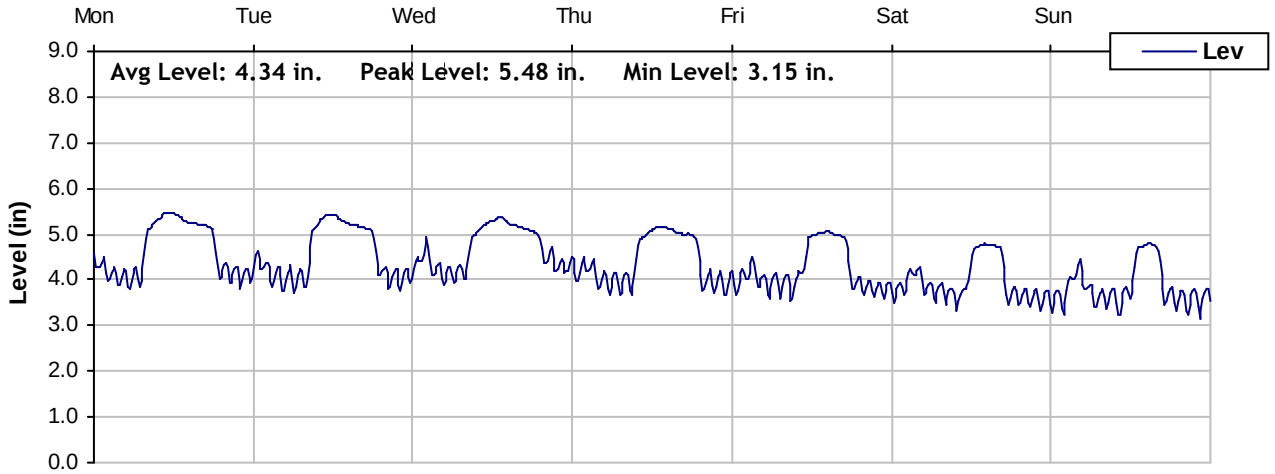
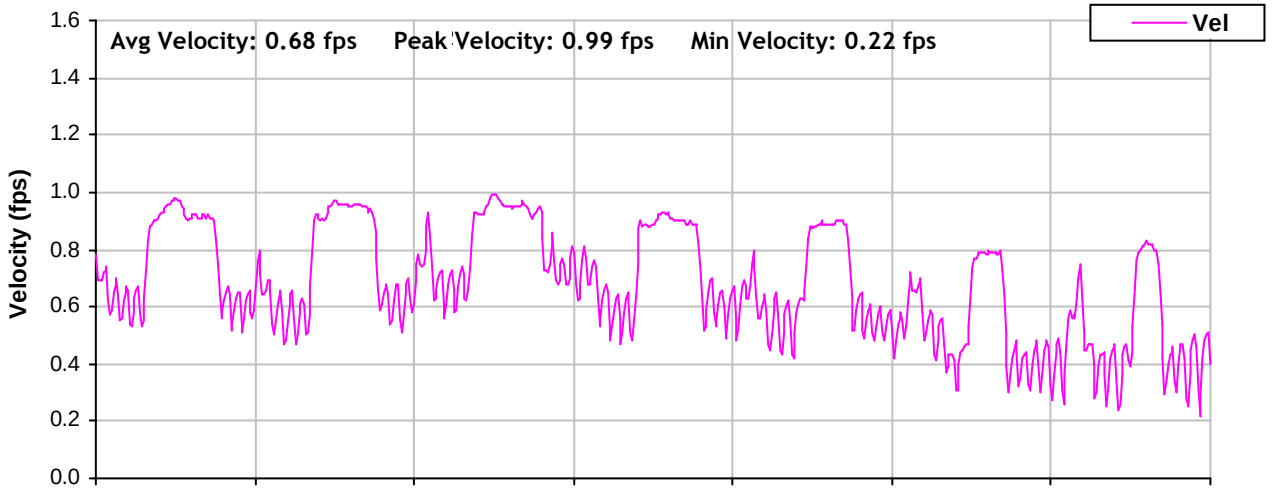
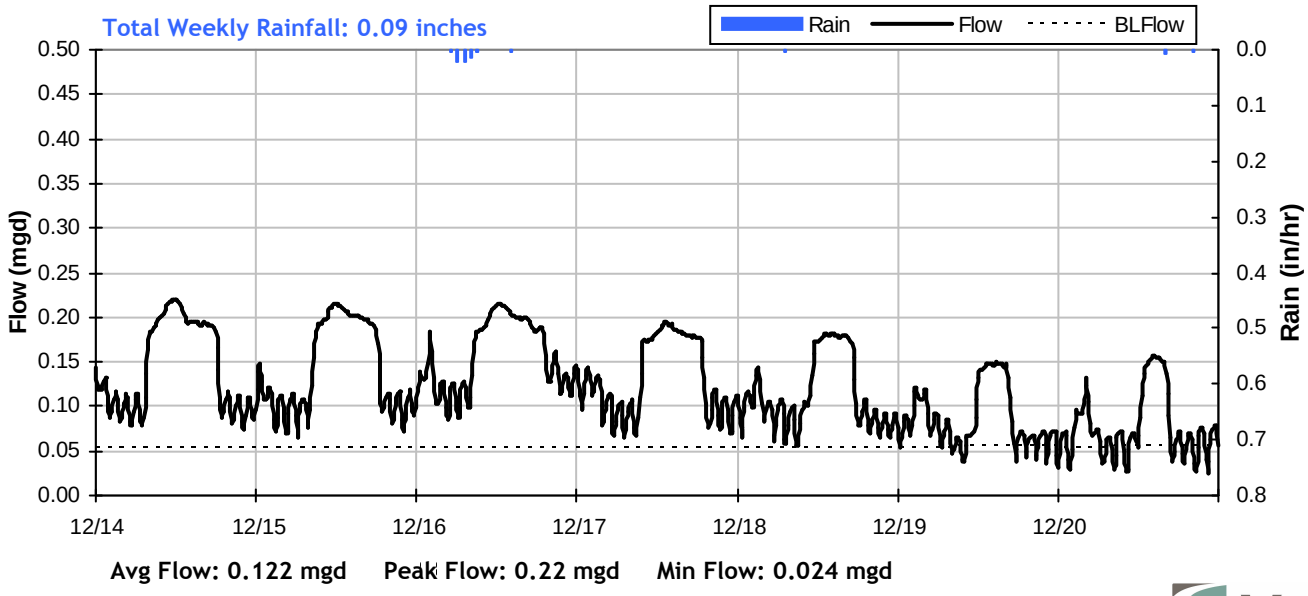
PORT OF OAKLAND

Level, Velocity and Flow
From 12/14/2009 to 12/21/2009

Monitoring Site:
Site M8







Avg Flow: 0.122 mgd Peak Flow: 0.22 mgd Min Flow: 0.024 mgd

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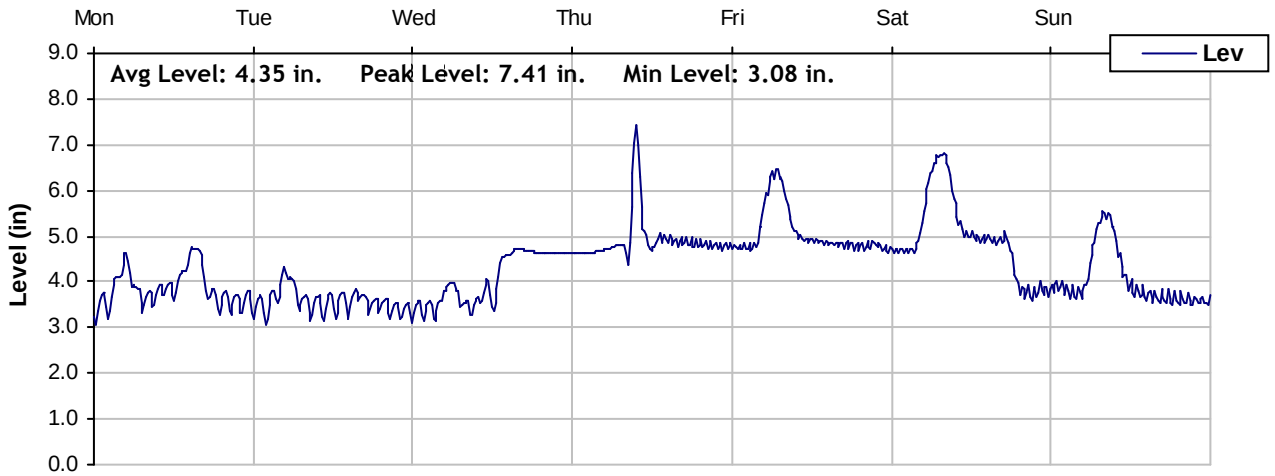
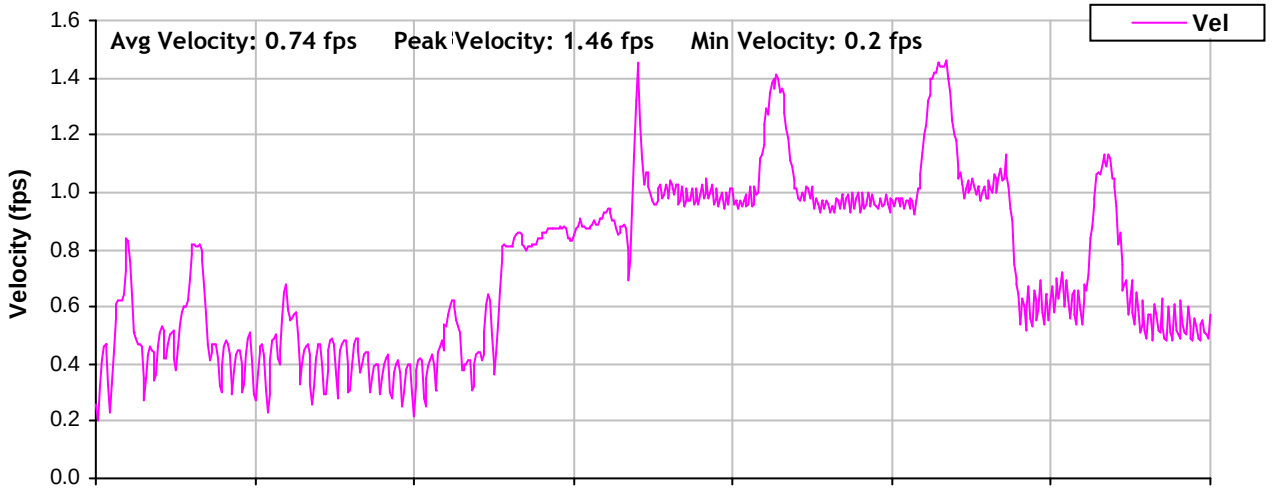
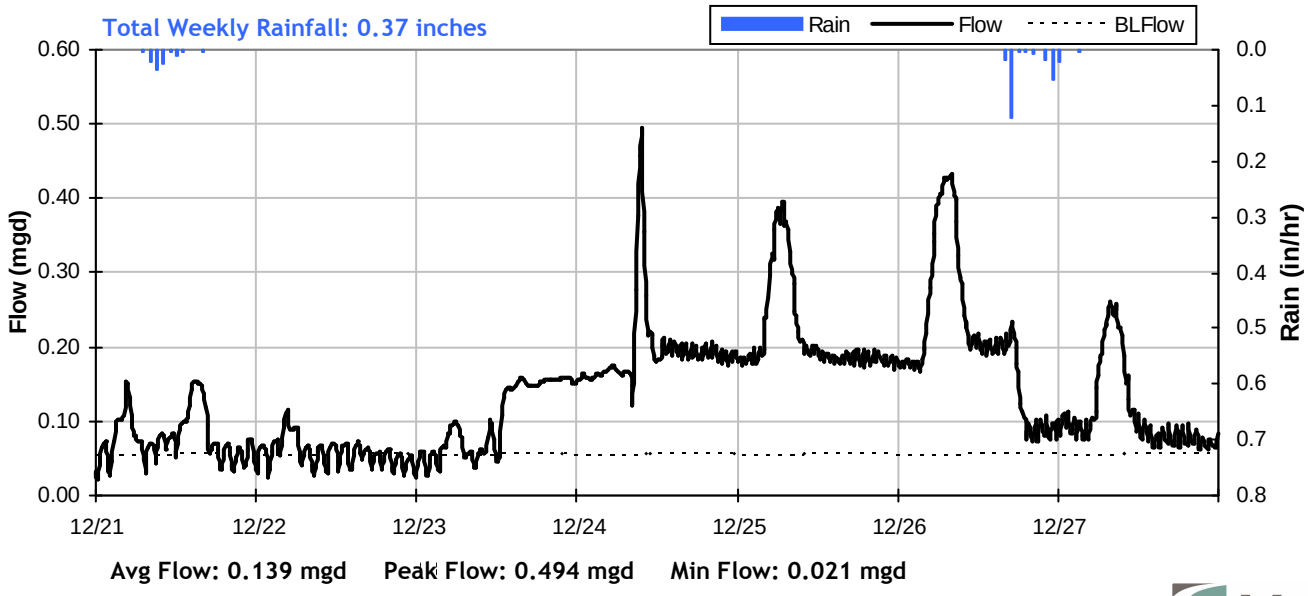
PORT OF OAKLAND

Level, Velocity and Flow
From 12/21/2009 to 12/28/2009

Monitoring Site:
Site M8







Avg Flow: 0.139 mgd Peak Flow: 0.494 mgd Min Flow: 0.021 mgd

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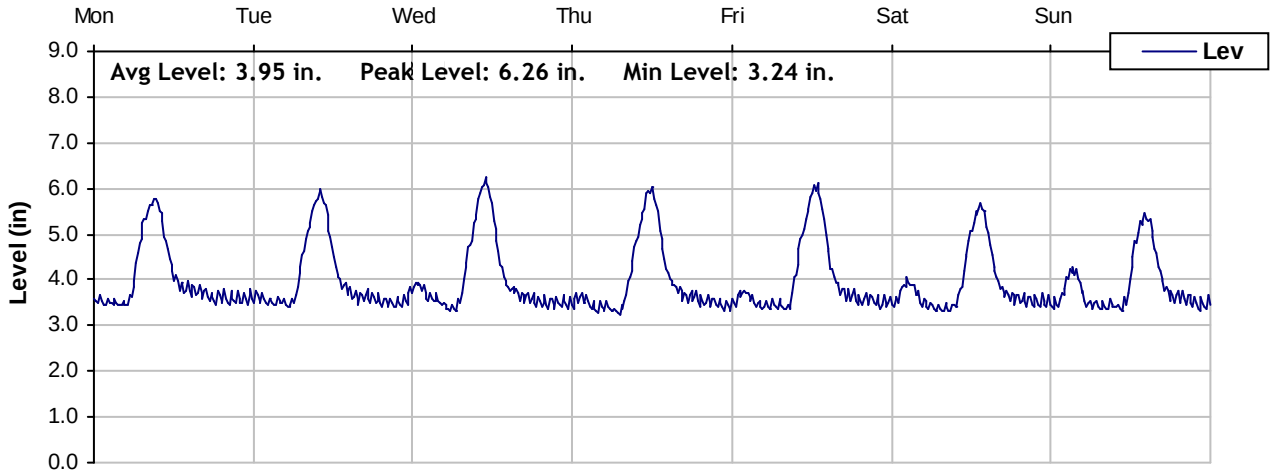
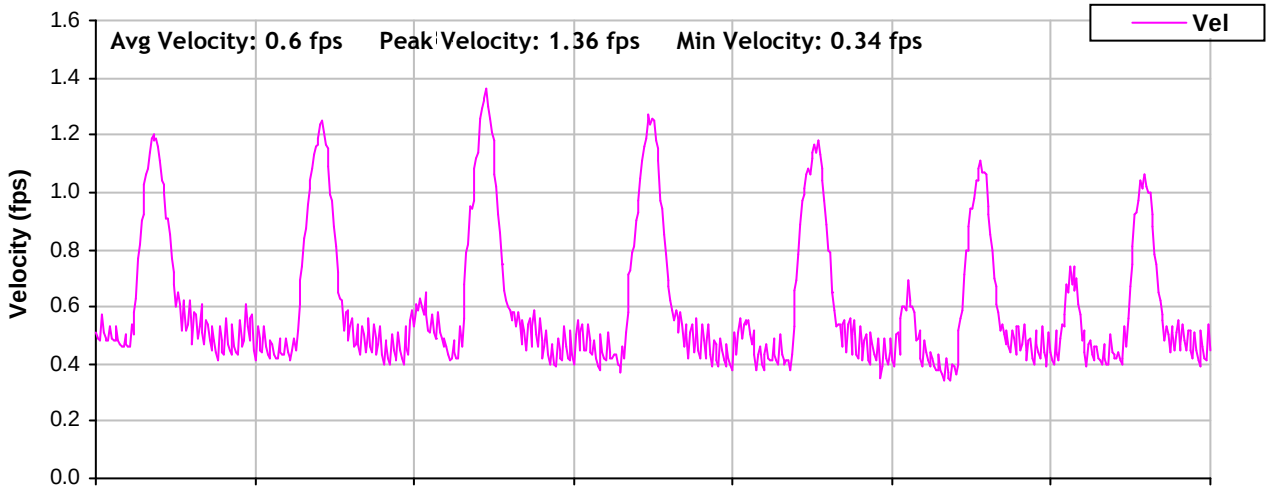
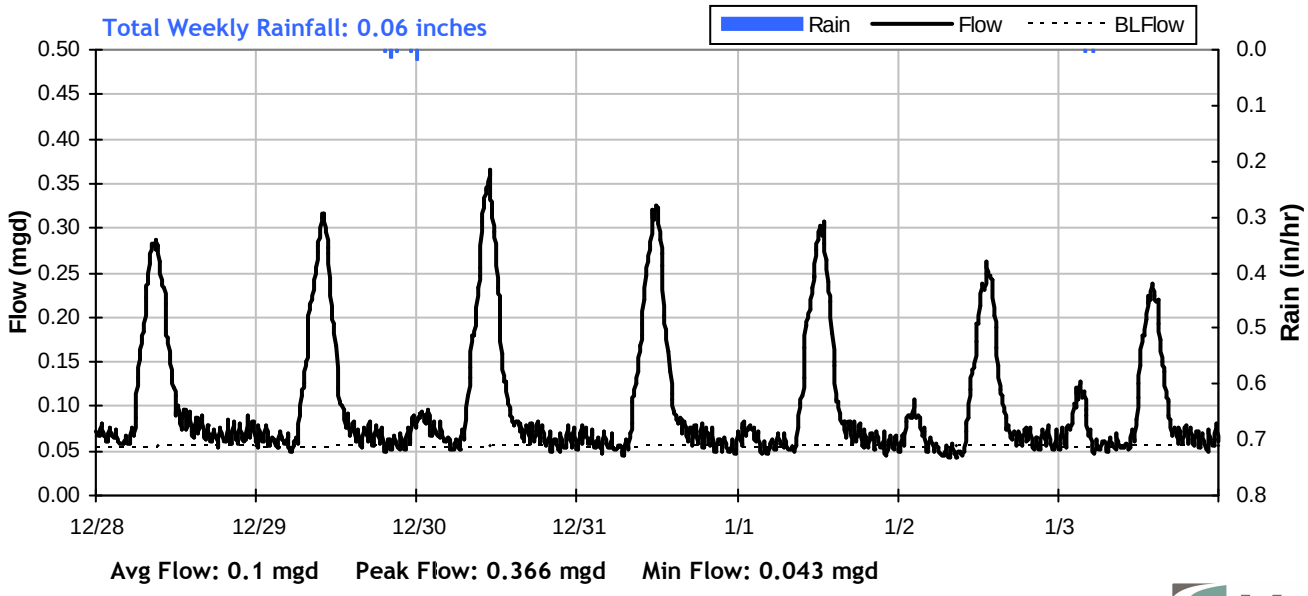
PORT OF OAKLAND

Level, Velocity and Flow
From 12/28/2009 to 1/4/2010

Monitoring Site:
Site M8







Avg Flow: 0.1 mgd Peak Flow: 0.366 mgd Min Flow: 0.043 mgd

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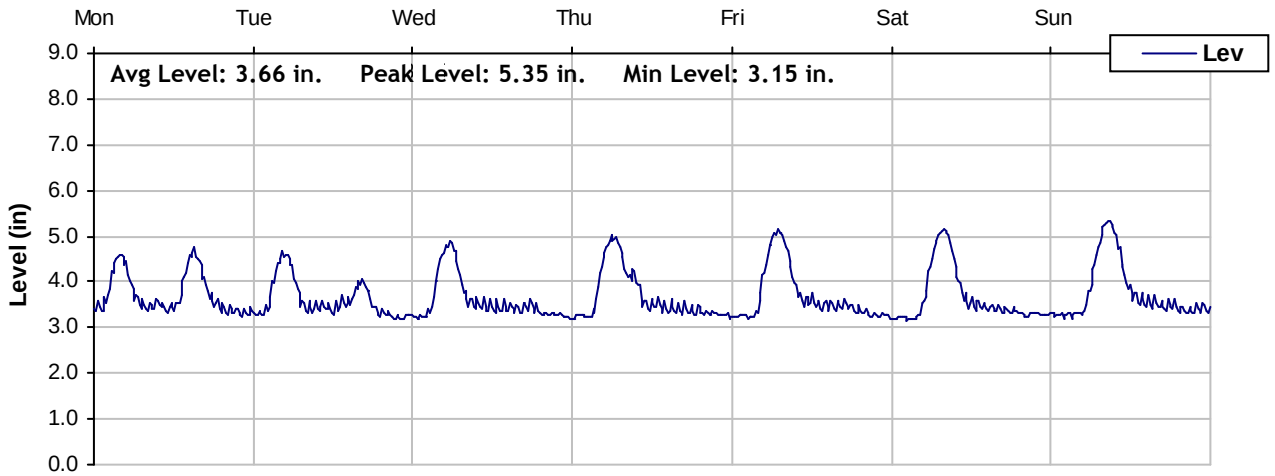
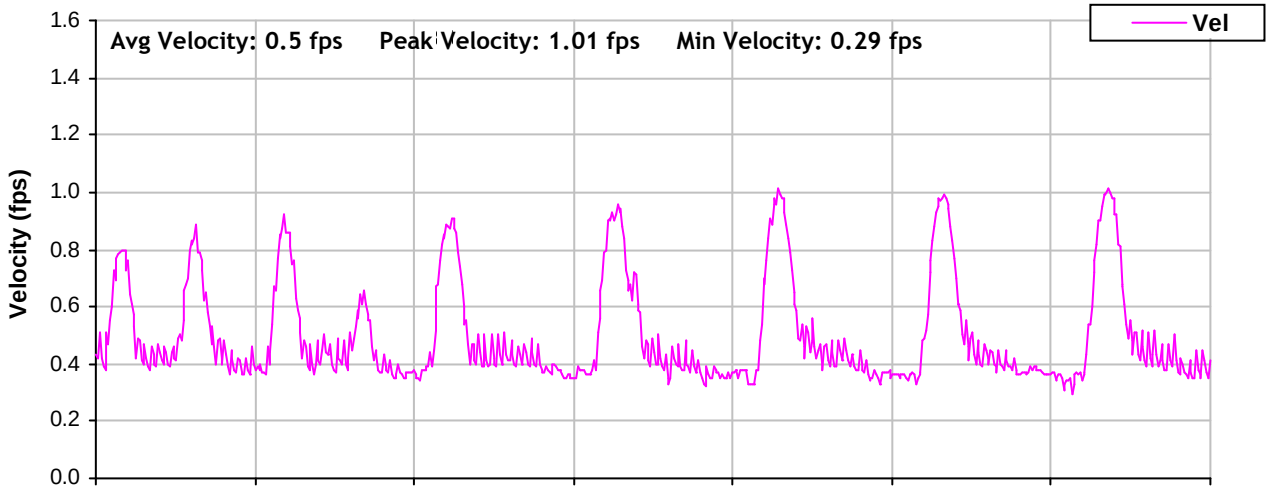
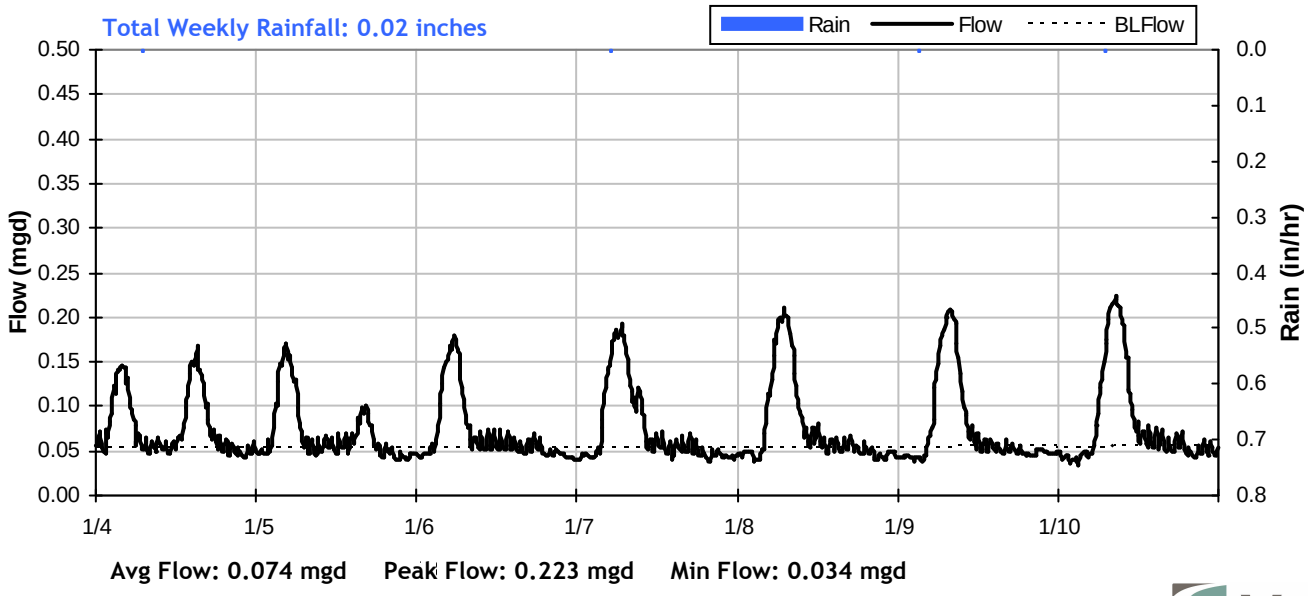
PORT OF OAKLAND

Level, Velocity and Flow
From 1/4/2010 to 1/11/2010

Monitoring Site:
Site M8







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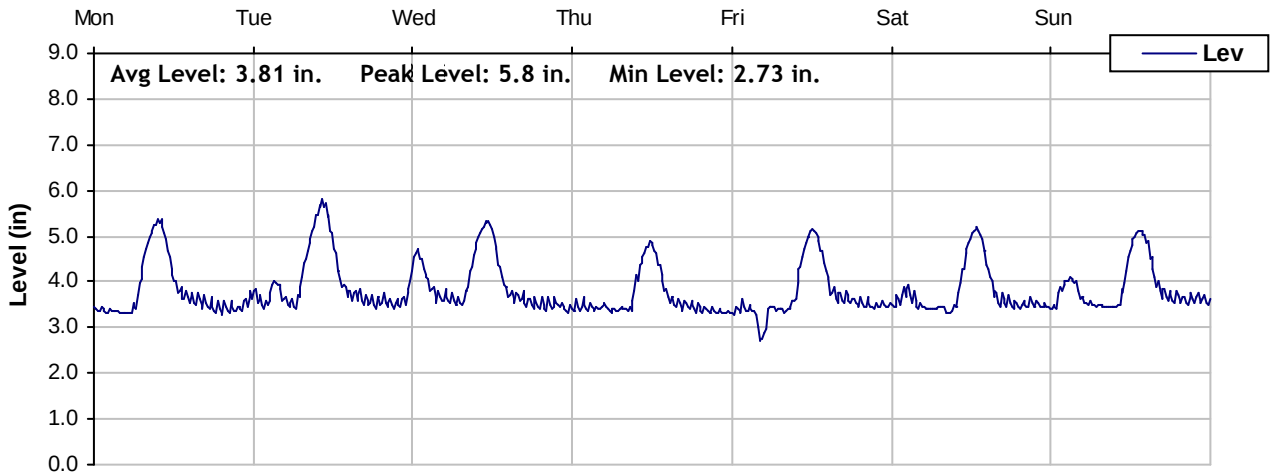
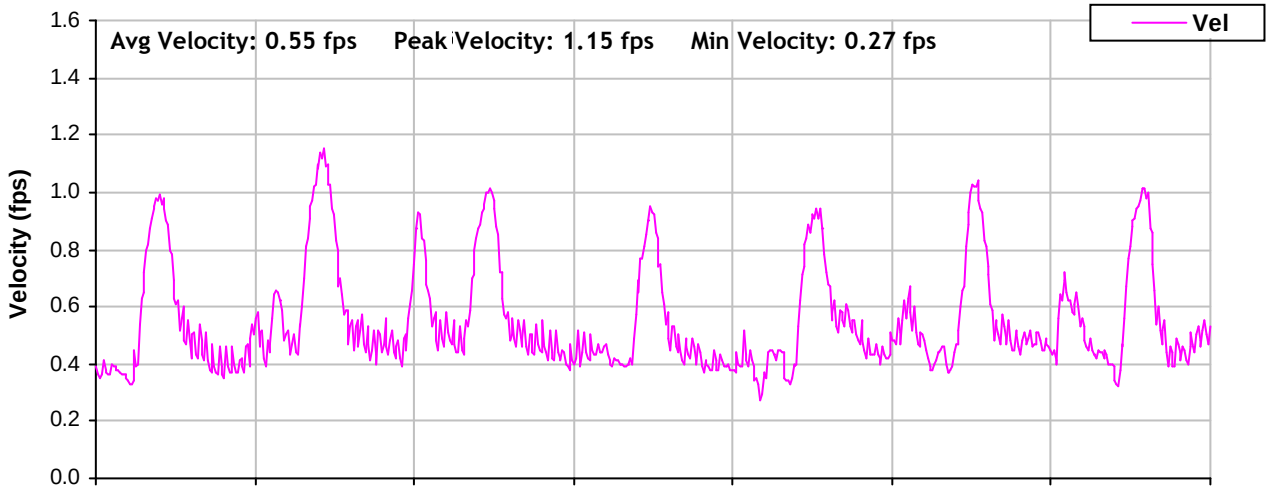
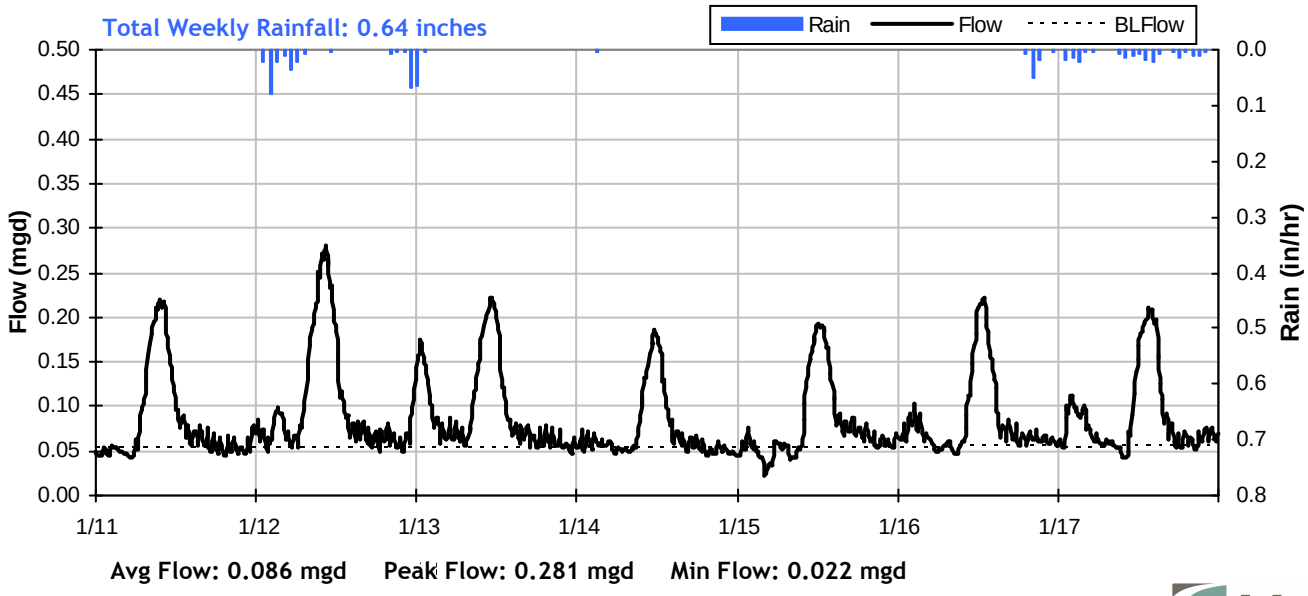
PORT OF OAKLAND

Level, Velocity and Flow
From 1/11/2010 to 1/18/2010

Monitoring Site:
Site M8







Avg Flow: 0.086 mgd Peak Flow: 0.281 mgd Min Flow: 0.022 mgd

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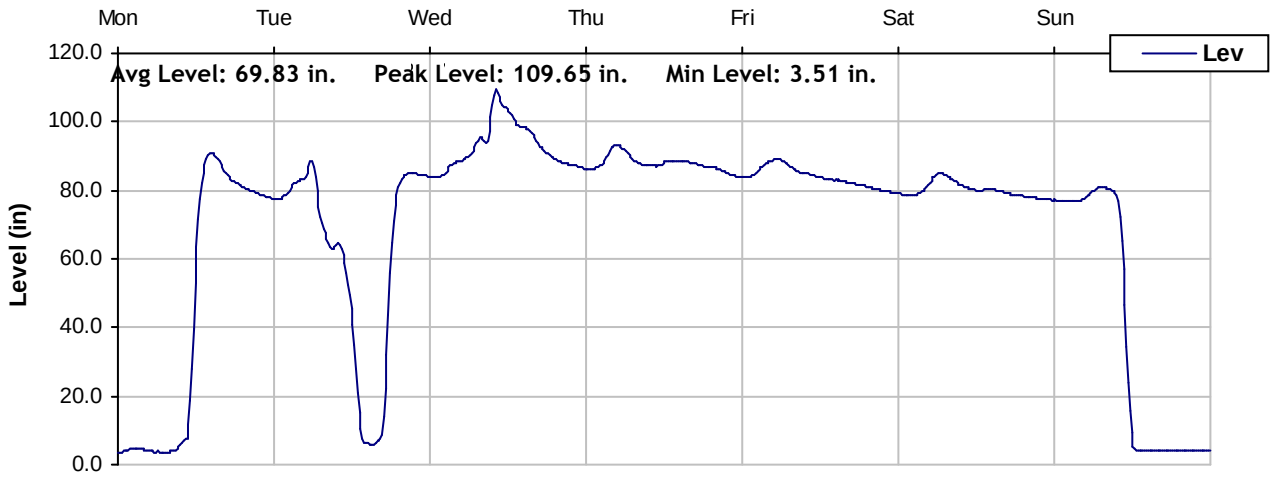
PORT OF OAKLAND

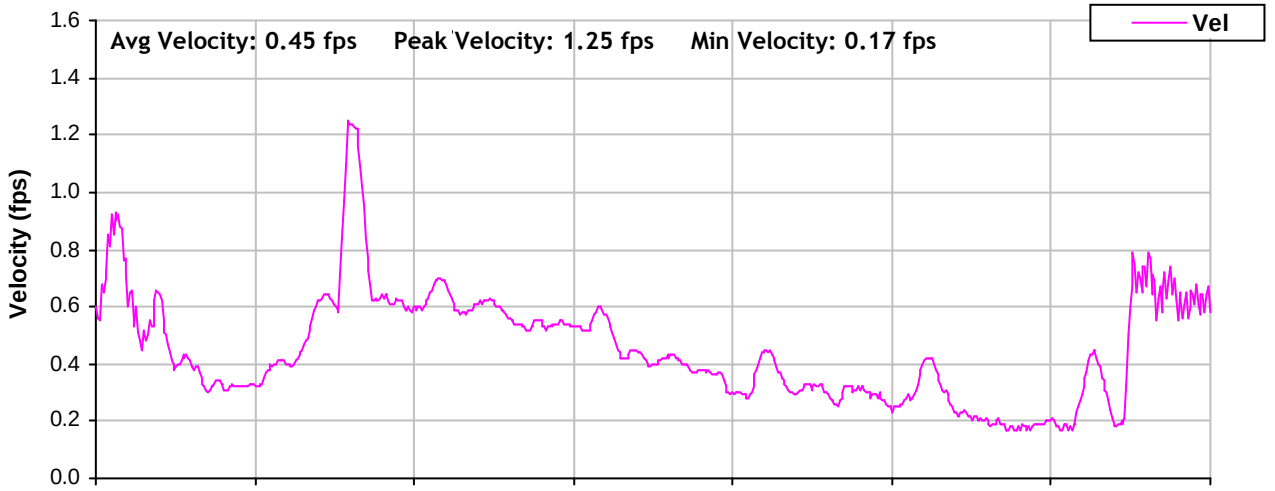
Level, Velocity and Flow

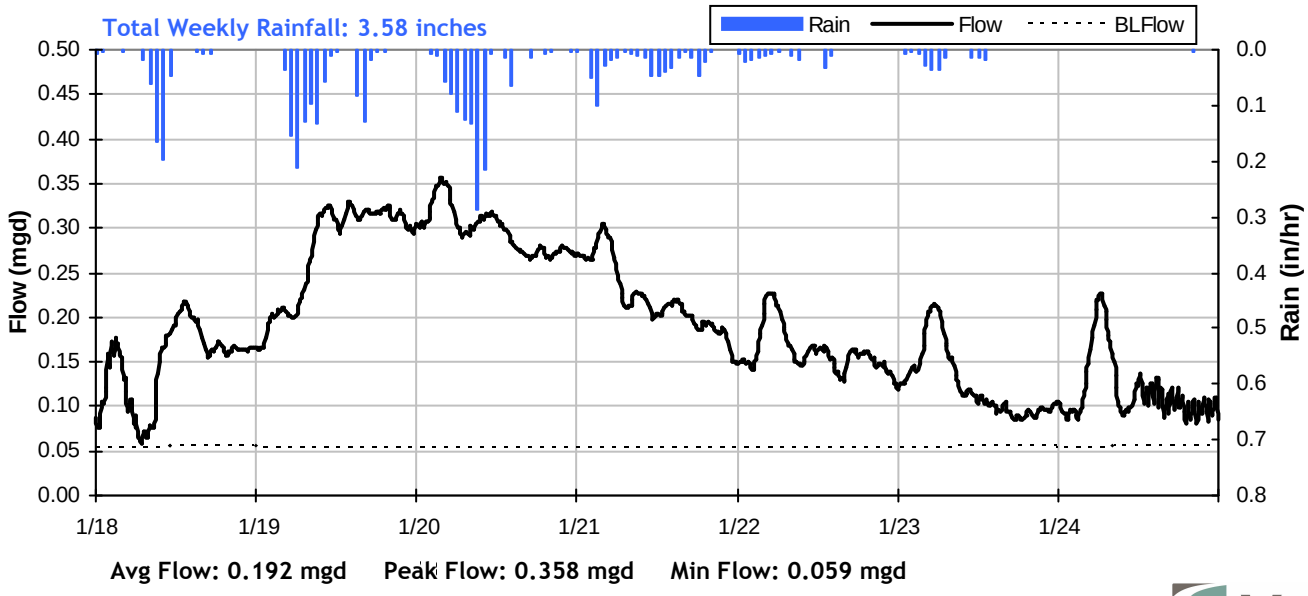
From 1/18/2010 to 1/25/2010

Monitoring Site:

Site M8







Avg Flow: 0.192 mgd Peak Flow: 0.358 mgd Min Flow: 0.059 mgd

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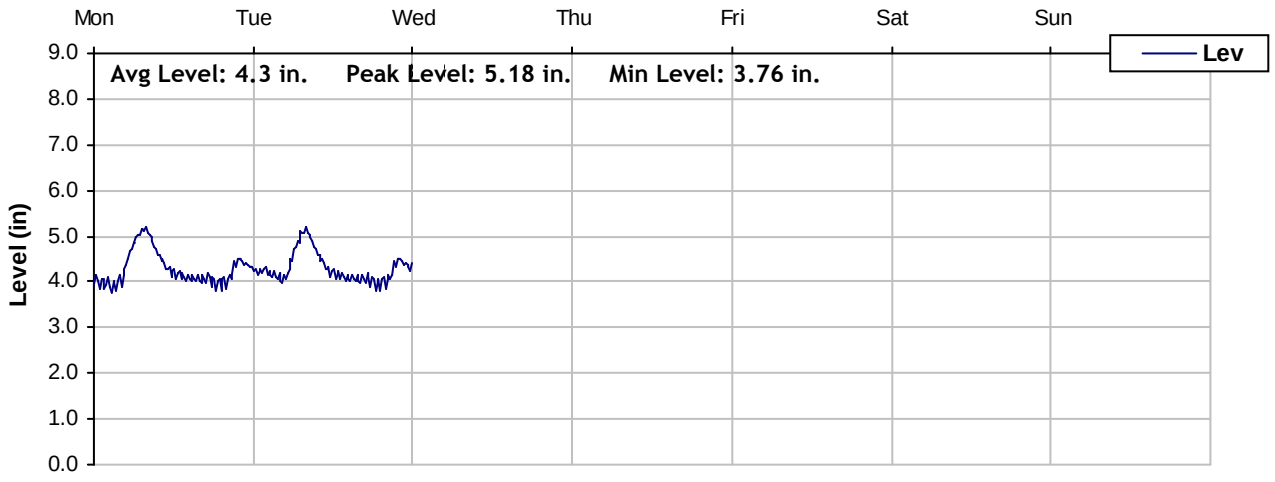
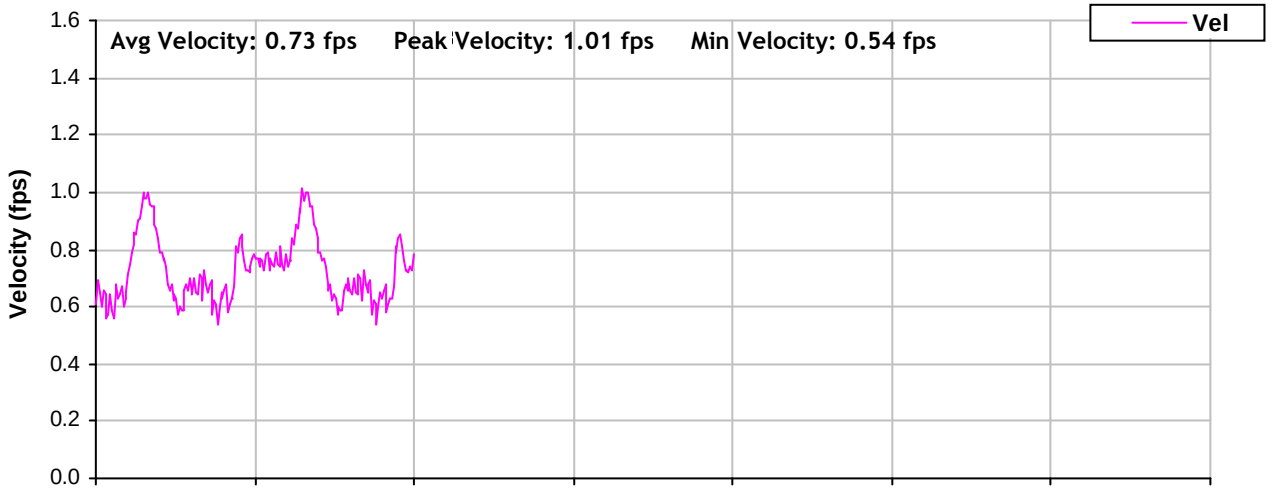
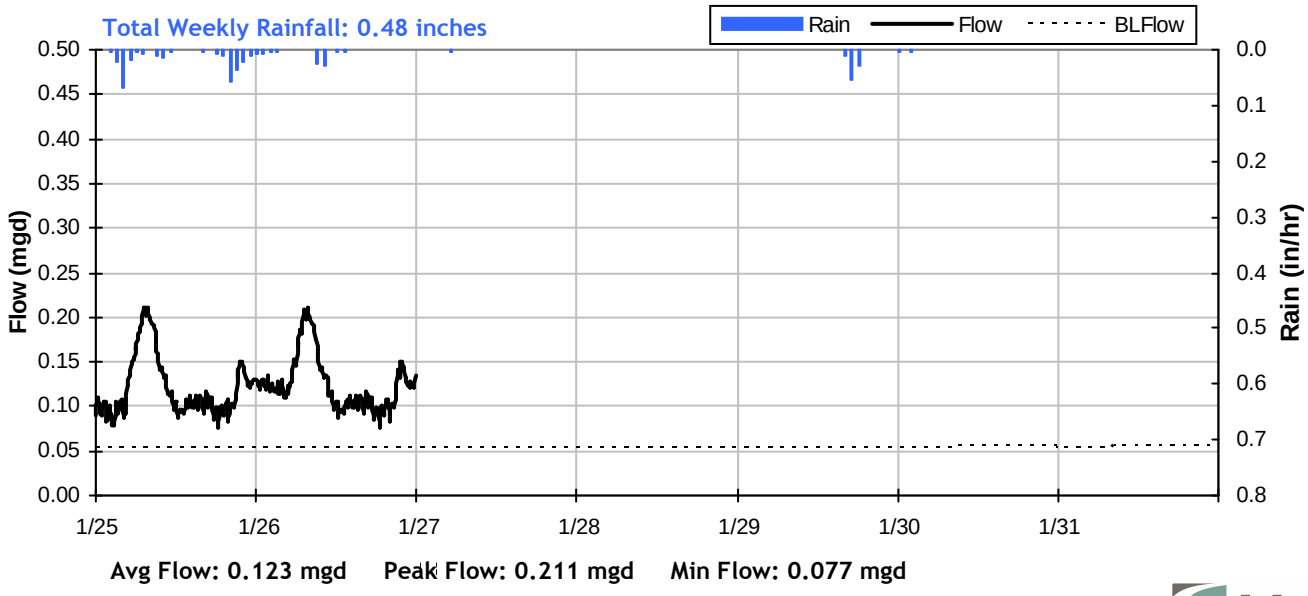
PORT OF OAKLAND

Level, Velocity and Flow
From 1/25/2010 to 2/1/2010

Monitoring Site:
Site M8







Avg Flow: 0.123 mgd Peak Flow: 0.211 mgd Min Flow: 0.077 mgd

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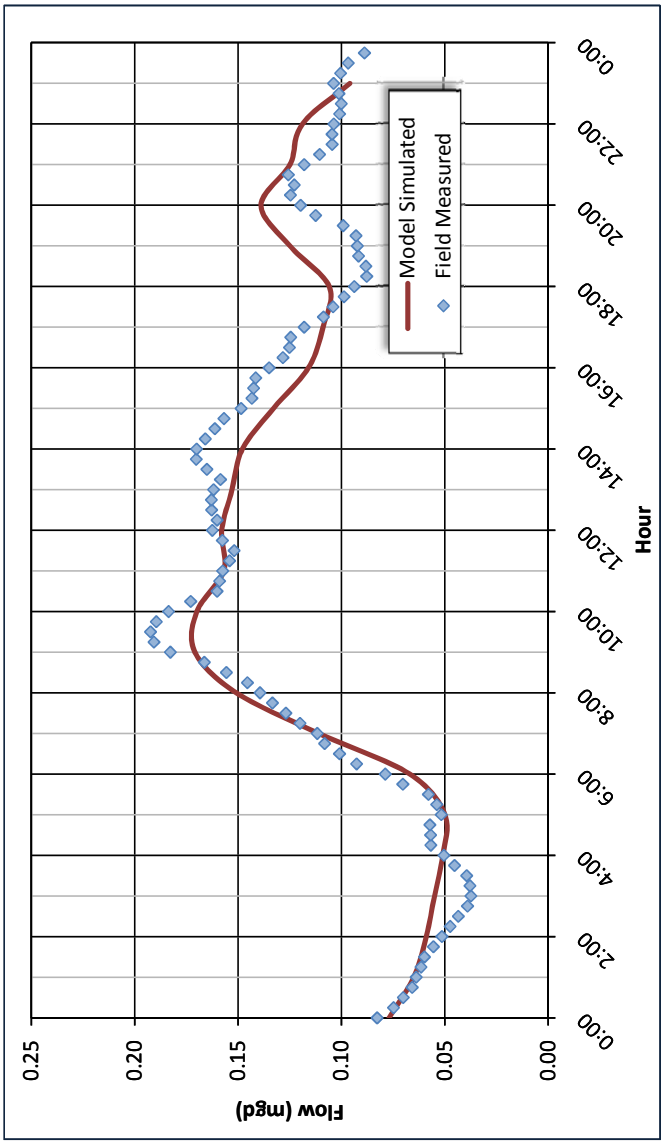
APPENDIX B - DRY WEATHER FLOW CALIBRATION PLOTS

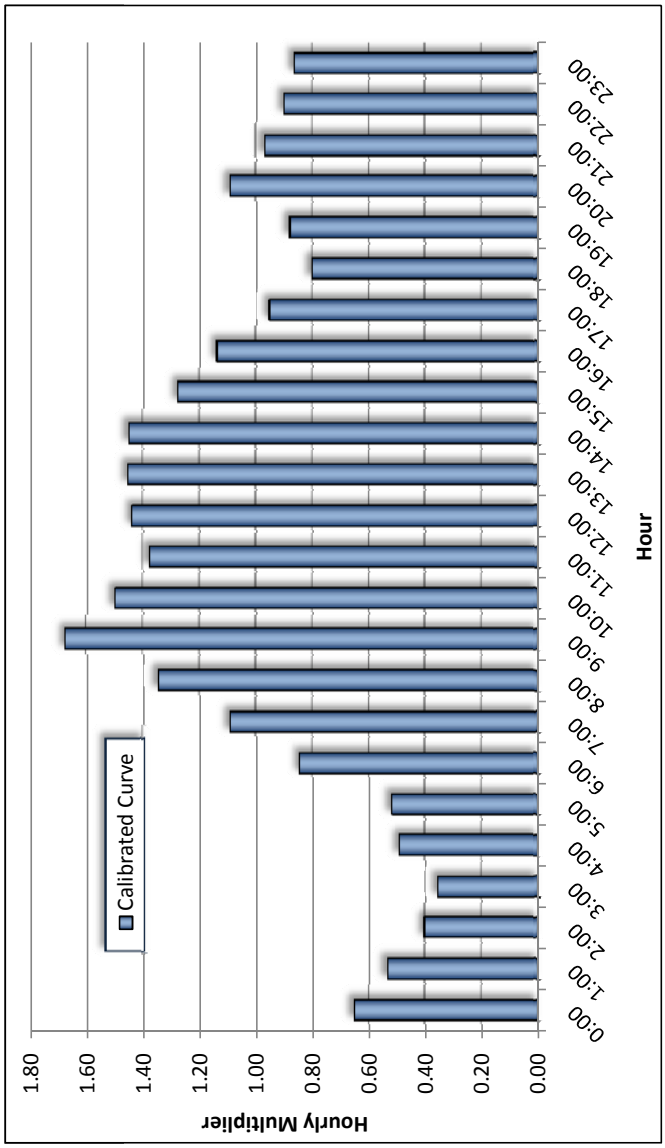
Table 1 Dry Weather Calibration Summary
System Evaluation and Capacity Assurance Plan
Port of Oakland

Meter Site	Meter Average Weekend Flow[2] Average (mgd)	Max. (mgd)	Min. (mgd)	Modeled Average Flow Average (mgd)	Max. (mgd)	Min. (mgd)	Percent Diff.[3]
1	0.113	0.189	0.040	0.113	0.171	0.050	0%
2	0.087	0.119	0.046	0.087	0.119	0.046	0%
3	0.103	0.147	0.063	0.103	0.146	0.064	0%
4	0.078	0.110	0.019	0.078	0.109	0.020	0%
5	0.013	0.026	0.004	0.013	0.025	0.003	0%
6	0.078	0.100	0.055	0.078	0.096	0.058	0%
7	0.086	0.096	0.074	0.086	0.093	0.076	0%
8	0.054	0.054	0.054	0.054	0.054	0.054	0%

Notes:
1. Source: Meter data from Sanitary Sewer Flow Monitoring and Inflow/Infiltration Study.
2. Average flow calculated from weekday flow monitoring data.
3. Percent difference between the average flow for the meter collected and model derived results.

Flow Meter 1 Dry Weather Calibration

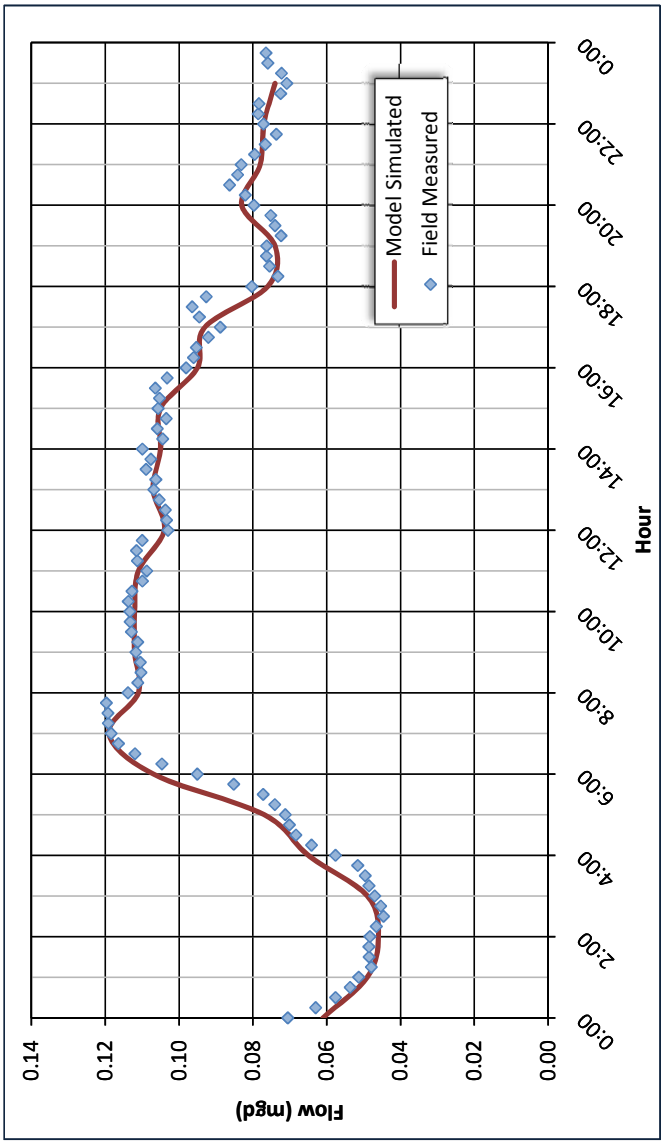


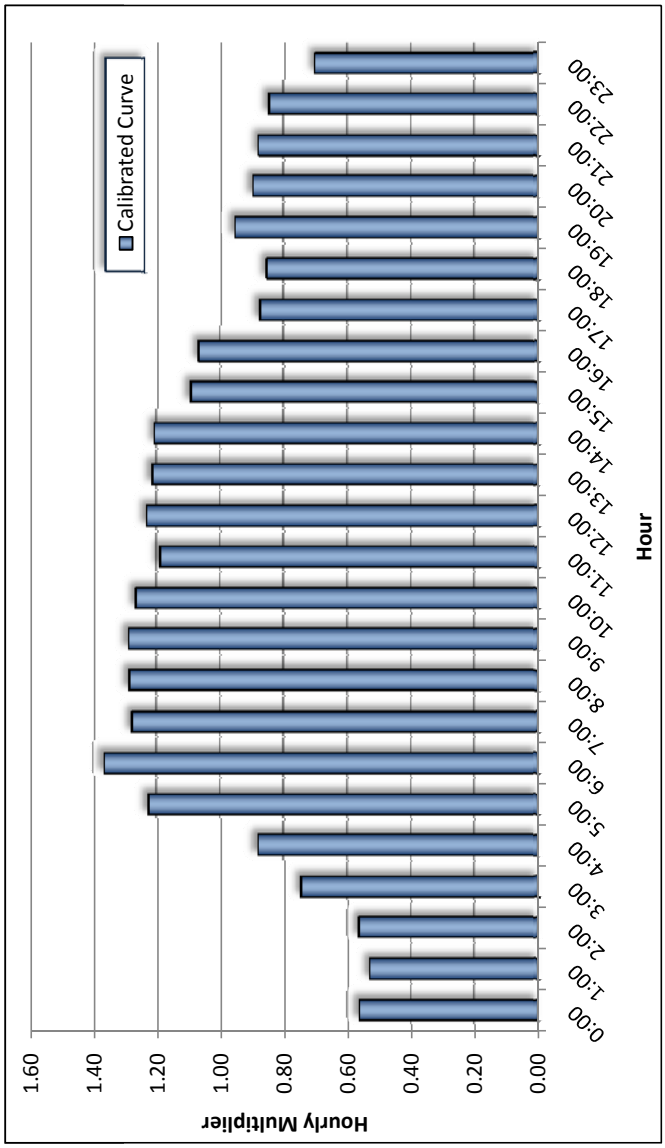


Hour	Measured Flow (mgd)	Modeled Flow (mgd)	Initial Curve	Modified Curve	Calibrated Curve
0:00	0.073	0.077	0.65	0.55	**0.65**
1:00	0.060	0.065	0.53	0.42	**0.53**
2:00	0.045	0.059	0.40	0.70	**0.40**
3:00	0.040	0.055	0.35	0.95	**0.35**
4:00	0.055	0.051	0.49	1.17	**0.49**
5:00	0.058	0.050	0.52	1.64	**0.52**
6:00	0.095	0.067	0.84	2.10	**0.84**
7:00	0.123	0.111	1.09	2.35	**1.09**
8:00	0.152	0.151	1.35	2.16	**1.35**
9:00	0.189	0.171	1.67	1.57	**1.67**
10:00	0.169	0.170	1.50	1.45	**1.50**
11:00	0.155	0.157	1.38	1.46	**1.38**
12:00	0.162	0.158	1.44	1.25	**1.44**
13:00	0.164	0.153	1.45	0.92	**1.45**
14:00	0.164	0.148	1.45	0.38	**1.45**
15:00	0.144	0.133	1.28	0.23	**1.28**
16:00	0.128	0.116	1.14	0.30	**1.14**
17:00	0.107	0.109	0.95	0.23	**0.95**
18:00	0.090	0.106	0.80	0.79	**0.80**
19:00	0.099	0.125	0.88	1.15	**0.88**
20:00	0.123	0.139	1.09	0.70	**1.09**
21:00	0.109	0.125	0.97	0.58	**0.97**
22:00	0.102	0.119	0.90	0.50	**0.90**
23:00	0.097	0.096	0.86	0.42	**0.86**
Average	**0.113**	**0.113**	**1.00**	**1.00**	**1.00**
% Error		**0%**			

Notes:
1. Calibrations performed for Weekday Flows

Flow Meter 2 Dry Weather Calibration

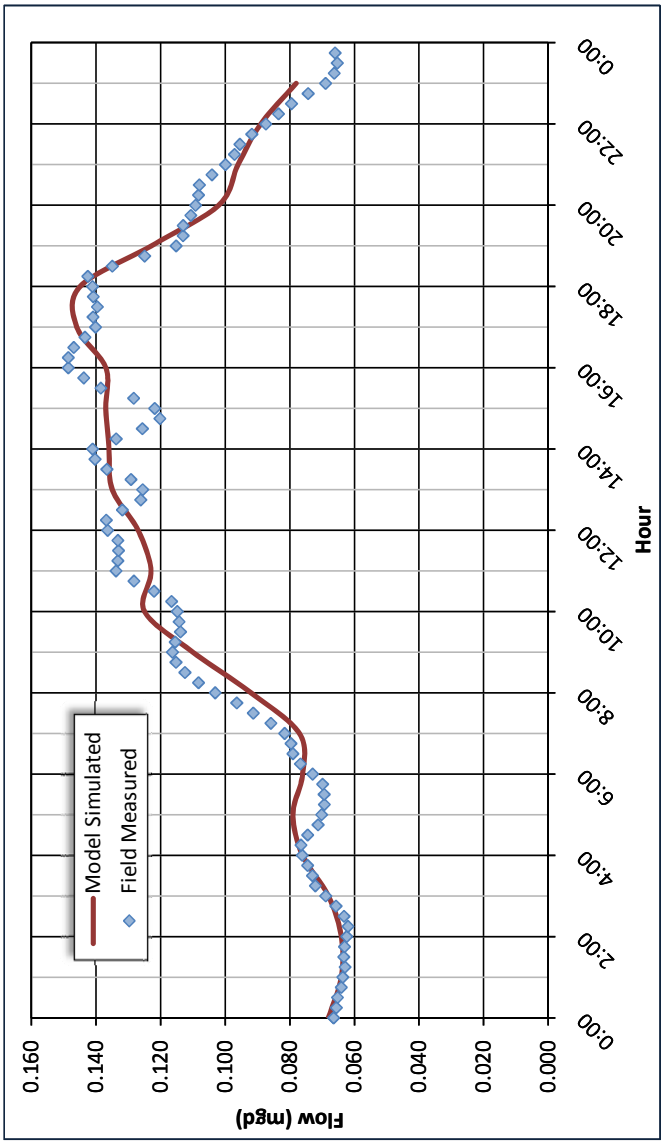


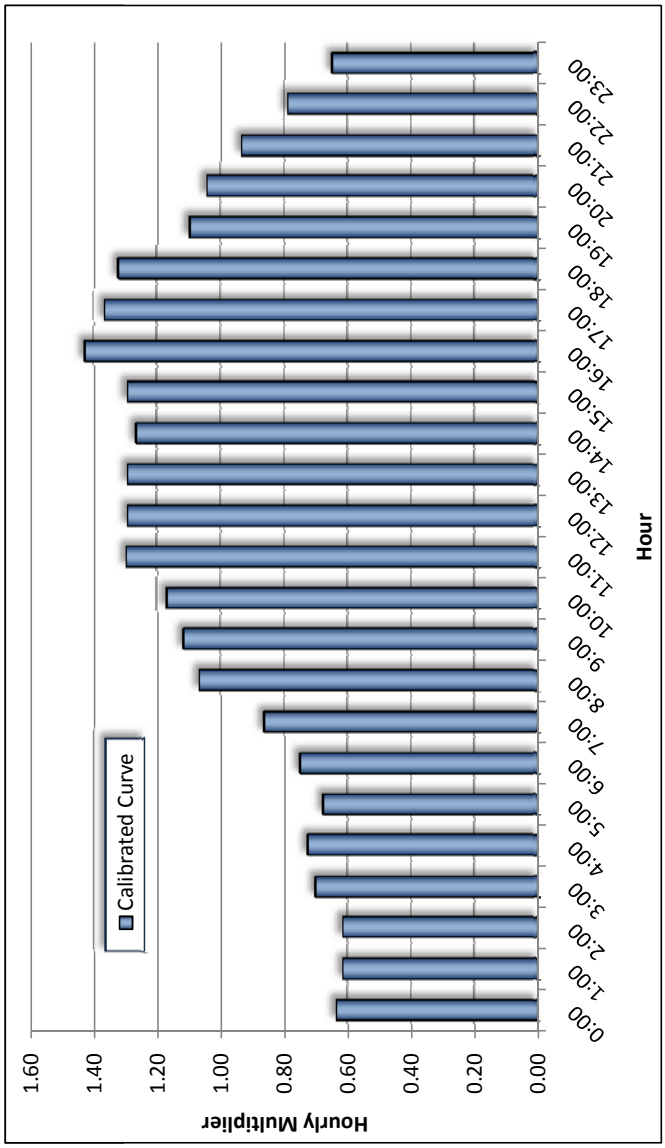


Hour	Measured Flow (mgd)	Modeled Flow (mgd)	Initial Curve	Modified Curve	Calibrated Curve
0:00	0.061	0.061	0.70	0.56	**0.56**
1:00	0.049	0.049	0.56	0.53	**0.53**
2:00	0.046	0.046	0.53	0.56	**0.56**
3:00	0.049	0.049	0.56	0.75	**0.75**
4:00	0.065	0.065	0.75	0.88	**0.88**
5:00	0.077	0.077	0.88	1.23	**1.23**
6:00	0.107	0.107	1.23	1.37	**1.37**
7:00	0.119	0.119	1.37	1.28	**1.28**
8:00	0.111	0.111	1.28	1.29	**1.29**
9:00	0.112	0.112	1.29	1.29	**1.29**
10:00	0.112	0.112	1.29	1.27	**1.27**
11:00	0.110	0.111	1.27	1.19	**1.19**
12:00	0.104	0.104	1.19	1.23	**1.23**
13:00	0.107	0.107	1.23	1.21	**1.21**
14:00	0.106	0.105	1.21	1.21	**1.21**
15:00	0.105	0.105	1.21	1.09	**1.09**
16:00	0.095	0.095	1.09	1.07	**1.07**
17:00	0.093	0.093	1.07	0.87	**0.87**
18:00	0.076	0.076	0.87	0.85	**0.85**
19:00	0.074	0.074	0.85	0.95	**0.95**
20:00	0.083	0.083	0.95	0.90	**0.90**
21:00	0.078	0.078	0.90	0.88	**0.88**
22:00	0.077	0.077	0.88	0.85	**0.85**
23:00	0.074	0.074	0.85	0.70	**0.70**
Average	**0.087**	**0.087**	**1.00**	**1.00**	**1.00**
% Error		**0%**			

Notes:
1. Calibrations performed for Weekday Flows

Flow Meter 3 Dry Weather Calibration

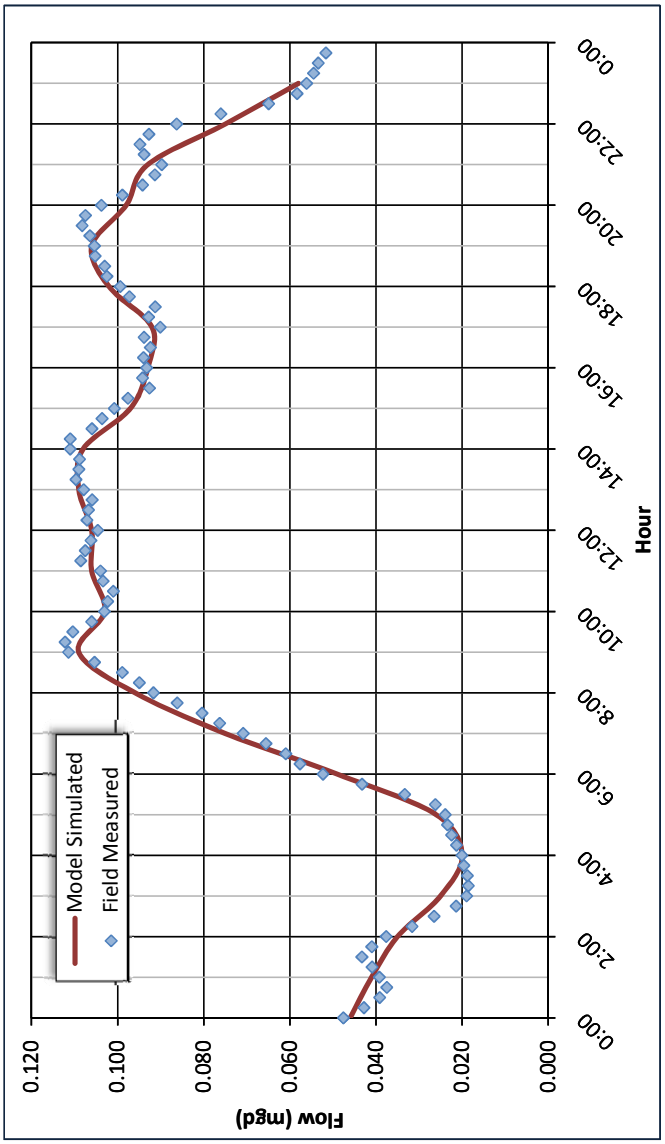


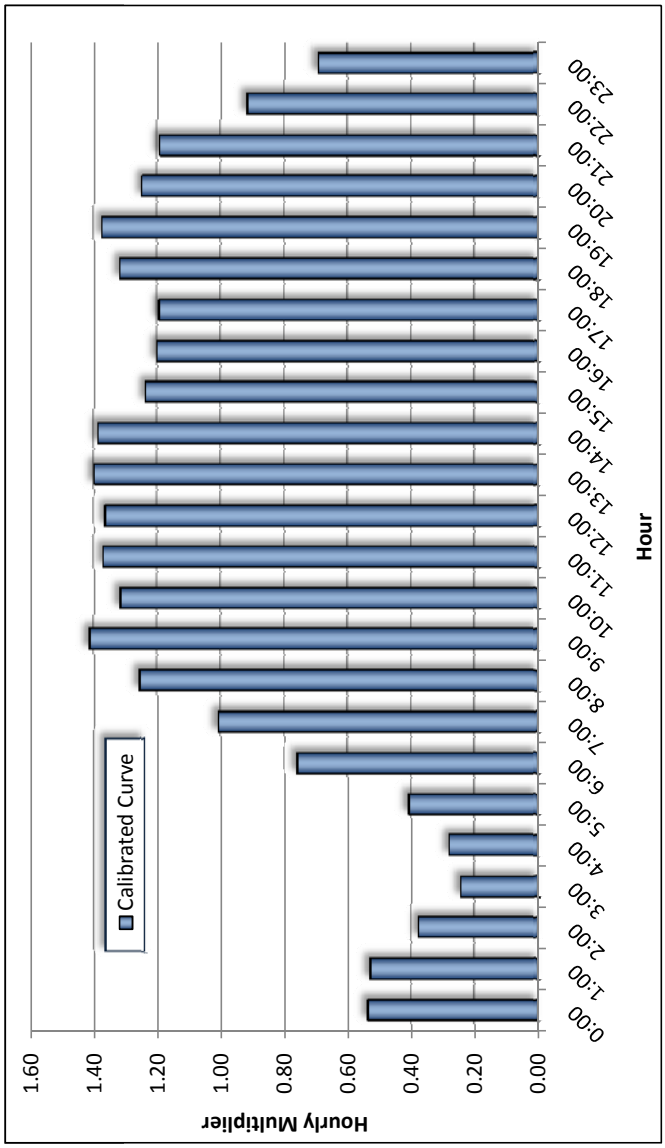


Hour	Measured Flow (mgd)	Modeled Flow (mgd)	Initial Curve	Modified Curve	Calibrated Curve
0:00	0.065	0.068	0.63	0.61	**0.63**
1:00	0.063	0.064	0.61	0.65	**0.61**
2:00	0.063	0.064	0.62	0.75	**0.62**
3:00	0.072	0.068	0.70	0.85	**0.70**
4:00	0.075	0.076	0.73	0.72	**0.73**
5:00	0.070	0.079	0.68	0.75	**0.68**
6:00	0.077	0.076	0.75	0.86	**0.75**
7:00	0.089	0.077	0.86	1.07	**0.86**
8:00	0.110	0.092	1.07	1.25	**1.07**
9:00	0.115	0.110	1.12	1.27	**1.12**
10:00	0.120	0.125	1.17	1.15	**1.17**
11:00	0.133	0.123	1.30	1.40	**1.30**
12:00	0.133	0.127	1.29	1.29	**1.29**
13:00	0.133	0.135	1.29	1.42	**1.29**
14:00	0.130	0.136	1.27	1.29	**1.27**
15:00	0.133	0.137	1.29	1.43	**1.29**
16:00	0.147	0.137	1.43	1.50	**1.43**
17:00	0.140	0.146	1.36	1.38	**1.36**
18:00	0.136	0.145	1.32	0.98	**1.32**
19:00	0.113	0.123	1.10	0.95	**1.10**
20:00	0.107	0.102	1.04	0.93	**1.04**
21:00	0.096	0.096	0.93	0.79	**0.93**
22:00	0.081	0.089	0.79	0.65	**0.79**
23:00	0.067	0.078	0.65	0.63	**0.65**
Average	**0.103**	**0.103**	**1.00**	**1.02**	**1.00**
% Error		**0%**			

Notes:
1. Calibrations performed for Weekday Flows

Flow Meter 4 Dry Weather Calibration

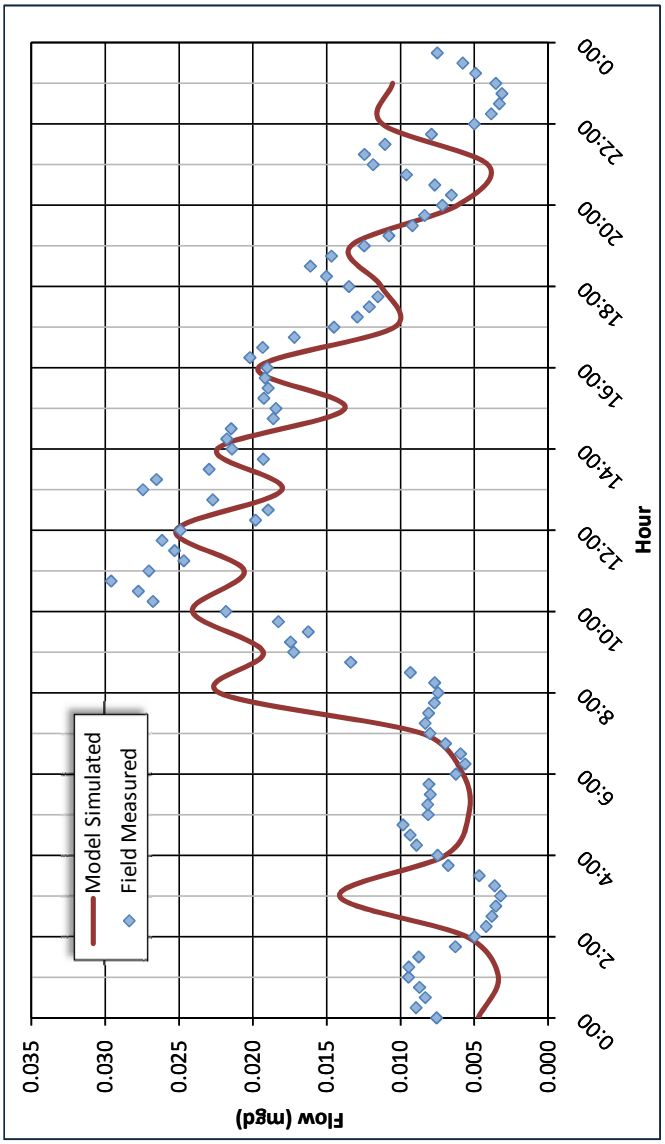


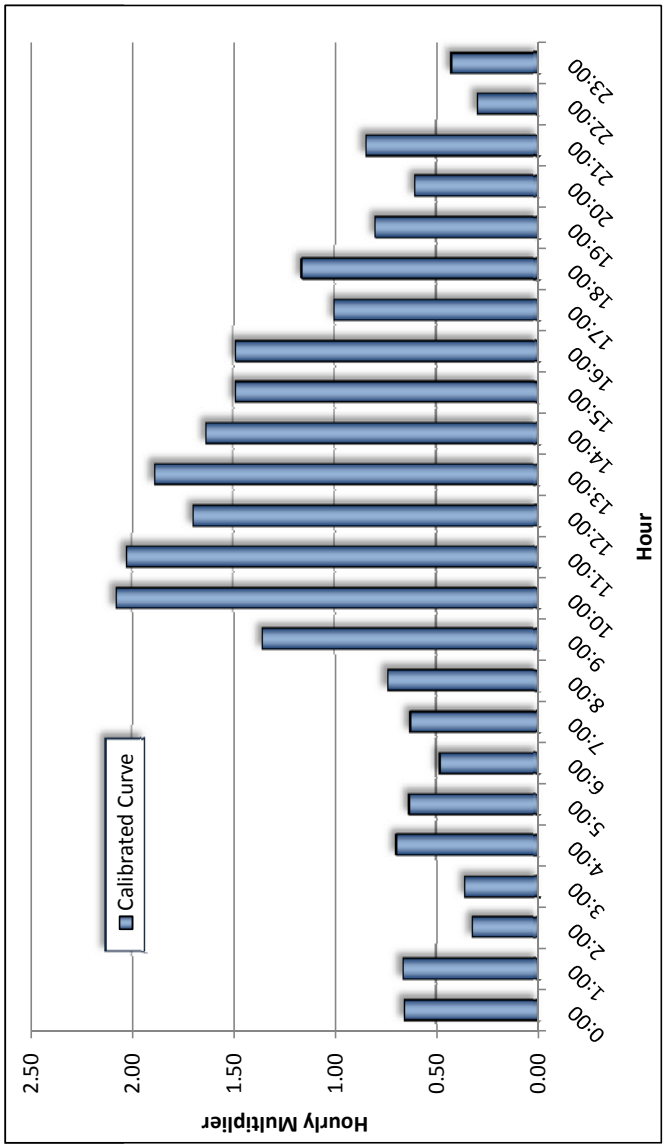


Hour	Measured Flow (mgd)	Modeled Flow (mgd)	Initial Curve	Modified Curve	Calibrated Curve
0:00	0.042	0.046	0.54	0.53	**0.54**
1:00	0.041	0.041	0.53	0.38	**0.53**
2:00	0.029	0.035	0.38	0.24	**0.38**
3:00	0.019	0.025	0.24	0.28	**0.24**
4:00	0.022	0.020	0.28	0.41	**0.28**
5:00	0.032	0.026	0.41	0.76	**0.41**
6:00	0.059	0.049	0.76	1.01	**0.76**
7:00	0.078	0.075	1.01	1.26	**1.01**
8:00	0.098	0.096	1.26	1.41	**1.26**
9:00	0.110	0.109	1.41	1.32	**1.41**
10:00	0.102	0.103	1.32	1.37	**1.32**
11:00	0.107	0.106	1.37	1.36	**1.37**
12:00	0.106	0.106	1.36	1.40	**1.36**
13:00	0.109	0.109	1.40	1.39	**1.40**
14:00	0.108	0.108	1.39	1.24	**1.39**
15:00	0.096	0.097	1.24	1.20	**1.24**
16:00	0.093	0.093	1.20	1.19	**1.20**
17:00	0.093	0.092	1.19	1.32	**1.19**
18:00	0.102	0.102	1.32	1.37	**1.32**
19:00	0.107	0.106	1.37	1.25	**1.37**
20:00	0.097	0.098	1.25	1.19	**1.25**
21:00	0.093	0.093	1.19	0.92	**1.19**
22:00	0.071	0.075	0.92	0.69	**0.92**
23:00	0.054	0.058	0.69	0.54	**0.69**
Average	**0.078**	**0.078**	**1.00**	**1.00**	**1.00**
% Error		**0%**			

Notes:
1. Calibrations performed for Weekday Flows

Flow Meter 5 Dry Weather Calibration

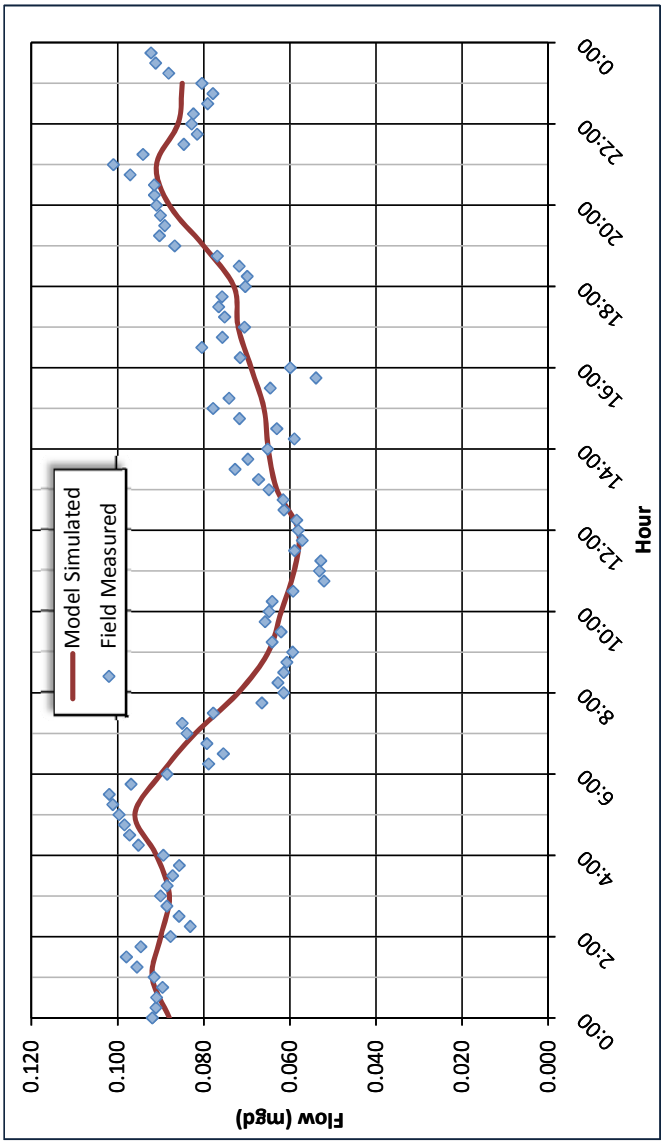


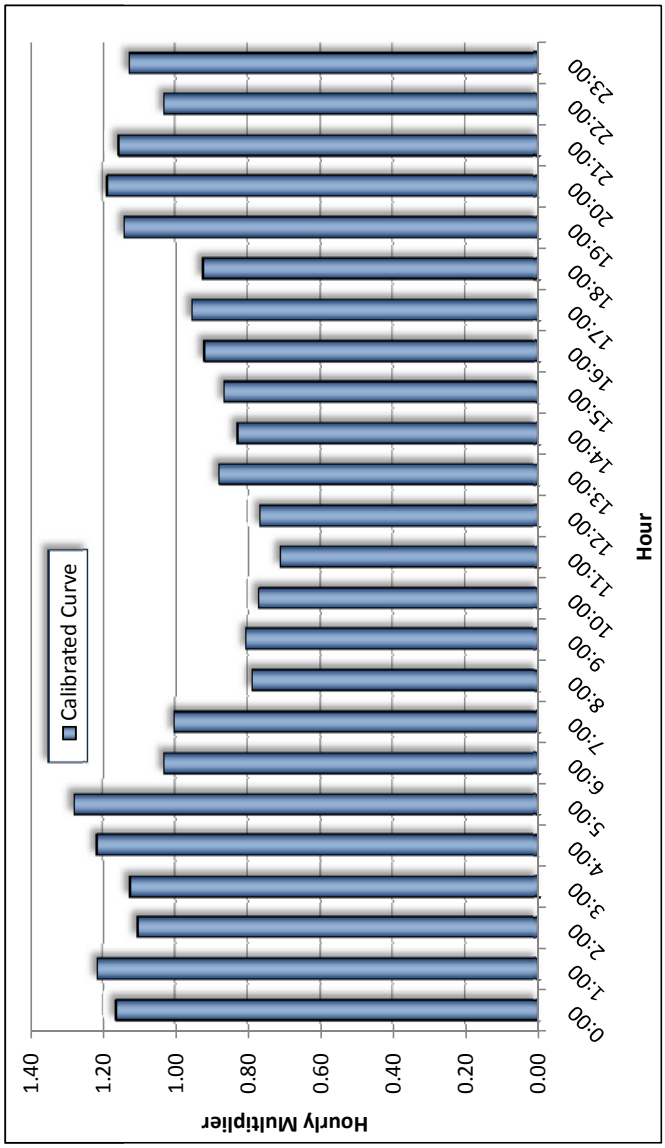


Hour	Measured Flow (mgd)	Modeled Flow (mgd)	Initial Curve	Modified Curve	Calibrated Curve
0:00	0.008	0.005	0.66	0.32	**0.66**
1:00	0.008	0.003	0.67	0.36	**0.67**
2:00	0.004	0.006	0.32	0.70	**0.32**
3:00	0.005	0.014	0.36	0.63	**0.36**
4:00	0.009	0.007	0.70	0.49	**0.70**
5:00	0.008	0.005	0.63	0.63	**0.63**
6:00	0.006	0.006	0.49	0.74	**0.49**
7:00	0.008	0.009	0.63	1.36	**0.63**
8:00	0.009	0.022	0.74	2.08	**0.74**
9:00	0.017	0.019	1.36	2.02	**1.36**
10:00	0.026	0.024	2.08	1.70	**2.08**
11:00	0.026	0.021	2.02	1.89	**2.02**
12:00	0.022	0.025	1.70	1.63	**1.70**
13:00	0.024	0.018	1.89	1.49	**1.89**
14:00	0.021	0.022	1.63	1.49	**1.63**
15:00	0.019	0.014	1.49	1.00	**1.49**
16:00	0.019	0.020	1.49	1.16	**1.49**
17:00	0.013	0.010	1.00	0.80	**1.00**
18:00	0.015	0.011	1.16	0.61	**1.16**
19:00	0.010	0.013	0.80	0.85	**0.80**
20:00	0.008	0.006	0.61	0.30	**0.61**
21:00	0.011	0.004	0.85	0.43	**0.85**
22:00	0.004	0.011	0.30	0.66	**0.30**
23:00	0.005	0.011	0.43	0.67	**0.43**
Average	**0.01275**	**0.013**	**1.00**	**1.00**	**1.00**
% Error		**0%**			

Notes:
1. Calibrations performed for Weekday Flows

Flow Meter 6 Dry Weather Calibration

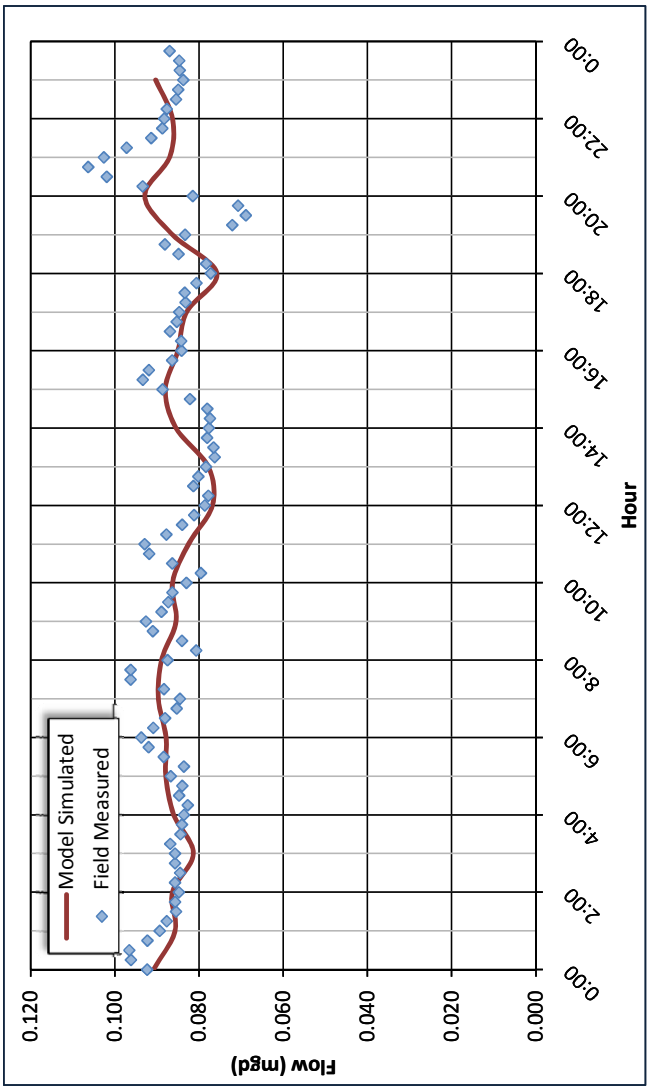


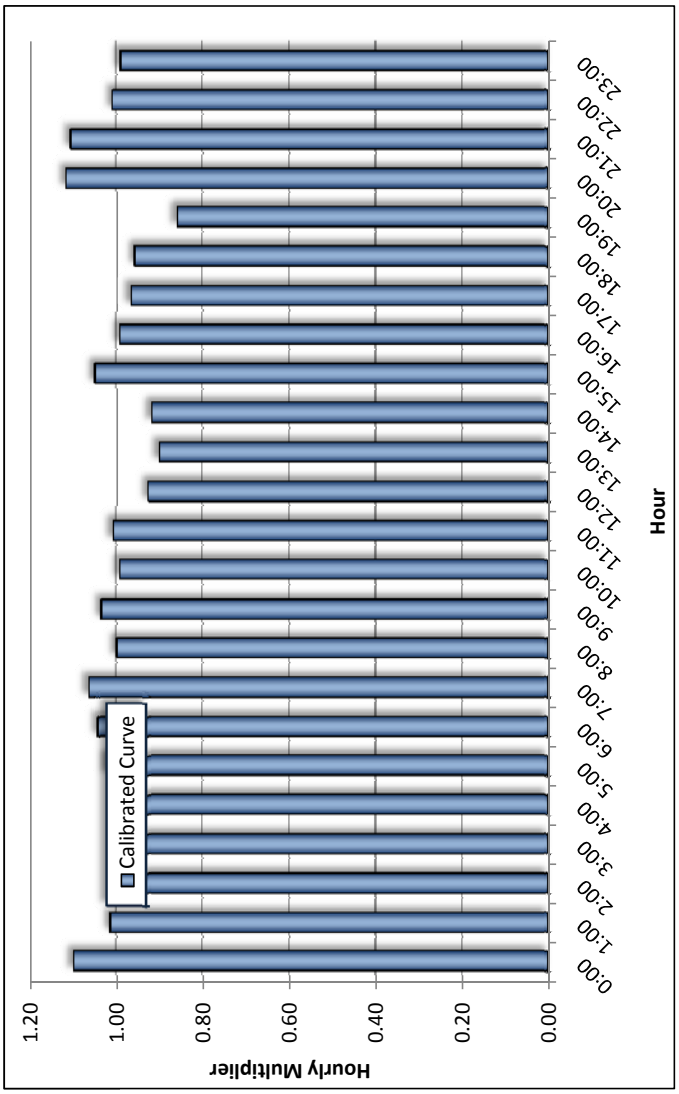


Hour	Measured Flow (mgd)	Modeled Flow (mgd)	Initial Curve	Modified Curve	Calibrated Curve
0:00	0.091	0.088	1.16	1.22	**1.16**
1:00	0.095	0.092	1.22	1.11	**1.22**
2:00	0.086	0.090	1.11	1.13	**1.11**
3:00	0.088	0.088	1.13	1.22	**1.13**
4:00	0.095	0.091	1.22	1.28	**1.22**
5:00	0.100	0.096	1.28	1.03	**1.28**
6:00	0.081	0.090	1.03	1.00	**1.03**
7:00	0.078	0.082	1.00	0.79	**1.00**
8:00	0.062	0.072	0.79	0.80	**0.79**
9:00	0.063	0.065	0.80	0.77	**0.80**
10:00	0.060	0.062	0.77	0.71	**0.77**
11:00	0.055	0.059	0.71	0.77	**0.71**
12:00	0.060	0.058	0.77	0.88	**0.77**
13:00	0.069	0.063	0.88	0.83	**0.88**
14:00	0.065	0.065	0.83	0.87	**0.83**
15:00	0.068	0.066	0.87	0.92	**0.87**
16:00	0.072	0.069	0.92	0.95	**0.92**
17:00	0.074	0.072	0.95	0.93	**0.95**
18:00	0.072	0.073	0.93	1.14	**0.93**
19:00	0.089	0.080	1.14	1.19	**1.14**
20:00	0.093	0.088	1.19	1.16	**1.19**
21:00	0.090	0.091	1.16	1.03	**1.16**
22:00	0.081	0.086	1.03	1.13	**1.03**
23:00	0.088	0.085	1.13	1.16	**1.13**
Average	**0.078**	**0.078**	**1.00**	**1.00**	**1.00**
% Error		**0%**			

Notes:
1. Calibrations performed for Weekday Flows

Flow Meter 7 Dry Weather Calibration

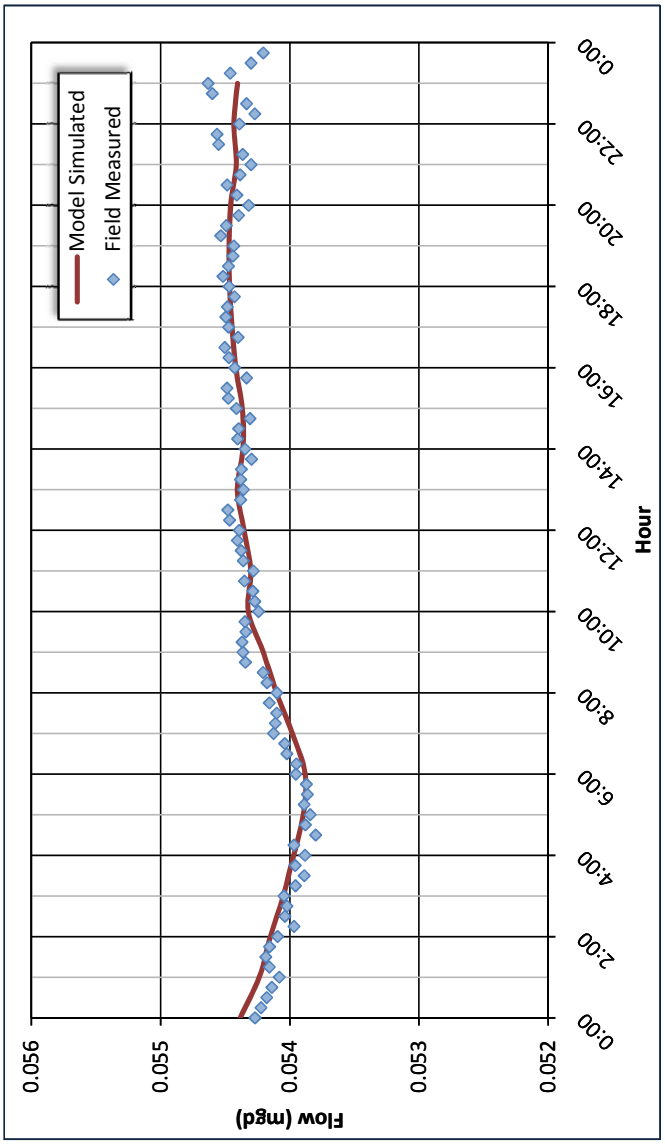


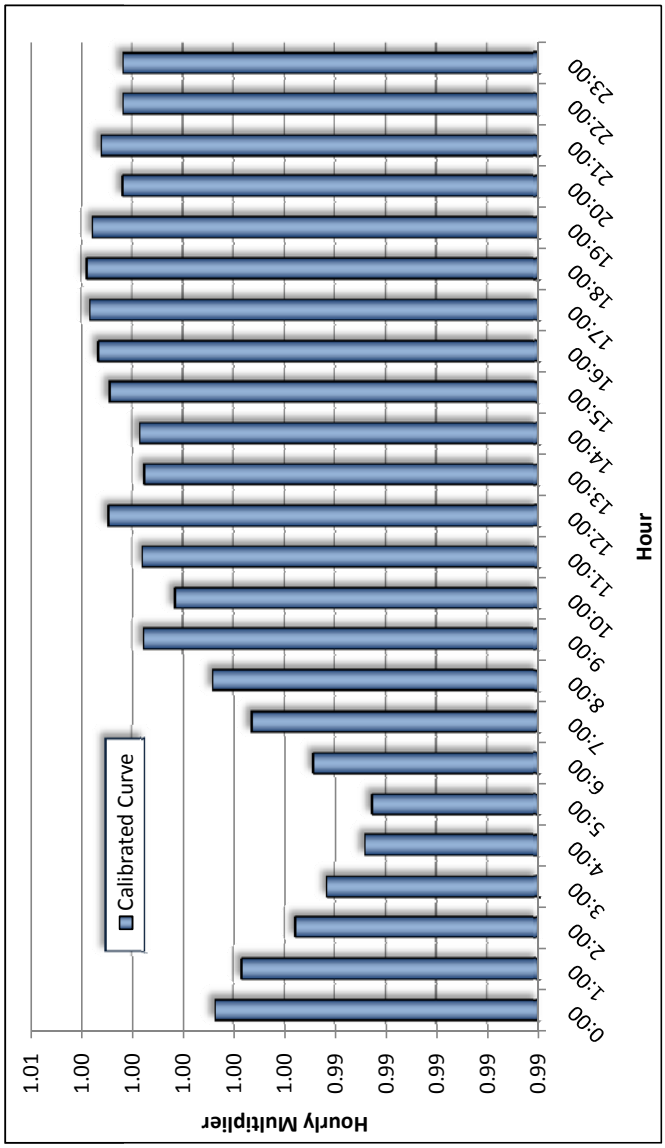


Hour	Measured Flow (mgd)	Modeled Flow (mgd)	Initial Curve	Modified Curve	Calibrated Curve
0:00	0.094	0.091	1.10	1.01	**1.10**
1:00	0.087	0.086	1.01	0.99	**1.01**
2:00	0.085	0.086	0.99	0.99	**0.99**
3:00	0.085	0.081	0.99	0.97	**0.99**
4:00	0.084	0.086	0.97	1.02	**0.97**
5:00	0.088	0.088	1.02	1.04	**1.02**
6:00	0.089	0.088	1.04	1.06	**1.04**
7:00	0.091	0.090	1.06	1.00	**1.06**
8:00	0.086	0.089	1.00	1.03	**1.00**
9:00	0.089	0.085	1.03	0.99	**1.03**
10:00	0.085	0.086	0.99	1.01	**0.99**
11:00	0.086	0.082	1.01	0.93	**1.01**
12:00	0.079	0.077	0.93	0.90	**0.93**
13:00	0.077	0.078	0.90	0.92	**0.90**
14:00	0.079	0.085	0.92	1.05	**0.92**
15:00	0.090	0.088	1.05	0.99	**1.05**
16:00	0.085	0.085	0.99	0.97	**0.99**
17:00	0.083	0.083	0.97	0.96	**0.97**
18:00	0.082	0.076	0.96	0.86	**0.96**
19:00	0.074	0.086	0.86	1.11	**0.86**
20:00	0.096	0.093	1.11	1.11	**1.11**
21:00	0.095	0.087	1.11	1.01	**1.11**
22:00	0.087	0.086	1.01	0.99	**1.01**
23:00	0.085	0.090	0.99	1.10	**0.99**
23:49					
Average	**0.086**	**0.086**	**1.00**	**1.00**	**1.00**
% Error		**0%**			

Notes:
1. Calibrations performed for Weekday Flows

Flow Meter 8 Dry Weather Calibration



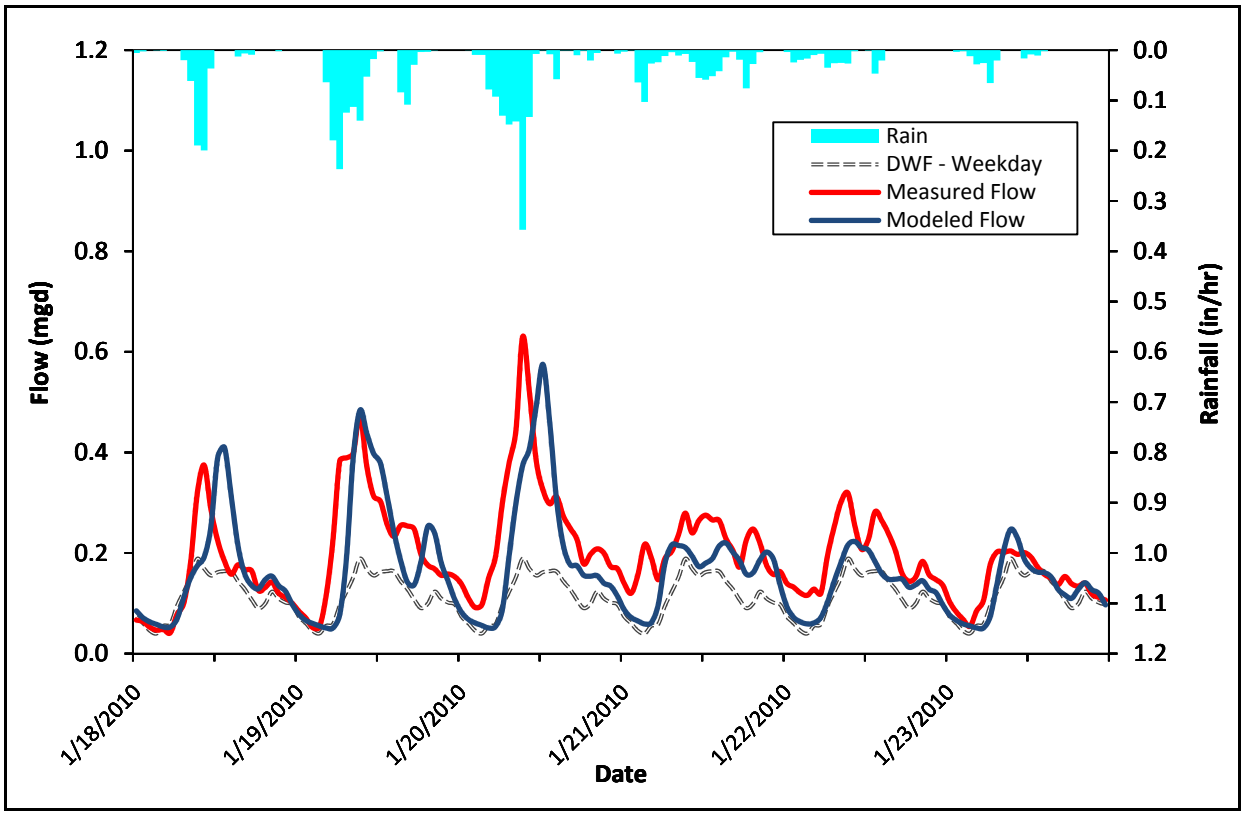


Hour	Measured Flow (mgd)	Modeled Flow (mgd)	Initial Curve	Modified Curve	Calibrated Curve
0:00	0.054	0.054	1.00	1.00	**1.00**
1:00	0.054	0.054	1.00	1.00	**1.00**
2:00	0.054	0.054	1.00	1.00	**1.00**
3:00	0.054	0.054	0.99	0.99	**0.99**
4:00	0.054	0.054	0.99	0.99	**0.99**
5:00	0.054	0.054	0.99	0.99	**0.99**
6:00	0.054	0.054	0.99	0.99	**0.99**
7:00	0.054	0.054	1.00	1.00	**1.00**
8:00	0.054	0.054	1.00	1.00	**1.00**
9:00	0.054	0.054	1.00	1.00	**1.00**
10:00	0.054	0.054	1.00	1.00	**1.00**
11:00	0.054	0.054	1.00	1.00	**1.00**
12:00	0.054	0.054	1.00	1.00	**1.00**
13:00	0.054	0.054	1.00	1.00	**1.00**
14:00	0.054	0.054	1.00	1.00	**1.00**
15:00	0.054	0.054	1.00	1.00	**1.00**
16:00	0.054	0.054	1.00	1.00	**1.00**
17:00	0.054	0.054	1.00	1.00	**1.00**
18:00	0.054	0.054	1.00	1.00	**1.00**
19:00	0.054	0.054	1.00	1.00	**1.00**
20:00	0.054	0.054	1.00	1.00	**1.00**
21:00	0.054	0.054	1.00	1.00	**1.00**
22:00	0.054	0.054	1.00	1.00	**1.00**
23:00	0.054	0.054	1.00	1.00	**1.00**
Average	**0.054**	**0.054**	**1.00**	**1.00**	**1.00**
% Error		**0%**			

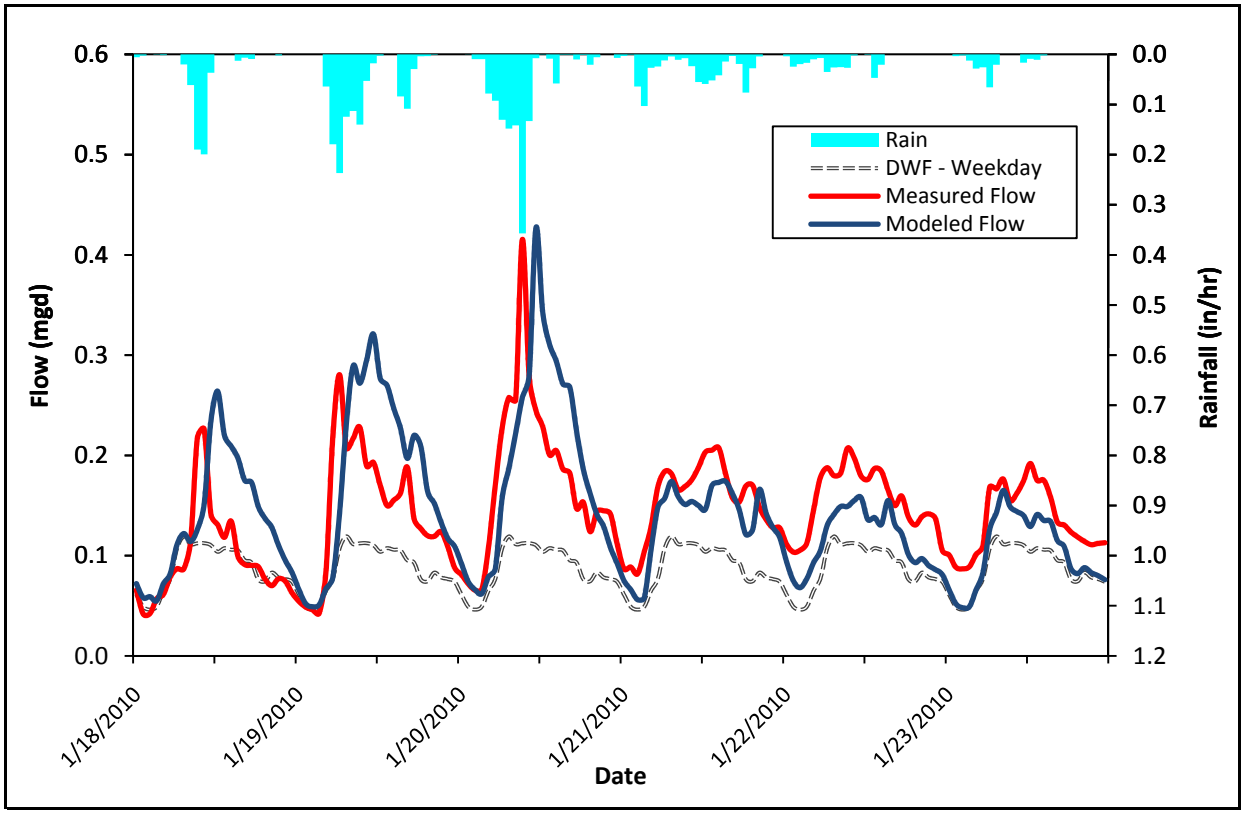
Notes:
1. Calibrations performed for Weekday Flows

APPENDIX C - WET WEATHER FLOW CALIBRATION PLOTS

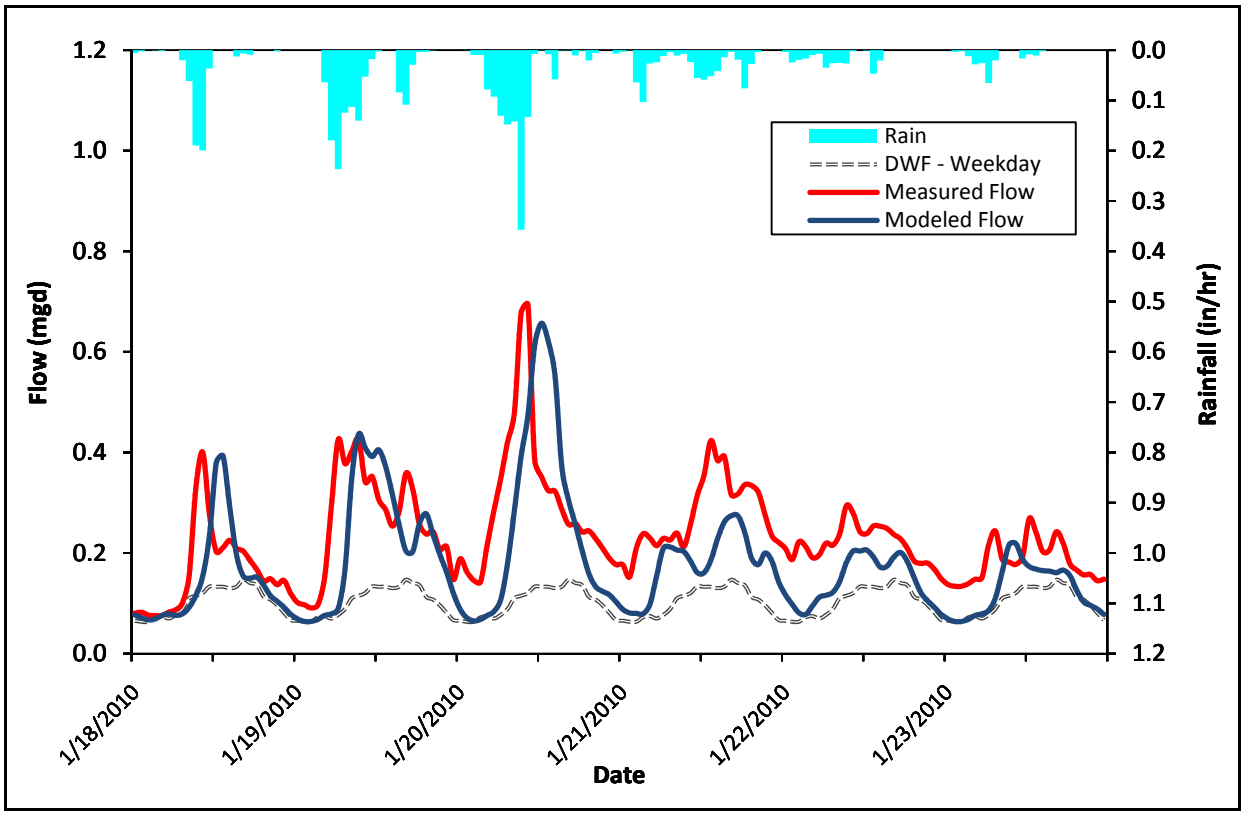
Flow Meter 1 Wet Weather Calibration



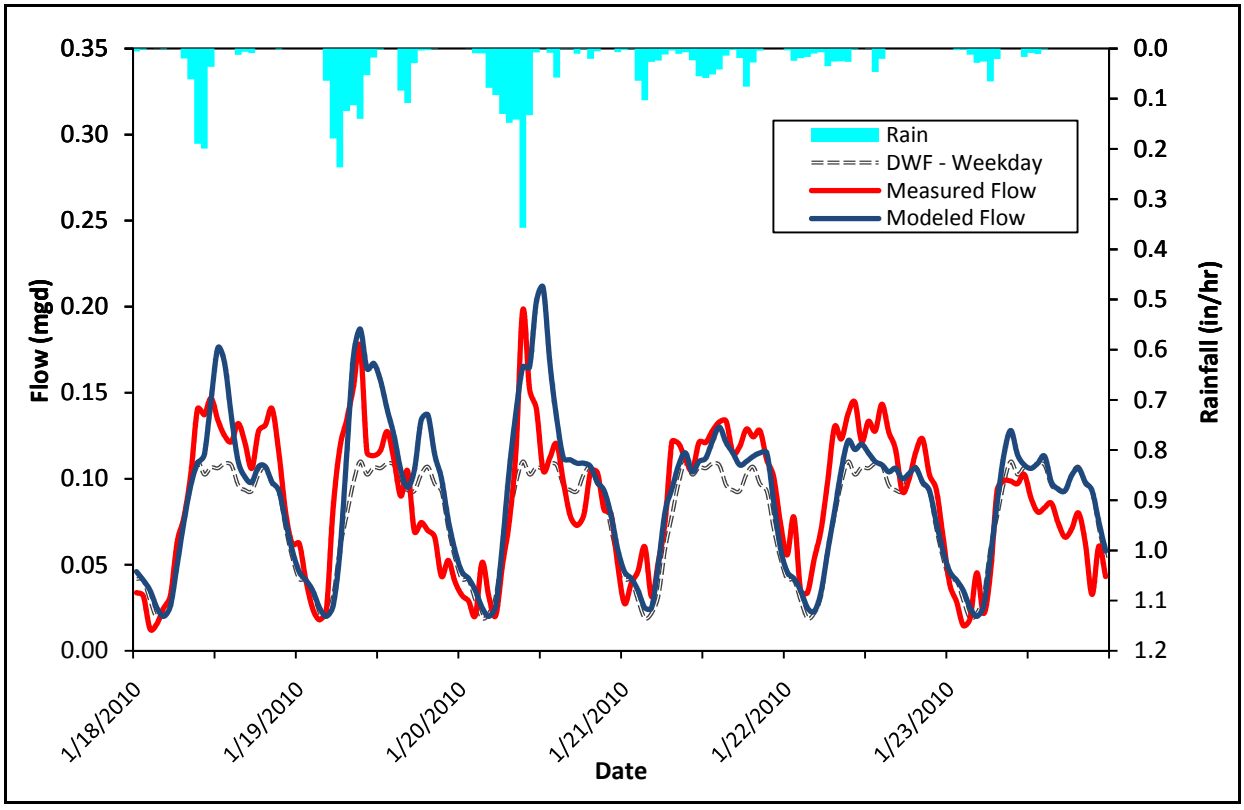
Flow Meter 2 Wet Weather Calibration



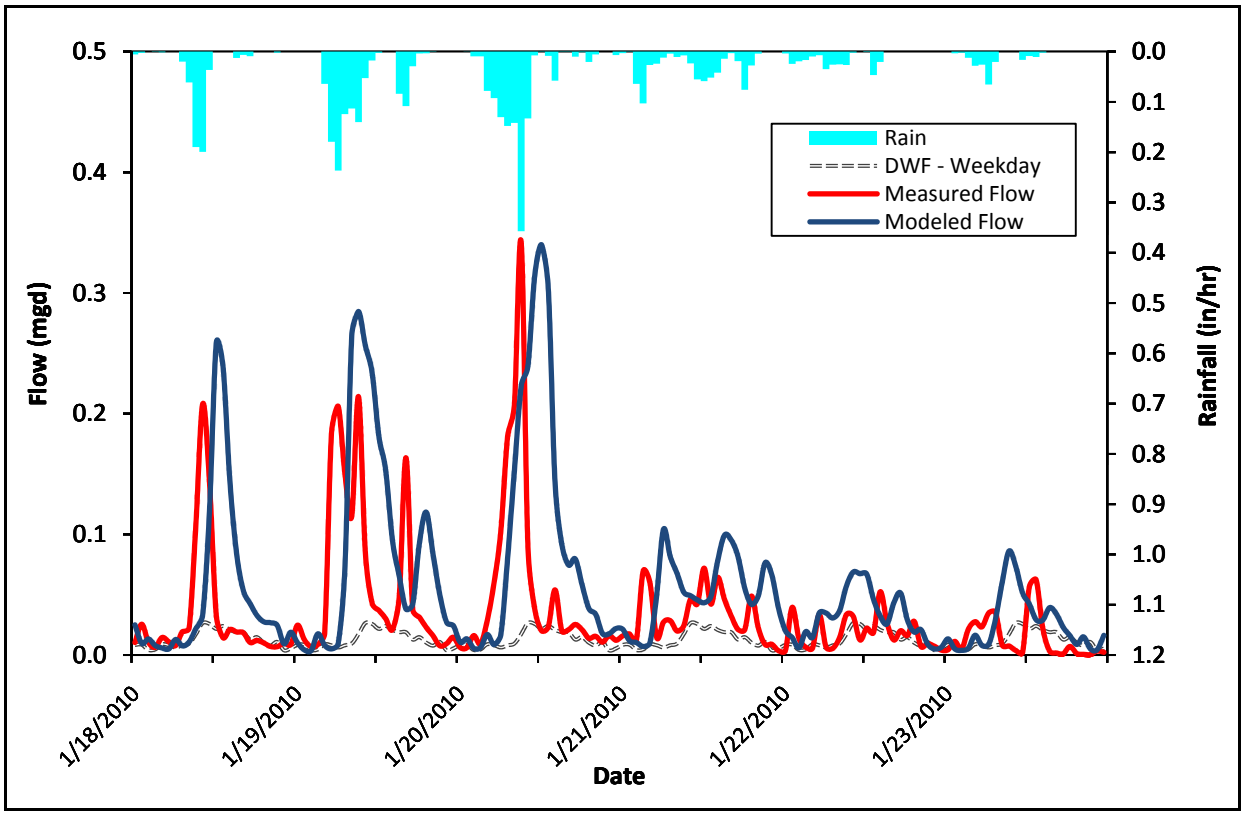
Flow Meter 3 Wet Weather Calibration



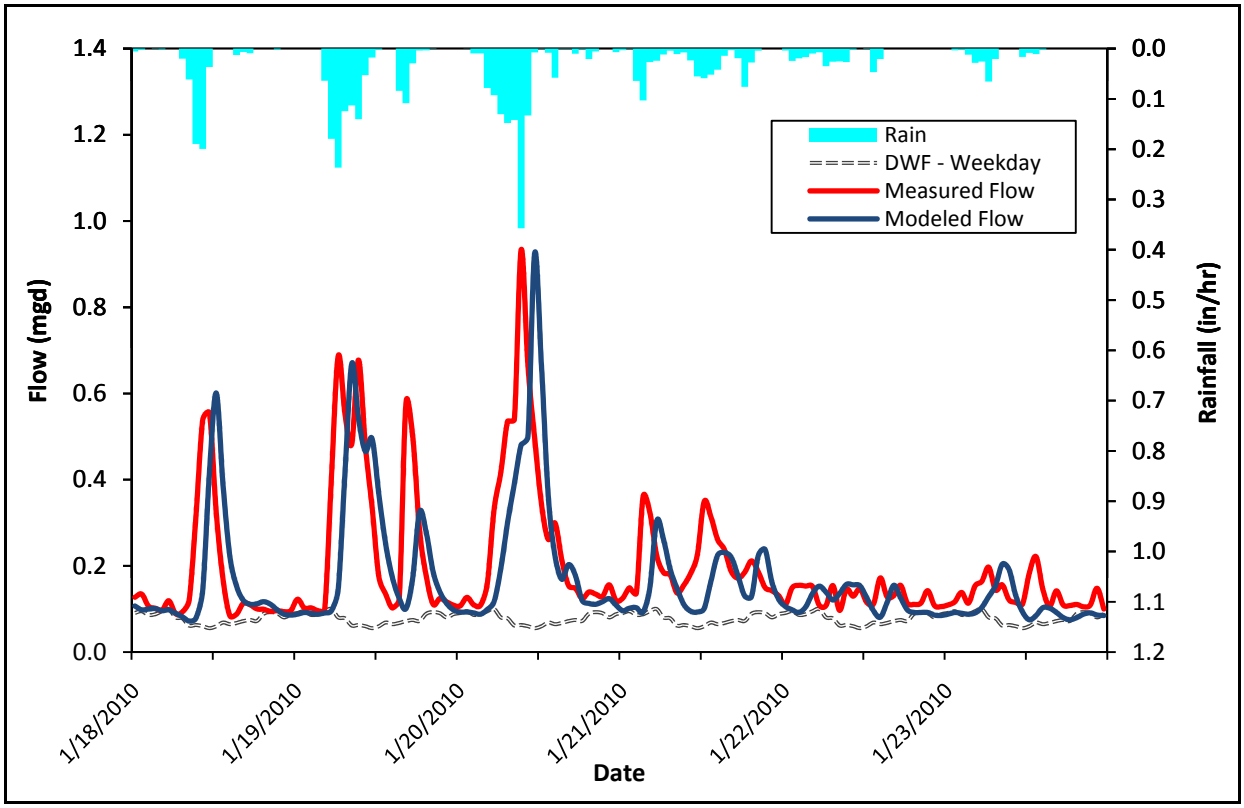
Flow Meter 4 Wet Weather Calibration



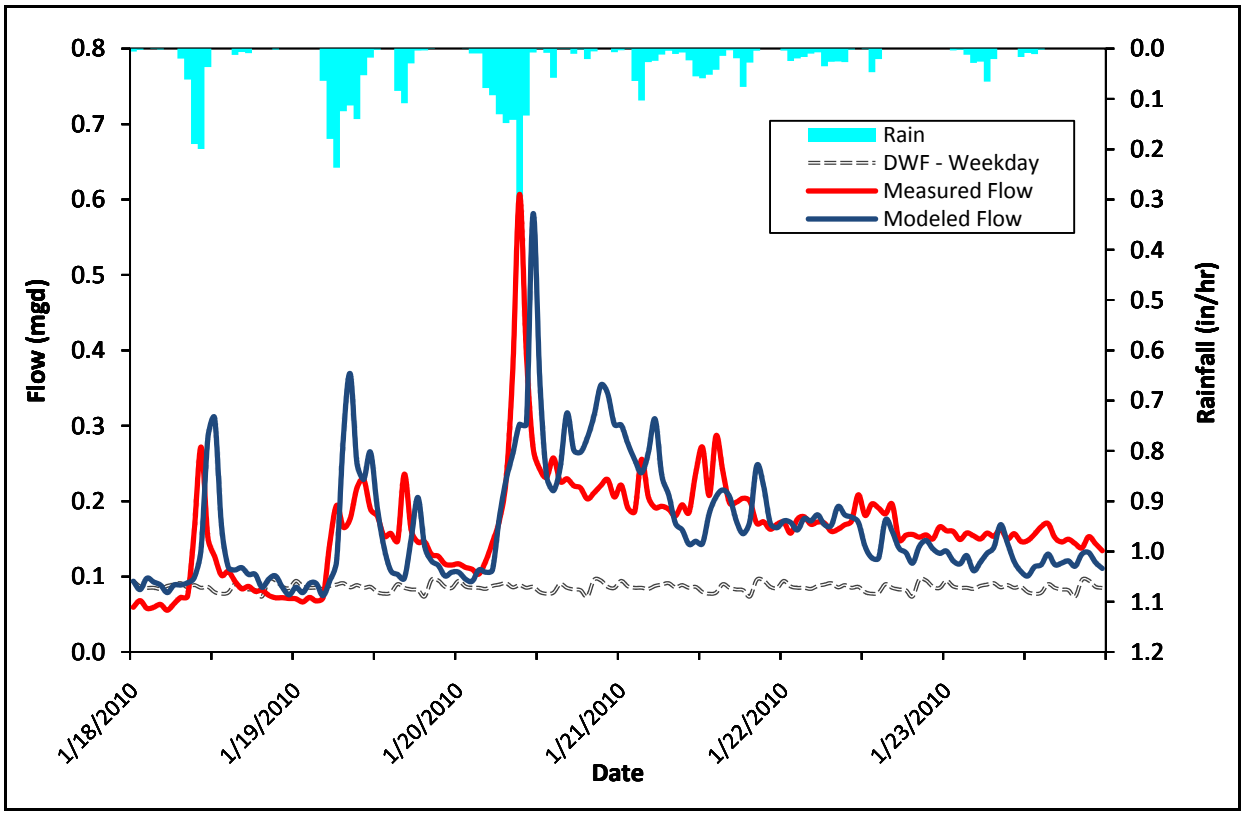
Flow Meter 5 Wet Weather Calibration



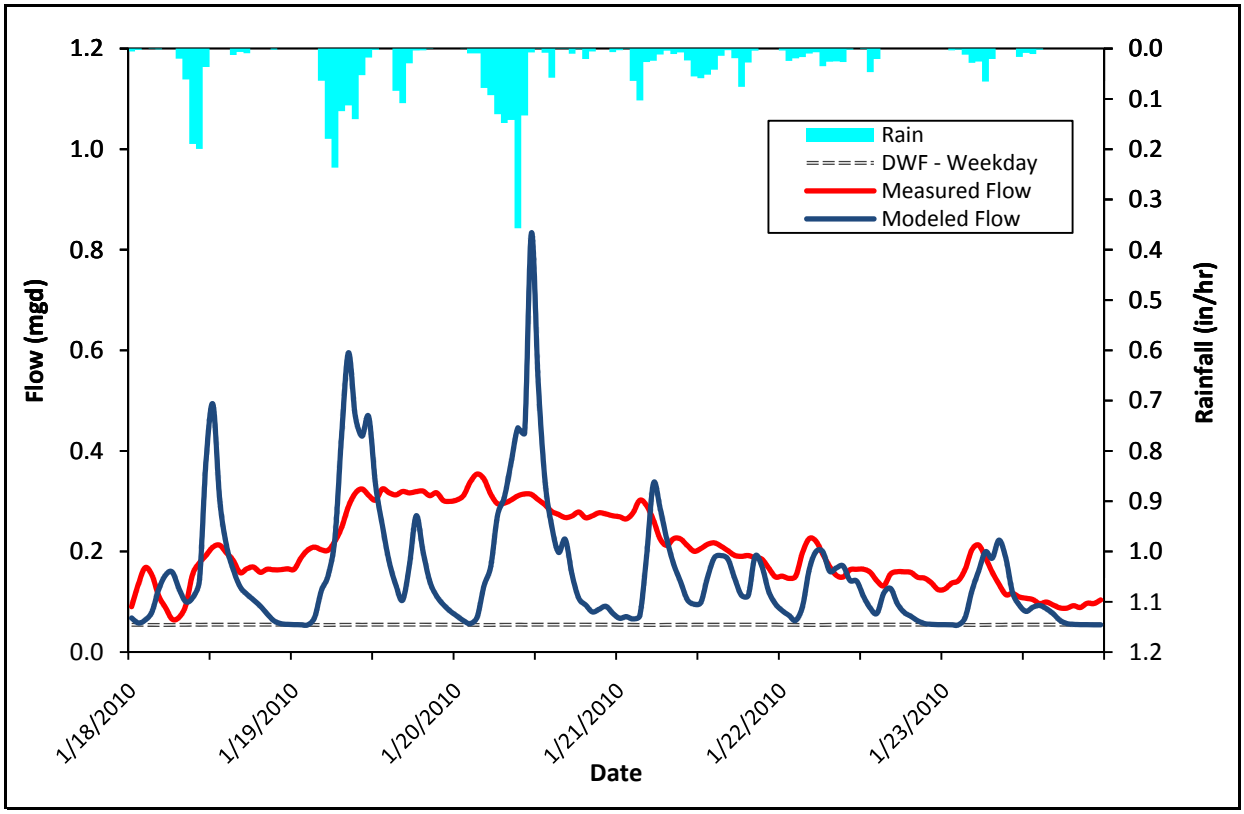
Flow Meter 6 Wet Weather Calibration



Flow Meter 7 Wet Weather Calibration



Flow Meter 8 Wet Weather Calibration



APPENDIX D - CLOSED CIRCUIT TELEVISION INSPECTION SUMMARY

Table 1	PACP Condition Rating Scale Harbor Sewer Inspection for 7th Street and Maritime Street Port of Oakland	
PACP Rating	**Pipe Grade Importance** [1]	**Likelihood of Failure Estimate** [1]
5 - Very Poor	Defects requiring immediate attention	Pipe has failed or will likely fail within the next 5 years
4 - Poor	Severe defects that will become Grade 5 defects within the foreseeable future	Pipe will probably fail in 5 to 10 years
3 - Fair	Moderate defects that will continue to deteriorate	Pipe may fail in 10 to 20 years
2 - Good	Defects that have not begun to deteriorate	Pipe unlikely to fail for at least 20 years
1 - Excellent	Minor defects	Failure is unlikely in the foreseeable future

Note:

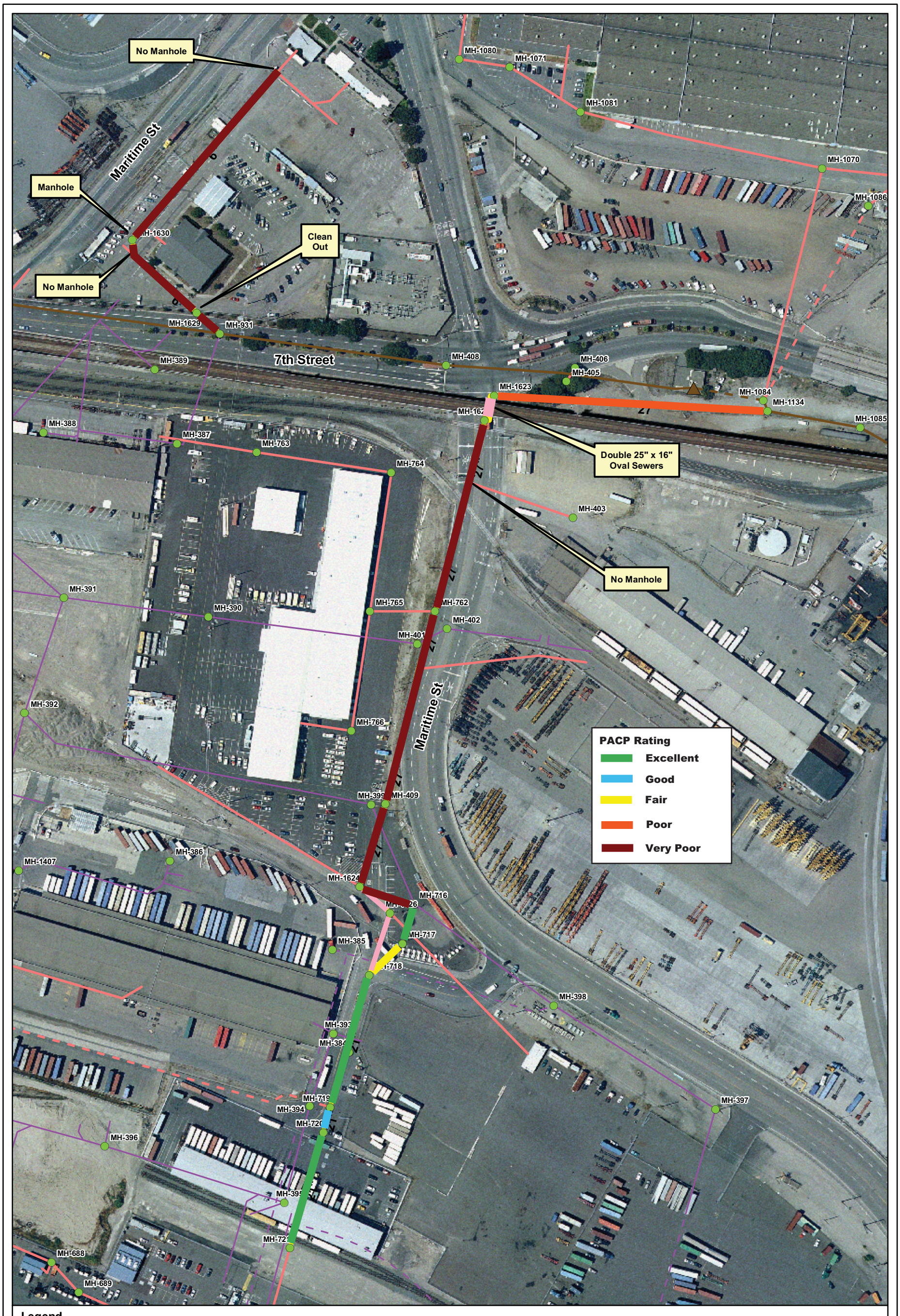
(1) The PACP Condition Grading System only considers internal pipe conditions obtained from CCTV inspection. While other factors such as pipe material, depth, soils, and surface conditions also affect pipe survivability and the likelihood of failure, those factors have not been incorporated into the PACP Condition Grading System

Table 2	Harbor Sewer Inspection Sewer Condition Ratings Harbor Sewer Inspection for 7th Street and Maritime Street Port of Oakland					
Starting Node	**Ending Node**	**Diameter (in)**	**As-built Length (LF)**	**PACP Structure**	**PACP O&M**	**PACP Overall**
721[1]	720	21	112	**0000**	**0000**	**0000**
720[1]	719	21	147	**0000**	**2100**	**2100**
719	718	21	252	**0000**	**0000**	**0000**
718	717	21	94	**0000**	**3121**	**3121**
717	716	21	76	**0000**	**0000**	**0000**
716[2]	1624	27	143	**5700**	**5100**	**5800**
716[1],[2]	1624	27	143	**5G00**	**5G00**	**5O00**
1624[2]	762	27	515	**5A00**	**5A00**	**5D00**
1624[1],[2]	762	27	515	**5A00**	**5A00**	**5D00**
762	1622	27	360	**5A00**	**5A00**	**5D00**
1623	1134	27	505	**3A00**	**4A00**	**4A3A**
End[1]	1630	6	253	**3B00**	**512A**	**513B**
1630	931	6	178	**0000**	**5121**	**5121**

Notes:

(1)Video taken in direction of reverse flow.

(2) Camera could not pass due to debris. Two inspections were performed: one downstream from the starting node and one upstream from the ending node.



Legend

- Manhole
- CCTV Location
- Abandoned Sewer Pipelines
- Other Pipelines

City of Oakland/ EBMUD Facilities

- Lift Station
- Gravity Main
- Force Main

Feet

0 100 200

Figure 1
CCTV Location -
7th Street and Maritime Street
Port-Wide Sewer System Management Plan
Port of Oakland

PORT OF OAKLAND carollo

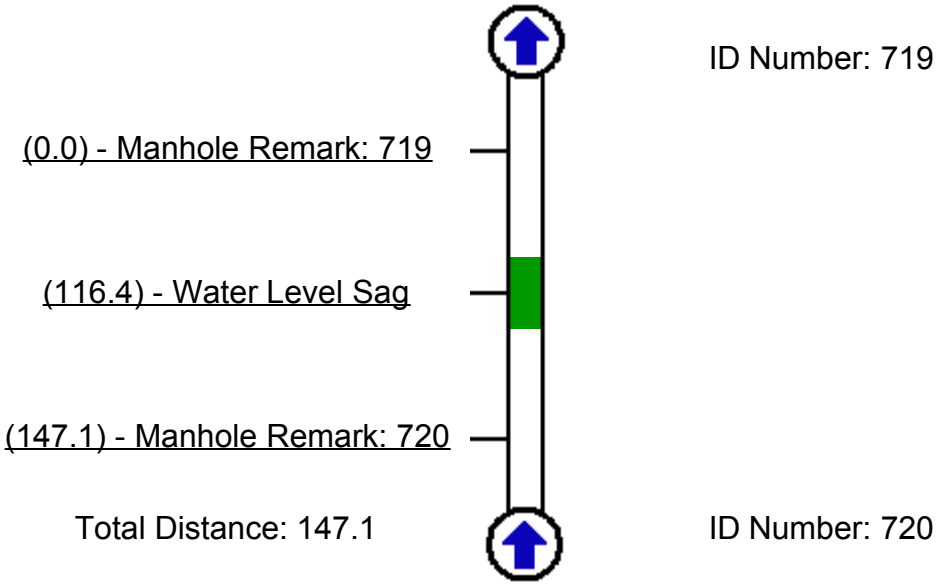
Revision Date: August 27, 2009

PO Number: Harbor

Date: 12/2/2009 9:17:06 AM
Street: Maritime Street
Distance: 147.1
Run Number:
Height (Diameter): 21

Pipe Segment Reference:
Upstream MH: 720
Downstream MH: 719
Direction of Survey: Upstream
Material: Vitrified Clay Pipe

Severity
Light
Moderate
Average
Heavy
Severe



PO Number: Harbor

Date: 12/2/2009 9:17:06 AM
Street: Maritime Street
Distance: 147.1
Run Number:
Height (Diameter): 21

Pipe Segment Reference:
Upstream MH: 720
Downstream MH: 719
Direction of Survey: Upstream
Material: Vitrified Clay Pipe

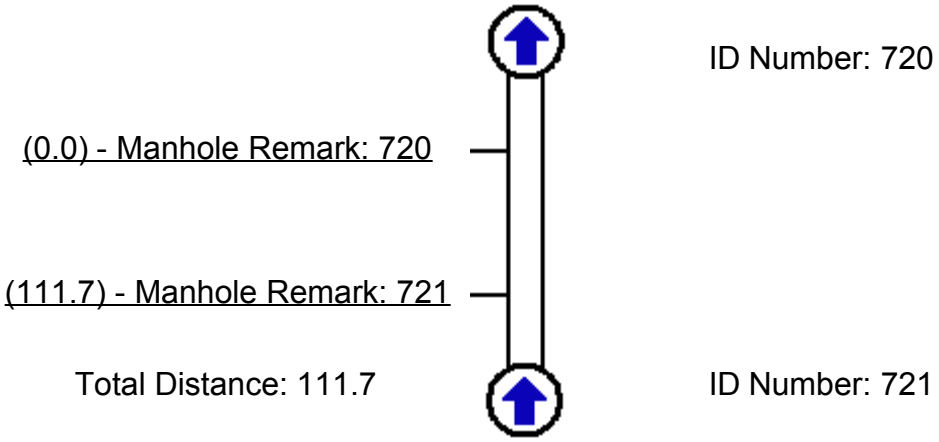
Distance	Fault Observation	Time	Picture
0.0	Manhole Severity: None Remarks: 719	41 00:00:00	
116.4	Water Level Sag Severity: None Percent: 10 Maint Weight: 2	07:17 00:00:00	
147.1	Manhole Severity: None Remarks: 720	09:39 00:00:00	

PO Number: Harbor

Date: 12/2/2009 10:08:20 AM
Street: Maritime Street
Distance: 111.7
Run Number:
Height (Diameter): 13

Pipe Segment Reference:
Upstream MH: 721
Downstream MH: 720
Direction of Survey: Upstream
Material: Polyethylene

Severity
Light
Moderate
Average
Heavy
Severe



PO Number: Harbor

Date: 12/2/2009 10:08:20 AM
Street: Maritime Street
Distance: 111.7
Run Number:
Height (Diameter): 13

Pipe Segment Reference:
Upstream MH: 721
Downstream MH: 720
Direction of Survey: Upstream
Material: Polyethylene

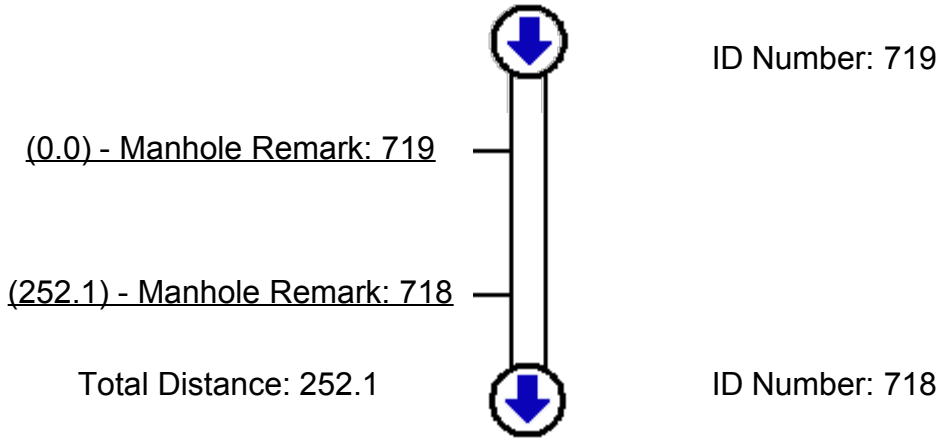
Distance	Fault Observation	Time	Picture
0.0	Manhole Severity: None Remarks: 720	01:05 00:00:00	
111.7	Manhole Severity: None Remarks: 721	05:26 00:00:00	

PO Number: Harbor

Date: 12/2/2009 10:26:24 AM
Street: Maritime Street
Distance: 252.1
Run Number:
Height (Diameter): 21

Pipe Segment Reference:
Upstream MH: 719
Downstream MH: 718
Direction of Survey: Downstream
Material: Vitrified Clay Pipe

Severity
Light
Moderate
Average
Heavy
Severe



PO Number: Harbor

Date: 12/2/2009 10:26:24 AM
Street: Maritime Street
Distance: 252.1
Run Number:
Height (Diameter): 21

Pipe Segment Reference:
Upstream MH: 719
Downstream MH: 718
Direction of Survey: Downstream
Material: Vitrified Clay Pipe

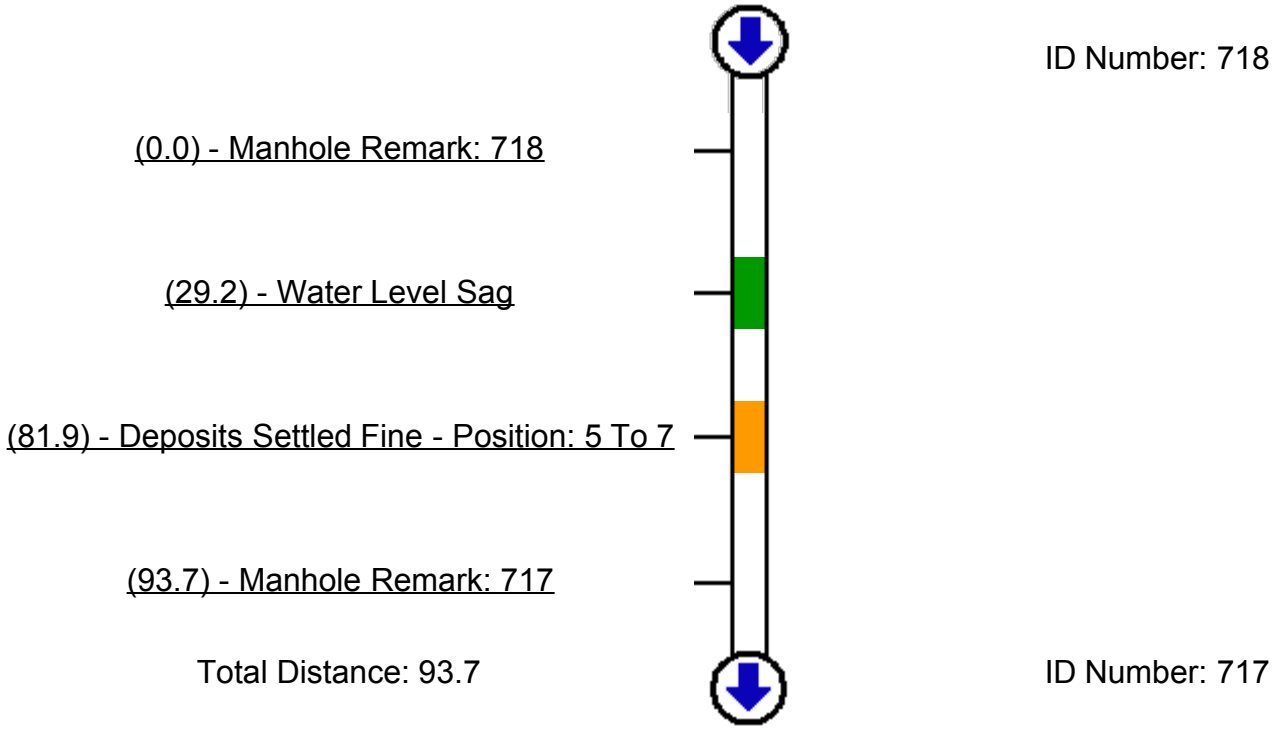
Distance	Fault Observation	Time	Picture
0.0	Manhole Severity: None Remarks: 719	42 00:00:00	
252.1	Manhole Severity: None Remarks: 718	12:45 00:00:00	

PO Number: Harbor

Date: 12/2/2009 11:16:07 AM
Street: Maritime Street
Distance: 93.7
Run Number:
Height (Diameter): 21

Pipe Segment Reference:
Upstream MH: 718
Downstream MH: 717
Direction of Survey: Downstream
Material: Vitrified Clay Pipe

Severity
Light
Moderate
Average
Heavy
Severe



PO Number: Harbor

Date: 12/2/2009 11:16:07 AM
Street: Maritime Street
Distance: 93.7
Run Number:
Height (Diameter): 21

Pipe Segment Reference:
Upstream MH: 718
Downstream MH: 717
Direction of Survey: Downstream
Material: Vitrified Clay Pipe

Distance	Fault Observation	Time	Picture
0.0	Manhole Severity: None Remarks: 718	40 00:00:00	
29.2	Water Level Sag Severity: None Percent: 10 Maint Weight: 2	04:31 00:00:00	
81.9	Deposits Settled Fine Position: 5 To 7 Severity: None Percent: 15 Maint Weight: 3	06:57 00:00:00	

Distance	Fault Observation	Time	Picture

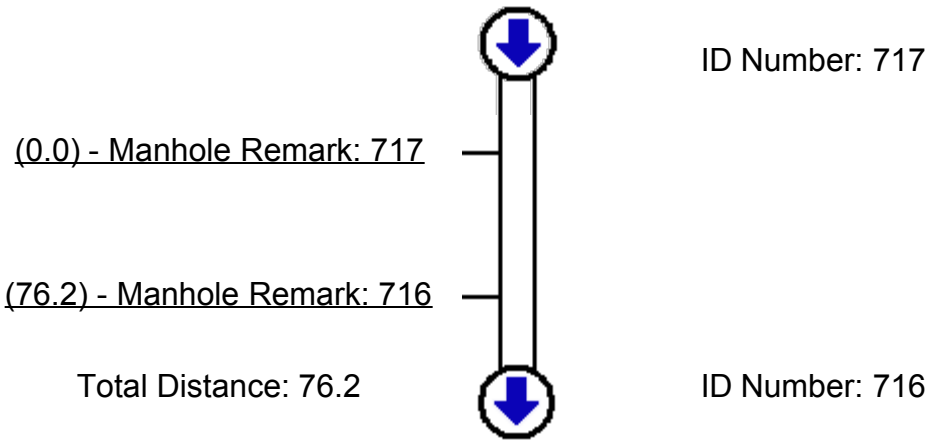
93.7	**Manhole** **Severity: None** **Remarks: 717**	**08:06** **00:00:00**	

PO Number: Harbor

Date: 12/2/2009 11:54:07 AM
Street: Maritime Street
Distance: 76.2
Run Number:
Height (Diameter): 21

Pipe Segment Reference:
Upstream MH: 717
Downstream MH: 716
Direction of Survey: Downstream
Material: Vitrified Clay Pipe

Severity
Light
Moderate
Average
Heavy
Severe



PO Number: Harbor

Date: 12/2/2009 11:54:07 AM
Street: Maritime Street
Distance: 76.2
Run Number:
Height (Diameter): 21

Pipe Segment Reference:
Upstream MH: 717
Downstream MH: 716
Direction of Survey: Downstream
Material: Vitrified Clay Pipe

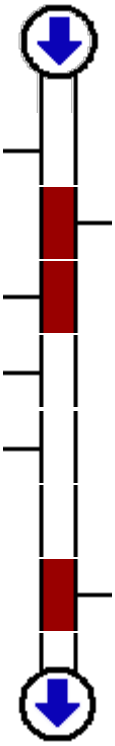
Distance	Fault Observation	Time	Picture
0.0	Manhole Severity: None Remarks: 717	43 00:00:00	
76.2	Manhole Severity: None Remarks: 716	11:00 00:00:00	

PO Number: Harbor

Date: 12/2/2009 12:11:32 PM
Street: Maritime Street
Distance: 30
Run Number:
Height (Diameter): 27

Pipe Segment Reference:
Upstream MH: 716
Downstream MH: 1624
Direction of Survey: Downstream
Material: Reinforced Concrete Pipe

Severity
Light
Moderate
Average
Heavy
Severe



ID Number: 716

(0.0) - Manhole Remark: 716

(2.0) - Surface Reinforcement Visible Chemical - Position: 8 To 4 - Cont Def: S01

(2.0) - Deposits Settled Fine - Position: 4 To 8

(2.0) - General Observation Remark: Zoom down pipe.

(2.0) - Abandoned Survey Remark: Camera will not pass debris in invert.

(30.0) - Surface Reinforcement Visible Chemical - Position: 8 To 4 - Cont Def: F01

Total Distance: 30

ID Number: 1624

PO Number: Harbor

Date: 12/2/2009 12:11:32 PM
Street: Maritime Street
Distance: 30
Run Number:
Height (Diameter): 27

Pipe Segment Reference:
Upstream MH: 716
Downstream MH: 1624
Direction of Survey: Downstream
Material: Reinforced Concrete Pipe

Distance	Fault Observation	Time	Picture
0.0	Manhole Severity: None Remarks: 716	56 00:00:00	
2.0	Surface Reinforcement Visible Chemical Position: 8 To 4 Severity: None Cont Defect: S01 Struct Weight: 5	06:42 00:00:00	
2.0	Deposits Settled Fine Position: 4 To 8 Severity: None Percent: 35 Maint Weight: 5	07:36 00:00:00	

Distance	Fault Observation	Time	Picture

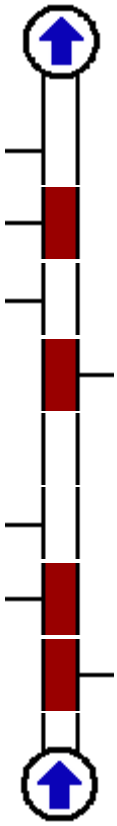
2.0	**General Observation Severity: None Remarks: Zoom down pipe.**	**09:53 00:00:00**	
2.0	**Abandoned Survey Severity: None Remarks: Camera will not pass debris in invert.**	**10:37 00:00:00**	
30.0	**Surface Reinforcement Visible Chemical Position: 8 To 4 Severity: None Cont Defect: F01 Struct Weight: 5**	**11:53 00:00:00**	

PO Number: Harbor

Date: 12/2/2009 12:42:21 PM
Street: Maritime Street
Distance: 143
Run Number:
Height (Diameter): 27

Pipe Segment Reference:
Upstream MH: 716
Downstream MH: 1624
Direction of Survey: Upstream
Material: Reinforced Concrete Pipe

Severity
Light
Moderate
Average
Heavy
Severe



ID Number: 1624

(0.0) - Manhole Remark: 1624

(3.9) - Deposits Settled Fine - Position: 4 To 8 - Cont Def: S01

(4.0) - Abandoned Survey Remark: Camera will not pass debris.

(4.2) - Surface Reinforcement Visible Chemical - Position: 8 To 4 - Cont Def: S03

(143.0) - General Observation Remark: Zoom to MH 716

(143.0) - Deposits Settled Fine - Position: 4 To 8 - Cont Def: F01

(143.0) - Surface Reinforcement Visible Chemical - Position: 8 To 4 - Cont Def: F03

Total Distance: 143

ID Number: 716

PO Number: Harbor

Date: 12/2/2009 12:42:21 PM
Street: Maritime Street
Distance: 143
Run Number:
Height (Diameter): 27

Pipe Segment Reference:
Upstream MH: 716
Downstream MH: 1624
Direction of Survey: Upstream
Material: Reinforced Concrete Pipe

Distance	Fault Observation	Time	Picture
0.0	Manhole Severity: None Remarks: 1624	42 00:00:00	
3.9	Deposits Settled Fine Position: 4 To 8 Severity: None Cont Defect: S01 Percent: 35 Maint Weight: 5	05:47 00:00:00	
4.0	Abandoned Survey Severity: None Remarks: Camera will not pass debris.	15:12 00:00:00	

Distance	Fault Observation	Time	Picture

4.2	Surface Reinforcement Visible Chemical Position: 8 To 4 Severity: None Cont Defect: S03 Struct Weight: 5	08:23 00:00:00	
143.0	General Observation Severity: None Remarks: Zoom to MH 716	13:19 00:00:00	
143.0	Deposits Settled Fine Position: 4 To 8 Severity: None Cont Defect: F01 Percent: 35 Maint Weight: 5	13:36 00:00:00	

Distance	Fault Observation	Time	Picture
143.0	Surface Reinforcement Visible Chemical Position: 8 To 4 Severity: None Cont Defect: F03 Struct Weight: 5	13:08 00:00:00	

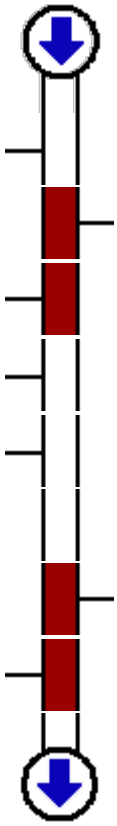
			 Upstream MH 716 Maritime Street to MH 1624 Surface Reinforcement Visible Chemical FT 143.0 12/02/2009 27 VCP

PO Number: Harbor

Date: 12/2/2009 1:24:39 PM
Street: Maritime Street
Distance: 50
Run Number:
Height (Diameter): 27

Pipe Segment Reference:
Upstream MH: 1624
Downstream MH: 762
Direction of Survey: Downstream
Material: Reinforced Concrete Pipe

Severity
Light
Moderate
Average
Heavy
Severe



ID Number: 1624

(0.0) - Manhole Remark: 1624

(2.0) - Surface Reinforcement Corroded Chemical - Position: 8 To 4 - Cont Def: S01

(2.0) - Deposits Settled Other - Position: 4 To 8 - Cont Def: S02 Remark: Mud and rocks.

(2.0) - General Observation Remark: Zoom down pipe.

(4.0) - Abandoned Survey Remark: Camera will not pass debris

(50.0) - Surface Reinforcement Corroded Chemical - Position: 8 To 4 - Cont Def: F01

(50.0) - Deposits Settled Other - Position: 4 To 8 - Cont Def: F02 Remark: Mud and rocks.

Total Distance: 50

ID Number: 762

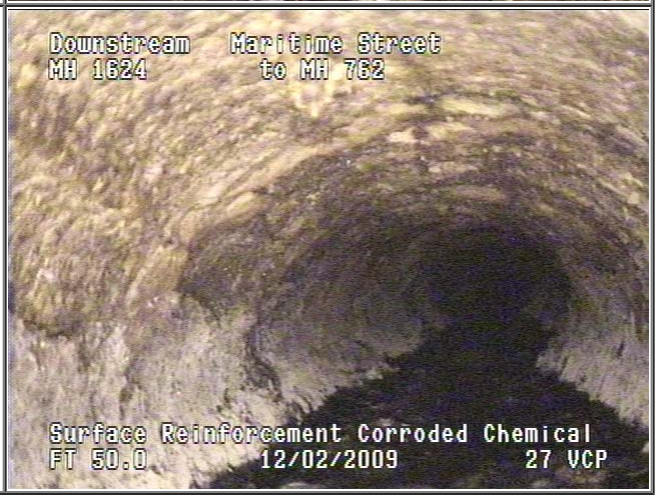
PO Number: Harbor

Date: 12/2/2009 1:24:39 PM
Street: Maritime Street
Distance: 50
Run Number:
Height (Diameter): 27

Pipe Segment Reference:
Upstream MH: 1624
Downstream MH: 762
Direction of Survey: Downstream
Material: Reinforced Concrete Pipe

Distance	Fault Observation	Time	Picture
0.0	Manhole Severity: None Remarks: 1624	47 00:00:00	
2.0	Surface Reinforcement Corroded Chemical Position: 8 To 4 Severity: None Cont Defect: S01 Struct Weight: 5	01:48 00:00:00	
2.0	Deposits Settled Other Position: 4 To 8 Severity: None Cont Defect: S02 Percent: 35 Remarks: Mud and rocks. Maint Weight: 5	03:33 00:00:00	

Distance	Fault Observation	Time	Picture

2.0	**General Observation Severity: None Remarks: Zoom down pipe.**	**04:44 00:00:00**	
4.0	**Abandoned Survey Severity: None Remarks: Camera will not pass debris**	**06:06 00:00:00**	
50.0	**Surface Reinforcement Corroded Chemical Position: 8 To 4 Severity: None Cont Defect: F01 Struct Weight: 5**	**5:10 00:00:00**	

Distance	Fault Observation	Time	Picture
50.0	**Deposits Settled Other Position: 4 To 8 Severity: None Cont Defect: F02 Percent: 35 Remarks: Mud and rocks.**	**05:23 00:00:00**	

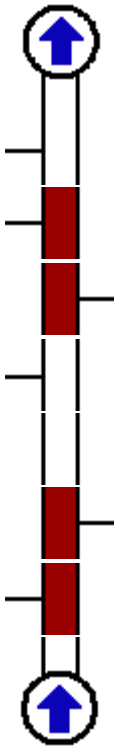
	Maint Weight: 5		

PO Number: Harbor

Date: 12/2/2009 2:20:17 PM
Street: Maritime Street
Distance: 50
Run Number:
Height (Diameter): 27

Pipe Segment Reference:
Upstream MH: 1624
Downstream MH: 762
Direction of Survey: Upstream
Material: Reinforced Concrete Pipe

Severity
Light
Moderate
Average
Heavy
Severe



ID Number: 762

(0.0) - Manhole Remark: 762

(0.0) - Deposits Settled Other - Position: 4 To 8 - Cont Def: S01 Remark: Rocks and mud.

(2.0) - Surface Reinforcement Corroded Chemical - Position: 8 To 4 - Cont Def: S02

(2.0) - Abandoned Survey Remark: Camera will not pass debris in invert.

(50.0) - Surface Reinforcement Corroded Chemical - Position: 8 To 4 - Cont Def: F02

(50.0) - Deposits Settled Other - Position: 4 To 8 - Cont Def: F01 Remark: Rocks and mud.

Total Distance: 50

ID Number: 1624

PO Number: Harbor

Date: 12/2/2009 2:20:17 PM
Street: Maritime Street
Distance: 50
Run Number:
Height (Diameter): 27

Pipe Segment Reference:
Upstream MH: 1624
Downstream MH: 762
Direction of Survey: Upstream
Material: Reinforced Concrete Pipe

Distance	Fault Observation	Time	Picture
0.0	Manhole Severity: None Remarks: 762	42 00:00:00	
0.0	Deposits Settled Other Position: 4 To 8 Severity: None Cont Defect: S01 Percent: 35 Remarks: Rocks and mud. Maint Weight: 5	02:04 00:00:00	
2.0	Surface Reinforcement Corroded Chemical Position: 8 To 4 Severity: None Cont Defect: S02 Struct Weight: 5	04:08 00:00:00	

Distance	Fault Observation	Time	Picture

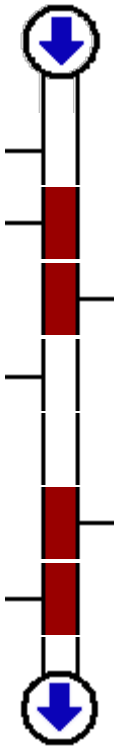
2.0	**Abandoned Survey Severity: None Remarks: Camera will not pass debris in invert.**	**06:33 00:00:00**	
50.0	**Surface Reinforcement Corroded Chemical Position: 8 To 4 Severity: None Cont Defect: F02 Struct Weight: 5**	**05:05 00:00:00**	
50.0	**Deposits Settled Other Position: 4 To 8 Severity: None Cont Defect: F01 Percent: 35 Remarks: Rocks and mud. Maint Weight: 5**	**05:41 00:00:00**	

PO Number: Harbor

Date: 12/2/2009 2:41:50 PM
Street: Maritime Street
Distance: 50
Run Number:
Height (Diameter): 27

Pipe Segment Reference:
Upstream MH: 762
Downstream MH: 1622
Direction of Survey: Downstream
Material: Reinforced Concrete Pipe

Severity
Light
Moderate
Average
Heavy
Severe



ID Number: 762

(0.0) - Manhole Remark: 762

(0.0) - Deposits Settled Other - Position: 4 To 8 - Cont Def: S01 Remark: Rocks and mud.

(2.0) - Surface Reinforcement Corroded Chemical - Position: 9 To 3 - Cont Def: S02

(2.0) - Abandoned Survey Remark: Camera will not pass debris.

(50.0) - Surface Reinforcement Corroded Chemical - Position: 9 To 3 - Cont Def: F02

(50.0) - Deposits Settled Other - Position: 4 To 8 - Cont Def: F01 Remark: Rocks and mud.

Total Distance: 50

ID Number: 1622

PO Number: Harbor

Date: 12/2/2009 2:41:50 PM
Street: Maritime Street
Distance: 50
Run Number:
Height (Diameter): 27

Pipe Segment Reference:
Upstream MH: 762
Downstream MH: 1622
Direction of Survey: Downstream
Material: Reinforced Concrete Pipe

Distance	Fault Observation	Time	Picture
0.0	Manhole Severity: None Remarks: 762	49 00:00:00	
0.0	Deposits Settled Other Position: 4 To 8 Severity: None Cont Defect: S01 Percent: 35 Remarks: Rocks and mud. Maint Weight: 5	01:39 00:00:00	
2.0	Surface Reinforcement Corroded Chemical Position: 9 To 3 Severity: None Cont Defect: S02 Struct Weight: 5	03:07 00:00:00	

Distance	Fault Observation	Time	Picture

2.0	**Abandoned Survey Severity: None Remarks: Camera will not pass debris.**	**05:47 00:00:00**	
50.0	**Surface Reinforcement Corroded Chemical Position: 9 To 3 Severity: None Cont Defect: F02 Struct Weight: 5**	**03:55 00:00:00**	
50.0	**Deposits Settled Other Position: 4 To 8 Severity: None Cont Defect: F01 Percent: 35 Remarks: Rocks and mud. Maint Weight: 5**	**5:10 00:00:00**	

PO Number: Harbor

Date: 12/2/2009 3:38:59 PM
Street: Maritime Street
Distance: 253.3
Run Number:
Height (Diameter): 6

Pipe Segment Reference:
Upstream MH: End
Downstream MH: 1630
Direction of Survey: Upstream
Material: Cast Iron

Severity
Light
Moderate
Average
Heavy
Severe

ID Number: 1630

(0.0) - Manhole Remark: 1630

(7.8) - General Observation Remark: 45 Elbow right.

(11.0) - Surface Corrosion Metal Pipe - Position: 7 To 5 - Cont Def: F01

(11.1) - Deposits Settled Compacted - Position: 4 To 8

(32.3) - Tap Factory - Position: 3

(130.1) - Deposits Settled Gravel - Position: 5 To 7 - Cont Def: F02

(136.2) - Tap Factory - Position: 3

(173.4) - Deposits Settled Gravel - Position: 5 To 7 - Cont Def: S02

(253.3) - Abandoned Survey Remark: Camera will not push further.

(253.3) - Surface Corrosion Metal Pipe - Position: 7 To 5 - Cont Def: S01

Total Distance: 253.3

ID Number: End

PO Number: Harbor

Date: 12/2/2009 3:38:59 PM
Street: Maritime Street
Distance: 253.3
Run Number:
Height (Diameter): 6

Pipe Segment Reference:
Upstream MH: End
Downstream MH: 1630
Direction of Survey: Upstream
Material: Cast Iron

Distance	Fault Observation	Time	Picture
0.0	Manhole Severity: None Remarks: 1630	43 00:00:00	
7.8	General Observation Severity: None Remarks: 45 Elbow right.	03:08 00:00:00	
11.0	Surface Corrosion Metal Pipe Position: 7 To 5 Severity: None Cont Defect: F01 Struct Weight: 3	40:41 00:00:00	

Distance	Fault Observation	Time	Picture

11.1	Deposits Settled Compacted Position: 4 To 8 Severity: None Percent: 40 Joint Maint Weight: 5	04:43 00:00:00	
32.3	Tap Factory Position: 3 Severity: None 1st Dimension: 4	39:24 00:00:00	
130.1	Deposits Settled Gravel Position: 5 To 7 Severity: None Cont Defect: F02 Percent: 10 Maint Weight: 2	35:52 00:00:00	

Distance	Fault Observation	Time	Picture
136.2	Tap Factory Position: 3 Severity: None 1st Dimension: 4	12:50 00:00:00	

			
173.4	**Deposits Settled Gravel** **Position: 5 To 7** **Severity: None** **Cont Defect: S02** **Percent: 10** **Maint Weight: 2**	34:22 00:00:00	
253.3	**Abandoned Survey** **Severity: None** **Remarks: Camera will not push further.**	27:40 00:00:00	

Distance	Fault Observation	Time	Picture
253.3	**Surface Corrosion Metal Pipe** **Position: 7 To 5** **Severity: None** **Cont Defect: S01** **Struct Weight: 3**	30:06 00:00:00	

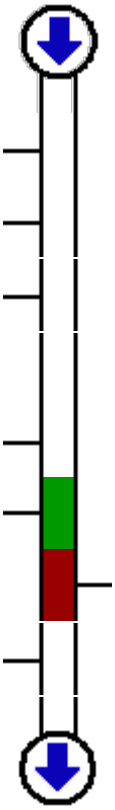
			 Upstream MH End Maritime Street to MH 1630 Surface Corrosion Metal Pipe FT 253.3 12/02/2009 6 CI

PO Number: Harbor

Date: 12/2/2009 4:47:05 PM
Street: Maritime Street
Distance: 178
Run Number:
Height (Diameter): 6

Pipe Segment Reference:
Upstream MH: 1630
Downstream MH: 931
Direction of Survey: Downstream
Material: Asbestos Cement

Severity
Light
Moderate
Average
Heavy
Severe



ID Number: 1630

(0.0) - Manhole Remark: 1630

(13.3) - General Observation Remark: Wye

(13.3) - General Observation Remark: Capped wye.

(171.6) - Material Change Remark: Cast Iron

(177.6) - Tap Break-in Intruding - Position: 12

(178.0) - Roots Ball Barrel - Position: 9 To 6

(178.0) - Abandoned Survey Remark: Camera will not pass roots.

Total Distance: 178

ID Number: 931

PO Number: Harbor

Date: 12/2/2009 4:47:05 PM
Street: Maritime Street
Distance: 178
Run Number:
Height (Diameter): 6

Pipe Segment Reference:
Upstream MH: 1630
Downstream MH: 931
Direction of Survey: Downstream
Material: Asbestos Cement

Distance	Fault Observation	Time	Picture
0.0	Manhole Severity: None Remarks: 1630	01:08 00:00:00	
13.3	General Observation Severity: None Remarks: Wye	02:51 00:00:00	
13.3	General Observation Severity: None Remarks: Capped wye.	03:34 00:00:00	

Distance	Fault Observation	Time	Picture

171.6	Material Change Severity: None Remarks: Cast Iron	11:19 00:00:00	
177.6	Tap Break-in Intruding Position: 12 Severity: None 1st Dimension: 4 2nd Dimension: 1 Maint Weight: 2	12:30 00:00:00	
178.0	Roots Ball Barrel Position: 9 To 6 Severity: None Percent: 75 Maint Weight: 5	13:47 00:00:00	

Distance	Fault Observation	Time	Picture
178.0	Abandoned Survey Severity: None Remarks: Camera will not pass roots.	14:55 00:00:00	

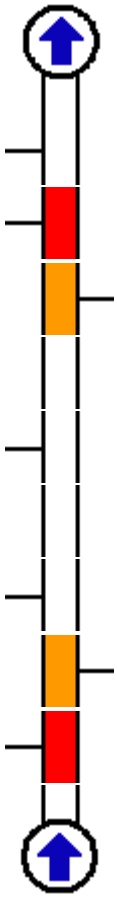
			 Downstream MH 1630 Maritime Street to MH 931 Abandoned Survey FT 178.0 12/02/2009 6 A0

PO Number: Harbor

Date: 12/3/2009 8:59:16 AM
Street: 7th Street
Distance: 50
Run Number:
Height (Diameter): 24

Pipe Segment Reference:
Upstream MH: 1623
Downstream MH: 1134
Direction of Survey: Upstream
Material: Reinforced Concrete Pipe

Severity
Light
Moderate
Average
Heavy
Severe



ID Number: 1134

(0.0) - Manhole Remark: 1134

(0.0) - Deposits Settled Other - Position: 5 To 7 - Cont Def: S01 Remark: Rocks and mud.

(3.0) - Surface Aggregate Projecting Chemical - Position: 8 To 4 - Cont Def: S02

(13.0) - Abandoned Survey Remark: Camera will not pass debris in invert.

(50.0) - General Observation Remark: Zoom up pipe.

(50.0) - Surface Aggregate Projecting Chemical - Position: 8 To 4 - Cont Def: F02

(50.0) - Deposits Settled Other - Position: 5 To 7 - Cont Def: F01 Remark: Rocks and mud.

Total Distance: 50

ID Number: 1623

PO Number: Harbor

Date: 12/3/2009 8:59:16 AM
Street: 7th Street
Distance: 50
Run Number:
Height (Diameter): 24

Pipe Segment Reference:
Upstream MH: 1623
Downstream MH: 1134
Direction of Survey: Upstream
Material: Reinforced Concrete Pipe

Distance	Fault Observation	Time	Picture
0.0	Manhole Severity: None Remarks: 1134	43 00:00:00	
0.0	Deposits Settled Other Position: 5 To 7 Severity: None Cont Defect: S01 Percent: 25 Remarks: Rocks and mud. Maint Weight: 4	04:36 00:00:00	
3.0	Surface Aggregate Projecting Chemical Position: 8 To 4 Severity: None Cont Defect: S02 Struct Weight: 3	05:19 00:00:00	

Distance	Fault Observation	Time	Picture

13.0	**Abandoned Survey Severity: None Remarks: Camera will not pass debris in invert.**	**11:13 00:00:00**	
50.0	**General Observation Severity: None Remarks: Zoom up pipe.**	**09:52 00:00:00**	
50.0	**Surface Aggregate Projecting Chemical Position: 8 To 4 Severity: None Cont Defect: F02 Struct Weight: 3**	**10:06 00:00:00**	

Distance	Fault Observation	Time	Picture
50.0	**Deposits Settled Other Position: 5 To 7 Severity: None Cont Defect: F01 Percent: 25 Remarks: Rocks and mud.**	**10:19 00:00:00**	

	Maint Weight: 4		

Table 1	PACP Condition Rating Scale Airport Sewer Inspection for Earhart Drive Sewer (2009) Port of Oakland	
PACP Rating	**Pipe Grade Importance** [1]	**Likelihood of Failure Estimate** [1]
5 - Very Poor	Defects requiring immediate attention	Pipe has failed or will likely fail within the next 5 years
4 - Poor	Severe defects that will become Grade 5 defects within the foreseeable future	Pipe will probably fail in 5 to 10 years
3 - Fair	Moderate defects that will continue to deteriorate	Pipe may fail in 10 to 20 years
2 - Good	Defects that have not begun to deteriorate	Pipe unlikely to fail for at least 20 years
1 - Excellent	Minor defects	Failure is unlikely in the foreseeable future

Note:

(1) The PACP Condition Grading System only considers internal pipe conditions obtained from CCTV inspection. While other factors such as pipe material, depth, soils, and surface conditions also affect pipe survivability and the likelihood of failure, those factors have not been incorporated into the PACP Condition Grading System

Table 2	Airport Sewer Inspection Sewer Condition Ratings Airport Sewer Inspection for Earhart Drive Sewer (2009) Port of Oakland					
Starting Node	**Ending Node**	**Diameter (in)**	**As-built Length (LF)**	**PACP Structure**	**PACP O&M**	**PACP Overall**
1	2	15	251	**4611**	**0000**	**4611**
2	3	15	245	**0000**	**4132**	**4132**
3	4	15	208	**5121**	**4136**	**5141**
4	5	15	251	**0000**	**4134**	**4134**
5	6	15	192	**1100**	**2100**	**2111**
5[1]	6	15	95	**0000**	**3100**	**3100**
6	7	15	326	**0000**	**3322**	**3322**
7	8	15	242	**0000**	**2100**	**2100**
9	10	15	384	**1200**	**2100**	**2112**
10	11	15	32	**0000**	**0000**	**0000**
11	12	15	71	**0000**	**0000**	**0000**
12	13	15	316	**0000**	**0000**	**0000**
13	14	15	292	**0000**	**0000**	**0000**

Table 2 **Airport Sewer Inspection Sewer Condition Ratings**
Airport Sewer Inspection for Earhart Drive Sewer (2009)
Port of Oakland

Starting Node	Ending Node	Diameter (in)	As-built Length (LF)	PACP Structure	PACP O&M	PACP Overall
14	15	15	250	**0000**	**0000**	**0000**
15	16	15	196	**0000**	**0000**	**0000**
16	17	15	264	**0000**	**4100**	**4100**
17	18	15	178	**0000**	**0000**	**0000**

Notes:
(1)Video taken in direction of reverse flow.

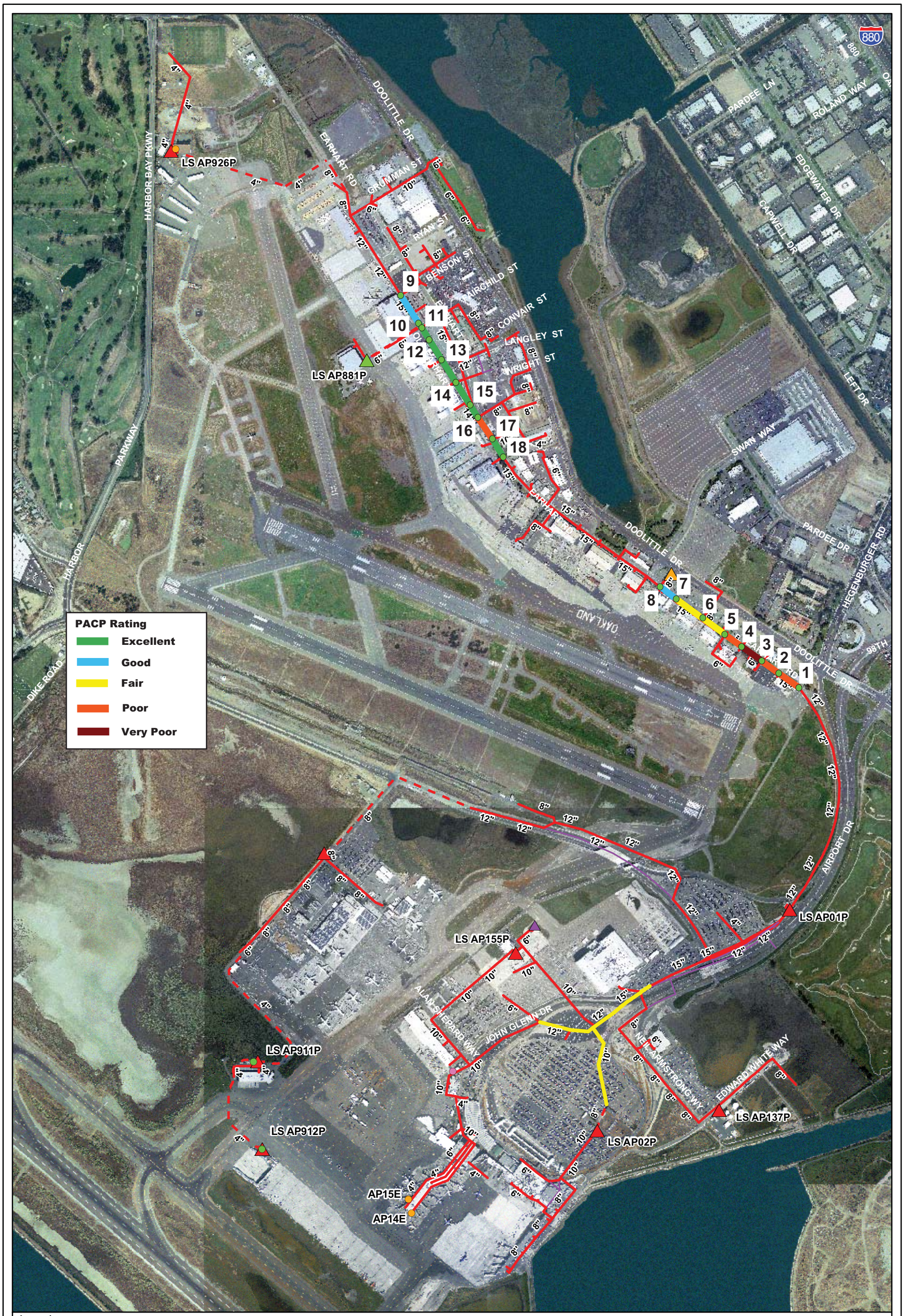


Figure 1
CCTV Locations 2009/2010
Port-Wide Sewer System
Management Plan
Port of Oakland

Revision Date: February 1, 2010

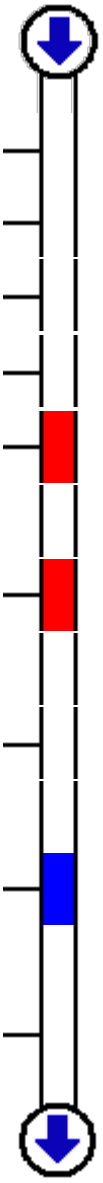
PO Number: 00001

Date: 4/27/2009 3:31:00 PM

Street: EARHART
Length Surveyed: 250.6
Run Number:
Height (Diameter): 15

Pipe Segment Reference: SSMH#1SSMH#2
Upstream MH: SSMH# 1
Downstream MH: SSMH# 2
Direction of Survey: Downstream
Material: Vitrified Clay Pipe

Severity
Light
Moderate
Average
Heavy
Severe



ID Number: SSMH# 1

(0.0) AMH - Manhole Remark: SSMH# 1

(0.0) MWL - Water Level

(7.0) MGO - General Observation Remark: WILL CONT. AFTER FLUSHING TOO MUCH DEBRIS

(7.0) MGO - General Observation Remark: CONT. INSPECTION AFTER JETTING

(7.0) FM - Fracture Multiple - Position: 1 To 12 - Cont Def: S01

(32.3) FM - Fracture Multiple - Position: 1 To 12 - Cont Def: F01

(60.1) MGO - General Observation Remark: HOLE INSIDE PIPE NOT ALL THE WAY THRU

(178.2) JOM - Joint Offset Medium

(250.6) AMH - Manhole Remark: SSMH# 2

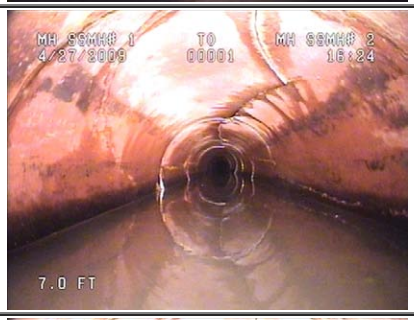
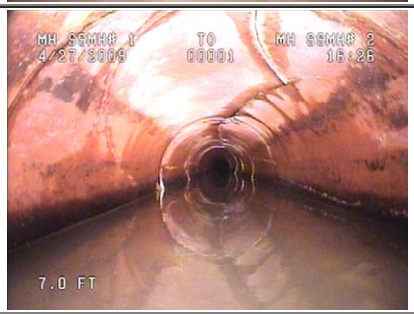
Total Distance: 250.6

ID Number: SSMH# 2

PO Number: 00001

Date: 4/27/2009 3:31:00 PM
Street: EARHART
Length Surveyed: 250.6
Run Number:
Height (Diameter): 15

Pipe Segment Reference: SSMH#1SSMH#2
Upstream MH: SSMH# 1
Downstream MH: SSMH# 2
Direction of Survey: Downstream
Material: Vitrified Clay Pipe

Distance	Fault Observation	Time	Picture
0.0	Manhole Severity: None Remarks: SSMH# 1	32 00:00:00	
0.0	Water Level Severity: None Percent: 10	01:00 00:00:00	
7.0	General Observation Severity: None Remarks: WILL CONT. AFTER FLUSHING TOO MUCH DEBRIS	05:52 00:00:00	
7.0	General Observation Severity: None Remarks: CONT. INSPECTION AFTER JETTING	20	
7.0	Fracture Multiple Position: 1 To 12 Severity: None Cont Defect: S01 Joint Struct Weight: 4	02:43	

Distance	Fault Observation	Time	Picture
32.3	Fracture Multiple Position: 1 To 12 Severity: None Cont Defect: F01 Joint Struct Weight: 4	04:35	
60.1	General Observation Severity: None Remarks: HOLE INSIDE PIPE NOT ALL THE WAY THRU	01:56	
178.2	Joint Offset Medium Severity: None Struct Weight: 1	12:14	
250.6	Manhole Severity: None Remarks: SSMH# 2	19:34	

PO Number: 00002

Date: 4/27/2009 5:21:00 PM

Street: EARHART
Length Surveyed: 244.9
Run Number:
Height (Diameter): 15

Pipe Segment Reference: SSMH#2SSMH#3
Upstream MH: SSMH# 2
Downstream MH: SSMH# 3
Direction of Survey: Downstream
Material: Vitrified Clay Pipe

Severity
Light
Moderate
Average
Heavy
Severe

ID Number: SSMH# 2

(0.0) AMH - Manhole Remark: SSMH# 2

(16.9) MGO - General Observation Remark: NO PROB.

(81.1) DAGS - Deposits Attached Grease - Position: 8 To 11

(105.6) ID - Infil Dripper - Position: 12

(113.8) ID - Infil Dripper - Position: 11 To 1

(222.8) DAGS - Deposits Attached Grease - Position: 8 To 11

(226.6) DAGS - Deposits Attached Grease - Position: 8

(238.7) IR - Infil Runner - Position: 9

(244.9) AMH - Manhole Remark: SSMH# 3

Total Distance: 244.9

ID Number: SSMH# 3

PO Number: 00002

Date: 4/27/2009 5:21:00 PM
Street: EARHART
Length Surveyed: 244.9
Run Number:
Height (Diameter): 15

Pipe Segment Reference: SSMH#2SSMH#3
Upstream MH: SSMH# 2
Downstream MH: SSMH# 3
Direction of Survey: Downstream
Material: Vitrified Clay Pipe

Distance	Fault Observation	Time	Picture
0.0	Manhole Severity: None Remarks: SSMH# 2	44 00:00:00	
16.9	General Observation Severity: None Remarks: NO PROB.	02:48 00:00:00	
81.1	Deposits Attached Grease Position: 8 To 11 Severity: None Percent: 5 Joint Maint Weight: 2	08:25 00:00:00	
105.6	Infil Dripper Position: 12 Severity: None Joint Maint Weight: 3	11:33 00:00:00	
113.8	Infil Dripper Position: 11 To 1 Severity: None Joint Maint Weight: 3	13:01 00:00:00	

Distance	Fault Observation	Time	Picture
222.8	Deposits Attached Grease Position: 8 To 11 Severity: None Percent: 5 Joint Maint Weight: 2	19:23 00:00:00	
226.6	Deposits Attached Grease Position: 8 Severity: None Percent: 5 Maint Weight: 2	20:55 00:00:00	
238.7	Infil Runner Position: 9 Severity: None Joint Maint Weight: 4	22:23 00:00:00	
244.9	Manhole Severity: None Remarks: SSMH# 3	24:04 00:00:00	

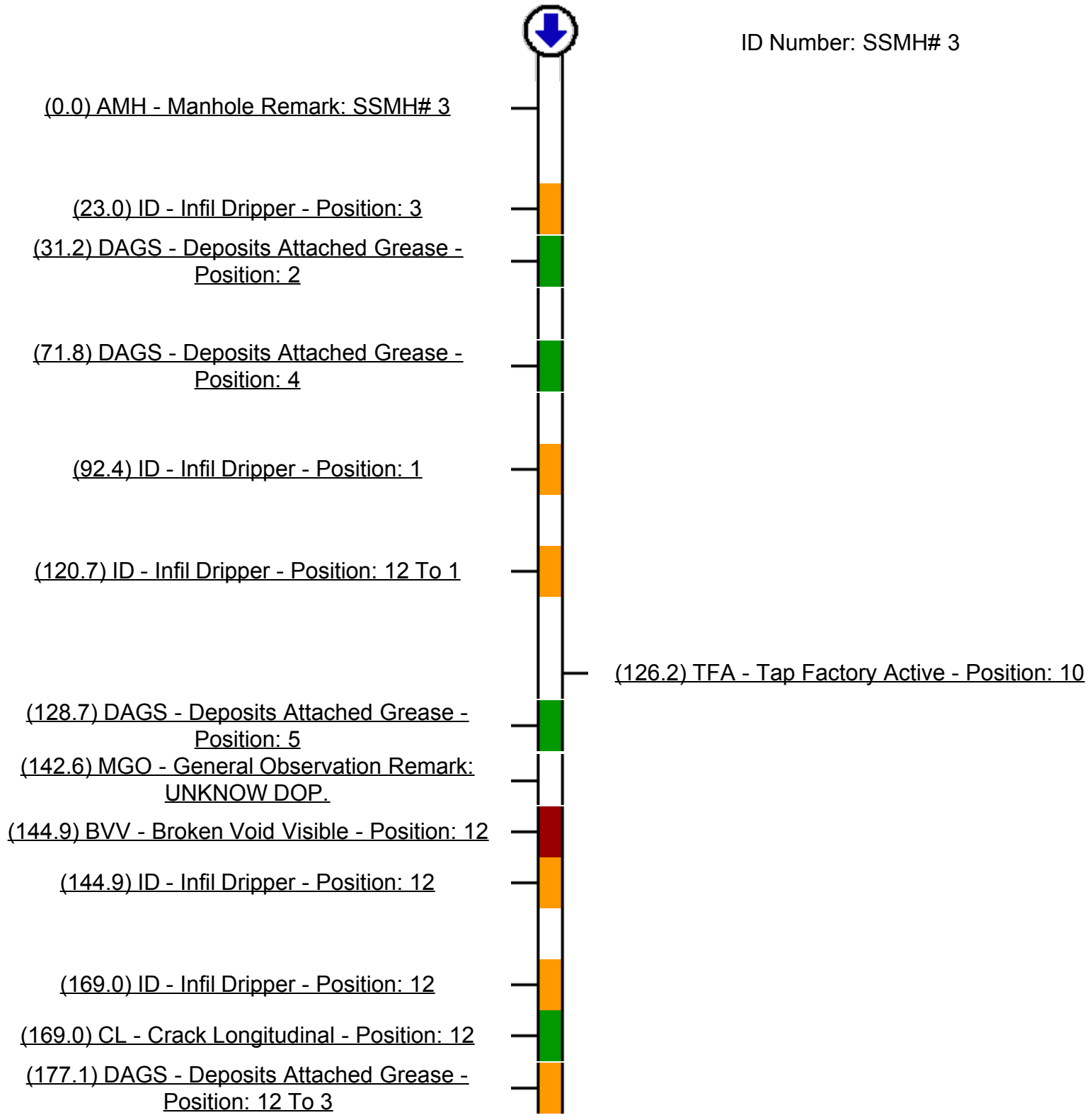
PO Number: 00003

Date: 4/28/2009 8:02:00 AM

Street: EARHART
Length Surveyed: 207.9
Run Number:
Height (Diameter): 15

Pipe Segment Reference: SSMH#3SSMH#4
Upstream MH: SSMH# 3
Downstream MH: SSMH# 4
Direction of Survey: Downstream
Material: Vitrified Clay Pipe

Severity
Light
Moderate
Average
Heavy
Severe



(177.1) IR - Infil Runner - Position: 12

(207.9) AMH - Manhole Remark: SSMH# 4

Total Distance: 207.9

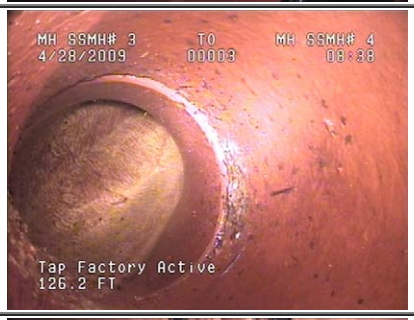
ID Number: SSMH# 4

PO Number: 00003

Date: 4/28/2009 8:02:00 AM
Street: EARHART
Length Surveyed: 207.9
Run Number:
Height (Diameter): 15

Pipe Segment Reference: SSMH#3SSMH#4
Upstream MH: SSMH# 3
Downstream MH: SSMH# 4
Direction of Survey: Downstream
Material: Vitrified Clay Pipe

Distance	Fault Observation	Time	Picture
0.0	Manhole Severity: None Remarks: SSMH# 3	35	
23.0	Infil Dripper Position: 3 Severity: None Joint Maint Weight: 3	04:23	
31.2	Deposits Attached Grease Position: 2 Severity: None Percent: 5 Joint Maint Weight: 2	06:03	
71.8	Deposits Attached Grease Position: 4 Severity: None Percent: 5 Joint Maint Weight: 2	08:47	
92.4	Infil Dripper Position: 1 Severity: None Joint Maint Weight: 3	10:27	

Distance	Fault Observation	Time	Picture
120.7	Infil Dripper Position: 12 To 1 Severity: None Joint Maint Weight: 3	12:59	
126.2	Tap Factory Active Position: 10 Severity: None 1st Dimension: 4	14:24	
128.7	Deposits Attached Grease Position: 5 Severity: None Percent: 5 Joint Maint Weight: 2	15:34	
142.6	General Observation Severity: None Remarks: UNKNOW DOP.	17:32	
144.9	Broken Void Visible Position: 12 Severity: None Joint Struct Weight: 5	19:04	
144.9	Infil Dripper Position: 12 Severity: None Joint Maint Weight: 3	19:31	

Distance	Fault Observation	Time	Picture
169.0	Infil Dripper Position: 12 Severity: None Joint Maint Weight: 3	21:43	
169.0	Crack Longitudinal Position: 12 Severity: None Joint Struct Weight: 2	22:31	
177.1	Deposits Attached Grease Position: 12 To 3 Severity: None Percent: 15 Joint Maint Weight: 3	24:09	
177.1	Infil Runner Position: 12 Severity: None Joint Maint Weight: 4	24:35	
207.9	Manhole Severity: None Remarks: SSMH# 4	28:03	

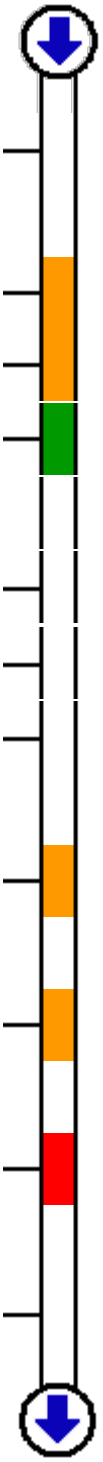
PO Number: 00005

Date: 4/28/2009 9:01:00 AM

Street: EARHART
Length Surveyed: 250.6
Run Number:
Height (Diameter): 15

Pipe Segment Reference: SSMH#4SSMH#5
Upstream MH: SSMH# 4
Downstream MH: SSMH# 5
Direction of Survey: Downstream
Material: Vitrified Clay Pipe

Severity
Light
Moderate
Average
Heavy
Severe



ID Number: SSMH# 4

(0.0) AMH - Manhole Remark: SSMH# 4

(26.2) ID - Infil Dripper - Position: 12

(34.4) ID - Infil Dripper - Position: 12

(34.4) DAGS - Deposits Attached Grease - Position: 12

(75.5) MGO - General Observation Remark: WILL MAKE TRACKS SMALLER

(76.5) MGO - General Observation Remark: ABLE TO PASS SPOT WILL CONT.

(92.1) TFA - Tap Factory Active - Position: 12

(127.3) ID - Infil Dripper - Position: 4

(179.1) ID - Infil Dripper - Position: 12

(207.7) IR - Infil Runner - Position: 5

(250.6) AMH - Manhole Remark: SSMH# 5

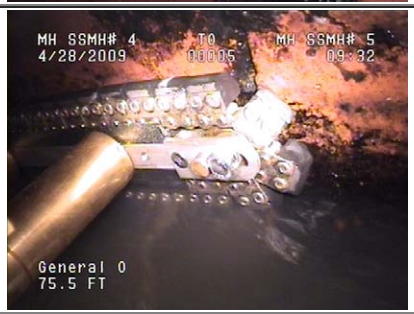
Total Distance: 250.6

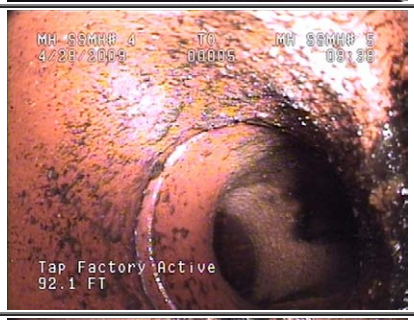
ID Number: SSMH# 5

PO Number: 00005

Date: 4/28/2009 9:01:00 AM
Street: EARHART
Length Surveyed: 250.6
Run Number:
Height (Diameter): 15

Pipe Segment Reference: SSMH#4SSMH#5
Upstream MH: SSMH# 4
Downstream MH: SSMH# 5
Direction of Survey: Downstream
Material: Vitrified Clay Pipe

Distance	Fault Observation	Time	Picture
0.0	Manhole Severity: None Remarks: SSMH# 4	32 00:00:00	
26.2	Infil Dripper Position: 12 Severity: None Joint Maint Weight: 3	02:49 00:00:00	
34.4	Infil Dripper Position: 12 Severity: None Joint Maint Weight: 3	04:16 00:00:00	
34.4	Deposits Attached Grease Position: 12 Severity: None Percent: 5 Joint Maint Weight: 2	04:46 00:00:00	
75.5	General Observation Severity: None Remarks: WILL MAKE TRACKS SMALLER	10:00 00:00:00	

Distance	Fault Observation	Time	Picture
76.5	General Observation Severity: None Remarks: ABLE TO PASS SPOT WILL CONT.	34 00:00:00	
92.1	Tap Factory Active Position: 12 Severity: None 1st Dimension: 4	03:49 00:00:00	
127.3	Infil Dripper Position: 4 Severity: None Joint Maint Weight: 3	06:29 00:00:00	
179.1	Infil Dripper Position: 12 Severity: None Joint Maint Weight: 3	09:29 00:00:00	
207.7	Infil Runner Position: 5 Severity: None Joint Maint Weight: 4	12:34 00:00:00	
250.6	Manhole Severity: None Remarks: SSMH# 5	16:04 00:00:00	

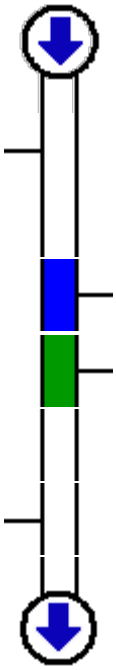
PO Number: 00006

Date: 4/28/2009 9:53:00 AM

Street: EARHART
Length Surveyed: 192.1
Run Number:
Height (Diameter): 15

Pipe Segment Reference: SSMH#5SSMH#6
Upstream MH: SSMH# 5
Downstream MH: SSMH# 6
Direction of Survey: Downstream
Material: Vitrified Clay Pipe

Severity
Light
Moderate
Average
Heavy
Severe



ID Number: SSMH# 5

(0.0) AMH - Manhole Remark: SSMH# 5

(134.9) CC - Crack Circumferential - Position: 8 To 9

(151.5) DAGS - Deposits Attached Grease - Position: 9

(192.1) MSA - Abandoned Survey Remark: DUE TO JOINT MATERIAL

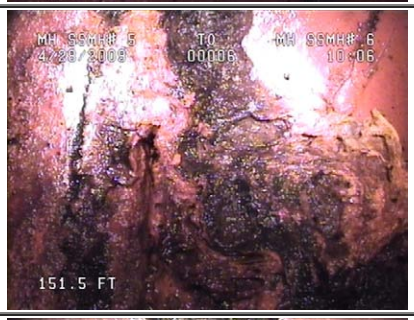
Total Distance: 192.1

ID Number: SSMH# 6

PO Number: 00006

Date: 4/28/2009 9:53:00 AM
Street: EARHART
Length Surveyed: 192.1
Run Number:
Height (Diameter): 15

Pipe Segment Reference: SSMH#5SSMH#6
Upstream MH: SSMH# 5
Downstream MH: SSMH# 6
Direction of Survey: Downstream
Material: Vitrified Clay Pipe

Distance	Fault Observation	Time	Picture
0.0	Manhole Severity: None Remarks: SSMH# 5	29	
134.9	Crack Circumferential Position: 8 To 9 Severity: None Struct Weight: 1	09:39	
151.5	Deposits Attached Grease Position: 9 Severity: None Percent: 5 Joint Maint Weight: 2	12:09	
192.1	Abandoned Survey Severity: None Remarks: DUE TO JOINT MATERIAL	23:44	

PO Number: 00006A

Date: 4/28/2009 10:34:00 AM

Street: EARHART
Length Surveyed: 95.1
Run Number:
Height (Diameter): 15

Pipe Segment Reference: SSMH#6SSMH#5
Upstream MH: SSMH# 5
Downstream MH: SSMH# 6
Direction of Survey: Upstream
Material: Vitrified Clay Pipe

Severity
Light
Moderate
Average
Heavy
Severe

ID Number: SSMH# 6

(-1.0) AMH - Manhole Remark: SSMH# 6

(-0.1) AMH - Manhole Remark: SSMH# 6

(0.0) MGO - General Observation Remark: REVERSE SET UP

(26.2) ID - Infil Dripper - Position: 9

(95.1) MGO - General Observation Remark: APPROX. 5 JOINTS FROM REVERSE SET UP

(95.1) MSA - Abandoned Survey Remark: DUE TO UNKNOW PIPE LINING

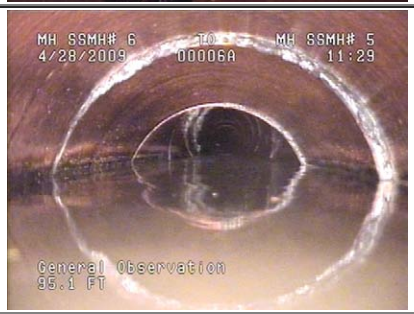
Total Distance: 95.1

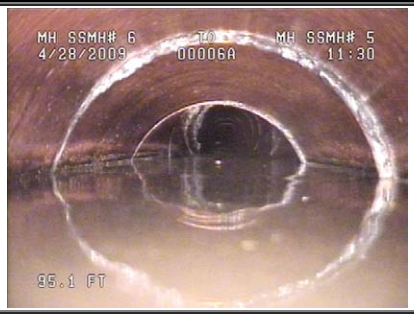
ID Number: SSMH# 5

PO Number: 00006A

Date: 4/28/2009 10:34:00 AM
Street: EARHART
Length Surveyed: 95.1
Run Number:
Height (Diameter): 15

Pipe Segment Reference: SSMH#6SSMH#5
Upstream MH: SSMH# 5
Downstream MH: SSMH# 6
Direction of Survey: Upstream
Material: Vitrified Clay Pipe

Distance	Fault Observation	Time	Picture
-1.0	Manhole Severity: None Remarks: SSMH# 6	34 00:00:00	
-0.1	Manhole Severity: None Remarks: SSMH# 6	10 00:00:00	
0.0	General Observation Severity: None Remarks: REVERSE SET UP	53 00:00:00	
26.2	Infil Dripper Position: 9 Severity: None Joint Maint Weight: 3	04:13 00:00:00	
95.1	General Observation Severity: None Remarks: APPROX. 5 JOINTS FROM REVERSE SET UP	13:17 00:00:00	

Distance	Fault Observation	Time	Picture
95.1	Abandoned Survey Severity: None Remarks: DUE TO UNKNOW PIPE LINING	14:53 00:00:00	

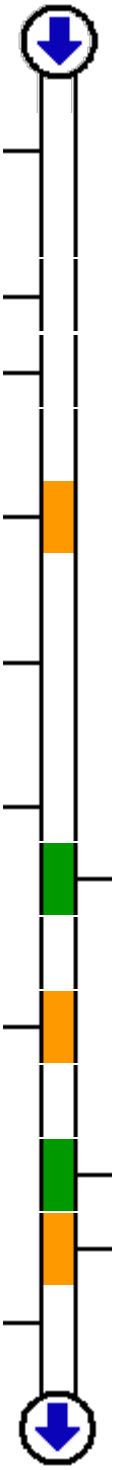
PO Number: 00007

Date: 4/28/2009 11:37:00 AM

Street: EARHART
Length Surveyed: 326.3
Run Number:
Height (Diameter): 15

Pipe Segment Reference: SSMH#6SSMH#7
Upstream MH: SSMH# 6
Downstream MH: SSMH# 7
Direction of Survey: Downstream
Material: Vitrified Clay Pipe

Severity
Light
Moderate
Average
Heavy
Severe



ID Number: SSMH# 6

(0.0) AMH - Manhole Remark: SSMH# 6

(101.8) MGO - General Observation Remark: CONT. AFTER AJUSTING TRACKS

(101.8) MGO - General Observation Remark: CONTINUE AFTER ADJUSTMENTS

(139.2) ID - Infil Dripper - Position: 12

(174.1) MWL - Water Level

(199.7) MWL - Water Level

(207.8) DAGS - Deposits Attached Grease - Position: 6 To 12

(285.6) DAGS - Deposits Attached Grease - Position: 12 To 5

(312.3) DAGS - Deposits Attached Grease - Position: 11

(312.3) ID - Infil Dripper - Position: 11

(326.3) AMH - Manhole Remark: SSMH# 7

Total Distance: 326.3

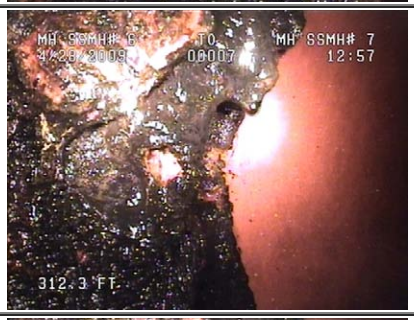
ID Number: SSMH# 7

PO Number: 00007

Date: 4/28/2009 11:37:00 AM
Street: EARHART
Length Surveyed: 326.3
Run Number:
Height (Diameter): 15

Pipe Segment Reference: SSMH#6SSMH#7
Upstream MH: SSMH# 6
Downstream MH: SSMH# 7
Direction of Survey: Downstream
Material: Vitrified Clay Pipe

Distance	Fault Observation	Time	Picture
0.0	Manhole Severity: None Remarks: SSMH# 6	29	
101.8	General Observation Severity: None Remarks: CONT. AFTER AJUSTING TRACKS	12:50	
101.8	General Observation Severity: None Remarks: CONTINUE AFTER ADJUSTMENTS	57	
139.2	Infil Dripper Position: 12 Severity: None Joint Maint Weight: 3	05:22	
174.1	Water Level Severity: None Percent: 15	08:31	

Distance	Fault Observation	Time	Picture
199.7	Water Level Severity: None Percent: 25	10:41	
207.8	Deposits Attached Grease Position: 6 To 12 Severity: None Percent: 10 Joint Maint Weight: 2	12:48	
285.6	Deposits Attached Grease Position: 12 To 5 Severity: None Percent: 15 Joint Maint Weight: 3	23:35	
312.3	Deposits Attached Grease Position: 11 Severity: None Percent: 10 Joint Maint Weight: 2	26:04	
312.3	Infil Dripper Position: 11 Severity: None Joint Maint Weight: 3	26:26	
326.3	Manhole Severity: None Remarks: SSMH# 7	29:14	

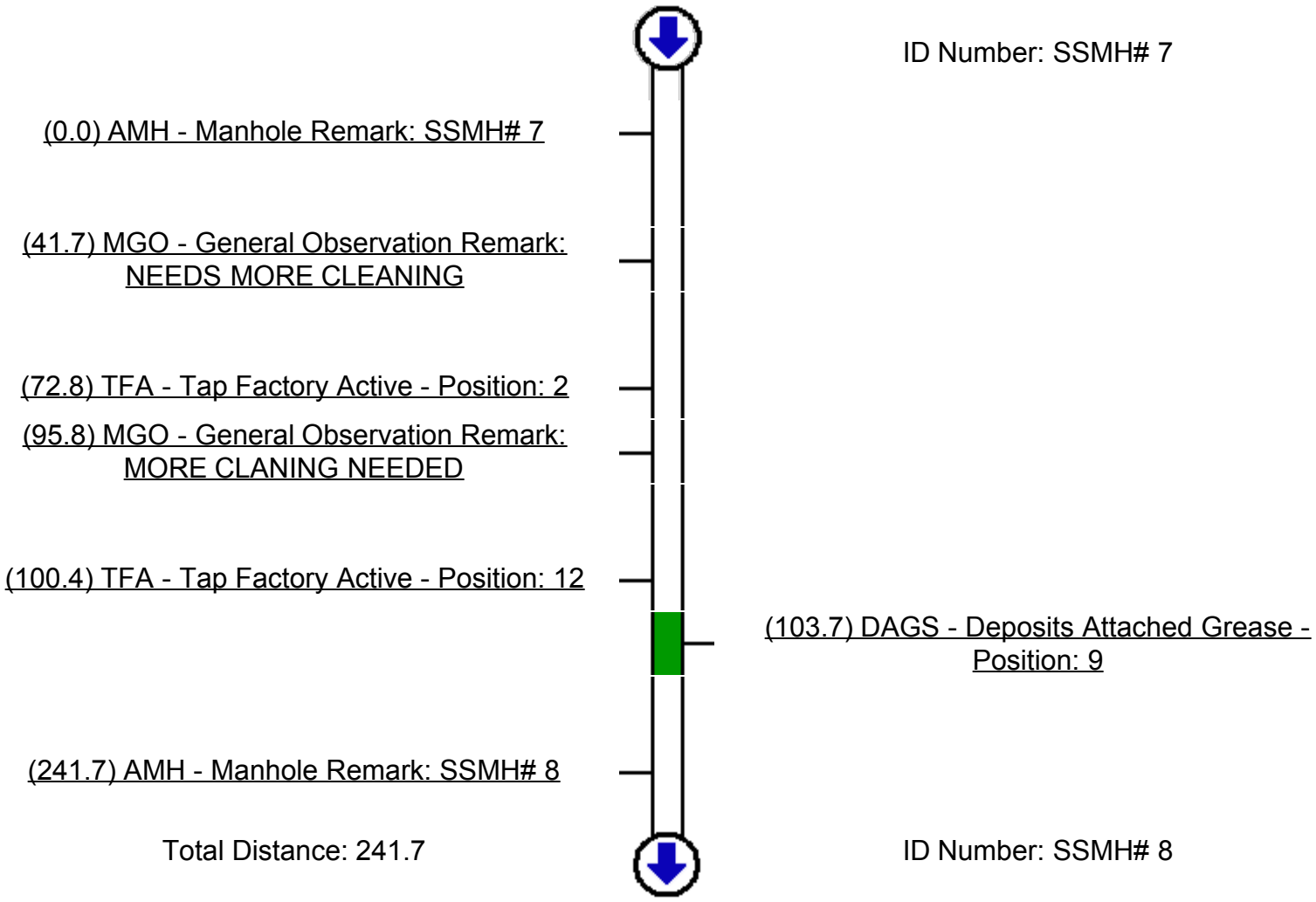
PO Number: 00008

Date: 4/28/2009 1:08:00 PM

Street: EARHART
Length Surveyed: 241.7
Run Number:
Height (Diameter): 15

Pipe Segment Reference: SSMH#7SSMH#8
Upstream MH: SSMH# 7
Downstream MH: SSMH# 8
Direction of Survey: Downstream
Material: Vitrified Clay Pipe

Severity
Light
Moderate
Average
Heavy
Severe



PO Number: 00008

Date: 4/28/2009 1:08:00 PM
Street: EARHART
Length Surveyed: 241.7
Run Number:
Height (Diameter): 15

Pipe Segment Reference: SSMH#7SSMH#8
Upstream MH: SSMH# 7
Downstream MH: SSMH# 8
Direction of Survey: Downstream
Material: Vitrified Clay Pipe

Distance	Fault Observation	Time	Picture
0.0	Manhole Severity: None Remarks: SSMH# 7	29 00:00:00	
41.7	General Observation Severity: None Remarks: NEEDS MORE CLEANING	03:16 00:00:00	
72.8	Tap Factory Active Position: 2 Severity: None 1st Dimension: 8	02:24 00:00:00	
95.8	General Observation Severity: None Remarks: MORE CLANING NEEDED	05:38 00:00:00	
100.4	Tap Factory Active Position: 12 Severity: None 1st Dimension: 6	01:32 00:00:00	

Distance	Fault Observation	Time	Picture
103.7	Deposits Attached Grease Position: 9 Severity: None Percent: 10 Maint Weight: 2	02:30 00:00:00	
241.7	Manhole Severity: None Remarks: SSMH# 8	09:41 00:00:00	

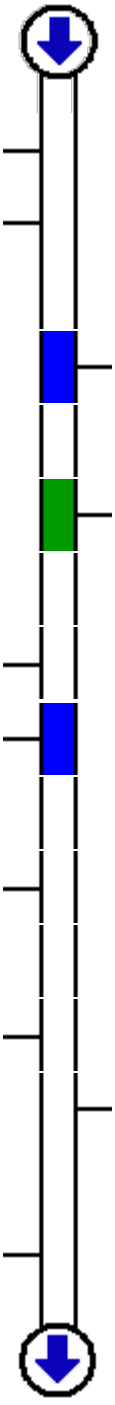
PO Number: 00009

Date: 4/29/2009 7:43:00 AM

Street: OLD EARHART
Length Surveyed: 384.2
Run Number:
Height (Diameter): 15

Pipe Segment Reference: SSMH#9SSMH#10
Upstream MH: SSMH# 9
Downstream MH: SSMH# 10
Direction of Survey: Downstream
Material: Vitrified Clay Pipe

Severity
Light
Moderate
Average
Heavy
Severe



ID Number: SSMH# 9

(0.0) AMH - Manhole Remark: SSMH# 9

(6.6) AMH - Manhole Remark: SSMH# 9

(47.9) CC - Crack Circumferential - Position: 11 To 12

(78.8) DAGS - Deposits Attached Grease - Position: 11

(120.2) MGO - General Observation Remark: more cleaning needed

(130.9) CC - Crack Circumferential - Position: 12 To 1

(181.8) MGO - General Observation Remark: neeeds more cleaning

(197.8) MGO - General Observation Remark: needs more cleaning

(228.6) TFA - Tap Factory Active - Position: 10

(384.2) AMH - Manhole Remark: SSMH# 10

Total Distance: 384.2

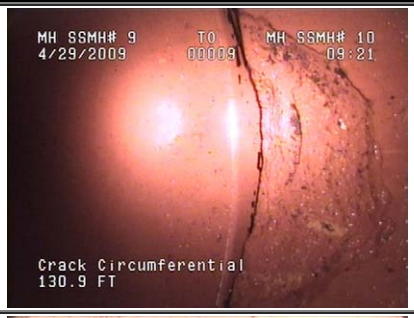
ID Number: SSMH# 10

PO Number: 00009

Date: 4/29/2009 7:43:00 AM
Street: OLD EARHART
Length Surveyed: 384.2
Run Number:
Height (Diameter): 15

Pipe Segment Reference: SSMH#9SSMH#10
Upstream MH: SSMH# 9
Downstream MH: SSMH# 10
Direction of Survey: Downstream
Material: Vitrified Clay Pipe

Distance	Fault Observation	Time	Picture
0.0	Manhole Severity: None Remarks: SSMH# 9	48 00:00:00	
6.6	Manhole Severity: None Remarks: SSMH# 9	14 00:00:00	
47.9	Crack Circumferential Position: 11 To 12 Severity: None Joint Struct Weight: 1	03:40 00:00:00	
78.8	Deposits Attached Grease Position: 11 Severity: None Percent: 5 Joint Maint Weight: 2	05:39 00:00:00	
120.2	General Observation Severity: None Remarks: more cleaning needed	08:13 00:00:00	

Distance	Fault Observation	Time	Picture
130.9	Crack Circumferential Position: 12 To 1 Severity: None Joint Struct Weight: 1	01:13 00:00:00	
181.8	General Observation Severity: None Remarks: neeeds more cleaning	4:10 00:00:00	
197.8	General Observation Severity: None Remarks: needs more cleaning	01:26 00:00:00	
228.6	Tap Factory Active Position: 10 Severity: None 1st Dimension: 4	01:49 00:00:00	
384.2	Manhole Severity: None Remarks: SSMH# 10	08:58 00:00:00	

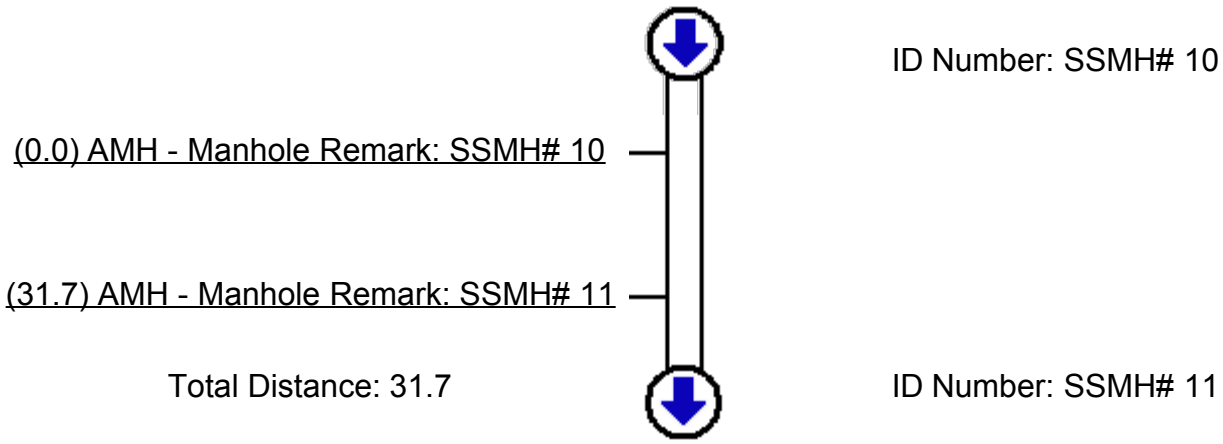
PO Number: 000010

Date: 4/29/2009 10:39:00 AM

Street: OLD EARHART
Length Surveyed: 31.7
Run Number:
Height (Diameter): 15

Pipe Segment Reference: SSMH#10SSMH#11
Upstream MH: SSMH# 10
Downstream MH: SSMH# 11
Direction of Survey: Downstream
Material: Vitrified Clay Pipe

Severity
Light
Moderate
Average
Heavy
Severe



PO Number: 000010

Date: 4/29/2009 10:39:00 AM
Street: OLD EARHART
Length Surveyed: 31.7
Run Number:
Height (Diameter): 15

Pipe Segment Reference: SSMH#10SSMH#11
Upstream MH: SSMH# 10
Downstream MH: SSMH# 11
Direction of Survey: Downstream
Material: Vitrified Clay Pipe

Distance	Fault Observation	Time	Picture
0.0	Manhole Severity: None Remarks: SSMH# 10	28 00:00:00	
31.7	Manhole Severity: None Remarks: SSMH# 11	04:00 00:00:00	

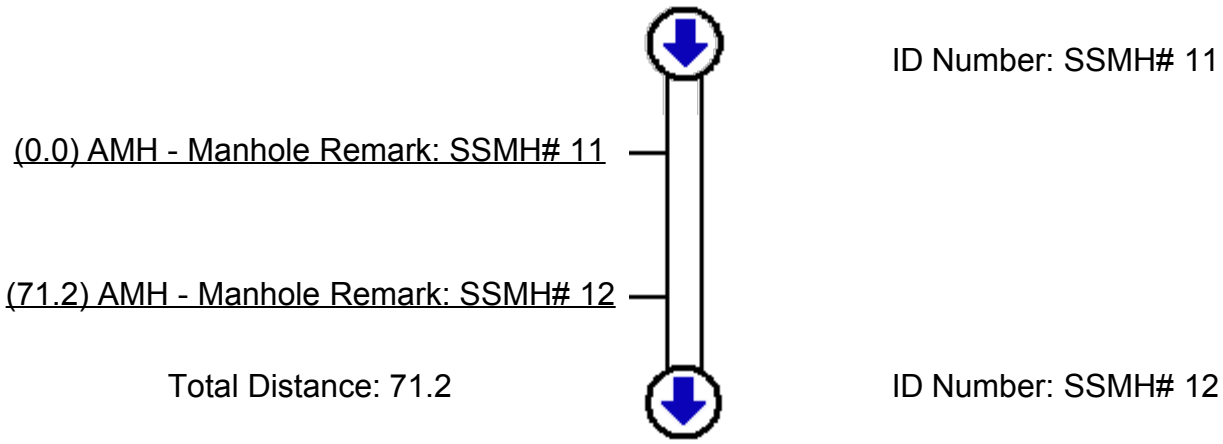
PO Number: 000011

Date: 4/29/2009 12:53:00 PM

Street: OLD EARHART
Length Surveyed: 71.2
Run Number:
Height (Diameter): 15

Pipe Segment Reference: SSMH#11SSMH#12
Upstream MH: SSMH# 11
Downstream MH: SSMH# 12
Direction of Survey: Downstream
Material: Vitrified Clay Pipe

Severity
Light
Moderate
Average
Heavy
Severe



PO Number: 000011

Date: 4/29/2009 12:53:00 PM
Street: OLD EARHART
Length Surveyed: 71.2
Run Number:
Height (Diameter): 15

Pipe Segment Reference: SSMH#11SSMH#12
Upstream MH: SSMH# 11
Downstream MH: SSMH# 12
Direction of Survey: Downstream
Material: Vitrified Clay Pipe

Distance	Fault Observation	Time	Picture
0.0	Manhole Severity: None Remarks: SSMH# 11	30	
71.2	Manhole Severity: None Remarks: SSMH# 12	07:28	

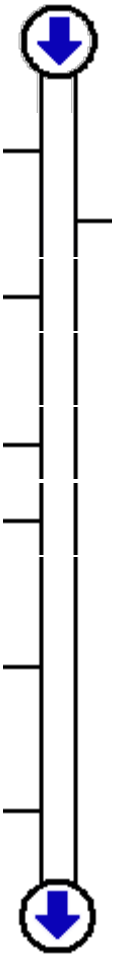
PO Number: 000012

Date: 4/29/2009 2:20:00 PM

Street: OLD EARHART
Length Surveyed: 315.5
Run Number:
Height (Diameter): 15

Pipe Segment Reference: SSMH#12SSMH#13
Upstream MH: SSMH# 12
Downstream MH: SSMH# 13
Direction of Survey: Downstream
Material: Reinforced Concrete Pipe

Severity
Light
Moderate
Average
Heavy
Severe



ID Number: SSMH# 12

(0.0) AMH - Manhole Remark: SSMH# 12

(25.6) TFA - Tap Factory Active - Position: 10

(25.6) MGO - General Observation Remark: LATERAL OFFSET

(39.4) MGO - General Observation Remark: NEED TO AJUST TRACKS

(40.3) MGO - General Observation Remark: CONT. INSPECTION

(74.7) TBA - Tap Break-in Active - Position: 12

(315.5) AMH - Manhole Remark: SSMH# 13

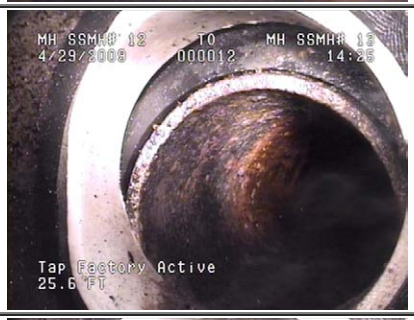
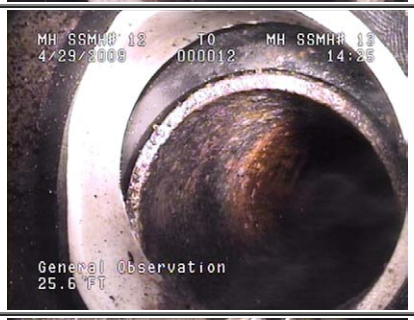
Total Distance: 315.5

ID Number: SSMH# 13

PO Number: 000012

Date: 4/29/2009 2:20:00 PM
Street: OLD EARHART
Length Surveyed: 315.5
Run Number:
Height (Diameter): 15

Pipe Segment Reference: SSMH#12SSMH#13
Upstream MH: SSMH# 12
Downstream MH: SSMH# 13
Direction of Survey: Downstream
Material: Reinforced Concrete Pipe

Distance	Fault Observation	Time	Picture
0.0	Manhole Severity: None Remarks: SSMH# 12	26 00:00:00	
25.6	Tap Factory Active Position: 10 Severity: None 1st Dimension: 4	02:59 00:00:00	
25.6	General Observation Severity: None Remarks: LATERAL OFFSET	03:27 00:00:00	
39.4	General Observation Severity: None Remarks: NEED TO AJUST TRACKS	05:11 00:00:00	
40.3	General Observation Severity: None Remarks: CONT. INSPECTION	13 00:00:00	

Distance	Fault Observation	Time	Picture
74.7	Tap Break-in Active Position: 12 Severity: None 1st Dimension: 6	01:38 00:00:00	
315.5	Manhole Severity: None Remarks: SSMH# 13	09:52 00:00:00	

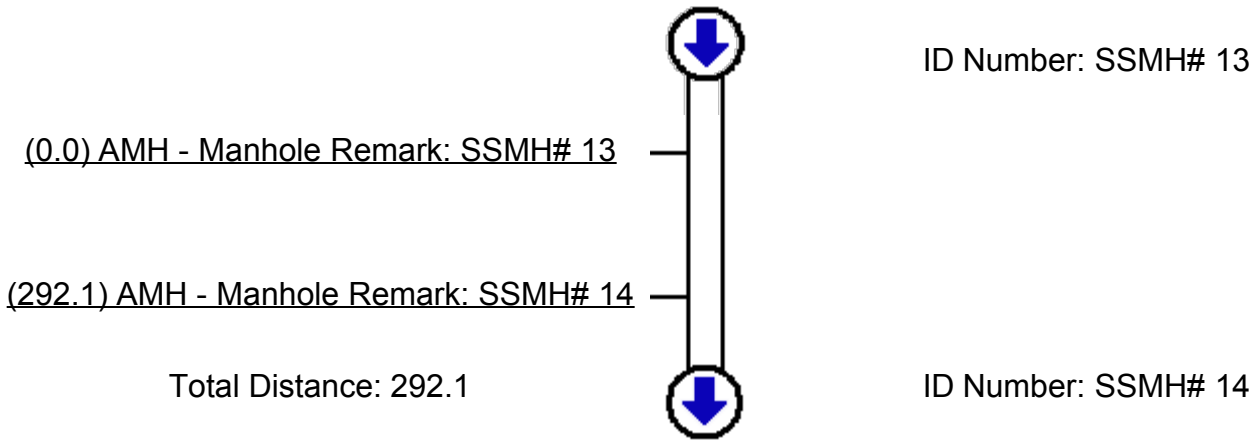
PO Number: 000013

Date: 4/29/2009 2:49:00 PM

Street: OLD EARHART
Length Surveyed: 292.1
Run Number:
Height (Diameter): 14

Pipe Segment Reference: SSMH#13SSMH#14
Upstream MH: SSMH# 13
Downstream MH: SSMH# 14
Direction of Survey: Downstream
Material: Vitrified Clay Pipe

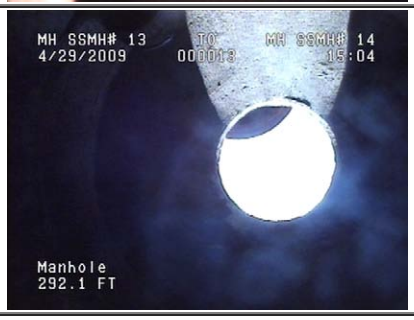
Severity
Light
Moderate
Average
Heavy
Severe



PO Number: 000013

Date: 4/29/2009 2:49:00 PM
Street: OLD EARHART
Length Surveyed: 292.1
Run Number:
Height (Diameter): 14

Pipe Segment Reference: SSMH#13SSMH#14
Upstream MH: SSMH# 13
Downstream MH: SSMH# 14
Direction of Survey: Downstream
Material: Vitrified Clay Pipe

Distance	Fault Observation	Time	Picture
0.0	Manhole Severity: None Remarks: SSMH# 13	40	
292.1	Manhole Severity: None Remarks: SSMH# 14	09:43	

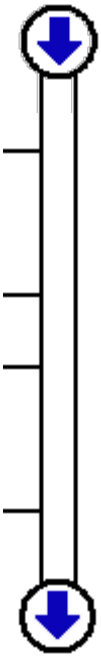
PO Number: 000014

Date: 4/29/2009 3:07:00 PM

Street: OLD EARHART
Length Surveyed: 250.4
Run Number:
Height (Diameter): 14

Pipe Segment Reference: SSMH#14SSMH#15
Upstream MH: SSMH# 14
Downstream MH: SSMH# 15
Direction of Survey: Downstream
Material: Vitrified Clay Pipe

Severity
Light
Moderate
Average
Heavy
Severe



ID Number: SSMH# 14

(0.0) AMH - Manhole Remark: SSMH# 14

(92.4) TBA - Tap Break-in Active - Position: 12

(92.4) MGO - General Observation

(250.4) AMH - Manhole Remark: SSMH# 15

Total Distance: 250.4

ID Number: SSMH# 15

PO Number: 000014

Date: 4/29/2009 3:07:00 PM
Street: OLD EARHART
Length Surveyed: 250.4
Run Number:
Height (Diameter): 14

Pipe Segment Reference: SSMH#14SSMH#15
Upstream MH: SSMH# 14
Downstream MH: SSMH# 15
Direction of Survey: Downstream
Material: Vitrified Clay Pipe

Distance	Fault Observation	Time	Picture
0.0	Manhole Severity: None Remarks: SSMH# 14	25 00:00:00	
92.4	Tap Break-in Active Position: 12 Severity: None 1st Dimension: 6	04:22 00:00:00	Link to Video
92.4	General Observation Severity: None	04:42 00:00:00	
250.4	Manhole Severity: None Remarks: SSMH# 15	11:05 00:00:00	

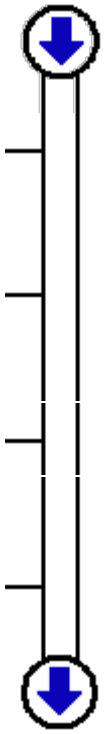
PO Number: 000015

Date: 4/30/2009 8:13:00 AM

Street: OLD EARHART
Length Surveyed: 195.9
Run Number:
Height (Diameter): 14

Pipe Segment Reference: SSMH#15SSMH#16
Upstream MH: SSMH# 15
Downstream MH: SSMH# 16
Direction of Survey: Downstream
Material: Vitrified Clay Pipe

Severity
Light
Moderate
Average
Heavy
Severe



ID Number: SSMH# 15

(0.0) AMH - Manhole Remark: SSMH# 15

(153.9) MWL - Water Level

(161.3) MGO - General Observation Remark: needs more claning

(195.9) AMH - Manhole Remark: SSMH# 16

Total Distance: 195.9

ID Number: SSMH# 16

PO Number: 000015

Date: 4/30/2009 8:13:00 AM
Street: OLD EARHART
Length Surveyed: 195.9
Run Number:
Height (Diameter): 14

Pipe Segment Reference: SSMH#15SSMH#16
Upstream MH: SSMH# 15
Downstream MH: SSMH# 16
Direction of Survey: Downstream
Material: Vitrified Clay Pipe

Distance	Fault Observation	Time	Picture
0.0	Manhole Severity: None Remarks: SSMH# 15	33 00:00:00	
153.9	Water Level Severity: None Percent: 35	06:53 00:00:00	
161.3	General Observation Severity: None Remarks: needs more claning	08:16 00:00:00	
195.9	Manhole Severity: None Remarks: SSMH# 16	02:26 00:00:00	

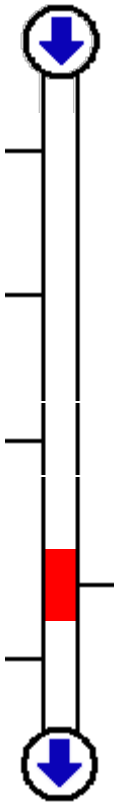
PO Number: 000016

Date: 4/30/2009 9:16:00 AM

Street: EARHART
Length Surveyed: 264.3
Run Number:
Height (Diameter): 15

Pipe Segment Reference: SSMH#16SSMH#17
Upstream MH: SSMH# 16
Downstream MH: SSMH# 17
Direction of Survey: Downstream
Material: Vitrified Clay Pipe

Severity
Light
Moderate
Average
Heavy
Severe



ID Number: SSMH# 16

(0.0) AMH - Manhole Remark: SSMH# 16

(36.2) TFA - Tap Factory Active - Position: 12

(64.4) MGO - General Observation Remark: needs more cleaning

(253.8) IR - Infil Runner - Position: 9

(264.3) AMH - Manhole Remark: SSMH# 17

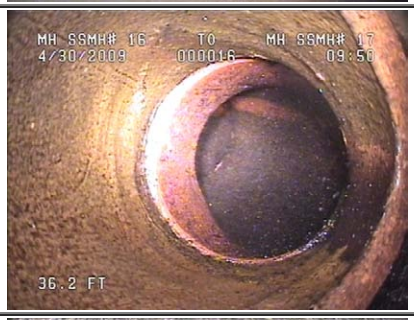
Total Distance: 264.3

ID Number: SSMH# 17

PO Number: 000016

Date: 4/30/2009 9:16:00 AM
Street: EARHART
Length Surveyed: 264.3
Run Number:
Height (Diameter): 15

Pipe Segment Reference: SSMH#16SSMH#17
Upstream MH: SSMH# 16
Downstream MH: SSMH# 17
Direction of Survey: Downstream
Material: Vitrified Clay Pipe

Distance	Fault Observation	Time	Picture
0.0	Manhole Severity: None Remarks: SSMH# 16	35	
36.2	Tap Factory Active Position: 12 Severity: None 1st Dimension: 4	03:31	
64.4	General Observation Severity: None Remarks: needs more cleaning	06:19	
253.8	Infil Runner Position: 9 Severity: None Joint Maint Weight: 4	06:31	
264.3	Manhole Severity: None Remarks: SSMH# 17	08:21	

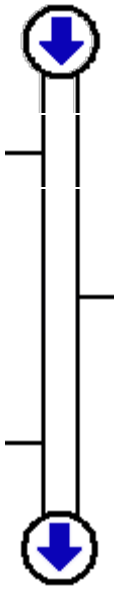
PO Number: 000017

Date: 4/30/2009 2:19:00 PM

Street: EARHART
Length Surveyed: 177.7
Run Number:
Height (Diameter): 15

Pipe Segment Reference: SSMH#17SSMH#18
Upstream MH: SSMH# 17
Downstream MH: SSMH# 18
Direction of Survey: Downstream
Material: Vitrified Clay Pipe

Severity
Light
Moderate
Average
Heavy
Severe



ID Number: SSMH# 17

(0.6) AMH - Manhole Remark: CONT. AFTER CLEANING

(98.2) TFA - Tap Factory Active - Position: 9

(177.7) AMH - Manhole Remark: SSMH# 18

Total Distance: 177.7

ID Number: SSMH# 18

PO Number: 000017

Date: 4/30/2009 2:19:00 PM
Street: EARHART
Length Surveyed: 177.7
Run Number:
Height (Diameter): 15

Pipe Segment Reference: SSMH#17SSMH#18
Upstream MH: SSMH# 17
Downstream MH: SSMH# 18
Direction of Survey: Downstream
Material: Vitrified Clay Pipe

Distance	Fault Observation	Time	Picture
0.6	Manhole Severity: None Remarks: CONT. AFTER CLEANING	01:01 00:00:00	
98.2	Tap Factory Active Position: 9 Severity: None 1st Dimension: 4	05:01 00:00:00	
177.7	Manhole Severity: None Remarks: SSMH# 18	08:55 00:00:00	

Table 1 **PACP Condition Rating Scale**
Airport Sewer Inspection for Parking Lot and Airport Drive
Port of Oakland

PACP Rating	Pipe Grade Importance [1]	Likelihood of Failure Estimate [1]
5 - Very Poor	Defects requiring immediate attention	Pipe has failed or will likely fail within the next 5 years
4 - Poor	Severe defects that will become Grade 5 defects within the foreseeable future	Pipe will probably fail in 5 to 10 years
3 - Fair	Moderate defects that will continue to deteriorate	Pipe may fail in 10 to 20 years
2 - Good	Defects that have not begun to deteriorate	Pipe unlikely to fail for at least 20 years
1 - Excellent	Minor defects	Failure is unlikely in the foreseeable future

Note:
(1) The PACP Condition Grading System only considers internal pipe conditions obtained from CCTV inspection. While other factors such as pipe material, depth, soils, and surface conditions also affect pipe survivability and the likelihood of failure, those factors have not been incorporated into the PACP Condition Grading System

Table 2 **Airport Sewer Inspection Sewer Condition Ratings**
Airport Sewer Inspection for Parking Lot and Airport Drive
Port of Oakland

Starting Node	Ending Node	Diameter (in)	As-built Length (LF)	PACP Structure	PACP O&M	PACP Overall
37	37A	10	111	**5132**	**2100**	**5132**
37A	44	10	333	**4133**	**312A**	**4134**
44	28	10	229	**5142**	**2800**	**5142**
28	29	10	211	**2300**	**4132**	**4132**
25[1]	26	12	335	**0000**	**3B00**	**3B00**
26	27	12	192	**0000**	**0000**	**0000**
27[1]	29	12	58	**0000**	**0000**	**0000**
29	1232	12	37	**0000**	**0000**	**0000**
1232	30	12	243	**0000**	**0000**	**0000**
30	1352	15	369	**0000**	**0000**	**0000**
1354[1]	1353	15	276	**0000**	**0000**	**0000**
1352[1]	1353	15	100	**0000**	**0000**	**0000**

Notes:
(1)Video taken in direction of reverse flow.

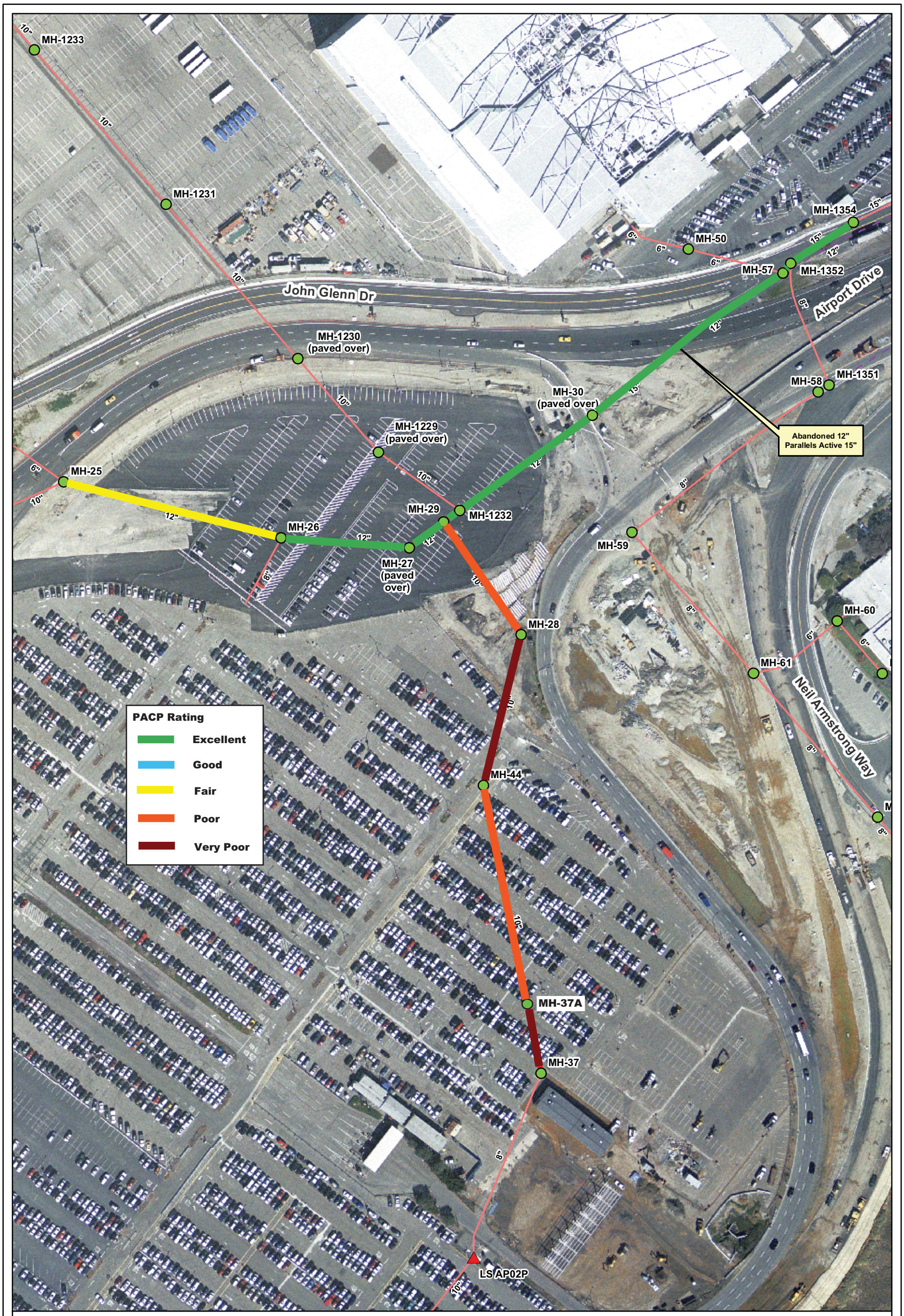


Figure 2
CCTV Location -
Airport Drive and John Glenn Drive
Port-Wide Sewer System
Management Plan
Port of Oakland

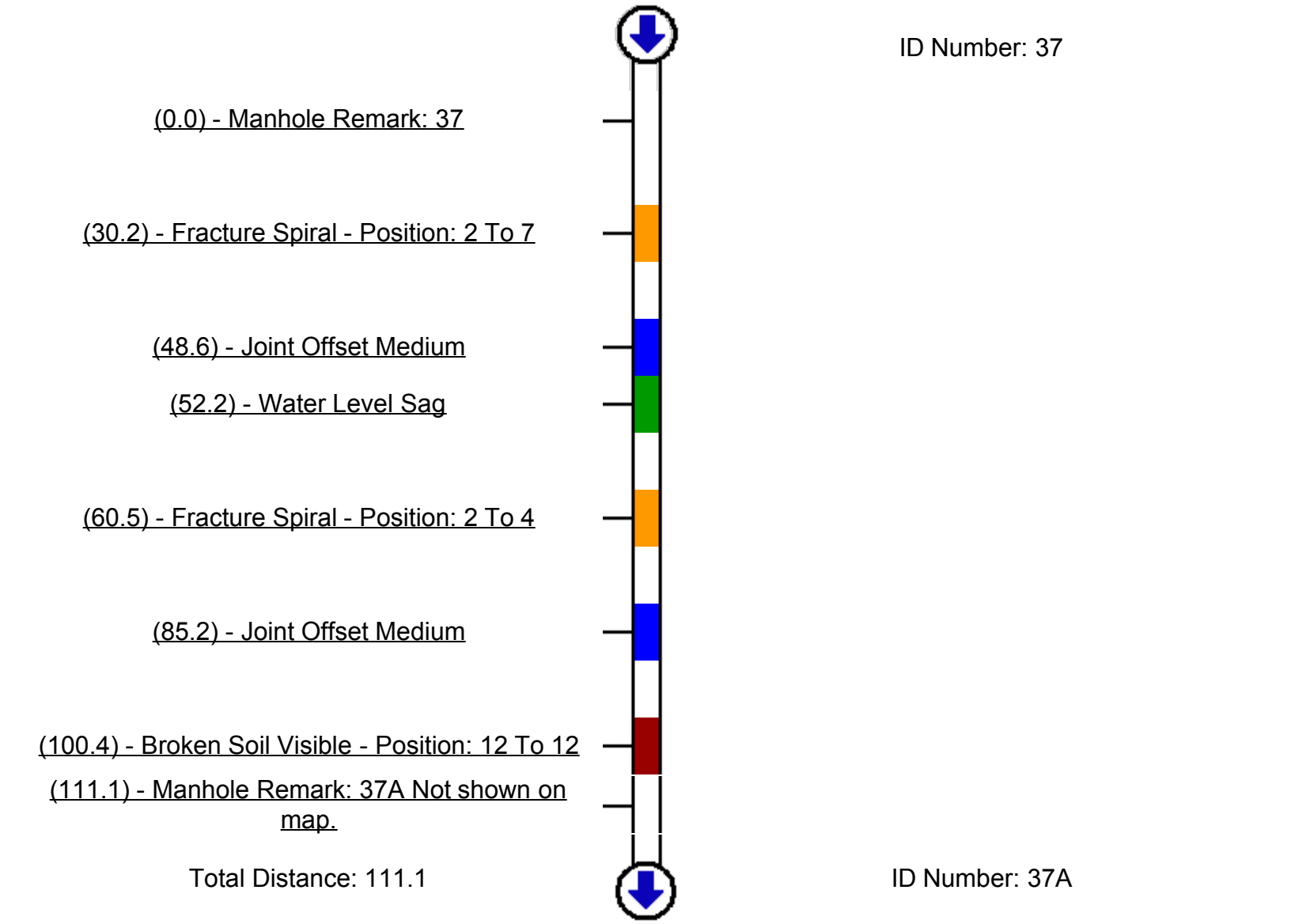
Revision Date: August 27, 2009

PO Number: Airport Sewers

Date: 10/30/2009 9:52:30 AM
Street: Daily Parking Lot
Distance: 111.1
Run Number:
Height (Diameter): 10

Pipe Segment Reference:
Upstream MH: 37
Downstream MH: 37A
Direction of Survey: Downstream
Material: Vitrified Clay Pipe

Severity
Light
Moderate
Average
Heavy
Severe



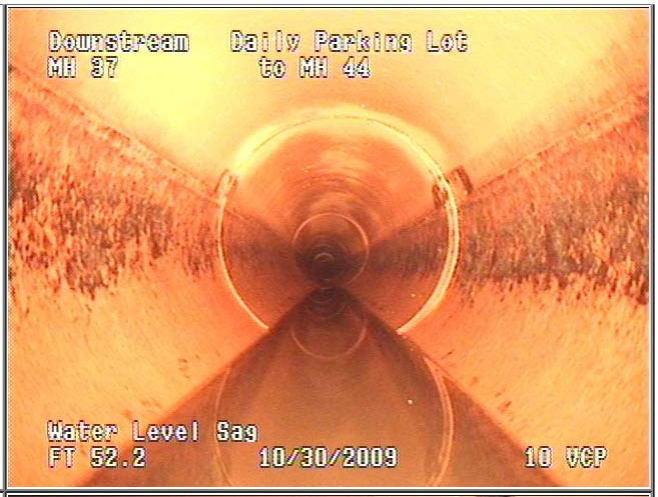
PO Number: Airport Sewers

Date: 10/30/2009 9:52:30 AM
Street: Daily Parking Lot
Distance: 111.1
Run Number:
Height (Diameter): 10

Pipe Segment Reference:
Upstream MH: 37
Downstream MH: 37A
Direction of Survey: Downstream
Material: Vitrified Clay Pipe

Distance	Fault Observation	Time	Picture
0.0	Manhole Severity: None Percent: 0 Remarks: 37	5 00:00:00	
30.2	Fracture Spiral Position: 2 To 7 Severity: None Percent: 0 Joint Struct Weight: 3	5:10 00:00:00	
48.6	Joint Offset Medium Severity: None Percent: 0 Struct Weight: 1	06:49 00:00:00	

Distance	Fault Observation	Time	Picture

52.2	**Water Level Sag Severity: None Percent: 10 Maint Weight: 2**	**07:25 00:00:00**	
60.5	**Fracture Spiral Position: 2 To 4 Severity: None Percent: 0 Joint Struct Weight: 3**	**08:21 00:00:00**	
85.2	**Joint Offset Medium Severity: None Percent: 0 Struct Weight: 1**	**10:04 00:00:00**	

Distance	Fault Observation	Time	Picture
100.4	**Broken Soil Visible Position: 12 To 12 Severity: None Percent: 0 Struct Weight: 5**	**11:48 00:00:00**	

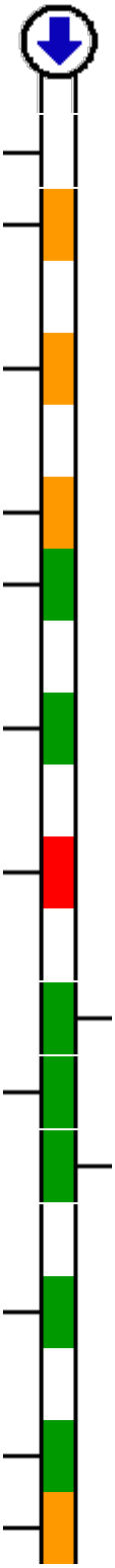
			
111.1	**Manhole Severity: None Percent: 0 Remarks: 37A Not shown on map.**	**14:27 00:00:00**	

PO Number: Airport Sewers

Date: 10/30/2009 10:11:44 AM
Street: Daily Parking Lot
Distance: 333
Run Number:
Height (Diameter): 10

Pipe Segment Reference:
Upstream MH: 37A
Downstream MH: 44
Direction of Survey: Downstream
Material: Vitrified Clay Pipe

Severity
Light
Moderate
Average
Heavy
Severe



ID Number: 37A

(0.0) - Manhole Remark: 37A Not shown on map.

(17.2) - Fracture Spiral - Position: 5 To 10

(60.4) - Fracture Spiral - Position: 4 To 7

(96.7) - Fracture Spiral - Position: 5 To 9

(98.6) - Water Level Sag

(130.1) - Water Level Sag

(151.7) - Fracture Multiple - Position: 2 To 10

(188.0) - Deposits Settled Fine - Position: 6 - Cont Def: S01

(195.5) - Water Level Sag

(199.6) - Deposits Settled Fine - Position: 6 - Cont Def: F01

(255.6) - Water Level Sag

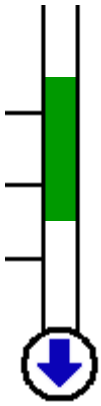
(267.7) - Water Level Sag

(279.5) - Water Level Sag

(303.0) - Water Level Sag

(315.0) - Water Level Sag

(333.0) - Manhole Remark: 44



Total Distance: 333

ID Number: 44

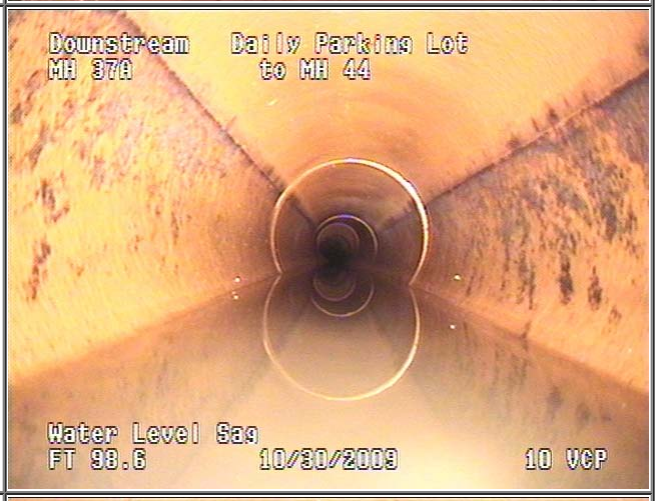
PO Number: Airport Sewers

Date: 10/30/2009 10:11:44 AM
Street: Daily Parking Lot
Distance: 333
Run Number:
Height (Diameter): 10

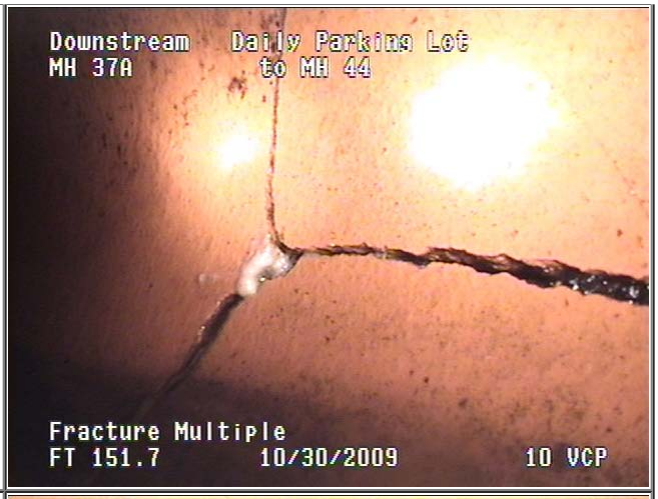
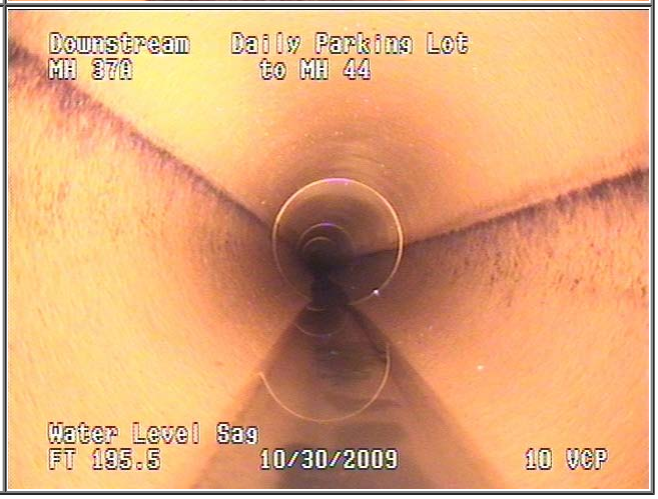
Pipe Segment Reference:
Upstream MH: 37A
Downstream MH: 44
Direction of Survey: Downstream
Material: Vitrified Clay Pipe

Distance	Fault Observation	Time	Picture
0.0	Manhole Severity: None Percent: 0 Remarks: 37A Not shown on map.	47 00:00:00	
17.2	Fracture Spiral Position: 5 To 10 Severity: None Percent: 0 Joint Struct Weight: 3	09:27 00:00:00	
60.4	Fracture Spiral Position: 4 To 7 Severity: None Percent: 0 Joint Struct Weight: 3	12:00 00:00:00	

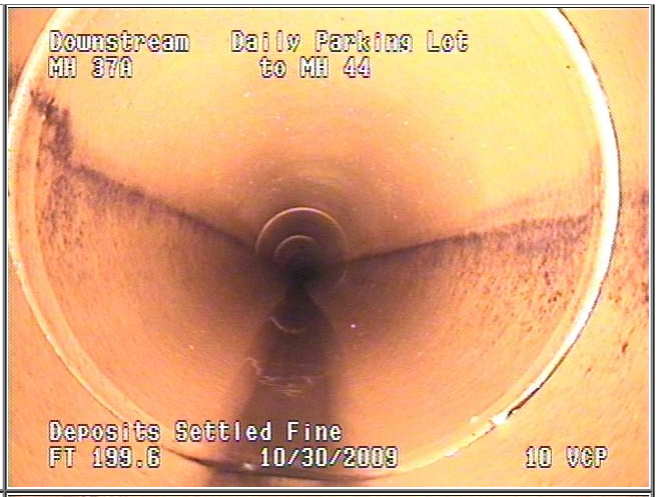
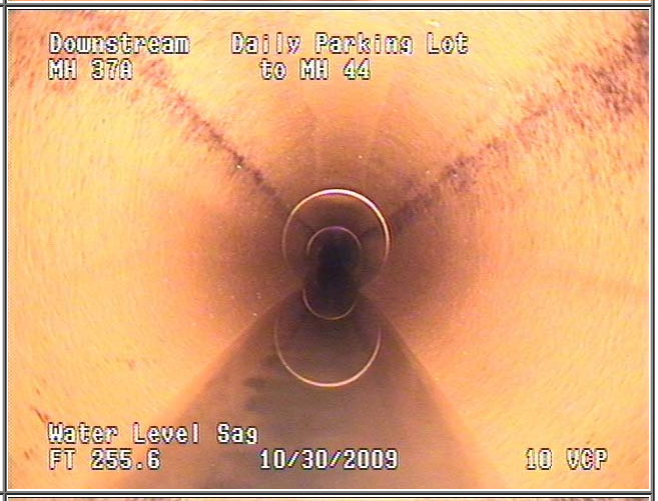
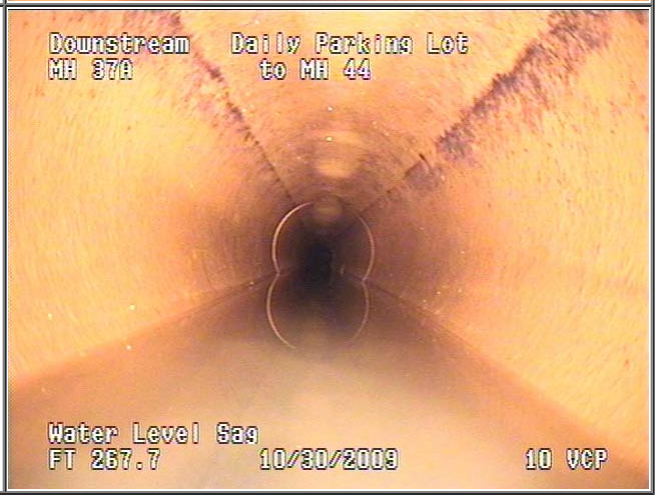
Distance	Fault Observation	Time	Picture

96.7	Fracture Spiral Position: 5 To 9 Severity: None Percent: 0 Joint Struct Weight: 3	14:12 00:00:00	
98.6	Water Level Sag Severity: None Percent: 25 Maint Weight: 2	14:45 00:00:00	
130.1	Water Level Sag Severity: None Percent: 5 Maint Weight: 2	16:23 00:00:00	

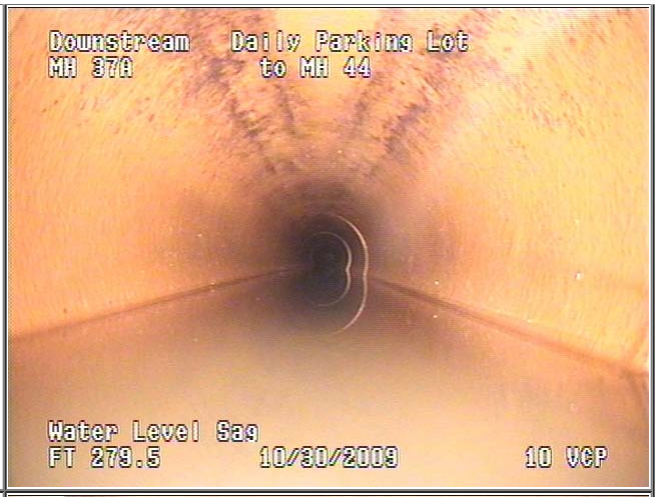
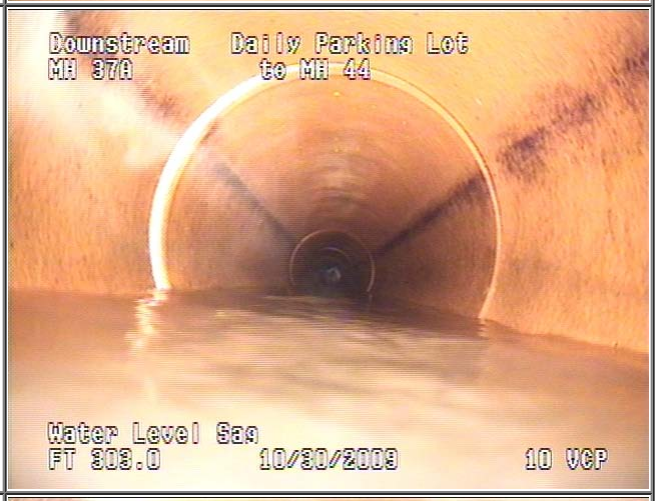
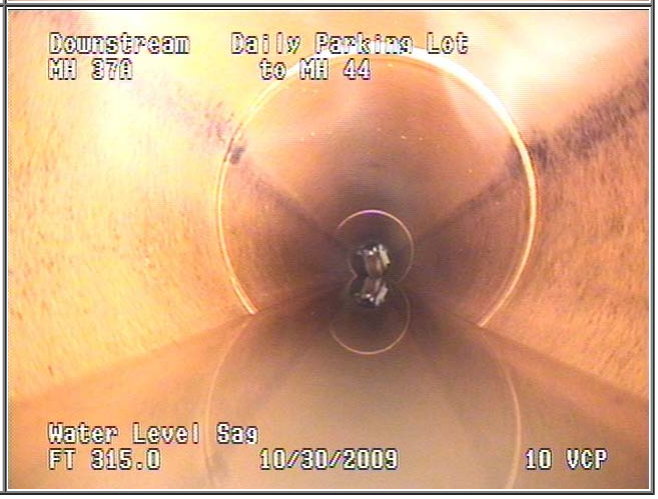
Distance	Fault Observation	Time	Picture
151.7	Fracture Multiple Position: 2 To 10 Severity: None Percent: 0 Joint Struct Weight: 4	18:57 00:00:00	

			
188.0	**Deposits Settled Fine** **Position: 6** **Severity: None** **Cont Defect: S01** **Percent: 5** **Maint Weight: 2**	**21:20** **00:00:00**	
195.5	**Water Level Sag** **Severity: None** **Percent: 5** **Maint Weight: 2**	**21:54** **00:00:00**	

Distance	Fault Observation	Time	Picture
199.6	**Deposits Settled Fine** **Position: 6** **Severity: None** **Cont Defect: F01** **Percent: 5** **Maint Weight: 2**	**22:37** **00:00:00**	

			
255.6	**Water Level Sag Severity: None Percent: 10 Maint Weight: 2**	**24:57 00:00:00**	
267.7	**Water Level Sag Severity: None Percent: 20 Maint Weight: 2**	**25:44 00:00:00**	

Distance	Fault Observation	Time	Picture
279.5	**Water Level Sag Severity: None Percent: 35 Maint Weight: 3**	**26:28 00:00:00**	

			
303.0	**Water Level Sag Severity: None Percent: 15 Maint Weight: 2**	**27:43 00:00:00**	
315.0	**Water Level Sag Severity: None Percent: 5 Maint Weight: 2**	**29:03 00:00:00**	

Distance	Fault Observation	Time	Picture
333.0	**Manhole Severity: None Percent: 0 Remarks: 44**	**30:07 00:00:00**	

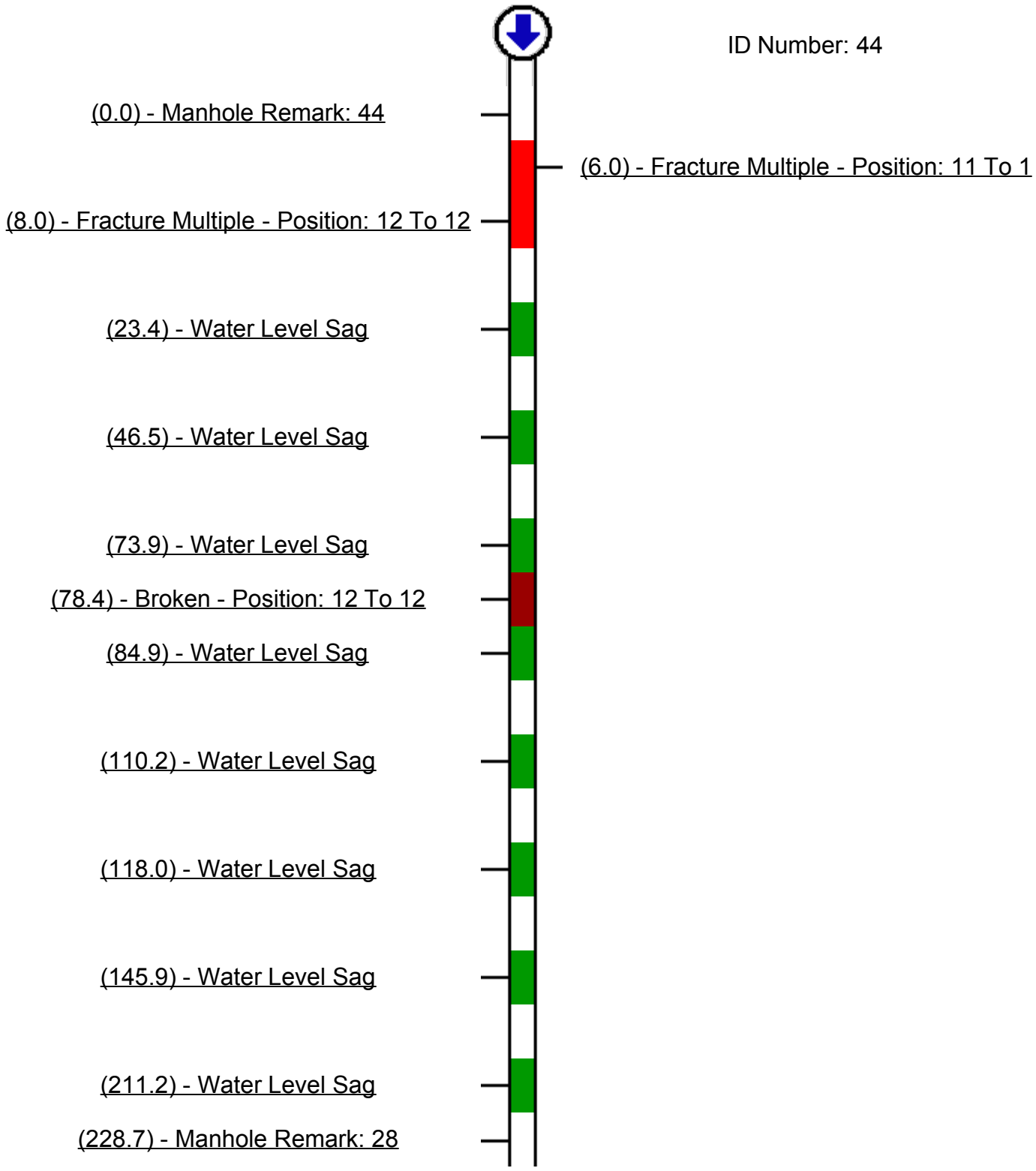
			 Downstream MH 37A Daily Parking Lot to MH 44 Manhole FT 333.0 10/30/2009 10 VCP

PO Number: Airport Sewers

Date: 10/30/2009 11:58:55 AM
Street: Daily Parking Lot
Distance: 228.7
Run Number:
Height (Diameter): 10

Pipe Segment Reference:
Upstream MH: 44
Downstream MH: 28
Direction of Survey: Downstream
Material: Vitrified Clay Pipe

Severity
Light
Moderate
Average
Heavy
Severe



Total Distance: 228.7

ID Number: 28

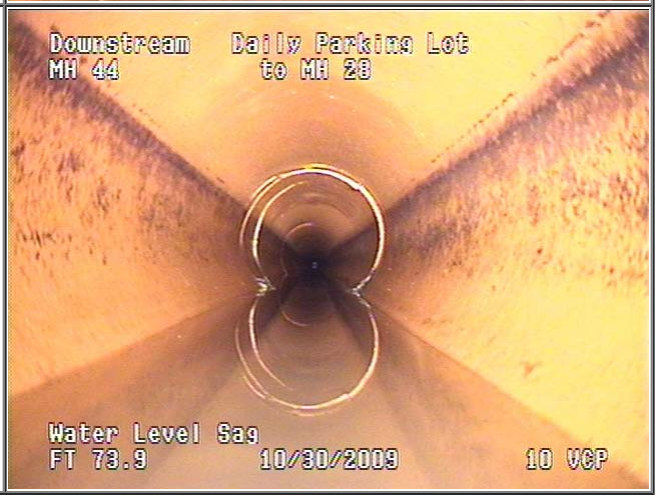
PO Number: Airport Sewers

Date: 10/30/2009 11:58:55 AM
Street: Daily Parking Lot
Distance: 228.7
Run Number:
Height (Diameter): 10

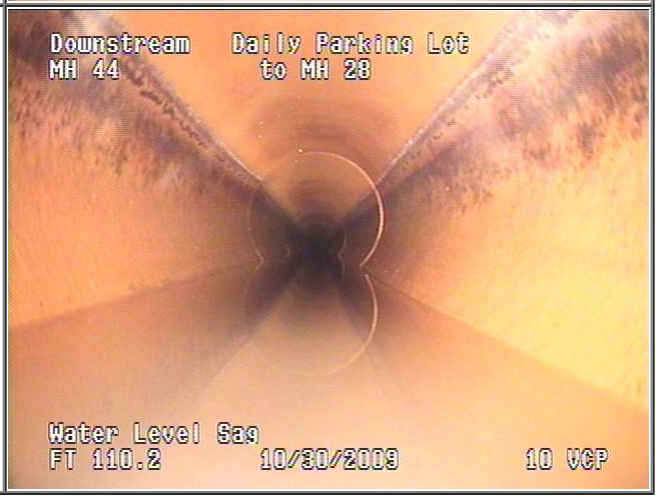
Pipe Segment Reference:
Upstream MH: 44
Downstream MH: 28
Direction of Survey: Downstream
Material: Vitrified Clay Pipe

Distance	Fault Observation	Time	Picture
0.0	Manhole Severity: None Percent: 0 Remarks: 44	54 00:00:00	
6.0	Fracture Multiple Position: 11 To 1 Severity: None Percent: 0 Joint Struct Weight: 4	03:59 00:00:00	
8.0	Fracture Multiple Position: 12 To 12 Severity: None Percent: 0 Joint Struct Weight: 4	07:07 00:00:00	

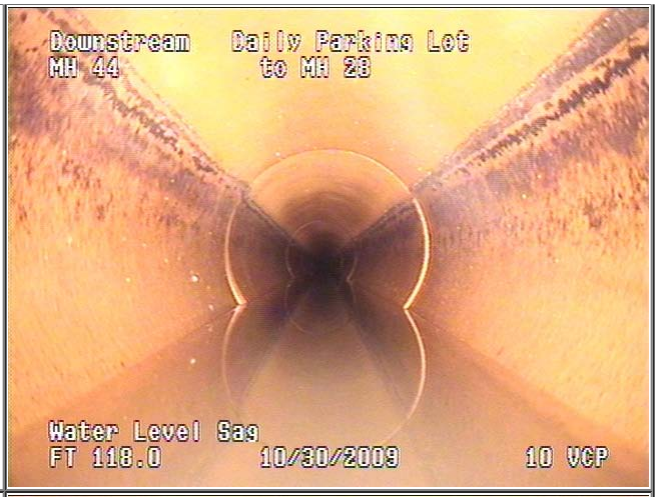
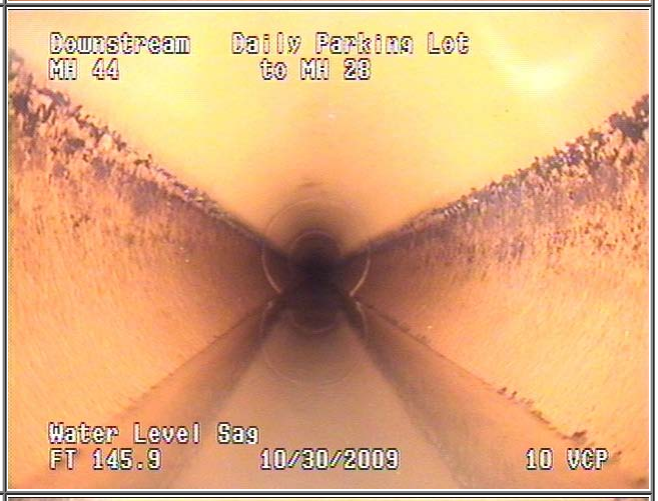
Distance	Fault Observation	Time	Picture

23.4	Water Level Sag Severity: None Percent: 10 Maint Weight: 2	08:17 00:00:00	
46.5	Water Level Sag Severity: None Percent: 20 Maint Weight: 2	09:20 00:00:00	
73.9	Water Level Sag Severity: None Percent: 10 Maint Weight: 2	10:29 00:00:00	

Distance	Fault Observation	Time	Picture
78.4	Broken Position: 12 To 12 Severity: None Percent: 0 Joint Struct Weight: 5	11:58 00:00:00	

			
84.9	**Water Level Sag Severity: None Percent: 20 Maint Weight: 2**	**12:45 00:00:00**	
110.2	**Water Level Sag Severity: None Percent: 10 Maint Weight: 2**	**14:03 00:00:00**	

Distance	Fault Observation	Time	Picture
118.0	**Water Level Sag Severity: None Percent: 20 Maint Weight: 2**	**14:39 00:00:00**	

			
145.9	**Water Level Sag Severity: None Percent: 10 Maint Weight: 2**	**15:46 00:00:00**	
211.2	**Water Level Sag Severity: None Percent: 10 Maint Weight: 2**	**18:08 00:00:00**	

Distance	Fault Observation	Time	Picture
228.7	**Manhole Severity: None Percent: 0 Remarks: 28**	**19:26 00:00:00**	

			 Downstream MH 44 Daily Parking Lot to MH 28 Manhole FT 228.7 10/30/2009 10 VCP

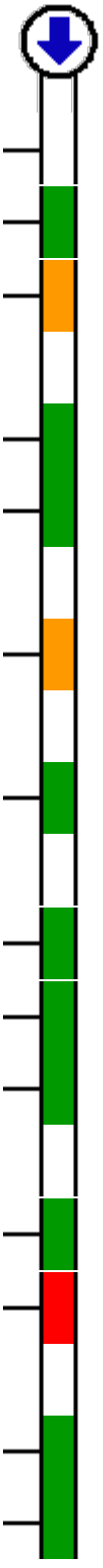
PO Number: Airport Sewers

Date: 10/30/2009 1:02:46 PM
Street: Daily Parking Lot
Distance: 211.2
Run Number:
Height (Diameter): 10

Pipe Segment Reference:
Upstream MH: 28
Downstream MH: 29
Direction of Survey: Downstream
Material: Vitrified Clay Pipe

Severity
Light
Moderate
Average
Heavy
Severe

ID Number: 28



(0.0) - Manhole Remark: 28

(3.0) - Fracture Circumferential - Position: 12 To 12

(8.0) - Water Level Sag

(21.4) - Water Level Sag

(30.5) - Water Level Sag

(60.2) - Water Level Sag

(80.1) - Water Level Sag

(88.8) - Fracture Circumferential - Position: 12 To 12

(88.8) - Water Level Sag

(98.5) - Water Level Sag

(156.7) - Fracture Circumferential - Position: 12 To 12

(156.7) - Infil Runner - Position: 4 To 10

(175.0) - Water Level Sag

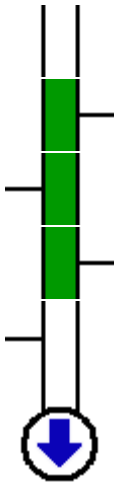
(184.0) - Water Level Sag

(192.3) - Deposits Settled Gravel - Position: 6 - Cont Def: S01

(206.5) - Water Level Sag

(209.8) - Deposits Settled Gravel - Position: 6 - Cont Def: F01

(211.2) - Manhole Remark: 29



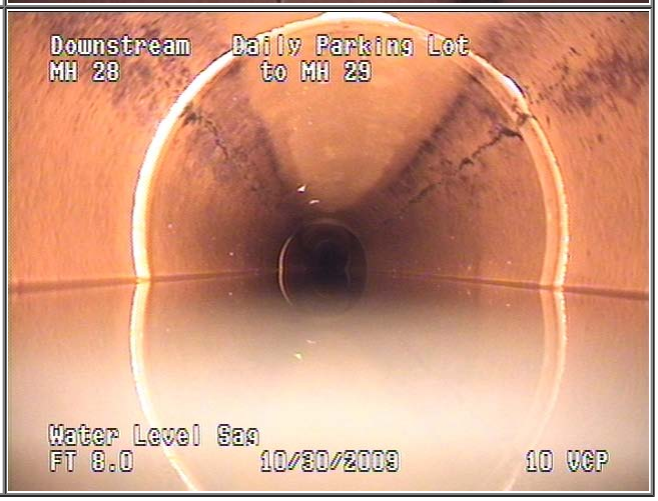
Total Distance: 211.2

ID Number: 29

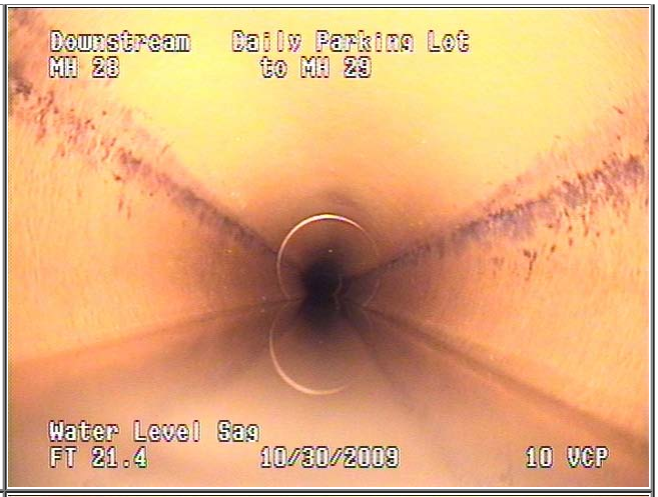
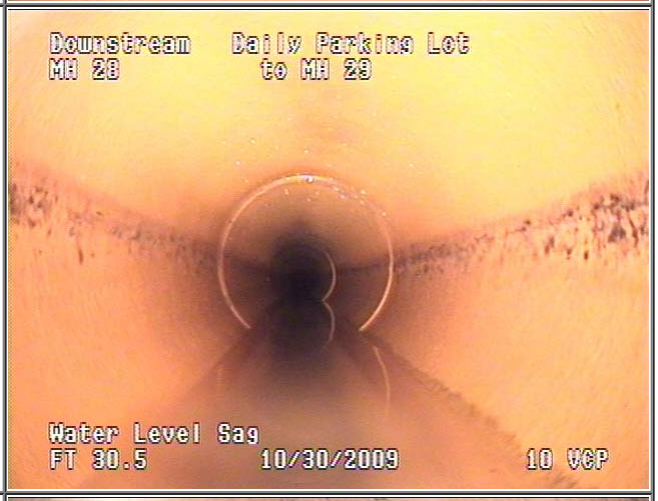
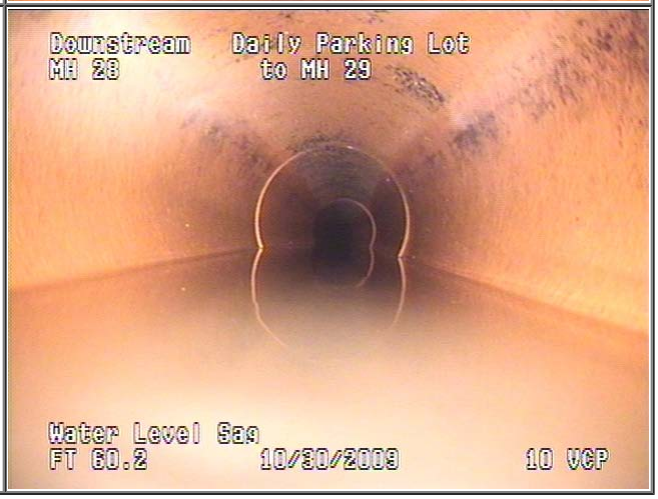
PO Number: Airport Sewers

Date: 10/30/2009 1:02:46 PM
Street: Daily Parking Lot
Distance: 211.2
Run Number:
Height (Diameter): 10

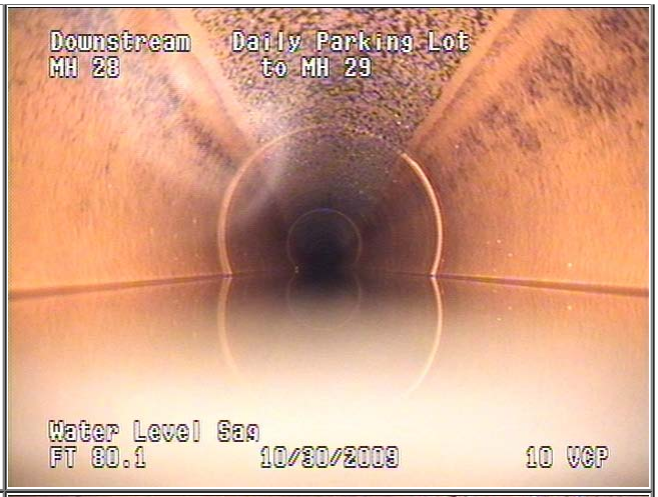
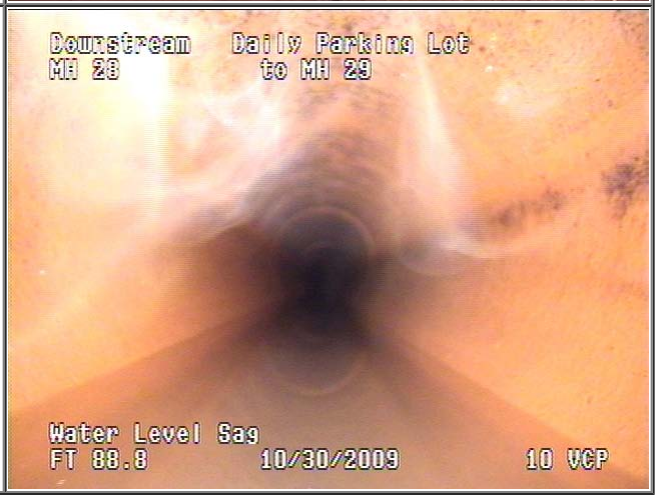
Pipe Segment Reference:
Upstream MH: 28
Downstream MH: 29
Direction of Survey: Downstream
Material: Vitrified Clay Pipe

Distance	Fault Observation	Time	Picture
0.0	Manhole Severity: None Percent: 0 Remarks: 28	42 00:00:00	
3.0	Fracture Circumferential Position: 12 To 12 Severity: None Percent: 0 Joint Struct Weight: 2	02:54 00:00:00	
8.0	Water Level Sag Severity: None Percent: 35 Maint Weight: 3	04:15 00:00:00	

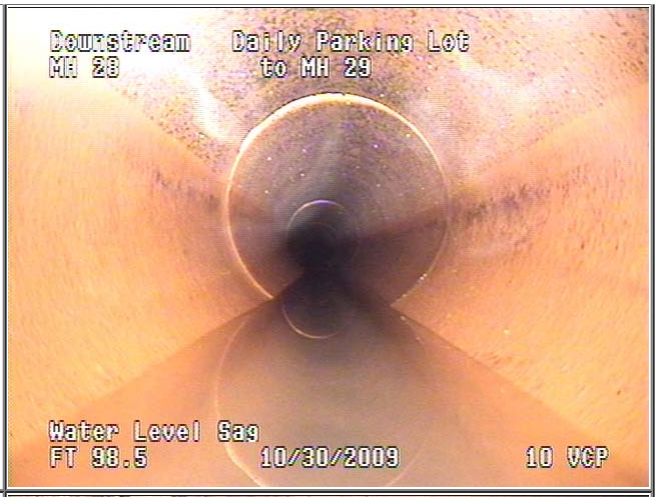
Distance	Fault Observation	Time	Picture

21.4	**Water Level Sag Severity: None Percent: 25 Maint Weight: 2**	**05:28 00:00:00**	
30.5	**Water Level Sag Severity: None Percent: 10 Maint Weight: 2**	**05:58 00:00:00**	
60.2	**Water Level Sag Severity: None Percent: 35 Maint Weight: 3**	**07:13 00:00:00**	

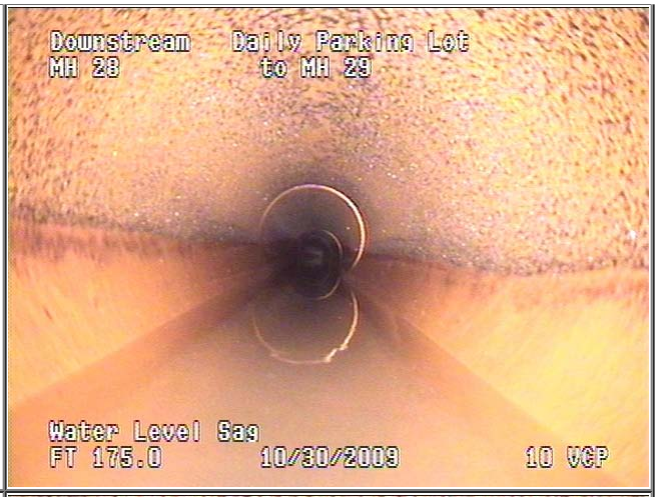
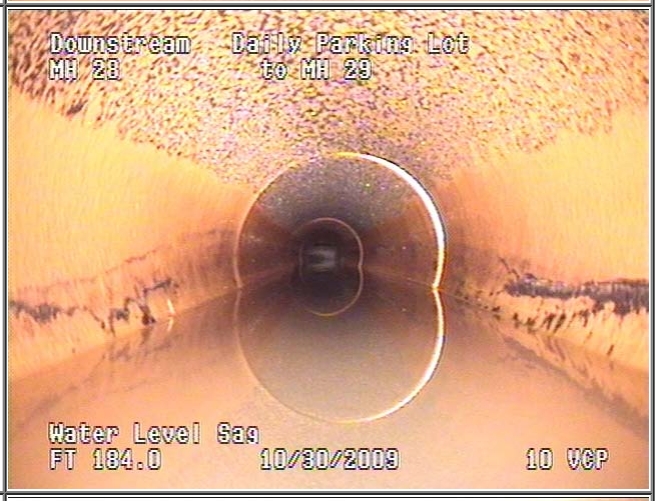
Distance	Fault Observation	Time	Picture
80.1	**Water Level Sag Severity: None Percent: 25 Maint Weight: 2**	**08:49 00:00:00**	

			
88.8	Fracture Circumferential Position: 12 To 12 Severity: None Percent: 0 Joint Struct Weight: 2	10:02 00:00:00	
88.8	Water Level Sag Severity: None Percent: 15 Maint Weight: 2	10:24 00:00:00	

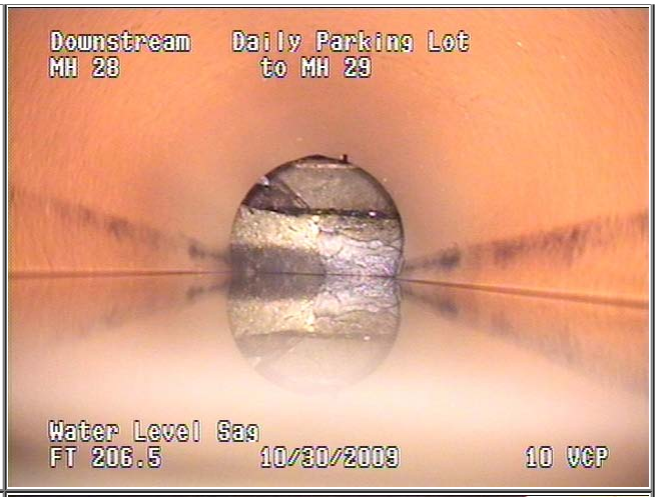
Distance	Fault Observation	Time	Picture
98.5	Water Level Sag Severity: None Percent: 5 Maint Weight: 2	11:18 00:00:00	

			
156.7	Fracture Circumferential Position: 12 To 12 Severity: None Percent: 0 Joint Struct Weight: 2	14:53 00:00:00	
156.7	Infil Runner Position: 4 To 10 Severity: None Percent: 0 Maint Weight: 4	16:06 00:00:00	

Distance	Fault Observation	Time	Picture
175.0	Water Level Sag Severity: None Percent: 10 Maint Weight: 2	17:18 00:00:00	

			
184.0	**Water Level Sag Severity: None Percent: 30 Maint Weight: 2**	**18:06 00:00:00**	
192.3	**Deposits Settled Gravel Position: 6 Severity: None Cont Defect: S01 Percent: 10 Maint Weight: 2**	**18:59 00:00:00**	

Distance	Fault Observation	Time	Picture
206.5	**Water Level Sag Severity: None Percent: 25 Maint Weight: 2**	**20:38 00:00:00**	

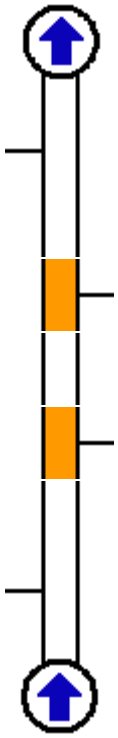
			
209.8	**Deposits Settled Gravel Position: 6 Severity: None Cont Defect: F01 Percent: 10 Maint Weight: 2**	**21:13 00:00:00**	
211.2	**Manhole Severity: None Percent: 0 Remarks: 29**	**22:15 00:00:00**	

PO Number: Airport Sewers

Date: 11/2/2009 11:05:06 AM
Street: Daily Parking Lot
Distance: 334.8
Run Number:
Height (Diameter): 12

Pipe Segment Reference:
Upstream MH: 25
Downstream MH: 26
Direction of Survey: Upstream
Material: Asbestos Cement

Severity
Light
Moderate
Average
Heavy
Severe



ID Number: 26

(0.0) - Manhole Remark: 26

(36.6) - Deposits Settled Gravel - Position: 6 - Cont Def: S01

(99.5) - Deposits Settled Gravel - Position: 6 - Cont Def: F01

(334.8) - Manhole Remark: 25 Burried

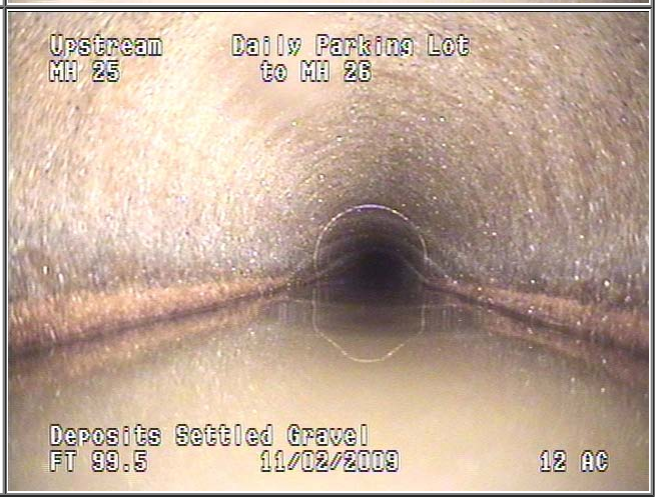
Total Distance: 334.8

ID Number: 25

PO Number: Airport Sewers

Date: 11/2/2009 11:05:06 AM
Street: Daily Parking Lot
Distance: 334.8
Run Number:
Height (Diameter): 12

Pipe Segment Reference:
Upstream MH: 25
Downstream MH: 26
Direction of Survey: Upstream
Material: Asbestos Cement

Distance	Fault Observation	Time	Picture
0.0	Manhole Severity: None Percent: 0 Remarks: 26	48 00:00:00	
36.6	Deposits Settled Gravel Position: 6 Severity: None Cont Defect: S01 Percent: 15 Maint Weight: 3	06:43 00:00:00	
99.5	Deposits Settled Gravel Position: 6 Severity: None Cont Defect: F01 Percent: 15 Maint Weight: 3	09:59 00:00:00	

Distance	Fault Observation	Time	Picture

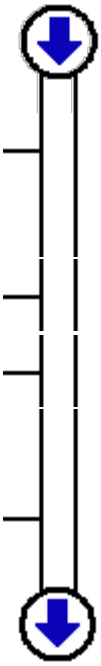
334.8	**Manhole** **Severity: None** **Percent: 0** **Remarks: 25 Burried**	**20:11** **00:00:00**	

PO Number: Airport Sewers

Date: 11/2/2009 11:39:33 AM
Street: Daily Parking Lot
Distance: 191.5
Run Number:
Height (Diameter): 12

Pipe Segment Reference:
Upstream MH: 26
Downstream MH: 27
Direction of Survey: Downstream
Material: Asbestos Cement

Severity
Light
Moderate
Average
Heavy
Severe



ID Number: 26

(0.0) - Manhole Remark: 26

(28.4) - Repair Point - Position: 12 To 12 - Cont Def: S01 Remark: PVC

(31.9) - Repair Point - Position: 12 To 12 - Cont Def: F01 Remark: PVC

(191.5) - Manhole Remark: 27 burried

Total Distance: 191.5

ID Number: 27

PO Number: Airport Sewers

Date: 11/2/2009 11:39:33 AM
Street: Daily Parking Lot
Distance: 191.5
Run Number:
Height (Diameter): 12

Pipe Segment Reference:
Upstream MH: 26
Downstream MH: 27
Direction of Survey: Downstream
Material: Asbestos Cement

Distance	Fault Observation	Time	Picture
0.0	Manhole Severity: None Percent: 0 Remarks: 26	01:17 00:00:00	
28.4	Repair Point Position: 12 To 12 Severity: None Cont Defect: S01 Percent: 0 Joint Remarks: PVC	05:40 00:00:00	
31.9	Repair Point Position: 12 To 12 Severity: None Cont Defect: F01 Percent: 0 Joint Remarks: PVC	06:14 00:00:00	

Distance	Fault Observation	Time	Picture

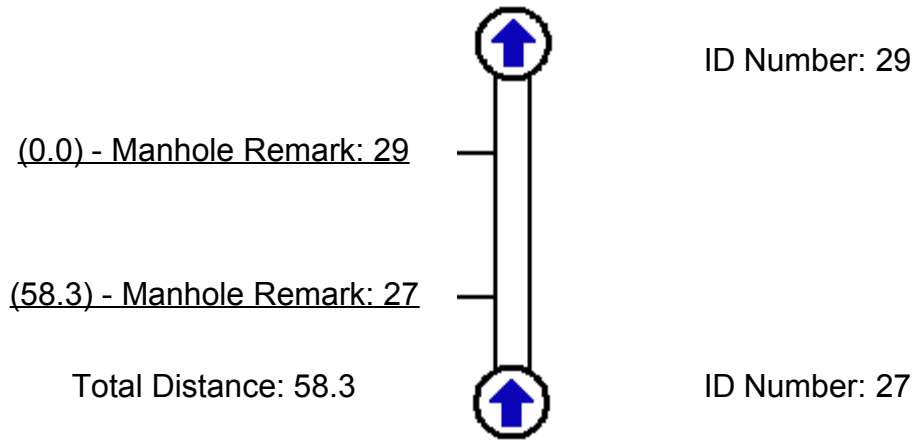
191.5	**Manhole** **Severity: None** **Percent: 0** **Remarks: 27 burried**	**13:05** **00:00:00**	

PO Number: Airport Sewers

Date: 11/2/2009 12:24:34 PM
Street: Daily Parking Lot
Distance: 58.3
Run Number:
Height (Diameter): 12

Pipe Segment Reference:
Upstream MH: 27
Downstream MH: 29
Direction of Survey: Upstream
Material: Asbestos Cement

Severity
Light
Moderate
Average
Heavy
Severe



PO Number: Airport Sewers

Date: 11/2/2009 12:24:34 PM
Street: Daily Parking Lot
Distance: 58.3
Run Number:
Height (Diameter): 12

Pipe Segment Reference:
Upstream MH: 27
Downstream MH: 29
Direction of Survey: Upstream
Material: Asbestos Cement

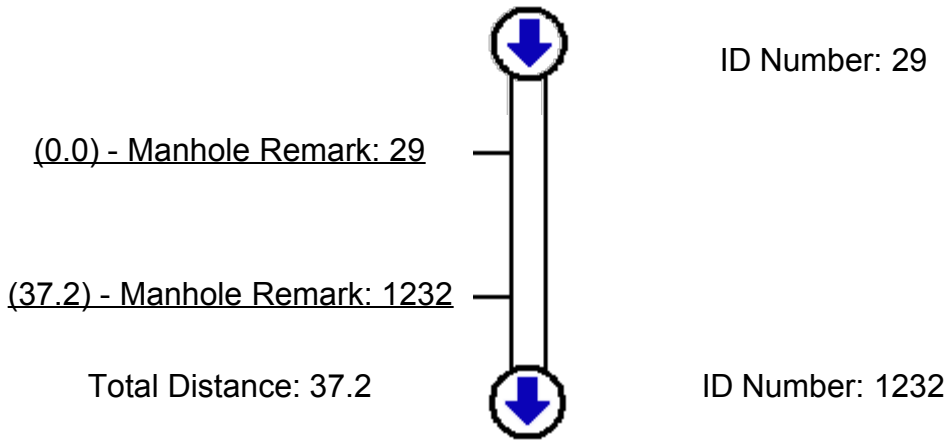
Distance	Fault Observation	Time	Picture
0.0	Manhole Severity: None Percent: 0 Remarks: 29	48 00:00:00	
58.3	Manhole Severity: None Percent: 0 Remarks: 27	05:06 00:00:00	

PO Number: Airport Sewers

Date: 11/2/2009 12:38:39 PM
Street: Daily Parking Lot
Distance: 37.2
Run Number:
Height (Diameter): 12

Pipe Segment Reference:
Upstream MH: 29
Downstream MH: 1232
Direction of Survey: Downstream
Material: Asbestos Cement

Severity
Light
Moderate
Average
Heavy
Severe



PO Number: Airport Sewers

Date: 11/2/2009 12:38:39 PM
Street: Daily Parking Lot
Distance: 37.2
Run Number:
Height (Diameter): 12

Pipe Segment Reference:
Upstream MH: 29
Downstream MH: 1232
Direction of Survey: Downstream
Material: Asbestos Cement

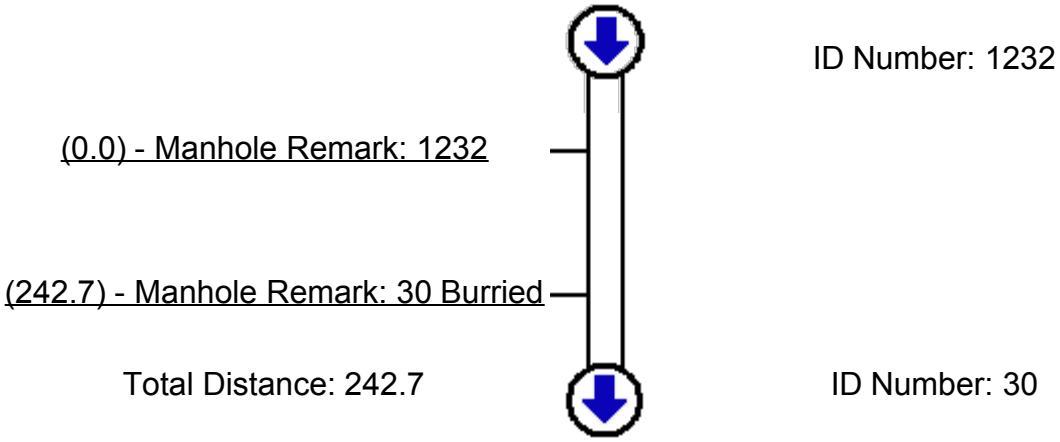
Distance	Fault Observation	Time	Picture
0.0	Manhole Severity: None Percent: 0 Remarks: 29	47 00:00:00	
37.2	Manhole Severity: None Percent: 0 Remarks: 1232	04:31 00:00:00	

PO Number: Airport Sewers

Date: 11/2/2009 12:58:26 PM
Street: Daily Parking Lot
Distance: 242.7
Run Number:
Height (Diameter): 12

Pipe Segment Reference:
Upstream MH: 1232
Downstream MH: 30
Direction of Survey: Downstream
Material: Asbestos Cement

Severity
Light
Moderate
Average
Heavy
Severe



PO Number: Airport Sewers

Date: 11/2/2009 12:58:26 PM
Street: Daily Parking Lot
Distance: 242.7
Run Number:
Height (Diameter): 12

Pipe Segment Reference:
Upstream MH: 1232
Downstream MH: 30
Direction of Survey: Downstream
Material: Asbestos Cement

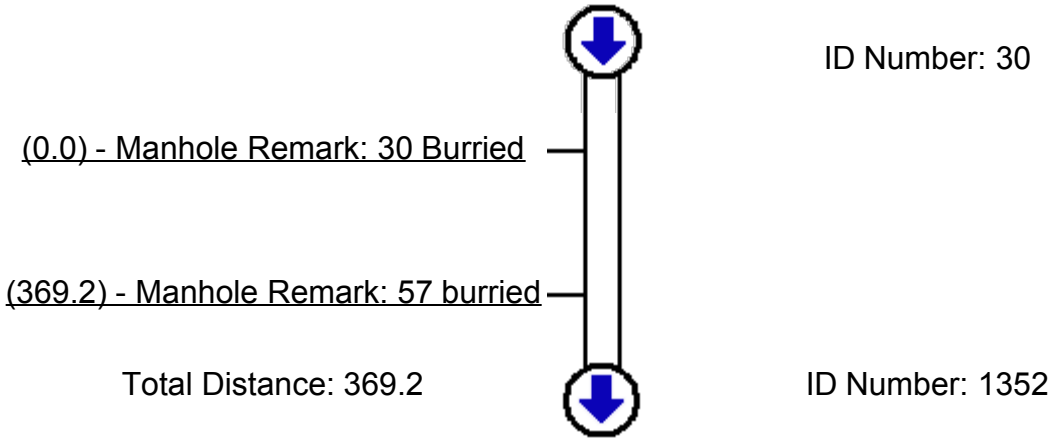
Distance	Fault Observation	Time	Picture
0.0	Manhole Severity: None Percent: 0 Remarks: 1232	48 00:00:00	
242.7	Manhole Severity: None Percent: 0 Remarks: 30 Burried	09:39 00:00:00	

PO Number: Airport Sewers

Date: 11/2/2009 1:12:53 PM
Street: Airport Drive
Distance: 369.2
Run Number:
Height (Diameter): 12

Pipe Segment Reference:
Upstream MH: 30
Downstream MH: 1352
Direction of Survey: Downstream
Material: Vitrified Clay Pipe

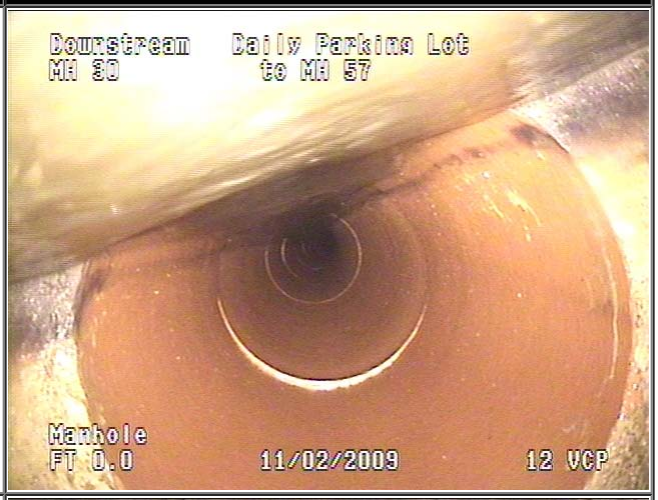
Severity
Light
Moderate
Average
Heavy
Severe



PO Number: Airport Sewers

Date: 11/2/2009 1:12:53 PM
Street: Airport Drive
Distance: 369.2
Run Number:
Height (Diameter): 12

Pipe Segment Reference:
Upstream MH: 30
Downstream MH: 1352
Direction of Survey: Downstream
Material: Vitrified Clay Pipe

Distance	Fault Observation	Time	Picture
0.0	Manhole Severity: None Percent: 0 Remarks: 30 Burried	01:02 00:00:00	
369.2	Manhole Severity: None Percent: 0 Remarks: 57 burried	22:38 00:00:00	

PO Number: Airport Sewers

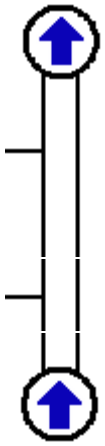
Date: 11/3/2009 9:01:47 AM
Street: John Glenn Drive
Distance: 275.7
Run Number:
Height (Diameter): 15

Pipe Segment Reference:
Upstream MH: 1354
Downstream MH: 1353
Direction of Survey: Upstream
Material: Vitrified Clay Pipe

Severity
Light
Moderate
Average
Heavy
Severe

ID Number: 1353

(0.0) - Manhole Remark: 1353



(275.7) - Manhole Remark: 1354 burried with steel plate cover.

Total Distance: 275.7

ID Number: 1354

PO Number: Airport Sewers

Date: 11/3/2009 9:01:47 AM
Street: John Glenn Drive
Distance: 275.7
Run Number:
Height (Diameter): 15

Pipe Segment Reference:
Upstream MH: 1354
Downstream MH: 1353
Direction of Survey: Upstream
Material: Vitrified Clay Pipe

Distance	Fault Observation	Time	Picture
0.0	Manhole Severity: None Percent: 0 Remarks: 1353	01:00 00:00:00	
275.7	Manhole Severity: None Percent: 0 Remarks: 1354 burried with steel plate cover.	14:50 00:00:00	

PO Number: Airport Sewers

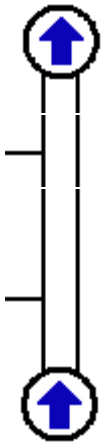
Date: 11/3/2009 9:35:28 AM
Street: John Glenn Drive
Distance: 99.8
Run Number:
Height (Diameter): 15

Pipe Segment Reference:
Upstream MH: 1352
Downstream MH: 1354
Direction of Survey: Upstream
Material: Vitrified Clay Pipe

Severity
Light
Moderate
Average
Heavy
Severe

ID Number: 1354

(0.0) - Manhole Remark: 1354 burried with steel plate cover.



(99.8) - Manhole Remark: 1352 / 57 burried

Total Distance: 99.8

ID Number: 1352

PO Number: Airport Sewers

Date: 11/3/2009 9:35:28 AM
Street: John Glenn Drive
Distance: 99.8
Run Number:
Height (Diameter): 15

Pipe Segment Reference:
Upstream MH: 1352
Downstream MH: 1354
Direction of Survey: Upstream
Material: Vitrified Clay Pipe

Distance	Fault Observation	Time	Picture
0.0	Manhole Severity: None Percent: 0 Remarks: 1354 burried with steel plate cover.	01:17 00:00:00	
99.8	Manhole Severity: None Percent: 0 Remarks: 1352 / 57 burried	09:36 00:00:00	

Table 1	PACP Condition Rating Scale Airport Sewer Inspection for Earhart Drive Sewer Port of Oakland	
PACP Rating	**Pipe Grade Importance** (1)	**Likelihood of Failure Estimate** (1)
5 - Very Poor	Defects requiring immediate attention	Pipe has failed or will likely fail within the next 5 years
4 - Poor	Severe defects that will become Grade 5 defects within the foreseeable future	Pipe will probably fail in 5 to 10 years
3 - Fair	Moderate defects that will continue to deteriorate	Pipe may fail in 10 to 20 years
2 - Good	Defects that have not begun to deteriorate	Pipe unlikely to fail for at least 20 years
1 - Excellent	Minor defects	Failure is unlikely in the foreseeable future

Note:

(1) The PACP Condition Grading System only considers internal pipe conditions obtained from CCTV inspection. While other factors such as pipe material, depth, soils, and surface conditions also affect pipe survivability and the likelihood of failure, those factors have not been incorporated into the PACP Condition Grading System

Table 2	Airport Sewer Inspection Sewer Condition Ratings Airport Sewer Inspection for Earhart Drive Sewer Port of Oakland					
Starting Node	**Ending Node**	**Diameter (in)**	**As-built Length (LF)**	**PACP Structure**	**PACP O&M**	**PACP Overall**
Earhart Road						
97	98	15	175	**0000**	**5141**	**5141**
98	99	15	291	**3100**	**3N2D**	**3N2D**
99(1)	542	15	223	**4635**	**4136**	**4737**
99(1)	542	15	223	**5100**	**0000**	**5100**
542	100	15	91	**3B00**	**413B**	**413F**
100(1)	101	15	328	**433A**	**2E00**	**433A**
100(1)	101	15	328	**3821**	**3122**	**3923**
101(1)	93	15	272	**2100**	**3321**	**3322**
101(1)	93	15	272	**0000**	**3F23**	**3F23**
93	105	15	271	**4122**	**4H31**	**4H31**
105	106	15	368	**0000**	**4U33**	**4U33**
106	80	15	165	**0000**	**4131**	**4131**

Table 2 **Airport Sewer Inspection Sewer Condition Ratings**
Airport Sewer Inspection for Earhart Drive Sewer
Port of Oakland

Starting Node	Ending Node	Diameter (in)	As-built Length (LF)	PACP Structure	PACP O&M	PACP Overall
John Glenn Drive						
568	557	15	355	**0000**	**0000**	**0000**
557	570	15	188	**0000**	**0000**	**0000**
Airport Drive						
570	571	15	335	**0000**	**0000**	**0000**
571	572	15	371	**3100**	**3B00**	**3C00**
572	573	12	180	**0000**	**3G00**	**3G00**
551A	551	12	181	**2100**	**5122**	**5122**
1612	551	12	410	**1100**	**4100**	**4111**
556	551A	12	410	**3100**	**5142**	**5142**
555	556	12	391	**3200**	**513D**	**513E**

Notes:

(1)Video taken in direction of reverse flow.

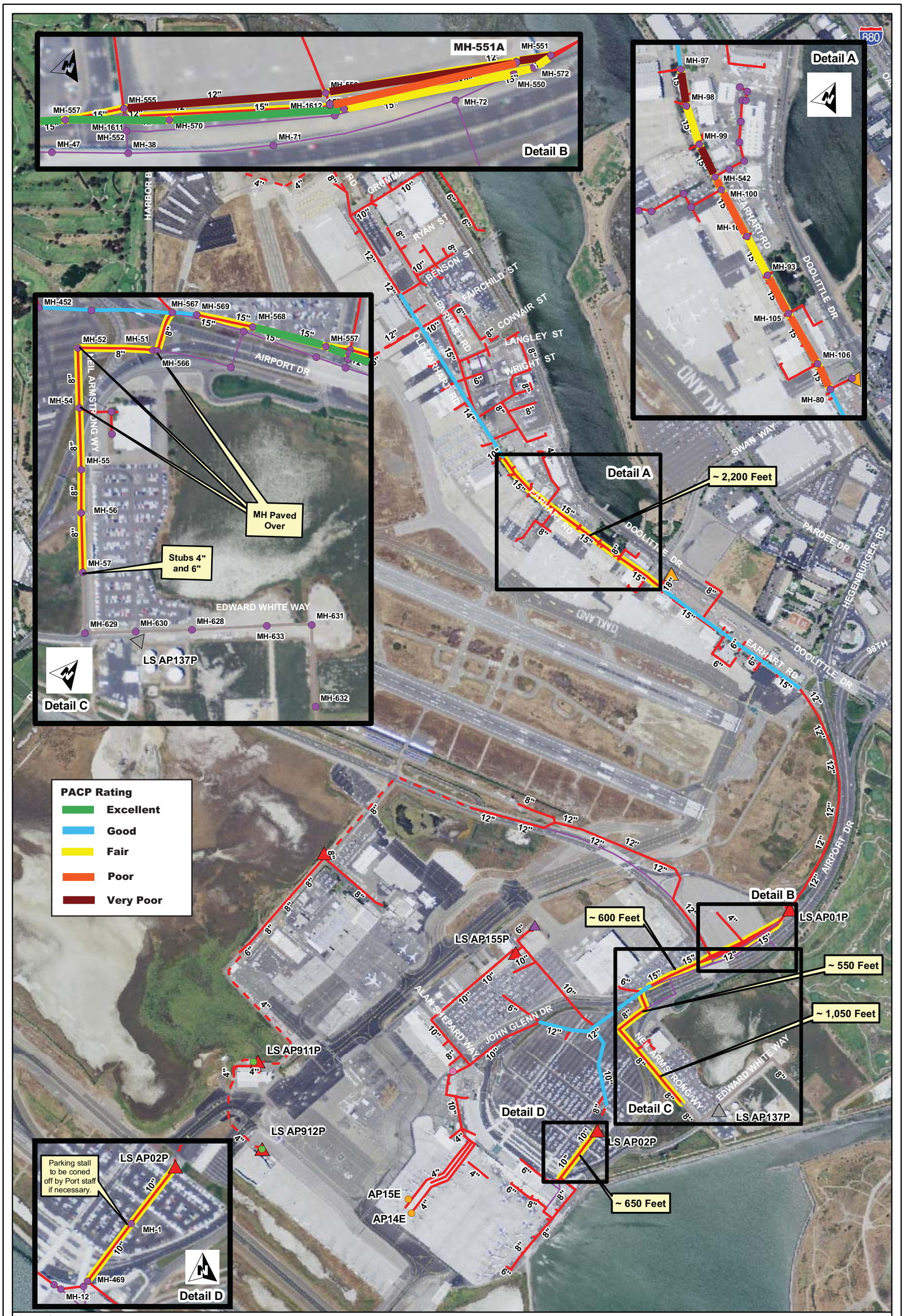


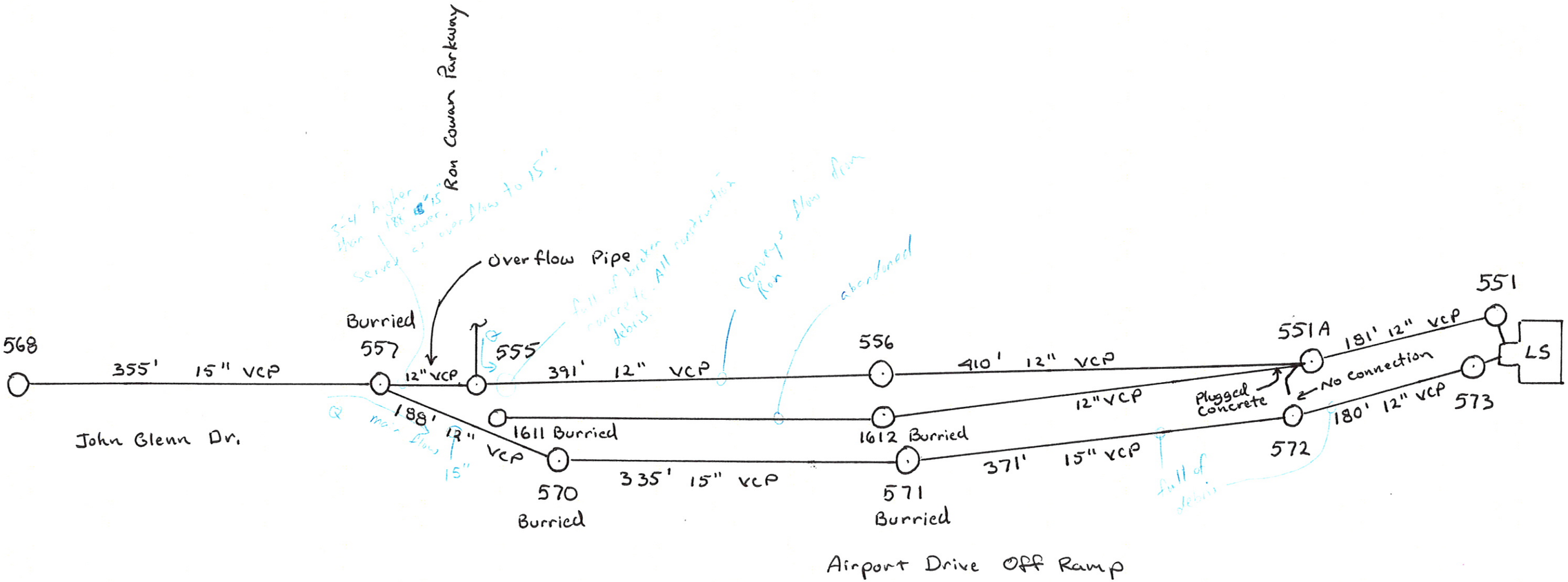
Figure 1
Proposed CCTV Locations 2010
Port-Wide Sewer System Management Plan
Port of Oakland

Revision Date: February 4, 2010

JOHN CAROLLO ENGINEERS

BY LRP DATE 3/26/10 SUBJECT Oakland Airport Sewer SHEET NO. 1 OF 1

CHKD. BY ____ DATE ____ JOB NO. ____

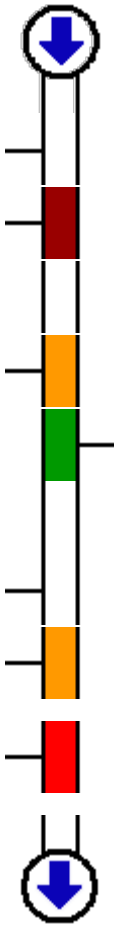


PO Number: Oakland Airport

Date: 2/16/2010 9:33:35 AM
Street: Earhart Road
Distance: 174.5
Run Number:
Height (Diameter): 15

Pipe Segment Reference:
Upstream MH: 97
Downstream MH: 98
Direction of Survey: Downstream
Material: Asbestos Cement

Severity
Light
Moderate
Average
Heavy
Severe



ID Number: 97

(0.0) - Manhole Remark: 97

(0.0) - Deposits Attached Other - Position: 4 To 8 Remark: Concrete or asphalt in flow channel.

(129.0) - Deposits Settled Gravel - Position: 5 To 7 - Cont Def: S01

(135.4) - Tap Break-in Intruding - Position: 10

(174.2) - Manhole Remark: 98

(174.5) - Deposits Settled Gravel - Position: 5 To 7 - Cont Def: F01

(174.5) - Deposits Attached Other - Position: 5 To 7 Remark: Concrete or asphalt stuck in flow channel.

Total Distance: 174.5

ID Number: 98

PO Number: Oakland Airport

Date: 2/16/2010 9:33:35 AM
Street: Earhart Road
Distance: 174.5
Run Number:
Height (Diameter): 15

Pipe Segment Reference:
Upstream MH: 97
Downstream MH: 98
Direction of Survey: Downstream
Material: Asbestos Cement

Distance	Fault Observation	Time	Picture
0.0	Manhole Severity: None Remarks: 97	51 00:00:00	
0.0	Deposits Attached Other Position: 4 To 8 Severity: None Percent: 35 Remarks: Concrete or asphalt in flow channel. Maint Weight: 5	02:55 00:00:00	
129.0	Deposits Settled Gravel Position: 5 To 7 Severity: None Cont Defect: S01 Percent: 20 Maint Weight: 3	17:43 00:00:00	

Distance	Fault Observation	Time	Picture

135.4	Tap Break-in Intruding Position: 10 Severity: None 1st Dimension: 4 2nd Dimension: 1 Maint Weight: 2	19:07 00:00:00	
174.2	Manhole Severity: None Remarks: 98	22:46 00:00:00	
174.5	Deposits Settled Gravel Position: 5 To 7 Severity: None Cont Defect: F01 Percent: 20 Maint Weight: 3	24:02 00:00:00	

Distance	Fault Observation	Time	Picture
174.5	Deposits Attached Other Position: 5 To 7 Severity: None Percent: 30 Remarks: Concrete or asphalt stuck in flow channel.	25:24 00:00:00	

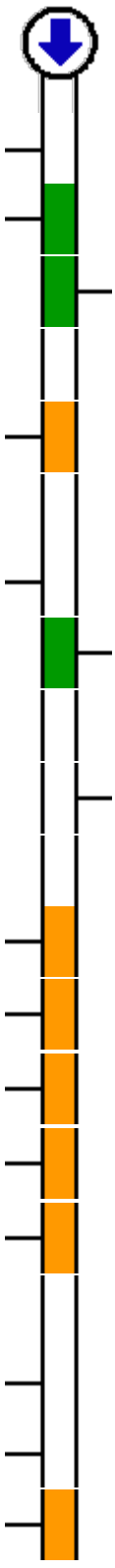
	Maint Weight: 4		

PO Number: Oakland Airport

Date: 2/16/2010 10:09:02 AM
Street: Earhart Road
Distance: 290.6
Run Number:
Height (Diameter): 15

Pipe Segment Reference:
Upstream MH: 98
Downstream MH: 99
Direction of Survey: Downstream
Material: Vitrified Clay Pipe

Severity
Light
Moderate
Average
Heavy
Severe



ID Number: 98

(0.0) - Manhole Remark: 98

(4.7) - Infil Weeper - Position: 12 To 4

(20.8) - Infil Weeper - Position: 8 To 4 - Cont Def: S01

(46.8) - Deposits Settled Gravel - Position: 5 To 7 - Cont Def: S02

(100.3) - Tap Factory - Position: 12

(113.0) - Infil Weeper - Position: 8 To 4 - Cont Def: F01

(138.2) - Tap Break-in - Position: 10 Remark: Insert

(195.3) - Infil Dripper - Position: 12

(196.5) - Fracture Longitudinal - Position: 12 - Cont Def: S03

(196.5) - Infil Dripper - Position: 12 - Cont Def: S04

(202.2) - Infil Dripper - Position: 12 - Cont Def: F04

(202.2) - Fracture Longitudinal - Position: 12 - Cont Def: F03

(283.7) - Tap Factory - Position: 12

(290.6) - Manhole Remark: 99

(290.6) - Deposits Settled Gravel - Position: 5 To 7 - Cont Def: F02

Total Distance: 290.6

ID Number: 99

PO Number: Oakland Airport

Date: 2/16/2010 10:09:02 AM
Street: Earhart Road
Distance: 290.6
Run Number:
Height (Diameter): 15

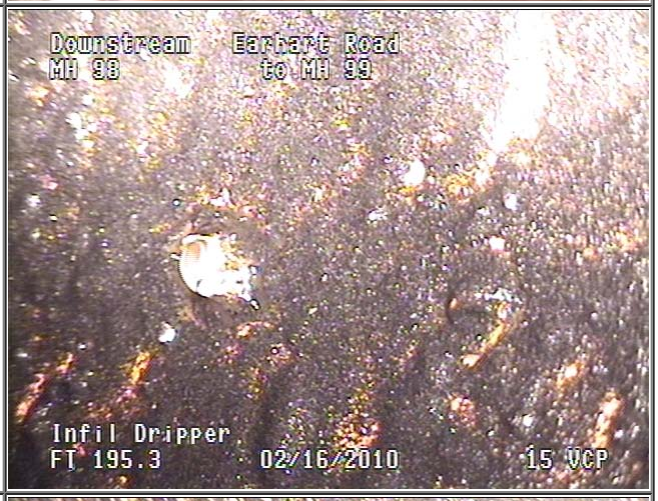
Pipe Segment Reference:
Upstream MH: 98
Downstream MH: 99
Direction of Survey: Downstream
Material: Vitrified Clay Pipe

Distance	Fault Observation	Time	Picture
0.0	Manhole Severity: None Remarks: 98	01:01 00:00:00	
4.7	Infil Weeper Position: 12 To 4 Severity: None Joint Maint Weight: 2	02:26 00:00:00	
20.8	Infil Weeper Position: 8 To 4 Severity: None Cont Defect: S01 Joint Maint Weight: 2	04:55 00:00:00	

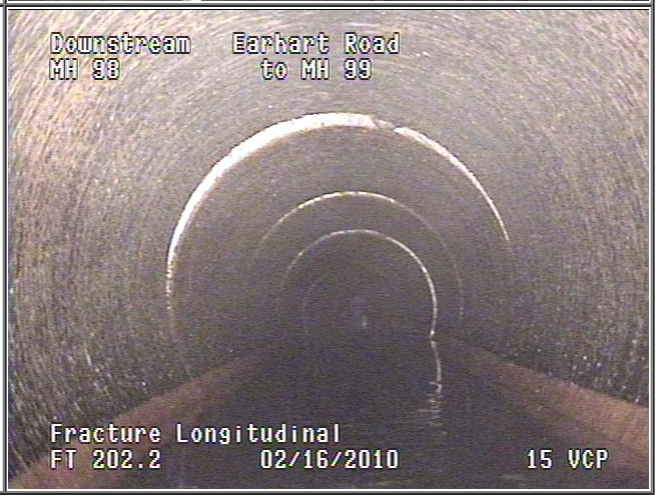
Distance	Fault Observation	Time	Picture

46.8	Deposits Settled Gravel Position: 5 To 7 Severity: None Cont Defect: S02 Percent: 15 Maint Weight: 3	06:31 00:00:00	
100.3	Tap Factory Position: 12 Severity: None 1st Dimension: 4	10:01 00:00:00	
113.0	Infil Weeper Position: 8 To 4 Severity: None Cont Defect: F01 Joint Maint Weight: 2	11:02 00:00:00	

Distance	Fault Observation	Time	Picture
138.2	Tap Break-in Position: 10 Severity: None 1st Dimension: 4 Remarks: Insert	15:46 00:00:00	

			
195.3	**Infil Dripper Position: 12 Severity: None Maint Weight: 3**	**19:06 00:00:00**	
196.5	**Fracture Longitudinal Position: 12 Severity: None Cont Defect: S03 Joint Struct Weight: 3**	**19:54 00:00:00**	

Distance	Fault Observation	Time	Picture
196.5	**Infil Dripper Position: 12 Severity: None Cont Defect: S04 Maint Weight: 3**	**20:21 00:00:00**	

			
202.2	**Infil Dripper Position: 12 Severity: None Cont Defect: F04 Maint Weight: 3**	**21:41 00:00:00**	
202.2	**Fracture Longitudinal Position: 12 Severity: None Cont Defect: F03 Joint Struct Weight: 3**	**21:55 00:00:00**	

Distance	Fault Observation	Time	Picture
283.7	**Tap Factory Position: 12 Severity: None 1st Dimension: 6**	**25:32 00:00:00**	

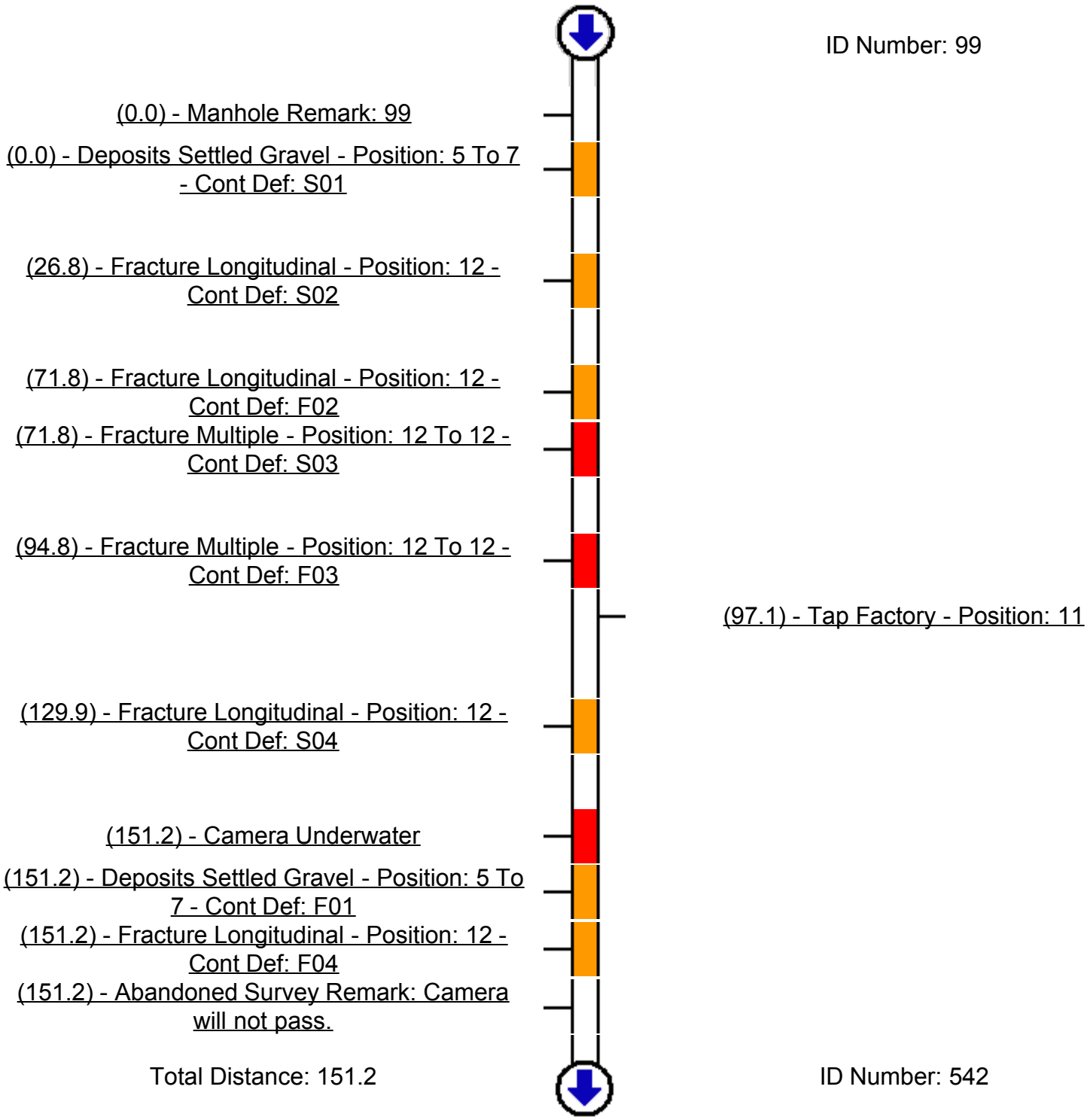
			
290.6	**Manhole Severity: None Remarks: 99**	**27:15 00:00:00**	
290.6	**Deposits Settled Gravel Position: 5 To 7 Severity: None Cont Defect: F02 Percent: 15 Maint Weight: 3**	**27:47 00:00:00**	

PO Number: Oakland Airport

Date: 2/16/2010 10:50:45 AM
Street: Earhart Road
Distance: 151.2
Run Number:
Height (Diameter): 15

Pipe Segment Reference:
Upstream MH: 99
Downstream MH: 542
Direction of Survey: Downstream
Material: Vitrified Clay Pipe

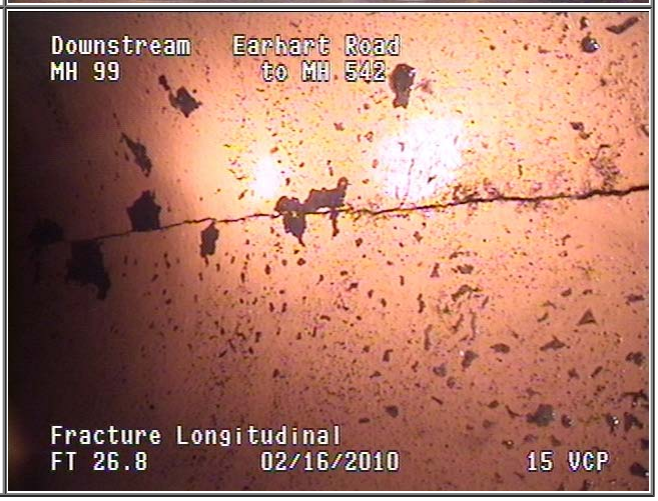
Severity
Light
Moderate
Average
Heavy
Severe



PO Number: Oakland Airport

Date: 2/16/2010 10:50:45 AM
Street: Earhart Road
Distance: 151.2
Run Number:
Height (Diameter): 15

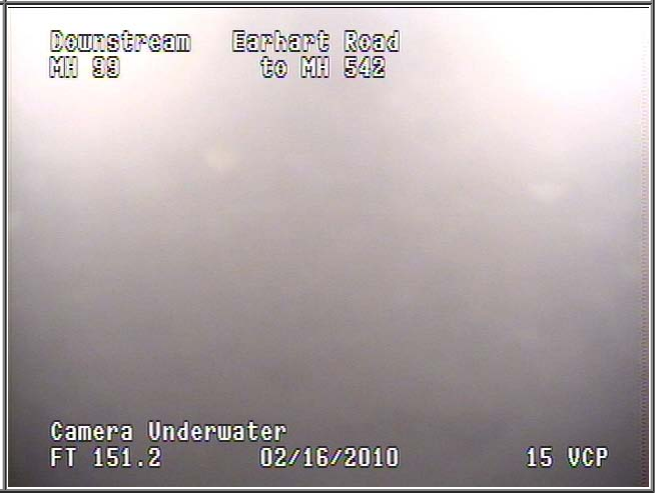
Pipe Segment Reference:
Upstream MH: 99
Downstream MH: 542
Direction of Survey: Downstream
Material: Vitrified Clay Pipe

Distance	Fault Observation	Time	Picture
0.0	Manhole Severity: None Remarks: 99	42 00:00:00	
0.0	Deposits Settled Gravel Position: 5 To 7 Severity: None Cont Defect: S01 Percent: 20 Maint Weight: 3	01:02 00:00:00	
26.8	Fracture Longitudinal Position: 12 Severity: None Cont Defect: S02 Joint Struct Weight: 3	03:08 00:00:00	

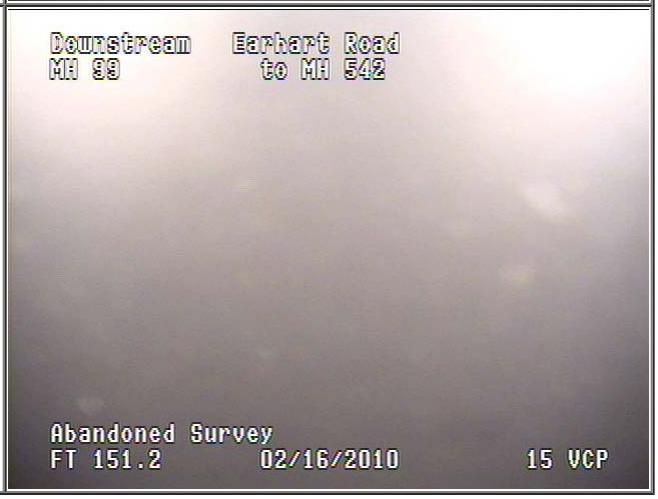
Distance	Fault Observation	Time	Picture

71.8	Fracture Longitudinal Position: 12 Severity: None Cont Defect: F02 Joint Struct Weight: 3	07:03 00:00:00	
71.8	Fracture Multiple Position: 12 To 12 Severity: None Cont Defect: S03 Joint Struct Weight: 4	07:34 00:00:00	
94.8	Fracture Multiple Position: 12 To 12 Severity: None Cont Defect: F03 Joint Struct Weight: 4	10:17 00:00:00	

Distance	Fault Observation	Time	Picture
97.1	Tap Factory Position: 11 Severity: None 1st Dimension: 6	11:15 00:00:00	

			
129.9	**Fracture Longitudinal Position: 12 Severity: None Cont Defect: S04 Joint Struct Weight: 3**	**16:23 00:00:00**	
151.2	**Camera Underwater Severity: None Maint Weight: 4**	**20:45 00:00:00**	

Distance	Fault Observation	Time	Picture
151.2	**Deposits Settled Gravel Position: 5 To 7 Severity: None Cont Defect: F01 Percent: 20 Maint Weight: 3**	**21:17 00:00:00**	

			
151.2	**Fracture Longitudinal Position: 12 Severity: None Cont Defect: F04 Joint Struct Weight: 3**	**21:42 00:00:00**	
151.2	**Abandoned Survey Severity: None Remarks: Camera will not pass.**	**22:03 00:00:00**	

PO Number: Oakland Airport

Date: 2/17/2010 8:11:42 AM
Street: Earhart Road
Distance: 7.5
Run Number:
Height (Diameter): 15

Pipe Segment Reference:
Upstream MH: 99
Downstream MH: 542
Direction of Survey: Upstream
Material: Vitrified Clay Pipe

Severity
Light
Moderate
Average
Heavy
Severe

ID Number: 542

(0.0) - Manhole Remark: 542

(7.5) - Collapse Pipe Sewer - Position: 1

(7.5) - Abandoned Survey Remark: Camera will not pass.

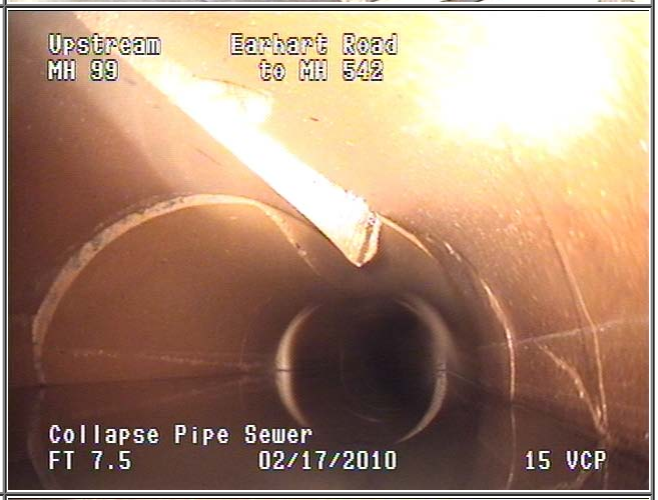
Total Distance: 7.5

ID Number: 99

PO Number: Oakland Airport

Date: 2/17/2010 8:11:42 AM
Street: Earhart Road
Distance: 7.5
Run Number:
Height (Diameter): 15

Pipe Segment Reference:
Upstream MH: 99
Downstream MH: 542
Direction of Survey: Upstream
Material: Vitrified Clay Pipe

Distance	Fault Observation	Time	Picture
0.0	Manhole Severity: None Remarks: 542	44 00:00:00	
7.5	Collapse Pipe Sewer Position: 1 Severity: None Percent: 45 Struct Weight: 5	08:58 00:00:00	
7.5	Abandoned Survey Severity: None Remarks: Camera will not pass.	09:18 00:00:00	

PO Number: Oakland Airport

Date: 2/17/2010 8:32:03 AM
Street: Earhart Road
Distance: 90.7
Run Number:
Height (Diameter): 15

Pipe Segment Reference:
Upstream MH: 542
Downstream MH: 100
Direction of Survey: Downstream
Material: Vitrified Clay Pipe

Severity
Light
Moderate
Average
Heavy
Severe

ID Number: 542

(0.0) - Manhole Remark: 542

(0.0) - Camera Underwater

(17.3) - Deposits Settled Gravel - Position: 5 To 7 - Cont Def: S01

(32.4) - Fracture Longitudinal - Position: 12 - Cont Def: S02

(90.7) - Deposits Settled Gravel - Position: 5 To 7 - Cont Def: F01

(90.7) - Fracture Longitudinal - Position: 12 - Cont Def: F02

(90.7) - Manhole Remark: 100

Total Distance: 90.7

ID Number: 100

PO Number: Oakland Airport

Date: 2/17/2010 8:32:03 AM
Street: Earhart Road
Distance: 90.7
Run Number:
Height (Diameter): 15

Pipe Segment Reference:
Upstream MH: 542
Downstream MH: 100
Direction of Survey: Downstream
Material: Vitrified Clay Pipe

Distance	Fault Observation	Time	Picture
0.0	Manhole Severity: None Remarks: 542	43 00:00:00	
0.0	Camera Underwater Severity: None Maint Weight: 4	55 00:00:00	
17.3	Deposits Settled Gravel Position: 5 To 7 Severity: None Cont Defect: S01 Percent: 15 Maint Weight: 3	02:27 00:00:00	

Distance	Fault Observation	Time	Picture

32.4	Fracture Longitudinal Position: 12 Severity: None Cont Defect: S02 Struct Weight: 3	03:40 00:00:00	
90.7	Deposits Settled Gravel Position: 5 To 7 Severity: None Cont Defect: F01 Percent: 15 Maint Weight: 3	10:05 00:00:00	
90.7	Fracture Longitudinal Position: 12 Severity: None Cont Defect: F02 Struct Weight: 3	10:17 00:00:00	

Distance	Fault Observation	Time	Picture
90.7	Manhole Severity: None Remarks: 100	10:30 00:00:00	

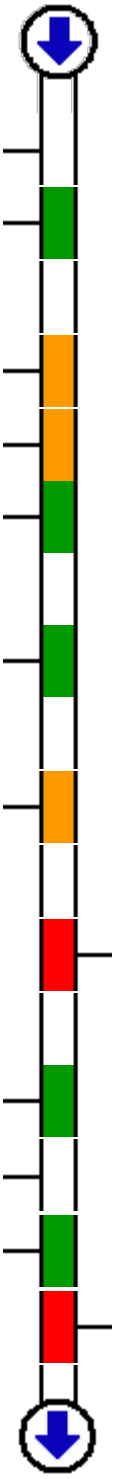
			 Downstream MH 542 Earhart Road to MH 100 Manhole FT 90.7 02/17/2010 15 VCP

PO Number: Oakland Airport

Date: 2/17/2010 9:41:52 AM
Street: Earhart Road
Distance: 101.9
Run Number:
Height (Diameter): 15

Pipe Segment Reference:
Upstream MH: 100
Downstream MH: 101
Direction of Survey: Downstream
Material: Vitrified Clay Pipe

Severity
Light
Moderate
Average
Heavy
Severe



ID Number: 100

(0.0) - Manhole Remark: 100

(0.9) - Deposits Settled Gravel - Position: 5 To 7 - Cont Def: S01

(12.1) - Fracture Longitudinal - Position: 12 - Cont Def: S02

(15.2) - Fracture Spiral - Position: 4 To 6

(15.2) - Infil Weeper - Position: 4

(44.4) - Infil Weeper - Position: 4

(60.6) - Fracture Longitudinal - Position: 12 - Cont Def: F02

(89.9) - Fracture Multiple - Position: 9 To 3 - Cont Def: S03

(95.7) - Water Level Sag

(101.9) - Abandoned Survey Remark: Camera will not pass something below water level.

(101.9) - Deposits Settled Gravel - Position: 5 To 7 - Cont Def: F01

(101.9) - Fracture Multiple - Position: 9 To 3 - Cont Def: F03

Total Distance: 101.9

ID Number: 101

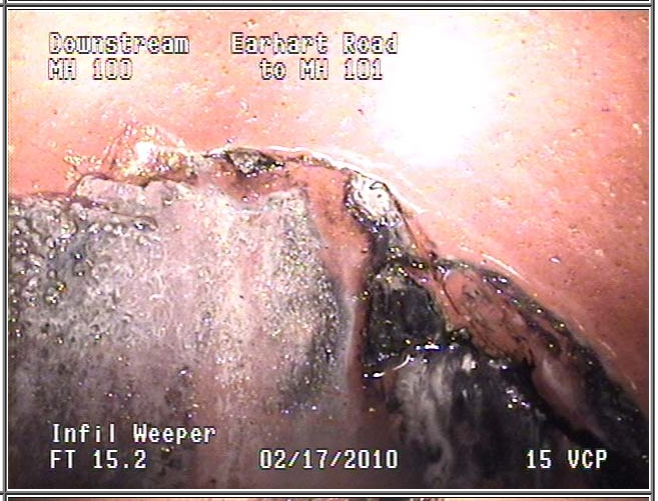
PO Number: Oakland Airport

Date: 2/17/2010 9:41:52 AM
Street: Earhart Road
Distance: 101.9
Run Number:
Height (Diameter): 15

Pipe Segment Reference:
Upstream MH: 100
Downstream MH: 101
Direction of Survey: Downstream
Material: Vitrified Clay Pipe

Distance	Fault Observation	Time	Picture
0.0	Manhole Severity: None Remarks: 100	45 00:00:00	
0.9	Deposits Settled Gravel Position: 5 To 7 Severity: None Cont Defect: S01 Percent: 10 Maint Weight: 2	03:41 00:00:00	
12.1	Fracture Longitudinal Position: 12 Severity: None Cont Defect: S02 Joint Struct Weight: 3	04:28 00:00:00	

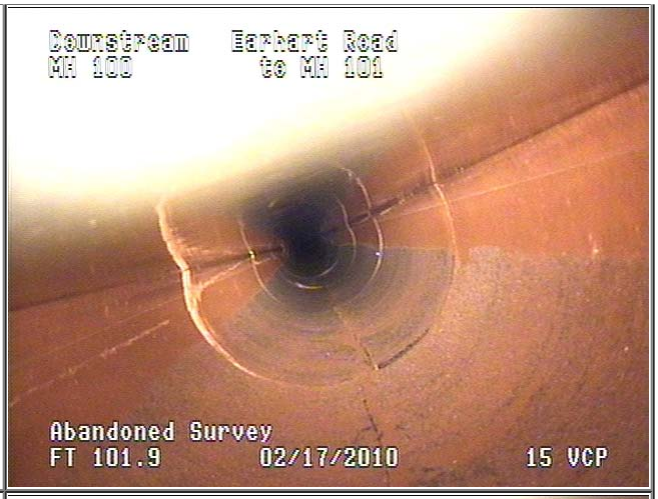
Distance	Fault Observation	Time	Picture

15.2	Fracture Spiral Position: 4 To 6 Severity: None Struct Weight: 3	05:30 00:00:00	
15.2	Infil Weeper Position: 4 Severity: None Maint Weight: 2	05:55 00:00:00	
44.4	Infil Weeper Position: 4 Severity: None Joint Maint Weight: 2	08:32 00:00:00	

Distance	Fault Observation	Time	Picture
60.6	Fracture Longitudinal Position: 12 Severity: None Cont Defect: F02 Joint Struct Weight: 3	09:18 00:00:00	

			
89.9	Fracture Multiple Position: 9 To 3 Severity: None Cont Defect: S03 Joint Struct Weight: 4	11:14 00:00:00	
95.7	Water Level Sag Severity: None Percent: 25 Maint Weight: 2	11:53 00:00:00	

Distance	Fault Observation	Time	Picture
101.9	Abandoned Survey Severity: None Remarks: Camera will not pass something below water level.	16:40 00:00:00	

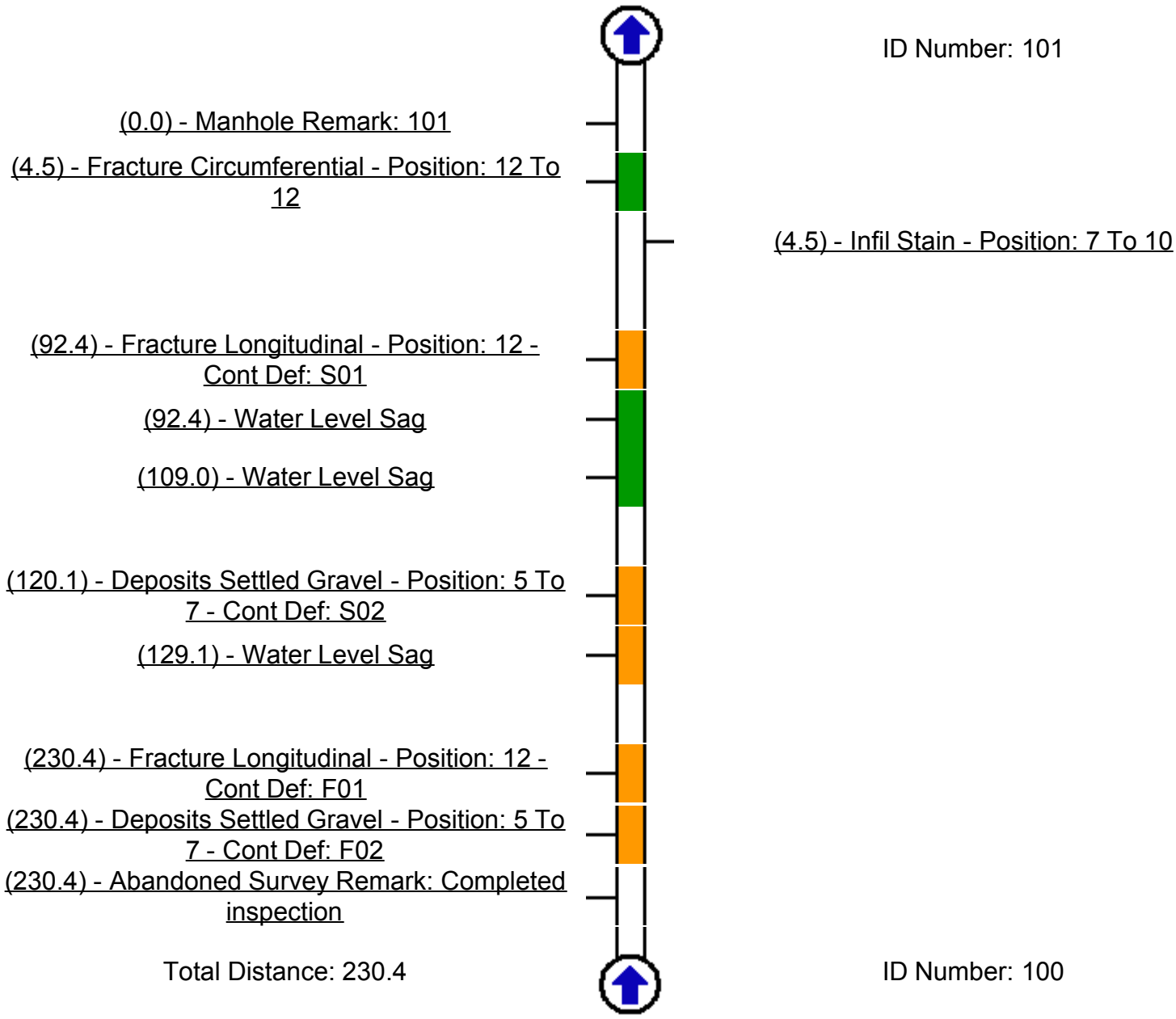
			
101.9	**Deposits Settled Gravel Position: 5 To 7 Severity: None Cont Defect: F01 Percent: 10 Maint Weight: 2**	**17:01 00:00:00**	
101.9	**Fracture Multiple Position: 9 To 3 Severity: None Cont Defect: F03 Joint Struct Weight: 4**	**17:16 00:00:00**	

PO Number: Oakland Airport

Date: 2/17/2010 10:19:22 AM
Street: Earhart Road
Distance: 230.4
Run Number:
Height (Diameter): 15

Pipe Segment Reference:
Upstream MH: 100
Downstream MH: 101
Direction of Survey: Upstream
Material: Vitrified Clay Pipe

Severity
Light
Moderate
Average
Heavy
Severe



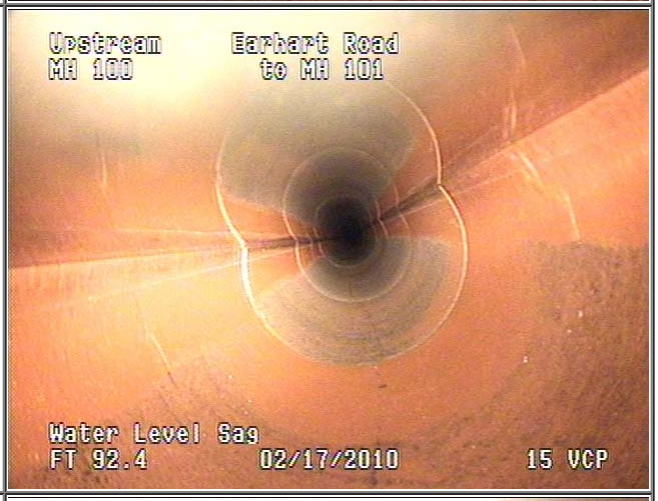
PO Number: Oakland Airport

Date: 2/17/2010 10:19:22 AM
Street: Earhart Road
Distance: 230.4
Run Number:
Height (Diameter): 15

Pipe Segment Reference:
Upstream MH: 100
Downstream MH: 101
Direction of Survey: Upstream
Material: Vitrified Clay Pipe

Distance	Fault Observation	Time	Picture
0.0	Manhole Severity: None Remarks: 101	48 00:00:00	
4.5	Fracture Circumferential Position: 12 To 12 Severity: None Struct Weight: 2	03:38 00:00:00	
4.5	Infil Stain Position: 7 To 10 Severity: None	04:31 00:00:00	

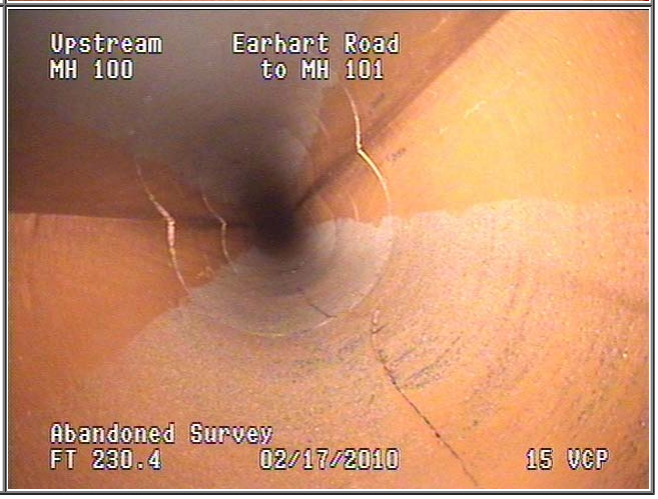
Distance	Fault Observation	Time	Picture

92.4	Fracture Longitudinal Position: 12 Severity: None Cont Defect: S01 Joint Struct Weight: 3	11:59 00:00:00	
92.4	Water Level Sag Severity: None Percent: 15 Maint Weight: 2	13:16 00:00:00	
109.0	Water Level Sag Severity: None Percent: 25 Maint Weight: 2	14:30 00:00:00	

Distance	Fault Observation	Time	Picture
120.1	Deposits Settled Gravel Position: 5 To 7 Severity: None Cont Defect: S02 Percent: 15 Maint Weight: 3	16:18 00:00:00	

			
129.1	**Water Level Sag Severity: None Percent: 40 Maint Weight: 3**	**24:55 00:00:00**	
230.4	**Fracture Longitudinal Position: 12 Severity: None Cont Defect: F01 Joint Struct Weight: 3**	**29:30 00:00:00**	

Distance	Fault Observation	Time	Picture
230.4	**Deposits Settled Gravel Position: 5 To 7 Severity: None Cont Defect: F02 Percent: 15 Maint Weight: 3**	**29:48 00:00:00**	

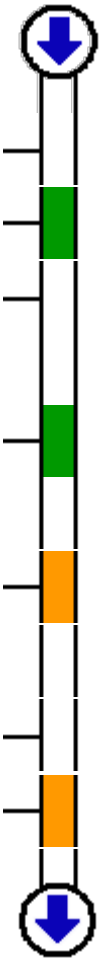
			
230.4	**Abandoned Survey Severity: None Remarks: Completed inspection**	**30:12 00:00:00**	

PO Number: Oakland Airport

Date: 2/17/2010 10:49:38 AM
Street: Earhart Road
Distance: 49.2
Run Number:
Height (Diameter): 15

Pipe Segment Reference:
Upstream MH: 101
Downstream MH: 93
Direction of Survey: Downstream
Material: Vitrified Clay Pipe

Severity
Light
Moderate
Average
Heavy
Severe



ID Number: 101

(0.0) - Manhole Remark: 101

(4.0) - Fracture Circumferential - Position: 12 To 12

(4.0) - Infil Stain - Position: 3 To 9

(28.7) - Water Level Sag

(35.8) - Deposits Settled Gravel - Position: 5 To 7 - Cont Def: S01

(49.2) - Abandoned Survey Remark: Camera will not pass debris in invert.

(49.2) - Deposits Settled Gravel - Position: 5 To 7 - Cont Def: F01

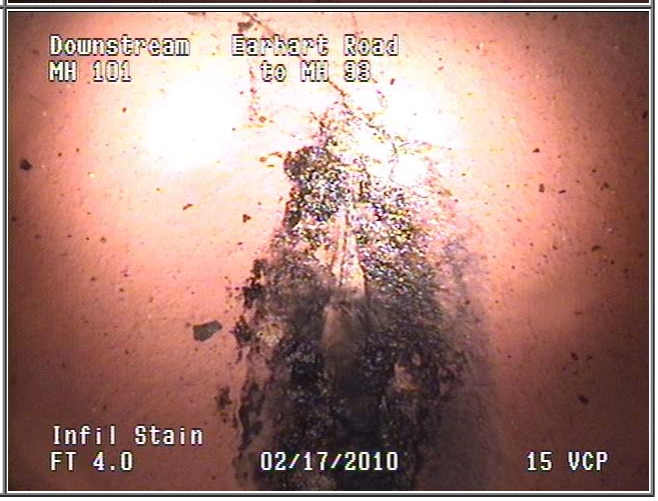
Total Distance: 49.2

ID Number: 93

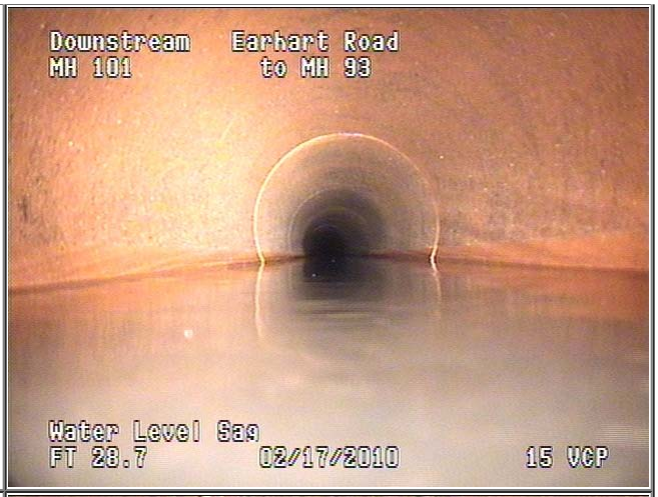
PO Number: Oakland Airport

Date: 2/17/2010 10:49:38 AM
Street: Earhart Road
Distance: 49.2
Run Number:
Height (Diameter): 15

Pipe Segment Reference:
Upstream MH: 101
Downstream MH: 93
Direction of Survey: Downstream
Material: Vitrified Clay Pipe

Distance	Fault Observation	Time	Picture
0.0	Manhole Severity: None Remarks: 101	39 00:00:00	
4.0	Fracture Circumferential Position: 12 To 12 Severity: None Struct Weight: 2	02:03 00:00:00	
4.0	Infil Stain Position: 3 To 9 Severity: None	02:52 00:00:00	

Distance	Fault Observation	Time	Picture

28.7	**Water Level Sag Severity: None Percent: 20 Maint Weight: 2**	**05:54 00:00:00**	
35.8	**Deposits Settled Gravel Position: 5 To 7 Severity: None Cont Defect: S01 Percent: 15 Maint Weight: 3**	**06:31 00:00:00**	
49.2	**Abandoned Survey Severity: None Remarks: Camera will not pass debris in invert.**	**08:48 00:00:00**	

Distance	Fault Observation	Time	Picture
49.2	**Deposits Settled Gravel Position: 5 To 7 Severity: None Cont Defect: F01 Percent: 15 Maint Weight: 3**	**09:26 00:00:00**	

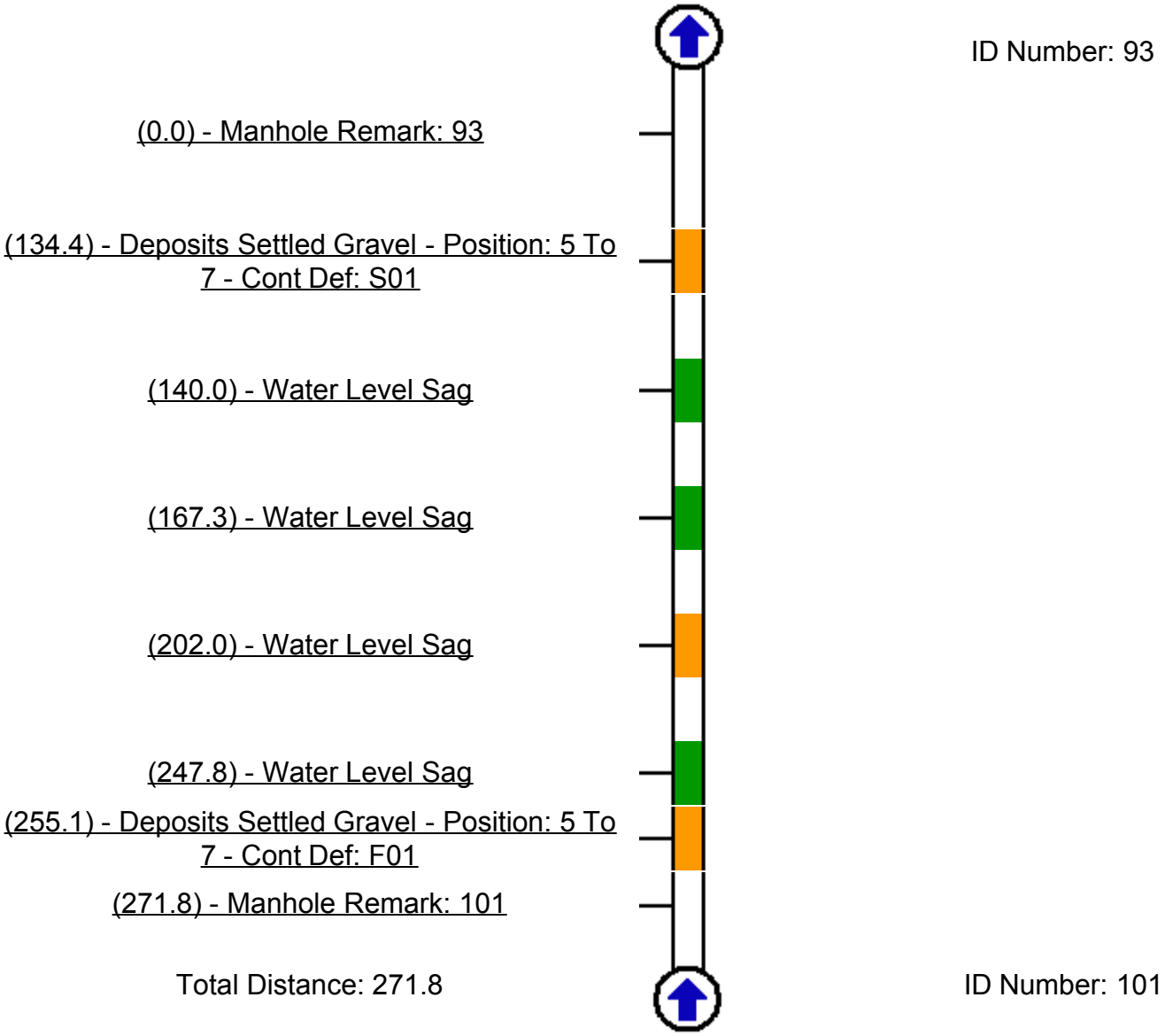
			 Downstream MH 101 Earhart Road to MH 93 Deposits Settled Gravel FT 49.2 02/17/2010 15 VCP

PO Number: Oakland Airport

Date: 2/17/2010 12:30:42 PM
Street: Earhart Road
Distance: 271.8
Run Number:
Height (Diameter): 15

Pipe Segment Reference:
Upstream MH: 101
Downstream MH: 93
Direction of Survey: Upstream
Material: Vitrified Clay Pipe

Severity
Light
Moderate
Average
Heavy
Severe



PO Number: Oakland Airport

Date: 2/17/2010 12:30:42 PM
Street: Earhart Road
Distance: 271.8
Run Number:
Height (Diameter): 15

Pipe Segment Reference:
Upstream MH: 101
Downstream MH: 93
Direction of Survey: Upstream
Material: Vitrified Clay Pipe

Distance	Fault Observation	Time	Picture
0.0	Manhole Severity: None Remarks: 93	01:25 00:00:00	
134.4	Deposits Settled Gravel Position: 5 To 7 Severity: None Cont Defect: S01 Percent: 15 Maint Weight: 3	10:55 00:00:00	
140.0	Water Level Sag Severity: None Percent: 25 Maint Weight: 2	11:45 00:00:00	

Distance	Fault Observation	Time	Picture

167.3	Water Level Sag Severity: None Percent: 30 Maint Weight: 2	13:00 00:00:00	
202.0	Water Level Sag Severity: None Percent: 35 Maint Weight: 3	14:32 00:00:00	
247.8	Water Level Sag Severity: None Percent: 30 Maint Weight: 2	16:33 00:00:00	

Distance	Fault Observation	Time	Picture
255.1	Deposits Settled Gravel Position: 5 To 7 Severity: None Cont Defect: F01 Percent: 15 Maint Weight: 3	17:20 00:00:00	

			
271.8	**Manhole Severity: None Remarks: 101**	**19:30 00:00:00**	

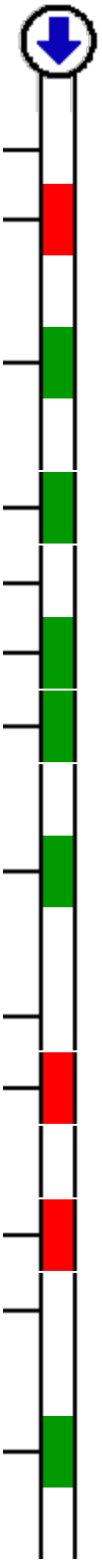
PO Number: Oakland Airport

Date: 2/17/2010 1:20:00 PM
Street: Earhart Road
Distance: 270.7
Run Number:
Height (Diameter): 15

Pipe Segment Reference:
Upstream MH: 93
Downstream MH: 105
Direction of Survey: Downstream
Material: Vitrified Clay Pipe

Severity
Light
Moderate
Average
Heavy
Severe

ID Number: 93



(0.0) - Manhole Remark: 93

(3.0) - Fracture Multiple - Position: 12 To 12

(38.2) - Water Level Sag

(65.8) - Fracture Circumferential - Position: 12 To 12

(65.8) - Infil Stain - Position: 3 To 9

(73.7) - Infil Weeper - Position: 12

(73.7) - Fracture Circumferential - Position: 12 To 12

(106.0) - Water Level Sag

(117.9) - Tap Factory - Position: 1

(118.8) - Deposits Settled Gravel - Position: 5 To 7 - Cont Def: S01

(142.5) - Infil Runner - Position: 1 Remark: From fracture in lateral.

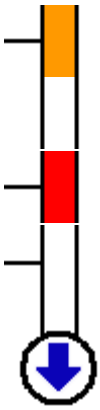
(142.5) - Tap Factory - Position: 1

(174.4) - Water Level Sag

(191.0) - Water Level Sag

(270.7) - Deposits Settled Gravel - Position: 5 To 7 - Cont Def: F01

(270.7) - Manhole Remark: 105



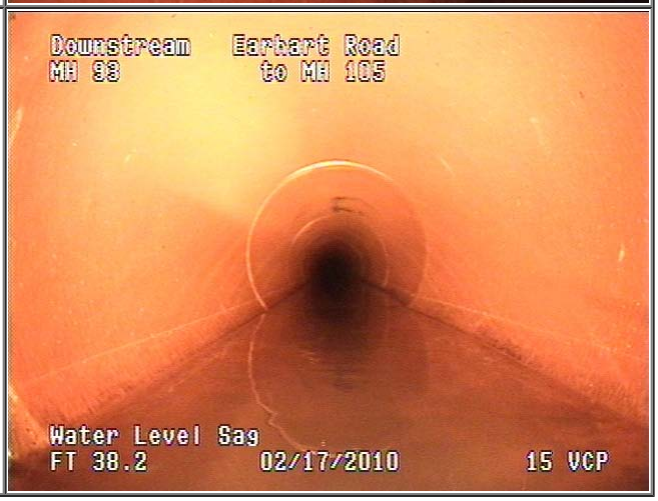
Total Distance: 270.7

ID Number: 105

PO Number: Oakland Airport

Date: 2/17/2010 1:20:00 PM
Street: Earhart Road
Distance: 270.7
Run Number:
Height (Diameter): 15

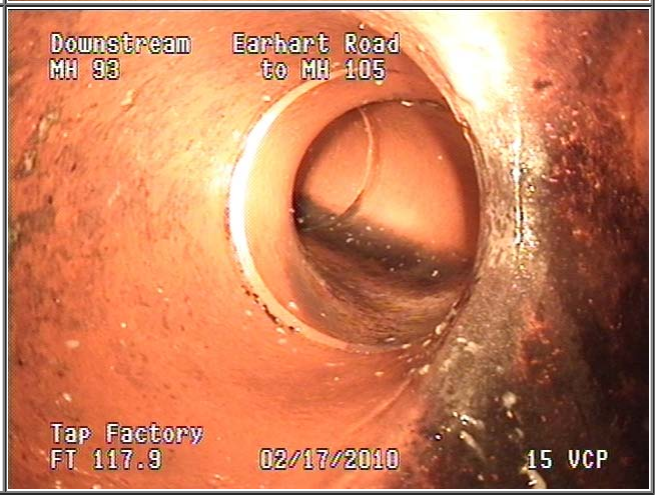
Pipe Segment Reference:
Upstream MH: 93
Downstream MH: 105
Direction of Survey: Downstream
Material: Vitrified Clay Pipe

Distance	Fault Observation	Time	Picture
0.0	Manhole Severity: None Remarks: 93	39 00:00:00	
3.0	Fracture Multiple Position: 12 To 12 Severity: None Joint Struct Weight: 4	01:02 00:00:00	
38.2	Water Level Sag Severity: None Percent: 15 Maint Weight: 2	04:41 00:00:00	

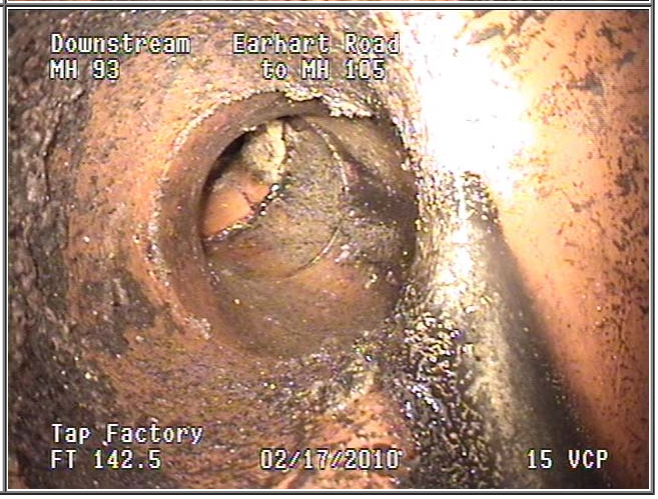
Distance	Fault Observation	Time	Picture

65.8	Fracture Circumferential Position: 12 To 12 Severity: None Struct Weight: 2	06:35 00:00:00	
65.8	Infil Stain Position: 3 To 9 Severity: None	07:03 00:00:00	
73.7	Infil Weeper Position: 12 Severity: None Maint Weight: 2	08:23 00:00:00	

Distance	Fault Observation	Time	Picture
73.7	Fracture Circumferential Position: 12 To 12 Severity: None Struct Weight: 2	08:49 00:00:00	

			
106.0	Water Level Sag Severity: None Percent: 20 Maint Weight: 2	10:29 00:00:00	
117.9	Tap Factory Position: 1 Severity: None 1st Dimension: 6	11:38 00:00:00	

Distance	Fault Observation	Time	Picture
118.8	Deposits Settled Gravel Position: 5 To 7 Severity: None Cont Defect: S01 Percent: 25 Maint Weight: 4	12:29 00:00:00	

			
142.5	Infil Runner Position: 1 Severity: None Remarks: From fracture in lateral. Maint Weight: 4	14:31 00:00:00	
142.5	Tap Factory Position: 1 Severity: None 1st Dimension: 6	14:56 00:00:00	

Distance	Fault Observation	Time	Picture
174.4	Water Level Sag Severity: None Percent: 30 Maint Weight: 2	16:32 00:00:00	

			
191.0	**Water Level Sag Severity: None Percent: 40 Maint Weight: 3**	**17:33 00:00:00**	
270.7	**Deposits Settled Gravel Position: 5 To 7 Severity: None Cont Defect: F01 Percent: 25 Maint Weight: 4**	**21:31 00:00:00**	

Distance	Fault Observation	Time	Picture
270.7	**Manhole Severity: None Remarks: 105**	**21:53 00:00:00**	

			 Downstream MH 93 Earhart Road to MH 105 Manhole FT 270.7 02/17/2010 15 VCP

PO Number: Oakland Airport

Date: 2/17/2010 1:48:09 PM
Street: Earhart Road
Distance: 367.5
Run Number:
Height (Diameter): 15

Pipe Segment Reference:
Upstream MH: 105
Downstream MH: 106
Direction of Survey: Downstream
Material: Vitrified Clay Pipe

Severity
Light
Moderate
Average
Heavy
Severe

ID Number: 105

(0.0) - Manhole Remark: 105

(0.0) - Water Level Sag

(0.0) - Deposits Settled Gravel - Position: 5 To 7 - Cont Def: S01

(71.7) - Water Level Sag

(137.6) - Water Level Sag

(178.5) - Infil Runner - Position: 12

(231.8) - Tap Factory - Position: 1

(317.6) - Water Level Sag

(367.5) - Deposits Settled Gravel - Position: 5 To 7 - Cont Def: F01

(367.5) - Manhole Remark: 106

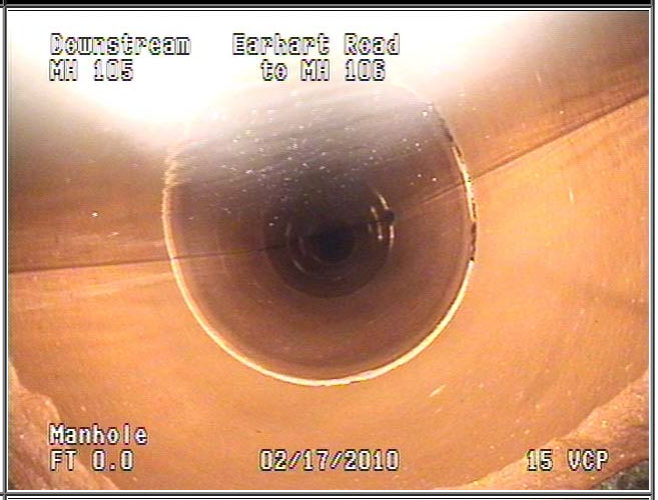
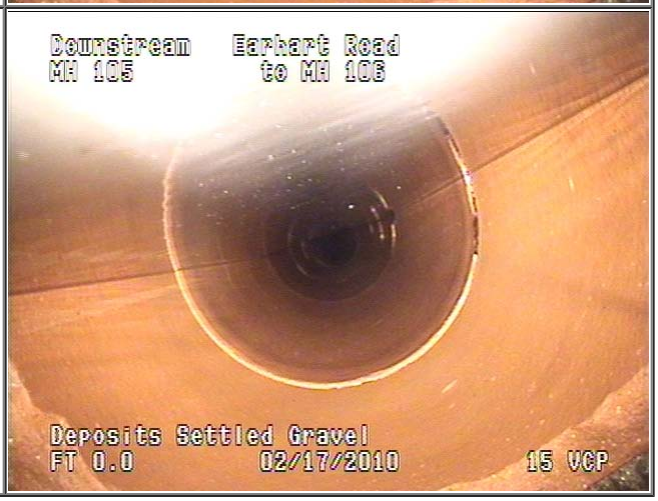
Total Distance: 367.5

ID Number: 106

PO Number: Oakland Airport

Date: 2/17/2010 1:48:09 PM
Street: Earhart Road
Distance: 367.5
Run Number:
Height (Diameter): 15

Pipe Segment Reference:
Upstream MH: 105
Downstream MH: 106
Direction of Survey: Downstream
Material: Vitrified Clay Pipe

Distance	Fault Observation	Time	Picture
0.0	Manhole Severity: None Remarks: 105	44 00:00:00	
0.0	Water Level Sag Severity: None Percent: 40 Maint Weight: 3	58 00:00:00	
0.0	Deposits Settled Gravel Position: 5 To 7 Severity: None Cont Defect: S01 Percent: 25 Maint Weight: 4	01:29 00:00:00	

Distance	Fault Observation	Time	Picture

71.7	Water Level Sag Severity: None Percent: 30 Maint Weight: 2	05:15 00:00:00	
137.6	Water Level Sag Severity: None Percent: 35 Maint Weight: 3	07:29 00:00:00	
178.5	Infil Runner Position: 12 Severity: None Joint Maint Weight: 4	09:57 00:00:00	

Distance	Fault Observation	Time	Picture
231.8	Tap Factory Position: 1 Severity: None 1st Dimension: 6	12:21 00:00:00	

			
317.6	Water Level Sag Severity: None Percent: 45 Maint Weight: 3	17:07 00:00:00	
367.5	Deposits Settled Gravel Position: 5 To 7 Severity: None Cont Defect: F01 Percent: 25 Maint Weight: 4	19:52 00:00:00	

Distance	Fault Observation	Time	Picture
367.5	Manhole Severity: None Remarks: 106	20:17 00:00:00	

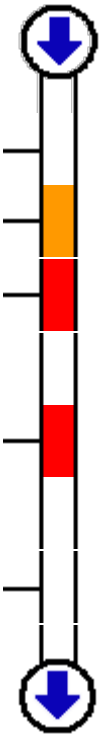
			 Downstream Earhart Road MH 105 to MH 106 Manhole FT 367.5 02/17/2010 15 VCP

PO Number: Oakland Airport

Date: 2/17/2010 2:10:39 PM
Street: Earhart Road
Distance: 161.2
Run Number:
Height (Diameter): 15

Pipe Segment Reference:
Upstream MH: 106
Downstream MH: 80
Direction of Survey: Downstream
Material: Vitrified Clay Pipe

Severity
Light
Moderate
Average
Heavy
Severe



ID Number: 106

(0.0) - Manhole Remark: 106

(0.0) - Water Level Sag

(0.0) - Deposits Settled Gravel - Position: 5 To 7 - Cont Def: S01

(22.6) - Camera Underwater

(161.2) - Abandoned Survey Remark: Camera will not pass debris in invert.

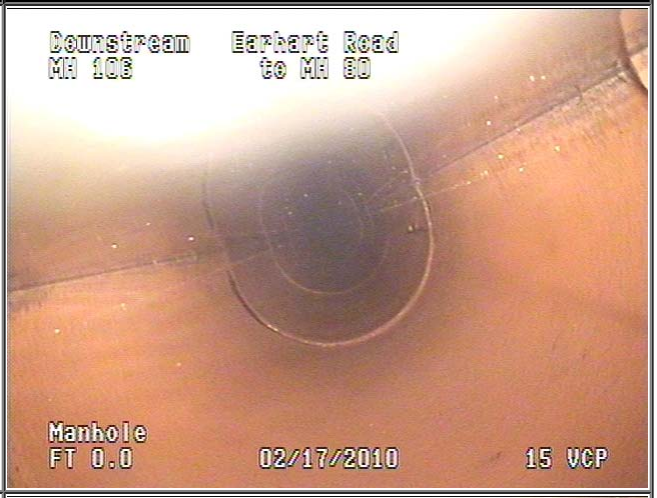
Total Distance: 161.2

ID Number: 80

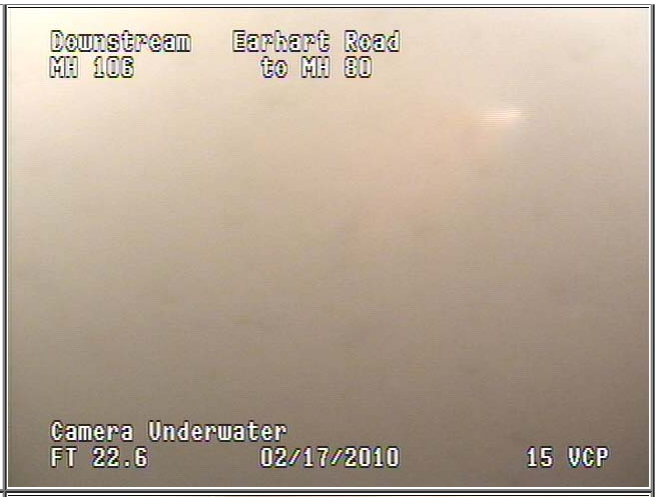
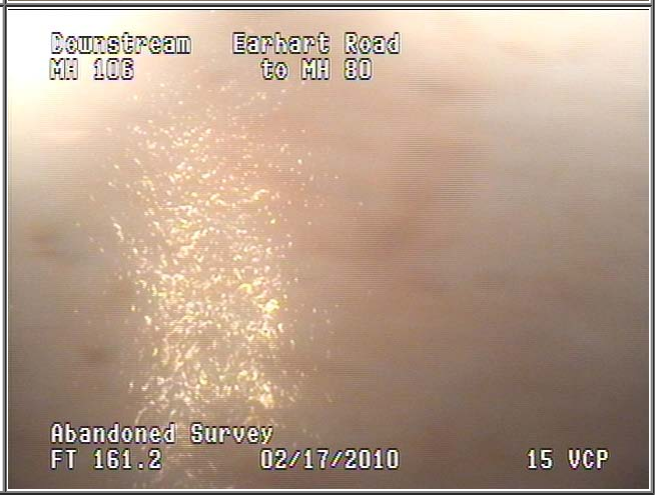
PO Number: Oakland Airport

Date: 2/17/2010 2:10:39 PM
Street: Earhart Road
Distance: 161.2
Run Number:
Height (Diameter): 15

Pipe Segment Reference:
Upstream MH: 106
Downstream MH: 80
Direction of Survey: Downstream
Material: Vitrified Clay Pipe

Distance	Fault Observation	Time	Picture
0.0	Manhole Severity: None Remarks: 106	56 00:00:00	
0.0	Water Level Sag Severity: None Percent: 35 Maint Weight: 3	01:12 00:00:00	
0.0	Deposits Settled Gravel Position: 5 To 7 Severity: None Cont Defect: S01 Percent: 25 Maint Weight: 4	01:26 00:00:00	

Distance	Fault Observation	Time	Picture

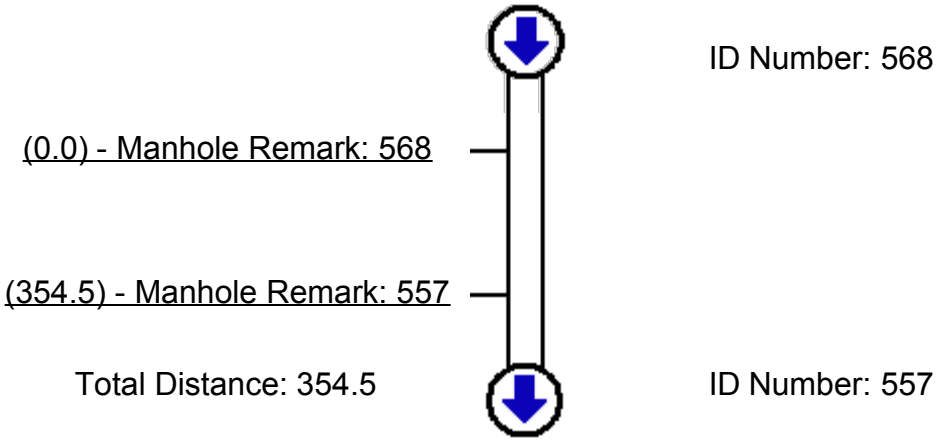
22.6	**Camera Underwater Severity: None Maint Weight: 4**	**03:57 00:00:00**	
161.2	**Abandoned Survey Severity: None Remarks: Camera will not pass debris in invert.**	**25:07 00:00:00**	

PO Number: Oakland Airport

Date: 3/17/2010 9:51:50 AM
Street: John Glenn Dr.
Distance: 354.5
Run Number:
Height (Diameter): 15

Pipe Segment Reference:
Upstream MH: 568
Downstream MH: 557
Direction of Survey: Downstream
Material: Vitrified Clay Pipe

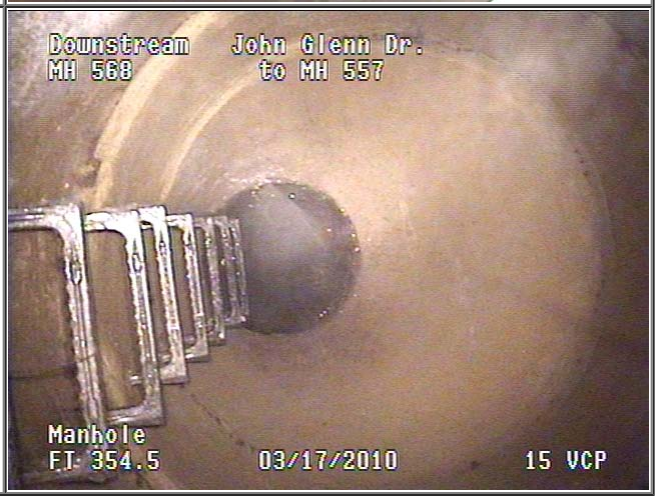
Severity
Light
Moderate
Average
Heavy
Severe



PO Number: Oakland Airport

Date: 3/17/2010 9:51:50 AM
Street: John Glenn Dr.
Distance: 354.5
Run Number:
Height (Diameter): 15

Pipe Segment Reference:
Upstream MH: 568
Downstream MH: 557
Direction of Survey: Downstream
Material: Vitrified Clay Pipe

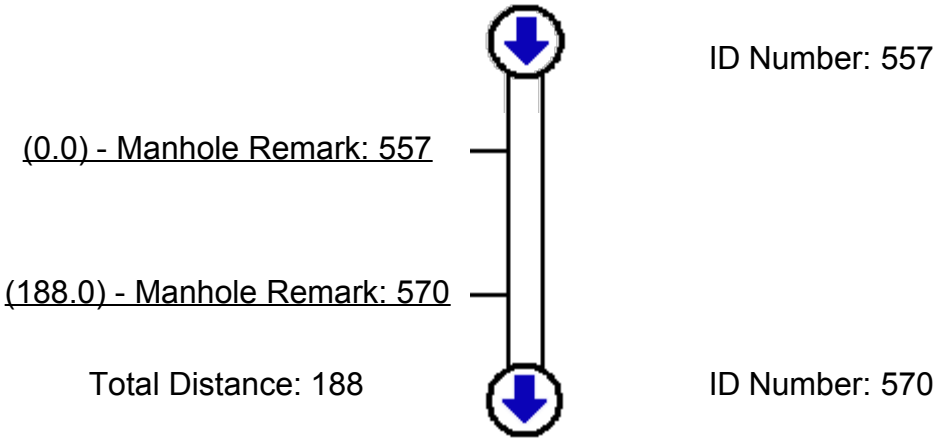
Distance	Fault Observation	Time	Picture
0.0	Manhole Severity: None Remarks: 568	46 00:00:00	
354.5	Manhole Severity: None Remarks: 557	17:04 00:00:00	

PO Number: Oakland Airport

Date: 3/17/2010 10:16:44 AM
Street: John Glenn Dr.
Distance: 188
Run Number:
Height (Diameter): 15

Pipe Segment Reference:
Upstream MH: 557
Downstream MH: 570
Direction of Survey: Downstream
Material: Vitrified Clay Pipe

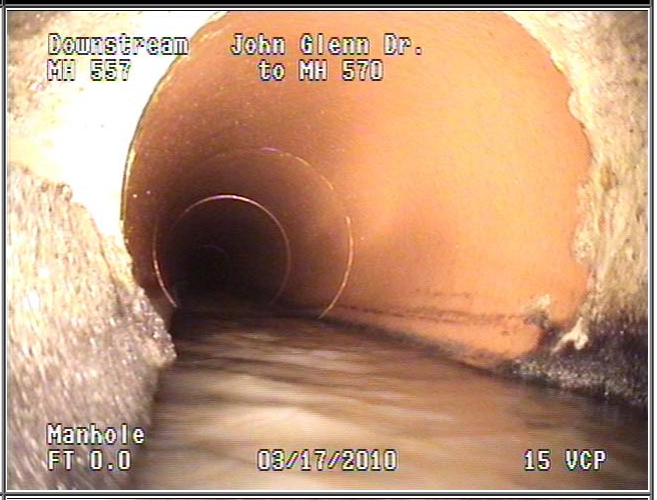
Severity
Light
Moderate
Average
Heavy
Severe



PO Number: Oakland Airport

Date: 3/17/2010 10:16:44 AM
Street: John Glenn Dr.
Distance: 188
Run Number:
Height (Diameter): 15

Pipe Segment Reference:
Upstream MH: 557
Downstream MH: 570
Direction of Survey: Downstream
Material: Vitrified Clay Pipe

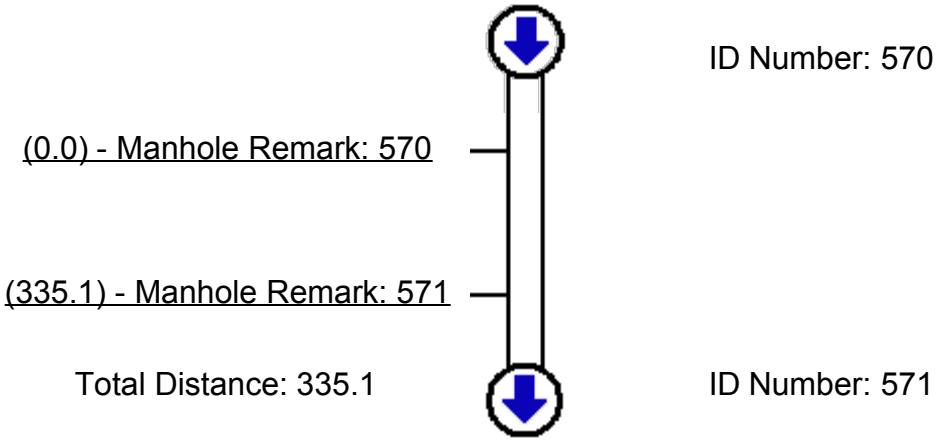
Distance	Fault Observation	Time	Picture
0.0	Manhole Severity: None Remarks: 557	42 00:00:00	
188.0	Manhole Severity: None Remarks: 570	08:33 00:00:00	

PO Number: Oakland Airport

Date: 3/17/2010 10:28:28 AM
Street: Airport Dr.
Distance: 335.1
Run Number:
Height (Diameter): 15

Pipe Segment Reference:
Upstream MH: 570
Downstream MH: 571
Direction of Survey: Downstream
Material: Vitrified Clay Pipe

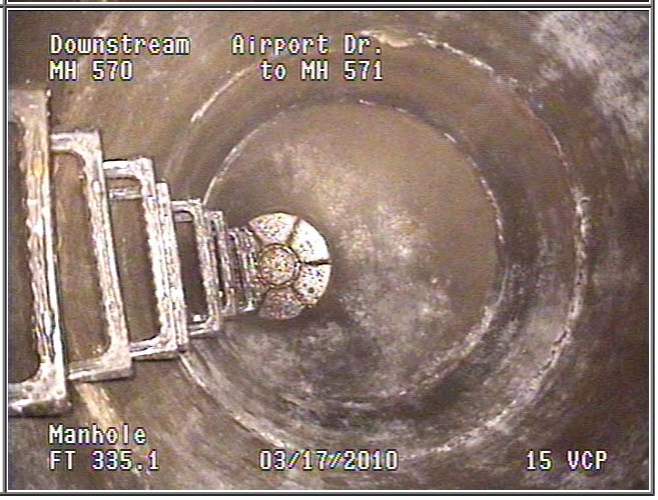
Severity
Light
Moderate
Average
Heavy
Severe



PO Number: Oakland Airport

Date: 3/17/2010 10:28:28 AM
Street: Airport Dr.
Distance: 335.1
Run Number:
Height (Diameter): 15

Pipe Segment Reference:
Upstream MH: 570
Downstream MH: 571
Direction of Survey: Downstream
Material: Vitrified Clay Pipe

Distance	Fault Observation	Time	Picture
0.0	Manhole Severity: None Remarks: 570	44 00:00:00	
335.1	Manhole Severity: None Remarks: 571	16:37 00:00:00	

PO Number: Oakland Airport

Date: 3/17/2010 11:13:31 AM
Street: Airport Dr.
Distance: 370.6
Run Number:
Height (Diameter): 15

Pipe Segment Reference:
Upstream MH: 571
Downstream MH: 572
Direction of Survey: Downstream
Material: Vitrified Clay Pipe

Severity
Light
Moderate
Average
Heavy
Severe

ID Number: 571

(0.0) - Manhole Remark: 571

(243.3) - Deposits Settled Gravel - Position: 5 To 7 - Cont Def: S01

(291.0) - Fracture Longitudinal - Position: 11

(291.0) - Infil Stain - Position: 11

(316.4) - Deposits Settled Gravel - Position: 5 To 7 - Cont Def: F01

(370.6) - Manhole Remark: 572

Total Distance: 370.6

ID Number: 572

PO Number: Oakland Airport

Date: 3/17/2010 11:13:31 AM
Street: Airport Dr.
Distance: 370.6
Run Number:
Height (Diameter): 15

Pipe Segment Reference:
Upstream MH: 571
Downstream MH: 572
Direction of Survey: Downstream
Material: Vitrified Clay Pipe

Distance	Fault Observation	Time	Picture
0.0	Manhole Severity: None Remarks: 571	43 00:00:00	
243.3	Deposits Settled Gravel Position: 5 To 7 Severity: None Cont Defect: S01 Percent: 20 Maint Weight: 3	18:33 00:00:00	
291.0	Fracture Longitudinal Position: 11 Severity: None Joint Struct Weight: 3	31:05 00:00:00	

Distance	Fault Observation	Time	Picture

291.0	**Infil Stain** **Position: 11** **Severity: None**	**31:25** **00:00:00**	
316.4	**Deposits Settled Gravel** **Position: 5 To 7** **Severity: None** **Cont Defect: F01** **Percent: 20** **Maint Weight: 3**	**32:50** **00:00:00**	
370.6	**Manhole** **Severity: None** **Remarks: 572**	**41:58** **00:00:00**	

PO Number: Oakland Airport

Date: 3/17/2010 1:43:38 PM
Street: Airport Dr.
Distance: 180
Run Number:
Height (Diameter): 12

Pipe Segment Reference:
Upstream MH: 572
Downstream MH: 573
Direction of Survey: Downstream
Material: Vitrified Clay Pipe

Severity
Light
Moderate
Average
Heavy
Severe

ID Number: 572

(0.0) - Manhole Remark: 572

(26.6) - Deposits Settled Gravel - Position: 5 To 7 - Cont Def: S01

(167.3) - Deposits Settled Gravel - Position: 5 To 7 - Cont Def: F01

(180.0) - Manhole Remark: 573

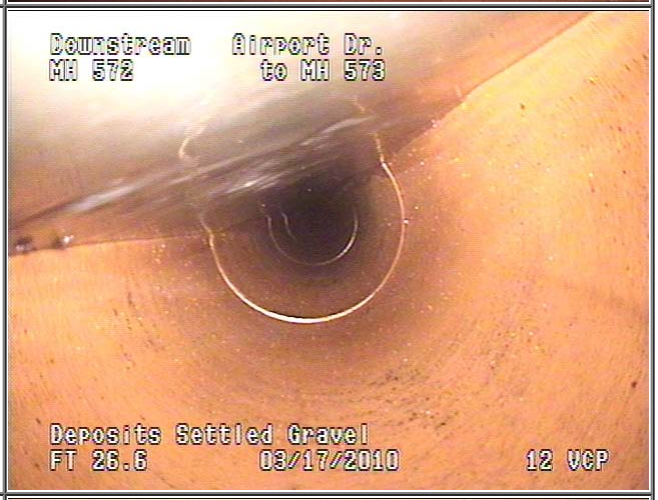
Total Distance: 180

ID Number: 573

PO Number: Oakland Airport

Date: 3/17/2010 1:43:38 PM
Street: Airport Dr.
Distance: 180
Run Number:
Height (Diameter): 12

Pipe Segment Reference:
Upstream MH: 572
Downstream MH: 573
Direction of Survey: Downstream
Material: Vitrified Clay Pipe

Distance	Fault Observation	Time	Picture
0.0	Manhole Severity: None Remarks: 572	43 00:00:00	
26.6	Deposits Settled Gravel Position: 5 To 7 Severity: None Cont Defect: S01 Percent: 20 Maint Weight: 3	03:40 00:00:00	
167.3	Deposits Settled Gravel Position: 5 To 7 Severity: None Cont Defect: F01 Percent: 20 Maint Weight: 3	09:08 00:00:00	

Distance	Fault Observation	Time	Picture

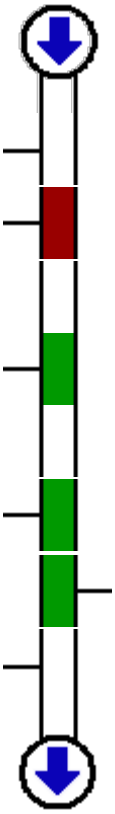
180.0	**Manhole** **Severity: None** **Remarks: 573**	**10:05** **00:00:00**	

PO Number: Oakland Airport

Date: 3/17/2010 2:23:47 PM
Street: Airport Dr.
Distance: 181
Run Number:
Height (Diameter): 12

Pipe Segment Reference:
Upstream MH: 551A
Downstream MH: 551
Direction of Survey: Downstream
Material: Vitrified Clay Pipe

Severity
Light
Moderate
Average
Heavy
Severe



ID Number: 551A

(0.0) - Manhole Remark: 551A

(0.0) - Deposits Settled Other - Position: 3 To 9 Remark: Concrete debris in flow channel.

(97.0) - Water Level Sag

(176.9) - Fracture Circumferential - Position: 12 To 12

(176.9) - Infil Weeper - Position: 8 To 4 Remark: From fracture.

(181.0) - Manhole Remark: 551

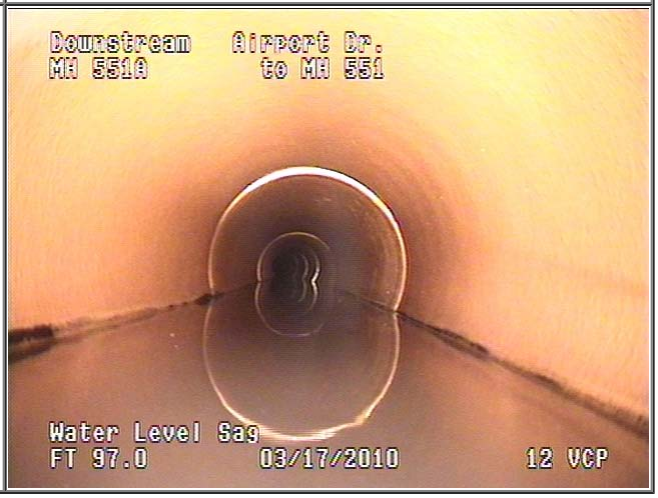
Total Distance: 181

ID Number: 551

PO Number: Oakland Airport

Date: 3/17/2010 2:23:47 PM
Street: Airport Dr.
Distance: 181
Run Number:
Height (Diameter): 12

Pipe Segment Reference:
Upstream MH: 551A
Downstream MH: 551
Direction of Survey: Downstream
Material: Vitrified Clay Pipe

Distance	Fault Observation	Time	Picture
0.0	Manhole Severity: None Remarks: 551A	01:01 00:00:00	
0.0	Deposits Settled Other Position: 3 To 9 Severity: None Percent: 50 Remarks: Concrete debris in flow channel. Maint Weight: 5	04:54 00:00:00	
97.0	Water Level Sag Severity: None Percent: 20 Maint Weight: 2	11:14 00:00:00	

Distance	Fault Observation	Time	Picture

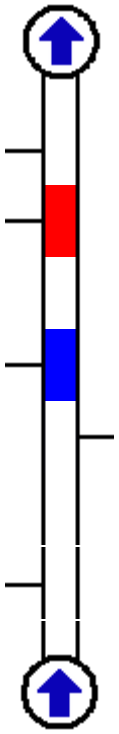
176.9	**Fracture Circumferential** **Position: 12 To 12** **Severity: None** **Struct Weight: 2**	**14:44** **00:00:00**	
176.9	**Infil Weeper** **Position: 8 To 4** **Severity: None** **Remarks: From fracture.** **Maint Weight: 2**	**15:36** **00:00:00**	
181.0	**Manhole** **Severity: None** **Remarks: 551**	**16:45** **00:00:00**	

PO Number: Oakland Airport

Date: 3/18/2010 9:35:58 AM
Street: Airport Dr.
Distance: 18.5
Run Number:
Height (Diameter): 12

Pipe Segment Reference:
Upstream MH: 1612
Downstream MH: 551A
Direction of Survey: Upstream
Material: Vitrified Clay Pipe

Severity
Light
Moderate
Average
Heavy
Severe



ID Number: 551A

(0.0) - Manhole Remark: 551A

(0.0) - Camera Underwater

(15.3) - Joint Offset Medium

(16.2) - Tap Factory - Position: 9

(18.5) - Abandoned Survey Remark: Camera will not pass wye, pipe plugged 7 ft. upstream.

Total Distance: 18.5

ID Number: 1612

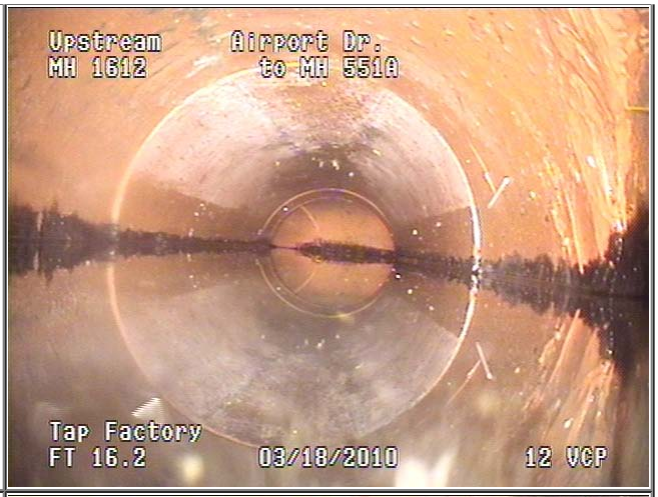
PO Number: Oakland Airport

Date: 3/18/2010 9:35:58 AM
Street: Airport Dr.
Distance: 18.5
Run Number:
Height (Diameter): 12

Pipe Segment Reference:
Upstream MH: 1612
Downstream MH: 551A
Direction of Survey: Upstream
Material: Vitrified Clay Pipe

Distance	Fault Observation	Time	Picture
0.0	Manhole Severity: None Remarks: 551A	47 00:00:00	
0.0	Camera Underwater Severity: None Maint Weight: 4	01:00 00:00:00	
15.3	Joint Offset Medium Severity: None Struct Weight: 1	02:40 00:00:00	

Distance	Fault Observation	Time	Picture

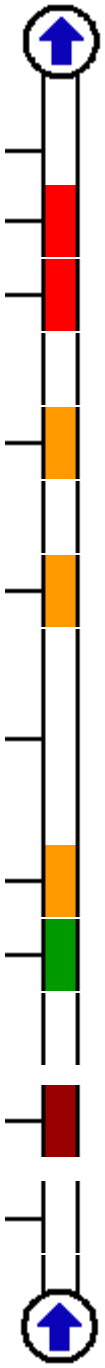
16.2	**Tap Factory Position: 9 Severity: None 1st Dimension: 12**	**06:13 00:00:00**	
18.5	**Abandoned Survey Severity: None Remarks: Camera will not pass wye, pipe plugged 7 ft. upstream.**	**08:54 00:00:00**	

PO Number: Oakland Airport

Date: 3/18/2010 9:50:07 AM
Street: Airport Dr.
Distance: 407.7
Run Number:
Height (Diameter): 12

Pipe Segment Reference:
Upstream MH: 556
Downstream MH: 551A
Direction of Survey: Upstream
Material: Vitrified Clay Pipe

Severity
Light
Moderate
Average
Heavy
Severe



ID Number: 551A

(0.0) - Manhole Remark: 551A

(0.0) - Camera Underwater

(10.2) - Deposits Settled Other - Position: 5 To 7 Remark: Concrete debris.

(43.9) - Deposits Settled Gravel - Position: 5 To 7 - Cont Def: S01

(117.9) - Deposits Settled Gravel - Position: 5 To 7 - Cont Def: F01

(280.4) - Infil Stain - Position: 2 To 4

(297.6) - Fracture Longitudinal - Position: 2

(297.6) - Infil Weeper - Position: 2 Remark: From fracture.

(407.7) - Deposits Settled Other - Position: 3 To 8 Remark: Concrete debris in flow channel and pipe.

(407.7) - Abandoned Survey Remark: Camera will not pass debris.

Total Distance: 407.7

ID Number: 556

PO Number: Oakland Airport

Date: 3/18/2010 9:50:07 AM
Street: Airport Dr.
Distance: 407.7
Run Number:
Height (Diameter): 12

Pipe Segment Reference:
Upstream MH: 556
Downstream MH: 551A
Direction of Survey: Upstream
Material: Vitrified Clay Pipe

Distance	Fault Observation	Time	Picture
0.0	Manhole Severity: None Remarks: 551A	41 00:00:00	
0.0	Camera Underwater Severity: None Maint Weight: 4	55 00:00:00	
10.2	Deposits Settled Other Position: 5 To 7 Severity: None Percent: 30 Remarks: Concrete debris. Maint Weight: 4	04:02 00:00:00	

Distance	Fault Observation	Time	Picture

43.9	Deposits Settled Gravel Position: 5 To 7 Severity: None Cont Defect: S01 Percent: 15 Maint Weight: 3	09:32 00:00:00	
117.9	Deposits Settled Gravel Position: 5 To 7 Severity: None Cont Defect: F01 Percent: 15 Maint Weight: 3	12:08 00:00:00	
280.4	Infil Stain Position: 2 To 4 Severity: None Joint	17:55 00:00:00	

Distance	Fault Observation	Time	Picture
297.6	Fracture Longitudinal Position: 2 Severity: None Joint Struct Weight: 3	19:44 00:00:00	

			
297.6	Infil Weeper Position: 2 Severity: None Remarks: From fracture. Maint Weight: 2	20:25 00:00:00	
407.7	Deposits Settled Other Position: 3 To 8 Severity: None Percent: 40 Remarks: Concrete debris in flow channel and pipe. Maint Weight: 5	25:39 00:00:00	

Distance	Fault Observation	Time	Picture
407.7	Abandoned Survey Severity: None Remarks: Camera will not pass debris.	26:40 00:00:00	

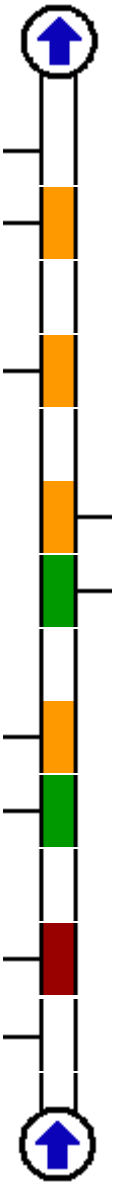
			 Upstream MH 556 Airport Dr. to MH 551A Abandoned Survey FT 407.7 03/18/2010 12 VCP

PO Number: Oakland Airport

Date: 3/18/2010 12:47:58 PM
Street: Airport Dr.
Distance: 388.5
Run Number:
Height (Diameter): 12

Pipe Segment Reference:
Upstream MH: 555
Downstream MH: 556
Direction of Survey: Upstream
Material: Vitrified Clay Pipe

Severity
Light
Moderate
Average
Heavy
Severe



ID Number: 556

(0.0) - Manhole Remark: 556

(9.7) - Deposits Settled Gravel - Position: 5 To 7 - Cont Def: S01

(111.1) - Deposits Settled Gravel - Position: 5 To 7 - Cont Def: F01

(202.0) - Fracture Longitudinal - Position: 9

(202.4) - Infil Weeper - Position: 9 Remark: From fracture.

(342.1) - Fracture Longitudinal - Position: 2

(342.1) - Infil Weeper - Position: 2 Remark: From fracture.

(388.5) - Deposits Settled Other - Position: 5 To 9 Remark: Concrete debris.

(388.5) - Abandoned Survey Remark: Camera will not pass debris.

Total Distance: 388.5

ID Number: 555

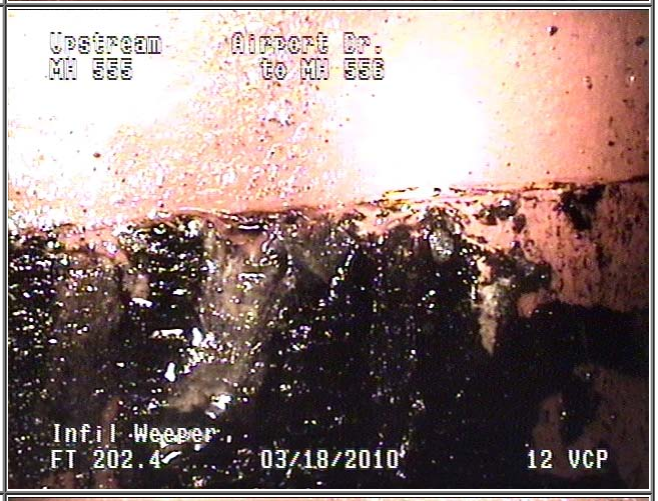
PO Number: Oakland Airport

Date: 3/18/2010 12:47:58 PM
Street: Airport Dr.
Distance: 388.5
Run Number:
Height (Diameter): 12

Pipe Segment Reference:
Upstream MH: 555
Downstream MH: 556
Direction of Survey: Upstream
Material: Vitrified Clay Pipe

Distance	Fault Observation	Time	Picture
0.0	Manhole Severity: None Remarks: 556	48 00:00:00	
9.7	Deposits Settled Gravel Position: 5 To 7 Severity: None Cont Defect: S01 Percent: 15 Maint Weight: 3	07:50 00:00:00	
111.1	Deposits Settled Gravel Position: 5 To 7 Severity: None Cont Defect: F01 Percent: 15 Maint Weight: 3	11:16 00:00:00	

Distance	Fault Observation	Time	Picture

202.0	Fracture Longitudinal Position: 9 Severity: None Joint Struct Weight: 3	14:31 00:00:00	
202.4	Infil Weeper Position: 9 Severity: None Remarks: From fracture. Maint Weight: 2	14:58 00:00:00	
342.1	Fracture Longitudinal Position: 2 Severity: None Joint Struct Weight: 3	20:08 00:00:00	

Distance	Fault Observation	Time	Picture
342.1	Infil Weeper Position: 2 Severity: None Remarks: From fracture. Maint Weight: 2	20:35 00:00:00	

			
388.5	**Deposits Settled Other Position: 5 To 9 Severity: None Percent: 40 Remarks: Concrete debris. Maint Weight: 5**	**23:34 00:00:00**	
388.5	**Abandoned Survey Severity: None Remarks: Camera will not pass debris.**	**24:35 00:00:00**	

APPENDIX E - LIFT STATION VISUAL INSPECTION FINDINGS

Oakland International Airport and Port of Oakland

Lift Station Visual Inspection

3/5/2010 – 3/6/2010

1. LSAP07P
   This lift station is near gate 7 in terminal 1. The station is fairly new and appears to be in good working condition. Minor rust can be found on and around the edges of the top of the tank, on some of the pipe joints, valves, and flanges. There are to pumps that are both in good condition. The system operates at 20 psi. A large concrete grease pit is located just out side of the lift station.

2. AP15E
   This station has all of its controls in a large storage closet. This storage room is also home to the old equipment that is no longer used for this station. The pumps are located just outside the control room below ground in a large vault. I was unable to inspect these pumps as we did not have the proper machine to open the lid of the vault. The system is the same as AP14E.

3. AP14E
   Same setup as station AP15E. The system consists of 2 tanks with 2 bladders. Waste water flows into the tanks, when the tanks fill compressed air fills the bladder pushing the waste out of the lift station. The system is setup to alternate the use of the two tanks so that they are used equally. The vault contains a lot of debris. The debris appears to be from surface water during wet weather. This system has broken down once causing the vault to fill with waste water and overflow onto the parking area for planes at the gate.

4. AP08P
   This station consist of one wet well with two submerged pumps controlled by float sensors. The pumps are automatic alternating pumps. Rust has formed on the influent pipe and effluent pipes as well as along the rim of the structure. It appears that hydrogen sulfide gas is coming from the wet well through the conduit and into the electrical box.

5. AP06P
   This station has the same setup as AP08P. The station consist of one wet well with two submerged pumps controlled by float sensors. The pumps are automatic alternating pumps. There is a significant amount of grease buildup in the structure. This lift station services a bar and a Chilies Restaurant (probable cause to the buildup).

6. AP155P
   This station is located in a parking lot. Approximately 4 years old the station consists of 2 submergible quick disconnect pumps operated by floating level sensors. The pumps alternate there use automatically. A pipe is located in the grass behind this station to allow for gas to be released. The station is in good condition with very little signs of rust.

7. AP911P
   2 pumps alternate. Both pumps/motors experience bearing problems approximately every 2 years. The plate on the motor shows RPM 1770/1470, volts 230/460, Hp 15/10. There is a significant amount of corrosion under the gas jumper. These jumpers are installed to allow the hydrogen sulfide gas (H_2S) to escape the structure in order minimize corrosion. Unfortunately the placement is causing the structures lid to corrode. The motors appear to be in good shape with minor spots of rust. One of the effluent pipes above ground and the pipes in a near by dry well have a much larger amount of noticeable corrosion. It appears that the dry well during wet weather can fill with water. This contact with water is causing rust buildup.

8. AP912P
   This station consists of the same setup as AP911P. At this location the drywell is steeling while the well housing the pumps is not. This is causing a lot of stress on the pipes that connect the two structures. O&M staff has had to come out and change the above ground connections to allow for this settling. It appears that the dry well during wet weather can fill with water. This contact with water is causing rust buildup. The plate on the motor shows RPM 1750, volts 230/460, Hp 5/8.

9. Air Sally Lift
   The old system was replaced in January 2009 or sooner by 2 submergible, 2 hp, 3 phase pumps. These pumps alternate there use and have had no problems since they were installed. Some of the old system is still at this sight. I was unable to inspect inside the drywell as we were not equipped to perform confined space entries.

10. AP137P
    This station consists of 2 submergible alternating pumps. The effluent pipe and the tops of the pumps show signs of corrosion.

11. AP926P
    This station consists of 2 submergible alternating pumps. The structure's lid and pipes show signs of corrosion. I could not see the pumps as the water level was too high. The lid on this station has no vent and had to be replaced two years ago. A vent needs to be added as the lid already shows a significant amount of corrosion.

12. AP01P

    3 to 4 years ago submergible pumps were installed in a dry pit connected to the wet well. The system is controlled by a pressure switch, alternating the pumps on and off. O&M staff wash down the down the wet well once a month. I was unable to inspect the pumps as we were not equipped to perform confined space entries. The control panel is wired with mercury switches.

13. AP02P

    The station consists of 2 pumps/motors in a dry well. I was unable to inspect inside the drywell as we were not equipped to perform confined space entries. I was able to get some photos of the pumps and they look to be in good condition. O&M staff washes down the wet well once a month. The use of an automatic bar screen would work well at this location with the amount of cleaning that needs to be done in the wet well. RPM on the motor reads 1745 but I couldn't read the rest.

14. AB018P

    This station consists of 2 vertical pumps/motors. I was unable to inspect inside the drywell as we were not equipped to perform confined space entries. No problems were reported by O&M staff and no corrosion was found from what we were able to view. However, the condition is unknown to O&M staff as this station has recently come into their possession. The nameplate on the motors has the following information.

    MOD: 5K2540NL90Z1A
    HP: 7.5-4.2
    RPM: 1175-885
    V: 200
    A: 25.1-17.0
    Phase: 3
    Hz: 60
    L254Hp10 Frame
    Type K
    Code J
    GE Motors
    DE BRG 6309ZC3
    ODE BRG 6207-2ZC3
    SN: BTP4132MN02A
    SF: 1.15
    NP278332

15. AB836P

    This station consists of two alternating submergible pumps. The O&M staff believes that the original level sensor failed and was upgraded to a float switch but they don't know for sure. The discharge pipe is separated from the pump due to a corroded base and is currently supported by

a few pieces of wood. The effluent pipe shows a significant amount of decay and corrosion. The repair of this station should be high on the list.

16. AB663P

    This station consists of two submergible pumps. One pump currently runs at 65 amps which is too high so it has been taken off line. Vandals cut and stole wire; repairs were made however, even after the repairs the auto system does not work. Once a week O&M staff come out to the station and manually turn on the one working pump until the water level in the wet well goes down its low level.

17. D04P

    This station consists of two submergible alternating pups with float sensors. The station is on auto mode but there is no sewage to pump. This lift station only supports the bathroom next to it and the owner has welded the doors shut. Operators have to use the latrine. O&M staff believes that the station is in working order however, the staff was unable to open the lid of the wet well so that I could inspect. No inspection was preformed at this location.

18. D05P

    This station consists of two submergible alternating pups with float sensors. The station has had no problems, the staff was unable to open the lid of the wet well so that I could inspect. No inspection was preformed at this location.

19. D06P

    This station consists of 2 sump pumps controlled by a float switch. The pumps run lead/lag with a manual switch to alternate the pumps lead/lag function. The station is 7 years old but has been rebuilt within the last 5 years. The station has visual alarms only but is set up to broadcast an alarm. Motor information is provided in the pictures. Visual inspection show minor coating loss on the pump and pipe.

20. D03P

    The station consists of 2 alternating 5 hp submergible pumps with float level censors. O&M staff flush the well with a fire hose as needed to clean. O&M staff say they have had no problems with the system. There is a minimal amount corrosion in the structure. The majority of the corrosion is on the bracing for the lid. This should be looked at as vehicles can drive over it.

21. D02P

    The station consists of 2 alternating 5 hp submergible pumps with float level censors. O&M staff flush the well with a fire hose as needed to clean. O&M staff say they have had no problems with the system. There is a minimal amount corrosion in the structure. The majority of the corrosion is on the bracing for the lid. This should be looked at as vehicles can drive over it. There is some rust on the flanges of the effluent pipes.

22. D01P

    The station consists of 2 alternating 5 hp submergible pumps with float level censors. O&M staff flush the well with a fire hose as needed to clean. O&M staff say they have had no problems with the system. There is a minimal amount corrosion in the structure. The majority of the corrosion is on the bracing for the lid. This should be looked at as vehicles can drive over it. There is some rust on the flanges of the effluent pipes, influent pipe, and on the tops of the submergible pumps.

23. C08P

    The controls for this station were moved above ground 6 months ago. The station is 30 years old but O&M staff say that it is in good condition. We didn't inspect pumps as we were not equipped to perform confined space entry.

24. C07P

    The controls for this station were moved above ground 6 months ago. The station is 30 years old but O&M staff say that it is in good condition. We didn't inspect pumps as we were not equipped to perform confined space entry. There is a large amount of coating missing from the exterior entrance into the dry well. There is a large crack on the rim of the entrance.

25. AB148P actually numbered AB048P in the field

    This station only has one operating pump with the second pump being burnt out. The pump is a submergible pump controlled by a float switch. The control for the pumps is a single switch identifying which pump is in operation (no lead/lag or alternating capabilities). The outgoing pipes and valves located in a dry pit on the side of the pump building are severely corroded.

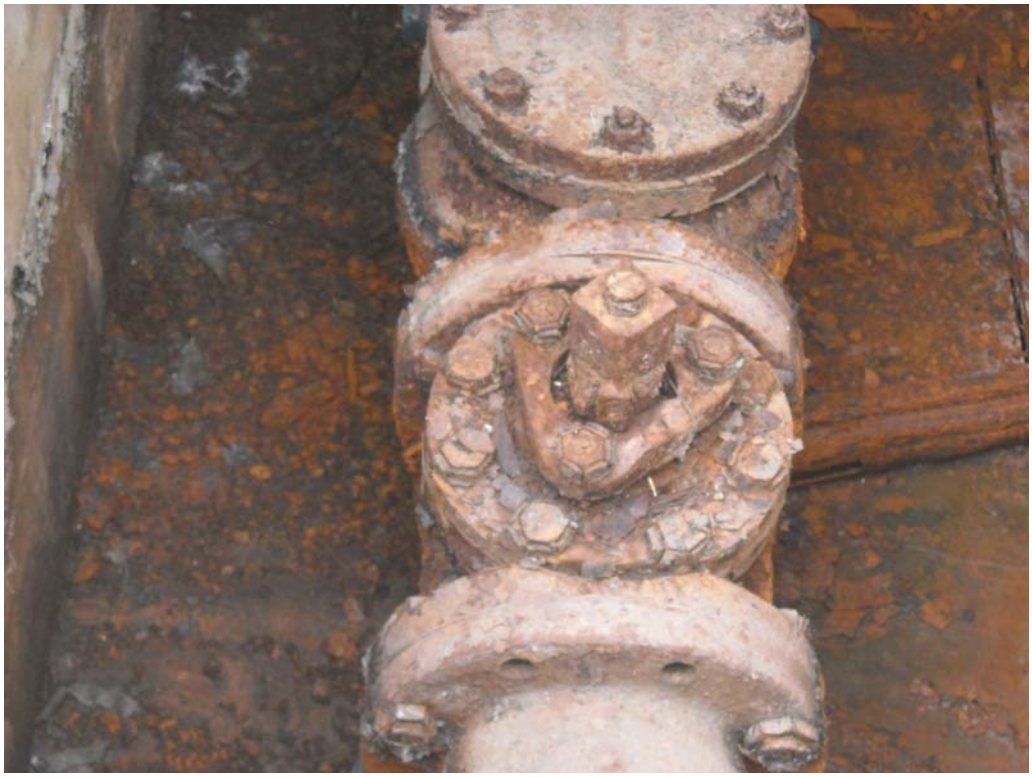
26. D10P

    This station has 2 submergible pumps controlled by float switches. There is no air pipe for the H_2S to escape so the effluent pipe shows signs of heavy corrosion. The O&M staff report having no problems with this system.

LIFT STATION AB018P

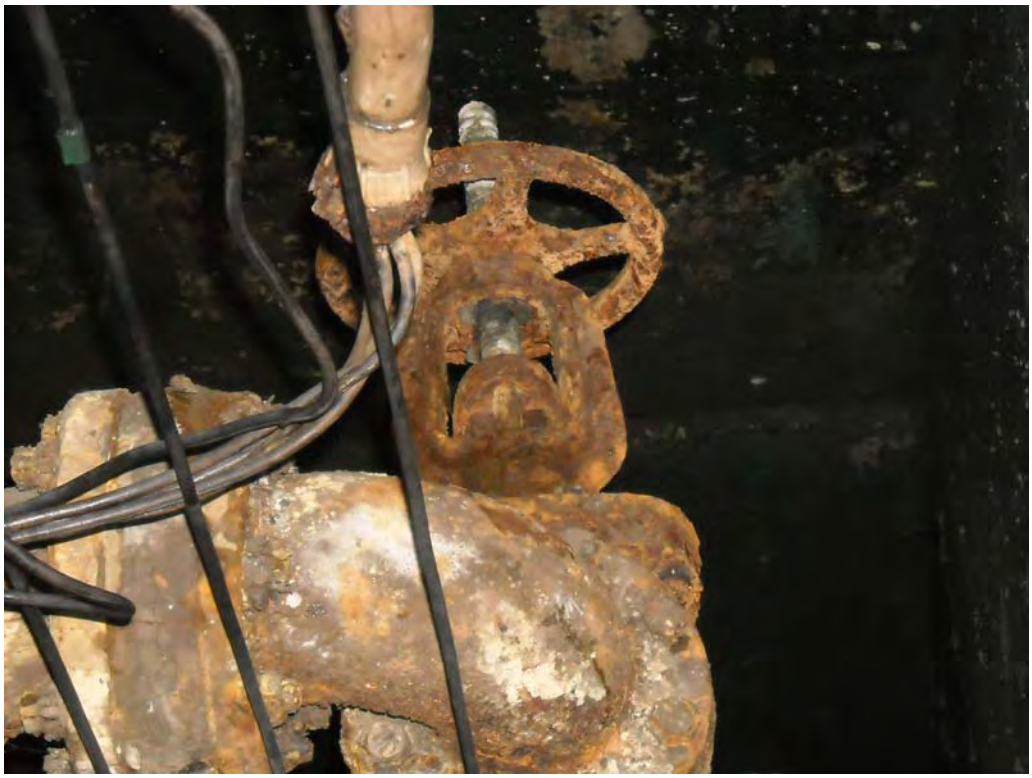

DANGER
SECURE MOTOR
BEFORE ENTERING
PIT BELOW
DANGER
THIS UNIT STARTS
AUTOMATICALLY

LIFT STATION AB048P

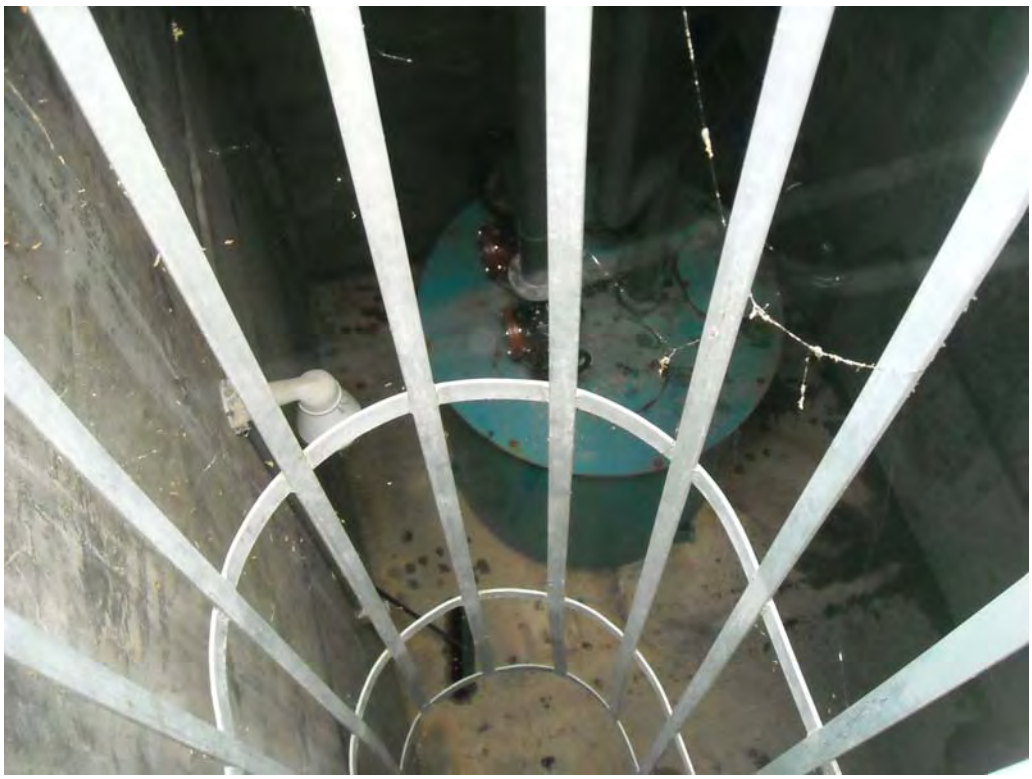


LIFT STATION AB663P

LIFT STATION AB836P



LIFT STATION AIR SALLY



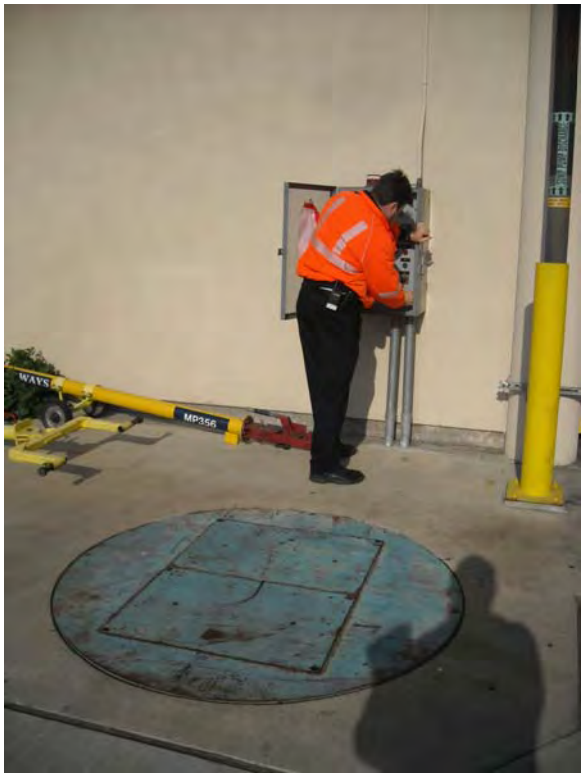
LIFT STATION AP01P

LIFT STATION AP02P

LIFT STATION AP06P

LIFT STATION AP07P

LIFT STATION AP08P



SEWER EJECTOR AP14E

SEWER EJECTOR AP15E


DIAMOND GRIP

LIFT STATION AP137P

LIFT STATION AP155P

LIFT STATION AP911P


DANGER
CONFINED SPACE
ENTER BY
PERMIT ONLY

LIFT STATION AP912P

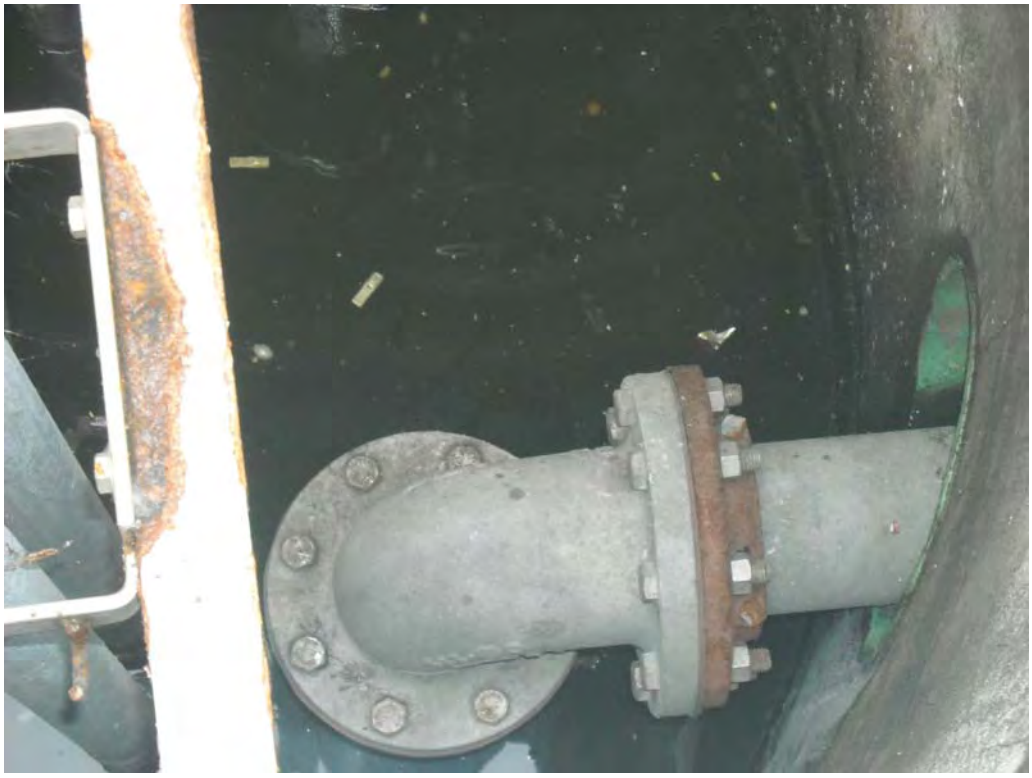
LIFT STATION AP926P

LIFT STATION C07P

LIFT STATION C08P

LIFT STATION D01P

LIFT STATION D02P



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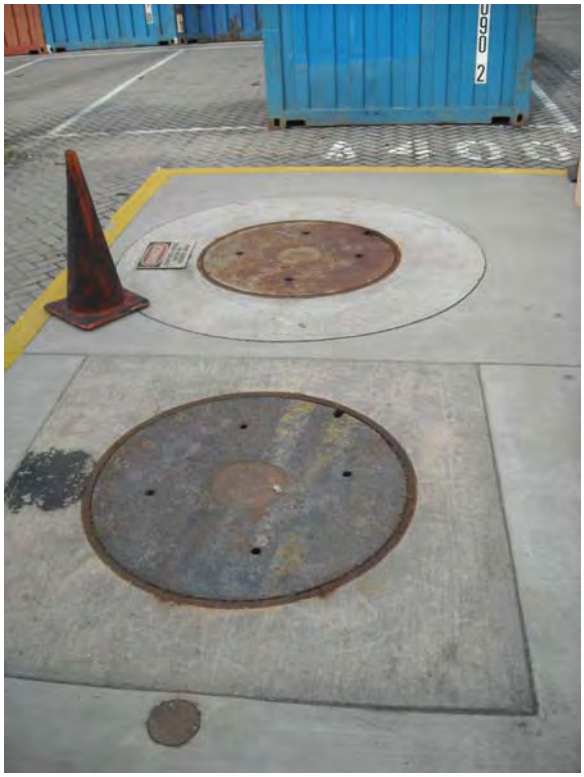


LIFT STATION D05P

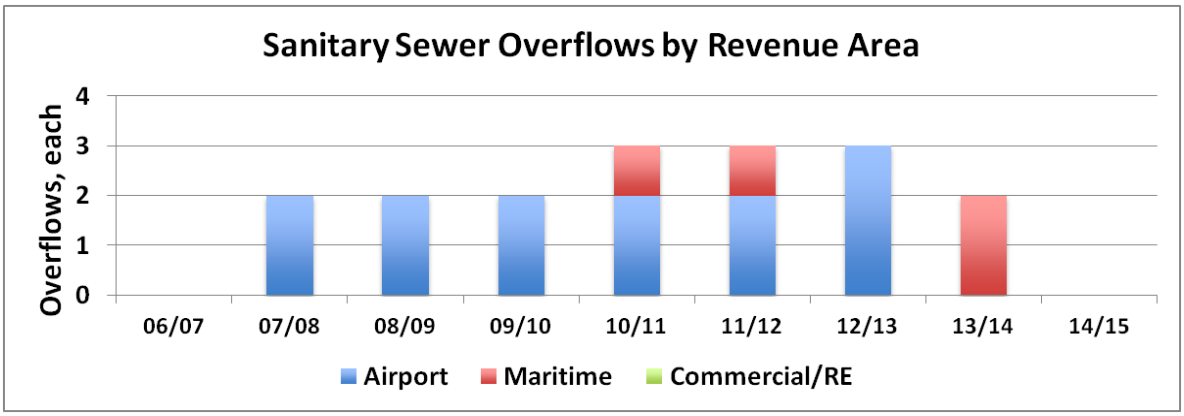
LIFT STATION D06P

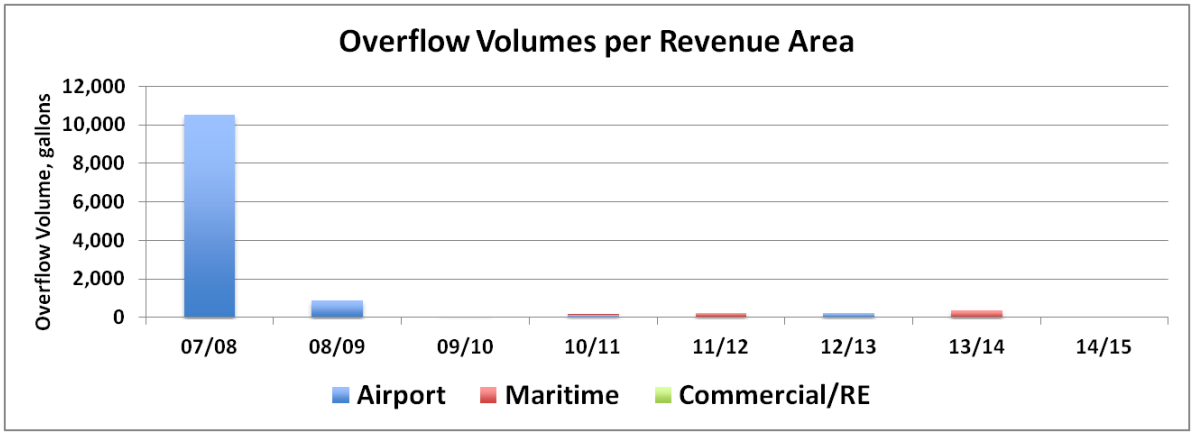
LIFT STATION D10P

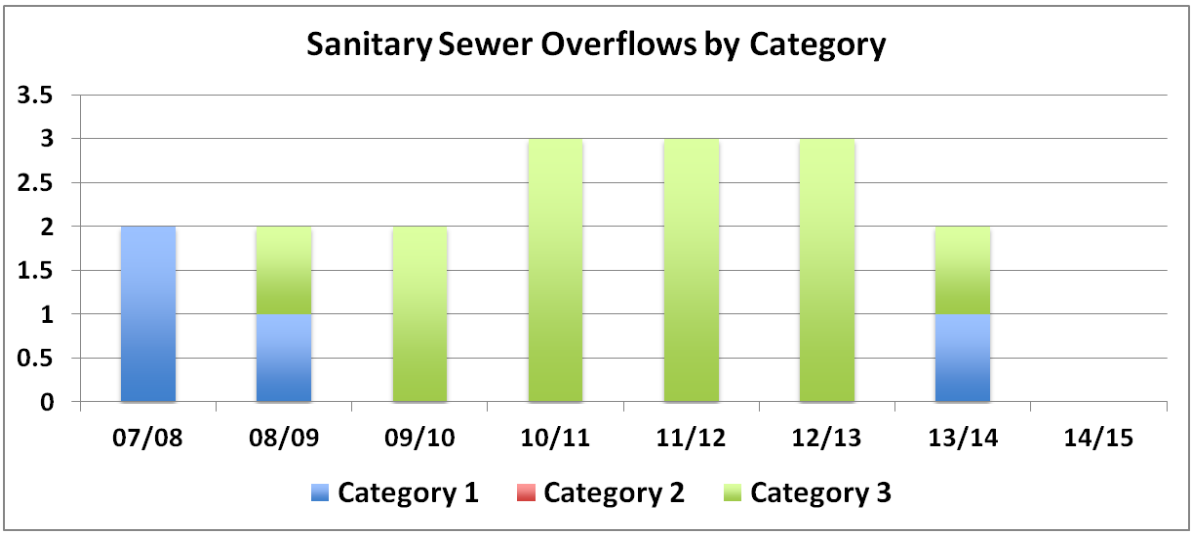
APPENDIX N - PORT STAFF NOTES RELATED TO THE SSMP

Note to Reader: The intent of this appendix is that when Port staff identify an important change related to the Sewer System Management Plan, they can place their notes or other relevant documents into this appendix for easy reference.

APPENDIX O - SSO DATA GRAPHS


Sanitary Sewer Overflows by Revenue Area
Overflows, each
4
3
2
1
0
06/07
07/08
08/09
09/10
10/11
11/12
12/13
13/14
14/15
Airport
Maritime
Commercial/RE


Overflow Volumes per Revenue Area
Overflow Volume, gallons
12,000
10,000
8,000
6,000
4,000
2,000
0
07/08
08/09
09/10
10/11
11/12
12/13
13/14
14/15
Airport
Maritime
Commercial/RE


Sanitary Sewer Overflows by Category
3.5
3
2.5
2
1.5
1
0.5
0
07/08
08/09
09/10
10/11
11/12
12/13
13/14
14/15
Category 1
Category 2
Category 3

APPENDIX P - SSMP ADOPTING RESOLUTION

5/18/10
Item No.: O-1
JS/lhr

Cc: L. Nguyen
W. Lau

BOARD OF PORT COMMISSIONERS
CITY OF OAKLAND

RESOLUTION NO. 10-58

RESOLUTION APPROVING AND ADOPTING THE PORT OF OAKLAND SEWER SYSTEM MANAGEMENT PLAN (SSMP) AS REQUIRED BY THE STATE WATER RESOURCES CONTROL BOARD ORDER NO. 2006-0003.

WHEREAS on May 2, 2006 the State Water Resources Control Board ("State Water Board") adopted Statewide General Waste Discharge Requirements for Sanitary Sewer Systems, Water Resources Control Board Order No. 2006-0003 ("Sanitary Sewer Order"); and

WHEREAS the Port of Oakland owns, operates and maintains approximately 40 miles of pipe which collect and convey sewage to the City of Oakland wastewater collection system and to EBMUD Water Treatment Plant; and

WHEREAS on December 4, 2007, by Resolution No. 07324, the Board approved the Sewer System Management Plan ("SSMP") Development Plan and Schedule. The first two (2) elements of the SSMP was developed; and

WHEREAS on April 7, 2009, by Resolution No. 07048, the Board approved staff to retain Carollo Engineers to complete developing the remaining nine (9) elements of the SSMP; and

RESOLVED the Board hereby approves and adopts the Sewer System Management Plan ("SSMP"), as required by the State Water Resources Control Board Order No. 2006-0003 Statewide General Waste Discharge Requirements for Sanitary Sewer Systems as that report is fully set forth in Agenda Report Item 0-1 dated May 18, 2010; and be it

FURTHER RESOLVED that the Board hereby finds and determines that this project has been determined to be categorically exempt from requirements of the California Environmental Quality Act (CEQA) and the Port CEQA Guidelines pursuant to Guidelines Section 15301, Existing Facilities. CEQA does not apply to the operation repair, maintenance, permitting, leasing, licensing, or minor alteration of existing public or private structures, facilities, mechanical equipment or topographical features, involving negligible or no expansion of use beyond that existing at the time of the lead agency's determination; and be it

FURTHER RESOLVED that this resolution is not evidence of and does not create or constitute (a) a contract, or the grant of any right, entitlement or property interest, or (b) any obligation or liability on the part of the Board or any officer or employee of the Board. This resolution approves and authorizes the execution of an agreement in accordance with the terms of this resolution. Unless and until a separate written agreement is duly executed on behalf of the Board as authorized by this resolution, is signed as approved as to form and legality by the Port Attorney, and is delivered to the other contracting parties, there shall be no valid or effective agreement.

At the regular meeting held on May 18, 2010

Passed by the following vote:

Ayes: Commissioners Gordon, Head, Katzoff, Lighty and President Uno – 5
Excused: Commissioners Calloway and Gonzales - 2
Noes: 0

7/9/15
Item No.: 5.1
JS/lhr

BOARD OF PORT COMMISSIONERS
CITY OF OAKLAND

RESOLUTION NO. 15-073

APPROVAL AND ADOPTION OF AN UPDATE TO THE PORT OF OAKLAND'S SEWER SYSTEM MANAGEMENT PLAN ("SSMP").

WHEREAS, on May 2, 2006 the State Water Resources Control Board ("State Water Board") adopted Statewide Waste Discharge Requirements for Sanitary Sewer Systems, Water Resources Control Board Order No. 2006-003 (the "WDR");

WHEREAS, municipalities, counties, districts, and other public entities that own or operate sanitary sewer systems greater than one mile in length that collect and/or convey untreated or partially treated wastewater to a publicly-owned treatment facility in the State of California are required to comply with the WDR;

WHEREAS, the Port of Oakland owns, operates and maintains approximately 35 miles of sewer mains and laterals, which collect and convey sewage to the City of Oakland wastewater collection system and to the East Bay Municipal Utility District ("EBMUD") Water Treatment Plant, and therefore is required by the WDR to develop and implement a SSMP;

WHEREAS, on May 18, 2010, by Resolution No. 10-58, the Board of Port Commissioners ("Board") approved the Port SSMP;

WHEREAS, the WDR requires the SSMP to be updated every five years, submitted to the governing board for approval at a public meeting and recertified when significant updates are made to the SSMP; and

WHEREAS, the State Water Board amended the Monitoring and Reporting Plan requirements ("MRP requirements") of the WDR effective September 9, 2013 (WQ 2013-0058-EXEC), which modify the monitoring and reporting requirements of sewer overflows; and

WHEREAS, in order to conform the SSMP with the current MRP requirements, to update the sanitary sewer reporting process and to expand the designations of Legally Responsible Officials ("LRO") to ensure continuous monitoring of the sanitary sewer system at the Port, certain amendments to the SSMP are necessary at this time.

RESOLVED, that the Board hereby approves and adopts the Updated 2015 SSMP as that report is fully set forth in Agenda Report Item 5.1, dated July 9, 2015 and attachments thereto (the "2015 SSMP"); and

FURTHER RESOLVED, that the Board hereby authorizes the Executive Director to fully implement the 2015 SSMP, such implementation to include but not be limited to:

1. Designating certain position classifications as LROs and Data Submitters for purposes of reporting and certifying all reports submitted to the State Board pursuant to the WDR and the 2015 SSMP; and

2. Establishing a Sanitary Sewer Task Force for purposes of coordinating all requirements of the WDR across all revenue divisions of the Port to assure conformance and consistency with the policies and procedures required to maintain the Port in full compliance with the WDR.

FURTHER RESOLVED, that the Board hereby finds and determines that this project has been determined to be exempt from review under California Environmental Quality Act ("CEQA") pursuant to Section 15061(b)(3). Updating the SSMP will not result in a physical change in the environment. Continuing administrative or maintenance activities, personnel-related actions, general policy and procedure making, such as the proposed administrative and procedural changes to implementation of the SSMP, are not projects under CEQA pursuant to Section 15378(b)(2) of the CEQA Guidelines. To the extent that any minor upgrade projects may be undertaken pursuant to the Updated SSMP, these projects would be covered under existing services contracts that have been subject to previous CEQA review; and be it

FURTHER RESOLVED, that this resolution is not evidence of and does not create or constitute (a) a contract, or the grant of any right, entitlement or property interest, or (b) any obligation or liability on the part of the Board or any officer or employee of the agreement in accordance with the terms of this resolution.

At the regular meeting held on July 9, 2015

Passed by the following vote:

Ayes: Commissioners Butner, Head, Hamlin, Parker and
President Yee – 5
Excused: Commissioner Colbruno – 1
Noes: 0

APPENDIX Q - SWRCB SSMP CERTIFICATION FORM

The SSMP certification form is available from the State Water Resources Control Board website: http://www.swrcb.ca.gov/water_issues/programs/sso/index.shtml