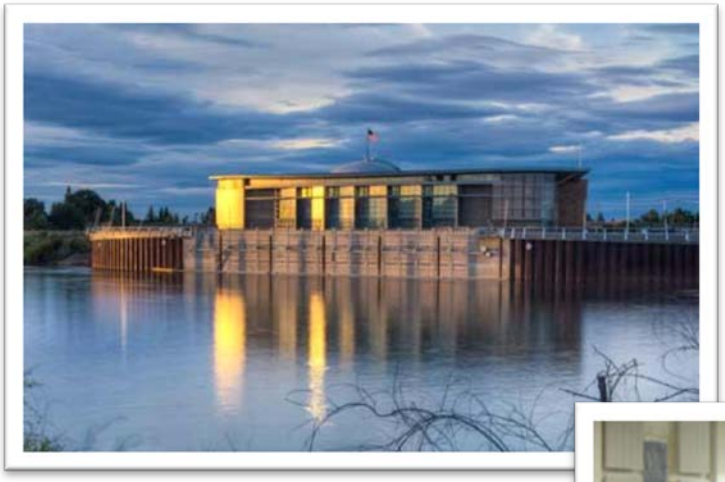
BAWSCA-EBMUD Short-Term Pilot Water Transfer Plan

September 2013



Bay Area Water Supply & Conservation Agency

BAWSCA-EBMUD Short-Term Pilot Water Transfer Plan

Executive Summary

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Bay Area Water Supply and Conservation Agency
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Executive Summary

Section ES-1: Introduction

In September 2012, the East Bay Municipal Utility District (EBMUD or District) and the Bay Area Water Supply and Conservation Agency (BAWSCA) entered into a Memorandum of Understanding to prepare a Short-term Pilot Water Transfer Plan (Pilot Plan). The purpose of the Pilot Plan was to evaluate the feasibility of partnering as buyers on long-term water transfer projects to improve future water supply reliability for the respective agencies. The Pilot Plan studied the potential to conduct a one-year pilot water transfer in a future dry-year when EBMUD is planning to operate the Freeport Regional Water Project (FRWP). For the purposes of this Pilot Plan, the term "one-year transfer" refers to a short-term water transfer that is completed within a one-year time period. EBMUD and BAWSCA have agreed that jointly conducting a one-year pilot water transfer with a willing seller would provide important information needed to evaluate the costs and benefits of a long-term water transfer partnership.

As shown on Figure ES-1, a water transfer involving EBMUD and BAWSCA would involve purchasing water from a willing seller, diverting the water using the FRWP intake, conveying the water through the FRWP facilities and EBMUD's raw water and treated water distribution systems, and delivering the transfer water to the BAWSCA service area via the EBMUD/San Francisco Public Utilities Commission (SFPUC)/City of Hayward Intertie (Hayward Intertie) and potentially the San Francisco Regional Water System (SF RWS). Transfer water delivered from EBMUD through the Hayward Intertie would be directly used by the City of Hayward (COH) in lieu of taking delivery of water from the SF RWS. Deliveries through the Hayward Intertie in excess of COH's demand could then be conveyed into the SF RWS.

As identified in the Pilot Plan, multiple parties other than BAWSCA and EBMUD will be involved and play critical decision-making roles in any pilot or long-term water transfer project. To distinguish the roles and responsibilities of the involved parties, BAWSCA and EBMUD are designated as the "Project Proponents" and other key decision makers or facility owners such as the COH and SFPUC are identified as "Project Stakeholders".

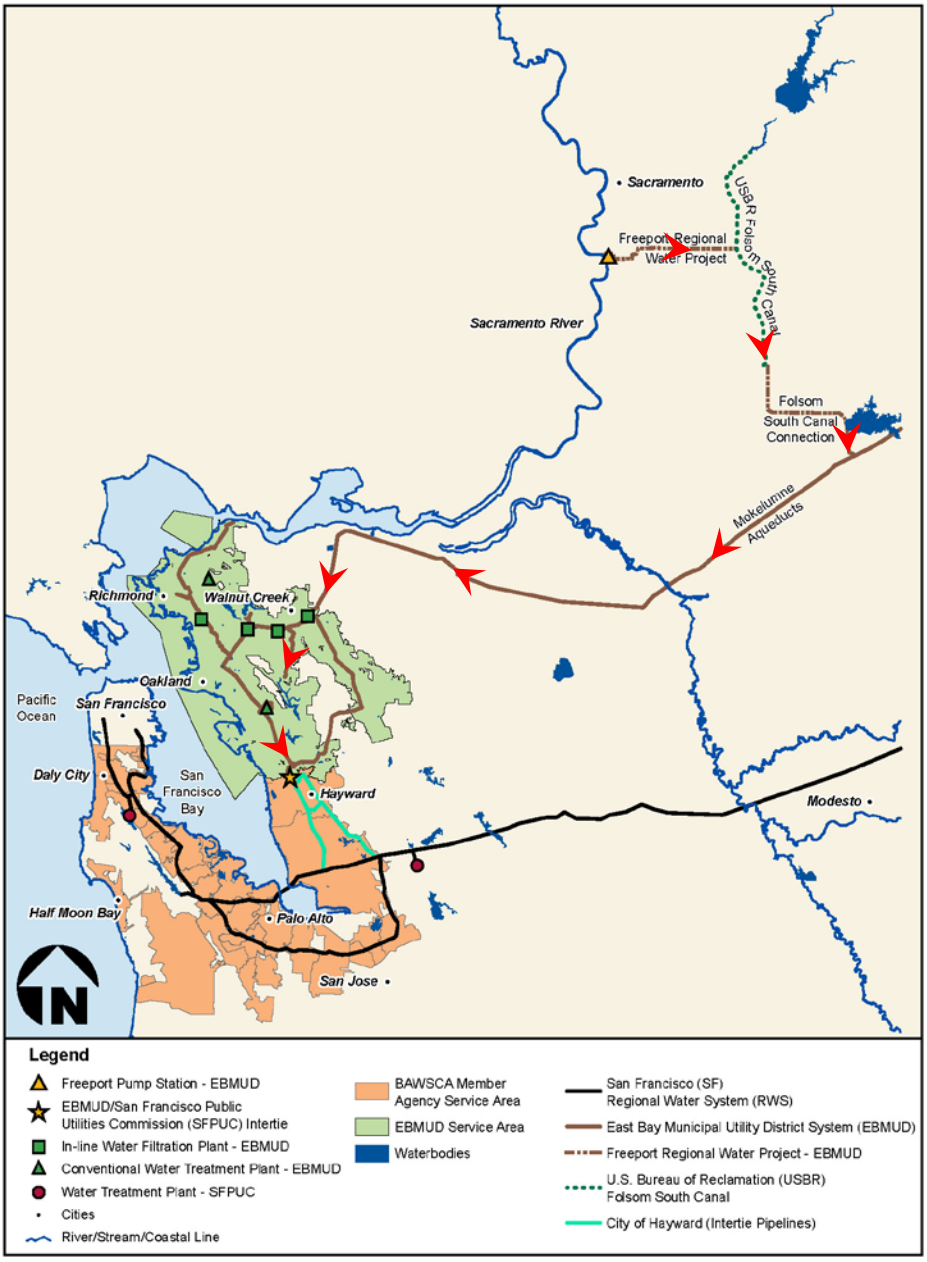
The Pilot Plan was developed as a series of detailed technical memorandums (TMs) which are listed below and attached hereto as Attachments A through E.

- TMs #1 and #1A - Pilot Plan Goals and Objectives
- TM #2 - Potential Pilot Water Transfer Sources

- TMs #3 and #3A - Ability to Convey Pilot Transfer Water to BAWSCA
- TM #4 and #4A - Approvals and Institutional Arrangements
- TM #5 - Pilot Water Transfer Recommendations

A summary of the Pilot Plan results and recommendations are presented in Section ES-2. In Section ES-3, each TM is briefly summarized, including the key findings and the additional information and actions needed to finalize a pilot transfer or a long-term transfer arrangement.

Figure ES-1: Facilities Used to Wheel Transfer Water to the BAWSCA Service Area



Section ES-2: Summary of Key Findings

Based on the work completed to date on the Pilot Plan, it appears that a short-term pilot water transfer (Pilot Transfer Project) would be both feasible and beneficial for BAWSCA and EBMUD. From BAWSCA's perspective, conducting a short-term pilot water transfer would meet the near-term objectives of gaining water transfer operational/institutional experience and determining whether a transfer partnership that involves the conveyance of water through EBMUD's water system into the BAWSCA service area is technically, politically, institutionally, and financially viable. If the Pilot Transfer Project is successfully implemented, that effort will support BAWSCA's consideration of investment in a long-term transfer arrangement to meet its objectives of increasing the dry-year reliability for its member agencies.

From EBMUD's perspective, conducting a short-term pilot water transfer will meet the objectives of developing buying partners to share in the costs for purchasing dry year water under future long-term transfer arrangements and providing opportunities for regional partners to maximize the use of existing EBMUD facilities while reducing District costs. Participating in a Pilot Transfer Project will test some of the institutional and operational elements of such partnerships.

Of importance to both BAWSCA and EBMUD is that implementation of the Pilot Transfer Project will support the implementation of regional solutions to increase dry year supply reliability, to the benefit of many.

ES-2.1 Pilot Water Transfer Timing, Rate and Duration

The Pilot Transfer Project would be implemented in a dry year when EBMUD is operating the FRWP to take delivery of Sacramento River water. It is anticipated that EBMUD's use of the FRWP would be coincident with a water shortage condition on the SF RWS. The transfer would most likely occur between July and December, subject to availability of the transfer water and coordination with the COH, SFPUC, BAWSCA, and EBMUD.

The proposed minimum transfer volume for the Pilot Transfer Project is 1,000 acre-feet (AF) and the transfer rate from EBMUD into the COH is expected to be 15 million gallons per day (MGD) (i.e., close to the average daily COH demand[1]). The transfer of

[1] The preferred delivery mode would be to supply the entire COH's demand with a small excess being conveyed to the SF RWS. This scenario would ensure that water will continue to flow through the pipeline connecting the COH

1,000 AF at a 15 MGD rate would result in a total Pilot Transfer Project length of 22 days, or just over 3 weeks, not including project ramp up time.

The final Pilot Transfer Project transfer volume, delivery rate and duration will be determined by the affected transfer parties prior to project execution.

ES-2.2 Pilot Water Transfer Cost

The unit cost to BAWSCA for purchasing and wheeling the water to the Hayward Intertie as part of this Pilot Transfer Project is estimated to be between $425 - $750 / acre-foot (AF), assuming that 1,000 AF of water is transferred. The estimated unit cost includes an assumed purchased water cost and the administrative costs to obtain the approvals necessary to implement the pilot transfer. These administrative costs will be further refined once a seller is selected. Additional costs will be incurred by BAWSCA for the cost of COH operation of the Hayward Intertie and the water quality monitoring associated with the Pilot Transfer Project.[2]

For the purpose of the Pilot Transfer Project, fixed costs for wear and tear on EBMUD and COH facilities and system losses will not be assessed. However, EBMUD and COH will work with BAWSCA to develop and evaluate fair compensation for the wear and tear on EBMUD and COH facilities as part of any long-term transfer agreement.

ES-2.3 Institutional Arrangements, Agreements, and Regulatory Approvals

Implementation of the Pilot Transfer Project will be subject to both BAWSCA and EBMUD Board approval, as well as that of all Project Stakeholders (including SFPUC and COH in their unique roles as co-owners and operators of the Hayward Intertie, respectively). In addition, the BAWSCA Board and the member agencies will have to determine cost-allocation based on whether all or a subset of the BAWSCA agencies want to purchase the transfer water.

The arrangements discussed below are also likely necessary to facilitate the Pilot Transfer Project. Specifically, BAWSCA will have to enter into a purchase agreement

system with the Newark Turnout from the SF RWS, thereby preventing water quality concerns caused by stagnant water.

[2] The Wholesale Customers' contractual obligation to pay their share of the SF RWS capital and operating costs is detailed in the 2009 WSA. Consistent with the WSA and with SFPUC past practice with inter-agency water transfers, the September 20, 2012 Letter from BAWSCA to SFPUC summarizes the agreements between the agencies' General Managers that (1) all costs for moving potential pilot transfer water through the SF RWS would be allocated proportionate to metered usage and (2) BAWSCA will reimburse any specific, legitimate incremental SF RWS costs incurred as a result of a BAWSCA-initiated transfer.

with a seller of the water and a cost-allocation and wheeling agreement with EBMUD to use the EBMUD system to transport the water to BAWSCA member agencies[3]. Since the water purchased by BAWSCA will flow through facilities owned by the United States Bureau of Reclamation (USBR), BAWSCA and EBMUD will likely also need to negotiate an agreement with the USBR to convey non-Central Valley Project water through federal facilities. As the Hayward Intertie will need to be used to transport water purchased by BAWSCA into the SF RWS, it is likely that the existing Hayward Intertie Operating Agreement among and between EBMUD, SFPUC and COH will require some modification. Additionally, BAWSCA will continue working with COH and SFPUC to finalize a cost-allocation and wheeling agreement with each entity to move the transfer water to the COH and the SF RWS, respectively.

A number of regulatory approval processes will likely also apply, depending on the seller of the water and the structure of the final purchase arrangement. These regulatory approval processes may include State Water Resources Control Board (SWRCB) approval for diversion and use of the water purchased by BAWSCA within BAWSCA's service area and complying with applicable environmental review laws.

ES-2.4 Outstanding Items to Implement the Pilot Transfer Project

The following items would need to be completed prior to implementing the Pilot Transfer Project:

- Identify and negotiate a purchase agreement with a willing seller.
- Develop all applicable agreements, institutional arrangements, and operating and water quality monitoring plans identified in the Pilot Plan necessary to implement the project.
- Obtain required regulatory approvals and prepare environmental documents, as necessary, to comply with applicable environmental review laws.

[3] The Municipal Utility District (MUD) Act allows EBMUD to sell surplus water outside its service area. Historically, EBMUD's drought management plans have included the imposition of rationing on its customers during dry years to ensure that scarce water supplies can be stretched to meet the requirements of its customers. EBMUD is reviewing how to structure a long-term transfer arrangement that would provide EBMUD with the ability to be the primary buyer for transfer water and to facilitate the purchase and use of a portion of the transfer water in dry years by BAWSCA. During the development of the Pilot Plan, EBMUD and BAWSCA discussed having BAWSCA directly purchase the pilot transfer water from the seller to ensure that the pilot transfer water could be delivered to BAWSCA even in a scenario where EBMUD is rationing its customers. Under this scenario, EBMUD and BAWSCA would enter into a wheeling arrangement where BAWSCA would purchase the pilot transfer water and EBMUD would wheel that water through its facilities to BAWSCA's service area. BAWSCA's role and responsibilities would include negotiating with the seller and working with EBMUD to secure the necessary approvals from the USBR to use federal facilities as part of wheeling water through the Freeport Project. In parallel, EBMUD and BAWSCA will continue to identify options for EBMUD to be the primary buyer for future water transfer projects.

Additionally, the COH has expressed concerns about singularly being affected as a result of the Pilot Transfer Project because the water supply source being delivered to them will change during a transfer (i.e., they will be served from the EBMUD system rather than the SF RWS). EBMUD and BAWSCA will monitor the quality of transfer water in the EBMUD, COH[4] and SF RWS systems throughout the Pilot Transfer Project. The results of this monitoring will be used to the support the analysis of the feasibility of a long-term transfer agreement.

ES-2.5 Recommended Next Steps

In order to be able to implement a Pilot Transfer Project, many of the outstanding items should be addressed prior to implementing the Pilot Transfer Project. As part of the next steps needed to work toward implementation of the Pilot Transfer Project, it is recommended that BAWSCA and EBMUD pursue the following actions during 2014:

- EBMUD and BAWSCA should approach Yuba County Water Agency (YCWA) and Placer County Water Agency (PCWA) to confirm their willingness to participate in the Pilot Transfer Project. Key terms to be negotiated for BAWSCA's purchase of the water include potential minimum quantities, costs, and the schedule for delivering water. The selection of a seller for the Pilot Transfer Project would not preclude the potential for a different seller or multiple sellers for a long-term transfer arrangement.
- EBMUD, BAWSCA, and the transfer water seller should jointly develop an outreach plan and engage key Project Stakeholders in the planning process for the Pilot Transfer Project. Key Project Stakeholders include the COH, SFPUC, regulatory agencies, resource agencies, and other agencies whose approval or cooperation is needed to successfully implement the pilot water transfer. Individual Project Stakeholders may also choose to engage in separate outreach efforts as part of their decision making on this project.
- As noted in Section ES-3.5, multiple agreements and approvals are likely necessary in order to implement the Pilot Transfer Project, depending on the final scope of the Pilot Transfer Project. Development and execution of these agreements and approvals may take significant time and resources. As such,

[4] At present, the structure of the Pilot Transfer Project is such that the water purchased by BAWSCA will not enter directly into SF RWS. Rather, the water will first enter the COH distribution system, and then can be conveyed through the COH and pumped into the SF RWS if necessary. Because the COH would be directly served the transfer water, they would be the BAWSCA member agency most affected during the Pilot Transfer Project.

BAWSCA and EBMUD plan to develop a schedule to undertake these and other related efforts.

Based on the schedule developed as part of this Pilot Plan, it is anticipated that twelve to eighteen months of lead time is required to develop and execute all the agreements and other necessary institutional arrangements before the Pilot Transfer Project could commence.

Section ES-3: Summary of Technical Memoranda

This Executive Summary provides a brief summary of the major aspects and key findings of each of the TMs that were developed by BAWSCA and EBMUD as part of the Pilot Plan. The TMs also identify additional information or issues that will need to be addressed prior to implementing the Pilot Transfer Project and a potential long-term water transfer agreement between BAWSCA and EBMUD.

ES-3.1 TMs #1A and #1B - Pilot Plan Goals and Objectives

Summary

As the Project Proponents, EBMUD and BAWSCA developed objectives and goals for the Pilot Plan, including identifying the benefits of partnering on transfers, the rationales for piloting a transfer, and the information that would be gained by conducting the Pilot Transfer Project.

Key Findings

EBMUD's Goals and Objectives:

The District's goals for developing the Pilot Plan were as follows:

- Assess costs, benefits, and feasibility of partnering with BAWSCA on water transfers; and
- Evaluate whether BAWSCA would be a good match for partnering with EBMUD on long-term transfer projects.

The District's objectives in developing the Pilot Plan were as follows:

- Work with BAWSCA to develop a plan for executing a short-term pilot water transfer;
- Evaluate the technical, institutional, and economic feasibility of wheeling transfer water to BAWSCA via FRWP, EBMUD's raw water and treated water systems, and the Hayward Intertie;

- Identify agreements and other elements (e.g., permits, etc.) that need to be in place to implement a pilot transfer; and
- Identify additional information that would still be needed to assess the feasibility of partnering on a long-term water transfer project with BAWSCA.

BAWSCA's Goals and Objectives:

BAWSCA's goals for developing the Pilot Plan were as follows:

- Assess dry year water transfers for reliability, quality, and cost-effectiveness; and
- Identify all necessary state and federal regulatory and permit processes to facilitate a dry year transfer, and the timing and the coordination of these regulatory processes.

BAWSCA's objectives in developing the Pilot Plan were as follows:

- Demonstrate the feasibility of water transfers with EBMUD by implementing a one-year pilot water transfer;
- Gain operational and institutional experience by understanding the process for implementing a water transfer;
- Lay the foundation for approval of long-term water transfer agreements;
- Identify the regulatory agencies, and potential water transfer partners, that would be involved in a short-term and long-term water transfer;
- Confirm the commitment of BAWSCA and EBMUD to securing water transfers as a dry year supply solution;
- Determine whether a transfer partnership that involves the conveyance of water through EBMUD's water system into the BAWSCA service area is technically, politically, institutionally, and financially viable;
- Identify agreements and other elements (e.g., permits, etc.) that need to be in place to implement a short-term pilot water transfer; and
- Identify additional information that would be needed to assess the feasiblity of partnering on a long-term water transfer project with EBMUD.

Outstanding Items Regarding a Long-Term Transfer Arrangement

The District is currently experiencing a decline in water demands due to the recent economic turndown and the residual drought effect. This decline in water demands has afforded EBMUD the flexibility to explore water supply projects with BAWSCA and other agencies that include wheeling water through unused capacity in EBMUD's facilities. In

the future, as EBMUD's demands recover to projected planning levels, capacity in EBMUD's water system will become more limited and the timing and ability to wheel water to other agencies will become more constrained. The ability to move water through the FRWP and EBMUD's raw and treated water systems under future conditions will require further evaluation, including more detailed consideration of the institutional, operational, and financial agreements that would need to be in place for a long-term water transfer partnership. EBMUD's future plans anticipate that the FRWP capacity will be fully needed by the District in dry years.

As part of its Long-Term Reliable Water Supply Strategy (Strategy), BAWSCA is evaluating whether water transfers are a viable alternative to achieve BAWSCA's goal of meeting the dry year supply needs of the BAWSCA member agencies in a cost-effective manner. Hence, following the successful execution of a short-term pilot water transfer, BAWSCA will likely conduct additional assessments to determine if a water transfer partnership with EBMUD creates a sufficiently reliable and cost-effective dry year supply to meet the BAWSCA member agency's water needs as identified through the Strategy. If so, BAWSCA would then have to develop the necessary agreements to support a long-term arrangement with EBMUD, COH, SFPUC and/or others, to purchase and convey the dry year transfer water to the BAWSCA member agencies.

ES-3.2 TM #2 - Potential Pilot Water Transfer Sources

Summary

EBMUD has completed significant work to identify water sellers that might be good partners for a long-term water transfer arrangement. Based on this information, and considering the specific goals and objectives of the Pilot Plan, EBMUD identified two potential sources of pilot transfer water: (1) the YCWA, and (2) the PCWA. As part of the description of these potential opportunities, the potential sellers were described, as well as the source water, the water rights, and the transfer mechanisms, including the transfer quantity, schedule and range of water purchase costs.

Key Findings

Potential Pilot Water Transfer Sources:

The YCWA and the PCWA were identified as potential transfer partners for the Pilot Transfer Project. See Figures ES-2 and ES-3 for maps of YCWA and PCWA, respectively.

Figure ES-2: Yuba County Water Agency Location Map

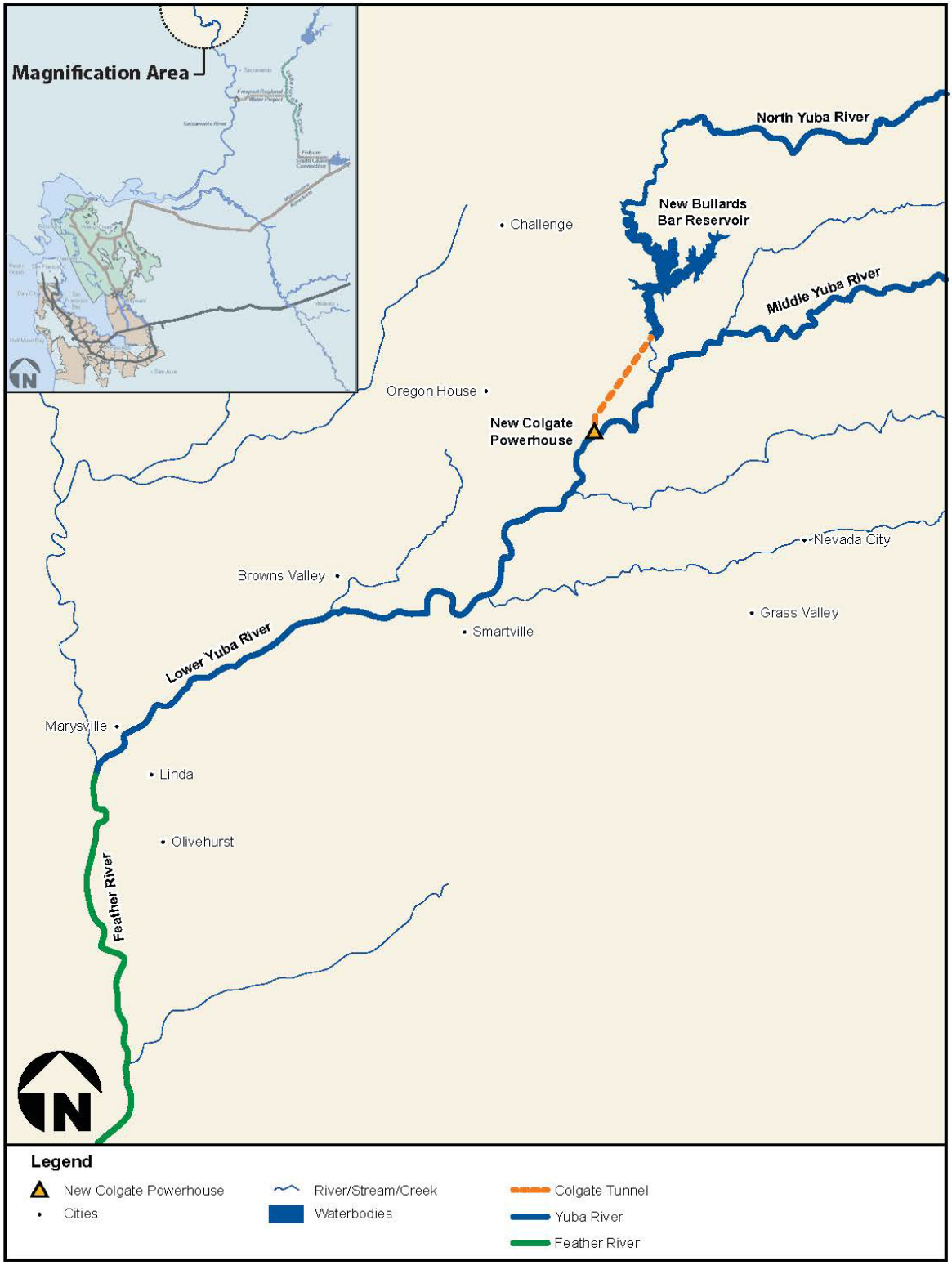
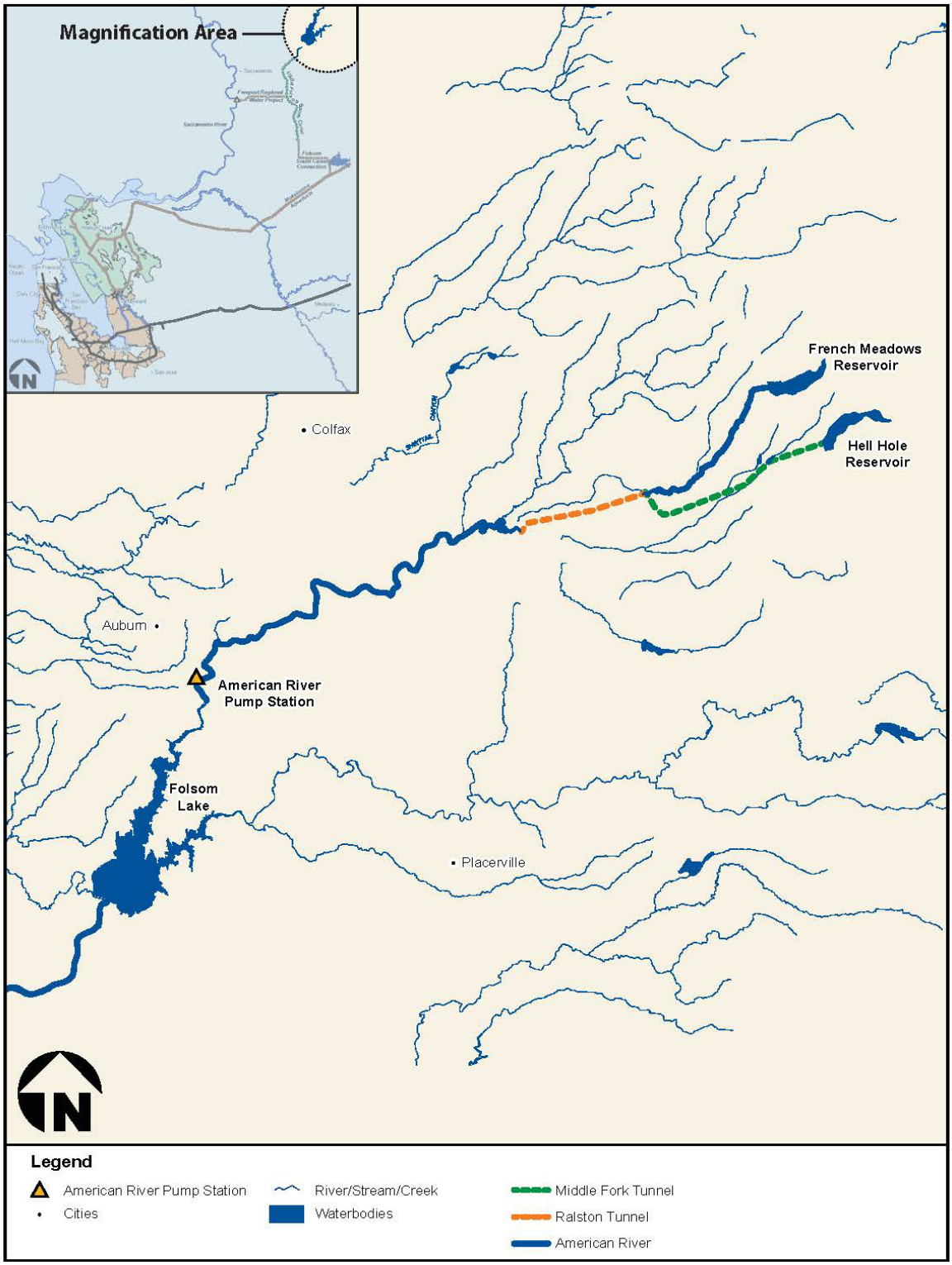


Figure ES-3: Placer County Water Agency Location Map



Summary of Transfer Water Characteristics:

Table ES-1 summarizes YCWA and PCWA water rights, schedules, rates of delivery, and estimated water purchase costs.

Table ES-1: Potential Sources of Supply for Pilot Water Transfer

Supply Characteristics	YCWA	PCWA
Source of Supply	Yuba River	Middle Fork of the American River
Surface Water Rights	Post-1914 (1927, 1953)	Post-1914 (1958)
Transfer Method	Stored water releases	Stored water releases
Quantity	Up to 67 TAF [(a),(b)]	Up to 47 TAF [(a) (c)]
Schedule	Varies [(d)]	July - December
Rate of Delivery	< 100 MGD [(e)]	< 100 MGD [(e)]
Water Purchase Cost	$75 - $275	$75 - $275

(a) Minimum pilot transfer quantities will be discussed with sellers. BAWSCA anticipates a minimum pilot water transfer quantity of 1000 AF.

(b) Based on modeling performed for Yuba Accord - Freeport Point of Rediversion Project (Feb., 2013).

(c) Based on modeling performed for the Sacramento Water Forum Agreement (2000).

(d) Under the Yuba Accord, the schedule and rate of stored water releases for transfer varies based on hydrologic year type and month. The transfer water that YCWA is seeking to sell to EBMUD are releases that cannot be delivered to existing buyers south of the Delta due to south Delta pumping restrictions. In dry years, transfer water for EBMUD would most likely be available outside the south Delta pumping window for transfers (July - September) in early spring or late fall.

(e) Rate of delivery cannot exceed EBMUD's dedicated FRWP capacity. Rate of delivery will likely be based on recommended rates for operating the Hayward Intertie.

Summary of the Yuba County Water Agency Option:

YCWA's source of water supply is the Yuba River. The Yuba River is a tributary of the Feather River, which, in turn, is a tributary of the Sacramento River. The Yuba River Basin drains approximately 1,339 square miles of the western Sierra Nevada slope, including portions of Sierra, Placer, Yuba, and Nevada counties. The average annual unimpaired flow of the Yuba River at Smartville is 2.45 million acre-feet (MAF); however a significant portion of this water is diverted out of the watershed and is not available to the lower Yuba River. The annual unimpaired flow has ranged from a maximum of approximately 4.9 MAF in 1986 to a minimum of approximately 370 TAF in 1977.

In partnership with EBMUD, YCWA is proposing to add the FRWP intake as a point of rediversion to YCWA's water rights. EBMUD would become a back-up buyer for transfer water released under the terms of the Yuba Accord that cannot currently be delivered to existing Yuba Accord buyers. The proposed project to add the FRWP intake as a point of rediversion requires SWRCB approval. YCWA and EBMUD are seeking to receive SWRCB approval and complete the proposed project by the end of 2013. In discussions to date, the YCWA has indicated that it would be willing to partner with BAWSCA and EBMUD as part of a small volume, short-term pilot water transfer.

Summary of the Placer County Water Agency Option:

PCWA is a signatory to the Sacramento Water Forum Agreement (WFA). The WFA establishes the co-equal goals of preserving the Lower American River and providing a reliable and safe water supply for the region. As part of the WFA, PCWA has agreed to release additional water (maximum of 47,000 AFY) from its Middle Fork Project (MFP) reservoirs in dry and critically dry years to benefit the Lower American River. This obligation to make environmental releases is conditioned upon PCWA's ability find a buyer to purchase the water downstream of the confluence of the Sacramento and American Rivers. Hence, transfer water purchased in dry and critically dry years from the PCWA is available in dry years only.

PCWA is currently initiating work on a draft environment document to support its MFP water rights extension project. This project will review the potential environmental impacts of PCWA's full utilization of its 120,000 AFY of MFP water. PWCA's environmental document will include analysis of a long-term water transfer project between EBMUD and PCWA. PCWA also plans to petition the SWCRB to add the FRWP intake as a point of rediversion and EBMUD's service area to PCWA's place of use. EBMUD and PCWA currently anticipate SWRCB approval for these efforts by end of 2016. PCWA's completion of its MFP water rights extension project environmental document and SWRCB approval of both the MFP water rights extension and long-term transfer change petition would be needed before PCWA and EBMUD could enter into a long-term transfer agreement for PWCA to sell water to EBMUD in dry years consistent with the WFA. However, this does not preclude PCWA's ability to participate in interim transfers including a one-year pilot transfer.

Additional Information or Action Required for the Pilot Transfer Project

BAWSCA, in coordination with EBMUD, will need to obtain a water purchase contract with either PCWA or YCWA. Wheeling agreements between BAWSCA and EBMUD,

the USBR, COH and SFPUC are also required, as well as the necessary regulatory and environmental approvals.

Outstanding Items Regarding a Long-Term Transfer Arrangement:

EBMUD will need to formalize transfer agreements with YCWA and/or PCWA prior to committing to a long-term agreement with BAWSCA. Furthermore, YCWA and PCWA must obtain appropriate regulatory approval to change their water rights to allow transfer of water to EBMUD and BAWSCA.

Among other things, BAWSCA would have to be added to the place of use for both the YCWA and PCWA transfer supplies if BAWSCA were to enter into a long-term agreement with EBMUD and others for the purchase and/or wheeling of the transfer water from either seller

ES-3.4 TMs #3 and #3A - Ability to Convey Transfer Water to BAWSCA

Summary

A key element of the Pilot Plan was the evaluation of the conveyance of transfer water originating from the FRWP facilities through the EBMUD service area and delivered to BAWSCA via the Hayward Intertie (refer to earlier Figure ES-1 for map of conveyance facilities).

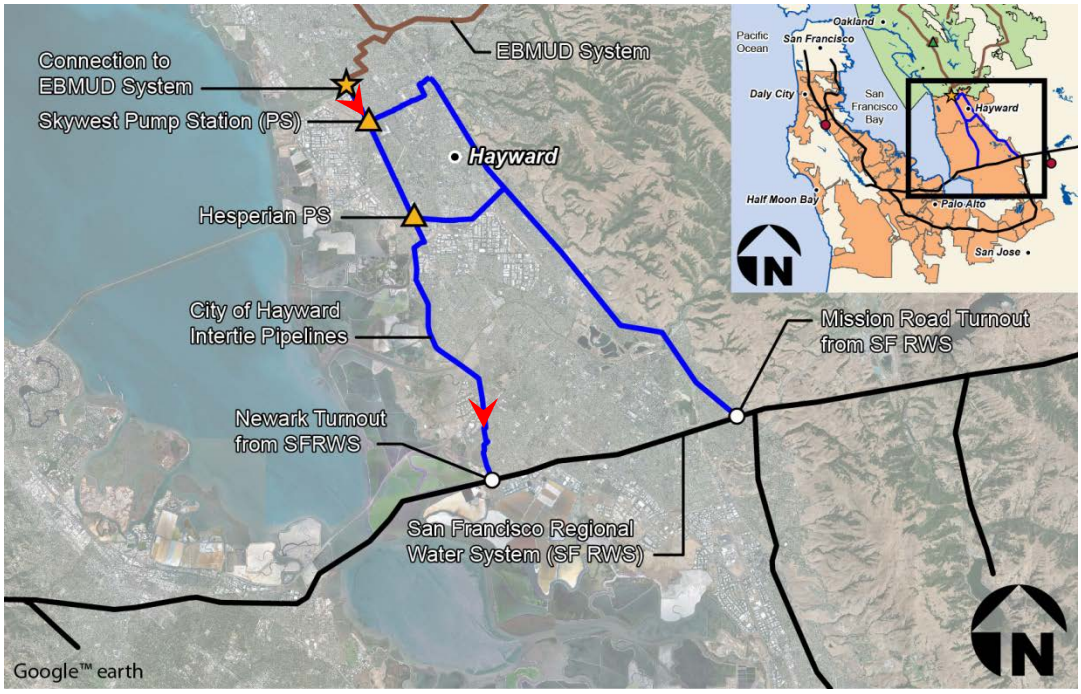
Specific evaluations were conducted for the FRWP, the Folsom South Canal Connection (FSCC), EBMUD's system, and the Hayward Intertie (see Figure ES-4 for the Hayward Intertie and surrounding facilities). Three different operational scenarios to transfer water through the Hayward Intertie were evaluated, potential water quality issues for the COH and the SF RWS were identified, and pre-transfer flushing options were developed.

Key Findings

The Pilot Water Transfer is Operationally Feasible:

There are no major operational impediments to conveying transfer water from the FRWP intake to the BAWSCA service area. However, close coordination between EBMUD, COH, and SFPUC will be required to ensure that the transfer operations are optimized to minimize impacts on all parties involved, and that use of the Hayward Intertie to respond to an emergency in either the SF RWS or EBMUD system remains a top priority.

Figure ES-4: Hayward Intertie Facilities



Pilot Water Transfer Timing:

The Pilot Transfer Project would be conducted during a dry year when EBMUD is utilizing the FRWP. Current plans are that in the first year of a drought EBMUD would begin taking delivery of its Central Valley Project (CVP) water from the FRWP no earlier than July 1. In the subsequent consecutive years of a drought, EBMUD may begin taking delivery of its CVP water as early as March 1, the beginning of the CVP contract year. The pilot transfer water purchased from YCWA or PCWA will likely be available in the fall or early winter (see Table ES-1), matching the timeframe in which EBMUD and BAWSCA anticipate conducting the pilot transfer. BAWSCA will coordinate with EBMUD, COH, and SFPUC to take delivery of the transfer water when it is available and on a mutually agreeable schedule.

Pilot Water Transfer Conveyance Path:

The anticipated Pilot Transfer Project includes BAWSCA's purchase of water from a seller in the Sacramento River basin, which will flow from the Sacramento River, through the FRWP, the Folsom South Canal owned and operated by the USBR, and the FSCC, into the EBMUD Mokelumne Aqueducts (see Figure ES-1). Once in the EBMUD system and service area, the water would then flow through existing EBMUD transmission facilities to the Hayward Intertie. Figure ES-4 shows the EBMUD system, the Hayward Intertie, the COH distribution system and pump stations, the COH

connections to the SF RWS at the Newark and Mission Road Turnouts, and the SF RWS in the South Bay.

It is anticipated that during the Pilot Transfer Project, water will be delivered to COH at a constant rate through the Hayward Intertie. Any incremental water delivered surplus to COH's demand would then be pumped into the SF RWS for delivery to the rest of the BAWSCA service area.

Pilot Water Transfer Quality and Treatment:

The source of the water transfer will be the Sacramento River at the FRWP. This location is in the northern end of the legal Delta, as the river is under tidal influence at low flows (see Figure ES-1). However, the quality of the water at the FRWP is distinctly different from that in the central portion of the Delta and is not influenced by the Delta wetlands and sea water that affect water quality in the central Delta.

During dry years when EBMUD utilizes the FRWP, the southwest portion of EBMUD's service district adjacent to the Hayward Intertie will be served by EBMUD's Upper San Leandro (USL) Water Treatment Plant. Therefore, it can be assumed that all water wheeled to BAWSCA will be pumped into USL Reservoir using Moraga Pumping Plant and treated at the USL Water Treatment Plant.

The USL Water Treatment Plant provides conventional treatment, including aeration, coagulation, flocculation, sedimentation, intermediate ozonation, dual-media filtration, fluoridation, and chloramination. Based on the quality of Sacramento River water at the FRWP intake it is anticipated that the quality of water exiting the EBMUD system during the pilot transfer will be between the quality currently produced by the Orinda Filter Plant and USL Water Treatment Plant.

The COH has expressed some concerns regarding potential water quality differences and other impacts to the City and its customers as a result of the Pilot Transfer Project. With the goal of optimizing operations and minimizing the staff burden for all participating agencies, BAWSCA and EBMUD have designed the Pilot Water Project to be short in duration and to reduce water quality variations within COH's service area by meeting 100 percent of COH's demand. In addition, BAWSCA and EBMUD have worked with the COH to develop a water quality monitoring plan to evaluate any water quality changes associated with the Pilot Transfer Project.

Summary of Prior Tests of the Hayward Intertie:

In July 2007, EBMUD, COH, and SFPUC conducted a joint operation to test the capacity of the Hayward Intertie. EBMUD water was conveyed at a rate of up to 30 MGD for 3.5 hours to the COH service area from EBMUD. During the water quality

monitoring, elevated turbidity levels, likely a result of the reverse flows in the Hayward Intertie pipelines, were noted for a short time at the initiation of the water transfer.

Between December 2009 and February 2010, approximately 1.3 billion gallons (4,000 acre-feet) were transferred from EBMUD via the COH to the SF RWS over a 66-day period. Transfer rates through the Hayward Intertie varied from 8.4 to 29.5 MGD. The extended test of the Hayward Intertie went without incident except for some short-duration water quality concerns related to turbidity at the beginning of the transfer.

Additional Information or Action Required for the Pilot Transfer Project

Prior to initiating the Pilot Transfer Project, additional close coordination between the operations departments of EBMUD, COH, and SFPUC is recommended, including the development of an operations and monitoring plan, and a more detailed assessment as to whether a pre-flushing program is warranted for the Hayward Intertie pipelines.

Outstanding Items Regarding a Long-Term Transfer Arrangement

Treatment and/or distribution system improvements are required to deliver EBMUD's projected supplemental water supply need in 2040. Several options are under consideration including a pretreatment plant near Camanche Pumping Plant for Sacramento River water and upgrades to one or more of EBMUD's direct filtration plants.These improvements will eliminate the current need to separate Mokelumne River water from Sacramento River water. While design and construction of these improvements will incur capital costs, the improvements will increase operational flexibility and likely will reduce pumping and treatment operating costs. The timing for adding these improvements is currently under study.

The Bay Area Regional Desalination Project (BARDP), among potential projects to supplement EBMUD's water supply, is currently in the planning phase. BARDP is a regional project being developed in partnership with EBMUD, Contra Costa Water Agency, Santa Clara Valley Water District, Zone 7 Water Agnecy, and SFPUC. As currently conceived, this project would include wheeling of water through EBMUD's raw water and treated water systems to the SFPUC and the SF RWS via the Hayward Intertie. SFPUC participation in the BARDP is for delivery of 9 MGD, in all years. If the BARDP is implemented, the capacity of the Hayward Intertie could become a constraint for meeting SFPUC's planned use of the water from the BARDP while also wheeling dry-year water to BAWSCA. Close coordination and scheduling of water passing through the Hayward Intertie would be required to maximize water deliveries to all parties. However, as co-owners of the Hayward Intertie, SFPUC and EBMUD would have priority over any other planned future uses of the Hayward Intertie.

The COH has expressed some concerns regarding potential water quality and other impacts to the COH and its customers as a result of any long-term transfer project. These issues will be addressed as part of any assessment of a long-term transfer option that uses the Hayward Intertie, including the BARDP.

As part of its Long-Term Reliable Water Supply Strategy, BAWSCA is evaluating whether water transfers are a viable alternative to achieve BAWSCA's goal of meeting the dry year supply needs of the BAWSCA member agencies in a reliable and cost-effective manner. Specifically, BAWSCA will evaluate whether a long-term water transfer arrangement with EBMUD is technically, politically, institutionally, and financially viable and whether it creates the level of certainty that the BAWSCA agencies need in terms of meeting their future water supply needs.

ES-3.5 TMs #4 and #4A - Approvals and Institutional Arrangements

Summary

BAWSCA and EBMUD worked jointly to determine the approvals and institutional arrangements necessary to implement the Pilot Transfer Project, as well as who the lead agency would be to secure the necessary approvals. In order to implement the transfer, BAWSCA and EBMUD identified the following potential compliance steps, regulatory approvals, and agreements, which are discussed below.

Key Findings

Potential Environmental Reviews, Approvals and Institutional Arrangements for a Pilot Water Transfer:

A summary of the key environmental reviews, approvals and institutional arrangements that were evaluated for this Pilot Transfer Project, and the lead agency responsible for securing the necessary approvals to conduct both a pilot water transfer and a long-term water transfer, is summarized in Table ES-2. As part of the Pilot Plan, a comprehensive review of existing environmental documents and agreements related to the FRWP and Hayward Intertie was performed to identify any potential requirements that would need to be addressed to implement the Pilot Transfer Project. TM#4 includes a more detailed list of existing documents that were reviewed for the Pilot Plan and a discussion of the potential relevancy of these documents to the Pilot Transfer Project.

Additional Information or Action Required for the Pilot Transfer Project

Several items requiring additional action or information are needed in advance of executing the Pilot Transfer Project:

- EBMUD and BAWSCA should approach YCWA and PCWA to confirm their willingness to participate in the Pilot Transfer Project. Key terms, including potential minimum quantities, costs, and schedule for delivering water would be negotiated so that EBMUD and BAWSCA can determine the most appropriate seller for the pilot transfer water. The selection of a seller for the Pilot Transfer Project would not preclude the potential for a different seller or multiple sellers for a long-term transfer arrangement.
- EBMUD, BAWSCA, and the transfer water seller should jointly develop an outreach plan and engage key Project Stakeholders in the planning process for the Pilot Transfer Project. Key Project Stakeholders include the COH, SFPUC, regulatory agencies, resource agencies, and other agencies whose approval or cooperation is needed to successfully implement the pilot water transfer. Individual Project Stakeholders may also choose to engage in separate outreach efforts as part of their decision making on this project.
- As noted in Tables ES-2, numerous agreements and approvals are needed in order to implement the Pilot Transfer Project. Development and execution of these agreements and approvals may take significant time and resources. As such, BAWSCA and EBMUD should develop a plan to secure the necessary agreements and approvals on a schedule that will support near-term implementation of a Pilot Transfer Project.

Outstanding Items Regarding a Long-Term Transfer Arrangement

For a long-term water transfer, the most effective means of processing a transfer may be for BAWSCA and EBMUD to work with USBR to prepare a joint document that complies with environmental resource laws and USBR requirements.

Table ES-2: Summary of Key Environmental Reviews, Approvals and Institutional Arrangements Needed to Conduct an EBMUD-BAWSCA Water Transfer[1]

	One-year Pilot Transfer Project	Proposed Primary Responsible Party	Long-term Water Transfer	Proposed Primary Responsible Party
Environmental Review				
State Resource Laws	CEQA exemption(s)	Seller / BAWSCA	Compliance with CEQA, CESA	TBD
Federal Resource Laws	Compliance with NEPA, ESA [2]	USBR / BAWSCA / EBMUD	Compliance with NEPA, ESA [2]	USBR / BAWSCA / EBMUD
Regulatory Agency Approvals				
SWRCB	Required [3]	Seller	Required [3]	Seller
USBR	Required for Warren Act contract and PCWA refill agreement [4]	USBR / BAWSCA / EBMUD	Required for Warren Act contract(s) and PCWA refill agreement [4]	USBR / BAWSCA / EBMUD
Delta Stewardship Council (future)	Likely not covered or exempt	TBD	TBD	TBD
Permits				
FRWA Intake Incidental Take Permit (2011)	Potentially no changes required	EBMUD	Amendment may be required	EBMUD
Hayward Intertie				
Hayward Intertie Operating Agreement (2007)	Amendment or other type of Agreement required to allow for one-year pilot test	EBMUD / SFPUC / COH	Amendment or other type of Agreement required	EBMUD / SFPUC / COH
Updated Operations Plan	Governs day-to-day operations	EBMUD / SFPUC / COH	Governs day-to-day operations	EBMUD / SFPUC / COH
Transfer Agreements				
Water Purchase Agreement with Seller	Required	BAWSCA / Seller	Required	BAWSCA / Seller
EBMUD / BAWSCA Pilot Transfer Cost-	Required	EBMUD / BAWSCA	Required	EBMUD / BAWSCA

	One-year Pilot Transfer Project	Proposed Primary Responsible Party	Long-term Water Transfer	Proposed Primary Responsible Party
Allocation and Wheeling Agreement				
BAWSCA / SFPUC Cost Allocation and Wheeling Agreement	Required	BAWSCA / SFPUC	Required	BAWSCA / SFPUC
Internal Agreements and Arrangements to Distribute Water to BAWSCA Agencies	Required	BAWSCA	Required	BAWSCA
BAWSCA / COH Cost-Allocation Agreement	Required	BAWSCA / COH	Required	BAWSCA / COH

(1) TM#4 includes a more detailed list of existing documents that were reviewed for the Pilot Plan and a discussion of the potential relevancy of these documents to the Pilot Transfer Project. Information in this table assumes that the potential seller is either YCWA or PCWA. This information would need to be updated if a different seller is considered for the Pilot Transfer Project.

(2) Compliance with NEPA and other federal environmental resource laws is required to execute a Warren Act contract to use the Folsom South Canal, a federally owned facility, to convey non-CVP water to EBMUD or BAWSCA service areas.

(3) If YCWA is able to successfully petition the SWRCB to add the FRWP intake as a point of re-diversion to their water rights in advance of a one-year pilot test or long-term transfer, SWRCB approval may not be required for a transfer of water diverted from YCWA to a BAWSCA member agency who is a State Water Project (SWP) or CVP contractor utilizing the FRWP facilities. However, at present, BAWSCA does not anticipate structuring a transfer in this manner.

(4) BAWSCA and EBMUD will work with the USBR to determine the appropriate applicant for the Warren Act contract. In either case, EBMUD would facilitate working with the USBR to obtain the required USBR approvals.

Similar to one-year transfers, the SWRCB must approve changes to a seller's water rights that are necessary to undertake a long-term transfer of water. EBMUD and BAWSCA should work closely with the potential seller to evaluate the best approach for obtaining SWRCB approval if the parties elect to move forward with a long-term water transfer. Further, EBMUD and BAWSCA would need to evaluate whether future transfer water volumes wheeled to BAWSCA would require an amendment to the FRWA Incidental Take Permit to increase the maximum annual diversion volume.

In a long-term transfer arrangement, the purchaser of the transfer water may be BAWSCA or may be individual member agencies or groups of agencies. At this time,

there is no final decision on how the transfer water purchase would be structured or how costs and benefits would be allocated amongst the BAWSCA member agencies. Specific agreements that are necessary to allocate water among the BAWSCA agencies include arrangements between BAWSCA and its member agencies relating to the quantity of the water acquired, how the water is allocated among member agencies, as well as arrangements between the member agencies themselves, depending on how the water is allocated.

ES-3.6 TM #5 - Pilot Water Transfer Recommendations

Summary

Based on the information developed as part of the Pilot Plan, final recommendations were made regarding the timing of the pilot water transfer, the minimum quantity of water transferred, and the duration of the Pilot Transfer Project. Estimated costs for conducting the Pilot Transfer Project were developed. A proposed schedule outlining the regulatory, institutional, and operational components was developed.

Key Findings

Pilot Water Transfer Timing:

To reduce the cost of the Pilot Transfer Project, the transfer should be conducted in a year when EBMUD is taking delivery of Sacramento River water through the FRWP, which would typically occur in critically dry years where it is anticipated that a water shortage condition would also exist on the SF RWS. Based on EBMUD's Interim Drought Planning Guidelines, EBMUD expects to utilize the FRWP when its projected total system storage at the end of September is below 450 TAF. To accommodate EBMUD operations planning, the earliest diversion of Sacramento River water during the first year of a drought would begin in July. The timing of the actual Pilot Transfer Project also depends on when the transfer water is made available. For YCWA, water would most likely be available in September through December while for PCWA, the proposed period identified is July through December.

The preferred timing of the Pilot Transfer Project will need to be further reviewed with COH, SFPUC, BAWSCA, and EBMUD prior to implementation.

Pilot Water Transfer Quantity:

The proposed minimum transfer volume for the Pilot Transfer Project is 1,000 AF. Final total water volume, delivery rate and pilot duration will be determined by the affected transfer parties prior to the implementation of the Pilot Transfer Project.

Pilot Water Transfer Delivery Rate:

The average COH water demand is 15 MGD, varying seasonally. The preferred delivery mode during the Pilot Transfer Project would be to supply COH's entire demand, with a small excess being conveyed to the SF RWS. This scenario would also ensure that some water flows through the pipeline connecting the COH system with the Newark Turnout from the SF RWS, thereby preventing water quality concerns caused by stagnant water.

Pilot Water Transfer Duration:

Combining the assumed transfer quantity of 1,000 AF with an average delivery rate of 15 MGD, results in a likely minimum pilot transfer duration of 22 days, excluding ramp up time.

Estimated Pilot Water Transfer Costs:

Total cost for the Pilot Transfer Project is largely proportional to the volume of water wheeled and consists of costs for purchased water, conveyance through the FRWP and EBMUD systems, EBMUD treatment, and Hayward Intertie use. A summary of estimated costs is provided in Table ES-3. A long-term transfer could include additional costs for wear and tear on facilities and proportional share of labor costs.

Table ES-3. Estimated Total Cost for Pilot Transfer of 1,000 Acre-Feet of Water

Component	Total Cost
Water Purchase	$75,000 - $275,000 (1)
Administrative Costs	$50,000 - $100,000 (2)
Conveyance	
From Freeport to Mokelumne Aqueducts	$155,000
Through Mokelumne Aqueducts to USL Reservoir	$36,000 - $109,000
Treatment	$107,000
Hayward Intertie	To be determined (3)
SF RWS	To be determined (4)
Total	$425,000 - $750,000(5)

(1) Actual costs to purchase transfer water would need to be negotiated with the seller and could range from $75 - $275/AF.

(2) Administrative costs to conduct the pilot transfer could vary anywhere from $50,000 - $100,000 based on the level of effort required to obtain the necessary regulatory approvals. These costs could include costs to prepare environmental documents, perform environmental reviews, and USBR staff time to review and approve the Warren Act and SWCRB filing fees. Administrative costs do not include estimates for internal BAWSCA or EBMUD staff time to support the project.

(3) These costs have been requested from COH.

(4) The Wholesale Customers' contractual obligation to pay their share of the SF RWS capital and operating costs is detailed in the 2009 WSA. Consistent with the WSA and with SFPUC past practice with inter-agency water transfers, the September 20, 2012 Letter from BAWSCA to SFPUC summarizes the agreements between the agencies' General Managers that (1) all costs for moving potential pilot transfer water through the SF RWS would be allocated proportionate to metered usage and (2) BAWSCA will reimburse any specific, legitimate incremental SF RWS costs incurred as a result of a BAWSCA-initiated transfer.

(5) Rounded to the nearest $5,000.

Pilot Water Transfer Schedule:

The estimated timing for securing the likely institutional and environmental approvals associated with implementing a Pilot Transfer Project is shown on Figure ES-5. It is anticipated that six to twelve months of pre-pilot water transfer efforts will be required for BAWSCA and EBMUD to work with key stakeholders to develop or amend agreements needed to use the Hayward Intertie for the Pilot Transfer Project and for BAWSCA to work with SFPUC, COH, and its member agencies on other agreements that would be required before BAWSCA could fully commit to participating in the Pilot Transfer Project. The effort on these pre-pilot water transfer agreements would be expected to run in advance of or concurrently with other institutional arrangements, environmental reviews, and regulatory agency approvals that would be needed if BAWSCA and EBMUD jointly agree to move forward with the Pilot Transfer Project in 2014.

As shown on Figure ES-5, the lead time for completing all the other intuitional arrangements, environmental reviews, and regulatory agency approvals for the Pilot

Transfer Project is expected to take approximately eight months, which includes preliminary discussions with the potential sellers and USBR in early spring if hydrologic conditions are dry. The decision by BAWSCA and EBMUD (as the Project Proponents) to move forward with the Pilot Transfer Project would likely occur in early May with final Board approval of the project by both agencies in June. Completion of applicable environmental reviews and regulatory approvals would be expected to occur in late summer to early fall and the pilot water transfer is estimated to commence in October. The entire lead time, including pre-water transfer efforts, before the pilot water transfer could commence is expected to take approximately twelve to eighteen months.

Additional Information or Action Required for Pilot Transfer Project

As additional information for the Pilot Transfer Project is developed related to anticipated supply shortfalls, and the costs and specifics of the transfer source and quantities, the pilot water transfer volume, delivery rate and duration may vary from what is presented here in the Pilot Plan.

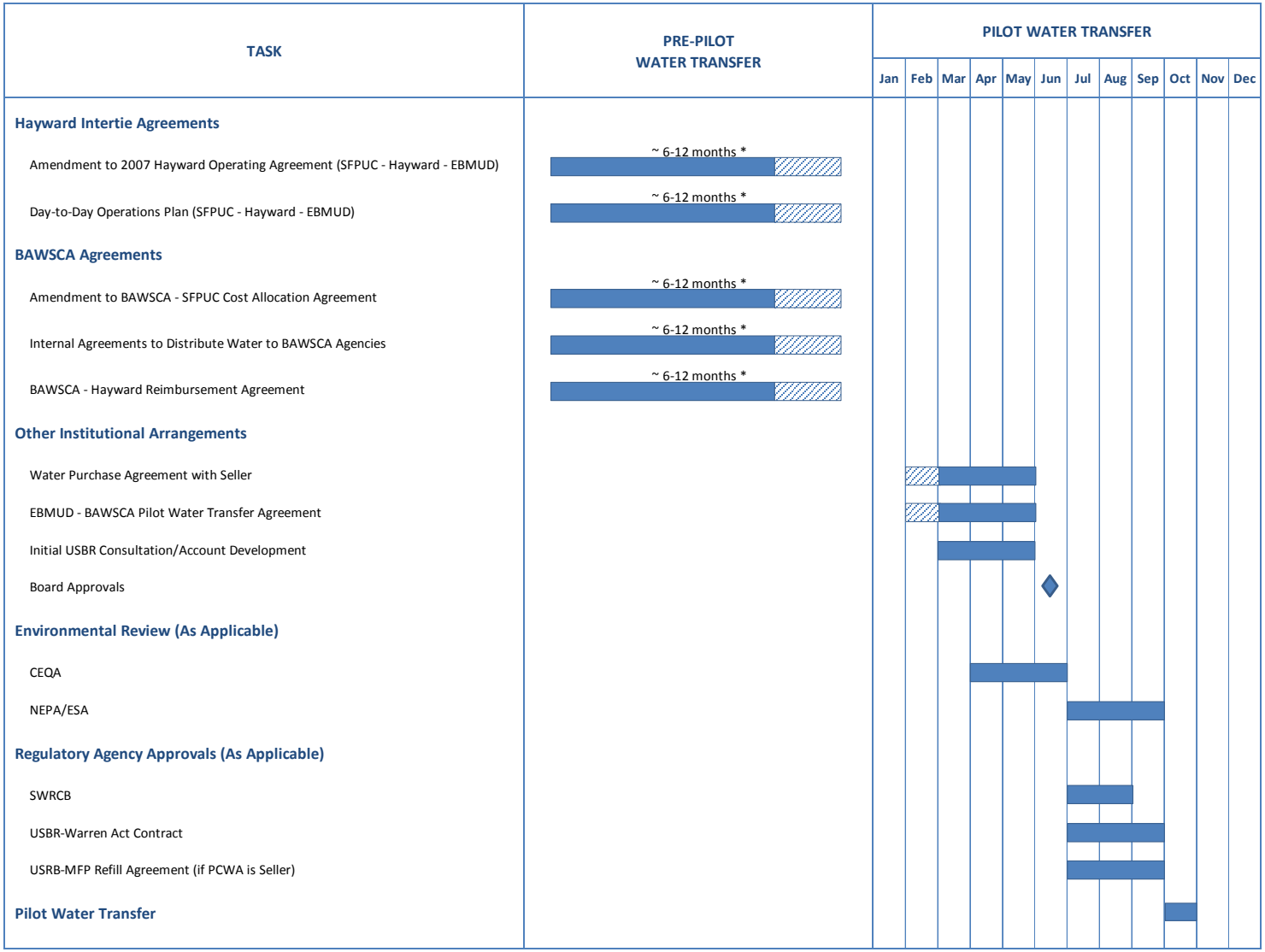
Prior to implementing the Pilot Transfer Project, close coordination between BAWSCA, EBMUD, COH, and SFPUC is recommended, including the development of an operations and monitoring plan and a more detailed assessment as to whether a pre-flushing program is needed for the Hayward Intertie pipelines.

In addition, BAWSCA and EBMUD will have to initiate work on all of the necessary agreements, arrangements and regulatory approvals that will need to be in place in order to implement the Pilot Transfer Project.

Outstanding Items Regarding a Long-Term Transfer Arrangement

While many of the same approvals and agreements that are identified for the Pilot Transfer Project will be the same or similar to those needed for a long-term transfer arrangement, it can be anticipated that the level of effort required to implement a longer term transfer will be significantly higher. It is BAWSCA and EBMUD's hope that the successful execution of the Pilot Transfer Project will lay the groundwork for a future regional long-term water transfer project.

Figure ES-5. Estimated Pilot Transfer Project



* Efforts could run concurrently with development of other institutional arrangements, environmental reviews, and regulatory agency approvals that would need to be completed before the pilot water transfer could commence.