

City of Greenfield

Sanitary System Management Plan

2020 UPDATE



11/2020
Prepared by
Public Works Operations Manager
Arturo Felix

APPENDICES

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Collection System Operations and Maintenance
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City of Greenfield, Sewer System Management Plan,- March 2014, Audit Report

Appendix G

City of Greenfield, Sewer System Management Plan, - September 2019, Audit
Report

Sanitary System Management Plan

Appendix A - Collection System Operations and Maintenance

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**COLLECTION SYSTEM OPERATIONS AND
MAINTENANCE
GPWUD -SOP-05**

ID No.:	GPWUD-SOP-XX
Rev. No.:	0
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 <h2 style="margin: 0;">City of Greenfield</h2>		Document No. GPWUD -SOP-05
Title: COLLECTION SYSTEM OPERATIONS AND MAINTENANCE		Revision Number: new
Prepared by: Arturo Felix Public works Operations Manager	Approved BY:	Page: 1 of 6
		Effective Date: September 1, 2020

A. PURPOSE:

The Public Works Department has developed the following procedures for operating and maintaining the sanitary sewer collection system within the City of Greenfield.

B. SCOPE:

The purpose of this collection system operations and maintenance procedure is to detail the care of the collection portion of the City sanitary sewer system. The collection system collects and conveys sanitary sewage to the wastewater treatment plant. Proper care and maintenance can prevent or minimize the potential number and severity of sanitary sewer overflows. The objective is to conduct preventative maintenance activities to ensure that sewage is not spilled outside the system causing potential health concerns for humans and wildlife.

Procedures once an overflow or spill has occurred are included in GPWUD-SOP-01: Sanitary Sewer Overflow (SSO) Response.

C. COLLECTION SYSTEM MANAGEMENT:

Management of the Greenfield wastewater system will be a proactive endeavor so that we are able to meet the goals of this plan as well as to provide our customers with fiscally, technically and environmentally sound operations of the system. An overview of our system along with our management approach is contained in the following sections.

D. SYSTEM PROFILE

The Greenfield sanitary sewer system consists of gravity and forced main components serving the city. The system is not interconnected with other sanitary collection systems. Maps of the system are maintained by the utility at 599 El Camino Real, Greenfield, California.

The system profile is as follows:

Total Population Served	
Size of Service Area (acres/miles)	
Treatment Plant Name(s) and Description of Treatment Process	
Plant Design Capacity	
Average Daily Wastewater Flow @ the treatment plant	
Miles of Gravity Sewers	
Miles of Force Mains	
Type of Pipe eg; PVC, vitrified clay, cast iron, etc	
Age of System (collection system & treatment plant)	
Number of Pump Stations	
Number of Pump Station w/Backup Power	
Number of Employees	
Number of Manholes	

E. Procedure-

a) Mapping

Detailed maps of the collection system identifying sanitary sewer mains, manholes, and lift stations are on file at the Public Works Department located at 599 El Camino Real. Maps of the system in convenient portable book sets have been issued to Streets Division and Utilities Division personnel. As a minimum, the Streets Division Superintendent and the On-Call person shall carry one copy of these maps in their vehicle. These maps will be divided into three sections that will include: water distribution lines. sewer collection & transmission lines and stormwater collection lines. The City of Greenfield Utilities System Operators will use these maps during the course of their work duties as needed..

b) Inspection-

- i. Periodic Inspections with type of facility, frequency and sample forms.

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c) Pump Stations Inspections:

- i.** Daily (Operator): Wastewater pump station sites and electrical controls are inspected daily by Utilities system operators.
- ii.** Weekly (Operator): Wet wells, hatch covers, float switches and pumps are visually inspected.
- iii.** Quarterly Visual Lift Station Inspection Log
- iv.** Semi-Annual (Electrical Contractor): Detailed inspection of the electrical motor control systems at the wastewater pump stations is performed semi-annually by a contracted equipment manufacturer Pump Stations Description: The wastewater pump stations are equipment with duplex pump controls that alternate the operation of two pumps at each station, providing backup and high flow capabilities. Daily data records such as run hours and pump cycle also alert system operators to real or potential problems that could lead to pump repair or replacement. Wet well high level and low-level alarms also alert operators to equipment problems.
- v.** Wastewater system operators will be trained to use voltage meters, amperage meters and ohmmeters to investigate and or troubleshoot controls and pump problems. The results of investigative troubleshooting determine when a component or piece of equipment will be repaired or replaced.

d) Gravity Sewer Lines Inspections:

- i.** Weekly Manhole Inspection Log
 - 1. City of Greenfield inspected hot spots for flow on a weekly basis.
 - 2. Weekly Visual Lift Station Inspection Log
- ii.** Quarterly: manholes, manhole rings, lids, joint grouting, and pipe conditions are inspected and documented.
- iii.** Inspection Checklist for Sewer Manhole/Mainline;
 - 1. This document contains a seven-step inspection procedure
 - 2. The report forms are reviewed and filed by the PW Administrative Assistance for future repair list if required.

Gravity Sewer Lines Description: The City has approximately 70 miles of underground lines ranging in size from 6” to 21” diameter. These gravity sewer lines are made of asbestos cement pipe (AC), clay pipe and poly vinyl chloride pipe (pvc). Manholes are generally placed over the gravity sewer line at intervals of 300 feet. Manholes provide access to all gravity sewer lines for all inspections and maintenance operations.

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- e) **Provisions for repairing and replacing old, worn equipment.**
- f) **Routine Maintenance** Automated Operations-At this time, wastewater pump and lift stations are inspected and adjusted manually on a daily basis. The pumps are automated in that they turn on and off based on wastewater levels detected in the wet wells. A new Supervisory Control and Data Acquisition (SCADA) system design is being installed. It is anticipated that the final phase of the SCADA system will be installed in the late fall of 2020. This system will allow remote monitoring and remote adjustment of the pump and lift stations.
- g) **Active Management**
The Public Works Operations Manager is responsible for actively managing the sewer Laterals, mains, wastewater pump/lift stations and their associated force mains. The Operations Manager will assign specific schedules and assign work to ensure the proper and continuous operation of pump and lift stations. Often repairs and replacement of sewer system facilities may require the combined effort of both Public Works Divisions.

F. Capacity and Conveyance

The City is currently completing a capacity study of the collection system. Once the study is complete, a capital plan to ensure adequate capacity throughout the collection system will be developed. The City of Greenfield “Wastewater Collections Masterplan” draft will be completed in fall 2020. Once approved, it will become the basis for a program of projects and Capital Improvement Plan to ensure that system capacity keeps pace with new development.

G. Avoiding Sanitary Sewer Overflows (SSOs)

- a) Procedures to minimize an SSO are contained in Sanitary Sewer Overflow Procedure, GPWUD-SOP-01.
- b) While total elimination of SSO’s is not practicable, the maintenance and/or replacement of specific systems and lines described in the paragraphs above are intended to prevent most SSO’s.

Weekly Manhole Inspection Log

This inspection record must be completed each week for all Hot Spots. Described any corrective actions taken or need further attention. Provide further description area.

Note:

Required Personal Protection Equipment:

- | | |
|---|-------------------------|
| 1. Gloves (Work Gloves & Rubber Gloves) | 2. Eye Protection |
| 3. Safety Work Boots | 4. High Visibility Vest |

Required Equipment:

- | | |
|---------------------------|-----------------------|
| 1. Minimum 5 Safety Cones | 2. Manhole Cover Hook |
|---------------------------|-----------------------|

Time	Manhole I.D. #	Manhole Location	Visual inspection				Comments
			Clear	Debris	Roots	other	
		Walnut Avenue & 10 th Street					
		ECR & Reed Way					
		ECR & in front of Mee Clinic					
		9 th Street & Apple Ave.					
		Hutchinson Ave. & Apple Av.					
		307 Larson Lane					
		11 th Street & Palm Avenue					
		10 th Street Palm Avenue					
		9 th Street & Palm Avenue					
		9 th Street Alley & ECR					
		ECR & 8 th Street (Alley)					
		8 th Street & Palm Avenue					
		7 th Street & Palm Avenue					
		6 th Street & Palm Avenue					

Time	Manhole I.D. #	Manhole Location	Visual Inspection				Comments
			Clear	Debris	Roots	other	
		5th Street & Palm Avenue					
		412 Calaveras Way					
		5th Street & Maple Avenue					
		6th Street & Maple Avenue					
		7th Street & Maple Avenue					
		8th Street & Maple Avenue					
		8th Street Alley & ECR					
		ECR & 9th Street (Alley)					
		9 th Street & Maple Avenue					
		10 th Street & Maple Avenue					
		11 th Street & Maple Avenue					
		341 Maple Avenue					
		354 Oak Avenue					
		Oak Avenue & 3 rd Street					

Questions or comments:

Inspection By: _____

Date: _____

OFFICAL USE ONLY		
REVIEW BY	DATE	File I.D No.

Weekly Visual Lift Station Inspection Log

This inspection record must be completed each week for all sanitary lift stations. Described any corrective actions taken in the comment box and on the station Green Logbook. Complete a Lift Station Work Order if further attention is required.

Note:

Required Personal Protection Equipment:

- 1. Gloves (Work Gloves & Rubber Gloves)
- 2. Eye Protection
- 3. Safety Work Boots
- 4. High Visibility Vest

Required Equipment:

- 1. Minimum 5 Safety Cones
- 2. Manhole Cover Hook

Pump Station Name: _____ Operator: _____ Date: _____

Wet Well Conditions (1-3)

- (1) Clean (no debris or grease)
- (2) Semi Clean (some debris or grease)
- (3) Requires cleaning (Scheduled for following week)

Time	Station	Wet well level (ft.)	Pump #1 (hrs.)	Pump #2 (hrs.)	Wet Well Condition	Generator hours
	Los Ositos LS					
	Tyler LS					
	Nino LS					
	Vineyard LS					
	Reed LS					
	Cyprus LS					

Inspection By: _____ Date: _____

OFFICAL USE ONLY		
REVIEW BY	DATE	File I.D No.

Quarterly Visual Lift Station Inspection Log

This inspection record must be completed each week for all sanitary lift stations. Describe any corrective actions taken in the comment box and on the station Green Logbook. Complete a Lift Station Work Order if further attention is required.

Pump Station Name: _____ Operator: _____ Date: _____

- (A) Operational in Good condition
- (B) Operational in Poor condition, failure likely, schedule repairs or maintenance.
- (C) Non-Operational, in need of prompt repair or replacement.
- (D) In need of weed abatement, grease removal, debris removal or cleaning

Pump Station Component	Check one See description above				Provide Additional Information if needed
	A	B	C	D	
Fences, gates, locks					
Panel Enclosures & Hatch Covers					
Pump Dry Well					
Wet Wells					
Check Valves & Gate Valves					
Alarm & Panel Lights					
Dry well Sump pump					
Facility lights					
SCADA					
PLC					
Landscape area					

I, _____ certify that I have reviewed and responded as needed according to the information provided in this report.

OFFICIAL USE ONLY		
REVIEW BY	DATE	LS I.D. Number

Attachment A – Sanitary Sewer Incident Report

City of Greenfield	Sanitary sewer Response Plan	SSIR-01
SANITARY SEWER INCIDENT REPORT		

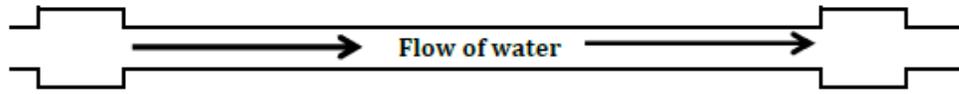
This Report is (CHECK ONE) Preliminary Final Revised Final

A. SPILL LOCATION
Spill location Street and Number: _____ Street Flow Direction (N,W,S,or E): _____ Nearest Cross Street: _____ Spill Location Description: _____ Location #2 (Street Name and Number): _____ Location #3 (Street Name and Number): _____
B. SPILL OCCURING TIME
SSO Report to (Who received call): _____ SSO Reported by (Who Called): _____ Estimated overflow began: _____ Time Agency Notified (time): _____ Operator arrival time: _____ Estimated spill end time & Date: _____ Weather conditions prior 72 hrs: () Sunny () Cloudy () measurable rain () Rain for several days
C. SPILL DISCRITION
Spill Appearance point: () Building or Structure () Pump Station () Manhole () Clean-out () Other sewer system structure () Other Did spill reach a gravity storm drain: () Yes () No If spill reached a gravity storm drain, was it fully captured and returned to Sanitary Sewer? () Yes () No If the spill was NOT fully capture and returned to sanitary sewer, does gravity storm water discharge to dedicated ground water percolation pond. () Yes () No Was spill from a private lateral? () Yes () No Final spill destination: () Building or Structure () Street/Curb Gutter () Storm drain () Other paved surface () Other unpaved surface () Other Estimated volume (in Gallons); _____ Method calculated volume: _____ Estimated volume of SSO recovered (gal): _____ were photos taken of spill: () Yes () No
D. CAUSE OF SPILL-PLEASE CHECK "PRIMARY" CAUSE OF SSO
SSO cause (check "primary" cause) () Debris/blockage () Grease () Roots () Operator error () Pump station failure () Electrical power failure () Vandalism () Other (specify)

Attachment A – Sanitary Sewer Incident Report

E. SPILL RESPONSE		
Spill response activities (check all that apply):		
<input type="checkbox"/> Clean up	<input type="checkbox"/> Restore flow	<input type="checkbox"/> Contained all/portion of spill
<input type="checkbox"/> Returned all / portion of spill to sanitary sewer	<input type="checkbox"/> Other (specify)	
Was any debris removed from location? (toilet paper, etc) <input type="checkbox"/> Yes <input type="checkbox"/> No		
Picture taken of cleanup activities. <input type="checkbox"/> Yes <input type="checkbox"/> No		
Restoration of effected area completed (Date and Time): _____		
Time &Date Reported to OES (Office of Emergency Services): _____ CAL-EMA # _____		
DRAWING OF SPILL: (street location)		
		
Spill Volume Estimated by:	Report Completed by:	Report Completed by (time & date):
Official Use only		
Spill ID #	Report Verified By:	

Attachment A – Line Cleaning Work Order

	<p>City of Greenfield Department of Public works Utilities Division 920 Walnut Avenue Greenfield, Ca (831)674-2635 / FAX (831)674-3259</p>	<p>Collection System O & M GPWUD -SOP-05 Revised October-2020</p>																									
<h2 style="margin: 0;">Line Cleaning Work Order</h2>																											
<p>Work Order Date: _____ Work Order Date: _____ Crew Members: _____ Crew Arrival time: _____</p>																											
<p>Type of Maintenance:</p> <p>Sanitary Sewer Manholes <input type="checkbox"/> Storm Drain catch basins <input type="checkbox"/> Other <input type="checkbox"/></p>																											
<p>Reason for Maintenance:</p> <p>Preventive Maintenance <input type="checkbox"/> Service call-out <input type="checkbox"/> Other <input type="checkbox"/></p>																											
<p>Location Notes: _____ _____ _____</p>																											
																											
<p>_____ <small>(Start Location Address)</small> <small>(End Location Address)</small></p>																											
<p>Cleaning Results: (Circle Application Result(s))</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th style="background-color: #333; color: white;">Type of Material</th> <th style="background-color: #333; color: white;">Clear <small>(no materials)</small></th> <th style="background-color: #333; color: white;">Light</th> <th style="background-color: #333; color: white;">Moderate</th> <th style="background-color: #333; color: white;">Heavy</th> </tr> </thead> <tbody> <tr> <td>Debris (sand, grit, rock)</td> <td>DL</td> <td>DL</td> <td>DM</td> <td>DH</td> </tr> <tr> <td>Grease</td> <td>GL</td> <td>GL</td> <td>GM</td> <td>GM</td> </tr> <tr> <td>Roots</td> <td>RL</td> <td>RL</td> <td>RM</td> <td>RM</td> </tr> <tr> <td>Other</td> <td>OL</td> <td>OL</td> <td>OM</td> <td>OM</td> </tr> </tbody> </table>			Type of Material	Clear <small>(no materials)</small>	Light	Moderate	Heavy	Debris (sand, grit, rock)	DL	DL	DM	DH	Grease	GL	GL	GM	GM	Roots	RL	RL	RM	RM	Other	OL	OL	OM	OM
Type of Material	Clear <small>(no materials)</small>	Light	Moderate	Heavy																							
Debris (sand, grit, rock)	DL	DL	DM	DH																							
Grease	GL	GL	GM	GM																							
Roots	RL	RL	RM	RM																							
Other	OL	OL	OM	OM																							
<p>Recommended Action:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">Cleaning Frequency _____ Months</td> <td style="width: 50%;">Video inspection?: yes () No ()</td> </tr> <tr> <td>Repairs?: Yes () NO ()</td> <td>Manhole inspection?: yes () No ()</td> </tr> <tr> <td>Root Control?: Yes () NO ()</td> <td></td> </tr> </table>			Cleaning Frequency _____ Months	Video inspection?: yes () No ()	Repairs?: Yes () NO ()	Manhole inspection?: yes () No ()	Root Control?: Yes () NO ()																				
Cleaning Frequency _____ Months	Video inspection?: yes () No ()																										
Repairs?: Yes () NO ()	Manhole inspection?: yes () No ()																										
Root Control?: Yes () NO ()																											
<p>COMPLETED BY: _____ SIGNATURE: _____</p>																											
<p>Office review by: _____ Date: _____</p>																											

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Attachment B – Inspection Checklist for Sewer Manhole/Mainline

Manhole / Mainline/ Lateral Inspection Procedure:

1. Perform a visual observation of the manhole, check for infiltration, root intrusion, debris on apron, debris in the troughs, grease build up, and cracks in the walls. Record all deficiencies, prepare Service Order Request and repair.
2. Inspect the manhole cover, and frame ring. Check to see if it at the proper elevation. Check for wear, fit, and proper type. Record all deficiencies, prepare Service Order Request and repair.
3. Inspect the grout joints and joint between the cone/grade rings and frame ring. Check for offset, steps, corrosion. Record all deficiencies, prepare Service Order Request and repair.
4. Inspect the inside drop structure (if applicable) for proper installation and function. Record all deficiencies, prepare Service Order Request and repair.
5. Look for any turbulence in the wastewater flow, signs inflow and/or infiltration, and listen for noises that may indicate such.
6. While performing routine high-pressure water cleaning of the mainlines, check for proper flows, types and amount of debris removed, and possible stoppages.
7. Dye testing and smoke testing will be performed to check sources of entry, proof of connections, and location of illegal connections, broken sewers and lost manholes.

Attachment B – Manhole/Mainline Inspection Form

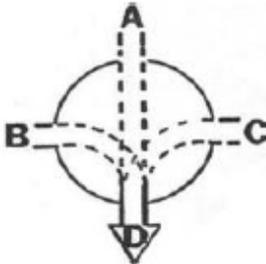
	<p>City of Greenfield</p> <p>Department of Public works Utilities Division</p> <p>920 Walnut Avenue Greenfield, Ca</p> <p>(831)674-2635 / FAX (831)674-3259</p>	<p>COLLECTION SYSTEM O & M</p> <p>GPWUD -SOP-05</p> <p>Sept. 2020</p>
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MANHOLE INSPECTION FORM

INSPECTION DATE: <input type="text"/> INSPECTOR: <input type="text"/> STREET NAME: <input type="text"/> NEAREST ADDRESS # <input type="text"/> MANHOLE DEPTH: <input type="text"/>	MANHOLE ID NUMBER: <input type="text"/> OVERALL RATING (1 TO 5) <input type="text"/> (1=NEW...5 FAILING) INFLOW RATE <input type="text"/> (0=NONE...5 OVERFLOW)
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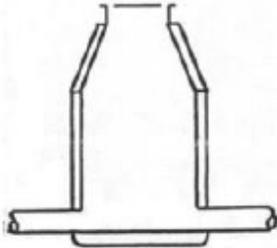
MANHOLE DETAILS					
Location	Material	MH Cover Size	MH Barrel Size	Direction Effluent:	
Roadway	Brick	22"	48"	(N, NE, E, SE, S, SW, W, NW) <input type="checkbox"/>	
Gutter	Block	24"	60"		
Paved Alley	Concrete	30"	other (below)	# of Influent: <input type="text"/>	
Unpaved Alley	Lined	36"			
Easement	Other	Other (describe)			
Other (describe)					

CONDITIONS					
Cover	Rim & Frame	Cone & Riser	Barrel	Rungs	
Serviceable	Serviceable	Serviceable	Serviceable	Serviceable	
Loose	Loose	Cracked/Broken	Cracked/Broken	Cracked/Broken	
Below Grade	Displaced	Corroded	Corroded	Corroded	
Damaged	Missing Grout	Misaligned	Misaligned	Misaligned	
Sealed	Raise	Infiltration	Infiltration	Infiltration	
Holes (# of holes)	Lower	Roots at Joints	Roots at Joints	Roots at Joints	



PIPE SIZE

A- _____ C- _____
 B- _____ D- _____

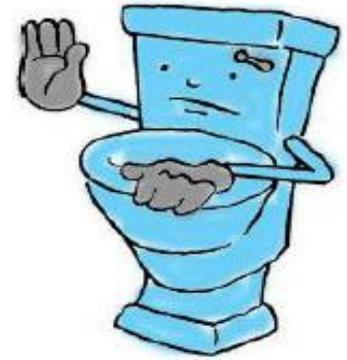


MAJOR DEFECTS ABOVE

1) _____
 2) _____
 3) _____

Don't Flush Trouble

These items belong in the trash!



**Disposable diapers
& baby wipes**



Condoms



Female products



Facial Wipes



Cigarette Butts



Grease /Oils



Hair



The label might say "flushable", but disposable wipes and other products are clogging our sewer lines and damaging pumps and other equipment.

Not only are these problems expensive to fix, they, can also cause raw sewage overflows into homes, business and local storm catch basins. So, think trash, not toilets!

*Use the trash
can not the
toilet!*

City of Greenfield
Public Works Department
Wastewater Division
(831)674-2635

No tire problemas al inodoro!

Estos elementos pertenecen a la basura!



Panales desechables y toallitas húmedas para bebé



Preservativos (condones)



Productos femeninos



Toallitas faciales



Las colillas de cigarrillos



Grasa y aceites



Cabello

La etiqueta puede decir que pueden tirarse al inodoro, pero las toallitas desechables y otros productos están tapando nuestras tuberías de alcantarillado y dañando las bombas y otro equipo.

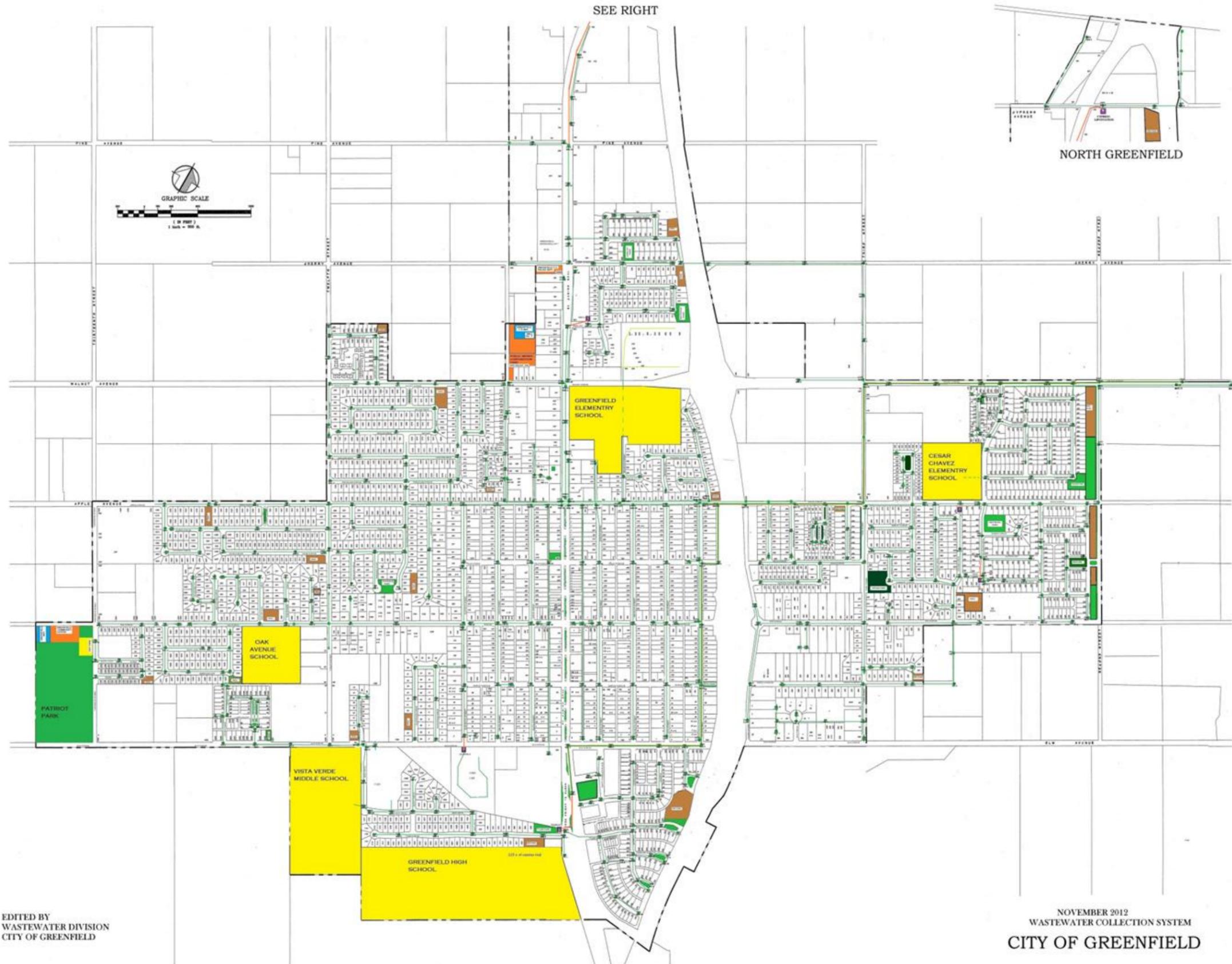
No sólo estos problemas son costosos de corregir, ya que ellos también pueden causar desbordamientos de aguas residuales crudas a los hogares, negocios y tormentas locales cuencas de captura. Por lo tanto, creo que la basura, no los baños!

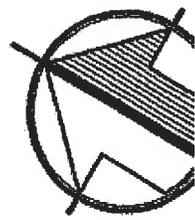
Utilice el bote de la basura NO el inodoro!



City of Greenfield
Community Service Department
Wastewater Division
(831)674-2635

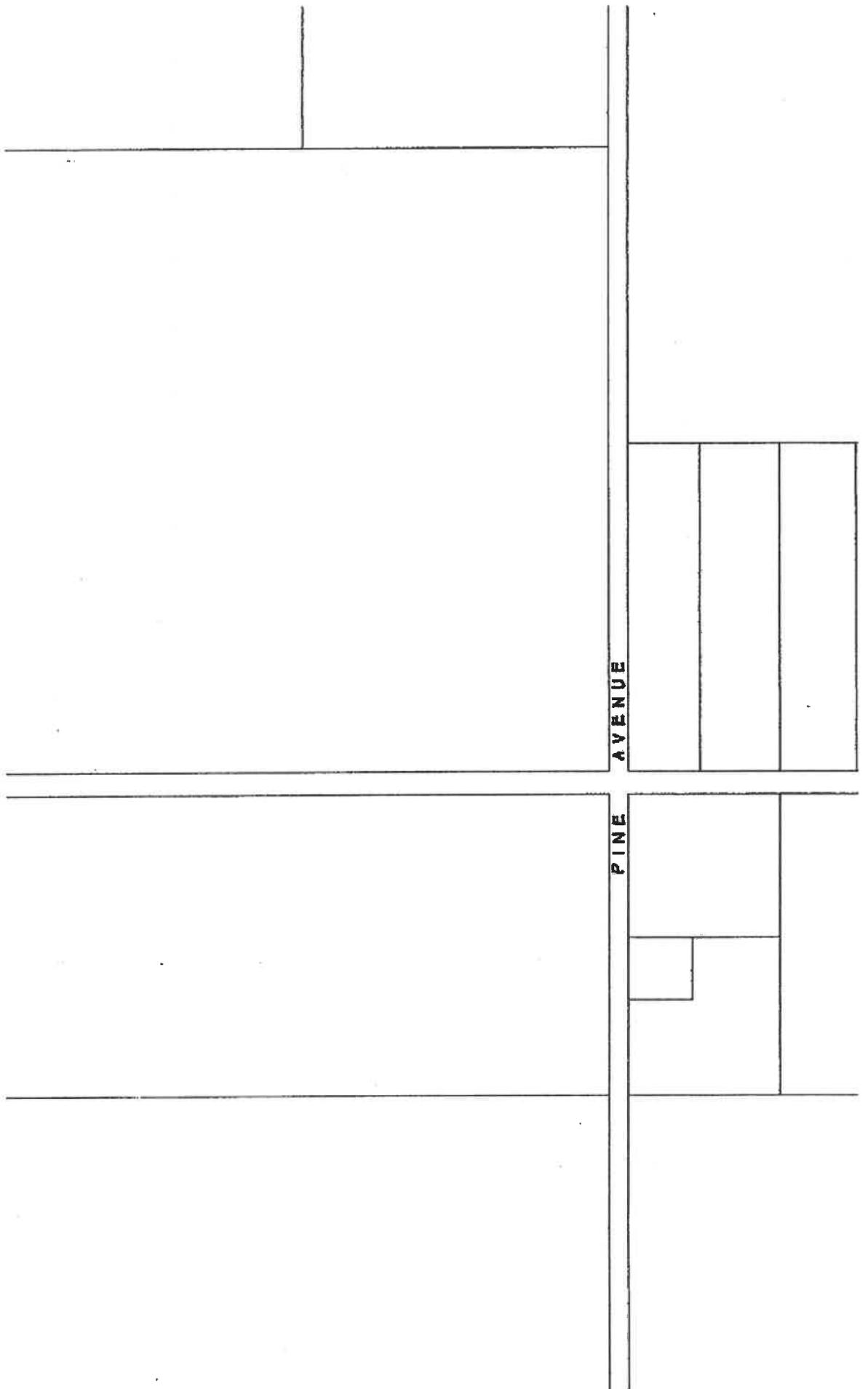
Map A-1 . Greenfield Wastewater Collection System Map





AVENUE

PINE



SEE RIGHT

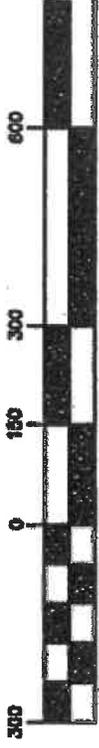




NORTH GREENFIELD



GRAPHIC SCALE



(IN FEET)

1 inch = 300 ft.

THIRTIETH STREET

AVENUE

WALNUT

SECOND STREET

CHERRY AVENUE

CHERRY AVENUE

COMMUNITY AVENUE

155

155

155

155

LOT

LOT

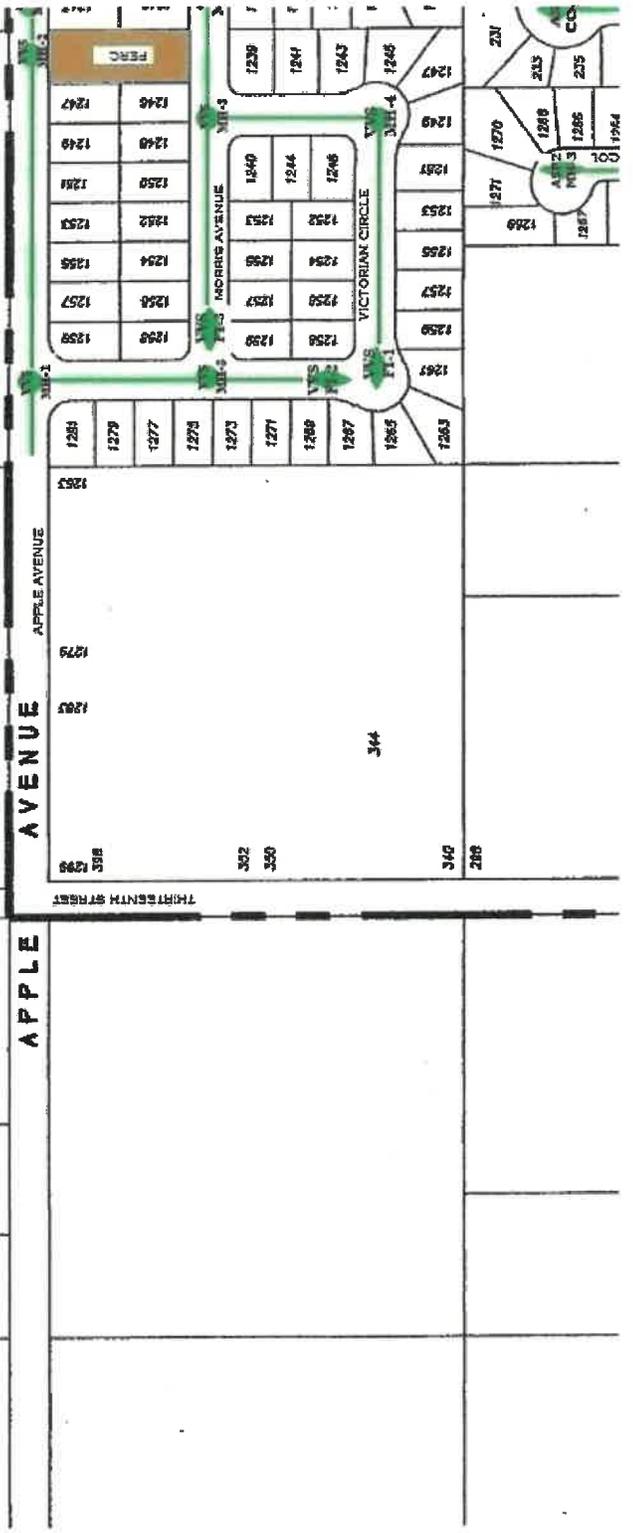
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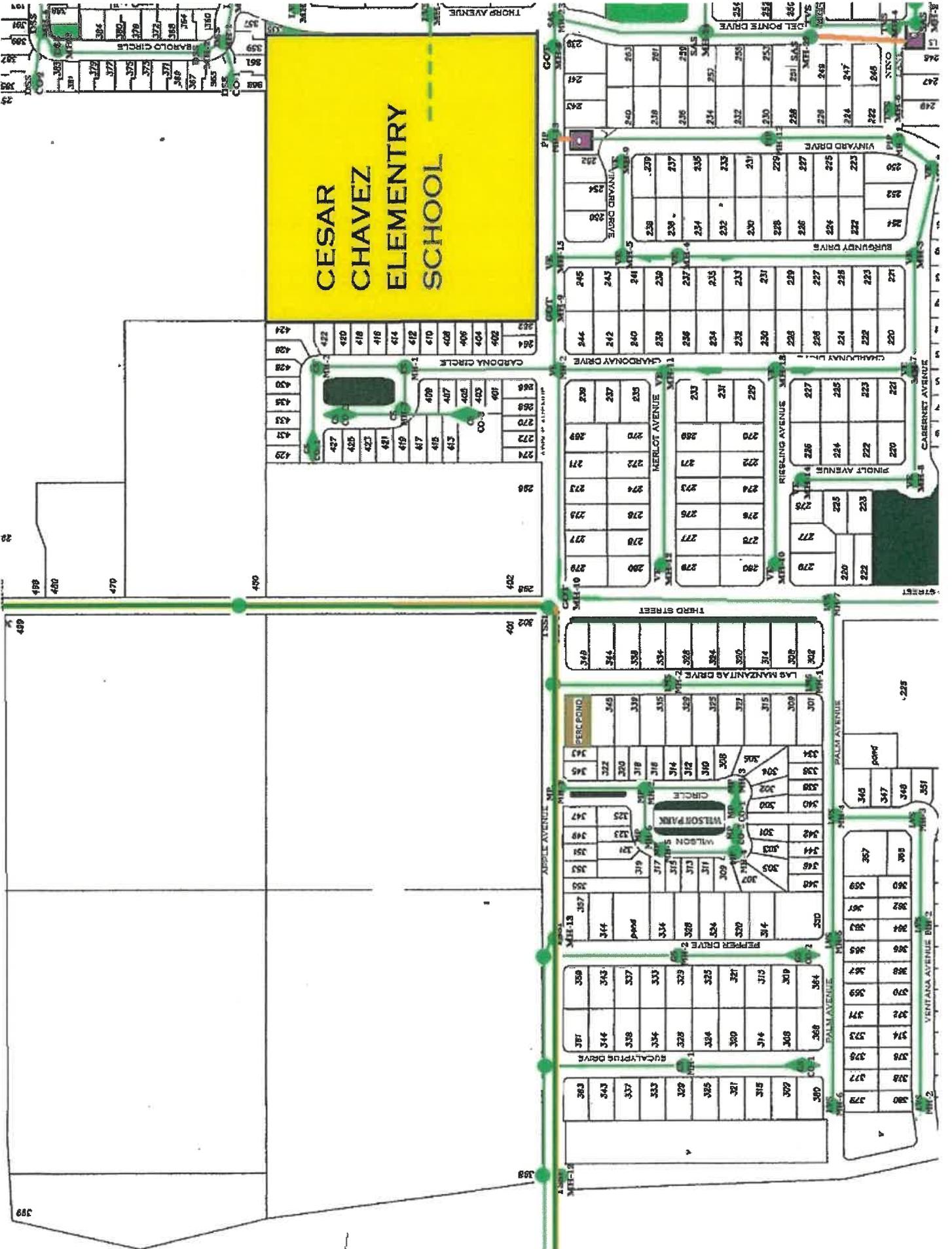




GREENFIELD ELEMENTARY SCHOOL



CESAR CHAVEZ ELEMENTRY SCHOOL





**VISTA VERDE
MIDDLE SCHOOL**

**OAK AVENUE
SCHOOL**

10:
1-2

LOS SITOS

ELM AVENUE

ELMWOOD DRIVE

ELMWOOD DRIVE

PERC

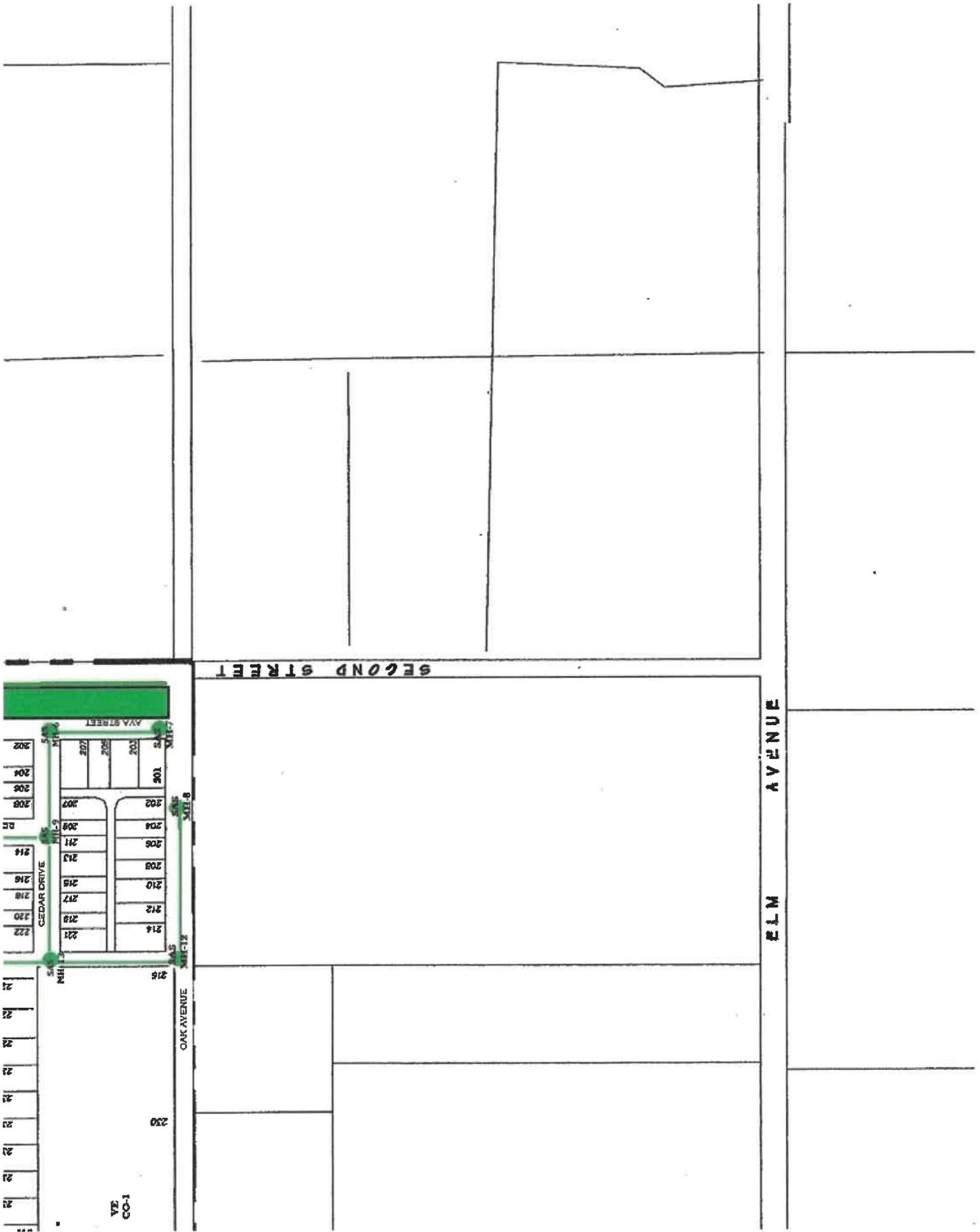
DON VICENTE DRIVE

HEIDI DRIVE

VAT







SECOND STREET

ELM AVENUE



202
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OAK AVENUE

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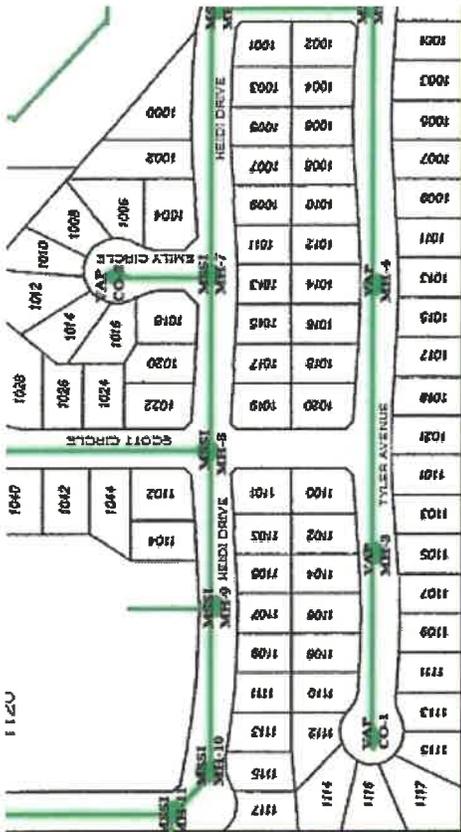
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GREENFIELD HIGH SCHOOL

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WASTEWATER DIVISION
CITY OF GREENFIELD**

Greenfield Wastwater Collection Manhole Inventory

TOTAL (MH,CO)	MH ID's	ESTATES	KIND	ST. NO.	ADDRESS LOCATION	SIZE	MAKE	SLOPE	DIST. FT.	FLOW	INVERT IN	ADDRESS LOCATION (MH#)	YR.
CAP-01	VAP MH-1	VISTA AL PARAISO	CAP	1149	ELM AVENUE	8	PVBC	.002	40	>		VAP MH-1	Sep-94
CAP-02	VAP MH-1	VISTA AL PARAISO	CAP	1150	ELM AVENUE	8	PVBC	0.004	30	>		VAP MH-1	Sep-94
CO-01	PIP CO-4	PASSEK INDUSTRIES	CO	26	ELM CIRLCE	6	VCP	0.005	110	>		PIP MH-4	Feb-79
CO-02	GOT FI-02	OLD TOWN	CO	3	FIFTH STREET	6	CVP		600	>		101 FIFTH / MAPLE	1953
CO-03	GOT FI-05	OLD TOWN	CO	510	OAK AVENUE	6	VCP		102	>	270.58	FIFTH / OAK (19)	1953
CO-04	GOT FI-06	OLD TOWN	CO	1	SIXTH STREET	6	CVP		590	>		104 SIXTH/MAPLE	1953
CO-05	GOT FI-07	OLD TOWN	CO	610	OAK AVENUE	6	VCP		108	>	223.19	SIXTH/OAK (23)	1953
CO-06	GOT FI-08	OLD TOWN	CO	3	SEVENTH STREET	6	CVP		540	>		45 SEVENTH / MAPLE	1953
CO-07	GOT FI-10	OLD TOWN	CO	2	ECR ALLEY / EIGHTH	6	CVP		560	>		48 ECR ALLEY / EIGHTH	1953
CO-08	GOT FI-12	OLD TOWN	CO	803	OAK AVENUE	6	VCP		115	>	278	ECR /EIGHT ALLEY (35)	1953
CO-09	GOT FI-14	OLD TOWN	CO	820	OAK AVENUE	6	VCP		102	>	278	ECR /EIGHT ALLEY (35)	1953
CO-10	GOT FI-16	OLD TOWN	CO	717	OAK AVENUE	6	VCP		255	>	276.5	SEVENTH/OAK (27)	1953
CO-100	CS CO-2	CAMBRIA	CO	427	CARDONA CIRCLE	8	PVC	0.004	180	>		CS MH-3	Jun-07
CO-100	VMS-CO-01	VINTAGE MEADOWS SUB	CO	20	THIRTEEN STREET	6	PVC	0.0100	250	>	297.43	VMS-MH-02	Apr-20
CO-101	CS CO-3	CAMBRIA	CO	411	CARDONA CIRCLE	6	PVC	0.01	109	>		CS MH-3	Jun-07
CO-101	VMS-CO-02	VINTAGE MEADOWS SUB	CO	40	PRIMROSE	6	PVC	0.0200	80	>	292.59	VMS-MH-03	Apr-20
CO-102	SS CO-1	SANDOVAL	CO	35	DON VICENTE DRIVE	8	PVC	0.004	113	>		SSMH-1	Aug-08
CO-102	VMS-CO-04	VINTAGE MEADOWS SUB	CO	1272	SYCAMORE STREET	6	PVC	0.0710	76	>	289.95	VMS-MH-09	Apr-20
CO-103	VG FI-1	VINEYARD GREEN	CO	1277	OAK AVENUE	8	PVC	0.5	110	>		VG MH-2	Feb-10
CO-103	VMS-CO-05	VINTAGE MEADOWS SUB	CO	45	EVERGREEN WAY	6	PVC	0.0100	177	>	291.41	VMS-MH-06	Apr-20
CO-104	VMS-CO-06	VINTAGE MEADOWS SUB	CO	47	EVERGREEN WAY	6	PVC	0.0100	100	>	292.79	VMS-MH-11	Apr-20
CO-104	GOT FI-13	OLD TOWN	CO	918	MAPLE AVE.	6	VCP		115	>		GOT MH-54	
CO-105	VMS-CO-07	VINTAGE MEADOWS SUB	CO	31	REDWOOD WAY	6	PVC	0.0100	177	>	290.23	VMS-MH-07	Apr-20
CO-105	NSSI-CO-1	SIP	CO	449	NINTH STREET	6	PVC	0.0083	477	>		NTH-MH-3	
CO-106	VMS-CO-08	VINTAGE MEADOWS SUB	CO	33	REDWOOD WAY	6	PVC	0.0100	100	>	293.3	VMS-MH-10	Apr-20
CO-106	FUR-CO-01	FREEWAY UTILITY RE.	CO	220	FOURTH STREET	6	VCP	0.002	350	>		FUR-MH-01	
CO-107	OTS MH-2	OAK TERRANCE	CO		LOT 4	6	PVC	0.0035	247	>	266.67	OTS MH-1	
CO-108	AM CO-1	ACACIA MANOR	CO	706	ACACIA COURT	8	PVC	.04	205	>	272.6	AM MH-1	
CO-109	OTS CO-1	OAK TERRANCE	CO		LOT 5	4	PVC	0.002	45	>		OTS MH-2	
CO-11	GOT FI-18	OLD TOWN	CO	3	NINTH STREET	6	CVP		600	>		103 NINTH	1953
CO-110	GOT-CO-03		CO	2	FOURTH STREET	6	VCP	0.0026	310	>		FUR-MH-03	
CO-12	GOT FI-19	OLD TOWN	CO	5	TENTH STREET	6	CVP		582	>	283.5	101 TENTH (54)	1953
CO-13	GOT FI-20	OLD TOWN	CO	1017	OAK AVENUE	6	VCP		250	>	281	TENTH / OAK (53)	1953
CO-14	GOT FI-23	OLD TOWN	CO	224	TWELVETH STREET	6	VCP			>		146 TWELVE STREET (60)	1953
CO-15	GOT FI-24	OLD TOWN	CO	850	OAK AVENUE	6	VCP		120	>	281.5	ECR/NINETH ALLEY (45)	1953

Greenfield Wastwater Collection Manhole Inventory

CO-16	GOT FT-25	OLD TOWN	CO	920	OAK AVENUE	6	VCP		300	>	283	NINETH / 802 OAK (49)	1953
CO-17	GOT FT-26	OLD TOWN	CO	118	TWELVETH STREET	6	VCP		280	>	292.19	146 TWELVE STREET (60)	1953
CO-18	GOT MH-		CO	380	OAK AVENUE	6	VCP			>		254 OAK AVENUE	1953
CO-19	GS-CO-1	GURRERO	CO	309	EUCALIPTUS DRIVE	8	VCP	0.25	360	>	267.62	GS-MH-1	Oct-71
CO-20	GS-CO-2	GURRERO	CO	309	PEPPER DRIVE	8	VCP	0.25	360	>	266.94	GS-MH-2	Oct-71
CO-21	ASP CO-2	ARROYO SECO	CO	232	SAN ANTONIO	6	VCP	0.4	232	>		ASP MH-3	Jan-78
CO-22	SEL-CO-1	S. E. I.	CO	8	ELEVENTH STREET	6	VCP			>		3 ELEVENTH	Apr-78
CO-23	AMA CO-1	APPLE MANOR	CO	444	CALAVERAS WAY	6	VCP	0.005	280	>		AMA MH-4	May-78
CO-24	AT CO-1	APPLE TREES	CO	620	MADERA AVENUE	6	VCP	0.005		>		AT MH-1	May-78
CO-25	AMA CO-2	APPLE MANOR	CO	590	MARIPOSA COURT	6	VCP	0.005	280	>		AMA MH-2	May-78
CO-26	AT CO-2	APPLE TREES	CO	408	TEHAMA WAY	6	VCP	0.005	390	>	271.44		May-78
CO-27	WS-CO-1	WOODFILL	CO	217	RENPRO PLACE	6	VCP	0.005	250	>		WS-MH-1	Nov-78
CO-28	PRS-CO-1	PIINI-ROSS SUB	CO	218	TOM ROGERS CIRCLE	6	VCP	0.005	260	>		PRS-MH-2	Nov-78
CO-29	PIP CO-2	PASSEK INDUSTRIES	CO	384	ELM AVENUE	6	VCP	0.005	115	>		PIP MH-3	Feb-79
CO-30	PIP CO-5	PASSEK INDUSTRIES	CO	320	ELM CIRCLE	8	VCP	0.007	100	>		PIP MH-6	Feb-79
CO-31	PIP CO-1	PASSEK INDUSTRIES	CO	370	MAPLE AVENUE	6	VCP	0.00563	565	>		PIP MH-2	Feb-79
CO-32	CC CO-1	CAILLAU SUB.	CO	1198	OAK AVENUE	6	VCP	0.005	210	>	290.2	CS MH-1	Mar-81
CO-33	ASP MH-3	ARROYO SECO 2	CO	1268	LOS PADRES COURT	8	VCP	0.4	226	>		ASP2 MH-2	Sep-82
CO-34	PVS-CO-2	PINNACLE VIEW	CO	476	CLIFTON COURT		VCP	0.43	115	>		PV2-MH-8	May-83
CO-35	PVS -CO-1	PINNACLE VIEW	CO	479	FRANSCIONI DRIVE			0.52	311	>		PV2- MH-10	May-83
CO-36	MS-CO-4	MEADOWS	CO	324	HUTCHISON DRIVE	8	PVC	0.0036	440	>		MS-MH-6	Dec-83
CO-37	MS-CO-4	MEADOWS	CO	358	HICKS AVENUE	6	PVC	0.005	129	>		MS-MH-8	Dec-83
CO-38	MS-CO-6	MEADOWS	CO	324	MEADOWS CIRCLE	6	PVC	0.005	360	>		MS-MH-8	Dec-83
CO-39	MS-CO-5	MEADOWS	CO	325	PARKSIDE COURT	6	PVC	0.005	435	>		MS-MH-7	Dec-83
CO-40	MS-CO-2	MEADOWS	CO	349	PASQUE AVENUE	6	PVC	0.005	500	>		MS-MH-5	Dec-83
CO-41	MS-CO-1	MEADOWS	CO	355	PASQUE AVENUE	6	PVC	0.007	280	>		MS-MH-2	Dec-83
CO-42	MS-CO-7	MEADOWS	CO	236	TWELVETH STREET	6	PVC	0.005	410	>		MS-MH-4	Dec-83
CO-43	PTH-CO-1	PRIMAVERA TOWN HOME	CO	411	PRIMAVERA COURT	6	PVC	0.04	80	>		PTH-MH-1	Feb-84
CO-44	PTH-CO-2	PRIMAVERA TOWN HOME	CO	425	PRIMAVERA COURT	6	PVC	0.0176	174	>		PTH-MH-1	Feb-84
CO-45	PTH-CO-3	PRIMAVERA TOWN HOME	CO	429	PRIMAVERA COURT	6	PVC	0.03	240	>		PTH-MH-2	Feb-84
CO-46	SCS-MH-	CREEKBRIDGE	CO	14	WALKER LANE	6	PVC			>		13 WALKER LANE	Feb-84
CO-47	SCS-MH-	CREEKBRIDGE	CO	17	WALKER LANE	6	PVC			>		13 WALKER LANE	Feb-84
CO-48	WRS1-CO-4	WOODRIDGE 1	CO	781	CHERRY AVENUE	8	PVC	0.002	550	>	271.22	WRS1-MH-13	Feb-84
CO-49	WRS1-CO-3	WOODRIDGE 1	CO	817	CHERRY AVENUE	8	PVC	0.003	385	>		WRS1-MH-13	Aug-84
CO-50	WRS1-CO-2	WOODRIDGE 1	CO	796	DART WAY	6	PVC	0.005	350	>		WRS1-MH-12	Aug-84
CO-51	WRS1-CO-1	WOODRIDGE 1	CO	806	DELON DRIVE	8	PVC	0.004	190	>		WRS1-MH-7	Aug-84
CO-52	FPRS CO-1	FIELDS-PASSEK	CO	222	LARSON LANE	6	PVC	0.004	434	>		TS-MH2	Sep-84

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CO-53	GE-CO-2	GAVILAN ESTATES	CO	410	HUTCHINSON DRIVE	6	PVC	.0050	125	>		GE-MH-9	Oct-88
CO-54	VE-CO-1	VINTAGE ESTATES	CO	252	CHABLIS CIRCLE	8	PVC	0.004	200	>		VE-MH-1	Dec-89
CO-55	VE-MH-14	VINTAGE ESTATES	CO	226	PINOT AVENUE	8	PVC	0.004	256	>		VE-MH-8	Dec-89
CO-56	OC-CO-1	OXFORD CT.	CO	1255	HICKS AVENUE	6	PVC	0.006	200	>		OC-MH-11	Dec-91
CO-57	PVS-CO-1	PALO VERDE	CO	280	PALO VERDE	6	PVC	0.5	114	>	257.2	PVS MH-1	Jun-93
CO-58	VAP - CO-2	VISTA AL PARAISO	CO	1012	EMILY CIRCLE	8	PVC	0.033	170	>		ESSI-MH-7	Sep-94
CO-59	VAP-CO-3	VISTA AL PARAISO	CO	1036	SCOTT CIRCLE	6	PVC	0.0185	330	>	270.26	ESSI-MH-8	Sep-94
CO-60	VAP -CO-1	VISTA AL PARAISO	CO	1116	TYLER AVENUE	6	PVC	0.0085	248	>		VAP-MH-3	Sep-94
CO-61	CAP -CO-2	CAMINO AL PARAISO	CO	1103	GAVILAN DRIVE	6	PVC	0.008	203	>		CAP -MH-6	Jun-96
CO-62	CAP -CO-3	CAMINO AL PARAISO	CO	1105	GAVILAN DRIVE	6	PVC	0.01	120	>		CAP -MH-5	Jun-96
CO-63	VVS-CO-3	VICTORIA VILLAGE	CO	1258	MORRIS AVENUE	8	PVC	0.0072	368	>		VVS MH-3	Jun-96
CO-64	CAP - CO-1	CAMINO AL PARAISO	CO	1108	PALOMA DRIVE	6	PVC	0.005	194	>		CAP-MH-11	Jun-96
CO-65	VVS-CO-1	VICTORIA VILLAGE	CO	1261	VICTORIA CIRCLE	6	PVC	0.005	375	>		VVS MH-4	Jun-96
CO-66	VVS -CO-2	VICTORIA VILLAGE	CO	1265	VICTORIA CIRCLE	8	PVC	0.006	275	>		1281 VICTORIA/APPLE	Jun-96
CO-67	GLS CO-1	GREENLEAF	CO	1227	GREENLEAF LOOP	8	PVC	0.035	302	>	294.18	GLS MH-6	Jun-97
CO-68	GLS CO-2	GREENLEAF	CO	1261	OAK AVENUE	8	PVC	2.5	182	>		GLS MH-12	Jun-97
CO-69		WOODRIDGE II	CO	784	CHERRY AVENUE	8	PVC	0.00285		>		CHERRY / SEVEN	Feb-02
CO-70		WOODRIDGE II	CO	819	CHERRY AVENUE	8	PVC	0.003		>		804 CHERRY / 7TH	Feb-02
CO-71		WOODRIDGE II	CO	786	ORCHARD STREET	8	PVC	0.01	50	>		WR2-MH-5	Feb-02
CO-72		WOODRIDGE II	CO	805	ORCHARD STREET	8	PVC	0.01	80	>		WR2-MH-4	Feb-02
CO-73	WR2-CO1	WOODRIDGE II	CO	810	ORCHARD STREET	8	PVC	0.01	80	>		WR2-MH-4	Feb-02
CO-74	LS-CO-1	LEXINGTON	CO	1226	AVINA AVENUE	8	PVC	0.01	217			LS-MH-5	Jul-03
CO-75	LS-CO-2	LEXINGTON	CO	1244	AVINA AVENUE	8	PVC	0.02	340			LS-MH-5	Jul-03
CO-76	LS-CO-3	LEXINGTON	CO	1251	CLARK COLONY AVE.	8	PVC	0.005	122			LS-MH-6	Jul-03
CO-77	LS-CO-5	LEXINGTON	CO	1250	ELM AVENUE	8	PVC	0.004	126			GLS-MH-5	Jul-03
CO-78	LS-CO-4	LEXINGTON	CO	42	GIANOLINI PARKWAY	8	PVC	0.004	268			LS-MH-3	Jul-03
CO-79	SCS-CO-01	CREEKBRIDGE	CO	315	MORENO STREET	6	PVC		116	>		309 MORENO STREET	Aug-03
CO-80	SCS-CO-02	CREEKBRIDGE	CO	316	MORENO STREET	6	PVC		157	>		309 MORENO STREET	Aug-03
CO-81	SCS-MH-01	CREEKBRIDGE	CO	633	ST CHRISTOPHER LANE	6	PVC		179	>		641 ST. CHRISTOPHER	Aug-03
CO-82	SCS-MH-21	CREEKBRIDGE	CO	15	ST. CHARLES PLACE	8	PVC		134	>		2 ST. CHARLES PLACE	Aug-03
CO-83	SCS-CO	CREEKBRIDGE	CO	712	TENEYUQUE AVENUE	6	PVC		158	>		301 ST MATHEWS STREET	Aug-03
CO-84	SCS-CO-04	CREEKBRIDGE	CO	634	VASQUEZ AVENUE	6	PVC		159	>		642 VASQUEZ AVE.	Aug-03
CO-85	OCS CO-1	OLIVE COURT	CO		LOT 4	6	PVC	0.01	100	>		OCS CO-1	Nov-03
CO-86	SAS CO-1	SECOND STREET	CO	227	BELLA STREET	8	PVC	0.004	107	>		SAS MH-11	Feb-04
CO-87	NTH -CO-1	NIETO TOWN HOMES	CO	424	NIETO DRIVE	6	PVC	0.0073	149	>		NTH MH-2	June-04
CO-88	WPS CO-1	WALNUT PLACE	CO	550	TWELAVETH STREET	6	PVC	0.0022	105	>		WPS MH-6	Sep-04
CO-89	SS-CO-1	SELF STORAGE	CO	775	EL CAMINO REAL	4	PVC	0.015	210	>		775 ECR / EL CAMINO REAL	3 Oct-04

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CO-90	LVS-CO-01	SEVILLE	CO	340	BARBERA WAY	8	PVC	0.004	391	>	LVS-MH-10	Apr-05
CO-91	LVS-MH-07	SEVILLE	CO	245	BIANCO WAY	8	PVC	0.004	390	>	LVS-MH-08	Apr-05
CO-92	LVS-CO-02	SEVILLE	CO	340	CHIANTI WAY	8	PVC	0.004	108	>	LVS-MH-08	Apr-05
CO-93	CDS-3	CASA DE SOL	CO	363	MUSCAT COURT	6	PVC	0.004	117	>	365 BAROLO CIRCLE	Apr-05
CO-94	DDS-CO-02	CASA DE SOL	CO	385	PORT LANE	6	PVC	0.004	146	>	386 THORP AVENUE	Apr-05
CO-95	LVS-CO-03	SEVILLE	CO	381	TAWNY PORT WAY	8	PVC	0.004	106	>	LVS-MH-09	Apr-05
CO-96	CDS-1	CASA DE SOL	CO	385	ZIN COURT	6	PVC	0.004	106	>	389 BAROLO	Apr-05
CO-97	MP CO-1	MARIPOSA PLACE	CO	300	WILSON CIRCLE	8	PVC	0.004	22	>	MS MH-3	Feb-06
CO-98	MP CO-2	MARIPOSA PLACE	CO	301	WILSON CIRCLE	8	PVC	0.004	22	>	MS MH-4	Feb-06
CO-99	CS CO-1	CAMBRIA	CO	429	CARDONA CIRCLE	8	PVC	0.0035	217	>	CS MH-2	Jun-07
FM-01	TSSI-MH-0	TYLER S.S.I	FM		TYLER LIFTSTATION	6	PVC	0.001	340	>	TSSI-MH-1	Dec-89
FM-02	SAS FM-02	SECOND STREET	FM	242	NINO LIFTSTATION	4	PVC	0.0027	240	>	SAS-MH-22	Feb-04
FM-03	SAS FM-01	SECOND STREET	FM	243	NINO LIFTSTATION	4	PVC	0.027	35	>	SAS-FM-2	Feb-04
FM-04	WRS1-LS	WOODRIDGE 1	FM		REED LIFSTATION	6	PVC	FM	268		WRS1-MH-4	Aug-84
FM-05		LOS OSITOS	FM	1083	LOS OSITOS LIFTSTATION		PVC	PRES.	100	>	3 ELEVENTH	
MH-001	GOT MH-13	OLD TOWN	MH	298	OAK AVENUE	6	VCP			>	THIRD / PALM	1953
MH-002	GOT MH-14	OLD TOWN	MH	254	OAK AVENUE	6	VCP		265.4	>	298 THIRD / OAK	1953
MH-003	GOT MH-17	OLD TOWN	MH	584	APPLE AVENUE	6	CVP			>		1953
MH-004	GOT MH-18	OLD TOWN	MH	247	FIFTH STREET	6	CVP		650	>	584 APPLE/FIFTH STREET	1953
MH-005	GOT MH-19	OLD TOWN	MH	148	FIFTH STREET	6	CVP		600	>	247 FIFTH / PALM	1953
MH-006	GOT MH-10	OLD TOWN	MH	279	THIRD STREET	12	VCP		261.81	>	VE-MH-16	1953
MH-007	GOT MH-20	OLD TOWN	MH	101	FIFTH STREET	6	CVP		610	>	148 FIFTH / OAK AVE.	1953
MH-008	GOT MH-21	OLD TOWN	MH	246	SIXTH STREET	6	CVP		600	>	345 SIXTH / APPLE	1953
MH-009	GOT MH-22	OLD TOWN	MH	147	SIXTH STREET	6	CVP		650	>	246 SIXTH / PALM	1953
MH-010	GOT MH-24	OLD TOWN	MH	104	SIXTH STREET	6	CVP		570	>	147 SIXTH / OAK	1953
MH-011	WRS1-MH-8	WOODRIDGE 1	MH	559	DELON DRIVE	8	PVC	0.002	413		WRS1-MH-6	Aug-84
MH-012	WRS1-MH-6	WOODRIDGE 1	MH	542	DELON DRIVE	10	PVC	0.002	135		WRS1-MH-5	Aug-84
MH-013	WRS1-MH-5	WOODRIDGE 1	MH	543	REED WAY	10	PVC	0.002	40		WRS1-LS	Aug-84
MH-014	WRS1-MH-7	WOODRIDGE 1	MH	530	DELON DRIVE	8	PVC	0.003	315		WRS1-MH-6	Aug-84
MH-015	WRS1-MH-4	WOODRIDGE 1	MH	547	EL CAMINO REAL	10	PVC	0.002	452	>	WRS1-MH-3	Aug-84
MH-016	WRS1-MH-3	WOODRIDGE 1	MH	502	EL CAMINO REAL	10	PVC	0.002	500	>	WRS1-MH-2	Aug-84
MH-017	WRS1-MH-2	WOODRIDGE 1	MH	452	EL CAMINO REAL	10	PVC	0.002	482	>	WRS1-MH-1	Aug-84
MH-018	WRS1-MH-1	WOODRIDGE 1	MH	402	EL CAMINO REAL	10	PVC	0.002	18	>	GOT-MH-61	Aug-84
MH-019	EWE MH-2	ELMWOOD	MH	41	ELMWOOD DRIVE	6	PVC	0.04	400	>	EWE MH-3	Aug-87
MH-020	EWE MH-3	ELMWOOD	MH	27	ELMWOOD DRIVE	6	PVC	0.04	250	>	EWE MH-6	Aug-87
MH-021	GOT MH-26	OLD TOWN	MH	245	SEVENTH STREET	6	CVP		600	>	345 SEVETH / APPLE	1953
MH-022	EWE MH-5	ELMWOOD	MH	14	ELMWOOD DRIVE	6	PVC	0.79	400	>	EWE MH-6	Aug-87

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MH-023	EWE MH-6	ELMWOOD	MH	26	ELMWOOD DRIVE	8	PVC	0.368	318	>	284.07	EWE MH-7	Aug-87
MH-024	EWE MH-4	ELMWOOD	MH	3	ELMWOOD DRIVE	6	PVC	0.58	388	>		EWE MH-5	Aug-87
MH-025	EWE MH-1	ELMWOOD	MH	49	ELMWOOD DRIVE	6	PVC	0.04	388	>		EWE MH-2	Aug-87
MH-026	GE-MH-6	GAVILAN ESTATES	MH	1080	CHALONE DRIVE	8	PVC	0.0024	290	>	285.68	GE-MH-5	Oct-88
MH-027	GE-MH-2	GAVILAN ESTATES	MH	1069	PINNACLES AVENUE	8	PVC	0.024	265	>	283.14	GE-MH-1	Oct-88
MH-028	GE-MH-4	GAVILAN ESTATES	MH	480	FRANSCIONI DRIVE	8	PVC	0.0024	269	>	284.32	GE- MH-3	Oct-88
MH-029	GE-MH-7	GAVILAN ESTATES	MH	1095	CHALONE DRIVE	8	PVC	0.0024	410	>	286.51	GE-MH-6	Oct-88
MH-030	GE-MH-8	GAVILAN ESTATES	MH	1105	CHALONE DRIVE	8	PVC	0.0061	454	>	289.62	GE-MH-7	Oct-88
MH-031	GE-CO-1	GAVILAN ESTATES	MH	404	HUTCHINSON DRIVE	6	PVC	0.0048	120	>		MS MH-1	Oct-88
MH-032	GOT MH-27	OLD TOWN	MH	145	SEVENTH STREET	6	CVP		600	>	245 SEVENTH / PALM		1953
MH-033	GE-MH-3	GAVILAN ESTATES	MH	472	FRANSCIONI DRIVE	8	PVC	.0050		>		GE-MH-2	Oct-88
MH-034	GE-MH-9	GAVILAN ESTATES	MH	1081	PINNACLES AVENUE	8	PVC	0.0048	453	>	285.31	GE-MH-2	Oct-88
MH-035	GE-MH-10	GAVILAN ESTATES	MH	1093	PINNACLES AVENUE	8	PVC	0.003	404	>	286.72	GE-MH-9	Oct-88
MH-036	GE- MH-11	GAVILAN ESTATES	MH	1105	PINNACLES AVENUE	6	PVC	0.0094	405	>	290.58	GE-MH-10	Oct-88
MH-037	LVS MH-5	LAS VENTANAS	MH	367	PALM AVENUE	6	PVC	0.005	253	>	264	LVS MH-4	Apr-89
MH-038	LVS MH-4	LAS VENTANAS	MH	357	PALM AVENUE	8	PVC	0.0024	412	>	262.23	LVS MH-7	Apr-89
MH-039	LVS MH-2	LAS VENTANAS	MH	367	VENTANA AVENUE	6	PVC	0.0024	353	>	263.91	LVS MH-3	Apr-89
MH-040	LVS MH-3	LAS VENTANAS	MH	353	VENTANA AVENUE	6	PVC	0.0024	211	>	262.86	LVS MH-4	Apr-89
MH-041	LVS MH-6	LAS VENTANAS	MH	379	PALM AVENUE	6	PVC	0.0074	354	>		LVS MH-5	Apr-89
MH-042	LVS MH-1	LAS VENTANAS	MH	380	VENTANA AVENUE	6	PVC	0.0024	340	>		LVS MH-2	Apr-89
MH-043	GOT MH-28	OLD TOWN	MH	45	SEVENTH STREET	6	CVP		600	>	145 SEVENTH / OAK		1953
MH-044	GOT MH-01	OLD TOWN	MH	1	WALNUT WENUE	14	PEP		220	>		WWTP	Jul-89
MH-045	SLS-MH-04	SANTA LUCIA SHOPPING	MH	696	WALNUT AVENUE	8	VCP	0.005	288	>		428 SEVETH ST	Jul-89
MH-046			MH	398	THORP AVENUE	21	PEP	0.004	600	>		220 WALNUT AVENUE	Jul-89
MH-047	TSSI-MH-13	TYLER S.S.I	MH	357	PEPPER DRIVE	21	PEP	0.002	372	>		MP-MH-1	Jul-89
MH-048	AESSI-MH-02	APPLE EXT S.S.I	MH	404	APPLE AVENUE	10	PVC	0.0035	321	>	271.39	AESSI-MH-03	Jul-89
MH-049	TSSI-MH-21	TYLER S.S.I	MH	200	WALNUT AVENUE	21	PEP	0.002	363	>	246.77	TSSI-MH-22	Jul-89
MH-050	TSSI-MH-25	TYLER S.S.I	MH	25	WALNUT (HILL)	21	PEP	0.012	370	>		TSSI-MH-26	Jul-89
MH-051	TSSI-MH-23	TYLER S.S.I	MH	100	WALNUT (HOUSE)	21	PEP	0.0028	567	>	246.77	TSSI-MH-24	Jul-89
MH-052	TSSI-MH-20	TYLER S.S.I	MH	220	WALNUT AVENUE	21	PEP	0.002	600	>		TSSI-MH-21	Jul-89
MH-053	TSSI-MH-19	TYLER S.S.I	MH	250	WALNUT AVENUE	21	PEP	0.0035	362	>		DSS-MH-7	Jul-89
MH-054	GOT MH-29	OLD TOWN	MH	348	EIGHTH STREET	6	CVP			>		SEVETH / APPLE (25)	1953
MH-055	TSSI-MH-18	TYLER S.S.I	MH	262	WALNUT AVENUE	21	PEP	0.0021	600	>	253.02	TSSI-MH-19	Jul-89
MH-056	TSSI-MH-17	TYLER S.S.I	MH	299	WALNUT AVENUE	21	PEP	0.0021	600	>	255.12	TSSI-MH-18	Jul-89
MH-057	TSSI-MH-22	TYLER S.S.I	MH	150	WALNUT (W. OF HOUSE)	21	PEP	0.002	600	>	244.62	TSSI-MH-23	Jul-89
MH-058	TSSI-MH-24	TYLER S.S.I	MH	50	WALNUT (E. OF HOUSE)	21	PEP	0.002	600	>		TSSI-MH-25	Jul-89
MH-059	TSSI-MH-16	TYLER S.S.I	MH	498	THIRD STREET	21	PEP	0.002	256	>	256.27	TSSI-MH-17	Jul-89

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MH-060	TSSI-MH-15	TYLER S.S.I	MH	450	THIRD STREET	21	PEP	0.002	675	>	257.62	TSSI-MH-16	Jul-89
MH-061	TSSI-MH-14	TYLER S.S.I	MH	302	THIRD STREET	21	PEP	0.002	675	>	259.17	TSSI-MH-15	Jul-89
MH-062	SLS-MH-04	SANTA LUCIA SHOPPING	MH	618	WALNUT AVENUE	6	VCP	0.0053	388	>	268.93	LIFSTATION	Jul-89
MH-063	AESSI-MH-03	APPLE EXT S.S.I	MH	702	SEVENTH STREET	10	PVC	0.0025	308	>		GOT-MH-25	Jul-89
MH-064	MP-MH-1	MARIPOSA PLACE	MH	347	APPLE AVENUE	21	PEP	0.002	252	>	262.34	LMS MH-3	Jul-89
MH-065	GOT MH-30	OLD TOWN	MH	247	EIGHTH STREET	6	CVP		600	>		348 EIGHT / APPLE	1953
MH-066	TSSI-MH-11	TYLER S.S.I	MH	501	APPLE AVENUE	21	PEP	0.01	120	>		TSSI-MH-10	Jul-89
MH-067	AESSI-MH-01	APPLE EXT S.S.I	MH	403	APPLE AVENUE	10	PVC	0.0035	59	>	271.7	AESSI-MH-02	Jul-89
MH-068	MS-MH-4	MEADOWS	MH	360	HICKS AVENUE	8	PVC	0.003	268	>	289.18	MS-MH-9	Dec-89
MH-069	VE-MH-4	VINTAGE ESTATES	MH	236	BURGANDY DRIVE	8	PVC	0.0045	140	>	258.73	VE-MH-5	Dec-89
MH-070	VE-MH-4	VINTAGE ESTATES	MH	236	BURGANDY DRIVE	8	PVC	0.0105	540	>		VE-MH-3	Dec-89
MH-071	VE-MH-5	VINTAGE ESTATES	MH	241	BURGANDY DRIVE	8	PVC	0.004	164	>	258.1	VE-MH-15	Dec-89
MH-072	VE-MH-3	VINTAGE ESTATES	MH	249	CABERNET AVENUE	8	PVC	0.0036	212	>	256.42	VE-MH-2	Dec-89
MH-073	VE-MH-7	VINTAGE ESTATES	MH	263	CABERNET AVENUE	8	PVC	0.0044	261	>	256.55	VE-MH-3	Dec-89
MH-074	VE-MH-8	VINTAGE ESTATES	MH	271	CABERNET AVENUE	8	PVC	0.0042	260	>	257.65	VE-MH-7	Dec-89
MH-075	VE-MH-13	VINTAGE ESTATES	MH	228	CHARDONAY DRIVE	8	PVC	0.0121	331	>	257.89	VE-MH-7	Dec-89
MH-076	GOT MH-31	OLD TOWN	MH	803	OAK AVENUE	6	CVP		670	>		247 EIGHTH / PALM	1953
MH-077	VE-MH-11	VINTAGE ESTATES	MH	238	CHARDONAY DRIVE	8	PVC	0.0081	260	>	259.31	VE-MH-13	Dec-89
MH-078	VE-MH-11	VINTAGE ESTATES	MH	238	CHARDONAY DRIVE	8	PVC	0.004	254	>		VE-MH-2	Dec-89
MH-079	TSSI-MH-05	TYLER S.S.I	MH	541	ELM AVENUE	12	PVC	0.002	688	>	269.65	TSSI-MH-6	Dec-89
MH-080	TSSI-MH-04	TYLER S.S.I	MH	639	ELM AVENUE	12	PVC	0.002	490	>		TSSI-MH-5	Dec-89
MH-081	TSSI-MH-06	TYLER S.S.I	MH	100	FIFTH STREET	12	PVC	0.002	660	>		TSSI-MH-7	Dec-89
MH-082	TSSI-MH-07	TYLER S.S.I	MH	146	FIFTH STREET	12	PVC	0.002	672	>		TSSI-MH-8	Dec-89
MH-083	TSSI-MH-08	TYLER S.S.I	MH	248	FIFTH STREET	12	PVC	0.002	225	>		TSSI-MH-9	Dec-89
MH-084	TSSI-MH-09	TYLER S.S.I	MH	248	FIFTH STREET ALLEY	12	PVC	0.002	620	>		TSSI-MH-10	Dec-89
MH-085	TSSI-MH-10	TYLER S.S.I	MH	501	FIFTH STREET ALLEY	12	PVC	0.002	215	>		TSSI-MH-12	Dec-89
MH-086	TSSI-MH-12	TYLER S.S.I	MH	398	FOURTH STREET	12	PVC	0.002	552	>		TSSI-MH-13	Dec-89
MH-087	GOT MH-32	OLD TOWN	MH	48	EIGHTH STREET	6	CVP		600	>		803 OAK / EIGHTH	1953
MH-088	VE-MH-12	VINTAGE ESTATES	MH	279	MERLOT AVENUE	8	PVC	0.004	510	>	261.2	VE-MH-11	Dec-89
MH-089	VE-MH-10	VINTAGE ESTATES	MH	280	RIESLING AVENUE	8	PVC	0.0042	473	>		VE-MH-13	Dec-89
MH-090	TSSI-MH-02	TYLER S.S.I	MH	2	S. EL CAMINO REAL	12	PVC	0.002	491	>		TSSI-MH-3	Dec-89
MH-091	TSSI-MH-01	TYLER S.S.I	MH	30	S. EL CAMINO REAL	12	PVC	0.002	495	>		TSSI-MH-2	Dec-89
MH-092	TSSI-MH-26	TYLER S.S.I	MH	0	WALNUT (PLANT ENT.)	21	PEP		220	>		WWTP	Dec-89
MH-093	VE-MH-1	VINTAGE ESTATES	MH	208	VINEYARD DRIVE	10	PCV		262	>	265.45	VE-MH-2	Dec-89
MH-094	VE-MH-2	VINTAGE ESTATES	MH	220	VINEYARD DRIVE	10	PVC		100	>	254.74	PIP-MH-11	Dec-89
MH-095	VE-MH-9	VINTAGE ESTATES	MH	252	VINEYARD DRIVE	8	PVC	0.004	105	>		VE-MH-5	Dec-89
MH-096	AM MH-01	ACACIA MANOR	MH	425	ACACIA COURT	8	PVC	.04	205	>		GOT MH-25A	May-90

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MH-097	OC-MH-3	OXFORD CT.	MH	1229	APPLE AVENUE	8	PVC	0.0052	440	>	292.63	OC-MH-2	Dec-91
MH-098	GOT MH-34	OLD TOWN	MH	246	ECR ALLEY / EIGHTH	6	CVP		600	>	274.89	348 ECR ALLEY / EIGHTH (33)	1953
MH-099	OC-MH-4	OXFORD CT.	MH	1243	APPLE AVENUE	8	PVC	0.0052	441	>	294.92	OC-MH-3	Dec-91
MH-100	OC-MH-6	OXFORD CT.	MH	1201	HICKS AVENUE	8	PVC	0.008	63	>	290.39	MS-MH-4	Dec-91
MH-101	OC-MH-9	OXFORD CT.	MH	1213	HICKS AVENUE	8	PVC	0.0062	391	>	292.73	OC-MH-6	Dec-91
MH-102	OC-MH-10	OXFORD CT.	MH	1231	HICKS AVENUE	8	PVC	0.006	399	>	294.73	OC-MH-9	Dec-91
MH-103	OC-MH-11	OXFORD CT.	MH	1245	HICKS AVENUE	8	PVC	0.004	350	>	296.33	OC-MH-10	Dec-91
MH-104	OC-MH-5	OXFORD CT.	MH	1214	MORRIS AVENUE	8	PVC	0.006	440	>	291.35	MS-MH-9	Dec-91
MH-105	OC-MH-7	OXFORD CT.	MH	1227	MORRIS AVENUE	8	PVC	0.006	440	>	293.99	OC-MH-5	Dec-91
MH-106	OC-MH-8	OXFORD CT.	MH	1242	MORRIS AVENUE	8	PVC	0.006	435	>	296.6	OC-MH-7	Dec-91
MH-107	PVS- MH-2	PALO VERDE	MH	261	PALO VERDE	6	PVC	0.5	176	>	258.28	PVS MH-3	Jun-93
MH-108	PVS- MH-1	PALO VERDE	MH	274	PALO VERDE	6	PVC	0.5	324	>	259.9	PVS MH-2	Jun-93
MH-109	GOT MH-36	OLD TOWN	MH	48	ECR ALLEY / EIGHTH	6	CVP		670	>		150 ECR ALLEY / EIGHTH	1953
MH-110	PVS- MH-3	PALO VERDE	MH	263	(MAPLE AVENUE)	8	VCP	0.5		>		PIP MH-8	Jun-93
MH-111	MSSI-MH-10	MIDDLE S.S. INTERCEPTER	MH	1115	HEIDI DRIVE	10	PVC	0.005	278	>	268.95	ESSI-MH-9	Sep-94
MH-112	MSSI-MH-1	MIDDLE S.S. INTERCEPTER	MH	130	EL CAMINO REAL	10	PVC	0.02	39	>	253.8	WET WELL	Sep-94
MH-113	VAP-MH-4	VISTA AL PARAISO	MH	1014	TYLER AVENUE	8	PVC	0.124	427	>	268	VAP-MH-4	Sep-94
MH-114	VAP-MH-5	VISTA AL PARAISO	MH	1120	HEIDI	10	PVC	0.005	333	>	296.62	MSSI-MH-4	Sep-94
MH-115	VAP-MH-3	VISTA AL PARAISO	MH	1104	TYLER AVENUE	8	PVC	0.004	450	>	268	VAP-MH-4	Sep-94
MH-116	VAP MH-2	VISTA AL PARAISO	MH	1120	HEIDI / ELM AVENUE	10	PVC	0.005	333	>	279.4	VAP MH-5	Sep-94
MH-117	MSSI-MH-7	MIDDLE S.S. INTERCEPTER	MH	1103	HEIDI DRIVE	10	PVC	0.005	407	>		MSSI-MH-6	Sep-94
MH-118	VAP MH-1	VISTA AL PARAISO	MH	1150	ELM AVENUE	8	PVBC	0.005	288	>	281.04	VAP MH-2	Sep-94
MH-119	MSSI-MH-4	MIDDLE S.S. INTERCEPTER	MH	911	HEIDI DRIVE	10	PVC	0.005	396	>	258.38	MSSI-MH-3	Jan-95
MH-120	GOT MH-43	OLD TOWN	MH	345	ECR ALLEY / NINTH	6	CVP			>	273.83	ECR	1953
MH-121	MSSI-MH-2	MIDDLE S.S. INTERCEPTER	MH	900	TYLER AVENUE	10	PVC	0.005	27	>	254.77	MSSI-MH-1	Jan-95
MH-122	MSSI-MH-3	MIDDLE S.S. INTERCEPTER	MH	903	TYLER AVENUE	10	PVC	0.005	300	>	256.4	MSSI-MH-2	Jan-95
MH-123	MSSI-MH-9	MIDDLE S.S. INTERCEPTER	MH	1107	HEIDI DRIVE	10	PVC	0.005	278	>	266.51	MSSI-MH-8	Jan-95
MH-124	MSSI-MH-8	MIDDLE S.S. INTERCEPTER	MH	1019	HEIDI DRIVE	10	PVC	0.005	263	>		MSSI-MH-7	Jan-95
MH-125	MSSI-MH-6	MIDDLE S.S. INTERCEPTER	MH	922	TYLER AVENUE	10	PVC	0.005	262	>	261.77	MSSI-MH-5	Jan-95
MH-126		MIDDLE S.S. INTERCEPTER	MH	908	TYLER AVENUE	10	PVC	0.005	398	>		890 TYLER AVENUE	Jan-95
MH-127	MSSI-MH-5	MIDDLE S.S. INTERCEPTER	MH	923	TYLER AVENUE	10	PVC	0.005	396	>	260.41	MSSI-MH-4	Jan-95
MH-128	VVS- MH-2	VICTORIA VILLAGE	MH	1253	APPLE AVENUE	8	PVC	0.005	266	>	296.36	OC-MH-4	Jun-96
MH-129	VVS- MH-1	VICTORIA VILLAGE	MH	1259	APPLE AVENUE	8	PVC	0.005	262	>	297.84	VVS MH-2	Jun-96
MH-130	CAP- MH-8	CAMINO AL PARAISO	MH	1069	GAVILAN DRIVE	8	PVC	0.0032	205	>	286.04	CAP- MH-9	Jun-96
MH-131	GOT MH-44	OLD TOWN	MH	303	ECR ALLEY / NINTH	6	CVP		610	>		345 ECR ALLEY / NINTH	1953
MH-132	CAP- MH-7	CAMINO AL PARAISO	MH	1084	GAVILAN DRIVE	8	PVC	0.0032	414	>	287.56	CAP- MH-8	Jun-96
MH-133	CAP- MH-6	CAMINO AL PARAISO	MH	1097	GAVILAN DRIVE	8	PVC	0.0032	290	>	289.2	CAP- MH-7	Jun-96

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MH-134	VVS-MH-3	VICTORIA VILLAGE	MH	1248	MORRIS AVENUE	8	PVC	0.004	120	>	298.07	1242 MORRIS	Jun-96
MH-135	CAP-MH-9	CAMINO AL PARAISO	MH	1069	PALOMA DRIVE	8	PVC	0.0032	271	>	285.23	CAP-MH-1	Jun-96
MH-136	CAP-MH-10	CAMINO AL PARAISO	MH	1084	PALOMA DRIVE	8	PVC	0.0032	434	>	286.71	CAP-MH-9	Jun-96
MH-137	CAP-MH-11	CAMINO AL PARAISO	MH	1100	PALOMA DRIVE	8	PVC	0.0032	474	>	288.4	CAP-MH-10	Jun-96
MH-138	CAP-MH-5	CAMINO AL PARAISO	MH	486	TWELVETH STREET	8	PVC	0.004	465	>	290.44	CAP-MH-4	Jun-96
MH-139	CAP-MH-4	CAMINO AL PARAISO	MH	498	TWELVETH STREET	8	PVC	0.0032	400	>	288.16	CAP-MH-3	Jun-96
MH-140	VVS-MH-4	VICTORIA VILLAGE	MH	1249	VICTORIA CIRCLE	6	PVC	0.005	275	>	299.79	VVS MH-3	Jun-96
MH-141	VVS-MH-5	VICTORIA VILLAGE	MH	1275	VICTORIA CIRCLE	8	PVC	0.005		>	299.56	VVS MH-1	Jun-96
MH-142	GOT MH-45	OLD TOWN	MH	201	ECR ALLEY / NINTH	6	CVP		600	>		303 ECR ALLEY / NINTH	1953
MH-143	CAP-MH-1	CAMINO AL PARAISO	MH	1071	WALNUT AVENUE	8	PVC	0.0032	276	>	284.27	PVS MH-9	Jun-96
MH-144	CAP-MH-2	CAMINO AL PARAISO	MH	1083	WALNUT AVENUE	8	PVC	0.0032	395	>	285.43	CAP-MH-1	Jun-96
MH-145	CAP-MH-3	CAMINO AL PARAISO	MH	1093	WALNUT AVENUE	8	PVC	0.0032	395	>	286.69	CAP-MH-2	Jun-96
MH-146		WOODRIDGE II	MH	785	APRICOT	24	PVC	0.002	267	>		784 CHERRY	Apr-97
MH-147		WOODRIDGE II	MH	791	APRICOT	24	PVC	0.002	357	>		785 APRICOT	Apr-97
MH-148		WOODRIDGE II	MH	802	APRICOT	24	PVC	0.002	621	>		791 PREICOT	Apr-97
MH-149	GLS MH-5	GREENLEAF	MH		ELM AVENUE	8	PVC	0.4	425	>	280.51	GLS MH-4	Jun-97
MH-150	GLS MH-4	GREENLEAF	MH		ELM AVENUE	8	PVC	0.4	400	>	278.5	GLS MH-3	Jun-97
MH-151	GLS MH-3	GREENLEAF	MH		ELM AVENUE	8	PVC	0.4	110	>	276.9	GLS MH-2	Jun-97
MH-152	GLS MH-2	GREENLEAF	MH		ELM AVENUE	8	PVC	0.4	243	>	276.49	GLS MH-1	Jun-97
MH-153	GOT MH-46	OLD TOWN	MH	103	ECR ALLEY / NINTH	6	CVP		610	>		103 ECR ALLEY / NINTH	1953
MH-154	GLS MH-1	GREENLEAF	MH		ELM AVENUE	8	PVC	0.4	400	>	275.49	VAP-MH-2	Jun-97
MH-155	GLS MH-15	GREENLEAF	MH	1233	GREENLEAF LOOP	8	PVC	1.62	280	.	287.44	GLS MH-14	Jun-97
MH-156	GLS MH-14	GREENLEAF	MH	1243	GREENLEAF LOOP	8	PVC	0.4	74	>	285.05	GLS MH-8	Jun-97
MH-157	GLS MH-8	GREENLEAF	MH	1249	GREENLEAF LOOP	8	PVC	0.4	418	>	284	GLS MH-7	Jun-97
MH-158	GLS MH-9	GREENLEAF	MH	1261	GREENLEAF LOOP	8	PVC	0.4	400	>	285.6	GLS MH-8	Jun-97
MH-159	GLS MH-10	GREENLEAF	MH	1268	GREENLEAF LOOP	8	PVC	0.4	270	>	286.84	GLS MH-9	Jun-97
MH-160	GLS MH-11	GREENLEAF	MH	1281	GREENLEAF LOOP	8	PVC	1.07	251	>	288.7	GLS MH-10	Jun-97
MH-161	GLS MH-12	GREENLEAF	MH	1289	GREENLEAF LOOP	8	PVC	1.96	260	>	293.6	GLS MH-11	Jun-97
MH-162	WR2-MH-3	WOODRIDGE II	MH	811	ORCHARD STREET	8	PVC	0.004	215	>	271.67	WR2-MH-2	Jun-97
MH-163	GLS MH-16	GREENLEAF	MH	1254	ROMO DRIVE	8	PVC	0.4	244	>		GLS MH-15	Jun-97
MH-164	GOT MH-47	OLD TOWN	MH	347	NINTH STREET	6	CVP			>	275.95	345 ECR ALLEY/ NINTH (43)	1953
MH-165	GLS MH-13	GREENLEAF	MH	1256	ROMO DRIVE	8	PVC	0.4	425	>		GLS MH-11	Jun-97
MH-166	WR2-MH-6	WOODRIDGE II	MH	793	ORCHARD STREET	8	PVC	0.04	245	>	265.26	WR2-MH-6	Feb-02
MH-167	WR2-MH-4	WOODRIDGE II	MH	803	ORCHARD STREET	8	PVC	0.04	340	>	269	WR2-MH-5	Feb-02
MH-168	WR2-MH-2	WOODRIDGE II	MH	817	ORCHARD STREET	24	HDPE			>		WR2-MH-5	Feb-02
MH-169	WR2-MH-1	WOODRIDGE II	MH	825	ORCHARD STREET	8	PVC	0.01	200	>		WR2-MH-2	Feb-02
MH-170	LMS MH-1	LAS MANZANITAS	MH	301	MANZANITAS DRIVE	8	PVC	0.004	297	>		LMS MH-2	Apr-03

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MH-171	LMS MH-2	LAS MANZANITAS	MH	329	MANZANITAS DRIVE	8	PVC	0.004	297	>		LMS MH-3	Apr-03
MH-172	LS-MH-5	LEXINGTON	MH	1234	AVINA AVENUE	8	PVC	0.004	210	>	281.81	LS-MH-8	Jul-03
MH-173	LS-MH-7	LEXINGTON	MH	1243	CLARK COLONY AVE.	8	PVC	0.015	215		282.02	LS-MH-8	Jul-03
MH-174	LS-MH-6	LEXINGTON	MH	1245	CLARK COLONY AVE.	8	PVC	0.005	30			LS-MH-6	Jul-03
MH-175	GOT MH-48	OLD TOWN	MH	248	NINTH STREET	6	CVP		610	>		347 NINTH / APPLE	1953
MH-176	LS-MH-3	LEXINGTON	MH	30	GIANOLINI PARKWAY	8	PVC	0.004	29		280.31	LS-MH-4	Jul-03
MH-177	LS-MH-2	LEXINGTON	MH	31	GIANOLINI PARKWAY	8	PVC	0.004	198		279.1	GLS-MH-4	Jul-03
MH-178	GLS-MH-7	GREENLEAF	MH	49	VIA SALVAGNO	8	PVC	0.4	205	>	283.16	LS-MH-1	Jul-03
MH-179	LS-MH-1	LEXINGTON	MH	1244	AVINA AVENUE	8	PVC	0.003	340	>	283.06	LS-MH-6	Jul-03
MH-180	SCS-MH-21	CREEKBRIDGE	MH	15	EL CAMINO REAL	8	PVC		133	>		4 PARK PLACE	Aug-03
MH-181	SCS-MH-02	CREEKBRIDGE	MH	9	HUERTA AVENUE	8	PVC		314	>		26 HUERTA	Aug-03
MH-182	SCS-MH-03	CREEKBRIDGE	MH	21	HUERTA AVENUE	8	PVC		306	>		648 ST CHRIST. / MORENO	Aug-03
MH-183	SCS-MH-04	CREEKBRIDGE	MH	26	HUERTA AVENUE	8	PVC		54	>		30 HUERTA	Aug-03
MH-184	SCS-MH-05	CREEKBRIDGE	MH	30	HUERTA AVENUE	8	PVC		258	>		21 MORENO / HUERTA	Aug-03
MH-185	SCS-MH-06	CREEKBRIDGE	MH	100	HUERTA AVENUE	8	PVC		199	>		21 MORENO / HUERTA	Aug-03
MH-186	GOT MH-49	OLD TOWN	MH	901	OAK AVENUE	6	CVP		600	>		248 NINTH	1953
MH-187	SCS-MH-07	CREEKBRIDGE	MH	201	HUERTA AVENUE	8	PVC		157	>		100 HUERTA AVE.	Aug-03
MH-188	SCS-MH-08	CREEKBRIDGE	MH	235	HUERTA AVENUE	8	PVC		59	>		201 HUERTA / ST CHARLES	Aug-03
MH-189	SCS-MH-09	CREEKBRIDGE	MH	239	HUERTA AVENUE	8	PVC		132	>		235 HUERTA	Aug-03
MH-190	SCS-MH-10	CREEKBRIDGE	MH	5	MORENO STREET	8	PVC		466	>		21 MORENO / HUERTA	Aug-03
MH-191	SCS-MH-11	CREEKBRIDGE	MH	201	MORENO STREET	8	PVC		378	>		720 TYLER AVENUE	Aug-03
MH-192	SCS-MH-25	CREEKBRIDGE	MH	309	MORENO STREET	8	PVC		60	>		SCS-MH-13	Aug-03
MH-193	SCS-MH-26	CREEKBRIDGE	MH	10	PARK PLACE	8	PVC		91	>		2 ST. CHARLES PL. / PARK	Aug-03
MH-194	SCS-MH-	CREEKBRIDGE	MH	645	ST CHRISTOPHER LANE	8	PVC		29	>		642 VASQUEZ AVE.	Aug-03
MH-195	SCS-MH-15	CREEKBRIDGE	MH	648	ST CHRISTOPHER LANE	8	PVC		61	>		702 TYLER / MORENO	Aug-03
MH-196	SCS-MH-15	CREEKBRIDGE	MH	648	ST CHRISTOPHER LANE	8	PVC		61	>		201 MORENO STREET / TYLER	Aug-03
MH-197	GOT MH-50	OLD TOWN	MH	103	NINTH STREET	6	CVP		670	>		901 OAK	1953
MH-198	SCS-MH-14	CREEKBRIDGE	MH	649	ST CHRISTOPHER LANE	6	PVC		254	>		641 ST. CHRISTOPHER	Aug-03
MH-199	SCS-MH-18	CREEKBRIDGE	MH	301	ST MATHEWS STREET	8	PVC		303	>		720 TYLER AVENUE	Aug-03
MH-200	SCS-MH-19	CREEKBRIDGE	MH	319	ST MATHEWS STREET	8	PVC		393	>		301 ST MATHEWS STREET	Aug-03
MH-201	SCS-MH-20	CREEKBRIDGE	MH	333	ST MATHEWS STREET	8	PVC		288	>		319 ST MATHEWS STREET	Aug-03
MH-202	SCS-MH-16	CREEKBRIDGE	MH	2	ST. CHARLES PLACE	8	PVC		276	>		201 HUERTA / ST CHARLES	Aug-03
MH-203	SCS-MH-17	CREEKBRIDGE	MH	720	TYLER AVENUE	8	PVC		113	>		130 S ECR / TYLER	Aug-03
MH-204	SCS-MH-	CREEKBRIDGE	MH	641	VASQUEZ AVENUE	8	PVC			>		642 VASQUEZ AVE.	Aug-03
MH-205	SCS-MH-	CREEKBRIDGE	MH	642	VASQUEZ AVENUE	8	PVC			>		209 MORENO STREET	Aug-03
MH-206	OCS CO-3	OLIVE COURT	MH		LOT 1	6	PVC	0.01	100	>		OCS-MH-1	Nov-03
MH-207	OCS CO-2	OLIVE COURT	MH		LOT 6	6	PVC	0.01	100	>		OCS CO-3	Nov-03

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MH-245	CDS-2	CASA DE SOL	MH	363	BAROLO CIRCLE	8	PVC	0.004	347	>		DSS-MH-01	Apr-05
MH-246	CDS-1	CASA DE SOL	MH	365	BAROLO CIRCLE	8	PVC	0.004	175	>		362 THORP / BAROLO	Apr-05
MH-247	LVS-MH-08	SEVILLE	MH	352	CHIANTI WAY	8	PVC	0.004	287	>		LVS-MH-11	Apr-05
MH-248	LVS-MH-12	SEVILLE	MH	373	PORT LANE	8	PVC	0.004	310	>		LVS-MH-11	Apr-05
MH-249	LVS-MH-10	SEVILLE	MH	218	SIRRAH WAY	8	PVC	0.004	257	>		LVS-MH-11	Apr-05
MH-250	LVS-MH-11	SEVILLE	MH	230	SIRRAH WAY	8	PVC	0.004	386	>		LVS-MH-12	Apr-05
MH-251	LVS-MH-09	SEVILLE	MH	230	TAWNY PORT WAY	8	P	0.004	526	>		LVS-MH-02	Apr-05
MH-252	GOT MH-60	OLD TOWN	MH	146	TWELVETH STREET	6	VCP			>	1160 OAK AVENUE (59)		1953
MH-253	LVS-MH-13	SEVILLE	MH	362	THORP AVENUE	8	PVC	0.004	173	>		LVS-MH-12	Apr-05
MH-254	DSS-MH-07	SEVILLE	MH	394	THORP AVENUE	8	PVC	0.004	150	>		DSS-MH-06	Apr-05
MH-255	LVS-MH-06	SEVILLE	MH	207	TUSCANY WAY	8	PVC	0.004	495	>		LVS-MH-05	Apr-05
MH-256	LVS-MH-04	SEVILLE	MH	208	TUSCANY WAY	8	PVC	0.004	572	>		LVS-MH3	Apr-05
MH-257	LVS-MH-05	SEVILLE	MH	228	TUSCANY WAY	8	PVC	0.004	505	>		LVS-MH-04	Apr-05
MH-258	LVS-MH06	SEVILLE	MH	245	TUSCANY WAY	8	PVC	0.004	484	>		LVS-MH-05	Apr-05
MH-259		SEVILLE	MH	372	TUSCANY WAY	8	PVC	0.004	278	>		207 TUSCANY	Apr-05
MH-260	MP MH-3	MARIPOSA PLACE	MH	302	WILSON CIRCLE	8	PVC	0.0035	206	>	264	MS MH-2	Feb-06
MH-261	MP MH-4	MARIPOSA PLACE	MH	305	WILSON CIRCLE	8	PVC	0.0035	178	>	264.57	MS MH-5	Feb-06
MH-262	MP MH-5	MARIPOSA PLACE	MH	317	WILSON CIRCLE	8	PVC	0.0035	43	>	263.76	MS MH-6	Feb-06
MH-263	GOT MH-61	OLD TOWN	MH	1160	OAK AVENUE	6	VCP			>	271.9	146 ELEVENTH / OAK (57)	1953
MH-264	MP MH-2	MARIPOSA PLACE	MH	318	WILSON CIRCLE	8	PVC	0.0035	210	>	263.07	MS MH-1	Feb-06
MH-265	MP MH-6	MARIPOSA PLACE	MH	323	WILSON CIRCLE	8	PVC	0.0035	90	>	263.58	MS MH-2	Feb-06
MH-266	CS MH-3	CAMBRIA	MH	419	CARDONA CIRCLE	8	PVC	,0035	115	>	260.76	CS MH-1	Jun-07
MH-267	CS MH-2	CAMBRIA	MH	426	CARDONA CIRCLE	8	PVC	0.0035	216	>	260.87	CS MH-1	Jun-07
MH-268	SS MH-2	SANDOVAL	MH	70	DON VICENTE DRIVE	8	PVC	0.004	275	>	287.09	SS MH-1	Aug-08
MH-269	SS MH-1	SANDOVAL	MH	79	DON VICENTE DRIVE	12	PVC			>	278.82	VAP-MH-2	Aug-08
MH-270	SSMH-3	SANDOVAL	MH	47	DON VICENTE DRIVE	8	PVC	0.004	275	>	288.39	SS MH-2	Aug-08
MH-271	VG MH-6	VINEYARD GREEN	MH	132	MALDONALDO STREET	8	PVC	0.005	221	>	291.8	GLE MH-10	Feb-10
MH-272	VG MH-7	VINEYARD GREEN	MH	138	MALDONALDO STREET	8	PVC	0.5	125	>	292.55	VG MH-6	Feb-10
MH-273	VG MH-10	VINEYARD GREEN	MH	1298	SANTA LUCIA STREET	8	PVC	0.05	322	>	297.24	VG MH-9	Feb-10
MH-274	TS-MH-1	THORP SUB	MH	946	APPLE AVENUE	8	VCP	0.5	385	>		GOT-MH- 55	Feb-09
MH-275	VG MH-9	VINEYARD GREEN	MH	1286	SANTAN LUCIA STREET	8	PVC	1.58	351	>	293.72	VG MH-7	Feb-10
MH-276	VG MH-5	VINEYARD GREEN	MH	1278	SPARK STREET	8	PVC	0.05	125	>	292.17	VG MH-6	Feb-10
MH-277	VG MH-4	VINEYARD GREEN	MH	1289	SPARK STREET	8	PVC	0.5	272	>	293.7	VG MH-5	Feb-10
MH-278	VG MH-3	VINEYARD GREEN	MH	1298	SPARK STREET	8	PVC	1.58	266	>	297.43	VG MH-4	Feb-10
MH-279	VG MH-1	VINEYARD GREEN	MH	1299	OAK AVENUE	8	PVC	0.5	507	>		VG MH-2	Feb-10
MH-280	VG MH-2	VINEYARD GREEN	MH	1279	OAK AVENUE	8	PVC	1.22	112	>	296.1	VG MH-8	Feb-10
MH-281	VG MH-8	VINEYARD GREEN	MH	148	MALDONALDO STREET	8	PVC	0.5	203	>	294.67	VG MH-7	Feb-10

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MH-282	GOT MH-07	OLD TOWN	MH	228	APPLE AVENUE	12	VCP		110	>	SAS MH-17
MH-283	GOT MH-09	OLD TOWN	MH	252	APPLE AVENUE	12	VCP		110	>	VE-HM-15
MH-284	GOT MH-14	OLD TOWN	MH	354	OAK AVENUE	6	VCP		20	>	OT-MH-1
MH-285	TS-MH-2	THORP SUB	MH	307	LARSON LANE	6	VCP	0.4	500	>	TS-MH-1
MH-286	ASP MH-3	ARROYO SECO	MH	228	SAN ANTONIO	6	VCP	0.4	258	>	ASP MH-2
MH-287	ASP CO-3	ARROYO SECO	MH	233	SAN ANTONIO	6				>	ASP MH-4
MH-288		TRINITY CHURCH	MH	801	ELM AVENUE	6				>	MAPLE AVENUE / ALLEY
MH-289		RENFRO	MH	1222	OAK AVENUE	8				>	OAK AVE./ TWELVE STREET
MH-290		TOM ROGERS	MH	1228	OAK AVENUE	8				>	1222 OAK AVENUE
MH-291		TOM ROGERS	MH	203	TOM ROGERS	8			10	>	1228 OAK AVENUE
MH-292	EWE MH-7	ELMWOOD	MH	112	ELEVENTH STREET	10				>	GOT MH-57
MH-293	MS-MH-1	MEADOWS	MH	1080	APPLE AVENUE	8	PVC	0.005	90	>	TS-MH-2
MH-294			MH	424	TENTH STREET	8	VCP	0.4		>	914 APPLE AVE.
MH-295	PTH-MH-2	PRIMAVERA TOWN HOME	MH	440	TENTH STREET	8	VCP	0.4		>	PTH-MH-3
MH-296	GS-MH-4	GURRERO	MH	357	APPLE AVENUE	8	VCP	0.25		>	GS-MH-3
MH-297		S.E.I	MH	[401]	NINTH STREET	6	VCP		123	>	900 APPLE AVE. (N MH)
MH-298	DSS-CO-01	CASA DE SOL	MH	363	BAROLO CIRCLE	8	PVC	0.004	355	>	DSS-MH-01
MH-299	CSSI-MH-15	CHERRY S.S.I	MH	300	WALNUT AVENUE	18	PVC	0.002	500	>	CSSI-MH-01
MH-300	CSSI-MH-02	CHERRY S.S.I	MH	550	THIRD STREET	18	PVC	0.002	492	>	CSSI-MH-01
MH-301	CSSI-MH-03	CHERRY S.S.I	MH	575	THIRD STREET	18	PVC	0.002	500	>	CSSI-MH-02
MH-302	VE-MH-6	VINTAGE ESTATES	MH	240	OAK AVENUE	8	PVC	0.0035	8	>	PIP-MH-10
MH-303	CSSI-MH-04	CHERRY S.S.I	MH	600	THIRD STREET	18	PVC	0.002	312	>	CSSI-MH-03
MH-304	CSSI-MH-05	CHERRY S.S.I	MH	350	CHERRY AVENUE	18	PVC	0.002	501	>	CSSI-MH-04
MH-305	PIP MH-10	PASSEK INDUSTRIES	MH	200	OAK AVENUE	10	VCP	0.00291	168		VE-MH-1
MH-306	CSSI-MH-06	CHERRY S.S.I	MH	375	CHERRY AVENUE	18	PVC	0.002	500	>	CSSI-MH-05
MH-307	GS-MH-3	GURRERO	MH	363	APPLE AVENUE	8	VCP	0.35	265	>	GS-MH-4
MH-308	CSSI-MH-07	CHERRY S.S.I	MH	385	CHERRY AVENUE	18	PVC	0.002	500	>	CSSI-MH-06
MH-309	CS MH-1	CAMBRIA	MH	412	CARDONA CIRCLE	8	PVC	0.0035	336	>	VE MH-2
MH-310	CSSI-MH-01	CHERRY S.S.I	MH	200	WALNUT AVENUE	18	PVC	0.002	500	>	TSSI-MH
MH-311	FUR-MH-02	FREEWAY UTILITY RE.	MH	60	FOURTH STREET	6	VCP	0.0026	680	>	FUR-MH-01
MH-312	LVS MH-7	LAS VENTANAS	MH	220	THIRD STREET	8	PVC	0.0024	661	>	GOT MH-10
MH-313	LVS MH-7	LAS VENTANAS	MH	220	THIRD STREET	8	PVC	0.0024	661	>	GOT MH-13
MH-314	SWIP-MH-11	SWIP	MH	700	CYPRESS	12	PVC	0.002	660	>	252.76
MH-315	ECRI-MH-2	ECR IMPR.	MH	950	CHERRY	12	PVC	0.003	573	>	272.32
MH-316	SAS MH-23	SECOND STREET	MH	239	APPLE AVENUE	12			524	>	256.09
MH-317	CSSI-MH-08	CHERRY S.S.I	MH	395	CHERRY AVENUE	18	PVC	0.002	267	>	262.86
MH-318	GS-MH-1	GURRERO	MH	329	EUCALIPTUS DRIVE	8	VCP	0.25	300	>	266.92

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MH-319	CSSI-MH-09	CHERRY S.S.I	MH	791	CHERRY AVENUE	18	PVC	0.002	203	>	264.03	CSSI-MH-08
MH-320	CSSI-MH-10	CHERRY S.S.I	MH	785	APRICOT AVENUE	18	PVC	0.002	264	>	264.76	CSSI-MH-09
MH-321	TSSI-MH-03	TYLER S.S.I	MH	700	ELM AVENUE	12	PVC	0.002	490	>		TSSI-MH-4
MH-322	MS-MH-6	MEADOWS	MH	338	HUTCHINSON	8	PVC	0.0036	440	>	285.79	MS-MH-5
MH-323	OC-MH-2	OXFORD CT.	MH	1215	APPLE AVENUE	8	PVC	0.006	440	>	290.34	MS-MH-3
MH-324	SWIP-MH-2	SWIP	MH	720	EL CAMINO REAL	8	PVC	0.0045	417	>	268.73	
MH-325			MH		SOUTH TO ELM #2	8	PVC	0.4	400	>		GLS MH-5
MH-326	SWIP-MH-3	SWIP	MH	740	EL CAMINO REAL	8	PVC	0.0045	397	>	265.12	
MH-327	SWIP-MH-16	SWIP	MH	930	PINE	12	PVC	0.002	390	>	270.3	
MH-328	SWIP-MH-5	SWIP	MH	800	CYPRESS	12	PVC	0.005	383	>	259.85	
MH-329	GS-MH-2	GURRERO	MH	329	PEPPER DRIVE	8	VCP	0.25	300	>	266.24	GS-MH-4
MH-330	SLS-MH-04	SANTA LUCIA SHOPPING	MH	500	WALNUT AVENUE	6	VCP	0.005	372	>		SLS-MH-03
MH-331	SWIP-MH-6	SWIP	MH	827	ALLEY N. ECR	12	PVC	0.002	365	>	260.54	
MH-332	SWIP-MH-7	SWIP	MH	851	ALLEY N. ECR	12	PVC	0.002	365	>	261.32	
MH-333	SWIP-MH-1	SWIP	MH	701	EL CAMINO REAL	8	PVC	0.0045	355	>	268.73	
MH-334	SWIP-MH-14	SWIP	MH	875	LIVINGSTON	12	PVC	0.002	328	>	255.9	
MH-335	SWIP-MH-4	SWIP	MH	780	EL CAMINO REAL	8	PVC	0.005	326	>		
MH-336	SWIP-MH-13	SWIP	MH	851	LIVINGSTON	12	PVC	0.002	322	>	254.43	
MH-337	CSSI-MH-11	CHERRY S.S.I	MH	802	APRICOT AVENUE	18	PVC	0.002	621	>	266.83	WP2-MH-06
MH-338	GE-MH-5	GAVILAN ESTATES	MH	1070	CHALONE DRIVE	8	PVC	0.0024	305	>	285.05	GE-MH-4
MH-339	MP-MH-02	MAGNOLIA PLACE	MH	16	TWELVE STREET	8	PVC	0.0034	300	>		MP-MH-01
MH-340	ASP MH-1	ARROYO SECO	MH	201	SAN ANTONIO/OAK AVE.	8	VCP			>		1239 OAK AVENUE
MH-341	SWIP-MH-17	SWIP	MH	950	PINE	12	PVC	0.002	300	>		
MH-342	SAS MH-10	SECOND STREET	MH	217	BELLA STREET	8	PVC	0.005	297	>	253.43	SAS MH-9
MH-343	CSSI-MH-12	CHERRY S.S.I	MH	617	EL CAMINO REAL	18	PVC	0.002	635	>	267.47	WP2-MH-02
MH-344	CSSI-MH-13	CHERRY S.S.I	MH	600	EL CAMINO REAL	18	PVC	0.002	275	>		CSSI-MH-12
MH-345	CSSI-MH-14	CHERRY S.S.I	MH	699	EL CAMINO REAL	18	PVC	502558	1000		268.47	CSSI-MH-12
MH-346	VE-MH-15	VINTAGE ESTATES	MH	245	BURGANDY DRIVE	12	PVC		263	>		PIP-MH-13
MH-347	SWIP-MH-9	SWIP	MH	899	ALLEY N. ECR	12	PVC	0.002	260	>	262.5	
MH-348	TO-MH-03	TERRACINA OAKS	MH	240	THIRTEEN STREET	8	PVC	0.005	258	>	297.32	TO-MH-02
MH-349	TO-MH-04	TERRACINA OAKS	MH	252	THIRTEEN STREET	8	PVC	0.005	258	>	298.61	TO-MH-03
MH-350	WR2-MH-5	WOODRIDGE II	MH	796	APRICOT STREET	24	PVC	0.002	245	>	267.44	APRICOT / ORCHARD
MH-351	ASP MH-2	ARROYO SECO	MH	214	SAN ANTONIO	8	VCP		255	>		ASP MH-1
MH-352	SCS-MH-13	CREEKBRIDGE	MH	209	MORENO STREET	8	PVC		243	>		SCS-MH-11
MH-353	SCS-MH-12	CREEKBRIDGE	MH	309	MORENO STREET	8	PVC		237	>		SCS-MH-25
MH-354	SWIP-MH-12	SWIP	MH	698	CYPRESS	12	PVC	0.002	232	>	253.68	
MH-355	SAS MH-14	SECOND STREET	MH	214	ALVES LANE	8	pvc	0.004	226	>	250.14	SAS MH-18

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MH-356	GHS-MH1	HIGH SCHOOL	MH	225	SEL CAMINO REAL	10	PVC	0.002	225	>		TYLER LIFSTATION
MH-357	SWIP-MH-15	SWIP	MH	899	LIVINGSTON	12	PVC	0.002	220	>	255.53	
MH-358	MP-MH-01	MAGNOLIA PLACE	MH	2	TWELVE STREET	8	PVC	0.0012	189	>		GLS-MH-02
MH-359	LMS-MH-3	LAS MANZANITAS	MH	348	MANZANITAS DRIVE	21	HDPE	0.43	185	>		TSSI-MH-14
MH-360	SLS-MH-04	SANTA LUCIA SHOPPING	MH	574	WALNUT AVENUE	6	VCP	0.0046	182	>	272.29	SLS-MH-04
MH-361	SAS MH-25	SECOND STREET	MH	263	DEL PONTE DRIVE	8	PVC	0.0035	176	>	256.7	SAS MH-23
MH-362	ASP MH-4	ARROYO SECO	MH	242	SAN ANTONIO	8	VCP	0.3	262	>		Jan-78
MH-363	SAS MH-01	SECOND STREET	MH	206	APPLE AVENUE	12	VCP		126	>		GOT-MH-6
MH-364	VE-MH-16	VINTAGE ESTATES	MH	244	CHARDONAY DRIVE	12	PVC		124	>		GOT-MH-9
MH-365	LS-MH-8	LEXINGTON	MH	37	GIANOLINI PARKWAY	8	PVC	0.004	114	>	280.9	LS-MH-2
MH-366	ECRI-MH-1	ECR IMPR.	MH	900	CHERRY	12	PVC	0.003	111	>	270.4	CSSI#14
MH-367	OTS MH-1	OAK TERRANCE	MH	350	OAK AVENUE	6	PVC	0.0035	100	>	265.65	
MH-368	SWIP-MH-8	SWIP	MH	875	ALLEY N. ECR	12	PVC	0.002	70	>	261.4	
MH-369	MP-MH-03	MAGNOLIA PLACE	MH	20	TWELVE STREET	8	PVC	0.0034	50	>		MP-MH-02
MH-370	TO-MH-01	TERRACINA OAKS	MH	200	THIRTEEN STREET	8	PVC	0.005	41	>	295.7	GV-MH-01
MH-371	TO-MH-02	TERRACINA OAKS	MH	220	THIRTEEN STREET	8	PVC	0.005	26	>	295.93	TO-MH-01
MH-372	LVS MH-8	LAS VENTANAS	MH	220	THIRD STREET	8	PVC	0.0024	16	>	266.83	LVS-MH-7
MH-373	ASP2-MH2	ARROYO SECO 2	MH	1261	LOS PADRES	6	VCP		46	>		Jan-78
MH-374	AMA-MH-2	ACACIA MANOR	MH	421	SEVETH STREET	6	VCP			>	272	GOT-MH-25A
MH-375	AMA-MH-1	APPLE MANOR	MH	501	APPLE AVENUE	8	VCP			>		GS-MH-3
MH-376	CS-MH-1	CAILLAU SUB.	MH	1207	OAK AVENUE	6	VCP			>	289.15	GOT-MH-61
MH-377	FUR-MH-01	FREEWAY UTILITY RE.	MH	185	FOURTH STREET	6	VCP			>	267.85	GOT-MH-14
MH-378	FUR-MH-03	FREEWAY UTILITY RE.	MH	36	FOURTH STREET	6	VCP	0.0026		>		FUR-MH-02
MH-379	GE-MH-1	GAVILAN ESTATES	MH	938	APPLE AVENUE	8	PVC					GOT-MH-55
MH-380	NTH MH-2	NIETO TOWN HOMES	MH	429	NINTH STREET	6	VCP					PVS MH-1
MH-381	OCS-MH-1	OLIVE COURT	MH	290	OAK AVENUE	6	VCP	0.007		>		PIP-MH-10
MH-382	SAS MH-17	SECOND STREET	MH	224	APPLE AVENUE	12	12				254.93	GOT-MH-7
MH-383	WPS MH-2	WALNUT PLACE	MH	1091	WALNUT AVENUE	8						WALUT AVE
MH-384	ASP2-MH1	ARROYO SECO 2	MH	1271	LOS PADRES	6	VCP	0.005	226	>		Jan-78
MH-385	CS-MH-2	WOODFILL	MH	1222	OAK AVENUE	6				>		
MH-386		WOODFILL	MH	1220	OAK AVENUE	6				>		
MH-387	SCS-MH-	CREEKBRIDGE	MH	13	WALKER LANE	8	PVC			>		631 ELM / WALKERLANE
MH-388	MSA-MH-04	MAGNOLIA APTS	MH	98	TWELVE STREET	8	PVC	0.034	49	>		MSA-MH-03
MH-389	MSA-MH-03	MAGNOLIA APTS	MH	94	TWELVE STREET	8	PVC	0.034	300	>		MSA-MH-02
MH-390	MSA-MH-02	MAGNOLIA APTS	MH	0	TWELVE STREET	8	PVC	0.012	189	>		GLS-MH-02
MH-391	TBR-CO-01	TACO BELL REST	MH	780	WALNUT AVENUE	6	PVC	0.006	40	>	280.89	TBR-MH-01
MH-392	TBR-MH-01	TACO BELL REST	MH	781	WALNUT AVENUE	6	PVC	0.006	253	>	277.41	TBR-CO-02

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MH-393	TBR-CO-02	TACO BELL REST	MH	782	WALNUT AVENUE	6	PVC	0.006	18	>	277.2	GOT- MH	Jan-78
MH-394	ASP CO-1	ARROYO SECO	MH	216	SAN SIMEON	6	VCP	0.004	294	>		ASP MH-3	Jan-78
MH-395	SEI-MH-1	S. E. I.	MH	249	ELEVENTH STREET	12	VCP	0.002	610	>		345 ELEVEN / APPLE (55)	Apr-78
MH-396	SEI-MH-2	S. E. I.	MH	146	ELEVENTH STREET	12	VCP	0.002	600	>		249 ELEVEN / PALM (56)	Apr-78
MH-397	SEI-MH-3	S. E. I.	MH	345	ELEVENTH STREET		VCP			>		345 TENTH / APPLE (51)	Apr-78
MH-398	SEI-MH-4	S. E. I.	MH	103	ELEVENTH STREET	10	VCP	0.002	610	>		146 ELEVENTH / OAK (57)	Apr-78
MH-399	SEI-MH-4	S. E. I.	MH	3	ELEVENTH STREET	10	VCP	0.002	600	>		103 ELEVEN / MAPLE (58)	Apr-78
MH-400			MH	131	S. EL CAMINO REAL	10	PVC	0.002	76	>		TYLER LIFSTATION	Apr-78
MH-401	AMA MH-4	APPLE MANOR	MH	432	CALAVERAS WAY	6	VCP	0.005	298	>	271.33	AMA MH-3	May-78
MH-402	AMA MH-3	APPLE MANOR	MH	422	CALAVERAS WAY	8	VCP	0.0036	288	>	292.74	AMA MH-2	May-78
MH-403	AMA MH-2	APPLE MANOR	MH	412	CALAVERAS WAY	8	VCP	0.0036	264	>	268.5	AMA-MH-1	May-78
MH-404	AT MH-1	APPLE TREES	MH	598	MADERA AVENUE	8	VCP	0.0036	417	>	171.24	AMA MH-3	May-78
MH-405	WS-MH-1	WOODFILL	MH	207	RENPRO PLACE	6	VCP	0.005	220	>		1222 OAK AVE. / RENPRO	Nov-78
MH-406	PRS-MH-2	PIINI-ROSS SUB	MH	206	TOM ROGERS CIRCLE	6	VCP	0.005	260	>		PRS-MH-1	Nov-78
MH-407	PIP MH-2	PASSEK INDUSTRIES	MH	341	MAPLE AVENUE	6	VCP	0.00563	479	>	262.13	PIP MH-1	Feb-79
MH-408	PIP CO-3	PASSEK INDUSTRIES	MH	48	ELM CIRCLE	6	VCP	0.005	200	>		PIP MH-3	Feb-79
MH-409	PIP MH-1	PASSEK INDUSTRIES	MH	309	MAPLE AVENUE	8	VCP	0.0034	500	>	259.44	PIP MH-7	Feb-79
MH-410	PIP MH-3	PASSEK INDUSTRIES	MH	40	ELM CIRCLE	6	VCP	0.005	70	>	265.43	PIP MH-4	Feb-79
MH-411	PIP MH-5	PASSEK INDUSTRIES	MH	338	ELM CIRCLE	8	VCP	0.0034	436	>	262.6	PIP MH-6	Feb-79
MH-412	PIP MH-6	PASSEK INDUSTRIES	MH	43	THIRD STREET	8	VCP	0.0034	436	>	260.95	PIP MH-1	Feb-79
MH-413	PIP MH-7	PASSEK INDUSTRIES	MH	[265]	MAPLE AVENUE	8	VCP	0.00534	503	>	257.4	PVS MH-3	Feb-79
MH-414	PIP MH-8	PASSEK INDUSTRIES	MH	[200]	MAPLE AVE. / CANNAL	8	VCP	0.0034	335	>	254.75	PIP MH-9	Feb-79
MH-415	PIP MH-10	PASSEK INDUSTRIES	MH	200	OAK AVENUE	10	VCP	0.00291	460	>	252.29	PIP MH-11	Feb-79
MH-416	PIP MH-11	PASSEK INDUSTRIES	MH	220	VINEYARD DRIVE	10	VCP	0.00291	317	>	250.81	PIP MH-12	Feb-79
MH-417	PIP MH-12	PASSEK INDUSTRIES	MH	230	VINEYARD DRIVE	10	VCP	0.00291	516	>	249.85	PIP MH-13	Feb-79
MH-418	PIP MH-4	PASSEK INDUSTRIES	MH	10	ELM CIRCLE	6	VCP	0.005	325	>	265.23	PIP MH-5	Feb-79
MH-419	PIP MH-13	PASSEK INDUSTRIES	MH	250	VINEYARD DRIVE					>	248.36	PS	Feb-79
MH-420	PIP MH-9	PASSEK INDUSTRIES	MH		MAPLE/OAK	8	VCP	0.0034	330	>	253.41	PIP MH-10	Feb-79
MH-421	PIP-LS	PASSEK INDUSTRIES	MH	250	VINEYARD DRIVE	8	VCP	O/F	36	>	258.08	PIP MH-14 (OVERFLOW)	Feb-79
MH-422	ASP2 MH-1	ARROYO SECO 2	MH	1257	LOS PADRES COURT	8	VCP	0.34		>		ASP MH-4	Sep-82
MH-423	ASP2 MH-2	ARROYO SECO 2	MH	1261	LOS PADRES COURT	8	VCP	0.4		>		ASP2 MH-1	Sep-82
MH-424	PVS- MH-1	PINNACLE VIEW	MH	900	APPLE AVENUE	8	VCP	0.4	315	>	274.44	ECR	May-83
MH-425	PVS- MH-2	PINNACLE VIEW	MH	914	APPLE AVENUE	8	VCP	0.4	310	>	275.84	PV2- MH-1	May-83
MH-426	PVS- MH-3	PINNACLE VIEW	MH	425	TENTH STREET	8	VCP	0.4	436.5	>	277.6	PV2- MH-2	May-83
MH-427	PVS- MH-4	PINNACLE VIEW	MH	477	TENTH STREET	8	VCP	0.4	450	>	279.4	PV2- MH-3	May-83
MH-428	PVS- MH-5	PINNACLE VIEW	MH	497	TENTH STREET	8	VCP	0.4	430	>	281.22	PV2- MH-4	May-83
MH-429	PVS- MH-6	PINNACLE VIEW	MH	497	CLIFTON COURT	8	VCP	0.4	260	>	282.36	PV2- MH-5	May-83

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MH-430	PVS-MH-9	PINNACLE VIEW	MH	497	FRANCONI DRIVE	8	VCP	0.44	261	>		PV2- MH-6	May-83
MH-431	PVS-MH-7	PINNACLE VIEW	MH	489	CLIFTON COURT	8	VCP	0.043	285	>	283.54	PV2- MH-6	May-83
MH-432	PVS-MH-8	PINNACLE VIEW	MH	482	CLIFTON COURT	8	VCP	0.04	265	>	284.68	PV2-MH-7	May-83
MH-433	PVS- MH-10	PINNACLE VIEW	MH	489	FRANCONI DRIVE	8	VCP	0.4	307	>	284.64	PV2-MH-9	May-83
MH-434			MH	424	TENTH STREET			0.04		>	275.85	APPLE AVENUE	May-83
MH-435	MS-MH-2	MEADOWS	MH	1098	APPLE AVENUE	8	PVC	0.0036	265	>	286.08	MS-MH-1	Dec-83
MH-436	MS-MH-3	MEADOWS	MH	1104	APPLE AVENUE	8	VPC	.0037	268	>		MS-MH-2	Dec-83
MH-437	MS-MH-5	MEADOWS	MH	348	HUTCHISON DRIVE	8	PVC	0.0036	255	>	284.86	MS-MH-1	Dec-83
MH-438	MS-MH-7	MEADOWS	MH	344	HICKS AVENUE	9	PVC	0.0036	348	>	287.55	MS-MH-6	Dec-83
MH-439	MS-MH-8	MEADOWS	MH	354	HICKS AVENUE	8	PVC	0.0036	129	>	288.7	MS-MH-7	Dec-83
MH-440	PTH-MH-1	PRIMAVERA TOWN HOME	MH	415	PRIMAVERA COURT	6	PVC	0.0176	235	>	281.46	PTH-MH-3	Feb-84
MH-441			MH	497	TENTH STREET		CVP	0.04		>		473 TENTH	Feb-84
MH-442	PTH-MH-3	PRIMAVERA TOWN HOME	MH	424	TENTH STREET	8	PVC	0.04	240	>	276.96	PVH-MH-2	Feb-84
MH-443		CHERRY S.S.I	MH	533	THIRD AVENUE	24	HDPE	0.002	500	>		WALNUT / THIRD	Feb-84
MH-444	WRSI-MH-13	WOODRIDGE 1	MH	804	CHERRY AVENUE	8	PVC	0.003	270		273.4	WRSI-MH-9	Aug-84
MH-445	WRSI-MH-9	WOODRIDGE 1	MH	793	MCDONARD WAY	8	PVC	0.002	240			WRS-MH-8	Aug-84
MH-446	WRSI-MH-10	WOODRIDGE 1	MH	774	MCDONARD WAY	8	PVC	0.003	565		270.53	WRSI-MH-9	Aug-84
MH-447	WRSI-MH-12	WOODRIDGE 1	MH	783	DART WAY	6	PVC	0.003	337		272.75	WRSI-MH-11	Aug-84
MH-448	WRSI-MH-11	WOODRIDGE 1	MH	540	BAYWOOD DRIVE	8	PVC	0.003	270		271.54	WRSI-MH-10	Aug-84
MH-449	VMS-MH-01	VINTAGE MEADOWS SUB	MH	2	THIRTEEN STREET	8	PVC	0.0050	155	>	296	VMS-MH-02	Apr-20
MH-450	VMS-MH-02	VINTAGE MEADOWS SUB	MH	10	THIRTEEN STREET	8	PVC	0.0060	204	>	293.28	VMS-MH-03	Apr-20
MH-451	VMS-MH-03	VINTAGE MEADOWS SUB	MH	54	PRIMROSE WAY	8	PVC	0.0050	171	>	242.42	VMS-MH-04	Apr-20
MH-452	VMS-MH-05	VINTAGE MEADOWS SUB	MH	51	PRIMROSE WAY	8	PVC	0.0050	257	>	293.28	VMS-MH-03	Apr-20
MH-453	VMS-MH-04	VINTAGE MEADOWS SUB	MH	42	PRIMROSE WAY	8	PVC	0.0050	201	>	291.41	VMS-MH-06	Apr-20
MH-454	VMS-MH-06	VINTAGE MEADOWS SUB	MH	1287	MAGNOLIA STREET	8	PVC	0.0050	99	>	290.43	VMS-MH-07	Apr-20
MH-455	VMS-MH-07	VINTAGE MEADOWS SUB	MH	1279	MAGNOLIA STREET	8	PVC	0.0100	196	>	288.23	VMS-MH-08	Apr-20
MH-456	VMS-CO-03	VINTAGE MEADOWS SUB	MH	49	PRIMROSE WAY	8	PVC	0.0110	155	>	297.54	VMS-MH-11	Apr-20
MH-457	VMS-MH-09	VINTAGE MEADOWS SUB	MH	1276	SYCAMORE STREET	8	PVC	0.0050	343	>	288.03	VMS-MH-08	Apr-20
MH-458	VMS-MH-10	VINTAGE MEADOWS SUB	MH	1284	SYCAMORE STREET	8	PVC	0.0072	205	>	289.75	VMS-MH-09	Apr-20
MH-459	VMS-MH-11	VINTAGE MEADOWS SUB	MH	1290	SYCAMORE STREET	8	PVC	0.0050	195	>	291.62	VMS-MH-10	Apr-20
MH-460	VMS-MH-08	VINTAGE MEADOWS SUB	MH	10	BIRCH HILL WAY	8	PVC	0.0050	210	>	281.03	VMS-MH-12	Apr-20
MH-461	VMS-MH-13	VINTAGE MEADOWS SUB	MH	1284	ELM AVENUE	8	PVC	0.0090	429	>	298.03	VMS-MH-12	Apr-20
MH-462	VMS-MH-12	VINTAGE MEADOWS SUB	MH	1268	ELM AVENUE	8	PVC	0.0050	139	>			Apr-20
MH-463	VMS-MH-14	VINTAGE MEADOWS SUB	MH	1298	ELM AVENUE	8	PVC	0.0054	331	>	292.98	VMS-MH-13	Apr-20



Public Works Department
Confined Space Entry Program
Revision 01
October 2020

Document Change Order Record Control

The Confined Space Program is to protect Public Works employees from exposure to hazards while working in or near confined spaces. City of Greenfield is concerned about the health and safety of its employees and has taken steps to ensure that all employees recognize confined space hazards. The procedures established through this Program are to ensure that employees avoid entering a confined space unless they have authorization through the permit process. This Confined Space Program is based on and implements the requirements of Title 8 California Code of Regulations §5157, Permit-Required Confined Spaces

This Document Change Order Control sheet is intended to support the City’s efforts to keep the copies of the CSP to City Staff as Current and up to date. Please contact Public Works Administration at (831) 674-2635 regarding any changes or updates needed to the current Version of the City's CSP.

Change Order #	Date	Description	Revision Completed By	Revision Approved By
00	May 22, 2014	The City developed and implemented as required California Code of Regulations, Title 8, Section 5156. Permit-Required Confined Spaces.	Greenfield PW staff	
	March 10, 2015	Permit-Required Confined Spaces Program was presented with the SSMP 5-year update	Greenfield PW Staff	City Council
01	October 2020	Revisions 01, changes to Appendices Section	Greenfield PW Staff	

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Appendix A
Confined Space Locations & Identification

Appendix B
Definitions Confined Space Decision Flow Chart

Appendix C
Confined Space Decision Flow Chart

Appendix D
Confined Space Entry Permit

Appendix E
Gas Monitor - Bump Test and Calibration Log Sheet

Appendix F
California Code of Regulations, Title 8, Section 5156

1. **Policy**

The Confined Space Program is to protect all employees from exposure to hazards while working in or near confined spaces. City of Greenfield is concerned about the health and safety of its employees and has taken steps to ensure that all employees recognize confined space hazards. The procedures established through this Program are to ensure that employees avoid entering a confined space unless they have authorization through the permit process. This Confined Space Program is based on and implements the requirements of Title 8 California Code of Regulations §5157, Permit-Required Confined Spaces.

2. **Scope/ Application**

This program applies to all employees of City of Greenfield who are responsible for planning, supervising, entering or participating in a confined space entry or non-entry rescue. The identified confined spaces and the known hazards of those confined spaces are covered by this PRCS Program. Refer to Appendix A for a list of identified confined spaces.

3. **Definitions of Terms** The definitions included in the Cal/OSHA Permit-Required Confined Space regulation are an integral part of the Program. Appendix B contains an alphabetical list that defines terms used throughout this Program document. The definitions are incorporated with City of Greenfield's confined space entry training.

4. **Role & Responsibilities**

- a. **Entry Supervisor Responsibilities** Entry supervisors will be familiar with all the elements of this policy. They must Know the hazards that may be faced during entry.
- i. Understand information on the signs.
 - ii. Recognize symptoms and consequences of exposure to harmful conditions.
 - iii. Verify that all tests have been conducted.
 - iv. Confirm that all personal protective equipment is supplied and utilized.
 - v. Verify that the proper rescue services are available onsite and that the means for summoning secondary emergency services are operable when applicable.
 - vi. Ensure that the entry permit is complete and accurate.
 - vii. Cancel the permit once the space has been vacated and filing it with the Secretary.
- b. **Attendant's Responsibilities** Each attendant will be familiar with all the elements of this policy. The attendant must Complete specialized training associated with this program.
- i. Be familiar with the confined space.
 - ii. Understand the duties they are to perform.
 - iii. Know any hazards that may exist within the confined space.
 - iv. Be sure that the permit is completed and properly displayed at the confined space.
 - v. Be sure warning signs are posted.
 - vi. Ensure that proper communication is established and understood with the entrants prior to their entry into the confined space.
 - vii. Be alert for any signs or symptoms of hazards that may appear.
 - viii. Be aware of possible behavioral effects of hazard exposure to entrants.

- ix. Maintain an accurate count of authorized entrants
 - x. Warn unauthorized entrants that they must stay away and are not allowed to enter the confined space.
 - xi. Maintain a position outside the confined space during the period of entrants' occupancy and any additional periods of time deemed necessary.
 - xii. Communicate with authorized entrants as necessary to monitor entrant status and to alert the entrants of the need to exit.
 - xiii. Monitor activities inside and outside the space to determine if it is safe to remain and continue work.
- c. **Entrant's Responsibilities** Each employee designated as an entrant will be familiar with all elements of this policy. The entrant will;
- i. Complete specialized training associated with this program.
 - ii. Be familiar with the confined space.
 - iii. Get approval by the entry supervisor to enter the confined space and be listed as an authorized entrant on the entry permit.
 - iv. Understand duties they are to perform.
 - v. Know any hazards that may exist within the confined space.
 - vi. Ensure that proper communication is established and understood with the attendant prior to their entry into the confined space.
 - vii. Ensure that they are properly fitted with all personal protective equipment necessary to perform the function as outlined above in the section entitled "Personal Protective Equipment."
 - viii. Communicate with the attendant as necessary to enable the attendant to monitor entrant status and alert entrants of the need to evacuate the space if necessary.
 - ix. Alert the attendant whenever any warning sign is recognized or symptoms of exposure to a dangerous situation exist.
 - x.

Entrants must follow directions from the attendant or entry supervisor when an order to exit is given.

- d. **Management Responsibilities** Each management employee supervising employees who work in or near a confined space will
- i. Be familiar with all elements of this policy.
 - ii. Specify and provide the proper equipment.
 - iii. Ensure that employees are properly trained.
 - iv. Require employees to follow the Confined Space Entry Policy when and where applicable in accordance with Cal-OSHA regulations.
 - v. Maintain all completed entry permits for one year; Public Works Administrative will maintain the file.

5. Confined Spaces Procedures

a. **Identification & Evaluation of a confined space**

Confined space locations are defined in this policy for the treatment plant and for those spaces defined as a part of the collection and transport systems. Treatment plant locations are noted on a confined space site map and are so noted by area (see Appendix A.) All collection system sewer entries are deemed permitted spaces; locations are noted within Manhole location numbers.

Use the Confined Space Decision Flow Chart (Appendix B) attached at the end of this policy to review the type of confined space and the type of entry required to complete the work. Determine if entry is absolutely necessary. If a task can be completed from outside the space, do so.

- b. **All spaces shall be considered permit-required confined spaces until the pre-entry checklist demonstrates otherwise.** The Confined Space Atmospheric Check, Pre-Entry Precautions and Safeguards must be completed before entry into a confined space. This list is part of the permit and verifies completion of items listed below. This checklist and permit shall be kept at the site for duration of the job. If circumstances dictate an interruption in the work, the confined space must be re-evaluated, and a new checklist and permit must be completed.

Confined spaces may be entered without the need for a written permit or attendant provided that the space can be maintained in a safe condition for entry by *mechanical ventilation alone* as provided in the California Code of Regulations, Section 8, Section 5157(c)(5). All spaces shall be considered permit-required confined spaces until the pre-entry procedures demonstrate otherwise.

6. Control of Hazard's

The Confined Space Pre-Entry Checklist and permit form contained in this program must be completed prior to entry. The checklist will help City of Greenfield employees identify potential hazards and assist with correcting unsafe situations. It will also help to identify unauthorized entrants.

- a. **Atmospheric testing** If entry is required, entry is prohibited until atmospheric testing of the space to be entered has been completed. Test shall be conducted from outside the space. The confined space atmosphere shall be tested to determine whether dangerous air contamination and/or oxygen deficiency exists. A direct reading gas monitor shall be used. The minimum parameters to be monitored are oxygen deficiency, Lower Explosive Limit (LEL), hydrogen sulfide concentration, carbon monoxide and the concentration of other toxic materials possibly present inside the confined space. The top, middle and bottom of the space must be tested, as air contaminants that may be present can have different densities and therefore settle in different locations within the confined space. A written record of the pre-entry test results shall be made and kept at the work site for the duration of the job. Affected employees shall be able to review the testing results.

- b. **OSHA requires that the atmosphere in a confined space be monitored continuously, prior to entry, during entry, and throughout occupancy.** Sudden fluctuations in atmospheric conditions can cause a change from a safe to a hazardous environment in a very short time.
- c. **Ventilation** When necessary the confined space should be vented or “purged” prior to entry and should continue to be vented during all work within the space until the work is completed. Ventilation equipment should be capable of moving an adequate supply of air to effectively ventilate the entire space. Cross-ventilation is the most effective method. If cross-ventilation is not possible, the space can be vented by using a fan or blower located outside of the space.
- d. **Personal Protective Equipment** City of Greenfield employees should never enter a confined space without the proper safety harness, properly rated lifting device and lifeline. Lifelines and harnesses must be strong enough to aid in removing an unconscious worker and must be securely attached. The type of safety harness may vary, but a full-body harness will usually be most effective.

Other personal protective equipment may include hard hats, goggles or face shields, ear plugs or muffs, gloves, protective clothing, and safety shoes. All personal protective equipment will be supplied by City of Greenfield.

- e. **Communications and observation** Communications between attendant and entrant(s) shall be maintained throughout entry. Methods of communication that may be specified by the permit include voice, voice-powered radio, signaling tugs on a rope, and the attendant's observation of the worker body language. These activities often generate so much noise that the necessary hearing protection makes communication by voice difficult.
- f. **Lockout and Tag out** All electrical and mechanical systems to the confined space shall be locked out and tagged following the procedures in Lockout /Tag out Program. All pumps and lines which may reasonably cause contaminants to flow into the space shall be disconnected, blinded and locked out, or effectively isolated by other means to prevent development of dangerous air contamination or engulfment. If blocking and/or isolation require entry into the space the provisions for entry into a permit-required confined space must be implemented.
- g. **Not all laterals to sewers or storm drains require blocking.** Collection system entry differs from other permit entries; first, there rarely exists any way to completely isolate the space to be entered; second, because isolation is not complete, the atmosphere may suddenly and unpredictably become lethally hazardous (toxic, flammable or explosive) from causes beyond the control of the entrant or employer. However, where experience or knowledge of industrial use indicates there is a reasonable potential for contamination of air or engulfment into an occupied sewer, then all affected laterals shall be blocked. Public Works Service Personnel should

develop and maintain liaison, to the extent possible, with the local fire and emergency services in their area so that sewer work may be completed with the local fire district on site.

- h. **Application of interior coatings/linings** Application of interior coatings/linings can generate atmospheric hazards. These hazards shall be controlled by forced air ventilation sufficient to keep the atmospheric concentration of flammable materials below 10% of the lower explosive limit (LEL). Appropriate respirators shall be used in addition to providing forced ventilation if the forced ventilation does not maintain acceptable respiratory conditions. Respirators do not provide oxygen. If oxygen level is below 19.5%, the confined space entry shall stop and entrant shall be removed until the atmosphere has been purged and is safe to re-enter. A new permit must be completed prior to re-entry. Where flammables may be present, all equipment must be explosion-proof and intrinsically safe. Air driven tools are preferred over electric tools. **Never** bring any cylinders of compressed air into a confined space.

7. **Permit Required Confined Space Entry**

Entry permit procedures shall be observed under any of the following conditions:

- a. Testing demonstrates the existence of dangerous or deficient conditions and additional ventilation cannot reduce concentrations to safe levels;
- b. The atmosphere tests as safe, but unsafe conditions can reasonably be expected to develop;
- c. An emergency exists and it is not feasible to wait for pre-entry procedures to take effect.
- d. When practical, entry must be through a top opening, the full body harness that suspends a person upright and a hoisting retrieval device or similar apparatus shall be available for lifting workers out of the space. Entry Permit procedures are as outlined below
- e. Entry supervisor will obtain an entry permit. The prescribed Confined Space Entry Permit form for City of Greenfield is located in the Utility Manager Office.

The entry team, with a minimum of three persons, will accomplish all pre-entry actions required for entering the space, such as atmospheric testing, hazard control/elimination actions, have all required equipment on hand and inspected.

- a. Operating and rescue procedures will be identified, organized and documented on the permit before the entry.
- b. The entry supervisor will ensure the pre-entry checklist is complete and authorize the entry permit
- c. Permits must be available to all permit space entrants.
- d. The entry will be authorized, and the permit will be signed and maintained outside the confined space until cancelled.
- e. The permit shall be kept at the job site for the duration of the job and should extend only for the duration of the work performed.

- f. If circumstances cause an interruption in the work or a change in the alarm conditions for which entry was approved, a new Confined Space Pre-entry Checklist and Entry Permit must be completed.
 - g. To facilitate non-entry rescue, retrieval systems will be used whenever an authorized entrant enters a permit space, unless the retrieval equipment would increase the overall risk of injury or would not contribute to the rescue of the entrant. A mechanical lifting device, full-body harness and retrieval line will be used by the entrant. The other end of the retrieval line must be connected to a mechanical lifting device, attached to a fixed point outside the permit space in such a manner that rescue can be performed expediently if necessary. In any situation where their use may endanger the worker, use of a hoisting device or safety belt and attached lifeline may be discontinued.
 - h. Permits must be retained for a year after cancellation.
 - i. Entry may proceed.
 - j. Continuous gas monitoring shall be performed during all confined space operations. If alarm conditions change adversely, entry personnel shall exit the confined space and a new confined space permit issued.
- 9) **Reclassification of a Permit -Required Confined Space to a non-Permit Confined Space**
A permit-required confined space may be reclassified and entered as a non-permit confined space if the permit space contains no actual or potential atmospheric hazard and all other hazards within the space can be eliminated without entry into the space. Hazards may be eliminated, for example, by:
- a. Following all designated lockout-tag out procedures for the space in question;
 - b. Emptying a vessel to remove an engulfment or other content hazard;
 - c. Draining tanks of their contents, purging any residual chemicals with water, and ventilating the space after purging is complete;
 - d. Following lockout/tag out procedures and by taking all appropriate safety measures to render the space safe for entry.

If hazards arise within a permit-required space that has been declassified to a non-permit space, each employee in the space shall exit the space as soon as possible. The Entry Supervisor shall then reevaluate the space and determine whether it must be reclassified as a permit-required space, in accordance with other applicable provisions.

- 10) **Alternate Entry Procedures for Permit -Required Confined Space** Spaces that have hazardous atmospheres as their only hazard will use alternate entry procedures. Alternate entry procedures require the use of a City of Greenfield Confined Space Entry Permit. Alternate entry procedures can only be used when the only hazard present in a confined space is an actual or potential atmospheric hazard that can be controlled through ventilation alone. In short, this means that a permit is not required before entry, rescue arrangements do not have to be made, and no attendant is required. It is extremely important to follow the procedures below when using the alternate entry procedure:
- a. Demonstrate that the only hazard posed by the space is an actual or potential hazardous atmosphere, which means that any hazard involving high noise levels, lockout-tagout,

drowning, excessive heat or cold, slips, trips, fall or any other hazards shall be eliminated;

- b. Demonstrate that continuous forced air ventilation alone is sufficient for safe entry;
- c. Develop monitoring and inspection data to support the above. If initial entry into the space is necessary to collect such data, the entrant shall follow the complete permit program; and
- d. Make available to each employee who enters the space the data collected to prove that the space qualifies for alternate entry procedures.

Even with alternate entry procedures, the following requirements shall be met prior to entry:

- a. The internal atmosphere shall be tested for oxygen content, flammable gases and vapors and potential toxic air contaminants to ensure there is no hazardous atmosphere in the space;
- b. Forced air ventilation shall be provided in the area where the employee will be present in order to control any hazardous atmosphere;
- c. Safe atmospheric conditions are ensured by periodic testing and recording.
- d. If a hazard is detected, the entry shall be cancelled, and the space re-evaluated.
- e. Entrants are trained on the hazards, equipment and safe work practices necessary to make the entry and all work performed during the entry safe.
- f. Certifications in writing that all the above procedures have been implemented, identifying the space and the date of entry. The signed certification shall be made available to all affected employees.

11) **NON-PERMIT REQUIRED CONFINED SPACE ENTRY:**

A non-permit-required confined space, by definition, poses no hazard to an employee more serious than its restricted means of entry and exit. Therefore, provided that the work to be performed lacks any potential to create a prohibited or unacceptable condition, entry to a non-permit-required confined space may proceed as described. Prior to entry:

- a. Review the work to see if personal protective equipment is needed;
- b. Establish traffic control barriers at the entry point, if applicable;
- c. Test atmosphere before opening cover or hatch.
- d. Eliminate any condition that would make removal of the confined space entry cover unsafe;
- e. Once the entry cover is removed, promptly protect the entry point with a guard or temporary barrier to prevent an accidental fall through the opening and protect employees working in the space from foreign objects entering the space;
- f. Ensure availability of a safe means of communication; and
- g. Ensure availability of appropriate lighting and/or equipment (e.g., ladders) for safe entry and exit by entrants

When there is a change in the use or configuration of a non-permit confined space, that space shall be reevaluated to determine if it should be reclassified as a permit-required confined space.

Precautionary Measures

- a. Operating procedures will be identified; organized and documented on the non-permit confined space entry permit will be fall out before the entry.
- b. The supervisor will ensure the "non-permit confined space entry" permit is complete and authorize the entry permit. see "Appendix D"
- c. Whenever City of Greenfield personnel work in non-permit space, an attendant shall be posted at the opening.
- d. Authorized entrant(s) and attendant(s) shall be briefed on the potential hazards that could be encountered in the space and the signs and symptoms associated with exposure to the hazard.
- e. Special permits shall be issued prior to any painting being performed in the space. *See below sections painting precautions.*
- f. All systems connected to the space shall be locked out, tagged, disconnected and/or blinded to preclude injury to the entrants from energy sources.
- g. Depending on the substance stored in the space (i.e. vessel, tank, etc.), the space shall be steamed, washed or purged before entry and work within the space has begun.
- h. Necessary personal protective equipment shall be provided to all employees assigned to work in the confined space.
- i. Use the decisions flow-chart included in Appendix C.

12) Reclassification of a Non-Permit Confined Space to A permit -Required Confined Space

When there are changes in the use of a non-permit confined space that may increase the hazards, the space shall be reevaluated and classified as a permit-required space if necessary. Reclassification would be required for situations such as:

- a. During application of solvents, paints, chemicals or other materials that could potentially create a hazardous atmosphere in a confined space.
- b. During cutting, brazing, or soldering in some confined spaces with limited ventilation. The confined space entry supervisor shall reevaluate and reclassify confined spaces as necessary depending upon the work activities to be performed in these spaces.

13) Rescue & Emergency Services

The City of Greenfield does not perform entry rescue in permit-required confined spaces. The City performs non-entry rescue only. Whenever work is going to be performed in a confined space, emergency rescue must be anticipated. In the event of an emergency, the entry supervisor will coordinate and work with the Fire Department to have them on site for any emergency. If at any time there is any questionable action or non-movement by the worker inside the confined space, a communication check will be made. If there is no response, the worker will be removed immediately. Exception: If the worker is disabled due to falling or impact, he/she shall not be removed from the confined space unless there is immediate danger to his/her life.

- ❖ *No Employees will enter a confined space for rescue unless they have been trained and equipped for the specific type of rescue.*

Non-entry rescue is the preferred method for rescue of personnel from a confined space. Entrant remains attached to the retrieval device so the attendant can initiate a rescue without entering the confined space.

Acceptable rescue procedures include non-entry retrieval, entry by a contract standby rescue team, and entry by public emergency services. The entry permit will specify which procedures will be used. The supervisor will ensure that rescue services are immediately available before the permit is approved.

A self-contained breathing apparatus shall be worn by any person entering the confined space for rescue.

If City of Greenfield arrange for rescue services to be performed by others, the entry supervisor must be sure to inform the designated rescuers of the hazards associated with the permit space and provide them with access to all permit spaces from which rescue may be necessary.

Arrangements for rescue services are not required when using Alternate Procedures.

14) **Employee Training**

City of Greenfield employees with active roles in and around confined spaces must be provided with the training and equipment as specified in this program. These employees are defined as authorized entrants, attendants, and entry supervisors.

Greenfield will provide training so that all employees whose work requires entering confined spaces acquire the knowledge, understanding and skills necessary for the safe performance of the duties assigned. The training syllabus for the “Confined Space Program” shall also provide training to individuals who work in non-permit confined space as well as permit-required confined spaces. The copy of the program syllabus can be found at the Public Works Administrative Office.

- a. Training shall be provided to each affected employee:
 - i) Before the employee is first assigned duties under this section;
 - ii) Whenever there is a change in permit space operations that presents a hazard about which an employee has not previously been trained.
- b. The training will establish employee proficiency in the duties required, and will introduce new or revised procedures, as necessary, for compliance.
- c. All training will be documented in the Greenfield Public Works administrative Office training record folders per employee.
- d. After initial training, employees are required to have annually complete confined space refresher training which includes a mock entry and rescue.

15) Equipment Maintenance

Much of the equipment used for confined space entry requires routine inspection and maintenance. The equipment manufacturers' manual should be referred to for specific requirements. Following is a partial list of equipment that requires documented inspections:

- a. Retrieval hoist system including winch
- b. Fall protection devices including full body harness
- c. Gas detectors

16) Working Involving Contractor or Multiple Employees

When City of Greenfield arranges to have employees of another employer (contractor) perform work that involves confined space entry, the project manager shall:

- a. Inform the contractor that the workplace contains permit-required confined spaces and the permit-required confined space entry is allowed only through compliance with a confined space program that complies with CCR Title 8 Section 5157.
- b. Inform the contractor of the hazards identified and the employer's experience with the confined space that makes the space in question a permit-required confined space.
- c. Coordinate entry operations with the contractor when personnel from both employers will be working in or near the confined space.
- d. Verify that the contractor has an appropriate confined space entry program.
- e. Debrief the contractor at the conclusion of the confined space entry operation(s) regarding the permit space entry procedures that were followed (if applicable) and the hazards that were encountered or created during entry operations.

17) Required program review

At least every 24 months, supervisors will conduct a review using canceled entry permits to identify any deficiencies in our program. We will conduct a review immediately if there is reason to believe that the program does not adequately protect our employees, such as the following situations:

- a. Unauthorized entry of a permit space
- b. Discovery of a hazard not covered by the permit
- c. Detection of a condition prohibited by the permit
- d. An injury or near-miss during entry
- e. Change in the use or configuration of the space or
- f. Employee complaints of confined space program ineffectiveness.

Corrective measures will be documented by revising the program. Employees will participate in revising the program and will be trained on any changes.

RELATED FORMS

Confined Space Entry Permit
Non-Confined Space Entry Permit

Confined Space Entry Program Appendix A- List of Confined Spaces

<u>Location</u>	<u>Permitted</u>	<u>Non-Permitted</u>
1. Wastewater Division		
A. Wastewater treatment plant		
1) Influent Manhole	X	
2) Head works influent area	-	X
3) Clarifier #1 thru #3 (empty)	X	-
4) Scum pits #1 thru #3 (empty)	X	-
5) All plant manholes sewers	X	-
6) Aerobic digester #1 and #2 (empty)	-	X
B. Oxidation Pond & Disposal Area		
1) Influent Diversion Box	X	-
2) Spray field wet well	X	-
C. Lift Stations Area		
1) Wet well (below the manhole)	X	-
2) Lift station dry well	-	X
D. Wastewater Collection System		
1) Manholes (greater than 3 feet)	X	-
2) Manholes (less than three feet)	-	X
2) Water Division		
A. Water storage tanks		
1) Oak Avenue (1 Million Gallon Tank)	X	-
2) Corporation Yard (1.5 Million Gallon Tank)	X	-
B. Water Meter Boxes (greater than 3 Feet)	-	X
C. Trenches (greater than 4 feet)	-	X
3) Storm Water Division		
A. Catch basins	-	X
B. Storm water manholes (greater than 3 feet)	X	-
C. Storm water manholes (less than 3 feet)	-	X
D. Storm water percolation pond culvert pipe	X	-

Confined Space Entry Program

Appendix B – Definitions

The following definitions, which may be abbreviated and/or enhanced in this text compared to the regulations are presented to facilitate understanding of Section 5157. Exact definitions, if required, are found in 8 CCR Section 5157(b).

Acceptable entry conditions – the conditions that must exist in a confined space to allow entry and to ensure that employees involved with a permit-required confined space entry can safely enter into and work within the space.

Attendant – a trained individual stationed outside one or more confined spaces who monitors the authorized entrants and who performs all attendant’s duties assigned in the City of Greenfield Confined Space Program.

Cancel – The process of completing and terminating the entry permit when the entry is complete or the space is no longer safe to enter.

Confined Space - a space that meets all of the following criteria: 1) is large enough and so configured that an employee can bodily enter and perform assigned work; 2) Has limited means of entry and egress; 3) Is not designed for continuous employee occupancy

Emergency – Any internal or external occurrence or event involving the confined space that could endanger the attendant or entrants (including any failure of hazard control or monitoring equipment).

Emergency is any occurrence or event internal or external to the permit space that could endanger the entrants

Engulfment – the surrounding and effective capture of a person by a liquid or finely divided (flow able) solid substance that can be aspirated to cause death by filling or plugging the respiratory system or that can exert enough force on the body to cause death by strangulation, constriction, or crushing.

Entrant – an employee who has been properly trained and authorized by City of Greenfield to enter a confined space.

Entry – the action by which a person passes through an opening into a permit-required confined space. Entry includes any work activities in that space and is considered to have occurred as soon as any part of the entrant’s body breaks the plane of an opening into the space.

Entry Permit – is a written document, issued by the employer, which contains space and work-specific information to allow and control permit space entry, once approved and signed by the entry supervisor.

Confined Space Entry Program

Appendix B – Definitions

Entry Supervisor the person responsible for determining if acceptable entry conditions are present at a permit space where entry is planned, for authorizing and overseeing entry operations, and for terminating entry as required by this section.

Hazardous atmosphere an atmosphere that may expose employees to the risk of death, incapacitation with impairment of ability to self-rescue (that is, escape unaided from a permit space), injury or acute illness from one or more of the following causes:

- Flammable gas, vapor or mist in excess of 10 % of its lower flammable limit or lower explosive limit (LFL/LEL);
- Airborne combustible dust at a concentration that meets or exceeds its LFL/LEL;
- Atmospheric oxygen concentration below 19.5 percent or above 23.5 percent;
- Atmospheric concentration of any substance for which a dose could result in employee exposure in excess of its permissible exposure limit;
- Any other atmospheric condition that is immediately dangerous to life or health.

Hot work permits written authorization to perform operations (for example, welding, grinding, cutting, burning and heating) capable of providing a source of ignition.

Immediately dangerous to life or health (IDLH) - any condition that poses an immediate or delayed threat to life or that would cause irreversible adverse health effects or that would interfere with an individual's ability to escape unaided from a permit space.

Inerting the displacement of the atmosphere in a permit space by a noncombustible gas (such as nitrogen) to such an extent that the resulting atmosphere is non-combustible.

Isolation is the process by which a permit space is removed from service and completely protected against the release of energy and material into the space.

Line breaking is the intentional opening of a line, pipe or duct containing a hazardous atmosphere or substance capable of causing injury.

Non-permit confined space – confined space that does not contain or, with respect to atmospheric hazards, have the potential to contain, any hazard capable of causing death or serious physical harm.

Oxygen deficient atmosphere containing less than 19.5 % oxygen by volume.

Oxygen enriched atmosphere more than 23.5 percent oxygen by volume.

Confined Space Entry Program

Appendix B – Definitions

Permit Required Confined Space is a confined space that (1) contains, or has potential to contain, a hazardous atmosphere, (2) contains a material that could engulf an entrant, (3) has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by a floor which tapers to a smaller cross section, or (4) contains any other recognized serious safety or health hazard.

Permit-required confined space program is the employer's overall written permit space program

Permit system The City written procedure for preparing and issuing permits for entry and for returning the confined space to service following termination of entry.

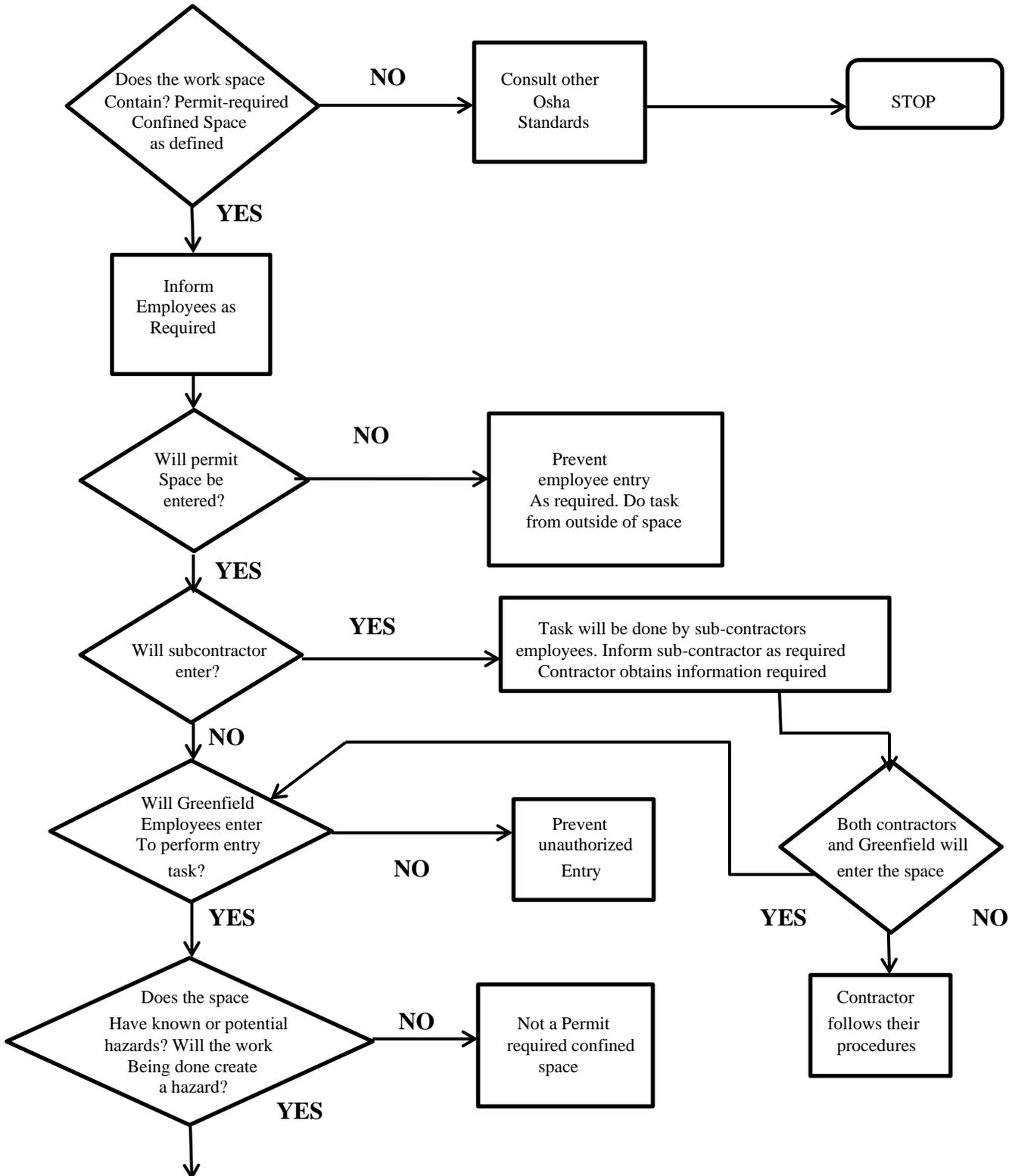
Prohibited condition any condition in a confined space that is not allowed by the permit during the period when entry is authorized.

Purging the procedure of filling a space with fresh air by means of a mechanical blower.
Rescue personnel – the personnel designated and trained to rescue employees from confined spaces.

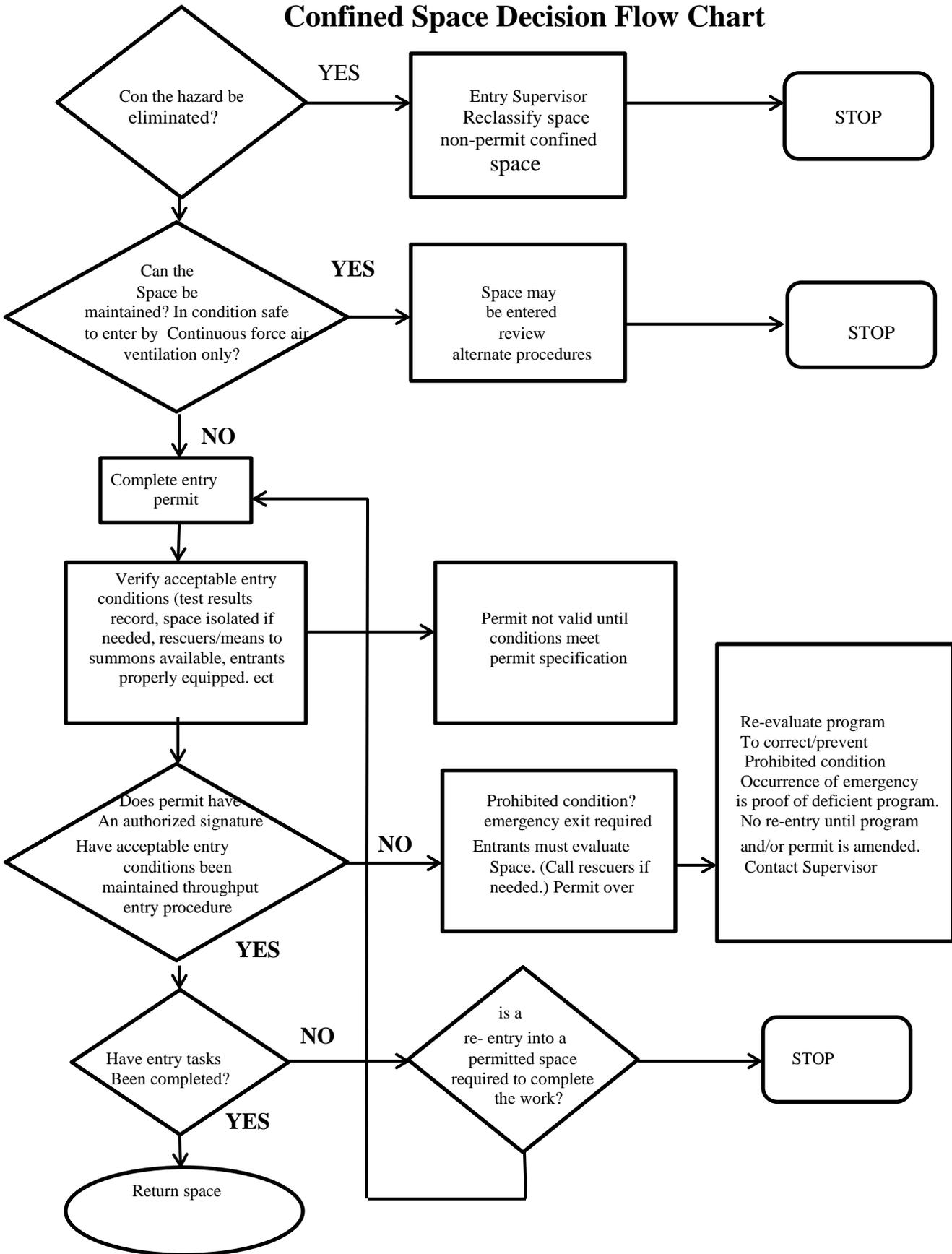
Retrieval system – the equipment to be used for non-entry rescue of persons from confined spaces, including a retrieval line, chest or full-body harness, mechanical lifting device and anchor point.

Testing the process by which the hazards that may confront entrants of a confined space are identified and evaluated.

Confined Space Entry Program Appendix C – Confined Space Decision Flow Chart



Confined Space Decision Flow Chart



normal operation

Appendix D

	<h3 style="margin: 0;">City of Greenfield</h3> <p style="margin: 0;">Department of Public works Utilities Division 920 Walnut Avenue Greenfield, Ca (831)674-2635 / FAX (831)674-3259</p>	<p style="margin: 0;">CONFINED SPACE PROGRAM</p> <p style="margin: 0;">SOP NO. A-2</p> <p style="margin: 0;">REVISED November-2020</p>			
Permit Required Confined Space Entry Form					
<p style="margin: 0;">This form must be completed for all permit space entries, and must be posted at the site of entry. It is to be completed by Lead Attendant.</p> <p style="margin: 0;">I have reviewed the work authorized by this permit and the information contained herein, written instructions and safety procedures have been received and are understood. The permit is not valid and entry cannot be approved if any element of this permit are not completed</p>					
Attendant Lead:		Job Site (location) :			
Date and Time Issued:		Purpose of entry:			
Permit Number:		Expiration Time:			
SECTION I- PERSONNEL (Attach list if necessary)					
<p style="margin: 0;">Your signature indicates you have been trained on the hazards of this space, your duties, and precautions you must take for this entry</p>					
Position	Name	Signature			
Lead Attendant					
Attendant					
lead Entrant					
Entrant					
SECTION II- Gas Detection Unit Inspection Check (Lead Attendant):					
Inspected By:		Calibration due (days):			
Gas Unit SN#		Time:	comments:		
Oxygen	%	19% to 21.9%	Levels		
Explosive	% LFL	<10%	Levels		
Hydrogen Sulfide	PPM	<10 PPM	Levels		
Carbon Monoxide	PPM	<25 PPM	Levels		
SECTION III- ENTRY REQUIREMENTS (PPE)					
Entry Requirement	Required	Checked	Personal Protective Equipment	Required	Checked
Communication Equipment			Eye Protection (Specify Type)		
Ventilation Equipment			Respiratory Protection (Specify Type)		
GFCI Protected Electrical			Hearing Protection		
Explosive proof lights			Gloves (Type)		
Non-Spark Tools			Boots (Type)		
Ladders			Clothing (Type)		
Fall Protection			Hard Hat		
Barricades			Other		
Continuous monitoring Equipment To Be Worn During Entry (Specify Type)			Other		
			Comments		

SECTION IV- Rescue Service /Plan			
Personal Protective Equipment	Inspected By:	Yes	NO
Non-entry Rescue/ Retrieval Device			
Stand -By Rescue Service			

SECTION V- Source Isolation (Pre-entry)			
Source Isolation	Inspected By:	Yes	NO
Lock/Out Tag out- Authorized Staff			
Ventilation System- Authorized Staff	Inspected By:	Yes	NO
Internal Mechanical			
Potable blower			
Natural Ventilation (only)			

SECTION VI- Atmospheric check pre entry (Inspection) Check:				
Inspected By:		Atmospheric check	Time:	
Oxygen	%	19% to 21.9%		
Explosive	% LFL	<10%		
Hydrogen Sulfide	PPM	<10 PPM		
Carbon Monoxide	PPM	<25 PPM		

SECTION VII- Atmospheric Monitoring Test (Every two hours or at re-entry)									
Time:			Time:			Time:			
Oxygen	%		Oxygen	%		Oxygen	%		
Explosive	% LFL		Explosive	% LFL		Explosive	% LFL		
Hydrogen Sulfide	PPM		Hydrogen Sulfide	PPM		Hydrogen Sulfide	PPM		
Carbon Monoxide	PPM		Carbon Monoxide	PPM		Carbon Monoxide	PPM		

Comments:

Permit Authorization

I certify that all actions and conditions necessary for safe entry have been performed.

Print Name

Signature

Date

Time

Reviewed and filed By (Office): _____ Date: _____ Time: _____

Confined Space Entry Program

Appendix F- California Code of Regulations, Title 8, Section 5156

§5157. Permit-Required Confined Spaces.

(a) Scope and application. This section contains requirements for practices and procedures to protect employees from the hazards of entry into permit-required confined spaces. This section applies to employers, as specified in section 5156(b)(1).

(b) Definitions.

Acceptable entry conditions means the conditions that must exist in a permit space to allow entry and to ensure that employees involved with a permit-required confined space entry can safely enter into and work within the space.

Attendant means an individual stationed outside one or more permit spaces who monitors the authorized entrants and who performs all attendant's duties assigned in the employer's permit space program.

Authorized entrant means an employee who is authorized by the employer to enter a permit space.

Blanking or blinding means the absolute closure of a pipe, line, or duct by the fastening of a solid plate (such as a spectacle blind or a skillet blind) that completely covers the bore and that is capable of withstanding the maximum pressure of the pipe, line, or duct with no leakage beyond the plate.

Confined space means a space that:

- (1) Is large enough and so configured that an employee can bodily enter and perform assigned work; and
- (2) Has limited or restricted means for entry or exit (for example, tanks, vessels, silos, storage bins, hoppers, vaults, and pits are spaces that may have limited means of entry.); and
- (3) Is not designed for continuous employee occupancy.

Double block and bleed means the closure of a line, duct, or pipe by closing and locking or tagging two in-line valves and by opening and locking or tagging a drain or vent valve in the line between the two closed valves.

Emergency means any occurrence (including any failure of hazard control or monitoring equipment) or event internal or external to the permit space that could endanger entrants.

Engulfment means the surrounding and effective capture of a person by a liquid or finely divided (flowable) solid substance that can be aspirated to cause death by filling or plugging the respiratory system or that can exert enough force on the body to cause death by strangulation, constriction, or crushing.

Entry means the action by which a person passes through an opening into a permit-required confined space. Entry includes ensuing work activities in that space and is considered to have occurred as soon as any part of the entrant's body breaks the plane of an opening into the space. Entry permit (permit) means the written or printed document that is provided by the employer to allow and control entry into a permit space and that contains the information specified in subsection (f).

Entry supervisor means the person (such as the employer, foreman, or crew chief) responsible for determining if acceptable entry conditions are present at a permit space where entry is planned, for authorizing entry and overseeing entry operations, and for terminating entry as required by this section.

NOTE: An entry supervisor also may serve as an attendant or as an authorized entrant, as long as that person is trained and equipped as required by this section for each role he or she fills. Also, the duties of entry supervisor may be passed from one individual to another during the course of an entry operation.

Hazardous atmosphere means an atmosphere that may expose employees to the risk of death, incapacitation, impairment of ability to self-rescue (that is, escape unaided from a permit space), injury, or acute illness from one or more of the following causes:

- (1) Flammable gas, vapor, or mist in excess of 10 percent of its lower flammable limit (LFL);
- (2) Airborne combustible dust at a concentration that meets or exceeds its LFL;

NOTE: This concentration may be approximated as a condition in which the dust obscures vision at a distance of 5 feet (1.52 M) or less.

- (3) Atmospheric oxygen concentration below 19.5 percent or above 23.5 percent;
- (4) Atmospheric concentration of any substance for which a dose is published in Group 14 for Radiation and Radioactivity or a permissible exposure limit is published in section 5155 for Airborne contaminants and which could result in employee exposure in excess of its dose or permissible exposure limit;

NOTE: An atmospheric concentration of any substance that is not capable of causing death, incapacitation, impairment of ability to self-rescue, injury, or acute illness due to its health effects is not covered by this provision.

- (5) Any other atmospheric condition that is immediately dangerous to life or health.

NOTE: For air contaminants for which a dose is not published in Group 14 for Radiation and Radioactivity or a permissible exposure limit is not published in section 5155 for Airborne contaminants, other sources of information such as: Safety Data Sheets that comply with section 5194, published information, and internal documents can provide guidance in establishing acceptable atmospheric conditions.

Hot work permit means the employer's written authorization to perform operations (for example, riveting, welding, cutting, burning, and heating) capable of providing a source of ignition. Immediately dangerous to life or health (IDLH) means any condition that poses an immediate or delayed threat to life or that would cause irreversible adverse health effects or that would interfere with an individual's ability to escape unaided from a permit space.

NOTE: Some materials - hydrogen fluoride gas and cadmium vapor, for example - may produce immediate transient effects that, even if severe, may pass without medical attention, but are

followed by sudden, possibly fatal collapse 12-72 hours after exposure. The victim “feels normal” from recovery from transient effects until collapse. Such materials in hazardous quantities are considered to be “immediately” dangerous to life or health.

Inerting means the displacement of the atmosphere in a permit space by a noncombustible gas (such as nitrogen) to such an extent that the resulting atmosphere is noncombustible.

NOTE: This procedure produces an IDLH oxygen-deficient atmosphere.

Isolation means the process by which a permit space is removed from service and completely protected against the release of energy and material into the space by such means as: Blanking or blinding; misaligning or removing sections of lines, pipes, or ducts; a double block and bleed system; lockout or tagout of all sources of energy; or blocking or disconnecting all mechanical linkages.

Line breaking means the intentional opening of a pipe, line, or duct that is or has been carrying flammable, corrosive, or toxic material, an inert gas, or any fluid at a volume, pressure or temperature capable of causing injury.

Non-permit confined space means a confined space that does not contain or, with respect to atmospheric hazards, have the potential to contain any hazard capable of causing death or serious physical harm.

Oxygen deficient atmosphere means an atmosphere containing less than 19.5 percent oxygen by volume.

Oxygen enriched atmosphere means an atmosphere containing more than 23.5 percent oxygen by volume.

Permit-required confined space (permit space) means a confined space that has one or more of the following characteristics:

- (1) Contains or has a potential to contain a hazardous atmosphere;
- (2) Contains a material that has the potential for engulfing an entrant;
- (3) Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by a floor which slopes downward and tapers to a smaller cross-section; or
- (4) Contains any other recognized serious safety or health hazard.

Permit-required confined space program (permit space program) means the employer's overall program for controlling, and, where appropriate, for protecting employees from, permit space hazards and for regulating employee entry into permit spaces.

Permit system means the employer's written procedure for preparing and issuing permits for entry and for returning the permit space to service following termination of entry.

Prohibited condition means any condition in a permit space that is not allowed by the permit during the period when entry is authorized.

Rescue service means the personnel designated to rescue employees from permit spaces.

Retrieval system means the equipment (including a retrieval line, chest or full-body harness, wristlets, if appropriate, and a lifting device or anchor) used for non-entry rescue of persons from permit spaces.

Testing means the process by which the hazards that may confront entrants of a permit space are identified and evaluated. Testing includes specifying the tests that are to be performed in the permit space. If electronic or thermal equipment is used to perform such tests, and the possibility

exists of an explosive substance or a hazardous atmosphere due to flammable gases and vapors, then the testing equipment must be approved for use in such explosive or flammable conditions as required by section 2540.2.

NOTE: Testing enables employers both to devise and implement adequate control measures for the protection of authorized entrants and to determine if acceptable entry conditions are present immediately prior to, and during, entry.

(c) General requirements.

(1) The employer shall evaluate the workplace to determine if any spaces are permit-required confined spaces.

NOTE: Proper application of the decision flow chart in Appendix A would facilitate compliance with this requirement.

(2) If the workplace contains permit spaces, the employer shall inform exposed employees and other employees performing work in the area, by posting danger signs or by any other equally effective means, of the existence, location of and the danger posed by the permit spaces.

NOTE: A sign reading "DANGER -- PERMIT-REQUIRED CONFINED SPACE, DO NOT ENTER" or using other similar language would satisfy the requirement for a sign.

(3) If the employer decides that its employees and other employees performing work in the area will not enter permit spaces, the employer shall take effective measures to prevent all such employees from entering the permit spaces and shall comply with subsections (c)(1), (c)(2), (c)(6), and (c)(8).

(4) If the employer decides that its employees will enter permit spaces, the employer shall develop and implement a written permit space program that complies with this section. The written program shall be available for inspection by employees and their authorized representatives.

(5) An employer may use the alternate procedures specified in subsection (c)(5)(B) for entering a permit space under the conditions set forth in subsection (c)(5)(A).

(A) An employer whose employees enter a permit space need not comply with subsections (d) through (f) and (h) through (k), provided that:

1. The employer can demonstrate that the only hazard posed by the permit space is an actual or potential hazardous atmosphere;

2. The employer can demonstrate that continuous forced air ventilation alone is sufficient to maintain that permit space safe for entry;

3. The employer develops monitoring and inspection data that supports the demonstrations required by subsections (c)(5)(A)1. and 2.;

4. If an initial entry of the permit space is necessary to obtain the data required by subsection (c)(5)(A)3., the entry is performed in compliance with subsections (d) through (k);

5. The determinations and supporting data required by subsections (c)(5)(A)1., 2. and 3. are documented by the employer and are made available to each employee who enters the permit space under the terms of subsection (c)(5) or to that employee's authorized representative; and

6. Entry into the permit space under the terms of subsection (c)(5)(A) is performed in accordance with the requirements of subsection (c)(5)(B).

NOTE: See subsection (c)(7) for reclassification of a permit space after all hazards within the space have been eliminated.

(B) The following requirements apply to entry into permit spaces that meet the conditions set forth in subsection (c)(5)(A).

1. Any conditions making it unsafe to remove an entrance cover shall be eliminated before the cover is removed.
2. When entrance covers are removed, the opening shall be promptly guarded by a railing, temporary cover, or other temporary barrier that will prevent an accidental fall through the opening and that will protect each employee working in the space from foreign objects entering the space.
3. Before an employee enters the space, the internal atmosphere shall be tested, with a calibrated direct-reading instrument, for the following conditions in the order given:
 - a. Oxygen content,
 - b. Flammable gases and vapors, and
 - c. Potential toxic air contaminants.
4. There may be no hazardous atmosphere within the space whenever any employee is inside the space.
5. Continuous forced air ventilation shall be used, as follows:
 - a. An employee may not enter the space until the forced air ventilation has eliminated any hazardous atmosphere;
 - b. The forced air ventilation shall be so directed as to ventilate the immediate areas where an employee is or will be present within the space and shall continue until all employees have left the space;
 - c. The air supply for the forced air ventilation shall be from a clean source and may not increase the hazards in the space.
6. The atmosphere within the space shall be periodically tested as necessary to ensure that the continuous forced air ventilation is preventing the accumulation of a hazardous atmosphere.
7. If a hazardous atmosphere is detected during entry:
 - a. Each employee shall leave the space immediately;
 - b. The space shall be evaluated to determine how the hazardous atmosphere developed; and
 - c. Measures shall be implemented to protect employees from the hazardous atmosphere before any subsequent entry takes place.
8. The employer shall verify that the space is safe for entry and that the pre-entry measures required by subsection (c)(5)(B) have been taken, through a written certification that contains the

date, the location of the space, and the signature of the person providing the certification. The certification shall be made before entry and shall be made available to each employee entering the space or to that employee's authorized representative.

9. Any employee who enters the space, or that employee's authorized representative, shall be provided an opportunity to observe the pre-entry testing required by subsections (c)(5)(B)3. and 6.

(6) When there are changes in the use or configuration of a non-permit confined space that might increase the hazards to entrants, the employer shall reevaluate that space and, if necessary, reclassify it as a permit-required confined space.

(7) A space classified by the employer as a permit-required confined space may be reclassified as a non-permit confined space under the following procedures:

(A) If the permit space poses no actual or potential atmospheric hazards and if all hazards within the space are eliminated without entry into the space, the permit space may be reclassified as a non-permit confined space for as long as the non-atmospheric hazards remain eliminated.

(B) If it is necessary to enter the permit space to eliminate hazards, such entry shall be performed under subsections (d) through (k). If testing and inspection during that entry demonstrate that the hazards within the permit space have been eliminated, the permit space may be reclassified as a non-permit confined space for as long as the hazards remain eliminated.

NOTE: Control of atmospheric hazards through forced air ventilation does not constitute elimination of the hazards. Subsection (c)(5) covers permit space entry where the employer can demonstrate that forced air ventilation alone will control all hazards in the space.

(C) The employer shall document the basis for determining that all hazards in a permit space have been eliminated through a certification that contains the date, the location of the space, and the signature of the person making the determination. The certification shall be made available to each employee entering the space or to that employee's authorized representative.

(D) If hazards arise within a permit space that has been declassified to a non-permit space under subsection (c)(7), each employee in the space shall exit the space. The employer shall then reevaluate the space and determine whether it must be reclassified as a permit space, in accordance with other applicable provisions of this section.

(8) When an employer (host employer) arranges to have employees of another employer (contractor) perform work that involves permit space entry or confined space entries covered by sections 5158 or 8355, the host employer shall:

(A) Inform the contractor that the workplace contains permit spaces and that permit space entry is allowed only through compliance with a permit space program meeting the requirements of this section, section 5158 or section 8355, depending on which section applies to the contractor;

(B) Apprise the contractor of the elements, including the hazards identified and the host employer's experience with the space, that make the space in question a permit space;

(C) Apprise the contractor of any precautions or procedures that the host employer has implemented for the protection of employees in or near permit spaces where contractor personnel will be working;

(D) Coordinate entry operations with the contractor, when both host employer personnel and contractor personnel will be working in or near permit spaces, as required by subsection (d)(11); and

(E) Debrief the contractor at the conclusion of the entry operations regarding the permit spaced program followed and regarding any hazards confronted or created in permit spaces during entry operations.

(9) In addition to complying with the permit space requirements that apply to all employers, each contractor who is retained to perform permit space entry operations shall:

(A) Obtain any available information regarding permit space hazards and entry operations from the host employer;

(B) Coordinate entry operations with the host employer, when both host employer personnel and contractor personnel will be working in or near permit spaces, as required by subsection (d)(11); and

(C) Inform the host employer of the permit space program that the contractor will follow and of any hazards confronted or created in permit spaces, either through a debriefing or during the entry operation.

(d) Permit-required confined space program (permit space program). Under the permit required confined space program required by subsection (c)(4), the employer shall:

(1) Implement the measures necessary to prevent unauthorized entry;

(2) Identify and evaluate the hazards of permit spaces before employees enter them;

(3) Develop and implement the means, procedures, and practices necessary for safe permit space entry operations, including, but not limited to, the following:

(A) Specifying acceptable entry conditions;

(B) Isolating the permit space;

(C) Purging, inerting, flushing, or ventilating the permit space as necessary to eliminate or control atmospheric hazards;

(D) Providing pedestrian, vehicle, or other barriers as necessary to protect entrants from external hazards; and

(E) Verifying that conditions in the permit space are acceptable for entry throughout the duration of an authorized entry.

(4) Provide the following equipment (specified in subsections (A) through (I), below) at no cost to employees, maintain that equipment properly, and ensure that employees use that equipment properly:

(A) Testing and monitoring equipment needed to comply with subsection (d)(5);

(B) Ventilating equipment needed to obtain acceptable entry conditions;

(C) Communications equipment necessary for compliance with subsections (h)(3) and (i)(5);

(D) Personal protective equipment insofar as feasible engineering and work practice controls do not adequately protect employees;

(E) Lighting equipment needed to enable employees to see well enough to work safely and to exit the space quickly in an emergency;

(F) Barriers and shields as required by subsection (d)(3)(D);

(G) Equipment, such as ladders, needed for safe ingress and egress by authorized entrants;

(H) Rescue and emergency equipment needed to comply with subsection (d)(9), except to the extent that the equipment is provided by rescue services; and

(I) Any other equipment necessary for safe entry into and rescue from permit spaces.

(5) Evaluate permit space conditions as follows when entry operations are conducted:

(A) Test conditions in the permit space to determine if acceptable entry conditions exist before entry is authorized to begin, except that, if isolation of the space is infeasible because the space is large or is part of a continuous system (such as a sewer), pre-entry testing shall be performed to the extent feasible before entry is authorized and, if entry is authorized, entry conditions shall be continuously monitored in the areas where authorized entrants are working;

(B) Test or monitor the permit space as necessary to determine if acceptable entry conditions are being maintained during the course of entry operations, and

(C) When testing for atmospheric hazards, test first for oxygen, then for combustible gases and vapors, and then for toxic gases and vapors.

(D) Provide each authorized entrant or that employee's authorized representative an opportunity to observe the pre-entry and any subsequent testing or monitoring of permit spaces;

(E) Reevaluate the permit space in the presence of any authorized entrant or that employee's authorized representative who requests that the employer conduct such reevaluation because the entrant or representative has reason to believe that the evaluation of that space may not have been adequate;

(F) Immediately provide each authorized entrant or that employee's authorized representative with the results of any testing conducted in accord with subsection (d).

NOTE: Atmospheric testing conducted in accordance with Appendix B would be considered as satisfying the requirements of this subsection. For permit space operations in sewers, atmospheric testing conducted in accordance with Appendix B, as supplemented by Appendix E, would be considered as satisfying the requirements of this subsection,

(6) Provide at least one attendant outside the permit space into which entry is authorized for the duration of entry operations;

NOTE: Attendants may be assigned to monitor more than one permit space provided the duties described in subsection (i) can be effectively performed for each permit space that is monitored. Likewise, attendants may be stationed at any location outside the permit space to be monitored as

long as the duties described in subsection (i) can be effectively performed for each permit space that is monitored.

(7) If multiple spaces are to be monitored by a single attendant, include in the permit program the means and procedures to enable the attendant to respond to an emergency affecting one or more of the permit spaces being monitored without distraction from the attendant's responsibilities under subsection (i);

(8) Designate the persons who are to have active roles (as, for example, authorized entrants, attendants, entry supervisors, or persons who test or monitor the atmosphere in a permit space) in entry operations, identify the duties of each such employee, and provide each such employee with the training required by subsection (g);

(9) Develop and implement procedures for rescuing entrants from permit spaces, for providing necessary emergency services to rescued employees, for summoning additional rescue and emergency services, and for preventing unauthorized personnel from attempting a rescue;

(10) Develop and implement a system for the preparation, issuance, use, and cancellation of entry permits as required by this section;

(11) Develop and implement procedures to coordinate entry operations when employees of more than one employer are working simultaneously as authorized entrants in a permit space, so that employees of one employer do not endanger the employees of any other employer. If the requirements of sections 5158 or 8355 apply to one or more of the other employers, then the procedures shall also ensure coordination with those employers, so as not to endanger any exposed employees;

(12) Develop and implement procedures (such as closing off a permit space and canceling the permit) necessary for concluding the entry after entry operations have been completed;

(13) Review entry operations when the employer has reason to believe that the measures taken under the permit space program may not protect employees and revise the program to correct deficiencies found to exist before subsequent entries are authorized; and

NOTE: Examples of circumstances requiring the review of the permit space program are: any unauthorized entry of a permit space, the detection of a permit space hazard not covered by the permit, the detection of a condition prohibited by the permit, the occurrence of an injury or near-miss during entry, a change in the use or configuration of a permit space, and employee complaints about the effectiveness of the program.

(14) Review the permit space program, using the canceled permits retained under subsection (e)(6) within 1 year after each entry and revise the program as necessary, to ensure that employees participating in entry operations are protected from permit space hazards.

NOTE: Employers may perform a single annual review covering all entries performed during a 12-month period. If no entry is performed during a 12-month period, no review is necessary. Appendix C presents examples of permit space programs that are considered to comply with the requirements of subsection (d).

(e) Permit system.

(1) Before entry is authorized, the employer shall document the completion of measures required by subsection (d)(3) by preparing an entry permit.

NOTE: Appendix D presents examples of permits whose elements are considered to comply with the requirements of this section.

(2) Before entry begins, the entry supervisor identified on the permit shall sign the entry permit to authorize entry.

(3) The completed permit shall be made available at the time of entry to all authorized entrants or their authorized representatives, by posting it at the entry portal or by any other equally effective means, so that the entrants can confirm that pre-entry preparations have been completed.

(4) The duration of the permit may not exceed the time required to complete the assigned task of job identified on the permit in accordance with subsection (f)(2).

(5) The entry supervisor shall terminate entry and cancel the entry permit when:

(A) The entry operations covered by the entry permit have been completed; or

(B) A condition that is not allowed under the entry permit arises in or near the permit space.

(6) The employer shall retain each canceled entry permit for at least 1 year to facilitate the review of the permit space program required by subsection (d)(14). Any problems encountered during an entry operation shall be noted on the pertinent permit so that appropriate revisions to the permit space program can be made.

(f) Entry permit. The entry permit that documents compliance with this section and authorizes entry to a permit space shall identify:

(1) The permit space to be entered;

(2) The purpose of the entry;

(3) The date and the authorized duration of the entry permit;

(4) The authorized entrants within the permit space, by name or by such other means (for example, through the use of rosters or tracking systems) as will enable the attendant to determine quickly and accurately, for the duration of the permit, which authorized entrants are inside the permit space;

NOTE: This requirement may be met by inserting a reference on the entry permit as to the means used, such as roster or tracking systems, to keep track of the authorized entrants within the permit space.

(5) The personnel, by name, currently serving as attendants;

(6) The individual, by name, currently serving as entry supervisor, with a space for the signature or initials of the entry supervisor who originally authorized entry;

(7) The hazards of the permit space to be entered;

(8) The measures used to isolate the permit space and to eliminate or control permit space hazards before entry;

NOTE: Those measures can include the lockout or tagging of equipment and procedures for purging, inerting, ventilating, and flushing permit spaces.

(9) The acceptable entry conditions;

(10) The results of initial and periodic tests performed under subsection (d)(5) accompanied by the names or initials of the testers and by an indication of when the tests were performed;

(11) The rescue and emergency services that can be provided on-site and additional service that can be summoned and the means such as the equipment to use and the numbers to call) for summoning those services;

(12) The communication procedures used by authorized entrants and attendants to maintain contact during the entry;

(13) Equipment, such as personal protective equipment, testing equipment, communications equipment, alarm systems, and rescue equipment, to be provided for compliance with this section;

(14) Any other information whose inclusion is necessary, given the circumstances of the particular confined space, in order to ensure employee safety, and

(15) Any additional permits, such as for hot work, that have been issued to authorize work in the permit space.

(g) Training.

(1) The employer shall provide training so that all employees whose work is regulated by this section acquire the understanding, knowledge, and skills necessary for the safe performance of the duties assigned under this section.

(2) Training shall be provided to each affected employee:

(A) Before the employee is first assigned duties under this section;

(B) Before there is a change in assigned duties;

(C) Whenever there is a change in permit space operations that presents a hazard about which an employee has not previously been trained;

(D) Whenever the employer has reason to believe either that there are deviations from the permit space entry procedures required by subsection (d)(3) or that there are inadequacies in the employee's knowledge or use of these procedures.

(3) The training shall establish employee proficiency in the duties required by this section and shall introduce new or revised procedures, as necessary, for compliance with this section.

(4) The employer shall certify that the training required by subsections (g)(1) through (g)(3) has been accomplished. The certification shall contain each employee's name, the signatures or initials of the trainers, and the dates of training. The certification shall be available for inspection by employees and their authorized representatives.

(h) Duties of authorized entrants. The employer shall ensure that all authorized entrants:

- (1) Know the hazards that may be faced during entry, including information on the mode, signs or symptoms, and consequences of the exposure;
- (2) Properly use equipment as required by subsection (d)(4);
- (3) Communicate with the attendant as necessary to enable the attendant to monitor entrant status and to enable the attendant to alert entrants of the need to evacuate the space as required by subsection (i)(6);
- (4) Alert the attendant whenever:
 - (A) The entrant recognizes any warning sign or symptom of exposure to a dangerous situation, or
 - (B) The entrant detects a prohibited condition; and
- (5) Exit from the permit space as quickly as possible whenever:
 - (A) An order to evacuate is given by the attendant or the entry supervisor,
 - (B) The entrant recognizes any warning sign or symptom of exposure to a dangerous situation,
 - (C) The entrant detects a prohibited condition, or
 - (D) An evacuation alarm is activated.
- (i) Duties of attendants. The employer shall ensure that each attendant:
 - (1) Knows the hazards that may be faced during entry, including information on the mode, signs or symptoms, and consequences of the exposure;
 - (2) Is aware of possible behavioral effects of hazard exposure in authorized entrants;
 - (3) Continuously maintains an accurate count of authorized entrants in the permit space and ensures that the means used to identify authorized entrants under subsection (f)(4) accurately identifies who is in the permit space;
 - (4) Remains outside the permit space during entry operations until relieved by another attendant;

NOTE: When the employer's permit entry program allows attendant entry for rescue, attendants may enter a permit space to attempt a rescue if they have been trained and equipped for rescue operations as required by subsection (k)(1) and if they have been relieved as required by subsection (i)(4).

- (5) Communicates with authorized entrants as necessary to monitor entrant status and to alert entrants of the need to evacuate the space under subsection (i)(6);
- (6) Monitors activities inside and outside the space to determine if it is safe for entrants to remain in the space and orders the authorized entrants to evacuate the permit space immediately under any of the following conditions;
 - (A) If the attendant detects a prohibited condition;
 - (B) If the attendant detects the behavioral effects of hazards exposure in an authorized entrant;

- (C) If the attendant detects a situation outside the space that could endanger the authorized entrants; or
- (D) If the attendant cannot effectively and safely perform all the duties required under subsection (i);
- (7) Initiate on-site rescue procedures and, if necessary, summon additional rescue and other emergency services as soon as the attendant determines that authorized entrants may need assistance to escape from permit space hazards;
- (8) Takes the following actions when unauthorized persons approach or enter a permit space while entry is underway:
 - (A) Warn the unauthorized persons that they must stay away from the permit space;
 - (B) Advise the unauthorized persons that they must exit immediately if they have entered the permit space; and
 - (C) Inform the authorized entrants and the entry supervisor if unauthorized persons have entered the permit space;
- (9) Performs non-entry rescues or other rescue services as part of the employer's on-site rescue procedure; and
- (10) Performs no duties that might interfere with the attendant's primary duty to monitor and protect the authorized entrants.
- (j) Duties of entry supervisors. The employer shall ensure that each entry supervisor:
 - (1) Knows the hazards that may be faced during entry, including information on the mode, signs or symptoms, and consequences of the exposure;
 - (2) Verifies, by checking that the appropriate entries have been made on the permit, that all tests specified by the permit have been conducted and that all procedures and equipment specified by the permit are in place before endorsing the permit and allowing entry to begin;
 - (3) Terminates the entry and cancels the permit as required by subsection (e)(5);
 - (4) Verifies that rescue services are available and that the means for summoning additional services are operable;
 - (5) Removes unauthorized individuals who enter or who attempt to enter the permit space during entry operations; and
 - (6) Determines, whenever responsibility for a permit space entry operation is transferred and at intervals dictated by the hazards and operations performed within the space, that entry operations remain consistent with terms of the entry permit and that acceptable entry conditions are maintained.
- (k) Rescue and emergency services. The employer shall ensure that at least one standby person at the site is trained and immediately available to perform rescue and emergency services.

(1) The following requirements apply to employers who have employees enter permit spaces to perform rescue services.

(A) The employer shall ensure that each member of the rescue service is provided with, and is trained to use properly, the personal protective equipment and rescue equipment necessary for making rescues from permit spaces.

(B) Each member of the rescue service shall be trained to perform the assigned rescue duties. Each member of the rescue service shall also receive the training required of authorized entrants under subsections (g) and (h).

(C) Each member of the rescue service shall practice making permit space rescues at least once every 12 months, by means of simulated rescue operations in which they remove dummies, manikins, or actual persons from the actual permit spaces or from representative permit spaces. Representative permit spaces shall, with respect to opening size, configuration, and accessibility, simulate the types of permit spaces from which rescue is to be performed.

(D) Each member of the rescue service shall be trained in basic first-aid and in cardiopulmonary resuscitation (CPR). At least one member of the rescue service holding current certification in first aid and in CPR shall be available.

(2) When an employer (host employer) arranges to have persons other than the host employer's employees perform permit space rescue, the host employer shall:

(A) Inform the rescue service of the hazards they may confront when called on to perform rescue at the host employer's facility, and

(B) Provide the rescue service with access to all permit spaces from which rescue may be necessary so that the rescue service can develop appropriate rescue plans and practice rescue operations.

(3) To facilitate non-entry rescue, retrieval systems or methods shall be used whenever an authorized entrant enters a permit space, unless the retrieval equipment would increase the overall risk of entry or would not contribute to the rescue of the entrant. Retrieval systems shall meet the following requirements.

(A) Each authorized entrant shall use a chest or full body harness, with a retrieval line attached at a suitable point so that when rescued, the entrant presents the smallest possible profile (for example at the center of the entrant's back near shoulder level, or above the entrant's head). Wristlets may be used in lieu of the chest or full body harness if the employer can demonstrate that the use of a chest or full body harness is infeasible or creates a greater hazard and that the use of wristlets is the safest and most effective alternative.

(B) The other end of the retrieval line shall be attached to a mechanical device or fixed point outside the permit space in such a manner that rescue can begin as soon as the rescuer becomes aware that rescue is necessary. A mechanical device shall be available to retrieve personnel from vertical type permit spaces more than 5 feet deep.

(4) If an injured entrant is exposed to a substance for which a Safety Data Sheet (SDS) or other similar written information is required to be kept at the worksite, that SDS or written information shall be made available to the medical facility treating the exposed entrant.

(l) Employee participation.

(1) Employers shall consult with affected employees and their authorized representatives on the development and implementation of all aspects of the permit space program required by subsection (c).

(2) Employers shall make available to affected employees and their authorized representatives all information required to be developed by this section.

(m) Appendices. Appendices A through E serve to provide information and non-mandatory guidelines to assist employers and employees in complying with the appropriate requirements of this section.

Sanitary System Management Plan

Appendix B – PWD- Emergency Response Plan-COVID-19



Emergency Response Plan

Coronavirus-COVID19

Greenfield Public Work Department

March 2020

This Emergency Response Plan, known hereafter as ‘the plan’, is intended to offer guidance in decision making to GPW staff and management during an outbreak of an infectious disease. It has been specifically prepared in response to the threat of a possible outbreak of Coronavirus - COVID19 but its attributes may be used in response to other situations as well. It contains some specific steps to be taken prior to and during an outbreak. Following these steps and other prudent actions as instructed by health officials should minimize the chance of GPWD staff becoming infected. The Plan however will not offer complete protection from the COVID19. Therefore, employees must remain vigilant against it and take steps to protect themselves.

Employees concerned with chemical supplies should always be aware of conditions affecting the work forces of suppliers as well as the work force at the plant. (Please see: Critical Chemicals section of the plan)

Precautionary Steps (Prior to Outbreak):

Education: All GPW staff should educate themselves on prevention of the COVID19 infection and the symptoms associated with it. Some resources for Coronavirus education are www.cdc.gov/coronavirus/2019, www.cdph.gov.ca.

Monitor your own condition:

All GPW employees should monitor their own condition. If an employee notices symptom consistent with a COVID19 infection in themselves and/or an immediate family member(s) they should take exceptional precautions to insure they do not infect other employees. For clarification, if an employee **believes** they may have been or has been infected, due to their own symptoms or those of someone they are in close contact with, they should not risk infecting other employees by coming to work. Anytime an employee is running a fever of 100 degrees or higher they should **not** come to work.

Symptoms of Coronavirus include:

- Fever (100.4° F [37.8° C] or greater using an oral thermometer)
- Cough
- Shortness of breath

Symptoms may appear anywhere from 2 to 14 days after exposure to COVID19.

Recovery from COVID19 depends on the patient's immune response.

Educate yourself about Coronavirus. One of the greatest weapons we can wield against COVID19 is an educated populous.

This link gives brief but well explained info: <https://www.youtube.com/watch?v=drMw2evwMFA>

Much is unknown about how the virus that causes COVID-19 spreads. Current knowledge is largely based on what is known about similar coronaviruses. Coronaviruses are a large family of viruses that are common in humans and many different species of animals, including camels, cattle, cats, and bats. Rarely, animal coronaviruses can infect people and then spread between people, such as with MERS-CoV and SARS-CoV. The virus that causes COVID-19 is spreading from person-to-person. According to the CDC, COVID19 can be contracted:

- Between people who are in close contact with one another (within about 6 feet)
- Via respiratory droplets produced when an infected person coughs or sneezes.
- These droplets can land in the mouths or noses of people who are nearby or possibly be inhaled into the lungs
- It may be possible that a person can get COVID-19 by touching a surface or object that has the virus on it and then touching their own mouth, nose, or possibly their eyes, but this is not thought to be the main way the virus spreads.

Per CDC: There is currently no vaccine to prevent coronavirus disease 2019 (COVID-19). The best way to prevent illness is to avoid being exposed to this virus. However, as a reminder, CDC always recommends everyday preventive actions to help prevent the spread of respiratory diseases, including:

- Avoid close contact with people who are sick.
- Avoid touching your eyes, nose, and mouth.
- Practice good hygiene
- Stay home when you are sick.
- Cover your cough or sneeze with a tissue, then throw the tissue in the trash.
- Clean and disinfect frequently touched objects and surfaces using a regular household cleaning spray or wipe.
- Follow CDC's recommendations for using a facemask.
 - CDC does not recommend that people who are well wear a facemask to protect themselves from respiratory diseases, including COVID-19.
 - Facemasks should be used by people who show symptoms of COVID-19 to help prevent the spread of the disease to others. The use of facemasks is also crucial for health workers and people who are taking care of someone in close settings (at home or in a health care facility).

- Wash your hands often with soap and water for at least 20 seconds, especially after going to the bathroom; before eating; and after blowing your nose, coughing, or sneezing.
 - If soap and water are not readily available, use an alcohol-based hand sanitizer with at least 60% alcohol. Always wash hands with soap and water if hands are visibly dirty.
- Practice social distance 6 feet way from one another.

There is no specific antiviral treatment recommended for COVID-19. People with COVID-19 should receive supportive care to help relieve symptoms. For severe cases, treatment should include care to support vital organ functions.

People who think they may have been exposed to COVID-19 should contact their healthcare provider immediately.

All healthcare facilities must ensure that their personnel are correctly trained and capable of implementing infection control procedures; individual healthcare personnel should ensure they understand and can adhere to infection control requirements.

Monitor Outbreak status:

The GPW staff should monitor the status of any outbreak using all available resources. Some resources include www.cdc.gov, www.cdph.ca.gov as well as local TV and Radio station websites and broadcast.

Reactionary Steps (During a Declared Pandemic):

Note: It may not be necessary to initiate any or all of the following portions of the plan if a declared pandemic is not prevalent in the immediate area. The individual portions of the plan may be implemented as needed. Management and staff should use any information available to them, including input from health officials, in deciding when to implement all or any parts of the plan.

1) Monitor your own condition:

All GPW employees should monitor their own condition. If an employee notices symptom consistent with a Coronavirus infection in themselves and/or an immediate family member(s) they should take exceptional precautions to insure they do not infect other employees. For clarification, if an employee believes they may have been or has been infected, due to their own symptoms or those of someone they are in close contact with, they should not risk infecting other employees by coming to work. Anytime an employee is running a fever of 100 degrees or higher they should not come to work.

2) Critical Chemicals:

In order for the GPW Water Division to produce high quality potable water free of any pathogens, a reliable supply of Sodium Hypochlorite chemicals is required. In the event a pandemic is declared the chemical stocks should be topped off and kept at the highest practical levels.

Employees concerned with chemical supplies should always be aware of conditions affecting the work forces of suppliers. Conditions that may affect the chemical supplier's work force can differ from those that affect the Water Division work force.

One example: A large Flu outbreak during an outbreak of Coronavirus may overwhelm the health care system as it tries to differentiate between the two in individual cases. Patients with certain Flu strains present with the same symptoms as COVID19 patients so testing is necessary to determine which is present. The time taken to determine could result in quarantine of the workforce at chemical suppliers disrupting service. This may lead to elongated delivery times.

This is only one example of many possible scenarios that could affect chemical supplies. Additional inventory of critical chemicals, when safe to do so, should be stored during infectious disease outbreaks.

Estimated chemical reserves:

Chemicals	# Days' Supply (At Capacity)
Sodium Hypochlorite	55

Critical Chemical deliveries:

During a pandemic it will be necessary to receive deliveries from outside vendors. The delivery process presents an avenue of infection to the staff and to truck drivers. Drivers from different areas of the country will be coming to the facilities to make deliveries. It may be determined necessary to minimize the interaction between drivers and staff. One way to achieve this minimization is allow the drivers to only access predetermined areas of the yard. The following is an example plan:

- No person to person contact should be allowed between drivers and staff. This includes hand shaking and other forms of touching.
- Staff and drivers should only interact outside, never be in the same room, and should keep a minimum distance of 10 feet between each other.
- Staff must wear surgical mask and gloves when interacting with drivers.
- Drivers should not be allowed to use the restroom facilities, but if Driver's need to use the facilities. (The restroom must be thoroughly disinfected after the driver leaves.)
- Drivers should be directed to the relative drop off sight site immediately upon arrival and should only be allowed access to that point and the designated restroom.
- When signing paperwork, the driver should place the paperwork on a table or other object outside and then the receiving staff member should sign it while wearing gloves. The paperwork must be disinfected using spray disinfectant and then stored in a specific container until enough time has passed that the particular contagion will have deactivated naturally. Staff members must remove the gloves in a sanitary way and discard them properly.
- The driver should leave the facility immediately and not spend idle time at the yard.

3) Safe Practices for staff at Work:

- a) GPW will keep a stock of Hand sanitizer, spray disinfectant, surgical masks, antimicrobial soap and gloves. All employees should wear gloves and mask while working during a verified risk of infection event.
- b) Anytime an employee uses the rest room facilities or kitchen area they should disinfect all surfaces they will contact prior to and immediately after use.
- c) Employees should wash their hands anytime they have removed their gloves and replace the gloves with a fresh pair.
- d) Always sneeze and cough into a tissue and discard the tissue immediately and properly.
- e) Avoid, always, contact between your hands and your mouth, eyes, nose and other openings in the body including cuts and scrapes. Immediately disinfect cuts and scrapes and bandage them. Keep cuts and scrapes bandaged until completely healed.
- f) Always disinfect all control room, Laboratory and other commonly used, work surfaces immediately upon arrival to start a shift and on the way out at the end of a shift.
- g) Employees, when feasible one employee per truck.

4) Gap between shifts:

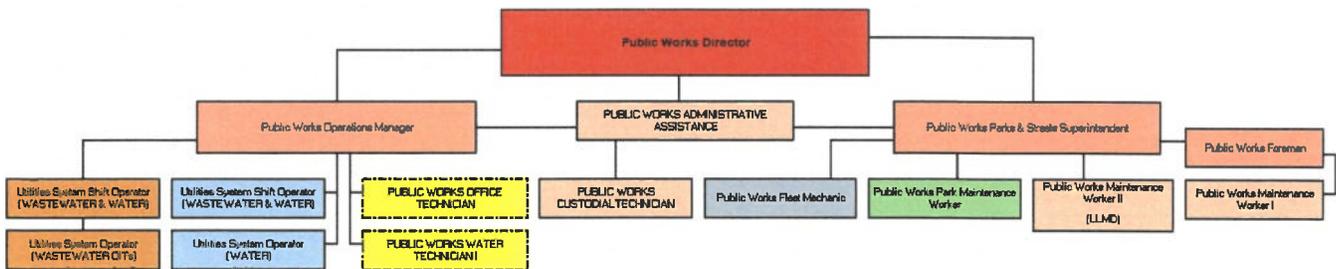
To minimize the amount of person to person contact, during a pandemic, a 30-minute gap between the morning and regular shifts can be implemented. The On-call operator will open the yard at 7:30 am and lock up during his night shift. Communication should happen via radios, phones and email rather than written notes. All operators should check their email frequently, both when on duty and off duty, during an outbreak. Any bulletins sent by management will be sent either through text or email or both.

5) Reduced Workforce plan:

During a declared pandemic the work force at GPW and its suppliers could be reduced due to the health status of those employees. In cases of a reduced workforce, schedules should be worked out via phone and email if available to lessen the need for face to face contact. Table 1.2 is an example of a 6-operator rotation schedule for utilities (Water and Wastewater) and Table 1.3 for regular staff which includes streets and parks. Staff should review times for arrival and departure of the yard, by individual operators, prior to implementation of a reduced workforce schedule. Communication will be imperative to ensure minimal person to person contact.

6) Chain of Command

The chain of Command (COC) is subject to change during an outbreak due to the health of individuals within the COC. The Organizational chart below will serve as the COC as long as all Staff members remain available for decision making. If top level individuals become incapacitated the next level becomes responsible for decision making. In the event that both the Operations Manager and Street Superintendent are unavailable the operator with the most seniority has the authority to make decisions related to operations.



7) Emergency Phone Numbers:

- a) SWRCB Division of Drinking Water - Monterey District
 - i) Shaminder Kler, 831.655.6938 Shaminder.Kler@waterboards.ca.gov
 - ii) Jan R. Sweigert, 831.655.6939 jan.sweigert@waterboards.ca.gov

- b) Coast Regional Water Quality Control Board
 - i) Kristina Olmos, 805.549.3121 Kristina.Olmos@waterboards.ca.gov
 - ii) Jennifer Epp, 805.594.6181 Jennifer.Epp@waterboards.ca.gov

Table 1.1 Schedule for Public Works Management and Custodial

Public Works Emergency Response Plan-COVID-19										
Management										
Management Personnel	Division-Shift #		Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Hrs.
PW Operations Manager	(2r's) Remote and Rounds		2R's	2R's	2R's	2R's	2R's			
PW Street Superintended	(2r's) Remote and Rounds		2R's	2R's	2R's	2R's	2R's			
PW Public works Admin.	8:00-8:30 as needed			9	9	9	9			36
PW Custodial Tech.	5:00:-11:00 as needed		6	6	6	6	6	6		36

Table 1.2 Schedule for Water and Wastewater Divisions (Utilities)

Public Works Emergency Response Plan-COVID-19										
4/9 36 Hour Work Week (1/2 lunch)										
Utility Division Personnel	Division-Shift #	Start of Shift	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Hrs.
Wastewater Division										
Utilities System Shift Operator	(WW-S1)	7:00-4:30	9	9	9	9	0	0	0	36
Utilities System Operator	(WW-S1)	8:00-5:30	9	9	9	9	0	0	0	36
Utilities System Shift Operator	(WW-S2)	7:00-4:30	0	0	0	9	9	9	9	36
Utilities System Shift Operator	(WW-S2)	8:00-5:30	0	0	0	9	9	9	9	36
Water Division										
Utilities System Shift Operator	(W-S1)	7:00-4:30	9	9	9	9	0	0	0	36
Utilities System Operator	(W-S2)	7:00-4:30	0	0	0	9	9	9	9	36
Utilities System Operator	(W-S3)	8:00-5:30	0	9	9	0	9	9	0	36
			3	4	4	6	4	4	3	

*On-Call Personnel will work 6/6 days; they will be responsible to open the corporation doors at 7 am, Val will open them on Saturday.
 On wednesday is O&M on Wastewater Collections or Water Distribution

Table 1.3 Schedule for Park and Street Divisions

Public Works Emergency Response Plan-COVID-19										
4/9 36 Hour Work Week (1/2 lunch)										
Streets and Parks Div. Personnel	Division-Shift #	Start of Shift	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Hrs.
Parks & LLMD's Division										
Public Works Maintenance	(PWM-S1)	7:30 5:00	0	9	9	9	9	0	0	36
Public Works Park Maintenance	(PWPM-S1)	8:00-5:30	9	9	9	9	0	0	0	36
Public Works Park Maintenance	(PWPM-S2)	7:00-4:30	0	0	0	9	9	9	9	36
			1	2	2	3	2	1	1	
Street Division										
Public Works Foreman	(PWF-S1)	7:30-5:00	0	9	9	9	9	0	0	36
Public Works Maintenance	(PWM-S2)	7:00-4:30	0	0	0	9	9	9	9	36
Public Works Maintenance	(PWM-S3)	8:00-5:30	9	9	9	9	0	0	0	36
			1	2	2	3	2	1	1	
Fleet Division										
Fleet Mechanic	7:30:-2:30 as needed			6	6	6	6	6	6	36

The Public Works Department is an essential service department, and as civil service workers, we have the responsibility to ensure the community is provided safe and reliable water and wastewater services during this critical situation. The needs of the City should take precedence.

This is a dynamic plan and is subject to amendments as new information is received.

Reference links:

California Department of Public Health Interim Guidance

<https://www.cdph.ca.gov/Programs/CHCQ/LCP/CDPH%20Document%20Library/AFL-20-09.pdf>

CDC COVID-19 General Information

<https://www.cdc.gov/coronavirus/2019-ncov/index.html>

Approved: _____
City Manager or Department Director

Date: _____

Approved: _____
Human Resource Department

Date: _____



Greenfield Public Works Dept.

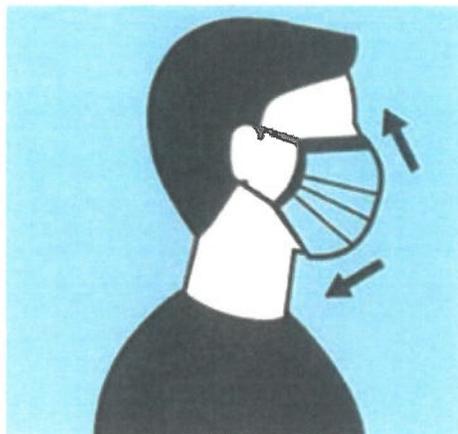
2020-Covid-19 IAP updated 4.14.2020

FACE MASKS

Wearing a face mask in the workplace is now mandatory and employees are required to follow the guidelines below:

1. The use of a mask is considered a preventative measure to reduce the spread of infectious disease from one person to another.
2. Employees will be issued either a cloth mask or a surgical mask. With the exception of public safety personnel, City employees will not be issued an N95 Respirator. When enough cloth masks become available, employees originally issued a surgical mask will be provided a cloth mask.
3. Employees are required to wear their mask anytime they are in the presence of another person and/or in the view of the public to include driving and riding in City vehicles.
4. Employees working alone in an office are permitted to take their mask off, although when the employee leaves the office, or another employee enters the office, the employee shall place the mask back onto their face.
5. Employees are required to write their name on their mask to ensure no one else uses it.
6. Care shall be taken when taking the mask off and storing it for future use.

How to Wear a Cloth Face Mask or Other Covering





Emergency Response Plan

Coronavirus-Covid19 (5-17-2020) update

Purpose

Public Health is asking everyone to do their part to help slow the spread of novel coronavirus in our community by practicing social distancing. This means making changes in our daily lives to protect ourselves and others, including those who are most at risk.

People who are sick or who have been in contact with people who have COVID-19 should take stronger measures than social distancing to reduce the risk of infecting others (see resources at the end of this guide).

What is social distancing?

Social distancing means staying home, avoiding crowds, and staying at least 6 feet away from others whenever possible. Why is everyone being asked to practice social distancing? When someone with COVID-19 coughs or sneezes the small droplets from their nose or mouth can travel 3-6 feet. People can get infected if they breathe in these droplets, or the droplets land on their eyes, nose, or mouth. Although people who are sick with COVID-19 are the most infectious, people may spread the virus a few days before they start to feel unwell. It may be possible that a person can also get COVID-19 by touching a surface or object that has the virus on it and then touching their own mouth, nose, or eyes.

The less time that we spend within 6 feet of each other, and the fewer people we interact with, the more likely we are to slow the spread of COVID-19.

How do Practice social distancing at Public Works Yard- Clocking in or Out?

1. The main entrance (offices) will be only to enter the building to go in (clock in) or any other activity inside the building.
2. The second door (garage) will be to exit only. There will be a clip board to log in your clock out time.
3. **This excludes Saturday and Sunday (weekend workdays) and evenings. (Weekend shift not required).**

This will allow less contact with crews coming in or out of the corporation yard and maintaining the 6 feet distance from each other.

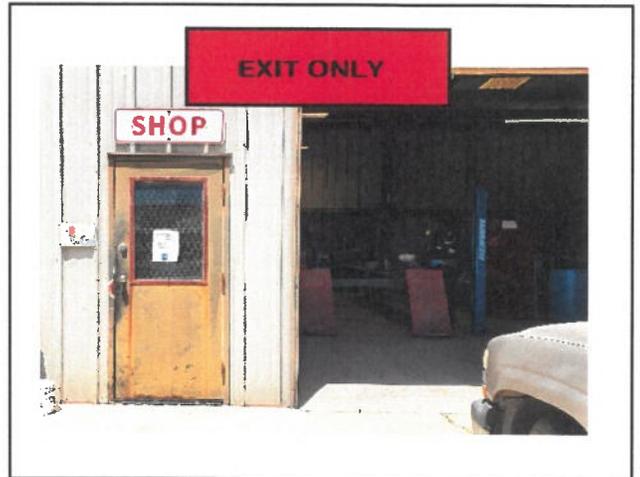
Please review picture for complete directions



1. The main entrance (offices) will be only to Enter the Building Only (clock in) or any other activity inside the building.

2. The second door (garage) will be **To Exit**. There will be a clip board to log out during your shift (lunch /end of day shift).

You may use any means to exit except the front door.



3. **This excludes Saturday and Sunday (weekend workdays) or evenings. (Weekend shift not required).**

Signing below indicates that I have read the Coronavirus-Covid19 (5-17-2020) update Document presented by my employer on the above date and the subject(s) above. I understand that this is part of an ongoing safety training effort and I will ask my supervisor if I have additional questions; I was given the opportunity to ask questions to ensure my understanding of what I just reviewed.

Emergency Response Plan Coronavirus-Covid19 (7-22-2020) update

Public Works Utilities Division, City of Greenfield

Title: COVID-19 Emergency Schedule A-Working On-call

Purpose

Public Health is asking everyone to do their part to help slow the spread of the novel coronavirus in our community by practicing social distancing. This means making changes in our daily lives to protect ourselves and others, including those who are most at risk.

People who are sick or who have been in contact with people who have COVID-19 should take stronger measures than social distancing to reduce the risk of infecting other.

What is social distancing?

Social distancing means staying home, avoiding crowds, and staying at least 6 feet away from others whenever possible. Why is everyone being asked to practice social distancing?

The less time that we spend within 6 feet of each other, and the fewer people we interact with, the more likely we are to slow the spread of COVID-19.

Public Works Utilities Division Crew works regular Monday-Friday 8-5 works weeks and 4 hours on Saturday and Sunday. Regular on-call is Tuesday to Tuesday, 7 days a week with a 4-6-man rotation.

Emergency Response Plan-Coronavirus-COVID19

Section: Reactionary Steps (During a Declared Pandemic):

5) Reduced Workforce plan, page 5.

“During a declared pandemic the work force at GPW and its suppliers could be reduced due to the health status of those employees. In cases of a reduced workforce, schedules should be worked out via phone and email if available to lessen the need for face to face contact. Table 1.2 is an example of a 6-operator rotation schedule for Utilities (Water and Wastewater) and Table 1.3 for regular staff which includes streets and parks. Staff should review times for arrival and departure of the yard, by individual operators, prior to implementation of a reduced workforce schedule. Communication will be imperative to ensure minimal person to person contact.”

During this Covid-19 Declared Emergency things have changed in the way we do business as normal. In order to reduce the contact with another citizen of Greenfield. The Public Works Department implemented a 4/10 schedule with a few exceptions. This 4/10 schedule allows the crew to be on site at work only for 4 days of the week for less exposure with the other crew members. This also created a different problem for the on-call personnel. Working On-call duties while off work.

On the last week of June when preparing the next ON-Call schedule for the 3rd quarter of 2020. I had conversations with all the Public Works On-Call crew about On-call while working their 4/10 schedule. This would allow them to be off at home without the worries of being on-call and being called out early morning during their regular scheduled days off.

During a regular staff meeting with Paul Wood, City Manager, I brought this to his attention and after talking it over with HR. It was decided that this was a better option for both the City and On-call employees.

The Schedule would work as follows. (see attached schedule)

Employee #1

On-call (Wednesday evening 5:00 pm- Saturday Evening 5:00 pm)

Employee #2

On-call (Saturday Evening 5:00 pm- Wednesday evening 5:00 pm)

Employees agreed that the Sunday shift would get extra day for a total of four days (nights) of On-call Pay, while crew starting on Wednesday would only be entitled to 3 days (nights) of On-call pay. The crew talked about alternating the Saturday On-call (night) with the next person coming onto the On-Call rotation.

Per MOU, Article IIV; Section; Salaries- B; ON-Call Pay page 12.

Public Works On-Call pay shall be One Hundred and Eighty Dollars (\$180.00) per assignment period (one week, Tuesday to Tuesday). During this Working On-Call it would be paid per day as follows ($180.00/7 = \$25.71$ per day.)

Employee #1 (3-night x $\$25.71 = \77.14) Employee #2 (4-nights x $\$25.71 = 102.84$)

Paul Wood and Nina Aguayo agreed this was the best way of keeping the crew safe while still being On-Call and provide essential services.

The Public Works Department is essential for the City and as civil service workers, we have the responsibility to ensure the community is provided safe and reliable water and wastewater services during this critical time. The needs of the City should take precedence, as well as to ensure the safety of our employees.

Sincerely yours,

Arturo Felix,
Public Works Operations Manager

Sanitary System Management Plan

Appendix C – Title 13.28 Sewer Service

**CITY OF GREENFIELD CITY COUNCIL
ORDINANCE NO. 539**

**AN ORDINANCE OF THE CITY COUNCIL OF THE
CITY OF GREENFIELD AMENDING THE MUNICIPAL
CODE ADDING SECTION 13.28.285 ESTABLISHING A FATS,
OILS AND GREASE PRETREATMENT PROGRAM FOR THE
SANITARY SEWER COLLECTION SYSTEM**

WHEREAS, the City of Greenfield operates a sanitary sewer collection system that serves the entire City of Greenfield including all residential, commercial and business locations within the City; and

WHEREAS, it is the duty of the City to ensure the sanitary sewer collection system is properly operated and maintained; and

WHEREAS, discharges of fats, oils and grease into the sanitary sewer collection system can result in blockages, overflows and biological/chemical upsets within the system that are injurious to the system and to public health; and

WHEREAS, the State Water Resources Control Board has issued Waste Discharge Requirements (WDR) Orders 2005-003-DWQ 2008-002- Exec; and

WHEREAS, said orders require the City of Greenfield to prepare and implement a Fats, Oils and Grease Control Program to reduce the amount of fats oils and grease discharged to the City's sanitary sewer collection system; and

WHEREAS, it is prudent and protective health for the City to implement a fats, oils and grease pretreatment program for Food Service Establishments and other commercial facilities that discharge fats oils and grease into the City's sewer collections system.

**NOW, THEREFOR, THE CITY COUNCIL OF THE CITY OF GREENFIELD
DOES ORDAIN AS FOLLOWS:**

Evidence: Section 1: The City Council has considered all the evidence submitted into the administrative record, which includes, but not limited to, public comments, both written and oral, received and/ or submitted at, or prior to the City Council's consideration of this amendment.

Section 2. Ordinance Adding Section 13.28.285 Fats, Oils and Grease Control Program:
Chapter 13.28 "Sewer Service" is hereby amended to add the following:

13.28.285 Fats, Oils and Grease Control Program

The purpose of this section is to establish the wastewater pretreatment requirements for Food Service Establishments (FSEs) and other commercial facilities that discharge Fats, Oils and

Grease (FOG) into the city's sewer collection and conveyance system. The requirements of this section are in addition to all other applicable requirements set forth in this chapter. Additional FOG Program Requirements are also contained in the city's FOG Program Standard Conditions, which shall be approved by the City Council by resolution. Said FOG Program Standard Conditions may be modified from time to time by the City Council by resolution.

A. Definitions.

1. "Discharger" means any person who discharges or causes a discharge of wastewater directly or indirectly to a public sewer.
2. "Fats, Oils and Grease (FOG)" means any substance such as a vegetable or animal product that is used in, or is a byproduct of, the cooking or food preparation process, and that turns or may turn viscous or solidifies with a change in temperature or other conditions.
3. "FOG Control Program" means the city's FOG Control Program required by and developed pursuant to SWRCB Order No. 2006-0003-DWQ, Section (D)(13)(iii) and Section (D)(13)(vii).
4. "FOG Wastewater Discharge Permit" or "FOG Permit" means a permit issued by the city subject to the requirements and conditions established by the city authorizing the permittee or discharger to discharge wastewater into the city's facilities or into sewer facilities which ultimately discharge into a city facility.
5. "Food Grinder" means any device installed in the plumbing or sewage system for grinding food waste or food preparation by-products for the purpose of disposing it in the sewer system.
6. "Food Service Establishment (FSE)" means any room, building, or place or portion thereof, located within the boundaries of the city, which is maintained, used or operated by any profit or non-profit entity for the purpose of storing, preparing, serving, manufacturing, packaging, transporting, salvaging or otherwise handling and distributing food and beverages (including prepackaged items), which have any process or device that uses or produces FOG. Food Service Establishments shall include, but are not be limited to, facilities and activities as defined above which are operated and maintained by restaurants, lunch counters, refreshment stands, bars, schools, hospitals, convalescent/health care homes, community centers, and private or public community clubhouses.
7. "Grease Control Device (GCD)" means any grease interceptor, grease trap or other mechanism, device, or process, which attaches to, or is applied to, wastewater plumbing fixtures and lines, the purpose of which is to trap or collect or treat FOG prior to it being discharged into the sewer system. "Grease control device" may also include any other proven method to reduce FOG subject to the approval of the city.

8. “Grease Interceptor (Gravity Grease Interceptor)” means a multi-compartment device that is constructed in different sizes and is generally required to be located, according to the California Plumbing Code, underground between a Food Service Establishment and the connection to the sewer system. These devices primarily use gravity to separate FOG from the wastewater as it moves from one compartment to the next.
9. “Grease Trap (Hydromechanical Grease Interceptor)” means a grease control device that is used to serve individual fixtures.
10. “Kitchen Best Management Practices (BMPs)” means schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the introduction of FOG to the sewer facilities.
11. “Manifest” means that receipt which is retained by the generator of wastes for disposing recyclable wastes or liquid wastes as required by the city.
12. “Permittee” means a person who has received a permit to discharge wastewater into the city's sewer facilities subject to the requirements and conditions established by the city.
13. “Sanitary Sewer Overflow (SSO)” means the unauthorized discharge of wastewater from the city’s designated sewer collection and conveyance facilities.
14. “Twenty-Five Percent (25%) Rule” means the requirement for grease interceptors to be maintained such that the combined FOG and solids accumulation does not exceed 25% of the design hydraulic depth of the grease interceptor. This is to ensure that the minimum hydraulic retention time and required available hydraulic volume is maintained to effectively intercept and retain FOG discharged to the sewer system.
15. “Waste Hauler” means any person licensed to carry on or engage in vehicular transport of waste as part of, or incidental to, any business for that purpose.

B. FOG Discharge Prohibited.

It shall be unlawful for any Discharger to discharge FOG or cause FOG to be discharged into the city’s sanitary sewer system. FSEs may not discharge FOG that may accumulate or cause or contribute to blockages in the sewer system or at the sewer system lateral that connects the FSE to the city’s sanitary sewer system. Additional specific FOG discharge prohibitions may be established by the Director of Public Works or designee and such additional prohibitions, if any, shall be as set forth in the city’s FOG Program Standard Conditions.

C. Grease Control Device Installation Requirements.

The GCD shall be adequate to separate and remove FOG contained in the wastewater discharge from the FSE prior to discharge to the city’s sanitary sewer system. Fixtures,

equipment, and drain lines located in the food preparation and clean-up areas, which are sources of FOG discharges, shall be plumbed to a GCD. The GCD shall be sized and installed per the California Plumbing Code, as that code may be adopted and amended by the city. Dishwashing machines shall not be connected to a hydromechanical grease interceptor (grease trap).

D. Grease Control Device – Installation.

All new and existing food service establishments (FSEs) shall install, operate, and maintain an approved type and adequately sized grease control device (GCD), such as a hydromechanical grease interceptor (grease trap) or a gravity grease interceptor. These devices must be cleaned, maintained, and have the FOG removed and disposed of in a proper manner on regular intervals to be effective. Grease traps have limited effect and should only be used in those instances where the use of a grease interceptor or other grease control device is determined by the city to be impossible or impracticable.

E. Grease Control Device – Maintenance.

1. All GCDs shall be cleaned on a regular basis at the Discharger's expense to ensure efficient operation of the GCD. All gravity grease interceptors shall be cleaned no less than once every ninety (90) days and all hydromechanical grease interceptors shall be cleaned no less than once every seven (7) days. The required cleaning frequency for a GCD may vary for each FSE based on the type of food prepared, volume of food prepared, and GCD size and type. The required cleaning frequency for a GCD will be determined by the city and identified on the FSE's FOG Wastewater Discharge Permit.

2. Maintenance of below ground gravity grease interceptors shall be performed only by a licensed pumping service at the Discharger's expense. Smaller hydromechanical grease interceptors may be cleaned by a licensed pumping service or by FSE staff.

3. The Discharger shall maintain the following records on-site for a period of three years:

a. GCD cleaning and maintenance records.

b. Grease barrel waste manifests.

F. Food Grinders Prohibited.

No food grinder may be installed in the plumbing system of any new construction of an FSE. All food grinders existing as of the effective date of this ordinance shall be removed from existing FSEs by July 1, 2019.

G. FOG Wastewater Discharge Permit Required.

1. FOG Permit holders may be assessed an initial and annual fee to cover actual costs associated with the treatment of wastewater containing chemical constituents not generally

present in domestic wastewater discharges, as well as the costs for permitting, inspection, sampling, monitoring, and other implementation activities. FOG Permit and program fees shall be in the amount adopted by resolution by the City Council.

2. Effective July 1, 2019, all FSEs must complete a FOG Permit Application and obtain a FOG Wastewater Discharge Permit from the city at the time an FSE applies for or renews its annual business license from the city.
3. Notwithstanding the preceding paragraph 2, effective July 1, 2019, no certificate of occupancy for any new construction or occupancy may be issued to an FSE unless the FSE has obtained a FOG Permit from the city and complied with the provisions of this section.
4. Dischargers may be granted a variance if an FSE is determined by the city to have negligible FOG discharge and insignificant adverse impact on the city's sanitary sewer system.
5. Any Discharger proposing to change the volume or characteristics of an existing discharge shall request authorization from the city's Director of Public Works or designee as to whether a new or amended FOG Permit application is required. If the proposed change requires an amendment to a current FOG Permit or requires a different type of FOG Permit be issued, the Discharger shall apply to the city for the appropriate FOG Permit within thirty (30) days of receiving notification from the city of such requirement.
6. The issuance by the city of a FOG Permit may contain any or all of the following conditions or limits:
 - a. Limits on discharge of FOG.
 - b. Requirements for proper operation and maintenance of GCDs.
 - c. Requirements for implementation of best management practices.
 - d. Requirements for maintaining records, including, but not limited to, cleaning logs and waste manifests.
 - e. Requirements for the FSE to install, operate, and maintain a GCD at its own expense.

Additional conditions and limitations may be established by the city to protect the city's sanitary sewer system, remain in compliance with regulatory agency requirements, and/or ensure the FSE remains in compliance with the requirements of this section.

7. FOG Permits are issued to a specific Discharger for a specific operation. A FOG Permit shall not be reassigned, transferred, or sold to a new owner, a new discharger, different premises, or a new or changed operation.

8. Any Discharger who violates any of the provisions of this section, of applicable state and federal regulations, of the city's FOG Program Standard Conditions, or of any of the following conditions, may be subject to FOG Permit revocation:

- a. Failure to factually report the wastewater constituents and characteristics of discharge.
- b. Failure to maintain maintenance records on-site.
- c. Failure to report significant changes in operations or wastewater constituents and characteristics.
- d. Refusal of reasonable access by the city to the Discharger's premises for the purposes of inspection or monitoring.
- e. Refusal of reasonable access by the city to the Discharger's GCD, which can include requiring the Discharger's staff to open the GCD and inspecting the grease and solids build-up in the GCD.
- f. Such additional grounds for revocation as set forth in the city's FOG Program Standard Conditions.

H. Enforcement.

The Director of Public Works shall enforce the city's FOG Control Program, the requirements of this section, and the requirements of the city's FOG Program Standard Conditions. Enforcement procedures shall be as set forth in the city's FOG Program Standard Conditions.

I. Noncompliance Fee.

Any Discharger determined by the city to be in noncompliance with the terms and conditions specified in this section shall pay to the city a noncompliance fee to compensate the city for costs of additional inspections and follow-up, sampling, monitoring, laboratory analysis, treatment, disposal, and administrative processing incurred as a result of the noncompliance. Such noncompliance fee shall be in addition to, and not in lieu of, any penalties or other charges that may be assessed in accordance with this section. Noncompliance fees may be tiered based on the type, gravity, or number of occurrences of the offense. Noncompliance fees shall be assigned in accordance with City Municipal Code Chapter 1.12, Section 1.12.010: Violation Penalty, as follows:

Part C. Any person convicted of an infraction for violation of an ordinance of the city is punishable by:

1. A fine not exceeding one hundred dollars (\$100.00) for a first violation;
2. A fine not exceeding two hundred dollars (\$200.00) for a second violation of

the same ordinance within one year;

3. A fine not exceeding five hundred dollars (\$500.00) for each additional violation of the same ordinance within one year.

Part D. Any person causing or permitting a violation of this code shall be regarded as committing a separate offense on each day that the violation occurs or continues

J. City Cost Recovery Charge.

Any Discharger determined by the city to have caused a discharge of wastewater which obstructs, damages or impairs the city's wastewater treatment plant or city sewer system, the city may assess a charge against the Discharger in an amount equal to the cost to the city of work required to clean or repair the facility or system and for payment of any associated penalties from state or local regulators. Any such Cost Recovery Charge shall be in addition to any noncompliance fees or penalties that may be assessed in accordance with this section. The amount of any Cost Recovery Charge shall be as determined by the city's Director of Public Works or designee.

13.28.290 Grease, oil and sand interceptors.

Grease, oil, and sand interceptors shall be provided when, in the opinion of the city's Director of Public Works or designee, they are necessary for the proper handling of liquid wastes containing grease in excessive amount, or any flammable wastes, sand, and other harmful ingredients; except that such interceptors shall not be required for private living quarters or dwelling units. All interceptors shall be of a type and capacity approved by the city's Director of Public Works or designee and shall be located as to be readily and easily accessible for cleaning and inspection. Grease and oil interceptors shall be constructed of impervious materials capable of withstanding abrupt and extreme changes in temperature. They shall be of substantial construction, watertight, and equipped with easily removable covers which when bolted in place shall be gastight and watertight. (Ord. 47 §504, 1953).

13.28.300 Grease, oil and sand interceptors--Maintained by owner.

Where installed, all grease, oil and sand interceptors shall be maintained by the owner, at his expense, in continuously efficient operation at all times. (Ord. 47 §505, 1953).

Section 3. Severability: If any section, subsection, clause, phrase, sentence, or word of this ordinance is for any reason held invalid by a court of competent jurisdiction or by preemptive legislation, such decision or preemptive legislation shall not affect the validity of the remaining portions of this ordinance. The City Council of the City of Greenfield declares that it would have passed this ordinance each section, subsection, clause, phrase, sentence or word thereof, irrespective of the fact that one or more sections, subsections, clauses, phrases, sentences or words be declared invalid.

Section 4. Execution and Certification: The City Clerk is directed to do all things necessary to cause the execution of this ordinance immediately upon its adoption and shall thereafter certify to the passage of this ordinance and cause the same to be published and posted according to law.

Section 5. Effective Date; Pursuant to California Government Code Section 36937, this ordinance shall take effect (30) days after its passage and adoption by the City Council of the City of Greenfield.

INTRODUCED at a regular meeting of the City Council of the City of Greenfield held on the day of February 26, 2019.

PASSED AND ADOPTED by the City Council of the City of Greenfield at a regular meeting of the City Council held on the ___ day of _____, 2019 by the following vote;

AYES, and in favor, thereof, Councilmembers:

NOES, Councilmembers:

ABESNT, Councilmembers:

Lance Walker, Mayor

Attest:

Ann F. Rathbun, City Clerk

Sanitary System Management Plan

Appendix D – FOG (Fats, Oils and Grease) Control Program informational material



City of Greenfield

Department of Public Works
599 El Camino Real Greenfield, CA 93927
Phone: 831.674.2635 / www.ci.greenfield.ca.us

Dear Facility Owner or Manager:

Please find important information below regarding the City of Greenfield Fats Oils and Grease (FOG) Control Program and requirements for Food Service Establishments in the City of Greenfield.

The State Water Resources Control Board Waste Discharge Requirements (WDR) Orders No. 2006-0003-DWQ and WQ 2008-0002-EXEC require the City of Greenfield, to prepare and implement a Fats, Oils, and Grease (FOG) Control Program to reduce the amount of FOG discharged to the sanitary sewer system, because FOG was an identified problem in the City's sanitary sewer system.

The primary objectives of the FOG Program are to:

- Prevent sanitary sewer overflows and blockages caused by FOG;
- Prevent the introduction of FOG into the City's sanitary sewer system; and
- Protect the City's sanitary sewer system, City personnel, the environment, and the public from sanitary sewer overflows and blockages caused by FOG.

In addition to these goals, the FOG Control Program strives to help educate owners and employees of Food Service Establishments (FSE's) on the proper operation and maintenance of Grease Control Devices (GCDs) in an effort to keep FOG out of the City's sewer system and reduce the factors that may lead to Sanitary Sewer Overflows (SSOs). Part of the FOG Control Program consists of unannounced routine inspections to verify whether FSEs are in compliance with the City's FOG Program. The City is planning to begin conducting inspections in the next month. We appreciate your cooperation to help facilitate these inspections.

To support the FOG Control Program, the City adopted Municipal Code Chapter 13.28.285 – Fats Oils and Grease Control Program, which establishes the City's legal authority to inspect, regulate, and monitor FSEs and require these facilities to install and maintain grease control devices, such as grease traps and interceptors, in order to comply with the WDR Orders mentioned above.

A brief summary of some of the items that will be inspected during routine inspections:

- Review of Best Management Practices used to reduce FOG;
- Inspection of Cleaning and Maintenance Records for your GCD (Grease Trap or Interceptor);
- Inspection of Grease and Solids levels in your GCD (Grease/Solids must be < 25% of total liquid depth in GCD);
- Inspection of GCD to ensure it is operating as designed;
- Review of improper use of emulsifiers (enzymes/degreasers) that may liquefy FOG and cause it to pass through your GCD and into the sewer system; and
- Proper disposal of yellow grease from deep fryers.

The City looks forward to working with FSE owners and employees to keep the sewer system free from FOG and protect the environment. Your continued support and cooperation with the City's FOG Control efforts is truly appreciated. We look forward to discussing the City's FOG Program with you during your next inspection.

If you have any questions regarding the City's FOG Control requirements, please call (831) 672-2635.

**General Information and
Instructions for obtaining a
Greenfield
Wastewater
Division**



**FOG
(Fats, Oils and Grease)
Wastewater Discharge Permit**

THIS PERMIT APPLICATION PACKET CONTAINS INFORMATION ON:

1. Fats, Oils and Grease (FOG) Wastewater Discharge Permit Program
2. FOG Permits Requirements for Discharging Wastewater from Food Services Establishments
3. Food Service Establishments that need a Fog Wastewater Discharge Permit
4. Penalties for Discharging Without a Valid FOG Wastewater Discharge Permit
5. Non-Transferability of Permits
6. FOG Wastewater Discharge Permit Conditions and Requirements
7. FOG Wastewater Discharge Permit modifications of terms and conditions
8. Grease Interceptor requirements
9. Grease Trap Requirements
10. Requirements Kitchen Best Management Practices (BMP's)
11. Applying for a FOG Wastewater Discharge Permit
12. Where to get Additional information
13. Permit Application Review and Evaluation Process

Appendix A -

Specific instructions to fill out a FOG Wastewater Discharge Permits

Appendix B-

Design Guidelines for Grease Interceptors

Appendix C-

Grease Interceptor Sizing Worksheet

Appendix C-

Grease Self- Cleaning Log

1. Fats, Oils and Grease (FOG) Wastewater Discharge Permit Program.

The Greenfield Wastewater Division (GWD) administers a Fats, Oils, and Grease (FOG) Source Control Program to protect the public and the environment through the regulation of wastewater discharges from Food Service Establishments.

A permit program is implemented to limit the discharge of FOG from Food Service Establishments by establishing prohibitions, requirements for implementation of kitchen Best Management Practices (BMP's), requirements for installation of grease interceptors, self-monitoring requirements, reporting requirements, and others.

2. FOG Permits requirements for discharging wastewater from Food Service Establishments.

Food Service Establishments (FSEs) proposing to discharge or currently discharging wastewater into the City's sewer system shall request a FOG Wastewater Discharge Permit from the City.

FOG Wastewater Discharge Permits shall be subject to all provisions of these Standard Conditions and all other regulations established by the City. The conditions of FOG Wastewater Discharge Permits shall be enforced by the City in accordance with these Standard Conditions, the City Municipal Code and applicable State and Federal Regulations.

3. Food Service Establishments that need FOG Wastewater Discharge Permit.

Permits are required for Food Service Establishments within the jurisdictional boundaries of GWD, operating in a permanently constructed structure that is maintained, used, or operated for the purpose of storing, preparing, serving, or manufacturing, packaging, or otherwise handling food for sale to other entities, or for consumption by the public, its members or employees, and which has any process or device that uses or produces FOG.

4. Penalties for discharging without a valid permit.

Facilities discharging without a valid permit are subject to the following penalties:

Any person who violates any provision of the GWD's FOG Ordinance is guilty of an infraction for violation of an ordinance of the city is punishable by a fine in an amount not to exceed \$100 for a first violation. A fine not exceeding two hundred dollars (\$200.00) for a second violation of the same ordinance within one year; A fine not exceeding five hundred dollars (\$500.00) for each additional violation of the same ordinance within one year.

5. Non-Transferability of Permits

FOG Wastewater Discharge Permits issued under these Standard Conditions are for a specific Food Service Establishment, for a specific operation, and create no vested rights

- A. No permit holder shall assign, transfer, or sell any FOG Wastewater Discharge Permit issued under these Standard Conditions nor use any such permit for or on any premises or for facilities or operations or discharges not expressly encompassed within the underlying permit.
- B. Any permit that is transferred to a new owner or operator or to a new facility is void.

Permits issued under the FOG Ordinance are for a specific user for a specific operation at a specific location. Permits are not transferable. Upon termination of the permit, a permit renewal application must be submitted.

6. FOG Wastewater Discharge Permit conditions and requirements.

The issuance of a FOG Wastewater Discharge Permit may contain any or all the following conditions or limits:

- A. Limits on discharge of FOG and other associated pollutants.
- B. Requirements for proper operation and maintenance of grease trap or interceptors and other grease control devices.
- C. Grease trap or interceptor maintenance frequency and schedule.
- D. Requirements for implementation of Kitchen Best Management Practices and installation of adequate grease trap or interceptor and/or grease control device.
- E. Requirements for maintaining and reporting status of Kitchen Best Management Practices.
- F. Requirements for maintaining and submitting logs and records, including waste hauling records and waste manifests.
- G. Requirements to self-monitor.
- H. Requirements for the Food Service Establishment to construct, operate and maintain, at its own expense, FOG control devices and sampling facilities.
- I. Additional requirements as otherwise determined to be reasonably appropriate by the Director of Public Works or designee to protect the City's sewer system or as specified by other regulatory agencies.
- J. Other terms and conditions, which may be reasonably applicable to ensure compliance with these Standard Conditions.

7. FOG Wastewater Discharge Permit modifications of terms and conditions.

- A. The terms and conditions of an issued FOG Wastewater Discharge Permit may be subject to modification and change by the sole determination of the Director of Public Works or designee during the life of the permit based on:
 - a. The discharger's current or anticipated operating data;
 - b. The City's current or anticipated operating data;
 - c. Changes in the requirements of regulatory agencies which affect the City; or
 - d. A determination by the Director of Public Works or designee that such modification is appropriate to further the objectives of the City's FOG Program.
- B. The Permittee may request a modification to the terms and conditions of an issued permit. The request shall be in writing stating the requested change and the reasons for the change. The Director of Public Works or designee shall review the request, make a determination on the request, and respond in writing.

- C. The Permittee shall be informed of any change in the permit limits, conditions, or requirements during routine compliance inspections. Any changes or new conditions in the permit shall include a reasonable time schedule for compliance

8. Grease Interceptor requirements

- A. All Food Service Establishments shall provide wastewater acceptable to the City, under the requirements and standards established herein before discharging to any public sewer. Any Food Service Establishment required to provide FOG pretreatment shall install, operate, and maintain an approved type and adequately sized grease interceptor necessary to maintain compliance with the objectives of these Standard Conditions.
- B. Grease interceptor sizing and installation shall conform to the current edition of the California Plumbing Code. Grease interceptors shall be constructed in accordance with the design approved by the City of Greenfield Building Department.
- C. The grease interceptor shall be installed at a location where it shall be at all times easily accessible for inspection, cleaning, and removal of accumulated grease.
- D. Grease interceptors shall be maintained in efficient operating condition by removing accumulated FOG so that the accumulation of FOG is always less than 25% of the total liquid operating depth.
- E. Grease interceptors shall be inspected periodically to check for influent crossover and effluent T's, and for effective operation of the baffles and flow regulating device. Grease interceptors and their baffles shall be maintained free of all deposits of FOG and waste.

9. Grease Trap Requirements

- A. Food Service Establishments may be required to install grease traps in the waste line leading from drains, sinks, and other fixtures or equipment where FOG may be introduced into the sewer system in quantities that can cause blockage.
- B. Sizing and installation of grease traps shall conform to the current edition of the California Plumbing Code subject to approval by the City of Greenfield Building Department.
- C. Grease traps shall be maintained in efficient operating conditions by removing accumulated FOG so that the accumulation of FOG is always less than 25% of the total liquid operating depth.
- D. Grease traps shall be maintained free of all food residues and any FOG waste removed during the cleaning and scraping process.
- E. Grease traps shall be inspected periodically to check for leaking seams and pipes, and for effective operation of the baffles and flow regulating device. Grease traps and their baffles shall be maintained free of all deposits of FOG and waste. Removable baffles shall be removed and cleaned during the maintenance process.
- F. Dishwashers and garbage grinders shall not be connected to or discharged into any grease trap.

10. Requirements for Kitchen Best Management Practices (BMP's)

- A. All Food Service Establishments shall implement Kitchen Best Management Practices in accordance with the requirements and guidelines established by the City under its FOG Control Program to minimize the discharge of FOG to the sewer system.
- B. All Food Service Establishments shall be required, at a minimum, to comply with the following Kitchen Best Management Practices, when applicable:
 - 1) Installation of drain screens. Drain screens shall be installed on all drainage pipes in food preparation areas
 - 2) Segregation and collection of waste cooking oil. All waste cooking oil shall be collected and stored properly in recycling receptacles such as barrels or drums. Such recycling receptacles shall be maintained properly to ensure that they do not leak. Licensed waste haulers or an approved recycling facility must be used to dispose of waste cooking oil.
 - 3) Disposal of food wastes. All food waste shall be disposed of directly into the trash or garbage, and not in sinks. Double bagging food wastes that have the potential to leak in trash bins are highly recommended.
 - 4) Employee training. Employees of the Food Service Establishment shall be trained by ownership/management periodically as specified in the permit, on the following subjects:
 - (a) How to “dry wipe” pots, pans, dishware and work areas before washing to remove grease.
 - (b) to properly dispose of food waste and solids in enclosed plastic bags prior to disposal in trash bins or containers to prevent leaking and odors.
 - (c) How to properly dispose of waste cooking oil in recycling receptacles and proper “dry” clean-up methods for spilled waste cooking oil.
 - (d) Training shall be documented, and employee signatures retained indicating each employee's attendance and understanding of the practices reviewed. Training records shall be available for review at any reasonable time by the FOG Control Program or an inspector.

Kitchen signage; Best management and waste minimization practices shall always be posted visibly in the food preparation and dishwashing areas.

11. APPLYING FOR A FOG WASTEWATER DISCHARGE PERMIT

- A. Complete the Application for FOG Wastewater Discharge Permit. Detailed instructions on how to fill out the permit application are provided in Appendix A of the information brochure.
- B. Submit the completed application with an enclosed one-time permit fee payment. Make checks or money orders payable to: Greenfield Wastewater Division FOG Program. Mail application with payment to

**City of Greenfield
c/o Utilities Division
599 El Camino Real
Greenfield, CA 93927**

NOTE: GWD will not process the permit application if any of the above requirements are either missing or incomplete. Please make sure that all information required is complete to avoid any delays in the issuance of the permit. Discharging wastewater from a Food Service Establishment without a valid permit is a violation of GWD's FOG Ordinance and may be subject to fines and penalties.

12. WHERE TO GET ADDITIONAL INFORMATION;

Should you have questions on how to fill out the permit application or on how to comply with the permit application requirements, please contact?

Phone (831) 674-2635

E-mail: publicworks@ci.greenfield.ca.us

13. Permit application review and evaluation process;

- A. A comprehensive review and evaluation will be conducted to identify any submittal deficiencies
- B. Greenfield Wastewater Division will conduct an inspection of any new applicant's facility to verify the information provided in the permit application.
- C. If all requirements are satisfied, the Permit will be issued within 2 to 4 weeks after receipt of the application

Appendix A

Specific instructions to fill out a FOG Wastewater Discharge Permit application

Clearly print or type the information requested and return the signed original to Greenfield Wastewater Division. All questions must be answered. DO NOT LEAVE BLANKS. If the question is not applicable, indicate "N/A" on the form

Section I- General Information

- A. Applicants Name
- B. Enter the food service establishment's official or legal name.
- C. IF the FSE is doing business under a different name other than indicated in line –A, enter here
- D. Provide the address (physical location) of FSE where wastewater is being discharged. Enter the FSE's telephone number, fax number, and e-mail at the physical location.
- E. Responsible/Emergency Contact information
- F. Check the appropriate box to indicate type of business entity. A sole proprietorship is a business owned by one person for profit. A partnership is a business owned by two or more persons for profit. A corporation is a business owned by shareholders.
- G. Enter the name of owner, general partner, or chief executive officer. If the type of business is sole proprietorship, indicate the name of the sole proprietor. If the type of business is a partnership, list the name of a general partner. If the type of business is a corporation, list the name of the Chief Executive Officer or equivalent. Provide the title, address, phone number, and fax number of the owner, partner, or chief executive officer.
- H.

Section II- Facility Operational Characteristics

Type of Facility

Under the Type of Food Service Establishment column, check the box(es) that appropriately describes the type of food service provided in the facility. Under the Location column, check the box (es) of the location of the facility.

- A. Seating Capacity,
- B. Number of Employees
- C. For each day of operation or when it is closed.

Type of Fixtures

Under the Food Processing Equipment column, check box(es) corresponding to equipment used to prepare/cook food in your facility and indicate the quantity for each. Likewise, do the same thing for the Kitchen Equipment column.

Indicate whether or not this facility already has a grease interceptor or grease trap and size of unit. A grease interceptor is a device typically underground and located outside a Food Service Establishment designed to collect, contain, or remove food wastes, fats, oils, and grease from the waste stream prior to discharge to the sewer. A grease trap is a device typically located inside a Food Service Establishment or under a sink designed to collect smaller quantities of fats, oils, and grease.

Section IV- Certification

I have personally examined, and I am Familiar with the information submitted in the attached documents, and I hereby certify that the information is correct, accurate, and complete, I am aware that there are significant penalties for submitting false information, including the possible of disconnection of utilities or fines.

The permit application must be signed and dated by the Owner, a General Partner, or Chief Executive Officer identified in Line F.

Provide the name, address, phone number, and e-mail of the person that GWD can contact if there are questions regarding the permit application.

APPLICATION FOR FATS, OILS, AND GREASE (FOG) WASTEWATER DISCHARGE PERMIT FOR FOOD SERVICE ESTABLISHMENTS



Instructions: For Greenfield Public Works Department (City) to properly evaluate, process, and issue a Fats, Oils, and Grease (FOG) Wastewater Discharge Permit, the applicant must provide a complete permit application.

- The Permit Application Form must be filled out completely. Your application will be returned to you if there is any missing information. Please write N/A if the information being requested does not apply.
- The Permit Application must be signed by an official company representative. City will return your permit application if it is not signed by the proper company official.
- The permit application fee is due at the time the permit application is submitted. An application received without remittance will be returned. All required Drawings and Information described in the information brochure must be submitted with this application. Complete the checklist provided to ensure that all requirements are satisfied.

City will not process incomplete Permit Applications. Clearly print or type the information requested.

SECTION I- GENERAL INFORMATION

A. Applicant Name: _____

B. Doing Business as: _____

C. Sewer Service Address: _____

D. Phone Number () _____ E-mail: _____

E. Responsible/Emergency Contact (Required): _____
(24-hour contact number, this should NOT be the phone number to restaurant)

F. Is your establishment: () Sole proprietorship () Partnership? () Corporation

G. Name of Owner, A General Partner, or Chief Executive Officer:

Name	Title		

Street	City	State	Zip Code

Phone Number	E-mail		

SECTION II – Facility Operational Characteristics

Please check description that represent your facility

<u>Type of Facility</u> <i>(check all that apply)</i>			
<input type="checkbox"/> Full Serve Rest.	<input type="checkbox"/> Hospital	<input type="checkbox"/> Church/Club/ Organization	<input type="checkbox"/> Coffee Shop
<input type="checkbox"/> 1/2 Serve Rest. (no dishes)	<input type="checkbox"/> School/College	<input type="checkbox"/> Nursing Home	<input type="checkbox"/> Deli
<input type="checkbox"/> Cafeteria	<input type="checkbox"/> Bakery	<input type="checkbox"/> Grocery Store	<input type="checkbox"/> Butcher shop
	<input type="checkbox"/> Ice Cream Shop		<input type="checkbox"/> Other _____
Seating Capacity: _____		Number of Employees: _____	
Hours <i>(i.e. 8am-5pm):</i>			
Sun: _____	Mon: _____	Tue: _____	Wed: _____
Thu: _____	Fri: _____	Sat: _____	
<u>Types of Fixtures</u> <i>(indicate quantity)</i>			
<input type="checkbox"/> Deep Fryers _____	<input type="checkbox"/> 1 Comp. sinks _____	<input type="checkbox"/> Pre-wash sinks _____	
<input type="checkbox"/> Grills _____	<input type="checkbox"/> Tilt Kettles _____	<input type="checkbox"/> Mop sinks _____	
<input type="checkbox"/> Ovens _____	<input type="checkbox"/> Garbage Grinders _____	<input type="checkbox"/> Floor Drains _____	
<input type="checkbox"/> 3 Comp. sinks _____	<input type="checkbox"/> Dishwashers _____		
<input type="checkbox"/> 2 Comp. sinks _____	<input type="checkbox"/> Wok Ranges _____		
<u>Types of Grease Abatement</u> <i>(indicate quantity)</i>		<u>Serviced By:</u>	
<input type="checkbox"/> Outside Grease Interceptor _____	<input type="checkbox"/> Hauler: _____ <i>(name)</i>		
<input type="checkbox"/> Indoor Manual Grease Trap _____	<input type="checkbox"/> Self: _____ <i>(how often?)</i>		
<input type="checkbox"/> Automatic Grease Removal Device (GRD)	<input type="checkbox"/> Clean Grease Rendering Co <i>(for fryer oil):</i>		
<input type="checkbox"/> Unknown <input type="checkbox"/> None	_____		

Do you Currently have a Grease Interceptor? () Yes () No

(if yes, indicate Type) () Gravity Grease interceptor
 () Hydromechanical Trap

****If you do not have a functioning Grease Recovery Device, you will be required to install one prior to opening****

SECTION III – Certification

I have personally examined and am familiar with the information submitted in the attached document, and I hereby certify under penalty of law that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information.

I certify that upon issuance of the permit, this firm’s operation and its resultant wastewater discharge will achieve consistent compliance with City’s FOG Ordinance and applicable regulations, the company will modify its operations, install wastewater pretreatment equipment, or do whatever is necessary to meet discharge requirements.

Certification of Owner, a General Partner, or Chief Executive Officer of FSE (restaurant)

Name Title

Signature Date

Appendix B

Design Guidelines for Grease Interceptors

The installation and use of a grease interceptor that is properly designed and sized for the type and size of the Food Service Establishment (FSE), is an important measure in ensuring that an FSE does not contribute with blockages in the sewer system or experience back-ups in the facility itself. Plans for future expansion should be considered since menu expansion, seating capacity expansion or menu changes impact the effectiveness of the grease interceptor.

I. APPLICATION

Grease interceptors are mainly used in treating kitchen wastewater from Food Service Establishments and other similar institutions. Influent to grease interceptors usually contains high organic loads, including FOG and dissolved particles, as well as detergents and suspended solids. Sanitary wastewaters are not treated by grease interceptors. Wastewater with high solids loadings should not be discharged to grease interceptors as it can upset the interceptor performance and greatly increase both solids accumulation and the need for frequent pump out.

II. BASIC DESIGN CRITERIA

In order to ensure effective separation, grease interceptors must be designed to satisfy four basic criteria:

- Time. The grease interceptor must provide sufficient retention time for emulsified FOG to separate and float to the surface of the chamber.
- Temperature. The grease interceptor must provide adequate volume to allow the wastewater to cool sufficiently for emulsified FOG to separate.
- Turbulence. Turbulence through grease interceptors must be controlled so that the FOG and solids are not suspended in the wastewater. Turbulence control is especially important during peak flow discharge periods.
- Tankage. The grease interceptor must provide sufficient storage capacity for accumulated FOG and solids between cleanings.

III. FACTORS AFFECTING GREASE INTERCEPTOR PERFORMANCE •

- Velocity of Incoming Water. A high velocity wastewater flow causes turbulence. This will slow the FOG separation process, thereby reducing the grease interceptor efficiency.
- Ratio of FOG to Water. The higher the ratio of FOG particles to the water, the lower the efficiency of the interceptor.
- Specific Gravity (Density) of FOG. FOG has a lower specific gravity than water and will rise to the surface quickly. FOG-laden food particles having a higher specific gravity than water will linger and accumulate at the bottom, eventually passing out of the interceptor.
- Possible Presence of Detergents in the System. Grease-cutting detergents will break the liquid grease into minute particles that can cause these liquids to pass through the interceptor.
- Percentage of Maximum Flow Capacity. If the maximum recommended flow is exceeded, the efficiency of the interceptor will decrease considerably.
- Location of Grease Interceptor. The interceptor should be located as close as possible to the source of FOG. Plumbing leading to the grease interceptor may become clogged if the wastewater cools prior to entering the grease interceptor

IV. SIZING GREASE INTERCEPTORS

Grease interceptors are designed and sized for maximum efficiency based on anticipated flow rates and organic load. The FOG Ordinance adopted by the Greenfield requires grease interceptor sizing to meet these standards and specifications. Contact Building Department to enquire about interceptor sizing and installation criteria. To calculate the size of a grease interceptor needed by a Food Service Establishment, refer to the Grease Interceptor Sizing Worksheet. Building Department will use the results of this formula as a guideline and make final determination to which size will be required for each FSE.

V. GREASE INTERCEPTOR DESIGN AND CONSTRUCTION GUIDELINES

- Grease interceptors shall be placed as close as practical to the fixture(s) being served. It shall be located where it is easily accessible at all times for inspection, cleaning, and removal of accumulated grease.
- A sample box shall be provided for all grease interceptors.
- Grease interceptors shall have two compartments. The inlet compartment shall be $\frac{2}{3}$ of the total capacity of the interceptor and in all cases shall be longer than the maximum inside width of the interceptor. The outlet compartment shall have a capacity of $\frac{1}{3}$ of the total interceptor capacity.
- Access to each grease interceptor shall be provided by manholes allowing viewing of the inner chambers including the inlet, intermediate and outlet tee pipes. Three access manholes shall be provided for all grease interceptors larger than 1500 gallons. Manholes shall extend to grade, have a minimum size of 24 inches diameter or square opening, and shall have a gasketed cover at grade and be traffic rated when necessary.
- The inlet and outlet shall have a baffle tee or similar flow device with a minimum cross-sectional area equal to the required cross-sectional area of the inlet. Each baffle shall extend from at least 4 inches above the liquid level to within at least 12 inches of the inside floor of the interceptor.
- Adequate partitions or baffles shall extend at least 6 inches above the liquid level. Flow from inlet compartment to outlet compartment shall be through a quarter bend, or similar device equivalent in cross sectional area to the inlet into the interceptor and shall extend down to within 12 inches of the inside floor. The Inlet, outlet and main baffle shall have a free vent area equal to the required cross-sectional area of the inlet pipe.

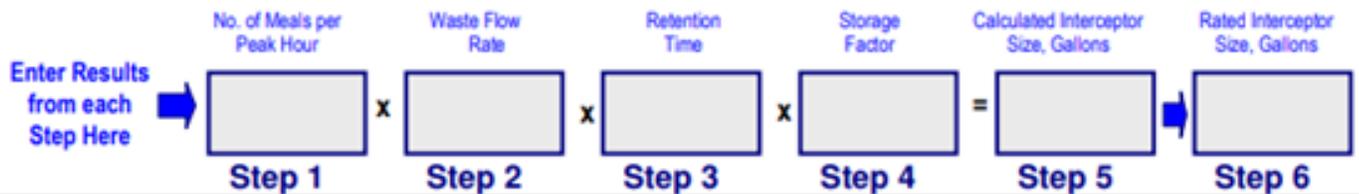
Appendix C

Grease Interceptor Sizing Worksheet

Grease Interceptor Sizing Worksheet

Name of Food Service Establishment	Contact Person for this worksheet	Name
Address		Phone E-mail:

Follow these six simple steps to determine size of grease interceptor:



Step 1	<p>Number of Meals per Peak Hour (Recommended Formula)</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;">Seating Capacity</td> <td style="width: 10%; text-align: center;">x</td> <td style="width: 30%;">Meal Factor</td> <td style="width: 10%; text-align: center;">=</td> <td style="width: 20%;">Meals per peak hour</td> </tr> <tr> <td style="text-align: center;"><input style="width: 40px; height: 20px;" type="text"/></td> <td></td> <td style="text-align: center;"><input style="width: 40px; height: 20px;" type="text"/></td> <td></td> <td style="text-align: center;"><input style="width: 40px; height: 20px;" type="text"/></td> </tr> </table> <p>Establishment Type</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 70%;"><input type="radio"/> Fast Food (45 min)</td> <td style="width: 30%; text-align: right;">Meal Factor</td> </tr> <tr> <td><input type="radio"/> Restaurant (60 min)</td> <td style="text-align: right;">1.33</td> </tr> <tr> <td><input type="radio"/> Leisure Dining (90 min)</td> <td style="text-align: right;">1.00</td> </tr> <tr> <td><input type="radio"/> Dinner Club (120 min)</td> <td style="text-align: right;">0.67</td> </tr> <tr> <td></td> <td style="text-align: right;">0.50</td> </tr> </table>	Seating Capacity	x	Meal Factor	=	Meals per peak hour	<input style="width: 40px; height: 20px;" type="text"/>		<input style="width: 40px; height: 20px;" type="text"/>		<input style="width: 40px; height: 20px;" type="text"/>	<input type="radio"/> Fast Food (45 min)	Meal Factor	<input type="radio"/> Restaurant (60 min)	1.33	<input type="radio"/> Leisure Dining (90 min)	1.00	<input type="radio"/> Dinner Club (120 min)	0.67		0.50	Notes:
Seating Capacity	x	Meal Factor	=	Meals per peak hour																		
<input style="width: 40px; height: 20px;" type="text"/>		<input style="width: 40px; height: 20px;" type="text"/>		<input style="width: 40px; height: 20px;" type="text"/>																		
<input type="radio"/> Fast Food (45 min)	Meal Factor																					
<input type="radio"/> Restaurant (60 min)	1.33																					
<input type="radio"/> Leisure Dining (90 min)	1.00																					
<input type="radio"/> Dinner Club (120 min)	0.67																					
	0.50																					
Step 2	<p>Waste Flow Rate (Add all the apply)</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 45%;">Condition</td> <td style="width: 55%;">Waste Flow Rate</td> </tr> <tr> <td><input type="checkbox"/> With a dishwashing machine</td> <td style="text-align: right;">6 gallons</td> </tr> <tr> <td><input type="checkbox"/> Without a dishwashing machine</td> <td style="text-align: right;">5 gallons</td> </tr> <tr> <td><input type="checkbox"/> Single service kitchen (Disposable Dishes and Utensils)</td> <td style="text-align: right;">2 gallons</td> </tr> <tr> <td><input type="checkbox"/> Food waste disposer (Grinder)</td> <td style="text-align: right;">1 gallon</td> </tr> <tr> <td colspan="2" style="text-align: right;">Total Waste Flow Rate ⇔ <u> </u></td> </tr> </table>	Condition	Waste Flow Rate	<input type="checkbox"/> With a dishwashing machine	6 gallons	<input type="checkbox"/> Without a dishwashing machine	5 gallons	<input type="checkbox"/> Single service kitchen (Disposable Dishes and Utensils)	2 gallons	<input type="checkbox"/> Food waste disposer (Grinder)	1 gallon	Total Waste Flow Rate ⇔ <u> </u>		Notes:								
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Total Waste Flow Rate ⇔ <u> </u>																						
Step 3	<p>Retention Time</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 60%;"><input type="radio"/> Commercial kitchen waste Dishwasher</td> <td style="width: 40%; text-align: right;">2.5 hours</td> </tr> <tr> <td><input type="radio"/> Single service kitchen Single serving</td> <td style="text-align: right;">1.5 hours</td> </tr> </table>	<input type="radio"/> Commercial kitchen waste Dishwasher	2.5 hours	<input type="radio"/> Single service kitchen Single serving	1.5 hours	Notes:																
<input type="radio"/> Commercial kitchen waste Dishwasher	2.5 hours																					
<input type="radio"/> Single service kitchen Single serving	1.5 hours																					
Step 4	<p>Storage Factor</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td colspan="2">Fully equipped commercial kitchen</td> </tr> <tr> <td><input type="radio"/> 8-hr operation</td> <td style="text-align: right;">1</td> </tr> <tr> <td><input type="radio"/> 16-hr operation</td> <td style="text-align: right;">2</td> </tr> <tr> <td><input type="radio"/> 24-hr operation</td> <td style="text-align: right;">3</td> </tr> <tr> <td><input type="radio"/> Single-Service Kitchen</td> <td style="text-align: right;">1.5</td> </tr> </table>	Fully equipped commercial kitchen		<input type="radio"/> 8-hr operation	1	<input type="radio"/> 16-hr operation	2	<input type="radio"/> 24-hr operation	3	<input type="radio"/> Single-Service Kitchen	1.5	Notes:										
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<input type="radio"/> 24-hr operation	3																					
<input type="radio"/> Single-Service Kitchen	1.5																					
Step 5	<p>Calculate Hydraulic Capacity</p> <p>Multiply the values obtained from steps 1, 2, 3 and 4. The result is the minimum approximate grease interceptor size for this application.</p>	Notes:																				
Step 6	<p>Select Grease Interceptor Size</p> <p>Using the approximate required hydraulic capacity from Step 5, select an appropriate size as recommended by the manufacturer.</p>	Notes:																				

Appendix D

FOG Grease Control Device Self Maintenance Log



STOP FEEDING THE GREASE MONSTER

POURING FOOD, OIL AND GREASE DOWN THE DRAIN IS DESTRUCTIVE AND COSTLY

NO GREASE



Any Questions contact?
Greenfield Public Works
599 El Camino Real
831-674-2635



Fight **F.O.G.**

*Help Keep **Fats, oils & Grease** Out of Your Drain*

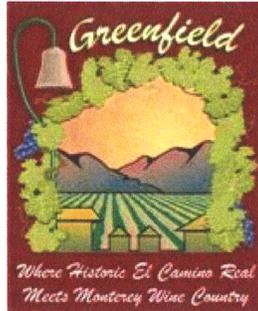
Prevent Sewer Backups in Your Home, Business & Neighborhood



Greenfield Public Works Dept.
599 El Camino Real
(831) 674-2635

Sanitary System Management Plan
Appendix E – City of Greenfield Wastewater Master Plan

CITY OF GREENFIELD WASTEWATER MASTER PLAN July 2016



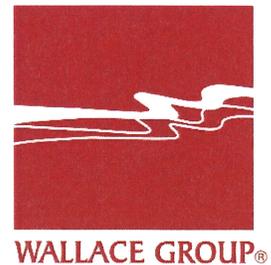
City Council

Mayor John Huerta, Jr.
Mayor Pro-Tempore Raul Rodriguez
Council Member Leah Santibañez
Council Member Avelina Torres
Council Member Lance Walker

Prepared By:

A handwritten signature in black ink, appearing to read "Steven G. Tanaka", is written over a horizontal line.

Steven G. Tanaka, P.E. 49779
Principal Civil Engineer



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July 2016

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List of Acronyms

ADF	Average Daily Flow
CIP	Capital Improvement Projects
City	City of Greenfield
County	Monterey County
d/D	Depth over Diameter
ENR	Engineering New Record
FOG	fats, oil, and grease
FPS	Feet per Second
Ft	Feet
Ft/Sec	Feet per Second
GIS	Geographic Information System
GPD	Gallons Per Day
GPM	Gallons Per Minute
HDPE	High Density Polyethylene
I/I	Infiltration and Inflow
LF	Linear Feet
MDDWF	Maximum Day Dry Weather Flow
MGD	Million Gallons Per Day
min	Minute
NA	Not Applicable
NAD	North American Datum
NAVD	North American Vertical Datum
O&M	Operation and Maintenance
P.E.	Professional Engineer
PF	Peaking Factor
PHDWF	Peak Hour Dry Weather Flow
PVC	Polyvinyl Chloride
S.F.	Square Foot
SCADA	Supervisory Control and Data Acquisition
VCP	Vitrified Clay Pipe
WWMP	Wastewater Master Plan

List of References

1. California Code of Regulations, Title 22.
2. City of Greenfield, 2005-2025 Wastewater System Capital Improvement Plan Update and Capacity Charge Study, June 2005
3. City of Greenfield, 2008 Update of the Wastewater System Capital Improvement Plan Update and Capacity Charge Study, July 2008
4. City of Greenfield, Sewer System Management Plan, October 2012
5. US³ Flow Monitoring, September and October, 2015
6. Progress GIS Files of the Sewer Collection System
7. Greenfield Population – Historical and Projected, 2005 General Plan
8. McGraw Hill ENR Construction Cost Index of 10242 (March 2016)
9. Metcalf & Eddy design handbook “Wastewater Engineering, Treatment and Reuse, Fifth Edition” 2014
10. Personal Communication with Mic Steinman, Community Services Director and Arturo Felix, Public Works Manager
11. Smith and Loveless Engineering Orders for Lift Stations

1: Introduction

The City of Greenfield (City) is responsible for the maintenance and operation of the sewer collection system and wastewater treatment facilities serving the residences and businesses in the City. As older infrastructure is replaced and new development projects are constructed, it is the City's goal to construct sewer collection system and treatment improvements to meet the current and ultimate needs of the City. In order to facilitate this goal, and to adequately plan for the capital resources needed to meet this goal, the City commissioned a comprehensive Wastewater Master Plan (Plan or WWMP) that evaluates all aspects of the wastewater collection and treatment system and its ability to meet current and long-term needs of the City.

Purpose of the Project

Preparation of the Plan will assist the City in prioritizing both current and future wastewater needs and set forth a mechanism for addressing those needs. The Plan does the following:

1. Addresses existing deficiencies within the sewer collection system based on today's standards and requirements;
2. Addresses deficiencies within the sewer collection system to meet future build-out needs;
3. Updates the prior 2013 wastewater evaluation and identifies improvements needed at the wastewater treatment plant; and
4. Provides a prioritized list of recommendations with associated hard and soft costs to complete the projects.

Environmental Review

In accordance with Title 14, California Code of Regulations, Chapter 3, Article 18 (Statutory Exemptions), this Wastewater Master Plan is considered a planning study and therefore adoption of this document is exempt from the requirements to prepare Environmental Impact Reports (EIR) or Negative Declarations (ND).

Authorization and Scope of Work

On May 13, 2015, the City authorized Wallace Group to prepare a comprehensive Wastewater Master Plan. This WWMP was prepared in accordance with Wallace Group's proposal dated April 10, 2015. A summarized scope of work is as follows:

1. **Kick-Off Meeting, Project Review Meetings, Field Reviews and Operation Staff Interviews:** Coordinate and attend a kick-off meeting with key Team members and City staff, including interviews with the City's operations staff and an initial field investigation of the City's lift stations to understand layouts and system operations.
2. **Existing Data Collection:** Develop an information database from existing planning reports, documents, maps, existing system flows, and population growth projections. Review City wastewater data, maintenance records, and meet with City staff to identify areas of concern

(high maintenance areas, or HMAs) regarding sewer mains (both gravity and force) and lift stations.

3. **Preliminary Findings Memorandum:** Prepare a description and general inventory of the sanitary sewer system based on review of plans, reports, studies, and other City records, visits with staff and field inspections. Visit and document accessible existing facilities and prepare an accurate, up-to-date description of the system. Include existing collection, pumping, and treatment system, including facilities, conditions, and processes; document existing wastewater treatment plant design conditions and criteria; document capital improvements and system expansions completed over the past 10-20 years based on record drawings and other detailed information provided by City staff; and document compliance requirements for California Regional Water Quality Control Board, Central Coast Region, Waste Discharge Requirements Order No. R-3-2002-0062.

Sewer Model Development and Calibration: Model and evaluate the existing sewer collection system to determine areas of deficiency including proper design flows and cavitation at lift stations. Document existing wastewater flows and projections of future requirements; based on historical wastewater consumption and population, land use, and economic growth projections, quantify sanitary flow and wastewater demand requirements; use infiltration/inflow characteristics from the existing system and accepted values for new construction, groundwater infiltration, and rainfall flow factors to develop infiltration/inflow values and wastewater demands for future requirements. Review “hot spots” or high maintenance areas (HMAs) with City staff, and including prior SSO reports, and collectively (with City staff) recommend specific areas for CCTV video by the City. Conduct in-line flow monitoring at select locations to evaluate wastewater flow trends in the collection system.

4. **Lift Station Evaluation:** Inspect all pump stations; inventory capabilities of each facility; and collect relevant as-built plans, maintenance records, pump curves, and run logs. Inspection of the existing lift stations will be limited to visual observation of overall conditions of the lift station pumps, wet well and visible piping. **Manhole Inspection:** Evaluate the condition of up to 5 typical problem area manholes identified by the City Staff. Develop general recommendations for sewer manhole rehabilitation, coating and/or replacement based on these observations, and make recommendations for on-going inspection of sewer manholes by City staff. Budgetary level costs will be included in the wastewater master plan as part of the recommended capital improvement program (CIP).
5. **Wastewater Treatment Plant Analysis:** Analyze Wastewater Treatment Plant Capacity Requirements. Utilize present and future flow information to determine capacity requirements to meet future needs and identify capital and system improvements and expansions to meet future wastewater flow demands and needs. Build upon the work already completed, the 2013 report entitled “City of Greenfield Wastewater Treatment Plant Evaluation”, and update this Report based on prior work completed since publication of this referenced report, including:
 - Update to State Board WWTP Re-Classification (from Class 3 to Class 2 plant);

- Current status of oxidation pond aeration improvements, currently under design by Wallace Group.
- Updates to current regulatory status, and future regulatory considerations, with the Regional Water Quality Control Board. We will include recent correspondence with Tom Kukol, Region 3 RWQCB, and Nicki Fowler, Monterey County Environmental Health Department relative to recent and on-going odor complaints received in the area of the treatment plant.
- Near-term WWTP improvements needed to support the 2.0 mgd design capacity that will be achieved when the 90 HP aeration project is completed. These recommendations will include improvements to sludge digestion, handling and drying; stormwater management practices on the WWTP premises; headworks improvements; facility/laboratory building upgrades.
- Long-term wastewater treatment considerations including general recommendations for the WWTP for wastewater flows beyond 2 mgd and through the 20-year planning horizon.

Develop Capital Improvement Program: Using data collected during Research and Field Investigations, develop a Wastewater Capital Improvement Program recommending improvements necessary to maintain a desired level of service for the City's wastewater assets such as mainlines, manholes, lift pump stations and wastewater treatment facilities.

6. **Staffing Recommendations:** Provide recommendations for improvements to the organizational structure of the Wastewater Treatment and Collection System staff, including suggestions for improvements to the City's general approach to operation of the system. Build upon prior work conducted for the City related to wastewater system staffing needs and requirements based on State of California Operator Certification requirements.
7. **Regulatory Update:** Identify present and future regulatory concerns for the treatment facilities and sewer collection system.

Acknowledgements

Wallace Group thanks and gratefully acknowledges the following for their efforts, involvements, input and assistance in preparing this Sewer Collection System Master Plan:

City of Greenfield: Sewer Collection System Master Plan
July 2016

City of Greenfield City Council:

Mayor John Huerta, Jr.
Mayor Pro-Tempore Raul Rodriguez
Council Member Leah Santibanez
Council Member Avelina Torres
Council Member Lance Walker

City of Greenfield City Staff:

Susan Stanton	City Manager
Doug Pike (MNS)	City Engineer
Mic Steinmann	Acting Community Development Director
Arturo Felix	Public Works Utilities Manager
Carmen Lorenzana	Public Works Administrative Assistant

The following Wallace Group key team members were involved in the preparation of this Water Master Plan:

Steven G. Tanaka, PE	Principal Civil Engineer
Kari Wagner, PE	Director of Water Resources
Valerie Huff, PE	Senior Civil Engineer
Kyle Anderson, PE	Civil Engineer
Jeff LeNay	GIS Specialist

2: Sewer Collection System Overview

Chapter 2 describes the features of the City’s sewer collection system. The details regarding the various sewer collection system features are then presented in subsequent chapters.

Sewer Collection System Background

The City owns and operates a sewer collection system that is comprised of approximately thirty-one miles of gravity sewer pipes ranging in size from 4-inch to 24-inch diameter, and six lift stations. The sewer collection system spans over 2.1 square miles to serve the City’s 3,700 customers. For the purposes of this master plan, only those trunk main sewer lines that were modeled, were included in this exhibit. The existing (modeled) sewer collection system is shown in Figure 2-1. An inventory of existing sewer pipe diameters and materials that were analyzed/modeled for this master plan are provided in Tables 2-1 and 2-2.

Table 2-1 Modeled Pipeline Inventory by Material

Material	Length	
	Feet	Miles
ACP	2,414	0.5
HDPE	8,339	1.6
PVC	26,986	5.1
VCP	17,348	3.3

Lift Stations

The City owns six (6) lift stations (all Smith & Loveless wetpit/drypit lift stations) located throughout the collection system which are shown in Figure 2-1 and are briefly summarized in this chapter. Lift station tributary areas are shown on Figure 2-2.

- **Tyler Lift Station:** Tyler Lift Station is located at the intersection of El Camino Real and Tyler Avenue. The lift station discharges through a 6-inch diameter PVC force main to a manhole near the intersection of Huerta Avenue and El Camino Real.
- **Los Ositos Lift Station:** Los Ositos Lift Station is located at the intersection of 11th Street and Elm Avenue. The lift station discharges through an 8-inch diameter PVC force main to a manhole near the intersection of 11th Street and Maple Avenue.
- **Vineyard Lift Station:** Vineyard Lift Station is located on Vineyard Avenue, south of Apple Avenue. The lift station discharges through a 4-inch diameter PVC force main to a manhole to the northwest of the lift station in Apple Avenue.

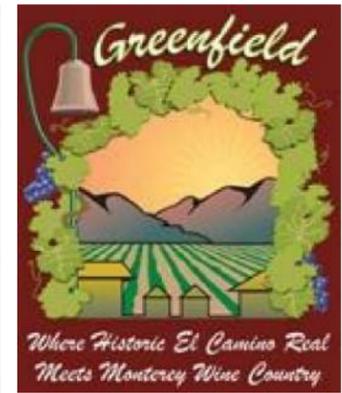
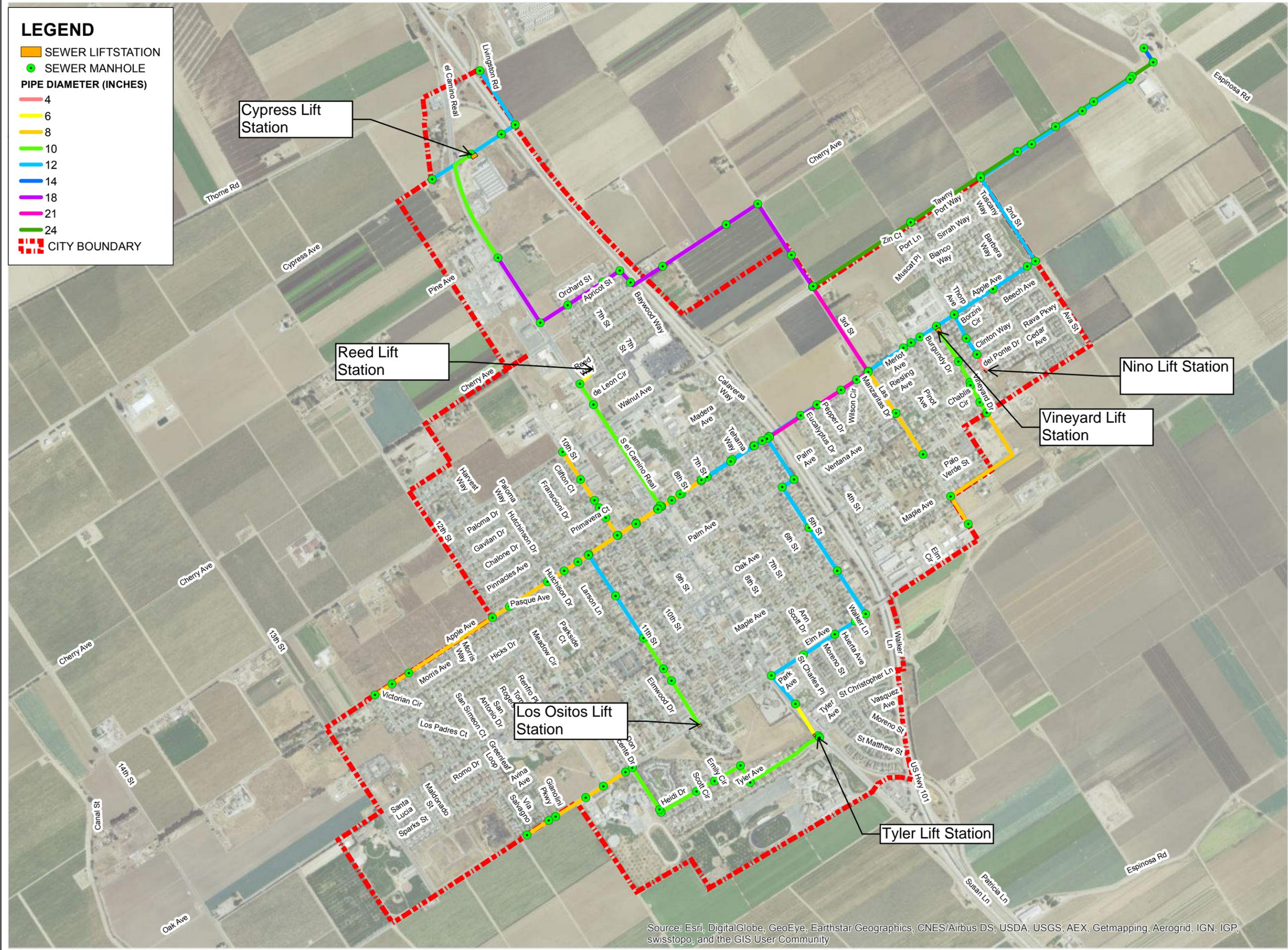
Table 2-2 Modeled Pipeline Inventory by Diameter

Diameter	Length	
	Feet	Miles
8	13,334	2.5
10	9,483	1.8
12	17,886	3.4
14	225	0.0
18	5,820	1.1
21	2,946	0.6
24	5,394	1.0

- Nino Lift Station: Nino Lift Station is located at the intersection of Nino Lane and Del Ponte Drive. The lift station discharges through a 4-inch diameter PVC force main to a manhole to the northwest of the lift station near the intersection of Del Ponte Drive and Nino Lane.
- Reed Lift Station: Reed Lift Station is located near the intersection of Reed Lane and De Leon Drive. The lift station discharges through a 6-inch diameter PVC force main to a manhole near the intersection of Reed Way and El Camino Real.
- Cypress Lift Station: Cypress Lift Station is located near the intersection of Cypress Avenue and El Camino Real. The lift station discharges through a 10-inch diameter PVC force main to a manhole near the intersection of Pine Avenue and El Camino Real.

LEGEND

- SEWER LIFTSTATION
- SEWER MANHOLE
- PIPE DIAMETER (INCHES)**
- 4
- 6
- 8
- 10
- 12
- 14
- 18
- 21
- 24
- CITY BOUNDARY

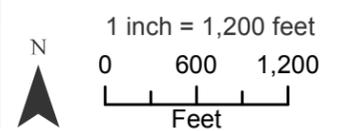


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 612 CLARION COURT
 SAN LUIS OBISPO, CA 93401
 805 544-4011 www.wallacegroup.us

Note: This exhibit only shows sewer lines that were modeled as part of this master plan but does not include the entire system.

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**FIGURE 2-1
 SEWER COLLECTION
 SYSTEM OVERVIEW**

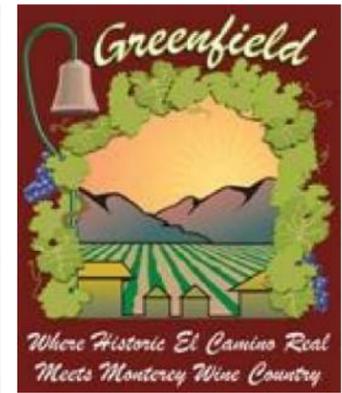
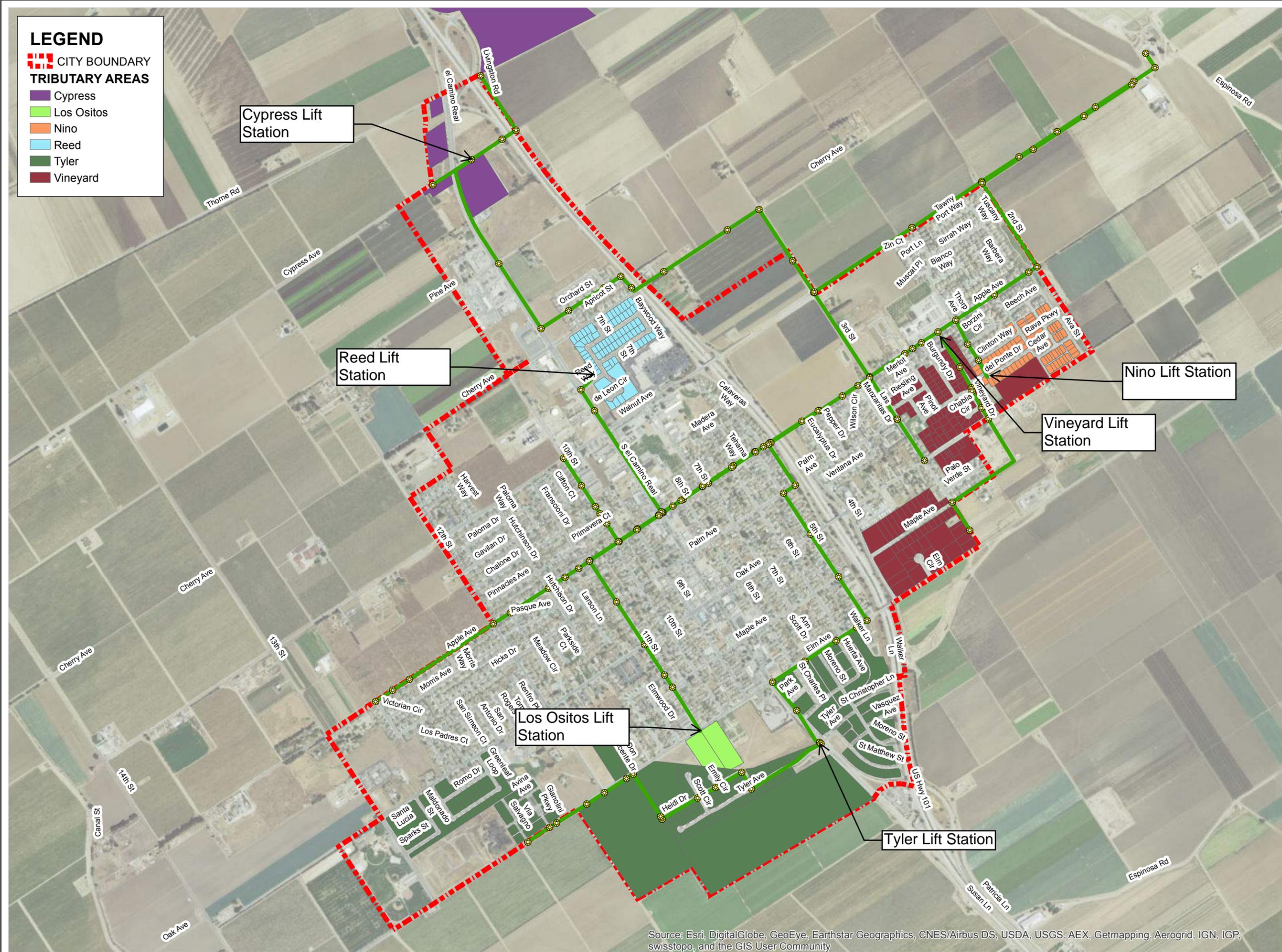


Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

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LEGEND

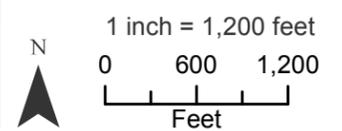
-  CITY BOUNDARY
- TRIBUTARY AREAS**
-  Cypress
-  Los Ositos
-  Nino
-  Reed
-  Tyler
-  Vineyard



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**FIGURE 2-2
 LIFT STATION
 TRIBUTARY MAP**



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

M:\1163-Greenfield_City of 005-Water and Wastewater Master Plans\06 - Reports and Calculations\03 - GIS\01 - Map Documents\Sewer Master Plan Exhibits\Lift Station Tributary Basin Map.mxd; Author: <MAP AUTHOR>

3: Study Area Characteristics

Chapter 3 describes the study area characteristics germane to this Sewer Master Plan for the City. Included in this chapter is a description of the various land uses in the service area, future development projections, and existing and future population projections. Future development is based on the 2005 General Plan Land Use Element and direction from City Staff.

Land Use and Future Development

The City of Greenfield is located in the Salinas Valley in Monterey County. Founded in 1905 and incorporated in 1947, Greenfield is centered in a highly productive agricultural region. Figure 3-1 illustrates the City's boundary, and the existing Land Use Designations per the 2005 General Plan. Table 3-1 summarizes the Land Use Designations and Projections (from the 2005 General Plan) and provides a breakdown of acreage designated for each land use. Figure 3-2 illustrates the future growth areas and land uses.

Population

For this master plan, historical and future population estimates were provided by the City. The reported population for the City for 2010-2015 is as follows:

- **2010:** 16,192 persons
- **2011:** 16,396 persons
- **2012:** 16,466 persons
- **2013:** 16,784 persons
- **2014:** 16,919 persons
- **2015:** 16,870 persons

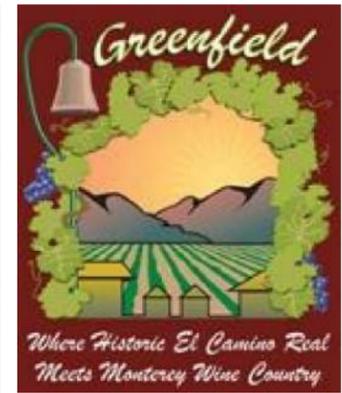
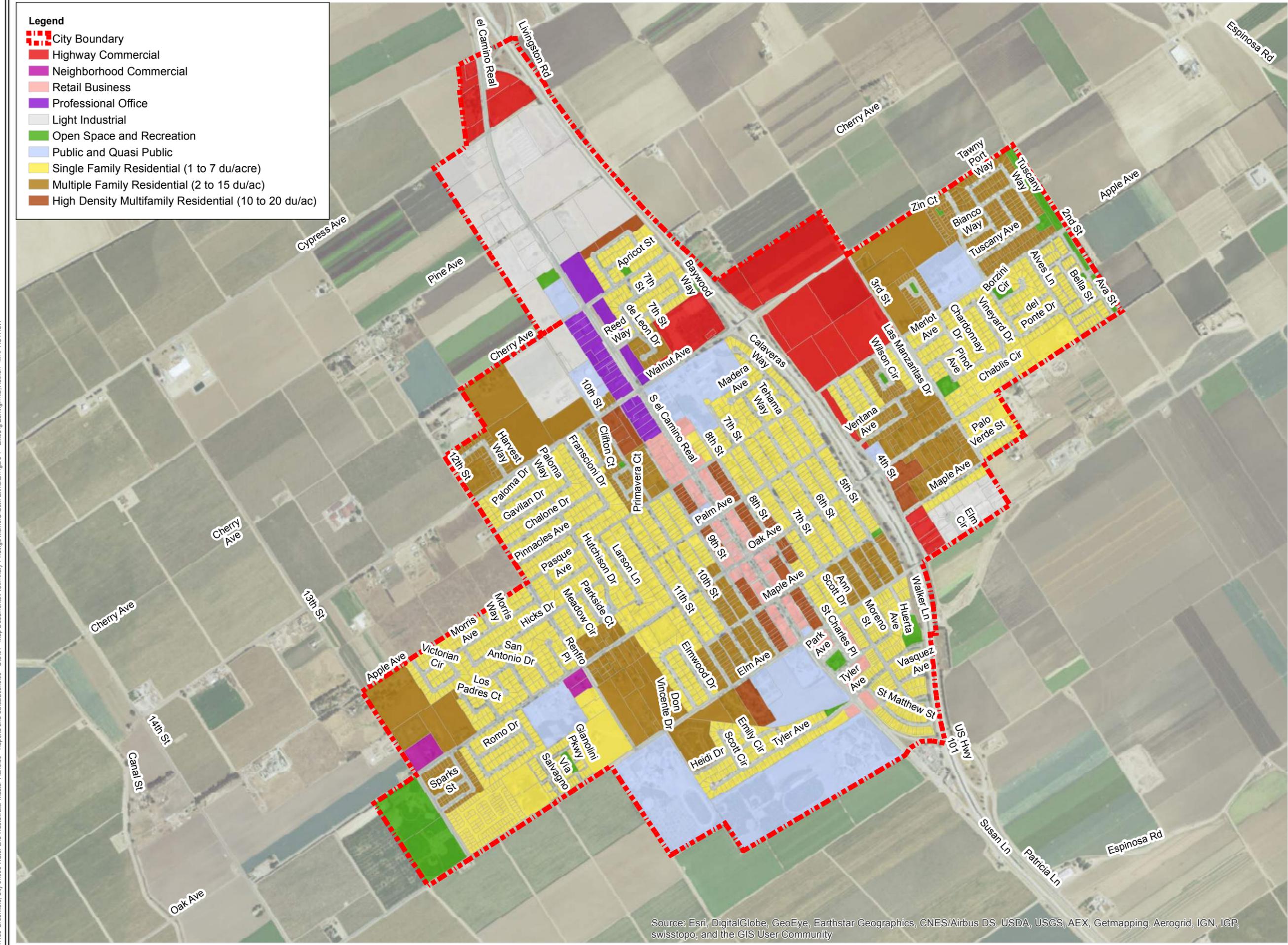
For the purposes of this Sewer Master Plan, the City has provided a projected population growth rate of 2.5% from the base population of 16,870 in 2015. This growth rate results in a total population of 28,400 by 2035, which correlates to the 20 year planning horizon for this Sewer Master Plan.

Table 3-1. Existing and Future Land Use

General Plan Land Use	Total Acreage	Future Growth Area
Single Family Residential	380.60	190.74
Multiple Family Residential	220.37	113.61
High Density Residential	30.84	0.00
Residential Estate	0.00	149.05
Neighborhood Commercial	5.24	0.00
Downtown Commercial	29.69	0.00
Highway Commercial	103.43	234.13
Professional Office	20.92	0.00
Light Industrial	108.36	32.43
Heavy Industrial	0.00	154.03
Public Quasi Public	139.22	0.00
Recreation and Open Space	34.56	0.00
Artisan Agricultural Visitor Serving	0	168.29

Source: City of Greenfield General Plan and Zoning 2010 GIS Database from PMC.

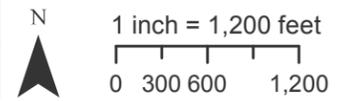
- Legend**
-  City Boundary
 -  Highway Commercial
 -  Neighborhood Commercial
 -  Retail Business
 -  Professional Office
 -  Light Industrial
 -  Open Space and Recreation
 -  Public and Quasi Public
 -  Single Family Residential (1 to 7 du/acre)
 -  Multiple Family Residential (2 to 15 du/ac)
 -  High Density Multifamily Residential (10 to 20 du/ac)



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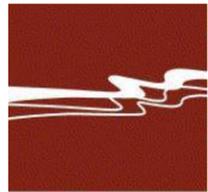
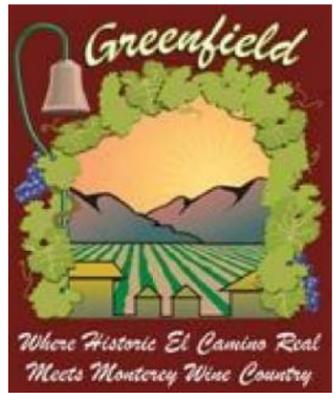
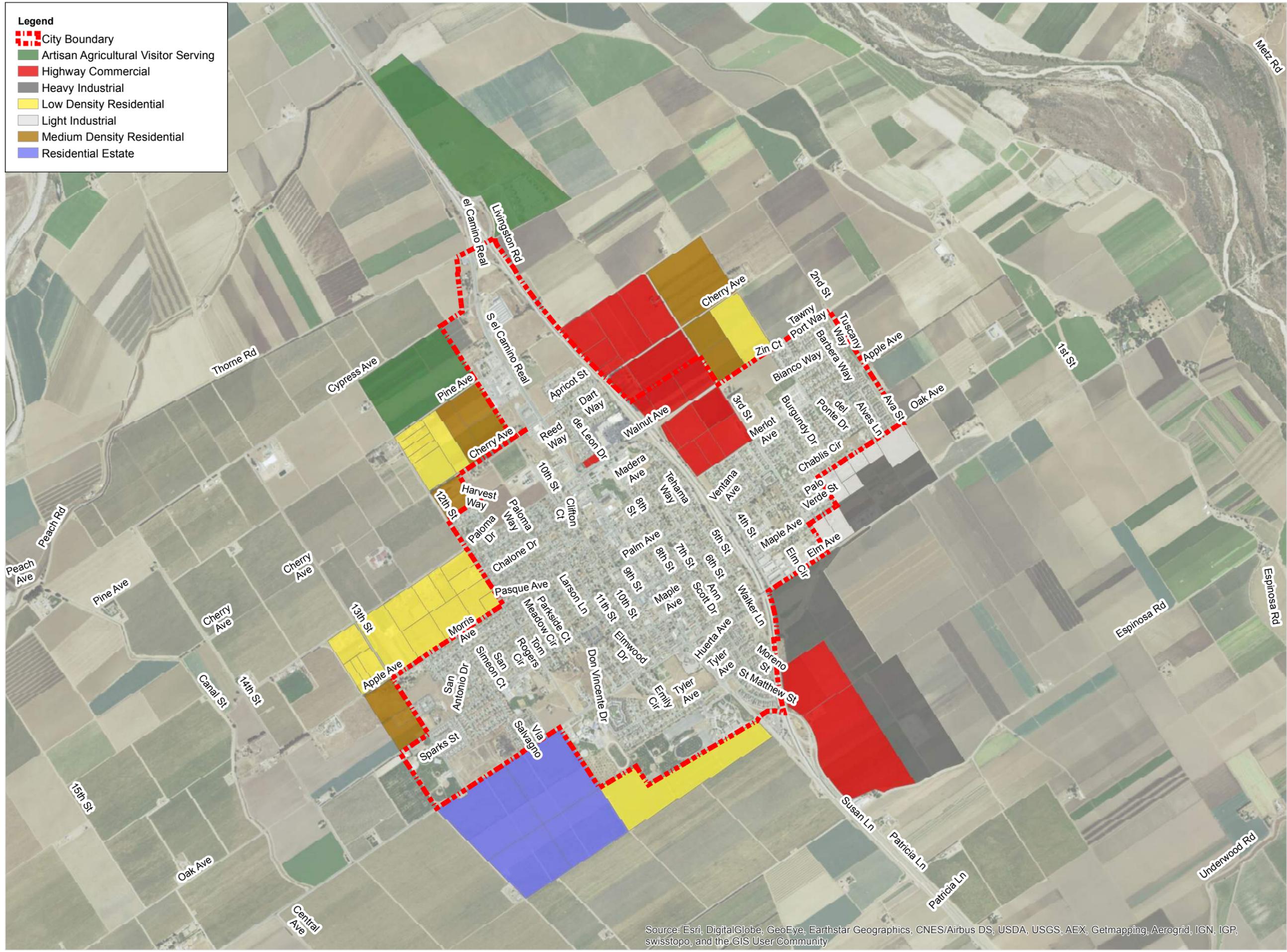
**FIGURE 3-1
 EXISTING ZONING**



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Legend

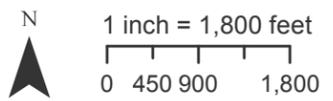
-  City Boundary
-  Artisan Agricultural Visitor Serving
-  Highway Commercial
-  Heavy Industrial
-  Low Density Residential
-  Light Industrial
-  Medium Density Residential
-  Residential Estate



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**FIGURE 3-2
 FUTURE GROWTH
 AREA ZONING**



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

4: Wastewater Flows

Chapter 4 describes the existing and projected sewer flows for the City. The sewer flow forecasts will form the basis for identifying existing and future system needs and analyzing deficiencies.

Wastewater Flow Monitoring

As part of this master plan effort, in conjunction with US³, in-line sewer flow monitoring was conducted at three select locations, from September 24, 2015 through October 28, 2015. The main goal of this data is to develop peaking factors for the hydraulic model. The data can also provide very useful information on flow patterns and if/when sewers may be surcharging.

Figure 4-1 shows the locations of the three flow monitoring locations chosen for this study.

These locations are described as follows:

Site 1

The site 1 flow meter was installed in a manhole on the 12" sewer main at the intersection of Apple Avenue and 2nd Street. It collects flow from the area east of Highway 101 and south of Apple Avenue. Flow is to the north towards Walnut Avenue.

Site 2

The site 2 flow meter was installed in a manhole on the 12" sewer main at the intersection of Apple Avenue and Calaveras Way. It collects flow from a majority of the central downtown area west of Highway 101. Flow is to the east under the Freeway.

Site 3

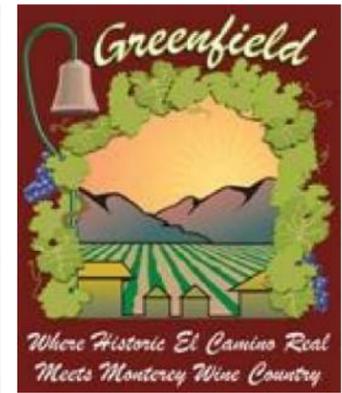
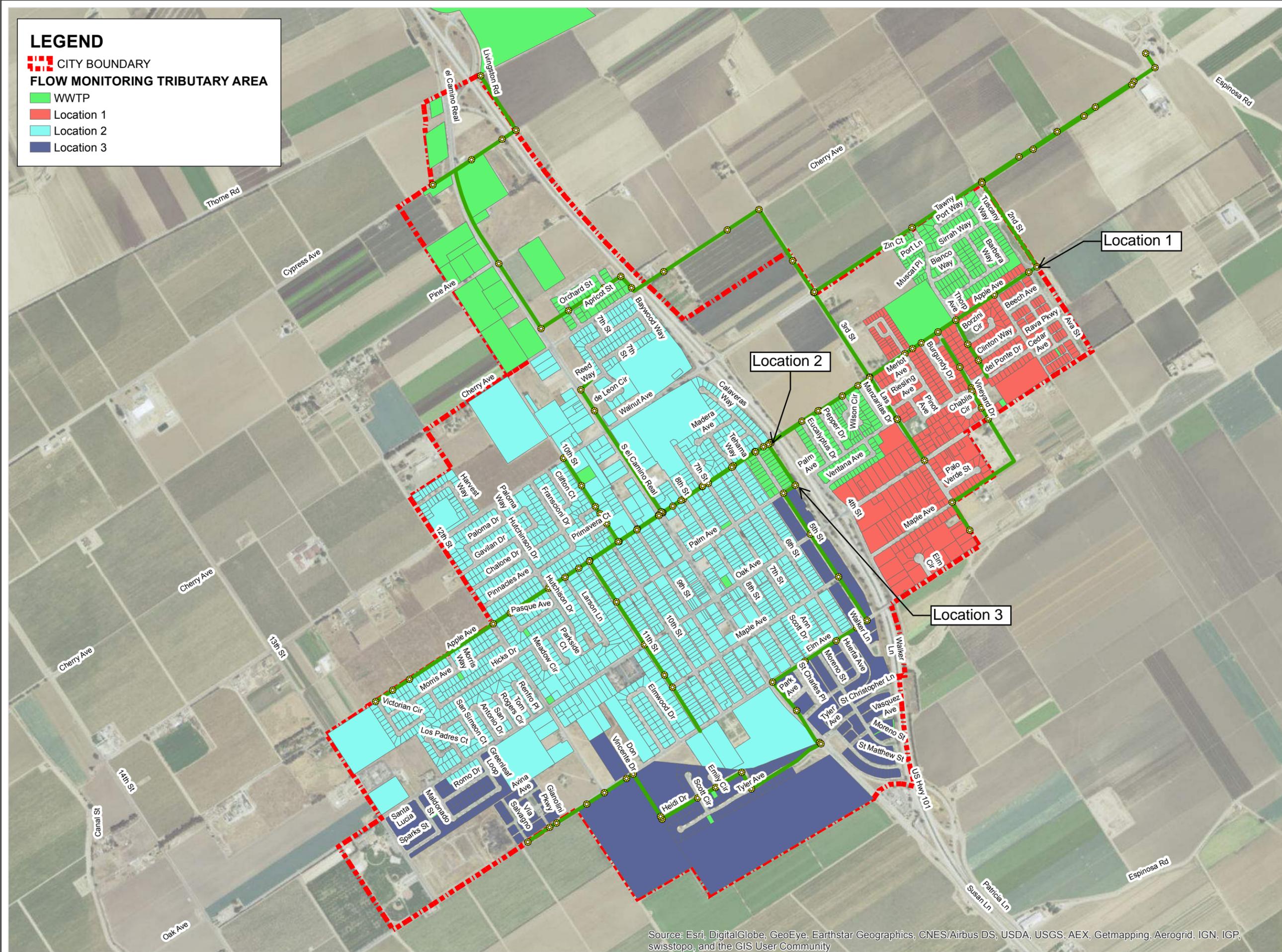
The site 3 flow meter was installed in a manhole on the 12" sewer main at the intersection of Apple Avenue and Palm Avenue. It collects flow from the southern portion of the City west of Highway 101. Flow is to the north to Apple Avenue.

Flow Meter Results

The flow meters were used to evaluate wastewater flow contributions from the individual tributary areas in the City. There were no significant rain events during the flow monitoring period to evaluate the rainfall dependent infiltration and inflow. Therefore, flow data collected for the entire monitoring period was used to calculate a daily average, representative of dry weather flow. A summary of the average daily flow results from each of the flow monitoring stations is provided in Table 4-1 below. Detailed flow monitoring results are included in Appendix A.

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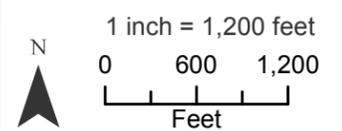
-  CITY BOUNDARY
- FLOW MONITORING TRIBUTARY AREA**
-  WWTP
-  Location 1
-  Location 2
-  Location 3



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**FIGURE 4-1
 FLOW MONITORING
 BASIN MAP**



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Table 4-1. Flow Meter Results Summary

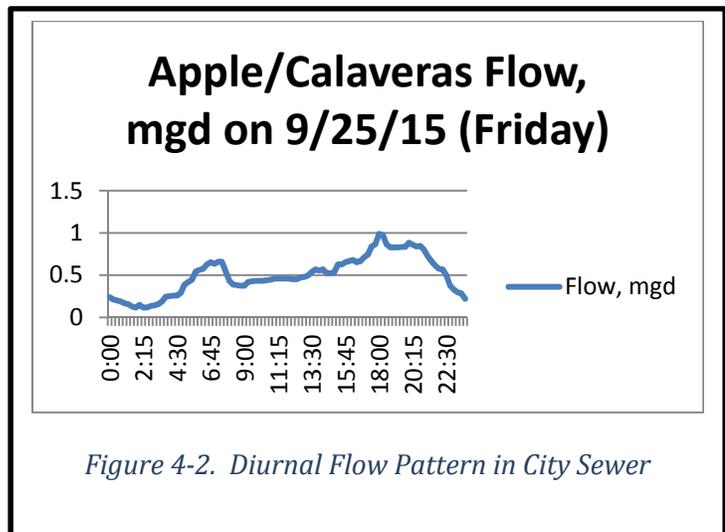
Location	Average Daily Flow ¹
Site 1	160,000
Site 2	440,000
Site 3	220,000
Total	820,000

¹This table represents flow from the metered areas only, and does not include flow for the entire City of Greenfield.

The flow monitoring equipment used included Hach Flo-Dar flow meters, which use pressure transducers to sense liquid pressure at the point of monitoring (which translates into flow depth), and radar to measure liquid velocity, with data readings every 5 minutes. These readings are then calculated into flow. These reports, and more in-depth analysis of the data conducted by Wallace Group, are included in their entirety as Appendix A. The wastewater treatment plant influent flow monitoring data (provided by the City) was also reviewed, to compare the various flow characteristics at the plant relative to the collection system. It is most informative to view these diurnal charts on weekdays, Saturday and Sunday separately, as in some instances, some very distinct and repeatable flow patterns exist.

There are a number of interesting observations to the flow data, and a number of diurnal curves were developed and reviewed. Again, these results are included in the Appendices. The major finding is at Location 2, where the existing gravity sewer in Apple Avenue appears to be surcharging on a daily basis. This was evaluated in the sewer model; however, the model results did not show surcharging to the degree shown in the flow monitoring results. The City should conduct sewer videos in this reach to determine if physical observations match up to this data.

Figure 4-2 depicts the flow pattern at Monitoring Site 2 (Apple Ave@Calaveras). This flow trend shows a fairly typical week day trend, with a morning peak as people get ready for work and school, and an evening peak when people come home after school and work.



Collection System Peaking Factors

As part of the flow analysis, peaking factors were derived from these diurnal curves and flow data, and were used in the sewer collection system model. Table 4-2 summarizes the peaking factors derived at each monitoring location.

Table 4-2. Summary of Peaking Factors in Sewer Collection System

Location	Peaking Factor
2nd Street/Apple Avenue	2.0
Apple Avenue/Freeway 101	2.0
Apple Alley/Palm Avenue	2.0
WWTP	2.75

5: Collection System Analysis

This Chapter presents the analysis of the gravity wastewater collection system for the City of Greenfield. Refer to Chapter 2 for an overview of the City's wastewater collection system. Refer to Chapter 8 for the proposed capital improvements based on the analysis presented in this Chapter.

Introduction

The City's wastewater collection system consists of a network of 8-inch to 24-inch gravity sewer mains, and six (6) lift stations. The main trunk sewer system was analyzed using a computer based hydraulic model as part of this Sewer Master Plan project, to evaluate performance of the wastewater collection system under both existing and future conditions. Figure 2-1 provides an overview of the sewer mains that were included in the hydraulic model.

The analysis of the wastewater collection system is based on a sewer Geographic Information System (GIS) developed using survey data collected by Wallace Group.

Collection System analysis criteria

As described in the City's Sanitary Sewer Management Plan (SSMP), Element 5: Design and Performance Provisions, the City defers to the City of Salinas Standard Specifications, Design Standards and Standard Plans for standardized design for the wastewater collection system. The recommended design criteria are summarized in Table 5-1. These criteria provide capacity buffer to avoid surcharge conditions, for fluctuations in flows due to diurnal variations, and anticipated peak flows. Gravity pipe performance was analyzed based on maximum percent full (d/D ratio), defined as the depth of flow in a pipe divided by the diameter of the pipe.

Table 5-1. City Design and Performance Standards

Pipe Diameter	Maximum Allowed d/D
10-inch and smaller	0.67
12-inch and larger	0.8
Other Design Criteria	
Minimum Diameter	8-inch
Minimum Velocity	2.0 fps
Maximum Velocity	8.0 fps
Manning's Coefficient, n	0.013 for VCP, CIP & DIP, 0.011 for PVC & HDPE

Collection System Flows

Existing and future flows were analyzed in the sewer model for both dry weather and wet weather conditions. Flow rates were derived as described in Chapter 4 of this report. Flow parameters as utilized in this analysis are defined as follows.

- **ADF:** Average daily dry weather system flow
- **PHDWF:** Peak hour dry weather system flow

Collection System Model Development

A hydraulic model of the sewer collection system was developed with the Innowyze® InfoSWMM sewer modeling program. InfoSWMM utilizes Manning's Equation for open channel flow (gravity pipes), Dynamic Wave analysis for flow routing through the collection system, and the Hazen-Williams Equation for pressurized flow conditions (force mains or surcharged pipes). Model results were evaluated for pipeline capacity, flow velocity, and maximum d/D ratio under various flow conditions.

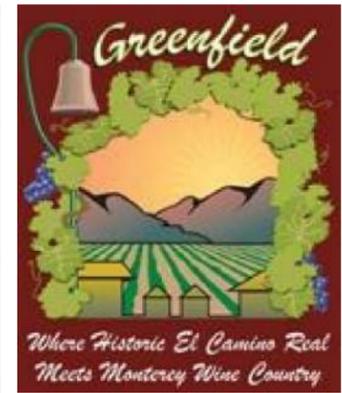
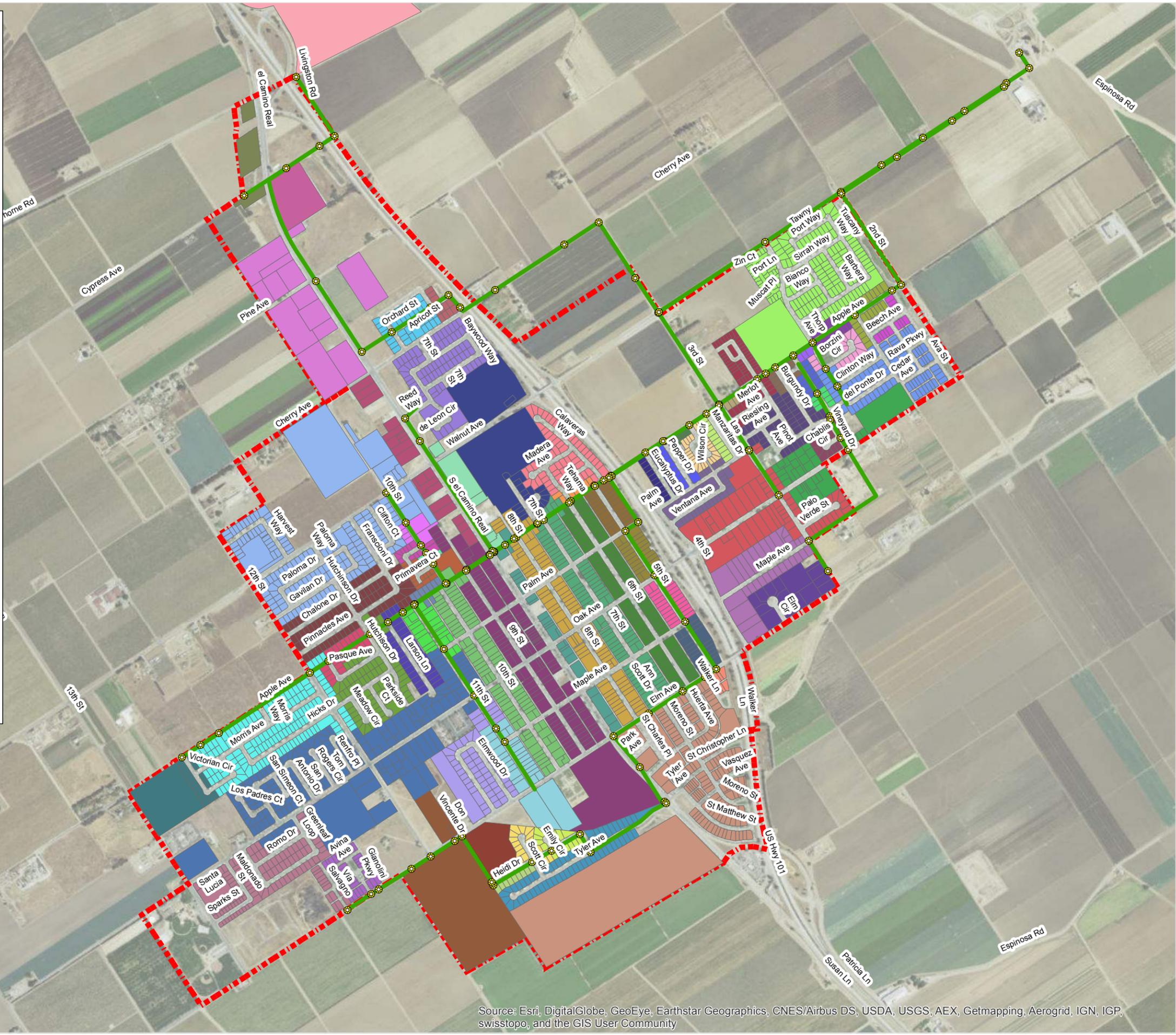
Flow Allocation

Wastewater flows were assigned to the sewer model utilizing estimated flows as described in Chapter 4. Flows were allocated to individual sewer manholes based on the actual location of City customers. Tributary areas for each modeled manhole were developed and shown on Figure 5-1. Each tributary area represents the total residential, commercial, and institutional customers contained within the tributary boundary.

Future wastewater flows were allocated to the sewer model based on the location of the parcels in relation to the tributary areas for the modeled manholes. The impact to the collection system from future flows and the proposed land uses, sewer system layout, and demands should be re-evaluated for each project in the planning stage to confirm assumptions made for the purpose of this Sewer Master Plan are accurate and confirm that no additional upgrades will be required.

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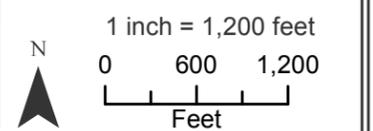
	CITY BOUNDARY		462
MANHOLE			467
	106		475
	113		481
	124		487
	130		495
	137		505
	143		511
	158		517
	164		519
	186		520
	195		530
	211		537
	217		547
	223		553
	249		554
	254		565
	265		572
	283		580
	288		593
	293		607
	300		613
	305		621
	318		627
	334		634
	341		669
	347		715
	354		721
	357		736
	364		747
	377		764
	382		775
	395		783
	402		803
	429		809
	435		810
	454		836



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**FIGURE 5-1
 MANHOLE TRIBUTARY
 AREA MAP**



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Model Calibration

Approximately five weeks of sewer flow data was collected in support of the hydraulic model development, as described in Chapter 4 of this report. Representative data for each flow monitoring location was compared to model results and demand allocations were adjusted to match the flow monitoring results for average daily flow conditions. However, the surcharging described in Chapter 4 at flow monitoring location 2 was not replicated.

System Conditions Analyzed

The hydraulic model was utilized to analyze system flow for both existing and future flow conditions. Within the model, multiple scenarios were developed that represent these various conditions. Existing and Future scenarios were utilized to identify system upgrades required in order to meet performance criteria as specified, and to identify areas recommended for high priority maintenance operations. Scenarios developed consist of the following:

- *Existing PHDWF Scenario:* This scenario represents the trunk sewer system under existing peak hour dry weather flow conditions. This scenario includes estimated flow contributions from groundwater infiltration.
- *Future PHDWF Scenario:* This scenario represents the trunk sewer system under future peak hour dry weather flow conditions, with all potential development as described in Chapter 2 contributing to the existing collection system. This scenario includes estimated flow contributions from groundwater infiltration.

Collection System Model Results – Existing Flow Conditions

This section provides a summary of model results for the existing flow conditions modeled.

Deficient System Capacity

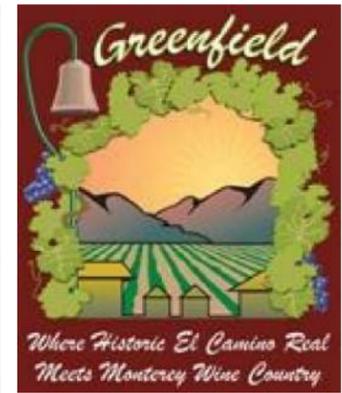
The following locations were identified through the analysis as having insufficient capacity to meet City performance standards under existing system flow conditions. Recommended pipe upgrades identified for existing conditions may have the potential to further increase in diameter for future conditions, as described later in this chapter. Thus, when making recommendations to correct existing deficiencies, the future condition must also be considered in the overall recommendation to upsize sewer mains. Refer to Figure 5-2 for a system-wide map showing whether existing modeled sewer mains meet the maximum d/D criteria under existing PHDWF conditions. Refer to Figure 5-3 for an overall map of the location of recommended system upgrades for existing conditions. Within the sewer model all gravity sewer upgrades were designated as PVC.

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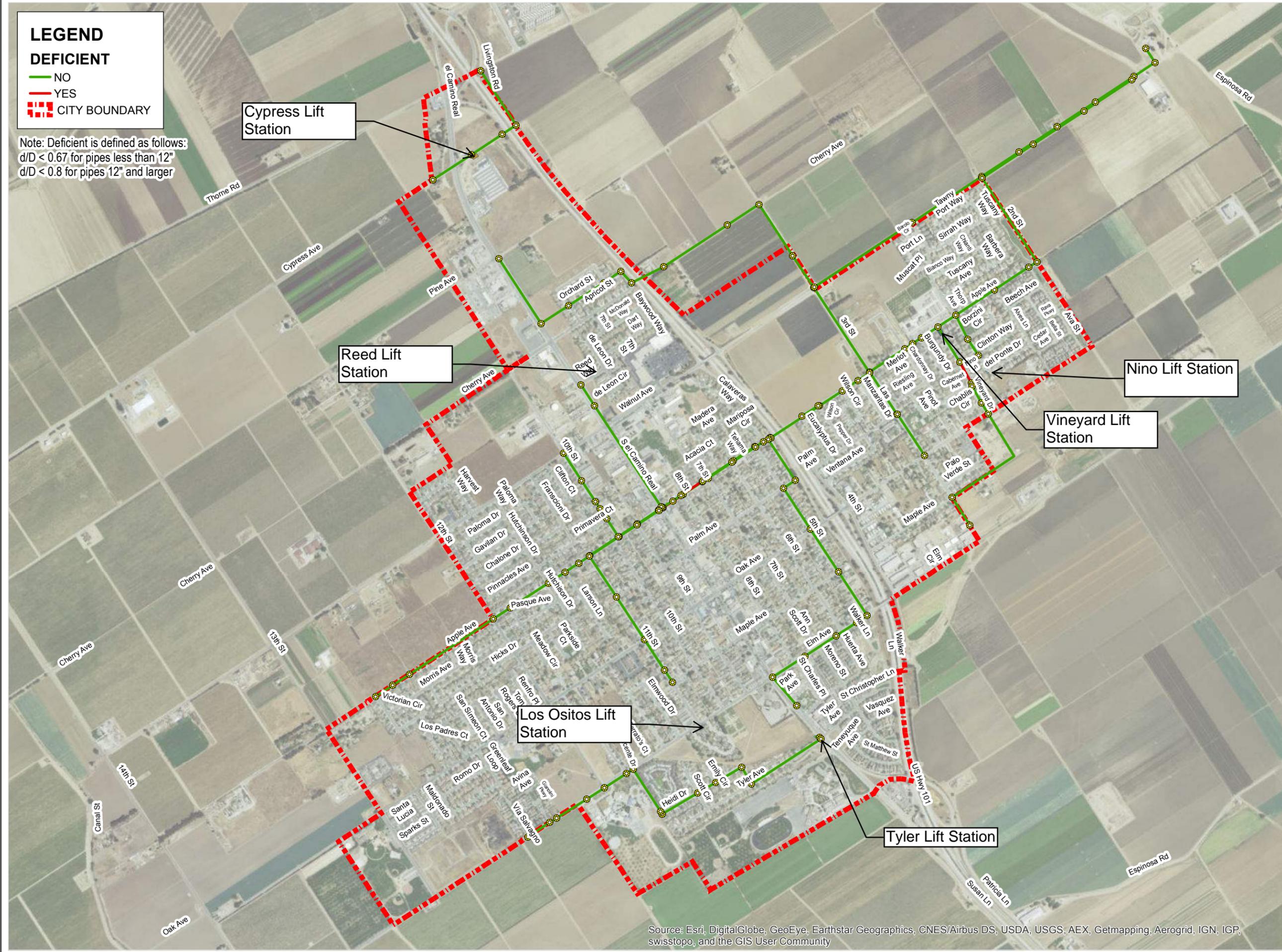
DEFICIENT

- NO
- YES
- CITY BOUNDARY

Note: Deficient is defined as follows:
 d/D < 0.67 for pipes less than 12"
 d/D < 0.8 for pipes 12" and larger

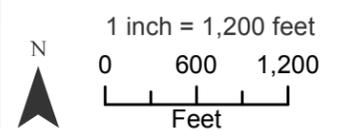


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FIGURE 5-2
DEFICIENT GRAVITY
SEWER MAINS
UNDER EXISTING
FLOW CONDITIONS

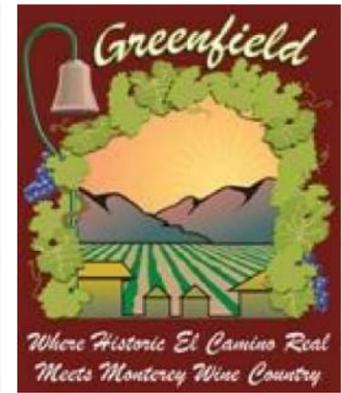
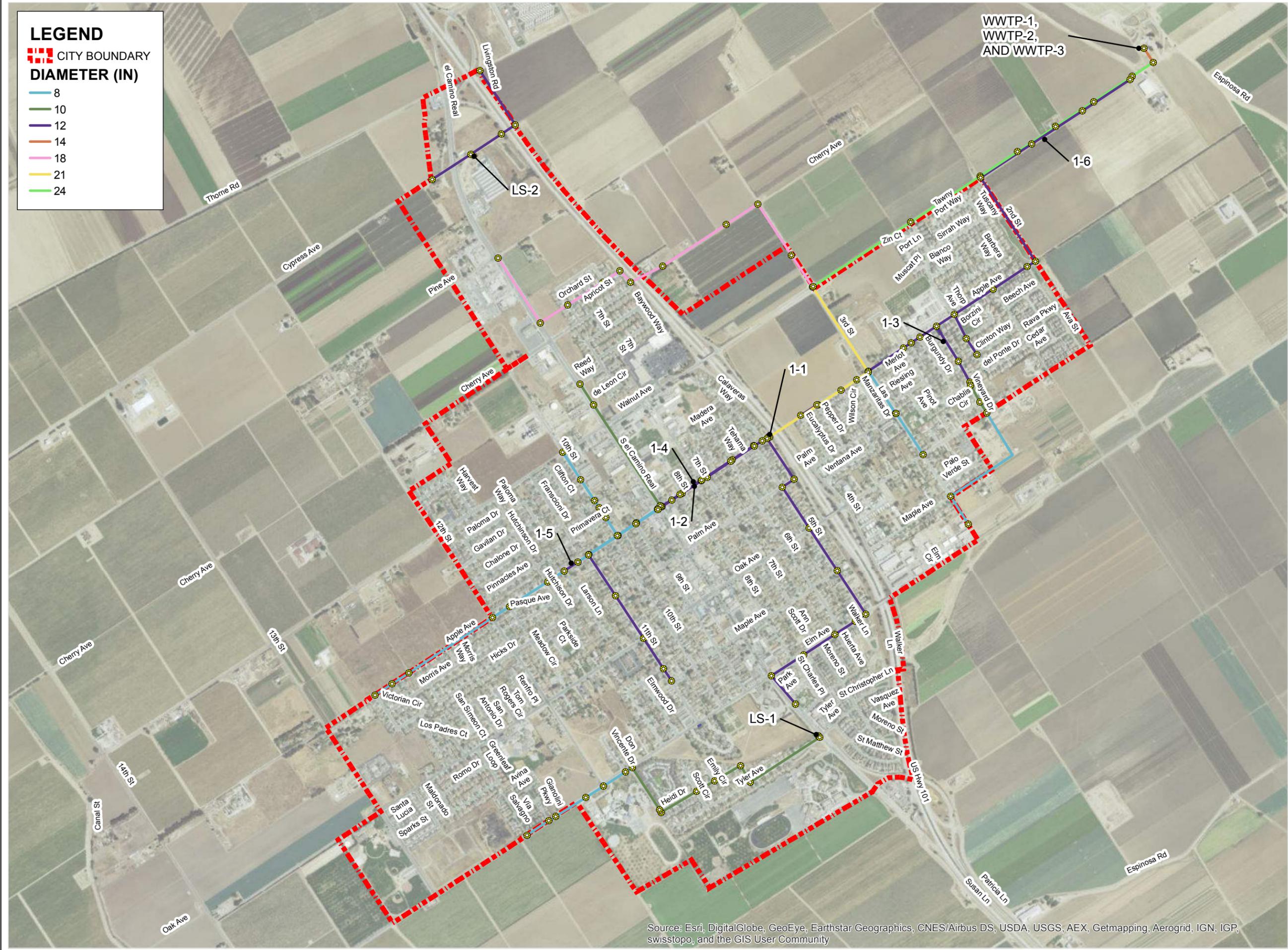


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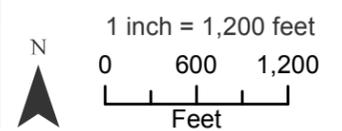
-  CITY BOUNDARY
- DIAMETER (IN)**
-  8
-  10
-  12
-  14
-  18
-  21
-  24



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FIGURE 5-3
EXISTING CIPS



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Apple Avenue

- Location Extents: South line between 7th Street and El Camino Real, north line between 7th Street and 8th Street and between Larson Lane and the mid-block manhole east of Larson Lane.

There are two parallel sewer mains in Apple Avenue, both of which are currently 8-inch VCP. Under PHDFW conditions, d/D values up to 1.00 were modeled, thus indicating potential or actual surcharge conditions. It is recommended to upgrade the identified gravity sewer mains to 12-inch PVC to reduce the maximum d/D to acceptable levels (below 0.8 for upsized 12" PVC gravity main). These upgrades require 1,200 lineal feet of 12-inch PVC.

Vineyard Drive

- Location Extents: Cabernet Avenue to Vineyard Drive Lift Station.

The Vineyard Drive sewer main is currently 10-inch VCP, and the sewer model indicates d/D values up to 1.00 under PHDFW. Upgrading to 12-inch PVC reduces the maximum d/D to acceptable levels (below 0.8) for existing and just over 0.8 for future flow conditions. Because the future maximum d/D is just over 0.8, the City will want to monitor and continue to reassess the capacity of this pipe to determine if further upgrades are necessary. This upgrade requires 780 lineal feet of 12-inch PVC.

Low Pipe Velocity

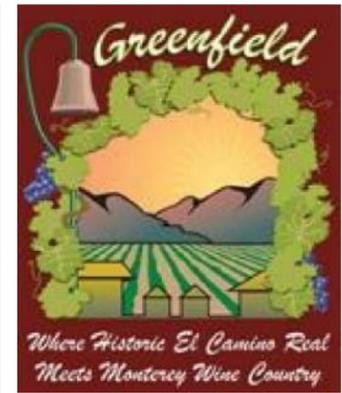
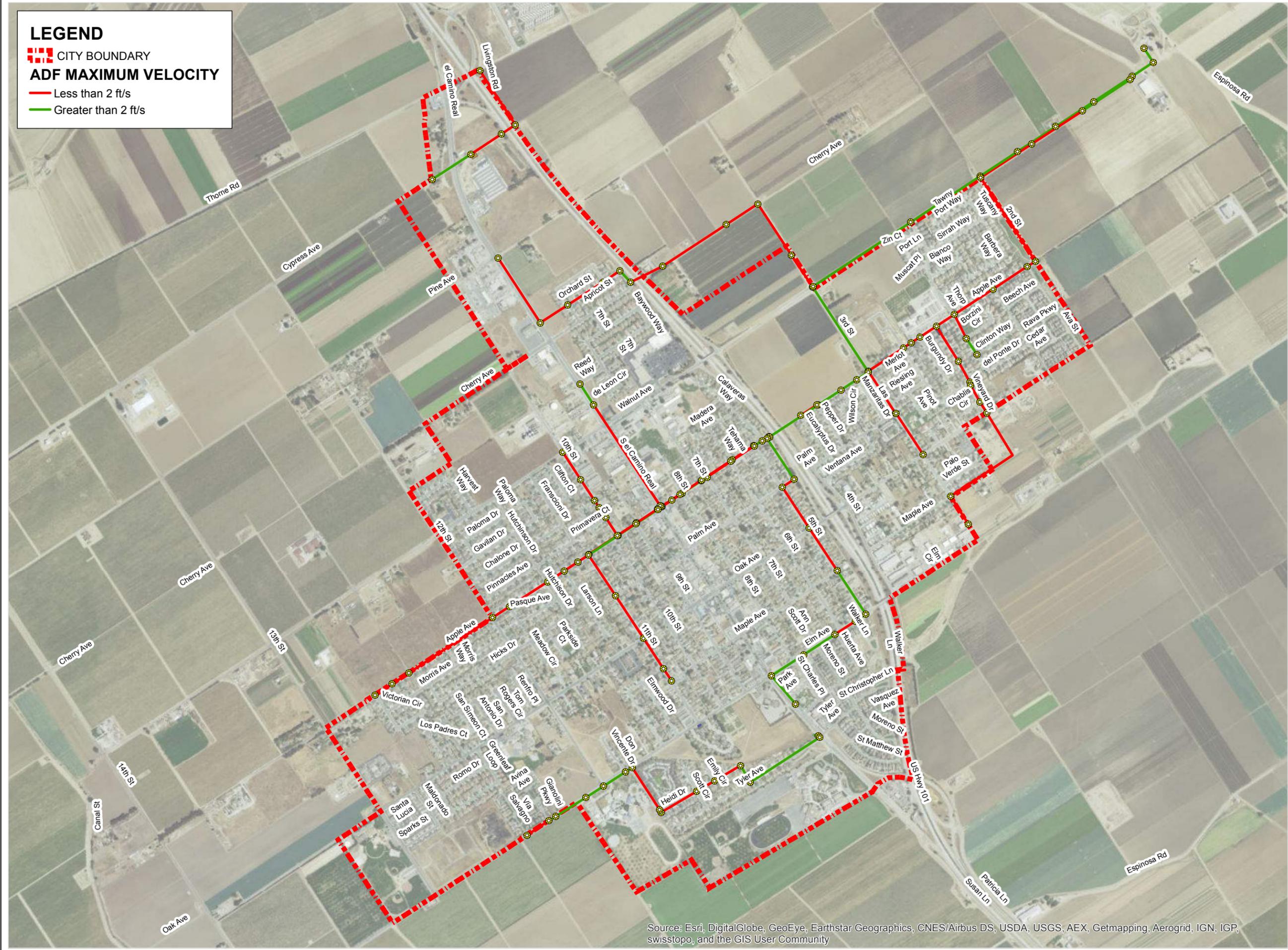
Low pipe velocity results in the increased likelihood for solids to settle out of wastewater flow, leading to pipe backups and blockages. It is recommended to maintain a minimum pipe velocity of 2.0 feet per second (fps) during average flow conditions, to maintain solids in suspension. A total of 77 modeled pipes were identified with a velocity below 2.0 fps under existing average day conditions. It is recommended that pipes identified with a maximum velocity of less than 2.0 fps be flushed and/or vacuumed on a regular basis. Total length of pipe is 6.4 miles. These pipes are depicted in Figure 5-4. These recommendations should be considered for incorporation into the City's SSMP (subsequent update following the 2014 Update) list of high maintenance areas (HMAs).

Pipe Travel Time

Excessive pipe travel time is a result of low velocity and/or long pipe runs, and can lead to problems with hydrogen sulfide attack and odor at downstream manholes. Typically wastewater is oxygenated as it flows through a manhole, decreasing likelihood of hydrogen sulfide generation. Travel time exceeding thirty minutes through a single pipe (manhole to manhole) is undesirable. All pipes included in the hydraulic model have an existing average day travel time of 5 minutes or less; therefore pipe travel time is not anticipated to cause maintenance issues for the City's collection system.

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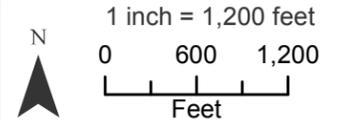
-  CITY BOUNDARY
- ADF MAXIMUM VELOCITY**
-  Less than 2 ft/s
-  Greater than 2 ft/s



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FIGURE 5-4
 EXISTING AVERAGE
 DAILY FLOW
 MAXIMUM VELOCITY



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

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Collection System Model Results – Future Flow Conditions

This section provides a summary of model results for the future flow conditions modeled.

Deficient System Capacity

The following locations were identified through the analysis as having insufficient capacity to meet City performance standards while conveying future system flows. Refer to Figure 5-5 for a system-wide map showing where the collection system does and does not meet maximum d/D criteria under future flow conditions. Refer to Figure 5-6 for an overall map of recommended system upgrades to address future wastewater flow conditions.

Recommendations for future upgrades to the City sewer collection system are based on the assumptions that the all of the upgrades recommended for existing conditions have been completed, and/or that recommended upgrades to address existing deficiencies already anticipate the future upgrades.

Apple Avenue

- Location Extents: Apple Avenue north line from 5th Street to 7th Street, Apple Avenue from 5th Street to 5th Street Alley, and Apple Avenue from 11th Street to 12th Street.

The sewer main in Apple Avenue is currently 12-inch that is projected to have a d/D greater than 0.80 under future PHDWF conditions. Upgrading to 18-inch PVC reduces the maximum d/D to acceptable levels. Total affected pipe length is 840 lineal feet.

WWTP

- Location Extents: End of 24" line on Walnut Avenue to WWTP headworks.

The sewer main at the WWTP is currently 14-inch and is projected to have a d/D greater than 0.80 under future PHDWF conditions. Upgrading to 24-inch PVC reduces the maximum d/D to acceptable levels. Total affected pipe length is 220 lineal feet.

Elm Avenue

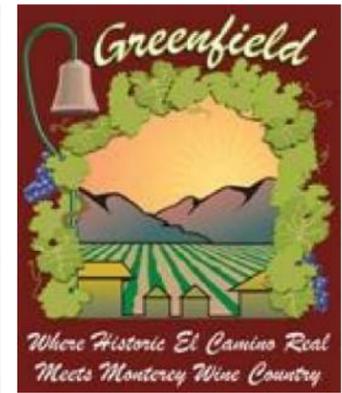
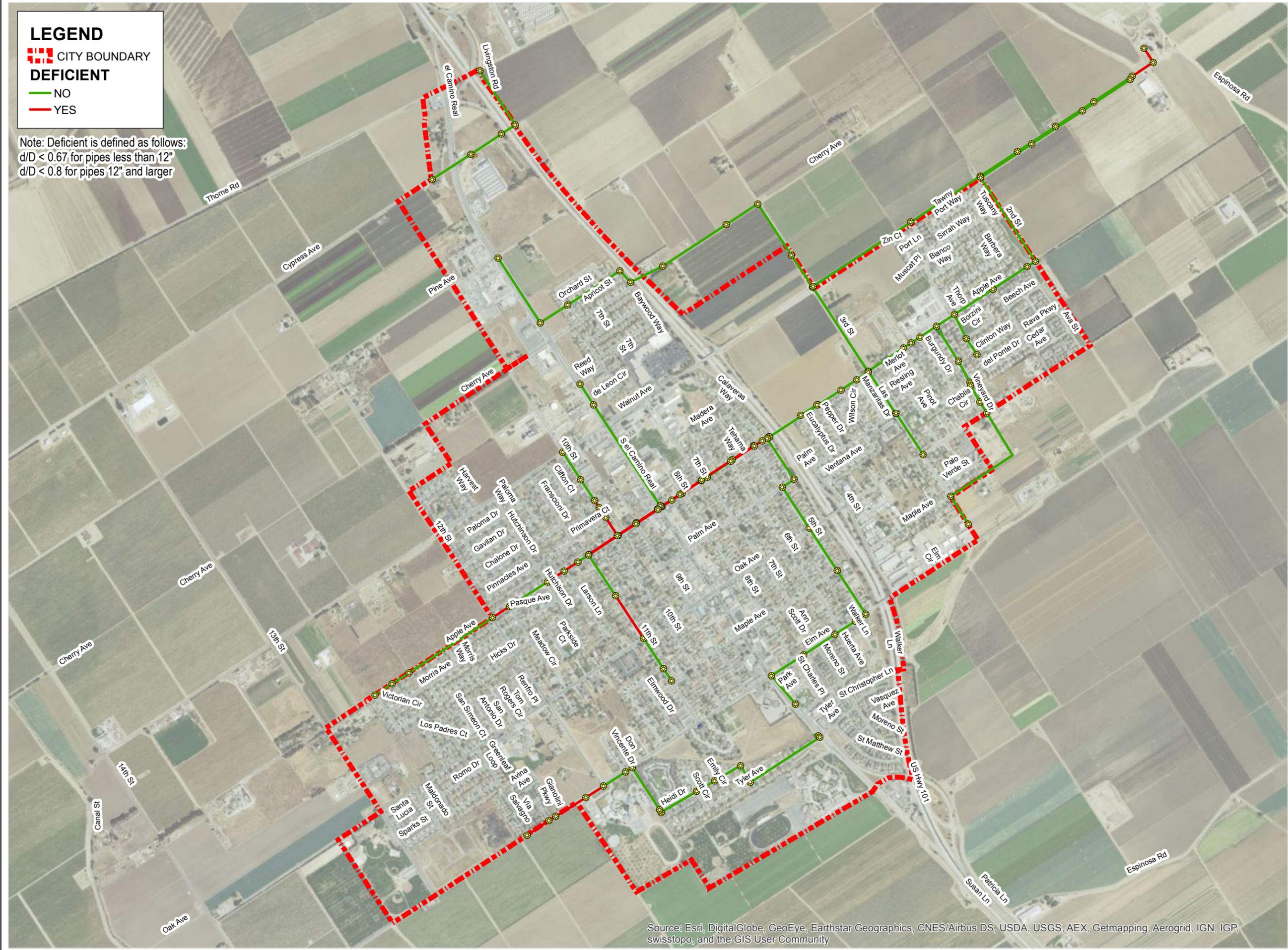
- Location Extents: Heidi Drive to Via Salvano.

The sewer main in Elm Avenue is currently 8-inch that has a d/D greater than 0.67 under future PHDWF. Upgrading to 10-inch PVC reduces the maximum d/D to acceptable levels. Total affected pipe length is 1,650 lineal feet.

LEGEND

-  CITY BOUNDARY
- DEFICIENT**
-  NO
-  YES

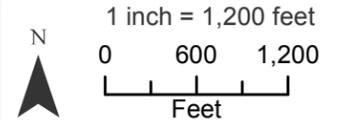
Note: Deficient is defined as follows:
 $d/D < 0.67$ for pipes less than 12"
 $d/D < 0.8$ for pipes 12" and larger



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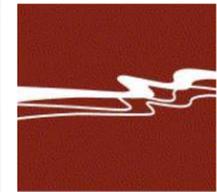
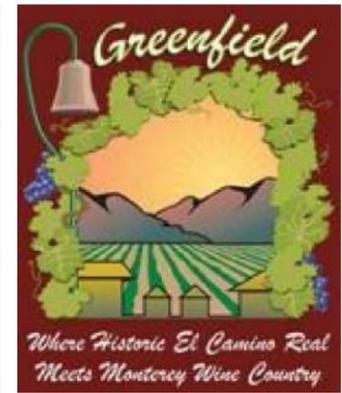
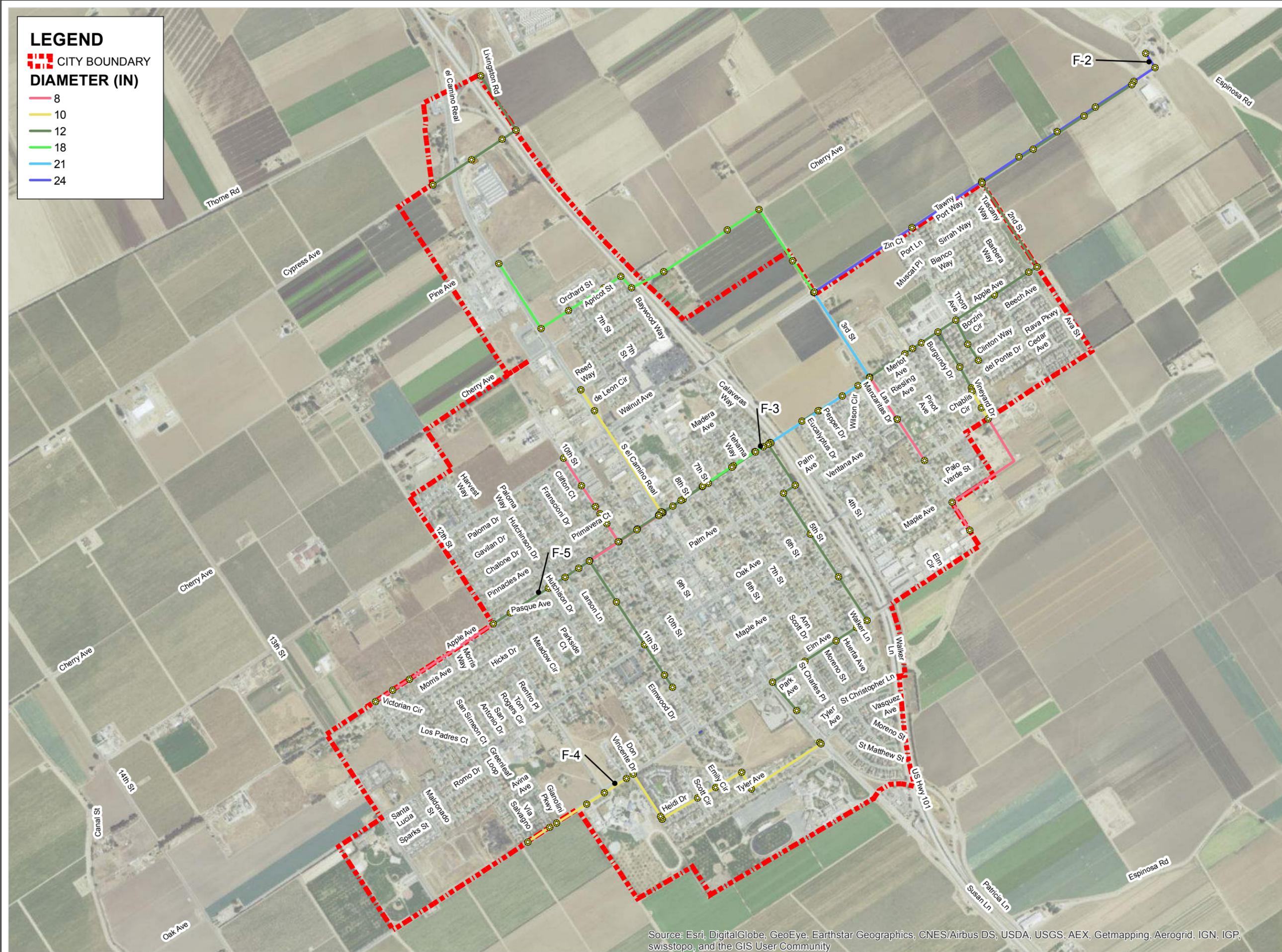
FIGURE 5-5
DEFICIENT GRAVITY
SEWER MAINS
UNDER FUTURE
FLOW CONDITIONS



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

LEGEND

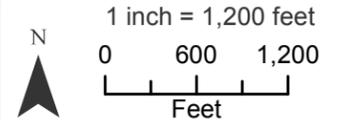
-  CITY BOUNDARY
- DIAMETER (IN)**
-  8
-  10
-  12
-  18
-  21
-  24



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**FIGURE 5-6
 FUTURE CIP
 DIAMETER**



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

6: Evaluation of Sewage Lift Stations

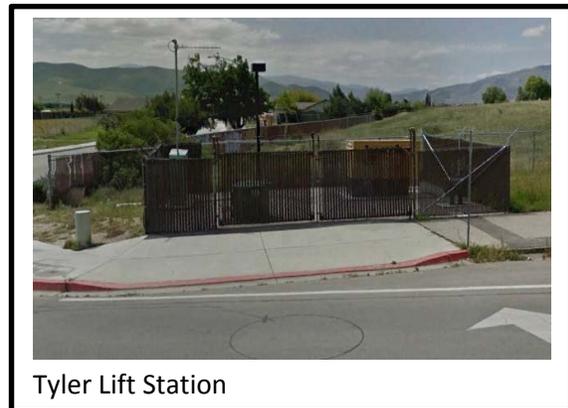
The City of Greenfield owns and operates six sewage lift stations as part of the City's overall sewage collection system. All six lift stations are Smith & Loveless wetpit/drypit lift stations. This section provides a detailed evaluation of each of the six lift stations. The lift stations are evaluated from a general operational standpoint, and then from a hydraulic/operations standpoint. These lift stations and corresponding tributary areas are depicted on Figure 2-2 in Chapter 2. Details of the hydraulic capacity, equipment and other details of the lift stations will be provided later in this Chapter.

Lift Station General Evaluation (non-hydraulic)

The six lift stations were evaluated based on non-hydraulic parameters. This evaluation included review of existing information, as-built drawings, and a site visit to each lift station with City staff on December 2, 2015. A summary of the pertinent non-hydraulic parameters of the lift stations is presented in Table 6-1.

Tyler Lift Station

Tyler Lift Station is located at the intersection of El Camino Real and Tyler Avenue. The lift station services the portion of the City to the south of Elm Avenue and west of Highway 101. The lift station discharges through a 6-inch diameter PVC force main to a manhole near the intersection of Huerta Avenue and El Camino Real.



Tyler Lift Station

Lift Station/Pumps: The lift station has a wetwell with suction piping and a drypit that houses the two pumps and valving. The lift station was installed in 1990 with two 10-hp pumps and was upgraded in 2007 with two new 20-hp pumps. According to City staff, this upgrade to 20-hp pumps maximizes the space within the drypit area, thus larger pumps cannot be accommodated in the existing drypit if needed in future years.

Wetwell: The wetwell is a circular unlined concrete wetwell. The wetwell is in good condition, with no visible signs of corrosion.

Site Conditions: The lift station site area is paved and fenced, with a driveway/access off of El Camino Real. Hatches are padlocked for security. There is good drainage in the area, and the site is not prone to flooding. The site has lighting for night-time emergency maintenance and there is potable water available for sanitation and washdown purposes.

Los Ositos Lift Station

The Los Ositos Lift Station is located at the intersection of 11th Street and Elm Avenue. The lift station services the Los Ositos residential development on Elm Avenue near the intersection of Elm Avenue and 11th Street. The lift station discharges through a 6-inch diameter PVC force main to a manhole near the intersection of 11th Street and Maple Avenue.

Table 6-1. Summary of Lift Station Conditions (Non-Hydraulic)

	Tyler	Los Ositos	Vineyard
Year Built	1990	1979	1983
Lift Station Type	Smith and Loveless - Wet Pit/Dry Pit	Smith and Loveless - Wet Pit/Dry Pit	Smith and Loveless - Wet Pit/Dry Pit
Standby Power	Yes	No, quick connect.	No, quick connect.
Electrical Service	Unknown	Unknown	Unknown
Alarms	Known Problems	Good	Good
Wetwell Material	Concrete	Concrete	Concrete
Wetwell Coating	No	Tar around Manway	No
Wetwell Condition	Good	Good	Deteriorating in manway, unable to see lower.
Chemical Feed (Ferrous Chloride) Tanks/Piping	Unknown	Unknown	Unknown
Site Drainage	Good	Good	Good
Potable Water at Site	Yes	No	No
Site Lighting	Yes	No, street lights nearby.	No, street lights nearby.
Site Security/Fencing	Yes	No	Yes

	Nino	Reed	Cypress
Year Built	2004	1985	2004
Lift Station Type	Smith and Loveless - Wet Pit/Dry Pit	Smith and Loveless - Wet Pit/Dry Pit	Smith and Loveless - Wet Pit/Dry Pit
Standby Power	Yes	No, quick connect.	No, quick connect.
Electrical Service	Unknown	Unknown	Unknown
Alarms	Good	Good	Good
Wetwell Material	Concrete	Concrete	Concrete
Wetwell Coating	No	No	Yes
Wetwell Condition	Good	Good	Good
Chemical Feed (Ferrous Chloride) Tanks/Piping	Unknown	Unknown	Unknown
Site Drainage	Good	Good	Good
Potable Water at Site	No	No	Yes
Site Lighting	No, street lights nearby.	No	Yes
Site Security/Fencing	Yes	Yes	Yes

Lift Station/Pumps: The lift station has a wetwell with suction piping and a drypit that houses the two pumps and valving. The lift station has two 3-hp pumps and was installed in 1979.

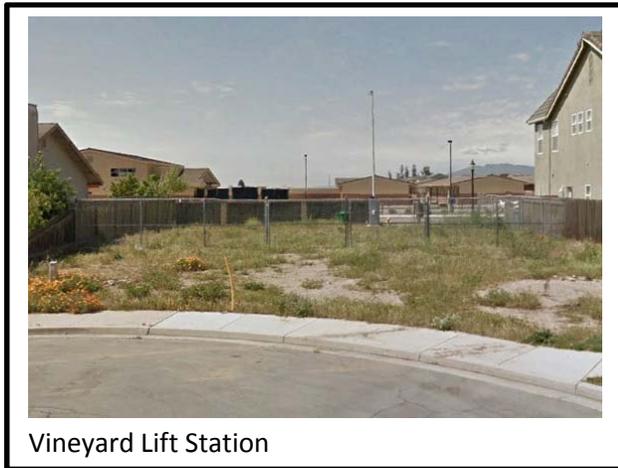


Wetwell: The wetwell is a circular concrete wetwell with tar around the manway portion to prevent root intrusion from the tree adjacent to the lift station. According to City staff, root intrusion is not currently an issue. The wetwell is in good condition, with no visible signs of corrosion however the manhole ring is beginning to deteriorate.

Site Conditions: The lift station is in a grassy area near Elm Avenue and is open (not fenced), with vehicle access for maintenance. Hatches are padlocked for security. The lift station is situated between two multi-family residential areas on the south side of Elm Avenue, with walkways on both sides of the station. There is good drainage in the area, and the site is not prone to flooding. The site does not have lighting for night-time emergency maintenance and there is not potable water available for sanitation and washdown purposes.

Vineyard Lift Station

The Vineyard Lift Station is located on Vineyard Avenue, south of Apple Avenue. The lift station services portions of the City south of Apple Avenue and north of Elm Avenue and between Las Manzanitas Drive to the west and Alves Lane to the east. The lift station discharges through a 4-inch diameter PVC force main to a manhole to the northwest of the lift station in Apple Avenue.



Lift Station/Pumps: The lift station has a wetwell with suction piping and a drypit that houses the two pumps and valving. The lift station has two 3-hp pumps and was installed in 1983.

Wetwell: The wetwell is a circular concrete wetwell with no coating. There are noticeable signs of deterioration in the manway, but due to access constraints the condition of the wet well below the manway is unknown.

Site Conditions: The lift station is in a dirt lot between Apple Avenue and Vineyard Drive near Elm Avenue and is fenced, with vehicle access for maintenance. Hatches are padlocked for security. There is good drainage in the area, and the site is not prone to flooding. The site does not have lighting for night-time emergency maintenance and there is not potable water available for sanitation and washdown purposes.

Nino Lift Station

The Nino Lift Station is located at the intersection of Nino Lane and Del Ponte Drive. The lift station services portions of the City south of Apple Avenue and north of Oak Avenue and between Las Ava Street to the west and Del Ponte Drive to the east. The lift station discharges through a 4-inch diameter PVC force main to a manhole to the northwest of the lift station near the intersection of Del Ponte Drive and Nino Lane.



Lift Station/Pumps: The lift station has a wetwell with suction piping and a drypit that houses the two pumps and valving. The lift station has two 3-hp pumps and was installed in 2004.

Wetwell: The wetwell is a circular concrete wetwell with no coating. The wetwell is in good condition, with no visible signs of corrosion. The wetwell has a large manhole lid that requires two operators to open.

Site Conditions: The lift station is in a dirt lot and is fenced, with vehicle access for maintenance. The wetwell is located outside of the fenced area in Del Ponte Drive. Hatches are padlocked for security. There is good drainage in the area, and the site is not prone to flooding. The site does not have lighting for night-time emergency maintenance and there is not potable water available for sanitation and washdown purposes.

Reed Lift Station

The Reed Lift Station is located near the intersection of Reed Lane and De Leon Drive. The lift station services portions of the City south of Apricot Avenue and north of Walnut Avenue and between Highway 101 to the west and El Camino Real to the east. The lift station discharges through a 6-inch diameter PVC force main to a manhole near the intersection of Reed Way and El Camino Real.



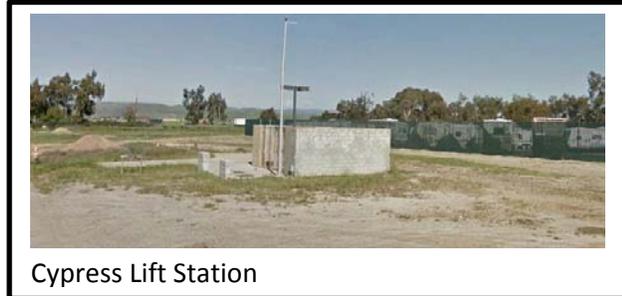
Lift Station/Pumps: The lift station has a wetwell with suction piping and a drypit that houses the two pumps and valving. The lift station has two 3-hp pumps and was installed in 1985.

Wetwell: The wetwell is a circular concrete wetwell with no coating. The wetwell is in good condition, with no visible signs of corrosion.

Site Conditions: The lift station is paved and is fenced, with vehicle access for maintenance. Hatches are padlocked for security. There is good drainage in the area, and the site is not prone to flooding. The site does not have lighting for night-time emergency maintenance and there is not potable water available for sanitation and washdown purposes.

Cypress Lift Station

The Cypress Lift Station is located near the intersection of Cypress Avenue and El Camino Real. The lift station services portions of the City north of Cypress Avenue. The lift station discharges through a 10-inch diameter PVC force main to a manhole near the intersection of Pine Avenue and El Camino Real.



Lift Station/Pumps: The lift station has a wetwell with suction piping and a drypit that houses the two pumps and valving. The lift station has two 20-hp pumps and was installed in 2004.

Wetwell: The wetwell is a circular concrete wetwell with a protective coating. The wetwell is in good condition, with no visible signs of corrosion.

Site Conditions: The lift station is paved and is fenced, with vehicle access for maintenance and the wetwell is located outside of the fenced area. Hatches are padlocked for security. There is good drainage in the area, and the site is not prone to flooding. The site does not have lighting for night-time emergency maintenance and there is not potable water available for sanitation and washdown purposes.

Lift Station Hydraulic Performance Evaluation

The hydraulic characteristics of each lift station were analyzed and deficiencies were noted. Design criteria that apply to the lift stations and force mains are summarized below. Table 6-2 summarizes the hydraulic parameters of each lift station.

- Force main velocities should be greater than 2.0 feet per second to maintain self-cleansing properties but less than 5.0 feet per second to minimize head loss and water hammer.
- Lift stations should be able to convey peak flows with the largest pump out of service. Station “capacity” is therefore calculated with the largest pump out of service.
- Lift station wet wells should be sized to limit the number of pump starts per hour to acceptable limits as defined by the pump manufacturer. Traditionally this is in the range of 6 starts per hour.
- Lift stations should have a means of conveying peak flows during a power outage. Lift stations serving a small number of customers could use wet well storage to meet this requirement.

Lift Station Flows

This subsection describes details of the existing lift stations and tributary flows (existing and future) relative to the pumping capacities of the existing lift stations. Flow parameters for each lift station are summarized in Table 6-3.

The peak hour wet weather flow is calculated as follows:

The average wastewater flow is multiplied by the diurnal peaking factor measured during the flow monitoring described previously, to obtain peak hour flow (dry weather).

Table 6-2. Summary of Hydraulic Characteristics

Lift Station		Tyler	Los Ositos	Vineyard
Pump Type		Vertical Non-Clog	Vertical Non-Clog	Vertical Non-Clog
Pump Manufacturer/Model		Smith & Loveless, Model 4C2A	Smith & Loveless, Model 4B2A	Smith & Loveless, Model 4B2A
No. of Pumps		2	2	2
Pump Motor HP		20	3	3
Motor Speed, RPM		1800	1170	1170
Date of Last Pump Upgrade/Overhaul		2007	N/A	N/A
Design Flow/Head (GPM@TDH)		600 GPM @ 80' TDH	450 GPM @ 17' TDH	140 GPM @ 25' TDH
Pump Design Flow Condition		Simplex	Simplex	Simplex
Approximate Pump Operating Efficiency at Design Point, %		70	70	45
Wet Well Diameter		6	6	6
Wet Well Depth		31	15.66	24
Operating Depth (ft)	High (Pump On)	6.50	4.00	7.00
	Low (Pump Off)	2.00	3.00	4.00
Wetwell Operating Volume, Gallons ¹		952	211	441
Force Main Diameter, Inches		6	8	4
Force Main Material		PVC	PVC	PVC
Force Main Velocity, ft/s, Simplex		2.20	1.59	1.65

¹Wetwell operating volume calculated based on existing operational set points.

Lift Station		Nino	Reed	Cypress
Pump Type		Vertical Non-Clog	Vertical Non-Clog	Vertical Non-Clog
Pump Manufacturer/Model		Smith & Loveless, Model 4B2	Smith & Loveless, Model 4B2A	Smith & Loveless, Model 6C4C
No. of Pumps		2	2	2
Pump Motor HP		3	3	20
Motor Speed, RPM		1200	875	1200
Date of Last Pump Upgrade/Overhaul		N/A	N/A	N/A
Design Flow/Head (GPM@TDH)		180 GPM @ 25' TDH	200 GPM @ 19' TDH	1000 GPM @ 42' TDH
Pump Design Flow Condition		Simplex	Simplex	Simplex
Approximate Pump Operating Efficiency at Design Point, %		55	70	65
Wet Well Diameter		6	4	8
Wet Well Depth		20	22.33	30
Operating Depth (ft)	High (Pump On)	6.75	5.50	1.50
	Low (Pump Off)	4.50	3.25	1.00
Wetwell Operating Volume, Gallons ¹		330	211	188
Force Main Diameter, Inches		4	6	10
Force Main Material		PVC	PVC	PVC
Force Main Velocity, ft/s, Simplex		3.12	1.73	4.08

¹Wetwell operating volume calculated based on existing operational set points.

Force Main Velocities

For three of the six lift stations (Tyler, Nino and Cypress), the force main velocities under simplex pump mode are within generally accepted criteria for self-cleansing and for minimizing headloss. The remaining three lift stations (Los Ositos, Vineyard and Reed) have force main velocities under simplex pump mode that are below generally accepted criteria for self-cleansing and for minimizing headloss. It is recommended that these force mains be maintained on a regular basis by occasionally running the pump station in duplex mode to increase the force main velocity.

Table 6-3. Summary of Lift Station Flows

Lift Station	Tyler	Los Ositos	Vineyard	Nino	Reed	Cypress
Existing Average Daily Flow, gpd	189,821	7,058	75,312	28,944	19,829	28,541
Existing Average Daily Flow, gpm	132	5	52	20	14	20
Peaking Factor	2	2	2	2	2	2
Existing Peak Hour Flow, gpm	264	10	105	40	28	40
Future Average Daily Flow, gpd	602,237	7,058	181,642	28,944	19,829	151,790
Future Average Daily Flow, gpm	418	5	126	20	14	105
Future Peak Hour Flow, gpm	836	10	252	40	28	211
Lift Station Design Capacity, gpm, Simplex	600	450	140	180	200	1,000
Lift Station Tested Capacity, gpm, Simplex ¹	193	249	64	122	153	1,000

¹Tested lift station capacity was calculated using the time required to run a full pump down cycle (i.e., between the high and low operational set points) and does not account for inflow into the wetwell during the test. Therefore, flows calculated based on this testing methodology are most likely lower than the actual flow.

Tyler Lift Station

The Tyler Lift Station has a design capacity of 600 gpm but a tested operating capacity of 193 gpm. Considering the design operating flow, the lift station is adequately sized to meet existing peak hour flow conditions with one pump running but will not have adequate capacity to meet future peak hour flow conditions. Although the design operating flow is adequate, a telephone interview with Arturo Felix on 6/20/16 revealed the following ongoing concerns with the Tyler lift station:

- The City has had difficulty with operating the lift station since the pumps were upgraded to 20 HP in 2007 and the new pumps do not seem to fit perfectly with the existing lift station configuration.
- The existing lift station physically cannot handle larger pumps than the existing 20 HP pumps.
- The generator at the site is not rated large enough to handle the startup amperage draw from the pumps when there is a power failure. When there is a power outage, the auto-transfer switch to the generator “trips”, triggers an alarm, and the pumps do not run. When this happens, City staff has to manually turn the generator back on to allow the pumps to run.
- The two gate valves and the check valve on pump #1 are currently not functional and the City is actively working to replace them.

Because of the future capacity deficiency and the items identified above, it is recommended that the City consider a full replacement of the Tyler lift station with a new triplex submersible or wet pit/dry pit lift station.

Los Ositos Lift Station

The Los Ositos Lift Station has a design capacity of 450 gpm but a tested operating capacity of 249 gpm. Based on existing and future peak hour flows, and despite the lower field tested pumping capacity noted, the lift station will be capable of pumping existing and future peak hydraulic flow in Simplex mode of operation.

Vineyard Lift Station

The Vineyard Lift Station has a design capacity of 140 gpm but a tested operating capacity of 64 gpm. Considering the design operating flow, the lift station has adequate capacity to meet the existing peak hour flow conditions with one pump running but will not have adequate capacity to meet future peak hour flow conditions. As development occurs upstream of the Vineyard lift station, the City should reanalyze the lift station and upsize the pumps as necessary.

Nino Lift Station

The Nino Lift Station has a design capacity of 180 gpm but a tested operating capacity of 122 gpm. Considering the design operating flow, the lift station has adequate capacity to meet both existing and future peak hour flow conditions with one pump running.

Reed Lift Station

The Reed Lift Station has a design capacity of 200 gpm but a tested operating capacity of 153 gpm. Considering the design operating flow, the lift station has adequate capacity to meet both existing and future peak hour flow conditions with one pump running.

Cypress Lift Station

The Cypress Lift Station has a design capacity of 1,000 gpm. Considering the design operating flow, the lift station has adequate capacity to meet both existing and future peak hour flow

conditions with one pump running. This lift station is over-sized, and recommendations to address this will be provided later in this section.

Lift Station Wetwell Capacity

The lift station volumes were calculated, and pump cycle times were computed for each station, based on average day and peak hour flows (running in simplex mode). Cycle times were not able to be computed for the wetwells in duplex mode, as duplex curves were not available. Table 6-4 summarizes the wetwell cycle time calculations.

Table 6-4. Summary of Lift Station Cycles per Hour

	Tyler	Los Ositos	Vineyard	Nino	Reed	Cypress
Wetwell Operating Volume, gallons	952	211	441	330	211	188
Cycles per Hour at Existing ADF	6.5	1.4	4.5	3.2	3.6	6.2
Cycles per Hour at Existing MDF	9.3	2.7	3.6	5.7	6.7	12.2
Cycles per Hour at Future ADF²	8.0	1.4	1.7	3.2	3.6	30.1
Cycles per Hour at Future MDF^{1,2}	-20.8	2.7	-27.6	5.7	6.7	53.1

¹Negative values indicate that the MDF exceeds current pump flow rate in simplex mode.

²Cypress lift station is currently using a small portion of the total wetwell capacity. Therefore, the calculated number of cycles per hour shown in this table for future flow conditions are higher than they would be if the full wetwell capacity was in use. It is anticipated that the City will adjust the operating levels of the wetwell as the ADF and MDF increase in the future.

Lift station pumps should typically cycle not more than 5 to 6 times per hour at average flow conditions, to limit pump starts. This recommendation, however, should be based on the actual pump manufacturer's information. Pump motors and starters have improved significantly over the years, and thus can withstand more frequent starts than in years past. Pump cycling in excess of the manufacturer's recommendation can lead to increased wear and tear, increased maintenance requirements and premature pump failure. If pumps do not cycle frequently enough, raw sewage is allowed to sit in the wetwell for longer, increasing the likelihood of off-gassing and sulfuric acid attack to the wetwell.

Tyler Lift Station

Although the Tyler lift station has a relatively large operating volume, it appears to be undersized, causing the pumps to cycle too frequently under existing peak hour and future average day conditions. Under future peak hour conditions, the inflow rate exceeds the outflow rate so the calculated number of cycles per hour is negative. Capital improvement recommendations related to the Tyler lift station are included in the next section.

Los Ositos Lift Station

Although the Los Ositos lift station has a relatively small operating volume, it appears to be oversized, causing the pumps to cycle too infrequently under all conditions. It is recommended that the City assess the feasibility of adjusting pump on/off levels to marginally decrease the operating volume.

Vineyard Lift Station

The Vineyard lift station appears to be oversized, causing the pumps to cycle too infrequently under existing average day and peak hour conditions and future average day conditions. It is recommended that the City assess the feasibility of adjusting pump on/off levels to marginally decrease the operating volume. Under future peak hour conditions, the inflow rate exceeds the outflow rate so the calculated number of cycles per hour is negative.

Nino Lift Station

The Nino lift station appears to be properly sized based on the current operating volume for conditions analyzed.

Reed Lift Station

The Nino lift station appears to be properly sized based on the current operating volume for conditions analyzed.

Cypress Lift Station

Although the operating volume for the Cypress lift station is currently small because of the operational set points, the lift station has a very large wetwell with adequate capacity to accommodate increased flows. The wetwell is sized too large for the design flows, and thus even with adjusting the wetwell operating volume, wastewater tends to sit in the wetwell for extended periods of time and turn septic. This has the potential to cause significant sulfide build up in the wetwell, cause potential odor problems, and create these same problems downstream of the lift station and force main. The City should consider the following recommendations to address the Cypress Lift Station:

- Reduce the horsepower/size of the pumps.
- If reducing the horsepower/size of the pumps does not fully address the concerns described above, compartmentalize the wetwell to reduce its volume, leaving half of the wetwell reserved only for emergency storage. This will ensure better throughput of sewage from the wetwell and keep wastewater fresher. This may be challenging

however, as it creates a maintenance problem to maintain this vacant portion of wetwell, and to clean it out if/when it is used for emergency storage.

Lift Station Capital Improvements

Recommended capital improvements with corresponding capital costs are presented in Chapter 8. A summary of the recommended capital improvements and their justification is included in this section.

Tyler Lift Station

Priority 1 Capital Improvements:

- Upgrade lift station alarms and controls to address lift station problems related to malfunctioning alarms and controls.
- Replace the lift station with either a new triplex wet pit/dry pit lift station or a triplex submersible pump station with self-cleaning wetwell, with shallow valve vault (eliminates confined space entry, except for any future wetwell interior repairs), and with sufficient hydraulic capacity/redundancy to meet future peak flows in the simplex mode of operation. This new station could be located in the City's nearby park located to the west on Tyler Avenue.

Los Ositos Lift Station

Priority 1 Capital Improvements:

- Adjust operational set-points (if possible) to decrease operating volume and increase the number of starts to reduce the likelihood of off-gassing and sulfuric acid attack to the wetwell.
- Consider constructing a fence around the lift station to improve security.

Nino Lift Station

Priority 1 Capital Improvements:

- Adjust operational set-points (if possible) to increase operating volume.

Reed Lift Station

Priority 1 Capital Improvements:

- Adjust operational set-points (if possible) to increase operating volume.

Vineyard Lift Station

Priority 1 Capital Improvements:

- Thorough inspection and repair of the entire lift station. The goal of this inspection and repair process would be to identify and remedy the cause of the discrepancy between the pump design flow and its tested operating flow. If, after completing the inspection

and repair process, the operating flow is still significantly lower than the design flow, the City will need to consider additional lift station improvement options.

- Replace pumps if inspection and repair process does not correct design vs. actual flow discrepancy.
- As development occurs upstream of the Vineyard lift station, the City should reanalyze the lift station and make upgrades as necessary.

Cypress Lift Station

Priority 1 Capital Improvements:

- Reduce the horsepower/size of the pumps.
- Compartmentalize the wetwell to reduce its volume, leaving half of the wetwell reserved only for emergency storage. This will ensure better throughput of sewage from the wetwell and keep wastewater fresher. This may be challenging however, as it creates a maintenance problem to maintain this vacant portion of wetwell, and to clean it out if/when it is used for emergency storage.

7: Wastewater Treatment Plant Evaluation and Update

This Chapter presents the wastewater treatment plant evaluation and update. In 2013, Wallace Group, in conjunction with Kennedy Jenks Consultants, prepared a Wastewater Treatment Plant (WWTP) evaluation. This evaluation covered a regulatory review of existing waste discharge requirements (WDRs), wastewater flow and organic loading analyses (and projection of future flows and loadings), field review of the overall plant and individual plant processes, review of the effluent disposal facilities, review of plant staffing needs, and preparation of a report/technical memorandum summarizing recommendations for the plant. This April 2013 Report is on file with the City. The majority of detailed information contained in this April 2013 Report is not duplicated in this Master Plan document, but rather specific items that are updated are described herein.

Definitions

- **BOD5** – biochemical oxygen demand, a measure of the organic waste strength of a wastewater.
- **TSS** – total suspended solids, a measure of the solids suspended in wastewater
- **TDS** – total dissolved solids – minerals and salts that exist in solution state in a water or wastewater

WWTP General Process Description

The treatment process is generally described as follows:

Raw wastewater enters the influent headworks by gravity via a 24" diameter circular gravity sewer pipe from Walnut Avenue, which discharges into a concrete rectangular channel. Raw wastewater then flows through a mechanical rake/screen, and control of the rake is actuated based on ultrasonic level measurement immediately upstream of the mechanical rake. Flow then passes through a coarse manual bar screen, where the channel then splits into two channels. At this point, wastewater flows through one of the two channels, each equipped with a comminutor before passing through a 6" Parshall Flume (in one of the channels, the second channel being the bypass channel) and primary clarifier flow splitter box. Raw wastewater then flows to three primary clarifiers operated in parallel.

Primary waste sludge and scum is pumped to two aerobic digesters for digestion, followed by discharge to sludge drying beds for drying/dewatering and ultimate disposal off-site. Sludge collected from Clarifier #1 and #2 is conveyed to Digester #1, and sludge collected from Clarifier #3 is conveyed to Digester #2.

Primary effluent flows by gravity to a splitter box, where flow may split between Oxidation Pond 1 and 2. Flow from Oxidation Ponds 1 and 2 then go to Oxidation Pond 3; Oxidation Pond 2 may discharge directly to Percolation Pond 4. Flow from Oxidation Pond 3 flows to Percolation Pond 5. Finally, effluent is pumped by a 60-HP pump station through manually maneuvered irrigation piping and is spray disposed on 26 acres of spray disposal fields. Refer to Figure 7-1 for a depiction of this overall plant process. An aerial view of the City’s WWTP is shown as Figure 7-2. Figure 7-3 shows the flow patterns at the oxidation and percolation ponds, and Figure 7-4 shows the effluent spray disposal area.

WWTP Design Criteria

The following table (Table 7-1) summarizes the design parameters for the City’s existing wastewater treatment plant. This criteria is consistent with that provided in the 2013 Wastewater Evaluation.

Table 7-1. Greenfield WWTP Design Criteria

Process/Plant	Criteria, Units	1.0 MGD CAPACITY	2.0 MGD CAPACITY
Flows and Loading	ADWF, mgd	1.0	2.0
	Peak Flow, process, mgd	3.0	6.0 ^e
	Peak Hydraulic Flow, mgd	5.0	10.0 ^{e, q}
	BOD ₅ , mg/L (lb/day)	240 (2,000) ^p	240 (4,000) ^p
	TSS, mg/L (lb/day)	240 (2,000) ^p	240 (4,000) ^p
Headworks	Headworks Channel, mgd	0.1 to 2.5 ⁿ	
	Number of Channels, dimensions (inches)	2@31”Wx32”D ^l	
	Chain & Rake Monster TM , quantity	1 each (3.5 mgd)	

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Process/Plant	Criteria, Units	1.0 MGD CAPACITY	2.0 MGD CAPACITY
	(peak hydraulic capacity, mgd)		
	Coarse Bar Screen, number	1	
	Comminutor, mgd	0.1 to 2.5 ⁿ	
	Comminutor, quantity@HP	2@5HP each ^l	
	Flow Measuring/Parshall Flume, mgd	0.1 to 2.5 6" Throat ^{l, n}	
Primary Sedimentation	Number of Units	2@0.5 mgd	2@0.5 mgd, 1@1.0 mgd
	Diameter, ft	2@30'	2@30' 1@45'
	Removal Rate, %SS	60 ^a	
	Effective Volume, ft ³	2@6,126 ft ³	2@6,126 ft ³ 1@12,253 ft ³
	Surface Loading, gpd/sf	707 ^a	
	Detention Time, hours	2.2 ^b	
	Weir Overflow Rate, gpd/LF	5,300	
Sludge Digestion (aerobic)	VSS (% of TSS)	75	
	VSS Reduction, %	40	

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Process/Plant	Criteria, Units	1.0 MGD CAPACITY	2.0 MGD CAPACITY
	Volume Treated Per Day, ft ³	347	694
	Number of Units	1	2
	Size, each unit (ft)	30' Dia x 13.5' Deep	
	Solids Retention Time, days	30	
	Rotary Lobe Blower, HP, each unit	10	
	Blower capacity, cfm	500	
	Loading Rate, lb VSS/ft ³ -day	0.04 (0.06) ^l	
Sludge Drying (Lagoons/beds)	Number of beds	6 ^{c, n}	
	Loading, lb/year	315,360 ^d	630,720 ^e
	Area, each bed, sf	62,500 ⁿ	
	Volume, ft ³	125,000 ^{d, n}	
	Loading Rate, lb dry solids/SF/day	0.006 ^l	0.012 ^{e, n}
	Loading Rate, lb/ft ³ /year	2.52 ^e	5.04 ^{e, n}
Oxidation Ponds	Number	3	
	Surface Area, Total	6.25 ^j , 7.6 ^k	
	Depth, ft	5	
	Detention Time, days	5.1 ^j , 14.9 ^k	2.5 ^j , 7.4 ^k

City of Greenfield: Sewer Collection System Master Plan
 July 2016

Process/Plant	Criteria, Units	1.0 MGD CAPACITY	2.0 MGD CAPACITY
	BOD ₅ Loading Rate, lbs/acre-day	200 ^j	400 ^j
	BOD ₅ Loading Rate, kg/acre-day	78 ^k	156 ^k
	Aerators	None	6@15 HP each ^f
Percolation Ponds	Number	2	
	Area, total, acres	4.21	
	Depth, each, ft	5	
	Percolation Rate, gal/acre-day	47,850	
	Application Rate, inches per day	2.3	
	Disposal Capacity, mgd	0.2 ^g	
Spray Disposal Fields	Total Area, acres	13	26
	Application rate, inches/day (inches/year)	2.3 (70)	
	Capacity, mgd	0.812	1.62 ^h

^aStated for original two 0.5 mgd clarifiers only. Design % Removal of BOD is not stated.

^bDetention time assumed to be based on ADWF.

^cOnly three beds were observed during February 2013 site visit.

^dNeed to verify if this is loading per bed, or total.

^eEstimated value, based on same ratio for 1.0 mgd criteria.

^fProposed in June 4, 2004 letter, but not installed.

^gIt is noted that in the June 4, 2004 letter, it was stated that the oxidation and disposal ponds had never been cleaned or dredged since their construction in the 1970s, and that these ponds effectively do not percolate (currently).

^hThis means total effluent disposal capacity is 1.8 mgd with percolation ponds and spray disposal. See note (g) above also. In order to yield 0.2 mgd disposal capacity in the percolation ponds, they will need to be properly rotated, dried, ripped and solids removed. Winter storage or redundancy/buffer should also be considered.

^jBased on 2003 Freitas Report.

^kBased on June 2004 Freitas Letter Report.

^lSection VI, RM Associates Report of Waste Discharge Report, July 2001.

^mThe O&M Manual does not indicate peak hydraulic capacity of this equipment.

ⁿApril 5, 2013 letter from Freitas+Freitas indicating original design criteria is sufficient for 2.0 mgd capacity.

^pRefer to Section on "Wastewater Characteristics". City will need to re-evaluate organic loading based on most recent Annual Report data.

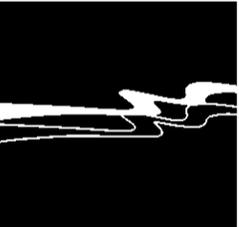
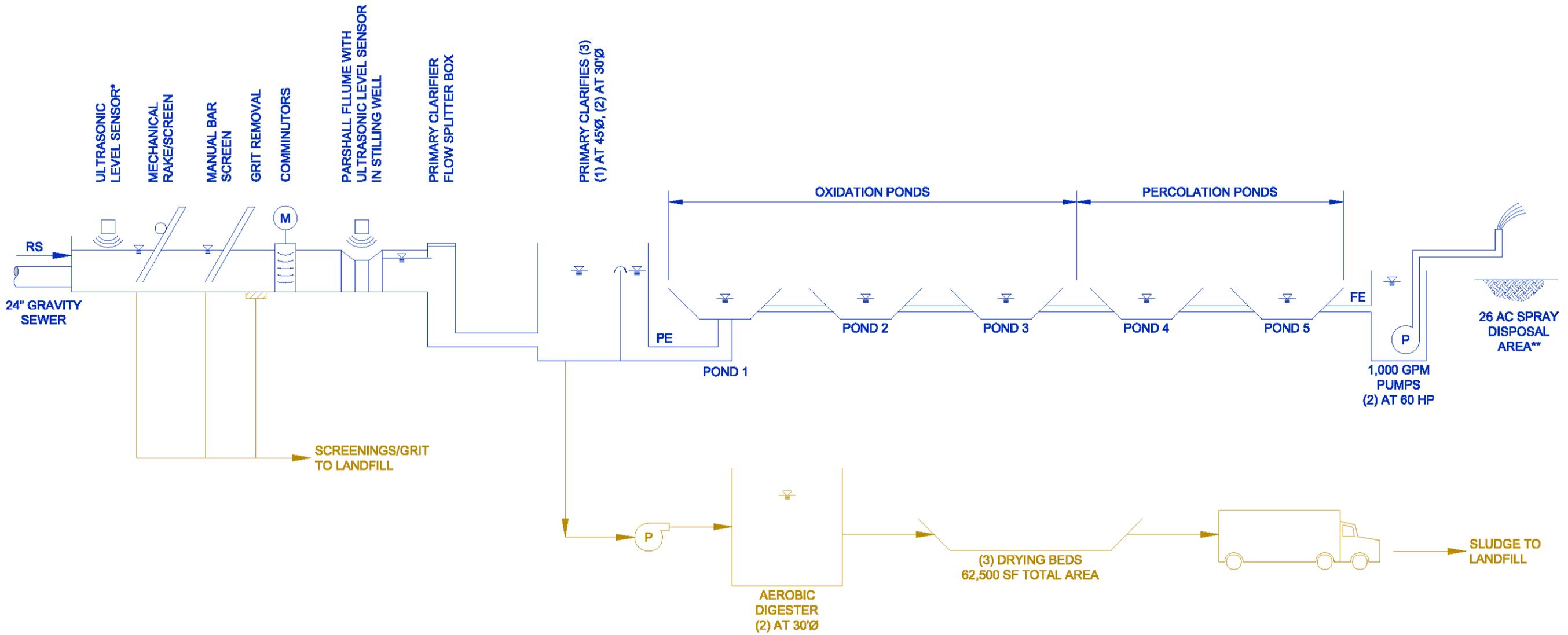
^qObserved peaking factors from flow chart recorders suggest this peak value may not be realized at the plant. Further evaluation is warranted.

Waste Discharge Requirements and Supporting Documents

The City of Greenfield WWTP is regulated by the Regional Water Quality Control Board (Regional Board), Central Coast Region, by Waste Discharge Requirements (WDR) Order No. R3-2002-0062. These WDRs were adopted May 31, 2002. Key aspects of the City's WDRs are summarized as follows:

- Current plant capacity is stated as 1.0 mgd, with City plans for expansion to "at least 1.5 mgd". Flows to the WWTP in 2002 were reported at 0.91 mgd.
- Specification B.1, wastewater flows shall not exceed 1.0 mgd until certain facility improvements are completed and supporting design documentation is submitted to and accepted by the Regional Board.
- Specification B.4, effluent disposal operations shall not cause downgradient monitoring wells to exceed 8 mg/L nitrates (as N).
- Specification B.5, effluent disposal operations shall not cause downgradient monitoring wells to see "significant increases" in mineral quality.
- Specification B.11, effluent disposal ponds shall be alternated to permit emptying for maintenance purposes.
- Specification B.12, disposal ponds shall be dried and disked at least annually.
- Specification B.13, wastewater application to spray irrigate disposal areas shall be managed to prevent ponding.
- Specification B.14, wastewater application to spray disposal areas shall not take place during rains.
- Specification B.16, spray disposal areas shall be operated using a regular rotation. Rotation from one irrigation area to another shall occur at least weekly. Between applications, irrigated areas shall be allowed to dry at approximately the field moisture condition of non-irrigated areas.
- Specification B.17, all solids generated must be reclaimed or disposed of in an acceptable manner.

Figure 7-1. Aerial View of City of Greenfield WWTP



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**FIGURE 1
PROCESS FLOW DIAGRAM
CITY OF GREENFIELD WWTP**

JOB No. : 1163-0001
DRAWING : 116301-EX.DWG
DRAWN BY: JSW
DATE : 03/06/13
SCALE : NONE

RS = RAW SEWAGE
PE = PRIMARY EFFLUENT
FE = FINAL EFFLUENT
* SENSOR FOR OPERATION OF MECHANICAL
RAKE/SCREEN
** CITY IS IN PROCESS OF CONVERTING TO GRAVITY
FLOW TO IRRIGATION DISPOSAL FIELD

Figure 7-2. Aerial View of City of Greenfield WWTP

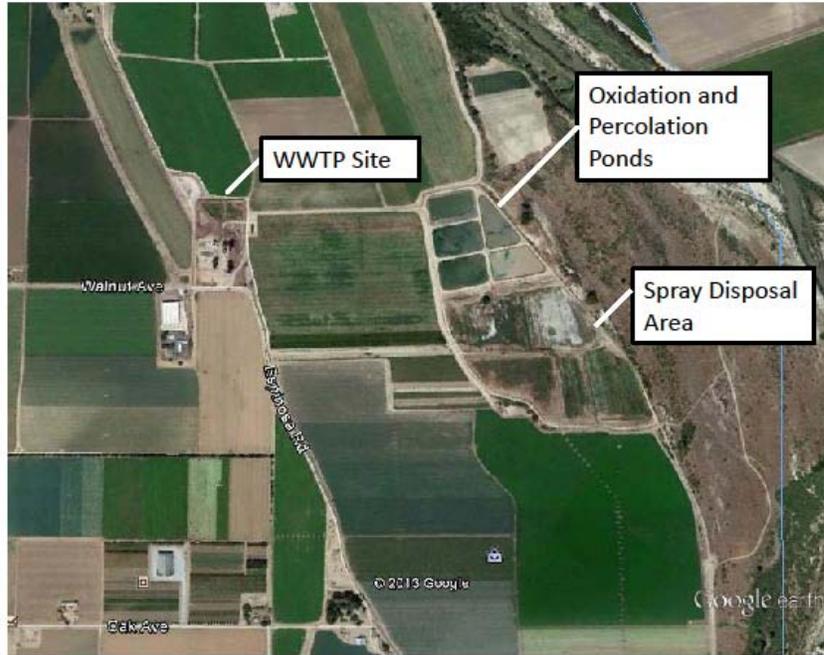


Figure 7-3. Oxidation and Percolation Pond Layout

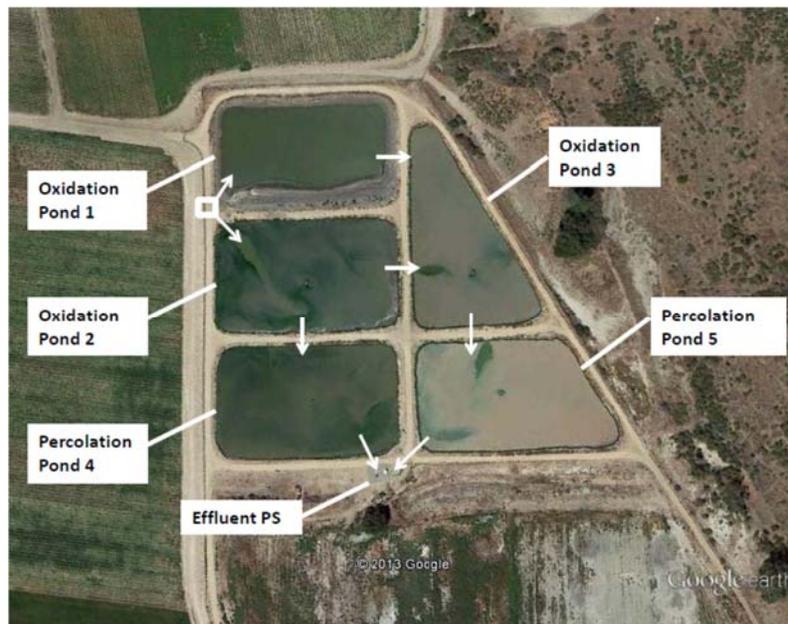


Figure 7-4. Effluent Spray Disposal Fields



- Specification B.18, all storm water contacting domestic wastewater shall be contained on site.
- Specification B.19, best management practices shall be implemented to minimize the inflow and infiltration of storm water into the facility.
- Provision C.5, City shall evaluate salt management practices and implement a long term salt management program. City shall submit report to Regional Board by March 1, 2003.
- Provision C.6 and C.7, City shall submit a report to the Regional Board by November 30, 2002 addressing groundwater monitoring wells and hydraulic gradient in the area of the facility. If disposal system is insufficient, City shall submit engineering report by March 1, 2003 evaluating various wastewater disposal options and shall consider water recycling as an option.

It is noted that there are no specific effluent treatment standards imposed in these WDRs.

Key aspects of the WDR monitoring requirements are as follows:

- Influent wastewater monitoring includes:
 - Daily flow metering, maximum daily flow metered, and mean daily flow (calculated).

- Quarterly BOD₅ and TSS (24-hour composite), settleable solids and pH (grab).
 - Annual TDS, sodium, chloride, sulfate, boron (24 hour composite)
- Pond monitoring, weekly grab samples for pH and dissolved oxygen.
- Effluent monitoring (discharged to spray disposal area):
 - Quarterly grab samples for pH, BOD₅, TSS, settleable solids, TDS, sodium, chloride, boron, sulfate, nitrite (as N), nitrate (as N), total Kjeldahl nitrogen (as N), total nitrogen (as N).
 - Annual grab sample for heavy metals.
 - Once every 5 years, grab sample for volatile organics and pesticides.
- Solids/biosolids monitoring:
 - Reported tonnage or yardage of sludge removed, each load.
 - Representative samples during transport/removal, for moisture content, nitrate (as N), pH, oils and grease, heavy metals
 - At least once every 5 years prior to transport or disposal, pesticides, organic lead and PCBs.

Prior Observations and Plant Conditions

A brief summary of prior plant conditions is summarized as follows:

- Screenings Device. The automatic bar screen which precedes the comminutors may be the source of rags and debris entering the plant. These rags and debris cause maintenance issues at the primary clarifiers and sludge pumps.
- Clarifiers. Significant accumulation of scum and grease has been observed on the clarifier surfaces, and could be a reflection of ineffective initial treatment units and possibly excess fats, oil and grease (FOG) in the collection system.
- Aerobic Digesters. The digesters operate on a fill and draw basis. Air blowers to the digesters are operated on a time clock sequence. It was uncertain whether there is any monitored program and a basis for such a program such as dissolved oxygen levels within the digesters. It was also uncertain as to the basis for when sludge is withdrawn from the digesters and sent to the sludge storage/drying lagoons.
- Sludge Lagoons. Odors from these lagoons seem to indicate that solids digestion may only be partial. In addition, an abundance of weeds was observed on the embankments, along with observed bank erosion.
- Oxidation Ponds. The major issue with the oxidation ponds is that they are being overloaded organically. A number of odor complaints have been received over the last several years, and the City is in the process of adding aeration to the ponds (described later in this Chapter).
- Percolation Ponds. The ponds seemed to remain full of water most if not all of the time, with little time to dry and scarify the bottoms. These ponds and the oxidation ponds had a lot of weed growth on the perimeters.

- **Effluent Spray Disposal Area.** Treated wastewater in excess of that disposed of from the infiltration ponds, is pumped to 26 acres of spray disposal fields. This system is comprised of a pumping station and irrigation pipe to spray heads within the disposal area. It was reported that the spray system utilizes 1,000 gpm 60 H.P. pumps and that the irrigation pipe is manually changed and moved to rotate use of the spray disposal fields. Operations have since been changed to thin spread effluent on the disposal fields.

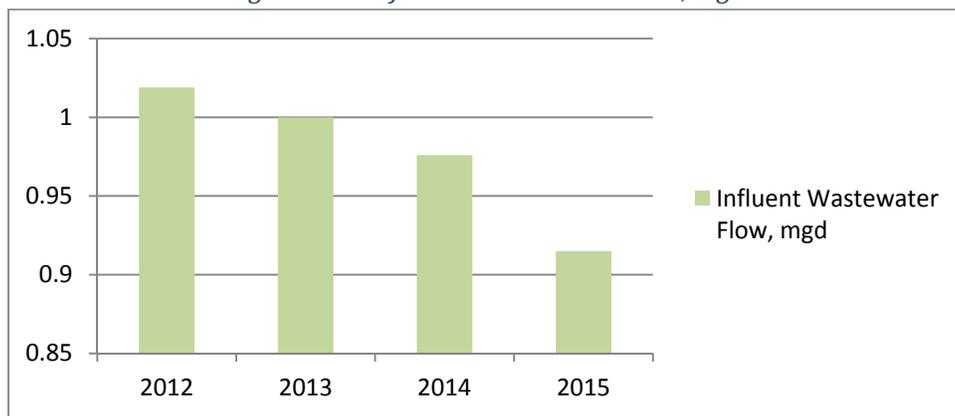
Existing and Projected Future Wastewater Characteristics

The following subsections summarize influent wastewater flows, influent organic waste strength (expressed in BOD₅ and TSS) and effluent quality (also expressed in BOD₅ and TSS).

Existing Plant Influent Flows

Influent wastewater flows over the past four years has decreased, while population continued to marginally increase. Year 2015 showed the most notable drop in measured flow, due to significant water conservation measures mandated by the drought. Figure 7-5 shows the wastewater influent flow trend for the past 4 years.

Figure 7-5: Influent Wastewater Flow, mgd



Future Plant Flows

For the purposes of this Master Planning process, the City has provided a projected population growth rate of 2.5%. This growth rate results in a total population of 28,400 by 2035, which correlates to the 20 year planning horizon for the City's water and wastewater master planning effort.

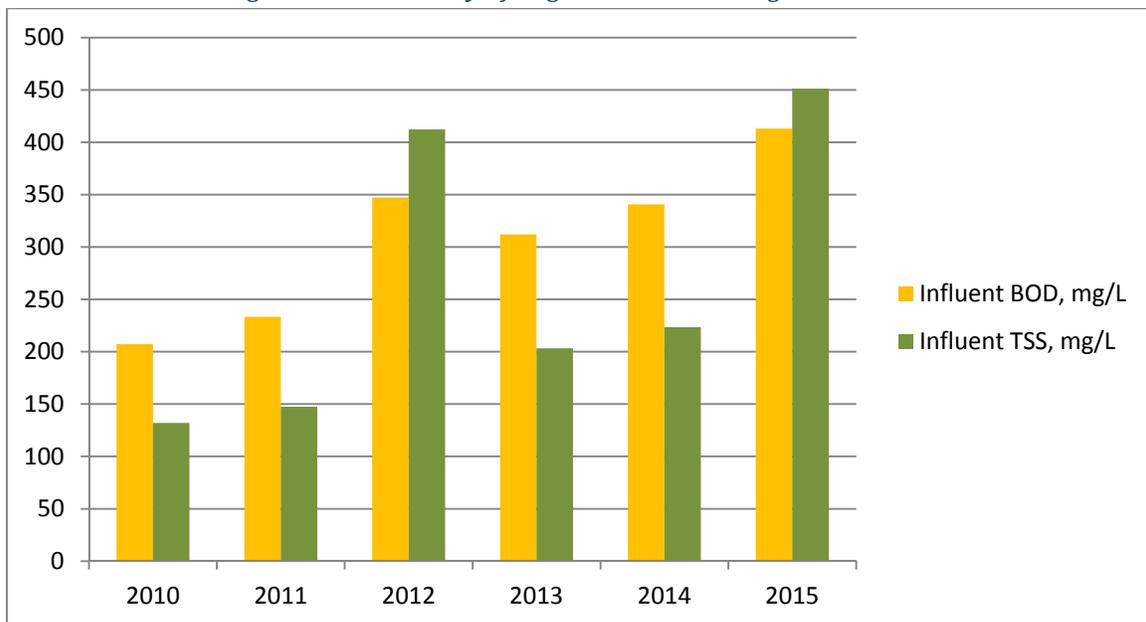
Current wastewater treatment plant flows have dropped to below 0.95 mgd recently due to drought/water conservation efforts. This results in a per capita wastewater flow rate of 60 gallons per capita per day (gpcd). Using the 2012 flow and population data, the per capita wastewater flow was 62 gpcd, just slightly higher than the 2015 per capita flow rate. Using the

build-out population of 28,400, the Year 2035 wastewater flow rate is expected to reach 1.7 mgd (average dry weather flow) to 1.8 mgd.

Existing Influent BOD₅ and TSS

Influent waste strength is typically measured as organic waste strength expressed in BOD₅ and TSS. These two values typically define the municipal wastewater strength, by which most biological wastewater processes are designed and compared against for treatment effectiveness. Figure 7-6 portrays the annual average BOD₅ and TSS results for Years 2010 through 2015. Based on these annual average results, there appears to be a clear upward trend in the organic waste strength. This upward trend is due mainly to water/wastewater reductions that concentrate organic matter in wastewater.

Figure 7-6: Summary of Organic Waste Strength at WWTP



Tables 7-2 and 7-3 summarize the quarterly influent BOD₅ and TSS results, respectively. These results are presented to show the variability in values each quarter. The wide variation in results suggests possible anomalies in sampling, and the City should review sampling protocol and ensure that 24-hour composite samples are being taken per established protocol, stored properly (refrigerated) during the sampling period. If and when anomalies arise (for example, 684 mg/L BOD during the 4th quarter of 2015), the City should consider re-sampling to verify results. It is also recommended that additional composite sampling be performed on varying days of the week including weekends, to ascertain if there are any trends and variations in waste strength based on calendar day of the week. Additional analysis can sometimes identify sources of large loading demands from area restaurants or other commercial establishments.

Table 7-2. Summary of Influent BOD₅ Sampling at WWTP

Quarter	2015	2014	2013	2012	2011	2010
1st	421	256	361	576	178	272
2nd	309	218	379	228	255	187
3rd	238	528	266	365	212	200
4th	684	361	242	220	288	170
Annual Average	413	341	312	347	233	207

Table 7-3. Summary of Influent TSS Sampling at WWTP

Quarter	2015	2014	2013	2012	2011	2010
1st	544	58	250	477	122	146
2nd	590	43	234	210	72	208
3rd	38	658	57	684	182	106
4th	633	135	272	278	214	68
Annual Average	451	224	203	412	148	132

Future Influent BOD₅ and TSS

It is expected that this upward trend in organic waste strength has reached a plateau, due to the fact that further reduction in per capita wastewater flows are not likely to occur. However, it is important to understand the relationship between wastewater strength and organic loading to the plant. In the 2013 WWTP Evaluation Report, the following future values were proposed for wastewater planning purposes:

- Influent BOD₅, 300 mg/L (5,000 lbs/day@2.0 mgd flow)
- Influent TSS, 275 mg/L (4,600 lbs/day@2.0 mgd flow)

For this planning period, and projecting 1.8 mgd wastewater flows, if the prior projected loading of 5,000 pounds per day BOD₅ is maintained, this results in a projected influent BOD₅ of 333 mg/L. The point made here, is that the overall organic loading to the plant at build-out will not change appreciably, but the flows and corresponding concentrations of organic matter in the wastewater will continue to vary over the years. As mentioned earlier, the City should continue to monitor waste strength at the plant, as it will be important from an operations standpoint.

Wastewater Flow Trends

In 2013, Wallace Group evaluated flow trends relative to inflow and infiltration (I/I). Additional evaluation was not warranted at this time. Prior results are summarized in this section. A select interval of chart recordings were reviewed during winter 2012. This interval was selected as there were mostly dry weather days preceding this interval, with one rain event on November 30, 2012. Influent wastewater flows were evaluated, and no unusual spikes in flow were observed during the rain days. The largest peaking factor observed was 2.3. Thus, the City does not appear to have an I/I problem that warrants further investigation. The peak flow values and peaking factors in Table 7-1 address the existing plant flow trends adequately.

Wastewater Pond Aeration Improvements

The construction of the wastewater pond improvements is now under way. Consistent with the 2013 recommendations, plans were prepared to improve the oxidation ponds by deepening and re-conditioning the ponds, adding synthetic liners to Ponds 1, 2 and 3, adding 90 HP of surface aerators. Once these improvements are completed, the ponds will be capable of processing 2.0 mgd capacity. These improvements are anticipated to be complete by late 2016 or early 2017. The City was awarded CDBG grant monies of approximately \$1.4 million. The total project cost exceeds this amount by approximately \$500,000. The additional costs stem from recommending deepening and lining of the ponds, and significant improvements to yard piping and hydraulic control structures. The latter will afford the City more flexibility in operating the ponds. Once completed, the improvements will also address the on-going odor complaints being received by local residents. The additional cost not covered by CDBG grant monies should be considered a near-term capital improvement.

Other Major Plant Improvements

In addition to the pond aeration project, there are a number of other key plant improvements will be needed to be addressed as part of the 10-year CIP period. These improvements include addressing the plant headworks, sludge management/sludge drying, and modernization of the existing administration building.

Headworks

The existing headworks to the wastewater plant is in fair to poor condition, and only rated at 1.0 mgd. It is anticipated that the headworks should be replaced within the next 5 years. The headworks replacement or overhaul should include screenings/rake, influent grinder, Parshall Flume, bypass channel, add grit chamber. The construction cost is estimated at \$1,000,000, or \$1.4 million total.

Sludge Management

The City's existing sludge drying ponds are substandard and in need of significant upgrades, or the sludge drying area should be moved to a different location all together. On December 11 and 12, 2014, a major storm pelted the entire State of California. The Central Coast was hit hard

by this storm, and the resulting runoff in the City of Greenfield caused the unlined ditch which conveys stormwater to the storm ponds within this same sludge drying area, to breach upstream of Stormwater Pond No. 1 (immediately upstream of the connecting pipe to Stormwater Pond No. 1).

Wallace Group assisted the City with interim repairs, which were completed just prior to the start of the rainy season in 2015. Although the stormwater repairs were completed, it is recommended that the City consider separating the stormwater management from sludge management on the WWTP site. From a long-term perspective, it is recommended that new sludge drying facilities be constructed outside of this existing sludge drying area, as the City will need to consider lined sludge beds (concrete or pavement) with sufficient surface area to for effective drying of sludge. The contours and grades of the existing sludge pond area are not conducive to providing flat and level sludge drying beds. A more detailed study is needed to determine the sludge bed area required, and suitable location(s) for the new sludge drying facilities.

It is recommended that conventional paved sludge drying beds be added to the plant, and that the existing sludge drying bed area be re-purposed and/or be dedicated to stormwater management only. It is estimated that new sludge facilities will be \$500,000 construction, or a total of \$700,000 (hard and soft costs).

Administration Building

The City's existing administration building at the WWTP is old and reaching the end of its useful life. A new administration building should include amenities such as laboratory facilities and sanitation/shower facilities, and provisions for the City to centralize SCADA and treatment plant controls in this building. It is estimated that a new modern administration with laboratory and other amenities, will cost \$750,000 to construct, or approximately \$1.1 million total.

Projects Beyond the 10-Year CIP Period

One key project that may be required in the future, is to address the existing aerobic sludge digesters. As part of the 2013 WWTP study, it was noted that use of aerobic digestion for primary clarifier solids is unusual, and that addition study should be conducted to evaluate the conversion to anaerobic digestion. It may be prudent to conduct this study as part of further study of the sludge drying beds. Regardless, for future planning purposes, the City should consider employing anaerobic digestion in lieu of current aerobic digestion process, estimated at \$2 million construction, or \$2.8 million total.

Wastewater Treatment Plant Classification

In early 2014, the City requested Wallace Group to assist the City with classification of the wastewater treatment plant. In 2013, the plant had been inadvertently classified as a Class III

wastewater treatment plant, due to the City's application providing conflicting information with regards to the type of treatment processes at the plant. The prior application had indicated the City uses an activated sludge (conventional) process, which led State Board Staff to classify the WWTP as a Class III facility. Wallace Group prepared a technical letter and revised application clarifying the treatment processes at the WWTP, and the plant was subsequently re-classified by the State Board as a Class II treatment facility. This re-classification further allows the City's current Class II operator, Arturo Felix, to oversee operations of the WWTP as a Grade II WWTP Operator, in compliance with Title 23, Division 3, Chapter 26, Section 3670.1(b)(1), Certification Requirements for Operating Wastewater Treatment Plants. The re-classification letter, dated March 7, 2014, is on file with the City.

Wastewater Treatment Plant Staffing Needs

The City's current staffing requirements were reviewed as part of the 2013 WWTP report. The City currently employs four full-time operators, including Arturo Felix, Grade 2 (chief plant operator), and one Grade 1 operator. The other two operators do not have wastewater operator certification, and thus tasks and responsibilities are limited with respect to wastewater operations. In 2014, Wallace Group assisted the City with preparation of a standard operating procedure (SOP) for WWTP staffing (included as Appendix C). The purpose of this procedure is to ensure that the City of Greenfield remains in compliance with Title 23 California Code of Regulations (CCR) Sections 3670 to 3719 which governs the classification of wastewater treatment plants (WWTP) and operator certification requirements.

Based on the size and complexity of the City's wastewater facility, the CPO should be a Grade 2 operator, as is currently provided. Other plant staff may be Grade 2 or lower.

Using an excel spreadsheet program (dated August 2006) based on a USEPA Publication "Estimating Staffing for Municipal Wastewater Treatment Facilities", dated 1973, staffing needs for the City's wastewater plant were calculated. Consideration was given to current wastewater flows (~1.0 mgd) and current plant improvements, and desired plant rated capacity of 2.0 mgd and anticipated near-term improvements to include pond aeration.

A "sensitivity" analysis was conducted, using variable inputs to the program for flows ranging from 1.5 to 2.0 mgd, and with the current oxidation pond operation and expected future addition of aeration to the ponds. Both variables resulted in a recommended range of 3 to 4 full-time staff to meet all plant operational needs for a wastewater plant of the City's size and complexity.

Thus, it is recommended that the City staff a minimum of four operations staff for current and near-term future plant needs. Based on the recommendations that will be made regarding needed plant maintenance in the short-term (such as weed abatement, re-condition pond embankments, sludge removal, etc.), the City's current planned staffing level of four staff is likely a minimum requirement to achieve the short-term needs in a reasonable time frame. It is

noted that the City currently has two vacant positions for Utility Worker, to be allocated to the wastewater treatment plant. These positions should be filled as soon as is practicable.

8: Capital Improvement Projects

This Chapter presents the proposed Capital Improvement Projects (CIP), with a brief description of the proposed projects and a preliminary cost estimate for each proposed improvement for the City of Greenfield (City). Basis of Capital Improvement Program Costs

The CIP costs were developed based on engineering judgment, confirmed bid prices for similar work in the area, consultation with vendors and contractors, established budgetary unit prices for the work, and other reliable sources. Hard construction costs are typically escalated by a factor of 1.4, to allow budget for “soft costs” that include preliminary engineering, engineering, administration, construction management and inspection costs. Some projects may have factors other than 1.4 depending on project type. All CIP costs are expressed in 2016 dollars, using McGraw-Hill ENR Construction Cost Index of 10242, and will need to be escalated to the year or years scheduled for the work. The unit cost for new gravity sewers includes the proposed pipelines, manholes, lateral re-connections, sewer bypassing, traffic control, etc., and all other aspects of sewer system construction.

Timing of Recommended Improvements

There are some projects triggered by existing deficiencies and some projects triggered by future development. The existing deficiencies are considered near-term projects, and are recommended to be completed within the next 10 years.

There are also projects that are triggered by potential future development, for which timing is difficult to ascertain. These long-term projects are listed in no particular order as they will be prioritized based on timing and location of future development.

Table 8-1 provides a summary of all the existing recommended CIPs, or Near Term Projects. Table 8-1 also provides an estimate of the construction and “soft” costs for each project. Table 8-2 provides a summary of the future recommended CIPs, or Long Term Projects, and their estimated costs.

Table 8-1: Existing CIPs

Project #	Title	Description	Quantity	Length (ft)	Existing Diameter (in)	New Diameter (in)	Street	Location	Construction Cost (\$)		Total Project Cost (\$)
1-1	Apple Avenue 1	Connect 12" line to 21" line upstream of Highway 101 crossing	1	20	12	12	Apple Avenue	Apple Avenue at 5th Street Alley	25,000	LS	40,000
1-2	Apple Avenue 2	Replace 8" VCP with 12" due to capacity deficiency	1	640	8	12	Apple Avenue	Apple Avenue south line between 7th Street and El Camino Real	112,000	LS	200,000
1-3	Vineyard Drive	Replace 10" VCP with 12" due to capacity deficiency	1	780	10	12	Vineyard Drive	Vineyard Drive from Cabernet Avenue to Vineyard Lift Station	136,500	LS	200,000
1-4	Apple Avenue 3	Replace 8" with 12" due to capacity deficiency	1	350	8	12	Apple Avenue	Apple Avenue north line from 7th Street to 8th Street	61,250	LS	90,000
1-5	Apple Avenue 4	Replace 8" with 12" due to capacity deficiency	1	220	8	12	Apple Avenue	Apple Avenue from Larson Lane to mid-block manhole east of Larson Lane	38,500	LS	60,000
1-6	Walnut Avenue	Abandon 12" gravity sewer from Walnut/2nd to the WWTP	1	NA	12	---	Walnut Avenue	2nd Street to WWTP	25,000	LS	40,000
LS-1	Tyler Lift Station	New Lift Station	1	LS	---	---	Tyler Lift Station	Tyler Lift Station	355,000	LS	500,000
LS-2	Cypress Lift Station	Operational Improvements - Decrease Pump size	1	LS	-	-	Cypress Lift Station	Cypress Lift Station	25,000	LS	40,000
LS-3	Tyler Lift Station	Operational Improvements	1	LS	-	-	Tyler Lift Station	Tyler Lift Station	10,000	LS	20,000
WWTP-1	WWTP	Complete Pond Aerator Addition Project	1	LS	---	---	WWTP	WWTP	500,000	LS	700,000
WWTP-2	WWTP	Upgrade Headworks	1	LS	---	---	WWTP	WWTP	1,000,000	LS	1,400,000
WWTP-3	WWTP	New Administration/Laboratory Building	1	LS	---	---	WWTP	WWTP	750,000	LS	1,050,000
WWTP-4	WWTP	Sludge Beds	1	LS	---	---	WWTP	WWTP	500,000	LS	700,000
Total Existing Project Costs											\$ 4,320,000

Table 8-2: Future CIPs

Project #	Title	Description	Quantity	Length (ft)	Existing Diameter (in)	New Diameter (in)	Street	Location	Construction Cost (\$)		Total Project Cost (\$)
F-1	Apple Avenue 5	Replace 12" with 18" due to capacity deficiency as a result of future development	1	840	12	18	Apple Avenue	Apple Avenue north line from 5th Street to 7th Street	189,000	LS	270,000
F-2	WWTP	Replace 14" with 24" due to capacity deficiency as a result of future development	1	220	14	24	Walnut Avenue	End of 24" line on Walnut Avenue to WWTP headworks	60,500	LS	90,000
F-3	Apple Avenue 6	Replace 12" with 18" due to capacity deficiency as a result of future development	1	250	12	18	Apple Avenue	Apple Avenue from 5th Street to 5th Street Alley	56,250	LS	100,000
F-4	Elm Avenue	Replace 8" with 10" due to capacity deficiency as a result of future development	1	1,650	8	10	Elm Avenue	Elm Avenue from Heidi Drive to Via Salvano	247,500		350,000
F-5	Apple Avenue 7	Replace 8" with 12" due to capacity deficiency as a result of future development	1	1,500	8	12	Apple Avenue	Apple Avenue from 11th Street to 12th Street	262,500		370,000
									Total Future Project Costs		\$ 910,000

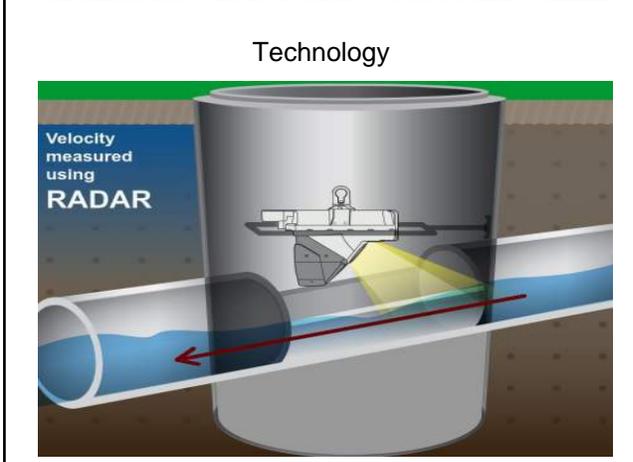
9: Appendix A – Flow Monitoring Results



Confidential Proprietary Information

Wallace Group	399 2nd St Greenfield, CA 93927
Site 1	

Access: Manhole within intersection of Apple Av & 2nd St	System Type: Sanitary <input checked="" type="checkbox"/> Storm <input type="checkbox"/>	Install Date: 9/24/2015
---	---	-------------------------



Flow Meter			
Meter Depth: 79.25"			
Meter SN:*			
Slow & steady hydraulics			
Avg Velocity	Avg Measured Level	Multiplier	
1.1 fps	4.19"	1.0	
Gas			
O2	H2S	CO	LEL
20.9	0	0	0
Notes			
*			
Traffic Safety			
Used cones, signs & vehicle.			
Land Use			
Residential	Commercial	Industrial	Trunk
X			
Manhole Depth		97"	
Pipe Size		12"	
Inner Pipe Size (In/Out)		12"/12"	
Pipe Shape		Round	
Pipe Condition		Good	
Manhole Material		Concrete	
Silt (inches)		1"	
Velocity Profile Data		*	
Velocity Profile Taken			
Sensor Offset		17.75"	
Sensor Dist. to Crown		5.75"	
Flow Direction		Upstream	
Flow Heading		North	



Meter Site Document

Wallace Group

Site 1

399 2nd St
Greenfield, CA 93927

Site



Manhole Before Install



Installation Process



Installed



Upstream



Downstream

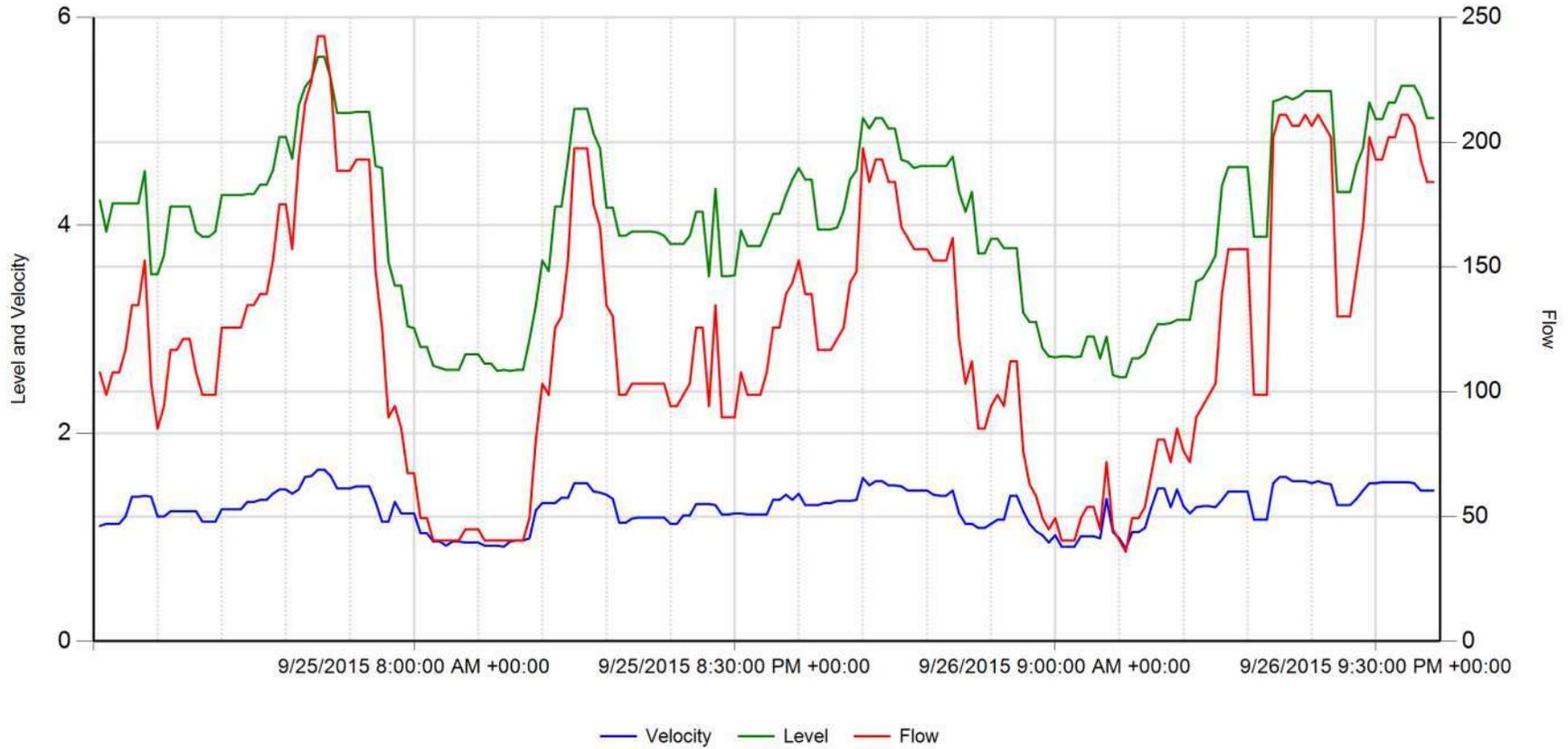


Statistics from Site 1 (2nd & Apple): 09/24/2015 thru 10/28/2015

Date	Flow (GPM)			Flow (MGD)			Velocity (FPS)			Level (inches)			Total Gal	Rain
	Avg	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg	Max	Min		
9/24/2015	141.43	242.37	67.32	0.20	0.35	0.10	1.34	1.65	1.11	4.41	5.62	3.03	203,656	
9/25/2015	111.41	197.49	40.39	0.16	0.28	0.06	1.25	1.57	0.91	3.89	5.12	2.60	160,435	
9/26/2015	122.63	210.95	35.91	0.18	0.30	0.05	1.28	1.58	0.83	4.06	5.34	2.54	176,593	
9/27/2015	122.21	224.42	40.39	0.18	0.32	0.06	1.26	1.61	0.92	4.07	5.40	2.55	175,987	
Week:	124.42	242.37	35.91	0.18	0.35	0.05	1.28	1.65	0.83	4.11	5.62	2.54	716,670	
9/28/2015	110.66	215.44	35.91	0.16	0.31	0.05	1.25	1.61	0.82	3.89	5.35	2.50	159,358	
9/29/2015	109.36	233.39	35.91	0.16	0.34	0.05	1.23	1.62	0.91	3.89	5.51	2.52	157,472	
9/30/2015	104.31	228.90	26.93	0.15	0.33	0.04	1.22	1.66	0.83	3.77	5.47	2.35	150,201	
10/1/2015	105.52	201.97	35.91	0.15	0.29	0.05	1.21	1.68	0.87	3.83	5.16	2.44	151,952	
10/2/2015	108.23	210.95	35.91	0.16	0.30	0.05	1.25	1.60	0.89	3.84	5.21	2.49	155,857	
10/3/2015	120.90	215.44	35.91	0.17	0.31	0.05	1.27	1.69	0.86	4.04	5.33	2.53	174,097	
10/4/2015	134.18	264.81	35.91	0.19	0.38	0.05	1.31	1.76	0.81	4.15	5.74	2.41	193,222	
Week:	113.31	264.81	26.93	0.16	0.38	0.04	1.25	1.76	0.81	3.92	5.74	2.35	1,142,159	
10/5/2015	106.18	233.39	35.91	0.15	0.34	0.05	1.20	1.66	0.90	3.87	5.38	2.44	152,894	
10/6/2015	113.38	210.95	35.91	0.16	0.30	0.05	1.25	1.55	0.86	3.93	5.35	2.52	163,262	
10/7/2015	118.57	255.83	31.42	0.17	0.37	0.05	1.29	1.72	0.91	3.95	5.62	2.43	170,735	
10/8/2015	111.41	269.30	35.91	0.16	0.39	0.05	1.21	1.79	0.86	3.95	5.69	2.43	160,435	
10/9/2015	105.66	188.51	35.91	0.15	0.27	0.05	1.18	1.57	0.91	3.95	5.11	2.53	152,154	
10/10/2015	121.61	210.95	35.91	0.18	0.30	0.05	1.26	1.56	0.93	4.05	5.32	2.44	175,111	
10/11/2015	116.60	210.95	35.91	0.17	0.30	0.05	1.25	1.70	0.90	3.98	5.33	2.45	167,908	
Week:	113.34	269.30	31.42	0.16	0.39	0.05	1.23	1.79	0.86	3.95	5.69	2.43	1,142,500	

Date	Flow (GPM)			Flow (MGD)			Velocity (FPS)			Level (inches)			Total Gal	Rain
	Avg	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg	Max	Min		
10/12/2015	106.97	251.35	31.42	0.15	0.36	0.05	1.17	1.69	0.78	3.95	5.61	2.50	154,039	
10/13/2015	116.70	251.35	26.93	0.17	0.36	0.04	1.24	1.70	0.81	3.99	5.64	2.33	168,042	
10/14/2015	115.99	255.83	35.91	0.17	0.37	0.05	1.24	1.77	0.94	3.96	5.49	2.33	167,033	
10/15/2015	104.63	242.37	35.91	0.15	0.35	0.05	1.17	1.68	0.85	3.85	5.52	2.52	150,673	
10/16/2015	105.15	193.00	31.42	0.15	0.28	0.05	1.21	1.59	0.77	3.80	5.06	2.45	151,413	
10/17/2015	119.88	233.39	31.42	0.17	0.34	0.05	1.26	1.63	0.81	3.99	5.52	2.47	172,620	
10/18/2015	126.75	251.35	35.91	0.18	0.36	0.05	1.26	1.70	0.85	4.10	5.62	2.50	182,517	
Week:	113.72	255.83	26.93	0.16	0.37	0.04	1.22	1.77	0.77	3.95	5.64	2.33	1,146,337	
10/19/2015	115.15	215.44	26.93	0.17	0.31	0.04	1.28	1.58	0.76	3.88	5.34	2.45	165,821	
10/20/2015	108.37	206.46	35.91	0.16	0.30	0.05	1.22	1.73	0.55	3.86	5.23	2.55	156,059	
10/21/2015	108.89	246.86	31.42	0.16	0.36	0.05	1.22	1.67	0.79	3.86	5.59	2.41	156,799	
10/22/2015	112.39	233.39	31.42	0.16	0.34	0.05	1.26	1.61	0.72	3.87	5.63	2.43	161,849	
10/23/2015	107.02	197.49	26.93	0.15	0.28	0.04	1.23	1.49	0.80	3.82	5.24	2.34	154,106	
10/24/2015	123.90	219.93	31.42	0.18	0.32	0.05	1.25	1.58	0.77	4.09	5.46	2.46	178,410	
10/25/2015	123.24	224.42	26.93	0.18	0.32	0.04	1.26	1.55	0.78	4.05	5.58	2.39	177,468	
Week:	114.14	246.86	26.93	0.16	0.36	0.04	1.24	1.73	0.55	3.92	5.63	2.34	1,150,511	
10/26/2015	126.75	273.79	35.91	0.18	0.39	0.05	1.32	1.71	0.83	4.03	6.03	2.56	182,517	
10/27/2015	117.96	264.81	35.91	0.17	0.38	0.05	1.22	1.77	0.85	4.04	5.68	2.55	169,860	
10/28/2015	80.09	152.60	31.42	0.12	0.22	0.05	1.11	1.35	0.62	3.42	4.66	2.82	115,327	
Week:	108.26	273.79	31.42	0.16	0.39	0.05	1.22	1.77	0.62	3.83	6.03	2.55	467,705	
Totals:	114.42	273.79	26.93	0.16	0.39	0.04	1.24	1.79	0.55	3.94	6.03	2.33	5,765,882	

Site 1

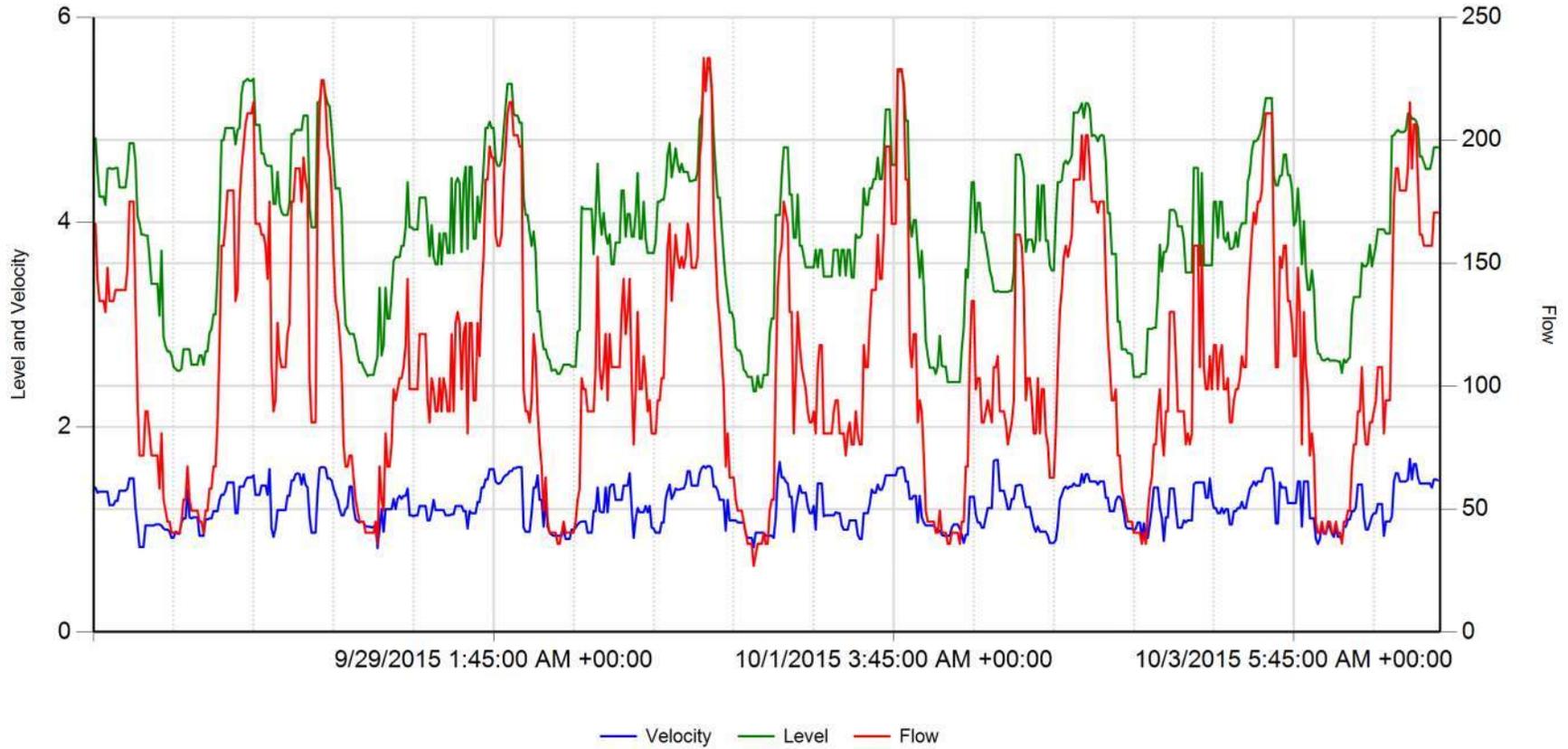


	Velocity (fps)	Level (in)	Flow (gpm)		
Average	1.287	4.039	122.022	RainFall	Inches
Maximum	1.650	5.620	242.369		
Minimum	0.890	2.540	35.906		



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Site 1

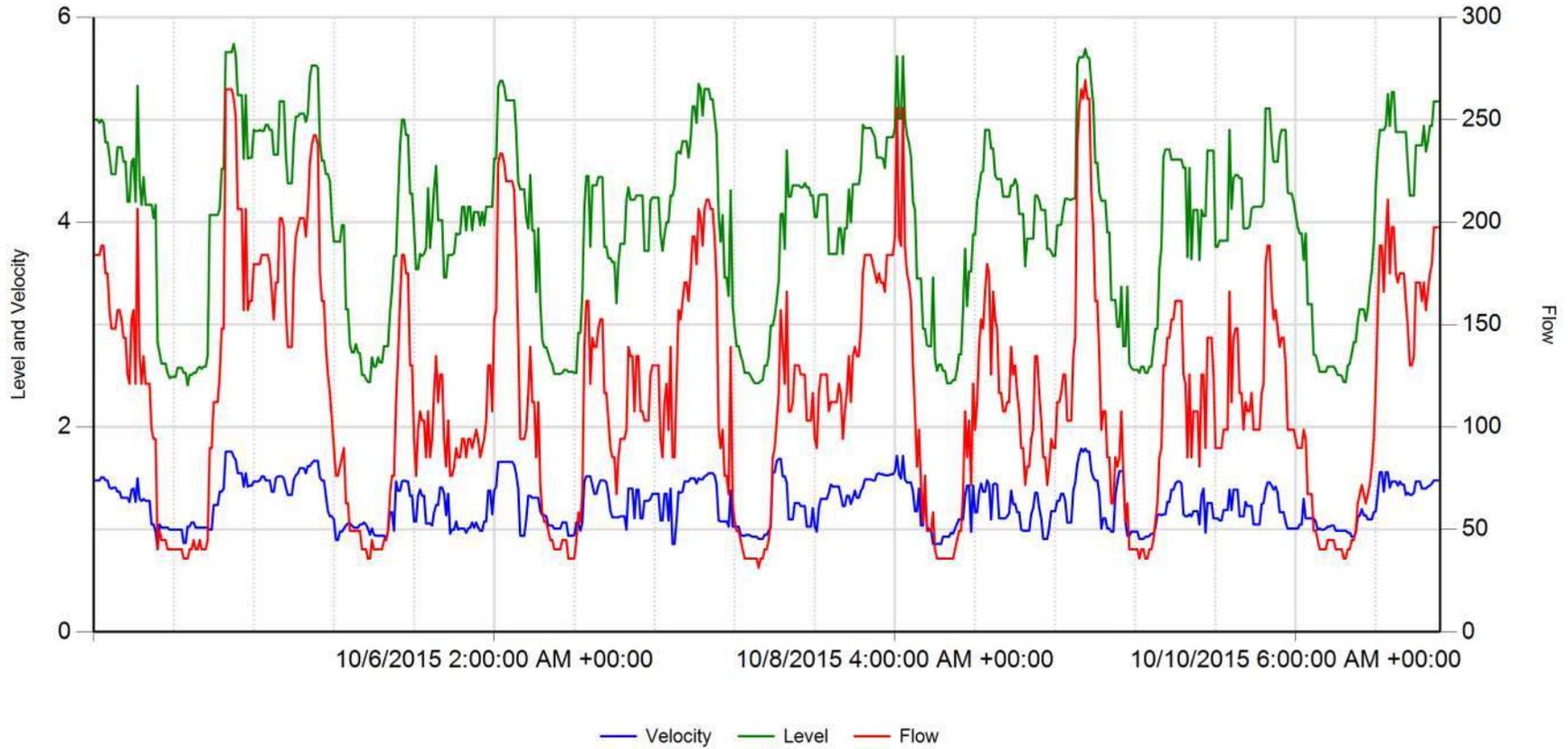


	Velocity (fps)	Level (in)	Flow (gpm)		
Average	1.237	3.889	110.431	RainFall	Inches
Maximum	1.690	5.510	233.392		
Minimum	0.820	2.350	26.930		



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Site 1

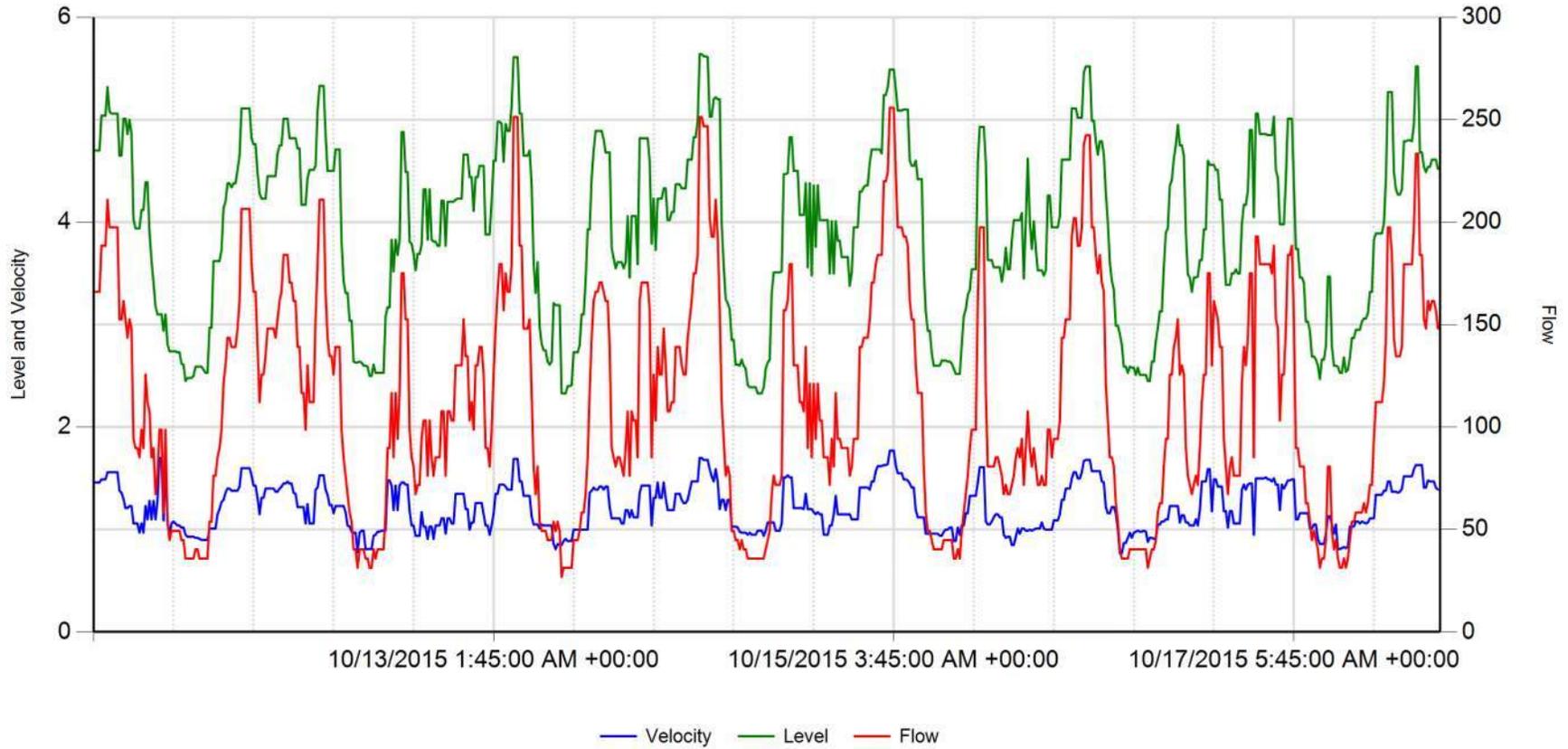


	Velocity (fps)	Level (in)	Flow (gpm)		
Average	1.243	3.979	116.061	RainFall	Inches
Maximum	1.790	5.740	269.299		
Minimum	0.810	2.410	31.418		



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Site 1

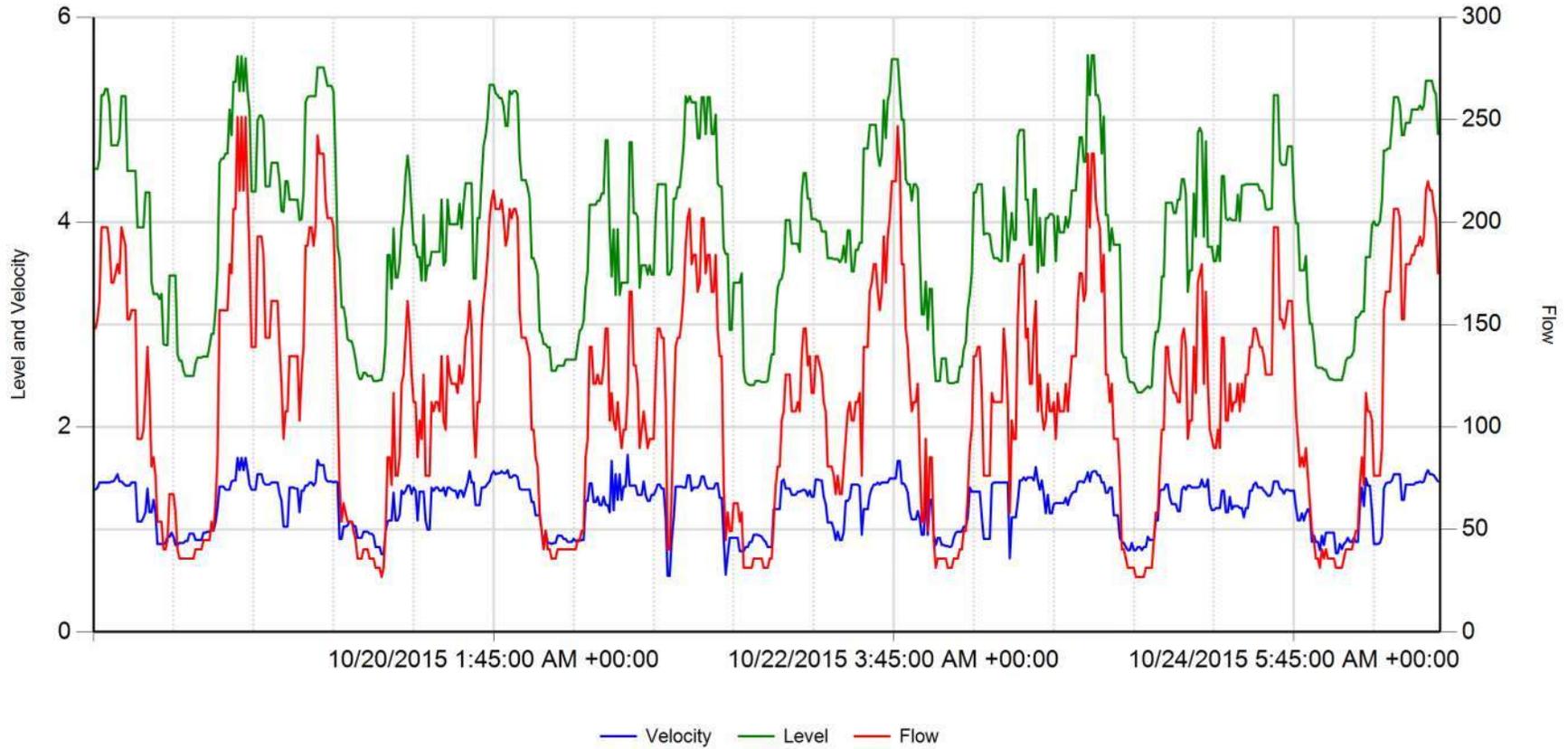


	Velocity (fps)	Level (in)	Flow (gpm)		
Average	1.218	3.931	112.007	RainFall	Inches
Maximum	1.770	5.640	255.834		
Minimum	0.770	2.330	26.930		



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Site 1

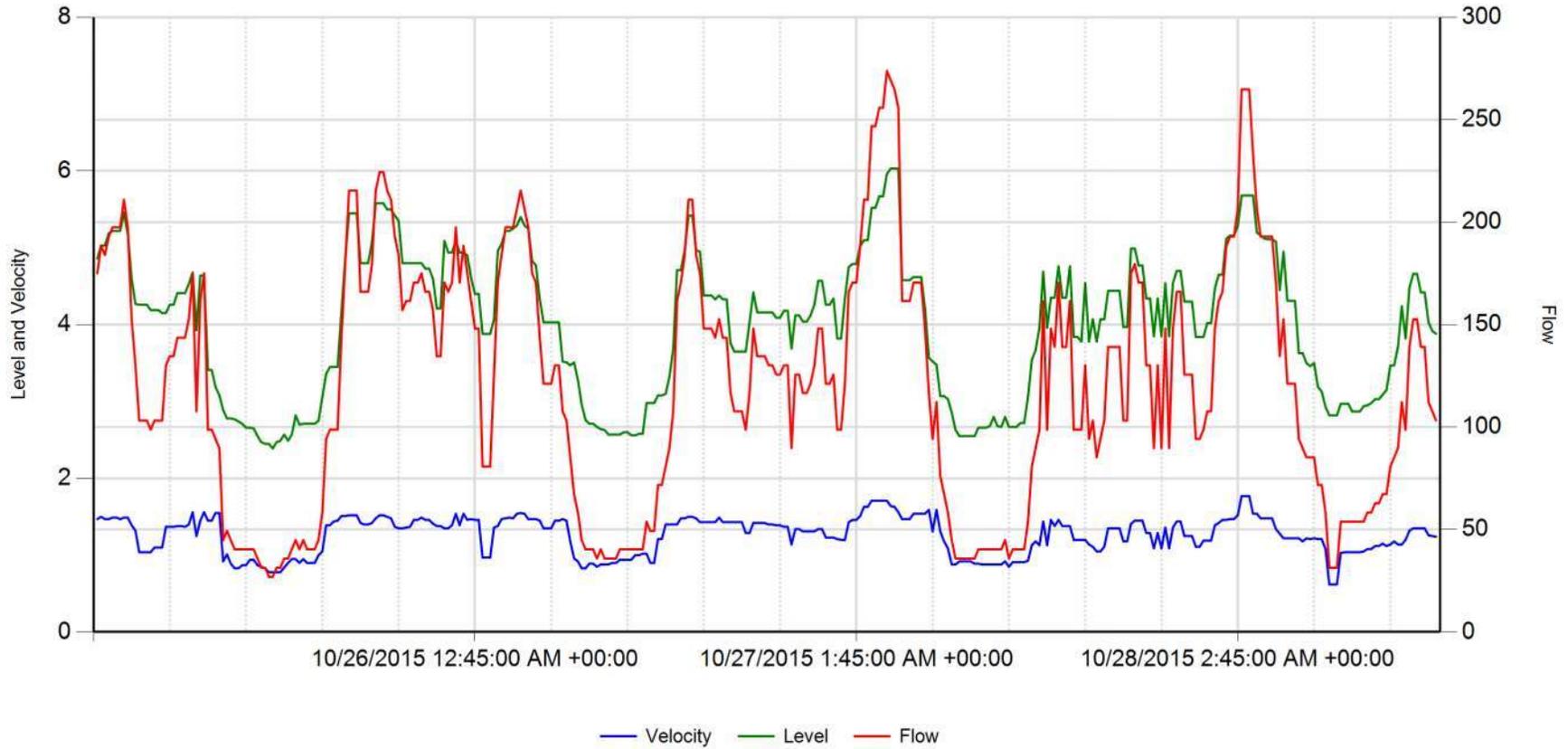


	Velocity (fps)	Level (in)	Flow (gpm)		
Average	1.244	3.928	114.759	RainFall	Inches
Maximum	1.730	5.630	251.345		
Minimum	0.550	2.340	26.930		



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Site 1

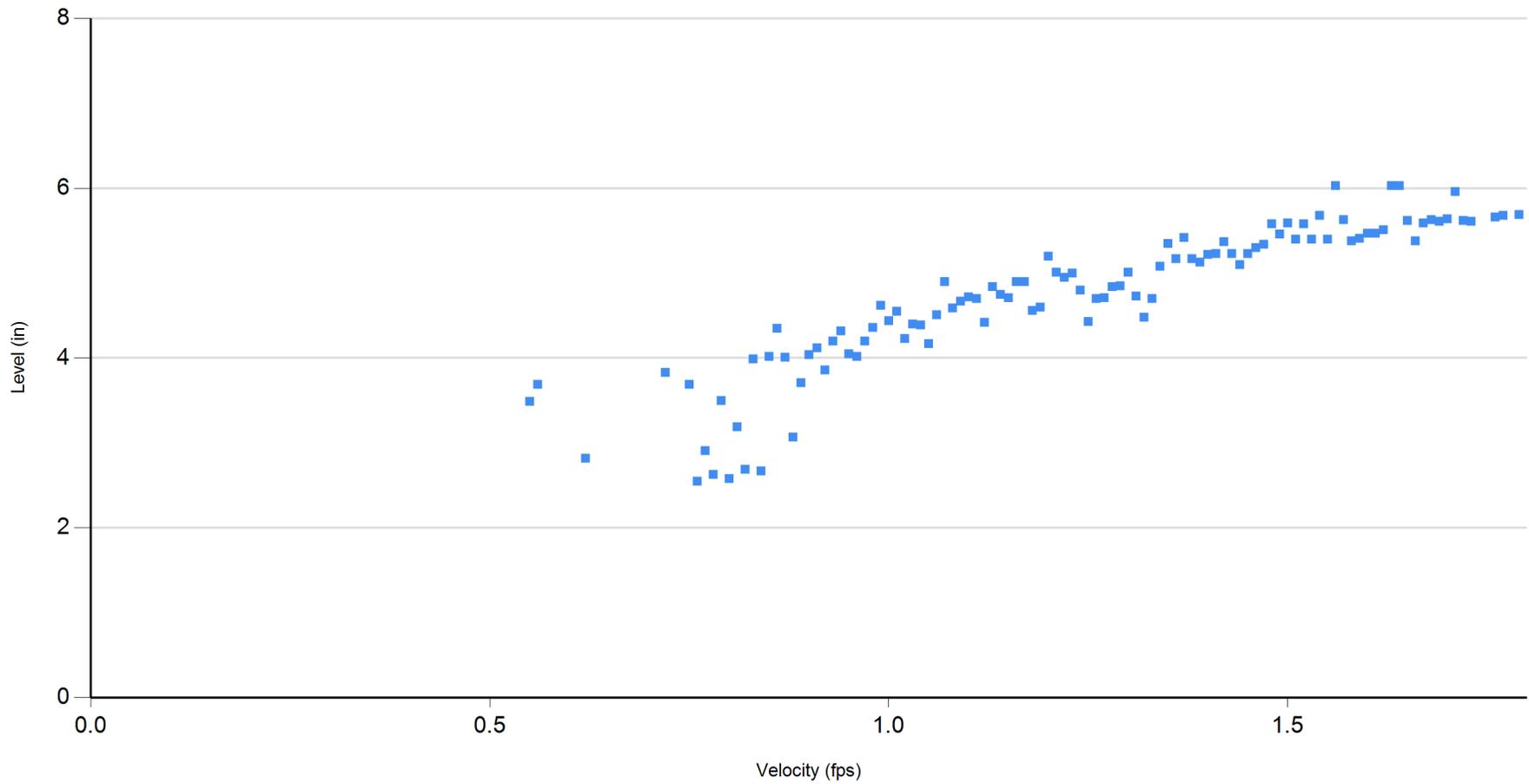


	Velocity (fps)	Level (in)	Flow (gpm)		
Average	1.261	4.021	120.802	RainFall	Inches
Maximum	1.770	6.030	273.787		
Minimum	0.620	2.390	26.930		



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Site 1



9/24/2015 thru 10/28/2015



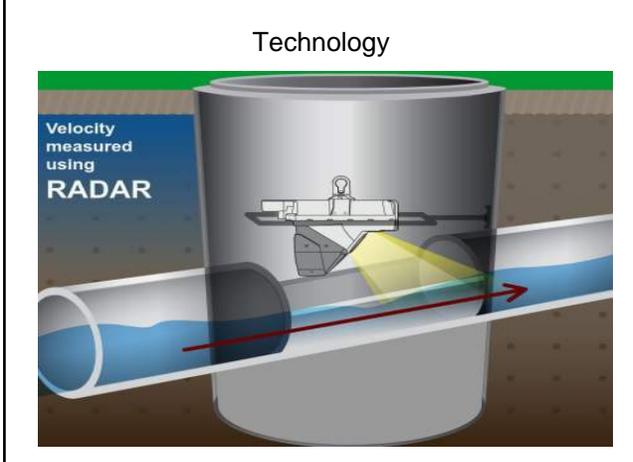
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Confidential Proprietary Information

Wallace Group	580 Apple Av Greenfield, CA 93927
Site 2	

Access: Manhole within intersection of Apple Av & Calaveras Way	System Type: Sanitary <input checked="" type="checkbox"/> Storm <input type="checkbox"/>	Install Date: 9/24/2015
--	---	-------------------------



Flow Meter			
Meter Depth: 82"			
Meter SN:*			
Slow & steady hydraulics			
Avg Velocity	Avg Measured Level	Multiplier	
2.25 fps	6.50"	1.0	
Gas			
O2	H2S	CO	LEL
20.9	0	0	0
Notes			
*			
Traffic Safety			
Used cones, signs & vehicle.			
Land Use			
Residential	Commercial	Industrial	Trunk
X			
Manhole Depth		100"	
Pipe Size		12"	
Inner Pipe Size (In/Out)		12"/12"	
Pipe Shape		Round	
Pipe Condition		Fair	
Manhole Material		Concrete	
Silt (inches)		0	
Velocity Profile Data		*	
Velocity Profile Taken			
Sensor Offset		17.92"	
Sensor Dist. to Crown		5.92"	
Flow Direction		Downstream	
Flow Heading		North	



Meter Site Document

Wallace Group

Site 2

580 Apple Av
Greenfield, CA 93927

Site



Manhole Before Install



Installation Process



Installed



Upstream



Downstream

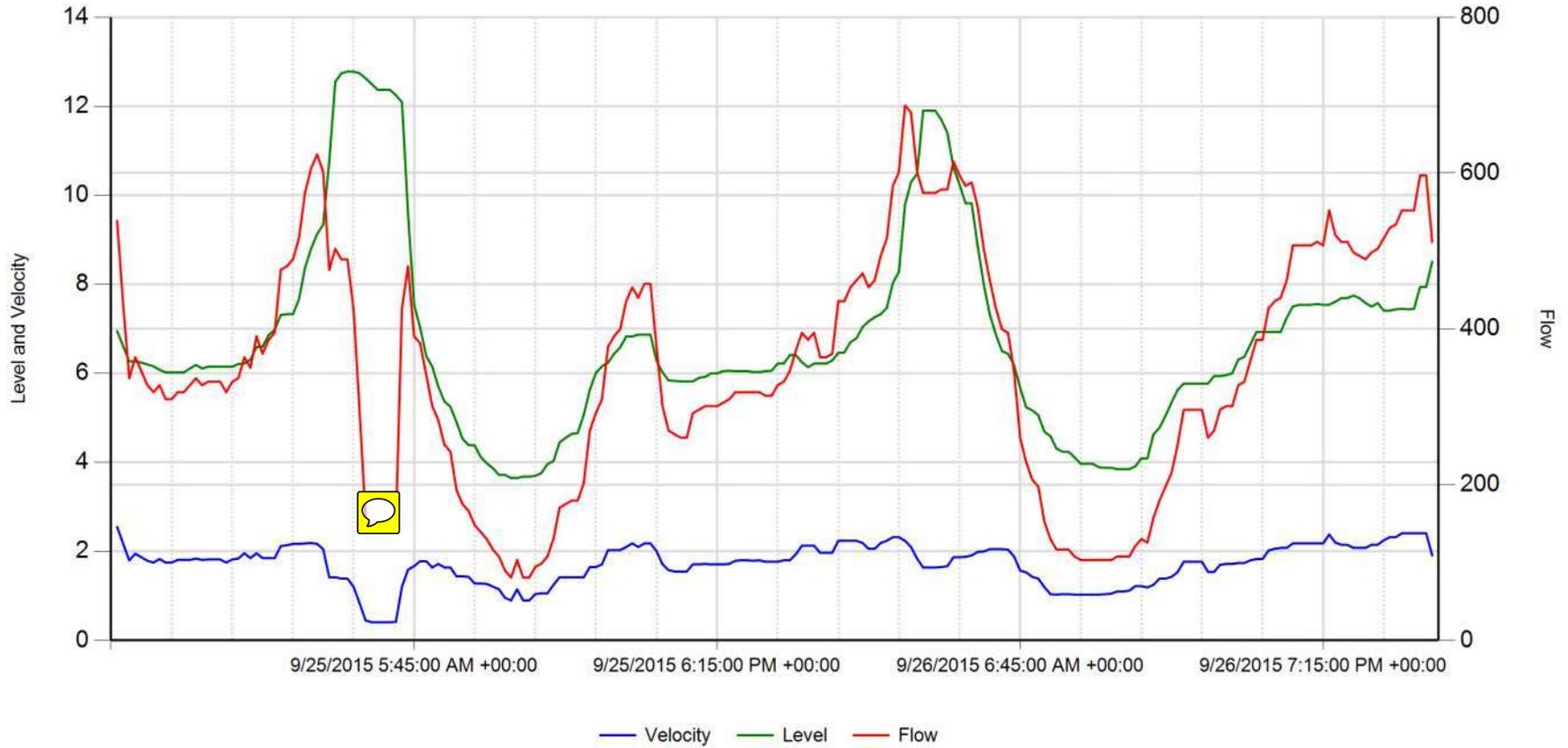


Statistics from Site 2 (Calaveras & Apple): 09/24/2015 thru 10/28/2015

Date	Flow (GPM)			Flow (MGD)			Velocity (FPS)			Level (inches)			Total Gal	Rain
	Avg	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg	Max	Min		
9/24/2015	359.76	623.88	143.63	0.52	0.90	0.21	1.64	2.55	0.41	7.90	12.78	4.53	518,056	
9/25/2015	346.91	686.71	80.79	0.50	0.99	0.12	1.74	2.32	0.90	6.46	11.90	3.65	499,549	
9/26/2015	384.92	664.27	103.23	0.55	0.96	0.15	1.77	2.41	1.03	6.98	12.57	3.85	554,284	
9/27/2015	377.06	632.85	121.18	0.54	0.91	0.17	1.56	2.18	0.55	8.13	12.86	3.77	542,974	
Week:	367.16	686.71	80.79	0.53	0.99	0.12	1.68	2.55	0.41	7.37	12.86	3.65	2,114,863	
9/28/2015	312.41	570.02	94.25	0.45	0.82	0.14	1.64	2.32	0.42	6.78	12.82	3.64	449,863	
9/29/2015	317.88	543.09	98.74	0.46	0.78	0.14	1.65	2.13	0.56	6.74	12.60	3.37	457,740	
9/30/2015	291.65	574.50	112.21	0.42	0.83	0.16	1.52	2.11	0.66	6.77	12.46	3.95	419,971	
10/1/2015	301.65	525.13	85.28	0.43	0.76	0.12	1.51	1.96	0.63	6.88	12.57	3.70	434,379	
10/2/2015	333.82	668.76	98.74	0.48	0.96	0.14	1.66	2.30	0.77	6.69	12.95	3.94	480,698	
10/3/2015	335.50	561.04	121.18	0.48	0.81	0.17	1.53	2.07	0.71	7.63	12.96	3.86	483,122	
10/4/2015	315.21	543.09	85.28	0.45	0.78	0.12	1.28	2.02	0.44	8.28	12.66	3.87	453,903	
Week:	315.44	668.76	85.28	0.45	0.96	0.12	1.54	2.32	0.42	7.11	12.96	3.37	3,179,677	
10/5/2015	247.89	547.57	76.30	0.36	0.79	0.11	1.28	2.20	0.48	6.80	12.89	3.65	356,955	
10/6/2015	228.16	502.69	80.79	0.33	0.72	0.12	1.21	1.69	0.41	6.73	12.62	3.63	328,544	
10/7/2015	254.66	507.18	67.32	0.37	0.73	0.10	1.28	1.73	0.72	6.78	12.87	3.66	366,718	
10/8/2015	235.68	457.81	62.84	0.34	0.66	0.09	1.22	1.68	0.57	6.67	12.35	3.48	339,384	
10/9/2015	267.76	484.74	67.32	0.39	0.70	0.10	1.34	1.85	0.73	6.53	12.38	3.71	385,568	
10/10/2015	305.91	507.18	71.81	0.44	0.73	0.10	1.35	1.79	0.78	7.41	12.68	3.62	440,505	
10/11/2015	299.13	493.71	85.28	0.43	0.71	0.12	1.30	1.90	0.44	7.65	12.82	3.87	430,743	
Week:	262.74	547.57	62.84	0.38	0.79	0.09	1.28	2.20	0.41	6.94	12.89	3.48	2,648,418	

	Flow (GPM)			Flow (MGD)			Velocity (FPS)			Level (inches)				
Date	Avg	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg	Max	Min	Total Gal	Rain
10/12/2015	288.47	668.76	80.79	0.42	0.96	0.12	1.44	2.07	0.48	6.89	12.66	3.77	415,393	
10/13/2015	271.45	543.09	103.23	0.39	0.78	0.15	1.40	1.99	0.54	6.77	12.37	3.56	390,887	
10/14/2015	264.02	498.20	103.23	0.38	0.72	0.15	1.37	1.99	0.48	6.68	12.92	3.62	380,182	
10/15/2015	249.57	462.30	103.23	0.36	0.67	0.15	1.31	1.97	0.52	6.77	12.66	3.62	359,379	
10/16/2015	310.44	493.71	116.70	0.45	0.71	0.17	1.59	2.07	0.90	6.58	11.93	3.64	447,036	
10/17/2015	313.62	561.04	112.21	0.45	0.81	0.16	1.45	2.30	0.64	7.42	12.59	3.89	451,614	
10/18/2015	339.71	614.90	103.23	0.49	0.89	0.15	1.51	2.30	0.55	7.75	12.71	3.73	489,181	
Week:	291.04	668.76	80.79	0.42	0.96	0.12	1.44	2.30	0.48	6.98	12.92	3.56	2,933,673	
10/19/2015	305.63	587.97	103.23	0.44	0.85	0.15	1.55	2.07	0.48	6.97	12.57	3.71	440,101	
10/20/2015	307.17	565.53	107.72	0.44	0.81	0.16	1.59	2.30	0.55	6.81	12.86	3.59	442,323	
10/21/2015	313.34	561.04	103.23	0.45	0.81	0.15	1.58	2.30	0.55	6.85	12.49	3.73	451,210	
10/22/2015	315.63	668.76	107.72	0.45	0.96	0.16	1.61	2.20	0.55	6.65	12.48	3.63	454,509	
10/23/2015	315.63	587.97	98.74	0.45	0.85	0.14	1.65	2.07	0.91	6.40	12.19	3.37	454,509	
10/24/2015	359.95	614.90	125.67	0.52	0.89	0.18	1.66	2.30	1.11	7.04	11.45	4.06	518,333	
10/25/2015	346.68	614.90	107.72	0.50	0.89	0.16	1.42	2.20	0.48	8.29	12.76	3.84	499,212	
Week:	323.43	668.76	98.74	0.47	0.96	0.14	1.58	2.30	0.48	7.00	12.86	3.37	3,260,197	
10/26/2015	295.39	547.57	103.23	0.43	0.79	0.15	1.55	2.07	0.48	6.81	12.57	3.77	425,357	
10/27/2015	307.92	565.53	107.72	0.44	0.81	0.16	1.61	2.30	0.65	6.61	12.32	3.53	443,400	
10/28/2015	185.72	403.95	103.23	0.27	0.58	0.15	1.35	1.99	1.09	4.66	6.78	3.65	267,441	
Week:	263.01	565.53	103.23	0.38	0.81	0.15	1.50	2.30	0.48	6.03	12.57	3.53	1,136,199	
Totals:	303.15	686.71	62.84	0.44	0.99	0.09	1.49	2.55	0.41	6.96	12.96	3.37	15,273,028	

Site 2

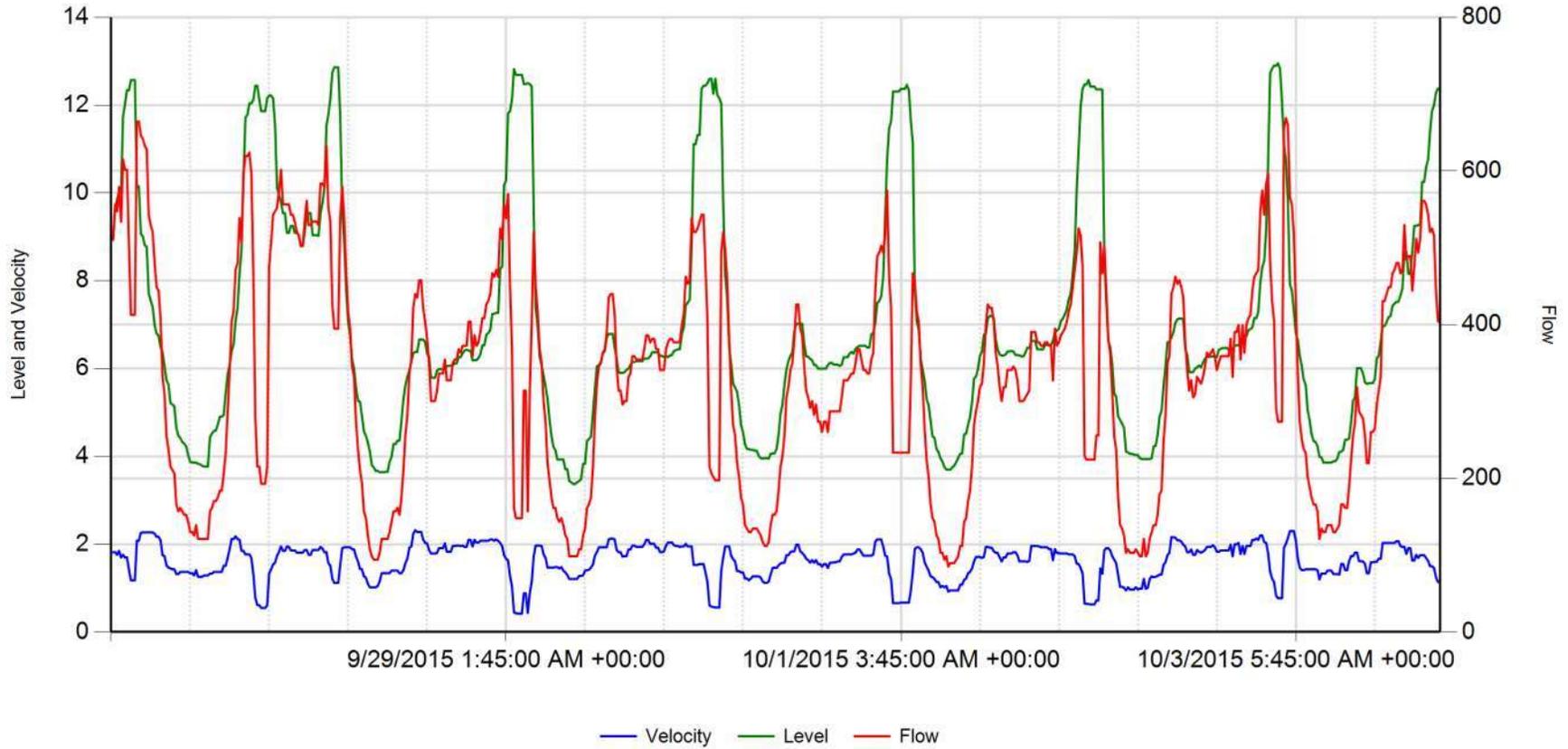


	Velocity (fps)	Level (in)	Flow (gpm)		
Average	1.715	6.741	347.762	RainFall	Inches
Maximum	2.550	12.780	686.712		
Minimum	0.410	3.650	80.790		



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Site 2

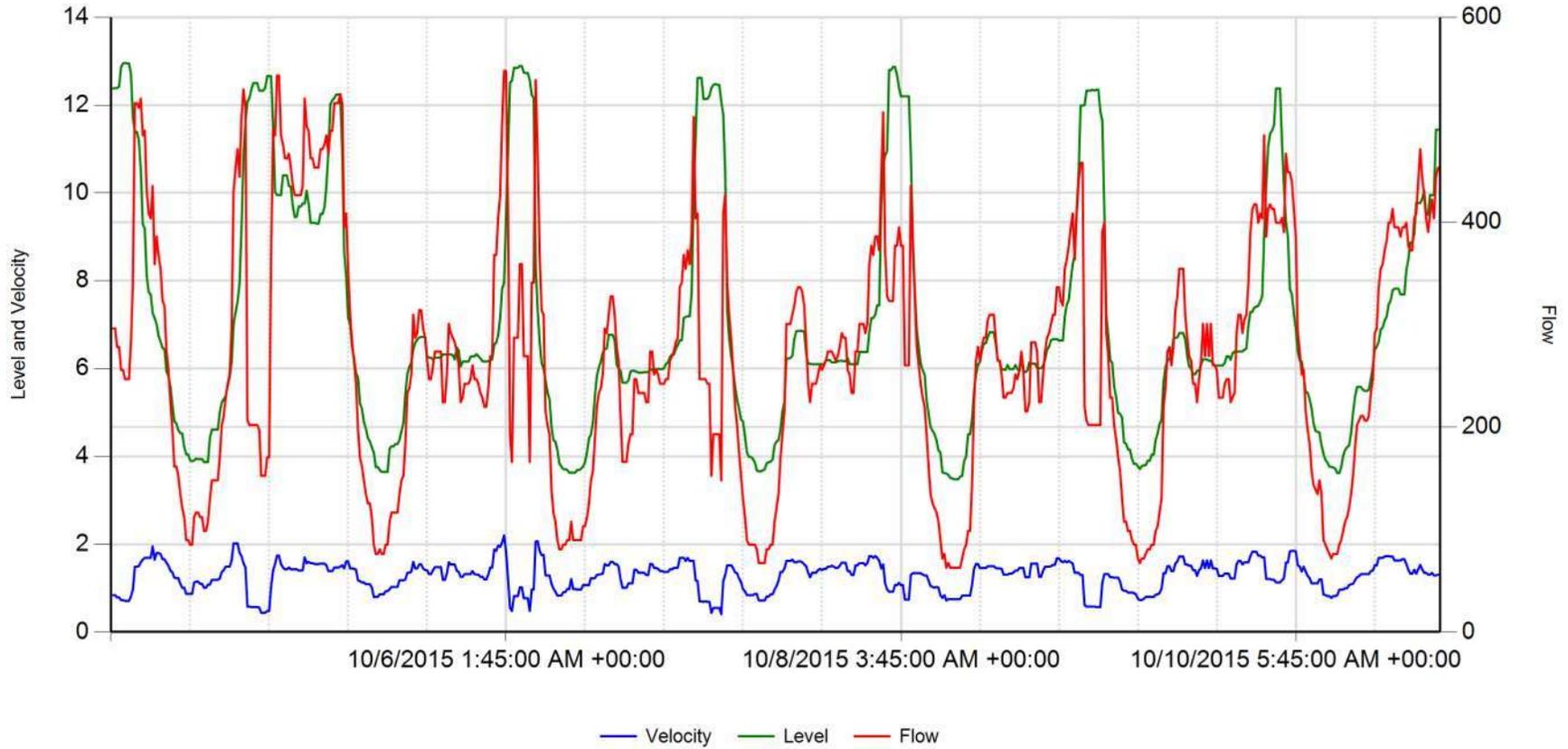


	Velocity (fps)	Level (in)	Flow (gpm)		
Average	1.606	7.058	330.746	RainFall	Inches
Maximum	2.320	12.950	668.758		
Minimum	0.420	3.370	85.278		



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Site 2

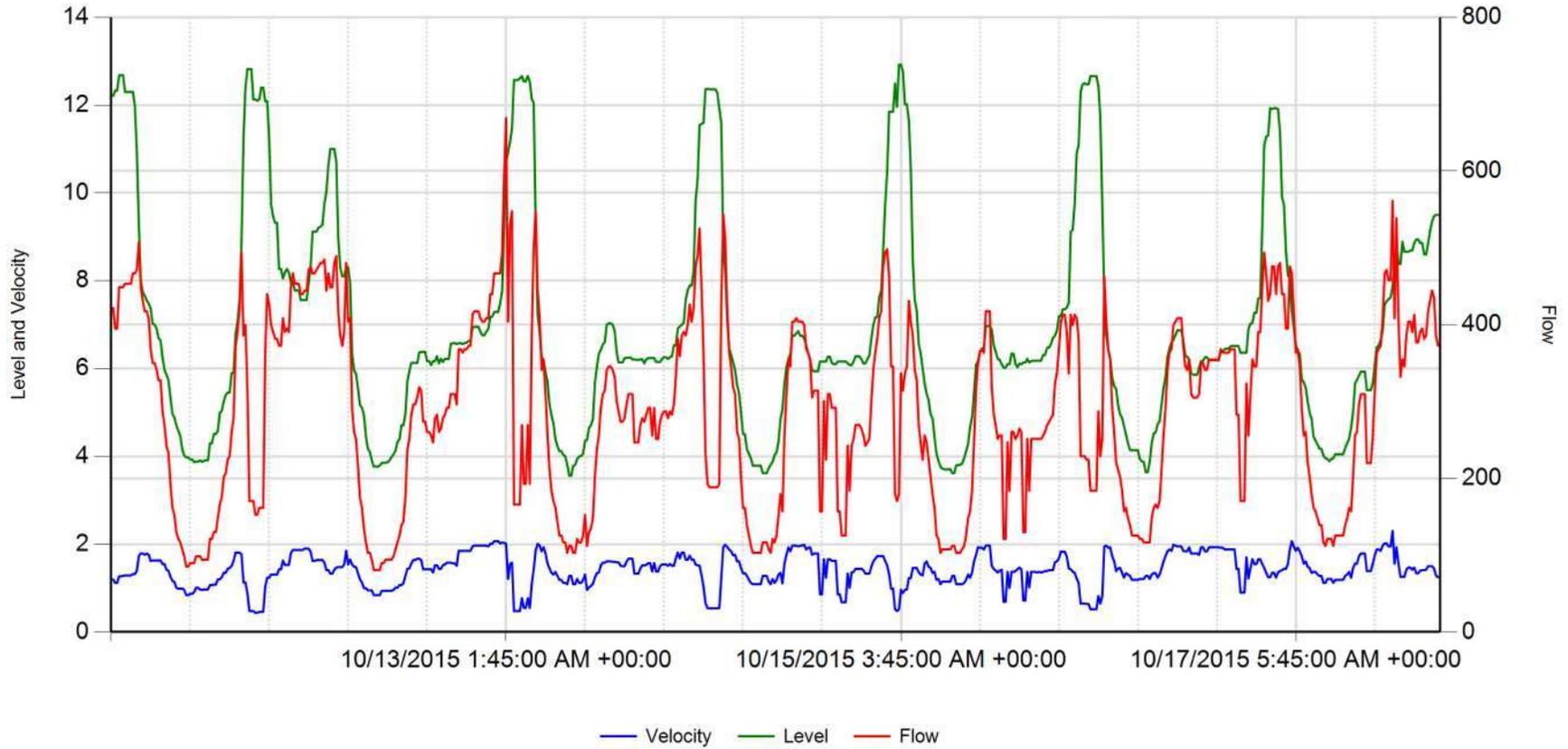


	Velocity (fps)	Level (in)	Flow (gpm)		
Average	1.274	7.047	263.481	RainFall	Inches
Maximum	2.200	12.960	547.574		
Minimum	0.410	3.480	62.836		



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Site 2

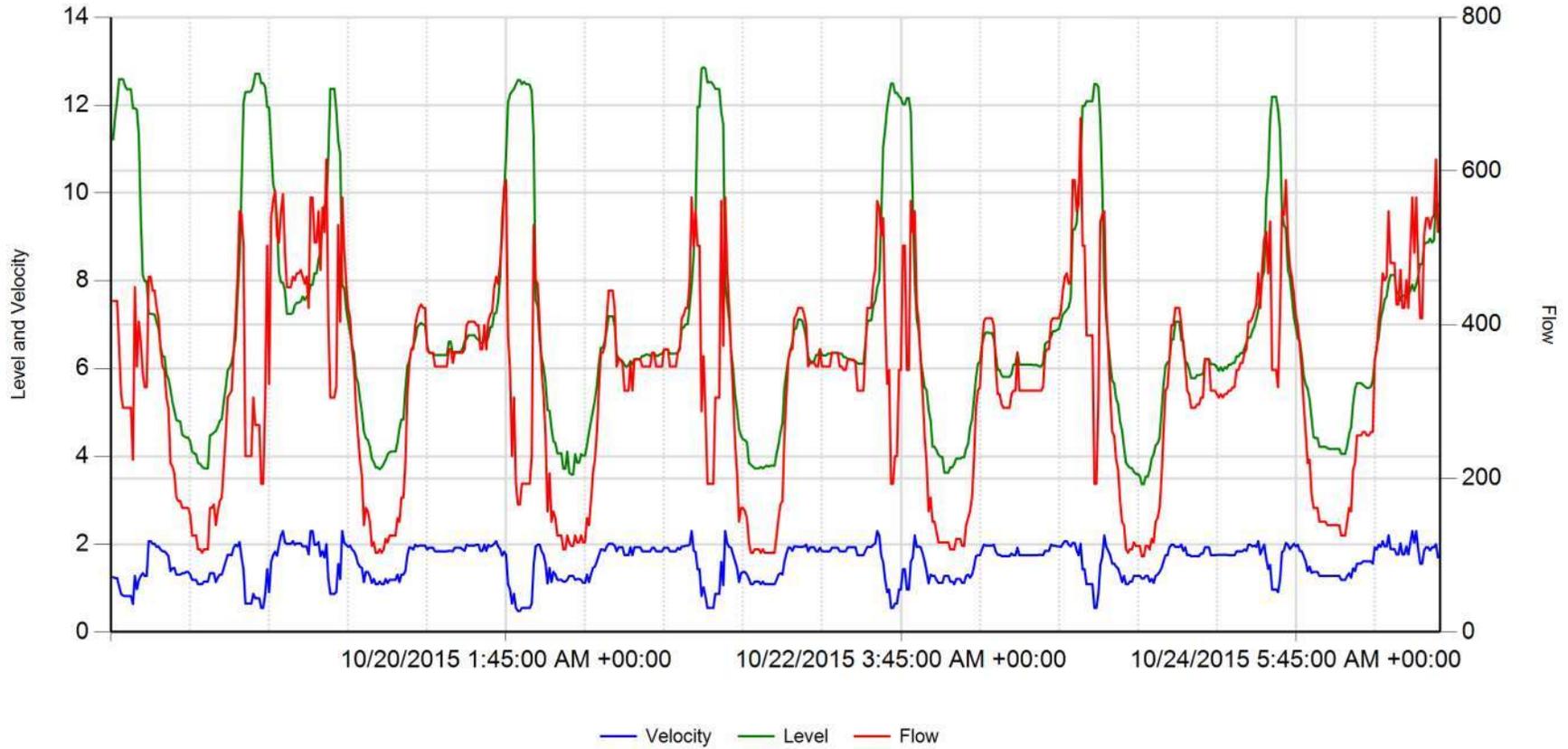


	Velocity (fps)	Level (in)	Flow (gpm)		
Average	1.412	6.958	286.531	RainFall	Inches
Maximum	2.300	12.920	668.758		
Minimum	0.440	3.560	80.790		



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Site 2

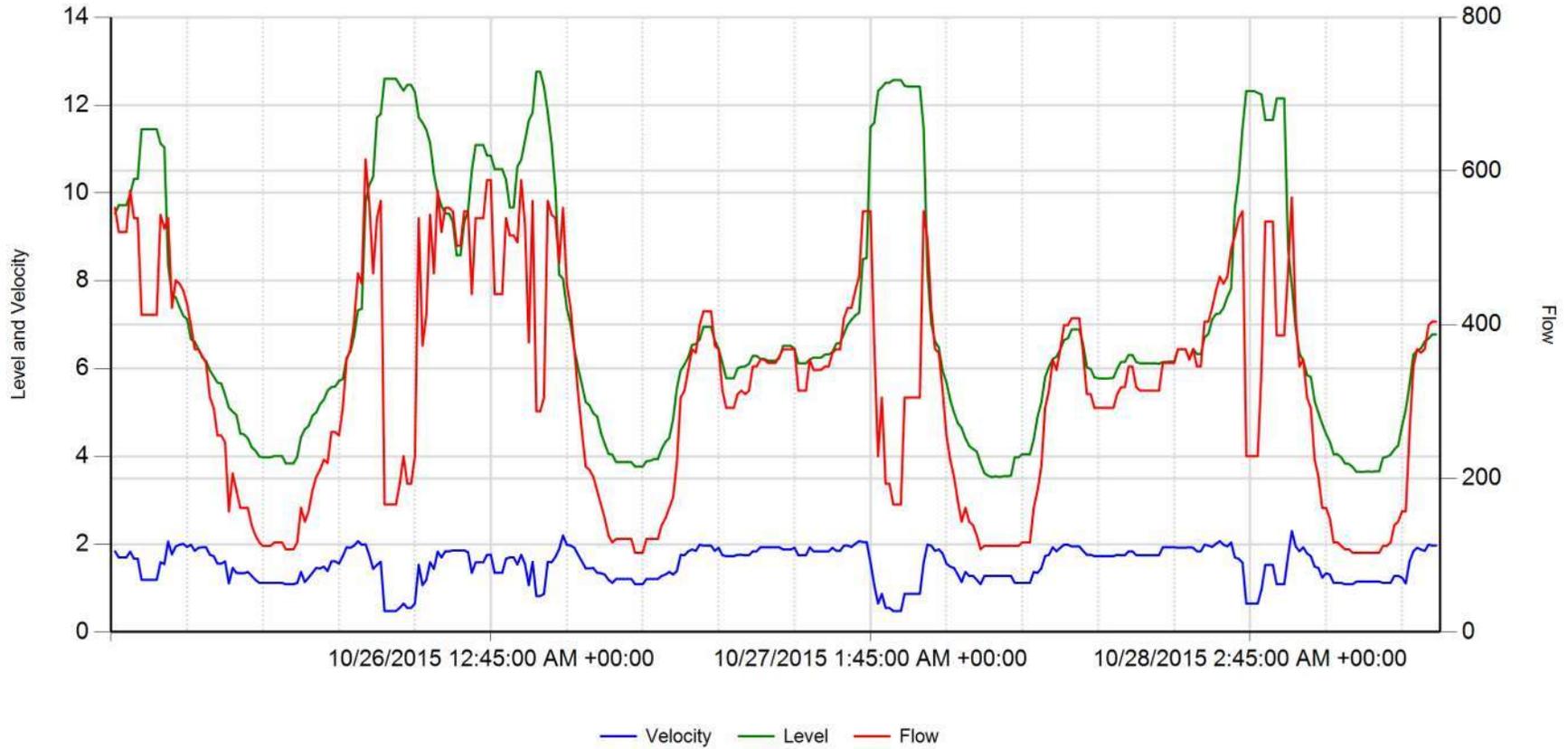


	Velocity (fps)	Level (in)	Flow (gpm)		
Average	1.580	6.964	319.371	RainFall	Inches
Maximum	2.300	12.860	668.758		
Minimum	0.480	3.370	98.743		



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Site 2

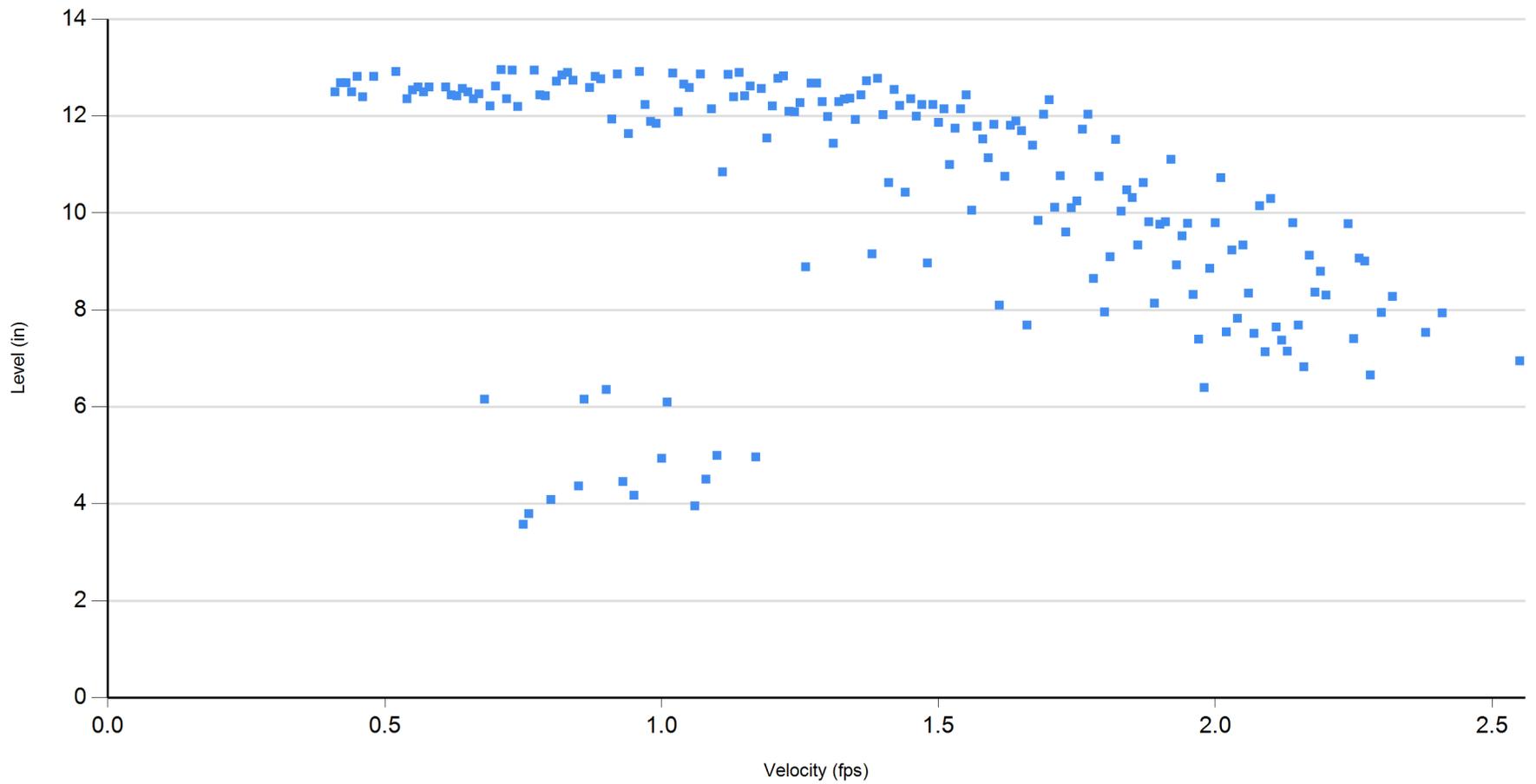


	Velocity (fps)	Level (in)	Flow (gpm)		
Average	1.524	7.119	314.580	RainFall	Inches
Maximum	2.300	12.760	614.899		
Minimum	0.480	3.530	103.231		



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Site 2



9/24/2015 thru 10/28/2015



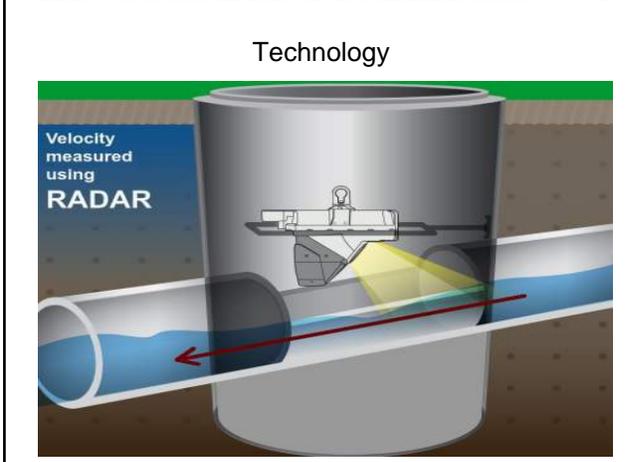
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Confidential Proprietary Information

Wallace Group	502 Palm Av Greenfield, CA 93927
Site 3	

Access: Manhole within intersection of Apple Av & Palm Av	System Type: Sanitary <input checked="" type="checkbox"/> Storm <input type="checkbox"/>	Install Date: 9/24/2015
--	---	-------------------------



Flow Meter			
Meter Depth: 91"			
Meter SN:*			
Slow & steady hydraulics			
Avg Velocity	Avg Measured Level	Multiplier	
1.36 fps	4.77"	1.0	
Gas			
O2	H2S	CO	LEL
20.9	3	0	0
Notes			
Minor H2S production.			
Traffic Safety			
Used cones & vehicle.			
Land Use			
Residential	Commercial	Industrial	Trunk
X			
Manhole Depth		109"	
Pipe Size		12"	
Inner Pipe Size (In/Out)		12"/12"	
Pipe Shape		Round	
Pipe Condition		Fair	
Manhole Material		Concrete	
Silt (inches)		0.5"	
Velocity Profile Data		*	
Velocity Profile Taken			
Sensor Offset		17.92"	
Sensor Dist. to Crown		5.92"	
Flow Direction		Upstream	
Flow Heading		West	



Meter Site Document

Wallace Group

Site 3

502 Palm Av
Greenfield, CA 93927

Site



Manhole Before Install



Installation Process



Installed



Upstream



Downstream

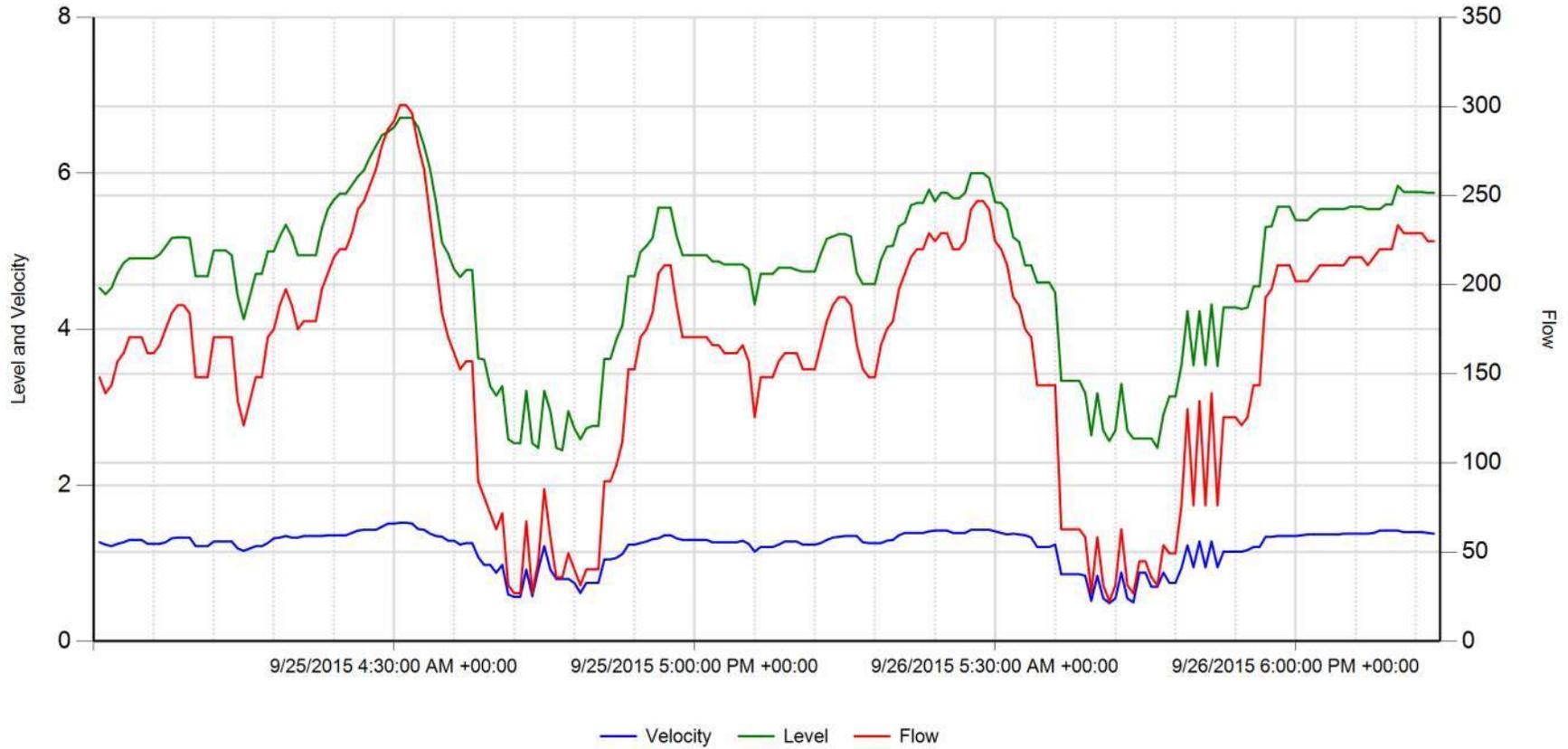


Statistics from Site 3 (Palm & Apple): 09/24/2015 thru 10/28/2015

Date	Flow (GPM)			Flow (MGD)			Velocity (FPS)			Level (inches)			Total Gal	Rain
	Avg	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg	Max	Min		
9/24/2015	192.78	300.72	121.18	0.28	0.43	0.17	1.32	1.52	1.16	5.27	6.71	4.13	277,608	
9/25/2015	150.36	246.86	26.93	0.22	0.36	0.04	1.20	1.43	0.57	4.57	6.00	2.45	216,516	
9/26/2015	156.39	237.88	22.44	0.23	0.34	0.03	1.18	1.42	0.49	4.70	6.04	2.48	225,201	
9/27/2015	167.94	273.79	22.44	0.24	0.39	0.03	1.20	1.44	0.56	4.84	6.53	2.27	241,830	
Week:	166.87	300.72	22.44	0.24	0.43	0.03	1.22	1.52	0.49	4.85	6.71	2.27	961,156	
9/28/2015	154.85	291.74	17.95	0.22	0.42	0.03	1.16	1.50	0.45	4.72	6.61	2.36	222,979	
9/29/2015	153.63	296.23	22.44	0.22	0.43	0.03	1.16	1.46	0.46	4.69	6.88	2.32	221,229	
9/30/2015	142.97	278.28	22.44	0.21	0.40	0.03	1.11	1.44	0.42	4.63	6.63	2.48	205,879	
10/1/2015	152.14	282.76	22.44	0.22	0.41	0.03	1.15	1.49	0.48	4.73	6.48	2.44	219,074	
10/2/2015	141.66	219.93	22.44	0.20	0.32	0.03	1.12	1.33	0.51	4.56	5.89	2.33	203,994	
10/3/2015	156.34	246.86	17.95	0.23	0.36	0.03	1.15	1.43	0.43	4.70	6.12	2.27	225,134	
10/4/2015	164.34	273.79	26.93	0.24	0.39	0.04	1.15	1.45	0.53	4.86	6.49	2.41	236,646	
Week:	152.28	296.23	17.95	0.22	0.43	0.03	1.14	1.50	0.42	4.70	6.88	2.27	1,534,935	
10/5/2015	158.31	291.74	44.88	0.23	0.42	0.06	1.22	1.61	0.92	4.77	6.74	2.37	227,961	
10/6/2015	150.31	309.69	22.44	0.22	0.45	0.03	1.15	1.54	0.54	4.65	6.77	2.19	216,449	
10/7/2015	155.22	291.74	26.93	0.22	0.42	0.04	1.22	1.94	0.52	4.69	6.69	2.41	223,518	
10/8/2015	149.80	278.28	22.44	0.22	0.40	0.03	1.15	1.42	0.48	4.71	6.65	2.56	215,708	
10/9/2015	143.06	215.44	26.93	0.21	0.31	0.04	1.13	1.32	0.57	4.62	5.85	2.53	206,014	
10/10/2015	157.00	228.90	22.44	0.23	0.33	0.03	1.18	3.94	0.45	4.78	6.03	2.43	226,076	
10/11/2015	162.19	269.30	17.95	0.23	0.39	0.03	1.19	3.75	0.42	4.83	6.44	2.32	233,549	
Week:	153.70	309.69	17.95	0.22	0.45	0.03	1.18	3.94	0.42	4.72	6.77	2.19	1,549,275	

Date	Flow (GPM)			Flow (MGD)			Velocity (FPS)			Level (inches)			Total Gal	Rain
	Avg	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg	Max	Min		
10/12/2015	150.59	273.79	26.93	0.22	0.39	0.04	1.13	1.43	0.54	4.74	6.56	2.48	216,853	
10/13/2015	144.00	260.32	31.42	0.21	0.38	0.05	1.14	1.39	0.68	4.61	6.43	2.30	207,360	
10/14/2015	146.01	269.30	31.42	0.21	0.39	0.05	1.12	1.41	0.62	4.70	6.54	2.53	210,255	
10/15/2015	155.50	264.81	35.91	0.22	0.38	0.05	1.35	5.25	0.59	4.63	6.30	2.45	223,922	
10/16/2015	148.49	219.93	31.42	0.21	0.32	0.05	1.29	4.40	0.62	4.56	5.77	2.37	213,823	
10/17/2015	156.39	237.88	26.93	0.23	0.34	0.04	1.24	4.58	0.54	4.68	6.03	2.30	225,201	
10/18/2015	161.67	255.83	22.44	0.23	0.37	0.03	1.20	1.44	0.48	4.76	6.20	2.45	232,809	
Week:	151.81	273.79	22.44	0.22	0.39	0.03	1.21	5.25	0.48	4.67	6.56	2.30	1,530,223	
10/19/2015	153.91	287.25	22.44	0.22	0.41	0.03	1.17	1.49	0.45	4.66	6.57	2.35	221,633	
10/20/2015	152.60	278.28	22.44	0.22	0.40	0.03	1.18	1.49	0.52	4.59	6.45	2.37	219,748	
10/21/2015	152.28	269.30	17.95	0.22	0.39	0.03	1.14	1.48	0.42	4.67	6.48	2.30	219,276	
10/22/2015	153.12	273.79	26.93	0.22	0.39	0.04	1.19	1.47	0.52	4.66	6.41	2.36	220,488	
10/23/2015	151.20	260.32	26.93	0.22	0.38	0.04	1.29	5.72	0.68	4.55	5.92	2.31	217,728	
10/24/2015	154.99	233.39	22.44	0.22	0.34	0.03	1.17	1.37	0.47	4.69	6.00	2.42	223,181	
10/25/2015	146.34	269.30	26.93	0.21	0.39	0.04	1.16	1.52	0.52	4.54	7.12	2.47	210,726	
Week:	152.06	287.25	17.95	0.22	0.41	0.03	1.19	5.72	0.42	4.62	7.12	2.30	1,532,781	
10/26/2015	167.98	309.69	17.95	0.24	0.45	0.03	2.43	7.04	0.46	3.95	6.99	1.89	241,898	
10/27/2015	146.90	287.25	26.93	0.21	0.41	0.04	2.25	7.17	0.58	3.78	6.06	1.89	211,534	
10/28/2015	146.13	184.02	116.70	0.21	0.27	0.17	5.73	6.08	5.45	1.70	1.97	1.55	210,433	
Week:	153.67	309.69	17.95	0.22	0.45	0.03	3.47	7.17	0.46	3.14	6.99	1.55	663,865	
Totals:	154.34	309.69	17.95	0.22	0.45	0.03	1.41	7.17	0.42	4.55	7.12	1.55	7,772,235	

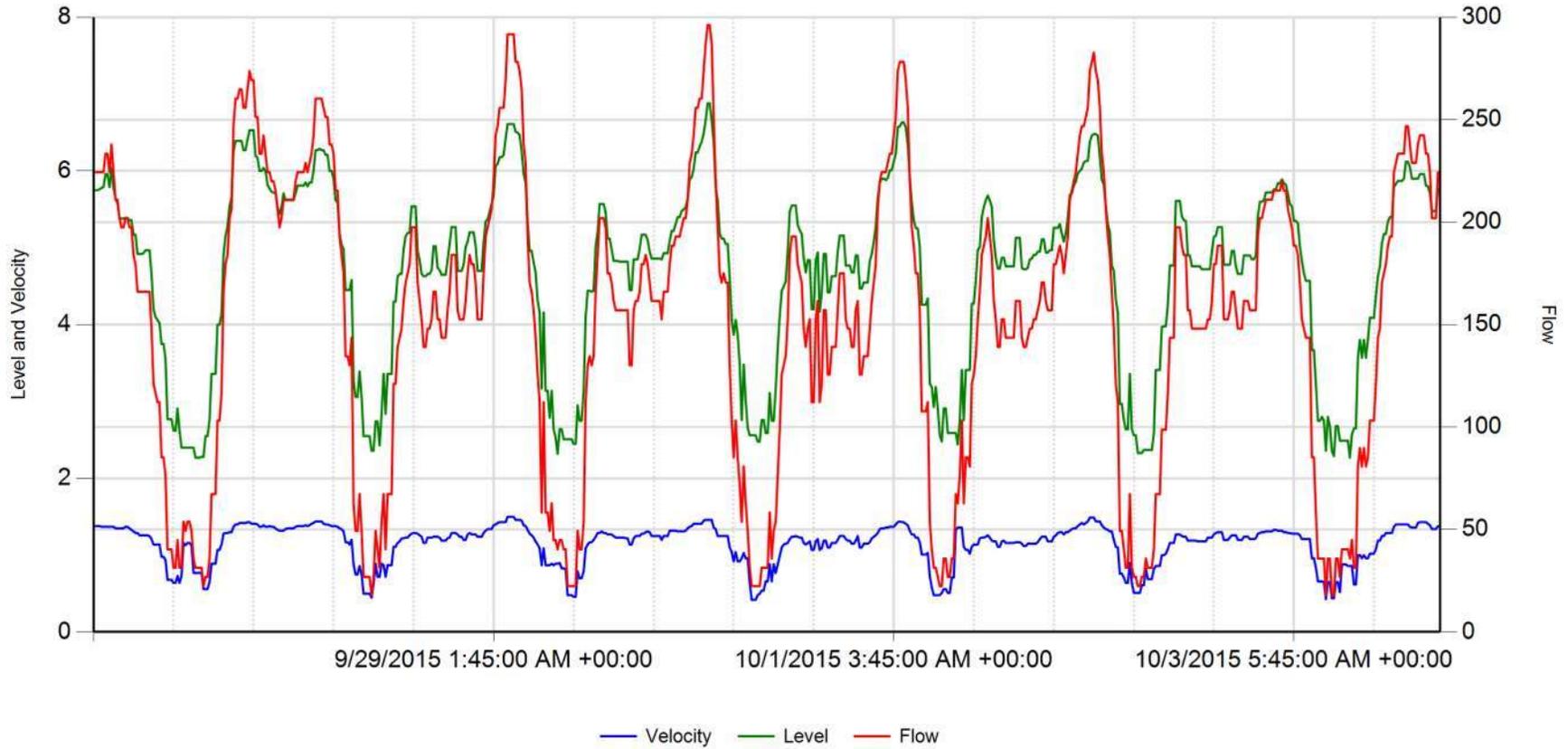
Site 3



	Velocity (fps)	Level (in)	Flow (gpm)		
Average	1.210	4.721	159.083	RainFall	Inches
Maximum	1.520	6.710	300.717		
Minimum	0.490	2.450	22.442		


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Site 3

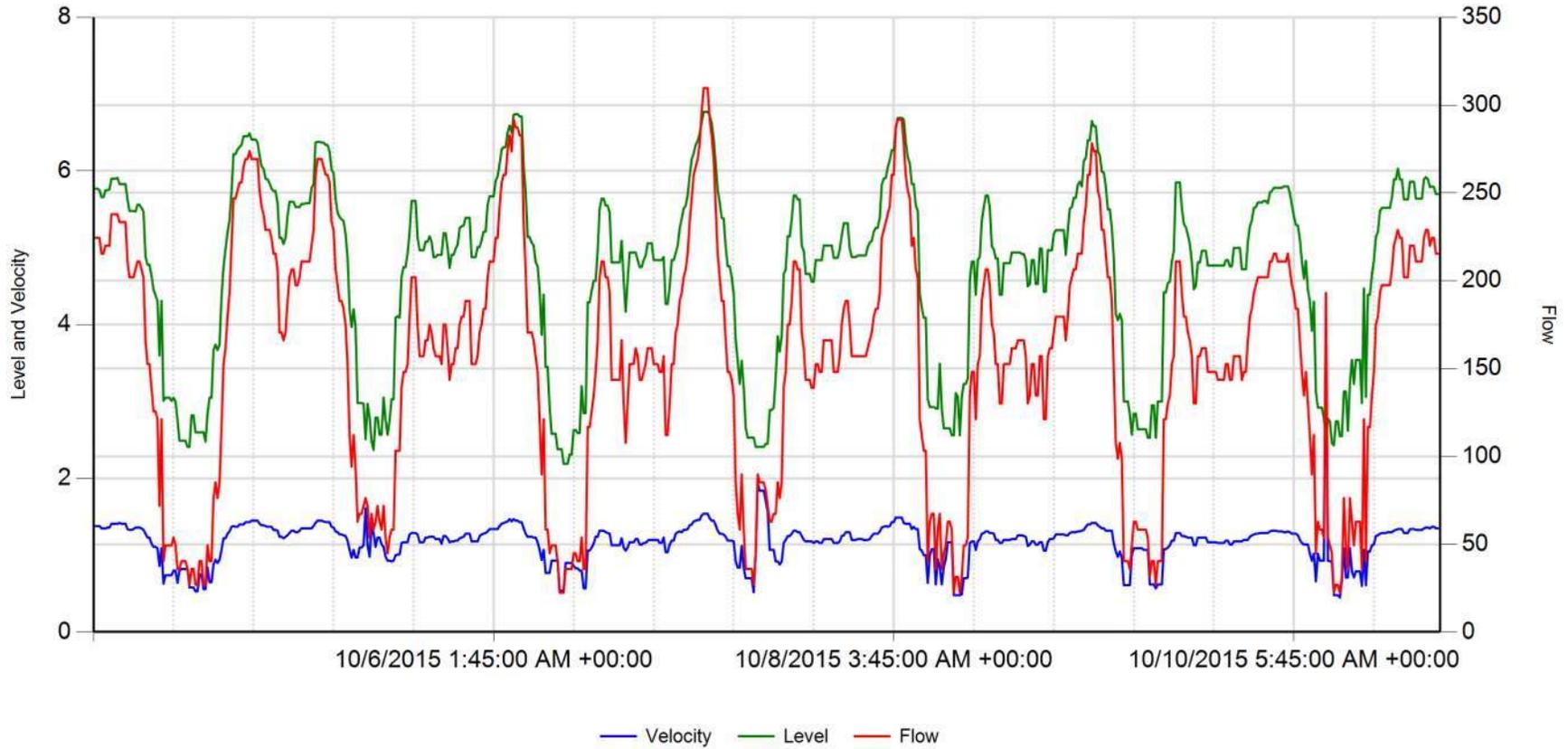


	Velocity (fps)	Level (in)	Flow (gpm)		
Average	1.149	4.685	152.242	RainFall	Inches
Maximum	1.500	6.880	296.229		
Minimum	0.420	2.270	17.953		



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Site 3

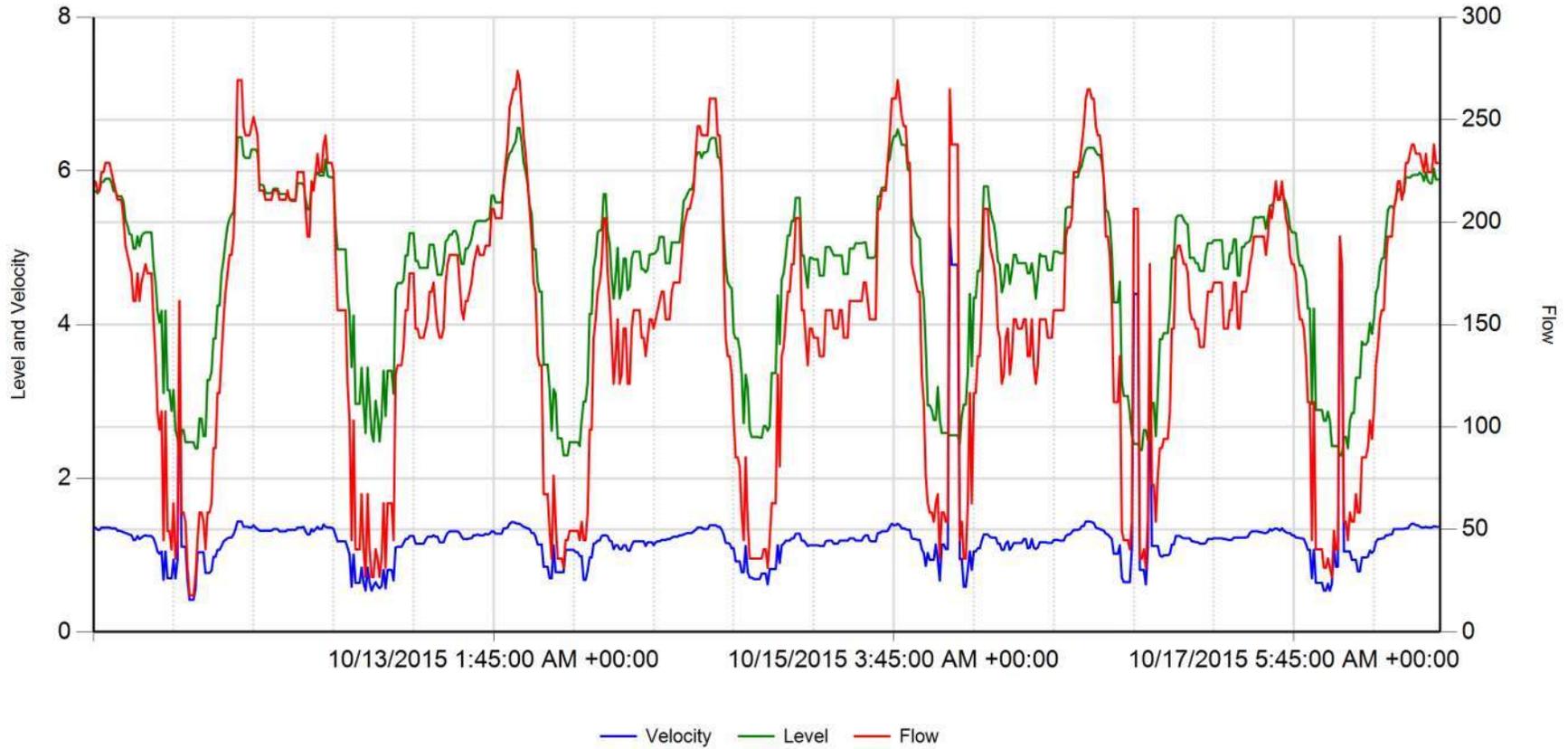


	Velocity (fps)	Level (in)	Flow (gpm)		
Average	1.172	4.731	154.560	RainFall	Inches
Maximum	3.940	6.770	309.694		
Minimum	0.450	2.190	22.442		



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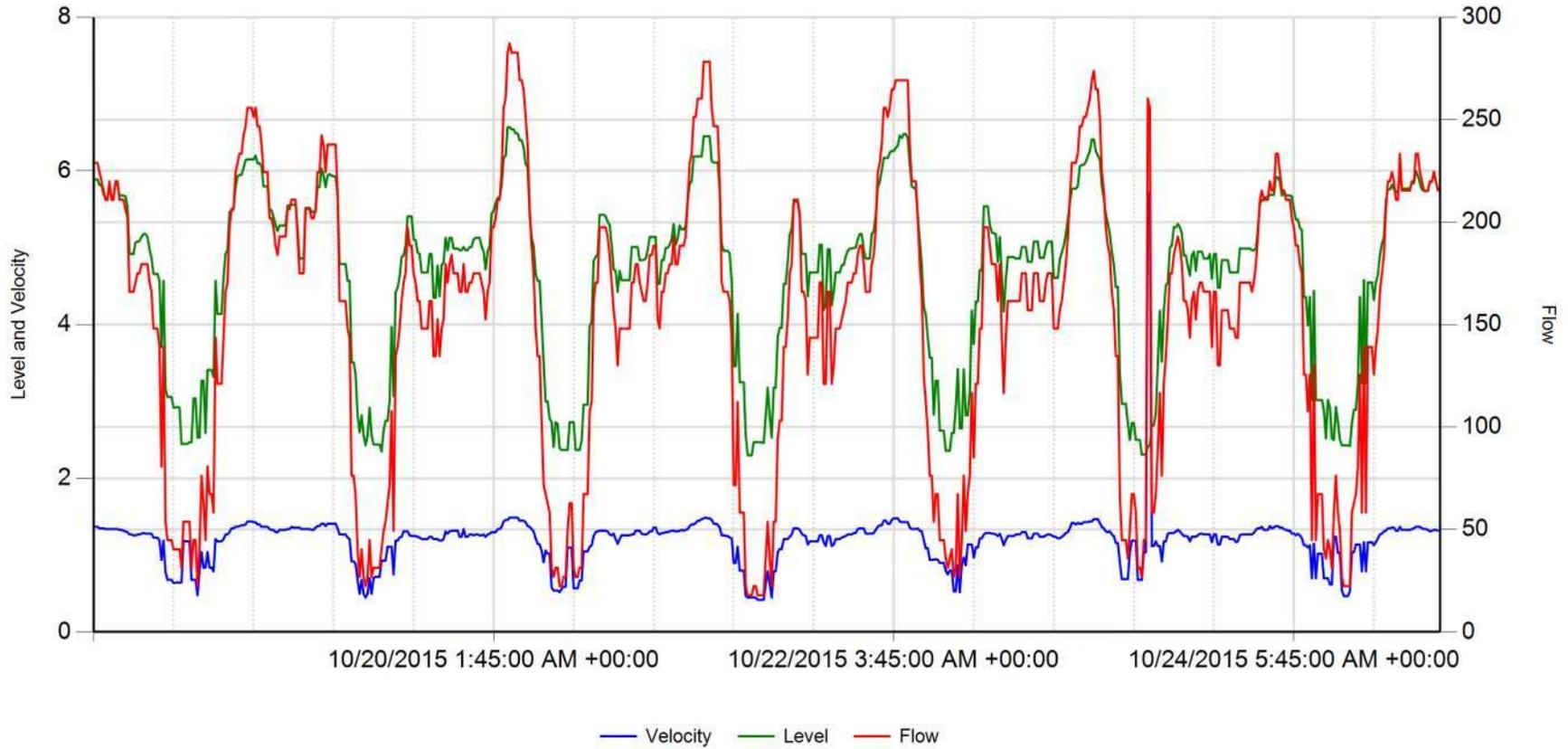
Site 3



	Velocity (fps)	Level (in)	Flow (gpm)		
Average	1.206	4.679	151.781	RainFall	Inches
Maximum	5.250	6.560	273.787		
Minimum	0.420	2.300	17.953		


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Site 3

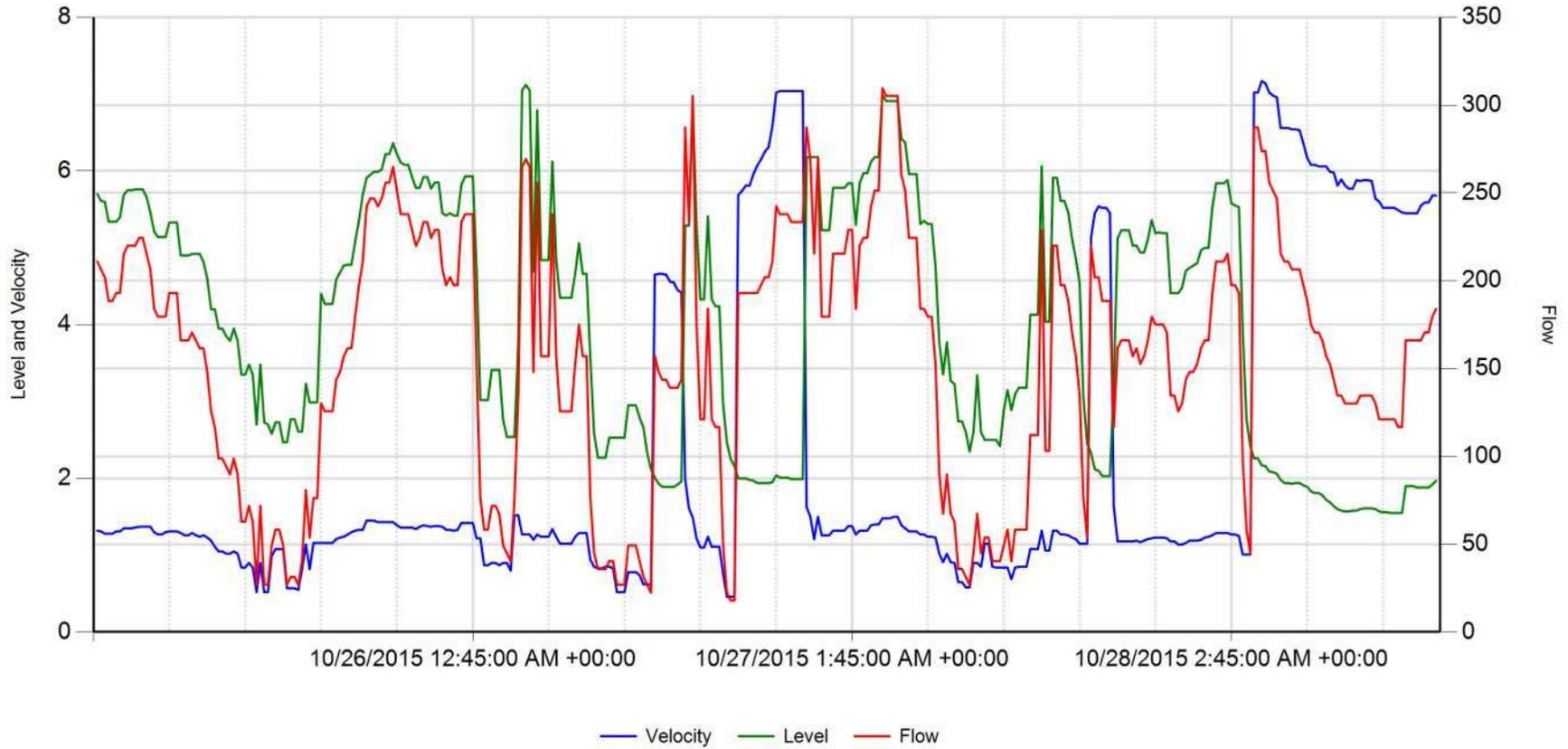


	Velocity (fps)	Level (in)	Flow (gpm)		
Average	1.193	4.660	154.553	RainFall	Inches
Maximum	5.720	6.570	287.252		
Minimum	0.420	2.300	17.953		



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Site 3

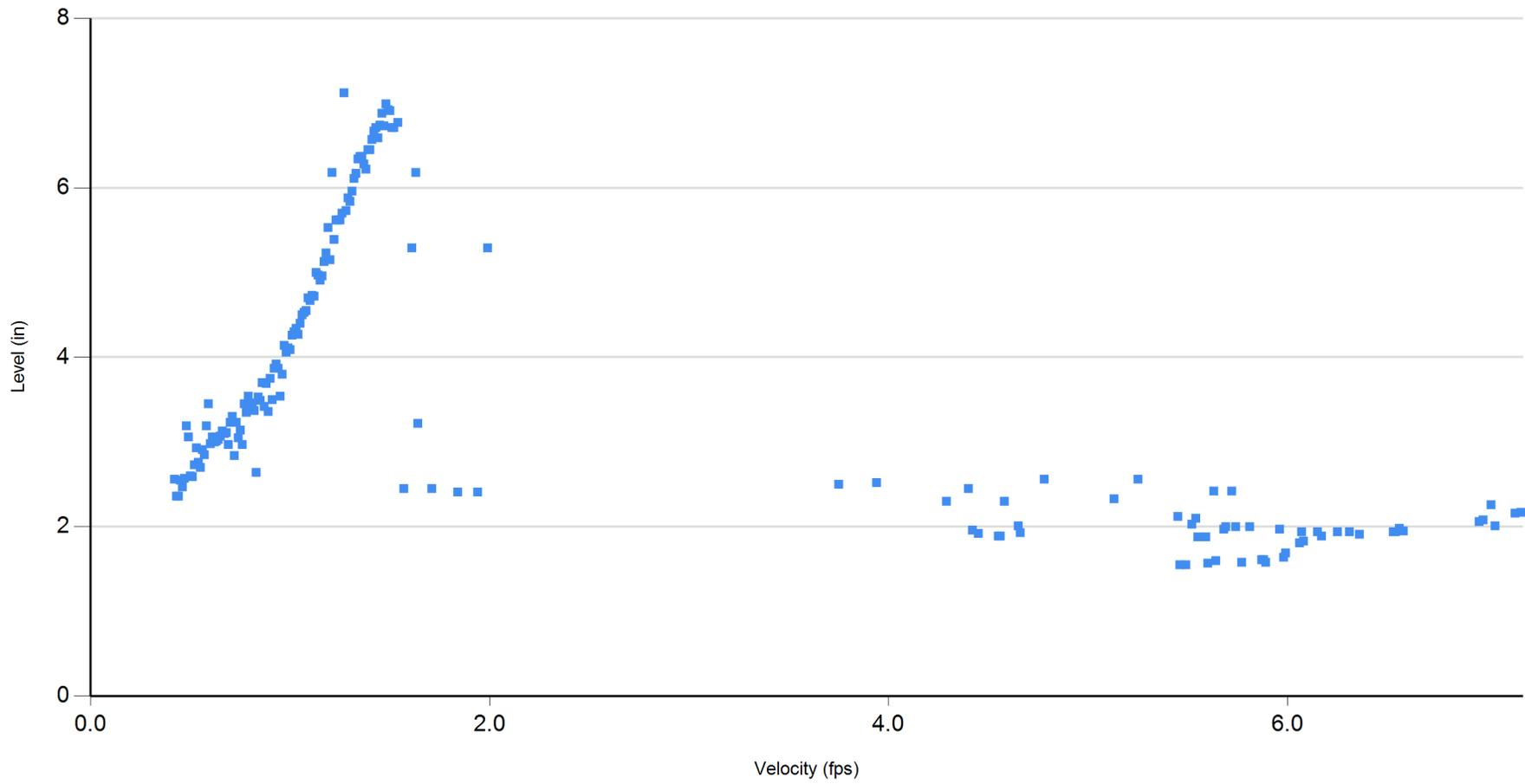


	Velocity (fps)	Level (in)	Flow (gpm)		
Average	2.249	3.965	156.001	RainFall	Inches
Maximum	7.170	7.120	309.694		
Minimum	0.460	1.550	17.953		



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Site 3



9/24/2015 thru 10/28/2015



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10: Appendix B - Expansion Report for City of Greenfield WWTP



Project	Comments	Capital or Outside Costs, \$
Re-Condition Percolation Ponds	Considered O&M Cost (unless import material req'd)	
Effluent Disposal Area Construction Improvements (26 acre area)	Estimated Budget	\$200,000
Prepare O&M Manual Updates and SOPs	Considered O&M Cost (in-house)	
Updated Report of Waste Discharge	Unknown at this time	\$10,000
TOTAL ESTIMATED CAPITAL OUTLAY TO ACHIEVE 2.0 MGD CAPACITY		\$515,000 (excluding addition of new sludge beds)

REFERENCES

1. Price Consulting Firm. City of Greenfield 2010 Urban Water Management Plan, February 21, 2013.
2. Terra Engineering, Inc. and Freitas + Freitas Engineering and Planning. City of Greenfield 2008 Update of the Wastewater System, Capital Improvement Plan and Capacity Charge Study, July 2008.
3. RM Associates. Report of Waste Discharge, 2001.
4. Terra Engineering, Inc. and Freitas + Freitas Engineering and Planning. Wastewater Disposal Report for City of Greenfield Wastewater Treatment Plant, September 2003.
5. Terra Engineering, Inc. and Freitas + Freitas Engineering and Planning. Expansion Report for City of Greenfield Wastewater Treatment Plant, September 2003.
6. Terra Engineering, Inc. and Freitas + Freitas Engineering and Planning. Wastewater Treatment Plant Expansion (Phase 3, Completed 2008) Operation & Maintenance Manual, 2008.
7. Metcalf & Eddy. Wastewater Engineering Treatment and Reuse, Fourth Edition, 2003.



Appendix F

City of Greenfield, Sewer System Management Plan-

March 2014, Audit Report

**City of Greenfield
Sewer System Management Plan, Revision 1 – March 2014
Audit Report**

April 21, 2014

Prepared By:



WALLACE GROUP[®]

CERTIFICATION

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.

Michael (Mic) Steinmann

Date

Sustainability Resources Director – City of Greenfield

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SCOPE AND PURPOSE

The State Water Resources Control Board (SWRCB) Sanitary Sewer System Waste Discharge Requirements Order No. 2006-0003-DWQ as amended by WQ 2013-0058-EXEC (herein SSSWDR Orders) require the City of Greenfield (City) to implement and maintain a Sewer System Management Plan (SSMP).

The City has contracted with Wallace Group to complete an Audit of the City's current SSMP in order to evaluate the effectiveness of the SSMP and its implementation.

The SSMP Audit measures compliance with section D.13 of the SSSWDR Orders and the effectiveness of the City's implementation of the current certified SSMP; Revision 1 which states that is revised as of August 2014 (in the future), but for the purposes of this SSMP Audit will be referred to as SSMP, Revision 1 dated March 2014.

- 1.0 [SSSWDR, Section D.13.i]: Goals
- 2.0 [SSSWDR, Section D.13.ii]: Organization
- 3.0 [SSSWDR, Section D.13.iii]: Legal Authority
- 4.0 [SSSWDR, Section D.13.iv]: Operation and Maintenance Program
- 5.0 [SSSWDR, Section D.13.v]: Design and Performance Provisions
- 6.0 [SSSWDR, Section D.13.vi]: Overflow Emergency Response Plan
- 7.0 [SSSWDR, Section D.13.vii]: Fats, Oils, and Grease Control Program
- 8.0 [SSSWDR, Section D.13.viii]: System Evaluation and Capacity Assurance Plan
- 9.0 [SSSWDR, Section D.13.ix]: Monitoring, Measurement, and Program Modifications
- 10.0 [SSSWDR, Section D.13.x]: Sewer System Management Plan Program Audits
- 11.0 [SSSWDR, Section D.13.xi]: Communication Program

AUDIT FORMAT

This SSMP Audit separately evaluates each SSMP Section using the following format:

- Applicable SSSWDR Section
- Audit Finding
- Ranking
- Reference Information
- Deficiencies
- Recommended steps and schedule to correct Deficiencies

The ranking criteria utilized in the Audit are provided in Table 1 below:

Table 1: SSMP Audit Ranking Criteria

Ranking	Ranking Basis
In Compliance	All requirements specified in the section are met.
Substantial Compliance	The majority of requirements in the section are met.
Partial Compliance	Half of the requirements in the section are met
Marginal Compliance	Less than half of the requirements in the section are met.
Out of Compliance	None of the requirements in the section are met.

SSMP AUDIT PARTICIPANTS AND SCHEDULE

This SSMP Audit assesses the effectiveness of the City's SSMP Revision 1, dated March 2014, and compliance with the SSSWDR Section D.13 requirements. The purpose of the Audit is to recognize accomplishments, identify deficiencies, and recommend corrective actions and a schedule to complete them. The Audit was conducted by the following Wallace Group Staff:

- Heather Billing
Senior Environmental Compliance Specialist
- Bill Callahan
Senior Environmental Compliance Specialist
- Brad Hagemann
Director Public Works Administration

Greenfield Staff participating in the SSMP Audit were:

- Susan Stanton
City Manager – City of Greenfield
- Michael (Mic) Steinmann
Sustainability Resources Director – City of Greenfield
- Arturo Felix
Public Works Utilities Systems Assistant Superintendent – City of Greenfield

The SSMP Audit was conducted in March and April of 2014, the following table summarizes key dates and locations:

Table 2: City of Greenfield SSMP, Revision 1 March 2014 Audit Key Dates

Date	Location	Topic	Staff
March 18, 2014	City Office	SSMP Audit Kick Off Meeting. SSMP Data and Records Request reviewed and records gathered. City staff interviewed regarding operation and maintenance practices and schedule.	Arturo Felix, Mic Steinmann, Heather Billing and Bill Callahan
March 27, 2014	Wallace Group and City Office; Teleconference 1:30 PM – 2:00 PM	SSMP Audit status review, additional documents requested from City to document past O&M activities such as CCTV,.	Susan Stanton, Arturo Felix, Mic Steinmann, Heather Billing and Bill Callahan
April 7 - 16, 2014	City Office	SSMP Audit Draft Report	Susan Stanton, Arturo

Date	Location	Topic	Staff
		Review	Felix, Mic Steinmann, Heather Billing, Brad Hagemann and Bill Callahan
April 21, 2014	City Office	SSMP Audit Final Report	Mic Steinmann to wet sign and thereby certify Final Audit Report.

CITY 2014 SSMP AUDIT RESULTS

The auditors would like to congratulate City staff on the substantial progress in the development and implementation of their SSMP from Revision 0 of the SSMP certified in October 2012 to the current SSMP dated March 2014. Maps, procedures, and forms have all been developed, trained on, and implemented which demonstrate that City Public Works staff is working hard to document what they do which will result in short and long term improvements to the level of service the City provides.

Since an SSMP is a living document, more work is recommended, as outlined below, to continue to develop the City SSMP so that the high level of sanitary sewer system service currently provided by the City can be maintained.

This audit concluded that four (4) sections are either in or are in substantial compliance, five (5) sections are in partial compliance, and two (2) are in marginal compliance with the SSSWDR Orders. A summary of the results is presented in Table 2 below:

Table 3: City of Greenfield SSMP Revision 1, March 2014 Audit Results

SSSWDR Section D.13	SSMP Compliance with Required Subsection	City Effectiveness in the Implementation of SSMP Subsections	Schedule
1.0 Goals [SSSWDR D.13(i)]	In Compliance	The City provides sixteen (16) goals which pertain to City and its SSMP implementation. Wallace Group recommends that the City reduce the number of goals to five (5) or less and target goals that are specific, measurable, and attainable within the next two (2) years.	N/A
2.0 Organization [SSSWDR D.13(ii)]	Partial Compliance	The City contact information is not current and complete throughout the SSMP. The City needs to provide an organization chart identifying all City and Contractor staff SSMP roles, responsibilities, and lines of authority.	Revise the Organization Section as soon as possible.
3.0 Legal Authority [SSSWDR D.13(iii)]	In Compliance	The SSMP should include an appendix to this section that includes the referenced sections of City Code.	N/A
4.0 Operation and	Partial	Updates are required to	Update the

SSSWDR Section D.13	SSMP Compliance with Required Subsection	City Effectiveness in the Implementation of SSMP Subsections	Schedule
<p>Maintenance Program [SSSWDR D.13(iv)]</p>	<p>Compliance</p>	<p>incorporate a formal plan and schedule for sewer line cleaning, manhole inspections, CCTV inspections, staff training, and rehabilitation and repair activities. A critical parts and equipment inventory must be developed and included in this section.</p>	<p>Operations and Maintenance Program Section in the August 2, 2014 Five Year Update</p>
<p>5.0 Design and Performance Provisions [SSSWDR D.13(v)]</p>	<p>In Compliance</p>	<p>The SSMP requires that all new construction conform with the 2008 City of Salinas Standard Specifications and Design Standards and May 2006 Caltrans Standard Specifications. The City of Salinas Standards includes inspection and testing requirements for the majority of sewer system assets.</p> <p>Lift station design standards are developed on a case by case basis by a licensed Professional Engineer (PE).</p> <p>A copy of the standards referenced and/or internet link should be included in an appendix to this section.</p>	<p>N/A</p>
<p>6.0 Overflow Emergency Response Plan [SSSWDR D.13(vi)]</p>	<p>Partial Compliance</p>	<p>Additional separate procedures should be created to inform City staff on how to respond, report, clean-up, and estimate SSO volume. The notification and reporting information in the SSMP is required to be updated to reflect the 2013 Monitoring and Reporting Program (MRP) changes and include more detail.</p> <p>A water quality monitoring</p>	<p>Update the Overflow Emergency Response Plan Section in the August 2, 2014 SSMP Five Year Update</p>

SSSWDR Section D.13	SSMP Compliance with Required Subsection	City Effectiveness in the Implementation of SSMP Subsections	Schedule
		program is also required to be developed as directed in the 2013 MRP.	
7.0 Fats, Oils and Grease (FOG) Control Program [SSSWDR D.13(vii)]	Partial Compliance	City has experienced a higher average number of Category 3 SSOs compared to other municipalities in the State. The main cause of the SSOs is FOG. The City FOG Program effectiveness needs to be re-evaluated and updated.	Update the FOG Control Program Section in the August 2, 2014 SSMP Five Year Update
8.0 System Evaluation and Capacity Assurance Plan (SECAP) [SSSWDR D.13(viii)]	Substantial Compliance	The City was substantially effective in implementing this requirement. A Wastewater System Capital Improvement Plan Update and Capacity Study (WSCIP) containing a SECAP was completed in 2005. The WSCIP recommended capital improvement projects which are based on future expansion and development. Updates to the City Capital Improvement Plan (CIP) and reference to 2005 Capacity Sewer Charges created to fund these projects need to be included in the SSMP.	Include or reference the 2005 WSCIP in the August 2, 2014 SSMP Five Year Update
9.0 Monitoring, Measurement, and Program Modifications [SSSWDR D.13(ix)]	Marginal Compliance	A plan and schedule needs to be created to develop and implement all of the required SSMP section monitoring, measurements, and program modifications. Appendix F contained a revised FOG Ordinance, not the SSO history and tracking information n committed to in	Update Monitoring, Measurement, and Program Modification Section in the August 2, 2014 SSMP Five Year Update.

SSSWDR Section D.13	SSMP Compliance with Required Subsection	City Effectiveness in the Implementation of SSMP Subsections	Schedule
		this section.	
<p>10.0 SSMP Program Audits [SSSWDR D.13(x)]</p>	<p>Marginal Compliance</p>	<p>The first SSMP Audit was due on or before August 2, 2011, the second audit was due on or before August 2, 2013.</p> <p>Wallace Group recommends that the City use its maintenance calendar to schedule the next SSMP Audit which will be due on or before August 2, 2016.</p>	<p>Update SSMP Program Audits Section in the August 2, 2014 SSMP Five Year Update.</p>
<p>11.0 Communication Program [SSSWDR D.13(xi)]</p>	<p>Partial Compliance</p>	<p>The SSS WDRs are not available on the City of Greenfield webpage which is the host for City information. The most current revision of the SSMP is also required to be posted on the City website as directed by the 2013 MRP.</p> <p>A formal SSMP Communication Program needs to be developed. Communication with the public and should include articles in City newsletters and/or press releases about FOG and non-flushable material. Documentation of communication with the Santa Lucia Shopping Center and Yanks RV Resort/Museum needs to be created, implemented, and included in the SSMP.</p>	<p>Update Communication Program in the August 2, 2014 SSMP Five Year Update.</p>

The following sections of this report describe these deficiencies in detail and address future additions and updates the City is required to make to its SSMP. The above list of updates is a summary and is not intended to replace the detailed Deficiencies identified in the SSMP Audit Report. The entire SSMP Audit Report recommendations are recommended to be implemented in a reasonable time frame, which should be in the Five Year Update due August 2, 2014 to ensure compliance with the SSS WDR Orders.

1.0 Goal [SSSWDR D.13(i)]

SSSWDR D.13(i) states:

The goal of the SSMP is to provide a plan and schedule to properly manage, operate, and maintain all parts of the sanitary sewer system. This will help reduce and prevent SSOs, as well as mitigate any SSOs that do occur.

Section D.13(i): The March 2014 City of Greenfield (City) SSMP includes sixteen (16) goals as listed below.

1. Properly manage, operate, and maintain all of the City's wastewater collection system.
2. Provide adequate capacity within the sewer system, including flows. This includes review of development plans and other associated plans, which may affect the City's sewer system capacity.
3. Minimize the frequency of Sanitary Sewer Overflows (SSO's).
4. Mitigate the impacts associated with SSO's.
5. Meet all applicable regulatory notification including monthly and annual reporting requirements.
6. Use funds available for sewer operations in the most efficient manner.
7. Prevent public health hazards.
8. Implement regular, practical maintenance of the sewer system to remove roots, debris, sand, and Fats, Oils, and Grease (FOG) in areas prone to blockage that may cause SSO's or sewer backups.
9. Perform operations in a safe manner to avoid personnel injury and/or property damage.
10. Methodically clean all sewer lines on a scheduled basis.
11. Provide monthly, quarterly, bi-annual and annual preventative maintenance of problematic areas (hot spots) within the collection system.
12. Conduct a video (CCTV) inspection/assessment of each sewer mainline every three years and continuously thereafter identify areas required root control, repairs and additional maintenance as evidenced by the video inspection.
13. Conduct appropriate analysis/evaluation of SSO's by utilization of systemic maintenance and activity data collection of "hot spots" that may be identified by visual observation and or CCTV of the collection system.
14. Identify collection system blockage due to Fats, Oils, and Grease (FOG) and develop strategies to mitigate blockages.
15. Maintain records of the Sanitary Sewer System and respond to customer inquiries concerns and complaints.
16. Continue with the development of capital improvement projects directed at a high level of maintenance of the current city assets by improving system reliability and providing adequate future capacity.

Element 1 Sufficiency: In Compliance

Reference: City March 2014 SSMP, Revision 1, Page 3

Deficiencies: City should revise the number of goals to less than five (5) and develop goals that are specific and meaningful for work to be performed in the next two (2) years.

Recommendation: Some of the listed goals may be better considered as program objectives since they are general and lack specificity (i.e. number 3, 6, and 9).

We recommend the City revise the number of goals for this timeframe down to no more than five (5). The goals should be Specific, Measureable, Attainable, Realistic, and Timely (SMART).

The updated goals should be included in the 5-Year Update due August 2, 2014.

2.0 Organization [SSSWDR D.13(ii)]

SSSWDR D.13(ii) states:

The SSMP must identify:

- (a). The name of the responsible or authorized representative as described in Section J of this Order;
- (b). The names and telephone numbers for management, administrative, and maintenance positions responsible for implementing specific measures in the SSMP program. The SSMP must identify lines of authority through an organization chart or similar document with a narrative explanation; and
- (c). The chain of communication for reporting SSOs, from receipt of a complaint or other information, including the person responsible for reporting SSOs to the State and Regional Water Board and other agencies if applicable (such as County Health Officer, County Environmental Health Agency, Regional Water Board, and/or State Office of Emergency Services).

Section D.13 (ii)(a): The names of all City staff who are responsible or authorized as the Legally Responsible Official (LRO) SSMP. Michael (Mic) Steinmann, is the sole LRO named, he is currently the Interim Director of Public Works, and his phone number is given.

The SSMP Revision 1, March 2014 LRO named matches the LRO names in the California Integrated Water Quality System (CIWQS) database (see Tab X for the CIWQS report).

- Michael (Mic) Steinmann

Dale Lipp, the former Director of Public Works was removed as required from CIWQS after his retirement.

The section above is in compliance with the above requirement. See recommendations below.

Section D.13(ii)(b): The names and telephone numbers of staff holding the following positions are included on Page 7 of the SSMP:

- City Manager;
- Interim Director of Public Works;
- Utilities System Assistant Superintendent;
- Wastewater Operator 1; and
- Public Works Service Worker.

Table 1 entitled “Implementation Responsibilities” describes which position is responsible for each SSMP Element. However, City Staff who are responsible for implementing elements of the SSMP (City Engineer and City Building Inspector) are not named and their contact information is not given.

Contract Staff, such as MNS Engineers, Greenline, etc. are also required to be named with contact information and SSMP areas of responsibility identified.

The section above is in partial compliance with the above requirement. See recommendations below.

Section D.13(ii)(c): A chain of communication for reporting sanitary sewer overflows (SSOs) is provided on Page 10 and entitled Figure 2, Sequence Chart, Reporting and Responding to SSO's. The chain of communication is a great start, but it should be amended to contain the detail necessary to ensure SSO reporting is timely and accurate. For example, SSOs that reach a Storm Drain (SD) or Waterway and of estimated volume of greater than 1,000 gallons is required to be reported within two (2) hours of becoming aware of the SSO to the California Office of Emergency Services (Cal OES).

The section above is in partial compliance with the above requirement. See recommendations below.

Element 2 Sufficiency: Partial Compliance

Reference: City March 2014 SSMP Revision 1, pages 5-10; CIWQS Facility At-A-Glance Report (March 26, 2014)

Deficiencies: The Organization Section requires updating to correctly identify the names and titles of persons responsible for implementing the SSMP in an organization table and chart showing lines of authority.

The titles and responsibilities of the individuals included in Figure 1 and the contact information for the regulatory agencies, which must be notified of SSOs, need to be given.

A revision record for this section needs to be created to document the changes that occurred within this Element from the City SSMP Revision 0, dated October 2012 to the City SSMP Revision 1, dated March 2014. A revision record should document when the changes were made, what the changes were, and who approved them.

Recommendation: Update the Organization Chart (Figure 1) with all City and Contract Staff identified with their names, titles, and contact information, and their SSMP and SSO_response responsibilities described. The Sequence Chart (Figure 2) also requires updating to incorporate the new 2013 MRP requirements such as how to report a Category 3 SSO in CIWQS. This section should be updated as soon as possible and the update reviewed with City Staff.

3.0 Legal Authority [SSSWDR D.13(iii)]

SSSWDR D.13(iii) states:

Each Enrollee must demonstrate, through sanitary system use ordinances, service agreements, or other legally binding procedures, that it possesses the necessary legal authority to:

- (a). Prevent illicit discharges into its sanitary sewer system (examples include I/I, storm water, chemical dumping, unauthorized debris and cut roots, etc.);
- (b). Require that sewers and connections be properly designed and constructed;
- (c). Ensure access for maintenance, inspection, or repairs for portions of the lateral owned or maintained by the Public Agency;
- (d). Limit the discharge of fats, oils, and grease and other debris that may cause blockages; and
- (e). Enforce any violation of its sewer ordinances.

This section was reviewed against the following sections of the City of Greenfield Municipal Code which are included in the list of records audited for this Audit Report:

- City Municipal Code:
 - Chapter 13.28 Sewer Service
 - Chapter 13.32 Sewer Rates
 - Chapter 13.70 Sanitary Sewer Capacity Charge

Section D.13(iii)(a): Illicit discharges such as storm water, debris, chemicals, waste, concrete, debris that obstruct, etc. are addressed in the following sections of City Municipal Code and outlined in Table 2, Page 14 in the City SSMP:

- City Municipal Code Referenced in SSMP:
 - Section 13.28.050 – 13.28.060
 - Section 13.28.130 – 13.28.240
 - Section 13.28.260 – 13.28.280
 - Section 13.28.310
 - Section 13.28.360

The section above is in compliance with the above requirement. See recommendations below.

Section D.13(iii)(b): Proper design and construction of private connections are addressed in the following City Municipal Code Sections:

- City Municipal Code Referenced in SSMP:
 - Section 13.28.020: Alterations or use—Permit required.
 - Section 13.28.070 – 13.28.080: Construction—Compliance with provisions.
 - Section 13.28.130 – 13.28.240: Public Sewer—Use required when available

Design and construction standards for public sewers are not incorporated into the City Municipal Code; but are incorporated into contracts for rehabilitation and replacement of public sewers.

The section above is in compliance with the above requirement. See recommendations section below.

Section D.13(iii)(c): City currently does not own and therefore does not require access to maintain or repair any portion of a Lateral Sewer, House Sewer or House Drain.

City ensures access for inspection for portions of the lateral owned or maintained by a “Person” in:

- City Municipal Code Section Referenced in SSMP:
 - Section 13.28.110: Private disposal—Inspection Required.

The section above is in compliance with the above requirement. See recommendations section below.

Section D.13(iii)(d): City has the authority to limit the discharge of FOG and other debris that may cause blockages into the system in the Ordinances specified below:

- City Municipal Code Referenced in SSMP:
 - Section 13.28.260 – 13.28.310: Construction—Compliance with provisions.
- Recommended Specific City Municipal Code to be Referenced in SSMP:
 - Section 13.28.280.B: Except as hereinafter provided, no person shall discharge or cause to be discharged any of the following described waters or wastes to any public sewer: any water or waste which may contain more than one hundred parts per million, by weight, of fat, oil, or grease.
 - Section 13.28.290 and 13.28.300: Grease Oil and Sand Interceptors shall be provided and Grease, Oil, and Sand Interceptors shall be maintained by the owner.

The section above is in compliance with the above requirement. See recommendations section below.

Section D.13(iii)(e): City has the authority to enforce any violation of its sewer ordinances in the sections of the Ordinances specified below:

- City Municipal Code Referenced in SSMP:
 - Section 13.28.360 – 13.28.400: Tampering with equipment—Penalty. Powers and Authority of Inspectors. Violation—Penalties. Misdemeanor—Separate Offense. Violation—Liability.

The section above is in compliance with the above requirement. See recommendations section below.

Element 3.0 Sufficiency: In Compliance

Reference:

City Municipal Code:

- Chapter 13.28 Sewer Service
- Chapter 13.32 Sewer Rates
- Chapter 13.70 Sanitary Sewer Capacity Charge

Deficiencies: None.

Recommendation: The City March 2014 SSMP Revision 1.0 specifies where the legal authorities required by the section are located but does not include a copy of the Chapter of City Municipal Code referenced. The SSMP should state that design and construction standards for public sewers are not incorporated into the City Municipal Code; but are incorporated into contracts for rehabilitation and replacement of public sewers.

4.0 Operation and Maintenance Program [SSSWDR D.13(iv)]

SSSWDR D.13(iv) states:

The SSMP must include those sections listed below that are appropriate and applicable to the Enrollee's system:

- (a). Maintain an up-to-date map of the sanitary sewer system, showing all gravity line segments and manholes, pumping facilities, pressure pipes and valves, and applicable storm water conveyance facilities;
- (b). Describe routine preventive and operation and maintenance activities by staff and contractors, including a system for scheduling regular maintenance and cleaning of the sanitary sewer system with more frequent cleaning and maintenance targeted at known problem areas. The Preventative Maintenance (PM) Program should have a system to document scheduled and conducted activities, such as work orders;
- (c). Develop a rehabilitation and replacement plan to identify and prioritize system deficiencies and implement short-term and long-term rehabilitation actions to address each deficiency. The program should include regular visual and TV inspections of manholes and sewer pipes, and a system for ranking the condition of sewer pipes and scheduling rehabilitation. Rehabilitation and replacement should focus on sewer pipes that are at risk of collapse or prone to more frequent blockages due to pipe defects. Finally the rehabilitation and replacement plan should include a capital improvement plan that addresses proper management and protection of the infrastructure assets. The plan shall include a time schedule for implementing the short- and long-term plans plus a schedule for developing the funds needed to the capital improvement plan;
- (d). Provide training on a regular basis for staff in sanitary sewer system operations and maintenance, and require contractors to be appropriately trained; and
- (e). Provide equipment and replacement part inventories, including identification of critical replacement parts.

Section D. 13(iv)(a): All sewer assets and appurtenances are identified in the City's Sewer Atlas Map referenced in the March 2014 SSMP. Two separate map atlas and map books are maintained by the City identifying sewer assets and storm water conveyance facilities that could be impacted by a SSO. Examples of the maps are included with this section of the SSMP in Appendix "A". Sewer Atlas information is currently being integrated into GIS by MNS Engineering. The City's GIS mapping system is planned to be operational by the end of May 2014.

The section above is in compliance with the above requirements. See recommendations section below.

Section D.13(iv)(b): The March 2014 City SSMP summarizes goals and Routine Preventative Operation and Maintenance (O&M) activities in this section. O&M relating to sewer line cleaning, and routine inspection are performed by Greenfield City staff.

O&M for the six (6) City Lift Stations are conducted by City collection system and maintenance staff. There was no evidence of a preventative maintenance program for these lift stations or emergency power supplies used to support these stations. Staff currently checks each station weekly and records; pump hours, wet well level, and alarms. If repairs are necessary based on these observations, staff completes a “Non-permit Required Confined Space Entry Form” and performs necessary maintenance and repairs. The reason for each entry is documented on each form.

Sewer line cleaning activities are recorded on a City sewer atlas and documented on a Sewer Line Cleaning Log. A formal preventative maintenance program and schedule does not exist for routine cleaning of the sewer system at this time. The City does identify a goal for cleaning the entire system as every five (5) years. A formal plan and schedule for routine cleaning of the entire collection system should be developed by the end of 2014. This plan should provide for the cleaning of the entire system at an interval that will help to reduce the current number of SSOs the City has historically encountered (system wide cleaning intervals for systems of this size are generally 3 years in duration to effectively reduce the occurrence of SSOs). All routine and non-routine cleaning activities should be tracked in the City’s Sewer Line Cleaning Log. A column for observed conditions should be added to this list to assist the City in assessing and tracking the conditions observed in the field.

Areas needing more frequent cleaning (High Maintenance Areas (HMAs)) are identified in the March 2014 SSMP and scheduled for weekly visual inspection. These areas are cleaned based on the results of these scheduled inspections. Sewer line cleaning work orders are also generated based on calls from the public or as scheduled maintenance. Staff documents conditions observed during the completion of each work order and documents recommended follow up actions on each work order form. When problems are found during sewer line cleaning activities that cannot be diagnosed by City staff, a CCTV inspection is conducted by contracted staff (Greenline) to determine the conditions of the line. CCTV reports are reviewed and when sewer line defects are observed, they are scheduled as a future CIP. At the time of this audit, no significant issues were noted in 2010 CCTV reports requiring additional CIP.

Manhole inspections, documenting flow conditions for high maintenance sections of sewer line occur weekly. There was no evidence of a formal manhole inspection schedule or inspection program documenting the overall condition of each manhole at the time of this audit.

A formal schedule should be developed for future sewer line cleaning and manhole inspections. Manhole inspection and routine sewer line cleaning forms should be developed and incorporated into the inspection process to track flow conditions, results of cleaning activities, and the physical condition of each manhole. Examples of; sewer line cleaning, CCTV investigations, and manhole inspection records should be included in the SSMP.

The section above is in partial compliance with the above requirements. See recommendations section below.

Section D. 13(iv)(c): The August 2014 SSMP states that the City conducted a 2005-2025 Wastewater System Capital Improvement Plan Update and Capacity Charge Study in 2005. Due to poor economic conditions all identified projects in this study have been on hold. It also states the City plans to purchase CCTV equipment which will allow for a formal assessment of City sewer lines at a time to be determined in the future. At the time of this audit there were no rehabilitation or replacement projects identified for any of the City's sewer assets (lift stations, sewer lines, manholes, force mains, or major equipment purchases) that were based on a formal condition assessment. CCTV equipment has not been purchased, however City staff is planning to contract for future CCTV services to assess City sewer lines. The City should identify a plan and schedule to assess the condition of sewer lines, force mains, lift stations, manholes, and major equipment. A plan and schedule for the rehabilitation and replacement of assets identified in this assessment should be developed along with the associated funding to support these projects. The results of this analysis and the required funding mechanisms to support rehabilitation and replacement should be included in the next SSMP Update.

The section above is out of compliance with the above requirements. See recommendations section below.

Section D. 13(iv)(d): The March 2014 SSMP states that Staff receives extensive training in system operations and maintenance. City Staff are encouraged to become certified under the California Water Environmental Association (CWEA) Certification Program for the Operation and Maintenance of Sewer Collection Systems. The City reports that staff rotates through selected seminars and training courses provided by CWEA for training in Collection System Maintenance, SSO Response/Spill Prevention/Control, Traffic Control, Vector Training, and Safety. CWEA certifications for two of the City's collections staff were available for review.

City staff also conducts internal safety and collection system training; some records documenting training specific to collection system operations were available at the time of this audit. Draft Standard Operating Procedures for collection system High Maintenance Areas and Routine Sewer Line Cleaning were reviewed during the audit. Staff will be implementing these procedures in by the end of 2014 once they receive final approval by City management. Additional procedures should be developed for O&M activities that are specific to the City and training should be conducted annually at a minimum or when conditions require more frequent training. Documentation of this training should be tracked and maintained. The City should provide evidence that contractors are trained for specific O&M activities they perform for the City and that they are aware of City collection system O&M Procedures. Contractors responsible for conducting sewer bypass procedures as part of a project should be trained in the City's Overflow Emergency Response Plan.

The section above is in marginal compliance with the above requirements. See recommendations section below.

Section D. 13(iv)(e): A list of current collection system critical parts and equipment was not available at the time of this audit. A list of vendors for items and equipment not kept in stock was not available.

The City should develop a comprehensive list of critical parts and equipment for all assets and equipment used in the sewer system and create a vendor list with contact information for parts and equipment that are not easily or reasonably stocked. Include these items in the next update to this SSMP. The City may also want to consider contacting neighboring agencies to discuss the formation of mutual aid agreements for emergency response, parts, and equipment. If mutual aid agreements are formalized, they should be referenced in the next updated SSMP.

The section above is out of compliance with the above requirements. See recommendations section below.

Sufficiency: Partial Compliance

Reference: City SSMP Rev 1: August 2014, 2012 Lift Station Confined Space Entry Log, 2013 Sewer Line Cleaning Log, Sewer Line Work Order Forms: 2012, Weekly Manhole and Lift Station Checklists: 2012, 2014: Draft High Maintenance Area Preventative Maintenance Program, 2014: Draft Sanitary Sewer Mainline Cleaning Procedure, 2014 Safety Meeting Sheets, 2014: Wastewater Collection System Map, CWEA Collection System Certifications: 2014, Greenline CCTV Reports: 2010, City Lift Station Logs: 2013/2014, City 2005-2025 Wastewater System Capital Improvement Plan Update and Capacity Charge Study, City List of High Maintenance Areas (*Weekly Manhole Checklist*).

Deficiencies: The preventative maintenance program does not include a specific plan and schedule for sewer line cleaning. There is no formal process for manhole inspections and these activities are not documented. Lift Station O&M activities and preventative maintenance schedules are not presented in the City SSMP. A plan, schedule, and funding is not in place for CCTV inspections and pipeline assessments. There is not a plan to rehabilitate or replace sewer assets such as sewer lines, manholes, and lift stations based on a condition assessment. A critical parts and equipment list has not been developed for City owned assets such as Lift Stations. This list should be developed to identify parts and equipment needed to repair critical equipment and respond to emergencies. Additionally, the City does not have a formal list of vendors and associated contact information for critical parts and equipment not normally kept in stock. A formal training program and training records are not available reflecting the City's current staff training efforts.

Recommendation: Deficient sections of the O&M Program to be created and documented in the next SSMP revision include:

- Create a formal plan and schedule that outlines sewer line cleaning and manhole inspections in routine and high maintenance areas.
- Develop a manhole inspection form to conduct manhole condition assessments.
- Identify and incorporate the Preventative Maintenance plan and schedule used for City Lift Stations and include in future updates to the SSMP. Maintain detailed Lift Station reports that identify specific O&M activities performed. (Records are required to be maintained for 5 years for compliance with the SSWDR 2008 Monitoring and Reporting Program).
- Develop a formal Rehabilitation and Replacement (R&R) plan that incorporates CCTV sewer line condition assessments and future manhole inspection data. Develop a short- and long-term CIP completion schedule based on the results of these inspections.

- Identify critical parts and equipment necessary for the operation and maintenance of City assets and document them. If parts and equipment are not planned to be stocked by the City, document the vendors for these items, contact information, and lead time for parts not in stock. If equipment is available through mutual aid agreements with neighboring agencies or through contract services, document/reference these agreements in the SSMP.
- Develop training procedures specific to City O&M activities and train on these procedures annually. Maintain documentation of this training.
- Develop a plan to incorporate and train new staff as current staff nears retirement to insure City “institutional knowledge” is maintained and there is adequate staffing to maintain compliance with requirements found in the SSWDRs.

5.0 Design and Performance Provisions [SSSWDR D.13(v)]

SSSWDR D.13(v) states:

- (a). Design and construction standards and specifications for the installation of new sanitary sewer systems, pump stations, and other appurtenances; and for the rehabilitation and repair of existing sanitary sewer systems; and
- (b). Procedures and standards for inspecting and testing the installation of new sewers, pumps, and other appurtenances and for rehabilitation and repair projects.

Section D.13(v)(a): The City states in the SSMP that it utilizes:

1. The latest edition (2008 Edition) of the City of Salinas, Standard Specifications, Design Standards and Standard Plans;
2. The May 2006 Edition of Caltrans Standards Specifications and Standard Plans; and
3. City Municipal Code Chapter 13.28, Sewer Service.

The section above is in compliance with the above requirements.

Section D.13(v)(b): Procedures and standards for the acceptance testing and inspection of new and repaired sewer main and appurtenances are per the City of Salinas Standard Specifications, Design Standards and Standard Plans specified on page twenty-one (21) in the SSMP.

The section above is in compliance with the above requirements.

Sufficiency: In Compliance

Reference: City March 2014 SSMP Revision 1, pages 21; 2008 Edition City of Salinas Standard Specifications, Design Standards and Standard Plans.

Deficiencies: The City is in compliance with this section. Design Standards and Specifications with Testing Procedures and Requirements were reviewed during the Audit.

Recommendation: Include a copy of the 2008 Edition City of Salinas Standard Specifications, Design Standards and Standard Plans as an appendix to this element. Reference the location of the May 2006 Edition of Caltrans Standard Specifications which is located here: http://www.dot.ca.gov/hq/esc/oe/construction_contract_standards/std_specs/2006_StdSpecs/2006_StdSpecs.pdf.

6.0 Overflow Emergency Response Plan [SSSWDR D.13(vi)]

SSSWDR D.13(vi) states:

Each Enrollee shall develop and implement an overflow emergency response plan 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 SSOs in a timely manner;
- (b). A program to ensure 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 MRP. All SSOs shall be reported in accordance with this MRP, the California Water Code, other State Law, and other applicable Regional Water Board WDRs or NPDES permit requirements. The SSMP identifies the officials who will receive immediate notification;
- (d). Procedures to ensure that appropriate staff and contract personnel are aware of and follow the 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 the discharge of untreated or partially treated wastewater to waters of the United States and minimize or correct any adverse impact on 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.

Section D.13 (vi): The City SSMP gives a general summary of Sanitary Sewer Overflow Response Plan (SSORP, June 2011) which is located in Appendix C to the SSMP Rev. 1, March 2014. Table 2-1, of the June 2011 SSORP, requires revision to remove the names and contact information of City staff who are no longer with the City (e.g. Brent Salma, Mike Snowden, Dale Lipp, etc.).

Section D.13 (vi)(a): The SSORP, June 2011 contains a SSO Notification Procedure in Appendix A to the procedure. This procedure discusses how the City is notified of a SSO and how staff is dispatched to a SSO through the Police Dispatch Center via cell phone or hand held radio. A discussion of which regulatory agencies to notify and when to notify them is located in the SSORP, June 2011 page 7. The SSORP and SSO Notification procedure both require updating to include the revised SWRCB 2013 MRP which became effective in September 2013 and introduced a new SSO Category; Category 3 SSOs which are SSOs of estimated volume of less than one thousand gallons that do not reach a surface water.

Section D.13 (vi)(b): A program and associated organizational flow chart or summary showing key positions and their responsibility to ensure appropriate response to all overflows is contained in the SSORP, June 2011. The organization chart requires updating as City staff named have left or retired from the City. Training records were obtained during the audit showing that responsible City staff were trained on the SSORP and associated Procedure on December 12, 2012.

As stated above, the SSORP and Procedure require updating to reflect the 2013 MRP requirements. All City and Contract staff must also be trained annually on the SSORP and associated procedures.

Section D.13 (vi)(c): A procedure was developed and issued in June 2011, entitled SOP NO: - 1, Sanitary Sewer Overflow. This procedure requires updating to reflect the 2013 MRP requirements.

Section D.13 (vi)(d): Procedures to ensure appropriate staff and contractor personnel are aware of, follow, and are trained on the SSORP were not available at the time of this audit. Training documents show that City staff were last trained on December 12, 2012.

Section D.13 (vi)(e): Procedures to address emergency operations, such as emergency traffic and crowd control, surface water quality monitoring, and other necessary response activities were not available at the time of this audit. One procedure was located that is entitled, City of Greenfield Emergency Response Plan, Tyler Lift Station. While incomplete, this procedure is a great start and moving forward with the development of emergency response procedures for the six (6) lift stations the City operates and maintains is recommended.

Section D.13 (vi)(e): The SSORP, June 2011 does summarize how staff should contain a SSO. Surface water quality monitoring information is not referenced. A comprehensive program with specific procedures to contain, prevent, and monitor untreated and partially treated wastewater to waters of the State was not available at the time of this audit.

The sections above are in partial compliance with the above requirements. See recommendations below.

Sufficiency: Partial Compliance

Reference: City March 2014 SSMP Revision 1, Appendix C Sanitary Sewer Overflow Response Plan Dated June 2011.

Deficiencies: The titles and responsibilities of the individuals included in an SSORP and the contact information for the agencies, which must be notified of SSOs, need to be updated. Update the SSORP to reference Cal-OES instead of Cal-EMA for SSOs. If the Monterey County Health Department Emergency Call List is utilized by City, the SSORP also needs to be updated to explain how the list is utilized.

Two procedures were provided, additional procedures informing traffic control, water quality monitoring, SSO volume estimating, SSO required above were not provided during the Audit or are included in the SSORP. Evidence of a program to inform and train City Staff and contractors

on how to contain and prevent a SSO and conduct follow-up water quality monitoring was also not provided during the Audit.

Recommendation: This SSMP Section is recommended to be updated with a schedule to update the SSORP, create additional procedures, forms, a formal SSORP and procedure training program. A list of procedures (EOPs or Emergency Operating Procedures) that other public agencies have created for their SSORP is:

- EOP-01: Overflow Emergency Response Plan or SSORP
- EOP-02: SSO Notification
- EOP-03: SSO Reporting
- EOP-04: SSO Traffic and Crowd Control
- EOP-05: SSO Volume Estimation
- EOP-06: SSO Mitigation and Cleanup
- EOP-07: Water Quality Monitoring
- EOP-08: Surface Water Closure
- EOP-09: SSO Response Documentation and Records
- EOP-10: SSO Training Program

7.0 Fats, Oils, and Grease Control Program [SSSWDR D.13(vii)]

SSSWDR D.13(vii) states:

Each Enrollee shall evaluate its service area to determine whether a FOG control program is needed. If an Enrollee determines that a FOG program is not needed, the Enrollee must provide justification for why it is not needed. If FOG is found to be a problem, the Enrollee must prepare and implement a FOG source control program to reduce the amount of these substances discharged to the sanitary sewer system. This plan shall include the following as appropriate:

- (a). An implementation plan and schedule for a public education outreach program that promotes 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 to 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) and the development of design standards for such devices, maintenance requirements, BMP requirements, record keeping and reporting requirements;
- (e). Authority to inspect grease producing facilities, enforcement authorities, and whether the City has sufficient staff to inspect and enforce the FOG ordinance;
- (f). An identification of 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 to the sewer system for each section identified in (f) above.

After the issuance of the SSS WDR in 2006, the City determined that FOG is an on-going problem in the sewer collection system and a FOG Program was needed. The City has over thirty Food Service Establishments in its service area.

In this Audit, the FOG Plan presented in the SSMP Revision 1, March 2014 was evaluated against the Section D.13(vii) requirements above. The effectiveness of the FOG Program was evaluated at the end of this section.

Section D.13(vii)(a): The City SSMP Revision 1, March 2014, page 27, presents a plan in this section to conduct outreach to business, not the residents of the City. It is recommended that the City develop a plan and schedule to create a public FOG outreach plan which could include articles in City newsletters, newspaper, radio, and/or television ads.

The section above is out of compliance with the above requirement. See recommendations below.

Section D. 13(vii)(b): The City SSMP Revision 1, March 2014, page 27, states that information is available to Food Service Establishments (FSEs) on how to dispose of FOG generated within the City's service area is available on the internet.

Appendix D to the City SSMP Revision 1, March 2014 contains a packet of information for FSE's, from how to obtain a permit to a cleaning log and FOG Best Management Practices (BMPs). A list of recommended FOG waste haulers is required to be added to this packet.

The section above is in partial compliance with the above requirement.

Section D. 13(vii)(c): The legal authority to prohibit discharges to the collection system and identify measures to prevent FOG-caused SSOs is located in Chapter 12.28.290-300 of the City Municipal Code.

The section above is in compliance with the above requirement.

Section D. 13(vii)(d): City staff have developed a FOG permit application, cleaning log, Best Management Practice Manual, etc. which is included in SSMP Revision 1, March 2014 in Appendix D. The FOG Program, which includes permitting of FSEs and inspections, has yet to be funded and implemented by the City. Page 26 of the SSMP Revision 1, March 2014, states that the FOG Program will be implemented during 2014.

The section above is partial compliance with the above requirement.

Section D. 13(vii)(e): The City does not maintain a separate FOG Ordinance in the City Municipal Code. Sections 13.28.360-400 give the City the authority to inspect and enforce violations of its sewer use ordinance. The City SSMP Revision 1, March 2014 on page 28 states that it has "some" staff to inspect and enforce the FOG requirements.

The City Interim Public Works Director and Utility Systems Assistant Superintendent indicated on March 18, 2014 that inspections and permitting have not started yet.

The section above is in partial compliance with the above requirement.

Section D. 13(vii)(f): The City SSMP, Revision 1 March 2014 states on Page 29 that it will identify sections of the collection system, which are subject to grease blockages and create a cleaning maintenance schedule for these high maintenance areas (HMAs).

The section above is out of compliance with the above requirement.

Section D. 13(vii)(g): The City SSMP Revision 1 March 2014, does not provide information regarding the development and implementation of source control measures for all sources of FOG discharged to the sanitary sewer system for each FOG induced HMA or provide an explanation for not including this information.

The section above is out of compliance with the above requirement.

FOG Program Effectiveness: The City is experiencing a higher rate of Class III SSOs (10.58 SSOs per 100 miles of collection system per year) than the State average (3.4 SSOs per 100 miles of collection system per year); changes to the FOG Program are needed to bring the rate and number of SSOs down.

Sufficiency: Partial Compliance

The sufficiency grade given is slightly higher than what is indicated above as City Staff has made significant effort since the SSMP Revision 0, April 2012 to put together the forms and information necessary to implement a comprehensive FOG Program.

Reference:

- SSMP Revision 1, March 2014 p. 26-29 and Appendix D;
- City Municipal Code 13.28; and
- CIWQS City Operation Report History dated March 28, 2014.

Deficiencies: The SSMP Revision 1, March 2014 does not include the following:

- Examples of public outreach conducted by the City;
- A list of companies FSEs could hire to collect and dispose of FOG;
- A list of FSEs;
- A plan and schedule to fund, staff, and implement a FOG Program;
- A list of FOG High Maintenance Areas (HMAs); and
- Information regarding the development and implementation of source control measures for all sources of FOG discharged into the sewer system for each FOG induced HMA.

Recommendation: It is recommended that this FOG Section be updated in the Five Year Update due August 2, 2014 to include:

- A plan and schedule to create a FOG public outreach program;
- A list of companies FSEs could hire to collect and dispose of FOG;
- Copies of applicable codes and ordinances as attachments;
- A plan and schedule to implement a FOG Control Program which includes how the program is funded, staffed, and managed and implemented and measures the effectiveness of the current program;
- A plan and schedule to implement a FSE on-site permitting and inspection program; and
- A plan and schedule to implement a video inspection program for FOG related SSOs.

8.0 System Evaluation and Capacity Assurance Plan [SSSWDR D.13(viii)]

SSSWDR D.13(viii) states:

The Enrollee shall prepare and implement a capital improvement plan (CIP) that will provide hydraulic capacity of key sanitary sewer system sections for dry weather peak flow conditions, as well as the appropriate design storm or wet weather event. At a minimum, the plan must include:

- (a). **Evaluation:** Actions needed to evaluate those portions of the sanitary sewer system that are experiencing or contributing to a SSO discharge 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; and
- (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, 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.
- (d). **Schedule:** The Enrollee shall develop a schedule of completion dates for all portions of the capital improvement program developed in (a)-(c) above. This schedule shall be reviewed and updated consistent with the SSMP review and update requirements as described in Section D.14.

Section D.13(viii)(a): The City SSMP refers to the 2005 Wastewater System Capital Improvement Plan Update and Capacity Charge Study (2005 WSCIP) that evaluated hydraulic conditions of the City sewer system. The 2005 WSCIP provided hydraulic evaluations of City: Lift Stations, Force Mains, and Gravity Sewer Lines based on; land use planning documents, flow meter information at the WWTP, historic water use information, and existing capacity information for City sewer assets. Hydraulic evaluations were conducted to evaluate existing dry and wet weather conditions and future dry and wet weather conditions which represent “worst case scenario” flow conditions. A review of City records shows the major contributing factor(s) that cause City SSOs are Fats, Oils, and Grease (FOG), debris, and rags, as opposed to pipelines that are deficient in hydraulic capacity during wet and dry weather flows. Additional hydraulic analysis is planned as future development is proposed in the outlying areas of the City.

The section above is in compliance with the above requirements. See recommendations below.

Section D.13(viii)(b): Design criteria were identified in the 2005 WSCIP and used in system analysis to assess the hydraulic conditions existing in the system. These criteria were used to make recommendations for hydraulic upgrades in City Lift Stations, Force Mains, and Gravity Sewer Lines. The study determined there is adequate dry and wet weather capacity in the existing collection and conveyance system. Additional development east of Hwy 101 will require capacity upgrades throughout the system. Evaluations specific to these development projects are planned to be conducted as commercial and residential projects are presented to the City. Developers for these projects will be responsible for future capacity analysis specific to their projects and the impacts those projects will have on the existing system.

The section above is in compliance with the above requirements. See recommendations below.

Section D.13(viii)(c) – (d): The 2005 WSCIP included a Wastewater Capacity Charge Study which identified fees for residential and commercial sewer users to support improvements to the City's Wastewater Treatment Plant and Collection System. As stated previously in this report, capacity related projects for the collection system are planned to be covered by new development as projects are identified and presented to the City. The City subsequently adopted a rate structure which was formalized by Resolution # 2005-65 and referenced in City Ordinance No. 458 (2005). This rate structure plans to fund the capital projects identified in the 2005 WSCIP.

The 2005 WSCIP, an updated summary of the capital projects identified with the schedule (Capital Improvement Plan (CIP) for each FY until 2025), and Resolution # 2005-65 will need to be included in the next update of the SSMP.

The sections above are in substantial compliance with the above requirements. See recommendations below.

Sufficiency: Substantial Compliance

Reference: City 2014 SSMP Rev 1; City 2005-2025 WSCIP; City Municipal Code Chapter 13.32 *Sewer Rates*, and Chapter 13.70 *Sanitary Sewer Capacity Charge*; City Resolution # 2005-65.

Deficiencies: The City has not presented supporting documentation for approved Wastewater Capacity Charges in the SSMP.

Recommendation: Incorporate any updates to the CIP project plan and schedule into annual updates to the SSMP. Present the plan to fund the capital improvement projects by the 2005 adopted rate structure in the updated SSMP.

9.0 Monitoring, Measurement, and Program Modifications [SSSWDR D.13(ix)]

SSSWDR D.13(ix) states:

The Enrollee shall:

- (a). Maintain relevant information that can be used to establish and prioritize appropriate SSMP activities;
- (b). Monitoring the implementation and, where appropriate, measure the effectiveness of each section of the SSMP;
- (c). Assess the success of the preventative maintenance program;
- (d). Update program sections, as appropriate, based on monitoring or performance evaluations; and
- (e). Identify and illustrate SSO trends, including: frequency, location and volume.

Section D. 13(ix)(a): The City does not have a comprehensive summary of necessary or prioritized SSMP activities in the SSMP. The City does maintain records associated with some O&M activities, such as sewer cleaning records, which are discussed in this SSMP Audit in the Operations and Maintenance Program [SSSWDR D.13(iv)] section.

The City SSMP does identify eight (8) performance indicators that will be used to measure the implementation and effectiveness of the City SSMP. Documents were not provided during the audit to show that these performance indicators were used to evaluate the implementation or effectiveness of the City's SSMP.

The section above is out of compliance with the above requirement. See recommendations below.

Section D. 13(ix)(b) and (c): The City does not formally evaluate the implementation or effectiveness of each section of the SSMP or preventative maintenance activities. A formal preventative maintenance program is not in place and therefore cannot be evaluated.

The section above is out of compliance with the above requirement. See recommendations below.

Section D. 13 (ix)(d): The City March 2014 SSMP was revised since its original certification by the City Council on October 23, 2012, but the revisions were not based on a formal SSMP section monitoring or performance evaluation.

The section above is in partial compliance with the above requirement. See recommendations below.

Section D.13(ix)(e): The City March 2014 SSMP states that the frequency, location, cause, and volume of SSOs will be tracked in Appendix “F” however information for Calendar Year 2012 is not included in this Appendix. SSO Trends are not discussed or presented in this section.

The section above is in partial compliance with the above requirement. See recommendations below.

Sufficiency: Marginal Compliance

Reference: City SSMP March 2014 Revision 1.0, Page 32.

Deficiencies: The does not have a written plan to formally evaluate the implementation or effectiveness of each SSMP Section.

Recommendation: Create a written program to schedule, track, and evaluate the effectiveness of preventative maintenance for the sanitary sewer system. Create a plan and schedule to review and asses the effectiveness of each SSMP section. Create a written record of SSO trend evaluation and identification. Complete these plans and records and incorporate them into the update of this SSMP Section.

10.0 Sewer System Management Plan Program Audit [SSSWDR D.13(x)]

SSSWDR D.13(x) states:

As part of the SSMP, the Enrollee shall conduct periodic internal audits, appropriate to the size of the system and the number of SSOs. At a minimum, these audits must occur every two years and a report must be prepared and kept on file. This audit shall focus on evaluating the effectiveness of the SSMP and the Enrollee's compliance with the SSMP requirements identified in this subsection (D.13), including identification of any deficiencies in the SSMP and steps to correct them.

Sufficiency: Marginal Compliance

Reference: City SSMP March 2014 Revision 1.0, Page 34.

Deficiencies: SSMP audits are required to be performed a minimum of every two years from the date of required adoption, which was August 2, 2009 for the City.

The first SSMP Audit was due on or before August 2, 2011 and the second on August 2, 2013.

While the City did not certify its original SSMP until October 2012, the due dates above were still in effect and the City missed the opportunity to perform the second SSMP Audit by August 2, 2013.

The scheduling and completion of this SSMP Audit in March 2014 is a correction of this deficiency.

Recommendation: Schedule future SSMP Audits in the maintenance scheduling system and revise the SSMP with the dates of future audits which are to be conducted by, at a minimum:

- August 2, 2016;
- August 2, 2018;
- August 2, 2020; etc.

In the City SSMP March 2014 Revision 1.0 Five Year Update, include the this SSMP Audit Report which must be signed and certified by the Legally Responsible Official.

11.0 Communication Program [SSSWDR D.13(xi)]

SSSWDR D.13(i) states:

The Enrollee shall communicate on a regular basis with the public on the development, implementation, and performance of its SSMP. The communication system shall provide the public the opportunity to provide input to the Enrollee as the program is developed and implemented.

The Enrollee shall also create a plan of communications with systems that are tributary and/or satellite to the Enrollee's sanitary sewer system.

Section D.13 (xi): The City SSMP, March 2014 Revision 1.0 states that the approval of the original SSMP, April 2012 Revision 0 occurred at the City Council Meeting on October 23, 2012. Resolution 2012-110 was obtained documenting that the SSMP certified by the City Council on this date.

The SSMP, April 2012 Revision 0 is posted on the City webpage as shown in a photo capturing the place on the City website

No other forms of communication to the public regarding development, implementation and performance of the SSMP were completed by the City.

The City has one satellite system named in the SSMP, the Santa Lucia Shopping Center. The City was not able to produce documents during the audit documenting communication between the Santa Lucia Shopping Center and the City. Communication, when needed, is verbal.

A second satellite system is under development, the Yanks Air Museum and Recreational Vehicle (RV) Resort. This is a twelve year project that started in 2010.

Sufficiency: Partial Compliance

Reference: City SSMP March 2014 Revision 1.0, Page 35.

Deficiencies: City does not have a plan to communicate with the public regarding the development, current contents, and performance of the SSMP. City has not created mechanism for documenting communication that occurs with its two satellite systems.

Recommendation: Establish a formal SSMP Communication Program with the public which could include press releases, flyers in utility bills, and articles in a City Newsletter, such as the City Manager Newsletter. Communication with the satellite systems could be in the form of an annual memo discussing nonflushables, FOG, etc. Keep a record of all outreach and coordination in the Communication Program Section of the SSMP.

Records List by SSMP Section

- 1.0 Goals – See Records under Sections 3 - 11**
- 2.0 Organization**
 - a. SWRCB CIWQS Facility at a Glance City of Greenfield
- 3.0 Legal Authority**
 - a. City of Greenfield Municipal Code Chapter 13.28, Sewer Service
 - b. City of Greenfield Municipal Code Chapter 13.32, Sewer Rates
 - c. City of Greenfield Municipal Code Chapter 13.70, Sanitary Sewer Capacity Charge
- 4.0 Operation and Maintenance Program**
 - a. Appendix A.1, Preventative Maintenance Program (High Maintenance Area)
 - b. Appendix 4.2 Sanitary Sewer Mainline Cleaning
 - c. Appendix A.3 – Wastewater Collection System Map
 - d. CWEA Certification, Collection System Maintenance Grade 1 – Humberto Aceves and Grade 2 – Arturo Felix
 - e. May 2010 Green Line Video CCTV Inspection Reports
 - f. 2012-14 Non-permit Required Confined Space Entry Form
 - g. 2012-14 Weekly Manhole and Liftstation Checklist
 - h. 2012-14 Sewer Line Cleaning Work Order
- 5.0 Design and Performance Standards**
 - a. City of Salinas Standard Specifications, Design Standards, and Standard Plans. 2008 Edition.
- 6.0 Overflow Emergency Response Plan**
 - a. Appendix C June 2011 Sanitary Sewer Overflow Response Plan
- 7.0 Fats, Oils, and Grease Program**
 - a. Appendix D City FOG Program. FOG Letter, Permit application, and FSE Cleaning Log.
 - b. Appendix F City FOG Ordinance, Draft.
- 8.0 System Evaluation and Capacity Assurance Plan (SECAP)**
 - a. Appendix E City of Greenfield 2005 – 2025 Wastewater System Capital Improvement Plan Update and Capacity Charge Study.
- 9.0 Monitoring, Measurement, and Program Modifications**
 - a. SWRCB CIWQS Facility at a Glance and City Operational Report
- 10.0 SSMP Audits**
- 11.0 Communication Program**
 - a. City of Greenfield Resolution 2012-110, Certifying the City SSMP.
 - b. City of Greenfield Webpage (www.ci.Greenfield.ca.us) location of SSMP, October 2012 Revision 0.

Appendix G

**City of Greenfield, Sewer System Management Plan-
September 2019, Audit Report**



**City of Greenfield
Sewer System Management Plan,
Revision 1 – August 2014
Audit Report**

September 4, 2019

Prepared By:



WALLACE GROUP®

CERTIFICATION

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.



Arturo Felix

*Public Works Operations Manager
City of Greenfield*

9-4-19

Date

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SCOPE AND PURPOSE

The State Water Resources Control Board (SWRCB) Sanitary Sewer System Waste Discharge Requirements Order No. 2006-0003-DWQ as amended by WQ 2013-0058-EXEC (herein SSSWDR Orders) require the City of Greenfield (City) to implement and maintain a Sewer System Management Plan (SSMP).

The City has contracted with Wallace Group to complete an Audit of the City's current SSMP in order to evaluate the effectiveness of the SSMP and its implementation.

The SSMP Audit measures compliance with section D.13 of the SSSWDR Orders and the effectiveness of the City's implementation of the current SSMP; Revision 1 August 2014.

- 1.0 [SSSWDR, Section D.13.i]: Goals
- 2.0 [SSSWDR, Section D.13.ii]: Organization
- 3.0 [SSSWDR, Section D.13.iii]: Legal Authority
- 4.0 [SSSWDR, Section D.13.iv]: Operation and Maintenance Program
- 5.0 [SSSWDR, Section D.13.v]: Design and Performance Provisions
- 6.0 [SSSWDR, Section D.13.vi]: Overflow Emergency Response Plan
- 7.0 [SSSWDR, Section D.13.vii]: Fats, Oils, and Grease Control Program
- 8.0 [SSSWDR, Section D.13.viii]: System Evaluation and Capacity Assurance Plan
- 9.0 [SSSWDR, Section D.13.ix]: Monitoring, Measurement, and Program Modifications
- 10.0 [SSSWDR, Section D.13.x]: Sewer System Management Plan Program Audits
- 11.0 [SSSWDR, Section D.13.xi]: Communication Program

AUDIT FORMAT

This SSMP Audit separately evaluates each SSMP Section using the following format:

- Applicable SSSWDR Section
- Audit Finding
- Ranking
- Reference Information
- Deficiencies
- Recommended steps and schedule to correct Deficiencies

The ranking criteria utilized in the Audit are provided in Table 1 below:

Table 1: SSMP Audit Ranking Criteria

Ranking	Ranking Basis
In Compliance	All requirements specified in the section are met.
Substantial Compliance	The majority of requirements in the section are met.
Partial Compliance	Half of the requirements in the section are met
Marginal Compliance	Less than half of the requirements in the section are met.
Out of Compliance	None of the requirements in the section are met.

SSMP AUDIT PARTICIPANTS AND SCHEDULE

This SSMP Audit assesses the effectiveness of the City’s SSMP Revision 1, dated August 2014, and compliance with the SSSWDR Section D.13 requirements. The purpose of the Audit is to recognize accomplishments, identify deficiencies, and recommend corrective actions. The Audit was conducted by the following Wallace Group Staff:

- Bill Callahan
Senior Environmental Compliance Specialist

Greenfield Staff participating in the SSMP Audit were:

- Arturo Felix
Public Works Operations Manager – City of Greenfield
- Maria Vidal
Public Works Administrative Assistant – City of Greenfield

The SSMP Audit was conducted in July 2019, the following table summarizes key dates and locations:

Table 2: City of Greenfield SSMP, Revision 1 August 2014, 2019 Audit Key Dates

Date	Location	Topic	Staff
May 22, 2019	Wallace Group Office	SSMP Data and Records Request	Bill Callahan and Arturo Felix
July 8, 2019	City Office	SSMP Audit Kick Off Meeting. SSMP Data and Records Request reviewed and records gathered. City staff interviewed regarding operation and maintenance practices and schedule.	Arturo Felix, and Bill Callahan
August 22, 2019	City Office	SSMP Audit Draft Report Review	Arturo Felix and Bill Callahan
September 4, 2019	City Office	SSMP Audit Final Report	Arturo Felix to sign and certify Final Audit Report.

CITY 2019 SSMP AUDIT RESULTS

The SSMP Audit resulted in a finding that the City SSMP dated August 2014 is in full compliance with three (3) of eleven subsections (elements) of SSSWDR Section D.13, partial or substantial compliance in three (3) of the elements and marginal or out of compliance in five (5) of the elements. The City has been marginally effective in implementation of the SSMP. A summary of the results is presented in Table 3 below:

Table 3: City of Greenfield SSMP Revision 1, August 2014 Audit Results

SSSWDR Section D.13	SSMP Compliance with Required Subsection	City Effectiveness in the Implementation of SSMP Subsections	Recommendations/Schedule
1.0 Goals [SSSWDR D.13(i)]	In Compliance	The City provides fourteen (14) goals which pertain to City and its SSMP implementation, however there is no evidence that the City has made progress toward meeting many of these goals.	Wallace Group recommends that the City reduce the number of goals to five (5) or less and target goals that are specific, measurable, and attainable within the next two (2) years.
2.0 Organization [SSSWDR D.13(ii)]	Partial Compliance	The City contact information is not current and complete throughout the SSMP. The City needs to provide an organization chart identifying all City and Contractor staff SSMP roles, responsibilities, and lines of authority.	Revise the Organization Section during 5-Year SSMP Update
3.0 Legal Authority [SSSWDR D.13(iii)]	In Compliance	The SSMP should include an appendix or links to this section that includes the referenced sections of City Code.	Include reference to City FOG Program Ordinance in next 5-Year Update
4.0 Operation and Maintenance Program [SSSWDR D.13(iv)]	Marginal Compliance	Updates are required to incorporate a formal plan and schedule for sewer line cleaning, manhole inspections, CCTV inspections, staff training, and rehabilitation and	Update the Operations and Maintenance Program Section in the 2019 5 - Year Update

SSSWDR Section D.13	SSMP Compliance with Required Subsection	City Effectiveness in the Implementation of SSMP Subsections	Recommendations/ Schedule
		<p>repair activities. A critical parts and equipment inventory must be developed and included in this section.</p>	
<p>5.0 Design and Performance Provisions [SSSWDR D.13(v)]</p>	<p>In Compliance</p>	<p>The SSMP requires that all new construction conform with the 2008 City of Salinas Standard Specifications and Design Standards and May 2006 Caltrans Standard Specifications. The City of Salinas Standards includes inspection and testing requirements for the majority of sewer system assets.</p> <p>Lift station design standards are developed on a case by case basis by a licensed Professional Engineer (PE).</p>	<p>A copy of the standards referenced and/or internet link should be included in an appendix to this section during the 5 – Year Update.</p>
<p>6.0 Overflow Emergency Response Plan [SSSWDR D.13(vi)]</p>	<p>Marginal Compliance</p>	<p>Additional separate procedures should be created to inform City staff on how to respond, report, clean-up, and estimate SSO volume. The notification and reporting information in the SSMP is required to be updated to reflect the 2013 Monitoring and Reporting Program (MRP) changes and include more detail.</p> <p>A water quality monitoring program is also required to be developed as directed</p>	<p>Update the Overflow Emergency Response Plan Section in the 2019 SSMP Five Year Update</p>

SSSWDR Section D.13	SSMP Compliance with Required Subsection	City Effectiveness in the Implementation of SSMP Subsections	Recommendations/ Schedule
		in the 2013 MRP.	
<p>7.0 Fats, Oils and Grease (FOG) Control Program [SSSWDR D.13(vii)]</p>	<p>Partial Compliance</p>	<p>City has experienced a higher average number of Category 2 &3 SSOs compared to other municipalities in the State. A significant cause of the SSOs is FOG.</p> <p>The City needs to continue to develop and implement a FOG control Program.</p>	<p>Update the FOG Control Program Section in the 2019 SSMP Five Year Update</p>
<p>8.0 System Evaluation and Capacity Assurance Plan (SECAP) [SSSWDR D.13(viii)]</p>	<p>Substantial Compliance</p>	<p>The City was substantially effective in in implementing this requirement.</p> <p>A Wastewater System Capital Improvement Plan Update and Capacity Study (WSCIP) containing a SECAP was completed in 2005 and Wastewater Master Plan in 2016 (WMP). The WSCIP and WMP recommended capital improvement projects which are based on future expansion and development. Updates to the City Capital Improvement Plan (CIP) and reference to 2005 Capacity Sewer Charges created to fund these projects need to be included in the SSMP.</p>	<p>Include or reference the 2005 WSCIP and the 2016 Wastewater Master Plan in 2019 SSMP Five Year Update and a plan, schedule and sources of funding to complete associated CIPs.</p>
<p>9.0 Monitoring, Measurement, and Program Modifications [SSSWDR D.13(ix)]</p>	<p>Out of Compliance</p>	<p>A plan and schedule need to be created to develop and implement all of the required SSMP section monitoring, measurements,</p>	<p>Update Monitoring, Measurement, and Program Modification Section in the 2019 SSMP</p>

SSSWDR Section D.13	SSMP Compliance with Required Subsection	City Effectiveness in the Implementation of SSMP Subsections	Recommendations/ Schedule
		<p>and program modifications.</p> <p>Appendix F is mislabeled and contained a revised FOG Ordinance, not the SSO history and tracking information committed to in this section.</p>	<p>Five Year Update.</p>
<p>10.0 SSMP Program Audits [SSSWDR D.13(x)]</p>	<p>Marginal Compliance</p>	<p>The first SSMP Audit was due on or before August 2, 2011, and subsequent audits were due before August 2, 2013, August 2, 2015 and August 2, 2017. Only one of these Audits were completed.</p> <p>Wallace Group recommends that the City use its maintenance calendar to schedule the next SSMP Audit which will be due on or before August 2, 2021.</p>	<p>Update SSMP Program Audits Section in the 2019 SSMP Five Year Update.</p>
<p>11.0 Communication Program [SSSWDR D.13(xi)]</p>	<p>Out of Compliance</p>	<p>The SSMP is not available on the City of Greenfield webpage which is the host for City information.</p> <p>A formal SSMP Communication Program needs to be developed. Communication with the public and should include articles in City newsletters and/or press releases about FOG and non-flushable material. Documentation of communication with the Yanks RV Resort/Museum needs to be created, implemented, and included</p>	<p>Update Communication Program in the 2019 SSMP Five Year Update.</p>

SSSWDR Section D.13	SSMP Compliance with Required Subsection	City Effectiveness in the Implementation of SSMP Subsections	Recommendations/ Schedule
		in the SSMP.	

The following sections of this report describe these deficiencies in detail and address future additions and updates the City is required to make to its SSMP. The above list of updates is a summary and is not intended to replace the detailed Deficiencies identified in the SSMP Audit Report. The entire SSMP Audit Report recommendations are recommended to be implemented in a reasonable time frame, which should be in the Five-Year Update due August 2, 2019 to ensure compliance with the SSS WDR Orders.

It should be noted that the City should make improvements with their Sewer System Overflow (SSO) reduction efforts when compared to State and Regional municipalities as shown in the tables below:

Comparison to Municipal Agencies 2014-2019

Spill Rate: Number of Spills per 100 miles of Pipe per Year			
	Category 1	Category 2	Category 3
City of Greenfield	0.0	8.26	9.17
State Municipal Average	2.31	1.02	3.91
Region Municipal Average	2.49	1.12	4.7

Category 1 = Spills of any volume that reach surface water.

Category 2 = Spills greater than or equal to 1,000 gallons that do not reach surface water.

Category 3 = Spills less than 1,000 gallons that do not reach surface water.

Comparison to Municipal Agencies 2014-2019

Net Volume of Spills in gallons per Capita per Year			
<i>Net Volume (volume spilled minus volume recovered) of SSOs, for which the reporting Enrollee is responsible, per capita (i.e. the population served by your agency's sanitary sewer system), per year.</i>			
	Category 1	Category 2	Category 3
City of Greenfield	0.0	691.7	30.56
State Municipal Average	1855.87	418.97	28.2
Region Municipal Average	1382.39	203.36	34.15

Category 1 = Spills of any volume that reach surface water.

Category 2 = Spills greater than or equal to 1,000 gallons that do not reach surface water.

Category 3 = Spills less than 1,000 gallons that do not reach surface water.

SSMP Management Recommendation

- 1) All changes/updates to the SSMP must be tracked and recorded in a SSMP Change Log identifying the change made to the document, person making change and date of change.
- 2) Inform and train Operations and Maintenance Staff on the following to reinforce the basis and importance of supporting the City in meeting goals and requirements stated in these documents:
 - a. SSSWDRs
 - b. City SSMP and supporting programs
 - c. 2013 Monitoring and Reporting Requirements

1.0 Goal [SSSWDR D.13(i)]

SSSWDR D.13(i) states:

The goal of the SSMP is to provide a plan and schedule to properly manage, operate, and maintain all parts of the sanitary sewer system. This will help reduce and prevent SSOs, as well as mitigate any SSOs that do occur.

Section D.13(i): The August 2014 City of Greenfield (City) SSMP includes fourteen (14) goals as listed below.

1. Properly manage, operate, and maintain all of the City's wastewater collection system.
2. Provide adequate capacity within the sewer system, including flows. This includes review of development plans and other associated plans, which may affect the City's sewer system capacity.
3. Minimize the frequency of Sanitary Sewer Overflows (SSO's).
4. Mitigate the impacts associated with SSO's.
5. Meet all applicable regulatory notification including monthly and annual reporting requirements.
6. Use funds available for sewer operations in the most efficient manner.
7. Prevent public health hazards.
8. Implement regular, practical maintenance of the sewer system to remove roots, debris, sand, and Fats, Oils, and Grease (FOG) in areas prone to blockage that may cause SSO's or sewer backups.
9. Perform operations in a safe manner to avoid personnel injury and/or property damage.
10. Methodically clean all sewer lines on a scheduled basis.
11. Provide monthly, quarterly, bi-annual and annual preventative maintenance of problematic areas (hot spots) within the collection system.
12. Conduct a video (CCTV) inspection/assessment of each sewer mainline every three years and continuously thereafter identify areas required root control, repairs and additional maintenance as evidenced by the video inspection.
13. Conduct appropriate analysis/evaluation of SSO's by utilization of systemic maintenance and activity data collection of "hot spots" that may be identified by visual observation and or CCTV of the collection system.
14. Identify collection system blockage due to Fats, Oils, and Grease (FOG) and develop strategies to mitigate blockages.
15. Maintain records of the Sanitary Sewer System and respond to customer inquiries concerns and complaints.
16. Continue with the development of capital improvement projects directed at a high level of maintenance of the current city assets by improving system reliability and providing adequate future capacity.

Element 1 Sufficiency: In Compliance

Reference: City August 2014 SSMP, Revision 1, Page 3

Deficiencies: City should update goals that are specific and meaningful for work to be performed in the sewer collection and conveyance system in the next two (2) years. There is no evidence that the City is tracking progress on meeting these goals, analyzing the effectiveness of these goals and how these goals are/will be achieved. Based on interviews of City staff, many of these goals are not understood and have not been met over the course of the past five (5) years.

Recommendation: Some of the listed goals may be better considered as program objectives since they are general and lack specificity (i.e. number 3, 6, and 9).

We recommend the City update goals that are specific and meaningful for work to be performed in the sewer collection and conveyance system in the next two (2) years. The goals should be specific to the City sewer collection and conveyance system and measurable to track performance and success in meeting each goal.

The updated goals should be included in the 5-Year Update due August 2, 2019. Accomplishment of these goals and their effectiveness should be tracked in Element 9 Monitoring, Measurement and Program Modifications.

2.0 Organization [SSSWDR D.13(ii)]

SSSWDR D.13(ii) states:

The SSMP must identify:

- (a). The name of the responsible or authorized representative as described in Section J of this Order;
- (b). The names and telephone numbers for management, administrative, and maintenance positions responsible for implementing specific measures in the SSMP program. The SSMP must identify lines of authority through an organization chart or similar document with a narrative explanation; and
- (c). The chain of communication for reporting SSOs, from receipt of a complaint or other information, including the person responsible for reporting SSOs to the State and Regional Water Board and other agencies if applicable (such as County Health Officer, County Environmental Health Agency, Regional Water Board, and/or State Office of Emergency Services).

Section D.13 (ii)(a): The position/job title of City staff responsible or authorized as the Legally Responsible Official (LRO) is listed in the SSMP. The Public Works Director is the sole LRO named and his phone number is given.

The SSMP Revision 1, August 2014 LRO name matches one of the LRO name/positions in the California Integrated Water Quality System (CIWQS) database.

- Public Works Director (Arturo Felix) is named which is the current LRO which is accurate
- Mic Steinmann is also on the CIWQS database as a LRO however he is no longer with the City and should be assigned a "Relationship End Date".

The section above is partial compliance with the above requirement. See recommendations below.

Section D.13(ii)(b): The names and telephone numbers of staff holding the following positions are included on Page 7 of the SSMP:

- City Manager
- Intern Director of Public Works;
- Public Works Director, LRO
- Utilities System Assistant Superintendent;
- Office Specialist;
- Wastewater Operator 1; and
- Public Works Service Workers.

Table 1 entitled “Implementation Responsibilities” describes which position is responsible for each SSMP Element.

Contract Staff, such as MNS Engineers, Greenline, etc. should also be named with contact information and SSMP areas of responsibility identified if appropriate. Some of the positions and staff members identified in this section are out of date and require updating.

The section above is in partial compliance with the above requirement. See recommendations below.

Section D.13(ii)(c): A chain of communication for reporting sanitary sewer overflows (SSOs) is provided on Page 10 and entitled Figure 2, Sequence Chart, Reporting and Responding to SSO’s. The chain of communication is incomplete and should be amended to contain details necessary to ensure SSO reporting is timely and accurate. For example, SSOs that reach a Storm Drain (SD) or Waterway and of estimated volume of greater than 1,000 gallons is required to be reported within two (2) hours of becoming aware of the SSO to the California Office of Emergency Services (Cal OES).

The section above is in partial compliance with the above requirement. See recommendations below.

Element 2 Sufficiency: Partial Compliance

Reference: City August 2014 SSMP Revision 1, pages 5-10; CIWQS Facility At-A-Glance Report (7/5/19)

Deficiencies: The Organization Section requires updating to correctly identify the names and titles of persons responsible for implementing the SSMP in an organization table and chart showing lines of authority.

The titles and responsibilities of the individuals included in Figure 1 and the contact information for the regulatory agencies, which must be notified of SSOs, need to be given.

Recommendation: Update the Organization Chart (Figure 1) and following page with all current City and Contract Staff identified with names, titles, and contact information, and their SSMP and SSO responsibilities described. The Sequence Chart (Figure 2) also requires updating to incorporate the new 2013 MRP requirements such as how to report a Category 3 SSO in CIWQS and timeframes for notifying OES (2hrs in event of CAT 1 SSO). This section should be updated as soon as possible, and the update reviewed with City Staff.

3.0 Legal Authority [SSSWDR D.13(iii)]

SSSWDR D.13(iii) states:

Each Enrollee must demonstrate, through sanitary system use ordinances, service agreements, or other legally binding procedures, that it possesses the necessary legal authority to:

- (a). Prevent illicit discharges into its sanitary sewer system (examples include I/I, storm water, chemical dumping, unauthorized debris and cut roots, etc.);
- (b). Require that sewers and connections be properly designed and constructed;
- (c). Ensure access for maintenance, inspection, or repairs for portions of the lateral owned or maintained by the Public Agency;
- (d). Limit the discharge of fats, oils, and grease and other debris that may cause blockages; and
- (e). Enforce any violation of its sewer ordinances.

Section D.13(iii)(a): Illicit discharges such as storm water, debris, chemicals, waste, concrete, debris that obstruct, etc. are addressed in the following sections of City Municipal Code and outlined in Table 2, Page 14 in the City SSMP:

- City Municipal Code Referenced in SSMP:
 - Section 13.28.050 – 13.28.060
 - Section 13.28.130 – 13.28.240
 - Section 13.28.260 – 13.28.280
 - Section 13.28.310
 - Section 13.28.360

The section above is in compliance with the above requirement. See recommendations below.

Section D.13(iii)(b): Proper design and construction of private connections are addressed in the following City Municipal Code Sections:

- City Municipal Code Referenced in SSMP:
 - Section 13.28.020: Alterations or use—Permit required.
 - Section 13.28.070 – 13.28.080: Construction—Compliance with provisions.
 - Section 13.28.130 – 13.28.240: Public Sewer—Use required when available

Design and construction standards for public sewers are not incorporated into the City Municipal Code; but are incorporated into contracts for rehabilitation and replacement of public sewers.

The section above is in compliance with the above requirement. See recommendations section below.

Section D.13(iii)(c): City currently does not own and therefore does not require access to maintain or repair any portion of a Lateral Sewer, House Sewer or House Drain.

City ensures access for inspection for portions of the lateral owned or maintained by a “Person” in:

- City Municipal Code Section Referenced in SSMP:
 - Section 13.28.110: Private disposal—Inspection Required.

The section above is in compliance with the above requirement. See recommendations section below.

Section D.13(iii)(d): City has the authority to limit the discharge of FOG and other debris that may cause blockages into the system in the Ordinances specified below:

- City Municipal Code Referenced in SSMP:
 - Section 13.28.260 – 13.28.310: Construction—Compliance with provisions.
- Recommended Specific City Municipal Code sections to be Referenced in SSMP:
 - Section 13.28.280.B: Except as hereinafter provided, no person shall discharge or cause to be discharged any of the following described waters or wastes to any public sewer: any water or waste which may contain more than one hundred parts per million, by weight, of fat, oil, or grease.
 - Section 13.28.285 Fats, Oils and Grease Control Program
 - City FOG Program Standard Conditions 2019
 - Section 13.28.290 and 13.28.300: Grease Oil and Sand Interceptors shall be provided, and Grease, Oil, and Sand Interceptors shall be maintained by the owner.

The section above is in compliance with the above requirement. See recommendations section below.

Section D.13(iii)(e): City has the authority to enforce any violation of its sewer ordinances in the sections of the Ordinances specified below:

- City Municipal Code Referenced in SSMP:

- Section 13.28.360 – 13.28.400: Tampering with equipment—Penalty. Powers and Authority of Inspectors. Violation—Penalties. Misdemeanor—Separate Offense. Violation—Liability.

The section above is in compliance with the above requirement. See recommendations section below.

Element 3.0 Sufficiency: In Compliance

Reference: City August 2014 SSMP Revision 1, City Municipal Codes: Chapter 13.28 Sewer Service, Chapter 13.32 Sewer Rates, Chapter 13.70 Sanitary Sewer Capacity Charge, Chapter 13.28.285 Fats, Oils and Grease Control Program

Deficiencies: None.

Recommendation: The City August 2014 SSMP Revision 1.0 specifies where the legal authorities required by the section are located but does not include a copy or link to the Chapter of City Municipal Code referenced. The SSMP should state that design and construction standards for public sewers are not incorporated into the City Municipal Code; but are incorporated into contracts for rehabilitation and replacement of public sewers. This Element should also be updated to incorporate updates to the City's Municipal Code for Fats, Oils and Grease Control.

4.0 Operation and Maintenance Program [SSSWDR D.13(iv)]

SSSWDR D.13(iv) states:

The SSMP must include those sections listed below that are appropriate and applicable to the Enrollee's system:

- (a). Maintain an up-to-date map of the sanitary sewer system, showing all gravity line segments and manholes, pumping facilities, pressure pipes and valves, and applicable storm water conveyance facilities;
- (b). Describe routine preventive and operation and maintenance activities by staff and contractors, including a system for scheduling regular maintenance and cleaning of the sanitary sewer system with more frequent cleaning and maintenance targeted at known problem areas. The Preventative Maintenance (PM) Program should have a system to document scheduled and conducted activities, such as work orders;
- (c). Develop a rehabilitation and replacement plan to identify and prioritize system deficiencies and implement short-term and long-term rehabilitation actions to address each deficiency. The program should include regular visual and TV inspections of manholes and sewer pipes, and a system for ranking the condition of sewer pipes and scheduling rehabilitation. Rehabilitation and replacement should focus on sewer pipes that are at risk of collapse or prone to more frequent blockages due to pipe defects. Finally, the rehabilitation and replacement plan should include a capital improvement plan that addresses proper management and protection of the infrastructure assets. The plan shall include a time schedule for implementing the short- and long-term plans plus a schedule for developing the funds needed to the capital improvement plan;
- (d). Provide training on a regular basis for staff in sanitary sewer system operations and maintenance, and require contractors to be appropriately trained; and
- (e). Provide equipment and replacement part inventories, including identification of critical replacement parts.

Section D.13(iv)(a): All sewer assets and appurtenances are identified in the City's Sewer Atlas Map referenced in the August 2014 SSMP. Two separate map atlas and map books are maintained by the City identifying sewer assets and storm water conveyance facilities that could be impacted by a SSO. Examples of the maps are included with this section of the SSMP in Appendix "A". Sewer Atlas information is currently being integrated into GIS. The City's GIS mapping system is planned to be operational by the end of 2019.

The section above is in compliance with the above requirements. See recommendations section below.

Section D.13(iv)(b): The August 2014 City SSMP summarizes goals and Routine Preventative Operation and Maintenance (O&M) activities in this section. O&M relating to sewer line cleaning, and routine inspection are performed by Greenfield City staff.

Routine operations and maintenance for the six (6) City Lift Stations are conducted by City collection system and maintenance staff. There was no evidence of a formal preventative maintenance program for these lift stations or supporting emergency power supplies. Staff checks each station weekly and records; pump hours, wet well level, alarms and documents other conditions as needed. If repairs are necessary based on these observations, staff performs necessary maintenance and repairs. If outside assistance is necessary, local contractors or Lift Station controls contractor (Tesco) are contacted for support.

Sewer line cleaning activities are recorded on a City sewer atlas and documented on a Sewer Line Cleaning Log. A formal preventative maintenance program and schedule does not exist for routine cleaning of the sewer system at this time and the City is currently without a means to clean sewer lines as the City Vactor Truck is out of service for repairs. The City does identify a goal for “methodically cleaning the system on a scheduled basis” and “to clean the system once every five (5) years”. The O&M section of this Element also states that the system is maintained on an “as needed basis” and that “use of sewer main cleaning logs will assist in creating a preventative maintenance program”. The preventative maintenance section of the SSMP is unclear pertaining to sewer line cleaning and general preventative maintenance and should be revised so that the plan, goals and objective of the program can be clearly understood.

A formal plan and schedule for routine cleaning of the entire collection system should be developed by the end of 2019. The plan and schedule should provide for the cleaning of the entire system at an interval that will help to reduce the current number of SSOs the City has historically encountered (system wide cleaning intervals for systems of this size are generally 3 years in duration to effectively reduce the occurrence of SSOs, especially in the older sections of town where SSOs are more prevalent). All routine and non-routine cleaning activities should be tracked in the City’s Sewer Line Cleaning Log. A column for observed conditions should be added to this list to assist the City in assessing and tracking the conditions observed in the field.

Areas needing more frequent cleaning (High Maintenance Areas (HMAs)) are identified in the August 2014 SSMP and scheduled for weekly visual inspection. It appears a revision was completed striking out “HMA” and replacing this abbreviation with “PMP”. This abbreviation is not defined.

These areas are cleaned based on the results of these scheduled inspections however the City is currently relying on contracted sewer cleaning services in the event a restricted line is observed at one of these Hot Spots which may be one of the contributing factors leading to an increase in SSO volumes and occurrences. Sewer line cleaning work orders are also generated based on calls from the public or as scheduled maintenance based on field observations. Staff documents conditions observed during the completion of each work order and documents recommended follow up actions on each work order form.

When problems are found during sewer line cleaning activities that cannot be diagnosed by City staff, a CCTV inspection is conducted by contracted staff (Greenline) to determine the

conditions of the line. CCTV reports are reviewed and when sewer line defects are observed, they are scheduled as a future CIP. At the time of this audit, no significant issues were noted in 2010 CCTV reports requiring additional CIP. There was no evidence that additional CCTV work has been conducted after 2010. Staff reports that a comprehensive CCTV investigation of the older section of the City system may help to reduce SSOs and identify future CIPs.

Manhole inspections, documenting flow conditions for high maintenance sections of sewer line occur weekly in HMA areas. There was no evidence of a formal manhole inspection schedule or inspection program documenting the overall condition of each manhole at the time of this audit.

A formal schedule should be developed for future sewer line cleaning and manhole inspections. Manhole inspection and routine sewer line cleaning forms should be incorporated into the inspection process to track flow conditions, results of cleaning activities, and the physical condition of each manhole when warranted. Examples of; sewer line cleaning, CCTV investigations, and manhole inspection records should be included in the SSMP or referenced in alternate locations. Procedures should be developed for operations and maintenance at each Lift Station. These procedures should include emergency response and spill response to help facilitate a standardized approach for Lift Station Operations and Maintenance.

The section above is in marginal compliance with the above requirements. See recommendations section below.

Section D.13(iv)(c): The August 2014 SSMP states that the City conducted a 2005-2025 Wastewater System Capital Improvement Plan Update and Capacity Charge Study in 2005. Due to poor economic conditions all identified projects in this study have been on hold. It also states the City plans to purchase CCTV equipment which will allow for a formal assessment of City sewer lines at a time to be determined in the future. At the time of this audit there were no rehabilitation or replacement projects identified for any of the City's sewer assets (lift stations, sewer lines, manholes, force mains, or major equipment purchases) that were based on a formal condition assessment. CCTV equipment has not been purchased to assess City sewer lines.

The City completed an additional Wastewater Master Plan in 2016 which included CIPs and Rehabilitation/Replacement Projects however this information is not included in the SSMP. Based on the information provided it is unclear if the City has a plan, schedule and funding to complete the thirteen (13) projects identified in the Master Plan. Projects identified in this Master Plan were not developed based on CCTV investigations. Projects were developed based on the results of hydraulic modeling. Lift Stations were evaluated as part of this Master Plan which included CIPs for stations requiring upgrades or rehabilitation.

The City should identify a plan and schedule to assess the condition of sewer lines, force mains, manholes, and major equipment. A plan and schedule for the rehabilitation and replacement of assets identified in this assessment should be developed along with the associated funding to support these projects. The results of this analysis and the required funding mechanisms to support rehabilitation and replacement should be included in the next SSMP Update. The City should track the status of identified CIP and Rehabilitation and Replacement projects on an ongoing basis.

The section above is out of compliance with the above requirements. See recommendations section below.

Section D.13(iv)(d): The August 2014 SSMP states that Staff receives extensive training in system operations and maintenance. City Staff are encouraged to become certified under the California Water Environmental Association (CWEA) Certification Program for the Operation and Maintenance of Sewer Collection Systems. The City reports that staff rotates through selected seminars and training courses provided by CWEA for training in Collection System Maintenance, SSO Response/Spill Prevention/Control, Traffic Control, Vector Training, and Safety. CWEA certifications for two of the City's collections staff were available for review.

There were no records documenting internal training specific to collection system operations available at the time of this audit. One Draft Standard Operating Procedure for collection system Routine Sewer Line Cleaning was reviewed during the audit, however there was no evidence that this SOP was adopted or implemented by the City. Additional procedures should be developed for O&M activities that are specific to the City and training should be conducted annually at a minimum or when conditions require more frequent training or new staff are hired with sewer system responsibilities. Documentation of this training should be tracked and maintained. Contractors responsible for conducting sewer bypass procedures as part of a project should be trained in the City's Overflow Emergency Response Plan.

The section above is out of compliance with the above requirements. See recommendations section below.

Section D.13(iv)(e): A list of current collection system critical parts and equipment was not available at the time of this audit. A list of vendors for items and equipment not kept in stock was not available.

The City should develop a comprehensive list of critical parts and equipment for all assets and equipment used in the sewer system and create a vendor list with contact information for parts and equipment that are not easily or reasonably stocked. Include these items in the next update to this SSMP. The City may also want to consider contacting neighboring agencies to discuss the formation of mutual aid agreements for emergency response, parts, and equipment. If mutual aid agreements are formalized, they should be referenced in the next updated SSMP.

The section above is out of compliance with the above requirements. See recommendations section below.

Sufficiency: Marginal Compliance

Reference: City SSMP Rev 1: August 2014, Sewer Line Work Order Forms, Weekly Manhole (Hot Spot/High Maintenance Areas) and Lift Station Checklists, 2014: Draft Sanitary Sewer Mainline Cleaning Procedure, 2014: Wastewater Collection System Map, CWEA Collection System Certifications, Greenline CCTV Report: 2010, City Lift Station Logs, City 2005-2025 Wastewater System Capital Improvement Plan Update and Capacity Charge Study, 2016 Wastewater Master Plan.

Deficiencies: The preventative maintenance program discusses a plan and schedule for sewer line cleaning identifying cleaning of the entire system every 5-years. Staff reports that there is no program in place to clean the entire system. Sewer line maintenance is currently reactionary with hot spot/high maintenance areas inspected weekly and cleaned on an “as-needed” basis. Lift Station O&M activities and preventative maintenance schedules are not presented in the City SSMP. A plan, schedule, and funding are not in place for CCTV inspections and pipeline assessments. A plan to rehabilitate or replace sewer assets such as sewer lines, manholes, and lift stations based on a condition assessment was not presented at the time of this audit. A critical parts and equipment list have not been developed for City owned assets such as Lift Stations. This list should be developed to identify parts and equipment needed to repair critical equipment and respond to emergencies. Additionally, the City does not have a formal list of vendors and associated contact information for critical parts and equipment not normally kept in stock. A formal training program and training records are not available reflecting the City’s current staff training efforts. The goals and objectives identified for preventative maintenance are unclear and should be updated for clarity so staff and the public can better understand the City’s program.

Recommendation: Deficient sections of the O&M Program to be created and documented in the next SSMP revision include:

- Create a formal plan and schedule that outlines sewer line cleaning and manhole inspections in routine and high maintenance areas. The focus should be proactive maintenance rather than the current reactive plan to assist the City in SSO reduction efforts.
- Clarify the City’s plan/objective for preventative maintenance of the sewer collection and conveyance system and include operations and maintenance staff in this discussion.
- Identify and incorporate the Preventative Maintenance plan and schedule used for City Lift Stations and include in future updates to the SSMP. Maintain detailed Lift Station reports that identify specific O&M activities performed. (Records are required to be maintained for 5 years for compliance with the SSWDR 2013 Monitoring and Reporting Program).
- Develop a formal Rehabilitation and Replacement (R&R) plan that incorporates CCTV sewer line condition assessments and future manhole inspection data. Develop a short- and long-term CIP completion schedule based on the results of these inspections.
- Identify critical parts and equipment necessary for the operation and maintenance of City assets and document them. If parts and equipment are not planned to be stocked by the City, document the vendors for these items, contact information, and lead time for parts not in stock. If equipment is available through mutual aid agreements with neighboring agencies or through contract services, document/reference these agreements in the SSMP.
- Develop training procedures specific to City O&M activities and train on these procedures annually. Maintain documentation of this training.
- Develop a plan to incorporate and train new staff as current staff nears retirement to ensure City “institutional knowledge” is maintained and there is adequate staffing to maintain compliance with requirements found in the SSWDRs.

5.0 Design and Performance Provisions [SSSWDR D.13(v)]

SSSWDR D.13(v) states:

- (a). Design and construction standards and specifications for the installation of new sanitary sewer systems, pump stations, and other appurtenances; and for the rehabilitation and repair of existing sanitary sewer systems; and
- (b). Procedures and standards for inspecting and testing the installation of new sewers, pumps, and other appurtenances and for rehabilitation and repair projects.

Section D.13(v)(a): The City states in the SSMP that it utilizes:

1. The latest edition (2008 Edition) of the City of Salinas, Standard Specifications, Design Standards and Standard Plans;
2. The May 2006 Edition of Caltrans Standards Specifications and Standard Plans; and
3. City Municipal Code Chapter 13.28, Sewer Service.

The section above is in compliance with the above requirements.

Section D.13(v)(b): Procedures and standards for the acceptance testing and inspection of new and repaired sewer main and appurtenances are per the City of Salinas Standard Specifications, Design Standards and Standard Plans specified on page twenty-one (21) in the SSMP.

The section above is in compliance with the above requirements.

Sufficiency: In Compliance

Reference: City August 2014 SSMP Revision 1, pages 21; 2008 Edition City of Salinas Standard Specifications, Design Standards and Standard Plans, May 2006 Edition of Caltrans Standard Specifications.

Deficiencies: The City is in compliance with this section. Design Standards and Specifications with Testing Procedures and Requirements were reviewed during the Audit.

Recommendation: Include a copy of (or link to) the City of Salinas Standard Specifications, Design Standards and Standard Plans as an appendix to this element. Reference May 2006 Edition of Caltrans Standard Specifications or newer editions as appropriate.

6.0 Overflow Emergency Response Plan [SSSWDR D.13(vi)]

SSSWDR D.13(vi) states:

Each Enrollee shall develop and implement an overflow emergency response plan 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 SSOs in a timely manner;
- (b). A program to ensure 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 MRP. All SSOs shall be reported in accordance with this MRP, the California Water Code, other State Law, and other applicable Regional Water Board WDRs or NPDES permit requirements. The SSMP identifies the officials who will receive immediate notification;
- (d). Procedures to ensure that appropriate staff and contract personnel are aware of and follow the 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 the discharge of untreated or partially treated wastewater to waters of the United States and minimize or correct any adverse impact on 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.

Section D.13 (vi): The City SSMP gives a general summary of Sanitary Sewer Overflow Response Plan (SSORP, June 2011) which is located in Appendix C to the SSMP Rev. 1, March 2014. Table 2-1, of the June 2011 SSORP, requires revision to remove the names and contact information of City staff who are no longer with the City (e.g. Brent Salma, Mike Snowden, Dale Lipp, etc.). The City developed an updated SSORP in 2014 which also requires updating to reflect current staff contact information and staff responsibilities.

Section D.13 (vi)(a): The SSORP, June 2011 contains a SSO Notification Procedure in Appendix A to the procedure. This procedure discusses how the City is notified of a SSO and how staff is dispatched to a SSO through the Police Dispatch Center via cell phone or hand held radio. A discussion of which regulatory agencies to notify and when to notify them is located in the SSORP, June 2011 page 7. This response plan is out of date.

The City developed an updated SSORP in 2014 SSO Notification procedure that include proper notification and reporting procedures in compliance with the revised SWRCB 2013 MRP

effective in September 2013 and introduced a new SSO Category; Category 3 SSOs which are SSOs of estimated volume of less than one thousand gallons that do not reach a surface water.

Section D.13 (vi)(b): A program and associated organizational flow chart showing key positions and their responsibility to ensure appropriate response to all overflows is contained in the SSORP, June 2011 and 2014. The organization chart in the 2014 flow chart and contact information requires updating as City staff named have left or retired from the City.

All City and Contract staff must also be trained annually on the SSORP and associated procedures.

Section D.13 (vi)(c): A procedure was developed and issued in July 2014, as part of the SSORP. There was no evidence of staff training on this procedure.

Section D.13 (vi)(d): Procedures to ensure appropriate staff and contractor personnel are aware of, follow, and are trained on the SSORP were not available at the time of this audit.

Section D.13 (vi)(e): Procedures to address emergency operations, such as emergency traffic and crowd control, spill volume estimation, and other necessary response activities are discussed in the 2014 SSORP. This SSORP should be reviewed and updated to cover Lift Station SSOs specific to each lift station, sewer bypass plans, and post SSO investigations. The Current procedure refers to an “Appendix A” for SSOs reaching a storm drain. This appendix does not exist. Additionally, there are references to CAL EMA in the notification portion of the SSORP which should be changed to CAL OES for compliance with the 2013 Monitoring and Reporting Program.

Section D.13 (vi)(e): The SSORP, July 2014 does summarize how staff should contain a SSO. Surface water quality monitoring information is not referenced. A comprehensive program with specific procedures to contain, prevent, and monitor untreated and partially treated wastewater to waters of the State was not available at the time of this audit.

The sections above are in marginal compliance with the above requirements. See recommendations below.

Sufficiency: Marginal Compliance

Reference: City August 2014 SSMP Revision 1, Appendix C Sanitary Sewer Overflow Response Plan Dated June 2011, SSORP 2014.

Deficiencies: The titles and responsibilities of the individuals included in an SSORP and the contact information for the agencies, which must be notified of SSOs, need to be updated. Update the SSORP to reference Cal-OES instead of Cal-EMA for SSOs. If the Monterey County Health Department Emergency Call List is utilized by City, the SSORP also needs to be updated to explain how the list is utilized.

Two procedures were provided informing traffic control and SSO volume estimating. Evidence of a program to inform and train City Staff and contractors on how to contain and prevent a SSO and conduct follow-up water quality monitoring was not provided during the Audit.

Recommendation: This SSMP Section is recommended to be updated with a schedule to update the SSORP, create additional procedures, forms, a formal SSORP and procedure training program. A list of procedures (EOPs or Emergency Operating Procedures) that other public agencies have created for their SSORP are:

- SSO Mitigation, Cleanup & Bypass Plan
- SSO Lift Station Response
- SSO Impact Assessment, Water Quality Monitoring
- Post SSO Investigation

Existing procedures identified in the 2014 SSORP such as Traffic and Crowd Control, Discharges to Storm Drains and Surface Waters and Collection System Failures require additional development to provide step by step procedures for staff responding to a SSO.

Train staff annually (minimum) and when new staff are hired with sewer system responsibilities. Assess staff abilities to perform SSO response procedures and protocols for compliance with the SSWDRs and 2013 MRP.

7.0 Fats, Oils, and Grease Control Program [SSSWDR D.13(vii)]

SSSWDR D.13(vii) states:

Each Enrollee shall evaluate its service area to determine whether a FOG control program is needed. If an Enrollee determines that a FOG program is not needed, the Enrollee must provide justification for why it is not needed. If FOG is found to be a problem, the Enrollee must prepare and implement a FOG source control program to reduce the amount of these substances discharged to the sanitary sewer system. This plan shall include the following as appropriate:

- (a). An implementation plan and schedule for a public education outreach program that promotes 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 to 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) and the development of design standards for such devices, maintenance requirements, BMP requirements, record keeping and reporting requirements;
- (e). Authority to inspect grease producing facilities, enforcement authorities, and whether the City has sufficient staff to inspect and enforce the FOG ordinance;
- (f). An identification of 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 to the sewer system for each section identified in (f) above.

After the issuance of the SSS WDR in 2006, the City determined that FOG is an on-going problem in the sewer collection system and a FOG Program was needed. The City has over thirty Food Service Establishments in its service area.

In this Audit, the FOG Plan presented in the SSMP Revision 1, August 2014 was evaluated against the Section D.13(vii) requirements above. The effectiveness of the FOG Program was evaluated at the end of this section. The City has moved forward with a plan to develop a formal FOG Control Program to meet all the subsections of Element 7. This plan and schedule does not mirror the language found in the existing 2014 SSMP and should be incorporated in the next update to the SSMP.

Section D.13(vii)(a): The City SSMP Revision 1, August 2014, page 27, presents a plan in this section to conduct outreach to business. It is recommended that the City develop a plan and

schedule to create a public FOG outreach plan which could include articles in City newsletters, newspaper, radio, and/or television ads.

The section above is out of compliance with the above requirement. See recommendations below.

Section D.13(vii)(b): The City SSMP Revision 1, August 2014, page 27, states that information is available to Food Service Establishments (FSEs) on how to dispose of FOG generated within the City's service area is available on the internet however specific information on haulers and/or disposal sights was not provided.

Appendix D to the City SSMP Revision 1, August 2014 contains a packet of information for FSE's, from how to obtain a permit to a cleaning log and FOG Best Management Practices (BMPs). A list of recommended FOG waste haulers is required to be added to this packet.

The section above is in partial compliance with the above requirement.

Section D.13(vii)(c): The legal authority to prohibit discharges to the collection system and identify measures to prevent FOG-caused SSOs is located in Chapter 12.28.290-300 of the City Municipal Code. The City recently adopted Section 13.28.285 Fats, Oils and Grease Control Program and City FOG Program Standard Conditions in 2019 to facilitate the development of a formal FOG Control Program.

The section above is in compliance with the above requirement.

Section D.13(vii)(d): City staff have developed an updated FOG Program in 2019 which includes FOG Program Standard Conditions, updates to the City Municipal Code, permit application, cleaning log, Best Management Practice Manual, etc. which should be referenced and included as appropriate in the next 5-Year Update to the SSMP. Page 26 of the SSMP Revision 1, August 2014, states that the FOG Program will be implemented during 2014 however significant resources were not applied for program development and implementation until the 2018/19 Fiscal Year.

The section above is substantial compliance with the above requirement.

Section D.13(vii)(e): The City does maintain a separate FOG Ordinance in the City Municipal Code giving the City the authority to inspect and enforce violations of it sewer use ordinance. The City SSMP Revision 1, March 2014 on page 28 states that it has "some" staff to inspect and enforce the FOG requirements.

The City Utility Systems Assistant Superintendent indicated that inspections and permitting are planned to be implemented by September 2019.

The section above is in partial compliance with the above requirement.

Section D.13(vii)(f): The City SSMP, Revision 1 March 2014 states on Page 29 that it will identify sections of the collection system, which are subject to grease blockages and create a

cleaning maintenance schedule for these high maintenance areas (HMAs). These areas are identified in Element 4: Operations and Maintenance.

The section above is in compliance with the above requirement.

Section D.13(vii)(g): The City SSMP Revision 1 August 2014, does not provide information regarding the development and implementation of source control measures for all sources of FOG discharged to the sanitary sewer system for each FOG induced HMA or provide an explanation for not including this information.

The section above is out of compliance with the above requirement.

FOG Program Effectiveness: The City is experiencing a higher rate of Category 2 & 3 SSOs than the State and Regional averages with FOG identified as 47% of the SSOs experienced by the City. Development and implementation of a FOG Program should continue to help bring the rate and number of SSOs down.

Sufficiency: Partial Compliance

Reference:

- SSMP Revision 1, August 2014 p. 26-29 and Appendix D;
- City Municipal Code Sections 13.28.260, 13.28.280, 13.28.285, 13.28.290, 13.28.300, City FOG Program Standard Conditions 2019.
- CIWQS City Operation Report History dated July 05, 2019.

Deficiencies: The SSMP Revision 1, August 2014 does not include the following:

- Examples of public outreach conducted by the City;
- A list of companies FSEs could hire to collect and dispose of FOG;
- A list of FSEs;
- A plan and schedule to fund, staff, and implement a FOG Program;
- A list of FOG High Maintenance Areas (HMAs); and
- Information regarding the development and implementation of source control measures for all sources of FOG discharged into the sewer system for each FOG induced HMA.

Recommendation: It is recommended that this FOG Section be updated in the Five-Year Update due August 2, 2019 to include:

- A plan and schedule to create a FOG public outreach program;
- A list of companies FSEs could hire to collect and dispose of FOG;
- Copies or links for applicable codes and ordinances;
- A plan and schedule to implement a FOG Control Program which includes how the program is funded, staffed, and managed and implemented and measures the effectiveness of the current program;
- A plan and schedule to implement a FSE on-site permitting and inspection program; and
- A plan and schedule to implement a video inspection program for FOG related SSOs.

8.0 System Evaluation and Capacity Assurance Plan [SSSWDR D.13(viii)]

SSSWDR D.13(viii) states:

The Enrollee shall prepare and implement a capital improvement plan (CIP) that will provide hydraulic capacity of key sanitary sewer system sections for dry weather peak flow conditions, as well as the appropriate design storm or wet weather event. At a minimum, the plan must include:

- (a). **Evaluation:** Actions needed to evaluate those portions of the sanitary sewer system that are experiencing or contributing to a SSO discharge 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; and
- (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, 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.
- (d). **Schedule:** The Enrollee shall develop a schedule of completion dates for all portions of the capital improvement program developed in (a)-(c) above. This schedule shall be reviewed and updated consistent with the SSMP review and update requirements as described in Section D.14.

Section D.13(viii)(a): The City SSMP refers to the 2005 Wastewater System Capital Improvement Plan Update and Capacity Charge Study (2005 WSCIP) that evaluated hydraulic conditions of the City sewer system. The 2005 WSCIP provided hydraulic evaluations of City: Lift Stations, Force Mains, and Gravity Sewer Lines based on; land use planning documents, flow meter information at the WWTP, historic water use information, and existing capacity information for City sewer assets. Hydraulic evaluations were conducted to evaluate existing dry and wet weather conditions and future dry and wet weather conditions which represent “worst case scenario” flow conditions.

A review of City records shows the major contributing factor(s) that cause City SSOs are Fats, Oils, and Grease (FOG), debris, and lift station control issues, as opposed to pipelines that are deficient in hydraulic capacity during wet and dry weather flows. This section also states that additional hydraulic analysis is planned as future development is proposed in the outlying areas of the City.

The City completed an updated Wastewater Master Plan which evaluated the condition and capacity of the sewer system in 2016. This plan is not referenced or included in the existing SSMP.

The section above is in compliance with the above requirements. See recommendations below.

Section D.13(viii)(b): Design criteria were identified in the 2005 WSCIP and in the 2016 Sewer Master Plan and used in system analysis to assess the hydraulic conditions existing in the system. These criteria were used to make recommendations for hydraulic upgrades in City Lift Stations, Force Mains, and Gravity Sewer Lines. The 2015 study determined there is adequate dry and wet weather capacity in the existing collection and conveyance system. Additional development east of Hwy 101 will require capacity upgrades throughout the system. Evaluations specific to these development projects are planned to be conducted as commercial and residential projects are presented to the City. Developers for these projects will be responsible for future capacity analysis specific to their projects and the impacts those projects will have on the existing system.

The 2016 Master Plan identified four (4) areas of the collection system that require capacity related improvements under existing conditions and five (5) areas that will require capacity enhancements based on future development.

The section above is in compliance with the above requirements. See recommendations below.

Section D.13(viii)(c) – (d): The 2005 WSCIP included a Wastewater Capacity Charge Study which identified fees for residential and commercial sewer users to support improvements to the City's Wastewater Treatment Plant and Collection System. As stated previously in this report, capacity related projects for the collection system are planned to be covered by new development as projects are identified and presented to the City. The City subsequently adopted a rate structure which was formalized by Resolution # 2005-65 and referenced in City Ordinance No. 458 (2005). This rate structure plans to fund the capital projects identified in the 2005 WSCIP.

The 2005 WSCIP, an updated summary of the capital projects identified with the schedule (Capital Improvement Plan (CIP) for each FY until 2025), and Resolution # 2005-65 will need to be included in the next update of the SSMP. The findings of the 2016 Wastewater Master Plan will also need to be incorporated into the next update to the SSMP.

The sections above are in substantial compliance with the above requirements. See recommendations below.

Sufficiency: Substantial Compliance

Reference: City 2014 SSMP Rev 1; City 2005-2025 WSCIP; City Municipal Code Chapter 13.32 *Sewer Rates*, and Chapter 13.70 *Sanitary Sewer Capacity Charge*; City Resolution # 2005-65, 2016 Wastewater Master Plan.

Deficiencies: The City has not presented supporting documentation for approved Wastewater Capacity Charges in the SSMP. Information from the 2016 Wastewater Master Plan are not incorporated in the existing SSMP.

Recommendation: Incorporate the findings of the 2016 Wastewater Master Plan and updates to the CIP project plan and schedule into the next update to the SSMP. Include a plan to fund the capital improvement projects.

9.0 Monitoring, Measurement, and Program Modifications [SSSWDR D.13(ix)]

SSSWDR D.13(ix) states:

The Enrollee shall:

- (a). Maintain relevant information that can be used to establish and prioritize appropriate SSMP activities;
- (b). Monitoring the implementation and, where appropriate, measure the effectiveness of each section of the SSMP;
- (c). Assess the success of the preventative maintenance program;
- (d). Update program sections, as appropriate, based on monitoring or performance evaluations; and
- (e). Identify and illustrate SSO trends, including frequency, location and volume.

Section D.13(ix)(a): The City does not have a comprehensive summary of necessary or prioritized SSMP activities in the SSMP. The City does maintain records associated with some O&M activities, which are discussed in this SSMP Audit in the Operations and Maintenance Program [SSSWDR D.13(iv)] section.

The City SSMP does identify eight (8) performance indicators that will be used to measure the implementation and effectiveness of the City SSMP. Documents were not provided during the audit to show that these performance indicators were used to evaluate the implementation or effectiveness of the City's SSMP.

The section above is out of compliance with the above requirement. See recommendations below.

Section D.13(ix)(b) and (c): The City does not formally evaluate the implementation or effectiveness of each section of the SSMP or preventative maintenance activities. A formal preventative maintenance program is not in place and therefore cannot be evaluated.

The section above is out of compliance with the above requirement. See recommendations below.

Section D.13 (ix)(d): The City March 2014 SSMP underwent minor revisions in March 2014. There have been no other revisions since this time. Revisions in 2014 were not based on formal SSMP monitoring, performance evaluations or audits.

The section above is in marginal compliance with the above requirement. See recommendations below.

Section D.13(ix)(e): The City August 2014 SSMP states that the frequency, location, cause, and volume of SSOs will be tracked in Appendix “F” however information is not included in this Appendix. SSO Trends are not discussed or presented in this section.

The section above is out of compliance with the above requirement. See recommendations below.

Sufficiency: Out of Compliance

Reference: City SSMP August 2014 Revision 1.0, Page 32.

Deficiencies: The City does not have a written plan to formally evaluate the implementation or effectiveness of each SSMP Section.

Recommendation: Create a written program to schedule, track, and evaluate the effectiveness of preventative maintenance for the sanitary sewer system. Create a plan and schedule to review and assess the effectiveness of each SSMP section. Create a written record of SSO trend evaluation and identification. Complete these plans and records and incorporate them into the update of this SSMP Section.

10.0 Sewer System Management Plan Program Audit [SSSWDR D.13(x)]

SSSWDR D.13(x) states:

As part of the SSMP, the Enrollee shall conduct periodic internal audits, appropriate to the size of the system and the number of SSOs. At a minimum, these audits must occur every two years and a report must be prepared and kept on file. This audit shall focus on evaluating the effectiveness of the SSMP and the Enrollee's compliance with the SSMP requirements identified in this subsection (D.13), including identification of any deficiencies in the SSMP and steps to correct them.

Sufficiency: Marginal Compliance

Reference: City SSMP August 2014 Revision 1.0, Page 34.

Deficiencies: SSMP audits are required to be performed a minimum of every two years from the date of required adoption, which was August 2, 2009 for the City of Greenfield.

The first City SSMP Audit was due on or before August 2, 2011 and the second on August 2, 2013.

While the City did not certify its original SSMP until October 2012, the due dates above were still in effect and the City missed the opportunity to perform the second SSMP Audit by August 2, 2013.

The scheduling and completion of this SSMP Audit in April 2014 was a correction of the 2013 deficiency, however the City did not complete a SSMP Audit in 2017 as required by the WDRs. The 2019 Audit was not completed prior to the August 2019 deadline.

Recommendation: Schedule future SSMP Audits in the maintenance scheduling system and revise the SSMP with the dates of future audits which are to be conducted by, at a minimum prior to the following dates:

- August 2, 2021
- August 2, 2023
- August 2, 2025

In the upcoming City SSMP August 2019 Revision 2.0 Five Year Update, include this SSMP Audit Report which must be signed and certified by the Legally Responsible Official.

11.0 Communication Program [SSSWDR D.13(xi)]

SSSWDR D.13(i) states:

The Enrollee shall communicate on a regular basis with the public on the development, implementation, and performance of its SSMP. The communication system shall provide the public the opportunity to provide input to the Enrollee as the program is developed and implemented.

The Enrollee shall also create a plan of communications with systems that are tributary and/or satellite to the Enrollee's sanitary sewer system.

Section D.13 (xi): The City SSMP, March 2014 Revision 1.0 states that the approval of the original SSMP, April 2012 Revision 0 occurred at the City Council Meeting on October 23, 2012. Resolution 2012-110 was obtained documenting that the SSMP certified by the City Council on this date.

The SSMP, August 2014 Revision 1 is not posted on the City's website as required by the 2013 Monitoring and Reporting Program.

No other forms of communication to the public regarding development, implementation and performance of the SSMP were completed by the City.

The City has one satellite system named in the SSMP, the Santa Lucia Shopping Center. The City was not able to produce documents during the audit documenting communication between the Santa Lucia Shopping Center and the City. Communication, when needed, is verbal.

A second satellite system is under development, the Yanks Air Museum and Recreational Vehicle (RV) Resort. This is a twelve-year project that started in 2010.

Sufficiency: Out of Compliance

Reference: City SSMP March 2014 Revision 1.0, Page 35.

Deficiencies: City does not have a plan to communicate with the public regarding the development, current contents, and performance of the SSMP. City has not created mechanism for documenting communication that occurs with its two satellite systems.

Recommendation: Establish a formal SSMP Communication Program with the public which may include press releases, flyers in utility bills, and articles in a City Newsletter, such as the City Manager Newsletter. Communication with the satellite systems could be in the form of an annual memo discussing non-flushables, FOG, etc. Keep a record of all outreach and coordination in the Communication Program Section of the SSMP.

Records List by SSMP Section

- 1.0 Goals – See Records under Sections 3 - 11**
- 2.0 Organization**
 - a. SWRCB CIWQS Facility at a Glance City of Greenfield
- 3.0 Legal Authority**
 - a. City of Greenfield Municipal Code Chapter 13.28, Sewer Service
 - b. City of Greenfield Municipal Code Chapter 13.32, Sewer Rates
 - c. City of Greenfield Municipal Code Chapter 13.70, Sanitary Sewer Capacity Charge
- 4.0 Operation and Maintenance Program**
 - a. Appendix A.1, Preventative Maintenance Program (High Maintenance Area)
 - b. Appendix 4.2 Sanitary Sewer Mainline Cleaning
 - c. Appendix A.3 – Wastewater Collection System Map
 - d. CWEA Certification, Collection System Maintenance Grade 1 – Humberto Aceves and Grade 2 – Arturo Felix
 - e. May 2010 Green Line Video CCTV Inspection Reports
 - f. Weekly Manhole and Lift Station Checklist
 - g. Sewer Line Cleaning Work Order
- 5.0 Design and Performance Standards**
 - a. City of Salinas Standard Specifications, Design Standards, and Standard Plans. 2008 Edition.
- 6.0 Overflow Emergency Response Plan**
 - a. July 2014 Sanitary Sewer Overflow Response Plan (SSORP)
- 7.0 Fats, Oils, and Grease Program**
 - a. Appendix D City FOG Program. FOG Letter, Permit application, and FSE Cleaning Log.
 - b. Appendix F City FOG Ordinance, Draft.
 - c. 2019 FOG Ordinance 13.28.285
 - d. 2019 FOG Standard Conditions
- 8.0 System Evaluation and Capacity Assurance Plan (SECAP)**
 - a. Appendix E City of Greenfield 2005 – 2025 Wastewater System Capital Improvement Plan Update and Capacity Charge Study.
 - b. 2016 Wastewater Master Plan
- 9.0 Monitoring, Measurement, and Program Modifications**
 - a. SWRCB CIWQS Facility at a Glance and City Operational Report
- 10.0 SSMP Audits**
 - a. 2014 SSMP Audit Report
- 11.0 Communication Program**
 - a. City of Greenfield Resolution 2012-110, Certifying the City SSMP.