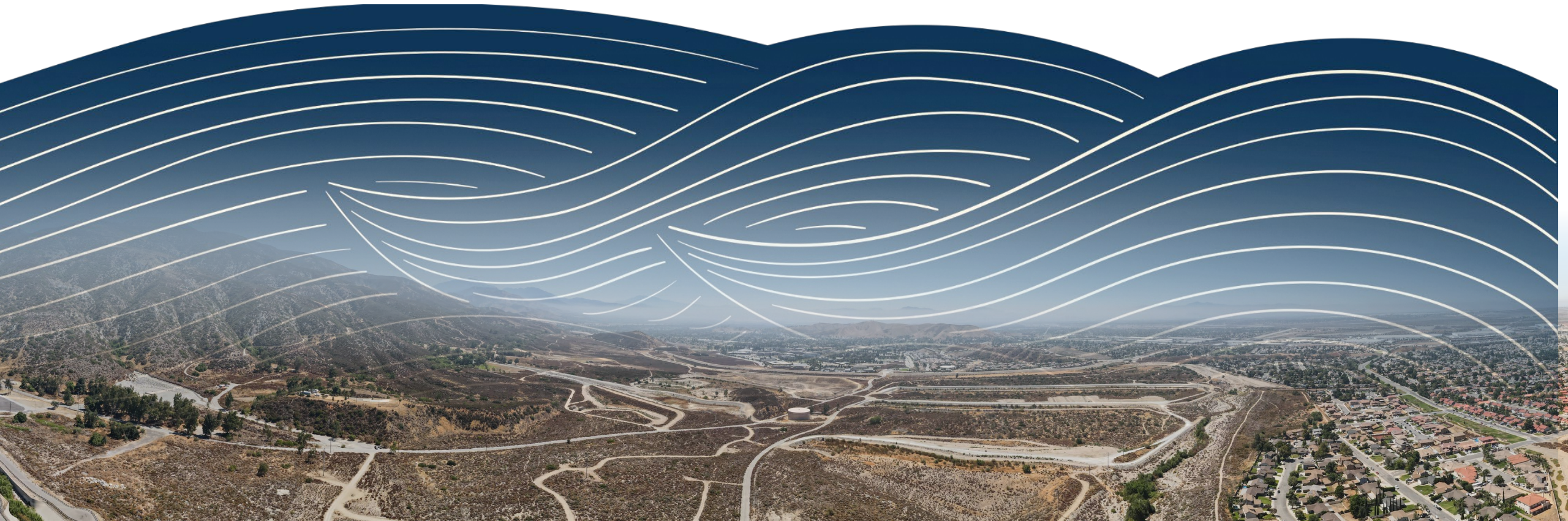




Pilot Assessment of Ambient Water Quality

May 1 , 2023



Scope Overview

Pilot Assessment of Ambient Water Quality in Select GMZs

2021 AWQ Pilot Study GMZs

Standard Methodology – Maximum Benefit GMZs

- Beaumont
- Chino North
- Cucamonga
- Elsinore
- San Jacinto Upper Pressure
- San Timoteo
- Yucaipa

Pilot Study Update Aquifer Storage Model

- Yucaipa

Yucaipa GMZ

Standard Methodology

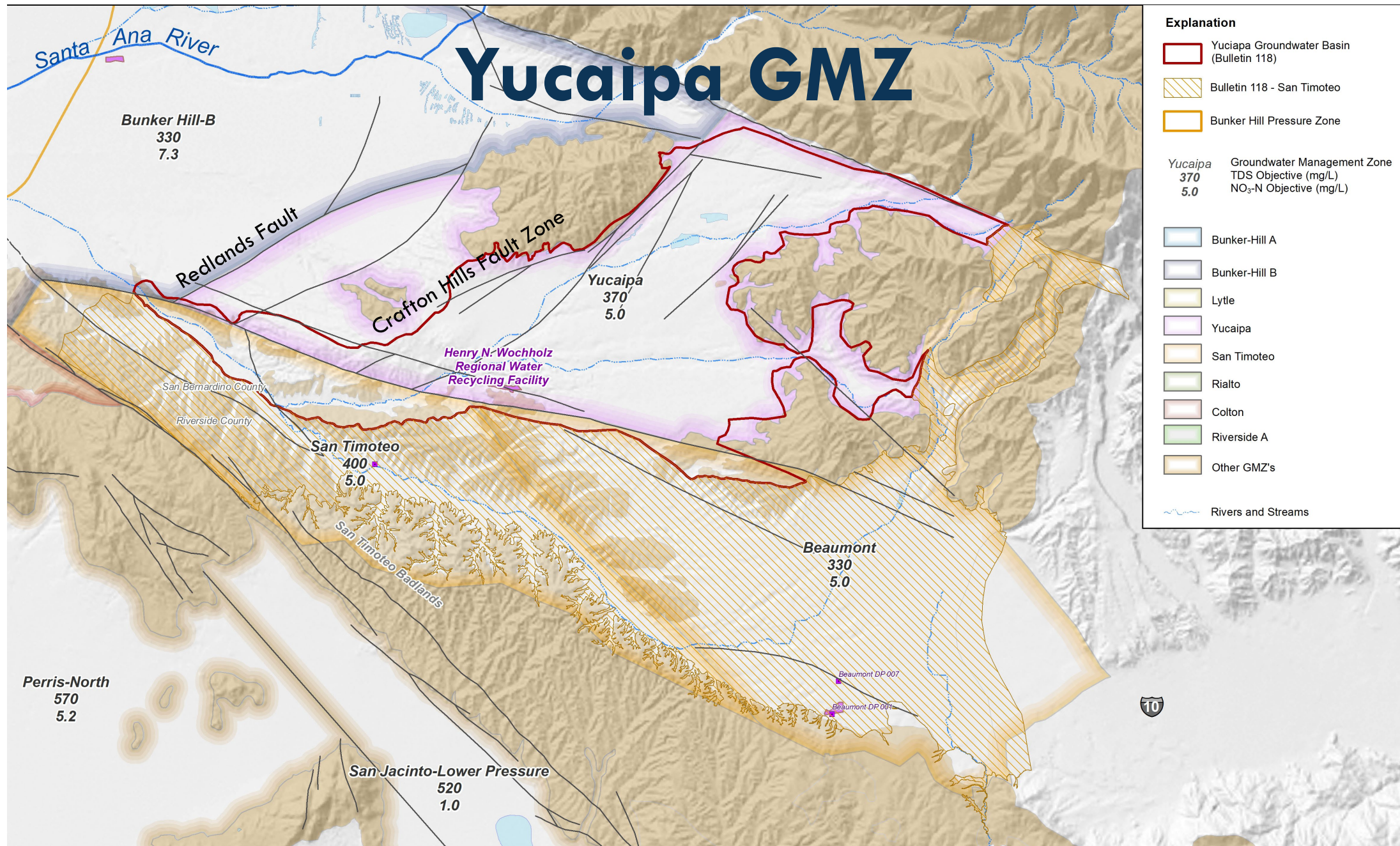
- Calculate the Objective Setting Period

This includes computing the AWQ for 2021 with the new and old storage models, and the AWQ for the objective setting period of 1954 to 1973 with the new storage model

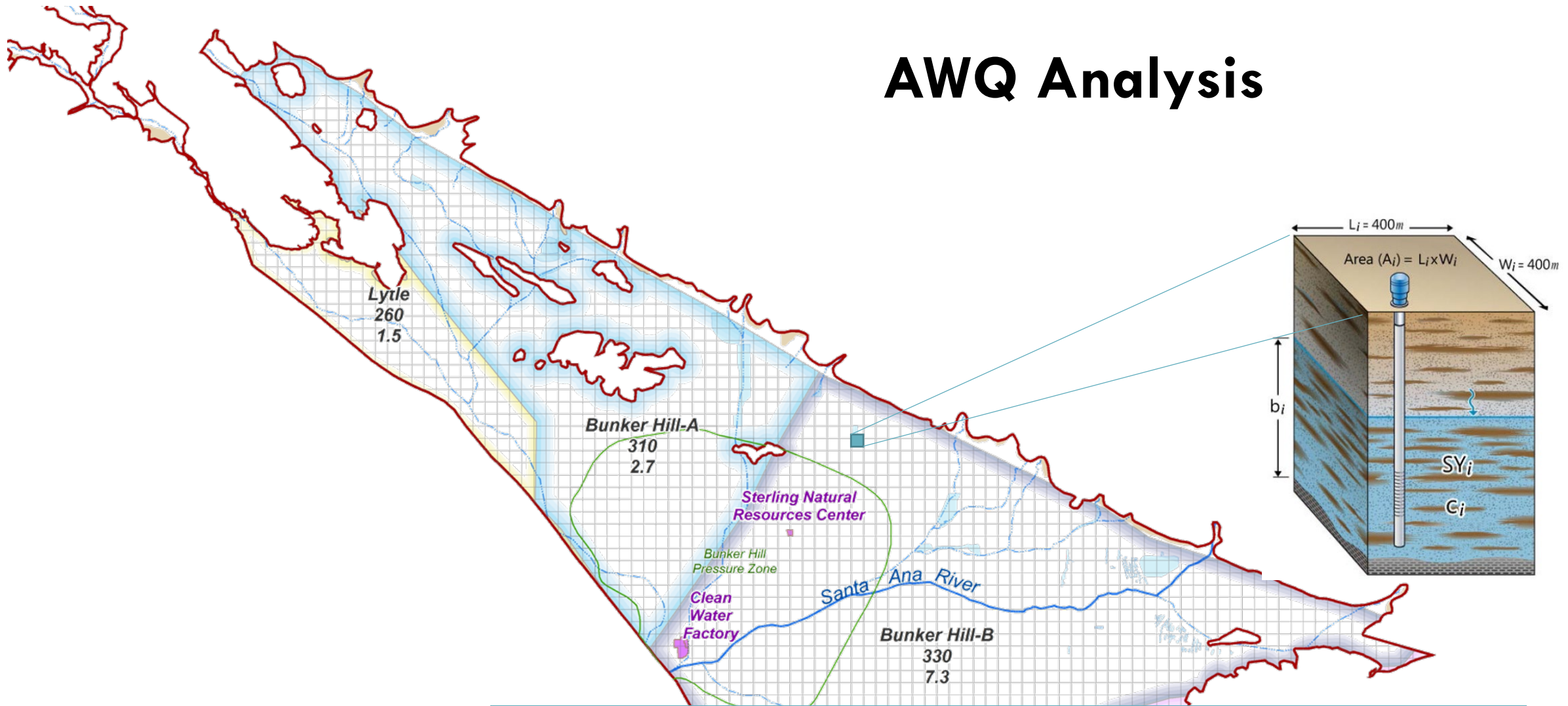
- **Pilot Study Update Aquifer Storage Model**

- Update Aquifer Properties from the SAR Integrated Model

Yucaipa Basin		
Geologic Unit	Hydrogeologic Unit	Model Layer
Very Young and Young Axial-Channel and Wash Deposits ¹ (Holocene)	Axial Channel and Wash Deposits	1
Very Young and Young Alluvial Deposits ² (Holocene)	Late Quaternary	
Old and Very Old Alluvial Deposits ³ (Pleistocene)		
Live Oak Canyon Deposits (Pleistocene)		2
	Live Oak Canyon Deposits	3
		4
		5
San Timoteo Formation (Plio-Pleistocene)	San Timoteo	6
Mt. Eden (Miocene)	Consolidated	
Granitic Rock	Basement	7
Sources: GEOSCIENCE, 2017; USGS, in progress		

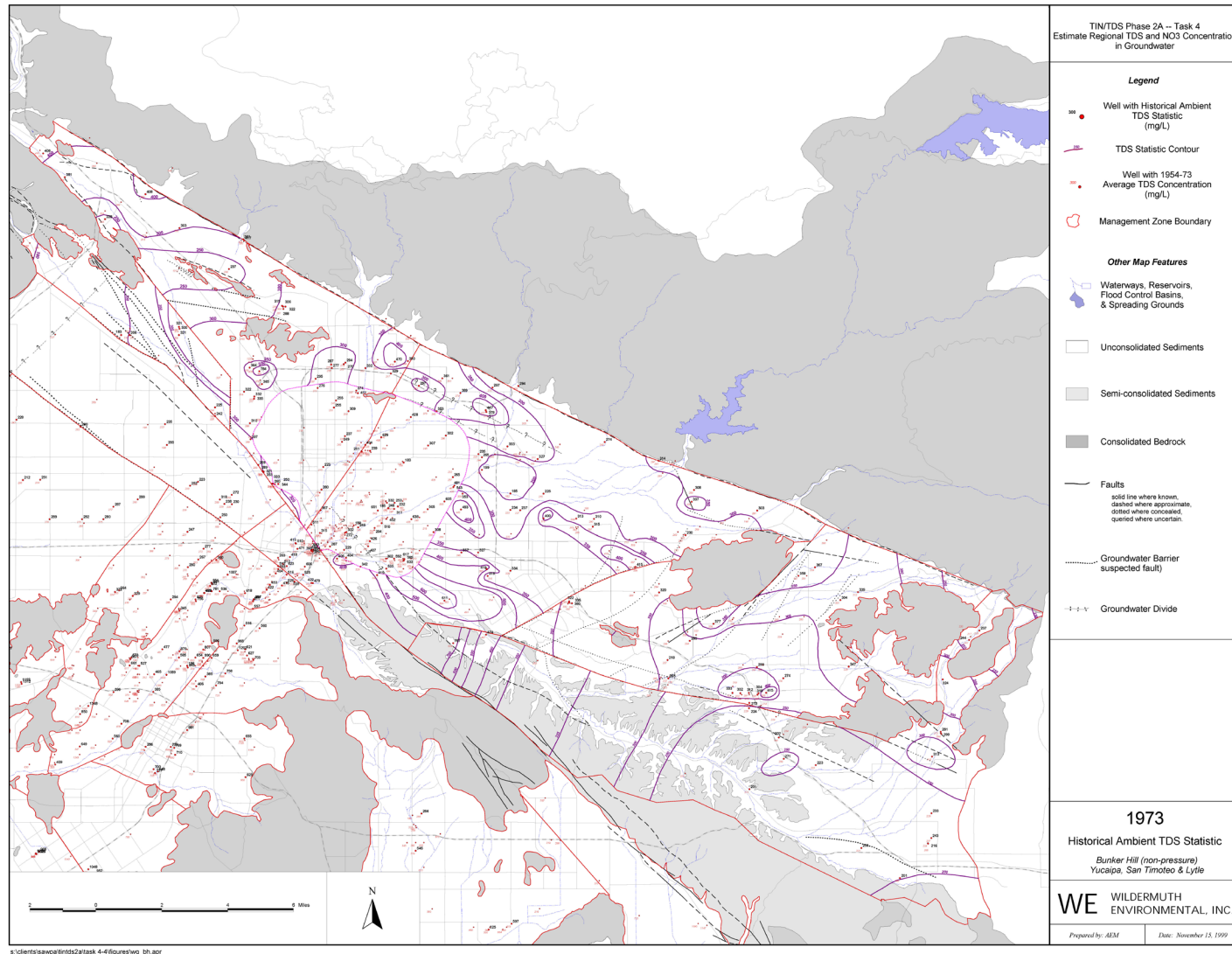


AWQ Analysis



Proof of Concept
Recreate Objective Setting Period (1954-1973) AWQ for Bunker Hill-A and Bunker Hill-B
Updated aquifer geometry and properties from the Integrated SAR Model

Objective Setting Period (1954-1973)



Data Required to Calculate AWQ

- Water Quality Point Statistics
- Water Quality Contours and **Raster Grid**
- Groundwater Elevation Contours and **Raster Grid**
- **Grid Extract Table Data**

Summary of AWQ Analysis for TDS

Groundwater Management Zone	Phase 2A ¹			AWQ ²			Updated Aquifer Properties ²		
	Water Quality Objective	2018 Ambient (1999-2018)	Assimilative Capacity	Historical Ambient (1954-1973)	2018 Ambient (1999-2018)	Assimilative Capacity	Historical Ambient (1954-1973)	2018 Ambient (1999-2018)	Assimilative Capacity
Bunker Hill-A	310	330	None (-20)	320	330	None (-10)	300	330	None (-30)
Bunker Hill-B	330	280	50	300	280	20	320	290	30
Lytle	260	240	20	260	240	20	240	220	20
SBB	--	--	--	310	310	0	300	290	10

¹WEI, 2000. Technical memorandum: TIN/TDS Phase 2A, Tasks 1 through 5, TIN/TDS study of the Santa Ana Watershed. July 2000.

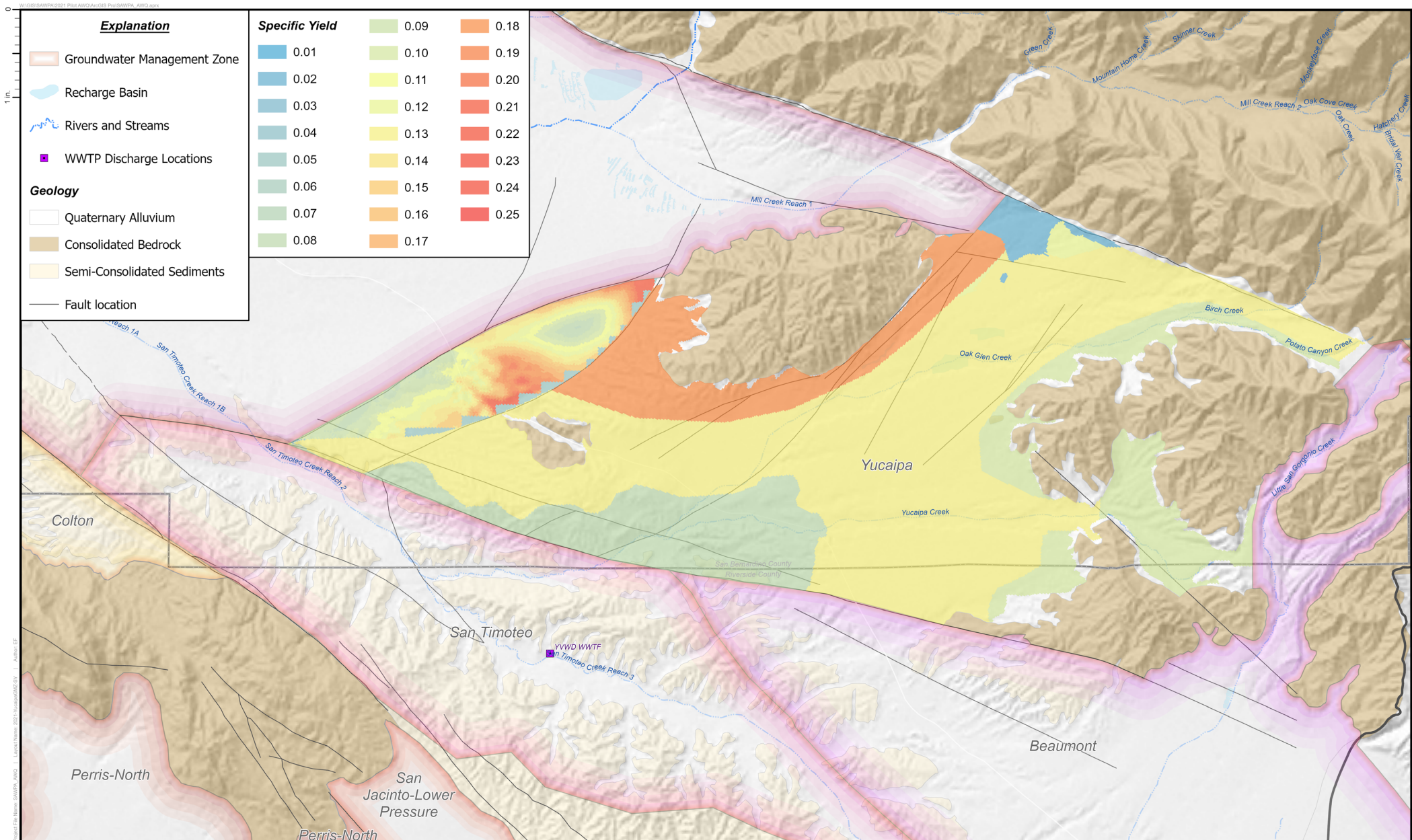
²This project.

Summary of AWQ Analysis for Nitrate

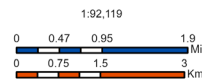
Groundwater Management Zone	Phase 2A ¹			AWQ ²			Updated Aquifer Properties ²		
	Water Quality Objective	2018 Ambient (1999-2018)	Assimilative Capacity	Historical Ambient (1954-1973)	2018 Ambient (1999-2018)	Assimilative Capacity	Historical Ambient (1954-1973)	2018 Ambient (1999-2018)	Assimilative Capacity
Bunker Hill-A	2.7	3.8	None (-1.1)	2.3	3.8	None (-1.5)	2.0	3.4	None (-1.4)
Bunker Hill-B	7.3	5.8	1.5	5.9	5.8	0.1	5.8	5.9	None (-0.1)
Lytle	1.5	2.4	None (-0.9)	1.5	2.4	None (-0.9)	1.3	2.1	None (-0.8)
SBB	--	--	--	4.4	5	None (-0.6)	4.2	4.7	None (-0.5)

¹WEI, 2000. Technical memorandum: TIN/TDS Phase 2A, Tasks 1 through 5, TIN/TDS study of the Santa Ana Watershed. July 2000.

²This project.



Prepared by:



References/Notes:

1. Coordinate System: WGS 1984 Web Mercator Auxiliary Sphere
Projection: Mercator Auxiliary Sphere
Datum: WGS 1984
Units: Meter
2. Specific yield grid cell size is approximately ~38 x 38 meters
- 3.

Prepared for:



SAWPA Basin Monitoring Program Task Force
Recomputation of Ambient Water Quality
for the Period 1999 to 2021

**Groundwater Specific Yield
2021 - Yucaipa GMZ
Santa Ana River Watershed**
Attachment X

2018 Yucaipa GMZ TDS

Explanation

Statistic
Average
Well With Ambient TDS Statistic

Average
Well Without Ambient TDS Statistic (Average Only)

Contour of Equal TDS Concentration

Groundwater Management Zone

Recharge Basin

Rivers and Streams

WWTP Discharge Locations

TDS Concentration

< 250 mg/L

1,000 mg/L

> 2,000 mg/L

Note: Grid cell size is 400 x 400 meters

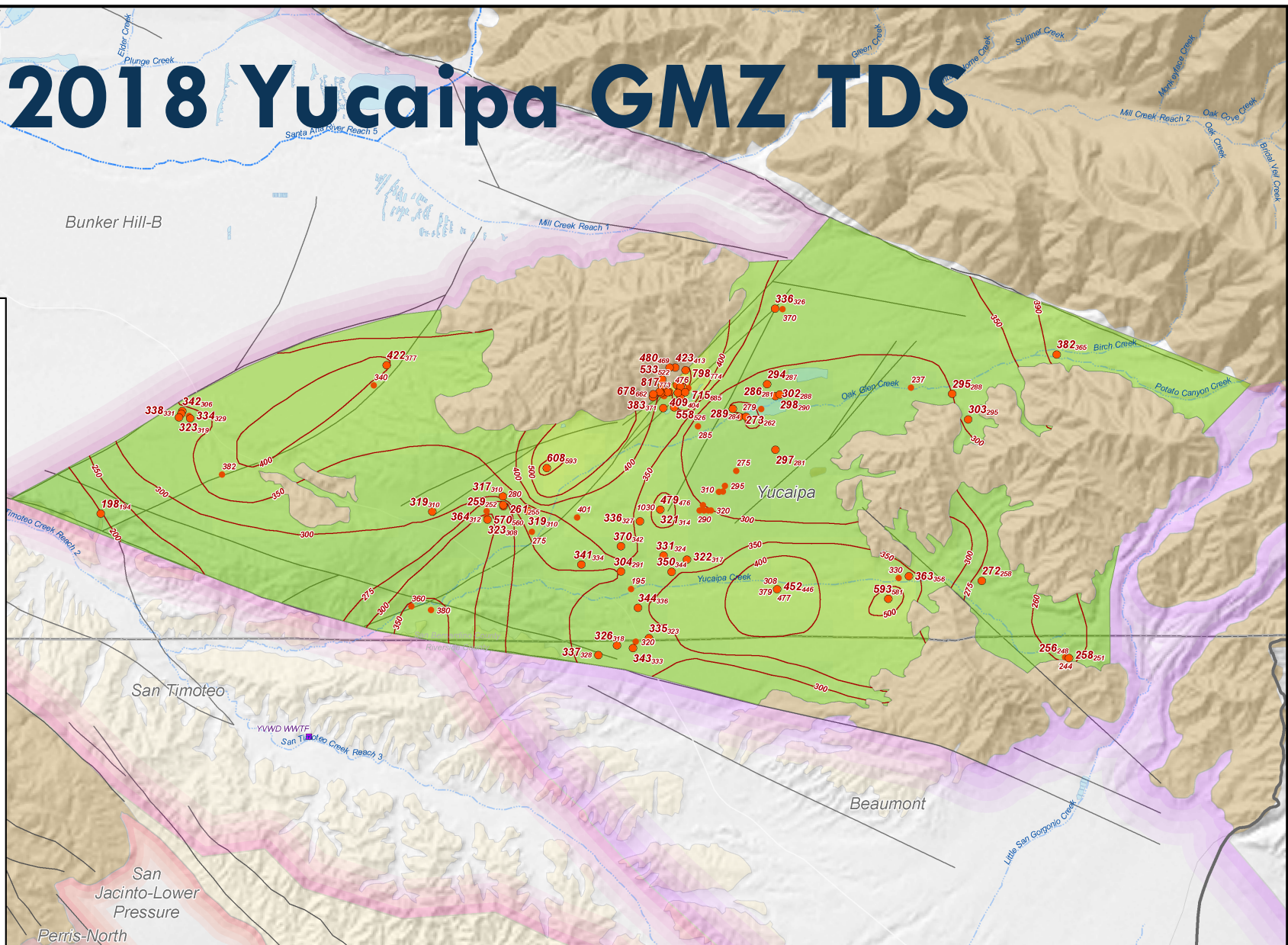
Geology

Quaternary Alluvium

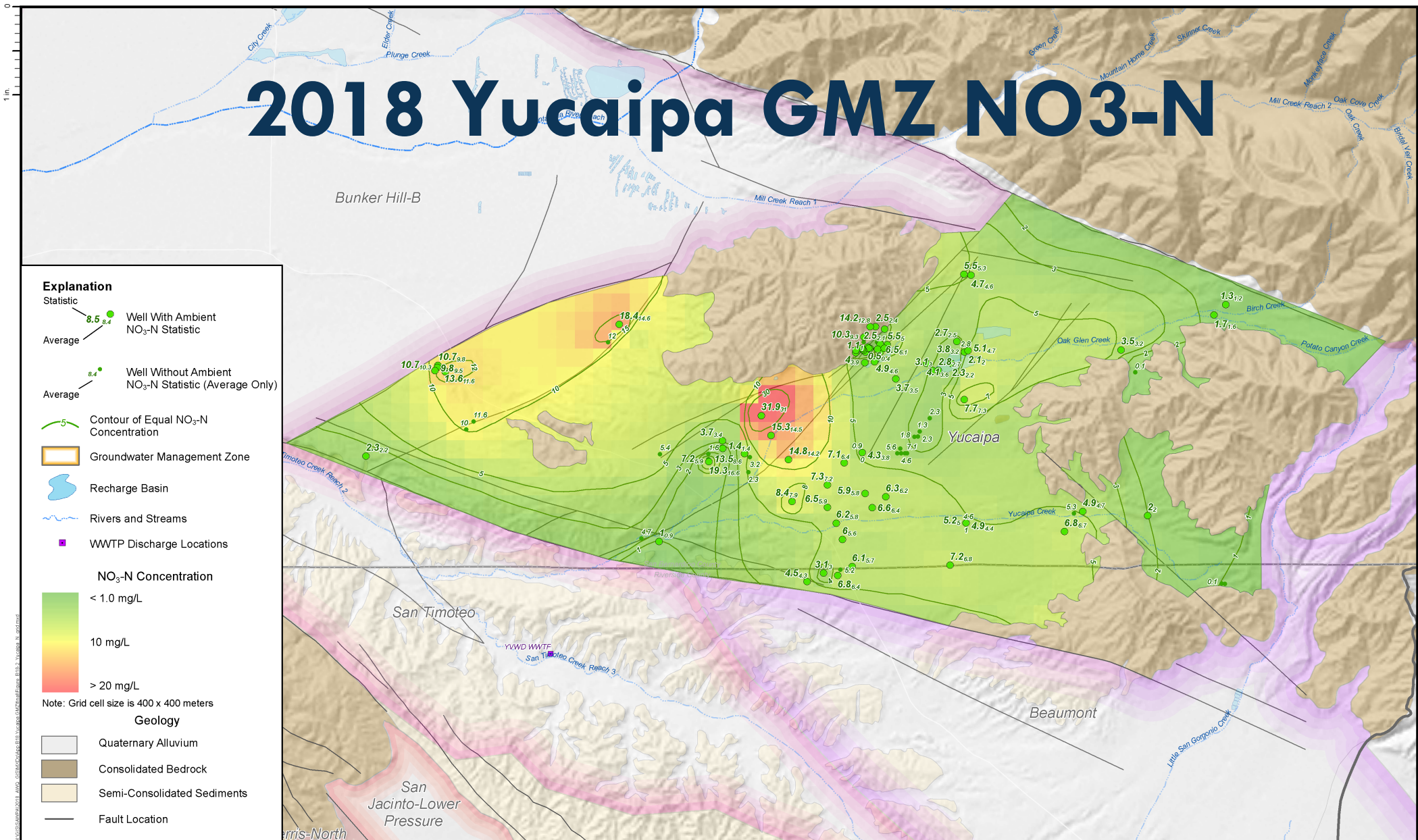
Consolidated Bedrock

Semi-Consolidated Sediments

Fault Location



2018 Yucaipa GMZ NO3-N

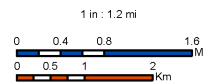


Prepared by:



Author: EC
Date: 3/24/2020

File Name: Figure_B18-2_Yucaipa_N_grid



References:

1. Coordinate System: NAD 1983 UTM Zone 11N
Projection: Transverse Mercator
Datum: North American 1983
Units: Meter
2.
3.

Prepared for:



SAWPA Basin Monitoring Program Task Force
Recomputation of Ambient Water Quality
for the Period 1999 to 2018

NO₃-N Concentration and Contour Map
Yucaipa GMZ
Santa Ana River Watershed
Attachment B18-2



Questions?