

# Cambria Emergency Water Supply Project

Cambria Community Services District



## Regional Water Board Title 22 & Title 27 Permit Presentation

**Bob Gresens,  
P.E.**



# Agenda

- CCSD Introductions
- Project Background
- Overview of Emergency Supply Project
- Permitting process
- Environmental process & mitigation measures
- Title 27 permit
- Title 22 permit
- Questions



## CCSD Staff & Board

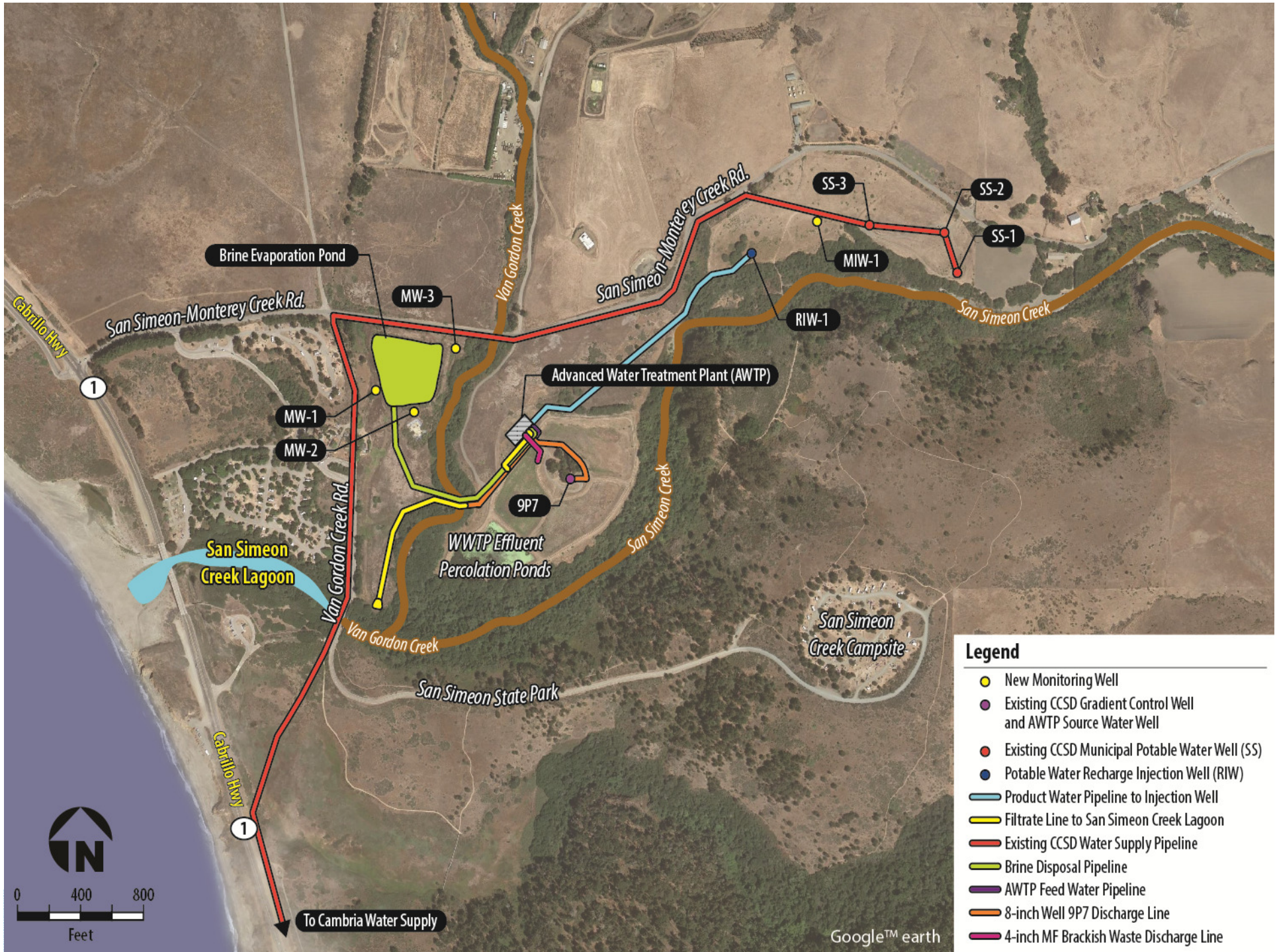
- Jerry Gruber, General Manager
- Bob Gresens, P.E. District Engineer
- Gail Robinette, Board Vice President



# Project background

- Emergency Supply Project used an earlier Army Corps study as a springboard in developing the overall approach.
- 2013 Army Corps Study evaluated 28 identified options,
  - Public workshops in 2012 solicited public input on screening
  - San Simeon Creek Road Brackish alternative most technically feasible.
  - Army Corps work is in progress on a longer term project.
- Emergency Supply Project is a simplified & reduced version of 2013 report's brackish water alternative
  - Designed to fit entirely on CCSD-owned property
  - Prefabricated treatment plant built in shipping containers
  - Used above grade piping as much as possible to avoid trenching
  - Fast tracked design-build effort

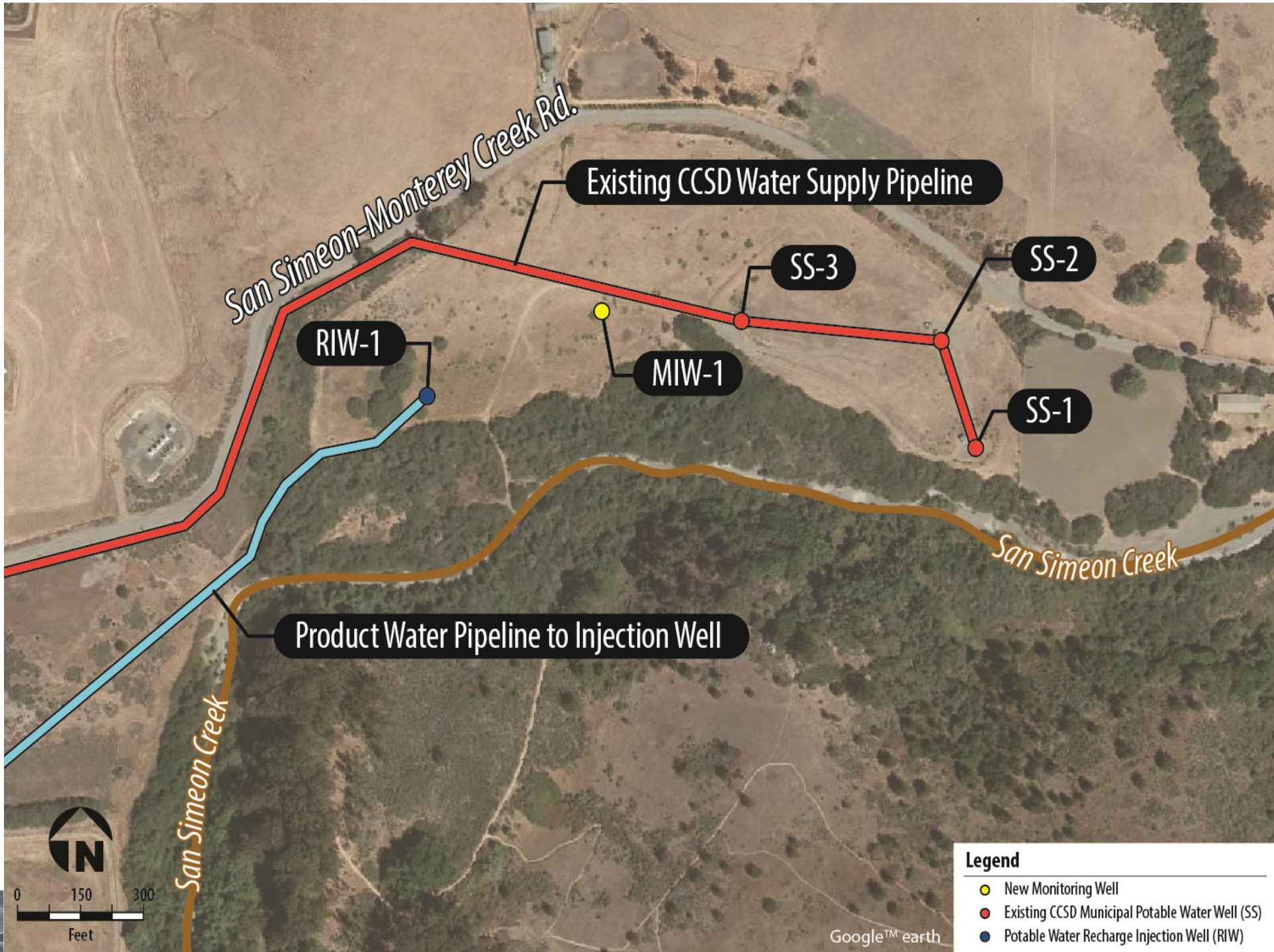
# OVERVIEW OF EMERGENCY WATER SUPPLY PROJECT



**Legend**

- New Monitoring Well
- Existing CCSD Gradient Control Well and AWTP Source Water Well
- Existing CCSD Municipal Potable Water Well (SS)
- Potable Water Recharge Injection Well (RIW)
- Product Water Pipeline to Injection Well
- Filtrate Line to San Simeon Creek Lagoon
- Existing CCSD Water Supply Pipeline
- Brine Disposal Pipeline
- AWTP Feed Water Pipeline
- 8-inch Well 9P7 Discharge Line
- 4-inch MF Brackish Waste Discharge Line

Google™ earth



Existing CCSD Water Supply Pipeline

San Simeon-Monterey Creek Rd.

RIW-1

MIW-1

SS-3

SS-2

SS-1

Product Water Pipeline to Injection Well

San Simeon Creek

San Simeon Creek



**Legend**

- New Monitoring Well
- Existing CCSD Municipal Potable Water Well (SS)
- Potable Water Recharge Injection Well (RIW)

Google™ earth

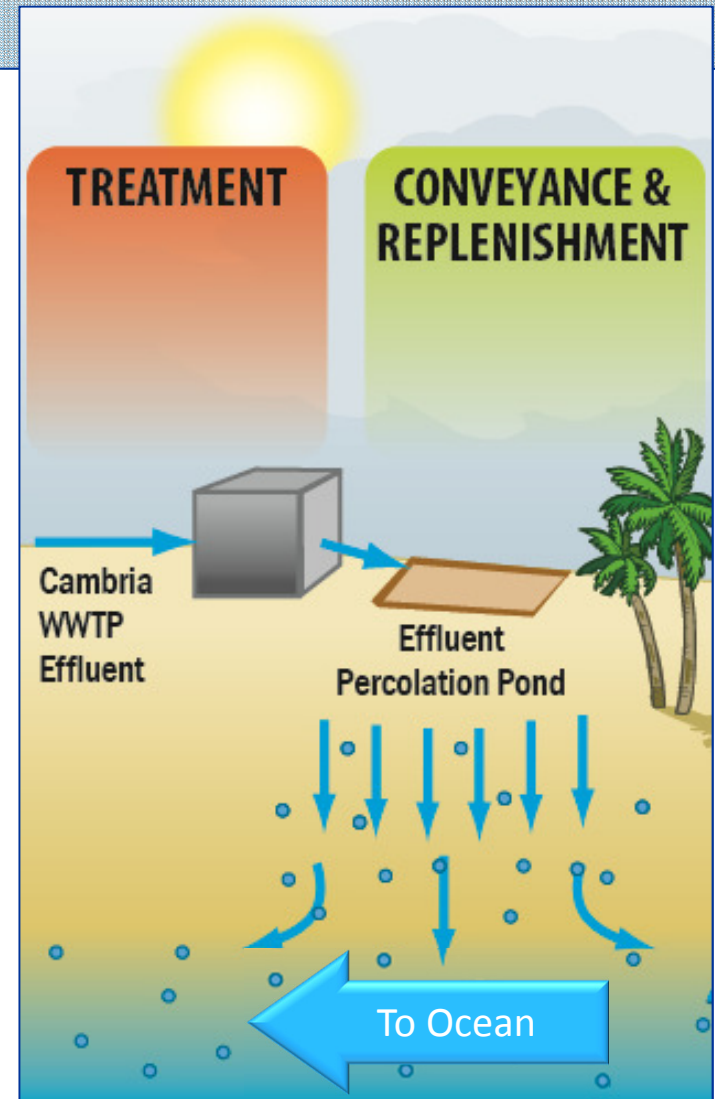
## How much water will be produced?

- 300 gpm of drinking water to CCSD customers
- Approximately 250 acre-feet of drinking water during the 6 month drought season

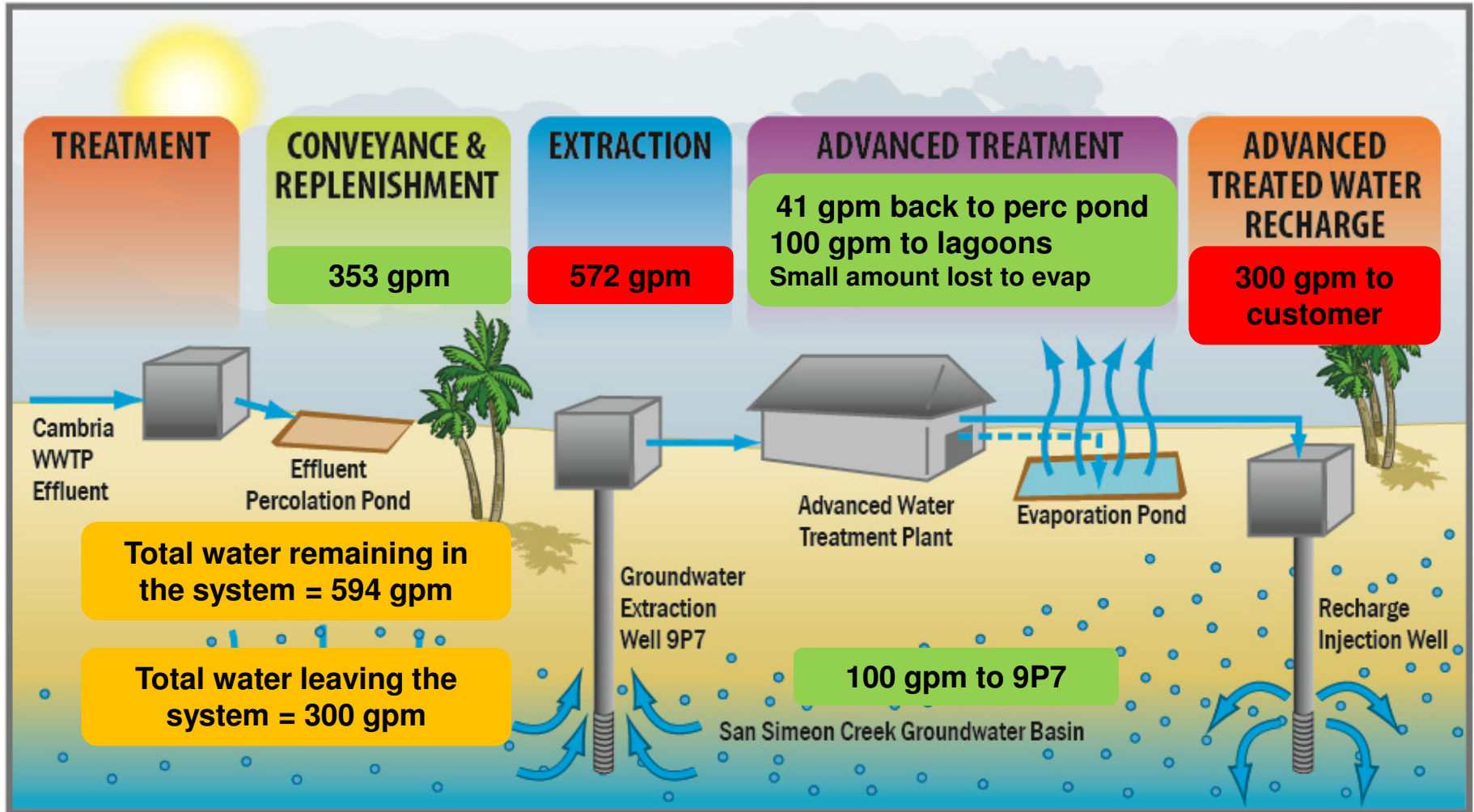


# What Happens to Our Water Now?

- 0.5 mgd wastewater treated at WWTP
- Treated water sent to percolation ponds on CCSD property off of San Simeon Creek Road.
- All water, including basin underflow, ultimately ends up in ocean (>45 acre-feet/month)
- Emergency project will recover a portion of this water



# What is Groundwater Replenishment?



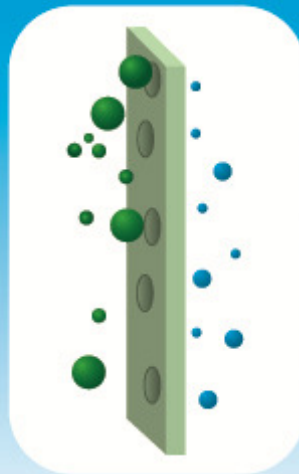
# Advanced Water Treatment

- Uses multiple treatment processes to eliminate or destroy contaminants, producing safe supply for public use
- Treatment includes 3 primary barriers for pathogens and other contaminants

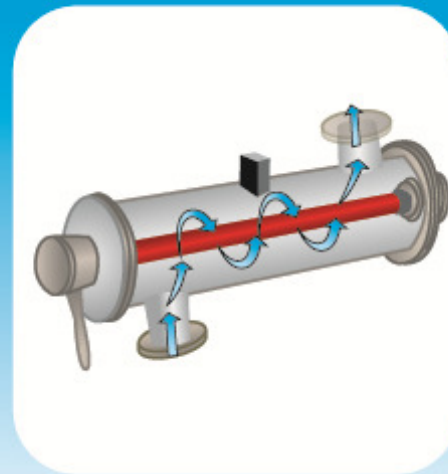
## Advanced Purification



Microfiltration



Reverse osmosis



Advanced oxidation  
process

# Barrier #1: Membrane Filtration

- Hollow fiber membranes filter out nearly all:
  - Suspended solids
  - Turbidity
  - Protozoa and bacteria
- Do not remove viruses or dissolved contaminants
- Do not use chemicals or change chemical constituents



## Barrier #2: Reverse Osmosis



- Spiral wound RO membranes remove:
  - Viruses
  - Dissolved salts
  - Dissolved organics
  - Pharmaceuticals and personal care products
- Pores in membrane too small to be measured, can remove particles as small as 0.1 nm

## Barrier #3: Advanced Oxidation



- Concentrated UV light and hydrogen peroxide remove any organic compounds
- Additional barrier for pathogens
- Operates at around 10 times higher intensity than typical UV treatment at drinking water plants

## Post-Treatment

- Chlorination is used to provide redundant disinfection
- Calcium and caustic soda added to stabilize water after most ions have been removed
- Finished water is injected into well, traveling two months through the ground before extraction

# PERMITTING PROCESS



# Permitting Process: emergency vs temporary

- Emergency coastal development permit
  - Awarded to the CCSD by SLO County on May 15, 2014
  - Requires construction completion by November 14, 2014.
  - Emergency CDP process has two paths 1) complete emergency project; and, 2) apply for and complete a regular CDP, which includes a supporting CEQA process.
  - Governor's Office of Planning & Research concurrence with April 24, 2014 executive orders on emergency project.
- Regular coastal development permit
  - Application submitted & is in review process
  - Earlier environmental effort (Initial Study/Mitigated Negative Declaration) is being upgraded to a project focused EIR
  - Sept 25, 2014 - CCSD Board authorized GM to develop a services contract for an EIR, which is in progress.

# ENVIRONMENTAL MITIGATION MEASURES

## Current emergency CDP authorized project is following the IS/MND mitigation measures

Earlier environmental effort (Initial Study/Mitigated Negative Declaration) analysis identified areas where at least one impact would be less than significant with mitigation incorporated:

- Aesthetics – e.g. staging area locations, debris removal, re-vegetation.
- Biological – e.g. biological monitor, preconstruction surveys, an Adaptive Management Plan to monitor protective design features (mitigation water to lagoon).
- Cultural Resources – e.g. archeological & Native American Indian monitors, worker training.
- Noise – e.g. equipment standards, staging locations, work hour limitations

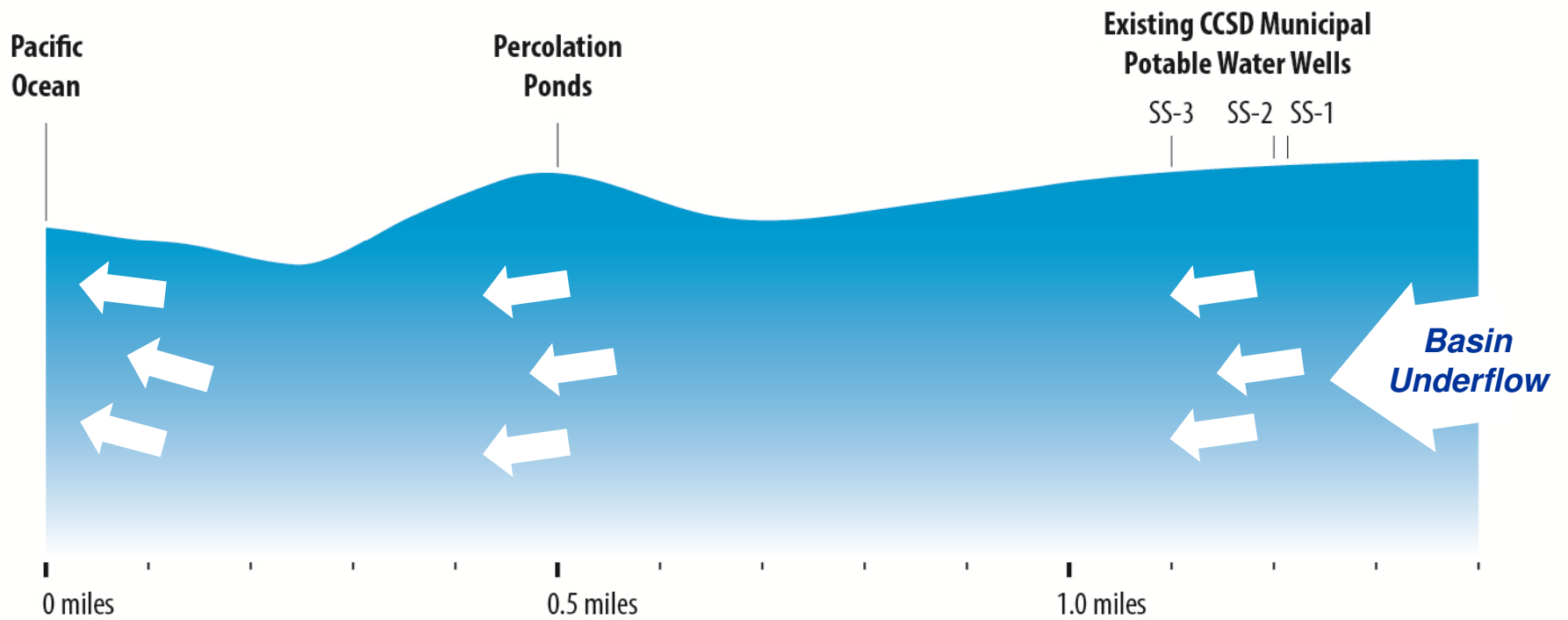


## Other considerations

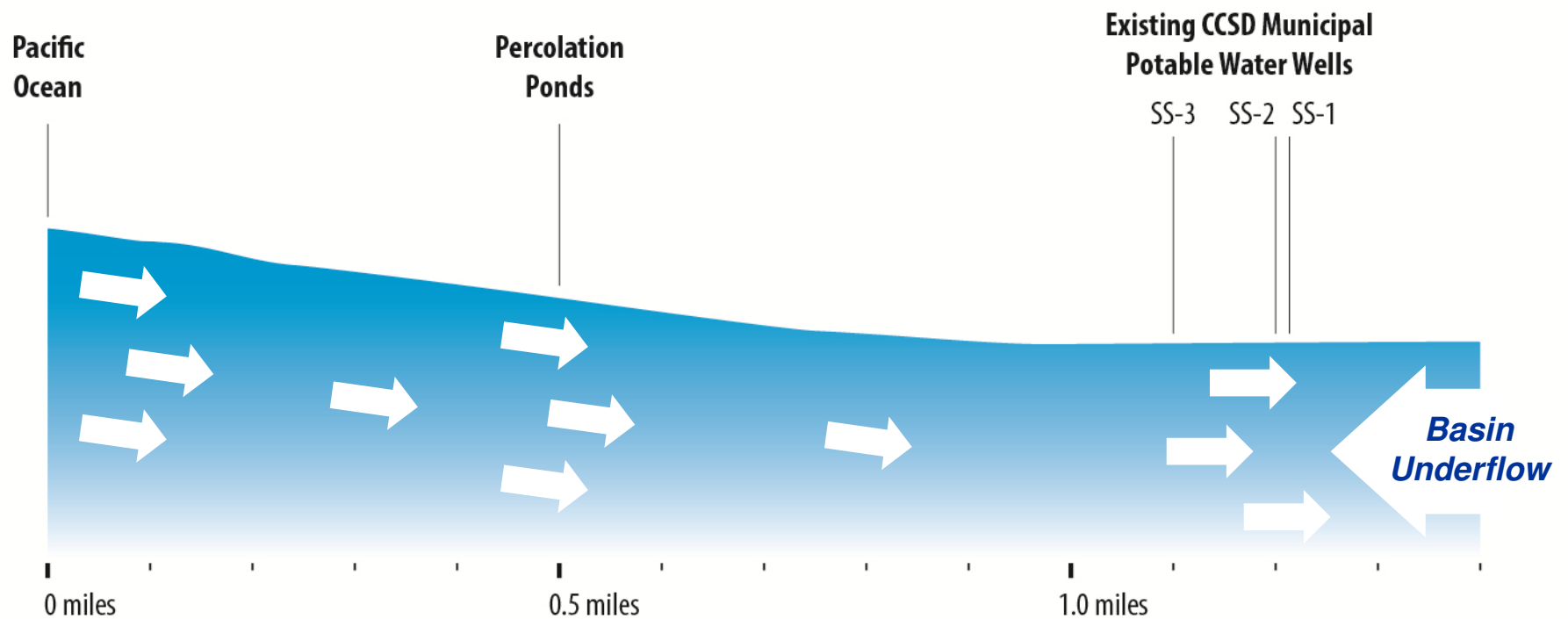
- Existing regulations – e.g., Local Coastal Program and Coastal Zone Land Use Ordinance requirements.
- Dust control
- Maintaining full compliance with terms of the emergency coastal development permit
- Third party/specialized evaporation pond construction monitoring
- Adding an underground gopher barrier and above ground frog barrier around entire perimeter of evaporation pond.
- Adding double containment to the reverse osmosis reject water pipeline from treatment plant to the pond.
- Increased overlap of pond liner system.

# MITIGATION WATER DESIGN FEATURE

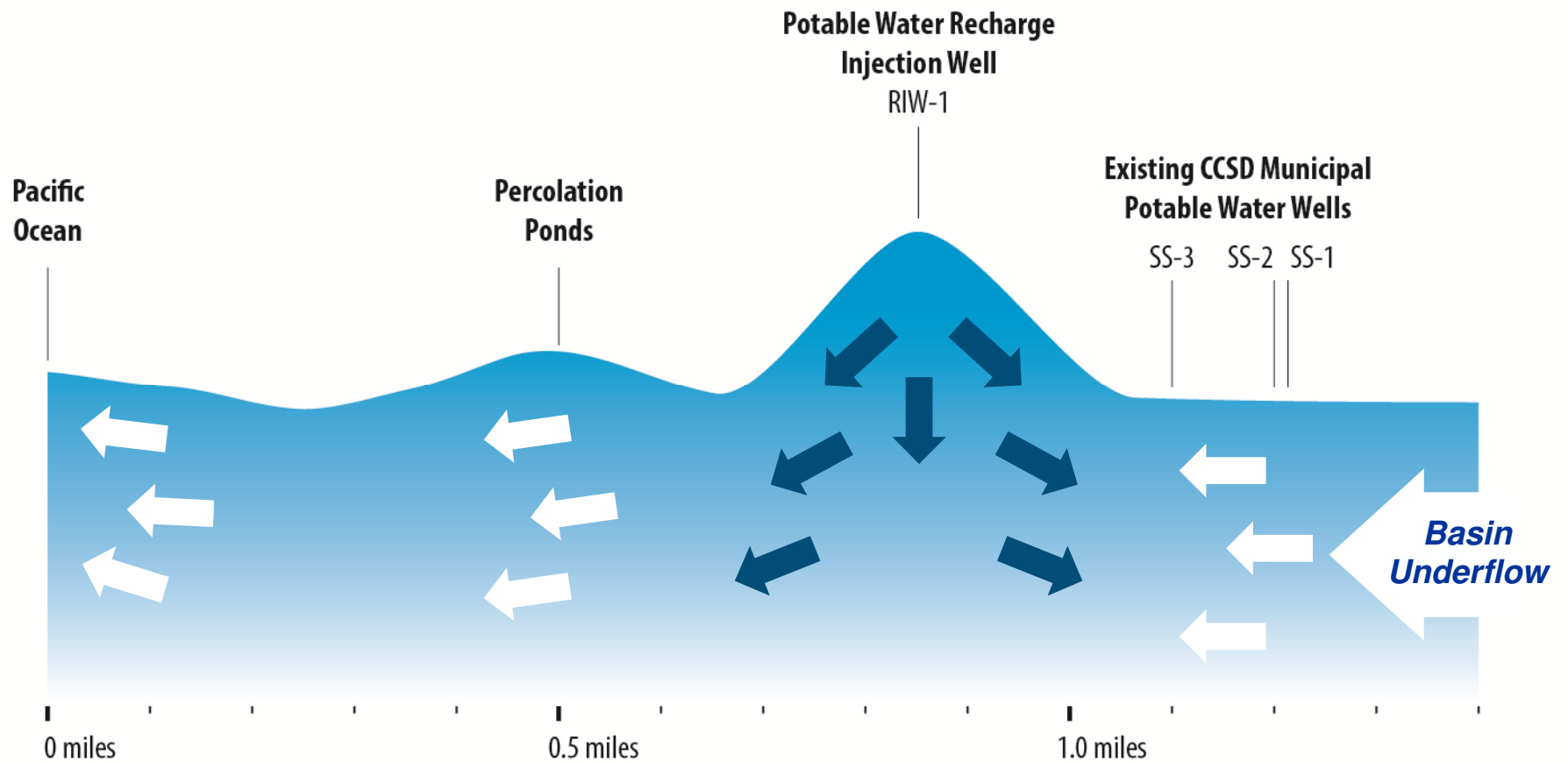
# How the basin works in a normal rain event year



# What happens to the basin in a drought without the emergency project



# What happens to the basin in a drought with the emergency project





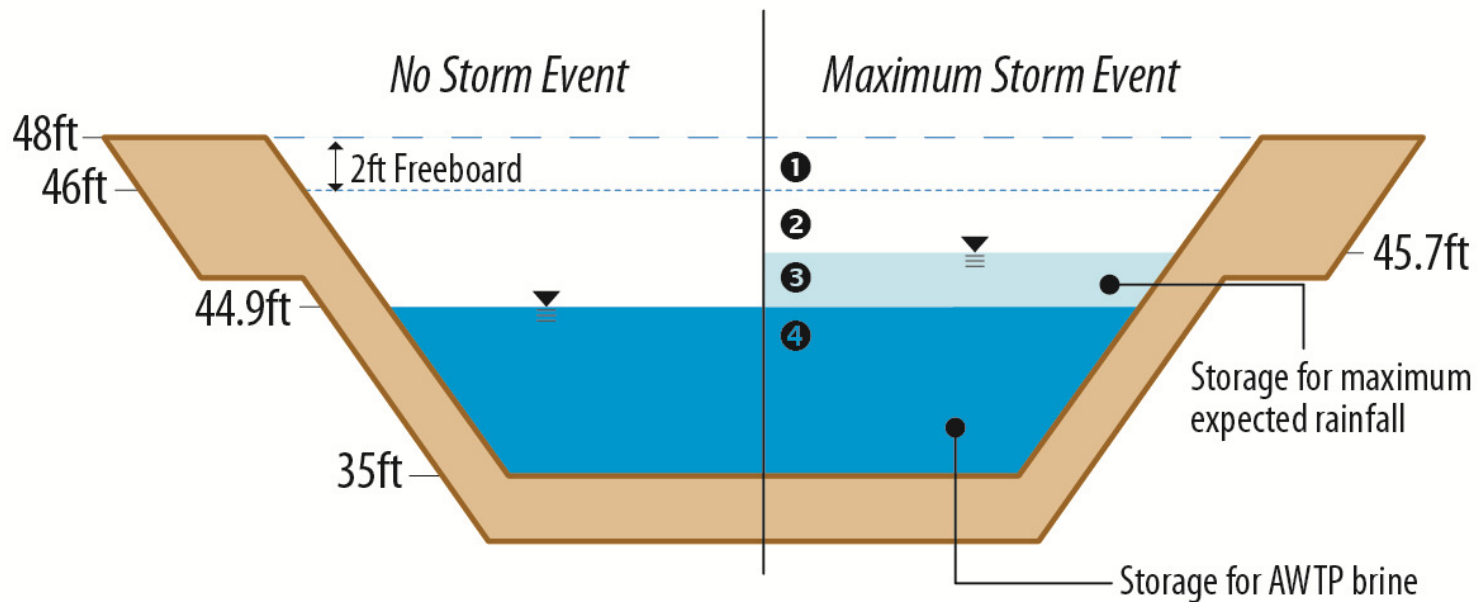
## Lagoon levels

- Lagoon levels are impacted by numerous conditions
  - Wet season
  - Dry season
  - Connectivity to beach berm
  - Groundwater inflows
- Mitigation flows circulate water back into the lagoon that could seep back into the basin

# TITLE 27

# Evaporation Pond

## Brine Level After First 6 Months of AWTP Operation



### Storage Volumes

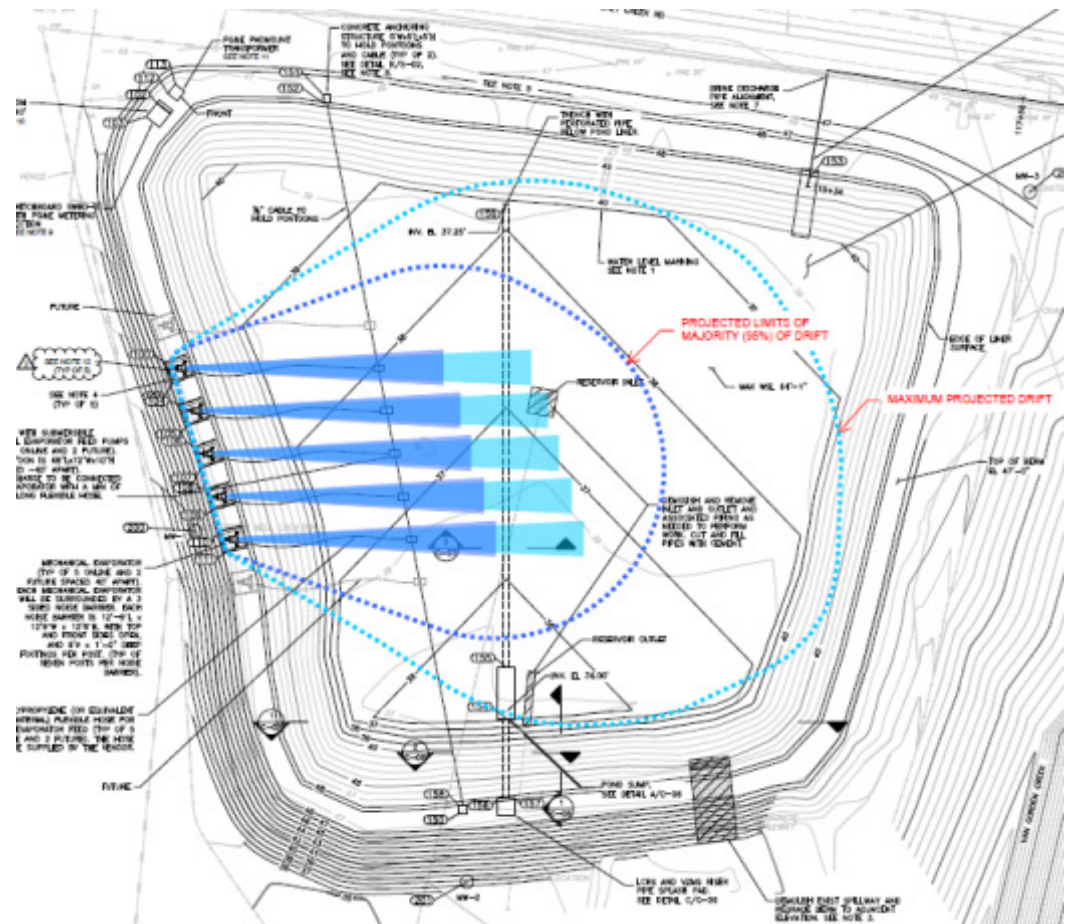
- ① 6.4 acre-feet    ② 0.5 acre-feet    ③ 2.7 acre-feet    ④ 18.1 acre-feet

# Brine disposal to an evaporation pond

- Evaporation blowers operational conditions:
  - Evaporators will operate only when wind is blowing from west to east
  - Evaporators will not operate with wind speeds above 6mph
- Sound proofing will be provided for the blowers
- Weather station located on-site to monitor operational conditions

# Brine Drift

- Controlled through onsite weather stations
- Operations restricted - wind speed/direction, temperature, and humidity
- Drift contained within evaporation pond
- Monitoring program



# Quality of Brine

- No constituents in the brine come close to reaching hazardous levels
- No selenium or mercury was detected in the source water



# TITLE 22

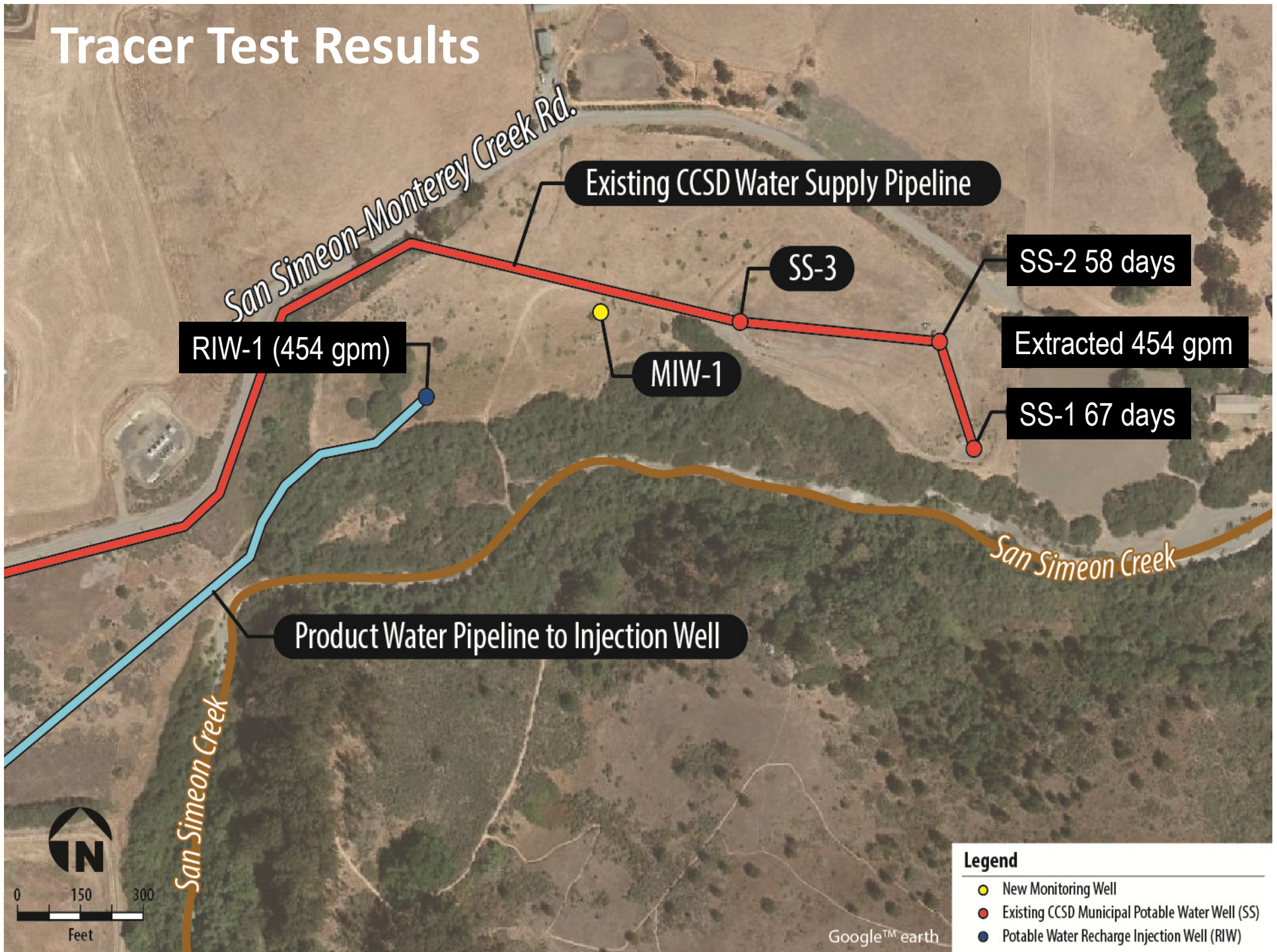
# Tracer Test

- Pump from existing production wells SS1 and SS2 at a total of 454 gpm
- Inject at RIW-1 with addition of tracer
- Addition of tracer bromide salt at 10 ppm
- Cease addition of tracer after 30 days
- Total duration of test 67 days
- At end of test wells SS1 and SS2 continue producing at 454 gpm

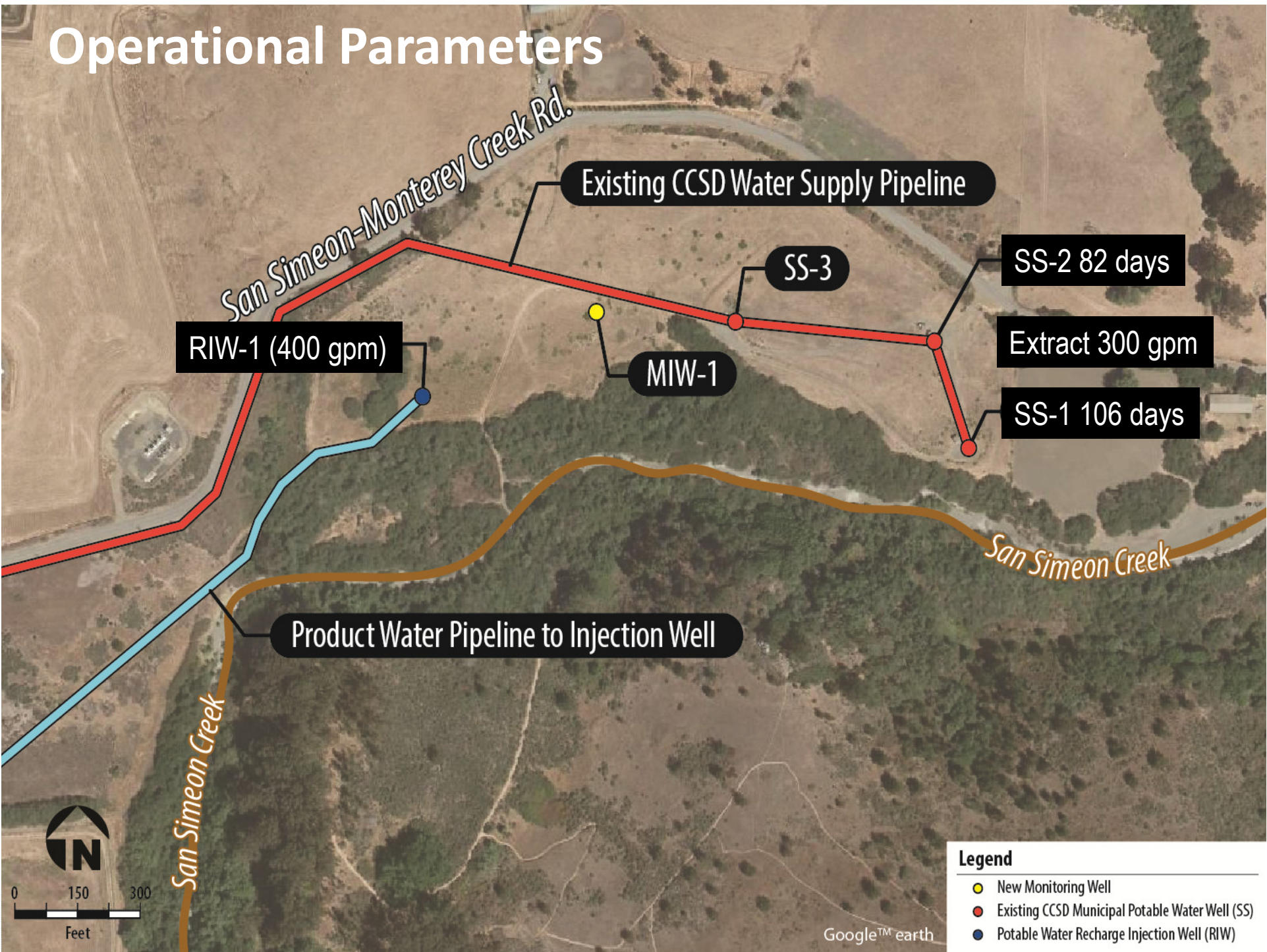




# Tracer Test Results



# Operational Parameters



### Legend

- New Monitoring Well
- Existing CCSD Municipal Potable Water Well (SS)
- Potable Water Recharge Injection Well (RIW)

# QUESTIONS

# Evaporation Pond: Projected Constituents in Dry Solids

94% of solids will come from six constituents

