West San Jacinto Groundwater Sustainability Agency (GSA) Development of the West San Jacinto Groundwater Sustainability Plan (GSP) – October 14, 2020

Rachel Gray
October 14, 2020
Introduction

• Project Overview
  – What is the Sustainable Groundwater Management Act?
  – What is a Groundwater Sustainability Plan?

• Update on the Groundwater Sustainability Plan Development
  – Historical, Current, and Projected Baseline Water Budgets for the West San Jacinto GSA Area
  – Minimum Thresholds and Measurable Objectives for Groundwater Quality
  – Undesirable Results
  – Projects and Management Actions

• Timeline and Next Steps
• SGMA Webpage
• Feedback
• Questions and Answers
Project Overview
What is the Sustainable Groundwater Management Act?

- Signed September 16, 2014
- Effective January 1, 2015
- Requires:
  - Formation of groundwater sustainability agencies (GSAs) for high and medium priority groundwater basins
  - Preparation of groundwater sustainability plans (GSPs) by 2022
  - Achieve sustainability within 20 years of plan adoption
- “A central tenet of these bills is the recognition that groundwater management is best accomplished locally.”
  – Governor Edmund G. Brown Jr.
San Jacinto Groundwater Basin

Water Budgets for GSP Development

Ali Taghavi, Ph.D., P.E.
Project Manager
Agenda

• Water Budget Background

• Water Budget Development for:
  – Historical Conditions
  – Current Conditions
  – Projected Baseline Conditions
Water Budgets Background
DWR’s Water Budget Best Management Practices

- Water Budgets provide an accounting and assessment of the total annual volume of groundwater and surface water entering and leaving the basin.

- Water budget information shall be reported in tabular and graphical form.

- Water Budgets should provide an understanding of historical and projected:
  - hydrology
  - water demand
  - water supply
  - land use
  - population
  - climate change
  - groundwater and surface water interaction
  - subsurface groundwater flow
DWR’s Water Budget Handbook

• The Water Budget Handbook is not prescriptive in what methods an agency should apply and does not impose requirements as to how water budgets should be developed for any compliance purposes.

• It serves as a technical resource that provides information on a suite of methods and data sources.
Water Budget: Defining Time Frames

Historical
Uses historical information for hydrology, precipitation, water supply and demand, and land use during a minimum of 10 years.

Current Conditions
Holds constant the most recent or “current” data on population, land use, year type, water supply and demand, and hydrologic conditions.

Projected Conditions
Uses a 50-year projected planning horizon to estimate population growth, land use changes, water supply conditions, climate change, etc.
Water Budget Assumptions

- **Period of Analysis**
  - Historical Conditions: WY 1984 – 2012
  - Current Conditions: WY 2013-2018
  - Projected Conditions: WY 2019-2072

- **Land Use Conditions**

- **Recharge Sources**
  - Precipitation
  - Irrigation
  - EMWD water sales
  - Sub-agency water sales
  - Reclaimed Water facilities
  - Recycled water sales

- **Groundwater Productions**

- **Projected Baseline Conditions**
  Include Additional Planned Projects:
  - Perris North Contamination Remediation Program
  - Perris South Desalter II
  - DWR’s Lake Perris Seepage Recovery
Precipitation Conditions
Land Use Conditions
EMWD Water Sales Deliveries

Projected EMWD Water Sales in Basin (AFY)

- Perris Valley South
- Perris Valley North
- Perris Valley North Outside of Basin
- Moreno Valley
- Moreno Valley Outside of Basin

Urban Area
- Outside Basin
- Inside Basin

EMWD Sales Projection Area
- Moreno Valley
- Perris Valley North
- Perris Valley South
Sub-Agency Water Sales

Projected Sub-Agency Water Sales (AFY)

City of Perris Water System
Nuevo Water Company

Sub-Agency Water Sales Areas
San Jacinto Groundwater Basin
Recycled Water Sales Deliveries
Groundwater Production Locations

Well Extraction Rate Source
- Blue dots: Projected Production Rates from EMWD
- Light blue dots: Production Rates Same as Current Conditions

Plan Area boundary
- Black line: San Jacinto Groundwater Basin

Legend:
- N: North

Scale:
- 0, 2, 4, 8 Miles

Image credits: EMWD.org
Groundwater Production in the Basin

![Bar chart showing groundwater production in the basin, comparing historical period average, current period average, and average planned extractions in projected conditions for the West Side Total, East Side Total, and Basin Total.]
Plan Area Water Budgets
Plan Area Summary
# Plan Area Summary

<table>
<thead>
<tr>
<th>Flow</th>
<th>Historical Period Average WY 1985-2012 (AFY)</th>
<th>Current Condition Average WY 2013-2018 (AFY)</th>
<th>Updated Projected Baseline Average WY 2019-2070 (AFY)</th>
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<td>1,504</td>
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<td>436</td>
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<td>5,462</td>
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<td>954</td>
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<td>2</td>
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<td>To Upper Pressure</td>
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<td><strong>Average Annual Change in GW Storage</strong></td>
<td>15,535</td>
<td>6,098</td>
<td>(2,351)</td>
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Hemet-San Jacinto Water Management Area Water Budgets
Hemet-San Jacinto Water Management Area

![Graph](graph.png)

- Applied Water Recharge
- Grant + IRRP Recharge
- Total Underflows In
- Rain
- Total Boundary Flow
- Stream Seepage
- Production
- Soboba Production
- Total Underflows Out
- Change in Storage

Water Year:
- 1985
- 1986
- 1987
- 1988
- 1989
- 1990
- 1991
- 1992
- 1993
- 1994
- 1995
- 1996
- 1997
- 1998
- 1999
- 2000
- 2001
- 2002
- 2003
- 2004
- 2005
- 2006
- 2007
- 2008
- 2009
- 2010
- 2011
- 2012
- 2013
- 2014
- 2015
- 2016
- 2017
- 2018
- 2019
- 2020
- 2021
- 2022
- 2023
- 2024
- 2025
- 2026
- 2027
- 2028
- 2029
- 2030
- 2031
- 2032
- 2033
- 2034
- 2035
- 2036
- 2037
- 2038
- 2039
- 2040
- 2041
- 2042
- 2043
- 2044
- 2045
- 2046
- 2047
- 2048
- 2049
- 2050
- 2051
- 2052
- 2053
- 2054
- 2055
- 2056
- 2057
- 2058
- 2059
- 2060
- 2061
- 2062
- 2063
- 2064
- 2065
- 2066
- 2067
- 2068
- 2069

Budget Volume (AF):
- 125,000
- 100,000
- 75,000
- 50,000
- 25,000
- 0

Cumulative Change in Storage (AF):
- 600,000
- 500,000
- 400,000
- 300,000
- 200,000
- 100,000
- 0

emwd.org

Page 24
### Hemet-San Jacinto Water Management Area

<table>
<thead>
<tr>
<th>Flow</th>
<th>Historical Period Average WY 1985-2012 (AFY)</th>
<th>Current Condition Average WY 2013-2018 (AFY)</th>
<th>Updated Projected Baseline Average WY 2019-2070 (AFY)</th>
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<tr>
<td>From Menifee</td>
<td>3</td>
<td>2</td>
<td>6</td>
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<tr>
<td>From Lower Pressure</td>
<td>3,717</td>
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<td>3,547</td>
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<tr>
<td>From Lakeview</td>
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<td><strong>Boundary Flows</strong></td>
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<td>City of Hemet</td>
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<td>City of San Jacinto</td>
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<td>Soboba (From Natural Recharge)</td>
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<td>1,491</td>
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<td>Soboba</td>
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<td>Agency Unused Soboba</td>
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<td>Private Production</td>
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<td>13,800</td>
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<td></td>
<td>52,962</td>
<td>42,403</td>
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<td><strong>Average Annual Change in GW Storage</strong></td>
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<td></td>
<td>(9,675)</td>
<td>(4,968)</td>
<td>(21)</td>
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Total Water Budget
Total Water Budget – Parts of the Whole
Total Water Budget

San Jacinto Groundwater Basin

Budget Volume (AF)

Change in Storage (AF)


Water Year
## Total Water Budget

<table>
<thead>
<tr>
<th>Flow</th>
<th>Historical Period Average WY 1985-2012 (AFY)</th>
<th>Current Condition Average WY 2013-2018 (AFY)</th>
<th>Updated Projected Baseline Average WY 2019-2070 (AFY)</th>
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<td></td>
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<tr>
<td>Mountain Front Recharge</td>
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<td><strong>Boundary Flows</strong></td>
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<td>From Sun City Area</td>
<td>889</td>
<td>1,098</td>
<td>1,160</td>
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Climate Change Data Downscaling to Groundwater Model Applications

- Data from Global Climate Models (GCMs) are downscaled to a regional planning scale
- Downscaled data is available in pre-existing datasets

Source: DWR SGMA Climate Change Guidance
Changes to Precipitation
### Changes to Precipitation (West San Jacinto Basin)

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<thead>
<tr>
<th>Category</th>
<th>Projected Baseline</th>
<th>2030 Central Tendency</th>
<th>2070 Central Tendency</th>
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<tr>
<td>% of Baseline Precipitation</td>
<td>100%</td>
<td>98%</td>
<td>95%</td>
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<td>Difference in Annual Modeled Precipitation</td>
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<td>-0.18”</td>
<td>-0.46”</td>
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Projected Change in GW Storage – Baseline and Climate Change Scenarios

* Numbers show the long-term projected annual rate of decline in GW Storage (AF/Yr)
Minimum Thresholds and Measurable Objectives for Groundwater Quality
Minimum Thresholds Under SGMA

From the SGMA Emergency Regulations:

• “Each Agency in its Plan shall establish minimum thresholds that quantify groundwater conditions for each applicable sustainability indicator at each monitoring site or representative monitoring site established pursuant to Section 354.36 (Representative Monitoring)” (23 CCR § 354.28. Minimum Thresholds)

• “An Agency may establish a representative minimum threshold for groundwater elevation to serve as the value for multiple sustainability indicators where the Agency can demonstrate that the value is a reasonable proxy.” (23 CCR § 354.28(d))

SUSTAINABILITY INDICATORS

- **Groundwater elevation**
  - MT = Water Level

- **Groundwater in storage**
  - MT = Water Level

- **Land Subsidence**
  - MT = Water Level

- **Water Quality**
  - MT = TDS Concentration

- **Interconnected surface water and groundwater** – Not applicable

- **Seawater Intrusion** – Not applicable
Water Levels Not Appropriate Proxy

- Water level does not correlate with concentration

![Graph showing water level and total dissolved solids over time with screen interval: 390-700 ft bgs](image-url)
Ongoing northeast migration of brackish water in the Lakeview GMZ would be an undesirable result

- Use 1000 mg/L TDS plume as indicator of extent of brackish water

 Sentinel Well – Perris II ROTF MRP

 Proposed Additional GSP Representative Monitoring Point – Water Quality ONLY

* Nutrilite 7 is also a representative monitoring point for water levels
Water Quality Representative Monitoring Points

- Use Perris II Sentinel Wells: Nutrilite 02, 07*, and 08 as representative monitoring points for water quality
  - Already incorporated into existing water quality monitoring plan
- Also include wells: John Bootsma, and Nutrilite 04 as additional representative monitoring points for water quality
  - Wells screened across representative aquifer
  - Provide additional understanding of water quality trends

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<th>RMP</th>
<th>Top of Screen (ft bgs)</th>
<th>Bottom of Screen (ft bgs)</th>
<th>Maximum TDS Concentration (mg/L)</th>
<th>Maximum TDS Concentration YEAR</th>
<th>Mann-Kendall Trend</th>
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<td>700</td>
<td>860</td>
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<tr>
<td>Nutrilite 02</td>
<td>-</td>
<td>-</td>
<td>645</td>
<td>1994</td>
<td>No Trend</td>
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<tr>
<td>Nutrilite 04</td>
<td>170</td>
<td>480</td>
<td>710</td>
<td>1996</td>
<td>Decreasing</td>
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<td>Nutrilite 08</td>
<td>-</td>
<td>-</td>
<td>970</td>
<td>2013</td>
<td>Increasing</td>
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<td>Bootsma, John</td>
<td>350</td>
<td>650</td>
<td>526</td>
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<td>Increasing</td>
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* Nutrilite 7 is also a representative monitoring point for water levels
Water Quality Minimum Threshold/Measurable Objective

- Propose 1000 mg/L TDS as the MT for these wells

- Propose 520 mg/L TDS as the MO
  - This corresponds with the basin plan objective for Lakeview/Hemet North

Proposed Representative Monitoring Point TDS Concentrations

Proposed MT: 1000 mg/L
Proposed MO: 520 mg/L
Minimum Thresholds

- Followed DWR guidance to propose water level, groundwater in storage, and land subsidence minimum thresholds at each representative monitoring point.
- Need to define minimum threshold for groundwater quality.

<table>
<thead>
<tr>
<th>RMP</th>
<th>Proposed MT Water Levels (ft MSL)</th>
<th>Proposed MT Groundwater In Storage (ft MSL)</th>
<th>Proposed MT Land Subsidence (ft MSL)</th>
<th>Proposed MT Groundwater / Surface Water Interaction</th>
<th>Proposed MT Seawater Intrusion</th>
<th>Proposed MT Water Quality (TDS – mg/L)</th>
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Measurable Objectives

- Followed DWR guidance to propose *water level, groundwater in storage, and land subsidence* measurable objectives at each representative monitoring point
- Need to define measurable objective for groundwater quality

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<tr>
<th>RMP</th>
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Undesirable Results
Undesirable Results

- From the SGMA Emergency Regulations:
  - “Undesirable results occur when significant and unreasonable effects for any of the sustainability indicators are caused by groundwater conditions occurring throughout the basin.”
  - The criteria used to define undesirable results “shall be based on a quantitative description of the combination of minimum threshold exceedances that cause significant and unreasonable effects in the basin” (emphasis added).
Undesirable Results: Water Quality

- Proposed quantification of undesirable results for water quality:
  - 3 of 5 wells have concentrations >1000 mg/L for 2 consecutive annual water quality sampling events.
Undesirable Results: Water Levels

- Proposed quantification of undesirable results for water levels:
  - >30% of RMPs (for WL) have water levels below the minimum threshold for 2 consecutive spring monitoring events
Projects and Management Actions
Projects and Management Actions

- Projects and management actions shall be commensurate with the level of understanding of the basin setting, based on the level of uncertainty and data gaps ((23 CCR § 350.4(d))

- Each Plan shall include a description of the projects and management actions the Agency has determined will achieve the sustainability goal for the basin, including projects and management actions to respond to changing conditions in the basin. ((23 CCR § 354.44(a))

- Funded projects already included in baseline understanding of basin and incorporated in groundwater model of future conditions

- What projects and/ or management actions would be undertaken to address “changing conditions in the basin” or unanticipated declines in groundwater elevation and storage?
Projects and Management Actions

- Adjust pumping as needed to meet water level and/or water quality objectives
  - Increase pumping in select areas to influence groundwater gradient to better control migration of non-point sources of contamination
  - Shift production away from localized areas that are experiencing over-pumping
    - Review spring water levels relative to minimum thresholds at representative monitoring points to determine if this is necessary
  - Reduce overall production if shifting production is unsuccessful at meeting water level objectives
- Assess feasibility of recycled water delivery to private producers in the Menifee production area to offset their groundwater production
  - Only applies if water levels in Menifee drop below minimum thresholds and shifting production does not result in groundwater elevation recovery
- Conduct additional investigations and/or technical studies
  - Collect additional data if necessary to support additional studies
  - Refine understanding of the basin hydrogeology
  - Assess controls on water quality or water levels based on revised understanding
Timeline and Next Steps
Next Steps

• EMWD and consultant team will continue to work together to:
  – Prepare the public draft GSP
• Next stakeholder advisory group meeting scheduled for April 2021
Questions