RECYCLED WATER SEASONAL STORAGE FACILITY

PLAN OF ACTION

June 19, 2015

Plan of Action

The Las Virgenes-Triunfo Joint Powers Authority (JPA) considers recycled water a valuable resource to be beneficially reused. The JPA produces recycled water at its Tapia Water Reclamation Facility (Tapia) by treating wastewater flows from its service area to meet strict state and federal water quality standards. The amount of recycled water produced at Tapia is relatively constant throughout the year. However, customers' needs or "demands" for recycled water fluctuate significantly during the year.

To balance the constant supply of recycled water with fluctuating demands throughout the year, the JPA has established this Plan of Action to initiate implementation of a recycled water seasonal storage project to help secure the water supply needs of its service area. As directed by the JPA Board the Plan of Action focuses on two scenarios, Scenario 4, the use of Las Virgenes Reservoir for indirect potable reuse and Scenario 5, re-purposing Encino Reservoir for seasonal storage. The Plan is intended to outline the objectives, strategies, and initial actions to move the scenarios forward in a parallel path until a decision is made to focus on a particular scenario. It should be updated periodically to incorporate new information and JPA direction. The JPA Board adopted the following Seasonal Storage Guiding Principles (see Appendix B) which are the foundation for the objectives and strategies in the Plan of Action.

Seasonal Storage Guiding Principles:

1. Maximize Beneficial Reuse
2. Seek Cost Effective Solutions
3. Seek Partnerships beyond the JPA
4. Gain Community Support
5. Govern with a Partnership
6. Be Forward Thinking by Considering the Possibilities

Objectives

1. Minimize reliance on imported water by maximizing the beneficial reuse of recycled water.
2. Achieve a high cost/benefit ratio by utilizing existing facilities where possible and maximizing funding sources.
3. Ensure the proposed project is beneficial to rate payers and other water users.
4. Secure and maintain public acceptance.
5. Develop a proposed project that is sustainable and meets or exceeds regulatory standards.
6. Provide leadership as an environmental steward of the Malibu Creek Watershed.

Strategies

1. Continue to engage Key Stakeholders identified during the Seasonal Storage Plan of Action workshop series and find opportunities to involve them in project planning
2. Expand public outreach program to include the entire service area of the Triunfo Sanitation District and Las Virgenes Municipal Water District.
3. Engage with LADWP and other potential partners to promote interest in the project and find common ground for moving forward.

4. Refine project descriptions and facility requirements and fully identify project costs and issues of implementation.
5. Prepare a funding strategy to identify all potential sources and any special application requirements or deadlines necessary to maximize funding assistance for the proposed project.
6. Initiate environmental documentation immediately once project is defined to support funding applications.
7. Wherever possible, perform actions concurrently to create shovel-ready projects suitable for construction funding.
8. Engage with regulators early to identify special needs or requirements of project implementation..
9. Develop a project schedule and set milestone dates to maintain project momentum. Develop a financial model to track impacts of project implementation on rate payers.

Actions

The following table shows the planned actions for Scenario 4 and Scenario 5 over the next four fiscal quarters. Each action item has been numbered and is referenced in the 1-year plan of action schedule shown below. Workshops are denoted with a “W” prefix, and JPA Board actions denoted with a “B” prefix. An overall project schedule for both scenarios is also included below.

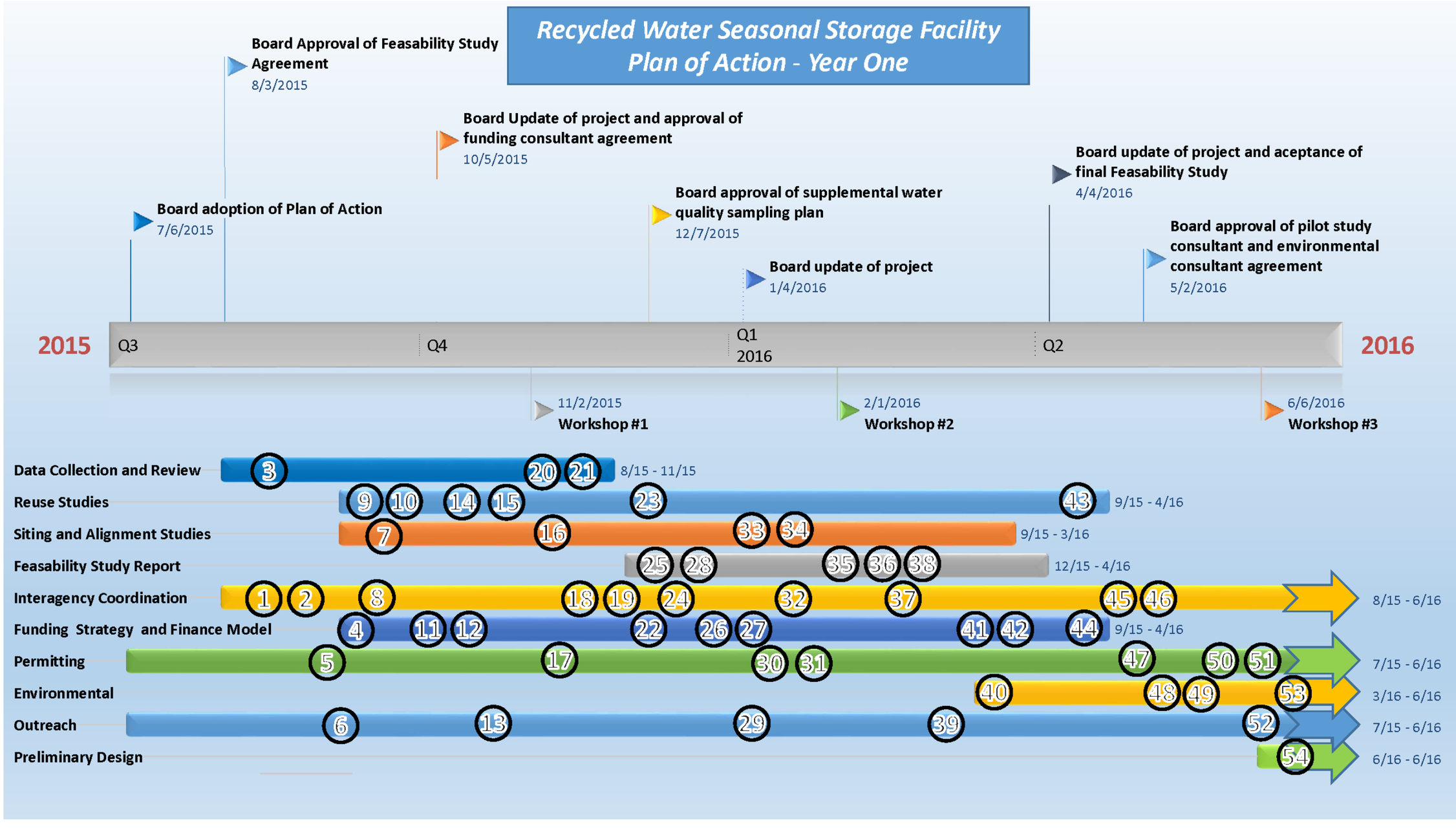
Recycled Water Seasonal Storage Facility Plan of Action
Year One

Item	Action	Remarks	Scenario 4 (Las Virgenes Reservoir)	Scenario 5 Encino Reservoir
Fiscal Quarter 3, 2015				
B1	**Board adoption of the Plan of Action**	**Board adoption of the Plan of Action will initiate evaluation of the selected scenarios.**	✓	✓
1	Initiate exploratory meetings with Metropolitan	These meetings are meant to clarify availability of LRP funding and Metropolitan participation	✓	✓
2	Initiate exploratory meetings with LADWP	These meetings are intended to clarify the positions and potential issues for LADWP regarding LVMWD use of Encino Reservoir facilities.		✓
3	Negotiate agreement for Basis of Design Report (BODR)	This agreement is needed to further define the facilities, costs, and schedules of the selected scenarios.	✓	✓
4	Prepare RFP for selection of funding consultant	A funding consultant is needed to ensure all potential sources of funding are identified and proper steps for application are followed.	✓	✓
5	On-going negotiation with RWQCB for TWRF discharge permit	The RWQCB discharge permit must be renegotiated to continue discharging to Malibu Creek, or to other reservoir locations.	✓	✓
6	Prepare draft engagement plan for Stakeholders	A continuing stakeholder engagement plan is an important aspect of the selected scenarios. The JPA may wish to retain a dedicated consultant and combine this with the public outreach program (see below).	✓	✓
B2	**Board approval of BODR agreement**	**This action item is needed to initiate facility engineering.**	✓	✓
7	Initiate pipeline alignment and hydraulic studies	Hydraulic studies and alternative pipeline alignments are needed to define the size, length, and feasibility of recycled water conveyance to and from the reservoirs.	✓	✓
8	Initiate exploratory meetings with Division of Drinking Water (DDW)	DDW needs to be informed of the selected scenarios and participate in the development of the Concept Study (see below).	✓	✓
9	Initiate RW operational storage study at Las Virgenes Reservoir	Evaluate reservoir volume, inflows, outflows, mixing, and residence time for general conformance with proposed surface water augmentation regulations for potable reuse.	✓	
10	Initiate RW operational storage study at Encino Reservoir	Evaluate reservoir operations for recycled water storage, including inflows, outflows and losses due to evaporation and seepage.		✓
11	Identify modifications to Integrated Regional Water Management Plan (IRWMP)	The IRWMP must be modified to include the selected scenarios to be eligible for Proposition 1 funding.	✓	✓
12	Select and negotiate agreement with funding consultant	Consultant selection will allow funding work to begin in following quarter.	✓	✓
13	Prepare draft public outreach program for project, including NGO engagement	A public outreach program is an important aspect of the selected scenarios, to gain and keep public support.	✓	✓
Fiscal Quarter 4, 2015				
B3	**Board update of project, and approval of funding consultant agreement**	**The Board will receive an update on the selected scenarios each quarter. Consultant should review and edit the Plan of Action to ensure steps are in place to prepare applications and meet submittal deadlines.**	✓	✓
14	Prepare summary of water quality data and supplemental sampling plan	Water quality for the most recent three years will be summarized and a supplemental sampling plan developed for constituents of concern.	✓	✓
15	Prepare supply and demand summary for facility sizing	A daily water balance of recycled water supply and demand for the most recent three years will be prepared to support facility sizing and operational analysis.	✓	✓
16	Identify potential sites for new pump stations, tanks, and/or treatment facilities	Based on pipeline alignment studies (see above), facility siting alternatives will be identified and evaluated.	✓	✓
17	On-going negotiation with RWQCB for TWRF discharge permit, including reservoirs	Discussions may generate the need for additional information and modifications to the Plan of Action.	✓	✓

W1	**Workshop #1**	**Workshop with JPA Board to discuss pipeline alignments, and reservoir operations**	✔	✔
18	Initiate discussions with Calleguas MWD on use of brine line and RW supply	Discussions are needed to determine feasibility of brine disposal and issues with increased recycled water use.	✔	
19	Continue meetings with Metropolitan for LRP funding	Discussions will determine eligibility of either project for LRP funding from Metropolitan	✔	✔
20	Conduct literature search of operational issues for recycled water storage facilities	Similar projects will be identified and reviewed for common issues and potential solutions in the implementation and operation of proposed facilities.		✔
21	Review source water control plans and identify issues in the collection system	The existing sewer source control plans will be reviewed and compared to expectations of DDW to determine if additional efforts are needed to ensure quality for potable reuse.	✔	
22	Prepare Prop 1 funding strategies and schedules for Chapters 5, 6, 7, 8, and 9	The funding consultant will prepare strategies for each chapter of Prop 1, and identify the timelines and application requirements to position the JPA for success.	✔	✔
23	Conduct initial treatment analysis for meeting potable reuse regulations	Based on initial discussions with DDW and blending considerations from the operational storage study of Las Virgenes Reservoir, a conceptual treatment process will be developed.	✔	
24	On-going meetings with LADWP	Continuation of discussions to resolve issues and define the potential use of Encino Reservoir for recycled water.		✔
25	Formulate facility alternatives for each scenario	Facility plans for each project scenario will be developed and refined with staff input.	✔	✔
26	Prepare preliminary project descriptions for coordination with funding efforts	Project descriptions will be prepared to meet the needs of funding applications.	✔	✔
B4	**Board approval of supplemental water quality sampling plan**	**Based on discussions with RWQCB and DDW, supplemental water quality sampling may be needed to support regulatory approval of each scenario.**	✔	✔
27	Submit modification to IRWMP	Project descriptions must be incorporated into the LA IRWMP to allow projects to be eligible for Prop 1 funding.	✔	✔
28	Prepare initial water savings model	Water savings models will be prepared for both scenarios to determine actual water saved by each project.	✔	✔
29	Update website and conduct public outreach event	Continuation of public outreach, including planned event and NGO engagement.	✔	✔
Fiscal Quarter 1, 2016				
B5	**Board update of project**	**The Board will receive an update on the selected scenarios each quarter.**	✔	✔
30	On-going negotiation with RWQCB for TWRF discharge permit, including reservoirs	Continuation of discussions for discharge permit.	✔	✔
31	Prepare Concept Study and submit to DDW	Based on water quality, reservoir blending, and treatment process analysis, prepare and submit a Concept Study to DDW to document approach to potable reuse.	✔	
32	On-going meetings with LADWP	Continuation of discussions to resolve issues and define the potential use of Encino Reservoir for recycled water.		✔
33	Conduct ROW and utility research to evaluate siting and alignment alternatives	Develop detailed information to evaluate alignment and siting alternatives.		✔
34	Conduct initial geotechnical assessments of siting alternatives	Develop detailed information to evaluate alignment and siting alternatives.	✔	✔
35	Develop initial control strategies	Develop control strategies for proposed facilities, including SCADA coordination and staffing requirements.	✔	✔
36	Finalize water savings model	Finalize draft water savings models for each scenario.	✔	✔

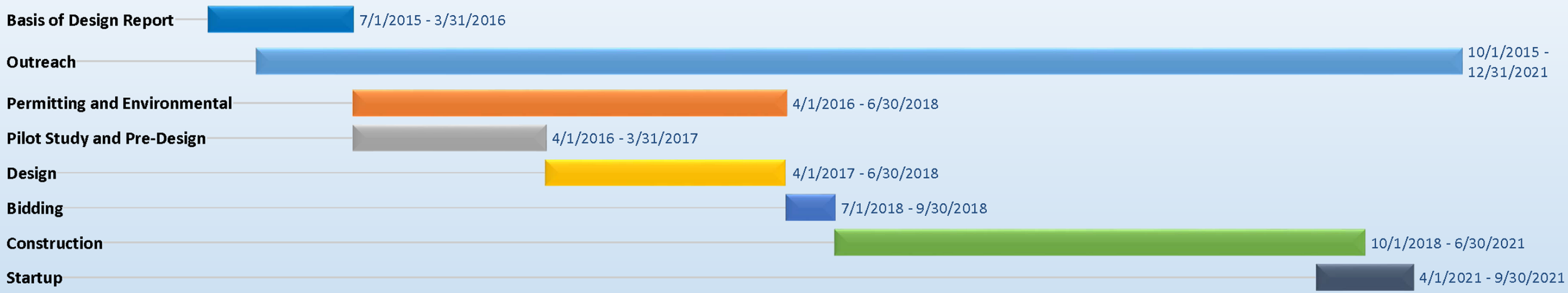
37	On-going discussions with DDW and Calleguas MWD	Meet to address issues with Concept Study and brine disposal.	✔	
38	Prepare schedule and cost analysis for each scenario	Complete project schedules and Class 4 cost estimates of proposed facilities.	✔	✔
W2	**Workshop #2**	**Present draft BODR to Board and stakeholders, including recommendation on the preferred scenario.**	✔	✔
39	Update website and conduct public outreach event	Continuation of public outreach, including planned event and NGO engagement.	✔	✔
40	Prepare RFP for selection of environmental consultant	Prepare scope and RFP for selection of environmental consultant.	✔	✔
41	Prepare financial planning model and CIP development	Financial planning model will provide insight into project timing, benefits of potential grant funding, and impacts on rates.	✔	✔
42	Prepare application for Prop 1 funding (planning)	Based on funding strategies developed earlier, prepare application(s) for submittal for planning elements of work. CEQA must be completed before applications for design and construction can be submitted.	✔	✔
Fiscal Quarter 2, 2016				
B6	**Board update of project, and acceptance of final BODR**	**The Board will receive an update on the selected scenario each quarter. Approval by the Board will allow the selected project to move forward to implementation.**	✔	✔
43	Negotiate agreement for Pilot Study	A pilot study will be needed to satisfy DDW and demonstrate treatment and control for potable reuse.	✔	
44	Submit application for Prop 1 funding for pilot study of potable reuse (if selected)	Pilot studies are eligible for funding under Prop 1.	✔	
B7	**Board approval of pilot study consultant and environmental consultant agreements**	**Board approval will allow CEQA, NEPA, and permitting work to begin. Board will approve initial pilot study plan.**	✔	✔
45	Prepare MOU with LADWP for use of Encino Reservoir	A formal MOU will define the terms of use for recycled water storage at Encino.		✔
46	Prepare annual update to the Plan of Action	The selection of a preferred scenario will allow the Plan of Action to be refined to focus on implementation.	✔	✔
47	Obtain approval of DDW for pilot study testing and sampling protocols	DDW will be engaged throughout the pilot study to ensure key concerns are addressed.	✔	
48	File Notice of Intent and complete initial study	Needed to begin environmental work.	✔	✔
49	Prepare project permitting handbook	Handbook will identify all local, county, state and federal permits required for implementation.	✔	✔
50	Initiate development of pilot plant testing protocols and design	Based on DDW comments, prepare the testing and sampling plan for the pilot plant and preliminary design drawings	✔	
51	Selection of pilot equipment, if Las Virgenes Reservoir scenario is selected	Pilot plant will provide data to obtain agreement with DDW on treatment and control for potable reuse. It may also have substantial benefit for public outreach program.	✔	
52	Update website and initiate public outreach event	Continuation of public outreach, including planned event and NGO engagement, and possibly involving the pilot plant.	✔	✔
53	Define project alternatives for environmental review and begin detailed analysis of biological, cultural, traffic, land use, etc. issues	Environmental studies should be fully underway.	✔	✔
W3	**Workshop #3**	**Conduct stakeholder engagement workshop and initial discussion of environmental concerns**	✔	✔
54	Prepare scope of work for preliminary design of facilities	Preliminary design should be scheduled for completion to coincide with CEQA approval.	✔	✔

Recycled Water Seasonal Storage Facility Plan of Action - Year One

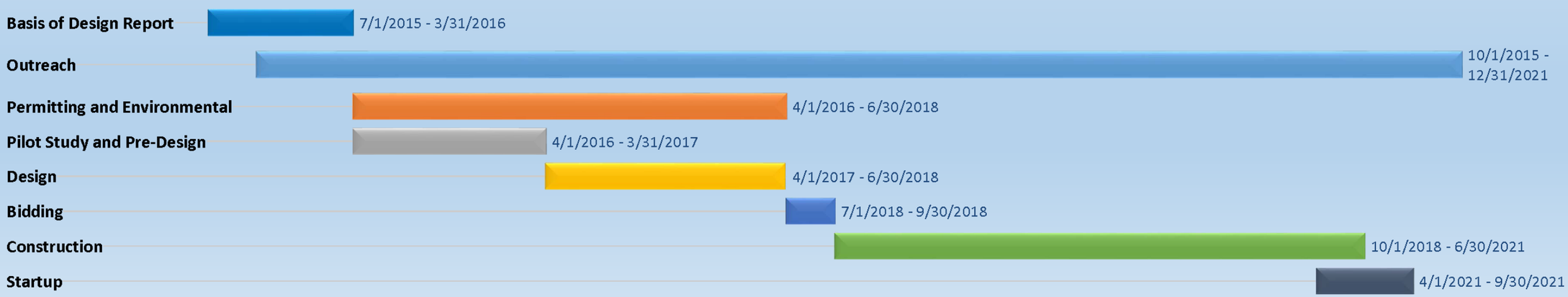


Recycled Water Seasonal Storage Facility Plan of Action – Overall Project Schedule

Scenario 4 – Las Virgenes Reservoir



Scenario 5 – Encino Reservoir



RECYCLED WATER SEASONAL STORAGE FACILTY

PLAN OF ACTION

DEVELOPMENT SUMMARY

June 19, 2015

Contents

Appendices

List of Abbreviations

AF – Acre Feet

BODR – Basis of Design Report

BPAT – Blink Prioritization Assessment Tool

DDW – Department of Drinking Water

DPR – Direct Potable Reuse

IPR – Indirect Potable Reuse

IRWSP – Integrated Regional Water Supply Plan

JPA – Joint Powers Authority

LVMWD – Las Virgenes Municipal Water District

MGD – Million Gallons per Day

MWH – Montgomery Watson Harza

PESTLE – Political, Economic, Social, Technical, Legal, Environmental

TMDL – Total Maximum Daily Load

TSD – Triunfo Sanitation Districts

TWRF – Tapia Water Reclamation Facility

RWQCB – Regional Water Quality Control Board

Project Authorization

The Las Virgenes –Triunfo Joint Powers Authority (JPA) retained MWH to provide professional engineering services to develop a Recycled Water Seasonal Storage Plan of Action. The JPA was established in 1964 by LVMWD and Triunfo Sanitation Districts (TSD) to cooperatively treat wastewater for the two agencies. This work is completed in fulfillment of a contract between JPA and MWH, dated December 8, 2014.

Project Background

Under the JPA, LVMWD and TSD operate and maintain the Tapia Water Reclamation Facility (TWRF). The TWRF has a treatment capacity of 12 mgd and currently treats about 10 mgd or 10,000 AF per year. To meet operational goals, the JPA started developing its recycled water system in the 1970's and since initial construction, has grown to serve roughly 6,000 AF of recycled water demands or 60% of TWRF annual outflows. Another 2,000 AF of recycled water demand must be met with supplemental potable and groundwater supplies. Due to seasonal demand imbalances, the remaining 4,000 AF is released to Malibu Creek. Wastewater inflows in 2035 are estimated to increase to 12 mgd, increasing the seasonal demand imbalance to 7,500 AFY.

Increasing regulatory and environmental requirements, especially stringent Total Maximum Daily Loads (TMDLs) on nitrogen and phosphorus, are making continued seasonal stream discharges to Malibu Creek problematic. At the same time, imported drinking water supplies are increasingly unreliable and costly due to drought, and imported water supply challenges. Over the years, a number of technical studies have been commissioned to investigate possible solutions, but these studies have not yet resulted in a viable path forward. The JPA commissioned the current Study to unify the Board, customers, and stakeholders around a common set of objectives, while allowing a Plan of Action to be developed around the most promising way forward.

Project Kickoff

The kickoff meeting for the Seasonal Storage Plan of Action project took place on December 8, 2014, and included LVMWD, TSD, and MWH staff, as well as the JPA Board of Directors. A slideshow presentation was given that highlighted project goals, structure, and schedule. An initial framework for the project was presented at the kickoff meeting. The project involved three workshop meetings with MWH staff, the JPA Board of Directors, and key stakeholders in the region. This presentation also laid out the first step in the project: individual interviews with each of the JPA Directors by MWH staff. **Appendix A** shows the slides as presented during the kickoff meeting.

Interviews with JPA Board

MWH conducted individual interviews with each of the JPA Directors in order to capture goals for the project, as well as capture previous work done on the project and lessons learned from previous projects. JPA Directors were interviewed on December 18th and 19th of 2014. Interviews were conducted over the period of one hour per interview and notes were taken to capture the Directors' responses. This information was used in subsequent phases of the project to inform the project team as to goals and limiting factors in delivering a Plan of Action upon project completion. In addition to the interviews, the JPA Board has also established a set of *Recycled Water Seasonal Storage Guiding Principles*. Common input received from the interviews and the Guiding Principles are presented in **Appendix B**.

Public Workshop Overview

The main activity of the Seasonal Storage Plan of Action project was to conduct public workshops with the JPA Board of Directors, LVMWD and TSD staff, and key stakeholders in the project. These workshops addressed project goals, potential implementation scenarios for the project, and issues that may impact project delivery. In order to capture this information and conduct the public workshops in an organized manner, the MWH team employed a PESTLE and BPAT management exercise. PESTLE, which stands for *Political, Economic, Social, Technical, Legal,* and *Environmental,* is a structured exercise that asks participants to list issues as they pertain to each of the six categories. This exercise is meant to foster participation from all workshop attendees, and to structure concerns into the six unique categories. These issues are then prioritized during the BPAT exercise. BPAT, which stands for *Blink Prioritization Assessment Tool,* asks participants to rank issues generated during the PESTLE exercise into order of importance, and gives a framework on what issues are most important to project success.

Public outreach for this project was divided into three workshops, each representing a distinct phases of the public acceptance process. The initial workshop focused on ***Context***. By taking the workshop participants through the PESTLE exercise in the first workshop, MWH and the LVMWD/TSD staff were able to get a better context of the issues surrounding the project. The second workshop focused on ***Convergence***. Using the BPAT process, the MWH team used the second workshop to converge the issues brought up during the PESTLE exercise into a select grouping of three to four issues per category that are most important to project success. Finally, the third workshop focuses on ***Affirmation***. The MWH team used the issues generated from the second workshop to develop several project configurations or ***Scenarios*** that were evaluated on their ability to deliver the project goals and overcome the project obstacles delineated in the first two workshops. The workshop participants are then able to view the project alternatives and provide feedback on them in order to affirm the issues have been addressed.

Workshop 1

Workshop #1 was held at the LVMWD Headquarters' boardroom in Calabasas, Calif. on Thursday, January 29, 2015 at 4:00pm. Workshop #1 focused on Context and collecting participant's concerns and thoughts of the overall project. The goal of the initial workshop was to introduce the public and key stakeholders to the project goals, project methodology, and to conduct the PESTLE exercise. The workshop included a slide show that provided project participants some background as to the state of water reuse, including a discussion of Direct Potable Reuse (DPR) and Indirect Potable Reuse (IPR). The presentation also discussed case studies in water reuse such as the Pure Water project in San Diego, Calif., and went into the current state of the LVMWD/TSD reuse system. **Appendix C** shows the slideshow as presented to the workshop participants.

PESTLE Exercise

The PESTLE exercise was conducted by MWH at Workshop #1. The MWH team formed six groups amongst the project participants and began soliciting issues for project success from the workshop attendees. Once the groups worked together to generate issues, the groups were then brought back together and PESTLE issues were listed on large presentation boards by the MWH team. These issues were discussed in order to capture which PESTLE category they best fit with and to group repeated issues together. These issues were later used as the basis with which to form a BPAT prioritization list in Workshop #2.

PESTLE Results

Once PESTLE issues were collected and grouped in Workshop #1, they were further organized and consolidated by the MWH team. A final list of all issues generated during the PESTLE exercise was generated and disseminated to the LVMWD project team for inclusion onto the project website (http://www.lvmwd.com/your-water/recycled-water/recycled-water-seasonal-storage). **Appendix D** shows a full list of the PESTLE issues generated during Workshop #1.

Workshop 2

Workshop #2 was the Convergence phase of the project, where issues developed previously were honed into performance metrics. Workshop #2 took place on Wednesday, February 11, 2015 at 4:00 pm, and provided an opportunity for the workshop attendees to review the PESTLE issues they had generated previously, as well as an opportunity for the MWH team to give presentations on topics chosen by the participants in the previous workshop. MWH presented information on the Malibu Creek watershed, as well as information on the role seasonal storage plays in a wastewater and recycled water system. Core issues of available recycled water supply, recycled water demand, and the imbalance between the two are key to understanding the need for seasonal storage. **Appendix E** shows the slides created for Workshop #2.

Four Concepts for Seasonal Storage

In addition to topic presentations and the BPAT exercise, four conceptual scenarios were also presented for participant feedback during the second workshop. The four scenarios illustrated the range of management strategies for addressing TWRF discharge to Malibu Creek, and included:

- Regional Water Quality Control Board (RWQCB) TMDL Compliance
- Recycle and Export
- Seasonal Storage
- Potable Reuse

These scenarios, presented in **Appendix F**, incorporate concepts of treatment, storage, and the development of new recycled water demands, which alone or in combination, can be used to achieve balance in the supply and demand for TWRF water. The Scenario Concepts were discussed during the workshop in an effort to better understand the stakeholders preferences and concerns regarding these conceptual management strategies. This information was considered when these Scenario Concepts were further developed for Workshop #3.

BPAT Voting Results

BPAT was used as a tool to take the large amount of information generated during the PESTLE exercise and distill it into the key issues for project success. The BPAT exercise was completed in two parts. The first part began with splitting the participants into four groups. Each group was given the full list of PESTLE issues as presented in **Appendix D**. Each group was asked to choose what they considered the three most important issues under each PESTLE category. The criteria for selecting these issues were factors that may affect project implementation. From this initial prioritization, the second phase of the exercise was to combine all issues selected by the four groups and create voting ballots for each PESTLE category. The participants were then given electronic polling devices and asked to vote for their most important issues. The results of this voting exercise were captured using TurningPoint voting cards and software and are presented in **Appendix G**.

The BPAT exercise yielded 19 issues, three for each PESTLE category except for "Environmental" which had four issues. These issues were used to refine and expand the number of project scenarios. They were also used to assess and rank the risk that each scenario would or would not satisfy that issue. These rankings were completed by MWH with input from LVMWD management staff. Each project concept scenario presented in Workshop #3 shows these rankings as red (high), yellow (moderate), and green (low), denoting the risk of not satisfying the PESTLE issue.

Workshop 3

Workshop #3 took place on Wednesday, March 18, 2015 at 4:00 pm, and included a short introduction and recap of previous workshops. The slides presented for Workshop #3 are shown in **Appendix H**.

Workshop #3 represented the ***Affirmation*** phase of the Seasonal Storage project. In this phase, the issues, rankings, and information collected during the first two workshops and Board of Director interviews were used to present six project scenarios. Each of these scenarios illustrated a plan for the future management of the JPA wastewater and recycled water resource, along with an assessment of how well they satisfied the PESTLE/BPAT issues, an approximate construction and operating cost, a schedule, and summary of tasks for implementation. The scenarios were shown on presentation boards in graphic format.

Each of the six alternatives presented to the participants of Workshop #3 are shown in **Appendix I**. A brief description of each of these scenarios is provided below.

Scenario 1 – TMDL Compliance with Advanced Nutrient Removal

This scenario would involve construction of an advanced nutrient removal facility of about 6 mgd capacity to meet more stringent future nutrient discharge requirements established by the RWQCB. This scenario would also require an associated brine line to convey concentrated brine to disposal, and a return pipeline to convey treated water back to the current point of discharge. This scenario does not result in additional water recycling and continues the current discharge to Malibu Creek.

Scenario 2 – New Seasonal Storage Reservoir and Reuse Partner

Scenario 2 calls for constructing a new recycled water storage reservoir to meet peak demands in the existing purple pipe system and store recycled water during times of low demand. This option would require a reuse partner or other new recycled water demand in order to fully balance seasonal differences in supply and demand.

Scenario 3 – New Seasonal Storage Reservoir and Direct Potable Reuse

Scenario 3 is similar to Scenario 2 in that it also calls for constructing a new recycled water storage reservoir. However, this scenario would utilize direct potable reuse (DPR) to create a new recycled water demand. Recycled water would be treated through a small DPR water treatment plant of about 6 mgd and delivered directly to the potable water distribution system. Regulations regarding DPR are still under development, so a temporary reuse partner may be needed until DPR use is accepted in the State of California.

Scenario 4 – Las Virgenes Reservoir (IPR)

This scenario would utilize LVMWD's existing potable water reservoir, Las Virgenes Reservoir, for seasonal storage and as an environmental buffer for indirect potable reuse (IPR). Recyceld water from TWFP would be conveyed through existing and expanded piping to a new IPR Water Treatment Plant of about 6 mgd capacity before being conveyed to Las Virgenes Reservoir. Once in the reservoir, the water would be mixed with existing surface water

supplies and eventually treated by the existing potable water treatment plant for delivery to the potable distribution system. This would be less reliant on regulation as IPR is already an accepted water resource practice in California.

Scenario 5 – Encino Reservoir for Seasonal Storage and Reuse Partner

Scenario 5 proposes the JPA use the currently inactive Encino Reservoir, owned by the Los Angeles Department of Water and Power (LADWP), in a scenario similar to Scenario 2. Water would be stored in Encino Reservoir during times of low demand, and used in peak months. This would also require a reuse partner, as well as a partnership with the Los Angeles Department of Water and Power (LADWP) for use of the reservoir.

Scenario 6 – Regional IPR with Encino Reservoir

Scenario 6 calls for using Encino Reservoir for seasonal storage and as an environmental buffer for indirect potable reuse (IPR). Recycled water from TWFP would be conveyed through new and expanded piping tot a new IPR Water Treatment Plant, and then conveyed to Encino Reservoir where it would be mixed with surface water supply. Water would be withdrawn and treated in a refurbished water treatment plant (also owned by LADWP) and conveyed back to the potable distribution system, or possibly sold to other agencies or cities in the San Fernando Valley.

Group Review and Comment

The scenarios described above and shown in **Appendix I** were displayed on easels for group review and comment during Workshop #3. The participants were split into six groups and each group viewed one of the Scenario boards for a period of 15 minutes. Participants elected a group leader and they took notes for the group, listing potential issues and listing their overall thoughts. Groups moved from board to board until they had seen all of them, and their notes were collected. **Appendix J** shows the notes taken by the project participants. These notes were considered by the JPA Board of Directors, who ultimately made the decision of which alternative scenario(s) to pursue.

Preferred Alternative

JPA Board of Directors Meeting April 6, 2015

The JPA Board met April 6, 2015 in order to discuss the previous workshops and choose a direction for the LVMWD and TSD customers. The board selected, by unanimous decision, to further investigate Scenario 4 and Scenario 5 for possible adoption. A plan of action for moving forward on the Recycled Water Seasonal Storage Project has been prepared from Workshop materials and discussion and is presented as a standalone document at the beginning of this report.

Appendix A - Kickoff Slides

Recycled Water Seasonal Storage Facility Plan of Action

Recycled Water Seasonal Storage Facility Plan of Action

Comprehensive Water Resource Strategy

Recycled Water Seasonal Storage Facility Plan of Action

Not an engineering or design study, but a facilitated exercise in ***communication and thought leadership***

Understanding

Future
- Roadmap

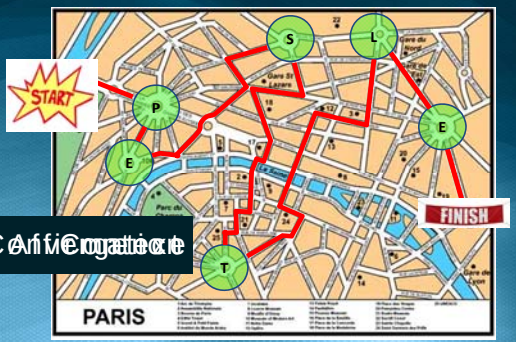
Present
- Guiding Principles

Past
- Reports……
- Studies……

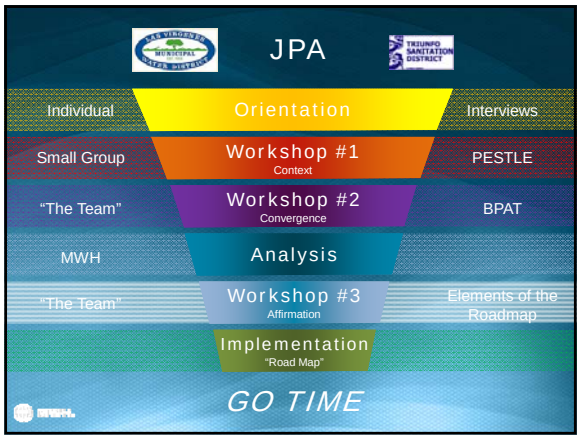
There are a wide variety of paths to choose from…

…the correct path for your project may not always be the obvious one.

There are many ways to navigate your way through the challenges



Communication



Tentative Schedule

Interviews with JPA Board Members	December 18-19
Workshop #1	January 14
Workshop #2	January 30
Working Group and Technical Group Meetings	February 5
Working Group Meeting #2	March 5
Workshop #3	March 18
Board Presentation	April 6

Questions / Comments


EXERCISE

Appendix B – JPA Recycled Water Seasonal Storage Project Guiding Principles

Recycled Water Seasonal Storage Project Guiding Principles

A seasonal storage reservoir for recycled water would allow the JPA to balance supply and demands. Excess recycled water could be placed in the reservoir during the winter months for use during the high demand summer period. Additional demands for recycled water would need to be developed to ensure that the reservoir could be drawn down each year, making room for needed storage in the wintertime. Since the first Recycled Water Master Plan was completed in the 1970s, seasonal storage has been envisioned to fully use the JPA's recycled water. Most recently in 2012, the JPA completed a Recycled Water Seasonal Storage Feasibility Study.

The JPA desires to fully and beneficially reuse its recycled water by moving forward with investigation of seasonal storage guided by the following principles.

1. ***Maximize Beneficial Reuse by:***

1.1. Being an environmental steward
1.2. Reducing existing potable water use
1.3. Reducing discharge to Malibu Creek and Los Angeles River
1.4. Encouraging infill use in both service areas
1.5. Providing regional benefits
1.6. Creating water supply reliability

2. ***Seek Cost Effective Solutions by:***

2.1. Seeking funding from grants, matching funds and partnerships
2.2. Engaging permitting and regulatory agencies early and often
2.3. Each partner sharing in outside funding
2.4. Each partner funding their share
2.5. Being on time, on schedule and within budget
2.6. Analyzing impacts and benefits of the project from each partners perspective

3. ***Seek Partnerships beyond the JPA by:***

3.1. Considering multiple uses such as;
3.1.1. Recreation
3.1.2. Education
3.1.3. Creation of open space
3.2. Engaging stakeholders early and often
3.3. Considering additional partners that will purchase recycled water

4. ***Gain Community Support by:***

4.1. Engaging and educating the public and stakeholders
4.2. Being transparent

4.3. Making public safety a top priority

5. Govern with a Partnership by:

5.1. Using the JPA Agreement as a guiding document

5.2. Communicating openly and frequently

5.3. Being committed to the project

5.4. Equitably allocating costs and sharing benefits from both partners perspective

6. Be Forward Thinking by considering the possibilities of:

6.1. Expanding the recycled water system beyond the JPA service area

6.2. Exterior residential reuse

6.3. Exterior and interior use for new and remodeled commercial projects

6.4. Indirect potable reuse

6.5. Direct potable reuse

Appendix C - Workshop #1: Slides

Recycled Water Seasonal Storage Facility Plan of Action

Comprehensive Water Resource Strategy

Recycled Water Seasonal Storage Facility Plan of Action

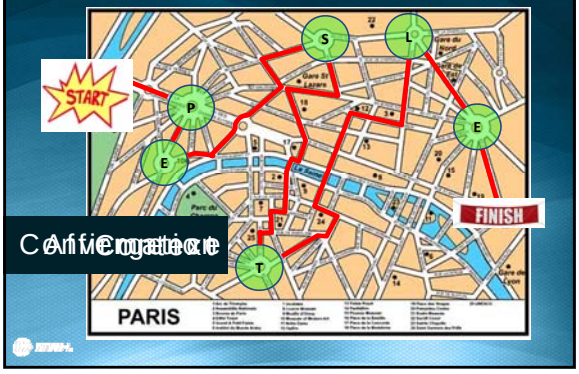
Not an engineering or design study, but a facilitated exercise in

communication and thought leadership

There are a wide variety of paths to choose from...

...the correct path for your project may not always be the obvious one.

There are many ways to navigate your way through the challenges



Confirmation

Affirmation

JPA

Individual	Orientation	Interviews
Small Group	Workshop #1 Context	PESTLE
"The Team"	Workshop #2 Convergence	BPAT
MWH	Analysis	
"The Team"	Workshop #3 Affirmation	Elements of the Roadmap
	Implementation "Road Map"	

GO TIME

Workshop 1 - Agenda

Time	Item
4:00 - 4:30	Introduction to Workshop, presented by Dr. Steve Weber
4:30 - 5:00	Water Reuse Presentation Part 1, presented by Dr. Joseph Jacangelo
5:00 - 5:15	Break, Dinner is served
5:15 - 5:45	Water Reuse Presentation Part 2, presented by James Borchardt
5:45 - 6:00	Break
6:00 - 7:45	PESTLE Exercise, by Dr. Steve Weber and Bob Armstrong
7:45 - 8:00	Closing and Next Steps, presented by Dave Pedersen

JPA Board Member Interview Results

- **Key Words and Phrases**
  - Customers
  - Cost Effectiveness
  - Using the most of existing resources
  - Malibu Creek
  - Expanding recycled water use
  - Innovative forms of reuse
  - Outreach

EXERCISE

Water Reuse Presentation
Part 1

Dr. Joseph G. Jacangelo
MWH
The Johns Hopkins Univ. Bloomberg School of Public Health

What is Water Reuse?

The reclamation and treatment of impaired waters for the purpose of beneficial reuse.

Approximately 90% of Water Reuse Occurs in Four States

Adapted from Miller, 2013

Largest Water Reuse Programs in the US

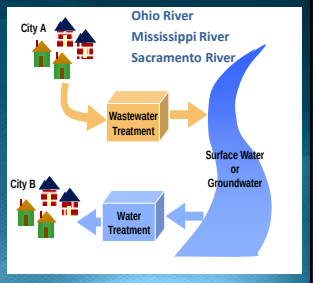
- OCWD/OCSD
- Central/West Basin
- MWD
- San Jose
- LACSD
- San Diego County
- Irvine Ranch
- Dublin San Ramon
- EBMUD
- Orlando
- Scottsdale
- Phoenix
- San Antonio
- El Paso
- Tarrant Regional
- St. Petersburg
- Pinellas County
- King County (WA)
- Austin
- Santa Rosa
- Las Virgenes-Triunfo JPA
- SNWA/LVVWD

Categories of Reuse

- Unplanned or Incidental Reuse
- Non-Potable Reuse
  - Examples: irrigation and industrial reuse
- Indirect Potable Reuse
  - GWR OCWD/OCSD
  - West Basin MWD
- Direct Potable Reuse
  - Windhoek, Namibia
  - Big Spring, Texas

Unplanned / Incidental Reuse

- 25 DWTPs recently studied
- Unplanned reuse ranged from 7 to 100% under low stream flow conditions
- WW flows increased 68% between 1980 and 2008



Non-Potable Reuse (Title 22)

Regulations and Guidelines Vary Depending on Type of Reuse

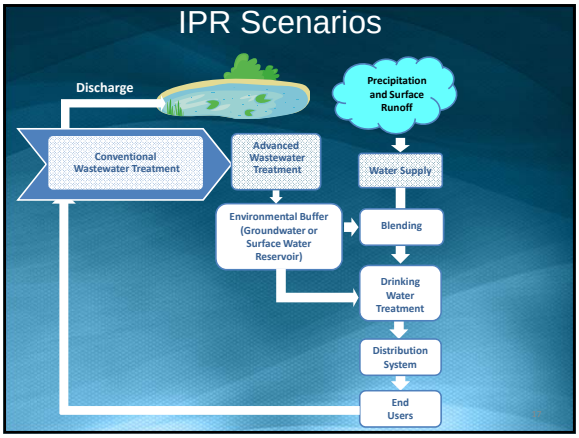
- Direct Potable Reuse
- Indirect Potable Reuse
- Agricultural Reuse on Food Crops
- Unrestricted Recreational Reuse
- Unrestricted Urban Irrigation Reuse
- Restricted Urban Irrigation Reuse
- Restricted Recreational Reuse
- Industrial Reuse
- Environmental Reuse
- Agricultural Reuse on Non-food Crops

More Stringent Regulations

Less Stringent Regulations

Adapted from Miller, 2014

IPR Scenarios



The Value of the Environmental Buffer

- Detection/Response Time
- Contaminant Removal
  - Chemical
  - Microbial
- Dilution and Blending
- Perception

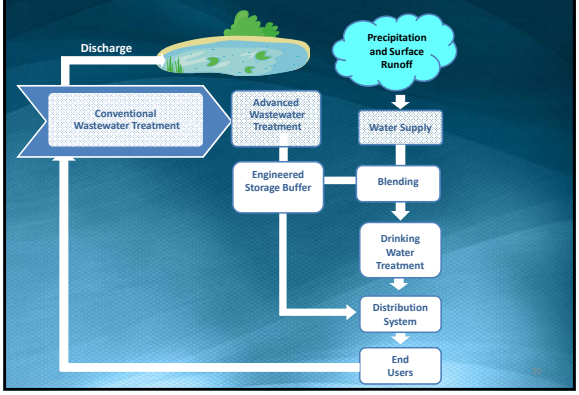
Adapted from Miller, 2014; Steinie Darling, 2014

What is Direct Potable Reuse?

Introduction of highly-treated reclaimed water directly into the raw water supply immediately upstream of a water treatment plant, or directly into the distribution system downstream of a water treatment plant.

Source: California Direct Potable Reuse Initiative Research Plan, 2014

DPR Scenarios

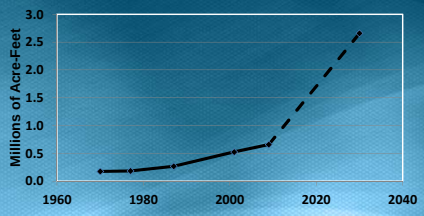


DPR vs. IPR

- Eliminates the need for an environmental buffer and greatly increases potential for reuse
- Decreases energy and costs and GHG emissions associated with pumping
- Eliminates many costs and disruption of pipe installation (digging up streets)
- Maintains very high water quality

California's Recycled Water Goals

California has adopted a goal of increasing the use of recycled water from approximately 0.65 MAF per year to 1.5 MAF/year by 2020 and then to 2.5 MAF/year by 2030 – approximately a four-fold increase over the next 16 years.

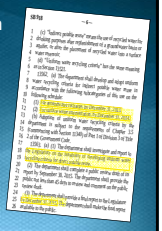


Adapted from Miller, 2014

From Miller, AWWA DPR Webcast, 2014

Impetus Behind the Current DPR Initiative

- Signed into law on September 30, 2010 (sponsored by State Senator Fran Pavley.)
- Requires DDW to adopt regulations for surface water augmentation by December 31, 2016, if an expert panel convened pursuant to the bill finds that the criteria would adequately protect public health.
- Requires DDW to *investigate the feasibility of developing direct potable reuse* and to provide a final report to the legislature by December 31, 2016.



Adapted from Miller, 2014

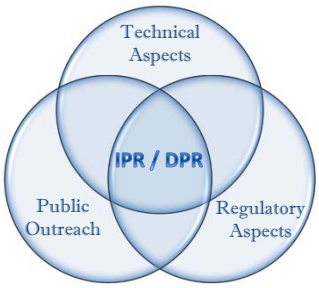
Direct Potable Reuse Initiative

- DPR became rallying cry for the entire water and water reuse community.
- Approximately 50 contributors.
- Approximately $6 M raised (cash).
- Additional $2.1 M granted by State of California for DBP demonstration project.

Current Research in Water Reuse

- Development of the "Engineered Buffer" concept
- Regulatory support concepts for microorganisms and chemicals
- Required safety factors to protect public health
- New sensors and monitoring technologies of water quality
- Brine disposal technologies
- Non-membrane treatment approaches
- Public outreach and communication

Elements of a IPR / DPR Program



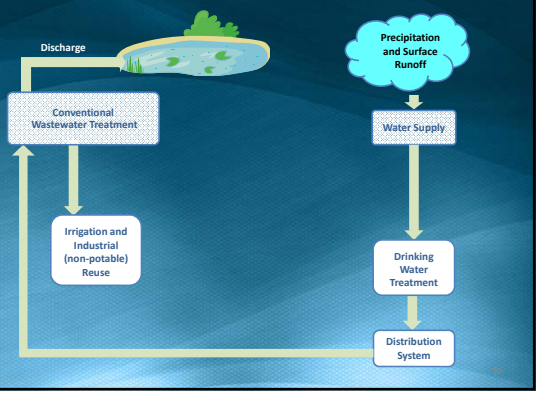
Questions?

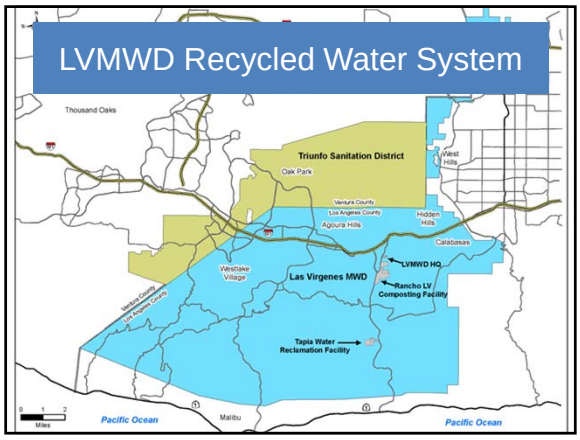
BREAK

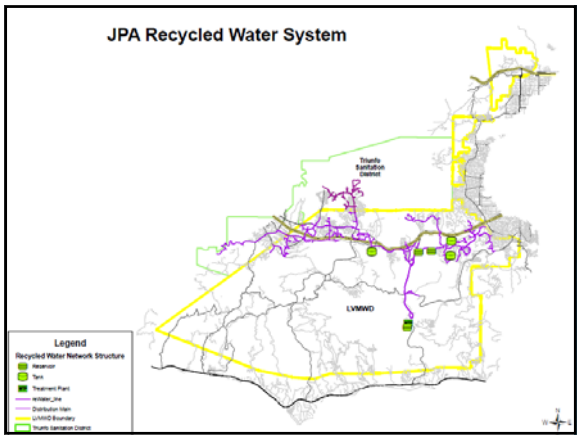
Water Reuse Presentation
Part 2

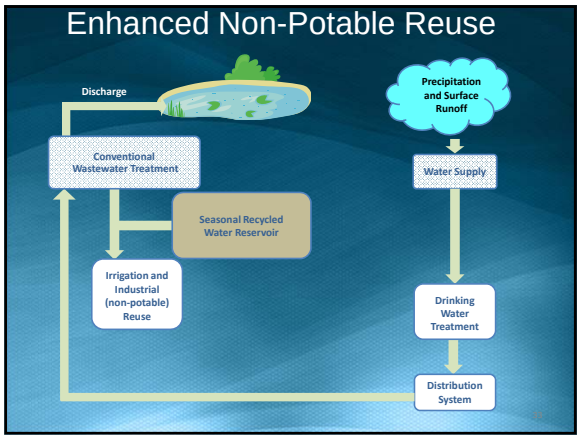
Jim Borchardt
MWH

Non-Potable Reuse

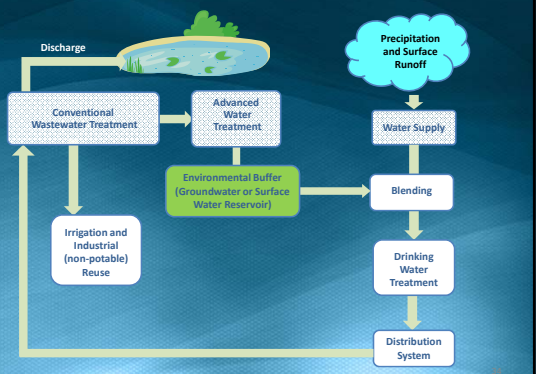



LVMWD Recycled Water System
Thousand Oaks
Triunfo Sanitation District
Oak Park
West Hills
Ventura County
Los Angeles County
Agoura Hills
Hidden Hills
Calabasas
LVMWD HQ
Westlake Village
Las Virgenes MWD
Rancho LV Composting Facility
Tapia Water Reclamation Facility
Malibu
Pacific Ocean
Pacific Ocean


JPA Recycled Water System
Triunfo Sanitation District
LVMWD
Legend
Recycled Water Network Structure


Enhanced Non-Potable Reuse
Discharge
Precipitation and Surface Runoff
Conventional Wastewater Treatment
Water Supply
Seasonal Recycled Water Reservoir
Irrigation and Industrial (non-potable) Reuse
Drinking Water Treatment
Distribution System

Indirect Potable Reuse (IPR)

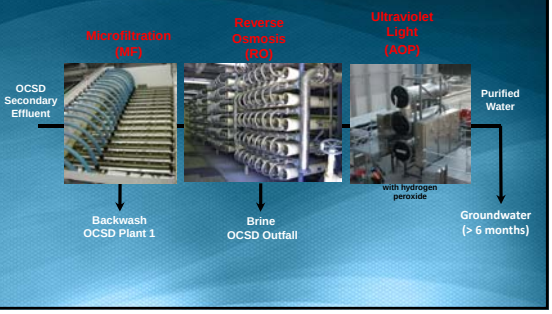


Indirect Potable Reuse Examples

- GWR – OCWD/OCSD
- West Basin MWD
- City of San Diego
- Irvine Ranch WD
- Dublin-San Ramon WD
- City of San Jose

Example: Indirect Potable Reuse

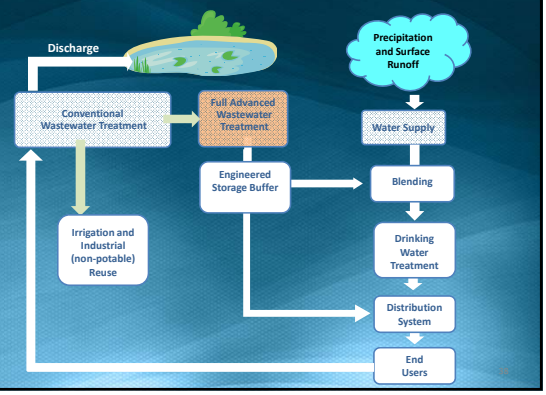
GWR Advanced Water Treatment (AWT)



RO Concentrate Disposal Options

- Surface water discharge
- Discharge to wastewater collection system
- Deepwell injection
- Evaporation ponds (without and with greenhouse)
- Land application
- Zero liquid discharge (ZLD)
- RO concentrate line to ocean

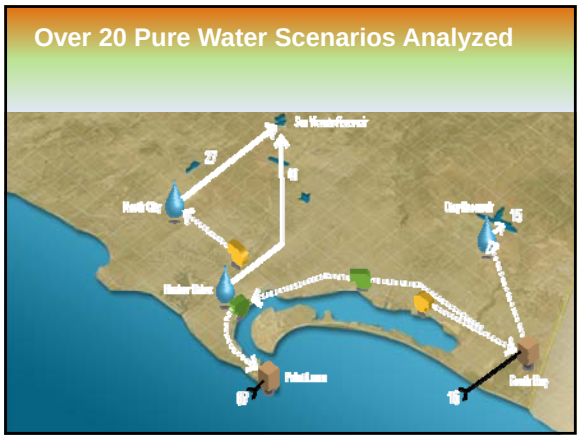
DPR Scenarios



Engineered Direct Potable Reuse Examples

- Big Spring, Texas
- Wichita Falls, Texas
- Cloudcroft, New Mexico
- Windhoek, Namibia

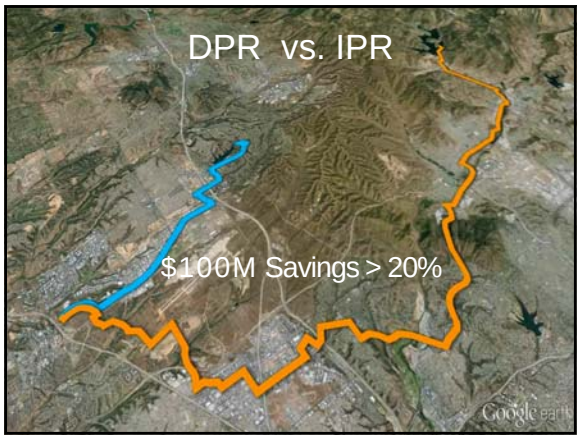

San Diego: Journey to Pure Water
1998
1998
2011
2014


Over 20 Pure Water Scenarios Analyzed
San Vicente Reservoir
27
41
North City
Otay Reservoir
15
Harbor Drive
Point Loma
South Bay
87
16


San Vicente Reservoir
27
41
North City
Otay Reservoir
15
Harbor Drive
Point Loma
South Bay
87
16


Proposed AWT
MF/RO
Post Treatment
UV


North City Technical Aspects
NCWRP Expansion
Proposed Advanced Water Treatment Facility
Pipeline & Reservoir



Summary of Water Reuse Options

- Unplanned or Incidental Reuse
- Non-Potable Reuse
  - Purple Pipe System
  - Seasonal Storage
- Indirect Potable Reuse
  - Advanced Water Treatment
  - Environmental Buffer
- Direct Potable Reuse
  - Full Advanced Water Treatment
  - Engineered Buffer

Questions?

BREAK

PESTLE EXERCISE

Political
Economic
Social
Technical
Legal
Environmental

PESTLE EXERCISE

NEXT STEPS:

TECHNICAL PRESENTATIONS FOR WORKSHOP #2

Tentative Schedule

Interviews with JPA Board Members	December 18-19
Workshop #1	January 29
Workshop #2	February 11
Working Group and Technical Group Meetings	February
Working Group Meeting #2	March
Workshop #3	March
Board Presentation	April

Questions / Comments / Adjourn

Appendix D - Workshop #1: PESTLE Issues from Attendees

Workshop #1 PESTLE Issue Summary

POLITICAL

- Get out of Malibu Creek
- Re-use 100% of our water
- Leadership
- Board unity/consistent leadership
- Disconnect among rate payers, regulators, & utilities
- Public stakeholder buy-in
- Public support for project
- Stakeholder speak as one
- Support from environmental groups
- Project gets built and not bogged down by regulations
- Regulators support for project
- Changing Public Perception of DPR
- Partnership
- Regional Partnerships
- Public acceptance
- Create a project with large support
- Partnerships?
- Integrate resource concerns
- History of disagreement
- Election timing
- Active public
- Growth/No growth
- External relationships and partnerships
- Land use planning/zoning
- Increase level of reuse
- Reuse, not waste

ECONOMIC

- Maximizing resources
- Avoid stranded costs
- How to price recycled water
- Funding
- Maximize the use of an imported and costly resource
- How to pay
- Cost/benefit
- Develop a plan for using reclaimed water that has benefits proportional to its costs
- Qualify for proposition 1 Section 8 money
- Impact on rate payers
- High water rates
- Cost of project
- Equitable cost/revenue sharing between LVMWD:TSD
- Funding and permitting an alternative to the creek
- Government financial support
- Affordable project for rate payers
- Recycled water storage cost
- Timing
- Banking future costs, pricing strategies
- Alternative financing P3
- Do we harden demand by adding purple pipe?
- Viable NPR customers
- Cost
- Financially feasible
- Efficient use of money
- Cost effective
- Bad science drives up costs
- Cost effective
- Project cost $$$$
- Funding
- Affordable water rates
- Pumping cost
- Efficient use of public money
- Beneficial to rate payers
- TMDL compliance/penalties
- Ability to finance
- Land acquisitions and scale
- Land exchanges
- Local job growth
- Trickle down impact of drought
- Aging infrastructure
- USACE funding without earmarks
- Title XVI
- Water bond
- Drought grants/IRWM page.84
- SRF $

SOCIAL

- Sustainable
- Sustainable water supply
- Future water supply
- Perpetuating bad habits
- End user reuse gray
- Water literate public
- Public support
- Yuck factor
- Public perception and acceptance
- Include recreation
- Create a water recreation area
- Public recreation reservoir
- Health & safety (env)
- Visual impact of infrastructure
- Timing
- Reduced portable imports
- Public awareness of costs/benefits
- Get community investments buy in
- Public Health
- Project protest public health
- Make DPR possible
- Eliminate unreasonable use and waste of water
- Maximum benefit of waste water
- Building resiliency in time of drought
- Incentives – change behaviors
- Community public support
- Consensus
- Improve conservation awareness of the general public
- Public support
- Public acceptance
- Outreach
- Public perception
- Partnerships
- Transparency
- Community disruptions
- OAC's/Env.justice
- Employment
- Property values
- Rural culture
- Need for education
- Lack of PR plans
- Engage community in process

TECHNICAL

- Managing high flows to the plant
- Brine disposal
- Decentralize treatment infrastructure
- Store on existing hardscapes
- Large tanks on LVMWD spreading growth feasible for some storage
- How to best divide NPR/IPR/DPR recycled water use
- Safety (water safe for designated use
- Hybridize soft and hard watersheds
- Pipeline length (getting the water there)
- Hardened recycled demand committed recycle uses
- Innovation
- Available customers for additional RW
- Affordable O &M costs
- Landscape irrigation
- Improved pervious surfaces and storage
- Obsolescence of Technology
- Local conditions verses one solution fits all
- Technology verses practical solutions
- Beneficial reuse
- Reliability (water Supply)
- Local water reliance
- Reliable water
- Resiliency during drought
- Save drinking water
- Piping mistakes---Cross contamination…
- Safe water
- Clean water
- Storm water recharge and reuse as part of portfolio
- Limited recycled water supply
- Can we really get of the creek year-round?
- Settleable solids
- Eliminating dry water run off
- Qualifications of benefits
- Correct mix of storage disposal & DPR
- Deciding on an alternative to the creek
- Modeling realistic solutions to water scarcity
- Seasonal & Diurnal equalization
- Thorough project ideas
- Alternatives to MF/RO/AOP
- Certainty (Actions vs changing regs)
- Balance supply and demand
- Goal=100% beneficial reuse
- TMDL
- No GW storage
- Unique geology
- Seismicity
- Ecosystem
- Constrained alignments
- Topography
- Non-point source solution
- Maint. flow to creek
- Reliance on imported water
- Poor lacking GW
- Storm water
- Reduce discharges to Malibu Creek “O”

LEGAL

- Regulatory constraints & framework
- Regulations
- Permitting
- Zero discharge to Malibu Creek
- Public health
- Already protected public parklands cannot be default site for reservoir
- Keeping the Tapia plant permits
- TMDL compliance in Malibu Creek and Santa Monica Bay
- Permitting in creek. NPDES
- ESA
- SWRCB/RWQCB
- Voting requirements
- Partnerships with others

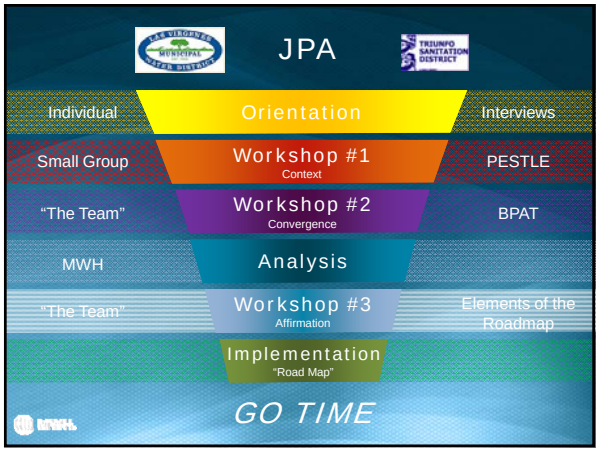
ENVIRONMENTAL

- Maintain fish flows
- Ocean water quality is getting/improving better because MS 4 progress
- Maximize resources
- Landscape native plants
- No grass
- Invasive species
- Healthy Malibu Creek ecosystem
- Red legged logs recover in water shed
- Steal head restoration/ protection must not be jeopardized
- Approximate Natural Native Hydrological System
- Improve the Malibu Creek water system
- Environmental stewardship/leadership
- Provide habitat for local Fauna, and Flora
- No water to Pacific
- No water in Malibu Creek
- Dealing with growth
- Resilience
- Regulations (all)
- Permitting requirements
- Take a the long view
- Resilience
- Conservation
- Conservation first
- Clean water in Malibu Creek and Santa Monica Bay
- Greenhouse gas
- Siting of reservoirs and other infrastructure
- Runoff
- Protecting Malibu
- Regulatory Challenges
- Revise ESA no treated H20 in creek
- Protecting beneficial uses of Malibu Creek
- Creek water quality
- Conservation
- Water Conservation
- Need reduction
- Landscape consumption 50%-70% of total
- Minimize runoff
- Unseasonal runoff
- Sustainability
- Clean drinking water
- Consider upstream changes over time (at user) point
- Lessening environmental impacts
- Environmental protection
- Environmental impacts
- Clean water
- Retire with knowing I contributed to the environment
- I believe that WQ in Malibu would improve with “more trees” and “more shad
- CEQA/NEPA
- ESA
- Water Quality in creek
- Fire prone
- Noises
- Wildlife Corridor
- Drought
- Flooding
- Dam failure risk
- Sediment transport
- Odor
- Nearby landfill

Appendix E - Workshop #2: Slides

Recycled Water Seasonal Storage Facility Plan of Action

Comprehensive Water Resource Strategy



Workshop 2 - Agenda

Time	Item
4:00 – 4:15	Welcome and Recap, presented by Dr. Steve Weber
4:15 – 4:45	Introduction and Water Quality, presented by Dave Pedersen
4:45 – 5:00	Technical Presentation: Seasonal Storage, presented by James Borchardt
5:00 - 5:30	BPAT Part 1
5:30 - 5:45	Break, Dinner is served
5:45-6:15	Concept Reuse and Storage Scenarios
6:15 - 6:30	Break
6:30 - 7:30	BPAT Part 2
7:30 - 8:00	Closing and Next Steps, presented by Dave Pedersen

Guiding Principles

- Maximize Beneficial Reuse
- Seek Cost Effective Solutions
- Seek Partnerships beyond the JPA
- Gain Community Support
- Govern with a Partnership
- Be Forward Thinking

Political

- Get out of Malibu Creek
- Re-use 100% of our water
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- Technology verses practical solutions
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- Reliability (water Supply)
- Local water reliance
- Reliable water
- Resiliency during drought
- Save drinking water
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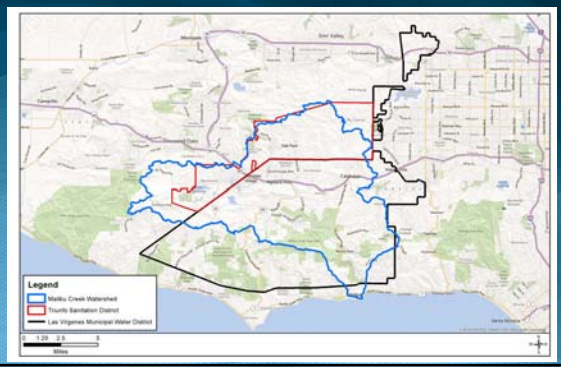
- Nearby landfill

Malibu Creek Water Quality

Dave Pedersen, General Manager

Malibu Creek Water Quality



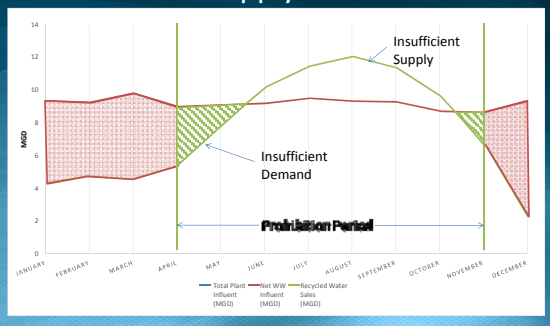
Questions?

Seasonal Storage Presentation

Why is storage needed?

Solution for differences between supply and demand

Storage is Solution for Differences Between Supply and Demand



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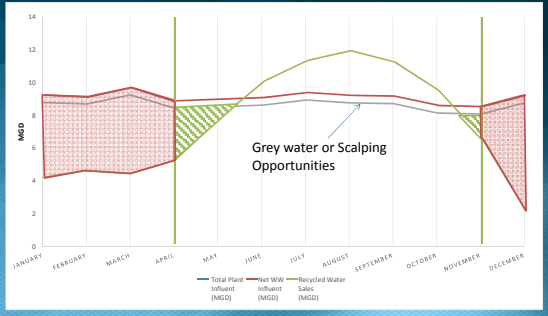

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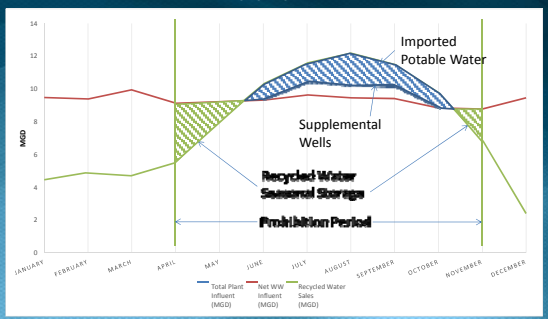

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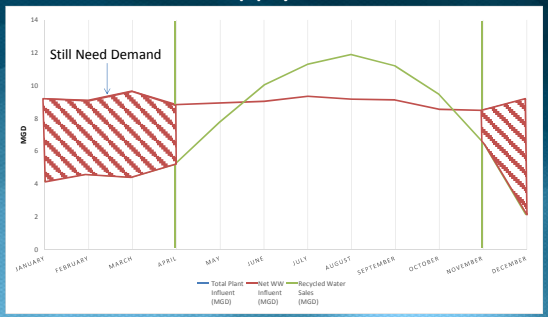


Scenarios to Minimize Discharge to Malibu Creek

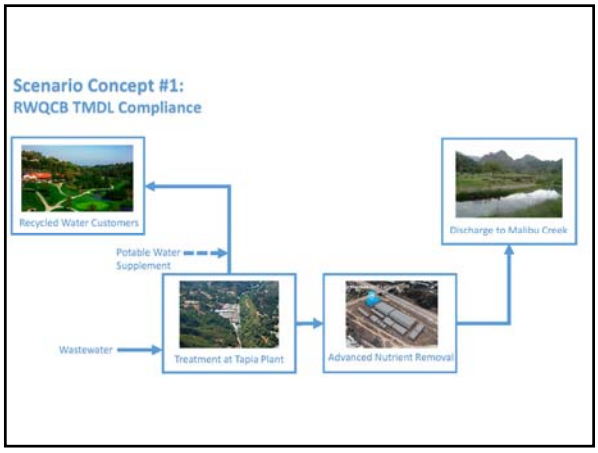
- Store more – insufficient
- Grey water or scalping – insufficient
- Reuse Partner(s) to accept extra water
- Use for some other demand

BPAT Part 1

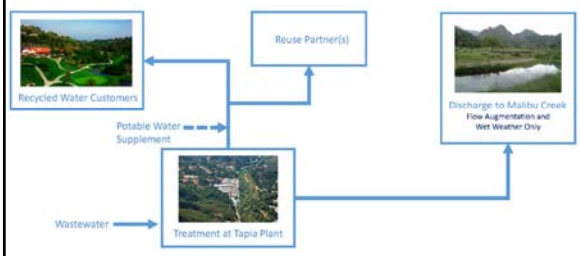
Questions?

BREAK

Concept Reuse and Storage Scenarios

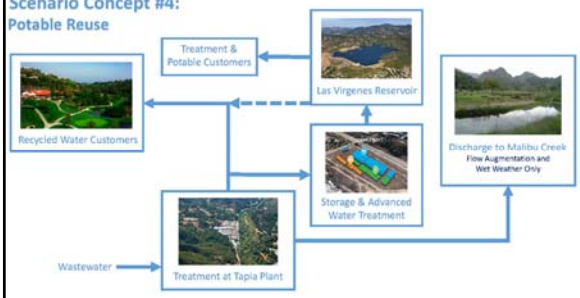


Scenario Concept #2: Recycle and Export



Scenario Concept #3: Seasonal Storage

Scenario Concept #4: Potable Reuse



Questions?

BREAK

BPAT Part 2

Questions?

BREAK

NEXT STEPS:

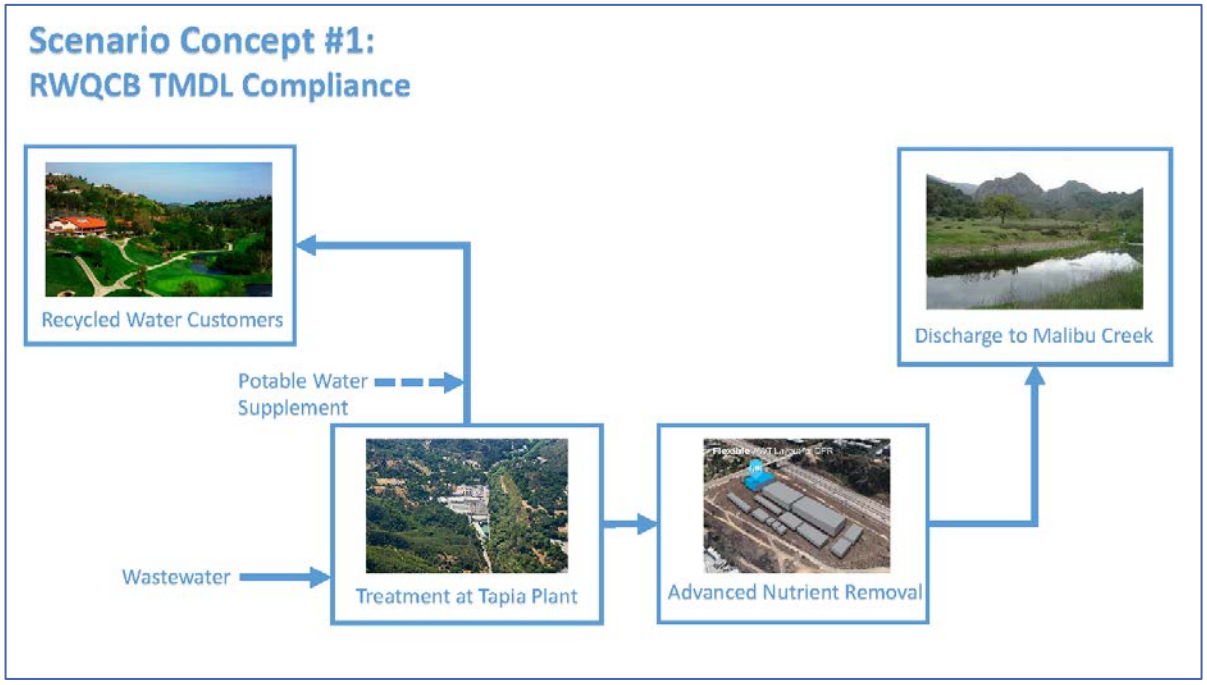
WORKSHOP #3

Tentative Schedule

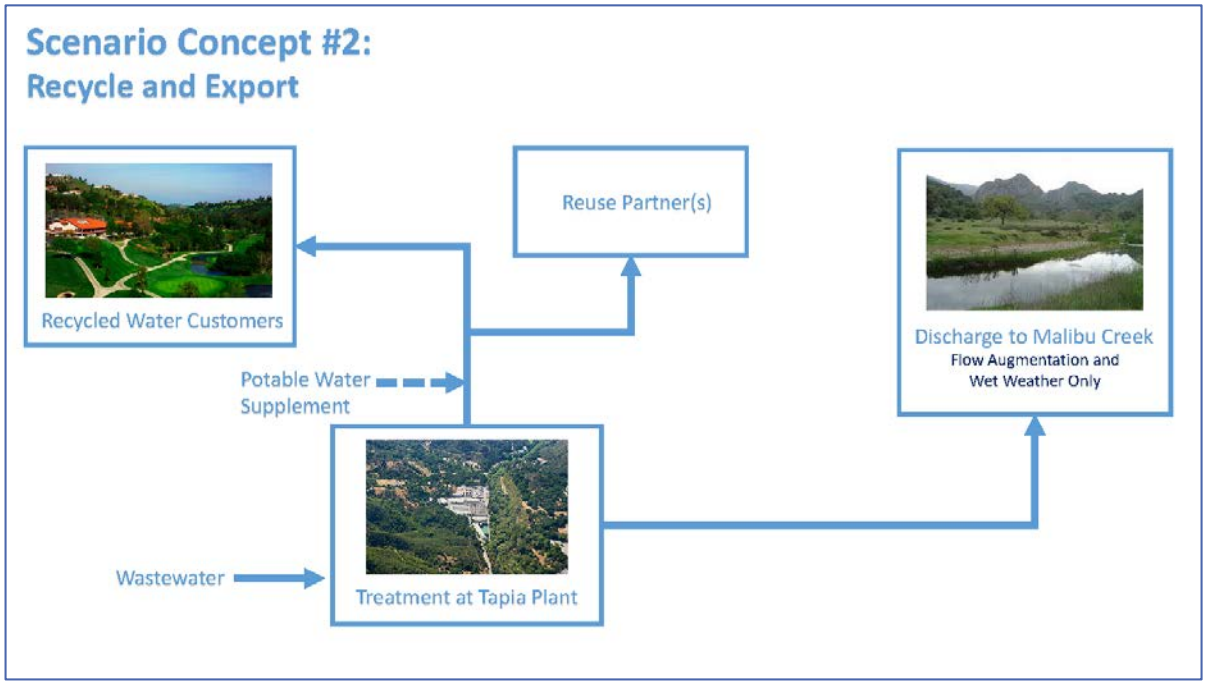
Interviews with JPA Board Members	December 18-19
Workshop #1	January 29
Workshop #2	February 11
Working Group and Technical Group Meetings	February
Working Group Meeting #2	March 5th
Working Group Meeting #3	March 12th
Workshop #3	March 18th
Board Presentation	April

Questions / Comments / Adjourn

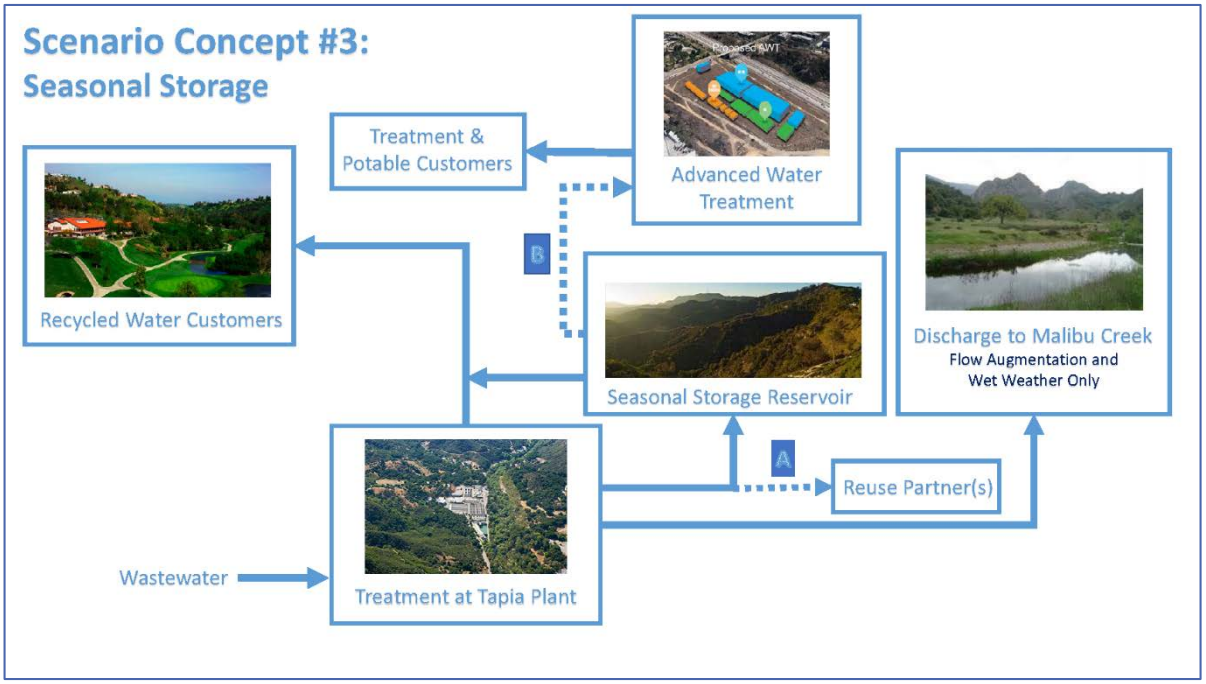
Appendix F - Four Concepts for Seasonal Storage



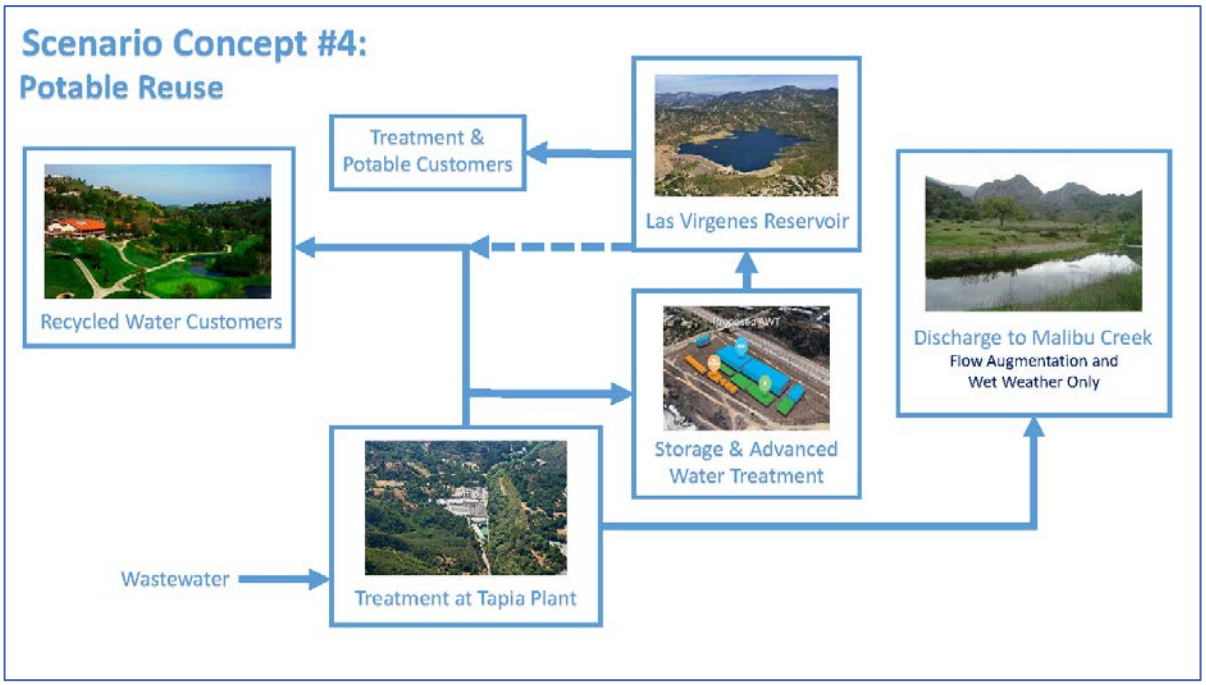
Scenario Concept #1



Scenario Concept #2



Scenario Concept #3

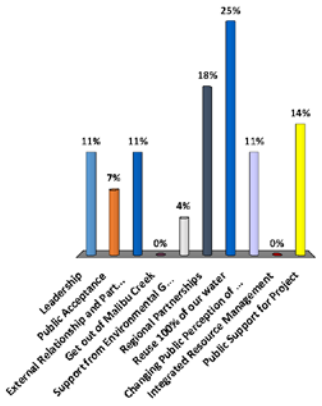


Scenario Concept #4

Appendix G – BPAT Voting Results

Political

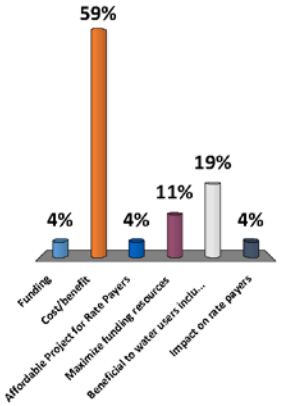
A. Leadership
B. Public Acceptance
C. External Relationship and Partnerships
D. Get out of Malibu Creek
E. Support from Environmental Groups
F. Regional Partnerships
G. Reuse 100% of our water
H. Changing Public Perception of DPR/IPR
I. Integrated Resource Management
J. Public Support for Project



BPAT Voting Result – Political

Economic

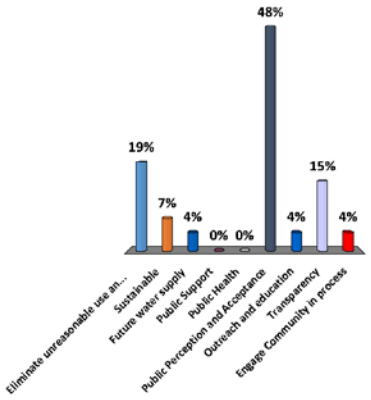
A. Funding
B. Cost/benefit
C. Affordable Project for Rate Payers
D. Maximize funding resources
E. Beneficial to water users including rate payers
F. Impact on rate payers



BPAT Voting Result - Economic

Social

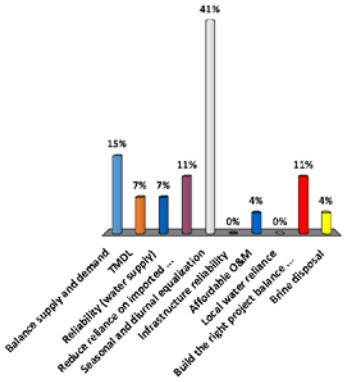
A. Eliminate unreasonable use and waste of water through incentives –Changing Behavior
B. Sustainable
C. Future water supply
D. Public Support
E. Public Health
F. Public Perception and Acceptance
G. Outreach and education
H. Transparency
I. Engage Community in process



BPAT Voting Result – Social

Technical

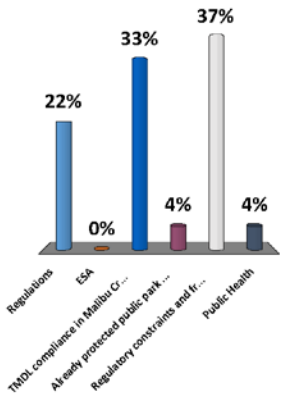
A. Balance supply and demand
B. TMDL
C. Reliability (water supply)
D. Reduce reliance on imported water
E. Seasonal and diurnal equalization
F. Infrastructure reliability
G. Affordable O&M
H. Local water reliance
I. Build the right project balance supply and demand
J. Brine disposal



BPAT Voting Result - Technical

Legal

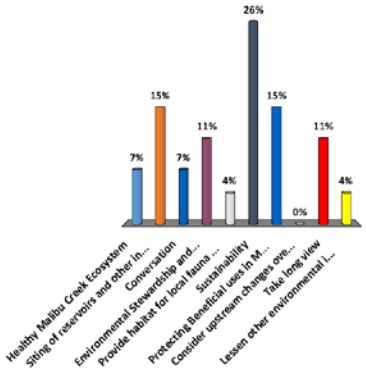
A. Regulations
B. ESA
C. TMDL compliance in Malibu Creek and Santa Monica Bay
D. Already protected public park lands cannot be default site for reservoir
E. Regulatory constraints and framework
F. Public Health



BPAT Voting Result – Legal

Environmental

A. Healthy Malibu Creek Ecosystem
B. Siting of reservoirs and other infrastructure
C. Conversation
D. Environmental Stewardship and leadership
E. Provide habitat for local fauna and flora
F. Sustainability
G. Protecting Beneficial uses in Malibu Creek
H. Consider upstream changes over time (at user) point
I. Take long view
J. Lessen other environmental impacts



BPAT Voting Result - Environmental

Appendix H - Workshop #3: Slides

Recycled Water Seasonal Storage Facility Plan of Action

Comprehensive Water Resource Strategy

MWH

Workshop 3 - Agenda

Time	Item
4:00 – 5:00	Welcome and Recap, presented by Dr. Steve Weber
5:00 - 5:15	Break, Dinner is served
5:15 – 6:00	Presentation of Concept Scenarios, presented by James Borchardt
6:00 - 6:15	Break
6:15 – 7:15	Gallery Tour
7:15-7:45	Review and Comment
7:45-8:00	Closing Remarks, presented by Dr. Steve Weber and Dave Pedersen

Guiding Principles

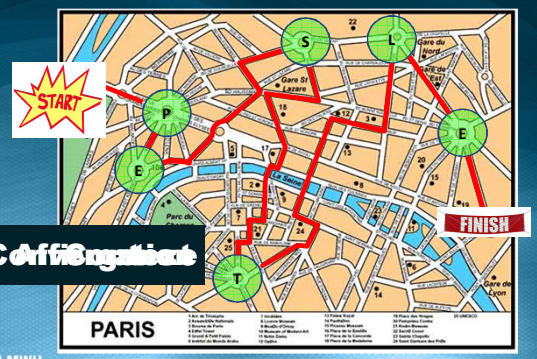
- Maximize Beneficial Reuse
- Seek Cost Effective Solutions
- Seek Partnerships beyond the JPA
- Gain Community Support
- Govern with a Partnership
- Be Forward Thinking

There are a wide variety of paths to choose from…

…the correct path for your project may not always be the obvious one.

MWH

There are many ways to navigate your way through the challenges



MWH

JPA

Individual	**Orientation**	Interviews
Small Group	**Workshop #1** Context	PESTLE
"The Team"	**Workshop #2** Convergence	BPAT
MWH	**Analysis**	
"The Team"	**Workshop #3** Affirmation	Elements of the Roadmap
	Implementation "Road Map"	

GO TIME

MWH

JPA Board Interviews

ORIENTATION

Interview Results

- **Key Words and Phrases**
  - Customers
  - Cost Effectiveness
  - Using the most of existing resources
  - Malibu Creek
  - Expanding recycled water use
  - Innovative forms of reuse
  - Outreach

Context - PESTLE

WORKSHOP 1

Political

- Get out of Malibu Creek
- Re-use 100% of our water
- Leadership
- Board unity/consistent leadership
- Disconnect among rate payers, regulators, & utilities
- Public stakeholder buy-in
- Public support for project
- Stakeholder speak as one
- Support from environmental groups
- Project gets built and not bogged down by regulations
- Regulators support for project
- Changing Public Perception of DPR
- Partnership
- Regional Partnerships
- Public acceptance
- Create a project with large support
- Partnerships?
- Integrate resource concerns
- History of disagreement
- Election timing
- Active public
- Growth/No growth
- External relationships and partnerships
- Land use planning/zoning
- Increase level of reuse
- Reuse, not waste

Economic

- Maximizing resources
- Avoid stranded costs
- How to price recycled water
- Funding
- Maximize the use of an imported and costly resource
- How to pay
- Cost/benefit
- Develop a plan for using reclaimed water that has benefits proportional to its costs
- Qualify for proposition 1 Section 8 money
- Impact on rate payers
- High water rates
- Cost of project
- Equitable cost/revenue sharing between LVMWD:TSD
- Funding and permitting an alternative to the creek
- Government financial support
- Affordable project for rate payers
- Recycled water storage cost
- Timing
- Banking future costs, pricing strategies
- Alternative financing P3
- Do we harden demand by adding purple pipe?
- Viable NPR customers
- Cost
- Financially feasible
- Efficient use of money
- Cost effective
- Bad science drives up costs
- Cost effective
- Project cost $$$$
- Funding
- Affordable water rates
- Pumping cost
- Efficient use of public money
- Beneficial to rate payers
- TMDL compliance/penalties
- Ability to finance
- Land acquisitions and scale
- Land exchanges
- Local job growth
- Trickle down impact of drought
- Aging infrastructure
- USACE funding without earmarks
- Title XVI
- Water bond
- Drought grants/IRWM page.84
- SRF $

Social

- Sustainable
- Sustainable water supply
- Future water supply
- Perpetuating bad habits
- End user reuse gray
- Water literate public
- Public support
- Yuck factor
- Public perception and acceptance
- Include recreation
- Create a water recreation area
- Public recreation reservoir
- Health & safety (env)
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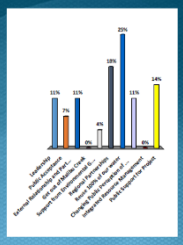
- Sediment transport
- Odor
- Nearby landfill

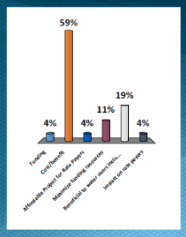
Convergence - BPAT

WORKSHOP 2

BPAT Results

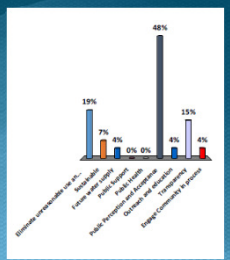
- Political
- Economic

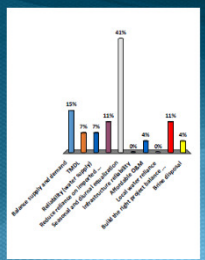




BPAT Results

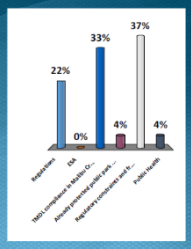
- Social
- Technical

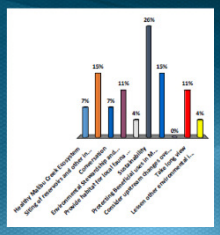




BPAT Results

- Legal
- Environmental



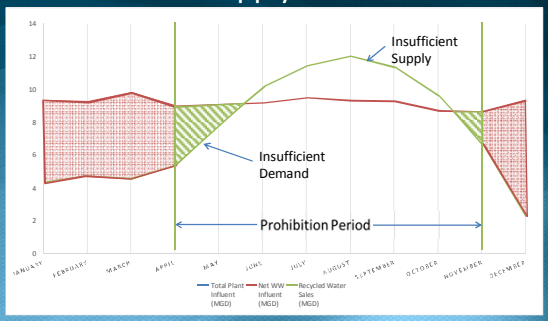


Dinner/Break

Affirmation

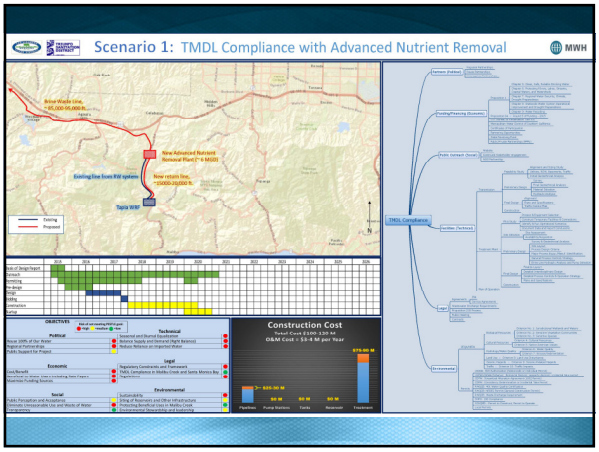
WORKSHOP 3

Storage is Solution for Differences Between Supply and Demand



Concept Reuse and Storage Scenarios

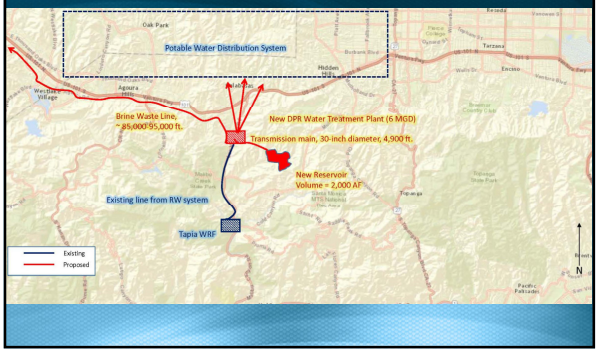
- Six scenarios developed, including
  - Map of facilities
  - PESTLE/BPAT assessment
  - Total construction costs
  - Project implementation schedules
  - Task lists identifying next steps



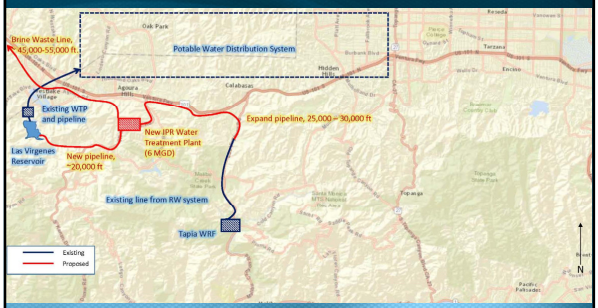
Scenario 1: TMDL Compliance with Advanced Nutrient Removal

Scenario 2: New Seasonal Storage Reservoir and Reuse Partner

Scenario 3: New Seasonal Reservoir Storage and DPR

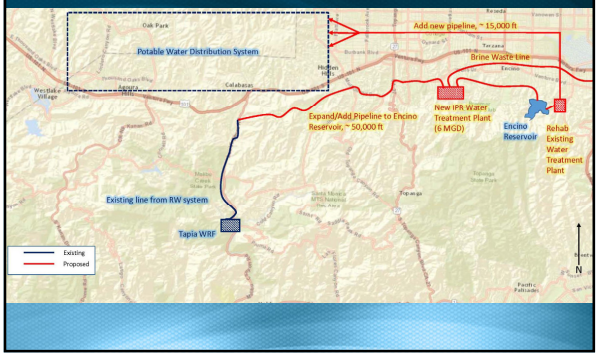


Scenario 4: Las Virgenes Reservoir (IPR)



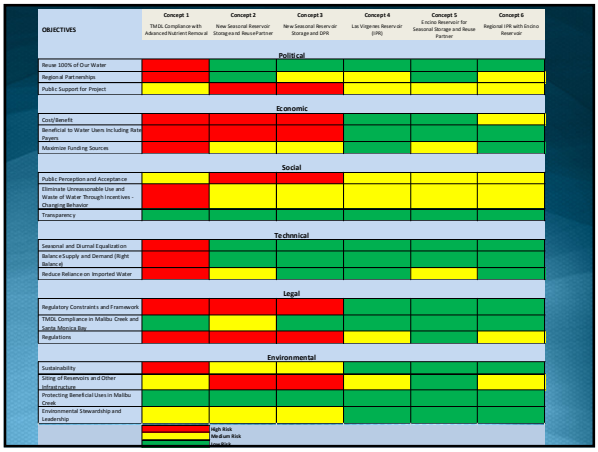
Scenario 5: Encino Reservoir for Seasonal Storage and Reuse Partners

Scenario 6: Regional IPR with Encino Reservoir



Scenario Summary

Scenario	Approximate Schedule	Approximate Construction Cost
1	6 years	$100-120 Million
2	11 years	$130-165 Million
3	11 years	$170-215 Million
4	6 years	$80-95 Million
5	6.5 years	$30-35 Million
6	6.5 years	$105-125 Million



Break

Exercise - “Art Critic”

Implementation

JPA BOARD MEETING - TBD

Questions / Comments / Adjourn

Questions?

So What's Next?

- JPA Board Scenario Selection
- Stakeholder's support continues beyond tonight
- JPA selects consultants to pursue permitting and pre-design
- LVMWD completes NPDES permitting

Appendix I - Workshop #3: Six Scenario Boards

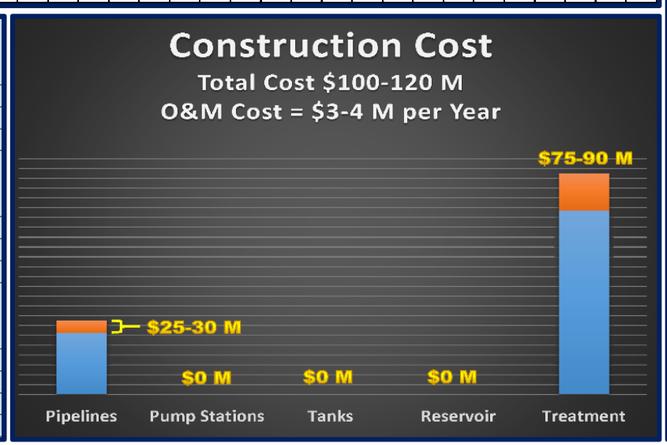
Scenario 1: TMDL Compliance with Advanced Nutrient Removal

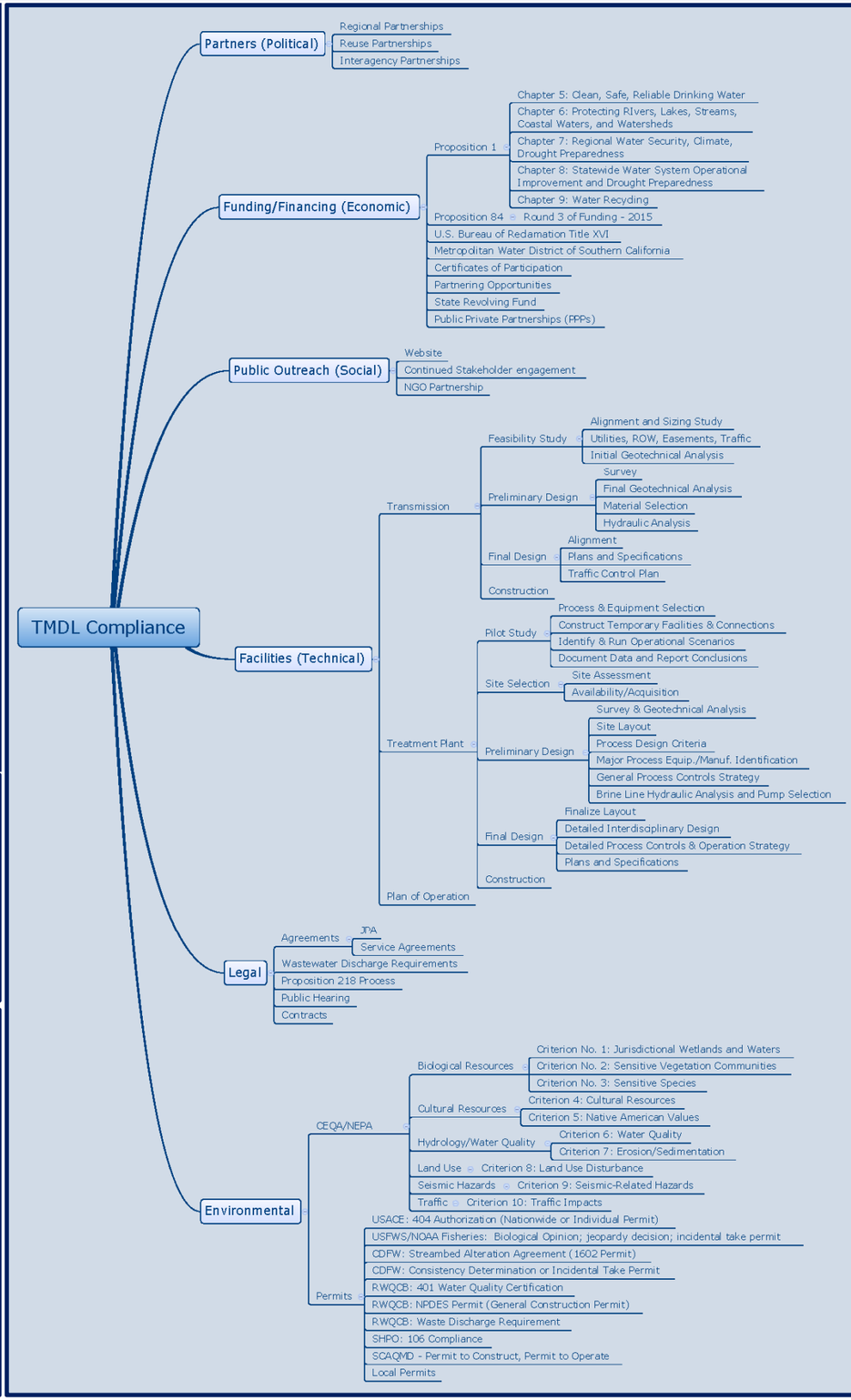
	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Basis of Design Report												
Outreach												
Permitting												
Pre-design												
Design												
Bidding												
Construction												
Startup												

OBJECTIVES

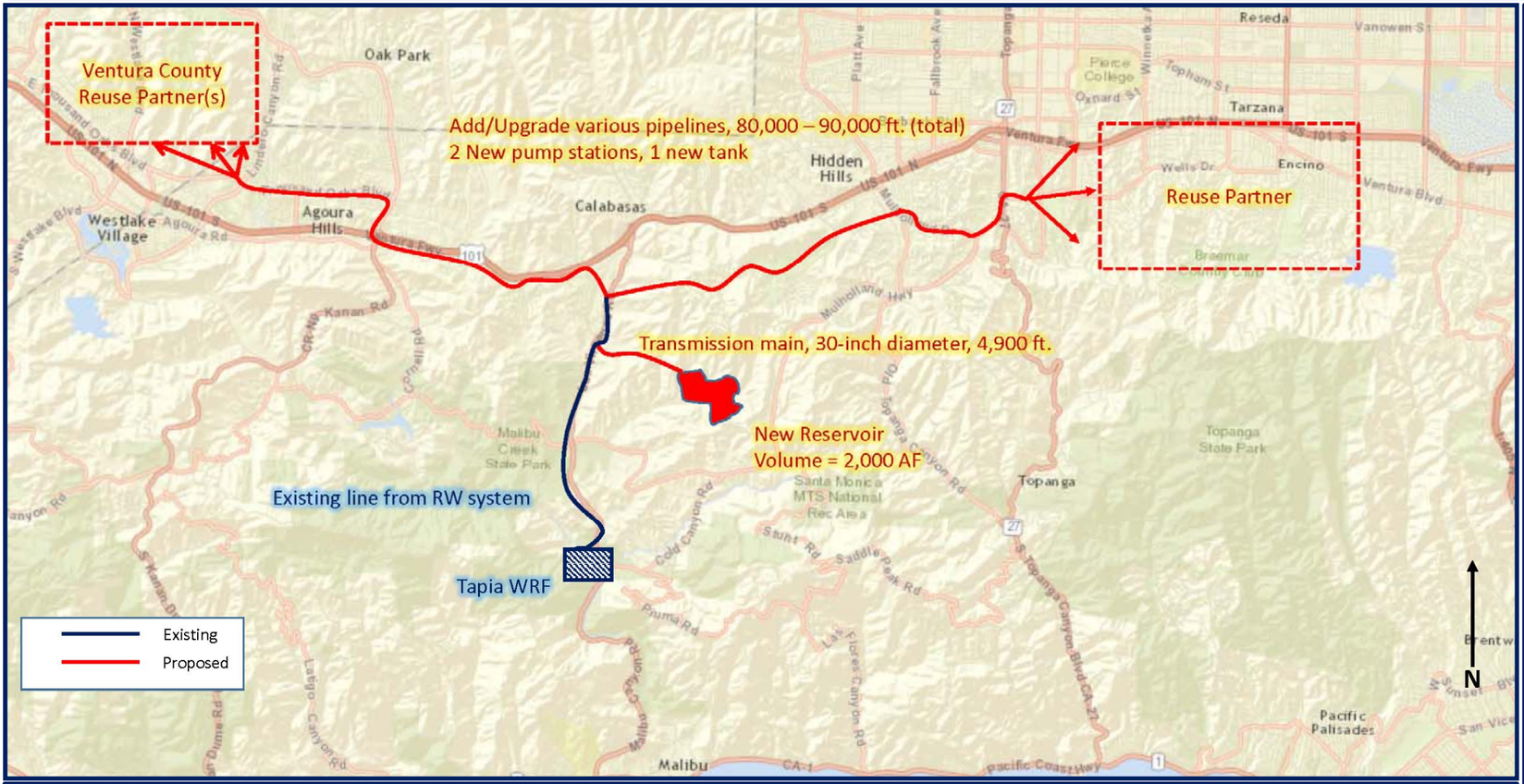
Risk of not meeting PESTLE goal: =high =medium =low

Political		Technnical	
Reuse 100% of Our Water		Seasonal and Diurnal Equalization	
Regional Partnerships		Balance Supply and Demand (Right Balance)	
Public Support for Project		Reduce Reliance on Imported Water	
Economic		**Legal**	
Cost/Benefit		Regulatory Constraints and Framework	
Beneficial to Water Users Including Rate Payers		TMDL Compliance in Malibu Creek and Santa Monica Bay	
Maximize Funding Sources		Regulations	
Social		**Environmental**	
Public Perception and Acceptance		Sustainability	
Eliminate Unreasonable Use and Waste of Water		Siting of Reservoirs and Other Infrastructure	
Transparency		Protecting Beneficial Uses in Malibu Creek	
		Environmental Stewardship and leadership	





Scenario 2: New Seasonal Storage Reservoir and Reuse Partner



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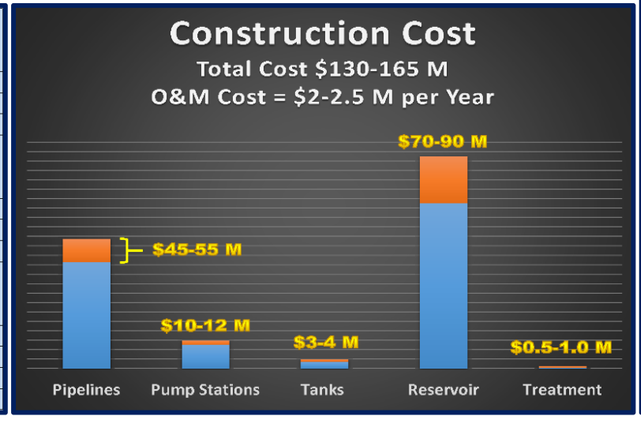
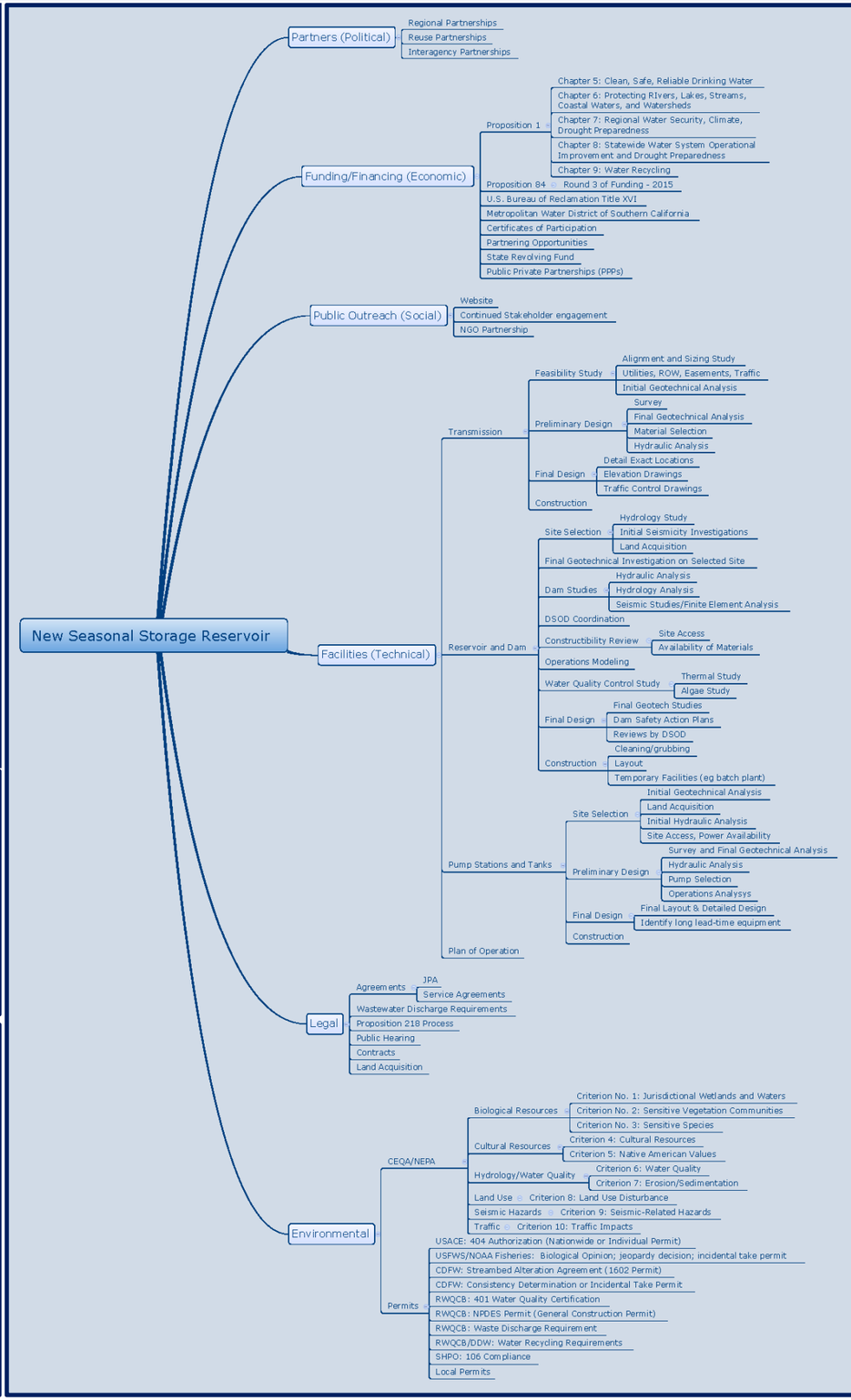
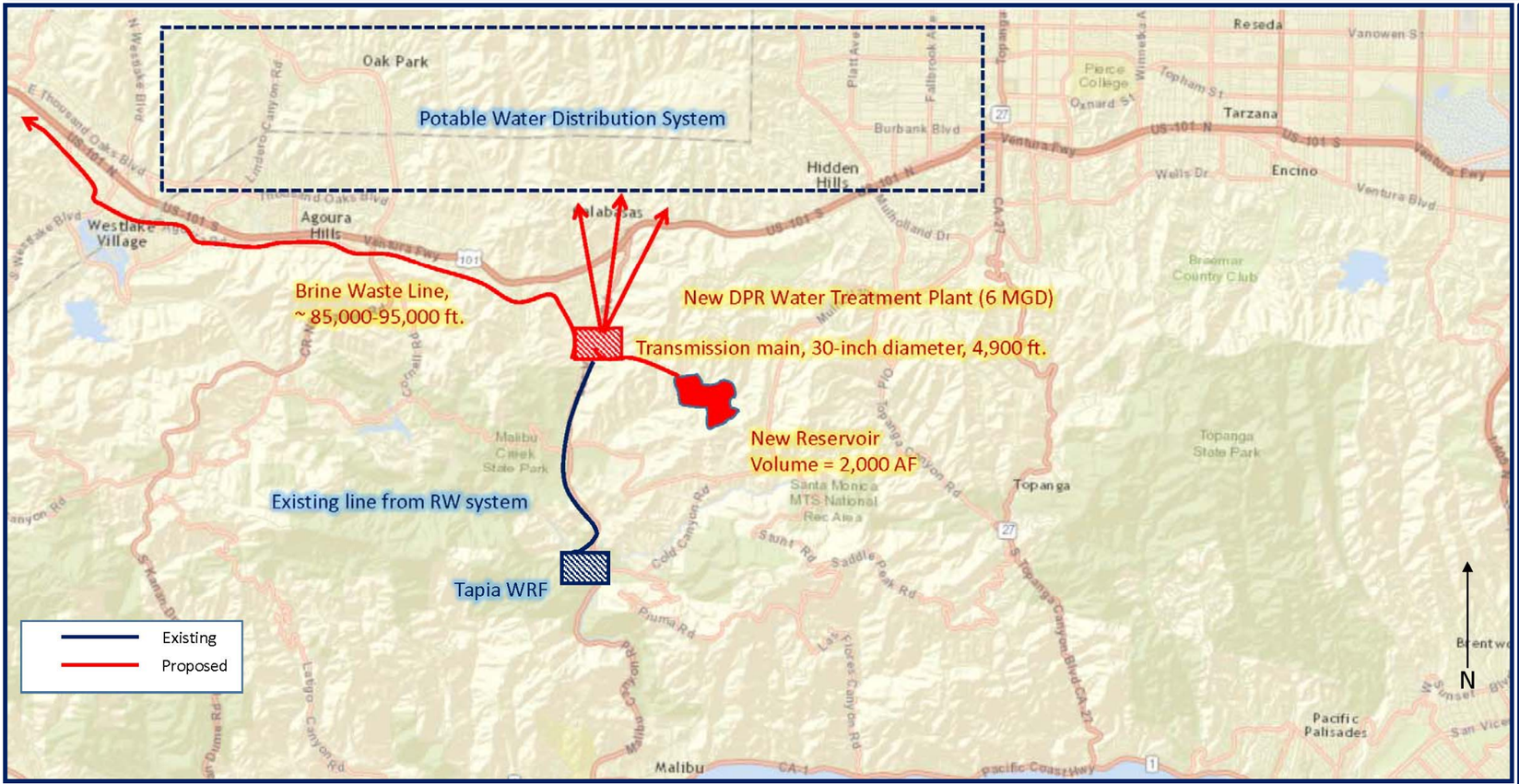




Scenario 3: New Seasonal Reservoir Storage and DPR



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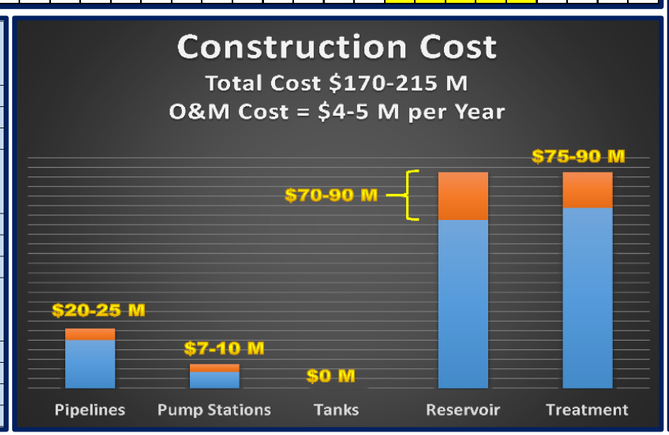

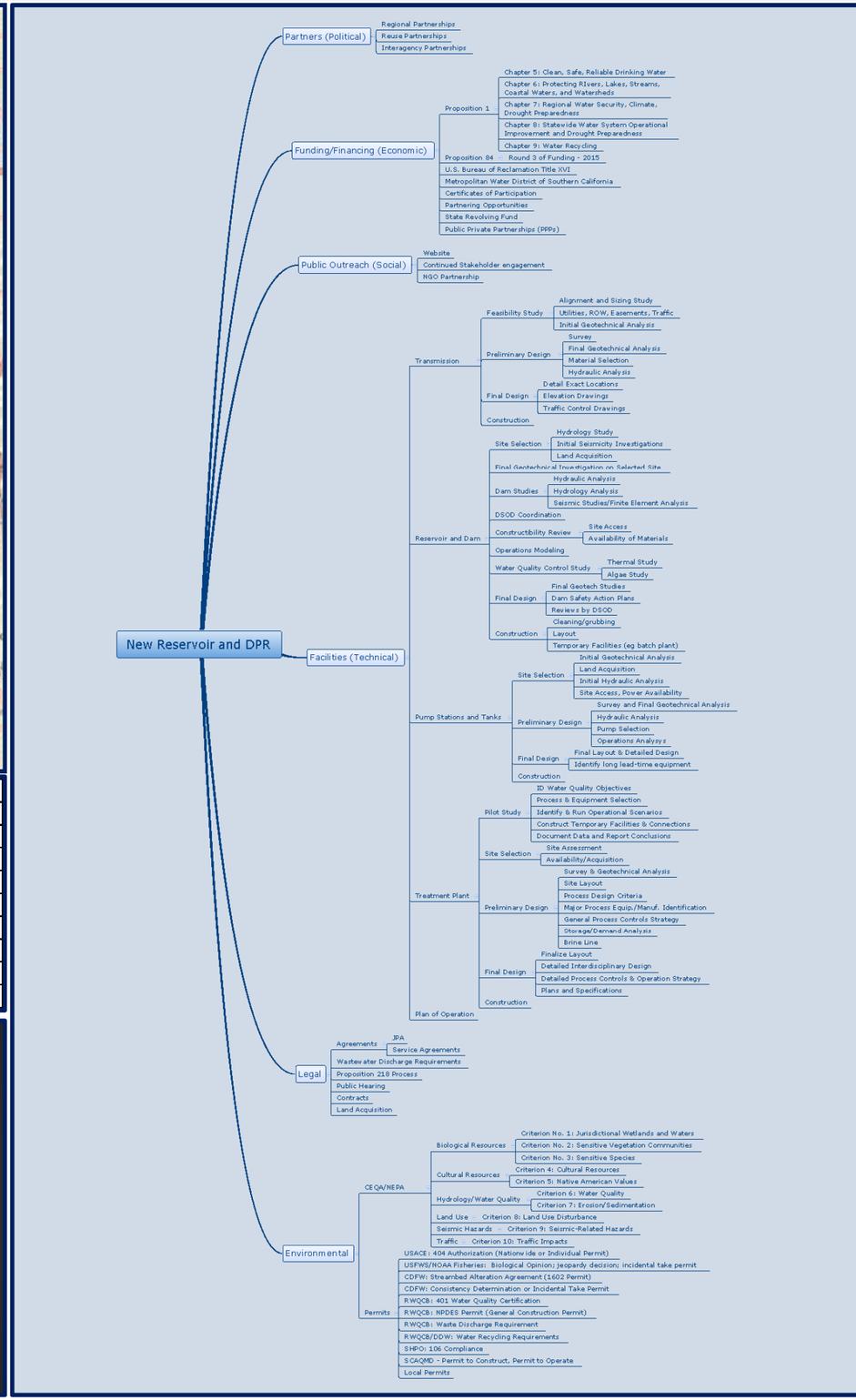

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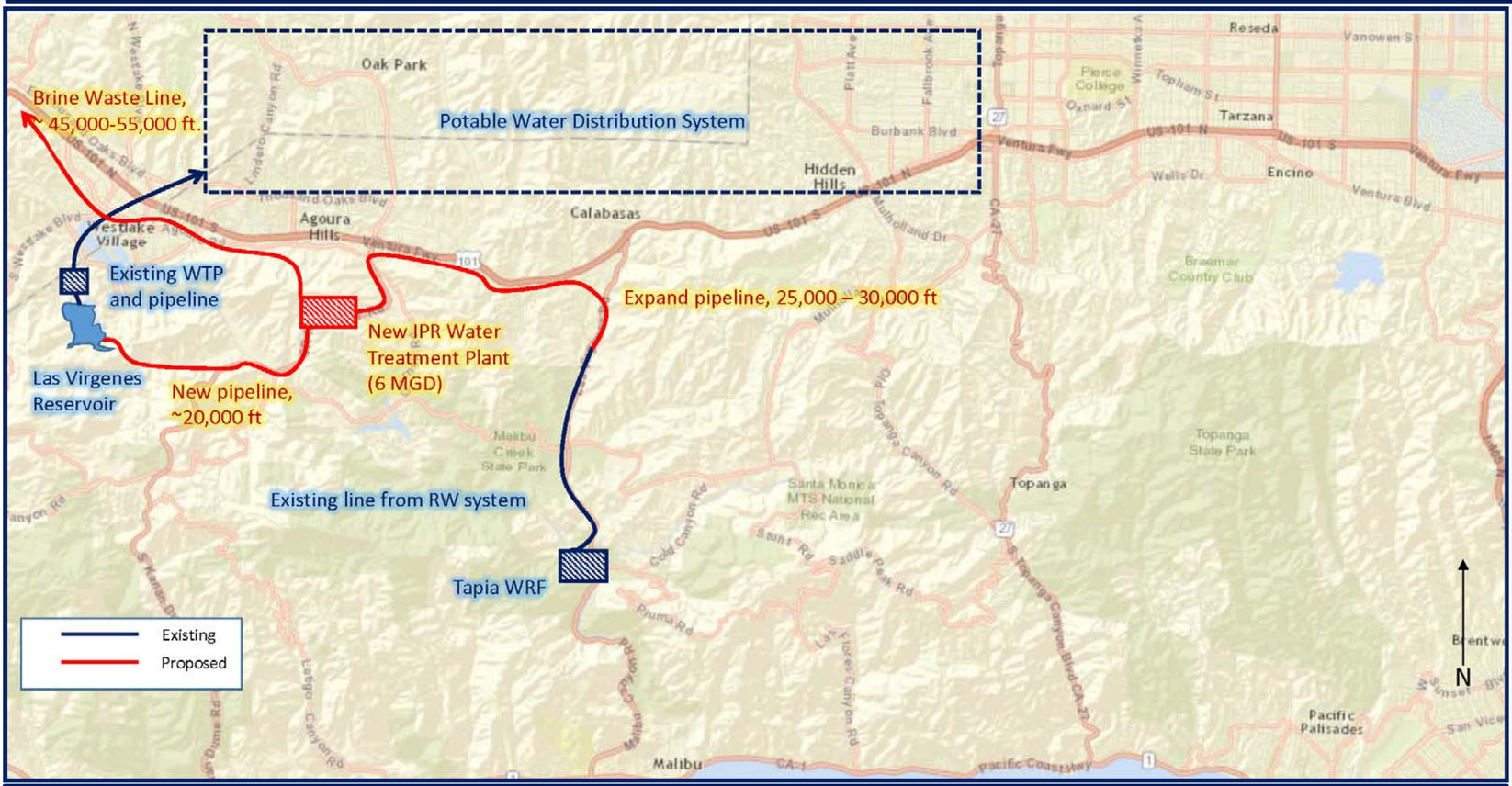

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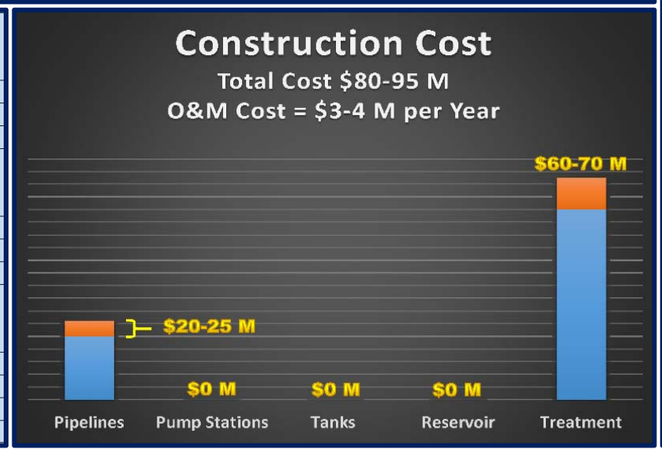
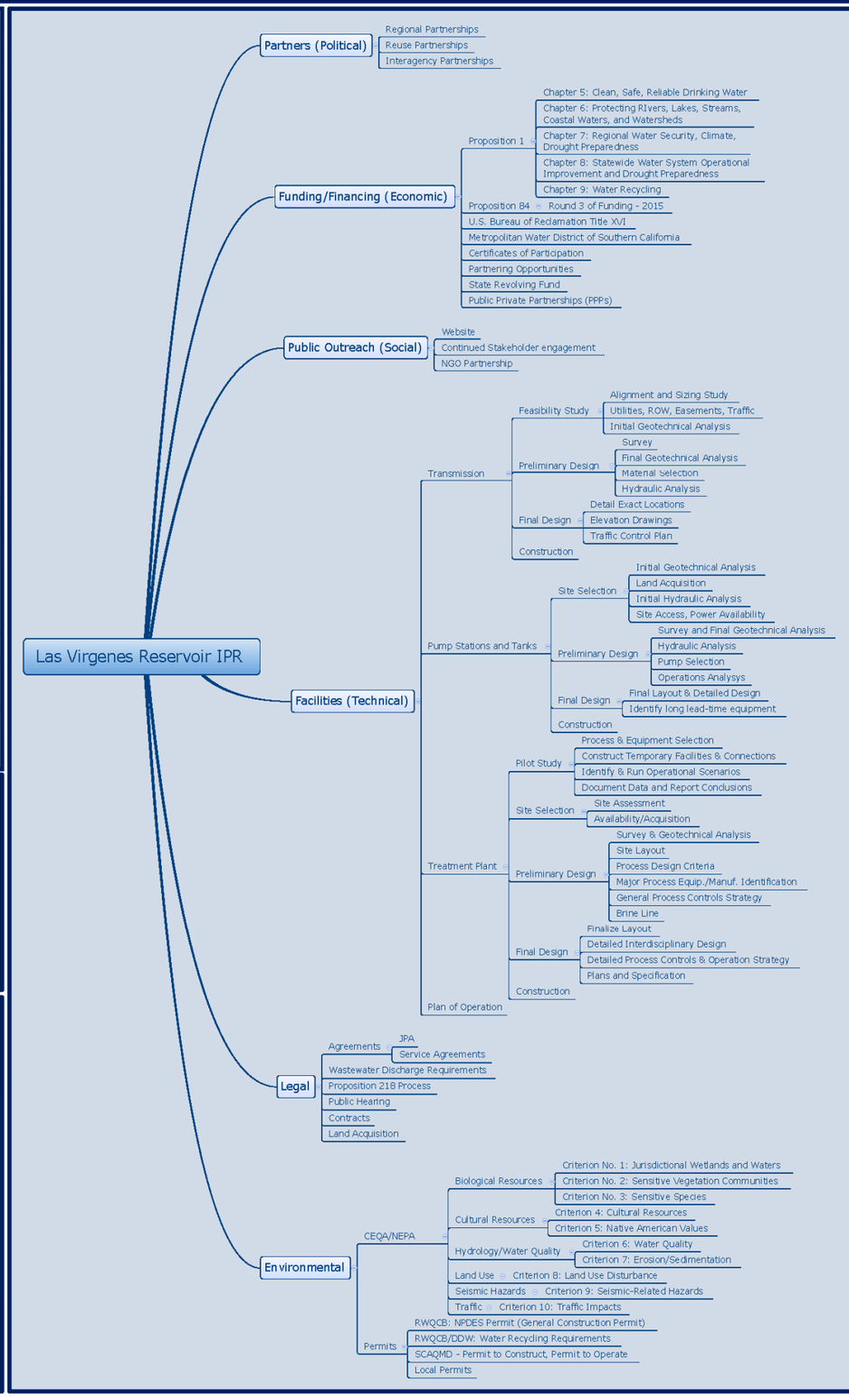
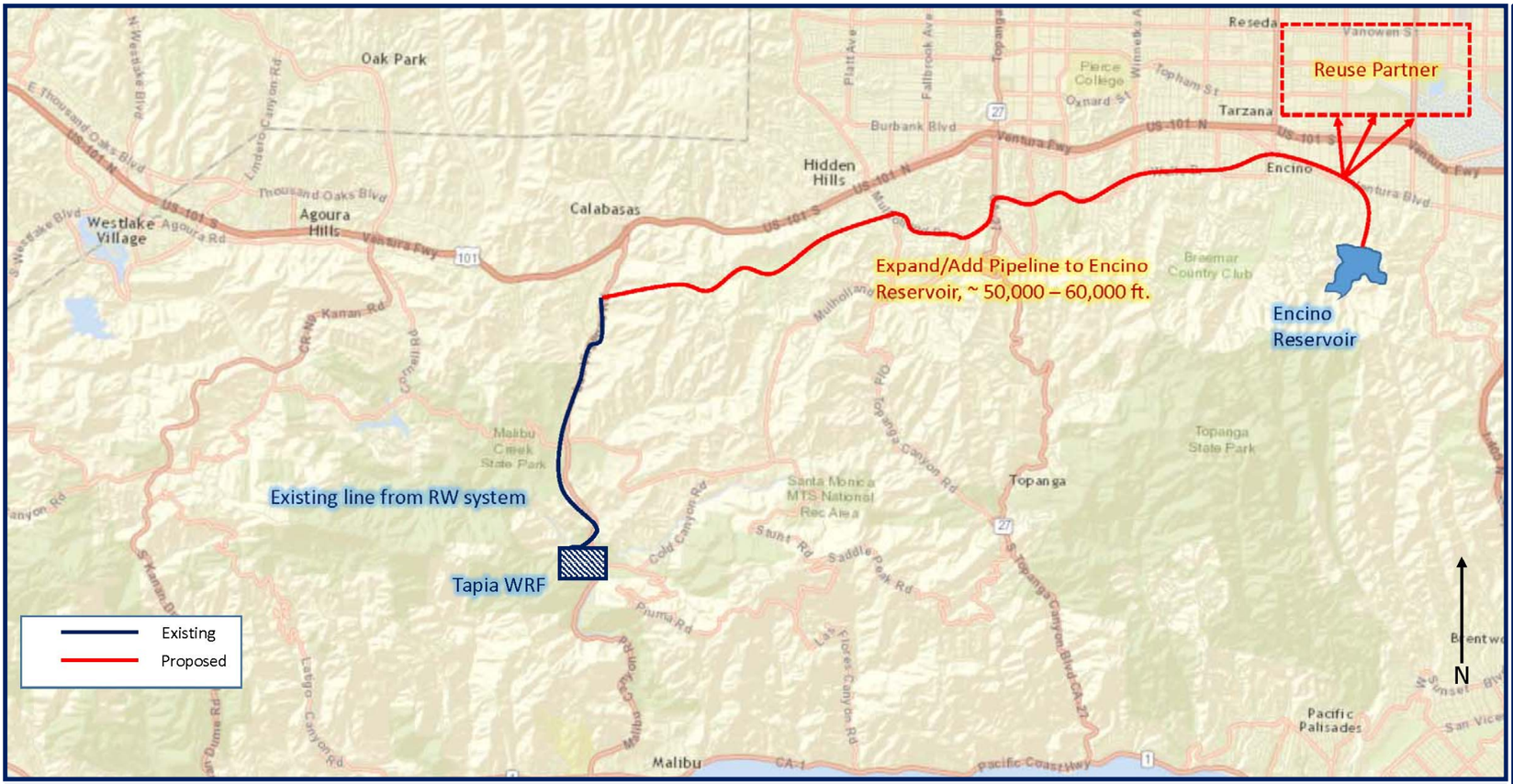




Scenario 5: Encino Reservoir for Seasonal Storage and Reuse Partner



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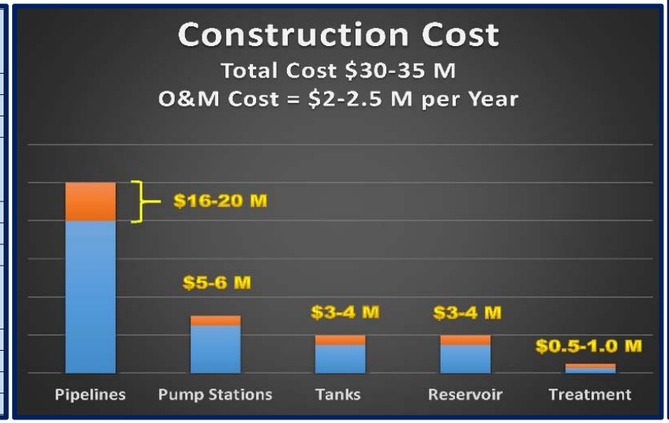
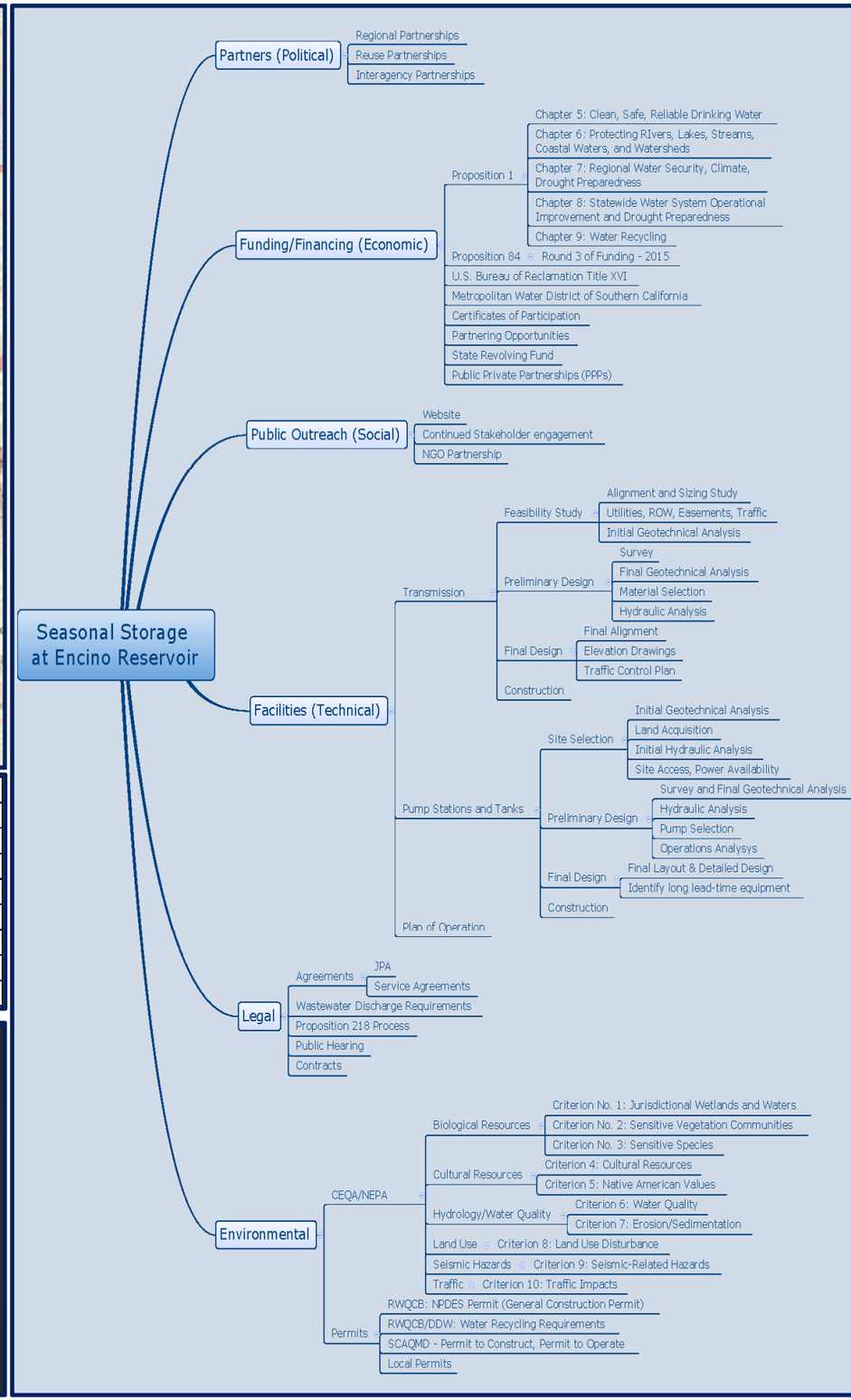
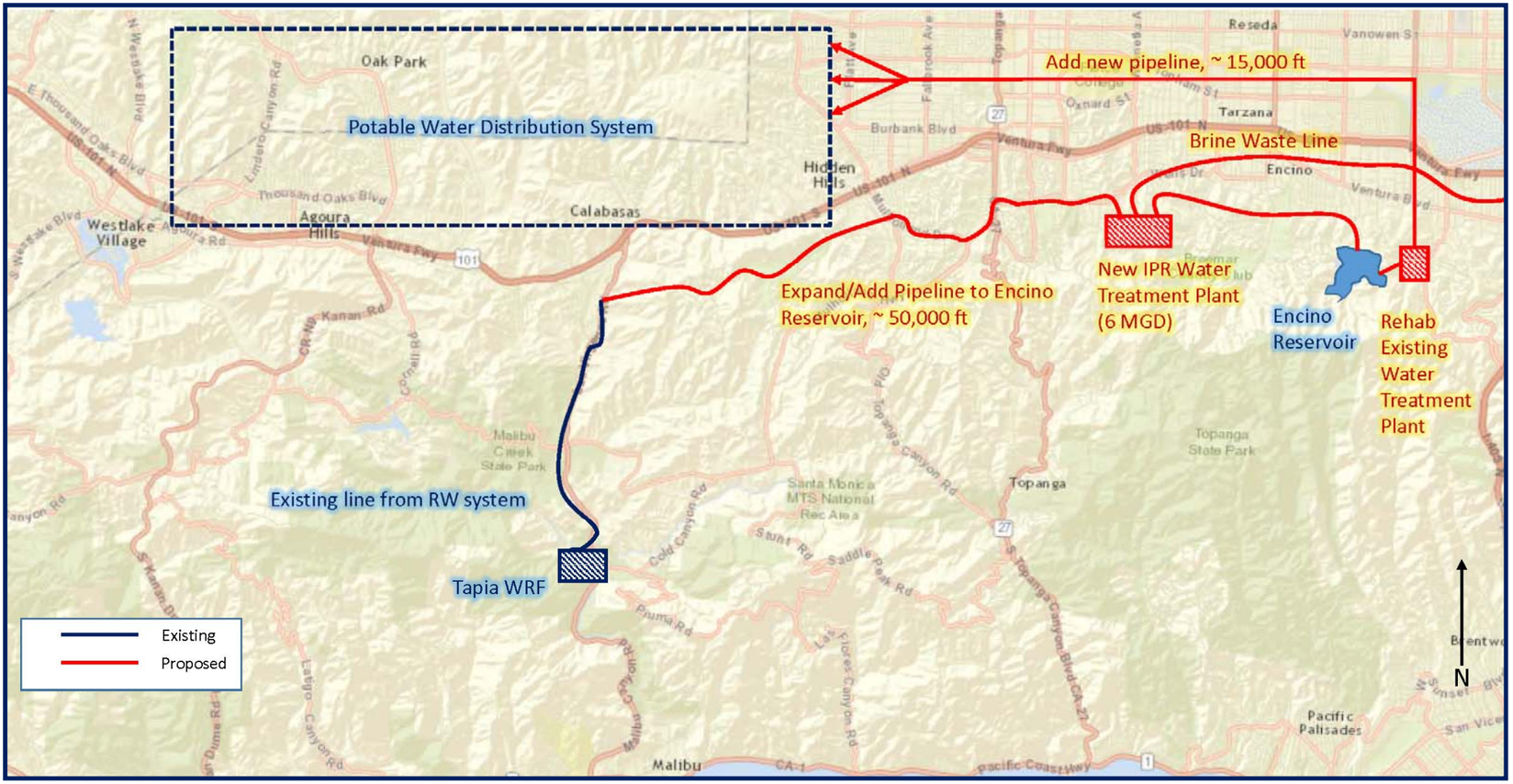




Scenario 6: Regional IPR with Encino Reservoir



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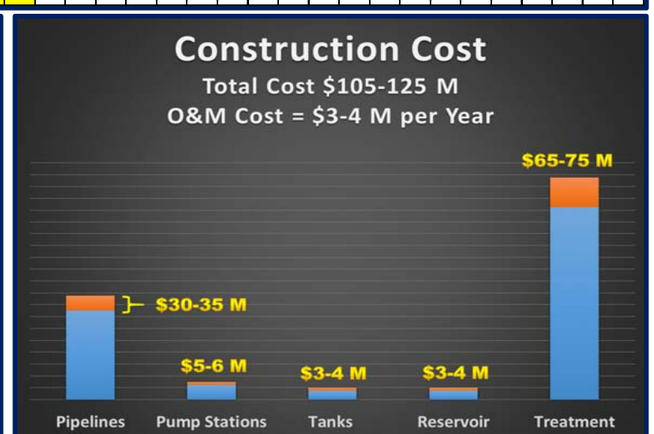

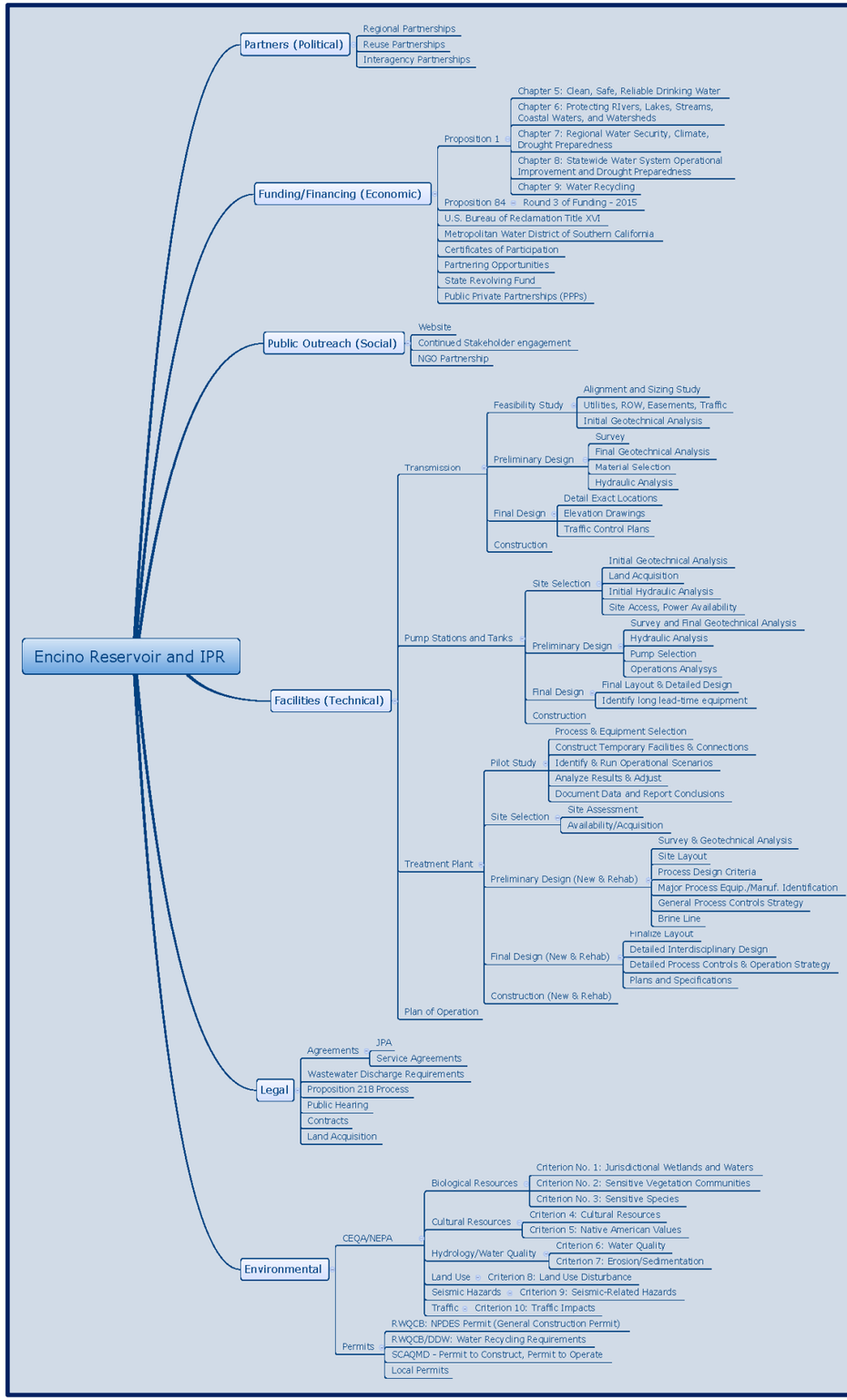

Appendix J - Workshop #3: Group Review and Comments for Scenario Boards

Scenario 1 - TMDL Compliance with Advanced Nutrient Removal

Pros	Cons
Fewest environmental permits required	A lot of problems
Low risk of failure and unexpected cost	RO water going into creek and wasted
	$100 million to dump back into creek
	No MWD-LRP funding
	May not qualify for Prop 1 or any grants
	This is the “No Project” alternative (will lose EPA lawsuit)
	Not a chance
	No beneficial re-use
	No Multi-benefit
	Still Expensive
	Fails to meet TMDL & Groups objective
	Water still in the creek from Facility
	Possible cost of using Brine line (x3)
	Seasonal discharge? Fish flow?
	How to supply water reliability cost effectively with minimal environmental impact (highest best use)
	Single benefit
	High Cost of O&M
	No reuse
	Benefits none
	Schedule looks aggressive
	No beneficial use of water
	No income
	Purpose of proposal is to get out of creek
	Still has uncertainty about future of Malibu Creek regulations, future facilities may be required
	No funding source
	Fewest environmental permits required
	If recycled water is cut back may need to enhance the treatment plant
	No outside support from other agencies
	Need support to take brine line
	Worst option
	No: political partners economic partners, offsetting benefits
	Meets perceived environmental benefit without looking at water system
	Lost resource, no income from resource
	Need to import same amount of water from MET

Scenario 2 - New Seasonal Storage Reservoir and Reuse Partner

Pros	Cons
No Prime	100% Recycle (purple)
No treatment plant	Not enough cost – effective users (V.G. ….
No discharge to creek	New Reservoir in wildlife corridor
Why is public support for project red?	Regulatory challenge (to say the least)
Get way out of the creek	Puts money down the drain (No local district use benefit
Recreational reservoir	Prohibitive cost
Possible partner is Ventura agriculture, do to restricted pumping of ground water	Key components not addressed (red dots)
More partnering opportunities	Issues with users
	Two users instead of one
	LADWP will not build pipeline to Braemar Country Club (less users than Encino option)
	Most of cost is reservoir
	No identified place for reservoir
	Too long to construct
	Reservoir concerns
	High cost to benefit ratio
	No potable reuse
	Unknown on Partnership
	Long lead time
	Cost is high & questionable
	Difficulty in buying a new site
	New reservoir is problematic without a specific site
	What's the upper L.A. River Watershed Masters position?
	HEPA permitting issues
	11 year time frame
	Massive cost is hard to sell
	Can we get support from public?
	Legally challenging considering – EIR, R/W right of way, public support for reservoir
	EIR is expensive
	Messaging to lots of different constituents
	Water does not benefit producers of it.
	(L.A. Benefits LV does not)
	Special treatment to reuse water, was this cost estimate?
	High Risk of failure
	10 years at least to Malibu Creek compliance

Scenario 3 - New Seasonal Storage Reservoir and DPR

Pros	Cons
Retains all water within the service area district	Highest cost approach
Reduces reliance on imported water (x2)	Brine line costly and uncertain alignment
Shorter pipeline	Highest potable water
Best long term solution	Highest gross revenue
Upside to a drought - pass regulation easier like DPR	Good water reduction scenario
DPR could start as IPR & as regs change, could switch to all DPR	Will people
Goal long term, cost benefit	Same issues with new reservoir as 2
Does the scenario include the income from selling potable H20?	More rate payer pain (low probability of continued public assistance or financing)
We use our own water	Doubles the rates
Will reduce imported water from Delta	Too long
Need to think about phasing, can DPR be built sooner?	Red dots
	More expensive
	DPR unknown when and what will be required
	Brine line
	New reservoir
	High cost of construction O&M
	Not approved system yet- uncertainty
	Environmental concerns on reservoir
	Brine disposal
	Expensive
	Uncertainty
	Longer implementation project has execution risk
	11 year time frame
	Direct portable reuse is most difficult public challenge
	Cost is huge challenge
	All problems with dam from previous page: safety, R/W, dam safety, public support
	Is 2 year cost schedule correct?
	Can we mitigate all reservoir issues
	Noise
	Equipment work etc.
	No benefit or compliance of Malibu Creek
	High risk of failure or unexpected costs
	Is 12 year cost correct?

Scenario 3 - New Seasonal Storage Reservoir and DPR

Pros	Cons
Water Supply benefit (reduces import to district) (x4)	Brine disposal challenge- 2 concerns
1 plant, not 2	Could take years to get IPR permit
Plant already being upgraded	Uncertainty
Low cost	Schedule looks aggressive
Lower risk of unexpected cost and environmental supports	Not phase able?
Get water	Brine Line
Messaging is easiest; constituents share value	Comment: Compare locating the plant on existing site and possible alternate Brine line to coast
Need Partnerships with Met & colleagues / for redundancy benefit?	Need to couple increase in local portable water with reduction in use overall
Overall thought: Highest beneficial use to cost ratio	People don't increase domestic irrigation – grass thereby negative benefits)
3rd Party issue (from going to distribution system) CMWD or could be partner ship	Gray water reuse on site still needed
Hits the goals (not red dots)	Expensive
Shorter time frame	Can Brine Line run through Malibu?
1 of 2 favorites	
Less uncertainty of regulatory than DPR	
Less dependence on imported water	
Lesser environmental concerns	
Reusing water	
Best long term solutions	
Upside to drought- Pass regulation easier like DPR	
DPR could start as IPR & as regs change. Could switch to all DPR.	
Benefit is quick (2016 vs. 2020)	
Less environmental impact, so should be able to get permits	
O&M offset by income	
Get more income	
More benefit out of existing facilities	
The best option	
Regional approach to shipping H20 to colleagues	
Value not included: unbought potable H20	
Benefit to using in local area versus value of negotiated sale of H20 to third party	
Possible to divert in summertime to save $ from effort	

Scenario 5 - Encino Reservoir for Seasonal Storage and Reuse Partner

Pros	Cons
Pro- Line agreement to Woodland Hills C.C. (View lake) Adds circulation	Brine disposal
Lowest cost – existing reservoir (x3)	Biggest risk is agreement w/ DWP (x2)
IPR/DPR is an add-on potential (x3)	Risk of recycled water being used less in future
Most viable	No potable water reuse
Potential golf courses to add along the way	Reliance on partnership
Pierce has purple pipe but no supply	Need pumping both ways
Shorter time frame (x3)	Water benefits others, not LV
Already planning to go to Woodland Hills Country Club	Exporting some RW permanently (x2)
Low O&M cost (no membranes) (x2)	2 messages (LV residents, Encino residents)
Less uncertainty of regulatory than DPR	Nutrient-salt analysis (surface vs Aquifer vs ocean) should be done
Less dependence on imported water	
Lesser environmental concerns	
Reusing water	
Lower pipeline cost because L.A. might build it	
Could go back and forth in pipes	
Got LV reservoir- 500 Aft	
Some monetary benefit	
Reuse 100% of LVMWD H2) not possible	
Possible long term solution subject	
No Brine line required (x2)	
Elimination of potable water to reclaimed water system	
Low risk option, likely to get support	

Scenario 6 - Regional IPR with Encino Reservoir

Pros	Cons
Can add on DPR later (x2)	Siting of new IPR plant
Can benefit LV with recycled water & potable water	Same benefit as Scenario 4 but costs more
Can get funding now	Uncertainty of Brine line
Low risk	Cost
Public messaging wouldn't need to be tailored to Woodland Hills, LV.	Partnerships
Use others money	Brine waste could be a real long-term issue
Use existing infrastructure	Public perception for IPR
Low risk in terms of environmental and public stopping project	Why is timeline for Scenario 5 and 6 the same?
Malibu creek compliance sooner	A lot more complicated
Can be phased - scene 5- scene 6	O&M must be higher for IPR
Many choices for treatment	NEPA problematic with easements on parkland
Pipeline cost could be 0	Higher revenue from potable sales (pays for operations but not 1st costs)
Shorter timeline possible?	Higher costs
Income could offset O&M	Scenario 4 is cheaper and easier but similar
Mulholland pipe alignment should be considered	Nimby issues for plant construction (no direct benefit)
Permitting could be easier	Need DWP's agreement
Same Pros as Scenario 5	Possible geologic problems
	Political issue with homeowner resistance to putting RW in Encino Reservoir