MINUTES
City Council Work Session Meeting
Tuesday, December 11, 2018 City Hall- Council Chambers, 39250 Pioneer Blvd., Sandy, Oregon 97055 6:30 PM

COUNCIL PRESENT: Jeremy Pietzold, Council President, John Hamblin, Councilor, Jan Lee, Councilor, and Carl Exner, Councilor

COUNCIL ABSENT:

STAFF PRESENT:

MEDIA PRESENT:

Page

1. Roll Call

2. Presentation

2.1. Informational Meeting - Waste Water Treatment Plant Design Update 3 - 54

Staff Report - 0087

Murraysmith a Portland firm that specializes in engineering design of transportation, water, wastewater and stormwater systems presented information to council on our current wastewater treatment plant and showed what can be done to improve and expand. See attached PDF presentation.
Please note, the video only has audio as we had a power outage and we were unable to recover video.

Sandy_WSFP_CityCouncil_2018.12.10

3. Adjourn

Mayor, William King

City Recorder, Karey Milne

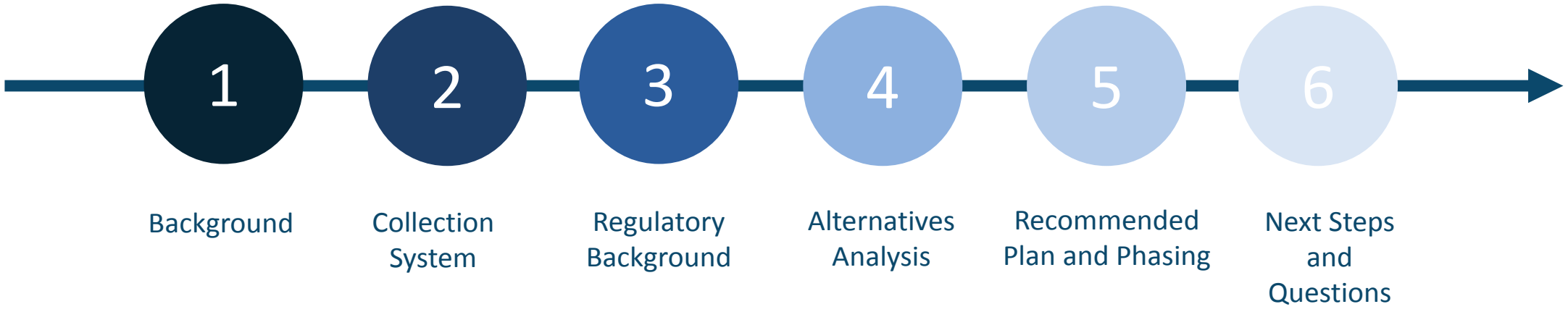
City of Sandy Wastewater System Facilities Plan Workshop

December 11, 2018

Meeting Purpose

- Update City Council on the status of the plan
- Provide overview of the draft plan and recommendations
- Provide a schedule for finalizing the plan including public comment and plan adoption
- Provide a schedule for implementation of recommendations

Agenda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6
Background
Collection System
Regulatory Background
Alternatives Analysis
Recommended Plan and Phasing
Next Steps and Questions

Sandy Wastewater System Background

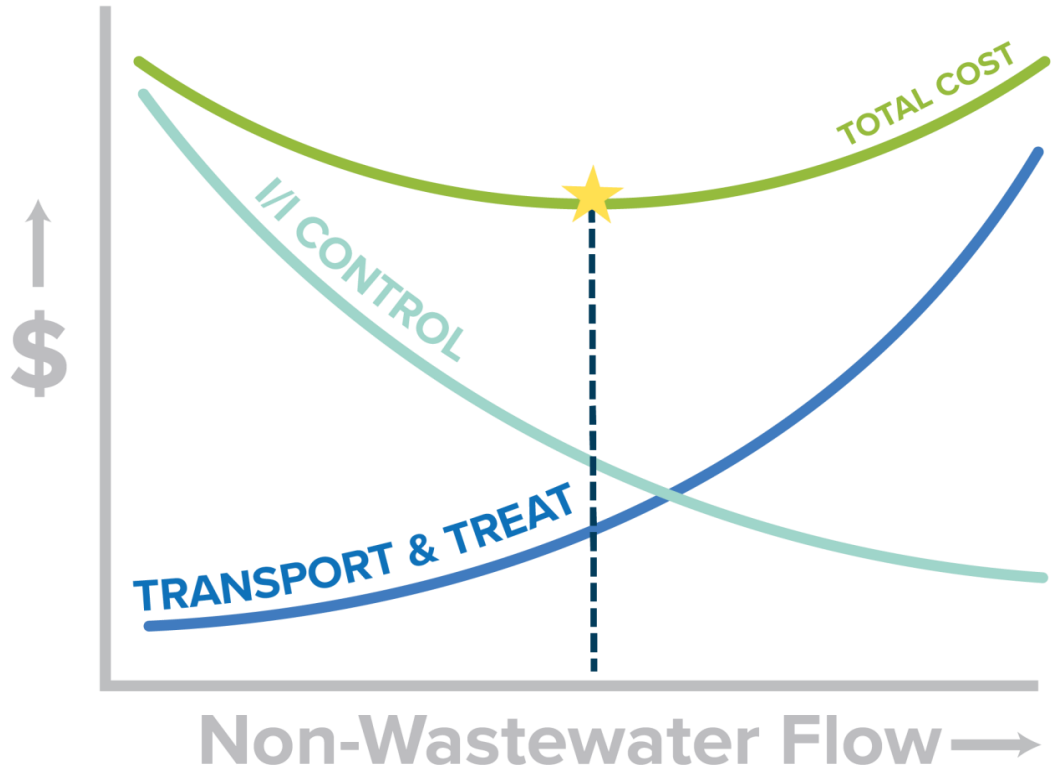
- WWTP History
  - **1965 –** WWTP original construction
  - **1993** – Last Wastewater System Facilities Plan (WSFP)
  - **1998** – Last WWTP Upgrades completed
- Sandy is one of the fastest growing communities in Clackamas County
- Need to update and implement WSFP to address deficiencies and provide for community growth

Overview of Wastewater System

Key Issues

- High Inflow and Infiltration in the City's sanitary sewer collection system
- Existing Wastewater Treatment Plant (WWTP) has limited capacity and is located on a constrained site
- Limited discharge capacity in Tickle Creek
- City now under Mutual Agreement and Order (MAO)

Balancing Collection System and Treatment Plant Investments



2. Collection System

INFLOW SOURCES

INFILTRATION SOURCES

ROOF DRAIN CONNECTION

UNCAPPED CLEANOUT

ROOT INTRUSION INTO LATERAL

STORM SEWER CROSS-CONNECTION

BROKEN HOUSE LATERAL

FAULTY LATERAL CONNECTION

CONNECTED FOUNDATION DRAIN

FAULTY MANHOLE COVER OR FRAME

STORM SEWER

CRACKED OR BROKEN PIPE

DETERIORATED MANHOLE

SANITARY SEWER

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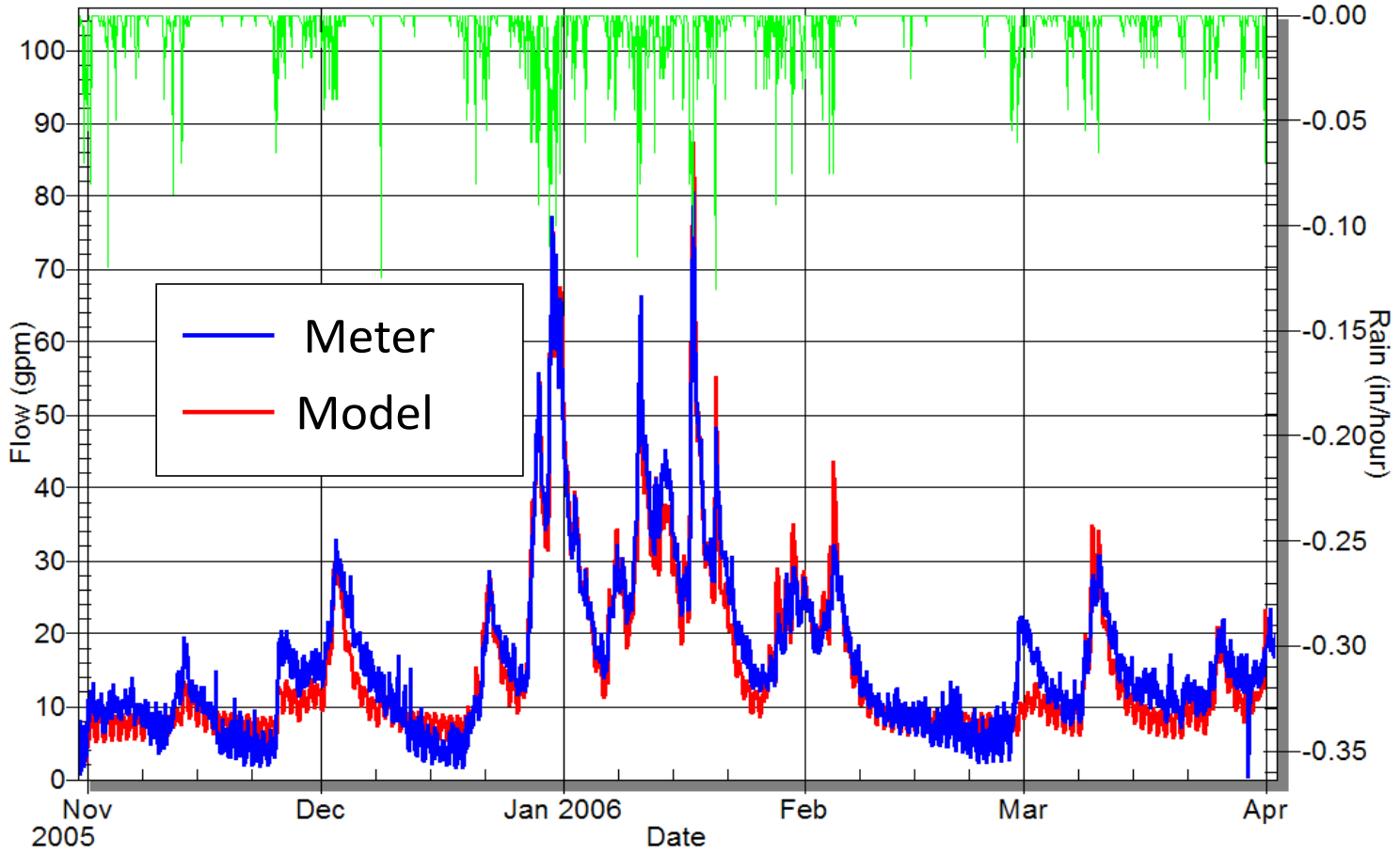
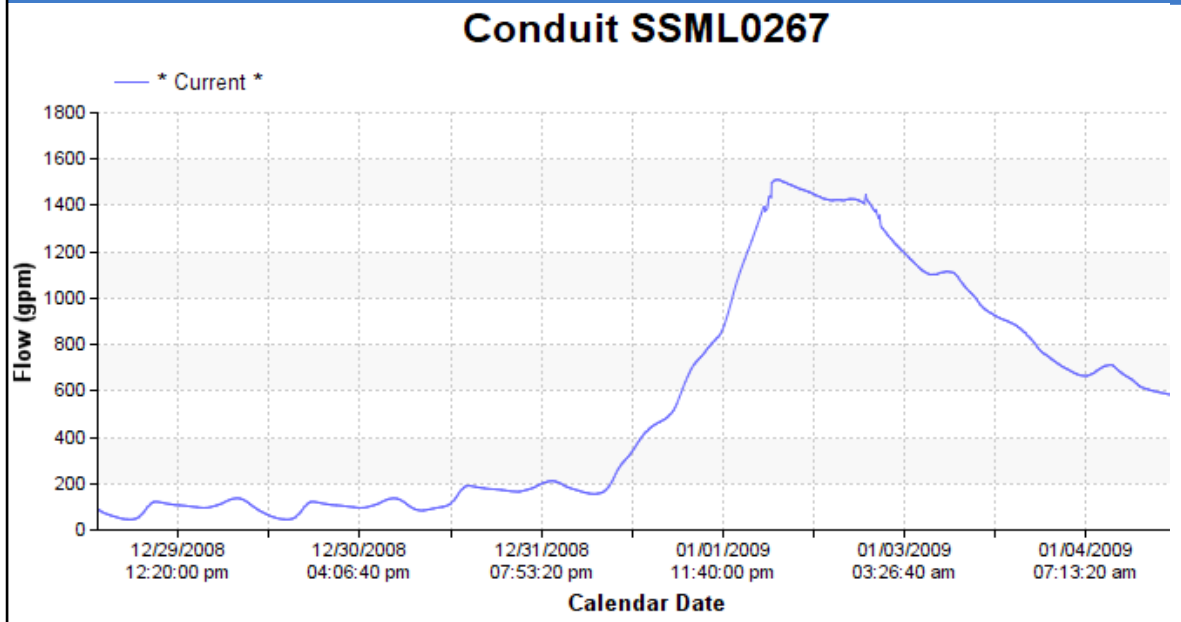
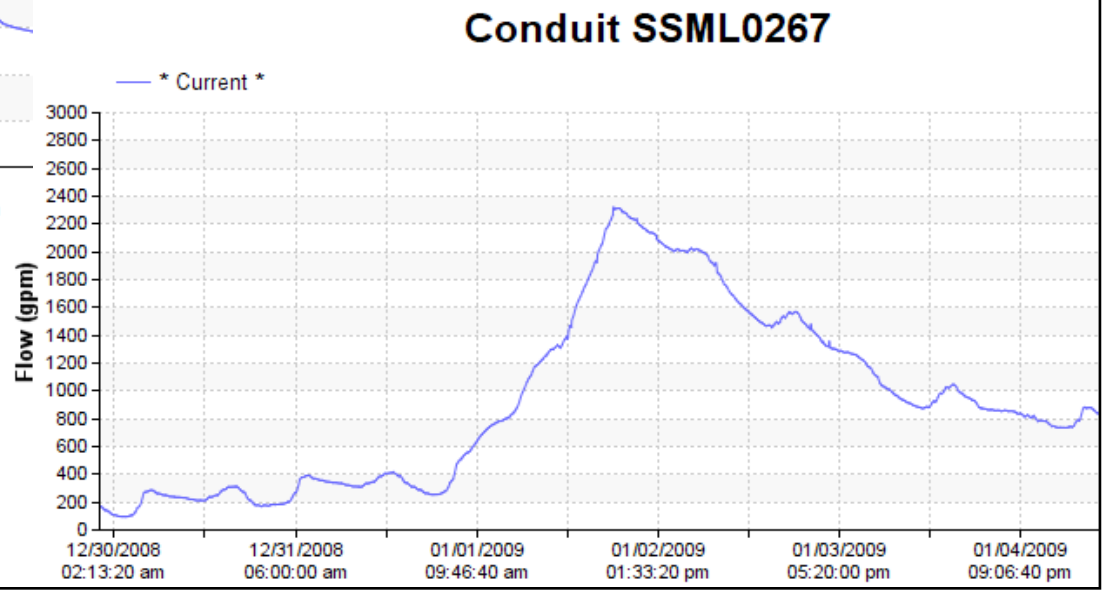
Flow Monitoring and Modeling

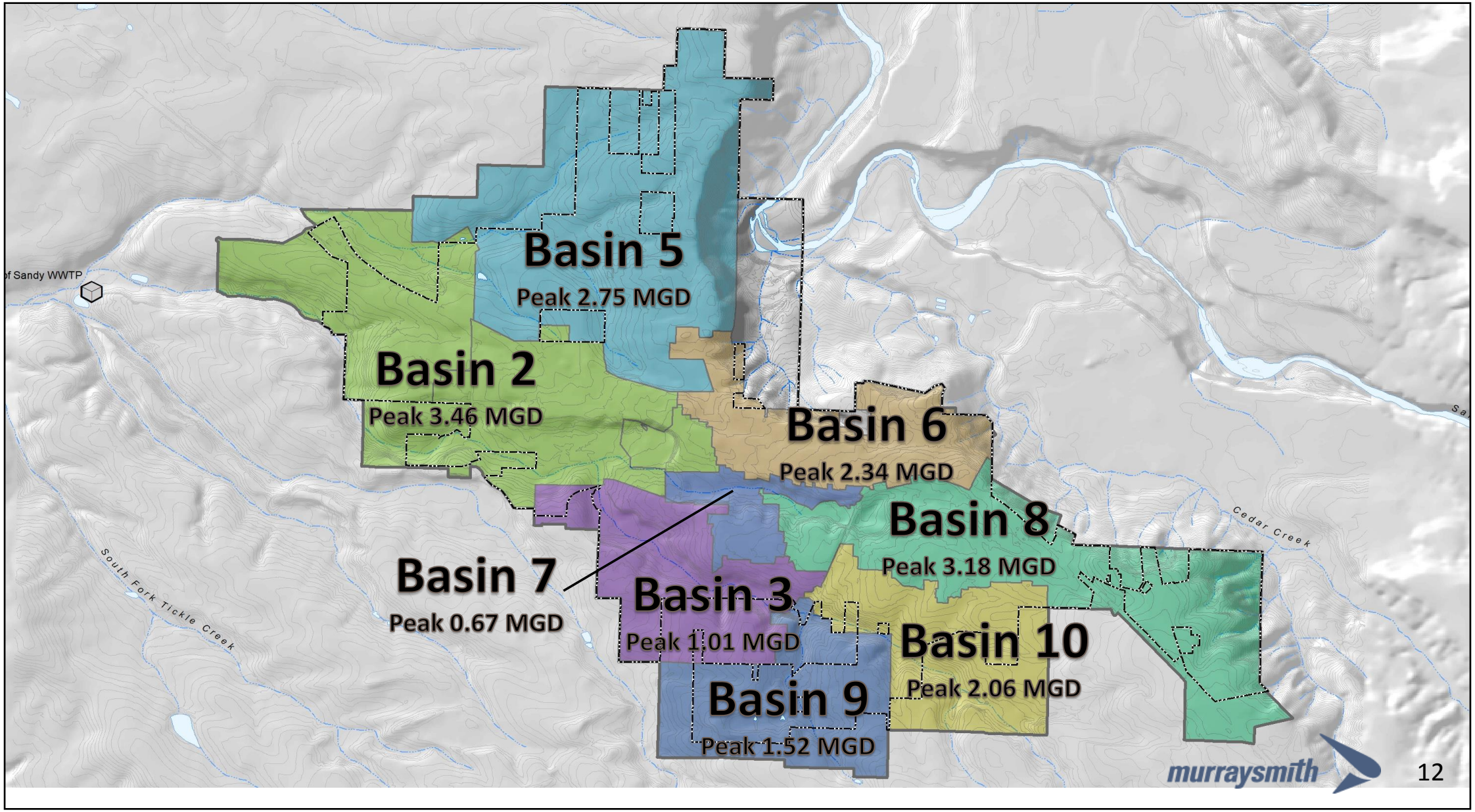


Sandy Wet-Weather Response – Basin 8



- 15:1 peaking factor
- Flows remain elevated



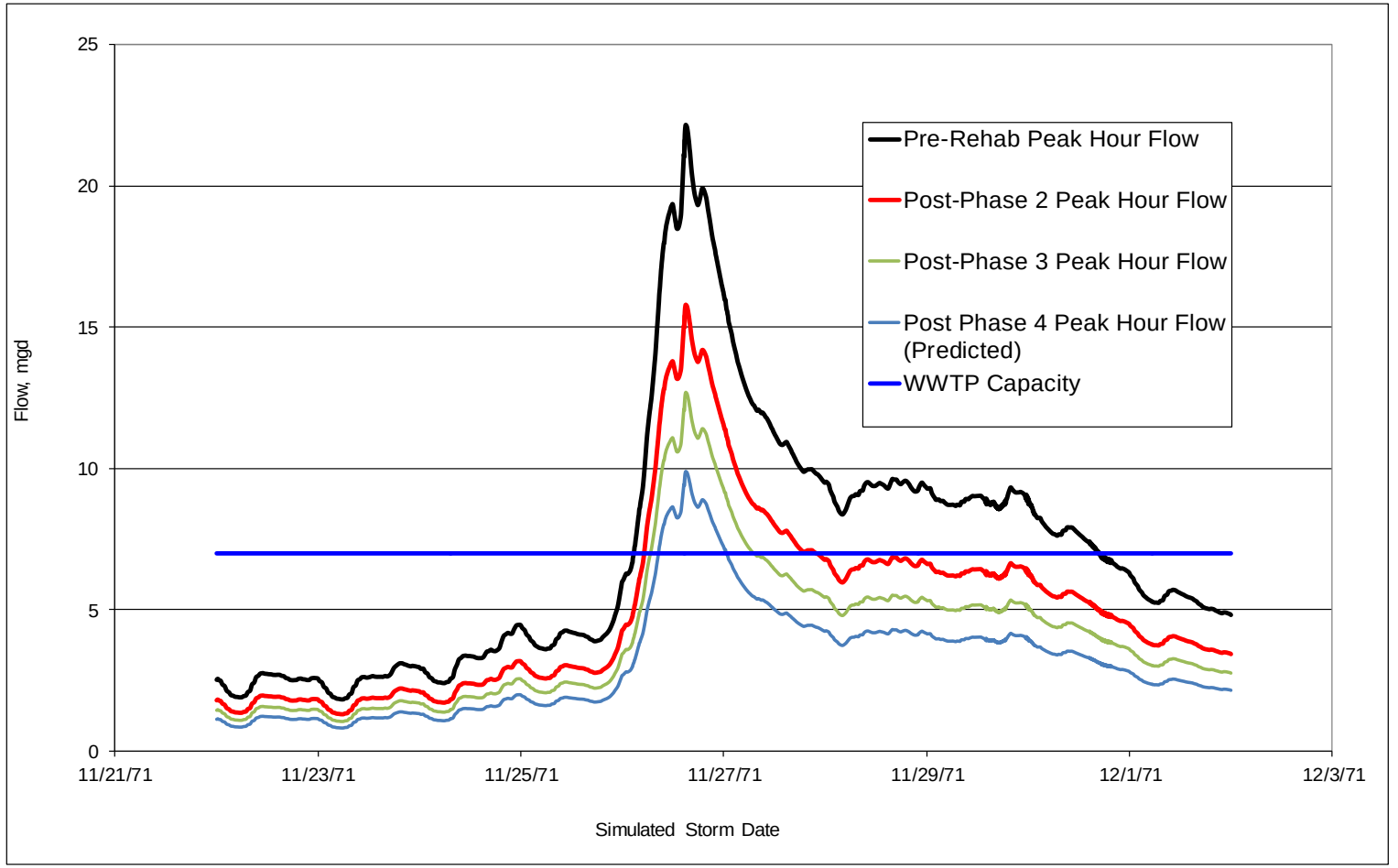

Basin 5
Peak 2.75 MGD
Basin 2
Peak 3.46 MGD
Basin 6
Peak 2.34 MGD
Basin 8
Peak 3.18 MGD
Basin 7
Peak 0.67 MGD
Basin 3
Peak 1.01 MGD
Basin 10
Peak 2.06 MGD
Basin 9
Peak 1.52 MGD
South Fork Tickle Creek
Cedar Creek
murraysmith

Cost-effectiveness of Rehabilitation Strategies

Method	% Peak I/I Removal
Mains and Laterals	65 to 88%
Mains and ROW Laterals Only	40%
Mainlines Only	12 to 16%

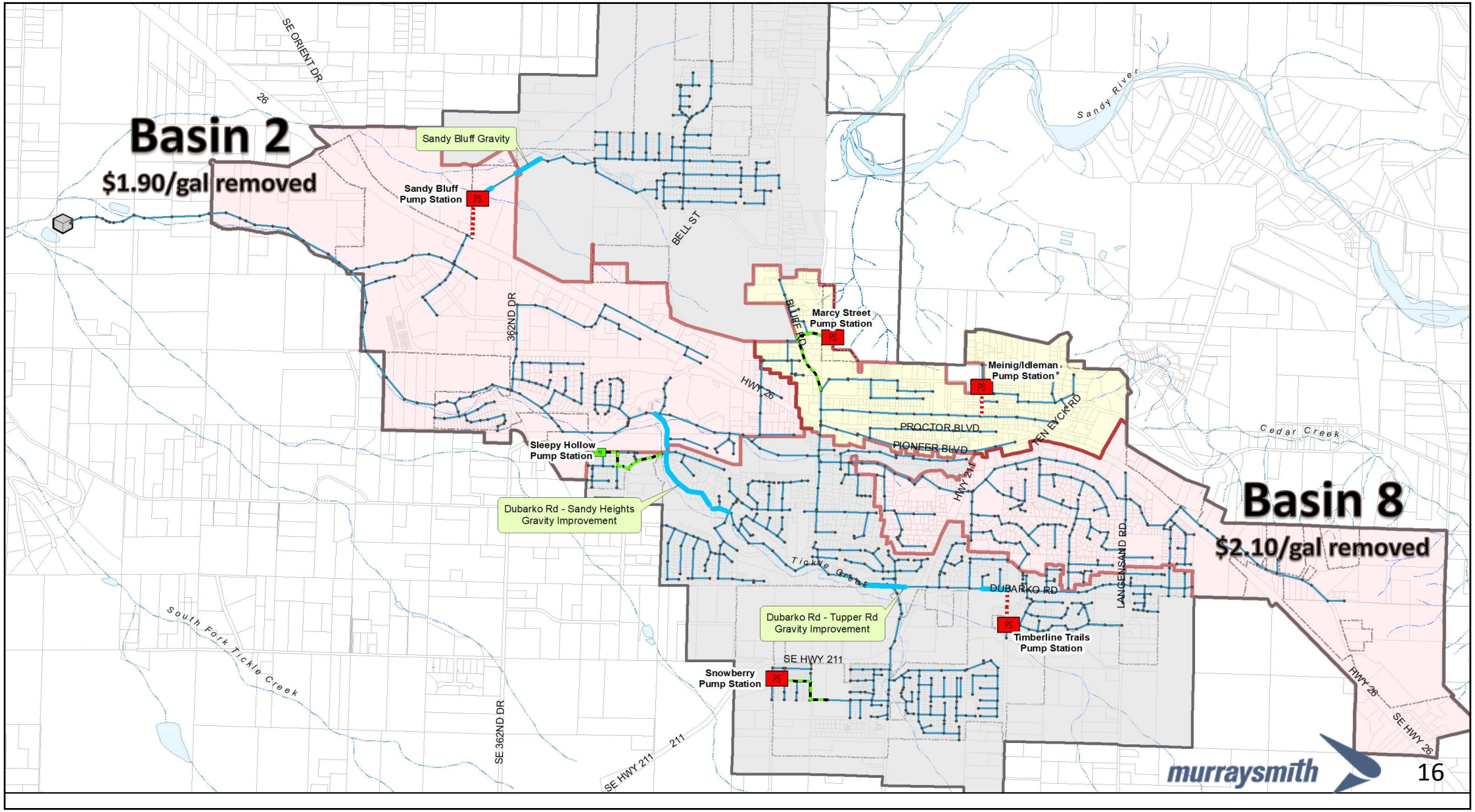
Method	$/gallons removed
Mains and Laterals	0.41
Laterals Only	26.40
Mainlines Only	27.79

Long-Term Commitment to Program
(example: Sweet Home, Oregon)



Initial Phases Generally Most Effective (example: Sweet Home, Oregon)

Phase	Cost	I/I reduction	$/gallons removed
1 and 2	$3.0M	6.4 mgd	**0.47**
3	$3.1M	2.2 mgd	**1.41**
4	$6.0M	2.1 mgd	**2.86**


Basin 2
$1.90/gal removed
Sandy Bluff Gravity
Sandy Bluff Pump Station
Marcy Street Pump Station
Meinig/Idleman Pump Station
Sleepy Hollow Pump Station
Dubarko Rd - Sandy Heights Gravity Improvement
Dubarko Rd - Tupper Rd Gravity Improvement
Timberline Trails Pump Station
Snowberry Pump Station
Basin 8
$2.10/gal removed
SE ORIENT DR
26
BELL ST
362ND DR
BLUFF RD
HWY 26
PROCTOR BLVD
PIONEER BLVD
HWY 211
TEN EYCK RD
LANGENSAND RD
DUBARKO RD
SE HWY 211
SE 362ND DR
South Fork Tickle Creek
Tickle Creek
Sandy River
Cedar Creek
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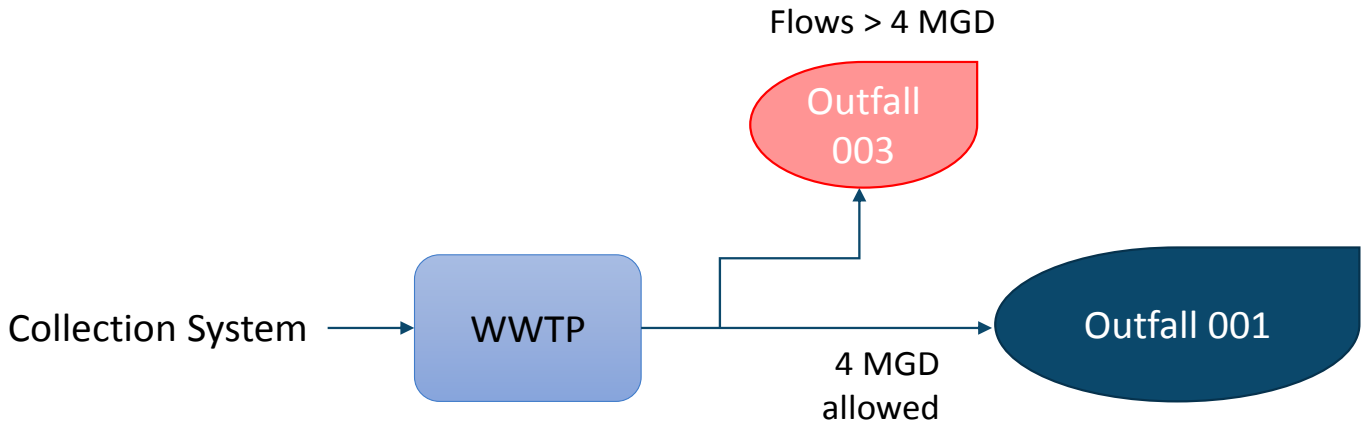
Next Steps

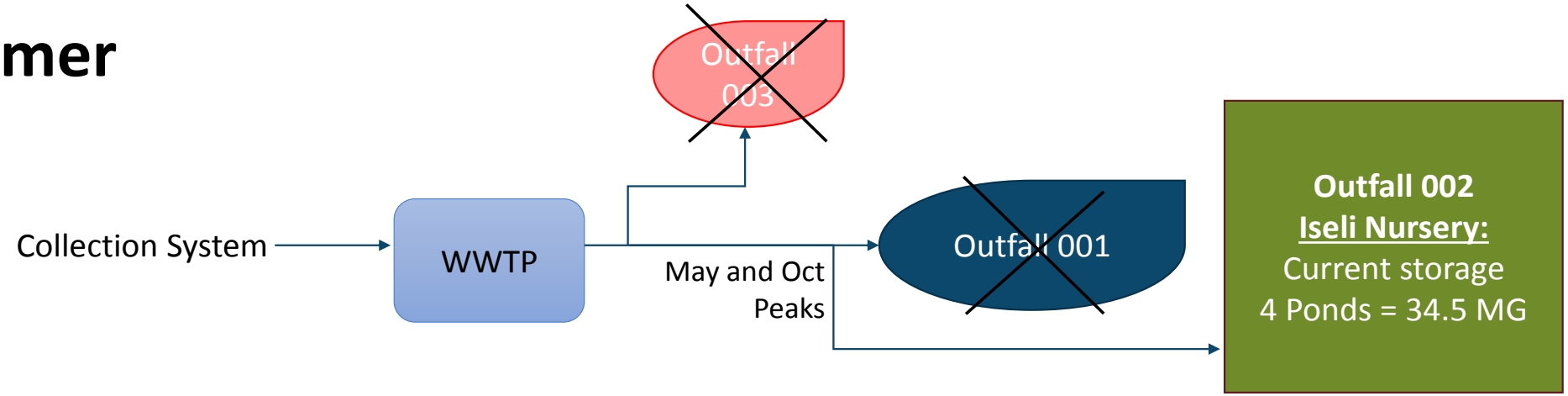
- Smoke Testing (City-wide)
- Remove Inflow Sources
- CCTV (Basins 2 and 8)
- Develop Private I/I Policy
- Flow Monitoring

3. Regulatory Background

Winter



Summer



Permitted Discharge Concentration and Mass Load Limits

Parameter	Average Effluent Concentrations Monthly	Weekly	Monthly* Average lb/day	Weekly* Average lb/day	Daily* Maximum lbs
BOD_5	10 mg/L	15 mg/L	125	187	250
TSS	10 mg/L	15 mg/L	125	187	250

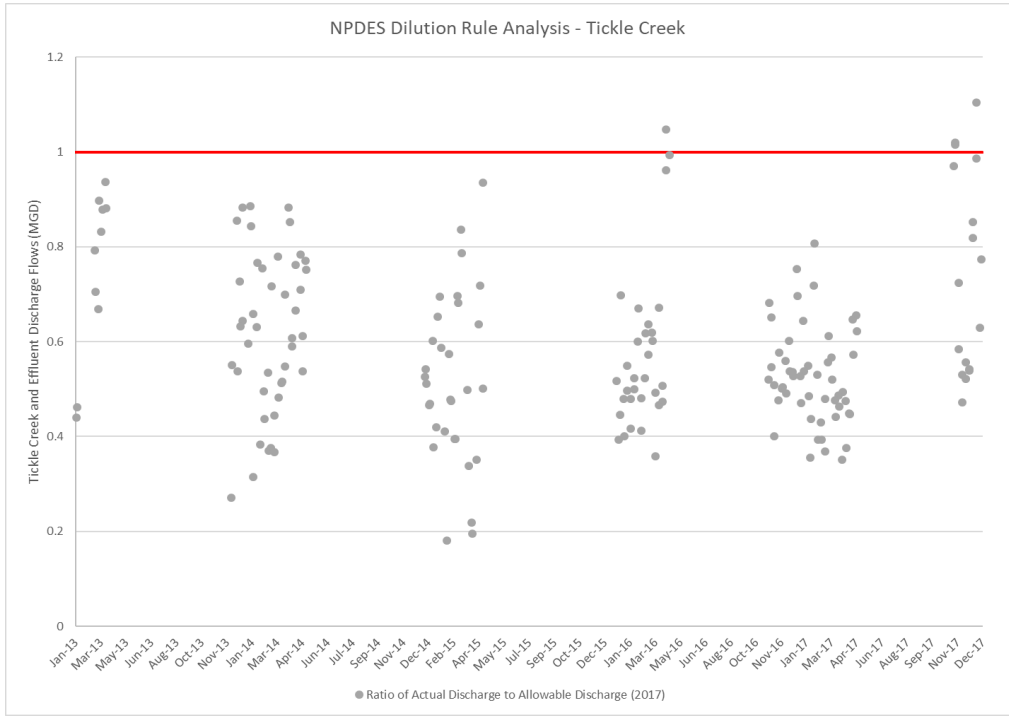
- Tickle Creek discharge Nov-April Only
- Three Basin Rule (OAR 340-041-0350) does not allow mass load limits increase in the Clackamas River Sub-basin.
- Based on current mass loads, 2040 design effluent BOD and TSS concentrations ~ 3.5 mg/L (much less than permitted average effluent concentrations)

Dilution Criteria Evaluation

Currently, exceeding Tickle Creek discharge limits based on NPDES dilution criteria

Need more river flow!

Deep Creek Confluence Flow is estimated to be 2.3X Tickle Creek flow at current outfall.

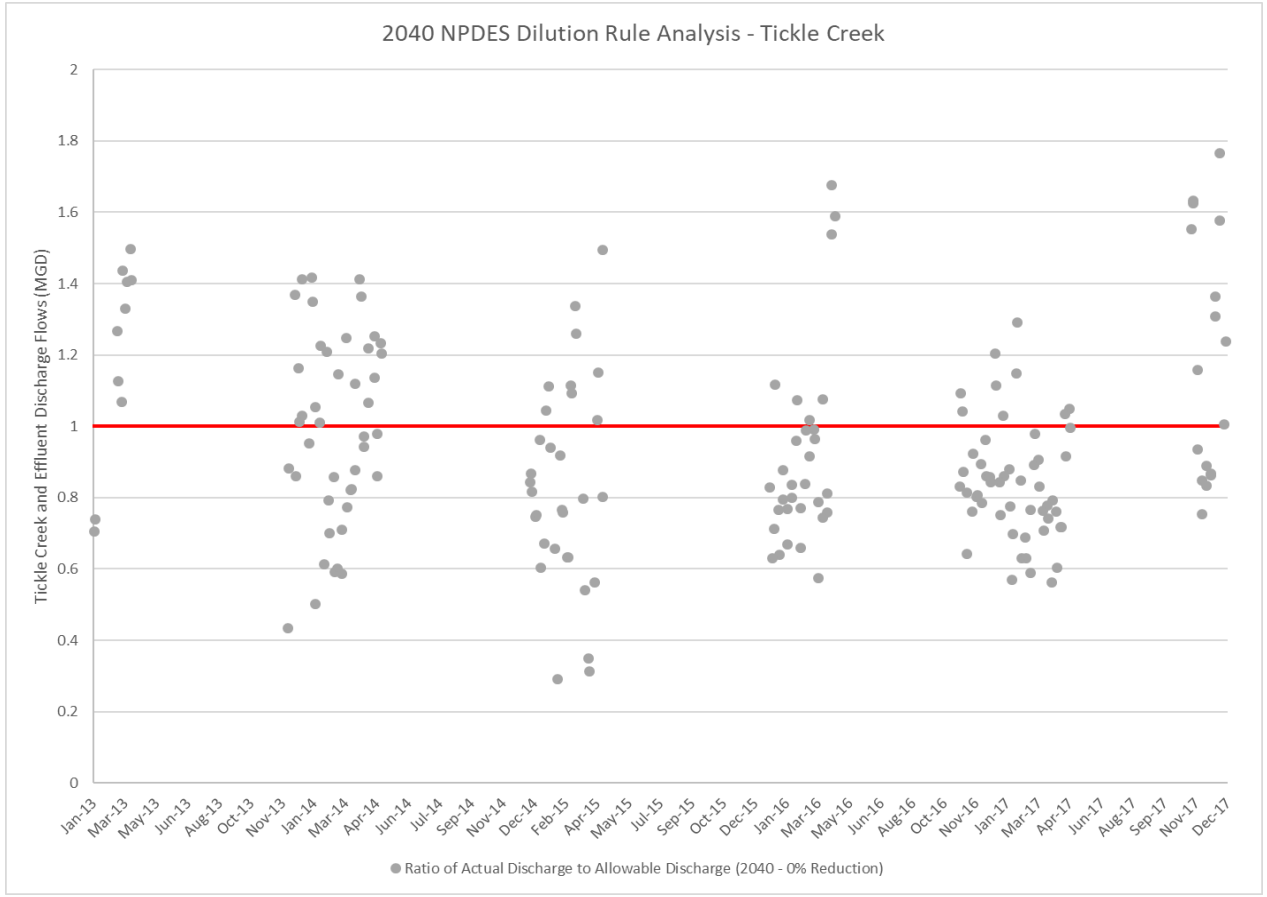


Dilution = $(Q_s + Q_e)/Q_e \geq 10$, where

Q_s = Tickle Creek flow measured at gauge, per Schedule B, 1.e (Note7).

Q_e = Effluent flow measured, per Schedule B, 1.b.

Projected 2040 Dilution Rule Exceedances



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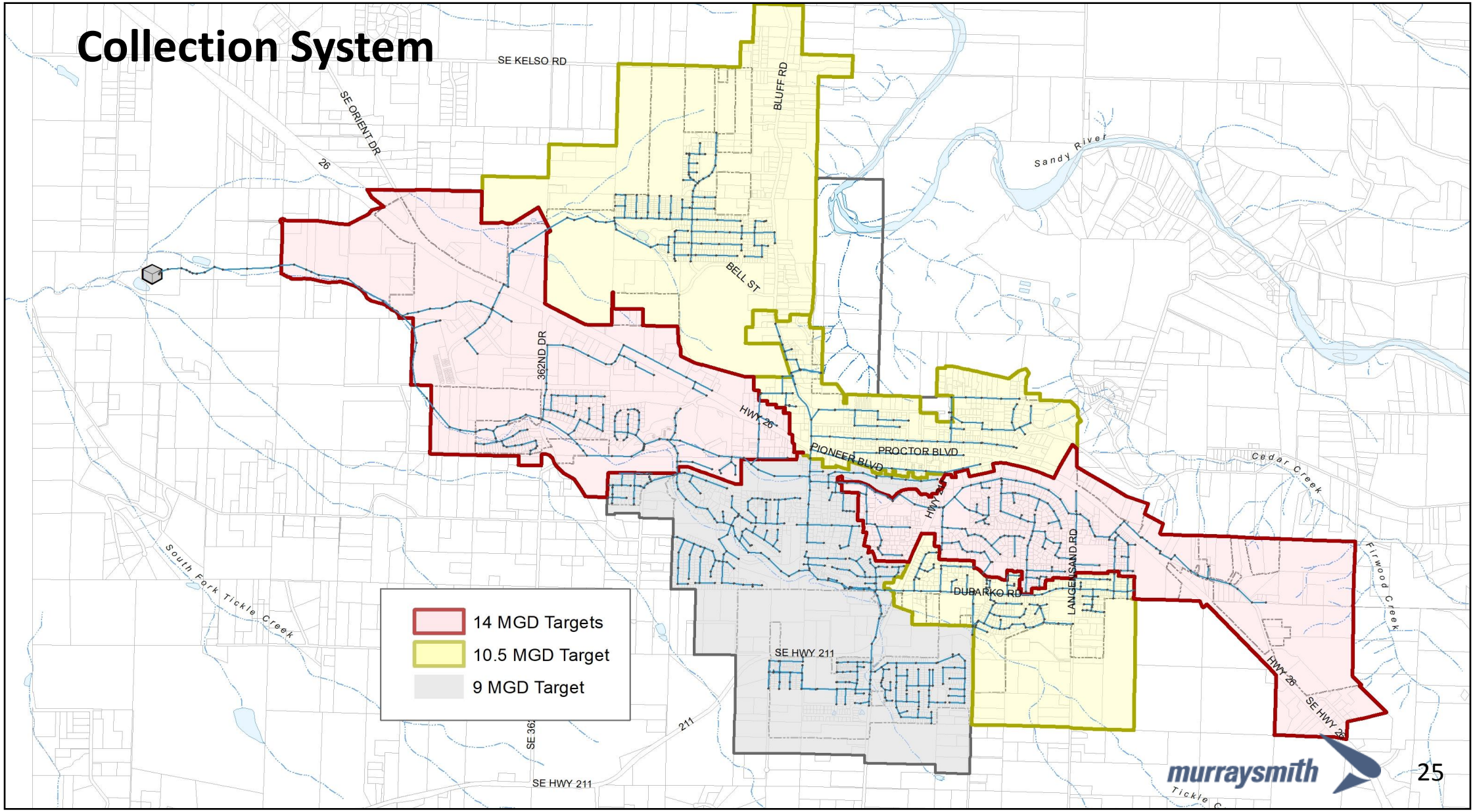
Summer Storage Requirements

- For the potted plants, Iseli irrigates when dry soils are observed.
- Limited irrigated in shoulder months (May & Oct).
- Issues of having available storage capacity during wet months.
- Need more pond volume to continue current summer season irrigation.

4. Alternatives

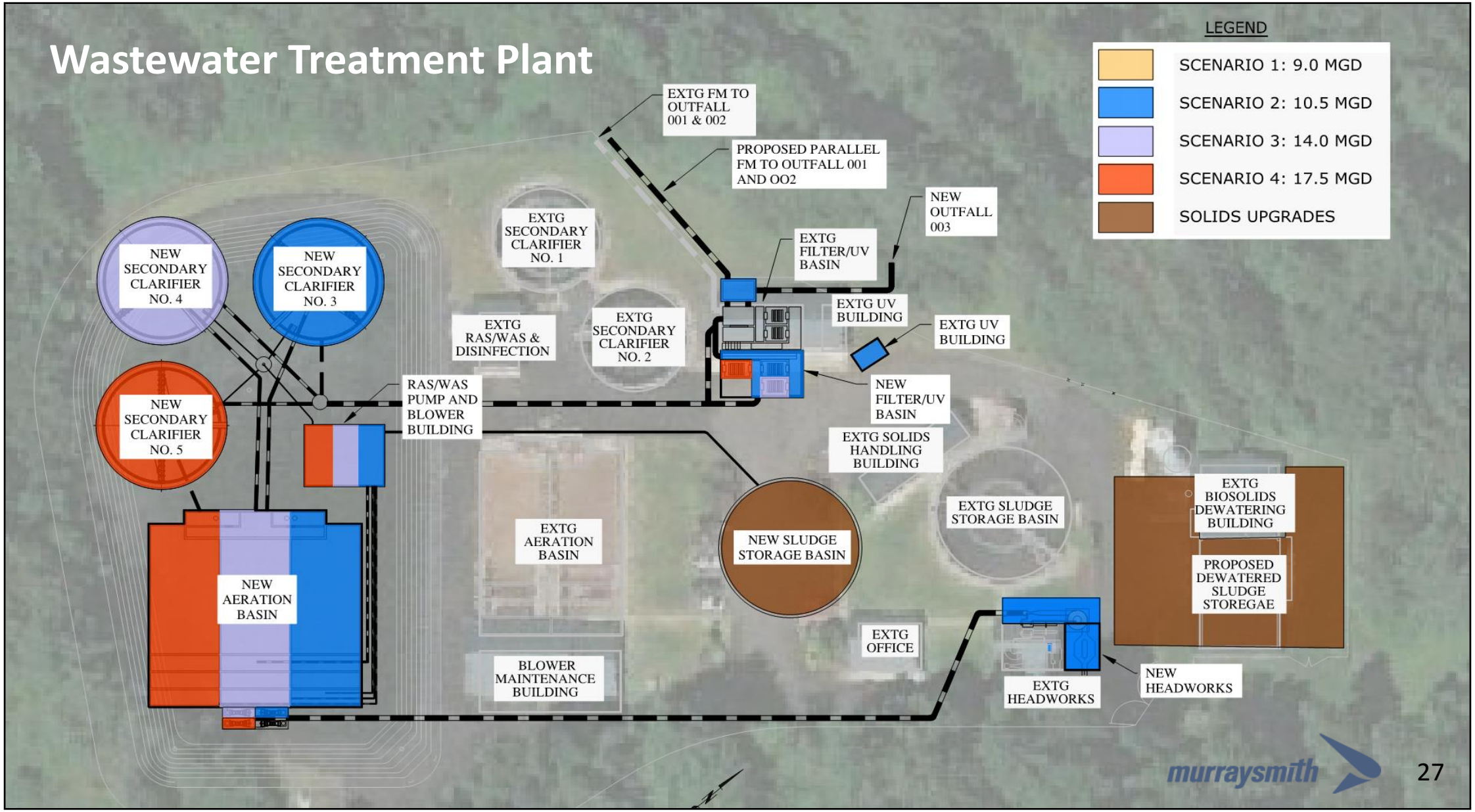
Collection System



Summary of Costs for Collection System for Peak Flow Scenarios

Item	9.0 MGD	10.5 MGD	14.0 MGD	17.5 MGD
Collection System Rehabilitation	$31.7 M	$17.9 M	$6.2 M	$0 M
Conveyance and Pump Station Upgrades	$3.8 M	$5.4 M	$10 M	$11.9 M
Total	**$35.5 M**	**$23.4 M**	**$16.2 M**	**$11.9 M**

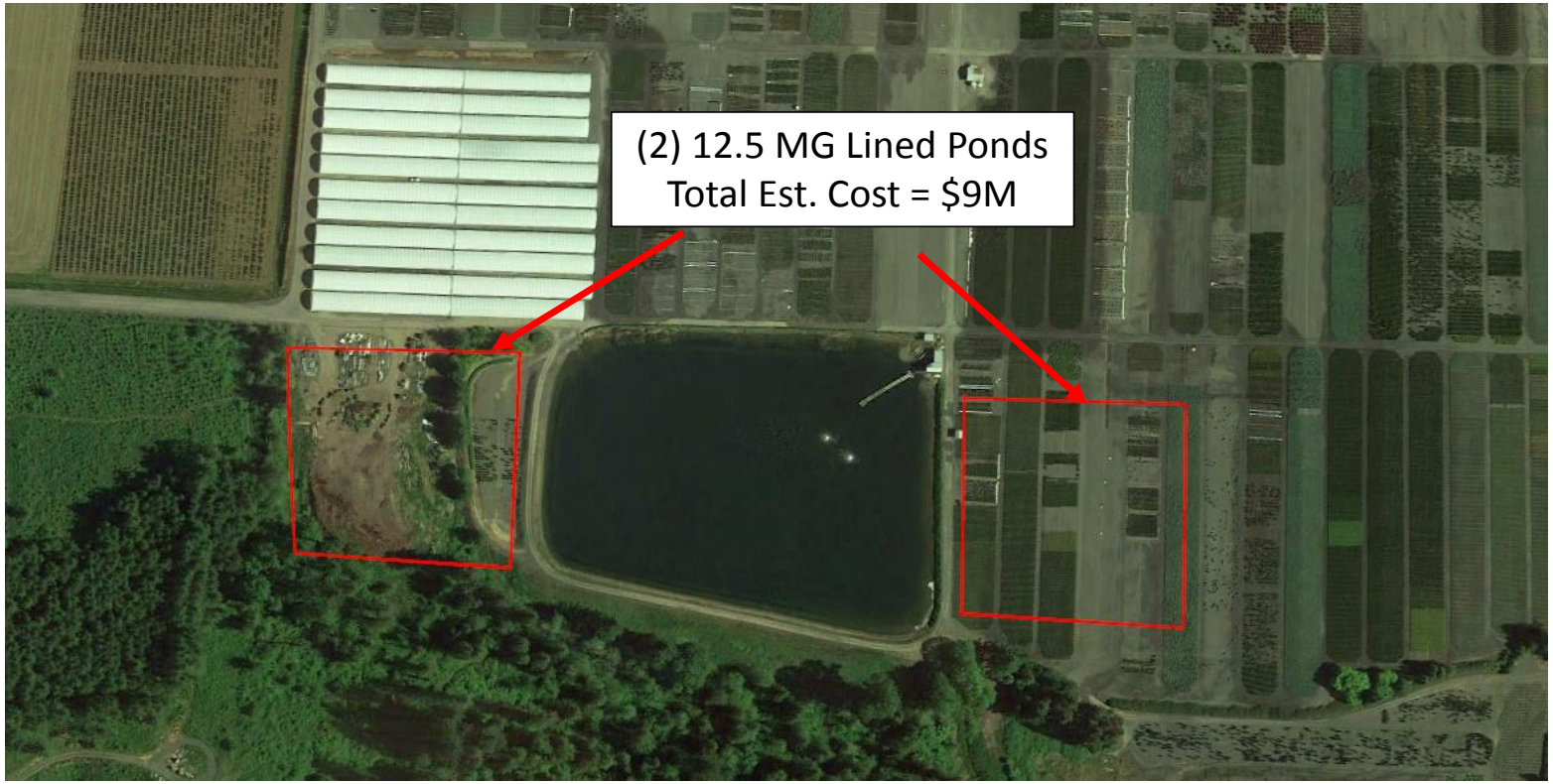
Wastewater Treatment Plant



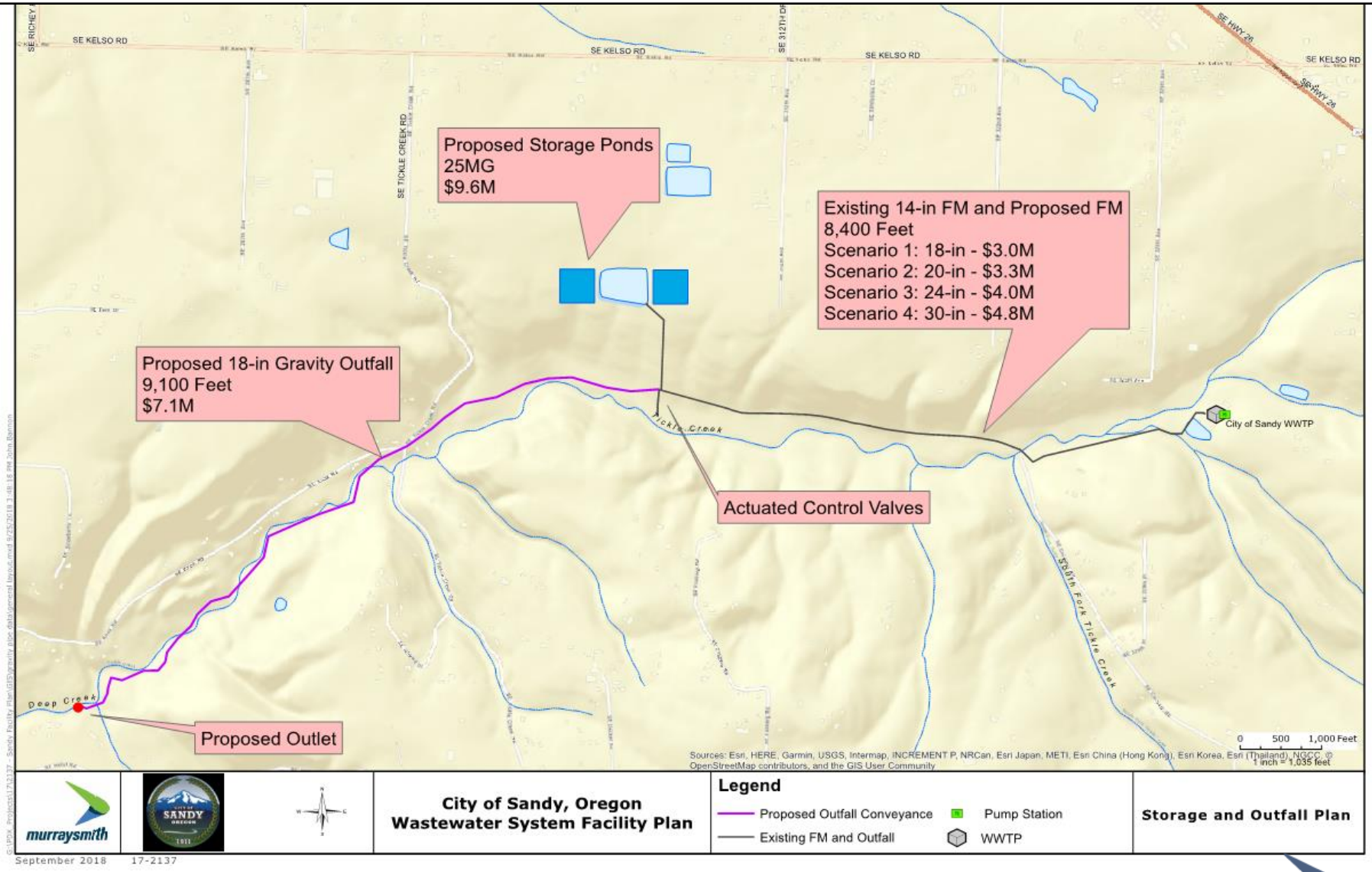
Summary of Costs for WWTP Upgrades for Peak Flow Scenarios

Item	9.0 MGD	10.5 MGD	14.0 MGD	17.5 MGD
Liquid Stream Upgrades	$ 9.24 M	$ 12.38 M	$ 17.45 M	$ 24.11 M
Solids Stream Upgrades	$ 6.93 M	$ 6.93 M	$ 7.62 M	$ 7.62 M
Total	**$ 16.17 M**	**$ 19.31 M**	**$ 25.07 M**	**$ 31.73 M**

Proposed Storage Ponds Location



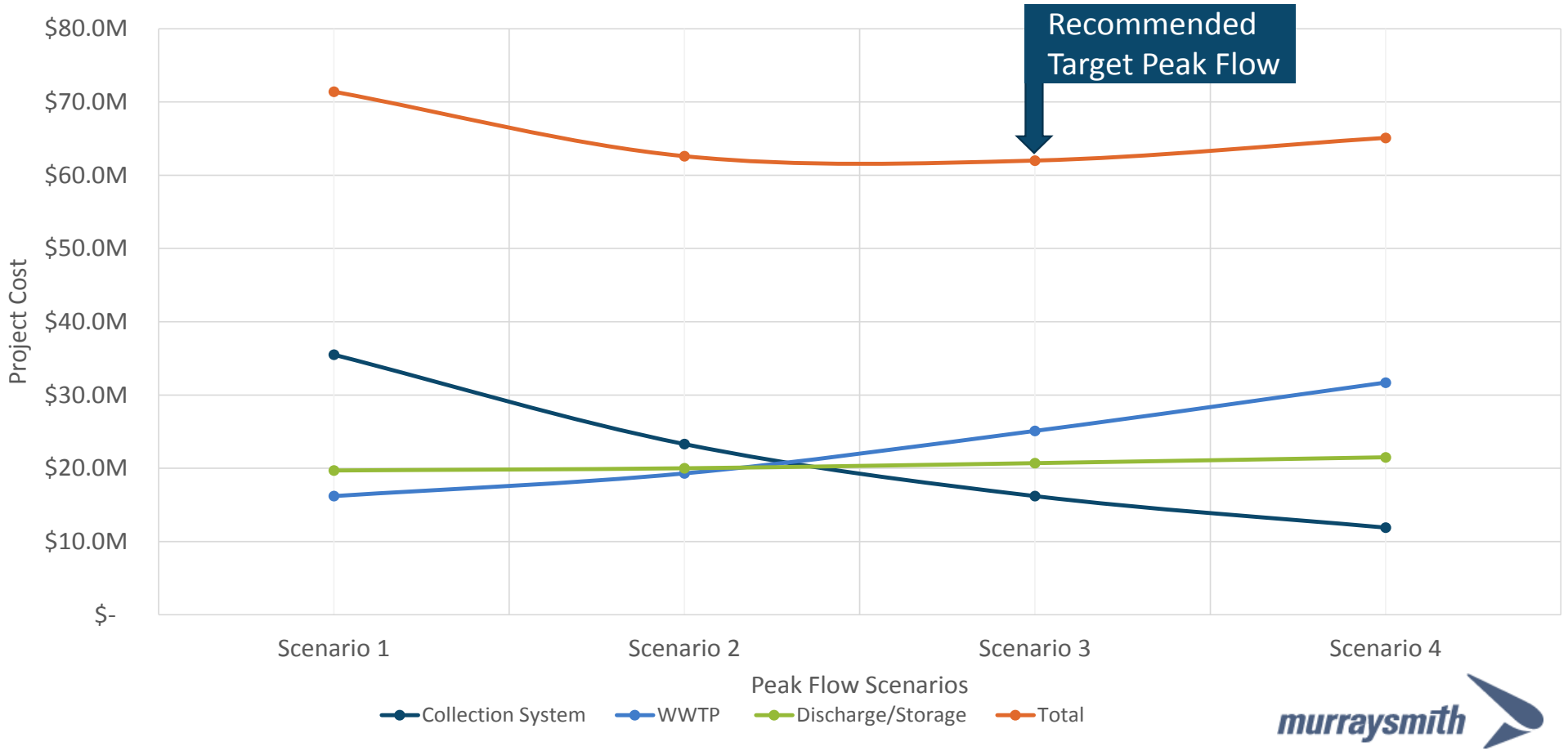
Proposed Outfall Location



Combined Summary of Costs

Item	9.0 MGD	10.5 MGD	14.0 MGD	17.5 MGD
Collection System Upgrades	$35.5M	$23.3M	$16.2M	$11.9M
WWTP Upgrades	$16.2M	$19.3M	$25.1M	$31.7M
Storage/Discharge Upgrades	$19.7M	$20M	$20.7M	$21.5M
Total	**$71.4M**	**$62.6M**	**$62.0M**	**$65.1M**

Combined Treatment and RDII upgrades Costs



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5. Recommended Plan and Phasing

- Treatment system
- Collection system
- Discharge scenarios

So… Looking to the Sandy River

- 1993 WSFP evaluated four discharge alternatives
  1. Tickle Creek/Iseli Nursery
  2. Sandy River
  3. Clackamas River
  4. Export to Gresham

- Sandy River discharge was a close second in their evaluation

Image Source: Google Earth Pro

Considered Four Sandy River Discharge Alternatives

- **Alternative A** – Existing WWTP site with existing process approach and effluent pump station to the Sandy River
- **Alternative B** – Existing WWTP site with partial MBR conversion and effluent pump station to the Sandy River
- **Alternative C** – Existing WWTP site with primary clarifiers, anaerobic digestion, and effluent pump station to the Sandy River
- **Alternative D** – Existing WWTP site with primary clarifiers and anaerobic digestion. Satellite MBR WW Facility

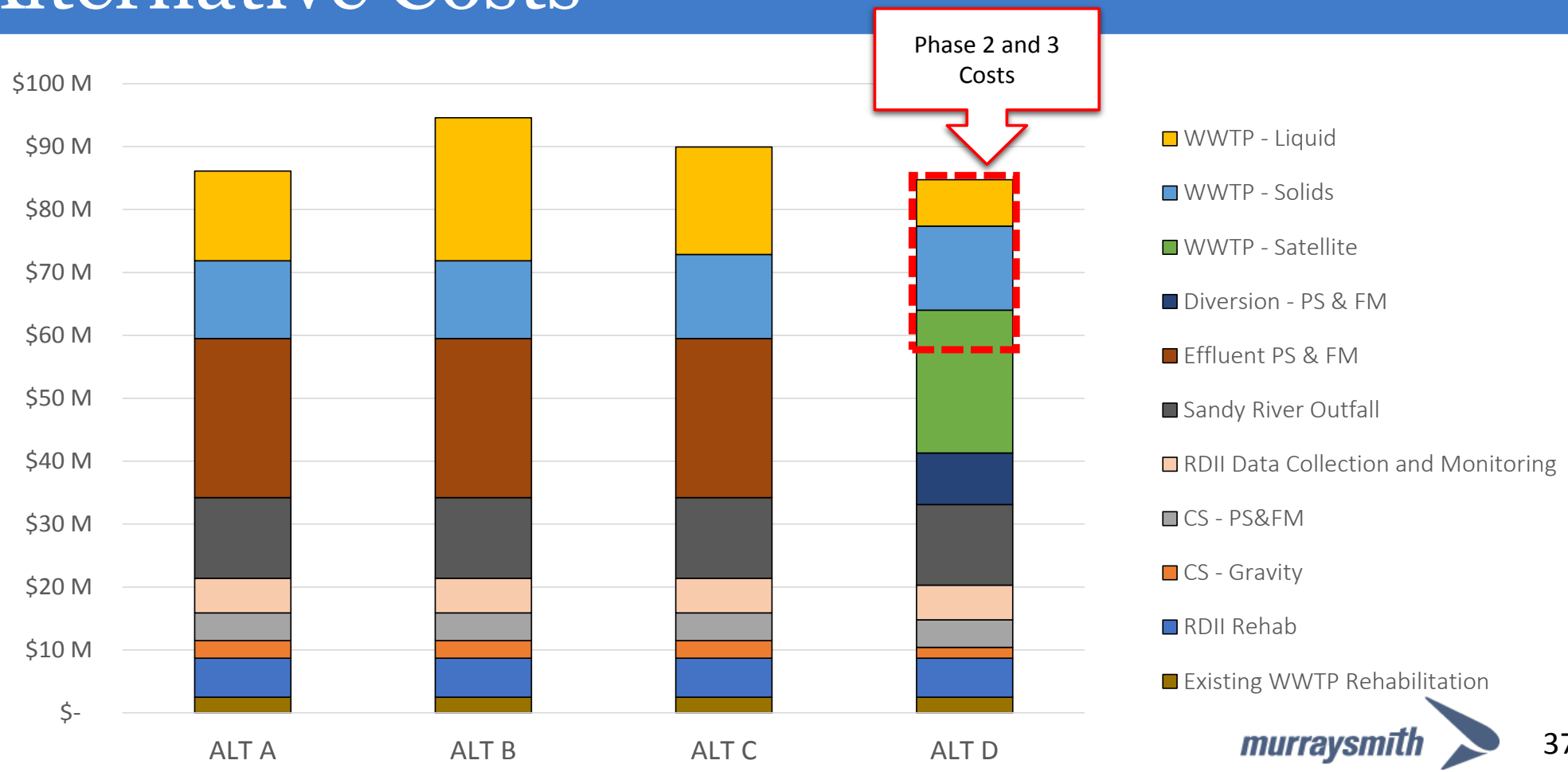
Considered Four Sandy River Discharge Alternatives

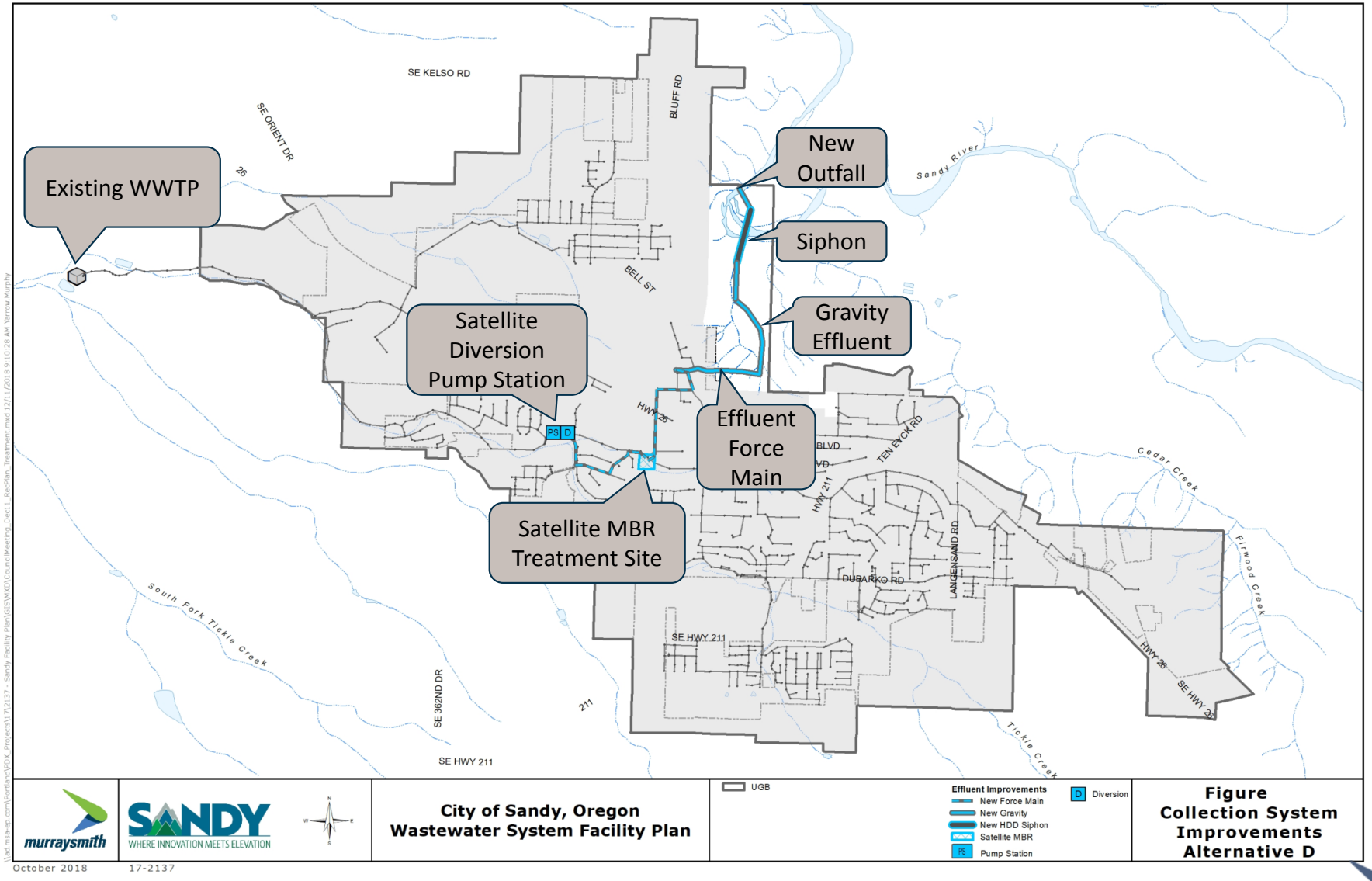
- **Alternative A –** Existing WWTP site with existing process approach and effluent pump station to the Sandy River
- **Alternative B –** Existing WWTP site with partial MBR conversion and effluent pump station to the Sandy River
- **Alternative C –** Existing WWTP site with primary clarifiers, anaerobic digestion, and effluent pump station to the Sandy River

ALL INVOLVE PUMPING TO SANDY RIVER FROM EXISTING WWTP

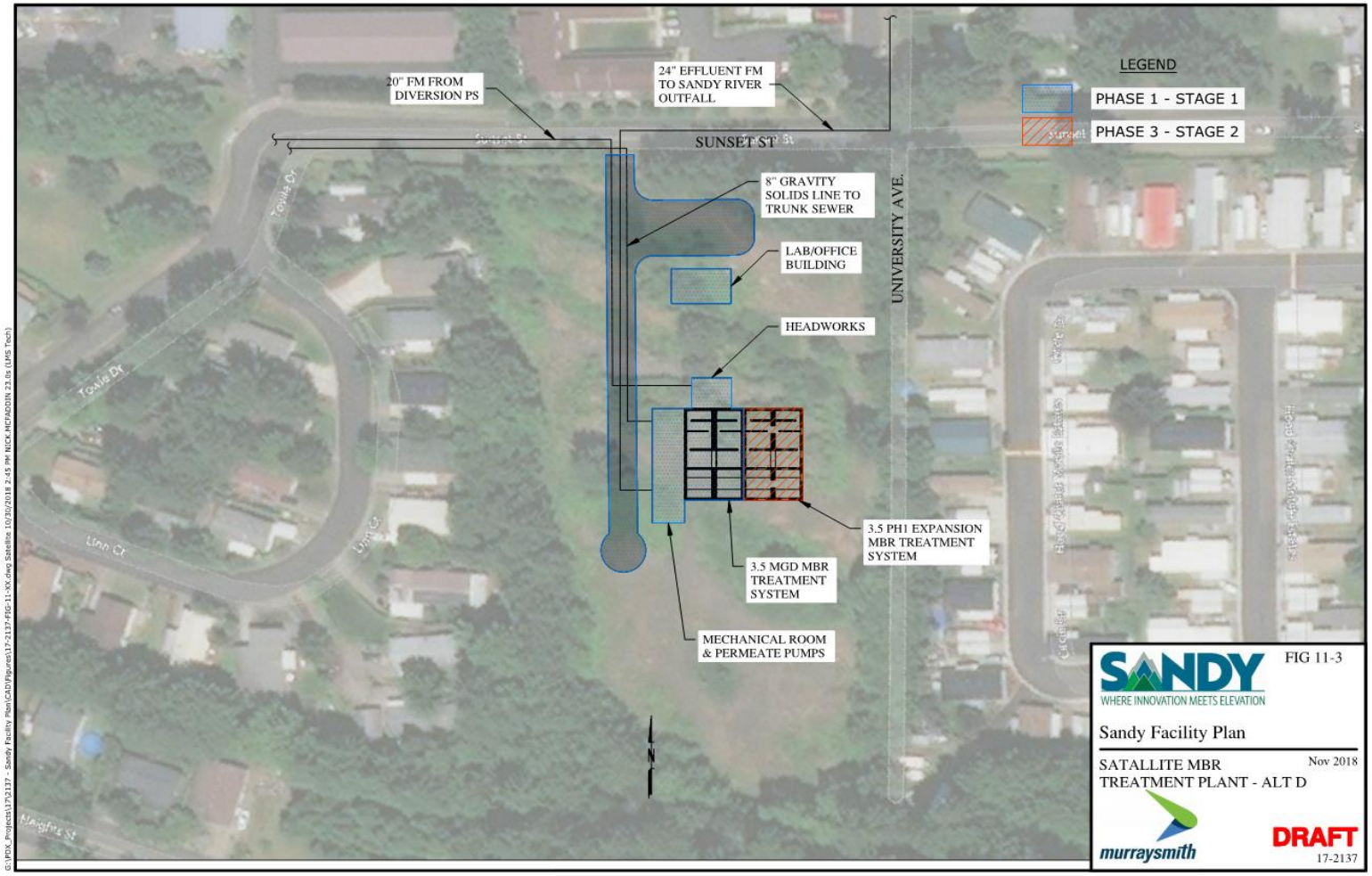
- **Alternative D –** Existing WWTP site with primary clarifiers and anaerobic digestion. Satellite MBR WW Facility

Summary of Sandy River Discharge Alternative Costs




Existing WWTP
New Outfall
Siphon
Gravity Effluent
Satellite Diversion Pump Station
Effluent Force Main
Satellite MBR Treatment Site
SE KELSO RD
SE ORIENT DR
BLUFF RD
BELL ST
HWY 26
Sandy River
TEN EYCK RD
HWY 211
LANGENSAND RD
DUBARKO RD
SE HWY 211
SE 362ND DR
South Fork Tickle Creek
Cedar Creek
Firwood Creek
Tickle Creek
SE HWY 26
PS
D
UGB
Effluent Improvements
New Force Main
New Gravity
New HDD Siphon
Satellite MBR
Pump Station
Diversion
murraysmith
SANDY
WHERE INNOVATION MEETS ELEVATION
City of Sandy, Oregon
Wastewater System Facility Plan
Figure
Collection System
Improvements
Alternative D
October 2018
17-2137

Alternative D – Satellite Facility



Phased Implementation Plan

Phase 3 Wastewater CIP	Phase 1 (2018-2025)	Phase 2 (2025-2032)	Phase 3 (2032-2040)	Beyond 2040
Collection System Capacity Upgrades	$ 4.30 M	$ 0.90 M	$ 0.9 M	-
Collection System RDII Reduction Program	$ 8.34 M	$ 1.60 M	$ 1.80 M	$ 12.00 M
Existing WWTP Improvements	$ 2.50 M	$ 19.80 M	$ 1.40 M	-
Eastside Satellite Treatment Facility	$ 19.20 M		$ 3.50 M	-
Diversion Pump Station	$ 7.20 M			
Force main to Sandy Outfall	$ 1.00 M			
Sandy River Outfall	$ 12.80 M			
Iseli Pump Station Upgrades/ Effluent Pump Station & Force Main to Sandy River	$ 1.40 M			$ 25.30 M
Total	**$ 56.74 M**	**$ 22.30 M**	**$ 7.60 M**	**$ 37.30 M**

6. Next Steps and Questions

WSFP Implementation Schedule

- January 16, 2019 – Incorporate DEQ comments into Draft Facilities Plan and re-submit
- January 18, 2019 – make Draft available to the public and solicit comments
- February 1, 2019 – DEQ submits comments on updated Draft Facilities Plan
- February 4, 2019 or February 19, 2019 – potential dates for public hearing
- Date for close of comment period (TBD)
- March 3, 2019 – Incorporate public comments and resubmit to DEQ
- March 18, 2019 – DEQ must provide provisional approval or approval of Facilities Plan
- Beyond March 2019 – Implement Recommended Plan adopted by City Council

Questions 

A. – Existing WWTP site with existing process approach and effluent pump station to the Sandy River

- Upgrade existing treatment plant with existing processes
- Rehab 2 basins
- New effluent pump station to Sandy River Outfall

Item	Cost
WWTP Upgrades	$30.5M
Collection System Upgrades	$13.4M
Effluent Infrastructure	$38.1M
Total	**$82.0M**

B. – Existing WWTP site with partial MBR conversion and effluent pump station to the Sandy River

- Upgrade existing treatment plant with advanced treatment technology
- Rehab 2 basins
- New effluent pump station to Sandy River Outfall

Item	Cost
WWTP Upgrades	$39.0M
Collection System Upgrades	$13.4M
Effluent Infrastructure	$38.1M
Total	**$90.5M**

C. – Existing WWTP site with primary clarifiers, anaerobic digestion, and effluent pump station to the Sandy River

- Upgrade existing treatment plant and improve solids handling
- Rehab 2 basins
- New effluent pump station to Sandy River Outfall

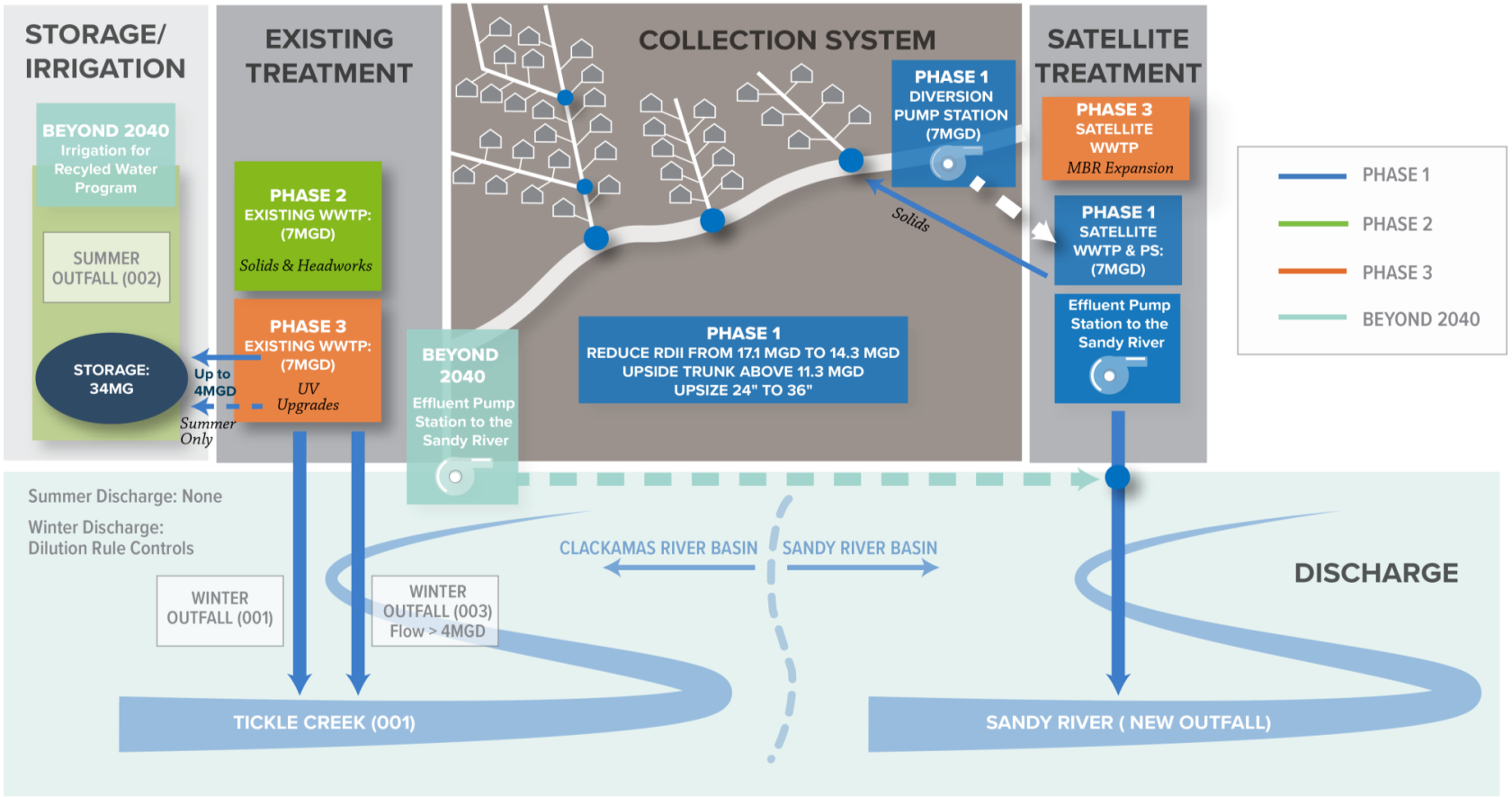
Item	Cost
WWTP Upgrades	$34.3M
Collection System Upgrades	$13.4M
Effluent Infrastructure	$38.1M
Total	**$85.8M**

D. – Existing WWTP site with primary clarifiers and anaerobic digestion. Satellite MBR WWR

- Split treatment with Existing WWTP and New Eastside satellite treatment facility construction
- Rehab 2 basin
- Satellite treatment facility effluent pump station and New Sandy River Outfall

Item	Cost
WWTP Upgrades	$47.3M
Collection System Upgrades	$12.3M
Effluent Infrastructure	$21.0M
Total	**$80.6M**

Overview of Recommended Improvements



THE PLAN PROVIDES FOR:

- Avoids new trunkline to existing WWTP
- Delays major upgrades at existing WWTP and new effluent pump station and force main
- Greatest ability to phase improvements
- Long-term river discharge to support community growth

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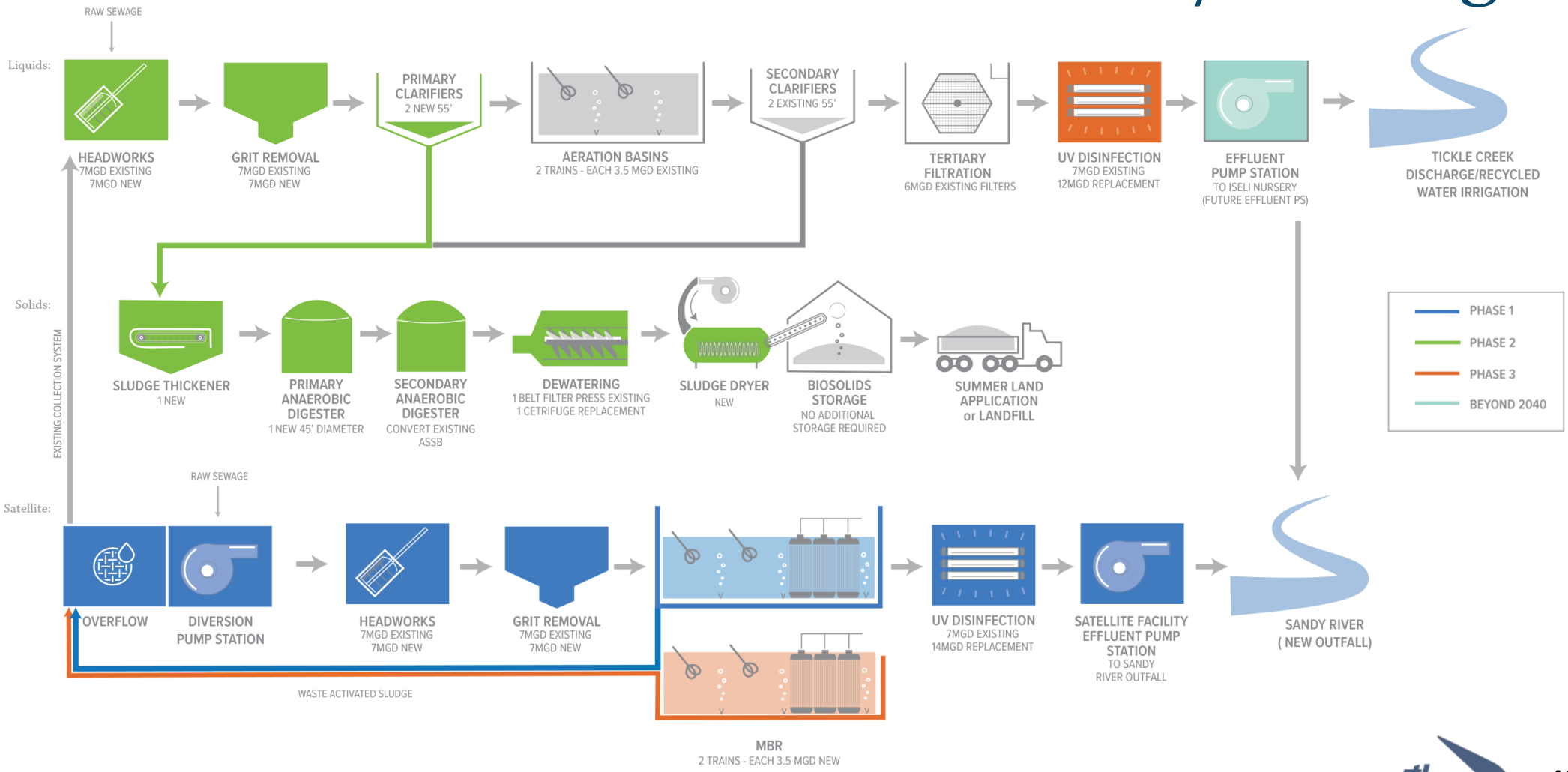
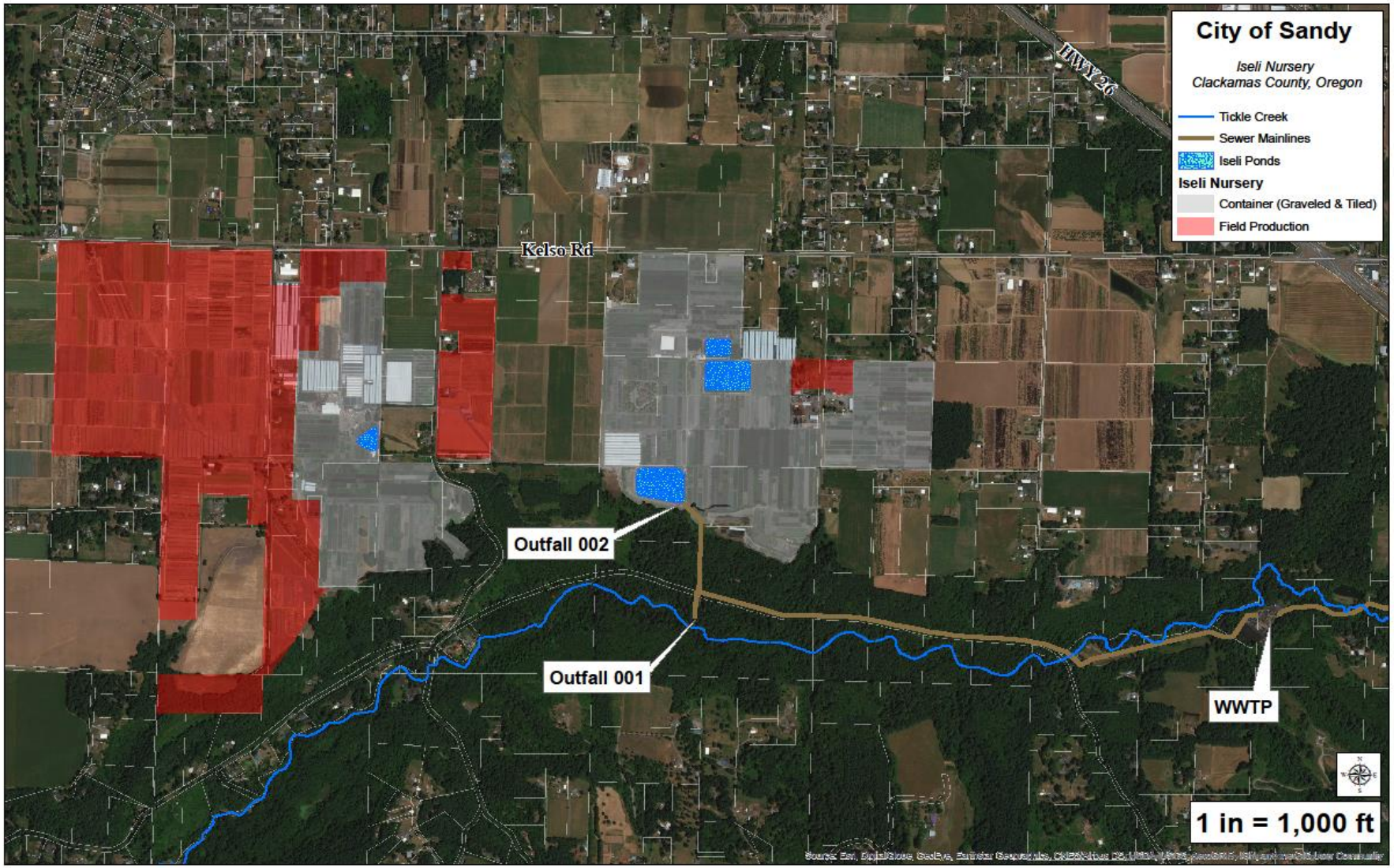
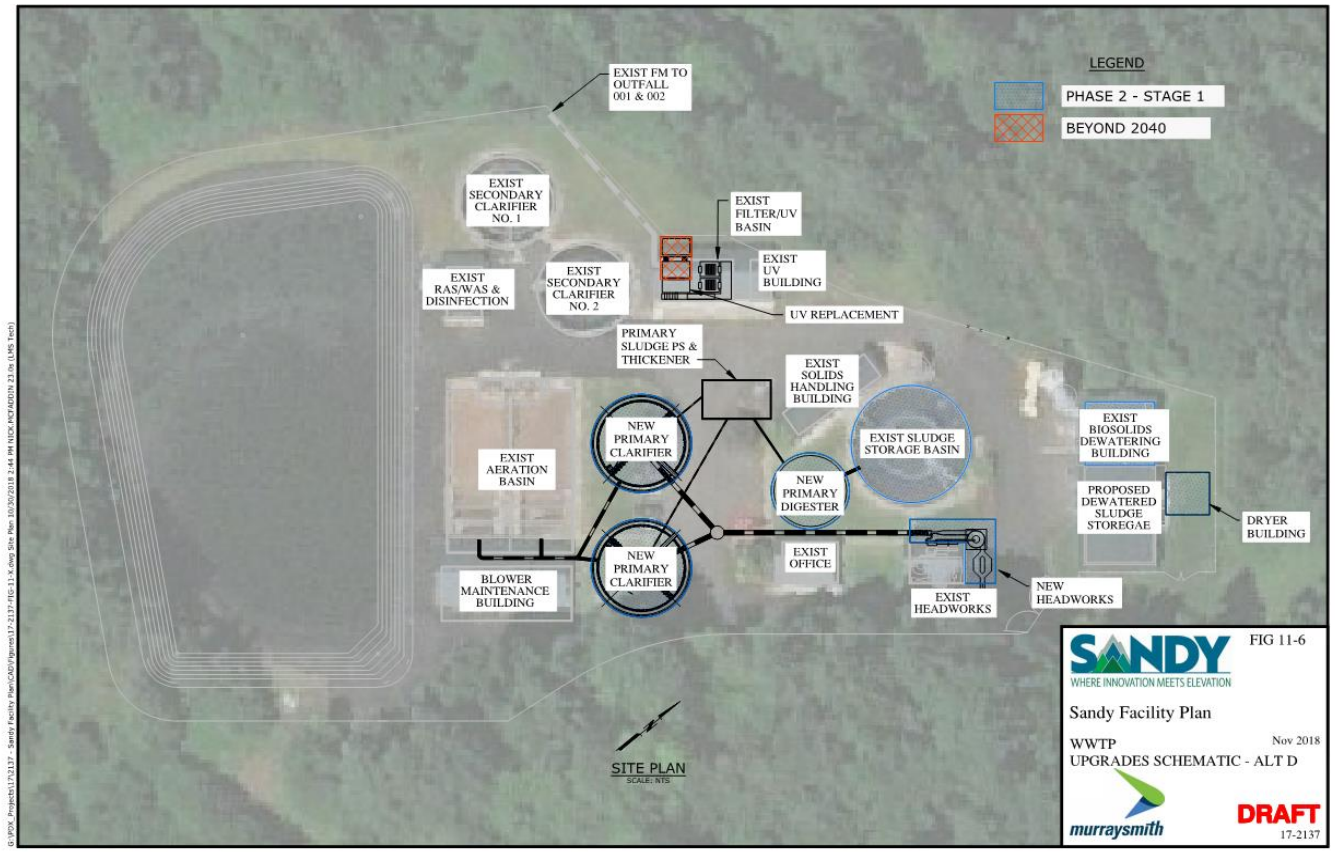
Alternative D – Process Schematic/Phasing

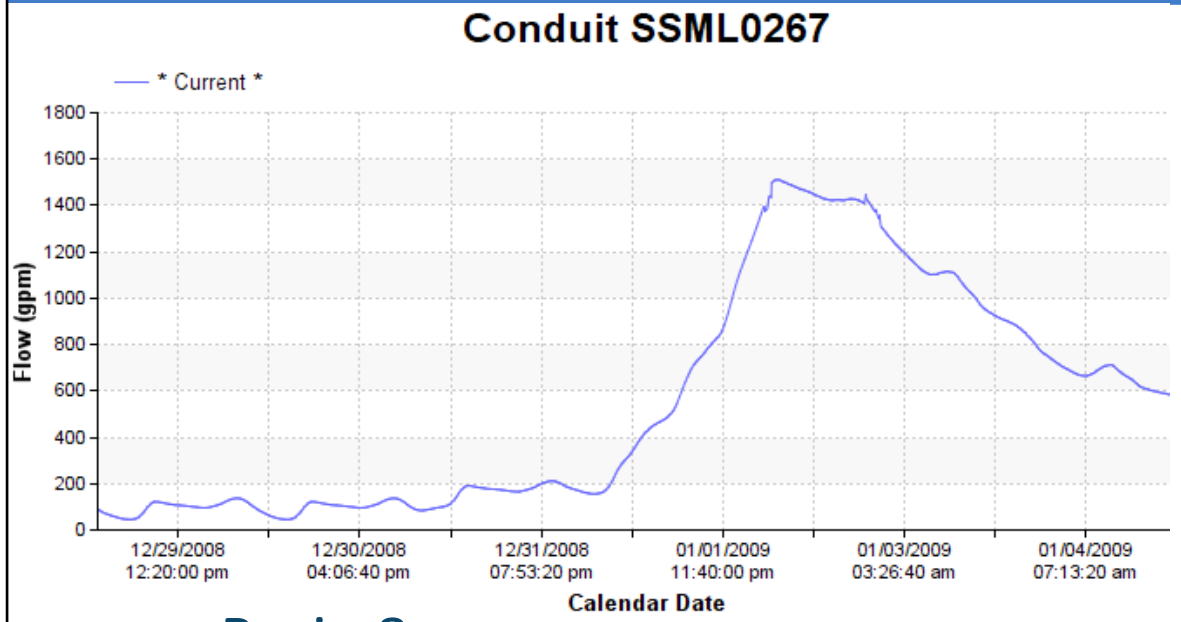



City of Sandy
Iseli Nursery
Clackamas County, Oregon
Tickle Creek
Sewer Mainlines
Iseli Ponds
Iseli Nursery
Container (Graveled & Tiled)
Field Production
HWY 26
Kelso Rd
Outfall 002
Outfall 001
WWTP
1 in = 1,000 ft

Existing WWTP



System Wet-Weather Response



- Basin 8
  - 15:1 peaking factor
  - Flows remain elevated