

IMPORTANT NOTICE REGARDING COVID 19 AND PARTICIPATION IN THE BASIN MANAGEMENT ADVISORY COMMITTEE MEETING

The Basin Management Advisory Committee meeting will be held by teleconference in order to minimize the spread of the COVID 19 virus, in accordance with the State of Emergency proclaimed by Governor Newsom on March 4, 2020, Executive Order N 29 20 issued by Governor Newsom on March 17, 2020, and the Shelter in Place Order issued by the Monterey County Health Officer on March 17, 2020, as may be periodically amended.

To participate in this Basin Management Advisory Committee meeting, the public is invited to observe and address the Committee telephonically or electronically. Instructions for public participation are below:

 For ZOOM participation please join by computer audio at: https://montereycty.zoom.us/j/99621772720
OR to participate by phone call any of these numbers below: +1 669 900 6833 US (San Jose)
+1 346 248 7799 US (Bouston)
+1 312 626 6799 US (Chicago)
+1 929 205 6099 US (New York)
+1 253 215 8782 US
+1 301 715 8592 US

Enter this Meeting ID number: 996 2177 2720 PASSWORD: 478310 when prompted. Please note there is no Participant Code, you will just hit # again after the recording prompts you. You will be placed in the meeting as an attendee; when you are ready to make a public comment, if joined by computer audio, please Raise your Hand; and by phone, please push *9 on your keypad.

2. If you wish to comment on a specific agenda item while the matter is being heard, you may participate by the following means:

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4. If you wish to make either a general public comment for items not on the day's agenda or to comment on a specific agenda item as it is being heard, please submit your comment, limited to 250 words or less, to the Monterey County Water Resources Agency at

WRApubliccomment@co.monterey.ca.us. In an effort to assist Agency staff in identifying the agenda item relating to your public comment please indicate in the subject line, the meeting body (i.e. Basin Management Advisory Committee) and item number (i.e. Item No. 10). Every effort will be made to read your comment into the record, but some comments may not be read due to time limitations. Comments received after an agenda item will be made part of the record if received prior to the end of the meeting.

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8. The Chair and/or Secretary may set reasonable rules as needed to conduct the meeting in an orderly manner.

AVISO IMPORTANTE SOBRE COVID 19 Y PARTICIPACIÓN EN LA REUNIÓN DEL COMITE DE ASESOR DE GESTION DE LA CUENCA

La reunión del Comité de Asesor de Gestion de la Cuenca se llevará a cabo por teleconferencia para minimizar la propagación del virus COVID 19, de acuerdo con el Estado de Emergencia proclamado por el Gobernador Newsom el 4 de Marzo del 2020, Orden Ejecutiva N 29 20 emitida por el Gobernador Newsom el 17 de Marzo del 2020, y la Orden de Refugio en el Lugar") emitida por el Oficial de Salud del Condado de Monterey el 17 de Marzo del 2020, según se pueda enmendar periódicamente.

Para participar en esta reunión del Comité de Asesor de Gestion de la Cuenca el público están

invitados a observar y dirigirse al Comité telefónicamente o por vía electrónica. Las instrucciones para la participación pública están a continuación:

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O el público puede escuchar a través del teléfono llamando al: +1 669 900 6833 US (San Jose) +1 346 248 7799 US (Houston) +1 312 626 6799 US (Chicago) +1 929 205 6099 US (New York) +1 253 215 8782 US +1 301 715 8592 US

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personal de la Agencia a identificar el artículo de la agenda con el cual se relaciona el comentario, se solicita al público que indique el nombre del Comité (por ejemplo: Comité de Asesor de Gestion de la Cuenca) y el número del artículo de la agenda (por ejemplo: Artículo # 10). Se hará todo lo posible para leer el comentario en el registro, pero algunos comentarios pueden no leerse en voz alta debido a limitaciones de tiempo. Los comentarios recibidos después del cierre del período de comentarios públicos sobre un artículo de la agenda serán parte del registro si se reciben antes que termine la reunión del Comité.

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8. El Presidente y / o Secretario pueden establecer reglas razonables según sea necesario para llevar a cabo la reunión de manera ordenada.

Call to Order

Roll Call

Public Comment

Consent Calendar

1.

Approve the Minutes of the Basin Management Advisory Committee meetings held on May 5, 2021.

Attachments: Draft Minutes BMAC May 5, 2021

Scheduled Matters

2.	Consider recommending that the Monterey County Water Resources Agency Board of Directors enter into a multi-year cooperative agreement with the US Geological Survey and the Salinas Valley Basin Groundwater Sustainability Agency to support the continued development of the Salinas Valley Integrated Hydrologic Model					
	<u>Attachments:</u> <u>Board Report</u> <u>Draft Salinas Valley Cooperative Science Proposal</u>					
Staff Reports						
3.	Proposition 1 Implementation Grant Update: <i>Protection of Domestic Drinking</i> <i>Water Supplies for the Lower Salinas Valley</i>					
	Attachments: Proposition 1 Grant Update					
4.	Update on Well Permit Application Activities					
	Attachments: Well Permit Application Activities Update					
5.	Update on Groundwater Sustainability Agency activities in the Salinas Valley Basin					
	Attachments: GSA Activities Update					
6.	Update on Agency Modeling Activities					
	Attachments: Agency Modeling Activities Update					
<u>Calendar</u> 7.	Consider future agenda items and set next meeting date					
Adjournment						

Monterey County

Board Report

Legistar File Number: WRABMAC 21-040

Introduced: 5/26/2021

Version: 1

Approve the Minutes of the Basin Management Advisory Committee meetings held on May 5, 2021.



168 W. Alisal St., 1st Floor Salinas, CA 93901 June 02, 2021

Current Status: Draft Matter Type: WRA BMAC Item

Item No.1

Board of Supervisors Chambers



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https://montereycty.zoom.us/j/98016048495 OR to participate by phone call any of these numbers below: +1 669 900 6833 US (San Jose) +1 346 248 7799 US (Houston) +1 312 626 6799 US (Chicago) +1 929 205 6099 US (New York) +1 253 215 8782 US +1 301 715 8592 US

Enter this Meeting ID number: 980 1604 8495 PASSWORD: 471712 when prompted. Please note there is no Participant Code, you will just hit # again after the recording prompts you. You will be placed in the meeting as an attendee; when you are ready to make a public comment, if joined by computer audio, please Raise your Hand; and by phone, please push *9 on your keypad.

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8. El Presidente y / o Secretario pueden establecer reglas razonables según sea necesario para llevar a cabo la reunión de manera ordenada.

Call to Order

The meeting was called to order at 8:30 a.m.

Roll Call

Present: John Baillie, Deidre Sullivan, Matthew Simis, David Bunn, Bill Lipe, Kevin Piearcy, Amy White, Patrick Breen, Marisela Cerda (joined after roll call), Patrick Collins (joined after roll call)

Public Comment

None

Consent Calendar

Scheduled Matters

1. Approve the Minutes of the Basin Management Advisory Committee meetings held on April 7, 2021.

Attachments: Draft Action Minutes April 7, 2021

Upon Motion by Matt Simis and Second by Bill Lipe the Committee approved the Minutes of the Basin Management Advisory Committee meeting held on April 7, 2021.

Ayes: Baillie, Simis, Bunn, Lipe, Piearcy, White, Breen Noes: None Abstain: Sullivan, Cerda Absent: Collins (joined meeting after this item-not present for vote)

2. Consider receiving a report on the Analysis of Groundwater Wells and Extractions in the "Area of Impact" of the 180/400 Foot Aquifer Subbasin and provide guidance to Staff for a presentation of that information to the Agency Board of Directors

Attachments: Board Report

Groundwater Extraction Data Package

Upon Motion by Bill Lipe and Second by Matt Simis the Committee received a report on the Analysis of Groundwater Wells and Extractions in the "Area of Impact" of the 180/400 Foot Aquifer Subbasin and requested that staff incorporate the questions, comments and chart suggestions made and present the report at the next meeting.

Ayes: Baillie, Sullivan, Simis, Bunn, Lipe, Piearcy, White, Cerda, Breen, Collins Noes: None Abstain: None Absent: None

3. Consider receiving a report on the DWR Bulletin 74: California Well Standards Update Project and providing input to Staff for upcoming Technical Advisory Committee meetings

Attachments: Board Report

Upon Motion by Matt Simis and Second by Amy White the Committee received a report on the DWR Bulletin 74: California Well Standards Update Project and provided input to Staff for upcoming Technical Advisory Committee meetings.

Ayes: Baillie, Sullivan, Simis, Bunn, Lipe, Piearcy, White, Cerda, Breen, Collins Noes: None Abstain: None Absent: None

6. Update on Well Permit Application Activities

Attachments: Well Permit Information Item_4-8-2021

Staff Reports

4. Update on the well permit application process in Monterey County

<u>Attachments:</u> <u>Board Report</u> <u>Well Permit Application Process Flowchart</u> <u>Article XI Amended 2019</u>

5. Proposition 1 Implementation Grant Update: *Protection of Domestic Drinking Water Supplies for the Lower Salinas Valley*

<u>Attachments:</u> <u>Proposition 1 Grant Update</u> <u>Right-of-Entry Agreement Template</u>

7. Update on Groundwater Sustainability Agency activities in the Salinas Valley Basin

Attachments: GSA Activities Update

8. Update on Agency Modeling Activities

Attachments: Agency Modeling Activities

9. Salinas Valley Water Conditions for the Second Quarter of Water Year 2020-2021

Attachments: Quarterly Report - 2nd Quarter WY 2021

<u>Calendar</u>

10. Consider future agenda items and set next meeting date

The next meeting date will be June 2, 2021.

Adjournment

The meeting adjourned at 9:36 a.m.





Board Report

Legistar File Number: WRABMAC 21-047

June 02, 2021

Item No.2

Board of Supervisors Chambers

168 W. Alisal St., 1st Floor Salinas, CA 93901

Introduced: 5/26/2021 Version: 1 Current Status: Agenda Ready Matter Type: WRA BMAC Item

Consider recommending that the Monterey County Water Resources Agency Board of Directors enter into a multi-year cooperative agreement with the US Geological Survey and the Salinas Valley Basin Groundwater Sustainability Agency to support the continued development of the Salinas Valley Integrated Hydrologic Model

RECOMMENDATION:

It is recommended that the Monterey County Water Resources Agency Basin Management Advisory Committee:

Recommend that the Monterey County Water Resources Agency Board of Directors enter into a multi-year cooperative agreement with the US Geological Survey and the Salinas Valley Basin Groundwater Sustainability Agency to support the continued development of the Salinas Valley Integrated Hydrologic Model

SUMMARY:

In July 2014, the County of Monterey initiated a comprehensive water resources assessment of Zone 2C of the Salinas Valley Groundwater Basin (Basin Investigation). The first phase of that investigation concluded in 2015 with the delivery of the *State of the Basin* report from Brown & Caldwell. The second phase of the Basin Investigation required the development of a suite of regional and integrated groundwater-surface water models for use in evaluating water budgets, groundwater elevations, and seawater intrusion under both historical and future conditions. The development of those models are being conducted by the US Geological Survey (USGS) under joint agreements with the County of Monterey (County) and the Monterey County Water Resources Agency (MCWRA). The Basin Investigation will include the publication by the USGS of a historical Salinas Valley Integrated Hydrologic Model (SVIHM), along with a provisional version of an operation model to evaluate future conditions, the Salinas Valley Operational Model (SVOM).

DISCUSSION:

The objective of this agreement is to update over the term of this agreement, the Salinas Valley Regional Models; provide a technical document describing the SVOM, along with a public model archive; provide technical support to Salinas Valley Cooperative (MCWRA and SVBGSA) and stakeholders in the transfer, training, and use of the Salinas Valley Model Suite, and; communicate model results, project milestones, and model developments to cooperators and stakeholders. The study will develop a greater understanding of regional water resources, support evaluation of reservoir operations, and the development of resource management strategies for the Salinas Valley. These tools and documentation will support science-based decision making and aide in sustainable development of

water resources.

The timeline for the work described in the agreement will distribute tasks over a three (3) year period. Attachment A is a draft "red-line" version of the proposed agreement. At this time the total budget for the project is approximately \$516,002 with potential USGS cooperative match of approximately \$103,200. The remaining cost to the Salinas Valley Cooperative members is approximately \$412,802 over the three year term of the agreement.

OTHER AGENCY INVOLVEMENT:

The MCWRA is partnering with the Salinas Valley Basin Groundwater Sustainability Agency in this project and the two agencies are identified in the draft agreement as the "Salinas Valley Cooperative".

FINANCING:

Funding of approximately \$65,000 for this project is identified in the MCWRA's 2021-22 FY budget in Fund 116. An additional \$50,000 in the 2021-22 FY budget, identified as "SVIHM Consultant" has been allocated in Fund 111. Current estimated annual costs to the MCWRA are approximately \$69,000 per year for the next three fiscal years. Based on the Salinas Valley Cooperative's agreed upon tasks, which will be detailed in the final agreement, it may be necessary to augment funding for this project.

Prepared by:	Howard Franklin,	Senior Hydrologist,	(831)	755-4860
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Approved by: Brent Buche, General Manager

Attachment:

DRAFT - Salinas Valley Cooperative Model and Decision Tool Development to Support Resource Evaluation, Decision Making, and Sustainable Water Management in Monterey County, California (red-line version)





Board Report

Legistar File Number: WRABMAC 21-047

June 02, 2021

Item No.3

Board of Supervisors Chambers

168 W. Alisal St., 1st Floor Salinas, CA 93901

Introduced: 5/26/2021 Version: 1 Current Status: Agenda Ready Matter Type: WRA BMAC Item

Consider recommending that the Monterey County Water Resources Agency Board of Directors enter into a multi-year cooperative agreement with the US Geological Survey and the Salinas Valley Basin Groundwater Sustainability Agency to support the continued development of the Salinas Valley Integrated Hydrologic Model

RECOMMENDATION:

It is recommended that the Monterey County Water Resources Agency Basin Management Advisory Committee:

Recommend that the Monterey County Water Resources Agency Board of Directors enter into a multi-year cooperative agreement with the US Geological Survey and the Salinas Valley Basin Groundwater Sustainability Agency to support the continued development of the Salinas Valley Integrated Hydrologic Model

SUMMARY:

In July 2014, the County of Monterey initiated a comprehensive water resources assessment of Zone 2C of the Salinas Valley Groundwater Basin (Basin Investigation). The first phase of that investigation concluded in 2015 with the delivery of the *State of the Basin* report from Brown & Caldwell. The second phase of the Basin Investigation required the development of a suite of regional and integrated groundwater-surface water models for use in evaluating water budgets, groundwater elevations, and seawater intrusion under both historical and future conditions. The development of those models are being conducted by the US Geological Survey (USGS) under joint agreements with the County of Monterey (County) and the Monterey County Water Resources Agency (MCWRA). The Basin Investigation will include the publication by the USGS of a historical Salinas Valley Integrated Hydrologic Model (SVIHM), along with a provisional version of an operation model to evaluate future conditions, the Salinas Valley Operational Model (SVOM).

DISCUSSION:

The objective of this agreement is to update over the term of this agreement, the Salinas Valley Regional Models; provide a technical document describing the SVOM, along with a public model archive; provide technical support to Salinas Valley Cooperative (MCWRA and SVBGSA) and stakeholders in the transfer, training, and use of the Salinas Valley Model Suite, and; communicate model results, project milestones, and model developments to cooperators and stakeholders. The study will develop a greater understanding of regional water resources, support evaluation of reservoir operations, and the development of resource management strategies for the Salinas Valley. These tools and documentation will support science-based decision making and aide in sustainable development of

water resources.

The timeline for the work described in the agreement will distribute tasks over a three (3) year period. Attachment A is a draft "red-line" version of the proposed agreement. At this time the total budget for the project is approximately \$516,002 with potential USGS cooperative match of approximately \$103,200. The remaining cost to the Salinas Valley Cooperative members is approximately \$412,802 over the three year term of the agreement.

OTHER AGENCY INVOLVEMENT:

The MCWRA is partnering with the Salinas Valley Basin Groundwater Sustainability Agency in this project and the two agencies are identified in the draft agreement as the "Salinas Valley Cooperative".

FINANCING:

Funding of approximately \$65,000 for this project is identified in the MCWRA's 2021-22 FY budget in Fund 116. An additional \$50,000 in the 2021-22 FY budget, identified as "SVIHM Consultant" has been allocated in Fund 111. Current estimated annual costs to the MCWRA are approximately \$69,000 per year for the next three fiscal years. Based on the Salinas Valley Cooperative's agreed upon tasks, which will be detailed in the final agreement, it may be necessary to augment funding for this project.

Prepared by:	Howard Franklin,	Senior Hydrologist,	(831)	755-4860
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Approved by: Brent Buche, General Manager

Attachment:

DRAFT - Salinas Valley Cooperative Model and Decision Tool Development to Support Resource Evaluation, Decision Making, and Sustainable Water Management in Monterey County, California (red-line version)

SALINAS VALLEY COOPERATIVE MODEL AND DECISION TOOL DEVELOPMENT TO SUPPORT RESOURCE EVALUATION, DECICION MAKING, AND SUSTAINABLE WATER MANAGEMENT IN MONTEREY COUNTY, CALIFORNIA California Water Science Center Pacific Region

WESLEY HENSON, USGS HOWARD FRANKLIN, MONTEREY COUNTY WATER RESOURCES AGENCY

DONNA MEYERS, SALINAS VALLEY BASIN GROUNDWATER SUSTAINABILITY AGENCY

EXECUTIVE SUMMARY

Background: In cooperation with Monterey County Water Resources Agency (MCWRA), the US Geological Survey has built a suite of geohydrologic models—the Salinas Valley Regional Models. The Salinas Valley Regional Models include: (1) a 3-D geologic texture model, the Salinas Valley Geologic Model (SVGM), (2) a historical integrated hydrologic model for Salinas Valley (SVIHM) for the historical period from 1967 to 2018; (3) a Salinas Valley Watershed Model (SVWM) for the historical period from 1947 to 2018, and an Salinas Valley Operational Model (SVOM) that is configured to represent current reservoir operations for the two reservoirs in the Salinas Valley for the period between 1967 to 2014 with historical climate, pumping, and diversions and fixed 2014 land use. This study builds upon prior agreements between the USGS and MCWRA, Monterey Countythe County of Monterey Resources Agency (MCRA), and the Salinas Valley Basin Groundwater Sustainability Agency (SVBGSA) [#16WSCA600466210, 17WSCA600466220]. This study is a joint effort between USGS, MCWRA and the SVBGSA hereafter referred to as the Salinas Valley Cooperative.

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Problem: Groundwater and surface water are conjunctively used for water supply in the Salinas Valley. Groundwater withdrawals, mainly for the irrigation of agricultural crops, have resulted in water-level declines and related seawater intrusion since the 1930s. To plan for sustainable future use it is important to develop tools necessary to evaluate historical conditions, understand and evaluate reservoir operations strategies, and examine benefits of water resource management strategies that will promote groundwater sustainability.

Objectives: The objectives of this study are to update the Salinas Valley Regional Models, provide a technical document describing the SVOM and a public model archive, provide technical support to Salinas Valley Cooperative and stakeholders in the transfer, training, and use of the Salinas Valley Model Suite; communicate model results, project milestones, and model developments to cooperators and stakeholders. The study will develop a greater understanding of regional water resources, support evaluation of reservoir operations, and development of resource management strategies for the Salinas Valley. These tools and documentation will support science-based decision making and aide in sustainable development of water resources. Science Plan: The proposed study will include four six main tasks that correspond to the study objectives: (1) update the Salinas Valley Regional Models to keep them up to date and relevant for scenario evaluation and decision support, (2) configure the SVIHM to include the basin and subbasin boundaries established by the California Department of Water Resources and utilized by the Salinas Valley Groundwater Basin Groundwater Sustainability Agencies, (3) reassess and if appropriate recalibrate the SVIHM (24) provide a technical document describing the MODFLOW-OWHM Surface Water Operations (SWO) model, SVOM model development, and a model archive hosted by the USGS for public release after final USGS approval. (35) provide technical support to Salinas Valley Cooperative in the transfer, training, and use of the Salinas Valley Regional Models for use in the analysis of various water resource assessments and

scenarios for evaluation of strategies and projects to support groundwater sustainability; (46) communicate model results, project milestones, and model developments to cooperators and stakeholders.

Background

The Salinas Valley in the Central Coast of California is the "Lettuce Bowl of America". The valley is a vital agricultural region providing food and agricultural products for the nation and contributing to regional food security. The local agricultural industry is a significant part of the regional economy and the region is experiencing significant growth. Local communities need reliable water supplies to adapt to long periods of drought or rain that are typical of the California climate. Groundwater and surface water are managed conjunctively, as one resource, to provide a reliable water supply. Surface water availability is highly variable with limited capacity for storage, specific constraints for beneficial use, and complex water rights. Groundwater is readily available but needs comprehensive management to maintain sustainable reservoirs to provide reliable water supply during drought. These diverse water supply challenges require an integrated resources management perspective that considers the climate, land use, agriculture, water use, and complexity of the natural system. This proposal aims to build and improve upon hydrologic decision tools that have been developed for the Salinas Valley to keep them relevant and useful for addressing water supply challenges, evaluating water supply reliability, and developing strategies for water supply sustainability.

The USGS has had a long-term cooperative partnership with Monterey County Water Resources Agency (MCWRA). In collaboration with the MCWRA team and support from the <u>County of Monterey</u>, the Food Energy and Water Security (FEWS) research group at the USGS California Water Science Center (CAWSC) has developed a suite of complementary models of the Salinas Valley Region (Salinas Valley Regional Models). Local cooperators include the Monterey County Water Resources Agency (MCWRA), Salinas Valley Basin Groundwater Sustainability Agency (SVBGSA), and <u>the Monterey CountyCounty of Monterey</u> and their consultant teams. The Salinas Valley models include a 3-D geologic texture model of the onshore and offshore aquifer system (Sweetkind and others, in Review), a regional climate model (Basin Characteristics Model, BCM, Flint and Flint, 2007), a Hydrologic Simulation Program – FORTRAN (HSPF) (Bicknell and others, 1997) watershed model of the entire Salinas River watershed in Monterey and San Luis Obispo Counties (Hevesi and Others, in Review), a

historical integrated hydrologic model (Henson and Others, in Review), and an integrated reservoir operation model that has not yet been documented and released to the public.

Information about the regional hydrologic setting, previous studies, and the importance of the Salinas Valley aquifer has been enumerated in prior approved proposals and agreements (Hanson and Franklin, 2016, Baillie and others, 2015, a,b). A brief overview of important terminology and the Salinas Valley Model Suite is provided however, this document will focus on describing new objectives, methods, and data products.

Salinas Valley Regional Models

The Salinas Valley Geologic Model (SVGM) was used to develop the conceptual model, structure, and estimate properties of the principal aquifers in the Salinas Valley Groundwater Basin. The model used borehole data from the region, regional geologic models, refined geologic maps and local expert input to develop a geologic model of the Salinas Valley.

The BCM climate model is maintained and developed by the CAWSC and supported by cooperative federal and local partnerships with the California Department of Water Resources (CADWR), and U.S. Forest Service. The BCM is used to develop and downscale climate data for historical precipitation, temperature, and potential evapotranspiration for the entire Salinas River watershed that is used as input to all the Salinas Valley Regional Models.

The Salinas Valley Watershed Model (SVWM) is a daily rainfall-runoff model of all the watersheds that contribute flow to the Salinas Valley and the Nacimiento and San Antonio reservoirs. The current simulation period of the SVWM is from October 1943 through December 2018. The SVWM is a comprehensive surface-water model that uses long-term continuous meteorological data to simulate hydrologic processes, including rainfall-runoff evapotranspiration, and recharge. The SVWM model represents the Salinas River watershed using an interconnected drainage network of pervious and impervious hydrologic response units and stream and reservoir segments (Hevesi and others, 2011). The SVWM model provides a basis for estimating surface-water runoff and potential groundwater underflow (from both stream-channel infiltration and mountain-block recharge) from the ungaged watersheds surrounding the Salinas Valley.

The SVWM is coupled to a MODFLOW-based One Water Hydrologic Flow Model (MF-OWHM; Hanson and Others 2014, Boyce and Others, 2020) model of the Salinas Valley to create the Salinas Valley Integrated Hydrologic Model (SVIHM). The current SVIHM simulation period is from October 1967 to December 2018. The model has bi-weekly time steps with monthly variable boundary conditions (e.g., pumping). Groundwater storage, flow and sea water intrusion in the subsurface are simulated using the well documented MODFLOW modular groundwater flow software (Harbaugh and others, 2005) with 9 aquifer layers representing the principle aquifers and aquitards of the Salinas Valley.

The SVIHM has a rigorous demand-based simulation of the landscape and hydrology that uses the updated MODFLOW Farm Process (FMP4). The SVIHM simulates specified pumpage from municipal industrial and domestic supply, reclaimed water supply, diversions to the Castroville Seawater Improvement Project from the Salinas River Diversion Facility, surface water flows in the entire Salinas River network and tributaries, and water demands from native vegetation and agriculture. All simulated hydrologic flows (e.g., agricultural diversions or pumping) are delivered based on sub-regional demands that vary in space in time with climate, land use, and crop type. Moreover, the delivery of water is constrained by water right and adjusted based upon irrigation type and regional efficiency of agricultural practices. Runoff, return flows, and recharge are directly simulated throughout the domain.

In partnership with the U.S. Bureau of Reclamation, U.S. Justice Department, and MCWRA, a surface water operations (SWO) module was developed for MF-OWHM. In collaboration with MCWRA and their team, a pilot project was developed using the Salinas Valley models to simulate complex reservoir operations for two reservoirs in the Salinas Valley. Prior reservoir models were evaluated separately from regional hydrology so t<u>T</u>his integrated framework was designed to provide more complete-information about the influence of different reservoir operations on important management and water supply criteria.³ including the potential benefit of an Interlake Tunnel to connect the San Antonio and Nacimiento Reservoirs to increase their capacity. The MF-OWHM SWO module input was developed for the San Antonio and Nacimiento Reservoirs and a version of the SVIHM was adapted to evaluate reservoir operations. The Salinas Valley Operational Model (SVOM) is a derivative of the SVIHM. The hydrologic framework (e.g., hydrologic properties, river network, wells, jurisdictional regions) are inherited from the SVIHM. The SVOM was developed as a baseline model to evaluate

potential benefits of a-large water supply projects, <u>such as the an</u> Interlake Tunnel, to connect the two reservoirs. The land use was fixed to 2014 conditions. <u>Climate Surface water flows</u> and groundwater extraction from the SVIHM was simulated using historical <u>climatic</u> data from 1967-2014. This model provided a "baseline" to compare <u>alternatives explored differences</u> in alternate <u>management</u> versions of the model to examine and quantify potential project benefits.

Objectives

The objectives of this study are to update the Salinas Valley Regional Models, provide a technical document describing the SVOM and a public model archive, provide technical support to Salinas Valley Cooperative and stakeholders in the transfer, training, and use of the Salinas Valley Model Suite; communicate model results, project milestones, and model developments to cooperators and stakeholders. The study will develop a greater understanding of regional water resources, support evaluation of reservoir operations, and development of resource management strategies for the Salinas Valley. These tools and documentation will support science-based decision making and aide in sustainable development of water resources.

The proposed study will include four <u>six</u> main tasks that correspond to the study objectives: (1) update the Salinas Valley Regional Models to keep them up to date and relevant for scenario evaluation and decision support, (2) <u>configure the SVIHM to include the basin and</u> <u>subbasin boundaries established by the California Department of Water Resources and utilized</u> <u>by the Salinas Valley Groundwater Basin Groundwater Sustainability Agencies, (3) reassess and</u> <u>if appropriate recalibrate the SVIHM (24)</u> provide a technical document describing the MODFLOW-OWHM Surface Water Operations (SWO) model, SVOM model development, and a model archive hosted by the USGS for public release after final USGS approval. (35) provide technical support to Salinas Valley Cooperative in the transfer, training, and use of the Salinas Valley Regional Models for use in the analysis of various water resource assessments and scenarios for evaluation of strategies and projects to support groundwater sustainability; (46) communicate model results, project milestones, and model developments to cooperators and stakeholders.

Task 1: Salinas Valley Integrated Historical Model (SVIHM) Updates

The objective to Task 1 is to maintain and refine the SVIHM so that is continues to be a relevant resource for evaluation of hydrologic conditions, hydrologic budgets, and regional water supply to support decision making and water resources management. This task is comprised of subtasks A-K. Tasks 1-A through 1-E are historical model updates for Water Year 2019 through Water Year 2020. Tasks 1-F through 1-J are historical model updates for Water Year 2021 through Water Year 2022. Each set of updates includes updated input for climate, land use, estimated inflows into the Salinas Valley from adjacent ungaged watersheds, updated information about hydrologic boundary conditions, groundwater and surface water use, and hydrologic flows and a facilitated evaluation of the model update after completion with relevant cooperative partners. Task 1-K supports continued development of model update and visualization tools and training on their use.

Climate model (BCM) updates

Climate data will be updated for the entire Salinas river watershed using the Basin Characteristics Model (BCM) through water year 2022. The USGS will generate distributed and downscaled monthly climate input data sets for precipitation, runoff and potential evapotranspiration for input into the Salinas Valley Model Suite. The data will leverage all available regional climate data be bias corrected to local meteorological stations using methodology consistent with the initial Salinas Valley Regional Model development. These data will provide climate input for the SVWM to simulate recharge and runoff for the entire Salinas River watershed, the historical integrated hydrologic model to simulate precipitation, runoff, and landscape water use in the Salinas Valley, and support selected updates to the baseline reservoir operations model to be determined by MCWRA and SVBGSA needs. The BCM data will be interpolated onto the SVWM hydrologic response units and the SVIHM modflow model grid.

Watershed Model (SVWM) updates

The historical precipitation-runoff model (Salinas Valley Watershed Model, SVWM) simulation period will be extended through water year 2022. This update will facilitate continued (1) estimates of in-stream surface-water flows and gaining and losing stream reaches for drainages outside of the SVIHM (2) simulation of peripheral recharge as runoff and potential

underflow (3) estimates of potential inflows into the reservoirs in the Salinas Valley and (4) provide information to implement operational criteria for the SVOM.

Land use updates

Land-use data will be extended through 2022. Two periods will be developed for each year to simulate multi-cropped land use changes. The land use data will be implemented in the SVIHM with multiple land uses supported for each model grid cell. This approach aims to represent the dynamic and highly variable land use in the Salinas Valley. Through our cooperation, the Salinas Valley Cooperative has pioneered a new estimation method for quantifying water demands from multi-cropped land uses (Henson and Baillie, in preparation.). This method uses the California Pesticide Use and Reporting Database (CalPUR), geospatial analysis, and local information from county agricultural reports and the California Department of Water Resources (CADWR) to develop high-resolution semi-annual land use. These data are implemented in the MODFLOW Farm Process (FMP4) to estimate water demands throughout the Salinas Valley. This method is being further refined with collaboration with CADWR. The intent is to continue to develop the land-use implementation in the SVIHM, using the Salinas Valley as a test bed for new methods to estimate irrigated and non-irrigated land use data. The model will benefit from the latest spatial data from the USGS and state national and international partnerships. The budget presented here is to support the implementation of these new methods as they develop with input from the Salinas Valley Cooperative.

Integrated Hydrologic Model (SVIHM) Updates

The simulation period for the Salinas Valley Integrated Hydrologic Model will be extended through water year 2022. This includes updates to all monthly boundary conditions including sea level changes for the coastal boundary, on-shore general head boundaries, streamflows, diversions at the Salinas River Diversion Facility, Tembledero Slough, and Clark Colony, reclaimed water supply, municipal and industrial groundwater pumpage time-series, reported groundwater extraction from the GEMS database. The costs in this scope assume the

continued use and development of the model updating tools and coordination with the members of the Salinas Valley Cooperative to facilitate model updates.

Additional model refinements can be implemented as needed, these may include changes model extent to hydrologic properties, updated information about geologic structure from newly collected data, updated extraction and observation well locations, information about irrigation and agricultural practices, and updates to other structural information about the hydrologic system. USGS will work with the Salinas Valley Cooperative to implement model refinements as needed. USGS will aim to complete refinements within the as-needed budget provided for Task 3 Technical Advice and Support.

Model Updating and Analysis Tools

MCWRA has been a partner with several other agencies in supporting the development of model updating and visualization tools for MODFLOW models to support updating, model analysis, and reporting of sustainability criteria. The model update budget includes continued support of these tools and input on their development so they are relevant to agency needs. The model update tools allow for quick updates to temporal data in the model to add additional years of data using spreadsheets and a set of python tools. The output processing includes configurable excel output of model observation data.

Task 2: Reconfigure the SVIHM Boundaries

Reconfigure the basin and subbasin boundaries established by the California Department of Water Resources and utilized by the Salinas Valley Groundwater Basin Groundwater Sustainability Agencies

Task 3: Reassess and if Appropriate Recalibrate the SVIHM

Commented [FHx1]: Still working with USGS to describe and scope Task 2. This work is in support of SVBGSA needs and that effort will be reflected in the distribution of project costs.

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Commented [FHx2]: Still working with the USGS to describe and scope Task 3

Task 24: Documentation of Input and Development of the Operational Model (SVOM)

The objective to Task 2-4 is to update, document, archive and release the SVOM so that is can be used to evaluate water supply strategies in the Salinas Valley. Task 2-4 has 7 subtasks that address software fixes related to specific needs of the Salinas Valley Cooperative's use of the SWO module, document the input and development of the SVOM, support the collaborative review and peer review of the model, support the publication archiving and release of the model by the USGS.

The Salinas Valley Operational Model (SVOM) was developed specifically as a baseline model for the evaluation of potential benefits of <u>the an</u> Interlake Tunnel to connect the Nacimiento and San Antonio Reservoirs. The SVOM can be a good water resource evaluation tool because of its rigorous representation of hydrology and reservoir operations, flexibility of model input and incorporation of important human and natural drivers of water supply. However, this model was developed specifically for one project, the scope of which exceeded the funding required to continue model updates, document the model input, review and archive the model, and release it to the public. The components of Task <u>2-4</u> support the completion of this project so it may be evaluated and documented sufficiently to be approved and published by the US Geological Survey (USGS). The components of Task <u>2-4</u> satisfy the reporting and review requirements that facilitate the provisional use of the model to meet the immediate needs of the Salinas Valley Cooperative and release the SVOM to the public.

Provisional use of a preliminary unpublished USGS Model

To support transparency, legitimacy, and credibility of our collaborative science, the USGS has Fundamental Science Practices (FSP) designed to ensure USGS products are scientifically sound, appropriate for approval by the federal government, and released to all members of the public at the same time. This approach has allowed USGS science products to build consensus in contentious resource conflicts and withstand the rigors of judicial review. Release of any scientific information and data prior to official approval by the USGS to any member of the public is limited under FSP for a number of reasons, including the risk of other entities making decisions based on information that could change or be judged as incorrect during the USGS approval process. Another reason for this provision of the FSP is to ensure that no entity has a competitive (or other type) of advantage by being privy to preliminary

information—USGS products are made available equally to all entities upon approval and publication.

The Salinas Valley Cooperative team plans to extend and adapt the SVOM to evaluate groundwater sustainability strategies and projects and variations in reservoir operational frameworks to prepare a groundwater sustainability plan and to evaluate reservoir operational rule changes to support conservation and regional water supply. The disclosure of this preliminary information and data is deemed critical by the USGS and Salinas Valley Cooperative team and is required to provide timely best science to comply with the California Sustainable Groundwater Management Act and federally listed fish habitat regulations for National Oceanic and Atmospheric Administration National Marine Fisheries. However, all appropriate disclaimers must be provided on all data and products, model input data sets and information sharing must be limited to members of the Salinas Valley Cooperative and their agents that are directly participating in this provisional use of the model until the model has received final approval.

The following must be observed for use of the provisional product and data.

- 1) Data may only be shared for internal collaboration with cooperators and their direct agents for a specific purpose.
- Provisional results must be watermarked and distributed with specific disclaimers on all preliminary data, text, and graphics.
- 3) For each graphic, table or text describing provisional data or models must have the following statement annotated or watermarked: "*provisional data subject to revision*".
- 4) For each document that includes provisional data or models, the following text must be included, "This data (model and/or model results) are preliminary or provisional and are subject to revision. This model and model results are being provided to meet the need for timely best science. The model has not received final approval by the U.S. Geological Survey (USGS). No warranty, expressed or implied, is made by the USGS or the U.S. Government as to the functionality of the model and related material nor shall the fact of release constitute any such warranty. The model is provided on the condition that neither the USGS nor the U.S. Government shall be held liable for any damages resulting from the authorized or unauthorized use of the model."
- 5) Collaborators and their agents must only use preliminary or provisional data to achieve a specific goal. Scientific information should only be shared to provide timely dissemination of information for a specific goal.

Software updates

Subtask A support specific updates to the software. The USGS will address specific changes to the release fractions to improve representation of Nacimiento, and San Antonio Reservoirs and their releases to the Salinas River. The USGS will update the SWO module to use the published version of the MF-OWHM framework and provide a technical document describing the SWO module, input options, and methods. The intent of this activity is limited to this scope item but can be extended to address other needs using "as needed services" described in Task 3-5 depending on scope.

Collaborative SVOM Evaluation

Task B describes the facilitated collaborative approach to future model development. Collaborative Salinas Valley Regional Model development to date has been challenging due to large datasets required for hydrologic models, the dynamic nature of model development and updates, the requirement of protecting preliminary data to prevent inappropriate use and consequences and the challenge of keeping collaborators up to date and informed of model changes. The updated SVOM will be developed in a collaborative environment with the Salinas Valley Cooperative and its agents. The USGS will host the preliminary version of the model in a private password secured repository with access provided to specific agents. This repository will provide a mechanism to update model data, facilitate transfer of data and provide transparency of the model development among the Salinas Valley Cooperative and upon its release the general public. This will track and maintain a record of all model changes and each version of the model can be reconstructed so that changes in model input and bug fixes can be summarized and transparent. The updated SVOM will be evaluated using criteria developed by the Salinas Valley Cooperative which will include but is not limited by hydrologic flows, water demands, and reservoir releases. The intent of these activities is limited scope evaluations before publication and release but may extend into "as needed services" described in Task 3-5 depending on scope.

SVOM Surface Water Operations Module (SWO) Input and Model Documentation

Task 2-4_items C through G describe the elements specific to documentation and public release of the SVOM. The Salinas Valley Cooperative will document the model development and model input. The intent is to document the baseline model, however significant changes were made by agents of MCWRA to facilitate the Interlake Tunnel evaluation. If a more complete representation of the various operational model configurations is important to document, a subcontract with the consultants should be made to enhance the report with their insights using and applying the SVOM. The report will have a courtesy review by the Salinas Valley Cooperative and a full scientific peer review by the USGS. The report will be published as a USGS Scientific Investigation Report with a companion model summary fact sheet for sharing information about the general model with broader audiences. The model will be archived in a public repository hosted by the USGS and will be released to the public.

Task 35: Technical Support and Advice

The intent of Task <u>3-5</u> is to provide technical support to Salinas Valley Cooperative in the transfer, training, and use of the Salinas Valley Regional Models, the MF-OWHM software, and the SWO module, and model update and visualization tools for use in the analysis of various water resource assessments and scenarios for evaluation of strategies and projects to support groundwater sustainability. These items are listed as "as needed" services because they are difficult to define a priori.

The intent is to develop a mechanism to facilitate information sharing and training among the Salinas Valley Cooperative and its stakeholders. The intent is to cover unexpected meetings with collaborators, stakeholders, leaders, and decision-makers beyond the scope of regular communication outlined in Task 4-6 Communication. This item will also be used to cover time for technical reviews of reports, documents and model scenario implementation.

As another as needed item to support the project, we can run additional models that are not part of the specific runs already covered by specific USGS evaluations of the model update and evaluations. There can be significant costs to run limited ensembles of models for the project. Uncertainty quantification is a key component of model evaluation that is often limited by computational resources. The availability of computational resources and costs leveraged by some companies to use their resources to complete even a single model run can be significant. Commented [FHx3]: SVBGSA Decision Point...

The USGS has sophisticated computational resources at our disposal with two local clusters and 2 super clusters throughout the country. On an as needed basis, <u>we-the USGS</u> can provide some resources to support limited runs for the projects in this scope.

A note on expense tracking. The USGS bills quarterly based upon project expenditures and provides regular updates of project milestones. Our administration is limited by federal billing. Recent reporting requirements by CADWR have added additional administrative costs to tracking time and effort for reporting and reimbursement of grant funding. If over the course of this agreement, a specifically detailed account of expenditures by subtask is required this as needed cost can be used to cover the additional administrative costs can be outlined. A log of as needed expenditures will be kept and shared with the Salinas Valley cooperative upon request and will be regularly communicated to the cooperative during update meetings outlined in Task 4. If these as needed service funds are expended, they can be replenished with future project funding.

Task 46: Communications

There are 3 defined communications defined in subtasks A-C to facilitate the cooperative science program. These include monthly update meetings with the Salinas Valley Cooperative to provide updates, communicate model results, present project milestones, exchange information, and align efforts. The proposed scope includes 1-2 stakeholder or collaborator presentation and trainings on the hydrologic model construction, input development tools or visualization tools. The duration and number of funded activities will depend on the audience and nature of the presentation content.

Quality Assurance/Quality Control

The updates of model input will be based upon data provided by the Salinas Valley Cooperative and data from external sources such as climate data or USGS stream gage data. Model results will be evaluated for potential errors during the USGS technical review and collaborative review by the Salinas Valley Cooperative The quality of the developed model products will be ensured by the collaborative review process and products will be based upon the best knowledge at the time of publication of the model.

Products

The project will deliver the following specific items:

- 1. SVWM, SVIHM, and SVOM models updated through water year 2022
- SVOM model documentation with specific updates to MODFLOW-OWHM SWO software, and model archive.
- 3. Training on the model and associated tools
- 4. Tools for updating the model, plotting groundwater budgets and evaluating sustainable management criteria

Timeline

This proposed program and updating will require tasks to be distributed over 3 years to complete. The immediate goal and focus of funded effort is to facilitate transfer of the model, training, and immediate use of the Salinas Valley Regional Models for use of the development of groundwater sustainability plans and reservoir evaluations. The intent is to support the effort such the that provisional use of the model has the rigorous review and transparency that will ensure acceptance by stakeholders and the CADWR while the model goes through the peer review process. Documentation and updates to the Salinas Valley Operational model will begin once the project is funded, primary datasets derived from the recent 2018 update to the SVIHM are received, reviewed and implemented in the operational model and the SVOM has been reviewed by the reservoir operations specialist Staff in MCWRA.

Personnel

From the USGS, the project chief will be Wes Henson. Scott Boyce, Joe Hevesi, Marisa Earll, and D.J. Martin from the USGS CAWSC will be part of the team that will complete the project. Personnel from other member agencies will be defined by management of the respective agency.

Cooperators/Collaborators

The cooperating agencies with the USGS will be the members of the Salinas Valley Cooperative, Monterey County Water Resource Agency, Salinas Valley Basin Groundwater Sustainability Agency. Commented [FHx4]: SVBGSA Decision Point...

Budget Summary

This is a cooperative project, the scientists and engineers in the two-three agencies will confer on a regular basis and both-all parties will add funding to the project. The budgets for the study tasks are listed below by calendar year (Table 1). The total budget for the project is \$516,002, of which \$139,528 is budgeted for "as needed" services. The potential contribution by USGS cooperative matching for years 2021 through 2023 is \$103,200. The total cost to the Salinas Valley Cooperative members is \$412,802 with all as needed services. The fixed costs to the Salinas Valley Cooperative members with no use of as needed support services of \$301,178.

Table 1. Detailed cost for work-plan tasks

Commented [FHx5]: Detailed workplan needs to be reevaluated based on previous comments and edits. Table 1 needs to be revised to include additional tasks as noted above in previous comments and edits.

	Calendar Year							
	2021			2022		2023		
Task 1: Historical Model and Operational Model Updates	\$	-	\$	78,979	\$	81,349	\$	160,328
A: Climate model updates Water Year 2019/2020	\$	-	\$	10,955	\$	-	\$	10,955
B: Land use updates Water Year 2019/2020	\$	-	\$	5,477	\$	-	\$	5,477
C: Watershed Model and Surface Water Inflow Updates Water Year 2019/2020	\$	-	\$	13,250	\$	-	\$	13,250
D: Groundwater Model Updates Water Year 2019/2020	\$	-	\$	21,910	\$	-	\$	21,910
E: Collaborative evaluation of model update	\$	-	\$	10,955	\$	-	\$	10,955
F: Climate model updates Water Year 2021/2022	\$	-	\$	-	\$	11,284	\$	11,284
G: Land use updates Water Year 2021/2022	\$	-	\$	-	\$	5,642	\$	5,642
H: Watershed Model and Surface Water Inflow Updates Water Year 2021/2022		-	\$	-	\$	13,647	\$	13,647
I: Groundwater Model Updates Water Year 2021/2022	\$	-	\$	-	\$	22,567	\$	22,567
J: Collaborative evaluation of model update	\$	-	\$	-	\$	11,284	\$	11,284
K: Continued collaborative development of model tools	\$	-	\$	16,432	\$	16,925	\$	33,358
Task 2: Salinas Valley Operational Model (SVOM) Documentation and Release	\$	132,948	\$	-	\$	-	\$	132,949
A: Software update to reservoir release fraction formulation	\$	13,295	\$	-	\$	-	\$	13,295
B: Collaborative SVOM Evaluation	\$	15,954	\$	-	\$	-	\$	15,954
C: Documentation of Surface Water Operations Module (SWO) Input and SVOM	\$	45,202	\$	-	\$	-	\$	45,202
D: Report Review	\$	15,954	\$	-	\$	-	\$	15,954
E: Report Figures	\$	10,636	\$	-	\$	-	\$	10,636
F: Report Publication	\$	15,954	\$	-	\$	-	\$	15,954
G: SVOM Model Archive and Public Release	\$	15,954	\$	-	\$	-	\$	15,954
Task 3: Technical Advice and Support (as needed, not to exceed)	\$	45,142	\$	46,496	\$	47,891	\$	139,528
A: Hydrologic Models	\$	15,954	\$	16,432	\$	16,925	\$	49,311
B: Surface Water Operations Software	\$	15,893	\$	16,370	\$	16,861	\$	49,124
C: Support computation of operational and historical models on USGS computer clusters	\$	13,295	\$	13,694	\$	14,104	\$	41,093
Task 4: Communications		18,613	\$	31,815	\$	32,769	\$	83,197
A: Annual Board Presentation	\$	2,659	\$	5,477	\$	5,642	\$	13,778
B: Monthly Meetings	\$	10,636	\$	16,432	\$	16,925	\$	43,993
C: Stakeholder Engagement and Education	\$	5,318	\$	5,477	\$	5,642	\$	16,437
D: Travel	\$	-	\$	4,428	\$	4,560	\$	8,988
Total Project Costs		196,703	\$	157,290	\$	162,009	\$	516,002
Fixed Costs	\$	151,561	\$	110,794	\$	114,118	\$	376,473
As needed services	\$	45,142	\$	46,496	\$	47,891	\$	139,529
Maximum USGS Cooperative Matching	\$	39,340	\$	31,458	\$	32,402	\$	103,200
Maximum Contribution by Collaborative Partners with all as needed services	\$	157,363	\$	125,832	\$	129,607	\$	412,802
Fixed Contribution by Collaborative Partners with no as needed services		121.249	Ś	88.635	Ś	91.294	Ś	301.178

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Monterey County

Board Report

Legistar File Number: WRABMAC 21-041

Introduced: 5/26/2021

Version: 1

Proposition 1 Implementation Grant Update: Protection of Domestic Drinking Water Supplies for the Lower Salinas Valley



Current Status: Draft

Matter Type: WRA BMAC Item

Item No.3

June 02, 2021

Board of Supervisors Chambers

168 W. Alisal St., 1st Floor Salinas, CA 93901
Update on Proposition 1 Implementation Grant – Protection of Domestic Drinking Water Supplies for the Lower Salinas Valley Project

SUMMARY:

Implementation of the *Protection of Domestic Drinking Water Supplies for the Lower Salinas Valley* project (Project) is ongoing. The Project is funded in part by a Proposition 1 Implementation Grant from the State Water Resources Control Board (SWRCB).

DISCUSSION:

Request for Proposals

On May 18, 2021, MCWRA released a Request for Proposals (RFP) from well drilling contractors to complete the well destruction work as part of the Project. The RFP is available on the Project webpage (<u>https://www.co.monterey.ca.us/government/government-links/water-resources-agency/programs/protection-of-domestic-drinking-water-supplies-in-the-lower-salinas-valley</u>) and proposals will be accepted until 3:00 PM on June 17, 2021.

Public Workshop

MCWRA held a Public Workshop on May 26, 2021 to provide general information about the purpose, location, budget, and implementation of the Project to date.

OTHER AGENCY INVOLVEMENT:

State Water Resources Control Board

FINANCING:

Project totals \$9,125,524 over a three-year period. The Project is funded in part (54%) by the SWRCB (\$4,927,729) with the remaining 46% of the funding as local match from MCWRA. MCWRA is satisfying the match through a combination of in-kind services (\$1,534,495) and additional funds (\$2,663,300).

MCWRA was originally responsible for the full \$2,663,300 in additional funds, but that amount has been reduced to \$2,115,801 due to contributions from the Monterey County Cannabis Assignment (\$399,499), Monterey One Water (\$65,000), and Castroville Community Services District (\$83,000). MCWRA has identified reserves in Fund 134 to cover any portion of the remaining \$2,198,801 in additional funds that is not covered by contributions from outside sources.

There is no financial impact in receiving this update.

Prepared by: Amy Woodrow, Hydrologist, (831) 755-4860 Tamara Voss, Associate Hydrologist, (831) 755-4860 Howard Franklin, Senior Hydrologist, (831) 755-4680

Monterey County

Board Report

Legistar File Number: WRABMAC 21-042

June 02, 2021

Matter Type: WRA BMAC Item

38





Introduced: 5/26/2021

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Board of Supervisors Chambers

168 W. Alisal St., 1st Floor Salinas, CA 93901

Current Status: Draft

Update on Well Permit Application Activities

Well Permit Application Activities Update

SUMMARY/DISCUSSION:

In support of Monterey County's Well Permit Application Program the Agency acts as technical advisor to the program's lead agency, the Environmental Health Bureau (EHB). In accordance with a 1991 interdepartmental Memorandum of Agreement between the Agency and EHB, the Agency performs a comprehensive review process on well permit applications for new wells pumping five acre-feet of water or more per year, as well as for proposed well destructions and repairs.

The Agency provides review and/or advisement to EHB within five (5) business days of receiving new well permit applications. The Agency also reviews final well designs and annular seal depth proposals on an on-going basis and is committed to providing a response to EHB within twenty-four (24) hours of receiving design proposals.

The Agency receives funds that cover staff time for well application review, well completion report processing, and database maintenance from fees collected by EHB. The Agency's fees are defined in Article XI of the Monterey County Fee Resolution.

Table 1 (attached) provides a summation of well permit applications received in the last month for evaluation by Agency staff, categorized by permit type, Agency management area, and aquifer unit. Also included is a tabulation of new well applications reviewed for the fiscal year. This table is provided to the Board of Directors and Basin Management Advisory Committee on a monthly basis.

Publication of the Agency's Report, "Recommendations To Address the Expansion of Seawater Intrusion in the Salinas Valley Groundwater Basin (October, 2017) and subsequent adoption of Interim Urgency Ordinance 5302 and Ordinance 5303 by the Monterey County Board of Supervisors (May 22, 2018 and June 26, 2018, respectively) have led to increased interest in data related to wells in and extractions from the Deep Aquifers (Figure 1).

Figure 2 depicts the history of well installation in the Deep Aquifers by water use category. As illustrated in the chart, a total of fifty-seven (57) wells have been installed in the Deep Aquifers since 1974, with twenty-five (25) of those wells being constructed in the last ten years, including fourteen (14) within the last three years. Figure 2 includes a tabular historical summary of reported annual Deep Aquifer well extractions by water use category.

Two (2) additional permits have been issued for new Deep Aquifers wells but construction has not been completed as of the date of this report. The proposed wells were applied for as replacement wells after the expiration of Ordinance No. 5302, which expired on May 21, 2020.

OTHER AGENCY INVOLVEMENT:

None

FINANCING: None

Prepared by: Nicole Koerth, Hydrologist, (831) 755-4860 Amy Woodrow, Hydrologist, (831) 755-4860 Tamara Voss, Associate Hydrologist (831) 744-4860 Howard Franklin, Senior Hydrologist, (831) 755-4860

Attachments:

Table 1 - Summary of Well Permits Received Figure 1- Map showing Deep Aquifer Wells Figure 2 - Timeline of Well Installation in the Deep Aquifers with Summary of Deep Aquifer Groundwater Extractions

Subarea/ Aquifer	Construction	Destruction	Repair	Other	Total	FY (20/21) Total
180-Ft Aquifer		1			1	10
400-Ft Aquifer	1				1	10
Deep Aquifers						7
East Side						13
Forebay		1			1	11
Upper Valley						5
Outside Zone 2C, Undefined GW Basin	3				3	41
Total	4	2			6	97

 Table 1. Well Permit Applications Received by Category - April, 2021





Deep Aquifers Groundwater Extraction History Since 1993*

1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
2,054	1,992	2,036	2,137	2,170	1,906	2,056	2,302	2,355	2,399	2,366	2,442	2,358	2,005	1,738	2,004	2,102	1,903	1,803	2,044	1,989	3,784	3,746	3,788	4,116	4,605	4,820
1,507	2,620	2,302	1,990	2,556	1,648	96	1	0	0	0	0	0	0	58	384	696	982	927	1,397	1,097	2,031	2,010	4,194	4,834	4,749	5,331
0	0	0	0	0	0	0	3	13	17	379	305	343	336	393	371	348	333	370	380	523	620	617	569	567	291	196
3,561	4,612	4,338	4,127	4,725	3,554	2,151	2,307	2,368	2,416	2,745	2,747	2,701	2,341	2,189	2,759	3,146	3,218	3,100	3,821	3,608	6,436	6,373	8,551	9,516	9,645	10,347

* Notes: Table includes all reported extraction data for the thirty-four (34) Deep Aquifer production wells that have reported extractions since inception of the Agency's GEMS program in 1993. Data are reported in acre-feet. Colors denote water use category (Municipal, Agricultural, Industrial). An additional twelve (12) recently constructed Deep Aquifers Agricultural production wells have yet to report extractions as of Reporting Year 2019.

Monterey County

Board Report

Legistar File Number: WRABMAC 21-043

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Update on Groundwater Sustainability Agency activities in the Salinas Valley Basin



June 02, 2021

Current Status: Draft Matter Type: WRA BMAC Item

Item No.5

Board of Supervisors Chambers

168 W. Alisal St., 1st Floor Salinas, CA 93901

Update on groundwater sustainability agency activities in the Salinas Valley Basin

SUMMARY/DISCUSSION:

- Groundwater Sustainability Fee Increase
 - On May 13, 2021 the Salinas Valley Basin Groundwater Sustainability Agency (SVBGSA) Board of Directors approved a Groundwater Sustainability Fee increase of five percent (5%) beginning in Fiscal Year 2021-2022.
 - This increase will result in a Groundwater Sustainability Fee for Fiscal Year 2021-2022 of \$5.03 per irrigated acre and \$2.37 per connection.
- Airborne Electromagnetic Surveys
 - The Department of Water Resources (DWR) will be conducting Airborne Electromagnetic (AEM) surveys in high- and medium-priority groundwater basins, which includes much of the Salinas Valley Groundwater Basin (Attachment 1 and <u>https://water.ca.gov/Programs/Groundwater-Management/Data-and-Tools/AEM)</u>. Agency staff is coordinating with the SVBGSA and the Marina Coast Water District GSA to provide well location, lithology, and geophysical data for locations in the Salinas Valley Groundwater Basin in support of the upcoming AEM surveys.
- GSP Development and Implementation
 - The SVBGSA has formed Subbasin Committees, consisting of SVBGSA Directors and stakeholders from each subbasin, that meet every two months to provide input during the development of the remaining five GSPs. Committees for all five subbasins that still require development of GSPs (Eastside, Forebay, Langley, Monterey, and Upper Valley) meet regularly. The meeting schedule is available on the SVBGSA website at <u>https://svbgsa.org/meetings/</u>.
 - Agency staff continues to meet regularly with SVBGSA staff to discuss projects or other aspects of the implementing Groundwater Sustainability Plans that may involve Agency staff or infrastructure, or impact Agency operations.
- Meeting Participation
 - At the May 13, 2021 SVBGSA Board of Directors meeting, Tamara Voss was appointed as the MCWRA Alternate Committee member for the SVBGSA Advisory Committee.
 - Agency staff continues to attend meetings of the Arroyo Seco GSA, Marina Coast Water District GSA, and Salinas Valley Basin GSA and their various subcommittees.

• The Agency is represented on the Advisory Committee of the Salinas Valley Basin GSA and participates in the SVBGSA's Seawater Intrusion Group (SWIG).

OTHER AGENCY INVOLVEMENT:

The Department of Water Resources, Marina Coast Water District, and Salinas Valley Basin Groundwater Sustainability Agency participated in some of the activities described in this report.

FINANCING:

There is no financial impact in receiving this update.

Prepared by: Amy Woodrow, Hydrologist, (831) 755-4860 Howard Franklin, Senior Hydrologist, (831) 755-4860

ATTACHMENTS Attachment 1 – AEM Factsheet from DWR



Proposition 68 Funded Project California Department of Water Resources Sustainable Groundwater Management Program



CONDUCT AIRBORNE ELECTROMAGNETIC SURVEYS

Airborne Electromagnetic (AEM) surveys will be conducted in California's High and Medium Priority Groundwater Basins, including areas with disadvantaged communities (DACs). The project will generate coarse-grid subsurface maps that will provide fundamental information about aquifer structures that supports the development and implementation of groundwater sustainability plans (GSPs). The coarse-grid AEM data may serve as the basis for the collection of fine-grid AEM data by local stakeholders in the future.

What is Proposition 68?

The California Drought, Water, Parks, Climate, Coastal Protection and Outdoor for all Fund (Senate Bill 5, Proposition 68) authorized \$4 billion in general obligation bonds for state and local parks, environmental protection and restoration projects, water infrastructure projects, and flood protection projects. The AEM survey will utilize \$12 million on data, tools, and analysis efforts for drought and groundwater investments to achieve regional sustainability in support of the Sustainable Groundwater Management Act (SGMA).

How Does This Project Support SGMA?

This project will provide state and federal agencies, groundwater sustainability agencies, related stakeholders, and the public with basin-specific and cross-basin geophysical data, tools, and analysis aligned to the technical requirements of the groundwater sustainability plan (GSP) regulations and The resulting information will provide a SGMA. standardized, statewide dataset that supports the implementation of SGMA by improving the understanding of large-scale aquifer structures, which aids in the development or refinement of a hydrogeologic conceptual model and identification of possible recharge areas.

This project builds on the knowledge and successful track record of DWR's Regional and Statewide Integrated Water Management technical assistance programs and aligns with the Governor's Water Resilience Portfolio (Executive Order N-10-19) and the Open and Transparent Data Act (AB 1755).

What is the Value of this Information?

The AEM data will provide supporting information about subsurface hydrogeologic characteristics of aquifer systems in groundwater basins. AEM data support the development and refinement of groundwater models, improve the potential for the successful development and implementation of GSPs, and reduce uncertainty in identifying locations for groundwater recharge projects. The collection of AEM data supports multi-benefit projects and has been successfully implemented in basins in California through a recent pilot project. The AEM surveys will benefit DACs by providing data to enhance understanding and management of their basins.

What is New?

In 2020, DWR plans to award a contract to collect AEM data throughout California's High and Medium Priority Groundwater Basins. The AEM data will be collected in a grid or set of parallel lines with the survey lines oriented to collect data in areas with known data gaps, adjacent to critical water delivery infrastructure, and where GSAs are considering implementation of SGMA related project, like aquifer recharge.

What are the Next Steps?

A technical advisory committee will be formed in early 2021 to provide input on project activities, such as survey design, data management, guidance documents, and AEM data use.

DWR will coordinate with local governments in the survey areas before surveys are conducted to inform the local community about the safety of the AEM method and why surveys are being conducted

What is AEM and How is a Survey Conducted?

AEM is a geophysical method that measures the electrical properties of subsurface materials from helicopter mounted equipment. The AEM equipment is housed in a large hoop frame that is securely hung from the helicopter. The helicopter carries the equipment approximately 100 feet above the ground surface and collects data along a defined flight path. Flight paths are designed to collect data over open spaces and avoid residential areas and structures containing people or confined livestock. The helicopter is flown by experienced pilots who follow all Federal Aviation Administration (FAA) regulations. The collected AEM data is interpreted to show the distribution of coarse-grained and fine-grained materials in the subsurface, which improves the understanding of aquifer structures. Below, is an example of the helicopter and AEM equipment (hoop), flight paths, and AEM data that have been interpreted to characterize subsurface hydrogeology.









Figure 1: Airborne Electromagnetic Survey and Resulting Data

Contact and Additional Information

For more information or questions, contact <u>Katherine.Dlubac@water.ca.gov</u>

DWR SGMA Data and Tools webpage

https://water.ca.gov/Programs/Groundwater-Management/Data-and-Tools DWR Statewide AEM Survey webpage Coming soon

Monterey County

Board Report

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168 W. Alisal St., 1st Floor

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Update on Agency Modeling Activities



Salinas, CA 93901

Update on Agency Modeling Activities

SUMMARY:

The Monterey County Water Resources Agency (Agency) continues to work on multiple projects involving the Salinas Valley Integrated Hydrologic Model (SVIHM or "historical model") and/or the Salinas Valley Operational Model (SVOM or "operational model"). Both the SVIHM and SVOM are tools developed by the U.S. Geological Survey (USGS), Agency, and Monterey County; the SVOM has been refined for use on the Interlake Tunnel Project by Wood Environment & Infrastructure, Inc. (Wood).

In addition to the Interlake Tunnel Project, the Agency is working with Monterey County to utilize the models are part of the Salinas Valley Basin Investigation.

DISCUSSION:

- On May 18, 2021, Agency staff and consultants from the USGS and Montgomery & Associates gave a presentation to the Monterey County Board of Supervisors with an update on the County's Basin Investigation and the status of the SVIHM (Attachment 1).
- The Agency, USGS, and Salinas Valley Basin Groundwater Sustainability Agency will be offering a technical workshop on the model for stakeholders via Zoom on Wednesday, June 30 at 1:00 PM.
- Agency staff is continuing to review preliminary output from the historical model for consistency with the Agency's conceptual understanding of the groundwater basin.
- On May 17, 2021, Wood provided the Agency with the results of a "Pre-Salinas Valley Water Project" model run scenario. Staff is currently reviewing the model output data.
- The Agency and Wood continue to work closely with another consultant, ICF, to use the SVOM in support if ICF's work on the Environmental Impact Report for the Interlake Tunnel Project.
- Preliminary data from the SVOM is being used by the Agency's consultant, WSC, to support the San Antonio Dam Spillway Rehabilitation Cost Share Analysis project.

OTHER AGENCY INVOLVEMENT None.

FINANCING:

There is no financial impact for receiving this report.

Prepared by:	Amy Woodrow, Hydrologist, (831) 755-4860
	Howard Franklin, Senior Hydrologist, (831) 755-4860

Approved by: Brent Buche, General Manager

ATTACHMENTS Attachment 1 – Slides from May 18, 2021 Board of Supervisors Presentation on the Basin Investigation Update



Consider receiving an update on the Salinas Valley Groundwater Basin Investigation



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Salinas Valley Groundwater Basin Investigation - Project Team



Project Management

Howard Franklin, P.G., Senior WRA Hydrologist Amy Woodrow, P.G., WRA Hydrologist



Model Development

Wesley Henson, PhD., Research Hydrologist



Data Analysis and Final Report

Derrik Williams, P.G., C.Hg., Principal Hydrogeologist



Board of Supervisors

Monterey County California

Monterey County Basin Investigation : Salinas Valley Model Suite Report

Wesley Henson US Geological Survey California Water Science Center whenson@usgs.gov



Food and Water Security Research Partnership



General Terminology Overview **California Pesticide Use Reporting Database (CalPUR)** A comprehensive database of pesticide application and crop data collected since 1974.

MODFLOW One Water Hydrologic Model (OWHM) – A modular groundwater/surface water/agricultural/operations model based upon the MODFLOW groundwater modeling software.

MODFLOW Farm Process (FMP) An implementation of agricultural operations and the United Nations Food and Agricultural Organization Crop Model.

Water Balance Subregion (WBS)- A water accounting subregion used to estimate and simulate agricultural supply and demand and quantify hydrologic budgets.

Surface Water Operations module (SWO) A rigorous and flexible module to simulate complex reservoir operations, enforce simulated river flow thresholds and limits, and provide linkages between water balance subregions and reservoirs.

Nash Sutcliffe Coefficient of Model Efficiency (NS) A metric used to quantify model performance (how well a model reproduces data).



Salinas Valley Model Suite

Basin Characteristics Model (BCM)- A 1-D climate, rainfall, and runoff model used to prepare precipitation and potential evapotranspiration input for models.

Salinas Valley Geological Model (SVGM) A 3-D Geologic model of Salinas Valley with discrete representation of geologic structures, aquifers, confining units and textural properties of geologic materials.

Salinas Valley Watershed Model (SVWM)– A historical rainfall and runoff watershed model of the entire area that contributes flow to the Salinas river and tributaries. The SVWM is calibrated from 09/30/1948 to 12/31/2014 and updated though water year 2018.

Salinas Valley Integrated Hydrologic Model (SVIHM) A historical integrated hydrologic model that uses estimated and measured data to simulate historical rainfall, runoff, recharge, storage, water levels, streamflow, water supply and demand for native and cultivated lands to develop comprehensive water budgets. The SVIHM is calibrated from 10/1/1967 to 12/31/2014 and updated though water year 2018.

Salinas Valley Operational Model (SVOM)— An operational baseline model that inherits, the geologic structure, hydrologic properties, and climate from the SVIHM. The SVOM assumes that current reservoir operations and 2014 land use were constant for the entire simulation from 10/1/1967 to 12/31/2014. The SVOM is used as a baseline for evaluation of potential water supply projects and to quantify project benefits.





Salinas Valley Geologic Model (SVGM)



Salinas Valley Geologic Model showing percentage of coarse material distribution for the 180-ft aquifer in the Salinas Valley Integrated Hydrologic Model.

- Provides a robust hydrogeologic framework and conceptual flow model
- 3-D Geologic texture model of entire Salinas Valley and watersheds
- Downscaled from regional scale model
- Developed subregional geologic facies
- Lithology database from Monterey County

Model Framework – 9 Layers with 529 ft. by 529 ft. grid cells

Layer 1 → Salinas Shallow/Recent Aquifer Layer 2 → Salinas Valley Aquitard Layer 3 → 180-Ft Aquifer Layer 4 → Middle Aquitard Layer 5 → 400-Ft Aquifer Layer 6 → Deep Aquitard Layer 7 → Paso Robles Formation Layer 8 → Purisima/Santa Margarita Formation Layer 9 → Composite Bedrock Aquifer



Basin Characteristics Model

Basin Characteristics Model (BCM) tools are used to prepare spatially distributed climate input for hydrologic models

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Maximum Air Temperature (C)

> 11 - 20 20 - 23

23 - 26

26 - 28

28 - 30

30 - 32 32 - 35

35 - 37

37 - 40 40 - 47 • Potential evapotranspiration (PET) is estimated

Climate data is downscaled to 270m

maximum temperature (Tmax)

minimum temperature (Tmin)

• Priestly Taylor

Precipitation

- Bias correction to California Irrigation Management Information System (CIMIS) station data.
- With solar radiation model that incorporates slope, aspect, and topographic shading (to define the percentage of sky seen for every grid cell) (Flint and Childs 1987).
- Downscaled using Gradient Inverse Distance Squared (GIDS) approach (Nalder and Wein, 1998)



Salinas Valley Watershed Model (SVWM)



Salinas Valley Watershed Model (SVWM) and Salinas Valley Integrated Hydrologic Model (SVIHM) showing boundaries, stream networks, stream gages, and subdrainages.

- Simulates watershed processes for the entire Salinas River Valley from Paso Robles to the coast
- Regionally downscaled climate from Basin Characteristics Model
- Provides surface inflows to integrated models from hillslopes to valley floors.
- Sediment and Contaminant transport capable



Available land use data was limited to multiyear snapshots with variable detail



A new land use model was developed to improve representation of semi-annual variability, multi-cropping, and crop diversity.



We use a tiled approach of available land use data to represent the landscape

Native and Urban areas represented by National Land Cover Database (NCLD) datasets

Riparian areas defined using aerial photography and the National Hydrography Database (NHD)

Representing agricultural development and distribution of crops and cropping patterns rely on

- Land use snapshots
- Aerial photography
- Agricultural commission data
- Stakeholder outreach activities





CalPUR data provides comprehensive crop data that can vary in time.



Cropped land use estimation is improved using pesticide data



Available multi-year land use data is combined with CalPUR pesticide data to generate semiannual land use for each model cell (~6 Acres)

This approach better represents:

- Crop Type
- Multi-Cropping
- Crop variations

Red area shows vague crop categorization that is enhanced with additional information from pesticide database





Reproduces magnitude and variation in cropped acreage



Comparison between cropped acreage reported by Monterey County Agricultural Commissioner annual crop reports, estimated acreage with CalPUR data, and estimated acreage from land use alone.



SVIHM received substantial input from stakeholders and technical advisors

• 8 Technical Advisory Committee meetings over 2 years



- Stakeholder surveys and 11 meetings
- Consultations with local and national agricultural experts
- Discussions with Groundwater Sustainability Agencies



SVIHM Calibrated using almost 104,000 Observations and reported data

- Stream flows (annual, monthly)
- Streamflow differences between stream gages (annual, monthly)
- Water Levels and drawdowns (annual, quarterly, monthly)
- Head differences (annual, quarterly, monthly)
- Reported groundwater pumpage (annual, quarterly, monthly)
- Reported diversions (annual, quarterly, monthly)





10 Subareas were split into 30 Water Balance Regions

- Aggregated water budget accounting areas
- Based on Zone 2C and Bulletin 118 Subareas
- Related efforts using model may have different definitions of subareas (e.g., SGMA)



Groundwater Levels



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SVIHM simulates reported agricultural pumping well.

- Nash Sutcliffe Error Metric is 0.87 (Perfect model is 1.0)
- Average annual estimation error from 1995-2014 is 9.3%
- More than half of estimation error is due to underprediction of pumping in winter (Dec, Jan., Feb.) and early and late growing season (Mar., Oct., Nov.).
- The error in prediction could be improved by:
 - Representation of agricultural storage ponds in the model
 - Regular validation of land use
 - Better understanding and simulation of water used for agricultural production

(field preparation, sanitation, processing, livestock, dust management)



Estimated Timeline for Salinas Valley Model Suite Public Release (SVGM¹, SVWM¹, SVIHM¹, SVOM²)





Expanded illustration of USGS review process. Blue vertical line illustrates current status. Lines along top of figure indicate transfer of report among reviewers and editors.


USGS Collaboration with Monterey County resulted in tools and products with far reaching impact at the national and state scale.

- Substantial contributions to the development and testing of MODFLOW One Water Hydrologic Model and new features that are currently being used in a case before the Supreme Court.
- Aggregated data from SVIHM is contributing to nationwide mapping of irrigated lands
 - Validation and testing of new remotely-sensed land use characterization, irrigation estimation methods and models.
- CalPUR method that is being further developed with California Department of Water Resources with statewide mapping of irrigated lands.
- Collaborative development of:
 - model updating tools
 - model post processing tools
 - new water budget estimation methods
- SVBGSA Coordination with related efforts in the basin.

Monterey County Basin Investigation Progress Update Monterey County **Board of Supervisors**



May 18, 2021







Presentation Outline

- Timeline
- Purpose of Study
- Objectives
- Background
- Study Methods
- Next steps

Monterey County Groundwater Study Timeline

2008 Final EIR	2010 General Plan	2012 Settlement Agreement	2015 State of the Basin Report	2016-2021 SVIHM & SVOM	2020-2022 SCRBS, GSPs, This Study
County analyzed groundwater conditions and pumping from 1995- 2005 and projected 2030	County created policies for sustainable growth based on 2008 EIR	County agreed to provide proof of a long-term, sustainable water supply for new development	MCWRA assessed near-term groundwater conditions, supply, and demand in Zone 2C	USGS developing SVIHM and SVOM groundwater models for assessing historical and operational hydrology	USBR, GSAs, and MCWRA preparing concurrent sustainable groundwater managemen t studies



Purpose

- This study addresses terms of the 2012 Salinas Valley Water Coalition et al. v County of Monterey Settlement Agreement.
- Specifically, the study re-assesses assumptions made in the EIR and 2010 General Plan related to land use, population, and water demands in 2030.
- In general, seek to align this study with the GSPs and SCRBS being compiled concurrently



Specific Study Objectives from Settlement Agreement

- Evaluate current groundwater conditions and projected 2030 groundwater conditions
 - Includes water demand, water budget, groundwater elevation declines, and seawater intrusion
- Compare current and projected groundwater conditions to EIR and General Plan
- Make recommendations on measures the County could take, should the groundwater conditions exceed 2030 projections



Study Uses the Groundwater Models Being Developed by USGS and MCWRA

EXPLANATION

Cities

Rivers and Streams
Lakes and Reservoirs





Source: MCWRA, USGS, DWR





Approach to Developing Water Use Projections

- Agricultural water use:
 - Estimate using groundwater model
 - Incorporate projected land use change, crop water use coefficients, and climate change.
- Urban water use:
 - Estimate urban growth from multiple sources
 - Incorporate urban water use coefficients (gallons / capita / day)



Data Sources for Developing Water Use Projections

- Agricultural water use:
 - Land use change USGS LUCAS, 2017
 - Incorporated into SVIHM land use map
 - Checked against Department of Conservation Farmland Monitoring and Mapping Program
 - Crop coefficients remain constant
 - Climate change DWR 2030 climate change scenario including sea level rise



Data Sources for Developing Water Use Projections

Urban water use:

- Population AMBAG, 2018
 - Verified and refined with California Department of Finance data
 - Verified and refined with US Census Bureau data
- Water efficiency Local urban water mgmt. plans and guidance from draft efficiency legislation
 - Low No change
 - Medium 10% reduction
 - High 20% reduction (used in SCRBS)







Groundwater Pumping



2030 Groundwater Demand

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Next Steps

- Compile projections
- Generate model input files
- Run models to estimate range of possible future outcomes for groundwater conditions
- Re-assess findings of EIR based on new information
- Prepare Groundwater Investigation Report



Timeline

- Will need about 5 months to complete the study after MCWRA, USGS and consultants agree the models are suitable
 - Run model scenarios
 - Process results
 - Analyze data
 - Draft report for MCWRA review
 - MCWRA review and comments
 - Finalize report

Discussion and Questions

Monterey County

Board Report

Legistar File Number: WRABMAC 21-045

June 02, 2021

Item No.7

Introduced: 5/26/2021

Version: 1

Consider future agenda items and set next meeting date





Current Status: Draft

Matter Type: WRA BMAC Item

Chambers 168 W. Alisal St., 1st Floor Salinas, CA 93901

Board of Supervisors