AGENDA
IRVINE RANCH WATER DISTRICT
SUPPLY RELIABILITY PROGRAMS COMMITTEE
THURSDAY, DECEMBER 20, 2018

CALL TO ORDER 3:00 p.m., Committee Room, Second Floor, District Office
15600 Sand Canyon Avenue, Irvine, California

ATTENDANCE
Committee Chair: Peer Swan _____
Member: Douglas Reinhart _____

ALSO PRESENT

Paul Cook	_____	Kellie Welch	_____
Rob Jacobson	_____	Christine Compton	_____
Ray Bennett	_____	Paul Weghorst	_____
Jo Ann Corey	_____	Dane Johnson	_____
Fiona Sanchez	_____	_____	_____
_____	_____	_____	_____

NOTICE

If you wish to address the Committee on any item, please file your name with the Committee. Forms are provided on the table outside of the Committee Room. Remarks are limited to three minutes per speaker on each subject.

COMMUNICATIONS

1. Notes: Weghorst
2. Public Comments
3. Determine the need to discuss and/or take action on item(s) introduced that came to the attention of the District subsequent to the agenda being posted.
4. Determine which items may be approved without discussion.

INFORMATION

5. WATER BANKING PROJECT FACILITIES, CAPACITIES, OPERATIONS, AND PROGRAMS – JOHNSON / WELCH / SANCHEZ/ WEGHORST

   Recommendation: Receive and file.

ACTION

6. CANAL ALIGNMENT STUDY FOR KERN FAN GROUNWATER STORAGE PROJECT – BENNETT / WELCH / SANCHEZ / WEGHORST

   Recommendation: That the Board authorize the General Manager to execute a professional services agreement with Dee Jaspar and Associates, Inc. in the amount of $115,425 to perform a planning level evaluation of potential canal alignments for the Kern Fan Groundwater Storage Project.

OTHER BUSINESS

7. Directors' Comments

8. Adjourn

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Availability of agenda materials: Agenda exhibits and other writings that are disclosable public records distributed to all or a majority of the members of the above-named Committee in connection with a matter subject to discussion or consideration at an open meeting of the Committee are available for public inspection in the District's office, 15600 Sand Canyon Avenue, Irvine, California ("District Office"). If such writings are distributed to members of the Committee less than 72 hours prior to the meeting, they will be available from the District Secretary of the District Office at the same time as they are distributed to Committee Members, except that if such writings are distributed one hour prior to, or during, the meeting, they will be available at the entrance of the meeting room at the District Office. The Irvine Ranch Water District Committee Room is wheelchair accessible. If you require any special disability-related accommodations (e.g., access to an amplified sound system, etc.), please contact the District Secretary at (949) 453-5300 during business hours at least seventy-two (72) hours prior to the scheduled meeting. This agenda can be obtained in an alternative format upon written request to the District Secretary at least seventy-two (72) hours prior to the scheduled meeting.

December 20, 2018
Prepared by: D. Johnson / K. Welch
Submitted by: F. Sanchez / P. Weghorst
Approved by: Paul A. Cook

SUPPLY RELIABILITY PROGRAMS COMMITTEE

WATER BANKING PROJECT FACILITIES, CAPACITIES, OPERATIONS, AND PROGRAMS

SUMMARY:

Staff has prepared information related to IRWD's water banking facilities, capacities, operations and exchange programs that may serve as reference during the Committee meeting. The information is presented in a format that can be updated as necessary to reflect changes in IRWD's projects, programs and operations. At the Committee meeting, staff will review this information and provide an update on ongoing efforts to secure additional water for recharge at IRWD's water banking projects. Staff will also provide an overview of how storage, recharge and recovery capacities in IRWD's water banking projects are allocated to existing and proposed exchange programs. Finally, additional information is provided related to property taxes assessed by the Kern County Water Agency (KCWA).

BACKGROUND:

To assist with the facilitation of Committee meeting discussions, staff has prepared reference materials in tabular, map and schematic formats that describe IRWD's water banking facilities, capacities, operations and exchange programs. The reference materials will be updated, as needed, to reflect changes to the projects, programs and operations. Following is an overview of the reference materials provided as well as information regarding IRWD's 2018 water banking operations. Information is also provided related to how storage, recharge and recovery capacities are allocated to IRWD's existing and proposed exchange programs. In addition, additional information is provided related to property taxes assessed by KCWA. At the Committee meeting, staff will provide an update on ongoing efforts to secure additional water for recharge at IRWD's water banking projects.

Capacity and Operations Tables:

A table presenting storage, recharge and recovery capacities of existing and planned IRWD water banking projects, including capacities available to IRWD in the Kern Water Bank, is attached as Exhibit "A". Exhibits "B" and "C" provide an update on water banking recovery and recharge operations, as well as the balance of the water stored in the Kern Water Bank. Exhibit "B" provides before-loss estimates of water recharged at the water banking projects, and Exhibit "C" provides after-loss estimates of water recharged at the projects. Both Exhibits "B" and "C" include a column that provides totals for each water type and storage location. There have been no changes to the capacity and operations tables since they were previously reviewed with the Committee.

Recharge Opportunities:

Staff has been pursuing additional opportunities to secure recharge water. At the Committee meeting, staff will provide an update on efforts to secure water from:

- Dudley Ridge Water District (DRWD);
- Carpinteria Valley Water District (CVWD);
- Mojave Water Agency (MWA); and
- Metropolitan Water District of Southern California (Metropolitan).

Staff will also provide perspectives on the complexities associated with the potential pursuit of water supply opportunities with Central Valley Project contractors and members of the San Joaquin River Exchange Contractors Water Authority such as:

- Westlands Irrigation District, and
- San Luis Canal Company.

2018 Recovery Operations:

In May 2018, Rosedale-Rio Bravo Water Storage District recovered and delivered 1,667 acre-feet (AF) to Buena Vista Water Storage District (BVWSD), as requested by BVWSD. BVWSD has a remaining balance of 4,532 AF in storage, after losses.

Project Maps:

To support the tables provided as Exhibits "A", "B", and "C", staff has prepared maps that depict project wells and pipelines, recharge basins and Cross Valley Canal turnout locations, along with the most recent recharge rates. These maps are provided as Exhibits "D", "E", and "F", respectively. The facilities shown on these maps are associated with the Strand Ranch, Stockdale West, Stockdale East and Rosedale Drought Relief Projects.

Program Agreement Diagrams:

Schematic diagrams have been prepared that depict the IRWD water banking and exchange programs with Rosedale, BVWSD, DRWD, and Metropolitan. These diagrams are provided as Exhibits "G", "H", "I", "J" and "K" as described in the List of Exhibits.

Capacities Allocated to Exchange Programs:

IRWD currently has four existing and proposed exchange programs which have been allocated to storage, recharge and recovery capacities in the Strand and Stockdale West Integrated Banking Projects. At Strand Ranch, IRWD has implemented the following exchange programs:

- Long-Term Water Exchange Program with BVWSD, and
- Unbalanced Exchange Program with DRWD.

IRWD has dedicated and made available 40,000 AF of Strand Ranch storage capacity to the program with BVWSD. The remaining 10,000 AF of Strand Ranch storage capacity has been reserved for the DRWD program. These two programs completely encumber the 50,000 AF of storage capacity in the Strand Ranch project.

At the Stockdale West project, the following two proposed programs have tentatively been allocated to capacities in the Stockdale West project:

- Long-Term Water Exchange Program with Antelope Valley - East Kern Water Agency (AVEK), and
- Long-Term Exchange Program with CVWD.

Per the executed agreement for the AVEK program, IRWD has dedicated 20,000 AF of the total 26,000 AF storage capacity in the project. Of the remaining 6,000 AF of capacity, 5,000 AF is expected to be dedicated to CVWD per the draft terms of a program that were previously reviewed with the Committee.

A table that provides an overview of dedicated storage, recharge and recovery capacities at IRWD's Strand Ranch and Stockdale West projects has been provided as Exhibit "L". At the Committee meeting, staff will provide an overview of how other exchange programs could be implemented in ways that do not impede the existing and proposed exchange programs while facilitating the delivery of water into IRWD's 50,000 AF leased storage capacity in the Rosedale-Rio Bravo Water Storage District's Conjunctive Use Program.

Kern County Property Taxes:

Last month staff provided an overview of Kern County property taxes assessed to the Strand and Stockdale West Ranch parcels. Staff has investigated the authority by which KCWA can levy a benefit assessment for the importation of State Water Project water against all properties.

The KCWA Zone 17 Debt and Zone 19 Debt taxes are considered voter-approved tax rates that were approved prior to Proposition 13. Proposition 13 was approved by voters in 1978 and restricts taxing agencies from taxing properties more than 1%. Although most bonds issued before the passage of Proposition 13 have been paid off, State Courts have determined that other obligations approved by voters before 1978 can be paid with additional ad-valorem tax rates. A common pre-1978 obligation paid with voter-approved debt related tax rates are payments to the State Water Project. State courts have concluded that annual costs for water deliveries from the State Water Project were voter-approved debt because the voters approved the construction, operation and maintenance of the State Water Project in 1960.

FISCAL IMPACTS:

None.

ENVIRONMENTAL COMPLIANCE:

Not applicable.

RECOMMENDATION:

Receive and file.

LIST OF EXHIBITS:

Exhibit "A" – Recharge, Storage and Recovery Capacities of Current and Anticipated Water Banking Projects
Exhibit "B" – Water Banking Storage, Recharge and Recovery Operations before Losses
Exhibit "C" – Water Banking Storage, Recharge and Recovery Operations after Losses
Exhibit "D" – Map of Water Banking Project Wells and Pipelines
Exhibit "E" – Map of Water Banking Recharge Basins and Cross Valley Canal Turnout Facilities
Exhibit "F" – Map of Water Banking Recharge Rates
Exhibit "G" – Diagram of IRWD-Rosedale Water Banking and Exchange Program Agreements
Exhibit "H" – Diagram of Long-Term Water Exchange Program with BVWSD and Diagram of One-Year Program to Augment Recharge Using Stockdale West Recharge Facilities with BVWSD
Exhibit "I" – Diagram of Unbalanced Exchange Program Diagram with DRWD
Exhibit "J" – Diagram of Coordinated Operating, Water Storage, Exchange and Delivery Agreement with MWD
Exhibit "K" – Diagram of Template Wheeling Agreement with Metropolitan
Exhibit "L" – IRWD Dedicated Water Banking Capacities for Existing and Proposed Exchange Programs

Exhibit "A"

TABLE 1
Current and Anticipated Water Banking Projects
Recharge, Storage and Recovery Capacities
December 20, 2018

WATER BANKING PROJECT	OWNERSHIP AND WELL INFO			ALLOCATED CAPACITY (AF)					1st PRIORITY RECOVERY CONDITIONS (CFS)		2nd PRIORITY RECOVERY CONDITIONS (CFS)	
	IRWD OWNED	WELLS EXISTING	WELLS PROPOSED OR UNDER CONST.	TOTAL STORAGE CAPACITY	ANNUAL RECHARGE 1ST PRIORITY	ANNUAL RECHARGE 2ND PRIORITY	ANNUAL RECOVERY 1ST PRIORITY	ANNUAL RECOVERY 2ND PRIORITY	RECOVERY CAPACITY AS PLANNED[1]	ESTIMATED RECOVERY CAPACITY (DEC. 2016 CONDITIONS)[2]	RECOVERY CAPACITY AS PLANNED	RECOVERY CAPACITY CURRENT CONDITIONS
Strand Ranch	Yes	7	-	50,000	17,500	-	17,500	-	40.0	35.0	-	-
Stockdale West	Yes	3	-	26,000	27,100	-	11,250	-	15.0	15.0	-	-
Stockdale East	No	-	2	-	-	19,000	-	7,500	-	-	10.0	-
IRWD Acquired Storage Account[3]	No	-	-	50,000	-	-	-	-	-	-	-	-
Drought Relief Project Wells[3]	No	-	3	-	-	-	-	-	15.0	-	-	-
Kern Water Bank Storage Account[5]	No	-	-	9,495	3,200	-	6,330	-	-	-	-	-
TOTALS		**10**	**5**	126,000	44,600	19,000	28,750	7,500	70.0	50.0	10.0	0.0
Partner Capacities[4]				36,000	22,300	9,500	12,000	0	35.5	25.0	-	-
IRWD Capacities				90,000	22,300	9,500	16,750	7,500	34.5	25.0	-	-
IRWD's recovery ***during*** 6 month partner recovery period (AF)									12,420	9,000	-	-
IRWD's recovery ***after*** 6 month partner recovery period (AF)									4,330	6,733	-	-
TOTALS (AF)									16,750	15,733	-	-
Number of months needed to recover IRWD's total AF after partners' recovery (Assumes IRWD has use of total recovery capacity after partners' recovery)									8.1	9.7	-	-
Strand Ranch monthy recharge amount assuming 0.3 ft/day average recharge rate (AF)											4,518	
Stockdale West monthy recharge amount assuming 0.3 ft/day average recharge rate (AF)											2,331	

[1] Based on designed Strand recovery capacity assuming 370' bgs. Assumes 5 cfs for each of the Stockdale West and Drought Relief wells in order to meet IRWD's Water Banking, Transfers, and Wheeling policy position. Assumes partners' water is recovered over 6 months.

[2] Strand Ranch and Stockdale West wells currently idle.

[3] IRWD has use of Acquired Storage and Drought Relief Project wells until January 12, 2039, unless the term of the agreement is extended.

[4] One half of storage capacity at Stockdale West and Strand Ranch will be allocated for partners.

[5] Kern Water Bank capacities based on 6.58% of Dudley Ridge Water District's 9.62% share of the Kern Water Bank. Annual recharge amount is based on an average of recharge rates for high and low groundwater level conditions. Not included in storage capacity, recharge, and recovery totals to match IRWD's Water Banking Policy Position Paper.

Exhibit "B"

TABLE 2
IRWD's Water Banking Storage, Recharge and Recovery Operations - BEFORE LOSSES
December 20, 2018

TRANSACTIONS	WATER BANKING ENTITY					TOTAL BY WATER TYPE AND STORAGE LOCATION
	IRWD		BUENA VISTA (BVWSD)	CENTRAL COAST (CCWA)	DUDLEY RIDGE WATER DISTRICT (DRWD)[3]	
	SWP[1]	NON-SWP[2]	NON-SWP	SWP	SWP	
BEGINNING WATER IN STORAGE 2017 (AF)						
Total Kern Water Bank	-	4,581	-	-	-	4,581
Total MWD System[4]	8,873	-	-	-	1,174	10,047
Total Kern County	437	10,835	-	-	-	11,272
TOTAL STORED WATER (1/1/2017)	9,310	15,416	-	-	1,174	25,900
(RECOVERY) AND RECHARGE IN 2017 (AF)						
Kern Water Bank Deliveries	-	75	-	-	-	75
2017 SWP Allocation (85%)[3]	787	-	-	-	787	1,574
2017 SWP Article 21[5]	1,744	-	-	-	1,744	3,488
SWP Table A (CCWA 2017 Exch.)	289	-		289	-	578
High Flow Kern River	-	6,869	6,869	-	-	13,738
MWD Water to Jackson Ranch[6]	-	-	-	-	(143)	(143)
TOTAL 2017 TRANSACTIONS	2,820	6,944	6,869	289	2,388	19,310
Total Kern Water Bank	-	4,656	-	-	-	4,656
Total MWD System	8,873	-	-	-	1,174	10,047
Total Kern County	3,257	17,704	6,869	289	2,388	30,507
TOTAL STORED WATER (1/1/2018)	12,130	22,360	6,869	289	3,562	45,210
(RECOVERY) AND RECHARGE IN 2018 (AF)						
Kern Water Bank Deliveries	-	-	-	-	-	-
2018 SWP Allocation (35%)[3]	310	-	-	-	310	620
High Flow Kern River	-	-	(1,667)	-	-	(1,667)
TOTAL ESTIMATED 2018 TRANSACTIONS	310	-	(1,667)	-	310	(1,047)
ESTIMATED WATER IN STORAGE 2018 (AF)						
Total Kern Water Bank	-	4,656	-	-	-	4,656
Total MWD System	8,873	-	-	-	1,174	10,047
Total Kern County	3,567	17,704	5,202	289	2,698	29,460
TOTAL ESTIMATED STORED WATER TO DATE	12,440	22,360	5,202	289	3,872	44,163

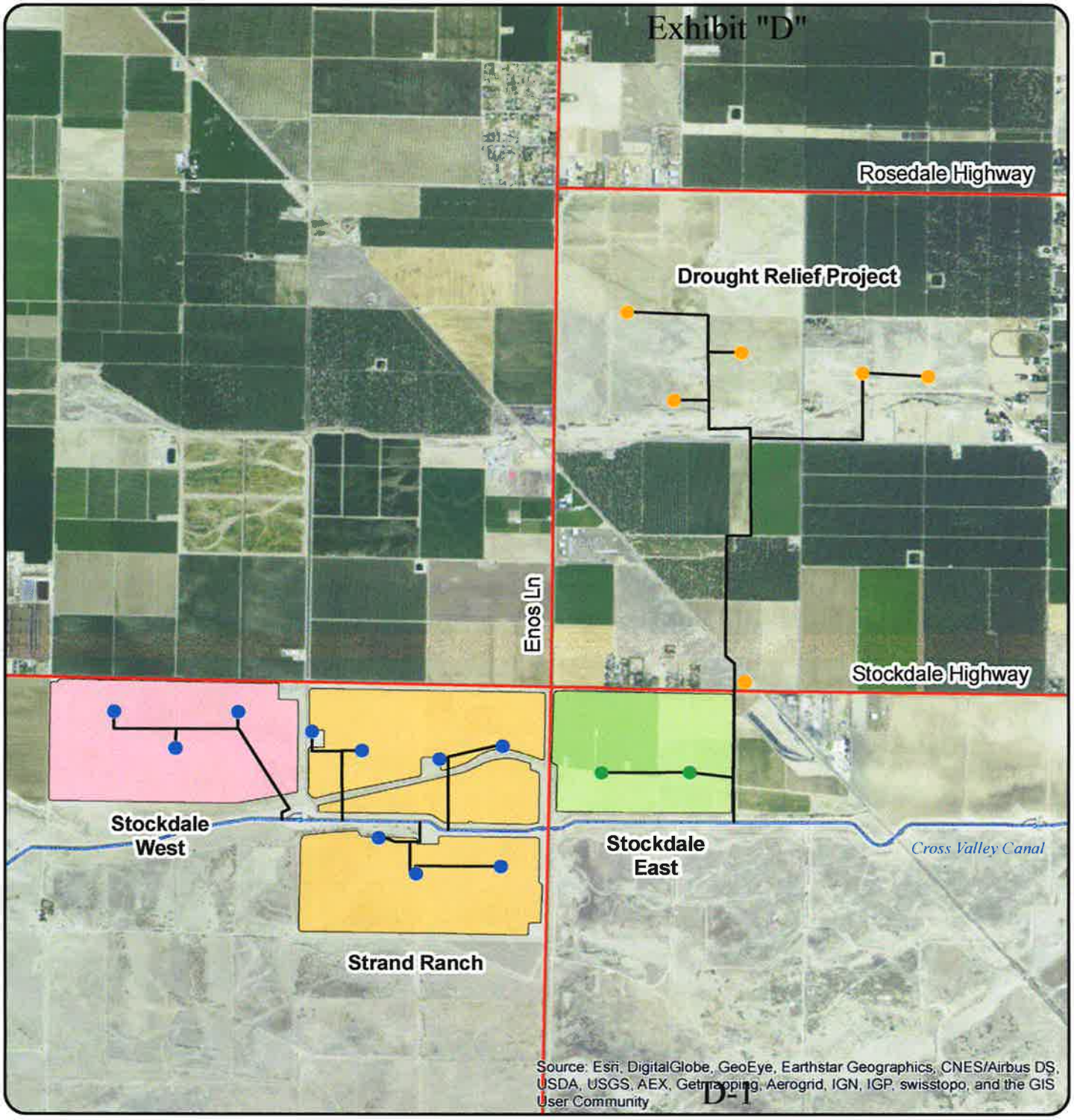
NOTES:
-MWD = Metropolitan Water District of Southern California.
[1] IRWD's SWP includes 437 AF from CVWD that stays in Kern County.
[2] IRWD's Non-SWP total includes 3,158 AF of Kern County Water Agency Article 21 Water.
[3] DRWD water supply will be returned by MWD or IRWD's Strand Ranch to IRWD's Jackson Ranch. IRWD's 2013-2016 SWP allocation amounts are stored in the MWD system. IRWD's 2017 SWP allocation water is stored in Kern County; assumes 2018 SWP water will be stored in Kern County.
[4] Beginning balance of water stored in MWD system includes: 4,494 AF from 2014 Exchange, 3,206 AF of 2014 borrowed SWP, 649 AF of IRWD's 2013-2016 SWP allocations through DRWD.
[5] Article 21 was deliverd to Strand Ranch/Stockdale West from 3/8/17 - 3/22/17. Deliveries made pursuant to the DRWD/MWD Unbalanced Exchange Program.
[6] Water returned to DRWD by MWD for use on IRWD's Jackson Ranch.

Exhibit "C"

TABLE 3
IRWD's Water Banking Storage, Recharge and Recovery Operations - AFTER LOSSES
December 20, 2018

TRANSACTIONS	WATER BANKING ENTITY					TOTAL BY WATER TYPE AND STORAGE LOCATION
	IRWD		BUENA VISTA (BVWSD)	CENTRAL COAST (CCWA)	DUDLEY RIDGE WATER DISTRICT (DRWD)[3]	
	SWP[1]	NON-SWP[2]	NON-SWP	SWP	SWP	
BEGINNING WATER IN STORAGE 2017 (AF)						
Total Kern Water Bank	-	4,165	-	-	-	4,165
Total MWD System[4]	7,917	-	-	-	1,174	9,091
Total Kern County	389	9,675	-	-	-	10,064
TOTAL STORED WATER (1/1/2017)	8,306	13,840	-	-	1,174	23,320
(RECOVERY) AND RECHARGE IN 2017 (AF)						
Kern Water Bank Deliveries	-	68	-	-	-	68
2017 SWP Allocation (85%)[3]	669	-	-	-	708	1,377
2017 SWP Article 21[5]	1,479	-	-	-	1,566	3,044
SWP Table A (CCWA 2017 Exch.)	246	-	-	246	-	491
High Flow Kern River	-	5,889	6,199	-	-	12,088
MWD Water to Jackson Ranch[6]	-	-	-	-	(143)	(143)
TOTAL 2017 TRANSACTIONS	2,393	5,957	6,199	246	2,131	16,925
Total Kern Water Bank	-	4,233	-	-	-	4,233
Total MWD System	7,917	-	-	-	1,174	9,091
Total Kern County	2,782	15,564	6,199	246	2,131	26,921
TOTAL STORED WATER (1/1/2018)	10,699	19,797	6,199	246	3,305	40,245
(RECOVERY) AND RECHARGE IN 2018 (AF)						
Kern Water Bank Deliveries	-	-	-	-	-	-
2018 SWP Allocation (35%)[3]	264	-	-	-	264	528
High Flow Kern River	-	-	(1,667)	-	-	(1,667)
TOTAL ESTIMATED 2018 TRANSACTIONS[7]	264	-	(1,667)	-	264	(1,139)
ESTIMATED WATER IN STORAGE 2018 (AF)						
Total Kern Water Bank	-	4,233	-	-	-	4,233
Total MWD System	7,917	-	-	-	1,174	9,091
Total Kern County	3,046	15,564	-	246	2,395	21,250
TOTAL ESTIMATED STORED WATER TO DATE	10,963	19,797	4,532	246	3,569	39,106

NOTES:
-Water in storage has been adjusted to account for losses. IRWD's water stored in Kern County is adjusted 15% for losses (5% for out of county loss, 6% surface loss, and 4% reserve loss); Water stored for DRWD and BVWSD in Kern County is adjusted 10% (6% for surface loss and 4% for reserve loss); KWB losses are 10%; no losses for water directly delivered to MWD system.
-MWD = Metropolitan Water District of Southern California.
[1] IRWD's SWP includes 389 AF from CVWD that stays in Kern County.
[2] IRWD's Non-SWP total includes 2,842 AF of Kern County Water Agency Article 21 Water.
[3] DRWD water supply will be returned by MWD or IRWD's Strand Ranch to IRWD's Jackson Ranch. IRWD's 2013-2016 SWP allocation amounts are stored in the MWD system. IRWD's 2017 SWP allocation water is stored in Kern County; assumes 2018 SWP water will be stored in Kern County.
[4] Beginning balance of water stored in MWD system includes (net of CVC losses): 3,920 AF of 2014 Exchange, 2,824 AF of 2014 borrowed SWP, 649 AF of IRWD's 2013-2016 SWP allocations through DRWD.
[5]Article 21 was deliverd to Strand Ranch/Stockdale West from 3/8/17 - 3/22/17. Deliveries made pursuant to the DRWD/MWD Unbalanced Exchange Program. 9 AF of additional CVC losses, split among IRWD and DRWD, are reflected in these amounts.
[6]Water returned to DRWD by MWD for use on IRWD's Jackson Ranch.
[7]2018 transactions may be adjusted for conveyance losses in CVC.



Irvine Ranch WATER DISTRICT

Location Map: IRWD Water Banking Projects Wells and Turnin Pipelines

MAP FEATURES

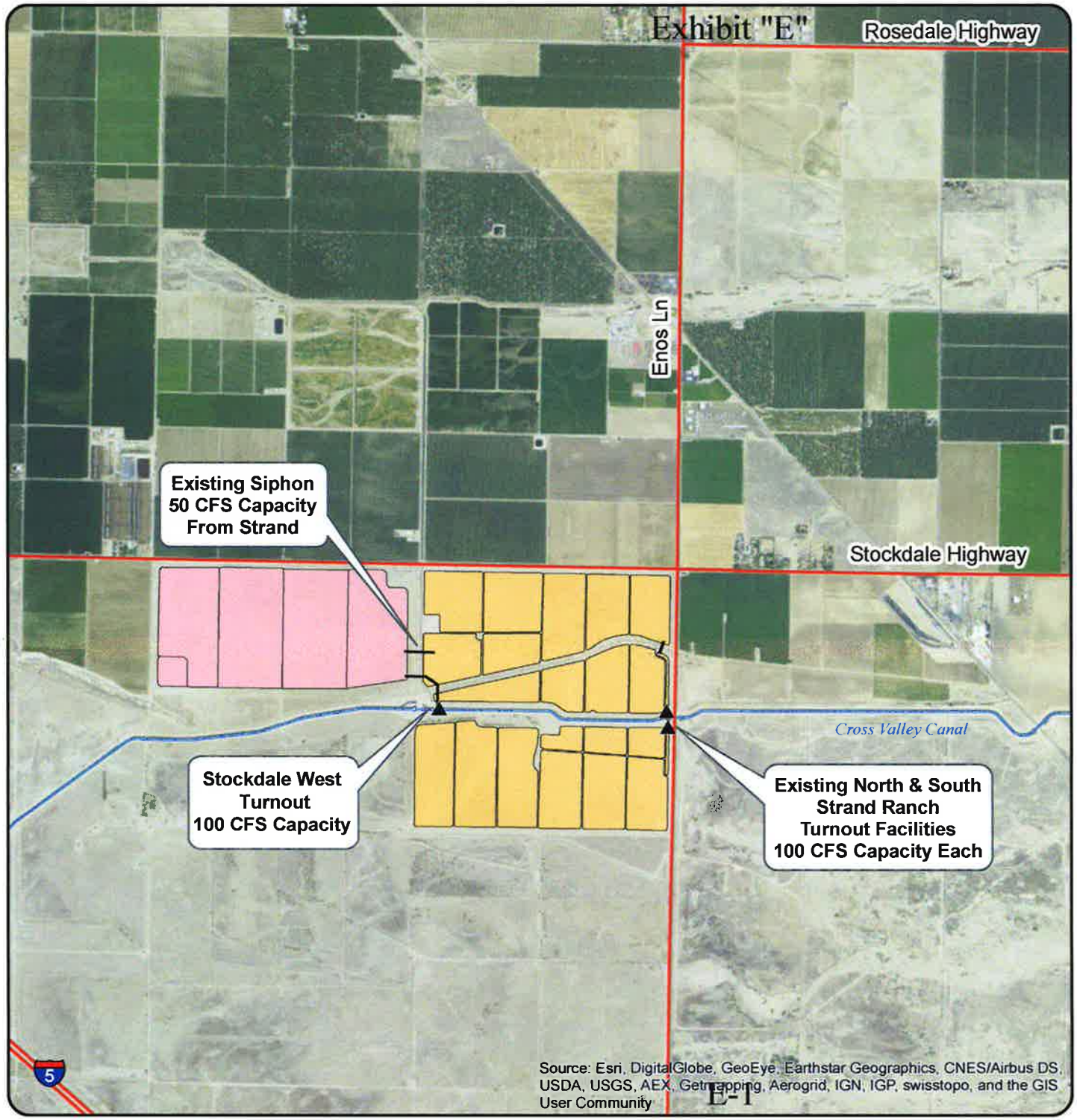
- Existing Extraction Well
- Planned Extraction Well
- Well Under Construction
- Well Discharge Pipelines
- Stockdale East
- Stockdale West
- Strand Ranch

This figure shows the location of IRWD's water banking project sites as well as existing and proposed extraction wells.

N

0 0.25 0.5 1 Miles

NAD 83 State Plane Zone 5 (feet)
Central Meridian: -118



Irvine Ranch
WATER DISTRICT

Location Map:
IRWD Water Banking Projects
Recharge Basins &Turnout Facilities

MAP FEATURES

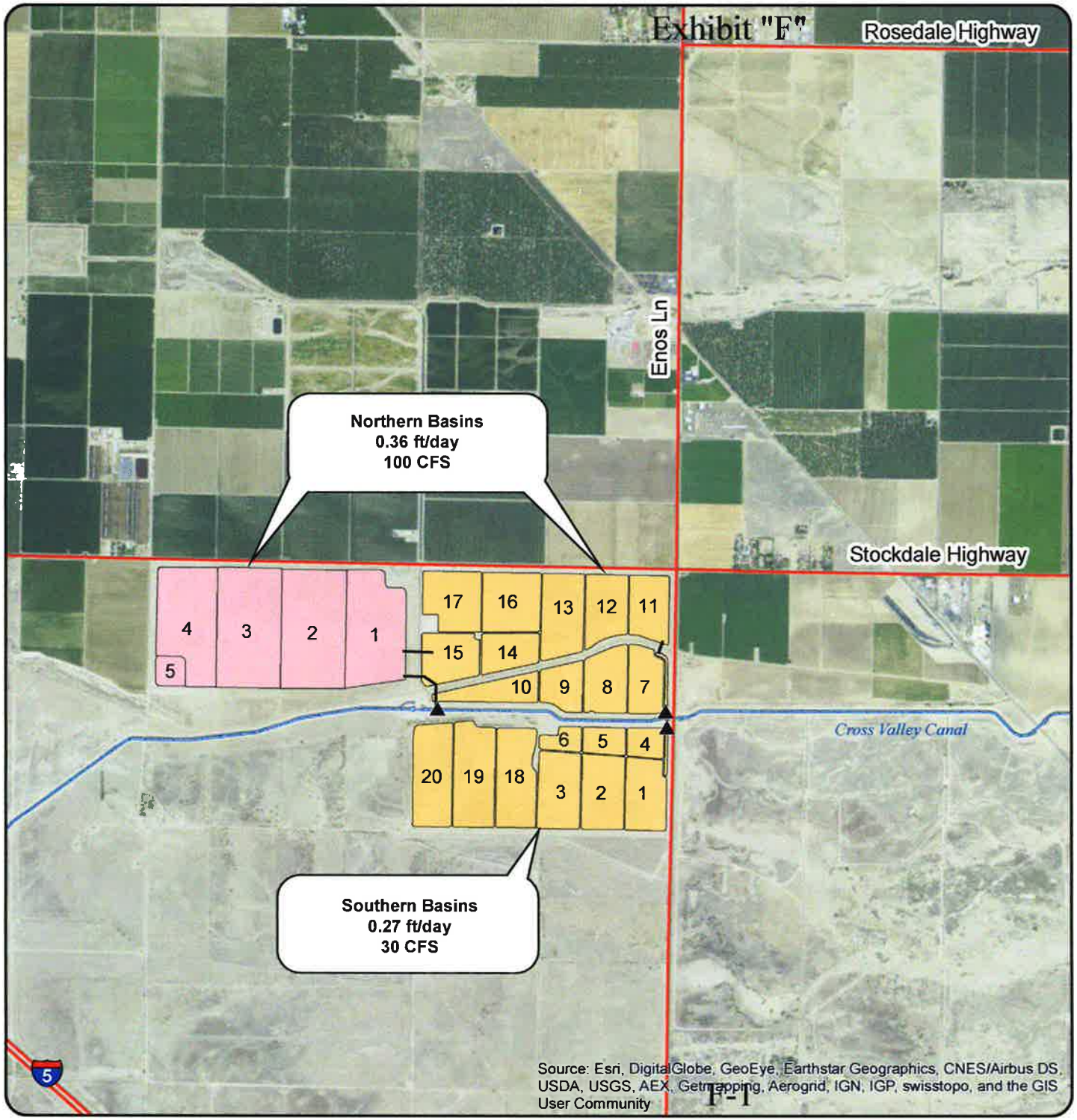
- ▲ Turnouts
- Stockdale West
- Strand Ranch

This figure shows the location of recharge basins as well as existing and anticipated pipelines and turnout facilities.

N

0 0.25 0.5 1
Miles

NAD 83 State Plane Zone 5 (feet)
Central Meridian: -118



Irvine Ranch WATER DISTRICT

Location Map:
IRWD Water Banking Projects
Recharge Rates

MAP FEATURES

- Turnouts
- Stockdale West
- Strand Ranch

This figure shows the location of recharge basins and their associated recharge rates as of December 2017. Recharge rates will be updated if rates change in 2018.

N

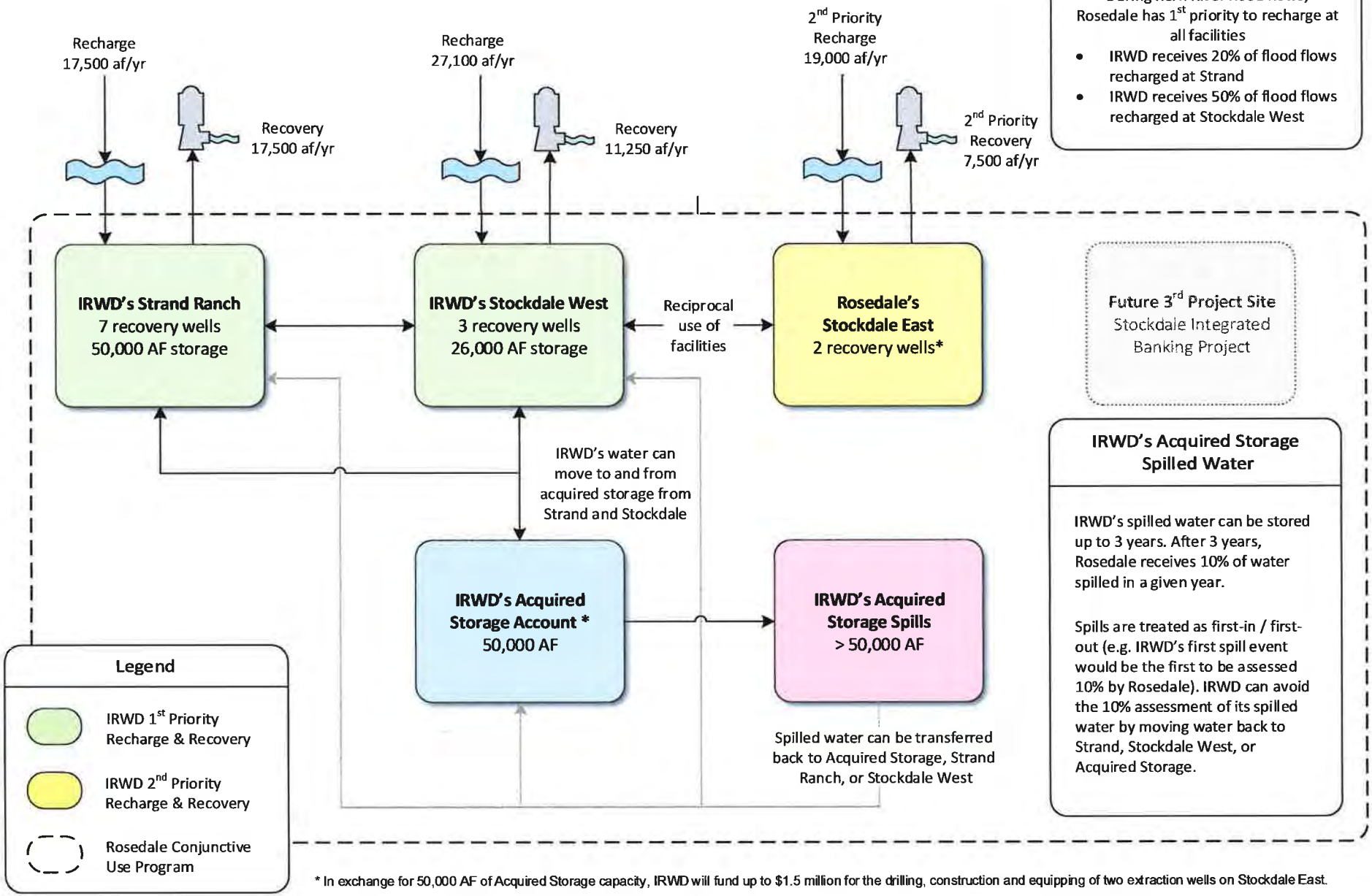
0 0.25 0.5 1 Miles

NAD 83 State Plane Zone 5 (feet)
Central Meridian: -118

Exhibit "G"

IRWD-Rosedale Water Banking and Exchange Program Agreements

Effective 1/12/2009 through 1/12/2039 (Strand Ranch)
2/4/2016 through 1/12/2039 (Stockdale West)



Recharge of Flood Flows

During Kern River flood flows, Rosedale has 1st priority to recharge at all facilities

- IRWD receives 20% of flood flows recharged at Strand
- IRWD receives 50% of flood flows recharged at Stockdale West

IRWD's Acquired Storage Spilled Water

IRWD's spilled water can be stored up to 3 years. After 3 years, Rosedale receives 10% of water spilled in a given year.

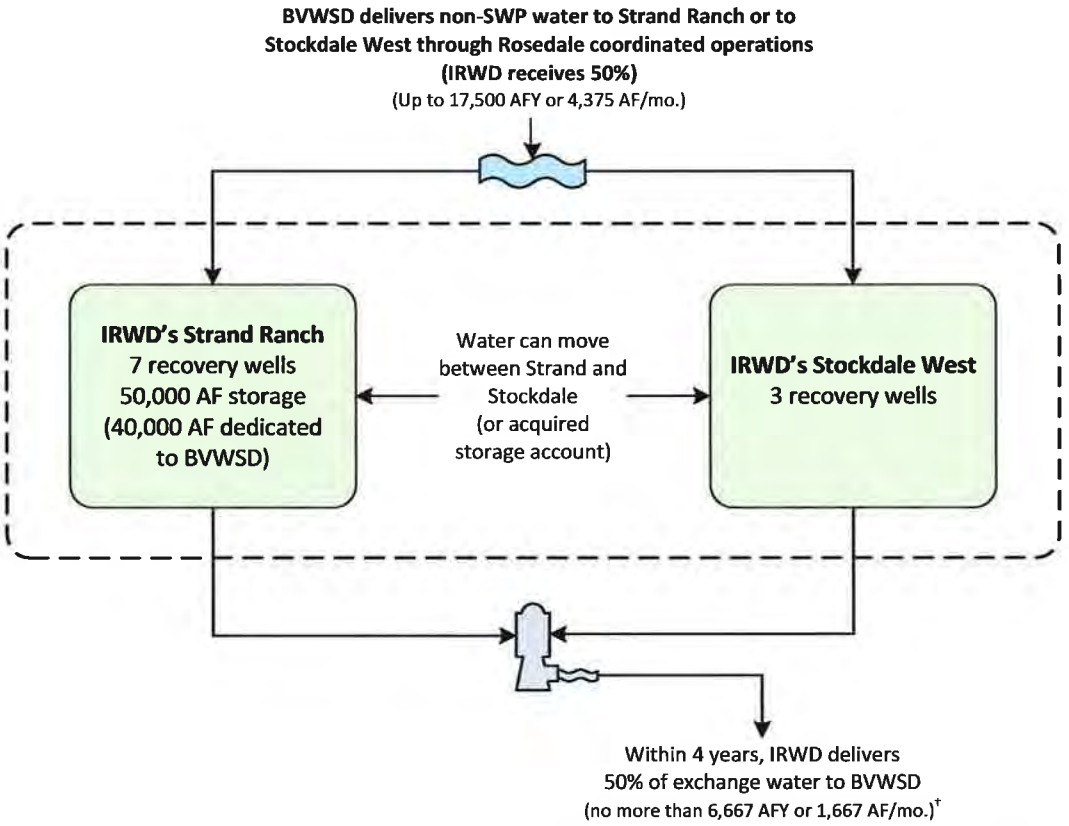
Spills are treated as first-in / first-out (e.g. IRWD's first spill event would be the first to be assessed 10% by Rosedale). IRWD can avoid the 10% assessment of its spilled water by moving water back to Strand, Stockdale West, or Acquired Storage.

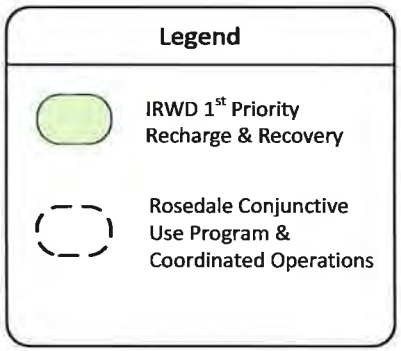
* In exchange for 50,000 AF of Acquired Storage capacity, IRWD will fund up to $1.5 million for the drilling, construction and equipping of two extraction wells on Stockdale East.

Exhibit "H"

Buena Vista Water Storage District Long Term Water Exchange Program

Effective 1/1/2011 through 1/12/2039



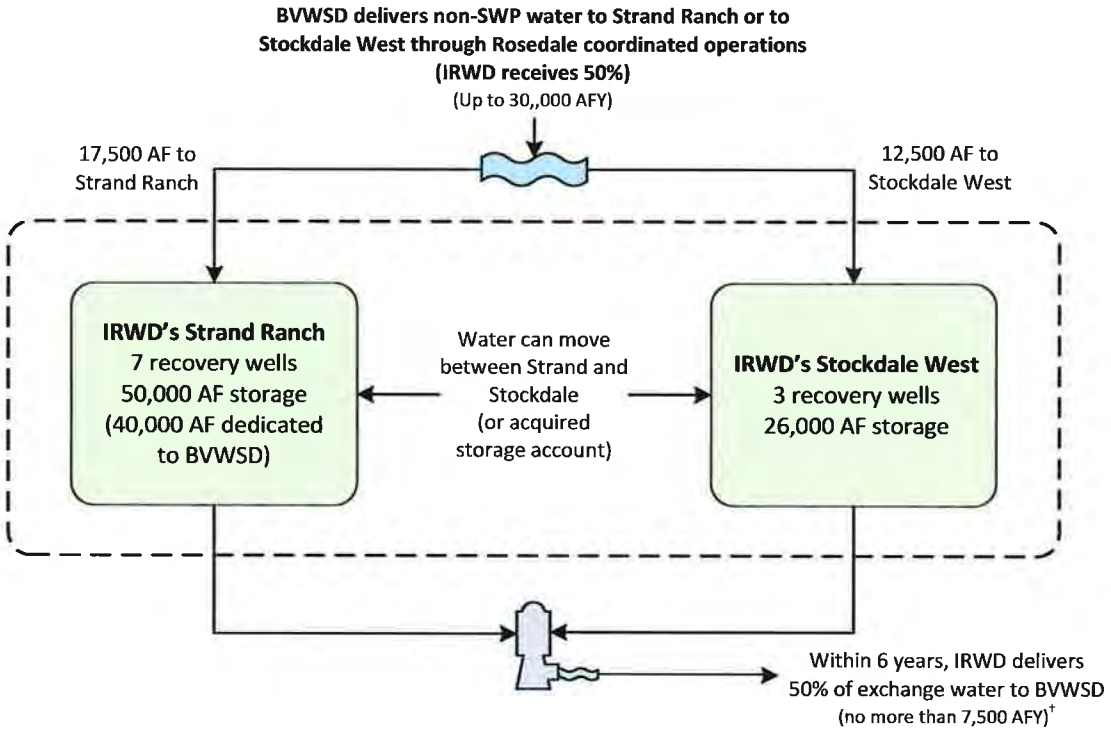


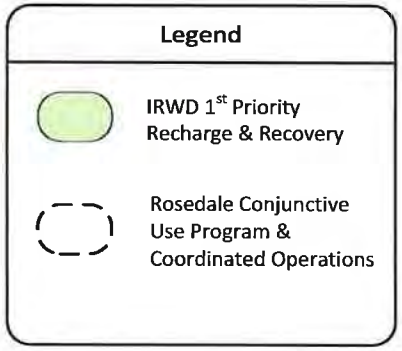
†IRWD shall remit one-half of the exchanged supply less one-half of reasonable losses back to BV no later than December 31st of the 4th year following the associated recharge event. IRWD pays for recovery of water returned to BV. Water to be remitted back to BV may remain in storage at Strand Ranch beyond the 4th year, in exchange for a greater percent being transferred to IRWD as compensation per the table shown to the right:

Year Following Recharge Event	Percent Transferred to IRWD	Percent Returned to BV During or Before Indicated Year
1	50%	50%
2	50%	50%
3	50%	50%
4	50%	50%
5	60%	40%
6	70%	30%
7	80%	20%
8	90%	10%
9	100%	0%

Buena Vista Water Storage District One-Year Program to Augment Recharge Using Stockdale West Recharge Facilities

Effective 4/1/2017 through 3/20/2018





†IRWD shall remit one-half of the exchanged supply less one-half of reasonable losses back to BV no later than December 31st of the 6th year following the associated recharge event. IRWD pays for recovery of water returned to BV. Water to be remitted back to BV may remain in storage at Strand Ranch beyond the 6th year, in exchange for a greater percent being transferred to IRWD as compensation per the table shown to the right:

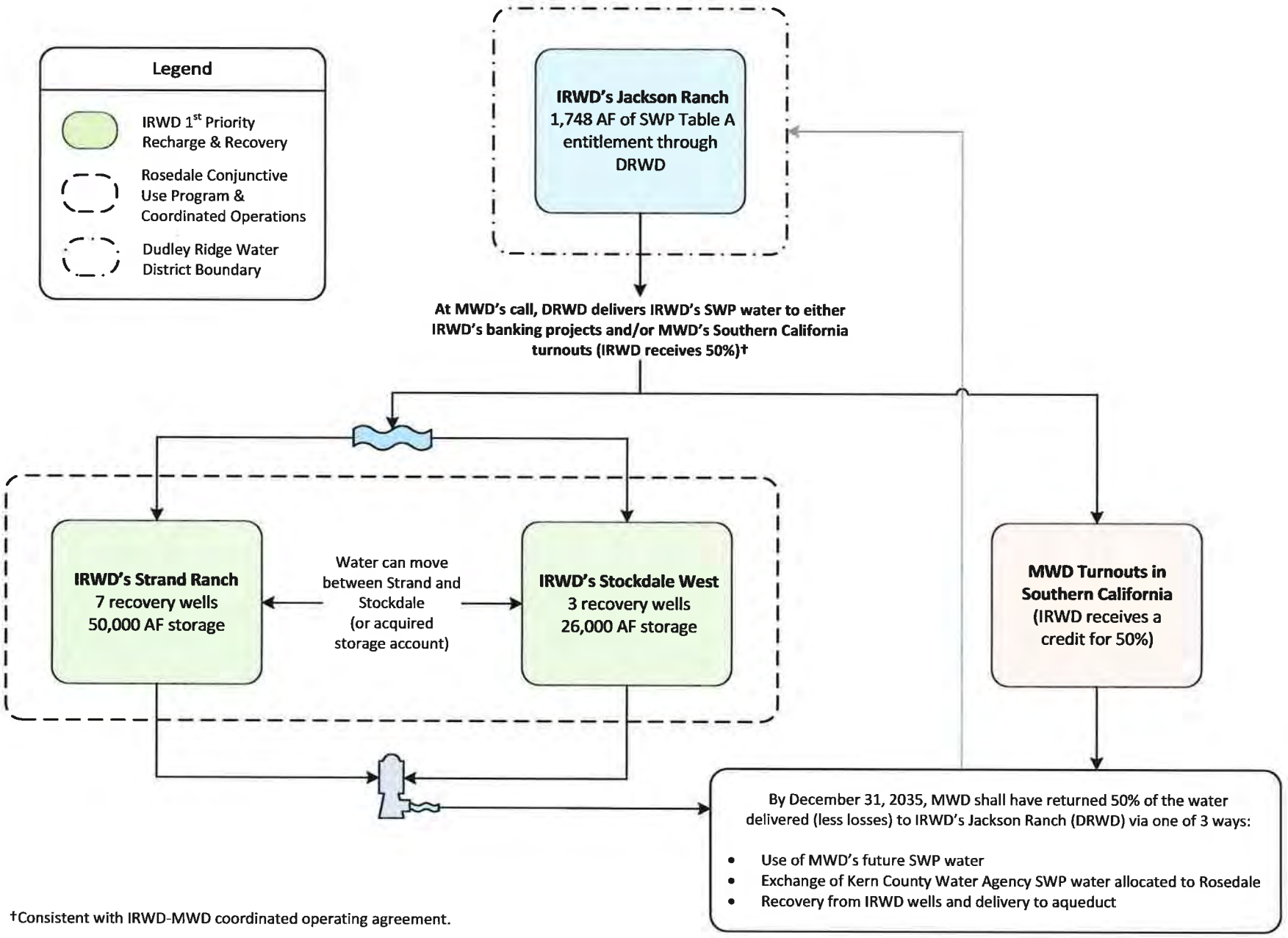
Modified for 1-Year Recharge Program Only

Year Following Recharge Event	Percent Transferred to IRWD	Percent Returned to BV During or Before Indicated Year
1	50%	50%
2	50%	50%
3	50%	50%
4	50%	50%
5	50%	50%
6	50%	50%
7	75%	25%
8	100%	0%
9	100%	0%

Exhibit "I"

Dudley Ridge Water District (DRWD) Unbalanced Exchange Program

Up to 12,240 AF delivered from 2/15/2018 through 12/31/2027



†Consistent with IRWD-MWD coordinated operating agreement.

Exhibit "J"

Coordinated Operating, Water Storage, Exchange and Delivery Agreement Between MWD, MWDOC and IRWD

Effective 5/1/2011 through 11/4/2035

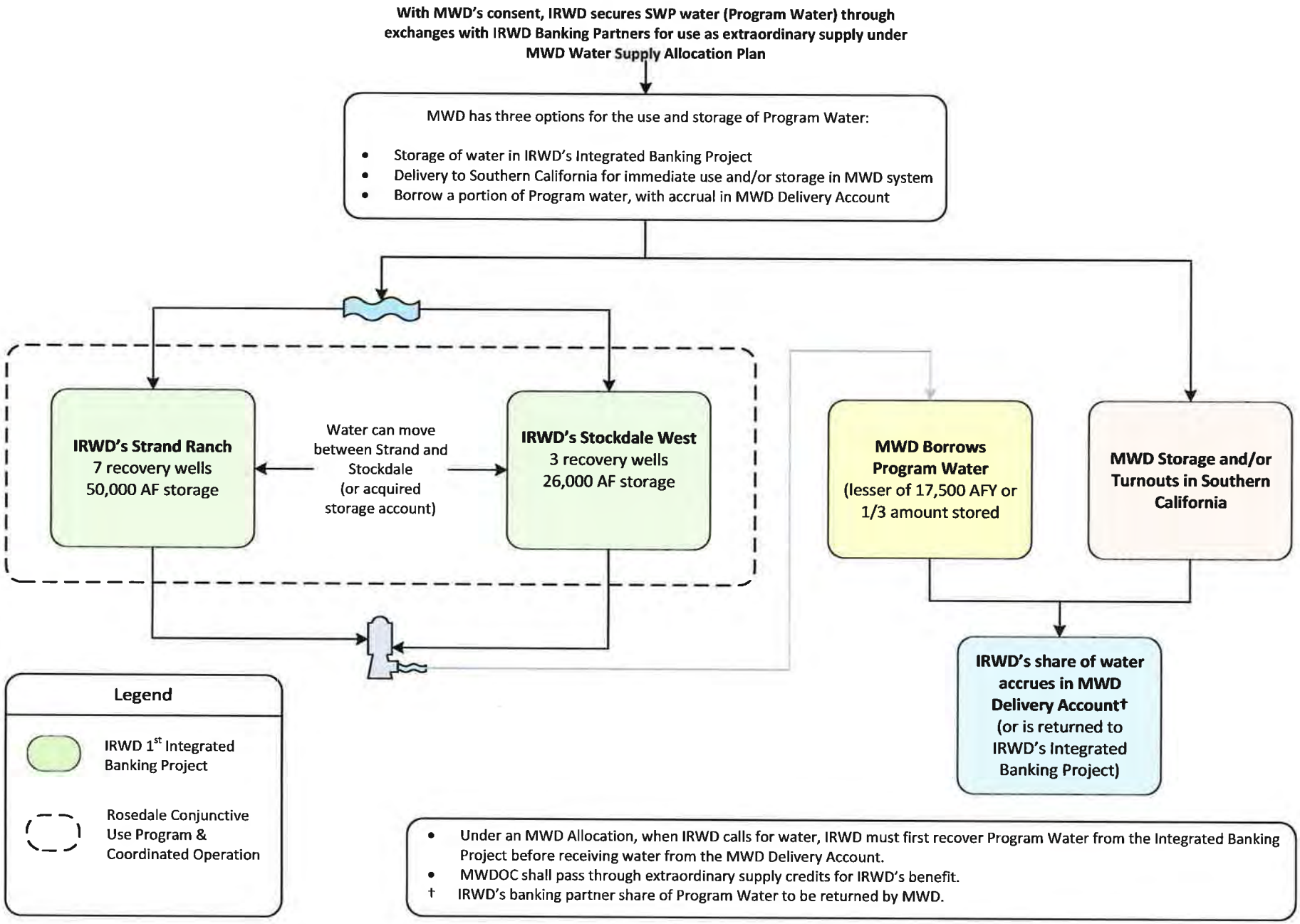
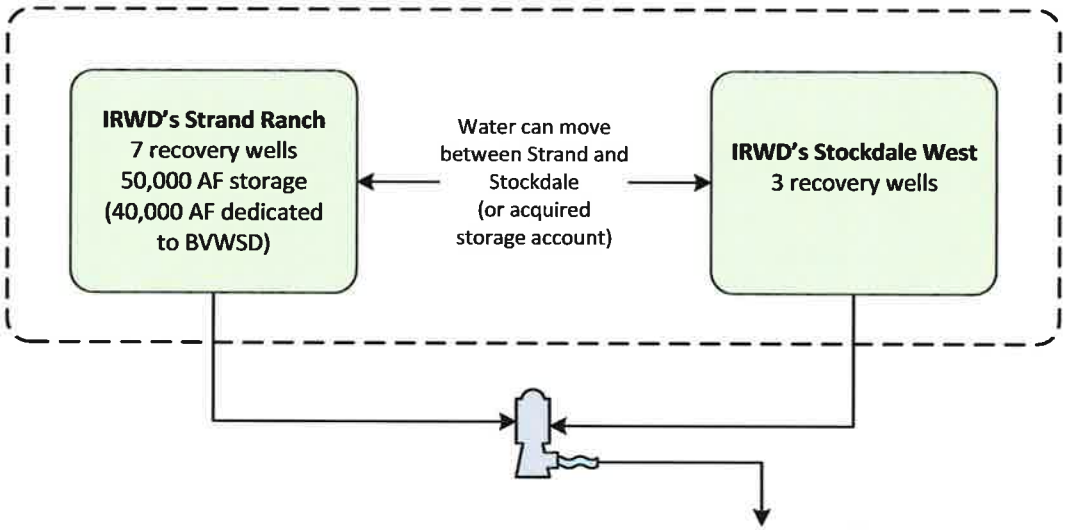


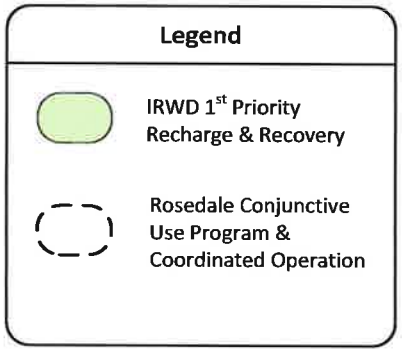
Exhibit "K"

Agreement for Conveyance of Water Between MWD, MWDOC, and IRWD (Wheeling Agreement)

Template for future agreements



IRWD recovers its share of non-SWP water from its Integrated Banking Projects for use as extraordinary supply under a declared MWD Water Supply Allocation. MWD will coordinate the conveyance and delivery of recovered water to be used within IRWD's Service Area. Delivery can also occur through an operational exchange.*



*The recovered water must be used within IRWD's service area. IRWD to pay MWD wheeling charges, including system access rate, water stewardship rate, and treatment surcharge (if applicable), for each acre foot of recovered water wheeled by MWD. IRWD will pay the actual costs of power incurred by MWD to convey recovered water in the California Aqueduct to IRWD delivery points.

Exhibit "L"

IRWD DEDICATED WATER BANKING CAPACITIES FOR EXISTING AND PROPOSED EXCHANGE PROGRAMS

Storage Capacity

Program	Dedicated Storage Capacity Strand Ranch (AF)	Dedicated Storage Capacity Stockdale West (AF)	Dedicated Storage Capacity Leased Storage Account (AF)	Kern Water Bank Storage Capacity (AF)
Total Capacity	50,000	26,000	50,000	9,495
BVWSD	40,000	-	-	-
DRWD	10,000	-	-	-
AVEK	-	20,000	-	-
CVWD	-	5,000	-	-
Total Dedicated	50,000	25,000	-	-
Total Remaining	-	1,000	50,000	9,495

Recharge Capacity

Program	Dedicated Recharge Capacity Strand Ranch (AF)	Dedicated Recharge Capacity Stockdale West (AF)	Dedicated Recharge Capacity Leased Storage Account (AF)	Kern Water Bank Recharge Capacity (AF)
Total Capacity	17,500	27,100	-	3,200
BVWSD	17,500	-	-	-
DRWD	-	-	-	-
AVEK	-	20,000	-	-
CVWD	-	5,000	-	-
Total Dedicated	17,500	25,000	-	-
Total Remaining	-	2,100	-	3,200

Recovery Capacity

Program Partner	Dedicated Recovery Capacity Strand Ranch (AF)	Dedicated Recovery Capacity Stockdale West (AF)	Dedicated Recovery Capacity Leased Storage Account (AF)	Kern Water Bank Recovery Capacity (AF)
Total Capacity	17,500	11,250	-	6,330
BVWSD	6,667	-	-	-
DRWD	-	-	-	-
AVEK	-	3,333	-	-
CVWD	-	833	-	-
IRWD	10,833	7,084	-	6,330
Total Dedicated	17,500	11,250	-	6,330
Total Remaining	-	-	-	-

December 20, 2018
Prepared by: R. Bennett / K. Welch
Submitted by: F. Sanchez / P. Weghorst
Approved by: Paul A. Cook

SUPPLY RELIABILITY PROGRAMS COMMITTEE

CANAL ALIGNMENT STUDY FOR
KERN FAN GROUNDWATER STORAGE PROJECT

SUMMARY:

On October 8, 2018, the IRWD Board approved an agreement with Rosedale-Rio Bravo Water Storage District that provides for IRWD and Rosedale to cost share early project planning activities while the Kern Fan Groundwater Storage Project Joint Powers Authority (JPA) is being formed. One of the early planning activities includes conducting a study to determine the optimal alignment for a proposed canal that would convey water from the California Aqueduct for recharge at the Kern Fan Groundwater Storage Project facilities. Staff recommends that the Board authorize the General Manager to execute a professional services agreement with Dee Jaspar and Associates, Inc. (DJA) in the amount of $115,425 to perform a planning level evaluation of potential canal alignments for the Project.

BACKGROUND:

In August 2017, IRWD and Rosedale jointly submitted an application to the CWC that requested $86 million in grant funds for the Kern Fan Groundwater Storage Project through the Water Storage Investment Program (WSIP). In July 2018, the CWC conditionally awarded $67.5 million in grant funding to the Project. The Project includes construction of up to 1,200 acres of spreading basins and up to 12 new extraction wells. Water will be conveyed from the California Aqueduct to the Project via a new turnout at the California Aqueduct and a new canal with up to 500 cubic feet per second conveyance capacity.

To facilitate the planning, design, construction and operation of the Project, IRWD and Rosedale intend to form a JPA. A JPA Agreement is being developed to create the Kern Fan Project Authority, which will carry out functions necessary to implement the Project. During the development of the JPA Agreement, certain early planning activities must be completed to maintain the overall project schedule. On October 8, 2018, the Board authorized an agreement between IRWD and Rosedale to initiate and cost share early project planning activities. Such early planning activities include property investigations, geophysical investigations, hydraulic evaluations and a canal alignment study for the Project.

Locating Project Facilities:

In August 2018, staff from IRWD, Rosedale and DJA met to discuss the optimal location of project facilities, location of a new turnout from the California Aqueduct and possible alignments for the Project canal. As shown in Exhibit "A", five possible alternatives for canal alignment were identified, including the alignment from the original application to the CWC. Prior to finalizing the canal alignment, it was agreed that a hydraulic study is needed to verify that the proposed California Aqueduct turn-out location would not impact operations of the Cross Valley Canal. Rosedale, with IRWD's concurrence, has contracted with engineers at GEI to perform a

hydraulic study for this purpose. This study will provide the information needed to evaluate canal alignment alternatives through a separate study.

Canal Alignment Study:

Engineers at DJA performed the conceptual engineering work and cost estimations that were included the Project grant application to the CWC. Therefore, DJA is uniquely qualified to assist in this next phase of engineering evaluations of the Project without having to expend effort to develop an understanding of the project. Staff requested that DJA prepare a scope of work to perform a planning level evaluation of up to three of the five canal alignments to be selected by Rosedale and IRWD. Major activities to be performed for each of the three selected alignments include:

- A visual investigation of the alignments;
- Preparation of plan and profile maps;
- Identification of permit requirements, environmental issues, constructability issues and ability to utilize existing infrastructure;
- Preparation of preliminary construction costs estimates;
- Participation in project meetings; and
- Preparation of a technical memorandum.

The total estimated cost for the evaluation is $115,425, which includes four optional tasks. The first three optional tasks may be used to evaluate different conveyance rates, variations in alignments or a change in recharge basin locations. The last optional task may be used to perform hydraulic modeling of one selected alignment. A copy of a scope of work, budget and schedule for DJA to perform the evaluation are provided as Exhibit "B". Staff has reviewed DJA's proposal and the negotiated costs are considered to be fair and reasonable. Rosedale has reviewed DJA's proposal and is agreeable to the terms, pursuant to the cost sharing agreement. On December 11, 2018, Rosedale's Board of Directors approved the DJA proposal and Rosedale's 50% cost-share for this planning level evaluation.

FISCAL IMPACTS:

On August 27, 2018, the Board approved the addition of the Kern Fan Groundwater Storage Project as Project 10854 to the Fiscal Year 2018-19 Capital Budget. Sufficient budget exists to fund the cost of the canal alignment study. Rosedale will reimburse IRWD for 50% of the cost of the study.

ENVIRONMENTAL COMPLIANCE:

A Final Environmental Impact Report (EIR) for the Stockdale Integrated Banking Project was prepared, certified and approved in compliance with California Environmental Quality Act (CEQA) of 1970 (as amended), codified at California Public Resources Code Sections 21000 et. seq., and the State CEQA Guidelines in the Code of Regulations, Title 14, Division 6, Chapter 3.

Rosedale, as lead agency, filed a Notice of Determination for the Stockdale Integrated Banking Project with the County of Kern. IRWD, as a responsible agency, filed Notices of Determination with the County of Orange and with the County of Kern. The EIR includes a program-level analysis of impacts of a third project site. When a third Stockdale project site is identified, subsequent project-level environmental review will be necessary prior to implementation of phase one of the Kern Fan Project. It is expected that a new EIR will be required for the construction and operation of the second phase facilities contemplated in the proposed Kern Fan Project.

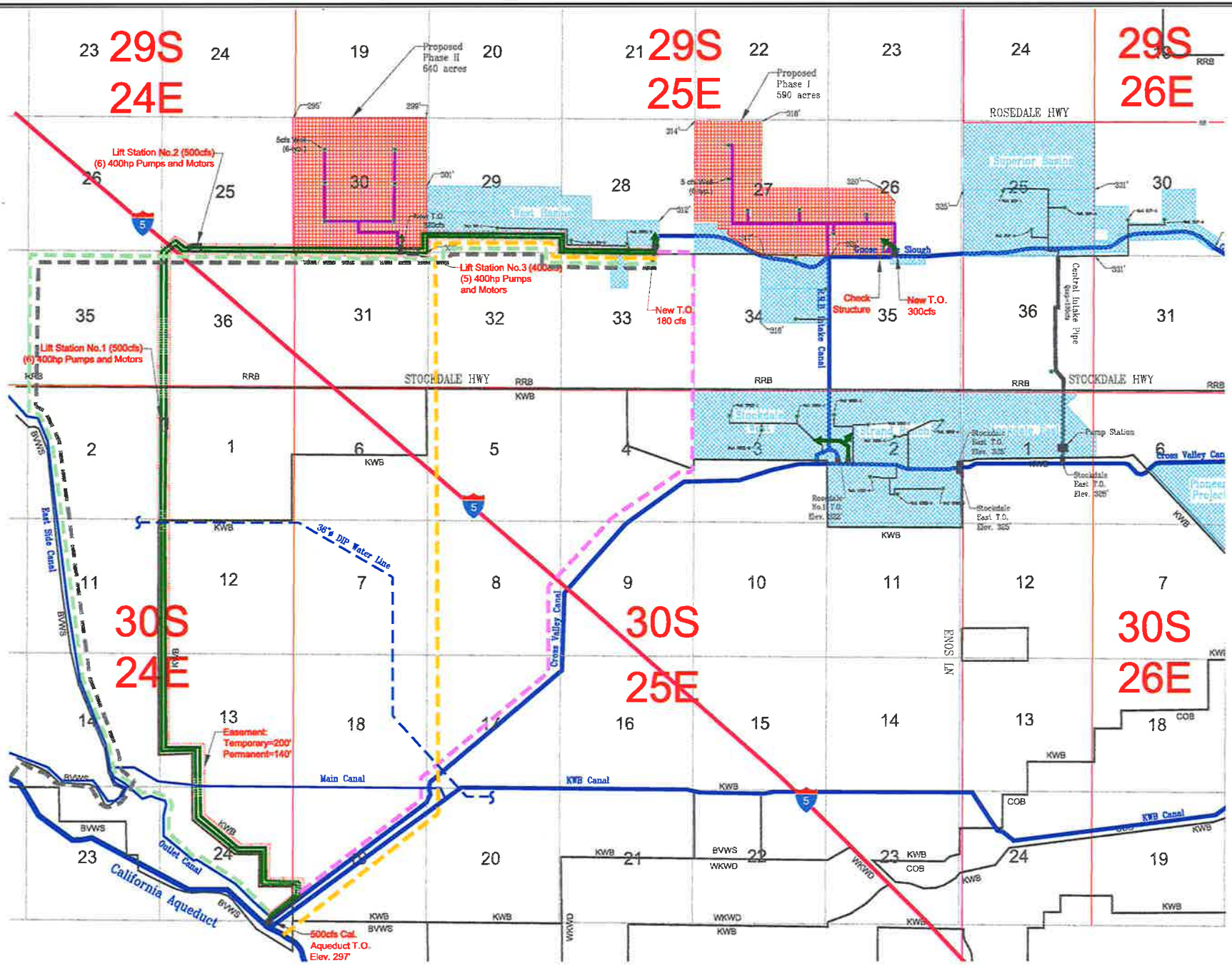
RECOMMENDATION:

That the Board authorize the General Manager to execute a professional services agreement with Dee Jaspar and Associates, Inc. in the amount of $115,425 to perform a planning level evaluation of potential canal alignments for the Kern Fan Groundwater Storage Project.

LIST OF EXHIBITS:

Exhibit "A" – Map of Alignment Alternatives for the Kern Fan Groundwater Storage Project

Exhibit "B" – Dee Jaspar and Associates Pre-Project Engineering Evaluation Proposal, dated December 3, 2018



A-1

Exhibit "A"

Kern Fan Groundwater Storage Project Feasibility Study Map

LEGEND

- Canals/other Waterways
- Diversion/Conveyance
- Pipe Sections (Underground)
- Easement
- Water District Boundary
- Major Roads
- Recovery/Conveyance
- Well
- Proposed Properties
- Current Properties
- Water Coverage
- Alt. 1 – KWB Alignment–Utilize or parallel KWB Main Canal & cross KWB property (± 31,300–39,300 LF)
- Alt. 2 – CVC Alignment–Parallel to CVC on KWB property (± 34,400 LF)
- Alt. 3 – BV/ESC Alignment–Utilize or parallel BV East Side Canal (± 40,000–55,100 LF)
- Alt. 4 – BV/Outlet Alignment–Utilize or parallel Outlet Canal & BV East Side Canal (± 30,900–56,000 LF)
- Alt. 5 – Morris Alignment–Grant Project alignment (± 52,500 LF)

N

DEE JASPAR & ASSOCIATES, INC. CIVIL ENGINEERS

Exhibit "B"

Kern Fan Project

Statement of Qualifications

Dee Jaspar & Associates, Inc.
2730 Unicorn Rd, Bldg A
Bakersfield, Ca 93308

Consulting Civil Engineers

Pre-Project Engineering Evaluation

DEE JASPAR & ASSOCIATES, INC.
CONSULTING CIVIL ENGINEERS
2730 UNICORN ROAD, BLDG A
BAKERSFIELD, CA 93308
PHONE (661) 393-4796
FAX (661) 393-4799

December 3, 2018

Ray Bennett, Engineer
c/o Irvine Ranch Water District
15600 Sand Canyon Avenue
Irvine, CA 92618

RE: Kern Fan Project
Pre-Project Engineering Assistance

Mr. Bennett,

Attached is an engineering proposal for the above referenced project. The proposal includes:

- Firm Information
- Scope of Work Plan
- Map of Alternative Project Alignments
- Itemized Engineering Budget
- Project Schedule
- 2018 Rate Structure

Dee Jaspar will serve as the Principal Engineer and will be performing the hydraulic modeling work, attending project meetings, and performing final in-house work product reviews.

Curtis Skaggs will serve as the Project Manager, will coordinate and oversee the work, attend project meetings, handle general correspondence, and prepare the written memorandums.

Matt Hooker will serve as the Project Engineer, will perform the alignment evaluations, and prepare the construction cost estimates.

Please let me know if you have any questions, concerns, or need anything else. Thank you for the opportunity to serve the District on this project.

Thanks,

Curtis M. Skaggs, PE

DEE JASPAR & ASSOCIATES, Inc.
FIRM INFORMATION

Dee Jaspar & Associates, Inc., founded in 1980 and established as a California corporation in 1982, is a professional civil engineering corporation. For more than thirty-eight years, civil engineers at Dee Jaspar & Associates have specialized in project management, engineering design, and construction administration for both public and private civil projects. Dee Jaspar & Associates, Inc. has offices in Bakersfield and Porterville, CA.

Dee Jaspar & Associates, Inc. currently employs ten (10) full-time and three (3) part-time staff members in its Bakersfield and Porterville offices; (5 Professional Engineers, 2 Staff Engineers (E.I.T.), 1 Drafting Technician, 1 Surveyor, 2 Clerical, and 3 part-time inspectors on an as needed basis).

The primary contact for this project will be the Project Manager, Curtis M. Skaggs, at (661) 393-4796.

Project Design and Management

- Project Design
- Project Management
- Construction Administration
- Construction Inspection
- Preliminary Design Studies
- Budget / Job Costing
- Estimating
- Scheduling

Civil Design

- Pipeline and Open Channel Design
- Pumping Plant Design
- Right of Way Surveys
- Topographic and Alignment Surveys
- Agricultural Water Supply and Distribution Systems
- Groundwater Recharge Facilities
- Water Storage Reservoirs
- Municipal / Industrial Water Supply and Treatment (Groundwater Wells)
- Feasibility Studies
- Drainage Studies and Drainage System Design
- Flood Studies and Flood Control Systems
- Agricultural Drainage Water Re-Use and Disposal Projects
- Permit Acquisition

Land Development

- Improvement Plans
- Boundary Surveys
- ALTA Surveys
- Construction Surveys
- Grading Plans
- Topographic Surveys

Municipal / Industrial Water Supply

- Distribution System Design and Analysis
- Pumping Plant Design
- Water Treatment Pilot Studies
- Water Treatment System Design
- Water Well Pilot Studies
- Hydraulic Modeling
- Well Design and Construction Monitoring
- Steel Water Storage Reservoir Design and Construction Monitoring
- Rate Structure Studies and Design
- Plan Checking Services

Agricultural Water Supply

- Open Channel Analysis and Design
- Closed Conduit Analysis and Design
- Pumping Plant Design
- Pipeline Alignment Surveys
- Earthen Water Storage Reservoirs
- Flood Control Facility Analysis and Design
- Open Channel Improvement Projects
  - Channel Prism Modification
  - Channel Lining and Liner Extensions
- Right-of-Way Determination and
- Groundwater Recharge & Recovery

Clients Served

Dee Jaspar & Associates, Inc., has served the Kern and Tulare County areas in many capacities including, but not limited to, engineering design, design and construction project team member, preparation of feasibility studies, design of temporary/emergency facilities, construction inspection and administration. Below is a partial list of other Kern and Tulare County clients we serve.

- The City of McFarland
- The City of Shafter
- Vaughn Water Company
- Oildale Mutual Water Company
- Cawelo Water District
- The City of Porterville
- Arvin Community Services District
- Irvine Ranch Water District
- West Kern Water District
- Ducor Community Services District
- Wheeler Ridge Maricopa Water Storage District

PRE-PROJECT ENGINEERING SCOPE OF WORK

A Preliminary Conceptual Design and Feasibility Study was prepared by Dee Jaspar & Associates, Inc. (DJA) as part of the Proposition 1 Grant Application phase. DJA considered a few variations of the proposed Kern Fan Project which endeavored to develop two 640 acre Recharge & Recovery Facilities along with the conveyance of approximately 500 cfs of Aqueduct water into these recharge areas and the Rosedale Rio-Bravo Water Storage District. The Feasibility Study for the Grant Application phase discussed the proposed project, provided detailed project cost estimates, provided a preliminary project schedule, and evaluated the proposed project operation and maintenance costs. The scope of work for the pre-project engineering work outlined herein serves to evaluate other feasible project alternatives and alignments as identified at a Project Participant meeting held August 21, 2018.

1. At the above referenced meeting, five potential project alignments were identified. These alignments require further analysis to evaluate the potential to make use of other existing infrastructure, evaluation of the alignment hydraulics, evaluation of permitting issues, environmental issues, constructability issues, and right-of-way issues as well as developing more detailed project cost estimates. This pre-project engineering work will select three of the five above referenced alignments to evaluate more closely and provide information to the project participants in an effort to narrow down the project alternatives in anticipation of a more detailed feasibility study at a later time.

2. DJA will perform the evaluation work noted in Item No. 1 for three project alignments as directed by the project participants. DJA has provided line items for evaluating alignments further with other considerations such as lower conveyance flow rates, variations of the alignment, or a change in the alignment terminus due to the recharge location changing. These items are referred to as Alignment Iterations and are broken out as optional tasks to be implemented at the discretion of the project participants.

3. DJA will perform a site visit and visual investigation of the alignments to note viable alignments, conditions of existing facilities, potential obstacles, and potential constructability issues.

4. DJA will prepare plan and profile maps of the project alignments. Google earth will be utilized at this time for approximate ground surface elevations. The plan and profile maps will identify locations of crossings, below ground siphons, and potential locations of lift stations.

5. Upon development of the alignment maps noted in Item No. 4, DJA will meet and review with IRWD and RRBWSD staff. This review will serve to identify other options to consider and to fine tune the alignments prior to performing any hydraulic modeling and cost estimating.

6. DJA will perform preliminary level hydraulic modeling using Hec-Ras as directed by the project participants. This modeling will serve to fine tune the canal cross sections, evaluate impacts of crossings or siphons, locate lift stations, and also evaluate the alignments for impacts to the hydraulic grade line. This task is listed as an optional task at the discretion of the project participants.

7. DJA will evaluate the potential issues associated with each alignment including permit requirements, environmental issues, constructability issues, and potential issues with utilizing existing infrastructure. This will not be a comprehensive evaluation of these issues, but merely a consideration or identification of potential issues.

8. DJA will prepare preliminary construction costs estimates for each alignment. These cost estimates will endeavor to list potential cost savings or cost increases for alternate materials, means, or methods associated with certain facilities or components of the project. An example of this would be listing a cost savings for utilizing a HDPE canal liner as opposed to concrete lining the conveyance canal.

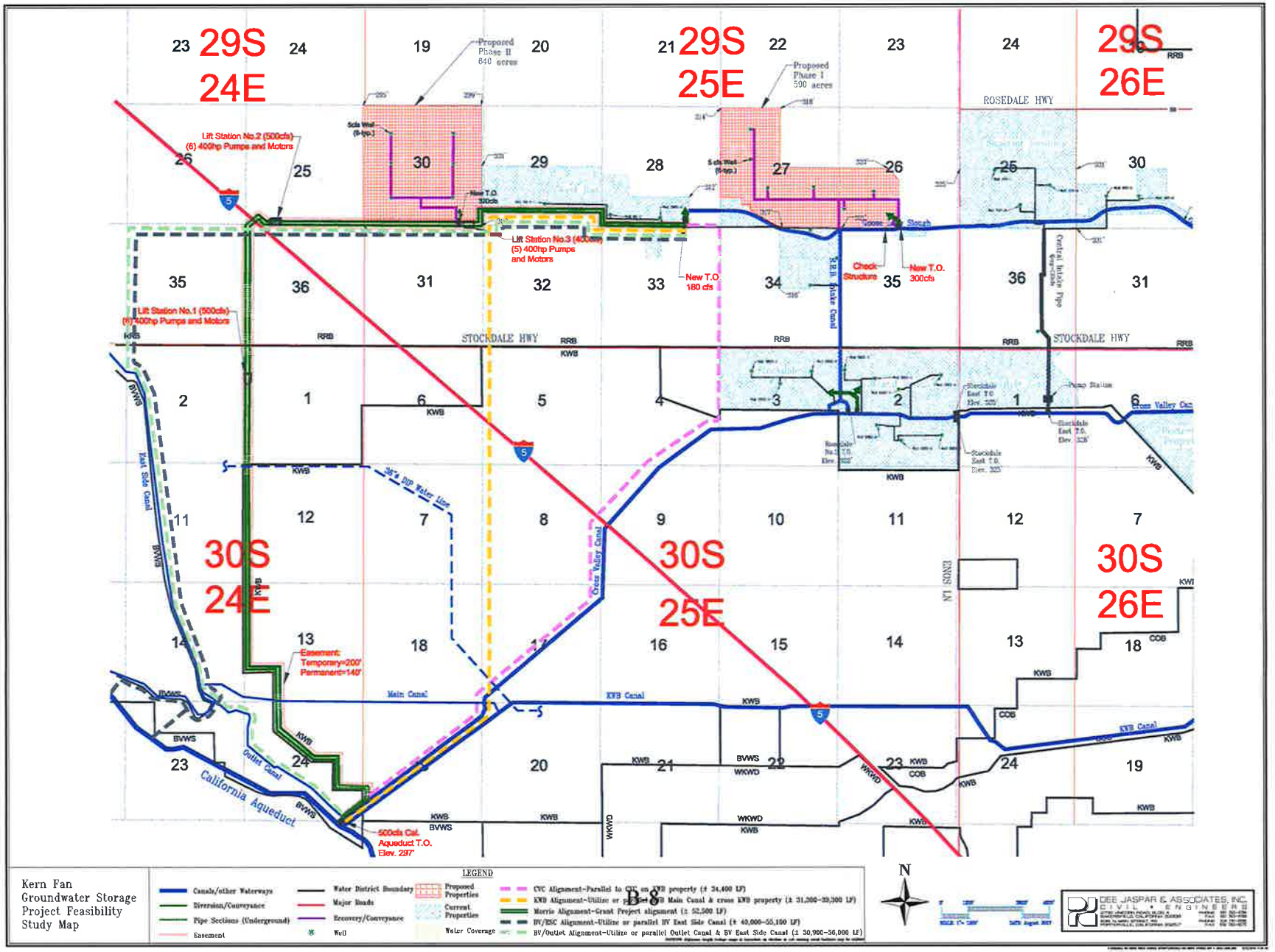
9. DJA will participate in monthly project meetings. DJA will utilize these meetings to update the project participants on the progress of work, to review findings and work completed, and to determine if other items need to be considered.

10. DJA will issue written technical memorandums for each alternative outlining and summarizing the work noted above. Draft Memorandums will be issued to the Project Participants for review and comment and then Final Memorandums issued once review comments have been addressed.

KERN FAN PROJECT

PRE-PROJECT ENGINEERING EVALUATION

MAP OF ALIGNMENT ALTERNATIVES


29S 24E
29S 25E
29S 26E
30S 24E
30S 25E
30S 26E
ROSEDALE HWY
STOCKDALE HWY
Proposed Phase II 640 acres
Proposed Phase I 590 acres
Lift Station No.2 (500cfs) (6) 400hp Pumps and Motors
Lift Station No.3 (400cfs) (5) 400hp Pumps and Motors
Lift Station No.1 (500cfs) (6) 400hp Pumps and Motors
New T.O 180 cfs
New T.O. 300cfs
Check Structure
New T.O 300cfs
Stockdale East T.O. Elev. 325'
Stockdale East T.O. Elev. 328'
Pump Station
Cross Valley Canal
East Side Canal
36" Dip Water Line
Easement: Temporary=200' Permanent=140'
Main Canal
KWB Canal
Outlet Canal
California Aqueduct
500cfs Cal. Aqueduct T.O. Elev. 297'
BVWS
KWB
WKWD
COB
RRB
Kern Fan Groundwater Storage Project Feasibility Study Map
LEGEND
Canals/other Waterways
Diversion/Conveyance
Pipe Sections (Underground)
Easement
Water District Boundary
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BV/Outlet Alignment-Utilize or parallel Outlet Canal & BV East Side Canal (± 30,900-56,000 LF)
N
DEE JASPAR & ASSOCIATES, INC.
CIVIL ENGINEERS

KERN FAN PROJECT

PRE-PROJECT ENGINEERING EVALUATION

ITEMIZED BUDGET PROPOSAL

Dee Jaspar Associates, Inc.
Consulting Civil Engineers

Irvine Ranch Water District
Kern Fan Groundwater Storage Project
Additional Engineering Services

	Principal Engineer	Registered Engineer	Staff Engineer	Surveyor	Survey Crew	Draftsperson	Secretary	EDS, Inc.	Aboriculor, Inc.	Miscellaneous	
	Estimated Time (hrs)	Estimated Time (hrs)	Estimated Time (hrs)	Estimated Time (hrs)	Estimated Time (hrs)	Estimated Time (hrs)	Estimated Time (hrs)	Estimated Cost ($)	Estimated Cost ($)	Estimated Cost ($)	Total
Task 1. General Engineering Services for Pre-Project Feasibility Work											
A. Attend project meeting, prepare map of alignment alternatives, and prepare meeting minutes	6	10									*$2,604*
B. Alignment Evaluation No. 1											
- Site visit and visual investigation of each alignment		4	4								$1,114
- Prepare preliminary alignment map (plan and profile) utilizing google earth for elevations along each alignment.		2	4			32					$3,844
- Outline potential issues with each alignment as well as potential benefits	2	10	12								$3,426
- Prepare preliminary capital cost estimates for each alternative		8	26								$4,595
- Prepare written memorandum with specific discussion of this alignment.	2	16	8			8					$4,538
Subtotal:											*$17,517*
C. Alignment Evaluation No. 2											
- Site visit and visual investigation of each alignment		4	4								$1,114
- Prepare preliminary alignment map (plan and profile) utilizing google earth for elevations along each alignment.		2	4			32					$3,844
- Outline potential issues with each alignment as well as potential benefits	2	10	12								$3,426
- Prepare preliminary capital cost estimates for each alternative		8	26								$4,595
- Prepare written memorandum with specific discussion of this alignment.	2	16	8			8					$4,538
Subtotal:											*$17,517*
D. Alignment Evaluation No. 3											
- Site visit and visual investigation of each alignment		4	4								$1,114
- Prepare preliminary alignment map (plan and profile) utilizing google earth for elevations along each alignment.		2	4			32					$3,844
- Outline potential issues with each alignment as well as potential benefits	2	10	12								$3,426
- Prepare preliminary capital cost estimates for each alternative		8	26								$4,595
- Prepare written memorandum with specific discussion of this alignment.	2	16	8			8					$4,538
Subtotal:											*$17,517*
E. Project Meetings and Correspondence with IRWD, RRBWSD, BV, KWBA, KCWA as necessary.	12	18	24								$8,070
F. Optional Task - Evaluation of iterations of one or more of the Project Alternatives above. Iterations may consist of evaluating different flow rates, minor alignment revisions, or optional facility components.											
- Prepare preliminary hydraulic modeling for one alignment using Hec-Ras program	24										$4,536
- Alignment iteration No. 1 for change in flow rate, change in alignment, or change in terminus location (recharge facility)	8	24	48			48					$15,888
- Alignment iteration No. 2 for change in flow rate, change in alignment, or change in terminus location (recharge facility)	8	24	48			48					$15,888
- Alignment iteration No. 3 for change in flow rate, change in alignment, or change in terminus location (recharge facility)	8	24	48			48					$15,888
Subtotal:											*$52,200*
Total Hours Estimated:	78	220	330	0	0	264	0	0	0	0	$115,425
Total Engineering Estimate:	$14,742	$32,340	$43,395	$0	$0	$24,948	$0	$0	$0	$0	***$115,425***

12/3/2018

Table 1

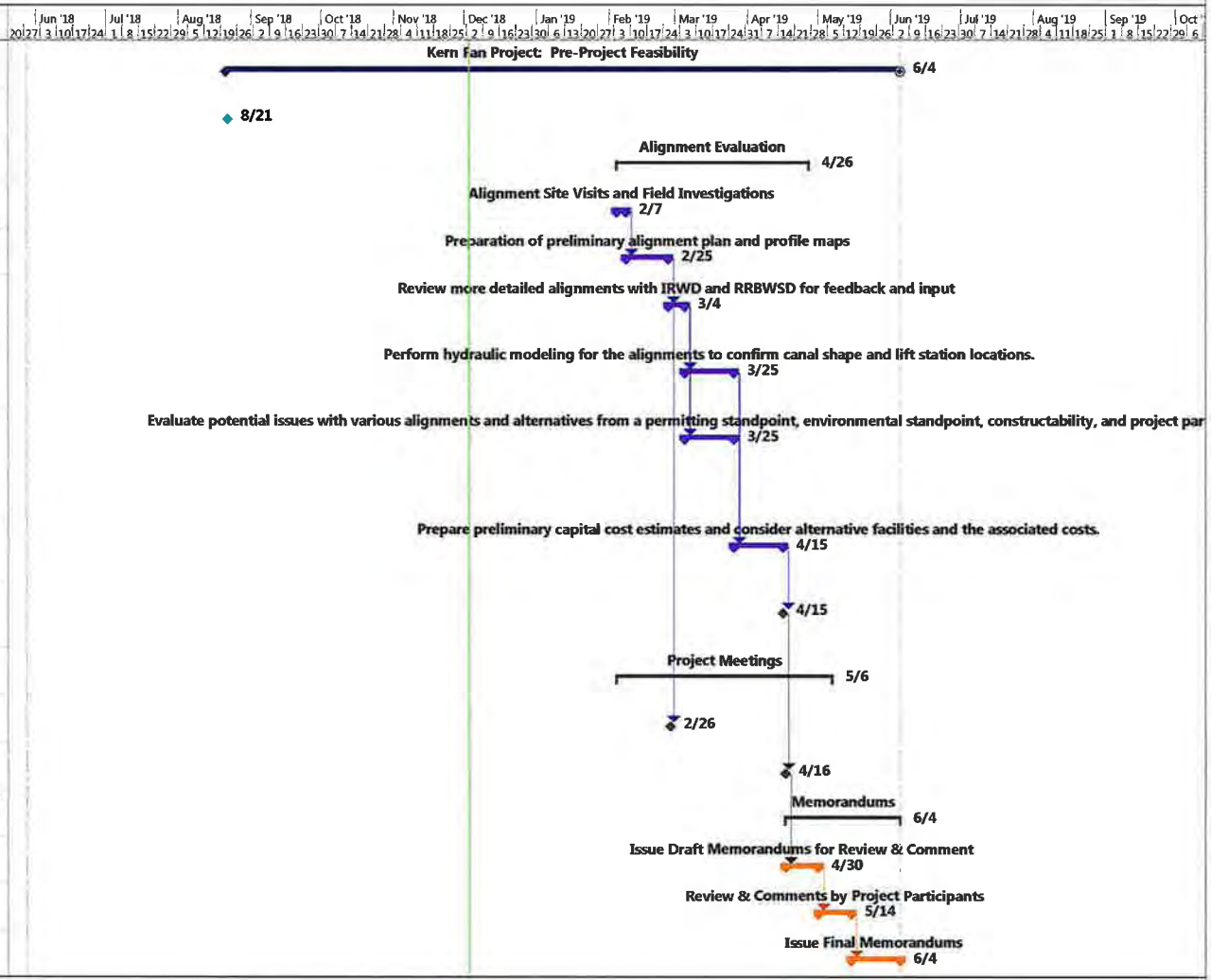
KERN FAN PROJECT

PRE-PROJECT ENGINEERING EVALUATION

PROJECT SCHEDULE

Preliminary Schedule-Rev1.mpp

ID	Task Mode	Task Name	Duration	Start
1		**Kern Fan Project: Pre-Project Feasibility**	**206 days**	**Tue 8/21/18**
2		Attend Kick-off Project Meeting	1 day	Tue 8/21/18
3		**Alignment Evaluation**	**60 days**	**Mon 2/4/19**
4		Alignment Site Visits and Field Investigations	4 days	Mon 2/4/19
5		Preparation of preliminary alignment plan and profile maps	12 days	Fri 2/8/19
6		Review more detailed alignments with IRWD and RRBWSD for feedback and input	5 days	Tue 2/26/19
7		Perform hydraulic modeling for the alignments to confirm canal shape and lift station locations.	15 days	Tue 3/5/19
8		Evaluate potential issues with various alignments and alternatives from a permitting standpoint, environmental standpoint, constructability, and project partnerships.	15 days	Tue 3/5/19
9		Prepare preliminary capital cost estimates and consider alternative facilities and the associated costs.	15 days	Tue 3/26/19
10		Review more detailed project costs, issues, and alternate facilities with IRWD and RRBWSD for feedback and input.	0 days	Mon 4/15/19
11		**Project Meetings**	**66 days**	**Mon 2/4/19**
12		February Progress Meeting	1 day	Tue 2/26/19
13		April Progress Meeting	1 day	Tue 4/16/19
14		**Memorandums**	**35 days**	**Wed 4/17/19**
15		Issue Draft Memorandums for Review & Comment	10 days	Wed 4/17/19
16		Review & Comments by Project Participants	10 days	Wed 5/1/19
17		Issue Final Memorandums	15 days	Wed 5/15/19



Critical Split	Task Progress	Duration-only	Baseline Split	Summary	External Milestone	Deadline
Critical Progress	Manual Task	Critical	Baseline Milestone	Manual Summary	Inactive Task	Baseline Summary
Task	Start-only	Critical Split	Milestone	Project Summary	Inactive Milestone	
Split	Finish-only	Baseline	Summary Progress	External Tasks	Inactive Summary	

KERN FAN PROJECT

PRE-PROJECT ENGINEERING EVALUATION

2018 RATE SCHEDULE

DEE JASPAR & ASSOCIATES, INC.
Consulting Civil Engineers

2730 Unicorn Road, Building A
BAKERSFIELD, CA 93308
(661)393-4796
FAX (661)393-4799

639 No. Main Street, #B
PORTERVILLE, CA 93257
(559)791-9286
FAX (559)783-9275

Rate Schedule

Effective January 1, 2018

Engineering	
Principal Engineer	$ 189.00 Per Hour
Expert Witness Work – Principal Engineer	$ 273.00 Per Hour
Senior Engineer I	$ 147.00 Per Hour
Senior Engineer II	$ 131.50 Per Hour
Staff Engineer I	$ 115.50 Per Hour
Staff Engineer II	$ 105.00 Per Hour
Design CADD Operator	$ 94.50 Per Hour
CADD Operator	$ 68.25 Per Hour
Surveying	
Private Works	
Surveyor	$ 115.50 Per Hour
2 Man Survey Crew	$ 173.25 Per Hour
3 Man Survey Crew	$ 210.00 Per Hour
Public Works	
Surveyor	$ 136.50 Per Hour
2 Man Survey Crew	$ 241.50 Per Hour
3 Man Survey Crew	$ 315.00 Per Hour
Construction Inspection	
Construction Inspector B Private Works	$ 115.50 Per Hour
Construction Inspector B Public Works	$ 147.00 Per Hour
Project Planning	
Project Planner	$ 115.50 Per Hour
Assistant Project Planner	$ 78.75 Per Hour
Clerical	
Executive Assistant I	$ 73.50 Per Hour
Executive Assistant II	$ 68.25
Per Hour	
Additional Fees	
Mileage	$ .54 Per Mile
Black & White Copies	$ .08 Per Copy
Color Copies	$ .15 Per Copy
Plotter Prints	$ 3.50 Per Print
Materials	Cost + 10%
Fees/Permits	Cost + 10%
Subsistence	Cost + 10%
GPS (Global Positioning System, Surveying Equipment)	$ 200.00 Per Day
GPS (Global Positioning System, Surveying Equipment)	$ 100.00 Per ½ Day

- Overtime is paid at time and a half
- Mileage and subsistence will not exceed the County Rates and will not be marked up