SOLANO SUBBASIN
GROUNDWATER SUSTAINABILITY AGENCY

BOARD OF DIRECTORS MEETING

DATE: **Thursday, July 8, 2021**

TIME: **5:00 P.M.-NOTE CHANGE OF START TIME**

PLACE: **Virtual Zoom Meeting**

https://us02web.zoom.us/j/83885574549?pwd=eTZpbkN3SXFQWkNBRDdnNlYrcEhnUT9
Meeting ID: 838 8557 4549/Passcode: 630031
One tap mobile: +16699009128,,83885574549#,,,,*630031#
Dial by your location: +1 669 900 9128

Backup Conference line: 800-510-5879/Passcode 385498

1. **CALL TO ORDER**

2. **PLEDGE OF ALLEGIANCE**

3. **APPROVAL OF AGENDA**

4. **PUBLIC COMMENT**

   Limited to 5 minutes for any one item not scheduled on the Agenda.

5. **CONSENT ITEMS**

   (A) Minutes: Approval of the Minutes of the Board of Directors meeting of May 13, 2021.

6. **BOARD MEMBER REPORTS** *(estimated time: 5 minutes)*

   RECOMMENDATIONS: For information only.

7. **SECRETARY/TREASURER REPORT** *(estimated time: 5 minutes)*

   RECOMMENDATIONS: For information only.

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http://www.scwa2.com/resources-management/ground-water/solano-gsa-bod

8. **SOLANO GSA BUDGET FOR FISCAL YEAR 2021-2022** *(estimated time: 10 minutes)*

RECOMMENDATION: Hear Staff report and consider adoption of Agency's fiscal year 2021-2022 budget.

9. **SOLANO GROUNDWATER SUSTAINABILITY PLAN UPDATE**
(estimated time: 40 minutes)

RECOMMENDATIONS: Hear presentation and provide direction to staff.

10. **CLOSED SESSION** (estimated time: 15 minutes)

CONFERENCE WITH LEGAL COUNSEL-ANTICIPATED LITIGATION
(Subdivision (d) of Gov. Code §54956.9)
Significant exposure to litigation: 1 potential case-SGMA Implementation Fees

11. **TIME AND PLACE OF NEXT MEETING**

Thursday, June 10, 2021 at 5:00 p.m. at the SCWA offices.

The Full Board of Directors packet with background materials for each agenda item can be viewed on the Agency's website at
www.scwa2.com/resources-management/ground-water/solano-gsa-bod

Any materials related to items on this agenda distributed to the Board of Directors of Solano Subbasin Groundwater Sustainability Agency less than 72 hours before the public meeting are available for public inspection at the Agency's offices located at the following address: 810 Vaca Valley Parkway, Suite 203, Vacaville, CA 95688. Upon request, these materials may be made available in an alternative format to persons with disabilities.

SOLANO SUBBASIN GROUNDWATER SUSTAINABILITY AGENCY
BOARD OF DIRECTORS MEETING MINUTES

MEETING DATE: May 13, 2021

The Solano Subbasin Groundwater Sustainability Agency Board of Directors met this evening at the Solano County Water Agency Offices. Present were:

Mayor Steve Bird, City of Dixon
Mayor Ronald Kott, City of Rio Vista
Supervisor John Vasquez, Solano County District 4
Supervisor Mitch Mashburn, Solano County District 5
Director Jack Caldwell, California Water Services Dixon
Director Spencer Bei, Dixon Resource Conservation District
Director Ryan Mahoney, Maine Prairie Water District
Director Dale Crossley, Reclamation District 2068
Director Kurt Balasek, Solano Resource Conservation District

CALL TO ORDER

The meeting was called to order at 5:00 p.m. by Chairman Crossley.

APPROVAL OF AGENDA

On a motion by Vice-Mayor Pederson and a second by Supervisor Vasquez the Board unanimously approved-by roll call vote-the Agenda.

PUBLIC COMMENT

There were no public comments.

CONSENT ITEMS

On a motion by Mayor Bird and a second by Mayor Kott the Board approved-by roll call vote-Consent Item 5(a) Minutes.

BOARD MEMBER REPORTS

There were no Board member reports.

SECRETARY/TREASURER REPORT

In addition to the written report, Staff discussed the Groundwater Sustainability Plan (GSP) schedule. Staff stated that it is likely that the draft GSP will be complete at the end of October. Staff asked the Board if they were comfortable, given the time constraints, releasing the entire draft GSP to the public at that time. This might mean that the last section or two of the GSP will be reviewed by staff but not presented to the Board before being released to the public. The Board was comfortable with this approach knowing that they would see the complete draft before adopting the GSP in December.

In addition, Staff asked if the start time of Board meetings could be moved up from 5:30 to 5:00 pm and the Board was ok with that suggestion.

SOLANO SUBBASIN
GROUNDWATER SUSTAINABILITY PLAN UPDATE

Staff introduced the team from Luhdorff & Scalmanini Consulting Engineers (LSCE) to the Board of Directors. Vicki Kretsinger Grabbert from LSCE gave the Board a presentation on current development of the Solano Subbasin Groundwater Sustainability Plan (GSP).

Vicki discussed the draft materials completed to date: Sections 1 and 2 of the GSP and a Technical Memorandums on the Surface Water Budget and the Hydrogeologic Conceptual Model (HCM) and Groundwater Conditions. Sections 3 and 4 of the GSP should be complete by early April. Vicki also discussed the upcoming schedule for the GSP, with the anticipation of a complete draft by the end of October.

Vicki gave an overview of what was covered in Sections 1 and 2 of the GSP as well as the HCM in the Technical Memorandum. Groundwater conditions and the surface water budget were also discussed. The team is working on the model and completion of the groundwater part of the water budget.

Currently, the technical team is working with the GSA staff to complete the picture of current and future land use, projections for 5, 10, and 50-years out. Preliminary

numbers indicate a reduction of about 3% of agricultural acres that will be converted to urban areas.

Section 3 of the GSP will be about the Basin Setting. This section will include the geologic setting, the Hydrogeologic Conceptual Model, a description of the monitoring networks and programs, and surface water and groundwater conditions.

The technical team is also working with GSA staff on identifying potential Projects and Management Actions. This is akin to adaptive management. If conditions change in the subbasin, these potential projects and management actions could help correct any deficiencies. Example projects might include recharge basins, recycled water, irrigation efficiency, land fallowing, or surface water trading to name a few.

Next steps include focusing on completing Sections 3 and 4 of the GSP.

TIME AND PLACE OF NEXT MEETING

The time and place of the next meeting is Thursday, June 11, 2021 at 5:00 p.m., via Zoom.

ADJOURNMENT

This meeting of the Solano Subbasin Groundwater Sustainability Agency Board of Directors was adjourned at 5:59 p.m.

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Roland Sanford
Secretary to the Solano Subbasin
Groundwater Sustainability Agency

SOLANO SUBBASIN
GROUNDWATER SUSTAINABILITY AGENCY

MEMORANDUM

TO: **Board of Directors**

FROM: **Roland Sanford, Secretary to the Board of Directors** *Roland Sanford*

DATE: **July 8, 2021**

SUBJECT: **July General Manager/Secretary Report**

Groundwater Sustainability Plan Update

Luhdorff & Scalmanini (LSCE), our consultants developing the Groundwater Sustainability Plan (GSP), will give the Board an update on progress and next steps for the GSP. Preliminary results for the Solano Integrated Hydrologic Conceptual Model, at the subbasin and GSA scale, will be presented.

In general, modeling results show that the Solano Subbasin has a positive amount of groundwater leaving the subbasin on an annual basis. Further refinement is needed in the model for the Delta portion of the subbasin.

Additional GSP topics that will be covered include an update on the DWR TSS Grant and draft GSP sections being finalized for review.

Groundwater Sustainability Plan Draft Implementation Costs

Preliminary costs have been estimated for implementing the GSP. Annual implementation costs will be approximately $280,000 for the first couple of years. Annual costs will then ramp up in Fiscal Year 2024-2025 and beyond to approximately $540,000 to account for 5-year updates to the GSP.

Annual costs will cover the following: Agency Administration and Operations (meetings, website maintenance, newsletters, etc.); GSP Monitoring and Data Management (both groundwater levels and water quality); Data Management (data collection, analysis, reporting to DWR); Annual Reporting (first annual report and 5-year updates); and grant writing.

A cost breakdown of annual GSP implementation costs is attached to this report.

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There will be a Closed Session to discuss potential GSP implementation Fees needed to fund GSP implementation costs.

Meetings and Inter-Basin Coordination

Coordination with our neighboring groundwater subbasins and other agencies continues.

May 18th-Staff met with the Groundwater Leadership Forum (GLF). The GLF is a non-profit group whose purpose is to ensure the success of the Sustainable Groundwater Management Act (SGMA). They have been reviewing the draft GSPs that were submitted to DWR in January of 2020. We queried GLF to see if there were any deficiencies or trouble spots they were seeing in the initial GSPs submitted that we should have on our radar for the Solano Subbasin GSP. In summary, staff believe our local GSP to be on the right trajectory for meeting the necessary SGMA and GSP Guideline requirements.

May 20th-Staff met with the Solano Collaborative (other GSA Staff) to discuss: Model Calibration; Surface and Groundwater Technical Memo; DWR TSS Grant (shallow wells near Putah Creek) Update; Projects and Management Actions; and Model Scenarios. The outreach team also discussed: General stakeholder engagement; Community Advisory Committee (CAC) June 1 Meeting; CAC Member Outreach; and the Virtual Town Hall-August 25.

May 26th-Staff met with the Solano GSA Technical Advisory Committee (your staff) to discuss: Interbasin Coordination; Draft Sections 3 & 4; Model Calibration; CDFW/TNC-Groundwater Dependent Ecosystems; Projects and Management Actions; DWR TSS Grant Update; Stakeholder Engagement; and Solano GSA BOD April 9th meeting debrief.

June 1st-Staff participated in the Citizens Advisory Committee meeting to help answer any technical questions. The agenda included: A Presentation on Solano Subbasin Groundwater Characterization; A Presentation on Sustainable Management Criteria: Defining Undesirable Results (URs); A Presentation on Projects and Management Actions to Avoid URs; and Observer Reflections and Q&A.

June 9th –Staff met with the consulting team to forecast topics for upcoming Solano Collaborative meeting.

June 17th –Staff met with the Solano Collaborative to discuss: DWR TSS Grant Update; Model Results (Subbasin Scale/GSA Scale and Future Projected Water Budget Scenarios); Undesirable Results; Stakeholder Engagement Update; and Forecast GSA Roundtable Discussion for July 6th Meeting (Model Results for Historical and Projected 50-Year, Climate Scenarios [2030 and 2070], and Climate Scenarios with Projects).

GSP Schedule

As requested, the schedule for the GSP is attached. The GSP schedule will be discussed during the GSP update presentation.

Solano Groundwater Sustainability Plan Website

Continuous updates are being made to the Solano Groundwater Sustainability Plan website. The address for the website is: http://www.solanogsp.com

Draft Solano Subbasin Groundwater Sustainability Plan Implementation Budget

June 9, 2021

Category	2022	Annual 2023 and On[6]	2023	2024	2025	2026	5-Year (January 2027)
Agency Administration & Operations							
Community Outreach & Education[5]							
Monthly GSA meeting (12 times/year, technical consultants, $500* 4hrs=$24,000) [2022]	$24,000						
Quarterly GSA Collaborative meeting (4 times/year, incl. prep, technical consultant, $220* 4hrs=$3,520) [Years 2023 and On]		$3,520	$3,520	$3,520	$3,520	$3,520	
Update Website Related to Online Visualization for public viewing of most recent groundwater levels (4 times/year*$1,000 each)	$4,000	$4,000	$4,000	$4,000	$4,000	$4,000	
Intra/Intersubbasin coordination (by GSA only; 2 times/year; $500/mtg)	$1,000	$1,000	$1,000	$1,000	$1,000	$1,000	
Newsletters to interested parties and others (by GSA; 4 times/year; $2,500 each)	$10,000	$10,000	$10,000	$10,000	$10,000	$10,000	
Update website (by GSA; 6 times/year; $500/update)	$3,000	$3,000	$3,000	$3,000	$3,000	$3,000	
Total	**$42,000**	**$21,520**	**$22,166**	**$22,831**	**$23,515**	**$24,221**	
GSP Monitoring and Data Management							
Monitoring[1] (SCWA/GSAs) and Well Maintenance							
Groundwater Elevation: 21 new wells, take manual measurements 4x/yr, check SCADA equipment, conduct maintenance when necessary.	$20,000	$20,000	$20,000	$20,000	$20,000	$20,000	
Groundwater Quality: 21 new wells purged and sampled annually (one person plus equip., 7 days ~ $2,500/day) and analyses (TDS, nitrate, chloride, arsenic, hexavalent chromium, boron; ~$250/sample).	$23,000	$23,000	$23,000	$23,000	$23,000	$23,000	

Other Monitoring To Be Determined with Representative Monitoring Sites in addition to new MWs	$30,000	$30,000	$30,000	$30,000	$30,000	$30,000		
Total Monitoring and Well Maintenance	**$73,000**	**$73,000**	**$75,190**	**$77,446**	**$79,769**	**$82,162**		
Data Management[2]								
Data collection from online sources and GSAs. Includes groundwater levels, groundwater extractions, streamflow, water quality (groundwater and surface water), Geotracker, other.		$20,000	$20,000	$20,000	$20,000	$20,000		
Data Management System update with data from all sources.		$5,000	$5,000	$5,000	$5,000	$5,000		
Data analysis including graphing and upload 2x/yr. to DWR Portal	$7,000	$7,000	$7,000	$7,000	$7,000	$7,000		
Total Data Management		**$32,000**	**$32,960**	**$33,949**	**$34,967**	**$36,016**		
Total GSP Monitoring and Data Management	**$7,000**	**$105,000**	**$108,150**	**$111,395**	**$114,736**	**$118,178**		
GSP Reporting								
GSP Annual Reporting[2]								
Annual Report for 2022 includes water years 2019, 2020, 2021; initial templates and process for future Annual Report	$115,000							
For 2023 and On: Compute and summarize annual groundwater extraction estimates for all water use sectors; estimate surface water supply used or available for use (or in lieu use). Summarize total water use, change in storage and elements guide. Prepare and summarize for water year per SGMA requirements.		$40,000	$40,000	$40,000	$40,000	$40,000		
Prepare figures: map of the subbasin and GSA boundaries, groundwater elevation contours by zone (2/yr.), hydrographs for basin-wide wells, map of location and volume of extractions, map of changes in GW storage by aquifer, graph of historical GW use by water year type.		$20,000	$20,000	$20,000	$20,000	$20,000		
Executive summary and narrative describing findings and recommendations for the period.		$6,000	$6,000	$6,000	$6,000	$6,000		

Upload to Annual Report Module/Report Submittal		$3,000	$3,000	$3,000	$3,000	$3,000	
Total GSP Annual Reporting	**$115,000**	**$69,000**	**$71,070**	**$73,202**	**$75,398**	**$77,660**	
GSP Five Year Update to include:							
Basin Setting Evaluation: any changes? Evaluate new information from the last 5 years.							$30,000
Monitoring Network: evaluation of network and description of data gaps and plan for new facilities if necessary.							$40,000 - $75,000
Current Groundwater Conditions for each sustainability indicator. Includes **update of Solano Subbasin model**.[3]							$150,000 - $250,000
Evaluation of Sustainable Management Criteria: revisions proposed if necessary. Progress toward meeting sustainability goal.							$20,000 - $35,000
Implementation of Projects: evaluation of projects implemented or planned for implementation							$25,000 - $50,000
Other: Relevant Actions taken by GSAs impacting the implementation of the GSP. GSP amendments if needed.							$5,000 - $30,000
Outreach and Coordination specific to 5-year update: of GSAs, adjacent subbasins, and others.							$60,000 -$100,000
Review Process: Assume Admin Draft GSP Update Review by Collaborative; Review by GSAs; Public Review; Finalize							$50,000-$100,000
Total GSP Five Year Update[4]			**$167,500**	**$167,500**	**$167,500**	**$167,500**	**$380,000 - $670,000**
Total GSP Annual Plus 5-Year Reporting (High End 5-Year Report Dispersed Over 2023-2026)	**$115,000**		**$238,570**	**$240,702**	**$242,898**	**$245,160**	
Grant Writing	**$25,000**	**$25,000**	**$25,750**	**$26,523**	**$27,318**	**$28,138**	
SGMA: to address comments from DWR on the GSP		**$15,000**	**$15,000**				
Contingency (10%)	**$18,900**	**$15,152**	**$39,464**	**$40,145**	**$40,847**	**$41,570**	

TOTAL Estimated GSP Expenses	**$280,900**	**$254,672**	**$524,289**	**$519,040**	**$529,084**	**$539,429**	

1. Assumes that each GSA/agency that currently conducts groundwater monitoring will continue to monitor its own wells for groundwater levels (and quality) using its own resources. Only groundwater levels and quality from the 21 new monitoring wells (10 TSS at 5 sites on Putah Creek; 10 potential other MWs as part of Prop 68 grant; 1 Other MW as part of Prop 68 Recharge Feasibility), that would not otherwise be conducted by the individual member agencies, is assumed to be covered by the Collaborative.

2. Assumes the first SGMA Annual Report (due April 1, 2022) covers WYs 2019 to 2021. This Report is included in the SCWA Fiscal Year Budget for 2021-2022. Includes Data Maangement in Fiscal Year 2021/2022.

3. The modeling amount covers a one-time effort after about 3 years (to allow time for modeling and use of model) to extend/update the future scenarios, update surface water deliveries, pumping, precipitation and ET data; recalibration if necessary. Estimated modeling amount is an expanded effort totaling up to about $250,000

4. Consevatively assumes high end of range

5. Includes 3% potential cost increase for 2023-2026.

6. Blue highlighting on this column is to identify estimated costs on Annual basis not including the allocation for the 5-Year GSP Update.

Implementing GSP: Projects and Management Actions (planned projects only)
1 TBD
2 TBD
3 TBD

Other potential costs (not necessarily needed in Solano Subbasin)

OPERATING EXPENSES							
Legal Services							
Insurance							
General							
Postage							
General Liability Insurance							
Website Development/Maintenance							
Financial Services/Banking/Bookkeeping							
Prop. 218 on Tax Rolls							
Contingency Fund							
Total Miscellaneous Expenses		$0	$0	$0	$0	$0	

TOTAL		

Notes:

Assumes there is a GSA lead agency during initial post-GSP year implementation period.

Assumes Collaborative would meet at least quarterly with some GSP Coordination.

Assumes GSP reporting would be handled as an ongoing GSP implementation cost with consultant support.

Assumes Five Year GSP Update would be funded over four budget years.

Assumes ongoing grant funding application preparation and submittal to secure available State and Federal grant funds for GSP implementation.

Solano Subbasin GSP Schedule

Updated Draft July 1, 2021

GSP Section/Event	NOTES	MEETING TOPICS: 2021	2020												2021												2022
			1st Qtr			2nd Qtr			3rd Qtr			4th Qtr			1st Qtr			2nd Qtr			3rd Qtr			4th Qtr			Jan.
Executive Summary	SUMMER 2021																						X				
Draft Section 1 **INTRODUCTION** GSA structure/authorities, Beneficial uses and users,	SPRING 2020				X																						
Draft Section 2 **PLAN AREA** Land/Water Mgmt., Monitoring and Management, Decision-Making	Sect 2; TM-HCM/GW; Water Supply Scenarios; Intro Proj & MAs												X														
Draft Section 3 **BASIN SETTING** Geologic setting, Hydrogeologic Conceptual Model, SW/GW, Potential Recharge Areas; Monitoring Network and Program	NOVEMBER, DECEMBER 2020, JANUARY 2021: Sect 3; Water Supply Scenarios; FEBRUARY/MARCH 2021: Projects & Mgmt Actions	**MARCH/APRIL:** Brief discussion of draft TM **JUNE:** SW/GW Draft TM for public review																	X			X						
TM: Hydrogeologic Conceptual Model and Groundwater Condtions	Draft TM-HCM/GW																		X								
Draft Section 4 **HISTORICAL, CURRENT AND PROJECTED WATER SUPPLIES** Land Use/Population Trends; Historical, Current and Projected Water Supplies/Use; Total Water Use	JANUARY/FEBRUARY 2021: Draft Section 4 (builds off of TM SWS plus input from GSAs on Water Demand and Supply Projections; MARCH 2021: Summary Projected Land Use	**MARCH/APRIL/MAY**: Projected Land Use; PMAs discuss Collaborative Input																	X									
TM: Preliminary SWS Water Budget	SPRING 2020						X																				
Draft Section 5 **WATER BUDGET** Water Budget, Hydrologic Model, Sustainable Yield	SPRING 2021: Prepare following Model TM	**MAY**: Discuss draft Water Budget results																					X				
TM: Groundwater Model Development, Calibration and Scenarios	SPRING 2021: Prepare while completing model development and calibration; complete when model scenarios for Projects and MAs are run	**MAY/JUNE**: Discuss draft Future Scenarios **JULY:** PMAs integrate in model Scenarios																					X				
Draft Section 6 **Sustainable Management Criteria** Sustainable Management Criteria Sustainability Goal, Sustainability Indicators, Undesirable Results, Minimum Thresholds, Measurable Objectives	Preliminary discussion of SMC concepts (FEBRUARY/MARCH 2021; Need to complete modeling to inform setting of criteria (SMC); May 2021 Draft Section 6	**MAY/JUNE**: Discuss Sustainable Management Criteria and esp. UR definitions; **JULY:** Discuss SMC Min. Thresholds and Measurable Objectives																						X				
Draft Section 7 **MONITORING DATA MANAGEMENT AND REPORTING** Data Management, Reporting, Mapping, Modeling Standards	SPRING 2021	**JUNE:** Discuss Data Management and Annual Reporting																										
Draft Section 8 **SUSTAINABLE GROUNDWATER MANAGEMENT: PROJECTS AND MANAGEMENT ACTIONS** GSA Goals, Policies, Ordinances, Education, Projects and Management Actions	Fall 2020 through April 2021 discuss Projects and MAs of interest; further discussion following modeling scenarios and complete prelim. feasibility analysis	**MARCH**: Projected Land Use; PMAs discuss Collaborative Input from Feb. 2021 request; **APRIL/MAY**: Discuss highest ranked PMAs related to Modeling Scenarios and additional info needs; **JULY/AUGUST:** Discuss Policies related to Management Actions																						X				
Draft Section 9 **PLAN IMPLEMENTATION** Summary, Recommendations, Annual Reports, Periodic Evaluation	SUMMER 2021: Builds off of discussions related to Projects and MAs, modeling results, and Policy discussions by GSAs	**JUNE/JULY/AUGUST:** Discuss draft Plan Implementation Costs																						X				
Draft Section 10 **REFERENCES**	SUMMER 2021																							X				
Complete Draft GSP for GSAs' Review	LATE SUMMER 2021																										
Complete Draft GSP for Public Comment	FALL 2021																										
Release of Final GSP for Public Comment	FALL 2021																										
GSAs' Consideration/Adoption of the Final GSP	FALL 2021																										
Submittal of GSP DWR SGMA Portal	JANUARY 2022: Submit to DWR																										

ACTION OF
SOLANO GROUNDWATER SUSTAINABILITY AGENCY

DATE: **July 8, 2021**

SUBJECT: **Solano Groundwater Sustainability Agency Fiscal Year 2021-2022 Budget**

RECOMMENDATION:

Hear Staff report and consider adoption of the Agency's fiscal year 2021-2022 budget.

FINANCIAL IMPACT:

Not applicable.

BACKGROUND:

The proposed Fiscal Year 2021-2022 budget includes funding to complete the Groundwater Sustainability Plan (GSP), develop fees for GSP implementation (Prop 218 process/rate study); membership to ACWA and insurance through the ACWA-JPIA for the Agency. The Agency does not pay any employee salaries, rent for office space, or costs for office equipment. The bulk of expenses are for work performed by Luhdorff & Scalmanini towards development of the GSP. Total expenses for FY 2021-2022 are estimated to be $863,164.51.

The bulk of revenues are from the 2017 Proposition 1 Sustainable Groundwater Planning Grant and the 2018 Proposition 68 Sustainable Groundwater Planning Grant. Payments are made in arrears for work done on the GSP (there is a 10% holdback until the end of the grant cycle in 2022). Additional revenues are from 2017 Agency membership dues and contributions from Solano County Water Agency (SCWA) towards groundwater investigations. Estimated reserves for the start of Fiscal Year 2022-2023 will be $9,475.72. This amount assumes DWR does not allocate the additional $305,000 awarded for the Proposition 68 grant.

The 2018 Proposition 68 grant awarded $705,000 to the Agency, however only $400,000 was allocated. There is the possibility that the additional $305,000 will be allocated this fiscal year, but there are no guarantees that will happen or when.

Recommended: *Roland Sanford*
Roland Sanford, Secretary

☐	Approved as recommended	☐	Other (see below)	☒	Continued on next page

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Modification to Recommendation and/or other actions:

I, Roland Sanford, Secretary to the Solano Groundwater Sustainability Agency, do hereby certify that the foregoing action was regularly introduced, passed, and adopted by said Board of Directors at a regular meeting thereof held on July 8, 2021 by the following vote:

Ayes:

Noes:

Abstain:

Absent:

Roland Sanford
Secretary to the
Solano Groundwater Sustainability Agency

An audit of the Agency's financial records will be included as a separate line item of the SCWA annual audit (amount of work required is trivial and will be absorbed by SCWA).

SOLANO GSA
Operating Budget
July 1, 2021-June 30, 2022

		Annual Budget
Expenses		
Admin Expenses		
6090AC	MEMBERSHIPS	203.00
6350AC	INSURANCE	2,500.00
6440AC	Prop 218/Rate Study	50,000.00
	Subtotal Admin Expenses	**52,703.00**
Other Services		
6611AC	GROUND WATER MANAGEMENT PLAN DEVELOPMENT	
	Q3 2021	202,000.00
	Q4 2021	206,000.00
	Q1 2022	205,000.00
	Q2 2022	197,461.51
	Total Expenses	**863,164.51**
Revenues		
4900AC	RESERVES*	661,353.45
4978AC	Prop 1/68 Grants	
	Q3 2021	63,118.38
	Q4 2021	53,118.37
	Q1 2022	50,808.37
	Q2 2022	44,241.66
	Total Revenues	**872,640.23**
	Net	**$ 9,475.72**

*** Includes SCWA and Member contributions**

ACTION OF
SOLANO SUBBASIN GROUNDWATER SUSTAINABILITY AGENCY

DATE: **July 8, 2021**

SUBJECT: **Solano Groundwater Sustainability Plan Update**

RECOMMENDATION:

Hear presentation and provide direction to staff.

FINANCIAL IMPACT:

None.

BACKGROUND:

Luhdorff & Scalmanini Consulting Engineers (LSCE) will provide an update on progress of the Solano Groundwater Sustainability Plan (GSP) to the Board. Topics to be covered during the presentation (attached):

- Integrated Hydrologic Model-Local Solano Subbasin Model Preliminary Results
- Preliminary Water Budget
- Next Steps and Schedule

After the presentation, staff will ask for input from the Board on continued direction of the development of the GSP.

Recommended: *Roland Sanford*
Roland Sanford, Secretary

☐ Approved as recommended ☐ Other (see below) ☐ Continued on next page

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Modification to Recommendation and/or other actions:

I, Roland Sanford, Secretary to the Solano Groundwater Sustainability Agency, do hereby certify that the foregoing action was regularly introduced, passed, and adopted by said Board of Directors at a regular meeting thereof held on July 8, 2021 by the following vote:

Ayes:

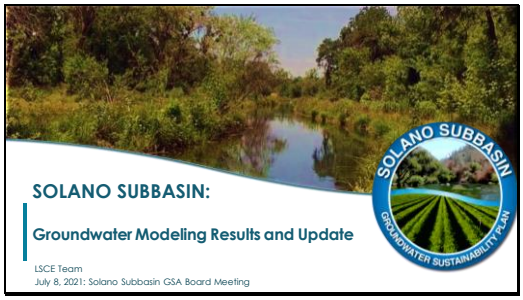
Noes:

Abstain:

Absent:

Roland Sanford,
Secretary to the
Solano Groundwater Sustainability Agency

Slide 1



SOLANO SUBBASIN:

Groundwater Modeling Results and Update

LSCE Team
July 8, 2021: Solano Subbasin GSA Board Meeting

Slide 2

Presentation Outline

- Background on Numerical Modeling for GSPs
- Solano Integrated Hydrologic Model (IHM) Development
- Solano IHM Results
  - Historical (1991-2018)
  - Projected (2022-2072)
    - Current Land Use Conditions
    - Future Land Use Conditions
    - Climate Change Conditions (2030 and 2070)
- Next Steps

2

Slide 3

Use of Groundwater Modeling for GSPs

GSP Regulations:

- Analyses must employ methods sufficient to evaluate historic/ projected future water budgets and undesirable results
- Must rely on "best available information and best available science"
- Must use numerical model or "equally effective tool"

Numerical model is tool for analyzing many complex and interrelated factors and processes

Sustainability ultimately judged on Sustainable Management Criteria

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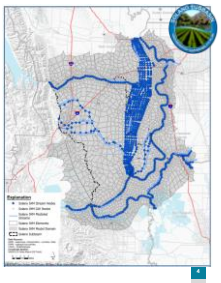
Slide 4

Solano Integrated Hydrologic Model (Solano IHM)

- Adapted from SVSim regional model and refined in Solano Subbasin
- Implementation of Preliminary SWS Water Budget prepared by DE
  - Convert daily to monthly
  - Data by GSA to elements
- Like all models, **simplification of reality**

Model Area	530,874 acres
# Nodes	4,085
# Elements	4,230
Element Size	
Avg.	196 acres
Min.	1 acre
Max.	2,189 acres
# Stream Nodes	2,465
# Model Layers	9

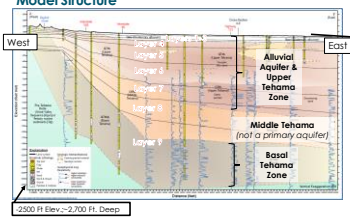
- Historical model runs from WY 1985-2019; calibrated WY 1991-2018



Slide 5

Solano IHM: Model Structure

Nine Model Layers in Relation to Geology; layering not changed from SVSim



Average Model Layer Thickness (feet)	
Layer 1	36
Layer 2	35
Layer 3	40
Layer 4	103
Layer 5	229
Layer 6	343
Layer 7	229
Layer 8	343
Layer 9	914

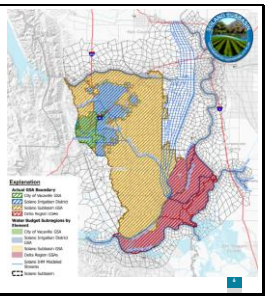
Slide 6

Solano IHM: Model Structure

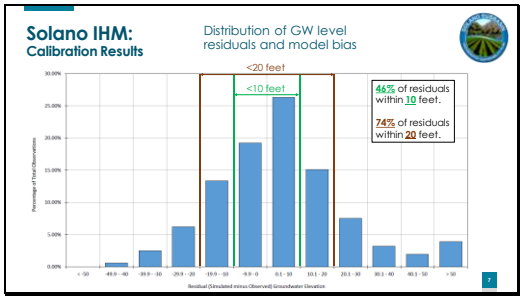
Approximation of GSA boundaries limited by element configuration

GSA	Actual Acres	Modeled Acres
City of Vacaville GSA	14,712	14,497
Solano Irrigation District	43,339	44,404
Solano Subbasin GSA	212,714	211,267
Delta Region GSAs	83,560	83,769
Entire Subbasin	354,673	354,624

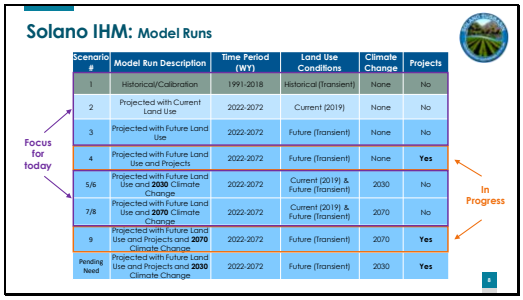
GSA areas defined in model do not change in scenarios
(i.e., they do not change with urban expansion)



Slide 7



Slide 8



Scenario #	Model Run Description	Time Period (WY)	Land Use Conditions	Climate Change	Projects
1	Historical/Calibration	1991-2018	Historical (Transient)	None	No
2	Projected with Current Land Use	2022-2072	Current (2019)	None	No
3	Projected with Future Land Use	2022-2072	Future (Transient)	None	No
4	Projected with Future Land Use and Projects	2022-2072	Future (Transient)	None	**Yes**
5/6	Projected with Future Land Use and **2030** Climate Change	2022-2072	Current (2019) & Future (Transient)	2030	No
7/8	Projected with Future Land Use and **2070** Climate Change	2022-2072	Current (2019) & Future (Transient)	2070	No
9	Projected with Future Land Use and Projects and **2070** Climate Change	2022-2072	Future (Transient)	2070	**Yes**
Pending Need	Projected with Future Land Use and Projects and **2030** Climate Change	2022-2072	Future (Transient)	2030	**Yes**

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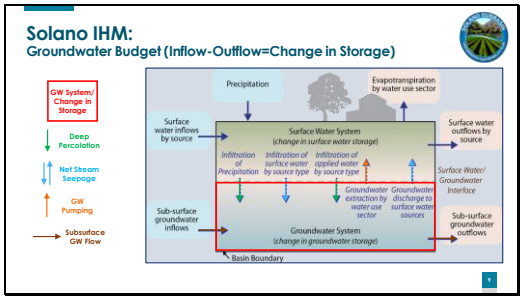

Slide 10

Solano IHM:
Historical (1991-2018)

Subbasin Water Budget

DRAFT RESULTS

	Solano Subbasin
	Historical Period, 1991-2018
	Average Annual Water Budget (AF/yr)
Total Stream Seepage	13,162
In-Channel Seepage	*-4,179*
Conveyance Losses	*17,341*
Deep Percolation	205,353
Small Watershed Contribution	1,797
Groundwater Pumping	-181,316
Total Subsurface Inflow	-36,129
Flow from (+)/to (-) Yolo Subbasin - North	*22,705*
Flow from (+)/to (-) Yolo Subbasin - East	*-21,297*
Flow from (+)/to (-) Suisun-Fairfield Valley Subbasin	*-176*
Flow from (+)/to (-) South American Subbasin	*-11,114*
Flow from (+)/to (-) Eastern San Joaquin Subbasin	*-23,728*
Flow from (+)/to (-) East Contra Costa Subbasin	*-4,860*
Flow from (+)/to (-) outside subbasins	*2,340*
Average Annual Change in Storage	2,866

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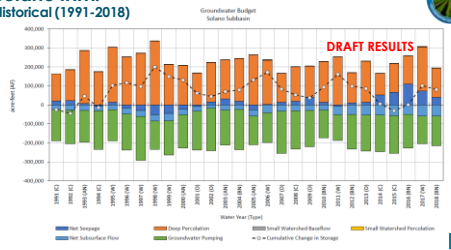
Solano IHM:
Historical (1991-2018)



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Solano IHM:
Historical (1991-2018)

DRAFT RESULTS

GSA Water Budgets

	Average Annual Water Budget (AF/yr)			
	City of Vacaville GSA	Solano Subbasin GSA	Solano Irrigation District GSA	Delta Region GSAs
Total Stream Seepage	812	12,522	1,694	-4,954
In-Channel Seepage	*-317*	*2,550*	*-3,554*	*-4,954*
Conveyance Losses	*1,128*	*9,971*	*6,248*	*0*
Deep Percolation	15,658	93,040	34,018	62,535
Small Watershed Contribution	257	1,386	69	63
Groundwater Pumping	-9,578	-161,204	-6,939	-2,644
Total Subsurface Inflow	-7,123	56,155	-30,163	-53,746
Flow from (+)/to (-) City of Vacaville GSA	-	*1,216*	*7,016*	-
Flow from (+)/to (-) Solano Subbasin GSA	*-1,216*	-	*-35,036*	*-16,273*
Flow from (+)/to (-) Solano Irrigation District GSA	*-7,016*	*35,036*	-	-
Flow from (+)/to (-) Delta Region GSAs	-	*16,273*	-	-
Flow from (+)/to (-) outside Solano Subbasin	*1,109*	*3,629*	*-2,142*	*-37,473*
Average Annual Change in Storage	26	1,899	-322	1,255

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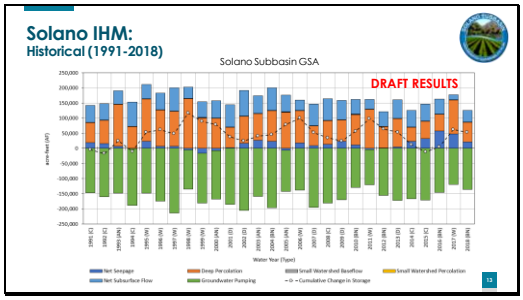
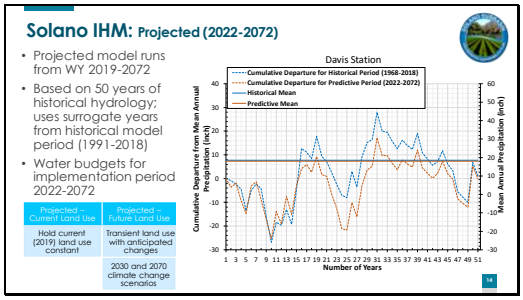
Slide 13



Slide 14



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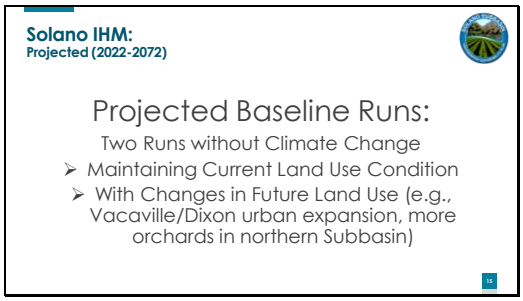

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Solano IHM:
Land Use Comparisons

Increases in perennial crops

Decrease in irrig. ag

Increase in urban

Land Use	Solano Subbasin Area (acres) 1991	2018	5 Years (2027)	10 Years (2032)	50 Years (2072)
Alfalfa	16,556	31,712	29,953	29,457	29,444
Almonds	1,272	15,695	23,725	25,791	26,199
Corn	39,504	18,752	18,393	17,906	17,633
Misc. Orchard	6,917	6,794	9,263	9,554	9,226
Pasture	16,350	28,921	28,177	28,174	28,113
Sunflowers and Misc. Field/Truck	32,009	23,590	19,966	19,062	18,944
Tomatoes	20,270	9,396	8,400	7,435	6,994
Vineyard	739	6,156	8,385	8,414	8,401
Walnuts	4,357	11,429	11,698	12,087	12,460
Wheat and Misc. Grain and Hay	56,802	35,364	28,411	26,567	25,329
Subtotal: Irrigated Land	**194,776**	**187,807**	**186,371**	**184,448**	**182,742**
Idle	41,564	19,977	15,182	14,075	13,956
Subtotal: Agricultural Land	**236,341**	**207,784**	**201,552**	**198,523**	**196,699**
Urban	17,751	32,620	36,191	38,242	40,252
Native, Riparian, Water	100,181	113,894	116,087	117,065	116,879
Total	**354,272**	**354,298**	**353,830**	**353,830**	**353,830**

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Solano IHM:
Projected – Baseline Runs (2022-2072)

DRAFT RESULTS

Subbasin Water Budgets

Average Annual Water Budget (AF/yr)
Solano Subbasin

	Historical Period, 1991-2018	Projected Current Land Use, 2022-2072	Projected Future Land Use, 2022-2072
Total Stream Seepage	13,162	26,335	30,482
In-Channel Seepage	*4,179*	*8,741*	*12,888*
Conveyance Losses	*17,341*	*17,594*	*17,594*
Deep Percolation	205,353	214,627	207,220
Small Watershed Contribution	1,797	1,780	1,780
Groundwater Pumping	-181,316	-166,182	-168,556
Total Subsurface Inflow	-36,129	-75,201	-69,939
Flow from (+)/to (-) Yolo Subbasin - North	*22,709*	*18,377*	*22,660*
Flow from (+)/to (-) Yolo Subbasin - East	*-21,297*	*-24,262*	*-22,478*
Flow from (+)/to (-) Suisun-Fairfield Valley Subbasin	*-176*	*-1,035*	*-1,061*
Flow from (+)/to (-) South American Subbasin	*-11,114*	*-18,906*	*-18,970*
Flow from (+)/to (-) Eastern San Joaquin Subbasin	*-23,728*	*-36,391*	*-36,613*
Flow from (+)/to (-) East Contra Costa Subbasin	*-4,860*	*-14,922*	*-15,385*
Flow from (+)/to (-) outside subbasins	*2,340*	*1,939*	*1,907*
Average Annual Change in Storage	2,866	1,359	987

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Solano IHM:
Projected – Baseline Runs (2022-2072)

DRAFT RESULTS

Solano Subbasin GSA Water Budgets

Average Annual Water Budget (AF/yr)

	Historical Period, 1991-2018	Projected Current Land Use, 2022-2072	Projected Future Land Use, 2022-2072
Total Stream Seepage	12,522	11,297	14,002
In-Channel Seepage	*2,550*	*1,127*	*3,833*
Conveyance Losses	*9,971*	*10,169*	*10,169*
Deep Percolation	93,040	92,507	91,199
Small Watershed Contribution	1,386	1,378	1,378
Groundwater Pumping	-161,204	-142,449	-138,094
Total Subsurface Inflow	56,155	37,931	32,000
Flow from (+)/to (-) City of Vacaville GSA	*1,216*	*1,704*	*1,573*
Flow from (+)/to (-) Solano Subbasin GSA	-	-	-
Flow from (+)/to (-) Solano Irrigation District GSA	*35,036*	*34,965*	*24,218*
Flow from (+)/to (-) Delta Region GSAs	*16,273*	*5,523*	*4,741*
Flow from (+)/to (-) outside Solano Subbasin	*3,629*	*-4,262*	*1,467*
Average Annual Change in Storage	1,899	665	484

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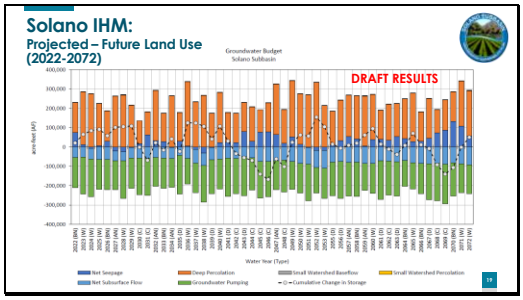
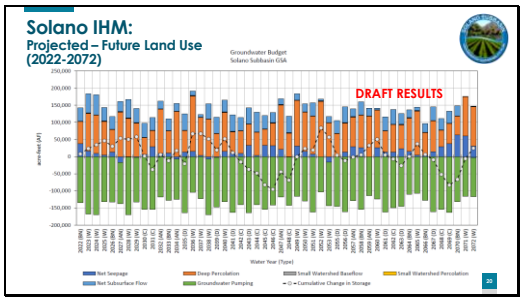
Slide 19



Slide 20



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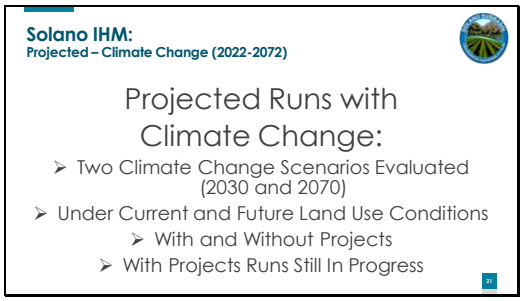
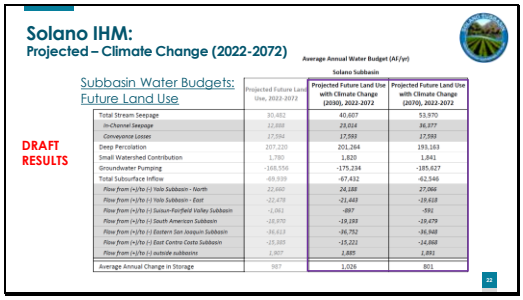


Slide 22



Solano IHM:
Projected – Climate Change (2022-2072)

Subbasin Water Budgets: Future Land Use

DRAFT RESULTS

Average Annual Water Budget (AF/yr)

Solano Subbasin

	Projected Future Land Use, 2022-2072	Projected Future Land Use with Climate Change (2030), 2022-2072	Projected Future Land Use with Climate Change (2070), 2022-2072
Total Stream Seepage	30,482	40,607	53,970
In-Channel Seepage	*12,888*	*23,014*	*36,377*
Conveyance Losses	*17,594*	*17,593*	*17,593*
Deep Percolation	207,220	201,264	193,163
Small Watershed Contribution	1,780	1,820	1,841
Groundwater Pumping	-168,556	-175,234	-185,627
Total Subsurface Inflow	-69,939	-67,432	-62,546
Flow from (+)/to (-) Yolo Subbasin - North	*22,660*	*24,188*	*27,066*
Flow from (+)/to (-) Yolo Subbasin - East	*-22,478*	*-21,443*	*-19,618*
Flow from (+)/to (-) Suisun-Fairfield Valley Subbasin	*-1,061*	*-897*	*-591*
Flow from (+)/to (-) South American Subbasin	*-18,970*	*-19,193*	*-19,479*
Flow from (+)/to (-) Eastern San Joaquin Subbasin	*-36,613*	*-36,752*	*-36,948*
Flow from (+)/to (-) East Contra Costa Subbasin	*-15,305*	*-15,221*	*-14,868*
Flow from (+)/to (-) outside subbasins	*1,907*	*1,885*	*1,891*
Average Annual Change in Storage	987	1,026	801

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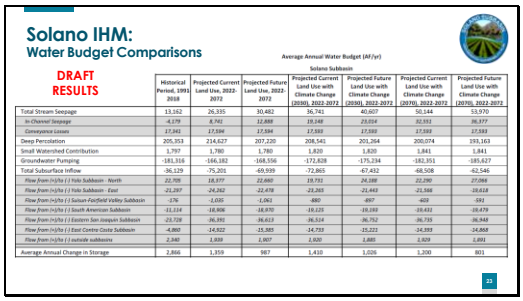

Solano IHM:
Water Budget Comparisons

DRAFT RESULTS

Average Annual Water Budget (AF/yr)

Solano Subbasin

	Historical Period, 1991-2018	Projected Current Land Use, 2022-2072	Projected Future Land Use, 2022-2072	Projected Current Land Use with Climate Change (2030), 2022-2072	Projected Future Land Use with Climate Change (2030), 2022-2072	Projected Current Land Use with Climate Change (2070), 2022-2072	Projected Future Land Use with Climate Change (2070), 2022-2072
Total Stream Seepage	13,162	26,335	30,482	36,741	40,607	50,144	53,970
In-Channel Seepage	*-4,179*	*8,741*	*12,888*	*19,148*	*23,014*	*32,551*	*36,377*
Conveyance Losses	*17,341*	*17,594*	*17,594*	*17,593*	*17,593*	*17,593*	*17,593*
Deep Percolation	205,353	214,627	207,220	208,541	201,264	200,074	193,163
Small Watershed Contribution	1,797	1,780	1,780	1,820	1,820	1,841	1,841
Groundwater Pumping	-181,316	-166,182	-168,556	-172,828	-175,234	-182,351	-185,627
Total Subsurface Inflow	-36,129	-75,201	-69,939	-72,865	-67,432	-68,508	-62,546
Flow from (+)/to (-) Yolo Subbasin - North	*22,709*	*18,377*	*22,660*	*19,731*	*24,188*	*22,290*	*27,066*
Flow from (+)/to (-) Yolo Subbasin - East	*-21,287*	*-24,262*	*-22,478*	*-23,265*	*-21,443*	*-21,566*	*-19,618*
Flow from (+)/to (-) Suisun-Fairfield Valley Subbasin	*-176*	*-1,035*	*-1,061*	*-880*	*-897*	*-603*	*-591*
Flow from (+)/to (-) South American Subbasin	*-11,114*	*-18,906*	*-18,970*	*-19,125*	*-19,193*	*-19,431*	*-19,479*
Flow from (+)/to (-) Eastern San Joaquin Subbasin	*-23,728*	*-36,391*	*-36,613*	*-36,514*	*-36,752*	*-36,735*	*-36,948*
Flow from (+)/to (-) East Contra Costa Subbasin	*-4,860*	*-14,922*	*-15,305*	*-14,755*	*-15,221*	*-14,595*	*-14,868*
Flow from (+)/to (-) outside subbasins	*2,340*	*1,838*	*1,907*	*1,920*	*1,885*	*1,819*	*1,891*
Average Annual Change in Storage	2,866	1,359	987	1,410	1,026	1,200	801

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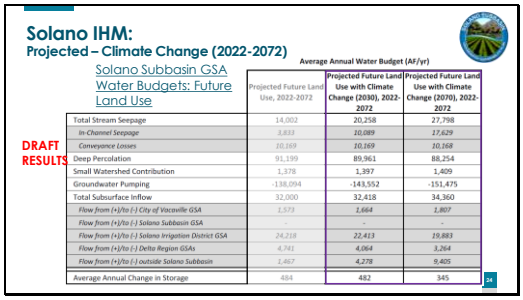
Slide 24



Solano IHM:
Projected – Climate Change (2022-2072)

Solano Subbasin GSA Water Budgets: Future Land Use

DRAFT RESULTS

Average Annual Water Budget (AF/yr)

	Projected Future Land Use, 2022-2072	Projected Future Land Use with Climate Change (2030), 2022-2072	Projected Future Land Use with Climate Change (2070), 2022-2072
Total Stream Seepage	14,002	20,258	27,798
In-Channel Seepage	*3,833*	*10,089*	*17,629*
Conveyance Losses	*10,169*	*10,169*	*10,168*
Deep Percolation	91,199	89,961	88,254
Small Watershed Contribution	1,378	1,397	1,409
Groundwater Pumping	-138,094	-143,552	-151,475
Total Subsurface Inflow	32,000	32,418	34,360
Flow from (+)/to (-) City of Vacaville GSA	*1,573*	*1,664*	*1,807*
Flow from (+)/to (-) Solano Subbasin GSA	*-*	*-*	*-*
Flow from (+)/to (-) Solano Irrigation District GSA	*24,218*	*22,413*	*19,883*
Flow from (+)/to (-) Delta Region GSAs	*4,741*	*4,064*	*3,264*
Flow from (+)/to (-) outside Solano Subbasin	*1,467*	*4,278*	*9,405*
Average Annual Change in Storage	484	482	345

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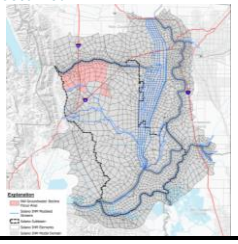
Solano IHM:
NW GWL Decline Focus Area



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Solano IHM:
NW GWL Decline Focus Area

DRAFT RESULTS

Average Annual Water Budget (AF/yr)

NW Focus Area

	Historical Period, 1991-2018	Projected Current Land Use, 2022-2072	Projected Future Land Use, 2022-2072	Projected Future Land Use with Climate Change (2030), 2022-2072	Projected Future Land Use with Climate Change (2070), 2022-2072
Total Stream Seepage	23,545	24,417	25,238	26,367	27,056
In-Channel Seepage	*19,176*	*20,027*	*20,848*	*21,977*	*22,666*
Conveyance Losses	*4,369*	*4,390*	*4,390*	*4,390*	*4,390*
Deep Percolation	21,076	20,898	17,753	17,423	17,020
Small Watershed Contribution	1,349	1,342	1,342	1,358	1,367
Groundwater Pumping	-38,386	-39,053	-40,833	-42,569	-45,086
Total Subsurface Inflow	-7,875	-6,954	-3,077	-2,089	23
Average Annual Change in Storage	-223	-156	-266	-261	-331

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Solano IHM: Next Steps

- Projected Scenarios with Projects (in NW area)
- Use of Model to Evaluate SMCs (e.g., stream depletion)
- Finalize Water Budget Results
- Model Documentation Preparation

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