# Paso Basin Cooperative Committee
# Notice of Meeting

**NOTICE IS HEREBY GIVEN** that the Paso Basin Cooperative Committee will hold a Regular Meeting at **4:00 P.M. on Wednesday, March 17, 2021**. Based on the threat of COVID-19 as reflected in the Proclamations of Emergency issued by both the Governor of the State of California and the San Luis Obispo County Emergency Services Director, as well as the Governor's Executive Order N-29-20 issued on March 17, 2020 relating to the convening of public meetings in response to the COVID-19 pandemic, this meeting will be conducted as a phone in/web-based meeting only. There will be no physical meeting location for this Cooperative Committee Meeting. Members of the public can participate via phone or by logging into the web-based meeting.

**TO JOIN THE MEETING FROM YOUR COMPUTER, TABLET OR SMARTPHONE, PLEASE GO TO:**

> https://zoom.us/j/98605016091?pwd=ZUZWK2pNNHVzU0lEYkJPNk8yQUQzdz09
> (This link will help connect both your browser and telephone to the call)
> Passcode: 871951

**YOU CAN ALSO DIAL IN USING YOUR PHONE:**

- United States: +1 669 900 6833
- Webinar ID: 986 0501 6091
- Passcode: 871951

**All persons desiring to speak during any Public Comment can submit a comment by:**

- Email at arford@co.slo.ca.us by 5:00 PM on the day prior to the Cooperative Committee meeting
- Teleconference meeting at link and/or phone number above
- Mail (*must be received by 5:00 PM on the day prior to the Committee meeting*) to:
  County of San Luis Obispo Department of Public Works
  Attn: Angela Ford
  County Government Center, Room 206
  San Luis Obispo, CA 93408
- Additional information on how to submit Public Comment is on page 3 of this Agenda

*NOTE: The Paso Basin Cooperative Committee reserves the right to limit each speaker to three (3) minutes per subject or topic. In compliance with the Americans with Disabilities Act, all possible accommodations will be made for individuals with disabilities so they may attend and participate in meetings.*

**John Hamon**, Treasurer, City of Paso Robles
**Kelly Dodds**, Secretary, San Miguel CSD
**Debbie Arnold**, Chair, County of SLO
**Matt Turrentine**, Vice Chair, Shandon-San Juan WD

**Steve Martin**, Alternate, City of Paso Robles
**Vacant**, Alternate, San Miguel CSD
**John Peschong**, Alternate, County of SLO
**Kevin Peck**, Alternate, Shandon-San Juan WD

**Agenda**
**March 17, 2021**

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1. **Call to Order**
2. **Pledge of Allegiance**
3. **Roll Call**
4. **Public Comment – Items not on Agenda**
5. **Approval of January 27, 2021 Meeting Minutes**
6. **Consider Rotation of Officers**
7. **Approval of Paso Robles Subbasin Water Year 2020 Annual Report**
8. **Consider proposed modifications to, and approval of, Paso Robles Subbasin First Annual Report**
9. **Receive project status update(s)**
   a. Supplemental Environmental Project
   b. Paso Basin Aerial Groundwater Mapping Pilot Study
10. **Committee Member Comments** – Committee members may make brief comments, provide status updates, or communicate with other members, staff, or the public regarding non-agenda topics
11. **Upcoming meeting(s)**
    a. 2021 PBCC Meeting Schedule (April 28, July 21, October 27)
12. **Future Items**
13. **Adjourn**

***CONFERENCE CALL/WEBINAR ONLY***

Wednesday, March 17, 2021 at 4:00 p.m.

**Important Notice Regarding COVID-19 based on guidance from the California Department of Public Health and the California Governor's Officer, to minimize the spread of the COVID-19 virus, please note the following:**

1. The meeting will only be held telephonically and via internet via the number and website link information provided on the agenda. After each item is presented, Committee Members will have the opportunity to ask questions. Participants on the phone will then be provided an opportunity to speak for 3 minutes as public comment prior to Committee deliberations and/or actions or moving on to the next item. If a participant wants to provide public comment on an item, they should select the "Raise Hand" icon on the Zoom Online Meeting platform or press *9 if on the phone. The meeting host will then unmute the participant when it is their turn to speak and allow them to provide public comment.

2. The Committee's agenda and staff reports are available at the following website: www.slocounty.ca.gov/pasobasin

3. If you choose not to participate in the meeting and wish to make a written comment on any matter within the Committee's subject matter jurisdiction, regardless of whether it is on the agenda for the Committee's consideration or action, please submit your comment via email or U.S. Mail to ensure it is received by 5:00 p.m. on the day prior to the Committee meeting. Please submit your comment to Angela Ford at arford@co.slo.ca.us. Your comment will be placed into the administrative record of the meeting.

   Mailing Address:
   County of San Luis Obispo Department of Public Works
   Attn: Angela Ford
   County Government Center, Room 206
   San Luis Obispo, CA 93408

4. If you choose not to participate in the meeting and wish to submit verbal comment, please call (805) 781-5139 and ask for Angela Ford. If leaving a message, state and spell your name, note the agenda item number you are calling about and leave your comment. The verbal comments must be received by no later than 9:00 a.m. on the morning of the noticed meeting and will be limited to 3 minutes. Every effort will be made to include your comment into the record, but some comments may not be included due to time limitations.

*NOTE: The Paso Basin Cooperative Committee reserves the right to limit each speaker to three (3) minutes per subject or topic. In compliance with the Americans with Disabilities Act and Executive Order N-29-20, all possible accommodations will be made for individuals with disabilities, so they may participate in the meeting. Persons who require accommodation for any audio, visual or other disability in order to participate in the meeting of the Paso Basin Cooperative Committee are encouraged to request such accommodation 48 hours in advance of the meeting from Joey Steil at (805) 781-5252.*

**Paso Basin Cooperative Committee**
**Minutes (DRAFT) -- January 27th, 2021**

**The following members or alternates were present:**
**John Peschong**, Chair, County of San Luis Obispo
**Kelly Dodds**, Member, San Miguel CSD
**Matt Turrentine**, Secretary, Shandon-San Juan WD
**John Hamon**, Treasurer, City of Paso Robles

<table>
<tr><td>1. Call to Order<br><br>2. Pledge of Allegiance<br><br>3. Roll call</td><td>Chair Peschong: calls the meeting to order at 4:00 p.m.<br><br>Chair Peschong: leads the Pledge of Allegiance.<br><br>County Staff, Angela Ford: calls roll.</td></tr>
<tr><td>4. Public Comment – items not on Agenda</td><td>Meeting Audio: Item start ~ 00:02:33<br>Chair Peschong: opens the floor for public comment.<br><br>Greg Grewal: comments on California Water Code § 34153 and the requirements for becoming a water district; asks about Committee's approach to dealing with Water Code violations.<br><br>Chair Peschong: asks for additional public comments, hearing none, closes the public comment period and moves on to Item #5.</td></tr>
<tr><td>5. Approval of November 18, 2020 Meeting Minutes</td><td>Meeting Audio: Item start ~ 00:04:58<br>Audio from the November 18, 2020, Paso Basin Cooperative Committee meeting is available at: www.slocounty.ca.gov/pasobasin<br><br>Chair Peschong: opens discussion for Agenda Item 5 – Approval of November 18, 2020 Cooperative Committee Meeting Minutes; asks for comments from the Committee, and then from the public; there are none.<br><br>Motion by: John Hamon<br>Second by: Matt Turrentine<br>Motion: The Committee moves to approve the November 18, 2020 Meeting Minutes.
<table>
<tr><th>Members</th><th>Ayes</th><th>Noes</th><th>Abstain</th><th>Recuse</th></tr>
<tr><td>John Peschong (Chair)</td><td>X</td><td></td><td></td><td></td></tr>
<tr><td>Kelly Dodds (Member)</td><td>X</td><td></td><td></td><td></td></tr>
<tr><td>Matt Turrentine (Secretary)</td><td>X</td><td></td><td></td><td></td></tr>
<tr><td>John Hamon (Treasurer)</td><td>X</td><td></td><td></td><td></td></tr>
</table></td></tr>
<tr><td>6. Appointment of Officers</td><td>Meeting Audio: Item start ~ 00:07:10<br>Meeting materials for Agenda Item #6 are available at: www.slocounty.ca.gov/pasobasin<br><br>County Staff, Angela Ford: provides an overview of past Committee appointments, the roles and responsibilities of each officer position, the process of agenda and meeting minutes development, and a recommendation to have the Committee appoint officers to each position.</td></tr>
</table>

Committee Members consider nominations for the offices of Chair, Vice Chair, Secretary, and Treasurer. Member Dodds recommends that the appointment of Chair and Vice Chair be rotated through the GSA Members on the Committee.

Chair Peschong: replies that a rule to rotate the Chair position does not currently exist but could be discussed at a later date and then opens the floor for public comment.

Greg Grewal: speaks.

John Peschong: nominates Debbie Arnold to the office of Chair, Matt Turrentine to the office of Vice Chair, John Hamon to the office of Treasurer, and Kelly Dodds to the office of Secretary.

John Hamon and Kelly Dodds accept their nominations to the offices of Treasurer and Secretary.

Matt Turrentine: comments that both the County of San Luis Obispo Member and City of Paso Robles Member have each held the position of Chair and suggests rotating the position to either the San Miguel CSD Member or the Shandon-San Juan WD Member.

John Peschong: recommends nominating the County Member, Debbie Arnold, to the position of Chair for the upcoming term.

The following Cooperative Committee Members are elected to the following offices:

- Debbie Arnold – Chair
- Matt Turrentine – Vice Chair
- Kelly Dodds – Secretary
- John Hamon – Treasurer

**Motion by:** John Peschong
**Second by:** John Hamon
**Motion:** The Committee moves to elect Debbie Arnold to the office of Chair, Matt Turrentine to the office of Vice Chair, John Hamon to the office of Treasurer, and Kelly Dodds to the office of Secretary.

| Members | Ayes | Noes | Abstain | Recuse |
|---|---|---|---|---|
| Debbie Arnold (Chair) | X | | | |
| Matt Turrentine (Vice Chair) | | X | | |
| Kelly Dodds (Secretary) | X | | | |
| John Hamon (Treasurer) | X | | | |

| | |
|---|---|
| **7. Receive project status update(s)** | *Meeting Audio: Item start ~ 00:07:30*<br>Meeting materials for Agenda Item #7 are available at: www.slocounty.ca.gov/pasobasin<br><br>*7.a Grant pursuit and future opportunities*<br><br>San Miguel CSD Staff, Blaine Reely: provides an update on the Prop 68 GSP Implementation Round 1 grant application which was submitted in December 2020 by San Miguel CSD for the amount of five million dollars; the draft list of funded projects is scheduled to be released in March 2021 with final awards to occur in May 2021; comments on the availability of stormwater capture grants, stating that Prop 1 and Prop 84 grant opportunities are currently closed, adding that a Prop 68 flood plain management protection and risk awareness grant, which provides funding for projects that achieve flood risk reduction related to stormwater flooding, may be of interest to the GSAs.<br><br>*7.b Supplemental Environmental Project (SEP)*<br><br>City Staff, Kirk Gonzales: provides an update on the goal of the SEP project, including the completion of one monitoring well at the 13th Street Bridge site, the addition of a potential monitoring well site on Airport Road at the Estrella River, and stream gauge procurement and installation which is estimated to be completed by March 2021.<br><br>Chair Arnold: asks if the additional monitoring well will be installed on private property and who the City needs to get permission from to complete the work.<br><br>City Staff, Kirk Gonzales: responds that permission will need to come from a private landowner.<br><br>*7.c Paso Basin Aerial Groundwater Mapping Pilot Study*<br><br>County Staff, Angela Ford: provides an update on the pilot study which used the Aerial Electromagnetic Method (AEM) to collect data over part of the Paso Basin; the mapping survey was completed in November 2019 and the County anticipates presenting results in Spring 2021.<br><br>*7.d DWR's GSP Review and public comments*<br><br>County Staff, Angela Ford: provides an overview of the Paso Robles Subbasin Groundwater Sustainability Plan (GSP) development process and adoption timeline, including public comment submission and response guidelines and DWR's review and evaluation of the GSP.<br><br>Treasurer Hamon: asks if comments submitted through DWR's portal are available for public review. |

County Staff, Angela Ford: responds that all comments submitted to DWR are available on their website.

Vice Chair Turrentine: asks if Tom Berg from the Department of Water Resources (DWR), present in the meeting, could provide an update on DWR's review process.

DWR, Tom Berg: responds that DWR is not making specific comments on the status of GSP reviews, adding that efforts are being made to review the first-round GSP submittals by 2022; DWR received approximately 30 GSPs to review by the first deadline and expects another 40 GSPs to be submitted during the next round.

Chair Arnold: opens the floor for public comment.

Greg Grewal: speaks.

Chair Arnold:  Closes public comment and brings item back to Committee for a motion.

**Motion by:** John Hamon
**Second by:** Kelly Dodds
**Motion:** The Committee moves to receive and file the project status update.

| Members | Ayes | Noes | Abstain | Recuse |
|---|---|---|---|---|
| Debbie Arnold (Chair) | X | | | |
| Matt Turrentine (Vice Chair) | X | | | |
| Kelly Dodds (Secretary) | X | | | |
| John Hamon (Treasurer) | X | | | |

**8. Receive update on Water Year 2020 Annual Report**

*Meeting Audio: Item start ~ 00:35:56*

Meeting materials for Agenda Item #8 is available at:
www.slocounty.ca.gov/pasobasin

County Staff, Angela Ford: provides an update on development of the Water Year 2020 Annual Report, including an overview of SGMA's requirements to submit an Annual Report to DWR by April 1 following adoption of a GSP and annually thereafter; reviews the Committee's recommendation to the City of Paso Robles to enter into a contract with GSI Water Solution, Inc. to develop the Annual Report on behalf of the GSAs, and the anticipated Draft Report that will be posted for public review in mid-February and then be brought to the Committee for final approval on March 17, 2021 and submitted to DWR by the April 1, 2021 deadline.

Chair Arnold: asks for questions from the Committee and then from the public; there are none.

The Committee receives and files the update with no abstentions or objections.

| | |
|---|---|
| **9. Discuss 1/26/2021 San Luis Obispo County Board of Supervisors staff direction on land use policy development for the Paso Basin and its implications to continued GSP implementation** | *Meeting Audio: Item start ~ 00:38:22*<br>Shandon-San Juan WD Staff, Ray Shady: introduces the discussion item related to the County Board of Supervisors direction to staff on land use policy for the Paso Basin.<br><br>Vice Chair Turrentine: comments on the importance of maintaining water neutrality for the basin and speaks to previous Committee discussions regarding the development of a parallel program through the GSA partners.<br><br>Chair Arnold: provides an overview of the land use policy discussion from the January 26, 2021 Board of Supervisors meeting, including the origin and intention of the temporary urgency ordinance, the need to adjust the terms of the ordinance, comments received on the proposed tiers, environmental review, exemptions, and fallowing program, the County's land use authority and expansion of projects, and the GSAs' authority to regulate groundwater extractions.<br><br>Treasurer Hamon: asks when County staff plans on bringing the ordinance item back to Board of Supervisors.<br><br>Chair Arnold: references a timeline that was included in the staff report (item #28) from the January 26th Board of Supervisors meeting and anticipates the item coming back by the end of the year.<br><br>Vice Chair Turrentine: agrees with distinction between the powers of the GSAs and the powers of the County; comments on the job of the GSAs getting the basin to sustainability by 2040, the best available data showing that the basin is in overdraft, the tiered approach and how it may contribute to increased levels of overdraft going forward, and the importance of focusing on actions that will lead to basin sustainability.<br><br>Chair Arnold: comments on the expiration date of the existing ordinance, how the ordinance affected some property owners, and the capacity for resuming historical irrigation practices.<br><br>Secretary Dodds: asks if the County ordinance could potentially last through 2045.<br><br>Chair Arnold: responds that County staff will return with the Board of Supervisors with the proposed period of time, which may extend through the GSP implementation period.<br><br>Secretary Dodds: asks if the County has the ability to revisit or amend the ordinance before the final end date if conditions drastically improve or decline in the basin. |

<table>
<tr><td></td><td>Chair Arnold: comments on the GSAs authority to regulate water extractions and their involvement in future environmental reviews for projects and expanded irrigation.<br><br>Treasurer Hamon: comments on GSA involvement in potential decision making and discussions regarding water use and property rights, and basin sustainability.<br><br>Chair Arnold: comments on the ordinance's effect on current and historic irrigators, irrigation practices during draught, rotational fallowing, the five-year lookback period, and efforts to include amendments to the ordinance.<br><br>Vice Chair Turrentine: comments on the ordinance's ability to limit further expansion, supporting private party efforts to utilize wastewater and implement best management practices to save and quantify water, voluntary fallowing per the ordinance's proposed tier system, and the potential for increased water use from the ordinance's per parcel exemption of 25 AFY.<br><br>Chair Arnold: opens the floor for public comment.<br><br>Greg Grewal and Laurie Gauge: speak.<br><br>Chair Arnold: responds to public comment and references the land use policy staff report from the January 26, 2021 Board of Supervisors meeting that estimates 93% of the water used in the basin is extracted for agricultural use; comments on the issue of fairness that some users have unlimited use while others have no use.</td></tr>
<tr><td>10. Committee Member Comments</td><td>None</td></tr>
<tr><td>11. Upcoming meeting(s)</td><td>Committee Meeting Schedule for 2021:<ul><li>Wednesday, March 17, 2021 @ 4:00 p.m.</li><li>Wednesday, April 28, 2021 @ 4:00 p.m.</li><li>Wednesday, July 21, 2021 @ 4:00 p.m.</li><li>Wednesday, October 27, 2021 @ 4:00 p.m</li></ul></td></tr>
<tr><td>12. Future Items</td><td><ul><li>Discuss rotation and terms for the Committee's elected officer positions</li><li>Water Year 2020 Annual Report</li></ul></td></tr>
<tr><td>13. Adjourn</td><td>Motion by: John Hamon<br>Second by: Kelly Dodds<br>Motion: The Committee moves to adjourn the meeting at 5:29 p.m.<table><tr><th>Members</th><th>Ayes</th><th>Noes</th><th>Abstain</th><th>Recuse</th></tr><tr><td>Debbie Arnold (Chair)</td><td>X</td><td></td><td></td><td></td></tr><tr><td>Matt Turrentine (Vice Chair)</td><td>X</td><td></td><td></td><td></td></tr><tr><td>Kelly Dodds (Secretary)</td><td>X</td><td></td><td></td><td></td></tr><tr><td>John Hamon (Treasurer)</td><td>X</td><td></td><td></td><td></td></tr></table></td></tr>
</table>

I, Kelly Dodds, Secretary to the Paso Basin Cooperative Committee, do hereby certify that the foregoing is a fair statement of the proceedings of the meeting held on January 27, 2021, by the Paso Basin Cooperative Committee.

Kelly Dodds, Secretary of the Paso Basin Cooperative Committee.
Drafted by: Joey Steil and Angela Ford, County of San Luis Obispo

# PASO BASIN COOPERATIVE COMMITTEE
# March 17, 2021

## Agenda Item #6 – Consider Rotation of Officers

**Recommendation**
It is recommended that the Paso Basin Cooperative Committee (Committee):
1. Consider and discuss the formulation of a policy for the rotation of officers.
2. Pending Committee consensus, direct staff to develop a DRAFT policy for the rotation of officers for Committee consideration and potential adoption.

**Prepared By**
Blaine Reely, San Miguel Community Services District

**Background**
The City of Paso Robles, the San Miguel Community Services District (SMCSD), the County of San Luis Obispo, and the Shandon San Juan Water District (collectively "GSAs") entered into a Memorandum of Agreement (MOA) regarding preparation of a Groundwater Sustainability Plan (GSP) for the Paso Robles Groundwater Basin in 2017. Prior to submitting the GSP to the Department of Water Resources by the January 31, 2020 SGMA deadline, the GSAs executed Amendment No. 1 to the MOA which removed the automatic termination language and facilitates continued cooperation of the GSAs in SGMA compliance efforts under the provisions of the MOA and through the Paso Basin Cooperative Committee it establishes.

**Discussion**
While Section 4 of the MOA outlines the roles and activities of Committee, it does not speak to Appointment of Officers. At their October 18, 2017 meeting, the Committee nominated and confirmed John Hamon as Committee Chair, John Peschong as Vice Chair and Willy Cunha as Secretary. At the March 7, 2018 meeting, the Committee considered administration of the Committee, roles of officers (below) and created the office of Treasurer, confirming Joe Parent for the position. At the May 22, 2019 meeting, the Committee appointed John Peschong as Chair, Joe Parent as Vice Chair, Matt Turrentine as Secretary, and John Hamon as Treasurer. At the January 27, 2021 meeting, the Committee nominated Debbie Arnold as Committee Chair, Matt Turrentine as Vice Chair, John Hammond as Treasurer and Kelly Dodds as Secretary. The officer appointments are specific to the individual and not based on the GSA.

Duties of Committee Officers are as follows:

- **Chair**: Set Agenda (based on Committee input) with County Staff; preside over meetings
- **Vice Chair**: Take on Chair responsibilities in absence of the Chair
- **Secretary**: Review draft Committee meeting minutes prior to publication in upcoming Agenda
- **Treasurer**: Reviews reports from the City Finance Department and conducts financial oversight

At the January 27, 2021 meeting a motion was made by Kelly Dodds to have the Committee discuss and consider for adoption a policy providing for the rotation of officers.

* * *

**PASO BASIN COOPERATIVE COMMITTEE**
**March 17, 2021**

**Agenda Item #7 – Approval of Paso Robles Subbasin**
**Water Year 2020 Annual Report**

**Recommendation**

It is recommended that the Paso Basin Cooperative Committee (Committee) receive a presentation by the Annual Report Consultant, GSI Water Solutions, Inc., and consider approving the Paso Robles Subbasin Water Year 2020 Annual Report for submission to the Department of Water Resources (DWR) by the April 1, 2021 deadline.

**Prepared By**

Nate Page, GSI Water Solutions, Inc.
Angela Ford, County of San Luis Obispo

**Background**

SGMA regulations require GSAs to submit an Annual Report to DWR by April 1 following adoption of a GSP and annually thereafter. The GSP Annual Reports are intended to provide information on groundwater conditions and implementation of the GSP over the prior water year.

**Discussion**

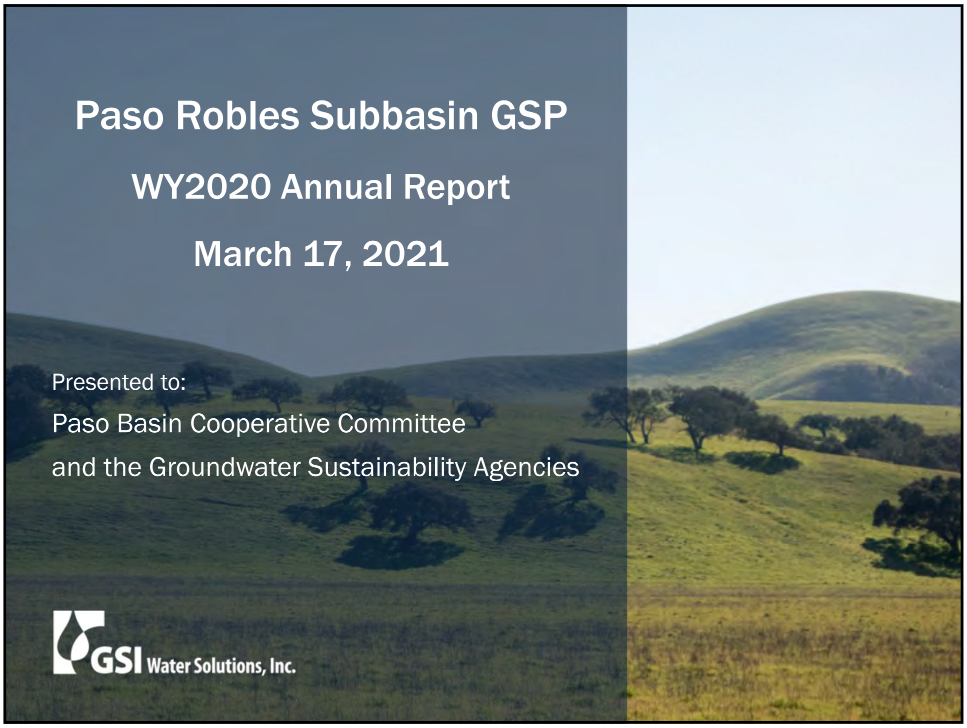
On November 18, 2020, consistent with MOA Section 6.3, the Committee recommended that the City of Paso Robles contract with GSI Water Solutions, Inc. for development of the Water Year 2020 Annual Report (Report). The Report Public Draft was posted for a public comment period that was open from February 17, 2021 to March 3, 2021. There were no comments received and, pending Committee approval on March 17, 2021, the Report will be finalized and submitted to DWR by the April 1, 2021 deadline.

**Attachments**

1. Presentation on Paso Robles Subbasin GSP Water Year 2020 Annual Report
2. Paso Robles Subbasin Water Year 2020 Annual Report*

* * *

**Figures and Appendices available at:https://www.slocounty.ca.gov/Departments/Public-Works/Forms-Documents/Committees-Programs/Sustainable-Groundwater-Management-Act-(SGMA)/Paso-Robles-Groundwater-Basin/Annual-Reports/Paso-Basin-WY2020-Annual-Report-PBCC-Review.pdf*




# Presentation Outline

- DWR Regulations and Process
- Groundwater Elevations
- Groundwater Extractions
- Surface Water Use
- Total Water Use
- Change in Groundwater in Storage
- Progress toward Meeting Basin Sustainability

GSI Water Solutions, Inc. 2

**DWR Process and Regulations** (§ 356.2)

"Each Agency shall submit an annual report to the Department by April 1 of each year following the adoption of the Plan."

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**Groundwater Elevations** (§ 356.2[b][1])

- Paso Robles Formation Aquifer
- Seasonal High and Low (Spring and Fall 2020) Contour Maps
- Hydrographs

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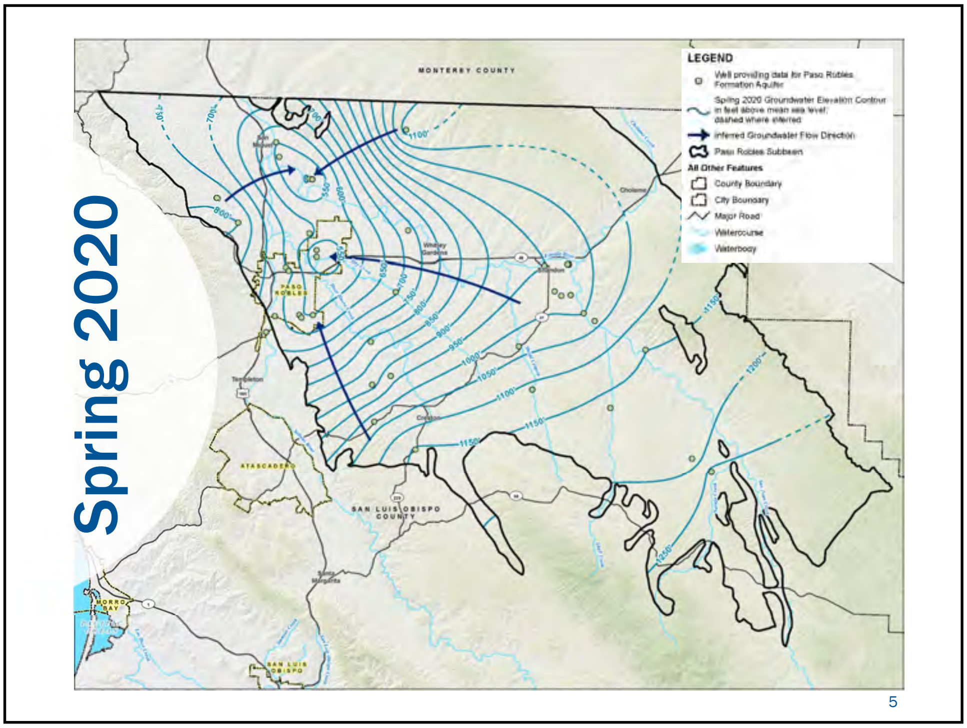
Spring 2020
MONTEREY COUNTY
LEGEND
Well providing data for Paso Robles Formation Aquifer
Spring 2020 Groundwater Elevation Contour in feet above mean sea level; dashed where inferred
Inferred Groundwater Flow Direction
Paso Robles Subbasin
All Other Features
County Boundary
City Boundary
Major Road
Watercourse
Waterbody
PASO ROBLES
ATASCADERO
SAN LUIS OBISPO COUNTY
MORRO BAY
SAN LUIS OBISPO
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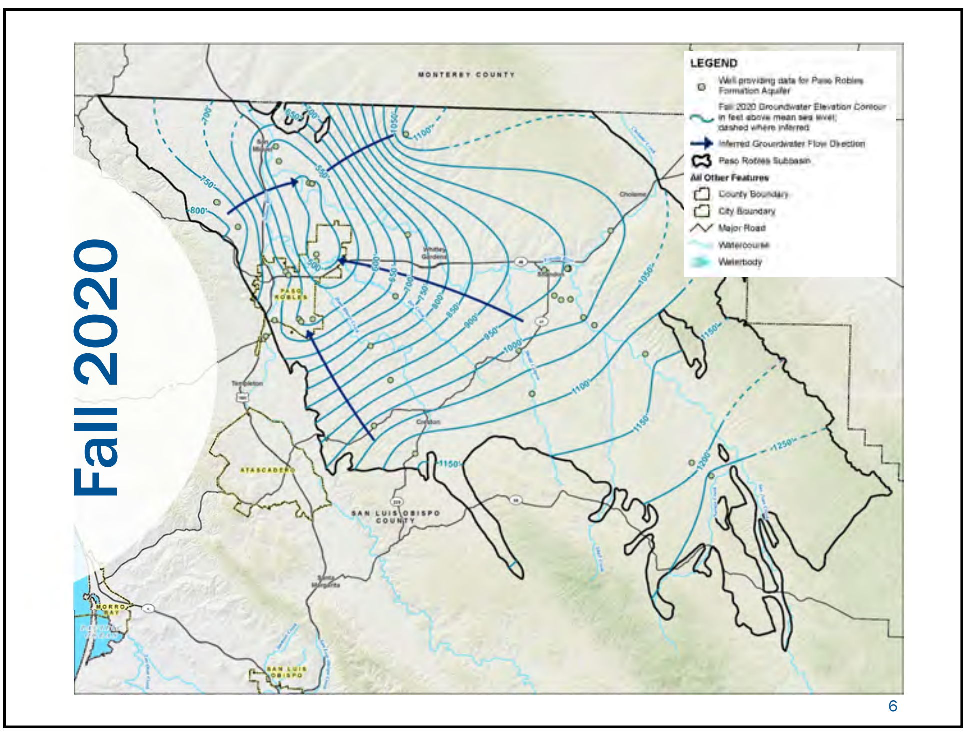
Fall 2020
MONTEREY COUNTY
LEGEND
Well providing data for Paso Robles Formation Aquifer
Fall 2020 Groundwater Elevation Contour in feet above mean sea level; dashed where inferred
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Paso Robles Subbasin
All Other Features
County Boundary
City Boundary
Major Road
Watercourse
Waterbody
PASO ROBLES
ATASCADERO
SAN LUIS OBISPO COUNTY
MORRO BAY
SAN LUIS OBISPO
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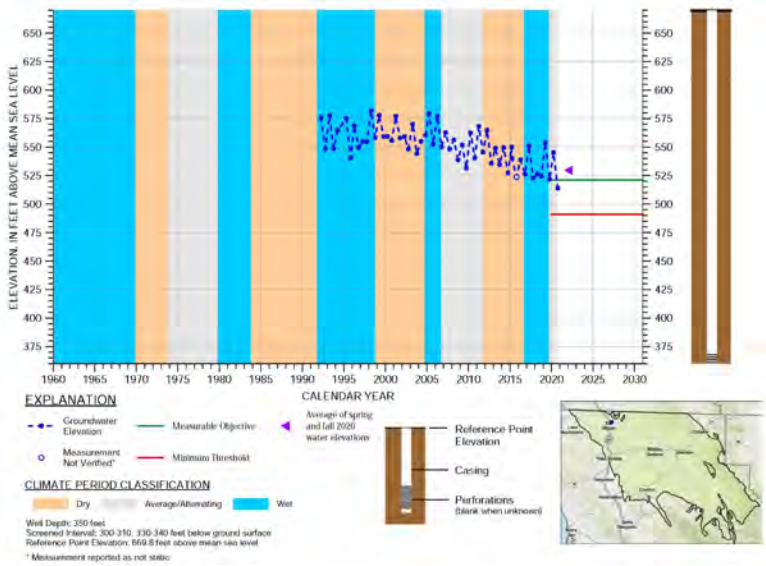
# 25S/12E-16K05

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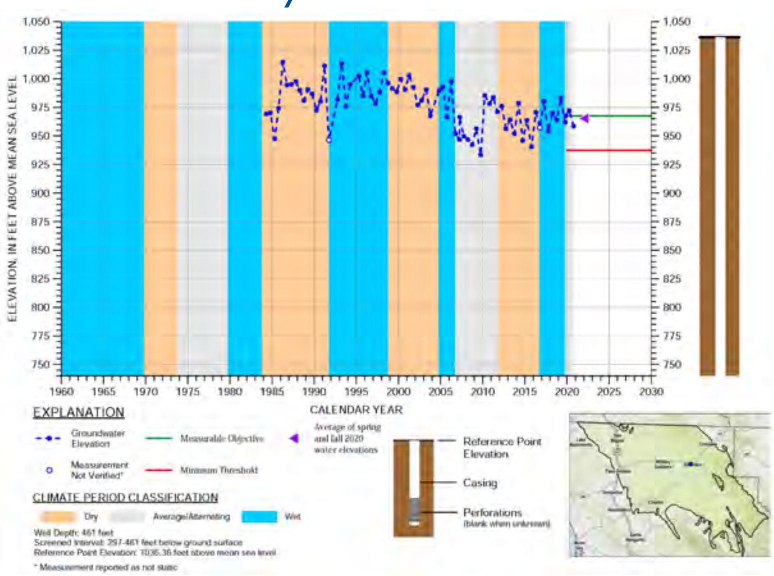
# 26S/15E-20B04

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## Groundwater Extractions (§ 356.2[b][2])

- Metered Municipal Well Production
- Estimated Agricultural Extraction
- Estimated Rural Domestic and Small Public Water System Extraction

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## Total Groundwater Extractions

| Water Year | Groundwater Extractions by Water Use Sector | | | Total (AF) |
|---|---|---|---|---|
| | Municipal (AF) | PWS and Rural Domestic (AF) | Agriculture (AF) | |
| 2020 | 1,509 | 5,060 | 60,700 | 67,300 |

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## Surface Water Use (§ 356.2[b][3])

- Surface Water Available for Use
- Total Surface Water Use

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# Surface Water Use

Surface Water Available for Use

| Water Year | Nacimiento Water Project (AF) | State Water Project (AF) | Total Available Surface Water (AF) |
|---|---|---|---|
| 2020 | 6,488 | 100 | 6,588 |

Total Surface Water Use

| Water Year | Nacimiento Water Project (AF) | State Water Project (AF) | Total Surface Water Use (AF) |
|---|---|---|---|
| 2020 | 737* | 0 | 737 |

*The City of Paso Robles also used 804 AF of NWP water in the Atascadero Subbasin.

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**Total Water Use**
(§ 356.2[b][4])

- Total Annual Water Use by Source
- Total Annual Water Use by Water Use Sector

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# Total Water Use

| Water Year | Municipal (AF) | | PWS and Rural Domestic (AF) | Agriculture (AF) | Total (AF) |
|---|---|---|---|---|---|
| Source: | Groundwater | Surface Water | Groundwater | Groundwater | |
| 2020 | 1,509 | 737 | 5,060 | 60,700 | 68,000 |

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## Change in Groundwater in Storage (§ 356.2[b][5])

- Annual Changes in Groundwater Elevation
- Annual and Cumulative Change in Groundwater in Storage Calculations

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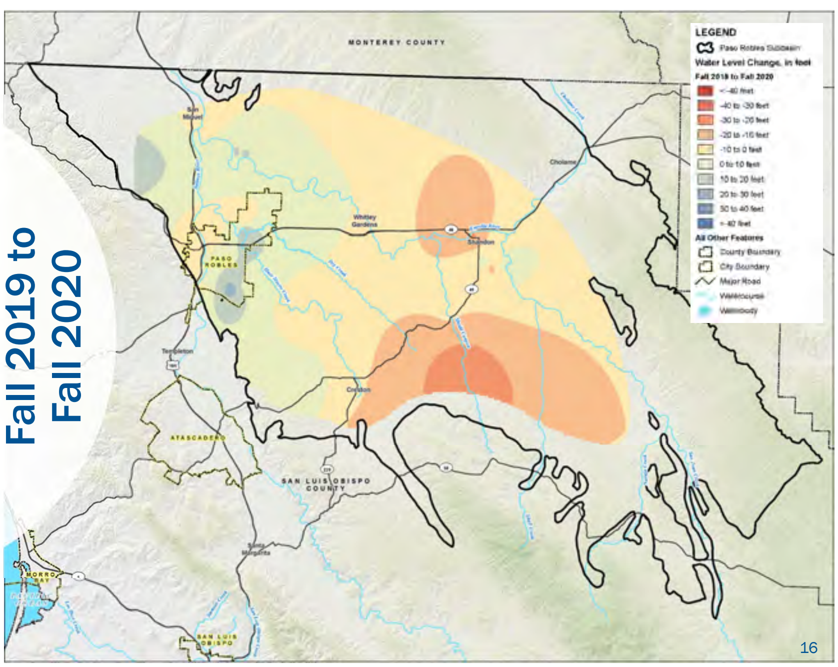
## Fall 2019 to Fall 2020

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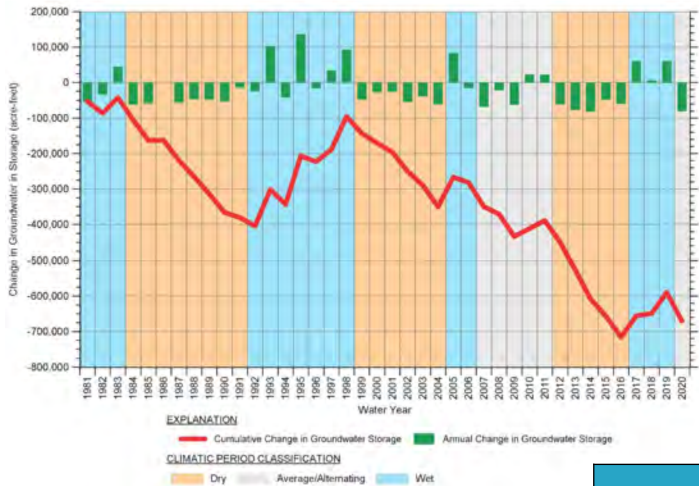
## Annual and Cumulative Change in Groundwater in Storage




| Water Year | Annual Change (AF) |
|---|---|
| 2020 | -80,800 |

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## Progress toward Meeting Basin Sustain-ability (§ 356.2[c])

- Subbasin Conditions:
  - Declining Groundwater Elevations
  - Decline of Groundwater in Storage
- Projects and Management Actions Goals:
  - Reduce Groundwater Pumping
  - Achieve Groundwater Sustainability by 2040

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## Projects and Management Actions

- Basin-Wide Management Actions and Projects
  - Extension of Water Neutral New Development Program (temporary measure)
  - Paso Basin Aerial Groundwater Mapping Study

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## Projects and Management Actions

- Area-Specific Projects
  - Expand Alluvial Aquifer Monitoring Network and Install New Stream Gages (SEP)
  - City of Paso Robles and San Miguel CSD Recycled Water Projects
  - Blended Water Project
  - Stormwater Capture and Recharge Projects
    - City of Paso Robles Municipal Stormwater Program
    - SSJWD/EPCWD Stormwater Capture and Recharge Feasibility Study

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## Projects and Management Actions

- Area-Specific Projects (cont'd)
  - Expand Monitoring Well Network
    - SLOFCWCD Initiative to Expand the Monitoring Well Network on Public Properties
    - SSJGSA Program to Expand the Monitoring Well Network
    - EPCWD Program to Expand the Monitoring Well Network
  - Expansion of Salinas Dam & Ownership Transfer

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## Questions?

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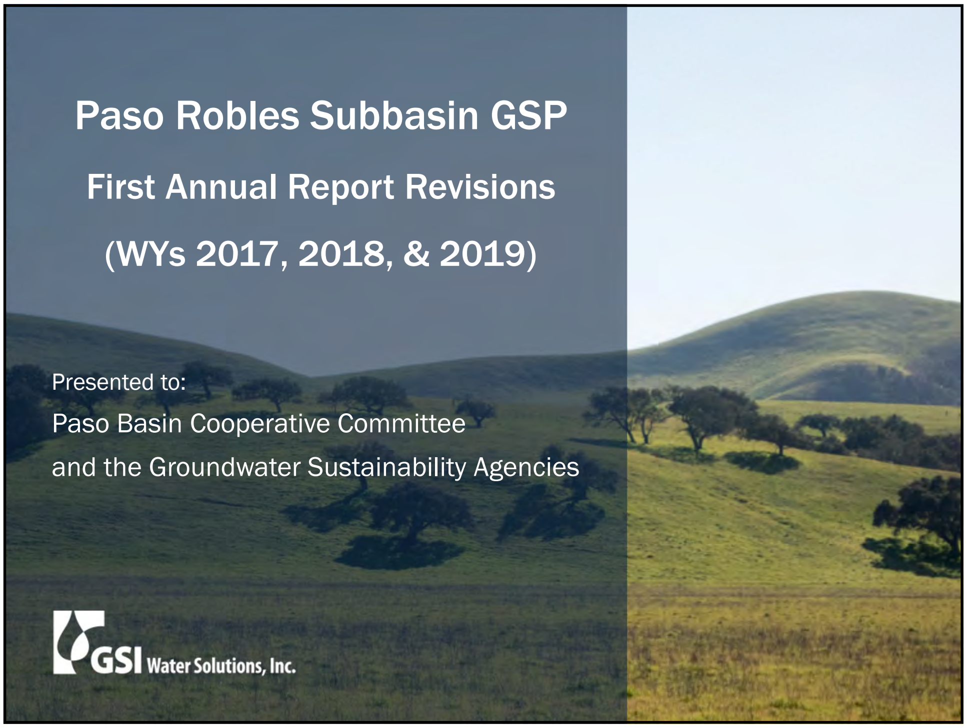


# Revised Total Water Use

| Water Year | Municipal (AF) | | PWS and Rural Domestic (AF) | Agriculture (AF) | Total (AF) |
|---|---|---|---|---|---|
| Source: | Groundwater | Surface Water | Groundwater | Groundwater | |
| 2017 | ~~4,235~~ 1,626 | ~~1,826~~ 1,691 | 5,060 | ~~72,500~~ 64,100 | ~~83,600~~ 72,500 |
| 2018 | ~~5,029~~ 1,677 | ~~2,339~~ 1,477 | 5,060 | ~~71,000~~ 75,500 | ~~83,400~~ 83,700 |
| 2019 | ~~4,804~~ 1,729 | ~~1,541~~ 1,184 | 5,060 | ~~72,200~~ 55,800 | ~~83,600~~ 63,800 |

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# Questions?

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PBCC REVIEW DRAFT

Paso Basin Cooperative Committee
and the Groundwater Sustainability Agencies

# Paso Robles Subbasin
# Water Year 2020 Annual Report

March 17, 2021

Prepared by:
**GSI Water Solutions, Inc.**
5855 Capistrano Avenue, Suite C, Atascadero, CA 93422

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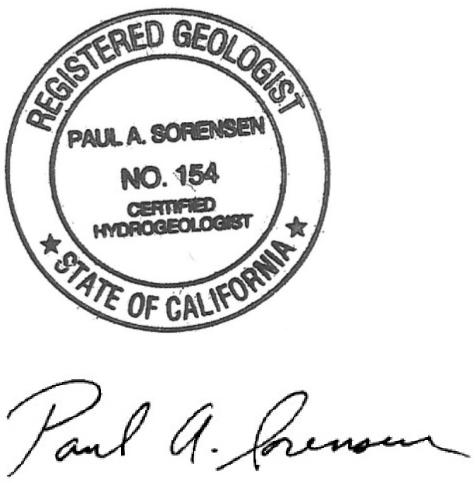
# Paso Robles Subbasin
# Water Year 2020 Annual Report

This report was prepared by the staff of GSI Water Solutions, Inc. under the supervision of professionals whose signatures appear below. The findings or professional opinion were prepared in accordance with generally accepted professional engineering and geologic practice.





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Project Manager

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Consulting Hydrogeologist

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# Abbreviations and Acronyms

| | |
|---|---|
| AEM | airborne electromagnetic method |
| AF | acre-feet |
| AFY | acre-feet per year |
| AMSL | above mean sea level |
| BMP | Best Management Practice |
| CASGEM | California State Groundwater Elevation Monitoring Program |
| CCR | California Code of Regulations |
| CDEC | California Data Exchange Center |
| CDFFP | California Department of Forestry and Fire Protection |
| CIMIS | California Irrigation Management Information System |
| COC | constituent of concern |
| CSA | Community Service Area |
| CSD | Community Services District |
| CWWCP | Countywide Water Conservation Program |
| DSOD | Division of Safety of Dams |
| DWR | California State Department of Water Resources |
| EPCWD | Estrella-El Pomar-Creston Water District |
| ETo | reference evapotranspiration |
| GDE | groundwater dependent ecosystem |
| GMP | Groundwater Management Plan |
| gpd/ft | gallons per day per foot |
| gpm | gallons per minute |
| GSA | Groundwater Sustainability Agency |
| GSP | Groundwater Sustainability Plan |
| GSSI | Geoscience Support Services, Inc. |
| IDC | IWFM Independent Demand Calculator |
| ILRP | Irrigated Lands Regulatory Program |
| InSAR | interferometric synthetic-aperture radar |
| IWFM | Integrated Water Flow Model |
| LID | low-impact development |
| M&A | Montgomery & Associates, Inc. |
| MOA | memorandum of agreement |
| NPDES | National Pollutant Discharge Elimination System |
| NWP | Nacimiento Water Project |
| PBCC | Paso Basin Cooperative Committee |
| PRWSP | Paso Robles Watershed Plan |
| PWS | public water system |
| RDI | regulated deficit irrigation |

| | |
|---|---|
| RMS | representative monitoring site |
| RU | rural domestic unit |
| S | storage coefficient |
| SEP | Supplemental Environmental Project |
| SGMA | Sustainable Groundwater Management Act |
| SLO | San Luis Obispo |
| SLOFCWCD | San Luis Obispo County Flood Control and Water Conservation District |
| SPI | Standardized Precipitation Index |
| SSJGSA | Shandon-San Juan Groundwater Sustainability Agency |
| SSJWD | Shandon-San Juan Water District |
| Subbasin | Paso Robles Area Subbasin of the Salinas Valley Groundwater Basin |
| SWMP | Stormwater Management Plan |
| SWRCB | State Water Resources Control Board |
| SWRP | San Luis Obispo County Stormwater Resource Plan |
| SWP | State Water Project |
| TDS | total dissolved solids |
| USACE | United States Army Corps of Engineers |
| USGS | U.S. Geological Survey |
| WNND | Water Neutral New Development |
| WY | water year |

# Annual Report Elements Guide and Checklist

| California Code of Regulations – GSP Regulation Sections | Annual Report Elements | Location in Annual Report |
|---|---|---|
| Article 7 | Annual Reports and Periodic Evaluations by the Agency | |
| § 356.2 | Annual Reports | |
| | Each Agency shall submit an annual report to the Department by April 1 of each year following the adoption of the Plan. The annual report shall include the following components for the preceding water year: | |
| | (a) General information, including an executive summary and a location map depicting the basin covered by the report. | Executive Summary (§356.2[a]) |
| | (b) A detailed description and graphical representation of the following conditions of the basin managed in the Plan: | Section 2.4 Monitoring Networks (§356.2[b]) |
| | (1) Groundwater elevation data from monitoring wells identified in the monitoring network shall be analyzed and displayed as follows: | Section 3 Groundwater Elevations (§356.2[b][1]) |
| | (A) Groundwater elevation contour maps for each principal aquifer in the basin illustrating, at a minimum, the seasonal high and seasonal low groundwater conditions. | Section 3.2 Seasonal High and Low (Spring and Fall) (§356.2[b][1][A]) |
| | (B) Hydrographs of groundwater elevations and water year type using historical data to the greatest extent available, including from January 1, 2015, to current reporting year. | Section 3.3 Hydrographs (§356.2[b][1][B], and Appendix E) |
| | (2) Groundwater extraction for the preceding water year. Data shall be collected using the best available measurement methods and shall be presented in a table that summarizes groundwater extractions by water use sector, and identifies the method of measurement (direct or estimate) and accuracy of measurements, and a map that illustrates the general location and volume of groundwater extractions. | Section 4 Groundwater Extractions (§356.2[b][2]) |
| | (3) Surface water supply used or available for use, for groundwater recharge or in-lieu use shall be reported based on quantitative data that describes the annual volume and sources for the preceding water year. | Section 5 Surface Water Use (§356.2[b][3]) |

| California Code of Regulations – GSP Regulation Sections | Annual Report Elements | Location in Annual Report |
|---|---|---|
| Article 7 | Annual Reports and Periodic Evaluations by the Agency | |
| § 356.2 | Annual Reports | |
| | (4) Total water use shall be collected using the best available measurement methods and shall be reported in a table that summarizes total water use by water use sector, water source type, and identifies the method of measurement (direct or estimate) and accuracy of measurements. Existing water use data from the most recent Urban Water Management Plans or Agricultural Water Management Plans within the basin may be used, as long as the data are reported by water year. | Section 6 Total Water Use (§356.2[b][4]) |
| | (5) Change in groundwater in storage shall include the following: | Section 7 Change in Groundwater in Storage (§356.2[b][5]) |
| | (A) Change in groundwater in storage maps for each principal aquifer in the basin. | Section 7.1 Annual Changes in Groundwater Elevation (§356.2[b][5][A]) |
| | (B) A graph depicting water year type, groundwater use, the annual change in groundwater in storage, and the cumulative change in groundwater in storage for the basin based on historical data to the greatest extent available, including from January 1, 2015, to the current reporting year. | Section 7.2 Annual and Cumulative Change in Groundwater in Storage Calculations (§356.2[b][5][B]) |
| | (c) A description of progress towards implementing the Plan, including achieving interim milestones, and implementation of projects or management actions since the previous annual report. | Section 8 Progress towards Basin Sustainability (§356.2[c]) |

# Executive Summary (§ 356.2[a])

## Introduction

This Water Year 2020 Annual Report for the Paso Robles Area Subbasin of the Salinas Valley Groundwater Basin (Paso Robles Subbasin or Subbasin; see Figure 1) has been prepared in accordance with the Sustainable Groundwater Management Act (SGMA) and Groundwater Sustainability Plan (GSP) Regulations. Pursuant to the California Department of Water Resources (DWR) regulations, a GSP Annual Report must be submitted to DWR by April 1 of each year following the adoption of the GSP.

With the submittal of the adopted Paso Robles Subbasin GSP on January 31, 2020, the Groundwater Sustainability Agencies (GSAs) are required to submit an annual report for the preceding Water Year (October 1 through September 30) to DWR by April 1 of each subsequent year. These annual reports will convey monitoring and water use data to the DWR and to Subbasin stakeholders on an annual basis to gauge performance of the Subbasin relative to the sustainability goals set forth in the GSP.

Sections of the Water Year 2020 Annual Report include the following:

**Section 1. Introduction – Paso Robles Subbasin Water Year 2020 Annual Report**: a brief background of the formation and activities of the Paso Robles Subbasin GSAs and development and submittal of the GSP.

**Section 2. Paso Robles Subbasin Setting and Monitoring Networks**: a summary of the Subbasin setting, Subbasin monitoring networks, and ways in which data are used for groundwater management.

**Section 3. Groundwater Elevations (§356.2[b][1])**: a description of recent monitoring data with groundwater elevation contour maps for spring and fall monitoring events and representative hydrographs.

**Section 4. Groundwater Extractions (§356.2[b][2])**: compilation of metered and estimated groundwater extractions by land use sector and location of extractions.

**Section 5. Surface Water Use (§356.2[b][3])**: a summary of reported surface water use.

**Section 6. Total Water Use (§356.2[b][4])**: a presentation of total water use by source and sector.

**Section 7. Change in Groundwater in Storage (§356.2[b][5])**: a description of the methodology and presentation of changes in groundwater in storage based on fall to fall groundwater elevation differences.

**Section 8. Progress towards Basin Sustainability (§356.2[c])**: a summary of management actions taken throughout the Subbasin by GSAs and individual entities towards sustainability of the Subbasin.

## Groundwater Elevations

In general, the groundwater elevations observed in the Subbasin during water year (WY) 2020 show a decline across portions of the Subbasin, likely due predominantly to below-average rainfall conditions in WY 2020. Positive and negative changes in groundwater elevations from year to year are observed in various parts of the Subbasin, as has been observed historically. Seasonal trends of slightly higher spring groundwater elevations compared with fall levels are observed annually.

## Groundwater Extractions

Total groundwater extractions in the Subbasin for WY 2020 is estimated to be 67,300 acre-feet (AF). Table ES-1 summarizes the groundwater extractions by water use sector for each water year. The values for WYs 2017 – 2019 (grayed out) are included for reference purposes. This convention is carried throughout the report.

**Table ES- 1. Groundwater Extractions by Water Use Sector**

| Water Year | Groundwater Extractions by Water Use Sector | | | Total (AF) |
|---|---|---|---|---|
| | Municipal (AF) | PWS and Rural Domestic (AF) | Agriculture (AF) | |
| 2017 | 1,626 | 5,060 | 64,100 | 70,800 |
| 2018 | 1,677 | 5,060 | 75,500 | 82,200 |
| 2019 | 1,729 | 5,060 | 55,800 | 62,600 |
| 2020 | 1,509 | 5,060 | 60,700 | 67,300 |
| Method of Measure: | Metered | 2016 Groundwater Model | Soil-Water Balance Model | |
| Level of Accuracy: | high | low-medium | medium | |

Notes:
AF = acre-feet
PWS = public water systems

## Surface Water Use

The Subbasin currently benefits from surface water entitlements from the Nacimiento Water Project (NWP) and the State Water Project (SWP) to supplement municipal groundwater demands in the City of Paso Robles and the community of Shandon, respectively. The City of Paso Robles actually utilized 1,541 AF of their NWP entitlement, but 804 AF of their NWP deliveries were recharged and extracted in the Atascadero Subbasin, so those volumes do not show up in this accounting. Locations of communities dependent on groundwater and with access to surface water are shown on Figure 8. There is currently no surface water available for agricultural or recharge project use within the Subbasin. A summary of total actual surface water use by source is provided in Table ES-2.

**Table ES- 2. Total Surface Water Use by Source**

| Water Year | Nacimiento Water Project[1] (AF) | State Water Project[2] (AF) | Total Surface Water Use (AF) |
|---|---|---|---|
| 2017 | 1,650 | 42 | 1,691 |
| 2018 | 1,423 | 55 | 1,477 |
| 2019 | 1,142 | 43 | 1,184 |
| 2020 | 737 | 0 | 737 |

Notes:
[1] Contract annual entitlement to the City of Paso Robles = 6,488 AFY
[2] Contract annual entitlement to CSA 16 = 100 AFY
AF = acre-feet
AFY = acre-feet per year

## Total Water Use

For WY 2020, quantification of total water use was completed through reporting of metered water production data from municipal wells, metered surface water use, and from models used to estimate agricultural crop water supply requirements. In addition, rural water use and small commercial public water system use was estimated. Table ES-3 summarizes the total annual water use in the Subbasin by source and water use sector.

**Table ES- 3. Total Water Use in the Subbasin by Source and Water Use Sector**

| Water Year | Municipal (AF) | | PWS and Rural Domestic (AF) | Agriculture (AF) | Total (AF) |
|---|---|---|---|---|---|
| Source: | Groundwater | Surface Water | Groundwater | Groundwater | |
| 2017 | 1,626 | 1,691 | 5,060 | 64,100 | 72,500 |
| 2018 | 1,677 | 1,477 | 5,060 | 75,500 | 83,700 |
| 2019 | 1,729 | 1,184 | 5,060 | 55,800 | 63,800 |
| 2020 | 1,509 | 737 | 5,060 | 60,700 | 68,000 |
| Method of Measure: | Metered | Metered | 2016 Groundwater Model | Soil-Water Balance Model | |
| Level of Accuracy: | high | high | low-medium | medium | |

Notes:
AF = acre-feet
PWS = public water systems

## Change in Groundwater in Storage

The calculation of change in groundwater in storage in the Subbasin was derived from comparison of fall groundwater elevation contour maps from one year to the next as well as taking the difference between groundwater elevations throughout the Subbasin as the aquifer becomes saturated (storage gain) or dewatered (storage loss). For this analysis, fall 2019 groundwater elevations were subtracted from the fall 2020 groundwater elevations resulting in a map depicting the changes in groundwater elevations in the Paso Robles Formation Aquifer that occurred during WY 2020.

The groundwater elevation change map for WY 2020 shows that water levels declined over a majority of the eastern portion of the Subbasin, with a minor depression in the Shandon area and a more pronounced area of decline in the south (Figure 10). The 2020 map also shows that groundwater elevations generally increased in the western portion of the Subbasin, notably in the southeastern portion of the City of Paso Robles.

The annual change of groundwater in storage calculated for WY 2020 is presented in Table ES-4. Increases of groundwater in storage are presented as positive numbers and decreases of groundwater in storage are presented as negative numbers.

**Table ES- 4. Annual Change of Groundwater in Storage**

| Water Year | Annual Change (AF) |
|---|---|
| 2017 | 60,100 |
| 2018 | 6,400 |
| 2019 | 59,700 |
| 2020 | -80,800 |

**Note:** AF = acre-feet

## Progress towards Meeting Basin Sustainability

Several projects and management actions are in process or have been recently implemented in the Subbasin to attain sustainability. These projects and actions include capital projects as well as non-structural basin-wide policies intended to reduce or optimize local groundwater use. Some of these projects were described in concept in the GSP; some of the actions described herein are new initiatives designed to make new water supplies available to the Subbasin that may be implemented by project participants to reduce pumping and partially mitigate the degree to which the management actions would be needed. Some of the ongoing efforts include:

- Amendment #1 to the Memorandum of Agreement
- Water Neutral New Development
- Paso Basin Aerial Groundwater Mapping Pilot Study
- Installation of Monitoring Wells and Stream Gages (SEP)
- City of Paso Robles Recycled Water Program
- San Miguel Community Services District Recycled Water Project
- Blended Water Project
- Stormwater Capture and Recharge Projects
- Expansion of Monitoring Well Network
- Expansion of Salinas Dam and Ownership Transfer

Relative to the basin conditions at the end of the study period as reported in the GSP, the First Annual Report (WYs 2017–2019) (GSI, 2020) and this Water Year 2020 Annual Report indicate an improvement in groundwater conditions throughout the Subbasin and a modest increase of total groundwater in storage. It is clear that historical groundwater pumping in excess of the sustainable yield has created challenging conditions for sustainable management. However, actions are already underway to collect data, improve the monitoring and data collection networks, and coordinate with affected agencies and entities throughout the Subbasin to develop solutions that address the shared mutual interest in the Subbasin's overall sustainability goal.

The above-average rainfall water years of 2017 and 2019 improved groundwater conditions in the Subbasin. Of the 22 representative monitoring site (RMS) wells in the Subbasin groundwater monitoring network, only one well exhibits groundwater elevations at or below the minimum threshold established in the GSP (this well is discussed in more detail in Section 3.3). Although the groundwater elevations in some of the RMS wells are continuing to trend downward, several of the RMS wells exhibit recovering groundwater elevations in the past few years, apparently because of the return to normal rainfall conditions. Eight of the 22 RMS wells have current groundwater elevations greater than the measurable objective for that RMS well.

Groundwater in storage in the Subbasin increased more than 45,000 AF in total over the past four water years, despite the 80,800 AF decrease of groundwater in storage in WY 2020.

As of the date of this report, updated Interferometric Synthetic Aperture Radar (InSAR) data has been provided by DWR through September 2019. As discussed in the GSP, there is a potential error of 0.1 feet (or 1.2 inches) associated with the InSAR measurement and reporting methods. A land surface change of less than 0.1 feet is therefore within the noise of the data and is equivalent to no evidence of subsidence. Considering this range of potential error, examination of the June 2018 through September 2019 InSAR data show that zero land subsidence has occurred since June 2018. These data indicate that there is no indication of an undesirable result. The GSAs will continue to monitor and report annual subsidence as more data become available.

At this time, there are no more recent data available since publication of the GSP to assess the interconnectivity of surface water and groundwater and the potential depletion of interconnected surface water. The potential for impact to this sustainability indicator will be assessed in future annual reports as data are developed to fill data gaps.

Additional time will be necessary to judge the effectiveness and quantitative impacts of the projects and management actions either now underway or in the planning and implementation stage. However, it is clear that the actions in place and as described in this Water Year 2020 Annual Report are a good start towards reaching the sustainability goals laid out in the GSP. It is too soon to judge the observed changes in basin conditions against the interim goals outlined in the GSP, but the anticipated effects of the projects and management actions now underway are expected to positively affect the ability of the Subbasin to reach the necessary sustainability goals.

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# SECTION 1: Introduction – Paso Robles Subbasin Water Year 2020 Annual Report

The Water Year 2020 Annual Report for the Paso Robles Area Subbasin of the Salinas Valley Groundwater Basin (Paso Robles Subbasin or Subbasin) has been prepared for the Paso Basin Cooperative Committee (PBCC) and the Groundwater Sustainability Agencies (GSAs) in accordance with the Sustainable Groundwater Management Act (SGMA) and Groundwater Sustainability Plan (GSP) Regulations (§ 356.2. Annual Reports) (see Appendix A, GSP Regulations for Annual Reports). Pursuant to the California Department of Water Resources (DWR) regulations, a GSP Annual Report must be submitted to DWR by April 1 of each year following the adoption of the GSP. Submittal of the adopted Paso Robles Subbasin GSP occurred on January 31, 2020. The GSAs are required to submit an annual report for the preceding water year (October 1 through September 30) to DWR by April 1 of each subsequent year. The First Annual Report (GSI, 2020) was submitted to DWR on March 25, 2020 and a modified version[1] was submitted to DWR on November 20, 2020. This Water Year 2020 Annual Report for the Paso Robles Subbasin documents groundwater production, water use data and water level data from October 1, 2019 through October 31, 2020 [2]. The numbers presented in this Water Year 2020 Annual Report include modified numbers for WYs 2017 through 2019. A revised First Annual Report, containing these modified numbers, will be submitted to DWR.

## 1.1 Setting and Background

The Paso Robles Subbasin GSP was prepared by Montgomery & Associates, Inc. (M&A, 2020), on behalf of and in cooperation with the Paso Basin Cooperative Committee and the Subbasin GSAs. The GSP, and subsequent annual reports including this Water Year 2020 Annual Report, covers the entire Paso Robles Subbasin (Figure 1). The Subbasin lies in the northern portion of San Luis Obispo County. The majority of the Subbasin comprises gentle flatlands near the Salinas River Valley, ranging in elevation from approximately 450 to 2,400 feet above mean sea level (AMSL). The Subbasin is drained by the Salinas River and its tributaries, including the Estrella River, Huer Huero Creek, and San Juan Creek. Communities in the Subbasin are the City of Paso Robles and the communities of San Miguel, Creston, and Shandon. Highway 101 is the most significant north-south highway in the Subbasin, with Highways 41 and 46 running east-west across the Subbasin.

The GSP was jointly developed by four GSAs:

- City of Paso Robles GSA
- Paso Basin - County of San Luis Obispo GSA
- San Miguel Community Services District (CSD) GSA
- Shandon - San Juan GSA

The Paso Basin GSAs overlying the Subbasin entered into a Memorandum of Agreement (MOA) in September 2017. The purpose of the MOA was to establish a Paso Basin Cooperative Committee (PBCC) to develop a single GSP for the entire Subbasin to be considered for adoption by each GSA and subsequently submitted to DWR for approval. Under the framework of the original MOA, the GSAs engaged the public and

[1] Modifications were limited to language related to Section 8.3.2, Extension of Water Neutral New Development Program.
[2] The required timeframe of the annual reports, pursuant to the SGMA regulations, is by water year, which is October 1 through September 30 of any year. However, because the County of San Luis Obispo Groundwater Level Monitoring Program measures water levels in October, the October 2020 measurements, for instance, are utilized to reflect conditions at the end of water year 2020.

coordinated to jointly develop the Paso Robles Subbasin GSP. At its November 20, 2019 meeting, in accordance with the MOA, the PBCC voted unanimously to recommend that the GSAs adopt the GSP and submit it to DWR by the SGMA deadline. Subsequent actions by each GSA resulted in unanimous approval of the GSP and a joint submittal of the GSP to DWR.

The original MOA included provision for automatic termination upon approval of the GSP by DWR. Resolutions adopted by each GSA during the GSP approval process included an amendment to the MOA that removed automatic termination language because the GSAs will continue cooperating on the GSP and its implementation until such time as the long-term governance structure for implementation of the GSP is developed.

Each of the GSAs appointed a representative Member and Alternate to the PBCC to coordinate activities among the GSAs during the development of the GSP and the development and submittal of this Water Year 2020 Annual Report. The GSAs also agreed to designate the County of San Luis Obispo Director of Public Works as the Plan Manager with the authority to submit the GSP and annual reports and serve as the point of contact with DWR.

## 1.2 Organization of This Report

The required contents of an annual report are provided in the GSP Regulations (§ 356.2), included as Appendix A. Organization of the report is meant to follow the regulations where possible to assist in the review of the document. The sections are briefly described as follows:

**Section 1. Introduction – Paso Robles Subbasin Water Year 2020 Annual Report**: a brief background of the formation and activities of the Paso Robles Subbasin GSAs and development and submittal of the GSP.

**Section 2. Paso Robles Subbasin Setting and Monitoring Networks**: a summary of the Subbasin setting, Subbasin monitoring networks, and the ways in which data are used for groundwater management.

**Section 3. Groundwater Elevations (§356.2[b][1])**: a description of recent monitoring data with groundwater elevation contours for spring and fall monitoring events and representative hydrographs.

**Section 4. Groundwater Extractions (§356.2[b][2])**: compilation of metered and estimated groundwater extractions by land use sector and location of extractions.

**Section 5. Surface Water Use (§356.2[b][3])**: a summary of reported surface water use.

**Section 6. Total Water Use (§356.2[b][4])**: a presentation of total water use by source and sector.

**Section 7. Change in Groundwater in Storage (§356.2[b][5])**: a description of the methodology and presentation of changes in groundwater in storage based on fall to fall groundwater elevation differences.

**Section 8. Progress towards Basin Sustainability (§356.2[c])**: a summary of management actions taken throughout the Subbasin by GSAs and individual entities towards sustainability of the Subbasin.

# SECTION 2: **Paso Robles Subbasin Setting and Monitoring Networks**

## 2.1 Introduction

This section provides a brief description of the basin setting and the groundwater management monitoring programs described in the GSP, as well as any notable events affecting monitoring activities or the quality of monitoring results in the reported WY 2020. Much of the background information reported on in this Water Year 2020 Annual Report was taken from the GSP prepared by Montgomery & Associates, Inc. (M&A, 2020).

## 2.2 Subbasin Setting

The Subbasin is a structural trough trending to the northwest filled with terrestrially derived sediments sourced from the surrounding mountains. The Subbasin is surrounded by relatively impermeable geologic formations, sediments with poor water quality, and structural faults. Land surface elevation ranges from approximately 2,000 feet AMSL in the southeast extent of the Subbasin to about 600 feet AMSL in the northwest extent, where the Salinas River exits the Subbasin. Agriculture is the dominant land use. The Subbasin includes the incorporated City of Paso Robles and unincorporated communities of San Miguel, Creston, and Shandon.

The Subbasin is the southernmost portion of the Salinas Valley Groundwater Basin. As originally defined by DWR (2003), the Subbasin was in both San Luis Obispo and Monterey counties. The 2019 DWR basin boundary modification process resulted in a revision of the northern boundary of the Paso Robles Subbasin to be coincident with the San Luis Obispo/Monterey county line, thereby placing the Subbasin entirely within San Luis Obispo County.

The top of the Subbasin is defined by land surface. The bottom of the Subbasin is defined by the base of the Paso Robles Formation. Sediments below the base of the Paso Robles Formation are typically much less permeable than the overlying sediments. Although the bedrock sediments often produce usable quantities of groundwater, the water is generally of poor quality, so they are not considered part of the Subbasin. As described in the GSP, the lateral boundaries of the Subbasin include the following:

- The western boundary is defined by the contact between the sediments in the Subbasin and the sediments of the Santa Lucia Range. A portion of the western boundary is defined by the Rinconada fault system which separates the Paso Robles Subbasin from the Atascadero Area Subbasin.
- The eastern boundary of the Subbasin is defined by the contact between the sediments in the Subbasin and the sediments of the Temblor Range. The San Andreas Fault generally forms the eastern Subbasin boundary.
- The southern boundary of the Subbasin is defined by the contact between the sediments in the Subbasin and the sediments of the La Panza Range. To the southeast, a watershed and groundwater divide separates the Subbasin from the adjacent Carrizo Plain Basin; sedimentary layers are likely continuous across this divide.
- The northern boundary of the Subbasin is defined by the San Luis Obispo/Monterey county line.

Two principal aquifers exist in the Subbasin, including the Alluvial Aquifer and the Paso Robles Formation Aquifer. The Alluvial Aquifer is the youngest aquifer. It is unconfined and consists of predominantly coarse-grained sediments (sand and gravel) deposited along the Salinas River, Estrella River, Huer Huero Creek, and San Juan Creek. The Alluvial Aquifer varies in thickness but may be up to 100 feet thick along the channels. Much of the Alluvial Aquifer is characterized by relatively high transmissivity that may exceed

100,000 gallons per day per foot (gpd/ft). Wells screened in the Alluvial Aquifer can be very productive and may yield over 1,000 gallons per minute (gpm).

The Paso Robles Formation Aquifer underlies the Alluvial Aquifer and outcrops in the Subbasin everywhere outside of the Holocene stream channels. The Paso Robles Formation represents the largest volume of sediments in the Subbasin, with a total thickness up to 3,000 feet in the northern Estrella area and up to 2,000 feet in the Shandon area. The Paso Robles Formation has a thickness of 700 to 1,200 feet throughout most of the Subbasin. It is generally characterized by interbedded, discontinuous lenses of sand and gravel that comprise the most productive strata within the aquifer, separated vertically by comparatively thick zones of fine-grained sediments (silts and clays). Well depths generally range from approximately 200 feet to 1,000 feet or more. As described in the GSP, reported aquifer transmissivity estimates in the Paso Robles Formation range from approximately 1,000 to 9,000 gpd/ft, and well yields range from approximately 150 gpm to 850 gpm.

The primary components of recharge to the Subbasin aquifers are percolation of precipitation and infiltration of surface water from rivers and streams. Natural discharge from the Subbasin aquifers occurs through springs and seeps, evapotranspiration, and discharge to surface water bodies. The most significant component of discharge is pumping of groundwater from wells. The regional direction of groundwater flow is from the southeast to the northwest. As there is no hydrogeologic barrier to flow along the northern boundary of the Subbasin, groundwater exits the Subbasin along that boundary to the adjacent Salinas Valley Basin to the north.

## 2.3 Precipitation and Climatic Periods

Annual precipitation recorded at the Paso Robles weather station (National Oceanic and Atmospheric Administration [NOAA] station 46730) is presented by water year in Figure 2. The total annual precipitation recorded at the Paso Robles weather station for WY 2020 is 12.5 inches. The long-term average annual precipitation for the period 1925 through 2020 is 14.6 inches per water year, as recorded at the Paso Robles weather station. Climatic periods in the Subbasin have been determined based on analysis of data from the Paso Robles weather station using the Standardized Precipitation Index (SPI), which quantifies deviations from normal precipitation patterns, using a 60-month period for analysis to maintain consistency with previous analyses in the GSP. These climatic periods are categorized according to the following designations: wet, dry, and average/alternating wet and dry (Figure 2). The spatial distribution of long-term average annual precipitation in the Paso Robles Subbasin is presented in Figure 3. Historical precipitation records for the NOAA station 46730 and the nearby City of Paso Robles Public Works station are provided in Appendix B.

## 2.4 Monitoring Networks

This section provides a brief description of the monitoring programs currently in place and any notable events affecting monitoring activities or the quality of monitoring results. Monitoring networks are developed for each of the five sustainability indicators relevant to the Paso Robles Subbasin:

- Chronic lowering of groundwater levels
- Reduction of groundwater in storage
- Degraded water quality
- Land subsidence
- Depletion of interconnected surface water

Monitoring for the first two sustainability indicators (chronic lowering of water levels and reduction of groundwater in storage) is implemented using the representative monitoring sites (RMS), discussed in

Section 2.4.1. Monitoring for the remaining three sustainability indicators (degraded water quality, land subsidence, and depletion of interconnected surface water) is discussed below in Section 2.4.2.

## 2.4.1 Groundwater Elevation Monitoring Network (§ 356.2[b])

The GSP provided a summary of existing groundwater monitoring efforts currently promulgated under various existing local, state, and federal programs. SGMA requires that monitoring networks be developed in the Subbasin to provide sufficient data quality, frequency, and spatial distribution to evaluate changing aquifer conditions in response to GSP implementation.

The GSP identifies an existing network of 23 RMS wells for water level monitoring. Of these 23 wells, 22 are wells that screen the Paso Robles Formation[3], and one is an Alluvial Aquifer well. These RMS have been monitored biannually, in April and October, for various periods of record. The RMS groundwater monitoring network developed in the GSP is intended to support efforts to do the following:

- Monitor changes in groundwater conditions and demonstrate progress toward achieving measurable objectives and minimum thresholds documented in the GSP
- Quantify annual changes in water use
- Monitor impacts to the beneficial uses and users of groundwater

The RMS are displayed in Figure 4, and a summary of information for each of the wells is included in Appendix C.

### 2.4.1.1 Monitoring Data Gaps

The GSP noted numerous data gaps in the current RMS network. It should be noted that efforts are continuing during the implementation phase of the GSP to identify existing wells that can be added to the network, or to construct new wells for the network. As a start to this effort, the GSP identified nine additional wells that may be incorporated into the RMS network once the depth and screened aquifer are established. These wells are displayed in Figure 4, and a summary of available well information is included in Appendix D.

## 2.4.2 Additional Monitoring Networks

Evaluation of the water quality sustainability indicator is achieved through monitoring of an existing network of supply wells in the Subbasin. Constituents of concern (COCs) identified in the GSP that have the potential to impact suitability of water for public supply or agricultural use include salinity (as indicated by electrical conductivity), total dissolved solids (TDS), sodium, chloride, nitrate, sulfate, boron, and gross alpha..

COCs for drinking water are monitored at public water supply wells (PWS). There are 41 PWSs in the Subbasin. PWSs constitute part of the monitoring network for water quality in the Subbasin. In addition, the GSP identified 28 agricultural supply wells that are monitored for COCs under the Irrigated Lands Regulatory Program (ILRP).

Land subsidence in the Subbasin is monitored using interferometric synthetic-aperture radar (InSAR) data collected using microwave satellite imagery provided by DWR. Available data to date indicate no significant subsidence in the Subbasin that impacts infrastructure. The GSAs will annually assess subsidence using the InSAR data provided by DWR.

A monitoring network to assess the sustainability indicator of groundwater/surface water interconnection is a current data gap that will be addressed during GSP implementation. There is at present only a single

[3] Since initial establishment of the monitoring well network, two of the 22 Paso Robles Formation Aquifer RMS wells (27S/13E-30N01 and 26S/12E-2607) have become either inactive or inaccessible.

Alluvial Aquifer well in the water level monitoring network. This is identified in the GSP as a significant data gap. Additional Alluvial Aquifer wells will need to be established in the monitoring network before groundwater/surface water interaction can be more robustly analyzed.

# SECTION 3: **Groundwater Elevations (§ 356.2[b][1])**

## 3.1 Introduction

This section provides a detailed report on groundwater elevations in the Subbasin measured during spring and fall of 2020. These maps present the most up-to-date seasonal conditions in the Basin. Most of the data presented characterizes conditions in the Paso Robles Formation Aquifer. Data for the Alluvial Aquifer are too sparse for regional analysis. Monitoring data is reviewed for quality and an appropriate time frame is chosen to provide the highest consistency in the wells used for each reporting period. Data quality is often difficult to ascertain when measurements are taken by other agencies or private well owners, and well construction information may be incomplete or unavailable. This means that a careful review of the data is required prior to uploading to DWR's Monitoring Network Module[4] to verify whether measurements are trending consistent with trends of previous years and with the current year's hydrology and level of extractions.

### 3.1.1 Principal Aquifers

As discussed in Section 2, there are two principal aquifers in the Subbasin. The Paso Robles Formation Aquifer is several hundreds of feet thick, represents the greatest volume of saturated sediments in the Subbasin, and is the aquifer that is most utilized for supply. The Alluvial Aquifer is limited in extent to the active channels of the streams in the Subbasin and is generally less than 100 feet thick.

## 3.2 Seasonal High and Low Groundwater Elevations (Spring and Fall) (§ 356.2[b][1][A])

The assessment of groundwater elevation conditions in the Subbasin as described in the GSP is largely based on data from the San Luis Obispo County Flood Control and Water Conservation District (SLOFCWCD) groundwater monitoring program. Groundwater levels are measured by the SLOFCWCD through a network of public and private wells in the Subbasin. Data from many of the wells in the monitoring program are collected subject to confidentiality agreements between the SLOFCWCD and well owners. Consistent with the terms of such agreements, the well owner information and specific locations for these wells are not published in the GSP and that convention is continued in this Water Year 2020 Annual Report. To maintain consistency with the GSP and represent conditions that can be easily compared from year to year, this Water Year 2020 Annual Report used the same set of wells as was used in the GSP. Groundwater level data from 39 wells were used to create the spring 2020 groundwater elevation contour map and data from 37 wells were used for the fall 2020 contour map. The well locations and data points are not shown on the maps to preserve confidentiality. Of these wells, owners of 23 of the wells have agreed to allow public use of the well data and are therefore used as RMS wells for the purpose of monitoring sustainability indicators. As implementation of the GSP progresses, it is anticipated that additional wells will be added to the data set and that many of the wells with current confidentiality agreements will be modified to allow for public use of the data.

[4] The Paso Robles Subbasin is no longer in the CASGEM program since implementation of the GSP. The GSAs are now responsible for monitoring and reporting of groundwater elevation data.

In accordance with the SGMA regulations, the following information is presented based on available data:

- Groundwater elevation contour maps for the seasonal high and seasonal low groundwater conditions for the previous water year. Groundwater elevation contour maps are presented for spring 2020 and fall 2020.
- A map depicting the change in groundwater elevation for the preceding water year. A change in groundwater elevation map is shown here for the period fall 2019 to fall 2020 (Section 7.1).
- Hydrographs for wells with publicly available data (Appendix E).

### 3.2.1 Alluvial Aquifer Groundwater Elevation Contours

Groundwater elevation data for the Alluvial Aquifer are too limited to prepare representative contour maps of the seasonal high and seasonal low groundwater elevations. Figure 5 shows the current (as of 2017) groundwater elevation contours for the Alluvial Aquifer, as shown in the GSP. This map, however, was developed using 2017 data (when available) as well as the most recent data prior to 2017. A reasonable data set of Alluvial Aquifer groundwater elevations specific to 2020 is not available, so the map as presented in the GSP is the most recent map available. This same map was also presented in the First Annual Report (GSI, 2020).

Groundwater elevations range from approximately 1,400 feet AMSL in the southeastern portion of the Subbasin to approximately 600 feet AMSL near San Miguel. Groundwater flow direction in the Alluvial Aquifer generally follows the alignment of the creeks and rivers. Overall, groundwater in the Alluvial Aquifer flows from southeast to northwest across the Subbasin. On a basin-wide scale, the average horizontal hydraulic gradient in the alluvium is about 0.004 feet per foot (ft/ft) from the southeastern portion of the Subbasin to San Miguel.

### 3.2.2 Paso Robles Formation Aquifer Groundwater Elevation Contours

Spring and fall 2020 (high and low) groundwater elevation data for the Paso Robles Formation Aquifer in the Subbasin were contoured to assess spatial variations, yearly fluctuations, trends in groundwater conditions, groundwater flow directions, and horizontal groundwater gradients. Contour maps were prepared for the seasonal high groundwater levels, which typically occur in the spring, and the seasonal low groundwater levels, which typically occur in the fall. In general, the spring groundwater data are for April and the fall groundwater data are for October. For consistency with the GSP, the same well data sets were used for contouring; information identifying the owner or detailed location of private wells is not shown on the maps to preserve confidentiality.

Figures 6 and 7 show contours of groundwater elevations in the Paso Robles Formation Aquifer for spring 2020 and fall 2020, respectively. Overall, groundwater conditions in the Subbasin in the spring and fall of 2020 were similar, with groundwater elevations in the fall generally lower than in the spring, a typical seasonal trend for the Subbasin. Groundwater flow direction is generally to the northwest and west over most of the Subbasin. In general, groundwater flow in the western portion of the Subbasin tends to converge toward areas of low groundwater elevations. These areas of low groundwater elevation are in the area between the City of Paso Robles and the communities of San Miguel and Whitley Gardens. Horizontal groundwater gradients range from approximately 0.002 ft/ft in the southeast portion of the Subbasin to approximately 0.02 ft/ft in the area southeast of Paso Robles.

In general, the groundwater elevations observed in the Subbasin during WY 2020 show a decline across portions of the Subbasin, likely due predominantly to below-average rainfall conditions in WY 2020. Positive and negative changes in groundwater elevations from year to year are observed in various parts of the

Subbasin, as has been observed historically. Seasonal trends of slightly higher spring groundwater elevations compared with fall levels are observed annually.

## 3.3 Hydrographs (§ 356.2[b][1][B])

Groundwater elevation hydrographs are used to evaluate aquifer behavior over time. Changes in groundwater elevation at a given point in the Subbasin can result from many influencing factors, with all or some occurring at any given time. Factors can include changing hydrologic trends, seasonal variations in precipitation, varying Subbasin extractions, changing inflows and outflows along boundaries, availability of recharge from surface water sources, and influence from localized pumping conditions. Climatic variation can be one of the most significant factors affecting groundwater elevations over time. For this reason, the hydrographs also display periods of climatic variation categorized as wet, dry, or average/alternating wet and dry (see Figure 2).

### 3.3.1 Hydrographs

Groundwater elevation hydrographs and associated location maps for the 22 wells in the Subbasin monitoring network that are constructed in and extract groundwater from the Paso Robles Formation Aquifer are presented in Appendix E. The groundwater elevation data for the single Alluvial Aquifer RMS is not shown. These hydrographs also include information on well screen interval (if available), reference point elevation, as well as measurable objectives and minimum thresholds for each well that were developed during the preparation of the GSP. Many of the hydrographs illustrate a condition of declining water levels since the late 1990s, although some indicate relative water level stability over the same period.

As described in the GSP, an average of the 2017 non-pumping groundwater levels was selected as the measurable objectives and minimum thresholds are set below those levels. Going forward from 2017, the average of the spring and fall measurements in any one water year will be the benchmark against which trends will be assessed.

Of the 22 RMS hydrographs presented in Appendix E, only 27S/13E-28F01 exhibits groundwater elevations at or below the minimum threshold[5]. Although the groundwater elevations in some of the RMS wells are continuing to trend downward, several of the RMS wells exhibit recovering groundwater elevations in the past few years, apparently as a result of the return to normal rainfall conditions. Eight of the 22 RMS wells have current groundwater elevations greater than the measurable objective for that RMS well.

[5] Well 27S/13E-28F01 has a total depth of 230 feet below ground surface, which is only 22 feet below the minimum threshold set for this well. Considering the two-decade long downward trend in water levels in this well and the well having been measured as dry during fall 2020 this well does not appear to be suitable for continued use as an RMS well. The owner of well 27S/13E-28F01 has indicated that another well on the property with a deeper completion may be available for future use as an alternative RMS well.

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# SECTION 4: **Groundwater Extractions (§ 356.2[b][2])**

## 4.1 Introduction

This section presents the metered and estimated groundwater extractions from the Subbasin for WY 2020. The types of groundwater extraction described in this section include municipal (Table 1), agricultural (Table 2), rural domestic (Table 3), and small public water systems (Table 4). Each following subsection includes a description of the method of measurement and a qualitative level of accuracy for each estimate. The level of accuracy is rated on a qualitative scale of low, medium, and high. The annual groundwater extraction volumes for all water use sectors are shown in Table 5.

## 4.2 Municipal Metered Well Production Data

The municipal groundwater extractions documented in this report are metered data. Metered groundwater pumping extraction data are from the City of Paso Robles, San Miguel CSD, and the County of San Luis Obispo for Community Service Area 16 (CSA 16), providing service to the community of Shandon. The data shown in Table 1 reflect metered data reported by the respective agencies. The accuracy level rating of these metered data is high.

**Table 1. Municipal Groundwater Extractions**

| Water Year | Metered Groundwater Extractions | | | Total (AF) |
|---|---|---|---|---|
| | City of Paso Robles[1] (AF) | San Miguel CSD (AF) | CSA 16 (AF) | |
| 2017 | 1,261 | 295 | 70 | 1,626 |
| 2018 | 1,302 | 325 | 50 | 1,677 |
| 2019 | 1,392 | 289 | 48 | 1,729 |
| 2020 | 1,121 | 297 | 91 | 1,509 |

Notes:
[1] – The City of Paso Robles produces groundwater from wells located in both the Paso Robles Subbasin and the Atascadero Subbasin. Only the portion produced from within the Paso Robles Subbasin is included here.
AF = acre-feet
CSA = community service area (County of San Luis Obispo)
CSD = community services district

## 4.3 Estimate of Agricultural Extraction

Agricultural water use constituted 90 percent of the total anthropogenic groundwater use in the Subbasin in WY 2020. To estimate agricultural water demand, land use data along with climate and soil data were analyzed and processed using the soil-water balance model that was developed for the Paso Robles Groundwater Basin Model Update (GSSI, 2014). Annual land use spatial data sets from San Luis Obispo County were used to determine the appropriate crop categories, distribution, and acreages. Land use types were grouped within seven crop categories, including alfalfa, citrus, deciduous, nursery, pasture, vegetable, and vineyard, each with a respective set of crop water demand coefficients from the San Luis Obispo County Master Water Report[6] (Carollo, 2012). Climate data inputs include precipitation from the Paso Robles Station (NOAA station 46730) and reference evapotranspiration (ETo) data from several private stations in the Subbasin operated by Western Weather Group. Soil water holding capacity data from National Resources

[6] Vineyard crop coefficients were modified based on discussions with Mark Battany, University of California Extension (GSSI, 2014).

Conservation Service soil surveys of San Luis Obispo County were used. The soil-water balance model includes consideration for regulated deficit irrigation (RDI), cover crop, and frost protection water demands for vineyards as well as irrigation system efficiencies (GSSI, 2014).

The soil-water balance model was utilized to estimate agricultural water demands through WY 2016 during completion of the GSP (M&A, 2020) and for WYs 2017, 2018, and 2019 in the First Annual Report (GSI, 2020). Agricultural water demand for this Water Year 2020 Annual Report was estimated for WY 2020 also using the soil-water balance model. The resulting estimated groundwater extractions for agricultural demands are summarized in Table 2. The accuracy level rating of this estimated volume is medium.

**Table 2. Estimated Agricultural Irrigation Groundwater Extractions**

| Water Year | Agricultural Demand (AF) |
|---|---|
| 2017 | 64,100 |
| 2018 | 75,500 |
| 2019 | 55,800 |
| 2020 | 60,700 |

**Note:** AF = acre-feet

## 4.4 Rural Domestic and Small Public Water System Extraction

Rural domestic and small PWS groundwater extractions in the Subbasin were estimated using the methods described here.

### 4.4.1 Rural Domestic Demand

As documented in the Paso Robles Groundwater Basin Model Update (GSSI, 2014), the rural domestic water demand was originally estimated as the product of County estimates of rural domestic units (DUs) and a water demand factor of 1.7 AFY per DU, which included small PWS water demand (Fugro, 2002). This factor was subsequently modified to 1.0 AFY/DU in the San Luis Obispo County Master Water Report, not including small PWS demand (Carollo, 2012). Based on further investigation completed for the 2014 groundwater model update, the rural domestic water use factor was refined to 0.75 AFY/DU (GSSI, 2014). To simulate rural water demand over time in the groundwater model, an annual growth rate of 2.25 percent for the rural population was assumed, based on recommendation from the San Luis Obispo County Planning Department (GSSI, 2014). The groundwater model update completed for the GSP (M&A, 2020) used a linear regression projection based on the 2014 model update to estimate rural domestic demand through WY 2016. The projected future water budget presented in the GSP (M&A, 2020) assumes water neutral growth in rural domestic water demand from WY 2016 going forward. Therefore, the rural domestic demand has been held constant at the estimated WY 2016 volume for this Water Year 2020 Annual Report. The resulting groundwater extractions for rural domestic demands are summarized in Table 3. The accuracy level rating of these estimated volumes is low-medium.

**Table 3. Estimated Rural Domestic Groundwater Extractions**

| Water Year | Rural Domestic (AF) |
|---|---|
| 2017 | 3,530 |
| 2018 | 3,530 |
| 2019 | 3,530 |
| 2020 | 3,530 |

Note: AF = acre-feet

### 4.4.2 Small Public Water System Extractions

The category of small PWSs includes a wide variety of establishments and facilities including small mutual water companies, golf courses, wineries, rural schools, and rural businesses. Various studies over the years used a mix of pumping data and estimates for type-specific water demand rates to estimate small PWS groundwater demand (Fugro, 2002; Todd Engineers, 2009). The 2012 San Luis Obispo County Master Water Report used the County of San Luis Obispo geographic information services mapping to define the distribution and number of commercial systems at the time and applied a single annual factor of 1.5 AFY per system (Carollo, 2012).

For the 2014 model update, actual pumping data were used as available to provide a monthly record over the study period (GSSI, 2014). Groundwater demand for four major golf courses (at the time) in the Subbasin (The Links, Hunter Ranch, Paso Robles, and River Oaks) was estimated using the following factors: ETo data measured in Paso Robles, the crop coefficient for turf grass, monthly rainfall data, and golf course acreage (GSSI, 2014). Water use for wineries was estimated by identifying each winery and its permitted capacity and applying a water use rate of 5 gallons of water per gallon of wine produced. Minor landscaping, wine tasting/restaurant functions, and return flows were also accounted for (GSSI, 2014). Water use for several small commercial/institutional water systems was estimated using water duty factors specific to the water system type (i.e., camp, school, restaurant, and other uses) (GSSI, 2014).

The groundwater model update completed for the GSP (M&A, 2020) used a linear regression projection for the 2014 model update to estimate small PWS demand through WY 2016. The projected future water budget presented in the GSP (M&A, 2020) assumes water neutral growth in small PWS water demand from WY 2016 going forward. Therefore, the small PWS demand has been held constant at the estimated WY 2016 volume for this Water Year 2020 Annual Report. The resulting groundwater extractions for small PWS demands are summarized in Table 4. The accuracy level rating of these estimated volumes is low-medium.

**Table 4. Estimated Small Public Water System Groundwater Extractions**

| Water Year | Small PWS (AF) |
|---|---|
| 2017 | 1,530 |
| 2018 | 1,530 |
| 2019 | 1,530 |
| 2020 | 1,530 |

Note: AF = acre-feet

## 4.5 Total Groundwater Extraction Summary

Total groundwater extractions in the Subbasin for WY 2020 is estimated to be 67,300 AF. Table 5 summarizes the total groundwater use by sector and indicates the method of measure and associated level of accuracy. Approximate points of extraction were spatially distributed and colored according to a grid system to represent the relative pumping across the basin in terms of AF per acre (see Figure 8).

### Table 5. Total Groundwater Extractions

| Water Year | Groundwater Extractions by Water Use Sector | | | Total (AF) |
|---|---|---|---|---|
| | Municipal (AF) | PWS and Rural Domestic (AF) | Agriculture (AF) | |
| 2017 | 1,626 | 5,060 | 64,100 | 70,800 |
| 2018 | 1,677 | 5,060 | 75,500 | 82,200 |
| 2019 | 1,729 | 5,060 | 55,800 | 62,600 |
| 2020 | 1,509 | 5,060 | 60,700 | 67,300 |
| Method of Measure: | Metered | 2016 Groundwater Model | Soil-Water Balance Model | |
| Level of Accuracy: | high | low-medium | medium | |

Notes:
AF = acre-feet
PWS = public water systems

# SECTION 5: Surface Water Use (§ 356.2[b][3])

## 5.1 Introduction

This section addresses the reporting requirement of providing surface water supplies used, or available for use, and describes the annual volume and sources for WY 2020. The method of measurement and level of accuracy is rated on a qualitative scale. The Subbasin currently benefits from surface water entitlements from the Nacimiento Water Project (NWP) and the State Water Project (SWP) to supplement municipal groundwater demands in the City of Paso Robles and the community of Shandon, respectively. Locations of communities dependent on groundwater and with access to surface water are shown on Figure 9.

## 5.2 Surface Water Available for Use

Table 6 provides a breakdown of surface water available for municipal use in the Subbasin. There is currently no surface water available for agricultural or recharge project use within the Subbasin.

**Table 6. Surface Water Available for Use**

| Water Year | Nacimiento Water Project[1] (AF) | State Water Project[2] (AF) | Total Available Surface Water (AF) |
|---|---|---|---|
| 2017 | 6,488 | 100 | 6,588 |
| 2018 | 6,488 | 100 | 6,588 |
| 2019 | 6,488 | 100 | 6,588 |
| 2020 | 6,488 | 100 | 6,588 |

Notes:
[1] Contract annual entitlement to the City of Paso Robles
[2] Contract annual entitlement to CSA 16
AF = acre-feet

## 5.3 Total Surface Water Use

A summary of total actual surface water use by source is provided in Table 7. The accuracy level rating of these metered data is high.

Environmental uses of surface water is also recognized but not estimated due to insufficient data to make an estimate of surface water use. It is expected that environmental uses will be quantified in future annual reports as more data become available.

**Table 7. Surface Water Use**

| Water Year | Nacimiento Water Project[1] (AF) | State Water Project[2] (AF) | Total Surface Water Use (AF) |
|---|---|---|---|
| 2017 | 1,650 | 42 | 1,691 |
| 2018 | 1,423 | 55 | 1,477 |
| 2019 | 1,142 | 43 | 1,184 |
| 2020 | 737 | 0 | 737 |

Notes:
[1] Contract annual entitlement to the City of Paso Robles = 6,488 AFY
[2] Contract annual entitlement to CSA 16 = 100 AFY
AF = acre-feet
AFY = acre-feet per year

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# SECTION 6: Total Water Use (§ 356.2[b][4])

This section summarizes the total annual groundwater and surface water used to meet municipal, agricultural, and rural demands within the Subbasin. For WY 2020, the quantification of total water use was completed from reported metered municipal water production and metered surface water delivery, and from models used to estimate agricultural and rural water demand. Table 8 summarizes the total water use in the Subbasin by source and water use sector for WY 2020. The method of measurement and a qualitative level of accuracy for each estimate is rated on a qualitative scale of low, medium, and high.

**Table 8. Total Water Use by Source and Water Use Sector, Water Year 2020**

| Water Year | Municipal (AF) | | PWS and Rural Domestic (AF) | Agriculture (AF) | Total (AF) |
|---|---|---|---|---|---|
| Source: | Groundwater | Surface Water | Groundwater | Groundwater | |
| 2017 | 1,626 | 1,691 | 5,060 | 64,100 | 72,500 |
| 2018 | 1,677 | 1,477 | 5,060 | 75,500 | 83,700 |
| 2019 | 1,729 | 1,184 | 5,060 | 55,800 | 63,800 |
| 2020 | 1,509 | 737 | 5,060 | 60,700 | 68,000 |
| Method of Measure: | Metered | Metered | 2016 Groundwater Model | Soil-Water Balance Model | |
| Level of Accuracy: | high | high | low-medium | medium | |

Notes:
AF = acre-feet
PWS = public water systems

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# SECTION 7: Change in Groundwater in Storage (§ 356.2[b][5])

## 7.1 Annual Changes in Groundwater Elevation (§ 356.2[b][5][A])

Annual changes in groundwater elevation in the Paso Robles Formation Aquifer for WY 2020 are derived from comparison of fall groundwater elevation contour maps from one year to the next. For this analysis, fall 2019 groundwater elevations were subtracted from the fall 2020 groundwater elevations resulting in a map depicting the changes in groundwater elevations in the Paso Robles Formation Aquifer that occurred during WY 2020 (see Figure 10). This groundwater elevation change map is based on a reasonable and thorough analysis of the currently available data. As stated in Section 3, groundwater elevation data for the Alluvial Aquifer are too limited to prepare annual groundwater elevation contour maps. Therefore, the change in groundwater in storage analysis is limited to the Paso Robles Formation Aquifer for this Water Year 2020 Annual Report. As discussed in the GSP, the monitoring network needs to be expanded to more completely assess Subbasin conditions.

The groundwater elevation change map for WY 2020 (Figure 10) shows that water levels declined over a majority of the eastern portion of the Subbasin, with a minor depression in the Shandon area and a more pronounced area of decline in the south. The 2020 map also shows that groundwater elevations generally increased in the western portion of the Subbasin, notably in the southeastern portion of the City of Paso Robles.

## 7.2 Annual and Cumulative Change in Groundwater in Storage Calculation (§ 356.2[b][5][B])

The groundwater elevation change map presented above represents a volume change within the Paso Robles Formation Aquifer for WY 2020. The volume change depicted on Figure 10 represents a total volume, including the volume displaced by the aquifer material and the volume of groundwater stored within the void space of the aquifer. The portion of void space in the aquifer that can be utilized for groundwater storage is represented by the aquifer storage coefficient (S), a unitless factor, which is multiplied by the total volume change to derive the change in groundwater in storage. Based on work completed for the GSP, S is estimated to be 7 percent.[7] The annual change of groundwater in storage calculated for WY 2020 is presented in Table 9 and the annual and cumulative change in groundwater in storage since 1981 are presented on Figure 11.

**Table 9. Annual Change in Groundwater in Storage - Paso Robles Formation Aquifer**

| Water Year | Annual Change (AF) |
|---|---|
| 2017 | 60,100 |
| 2018 | 6,400 |
| 2019 | 59,700 |
| 2020 | -80,800 |

**Note:** AF = acre-feet

The 80,800 AF decrease of groundwater in storage in WY 2020 shown in Table 9 is coincident with below average precipitation in 2020 (12.5 inches). Historical comparison of annually tabulated precipitation, total groundwater extractions, and annual change in groundwater in storage reveals a close correlation between

[7] Appendix F includes derivation of the storage coefficient from the GSP groundwater model files and a sensitivity analysis.

annual total precipitation and change in groundwater in storage (see Figure 12). Specifically, years with well above average precipitation (i.e. 1983, 1993, 1995, 1998, 2005, and 2017) are all associated with years of large increases in groundwater in storage. Conversely, nearly all[8] below average precipitation years are associated with years of decline in groundwater in storage. The influence of total annual groundwater extractions on annual change in groundwater in storage is also apparent, although to a lesser degree. The influence of groundwater extractions on annual changes in groundwater in storage is most apparent during the drought of the mid-1980's through the early 1990's, when below average precipitation prevailed, but a trend of decreasing groundwater extractions resulted in a slight upward trend in annual changes of groundwater in storage.

[8] The exception to this is water year 2018, which was a below average precipitation year associated with a minor increase in groundwater in storage. It should be noted that this change in groundwater in storage was calculated independently from the groundwater model using the groundwater elevation change map method described above.

# SECTION 8: **Progress toward Basin Sustainability (§ 356.2[c])**

## 8.1 Introduction

This section describes several projects and management actions that are in process or have been recently implemented in the Subbasin as a means to improve groundwater conditions, avoid potential undesirable results, attain subbasin sustainability, and improve understanding of the implications of GSP implementation. These projects and actions include capital projects and non-structural policies intended to reduce or optimize local groundwater use. Some of these projects were described in concept in the GSP; some of the actions described herein are new initiatives designed to make new water supplies available to the Subbasin that may be implemented by the GSAs to reduce pumping and partially mitigate the degree to which the management actions would be needed.

As described in the GSP, the need for projects and management actions is based on emerging Subbasin conditions, including the following:

- Groundwater levels are declining in some parts of the Subbasin, indicating that the amount of groundwater pumping is more than the natural recharge.
- The calculated water budget of the Paso Robles Formation aquifer indicates that the amount of groundwater in storage is in decline and will continue to decline in the near future if there is no net decrease in groundwater demand on the aquifer.

To mitigate declines in groundwater levels in some parts of the Subbasin, achieve the Subbasin sustainability goal by 2040, and avoid undesirable results as required by SMGA regulations, new water supplies must be imported into the Subbasin [i.e. project(s)] and/or groundwater pumping must be reduced through management action(s).

In addition to project and management actions that address chronic declines in groundwater levels and depletion of groundwater in storage, this section also provides a brief discussion of land subsidence, potential depletion of interconnected surface waters, and groundwater quality trends that occurred during WY 2020.

The projects and management actions described in this section are all intended to help achieve groundwater sustainability in the Subbasin and avoid undesirable results.

## 8.2 Implementation Approach

As described in the GSP, the volume of groundwater pumping in the Subbasin is more than the estimated sustainable yield and, as a result, groundwater levels are persistently declining in some parts of the Subbasin. In response, the GSAs have initiated several projects and management actions designed to address the impacts of the decline in groundwater levels and reductions of groundwater in storage. It is anticipated that additional new projects and management actions, some of which are described herein, will be implemented in the near future to continue progress towards avoiding or mitigating undesirable results.

Some of the projects and management actions described in this section are Subbasin-wide initiatives and some are area-specific. Generally, the basin-wide management actions apply to all areas of the Subbasin and reflect relatively basic GSP implementation requirements. Area-specific projects have been designed to aid in mitigating persistent water level declines in certain parts of the Subbasin.

## 8.3 Basin-Wide Management Actions and Projects

### 8.3.1 Amendment #1 to the MOA

This management action is described in the First Annual Report (GSI, 2020) but is repeated here because the intent of the action and the results of its implementation are applicable and relevant to the reporting of WY 2020.

Originally, five GSAs, including the four current partners as well as Heritage Ranch Community Services District (CSD), entered into a Memorandum of Agreement (MOA) in September 2017. The purpose of the MOA was to establish a committee to develop a single GSP for the entire Subbasin. Furthermore, the GSAs intended to use the MOA as the framework for basin-wide cooperation to manage the Subbasin during the time between adoption of the GSP by the GSAs and approval of the GSP by DWR. As originally written, the MOA would automatically terminate upon DWR's approval of the GSP, which is expected sometime within a two-year window following GSP submittal.

Heritage Ranch CSD was an original party to the MOA but with basin boundary modification approval by DWR in 2019, the CSD is no longer in the Subbasin and has withdrawn from the MOA.

Prior to submittal of the GSP for DWR review and approval, each of the GSAs adopted the GSP pursuant to the terms of the MOA. Each GSA separately adopted resolutions amending the original MOA to remove the automatic termination language because the GSAs agree to continue cooperating on the GSP and its implementation pursuant to the framework established by the MOA until such time as a long-term governance structure is developed. The amendment (Amendment #1) allows for continued collaboration and cooperation among the GSAs to manage groundwater in the Subbasin and achieve sustainability. A copy of the amendment to the MOA is provided in Appendix G.

### 8.3.2 Water Neutral New Development

In October 2015, the County Board of Supervisors adopted the Water Neutral New Development (WNND) amendments to the County Land Use Ordinance (Title 22) and Building and Construction Ordinance (Title 19). The amendments require a 1:1 water offset for new non-agricultural development and new or expanded irrigated commercial crop production while providing a 5 AFY exemption for irrigated properties outside of an “area of severe decline” defined based on changes in groundwater elevation measurements from Spring 1997 to Spring 2013. The action to amend the ordinances was taken in response to declining groundwater levels to minimize further depletion of the groundwater resource. The 1:1 water offset requirement was originally intended to be a stopgap measure to avoid further depletion of the groundwater basin[9] until SGMA implementation and included a termination clause to expire upon the effective date of a final and adopted GSP. On November 5, 2019, the County Board of Supervisors extended the termination date of the WNND ordinances to January 1, 2022 and removed “off-site” agricultural water offsets.

The water offset requirement for planting new irrigated crops may affect properties in three ways:

- If there was existing irrigated crop production onsite within 5 years of application, the property can be replanted in the same crop type and acreage with an Ag Offset Exemption. Planting new or expanded crops would require an Onsite Offset Clearance showing the new crop would use the same amount of water as the existing crop, or less.

[9] The WNND programs apply to the Paso Robles Groundwater Basin, as defined by the 2002 Fugro study, which differs from the Bulletin 118 boundary of the Paso Robles Subbasin. There are about 103,000 acres within the Bulletin 118 Subbasin boundary that are not subject to the WNND programs, they are predominately dry farmed or grazing lands.

- If there was not existing irrigated crop production onsite within 5 years of application, and if the site is not within the area of severe decline, new irrigated crop production may be allowed with a one-time exemption to plant crops that use up to 5 AFY.
- If there was not existing irrigated crop production onsite within 5 years of application, and if the site is within the area of severe decline, then there are no options for new or expanded irrigated crop production.

Additional actions by the Board of Supervisors on August 18, 2020 amended the ordinances by clarifying that the requirements apply if the well(s) serving the proposed use are located within the groundwater basin or area of severe decline, as defined in the County land use ordinance.

The actions by the County Board of Supervisors described above, including extension of the WNND requirements, have been included in the Water Year 2020 Annual Report because they affect groundwater management in the Subbasin. However, WNND is a temporary management action enacted by the County pursuant to its police powers through land use authority, rather than GSA authority, and is set to expire on January 1, 2022, rather than a long-term management action identified in the GSP. Thus, its inclusion in the Water Year 2020 Annual Report shall not be construed as any sort of commitment on the part of the County to a further extension.

### 8.3.3 Paso Basin Aerial Groundwater Mapping Study

In November 2019, the County of San Luis Obispo joined in a pilot study through DWR and Stanford University to conduct aerial groundwater mapping of a large portion of the Subbasin utilizing Airborne Electromagnetic method (AEM). The goal of the study is to acquire survey data to characterize and map subsurface geologic structures as well as the presence and extent of clay, silt, sand, and gravel layers to a depth of approximately 1,000 to 1,400 feet below the ground surface.

The SkyTEM aerial survey was flown from November 5th to November 7th, 2019. Throughout 2020, the acquired data were compiled and analyzed. An initial data report was finalized and made public in October 2020 (SkyTEM, 2020) and a hydrogeologic conceptual model report summarizing the results and interpretations of the data is expected in early 2021. The results of the study will enhance understanding of groundwater flow within the Subbasin, the interconnectedness of different parts of the Subbasin, and the geologic framework that controls groundwater flow.

## 8.4 Area-Specific Projects

### 8.4.1 Installation of Monitoring Wells and Stream Gages (SEP)

The existing network of monitoring wells in the Alluvial Aquifer in areas where surface water and groundwater interaction may occur is insufficient for adequate assessment, and surface water flows in the Subbasin are ephemeral. Together, these two factors make it difficult to evaluate the interconnectivity of surface water and groundwater and to quantify whether any surface water depletion has occurred. There are no available data that establish whether the groundwater and surface water are connected through a continuous saturated zone in any aquifer, although water elevation contour maps of groundwater in the Paso Robles Formation Aquifer wells suggest that a continuous saturated zone between the surface water and the Paso Robles Formation Aquifer does not exist. The lack of publicly available groundwater level data for the Alluvial Aquifer is a significant data gap.

The inability to assess the interconnectivity of the surface water with the underlying aquifers also affects the understanding of the potential impacts of pumping on groundwater dependent ecosystems (GDEs), which are plant and animal communities that require groundwater to meet some or all of their water needs. GDEs can be associated with areas where there is a direct connection between shallow alluvial water-bearing formations and deeper aquifers. The existing groundwater monitoring program in the Subbasin does not include any nested monitoring wells that can be used to assess the interaction between the surface stream flows, associated Alluvial Aquifer, and the underlying Paso Robles Formation Aquifer.

Per the recommendations set forth in the GSP, *"Definitive data delineating any interconnections between surface water and groundwater or a lack of interconnected surface waters is a data gap that will be addressed during implementation of this GSP."* To address this significant data gap and assess the potential for interconnectivity of the surface water with the principal aquifers of the Subbasin, the City of Paso Robles GSA submitted a proposal to the SWRCB for the use of Supplemental Environmental Project (SEP) funds that are available as a result of a settlement agreement between the SWRCB and the City of Paso Robles for violations of the City's National Pollutant Discharge Elimination System (NPDES) permit related to wastewater treatment releases.

Through the assistance of the SEP funds, the potential for interconnected surface water within the Alluvial Aquifer will be assessed after data from this expanded network of monitoring wells and stream gages are developed and analyzed. Currently, two stream gages exist within the Subbasin. The initial phase of work utilizing the SEP funds will expand that network by coupling stream gages with monitoring wells.

The GSAs recognize that installing the proposed network of monitoring wells and stream gages throughout the Subbasin will require a significant initial capital investment as well as a commitment of resources and funding for annual operation and maintenance of the sites. Thus, the GSAs intend to implement the proposed monitoring network over time. The initial work effort for monitoring well installation, therefore, is planned for two sites, including the Salinas River at the 13th Street Bridge in the city of Paso Robles, and the Estrella River at Airport Road (Cleath-Harris Geologists, 2020a; a copy of the summary report is provided in Appendix H). Construction of two monitoring wells at each site (four total) is planned for 2021. If budget permits, a third well at the Estrella River/Airport Road site is planned.

The SEP project will install stream gages that record stream stage; rating curve development is not part of the project. Stage data without a rating curve is useful for identifying flow/no flow conditions and the timing of stormwater runoff when analyzed with rain gages and other stream gages in the watershed. The stage data may also be used to evaluate the interconnectivity of surface water and groundwater. The SEP project funds were sufficient for performing the feasibility analysis of stream gage installation, identifying potential sites, developing a work plan, and installing up to three gages (Cleath-Harris Geologists, 2020b; a copy of the summary report is provided in Appendix H). The three new stream gage sites, which will be installed in 2021, are:

- Salinas River at the River Road Bridge in San Miguel
- Estrella River at the River Grove Drive Bridge in Whitley Gardens
- Huer Huero Creek at the Geneseo Road Bridge near Eagle Oak Ranch Way

### 8.4.2 City of Paso Robles Recycled Water Program

In 2016, the City completed a major upgrade of its Wastewater Treatment Plant to remove all harmful pollutants efficiently and effectively from the wastewater. The City's master plan is to produce tertiary-quality recycled water and distribute it to various locations within the City as well as east Paso Robles, where it may be used for irrigation of city parks, golf courses, and vineyards. This will reduce the need to pump groundwater from the Subbasin and will further improve the sustainability of the City's water supply. In 2019, the City began operating the recycled water system. Some sections of the distribution system are currently in construction in anticipation of eventually building the full system, pending development of funding mechanisms.

The project will have the capacity to use up to 2,200 AFY of disinfected tertiary effluent for in-lieu recharge inside the City of Paso Robles and in the central portion of the Subbasin (see Section 8.4.4) Water that is not used for recycled water purposes can potentially be discharged to surface infiltration facilities, such as Huer Huero Creek, with the possibility for additional recharge benefits.

The primary benefit from the City's Recycled Water Program is higher groundwater elevations in the central portion of the Subbasin due to in-lieu recharge from the direct use of the recycled water and potential surface recharge opportunities.

### 8.4.3 San Miguel CSD Recycled Water Project

The San Miguel CSD Recycled Water project is currently in the final design phase. This planned project will upgrade the CSD wastewater treatment plant to meet California Code of Regulations (CCR) Title 22 criteria for disinfected secondary recycled water for irrigation use by vineyards. Potential customers include a group of agricultural irrigators on the east side of the Salinas River, and a group of agricultural customers northwest of the wastewater treatment plant. The project could provide between 200 AFY and 450 AFY of additional water supplies. The primary benefit from the CSD's Recycled Water project is higher groundwater elevations in the vicinity of the community of San Miguel due to in-lieu recharge from the direct use of the recycled water.

### 8.4.4 Blended Water Project

Private entities and individuals are working actively with the City of Paso Robles and numerous agricultural irrigators to develop a project that can bring recycled water to the central portion of the Subbasin. As described above, the City estimates that as much as 2,200 AFY of recycled water will be available, and the volume will likely increase in the future as the City grows. The wastewater treatment plant is designed to process and deliver up to 4,000 AFY.

The goal of the Blended Water Project is to design and construct a pipeline system to connect to the City's Recycled Water Program and convey recycled water into the agricultural areas east of the City. Although there are many ways to utilize the Recycled Water Program water directly, certain challenges exist to make the water quality of the recycled water attractive to some agricultural users. Blending the recycled water with surplus Nacimiento Water Project water, when available, may mitigate these challenges. Additional challenges with the use of NWP water include acreage limitations on the place of use for irrigated agricultural lands within SLO County – a constraint in the existing water right held by the Monterey County Water Resources Agency.

Numerous challenges exist to develop the project, but considerable time and effort has been expended by several private entities as well as City and County staff to develop this conceptual project. The primary benefit from the Blended Water Project is higher groundwater elevations in the central portion of the Subbasin east of the City of Paso Robles due to reductions in groundwater pumping for irrigation and in-lieu recharge from the direct use of the blended water. Associated benefits may include improved groundwater quality from the use and recharge of high-quality irrigation water.

### 8.4.5 Stormwater Capture and Recharge Projects

As described in the GSP, stormwater runoff capture projects, including low-impact development (LID) standards for new or retrofitted construction, will be promoted throughout the Subbasin as priority projects to be implemented as described in the San Luis Obispo County Stormwater Resource Plan (SWRP). The SWRP outlines an implementation strategy to ensure valuable, high-priority projects with multiple benefits.

This management action covers two types of stormwater capture activities. The first stormwater management activity is the effort to reduce runoff of rainwater in the urban environment into streets, storm drains, and other sites that discharge water as well as pollutants directly into waterways and the underlying aquifer through infiltration of streamflow recharge. In this way, groundwater quality is protected and improved. Examples of this effort include LID and on-farm recharge of local runoff.

The second stormwater capture effort involves direct recharge of storm flows through the capture and diversion of water to recharge locations to help maintain base flows in streams and to replenish aquifer storage.

Two stormwater capture programs are underway in the Subbasin, including the City of Paso Robles's Municipal Stormwater Program and joint efforts by the Shandon-San Juan Water District (SSJWD) and Estrella-El Pomar-Creston Water District (EPCWD) to assess the feasibility of developing stormwater capture and recharge projects in their respective districts and Subbasin-wide.

#### 8.4.5.1 City of Paso Robles Municipal Stormwater Program

The City of Paso Robles (City) implements a municipal stormwater program pursuant to the State's General Permit for the Discharge of Storm Water from Small Municipalities (Order 2003-0005-DWQ). As such, the stormwater program implements six major program elements to not only address improvements and protection of water quality but encourage groundwater recharge. The City implements its post-construction program, which is one of the six major program elements, where both private and public development projects are conditioned to design, construct and maintain specific stormwater features. These stormwater features, such as retention basins or bioretention swales, improve stormwater runoff generated from the new development project as well as encourage groundwater infiltration. By law, these stormwater features are proposed as part of the greater development project through the City's application process then evaluated and approved by City staff. Once constructed, the City conducts annual assessments of these post-construction stormwater features to determine their effectiveness and evaluate the need for maintenance ensuring their intended design efficiency.

In addition, the City is currently developing the Paso Robles Watershed Plan (PRWSP) for the purpose of providing the City flexibility in identifying optimal locations for the design and installation of stormwater features. Stormwater features are evaluated, scored, and ranked depending on their location, design, and intended purpose. Stormwater feature types and locations provide multi-beneficial uses such as stormwater capture, trash capture, and groundwater infiltration. The PRWSP also provides a roadmap for a crediting system where the City designs and installs a stormwater feature and creates water quality credits. Subsequently, developers proposing to construct projects within the City limits have flexibility to pay for water quality credits or install a stormwater feature on-site. This crediting system inherently provides greater flexibility to both the City as well as local developers. As a result, the City will have greater ability to install stormwater capture and groundwater recharge facilities in optimal locations throughout the City.

#### 8.4.5.2 SSJWD/EPCWD Stormwater Capture and Recharge Feasibility Study

The SSJWD and EPCWD jointly funded a study to assess the feasibility of capturing stormwater runoff and recharging aquifers in the Subbasin. The summary report of the initial feasibility study was finalized in 2020 (GSI, 2020). The districts are now evaluating possible next step efforts.

Stormwater capture and recharge is a concept for augmenting natural recharge to a groundwater basin, thereby improving groundwater levels. The concept involves building diversion structures to divert storm flows from a stream above a certain allowed volume, capture those flows by diverting to nearby fields or undeveloped areas, and inundating the fields to allow for passive infiltration. The SSJWD/EPCWD study is a screening level feasibility study to locate sites where stormwater (flood) flow can be captured and used to recharge aquifers within the Subbasin. The study identifies areas with favorable soil, topography, and aquifer characteristics and estimates the stormwater amount from the tributary watersheds contributing to the surface flows in the Salinas and Estrella rivers and San Juan and Huer Huero creeks. Of particular focus are areas where the recharge water would migrate directly into the underlying Paso Robles Formation aquifer, the principal aquifer serving most irrigation demands in the basin. The study scope consisted of two main tasks, including (1) identification of optimum target areas for stormwater recharge, and (2) quantification of availability of stormwater for capture and potential recharge.

The key aspects of spatially distributed information and considerations used to delineate recharge target areas included:

- Topography
- Surficial soil hydraulic properties
- Aquifer hydraulic properties
- Surficial geology
- Groundwater occurrence and depth
- Proximity to a 100-year flood zone area
- Proximity to water treatment plants
- Proximity to septic tanks
- Proximity to wells

The State Water Resources Control Board (SWRCB) will permit diversions of stormflows that are 20 percent of the 90 percent exceedance flows, which occur, on average, 10 percent of the time. Thus, the long-term potential benefit of stormwater capture projects in the Subbasin are somewhat limited. The study assessed the potential for capturing stormwater at five separate locations in the Subbasin, including two sites on the Estrella River, two sites on San Juan Creek, and one site on Huer Huero Creek. The results showed that the potential volumes of available recharge ranged from highs of 280 AFY, 20,500 AFY, and 0 AFY in average, wet, and dry hydrologic years, respectively, to as little as 0 AFY, 630 AFY, and 0 AFY in average, wet, and dry hydrologic years, respectively. A copy of the GSI (2020) summary report is provided in Appendix I.

The districts are currently assessing possible next steps, including identification of alternative recharge locations, site specific project investigations, and permitting and regulatory requirements.

### 8.4.6 Expansion of Monitoring Well Network

As described in the GSP, SGMA regulations require a sufficient density of monitoring wells to characterize the groundwater elevation in each principal aquifer. The GSP concluded that a significant data gap existed in the number of monitoring wells in both the Alluvial Aquifer and Paso Robles Formation Aquifer within the Subbasin. The City of Paso Robles GSA project (using SEP funds) will partially address this data gap by drilling new monitoring wells, as described in Section 8.4.1.

The 22 wells in the Paso Robles Formation Aquifer monitoring network are insufficient to develop representative and sufficiently detailed groundwater contour maps. The lack of publicly available data for the aquifer is identified as a data gap that must be addressed in GSP implementation. This section describes new projects and initiatives undertaken by SLOFCWCD, Shandon-San Juan GSA (SSJGSA), and EPCWD to expand the collection of water level data in the Paso Robles Formation Aquifer and develop potential new monitoring wells in their respective districts.

#### 8.4.6.1 SLOFCWCD Initiative to Expand the Monitoring Well Network on Public Properties

On July 7, 2020, the County Board of Supervisors directed staff to evaluate groundwater wells that are located on public properties and include them into the SLOFCWCD's existing monitoring network. County staff is evaluating approximately 6 groundwater wells in the Paso Robles Subbasin and has identified 2-3 wells on public properties that are suitable to be added to the semiannual groundwater level measuring program.

#### 8.4.6.2 SSJGSA Program to Expand the Monitoring Well Network

The SSJGSA initiated a program in WY 2020 to enlist many well owners that are members of the SSJWD to join a pilot study to measure water levels in wells throughout the District. The initial effort is to measure water levels in as many as 60 wells on a weekly basis throughout the spring and fall of WY 2021 to gain a better understanding of the time of year of the seasonal high and low water levels. During the summer and winter seasons, water levels will be measured monthly.

After about a year of this extensive monitoring and recording program, the data will be analyzed with the intent to reduce the number of measuring points as well as frequency of measurements. The eventual goal of the program is to develop a network of 20 to 30 new wells to incorporate into the GSP RMS monitoring network.

#### 8.4.6.3 EPCWD Program to Expand the Monitoring Well Network

The EPCWD initiated a program in WY 2020 similar to the SSJWD program. The District is enlisting as many as 20 to 40 property owners that are members of the District to allow a District subcontractor to measure water levels in their wells on a monthly to quarterly basis. Like the SSJGSA program, the eventual goal of the EPCWD initiative is to develop a network of 20 to 30 new wells to incorporate into the GSP RMS monitoring network.

### 8.4.7 Expansion of Salinas Dam and Ownership Transfer

One of the conceptual projects discussed in the GSP (Section 9.5.2.7 of the GSP) is expansion of the Salinas Dam. The dam is owned by the United States Army Corps of Engineers (USACE), which jointly holds Santa Margarita Reservoir water rights permits with the City of San Luis Obispo (City of SLO). The USACE leases the dam to the SLOFCWCD, who oversees its operation and maintenance, including water delivery to the City of SLO.

The original dam design included the installation of spillway gates that would raise the reservoir elevation, however they were not installed due to seismic safety concerns. The storage capacity of Santa Margarita Reservoir could be expanded by installing the spillway gates, potentially increasing the maximum volume in the reservoir from 23,843 AF to 41,792 AF.

As described in the GSP, expanded reservoir storage might benefit the Subbasin by scheduling summer releases from reservoir storage to the Salinas River, which would benefit the Subbasin by increasing streamflow recharge through augmented flows in the Salinas River. Another way the project might indirectly benefit the Subbasin is if the City of SLO could increase their Santa Margarita Reservoir deliveries, thereby freeing up a portion of their NWP water allocation for purchase by the GSAs.

In 2018, the USACE initiated a Disposition Study to evaluate options to dispose of the Salinas Dam, including transferring ownership to a local agency. An option under investigation is to transfer the dam to a local agency such as the SLOFCWCD, thus the USACE has requested that the County Board of Supervisors, acting in their role as the SLOFCWCD, submit a letter expressing interest in potentially moving forward with the ownership transfer process. Such an ownership transfer would help facilitate the dam expansion, should it prove to be a cost-effective and worthwhile project.

Some of the known issues with transferring ownership of the dam include:

- The USACE has indicated that the Salinas Dam has some deficiencies but is considered low risk. As such, the USACE has indicated that the dam would need to be transferred "as-is", with the USACE only willing to consider providing minimal funding to support retrofit.
- The State, as the California DWR Division of Safety of Dams (DSOD), has indicated that seismic rehabilitation of Salinas Dam would be required. Any retrofit or structural improvements, including expanding the dam's capacity, will require coordination with and approval by the DSOD following acquisition of the dam by the SLOFCWCD.
- Since the USACE has indicated they are unlikely to install the gates, ownership of the dam would need to be transferred from the federal government to a local agency to pursue the opportunity. This transfer would result in the Salinas Dam oversight responsibilities transferring from federal to state jurisdiction and require the dam retrofit and expansion to meet any additional requirements from the State.

On September 22, 2020, the County Board of Supervisors approved sending a letter to the USACE expressing interest in moving forward with the ownership transfer process. These actions by the County will require considerable time and expense to eventually bring this potential project to fruition and increase the local water supply resiliency, including potential benefits to the Subbasin and other public or private entities downstream of the dam along or near the Salinas River.

## 8.5 Summary of Progress toward Meeting Subbasin Sustainability

Relative to the basin conditions at the end of the study period as reported in the GSP, the First Annual Report (WYs 2017–2019) (GSI, 2020) and this Water Year 2020 Annual Report together indicate an improvement in groundwater conditions throughout the Subbasin and a modest increase of total groundwater in storage. It is clear that historical groundwater pumping in excess of the sustainable yield has created challenging conditions for sustainable management. However, actions are already underway to collect data, improve the monitoring and data collection networks, and coordinate with affected agencies and entities throughout the Subbasin to develop solutions that address the shared mutual interest in the Subbasin's overall sustainability goal.

### 8.5.1 Subsidence

Land subsidence is the lowering of the land surface. As described in the GSP, several human-induced and natural causes of subsidence exist, but the only process applicable to SGMA are those due to permanently lowered ground surface elevations caused by groundwater pumping (M&A, 2020). Historical subsidence can be estimated using Interferometric Synthetic Aperture Radar (InSAR) data provided by DWR. InSAR measures ground elevation using microwave satellite imagery data. The GSP documents minor subsidence in the Subbasin using data provided by DWR depicting the difference in InSAR measured ground surface elevations between June 2015 and June 2018. These data show that subsidence of up to 0.025 feet may have occurred over this three-year period in a few small, isolated areas of the Subbasin (M&A, 2020). As of the date of this report, updated InSAR data has been provided by DWR through September 2019. As discussed in the GSP, there is a potential error of 0.1 feet (or 1.2 inches) associated with the InSAR measurement and reporting methods. A land surface change of less than 0.1 feet is therefore within the noise of the data, and is equivalent to no subsidence. Considering this range of potential error, examination of the June 2018 through September 2019 InSAR data show that zero land subsidence has occurred since June 2018 (Figure 13). Therefore, subsidence of up to 0.025 feet may have occurred in a few small, isolated areas over the four-year period between June 2015 and September 2019. The GSA's will continue to monitor and report annual subsidence as more data become available.

### 8.5.2 Interconnected Surface Water

Ephemeral surface water flows in the Subbasin make it difficult to assess the interconnectivity of surface water and groundwater and to quantify the degree to which surface water depletion has occurred. Currently, there are no available data that establish connectivity between groundwater and surface water through a continuous saturated zone in any aquifer. As stated in the GSP, water elevation contour maps of the Paso Robles Formation wells may suggest that a continuous saturated zone between the surface water and the Paso Robles Formation aquifer does not exist (M&A, 2020). As of the date of this report, there are no more recent data available since publication of the GSP to assess the interconnectivity of surface water and groundwater or to quantify potential surface water depletion. The potential for interconnected surface water with the Alluvial Aquifer will be assessed as data are developed and analyzed as discussed in Section 8.4.1.

### 8.5.3 Groundwater Quality

Although groundwater quality is not a primary focus of SGMA, actions or projects undertaken by GSAs to achieve sustainability cannot degrade water quality to the extent that they would cause undesirable results. As stated in the GSP, groundwater quality in the Subbasin is generally suitable for both drinking water and agricultural purposes (M&A, 2020). Eight constituents of concern (COC's) were identified and discussed in the GSP that have the potential to be impacted by groundwater management activities. These COC's identified in the GSP are salinity (as indicated by electrical conductivity), total dissolved solids (TDS), sodium, chloride, nitrate, sulfate, boron, and gross alpha. For this Water Year 2020 Annual Report, trends of concentrations of these eight COC's were analyzed through WY 2020 using data from the GeoTracker GAMA database (GAMA, 2021). All but one of the COC's reviewed show a steady concentration trend since 2016. Gross alpha, the exception, exhibits a slight downward trend since 2016, driven mostly by sampling results from the City of Paso Robles area.

Overall, there are no significant changes to groundwater quality since 2016, as documented in the GSP, the First Annual Report, and this Water Year 2020 Annual Report. Implementation of sustainability projects and/or management actions, as presented in the GSP, in this Water Year 2020 Annual Report, or in future reports or GSP updates, are not anticipated to result in degraded groundwater quality in the Subbasin. Any potential changes in groundwater quality will be documented in future annual reports and GSP updates.

### 8.5.4 Summary of Changes in Basin Conditions

Despite below-average precipitation in 2018 and 2020, the above-average precipitation water years of 2017 and 2019 improved groundwater conditions in the Subbasin. Groundwater in storage in the Subbasin increased more than 45,000 AF in total over the past four water years. Although groundwater in storage has increased, groundwater pumping continues to exceed the estimated future sustainable yield and the projects and management actions described in the GSP and in this Water Year 2020 Annual Report will be necessary in order to bring the Subbasin into sustainability.

### 8.5.5 Summary of Impacts of Projects and Management Actions

Additional time will be necessary to judge the effectiveness and quantitative impacts of the projects and management actions either now underway or in the planning and implementation stage. However, it is clear that the actions in place and as described in this Water Year 2020 Annual Report are a good start towards reaching the sustainability goals laid out in the GSP. It is too soon to judge the observed changes in basin conditions against the interim goals outlined in the GSP, but the anticipated effects of the projects and management actions now underway are expected to significantly affect the ability of the Subbasin to reach the necessary sustainability goals.

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**PASO BASIN COOPERATIVE COMMITTEE**
**March 17, 2021**

**Agenda Item #8 – Consider proposed modifications to, and approval of, Paso Robles Subbasin First Annual Report**

**Recommendation**
It is recommended that the Paso Basin Cooperative Committee (Committee) consider approval of the Paso Robles Subbasin First Annual Report (Report), as modified, for submission to the Department of Water Resources (DWR).

**Prepared By**
Nate Page, GSI Water Solutions, Inc.
Angela Ford, County of San Luis Obispo

**Background**
GSA staff worked with GSI Water Solutions, Inc. (GSI) to develop the Paso Robles Subbasin First Annual Report (Report) by the April 1, 2020 SGMA deadline. Following cancellation of the March 18, 2020 Committee meeting due to COVID-19, the County Director of Public Works, as the appointed GSP Plan Manager, authorized submission of the Report to DWR by the submittal deadline with the understanding that it would be brought for Committee approval at the next meeting. On September 23, 2020, the Committee considered modifications to the Report and on November 18, 2020 the Committee approved the modified report for resubmission to the DWR.

**Discussion**
In the process of producing the Water Year 2020 Annual Report, GSI identified First Annual Report errors in the reported groundwater extraction numbers and imported surface water numbers (*note: no errors were found in the groundwater elevation analysis, hydrographs, groundwater contour maps, or estimation of change in groundwater in storage*). The errors and proposed corrections are as follows:

**City of Paso Robles groundwater production and NWP water volumes**
The prior report included all of City of Paso Robles groundwater extractions and Nacimiento Water Project (NWP) water deliveries, some of which occur within the Atascadero Subbasin. This error was carried over from the GSP. These errors were corrected at these locations in the report pdf:

- Corrections made to *Municipal groundwater extractions* specific to Paso Robles Subbasin. **– [pages 14, 15, 29, 32, 33, 36]**
- Corrections made to *NWP* use specific to Paso Robles Subbasin. **– [pages 14, 15, 34, 36]**

**Agricultural Irrigation Demand**
Due to a spreadsheet error, prior report utilized 2016 land use data for 2017, 2018, and 2019 agricultural demand estimates instead of land use data specific to each year. These errors were corrected at these locations in the report pdf:

- Corrections made to *Agricultural groundwater extractions*. **– [pages 14, 15, 30, 32, 33, 36]**

Section 4.8 of the Memorandum of Agreement between the GSAs states that any action or recommendation considered by the Committee shall require the affirmative vote of 67 percent of the Committee. Therefore, it is recommended that the Committee consider approval of the Report as modified and authorize staff to coordinate with DWR on submission of the updated Report.

**Attachments**
1. Redlined Paso Robles Subbasin First Annual Report* (Updated February 2021)

* * *

**Figures and Appendices available at:https://www.slocounty.ca.gov/Departments/Public-Works/Forms-Documents/Committees-Programs/Sustainable-Groundwater-Management-Act-(SGMA)/Paso-Robles-Groundwater-Basin/Annual-Reports/Paso-Robles-Subbasin-First-Annual-Report-UpdatedFe.pdf*


**FINAL**

Paso Basin Cooperative Committee
and the Groundwater Sustainability Agencies

# Paso Robles Subbasin
# First Annual Report (2017—2019)

March 25, 2020
*(updated ~~November~~ February 25~~20~~, 2021~~0~~)*

Prepared by:
**GSI Water Solutions, Inc.**
5855 Capistrano Avenue, Suite C, Atascadero, CA 93422

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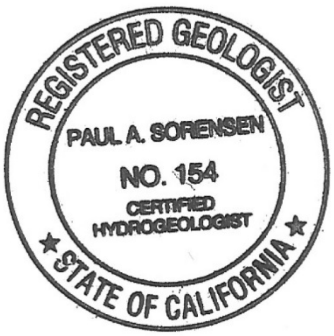
# Paso Robles Subbasin
# First Annual Report (2017–2019)

This report was prepared by the staff of GSI Water Solutions, Inc. under the supervision of professionals whose signatures appear below. The findings or professional opinion were prepared in accordance with generally accepted professional engineering and geologic practice.





Paul A. Sorensen, PG, CHg, CEG
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Project Manager

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Consulting Hydrogeologist

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# Contents

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# Abbreviations and Acronyms

| | |
|---|---|
| AEM | aerial electromagnetic method |
| AF | acre-feet |
| AFY | acre-feet per year |
| AMSL | above mean sea level |
| BMP | Best Management Practice |
| CASGEM | California State Groundwater Elevation Monitoring Program |
| CCR | California Code of Regulations |
| CDEC | California Data Exchange Center |
| CDFFP | California Department of Forestry and Fire Protection |
| CIMIS | California Irrigation Management Information System |
| COC | constituent of concern |
| CSA | Community Service Area |
| CSD | Community Services District |
| CWWCP | Countywide Water Conservation Program |
| DWR | California State Department of Water Resources |
| EPCWD | Estrella-El Pomar-Creston Water District |
| ETo | reference evapotranspiration |
| GDE | groundwater dependent ecosystem |
| GMP | Groundwater Management Plan |
| gpd/ft | gallons per day per foot |
| gpm | gallons per minute |
| GSA | Groundwater Sustainability Agency |
| GSP | Groundwater Sustainability Plan |
| GSSI | Geoscience Support Services, Inc. |
| IDC | IWFM Independent Demand Calculator |
| ILRP | Irrigated Lands Regulatory Program |
| InSAR | interferometric synthetic-aperture radar |
| IWFM | Integrated Water Flow Model |
| LID | low-impact development |
| M&A | Montgomery & Associates, Inc. |
| MOA | memorandum of agreement |
| NPDES | National Pollutant Discharge Elimination System |
| NWP | Nacimiento Water Project |
| PBCC | Paso Basin Cooperative Committee |
| PWS | public water system |
| RDI | regulated deficit irrigation |
| RMS | representative monitoring site |
| RU | rural domestic unit |

| | |
|---|---|
| S | storage coefficient |
| SEP | Supplemental Environmental Project |
| SGMA | Sustainable Groundwater Management Act |
| SLOFCWCD | County of San Luis Obispo Flood Control and Water Conservation District |
| SPI | Standardized Precipitation Index |
| SSJWD | Shandon-San Juan Water District |
| Subbasin | Paso Robles Area Subbasin of the Salinas Valley Groundwater Basin |
| SWMP | Stormwater Management Plan |
| SWRCB | State Water Resources Control Board |
| SWRP | San Luis Obispo County Stormwater Resource Plan |
| SWP | State Water Project |
| TDS | total dissolved solids |
| USGS | U.S. Geological Survey |
| WNND | Water Neutral New Development |
| WY | water year |

# Annual Report Elements Guide and Checklist

| California Code of Regulations – GSP Regulation Sections | Annual Report Elements | Location in Annual Report |
|---|---|---|
| Article 7 | Annual Reports and Periodic Evaluations by the Agency | |
| § 356.2 | Annual Reports | |
| | Each Agency shall submit an annual report to the Department by April 1 of each year following the adoption of the Plan. The annual report shall include the following components for the preceding water year: | |
| | (a) General information, including an executive summary and a location map depicting the basin covered by the report. | Executive Summary (§356.2[a]) |
| | (b) A detailed description and graphical representation of the following conditions of the basin managed in the Plan: | Section 2.4 Groundwater Elevation Monitoring (§356.2[b]) |
| | (1) Groundwater elevation data from monitoring wells identified in the monitoring network shall be analyzed and displayed as follows: | Section 3 Groundwater Elevations (§356.2[b][1]) |
| | (A) Groundwater elevation contour maps for each principal aquifer in the basin illustrating, at a minimum, the seasonal high and seasonal low groundwater conditions. | Section 3.2 Seasonal High and Low (Spring and Fall) (§356.2[b][1][A]) |
| | (B) Hydrographs of groundwater elevations and water year type using historical data to the greatest extent available, including from January 1, 2015, to current reporting year. | Section 3.3 Hydrographs (§356.2[b][1][B], and Appendix E) |
| | (2) Groundwater extraction for the preceding water year. Data shall be collected using the best available measurement methods and shall be presented in a table that summarizes groundwater extractions by water use sector, and identifies the method of measurement (direct or estimate) and accuracy of measurements, and a map that illustrates the general location and volume of groundwater extractions. | Section 4 Groundwater Extractions (§356.2[b][2]) |
| | (3) Surface water supply used or available for use, for groundwater recharge or in-lieu use shall be reported based on quantitative data that describes the annual volume and sources for the preceding water year. | Section 5 Surface Water Use (§356.2[b][3]) |

| California Code of Regulations – GSP Regulation Sections | Annual Report Elements | Location in Annual Report |
|---|---|---|
| Article 7 | Annual Reports and Periodic Evaluations by the Agency | |
| § 356.2 | Annual Reports | |
| | (4) Total water use shall be collected using the best available measurement methods and shall be reported in a table that summarizes total water use by water use sector, water source type, and identifies the method of measurement (direct or estimate) and accuracy of measurements. Existing water use data from the most recent Urban Water Management Plans or Agricultural Water Management Plans within the basin may be used, as long as the data are reported by water year. | Section 6 Total Water Use (§356.2[b][4]) |
| | (5) Change in groundwater in storage shall include the following: | Section 7 Change in Groundwater in Storage (§356.2[b][5]) |
| | (A) Change in groundwater in storage maps for each principal aquifer in the basin. | Section 7.1 Annual Changes in Groundwater Elevation (§356.2[b][5][A]) |
| | (B) A graph depicting water year type, groundwater use, the annual change in groundwater in storage, and the cumulative change in groundwater in storage for the basin based on historical data to the greatest extent available, including from January 1, 2015, to the current reporting year. | Section 7.2 Annual and Cumulative Change in Groundwater in Storage Calculations (§356.2[b][5][B]) |
| | (c) A description of progress towards implementing the Plan, including achieving interim milestones, and implementation of projects or management actions since the previous annual report. | Section 8 Progress towards Basin Sustainability (§356.2[c]) |

# Executive Summary (§ 356.2[a])

## Introduction

This First Annual Report for the Paso Robles Area Subbasin of the Salinas Valley Groundwater Basin (Paso Robles Subbasin or Subbasin; see Figure 1) has been prepared in accordance with the Sustainable Groundwater Management Act (SGMA) and Groundwater Sustainability Plan (GSP) Regulations. Pursuant to the California Department of Water Resources (DWR) regulations, a GSP Annual Report must be submitted to DWR by April 1 of each year following the adoption of the GSP.

With the submittal of the adopted Paso Robles Subbasin GSP by the January 31, 2020 deadline, the Groundwater Sustainability Agencies (GSAs) are required to submit an annual report for the preceding Water Year (October 1 through September 30) to DWR by April 1, 2020. Because this is the first GSP Annual Report for the Paso Robles Subbasin, this report documents and updates data from October 1, 2016 (for groundwater production and water use data) or October 1, 2017 (for water level data) through October 31, 2019. The annual report will convey monitoring and water use data to the DWR and to Subbasin stakeholders on an annual basis to gauge performance of the Subbasin relative to the sustainability goals set forth in the GSP.

Sections of the Annual Report include the following:

**Section 1. Introduction – Paso Robles Subbasin First Annual Report (2017–2019)**: a brief background of the formation and activities of the Paso Robles Subbasin GSAs and development and submittal of the GSP.

**Section 2. Paso Robles Subbasin Setting and Monitoring Networks**: a summary of the Subbasin setting, Subbasin monitoring networks, and ways in which data are used for groundwater management.

**Section 3. Groundwater Elevations (§356.2[b][1])**: a description of recent monitoring data with groundwater elevation contour maps for spring and fall monitoring events and representative hydrographs.

**Section 4. Groundwater Extractions (§356.2[b][2])**: compilation of metered and estimated groundwater extractions by land use sector and location of extractions.

**Section 5. Surface Water Use (§356.2[b][3])**: a summary of reported surface water use.

**Section 6. Total Water Use (§356.2[b][4])**: a presentation of total water use by source and sector.

**Section 7. Change in Groundwater in Storage (§356.2[b][5])**: a description of the methodology and presentation of changes in groundwater in storage based on fall to fall groundwater elevation differences.

**Section 8. Progress towards Basin Sustainability (§356.2[c])**: a summary of management actions taken throughout the Subbasin by GSAs and individual entities towards sustainability of the Subbasin.

## Groundwater Elevations

In general, the groundwater elevations observed in the Subbasin during water years 2017 through 2019 reflect slight increases across much of the Subbasin compared with the declines witnessed in water years 2015 and 2016. The increased groundwater elevations are likely due predominantly to above-average rainfall conditions in water years 2017 and 2019. Both positive and negative changes in groundwater elevations from year to year are observed in different parts of the Subbasin, as has been the pattern in the Subbasin for many years. Seasonal trends of slightly higher spring groundwater elevations compared with fall levels continued in each of the water years.

## Groundwater Extractions

Total groundwater extractions in the Subbasin for water years 2017, 2018, and 2019 are ~~81,8~~70,800 acre-feet (AF), 82~~1~~,2~~1~~00 AF, and 6~~8~~2,6~~1~~00 AF, respectively. Table ES-1 summarizes the groundwater extractions by water use sector for each water year.

**Table ES- 1. Groundwater Extractions by Water Use Sector**

| Water Year | Groundwater Extractions by Water Use Sector | | | Total (AF) |
|---|---|---|---|---|
| | Municipal (AF) | PWS and Rural Domestic (AF) | Agriculture (AF) | |
| 2017 | 1,626~~4,235~~ | 5,060 | 64,100~~72,500~~ | 70,800~~81,800~~ |
| 2018 | 1,677~~5,029~~ | 5,060 | 75,500~~71,000~~ | 82,200~~81,100~~ |
| 2019 | 1,729~~4,804~~ | 5,060 | 55,800~~72,200~~ | 62,600~~82,100~~ |
| Method of Measure: | Metered | 2016 Groundwater Model | Soil-Water Balance Model | |
| Level of Accuracy: | high | low-medium | medium | |

Notes:
AF = acre-feet
PWS = public water systems

## Surface Water Use

The Subbasin currently benefits from surface water entitlements from the Nacimiento Water Project (NWP) and the State Water Project (SWP) to supplement municipal groundwater demands in the City of Paso Robles and the community of Shandon, respectively. Locations of communities dependent on groundwater and with access to surface water are shown on Figure 11. There is currently no surface water available for agricultural or recharge project use within the Subbasin. A summary of total actual surface water use by source is provided in Table ES-2.

**Table ES- 2. Total Surface Water Use by Source**

| Water Year | Nacimiento Water Project[1] (AF) | State Water Project[2] (AF) | Total Surface Water Use (AF) |
|---|---|---|---|
| 2017 | 1,650~~1,784~~ | 42 | 1,691~~1,826~~ |
| 2018 | 1,423~~2,284~~ | 55 | 1,477~~2,339~~ |
| 2019 | 1,142~~1,498~~ | 43 | 1,184~~1,541~~ |

Notes:
[1] Contract annual entitlement to the City of Paso Robles = 6,488 AFY
[2] Contract annual entitlement to CSA 16 = 100 AFY
AF = acre-feet
AFY = acre-feet per year

## Total Water Use

For water years 2017, 2018, and 2019, quantification of total water use was completed through reporting of metered water production data from municipal wells, metered surface water use, and from models used to estimate agricultural crop water supply requirements. In addition, rural water use and small commercial public water system use was estimated. Table ES-3 summarizes the total annual water use in the Subbasin by source and water use sector.

**Table ES- 3. Total Annual Water Use in the Subbasin by Source and Water Use Sector**

| Water Year | Municipal (AF) | | PWS and Rural Domestic (AF) | Agriculture (AF) | Total (AF) |
|---|---|---|---|---|---|
| Source: | Groundwater | Surface Water | Groundwater | Groundwater | |
| 2017 | 1,626~~4,235~~ | 1,691~~1,826~~ | 5,060 | 64,100~~72,500~~ | 72,500~~83,600~~ |
| 2018 | 1,677~~5,029~~ | 1,477~~2,339~~ | 5,060 | 75,500~~71,000~~ | 83,700~~83,400~~ |
| 2019 | 1,729~~4,804~~ | 1,184~~1,541~~ | 5,060 | 55,800~~72,200~~ | 63,800~~83,600~~ |
| Method of Measure: | Metered | Metered | 2016 Groundwater Model | Soil-Water Balance Model | |
| Level of Accuracy: | high | high | low-medium | medium | |

Notes:
AF = acre-feet
PWS = public water systems

## Change in Groundwater in Storage

The calculation of change in groundwater in storage in the Subbasin was derived from comparison of fall groundwater elevation contour maps from one year to the next as well as taking the difference between groundwater elevations throughout the Subbasin as the aquifer becomes saturated (storage gain) or dewatered (storage loss). For example, the fall 2016 groundwater elevations were subtracted from the fall 2017 groundwater elevations, resulting in a map depicting the changes in groundwater elevations in the Paso Robles Formation Aquifer that occurred during the 2017 water year. Similar calculations were made for water years 2018 and 2019, resulting in a series of groundwater elevation change maps in the Paso Robles Formation Aquifer.

The groundwater elevation change map for water year 2017 (Figure 12), which was an above-average rainfall year, shows that water levels declined over a large portion of the central and northern areas of the Subbasin, with a minor depression in the City of Paso Robles area and a more pronounced area of decline in the Shandon area. The 2017 map also shows that groundwater elevations increased significantly in the southern highland areas of the Subbasin, in response to the above-average precipitation received in 2017.

The groundwater elevation change map for water year 2018 (Figure 13), which was a below-average rainfall year, shows that water levels declined in the southern, eastern, and northwestern areas of the Subbasin and increased over the central portion of the Subbasin, notably in the Shandon area.

The groundwater elevation change map for water year 2019 (Figure 14), which was an above-average rainfall year, shows that groundwater elevations increased over a large portion of the eastern half of the Subbasin, including a pronounced increase in the Shandon area, and that water levels declined over a large portion of the western half of the Subbasin, notably in the area west of Creston.

The annual changes of groundwater in storage calculated for water years 2017, 2018, and 2019 are presented in Table ES-4.

**Table ES- 4. Annual Changes of Groundwater in Storage for Water Years 2017, 2018, and 2019**

| Water Year | Annual Change in Groundwater in Storage (AF) |
|---|---|
| 2017 | 60,100 |
| 2018 | 6,400 |
| 2019 | 59,700 |

Note:
AF = acre-feet

## Progress towards Meeting Basin Sustainability

Several projects and management actions are in process or have been recently implemented in the Subbasin to attain sustainability. These projects and actions include capital projects as well as non-structural basin-wide policies intended to reduce or optimize local groundwater use. Some of these projects were described in concept in the GSP; some of the actions described herein are new initiatives designed to make new water supplies available to the Subbasin that may be implemented by project participants to reduce pumping and partially mitigate the degree to which the management actions would be needed. Some of the ongoing efforts include:

- Amendment #1 to the Memorandum of Agreement
- Extension of Water Neutral New Development Program
- Paso Basin Aerial Groundwater Mapping Pilot Study
- Expand the Alluvial Aquifer Monitoring Network and Install New Stream Gages
- City of Paso Robles Recycled Water Program
- San Miguel Community Services District Recycled Water Project
- Blended Water Project
- Stormwater Capture and Recharge Projects

Relative to the most current basin conditions as reported in the GSP, this First Annual Report (2017–2019) indicates an improvement in groundwater conditions throughout the Subbasin, increased groundwater elevations in several of the representative monitoring site (RMS) wells, and a marked increase in total groundwater in storage. It is clear that historical groundwater pumping in excess of the sustainable yield has created challenging conditions for sustainable management. However, actions are already underway to collect data, improve the monitoring and data-collection networks, and coordinate with affected agencies and entities throughout the Subbasin to develop solutions that address the shared mutual interest in the Subbasin's overall sustainability goal.

The above-average rainfall water years of 2017 and 2019 improved groundwater conditions in the Subbasin. Of the 22 RMS wells in the Subbasin groundwater monitoring network, none of the wells exhibit groundwater elevations at or below the minimum threshold established in the GSP. Although the groundwater elevations in some of the RMS wells are continuing to trend downward, several of the RMS wells exhibit recovering groundwater elevations in the past two years. Ten of the 22 RMS wells in the monitoring network have current groundwater elevations greater than the measurable objective for that RMS well.

Groundwater in storage in the Subbasin increased more than 126,000 AF in total over the past three water years. ~~The volume of groundwater extractions in the Subbasin has remained relatively consistent for the past~~

~~three years averaging approximately 81,700 AFY, which is slightly less than the average volume of 85,800 AFY of groundwater extractions estimated for 2012–2016.~~ Although groundwater in storage has increased somewhat over the past three water years, groundwater pumping continues to exceed the estimated future sustainable yield and the projects and management actions described in the GSP and in this First Annual Report will be necessary in order to bring the Subbasin into sustainability.

At this time, there are no more recent data available since publication of the GSP to assess any changes in Subbasin subsidence, the interconnectivity of surface water and groundwater, or potential surface water depletion. The potential for impacts to these sustainability indicators will be assessed in future annual reports as data are developed.

Additional time will be necessary to judge the effectiveness and quantitative impacts of the projects and management actions either now underway or in the planning and implementation stage. However, it is clear that the actions in place and as described in this First Annual Report are a good start towards reaching the sustainability goals laid out in the GSP. It is too soon to judge the observed changes in basin conditions against the interim goals outlined in the GSP, but the anticipated effects of the projects and management actions now underway are expected to significantly affect the ability of the Subbasin to reach the necessary sustainability goals.

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# SECTION 1: **Introduction – Paso Robles Subbasin First Annual Report (2017–2019)**

The First Annual Report for the Paso Robles Area Subbasin of the Salinas Valley Groundwater Basin (Paso Robles Subbasin or Subbasin) has been prepared for the Paso Basin Cooperative Committee (PBCC) and the Groundwater Sustainability Agencies (GSAs) in accordance with the Sustainable Groundwater Management Act (SGMA) and Groundwater Sustainability Plan (GSP) Regulations (§ 356.2. Annual Reports) (see Appendix A, GSP Regulations for Annual Reports). Pursuant to the California Department of Water Resources (DWR) regulations, a GSP Annual Report must be submitted to DWR by April 1 of each year following the adoption of the GSP. With adoption and submittal of the Paso Robles Subbasin GSP by January 31, 2020, the GSAs are required to submit an annual report for the preceding water year (October 1 through September 30) to DWR by April 1, 2020. Because this is the first GSP Annual Report for the Paso Robles Subbasin, this report documents and updates data from October 1, 2016 (for groundwater production and water use data) or October 1, 2017 (for water level data) through October 31, 2019.[1]

## 1.1 Setting and Background

The Paso Robles Subbasin Groundwater Sustainability Plan was prepared by Montgomery & Associates, Inc. (M&A, 2019), on behalf of and in cooperation with the Paso Basin Cooperative Committee and the Subbasin GSAs. The GSP, and this Annual Report, covers the entire Paso Robles Subbasin (Figure 1). The Subbasin lies in the northern portion of San Luis Obispo County. The majority of the Subbasin comprises gentle flatlands near the Salinas River Valley, ranging in elevation from approximately 450 to 2,400 feet (ft) above mean sea level (AMSL). The Subbasin is drained by the Salinas River and its tributaries, including the Estrella River, Huer Huero Creek, and San Juan Creek. Communities in the Subbasin are the City of Paso Robles and the communities of San Miguel, Creston, and Shandon. Highway 101 is the most significant north-south highway in the Subbasin, with Highways 41 and 46 running east-west across the Subbasin.

The GSP was jointly developed by four GSAs:

- City of Paso Robles GSA
- Paso Basin - County of San Luis Obispo GSA
- San Miguel Community Services District (CSD) GSA
- Shandon - San Juan GSA

The Paso Basin GSAs overlying the Subbasin entered into a Memorandum of Agreement (MOA) in September 2017. The purpose of the MOA was to establish a Paso Basin Cooperative Committee (PBCC) to develop a single GSP for the entire Subbasin to be considered for adoption by each GSA and subsequently submitted to DWR for approval. Under the framework of the original MOA, the GSAs engaged the public and coordinated to jointly develop the Paso Robles Subbasin GSP. At its November 20, 2019 meeting, in accordance with the MOA, the PBCC voted unanimously to recommend that the GSAs adopt the GSP and submit it to DWR by the SGMA deadline. Subsequent actions by each GSA resulted in unanimous approval of the GSP and a joint submittal of the GSP to DWR.

[1] The required timeframe of the annual reports, pursuant to the SGMA regulations, is by water year, which is October 1 through September 30 of any water year. However, because the County of San Luis Obispo Groundwater Level Monitoring Program measures water levels in October, the October 2019 measurements, for instance, are utilized to reflect conditions at the end of water year 2019.

The original MOA included provision for automatic termination upon approval of the GSP by DWR. Resolutions adopted by each GSA during the GSP approval process included an amendment to the MOA that removed automatic termination language because the GSAs will continue cooperating on the GSP and its implementation until such time as the long-term governance structure for implementation of the GSP is developed.

Each of the GSAs appointed a representative to the PBCC to coordinate activities among the GSAs during the development of the GSP and the development and submittal of this Annual Report. The GSAs also agreed to designate the County of San Luis Obispo Director of Public Works as the Plan Manager with the authority to submit the GSP and the Annual Report and serve as the point of contact with DWR.

## 1.2 Organization of This Report

The required contents of an Annual Report are provided in the GSP Regulations (§ 356.2), included as Appendix A. Organization of the report is meant to follow the regulations where possible to assist in the review of the document. The sections are briefly described as follows:

**Section 1. Introduction – Paso Robles Subbasin First Annual Report (2017–2019)**: a brief background of the formation and activities of the Paso Robles Subbasin GSAs and development and submittal of the GSP.

**Section 2. Paso Robles Subbasin Setting and Monitoring Networks**: a summary of the Subbasin setting, Subbasin monitoring networks, and the ways in which data are used for groundwater management.

**Section 3. Groundwater Elevations (§356.2[b][1])**: a description of recent monitoring data with groundwater elevation contours for spring and fall monitoring events and representative hydrographs.

**Section 4. Groundwater Extractions (§356.2[b][2])**: compilation of metered and estimated groundwater extractions by land use sector and location of extractions.

**Section 5. Surface Water Use (§356.2[b][3])**: a summary of reported surface water use.

**Section 6. Total Water Use (§356.2[b][4])**: a presentation of total water use by source and sector.

**Section 7. Change in Groundwater in Storage (§356.2[b][5])**: a description of the methodology and presentation of changes in groundwater in storage based on fall to fall groundwater elevation differences.

**Section 8. Progress towards Basin Sustainability (§356.2[c])**: a summary of management actions taken throughout the Subbasin by GSAs and individual entities towards sustainability of the Subbasin.

# SECTION 2: Paso Robles Subbasin Setting and Monitoring Networks

## 2.1 Introduction

This section provides a brief description of the basin setting and the groundwater management monitoring programs described in the GSP, as well as any notable events affecting monitoring activities or the quality of monitoring results in the reported 2017–2019 water years. Much of the information reported on in this Annual Report was taken from the GSP prepared by Montgomery & Associates, Inc. (M&A, 2019).

## 2.2 Subbasin Setting

The Subbasin is a structural trough trending to the northwest filled with terrestrially derived sediments sourced from the surrounding mountains. The Subbasin is surrounded by relatively impermeable geologic formations, sediments with poor water quality, and structural faults. Land surface elevation ranges from approximately 2,000 ft AMSL in the southeast extent of the Subbasin to about 600 ft AMSL in the northwest extent, where the Salinas River exits the Subbasin. Agriculture is the dominant land use. The Subbasin includes the incorporated City of Paso Robles and unincorporated communities of San Miguel, Creston, and Shandon.

The Subbasin is the southernmost portion of the Salinas Valley Groundwater Basin. As originally defined by DWR (2003), the Subbasin was in both San Luis Obispo and Monterey counties. The 2019 DWR basin boundary modification process resulted in a revision of the northern boundary of the Paso Robles Subbasin to be coincident with the San Luis Obispo/Monterey county line, thereby placing the Subbasin entirely within San Luis Obispo County.

The top of the Subbasin is defined by land surface. The bottom of the Subbasin is defined by the base of the Paso Robles Formation. Sediments below the base of the Paso Robles Formation are typically much less permeable than the overlying sediments. Although the bedrock sediments often produce usable quantities of groundwater, the water is generally of poor quality, so they are not considered part of the Subbasin. As described in the GSP, the lateral boundaries of the Subbasin include the following:

- The western boundary is defined by the contact between the sediments in the Subbasin and the sediments of the Santa Lucia Range. A portion of the western boundary is defined by the Rinconada fault system which separates the Paso Robles Subbasin from the Atascadero Area Subbasin.
- The eastern boundary of the Subbasin is defined by the contact between the sediments in the Subbasin and the sediments of the Temblor Range. The San Andreas Fault generally forms the eastern Subbasin boundary.
- The southern boundary of the Subbasin is defined by the contact between the sediments in the Subbasin and the sediments of the La Panza Range. To the southeast, a watershed and groundwater divide separates the Subbasin from the adjacent Carrizo Plain Basin; sedimentary layers are likely continuous across this divide.
- The northern boundary of the Subbasin is defined by the San Luis Obispo/Monterey county line.

Two principal aquifers exist in the Subbasin, including the Alluvial Aquifer and the Paso Robles Formation Aquifer. The Alluvial Aquifer is the youngest aquifer. It is unconfined and consists of predominantly coarse-grained sediments (sand and gravel) deposited along Huer Huero Creek, the Estrella River, and the Salinas River. The Alluvial Aquifer varies in thickness but may be up to 100 ft thick along the channels. Much of the Alluvial Aquifer is characterized by relatively high transmissivity that may exceed 100,000 gallons per day per foot (gpd/ft). Wells screened in the Alluvial Aquifer can be very productive and may yield over 1,000 gallons per minute (gpm).

The Paso Robles Formation Aquifer underlies the Alluvial Aquifer and outcrops in the Subbasin everywhere outside of the Holocene stream channels. The Paso Robles Formation represents the largest volume of sediments in the Subbasin, with a total thickness up to 3,000 ft in the northern Estrella area and up to 2,000 ft in the Shandon area. The Paso Robles Formation has a thickness of 700 to 1,200 ft throughout most of the Subbasin. It is generally characterized by interbedded, discontinuous lenses of sand and gravel that comprise the most productive strata within the aquifer, separated vertically by comparatively thick zones of fine-grained sediments (silts and clays). Well depths generally range from approximately 200 ft to 1,000 ft or more. As described in the GSP, reported aquifer transmissivity estimates in the Paso Robles Formation range from approximately 1,000 to 9,000 gpd/ft, and well yields range from approximately 150 gpm to 850 gpm.

The primary components of recharge to the Subbasin aquifers are percolation of precipitation and infiltration of surface water from rivers and streams. Natural discharge from the Subbasin aquifers occurs through springs and seeps, evapotranspiration, and discharge to surface water bodies. The most significant component of discharge is pumping of groundwater from wells. The regional direction of groundwater flow is from the southeast to the northwest. As there is no hydrogeologic barrier to flow along the northern boundary of the Subbasin, groundwater exits the Subbasin along that boundary to the adjacent Salinas Valley Basin to the north.

## 2.3 Precipitation and Climatic Periods

Annual precipitation recorded at the Paso Robles weather station (National Oceanic and Atmospheric Administration [NOAA] station 46730) is presented by water year in Figure 2. The long-term average annual precipitation for the period 1925 through 2019 is 14.6 inches per water year, as recorded at the Paso Robles weather station. Climatic periods in the Subbasin have been determined based on analysis of data from the Paso Robles weather station using the Standardized Precipitation Index (SPI), which quantifies deviations from normal precipitation patterns, using a 60-month period for analysis to maintain consistency with previous analyses in the GSP. These climatic periods are categorized according to the following designations: wet, dry, and average/alternating wet and dry (Figure 2). Historical precipitation records are provided in Appendix B.

## 2.4 Groundwater Elevation Monitoring (§ 356.2[b])

This section provides a brief description of the groundwater management monitoring programs currently in place and any notable events affecting monitoring activities or the quality of monitoring results.

### 2.4.1 Groundwater Elevation Monitoring Locations

The GSP provided a summary of existing groundwater monitoring efforts currently promulgated under various existing local, state, and federal programs. SGMA requires that monitoring networks be developed to provide sufficient data quality, frequency, and spatial distribution to characterize groundwater and surface water in the Subbasin, and to evaluate changing aquifer conditions in response to GSP implementation. The monitoring network developed in the GSP is intended to support efforts to do the following:

- Monitor changes in groundwater conditions and demonstrate progress toward achieving measurable objectives and minimum thresholds documented in the GSP
- Quantify annual changes in water use
- Monitor impacts to the beneficial uses and users of groundwater

Monitoring networks are developed for each of the five sustainability indicators relevant to the Paso Robles Subbasin:

- Chronic lowering of groundwater levels
- Reduction of groundwater in storage
- Degraded water quality
- Land subsidence
- Depletion of interconnected surface water

Monitoring for the first two sustainability indicators (chronic lowering of water levels and reduction of groundwater in storage) is implemented using the same representative monitoring sites (RMS). The GSP identifies an existing network of 23 RMS wells for water level monitoring. Of these 23 wells, 22 are wells that screen the Paso Robles Formation[2], and one is an Alluvial Aquifer well. These RMS have been monitored biannually, in April and October, for various periods of record. The RMS are displayed in Figure 3, and a summary of information for each of the wells is included in Appendix C.

### 2.4.2 Monitoring Data Gaps

The GSP noted numerous data gaps in the current RMS network. It should be noted that efforts are continuing during the implementation phase of the GSP to identify existing wells that can be added to the network, or to construct new wells for the network. As a start to this effort, the GSP identified nine additional wells that may be incorporated into the RMS network once the depth and screened aquifer are established. These wells are displayed in Figure 3, and a summary of available well information is included in Appendix D.

## 2.5 Additional Monitoring

Evaluation of the water quality sustainability indicator is achieved through monitoring of an existing network of supply wells in the Subbasin. Constituents of concern (COCs) identified in the GSP that have the potential to impact suitability of water for public supply or agricultural use include total dissolved solids (TDS), chloride, sulfate, nitrate, boron, and gross alpha radiation.

COCs for drinking water are monitored at public water supply wells (PWS). There are 41 PWSs in the Subbasin. PWSs constitute part of the monitoring network for water quality in the Subbasin. In addition, the GSP identified 28 agricultural supply wells that are monitored for COCs under the Irrigated Lands Regulatory Program (ILRP).

Land subsidence in the Subbasin is monitored using interferometric synthetic-aperture radar (InSAR) data collected using microwave satellite imagery provided by DWR. Available data to date indicate no significant subsidence in the Subbasin that impacts infrastructure. The GSAs will annually assess subsidence using the InSAR data provided by DWR.

A monitoring network to assess the sustainability indicator of groundwater/surface water interconnection is a current data gap that will be addressed during GSP implementation. There is at present only a single Alluvial Aquifer well in the water level monitoring network. This is identified in the GSP as a significant data gap. Additional Alluvial Aquifer wells will need to be established in the monitoring network before groundwater/surface water interaction can be more robustly analyzed.

[2] Since initial establishment of the monitoring well network, two of the 22 Paso Robles Formation Aquifer RMS wells (27S/13E-30N01 and 26S/12E-2607) have become either inactive or inaccessible.

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# SECTION 3: **Groundwater Elevations (§ 356.2[b][1])**

## 3.1 Introduction

This section provides a detailed report on groundwater elevations in the Subbasin since spring of 2017, which marked the end of the analyses completed for the GSP. In the future, annual reports will present groundwater elevation updates for the previous water year. However, because of the gap between the end of the GSP analysis and this First Annual Report, five groundwater elevation maps are presented—for fall 2017, spring 2018, fall 2018, spring 2019, and fall 2019.

These maps present the most up-to-date seasonal conditions in the Basin. Most of the data presented characterizes conditions in the Paso Robles Formation Aquifer. Data for the Alluvial Aquifer is too sparse for regional analysis. Monitoring data is reviewed for quality and an appropriate time frame is chosen to provide the highest consistency in the wells used for each reporting period. Data quality is often difficult to ascertain when measurements are taken by other agencies or private well owners, and well construction information may be incomplete or unavailable. This means that a careful review of the data is required prior to uploading to DWR's new Monitoring Network Module (replacing the current CASGEM program) to verify whether measurements are trending consistent with trends of previous years and with the current year's hydrology and level of extractions.

### 3.1.1 Principal Aquifers

As discussed in Section 2, there are two principal aquifers in the Subbasin. The Paso Robles Formation Aquifer is several hundreds of feet thick, represents the greatest volume of saturated sediments in the Subbasin, and is the aquifer that is most utilized for supply. The Alluvial Aquifer is limited in extent to the active channels of the streams in the Subbasin and is generally less than 100 ft thick.

## 3.2 Seasonal High and Low (Spring and Fall) (§ 356.2[b][1][A])

The assessment of groundwater elevation conditions in the Subbasin as described in the GSP is largely based on data from the County of San Luis Obispo Flood Control and Water Conservation District (SLOFCWCD) groundwater monitoring program. Groundwater levels are measured by the SLOFCWCD through a network of public and private wells in the Subbasin. Data from many of the wells in the monitoring program are collected subject to confidentiality agreements between the SLOFCWCD and well owners. Consistent with the terms of such agreements, the well owner information and specific locations for these wells are not published in the GSP and that convention is continued in this Annual Report. To maintain consistency with the GSP and represent conditions that can be easily compared from year to year, this Annual Report used the same set of wells as was used in the GSP. Groundwater level data from approximately 50 to 55 wells are used to create the groundwater elevation contour maps, but the well locations and data points are not shown on the maps to preserve confidentiality. Of these 50 to 55 wells, owners of 23 of the wells have agreed to allow public use of the well data and are therefore used as RMS wells for the purpose of monitoring sustainability indicators. As implementation of the GSP progresses, it is anticipated that additional wells will be added to the data set and that many of the wells with current confidentiality agreements will be modified to allow for public use of the data.

In accordance with the SGMA regulations, the following information is presented based on available data:

- Groundwater elevation contour maps for the seasonal high and seasonal low groundwater conditions for the previous water year. Because the most recent presentation of groundwater conditions described in the GSP was spring 2017, groundwater elevation contour maps are presented for fall 2017, spring 2018, fall 2018, spring 2019, and fall 2019.

- A map depicting the change in groundwater elevation for the preceding water year. Because the most recent change in groundwater elevation in the GSP represented the period between 1997 and 2017, change in groundwater elevation maps are shown here for the periods fall 2016 to fall 2017, fall 2017 to fall 2018, and fall 2018 to fall 2019 (Section 7.1).
- Hydrographs for wells with publicly available data (Appendix E).

### 3.2.1 Alluvial Aquifer Groundwater Elevation Contours

Groundwater elevation data for the Alluvial Aquifer are too limited to prepare representative contour maps of the seasonal high and seasonal low groundwater elevations. Figure 4 shows the current (as of 2017) groundwater elevation contours for the Alluvial Aquifer, as shown in the GSP. This map, however, was developed using 2017 data (when available) as well as the most recent data prior to 2017. A reasonable data set of Alluvial Aquifer groundwater elevations specific to years 2018 or 2019 is not available, so the map as presented in the GSP is the most recent map available.

Groundwater elevations range from approximately 1,400 ft AMSL in the southeastern portion of the Subbasin to approximately 600 ft AMSL near San Miguel. Groundwater flow direction in the Alluvial Aquifer generally follows the alignment of the creeks and rivers. Overall, groundwater in the Alluvial Aquifer flows from southeast to northwest across the Subbasin. On a basin-wide scale, the average horizontal hydraulic gradient in the alluvium is about 0.004 feet per foot (ft/ft) from the southeastern portion of the Subbasin to San Miguel.

### 3.2.2 Paso Robles Formation Aquifer Groundwater Elevation Contours

Seasonal high and low groundwater elevation data for the Subbasin for fall 2017 through fall 2019 for the Paso Robles Formation Aquifer were contoured to assess spatial variations, yearly fluctuations, trends in groundwater conditions, groundwater flow directions, and horizontal groundwater gradients. Contour maps were prepared for the seasonal high groundwater levels, which typically occur in the spring, and the seasonal low groundwater levels, which typically occur in the fall. In general, the spring groundwater data are for April and the fall groundwater data are for October. For consistency with the GSP, the same well data sets were used for contouring; information identifying the owner or detailed location of private wells is not shown on the maps to preserve confidentiality.

Figure 5 presents groundwater elevation contours for fall 2017. Groundwater elevations are higher than 1,250 ft AMSL in the southeast portion of the Subbasin and the regional direction of groundwater flow is from the southeast to northwest. The lowest groundwater elevations are observed in the northern portion of the City of Paso Robles and immediately north of the city, with elevations lower than 500 ft AMSL.

Figures 6 and 7 show contours of groundwater elevations in the Paso Robles Formation Aquifer for spring 2018 and fall 2018, respectively. Overall, groundwater conditions in the Subbasin in the spring and fall of 2018 were similar, with groundwater elevations in the fall generally lower than in the spring, a typical seasonal trend for the Subbasin. Groundwater flow direction is generally to the northwest and west over most of the Subbasin. In general, groundwater flow in the western portion of the Subbasin tends to converge toward areas of low groundwater elevations. These areas of low groundwater elevation are in the area between the City of Paso Robles and the communities of San Miguel and Whitley Gardens. Horizontal groundwater gradients range from approximately 0.002 ft/ft in the southeast portion of the Subbasin to approximately 0.02 ft/ft in the area southeast of Paso Robles.

Figures 8 and 9 show contours of groundwater elevations in the Paso Robles Formation Aquifer for spring 2019 and fall 2019, respectively. As is the overall trend every year in the Subbasin, groundwater conditions in the Subbasin in the spring and fall are similar, with groundwater elevations in the fall generally slightly lower than in the spring. Groundwater flow direction is generally to the northwest and west over most of the Subbasin. In general, groundwater flow in the western portion of the Subbasin tends to converge toward areas of low groundwater elevations.

In general, the groundwater elevations observed in the Subbasin during water years 2017 through 2019 reflect slight increases across portions of the Subbasin, likely due predominantly to above-average rainfall conditions in water years 2017 and 2019. Positive and negative changes in groundwater elevations from year to year are observed in different parts of the Subbasin, as has been observed historically. Seasonal trends of slightly higher spring groundwater elevations compared with fall levels continued in each of the water years.

## 3.3 Hydrographs (§ 356.2[b][1][B])

Groundwater elevation hydrographs are used to evaluate aquifer behavior over time. Changes in groundwater elevation at a given point in the Subbasin can result from many influencing factors, with all or some occurring at any given time. Factors can include changing hydrologic trends, seasonal variations in precipitation, varying Subbasin extractions, changing inflows and outflows along boundaries, availability of recharge from surface water sources, and influence from localized pumping conditions. Climatic variation can be one of the most significant factors affecting groundwater elevations over time. For this reason, the hydrographs also display periods of climatic variation categorized as wet, dry, or average/alternating wet and dry (see Figure 2).

### 3.3.1 Hydrographs

Groundwater elevation hydrographs and associated location maps for the 22 wells in the Subbasin monitoring network that are constructed in and extract groundwater from the Paso Robles Formation Aquifer are presented in Appendix E. The groundwater elevation data for the single Alluvial Aquifer RMS is not shown. These hydrographs also include information on well screen interval (if available), reference point elevation, as well as measurable objectives and minimum thresholds for each well that were developed during the preparation of the GSP. Many of the hydrographs illustrate a condition of declining water levels since the late 1990s, although some indicate relative water level stability over the same period.

As described in the GSP, an average of the 2017 non-pumping groundwater levels was selected as the measurable objectives and minimum thresholds are set below those levels. Going forward from 2017, the average of the spring and fall measurements in any one water year will be the benchmark against which trends will be assessed.

Of the 22 RMS hydrographs presented in Appendix E, none of the RMS wells exhibit groundwater elevations at or below the minimum threshold. Although the groundwater elevations in some of the RMS wells are continuing to trend downward, several of the RMS wells exhibit recovering groundwater elevations recently, apparently as a result of the recent years of above-average rainfall. Ten of the 22 RMS wells have current groundwater elevations greater than the measurable objective for that RMS well.

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# SECTION 4: **Groundwater Extractions (§ 356.2[b][2])**

## 4.1 Introduction

This section presents the metered and estimated groundwater extractions from the Subbasin for the 2017, 2018, and 2019 water years. The types of groundwater extraction described in this section include municipal (Table 1), agricultural (Table 2), rural domestic (Table 3), and small public water systems (Table 4). Each following subsection includes a description of the method of measurement and a qualitative level of accuracy for each estimate. The level of accuracy is rated on a qualitative scale of low, medium, and high. The annual groundwater extraction volumes for all water use sectors are shown in Table 5.

## 4.2 Municipal Metered Well Production Data

The municipal groundwater extractions documented in this report are metered data. Metered groundwater pumping extraction data are from the City of Paso Robles, San Miguel CSD, and the County of San Luis Obispo for Community Service Area 16 (CSA 16), providing service to the community of Shandon. The data shown in Table 1 reflect metered data reported by the respective agencies. The accuracy level rating of these metered data is high.

**Table 1. Municipal Groundwater Extractions**

| Water Year | Metered Groundwater Extractions | | | Total (AF) |
|---|---|---|---|---|
| | City of Paso Robles[1] (AF)~~City of Paso Robles (AF)~~ | San Miguel CSD (AF) | CSA 16 (AF) | |
| 2017 | 1,261~~3,870~~ | 295 | 70 | 1,626~~4,235~~ |
| 2018 | 1,302~~4,654~~ | 325 | 50 | 1,677~~5,029~~ |
| 2019 | 1,392~~4,467~~ | 289 | 48 | 1,729~~4,804~~ |

Notes:
1 – The City of Paso Robles produces groundwater from wells located in both the Paso Robles Subbasin and the Atascadero Subbasin. Only the portion produced from within the Paso Robles Subbasin is included here.
AF = acre-feet
CSA = community service area (County of San Luis Obispo)
CSD = community services district
~~AF = acre feet~~
~~CSA = community service area (County of San Luis Obispo)~~
~~CSD = community services district~~

## 4.3 Estimate of Agricultural Extraction

Agricultural water use constituted ~~88~~ 91 percent of the total anthropogenic groundwater use in the Subbasin in water years 2017-2019. To estimate agricultural water demand, land use data along with climate and soil data were analyzed and processed using the soil-water balance model that was developed for the Paso Robles Groundwater Basin Model Update (GSSI, 2014). Annual land use spatial data sets from San Luis Obispo County were used to determine the appropriate crop categories, distribution, and acreages. Land use types were grouped within seven crop categories, including alfalfa, citrus, deciduous, nursery, pasture, vegetable, and vineyard, each with a respective set of crop water demand coefficients from the San Luis

Obispo County Master Water Report[3] (Carollo, 2012). Climate data inputs include precipitation from the Paso Robles Station (NOAA station 46730) and reference evapotranspiration (ETo) data from several private stations in the Subbasin operated by Western Weather Group. Soil water holding capacity data from National Resources Conservation Service soil surveys of San Luis Obispo County were used. The soil-water balance model includes consideration for regulated deficit irrigation (RDI), cover crop, and frost protection water demands for vineyards as well as irrigation system efficiencies (GSSI, 2014).

The soil-water balance model was utilized to estimate agricultural water demands through water year 2016 during completion of the GSP (M&A, 2019). Agricultural water demand for this First Annual Report was estimated for water years 2017, 2018, and 2019 using the soil-water balance model. The resulting estimated groundwater extractions for agricultural demands are summarized in Table 2. The accuracy level rating of these estimated volumes is medium.

**Table 2. Estimated Agricultural Irrigation Groundwater Extractions**

| Water Year | Agricultural Demand (AF) |
|---|---|
| 2017 | 64,100~~72,500~~ |
| 2018 | 75,500~~71,000~~ |
| 2019 | 55,800~~72,200~~ |

Note:
AF = acre-feet

## 4.4 Rural Domestic and Small Public Water System Extraction

Rural domestic and small PWS groundwater extractions in the Subbasin were estimated using the methods described here.

### 4.4.1 Rural Domestic Demand

As documented in the Paso Robles Groundwater Basin Model Update (GSSI, 2014), the rural domestic water demand was originally estimated as the product of County estimates of rural domestic units (DUs) and a water demand factor of 1.7 AFY per DU, which included small PWS water demand (Fugro, 2002). This factor was subsequently modified to 1.0 AFY/DU in the San Luis Obispo County Master Water Report, not including small PWS demand (Carollo, 2012). Based on further investigation completed for the 2014 groundwater model update, the rural domestic water use factor was refined to 0.75 AFY/DU (GSSI, 2014). To simulate rural water demand over time in the groundwater model, an annual growth rate of 2.25 percent for the rural population was assumed, based on recommendation from the San Luis Obispo County Planning Department (GSSI, 2014). The groundwater model update completed for the GSP (M&A, 2019) used a linear regression projection based on the 2014 model update to estimate rural domestic demand through water year 2016. The projected future water budget presented in the GSP (M&A, 2019) assumes water neutral growth in rural domestic water demand from water year 2016 going forward. Therefore, the rural domestic demand has been held constant at the estimated 2016 water year volume for this annual report. The resulting groundwater extractions for rural domestic demands are summarized in Table 3. The accuracy level rating of these estimated volumes is low-medium.

[3] Vineyard crop coefficients were modified based on discussions with Mark Battany, University of California Extension (GSSI, 2014).

**Table 3. Estimated Rural Domestic Groundwater Extractions**

| Water Year | Rural Domestic (AF) |
|---|---|
| 2017 | 3,530 |
| 2018 | 3,530 |
| 2019 | 3,530 |

Note: AF = acre-feet

### 4.4.2 Small Public Water System Extractions

The category of small PWSs includes a wide variety of establishments and facilities including small mutual water companies, golf courses, wineries, rural schools, and rural businesses. Various studies over the years used a mix of pumping data and estimates for type-specific water demand rates to estimate small PWS groundwater demand (Fugro, 2002; Todd Engineers, 2009). The 2012 San Luis Obispo County Master Water Report used the County of San Luis Obispo geographic information services mapping to define the distribution and number of commercial systems at the time and applied a single annual factor of 1.5 AFY per system (Carollo, 2012).

For the 2014 model update, actual pumping data were used as available to provide a monthly record over the study period (GSSI, 2014). Groundwater demand for four major golf courses (at the time) in the Subbasin (The Links, Hunter Ranch, Paso Robles, and River Oaks) was estimated using the following factors: ETo data measured in Paso Robles, the crop coefficient for turf grass, monthly rainfall data, and golf course acreage (GSSI, 2014). Water use for wineries was estimated by identifying each winery and its permitted capacity and applying a water use rate of 5 gallons of water per gallon of wine produced. Minor landscaping, wine tasting/restaurant functions, and return flows were also accounted for (GSSI, 2014). Water use for several small commercial/institutional water systems was estimated using water duty factors specific to the water system type (i.e., camp, school, restaurant, and other uses) (GSSI, 2014).

The groundwater model update completed for the GSP (M&A, 2019) used a linear regression projection for the 2014 model update to estimate small PWS demand through water year 2016. The projected future water budget presented in the GSP (M&A, 2019) assumes water neutral growth in small PWS water demand from water year 2016 going forward. Therefore, the small PWS demand has been held constant at the estimated 2016 water year volume for this annual report. The resulting groundwater extractions for small PWS demands are summarized in Table 4. The accuracy level rating of these estimated volumes is low-medium.

**Table 4. Estimated Small Public Water System Groundwater Extractions**

| Water Year | Small PWS (AF) |
|---|---|
| 2017 | 1,530 |
| 2018 | 1,530 |
| 2019 | 1,530 |

Note:
AF = acre-feet

## 4.5 Total Groundwater Extraction Summary

Total groundwater extractions in the Subbasin for water years 2017, 2018, and 2019 are ~~81~~70,800 AF, ~~81~~82,2~~1~~00 AF, and ~~82~~62,6~~1~~00 AF, respectively. Table 5 summarizes the total water use by sector and indicates the method of measure and associated level of accuracy. Approximate points of extraction were spatially distributed and colored according to a grid system to represent the relative pumping across the basin in terms of AF per acre (see Figure 10).

### Table 5. Total Groundwater Extractions

| Water Year | Groundwater Extractions by Water Use Sector | | | Total (AF) |
|---|---|---|---|---|
| | Municipal (AF) | PWS and Rural Domestic (AF) | Agriculture (AF) | |
| 2017 | 1,626~~4,235~~ | 5,060 | 64,100~~72,500~~ | 70,800~~81,800~~ |
| 2018 | 1,677~~5,029~~ | 5,060 | 75,500~~71,000~~ | 82,200~~81,100~~ |
| 2019 | 1,729~~4,804~~ | 5,060 | 55,800~~72,200~~ | 62,600~~82,100~~ |
| Method of Measure: | Metered | 2016 Groundwater Model | Soil-Water Balance Model | |
| Level of Accuracy: | high | low-medium | medium | |

Notes:
AF = acre-feet
PWS = public water systems

# SECTION 5: **Surface Water Use (§ 356.2[b][3])**

## 5.1 Introduction

This section addresses the reporting requirement of providing surface water supplies used, or available for use, and describes the annual volume and sources for the 2017, 2018, and 2019 water years. The method of measurement and level of accuracy is rated on a qualitative scale. The Subbasin currently benefits from surface water entitlements from the Nacimiento Water Project (NWP) and the State Water Project (SWP) to supplement municipal groundwater demands in the City of Paso Robles and the community of Shandon, respectively. Locations of communities dependent on groundwater and with access to surface water are shown on Figure 11.

## 5.2 Surface Water Available for Use

Table 6 provides a breakdown of surface water available for municipal use in the Subbasin. There is currently no surface water available for agricultural or recharge project use within the Subbasin.

**Table 6. Surface Water Available for Use**

| Water Year | Nacimiento Water Project[1] (AF) | State Water Project[2] (AF) | Total Available Surface Water (AF) |
|---|---|---|---|
| 2017 | 6,488 | 100 | 6,588 |
| 2018 | 6,488 | 100 | 6,588 |
| 2019 | 6,488 | 100 | 6,588 |

Notes:
[1] Contract annual entitlement to the City of Paso Robles AF = acre-feet
[2] Contract annual entitlement to CSA 16

## 5.3 Total Surface Water Use

A summary of total actual surface water use by source is provided in Table 7. The accuracy level rating of these metered data is high.

Environmental uses of surface water is also recognized but not estimated due to insufficient data to make an estimate of surface water use. It is expected that environmental uses will be quantified in future annual reports as more data become available.

**Table 7. Annual Surface Water Use**

| Water Year | Nacimiento Water Project[1] (AF)~~Nacimiento Water Project (AF)~~ | State Water Project[2] (AF)~~State Water Project (AF)~~ | Total Surface Water Use (AF) |
|---|---|---|---|
| 2017 | 1,650~~1,784~~ | 42 | 1,691~~1,826~~ |
| 2018 | 1,423~~2,284~~ | 55 | 1,477~~2,339~~ |
| 2019 | 1,142~~1,498~~ | 43 | 1,184~~1,541~~ |

**Notes:**
[1] Contract annual entitlement to the City of Paso Robles = 6,488 AFY
[2] Contract annual entitlement to CSA 16 = 100 AFY
AF = acre-feet

AFY = acre-feet per year
~~AF = acre-feet~~

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# SECTION 6: **Total Water Use (§ 356.2[b][4])**

This section summarizes the total annual groundwater and surface water used to meet municipal, agricultural, and rural demands within the Subbasin. For the 2017, 2018, and 2019 water years, the quantification of total water use was completed from reported metered municipal water production and metered surface water delivery, and from models used to estimate agricultural and rural water demand. Table 8 summarizes the total annual water use in the Subbasin by source and water use sector for water years 2017, 2018, and 2019. The method of measurement and a qualitative level of accuracy for each estimate is rated on a qualitative scale of low, medium, and high.

**Table 8. Total Annual Water Use by Source and Water Use Sector**

| Water Year | Municipal (AF) | | PWS and Rural Domestic (AF) | Agriculture (AF) | Total (AF) |
|---|---|---|---|---|---|
| Source: | Groundwater | Surface Water | Groundwater | Groundwater | |
| 2017 | 1,626~~4,235~~ | 1,691~~1,826~~ | 5,060 | 64,100~~72,500~~ | 72,500~~83,600~~ |
| 2018 | 1,677~~5,029~~ | 1,477~~2,339~~ | 5,060 | 75,500~~71,000~~ | 83,700~~83,400~~ |
| 2019 | 1,729~~4,804~~ | 1,184~~1,541~~ | 5,060 | 55,800~~72,200~~ | 63,800~~83,600~~ |
| Method of Measure: | Metered | Metered | 2016 Groundwater Model | Soil-Water Balance Model | |
| Level of Accuracy: | high | high | low-medium | medium | |

Notes:
AF = acre-feet
PWS = public water systems

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# SECTION 7: Change in Groundwater in Storage (§ 356.2[b][5])

## 7.1 Annual Changes in Groundwater Elevation (§ 356.2[b][5][A])

Annual changes in groundwater elevation in the Paso Robles Formation Aquifer for water years 2017, 2018, and 2019 are derived from comparison of fall groundwater elevation contour maps from one year to the next. For example, the fall 2016 groundwater elevations were subtracted from the fall 2017 groundwater elevations resulting in a map depicting the changes in groundwater elevations in the Paso Robles Formation Aquifer that occurred during the 2017 water year (see Figure 12). Similar calculations were made for water years 2018 and 2019 resulting in groundwater elevation change maps in the Paso Robles Formation Aquifer for water year 2018 (Figure 13) and water year 2019 (Figure 14). These groundwater elevation change maps are based on a reasonable and thorough analysis of the currently available data. As stated in Section 3, groundwater elevation data for the Alluvial Aquifer are too limited to prepare annual groundwater elevation contour maps. Therefore, the change in groundwater in storage analysis is limited to the Paso Robles Formation Aquifer for this annual report. As discussed in the GSP, the monitoring network needs to be expanded to more completely assess Subbasin conditions.

The groundwater elevation change map for water year 2017 (Figure 12) shows that water levels declined over a large portion of the central and northern areas of the Subbasin, with a minor depression in the City of Paso Robles area and a more pronounced area of decline in the Shandon area. The 2017 map also shows that groundwater elevations increased significantly in the southern highland areas of the Subbasin in response to the above-average precipitation received in 2017.

The groundwater elevations change map for water year 2018 (Figure 13) shows that water levels declined in the southern, eastern, and northwestern areas of the Subbasin and increased over the central portion of the Subbasin, notably in the Shandon area.

The groundwater elevations change map for water year 2019 (Figure 14) shows that groundwater elevations increased over a large portion of the eastern half of the Subbasin including a pronounced increase in the Shandon area and that water levels declined over a large portion of the western half of the Subbasin, notably in the area west of Creston.

## 7.2 Annual and Cumulative Change in Groundwater in Storage Calculations (§ 356.2[b][5][B])

The groundwater elevation change maps presented above represent a volume change within the Paso Robles Formation Aquifer for each water year. The volume change depicted on each map represents a total volume, including the volume displaced by the aquifer material and the volume of groundwater stored within the void space of the aquifer. The portion of void space in the aquifer that can be utilized for groundwater storage is represented by the aquifer storage coefficient (S), a unitless factor, which is multiplied by the total volume change to derive the change in groundwater in storage. Based on work completed for the GSP, S is estimated to be 7 percent.[4] The annual changes of groundwater in storage calculated for water years 2017, 2018, and 2019 are presented in Table 9 and the annual and cumulative change in groundwater in storage since 1981 are presented on Figure 15.

[4] Appendix F includes derivation of the storage coefficient from the GSP groundwater model files and a sensitivity analysis.

## Table 9. Annual Changes in Groundwater in Storage - Paso Robles Formation Aquifer

| Water Year | Annual Change (AF) |
|---|---|
| 2017 | 60,100 |
| 2018 | 6,400 |
| 2019 | 59,700 |

Note:
AF = acre-feet

# SECTION 8: **Progress toward Basin Sustainability (§ 356.2[c])**

## 8.1 Introduction

This section describes several projects and management actions that are in process or have been recently implemented in the Subbasin to avoid undesirable results and to attain sustainability. These projects and actions include capital projects and non-structural policies intended to reduce or optimize local groundwater use. Some of these projects were described in concept in the GSP; some of the actions described herein are new initiatives designed to make new water supplies available to the Subbasin that may be implemented by project participants to reduce pumping and partially mitigate the degree to which the management actions would be needed.

As described in the GSP, the need for projects and management actions is based on emerging Subbasin conditions, including the following:

- Groundwater levels are declining in many parts of the Subbasin, indicating that the amount of groundwater pumping is more than the natural recharge.
- Water budgets indicate that the amount of groundwater in storage has been in decline and will continue to decline in the future if there is no net decrease in pumping demand on the Subbasin.

To mitigate declines in groundwater levels in some parts of the Subbasin, achieve the sustainability goal before 2040, and avoid undesirable results as required by SMGA regulations, an overall reduction of groundwater pumping will be needed. A reduction in groundwater pumping can occur as a result of both management actions and projects that develop new water supplies used in lieu of pumping.

This section also provides a brief discussion of land subsidence, potential depletion of interconnected surface waters, and groundwater quality trends that have occurred during water years 2017, 2018, and 2019.

The projects and management actions described in this section will help achieve groundwater sustainability by avoiding undesirable results.

## 8.2 Implementation Approach

As described in the GSP, because the amount of groundwater pumping in the Subbasin is more than the estimated sustainable yield and groundwater levels are persistently declining in some parts of the Subbasin, the GSAs have already initiated several projects and management actions. It is anticipated that additional new projects and management actions will be implemented in the near future to continue progress towards avoiding or mitigating undesirable results.

Some of the projects and management actions described in this section are Subbasin-wide initiatives and some are area-specific. Generally, the basin-wide management actions apply to all areas of the Subbasin and reflect relatively basic GSP implementation requirements. Area-specific projects have been designed to aid in mitigating persistent water level declines in certain parts of the Subbasin.

## 8.3 Basin-Wide Management Actions and Projects

### 8.3.1 Amendment #1 to the MOA

The original five GSAs overlying the original Subbasin entered into a Memorandum of Agreement (MOA) in September 2017. Heritage Ranch Community Services District (CSD) was an original party to the MOA but with basin boundary modification approval by DWR in 2019, Heritage Ranch CSD is no longer part of the Subbasin and has withdrawn from the MOA, leaving four participants. The purpose of the MOA was to establish a committee to develop a single GSP for the entire Subbasin. Furthermore, the GSAs intended to use the MOA as the framework for basin-wide cooperation in management of the Subbasin during the time between adoption of the GSP and approval of the GSP by DWR. As originally written, the MOA would automatically terminate upon DWR's approval of the GSP.

Prior to submittal of the GSP for DWR review and approval, each of the GSAs adopted the GSP pursuant to the terms of the MOA. Each GSA separately adopted resolutions amending the original MOA to remove the automatic termination language because the GSAs agree to continue cooperating on the GSP and its implementation pursuant to the framework established by the MOA until such time as a long-term governance structure is developed. The amendment (Amendment #1) will allow for continued collaboration and cooperation among the GSAs to manage groundwater in the Subbasin and achieve sustainability.

### 8.3.2 Extension of Water Neutral New Development Program

In October 2015, the County Board of Supervisors established the Countywide Water Conservation Program (CWWCP), which includes the County's Water Neutral New Development (WNND) program, in response to declining groundwater levels. WNND programs that are being implemented in the Subbasin include:

- The Urban/Rural Water Offset and Rebate Programs
- The Agricultural Offset Program

These programs required new urban/rural development using groundwater from the Subbasin to offset new water use at a 1:1 ratio and limited new or expanded irrigated commercial crop production in areas within the Subbasin except by offset of existing irrigated crop production at a 1:1 ratio either on the same property or on a different property in the Subbasin. The Agricultural Offset Program also identified areas of severe decline in groundwater elevation and further restricted properties overlying these areas from planting new or expanded irrigated crops except for those converting irrigated crops on the same property to a different crop type. The Agricultural Offset Program was originally intended to be a stop-gap measure to avoid further depletion of the Subbasin until SGMA implementation. The ordinances that created the programs included a termination clause that stated the programs in the Subbasin shall expire upon the effective date of a final and adopted GSP.

In June 2019, the County Board of Supervisors directed the County of San Luis Obispo Department of Planning and Building to develop recommendations for extending the WNND programs such that there would be no gap between the expiration of the County's programs and any pumping restrictions or controls that may be implemented as part of the GSP. Modification of the Agricultural Offset Program was proposed to occur in several phases, with the first phase starting in November 2019 to avoid the gap. The first phase amendments, adopted by the County Board of Supervisors on November 5, 2019, did not require environmental review because the changes from the existing ordinance were relatively minor. These items include the following:

- Extend the WNND ordinance expiration dates by two years
- Include a process to add water duty factors to unlisted crops
- Include a water duty factor for supplementally irrigated Dry Cropland and a methodology for determining previous five-year onsite water use
- Include a water duty factor for hemp
- Eliminate off-site offsets

- Require a recorded disclosure form

The County Board of Supervisors anticipates addressing additional items in early 2020, including:

- Re-evaluate the extent of the "red zone," the zone of critical impact in the central portion of the Subbasin
- Update and set the Subbasin boundary map to match the DWR Bulletin 118 boundary
- Establish a registration process for voluntary fallowing of irrigated agricultural lands

Items that will likely be addressed in mid-to-late 2020 are those that could trigger additional environmental review because they have the potential to result in adverse environmental impacts, and as such, more time is needed to complete those amendments. These later-phase items as they pertain to the Subbasin include the following:

- Consider expanding the definition of de minimis use from 5 AFY to 25 AFY per site, considering parcel size
- Consider extending the lookback period beyond five years
- Revisit the Paso Robles Subbasin planning area standards that prohibit general plan amendments and land divisions (to allow for water-neutral housing projects)
- Revisit water offset fees and water usage assumptions
- Discuss allowing off-site offsets

The extension of the WNND has been included in the Annual Report because the WNND represents a current management action. However, it is a temporary management action enacted by the County pursuant to its police powers that is set to expire on January 1, 2022 rather than a long-term management action identified in the GSP. Thus, its inclusion in the Annual Report and reference to future potential items to be addressed shall not be construed as any sort of commitment on the part of the County to a further extension.

### 8.3.3 Paso Basin Aerial Groundwater Mapping Pilot Study

In November 2019, the County of San Luis Obispo joined in a pilot study through DWR and Stanford University to conduct aerial groundwater mapping of a large portion of the Subbasin utilizing Aerial Electromagnetic method (AEM). The goal of the pilot study is to acquire survey data to characterize and map subsurface geologic structures as well as the presence and extent of clay, silt, sand, and gravel layers to a depth of approximately 1,000 to 1,400 feet below the ground surface. The study has the potential to enhance our understanding of the groundwater flow within the Subbasin, the interconnectedness of different parts of the Subbasin, and the geologic framework that controls groundwater flow. The study is in line with proposal #3.7 of California's Water Resilience Portfolio (see Section 8.4.1 for additional discussion and detail of the Water Resilience Portfolio) which is specifically intended to support use of aerial electromagnetic surveys, groundwater quality conditions, and well completion reports to identify optimal areas for enhanced recharge and critical connections in aquifer systems.

## 8.4 Area-Specific Projects

### 8.4.1 Expand Alluvial Aquifer Monitoring Network and Install New Stream Gages

A significant data gap that was identified in the GSP was the need to expand the network of monitoring wells and stream gages within the Alluvial Aquifer, one of the two principal aquifers in the Subbasin. The existing network of monitoring wells in the Alluvial Aquifer in areas where surface water and groundwater interaction may occur is extremely sparse and surface water flows in the Subbasin are ephemeral. Together, these two factors make it difficult to assess the interconnectivity of surface water and groundwater and to quantify whether any surface water depletion has occurred. There are no available data that establish whether the groundwater and surface water are connected through a continuous saturated zone in any aquifer, although water elevation contour maps of the Paso Robles Formation wells suggest that a continuous saturated zone between the surface water and the Paso Robles Formation aquifer does not exist.

The inability to assess the interconnectivity of the surface water with the underlying aquifers also affects the understanding of the potential impacts of pumping on groundwater dependent ecosystems (GDEs), which are plant and animal communities that require groundwater to meet some or all of their water needs. GDEs can be associated with areas where there is a direct connection between shallow alluvial water-bearing formations and deeper aquifers. The existing groundwater monitoring program in the Subbasin does not include any nested monitoring wells that can be used to assess the interaction between the surface stream flows, associated Alluvial Aquifer, and the underlying Paso Robles Formation Aquifer.

Per the recommendations set forth in the GSP, *"Definitive data delineating any interconnections between surface water and groundwater or a lack of interconnected surface waters is a data gap that will be addressed during implementation of this GSP."* To address this significant data gap and assess the potential for interconnectivity of the surface water with the principal aquifers of the Subbasin, the four GSAs have submitted a proposal to the State Water Resources Control Board (Board) for the use of Supplemental Environmental Project (SEP) funds that are potentially available as a result of a settlement agreement between the Board and the City of Paso Robles for violations of the City's National Pollutant Discharge Elimination System permit related to wastewater treatment releases.

Through the assistance of the SEP funds, the potential for interconnected surface water within the Alluvial Aquifer will be assessed after data from this expanded network of monitoring wells and stream gages are developed and analyzed. Currently, only two stream gages exist within the Basin. The proposed SEP project intends to expand that network by coupling stream gages with monitoring wells in each of the major drainages across the Subbasin, including the Salinas River, Huer Huero Creek, Estrella River, San Marcos Creek, Shell Creek, San Juan Creek and other smaller surface water drainage features.

The GSAs have identified 10 sites in which additional hydrologic, geologic, and hydrogeologic data are necessary. The overall project goals include the installation of a stream gage and a nested monitoring well at each of the 10 sites. The sites were identified in locations where stream gages coupled with dedicated monitoring wells would provide key data. Monitoring wells would be nested or paired (depending on local conditions and whether existing wells are available and suitable) with a minimum of three wells, or discrete depth intervals, at each site. The discrete intervals are intended to monitor hydrologic conditions within the Alluvial Aquifer, a short distance below the base of the Alluvial Aquifer in the Paso Robles Formation Aquifer and deeper into the Paso Robles Formation Aquifer at depths similar to production wells in the general vicinity of each individual site.

Two of the selected sites, the 13th Street Bridge in Paso Robles and the Airport Road crossing of the Estrella River, have existing U.S. Geological Survey (USGS) stream gages. The other eight sites will require new stream gage installations. GSAs recognize that installing the proposed network of monitoring wells and stream gages at all of the 10 proposed sites will require a significant initial capital investment as well as a commitment of resources and funding for annual operation and maintenance of the sites. Thus, the GSAs intend to implement the proposed monitoring network over time. Under the terms of this proposed grant application, the GSAs intend to complete two or three sites at this time, and install monitoring systems at the remaining sites as funding becomes available.

This proposed work effort is in line with California Senate Bill 19 (approved September 27, 2019) which is an act to add Section 144 to the California Water Code, relating to water resources. The bill requires DWR to develop a plan to deploy a network of stream gages that includes a determination of funding needs and opportunities for modernizing and reactivating existing gages and deploying new gages. The bill also requires DWR to give priority in the plan to placing or modernizing and reactivating stream gages where lack of data contributes to conflicts in water management or where water can be more effectively managed for multiple benefits.

This proposed project also supports the mandate of Governor Gavin Newsom's Executive Order N-10-19 (April 2019) that directs the state's water agencies to develop a "water resilience portfolio," described as a set of actions to meet California's water needs. In response, the state agencies developed an inventory and assessment of key aspects of California water, leading to a series of priorities. Among the list of 133 specific priorities, proposal #22.6 is intended to modernize water data systems to inform real-time water management decisions and long-term planning by building on implementation of Senate Bill 19 which requires an assessment of the state's stream gage network.

The amount of money that may be available to fund the project is $240,000.

### 8.4.2 City of Paso Robles Recycled Water Program

In 2016, the City completed a major upgrade of its Wastewater Treatment Plant to efficiently and effectively remove all harmful pollutants from the wastewater. The City's master plan is to produce tertiary-quality recycled water and distribute it to east Paso Robles, where it may be safely used for irrigation of city parks, golf courses, and vineyards. This will reduce the need to pump groundwater from the Subbasin and will further improve the sustainability of the City's water supply. In 2019, the City completed construction and began operating the recycled water system and is presently designing a major distribution system to deliver recycled water to east Paso Robles. The recycled water distribution system project will be ready for construction in 2020.

The project will use up to 2,200 AFY of disinfected tertiary effluent for in-lieu recharge in the central portion of the Subbasin near and inside the City of Paso Robles. Water that is not used for recycled water purposes can be discharged to Huer Huero Creek with the potential for additional recharge benefits. Infrastructure includes upgraded wastewater treatment plant and pump station, 5.8 miles of pipeline, a storage tank, numerous turnouts, and a discharge to Huer Huero Creek.

The primary benefit from the City's Recycled Water Program is higher groundwater elevations in the central portion of the Subbasin due to in-lieu recharge from the direct use of the recycled water and recharge through Huer Huero Creek.

### 8.4.3 San Miguel CSD Recycled Water Project

The San Miguel CSD Recycled Water project is currently in the planning and preliminary design phases. This planned project will upgrade the CSD wastewater treatment plant to meet California Code of Regulations (CCR) Title 22 criteria for disinfected secondary recycled water for irrigation use by vineyards. Potential customers include a group of agricultural irrigators on the east side of the Salinas River, and a group of agricultural customers northwest of the wastewater treatment plant. The project could provide between 200 AFY and 450 AFY of additional water supplies. The primary benefit from the CSD's Recycled Water project is higher groundwater elevations in the vicinity of the community of San Miguel due to in-lieu recharge from the direct use of the recycled water.

### 8.4.4 Blended Water Project

Private entities and individuals are working actively with the City of Paso Robles and numerous agricultural irrigators to develop a project that can bring recycled water to the central portion of the Subbasin. As described above, the City estimates that as much as 2,200 AFY of recycled water will be available, and the volume will likely increase in the future as the City grows. The wastewater treatment plant is designed to process and deliver up to 4,000 AFY.

The goal of the Blended Water Project is to design and construct a pipeline system to connect to the City's Recycled Water Program and convey recycled water into the agricultural areas east of the City. Although there are many ways to utilize the Recycled Water Program water directly, certain challenges exist to make the water quality of the recycled water attractive to some agricultural users. Blending the recycled water with surplus Nacimiento Water Project water, when available, may mitigate these challenges.

Numerous challenges exist to develop the project, but considerable time and effort has been expended by several private entities as well as City staff to develop this conceptual project. The primary benefit from the Blended Water Project is higher groundwater elevations in the central portion of the Subbasin east of the City of Paso Robles due to reductions in groundwater pumping for irrigation and in-lieu recharge from the direct use of the blended water. Associated benefits may include improved groundwater quality from the use and recharge of high-quality irrigation water.

### 8.4.5 Stormwater Capture and Recharge Projects

As described in the GSP, stormwater runoff capture projects, including low-impact development (LID) standards for new or retrofitted construction, will be promoted throughout the Subbasin as priority projects to be implemented as described in the San Luis Obispo County Stormwater Resource Plan (SWRP). The SWRP outlines an implementation strategy to ensure valuable, high-priority projects with multiple benefits.

This management action covers two types of stormwater capture activities. The first stormwater management activity is the effort to reduce runoff of rainwater in the urban environment into streets, storm drains, and other sites that discharge water as well as pollutants directly into waterways and the underlying aquifer through infiltration of streamflow recharge. In this way, groundwater quality is protected and improved. Examples of this effort include LID and on-farm recharge of local runoff. The second stormwater capture effort involves direct recharge of storm flows through the capture and diversion of water to recharge locations to help maintain base flows in streams and to replenish aquifer storage.

Two stormwater capture programs are underway in the Paso Robles Subbasin, including the City of Paso Robles's Municipal Stormwater Program and a joint investigation by the Shandon-San Juan Water District (SSJWD) and the Estrella-El Pomar-Creston Water District (EPCWD) to assess the feasibility of developing stormwater capture and recharge in their respective districts.

#### 8.4.5.1 City of Paso Robles Municipal Stormwater Program

The City of Paso Robles currently has a City Watershed Plan in development. This Plan will identify opportunities to capture stormwater, send it through the City's wastewater treatment plant, and add it to the Recycled Water supply. The City of Paso Robles has also developed a Municipal Stormwater Program that includes the development and implementation of a Stormwater Management Plan (SWMP) to reduce or eliminate pollutants in stormwater runoff and non-storm water discharges. The SWMP describes the Best Management Practices (BMPs), measurable goals, and timetables for implementation of the following five minimum control measures:

- Construction Site Stormwater Runoff Control
- Illicit Discharge Detection and Elimination
- Pollution Prevention/Good Housekeeping for Municipal Operations
- Post-Construction Stormwater Runoff Management

- Public Education and Public Participation

Under the program, the City educates and involves the community in stormwater pollution prevention, regulates stormwater run-off from construction sites, investigates non-stormwater discharges, and reduces non-stormwater runoff from municipal operations.

#### 8.4.5.2 SSJWD/EPCWD Stormwater Capture and Recharge Feasibility Study

The SSJWD and EPCWD are jointly funding a study to assess the feasibility and costs associated with capturing stormwater runoff and recharging aquifers within selected areas of their respective districts, including Shell Creek, Navajo Creek, San Juan Creek, and Huer Huero Creek. If feasible and cost effective, the capture and recharge of stormwater will aid in reducing the deficit between pumping and natural recharge in the Subbasin, which will improve the sustainability of the groundwater system. This ongoing investigation focuses on the following key questions:

- Where are the best areas to divert and recharge stormwater that would benefit the Subbasin?
- How much water can potentially be captured?
- What scale is necessary to make the projects meaningful?
- What is the most efficient way to capture and recharge stormwater and what would a typical project concept look like?
- What are the permitting and regulatory requirements for building and operating a stormwater capture and recharge project?
- What would a project or projects cost to design, permit and construct?
- What is the availability of grant funds?

Building on previous County of San Luis Obispo studies of the Huer Huero Creek near the City of Paso Robles (Todd Groundwater, RMC Woodard & Curran, 2017), the joint SSJWD/EPCWD study will be expanded to include the southern reaches of Huer Huero Creek in the Creston area, as well as the Shell, San Juan, and Navajo creeks. Areas within the watershed of these creeks will be assessed to identify the most promising locations for stormwater capture and recharge by considering the following:

- Existing drainage locations overlying or feeding into the Subbasin
- Land surface elevation and slope
- Soils conducive to recharge
- Locations directly overlying the Paso Robles Formation Aquifer
- Proximity to low permeability layers that would impede infiltration
- Proximity to structures
- Potential for impacts caused by ponding stormwater

The results of the study are expected in spring 2020.

## 8.5 Summary of Progress toward Meeting Subbasin Sustainability

Relative to the basin conditions at the end of the study period as reported in the GSP, this First Annual Report (2017–2019) indicates an improvement in groundwater conditions throughout the Subbasin and a marked increase of total groundwater in storage. It is clear that historical groundwater pumping in excess of the sustainable yield has created challenging conditions for sustainable management. However, actions are already underway to collect data, improve the monitoring and data collection networks, and coordinate with affected agencies and entities throughout the Subbasin to develop solutions that address the shared mutual interest in the Subbasin's overall sustainability goal.

### 8.5.1 Subsidence

Land subsidence is the lowering of the land surface. As described in the GSP, several human-induced and natural causes of subsidence exist, but the only process applicable to SGMA are those due to lowered ground surface elevations caused by groundwater pumping (M&A, 2019). Historical subsidence can be estimated using Interferometric Synthetic Aperture Radar (InSAR) data provided by DWR. InSAR measures ground elevation using microwave satellite imagery data. The GSP documents minor subsidence in the Subbasin using data provided by DWR depicting the difference in InSAR measured ground surface elevations between June 2015 and June 2018. These data show that subsidence of up to 0.125 feet may have occurred over this three-year period in a few small, isolated areas of the Subbasin (M&A, 2019). This is a minor rate of subsidence and is relatively insignificant and not a major concern for the Subbasin. As of the date of this report, there are no more recent land subsidence datasets available since publication of the GSP. The GSA's will continue to monitor and report annual subsidence as more data become available.

### 8.5.2 Interconnected Surface Water

Ephemeral surface water flows in the Subbasin make it difficult to assess the interconnectivity of surface water and groundwater and to quantify the degree to which surface water depletion has occurred. Currently, there are no available data that establish connectivity between groundwater and surface water through a continuous saturated zone in any aquifer. As stated in the GSP, water elevation contour maps of the Paso Robles Formation wells may suggest that a continuous saturated zone between the surface water and the Paso Robles Formation aquifer does not exist (M&A, 2019). As of the date of this report, there are no more recent data available since publication of the GSP to assess the interconnectivity of surface water and groundwater or to quantify potential surface water depletion. The potential for interconnected surface water with the alluvial aquifer will be assessed as data are developed and analyzed as discussed in Section 8.4.1.

### 8.5.3 Groundwater Quality

Although groundwater quality is not a primary focus of SGMA, actions or projects undertaken by GSAs to achieve sustainability cannot degrade water quality to the extent that they would cause undesirable results. As stated in the GSP, groundwater quality in the Subbasin is generally suitable for both drinking water and agricultural purposes (M&A, 2019). Eight constituents of concern (COC's) were identified and discussed in the GSP that have the potential to be impacted by groundwater management activities. These COC's identified in the GSP are salinity (as indicated by electrical conductivity), total dissolved solids (TDS), sodium, chloride, nitrate, sulfate, boron, and gross alpha. For this annual report, concentrations of these eight COC's were analyzed for the water years 2017 through 2019 period using data from the GeoTracker GAMA database (GAMA, 2019) to document any potential changes in Subbasin-wide concentration trends since 2016. All but one of the COC's reviewed show a steady concentration trend since 2016. Gross alpha, the exception, exhibits a slight downward trend since 2016, driven mostly by sampling results from the City of Paso Robles area.

Overall, there are no significant changes to groundwater quality since 2016, as documented in the GSP. Implementation of sustainability projects and/or management actions, as presented in the GSP, in this annual report, or in future reports or GSP updates, are not anticipated to result in degraded groundwater quality in the Subbasin. Any potential changes in groundwater quality will be documented in future annual reports and GSP updates.

### 8.5.4 Summary of Changes in Basin Conditions

The above-average rainfall water years of 2017 and 2019 improved groundwater conditions in the Subbasin. Groundwater in storage in the Subbasin increased more than 125,000 AF in total over the past three water years (Section 7.2). The volume of groundwater extractions in the Subbasin has remained relatively consistent for the past several years (averaging approximately 81,700 AFY; Section 4.5) because the known irrigated acreage in the Subbasin has not changed dramatically. Although groundwater in storage has increased somewhat over the past three water years, groundwater pumping continues to exceed the estimated future sustainable yield and the projects and management actions described in the GSP and in this First Annual Report will be necessary in order to bring the Subbasin into sustainability.

### 8.5.5 Summary of Impacts of Projects and Management Actions

Additional time will be necessary to judge the effectiveness and quantitative impacts of the projects and management actions either now underway or in the planning and implementation stage. However, it is clear that the actions in place and as described in this First Annual Report are a good start towards reaching the sustainability goals laid out in the GSP. It is too soon to judge the observed changes in basin conditions against the interim goals outlined in the GSP, but the anticipated effects of the projects and management actions now underway are expected to significantly affect the ability of the Subbasin stakeholders to reach the necessary sustainability goals.

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## PASO BASIN COOPERATIVE COMMITTEE
## March 17, 2021

### Agenda Item #9 – Receive status update(s)

**Recommendation**

It is recommended that the Paso Basin Cooperative Committee (Committee) receive an update on various efforts related and/or relevant to the Paso Basin, including:

a. Supplemental Environmental Project
b. Paso Basin Aerial Groundwater Mapping Pilot Study

**Prepared By**

GSA Staff

**Discussion**

The GSAs are engaged in various efforts to improve the Paso Basin monitoring network and increase understanding of groundwater conditions, fill data gaps, support basin sustainability, and comply with SGMA:

*a. Supplemental Environmental Project*

- The City of Paso Robles has engaged Cleath-Harris Geologists, Inc. to provide hydrogeologic services for the SEP. The goal of the SEP is the siting and installation of stream gauges and monitoring wells in the Paso Basin to help fill data gaps.

*b. Paso Basin Aerial Groundwater Mapping Pilot Study*

- The County is engaged in a pilot study to collect data over part of the Paso Basin using Aerial Electromagnetic Method (AEM). The groundwater mapping survey was completed in November 2019 and the data is being analyzed by Stanford University and other project partners.
- The County anticipates presenting results in April 2021. For more information, please visit the County's webpage: https://www.slocounty.ca.gov/Departments/Public-Works/Current-Public-Works-Projects/Paso-Basin-Aerial-Groundwater-Mapping-Pilot-Study.aspx

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