

Alternative Compliance Plan

**Water Right Applications
A014430, A022102 and A023838**

**South Sutter Water District
March 29, 2018**

Alternative Compliance Plan - Applications A014430, A022102 and A023838

Introduction:

South Sutter Water District (SSWD or District) was formed in May 1954 to develop, store, and distribute surface water supplies for agricultural irrigation uses primarily from the Bear River via an enlarged Camp Far West Reservoir (CFW Reservoir). The development of the surface waters, primarily enlarging CFW Reservoir and developing a distribution system, was an effort by SSWD landowners to augment and develop alternatives to a declining groundwater table that was being tapped by private agricultural wells within the service area. Reportedly, the groundwater basin was being overdrawn by 1 to 3 feet per year or by as much as 10,000 to 11,000 acre-feet per year, and the formation of SSWD and subsequent enlargement of CFW Reservoir would furnish sufficient water to replace the overdraft. The annual available water supply from CFW Reservoir is allocated each year, and a full reservoir represents only a portion (approximately 1.4 acre-feet per acre) of water users' demands.

The major supply of surface water available to SSWD comes from the Bear River, where SSWD holds Licenses 10221 and 14804 for direct diversion from the Bear River and storage in CFW Reservoir. The District also holds Licenses 4653, 11121 and 12587 (Applications 14430, 22102, and 23838, respectively) for direct diversion from several small streams within its boundaries. These small streams include Yankee Slough, Coon Creek, Markham Ravine, Auburn Ravine and the East Side Canal. During the summer irrigation season there is typically very little or no inflow to the District from these small streams. Therefore the District utilizes the small stream channels within its boundaries to convey water diverted under its water right licenses to the Bear River including water released from CFW Reservoir for delivery to its customers. On average, during the four years from 2013 through 2016, 99% of the District's surface water supply originated from the Bear River. Only one percent (approximately 800 acre feet) originated from the small streams. The combined face value of the Licenses for the small streams represent less than 4% of the combined face value of all of the District's water right Licenses.

The District currently measures the quantities of water delivered to each of the tributaries from its conveyance system and the quantities diverted or delivered from the tributaries to its customers. The quantities diverted under License 4653, 11121, and 12587 are determined or calculated as the difference between the amount delivered to the District's customers and the amount released to the tributaries by the District. The quantities diverted or delivered from the tributaries to its customers are measured by taking a periodic reading with a portable meter at the time the turnout flow rate is set and then multiplying the flow rate by the length of the customer's order.

The basis for the submittal of this Alternative Compliance Plan (Plan) is "not feasible" and "unreasonably expensive". Strict compliance with the requirements for measuring and monitoring at each of the points of diversion (PODs) is not feasible due to sheer number of measurement locations that would need permanent measurement equipment. There are over 50 field turnouts along the small streams that are periodically measured with the use of portable meters. The periodic measurements taken with the portable meters at each turnout are used to charge the District's customers for water use on a volumetric basis in accordance with Senate Bill x7-7 (SBx7-7). The SBx7-7 regulation is very specific as to the accuracy of each measurement device requiring that all measurement devices are either lab certified or field verified by an engineer to meet volumetric accuracies of +/- 5% for lab certified, +/- 10% for new devices that are field verified or +/- 12% for existing devices that are field verified. The District, with assistance from MBK Engineers, is in the process of certifying the accuracy of the turnout measurement. This process includes an inventory of each turnout and in-stream measurements upstream and downstream of a representative sample of turnouts to compare with the flow meter readings. However, measurement at

each turnout will not meet the frequency requirement of the Measurement Regulation since there is not a permanent meter at each turnout.

The District obtained a cost estimate to purchase and install measurement equipment at each turnout in order to comply with Senate Bill 88 (SB 88). The estimate was \$323,540 (Attachment 2) to calibrate and equip the existing meters with data loggers, to purchase new measurement equipment for the turnouts that are currently measured with portable meters, and to subscribe to a telemetry service. In addition, the estimate included an approximate annual cost of \$31,270 for the annual telemetry service and to calibrate and repair the meters, as necessary. These costs do not include the hiring of an additional ditch tender that would be required to maintain and inspect for debris the 53 turnout meters on a daily basis. This ditch tender would require an additional vehicle with equipment, insurance and other associated costs. In comparison, the District is spending approximately \$18,000 to purchase and install measurement equipment in order to comply with the Measurement Regulation for its Bear River diversions. It is not reasonable for the District to spend approximately \$323,000 for less than 4% of its surface water supply, as compared to approximately \$18,000 for greater than 96% of its surface water supply.

For the above reasons the District has determined that the cost to comply is excessive and unreasonable and therefore it is submitting this Plan pursuant to Section 935 of the California Code of Regulations.

Section A – Water Right Owner Information

(1) Owner Name(s)	South Sutter Water District
(2) Email Address	sswd@hughes.net
(3) Phone Number	(530) 656-2242
(4) Mailing Address Line 1	2464 Pacific Avenue
(5) Mailing Address Line 2	
(3) City	Sacramento
(4) State	California
(5) Zip Code	95659
(6) Is the Water Right Owner also the Primary Contact?	No
(7) Installation Deadline	January 1, 2017
(8) Measurement Accuracy	10%
(9) Required Monitoring Frequency	Hourly
(10) Qualifications of the Individual Installing/Certifying	California Licensed Professional Engineer (PE)

Section B – Information on Primary Contact

(1) Name(s)	MBK Engineers, C/O Kyle Knutson
(2) Phone Number	(916) 456-4400
(3) Email Address	knutson@mbkengineers.com
(4) Mailing Address Line 1	455 University Avenue
(5) Mailing Address Line 2	
(6) City	Sacramento
(7) State	California
(8) Zip Code	95825
(9) The Alternative Compliance Plan Primary Contact is a(n)	Agent

Section C – Information on Qualified Individual

(1) Name(s)	Kyle Knutson
(2) Phone Number	(916) 456-4400
(3) Email Address	knutson@mbkengineers.com
(4) Mailing Address Line 1	455 University Avenue
(5) Mailing Address Line 2	Suite 100
(6) City	Sacramento
(7) State	California
(8) Zip Code	95825
(9) The qualifications of the individual certifying the Alternative Compliance Plan are	California Licensed Professional Engineer (PE)
(10) Qualifying Individual's PE or Contractor License number, if applicable	86370

Section D – Request for Alternative Compliance

(1a) Diverter is seeking alternative compliance from the requirement(s) Monitoring Frequency

(1b) Provide additional information for each of the reasons selected in question 1a:

The five tributaries (Coon Creek, Markham and Auburn Ravines, East Side Canal, and Yankee Slough) covered under this Alternative Compliance Plan typically convey little to no natural flow during the season covered by Applications 14430, 22102 and 23838. The majority of the water within these channels during the season covered under the Applications originates from the Bear River. During the irrigation season there is little to no natural flow in the small streams. These channels are utilized by SSWD as part of its conveyance system to redistribute and deliver Bear River diversions and releases from CFW Reservoir to its customers.

The water diverted from the Bear River and stored water deliveries from CFW Reservoir are measured by the District just downstream of its diversion dam at its Main Canal weir. Near the weir is a pressure transducer that is used to estimate hourly flow over the weir using a rating developed by MBK. Downstream of the Main Canal weir are the delivery points to each of the tributaries. The District measures the quantities of water delivered to each of the tributaries from its Main Canal with the following:

- Coon Creek – The District measures deliveries using a weir and staff gage. Readings of the staff gage are made daily.
- Markham Ravine – The District measures deliveries using a McCrometer open flow meter with mechanical register. Readings of the totalizer are made daily.
- Auburn Ravine – The District measures deliveries using a McCrometer open flow meter with mechanical register. Readings of the totalizer are made daily.
- East Side Canal – The District attempts to operate its water delivery system with minimal spills; however, operational and seasonal spills are inherent utilizing open ditches and natural channels for conveyance facilities. The operational spills from Coon Creek drain into Reclamation District 1001's main canal. Markham Ravine and Auburn Ravine operational spills drain to the East Side Canal and thence into the Natomas Cross Canal. Yankee Slough surplus flows return to the Bear River channel. As described above, the East Side Canal is primarily a drainage channel, thus the District does not measure deliveries to the East Side Canal from each channel; however, diversions are measured.
- Yankee Slough – The District measures deliveries using a weir and staff gage. Readings are made daily.

Downstream of the delivery point to each tributary the District measures the quantities diverted or delivered from the tributaries to each POD with the following:

- Pumped PODs– There are 23 pumped diversions along the tributaries. These pumps are equipped with permanent McCrometer saddle propeller meters with mechanical registers to measure the volume of water diverted. These meters are owned and maintained by the landowners.
- Gravity PODs – The District ditch tenders use McCrometer open flow meters to take periodic readings at 30 gravity turnouts to set the flow rate according to its customers' orders. Once a change in the system is made, the ditch tenders wait for the system to stabilize and then perform readings at each turnout affected by the change in order to verify the flow rate. This flow rate is then multiplied by the length of the customer's order to estimate the volume of water diverted. The

accuracy of propeller meters can be significantly affected by debris in the small streams. Therefore, the periodic readings result in a more accurate measurement since they meters are regularly cleaned prior to and after taking each measurement.

The quantities diverted under License 4653, 11121, and 12587 (Applications 14430, 22102, and 23838, respectively) are determined or calculated as the difference between the amount delivered to the District's customers and the amount released to the tributaries by the District.

It is not feasible and unreasonably expensive for the District to upgrade existing equipment and/or install new measurement equipment at each POD. On average, during the four years from 2013 through 2016, 99% of the District's surface water supply originated from the Bear River. Only one percent (approximately 800 acre feet) originated from the small streams. The combined face value of the Licenses for the small streams represent less than 4% of the combined face value of all of the District's water right Licenses. Therefore strict compliance with these requirements is not reasonable.

(2a) Alternative Compliance is being pursued because strict compliance with one of more of the requirements for measuring and monitoring (check all that apply)

Is not feasible, Is unreasonably expensive

(3a) Alternative compliance is requested under the following categories (check all that apply)

There is an existing measurement device or measurement method in use

(3b) Provide additional information for each of the categories selected in question 3a:
The District is currently utilizing this measurement method. See Section D (1b) above.

(4) Alternative Compliance Plans shall include alternative, objective measurement and performance standards that achieve the closest attainable compliance. Describe the measurement or alternative to measurement that will be used at each point of diversion in the plan to achieve closest attainable compliance:
See Section D (1b) above.

Section E – Area Covered by the Alternative Compliance Plan

(1) Provide a general description of the area covered by the Alternative Compliance Plan:

See Attachments 4, 5 and 6

(2) Describe all diversion and conveyance works covered by the Alternative Compliance Plan:

See Attachment 3

(3) Describe the type(s) of Beneficial Use:

Irrigation

- (4) Have you attached a list of assessor's parcel numbers and the current owner of each parcel covered by the Alternative Compliance Plan?** Yes
(Attachments may be under Section I of this form)

Section F – Measurement and Monitoring

- (1) For each point of diversion listed in the Alternative Compliance Plan, describe how the water is measured:**
See Section D (1b) above
- (2) Identify the measurement accuracy associated with the measurement devices:**
All of the measurement devices utilized by the District are McCrometer or Water Specialties propeller flow meters. According to manufacturer's specifications the accuracy of these devices are +/- 2%. The overall accuracy of the approach described in this Plan is believed to be +/- 10%.
- (3) Describe how the accuracy of the Alternative Compliance Plan was calculated:**
The District, with assistance from MBK Engineers, is in the process of certifying the accuracy of the turnout measurement pursuant to SBx7-7 and this information will also be used to determine the accuracy for SB 88 where appropriate. This process includes an inventory of each turnout and in-stream measurements upstream and downstream of at a representative sample of turnouts to compare with the flow meter readings. In addition, the measurement records where the main canal drops into each small stream will be compared with the sum of the measurement records for the turnout deliveries. This comparison will produce an overall accuracy for the current approach.

Section G – Implementation Schedule

- (1) If applicable, describe the implementation schedule for the Alternative Compliance Plan, including objective milestones from date of filing through final implementation. Milestone's should include date of completion for construction and testing, expected dates of issuance of required permits, and expected date for compliance with the California Environmental Quality Act:**

See Section D (1b) above. The District is currently utilizing this approach and is in the process of certifying the turnout measurement accuracy pursuant to SBx7-7 (completion goal of December 2019). The District annually includes in their budget monies for MBK plan implementation, water use data review and reporting, and Kirkpatrick and Associates measurement equipment maintenance.

Section H – Other Permits

- (1) Describe any other permits required to implement the Alternative Compliance Plan. Include information on the agency that will issue the permit, and the expected date of issuance.**

Not applicable

Section I – Attachments

- (1) Attach documents that support the Alternative Compliance Plan.**
- (2) Provide a brief description of the attached documents:**

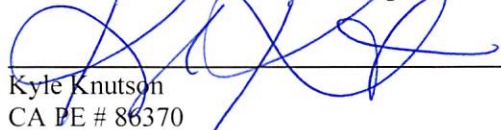
Attachment 1 – Water Rights Covered Under this Alternative Compliance Plan
Attachment 2 – Cost Estimate to Install Measurement Equipment
Attachment 3 – South Sutter Water District Conveyance System
Attachment 4 – License 4653 Place of Use Map
Attachment 5 – License 11121 Place of Use Map
Attachment 6 – License 12587 Place of Use Map
Attachment 7 – Assessor's Parcel Numbers (APNs) and Landowner Information for Each Parcel Covered Under the Plan

Section J – Important information and signatures

Yes
Kyle Knutson

Certification:

I, Kyle Knutson, 455 University Ave Suite 100, Sacramento, California, hereby certify that this Alternative Compliance Plan is in compliance with Chapter 2.8, Section 935 of the California Code of Regulations. The compliance is based on the use of an approach that is being utilized by the South Sutter Water District, including the use of McCrometer measurement equipment which are within the accuracy and frequency called for in Chapter 2.8, Section 933 of the California Code of Regulations to determine the diversion under each License. This Alternative Compliance Plan is reasonable and practical (based on my October 10, 2017 site visit and knowledge of District water rights and operation), and facilitates the District's water right reporting and the Division's overall water right management and regulation pursuant to Title 23, California Code of Regulations.



Kyle Knutson
CA PE # 86370

Attachment 1:
Water Rights Covered Under Alternative Compliance
Plan

License 4653 (Application 14430)

Priority: August 16, 1951
Source: Coon Creek
Purpose of Use: Irrigation
Amount: 2 cfs
Season: About April 1 to about November 1
Place of Use: 80 Acres
Point of Diversion: Within the NE ¼ of SE ¼ of Section 2, T12N, R4E MDB&M.

License 11121 (Application 22102)

Priority: April 12, 1965
Source: (1) East Side Canal
(2) Coon Creek
(3) Markham Ravine
(4) Auburn Ravine
Purpose of Use: Irrigation
Amount: 40.3 cfs; Max DD 4,769 AF per annum.
Season: April 1 to June 15 and September 1 to October 31
Place of Use: 4,000 net Acres within a gross area of 43,675 Acres within T11N, R4E; T11N, R5E; T12N, R3E; T12N, R4E; T12N, R5E; T13N, R4E; and T13N, R5E, all MDB&M.
Point of Diversion: (1) Moveable POD: Along the East Side Canal from confluence of Coon Creek to Coppin Dam
(2) Moveable POD: Along Coon Creek from Coon Creek Headgate to Coppin Dam
(3) Moveable POD: Along Markham Ravine from Markham Headgate to Coppin Dam
(4) Moveable POD: Along Auburn Ravine from Auburn Headgate to Coppin Dam

License 12587 (Application 23838)

Priority: August 11, 1971
Source: Yankee Slough
Purpose of Use: Irrigation
Amount: 1.35 cfs; Max DD 143 AF per annum.
Season: April 1 to June 30 and September 1 to September 30
Place of Use: 235 net Acres within a gross area of 2,800 acres within Sections 13, 14, 21, 22, and 23, T13N, R4E, MDB&M and Sections 15, 16, 17, 18, 21, 22, and 23, T13N, R5E, MDB&M.
Point of Diversion: Moveable POD: Along Yankee Slough from Yankee Slough Headgate to point within NW ¼ of NE ¼ of Section 21, T13N, R4E MDB&M.

Attachment 2:
Cost Estimate to Install Measurement Equipment

Table 1: Summary of Estimated Cost for Measurement Equipment

Item	Quantity	Unit Price	Total
Pumped Diversions Existing Flow Meter Calibration and Install of Digital Register ¹	23 EA	\$1,200.00	\$27,600.00 ³
Purchase Cost for Flow Meters at the Gravity Diversions	30 EA	\$2,900.00	\$87,000.00 ³
Telemetry Device	53 EA	\$800.00	\$42,400.00 ³
Annual Telemetry Cost	53 EA	\$180.00	\$9,540.00
Installation Cost ²	1 LS	-	\$157,000.00
Total Cost for First Year			\$323,540.00
Total Cost for 2 nd Year (and every year thereafter)			\$31,270.00 ⁴

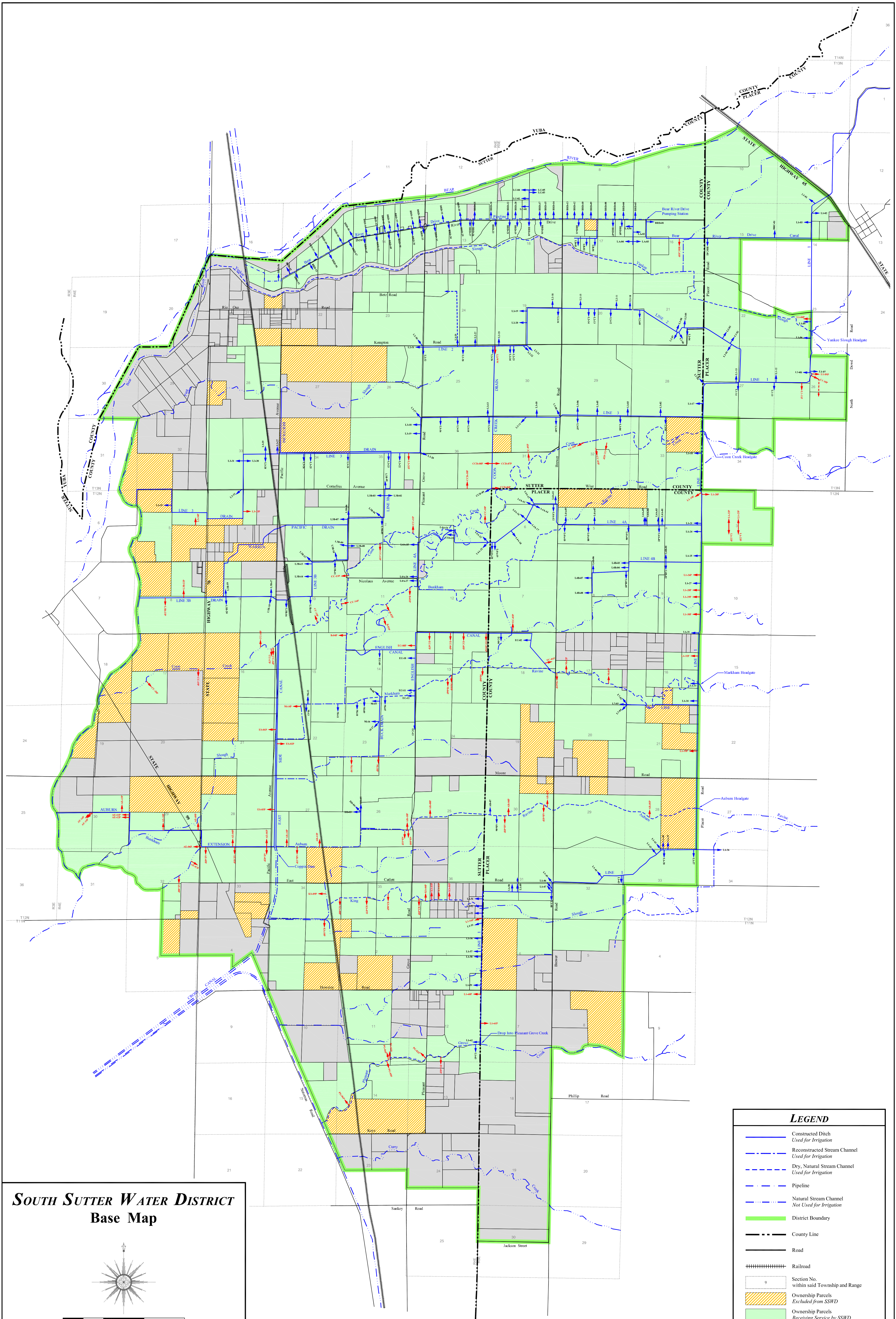
¹ This cost includes the calibration and installation of a digital register. Currently, all of the existing meters are equipped with mechanical registers. In order to record hourly measurements and telemeter the data the register needs to be converted to a digital register. These meters are owned by the landowners and not the District. This cost does not include any additional repair work to bring the meter into working condition.

² Based upon discussions with flow measurement equipment contractors, the estimated cost to install the equipment is approximately equal to the cost to purchase the equipment.

³ Cost includes estimate for tax and shipping.

⁴ This is the annual cost for telemetry and an estimate to calibrate and repair (as necessary) half of the 53 flow meters. Telemetry is required due to the number of meters. It is not feasible for the District to manually collect the data from each meter, thus they would need to install telemetry equipment at each site. We estimate the cost for calibration and repairs to be on average \$1,000 per meter.

Attachment 3:
South Sutter Water District Conveyance System



SOUTH SUTTER WATER DISTRICT

Base Map

MBK
ENGINEERS

2450 Alhambra Boulevard, 2nd Floor
Sacramento, California 95817
Phone: (916) 456-4400 • Fax: (916) 456-0253

LEGEND	
	Constructed Ditch Used for Irrigation
	Reconstructed Stream Channel Used for Irrigation
	Dry, Natural Stream Channel Used for Irrigation
	Pipeline
	Natural Stream Channel Not Used for Irrigation
	District Boundary
	County Line
	Road
	Railroad
	Section No. within said Township and Range
	Ownership Parcels Excluded from SSWD
	Ownership Parcels Receiving Service by SSWD
	Ownership Parcels Not Receiving Service by SSWD
	SSWD-01 Diversion, Gravity Flow
	SSWD-01P Diversion, Pump

Attachment 4:
License 4653 Place of Use Map

STATE OF CALIFORNIA
STATE WATER RIGHTS BOARD
SACRAMENTO

OWNER JAMES M. & MAE E. BROWN

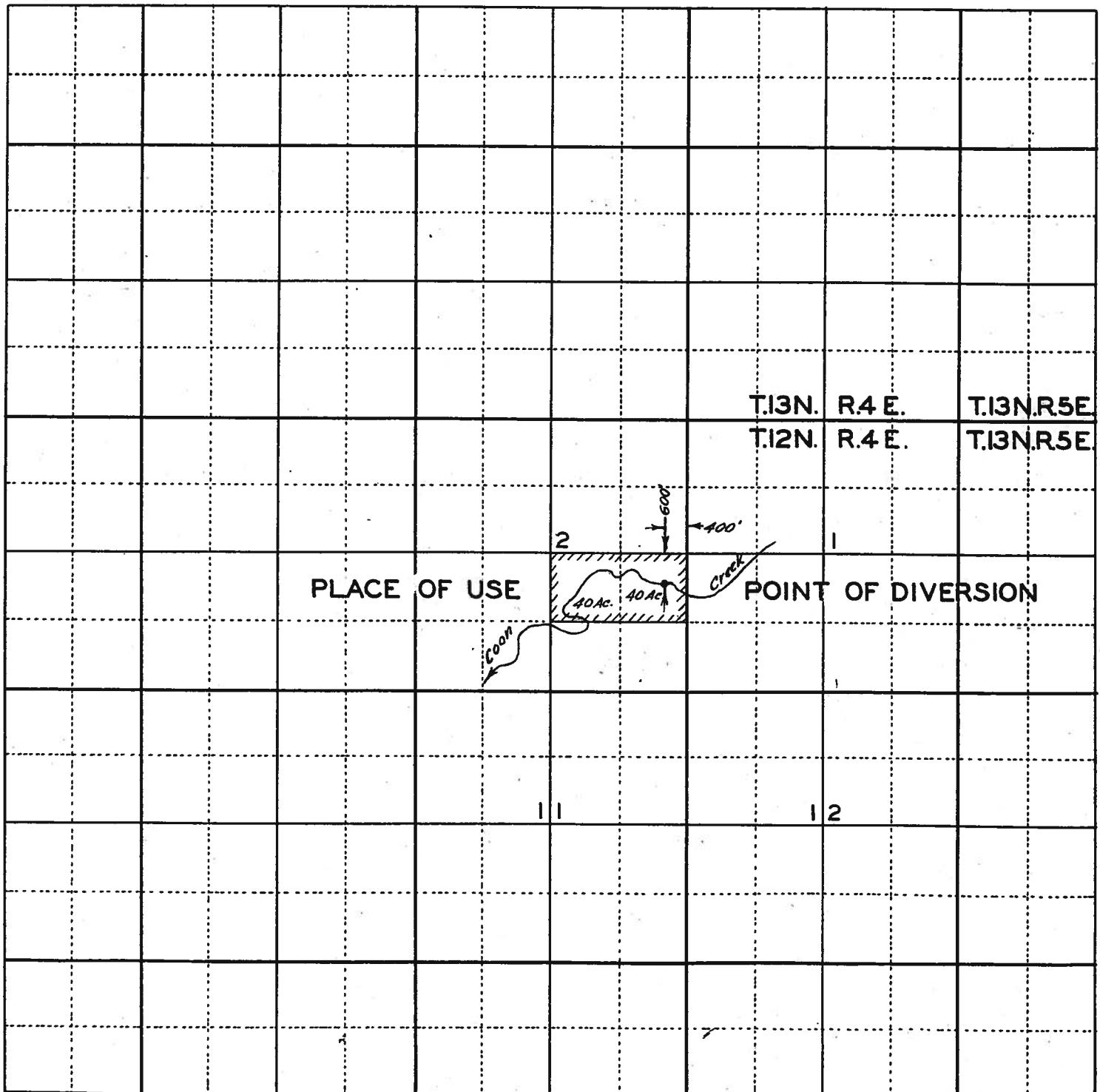
APPLICATION 14430

SECTION 2, TOWNSHIP 12 NORTH, RANGE 4 EAST, M.D.B. & M

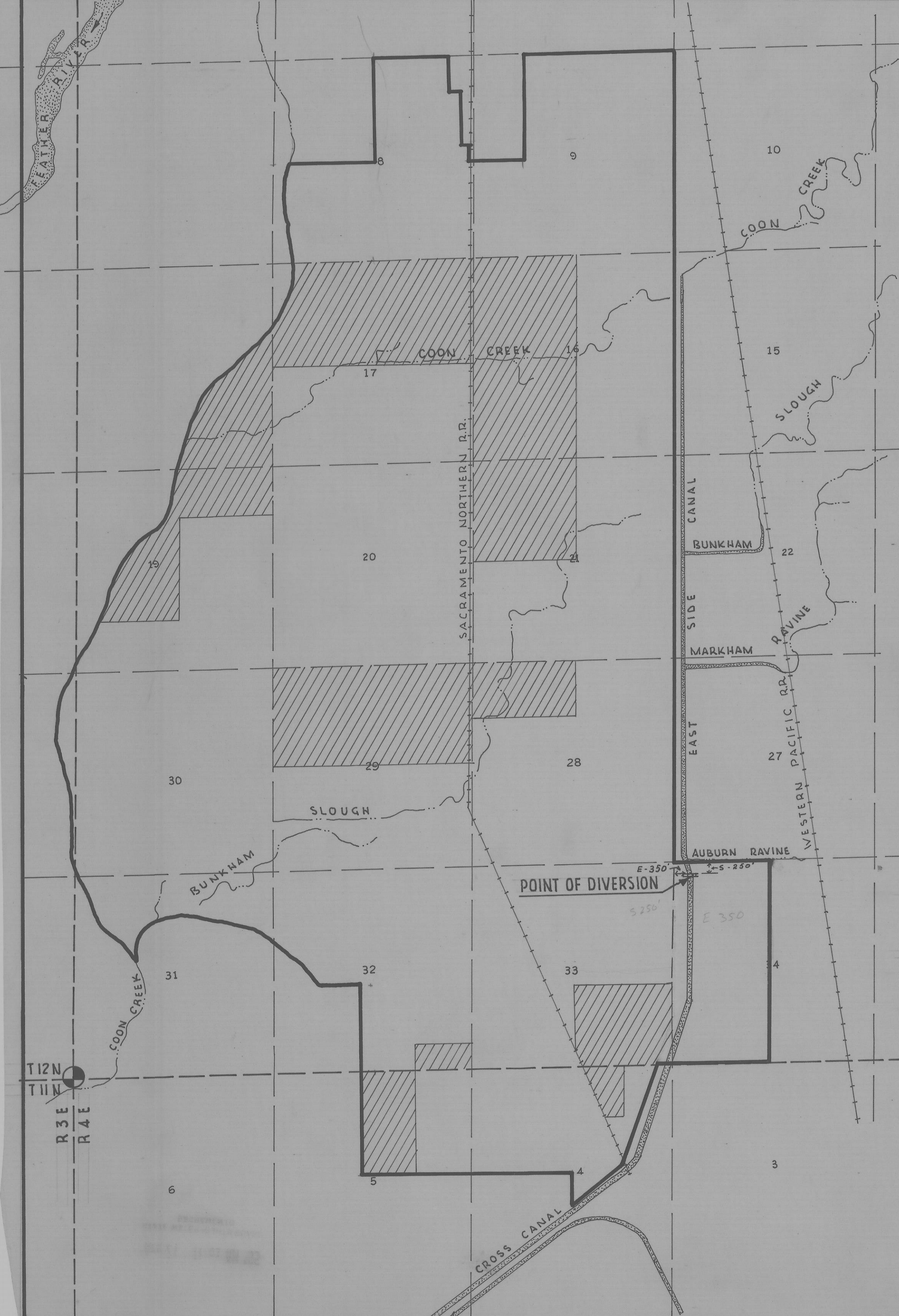
PERMIT 9330

COUNTY OF SUTTER

LICENSE 4653



Attachment 5:
License 11121 Place of Use Map



I, A.N. MURRAY, OF SACRAMENTO, DO HEREBY CERTIFY THAT THIS MAP WAS MADE UNDER MY DIRECTION FROM A BASE OF 1:24,000 U.S.G.S. QUADRANGLES "NICOLAUS" AND "VERONA" AND A BOUNDARY MAP OF THE SOUTH SUTTER WATER DISTRICT, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF CORRECTLY DEPICTS THE AREA EXPECTED TO BE IRRIGATED AND THE LOCATION OF STREAM COURSES AND DIVERSION WORKS DESCRIBED IN THE ACCOMPANYING APPLICATION.

C.E. Murray
C. E. 10409

LEGEND

- BOUNDARY OF AREA OF USE.
- RANGE AND TOWNSHIP LINES.
- SECTION LINES.
- RAILROADS.
- STREAMS.
- RIVERS AND CANALS.
- AREAS WITHIN AREA OF USE WHICH ARE EXCLUDED FROM THE SOUTH SUTTER WATER DISTRICT.

SCALE : 1:24,000

GIANELLI AND MURRAY
CONSULTING CIVIL ENGINEERS
1031 FORUM BLDG. SACRAMENTO, CALIF.

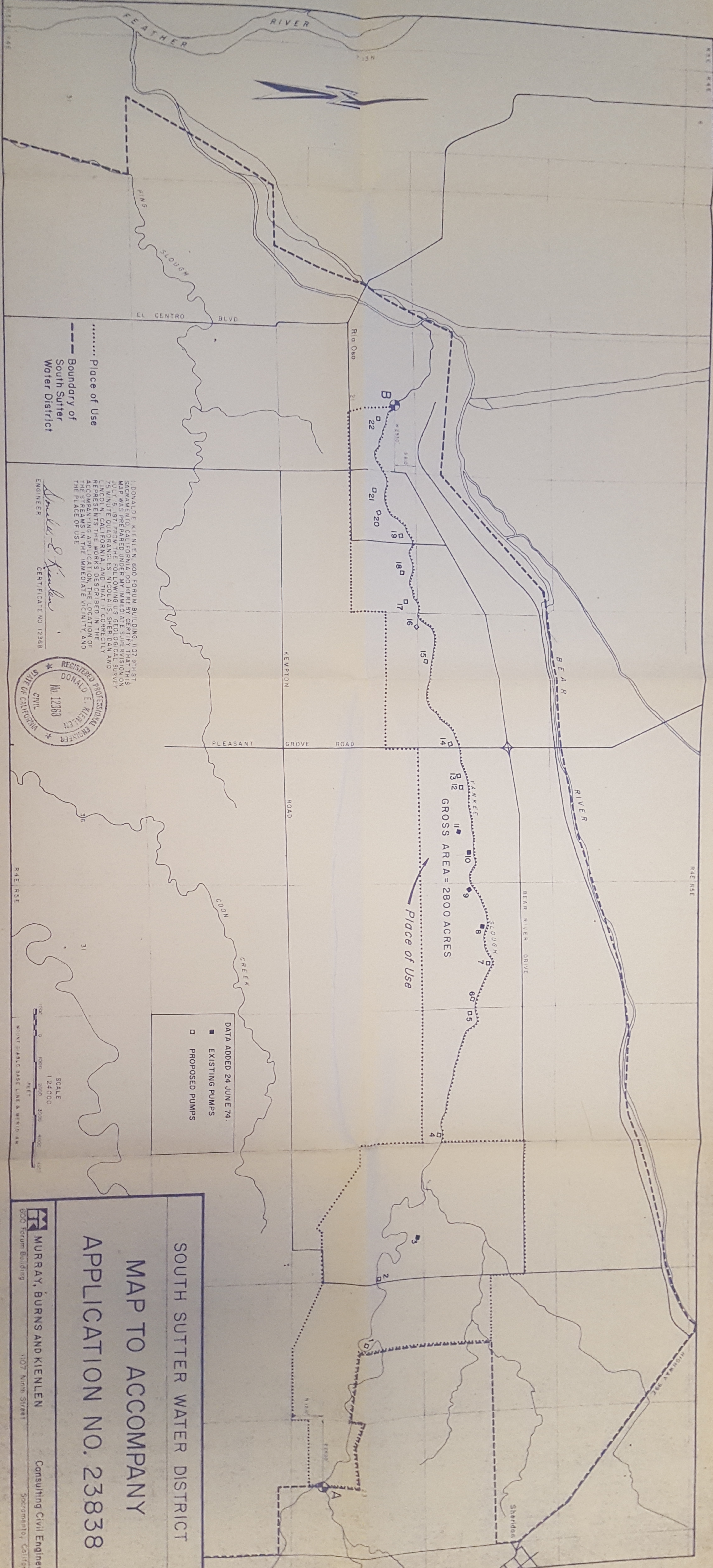
MAP TO ACCOMPANY APPLICATION
22102

TRACED: *[Signature]* APPROVED: *[Signature]*

DATE: APRIL 16, 1965

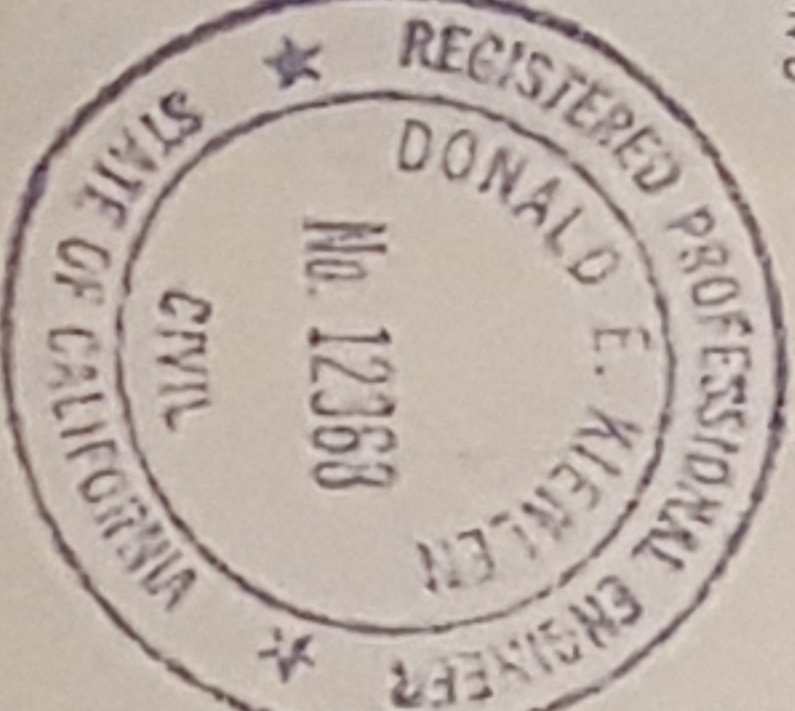
L11121 A22102

Attachment 6:
License 12587 Place of Use Map



..... Place of Use
--- Boundary of South Sutter Water District

I, DONALD E. KIENLEN, 600 FORUM BUILDING, 1107 9TH ST. SACRAMENTO, CALIFORNIA, DO HEREBY CERTIFY THAT THIS MAP WAS PREPARED UNDER MY IMMEDIATE SUPERVISION ON JULY 16, 1971 FROM THE FOLLOWING U.S. GEOLOGICAL SURVEY 1:50,000 SCALE MAP OF THE SACRAMENTO-SAN JOAQUIN RIVER DELTA, CALIFORNIA, AND THAT IT CORRECTLY REPRESENTS THE WORKS DESCRIBED IN THE ACCOMPANYING APPLICATION, THE LOCATION OF THE STREAMS IN THE IMMEDIATE VICINITY AND THE PLACE OF USE.

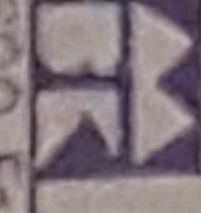


SCALE
1" = 2400'
0 1000 2000 3000 4000 5000
FEET
MOUNT BIALO BASE LINE & VERTIC. AN.

SOUTH SUTTER WATER DISTRICT

MAP TO ACCOMPANY

APPLICATION NO. 23838

MURRAY, BURNS AND KIENLEN
600 Forum Building
1107 Ninth Street
Sacramento, California
Consulting Civil Engineers

DATA ADDED 24 JUNE 74:
■ EXISTING PUMPS
□ PROPOSED PUMPS

Attachment 7:
Assessor's Parcel Numbers (APNs) and Landowner
Information for Each Parcel Covered Under the Plan

Table 2: APNs and Ownership Information for Parcels Covered Under the Plan

Yankee Slough	
Name	Parcel #
Adams, David	28-120-007
Derby Orchards	28-020-065, 28-020-069, 28-230-066
Nelson, Richard	28-230-062
SSC Orchards	28-120-027
Conant Orchards	28-120-006
Coon Creek	
Name	Parcel #
Siller Brothers	28-240-009
Tealbrook	28-240-030
Boeger, Erving	28-240-029
Coon Creek Ranch	28-240-006
Gallagher Farms	28-240-023, 28-240-024
Haughey Farms	33-070-006, 33-070-015
Scheiber, John	33-180-024
Twin Creeks	33-180-014
Shalz, Richard	33-220-020
Sills, Edward	33-230-011
Michel, Dennis	33-230-010
Gill, Rajinder	33-240-010
East Side Canal	
Name	Parcel #
Davis, Dale	33-220-005, 33-150-002
Reese, Tom	33-250-011
Brennan, Diane	33-280-014, 33-280-015
Auburn Ravine	
Name	Parcel #
Van Dyke Brothers	33-260-04, 33-260-013, 33-260-015, 33-270-005, 33-270-057
Phelps, Ron	33-270-010, 33-320-007
Stubbs-Berg	33-320-016
Dale Davis	33-310-042, 33-310-060
Algeo, George	33-280-008
Markham Ravine	

Name	Parcel #
Knickerbocker, Sandra	21-370-017
Allison, Arthur	21-030-055, 21-030-056
Koshman Estate	21-370-006
Placer 290 Investors LLC	21-030-059, 21-030-060
Vogt, Edward	33-210-007, 33-210-008, 21-030-008
Van Dyke, Harley	33-210-006, 33-260-005, 33-270-044
Van Dyke, Brian	33-210-027
Diamond J Farms	33-210-002, 33-260-001
Davis, Dale	33-250-019
Fruetel Farms	33-260-002, 33-260-003, 33-250-014
James, Norman	33-250-010, 33-250-013, 33-250-018