

White Wolf Subbasin Groundwater Sustainability Agency Regular Board Meeting of the Board of Directors

**Agenda
September 1, 2020 at 1:00 p.m.**

Online-only due to COVID-19 Shelter-In-Place restrictions

<https://zoom.us/j/98403249226?pwd=MTRyWEdHbXVJb3I4NlFic09DakRpQT09>

or call in (408) 638-0968

Meeting ID: 984 0324 9226

Password: 951323

- 1. Call to order**
- 2. Recognition of Guests**
- 3. Approval of Minutes of the Regular Board Meeting of March 3, 2020**
- 4. Report by Board Secretary (Angelica)**
 - a. Financial Accounting
- 5. Updates on Actions Discussed or Authorized on March 3, 2020 (EKI)**
 - a. Proposition 68 SGM Grant Update
 - b. Model Discussion and Proposal
 - c. Management Areas Discussion
 - d. Proposed SGMA Monitoring Network
- 6. Discuss and Consider Approval of EKI's Task Order #5 for the Basin-Specific Model Development Task of the Proposition 68 Funded Work Plan**
- 7. Discuss and Consider Approval of EKI's Task Order #6 for As Needed Technical Support Related to the Sustainable Groundwater Management Act (SGMA) Compliance**
- 8. Schedule Stakeholder Workshop and provide direction on workshop format**
- 9. Public Comment**

At this time, the public may address the Board on any item not appearing on the agenda that is within the subject matter jurisdiction of the Board. Comments will be limited to three minutes.
- 10. Consider and provide direction on future agenda items**
- 11. Adjourn**

In compliance with the Americans with Disabilities Act, if you need disability-related modifications or accommodations, including auxiliary aids or services, please call Angelica Martin (661) 663-4262.

White Wolf Subbasin Groundwater Sustainability Agency
Wheeler Ridge-Maricopa Water Storage District Headquarters
12109 Highway 166, Mettler, CA 93313
MINUTES OF THE REGULAR BOARD OF DIRECTORS MEETING

Date of Meeting: Tuesday, March 3, 2020

Place of Meeting: Conference Room, Wheeler Ridge-Maricopa Water Storage District, 12109 Highway 166, Mettler, CA 93313

Meeting Commenced at 1:02 p.m.

DIRECTORS PRESENT: Allen Lyda, George Cappello, Jon Reiter (via phone), Tito Martinez, Jeff Giumarra.

ALTERNATES: Sheridan Nicholas

DIRECTORS ABSENT: Jeff Mettler

PUBLIC AND STAFF: See attendee list attached. Legal Counsel, Alan Doud was present. Christina Lucero, and Anona Dutton from EKI, and Matthew Owens from DWR, as well as Jeevan from AEWS, were on the phone.

Meeting started with recognition of guests.

On motion by Director Capello, seconded by Director Giumarra, the draft minutes of the Regular Board meeting of October 1, 2019 were approved unanimously.

Board Secretary, Angelica Martin, provided a brief explanation on the financials for the 3rd and 4th quarter. No questions were asked.

Anona Dutton began her presentation with an update on Proposition 68 Grant. She explained the Department of Water Resources (DWR) released a draft funding list in January. The White Wolf Subbasin (WWB) was recommended for full funding with no extra conditions, which equates to \$513,000 of grant fund and \$171,000 of cost share. Final approval is expected to be released mid-March. She also explained that the effort in management and monitoring of Groundwater Dependent Ecosystems (GDEs) was originally not in anyone's scope of work. It has become an important element of SGMA. The initial task is to identify if there are GDEs and that needs to be done through further studies. Director Reiter asked if the costs for this task could be funded under the Prop 68 grant; Mrs. Dutton confirmed that to be correct and it had been mentioned in the grant application. She continued to explain the prioritization of the tasks related to sustainability planning as well as coordination between tasks 3 and 2. She explained the importance of establishing potential management areas as well as a preliminary monitoring network. Director Cappello asked if we could use existing monitoring wells or not. Anona answered that specifications have been established by DWR but many of the already existing wells meet those specs.

Mrs. Dutton talked about identifying the management areas. There are three options; 1. single area, 2. jurisdictional boundaries, and 3. land use categories. After discussion, the Board agreed that they would like the Technical Ad Hoc Committee to look further into option 3 and present more information at the next Board meeting.

Christina Lucero from EKI provided an update on project schedule and budget. She explained how we had reached cost share for two budget categories in our Proposition 1 Grant. And talked briefly about the reimbursement process for Proposition 68 Grant.

Anona explained the importance of approving the Proposition 68 scope of work tasks since they were related to the management and monitoring of Groundwater Dependent Ecosystems (GDEs). It was important to initiate the process of identifying GDEs and areas to drill monitoring wells. After a brief discussion, on motion by Director Lyda, seconded by Director Giumarra, the Board of Directors approved that EKI initiate the tasks related to Proposition 68 Scope of Work, pending that DWR did confirm the full funding of the grant with no conditions.

Ms. Martin went over the Correspondence list. She explained the continued efforts to obtain the White Wolf C5VSimFG-Kern Model Files. A couple of more emails had been sent to no avail. The Board agreed that if no response was received by the end of March, a formal letter requesting the files and signed by the Board President, Tito Martinez, would be sent out.

There was one public comment. Matt Owens, from the Department of Water Resources, talked about a technical support program offered by the State. He explained that it provides support for things like camera surveys of monitoring wells, and installation of monitoring wells. He offered to email the information to Angelica and Anona for their review.

President Martinez adjourned the meeting at 2:40 p.m.

Angelica Martin, Secretary, White Wolf Subbasin GSA

Approved by: White Wolf Subbasin GSA Board of Directors

Dated: September 1, 2020

WHITE WOLF GSA REGULAR BOARD MEETING

Tuesday, March 3, 2020

SIGN-IN SHEET

	NAME	REPRESENTING	EMAIL ADDRESS
1	MICAH CLARK	ATWOOD	mclark@atwood.org
2	BOB OSGOOD	Southouse Prop.	
3	CHRISTINA LUCERO	EKI	
4	Ryan Fashin/Trey T	Tigon Ranch	
5	Robbin Hamilton	Wonderful Citrus	
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White Wolf Groundwater Sustainability Agency

Arvin-Edison Water Storage District
 Tejon-Castac Water District
 Wheeler Ridge-Maricopa Water Storage District
 Kern County

AGENDA MEMORANDUM

Date: 26 August 2020

To: Board of Directors, White Wolf Groundwater Sustainability Agency (GSA)

From: Angelica Martin, Secretary, White Wolf GSA

Item: 4a. Financial Accounting

SUMMARY

Amount Owed to TCWD for Costs Incurred Through 2nd Quarter 2020

Cost Category	AEWSD	WRMWSD
Grant Cost Share	\$16,165	\$16,165
Not Grant Reimbursable	\$404	\$404
Total	\$16,569	\$16,569

DISCUSSION

Tejon-Castac Water District (TCWD) entered into an amended Grant Agreement with the California Department of Water Resources (DWR), requiring separate financial accounting between the Proposition 1 funds, which require a 50% local cost share, and the Proposition 68 funds, which require a 25% local cost share.

The above table summarizes payments due to TCWD from Arvin Edison Water Storage District (AEWSD) and Wheeler Ridge-Maricopa Water Storage District (WRMWSD) for Proposition 1 and Proposition 68 tasks for First and Second Quarter 2020.

As a reminder, Table 1 presents a full reconciliation of all costs through the Second Quarter 2020, which are split equally between the three districts.

Attached: Table 1. Updated Accounting of GSP Development Efforts in the White Wolf Basin through 2020 Quarter 2

Table 1
Updated Accounting of GSP Development Efforts in the White Wolf Basin through 2020 Quarter 2 ⁽¹⁾
 Tejon-Castac Water District

Reconciliation Period	Technical Consultant Cost		Grant Cost Share Amount ⁽²⁾						Grant Reimbursable Amount		Not Grant Reimbursable Amount ⁽³⁾					
			TCWD ⁽⁴⁾		AEWSD		WRMWS		DWR		TCWD		AEWSD		WRMWS	
	Prop 1	Prop 68	Prop 1	Prop 68	Prop 1	Prop 68	Prop 1	Prop 68	Prop 1	Prop 68	Prop 1	Prop 68	Prop 1	Prop 68	Prop 1	Prop 68
1 January 2015 to 30 June 2017	\$156,790	--	\$53,474	--	\$48,710	--	\$49,014	--	\$0	--	\$5,016	--	\$576	--	\$0	--
1 July 2017 to 20 April 2018	\$118,979	--	\$25,149	--	\$6,402	--	\$53,350	--	\$0	--	\$31,915	--	\$260	--	\$1,903	--
2nd Quarter 2018	\$65,016	--	\$43,095	--	\$10,867	--	\$10,867	--	\$0	--	\$62	--	\$62	--	\$62	--
3rd Quarter 2018	\$128,749	--	\$85,266	--	\$21,317	--	\$21,317	--	\$0	--	\$849	--	--	--	--	--
4th Quarter 2018	\$114,297	--	\$59,992	--	\$19,044	--	\$19,044	--	\$16,184	--	\$32	--	--	--	--	--
1st Quarter 2019	\$32,745	--	-\$88,812	--	\$71,826	--	\$24,574	--	\$24,828	--	-\$24,185	--	\$12,790	--	\$11,723	--
2nd Quarter 2019	\$23,657	--	\$3,927	--	\$3,925	--	\$3,925	--	\$9,494	--	\$795	--	\$795	--	\$795	--
3rd Quarter 2019	\$31,264	--	\$4,992	--	\$0	--	\$0	--	\$8,087	--	\$18,185	--	--	--	--	--
4th Quarter 2019	\$14,837	--	-\$1,300	--	\$3,696	--	\$3,696	--	\$8,333	--	-\$13,046	--	\$6,729	--	\$6,729	--
1st Quarter 2020	\$24,842	--	\$639	--	--	--	--	--	\$22,836	--	\$1,367	--	--	--	--	--
2nd Quarter 2020	\$33,511	\$49,293	\$0	\$47,859	--	--	--	--	\$33,511	\$0	\$0	\$1,434	--	--	--	--
Total Cost to Date	\$744,685	\$49,293	\$186,424	\$47,859	\$185,787	\$0	\$185,787	\$0	\$123,274	\$0	\$20,990	\$1,434	\$21,212	\$0	\$21,212	\$0
Amount Owed to TCWD	--	--	--	--	\$212	\$15,953	\$212	\$15,953	\$56,347	\$0	--	--	-\$74	\$478	-\$74	\$478
Total Amount Owed to TCWD	--	--	--	--	\$16,165	\$16,165	\$16,165	\$16,165	\$56,347	\$0	--	--	\$404	\$404	\$404	\$404

Abbreviations:

AEWSD = Arvin-Edison Water Storage District
 DWR = California Department of Water Resources
 GSP = Groundwater Sustainability Plan
 Prop = Proposition

SGMA = Sustainable Groundwater Management Act
 TCWD = Tejon-Castac Water District
 WRMWS = Wheeler Ridge-Maricopa Water Storage District

Notes:

- (1) Fees incurred between 1 January 2015 and 30 June 2020.
- (2) Excludes Grant Reimbursable amount to be paid by DWR. TCWD has paid the Grant Reimbursable costs and will be reimbursed by DWR directly.
- (3) Billed travel expenses, 4% communication fee, Proposition 1 Grant application preparation costs, and Proposition 68 Grant application preparation costs are not eligible for grant reimbursement nor cost share. AEWSD, TCWD, and WRMWS participate in voluntary cost share for Not Grant Reimbursable costs.
- (4) TCWD costs incurred minus costs paid by AEWSD and WRMWS after reconciliation.



White Wolf Groundwater Sustainability Agency

Arvin-Edison Water Storage District
 Tejon-Castac Water District
 Wheeler Ridge-Maricopa Water Storage District
 Kern County

AGENDA MEMORANDUM

Date: 27 August 2020

To: Board of Directors, White Wolf Groundwater Sustainability Agency (GSA)

From: Angelica Martin, Secretary, White Wolf GSA

Item: 4a. Financial Accounting / LEGAL COSTS

SUMMARY

**Amount Owed to TCWD for Legal Costs Incurred
 For 2019 through 2nd Quarter 2020**

Cost Category	AEWSD	WRMWSD
Total Paid by TCWD \$5,426.50		
Total Due to TCWD	\$1,808.83	\$1,808.83

DISCUSSION

Tejon-Castac Water District (TCWD) has paid all legal costs for matters relate to the White Wolf GSA. The attached statement reflects invoices paid for the year 2019 through 2nd quarter of 2020. These charges are equally split in three parts between all three Districts

The above table summarizes payments due to TCWD from Arvin Edison Water Storage District (AEWSD) and Wheeler Ridge-Maricopa Water Storage District (WRMWSD) for these legal expenses.

These amounts will be included as a separate item on the invoices sent to WRMWSD and AEWSD for other 1st and 2nd quarter charges.

Attached: Statement from Young Wooldridge



THE LAW OFFICES OF

A LIMITED LIABILITY PARTNERSHIP • EST. 1939
1800 30TH STREET, FOURTH FLOOR
BAKERSFIELD . CA. 93301

HTTP://WWW.YOUNGWOOLDRIDGE.COM
EMAIL: ACCOUNTING@YOUNGWOOLDRIDGE.COM
PHONE: (661) 327-9661
FACSIMILE: (661) 327-1087

TEJON-CASTAC WATER DISTRICT
PO BOX 1000
LEBEC CA 93243

July 07, 2020

Client ID 13117-109 SKK

Statement for period February 01, 2019 through June 30, 2020

LEGAL SERVICES REGARDING: WHITE WOLF GSA

Fees	T.K.	Hours	Amount
02/26/19 CONSULT WITH EKI ON GSP MATTERS.	AFD	0.40	\$108.00
03/05/19 ATTEND GSA BOARD MEETING	AFD	1.50	\$405.00
05/20/19 REVIEW AND REVISE DRAFT MINUTES FROM 3/5/19 BOARD MEETING.	AFD	0.30	\$81.00
06/04/19 ATTEND WHITE WOLF GSA BOARD MEETING AND WORKSHOP. TRAVEL TO AUTHORITY OFFICE.	AFD	3.50	\$945.00
09/12/19 REVIEW AND REVISE MINUTES OF 6/4 BOARD MEETING.	AFD	0.30	\$81.00
09/26/19 REVIEW AND REVISE RESOLUTIONS REGARDING DWR GRANT APPLICATION.	AFD	0.30	\$81.00
10/01/19 ATTEND WHITE WOLF GSA BOARD MEETING. TRAVEL TO WHEELER RIDGE.	AFD	3.00	\$810.00
03/03/20 ATTEND BOARD MEETING. TRAVEL TO WHEELER RIDGE-MARICOPA WSD OFFICE.	AFD	3.00	\$885.00
03/09/20 CONFER WITH ATTORNEY SINGH REGARDING BOARD OFFICER APPOINTMENTS.	AFD	0.30	\$88.50
03/31/20 LEGAL RESEARCH REGARDING MISSING PROCEDURES ON ELECTION, TENURE, OR REMOVAL OF BOARD MEMBERS FROM JPA; DRAFTED EMAIL WITH SUGGESTIONS.	IJS	1.00	\$220.00
04/07/20 RESEARCH AB 1755 PROTOCOLS AND DETERMINE APPLICABILITY OF SAME TO AUTHORITY'S PROP 68 GRANT. CONFER WITH A. MARTIN.	AFD	2.20	\$649.00
COMMENCE REVIEW OF PROP 68 GRANT AGREEMENT.	AFD	0.50	\$147.50
04/08/20 COMPLETE EVALUATION OF GRANT AGREEMENT FOR PROP 68 FUNDS AND CONFER WITH A. MARTIN REGARDING SAME. PROVIDE ANNOTATED DRAFT WITH SUGGESTIONS AND COMMENTS.	AFD	2.50	\$737.50

A FINANCE CHARGE OF 1.5% WILL BE ADDED TO YOUR BALANCE 30 DAYS AFTER STATEMENT DATE



THE LAW OFFICES OF

A LIMITED LIABILITY PARTNERSHIP · EST. 1939
 1800 30TH STREET, FOURTH FLOOR
 BAKERSFIELD . CA. 93301

HTTP://WWW.YOUNGWOOLDRIDGE.COM
 EMAIL: ACCOUNTING@YOUNGWOOLDRIDGE.COM
 PHONE: (661) 327-9661
 FACSIMILE: (661) 327-1087

TEJON-CASTAC WATER DISTRICT

July 07, 2020

Timekeeper Recap

T.K.	Name	Hours	Rate	Amount
AFD	ALAN DOUD	9.30	\$270.00	\$2,511.00
AFD	ALAN DOUD	8.50	\$295.00	\$2,507.50
IJS	INDERRAJ SINGH	1.00	\$220.00	\$220.00

TOTAL FEES **\$5,238.50**

COSTS AND EXPENSES **Amount**

06/07/19	ALAN F. DOUD TRAVEL EXPENSES: ATTENDED WHITE WOLF GSA MEETING AT WRMWSD			\$31.90
	ALAN F. DOUD TRAVEL EXPENSES: TRAVEL TO AND SACRAMENTO TO ATTEND CVP WIDE WIIN ACT NEGOTIATIONS AT DOWNEY BRAND IN SACRAMENTO, CA			\$92.58
10/03/19	ALAN F. DOUD MILEAGE REIMBURSEMENT: Attend board meeting at Wheeler Ridge Maricopa Water Storage District			\$31.90
03/04/20	ALAN F. DOUD TRAVEL EXPENSES: ATTEND BOARD MEETING AT WHEELER-RIDGE MARICOPA WATER STORAGE DISTRICT ON 3/4/2020.			\$31.62

TOTAL COSTS AND EXPENSES **\$188.00**

TOTAL FEES AND COSTS **\$5,426.50**

A FINANCE CHARGE OF 1.5% WILL BE ADDED TO YOUR BALANCE 30 DAYS AFTER STATEMENT DATE



White Wolf Groundwater Sustainability Agency

Arvin-Edison Water Storage District
Tejon-Castac Water District
Wheeler Ridge-Maricopa Water Storage District
Kern County

AGENDA MEMORANDUM

Date: 26 August 2020

To: Board of Directors, White Wolf Groundwater Sustainability Agency (GSA)

From: Angelica Martin, Secretary, White Wolf GSA

Item: 6. Discuss and consider approval of EKI's Task Order #5 for the Basin-Specific Model Development Task of the Proposition 68 Funded Work Plan

SUMMARY

Recommendation: Approve EKI Environment and Water, Inc. (EKI)'s Task Order #5 for Basin-Specific Model Development Task of the Proposition 68 Funded Work Plan

Fiscal Impact: GSA cost match of \$78,500 (\$26,167 per District)

BACKGROUND

Tejon-Castac Water District, on behalf of the White Wolf GSA, amended the existing Proposition 1 Sustainable Groundwater Management (SGM) Grant Agreement with the California Department of Water Resources (DWR) to include all Proposition 68 SGM Grant tasks and funding requested in the White Wolf GSA's Proposition 68 Grant application. The White Wolf GSA Board of Directors approved EKI Task Order #4 for Selected Elements of the Proposition 68 Funded Work Plan on 3 March 2020. The remaining two tasks associated with the Proposition 68 Work Plan include: (1) a Basin-Specific Numerical Model Development, and (2) Monitoring Network Improvements. The attached Task Order #5 is for development of a Basin-Specific Numerical Model. The monitoring network improvements task will be brought to the Board of Directors for consideration at a later date.

When the Sustainable Groundwater Management Act (SGMA) became effective in 2015, the White Wolf Subbasin was part of the greater Kern County Subbasin and did not exist as a unique subbasin. The Kern County Subbasin began numerical groundwater flow model development for the entire Kern County Subbasin using a modified version of C2VSimFG Beta ("C2VSimFG-Kern"). In July 2016, DWR approved a Basin Boundary Modification splitting the Kern County Subbasin along the White Wolf Fault, and forming the White Wolf Subbasin (Basin). In May 2017 the White Wolf GSA was formed.

As part of initial SGMA efforts, the GSA elected to continue to participate in the development of the Kern

County Subbasin model and, if applicable, incorporate the results into the White Wolf Groundwater Sustainability Plan (GSP), particularly for the assessment of potential future conditions.

However, as documented in GSA correspondence to DWR, Todd Groundwater, and the Kern Groundwater Authority (KGA), the C2VSimFG-Kern model does not provide an accurate depiction of conditions in the Basin despite the improvements made by Todd Groundwater. The GSA therefore opted to pursue development of an alternative model specifically designed for the Basin as part of the Proposition 68 Work Plan for the following reasons:

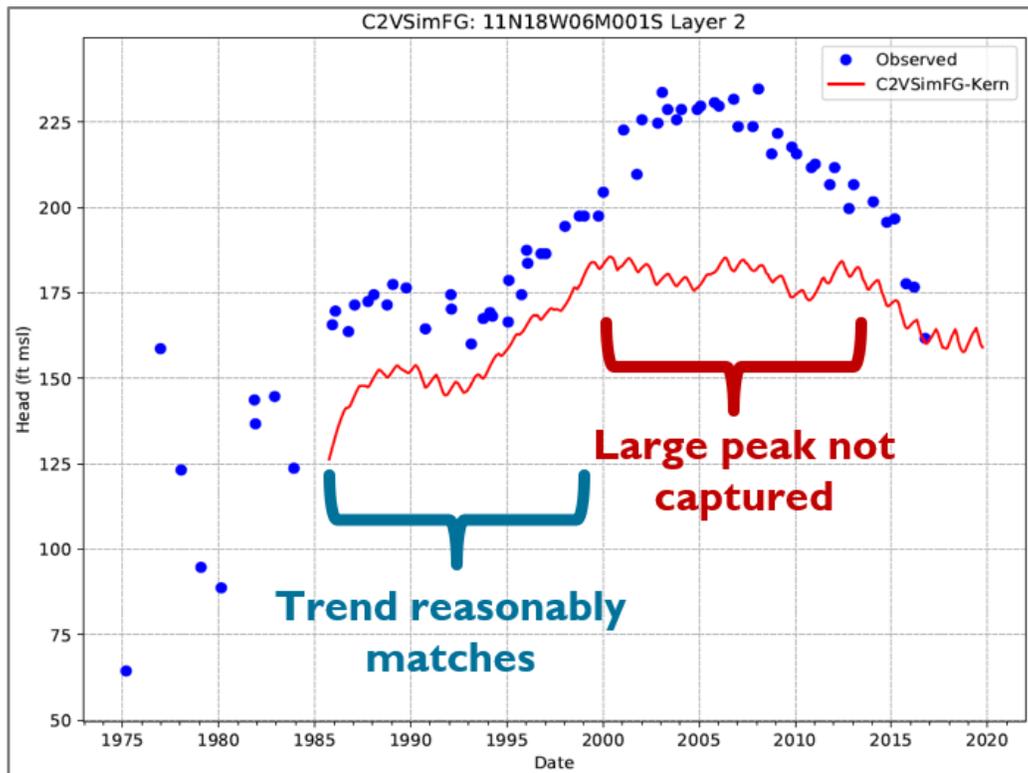
- C2VSimFG-Kern elements representing the White Wolf Fault and the Basin do not align with the Basin boundary as defined by DWR, nor is horizontal discretization fine enough to provide useful information as a future planning tool (e.g., with respect to managing sensitive beneficial users such as Groundwater Dependent Ecosystems; GDEs). Additionally, the vertical layering specified in C2VSimFG-Kern does not align with the aquifers as defined in the Basin’s Hydrogeological Conceptual Model (HCM). Due to limitations engrained within IWFEM (the underlying source code), modifications of node locations and layering within C2VSimFG-Kern is impractical.
- The companion analytical (spreadsheet) water budget model developed for the Basin representing the “historical” and “current” water budget time periods (i.e., 1995-2015) suggests that the historical and current water budget accounting in the C2VSimFG-Kern is not accurate. Furthermore, KGA and Todd Groundwater have stated on numerous occasions that while C2VSimFG-Kern is an adequate tool for water budget accounting purposes for a basin at the scale of the Kern County Subbasin, it has proved to not be appropriate for modeling subareas of the model, such as the White Wolf Subbasin.
- Notably, all future conditions scenarios developed using the C2VSimFG-Kern model hold land use conditions fixed at 2013 conditions – this does not account for the significant land use changes anticipated in the Basin once the 12,000 residential dwelling unit and 5.1 million square feet commercial/industrial Grapevine Project is developed.
- As discussed in more detail below, the C2VSimFG-Kern is uncalibrated and modeled water levels are an average of 47 feet different than observed water levels in the Basin, with exceedances over 600 feet. This means that the model is not an effective tool to support the GSA to develop and validate Sustainable Management Criteria (SMCs), assess effectiveness of projects and management Actions (P/MAs), or assess impacts to beneficial users (e.g., GDEs or well dewatering).
- Obtaining model results from the KGA typically takes approximately a month, and obtaining model input files from the KGA took almost a year, effectively making C2VSimFG-Kern an impractical tool for timely use by the GSA for analyses within the Basin.

DISCUSSION

Figure 1 shows the average residual (i.e., the difference between the model-calculated water level and the observed water level) from wells with long-term records scattered throughout the Basin. C2VSimFG-Kern typically under-predicts water levels throughout the northern irrigated portions of Basin by about 30 to 40 feet; however, the model does an extremely poor job in predicting water levels on the southern end of the Basin where model-calculated water levels are hundreds of feet too low. Over the entire Basin,

model-calculated water levels deviate from observed levels, on average, by 47 feet. The root mean square error (RMSE) which is a standardized method for measuring a model's accuracy in predicting water levels, is 98 feet.

Furthermore, inspection of hydrographs show that, while the model-calculated water level trends over the 1986-1999 period reasonably match observed, the large recovery in water levels the Basin experienced between 2000-2015 is not captured and model-calculated water levels remain relatively flat.



Hydrograph from a representative Basin well comparing observed and C2VSimFG-Kern calculated groundwater levels

Under technical committee direction, EKI conducted a series of sensitivity tests to assess the viability of improving C2VSimFG-Kern performance in the Basin. Some adjustments to initial heads and aquifer properties helped to increase the water levels overall, but significant additional work would be needed to refine the model to better match the large fluxes in observed water levels. EKI's assessment after conducting the sensitivity analysis was that, with some further detailed refinement, C2VSimFG-Kern would likely "check the box" for 2022 GSP reporting requirements, but would never be a robust tool, especially in the southern portion of the Basin where GDEs are likely connected to the Principal Aquifer.

As described in the GSA's Proposition 68 application, development of a new model would have the following advantages:

- Represent the Basin HCM more accurately;
- Provide a more reliable tool for assessing undesirable results for lowering of groundwater levels and/or reduction of groundwater storage;

- Future projected water budget will reflect future land use changes planned for the Basin;
- Can be used to examine the water level response in the Principal Aquifer to P/MAs proposed within the Basin;
- Can aid establishment of SMCs, especially near GDEs.

The Basin-specific numerical groundwater flow model will meet the SGMA requirements outlined in CCR §352.4(f): (1) include publicly available supporting documentation, included as a GSP Appendix; (2) be based on field water level measurements and be calibrated against those well-specific water level measurements; and (3) be developed using a finite-element grid and utilize the public domain open-source software, MODFLOW.

The estimated level of effort and resulting cost share to refine the model versus develop a new model is shown below:

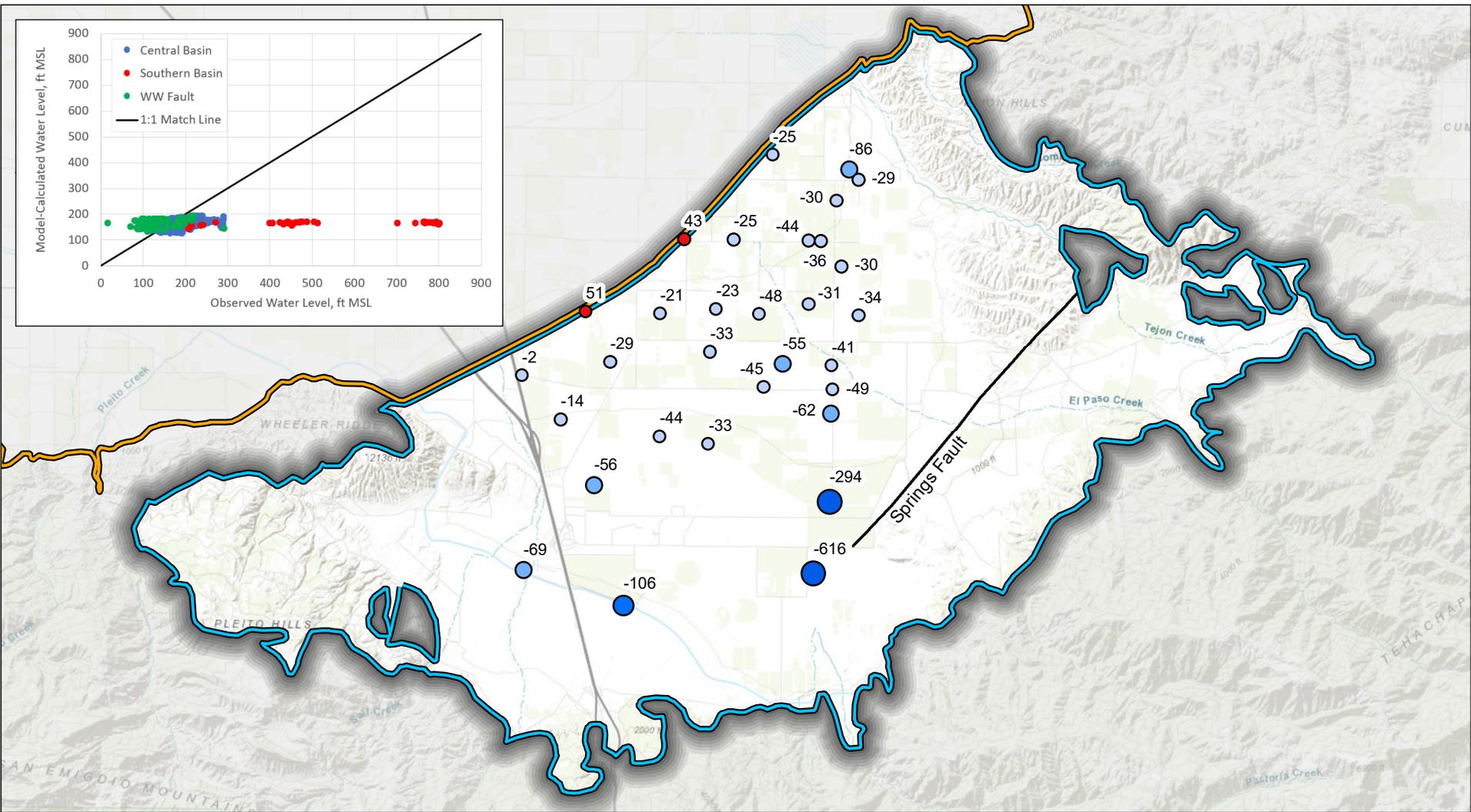
Model	Grant funds	GSA cost share	Per District
Develop Basin-Specific Model	\$235,500	\$78,500	\$26,167
Refine C2VSimFG-Kern	\$112,500*	\$37,500*	\$12,500*

Note: *Assuming \$150,000 for refinement and DWR approves grant amendment

It is the ad-hoc technical committee’s recommendation to develop a basin-specific model that can better represent Basin conditions, especially those in the uplands areas near GDEs, and be a more useful tool for future SGMA-related planning and compliance efforts.

- Attached:**
- (1) Figure 1 – C2VSimFG-Kern Residuals White Wolf Subbasin
 - (2) EKI’s Task Order #5 for Basin-Specific Model Development Task of the Proposition 68 Funded Work Plan

Path: X:\B50001_05\Maps\2020\08\Fig1_C2VSimFG-Kern_Residuals.mxd



Legend

Groundwater Subbasin

- White Wolf (DWR 5-022.18)
- Kern County (DWR 5-022.14)

Average Residual (feet)

- < -200
- 200 to -100
- 100 to -50
- 50 to 0
- 0 to 50

RMSE	98 ft
Minimum Residual	-643 ft
Maximum Residual	147 ft
Average Residual	-47 ft

Abbreviations

DWR = California Department of Water Resources
 ft MSL = feet above mean sea level

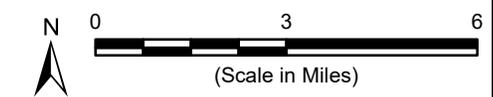
RMSE = Root Mean Square Error
 SGMA = Sustainable Groundwater Management Act

Notes

- All locations are approximate.
- Residual is the difference between the model-calculated water level and the observed water level. Positive values indicate the model is over-predicting water levels and negative values indicate the model is under-predicting water levels.
- RMSE is the standard deviation of the residuals, and is a standardized method for measuring a model's accuracy in predicting water levels.
- The XY scatter plot compares the match between model-calculated and observed water levels. Data points from a well-performing model plot close to the 1:1 match line.

Sources

- DWR groundwater basins are based on the boundaries defined in California's Groundwater Bulletin 118 - Final Prioritization, dated February 2019.
- Basemap is ESRI's ArcGIS Online world topographic map, obtained 25 August 2020.



C2VSimFG-Kern Residuals
White Wolf Subbasin

17 August 2020

To: Allen Lyda, Tejon-Castac Water District (TCWD)

Cc: Tito Martinez, White Wolf Groundwater Sustainability Agency (WWGSA)
Angelica Martin, TCWD
Jeevan Muhar, Arvin-Edison Water Storage District (AEWSD)
Sheridan Nicholas, Wheeler Ridge-Maricopa Water Storage District (WRMWSD)
Alan Christensen, Kern County

From: Anona Dutton, P.G., C.Hg., EKI Environment & Water, Inc. (EKI)
Dave Leighton (EKI)
Christina Lucero, P.G. (EKI)

Subject: **Task Order #5 for the Basin-Specific Model Development Task of the Proposition 68 Funded Work Plan**
Tejon-Castac Water District
Kern County, CA

Dear Mr. Lyda,

Tejon-Castac Water District (TCWD, District, or Client) has requested that EKI Environment and Water, Inc. (EKI) provide a scope to support continued Groundwater Sustainability Plan (GSP) activities for the White Wolf Subbasin (Basin) as part of compliance with the Sustainable Groundwater Management Act (SGMA). The White Wolf Groundwater Sustainability Agency (GSA) submitted an application for a Proposition 68 Sustainable Groundwater Management (SGM) Grant for GSP Development Activities for the Basin. This Proposition 68 application, prepared by EKI with significant input from the GSA, included a Work Plan (Attachment A), Budget, and Schedule for GSP development activities for the Basin. In March 2020, the California Department of Water Resources (DWR) released the final grant awards and the GSA's application was fully funded. In March, the White Wolf GSA Board approved EKI's Task Order #4 for Elements of the Proposition 68 Funded Workplan, which included Tasks for Grant Administration, groundwater dependent ecosystem (GDE) studies, and monitoring well installations. In May 2020, Grant Agreement Amendment #1 was executed, in which the Proposition 68 SGM Grant tasks and funding was added to the existing Proposition 1 Grant Agreement, and EKI's Task Order #4 with TCWD was signed.

The Proposition 68 Work Plan included the development of a basin-specific groundwater model to quantify the water budget for the basin, estimate Basin sustainable yield, simulate future

Formerly known as Erler & Kalinowski, Inc.

projected scenarios, and determine impacts from proposed Projects and Management Actions. The following Task and Subtasks (equivalent to Component 2, Category (c), Task 2 articulated in the Proposition 68 application) summarize the effort associated with development of the basin-specific groundwater model; additional details are more fully described in the attached Proposition 68 Work Plan (Attachment A).

A detailed budget that itemize the proposed Task and Subtasks is also included herein (Attachment B).

This Task Order would initiate model-development efforts, consistent with the Proposition 68 work plan. An additional Task Order that addresses the remaining elements of the Proposition 68 work plan (e.g., monitoring network improvements) will be provided to the GSA Board of Directors for approval at a later date.

SCOPE OF WORK

Task 1 – Basin-Specific Groundwater Model Development

Task 1 has been divided into five subtasks to provide detail on the model-development and documentation process.

Subtask 1: Model grid development. Data required for model development will be compiled. These data include information on climate, land use, water use, groundwater levels, hydrogeology, aquifer properties, and boundary conditions. EKI will create a MODFLOW finite-difference numerical groundwater flow model for the Basin. EKI will evaluate the methods available to estimate the pumping and recharge time series required for the model and select the most appropriate method. The model grid will be developed using the appropriate horizontal and vertical discretization needed to represent the hydrogeology, structural characteristics (e.g., the Springs Fault), current and future land use, sensitive beneficial users (e.g., Groundwater Dependent Ecosystems; GDEs), and potential Projects and Management Actions (P/MAs) in the Basin. Previously published contour maps of formation elevations will be compiled and additional cross section(s) will be developed, as needed, to inform the vertical discretization (layering) of the model.

Deliverables:

- *Updated hydrographs of key wells through fall 2019,*
- *Groundwater elevation contour maps for spring and fall (2018 or 2019),*
- *Technical presentations to both the Technical Committee and the GSA summarizing work completed on this subtask.*

Subtask 2: Sensitivity testing and calibration. Existing groundwater level data and information from the analytical water budget will be used to calibrate the model to accurately represent

historical conditions. Sensitivity testing will be used to identify the model inputs to which the results are most sensitive. This will help focus the calibration efforts and identify potential data gaps that can be filled to improve the model in the future.

Deliverables:

- *Technical presentations to both the Technical Committee and the GSA summarizing work completed on this subtask.*

Subtask 3: Development of projected model scenarios. A model scenario will be developed to represent projected future “baseline” conditions. This “baseline” scenario will use a representative period of historical hydrology and projected future changes in land use. Additional scenarios will be developed from the “baseline” scenario that incorporate the effects of climate change and proposed P/MAs.

Deliverables:

- *Technical presentations to both the Technical Committee and the GSA summarizing work completed on this subtask.*

Subtask 4: Water budget summary and analysis: Historical, current, and projected future water budgets will be summarized from model results. The historical and current water budgets will be compared to the analytical water budget and discrepancies will be analyzed and explained. The projected future water budgets will be used to evaluate Basin sustainability under climate change conditions and proposed P/MAs.

Deliverables:

- *Updated water budget tables and figures, and*
- *Technical presentations to both the Technical Committee and the GSA summarizing work completed on this subtask.*

Subtask 5: Prepare Technical Memorandum documenting model development and results, Sustainable Management Criteria (SMC) development, and update GSP. EKI will prepare a Technical Memorandum (TM) documenting model development and results. This TM will be developed into an appendix to the GSP. Model results will be used for water budget and SMC development and relevant sections of GSP will be updated with these results.

Deliverables:

- *TM documenting model development, calibration, and results,*
- *Updates to relevant GSP sections,*
- *GSP Appendix documenting the groundwater model, and*
- *The model and associated files to be submitted to DWR with the GSP.*

PERSONNEL

EKI's staff members who will be available to work on this project include Anona Dutton, P.G., C.Hg. (Officer), David Leighton (Senior 2), Christina Lucero, P.G. (Grade 2), Aaron Lewis (Grade 3), and Kristyn Lindhart (Grade 4); grades in parentheses are for purposes of billing in accordance with the attached Schedule of Charges (see Attachment C). Other EKI staff members may be assigned to assist with the performance of the tasks as required to meet project commitments.

SCHEDULE

EKI is prepared to start work on the above Scope of Work immediately upon authorization to proceed. We anticipate that the model will be largely complete by July 2021 to support GSP submission by 31 January 2022. We will inform the GSA of any issues that arise that may affect the schedule for completion or impact the anticipated level of effort.

TERMS AND CONDITIONS

All work performed by EKI under this Task Order is anticipated to be performed pursuant to the Terms and Conditions of our existing Agreement with Tejon-Castac Water District.

COMPENSATION

Inasmuch as the exact level of effort required to complete the above Scope of Work cannot be known precisely, EKI proposes to perform the work on a time and materials expense reimbursement basis in accordance with our current Schedule of Charges. A breakdown of the estimated budget is provided in Table 1 below, and a detailed budget estimate is included as Attachment B.

Table 1. Estimated Budget for Selected Elements of the Proposition 68 Funded Work Plan

Task	Estimated Budget	Grant	
		Reimbursable Amount	White Wolf GSA Amount
Task 1 – Basin-Specific Groundwater Model Development	\$314,000	\$235,500	\$78,500
GSA Member Costs:			\$26,167

We are happy to discuss the proposed approach and anticipated level of effort for this task and subtasks in more detail with you and look forward to working with you on this important project. If this Task Order meets with your approval, please sign where noted below. Please return a fully executed copy to our office to confirm your authorization to proceed.

Very truly yours,

EKI Environment & Water, Inc.



Anona L. Dutton, P.G., C.Hg.
Vice President / Principal-In-Charge

AUTHORIZATION

TEJON-CASTAC WATER DISTRICT
(CLIENT)

By _____

Title _____

Date _____

Attachments

- Attachment A White Wolf GSA Proposition 68 Work Plan
- Attachment B Cost Estimate for Basin-Specific Model Development Task of the
Proposition 68 Funded Work Plan
- Attachment C 2020 Schedule of Charges

Attachment A

**White Wolf GSA Proposition 68 Work Plan
(excluding Attachments)**

ATTACHMENT 3
WORK PLAN – TEMPLATE

Grant Proposal Title: **GSP Development Activities in the White Wolf Subbasin**

Applicant: **White Wolf GSA**

PROJECT JUSTIFICATION

A. Project Description

The White Wolf Groundwater Subbasin (DWR 5-022.18, hereinafter “Basin”) is a medium priority basin located in Kern County and as such is required to comply with the Sustainable Groundwater Management Act (SGMA). Specifically, the White Wolf Groundwater Sustainability Agency (GSA) is required to submit a Groundwater Sustainability Plan (GSP) by 31 January 2022. The development and adoption of the GSP will be a critical step toward maintaining groundwater sustainability and will provide a clear framework for demonstrating sustainability throughout the Basin by 2042. GSP development is currently underway, and multiple data gaps and/or additional analyses have been identified as crucial for the development of a complete GSP based on guidance recently developed by the Department of Water Resources (DWR) and others (e.g., The Nature Conservancy). These issues could not have been anticipated when the GSP work was originally scoped and initiated. The proposed Project therefore includes tasks to fill these crucial data gaps and complete additional analysis, thereby bolstering the GSP’s functionality to meet both the applicable regulations and guidance and respond to input provided by Basin stakeholders to date.

This Project will be implemented by the White Wolf GSA, which is the exclusive GSA for the Basin. As shown in **Figure 1**, the GSA is composed of Arvin-Edison Water Storage District (AEWSD), Tejon-Castac Water District (TCWD), Wheeler Ridge-Maricopa Water Storage District (WRMWS), and Kern County.

Approximately 23% of the Basin falls within DWR-designated disadvantaged communities (DACs) on the tract level, however many of these areas have small populations (see **Figure 1**). Groundwater supplies approximately 23% of the Basin demand, which is primarily irrigated agriculture. Thus, ensuring the long-term sustainability of groundwater resources is critical to the economic vitality of Basin water users, as well as others in Kern County and the State.

Project Goal

The overall goal of this Project is to address the data and analysis gaps that have been identified through work efforts associated with GSP development to date. This Project will inform development of a complete and effective GSP for the Basin that will comply with and meet all requirements of the GSP Emergency Regulations (23-CCR §350-358.4) and provide a reasonable path forward for achieving and demonstrating sustainable groundwater management in the Basin by the SGMA implementation deadline of 2042.

Project Objectives & Needs

The Project’s objectives are to provide direct support to the development of the GSP by proactively addressing the Basin’s currently identified data gaps including a more comprehensive understanding and monitoring of groundwater dependent ecosystems (GDEs), development of a basin-specific numerical groundwater flow model, and an improved monitoring network that meets DWR’s requirements. All of the above are new tasks that were not anticipated in the original GSP scope and budget, nor could they have been based on the information available at the time. It is only through intensive data gathering, analysis, and coordination that these issues have been identified and the GSA seeks to proactively address them in the 2022 GSP.

The Project needs include (1) technical expertise in regard to grant management; the needs and expectations of SGMA; groundwater flow model development, calibration, and implementation; biological and/or ecological expertise; monitoring well siting and design, a C-57 licensed driller, a qualified land surveyor, and a video logging specialist, (2) a calibrated Basin-specific groundwater flow model, (3) shallow and/or clustered monitoring wells, and (4) water level instrumentation (e.g., pressure transducers) and flow metering equipment (e.g., totalizer counters).

The proposed Project work efforts have been grouped into three components, which collectively work together to strengthen the Basin’s GSP currently under development:

1. Grant Administration,
2. GSP Development, and
3. Monitoring Well Installation

Component 1 will occur over the entire duration of the Project and will invoice work efforts for deliverables produced under Components 2 and 3. Component 2 work associated with GDEs verification will inform the construction of the monitoring wells proposed under Component 3. Component 2 work associated with the basin-specific groundwater model development will be used to inform not only the projected water budget required under CCR §354.18(d)(3), but also the development of Sustainable Management Criteria (SMCs), and evaluation of potential Projects and Management Actions. Likewise, the data collected from the monitoring wells installed under Component 3 will fill data gaps associated with potential GDE connectivity to the Principal Aquifer, and strengthen, and inform sections of the GSP, including but not limited to current groundwater conditions, SMCs, and monitoring network. The needs and objectives of each Component are discussed in more detail below.

Proposition 68 SGM Grant (Round 3) funding will support this Project moving forward, bolstering the GSA's efforts to develop a proactive and fully compliant GSP that will be broadly supported by Basin stakeholders and approved by DWR upon submittal. Regardless of additional funding from Round 3, a fully compliant GSP will be submitted to DWR by the January 2022 deadline; however, significant data gaps will remain and sources of uncertainty will be identified. In the absence of Round 3 funding, these data gap filling tasks will be considered by the GSA during the GSP implementation phase.

Component 1: Grant Administration

Grant Administration will cover the administrative needs associated with executing the Grant Agreement, including invoicing and associated reporting. TCWD plans to undertake work efforts associated with Grant Administration, supported by the technical consultant. Since TCWD has demonstrated its ability to successfully administer the Round 2 grant, administering the Round 3 grant will be accomplished in a streamlined fashion for both TCWD and DWR. As the Proposition 68 Grant requires separate grant reporting and invoicing, this Component does not overlap with the previously funded (Round 2) Grant Agreement Administration task. Work conducted pursuant to the components described below will be tracked under separate project task numbers than the current Round 2 work efforts so that invoicing and cost share can be easily differentiated. Similarly, quarterly cost share reconciliation will occur separately, as Round 3 has a reduced cost share requirement (i.e., 25% instead of 50%).

Component 2: GSP Development

Through the substantial work completed to date on the GSP, certain data and analysis gaps have been identified that could not have been anticipated when the GSP work was originally scoped and initiated. Specifically, the need for further work in regard to GDEs, development of a new, basin-specific numerical model, and monitoring network improvements. As detailed below, technical experts will be retained to complete the work and each GSA member agency will contribute to work efforts associated with GSP Development including providing support and constructive feedback to the technical consultants. Similarly, Basin stakeholders will have opportunities to provide data and feedback during the GSP development process.

GDEs Assessment

The GSA received Proposition 1 Grant (Round 2) funding which covered an initial identification and preliminary screening of GDEs based on depth to groundwater in nearby wells. Based on The Nature Conservancy's (TNC) "*Groundwater Dependent Ecosystems under the Sustainable Groundwater Management Act Guidance for Preparing Groundwater Sustainability Plans*,"¹ establishing a connection between potential GDEs and groundwater can be based on depth to groundwater. Depth to groundwater of 30 feet below ground surface (ft bgs) or less is generally accepted as being a proxy for confirming that the potential GDEs identified in the *Natural Communities Commonly Associated with Groundwater* (NCCAG) shapefiles produced by TNC and DWR are in fact reliant upon groundwater. Applying TNC's 2018 guidelines, the GSA was able to preliminarily eliminate some NCCAG areas based on the Spring 2015 depth to groundwater measured in Basin wells, which showed that depths to water in the principal aquifer were typically about 200 to 400 ft bgs in the vicinity of some areas identified on the NCCAG map (see **Figure 2**).

However, several areas of potential GDEs have been identified in the Basin (see **Figure 2**) and further assessment is needed to understand how these areas and ecosystems do or do not interact with the local groundwater system. For

¹ TNC, 2018, *Groundwater Dependent Ecosystems under the Sustainable Groundwater Management Act Guidance for Preparing Groundwater Sustainability Plans*, dated January 2018.
https://groundwaterresourcehub.org/public/uploads/pdfs/GWR_Hub_GDE_Guidance_Doc_2-1-18.pdf

instance, in the uplands area of the Basin where no wells currently exist, or where no current (i.e., 2015) depth to water measurements are available, the GSA is unable to confirm if the mapped NCCAG areas are actually dependent on groundwater. Additionally, Basin stakeholders such as Wind Wolves Preserve and Tejon Ranch representatives have provided verbal feedback that suggests GDEs may exist in the Basin. As such, a refined inventory, mapping and monitoring of these areas will be crucial for a comprehensive GSP.

In July 2019, TNC released a guidebook "*Identifying GDEs Under SGMA Best Practices for using the NC Dataset*,"² which provides detailed guidance regarding the process by which GDEs should be investigated further and confirmed and/or eliminated from the NCCAG dataset. TNC Best Practice #2 details that examining depth to groundwater at a single point in time defined as current groundwater conditions, as required under SGMA (CCR §354.16(g)), is insufficient as variability due to seasonal and annual climate fluctuations are not considered.

TNC Best Practice #4 details that using depth to groundwater measurements from wells for confirming whether NCCAG areas are supported by groundwater should be from the Principal Aquifer and can be applied to areas within approximately three miles of the wells. NCCAG polygons falling outside this distance should be retained until sufficient data becomes available to confirm or eliminate the NCCAG areas. Following TNC Best Practice #6, "*TNC strongly advises that questionable polygons from the NC dataset be included in the GSP until data gaps are reconciled in the monitoring network.*"

Furthermore, in June 2019, TNC released a new webtool "GDE Pulse"³ which provides remote sensing images paired with groundwater level and precipitation trends to aid in examining temporal trends between NCCAG polygon areas, climate, and groundwater levels.

The Proposition 1 Grant (Round 2) funding request and original GSP scope did not anticipate new TNC Guidelines specifying additional analyses beyond those required by the GSP Regulations nor a new TNC tool being released, and therefore did not budget for GDEs assessment using such tools and methods. Therefore, the objective of the GDEs Assessment task is to have a technical expert in biology and/or ecology conduct an aerial imagery and field survey to more accurately map GDEs. The GDE Pulse tool will be used to further identify temporal trends for the field-verified GDEs. This information will be detailed in an Appendix to the GSP and will inform key sections of the GSP (e.g., the development of SMCs and monitoring network). For example, it will be important to have the GDEs appropriately mapped so that when the GSA is considering if and where undesirable results associated with GDEs may occur, the work is appropriately focused on those areas and ecosystems that are actually dependent upon groundwater conditions in the Principal Aquifer.

As these proposed work efforts are informed by recently released guidance and tools, they will not overlap the work efforts undertaken or anticipated pursuant to the Round 2 grant. These proposed work efforts are consistent with the current Round 2 agreement, as they support GSP development using available tools and guidelines. If additional funding from Round 3 is not awarded, the GSP will include all NCCAG areas that were not preliminary eliminated from the dataset as potential GDEs, without verification of groundwater dependence, and with identification as a data gap. The GSP Chapter detailing GSP implementation will need to address further evaluation and assessment of these potential GDEs and the 5-year GSP update will aim to refine the GDEs map accordingly.

Basin-Specific Groundwater Model

Per § 354.18(e), Each Plan shall rely on the best available information and best available science to quantify the water budget for the basin in order to provide an understanding of historical and projected hydrology, water demand, water supply, land use, population, climate change, sea level rise, groundwater and surface water interaction, and subsurface groundwater flow. ***If a numerical groundwater and surface water model is not used to quantify and evaluate the projected water budget conditions and the potential impacts to beneficial uses and users of groundwater, the Plan shall identify and describe an equally effective method, tool, or analytical model to evaluate projected water budget conditions.*** (emphasis added)

When SGMA was initiated in 2015, the White Wolf Subbasin was part of the greater Kern County Subbasin and did not exist as a unique subbasin. The Kern County Subbasin was prioritized as high priority and in a state of critical overdraft and therefore required to submit a GSP by 31 January 2020. The Kern County Subbasin began numerical groundwater flow model development covering the entire Kern County Subbasin. However, in July 2016, DWR approved a Basin Boundary

² TNC, 2019, IDENTIFYING GDEs UNDER SGMA Best Practices for using the NC Dataset, dated July 2019, https://groundwaterresourcehub.org/public/uploads/pdfs/TNC_NCdataset_BestPracticesGuide_2019.pdf

³ <https://gde.codefornature.org/#/home>

Modification splitting the Kern County Subbasin along the White Wolf Fault, forming the White Wolf Subbasin, and in May 2017 the White Wolf GSA was formed. The GSA elected to continue participating in an inter-basin coordination effort with the adjacent Kern County Subbasin in which the GSA would integrate the Kern County Subbasin model results into the White Wolf GSP, particularly for the assessment of potential future conditions (i.e., through 2072). The Proposition 1 Grant (Round 2) funding in the White Wolf Subbasin included development of a companion analytical (spreadsheet) water budget model to inform and verify water budget component results from Kern County Subbasin's model for the "historical" and "current" water budget time periods (i.e., 1995-2015). None of the GSA's Round 2 funding was used to support numerical model development within the Basin and therefore this proposed work effort will not overlap with the work conducted to date or anticipated pursuant to Round 2 funding.

Todd Groundwater has developed a modified version of C2VSimFG Beta as part of its work for the Kern County Subbasin ("C2VSimFG-Kern"). The White Wolf GSA has provided all requested data to support model improvements and reviewed and commented on items related to the C2VSimFG Beta representation of the Basin. As specified in the Proposition 1 Grant (Round 2) Work Plan, *"the White Wolf GSA intends to participate in the Kern Subbasin shared modeling effort which will use the C2VSim Fine Grid Model, assuming that upon release of that model by DWR and review by the White Wolf GSA it is determined to be reasonably representative of conditions in the White Wolf Subbasin."* However, as documented in GSA correspondence to DWR, Todd Groundwater, and the Kern Groundwater Authority (KGA), the C2VSimFG-Kern model does not provide an accurate depiction of conditions in the Basin despite the improvements made by Todd Groundwater (see Attachment A). The GSA has identified that the C2VSimFG-Kern is based on the uncalibrated C2VSimFG Beta, the C2VSimFG-Kern mesh elements do not align with the DWR Basin boundary (see **Figure 3**), and that historical and current water budget accounting is not accurate compared to the analytical water budget model developed by the GSA as a secondary verification. In fact, the annual pumping rate estimated by C2VSimFG-Kern is almost double that estimated by the analytical water budget for the Basin (see **Figure 4**). Furthermore, KGA and Todd Groundwater have stated on numerous occasions that while C2VSimFG-Kern is an adequate tool for water budget accounting purposes for a basin at the scale of the Kern County Subbasin, it has proved to not be appropriate for modeling subareas of the model, such as the White Wolf Subbasin.

As specified in the Proposition 1 Grant (Round 2) Work Plan, *"once the historical and current water budgets produced by the conceptual "bucket model" and C2VSim Fine Grid Model are in acceptable agreement (based on a pre-defined criteria), the C2VSim Fine Grid Model will be further employed (in coordination with the GSAs in the adjacent Kern Subbasin) to evaluate the availability and reliability of past surface water supply and demand trends "as a function of the historical planned versus actual annual surface water deliveries, by surface water source and water year type, and based on the most recent ten years of surface water supply information" (23-CCR §354.18(c)(2)(A)). The C2VSim Fine Grid Model will then be employed to establish "baseline conditions" and to derive a metric of "sustainable yield" within the Basin in accordance with the requirements described in the GSP regulations (23-CCR §354.18(b)(7), (c)(3))."* Since the White Wolf GSA has found the historical and current water budget results generated by the two models to be in significant disagreement, the GSA has determined that the C2VSimFG-Kern is inadequate for estimating Basin sustainable yield, simulating future projected scenarios, and determining impacts resulting from proposed Projects and Management Actions. Therefore, additional numerical model development is needed to support future groundwater planning and management in the Basin. This additional numerical model development could take the form of either: (1) refinements to the existing C2VSimFG-Kern model, or (2) development of an alternative model specifically for the Basin. For the reasons discussed below, the GSA has opted to pursue the latter option.

- C2VSimFG-Kern elements representing the White Wolf Fault and the Basin do not align with the Basin boundary as defined by DWR (see **Figure 3**) nor is horizontal discretization fine enough to provide useful information as a future planning tool. Additionally, the vertical layering specified in C2VSimFG-Kern does not align with the aquifers as defined in the Hydrogeological Conceptual Model (HCM). Due to limitations engrained within IWFM (the underlying source code), modifications of node locations and layering within C2VSimFG-Kern is impractical.
- Notably, all future conditions scenarios developed using the C2VSimFG-Kern model hold land use conditions fixed at 2013 conditions – this does not account for the significant land use changes anticipated in the Basin once the 12,000 residential dwelling unit and 5.1 million square feet commercial/industrial Grapevine Project is developed.⁴
- DWR's schedule for releasing the calibrated C2VSimFG model has continually been extended and is not anticipated until Spring 2020 at the earliest.

⁴ Tejon Ranchcorp, 2016. Grapevine Final Specific and Community Plan. Kern County Planning and Natural Resources Department. Applicant: Tejon Ranchcorp; Technical Assistance by: Dudek 340 pp., December, 2016.

- Obtaining model results from the KGA typically takes approximately a month, effectively making C2VSimFG-Kern an impractical tool for timely use by the GSA for analyses within the Basin.

Therefore, the GSA has elected to retain a qualified technical expert to develop an alternative Basin-specific model, ensuring that the GSA has the best available tool for adequate Basin-scale representation that maintains local control. The Basin-specific groundwater flow model will not only represent the Basin HCM more accurately but will also provide a more reliable tool for assessing undesirable results for lowering of groundwater levels and/or reduction of groundwater storage. For example, the future projected water budget will reflect not only future land use changes planned for the Basin but will also examine the water level response in the Principal Aquifer to Projects and Management Actions proposed within the Basin. The Basin-specific model will be an important tool for the GSA in not only establishing the sustainable yield and establishing SMCs, thereby ensuring the Basin is operating within its sustainable yield moving forward, but also provide the ability for future water supply planning and adaptive management.

Work efforts associated with the development and utilization of a Basin-specific groundwater flow model are consistent with the current Round 2 agreement for GSP development, as the model will be calibrated to water levels measured within the Basin (CCR §352.4(f)) and the projected water budget will reflect anticipated land use changes within the Basin (CCR §354.18(d)(3)). However, if additional funding from Round 3 is not awarded, the GSP will rely on the analytical water budget model results for quantifying historical and current conditions. Climate change factors and surface water reduction projections will be incorporated into the analytical water budget model to examine baseline changes in storage on a basin-wide scale. Additionally, the projected volumes of water generated by projects and management actions will be incorporated into the analytical water budget model to compare with the climate change baseline scenarios. Therefore, the GSP will be complete per the GSP regulations. However, the analytical water budget model does not represent the spatial variability in the Basin land and water use and cannot be used to accurately predict groundwater system performance in subareas of the basin, quantify specific areal impacts, estimate dynamic cross-boundary or other fluxes, or conduct other more complex analyses in which the GSA would benefit during decision making and adaptive management.

Monitoring Network Improvements

As part of the Proposition 1 Grant (Round 2) Work Plan, the GSA planned to assess the existing monitoring programs and infrastructure for application towards the SGMA-compliant monitoring network. The GSA currently monitors 17 wells under DWR's California Statewide Groundwater Elevation Monitoring (CASGEM) program. Additionally, there are 108 voluntary CASGEM wells that could potentially be used as part of the GSP monitoring network, if needed and if complete well construction details can be confirmed. The Proposition 1 Grant (Round 2) Work Plan states *"to the extent that the monitoring plan identified deficiencies, the GSA will work on plans to rectify those deficiencies prior to submittal of the GSP to DWR, or to address them as part of Plan implementation."*

As part of the migration from CASGEM to the GSP Monitoring Network Module on the SGMA data portal, DWR is requiring increased coordinate location accuracy compared to CASGEM requirements. Specifically, surveyed horizontal latitude and longitude coordinates must be accurate within 30-feet, or 5 decimal places, and vertical ground surface elevation and reference point elevations must be accurate within 0.5-feet, or 2 decimal places. Currently none of the 17 CASGEM wells meet both of these horizontal and vertical coordinate accuracy requirements. Component 2 therefore includes well surveying by a qualified land surveyor to ensure all GSP monitoring network wells meet SGMA compliance requirements.

Additionally, the existing 17 CASGEM wells are not adequately spatially distributed throughout the developed extent of the Basin. As the GSA works to finalize their GSP monitoring network, voluntary CASGEM wells may be utilized to provide additional spatial coverage. However, well screen information is unknown for many of the voluntary CASGEM wells, thereby limiting the voluntary CASGEM wells that can be utilized as part of the GSP monitoring network, as SGMA requires known well construction details including depth of screened interval. Component 2 therefore includes video logging on a subset of voluntary CASGEM wells to determine screened interval information, allowing these wells to meet SGMA-requirements for integration into the GSP monitoring network.

The work efforts proposed herein do not overlap the work efforts being funded pursuant to Round 2 as they aim to fill data gaps that would otherwise be deferred to the GSP implementation phase. Monitoring network improvements ensure a fully-compliant GSP monitoring network and are therefore consistent with the current Round 2 agreement. If additional funding from Round 3 is not awarded, the GSP Chapters detailing the monitoring network will identify the associated data gaps and describe how they will be addressed. The GSA member agencies may also need to provide in-kind services in coordinating surveying. The SGMA monitoring network specified in the GSP will rely primarily on CASGEM wells, or wells within the Basin's Data Management System, with known screened intervals. Future 5-year updates may aim to improve the

monitoring network using voluntary wells if screened interval information can be obtained in the future or if new wells are constructed in the Basin.

Component 3: Monitoring Well Installation

Development of a GDE-specific monitoring network was not anticipated or funded as part of Round 2. However, results from the GDEs survey undertaken during Component 2 may verify areas in which communities are dependent upon groundwater and therefore benefit from shallow depth-to-groundwater monitoring. In these areas, additional monitoring infrastructure (e.g., shallow or clustered wells) will be required to assess if management actions of the Principal Aquifer (i.e., pumping) effect groundwater levels near confirmed GDEs. Therefore, the GDEs Assessment task undertaken for Component 2 will inform the need for and placement of the monitoring wells installed under Component 3. The objectives of Component 3 are to install, instrument, and monitor shallow/clustered groundwater monitoring wells to assess the temporal trends in water levels near verified GDE units. Data collected under Component 3 will be integrated into the GDEs analysis presented within the GSP Appendix produced under Component 2. The GSA member entities plan to undertake efforts associated with locating accessible areas of land in which shallow/clustered monitoring wells can be installed, securing access, marking the well site location(s), and working with the technical consultant who will be overseeing the well siting, design, and construction activities. The GSA will retain a C-57 licensed driller and qualified land surveyor to conduct the well installation and surveying.

If additional funding from Round 3 is not awarded, the GSP Chapters detailing the monitoring network and GSP implementation will identify the associated data gaps and describe how they will be addressed, as outlined in CCR §354.38(a) through (d). Future annual monitoring will aim to identify and utilize voluntary CASGEM wells near these mapped GDE areas and the 5-year GSP update will refine the GDEs map accordingly.

Tools

As part of this Project, a calibrated numerical groundwater flow model for the Basin will be developed.

Coordination Efforts

The White Wolf GSA will continue to coordinate internally among the four parties comprising the GSA. To date, the members comprising the White Wolf GSA have had great success working together during the GSP development stages. The current GSP work effort represents a series of successful partnerships by the GSA member entities including, but not limited to:

1. Long history of coordinated management of overlapping district lands and water resources
2. Successful creation of the White Wolf Subbasin
3. Successful and seamless full-basin coverage by a single GSA (i.e., there are no “white lands”)
4. Successful effort to re-classify the basin as Medium priority (i.e., originally it was part of the critically-overdrafted Kern County Subbasin, and then classified as high priority)
5. Successful joint application for Proposition 1 (Round 2) grant funding and subsequent grant administration
6. Development of significant portions of a draft GSP (i.e., Stakeholder Engagement and Communication Plan [SCEP], Plan Area, and Basin Setting components)

As the White Wolf GSA is the exclusive GSA for the Basin, and members are working together to develop one coordinated GSP, no other intra-Basin entities are contributing to GSP development. However, the GSA welcomes stakeholder input and feedback and will continue its outreach efforts to Basin stakeholders by (1) holding open Board meetings, and (2) mailing invitations to all land owners within the Basin to the Public Workshop(s) held throughout the GSP development process and the Public Hearing to adopt the GSP.

The Basin shares a boundary with the Kern County Subbasin. AEWSD, TCWD, and WRMWSD have service areas in both White Wolf and Kern County subbasins, so SGMA compliance efforts, including water budgets and data management systems have been coordinated on a district scale, covering both subbasins. Additional inter-basin coordination efforts to date have been extensive and primarily include: (1) regular meetings and communications with Kern County Subbasin GSAs, (2) coordinating water budget accounting timeframes and key data sources, (3) sharing District-specific data, as needed, and (4) coordinating in the update of the C2VSimFG-Kern model. The White Wolf GSA will continue its inter-basin coordination efforts, as appropriate, especially on issues related to cross-boundary flows, inter-basin transfers, etc.

B. Project Benefits

The proposed Project has numerous expected measurable benefits to ensure the Basin is managed sustainably now and in the future:

- A numerical groundwater model that has been developed and calibrated for the Basin and accurately represents groundwater conditions in the Basin (now and in the future) will provide several benefits during GSP preparation and to sustainable management of the Basin. Development of projected water budgets for future scenarios that incorporate climate change, anticipated land use changes, and Projects and Management Actions will be supported by the numerical groundwater model. Spatial and temporal variability in land and water use conditions can be represented in the model and their effect on the water budget can be evaluated in ways that cannot be evaluated using the analytical water budget model. For example, the spatial variability in water level or water quality trends can be more accurately replicated and potential impacts to wells, especially those that support DACs and other beneficial users (e.g., GDEs), can be more readily evaluated and adaptive management can be effectively employed.
- Shallow monitoring wells, and associated deployed water level measurement instrumentation, will monitor groundwater levels in critical areas where GDEs are potentially located. For each Annual Report, groundwater level measurements will be reported and hydrographs produced. Groundwater levels can be used as proxy for the SMCs associated with GDEs that may be established as part of the GSP, if the presence of GDEs is confirmed. Therefore, if this project is funded, infrastructure can be developed that will allow annual groundwater levels to be collected and examined in areas potentially supporting GDEs to ensure future Basin management practices are not causing undesirable results to these beneficial users of groundwater.
- Improving the monitoring network will ensure future annual monitoring and reporting will accurately depict Basin conditions by having adequate spatial coverage and vertical accuracy. This will support more effective understanding, reporting, and adaptive management within the Basin.

Disadvantaged Communities

As shown in **Figure 1**, approximately 23% of the Basin is covered by DACs when mapped at the Census Tract level for 2013-2017. However, the population in these DACs is very small. Almost half (46%) of these DAC areas fall within the WRMWSD and TCWD service areas; the remaining areas fall within either the Wind Wolves Preserve lands or native (i.e., non-irrigated) portions of the Basin. Further, there are very few known wells within the DAC areas. Nonetheless, the proposed Project allows the GSA to better quantify the relationship between groundwater conditions and potential impacts to beneficial users of water, quantify the impacts of future Projects and Management Actions on groundwater conditions, and improve monitoring to ensure that undesirable results do not occur in the future.

Tribes

There are no identified California Native American tribal lands within the Basin.

C. Technical Expertise

Roles and Responsibilities

The GSA Board is composed of six voting representatives, two each from AEWSD, TCWD, and WRMWSO, and one non-voting representative from Kern County. This structure is memorialized in the Joint Powers Agreement (JPA) signed by all parties in 2017 as part of GSA formation (see Attachment B). Representatives of AEWSD, TCWD, and WRMWSO participate in an ad-hoc Technical Committee (hereinafter "TC") and WRMWSO collects and uploads groundwater level data to CASGEM on behalf of the White Wolf GSA. TCWD has assumed responsibility for grant administration on behalf of the White Wolf GSA.

The GSA Board has selected a TC composed of one to two representatives of each voting party, which will guide and contribute to the efforts outlined in this Work Plan. This Work Plan assumes that the GSA will do the work described herein directly through in-kind services of the TC or through contracts with a specialized technical consultant team. Specifically, this Work Plan assumes that the GSA (1) will retain a qualified consultant team, led by a California-registered Professional Geologist that is experienced with SGMA, to complete or oversee the technical work described herein and (2) will be an active participant in the GSP development effort. As discussed below, it is anticipated that additional technical resources retained by the GSA will include experienced biologists (to conduct the GDE assessment), hydrogeologists (to conduct the numerical modeling and oversee well siting, design and testing), surveyors (to conduct the well surveying tasks), and C-57 licensed well drillers to conduct the well logging and construction tasks.

Past Experiences and Successes

The GSA successfully obtained Proposition 1 Grant (Round 2) funding to aid in GSP Development efforts and in December 2018, TCWD entered into a Grant Agreement with DWR on behalf of the White Wolf GSA. Work to complete the Round 2 Grant deliverables is currently underway. The first two quarterly invoices and associated progress reports and backup documentation were successfully submitted and accepted by DWR. All other GSA member agencies have previous experience with successful water bond grants, and have knowledge of the level of effort involved with successful grant management.

Members of the GSA have successfully completed large-scale planning documents in the past. Most germane to this Project includes the complete GSP Management Area Plans developed for the neighboring Kern County Subbasin, as three of the entities of the White Wolf GSA also have service areas within that basin (AEWSD, TCWD, and WRMWSO). Therefore, the GSA is well versed in the necessary steps and requirements of developing a GSP and will successfully complete, adopt, and submit the White Wolf GSP before the 31 January 2022 deadline. Letters of support from the GSA entities can be found in Attachment C. Other large-scale planning documents successfully completed by GSA members include Agricultural Water Management Plans and Groundwater Management Plans.

Members of the White Wolf GSA also have a long history of coordinated management of overlapping district lands and water resources. These include the development of or investment in water banks, perfecting water rights, transfers and exchanges, and otherwise supporting proactive sustainable management of their resources.

Technical Need

To successfully complete this Project, there is a technical need for both tools and expertise. Specifically, the main tool to be developed will be a Basin-specific groundwater flow model which accurately represents the Basin HCM and groundwater conditions. Technical expertise should include an experienced technical consultant team led by a California-registered Professional Geologist that is not only fully versed in the need and expectations of SGMA and the GSP Regulations, but also have ample experience with project and grant management; groundwater flow modeling development, calibration, and implementation; biological and/or ecological expertise; and well siting, design, and installation oversight. Finally, well construction personnel should include C-57 licensed drillers, a qualified land surveyor, and a video logging specialist. These will be crucial for completing the Project work efforts.

The GSA has a strong track record of selecting and managing consultant teams which produce effective work products on time and within budget. For example, the GSA, with support of their technical consultant team, successfully completed the White Wolf Basin Boundary Modification request. DWR stated that it was "the best boundary modification request they had ever seen." The GSA is confident in their selection of supporting consultant teams, which historically have met all necessary performance and technical standards. The technical consultant team selected to oversee the GSP development activities described herein will be led by a California-registered Professional Geologist, have knowledge of SGMA, the GSP process,

and the GSP Regulations, and demonstrate technical expertise associated with groundwater model development, calibration, and implementation. It is anticipated that the current technical consultant supporting GSP development (which meets all the required qualifications) will be instrumental in overseeing and completing these GSP development activities.

GSP Completion Expectations

Success of this Project relies upon continued participation from the TC and GSA Board. Specifically, the TC will continue providing in-kind support for GSP development, the GSA Board will continue engaging in proactive and informed decision-making during GSA Board meetings, and both the GSA Board and the TC will continue providing constructive feedback and timely reviews of work products produced by the technical consultant.

To date, the GSA has developed significant portions of their draft GSP including the SCEP, Plan Area, and Basin Setting components. The GSP development activities presented herein fill data gaps identified as part of this work, and will meet the GSP regulations and technical guidance provided by DWR and others in the following ways:

- Expand upon the GDEs definition of current groundwater conditions work completed, as required under CCR §354.16(g), to address TNC Best Practice #2 in which variability due to seasonal and annual climate fluctuations are considered.
- The Basin-specific numerical groundwater flow model will meet the SGMA requirements outlined in CCR §352.4(f): (1) include publicly available supporting documentation, included as a GSP Appendix; (2) be based on field water level measurements and be calibrated against those well-specific water level measurements; and (3) will utilize public domain open-source software, such as MODFLOW or IWFEM.
- Results from the Basin-specific numerical groundwater flow model will satisfy the requirements of CCR §354.18(c) and (d). Specifically, the model will utilize projected water budget information for population growth and climate change as required under CCR §354.18(d)(3), utilizing DWR's Guidance for Climate Change Data and projected land use changes under the Grapevine Development.
- CASGEM wells will be re-surveyed to meet the data and reporting standards, as required under CCR §352.4(a)(4) and (5).
- Voluntary CASGEM wells will be video logged to meet the data and reporting standards for wells, as required under CCR §352.4(c)(1)(D).
- Consistent with CCR §354.34(g), the shallow and/or clustered monitoring well(s) sites will have a scientific rationale behind their selection (i.e., in close proximity to verified GDEs).
- Shallow and/or clustered monitoring well(s) will be used to monitor groundwater levels near verified GDE units. If undesirable results related to GDEs are defined, it is anticipated that water levels will serve as proxy for establishing representative minimum thresholds for GDEs, per CCR §352.28(d). Similarly, measurable objectives will be established for GDEs based on measured water levels in the newly installed monitoring well(s), in accordance with CCR §354.30(b) and (d).

As mentioned above, the member agencies comprising the GSA (AEWSD, TCWD, WRMWSD, and Kern County) fully support the on-going GSP development activities, and their letters of support can be found in Attachment C. No other GSAs exist within the Basin.

As mentioned above, irrespective of the additional funding from Round 3, the GSA is currently on track to have a completed and adopted GSP, submitted to DWR for review, by the 31 January 2022 deadline, however significant data gaps or sources of uncertainty will be identified. In the absence of Round 3 funding, these data gap filling tasks will be deferred and need to be considered by the GSA during the GSP implementation phase.

PROJECT DETAILS

D. Scope of Work and Deliverables

a. Scope of Work

The Project Work Plan below is split into three Components and multiple categories, which coincide with the Components and categories in Attachment 4 – Project Budget and Attachment 5 – Project Schedule. Within each applicable Component and category are a series of Project sub-tasks which are necessary to support development of a proactive and comprehensive GSP. Project Deliverables in the following section follow the same Components, categories, and sub-tasks structure.

Basin stakeholders and the general public will be informed on the status and results of the identified tasks below during public GSA Board meetings, Public Workshop(s), direct outreach, and the Public Hearing to Adopt the GSP. All GSA Board meeting packets and workshop presentations are posted to the GSA's website (<http://whitewolfgsa.org/>). Additionally, the GSA mails invitations to Public Workshops to all land owners within the Basin. Finally, the Draft GSP will be available on the GSA's website for a 90-day public comment period. Once public comments have been addressed, the GSA will hold a Public Hearing to adopt the GSP, and the final adopted GSP will be uploaded to DWR's SGMA portal as well as the GSA's website. Annual Reports will also be submitted via DWR's SGMA portal.

Component 1. Grant Administration

Component 1 includes all work efforts needed to comply with Grant reporting and administration requirements, including accounting of expenditures of allocated grant monies, preparation of Quarterly Progress Reports, invoices, and associated documentation, and as-needed communications with DWR Sustainable Groundwater Planning grant administration staff. Grant Administration will be conducted throughout the entire Project timeframe (i.e., one quarter following the January 2022 GSP submission deadline [April 2022]), as it requires tracking the Project progress, budget, and schedule. As the Proposition 68 Grant requires separate grant reporting and invoicing, this task is not duplicative to, or budget augmentations of, the previously funded (Round 2) Grant Agreement Administration task.

Category (a). Grant Administration

Task 1. Invoicing

Task 1 includes all work efforts needed to prepare and submit Grant invoicing documents to DWR. These documents include invoices and associated backup documentation and quarterly cost share reconciliation.

Task 2. Quarterly Reporting

Task 2 includes all work efforts needed to prepare and submit quarterly reporting documents to DWR. These documents include quarterly Grant Progress Reports using the DWR templates and associated backup attachments, which may include GSP development activities documentation such as TC/GSA Board meeting agendas, presentations, work products, or project photographs.

Task 3. Grant Administration

Task 3 includes work efforts associated with Grant administration, such as working with DWR to enter into the Grant Agreement, attendance to a Grant kick-off meeting, and submittal of the Grant Completion report.

Component 2. GSP Development

Component 2 includes the following specific work efforts required to fill data and analysis gaps identified during the foundational GSP work efforts conducted to date. These tasks are crucial for developing a proactive and comprehensive GSP that meets all regulatory and technical guidance provided by DWR and others. Component 2 includes critical supplemental tasks to the GSP development currently under way as part of Proposition 1 (Round 2), as detailed below. Component 2 will extend from March 2020 to June 2021. These work efforts have been informed based on newly provided guidance and learning throughout the GSP development process and are not duplicative to, or budget augmentations of, work efforts currently underway pursuant to the Proposition 1 (Round 2) funding.

Category (a). Component Administration

Category (a) includes component project management activities:

Task 1. Project Management

Task 1 includes general component management tasks, such as invoicing, budget tracking, schedule management, staff assignments, and subconsultant management. For example, as part of Category (c) Task 1, it is anticipated that a consultant with expertise in biology and/or ecology will be hired to complete the GDEs field mapping.

Category (b). Stakeholder Engagement / Outreach

Not applicable.

Category (c). GSP Development

Category (c) includes activities associated with GSP development and is divided into two tasks: (1) GDEs Assessment, and (2) Basin-Specific Groundwater Model Development.

Task 1. GDEs Assessment

The GSP Regulations (23-CCR §354.16) require each GSP to include a description of groundwater conditions in the Basin, which includes assessment of GDEs. Based on the TNC's 2018 "Groundwater Dependent Ecosystems under the Sustainable Groundwater Management Act Guidance for Preparing Groundwater Sustainability Plans," some GDEs originally included in DWR's "Natural Communities Commonly Associated with Groundwater" (NCCAG) database have been preliminarily eliminated based on the depth to groundwater greatly exceeding 30 feet in nearby wells (i.e., within approximately 3 miles). However, there are areas of the Basin where potential GDEs are mapped, but no wells exist, and/or no current depth to groundwater data are available. The GSP development process has identified a need to conduct a more thorough assessment of the status of these remaining potential GDEs in the Basin. Under Task 1, the GSA will:

- Evaluate the remaining GDEs identified in the NCCAG dataset using aerial imagery and field mapping, and
- Evaluate NCCAG dataset using TNC's GDE Pulse tool.

The features in the NCCAG dataset which were not eliminated based on depth to groundwater in the Principal Aquifer will be verified using aerial imagery and/or field mapping. Specifically, a certified biologist/ecologist will use aerial imagery to further confirm or eliminate some or all of the potentially remaining GDEs and identify those remaining areas that require on-site evaluation. The field mapping will entail approximately two to three days of field study and follow up wherein a biologist/ecologist will visit certain features identified in the NCCAG dataset to verify species type, root zone depth, etc. and document the results of their findings.

Following TNC's Best Practice #2, TNC's GDE Pulse tool will be used to characterize seasonal and interannual groundwater conditions related to the NCCAG polygons within the Basin.

The results from the aerial imagery and field mapping study paired with the findings from the GDE Pulse tool will verify which features in the NCCAG dataset may be dependent upon groundwater and which may be eliminated. The confirmed GDEs will then be grouped into GDE units for the GSP and future monitoring. The results will be summarized in (1) technical presentation(s) to both the GSA and TC, and (2) in *GSP Appendix – GDEs Verification*. Maps will be developed showing the NCCAG features that have been verified as GDE units and those features that were eliminated.

Task 2. Basin-Specific Groundwater Model Development

As detailed above, the GSA's original intent was to utilize the results from C2VSimFG-Kern, developed as part of the neighboring Kern County Subbasin GSP, to quantify the historical, current, and future water budgets for the Basin. Once the GSA confirmed the validity of the historical C2VSimFG-Kern results using the analytical model developed using Round 2 funding, C2VSimFG-Kern results were to be used for sustainability planning, including projecting future impacts from climate change and proposed Projects and Management Actions. However, as detailed above, the GSA has found that the C2VSimFG-Kern is not calibrated, does not accurately represent the Basin boundary, HCM, or future land use conditions, and inadequately represents water budget flow components and conditions in the Basin. The GSA therefore cannot rely upon C2VSimFG-Kern results for projected future scenarios and associated sustainability planning tasks.

Under Task 2, the GSA will work with a technical consultant with expertise in hydrogeologic modeling to develop a Basin-specific numerical groundwater model, thereby increasing the reliability of water budget accounting within the Basin for

evaluating Basin sustainable yield, future water budget scenarios, establishing Sustainable Management Criteria, and for informing future management in the Basin, while improving local control over a key planning tool for the GSA. Results from the analytical water budget model will be used to inform inputs to and verification of the numerical model. Therefore, the work conducted as part of the Round 2 funding (i.e., development of an analytical water budget model for the Basin that covers the 1995-2015 time period) will not be duplicative and will in fact help inform and validate the tasks and results produced under Task 2.

A calibrated numerical groundwater flow model will meet all of the requirements of §354.18 of the GSP Regulations and be developed to provide the best available tool for developing future water budgets that evaluate the effects of climate change and Projects and Management Actions while maintaining local control. The model platform (IWFEM or MODFLOW) will be selected based on input from the GSA. The model grid will be designed to effectively represent the basin boundary as defined by DWR and the model discretization will be specified to accurately represent the spatial variability of aquifer properties, land use, water use, and calibration data. The vertical discretization of the model grid will be specified to represent the aquifers as defined in the Basin's HCM. Reported and future land and water use data will be incorporated into the model which will then be used to calculate water demand and the groundwater pumping required to meet the demand to aid with developing SMCs for the Basin.

Long-term water levels exist for numerous wells within the Basin; this water level data will be used to calibrate the model to historical conditions. Water budget information extracted from the numerical model will be compared to the analytical water budget model for verification. A future scenario representing future baseline conditions will be developed using a representative period of historical hydrology and projected future changes in land use. The effects of climate change will be applied to the baseline scenario following DWR guidance documents and proposed Project and Management Actions will be incorporated into these scenarios. Water budget information will be extracted from these scenarios to evaluate the effects of climate change and Projects and Management Actions on groundwater sustainability. The numerical model will also be used in the development of SMCs.

Results from the numerical groundwater flow model will be summarized in (1) technical presentation(s) to both the GSA and TC, (2) in the relevant GSP sections, including sections detailing the water budget, SMCs, and Projects and Management Actions, and (3) in *GSP Appendix – Groundwater Flow Model Documentation*. Documentation will include a narrative description of model development and inputs, calibration and sensitivity analysis results, the projected future water budget components, and tables and graphical depictions of these components following the examples provided in DWR's Best Management Practices 3. The model and associated files will be submitted to DWR with the GSP.

Category (d). Monitoring / Assessment

Category (d) consists of two tasks: (1) integrating the results of GDEs monitoring from Component 3, detailed below, into relevant GSP sections, as appropriate, and (2) existing monitoring network improvements.

Task 1. GDEs Monitoring

The water level data and pumping well records collected under Component 3 Category (e) will be analyzed to determine if the water levels in the shallow monitoring wells may be affected by nearby pumping. If a correlation between shallow water levels near the GDEs units and pumping is found, the shallow monitoring well(s) will be integrated into the GSP monitoring network and associated SMCs will be established. Results will be detailed in a GSP Appendix summarizing the connection of GDEs, or lack thereof, to the Principal Aquifer.

Task 2. Monitoring Network Improvements

DWR's requirements for SGMA compliant monitoring networks includes known well construction information, increased accuracy for surveyed horizontal coordinates and vertical reference point elevations (i.e., 30-ft horizontal accuracy or 5 decimal places and 0.5-ft vertical accuracy or 2 decimal places). The GSA has identified data gaps in their CASGEM and voluntary monitoring network that do not meet all SGMA requirements. Specifically, none of the 17 CASGEM or 108 voluntary wells currently meet the SGMA coordinate accuracy standards and screened interval information is unknown for 56 voluntary CASGEM wells.

Task 2 involves updating the CASGEM monitoring network to comply with SGMA standards. The 17 CASGEM wells and up to 10 additional CASGEM voluntary wells selected for inclusion in the GSP monitoring network will be re-surveyed by a qualified land surveyor. The well survey will determine the horizontal coordinates with a maximum 30-foot accuracy and the vertical reference point elevation and ground surface elevation with a maximum accuracy to 0.5 feet to be fully compliant

with DWR's standards for SGMA Monitoring Network surveying. Additionally, up to 10 selected CASGEM voluntary monitoring wells will be video logged by a well driller or video logging specialist to obtain screened interval information.

The White Wolf GSA Data Management System (DMS) will be updated to reflect the results of both the video logging and surveying. Additionally, during migration from the CASGEM system to the Monitoring Network Module on DWR's SGMA portal, well information will be updated to ensure compliance with SGMA standards.

Component 3. Monitoring Well Installation

As mentioned above, there are areas of the Basin in which the NCCAG dataset maps potential GDEs where no wells exist, and/or no current depth to groundwater data are available. After GDE units have been defined as part of the GDE Assessment work efforts conducted under Component 2 category (c) Task 1, locations in which shallow and/or clustered monitoring well(s) will benefit monitoring of the GDE units will be determined. Under Component 3, the GSA will install up to three shallow and/or clustered monitoring well(s), as needed, to monitor shallow groundwater levels adjacent to the confirmed GDEs unit(s). Once installed, water level measurement instrumentation will be deployed to monitor the temporal water level trends adjacent to GDEs unit(s). Component 3 will extend from October 2020 to June 2021.

Category (a). Component Administration

Category (a) includes component project management activities.

Task 1. Project Management

Task 1 includes general component management tasks, such as invoicing, budget tracking, schedule management, staff assignments, and subcontractor management. For example, as part of Category (d), it is anticipated that at least one well driller and land surveyor will be hired to complete the well installation(s) and well survey.

Category (b). Land Purchase / Easement

It is assumed that monitoring well location(s) will be selected so that land purchases are not necessary. If the monitoring well location(s) fall outside of District-owned lands, the GSAs will work with land owners to obtain written permanent access agreements, thereby avoiding land purchases. Therefore, Category (b) is not applicable.

Category (c). Planning / Design / Environmental

Category (c) includes the activities associated with planning for monitoring well installation and is divided into two tasks: (1) well siting and (2) well design & permitting.

Task 1. Well Siting

Task 1 includes determining the best location for monitoring well(s) installation. Location(s) must be in close proximity to a verified GDE unit. Following DWR's Best Management Practices #2, spatial considerations will include proximity to major pumping wells, interconnected surface waters, significant recharge areas, basin boundaries, and suspected occurrence of undesirable results. As required by Kern County Environmental Health Division, plot plan(s) will be developed, which details the exact planned location of the well with respect to nearby property lines, adjoining properties, water bodies or courses, drainage pattern, roads, existing wells, structures, sewers or private disposal systems, as applicable. If the monitoring well location(s) fall outside of District-owned lands, the GSAs will work with land owners to obtain written permanent access agreements. For example, Wind Wolves Preserve has expressed interest in discussions regarding monitoring well installation on their land. If a verified GDE unit is mapped within the Preserve, the GSA may enter discussions with Wind Wolves in pursuit of well siting. Under Task 1, it is assumed the GSA will provide in-kind services to establish permanent written access agreement(s) for the newly installed monitoring well(s), as necessary. The access agreement(s) will be included as *GSP Appendix – Monitoring Network Access Agreements*.

Task 2. Well Design & Permitting

Task 2 includes work efforts and costs associated with monitoring well design and permitting. Following DWR's Best Management Practices #2, monitoring wells should: (1) be a dedicated monitoring well, (2) have an aquifer-specific screened interval, and (3) consider both unconfined and confined aquifers, as applicable. Clustered monitoring wells can provide details on the response to Basin management actions (i.e., pumping) with depth and vertical gradients. Under Task 2, monitoring well site(s) will be designed, either as a single shallow monitoring well or as clustered monitoring wells. Once access agreements have been established by the GSA, well installation permit(s) will be obtained from Kern County prior to installation of the monitoring wells. Specifically, water well permit application(s) and associated plot plan(s) developed under Task 1 will be submitted to Kern County Environmental Health Division. Under Task 2, it is assumed the GSA will

provide in-kind services for securing access to and marking the proposed monitoring well site(s) for inspection by Kern County Environmental Health Division personnel during their site inspection and verification.

Category (d). Implementation / Construction

Category (d) includes the activities associated with monitoring well installation and is divided into two tasks: (1) well installation and (2) well survey. It is assumed that qualified C-57 licensed well drillers and qualified land surveyors will be hired to complete these tasks, under the supervision of the GSP consultant and the GSAs.

Task 1. Well Installation

Task 1 includes the field work and construction costs associated with installing and developing up to three shallow and/or clustered monitoring well(s). Well installation(s) will occur after permit(s) have been approved by Kern County Environmental Health Division. Under Task 1, it is assumed the GSA will provide in-kind services for securing access to and marking the proposed monitoring well site(s) for Underground Services Alert (USA) clearance. USA will be called at least two working days, but no more than 14 working days prior to drilling activities. A qualified C-57 licensed well driller will install up to three shallow and/or clustered monitoring well(s), with oversight provided by a California registered Professional Geologist. No less than 24 hours after annual seal placement, the monitoring well(s) will be developed by the well driller. As required by DWR, a Well Completion Report for each monitoring well will be submitted to DWR and copies transmitted to Kern County Environmental Health Division.

Task 2. Well Survey

Task 2 includes the field work associated with surveying up to three shallow and/or clustered monitoring well(s). The well survey will be conducted by a qualified land surveyor and will determine the horizontal coordinates with a maximum 30-foot accuracy and the vertical reference point elevation and ground surface elevation with a maximum accuracy to 0.5 feet to be fully compliant with DWR's standards for SGMA Monitoring Network. Task 2 will occur after all monitoring wells have been installed under Task 1.

Category (e). Monitoring / Assessment

Task 1. Water level instrumentation

After the shallow monitoring well(s) have been installed under Category (d) Task 1, the GSA will install water level monitoring instrumentation within the monitoring well(s) and temporary flow or operational monitoring instrumentation (i.e., totalizer counters) on selected existing nearby pumping well(s) to measure any potential changes in water levels occurring during key time periods, such as the irrigation season. Data collected will be used to evaluate the connectivity between shallow water levels near the GDEs and groundwater extraction in the Principal Aquifer in certain areas as identified from Component 2 work efforts. Specifically, counter units and/or flow measurement instrumentation will identify the operational periods of extraction wells and transducers will measure the water levels in the shallow monitoring wells. Under Task 1, it is assumed the GSA will provide in-kind services for securing access to pumping wells for temporary installation of meters.

Task 2. Semi-annual monitoring

Under Task 2, up to two semi-annual monitoring events will occur, which includes measuring water levels and downloading data from instrumentation deployed in up to three shallow and/or clustered monitoring well(s). It is assumed that, in its role of CASGEM monitoring entity, WRMWSD will conduct the data collection efforts.

b. Project Deliverables

Component 1 Deliverables (0% complete):

Category (a) Deliverables (0% complete):

Task 1 Deliverables (0% complete):

- Quarterly invoices and all required backup documentation (0% complete)

Task 2 Deliverables (0% complete):

- Quarterly Progress Reports (0% complete)

Task 3 Deliverables (0% complete):

- Executed Grant Agreement, including Amendment(s) (if necessary) (0% complete)

- Draft and Final Grant Completion Report (0% complete)

Environmental Compliance and Permitting

No environmental compliance and permitting is required under Component 1.

Component 2 Deliverables (0% complete):

Category (a) Deliverables (0% complete):

- Invoices (0% complete)

Category (c) Deliverables (0% complete):

Task 1 Deliverables (0% complete):

- Representative maps showing the distribution of GDEs (0% complete)
- GSP Appendix - GDEs verification (0% complete)

Task 2 Deliverables (0% complete):

- Inputs/outputs from the Basin-specific groundwater model (0% complete)
- Revised Water budget, Sustainable Management Criteria, and Projects and Management Actions sections of the GSP (0% complete)
- GSP Appendix – Groundwater Flow Model documentation (0% complete)

Category (d) Deliverables (0% complete):

Task 1 Deliverables (0% complete):

- GSP Appendix - GDEs connection to Principal Aquifer (0% complete)

Task 2 Deliverables (0% complete):

- Well Survey Report (0% complete)
- Video Logging Report(s) (0% complete)
- Updated Data Management System (0% complete)
- Updated Representative Monitoring Network location and screened interval information uploaded to DWR's SGMA Portal Monitoring Network Module (0% complete)

Environmental Compliance and Permitting

No environmental compliance and permitting is required under Component 2.

Component 3 Deliverables (0% complete):

Category (a) Deliverables (0% complete):

- Invoices (0% complete)

Category (c) Deliverables (0% complete):

Task 1 Deliverables (0% complete):

- Plot plan(s) (0% complete)
- Written access agreement(s) (0% complete)

Task 2 Deliverables (0% complete):

- Monitoring well permit(s) (0% complete)

Category (d) Deliverables (0% complete):

Task 1 Deliverables (0% complete):

- Well Completion Report(s) (0% complete)

Task 2 Deliverables (0% complete):

- Well Survey Report (0% complete)

Category (e) Deliverables (0% complete):

Task 1 Deliverables (0% complete):

- Field sheet(s) (0% complete)

Task 2 Deliverables (0% complete):

- Data upload to CASGEM (0% complete)

Environmental Compliance and Permitting

It is not anticipated that shallow and/or clustered monitoring well installation(s) will require any environmental compliance documentation associated with California Environmental Quality Act (CEQA) obligations.

Kern County requires monitoring well installation permits. Well siting will include the GSA coordinating permanent access agreement(s) with land owner(s) and the Technical Consultant drafting plot plan(s). Once access agreement(s) are in place, well installation permit(s) will be obtained from Kern County. Well installation permit application(s) must be submitted to Kern County at least 10 working days prior to proposed well installation date and includes the permit application and a plot plan. Well site verification, visit, approval by Kern County Environmental Health Division is required prior to installation of the monitoring well(s). At least 48-hours before drilling, a well inspection appointment for annular seal placement will be made with Kern County. Similarly, USA will be called at least two working days, but no more than 14 working days prior to drilling activities. During well installation, a Kern County inspector will be on-site to inspect the annular seal placement and sign off on the well installation.

As required by DWR, a Well Completion Report for each monitoring well will be submitted to DWR within 30-days of well installation. As required by Kern County, copies of the Well Completion Report(s) will be transmitted to their Environmental Health Division within 60-days of well installation.

MISCELLANEOUS

E. Project Support

GSA Support

The White Wolf GSA is the exclusive GSA for the Basin. The entities comprising the GSA (AEWSD, TCWD, WRMWS, and Kern County) all support the Project, and their letters of support for the Proposition 68 (Round 3) funding are included herein in Attachment C.

Inter-Basin Communication and Support

The Basin shares a boundary with the Kern County Subbasin. Inter-basin coordination efforts between the White Wolf GSA and neighboring Kern County Subbasin to date have been extensive and primarily include: (1) regular meetings and communications with KGA, (2) coordinating water budget accounting timeframes and key data sources, (3) sharing District-specific data, as needed, and (4) coordinating in the update of the C2VSim-FG Kern model. As part of verifying the C2VSim-FG Kern model's performance in the Basin, the GSA communicated with the KGA regarding potential issues (see Attachment A).

Beneficial Users Support

As mentioned above, approximately 23% of the Basin is covered by DACs when mapped at the Census Tract level for 2013-2017 (see **Figure 1**). However, the population in these DACs is very small. As mentioned above, almost half (46%) of these DAC areas fall within the WRMWS and TCWD service areas; the remaining areas fall within either the Wind Wolves Preserve lands or native (i.e., non-irrigated) portions of the Basin. Further, there are very few known wells within the DAC areas. The GSA will continue its outreach efforts to all land owners within the Basin.

The GSA has conducted significant outreach efforts to the small community water system within the Basin. The only public water system within the Basin, Tut Brothers Farm #96, is a community water system with two active wells that supply potable groundwater to approximately 30 year-round residents.⁵ The GSA has contacted Tut Brothers Farm on multiple occasions via phone and email to solicit their input to the GSP development process and the GSA will continue its outreach efforts to them and other Basin stakeholders.

The primary developed land use within the Basin is irrigated agriculture, comprising approximately 33% of the total land area in the Basin in 2014.⁶ Collectively, WRMWS and AEWSD provide water service to the majority of the agricultural water users in the Basin. As outlined in their attached letters of support, both WRMWS and AEWSD fully support the Project. Additionally, other land owners whom are actively engaged in the GSP process fully support the Project (see Attachment C).

No active municipal well operators exist in the Basin. TCWD operates three wells for emergency water supply associated with the Tejon Ranch Commerce Center and fully supports this Project, as discussed in their letter of support (Attachment C).

Wind Wolves Preserve is a nature preserve overlying uplands portions of the Basin. The GSA received a letter from Wind Wolves Preserve stating that they are “open to a discussion about installing a monitoring well on-site, if this is something that would support the GSP.”⁷ The Wildlands Conservancy, Wind Wolves Preserve's letter of support for the Project can be found in Attachment C.

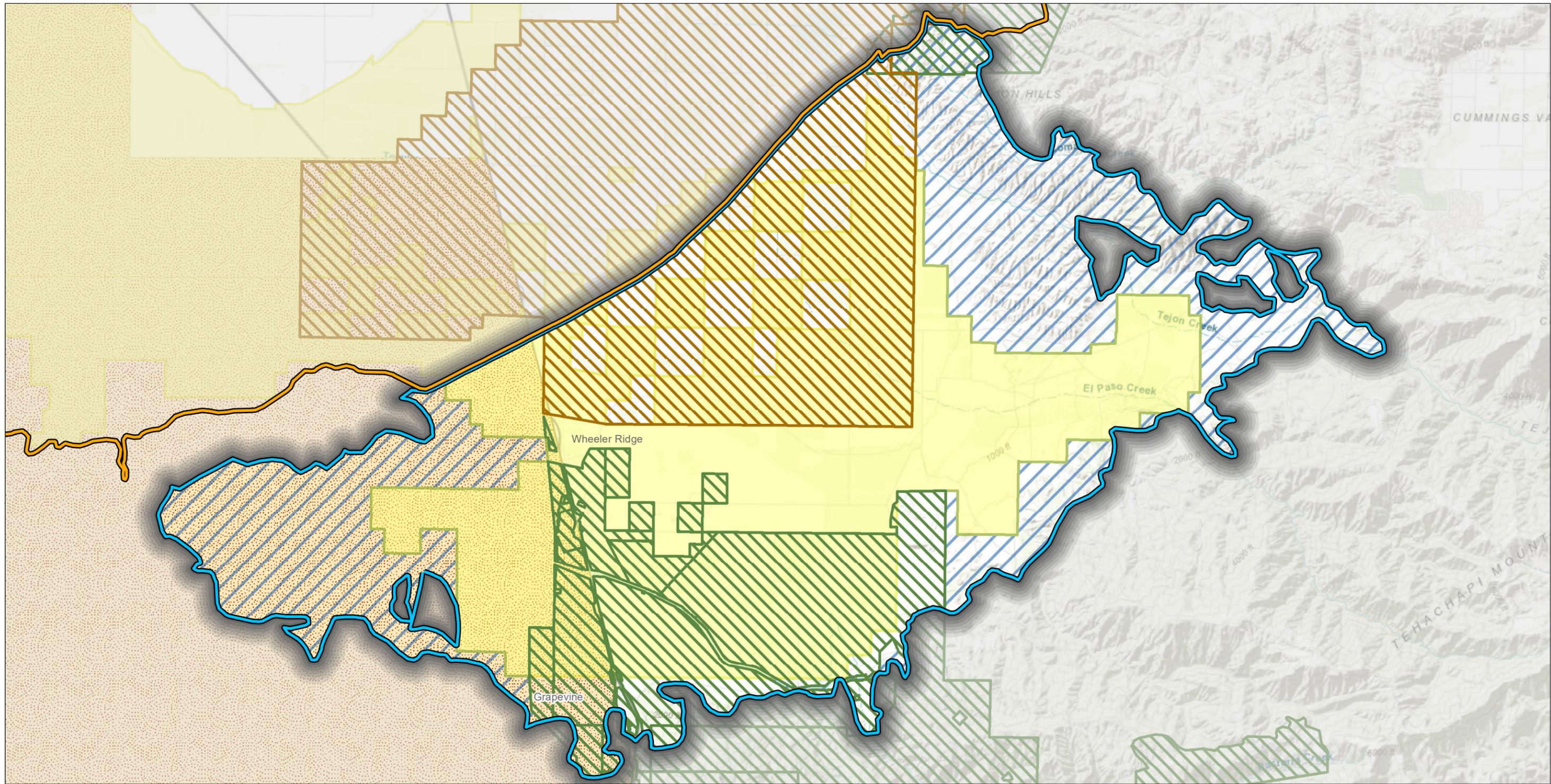
⁵ Water System No. CA1500516

https://sdwis.waterboards.ca.gov/PDWW/JSP/WaterSystemDetail.jsp?tinwsys_is_number=1364&tinwsys_st_code=CA

⁶ Land IQ, 2017. Statewide Crop Mapping 2014, prepared for California Department of Water Resources.

<https://gis.water.ca.gov/app/CADWRLandUseViewer/>

⁷ Email from Landon Peppel, Wind Wolves Preserve, to Anona Dutton, EKI Environment and Water, Inc., 30 March 2018.



Legend
Groundwater Subbasin
 White Wolf (DWR 5-022.18)
 Kern County (DWR 5-022.14)

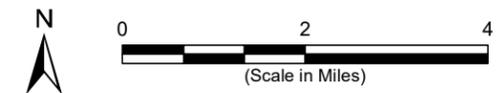
Disadvantaged Communities
 Severely Disadvantaged Communities
 Disadvantaged Communities

Arvin-Edison Water Storage District
 Tejon-Castac Water District
 Wheeler Ridge-Maricopa Water Storage District
 Kern County (outside of other GSA parties' jurisdictions)

Abbreviations
 DWR = California Department of Water Resources
 GSA = Groundwater Sustainability Agency

Notes
 1. All locations are approximate.

Sources
 1. Basemap is ESRI's ArcGIS Online world topographic map, obtained 25 September 2019.
 2. DWR groundwater basins are based on the boundaries defined by Bulletin 118 final Basin Prioritization - February 2019.
 3. District boundaries acquired from respective District staff.
 4. Disadvantaged communities data from DWR DAC Mapping tool, 2016 Census Tract, obtained 8 August 2019.

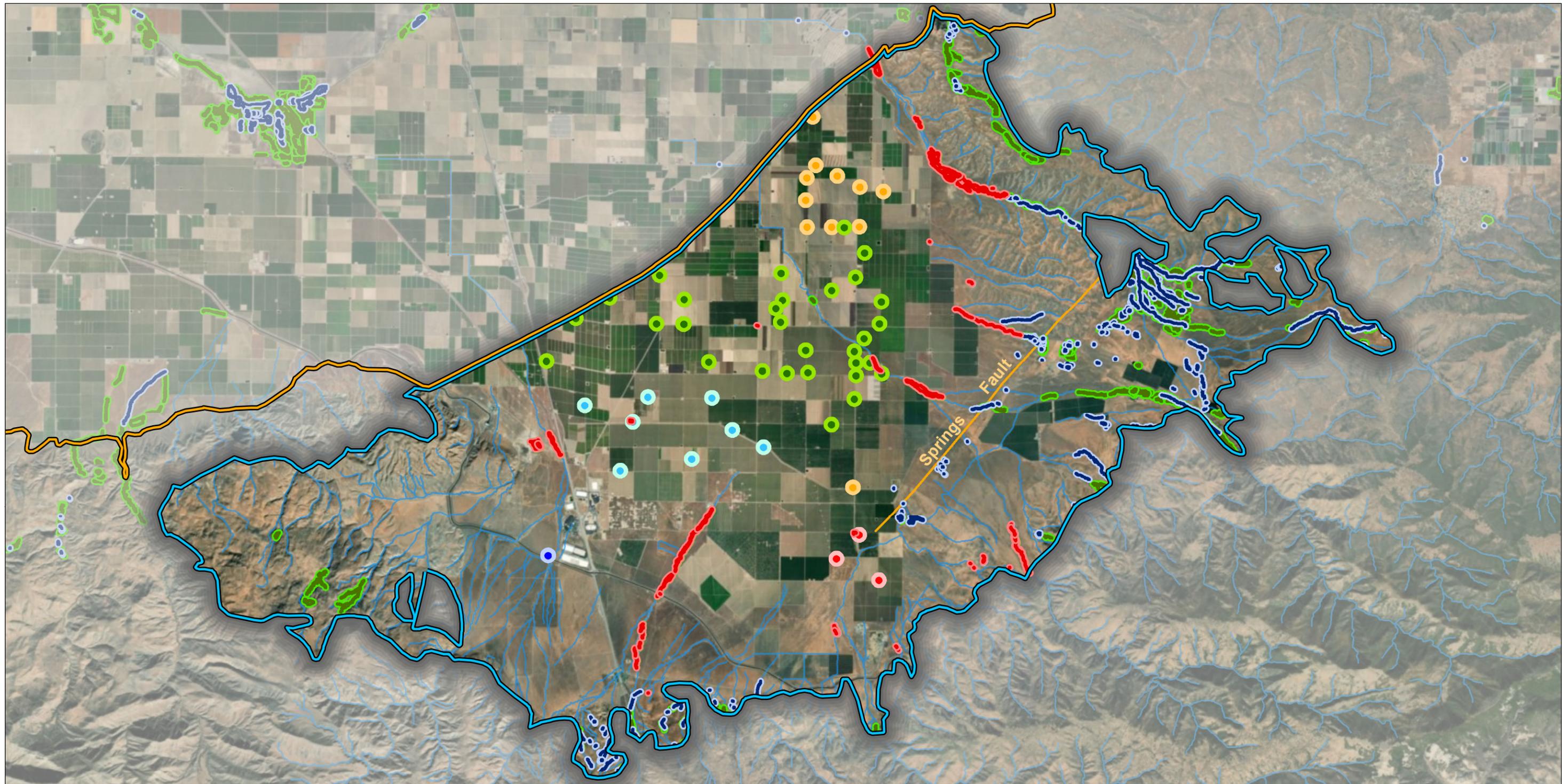


Project Location

White Wolf GSA
 Kern County, California
 September 2019
 B50001.05



Figure 1



Legend

Groundwater Subbasin

- White Wolf (DWR 5-022.18)
- Kern County (DWR 5-022.14)

NCCAG

- Wetland
- Vegetation
- Removed NCCAG Vegetation or Wetland
- Fault
- Stream into White Wolf Subbasin

Spring 2015 Depth to Groundwater (ft bgs)

- < 200
- 200 - 400
- 400 - 600
- 600 - 800
- > 800

Abbreviations

DWR = California Department of Water Resources
 ft bgs = feet below ground surface

NCCAG = Natural Communities Commonly Associated with Groundwater
 NHD = National Hydrography Dataset

Notes

1. All locations are approximate.

Sources

1. Basemap is ESRI's ArcGIS Online world topographic map, obtained 25 September 2019.
2. DWR groundwater basins are based on the boundaries defined by Bulletin 118 final Basin Prioritization - February 2019.
3. DWR NCCAG dataset was obtained from NC Dataserver Viewer <https://gis.water.ca.gov/app/NCDatasetViewer/>
4. Springs Fault from Goodman, E.D., and P.E. Malin, 1992, Evolution of the Southern San Joaquin Basin and Mid-Tertiary "Transitional" Tectonics, Central California, Tectonics, Vol. 11, No. 3, pages 478-498.
5. Surface water features and watersheds from NHD (<https://viewer.nationalmap.gov/basic/>).



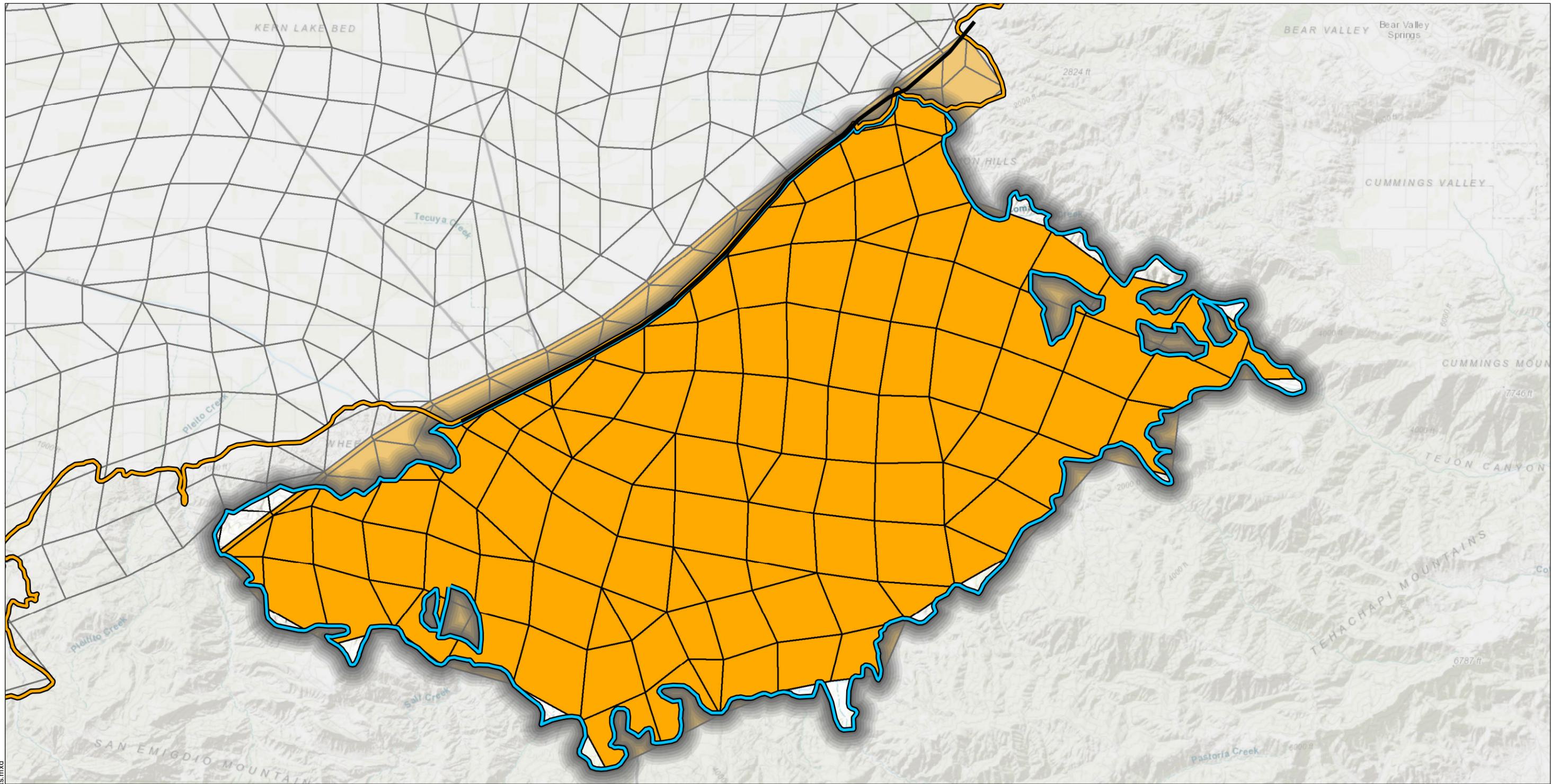
Natural Communities Commonly Associated with Groundwater and Spring 2015 Depth to Groundwater

White Wolf GSA
 Kern County, California
 September 2019
 B50001.05



Figure 2

Path: X:\B50001.05\Maps\2019\09\Fig2_NCCAG.mxd



Path: X:\B50001.05\Maps\2019\09\Fig3_C2VSimFG_elements.mxd

Legend

- White Wolf Fault Trace
 - C2VSimFG Elements
 - White Wolf Subbasin Water Budget
- Groundwater Subbasin**
- White Wolf (DWR 5-022.18)
 - Kern County (DWR 5-022.14)

Abbreviations

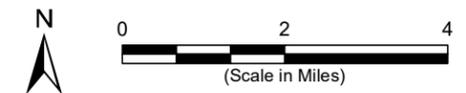
C2VSimFG= California Central Valley Groundwater-Surface Water Simulation Model – Fine Grid
 DWR = California Department of Water Resources

Notes

1. All locations are approximate.

Sources

1. Basemap is ESRI's ArcGIS Online world topographic map, obtained 25 October 2019.
2. DWR groundwater basins are based on the boundaries defined by Bulletin 118 final Basin Prioritization - February 2019.
3. C2VSimFG elements from DWR C2VSimFG - BETA, downloaded 30 April 2018.
4. White Wolf Fault trace from Wood PR and Dale RH, 1964, Geology and Ground-Water Features of the Edison-Maricopa Area, Kern County, California, United States Geological Survey Water Supply Paper 1656.

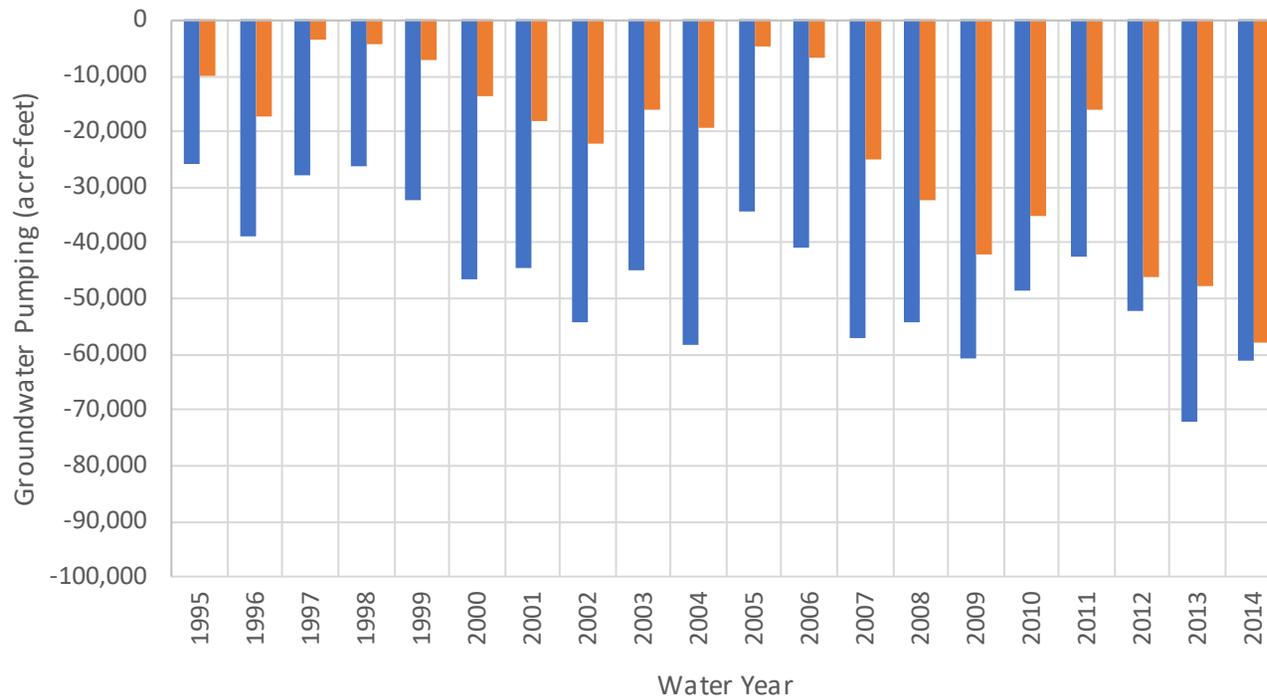


**C2VSimFG-Kern Elements
White Wolf Subbasin**

White Wolf GSA
 Kern County, California
 October 2019
 B50001.05



Figure 3



Legend

- C2VSimFG-Kern
- Analytical Water Budget

Abbreviations

- AFY = acre-feet per year
- C2VSimFG-Kern = California Central Valley Groundwater-Surface Water Simulation Model – Fine Grid - Kern
- WY = Water Year

Notes

1. Average estimated pumping for the historical water budget period (WY 1995-2014):
 Analytical model: 22,300 AFY
 C2VSimFG-Kern: 46,200 AFY

Sources

C2VSimFG-Kern water budget results for the White Wolf Subbasin from TODD Groundwater, received 7 May 2019.

Estimated Pumping Comparison, Analytical Water Budget and C2VSimFG-Kern White Wolf Subbasin

Attachment B

Cost Estimate for Basin-Specific Model Development Task of the Proposition 68 Funded Work Plan

Cost Estimate for Basin-Specific Model Development Task of the Proposition 68 Funded Work Plan
White Wolf Subbasin

Task	Approved Grant Amount	GSA Cost Share Amount	Total Cost
Task 1 - Basin-Specific Groundwater Model Development			
Subtask 1 - Model grid development	\$102,750	\$34,250	\$137,000
Subtask 2 - Sensitivity testing and calibration	\$41,250	\$13,750	\$55,000
Subtask 3 - Develop projected model scenarios	\$35,250	\$11,750	\$47,000
Subtask 4 - Water budget summary and analysis	\$18,750	\$6,250	\$25,000
Subtask 5 - Prepare TM, SMC development, update GSP	\$37,500	\$12,500	\$50,000
Total	\$235,500	\$78,500	\$314,000
GSA Member Cost		\$26,167	

Abbreviations:

GSA = Groundwater Sustainability Agency

GSP = Groundwater Sustainability Plan

SMC = Sustainable Management Criteria

TM = Technical Memorandum

Attachment C
2020 Schedule of Charges

Proposal/Agreement Date: 17 August 2020

EKI Project # B50001.06

SCHEDULE OF CHARGES FOR EKI ENVIRONMENT & WATER, INC.

2 January 2020

<u>Personnel Classification</u>	<u>Hourly Rate</u>
Officer and Chief Engineer-Scientist	297.44
Principal Engineer-Scientist	286.00
Supervising I, Engineer-Scientist	275.60
Supervising II, Engineer-Scientist	265.20
Senior I, Engineer-Scientist	252.72
Senior II, Engineer-Scientist	239.20
Associate I, Engineer-Scientist	227.76
Associate II, Engineer-Scientist	213.20
Engineer-Scientist, Grade 1	198.64
Engineer-Scientist, Grade 2	187.20
Engineer-Scientist, Grade 3	171.60
Engineer-Scientist, Grade 4	151.84
Engineer-Scientist, Grade 5	134.16
Engineer-Scientist, Grade 6	117.52
Technician	108.16
Senior GIS Analyst	138.32
CADD Operator / GIS Analyst	122.72
Senior Administrative Assistant	135.20
Administrative Assistant	107.12
Secretary	88.40

Direct Expenses

Reimbursement for direct expenses, as listed below, incurred in connection with the work will be at cost plus ten percent (10%) for items such as:

- a. Maps, photographs, reproductions, printing, equipment rental, and special supplies related to the work.
- b. Consultants, soils engineers, surveyors, drillers, laboratories, and contractors.
- c. Rented vehicles, local public transportation and taxis, travel and subsistence.
- d. Special fees, insurance, permits, and licenses applicable to the work.
- e. Outside computer processing, computation, and proprietary programs purchased for the work.

Reimbursement for company-owned automobiles, except trucks and four-wheel drive vehicles, used in connection with the work will be at the rate of sixty cents (\$0.60) per mile. The rate for company-owned trucks and four-wheel drive vehicles will be seventy-five cents (\$0.75) per mile. There will be an additional charge of thirty dollars (\$30.00) per day for vehicles used for field work. Reimbursement for use of personal vehicles will be at the federally allowed rate plus fifteen percent (15%).

CADD Computer time will be charged at twenty dollars (\$20.00) per hour. In-house material and equipment charges will be in accordance with the current rate schedule or special quotation. Excise taxes, if any, will be added as a direct expense.

Rate for professional staff for legal proceedings or as expert witnesses will be at a rate of one and one-half times the Hourly Rates specified above.

The foregoing Schedule of Charges is incorporated into the Agreement for the Services of EKI Environment & Water, Inc. and may be updated annually.



White Wolf Groundwater Sustainability Agency

Arvin-Edison Water Storage District
Tejon-Castac Water District
Wheeler Ridge-Maricopa Water Storage District
Kern County

AGENDA MEMORANDUM

Date: 26 August 2020

To: Board of Directors, White Wolf Groundwater Sustainability Agency (GSA)

From: Angelica Martin, Secretary, White Wolf GSA

Item: 7. Discuss and consider approval of EKI's Task Order #6 for As Needed Technical Support Related to the Sustainable Groundwater Management Act (SGMA) Compliance

SUMMARY

Recommendation: Approve EKI Environment and Water, Inc. (EKI)'s Task Order #6 for As Needed Technical Support Related to the SGMA Compliance

Fiscal Impact: GSA cost of \$10,000 (\$3,333 per District)

BACKGROUND

Tejon-Castac Water District, along with other White Wolf Groundwater Sustainability Agency (GSA) ad-hoc technical committee partners, has requested that EKI provide a Task Order to provide continued as-needed technical support for activities that may arise that may be time sensitive and that were not originally scoped in EKI's Work Plan to prepare a Groundwater Sustainability Plan (GSP).

At the direction of the GSA ad-hoc technical committee, EKI will be available to provide technical support to the GSA for as-needed tasks that are beyond the approved scope of work for GSP development. Such tasks could include review or development of documents or tools to support GSA efforts (e.g., sensitivity testing of the Kern Subbasin groundwater model). Additional services under this task, including routine project management and communications tasks, will be performed on an as-needed and as-requested basis. This Task Order is intended to cover services in fiscal year 2020-2021 (i.e., July 2020 through June 2021), at which time the scope may be revisited and adjusted at the request of the GSA.

Attached: (1) EKI's Task Order #6 for As Needed Technical Support Related to the Sustainable Groundwater Management Act (SGMA) Compliance

25 August 2020

To: Allen Lyda, Tejon-Castac Water District (TCWD)

Cc: Tito Martinez, White Wolf Groundwater Sustainability Agency (WWGSA)
Angelica Martin, TCWD
Jeevan Muhar, Arvin-Edison Water Storage District (AEWSD)
Sheridan Nicholas, Wheeler Ridge-Maricopa Water Storage District (WRMWSD)
Alan Christensen, Kern County

From: Anona Dutton, P.G., C.Hg., EKI Environment & Water, Inc. (EKI)
Christina Lucero, P.G. (EKI)

Subject: **Task Order #6 for As Needed Technical Support Related to the Sustainable Groundwater Management Act (SGMA) Compliance**
Tejon-Castac Water District
Kern County, CA

Dear Mr. Lyda,

Tejon-Castac Water District (TCWD, District, or Client), along with other White Wolf Groundwater Sustainability Agency (GSA) ad-hoc technical committee partners, has requested that EKI Environment and Water, Inc. (EKI) provide a scope to provide continued as-needed technical support for activities that may arise that may be time sensitive and that were not originally scoped in EKI's Work Plan to prepare a Groundwater Sustainability Plan (GSP).

SCOPE OF WORK

Task 1 – Provide As Needed Technical Support Related to SGMA Compliance

At the direction of the GSA ad-hoc technical committee, EKI will be available to provide technical support to the GSA for as-needed tasks that are beyond the approved scope of work for GSP development. Such tasks could include review or development of documents or tools to support GSA efforts (e.g., sensitivity testing of the Kern Subbasin groundwater model). Additional services under this task, including routine project management and communications tasks, will be performed on an as-needed and as-requested basis.

PERSONNEL

EKI's staff members who will be available to work on this project include Anona Dutton, P.G., C.Hg. (Officer), Christina Lucero, P.G. (Grade 2), and Luodan You (Grade 5); grades in parentheses are for purposes of billing in accordance with our current Schedule of Charges. Other EKI staff members may be assigned to assist with the performance of the tasks as required to meet project commitments.

SCHEDULE

This Task Order is intended to cover services in fiscal year 2020-2021 (i.e., July 2020 through June 2021), at which time the scope may be revisited and adjusted at the request of the District.

TERMS AND CONDITIONS

All work performed by EKI under this Task Order is anticipated to be performed pursuant to the Terms and Conditions of our existing Agreement with Tejon-Castac Water District.

COMPENSATION

Inasmuch as the exact level of effort required to complete the above Scope of Work cannot be known precisely, EKI proposes to perform the work on a time and materials expense reimbursement basis in accordance with our current Schedule of Charges. A breakdown of the estimated budget through fiscal year 2020-2021 is provided in Table 1 below.

Table 1. Estimated Budget, Fiscal Year 2020-2021

Task	Estimated Budget	Grant	
		Reimbursable Amount	White Wolf GSA Amount
Task 1 – Provide As Needed Technical Support Related to SGMA Compliance	\$10,000	\$0	\$10,000
GSA Member Costs:			\$3,333

If this Task Order meets with your approval, please sign where noted below. Please return a fully executed copy to our office to confirm your authorization to proceed.

Very truly yours,

EKI Environment & Water, Inc.



Anona L. Dutton, P.G., C.Hg.
Vice President / Principal-In-Charge

AUTHORIZATION

TEJON-CASTAC WATER DISTRICT
(CLIENT)

By _____

Title _____

Date _____

Proposal/Agreement Date: 25 August 2020

EKI Project # B50001.05

SCHEDULE OF CHARGES FOR EKI ENVIRONMENT & WATER, INC.

2 January 2020

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