APPENDIX C – SEWD TECHNICAL DOCUMENTS

Att4_IG2_Budget_3of3

C-1 SEWD DRAFT DESIGN PLANS FOR WATER BANKING PROJECT AND OPERATIONS AND MAINTENANCE PLAN

STOCKTON EAST WATER DISTRICT

STOCKTON, CALIFORNIA

FARMINGTON GROUNDWATER RECHARGE PROGRAM NORTH SITE AND AS PART OF THE CALAVERAS RIVER INTEGRATED STORMWATER MANAGEMENT PROJECT

NOVEMBER 2011 DRAFT

LOCATION MAP

BOARD OF DIRECTORS

- Richard Atkins
- Andrew Watkins
- Alvin Cortopassi
- Melvin Panizza
- Paul Sanguinetti
- Loralee McGaughey
- Thomas McGurk

DISTRICT OFFICERS

Richard Atkins - President
Andrew Watkins - Vice President
Kevin M. Kauffman - General Manager
Elpedio "Jun" Jamosmos - Finance Director
Jeanette R. Thomas - Assistant Manager - Agricultural and Municipal Operations
Jeanne M. Zolezzi - General Counsel

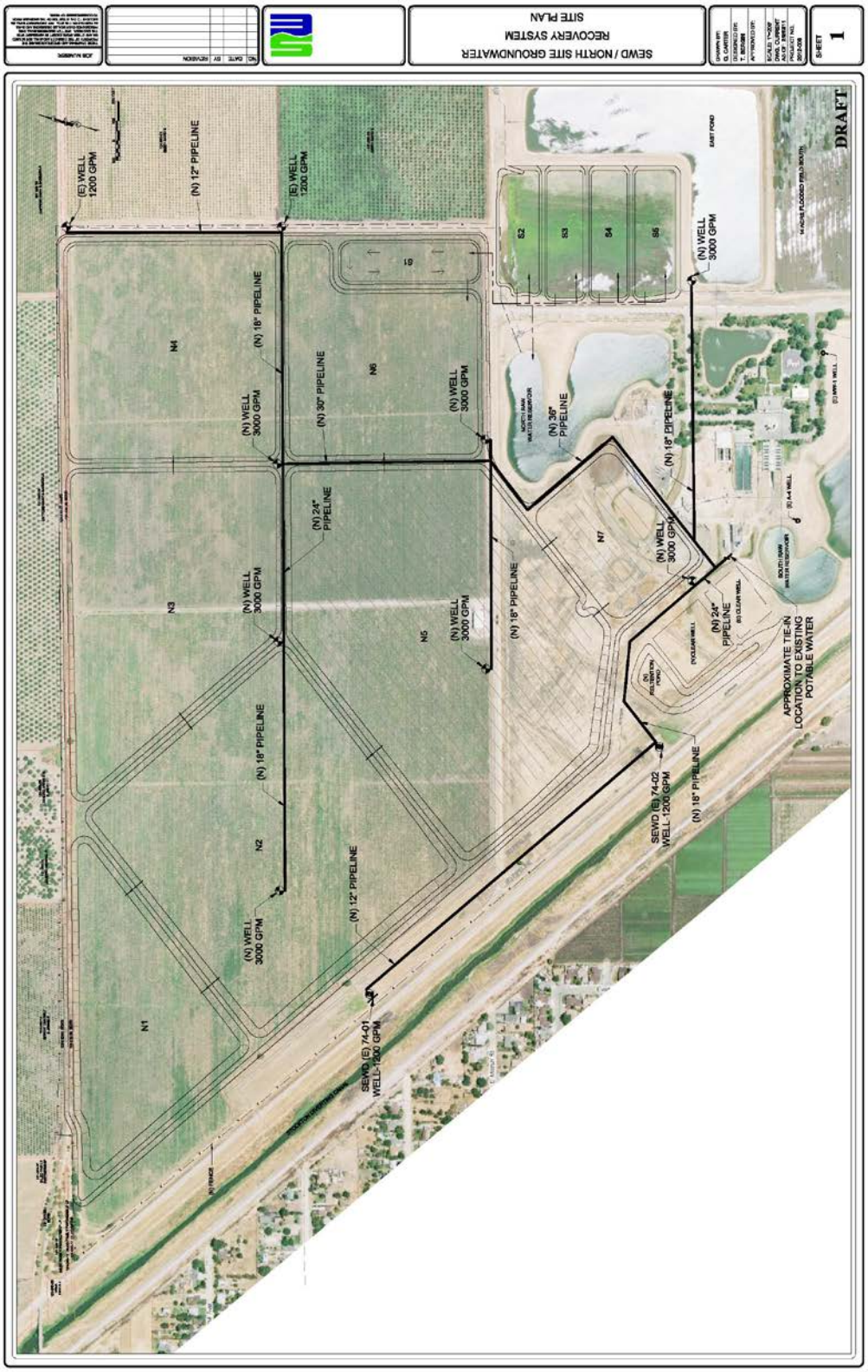
STOCKTON EAST WATER DISTRICT

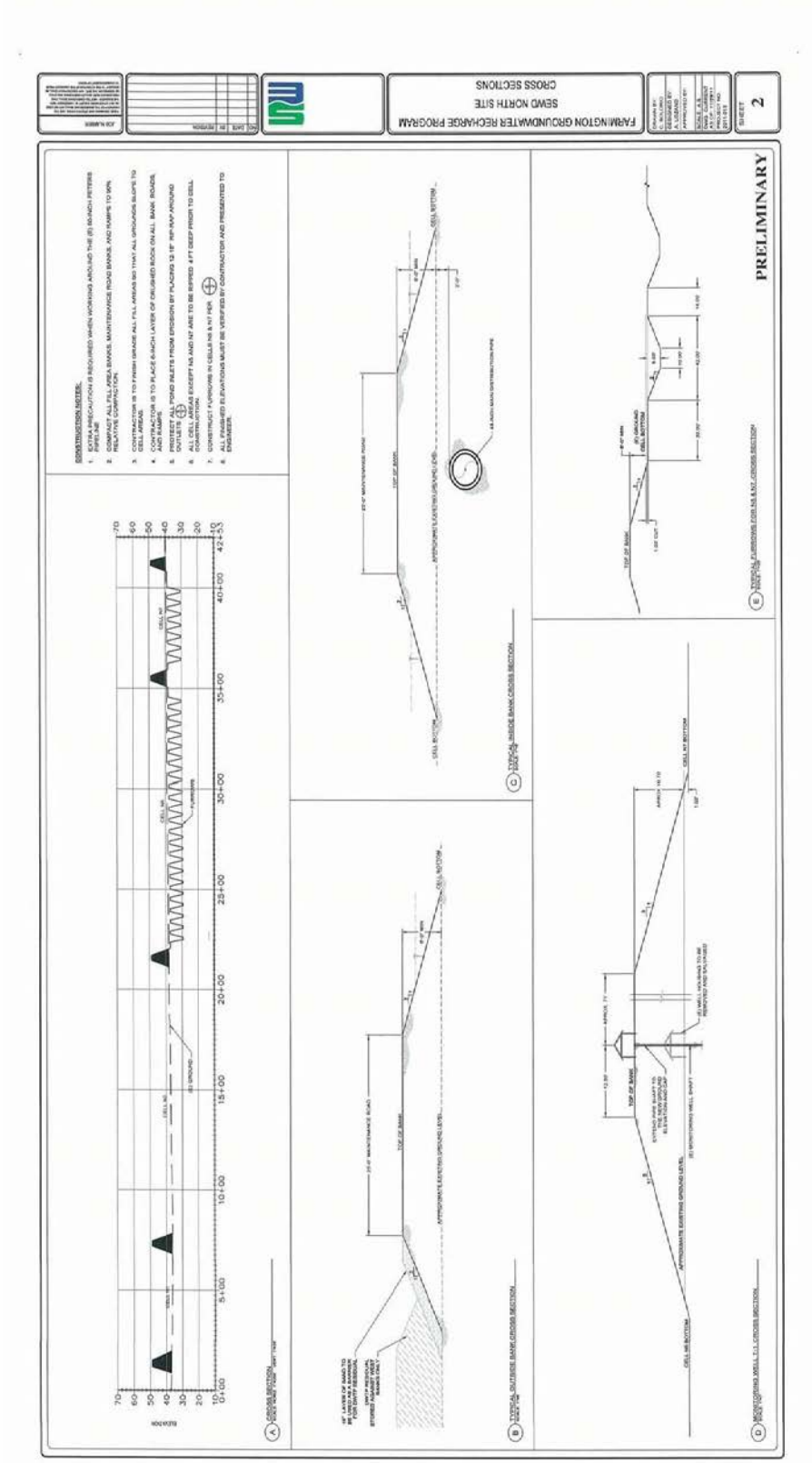
President _____

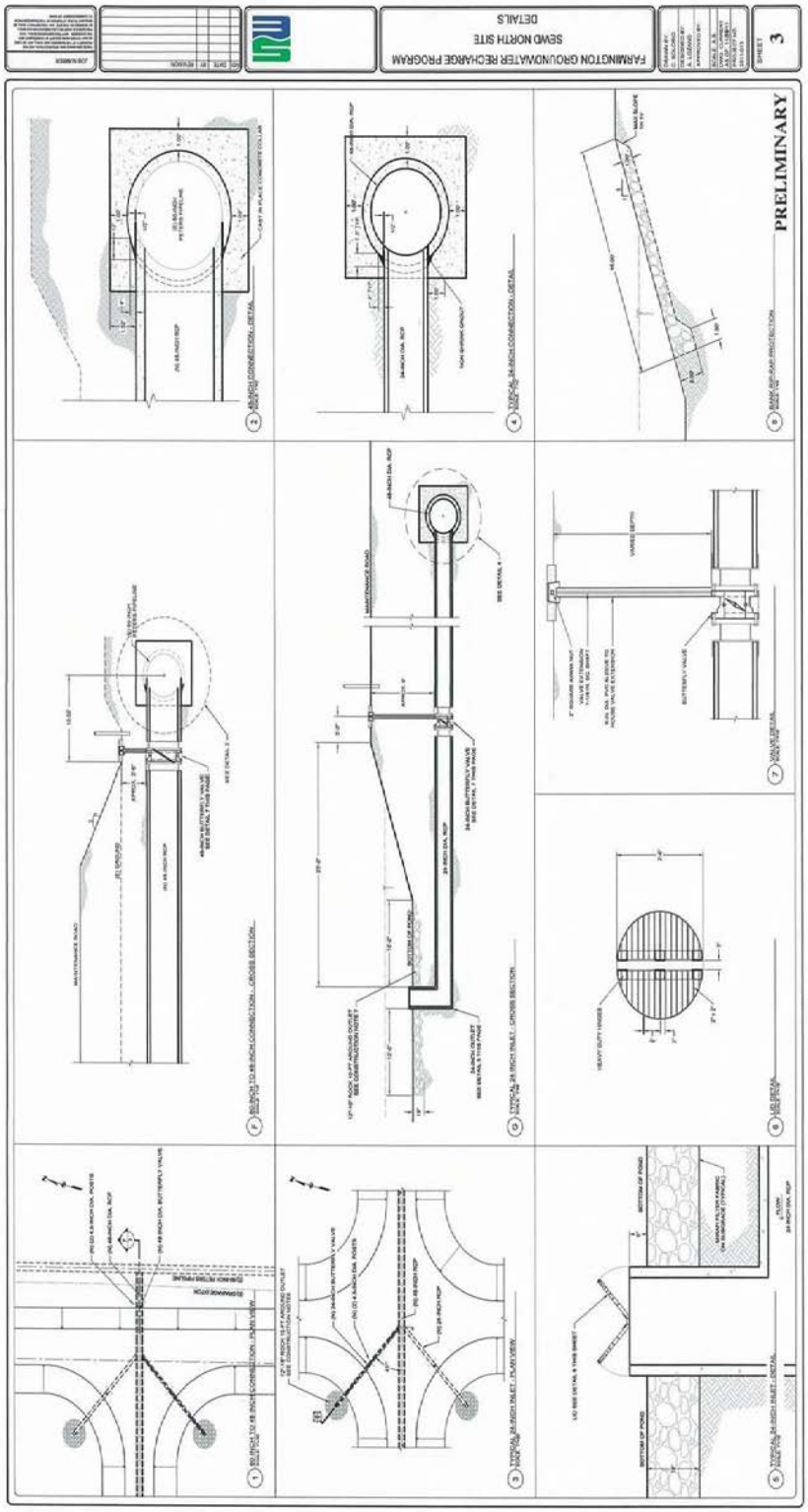
General Manager _____

VICINITY MAP

PRELIMINARY


SEWD / NORTH SITE GROUNDWATER
RECOVERY SYSTEM
SITE PLAN
SHEET
1
DRAFT
(E) WELL
1200 GPM
(N) 12" PIPELINE
(E) WELL
1200 GPM
(N) WELL
3000 GPM
(N) 18" PIPELINE
(N) 30" PIPELINE
(N) WELL
3000 GPM
(N) 24"
PIPELINE
(N) WELL
3000 GPM
(N) 18" PIPELINE
(N) WELL
3000 GPM
(N) 12" PIPELINE
SEWD (E) 74-01
WELL-1200 GPM
(N) 18" PIPELINE
(N) 30"
PIPELINE
(N) 18" PIPELINE
(N) WELL
3000 GPM
(N) 24"
PIPELINE
SEWD (E) 74-02
WELL-1200 GPM
(N) 18" PIPELINE
APPROXIMATE TIE-IN
LOCATION TO EXISTING
POTABLE WATER
N1
N2
N3
N4
N5
N6
N7
S2
S3
S4
S5
G1
EAST POND


FARMINGTON GROUNDWATER RECHARGE PROGRAM
SEWD NORTH SITE
CROSS SECTIONS
SHEET 2
PRELIMINARY


FARMINGTON GROUNDWATER RECHARGE PROGRAM
SEMD NORTH SITE
DETAILS
PRELIMINARY
3

Operations and Maintenance Plan

The typical hydrological cycle for the San Joaquin Basin area is eight years, comprised of 5 years of average to wet precipitation and three years of average to dry precipitation. The basis of the operation and maintenance plan is this eight year cycle. The cycle assumes five years of recharge followed by three years of extraction. Recharge will occur almost every year, but if hydrology turns dry, operations will cease; therefore using five of eight years simplifies the variation anticipated. Staff time will be limited and able to be blended in with existing daily operations. Where additional staff time has been identified, it has been incorporated into the cost estimates.

Recharge

Based on the experience with the adjacent 60 acre site which has been in operation since 2003, the recharge phase of the bank operation would not require a large amount of staff time nor equipment. The typical operation of the recharge phase would consist of diverting water from either the New Hogan or New Melones conveyance systems into the 7 recharge basins on the proposed site. Once the water is diverted, it would pond and essentially percolates into the ground. Water levels and flow rates would be monitored. As the rate of percolation changes, adjustments to the volume of inflow will be made. Staff will monitor and record the amounts of water percolated into the ground and log the amount stored in the bank and available for extraction. Extrapolating the results for the 60 acre site, the proposed surface water storage facility is expected to be a capacity of storing 26,500 acre feet of water per year when water is available (average to wet hydrologic years).

SEWD's engineering department estimates that the annual base O&M cost would average 1.5% of the $8,171,000 construction cost of the bank facility. This estimate equates to $122,565 per year. Included in this cost would be items such as weed control, routine maintenance of the valving and roadways and any other normal maintenance work. Operational expenses would include staff time required to operate and monitor water levels and flows plus record keeping of water placed into storage. Over the eight year cycle, the anticipated cost of O&M would be $980,520.

Considering that the bank would be able to store 26,500 acre feet of water per year in the recharge phase (5 years) the cost per acre foot stored in the bank would be: total O&M cost of $6,015,891 divided by the water stored 26,500 acre feet per year x 5 years = 132,500 acre feet. This equals $45.40 per acre foot.

The storage component includes the cost of water from New Melones ($28.79 per acre foot) plus an additional 10% to reflect evaporation and conveyance losses. Should the District place water from New Hogan Reservoir into the bank, the annual cost for recharge would drop to $980,520 and would bring the cost per acre foot over the five year recharge phase to $7.40.

It is expected then that the recharge phase of operation and maintenance would cost between $7.40 and $45.40 per acre foot depending upon the source of water.

Source	For 5 Year Cycle	Per Acre Foot
New Melones Reservoir	$6,015,891	$45.40
New Hogan Reservoir	$980,520	$7.40

Extraction

During the three of eight year extraction phase, SEWD engineering staff has estimated that the network of on-site wells would be operated for a 6 month cycle per year. Care would be taken to ensure that the pumping does not create a negative impact on groundwater users. While in urban areas care is taken not to depress the existing groundwater levels by no more than 0.6 feet per year (with a maximum of 0.75 feet), it is not expected that this rule will be a concern as it is in urban areas. This is because that during the recharge phase, an expected 132,500 acre feet of surface water will be stored in the ground and during the extraction phase 81,000 acre feet will be removed. Conversely, in urban areas little water is recharged back into the aquifer, hence the concern. The net result is an increase of 51,500 acre feet of surface water in the aquifer over the eight year cycle. While there can be no absolute certainty that the groundwater level at any individual well will not change, the fact that about 39% of the stored surface water will remain underground demonstrates a net increase in total water in the aquifer.

It is additionally estimated that 30,000 acre feet of water have already been placed into storage under the SEWD facility by way of the operation of the 60-acre demonstration project at the District's easterly border. This water is available for immediate extraction should the need arise.

SEWD's Opinion on Sustainable Yield for Groundwater Pumping

Water management plans within San Joaquin County have addressed safe groundwater withdrawal rates to reduce groundwater depletion or overdraft and to protect the groundwater basin from further saline intrusion and water quality degradation. SEWD's Urban Contractors (UC's) exercise their right to extract groundwater underlying their service areas when surface water supplies are not sufficient to meet their water demands. The UC's extract water from the western reaches of the groundwater basin where salt water intrusion from the west can degrade groundwater quality rendering it unsuitable for municipal use. The City of Stockton has adopted a conservative acceptable groundwater yield value to stop the advance of saline water eastward. This yield objective is 0.60 ac-ft/ac per year. Their stated maximum sustainable yield is 0.75 ac-ft/ac per year, and the current rate is about 0.65 ac-ft/ac per year.

The UC's service areas generally encompass a 40,000 acre area surrounding the City of Stockton in the center of San Joaquin County and adjacent to the San Joaquin Delta. The Stockton East Water District (SEWD) service area consists of approximately 143,000 acres that extends into the eastern portion of San Joaquin County. District groundwater hydrology is more likely representative of the conditions found within the Eastern San Joaquin Groundwater Basin. According to the Northeastern San Joaquin County Groundwater Banking Authority the sustainable groundwater yield is reportedly greater within the Eastern San Joaquin Groundwater Basin than it is within the City of Stockton Metropolitan Area. The recommended maximum sustainable yield for the Eastern Basin is 1.96 ac-ft/ac per year. SEWD has adopted this Plan as its own groundwater management plan.

Present Groundwater Yield within District Boundaries

The present annual groundwater yield within the District Boundaries was calculated utilizing present district acreage, records of groundwater pumped by agriculture, and the approximate amount of water pumped by Urban Water Suppliers. Calculations parameters include:

Present District acreage equals 143,300 acres (reported in 2010 Urban Water Management Plan), 120,000 ac-ft of groundwater pumped by agriculture within the District boundary per year, estimated 25,000 ac-ft of groundwater pumped by Urban Water Suppliers within the District boundaries per year.

Combining the two groundwater pumped values above and using the District boundary acreage, the present groundwater yield equals 1.01 ac-ft/acre per year. This value is about 50% of the sustainable yield value of 1.96 ac-ft/ac per year as identified for the Eastern San Joaquin Groundwater Basin (2004 Groundwater Basin Management Plan), and about 1 or 35% greater than the stated sustainable yield maximum values identified in various City of Stockton Plans.

A summary of data from the various applicable water planning documents is presented within the table below. The reporting Agency, the name of the planning document, and the identified sustainable groundwater yield is included.

Agency	City of Stockton Metropolitan Area (COSMA)	City of Stockton	North Stockton	Northeastern San Joaquin County Groundwater Banking Authority
Document Cited	Supplemental Reports for Water	Urban Water Management Plan,	Master Plan	Eastern San Joaquin

Agency	City of Stockton Metropolitan Area (COSMA)	City of Stockton	North Stockton	Northeastern San Joaquin County Groundwater Banking Authority
	Supply, 1992 - Special Planning Area Study	December 1995		Groundwater Basin – Groundwater Management Plan, June 2004
Location	Urban Service Area	Urban Service Area	Urban Service Area	Eastern San Joaquin County Groundwater Management Area
Stated Sustainable Groundwater Yield (per year)	0.75 ac-ft/ac to 1.0 ac-ft/ac	1.0 ac-ft/acre	0.75 ac-ft/acre	1.96 ac-ft/acre
Stated Conservative Common Objective Yield (per year)	0.6 ac-ft/acre	0.6 ac-ft/acre	0.6 ac-ft/acre	1.96 ac-ft/acre

The operation of the individual wells will consider the total urban water demand, availability of surface water from New Hogan and New Melones Reservoirs and the amount of water previously stored in the banking facility. The pumps will have the ability to be operated individually according to the system demand. SEWD does not anticipate operating the pumping network once the total amount of stored water has been recovered. The goal of the facility is to always ensure that no more water is removed than has been previously placed into storage.

Because the network of pumps along the District's pipelines and the Lower Farmington Canal is a geographically large area (approximately 15 miles), it is not expected that the pumping operations will negatively impact the groundwater levels in the pumping area. There are existing monitoring protocols implemented by the Groundwater Banking Authority (GBA) with respect to basin wide groundwater monitoring and reporting. The District will assist with the GBA in providing well data and work in close cooperation with the GBA and consider GBA recommendations for best management practices.

In dry years, it is anticipated that pumping during winter months will be minimal, if at all, as the urban water demand during these months is comparatively small, and existing supplies supplemented by the Urban Contactors existing wells will likely provide 100% of the system demand. During spring, summer and fall when system demand is high, the network of surface water bank wells will operate to provide a targeted minimum 40 million gallons of drinking water per day to the Urban Contractors.

Over the course of a calendar year, with the ability to extract 27,000 acre feet of water per year for up to three consecutive years, SEWD will be able to fully comply with, and exceed, the terms of the Second Amended Contract and thus ensuring the Urban Contractors of a reliable dry year water supply.

Assured Ability to Recover Water from the SEWD Water Bank

Considering three key factors: (1) a confined aquifer (groundwater basin), (2) anticipated groundwater use, and (3) regulatory protections currently in-place, SEWD can assure its customers that surface water deposited/recharged into the SEWD Water Bank will be available when it is needed (in 3 of 8 years).

(1) Confined Aquifer. The Eastern San Joaquin County Basin (Basin) is a completely encapsulated or confined groundwater aquifer/basin lying below the ground surface of San Joaquin County east of the Sacramento-San Joaquin River Delta, and a small portion of Calaveras and Stanislaus Counties east of their common county-line with San Joaquin County. This Basin is replenished naturally from the three rivers (Stanislaus, San Joaquin, and Mokelumne) and the foothills that surround it. Groundwater movement, overdraft, and recharge potential characteristics of this Basin are well documented in the locally adopted groundwater management plan. Testing to date indicates that recharging of the Basin results in localized rising of groundwater levels and the potential for 'mounding' that act as hydraulic barriers to prevent migration of undesired groundwater contamination (i.e., saltine intrusion). As a result of its confined nature, surface water deposited/recharged into the Basin is expected to remain in the Basin until the Basin is actually filled and begins overflowing to the surface and its three surrounding rivers, or until the stored water is recovered in dry years when surface water is insufficient to meet demands.

(2) Anticipated Groundwater Use. The lands over the Basin are nearly fully developed with urban, suburban, or agricultural uses. The combined water needs of all of this developed land results in the individual district demand for surface and groundwater for each of the three water district overlying the Basin. Reliance on groundwater use by both urban and agriculture areas has resulted in the Basin being overdrafted by an estimated two-million acre-feet. The locally adopted groundwater management plan

has estimated the current and projected groundwater demand. Projected future demands are not significantly different then current demands. Accepting the facts of the groundwater management plan, the potential is minimal for lands overlying the Basin to withdraw the surface water deposited/ recharged water in the Basin to an extent that stored water would not be available when dry-years occur. Groundwater level data is kept by San Joaquin County and reported on semi-annually. This Basin condition information will confirm if the surface water deposited/recharged and stored will only benefit other SEWD customers, or if it will be available when needed by all in dry years for SEWD banking customers. Historic minimal levels of the Basin were measured in the fall of 1992; the last year of a four-year drought period. Regional hydrology has ranged from slightly dry to very wet in every year since this drought period. As a result, Basin water levels have generally stabilized in an operating range above the 1992 levels. Considering that only minimal direct groundwater recharge efforts, this stabilization indicates that groundwater use may have also stabilized, and there is the potential for the Basin to be operated as a water bank in a similar operating range above the 1992 levels. As explained in the groundwater management plan, operating a Basin-wide water bank is possible to a nominal volume of about one-million acre-feet or more; roughly half of the calculated overdraft volume. The potential for users overlying the Basin to deplete the water stored in the SEWD water bank are therefore believed to be minimal.

(3) Regulatory Protections Currently In-Place. In the 1990s, San Joaquin County was concerned that the State or other Regions may claim their groundwater and have prevented such potential by adopting a groundwater export ordinance. This ordinance is believed to be protective of the Basin, yet flexible enough to allow a well-planned and managed water bank to be operated in the nominal one-million acre-foot range discussed in the groundwater management plan.

The SEWD Water bank will be constantly monitored to assure deposits are recharging the Basin, and that withdrawn/recovered water from the Basin is sufficient and adequate to meet SEWD customer demands.

Operation and Maintenance costs of the extraction phase have been estimated by SEWD engineering staff. These costs are presented in Appendix B. The O&M cost estimate includes items such as PG&E meter charges, on-peak and off-peak electrical use, as well as pump and well maintenance. Included in the O&M estimate is the assumption that in years when pump usage is not anticipated, PG&E service will be terminated so as to not incur any demand or meter charges. When pump usage is anticipated, PG&E service will be restored. This will allow the surface water storage bank to operated efficiently and not cause the Urban Contractors to incur unnecessary charges. The demand, meter and electric rated were obtained from current PG&E schedules. Based upon these schedules, the demand charges will total $321,559 per year for the three years of estimated extraction, or a total of $946,677 for the extraction cycle.

Similarly, electrical costs were estimated based upon the number of off- and on-peak hours of usage per pump, and the season of the year (summer rate versus winter rate) that the pumps would be expected to be in operation. Based upon a total of 11 pumps in operation during the extraction phase, the

anticipated electrical cost would be $1,491,150 per year, or $4,473,450 for the three year cycle. Any addition staff time during the extraction phase was considered to be minimal as the network of pumps was planned to be remotely operated and monitored using a SCADA system.

The following table presents the anticipated pumping costs:

Item	Per Year	For 3 year cycle
PG&E Demand Charges	$321,559	$946,677
Electrical Use	$ 1,491,150	$4,473,450
Total	$1,812,709	$5,438,127

Assuming that 27,000 acre feet of water would be pumped in each of the three years of a dry cycle, the total cost of extraction of the water (81,000 acre feet in total) would be $68.37 per acre foot.

C-2. Construction Cost of 60 Acre Site Final Feasibility Study Report (2006)

Dated August 15, 2006

Final Feasibility Study Report

Grant Contract No. F90004

August 15, 2006

Per Article A-6, Section (b) of our contract, the district submits this report to the Department of Water Resources as its final task in completing its obligations under the Proposition 13 Groundwater Storage/Pilot Project Grant. This report is split into three sections. Section 1 provides the results of the worked performed pursuant to the Feasibility Study Description. Section 2 is an analysis of the Feasibility Study's findings. Section 3 provides a summary of the costs incurred and disposition of funds disbursed.

Section 1. Results of Work Performed

The purpose of this study was to construct a pilot project in order to develop information and knowledge of groundwater storage issues, and operational needs of such a project that would lead to selection and development of future recharge sites.

The pilot project consists of demonstration-scale groundwater recharge facilities constructed on a 60-acre site owned by the Stockton East Water District (SEWD). The pilot project was built north of East Main Street east of the Stockton Diverting Canal, and is located primarily on San Joaquin County Assessor Parcel Number 101-170-08, in Section 76 of the Weber Grant. Pilot Project facilities include:

1. A system of groundwater monitoring wells (new and existing)
2. A 19-acre unlined storage pond with a capacity of 60-million gallons
3. Two 15-acre, and one 5-acre fields contained for recharge by earthen berms
4. Rehabilitation of two existing drinking water wells as stored water recovery wells

Enclosed is a copy of the record drawings for this project. An electronic version of the drawings is also enclosed for your convenience.

Operation and maintenance of the groundwater recharge and recovery facilities began in April 2003, immediately after construction. Pilot Project water level and water quality monitoring will continue as long as water is provided to these facilities. Results from the April 2003 through May 2006 monitoring period indicated an average infiltration rate over 0.50 feet per day, consistent with the previous reports.

The SEWD previously provided the Department copies of three reports completed during the monitoring phase of this pilot project that provide a comparison of the performance by recharge method and our ability to recover the banked water.

1. "Sediment Solutions' Second Annual Report and Operations Manual for Stockton East Water District Farmington Groundwater Recharge Pilot Project," dated June 15, 2005, and prepared by Dennis Payton, P.E., of Sediment Solutions

2. "Final Technical Memorandum 6, Farmington Groundwater Recharge Program, Results of Recharge Testing Stockton East Water District and Detention Basin No. 2," dated September 2004, and prepared by MWH for the USACE

3. "Draft Farmington Groundwater Recharge Program, Stockton East Water District Site, Aquifer Test Evaluation," dated May 2006 by MWH for the USACE.

The SEWD has made the following findings based on the above three reports, and the knowledge it has gained through the management of this pilot project:

1. Demonstration-scale pilot projects may be cost prohibitive, unless the land is available at no or low cost, and confidence is high that the pilot project will prove the feasibility of a permanent groundwater recharge/storage/recovery facility.

2. Net recharge rates are expected to continue to exceed the average design recharge rate (0.25 feet per day) of this facility indefinitely.

3. Mounding of the recharged water over the background groundwater performs as expected.

4. No reduction in recharge rates was attributed to the mounding of groundwater.

5. Reduction in mounded water levels occurred following extending recovery well pumping.

6. Nothing learned to date has discouraged SEWD from budgeting for the long-term operation of the pilot groundwater recharge/storage/recovery facility.

7. The SEWD is committed to operate this pilot project as a permanent groundwater recharge/storage/recovery facility as long as water is available to the site.

District drinking water wells 74-01 and 74-02 were re-furbished and placed back into service following Department of Health Services approval. These wells were operated in 2005 and 2006 in order to demonstrate the ability of the pilot project to recharge surface water, store it in the ground until needed, and extract it in dry years. The pilot project has now shown that surface water can recharge and be stored in the ground for use at a later date.

Section 2. Analysis of Feasibility Study's Findings

The findings from Section 1 are repeated below with analysis of each:

1. *Demonstration-scale pilot projects may be cost prohibitive, unless the land is available at no or low cost, and confidence is high that the pilot project will prove the feasibility of a permanent groundwater recharge/storage/recovery facility.*

The least expensive open land in the area of need is currently selling for $50,000 per acre. A typical groundwater recharge facility is 40 to 60-acres in size. Therefore, the land cost of a recharge facility will cost $2 to 3 million. This may have made the pilot project constructed by SEWD infeasible due to funding constraints. (i.e., land cost would have added ~ $40 per AF to the recharge capital and operating cost of ~ $51 per AF. Recovery cost is ~ $45 per AF for this Project.) Risk of the unknowns is also a consideration before proceeding with a pilot project. With this pilot project, SEWD has peaked significant interest from both regulatory and non-regulatory interests. Water quality concerns is the largest area of interest, but attraction of wildlife, evasive species, and pests make a pilot project effort a significant venture for an individual or entity with limited resources. Completing a business plan that includes all these factors is highly recommended prior committing to a groundwater banking program alternative.

2. *Net recharge rates are expected to continue to exceed the average design recharge rate (0.25 feet per day) of this facility indefinitely.*

With the basins in full operation, Project recharge rates net of ET have been consistently averaging over 0.5 feet per day. This was somewhat surprising based on the design parameters, and the experience of other facilities investigated in the Fresno and Bakersfield areas. Although rates decrease when water for the basins is sparse and water levels are low, with a district pipeline nearly complete, adequate water should be available to this site in all months besides those of the driest years.

3. *Mounding of the recharged water over the background groundwater performs as expected.*

The mound of stored water reportedly follows the course of least resistance, mounding immediately under the recharge area, with the slope of the mound gradually dropping off to the elevation of the background groundwater levels.

4. *No reduction in recharge rates was attributed to the mounding of groundwater.*

This is another somewhat surprising outcome. SEWD anticipated that as the mound grew, recharge rates would decline. To date this has not happened.

5. *Reduction in mounded water levels occurred following extending recovery well pumping.*

Although short term testing by MWH in 2006 was not conclusive, SEWD records indicate that over a 30 to 60 day monitoring period, continuous operation of the two drinking water production wells of the pilot project result in lowering of the mound under the recharge area. These production wells are located within 1,000 feet of the recharge basins.

6. *Nothing learned to date has discouraged SEWD from budgeting for the long-term operation of the pilot groundwater recharge/storage/recovery facility.*

As expected, nothing learned about this pilot project to date, recharge rates, water quality concerns, operational costs, ecological effects, or politics, is discouraging future operations of these facilities.

7. *The SEWD is committed to operate this pilot project as a permanent groundwater recharge/storage/recovery facility as long as water is available to the site.*

SEWD is committed to the long-term management of the Eastern San Joaquin Basin. This sub-basin of the greater San Joaquin Groundwater Basin continues to be in a state of critical overdraft. In addition to the 35,000 AFA available for groundwater recharge, SEWD and its regional partners must secure and recharge an additional 115,000 AFA to assure the long-term sustainability of our groundwater Basin. Converting this pilot project to a permanent facility is a logical next step.

Section 3. Summary of Costs & Disposition of Funds Disbursed

Using the format of the preliminary cost estimate included in the Pilot Project grant application, below is a table illustrating the comparison of those preliminary costs to actual costs to date:

	Description	Preliminary Estimate ($)	Actual Cost or Estimate to Date ($)
A.	Planning, Preliminary Engineering	26,000	26,000
B.	Final Design and Engineering	40,000	170,311
C.	Construction Cost	1,071,000	2,059,331
D.	Operation & Maintenance and Monitoring	218,000	245,000
E.	Reporting	240,000	55,000
	Contingency	193,000	
	Totals	1,788,000	2,555,642

The increase in total project cost, reflected in the above table, is attributed to conscious decision by SEWD to construct more permanent facilities than originally anticipated when the grant application was made. SEWD was confident that the recharge facilities being constructed will benefit the San Joaquin County groundwater basin for generations to come, and needed to be constructed in a permanent manner. SEWD and its urban contractors are funding all additional cost.

The following table illustrates the monies received and billed per the contract funding provided in Grant Contract No. F90004:

Disbursement Request Number	Date of Request	Amount Requested Less Retention ($)	Amount Received ($)
Estimate No. 1	June 06, 2003	$1,150,357.56	$1,150,357.56
Estimate No. 2	Dec. 19, 2003	56,542.44	56,542.44
Estimate No. 3	June 08, 2006	134,100.00	-
Total		$1,341,000.00	$1,206,900.00

Questions regarding this Draft Final Feasibility Report can be directed to its author:

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(209) 948-0423 fax
kkauffman@sewd.net

END OF DRAFT FINAL FEASIBILITY REPORT (August 15, 2006)

APPENDIX C-3 ESTIMATE OF SEWD IN-KIND CONTRIBUTION

Table 46 - Estimate of SEWD In-Kind Contribution

SEWD Flood Detention and Groundwater Recharge Facility Cost Estimate Land and Planning In-Kind Contribution Cost Breakdown SEWD Labor and Contract Costs Preliminary FY13-FY16 Budget Planning				
Design effort through 12/31/12				$35,000
Site preparation effort through 12/31/12				
35-acre of DWTP residuals removal contract				$40,000
35-acre of railroad tie debris disposal				$8,000
Land acquisition cost through 12/31/12				$390,000
Final Design effort: (2013-14)	Hours	Rate	Total	
Engineering Technician	150	$50.85	$7,628	
Assistant Engineer	80	$55.83	$4,466	
District Engineer	25	$81.72	$2,043	
Water Supply Manager	20	$99.13	$1,983	
General Manager	10	$130.00	$1,300	
Administrative Staff Support	50	$52.31	$2,616	
			$20,035	$20,035
Construction and Construction Management (2014-15)				
Engineering Technician	25	$50.85	$1,271	
Assistant Engineer	100	$55.83	$5,583	
District Engineer	50	$81.72	$4,086	
Water Supply Manager	40	$99.13	$3,965	
General Manager	20	$130.00	$2,600	
Administrative Staff Support	80	$52.31	$4,185	
			$21,690	$21,690
Stormwater Management Operations Start-up/Testing (2015-16)				
Engineering Technician	10	$50.85	$509	
Assistant Engineer	40	$55.83	$2,233	
District Engineer	20	$81.72	$1,634	
Water Supply Manager	20	$99.13	$1,983	
General Manager	10	$130.00	$1,300	
Administrative Staff Support	10	$52.31	$523	
			$8,182	$8,182
TOTAL SEWD Land and Planning In-Kind Labor and Contract Costs				$522,907