



RANCHO MURIETA COMMUNITY SERVICES DISTRICT

15160 Jackson Road, Rancho Murieta, CA 95683
Office - 916-354-3700 * Fax - 916-354-2082

IMPROVEMENTS COMMITTEE

(Directors Les Clark and Randy Jenco)

Regular Meeting
August 6, 2019 at 8:00 a.m.

All persons present at District meetings will place their cellular devices in silent and/or vibrate mode (no ringing of any kind). During meetings, these devices will be used only for emergency purposes and, if used, the party called/calling will exit the meeting room for conversation. Other electronic and internet enabled devices are to be used in the "silent" mode. Under no circumstances will recording devices or problems associated with them be permitted to interrupt or delay District meetings.

AGENDA

1. **Call to Order**
2. **Comments from the Public**
3. **Review Monthly Updates**
 - a. **Development**
4. **Review of South Sewer & Storm-Line Inspections**
5. **Discuss Ideas to Deal with and Prevent Future Manganese Issues**
6. **Legacy Lane Recycled Water Reimbursement**
7. **Sobon to Murieta Drive Recycled Water Reimbursement**
8. **Director and Staff Comments/Suggestions** *[no action]*
9. **Adjournment**

In accordance with California Government Code Section 54957.5, any writing or document that is a public record, relates to an open session agenda item and is distributed less than 72 hours prior to a regular meeting will be made available for public inspection in the District offices during normal business hours. If, however, the document is not distributed until the regular meeting to which it relates, then the document or writing will be made available to the public at the location of the meeting.

Note: This agenda is posted pursuant to the provisions of the Government Code commencing at Section 54950. The date of this posting is August 2, 2019. Posting locations are: 1) District Office; 2) Post Office; 3) Rancho Murieta Association; 4) Murieta Village Association.

MEMORANDUM

Date: July 30, 2019
To: Improvements Committee
From: Paul Siebensohn, Director of Field Operations
Subject: Monthly Updates

PROJECTS

Development

The Retreats East and North

No new update.

The Murieta Gardens

The Murieta Gardens - Murieta Marketplace

Work has resumed on this project with the development of the sanitary sewer system and final expansion of the drainage detention basin that serves the entire Murieta Gardens development. The developer's engineer for the project noted that he had resized the final detention basin to a smaller sized basin. As the developer's contractors have already begun working on it, I requested that he resubmit the detention basin design document for Coastland's review to ensure that the downsized basin was still adequate. The technical memo for the reduced detention basin storage was received July 29 and is being reviewed by Coastland. It has also been discovered the developer did not communicate the proposed changes to the basin to Sacramento County for review and approval as should have occurred.

The Murieta Gardens – Highway 16 Off-Site Improvements

No new update.

The Murieta Gardens II – Infrastructure at "Utility A"

The development contractor repaired a sagging sewer line that was installed near Murieta Drive, completed work on air release valves on Legacy Lane, and completed necessary work on the recycled water line to allow potable water to be supplied through it to irrigate landscaping being installed. In the future when there is enough recycled water available to supply beyond the golf courses, the recycled water line will then be utilized to supply recycled water.

The Murieta Gardens II – Subdivision

As of July 29, there was one item left to be completed, item #12 of the punchlist, which was to re-center a utility box over a sewer cleanout. Also pending final acceptance was the submittal of a final as-built for the project's infrastructure. Coastland Engineering conceded that submittal of complete 'red-line' (marked up) plans would suffice until final as-built plans in pdf and autocad format could be completed and supplied. The red-line plans were submitted to Coastland at the very end of the day on Friday July 26. Coastland has reviewed and accepted the redlines. Approval for the Murieta Gardens II to connect to District facilities was officially granted by the General Manager at end of day, July 30, 2019.

Rancho Murieta North – Development Project

A deposit for review has been received by the developer to support District review. It has been requested that the review begin with the Drainage system design first.

FAA Business Park

The project is continuing to wait on approval from Sacramento County before proceeding.

MEMORANDUM

Date: August 1, 2019
To: Improvements Committee
From: Paul Siebensohn, Director of Field Operations
Subject: Review of South Sewer & Storm-line inspections

DISCUSSION

With the known issues in the South community of expansive soils and surface cracking causing separations of asphalt in streets there, we wanted to explore the sewer and drainage pipes in the area to determine if there were any issues. To do so we needed to bring in a contractor who has the proper equipment to conduct these inspections. First staff went around the south and cleaned the sewer lines they could with the District's equipment to allow for good visualization of the pipes to be inspected. They then worked with the contractor with their larger and more powerful equipment to clean additional pipes and cctv them.

This work was worthwhile as several issues were discovered that will need to be fixed. Below is a summary of those items discovered as put together by the District's Utility Supervisor. The sections inspected with no issues have been left out of this memo.

Staff has been doing what they can so far to remedy issues discovered, removing and treating roots in lines. The sag in the sewer pipeline in run 21 will most likely need a project put together for it to go out to bid for a qualified contractor to repair.

Quick caption of problems,

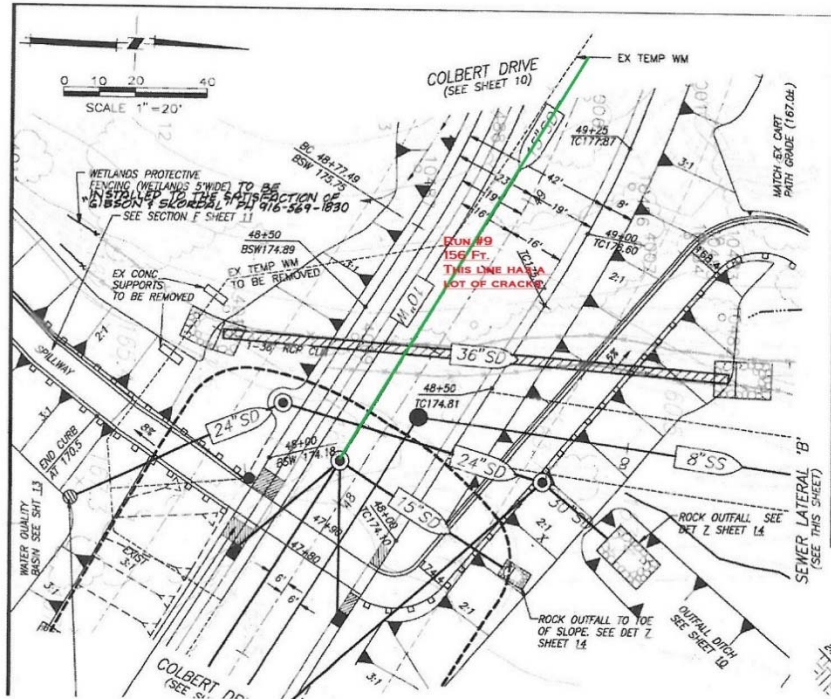
Problems found in Run #9

Large cracks in pipe at 2.5 Ft, 28.1 Ft, 151.2 Ft, 152.8 Ft

Small cracks in pipe at 125.7 Ft, 134.2 Ft.

Hole in pipe at 27.8 Ft

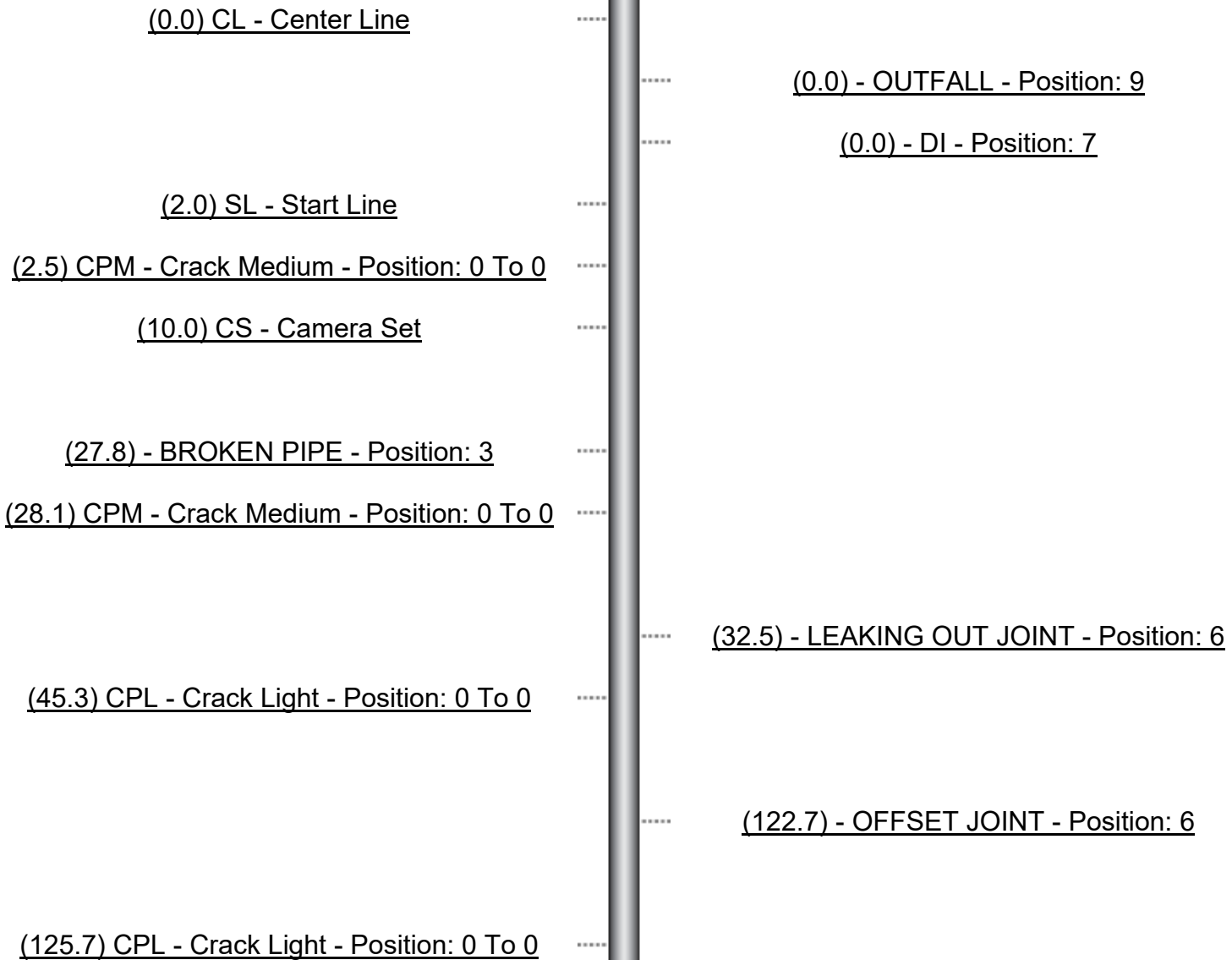
Leak in pipe at 32.5 Ft, water is running out of pipe joint



Project Name: RANCHO MURIETA SOUTH	
Date: 6/25/2019 10:40:00 AM	Asset ID:
Location: COLBERT DR BY HOLE 12	Upstream MH Number: WEST DIRECTION
length surveyed: 156.4	Downstream MH Number: SDMH STA 48+00
Run Number: 9	Flow Direction: Reverse
Pipe Size: 18	Pipe Material: Reinforced Concrete Pipe

Severity

ID Number: SDMH STA 48+00



(134.2) CPL - Crack Light - Position: 0 To 0

(137.8) - OFFSET JOINT - Position: 6

(145.1) - x

(151.2) CPM - Crack Medium - Position: 0 To 0

(152.8) CPM - Crack Medium - Position: 0 To 0

(154.4) EL - End of Line

(156.4) CL - Center Line

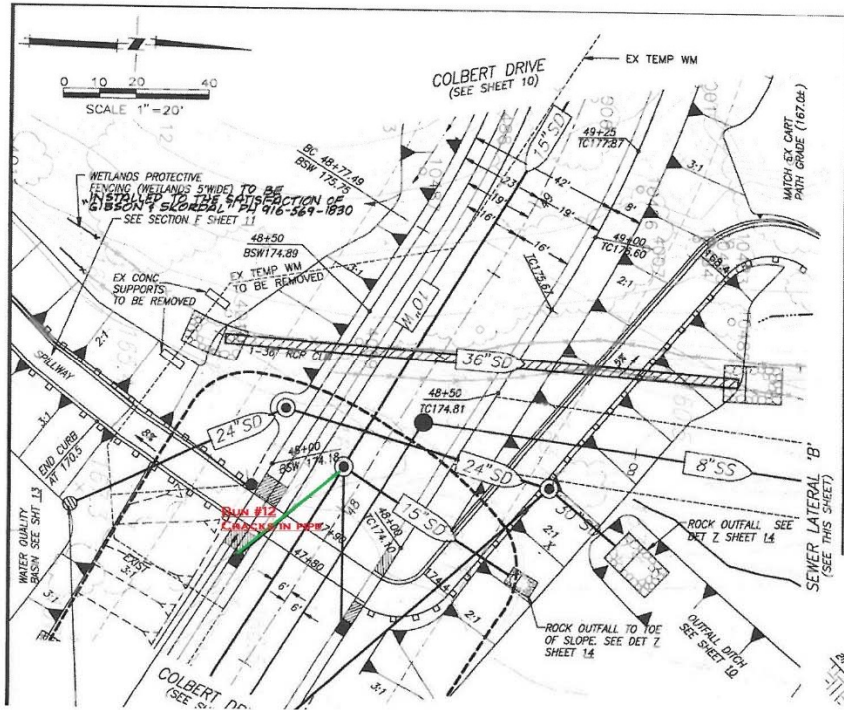
Total Distance: 156.4

ID Number: WEST DIRECTION

Created with the report generator

Problems found in Run #12

Cracks found in several places in pipe



Project Name: RANCHO MURIETA SOUTH	
Date: 6/25/2019 11:28:00 AM	Asset ID:
Location: COLBERT DR BY HOLE 12	Upstream MH Number: DI SOUTH

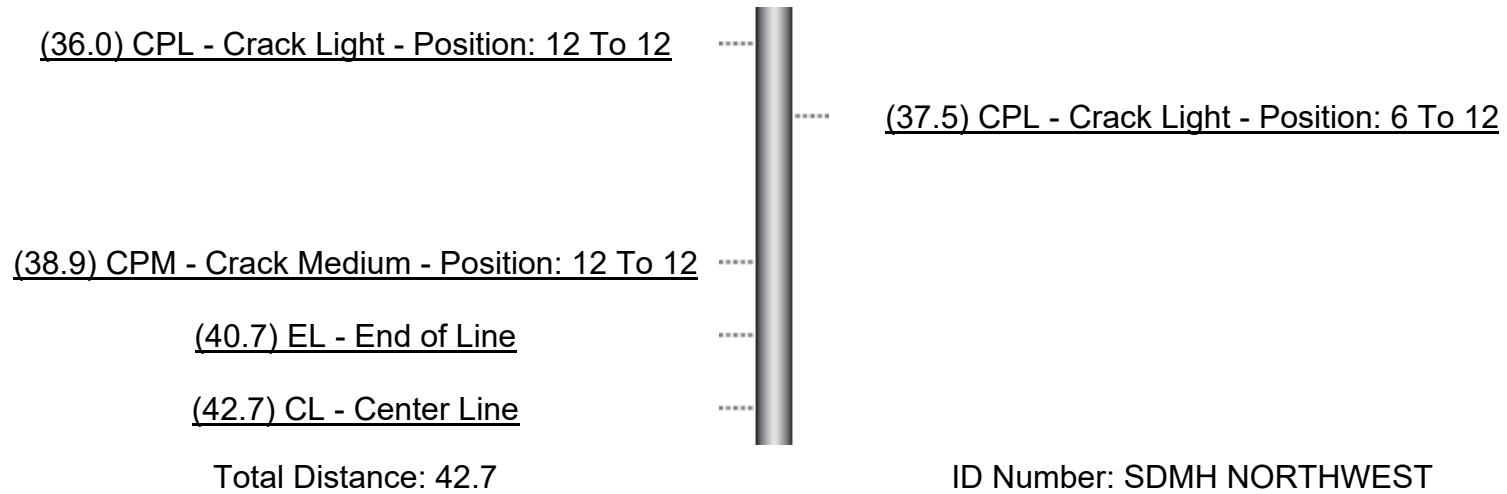
Severity

length surveyed: 42.7	Downstream MH Number: SDMH NORTHWEST
Run Number: 12	Flow Direction: Forward
Pipe Size: 12	Pipe Material: Reinforced Concrete Pipe

ID Number: DI SOUTH

- (0.0) CL - Center Line
- (1.0) SL - Start Line
- (10.0) CS - Camera Set
- (12.0) - x
- (14.1) CPL - Crack Light - Position: 12 To 12
- (21.1) CPL - Crack Light - Position: 12 To 12
- (29.0) CPL - Crack Light - Position: 12 To 12





Created with the report generator

Problems found in Run #19

From Plan set, Rancho Murieta South – Unit No. 7, Reynosa Drive & Drain outfall ‘D’

This pipe runs behind lots 370, 371 and 372 on Murieta South Parkway

Redwood trees are planted over the top of this line. This line has a root problem.

Drain is located at the corner of Murieta South Parkway and Agradar

This pipe runs behind lots 370, 371 and 372 on Murieta South Parkway

Problems found in Run #20

From Plan set, Rancho Murieta South – Unit No. 7, Reynosa Drive & Drain outfall 'D'

Street trees are planted over the top of this line.

This line has a root problem.

Drain is located at the corner of Murieta South Parkway and Agradar

This pipe comes from behind lots 370, 371 and 372 on Murieta South Parkway

MURIETA SOUTH PARKWAY
(EXISTING)

RANCHO MURIETA SOUTH
UNIT NO. 18

AGRADAR DRIVE
(EXISTING)

From Plan Set, Rancho Murieta South
- Unit No. 7 Page 6 of 15


Run #19, This section has roots in 50% of all joints. Redwood trees planted on top of line

Run #20, This section has roots in 90% of all joints. Street trees planted on top of line

DRAIN OUTFALL "D"

DATE: FEBRUARY 2000	NO.	REVISION	DATE
SCALE: H: 1"=40' ; V: 1"=4'			
DRAWN BY: R.W. & B.W.			
DESIGNED BY: R.W. & B.W.			
CHECKED BY: R. WOOD			

WOOD-RODGERS INC.



DATE: 2/18/00

WOOD-RODGERS INC.
9 G STREET, SACRAMENTO, CA 95814
PHONE: (916) 341-7780

Project Name: RANCHO MURIETA SOUTH		Severity
Date: 6/25/2019 1:52:00 PM	Asset ID:	
Location: AGRADAR DR	Upstream MH Number: GRATED DI	
length surveryed: 205.5	Downstream MH Number: BEHIND LOTS 372,371&370	
Run Number: 19	Flow Direction: Forward	
Pipe Size: 12	Pipe Material: Reinforced Concrete Pipe	

ID Number: GRATED DI

- (0.0) CL - Center Line
- (1.0) SL - Start Line
- (4.0) - INLET
- (5.3) RP2 - Roots block 10% to 20% - Position: 5
- (10.0) CS - Camera Set
- (12.5) RP2 - Roots block 10% to 20% - Position: 5
- (25.3) RP1 - Roots block up to 10% - Position: 1



(82.5) - CHIP - Position: 2

(86.3) RP1 - Roots block up to 10% - Position: 12

(92.4) RP1 - Roots block up to 10% - Position: 12 To
12

(98.4) RP1 - Roots block up to 10% - Position: 12

(103.8) RP1 - Roots block up to 10% - Position: 3

(109.9) RP1 - Roots block up to 10% - Position: 3

(115.2) - BROKEN PIPE - Position: 12 To 12

(116.4) - DI LOT #371 - Position: 12

(122.4) RP9 - Roots block over 80% - Position: 12 To
12



(43.8) RP1 - Roots block up to 10% - Position: 6

(49.8) RP1 - Roots block up to 10% - Position: 6

(99.9) CPL - Crack Light - Position: 11 To 12

(104.0) RP1 - Roots block up to 10% - Position: 10

(110.1) RP1 - Roots block up to 10% - Position: 10

	.....	<u>(127.3) RP2 - Roots block 10% to 20% - Position: 10 To 6</u>
	.....	<u>(152.2) RP2 - Roots block 10% to 20% - Position: 7</u>
<u>(154.1) - x</u>	.....
	.....	<u>(159.0) RP2 - Roots block 10% to 20% - Position: 7</u>
	.....	<u>(163.1) RP3 - Roots block 20% to 30% - Position: 8 To 3</u>
<u>(170.8) RP2 - Roots block 10% to 20% - Position: 4</u>	.....
<u>(172.1) - x</u>	.....
	.....	<u>(177.0) RP2 - Roots block 10% to 20% - Position: 8</u>
<u>(183.1) RP2 - Roots block 10% to 20% - Position: 4 To 7</u>	.....
<u>(189.6) RP1 - Roots block up to 10% - Position: 5</u>	.....
<u>(189.7) RP1 - Roots block up to 10% - Position: 12</u>	.....
	.....	<u>(195.4) RP3 - Roots block 20% to 30% - Position: 7</u>
<u>(200.1) RP2 - Roots block 10% to 20% - Position: 3 To 9</u>	.....

(205.5) - DI LOT #370 - Position: 12

(205.5) EL - End of Line

Total Distance: 205.5



ID Number: BEHIND LOTS 372,371&370

Created with the report generator

Project Name: RANCHO MURIETA SOUTH		Severity
Date: 6/25/2019 3:00:00 PM	Asset ID:	
Location: AGRADAR DR	Upstream MH Number: GRATED DI	
length surveyed: 106	Downstream MH Number: TOWARD MURIETA S PKWY	
Run Number: 20	Flow Direction: Forward	
Pipe Size: 12	Pipe Material: Reinforced Concrete Pipe	

ID Number: GRATED DI

(0.0) CL - Center Line

(1.0) SL - Start Line

(7.1) RP2 - Roots block 10% to 20% - Position: 3 To 8



(10.0) CS - Camera Set

(12.4) RP1 - Roots block up to 10% - Position: 3

(25.0) RP1 - Roots block up to 10% - Position: 3

(35.5) RP1 - Roots block up to 10% - Position: 3

(42.1) RP1 - Roots block up to 10% - Position: 3

(67.8) RP1 - Roots block up to 10% - Position: 5

(19.1) RP1 - Roots block up to 10% - Position: 9

(31.1) RP2 - Roots block 10% to 20% - Position: 9

(49.8) RP2 - Roots block 10% to 20% - Position: 6 To
3

(60.4) RP2 - Roots block 10% to 20% - Position: 10 To
2

(79.3) RP2 - Roots block 10% to 20% - Position: 5



(86.1) RP1 - Roots block up to 10% - Position: 8

(92.0) RP1 - Roots block up to 10% - Position: 6

(97.8) RP2 - Roots block 10% to 20% - Position: 6

(104.0) EL - End of Line

(106.0) CL - Center Line

Total Distance: 106

ID Number: TOWARD MURIETA S PKWY

Created with the report generator

Problems found in Run #21

Dip in sewer main just before manhole

This dip holds paper back then pushes through to the drop in and has the potential to plug downstream sewer main.

There are some pictures but video needs to be watched

This is a problem that started to be noticed in December 2018 with two sewer overflows. Staff has been following up since with inspections and repeated cleaning.

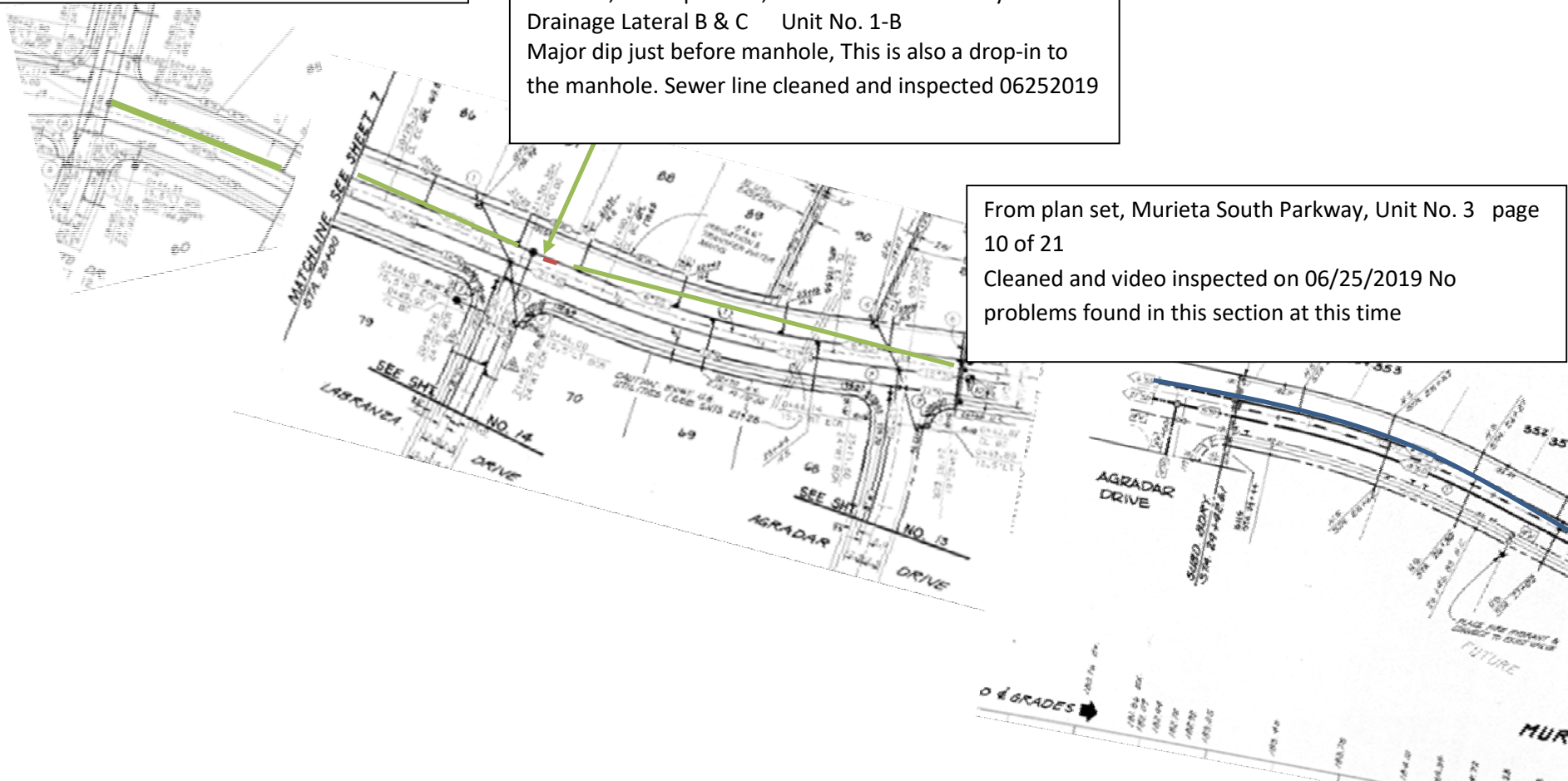
Plan Set, Murieta South Parkway,

Unit No. 1-B Page 7 of 52

Run #22 From plan set, Murieta South Parkway, Unit No. 1-A sheet 8 of 52
This section had some debris in the bottom and was cleaned

Run #21, From plan set, Murieta South Parkway & Drainage Lateral B & C Unit No. 1-B
Major dip just before manhole, This is also a drop-in to the manhole. Sewer line cleaned and inspected 06252019

From plan set, Murieta South Parkway, Unit No. 3 page 10 of 21
Cleaned and video inspected on 06/25/2019 No problems found in this section at this time



MEMORANDUM

Date: July 30, 2019
To: Improvements Committee
From: Paul Siebensohn, Director of Field Operations
Subject: Ideas to deal with and prevent future Manganese issues in potable water

Discussion

The yellow water that a portion of the community experienced was due to manganese present in the water. The ideas that follow are a preliminary look into what we may do as a District to prevent any issues with yellow water again here in our community's potable water supply, along with what we have done to resolve the issue of yellow water.

What we have done currently:

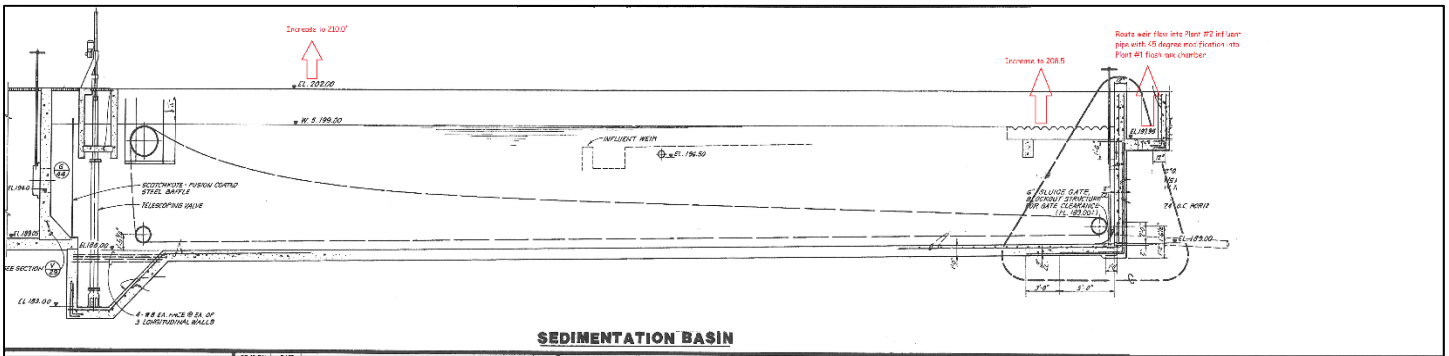
To deal with the dissolved manganese that passes through Plant #1's ultrafiltration membranes we do two primary things. One is to operate Plant #2 who's conventional treatment process of flash mixing, flocculation, and sedimentation basins followed by sand and anthracite filtration, is significantly better equipped to remove manganese. This allows us to shut off the Plant #1, the ultrafiltration membrane plant, or at least significantly reduce its flow to limit any manganese carry through to the water supply system. Two is to use a strong oxidant such as Potassium Permanganate and/or Chlorine to oxidize the dissolved manganese out of solution into a solid form so it may be filtered out of the water.

In addition, to deal with the high concentration of manganese in the backwash return water that is processed, all of it is routed into Plant#2 which is able to remove it.

Additional Solutions:

Physical Improvements to water treatment system:

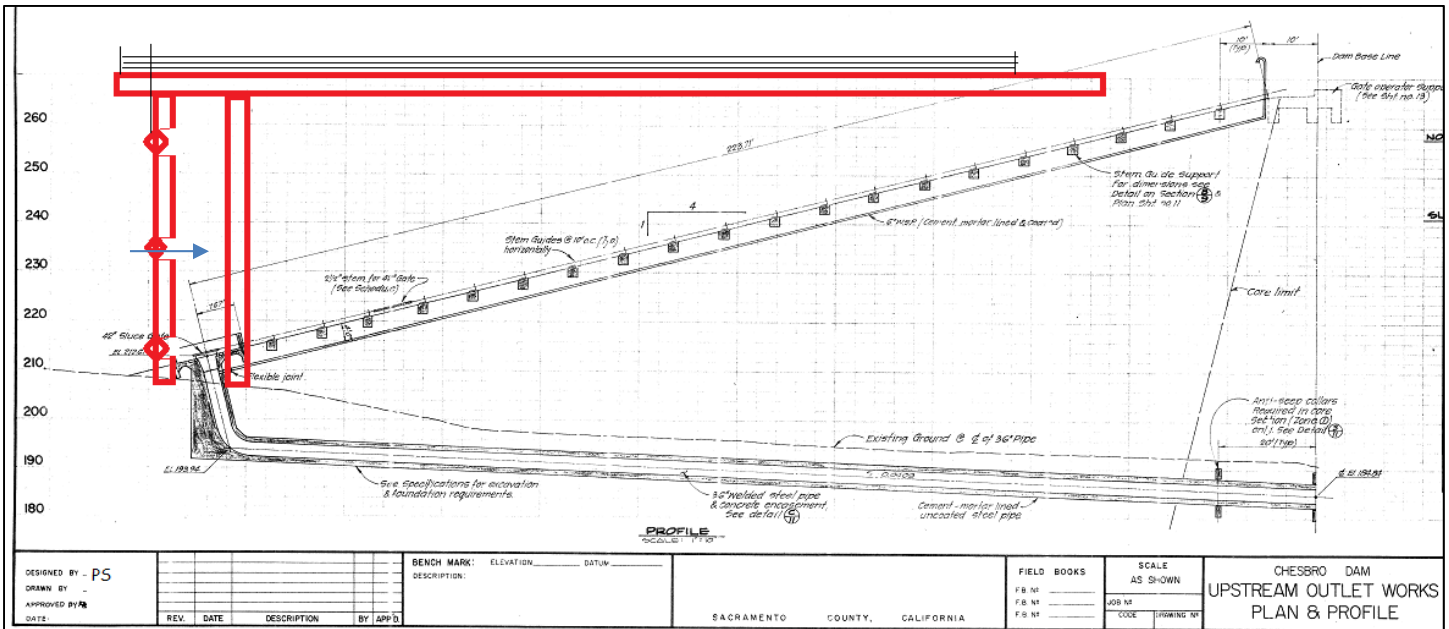
- 1) Water Treatment Plant process modifications: I'd recommend the following modifications take place to allow Plant #2's sedimentation basin to be utilized for pre-treatment of water flowing in from the Chesbro reservoir before flowing to Plant #1. The modification would be to route the Plant #1 influent water line into Plant #2's flash mix, flocculation, and sedimentation basins before flowing into weirs that would feed Plant #1. To possibly make this work with the water flowing by gravity from the head pressure of the Chesbro Reservoir, Plant #2's facilities could be raised an estimated 9.5'. Piping would also need to be installed to allow the flow from the weir of Plant #2 into Plant #1. A hydraulic engineer would need to confirm that it would be possible and what the actual elevations and pipe sizes would be needed. I believe this is the best overall option as Plant #2's filter system is slated to be decommissioned due to age and Plant #1 to be expanded and be the sole facility to provide the communities water. Currently the way Plant #1 operates there is no pretreatment available other than the 400 micron screens on its raw water supply and this would change that. The two major concerns with doing this would be cost and it would take Plant #2 out of service so that there would be no redundancy to Plant #1.



Idea to raise Plant #2's sedimentation basin to be utilized to feed Plant #1

2) Modify intake: Due to potential costs this is most likely not viable.

Currently the Water Treatment Plant's (WTPs) intake in the Chesbro reservoir sits on the bottom of the reservoir. Based on laboratory testing conducted during the manganese issue, it was seen that manganese levels in the reservoir's waters were much higher in the bottom of the reservoir and reduced significantly towards the surface. Having an intake structure that allowed the District to pull water from higher levels would significantly improve water quality.



Idea for intake modification structure to allow water to be pulled from varying depths

- a. Pros: This modification would practically eliminate any issues due to reservoir turnover or issues with stirred up sediment in the lower level of the Chesbro reservoir.
- b. Cons: It would be very expensive and difficult to do as the intake to the Water Plant is the sole source of water for the Water Plant. No estimate is available yet, but it is assumed this project would probably cost over \$600k, plus any additional pumping costs to fill the reservoir should the reservoir have to be lowered or drained to complete the project.

3) Piping modification to backwash return system from Plant #1 to Plant #2 and/or Neutralization tank: This would allow staff to control where concentrated manganese and dissolved organics are sent as Plant #1 doesn't do as well as Plant #2 in removing them. Sending backwash return water to the sewer

eliminates the need for treatment in the water process but then requires storage and treatment in the sewer process.

- a. Pros: Relatively inexpensive and needed for control of water feeding the treatment process. It is estimated to be under \$20k with most of the cost being for repaving of areas trenched.
- b. Cons: Water sent to the sewer system would need to be stored and treated. The amount of storage required could affect development density scenarios and trigger expansion of secondary storage reservoirs.

- 4) Modification of Calero to Chesbro feed system: Currently the siphon line feeds from the bottom of the Calero reservoir where the water is cold and dense. This is typically good as aesthetically colder water is better received by customers as well as it allows the capacity of Calero to be used. However, this cold water may displace the waters in the bottom of the Chesbro reservoir as it sinks down to its bottom and stirs up sediment in the reservoir.

One modification could be made by installing piping in the Calero siphon suction line to allow staff to pull from water near the surface which is warmer. Another possible modification could be to extend the discharge into Calero to extend to the deeper parts of Chesbro with a diffuser system on its discharge so as to prevent stirring up of sediment by the velocity of inflowing water.

- a. Pros: These modifications should help to prevent the Chesbro reservoir from turning over. One or both modifications could be made to limit cost.
- b. Cons: It would be an expensive project and turnover may still occur due to natural environmental conditions.

Monitoring Solutions:

- 1) HACH Manganese online metering system
 - a. Pros: Could be utilized to detect levels of manganese in water entering and leaving the water treatment plants (WTPs) to allow staff to make appropriate operations changes to deal with incoming manganese. It could also be tied into the SCADA system to allow staff to trend data.
 - b. Cons: Very expensive to purchase, install and expensive to maintain. Feed supply to a building with a power source is not readily available. Quote for raw water monitoring metering system is \$32,322. Equipment is too complicated for staff to maintain on their own so an annual service contract would be needed.
- 2) Temperature monitoring of incoming water. If temperature changes drastically it could indicate reservoir turnover.
 - a. Pros: Easy to do with equipment available at the WTPs.
 - b. Cons: No baseline temperatures have been established.
- 3) Daily grab samples and lab testing by staff.
 - a. Pros: Lower cost option than online monitoring equipment is not too relatively expensive, \$475. Detects to 0.01 mg/L level with +/- 5% accuracy, close to contract lab results.
 - b. Cons: Staffing time needed to train, take samples, and test samples.
- 4) Dissolved Oxygen monitoring: Unknown right now. Low dissolved oxygen levels are potentially tied to increased dissolved manganese. We need to do more research to understand the possible correlation and viability of this.

Treatment Solutions:

Pre-oxidant feed: Feeding an appropriate oxidant into the water feeding the water plant will oxidize dissolved manganese out of solution and allow it to be filtered.

1) Potassium Permanganate:

- a. Pros: This is listed as one of the best solutions to oxidize Manganese out of solution quickly. It works well when dosed appropriately.
- b. Cons: It is a very messy, dangerous, solid product that must be dissolved so it may be fed through chemical feed equipment at a proper dose. Dosing and reaction times are finicky. Overdose may lead to colored water issues from this product on its own. Not recommended for facilities with direct filtration such as Plant #1.

2) Chlorine:

- a. Pros: Chlorine feed system is automated with the SCADA system, fully contained, and easy to track and dose. It is good to use for the membranes to keep biological growth from forming on the membranes and recommended by the membrane manufacturer.
- b. Cons: It's listed as having a slower reaction time than permanganate or ozone so higher doses are needed for faster reactions. Utilizing it in the pre-feed, chlorine may react with organics to form disinfection byproducts which are regulated and potentially harmful. Staff would need to carefully monitor the total organic carbon present in the raw water and dosing of chlorine to prevent disinfection byproduct production, yet be able to oxidize dissolved manganese.

3) Ozone:

- a. Pros: Ozone is the quickest and best overall oxidant available to oxidize metals and organics that may be present. As a side benefit to oxidizing manganese out of solution, it would also oxidize taste and odor compounds out of the water.
- b. Cons: We would have to purchase and install an ozone feed system which would be expensive and power intensive. There would also need to be an ozone destruct system to neutralize the ozone before it reached the membranes where it could damage them. Infrastructure around where it was being fed may also need to be protected from ozone damage with special coatings.

4) Aeration:

- a. Pros: Aeration can transform organically bound forms of manganese into insoluble forms that may be filtered. We already have an aeration system set up in the Chesbro reservoir to oxidize iron that has been an issue for us in the past. We need to increase the level of aeration present to affectively make it work.
- b. Cons: It may not work for various dissolved forms of manganese.

We are continuing to look into costs and viability for greensand filtration media for our conventional water plant which should filter out any iron and manganese present and looking into other proprietary filtration processes that could be routed in front of Plant #1. We are also putting better procedures in place to direct staff on how to identify and deal with the issue of manganese in the water supply for the water treatment plants.

Staff is continuing to seek additional solutions from vendors, consultants, and Suez (formerly GE) who is the supplier of the ultrafiltration membrane facility. An item being tested out today is to utilize a propriety coagulant which is utilized for metals removal. Staff and a vendor are testing this and sending out samples to a lab to determine its viability.