

AGENDA

IRWMP STAKEHOLDER MEETING

Wednesday, March 26, 2014

City of Palmdale – Larry Chimbole Cultural Center

“Joshua Room”

38350 Sierra Highway

9:00 – 10:30 a.m.

- 1. Welcome and Introductions**
- 2. Drought Emergency - Expedited Round of Grant Awards & Call for Projects**
- 3. Boron CSD Arsenic Update**
- 4. Salt and Nutrient Plan – Finalizing Draft and Adding to Updated IRWMP**
- 5. New Project for Inclusion - LA County Flood Control Upgrades on Avenue P-8**
- 6. Presentation on Palmdale Water District’s “Littlerock Creek Groundwater Recharge and Recovery Project” – Kennedy/Jenks (15 Minutes)**
- 7. RMC Proposal for As-Needed Consulting Services**

**** Please note that there will NOT be a Salt/Nutrient Meeting following the Stakeholder Meeting**

AV IRWM Stakeholder Meeting

Wednesday, March 26, 2014

Minutes taken by: Brenda Ponton

The Antelope Valley Integrated Regional Water Management Stakeholder Meeting was held from 9:00 – 11:00 am on March 26, 2014, at the City of Palmdale Larry Chimbole Cultural Center – Joshua Room.

1. Welcome and Introductions

- a. The meeting was opened and led by Matt Knudson and Rick Caulkins and called to order at 9:05 am.
- b. An electronic copy of the PowerPoint presentations, Handouts, and sign-in sheet is attached.

2. Drought Emergency - Expedited Round of Grant Awards & Call for Projects

- a. AV IRWM Plan Update 2013
 - The IRWMP Update was submitted to DWR at the end of January 2014.
 - DWR will respond with comments within 60 days (April 1st).
 - Plan adoption by the Regional Water Management Group (RWMG) is required for the Prop. 84 grant process.
- b. The final round of Prop. 84 funding has been split into two parts: Part 1 is an expedited emergency drought relief round and Part 2 is the regular implementation round.
 - \$200 million is available for the Expedited Round (Part 1) for projects that provide immediate drought relief. About \$6 million will be available to the Lahontan Funding Area that includes the Antelope Valley Region.
 - The remaining \$250 million in Prop. 84 IRWM funds will be available for the regular Implementation round (Part 2) in 2015/2016.
 - The Expedited Round (Part 1) draft guidelines will be released April 1st and the final guidelines June 1st. DWR will conduct workshops to discuss the guidelines and allow for comments during the 60-day comment period. The anticipated application deadline is August 1st.
 - The anticipated requirement to provide “Immediate” drought preparedness does not mean that projects must have CEQA complete. It is likely that projects funded by expedited grants will have to be operational by a certain date.
 - Los Angeles County Waterworks Districts (LACWD) stated they have heard projects might have to be complete by October 2016.
- c. It was asked how DWR’s response to the IRWMP Update (April 1st) will affect the expedited Prop. 84 application process (draft guidelines available April 1st)
 - Brian stated the IRWMP update needs to be approved by DWR and adopted by the RWMG. Plans will be approved by DWR if they meet 70% of the IRWMP requirements or more. DWR will provide comments on the Antelope Valley

IRWMP by April 1. Any comments on the IRWMP will be able to be incorporated quickly to be ready for the expedited funding round.

- The A-Team will draft language for the member agencies. Rick C. volunteered to help.
- One comment on the IRWMP Update will likely be about the Salt and Nutrient Management Plan (SNMP) placeholder.

d. Stakeholders and project proponents should begin to review projects in the 2013 IRWMP Update to decide which to submit for grant funding for the Region.

- Projects with supply benefits not quantified and other gaps in information will need to fill in the gaps to be competitive.
- The A-Team should administer a Call for Projects to retrieve the most updated information on existing and new projects.
- Information gathering for projects should be completed by May/June

3. Lahontan Funding Area Coordination

a. The Lahontan Prop. 84 funding area includes the following Regions: Antelope Valley, Tahoe Sierra, Inyo Mono, Mojave, Fremont, and Lahontan Basins.

- Fremont and Lahontan Basins are still in the process of becoming accepted Regions.
- It was noted that the City of Mojave is not the same as the Mojave Region. It is possible that the City of Mojave will participate as a stakeholder in the Antelope Valley Region.
- The Mojave Region received the bulk of the Prop. 84 Round 2 funding for the Lahontan Funding Area.
- There have been efforts recently for the Regions to work cooperatively to pursue Lahontan Funding Area funds strategically.
 - An email was sent to the other Regions. Tahoe Sierra and Inyo Mono have responded. The A-Team is still waiting to hear back from Mojave.
 - Rick Caulkins will continue to lead the cooperation efforts with the other Lahontan Funding Area Regions

b. The group discussed whether pursuing funding during the Expedited Round is beneficial.

- It was agreed that pursuing funding earlier (Part 1) is a better strategy than waiting for the next round (Part 2).

4. Other Drought-Related Funding Opportunities

a. State Water Resources Control Board State Revolving Fund 1% loans are available for recycled water projects

- It was asked if this loan could be coupled with the Prop. 84 grant to pay as part of the cost share for the grant.

- Brian stated Local and Federal Loans have been used with a State grant before, but usually not State loans with a State grant. Typically, state funds cannot be used as matching funds for other state funding programs.
 - b. Title XVI US Bureau of Reclamation funding is available for recycled water projects
 - c. Antelope Valley College is pursuing a competitive grant through the California Pathways Trust and soliciting sponsorship. Their application is due Friday March 28, 2014. They wish to promote water treatment, wastewater, and conservation education in schools.
5. Boron CSD Arsenic Update
- Natalie Dadey of Boron CSD provided an update on the Prop. 84, Round 2 Implementation Grant for the Arsenic Management Feasibility Study and Well Design project.
- a. Boron CSD was not awarded funding under the Prop. 84, Round 2 draft grant recommendations. In response, RMC assisted Boron CSD in writing a letter contesting the initial scoring of the project.
 - b. While in the process of contesting, Boron CSD received funding through another state program, the SWRCB SRF program, after successfully qualifying as a DAC.
 - c. Boron CSD subsequently received full funding under Prop. 84, Round 2 when the final grant recommendations were issued.
 - d. Boron has decided to respectfully decline the IRWM Prop. 84 Round 2 award because the timing of the SRF funding had required them to give an answer prior to the Prop. 84, Round 2 final grant recommendations.
 - e. The \$427,000 in funds from Prop. 84, Round 2 will presumably be available to all Regions in the Lahontan Funding Area for Round 3.
6. Salt and Nutrient Management Plan Update
- a. LACWD is working on completing the SNMP
 - The SNMP will be due to the RWQCB on May 16th, 2014
 - LACWD expects to have the SNMP available by the end of April.
 - Another SNMP stakeholder meeting might not be necessary, but there will most likely be an opportunity for one when the A-Team holds a meeting to discuss projects for the expedited Prop. 84, Round 3 Grant.
7. New Project for Inclusion
- a. LA County Flood Control Upgrades on Avenue P-8
 - The Project is proposed by Los Angeles County DPW. It would protect the existing water structures along Avenue P-8.
 - An economic analysis is being conducted but is not complete.
 - The A-team recommended to accept the project into the IRWMP as conceptual.
 - There was stakeholder consensus to accept the project into the IRWMP as conceptual.
 - Rick C. volunteered to forward the project information to Aracely J. to add it to the AV IRWMP website.

8. Littlerock Creek Groundwater Recharge and Recovery Project Update

- a. David Ferguson from Kennedy-Jenks presented an update on Palmdale Water District's Littlerock Creek Groundwater Recharge and Recovery Project. An electronic copy of the PowerPoint is attached.
- b. Of the groundwater subbasins within the project area, the Lancaster Subbasin has the most storage potential (4.7 million AF) due to heavy pumping in the past. It is still being investigated whether subsidence has occurred.
- c. The analysis to determine how to get the water in the ground includes 2 alternatives that put water in the creek for infiltration and 8 alternatives that pipe the water directly to the Lancaster Subbasin.
- d. Satellite data is being used to determine which areas are best for recharge and recovery.
- e. Recycled water recharge options are one of several evaluation criteria being considered.
- f. A 10-year running average is being used to estimate the amount of surface water and imported water needed to dilute recycled water used for recharge.
- g. The alternatives for where recharge basins will be located are partially within and surrounding the Los Angeles World Airports (LAWA).
- h. The consultants are in the processes of further developing the alternatives.

9. Selection of new A-Team members

- a. Three of the seven A-Team terms ended at the close of 2013: Agriculture, Municipalities, and Urban Water Suppliers. The terms have a three year duration. The selections for the three seats were as follows:
 - Agriculture: Gene Nebeker (Farm Bureau) was selected to continue the position with Julie Kyle as stand-in. Gene previously stated he would accept.
 - Municipalities: Gordon Phair (City of Palmdale) was selected for the position. He previously stated he would accept.
 - Urban Water Supplies: Aracely Jaramillo (LACWD) and Dave Rydman were mentioned as potential candidates. Matt Knudson volunteered to remain in the position until the next stakeholder meeting when the topic can be revisited and the named parties have expressed their desire to accept or decline.

10. RMC Proposal for As-Needed Consulting Services

- a. The stakeholder group agreed to use approximately \$9,000 of the remaining RWMG funds to contract with RMC for as needed services to support the Region with any remaining IRWMP Update action items and to help prepare the Region for the upcoming expedited Round 3, Part 1 grant process.

11. Meeting was adjourned at 11:00 am

ACTION ITEMS:

1. A-Team to draft a Call for projects and distribute to the stakeholder group.

2. A-Team to meet to discuss projects and Prop. 84, Round 3, Part 1 draft guidelines when released (expected April 1).
3. A-Team to schedule the next stakeholder meeting to discuss the Prop. 84, Round 3, Part 1 guidelines and projects. This meeting will also include discussion about adoption of the 2013 IRWMP Update by the 11 member agencies of the Regional Water Management Group and other adopting agencies.
4. Rick C. to forward any new project information to Aracely J. for the AV IRWMP website, including the LA County Project information.
5. RMC to work with AVSWCA to develop a contract for as-needed services.

DRAFT

**Antelope Valley Integrated Regional Water Management Plan
Stakeholders
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Last Name	First Name	Title	Organization	Address	City	State	Zip	Phone	Fax	E-Mail	Signature
Adams	Ranney	Env. Mgr	AFResearch Lab Edwards					661-275-5465		ranney.adams@edwards.af.mil	
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Argo	Johnny		LA Co. Sans Districts/Director Assoc. of Rural Town Councils					661-433-5888		jargo@lacs.org	
Argo	Wayne	President	Antelope Valley Town Councils					661-257-4841 X6907		wayneargo@hughes.net	
Ariki	Adam	Assistant Deputy Director	Los Angeles County Waterworks Districts	900 S. Fremont Ave.	Alhambra	CA	91803	626-300-3302	626-300-3385	aariki@dpw.lacounty.gov	
Armstrong	Scott	Vice President	Paleo Solutions	911 S. Primrose Ave, Unit J	Monrovia	CA	91016	949-813-1240	949-813-1240	scott@paleosolutions.com	
Baker	Jess	Manager	White Fence Farms #3	PO Box 3411	Quartz Hill	CA	93586	816-1741	943-2127		
Barnes	Tom	Resources Manager	AVEK	6500 W. Avenue	Palmdale	CA	93550	661-943-3201	661-943-3204	tbarnes@avek.org	
Beeby	Robert		SAIC					805-564-6139		beeby@saic.com	
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Berglund	Travis	Assit. GM	LCID	53141 87th Street East	Little Rock	CA	53453	661-944-2015	661-944-3668	tberglund@LRCID.com	
Bevins	Michael	PW Director	City of California City		California City	CA	93505	760-596-2861		pwdir@californiacity.com	
Blank	Laura		Edwards AFB							laura.blank@edwards.af.mil	
Bones	Brad	GM	Little Rock Creek Irrigation District	35141 87th Street	Little Rock	CA	93543	661-944-2015	661-944-3668	bbones@lrcid.com	
Brown	Marta Golding	Antelope Valley Director	BIA LAV	44903 10th Street West	Lancaster	CA	93534	661-949-6857	661-949-6090	mgbrown@bialav.org	
Cajina	Stefan	District Engineer	CA Dept. of Health Services	1449 W Temple St, R202	Los Angeles	CA	90026			Stefan.cajina@cdph.ca.gov	
Campbell	Richard	Director	Antelope Valley Resource Conservation District	44811 N. Date Ave., Suite G	Lancaster	CA	93534	661-722-7829	1-888-542-0024	richcam@wwdb.org	
Caulkins	Richard	Senior Engineer	LA County Sanitation District	41769 11th St W, Ste A	Palmdale	CA	93551	866-422-8474		rcaulkins@lacs.org	

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Last Name	First Name	Title	Organization	Address	City	State	Zip	Phone	Fax	E-Mail	Signature
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Chen	Timothy	Associate Civil Engineer	Los Angeles County Waterworks Districts	900 S. Fremont Ave.	Alhambra	CA	91803	626-300-3342	626-300-3385	tchen@dpw.lacounty.gov	<i>TC</i>
Chisam	Dwayne	Asst. General Manager	Antelope Valley-East Kern Water Agency	6500 W. Ave N	Palmdale	CA	93551	661-943-3201		dchisam@avek.org	
Copeland	Patrice	Senior Engineering Geologist	Lahontan Regional Water Quality Control Board					760-241-7404		pcopeland@waterboards.ca.gov	<i>Patrice Copeland</i>
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Dadey	Natalie		Boron CSD					760-762-6127		boroncsd@yahoo.com	<i>3/26/14</i>
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Davis	Kevin	Director	eSolar					650-823-2584		kevin@esolar.com	
de Hollan	Erika	Project Engineer	Los Angeles County Sanidation Districts							edehollan@lacsds.org	
De La Cruz	Valerie		Los Angeles County Department of Public Works - FCD	900 S. Fremont Ave.	Alhambra	CA	91803	626-458-6126		vdelacruz@ladpw.org	
Deal	Wanda		Edwards AFB Natural Resources	5 E Popson Ave	Edwards AFB	CA	93524	661-810-9622		wanda.deal@edwards.af.mil	<i>Wanda Deal</i>
Diep	Chi		California DHS - Drinking Water Program	1449 W. Temple St.	Los Angeles	CA	90026	213-580-5727		chi.diep@cdph.ca.gov	
Dietrick	Brian	Project Manager	RMC	2400 Broadway, Suite 300	Santa Monica	CA	90404	310-566-6460		bdietrick@rmcwater.com	
Dodson	Jim	Board Chairs	Desert & Mountain Conservation Authority	44811 N. Date Ave., Suite G	Lancaster	CA	93534	661-945-2604/ 661-942-3662		jim.dodson@verizon.net	
DuBois	Jamie	Operations	Rosamond Community Services District	3179 35th St W	Rosamond	CA	93560	256-6789			
Dyas	Keith	Director	AVEK					256-4512		keith.dyas77@gmail.com	
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Kennedy	Kristi		Lake Los Angeles Town Council					661-877-9952		lakelakristi@gmail.com	
Knudson	Matt	Assitant GM	Palmdale Water District	2029 East Avenue Q	Palmdale	CA	93550	661-947-4111		mknudson@palmdalewater.org	
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Last Name	First Name	Title	Organization	Address	City	State	Zip	Phone	Fax	E-Mail	Signature
Matthias	Colleen	Secretary II	City of Lancaster	615 W Ave H	Lancaster	CA	93534	661-723-5888		cmatthias@cityoflanaster.org	
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Rydman	Dave	Civil Engineer	Carollo Engineers					626-535-0180		drydman@carollo.com	
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Sloan	William		US Borax							wsloan@mofo.com	
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Last Name	First Name	Title	Organization	Address	City	State	Zip	Phone	Fax	E-Mail	Signature
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Tyman	Frank		Quartz Hill Water District					661-943-3654		frank@qnet.com	
Ukkestad	John	President	White Fence Farms Mutual Water Co.; AV United Water Purveyors	41901 20th St. West	Palmdale	CA	93551	661-272-0015; 661-943-3316	661-943-3576; 805-943-3316	wff@qnet.com	
Upton-Knittle	Alexis		Leona Valley Town Council Secretary							auk9@earthlink.net	
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Werner	Andrew		WDS	5700 Wilshire Blvd., Suite 330	Los Angeles	CA	90035	323-244-5756	323-930-9114	andrewwerner@westerndev.com	
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Wise	Cindy	Staff Environmental Scientist	Lahontan Regional Water Quality Control Board	2501 Lake Tahoe Blvd.	South Lake Tahoe	CA	96150	530-542-5408	530-544-2271	cwise@waterboards.ca.gov	
Withrow	Nancy	Soil Cons. Student	NRCS		Lancaster	CA		945-2604			
Wong	Jennifer	Water Resources Engineer	CA Dept of Water Resources	770 Fairmont Ave Suite 102	Glendale	CA	91203	818-500-1645 x262	818-543-4604	jenwong@water.ca.gov	
Wood	Greg		Rosamond Community Services District					661-256-3411		gwood@lacsdsd.org	
Wood	Mary	Director	Westside Park Mutual Water Co	40317 11th St.	Palmdale	CA	93551	661-273-2997	661-266-7938	maryiw@rglobal.net	
Wood	Robert		Leona Valley Town Council					661-270-9745		robertwood840@sbcglobal.net	

Antelope Valley Integrated Regional Water Management Plan

Stakeholders

03/26/2014

Last Name	First Name	Title	Organization	Address	City	State	Zip	Phone	Fax	E-Mail	Signature
Workman	Carlyle	City Engineer	City of Lancaster	44933 Fern Ave.	Lancaster	CA	93534	661-723-6079		cworkman@cityoflancafterca.org	
Yazdani	Jamshed	Assoc. Engineer	City of Lancaster	44933 N. Fern Avenue	Lancaster	CA	93534	661-845-6880		jyazdani@cityoflancafterca.org	
Zimmerman	Jan	Geologist	Lahontan Regional Water Quality Control Board					760-241-7376		jzimmerman@waterboards.ca.gov	
JENKINS	RHYS										
Gillette	Daniel										
Fowler	Virginia	M&T	LACFCO							vmfowler@dpw.lacounty.gov	
SMITH	BRACH		RCSO								
UHAZY	Les	Dean Math, Sci. + Engr.	Antelope Valley College	3041 W. Ave K Lancaster			93536	661-722-6417		lchazy@avc.edu	

O'Neil Tom Dean Econ Dev

AVC " Lake L.A.

" 722-6481 204 0069

Lowell@AVC.edu *[Signature]* 03-26-2014

HAROLD BRAND

Ferguson, David Principle Engineer Kennedy/Jacobson 300 N Lake Park 91101

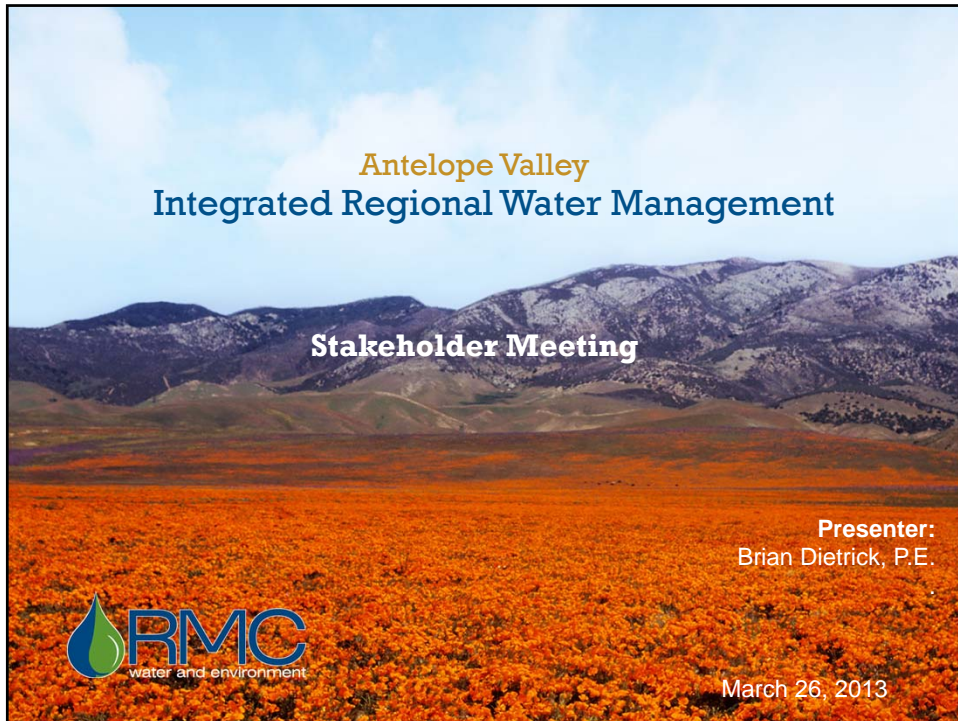
626 568 4300

david.ferguson@kennedycorp.com *[Signature]*

VELASQUEZ, CHRISTINA GEOLOGIST LAHONTAN RWQCB

760 241 7333

CHRISTINA.VELASQUEZ@WATERBOARDS.CA.GOV *[Signature]*



Prop. 84, Round 3 Funding is Split into Two Parts

Part 1: Expedited Emergency Drought Relief Funding

- \$200 million in funds
- Projects that provide immediate drought relief
- Applications due Summer 2014 (likely August 1st)
- Likely \$6 million for Lahontan Region

Part 2: Regular IRWM Implementation Funding

- \$250 million in funds
- IRWM implementation projects
- Similar to Round 2
- Guidelines not expected until Summer 2015
- Likely \$5 million for Lahontan Region



Drought Emergency - Prop. 84, Round 3, Part 1 (expedited round)

- Expedited emergency drought relief funding
- \$200 million in Prop. 84 funds through IRWM Program for projects that provide immediate drought relief
- Draft guidelines (Proposal Solicitation Package or PSP): anticipated April 1st
 - Information about eligibility and funding availability will be included within the PSP
- Final PSP: June 1st
- Grant application due to DWR: expected August 1st
- Funding awards anticipated: early Fall 2014



Prop. 84, Round 3, Part 1 - Competitive Features

- SB104 language - projects that "...provide immediate regional drought preparedness, increase local water supply reliability and the delivery of safe drinking water, assist water suppliers and regions to implement conservation programs and measures that are not locally cost-effective, or reduce water quality conflicts or ecosystem conflicts created by the drought."
- "Immediate" will likely apply to projects that will be ready for implementation in the very near future
- "Drought preparedness" from IRWM Guidelines - contribute to sustainable water supply and reliability water shortages that achieve one or more of the following:
 - Promote water conservation, conjunctive use, reuse and recycling
 - Improve landscape and agricultural irrigation efficiencies
 - Achieve long-term reduction of water use
 - Efficient groundwater basin management
 - Establish system inerties



Next Steps for Antelope Valley IRWM on Prop. 84



Potential Projects that could be considered for Prop. 84, Round 3, Part 1

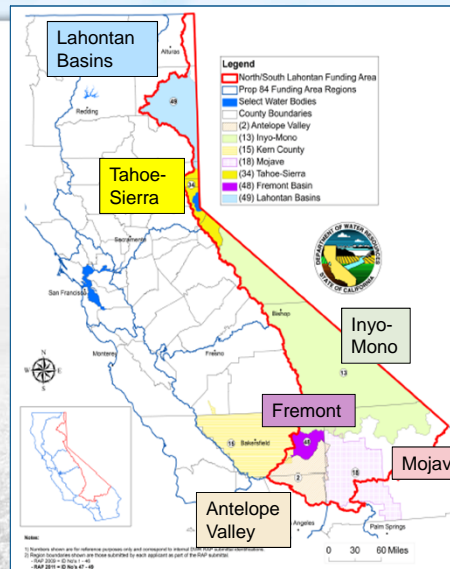
Project	Project Type	Supply Benefit	Other Benefits
Littlerock Creek Groundwater Recharge and Recovery Project	Recycled and Imported Water Recharge	IW: 38,000 AFY RW: 5,000 AFY	Basin water quality; flood
Whit Carter Park Recycled Water Conversion	Recycled Water Conversions	50 AFY	Basin water quality
Pierre Bain Park Recycled Water Conversion	Recycled Water Conversions	75 AFY	Basin water quality
Lancaster National Soccer Center Recycled Water Conversion	Recycled Water Conversions	500 AFY	Basin water quality
Palmdale Recycled Water Authority – Phase 2 Distribution System	Recycled Water Conveyance	1,000 AFY	Basin water quality
Upper Amargosa Creek Flood Control, Recharge, and Habitat Restoration Project	Stormwater and Imported Water Recharge	SW: 400 AFY IW: 24,300 AFY	Flood; habitat (15 acres)
Antelope Valley Water Bank - Phase 2	Imported Water Recharge	100,000 AFY / 450,000 AFY	
Littlerock Dam Sediment Removal	Stormwater Capture	560 AFY	Water quality; habitat
Water Supply Stabilization Project (WSSP) – Westside Expansion	Imported Water Recharge	6,000 AFY / 450,000 AF storage	
BCSD Arsenic Management Feasibility Study and Well Design	Groundwater	Not quantified	Drinking water quality
RCSA Arsenic Consolidation Project	Groundwater	Not quantified	Drinking water quality
Antelope Valley Regional Conservation project	Conservation	Not quantified	Open space (5 acres)



Lahontan Funding Area Coordination

Other Regions:

- Tahoe Sierra
- Inyo Mono
- Mojave
- Fremont
- Lahontan Basins



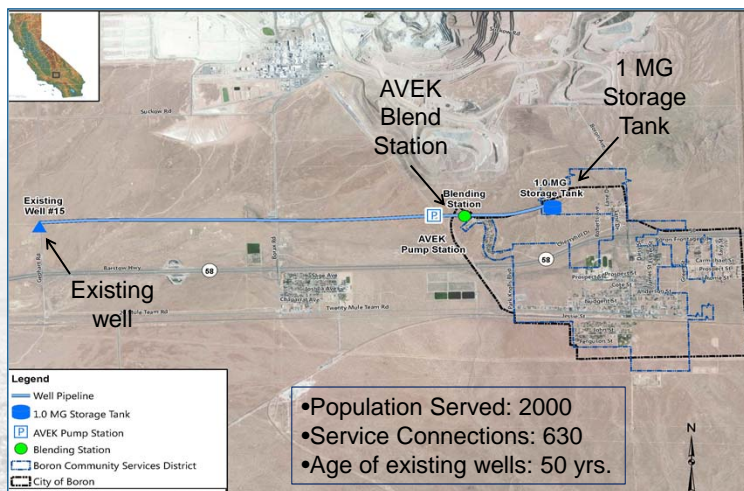
Other Drought-Related Funding Opportunities are also Available

- SWRCB SRF 1% loans for recycled water projects
 - Projects that are ready to provide new water supplies within the next 3 years
 - Must have complete applications between Jan. 17, 2014 to December 2, 2015
 - Funding cap of \$800 million
- Title XVI USBR funding for recycled/reclaimed water projects
 - Funding for Feasibility Study
 - Up to \$150,000 for projects that can be complete in 18 months
 - Up to \$450,000 for projects that can be complete in 3 years
 - Funding share 50%
 - Applications due in May



Update on Prop. 84, Round 2

Boron CSD Arsenic Management Feasibility Study and Well Design



Salt and Nutrient Management Plan

- Update from LACWD 40 and LACSD
- Final version is needed to complete IRWMP



New Project for Inclusion in IRWMP

- LA County Flood Control Upgrades on Avenue P-8



Littlerock Creek Groundwater Recharge and Recovery Project

- Update from Palmdale Water Districts and Kennedy-Jenks Consultants



A-Team Open Positions

A-Team Seats (Category)	Designated end of first term	2009	2010	2011	2012	2013	2014
Agriculture	2010	Dave Rizzo			Dave Rizzo (left AVEK) Gene Nebeker (Stand-in: Julie Kyle)		
Conservation, Environmental, and Water Quality	2011	Brian Dietrick (left LACSD) Rick Caulkins				Rick Caulkins (Stand-in: TBD)	
Industry and Commerce	2009	Gretchen Guttierrez	Gretchen Guttierrez (left BOT 09-2009) Josh Mann (resigned 02-2011) Vicki Medina			Vicki Medina (Stand-in: Marta Golding Brown)	
Municipalities	2010	Randy Williams (retired 08-2009) Steve Dassler			Steve Dassler (retired 12-2011) Carlyle Workman (Stand-in: TBD)		
Mutual Water Companies	2011	Vicki Nelson				Vicki Nelson (Stand-in: TBD)	
Public/Land Owners/Rural Town Councils	2009	Bob Large	Bob Large			Bob Large (Stand-in: Yvonne Malkowski)	
Urban Water Suppliers	2010	Dave Rydman			Dave Rydman (left LACWD) Jessica Bunker (transferred) Matt Knudsen		



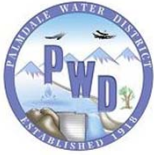
RMC Proposal for As-needed Consulting Services



Open Discussion/Q&A

Courtesy of Richard Caulkins





Palmdale Water District
**Littlerock Creek Groundwater Recharge
and Recovery Project Feasibility Study**
Development of Alternatives and Project Sizing



March 26, 2014

Kennedy/Jenks Consultants

Agenda

Introduction

Hydrogeology

Geophysical Investigation

InSAR Data

Evaluation Criteria

Project Sizing Optimization

Alternatives Development

Groundwater Wells

Summary and Next Steps

Kennedy/Jenks Consultants

Agenda

Introduction

Hydrogeology

Geophysical Investigation

InSAR Data

Evaluation Criteria

Project Sizing Optimization

Alternatives Development

Groundwater Wells

Summary and Next Steps

Kennedy/Jenks Consultants

Introduction

Data Collection
and Evaluation

Field
Investigations &
Groundwater
Modeling

Development of
Alternatives
Project Sizing

Refinement of
Alternatives
Quantity
Quality
Cost

Kennedy/Jenks Consultants

Agenda

Introduction

Hydrogeology

Geophysical Investigation

InSAR Data

Evaluation Criteria

Project Sizing Optimization

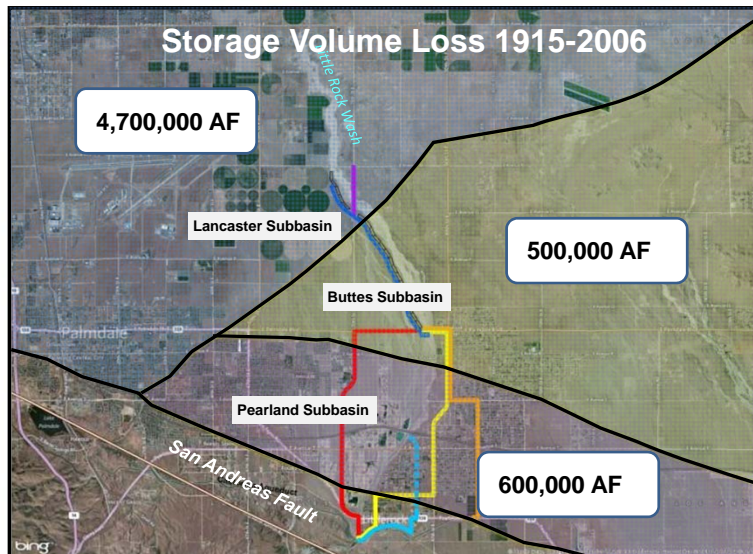
Alternatives Development

Groundwater Wells

Summary and Next Steps

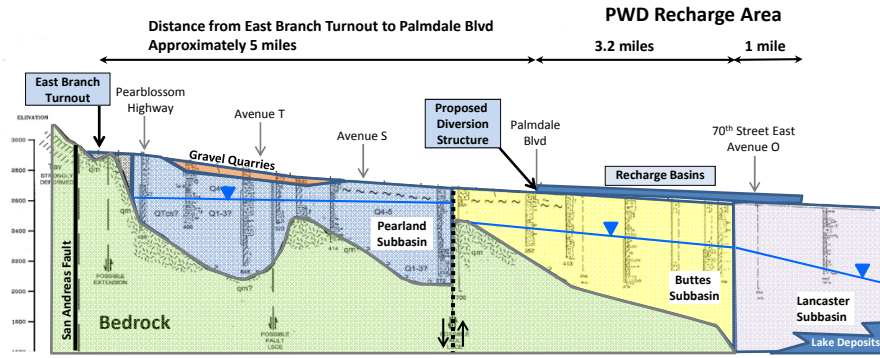
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Evaluate the Project Influence Over Several Groundwater Subbasins within Project Area



Kennedy/Jenks Consultants

The Geology and Groundwater Conditions Vary Considerably Across the Project Area



Kennedy/Jenks Consultants

Groundwater Quality

Low Total Dissolved Solids (TDS)

Low Nitrate and Low Arsenic

Water quality generally GOOD

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Agenda

Introduction

Hydrogeology

Geophysical Investigation

InSAR Data

Evaluation Criteria

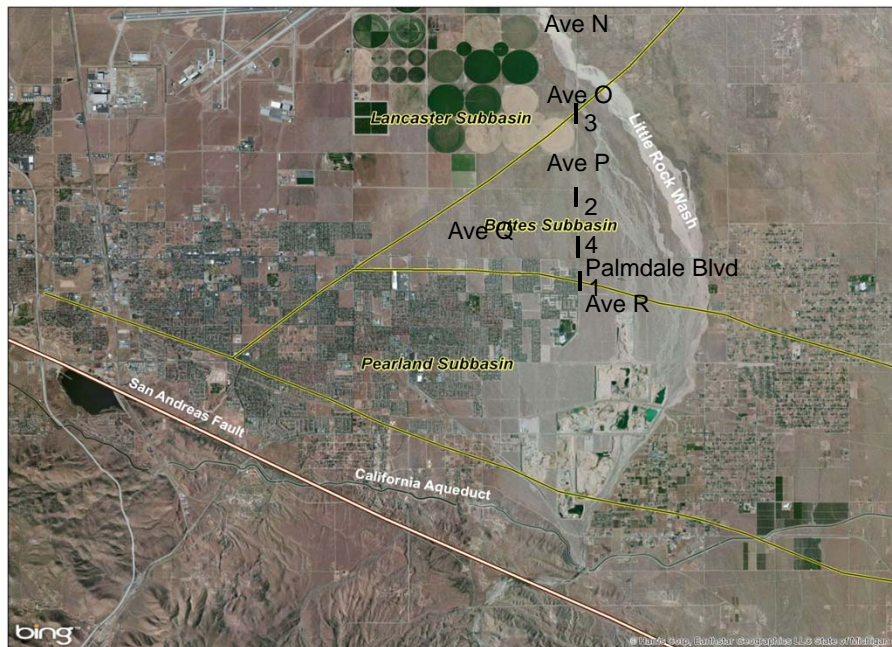
Project Sizing Optimization

Alternatives Development

Groundwater Wells

Summary and Next Steps

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Agenda

Introduction

Hydrogeology

Geophysical Investigation

InSAR Data

Evaluation Criteria

Project Sizing Optimization

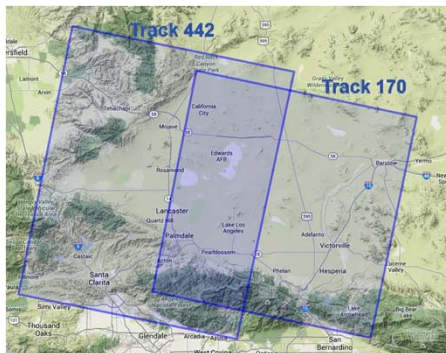
Alternatives Development

Groundwater Wells

Summary and Next Steps

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InSAR Data



Use satellite imagery to measure land uplift during high recharge events

Infer locations of permeable pathways in aquifer

Using 2005 flood for analysis

Not enough data for 1998 flood

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Agenda

Introduction

Hydrogeology

Geophysical Investigation

InSAR Data

Evaluation Criteria

Project Sizing Optimization

Alternatives Development

Groundwater Wells

Summary and Next Steps

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Evaluation Criteria

Capital Cost

Unit Water Cost

Recharge and
Recovery
Capacity

Recovery Water
Quality

Environmental
Impact

Implementation
Risk and
Uncertainty

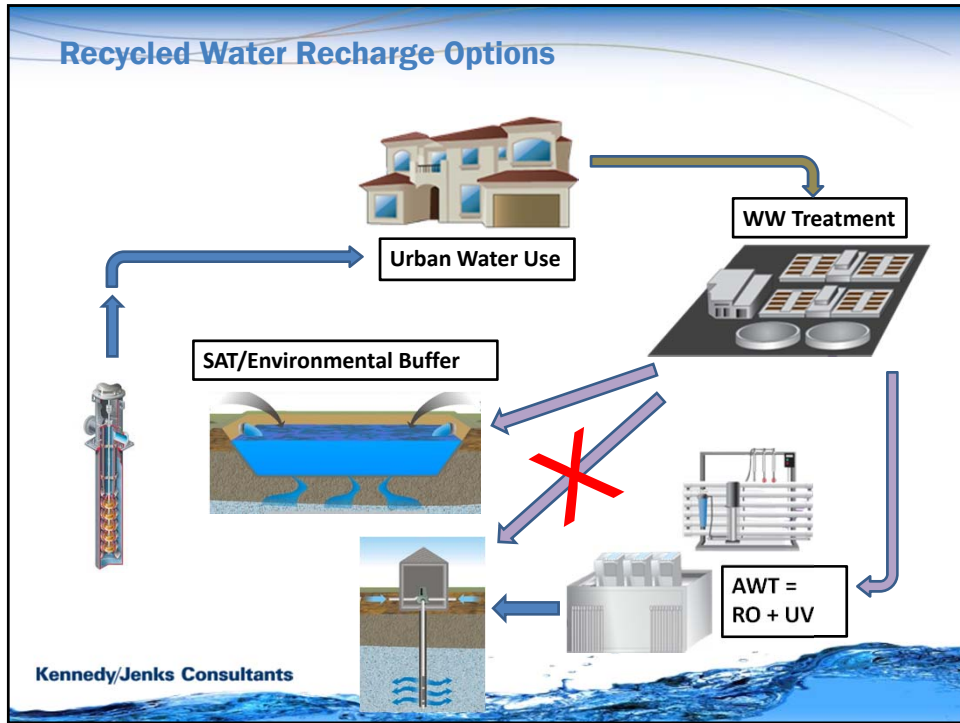
Institutional
and Private
Entity Issues

Recycled Water
Recharge
Compatibility

Regulatory and
Permitting
Issues

Public
Acceptance

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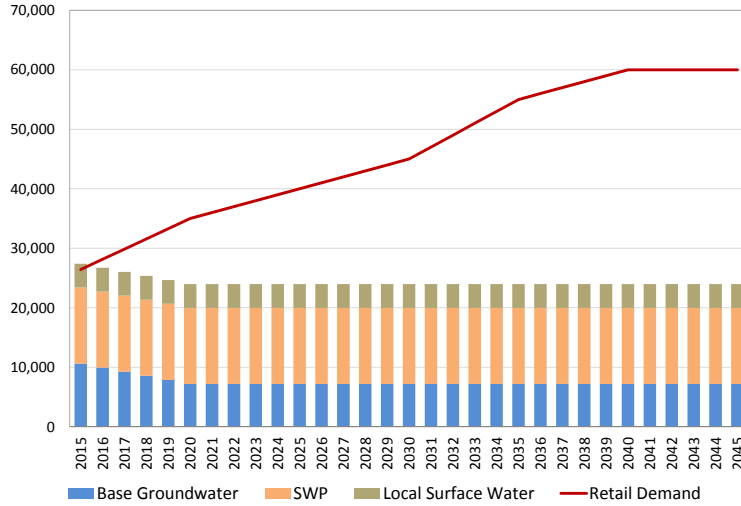


Agenda

Introduction
Hydrogeology
Geophysical Investigation
InSAR Data
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Summary and Next Steps

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Supply Demand Gap



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Key Assumptions for Alternatives Development

Project life cycle = 2016 - 2045

95% recovery of recharged water

Average SWP allocation = 60%

Available recycled water for recharge = 6,000 AFY in 2016 and increases to 19,000 in 2040

Max allowed Recycled Water Contribution starts at 20% and will increase to 30% after 5 years, 40% after 8 years and 50% after 11 years

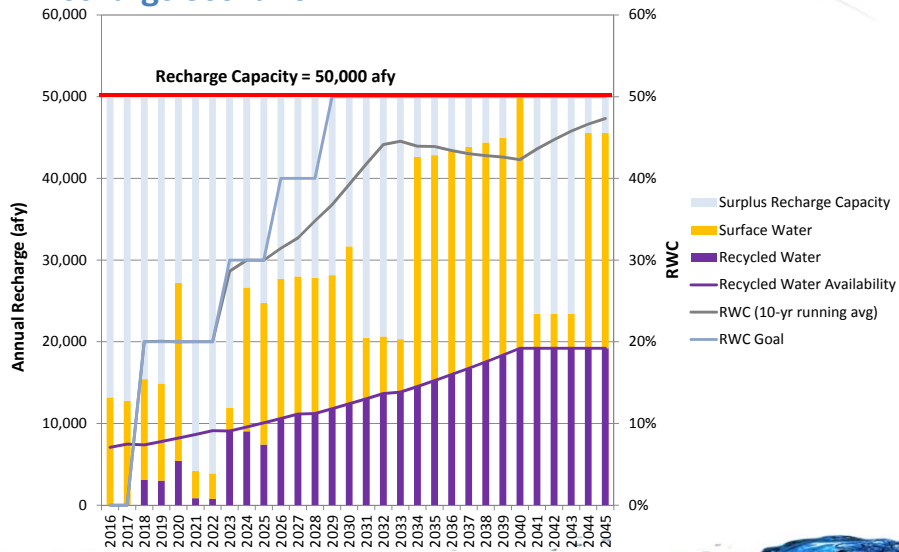
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Water Supply Scenarios

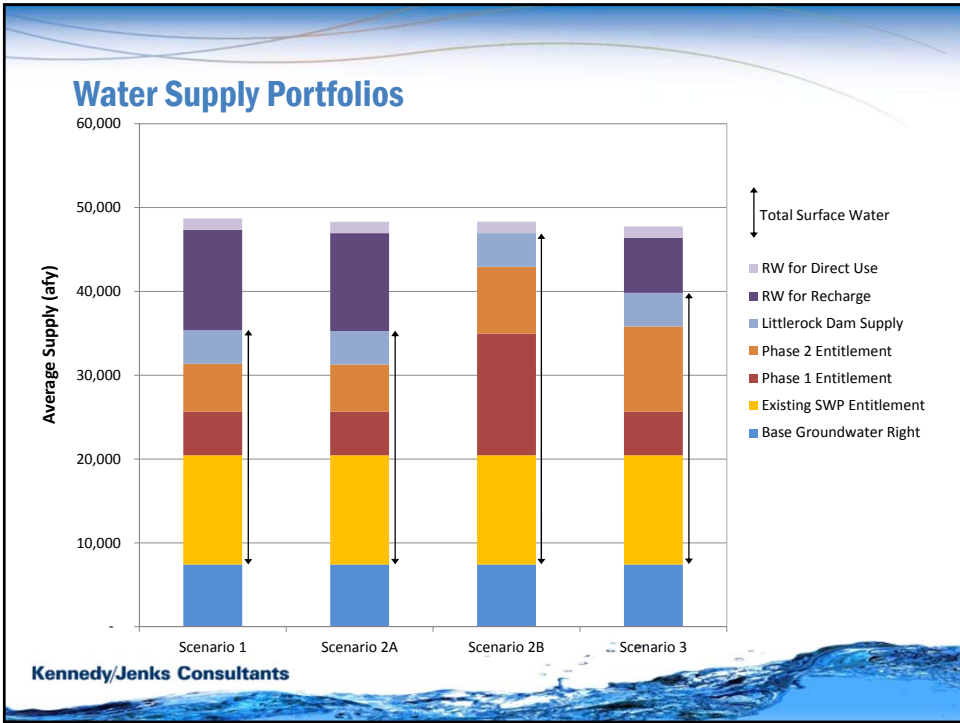
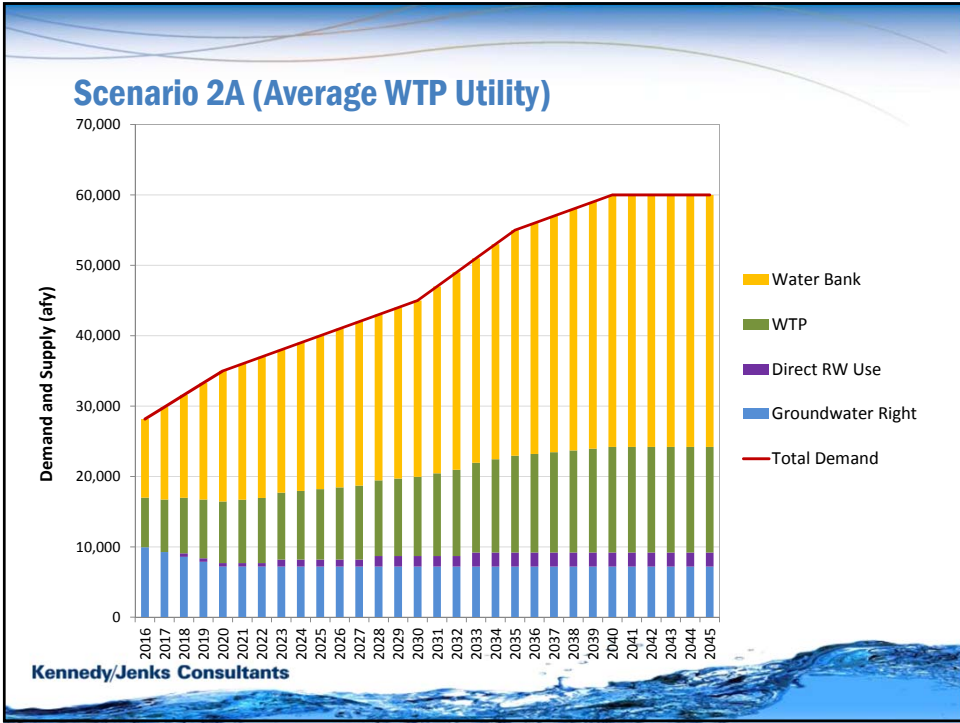
- Scenario 1 – Low WTP Utilization
 - Constant flow of 4,000 afy throughout
- Scenario 2 – Moderate WTP Utilization
 - 25% of demands (7,000-15,000 afy)
- Scenario 3 – High WTP Utilization
 - 25-65% of demands (7,000-39,000 afy)

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Recharge Scenario 2A



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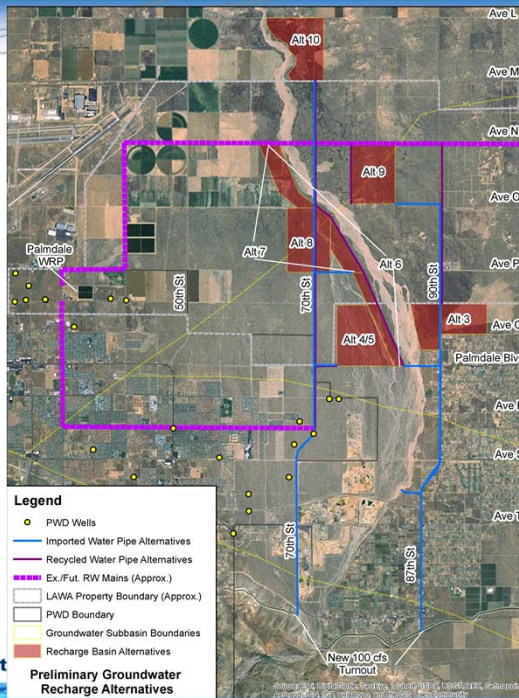


Agenda

- Introduction
- Hydrogeology
- Geophysical Investigation
- InSAR Data
- Evaluation Criteria
- Project Sizing Optimization
- Alternatives Development**
- Groundwater Wells
- Summary and Next Steps

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Alternatives



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Preliminary Groundwater Recharge Alternatives

Agenda

- Introduction
- Hydrogeology
- Geophysical Investigation
- InSAR Data
- Evaluation Criteria
- Alternatives Development
- Project Sizing Optimization
- Groundwater Wells**
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Recovery Groundwater Wells

Recharge Alternative	Pearland Basin	Buttes Basin	Lancaster Basin
1	67%	33%	
2	33%	67%	
3, 4, 5		100%	
6		67%	33%
7, 8, 9		50%	50%
10			100%

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Quantities and Phasing of Recovery Wells

Retail Demand (afy)	Year	Alt 1	Alt 2	Alts 3,4,5	Alt 6	Alts 7,8,9	Alt 10
30,000	2017	22	21	19	14	13	10
40,000	2025	35	33	29	22	20	15
50,000	2032-33	49	46	41	31	27	21
60,000	2040	63	59	53	40	35	27

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Agenda

Introduction

Hydrogeology

Geophysical Investigation

InSAR Data

Evaluation Criteria

Alternatives Development

Project Sizing Optimization

Groundwater Wells

Summary and Next Steps

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Summary of Work to Date

- Kick-off and Stakeholder Meeting No. 1
- Initial Geology/Hydrogeology - Evaluated
- Existing & Future Infrastructure - Reviewed
- Evaluation Criteria – Draft
- Project Sizing - Optimized
- 10 Alternatives - Developed
- Capital and Unit Costs – first Cut

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Next Steps

- Perform additional testing and evaluation to refine the alternatives.
 - Geophysical Testing (Depth to Bedrock) – report
 - Infiltration Testing (6 locations)
 - Environmental Constraints Study (Bio and Cultural)
 - Water Quality Sampling (10 wells)
 - Groundwater Flow Model
 - Water Quality Model
 - Subsidence Evaluation

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