

Tahoe Sierra IRWMP Drought Preparedness Project

Attachment 3: Project Justification

Table 4 – 2014 IRWM Drought Solicitation Project Summary Table

Drought Project Element		Squaw Valley Public Service District	Tahoe City Public Utility District	Lukins Brothers Water Company	South Tahoe Public Utility District
		SVPSUD & SVMWD Interconnectoin Facility	Tahoe City Main Emergency Water Supply	Lukins Brothers Water Co. Waterline Project	Regional Water Conservation Program
D.1	Provide immediate regional drought preparedness	X	X	X	X
D.2	Increase local water supply reliability and the delivery of safe drinking water	X	X	X	
D.3	Assist water suppliers and regions to implement conservation programs and measures that are not locally cost-effective				
D.4	Reduce water quality conflicts or ecosystem conflicts created by the drought	X	X		
<b>IRWM Project Element</b>					
IR.1	Water supply reliability, water conservation, and water use efficiency	X	X	X	X
IR.2	Stormwater capture, storage, clean-up, treatment, and management				
IR.3	Removal of invasive non-native species, the creation and enhancement of wetlands, and the acquisition, protection, and restoration of open space and watershed lands				
IR.4	Non-point source pollution reduction, management, and monitoring				
IR.5	Groundwater recharge and management projects				
IR.6	Contaminant and salt removal through reclamation, desalting, and other treatment technologies and conveyance of reclaimed water for distribution to users				
IR.7	Water banking, exchange, reclamation, and improvement of water quality	X			
IR.8	Planning and implementation of multipurpose flood management programs				
IR.9	Watershed protection and management				
IR.10	Drinking water treatment and distribution	X	X	X	
IR.11	Ecosystem and fisheries restoration and protection				

## **Attachment 3 – Project Description Regional Water Conservation Program**

The Regional Water Conservation Program Project is the implementation of several water conservation best management practices as proposed by the California Urban Water Conservation Council.

South Tahoe PUD is the implementing organization although the implementation is region wide.

The project meets the following drought project types:

1. **Provide immediate regional drought preparedness:** The Regional Water Conservation Project would effectively address immediate drought preparedness and help alleviate the drought impacts identified in Attachment 2 by implementing the following water conservation practices that would save approximately 28 ac-ft/year of water:

Turf Removal: Residential and commercial turf buy back at an estimated 93,334 sq. feet of turf removal.

Residential Incentives for Irrigation Water Saving Devices: Project includes approximately 67 installations of residential irrigation smart timers.

Commercial Incentives for Irrigation Water Saving Devices: Project includes approximately 60 installations of commercial irrigation smart timers.

Residential Water Saving Appliance Rebates: Project includes approximately 400 high efficiency washing machine rebates and 375 ultra-low flow toilet rebates

Commercial Water Saving Appliance Rebates: Project includes approximately 110 high efficiency washing machine rebates.

2. **Assist the IRMW region's effort to address the California Human Right to Water (AB 685):** The regional project implementation area includes several disadvantaged communities (City of South Lake Tahoe, Kings Beach and Woodfords Community) and outreach for participation in the program will target these areas. The proposed Project would not only result in a long-term water use reduction and the subsequent beneficial effect on the water sources within the region, but also has a long-term financial effect on water consumers by reducing their water use costs and maintaining affordability of safe drinking water. The goal of AB 685 is to ensure safe, clean, affordable and accessible water adequate for domestic uses and implementation of the Project is consistent with these goals.

Expedited funding is needed to continue to implement a regional water conservation program that focuses on CUWCC Best Management Practices as funding for the program is exhausted.

## **Attachment 3 – Project Description**

### **Tahoe City PUD Main Emergency Water Supply Project**

The Tahoe City PUD (Implementing Agency) Main Emergency Water Supply Project is the extension of a dedicated raw water line to the utility where portable treatment units would be staged for emergency water supply.

The project meets the following drought project types:

1. **Provide immediate regional drought preparedness:** The Project would provide for immediate backup to the Tahoe City main water system and help alleviate the drought impacts identified in Attachment 2. Currently, the community relies on two groundwater wells for drinking water production with no backup water supply. The original water supply well for Tahoe City is no longer useable due the groundwater table elevation declining below the pump intake, caused largely by water supply demand and reduced groundwater levels. An existing lake intake, the Grove Street Intake, has been maintained in a usable state and can be used as an emergency water supply source. Water from this source is untreated and its use would necessitate a boil water order for all customers in the system. Adequate space does not exist near the existing intake building to setup portable water treatment units. The proposed Project would extend a dedicated raw water line from the existing intake to a location on Tahoe City Public Utility District (TCPUD) property where portable treatment units could be staged for emergency water treatment and supply, as needed.
2. **Increase local water supply reliability and the delivery of safe drinking water:** As discussed above, the Tahoe City water system currently has no potable water supply backup. During the summer months which coincide with peak water demand conditions, failure of either of the Tahoe City wells would result in rationing and the need to activate the existing Grove Street lake intake. The proposed Project would extend a raw water pipeline from the existing lake intake to a location on TCPUD property where portable treatment units could be staged to provide emergency water treatment and supply to the Tahoe City community in the event of continued drought or emergency.
3. **Reduce water conflicts or ecosystem conflicts created by drought:** The Project would also address the TCPUD's reliance on a pre-1914 appropriative water right to divert flows from Burton Creek to irrigate the Tahoe City public golf course. The existing water right to Burton Creek has come under scrutiny from California resource agencies due to environmental concerns associated with diverting flow from the creek. While the appropriative right has been upheld by the State Water Resources Water Control Board, reducing the reliance on Burton Creek by extending the proposed Project raw water line to provide untreated water to the public golf course for irrigation could provide valuable ecosystem and wildlife habitat benefits to the Burton Creek watershed in a drought period.
4. **Assist the IRMW region's effort to address the California Human Right to Water (AB 685):** The proposed Project would construct a critical piece of infrastructure required to provide a safe, reliable source of backup water supply during drought or emergency periods. Implementation of the proposed Project is consistent with the obligations contained within Assembly Bill 685, which provides a framework to guide agencies with responsibilities that impact the quality, affordability and accessibility of water for domestic purposes. The goal of AB 685 is to achieve universal access to clean water in the state. Implementation of the Project is consistent with the goals of AB 685.

Expedited funding is necessary to ensure the emergency water supply is set up timely to meet ongoing drought preparedness.

**Attachment 3 – Project Description**  
**Squaw Valley Public Service District and Squaw Valley Mutual Water Company**  
**Interconnection Facility Project**

The SVPSD and SVMWC Interconnection Facility (Project) is the construction of a system intertie between the systems for mutual support during emergency events.

Squaw Valley Public Service District is the implementing agency.

The project meets the following drought project types:

1. **Provide Immediate Regional Drought Preparedness:** The Project will establish a system intertie between SVPSD and SVMWC that will provide immediate drought preparedness and help alleviate the drought impacts identified in Attachment 2. Public water systems have long been encouraged to utilize interties to achieve public health and resource management objectives and the community benefits from these water system interconnections as they prepare the common constituencies for emergencies such as water supply system failure caused by drought. The system intertie will allow for mutual aid between water suppliers during drought-related water shortages.
2. **Increase local water supply reliability and the delivery of safe drinking water:** Interconnections between SVPSD and SVMWC will benefit the water consumers of both agencies by providing a reliable water supply backup to maintain the delivery of safe drinking water. System failure of either system, caused by drought as listed above, or other circumstances such as planned maintenance, repair, rehabilitation, relocation, power outages and/or contamination, can easily dictate the need for one agency to support the other by supplying potable water.
3. **Reduce water conflicts or ecosystem conflicts created by drought:** The value of system interties to reducing water conflicts in regions that share water providers has been long recognized as a cost effective water management tool. These interties improve the reliability of public water systems, enhancing their management, and more efficiently utilizing the increasingly limited water resources.
4. **Assist the IRMW region's effort to address the California Human Right to Water (AB 685):** The proposed Project would construct a critical piece of infrastructure required to provide a safe, reliable source of backup water supply during drought or emergency periods. Implementation of the proposed Project is consistent with the obligations contained within Assembly Bill 685, which provides a framework to guide agencies with responsibilities that impact the quality, affordability and accessibility of water for domestic purposes. The goal of AB 685 is to achieve universal access to clean water in the state. Implementation of the Project is consistent with the goals of AB 685.

Expedited funding is necessary to construct the intertie project as neither agency has the capital funding necessary to complete the project.

## **Attachment 3 – Project Description**

### **Lukins Brothers Waterline Replacement Project**

The Lukins Brothers (Implementing Agency) Waterline Replacement Project (Project) is the installation of 2000 linear feet of water supply pipeline; 42 residential water meters, and 14 fire hydrants to meet California Fire Code.

The project meets the following drought project types:

1. **Provide immediate regional drought preparedness:** The Project would achieve an immediate reduction of water use and help alleviate the drought impacts identified in Attachment 2 through the replacement of 2000 linear feet of leaking, aged water delivery infrastructure. The current waterline has a significant leak history with 5-6 leak repairs annually. Although adequate maintenance is provided on the line, the loss of water prior to the repair of these leaks amounts to 65000 gallons per year. The current waterline has reached its life expectancy (50 years) resulting in numerous leaks annually due to the deterioration of the line. The replacement waterline would result in significant water savings through the reduction in leakage as well as the 42 newly installed residential water meters that are a part of the project. Total annual water savings from this project is estimated to be 6.9 ac-ft/yr.
2. **Increase local water supply reliability and the delivery of safe drinking water:** As discussed above, the installation of a reliable water supply conveyance increases long-term delivery of safe drinking water.
3. **Assist the IRMW region’s effort to address the California Human Right to Water (AB 685):** The proposed Project would construct a critical piece of infrastructure required to provide a safe, reliable source of backup water supply during drought or emergency periods. Implementation of the proposed Project is consistent with the obligations contained within Assembly Bill 685, which provides a framework to guide agencies with responsibilities that impact the quality, affordability and accessibility of water for domestic purposes. The goal of AB 685 is to achieve universal access to clean water in the state. Implementation of the Project is consistent with the goals of AB 685.

Expedited funding is needed for installation of the waterline as Lukins Brothers Water is located in a disadvantaged community in South Lake Tahoe and does not have 100% of the capital improvement funds necessary to complete the work unless water rate charges are increased. As the Public Utilities Commission regulates any water service increases, currently Lukins is able to meet the proposed match amount, but not the requested grant amount.

**Table 5a – Annual Project Physical Benefits**

Project Name: Regional Water Conservation Program

Type of Benefit Claimed: water supply saved

Units of the Benefit Claimed : acre-feet

Additional Information About this Benefit project saves water through a regional water conservation effort

(a)	(b)	(c)	(d)
			<b>Physical Benefits</b>
Year	Without Project	With Project	Change Resulting from Project (b) – (c)
2015-2035	0 ac-ft/yr water savings	28 ac-ft/yr water savings	28 ac-ft/yr water savings (9.1 mg/yr)

**Comments:** *This project has several elements including turf buyback and rebates for smart timers, washing machines, and toilets. See table below for the water savings calculations.*

**Regional Water Conservation Program Water Savings**

Rebates	Budget Amount	Rebate Amount	Number of Rebates	Max Rebate Amounts	Estimated Water Savings
Residential Turf Buy Back	\$ 70,000	1.50/ft <sup>2</sup>	46,667 ft <sup>2</sup>	Max rebate of \$3,000	1,026,674 gallons of water saved annually or 3.15 AF per year
Commercial Turf Buy Back	\$ 70,000	1.50/ft <sup>2</sup>	46,667 ft <sup>2</sup>	Max rebate of \$10,000	1,026,674 gallons of water saved annually or 3.15 AF per year
Residential Smart Timer Rebate	\$ 10,000	\$ 150.00	67	Max rebate of \$200	37gpd x 66 days x 67 rebates= 163,614 gallons per year or .50 AF per year
Commercial Smart Timer Rebate	\$ 15,000	\$ 250.00	60	Max rebate of \$500	37gpd x 66 days x 60 rebates= 146,520 gallons per year or .44 AF per year
Residential Appliance Rebates	\$ 155,194	\$ 200.00 average customer	400 washing machines  375 toilets	Max rebate \$200 for washing machine; up to \$100 per toilet	5,085.6 gallons per year savings x 400 washing machines = 2,034,240 gallons per year or 6.24 AF per year; 8,541 gallons per year savings x 375 toilets = 3,202,875 gallons per year or 9.82 AF per year
Commercial Appliance Rebates	\$ 44,000	\$ 400.00 average customer per unit replaced	110* *Commercial washing machine replacement to a Level 4 Energy machine uses only 12.3 gallons per cycle as compared to 22.4 gallons per cycle on a Level 1 Energy Machine	Max rebate amount \$1000	10.1 gallons per cycle based on an industry average calculation of 3.4 cycles per machine per day (estimates only) = 12,534 gallons per machine per year x 110 machines = 1,378,751 gallons per year or 4.23 AF per year
	\$ 364,194				

**Table 5b – Annual Project Physical Benefits**

**Project Name:** Regional Water Conservation Program

**Type of Benefit Claimed:** energy saved and green house gas reduction

**Units of the Benefit Claimed :** kWh and metric tons of CO2

**Additional Information About this Benefit** project saves energy needed to convey and heat water through a regional water conservation effort

(a)	(b)	(c)	(d)
Year	Without Project	With Project	Change Resulting from Project (b) – (c)
2015-2035	0 energy savings and 0 green house gas reduction	36,000 kWh/yr energy savings and 25 metric tons green house gas reduction	36,000 kWh/yr energy savings and 25 metric tons of CO2e green house gas reduction

**Comments:** *This project has several elements including turf buyback and rebates for smart timers, washing machines, and toilets. The reduction in water use due to this project would result in reduced energy use for the pumping, treatment, and delivery of water and reduced energy use by customers for the heating of water for washing machines. The green house gas reductions would be directly due to the reduction in energy generation. The energy savings are based on 3,950 kWh per MG of water saved based on the California Energy Commission's estimate for a typical urban water system in northern California. The green house gas reductions are based on 0.69 metric tons of CO2 equivalent per 1,000 kWh, based on the EPA Greenhouse Gas Equivalencies Calculator.*

**Table 5a – Annual Project Physical Benefits**

**Project Name:** Tahoe City Main Emergency Water Supply Project

**Type of Benefit Claimed:** water supply

**Units of the Benefit Claimed :** acre-feet

**Additional Information About this Benefit** project provides backup water supply

(a)	(b)	(c)	(d)
	<b>Physical Benefits</b>		
Year	Without Project	With Project	Change Resulting from Project (b) – (c)
<b>2015-2065</b>	0 ac-ft supply	800-1,600 ac-ft supply per year	800-1,600 ac-ft per year

**Comments:** *The project would provide water supply to the main system from the Grove Street intake on Lake Tahoe in the event of a reduction or loss of water supply from the existing groundwater supply wells. The Grove Street Pump Station has a capacity of 1,000 gpm. This would be a supply of 1.4 mgd, or 800 to 1,600 ac-ft assuming a six month to twelve month duration.*

**Table 5 – Annual Project Physical Benefits**

Project Name: Emergency Intertie with Squaw Valley PSD and Squaw Valley Mutual Water Company

Type of Benefit Claimed: water supply

Units of the Benefit Claimed : acre-feet

Additional Information About this Benefit project provides backup water supply

(a)	(b)	(c)	(d)
			Physical Benefits
Year	Without Project	With Project	Change Resulting from Project (b) – (c)
2015-2065	0 ac-ft supply	160 to 320 ac-ft supply per year	160-320 ac-ft per year

**Comments:** *The project would provide a 200 gpm water supply from SVPSD to SVMWC in the event of a loss of groundwater supply from SVMWC's wells. SVPSD has 400 gpm of additional available supply to share while meeting its maximum day demand with the largest source out of service. This would supply 0.29 mgd, or 160 to 320 ac-ft assuming a six month to twelve month duration.*

**Table 5a – Annual Project Physical Benefits**

**Project Name:** Lukins Leaking Pipeline Replacement Project

**Type of Benefit Claimed:** water supply saved

**Units of the Benefit Claimed :** acre-feet

**Additional Information About this Benefit** project reduces water use by addressing pipeline leakage and installing water meters on customer connections

(a)	(b)	(c)	(d)
Year	Without Project	With Project	Change Resulting from Project (b) – (c)
2015-2065	0 ac-ft/yr water savings	6.9 ac-ft/yr water savings compared to leak repair	6.9 ac-ft/yr water savings compared to leak repair

**Comments:** *This project consists of replacing existing leaking and undersized water pipelines with larger pipelines that includes water meters and fire hydrants. The water savings realized by stopping pipelines leaks is estimated to be 65,000 gallons per year or 0.20 ac-ft/yr (5 leaks/yr\*3 gpm/each\* 3 days to repair leak) compared to the alternative method of repairing the leaks once they are identified. The water loss from unrepaired leaks would be 7.9 mg/yr, or 24 ac-ft/yr. The water savings from installing 42 water meters in the 1 to 2 inch size range is estimated to be 6.7 ac-ft/yr (0.8 ac-ft/yr per customer\*20%\*42).*

**Table 5b – Annual Project Physical Benefits**

**Project Name:** Lukins Leaking Pipeline Replacement Project

**Type of Benefit Claimed:** fire flow

**Units of the Benefit Claimed :** gallons per minute

**Additional Information About this Benefit** project provides 14 fire hydrants and an upsized pipeline that has the capacity to convey fire flow

(a)	(b)	(c)	(d)
Physical Benefits			
Year	Without Project	With Project	Change Resulting from Project (b) – (c)
2015-2065	no fire flow	8,000 gpm for two fire hydrants simultaneously	8,000 gpm for two fire hydrants simultaneously

**Comments:** *This project consists of replacing existing 2 and 4-inch pipelines with a 12-inch water main and 14 fire hydrants. The fire hydrants will be located in a commercial corridor that does not currently have fire hydrant coverage. Each hydrant will be able to provide 4,000 gpm. The proposed 12-inch water main will have a capacity to supply two fire hydrants simultaneously.*

**Table 5c – Annual Project Physical Benefits**

**Project Name:** Lukins Brothers Waterline Replacement Project

**Type of Benefit Claimed:** energy saved and green house gas reduction

**Units of the Benefit Claimed :** kWh and metric tons of CO2

**Additional Information About this Benefit** project saves energy needed to convey water to consumers

(a)	(b)	(c)	(d)
Year	Without Project	With Project	Physical Benefits Change Resulting from Project (b) – (c)
2015-2065	0 energy savings and 0 green house gas reduction	7,900 kWh/yr energy savings and 5.45 metric tons green house gas reduction	7,900 kWh/yr energy savings and 5.45 metric tons of CO2e green house gas reduction

**Comments:** *This project has several elements that result in water savings, including a reduction in water supply delivery infrastructure leakage and the implementation of residential meters. The reduction in water use due to this project would result in reduced energy use for the pumping, treatment, and delivery of water. The green house gas reductions would be directly due to the reduction in energy generation. The energy savings are based on 3,950 kWh per MG of water saved based on the California Energy Commission's estimate for a typical urban water system in northern California. The green house gas reductions are based on 0.69 metric tons of CO2 equivalent per 1,000 kWh, based on the EPA Greenhouse Gas Equivalencies Calculator.*

## **Attachment 3 – Technical Justification Regional Water Conservation Program**

The Regional Water Conservation Program is the implementation of several water conservation best management practices as proposed by the California Urban Water Conservation Council.

### **Benefits claimed:**

#### Primary --- Water savings

The 28 ac-ft/yr water savings are described in Table 5a: Annual Physical Benefits for each of individual BMP's, but justification for the estimated water savings comes from the following:

Turf removal: The Southern Nevada Water Authority estimates an average yearly savings of 55 gallons of water for every square foot of grass replaced with water-smart trees, shrubs and flowers. Since Southern Nevada is able to irrigate 365 days a year and Tahoe's climate only allows irrigation for approximately 150 days the estimate has been converted to water savings of 15 gallons per day. *Source: Smart Savings Water Conservation Measures that Make Cents, Western Resources Advocates, 2008 (pg. 24, Southern Nevada Water Authority, Water Smart Landscapes Rebates, Las Vegas, NV)*

Water efficient clothes washers: An estimated annual water savings for the water efficient clothes washer rebate is based on data from the California Urban Water Conservation Council (CUWCC) BMP Costs and Savings Study. According to this study, which included 5 of the largest washing machine savings from a variety of example sites, the mean savings was 5085.6 per machine, per year. *Source: BMP Costs and Savings Study: A guide to data and methods for cost-effectiveness analysis of Urban Water Conservation Best Management Practices, March 2005. Prepared for the California Urban Water Conservation Council by A & N Technical Services, Inc.*

High Efficiency Toilets: Replacing an older toilet with a new high-efficiency toilet will save on average 2.22 to 2.72 gallons per flush. Calculations below are from the US Environmental Protection Agency's Benchmarks for Estimating Residential End Uses of Water. To calculate the amount of gallons of water saved using the information in the tables provided in the Benchmarks, we calculated on the very low end of the scale (most toilet calculations are much higher): 2.22 gallons per flush saved x 10.5 flushes per day (between 4-6 per capita in the household x household size of 2.55) = 23.31 gallons per day saved. *Source: USEPA Water Conservation Plan Guidelines, Appendix B: Benchmarks Used in Conservation Planning, pages 163 and 164*

Irrigation Smart Timers: Estimated to save approximately 8,800 gallons of water per year per unit, the estimate has been altered to represent only a three times a week usage during the Tahoe irrigation season as based on the Water Conservation policy adopted by the water agencies of 3 times weekly irrigation for a total of 66 days per year of irrigation. *Source: [www.epa.gov/WaterSense/products/controltech](http://www.epa.gov/WaterSense/products/controltech)*

#### Secondary --- Energy Reduction/GHG Reduction

### **Attachment 3 – Technical Justification Regional Water Conservation Program**

The reduction in water use above would result in reduced energy use for the pumping, treatment and delivery of water. The energy savings of 36,000 kWh/year is per the California Energy Commission's estimate for a typical urban water system in northern California of 3,950 kWh for every MG of water saved. Utilizing the EPA's Greenhouse Gas Equivalencies Calculator

[www.epa.gov/cleanenergy/energy-resources/calculator](http://www.epa.gov/cleanenergy/energy-resources/calculator)

the 36,000 kWh saved annually results in 25 Metric Tons of GHG reduction.

No estimates can be completed for benefits under the without-project conditions as it is possible that water savings could result without incentives for the implementation of BMP's, but it would be impossible to estimate those benefits or the water savings.

No potential adverse physical effects have been identified.

## **Attachment 3 – Technical Justification Tahoe City PUD Main Emergency Water Supply Project**

The Tahoe City PUD Main Emergency Water Supply Project is the extension of a dedicated raw water line to the utility where portable treatment units would be staged for emergency water supply.

### **Benefits claimed:**

#### Primary --- Emergency Water Supply

The project provides emergency water supply to the main system from an intake pump station on Lake Tahoe capable of pumping at full capacity 1,000 gallons per minute. This would be a supply of 1.4 million gallons daily which would be translated into acre-feet of additional water supply dependent upon the duration of the emergency event, but could provide up to 1,600 ac-ft per year. Justifications for these estimates are the pump capacity at the intake pump station and the TCPUD water rights allowing for full capacity pumping.

The District has analyzed the possible scenarios for providing potable water to the Tahoe City system in the event of continued drought and severely diminished groundwater supply. The community of Tahoe City currently relies on two groundwater wells for drinking water production, Tahoe City Wells 02 and 03. The Bunker Well, which was the original water supply well for Tahoe City, is no longer useable due to the decline in the water table elevation below the pump intake. The decline in water table elevation was largely caused by water supply demand and reduced precipitation. During the summer months, which coincide with peak water demand conditions, failure of either Tahoe City Wells No 02 or 03 would result in water rationing and the need to activate an emergency lake intake. Currently, there is no backup to the Tahoe City system. This could cause hardship to the local economy, which relies heavily upon the peak tourist summer season for year-round economic sustainability.

An existing lake intake, the Grove Street Intake, has been maintained in a usable state and can be utilized as an emergency water supply source within a short period of time. However, water provided from this source would be untreated and would necessitate a boil water order for all customers in the system. Portable water treatment units are available to be brought on site within a short period of time and can be set up to treat water to drinking water standards. Adequate space does not exist near the existing intake building, but does exist approximately 600 feet away, across State Route 89, adjacent to a local ball field. The proposed Project would extend a dedicated 12-inch raw water line to that location to provide raw water to a portable facility (or future permanent facility).

No potential adverse physical effects have been identified.

**Attachment 3 – Technical Justification**  
**Squaw Valley Public Service District and Squaw Valley Mutual Water Company**  
**Interconnection Facility Project**

The SVPSD and SVMWC Interconnection Facility (Project) is the construction of a system intertie between the systems for mutual support during emergency events.

**Benefits claimed:**

Primary --- Emergency Water Supply

The project provides emergency water supply from SVPSD to SVMWC in the event of a loss of groundwater from SVMWC's wells. SVPSD can provide a 200 gpm water supply as it maintains a 400 gpm of additional available supply to share while still meeting its maximum daily demand. This allows for a supply of 0.29 mgd for the duration of an emergency event but could potentially supply up to 320 ac-ft a year. Justifications and methods used for these estimates are the water supply capacity of SVPSD and the capacity of the intertie.

SVMWC is reliant on two groundwater wells to provide daily water demand. With the drought, fears of a reduced aquifer level that would restrict the well usage have led to renewed collaboration between the two utilities to provide for emergency water services as necessary. SVPSD received a planning grant in 2012 and hired an engineering consultant to design the construction of the intertie.

This new intertie would be required to obtain the benefits described above, as well as the development of an operating agreement between the two utilities.

The utilities have analyzed the possible scenarios for providing emergency water supply to SVMWC without the construction of the intertie, but the only other option is to construct a new well for SVMWC and that would be an extremely high cost option and beyond the financial capability of SVMWC at this time.

No potential adverse physical effects have been identified.

## **Attachment 3 – Technical Justification Lukins Brothers Waterline Replacement Project**

The Lukins Brothers Waterline Replacement Project (Project) is the installation of 2000 linear feet of water supply pipeline; 42 residential water meters, and 14 fire hydrants to meet California Fire Code.

### **Benefits claimed:**

#### Primary --- Water savings

The .20 ac-ft/yr water savings on the replacement waterline were estimated based on industry leak data, as well as historical leak repair data from Lukins Brothers Water. The current waterline has a significant leak history with 5-6 leak repairs annually. Although adequate maintenance is provided on the line, the loss of water prior to the repair of these leaks amounts to 65,000 gallons per year. The current waterline has reached its life expectancy (50 years) resulting in numerous leaks annually due to the deterioration of the line.

The 6.7 ac-ft/yr water savings is based on the 42 newly installed residential water meters that are a part of the project. The US EPA ([www.epa.gov/WaterSense/pus/indoor](http://www.epa.gov/WaterSense/pus/indoor)) estimates a family of four to utilize 400 gallons per day, or approximately 100 gallons per person. For Lukins Brothers Water, the 42 residential units represent an annual water usage of 0.8 ac-ft/yr per customer at a 20% water savings times. Annual water savings from meter installation are an industry established standard of 20% and can be justified on the California Urban Water Conservation Council website [www.cuwcc.org](http://www.cuwcc.org).

#### Secondary --- Energy Reduction/GHG Reduction

The reduction in water use above would result in reduced energy use for the pumping and delivery of water. The energy savings of 7,900 kWh/year is per the California Energy Commission's estimate for a typical urban water system in northern California of 3,950 kWh for every MG of water saved. Utilizing the EPA's Greenhouse Gas Equivalencies Calculator ([www.epa.gov/cleanenergy/energy-resources/calculator](http://www.epa.gov/cleanenergy/energy-resources/calculator)) the 7,900 kWh saved annually results in 5.4 Metric Tons of GHG reduction.

#### Secondary --- Fire flow increased capability

The increase in pipe size proposed for the new line is to provide sufficient fire flow to the 14 new fire hydrants to be installed. Fire flow estimates are based on pipe size and available water supply.

No estimates can be completed for benefits under the without-project conditions as no other projects can be planned that would provide the same benefits.

No potential adverse physical effects have been identified.

**Table 6 – Cost Effective Analysis**

**Project name: Regional Water Conservation Program**

Question 1	Types of benefits provided as shown in Table 5: <i>water savings, energy saving, green house gas reduction</i>
Question 2	Have alternative methods been considered to achieve the same types and amounts of physical benefits as the proposed project been identified? <i>Yes.</i>
	If no, why? If yes, list the methods (including the proposed project) and estimated costs. <i>1. Proposed Project, cost \$0.4 million. 2. Provide additional water supply.</i>
Question 3	If the proposed project is not the least cost alternative, why is it the preferred alternative? Provide an explanation of any accomplishments of the proposed project that are different from the alternative project or methods. <i>The proposed project is the least cost alternative. The alternative method is to provide water supply by the use of available water supplies. The accomplishments of the proposed project that are different than the alternative method include more efficient use of water supplies thereby allowing those saved water supplies to be used for other purposes including environmental benefits.</i>
<p>Comments: <i>This project has several elements including turf buyback and rebates for smart timers, washing machines, and toilets. The alternative method would be to not reduce water demand and continue to provide the higher amount of water supply.</i></p>	

**Table 6 – Cost Effective Analysis**

**Project name: Tahoe City Main Emergency Water Supply Project**

Question 1	Types of benefits provided as shown in Table 5: <i>Water supply</i>
Question 2	Have alternative methods been considered to achieve the same types and amounts of physical benefits as the proposed project been identified? <i>No.</i>
	<p>If no, why? <i>The TCPUD's 2010 Urban Water Management Plan addresses a Water Shortage Contingency Plan, in accordance with the requirements of the California Water Code. For the Tahoe City main water system, an emergency operations agreement has already been established with the Department of Public Health to allow for activation and use of the existing lake intake, provided appropriate water treatment is utilized. Therefore, implementation of the proposed Project is consistent with the approved Plan and is seen to be the most cost effective and efficient way to provide for emergency water supply. Additionally, providing for backup water supply with surface water (as opposed to groundwater) diversifies the water supply system), which is desirable from a long term reliability standpoint.</i></p>
	If yes, list the methods (including the proposed project) and estimated costs.
Question 3	If the proposed project is not the least cost alternative, why is it the preferred alternative? Provide an explanation of any accomplishments of the proposed project that are different from the alternative project or methods. <i>The proposed project is the least cost alternative since no other project with equivalent benefits has been identified.</i>
<p>Comments: <i>This project would provide the infrastructure to allow the use of the existing lake intake as an emergency supply in accordance with TCPUD's Urban Water Management Plan and Water Shortage Contingency Plan.</i></p>	

**Table 6 – Cost Effective Analysis**

**Project name: Emergency Intertie with Squaw Valley PSD and Squaw Valley Mutual Water Company**

Question 1	Types of benefits provided as shown in Table 5: <i>Water supply</i>
Question 2	Have alternative methods been considered to achieve the same types and amounts of physical benefits as the proposed project been identified? <i>Yes, the installation of a well has been considered as an alternative method.</i>
	If no, why? If yes, list the methods (including the proposed project) and estimated costs. 1. Proposed Project, cost \$0.3 million. 2. Construct new well, cost \$1 to \$2 million.
Question 3	If the proposed project is not the least cost alternative, why is it the preferred alternative? Provide an explanation of any accomplishments of the proposed project that are different from the alternative project or methods. <i>The proposed project is the least cost alternative. In contrast to the alternative of drilling a new well, the accomplishments of this project would provide for the sharing of existing water supply facilities at a lower cost.</i>
<p>Comments: <i>SVMWC is supplied by two groundwater wells. The loss of one or both wells would result in inadequate water supply. The groundwater supply could be restricted due to reduced aquifer levels due to drought, possible groundwater quality issues, or mechanical failure. Possible scenarios for providing backup supply to SVMWC have been considered. The alternative would be to construct a new well, which would be a higher cost project than the proposed project.</i></p>	

**Table 6 – Cost Effective Analysis**

**Project name: Lukins Leaking Pipeline Replacement Project**

Question 1	Types of benefits provided as shown in Table 5: <i>water savings and fire flow</i>
Question 2	Have alternative methods been considered to achieve the same types and amounts of physical benefits as the proposed project been identified? <i>No.</i>
	If no, why? <i>No alternative that provides equivalent benefit identified.</i>
	If yes, list the methods (including the proposed project) and estimated costs.
Question 3	If the proposed project is not the least cost alternative, why is it the preferred alternative? Provide an explanation of any accomplishments of the proposed project that are different from the alternative project or methods. <i>The proposed project is the least cost alternative since no other alternative has been identified. The current method of repairing leaks is unsustainable in the long term. The fire flow that would be provided by the proposed project is an accomplishment not available with the current pipeline.</i>

Comments: *This project consists of replacing existing leaking and undersized water pipelines with larger pipelines that includes water meters and fire hydrants. No alternative method has been identified that provides equivalent benefits of both water savings and fire flow. The current approach of repairing water leaks on a reactive basis results in water losses due to leaks that continue for periods of time until they are identified and then repaired.*