

# Enhanced Recycled Water Feasibility Analysis Update

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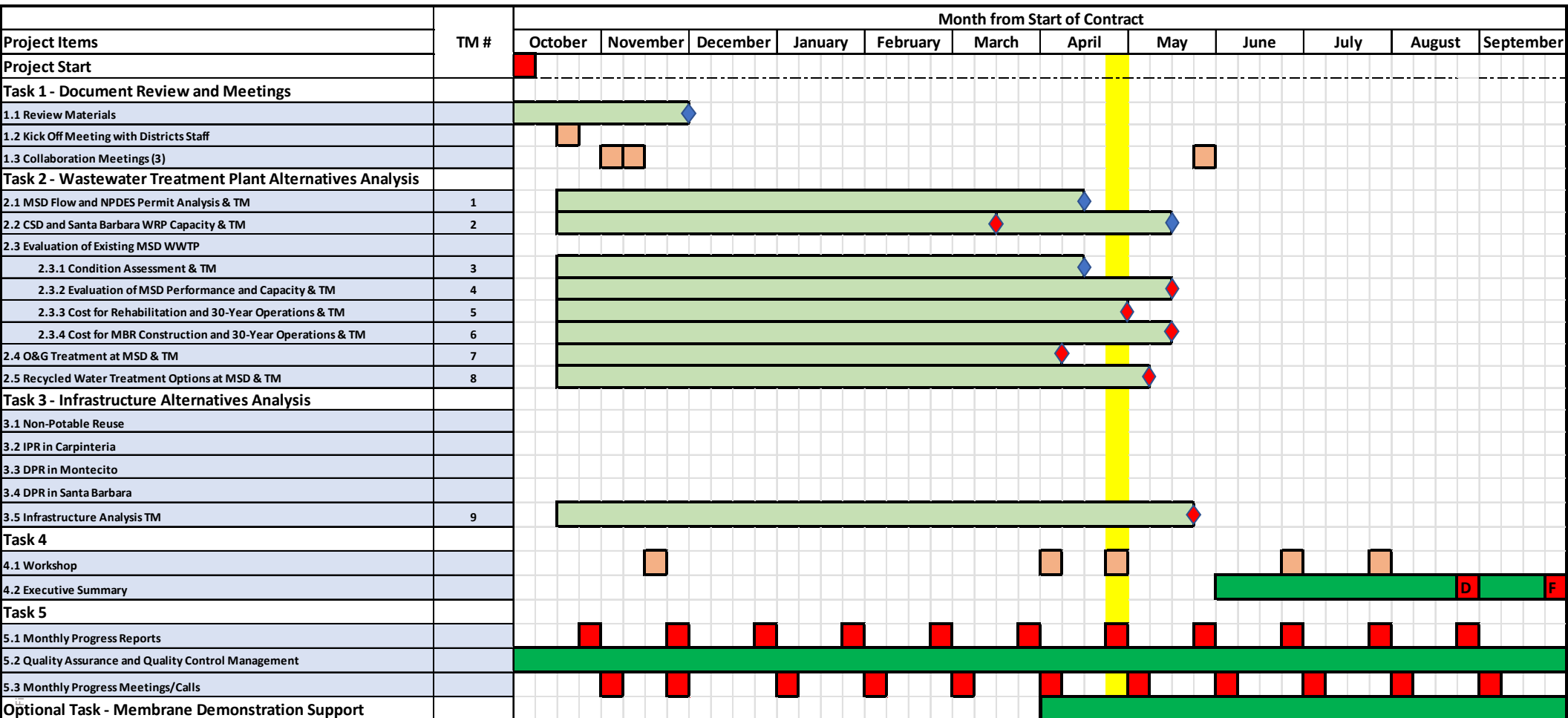


Teams // April 27, 2022

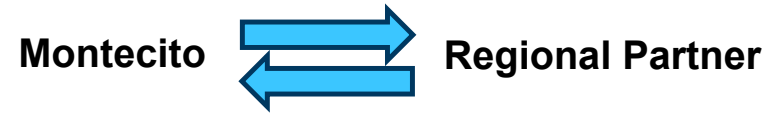
# Outline

- Schedule
- Brief Project Overview
- Details on Specific Tasks
- Open discussion

# Project Schedule



# Regional Collaboration



## // Project Memorandums

- TM 1 – MSD Flow and NPDES Permit Analysis
- TM 2 – CSD and SB WRP Capacity
- TM 3 – MSD Condition Assessment
- TM 4 – Evaluation of MSD Performance and Capacity
- TM 5 – Cost for Rehabilitation and 30-year Operations
- TM 6 – Cost for MBR Construction and 30-year Operations
- TM 7 – O&G Treatment at MSD
- TM 8 – Recycled Water Treatment Options at MSD
- TM9 - Infrastructure Analysis

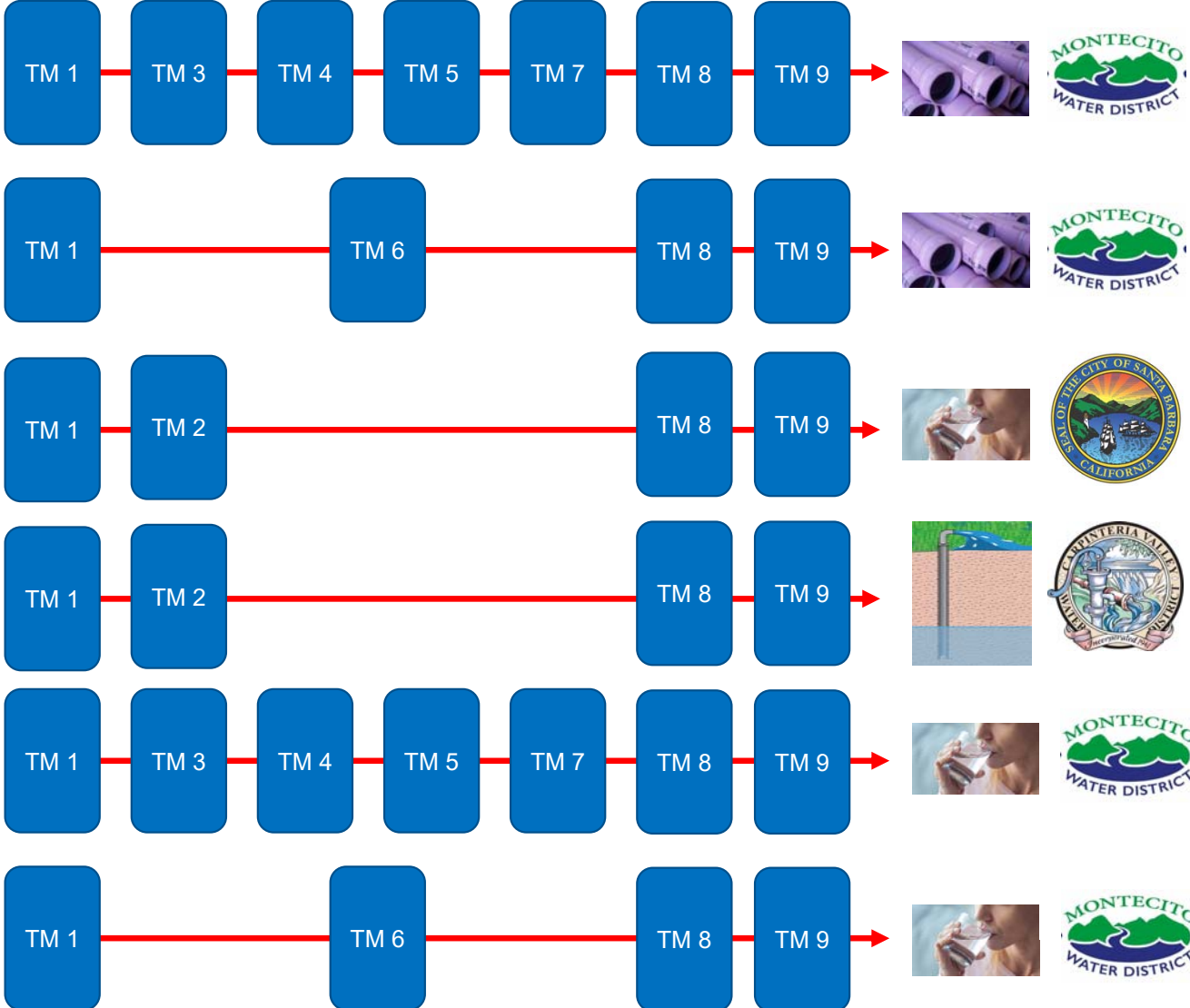


Montecito Sanitary District & Montecito Water District  
Enhanced Recycled Water Feasibility Analysis

Technical Memorandum 7  
O&G TREATMENT AT MSD

DRAFT | April 2022

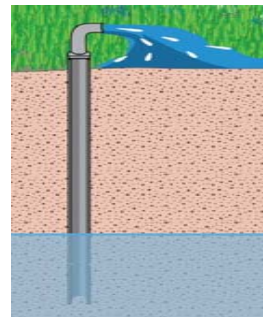




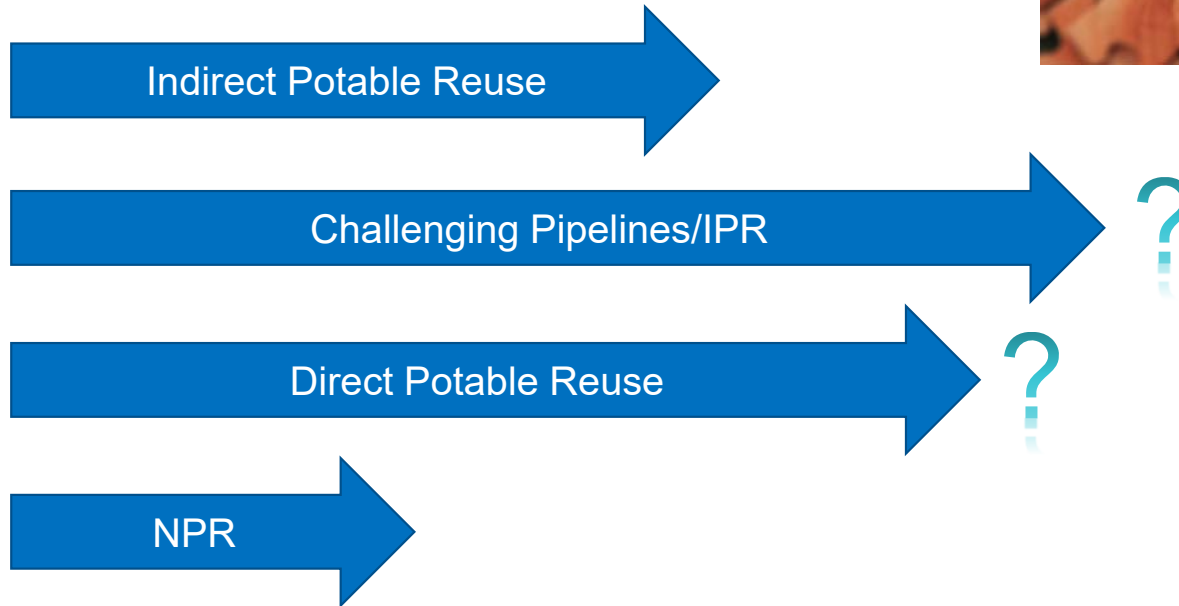
# // Executive Summary



# // Executive Summary- Project Phasing



# // Executive Summary- Project Timelines





## // Executive Summary- Interagency Coordination and Agreements



## // Key Conclusions (to be made)

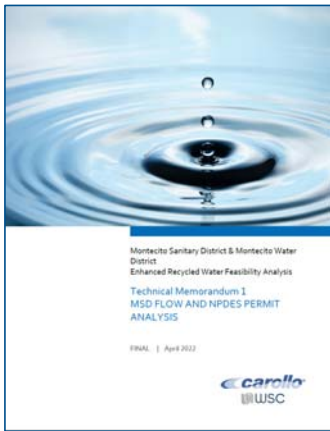
- Regional Collaboration Opportunities, Timelines, and Challenges
- MSD Capacity and MSD Rehabilitation Needs
- Treatment and Distribution Infrastructure Location and Footprint
- Costs to implement:
  - NPR in Montecito
  - DPR in Montecito
  - DPR in Santa Barbara
  - IPR in Carpinteria
  - All in \$/acre-foot per year based upon a 30-year cost analysis
- Potential savings and benefits for O&G removal based upon MSD Pilot System Testing

# Task Updates

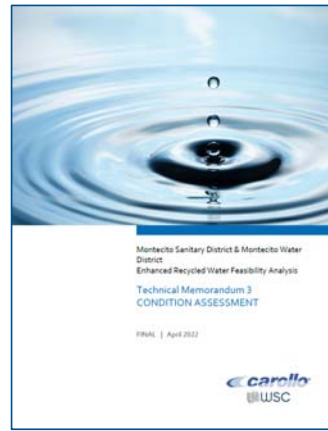
# "Mini" Master Plan

- TM 1 – MSD Flow and NPDES Permit Analysis
- TM 3 – MSD Condition Assessment
- TM 4 – Evaluation of MSD Performance and Capacity
- TM 5 – Cost for Rehabilitation and 30-year Operations
- TM 6 – Cost for MBR Construction and 30-year Operations

# Mini Master Plan Looking at Performance and Capacity of MSD WWTP



- TM1
- Flows & Loads
- NPDES
- Outfall



- TM3
- Assess critical infrastructure at the MSD WWTP



- TM4
- Evaluation of treatment system performance of the MSD WWTP
- Evaluation of treatment system capacity of the MSD WWTP



- TM5
- Prioritized capital improvement plan (CIP) for MSD WWTP
- Develop operating costs for MSD WWTP



- TM6
- Evaluate MBR systems and set membrane design criteria
- Lay out “Greenfield” and Retrofit MBR systems
- Develop construction and operational costs for a new MBR WWTP



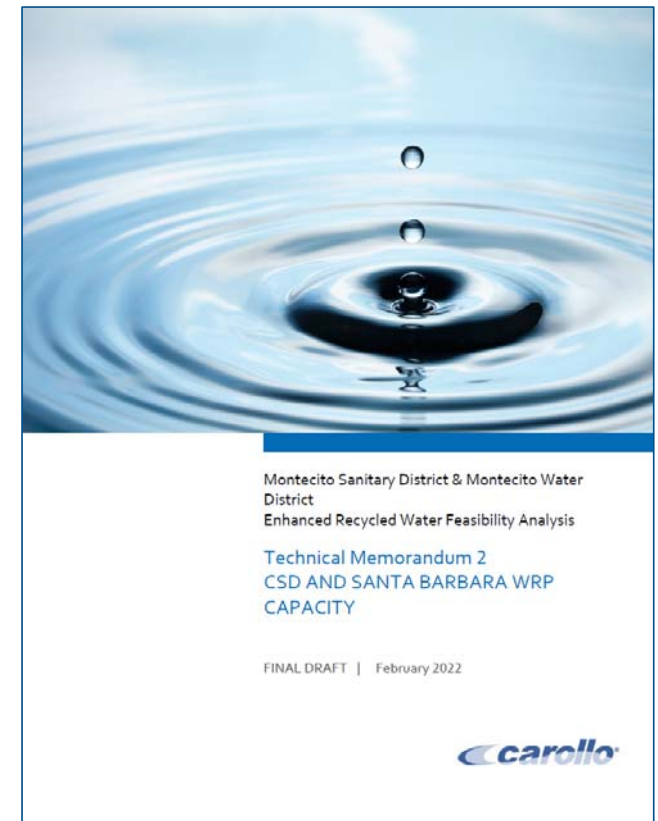
*Mini Master Plan details to be provided in the 4/28/22 (Thursday) MSD Board Meeting*

# Water Reuse Tasks

- TM 2 – CSD and Santa Barbara WRP Capacity
- TM 7 – O&G Treatment at MSD
- TM 8 – Recycled Water Treatment Options
- TM 9 – Infrastructure Analysis

# TM 2 – CSD and Santa Barbara Capacity Analysis

- Review influent wastewater flows for Santa Barbara and CSD
- Consider if there is available capacity at both locations for MSD flows, either equalized or unequalized



# TM 2 – CSD and Santa Barbara Capacity Analysis

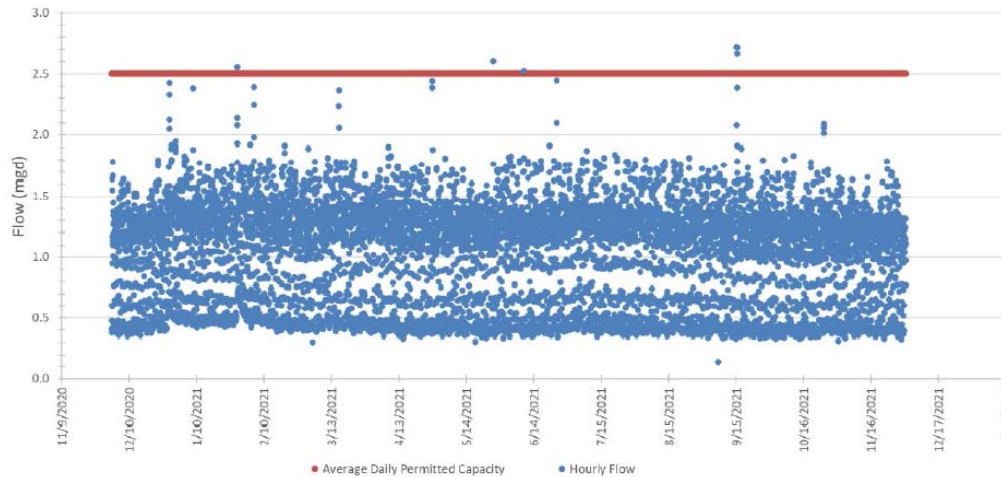
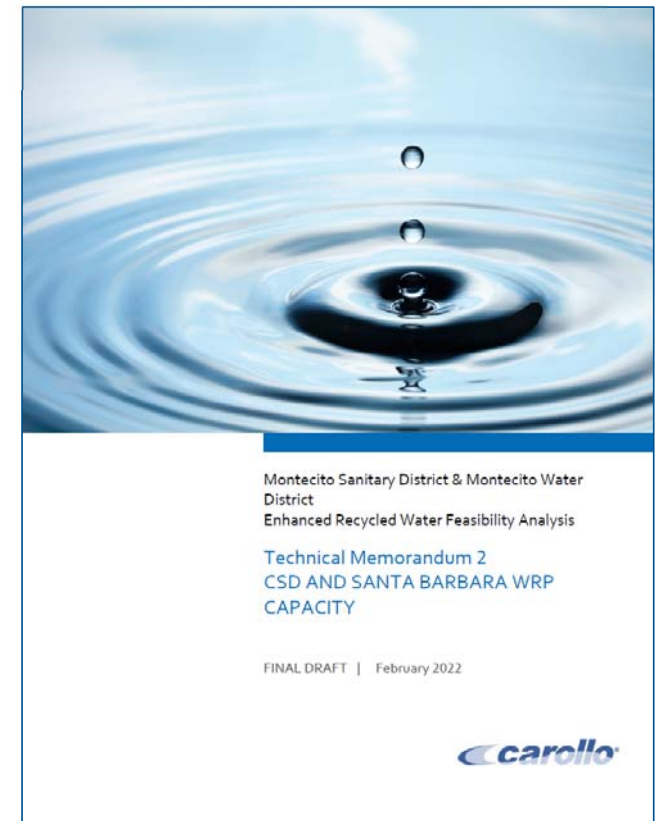


Figure 2.2 Hourly Influent Flow to Carpinteria WWTP – December 2020 to December 2021

- CSD has some limited additional capacity
- Incorporation of MSD flows would require 100% equalization, if it is deemed acceptable by CSD
- Connection costs not (yet) estimated





# TM 2 – CSD and Santa Barbara Capacity Analysis

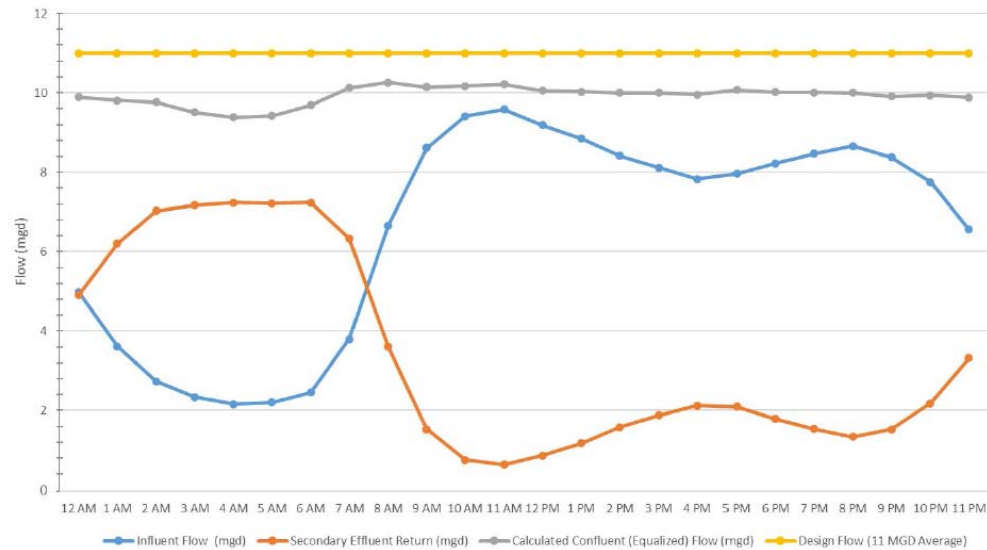
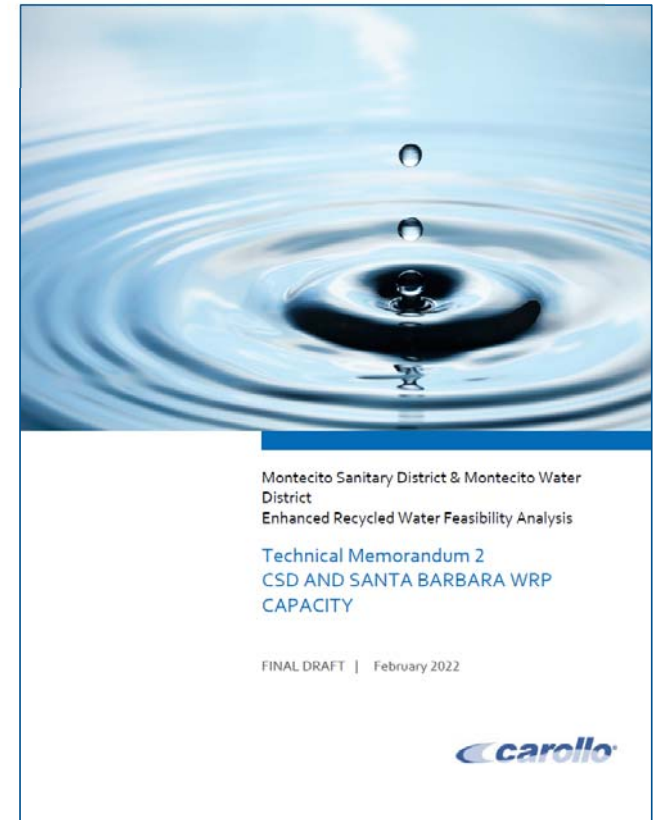


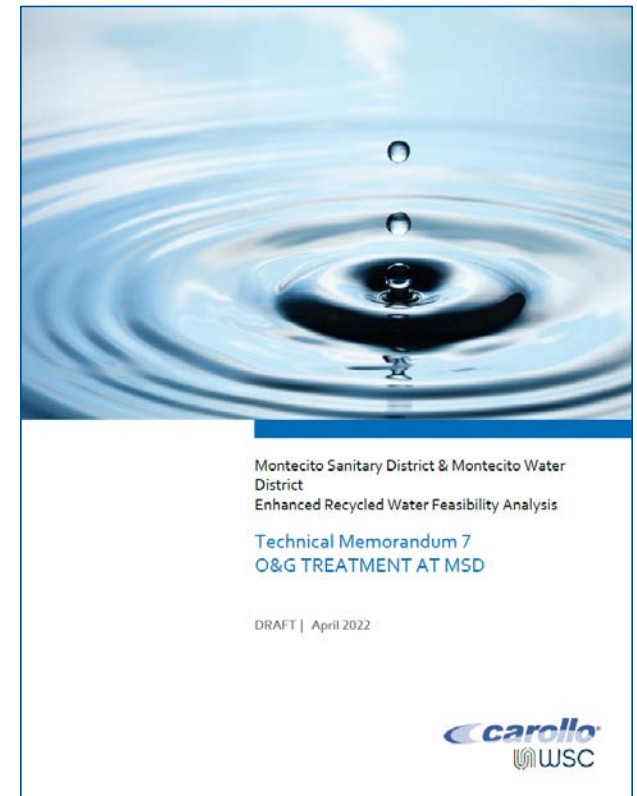
Figure 2.4 Average Influent Flow to El Estero WRP – October 2021

- SB El Estero has capacity to take MSD flow.
- Some equalization is needed due to conveyance limitations and also brings added value to SB



# TM 7 – O&G Treatment at MSD

- O&G impacts membrane treatment...and membrane treatment is needed for TDS reduction
- Review of O&G data
- Develop and evaluate primary DAF ahead of MSD biological treatment
- Develop and evaluate tertiary DAF downstream of MSD biological treatment



# TM 7 – O&G Treatment at MSD

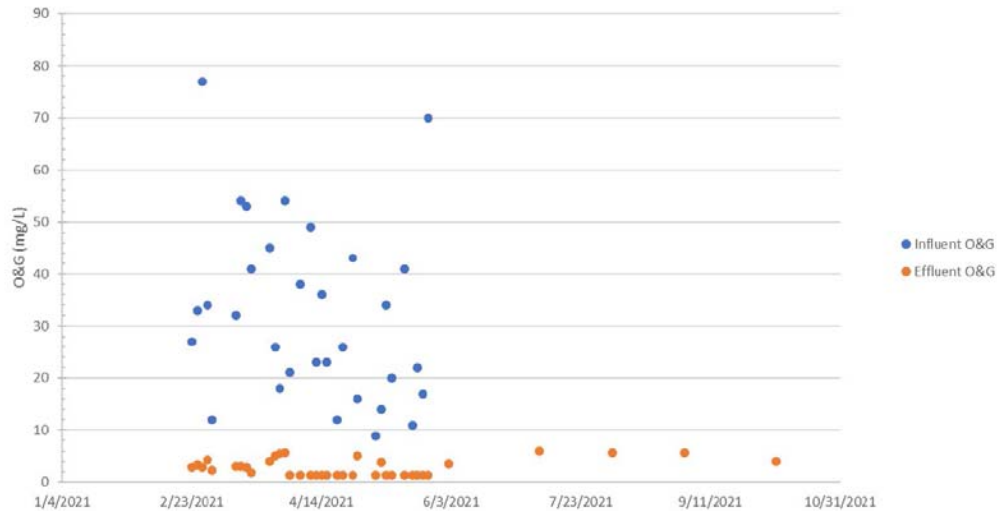
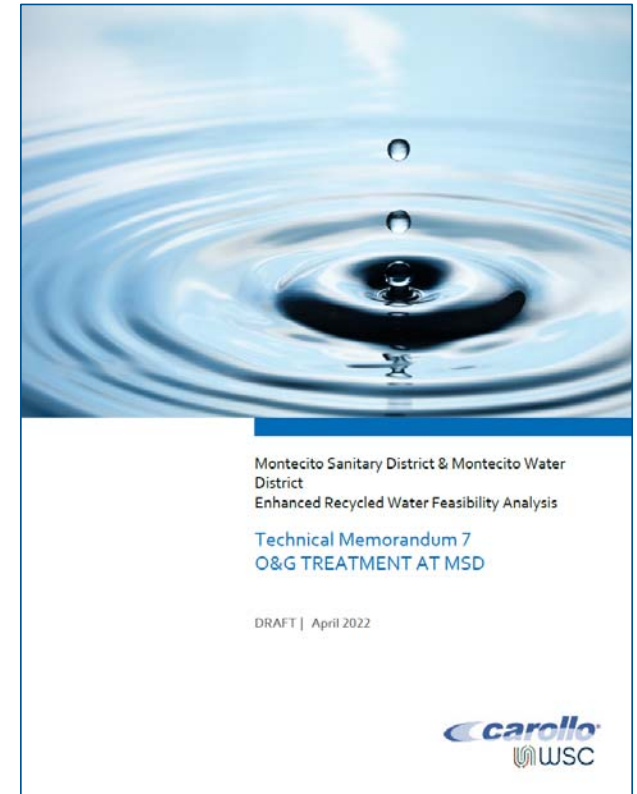


Figure 7.2 MSD WWTP O&G Data from February 2021 to October 2021

- Variable O&G into the WWTP
- Low level (but significant) O&G after the WWTP



# TM 7 – O&G Treatment at MSD

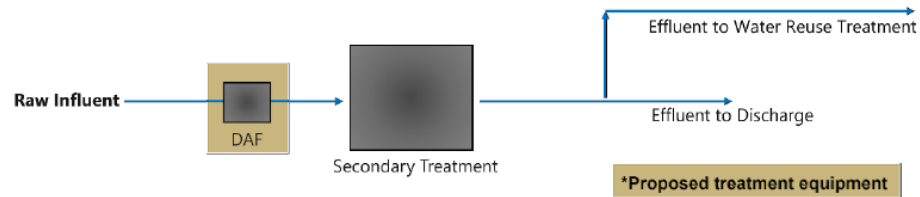


Figure 7.8 Alternative 1: Primary DAF Full Flow Simplified PFD

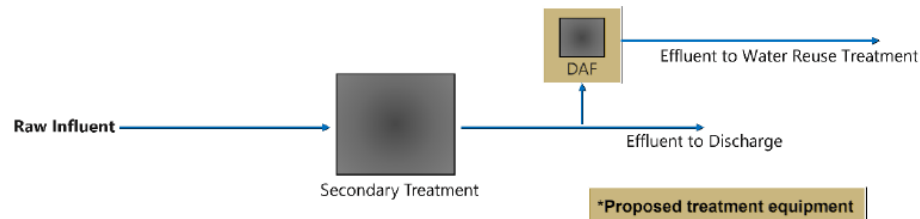


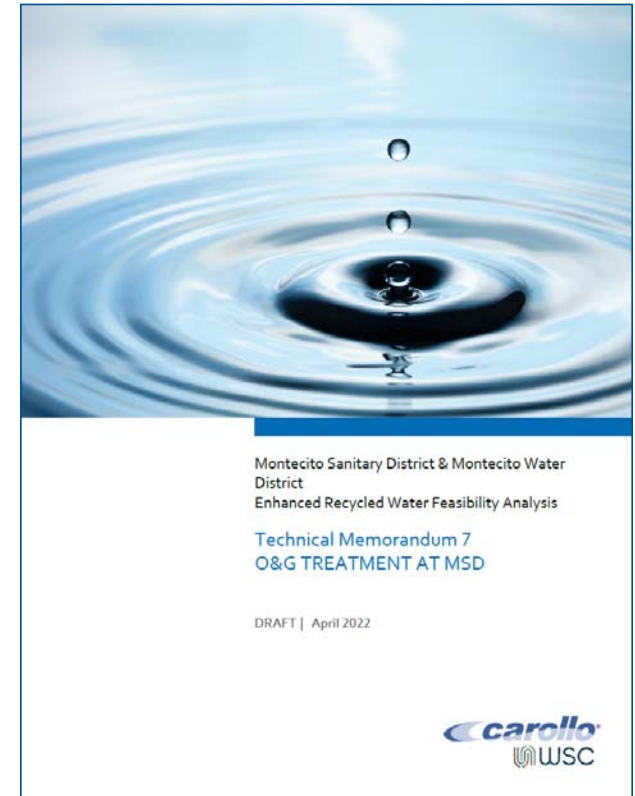
Figure 7.9 Alternative 2: Secondary DAF Simplified PFD

Table 7.2 DAF Treatment Criteria

Treatment Criteria	Units	Construction Costs	
		Alternative 1: Primary DAF Full Flow	Alternative 2: Secondary DAF ADWF
Max Instantaneous Flow	mgd (gpm)	8.76	0.7
Max Hourly Flow	mgd (gpm)	6.29	0.7
Effluent O&G Goal	mg/L	<1.4	<1.4

Notes:

Abbreviation: gpm - gallons per minute.

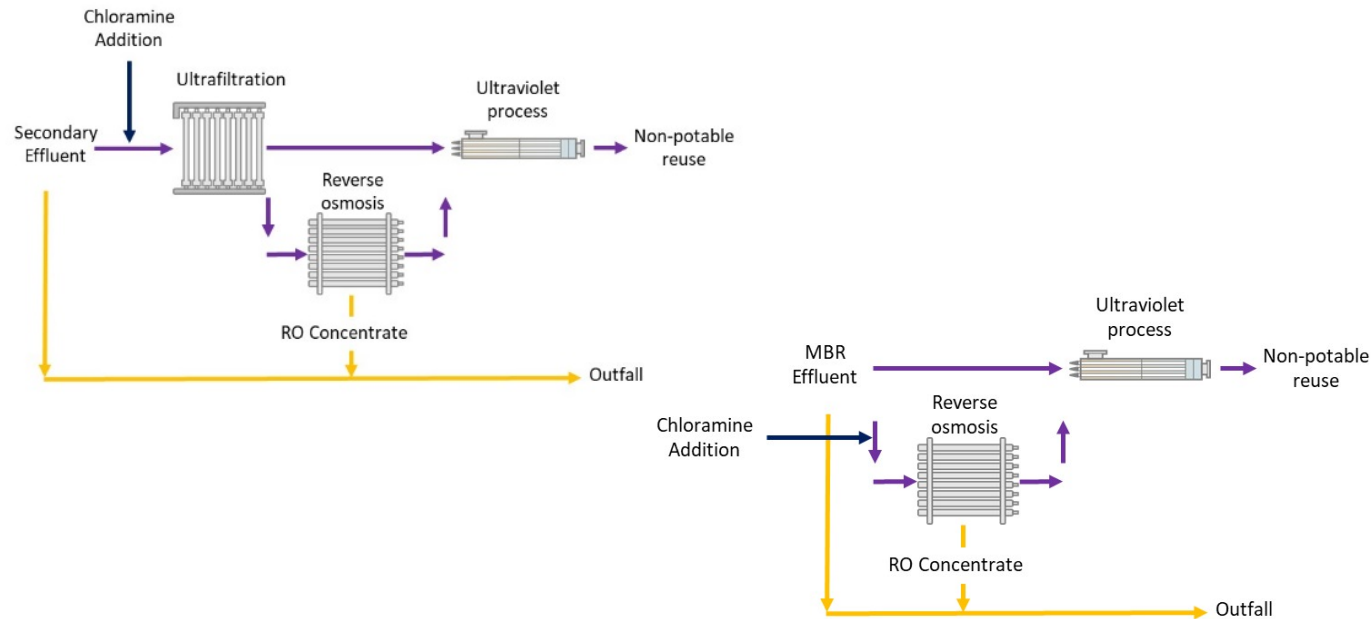


# TM 8 – Recycled Water Treatment Options

- Evaluate NPR, IPR, and DPR Treatment at MSD
- Evaluates DPR treatment at Santa Barbara
- Includes integration of WTPs into DPR efforts



# TM 8 – Recycled Water Treatment Options

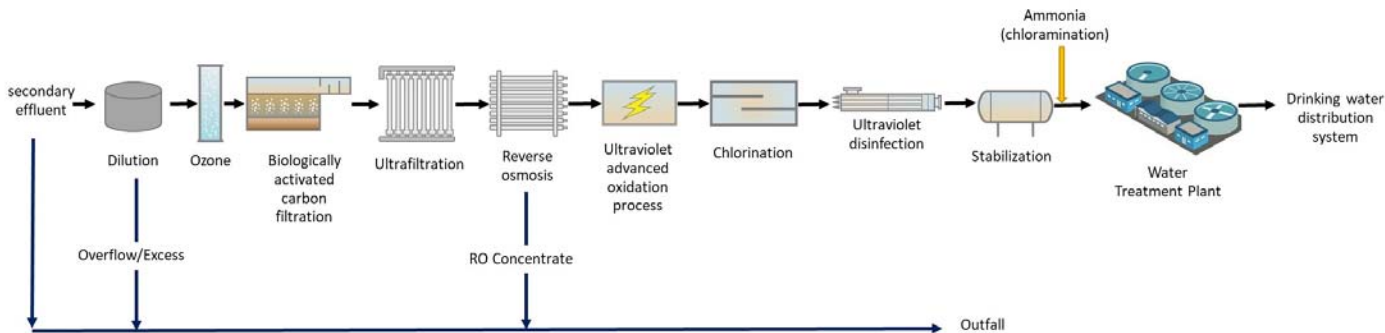
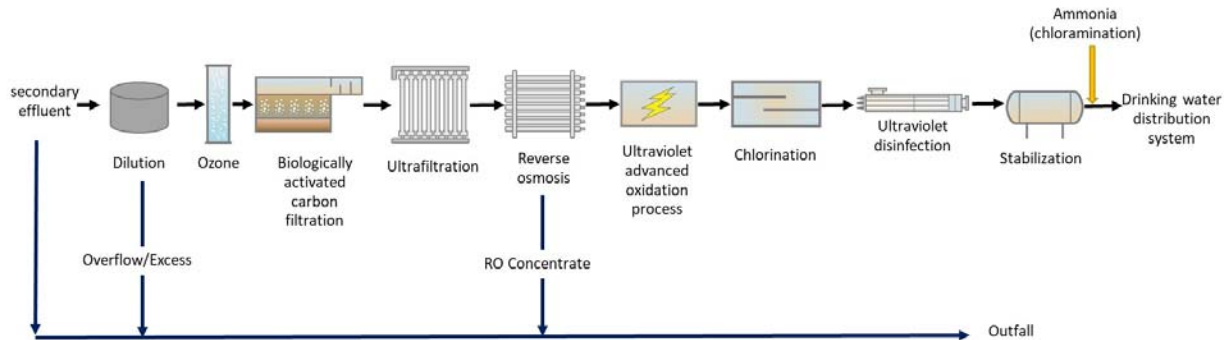


TM 8



- NPR targeting 50% reduction in TDS (from 1,400 to 700 mg/L), along with reduction of chlorides
- System readily expandable for IPR
- Analysis can include no RO if acceptable for irrigation

# TM 8 – Recycled Water Treatment Options



- DPR can, but does not need to, include the existing WTPs
- Additional treatment lifecycle costs for DPR can be lower than NPR/IPR conveyance infrastructure

# TM 9 – Infrastructure Analysis

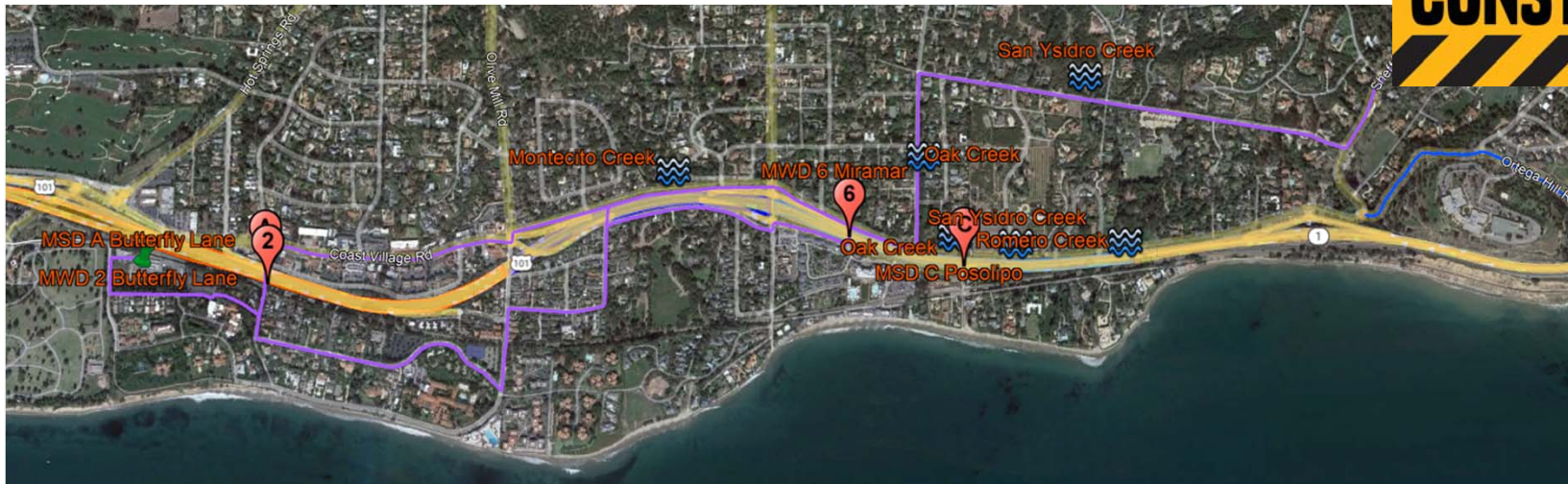
TM9 addresses infrastructure for:

- NPR in Montecito (pipelines, customers)
- IPR in Carpinteria (equalization, pipelines, wells, exchange)
- DPR in Montecito (pipelines)
- DPR in Santa Barbara (equalization, sewers)

Status

- Evaluated Highway 101 crossings (applies to all alternatives except City DPR)

TM 9



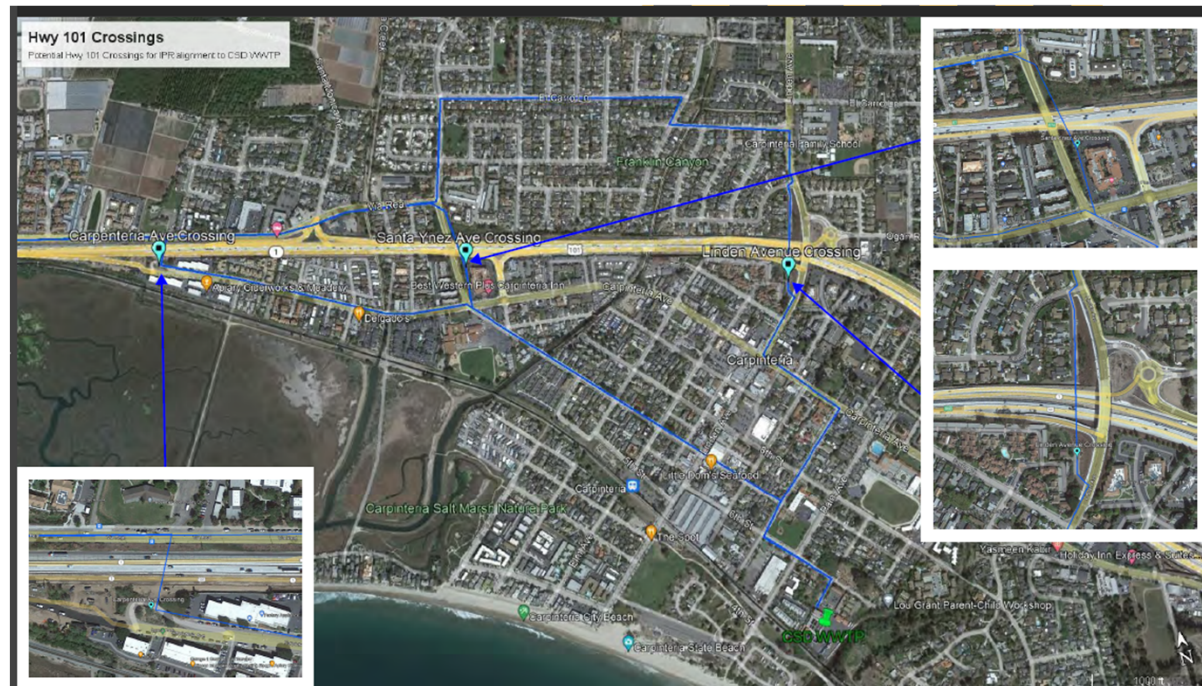


# TM 9 – Infrastructure Analysis

TM 9

Status (cont.)

- NPR in Montecito
  - Met with Valley Club; Facility sizing pending Birnam Woods meeting
  - Recycled water quality assumptions drive treatment assumptions
- IPR in Carpinteria
  - Preliminary alignments and well locations defined



# TM 9 – Infrastructure Analysis

Status (cont.)

- DPR in Montecito
  - Pipelines assumed similar to RWFP
- DPR in Santa Barbara:
  - Defined multiple options to convey water to City WRF
    - Raw wastewater – with and without equalization at CSD WWTF
    - Secondary effluent – with and without releasing at night (per City requirement)
    - City is interested in potential conveyance partnership to address their collection system issues

TM 9



# Discussion

Discussion