



Recomputation of Ambient Water Quality in the Santa Ana River Watershed

BMPTF: January 14, 2020

Ambient Water Quality Phases

1: Data Gathering

- ✓ Data Compilation
- ✓ QA/QC, Process, and Upload recent data

2: Point Statistics

- ✓ Calculate Water Quality Point Statistics
- ✓ Shapiro-Wilk Test for Normality

3: Computations

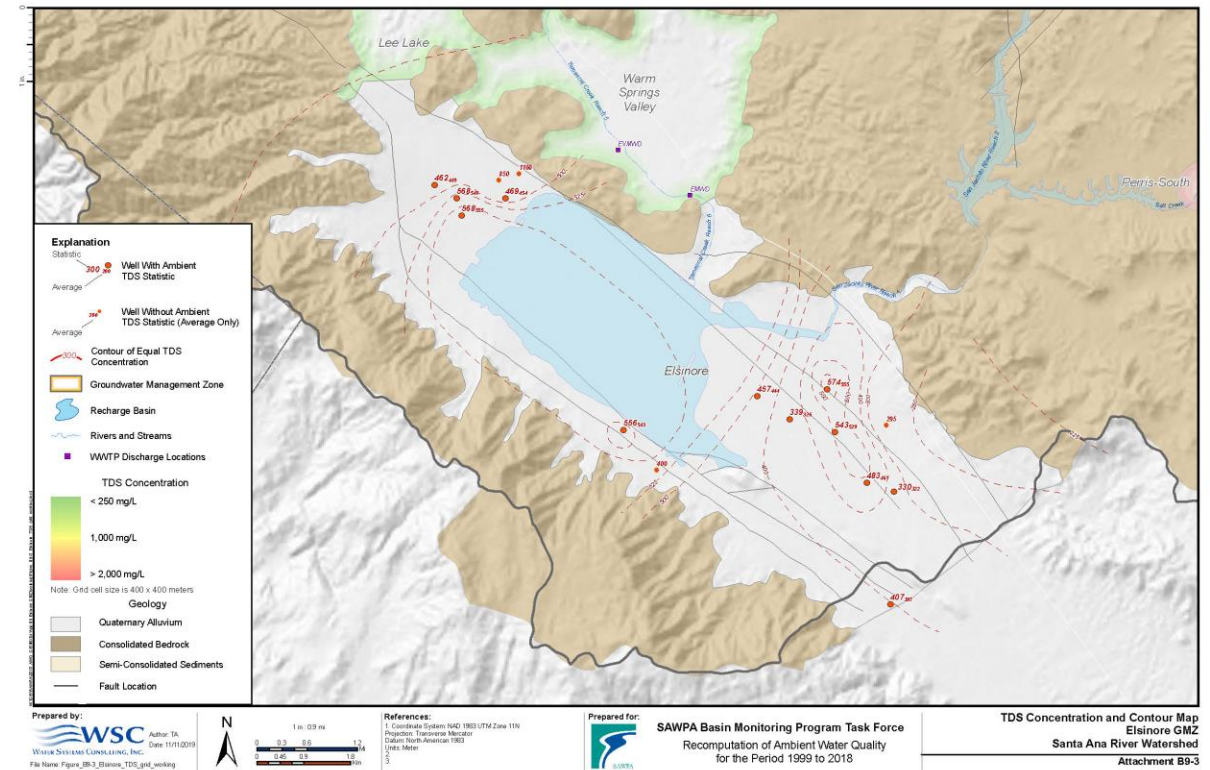
- ✓ Groundwater Elevation Contours
- ✓ Nitrate, TDS Concentrations
- ✓ Compute ambient water quality for GMZ's

4: Interpretive Tools

- ✓ Innovative Interpretive Tool

Review of Nitrate and TDS AWQ Maps (1999-2018)

[FTP Site to view and QA/QC Maps](#)



Well Attrition Analysis

■ *High Risk Point Statistic*

Wells with computed water quality point statistics that will not qualify for inclusion in the next recomputation (2002 to 2021) of AWQ if no data are collected during 2019-2021.



Medium Risk Point Statistic

Wells with computed water quality point statistics that will not qualify for inclusion in the following recomputation (2005 to 2024) of AWQ if no data are collected during 2019-2024.

■ *New Point Statistics*

Wells that are now eligible to have a water quality point statistic computed for the 2018 current AWQ recomputation period.

● *Potential Point Statistic*

Wells that will be eligible to have a water quality point statistic computed for the next period (2002 to 2021), if a sample is collected and analyzed in the 2019 to 2021 period.

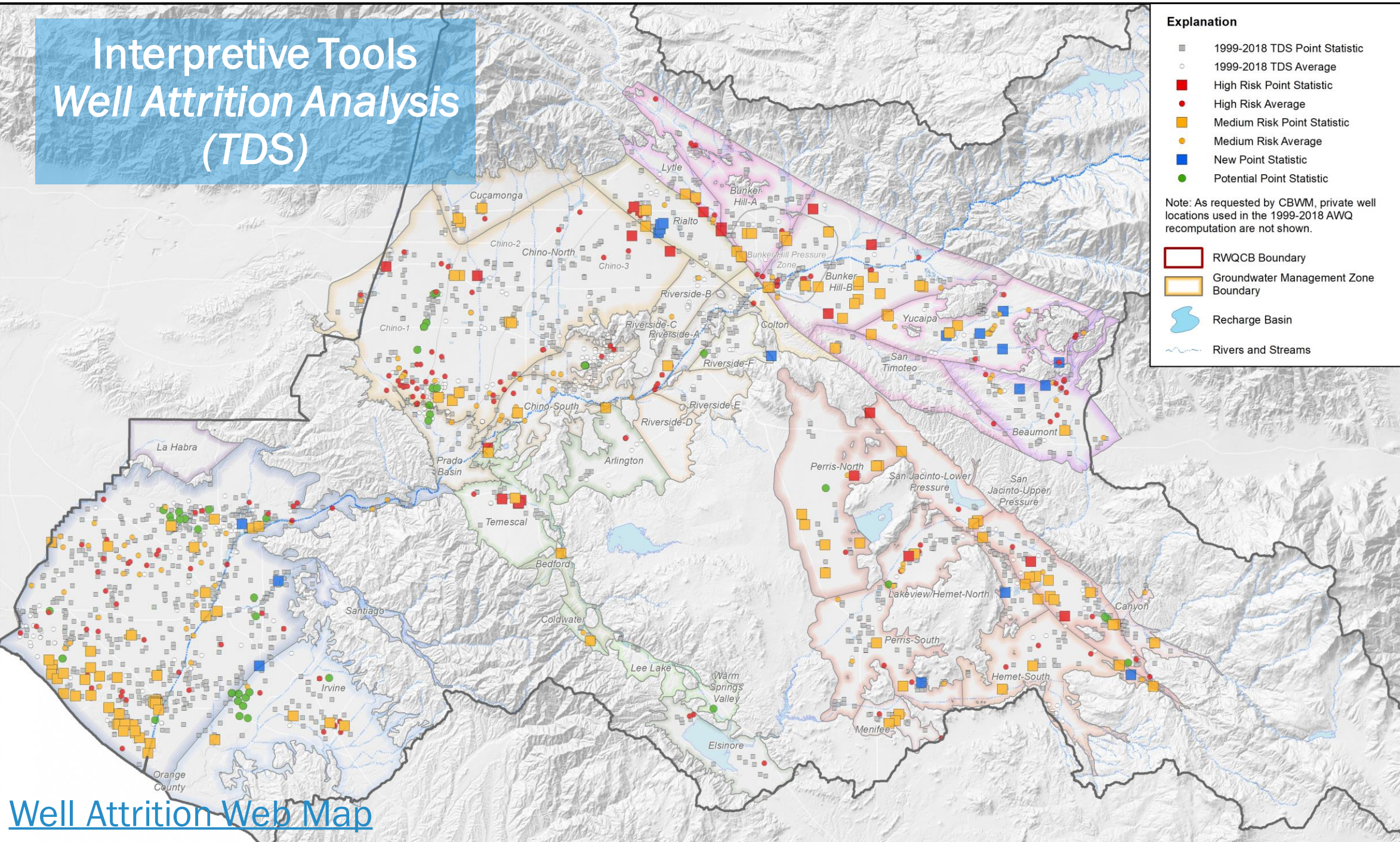
Interpretive Tools Well Attrition Analysis (TDS)

Explanation

- 1999-2018 TDS Point Statistic
- 1999-2018 TDS Average
- High Risk Point Statistic
- High Risk Average
- Medium Risk Point Statistic
- Medium Risk Average
- New Point Statistic
- Potential Point Statistic

Note: As requested by CBWM, private well locations used in the 1999-2018 AWQ recomputation are not shown.

- RWQCB Boundary
- Groundwater Management Zone Boundary
- Recharge Basin
- Rivers and Streams



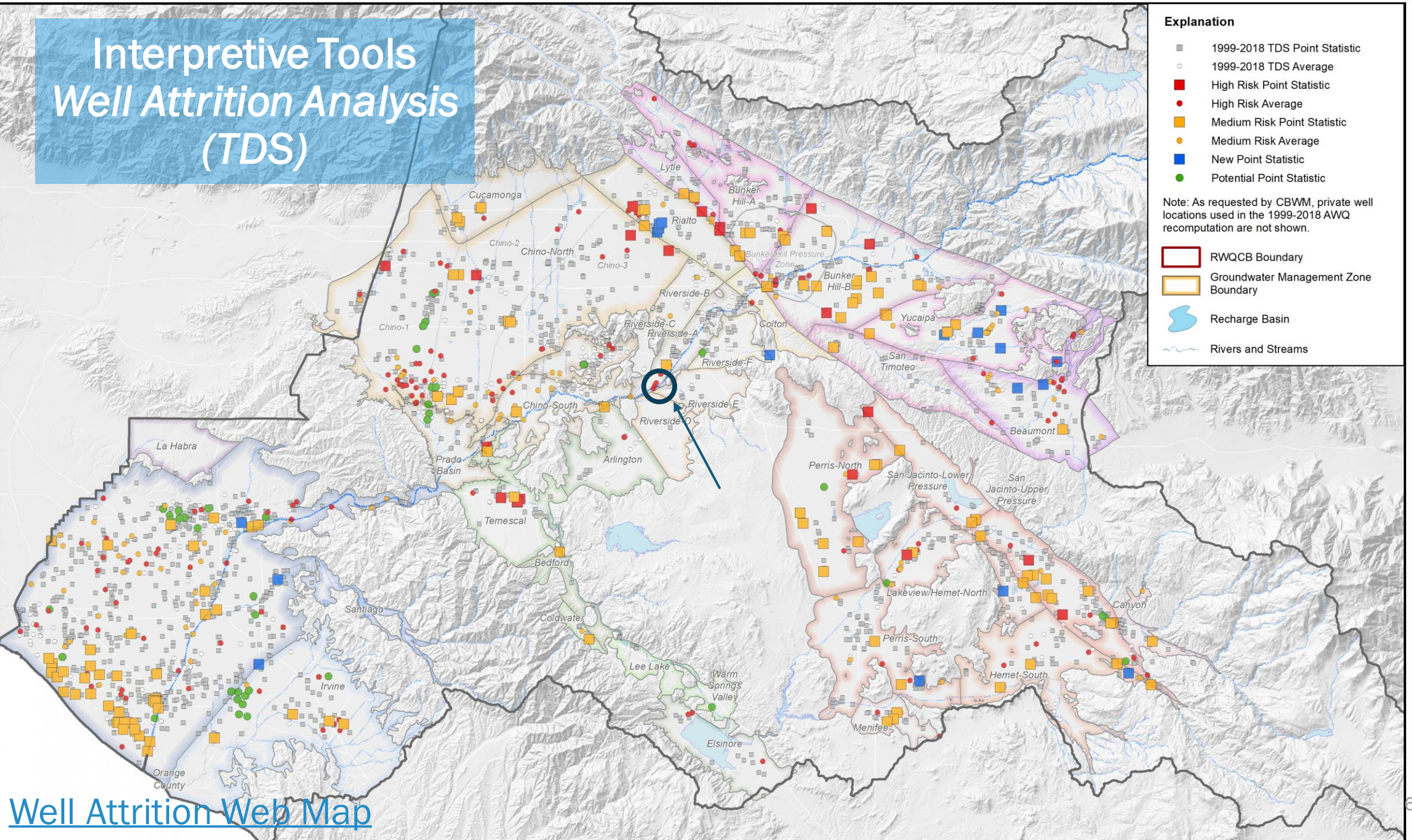
Interpretive Tools Well Attrition Analysis (TDS)

Explanation

- 1999-2018 TDS Point Statistic
- 1999-2018 TDS Average
- High Risk Point Statistic
- High Risk Average
- Medium Risk Point Statistic
- Medium Risk Average
- New Point Statistic
- Potential Point Statistic

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Example #1 – High Risk Well in Riverside A

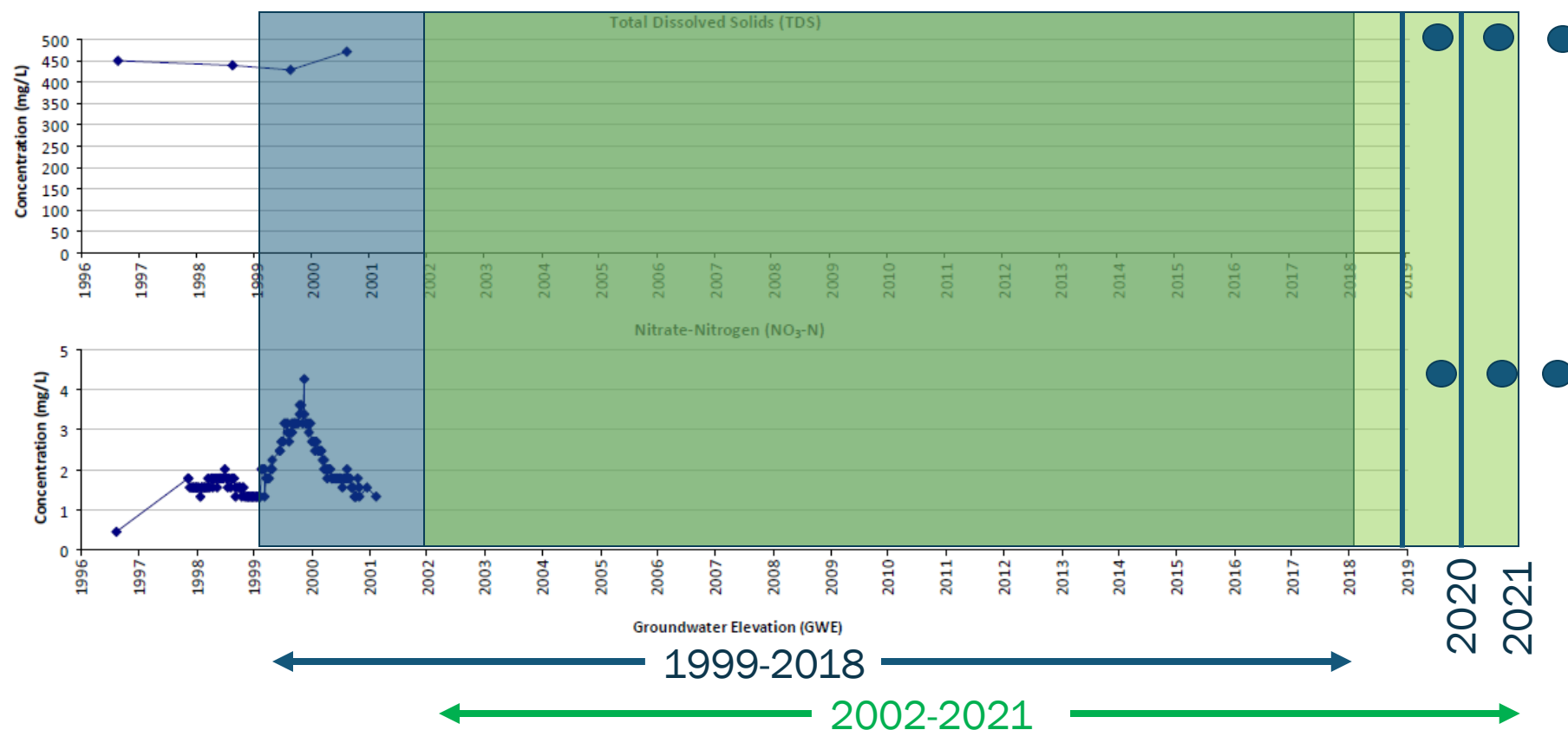
1999-2018 Ambient Water Quality Recomputation
Trend Charts for TDS, Nitrate-Nitrogen, and Groundwater

Well ID: 1003349
Management Zone: Riverside-A

High Risk Avg



High Risk Stat



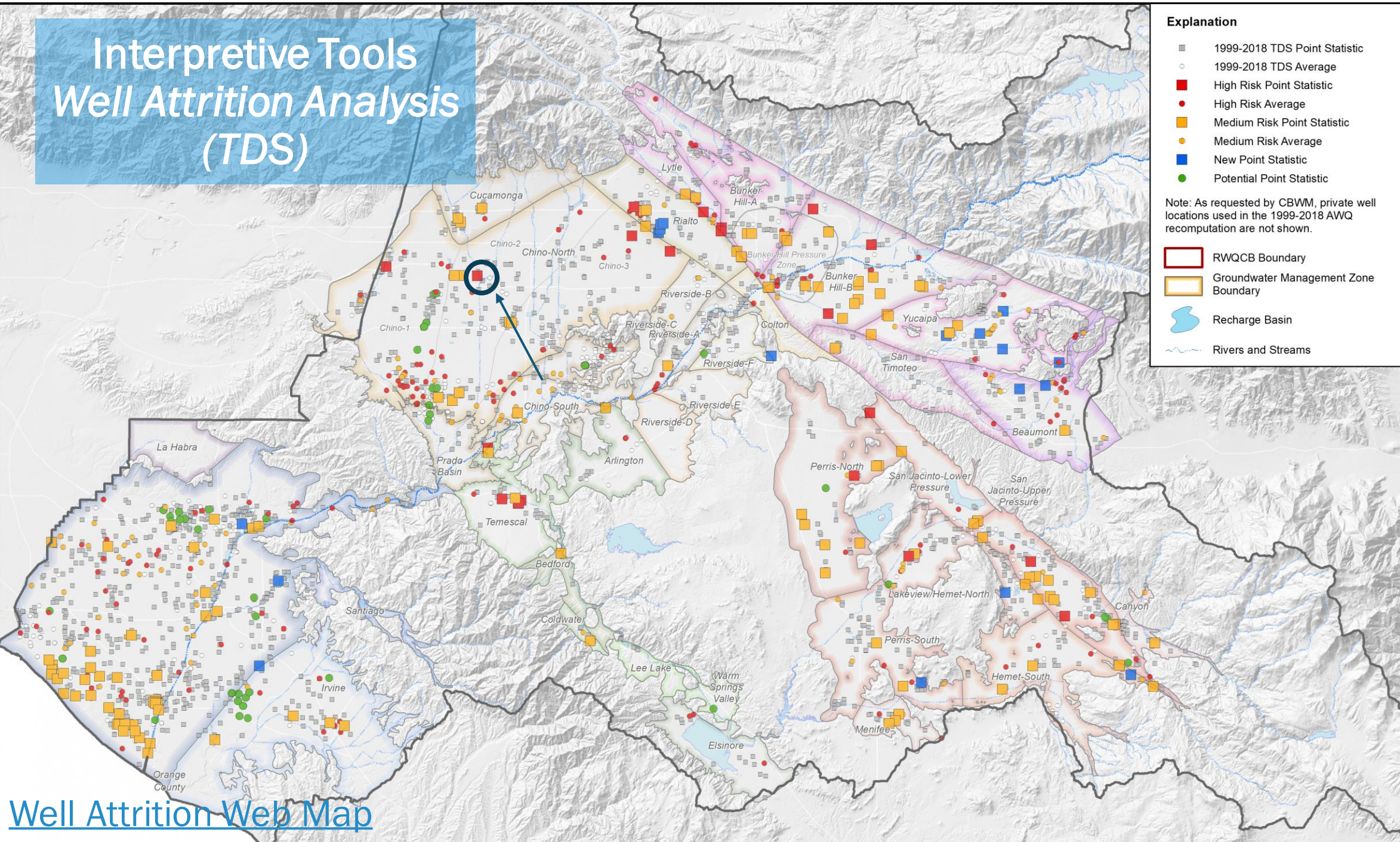
Interpretive Tools Well Attrition Analysis (TDS)

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- 1999-2018 TDS Average
- High Risk Point Statistic
- High Risk Average
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- Medium Risk Average
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Example #2 – Well in Chino North

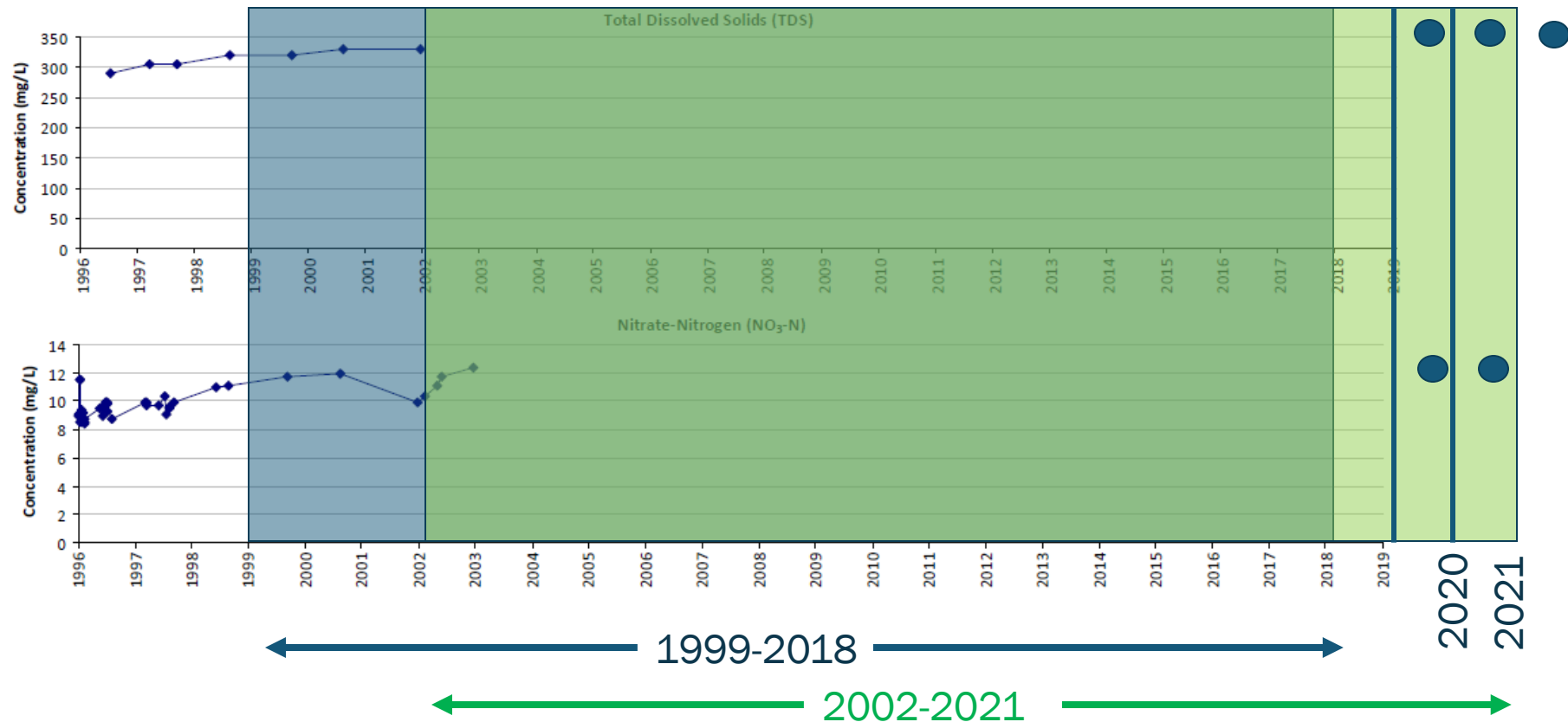
1999-2018 Ambient Water Quality Recomputation
Trend Charts for TDS, Nitrate-Nitrogen, and Groundwater

Well ID: 1002330
Management Zone: Chino-2/Chino-North

High Risk
Statistic



Medium Risk
Stat



High Risk Point Stats and AVG AWQ (1999-2018)

High and *Medium Risk Point Statistics*

Wells with computed water quality point statistics that will not qualify for inclusion in the next recomputation (2002 to 2021) of AWQ if no data are collected during 2019-2021.

- Sample Needed in 2019
 - Last year of data = 2001
 - Less than 3 years of data remain
- Sample Needed in 2020
 - Last year of data = 2002
 - Less than 4 years of data remain
- Sample Needed in 2021
 - Last year of data = 2003
 - Less than 5 years of data remain

High Risk Point Stats and AVG AWQ (1999-2018)

- *High and Averages*
- *Medium Risk*

Wells with computed water quality averages that will not qualify for inclusion in the next recomputation (2002 to 2021) of AWQ if no data are collected during 2019-2021.

- Sample Needed in 2020
 - Last year of data = 2002
 - Less than 2 years of data remain
- Sample Needed in 2021
 - Last year of data = 2003
 - Less than 2 years of data remain

Interpretive Tools Well Attrition Analysis (TDS)

Explanation

- 1999-2018 TDS Point Statistic
- 1999-2018 TDS Average
- High/Medium Risk TDS Point Stat Risk Year 2019
- High/Medium Risk TDS Point Stat Risk Year 2020
- High/Medium Risk TDS Point Stat Risk Year 2021
- High/Medium Risk TDS Average Risk Year 2020
- High/Medium Risk TDS Average Risk Year 2021
- New Point Statistic
- Potential Point Statistic

Note: As requested by CBWM, private well locations used in the 1999-2018 AWQ recomputation are not shown.

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- ▭ Groundwater Management Zone Boundary
- ▭ Recharge Basin
- ▭ Rivers and Streams

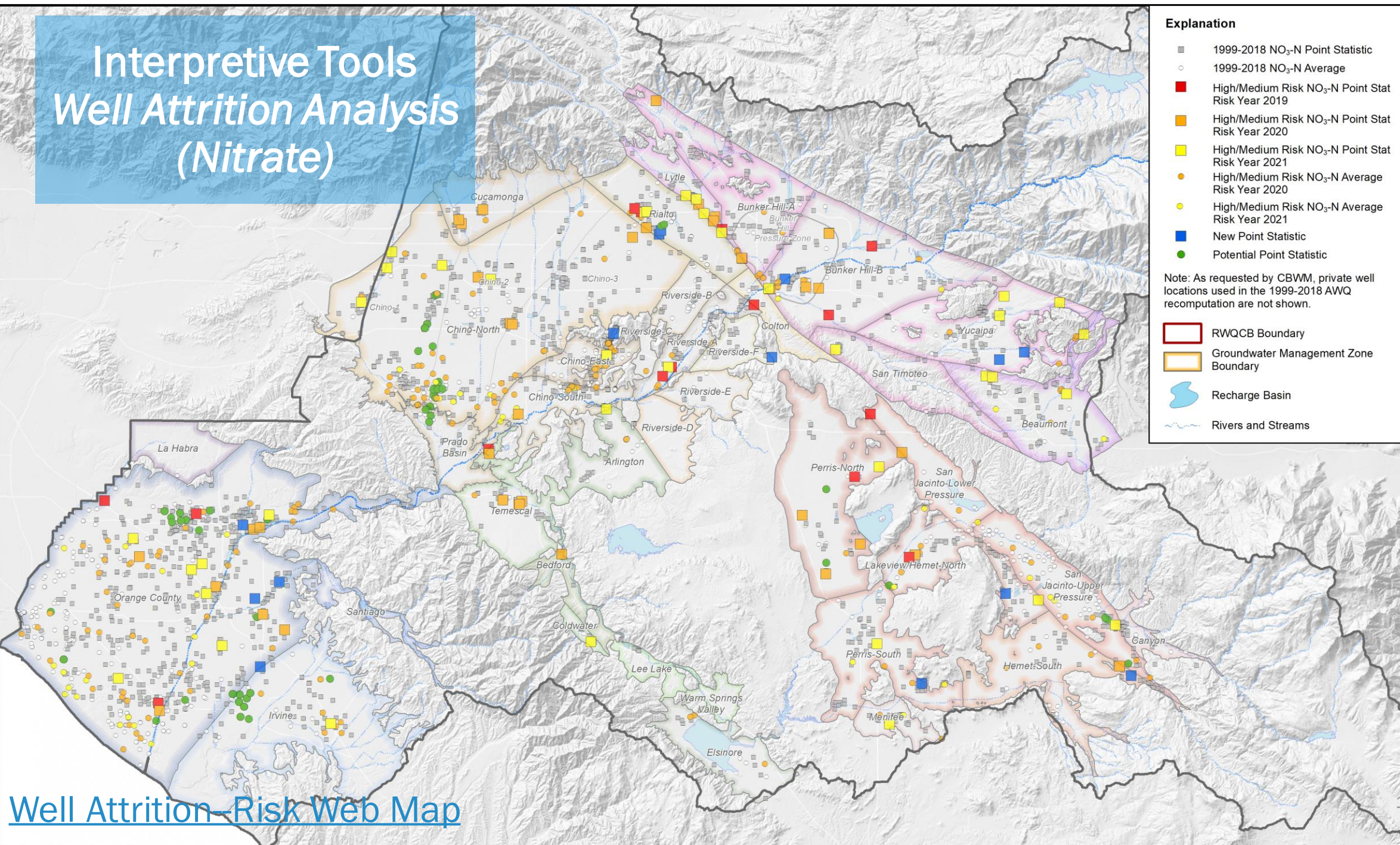
Interpretive Tools Well Attrition Analysis (Nitrate)

Explanation

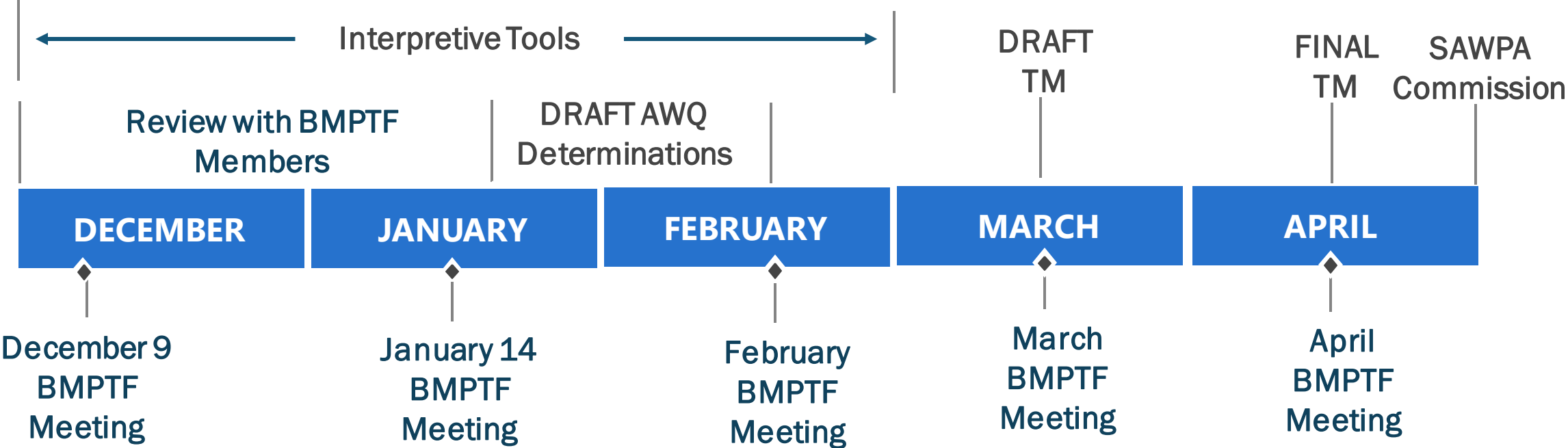
- 1999-2018 NO₃-N Point Statistic
- 1999-2018 NO₃-N Average
- High/Medium Risk NO₃-N Point Stat Risk Year 2019
- High/Medium Risk NO₃-N Point Stat Risk Year 2020
- High/Medium Risk NO₃-N Point Stat Risk Year 2021
- High/Medium Risk NO₃-N Average Risk Year 2020
- High/Medium Risk NO₃-N Average Risk Year 2021
- New Point Statistic
- Potential Point Statistic

Note: As requested by CBWM, private well locations used in the 1999-2018 AWQ recomputation are not shown.

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Near-term Schedule



A photograph of two people kayaking on a calm body of water. The person in the foreground is on the left, wearing a green shirt, with their arms and hands on a black paddle. The person in the background is further away, also kayaking. The water is still, reflecting the sky and the kayakers. The overall tone is serene and contemplative.

QUESTIONS?