

SOUTH Y: DRAFT INTERIM REMEDIAL ACTION PLAN PREFERRED ALTERNATIVE

Public Webinar

March 31, 2020 3:00 PM – 5:00 PM

Web Cast . <https://global.gotomeeting.com/join/697120549>

Call-In #: (Toll Free): 1 (877) 309-2073; or : 1 (646) 749-3129

Access Code: 697-120-549



INTRODUCTION

Public Webinar – Groundwater at the South Y

- Draft Interim Remedial Action Plan (IRAP)
- Comments: March 17th – April 16th, 2020
- Documents: Groundwater Web Page (<https://www.stpud.us>)
- Information: ibergsohn@stpud.dst.ca.us



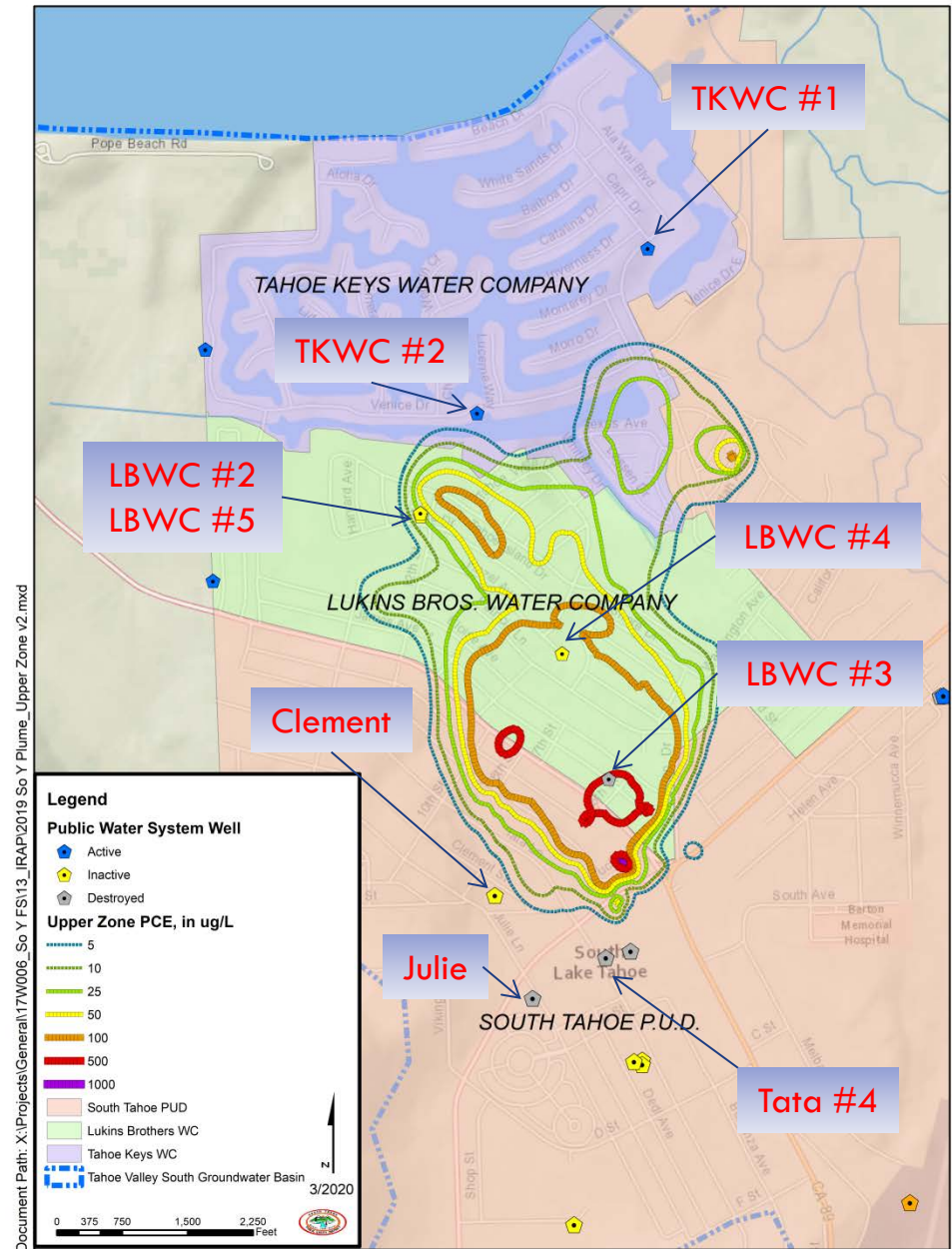
NAME	AFFILIATION	ROLE
Ivo Bergsohn, PG, HG	South Tahoe Public Utility District	Project Director
Sachi Itagaki, PE	Kennedy Jenks Consultants	Principal Engineer
Jennifer Lau Larsen, PE	Kennedy Jenks Consultants	Project Engineer

AGENDA

- Chronology
- South Y Plume
- Impacts on Drinking Water Supply
- South Y Feasibility Study
- Interim Remedial Alternatives
- Preferred Interim Alternative
- IRAP Implementation
- Questions

CHRONOLOGY

- 1989: PCE 1st detected in South Y Area Wells (Clement, Julie, Tata #4, LBWC #3, LBWC #4, TKWC #2)
- 1991: Clement Well - PTAS (870 gpm)
- 1994: LBWC #4 - Impaired, offline
- 2000: LBWC #3 - Impaired, offline
- 2001: Clement Well – Impaired, offline
- 2006: Julie, Tata #4 - Destroyed
- 2006: LBWC #5 - PCE 1st Detection
- 2012: TKWC #2 - GAC (550 gpm)
- 2013: LBWC # 3 - Destroyed
- 2014: LBWC #2, LBWC #5 - Impaired, off-line
- 2016: TKWC #1 - PCE 1st Detection

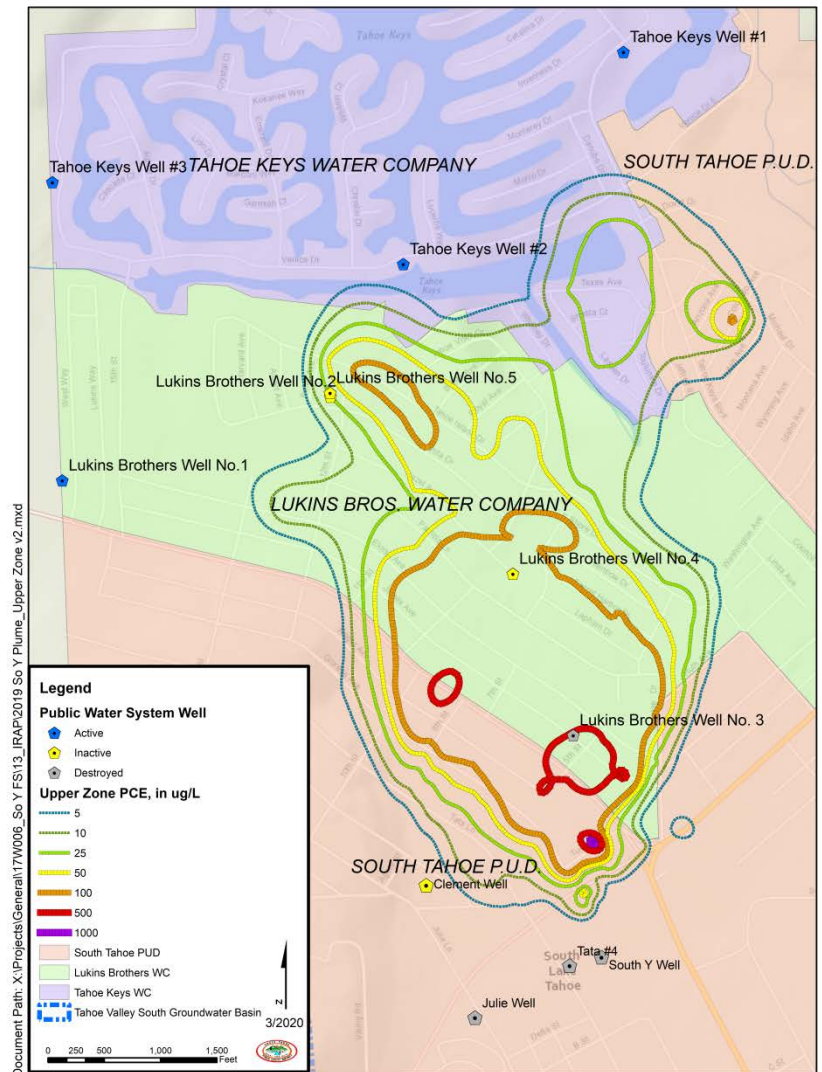


SOUTH Y PLUME

- 2019 Regional Plume Characterization (LRWQCB, Prelim.)

- Length (in feet): >5,300
- Max. Depths (in feet):
 - > 5 ppb: 183 – 185
 - < 5 ppb: 223-225
- Depth Zones (in feet)
 - Upper: 0 -100;
 - Middle: 140 – 180
 - Deep: 180 - 300
- Max Concentration (in ppb):
 - Upper: 570
 - Middle: 260
 - Deep: 4.9

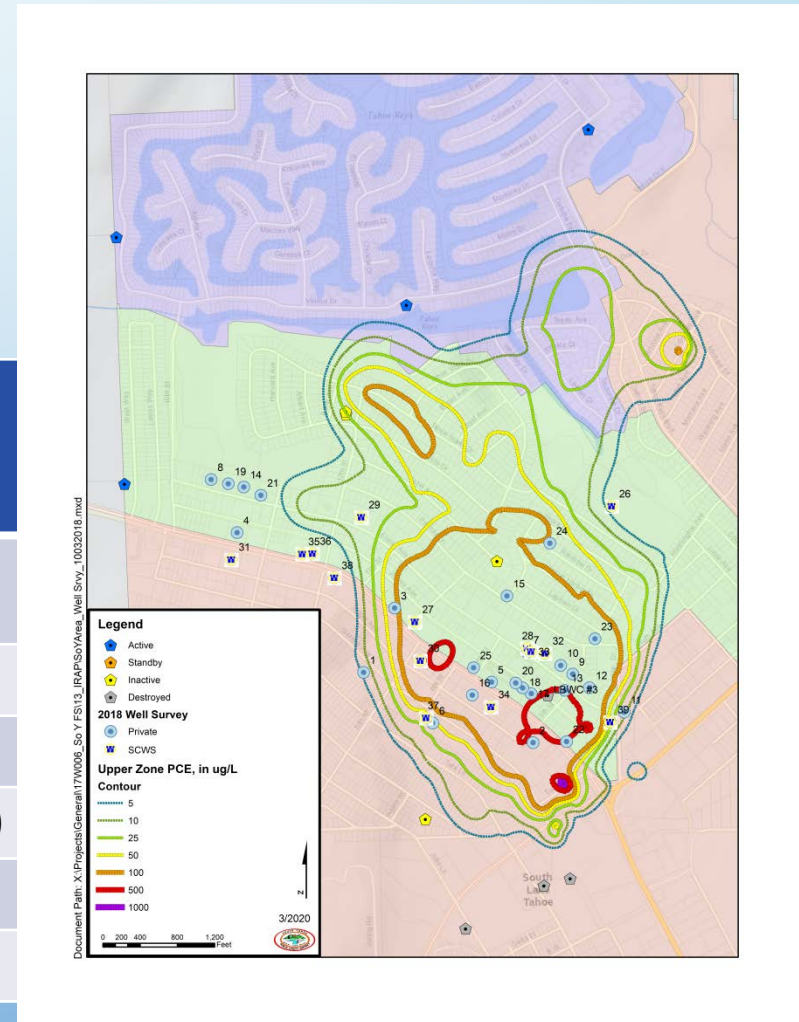
Upper Zone : 0- 100 feet



IMPACTS ON DRINKING WATER SUPPLY

- Impairment of Drinking Water Wells (Public Water System)
- Future impairment of other Drinking Water Wells (Small Community, Private)
- Lost Water Production

Well	System	Lost Production (MGD)	Well Status: Notes
Clement	STPUD	0.26	Inactive; Packed Tower Air Stripper
LBWC #2	LBWC	0.42	Inactive; To be Destroyed
LBWC #4	LBWC	0.14	Inactive; To be Destroyed
LBWC #5	LBWC	1.04	Inactive; GAC Treatment (2021)
TKWC #2	TKWC	2.1	Active; GAC Limited (550 gpm)
	TOTALS	3.96	



INTERIM ALTERNATIVE GOALS

- Remove PCE contamination from groundwater
- Inhibit plume migration
- Reduce PCE contamination at down-gradient receptor Wells (LBWC #5, TKWC #2, TKWC #1)
- Reduce lost water production

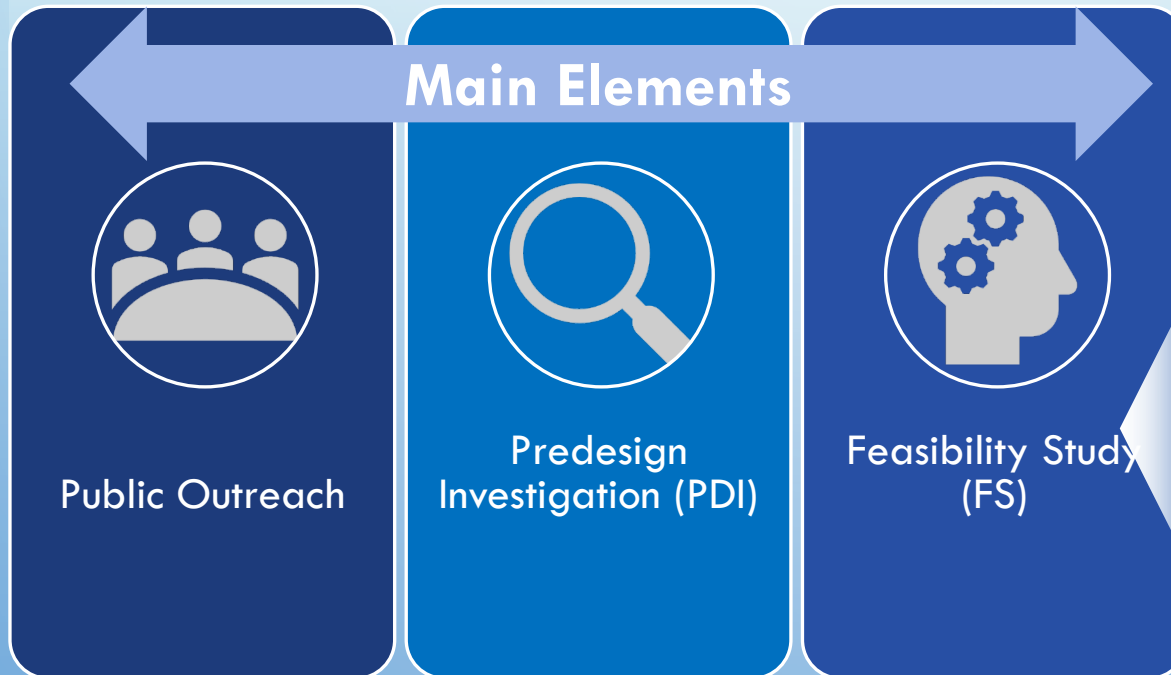
PROPOSITION 1 GROUNDWATER: PLANNING GRANT REQUIREMENTS

- Feasibility Study
 - Purpose: “Develop interim remedial alternatives that prevent or clean up contamination of groundwater that serves or has served as a source of drinking water”
 - Description and evaluation of the interim remedial alternatives
 - Preferred interim remedial alternative
- Interim Remedial Action Plan
 - Objective: “Develop an Interim Remedial Action Plan that will lead to the implementation of the preferred interim remedial alternative and prevent or clean up contamination of groundwater that serves or has served as a source of drinking water”
 - Description of implementation activities associated with the preferred interim remedial alternatives, implementation schedule, potential financing, and stakeholder outreach

SOUTH Y FEASIBILITY STUDY

Objective:

Identify a cost-effective alternative to remove PCE from groundwater and manage existing groundwater sources to maintain adequate drinking water supply and water quality. Alternatives will prevent further migration of contaminants and potential future impacts to downgradient water supply wells



- Evaluation of Alternatives for Treatment and Disposal
- Define Facility Needs and Estimate Costs for Implementation
- Implementation plan for preferred interim remedial alternative

FEASIBILITY STUDY

6 Scenarios

Screen Modeled Scenarios for Engineering Evaluation



3 Alternatives

- 1) Define Infrastructure Needs
- 2) Estimate Life Cycle Costs
- 3) Complete Environmental Checklists/Determine Mitigation Costs



1 Alternative

Identify Recommended Alternative

SOUTH Y PCE FACILITIES FEASIBILITY STUDY
[AGREEMENT D1712508]



Map data ©2019 Google



Prepared for
**South Tahoe Public
Utility District**
1275 Meadow Crest Drive
South Lake Tahoe, CA 96150
KJ Project No. 177002700

 Kennedy Jenks

INTERIM REMEDIAL ALTERNATIVES

1. No Action

- Continue current pumping

2. Targeted Pumping of existing and new extraction wells for plume capture

- With groundwater treatment
- From a treatment perspective, PCE is relatively dilute

3. Conversion to Surface Water

- Provided replacement water supply

EVALUATION CRITERIA FOR ALTERNATIVES

- Effectiveness
 - PCE Mass Removal
 - PCE Concentration Trends/Reductions
 - Short-term Effectiveness
 - Long-Term Effectiveness
 - Overall Protection of Human Health and Environment
 - Compliance with ARARS*
- Implementability
 - Operations and Maintenance
 - Disposal/Reuse Options
- Environmental Effects
- Cost
 - Capital
 - 20-year Operations and Maintenance

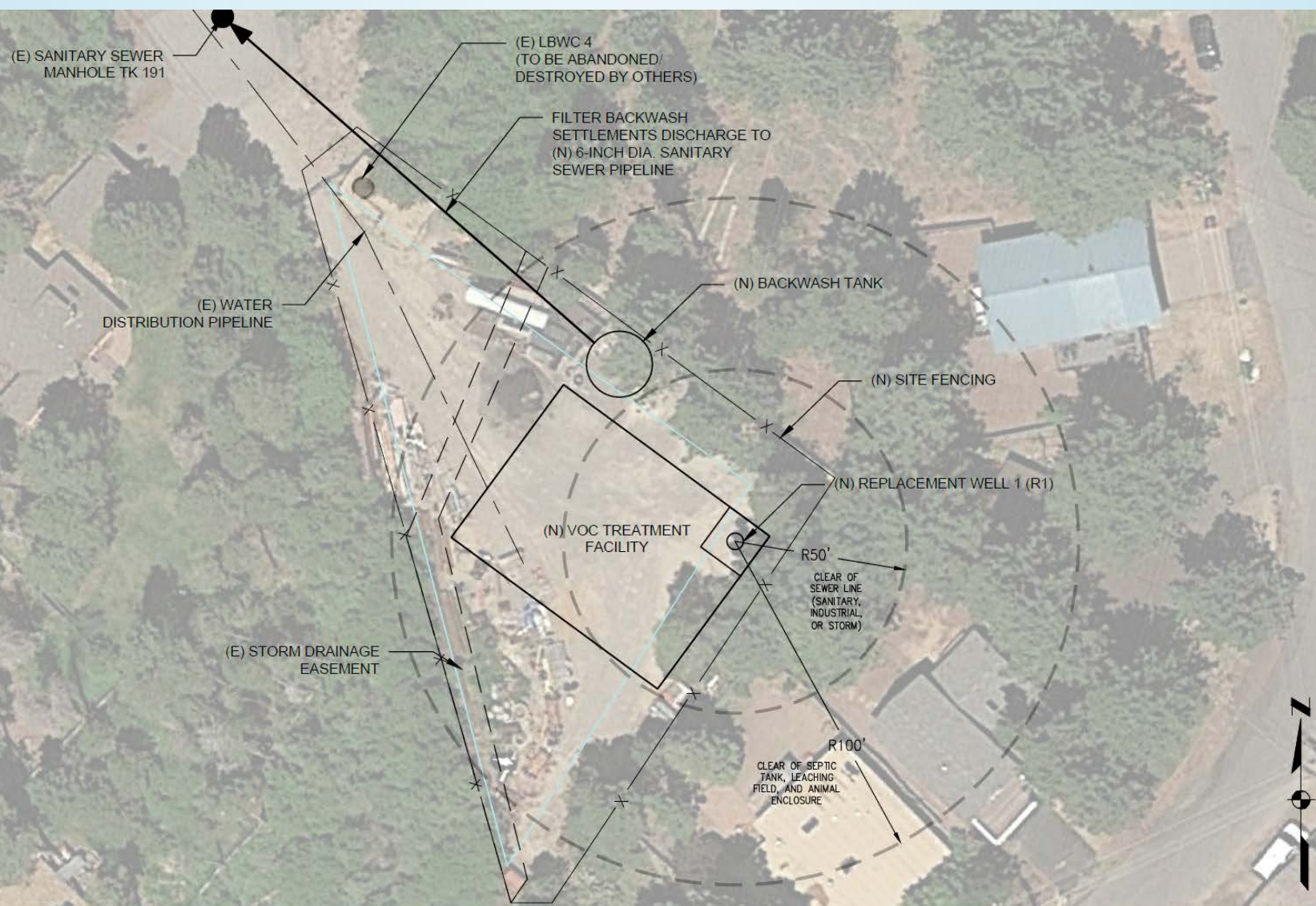
*ARARS = Applicable or Relevant and Appropriate Requirements

PREFERRED INTERIM REMEDIAL ALTERNATIVE

- Alternative 2, Option 1 - Targeted pumping and treatment to potable quality using
 - Existing LBWC 5 well and
 - New replacement well R1 drilled to above 150 feet below ground surface
- Recommended facilities include
 - New replacement well R1 on LBWC 4 property
 - Granular activated carbon (GAC) treatment for PCE treatment
 - Iron and manganese treatment to meet secondary drinking water standards

Neither the District, TKWC, nor LBWC has endorsed or committed to the activities or facilities described for the interim remedial alternatives, and discussions and decisions have been limited to the feasibility of such activities or facilities.

NEW REPLACEMENT WELL R1 AND FACILITIES



PRELIMINARY COST ESTIMATE OF PREFERRED REMEDIAL ALTERNATIVE

Activity	LBWC 5	R1
Pre-Design Activities		
R1 Test Well and Treatment Pilot	0	\$130,000 to \$280,000
(Optional) 97-005 Documentation and Permit Application	0	\$370,000 to \$790,000
Site Survey	0	\$30,000 to \$64,000
Geotechnical Investigation	0	\$21,000 to \$44,000
TRPA/CEQA Environmental Documentation and Approvals	0	\$44,000 to \$94,000
Direct Facility Costs		
R1 Construction and Equipping	0	\$500,000 to \$1,100,000
R1 Groundwater Treatment Facility	0	\$3,400,000 to \$7,200,000
Monitoring Network Plan and New Monitoring Well (1)	0	\$74,000 to \$160,000
O&M for 20 Years	\$670,000 to \$1,400,000 ^(a)	\$4,800,000 to \$10,000,000
Total	\$670,000 to \$1,400,000	\$8,500,000 to \$18,000,000

Notes:

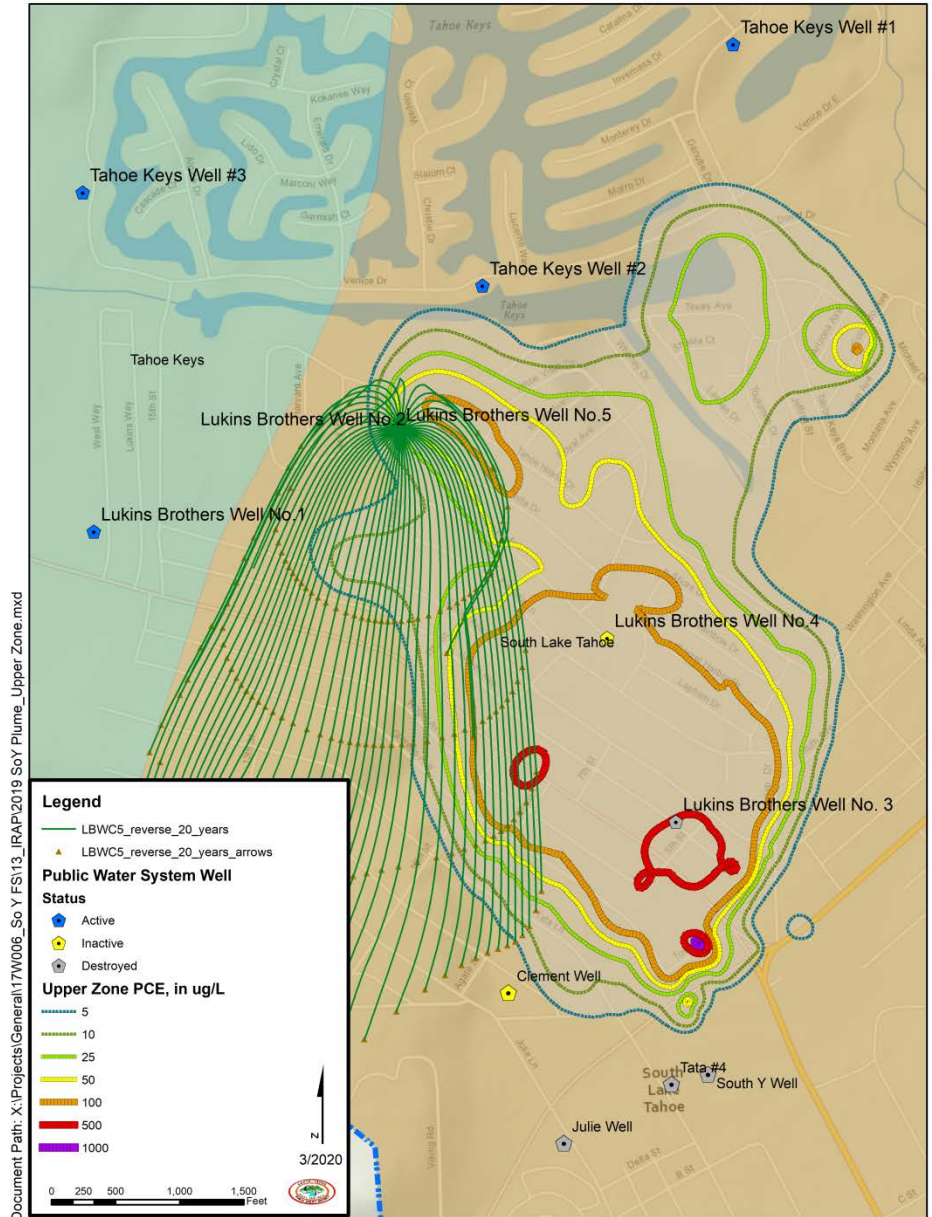
a. Energy costs only

BENEFITS OF PREFERRED INTERIM REMEDIAL ALTERNATIVE

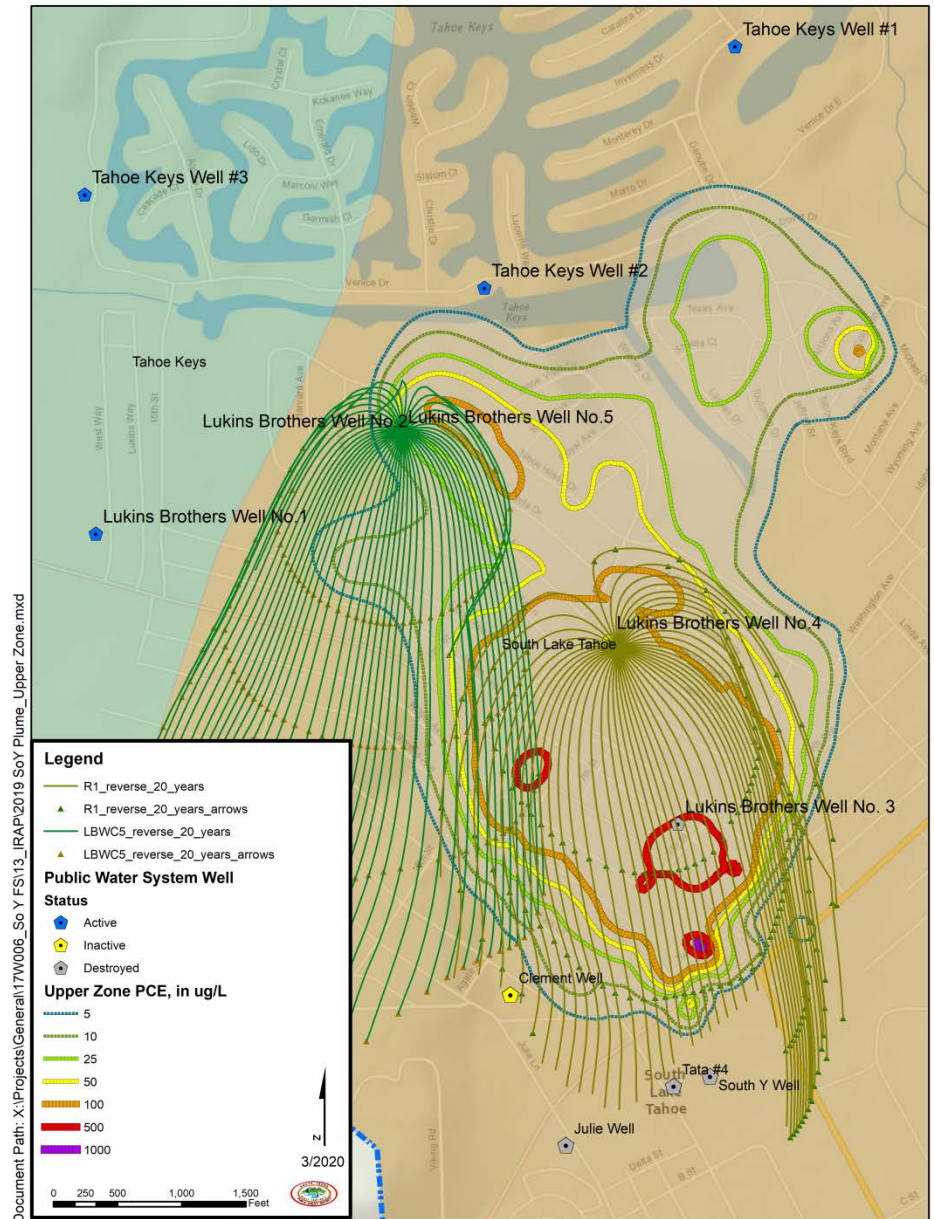
- 800-5,000* lbs of PCE removed over 20 years compared to 300-3,000* lbs of PCE removed over 20 years in no-action
- Reduces cleanup time (PCE < 4 ug/L) by an estimated 3 years for the 2 LBWC wells and 3 TKWC wells modeled
- Reduces peak PCE concentration in downgradient wells

* PCE removal values estimated by DRI Fate and Transport Model for base model (assumes no new PCE is introduced) and conservative model (PCE continues to be introduced into model)

SOUTH Y PLUME- CAPTURE ZONE LBWC 5



SOUTH Y PLUME-CAPTURE ZONES: LBWC 5 WITH R1



OVERVIEW OF IRAP IMPLEMENTATION ACTIVITIES

Phase 1 – Project Planning

Phase 2 – R1 Test Well and Treatment Pilot Study

Phase 3 – Groundwater Treatment Facility Preliminary Design
Report and Draft Design

Phase 4 – Final R1 Groundwater Treatment Facility Design

Phase 5 – R1 Groundwater Treatment Facility Construction/Startup

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IRAP PHASE 1: PROJECT PLANNING

- **No decisions have been made by the water purveyors regarding implementation**
- Develop Agreements including
 - Property/Access Agreements
 - Water purchase agreements
 - Implementation Governance
- Identify and Secure Funding
 - Potential funding sources include Local, Regional, State, and private sources
- Develop Project Workplans and Protocols
 - Project Guide Manual including organization, budget and status, schedule, action plan, QA/QC
 - Treatment Pilot Study Protocol
 - Operational Plans including water quality monitoring, treatment operations, and disaster/emergency response
- Conduct Stakeholder Outreach

PROJECT FINANCING OPTIONS

- Potential funding sources include
 - Proposition 1, Round 3 Groundwater Sustainability Grant Funding
 - Application closes Q4 2020 (estimated)
 - Drinking Water State Revolving Fund (SRF) Loan,
 - El Dorado County Bridge Loan,
 - Local Project Sponsorship/Cost Share,
 - Grant funding has requirements for Responsible Parties Identification and Cost Recovery
- Groundwater Sustainability Agency has authority under Sustainable Groundwater Management Act (SGMA) to levy fees to support basin clean up

IRAP PHASE 2: R1 TEST WELL AND TREATMENT PILOT STUDY

- Test Well Design and Drilling
- 97-005 Application (needed if PCE > 50 ug/L)
 - Drinking Water Source Assessment and Contamination Assessment
 - Full Characterization of Raw Water Quality
 - Treatment and Monitoring Program Proposal
 - Evaluation of Human Health Risks Associated with Failure of Proposed Treatment
- Identify Treatment Vendor for Pilot and Quotes
- Conduct Treatment Pilot Study
 - Install pilot equipment, operate pilot, collect and analyze data
- Treatment and Monitoring Program Proposal for DDW Approval

IRAP PHASE 3: GROUNDWATER TREATMENT FACILITY PRELIMINARY DESIGN REPORT AND DRAFT DESIGN

- Prepare preliminary design report with
 - Preliminary assumptions and completed calculations;
 - 50% (conceptual) design of treatment plant building floor plan, flow schematic, process and instrumentation diagrams, technical specifications;
 - Opinion of probably construction cost; and
 - Estimated schedule
- Survey and Geotechnical Investigation
- Identify agreements and permitting
 - Environmental documents (CEQA and TRPA)
 - Drinking water supply permit amendment
 - Sewer/storm drain connection agreement (for start up)
 - Land coverage acquisition and TRPA permit

IRAP PHASE 4: FINAL DESIGN

- Design engineering for R1 groundwater treatment facility inside the building,
 - Structural design engineering for the building and mechanical design of R1 and groundwater treatment facility;
 - Electrical, instrumentation and controls engineering for new well, treatment process, building and site;
 - Coordination of electrical power service upgrade; and
 - Calculation of headloss through the treatment process for the selection of well pump
- Preparation of the 60%, 95% and final design and construction documents for public bidding procedures in accordance with Public Contracting Code per likely funding requirements.

IRAP PHASE 5: R1 GROUNDWATER TREATMENT FACILITY CONSTRUCTION/STARTUP

- Competitive bid of groundwater treatment facility construction
- Startup of R1 Groundwater Treatment Facility including
 - Year 1 – Start-up Demonstration: treated water will be routed to the sewer discharge with high-frequency sampling
 - Year 2 – Conditional Operation: treated water will be connected to the distribution system with high-frequency sampling
 - After 2 years – Normal Operation: treated water will be connected to the distribution system with a sampling schedule approved by DDW



QUESTION AND ANSWERS

DRAFT IRAP COMMENTS

Last Day : Thursday, April 16th, 2020

Written:

South Tahoe Public Utility District,
Attention I. Bergsohn
1275 Meadow Crest Drive,
South Lake Tahoe, 96150

Email:

ibergsohn@stpud.dst.ca.us

 Kennedy Jenks

10850 Gold Center Drive, Suite 350
Rancho Cordova, CA 95670
916-858-2700

**DRAFT Interim Remedial
Action Plan for the South Y
PCE Facilities Feasibility Study
[Agreement D1712508]**

17 March 2020

