Stakeholder workshop No. 1: Building a vision for a sustainable Arlington Basin

Arlington Basin Groundwater Sustainability Plan (GSP)

July 30, 2020 • 3 p.m. – 5 p.m.

WESTERN MUNICIPAL WATER DISTRICT

Quick Zoom orientation

Workshop goals

- Share what we've learned about the Basin

- Describe the role of the Water Budget

- Document **stakeholder's vision** of what a "sustainable Arlington Basin" means.

This input will be used by the project team to **inform** the GSP's sustainability goals and projects and management actions.

Presenters

Tiffany Meyer
Stakeholder Engagement Lead
Water Systems Consulting (WSC)

Brian Villalobos
Principal Hydrogeologist
Geoscience

Ryan Shaw
Groundwater Sustainability Agency (GSA) Representative
Western Municipal Water District

Workshop agenda

10 min	Project Overview
20 min	Key Takeaways of the Basin Setting
30 min	**GROUP EXERCISE:** Building a Vision for a Sustainable Arlington Basin
15 min	Water Budget and Sustainable Management Criteria
15 min	What's Next and Audience Q&A

Who's here?

ENVIRONMENTAL / CONSERVATION GROUPS

Santa Ana Watershed Project Authority (SAWPA)

INTEGRATED WATER MANAGEMENT

Bureau of Reclamation

COMMUNITY GROUPS

Spanish Town Heritage Foundation

PRIVATE WATER USERS

La Sierra University

TRIBES

Soboba Band of Luiseño Indians

URBAN / AGRICULTURE WATER USERS

Western Municipal Water District

Elsinore Valley Municipal Water District

City of Riverside

Corona – The Circle City – Established May 4, 1886 – To Cherish Our Past - To Plan Our Future

Audience polls

1. *What brought you here today?*

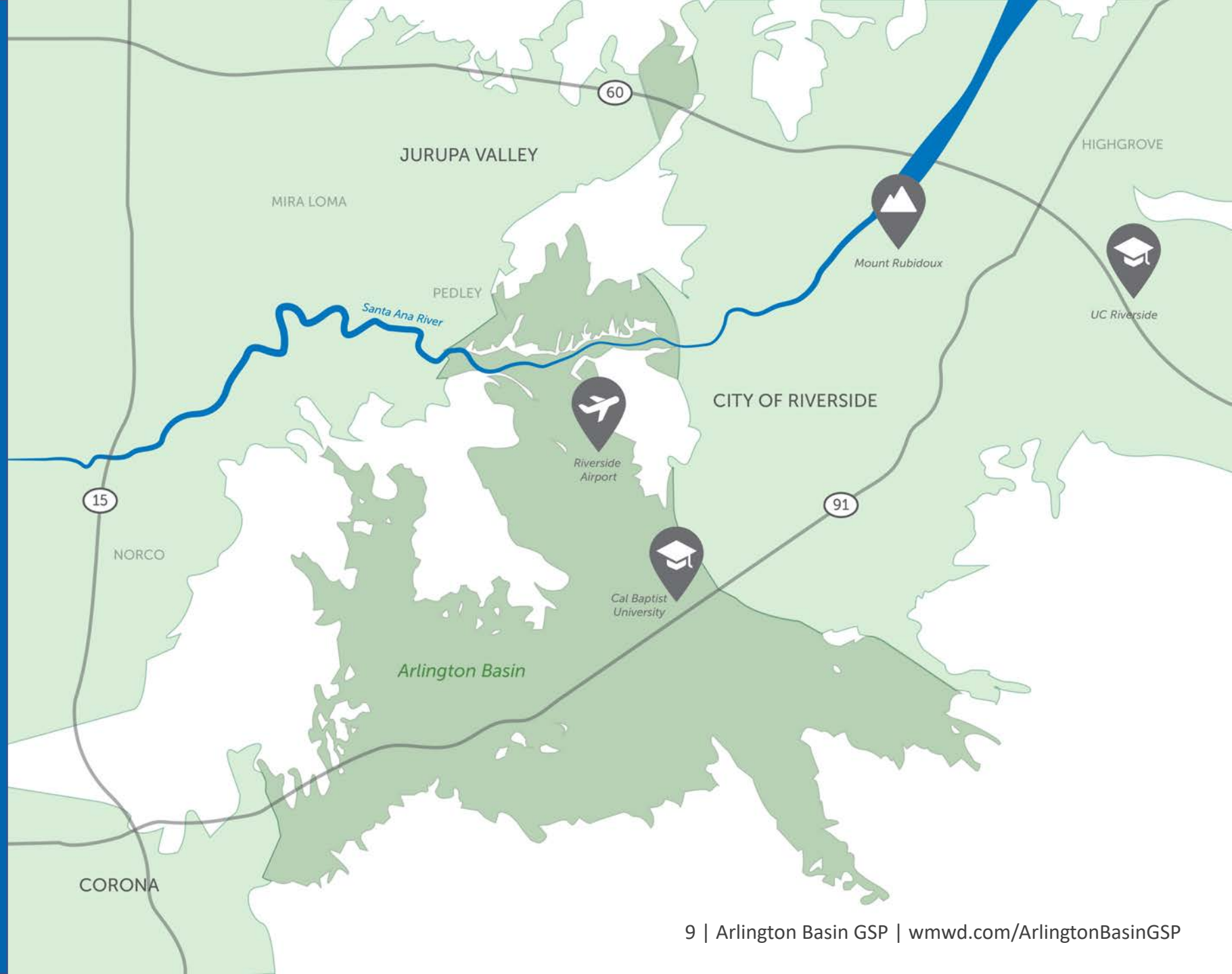
2. *Rate your understanding of groundwater and its use in the Arlington Basin?*

3. *Did you attend the April 2019 kick off meeting?*

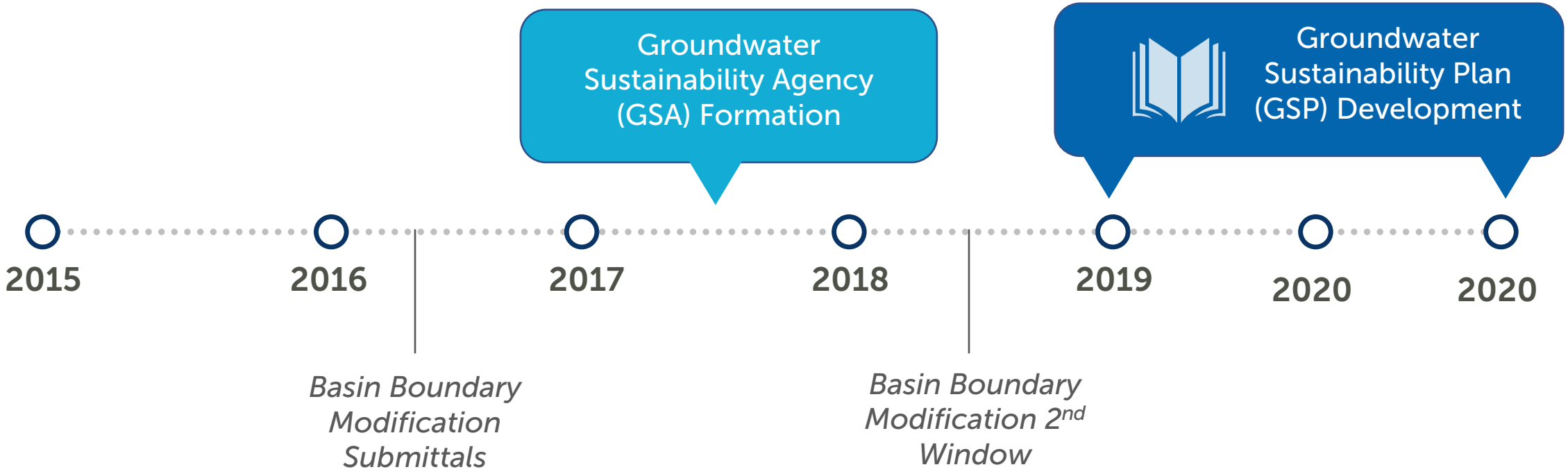
Project overview

Ryan Shaw
Western Municipal Water District,
Arlington Basin GSP Groundwater Sustainability Agency

Securing sustainable groundwater in the Arlington Basin



Arlington Basin governance



Sustainable Groundwater Management Act (SGMA) deadlines

Opportunities for stakeholders to inform the GSP

Step 1. Establish Governance Structure

Jan '19 – Apr '19

Apr. 2019
PUBLIC MEETING
and GSA Formation

Step 2. Document Basin Setting

Apr '19 – Jul '20

July 30, 2020
STAKEHOLDER WORKSHOP:
Building a Shared Vision of a Sustainable Arlington Basin

WE ARE HERE

Step 3. Set Sustainability Goals

Jul '20 – Sep '20

Aug. 27, 2020
STAKEHOLDER WORKSHOP
Sustainable Goal Setting

Step 4. Develop Plan to Sustainability

Sep '20 – Nov '20

Sep. 30, 2020
STAKEHOLDER WORKSHOP
Projects and Management Actions

Step 5. Adopt the Plan

Nov '20 — Feb '21

Apr. 2021
PUBLIC COMMENT PERIOD
Full Draft of GSP

Questions about the project overview?

WESTERN MUNICIPAL WATER DISTRICT

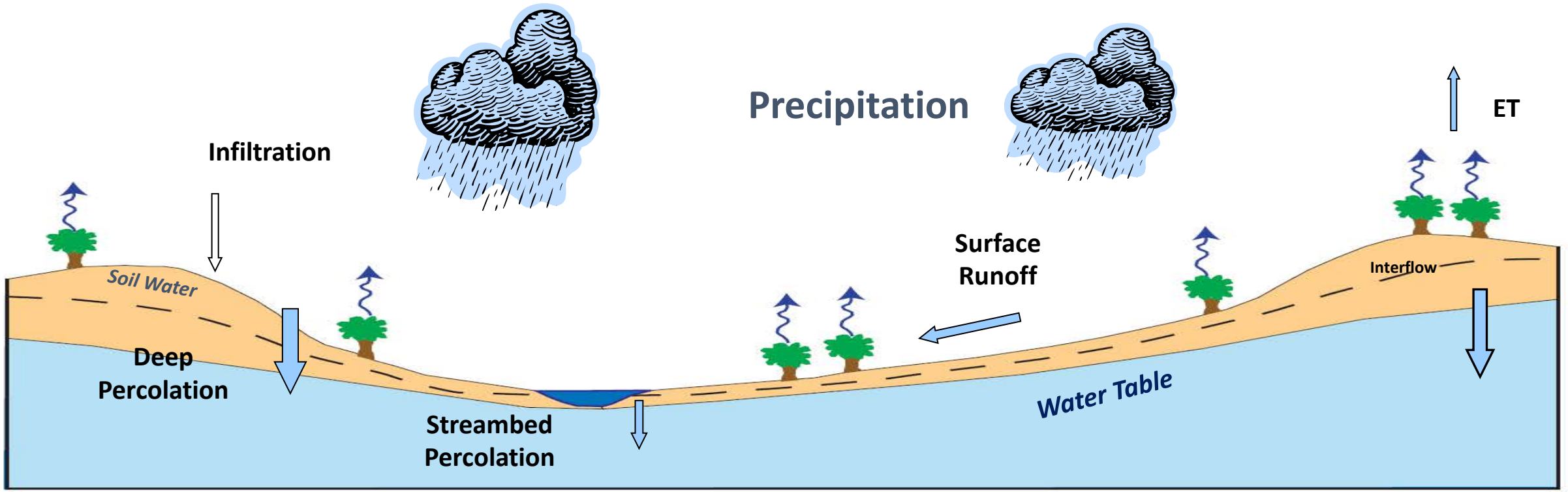
Groundwater 101

Brian Villalobos
Hydrogeologist, Geoscience

What is groundwater?

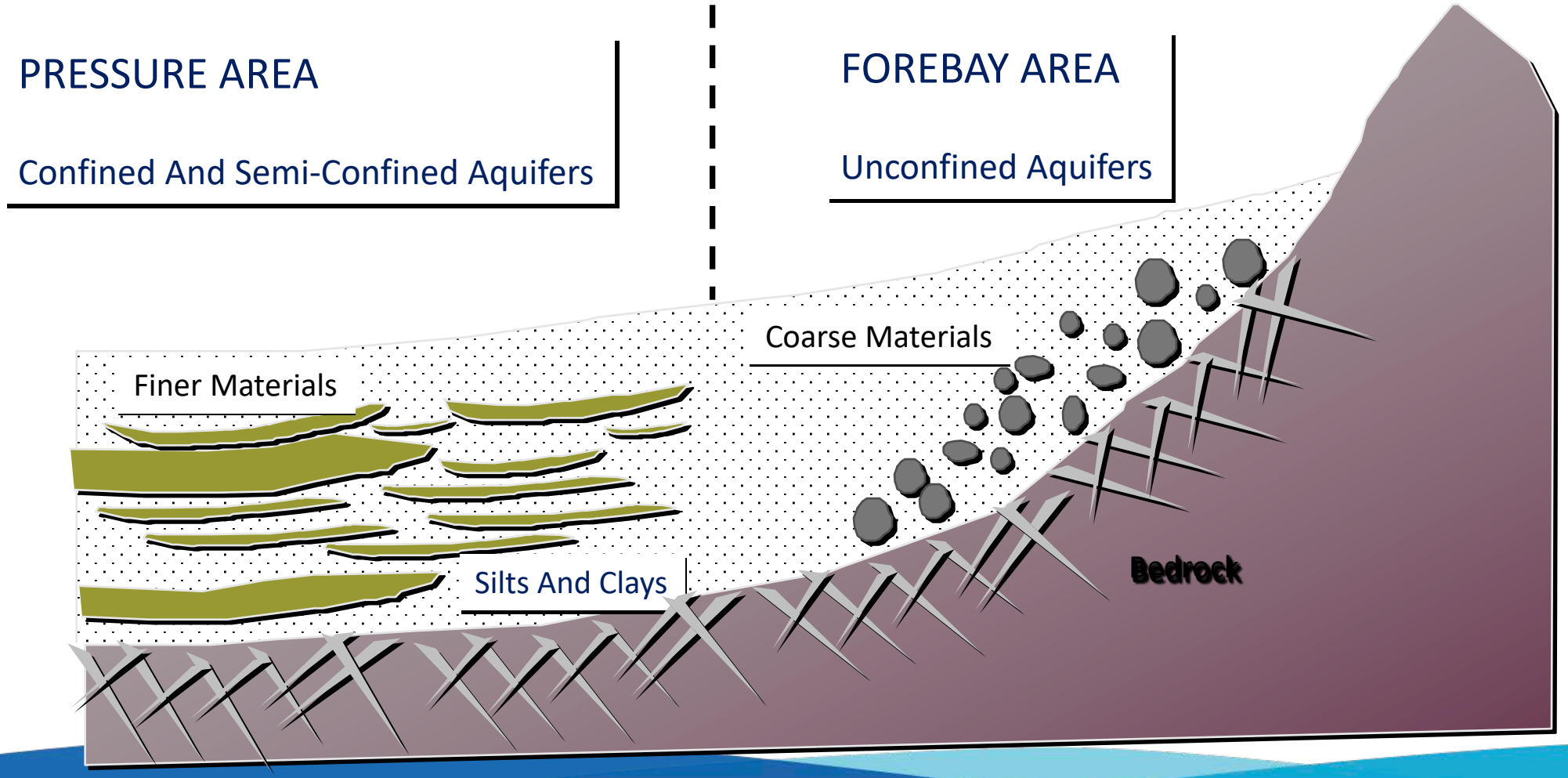
Groundwater is the water found underground in the cracks and spaces in soil, sand and rock. It is stored in and moves slowly through geologic formations of soil, sand and rocks called **aquifers**.

What is groundwater?



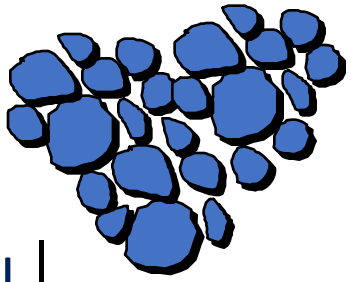
Surface water / groundwater interface

Typical alluvial groundwater basin



Primary and secondary porosity

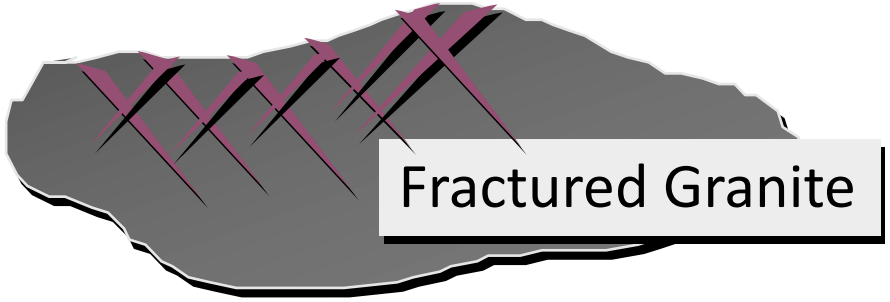
Primary Porosity



Sand & Gravel

Ground Water Is Transmitted Through Primary Pore Spaces (Interstices)

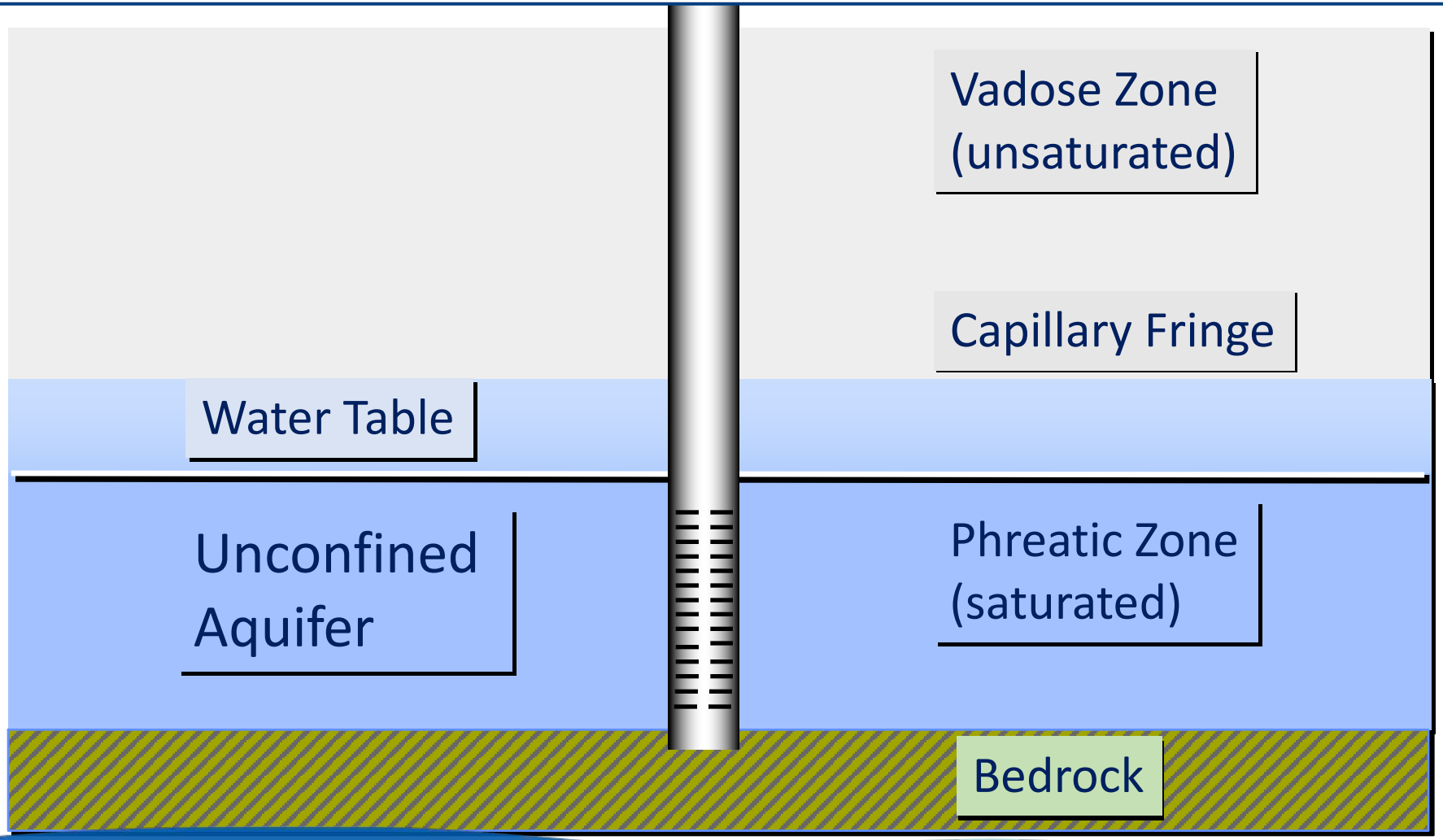
Secondary Porosity



Fractured Granite

Ground Water Moves Through Secondary Porosity Features

Unconfirmed aquifer (Arlington Basin)



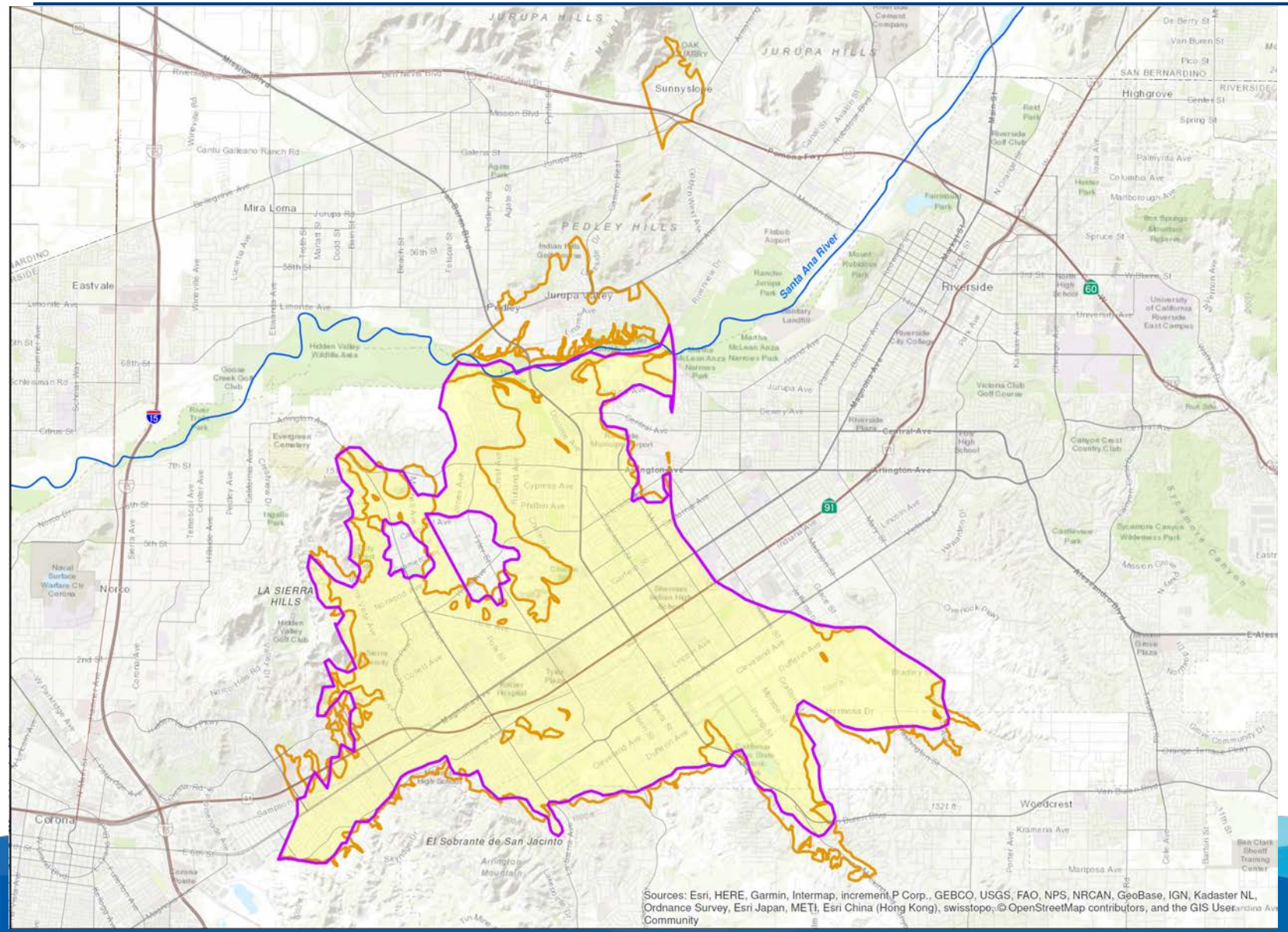
Questions about groundwater 101?

WESTERN MUNICIPAL WATER DISTRICT

Key takeaways of the Basin Setting

Brian Villalobos
Hydrogeologist, Geoscience

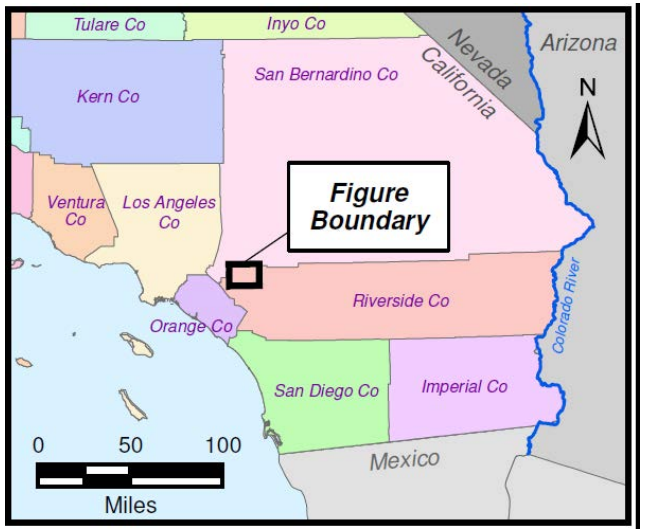
Arlington Basin groundwater boundaries



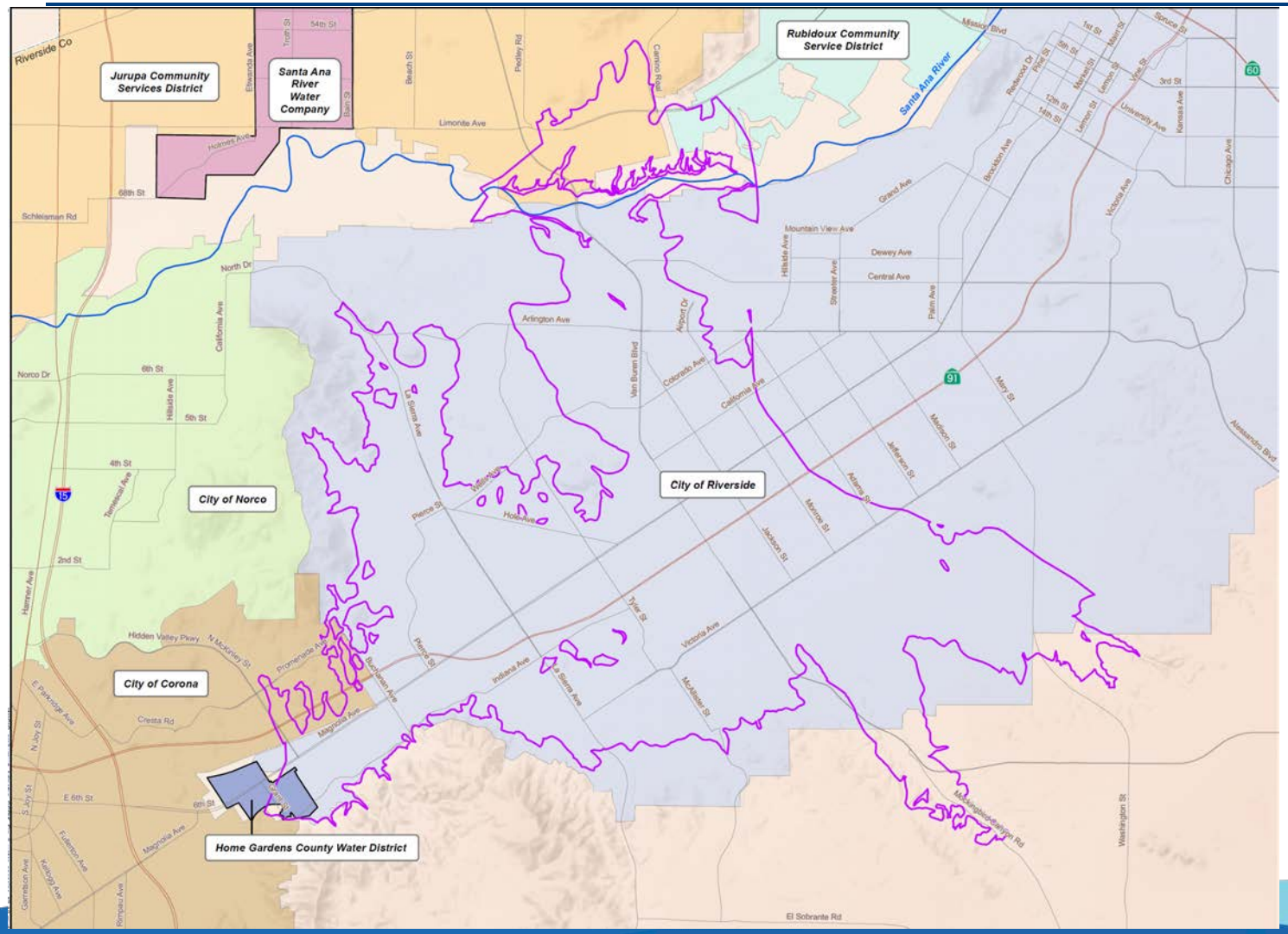
EXPLANATION

Arlington Subbasin Boundary (DWR 2016 Completed Basin Modification)

Arlington Subbasin GSA Boundary



Arlington Basin water agencies



EXPLANATION

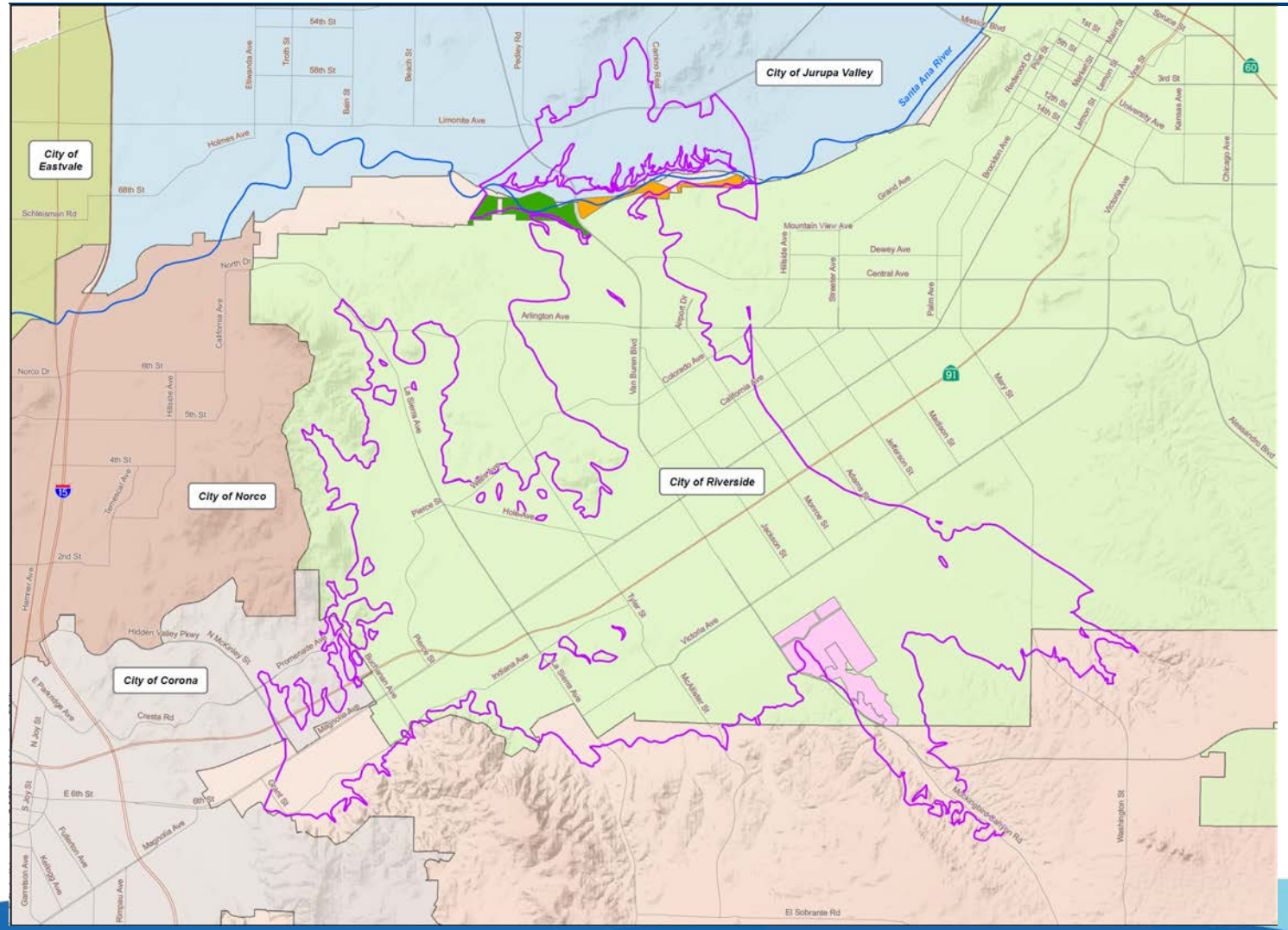
Arlington Subbasin Boundary (DWR 2016 Completed Basin Modification)

Water Agency (DWR Atlas, 2019)

- City of Corona
- City of Norco
- City of Riverside
- Home Gardens County Water District
- Jurupa Community Services District
- Rubidoux Community Service District
- Santa Ana River Water Company

Note: Western Municipal Water District Service Area Covers Entire Map View Within Riverside County

Arlington Basin municipalities and special lands



EXPLANATION

Arlington Subbasin Boundary (DWR 2016 Completed Basin Modification)

California Protected Area, 2019

Santa Ana River Wildlife Area (Operated by Riverside Co. Regional Park and Open Space District

California Citrus State Historical Park (Operated by Calif. Dept. of Parks and Recreation)

Hidden Valley (Operated by Calif. Dept. of Fish and Wildlife)

Note: Entire Riverside County is Covered by the Calif. Coastal Conservancy

City of Corona

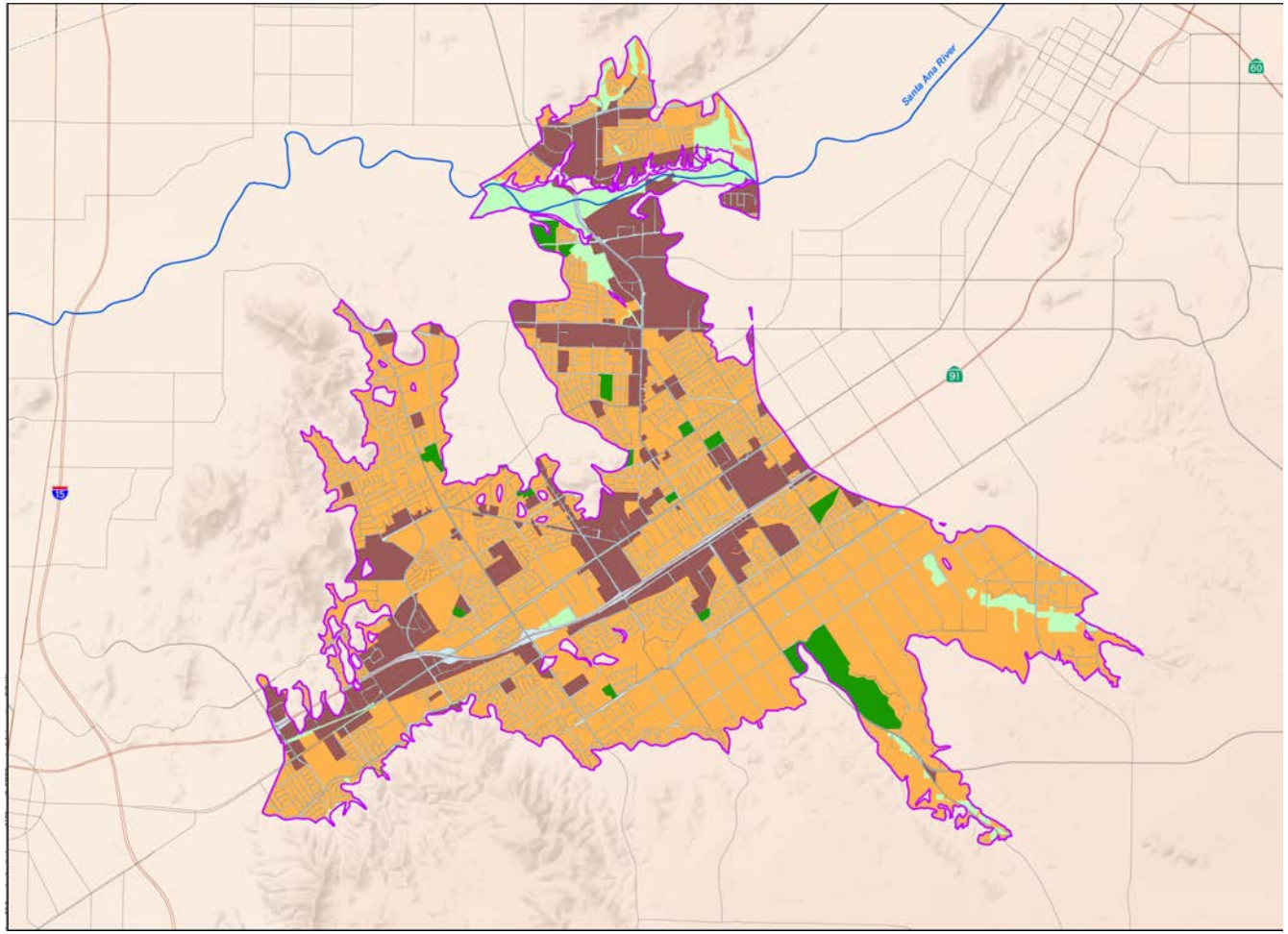
City of Eastvale

City of Jurupa Valley

City of Norco

City of Riverside

Arlington Basin 2012 land use



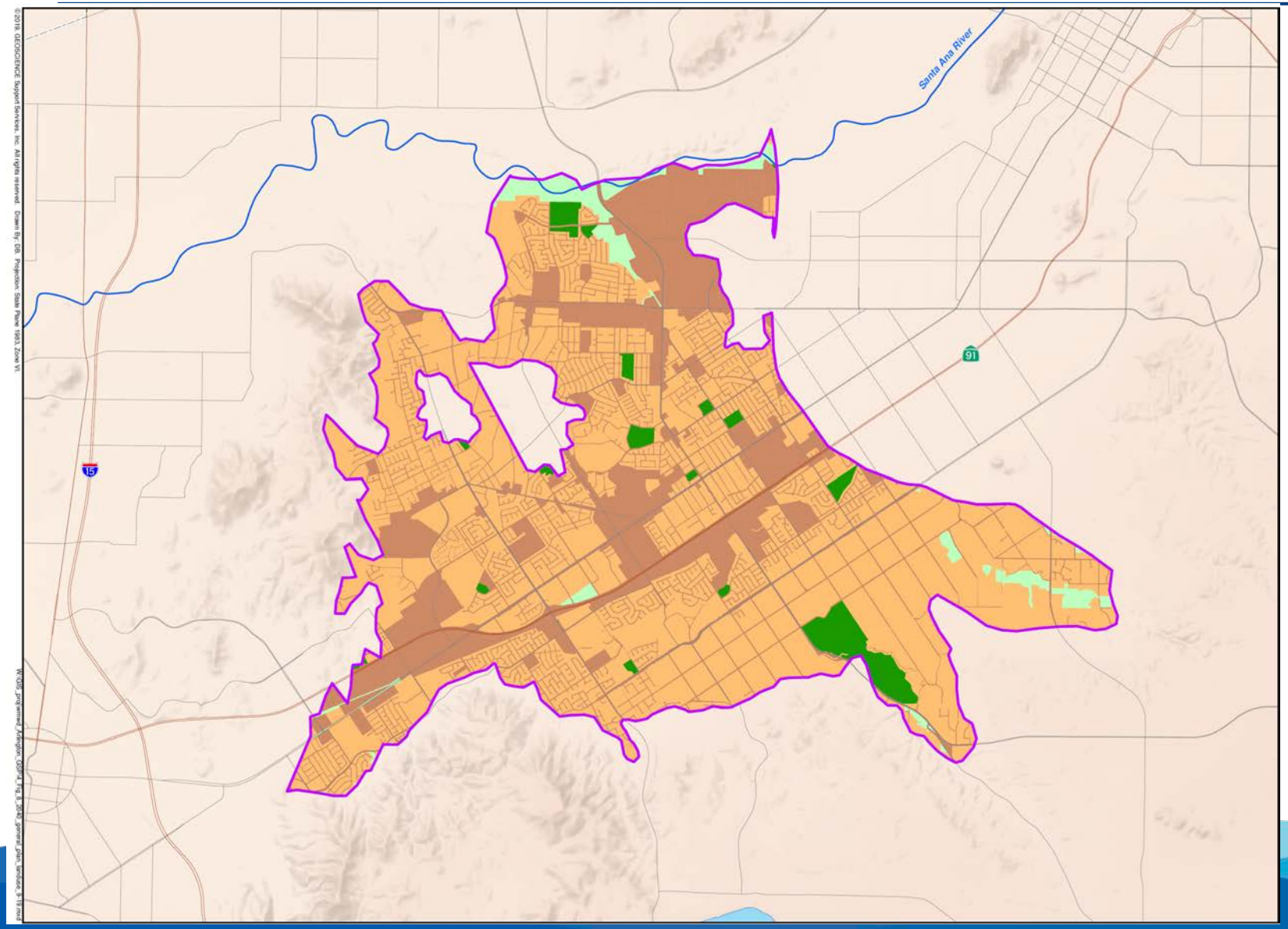
EXPLANATION

Arlington Subbasin Boundary (DWR 2016 Completed Basin Modification)

Land Use Type (SCAG, 2015a)

- Agriculture
- Commercial / Industrial / Public Facilities
- Open Space
- Residential

Arlington Basin general plan (future) land use conditions



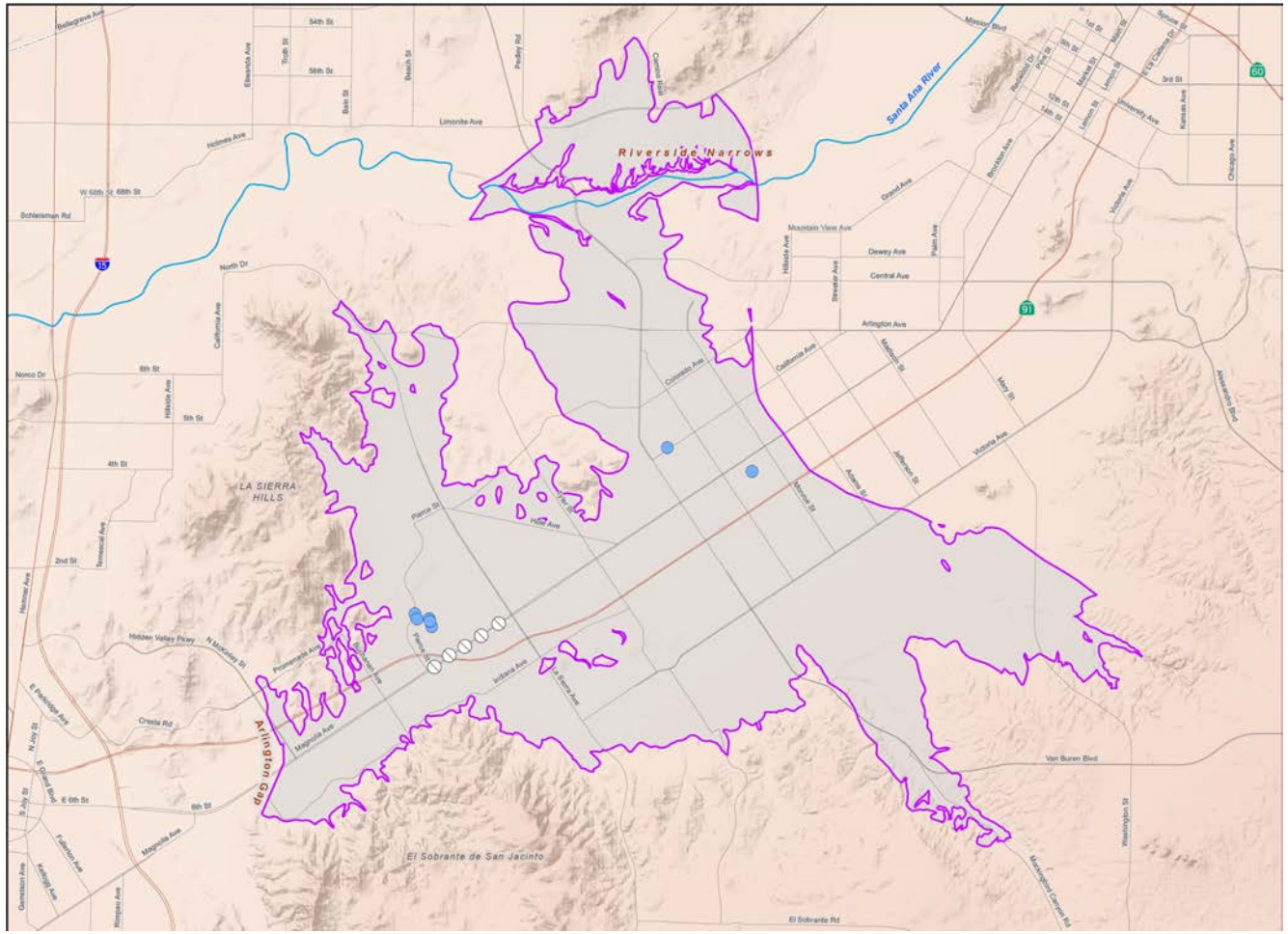
EXPLANATION

Arlington Subbasin Boundary (DWR 2016 Completed Basin Modification)

Land Use Type (SCAG, 2015b)

- Agriculture
- Commercial / Industrial / Public Facilities
- Open Space
- Residential

Arlington Basin – Active Production Wells



EXPLANATION

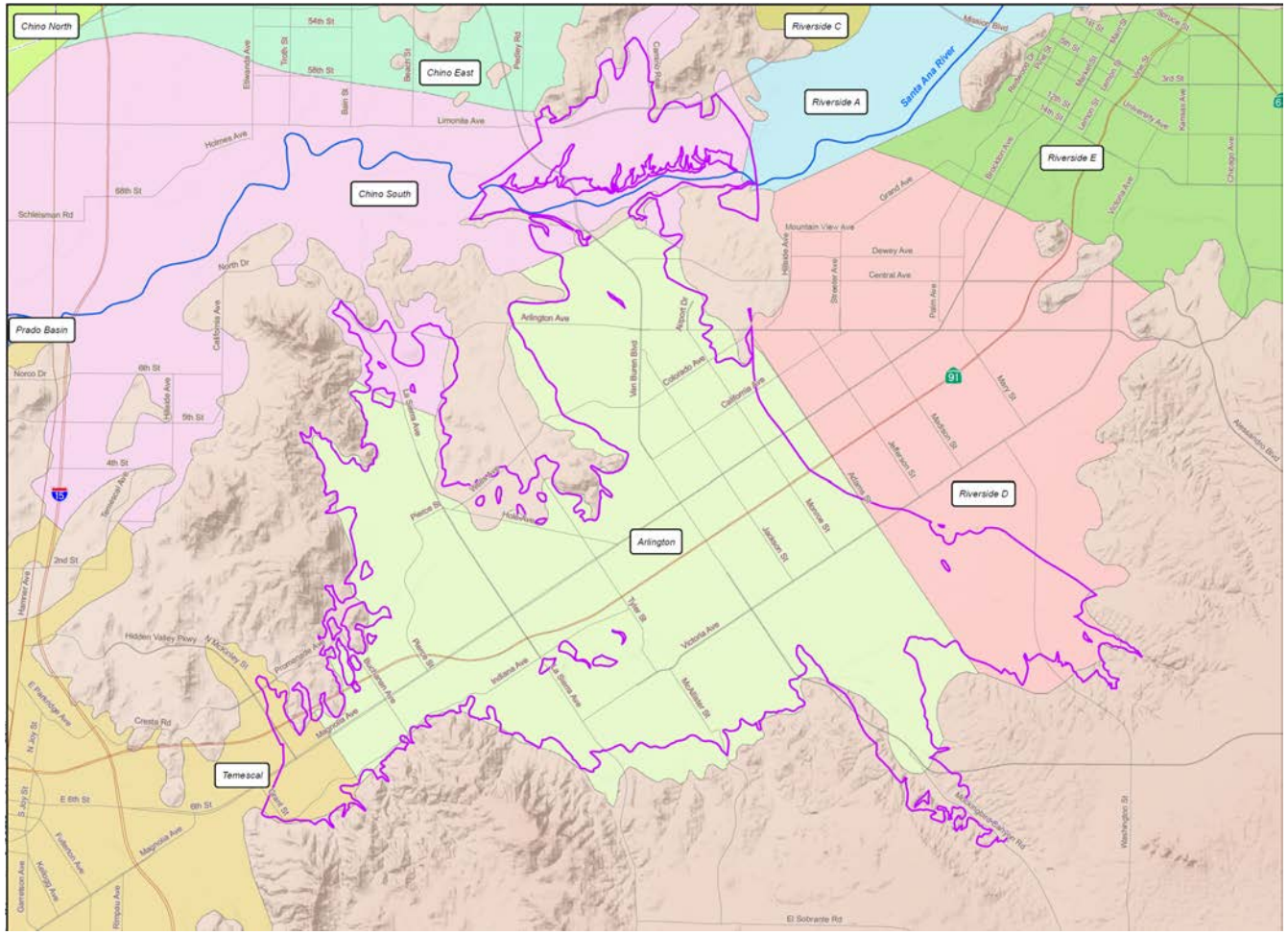
Arlington Subbasin Boundary
(SGMA Basin Boundary 9-17)

Production Well Type

Desalter Well

Other Production Well

Arlington Basin – Groundwater Management Zones



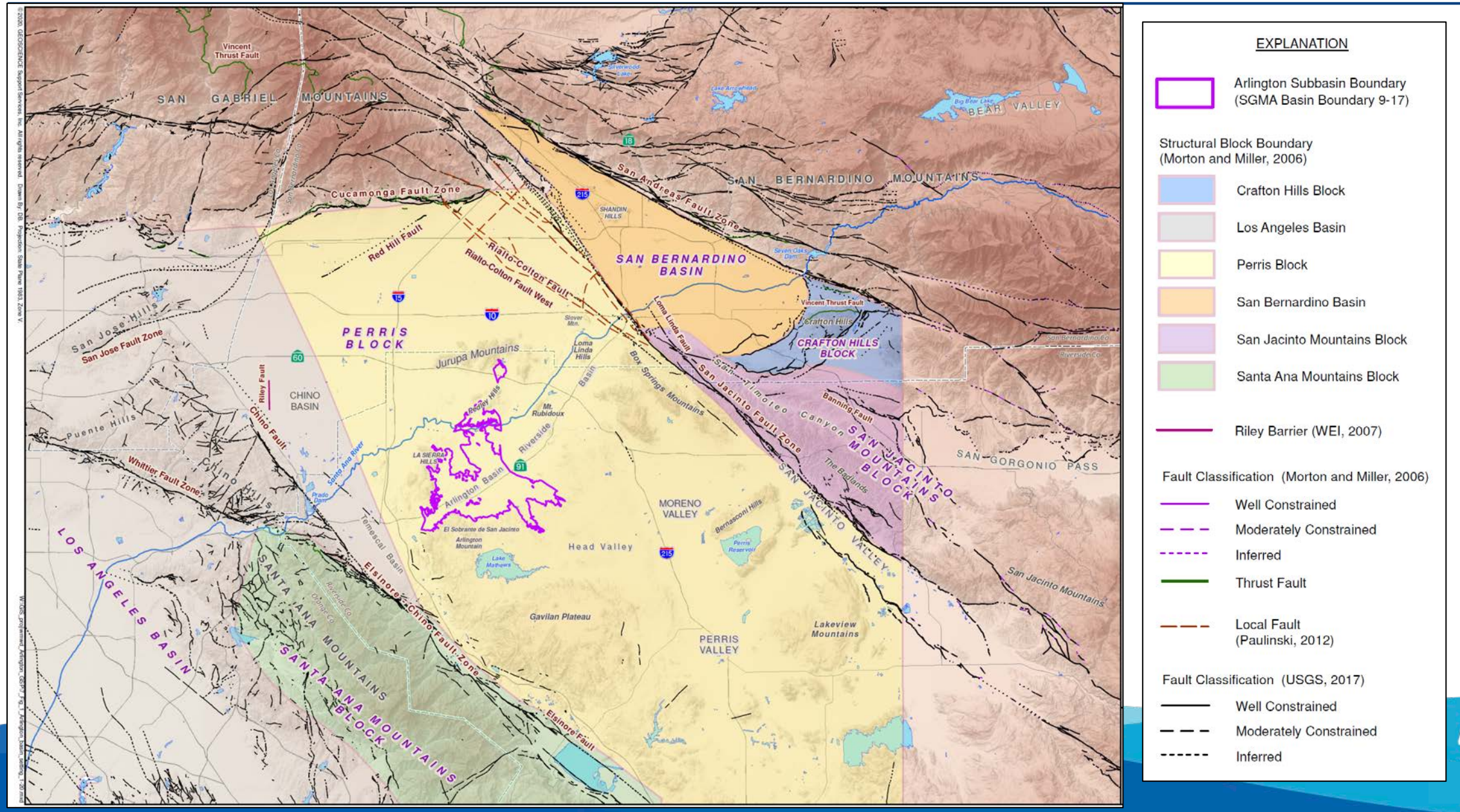
EXPLANATION

Arlington Subbasin Boundary (DWR 2016 Completed Basin Modification)

Management Zones (WEI, 2004)

- Arlington
- Chino East
- Chino North
- Chino South
- Prado Basin
- Riverside A
- Riverside C
- Riverside D
- Riverside E
- Temescal

Arlington Basin regional geologic setting



EXPLANATION

Arlington Subbasin Boundary (SGMA Basin Boundary 9-17)

Structural Block Boundary (Morton and Miller, 2006)

- Crafton Hills Block
- Los Angeles Basin
- Perris Block
- San Bernardino Basin
- San Jacinto Mountains Block
- Santa Ana Mountains Block

Riley Barrier (WEI, 2007)

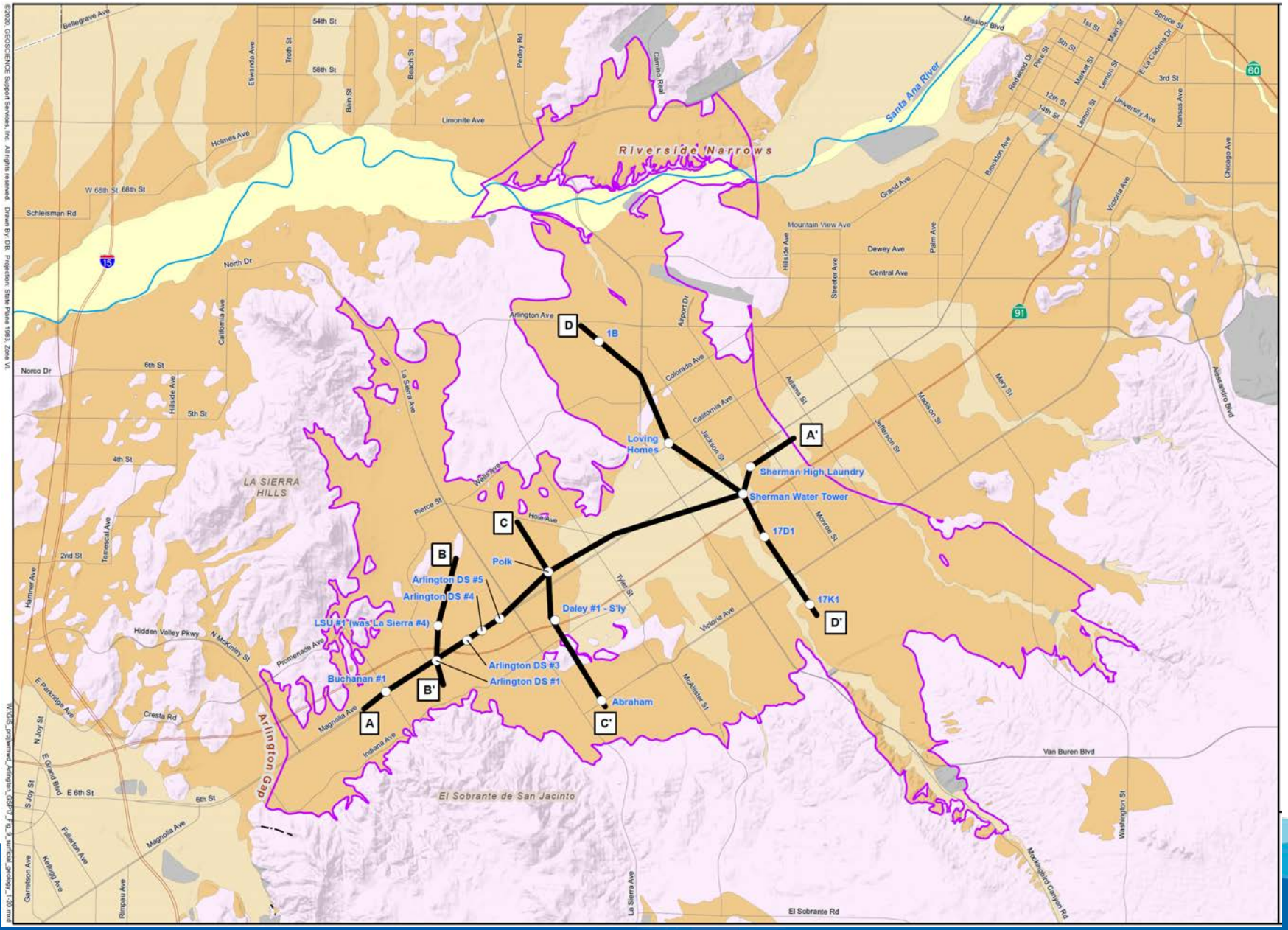
Fault Classification (Morton and Miller, 2006)

- Well Constrained
- Moderately Constrained
- Inferred
- Thrust Fault
- Local Fault (Paulinski, 2012)

Fault Classification (USGS, 2017)

- Well Constrained
- Moderately Constrained
- Inferred

Arlington Basin geologic setting



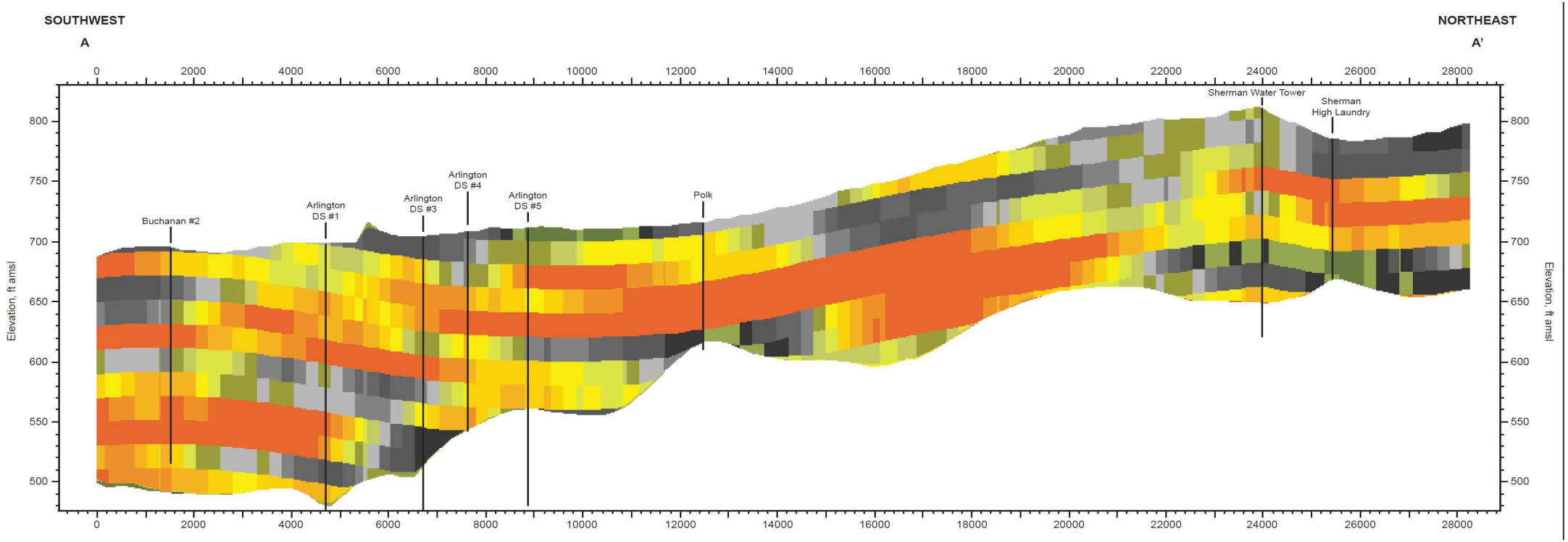
EXPLANATION

Arlington Subbasin Boundary (SGMA Basin Boundary 9-17)

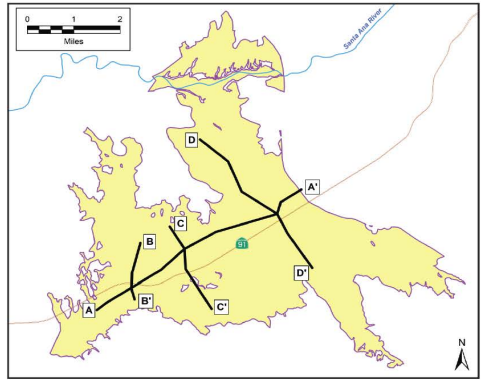
Geologic Units Generalized from
1) USGS OFR 2006-1217 (Morton and Miller, 2006)
2) USGS OFR 2010-1274 (Matti, et al., 2015)

- Artificial Fill
- Very Young and Young Axial-Channel and Wash Deposits (Holocene)
- Very Young and Young Alluvial Deposits (Pleistocene)
- Old and Very Old Alluvial Deposits (Pleistocene)
- Bedrock (Miocene and Older, Undifferentiated)
- Fault
  Solid - Well Constrained
  Dashed - Moderately Constrained
- A — A' Cross-Section Location
- Well Used in Cross-Section

Arlington Basin cross-section

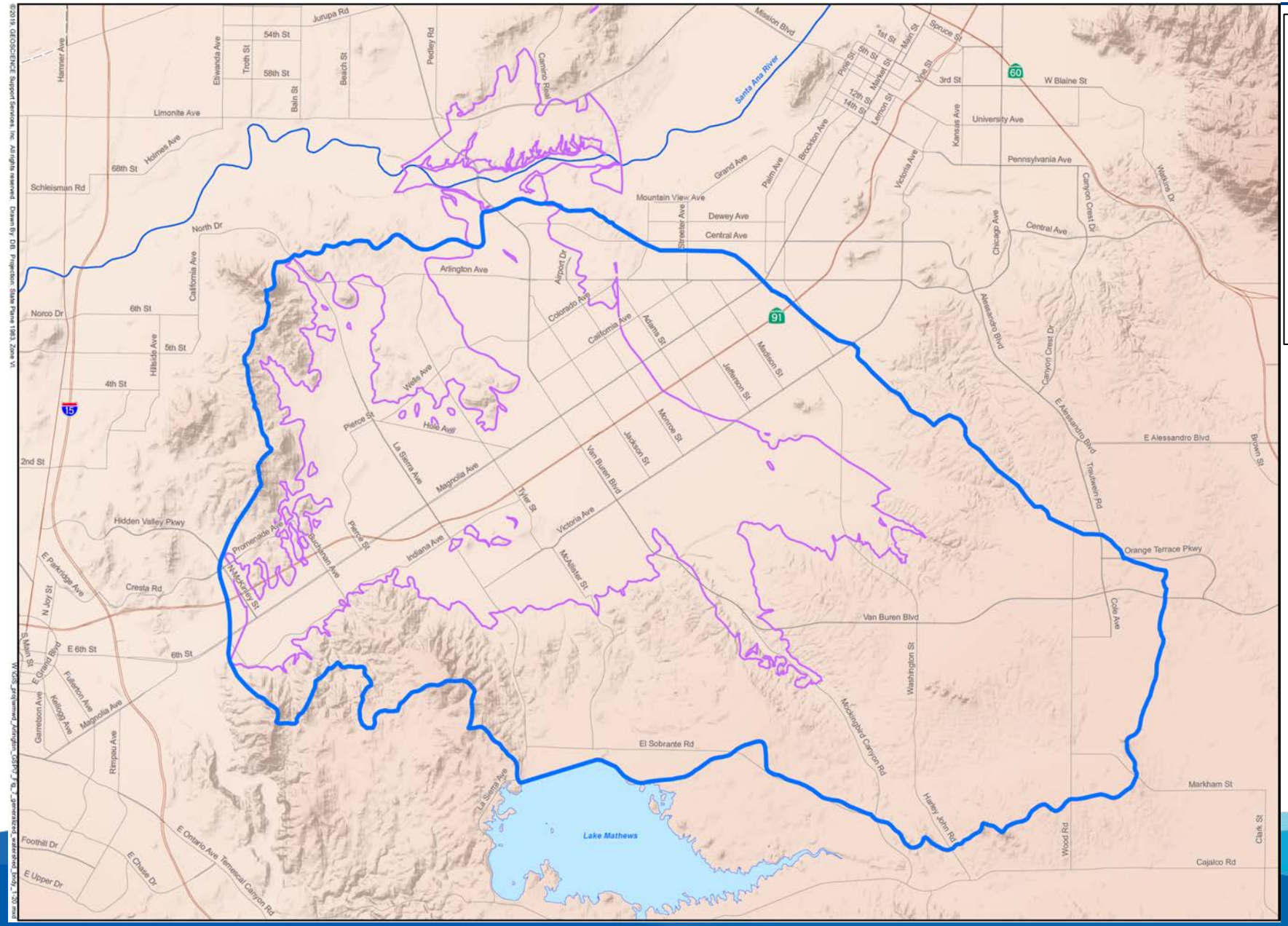


- High Plasticity Clays
- Clay
- Silt
- Sandy Silt
- Clayey Sand
- Silty Sand
- Sand (Minor Silt/Clay)
- Clean Sand
- Gravel with Clay
- Gravel with Silt
- Gravel with Sand
- Clean Gravel



GEOLOGIC
CROSS-SECTION A-A'

Arlington Basin watershed boundary

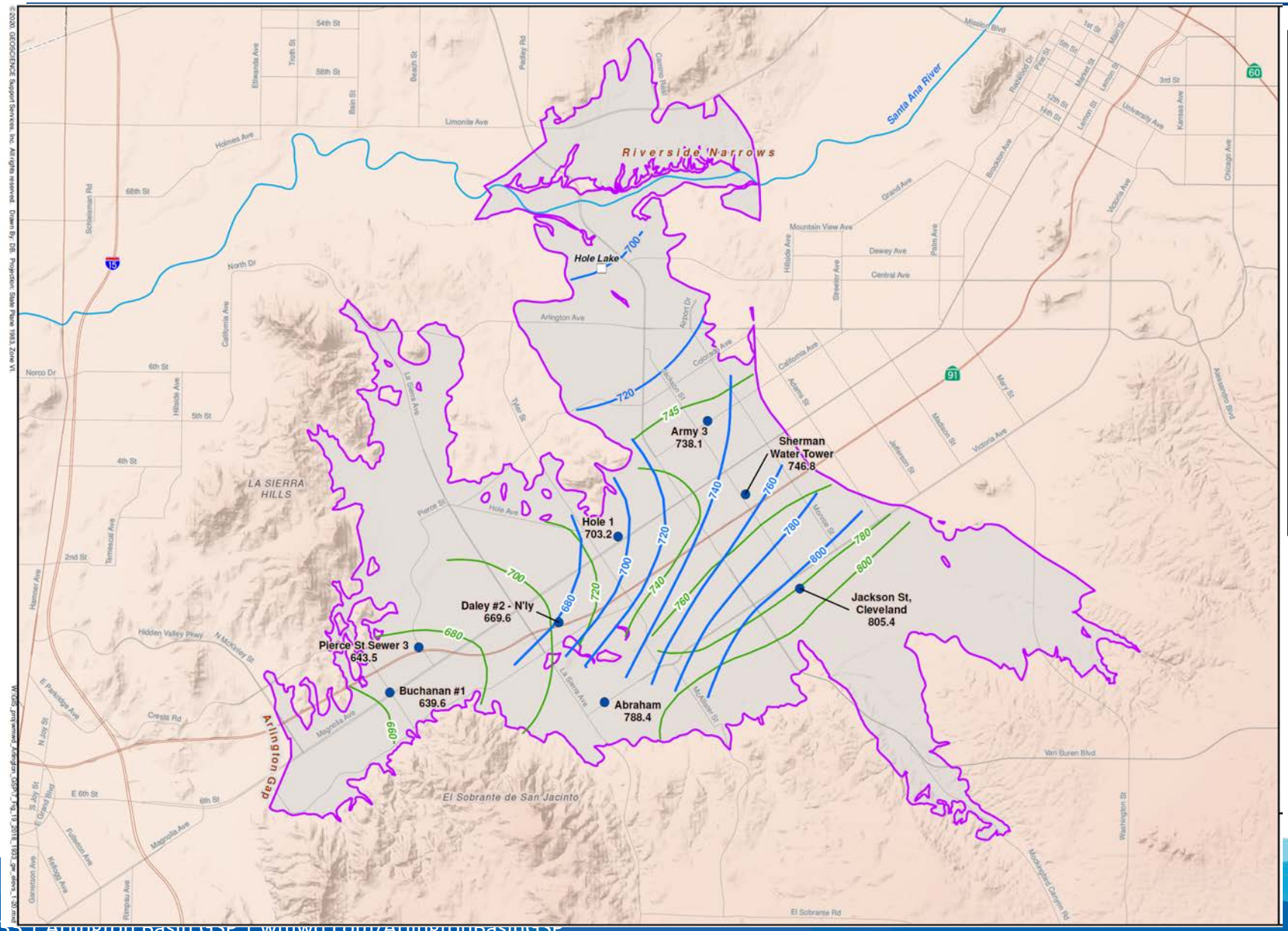


EXPLANATION

Arlington Subbasin Boundary
(SGMA Basin Boundary 9-17)

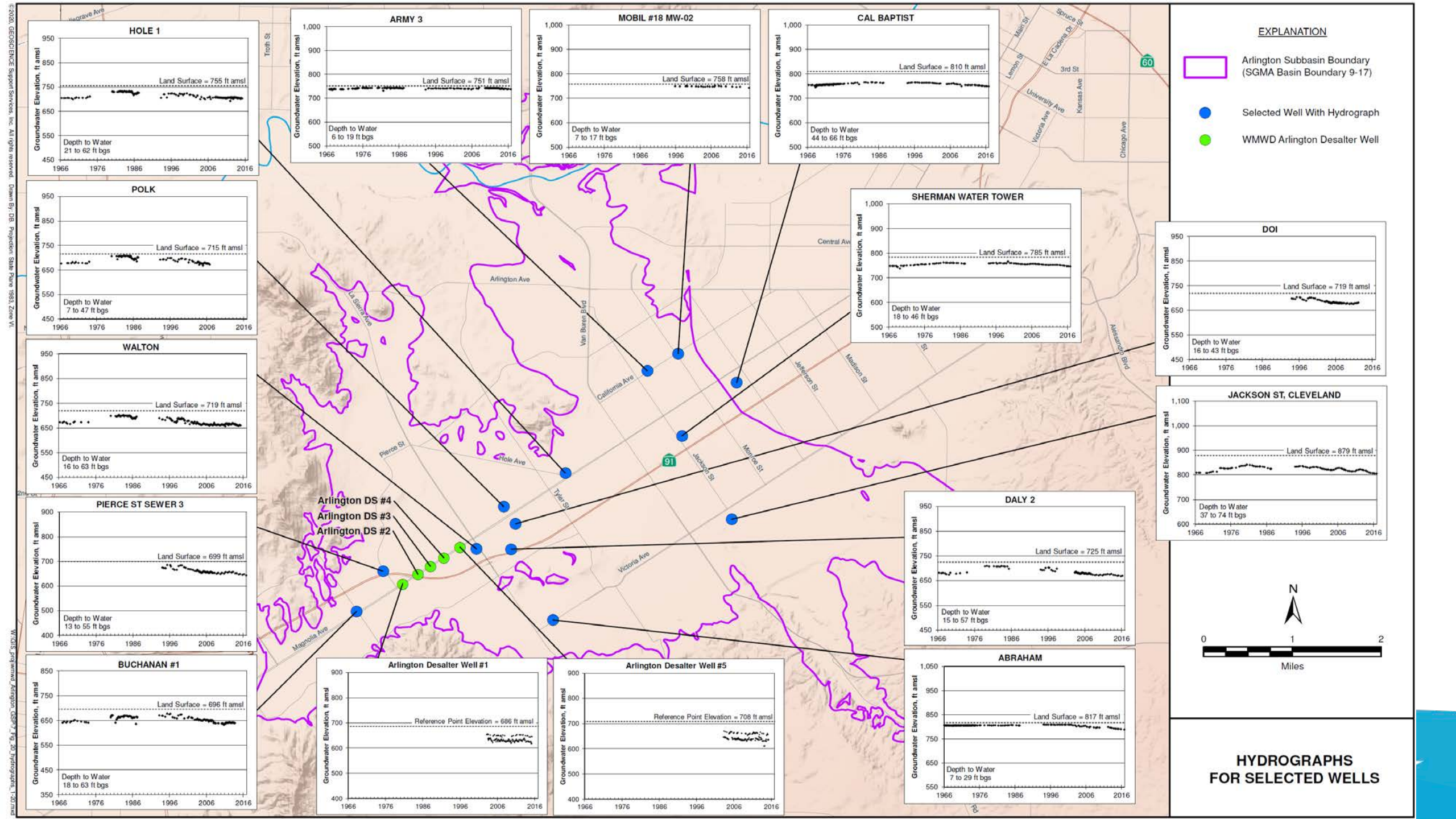
Generalized Watershed Boundary
(Modified from DWR)

Arlington Basin groundwater contours 2018 and 1933

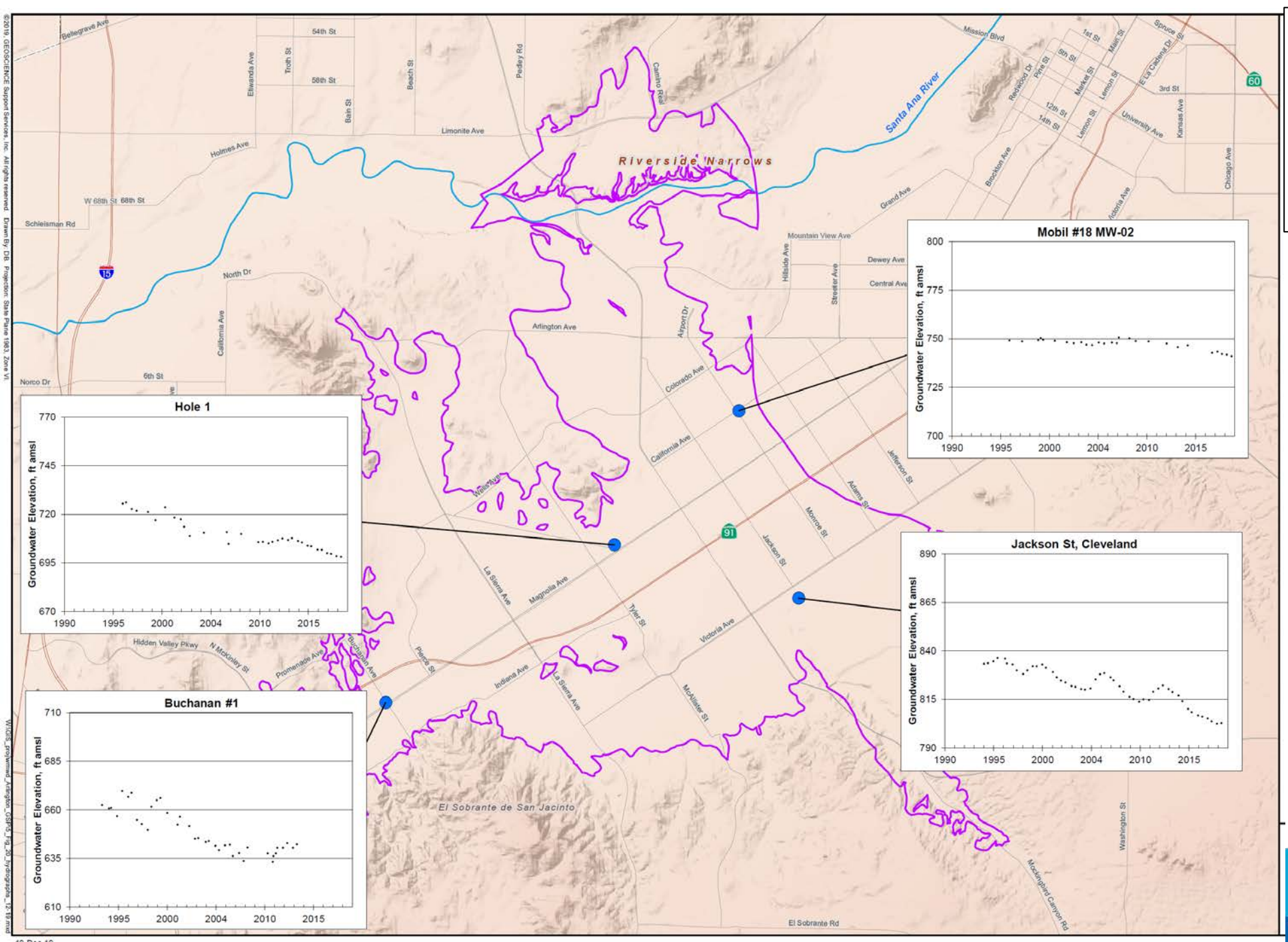


EXPLANATION

- Arlington Subbasin Boundary (SGMA Basin Boundary 9-17)
- 700 — January 1933 Groundwater Elevations (WMWD, 2010)
- 780 — Spring 2018 Groundwater Elevations (COOP, 2019)
- Spring 2018 Groundwater Elevation Control Point Name and Elevation (ft amsl)



W:\GIS_proj\wmwd_Arlington_GSP\7_Fig_20_Hydrographs_1-20.mxd

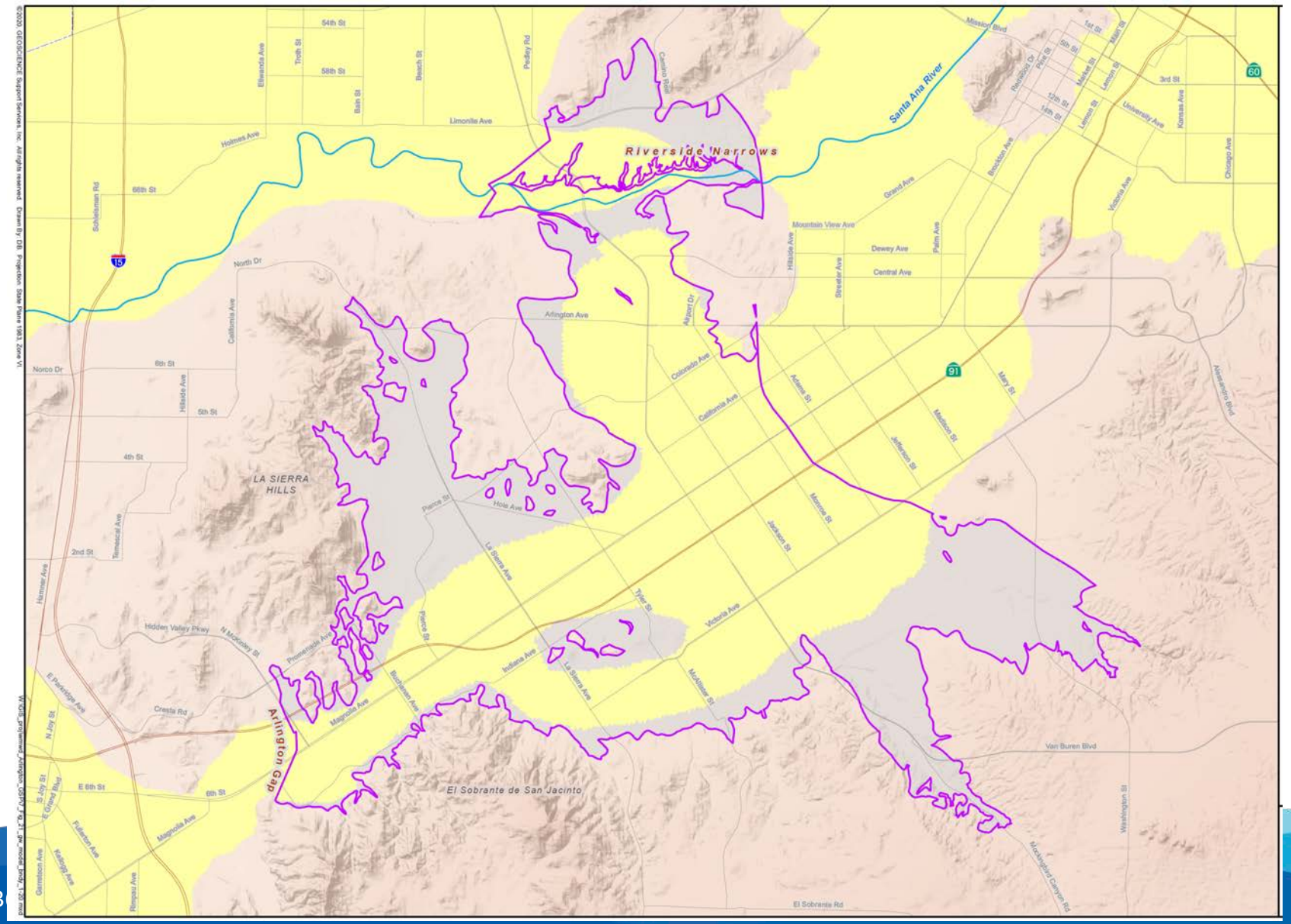


EXPLANATION

Arlington Subbasin Boundary
(SGMA Basin Boundary 9-17)

Selected Well With Hydrograph

Arlington Basin Integrated Santa Ana River Model active area

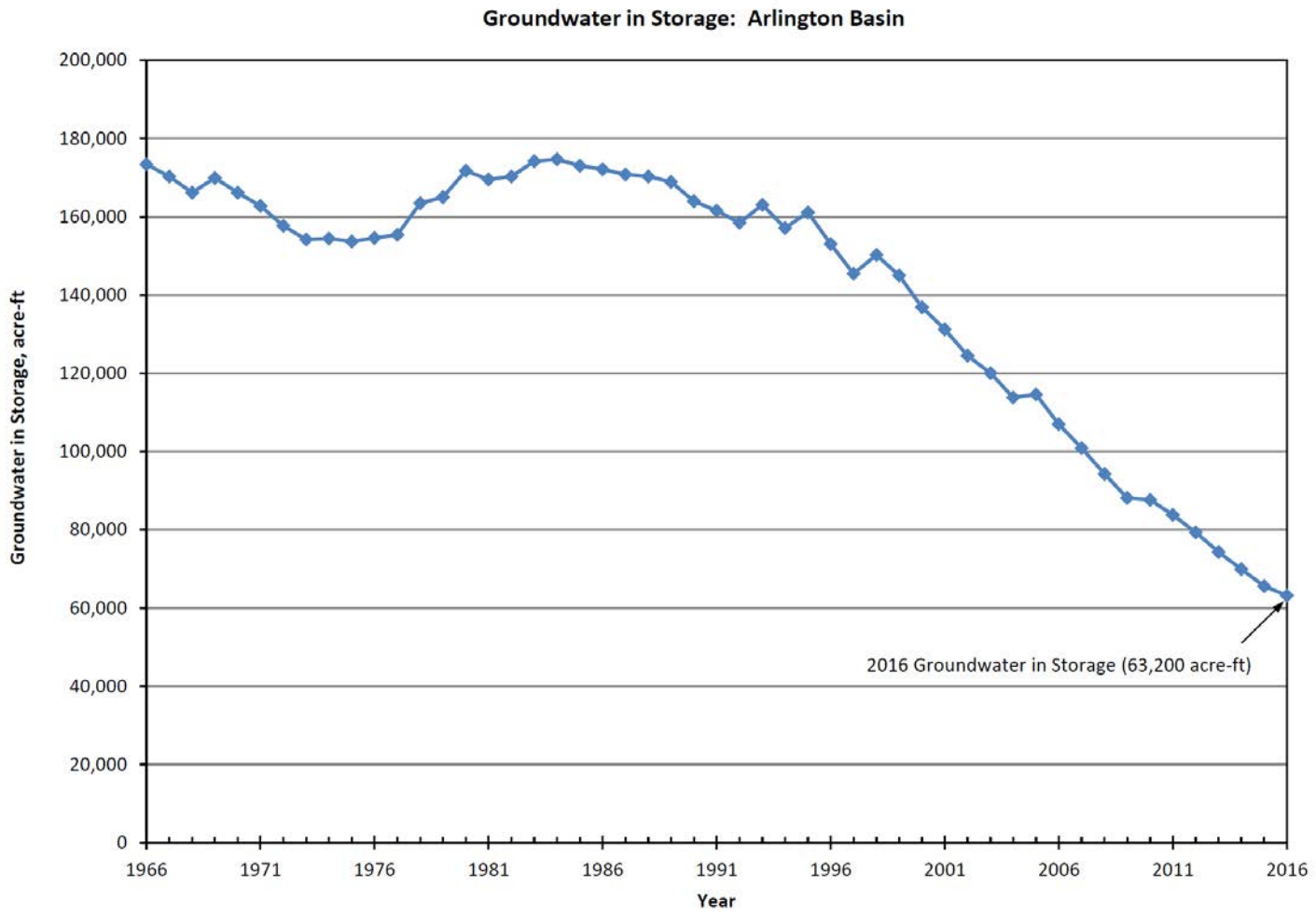


EXPLANATION

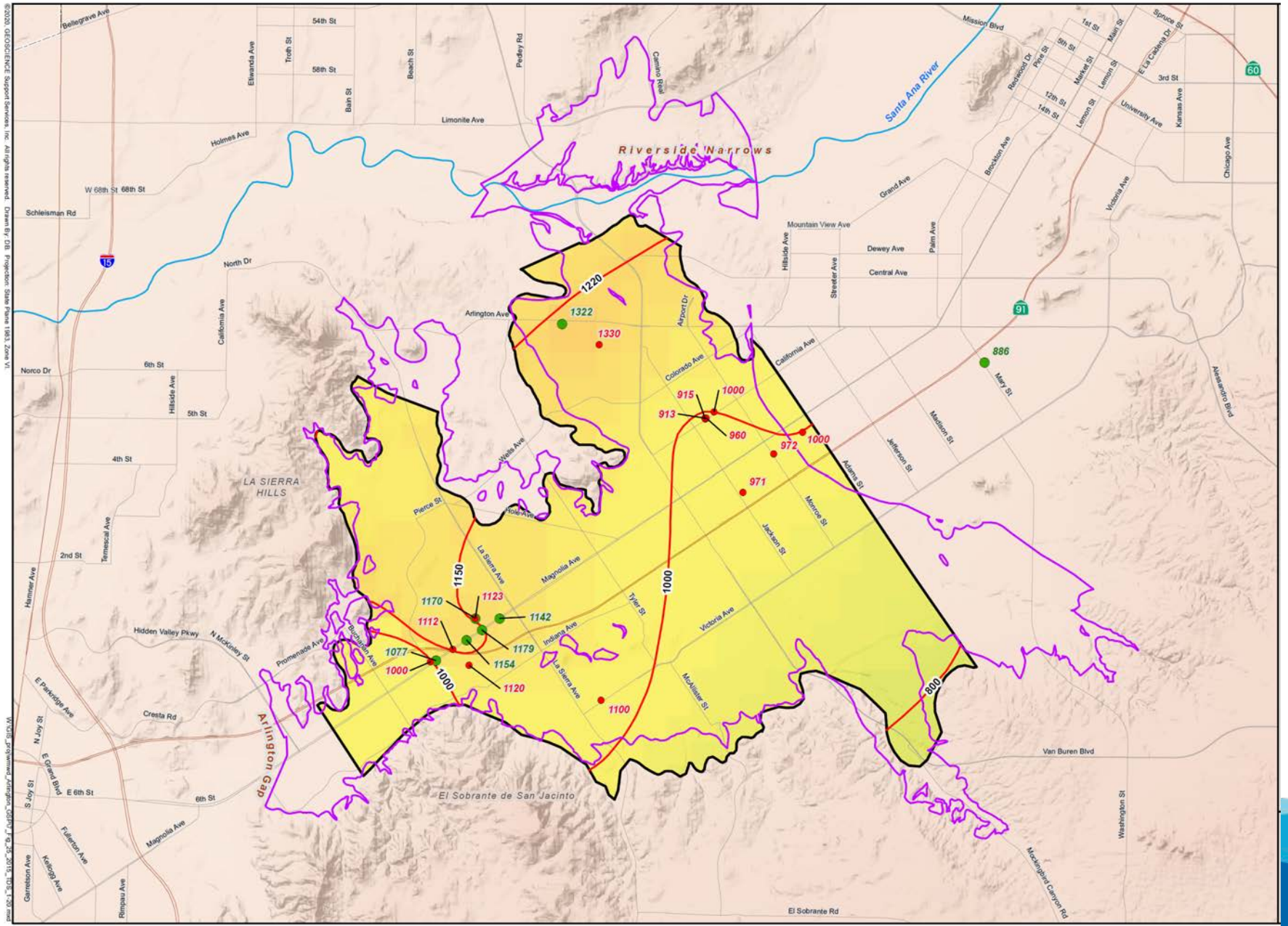
Arlington Subbasin Boundary (SGMA Basin Boundary 9-17)

Integrated Santa Ana River Model Active Area

Arlington Basin – Groundwater in Storage



Arlington Basin 2015 ambient TDS concentrations



EXPLANATION

Arlington Subbasin Boundary (SGMA Basin Boundary 9-17)

Management Zone Boundary

1322 — Well With Ambient TDS Statistic

972 — Well Without Ambient TDS Statistic (Average Only)

860 — Contour of Equal TDS Concentration

TDS Concentration

< 250 mg/L

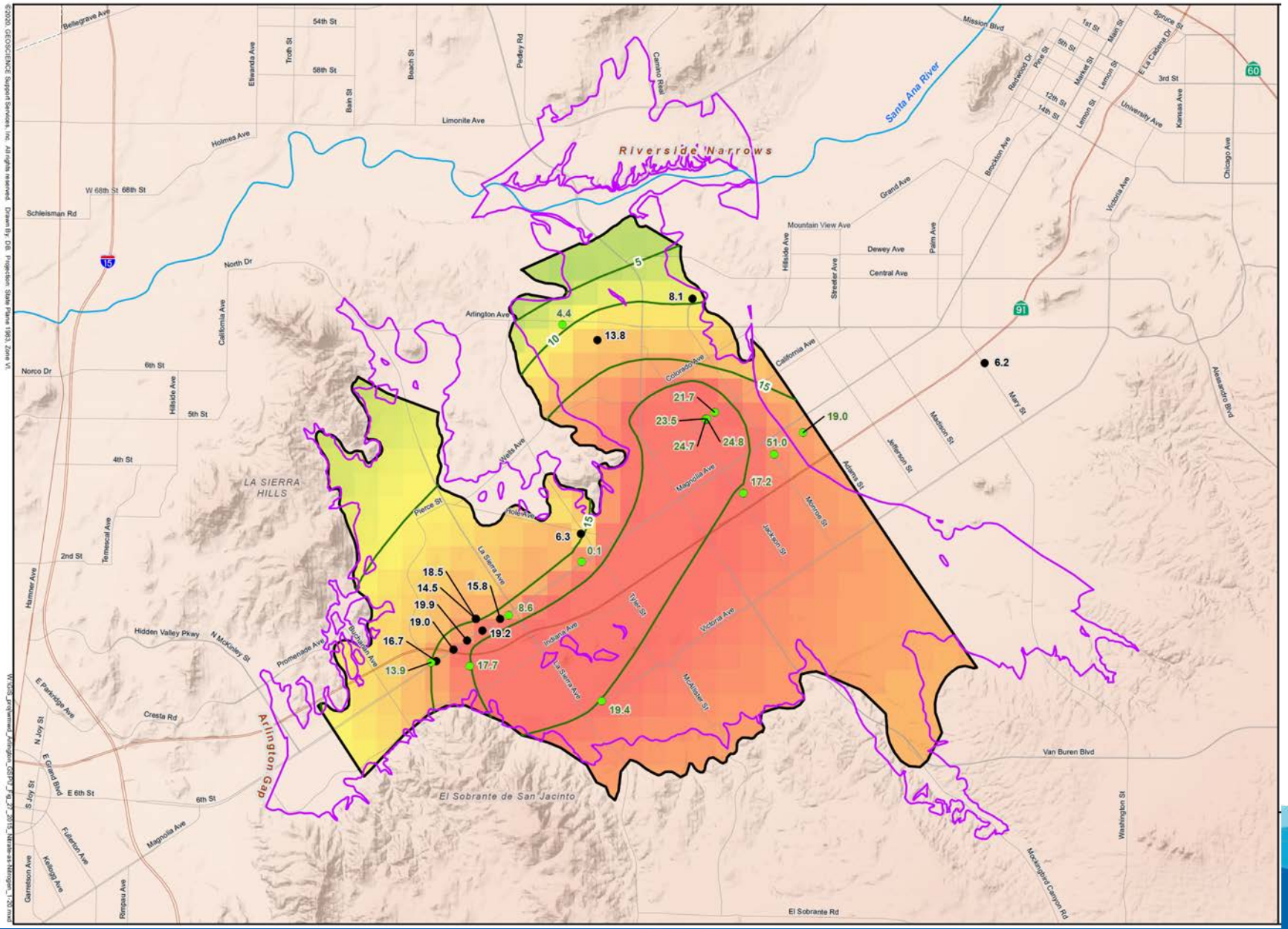
1,000 mg/L

> 2,000 mg/L

NOTE:
Groundwater quality data for the Arlington Subbasin were acquired through the 1996-2015 Triennial Recomputation of Ambient Water Quality (AWQ) for the Santa Ana River Watershed.
Ambient Water Quality calculated using a grid cell size of 400 x 400 meters.

Data adapted by WSC from Daniel B. Stephens and Associates, Inc. Recomputation of Ambient Water Quality in the Santa Ana River Watershed for the Period 1996 to 2015. Prepared for Santa Ana Watershed Project Authority Basin Monitoring Program Task Force. September 2017.

Arlington Basin 2015 ambient nitrate as nitrogen concentrations



EXPLANATION

Arlington Subbasin Boundary (SGMA Basin Boundary 9-17)

Management Zone Boundary

8.5 — Well With Ambient NO_3-N Statistic

8.4 — Well Without Ambient NO_3-N Statistic (Average Only)

15 — Contour of Equal NO_3-N Concentration

NO_3-N Concentration

< 1.0 mg/L

10 mg/L

> 20 mg/L

NOTE:
Groundwater quality data for the Arlington Subbasin were acquired through the 1996-2015 Triennial Recomputation of Ambient Water Quality (AWQ) for the Santa Ana River Watershed.
Ambient Water Quality calculated using a grid cell size of 400 x 400 meters.

Data adapted by WSC from Daniel B. Stephens and Associates, Inc. Recomputation of Ambient Water Quality in the Santa Ana River Watershed for the Period 1996 to 2015. Prepared for Santa Ana Watershed Project Authority Basin Monitoring Program Task Force. September 2017.

Questions about the basin setting?

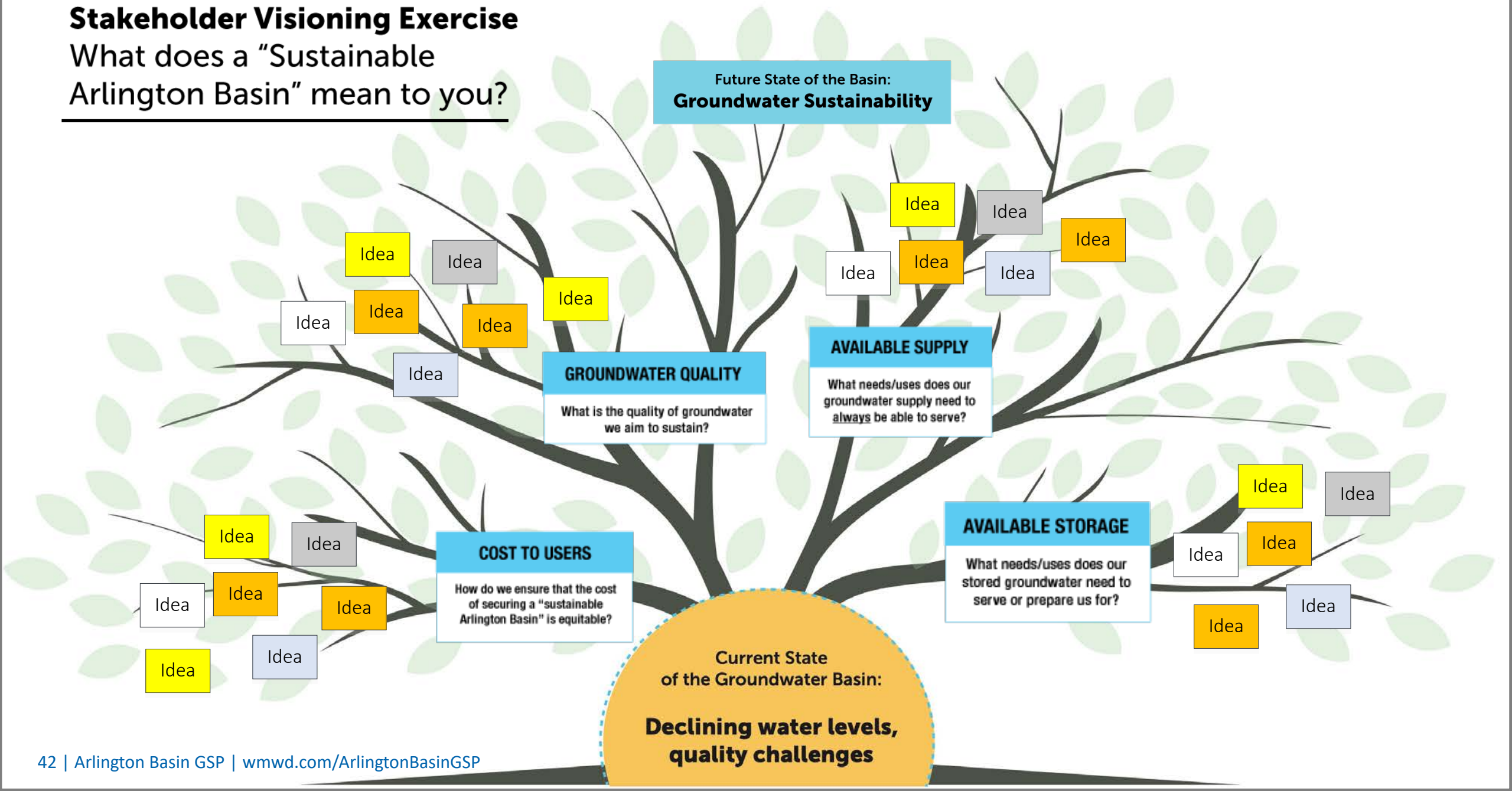
Visioning exercise

Tiffany Meyer, WSC

- INTRODUCTION
- DEMONSTRATION
- GROUP WORK
- SYNTHESIS AND DISCUSSION

Stakeholder Visioning Exercise

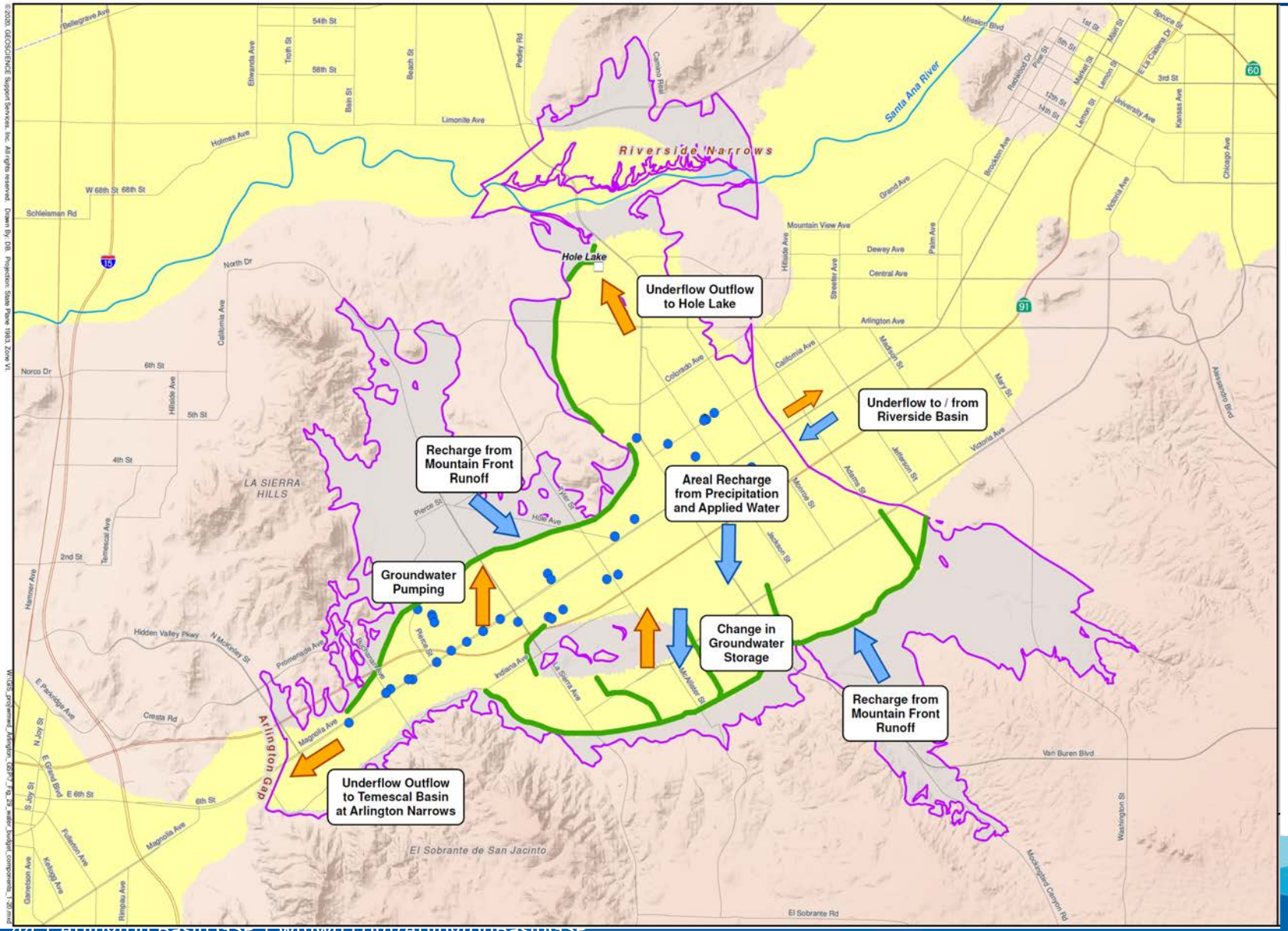
What does a "Sustainable Arlington Basin" mean to you?



The water budget

Brian Villalobos
Hydrogeologist, Geoscience

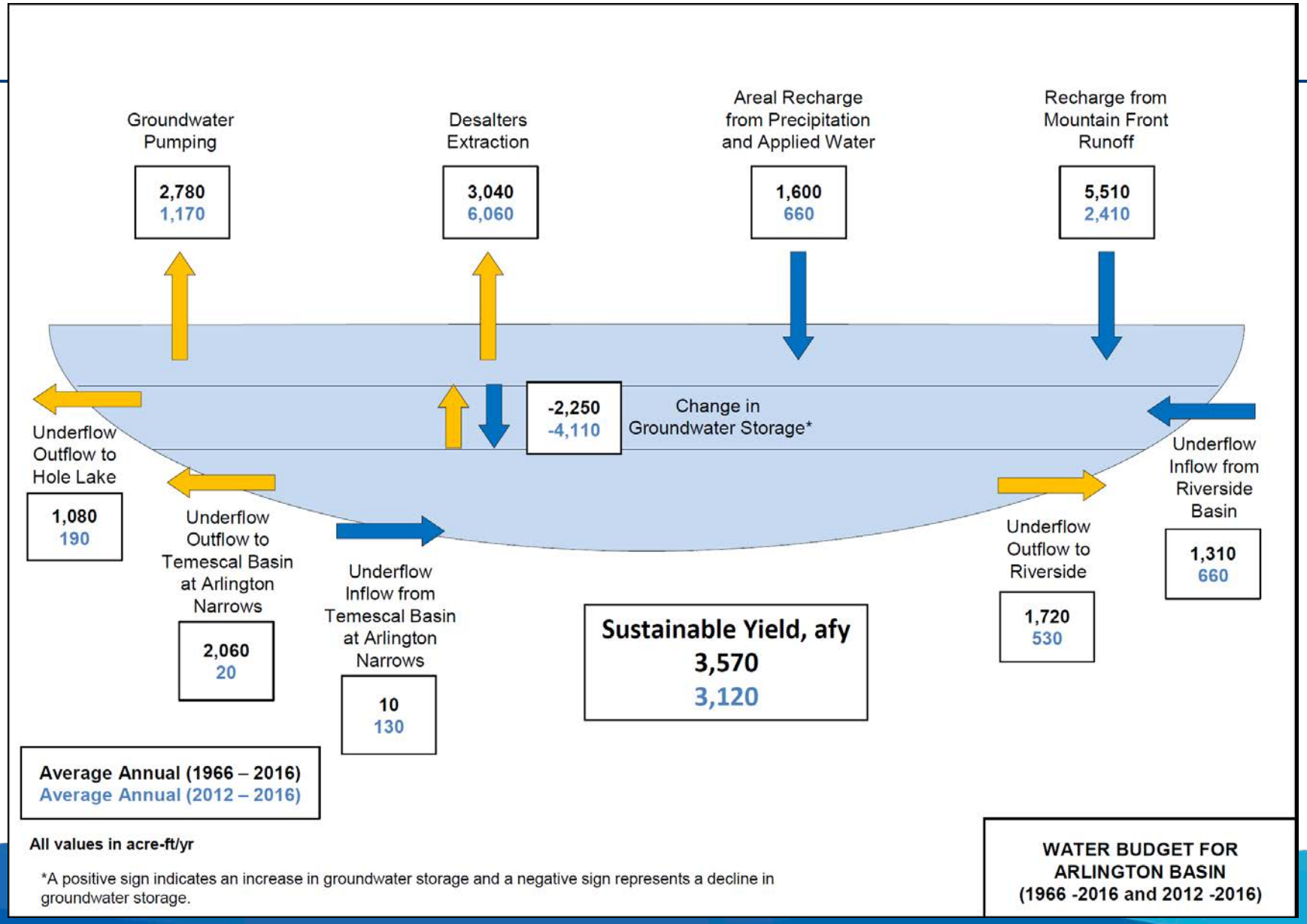
Arlington Basin water budget components



EXPLANATION

- Arlington Subbasin Boundary (SGMA Basin Boundary 9-17)
- Groundwater Inflow (Recharge)
- Groundwater Outflow (Discharge)
- Pumping Well
- Mountain Front Runoff and Streambed Percolation in Unlined Channel
- Integrated Santa Ana River Model Active Area

Arlington Basin – Water Budget (1966-2016 and 2012-2016)



Sustainable management criteria

SUSTAINABILITY INDICATOR	CHRONIC LOWERING OF GROUNDWATER LEVELS	REDUCTION OF GROUNDWATER STORAGE	INTER-CONNECTED SURFACE WATER DEPLETIONS	WATER QUALITY DEGRADATION	SEAWATER INTRUSION	LAND SUBSIDENCE
METRIC(S) USED	Groundwater Elevation	Total Volume	Volume or rate of surface water depletion	- Migration Plumes - # of Supply Wells - Volume - Location of Isocontour	Chloride Concentration Isocontour	Rate and extent of land subsidence

Questions about the water budget?

Visioning exercise synthesis

Tiffany Meyer, WSC

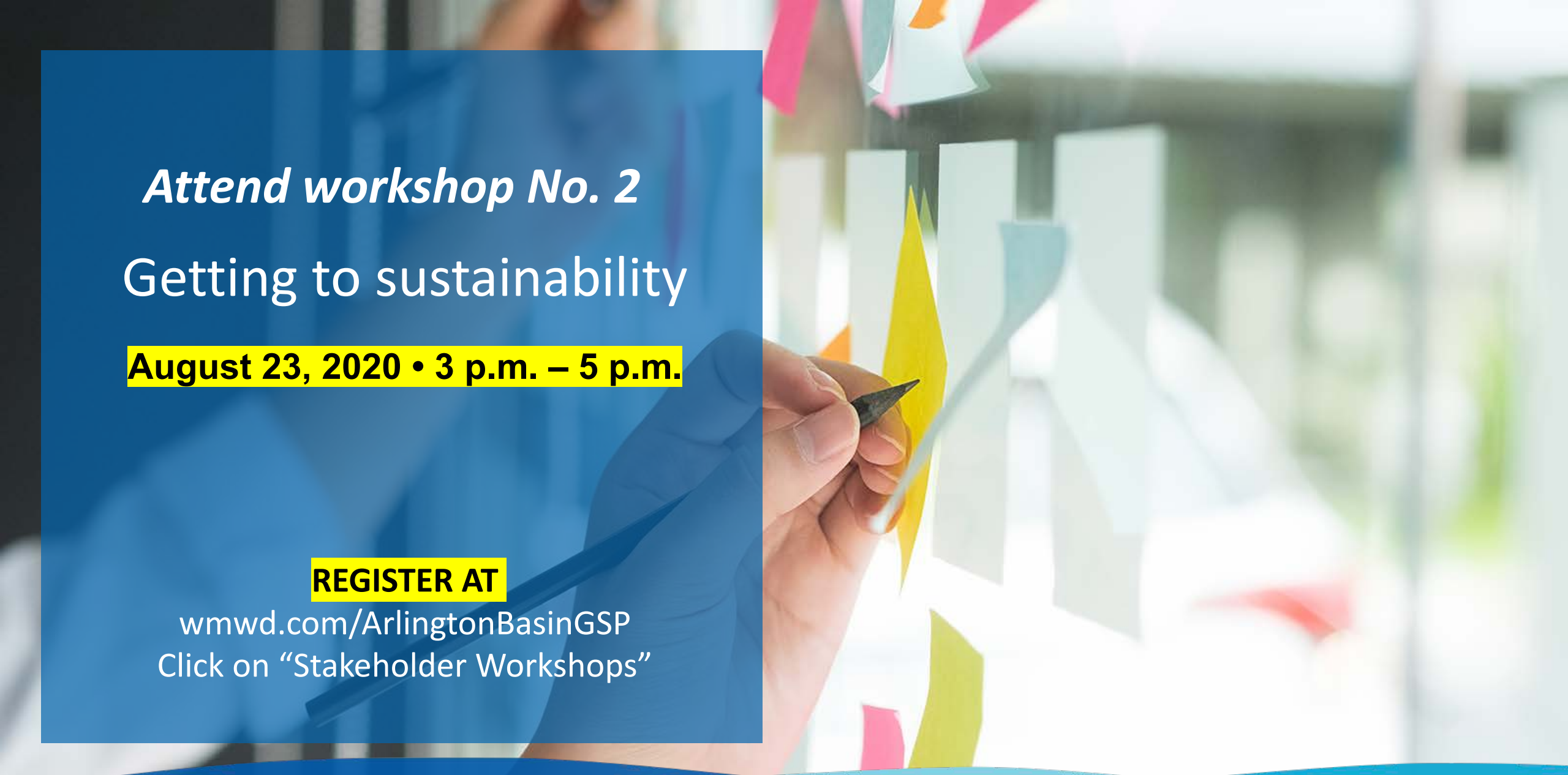
What's next?

Tiffany Meyer, WSC

Review workshop summary

SUMMARY COMING WITHIN 2 WEEKS

This input will be used by the project team to **finalize the stakeholder vision for a sustainable Arlington Basin**



Attend workshop No. 2

Getting to sustainability

August 23, 2020 • 3 p.m. – 5 p.m.

REGISTER AT
wmwd.com/ArlingtonBasinGSP
Click on “Stakeholder Workshops”

Q&A Panel

Tiffany Meyer
Stakeholder Engagement Lead
Water Systems Consulting (WSC)

Brian Villalobos
Principal Hydrogeologist
Geoscience

Ryan Shaw
Groundwater Sustainability Agency (GSA) Representative
Western Municipal Water District