APPENDIX B

DOCUMENTS RELATED TO SECTION IV

OPERATIONS AND MAINTENANCE

1. Example of Sewer System Map
2. Example Sanitary Sewer Flushing Sheet
3. Example Wastewater Daily Report.
4. Example Sewage Pump Station Maintenance Checklist
5. Example Remote Monitoring SCADA Screens
6. SOP for Sewer Cleaning
7. SOP for VacCon (by DKF Solutions)
8. SOP for Rodding
9. Major Sewer System Equipment

City of Mountain View

500 Castro St, Mountain View, CA 94043

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Example "701" Map
Sanitary Sewer System

1 inch = 150 feet (1:1,800)

0 62.5 125 250 375 500 Feet

Hot Spots
- Monthly
- 3 - Month
- 6 - Month
- 12 - Month

Parcel Alerts

H4-174, 6.3 — Manhole, ID, Depth
Plug
PS — Pump Station
Unknown
12" RCP 91' — Main, Direction of Flow, Diameter, Material, Length
Abandoned Main Line
Private Main & Lateral Line
10.0' — Lateral - Distance from Downstream Manhole

CIP Cast Iron Pipe
CMP Corrugated Metal
CIPP Cured in Place
DIP Ductile Iron Pipe
HDPE High Density Polyethylene
PVC Polyvinyl Chloride
RCP Reinforced Concrete Pipe
STEEL Steel
VCP Vitrified Clay Pipe
UNK Unknown

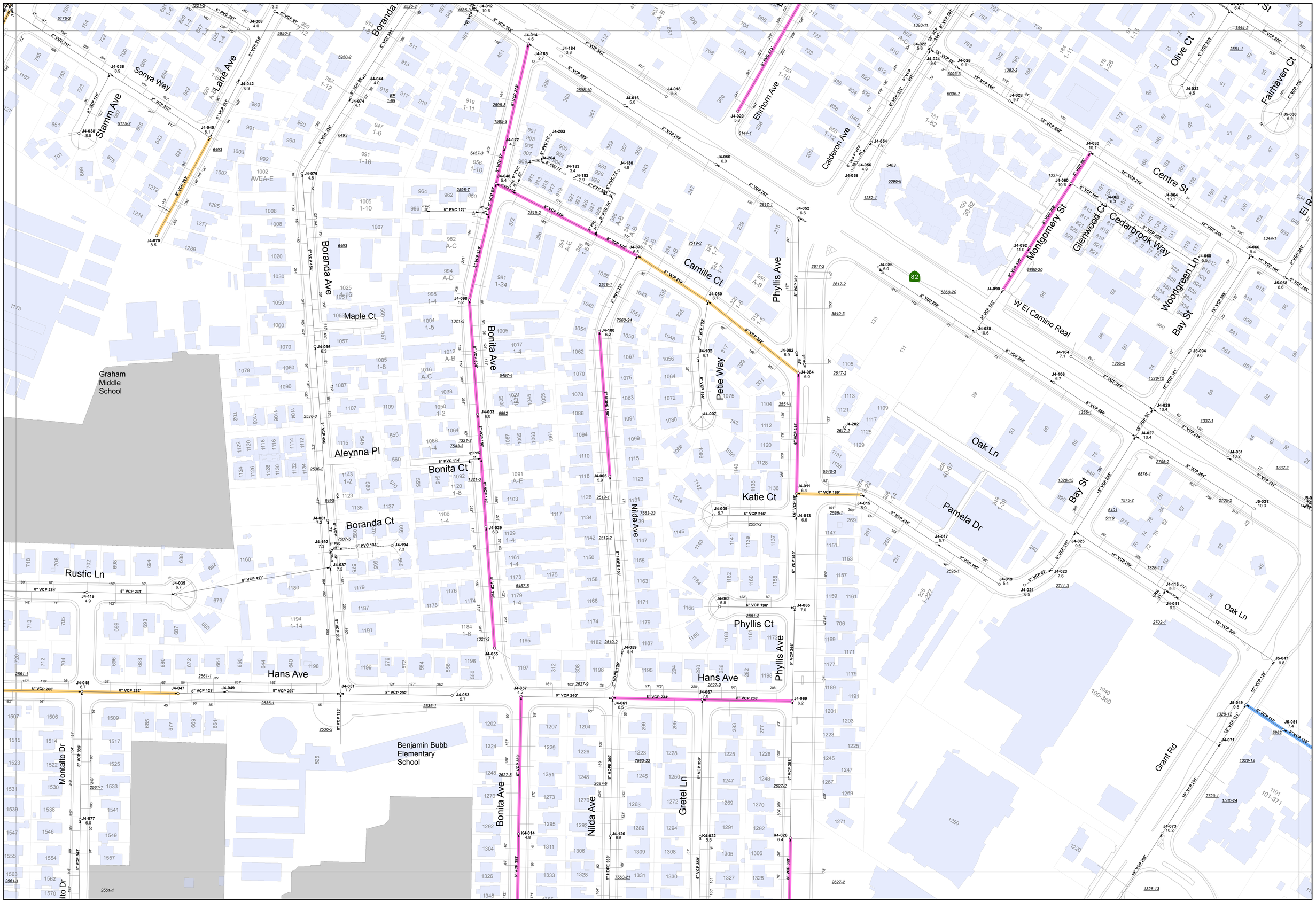
Road Edge
123 Parcel, Address
Railroad. Single Track
Railroad, Double Track
6859-41 Construction Plan File No.
Rest Rooms

Trail Head
Trail, Paved
Trail, Unpaved
City Limit
Creek
Water
Open Space, Park

J4

I3	I4	I5
J3	**J4**	J5
K3	K4	K5

Edition Date August 2017



Sanitary Sewer Flushing Sheet

Operator: 4/26, 4/22

Date: 2/27/18

Chart

Type of debris	Clear (No debris)	Light	Moderate	Heavy
Sand, grit, rock	CLR	DL	DM	DH
Grease	CLR	GL	GM	GH
Roots	CLR	RL	RM	RH
Other (specify)	CLR	OL	OM	OH

M/H# INSPECTED	U/S Manhole	D/S Manhole	Street	Feet	Debris Yes/No	Debris Type (see chart)	Comments
L5-53	L5-55	L5-53	BROOK PL	173'		RL, GL	WART HOG
L5-41	L5-43	L5-41	FAIRBROOK DR	341'		DL, RL	
L5-43	M5-20	L5-43	" "	340'		DL, RL	
L5-29	L5-31	L5-29	KATRINA WAY	290'		RL, DM	
	M5-18	L5-31	" "	301'		RL, DM	
L5-35	L5-33	L5-35	DIERICX CT	262'		RL, DM	
	L5-37	L5-35	DIERICX DR	282'	YES	DM, RL	
	L5-39	L5-37	" "	187'			
	L5-138	L5-35		161'			FLUSHED X2
	L5-136	L5-138		117'			FLUSHED X2
L5-130	L5-134	L5-130		229'			FLUSHED X2
	L5-136	L5-134		225			FLUSHED X2
	L5-132	L5-130	FRANKLIN AVE	231'			FLUSHED X2
	L5-27	L5-132		235'			FLUSHED X2
	L5-29	L5-27		246'			FLUSHED X2
TOTAL M/H'S				Total Feet	Cubic Yards of Debris		Total Water
6				3,614	1/4		4,500

Sewer Flushing Maps Highlighted & Updated YES ☒

HotSpot Flushing YES ☐

Wastewater Daily Report

Day: Tuesday Date: Feb 27, 2018

Crew: 426 Crew: 422 Crew: Crew: Crew: Crew:

	Activity	Ea	Ft	Gal	Crew	Crew	Crew	Crew	Crew	Crew	Hrs	Equip No.	Use (hrs)
SS Main	Scheduled Cleaning		3,614	4,500	426	422					8	2807	8
SS Main	Manholes Inspected	6											
SS Main													
SS Main													
SS Lateral													
SS Lateral													
SS Lateral													
Sanitary													
SD Main													
SD Main													
Drain Inlet													
Drain Inlet													
Reclaim													
MISC (describe below)	Meetings/Trainings				426	422					1		
MISC (describe below)													

Comments

Am meeting
701 Flushing
Dump/Clean Vac-con

Print Form Submit by Email Reset Form

Sewage Pump Station January 2018 Maintenance

Name	Date	
		Wash and inspect building.
		Clean and inspect generator.
		Cut weeds and blow out micro turbine area.
		Cut weeds and ivy around station.
		Blow and sweep driveway and transformer area.
		Pick up garbage around site.
		Check fire extinguishers and sign tag.
		Test and sign eye wash tag.
		Check safety equipment.
		Sweep outside stairs.
		Clean bathroom and empty trash.
		Calibrate portable gas monitors.
		Inspect and log SCBAS.
		Inspect all fans.
		Clean odor scrubber room, clean and inspect scrubber.
		Run and inspect generator.
		Run and inspect pump #2.
		Grease pumps and couplings.
		Purge air bubbler.
		Drain water and inspect compressors.
		Check oil and wipe off compressor motors.
		Clean motor room and wipe off equipment.
		Clean pump room and wipe off equipment.
		Test and inspect sump pump.
		Inspect motors and pumps.
		Clean wet well and inspect grinder rotation.
		Check wet well fire extinguisher and sign tag.
		Inspect and wash off slews gate.
		Inspect Vickers unit and wipe off.
		Check camera operation.
		Clean control room and wipe off equipment.
		Clean vent on odor scrubber.
		Clean all vents above back doors.
		Clean vent room above panels.
		Inspect cranes and operate.
		Check and fill oil on #2 pump and generator.
		Check and fill radiators on pump #2 and generator.
		Check stationary gas monitor operation and level.
		Check alarm panel.
		Sweep stairs inside station.
		Inspect belts on both compressors.
		Service Odor scrubber media from top ports, clean filter and housing.

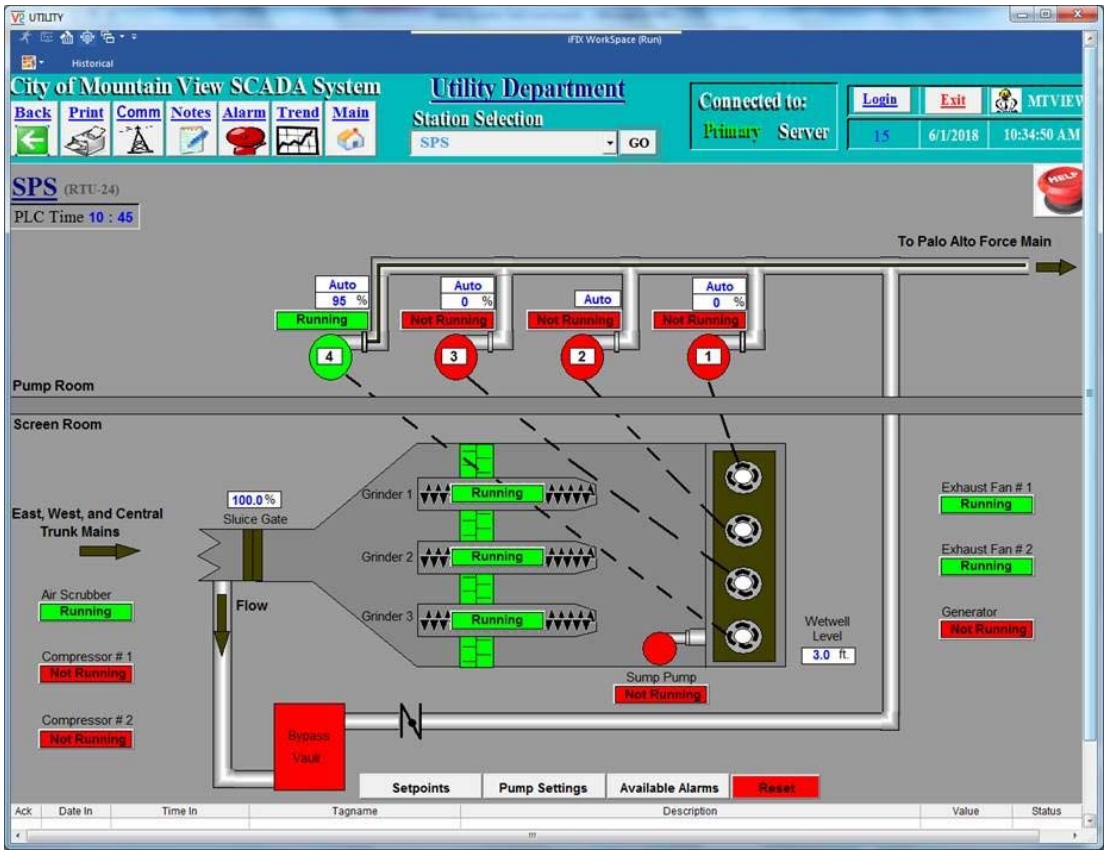
Comments	Additional maintenance preformed or needed.	Contractors

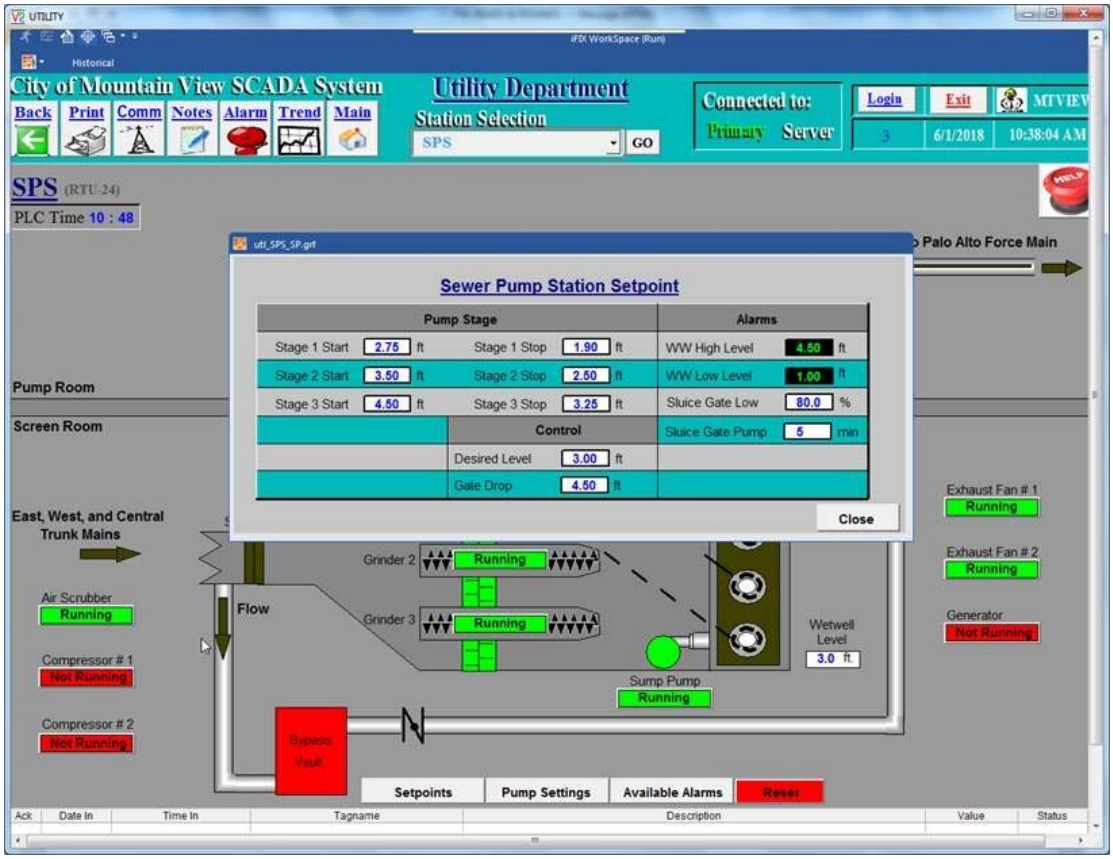
Pastel Lane Lift Station November 2018 Maintenance

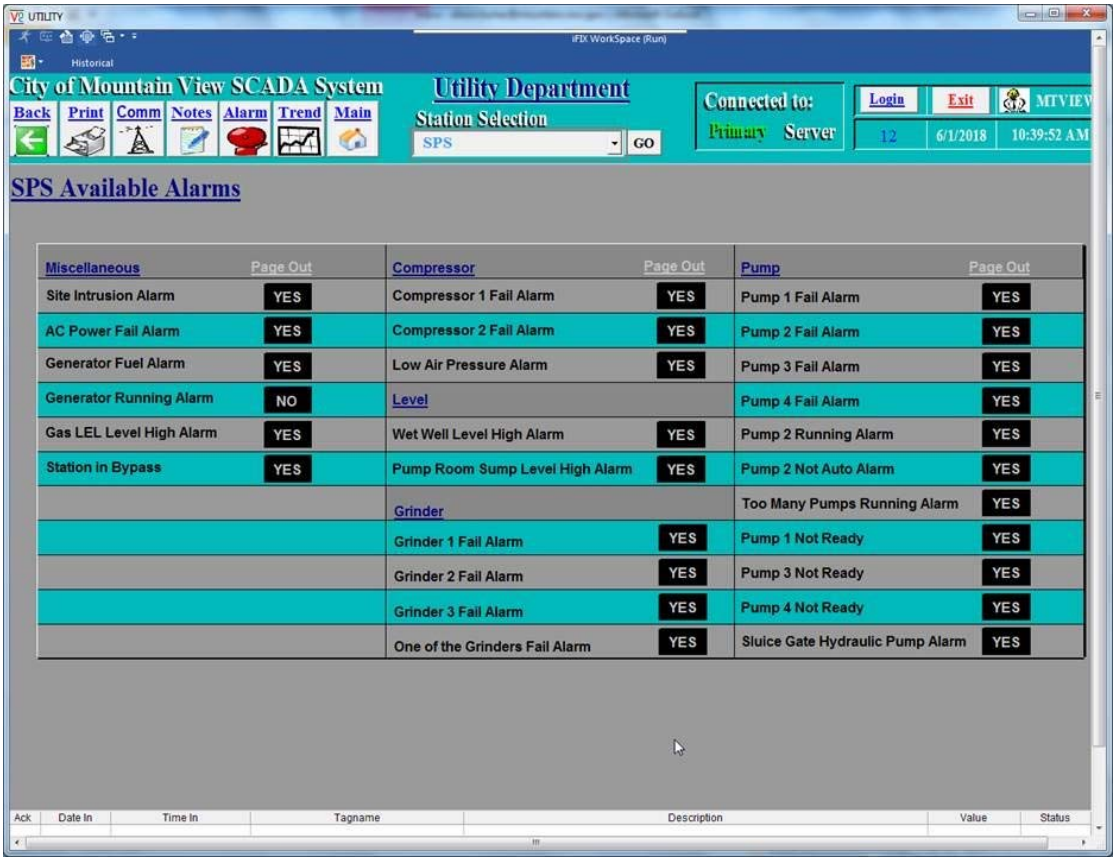
Date	Name	
		Pick up trash around site and clean vault.
		Check vault and manhole.
		Fill line and test pump. Turn pump off when ariving for the PM to fill vault.
		Check oil level.
		Check belt.

Comments
Contractors
Additional maintenance preformed or needed.

Example Remote Monitoring SCADA Screens – Shoreline Pump Station

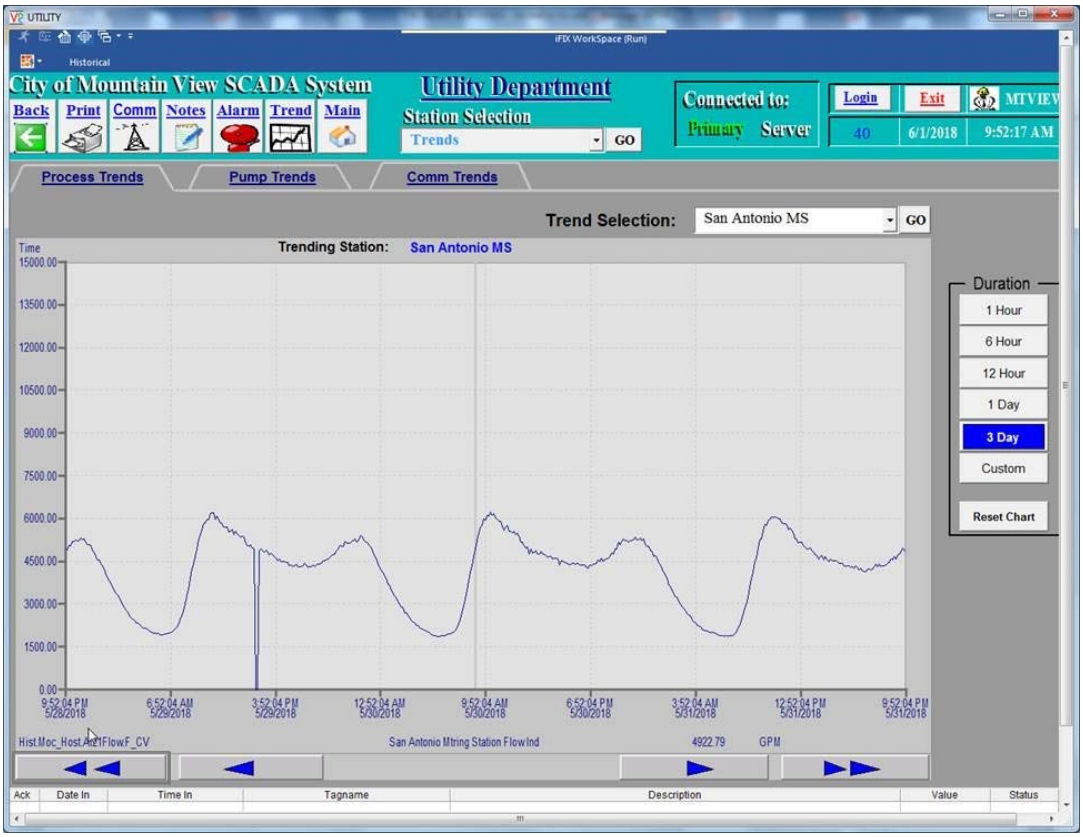


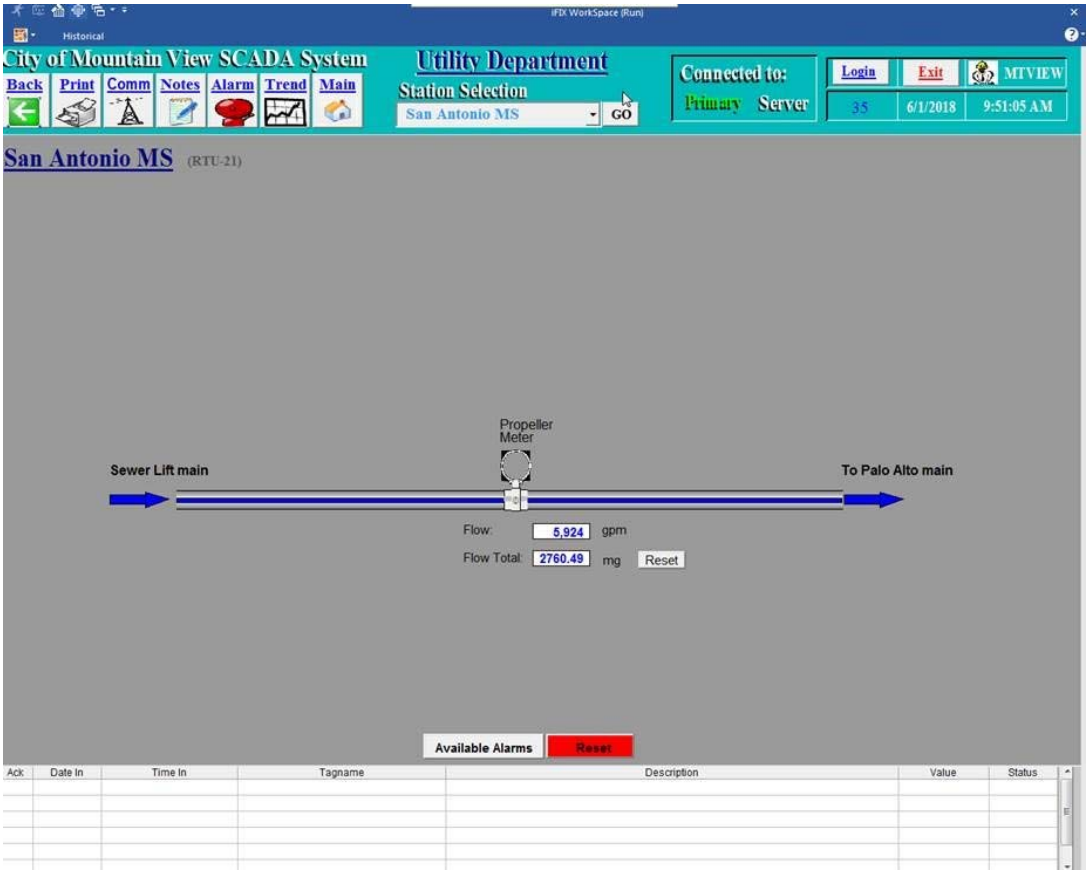



City of Mountain View SCADA System
Utility Department
Station Selection
SPS
GO
Back
Print
Comm
Notes
Alarm
Trend
Main
Connected to:
Primary Server
Login
Exit
MTVIEW
12
6/1/2018
10:39:52 AM
SPS Available Alarms
Miscellaneous
Page Out
Site Intrusion Alarm YES
AC Power Fail Alarm YES
Generator Fuel Alarm YES
Generator Running Alarm NO
Gas LEL Level High Alarm YES
Station in Bypass YES
Compressor
Page Out
Compressor 1 Fail Alarm YES
Compressor 2 Fail Alarm YES
Low Air Pressure Alarm YES
Level
Wet Well Level High Alarm YES
Pump Room Sump Level High Alarm YES
Grinder
Grinder 1 Fail Alarm YES
Grinder 2 Fail Alarm YES
Grinder 3 Fail Alarm YES
One of the Grinders Fail Alarm YES
Pump
Page Out
Pump 1 Fail Alarm YES
Pump 2 Fail Alarm YES
Pump 3 Fail Alarm YES
Pump 4 Fail Alarm YES
Pump 2 Running Alarm YES
Pump 2 Not Auto Alarm YES
Too Many Pumps Running Alarm YES
Pump 1 Not Ready YES
Pump 3 Not Ready YES
Pump 4 Not Ready YES
Sluice Gate Hydraulic Pump Alarm YES
Ack
Date In
Time In
Tagname
Description
Value
Status

City of Mountain View SCADA System
Utility Department
Station Selection
Trends
GO
Back
Print
Comm
Notes
Alarm
Trend
Main
Connected to:
Primary Server
Login
Exit
MTVIEW
6
6/1/2018
9:53:51 AM
Process Trends
Pump Trends
Comm Trends
Trend Selection:
SPS
GO
Trending Station:
SPS
Time
Duration
1 Hour
6 Hour
12 Hour
1 Day
3 Day
Custom
Reset Chart
Hist.Moc_Host.AI24WWLvl.F_CV
Hist.Moc_Host.R24VFD1SPD.F_CV
Hist.Moc_Host.R24VFD3SPD.F_CV
Hist.Moc_Host.R24VFD4SPD.F_CV
Wastewtr Lift Stat Wet Well Level 2.99 FT
SPS - VFD #1 Running Speed (F_CV) 0.00 %
SPS - VFD #3 Running Speed (F_CV) 98.02 %
SPS - VFD #4 Running Speed (F_CV) 0.00 %
Ack
Date In
Time In
Tagname
Description
Value
Status

Example Remote Monitoring SCADA Screens – San Antonio Mixing Station





Standard Operating Procedure for Sewer Cleaning

Purpose

The purpose of this Standard Operating Procedure is to ensure that sewer cleaning is performed in a manner that will produce a high-quality work product. Quality is important because it ensures that the sanitary sewers will not experience problems prior to their next scheduled cleaning.

Note: Portions of this SOP may be superseded or modified by SOPs developed specifically for the VacCon Flushing and Rodding operations.

Goal

The goal of cleaning a gravity sewer is to restore the flow area to 95 percent of the original flow area of the pipe.

Required Equipment and Tools

1. Personal protective equipment (hardhat, steel toe boots, gloves, eye/face protection, hearing protection).
2. Calibrated gas detector.
3. Proper safety cones/barricades/flagging/signs or other traffic-control devices.
4. Confined space equipment—tripod, harness, and ventilation blower.
5. Sanitary sewer system map book.
6. Combo (jet rodder/vacuum) truck.
7. 45-degree sewer cleaning nozzle and root saws.
8. Manhole hook or pickax.
9. Measuring wheel.
10. Disinfectant.

Required Forms

- Cleaning work order.
- Daily truck report form.
- Damage report form.

Procedures for Sewer Cleaning Crew

Prior to Leaving the Yard

1. Plan the work so that it starts in the upstream portion of the area and moves downstream.
2. Wherever possible, plan to clean sewers from the downstream manhole.
3. Inspect the sewer cleaning nozzles for wear. Replace nozzles that are excessively worn.

At the Job Site

1. Wear proper personnel protective equipment (PPE).
2. Fill the water tank at or near the first job site.
3. Determine and confirm location of upstream and downstream manholes (use manhole identification numbers if possible).
4. Look for any overhead utilities that may come into contact with the vacuum boom during the cleaning operation.
5. Set up proper traffic control by placing traffic signs, flags, cones, and other traffic-control devices.
6. Move the cleaning unit into the traffic control so that the hose reel is positioned over the manhole.
7. Open the manhole and use the gas detector to determine if it is safe to proceed with the cleaning operation.
8. Install the 45-degree sewer cleaning nozzle of choice or root saw on the hose.

Cleaning Operation

1. Start the auxiliary engine.
2. Lower the hose, with a guide or roller to protect the hose, into the manhole and direct it into the sewer to be cleaned.
3. Start the high-pressure pump and set the engine speed to provide adequate pressure for the sewer cleaning operation.
4. Open the water valve and allow the hose to proceed up the sewer. The hose speed should not exceed 3′ per second.
5. Allow the hose to proceed 25 percent of the length of the sewer (or 50′ minimum) and pull the hose back (only in heavy grit lines).
6. Observe the nature and the quantity of debris pulled back to the manhole.
7. If there is little or no debris, allow the hose to proceed to the upstream manhole.

8. If there is moderate to heavy debris, clean the remaining portion of the sewer in steps not to exceed 25 percent of the length of the sewer (or 50′ minimum).
9. Open the upstream manhole and verify that the nozzle is at or past the manhole. Rely on map footage and hose reel footage. If there is a conflict, check upstream manhole to verify.
10. The sewer has been adequately cleaned when successive passes with a cleaning nozzle do not produce any additional debris.
11. Determine the nature and quantity of the debris removed during the cleaning operation. Use the codes shown in the table below to report the nature and quantity of debris.
12. Remove the debris from the manhole using the vacuum unit (The operator may vacuum during flushing pull-back operations).
13. Rewind the hose on the reel.
14. Clean the mating surface and close the manhole. Ensure that the manhole is properly seated.
15. Enter the results on the work order.
16. Move the cleaning unit, break down and stow the traffic controls.
17. Proceed to the next cleaning job site.

Nature and Quantity of Debris Removed During Cleaning

Type of Debris	Clear (no debris)	Light	Moderate	Heavy
Sand, grit, rock	CLR	DL	DM	DH
Grease	CLR	GL	GM	GH
Roots	CLR	RL	RM	RH
Other (specify)	CLR	OL	OM	OH

<u>At the End of the Day</u>

1. Inspect the equipment and tools for problems.
2. Report any problems with equipment, tools, or sewers that were cleaned during the day to the Supervisor and crew leaders.
3. Submit daily work reports to the Supervisor at end of shift.

Major Sewer System Equipment

Equipment Number	Major Equipment Type	Year Purchased
2807	Combination Cleaning Unit (VacCon)	2017
2808	Combination Cleaning Unit (VacCon)	2017
2102	Service truck w/ #7022 rodder (2016) and lateral camera (2017)	2007
2128	Service truck w/ #7023 rodder (2016) and lateral camera (2017)	2016
5300	Emergency Response Trailer	2007
2806	Dump Truck, 10 cubic yard (International)	2010
492	Backhoe (Caterpillar)	2017
449	Trash Pump, 6″ (Deutz)	1987
702	Trash Pump, 4″ (Gorman Rupp)	1991
833	Confined Space Trailer	1988