



Willow Springs
Water Bank

WATER STORAGE INVESTMENT PROGRAM
PROGRESS REPORT

Willow Springs Water Bank
Conjunctive Use Project

30 April 2019



Willow Springs
Water Bank

PURPOSE OF NARRATIVE

This Narrative explains the items listed in Tables 1 and 2 (Attachment A) of this initial WSIP progress report. The two tables are required components of the initial and quarterly reports to be provided to California Water Commission and staff. This Narrative provides an easy-to-follow explanation of many of the items listed in both tables along with significant, new developments over the past few months that could impact Willow Springs Water Bank (WSWB) and its development.

The major Narrative components are (1) State Water Project Contractor Partnership, (2) Complimentary Grants, (3) CEQA, (4) Facilities Planning, (5) Cost Update, (6) Schedule Update, (7) Financing Plan, (8) Energy, and (9) Emerging groundwater quality issues associated with TCP contamination.

1. SWP CONTRACTOR PARTNERSHIP

A partnership with a State Water Project Contractor is needed. A partnership will facilitate DWR, DFW, USBR, and SWP Contractor discussions. It is also needed for the DWR turnout discussions. Developing this partnership has been a high priority.

Progress has been made. An agreement in principle has been signed and intensive discussions are ongoing. We are optimistic that this effort will result in an agreement to implement this conjunctive use project.

An additional development in the past few months is progress on a joint water bank between Antelope Valley- East Kern Water Agency (AVEK) and the Metropolitan Water District of Southern California (MWD). It is called the "High Desert Water Bank" and is described in further detail in an April 9, 2019 Letter (Attachment B). It will impact the market value of water banking and conveyance capacity availability in the California Aqueduct. WSWB development will need to be coordinated with High Desert Water Bank development.

2. COMPLIMENTARY GRANTS

In April 2019 WSWB was notified of eligibility for a couple of additional FEMA grants based on DR-4407. An update will be provided to the CWC on these funds as they progress in the 2019 Quarter 3 Progress Report.

On June 14 of 2018, WSWB successfully obtained a commitment of \$15 M in Federal Emergency Management Agency (FEMA) grant funds from the Hazard Mitigation Grant Program (FEMA-I). The basis of the grant application is WSWB's ability to respond to flood and drought emergencies. A letter was sent from the State Office of Emergency Services (OES) notifying WSWB that its application had been accepted and submitted to FEMA (Attachment C).

This OES/FEMA application leads to a finance agreement with FEMA. The FEMA funds are already allocated to California. Receipt is now dependent upon a signed finance agreement with FEMA. FEMA is preparing an Environmental Assessment, in compliance with the National Environmental Policy Act (NEPA), for the \$15 M grant. Completion of the Environmental Assessment by FEMA is expected soon.

When NEPA is complete, a finance agreement with FEMA will be executed. WSWB will build a 48" diameter pipe connection to existing aqueduct systems and make 16 existing wells operational which enables additional recharge into WSWB. It is estimated that these facilities will be online by 2020.

Kern County has partnered with WSWB and is the sponsor for the FEMA-I grant. Kern County will also be the sponsor for the FEMA-II grant as well (see the next paragraph). This sponsorship with Kern County to streamline the many permits and approvals that WSWB will need from Kern County. WSWB is primarily located in eastern Kern County, so this partnership is important.

WSWB was notified on September 28 that it is also eligible to apply for a second OES/FEMA grant of \$10 M (FEMA-II). Again, the basis of the application is WSWB's ability to respond to flood and drought emergencies. Formal application was submitted on April 18, 2019. WSWB meets the criteria and appears to be well positioned to receive funding through this program. OES has accepted WSWB's Notice of Interest (Attachment D).

WSWB submitted a Notice of Interest on March 15, 2019, for a third OES/FEMA grant of \$10M as part of the HGMP. This is designated as FEMA-III. It will compliment the FEMA-I and FEMA-II grant programs.

These federal FEMA grants leverage local, state and federal funding. They also demonstrate the multi-purpose benefits of WSWB and its ability to meet statewide emergency goals as well as water storage and supply goals.

Phased facility construction may enable use of additional \$28 M if another Water Storage Infrastructure Project (WSIP) drops out by 2022. The WSWB Eligible Amount of \$123 M can be used to build more wells beyond those possible with the initial \$95 M grant amount. This would reduce the amount of money that must be financed from loans and equity.

WSWB may also pursue grant opportunities that result from the federal Water Infrastructure Improvements for the Nation. As a conjunctive use project, it can be used jointly with surface reservoirs other than San Luis and Oroville. If additional state grants are

pursued, the commitments made in the August 2017 grant application will take priority over any new grant opportunities.

In summary, WSWB has obtained \$15 M in complementary federal grants, has a plan to use an additional \$28 M in WSIP funds should they become available, and may pursue additional grant funding for conjunctive use. The project will be ready soon to start spending the \$95 M in WSIP grant funds for the facilities needed to partially build out the bank.

Additionally, the EIR Addendum described in the next section means that the state’s storage portfolio will now be able to realize an actual storage volume increase of 1.00 million acre-feet (MAF) rather than the 0.50 MAF specified in the WSWB grant application.

3. CEQA

The original EIR was prepared and filed with the state clearinghouse in 2006. It is available online at: https://cwc.ca.gov/WISPDocs/WSWB_EvnDoc_1of1.pdf. It was implemented via a 2008 Memorandum of Understanding with Kern County.

An EIR Addendum was started in July of 2017. It was finalized in August 2018 and has been filed with the state clearinghouse (<https://www.rosamondcsd.com/home/showdocument?id=2363>). A copy of the Addendum and Appendices are available on request.

The 2018 Addendum enhances the amount of storage that WSWB will add to California’s storage portfolio by increasing volume from 0.50 to 1.00 MAF. This enables an increase in bank shares to be sold from 100,000 to 225,000. The capacity increase is accomplished primarily by adding more wells. The Addendum also reduces the impact of the project on the environment by altering the alignment of the recharge pipe slightly to avoid Sensitive Environmental Areas (SEAs) that contain Joshua Trees. This reduces the risk that the project construction and online dates will be delayed due to environmental issues.

The Addendum also enables the full put and take capacity planned for WSWB. Put is 280 thousand acre-feet per year (TAFY). Take is 225 TAFY. The planned volume is 1,000 thousand acre-feet (TAF). This enables 214,000 new bank shares plus 11,000 existing shares. A share is defined as 1.0 AFY of put and take. One-third of those shares, or 71,000 shares, will be dedicated to WSIP ecosystem needs. This is based on the results of the CalSim modeling in the original grant application.

Additional CEQA work in conjunction with the Water Commission staff will be needed. Capturing unallocated surplus SWP water will need to be vetted under CEQA and other regulatory agencies. The form and extent of required CEQA documentation has not been determined yet. It will also be coordinated with the NEPA documents being prepared by FEMA. Process and progress on these documents will be described in future quarterly reports.

4. FACILITIES PLANNING

Considerable feasibility planning for the new facilities has already been completed. Past studies include the following:

- 2005 initial feasibility study prepared for the 2006 EIR (by Western Development and Storage)
- 2011 master plan for site buildout (by GEI)
- 2014 groundwater model (by HDR)
- 2016 master plan update (by GEI)

Additional planning is needed to start design/build process. Design/build enables a rapid online date. It also controls the risk of cost overruns with the use of a Guaranteed Maximum Price type of contract. This will reduce project risk. It is assumed that 20% to 30% of design will need to be complete before the design/build process can proceed.



Securing right-of-way for the 84" diameter recharge pipe has started. It is a critical path item. Easements and outright ownership of land needed for these facilities has been ongoing to ensure that needed right-of-way is available when construction starts. A phasing plan is also being developed to optimize the online dates for all facilities.

A Conjunctive Use Feasibility Study is part of the WSIP Regulation. WSWB will conduct its Feasibility Study in 2019. GEI Consultants Inc. have been hired and are conducting this study.

5. COST UPDATE

Capital cost estimates have been carried forward from the Prop. 1 application to reflect funding needs and current market conditions. The update will determine how much of the capital cost the grants (Prop 1 and FEMA) can cover and how much must be financed by WSWB. The cost estimates will be adjusted as the project progresses to reflect current market conditions.

This cost update was presented to the Water Commission in the same format as the August, 2017 application (https://cwc.ca.gov/WISPDocs/WSWB_ProjectCosts_1of1.pdf).

The cost estimate addresses a recent shortage of well drillers in the Antelope Valley. One of two local well drillers in the AV, DRC Pumping Systems, decided to quit the business. This could impact the price to drill a well and the schedule for drilling the 60 to 90 new wells needed for WSWB. It may be possible to rely more on well drillers from the Central Valley who have been preoccupied drilling wells in advance of SGMA implementation until recently.

6. SCHEDULE UPDATE

WSWB recharge capability is targeted to be online in 2020. The primary recharge facility is an 84" diameter pipe from the California Aqueduct to WSWB's percolation ponds. WSWB is also developing a backup

plan for recharge in case there are delays in building the 84" diameter pipe. The existing 48" diameter AVEK West Feeder already connects to the WSWB percolation ponds and can be used for recharge under a 2012 Agreement with AVEK and can occur

immediately. Also, the 48" diameter pipe planned for construction using FEMA money enables additional recharge. Both 48" diameter pipes represent a backup plan to make sure recharge operations can begin in 2020.

Recharge capacity is the initial priority for facilities. The bank needs to catch the next wet cycle and put it into the ground.

Bringing well capacity online early is not as urgent as providing recharge capability because water cannot be extracted from the bank until it is recharged. Much like a surface reservoir, water cannot be taken out of storage in WSWB until it is banked. The AV Watermaster enforces this requirement. Unless an agreement to borrow groundwater can be developed, water must be stored before it can be extracted.

Institutional issues and agreements may be difficult to resolve before starting recharge. Agreements are needed with DWR, USBR, and the SWP contractors to initiate pre-delivery of water from San Luis Reservoir into WSWB. The impacted parties must be convinced that there will be no negative impact on them due to the pre-delivery of water.

Well drilling will be phased to optimize production and recognize local drilling limitations. Drilling too many wells too fast can result in poor per well production, poor water quality, or both. This will be detailed in a formal operations and startup plan, which is under development.

Phase II will provide the 75 TAFY extraction capacity needed to enable pre-delivery and spill capture. Once the Phase II wells and lift station are online, pre-delivery and spill capture from San Luis and Oroville can begin.



The phasing plan will ensure that the full 75 TAFY of water extraction needed for the ecosystem and for backstopping of San Luis Reservoir is available once it has been stored. 75 TAFY is the amount of water needed for ecosystem (pulsed flows for fish) and backstopping (putting water back into San Luis to avoid the low point issue) from the CalSim-II modeling performed for the original application. The 215 TAFY of emergency response water will take at least seven (7) years to get into the ground. Well drilling can be phased to match this constraint. The phased construction schedule for the WSWB is shown as Figure 1.

Early start storage can also be used to provide new carryover and emergency storage for the state. This will be part of ongoing discussions with various state agencies (Figure 2).

7. FINANCING PLAN

WSWB has invested over \$30 M to date in developing the project. Currently, another roughly \$18 M in cash is on hand to further develop the water bank in anticipation of rapid build out. WSWB would seek to raise additional equity and financing to complete the project as well. WSWB and its partners have ample experience raising debt financing to support projects.

A formal financing plan will be prepared once the Prop 1 and FEMA grant amounts are determined. A draft budget of WSWB Early Start Phasing and Capital Cost is shown in Table 1. Any capital cost not covered by a grant will be financed through a combination of equity and debt financing.

Financing plans include an assessment of federal and state subsidized loan programs. This can reduce project costs and mitigate risks.

The financing plan will also include an update of the economic plan included in the original application. The economic evaluation will address the potential effect of other conditionally eligible projects on the WSWB benefits. One potential impact could be an additional \$28 M in WSIP grant funds that may become available if another WSIP project drops out. Another potential impact is the market price of new yield created by other storage projects. WSWB will create 34.0 TAFY of new yield from SWP spill capture. If another project that creates new yield has cost increases that must be passed on to participants, that will enable WSWB to increase the price it can charge for new yield. This could impact WSWB's economics and how to optimize the public benefits it provides.

Figure 1 WSWB Potential Construction Schedule

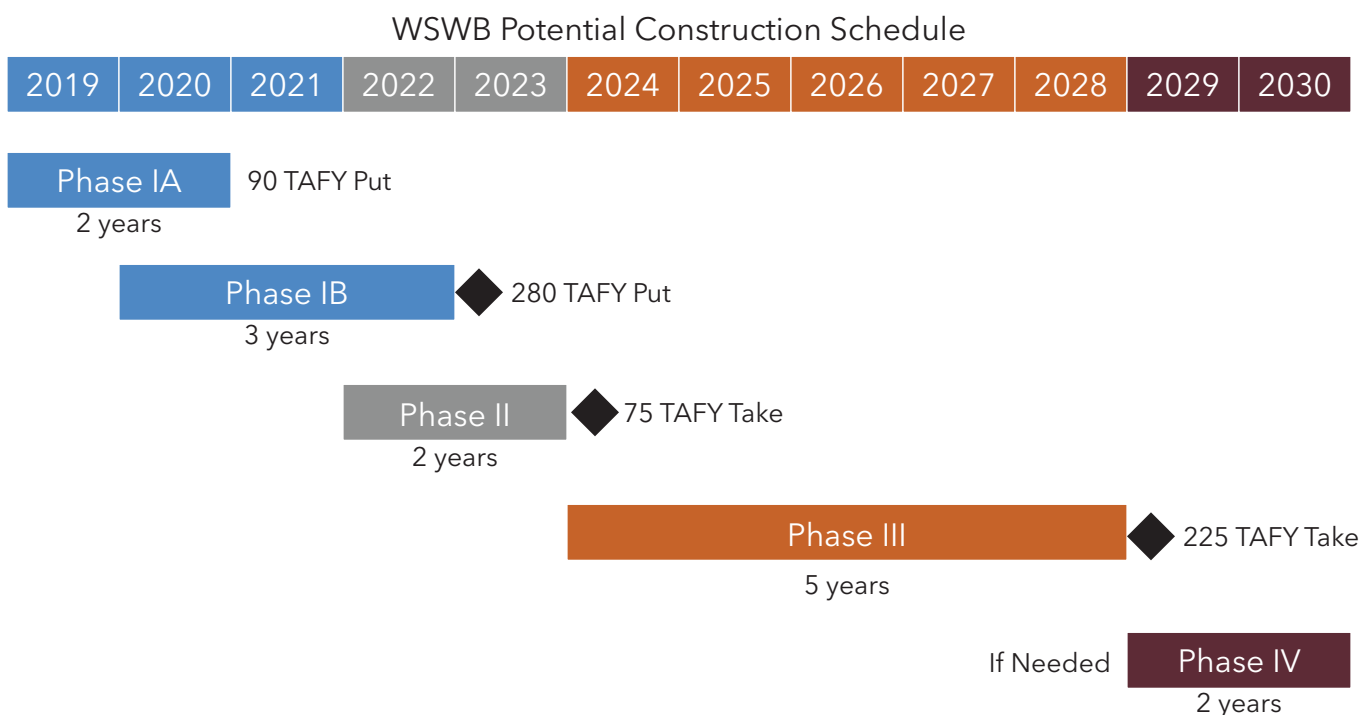
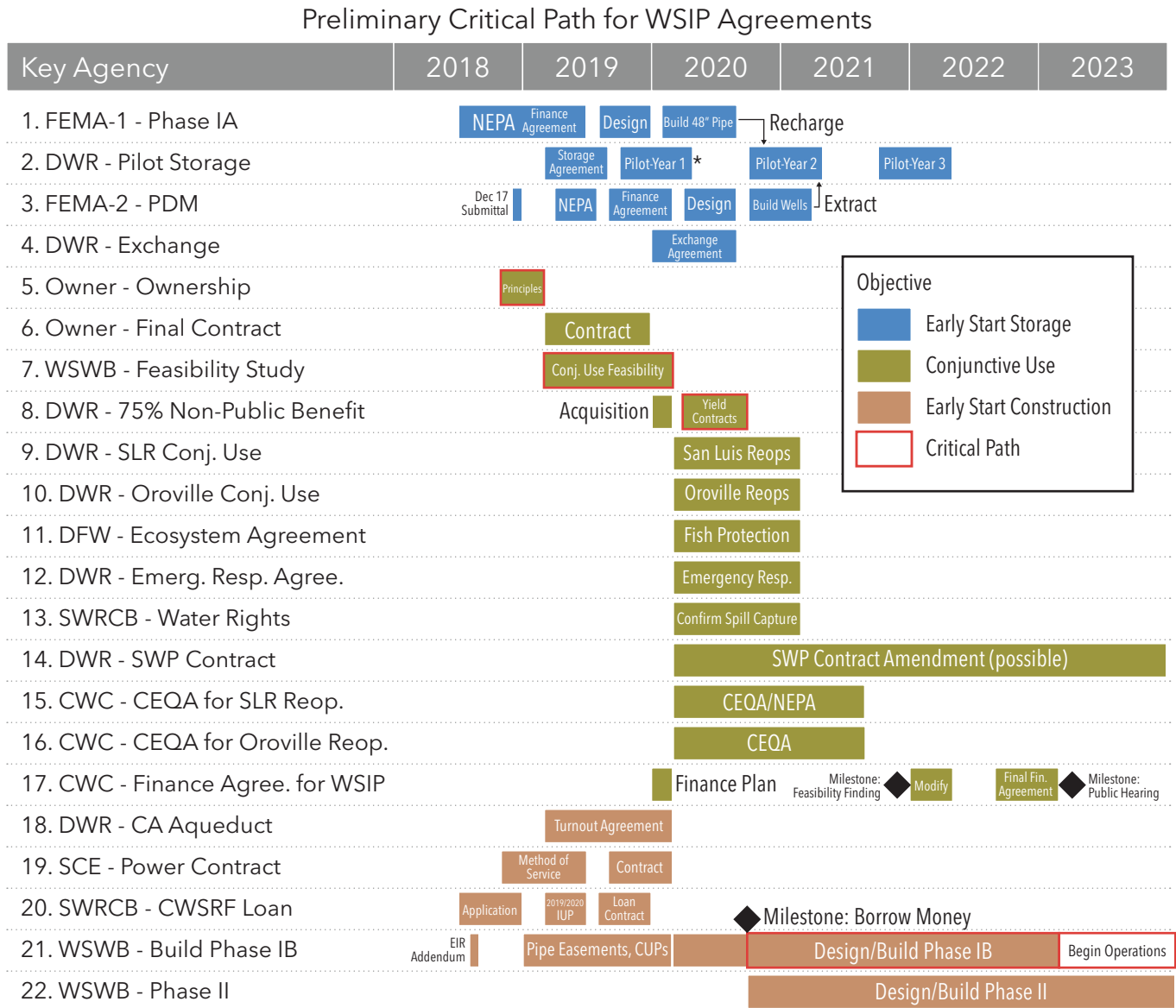


Figure 2. Preliminary Critical Path for WSWB Agreements



*Pilot storage to begin on October 1, 2019. Makes early use of the expanded 1.0 MAF storage volume of WSWB

8. ENERGY

A major energy development occurred on September 10, 2018. On that day, the Governor signed Senate Bill (SB) 100 into law (https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201720180SB100). SB 100 commits California to achieving a 100% renewable energy portfolio by the year 2045. Substantial new renewables penetration and energy storage will be needed to meet this aggressive goal.

An initial WSWB study funded by the California Energy Commission established the ability of WSWB to store energy. It is titled EPC-15-049 "Groundwater

Bank Energy Storage Systems". It was submitted to CEC in July 2017. The study has been posted online at the CEC website. It shows how WSWB can avoid any on-daily peak use of electricity through use of onsite water storage. It also shows how a 5.2 MW hydropower turbine can be used in combination with onsite storage to generate daily on-peak electricity.

A second WSWB study funded by the California Energy Commission established the ability of WSWB to serve as a water/energy bank. It is titled EPC-16-029 "Water/ Energy Bank Proof-of-Concept" study. A final draft report was sent to the CEC in December 2018.

Table 1. WSWB Early Start Phasing and Capital Cost

WSWB Early Start Phasing and Capital Cost					
Phase	Major Facilities	Year Online	Put (cfs)	Take (cfs)	\$M
Existing	AVEK West Feeder, 320 acres of ponds, 7 irrigation wells	Now	100	14	0
IA	FEMA-I: 48" pipe to LAA #2, 50cfs from well equipping	2020	225	50	16
IB	84" recharge pipe, remainder of percolation pods	2022	385	50	94
II	16 new wells, 150cfs lift station (60% of 250cfs)	2024	385	106	67
III	60 new wells, full lift station, substation, 84" and 48" pipes	2028	385	310	129
All					306

The Water/ Energy Bank is aimed at providing over 200 megawatt (MW) of Demand Response benefits for the electric grid. It shifts water deliveries seasonally to shift when electricity is used to pump imported water. This moves electric loads from the peak summer season to the spring when there is a surplus of solar energy, avoiding renewables curtailment. This can help California meet its goal of 100% renewables by 2045.

Both CEC studies establish the ability of WSWB to increase renewables penetration and reduce greenhouse gases. This means that WSWB can play an important role in helping the state meet its new energy goals. The statewide value of this benefit is still being assessed. While not an original goal of the WSWB grant application, recent energy developments make it more important.

An additional benefit of WSWB is that fact that a groundwater bank does not create greenhouse gases (GHG). Surface reservoirs that stratify create methane in their anaerobic bottom layer, which is a potent GHG.

As a conjunctive use project, WSWB will provide a double GHG benefit: reduced GHGs due to increased renewables penetration and avoided GHGs as a groundwater bank. This also avoids the need to mitigate GHGs for 1.00 MAF of new water storage as part of CEQA documentation.

9. EMERGING ISSUE OF 1,2,3 TRI-CHLOROPROPANE (TCP)

A new water quality issue emerged in the summer of 2018: 1,2,3 tri-chloropropane (TCP). It is a pesticide used to kill nematode worms. A new California standard for TCP was set in December of 2017. The Maximum Contaminant Level in water was set at 5.0 parts per trillion (ppt). That level is also the detection limit. The Public Health Goal is 0.7 ppt. TCP is a "probable human carcinogen", is entirely man-made, and is a health concern at extremely low levels. This makes it a serious issue for groundwater banks.

TCP monitoring data for the first quarter of 2018 were posted online by the SWRCB in the late summer of 2018: [https:// www.waterboards.ca.gov/drinking_water/ certlic/ drinkingwater/123TCP. html](https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/123TCP.html) The data show that TCP contamination is extensive throughout the Central Valley of California. Fortunately, the Antelope Valley has not had significant detections of TCP. This appears to be due to the historical crop usage, need for the pesticide, and the geology of the Antelope Valley. Other parts of the state are not so lucky.

TCP is likely to become a more significant problem for Central Valley groundwater banks. It can impair their ability to pump water back into the large aqueduct systems that serve urban areas, particularly the California Aqueduct.

WSWB will monitor this issue closely. It may be appropriate to adjust the WSWB emergency response plan to help the state deal with TCP if it impairs the ability to use groundwater banks statewide.

Emerging issues like TCP also highlight the value of a diverse storage portfolio. Conjunctive use projects that are geographically diverse and flexible increase reliability. Too many eggs in one basket can have negative consequences.

10. FINANCIAL DATA

The Financial Management Systems (FMS) Questionnaire is a required component of our first progress report. The most recent annual audited financial statements for the Southern California Water Bank Authority were provided to the Water Commission in October 2018.

In addition to audited financial statements, WSWB will need to demonstrate that it has adequate Financial Management Systems in place. This is needed to track costs, invoices, and avoid an audit. The FMS form is as follows: https://cwc.ca.gov/Documents/2018/WSIP/FinancialQuestionnaire_Final.pdf

SUMMARY

The most significant events of the WSWB project implementation are as follows:

- Positive developments in the partnership discussions
- Acquisition of more FEMA grants to leverage WSIP grants
- Approval of an EIR Addendum, increasing the WSWB capacity to 1.00 MAF
- Passage of SB 100 to achieve 100% renewables, making WSWB energy benefits more important
- Emergence of TCP contamination issue and the fact that WSWB does not have a TCP problem

ATTACHMENTS

Attachment A: Table 1. Project Schedule

Table 2: Quarterly Reporting Items for Commission Hearing on Final Awards

Attachment B: MWD Board of Directors Letter of April 9, 2019

Attachment C: Letter from the California Office of Emergency Services

Attachment D: Email Notification of Eligibility for Pre-Disaster Mitigation Grant

Required Components of Progress Report
Table 1: Project Schedule

Funding Agreement Milestone	Start Date	Finish Date	% Complete
Non-public benefits cost share contracts - 154,000 shares in WSWB out of 225,000 shares total (68%) <ul style="list-style-type: none"> Executed non-public benefit contract: Rosamond CSD (6,000 shares) Executed non-public benefit contract: San Diego CSD (5,000 shares) Unallocated non-public shares available: 143,000 shares 	Done Done TBD	Done Done TBD	100% 100% 0%
Contracts for Administration of Public Benefits - 71,000 shares in WSWB out of 225,000 shares total (32%)* <ul style="list-style-type: none"> DFW (ecosystem) SWRCB (ecosystem) DWR (emergency response) 	TBD TBD TBD	TBD TBD TBD	0% 0% 0%
Completed Feasibility Studies <ul style="list-style-type: none"> 2005 Feasibility Evaluation 2011 Master Plan 2014 groundwater hydrologic model 2016 Master Plan Update 2019 Conjunctive Use Feasibility Study 	2004 2010 2015 2013 2019	2005 2011 2016 2014 2019	100% 100% 100% 100% 5%
Environmental documents <ul style="list-style-type: none"> Prior CEQA Environmental Impact Report (2006) Prior CEQA Environmental Impact Report Addendum (2018) New CEQA needed for SWP spill capture New NEPA for FEMA-I grant New NEPA for FEMA-II grant New NEPA for FEMA-III grant 	2005 7/2017 TBD 8/2018 TBD TBD	2006 8/2018 TBD 12/2018 TBD TBD	100% 100% 0% ~50% 0% 0%
Federal, State, and Local Approvals <ul style="list-style-type: none"> Federal: USBR, FEMA State: DFW, DWR, SWRCB, CWC Local: Kern Co. Los Angeles Co., AVEK 	TBD TBD TBD	TBD TBD TBD	0% 0% 0%
Funding Agreement <ul style="list-style-type: none"> Updated budget Updated Schedule Phasing Plan 	TBD TBD TBD	TBD TBD TBD	0% 0% 0%

APRIL 30 WSIP PROGRESS REPORT

Funding Agreement Milestone	Start Date	Finish Date	% Complete
Project Planning for design/build			
• Project planning	Done	Done	100%
• Right-of-way acquisition and pipeline easements	1/2017	TBD	25%
• 20% to 30% design (or sufficient to start design/build)	TBD	TBD	0%
Construction			
• Phase IA facilities to comply with FEMA grant obligations	TBD	TBD	0%
• Phase IB facilities to comply with Prop.1 grant obligations	TBD	TBD	0%
• Phases II, III, and possibly IV: new wells needed to extract the full 225 TAFY extraction capacity	TBD	TBD	0%
Begin Operations			
• Recharge pipes online in 2020	TBD	TBD	0%
• Extraction wells online in phases over a 7-year period	TBD	TBD	0%
• Backup plan if recharge facilities are delayed	TBD	TBD	0%
• Early start operations	TBD	TBD	0%

* WSWB will provide 225,000 shares of bank capacity based on 225 TAFY of extraction. 71,000 shares or 71 TAFY of capacity must be dedicated to ecosystem (fish pulse flows) and backstopping (putting water back into San Luis to avoid the low point problem). This is 1/3 of the WSWB available capacity. Extraction capacity constrains the total number of shares available. 375 TAF of volume (5.0 AF/share) will be dedicated to WSIP needs to store captured SWP spill water. This is consistent with the CalSim modeling presented in the WSWB grant application.

APRIL 30 WSIP PROGRESS REPORT

Description	Instructions	Estimated Completion Date	Percent Complete %
Contracts for non-public cost share	<ul style="list-style-type: none"> Existing contract with RCSD (6,000 shares) Existing contract with SDCWA (5,000 shares) New contracts 	Done Done 2022	100% 100% 1%
Contracts for Administration of public benefits	<ul style="list-style-type: none"> DFW contract for ecosystem benefits DWR contract for San Luis backstopping DWR contract for emergency response water 	TBD TBD TBD	0% 0% 0%
Completed feasibility studies	<ul style="list-style-type: none"> 2005 initial feasibility evaluation prepared for the 2006 EIR (prepared by WDS) 2011 master plan for site buildout (prepared by GEI) 2014 groundwater model (prepared by HDR) 2016 master plan update (prepared by GEI) 	Done Done Done Done	100% 100% 100% 100%
Final environmental documentation	<ul style="list-style-type: none"> Existing 2006 Environmental Impact Report (EIR) Existing 2018 EIR Addendum New Environmental Assessment for NEPA compliance for FEMA grant(s) New CEQA documents to secure water rights for SWP spill capture 	Done Done 12/2018 TBD	100% 100% 50% 0%
Construction	<ul style="list-style-type: none"> FEMA approval of finance agreement for grant DWR approval to draw down San Luis Reservoir DWR approval to draw down Oroville Reservoir OES approval of finance agreement for FEMA grant Kern County Conditional Use Permit Los Angeles County Conditional Use Permit AVEK agreement for turnout to CA Aqueduct 	TBD TBD TBD TBD TBD TBD TBD	0% 0% 0% 0% 0% 0% 0%

Permits needed: https://cwc.ca.gov/WISPDocs/WSWB_Permits_1of1.pdf . Permits and approvals listed in Table 2 are only the major ones; the link to the application contains the comprehensive list.

ATTACHMENT B



● **Board of Directors**
Water Planning and Stewardship Committee

4/9/2019 Board Meeting

8-5

Subject

Review and consider the Antelope Valley-East Kern Water Agency's approved Mitigated Negative Declaration and authorize the General Manager to enter into the High Desert Water Bank Program agreement with the Antelope Valley-East Kern Water Agency

Executive Summary

The High Desert Water Bank Program (Water Bank) with Antelope Valley-East Kern Water Agency (AVEK) would improve water supply reliability during dry years or emergencies and provide greater operational flexibility to balance supplies and demand. Staff presented to the Board on the Water Bank in September 2018 and January 2019. Under the Water Bank, Metropolitan could store up to 280,000 acre-feet (AF) of its State Water Project (SWP) Table A or other supplies in the Antelope Valley groundwater basin.

Metropolitan would have first priority to 70,000 AF per year of both put and take capacity. Metropolitan would pay AVEK for the capital costs for construction of monitoring and production wells, turnouts from the California Aqueduct, underground and aboveground pipelines, recharge basins, water storage, and booster pump facilities. These facilities are estimated to be \$131 million. In addition, Metropolitan would subsequently pay actual operation and maintenance, energy, and recovery usage fees to recover the water in storage.

Details

Background

Metropolitan's existing SWP groundwater storage programs provide the region with valuable supply benefits. These programs help Metropolitan manage surplus supplies and provide for dry-year regional reliability. They also provide increased emergency reliability with direct pump-back of stored water into the California Aqueduct when needed. Existing SWP groundwater storage programs performed well during the recent droughts, producing more than one million acre-feet of water in the last 24 years. While these storage programs are cost-effective and provide Metropolitan with increased operational flexibility, Metropolitan could benefit from a more diverse portfolio of storage programs moving into the future.

Some of Metropolitan's existing SWP groundwater storage programs contain risks that need to be managed. During the recent drought, the capacity to return water by exchange was significantly reduced during low SWP allocations. Water quality is also an issue with some of Metropolitan's groundwater storage programs. New and changing water quality standards can reduce the amount of water available to Metropolitan. Lastly, none of the current SWP groundwater storage agreements extend beyond year 2035. For continued long-term regional reliability, extending these agreements or developing new programs are necessary.

AVEK is a SWP contractor that provides water to the Antelope Valley and is offering a new storage program opportunity. Its 2,400 square-mile service area includes northern Los Angeles County, east Kern County and a small portion of Ventura County. AVEK has the third largest Table A contract amount of the 29 SWP contractors with a Table A amount of 144,844 AF. Served by the East Branch of the California Aqueduct, AVEK delivers

both treated and untreated water to its customers. The proposed Water Bank's strategic location, downstream of the Edmonston Pumping Plant, provides an additional factor of reliability. If the Edmonston Pumping Plant or facilities upstream are damaged by an earthquake or shut down due to another type of failure, stored water would be returned from the Water Bank to help maintain reliable deliveries to Metropolitan. In addition to earthquake-related failures, the aging California Aqueduct is prone to failure, particularly in portions of the San Joaquin Valley upstream of the AVEK connection. The direct pump-back capacity of the Water Bank, when compared to programs that recover through exchange, is more reliable and valuable during low supply or emergency conditions when exchange supplies may not be available.

Description of Potential Water Bank

To operate the proposed Water Bank, AVEK proposes to build and operate groundwater recharge and recovery facilities located near the split of the West and East Branch of the California Aqueduct. The Water Bank would have a 280,000 AF capacity to store Metropolitan's supplies. The storage and recovery capacities would be up to 70,000 AF per year. Similar to other groundwater storage programs, Metropolitan would be assessed a one-time 10 percent loss when water is stored. A key advantage of the program is that AVEK would be able to return up to 70,000 AF per year by direct pump-back into the East Branch of the California Aqueduct. The program could also be used to provide water to satisfy West Branch service area demands by delivering water to a downstream connection with the Los Angeles Aqueduct. While AVEK would own the facilities, Metropolitan would have first priority to the return capability which is critical during emergencies or dry years when SWP allocations are low.

Implementation of the Water Bank requires the construction of monitoring and production wells, turnouts from the California Aqueduct, underground and aboveground pipelines, recharge basins, and water storage and booster pump facilities. Metropolitan would pay AVEK for the capital costs of the project up to \$131 million. Metropolitan's Engineering Services has reviewed and confirmed the capital cost estimate. Metropolitan would make payments based on a mutually agreed upon schedule related to construction progress. In addition, Metropolitan would pay for the actual operation, maintenance and power costs for the Water Bank facilities when used for Metropolitan's benefit. There are no put fees to store the water. However, Metropolitan would pay AVEK a \$100/AF recovery usage fee based on all the recovered water that would be escalated every year based on the Consumer Price Index (CPI) starting in 2019. Metropolitan would pay a minimum rolling average of \$2 million towards the recovery usage fee per year, starting after the project construction is complete. Any minimum payments not used during the year would be applied to recovery costs in future years. In total, Metropolitan would pay AVEK an estimated \$320/AF (present value). The revised estimate includes additional Metropolitan SWP energy costs because 10 percent of the water is not returned to Metropolitan, updated capital cost estimates, and returning 70,000 AF in dry years (assumed one of three years).

Under the Water Bank, Metropolitan would have first priority to store its SWP Table A or other supplies. AVEK retains a secondary priority right to access the groundwater bank. Lower priority users may utilize unused capacity in the groundwater bank. Revenues collected from lower priority users would be shared equally between Metropolitan and AVEK. The potential revenue collections would serve to reduce the unit cost of the program. All program participants must meet all water quality requirements set by the Department of Water Resources. Based on groundwater testing, all constituents are currently below the maximum contaminant levels.

Metropolitan and AVEK conducted a value engineering process to ensure the cost-effectiveness of the proposed facilities. The value engineering study showed that there are potential cost savings in relocating the recharge basins and phasing construction to manage recharge costs. Increasing the recharge basins that are supplied by gravity will reduce future operating costs and may avoid the need to build a costly pump station. If the gravity fed recharge basins can meet Metropolitan's recharge needs, the pump station and additional recharge basins could be constructed as a future expansion of the project. Metropolitan would have first right of refusal for any expansion of the storage program. Should Metropolitan choose not to be part of the expanded storage program, a prorated portion of the capital costs will be reimbursed to Metropolitan.

Summary

The potential High Desert Water Bank Program with AVEK provides Metropolitan with improved water supply reliability for the region consistent with Metropolitan's Integrated Water Resources Plan. Furthermore, this program would protect against the water quality issues now observed with other water banks, nearly doubles the total direct pump-back capability of current SWP groundwater storage programs, and allows for a contract end date in 2057. The coordination of each water agency's water supply resources would strengthen Metropolitan's ability to respond to future challenges and improve our partnership with a key SWP contractor. It is anticipated that construction of Water Bank facilities will take five years, with Metropolitan's capital payments made based on construction progress.

Staff recommends that the Board authorize the General Manager to enter into the High Desert Water Bank Program agreement with the Antelope Valley-East Kern Water Agency consistent with the terms outlined in **Attachment 1**. The agreement would fund capital payments for Water Bank facilities, recovery fees, operation and maintenance costs, and energy costs. The agreement will also include provisions where Metropolitan and AVEK will share in revenue from lower priority partners. The Water Bank will provide improved flexibility to store and recover water for emergency or water supply needs through 2057. In addition, the Water Bank increases Metropolitan's capabilities to respond to changing climate and water supply conditions.

Policy

Metropolitan Water District Administrative Code Section 4203: Water Transfer Policy

By Minute Item 50358, dated January 12, 2016, the Board adopted the 2015 Integrated Water Resources Plan Update.

California Environmental Quality Act (CEQA)

CEQA determination for Option #1:

Pursuant to the provisions of CEQA and the State CEQA Guidelines, the Antelope Valley-East Kern Water Agency, acting as the Lead Agency, adopted a Mitigated Negative Declaration (MND) on December 19, 2017, for the proposed project. Metropolitan, acting as a Responsible Agency under CEQA, is required to certify that it has reviewed and considered the information in the MND and adopted the Lead Agency's mitigation measures relevant to Metropolitan prior to approval of the formal terms and conditions for the proposed agreement. The environmental documentation is in **Attachment 2**.

CEQA determination for Option #2:

None required

Board Options

Option #1

Review and consider the Lead Agency's adopted Mitigated Negative Declaration and take related CEQA actions, and

- a. Authorize the General Manager to enter into the High Desert Water Bank Program agreement with the Antelope Valley-East Kern Water Agency consistent with the terms outlined herein and in a form approved by the General Counsel;
- b. Approve capital payments of up to \$131 million for funding High Desert Water Bank facilities; and
- c. Approve payments of recovery fees, operation and maintenance costs, and energy costs related to the High Desert Water Bank.

Fiscal Impact: The fiscal impact includes \$131 million in capital costs. In addition, Metropolitan would be responsible for recovery fees at \$100/AF (escalated based on CPI), actual energy, and operations and maintenance costs. These costs depend on actual usage. The fiscal impacts of the program are not currently included in the biennial budget and ten-year financial forecast.

Business Analysis: Metropolitan’s SWP groundwater storage programs currently do not extend beyond 2035. The High Desert Water Bank Program will provide improved flexibility to store and recover water for emergency or water supply needs through 2057.

Option #2

Do not authorize entering into agreement with Antelope Valley-East Kern Water Agency.

Fiscal Impact: Undetermined.

Business Analysis: Metropolitan may miss an opportunity to increase storage resulting in a reduction of emergency and water supply reliability for the region.

Staff Recommendation

Option #1


Brad Coffey
Manager, Water Resource Management

3/27/2019
Date


Jeffrey Nightlinger
General Manager

3/28/2019
Date

Attachment 1 – Contractual Term Sheet

Attachment 2 – AVEK Mitigated Negative Declaration

Ref# wrm12653868

**Term Sheet for the Potential
Antelope Valley-East Kern and Metropolitan Water District
High Desert Water Bank Program**

Program Overview

- Storage Capacity: 280,000 AF
- Storage Losses: 10 percent (one time)
- Put Capacity: 70,000 AFY
- Take Capacity: 70,000 AFY (Dedicated Well Extraction Capacity)
- Term: September 20, 2037, plus 20-year, no-cost option to extend the agreement

Program Costs

- Estimated Capital costs: \$131 million to fund recharge basins, recovery wells, transmission pipelines, electrical, instrumentation and controls, and other necessary High Desert Water Bank facilities.
- The estimated capital costs include oversized power and transmission facilities. As AVEK develops additional banking capacity that uses the oversized facilities, the capital costs will be reimbursed to Metropolitan, plus interest.
- Capital payments are linked to actual construction costs and paid on a mutually agreed schedule. If capital costs exceed the estimated capital budget, Metropolitan can determine either scaling facilities to keep the costs within budget or paying the additional capital costs. Any unused funds will be returned to Metropolitan.
- Metropolitan is responsible for payment of actual O&M costs. If AVEK or other party uses facilities, AVEK or the other party are required to pay a prorated O&M cost.
- Metropolitan is responsible for paying the actual energy costs incurred to return water.
- Metropolitan shall pay AVEK a \$100 per acre-foot Recovery Usage Fee that will be escalated on the Consumer Price Index (CPI) starting in 2018.
- There is no cost to Metropolitan to put water into storage.
- Metropolitan shall pay a minimum rolling average each year of \$2,000,000 towards the Recovery Usage Fee (escalated on the CPI) per year, starting upon the earlier of (1) completion of the program facilities, or (2) first return of water to Metropolitan. Any payments made in excess of amounts owed during the year shall be credited in future years to Recovery Usage Fees. During the last five years of the agreement, Metropolitan may also use any available credits towards O&M, Recovery Treatment, or energy costs.
- Recovery Treatment Costs – If applicable, Metropolitan shall reimburse AVEK for actual capital and O&M treatment costs incurred for the return of Metropolitan-stored water.

Other Key Terms

- Metropolitan will have an exclusive first priority right to access High Desert Water Bank facilities. AVEK has an exclusive second priority right to unused capacity.
- Metropolitan and AVEK share equally on any lower priority banking by third parties.
- AVEK will enter into the necessary water storage agreements with the Antelope Valley Watermaster.

ATTACHMENT C

EDMUND G. BROWN JR.
GOVERNOR

MARK S. GHILARDUCCI
DIRECTOR



June 14, 2018

Mr. Mark Beuhler
General Manager
Willow Springs Water Bank
1672 Avenue J, Suite 207
Lancaster, CA 93534

Subject: Subapplication in FEMA Review
Hazard Mitigation Grant Program
FEMA-4308-DR-CA, February 2017 Storms
Cal OES PJ0204, MARPRO Willow Springs Water Bank
Subapplicant: Kern County, FIPS: 029-00000

Dear Mr. Beuhler:

The California Governor's Office of Emergency Services (Cal OES) received and reviewed your subapplication requesting funds from the Hazard Mitigation Grant Program (HMGP). Cal OES has submitted your grant subapplication to the Federal Emergency Management Agency (FEMA) for grant review and funding consideration.

Please include "FEMA-DR-4308-CA, Cal OES PJ0204" in the subject line of any future written or email correspondence with Cal OES, related to this project, so that we may reference it in our tracking systems.

Should you have any questions, please contact Stephanie Stephens, Hazard Mitigation Grants Specialist at (916) 767-3047 or stephanie.stephens@caloes.ca.gov.

Sincerely,

JASON WILLIAMS
HMGP Manager



3650 SCHRIEVER AVENUE • MATHER, CA 95655
RECOVERY SECTION • HAZARD MITIGATION GRANT PROGRAM
PHONE: (916) 845-8200 • FAX: (916) 845-8388
www.CalOES.ca.gov

ATTACHMENT D

From: Steven Larson <steven.larson@CalOES.ca.gov> on behalf of Governor's Office of Emergency Services <Governor's_Office_of_Emergency_Services@oes.ca.gov>
Sent: Friday, September 28, 2018 5:11 PM
To: Mark Beuhler
Subject: Your PDM NOI is eligible - Control No. is 18-0069

The California Governor's Office of Emergency Services (Cal OES) has received the Notice of Interest (NOI) submitted by your agency.

Your NOI has been reviewed by the Cal OES Pre-Disaster and Flood Mitigation (PDFM) Division and represents an eligible Pre-Disaster Mitigation (PDM) activity.

Pre-Disaster Mitigation Grant (PDM) Program NOI submitted by your agency is:

Project Number: 18-0069
Applicant Name: Kern County
Activity Title: Willow Springs Managed Aquifer Recharge - Resilient Infrastructure Project.
Federal Share Request: \$10,000,000.00.
Required Application Match: \$3,330,000.00.

This email confirms the formal invitation for the Kern County to develop a full sub-application for PDM funding.

Your application must meet FEMA's Benefit-Cost Analysis (BCA) requirements to validate cost effectiveness.

Click link for BCA requirements

<https://na01.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwww.fema.gov%2Fbenefit-cost-analysis&data=01%7C01%7CMBeuhler%40wswaterbank.com%7Ce5edc3c1bbc843a7994608d625a00ff1%7C3cc65a8220404d49b7ad17e50b5e9841%7C0&data=QmbWo7UX6w2fDj%2BU7Bdl4QIX%2FmTTX7uMW%2B%2FETWeMKt4%3D&reserved=0>

Sub-applications will be submitted via FEMA's web-based Mitigation Electronic Grants (eGrants) Management System at <https://na01.safelinks.protection.outlook.com/?url=https%3A%2F%2Fportal.fema.gov&data=01%7C01%7CMBeuhler%40wswaterbank.com%7Ce5edc3c1bbc843a7994608d625a00ff1%7C3cc65a8220404d49b7ad17e50b5e9841%7C0&data=k4o9wFd2CchJ27QViaj9a6ucvF99frHI8LifuJNCDx8%3D&reserved=0>.

A helpful on-line training course for development of sub-grant applications via eGrants can be found at the following link:

<https://na01.safelinks.protection.outlook.com/?url=http%3A%2F%2Fwww.training.fema.gov%2Fis%2Fcourseoverview.aspx%3Fcode%3DIS-30.a&data=01%7C01%7CMBeuhler%40wswaterbank.com%7Ce5edc3c1bbc843a7994608d625a00ff1%7C3cc65a8220404d49b7ad17e50b5e9841%7C0&data=lgovdWb0CfCSZb87ubxWC%2BEcMgP0ndfHkQwW%2FIMUPkQ%3D&reserved=0>

You will be contacted by a representative of the PDFM Division for further instructions and deadline for application submittal.

Please direct any immediate questions or concerns to PDFM@caloes.ca.gov.

About Willow Springs Water Bank Conjunctive Use Project



The WSWB captures surplus water from existing surface reservoirs and saves it for a dry day.

CONTACT INFORMATION

Mark Beuhler
General Manager
Willow Springs Water Bank
(323) 860-4829
mbeuhler@swwaterbank.com