

Amador Regional Sanitation Authority • City of Ione • California Department of Corrections and Rehabilitation

## **Regional Water Recycling Feasibility Study**

## AUGUST 2016

Prepared by HydroScience Engineers, Inc.



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Amador Regional Sanitation Authority, City of Ione, and California Department of Corrections and Rehabilitation

# Regional Water Recycling Feasibility Study

Prepared by HydroScience Engineers





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## LIST OF ACRONYMS AND ABBREVIATIONS

ADWF	Average Dry Weather Flow
AF	acre-feet, acre-foot
AF/y	acre-feet per year
ARSA	Amador Regional Sanitation Authority
AWA	Amador Water Agency
AWS	Amador Water System
CDCR	California Department of Corrections and Rehabilitation
CDO	Cease and Desist Order
CIP	Capital Improvement Plan
cfs	cubic feet per second
COGC	Castle Oaks Golf Course
COWRP	Castle Oaks Water Reclamation Plant
CSA #4	Amador County Service Area #4
DDW	Division of Drinking Water
DOF	Department of Finance
DSOD	Division of Safety of Dams
EDU	Equivalent Dwelling Unit
ET	evapotranspiration
Feasibility Study	Regional Water Recycling Feasibility Study
ft	feet
gpcd	gallon per day per capita
gpd	gallon per day
gpm	gallon per minute
GRR	Gold Rush Ranch and Golf Resort
hp	horsepower
HydroScience	HydroScience Engineers, Inc.
JPA	Joint Powers Authority
LF	linear feet
MCL	Maximum Contaminant Level
MCSP	Mule Creek State Prison
MG	million gallon
MGD	million gallons per day
mg/L	milligram per liter
ml	milliliters
MPN	most probable number
MRP	Monitoring and Reporting Program
MSF	million square feet
O&M	Operations and maintenance
PDF	Peak Day Flow
PHF	Peak Hour Flow
ppb	parts per billion
ppm	parts per million

## LIST OF ACRONYMS AND ABBREVIATIONS

PRV	pressure-reducing valve
psi	pounds per square inch
PYCF	Preston Youth Correction Facility
RCS	Regional Service Center
RDI/I	rainfall-dependent inflow and infiltration
ROW	right-of-way
ROWD	Report of Waste Discharge
RP, RP10	Return Period, 10-Year Return Period
RSC	Regional Service Center
RW	Recycled water or recycled water service
RWQCB	Regional Water Quality Control Board
SDCP	Seepage Discharge Compliance Plan
SWRCB	State Water Resources Control Board
VFD	Variable frequency drive
WDR	Waste Discharge Requirement
WID #11	Wastewater Improvement District #11
WTP	Water Treatment Plant
WWMP	Wastewater Master Plan
WWTP	Wastewater Treatment Plant

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#### SECTION 1 – INTRODUCTION AND BACKGROUND

This section provides the background information for the Regional Water Recycling Feasibility Study (Feasibility Study) including a description of the study area and regional partnership.

#### **1.1 Study Area Characteristics**

There are three study areas addressed by this report:

- Amador Regional Sanitation Authority (ARSA) Service Area
- Ione Service Area
- Mule Creek State Prison (MCSP)

Below is a description of each study area including service area boundaries, governing agencies and any contractual relationships between the agencies, land use and population projections and descriptions of the major surface and groundwater features. The locations of each entity and major facility to be discussed below are illustrated in **Figure 1-1** below.

#### 1.1.1 Amador Regional Sanitation Authority (ARSA) Service Area

The City of Sutter Creek owns and operates the Sutter Creek Wastewater Treatment Plant (WWTP). Amador Regional Sanitation Authority (ARSA) manages the existing recycled water conveyance, storage, and distribution system downstream of the WWTP through a joint powers agreement between the City of Sutter Creek, Amador City, and Amador County. The City of Sutter Creek provides operation services under contract to ARSA.

As shown on **Figure 1-2**, this WWTP serves the Cities of Sutter Creek and Amador City, and Amador County Service Area #4/Amador Water Agency (AWA) Wastewater Improvement District #11, which generally comprises the community of Martell. The cities of Sutter Creek and Amador City are primarily residential, while the Martell area contains a significant amount of commercial and industrial land uses. Growth within the Sutter Creek WWTP service area would include that resulting from infill development within the City of Sutter Creek and the Martell area. According to the 2011 Amador County General Plan, Amador City expects very little new growth since it has nearly reached buildout.

The City of Sutter Creek has approved the development agreement for the Gold Rush Ranch and Golf Resort (GRR) project, which is located southwest of the current City limits (see **Figure 1-2**) and would be served by the Sutter Creek WWTP. In addition to infill development, the GRR project would comprise a significant portion of the future growth and development in the service area. As approved, the GRR project would include an 18-hole golf course, 1,334 residential units, 300 vacation rental units, neighborhood commercial uses, and a public safety site, which are expected to develop over 25 years. Currently there is uncertainty about if or when this development will actually occur. Therefore this study considers scenarios including GRR and its impact on wastewater flows and recycled water availability, however, to be conservative, no credit is taken for potential recycled water use. ARSA, City of Ione, and CDCR Regional Water Recycling Feasibility Study August 2016 Page 1-2

#### Figure 1-1: Study Areas



Source: Developed for Regional Water Recycling Feasibility Study

Figure 1-2: ARSA Service Areas



Source: City of Sutter Creek and Amador Regional Sanitation Authority – Draft Wastewater Master Plan, November 2012

The County has also designated 690 acres as a large-scale Regional Service Center (RSC) for the Martell area. The County estimates that this RSC area will develop an additional 1,250 residential units over 20 years (beginning in 2015), and will develop up to a total of 3.5 million square feet (MSF) of commercial and industrial area over the next 20 years.

The City of Ione currently accepts effluent from ARSA, which it stores, treats and disposes along with effluent from Mule Creek State Prison (MCSP) and backwash from the Preston Water

Treatment Plant (WTP). Acceptance and disposal of ARSA effluent in the lone system is governed by the 2007 lone Disposal Agreement (See **SECTION 1.2**), which obligates the City of lone to accept up to 650 AF per year (AF/y) of combined flow from ARSA and MCSP. A copy of the agreement is included as **Appendix A**. This agreement includes a five-year cancellation clause which can be invoked by either party. In the event that the City of lone was to invoke this clause, the storage and disposal capacity currently available in these facilities would no longer be available to ARSA after 5 years.

#### 1.1.2 Ione Service Area

The City of Ione is located in the western foothills of the Sierra Nevada Mountains in Amador County, California. Neighboring communities are Clay to the west, Clements and Wallace to the south, and the Cities of Jackson, Sutter Creek, and Amador City to the east and northeast. The southern portion of the City is bisected east to west by Sutter Creek, with approximately 450 acres on either side of the creek, totaling 900 acres. The City of Sacramento is located approximately 40 miles to the northwest of Ione. Around the City of Ione, the major stream flows are Sutter Creek, which runs through the center of town and Mule Creek, located at the western city limits. Flows from both creeks go to Dry Creek, which drains to Mokelumne River. Sutter Creek and Mule Creek are intermittently dry in the summer months. A key map of the area is shown in **Figure 1-3**.

To preserve water quality, the Central Valley Regional Water Quality Control Board (RWQCB), who regulates the enforcement of water quality standards in the area, has placed restrictions prohibiting discharge into the creeks.

Groundwater in the area is used mostly for agricultural purposes and to a lesser extent, as a domestic water supply. The groundwater is typically shallow, less than 100 feet below ground surface, with limited available capacity and of marginal quality. It is believed that some of the water from Sutter Creek infiltrates into the Ione Valley in the winter and spring due to the topography and hydrology.

The City of Ione owns and operates two wastewater treatment plants – the Ione WWTP and the Castle Oaks Water Reclamation Plant (COWRP). The Ione WWTP, located directly south of Sutter Creek at the corner of West Marlette Street and Dave Brubeck Road, provides secondary treatment for properties within the city limits. This consists of residential and a small number of commercial customers, including the main commercial area of the City, consisting of retail shops, restaurants, and City Hall. The service area includes approximately 1,525 Equivalent Dwelling Units (EDUs). Inmates and wards of MCSP, which is within the lone city limits, are included in the MCSP Area, therefore are excluded from the lone service area. The MCSP Area is described in **SECTION 1.1.3**.

Based on historical data, the population growth from 1990 to 2000 was approximately 0.45 percent. The City of lone has approved development agreements that allow for up to 1,000 more residential units in the City.

The General Plan for the City of Ione, adopted in 2009, provides policies that guide the land use development of Ione. The City's WWTP is designated as Public Service land (PS) and zoned as Single Family Residential (R1A) except for selected areas.

Figure 1-3: City of lone



The other WWTP that the City of Ione operates is COWRP, which is located approximately 600 feet to the northwest of the City's WWTP, across Sutter Creek. COWRP provides tertiary treatment to Title 22 standards for secondary effluent from ARSA and MCSP before it is used for irrigation at Castle Oaks Golf course (COGC).

#### 1.1.3 Mule Creek State Prison (MCSP)

The MCSP is located in the City of Ione. Because of this, the study area shares the same surface and groundwater characteristics. Refer to the preceding section for a description of these characteristics. In 1987, the CDCR commissioned MCSP including a dedicated WWTP and associated sprayfield disposal system to service the prison. Currently, the wastewater facilities at MCSP operate under revised Monitoring and Reporting Program (MRP) No. 5-00-088 issued by the RWQCB. MCSP is contractually allowed to dispose up to 350 AF/y of secondary effluent to Preston Reservoir which is ultimately discharged to either Ione's COWRP for tertiary treatment or Ione's secondary percolation pond (see **Appendix A**). In practice, the MCSP discharges no more than 230 AF/y unless the COWRP requests additional recycled water to meet golf course irrigation demands.

As of August 2013, the inmate population was approximately 2,800. CDCR's long term plans and operations, detailed in *The Future of California Corrections: A Blueprint to Save Billions of Dollars, End Federal Oversight, and Improve the Prison System* targeted a population goal of 2,400 by the end of 2013. Currently, CDCR is implementing a new inmate classification and custody designation system to insure improved, more efficient housing and supervision of inmates. Part of the plan is to develop a Level II Dorm Complex which will serve as an infill correctional facility expansion next to MCSP. The Level II facility will house up to 1,584 inmates and the existing main prison facility will continue to house approximately 2,600-2,800 inmates.

#### 1.2 Regional Partnership

The City of Ione, ARSA, and the State of California (CDCR), herein referred collectively as the "Regional Partners" are collaborating to explore opportunities to regionalize the beneficial reuse of treated effluent in order to address regulatory mandates and planned growth.

In fall of 2007, an agreement was reached between the Regional Partners (2007 Ione Disposal Agreement) under which Ione must accept up to 650 AF of secondary treated wastewater for disposal from ARSA and/or MCSP annually (MCSP may contribute up to 350 AF counted against ARSA's and MCSP's 650 AF combined total disposal amount). Furthermore, the agreement limits total discharges to 10 AF per month from October through April of each year, and 95 AF per month from April through September. The annual total based on these monthly limits is only 630 AF/y, and MCSP's share of this total (based on the ratio of annual maximums) is approximately 341 AF/y. This Study utilizes these more conservative values for current contractual limits.

The full language of the agreement is contained in **Appendix A**. A 2009 ground lease agreement further delineates the water rights, responsibilities, and partnership between CDCR and ARSA and is also included in **Appendix A**. These agreements will serve as stepping stones for future agreements for regionalization.

#### **1.3 ARSA Fee Structure**

The City of Amador City, the City of Sutter Creek, and a section of Amador County known as Martell (all Disadvantaged Communities) send their effluent to Sutter Creek to be treated at the WWTP in Sutter Creek, owned by Sutter Creek. The City of Sutter Creek charges each of the three entities for treatment based on calculated flows from each. ARSA takes the secondary treated effluent from the Sutter Creek WWTP and disburses it through a series of irrigation fields, reservoirs and sends some to the City of Ione. ARSA determines its annual costs and bills the

three entities making up the Joint Powers Authority (JPA) a portion of those costs based on the calculated flows Sutter Creek has determined. These fees are general obligations of the entities and not directly of their rate payers. All of the ARSA facilities, operations, maintenance, and management costs are determined annually and split between the members of the JPA based on their input to the Sutter Creek WWTP. SRF costs and/or other long term debt for Capital Improvement is ARSA's to determine and annual costs will be divided amongst its members the same way.

#### **1.4 Public Participation**

Information about Regional recycled water planning and development of this Study has been a part of the public process. Recycled Water has been an open topic for discussion on ARSA Board of Directors' and City of Ione Council Agendas. **Appendix B** includes copies of meeting agendas for both utilities. The public has not indicated any specific concern regarding the environmental impact of recycled water use.

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#### **SECTION 2 – EXISTING FACILITIES AND CHARACTERISTICS**

This section provides the water supply characteristics, and the existing wastewater facility characteristics.

#### 2.1 Water Supply Characteristics

The Annual Consumer Confidence Report for reporting period January 1, 2013 to December 31, 2013 was used to assemble available data on the water supply source and the reliability of the sources for the AWA. The North Fork of the Mokelumne River, located in the Sierra Nevada Mountains, is the primary water source for AWA and the PG&E Tiger Creek Powerhouse System. Water from the Mokelumne River supplies the Tanner WTP, where the water is treated for use by the customers of Jackson, Sutter Creek, Amador City, Drytown, and Plymouth. Raw water from the Tanner Reservoir is transported to the Ione WTP to be treated for use by the customers of Ione.

A source water assessment was conducted in 2007 for the lone drinking water source (lone Reservoir). It is most vulnerable to grazing (>5 large animal or equivalent/acre), railroads, and storm drain discharge.

**Table 2-1** and **Table 2-2** below shows water testing results for microbiological contaminants and lead and copper for the year 2013 against the Maximum Contaminant Level (MCLs).

Service Districts	Total Coliform Bacterial MCL Violation	Fecal Coliform and E Coli. MCL Violation		
AWS (lone)	None to Report	None to Report		
(Sutter Creek, Amador City)	None to Report	None to Report		
City of Jackson	64426.1(B)(2) <sup>1</sup>	None to Report		

#### Table 2-1: 2013 Water Quality Data – Microbiological Contaminants

Source: AWA Annual Consumer Confidence Report for the reporting period January 1, 2013 to December 31, 2013 Notes:

1. City of Jackson had two samples that came back positive in July of 2013. The public was notified and all Division of Drinking Water (DDW) requirements have been meet.

#### Table 2-2: 2013 Water Quality Data – Lead and Copper

Service	# of Sites	Lead Results 15 ppb (MCL)			Copper Results 1.3 ppm (MCL)		
Districts	Sampled	Year Sampled	90% Level in ppb	# of Sites >15 ppb	Year Sampled	90% Level in ppb	# of Sites >1.30 ppm
AWS (lone)	20	2013	ND	0	2013	ND	0
(Sutter Creek, Amador City)	20	2013	ND	0	2013	0.066	0
City of Jackson	20	2012	ND	1	2012	ND	0

Source: AWA Annual Consumer Confidence Report for the reporting period January 1, 2013 to December 31, 2013

#### 2.2 Wastewater Facilities and Characteristics

This section describes the existing wastewater treatment, storage, and disposal facilities including current capacity, regulatory compliance status, age, and condition. This information was gathered from previous reports and studies done by the individual agencies. The format of information presentation may vary due to the different sources used. The primary sources are listed below and incorporated by reference:

- City of Sutter Creek and Amador Regional Sanitation Authority Draft Wastewater Master Plan, November 26, 2012 (2012 Draft ARSA WWMP);
- City of Ione Revised Report of Waste Discharge, Modifications to City WWTP, September 2012;
- City of Ione Basis of Design WWTP Compliance Project, November 2012;
- City of Ione Additional Information for Combined Report of Waste Discharge, July 2012.
- Mule Creek State Prison Report of Waste Discharge, January 2009
- Mule Creek State Prison WWTP & Disposal Systems Improvements, Predesign Engineering Report Partial Draft, August 2013
- Central Valley RWQCD, Amador Regional Sanitation Authority, City of Ione, and Portlock International, Ltd., Amador County – Water Reclamation Requirements for Amador County Regional Outfall and Castle Oaks Golf Course and Development Order No. 93-240, December 3, 1993

#### 2.2.1 ARSA Wastewater Facilities

The Sutter Creek WWTP currently has a permitted average dry weather flow (ADWF) capacity of 0.48 million gallons per day (MGD). The WWTP was originally constructed in 1949. The trickling filter and the clarigester unit processes are original. Subsequent modifications were completed that included aerators for the emergency overflow pond, enlargement of the emergency overflow pond, updated electrical service from 200- to 400-amp, and a dewatering screw press. The WWTP consists of the following primary components:

- Mechanical bar screen;
- Flow meter;
- Primary treatment using rotating fine screens (Roto-Strainers) with 0.01-inch openings, the solids to dumpster via screw conveyor;
- A trickling filter with a five foot rock media depth;
- Two secondary clarigesters with combined secondary clarifier and unheated anaerobic digestion processes;
- Sodium hypochlorite disinfection in 30,000-gallon chlorine contact channel;
- Sludge dewatering using an inclined screw press, the solids to dumpster;
- Two sand sludge drying beds and one synthetic media sludge drying bed;
- 1.1 million gallon (MG) aerated emergency storage pond; and
- Emergency standby power

The current plant configuration is shown in Figure 2-1.



Figure 2-1: Current Sutter Creek WWTP Configuration

Wastewater is conveyed through the collection system to the WWTP via a 15-inch diameter influent pipeline. Influent wastewater then passes through the mechanical bar screen and flow meter, after which peak flows can be equalized in the 1.1-MG aerated storage basin. The wastewater is then routed in a channel to four parallel Roto-Strainers where primary solids are removed by a doctor blade and discharged by a screw conveyor to a dumpster.

Effluent from the Roto-Strainers flows by gravity to the 70-foot diameter trickling filter. Effluent collected in the underdrains of the trickling filter is routed through the secondary pump station to recirculation pumps. The recirculation pumps recycle flow back to the trickling filter at up to 200% of the average flow. Overflow from the recirculation pump station flows to the secondary pump station and is then pumped to two "clarigesters" for secondary treatment. The clarigesters combine secondary sedimentation and sludge storage/digestion in a single unit process. The top portion of the clarigester is the clarifier section with a depth of approximately six feet. Both clarigesters operate in parallel to settle and digest solids from the trickling filter effluent stream.

Secondary effluent from the clarigester is disinfected using bulk sodium hypochlorite in a 4,000 cubic-foot chlorine contact basin, which consists of five chambers controlled by weirs to approximate plug flow and provide detention time. Disinfected effluent is then discharged to the ARSA treated effluent conveyance pipeline, which is discussed in further detail below.

Source: City of Sutter Creek and Amador Regional Sanitation Authority – Draft Wastewater Master Plan, November 2012

The digester tanks, located beneath the clarifier, provide digestion of accumulated solids. Digested solids are drawn off the digesters with an electric motor-driven rake arm/mixer, a polymer coagulant is added and solids are pumped to a screw press or to the covered sludge drying beds for dewatering prior to transport by a private septic company for disposal at Forward Landfill in Manteca, California. The drying beds are only used for redundancy when the screw press is being serviced.

The design capacities are summarized in Table 2-3.

Process	Average Day Flow (MGD)	Max Month Flow (MGD)	Peak Flow (MGD)	Comment
Fine Screens (Roto-Strainers)	-	-	1.80	Firm capacity
High-Rate Trickling Filter with Recirculation	0.47	0.61	0.96 (process) 1.75 (hydraulic)	High rate organic loading (40 lb/kcf/d) or greater
Clarigester Clarifier	0.90	1.20	1.95	Equalized
Clarigester Digester	0.52	0.66	-	30 d HRT, 40 lb VSS/kcf/d
Chlorine Contact Basin	-	-	1.44	30 min peak

Table 2-3: WWTP Process Capacities

Source: City of Sutter Creek and Amador Regional Sanitation Authority – Draft Wastewater Master Plan, November 2012

#### Existing ARSA Disposal System

Secondary effluent produced at the Sutter Creek WWTP is discharged to the ARSA system for storage and reuse/disposal. The ARSA effluent disposal system is a series of pipelines, storage reservoirs, stock troughs, and land application sites in Amador County, southwest of the Sutter Creek WWTP.

The primary components of the ARSA effluent disposal system are:

- Effluent pipeline (ARSA pipeline) from the Sutter Creek WWTP to Preston Reservoir;
- Irrigation on Bowers Ranch;
- Henderson Reservoir;
- Irrigation on Hoskins Ranch;
- Preston Forebay; and
- Preston Reservoir.

The City of Ione currently accepts up to 289 AF/y of effluent from ARSA as part of the 2007 Ione Disposal Agreement. In addition, the CDCR also has a 737 AF/y water right diversion off Sutter Creek which allows the diversion of 4.5 cubic feet per second (cfs) of surface water to the ARSA system from March 1st through October 31st, and the right to store 469 AF/y in Henderson Reservoir and 268 AF/y in Preston Reservoir collected from November 1st to May 1st at a maximum diversion rate of 15 cfs.

Figure 2-2 shows the location of the ARSA effluent disposal system.



Figure 2-2: Existing ARSA System and WWTP

Source: City of Sutter Creek and Amador Regional Sanitation Authority – Draft Wastewater Master Plan, November 2012

#### **Conveyance Facilities**

Secondary effluent is conveyed from the Sutter Creek WWTP to the land application sites and storage facilities through the ARSA pipeline, which is approximately 7.5 miles long from the WWTP to the Preston Reservoir. **Table 2-4** describes the individual components of the ARSA pipeline.

Pipeline Segment		Diameter	Material	Length	Notes	
From	То	(in)		(ft)		
WWTP	Diversion Structure	12	Ductile Iron	1,850	Hydraulic bottleneck. Capacity depends on water surface elevation at the intake	
Diversion Structure	Siphon	10 to 18	Ductile Iron	8,000		
Jackass Creek Siphon		24	Ductile Iron	Approx. 450	Above-grade creek crossing	
Siphon	Henderson Reservoir	10 to 12	Unreinforced Concrete	7,000		
Henderson Reservoir	Preston Reservoir	12 to 30	Unreinforced Concrete	Approx. 22,300	First 3,300 LF slip-lined in 1983 to inhibit exfiltration near fresh water Goffinet Reservoir	

#### **Table 2-4: ARSA Pipeline Components**

Source: City of Sutter Creek and Amador Regional Sanitation Authority - Draft Wastewater Master Plan, November 2012

The pipeline is approximately 30 years old, consists of ductile iron and unreinforced concrete pipe from 10- to 21-inches in diameter, and provides the only means to convey treated effluent to the existing storage reservoirs and reuse sites.

ARSA leases the pipeline and reservoirs from the CDCR. The original agreement was struck in 1977 and subsequently superseded by Ground Lease No. L-2070, executed on February 23, 2009 and set to expire on September 18, 2037.

#### **Storage Facilities**

Henderson Reservoir is used as a secondary effluent storage facility on the ARSA system and is located in the Jackass Creek drainage, as shown on **Figure 2-2**. Preston Forebay and Preston Reservoir are located downstream of Henderson Reservoir and receive any effluent discharged from Henderson and not otherwise disposed of on Hoskins or Bowers Ranch. Outflow from Preston Reservoir is discharged into the Ione wastewater system. The current storage facilities available to ARSA are listed in **Table 2-5**.

#### Table 2-5: Existing Storage Reservoirs

Reservoir	Ownership	Surface Area (acre)	
Henderson	State of CA	5 to 27 (21 max operational area)	
Preston Forebay	State of CA	2	
Preston Reservoir	State of CA	0 to 18	

Source: City of Sutter Creek and Amador Regional Sanitation Authority – Draft Wastewater Master Plan, November 2012

Henderson Reservoir is created by an earthen dam on Jackass Creek which was originally completed in 1855, reconstructed to an approximate height of 46 feet, and raised ten feet in 1922 to the current height of 56 feet. The dam footprint covers approximately two acres. The reservoir's maximum operational surface area with freeboard is 21 acres (27 acres with less than the required two feet freeboard). The surface area at the top of dam elevation is 31 acres.

A corrugated metal diversion pipeline was installed in 1979 along the north side of Henderson Reservoir to reduce Jackass Creek inflow to the ARSA system by capturing runoff from the 14-acre tributary watershed and bypassing the reservoir. The pipeline was replaced in 2006 with a 48-inch corrugated plastic pipe. In addition to this diversion pipeline, an interceptor ditch is located along the south side of the reservoir which conveys stormwater runoff around the reservoir.

#### Effluent Disposal Facilities

Effluent in the ARSA system is reclaimed through land application and supplied to 22 stock water troughs along the ARSA pipeline. The existing ARSA effluent disposal sites are summarized in **Table 2-6**. Bowers Ranch is contracted to provide 40 acres of pastureland, which is currently approximately 60% developed for flood irrigation. Hoskins Ranch provides approximately 60 acres of pastureland, which is currently approximately 40% developed for spray irrigation. See **Figure 2-2** for land application sites.

ARSA has an easement and agreement for the use of Hoskins Ranch for effluent disposal, which requires a minimum of 60 acres to be made available to ARSA for irrigation and a minimum of 25 AF/y of effluent to be made available to Hoskins Ranch. This agreement was for a period of

six years, estimated to have begun in 2003 and therefore likely expired. Bowers Ranch likely has a similarly expired agreement.

Disposal Site	Ownership/ Agreement	Type of Disposal	Area (acres)	Subject to 5-Year Cancellation Clause
Noble Ranch	ARSA Easement	1,300 AF/y Easement	Undetermined	No
Bowers Ranch	ARSA Agreement	Flood Irrigation	24 in use 40+/- available	No
Henderson	ARSA/CDCR Land	Evaporation	5 to 27	No
Reservoir	Lease	Percolation	5 to 27	No
Hoskins Ranch	ARSA Agreement	Sprinkler Irrigation	24 in use 60+/- available	No
Preston Forebay	ARSA/CDCR Land	Evaporation	2	No
	Lease	Percolation	2	Yes
Preston Reservoir	ARSA/CDCR Land	Evaporation	0 to 18	Yes
	Lease	Percolation	0 to 18	Yes
Castle Oaks Golf Course	JPA with City of Ione	Sprinkler Irrigation	Est'd 120 +/-	Yes
Ione Percolation Ponds	JPA with City of lone	Percolation Ponds	Unknown	Yes

**Table 2-6: ARSA Disposal Facilities** 

Source: City of Sutter Creek and Amador Regional Sanitation Authority - Draft Wastewater Master Plan, November 2012

If the Bowers Ranch and Hoskins Ranch disposal facilities are expanded to their full buildout potential of 40 acres and 60 acres, respectively, the ARSA system will achieve adequate capacity under an average rainfall year to dispose of current flows without lone, but would experience a shortfall during a 100RP year.

The 2012 Draft Wastewater Master Plan identified deficiencies in the ARSA pipeline that would need to be addressed over time in order to continue reliable operation of the system. These are discussed further in **SECTION 4.4.4**.

#### 2.2.2 Ione Wastewater Facilities

Currently, the process treatment train at the City of Ione WWTP consists of headworks, a grit channel, aeration ponds percolation ponds, and secondary effluent irrigation areas. The influent flow is diverted to one or both open concrete channels where gravel traps remove sand and gravel. Comminutors located downstream of the channel grind and shred solids. The flow is then pumped to aerated wastewater treatment ponds. There are seven ponds at the Ione WWTP. Ponds 1 through 4 provide secondary wastewater treatment through aeration and settling. Ponds 5 through 7 are used for treated effluent disposal via percolation and evaporation. Effluent is also pumped to irrigation areas from Ponds 5 through 7.

The Ione WWTP receives flows from within the City of Ione and COWRP backwash flows. Treated secondary effluent from ARSA and MCSP are usually routed to Castle Oaks Water Reclamation Plant (COWRP) for tertiary treatment for irrigation at the Castle Oaks Golf Course (COGC). When capacity at COWRP is fully utilized, the secondary effluent from ARSA and MCSP can be routed to Pond 5 at Ione WWTP for percolation or irrigation and COWRP backwash is rerouted to the Ione WWTP Pond 1 for treatment. **Table 2-7** shows the historical influent wastewater characteristics for the Ione WWTP.

Year	Average BOD (mg/l)		
2012	251		
2013	264		
2014	185		

#### Table 2-7: Historical BOD Average for City of Ione WWTP

Source: Plant Monitoring Data.

The lone WWTP operates under the WDR Order No. R5-2013-0022-001 as amended by R5-2014-0166. On July 11, 2003, the WWTP was issued Cease and Desist Order (CDO) R5-2008-0108 by the Central Valley RWQCB as there were concerns that there was potentially seepage from percolation/evaporation ponds to Sutter Creek in violation of the WDR. Additionally, the City of Ione constructed and started using Pond 7 which is not covered by the WDR. Furthermore, there was concern that the limited groundwater monitoring results around the treatment plant indicated potential groundwater degradation. In addition to limiting flow and disposal rates at the plant, the CDO required the City of Ione to make facility improvements to the plant that would stop the mechanism that results in mobilization and discharge of iron and manganese that is in violation of State Board Resolution 68-16. The CDO required that a Final WWMP and Report of Waste Discharge (ROWD) be submitted. The City completed the WWMP and ROWD which was subsequently deemed incomplete by the RWQCB.

The WWTP was issued a second CDO (R5-2011-0019) in 2011 which imposed flow limits on the plant, including a monthly ADWF of 0.55 MGD and a monthly average flow to the percolation/evaporation ponds of 0.75 MGD. A Seepage Discharge Compliance Plan (SDCP) was to be submitted by January 30, 2012 that defined a seepage compliance option that would provide a means to achieve compliance. If the selected compliance alternative did not require an NPDES permit, the City was required to submit a ROWD or apply for revised WDR by May 30, 2012.

The WWTP was issued a third CDO (R5-2013-0023) in 2013. This CDO required material to be removed from Pond 5. It also required groundwater monitoring and additional improvement if monitoring did not show improved iron and manganese concentration. The City completed the required improvements under the CDO. R5-2014-0166 amended the requirements for recycled water use to allow undisinfected secondary water to be used on irrigation sites. A fourth CDO (R5-2014-0157) was issued which provided the City with more options for compliance with iron and manganese groundwater limits. The City is now completing WWTP improvements to provide better alarm monitoring and provide dedicated irrigation pumps.

#### 2.2.3 Castle Oaks Water Reclamation Plant (COWRP)

The process treatment train at COWRP includes flocculation/headworks, tertiary sand filters (four filter cells), chlorine mix tank and contact basin, effluent pump stations, solids handling facility, electrical service, control and chemical building, and chemical storage tanks. See **Figure 2-3** for a process flow schematic.





COWRP operates under WDR Order 93-240 issued jointly to the City of Ione, ARSA, COGC and Development, and Portlock International LTD. COWRP treats secondary effluent from ARSA and MCSP to Title 22 tertiary standards before it is used for irrigation at COGC. COWRP provides all water for the golf course during the dry season and does not operate during the winter. There are no plans for specific improvement projects at this time; the only capital work planned are ongoing repairs and replacement of existing components, as necessary.

#### 2.2.4 CDCR Wastewater Facilities

Currently, the WWTP at MCSP consists of headworks (an influent screening and pumping station), an oxidation ditch, two clarifiers, chlorination facilities (chlorine contact piping, chlorination feed equipment, 4,000-gallon sodium hypochlorite storage tank), a belt filter press, sludge drying beds, a 525 AF storage reservoir, and 260 acres of irrigated land. The WWTP operates under a RWQCB discharge permit for an average flow of 0.74 MGD. **Table 2-8** shows the historical influent wastewater characteristics for the MCSP WWTP.

Year	Influent (MGD) Annual Average	Average BOD (mg/L)
2011	0.443	256
2012	0.355	256
2013 ( 6 months)	0.365	253

#### Table 2-8: Historical BOD Average for MCSP WWTP

Historically, the influent source for the MCSP WWTP was composed of wastewater generated from MCSP, Preston Youth Correction Facility (PYCF), and the California Department of Forestry Fire Academy. However, the PYCF closed in June 2011. CDCR has no plans to reuse the PYCF facility. Currently, flow from MCSP includes industrial wastewater generated by a meat packing plant, laundry facility and coffee grounds processed on MCSP operated by the Prison Industry Authority.

RWQCB issued CDO No. R5-2006-0130 to the CDCR WWTP at MCSP that required CDCR to implement corrective measures and facility improvements to ensure long-term compliance with the NPDES permit WDRs. Since 2006, MCSP has implemented corrective measures and WWTP upgrades are in progress. The WWTP upgrades include a secondary clarifier, a sludge pump station, a mixed liquor splitter box, a chlorine contact basin, a utility water pump station to be used at the WWTP, and staff and laboratory facilities.

Since all other corrective measures have been completed, RWQCB rescinded the CDO on July 26, 2013 by issuing Order No. R5-2013-0016 with the upgrades still to be implemented. CDO No R5-2006-0130 requires facility improvements to be made to the plant to provide redundancy and to improve the treatment process. To address required improvements and also to improve operational inefficiencies, CDCR is in the process of making significant upgrades to the WWTP by implementing improved and more efficient treatment technology. As such, CDCR expects that, with the improved technology, the current 0.074 MGD permitted capacity will be more than adequate to meet the MCSP needs. The MCSP WWTP Upgrade Project is currently underway.

CDCR is also in the process of making improvements to 200 acres of the existing spray fields including more uniform coverage, conversion to higher water consuming crops, and operational improvements that will increase recycled water demand/disposal capacity for these fields. **Table 2-9** below provides a summary of the existing facility components.

#### Table 2-9: Existing MSCP WWTP

Facilities	Existing
Influent Screens	
No. of Automatic systems	2
Screen Type	Mechanical Bar
Capacity	Unknown
Oxidation Ditch	·
Number	1
Hydraulic Capacity	0.74 MGD AADF
Aeration	4 Fixed Speed Rotors
Aeration Capacity	11,500 lb/day
Power	4 x 40 hp rotors = 160 hp
Clarifiers	
Number	2
Size (diameter)	36 foot each
Total Surface Area	2,036 sf
Surface Settling Rate at AADF	363 gpd/sf
RAS Pumps	
No. and type of pumps	2 submersible
Total Capacity	750 gpm
Firm Capacity	375 gpm
Chlorine Contact Basin	
No. of isolatable chambers	1
Type of chamber	Straight 84 inch diameter pipe
Total Volume	63,320 gal when full, 31,660 gal when half full (normal operation)
Detention Time at AADF	91 min when full, 45 min when half full
Utility Water System	
No. of pumps	0
Firm Capacity	NA
Hydropneumatic Tank Volume	NA
Effluent Pumps	
No. and type of pumps	4 submersible
Firm Capacity	1,894 gpm
Sludge Drying Beds	
Condition	3 nonfunctioning
Size	10,000 sf each
Belt Filter Press System	
Capacity	200 gpm
Wash Water Flow Meters	NA

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#### SECTION 3 – PLANNING AND DESIGN CRITERIA

This section presents the planning and design criteria for determining type of reuse and the volume of recycled water production projected for reuse/disposal.

#### 3.1 Wastewater Flow Projections

This section identifies the proposed wastewater flow projections developed for each of the Regional Partners. These projections were obtained from existing, recent studies prepared by each of the Regional Partners and are incorporated into this study as the basis for alternatives evaluation and selection. Each Regional Partner used somewhat different approaches for projecting future flows, which have been reviewed and validated as part of this study effort. The timelines for projections in the source documents vary due to somewhat different timing of the source studies. **SECTION 3.2** provides a summary of the flow projections that have been extrapolated to establish an equivalent basis for flow criteria and water balances for the alternatives evaluated in **SECTION 4**.

#### 3.1.1 ARSA Flow Projections and Methodology

Wastewater flows to the Sutter Creek WWTP and corresponding effluent flows to ARSA were projected in the 2012 Draft ARSA WWMP. The following methodology was used to develop the flow projections:

- Land use, population, and wastewater flows were projected using 2011 data as the base to project out to year 2036.
- Land use categories were grouped by wastewater generation characteristics and consolidated into three land use categories: residential, commercial/industrial, and institutional.
- Annual growth rates were applied to each wastewater collection system within the service area over the 25-year planning period to project year 2036 population and land uses.
- WWTP influent flow data were analyzed over the three year period from 2009 to 2011. These WWTP flow data were used to develop and calibrate unit flows for each land use category, and were then applied to the land use projections to project 2036 wastewater flows.

Provided is a summary of the analysis completed for the projections. Details can be found in the 2012 Draft ARSA WWMP, which is incorporated by reference.

#### Population Projections

Population projections were developed by applying growth rates to population data for the various WWMP land uses. Data was based on multiple resources including the Department of Finance (DOF), 2010 census data, and the City Planner. The 2011 land use and population for the service area is summarized in **Table 3-1**.

#### Table 3-1: 2011 Land Use and Population

Land Use/Population	Sutter Creek	Martell	Amador City	Total
Population	2,522	286	187	2,995
Residential Units	1,373	128	86	1,587
Commercial and Industrial (MSF)	0.35	1.20	0	1.55
Institutional (Number of Students)	883	100	65	1,048

Source: City of Sutter Creek and Amador Regional Sanitation Authority – Draft Wastewater Master Plan, November 2012

The service area land use and population is projected over a 25-year planning period by applying anticipated growth rates to the 2011 land use and population. The annual growth rates identified in the 2012 Draft ARSA WWMP are summarized in **Table 3-2**.

Table 3-2: Anticipated Annual Growth Rates

<b>Collection System</b>	Land Use	Projected Annual Growth Rate	
Sutter Creek	Residential & Institutional	0.84%	
	Commercial & Industrial	0.84%	
	GRR	127 capita per year (59 residential units)	
Martell	Residential	1.4%	
	Commercial & Industrial	0.121 MSF/year	
	Martell RSC Housing (MRSCH)	118 capita per year (62.5 residential units)	
Amador City	All	0.84%	

Source: City of Sutter Creek and Amador Regional Sanitation Authority - Draft Wastewater Master Plan, November 2012

The residential population for the service area was projected by applying the annual growth rates to the existing populations summarized in **Table 3-1**. Similar to the residential population projections, the non-residential land uses were projected over the 25-year planning period by applying the annual growth rates to the existing land uses, also summarized in **Table 3-1**. The residential population projections and non-residential land use projections for the 25-year planning period are summarized in **Table 3-3**.

Year	Sutter Creek, Martell, & Amador City	Total (with GRR & MRSCH)	Commercial and Industrial Building Area (MSF)	Institutional (No. of Students)
2011	2,995	2,995	1.55	1,048
2016	3,131	3,622	2.17	1,093
2021	3,274	4,992	2.79	1,139
2026	3,423	6,369	3.41	1,188
2031	3,580	7,753	3.91	1,239
2036	3,744	9,144	3.93	1,292

#### Table 3-3: 25-year Residential Population and Non-Residential Land Use Projections

Source: City of Sutter Creek and Amador Regional Sanitation Authority - Draft Wastewater Master Plan, November 2012

#### Wastewater Flows

Historical influent WWTP data was used to develop and calibrate unit flows for each land use category, and then applied to the land use projections to project wastewater flows over the 25-year planning period. The influent flows for 2009 to 2011 are presented in **Figure 3-1**.



Figure 3-1: Sutter Creek WWTP Daily Average Influent Wastewater Flows (2009-2011)

As shown in **Figure 3-1**, 2009 and 2010 dry weather flows from June through September were very consistent from one year to the next. However, 2011 dry weather flows are significantly lower than usual; even lower than the historic dry weather flows and was determined to be suspect. Therefore, WWTP flow data after April 2011 was not used in the analysis. Instead, a two-year average (summarized in **Table 3-4**) of daily flow data for 2009 and 2010 was used.

Table 3-4: Sutte	r Creek WWTP Influent	Flows (2009-2011)
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Parameter	2009	2010	2-Year Average
Annual Average Flow (MGD)	0.346	0.426	0.386
Minimum Day Flow (MGD)	0.142	0.169	0.156
ADWF (June through September) (MGD)	0.319	0.306	0.313
Peak Day Flow (PDF) (MGD)	1.310	1.711	1.511
Peak Day Peaking Factor (PDF/ADWF)	4.1	5.7	4.9
Total Annual Rainfall (in)	26	41	33

Source: City of Sutter Creek and Amador Regional Sanitation Authority – Draft Wastewater Master Plan, November 2012

Source: City of Sutter Creek and Amador Regional Sanitation Authority – Draft Wastewater Master Plan, November 2012

Wastewater flows were projected by developing unit flow factors for each land use category using historic wastewater flow data, and applying those unit factors to population and land use projections over the 25-year planning period. The final unit flow factors developed in the 2012 Draft ARSA WWMP analysis are as follows:

- Residential: 74 gpd per capita (gpcd)
- Commercial and Industrial: 51,000 gpd/MSF
- Institutional: 18 gpd per student

The City experiences heavy rainfall-dependent inflow and infiltration (RDI/I). There is a direct relationship between the average daily influent flow to the WWTP and the volume and frequency of rainfall. As storms occur, the ground saturates, I/I increases, and flows to the WWTP increase. For periods of consecutive storms the ground remains saturated, and flows do not recede back to ADWF rates. However, the service area does not appear to have high groundwater infiltration other than during storms, therefore, it is characterized as RDI/I and not just groundwater infiltration.

Using the historic rainfall and WWTP flows, the relationships between monthly rainfall depths and monthly average and peak day flows at the WWTP were used to project the collection system's response to monthly rainfall in the form of response curves, which are detailed in the 2012 Draft ARSA WWMP. Peak wet weather flows are developed for a specific design storm or a specific return period (RP) for annual rainfall. The analysis in the 2012 Draft ARSA WWMP used a 10-year return period (RP10) to develop a wet weather peaking factor. The projected RP10 average and peak day flows are presented in **Table 3-5**.

Month	% Annual Rainfall Distribution	RP10 Rainfall (in/month)	Projected RP10 ADF (MGD)	Projected RP10 PDF (MGD)
January	20.1%	11.19	0.713	1.827
February	21.4%	11.91	0.739	1.859
March	14.9%	8.30	0.606	1.641
April	8.2%	4.57	0.469	1.262
Мау	1.4%	0.78	0.330	0.719
June	0.4%	0.22	0.309	0.625
July	0.1%	0.06	0.303	0.596
August	0.6%	0.33	0.313	0.644
September	1.0%	0.56	0.321	0.682
October	3.7%	2.06	0.377	0.920
November	8.4%	4.68	0.473	1.276
December	19.8%	11.02	0.707	1.819
RP10 Total Rainfall 55.67		-	-	
Average Dry Weather Flow (ADWF) and Peak Day Flow (PDF)		0.312	1.859	
Wet Weather Peaking Factor (PD/ADWF)		-	5.96	

Table 3-5: Sutter Creek Projected Monthly Peak Day Flows for RP10 Design Year

Source: City of Sutter Creek and Amador Regional Sanitation Authority – Draft Wastewater Master Plan, November 2012
From **Table 3-5**, the peak day flow (PDF) of the RP10 year was 1.859 MGD, which yields a wet weather peak day peaking factor (PDF/ADWF) of 5.96. The unit flows were applied to the population and land use projections in **Table 3-3**, to project the residential and non-residential ADWFs over the 25-year planning period, which are summarized in **Table 3-6**.

Year	Sutter Creek, Martell, & Amador City (MGD)	Total (with GRR & MRSCH) (MGD)	Non-residential ADWF (MGD)
2011	0.261	0.261	0.056
2016	0.272	0.315	0.072
2021	0.285	0.434	0.088
2026	0.298	0.554	0.103
2031	0.311	0.674	0.116
2036	0.326	0.796	0.118

Source: City of Sutter Creek and Amador Regional Sanitation Authority – Draft Wastewater Master Plan, November 2012

The peak day peaking factor of 5.96 is specific to the existing collection system and its response to RDI/I. Growth within the service area is expected to be infill development within the existing collection system, with the exception of GRR. GRR will be served by a separate, new collection system and trunk sewer that is expected to have lower I/I rates due to the City's improved development standards. Therefore, for the GRR development, a peak day peaking factor of 1.8 x ADWF is estimated. All other future development will be projected using the peak day peaking factor of 5.96 x ADWF. Peak hourly flows (PHFs) were estimated to be 2.5 times PDF.

# 3.1.2 City of lone Flow Projections and Methodology

This section provides a description of the current and future wastewater flow.

### Historical Wastewater Flow Data

Peak Wet Weather Flow (PWWF) was determined by the maximum day flow value for a given year. The historical ADWF and PWWF flow data for the Ione WWTP based on the influent meter are summarized in **Table 3-7** below.

### Table 3-7: Ione Historical Wastewater Flow Data

Year	ADWF (MGD)	PWWF (MGD)	Peak Day Peaking Factor
2012	0.390	0.813	2.1
2013	0.384	0.552	1.4
2014	0.394	0.860	2.2

Source: WWTP monitoring data.

### **Current and Projected Wastewater Flows**

While historic ADWF and PWWF have been calculated based on the definitions presented above, flow projections have been developed based on a broader review of historic flow. Components of the current and projected flows are summarized in **Table 3-8** and discussed in detail below.

### Table 3-8: Summary of Current and Projected Ione Wastewater Flows from 2013

Flow Component	Current Average Flow (MGD)	Source
City Base Flows	0.274	
AWA Backwash Flows <sup>1</sup>	0.065	AWA
COWRP Backwash Flows	0.045	COWRP
Total	0.384	Meter

Source: Ione WWTP monitoring data.

Notes:

1. AWA Backwash flows are no longer discharged to the Ione WWTP

### Existing Flows into the City Collection System

Influent flows are measured at the influent flow meter at the Ione WWTP. AWA and COWRP backwash flows are also metered. The sections below provide a brief summary of each major component of the existing influent flow. **Table 3-9** illustrates the "base" flow calculation. For the purpose of this study the current design flow was estimated to be 0.43 MGD.

#### Table 3-9: Adjusted City Base Flows for 2013

Month	City Influent Flows (MGD)	COWRP Backwash Flows (MGD)	AWA Backwash Flows (MGD)	Adjusted City Influent Flows (MGD)
January	0.305	0	0.051	0.356
February	0.272	0	0.051	0.324
March	0.273	0	0.051	0.324
April	0.318	0	0.054	0.372
May	0.270	0	0.069	0.339
June	0.272	0	0.068	0.340
July	0.250	0	0.089	0.416
August	0.259	0	0.095	0.486
September	0.263	0	0.085	0.476
October	0.252	0	0.067	0.454
November	0.278	0	0.053	0.399
December	0.273	0	0.051	0.325
Average	0.274	0.0	0.065	0.384

Source: Compiled from the Revised Report of Waste Discharge September 28, 2012 Notes:

1. AWA Backwash flows are no longer discharged to the lone WWTP

**City-Approved Growth:** For this study it has been assumed that the City would reach General Plan buildout. **SECTION 3.2** presents projected future flows based on this assumption.

**Ione Base Flows:** The "base" flow for the City's system has been developed by subtracting the AWA and COWRP flows from the total influent flow meter readings. This yields a result of 0.274 MGD. The City of Ione has a current service obligation to approximately 1,525 EDUs. These connections are primarily single family residences, but include some multi-family and commercial (retail and office) connections. Dividing the "base" flow by the number EDUs yields an average flow of 180 gpd per EDU.

**COWRP Backwash Flows:** Backwash flows from the COWRP are sometimes discharged to the lone WWTP. These flows are measured at the COWRP prior to being pumped to the WWTP using a propeller flow meter.

**AWA Flows:** AWA operates the lone WTP and previously discharged backwash water from the plant's filters to the City sanitary sewer system on a daily basis. AWA backwash flow data were reviewed from monthly flow monitoring data provided by AWA. These flows were measured at the lone WTP prior to being discharged to the City's sewer collection system. The backwash water averaged approximately 87,000 gpd in 2007. Average flows from 2007 through 2012 are approximately 71,000 gpd. During 2014 AWA completed a capital improvement project and AWA is no longer discharging backwash to the lone WWTP.

**Contractual Service Requirements:** In 2007, the City of Ione entered into the 2007 Disposal Agreement. This agreement replaced an earlier court settlement between ARSA and the City in 1990 and subsequent amendments to that settlement. The significant impact of the agreement is that the disposal of MCSP and ARSA wastewater to the City's percolation ponds was reduced from 900 acre-feet per year (AF/y) (or approximately 0.8 MGD) to a maximum 650 AF/y (0.58 MGD), a reduction of 250 AF/y (0.22 MGD).

**Infiltration and Inflow (I/I):** The flow contribution associated with I/I was determined using a linear regression analysis. The regression analysis allows for projection of RDI/I for specific design precipitation events such as 25-year or 100-year precipitation years.

The City has a relatively low I/I compared to thresholds established by the State of California for funding. The State utilizes a threshold of 120 gpd per capita (gpcd) for average daily flow during periods of sustained high groundwater. The City's maximum month average daily flow is 0.385 MGD, which translates to approximately 101 gpcd. The details of the linear regression analysis can be found in the ROWD, which is incorporated by reference.

# 3.1.3 MCSP/CDCR Flow Projections and Methodology

The CDCR currently has no plans for future growth beyond the current Level II Dorms project. As such the wastewater flow projections will be constant over the timeframe of the study. **Table 3-10** provides the estimated wastewater flows to the MCSP WWTP. The annual flows for the MCSP are equivalent to 705.3 AF (229.86 MG).

CDCR intends to continue to operate the MCSP WWTP and onsite MCSP sewer effluent sprayfields. CDCR's improvements to the MCSP WWTP and adjustments to the sprayfields are designed to accommodate the needs of both the MCSP and new Infill facility. No other expansions are planned at this time.

#### Table 3-10: CDCR Projected Flows

Month	Total Monthly MCSP Influent (MG)	Average Daily Flow (MGD)
January	19.81	0.64
February	18.20	0.65
March	20.05	0.65
April	19.31	0.64
Мау	19.22	0.62
June	18.60	0.62
July	19.22	0.62
August	19.22	0.62
September	18.60	0.62
October	19.22	0.62
November	18.60	0.62
December	19.81	0.64
Total	229.86	0.63

Source: Dexter Wilson, CDCR Flow Projections, August 2014

Discharge to the onsite sprayfields will be maximized with the remainder of the effluent continuing to pass through Preston Reservoir to the Ione WWTP. CDCR is currently evaluating the option of increasing on-site effluent sprayfields to compensate for the sprayfields removed from service to accommodate the new Level II Dormitory Project while maintaining historical distribution up to the contractual limit values to Ione. The net effect of flow to the Ione WWTP project will be zero change to contractual limits.

# 3.2 Summary of Flow Projections

This section presents a summary of the flow projections which were used to develop water balances, discussed later in **SECTION 4.2**. Three separate flow scenarios were generated:

- Current Flows
- Contractual Maximum Flows
- Projected Future Flows

Flow projections were compiled by Dexter Wilson based on input from each Regional Partner, and these were checked by HydroScience. The following sections present the basis for each of the flow projections.

### 3.2.1 Current Flows

**Table 3-11** provides an estimate of current average flows for the City of Ione, ARSA, and CDCR. As can be seen in the tables, the flows reaching Ione from these three agencies at the present time averages approximately 826 AF.

### Table 3-11: Current Flows

Description	Total Average Yearly Flow in AF	
ARSA/Sutter Creek	289	
CDCR	230	
lone	307	
Current Total	826	

Source: Dexter Wilson, Summary of Flow Projections

# 3.2.2 Contractual Flows

The 2007 Disposal Agreement was used as the basis for developing **Table 3-12**. That agreement addresses flows for ARSA and CDCR. The lone flow represents current average flow. This table shows a total flow of 937 AF reaching the City of lone.

### Table 3-12: Annual Contractual Flows

Description	Total Annual Contractual Flow in AF
ARSA/Sutter Creek <sup>1</sup>	289
CDCR <sup>1</sup>	341
lone <sup>2</sup>	307
Current Total	937

Source: Dexter Wilson, Summary of Flow Projections Notes:

1. ARSA and CDCR annual contractual flows based on monthly contractual discharge maximums in 2007 Disposal Agreement.

2. For lone, current average annual flow used.

The 2007 Disposal Agreements details monthly limits on discharges to lone from Preston Reservoir, which are as follows:

- October 1 through March 31, discharges limited to 10 AF
- April 1 through September 30, discharges limited to 95 AF

Based on these monthly discharge limits, the total annual limit is 630 AF. The limits for ARSA and CDCR were adjusted based on the percentage of allowed annual discharge, which results in 341 AF/y and 289 AF/y, respectively. CDCR has an informal agreement with ARSA to discharge up to 230 AF/y.

Water reclamation requirements for the Preston Outfall to the COWRP and Golf Course is regulated by Order No. 93-240 issued by the Central Valley RWQCB. The permit names ARSA, the City of Ione, and Portlock International, Ltd. (COGC) as the dischargers. The permit limits that amount of flow to the treatment ponds to a monthly average limit of 1.2 MGD, which is approximately equivalent to 1,614 AF/y.

# 3.2.3 Future Flows

**Table 3-13** presents projected future flows in five year increments from 2016 to 2036 for ARSA, CDCR, and the City of Ione. The ARSA flows were provided by ARSA and represent total produced flows. The City of Ione flows were provided by the City of Ione. The CDCR flows were provided by CDCR. For CDCR, low projections were assumed to be the projected 230 AF/y while high projections were assumed to be the contractual limit of 341 AF/y. Due to the uncertainty of development timing in the Cities of Ione and Sutter Creek and percolation allowance, high and low projections are provided.

Projected Year	Description	LOW Average Annual Projected Flow (AF)	HIGH Average Annual Projected Flow (AF)
2016	ARSA/Sutter Creek	619	656
	CDCR	230	341
	lone	318	481
	2016 Total	1,167	1,478
2021	ARSA/Sutter Creek	753	885
	CDCR	230	341
	lone	365	689
	2021 Total	1,348	1,915
2026	ARSA/Sutter Creek	888	1,114
	CDCR	230	341
	lone	412	898
	2026 Total	1,530	2,353
2031	ARSA/Sutter Creek	1,020	1,341
	CDCR	230	341
	lone	459	1,107
	2031 Total	1,709	2,789
2036	ARSA/Sutter Creek	1,134	1,547
	CDCR	230	341
	lone	506	1,318
	2036 Total	1,870	3,206

#### Table 3-13: Future Flows/High Projection

Source: Dexter Wilson, Summary of Flow Projections

# 3.3 Recycled Water Market Assessment

This section describes existing and potential users, type of recycled water needed, and the demand for recycled water.

# 3.3.1 Treatment Requirements for Disposal and Reuse

The California Title 22 Code of Regulations were reviewed to provide anticipated treatment requirements for various effluent discharge and reuse strategies. A summary of the applicable recycled water types, definitions, and treatment methods for each type of recycled water; uses; and applicable study locations are included in the definitions below. A detailed discussion of discharge and reuse alternatives is included in **SECTION 4**.

**Undisinfected secondary recycled water:** This is defined as oxidized wastewater and can be used for surface irrigation where the recycled water does not come into contact with the edible portions of the crop. It can be used for non-food bearing trees, fodder and fiber crops and pasture for animals not producing milk for human consumption, seed crops not eaten by humans, food crops that must undergo commercial pathogen-destroying processing before being consumed by humans, and ornamental nursery stock and sod farms provided no irrigation with recycled water occurs for a period of 14 days prior to harvesting or retail sale. No access by the general public may be allowed. This type of recycled water can also be used for flushing sanitary sewers.

**Disinfected secondary-2.2 recycled water:** This is defined as wastewater that has been oxidized and disinfected so that the median concentration of total coliform bacteria does not exceed a most probable number (MPN) of 2.2 per 100 milliliters (ml) over a seven day period, and the number of total coliform bacteria does not exceed an MPN of 23 per 100 ml in more than one sample in any 30 day period. This type of recycled water can be used for the surface irrigation of food crops where the edible portion is produced above ground and not contacted by the recycled water.

**Disinfected secondary-23 recycled water:** This is defined as wastewater that has been oxidized and disinfected so that the median concentration of total coliform bacteria does not exceed a MPN of 23 per 100 ml over a seven day period, and the number of total coliform bacteria does not exceed an MPN of 240 per 100 ml in more than one sample in any 30 day period. This type of recycled water can used for the surface irrigation of cemeteries, freeway landscaping, restricted access golf courses, ornamental nursery stock and sod farms where access by the general public is not restricted, pasture for animals producing milk for human consumption, and any nonedible vegetation where access is controlled so that the irrigated area cannot be used as if it were part of a park, playground or school yard. Other uses include industrial or commercial cooling or air conditioning that does not involve the use of a cooling tower, evaporative condenser, spraying, or any mechanism that creates a mist, industrial boiler feed, nonstructural fire-fighting, backfill consolidation around non-potable piping, soil compaction, mixing concrete, dust control on roads and streets, cleaning roads, sidewalks and outdoor work areas and industrial process water that will not come into contact with workers.

**Disinfected tertiary recycled water:** This is defined as filtered and subsequently disinfected wastewater that meets either a CT (the product of total chlorine residual and modal contact time measured at the same point) value of not less than 450 mg-minutes per liter at all times with a modal contact time of at least 90 minutes, based on peak dry weather design flow; or has been demonstrated to inactivate and/or remove 99.999 percent of the plaque-forming units of F-

specific bacteriophage MS2, or polio virus in the wastewater. A virus that is at least as resistant to disinfection as polio virus may be used for purposes of the demonstration. The median concentration of total coliform bacteria measured in the disinfected effluent does not exceed an MPN of 2.2 per 100 ml utilizing the bacteriological results of the a seven day period and the number of total coliform bacteria does not exceed an MPN of 23 per 100 ml in more than one sample in any 30 day period. No sample shall exceed an MPN of 240 total coliform bacteria per 100 ml. Uses include irrigation of food crops, including all edible root crops, where the recycled water comes into contact with the edible portion of the crop, parks and playgrounds, school yards, residential landscaping, and unrestricted access golf courses. This type of recycled water can also be used for impoundments, industrial and commercial cooling, flushing toilets and urinals, priming drain traps, industrial process water that may come into contact with workers, structural firefighting, decorative fountains, commercial laundries, consolidation of backfill around potable water pipelines, artificial snow making for commercial outdoor use, and commercial car washes, including hand washes if the recycled water is not heated, where the general public is excluded from the washing process.

Opportunities for recycled water use vary based on the level of treatment required by Title 22 for the intended use. For the uses contemplated by this study, minimum treatment requirements are summarized in **Table 3-14**. The uses are discussed further in **SECTION 4** and **SECTION 5**.

Applicable Locations	Minimum Level of Treatment Required
<b>Storage</b> - Rancho Arroyo Seco <b>Irrigation</b> <sup>1</sup> – Sprayfields at Bowers and Hoskins Ranches, Sprayfields at Green Rock Ranch Lands LLC (Town Field), City of Ione WWTP (City Field), and Rancho Arroyo Seco fields Woodard Bottom and Dry Creek	Undisinfected secondary recycled water
Irrigation - Castle Oaks Golf Course, Gold Rush Ranch Golf Course Other Purposes – Process Water at Howard Family Trust (formerly Unimin Mine) <sup>2</sup>	Disinfected tertiary recycled water <sup>3</sup>

#### Table 3-14: Applicable Uses and Minimum Treatment Requirements

Notes:

2. Minimum level of treatment at Howard Family Trust based on assumed process water use. Treatment level may change depending on type of use contemplated at this site.

3. No recycled water used for irrigation, or soil that has been irrigated with recycled water, shall come into contact with the edible portion of food crops eaten raw by humans unless the recycled water complies with disinfected tertiary recycled water requirements listed above.

# 3.3.2 Existing and Potential Recycled Water Users

There are existing recycled water users within the proposed regional system and these uses include both secondary effluent and tertiary effluent applications of recycled water which serve both as recycled water application areas and as a means to dispose of treated wastewater on land. Existing uses are located along the ARSA conveyance pipeline (Hoskins Ranch and Bowers Ranch), at the MCSP, within the City of Ione (City and Town Field), and at the COGC.

The existing ARSA sprayfields may be decommissioned along with Henderson Reservoir, but also have the potential to be expanded. In the event that the Bowers Ranch and Hoskins Ranch recycled water application areas are expanded to their full buildout potential of 40 acres and 60 acres, respectively, there would be additional recycling capacity within the ARSA system. There may be potential to develop additional sprayfields along the ARSA outfall; however, the location and capacity have not yet been identified and are not included at this time. Potential regional

<sup>1.</sup> Sprayfields cannot transition in the future to alfalfa for milk cows (and any other applicable restrictions) unless disinfection is added.

recycled water demands include existing and future sprayfields as well as the potential recycled water application areas at Woodard Bottom and Dry Creek within Rancho Arroyo Seco, and Howard Family Trust Properties. A description of each site is provided below:

- Rancho Arroyo Seco (RAS): RAS is local ranch land and is composed of multiple properties, of which Woodard Bottom and Dry Creek have been identified as potential recycled water application areas. The Dry Creek irrigation site has a supplemental supply of water and can take recycled water when available. The other fields do not have a supplemental supply and may need a backup water supply or would need a method of reuse that does not depend on a constant supply of water. It is expected that RAS fields will be able to accept recycled water treated to the level of undisinfected secondary. The land will be used to raise alfalfa (fodder crop) that can be harvested seasonally to coincide with the availability of water.
- Howard Family Trust Properties (formerly Unimin Mine): The Howard Properties may have a future use for recycled water for industrial process water. The potential demand and level of treatment required have not yet been identified as the future property use is not yet known, so it is assumed in this study that water used for any process will be treated to tertiary level. Irrigation uses have not been identified at this site.

**Table 3-15** summarizes the existing and potential recycled water demands for existing and new recycled water facilities and also considers the decommissioning of the ARSA facilities and the impact to the required recycled water capacity. **Figure 3-2** identifies existing and potential recycled use areas.

Recycled Water User	Reuse Area (Acres)	Existing Annual Average Demand (AF/y)	Potential Annual Average Demand (AF/y)
Secondary Effluent Reuse			
ARSA sprayfield – Hoskins Ranch buildout <sup>1</sup>	24 in use; approx. 60 available	64	160
ARSA sprayfield – Bowers Ranch buildout <sup>1</sup>	24 in use; approx. 40 available	64	106
City of lone sprayfield (Town Field)	57.1	248	248
City of lone sprayfield (City Field)	8.6	57	57
Woodard Bottom sprayfield	115	0	570
Dry Creek sprayfield	403	0	1,999
Tertiary Effluent Reuse			
Castle Oaks Golf Course (COGC)	180	530	530
Howard Properties <sup>2</sup>		0	unknown
Total Recycled Water Demand		963	3,670
Total Recycled Water Demand (w/o ARSA sprayfields)		835	3,404

### Table 3-15: Summary of Potential Recycled Water Demands

Notes:

1. If the sprayfields along the ARSA pipeline are not decommissioned they may be expanded to increase disposal.

2. Howard Properties has not defined anticipated type of reuse or the demand on an annual and seasonal basis. Therefore no demand is included for this reuse site at this time.

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# (E) BOWERS RANCH LAND -(E) MULE CREEK HENDERSON RESERVOIR RESERVOIR (E) MULE CREEK SPRAY FIELOS PRESTON RESERVOIR (E) HOSKINS RANCH LAND -(E) CASTLE OAKS GOLF COURSE (TERTIARY) IONE WWTP OODARD BOTTOM-(E) CITY RESERVOIR FIELD (E) PONDS 5, 6, 7 -(E) FOWN FIELD HOWARD TRUST PROPERTIE DRY CREEK POPE RANCH LEGEND EXISTING OR NON REGIONAL NEW REGIONAL

#### Figure 3-2: Existing and Potential Recycled Water Use Areas

Source: Developed for Regional Water Recycling Feasibility Study

# SECTION 4 – ALTERNATIVES DEVELOPMENT AND SCREENING

The section presents the project goals for each Regional Partner that will drive the development and selection of alternatives, summarizes the regional alternatives under consideration in this study, and discusses the screening of alternatives to determine which alternatives are candidates for further detailed evaluation in **SECTION 5**.

# 4.1 Regional Goals and Project Evaluation Criteria

The Regional Partners have established the shared goal of considering and evaluating opportunities to implement regional storage and recycled water reuse sites as a means of both disposing of and recycling a portion or all of their effluent. The common goals of the Regional Partners, which will drive the development and selection of alternatives in this study are as follows:

- 1. Develop a cost-effective regional recycled water storage solution that, at build-out, provides seasonal storage sufficient for the projected future flows from each Regional Partner plus the 100 year return period (100RP) rainfall event while maintaining required freeboard;
- 2. Develop one or multiple locations for effluent reuse as a means of both land disposal of effluent and recycled water use;
- 3. Prioritize reuse applications that allow for the use of Title 22 undisinfected secondary recycled water given that this quality of effluent is already being produced by all Partners;
- 4. Prioritize reuse applications that can tolerate interruptions of recycled water supply and would not require a contractual guarantee of supply;
- 5. Where practical, allow for phased construction of storage and reuse sites to coincide with actual rates of growth;
- 6. Avoid surface water discharge of effluent, which wastes a valuable water resource and triggers complex and costly regulatory requirements;
- 7. Given that each Regional Partner has an existing wastewater treatment facility which effectively produces undisinfected secondary effluent and is a sunk cost that has value going forward, do not consider the potential to regionalize wastewater treatment; and
- 8. Select an alternative that best addresses long-term storage and disposal/reuse needs with the least impact to sewer rates in each community served by the project.

Each Regional Partner has stated its own individual goals for the project, discussed below. The intent of this study is to develop a regional storage and recycling alternative that, as much as possible, meets the goals stated above plus the individual goals of each Regional Partner.

# 4.1.1 ARSA Goals for Regionalization

ARSA seeks to minimize operations and maintenance (O&M) costs for the existing storage and disposal system and consider economically favorable alternatives. Specifically, ARSA's goals are as follows:

- Continue secondary treatment at the Sutter Creek WWTP;
- Continue conveyance of secondary treated effluent via the existing ARSA pipeline (with pipeline upgrades as required);
- Maintain the operation of Henderson Reservoir; and
- Potentially eliminate ARSA sprayfields and rely on regional system for reuse.

The inclusion of some storage and/or spray acreage along the ARSA pipeline would be considered if it is an economically favorable alternative to an all-regional storage and spray system. The continued use of Henderson Reservoir is preferred if a cost-effective means can be identified to repair a structurally-compromised drain pipe at the base of the dam while satisfying regulatory requirements.

In order to achieve the goals identified, improvements to the Sutter Creek WWTP will be required (See **SECTION 4.4.3**) as well as potential improvements to the Henderson Reservoir. HydroScience conducted a condition assessment of the treatment, conveyance, storage, and disposal systems as part of the 2012 Draft ARSA WWMP. Based on further communication with Division of Safety of Dams (DSOD), continued operation of the Henderson Reservoir is a possibility if a new alternative to repair a damaged drain pipe can be identified that is acceptable to DSOD. Each of the assessments and recommendations is detailed in the 2012 Draft ARSA WWMP and summarized in **SECTION 4.4**.

### 4.1.2 Ione Goals

The City of Ione has established the following long-term goals for the Ione WWTP and effluent disposal system:

- Continue secondary treatment at the lone WWTP;
- Maintain Ione WWTP regulatory compliance;
- Convert Pond 5 into a forebay for receiving and combining flows from the Regional Partners and then distributing it to storage and reuse/disposal sites as appropriate;
- Continue use of Ponds 6 and 7 as percolation ponds if allowed by the RWQCB;
- Continue to maximize the ability to dispose of and reuse undisinfected secondary effluent via sprayfields; and
- Continue the operation of the COWRP and beneficial reuse of tertiary effluent for irrigation of the golf course.

# 4.1.3 CDCR Goals

CDCR has established the following long term goals for the MCSP WWTP and the disposal and reuse of effluent:

- Incorporate upgrades and improve the WWTP technology for existing and future flows for improved treatment performance as required under CDO No R5-2006-0130;
- Maintain existing and develop new disposal fields in order to maintain the ability to manage all WWTP effluent in excess of the projected 230 AF/y discharged to Preston Reservoir;

- Maintain the inter-agency wastewater agreement where CDCR may dispose up to 341 AF
  of wastewater into Preston Reservoir annually, though current and anticipated discharges
  do not exceed 230 AF/y; and
- Continue to comply with WWTP regulatory requirements after construction and inhabitance of Level II dorms.

# 4.1.4 Operational Considerations for Regionalization

The Regional Partners currently coordinate the discharge, storage, and disposal of effluent at Preston Reservoir, Ione WWTP Pond 5, and the COWRP through periodic communications among operations staff and management of flows in accordance with the annual contractual limits contained in the 2007 Ione Disposal Agreement. Though that agreement called for an operational agreement to be prepared, one was not prepared. The existing system provides several points of operational flexibility that may not exist in the future regional system. These include the available storage at Henderson Reservoir, where ARSA may hold back flows if needed (avoiding discharge to Preston), and the percolation disposal available at Ione, which unlike sprayfields can be utilized any month of the year including during rainfall.

The regional storage and disposal system contemplated by this study would likely be more challenging to operate than the current system, due to higher flows and the potential loss of Henderson Reservoir (or any other form of storage in the ARSA system) and/or percolation as a means of disposal. Therefore, a more rigorous level of operational coordination will be required than is currently employed in order to assure that each Regional Partner has access to their contractually-specified portion of the system's storage and disposal capacity, and that discharges are properly coordinated and managed during all anticipated seasonal and flow conditions.

The regional system to be defined later in this study will be based on a series of detailed water balances including one that addresses a RP100 rainfall condition. This study anticipates that a Technical Advisory Committee (TAC) would be formed to perform operational coordination. The TAC would consist of operators and managers representing each of the Regional Partners. Current and anticipated flow volumes would be recorded and shared on a monthly basis or more frequently if required, and this information would be applied to the water balance to assess the current status of the system and determine operational setpoints for the coming month.

# 4.2 Regional Water Balances

The water balance was developed to determine the required amount of additional disposal/reuse capacity and storage volume for effluent disposal/reuse under the worst case condition for a given flow scenario. The worst case condition used was the expected amount of rainfall to be received under a wet water year based on a 100-year return period ("100RP") annual total distributed monthly in accordance with mean monthly precipitation patterns. Water balances were developed by Dexter Wilson based on data provided by the Regional Partners including prior studies, and the water balances were checked by HydroScience.

The basis of the water balance is a month-by-month assessment of all water flowing into, and being disposed of/recycled from, the system of reservoirs and sprayfields. Any excess water at the end of a month that cannot be disposed of must be stored until there is available disposal capacity to reduce the backlog. The sources of water into the system include effluent from the three WWTPs (Sutter Creek, MCSP and Ione) as well as any rain that falls onto the reservoirs

and their watersheds. Water is removed from the system via application at the reuse sites (when there is a demand during dry months), percolation into the ground through the bottom of the ponds when they are unlined, and evaporation into the air from the surface of the ponds.

The amount of additional sprayfield disposal/reuse capacity required was estimated as 110% of any disposal shortfall. This additional amount of disposal/reuse capacity allows the system to reduce the amount of water stored to zero by the end of the dry months even with additional rainfall being collected. The sprayfield disposal/reuse capacity required was converted into a required sprayfield acreage using evapotranspiration data for CIMIS Zone 13.

The amount of additional storage required was the maximum amount of water that needed to be stored, beyond the current storage capacity, at the end of the wet months before the sprayfield disposal/reuse could begin to reduce the backlog.

The analysis was conducted for the current effluent flows, for the currently contracted effluent flows, and for the high and low projected flows through 2036. For each flow scenario, the analysis was run both with and without percolation through the bottom of Ponds 6 and 7. Percolation through the bottom of the ponds would not occur if a liner is installed in the future. This would be the case if the RWQCB decides to require a liner for those ponds in the future.

The required amount of additional storage capacity and additional sprayfield acreage (above and beyond existing storage and spray facilities within the confines of the regional system, which consist of Preston Reservoir, Ione Ponds 5-7, City Field, Town Field, and COWRP) for each scenario is presented below in **Table 4-1**, **Table 4-2**, and **Table 4-3**. The background information for the water balance including flows, acreages, irrigation rates and percolation rates are described at the end of this section. The detailed calculations and water balances can be found in **Appendix C**.

Under the "current" and contractual flow conditions with the existing ponds, reservoirs and sprayfields, no additional storage volume or sprayfield area is required to dispose of the expected flows even under wet year conditions. Note that "current" refers to data collected in 2012-2013, which is the baseline data year for this study. This water balance includes percolation at Ponds 6 and 7 as these ponds are currently unlined. These results are shown in **Table 4-1**.

Disposal With Percolation	Additional Capacity Required at Current Flows	Additional Capacity Required at Contractual Maximum Flows
Additional Storage Volume Required (AF)	0	0
Additional Sprayfield Area Required (ac)	0	0

# Table 4-1: Summary of Water Balance Results for Current and Contractual Flows, with Percolation

Source: Dexter Wilson - CDCR at 341 AF/y, Current and contractual flow requirements (no lining).

The required amount of additional storage and sprayfield area for future flows, if Ponds 6 and 7 remain unlined and continue to percolate, is shown in **Table 4-2**.

# Table 4-2: Summary of Water Balance Results for Additional Storage Volume and Sprayfield Area Required, with Percolation

Reuse	20	16	20	21	20	26	20	31	20	36
Component	Low	High								
Additional Storage Volume Required (AF)	117	285	208	529	314	743	415	983	489	1,189
Additional Sprayfield Area Required (ac)	39	86	64	162	91	259	120	356	152	448

Source: Dexter Wilson – CDCR at 341 AF/y, growth scenarios with percolation (no lining).

Under all the future flow scenarios there is a need for additional storage capacity and sprayfield area in order to ensure that the effluent can be safely disposed of even during a wet year as shown in the water balance spreadsheets. The water balance assumes that percolation at ponds 6 and 7 will continue at the current rate. As can be seen in **Table 4-2** the difference between the low and high flow scenarios can be significant with the high flow scenario sometimes requiring more than double the amount of additional storage and sprayfield area.

The required amount of additional storage and sprayfield area if Ponds 6 and 7 are lined and do not continue to percolate is shown in **Table 4-3**.

Table 4-3: Summary of Water Balance Results for	Additional Storage Vol	lume and Sprayfield Area
Required, without Percolation	_	

Reuse	20	16	20	21	20	26	20	31	20	36
Component	Low	High	Low	High	Low	High	Low	High	Low	High
Additional Storage Volume Required (AF)	378	538	461	745	545	993	627	1,210	719	1,417
Additional Sprayfield Area Required (ac)	113	174	146	264	183	361	220	457	253	550

Source: Dexter Wilson - CDCR at 341 AF/y, growth scenarios without percolation (ponds lined).

Under all the flow scenarios there is a need for additional capacity and sprayfield area in order to ensure that the effluent can be safely disposed of even during a wet year. The water balance assumes that there will be no percolation at ponds 6 and 7. Again, as can be seen in the table the difference between the low and high flow scenarios can be significant with the high flow scenario sometimes requiring more than double the amount of additional storage and sprayfield area. In addition the impact of removing the percolation component is more dramatic during the early years when the percolation portion makes up a larger fraction of the overall disposal need.

# 4.2.1 Water Balance Background and Assumptions

HydroScience conducted an independent review of the water balances prepared by Dexter Wilson to verify the operation of the spreadsheet analysis and confirm the findings were reasonable to the extent that the inputs were accurate. This section provides a more detailed description of background information and assumptions that went into preparing the water balances.

**100RP rainfall:** Precipitation data used in the water balance consists of total monthly precipitation data collected at Camp Pardee. The data is collected by East Bay Municipal Utilities District, and was obtained from the Western Regional Climate Center for the period of record 1926 to present. The station is located approximately eight miles southeast of the City of lone, and at a relatively similar elevation. For the 100 year analysis, a 100 year recurrence interval total precipitation depth of 41.38 inches was used.

**Evaporation Rate:** Camp Pardee also maintains average monthly pan evaporation data. Average monthly evaporation data was used in the water balance to reflect outflows in the form of evaporation from the ponds and reservoirs. The period of record of the data is 1948 – 2005. Monthly pan evaporation data was corrected to reflect evaporation from the ponds.

**Sprayfield Irrigation Demand:** The sprayfield disposal capacity required was determined using the sprayfield acreage and evapotranspiration data for CIMIS Zone 13.

**WWTP Flows:** The current flow scenario model run utilized the existing flow data for Sutter Creek/ARSA, CDCR/MCSP, and the Ione wastewater effluent. The contractual flow scenario model run utilized the maximum allowable flow under the 2007 Ione Disposal Agreement for Sutter Creek/ARSA and CDCR/MCSP. Ione wastewater effluent flows were left the same as the current flow scenario.

The future flow scenarios were based on projected flows from the year 2016 to 2036 for ARSA, CDCR, and the City of Ione. The ARSA flows were obtained from the 2012 Draft ARSA WWMP, based on 25-year ADF wastewater flow projections for scenarios with and without the development of GRR, assuming no use of downstream ARSA storage or sprayfields. The City of Ione flows were provided by the City of Ione. The CDCR flows were taken from the 2007 contract. Due to the uncertainty of development timing in the City of Ione and the City of Sutter Creek a high and a low projection are provided. The City of Sutter Creek high and low flow scenarios represent expected flows with and without the GRR development; see the Sutter Creek/ARSA 2012 Draft ARSA WWMP for more detailed discussion.

**Reservoirs/Ponds:** The storage capacities, surface area and percolation rates (if applicable) for the ponds and reservoirs included in this analysis are presented below in **Table 4-4**.

Pond/Reservoir	Volume (AF)	Surface Area (Acres)	Percolation Rate (inches/day)
Preston	235	18	-
Pond 5	52.17	4.35	-
Percolation Pond 6	27.62	3.45	2.77
Percolation Pond 7	30.39	4.38	1.26

### Table 4-4: Summary of Storage and Percolation Inputs to Water Balance

Source: Dexter Wilson, Water Balance Spreadsheets

The volume was used in calculating how much water could be stored in the existing system. The surface area was used in calculating the amount of evaporation from and precipitation into each pond. The percolation rates were based on actual data from the winter of 2013-2014.

# 4.3 Stand-Alone Project Alternatives

The City of Ione and ARSA/Sutter Creek have individually explored stand-alone alternatives that could be implemented if a regional solution is not selected. MCSP has not developed a stand-alone alternative. The following summarizes these stand-alone alternatives based on prior documentation provided by the Regional Partners. The format of presentation may vary given the different sources of information used.

# 4.3.1 ARSA

As part of the 2012 Draft ARSA WWMP, ARSA evaluated five stand-alone alternatives of which two alternatives were selected as the preferred alternatives. Refer back to **SECTION 1.1.1** for a discussion of the study area characteristics including the potential for development of the GRR golf course community.

Alternatives 1 and 2 address two approaches for continued seasonal storage and land disposal and assume GRR is not developed. Alternative 3 evaluates surface water direct discharge to Sutter Creek and also assumes no development of GRR. Alternatives 4 and 5 are based on Alternatives 1 and 3 with the addition of the GRR development. There is no variation of Alternative 2 that addresses GRR development since the storage and disposal site is the same as that of the GRR (the GRR development is proposed for the same property as Noble Ranch). Below is a list of alternatives followed by a brief description of each alternative.

- Alternative 1 ARSA Sprayfields: This alternative includes the improvement and expansion of the existing ARSA secondary effluent disposal/reuse system;
- Alternative 2 Noble Ranch Sprayfields: This alternative includes the abandonment of the existing ARSA disposal/reuse system and installs a new secondary effluent disposal system on the existing Noble Ranch effluent disposal easement;
- Alternative 3 Surface Water Discharge: This alternative includes the abandonment of the existing ARSA disposal/reuse system and discharges directly to Sutter Creek under anticipated discharge permit conditions discussed in the 2012 Draft ARSA WWMP;
- Alternative 4 ARSA Sprayfields and Golf Course Irrigation: This alternative includes the improvement and expansion of the existing ARSA secondary effluent disposal/reuse system and supplies Title 22 effluent to the GRR golf course for reuse; and
- Alternative 5 Surface Water Discharge and Golf Course Irrigation: This alternative includes the abandonment of the existing ARSA disposal system, reuse of effluent on the GRR golf course, and discharge of effluent in excess of golf course demands directly to Sutter Creek.

Alternative 3 is the preferred alternative without development of GRR and Alternative 5 is the preferred alternative with GRR. The potentially high cost of replacing Henderson Reservoir with a large replacement storage reservoir drove the selection to surface water discharge at the time the 2012 Draft ARSA WWMP was developed. The preference is to continue to operate Henderson Reservoir and the potential to repair the compromised drain line is currently being evaluated. The approach for the 2012 Draft ARSA WWMP was to assume that the reservoir would be decommissioned in order to identify the most conservative alternative to meet ARSA's disposal needs. Below is a more detailed description of each preferred alternative identified.

# ARSA Alternative 3: Surface Water Discharge

Alternative 3 includes the abandonment of the existing ARSA disposal system and discharges directly to Sutter Creek under the discharge permit conditions discussed in the 2012 Draft ARSA WWMP. Alternative 3 is presented in **Figure 4-1** and consists of the following components:

- Abandon the existing ARSA disposal system. Sludge and sediment would be removed from Henderson Reservoir in accordance with existing agreements. No other demolition is included. Abandonment in place is assumed.
- Outfall pipe and structure to discharge to Sutter Creek would be constructed.
- Sutter Creek WWTP unit processes would be upgraded and replaced as required to achieve advanced tertiary treatment including nutrient removal, disc filters capable of producing Title 22 effluent, and a new ultraviolet disinfection system.



#### Figure 4-1: ARSA Alternative 3 – Surface Water Discharge

Source: City of Sutter Creek and Amador Regional Sanitation Authority - Draft Wastewater Master Plan, November 2012

# ARSA Alternative 5: Surface Water Discharge and Golf Course Irrigation

Alternative 5 includes the abandonment of the existing ARSA disposal system, reuses effluent on the GRR golf course, and discharges effluent in excess of golf course demands directly to Sutter Creek under the anticipated discharge permit conditions discussed in the 2012 WWMP.

Alternative 5 is presented in **Figure 4-2** and consists of the following components:

 Abandon the existing ARSA disposal system. Sludge and sediment would be removed from Henderson Reservoir in accordance with existing agreements. No other demolition is included. Abandonment in place is assumed.

- Sutter Creek WWTP unit processes would be upgraded and replaced as required to achieve advanced tertiary treatment including nutrient removal, disc filters capable of producing Title 22 effluent, a new ultraviolet disinfection system, and an effluent pump station to convey flows to the GRR golf course for reuse.
- Outfall pipe and structure to Sutter Creek would be constructed.
- New 12-inch effluent force main to the GRR golf course recycled water storage facilities would be constructed.
- Construct approximately 1.0 MG of recycled water storage at the GRR golf course.

Figure 4-2: ARSA Alternative 5 – Surface Water Discharge and Golf Course Irrigation



Source: City of Sutter Creek and Amador Regional Sanitation Authority - Draft Wastewater Master Plan, November 2012

### Evaluation Methodology

The evaluation methodology for the alternatives included an economic and non-economic analysis, which was presented in the 2012 WWMP.

For the economic analysis a detailed cost estimate was prepared for each alternative. Costs for each of the alternatives included initial capital costs to acquire and place the facilities in service, annual O&M costs, and equipment replacement costs required to keep the facilities in service over the 25-year planning period. **Table 4-5** provides a summary of the costs for the preferred alternatives (Alternatives 3 and 5).

Facility	Alternative 3 Surface Water Discharge	Alternative 5 Surface Water Discharge & Golf Course Irrigation	
WWTP	Cost (\$ Millions)	Cost (\$ Millions)	
0.669 MGD Advanced Tertiary WWTP	19.9	-	
0.913 MGD Advanced Tertiary WWTP	-	25.2	
WWTP Subtotal	19.9	25.2	
Effluent Conveyance			
12" Force main	-	4.3	
Effluent Conveyance Subtotal	-	4.3	
Storage Facilities			
Henderson Reservoir Sediment Removal	1.3	1.3	
Recycled Water Storage	-	1.7	
Storage Facility Subtotal	1.3	3.0	
Total Estimated Construction Costs	21.2	32.5	
Engineering, Legal, Admin, etc. @ 25%	5.3	8.1	
Total Capital Costs	26.5	40.6	
Present Worth Capital	25.9	39.5	
Present Worth O&M	22.9	38.6	
Present Worth Ongoing Equip. Repl. Costs	6.0	10.7	
Net Present Value	54.8	88.8	

#### **Table 4-5: Economic Analysis Results**

Source: City of Sutter Creek and Amador Regional Sanitation Authority – Draft Wastewater Master Plan, November 2012 Notes:

1. All costs in October 2012 dollars.

2. Capital costs include a 35% construction contingency.

For the non-economic analysis, the alternatives were evaluated based on a series of decision factors. **Table 4-6** discusses the non-economic factors applied in the alternatives analysis. The detailed analysis can be found in the 2012 Draft ARSA WWMP.

<b>Decision Factor</b>	Description
Institutional/Public Acceptance	Likelihood of affected stakeholders to be accepting of the alternative and reach inter- agency agreements. Considers impacts on the community and their effects on community acceptance.
Ease of O&M	The level of ease of which the facilities can be operated. Considers the risk of unforeseen O&M challenges that could result in unexpected operation costs, fines, or other negative impacts.
Implementation Time/Constructability	The likelihood that the alternative is completed in time to meet critical deadlines. Considers unknowns and construction complexities that could unexpectedly delay completion.
Permits/Regulatory	The likelihood that the required permits can be secured, permit conditions can be complied with, and the costs of compliance will be consistent with the defined alternatives. Considers the potential for permit violations and future regulatory changes that have a negative impact on the cost and reliability of compliance.
Legal/Right-of-Way	The complexity of and ability to secure and comply with the required legal agreements and rights-of-way that must be secured and maintained for the 25-year planning period. Considers unexpected delays, compliance with GRR and other entitlements, or potential cost increases associated with securing the required legal agreements and rights-of-way.

#### **Table 4-6: Non-Economic Decision Factor Descriptions**

Source: City of Sutter Creek and Amador Regional Sanitation Authority - Draft Wastewater Master Plan, November 2012

### 4.3.2 Ione

In 2012, the City of Ione undertook an alternative analysis to present and compare alternative concepts for bringing the City's disposal program into compliance based on current and projected wastewater flows managed at the City WWTP and the COWRP. Four alternatives were identified and developed to a conceptual level for the purposes of evaluation and determination of a preferred alternative for the City of Ione.

### Ione Alternative 1

Alternative 1 is essentially a "compliance project" which is focused on eliminating the conditions that result in iron and manganese mobilization in the groundwater, eliminating the potential for degraded groundwater interacting with Sutter Creek and securing permit coverage for Pond 7. This alternative includes:

- Reducing the depth of and installing a mixer in Pond 5 to eliminate stratification and the potential for ORP reduction. The low ORP in Pond 5 is the likely mechanism that mobilizes iron and manganese in the groundwater
- Modifying the operation of the COWRP and installing irrigation infrastructure to allow for irrigation of 16.7 acres of City-owned property at the COWRP with tertiary treated water, which would reduce ARSA flows to the percolation ponds
- Installing a pump station and irrigation infrastructure to allow for irrigation of 11 acres of the City-owned property at the City WWTP with undisinfected secondary effluent, which would reduce City flows to percolation ponds
- Installing new inter-pond piping and transfer structures to facilitate operations.

The water balance results indicate that this strategy will allow the percolation ponds to empty during summer months, even with 100-year rainfall, which further reduces concerns about dry-weather seepage of groundwater influenced by the percolation ponds.

### Ione Alternative 2

Alternative 2 is a "land disposal" alternative for the City's WWTP. This alternative assumes that percolation is no longer a viable alternative and that all City flows, together with all MCSP, ARSA and backwash flows must be disposed of by spray irrigation. The COWRP operations remain the same and include seasonal golf course irrigation.

Under this alternative, the City would need to construct 166 AF of seasonal storage facilities and acquire or lease approximately 221 acres of agricultural land for irrigation with secondary effluent. An irrigation pump station and hydropneumatic tank will be needed to pump secondary treated water to the sprayfields. The irrigation pump station has been conceptually designed to pump the maximum month flow of 59 MG/month developed in the water balance for this alternative on a daily basis for eight hours per day. This results in a pumping flowrate of 4,100 gpm. The transmission main has been sized at 20 inches to provide velocities of approximately 4-feet per second.

Extensions of pipelines to alternative sites could increase the estimated costs. For the purposes of providing a preliminary estimate of costs, this alternative assumes that on-site irrigation infrastructure will be provided by the property owners. Because this alternative manages disposal for flows generated by the City, MCSP, and ARSA, the City of Ione may seek a cost-sharing arrangement with the Regional Partners.

### Ione Alternative 3

Alternative 3, like Alternative 1, assumes percolation continues to be a viable disposal method. However, this alternative assumes that the City sends its flow to the COWRP for treatment and to the golf course and/or percolation ponds for disposal. ARSA flows would only be accepted to the extent that they are needed to meet the golf course demands and excess ARSA flows would not be diverted to the percolation ponds for disposal. This alternative includes:

- Reducing the depth of and installing a mixer in Pond 5 to eliminate stratification and the potential for ORP reduction. The low ORP in Pond 5 is the likely mechanism that mobilizes iron and manganese in the groundwater
- Constructing a pump station and pipeline to transfer City effluent from the City WWTP to the COWRP
- Installing new inter-pond piping and transfer structures to facilitate operations.

Under this alternative, the City would not need to construct any additional irrigation infrastructure and would only use its existing percolation capacity during the winter months, reducing the overall input to groundwater. The City would dispose of its planned flows and approximately 410 AF from the ARSA system through golf course irrigation and the percolation ponds. This represents a 240 AF reduction in ARSA flows. However, the City will be able to manage 350 AF of water from MCSP according to its contract as well as approximately 60 AF from ARSA, which would likely vary based on annual weather patterns and irrigation demands.

### **Ione Alternative 4**

Alternative 4 is also a "land disposal" alternative and assumes that percolation is no longer a viable disposal method. Under this scenario, it assumed that the City maximizes disposal of City flows through the COWRP and golf course irrigation, making storage and sprayfield requirements slightly less than in Alternative 2 because ARSA contractual flows are not maintained.

A total of 135.1 AF of storage are required under this alternative. It is assumed that the existing percolation ponds can be combined into a single larger storage pond and additional storage constructed as required. In addition to new storage ponds, this alternative requires approximately 138.8 acres of secondary sprayfields. For the purposes of providing a preliminary estimate of costs, this alternative assumes that on-site irrigation infrastructure will be provided by the property owners.

This alternative requires a combined pump station. Low-head pumps, similar to those proposed under Alternative 3, would be used to pump secondary effluent to the COWRP for additional treatment and golf course use. In addition, a pump station and hydropneumatic tank will be needed to pump secondary treated water to the sprayfields at pressures suited for irrigation use. The irrigation pump station has been conceptually designed to pump the maximum month flow of 36.75 MG/month developed in the water balance for this alternative on a daily basis for eight hours per day. This results in a pumping flow rate of 2,550 gpm. The transmission main has been sized at 16 inches to provide velocities of approximately 4 fps.

Because this alternative manages disposal for flows generated by the City and MCSP, the City of Ione may seek a cost-sharing arrangement with MCSP. The costs of the alternatives are provided in **Table 4-7** below.

Alternative	Cost (\$ Millions)
Alternative 1	1.7
Alternative 2	16.7
Alternative 3	1.2
Alternative 4	12.9

### Table 4-7: Ione Alternative Economic Comparison

# 4.3.3 MCSP

Existing planned upgrades to the MCSP WWTP are a result of CDO's as well as the new Level II Dorm Complexes. These Level II Dorms Complexes are being constructed at MCSP where some existing sprayfields are located. The new dorms will reduce the disposal sprayfield area to 200 acres while potentially increasing the total disposal load due to increase in MCSP inmate population. However, improvements to the treatment technology will increase the WWTP overall efficiency therefore negated the need to increase the capacity of the WWTP.

CDCR is in the process of evaluating options to increase on-site effluent sprayfields by 60 acres to compensate for sprayfields removed from service from the new Level II dorms, which would result in 260 acres of disposal area. The development of these potential sprayfields will be the subject of appropriate environmental analysis. The operations strategy for the disposal of the treated effluent will continue to be maximizing discharge to onsite sprayfields with the remainder

of the effluent passing through Preston Reservoir to the City of Ione WWTP and discharge system. Within the planning timeframe evaluated in this study, MCSP intends not to exceed the current projected flow of 230 AF/y to Preston (and thus to the regional system) as well as the contractual maximum flow of 341 AF/y.

# 4.4 Regional Alternatives Development and Screening

The alternatives to be evaluated in the next section (**SECTION 5**) will be developed from the treatment, conveyance, storage, and disposal subalternatives described in this section. A consideration of fatal flaws will follow, and any subalternatives with clear fatal flaws will be screened from the study and not carried forward to detailed evaluation. The development of subalternatives will consider the following issues prior to incorporation into complete alternatives for detailed evaluation in **SECTION 5**:

- **Capacity:** Does a facility have enough capacity to meet the needs for long-term storage and disposal?
- Treatment: What is the level of treatment required for storage and/or disposal?
- **Demand:** What is the pattern of demand? Is there a backup supply to meet demands if necessary?
- Regulatory: What would be expected for implementation and ongoing compliance?
- Environmental: Are there potential impacts and would there be barriers to obtaining clearance?
- Land Acquisition/Easement/Owner Participation: Initial input and acceptance for land owner if the land is not already owned by a Regional Partner
- **Operations & Maintenance:** What are the O&M implications for the facility or associated treatment and conveyance facilities?
- **Physical Limitations:** Are there any physical barriers to consider? Is the topography favorable? How will physical constraints affect construction/operation?

Each of the storage and disposal subalternatives is described followed by discussion of treatment improvements and conveyance requirements. The schematic in **Figure 4-3** shows the basic components on this system (note that any reuse sites requiring tertiary recycled water would require additional treatment not shown in this schematic). The alternatives for storage and disposal were developed around this schematic.

A conceptual approach to the regional system was discussed and agreed to by the Regional Partners. The approach would be to route all the secondary effluent from Ione, ARSA and MCSP first to Ione WWTP Pond 5, which would serve as a forebay. From there, flow could be routed to Ponds 5, 6, and 7 for percolation (if allowed by the RWQCB), to regional storage, or directly to secondary and/or tertiary points of reuse. If feasible, flow could also be returned to Pond 5 from regional storage for redistribution to other points of reuse/disposal as needed.

This system would require coordination between the Regional Partners to ensure that management of flows were optimized.



### Figure 4-3: Schematic Representation of the Proposed Regional System

Source: Developed for Regional Water Recycling Feasibility Study

### 4.4.1 Effluent Storage

This section includes discussion for both existing and potential storage facilities. A summary of the existing facilities and considerations for ongoing use is provided.

### Existing Storage Facilities

Existing regional storage facilities and respective capacities are provided in Table 4-8.

Table 4-8: Existing Regional Storage Facilities and Capacities

Existing Storage Facilities	Storage Capacity (AF)		
Henderson Reservoir	349 <sup>1</sup>		
Preston Reservoir	235		
Ione Pond 5	58.8		
Ione Pond 6	33.8		
Ione Pond 7	41.3		

Notes:

1. Source: ARSA – Henderson Reservoir Volume Calculation (04/21/2015) provided by Gary Ghio. At two feet of freeboard (393 AF) and assuming approximately 44 AF of sludge accumulation (see **Table 4-9**), the net volume is estimated to 349 AF.

A brief summary of each facility and the considerations for ongoing use in the regional system is provided below. **Figure 4-4** depicts all existing storage facilities.

**Henderson Reservoir:** The DSOD has jurisdiction over the reservoir dams in the ARSA system. The Henderson Reservoir dam has several identified deficiencies, summarized in **Table 4-9**.

Deficiency	Information Source	Potential Improvement
Dam Structural Deficiencies	2008 Henderson Dam Report	Report discussed repairs including buttressing, construction of a stability berm, repair of embankment cracks and other modifications. More recent discussions with DSOD indicate dam replacement per DSOD standards will not be required as the dam is stable.
Spring Bleed-off Line	DSOD Discussions (January 2012)	DSOD allowed a repair with sand.
Corroded Outlet Pipe	DSOD Discussions (January 2012)	DSOD allowed monitoring for five years then permanent replacement, which may require open-cut replacement of the pipe (and likely the entire dam). Trenchless improvements to the dam are currently being investigated as a lower-cost alternative.
Sludge Accumulation Reduces Capacity	Weatherby– Reynolds–Fritson Memo, February 11, 2009	Dredge estimated 44 AF of settled solids in late September (reach minimum water level by October 1st to maximize wet weather storage capacity).
Existing Dam Height Restricts Capacity	WWTP Draft EIR	Replace the dam in its existing location, adding approximately seven feet to allow for WWTP flow up to 0.9 MGD ADWF. Challenges include the diversion of flow to other temporary storage or land dispersal sites during construction.

Source: City of Sutter Creek and ARSA Draft WWMP, 2012





Source: Developed for Regional Water Recycling Feasibility Study

There is a spring bleed-off line beneath the dam that produces a relatively constant low flow, and the reservoir outlet pipe has been internally inspected and found to have sections of the bottom of the pipe completely corroded away. Various options for dam repair and replacement are being considered.

DSOD allowed ARSA to temporarily repair the spring bleed-off line with sand in 2013, but required that the reservoir outlet pipe be completely replaced within five years. ARSA is monitoring the corroded outlet pipe for any further damage, and is also considering alternatives for trenchless pipe repair to present to DSOD as a lower-cost approach to keeping the reservoir in service. It is likely infeasible to raise the dam to provide more storage capacity unless the entire dam is replaced at considerable expense.

**Preston Forebay and Preston Reservoir:** Preston Reservoir would continue to operate in a regional system and would receive effluent conveyed from the ARSA pipeline and discharge to the regional system from MCSP. With the decommissioning of Henderson Reservoir, Preston Forebay and Preston Reservoir would receive effluent directly from the SCWWTP without any

ability to hold back flows. As such, the Preston facilities will function as a very wide pipe and will rely on other storage downstream to manage capacity.

**MCSP Reservoir:** This storage facility would continue to be operated by CDCR and is not part of the evaluation for regional storage. It has a capacity of 475 AF. This study assumes that MCSP on-site storage and disposal is sufficient to address any flows in excess of the current projected discharge to the regional system of 230 AF/y.

**Ponds 5, 6, and 7:** Pond storage is also present at the Ponds 5, 6, and 7 at lone WWTP. Ponds 5, 6, and 7 serve as percolation ponds at lone WWTP. Pond 5 receives secondary treated wastewater. Pond 6 is typically only utilized for ARSA wastewater during the wet months of the year when the COGC does not require irrigation. The final pond, Pond 7 was intended to accommodate excess wastewater from Ponds 5 and 6. Since the secondary WWTP is currently at or near capacity, Pond 6 and sometimes Pond 7 may contain treated secondary wastewater throughout the year and not just during the wet months.

Previous testing documented in the Seepage Discharge Compliance Plan (SDCP), January 2012 indicates that Pond 5 exhibits low ORP conditions, which most likely contribute to the mobilization of iron and manganese which is discharged to the groundwater through percolation. The SDCP recommends that "Discharger should line all ponds within 200 feet of Sutter Creek or backfill all the ponds within 200 ft." Currently all incoming treated effluent is transferred to Pond 5 or 6. If lined, Pond 5 storage capacity will remain 58.8 AF.

Ponds 6 displays high ORP conditions, which inhibits mobilization of iron and manganese but is still within 200 ft of Sutter Creek. If lining of Pond 6 is ultimately required by the RWQCB, the storage capacity will remain 33.75 AF.

Pond 7 was constructed and used as a percolation pond. Part of the compliance project is to secure coverage of this pond in the WDR permit so that Pond 7 can continue be used as a percolation pond. Pond 7 also displays high ORP conditions, which inhibit mobilization of iron and manganese indicating that groundwater will not be degraded because of percolation from Pond 7. Therefore, it is likely that Pond 7 will continue serving as a storage/ percolation pond, though the RWQCB could ultimately require it to be lined. If permit application for Pond 7 is approved, storage capacity shall remain the same 41.25 AF. The regional study includes scenarios with and without percolation from Ponds 6 and 7.

# Potential Recycled Water Storage Facilities

A large storage reservoir in the vicinity of the lone WWTP would be developed and sized sufficiently for projected future seasonal storage needs for all Regional Partners in a 100RP rainfall year. Two potential sites have been identified. The applicable regulatory requirements for recycled water storage in a reservoir are discussed below, followed by a discussion of the particulars of the two identified storage sites.

**General Regulatory Requirements for Recycled Water Storage:** Recycled water storage reservoirs must comply with the State Water Resources Control Board (SWRCB) General Waste Discharge Requirements (WDRs) for Recycled Water Use (Order No. 2014-0090-DWQ). The permit dictates monitoring and reporting requirements for recycled water storage as well as the antidegradation requirements to support and maintain high quality of groundwater and/or surface water. As part of the operation of any recycled water storage reservoir, sampling and reporting requirements must be fulfilled and, at minimum, include the following as presented in **Table 4-10**:

Parameter	Sample Type	Sample Frequency	<b>Reporting Frequency</b>
Freeboard <sup>1</sup>	Measurement	Quarterly	Annually
Odors	Observation	Quarterly	Annually
Berm Condition	Observation	Quarterly	Annually

Table 440. Oswawal M/DD	Dan J. Owertan		De
Table 4-10: General WDR	Pond System	wonitoring	Requirements

Source: SWRCB General WDRs for Recycled Water Use (Order No. 2014-0090-DWQ)

The amount of freeboard will need to be determined and controlled to assure compliance with SWRCB storage requirements.

Per the General WDRs, "Recycled water use shall not cause unacceptable groundwater and/or surface water degradation" and as such "Regional Water Boards have discretion regarding permitting storage of recycled water in unlined ponds. Applicants may improve storage facilities if deemed necessary by a Regional Water Board." The RWQCB may determine that it is necessary to evaluate and improve the reservoir to minimize the potential for percolation. Groundwater monitoring wells may be necessary to monitor subsurface conditions, and where the potential for groundwater degradation is anticipated by the RWQCB, a subdrainage system in conjunction with a liner may be required to facilitate leak detection and prevent seepage.

In addition, per the General WDRs "Recycled water shall not create nuisance conditions." As such, oxidation equipment may be required in order to maintain dissolved oxygen in the reservoir to prevent the potential for odors.

Since the level of treatment for the recycled water will be undisinfected secondary recycled water, and this water is not approved for direct human contact, it will be necessary to control and restrict access to the facility to protect the public.

**Greenrock Ranch Lands – New RAS Reservoir Site:** A potential new reservoir site ("Rancho Arroyo Seco Reservoir") between Woodard Bottom and Dry Creek has been identified on Greenrock Ranch lands at the location shown in **Figure 4-4**. A landowner representative has indicated that this would be an acceptable storage location to serve sprayfield reuse sites on the property. The topography in this location is somewhat of a natural "bowl" shape which lends itself to efficient reservoir construction with a reduced amount of earthwork to construct dams as compared to a flat site. The landowner provided a LIDAR survey of the site which is considered in the **SECTION 5** evaluation. Preliminary indication is that the site could support a storage volume of at least 1,000 AF (refer to water balance discussion, **Table 4-3**). The development of this alternative in **SECTION 5** will include consideration of maximizing existing topography to minimize dam earthwork, and development of a phasing approach to coincide with timing of additional flows.

**Howard Trust Properties:** Howard Trust Properties is the site of the former Unimin Mine. There are existing impoundments that could potentially be used for recycled water storage. The potential storage facilities are listed in **Table 4-11** below along with the current existing uses, source water, capacity, and opportunity for expansion. The sites are shown on **Figure 4-4**.

Facility	Source	Current Use	Lining	Storage Capacity (AF)	Potential for expansion
Lot 273	Local runoff	None	Unlined, clay soils	812	Yes – Via dredging
Pond J	Piped in from pits and plant	Process and pit water storage	Clay lined	753	Yes – Requires new dam
Fresh Water Pond	Piped in from AWA raw water line	Plant process water	Clay lined	164	No

Table 4-11: Howard Trust Properties Storage Facilities Summar
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A representative for Howard Properties has indicated that there is a sale negotiation in progress, though the timing of the sale would be dependent on the timing of the Unimin Mine termination. The existing and proposed uses of impounded water are described further in the following section (**SECTION 4.4.2**) but it is expected that any potential recycled water used would require that water to be treated to disinfected tertiary levels so that it could be reused for industrial processes. It is not currently known if the future land owners will have any interest in recycled water use and what the projected seasonal demand would be for the potential uses identified. As such it is difficult to determine the amount of usable disposal opportunity there is.

### Summary of Storage Alternatives

A summary of the existing and new potential reservoirs is shown in **Table 4-12** below. Continued use of MCSP Reservoir, Preston Reservoir, and Pond 5 is assumed as these are integral to the water balance. However, regional capacity is considered downstream of MCSP facilities, and as such, the MCSP reservoir is not included in **Table 4-12**.

Storage Facilities <sup>1</sup>	Storage Capacity (AF)	
Henderson Reservoir	349	
Preston Reservoir	235	
lone Pond 5	58.8	
lone Pond 6	33.75	
lone Pond 7	41.25	
Howard Trust Properties (undisinfected secondary)	812	
Howard Trust Properties (disinfected tertiary)	917	
New RAS Reservoir	Approx. 1,000 – 1,500	

#### Table 4-12: Existing and Potential Regional Storage Facilities and Capacities

Notes:

1. MCSP Reservoir capacity is not part of the regional capacity, which is considered downstream of MCSP.

# 4.4.2 Secondary and Tertiary Effluent Reuse

This section includes discussion for both existing and potential land application sites for secondary and tertiary recycled water use. See **SECTION 3.2.3** for flow projections.

### Existing Reuse Sites

A summary of the existing facilities and considerations for ongoing use of these facilities is provided below and summarized in **Table 4-13**.

Recycled Water User	Disposal Area (Acres)	Existing Annual Average Demand (AF/y)	Potential Annual Average Demand (AF/y)
Effluent Disposal – Secondary Reuse			
ARSA sprayfield – Hoskins Ranch buildout <sup>1</sup>	24 in use; approx. 60 available	64	160
ARSA sprayfield – Bowers Ranch buildout <sup>1</sup>	24 in use; approx. 40 available	64	106
City of Ione sprayfield (Town Field)	57.1	248	248
City of Ione sprayfield (City Field)	8.6	57	57
Effluent Disposal – Tertiary Reuse			
Castle Oaks Golf Course (COGC)	180	530	530
Total Recycled Water Demand	963	1,101	
Total Recycled Water Demand (w/o ARSA)		835	835

Table 4-13: Summary of Existing Disposal Sites

Notes:

1. In the event that the sprayfields along the pipeline are not decommissioned they may be expanded to increase the capacity to accept recycled water.

**ARSA Reuse Sites:** As mentioned in **SECTION 2.2.1**, the existing ARSA reuse sites consist of Bowers Ranch and Hoskins Ranch. Bowers Ranch is contracted to provide 40 acres of pastureland, which is currently approximately 60% developed for flood irrigation. Hoskins Ranch provides approximately 60 acres of pastureland, which is approximately 40% developed for spray irrigation. ARSA has an easement and agreement for the use of Hoskins Ranch for effluent reuse, which requires a minimum of 60 acres to be made available to ARSA for irrigation and a minimum of 25 AF/y of effluent to be made available to Hoskins Ranch.

The land application areas are relatively low maintenance, approximately 12 years old, and are in good condition. The majority of the land reuse sites are for cattle grazing. Decommissioning the existing reuse sites along the pipeline and developing a regional disposal solution will centralize and potentially improve the overall efficiency for operations and maintenance of all collective regional facilities. Continued use of both sites will require that ARSA negotiate new agreements with the property owners as the existing agreements are expired.

**MCSP sprayfields**: After construction of the Level II Dorm Complex Plan, approximately 200 acres of usable disposal area will remain. The irrigation spray area will be reduced to 200 acres with removal of Field 5, a moderate amount from Fields 6 and 7, and some from Fields 1 and 4. Since the flows from Mule Creek are based on the contractual obligations, it is assumed to be

independent of the sprayfield acreage at Mule Creek. These sprayfields are therefore not included in the water balance analysis.

Land disposal on agricultural land near lone WWTP: The Town and City fields can continued to be used for sprayfield irrigation in the future. These are approximately 57 acres and 9 acres respectively.

**Castle Oaks Golf Course (COGC):** The COGC has an average annual demand of up to 530 AF/y met by ARSA and MCSP secondary effluent that is treated to tertiary standards at the COWRP. No changes to annual demand are expected. The continued supply of recycled water to COWRP would require continued operation and maintenance of the COWRP tertiary treatment facility, which is only needed for this recycled water application site.

# Potential Sprayfield Reuse Sites

Large sprayfield reuse site(s) would be developed on Greenrock Ranch land for land application of the combined flow from Regional Partners. Two identified sprayfield sites have been identified as follows:

**Woodard Bottom:** Woodard Bottom is relatively flat with an irregularly shaped boundary. It is located approximately 1.3 miles southwest of the Ione WWTP and is bordered on the north by Sutter Creek and on the east by Southern Pacific railroad tracks. The intended site is 196 acres, though the irrigable area is approximately 115 acres.

With the required setback distances and construction of a tailwater pond if needed, this site would be feasible for planting seasonal alfalfa for wastewater irrigation reuse. There is no backup water supply available at this site when recycled water is unavailable, so any reuse agreement for this site would need to allow for unavailability of recycled water in a particularly dry year (i.e. no guarantee of recycled water availability could be made).

The irrigation area at this site could be developed in phases coinciding with regional growth. Assumed phasing increments for study purposes are discussed in **SECTION 5** and this phasing can be adjusted by the Regional Partners and the landowner based on actual and projected need.

Woodard Bottom is located on land owned by Greenrock Ranch. The landowner has been an active stakeholder in this Study and is interested in reusing the water for alfalfa. Implementation of this alternative would be subject to final negotiation of an agreement. This land disposal site is evaluated and discussed in more detail in **SECTION 5** including phasing, costs and regulatory requirements.

**Dry Creek:** Dry Creek field is relatively flat, long and narrow shaped with an irregular boundary. It is located approximately 2.5 miles southwest of the lone WWTP, bordered on the west by Dry Creek. The upper 2/3 of the field is graded and the direction of irrigation is from north to south with side fall from west to east, away from Dry Creek. The upper 2/3 of the field is planted with alfalfa or winter wheat. The lower 1/3 of the field is graded and the direction of irrigation is from west to east away from Dry Creek with side fall from north to south. The lower 1/3 of the field is planted with fallow. The site is approximately 647 farmable acres of which 403 acres are currently considered for recycled water irrigation. The remaining 244 acres is owned by Pope Ranch. While there may be an opportunity to incorporate Pope Ranch into the Regional disposal system, no communication has occurred with the owner at Pope Ranch and it is assumed that this area will not be irrigated with recycled water for the purposes of this Study.

With the required setback distances and construction of a tailwater pond if needed, this site would be feasible for planting alfalfa for wastewater irrigation reuse. A backup water supply is available at this site when recycled water is unavailable. The Regional Partners cannot guarantee supply of recycled water to this site at all times.

The irrigation area at this site could be developed in phases coinciding with regional growth. Assumed phasing increments for study purposes are discussed in **SECTION 5** and this phasing can be adjusted by the Regional Partners and the landowner based on actual and projected need.

Dry Creek is located on land owned by Greenrock Ranch. The landowner has been an active stakeholder in this Study and is interested in reusing the water for alfalfa. Implementation of this alternative would be subject to final negotiation of an agreement. This land disposal site is evaluated and discussed in more detail in **SECTION 5** including phasing, costs and regulatory requirements.

**Howard Trust Properties:** Howard Trust Properties is the site of the former Unimin Mine. There is a sand plant (the old Unimin plant), Ione Minerals, and remaining industrial and mined lands within the property. Both the sand plant and Ione Minerals use water for industrial processes and there is potential opportunity for the remaining industrial and mined lands to be reclaimed and to use water for other industrial processes. This water need could be met by tertiary recycled water.

The sale of the property is currently in negotiation for the reclaimed land and the timing of such sale will be dependent on the final Unimin Mine termination. It is unknown at this time whether there would be interest from future land owners in utilizing recycled water. In addition, without knowing the type and potential demand for recycled water including its projected seasonal variation, it is impossible to predict how disposal on this site would affect the regional water balance. It is assumed that any processes located on Howard Trust Properties would require recycled water treated to disinfected tertiary standards.

**Gold Rush Ranch (GRR):** The City of Sutter Creek has approved the development agreement for the Gold Rush Ranch and Golf Resort (GRR) project, which is located southwest of the current City limits (see **Figure 4-5**) and will be served by the Sutter Creek WWTP. As approved, the GRR project includes an 18-hole golf course, 1,334 residential units, 300 vacation rental units, neighborhood commercial uses, and a public safety site, which are expected to develop over 25 years. This project would generate wastewater for treatment at SCWWTP or at a new satellite plant and would also have a significant recycled water demand. The project was originally slated to begin construction in 2015, but has been stalled by a lawsuit, financial issues, and efforts to sell the property. Given the uncertainty surrounding this development, this study projects future flows both with and without GRR, and does not take credit for use of recycled water at the GRR golf course. Should the golf course be developed, it would consume up to 1 MGD of recycled water in the summer (around 350 AF/y) and this would have the effect of delaying the need to expand regional storage or sprayfield phased increments.

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Figure 4-5: Existing and Potential Regional Recycled Water Use Sites

Source: Developed for Regional Water Recycling Feasibility Study

### Summary of Secondary and Tertiary Reuse Alternatives

A summary of existing and potential reuse sites and capacities is presented in **Table 4-14**. All regional alternatives are considered downstream of any MCSP facilities, as such the MCSP sprayfields are not included in **Table 4-14**.

Table 4-14: Summary of Existing and Potential Reuse Sites for Regional Use
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Recycled Water User	Irrigation Area (Acres)	Existing Annual Average Demand (AF/y)	Potential Annual Average Demand (AF/y)
Effluent Disposal – Secondary Reuse			
ARSA sprayfield – Hoskins Ranch buildout <sup>1</sup>	24 in use; approx. 60 available	64	160
ARSA sprayfield – Bowers Ranch buildout <sup>1</sup>	24 in use; approx. 40 available	64	106
City of lone sprayfield (Town Field)	57.1	248	248
City of lone sprayfield (City Field)	8.6	57	57
Woodard Bottom	115	0	570
Dry Creek	403	0	1,999
Effluent Disposal – Tertiary Reuse			
Castle Oaks Golf Course (COGC)	180	530	530
Howard Trust Properties	Unknown	Unknown	Unknown
Total Recycled Water Demand		963	3,670
Total Recycled Water Demand (w/o ARSA sprayfields)		835	3,404

Notes:

1. In the event that the sprayfields along the ARSA pipeline are not decommissioned, they may be expanded to increase the capacity to accept recycled water.

2. For the purpose of this Study, it was assumed that Gold Rush Ranch would not be a potential disposal site as the development of this facility is uncertain.

With the inclusion of Dry Creek, there is adequate sprayfield acreage with or without the ARSA sprayfields through the year 2036 (see **Table 4-3**). The addition of Woodard Bottom alone would not be enough to accommodate the 2036 high demands, but would have adequate capacity through 2031 assuming full development of ARSA sprayfields. **Figure 4-5** shows the locations of existing and potential recycled water use sites that are in consideration for the regional alternatives.

# 4.4.3 Treatment

Each of the treatment facilities will continue to be in operation under any regional alternative considered. Some alternatives will require elevated levels of treatment. This section summarizes the improvements required for the treatment facilities assuming continued operation.

### Sutter Creek WWTP (SCWWTP)

Improvements will be required at the SCWWTP to replace aging equipment and provide adequate capacity for projected average and peak flows. All alternatives considered in this analysis require continued use of the SCWWTP to treat wastewater to at least secondary standards. According to the 2012 Draft ARSA WWMP assessment, the SCWWTP equipment is in fair to good operating condition. However, the concrete containment structures are remaining from the original 1949 plant construction.

**Table 4-15** lists the known SCWWTP deficiencies and potential improvements for increasing operational efficiency and plant capacity, as identified in the 2012 Draft ARSA WWMP.

Process	Issue/Deficiency	Potential Improvement
Influent Flow Meter	Inaccurate readings in 2011.	Calibrate
Trickling Filter	Inefficient operation. Trickling Filter organic loading of 0.96 MGD is the process bottleneck. No water quality data is available to monitor process performance.	Run recirculation pumps and periodically sample the trickling filter effluent to maximize the efficiency of the filter. Use the City's two ISCO auto samplers to continuously monitor BOD/SS and settleable solids in trickling filter influent (rotary screen effluent). This will allow proper loading calculations and facilitate optimization of trickling filter operation. Consider addition of a primary clarification process to reduce organic loading on the trickling filter. This could be achieved by converting one clarigester to a primary clarifier and making associated improvements to sludge digestion and handling.
Disinfection	Manual chlorine dosage produces residuals up to 25 ppm, which is inefficiently high.	Automate the chlorine dosage to reduce chemical usage and increase disinfection effectiveness.
Disinfection	Nearby tree debris interferes with disinfection and clogs basin.	Cover the chlorine contact basin.
Sludge Digestion	Clarigesters are inefficient digesters.	Convert the clarigesters to clarifiers only, and construct a separate 25,000 gallon digester (for current flow rates).
Aerated Emergency Storage Pond	Use of aerators disrupts secondary treatment processes and is inefficient use of energy	Use the overflow basin as an emergency overflow basin only, not for aeration/treatment. Install a new sump pump to dewater this basin to the headworks, not to the clarigester.
Electrical System	At capacity (2010 Draft SC WWMP).	Upgrade electrical service during next improvement project.

Table 4-15: Existing WWTP Deficiencies

Source: City of Sutter Creek and Amador Regional Sanitation Authority - Draft Wastewater Master Plan, November 2012

In order to address future capacity projected for the planning period through 2036 and to maintain water quality, a series of improvements have been recommended for implementation. Planned improvements are listed below, and include some degree of reuse of existing facilities:
- A new influent pump station utilizing submersible pumps in a wet well configuration;
- A new, fine screen headworks facility with vortex grit removal process followed by a flow split structure;
- Influent emergency storage/flow equalization basin able to return flows to the influent pump station;
- A new, modular, compact, activated sludge treatment facility will be constructed to provide aeration, clarification, digestion, and to facilitate a phased replacement project given the space constraints at the existing site;
- The existing screw press and drying bed will be used for waste solids dewatering;
- A new administration and operations building will be constructed in the northeast portion of the site;
- An emergency stand-by diesel generator with approximately 1.0 megawatt capacity will be provided to permit continued plant operation during a power outage;

These facilities are recommended to continue to reliably produce and convey undisinfected secondary effluent from the SCWWTP to the regional system. No additional treatment is necessary (i.e. filtration or disinfection) for the purpose of meeting the needs of the regional alternative. However, if GRR develops, a separate tertiary treatment system at SCWWTP and tertiary effluent conveyance to GRR golf course would be required. This would reduce or eliminate flow to the regional system when effluent is being supplied to the golf course.

Flow projections prepared for the 2012 Draft ARSA WWMP indicated that the current permitted ADWF capacity of the SCWWTP of 0.48 MGD would be exceeded sometime between 2021 and 2026. This would trigger the need to complete some of the improvements described above prior to that time, including biological treatment and sludge digestion improvements. A more detailed hydraulic evaluation and condition assessment would be needed to determine the timing of projects to improve peak hydraulic capacity and address equipment and structure deterioration issues.

### Ione WWTP

The City opted to proceed with Alternative 1. The Basis of Design Report (completed prior to the design of improvements) defined the recommended project for the Ione WWTP as having the following components, a number of which have already been implemented or are currently being implemented:

- Increase aeration capacity in the existing treatment ponds to provide well-oxidized secondary effluent;
- Install mixing capacity in one of its three percolation ponds in order to address temperature stratification and water quality concerns:
- Construct a new pump station to serve irrigation users;
- Construct irrigation system improvements on approximately 57 total acres owned by Greenrock Ranch Lands LLC (the Town Field) and approximately 9 total acres at the City WWTP (City Field); and

• The COGC would continue to receive tertiary recycled water produced by the Tertiary Treatment Facility, provided that supply of RW to COGC continues as part of the regional strategy.

These facilities are recommended to continue to reliably produce and convey undisinfected secondary effluent from the lone WWTP to the regional system. No additional treatment is necessary (i.e. filtration or disinfection) for the purpose of meeting the needs of regional disposal and reuse alternatives utilizing undisinfected secondary effluent quality recycled water. Additional regional treatment would be needed to provide effluent for tertiary applications.

### MCSP WWTP

Analysis was done by CDCR to address the CDO deficiencies as well as the impacts to MCSP's existing WWTP and disposal system resulting from construction of the proposed Level II dorms.

To address required improvements and also to improve operational inefficiencies, CDCR is currently making significant upgrades to the WWTP by implementing improved and more efficient treatment technology which will use less secondary process influent. As such, CDCR expects that, with the improved technology, the current 0.074 MGD permitted capacity will be more than adequate to meet the MCSP needs.

These facilities are anticipated to address the treatment needs for the regional alternatives and will produce undisinfected secondary effluent suitable for that type of reuse. Additional regional treatment would be needed to provide effluent for tertiary applications.

#### Summary of WWTP Discussion

The Regional Partners have upgrade plans for their respective treatment facilities, which would permit them to continue to reliably produce and convey undisinfected secondary effluent from the respective WWTPs to the regional system. This level of treatment would be sufficient for the sprayfield reuse alternatives being considered. Additional regional treatment would be needed to provide effluent for tertiary applications.

#### 4.4.4 Conveyance Elements

This section includes discussion for both existing and proposed conveyance facilities to convey recycled water to the identified storage and reuse sites alternatives. A summary of the existing facilities and considerations for ongoing use is provided in this section, and further analysis is provided in **SECTION 5**.

#### ARSA Conveyance System

In order to continue to use the existing ARSA pipeline, a number of deficiencies must be addressed. The ARSA pipeline would need to be upgraded and improved to maintain reliability and required service levels, and provide capacity for projected flow increases.

The known deficiencies of the ARSA pipeline are listed in **Table 4-16**. This list was developed as part of the 2012 Draft ARSA WWMP.

Segment	Deficiency	Information Source	Potential Action or Improvement
All	Surface Exposure/Shallow Bury Depth	2010 Draft ARSA MP	CCTV of shallow pipe subject to traffic loading. Prioritize shallow pipe for replacement, subject to condition verification.
All	Leaky joints	ARSA Operator	Repair leaks.
All	Air relief valves (ARVs) are mostly non-functional, buried, and/or inaccessible	ARSA Operator	Repairing or replacing ARVs will eliminate trapped air to potentially improve capacity and minimize pipe damage due to water hammer.
All	No isolation valves	ARSA Operator	The addition of isolation valves would be useful in isolating sections for future repairs.
WWTP to Sutter- lone Road	Capacity bottleneck	2010 Draft ARSA MP	Study segment to determine actual capacity. If required, install upsized new pipeline parallel to the existing.
WWTP to Henderson Reservoir	No maintenance access points	ARSA Operator	Add access ports for maintenance, inspection, and repair.
Jackass Creek Siphon	Above-grade creek crossing in flood plain	HydroScience Site Visit	Protect or relocate (bury) siphon, based on a more detailed engineering evaluation of risk.
From Henderson Reservoir to Preston Forebay	Age, leaking joints, surface exposure, presence of asbestos-cement	2010 Draft ARSA MP	Increase maintenance budget to account for repair and replacements. Perform more detailed condition assessment. Consider slip-lining additional sections to reduce leakage.

Source: City of Sutter Creek and ARSA WWMP, 2012

Based on this information, while complete replacement may be needed before the pipeline reaches an age of 70 years (approximately 40 years from now), within the 25-year planning horizon the City and ARSA should implement an increased maintenance program which includes interior and exterior inspections, material evaluations, repair and phased replacement.

#### Ione Sprayfield Conveyance

Approximately 750 feet of 8-inch pipeline was constructed for conveyance to the Town and City fields. These are existing City sprayfields and are not part of the contemplated new regional storage and reuse system.

#### Preston to Ione Ponds Conveyance

Existing conveyance from Preston Reservoir to the City of Ione via the COWRP is assumed to be in good condition. Based on a preliminary capacity analysis conducted by Dexter Wilson, the existing pipeline could convey up to 2,000 gpm from Preston Reservoir (at water level 329-ft) to COWRP by gravity. This conveyance capacity is 1,100 gpm in excess of the 900 gpm COWRP treatment and discharge capacity. In theory, the excess 1,100 gpm capacity could be used to convey secondary effluent from Preston Reservoir to Ione WWTP Pond 5, which would be lined and serve as a forebay to distribute flows to regional storage and reuse site(s).

The existing Preston pipeline system consists of the following:

- 165-ft of 18-inch corrugated metal pipe (CMP), installation date unknown
- 2,405-ft of 24-inch asbestos-cement pipe (ACP) installed 1979
- 6,181-ft of 12-inch polyvinyl chloride (PVC) installed 1990

Under gravity conditions, the capacity of the pipeline would vary with the level of the Preston Reservoir from 1,600 gpm when empty (318-ft) to 2,250 gpm when full (355-ft). Incorporating booster pumping can assure higher capacities if desired, assuming the condition of the pipeline is good. The capacity is evaluated in **SECTION 5** with the various alternative flow permutations.

#### Proposed RAS Conveyance

New conveyance infrastructure will be required to transfer recycled water from Pond 5 to the new RAS Reservoir, and then to the new sprayfield reuse sites at Woodard Bottom and/or Dry Creek. Conceptually, flow would be pumped from Pond 5 to the new reservoir and then flow by gravity to either Dry Creek or Woodard Bottom.

Based on the expected elevations of the new RAS storage and the proposed sprayfields, it is expected that conveyance from storage to disposal will be by gravity. The bottom of the reservoir is expected to be at an approximate elevation of 345 feet with high water elevation at 378 feet. The LIDAR survey shows that the Dry Creek disposal site elevation ranges from 200 to 230 feet. On the east side of Dry Creek the elevations range between 220 and 230 feet. For Woodard Bottom, disposal site elevation ranges from 240 to 300 feet. On the east side of Woodward Bottom facing lone WWTP, the elevations range between 258 and 290 feet. Based on preliminary review of topography, RAS Reservoir appears to be at a high enough elevation to support gravity conveyance. Additional information will need to be collected in order to determine definitively that pumping will not be required.

Wastewater will also be able to flow in the reverse direction, i.e. from the new reservoir to Pond 5 where it can be re-distributed as appropriate. Because of the proximity of Woodard Bottom to the Ione WWTP, it will also be possible to pump directly from Pond 5 to Woodard Bottom.

To convey effluent to Woodward Bottom, a new pump station at lone WWTP and 1.1 miles of 16-inch PVC piping would be required. Approximately 0.72 miles of 24" PVC piping is required for the gravity feed line to Dry Creek field. Phasing alternatives for conveyance may be limited but will be explored in **SECTION 5**. This study assumes that the landowner would construct local irrigation pumping and spray application systems (wheel line irrigation systems) as needed to irrigate the sites.

#### Summary of Conveyance Alternatives

Conveyance alternatives are evaluated and discussed in more detail in **SECTION 5** including phasing opportunities, costs and regulatory requirements.

## 4.4.5 Alternatives Screening

Of the regional system component subalternatives described previously, the following have been identified as having potentially fatal flaws that preclude further evaluation in this Study.

### **Reuse at Howard Family Trust**

The property is currently in the process of being sold and it is not currently known if the future land owners will have any interest in recycled water use and what the projected seasonal demand would be for the potential uses identified. As such it is difficult to determine the amount of usable disposal opportunity there is and what the associated seasonal storage requirement would be.

Based on the lack of information regarding the future of the property and potential demands, this alternative cannot be further considered in this study but could be revisited in the future once the intended site use is known and additional information on recycled water demand is provided.

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# SECTION 5 – PROJECT ALTERNATIVES ANALYSIS

This section presents the evaluation of alternatives that survived the screening process in **SECTION 4**. The evaluation includes a cost-based alternatives analysis and a non-economic analysis. This section concludes with the selection of a preferred alternative based on economic and non-economic alternatives. Opportunities for phasing improvements based on actual storage and disposal needs and recycling opportunities over time are also discussed.

## 5.1 Alternative Development Criteria and Rationale

The following sections discuss the criteria, rationale, and assumptions involved in the development of the project alternatives.

### 5.1.1 Recycled Water Reuse/Disposal Criteria

Reuse/Disposal alternatives were developed based on the highest future peak recycled water flow projections, which were determined as part of the regional water balance (see **SECTION 4.2**) and are summarized below in **Table 5-1**.

**Table 5-1** provides a summary of reuse area required under "High" flow conditions extracted from the water balance through the year 2036.

#### Table 5-1: Summary of Additional Sprayfield Area Required for High Flow Conditions

	2016	2021	2026	2031	2036
Additional Sprayfield Area Required (acres)	173	263	361	457	550

Source: Dexter Wilson - CDCR at 341 AF/y, growth scenarios without percolation (ponds lined).

These values represent irrigation area required to maximize recycling and provide sufficient disposal capacity to meet regional needs for the "High" water balance conditions, which include:

- Development of GRR residential, excluding tertiary reuse at the proposed GRR golf course (which may or may not be constructed),
- Assumes no percolation disposal at lone Ponds, and
- Assumes ARSA sprayfields will be decommissioned.

### 5.1.2 Recycled Water Storage Criteria and Considerations

Recycled water storage alternatives were developed based on the reasonable capacity determined to be available at the site considered. As discussed in **SECTION 4.4.1**, a new effluent storage option has been identified at the RAS property.

As a reference, **Table 5-2** provides a summary of disposal capacity required under both "Low" and "High" flow conditions extracted from the water balance through the year 2036.

Table 5-2: Summar	y of Additional	Storage Required fo	r Low and High Flow C	conditions
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		2016	2021	2026	2031	2036
Additional Storage	Low	378	461	545	627	719
Volume Required (AF)	High	538	745	993	1,210	1,417

Source: Dexter Wilson - CDCR at 341 AF/y, growth scenarios without percolation (ponds lined).

Notes:

1. Data represents the additional storage required beyond Preston Reservoir and Ione Ponds 5, 6, and 7.

Below is further discussion about the reservoir and feasibility considerations.

**New RAS Reservoir Site:** The new RAS reservoir would be constructed to take advantage of the natural "bowl" shape that currently exists on the hilltop between the Dry Creek and Woodard Bottom irrigation areas. **Figure 5-1** presents a preliminary reservoir site plan that identifies how the design might take advantage of the natural topography. The maximum size evaluated is  $\pm 1,000$  AF. This size is based on a preliminary review of topography and optimal layout and targets the 2036 "High" condition volume requirement of 1,068 AF plus 349 AF at Henderson Reservoir, totaling 1,417 AF of system storage. This alternative assumes suitable geology and reuse of excavated native soil.





Source: Developed for Regional Water Recycling Feasibility Study

Furthermore, while the worst-case year 2036 projected storage requirement of 1,417 AF (**Table 5-2**) could potentially be addressed by an enlargement of this layout, the natural topography does not lend itself to the larger capacity and would likely become infeasible from a cost-effective standpoint. Therefore, a 2036 "High" storage scenario met solely by a reservoir at this site has not been evaluated. It is assumed that, to meet the 1,417 AF storage needs, additional storage would be developed by constructing additional ponds nearby or at another site, such as at the lone WWTP. For the purpose of this analysis, the maximum available regional storage volume of 1,068 AF was evaluated and intended to meet, at minimum, 2036 "High" flow conditions with continued operation of Henderson Reservoir. This volume takes maximum advantage of the natural topography.

If Henderson Reservoir is decommissioned and development proceeds at "High" flow conditions, the  $\pm$ 1,000 AF of storage at RAS can accommodate storage needs beyond 2026 but will need additional storage to be implemented before 2031.

Detailed planning and design of this reservoir will be intended to maximize existing topography and minimize dam earthwork. Detailed geological investigation and consultation with the RWQCB, DSOD, DDW, and other stakeholders would be required. A geosynthetic liner may or may not be required, depending on RWQCB findings with respect to groundwater impacts. The base cost provided in the economic analysis assumes no liner.

### 5.1.3 **Project Alternative Development Rationale and Assumptions**

This section provides a description of the rationale and assumptions applied in developing the alternatives considered for implementation. The various conditions and components are described below:

- Henderson Reservoir: Primary alternatives address storage needs based on the decommissioning of Henderson Reservoir, as this would be considered a worst-case scenario for storage capacity needs. The secondary alternatives address storage needs based on continued use of Henderson Reservoir after repair of the outlet, which is currently being evaluated. While continued use of Henderson Reservoir is being considered in this evaluation, the feasibility of its continued operation has not yet been fully determined. Therefore this study considers both possibilities.
- ARSA Sprayfields: The continued use of the ARSA sprayfields is triggered by the status of the Henderson Reservoir. It is assumed that if Henderson Reservoir is retained, then the ARSA sprayfields would also be retained since they are already constructed and operating successfully. It is also assumed that, if the ARSA sprayfields are retained, then they would be expanded to full capacity as expanding them would afford the Regional Partners time before having to construct new sprayfields elsewhere. Expanding these sprayfields would also be more cost-effective than immediately constructing new sprayfields. If Henderson Reservoir is decommissioned, it is assumed that the ARSA sprayfields would also be decommissioned since the loss of Henderson would eliminate the only existing seasonal storage facility supporting those sprayfields.
- New Storage and Recycled Water Use Sites: Recycled water use sites are coordinated based on proximity to proposed storage. The intent is to limit the length of pipeline required to serve the sprayfield site from the storage site. Storage and use sites are coupled as follows:

- RAS Reservoir + Woodard Bottom/Dry Creek Sprayfields: It is assumed that if a new reservoir is constructed on the RAS property, then the sequence of sprayfield development would be to first construct Woodard Bottom, then supplement with Dry Creek, as necessary. In all alternatives considered, Woodard Bottom is not large enough to meet 2036 "High" disposal area needs and will require some additional sprayfield development within Dry Creek. Additionally, the most cost-effective use of the RAS site for storage is to construct a ±1,000 AF reservoir sized large enough to accommodate 2036 "High" storage needs with the continued operation of Henderson Reservoir.
- Secondary Treatment: It is assumed that each existing WWTP would continue to operate and produce the same undisinfected secondary recycled water as is currently produced. It is expected that improvements to each respective treatment facility would be borne by the current owner/operator and is not a factor in determining the preferred regional alternative.
- Tertiary Treatment: Continued operation of the existing COWRP to serve COGC is the only
  form of tertiary reuse considered. The baseline alternatives assume continued operation of
  this system at current demands, and a later part of this section examines the impact of
  eliminating this demand and associated tertiary treatment. Eliminating this facility and
  accommodating the additional demand within the regional system would apply to all
  alternatives and is not a factor in determining the preferred regional alternative.
- ARSA Pipeline Improvements: The ARSA pipeline would be upgraded and improved to maintain reliability and provide capacity for projected flow increases. It is assumed that the upgrade will be to all portions of the pipeline from the Sutter Creek WWTP to Preston Reservoir and will be achieved in a phased manner over time via an annual pipeline replacement program. The details of the pipeline replacement were analyzed in the 2012 Draft ARSA WWMP. This element is required for all alternatives and is not a factor in determining the preferred regional alternative.

## 5.2 Alternative Descriptions

This section provides a description of the two alternatives developed from the options that passed the screening stage in **SECTION 4**. The alternatives address the storage and disposal components required to address various conditions and assume new storage at RAS Reservoir and new disposal at Dry Creek and Woodard Bottom, as follows:

- Alternative 1: Decommissioning of Henderson Reservoir and ARSA sprayfields, plus new storage at RAS Reservoir and new disposal at Dry Creek and Woodard Bottom
- Alternative 2: Repair and continued use of Henderson Reservoir and expanded ARSA sprayfields, plus new storage at RAS Reservoir and new disposal at Dry Creek and Woodard Bottom
- **Non-Recycled Water Alternative:** Continued implementation of current conditions, i.e. No Action Project implementation

**Table 5-3** presents the matrix of alternatives and the various permutations considered.

	RAS + Dry	Henderson Reservoir		ARSA Sprayfield	
Alternative Creek/Wood Bottom		Yes	No	Yes	No
Alternative 1	Х		Х		х
Alternative 2	Х	Х		Х	

Table	5_2.	Floments	Considered	for	Alternative	Development
I able	5-5.	Liements	Considered	101	Allemative	Development

Alternative 1 addresses regional storage and recycled water use area needs in the event that Henderson Reservoir is no longer in operation and the ARSA sprayfields are also decommissioned. Alternative 2 assumes that the continued operation of Henderson Reservoir is feasible and cost-effective. This alternative includes the expansion of the ARSA sprayfields to full capacity.

To be conservative, all disposal alternatives are evaluated based on 2036 "High" conditions (see **Table 5-2**). The RAS reservoir is based on the maximum estimated capacity of  $\pm 1,000$  AF. **Table 5-4** provides a summary of the basis for sprayfield and storage facility quantities for each alternative.

Table 5-4: Storage and Sprayfield As	Assessment of Alternatives
--------------------------------------	----------------------------

	RAS Reservoir + Dry Creek/Woodard Bottom Sprayfields				
	Alternative 1 Decommission Henderson Reservoir and ARSA Sprayfields	Alternative 2 Retain Henderson Reservoir and Expand ARSA Sprayfields			
Sprayfield Sites					
Expand ARSA Sprayfields (Acres)	0	100			
Dry Creek Sprayfields (Acres)	403	335			
Woodard Bottom Sprayfields (Acres)	115	115			
Sprayfield Site Total (Acres)	518	550			
Storage Facilities					
Henderson Reservoir	0	349			
RAS Reservoir	±1,000	1,068			
Storage Capacity Total	±1,000	1,417			

Notes:

1. Alternative 1 does not provide sufficient disposal or storage to meet worst-case 2036 "High" storage requirements.

The "Non-Recycled Water Alternative" would essentially be the continued implementation of current conditions, also equivalent to the "No Action Project." Sprayfields would continue to be irrigated with freshwater obtained by each respective landowners' water rights. Each of the alternatives is described in further detail in the following sections.

### 5.2.1 Regional Alternative 1

**Decommission Henderson/ARSA Sprayfields; Construct RAS Reservoir and Woodard Bottom/Dry Creek Sprayfields:** Alternative 1 includes the decommissioning of the Henderson Reservoir and abandonment of the existing ARSA disposal system and installs a new secondary effluent disposal system on the existing Woodard Bottom (115 acres) and Dry Creek irrigation fields. Storage would be constructed at the proposed site of the RAS reservoir. Alternative 1 is shown in **Figure 5-2** and consists of the following components:

- Decommission Henderson Reservoir
  - A bypass pipeline would be constructed around Henderson Reservoir so that it can be decommissioned.
  - <sup>o</sup> Henderson Reservoir would be drained and accumulated sludge and sediment removed.

WOODARD BOTTOM 115 ACRES DRY CREEK ALTERNATIVE 1: 403 ACRES ALTERNATIVE 2: 355 ACRES OND 5 RAS RESERVOIR ±1,000 AC-F1 LEGEND RESERVOIR PROPERTY BOUNDARY PIPELINE ALTERNATIVE 2 SPRAYFIELDS ALTERNATIVE 1 ADDITIONAL AREA POPE RANCH

#### Figure 5-2: Alternatives 1 and 2 Storage and Reuse Sites

Source: Developed for Regional Water Recycling Feasibility Study

- Construct recycled water sprayfields:
  - <sup>°</sup> Reuse Site Phase 1: Woodard Bottom property (115 acres)
  - <sup>°</sup> Reuse Site Phase 2: Dry Creek property (403 acres)
- Construct new ±1,000 AF reservoir at RAS
- Decommission/Abandon ARSA land application sites (Bowers Ranch and Hoskins Ranch). No demolition is included. Abandonment in place is assumed.
- Construct recycled water supply conveyance of 6,400 feet of 18-inch forcemain from lone Ponds to RAS Reservoir. This alignment would include a bridge mounting or trenchless crossing under a drainage on Dave Burbeck Rd, crossing a decommissioned railroad on Dave Burbeck Rd, and crossing Sutter Creek at an existing weir and pumphouse.
- Construct conveyance from RAS Reservoir to Dry Creek and Woodard Bottom sprayfields of 4,400 feet. It is assumed that both Dry Creek and Woodard Bottom can be supplied via gravity based on a preliminary review of existing topography. The pipeline to Woodard Bottom would need to cross Sutter Creek at the weir.
- Construct additional storage and disposal at a location to be determined to accommodate storage and disposal of flows beyond 2026 through 2036 "High" conditions, if required.

### 5.2.2 Regional Alternative 2

**Retain Henderson/ARSA Sprayfields; Construct RAS Reservoir and Woodard Bottom/Dry Creek Sprayfields:** Alternative 2 includes the continued use of Henderson Reservoir and expansion of the existing ARSA disposal system. This alternative also includes a new secondary effluent disposal system on the existing Woodard Bottom (115 acres) and Dry Creek (335 acres) irrigation fields. Storage would be constructed at the proposed site of the RAS reservoir. Alternative 2 is shown in **Figure 5-2** and consists of the following components:

- Retention of the existing Henderson Reservoir after it has been determined that the repair to the outlet pipeline is feasible.
- Reuse Site Phase 1: Expand existing ARSA land application sites
  - <sup>o</sup> Bowers Ranch (existing 24 acres expanded to 40 acres).
  - <sup>o</sup> Hoskins Ranch (existing 24 acres expanded to 60 acres).
- Construct recycled water supply conveyance of 6,400 feet of 16-inch forcemain from lone Ponds to RAS Reservoir. This alignment would include a bridge mounting or trenchless crossing under a drainage on Dave Burbeck Rd, crossing a decommissioned railroad on Dave Burbeck Rd, and crossing Sutter Creek at an existing weir and pumphouse.
- Construct new 1,068 AF reservoir at RAS
- Construct recycled water sprayfields:
  - <sup>o</sup> Reuse Site Phase 2: Sprayfield: Woodard Bottom property (115 acres)
  - <sup>o</sup> Reuse Site Phase 3: Dry Creek property (minimum 335 acres)
- Construct conveyance from RAS Reservoir to Dry Creek and Woodard Bottom sprayfields of 4,400 feet. It is assumed that both Dry Creek and Woodard Bottom can be supplied via

gravity based on a preliminary review of existing topography. The pipeline to Woodard Bottom would need to cross Sutter Creek at the weir.

## 5.2.3 Non-Recycled Water Alternative

The Non-Recycled Water Alternative also represents the No Action Project Alternative. With the implementation of either Alternative 1 or 2, there is no net offset of potable water since the implementation of the project alternatives is for the beneficial use of recycled water at sites that are not currently using potable water. There is no additional cost beyond the operation of the facilities.

## 5.3 Evaluation Methodology

This section discusses the evaluation criteria and methodology used in the alternatives analysis to select a preferred alternative. The evaluation criteria are divided into two categories: economic and non-economic criteria. The economic category is presented in terms of net present value, while the non-economic criteria consider implementation and long-term risk factors.

## 5.3.1 Economic Evaluation

The economic analyses of the alternatives include initial capital costs to acquire and place the facilities in service, annual O&M costs, and equipment replacement costs required to keep the facilities in service over the planning period. This planning-level comparison of alternatives uses a 25-year planning period, an inflation rate of three percent, and an interest rate of six percent. The following sections discuss the development of capital costs, O&M costs, and recurring costs.

### Capital Costs

Engineer's opinions of probable project costs (estimates) were developed for each of the alternative elements. Capital costs are presented in February 2015 dollars (monthly ENR Construction Index of 9961.75). The estimates were prepared using cost curves from published data, bid results from similar projects, and select existing cost estimates and unit cost factors previously developed for the project (including those presented in the 2012 Draft WWMP) that have been independently verified, modified, or updated by HydroScience.

The estimates are considered Class 5 estimates, based on the Association for the Advancement of Cost Engineering International (AACE) criteria. A Class 5 estimate is defined as a Conceptual Level or Project Viability Estimate, typically with engineering from 0% to 2% complete. Class 5 estimates are used to complete alternative comparisons, prepare planning level cost scopes, or evaluate design options and form the base work for the Class 4 Design Baseline or Control Estimate. Expected accuracy for Class 5 estimates typically range from minus 50% on the low side to plus 100% on the high side, depending on the technological complexity of the project, appropriate reference information, and the inclusion of an appropriate contingency of 35% is included in the estimated construction costs to account for unknown conditions, design completion level of the project, and bidding climate factors discussed above.

The total probable capital costs are developed by adding an allowance of 25% to the estimated construction costs to cover planning level activities, environmental reviews, legal, administration, construction services, change orders, and other related items.

The following sections describe the estimating procedures used in the economic analysis for each of the project alternative elements. Detailed cost estimates are included as **Appendix D**.

**Disposal/Reuse Sites:** As discussed in **SECTION 2.2.1**, the ARSA reuse sites consist of Bowers Ranch and Hoskins Ranch. Bowers Ranch is contracted to provide 40 acres of pastureland, which is currently approximately 60% developed for flood irrigation. Hoskins Ranch provides approximately 60 acres of pastureland, which is approximately 40% developed for spray irrigation. ARSA has an easement and agreement for the use of Hoskins Ranch for effluent reuse, which requires a minimum of 60 acres to be made available to ARSA for irrigation and a minimum of 25 AF/y of effluent to be made available to Hoskins Ranch.

The existing ARSA land application areas are relatively low maintenance, approximately 12 years old, and are in good condition. The majority of the land reuse sites are for cattle grazing. Continued use of both sites will require that ARSA negotiate new agreements with the property owners, which will incur additional legal and administrative costs. However, it is expected that expanding the existing fields will be more cost-effective than developing new sprayfields since the conveyance and initial infrastructure has already been developed.

As discussed in **SECTION 4.4.2**, Woodard Bottom and Dry Creek are located on land owned by Greenrock Ranch. Preliminary discussion with the owner has been favorable. Use of these fields would be subject to final negotiation of an agreement with the property owners, which will incur additional legal and administrative costs. The cost to retrofit these fields to recycled water would include the construction of a tailwater control system, onsite piping, outlet control, and augmentation of an existing irrigation system or construction of a new one. The unit capital costs to expand the ARSA fields and retrofit the existing irrigation fields on Greenrock Ranch to recycled water use sites is summarized in **Table 5-5**.

Disposal Site	Existing Sprayfield Area (acres)	Maximum Available Area (acres)	Unit Cost (\$ per acre)
Bowers Ranch	24	40	\$5,700
Hoskins Ranch	24	60	\$5,700
Woodard Bottom	0	115	\$9,700
Dry Creek	0	403	\$9,700

Table 5-	5. Capita	al Retrofit	Cost for	Spray	vfield Fx	nansion/	Conversion
Table J	J. Capite	a neu onu	COSCION	opra		pansion	5011461 31011

Notes

1. Costs include grading, tailwater control system, onsite piping, sprinklers, fencing, and monitoring wells

2. The cost to buildout ARSA sprayfields is estimated to be \$4,200/Acre plus a 35% construction contingency, which is equivalent to \$5,700/Acre.

3. The cost to retrofit existing irrigation to recycled water irrigation is estimated to be \$7,200/Acre plus a 35% construction contingency, which is equivalent to \$9,700/Acre.

At this time, the Regional Partners and the property owner have not yet negotiated responsibility for retrofit cost of the Greenrock Ranch properties. It is expected that ARSA will negotiate terms with Hoskins and Bowers Ranch for conversion of the remaining sprayfields. However, letters of intent/interest have been obtained from the proposed landowners and are included as **Appendix F**.

**Existing ARSA Pipeline Replacement:** The cost for replacing the ARSA pipeline was analyzed in the 2012 Draft ARSA WWMP. That study assumed that the pipeline would be fully replaced in phases and completed by the end of the 25-year planning period. An additional cost of 10% was added to the cost for removal and disposal of the existing ARSA pipeline. A net discount rate of 3% was used in calculating the 25-year Present Worth value of the annual ARSA pipeline reserve fund. The 2012 Draft ARSA WWMP did not consider upgrades of the ARSA pipeline segment from Hoskins Ranch to Preston Reservoir, since the regional alternative had not been defined at the time of that study.

ARSA pipeline replacement costs presented in this section are based on the costs in the 2012 Draft ARSA WWMP, modified to address the entire reach of ARSA pipeline from the Sutter Creek WWTP to Preston Reservoir, and converted to 2015 dollars.

Based on flow projections and water balances presented herein, the segment of ARSA pipeline from Sutter Creek WWTP to Henderson Reservoir would be upgraded to 27-inches diameter to convey peak flows from the Sutter Creek WWTP to Henderson Reservoir. From Henderson Reservoir to Preston Reservoir, the pipeline would be 15-inches, given that the reservoir provides flow attenuation. In the event that the Henderson Reservoir was decommissioned, the pipeline from Henderson to Preston would need to increase in diameter to approximately 27-inches to convey unattenuated peak wet weather flows.

It is beyond the scope of this study to evaluate lower cost alternatives in lieu of complete pipeline replacement, however it is likely that the cost could be significantly reduced after more detailed study. Lower cost alternatives include installation of a parallel pipeline next to the existing to provide equivalent capacity, and rehabilitation (i.e. slip-lining) of existing pipes to extend service life. Pipeline diameters can also be optimized on a segment-by-segment basis based on pipe slope. To facilitate this study, a condition assessment of the existing pipeline and a survey of each segment would be required.

Preliminary estimate to replace this asset from Sutter Creek to Preston Reservoir is \$38M, assuming continued use of Henderson Reservoir and a unit cost of \$25/in-diameter including the gravity main and manholes. **Table 5-6** provides the engineer's opinion of probable project cost to completely replace the ARSA pipeline over a 25-year planning period and provide the capacity required for Alternative 2, which assumes that Henderson Reservoir will remain.

Item	Unit Cost	Unit	Quantity	Estimated Cost
27" Gravity Pipeline	\$675	LF	20,500	\$13,837,500
15" Gravity Pipeline	\$375	LF	22,300	\$8,362,500
Subtotal	\$22,200,000			
35% Construction Contingency	35%	of Subtotal	1	\$7,770,000
Removal of Exist. Pipe	10%	of Subtotal	1	\$2,220,000
Engineering, Legal, Admin, etc.	25%	of Subtotal	1	\$5,550,000
Total Present Replacement Cost	\$37,740,000			
Annual Replacement Cost over 25 Ye	\$2,167,328			

### Table 5-6: ARSA Pipeline Replacement Cost Estimate (Regional Alternative 2)

**Pump Stations:** A cost curve was used to estimate the cost for the new pumping stations to convey recycled water to new reservoirs. The cost curve used for the analysis was taken from Figure 29-3 in Pumping Station Design, Third Edition and is included in **Appendix D**. The cost curve is intended to provide a relative cost comparison for pump stations construction with or without the continued use of Henderson Reservoir.

**New Pipelines:** Gravity pipeline costs are based on a unit cost of \$20 per inch-diameter per lineal foot of pipe (plus a 35% construction contingency), and include mobilization; demobilization; traffic control; normal sheeting, shoring and bracing; excavation and dewatering; standard manholes at typical intervals; native soils surface restoration; erosion, sediment and stormwater control; overhead; and profit.

Pressure pipeline costs are based on a unit cost of \$18 per inch-diameter per lineal foot of pipe (plus a 35% construction contingency), and include mobilization; demobilization; traffic control; normal sheeting, shoring and bracing; excavation and dewatering; standard isolation and air/vacuum valves at typical intervals; native soils surface restoration; pressure testing; erosion, sediment and stormwater control; overhead; and profit.

**Storage Facilities:** The RAS storage reservoir is assumed to have an earthen dam composed of soils excavated from the proposed storage site, stormwater diversion facilities, outlet piping and spillway, a perimeter access road, and electrical facilities. For the purpose of the alternatives analysis, it is assumed that the RAS reservoir would include full buildout of the reservoir to the maximum apparent cost-effective size based on the existing topography of the site, corresponding to ±1,000 AF. This size addresses the storage requirement scenario assuming retention of Henderson Reservoir but does not meet the 2036 "High" condition without Henderson Reservoir.

A cost-effective strategy for constructing the RAS reservoir in phases was not apparent at the time of this study, so this alternative assumes full buildout of the reservoir during the first phase. Sludge and sediment removal costs for Henderson Reservoir were based on estimates from the 2012 Draft ARSA WWMP which were escalated to February 2015 dollars using the monthly ENR Construction Index.

### O&M Costs

The extent of O&M costs is expected to be minimal as a majority of the operating costs would be associated with the operation of the sprayfields, which would be borne by the property owner. The party responsible for the operating costs for storage has yet to be determined, though is expected to be similar for all alternatives. As such, no O&M costs were included as part of this analysis. These costs would be similar under all alternatives evaluated and are not expected to be a factor in determining the preferred regional alternative.

### Equipment Replacement Costs

The extent of equipment replacement costs is expected to be minimal as a majority of the equipment would be associated with the operation of the sprayfields, which would be borne by the property owner. The party responsible for the equipment replacement costs for supply to the storage reservoirs has yet to be determined, though is expected to be similar for all alternatives. As such, no equipment replacement costs were included as part of the alternatives analysis. These costs would be similar under all alternatives evaluated and are not expected to be a factor in determining the preferred regional alternative.

#### Land Acquisition and Easements

It is not expected that land acquisition will be required for the alternatives considered. Pipeline easement acquisition costs were incorporated into the unit cost of pipeline construction per linear foot of pipe

### 5.3.2 Non-Economic Evaluation

The non-economic factors are presented in this analysis as a relative comparison in terms of positive and negative impacts for decision factors that have distinction between the alternatives. The non-economic factors evaluated in this analysis include institutional and public acceptance; ease of O&M; implementation time and constructability; permits and regulatory; and legal and right-of-way. **Table 5-7** describes the non-economic factors applied in this alternatives analysis.

<b>Decision Factor</b>	Description
Institutional/ Public Acceptance	Likelihood of affected stakeholders to be accepting of the alternative and reach inter- agency agreements. Considers impacts on the community and their effects on community acceptance.
Ease of O&M	The level of ease of which the facilities can be operated. Considers the risk of unforeseen O&M challenges that could result in unexpected operation costs, fines, or other negative impacts.
Implementation Time/ Constructability	The likelihood that the alternative is completed in time to meet critical deadlines. Considers unknowns and construction complexities that could unexpectedly delay completion.
Permits/ Regulatory	The likelihood that the required permits can be secured, permit conditions can be complied with, and the costs of compliance will be consistent with the defined alternatives. Considers the potential for permit violations and future regulatory changes that have a negative impact on the cost and reliability of compliance.
Legal/Right-of-Way	The complexity of and ability to secure and comply with the required legal agreements and rights-of-way that must be secured and maintained for the 25-year planning period. Considers unexpected delays, compliance with entitlements, or potential cost increases associated with securing the required legal agreements and rights-of-way.
Environmental	Potential direct and indirect environmental impacts

#### **Table 5-7: Non-Economic Decision Factors**

#### Comparative Rating Methodology

The non-economic alternatives evaluation employs the use of a weighted matrix that considers the relative importance (weight) of each decision factor. This analysis presents a comparison of each of the alternatives by assigning a relative rating for each alternative on a scale of 1 to 5, with 5 being the most desirable/favorable.

First, in order to conduct the alternatives comparison, factor importance must be evaluated to develop the weighted matrix. This analysis employs the Pairwise Comparison Method to develop factor importance. In this analysis, each decision factor identified in **Table 5-7** is evaluated head-to-head with the other decision factors to identify relative importance.

Each factor is compared to each of the other factors and rated based on relative importance. **Table 5-8** describes the criteria for rating each of the decision factors. The ratings are totaled for the leading Factor (Factor A) and normalized such that the highest value is equal to 10. The resulting normalized totals represent the weighting factors that will be used for the development of the alternatives analysis.

If Factor A is:	Factor A	Factor B
Much more important than Factor B	5	1
More important than Factor B	4	2
Equal in importance to Factor B	3	3
Less important than Factor B	2	4
Much less important than Factor B	1	5

#### Table 5-8: Comparative Rating Criteria

Each factors' ratings are totaled and normalized for use in the weighted matrix. **Table 5-9** presents the pairwise comparison of each decision factor.

### Table 5-9: Pairwise Comparison of Decision Factors

	Factor vs Factor	Institutional Issues/ Public Acceptance	Ease of O&M	Implementation Time/ Constructability	Hermits/Regulatory	ថ្មី យ Legal/Right-of-Way	Environmental Impact	Total	Normalized Total
	Institutional Issues/ Public Acceptance		4	4	3	4	3	18	9
	Ease of O&M	2		4	2	4	2	14	7
actor A	Implementation Time/ Constructability	2	2		2	4	1	11	6
ш	Permits/Regulatory	3	4	4		5	3	19	10
	Legal/Right-of-Way	2	2	2	1		2	9	5
	Environmental Impact	3	4	5	3	4		19	10

## 5.4 Alternatives Evaluation

This section presents the results of the analysis for alternatives both with and without the continued use of Henderson Reservoir.

### 5.4.1 Economic Analysis

**Table 5-10** is a summary of the costs for each alternative. Additional detail is provided in **Appendix D**.

Table 5-10: Economic Analysis Results (in \$Millions)

	RAS Reservoir + Dry Creek/Woodard Bottom Sprayfields				
	Alternative 1 Decommission Henderson Res. and ARSA Sprayfields	Alternative 2 Retain Henderson Reservoir and Expand ARSA Sprayfields			
Effluent Conveyance					
Gravity Pipeline	\$4.30	\$2.36			
Forcemain	\$4.72	\$4.20			
Pump Station	\$2.16	\$1.22			
Effluent Conveyance Subtotal	\$11.18	\$7.78			
Storage Facilities					
Henderson Reservoir Sludge Removal	\$1.39	\$1.39			
Henderson Reservoir Decommission	\$0.60	\$0			
Henderson Reservoir Improvements	\$0	\$0.11			
RAS Reservoir Buildout	\$18.30	\$13.07			
Storage Facility Subtotal	\$20.29	\$14.57			
Sprayfield Site Development/Retrofit					
Expand ARSA Sprayfields	\$0	\$0.30			
Woodard Bottom Sprayfields	\$1.12	\$1.12			
Dry Creek Sprayfields	\$3.91	\$3.25			
Sprayfield Site Subtotal	\$5.03	\$4.67			
Total Estimated Construction Costs	\$36.49	\$27.00			
Engineering, Legal, Admin, etc. @ 25%	\$9.12	\$6.75			
Total Capital Costs	\$45.62	\$33.75			
Total Annual Recycled Water Demand	2,569	2,498			
Unit Cost (\$/AF)	\$17,760	\$13,510			
Rank (1=Lowest Cost, 2=Highest Cost)	2	1			

Notes:

1. All costs in February 2015 dollars. Capital costs include a 35% construction contingency.

There would be no realized cost for the Non-Recycled Project Alternative as this is equivalent to the No Action Project Alternative. As such, there is no true apples-to-apples cost comparison that can be evaluated between the three alternatives.

## 5.4.2 Non-economic Analysis

The non-economic analysis of each alternative is documented in the decision matrix shown in **Table 5-11**. Decision factor importance weights were developed by a pairwise comparison and provided in **Table 5-9**. Ratings for each alternative are provided as a relative comparison to the other alternatives. Rating values range from 1 to 5, with 5 being the most desirable.

DECISION FACTORS														
	Institutional Issues/	Public Acceptance		Ease of O&M	Implementation Time/	Constructability		rermus/regulatory		Legai/Kignt-of-way	Environmental	Impacts	tal Weighted Rating - gher Value Preferred	1=Most Preferable, st Preferable)
Weighting Factor	9	9		7	(	6	1	0		5	1	0	Tot Hiç	ank ( Lea:
from Table 5-9	R	WR	R	WR	R	WR	R	WR	R	WR	R	WR	WR	₽ 8 8 4
Alternative 1: Decommission Henderson and ARSA Sprayfields, plus RAS Reservoir + Woodard Bottom/ Dry Creek	3	27	3	21	3	18	3	30	3	15	3	30	141	2
Alternative 2: Improve Henderson and Expand ARSA Sprayfields plus RAS Reservoir + Woodard Bottom/ Dry Creek	4	36	3	21	4	24	3	30	2	10	4	40	161	1

Table 5-11: Non-Economic Analysis Results

Notes:

1. Rating for each decision factor is on a scale from 1 to 5, with 5 being the highest and most favorable.

2. R = Rating; WR = Weighted Rating

Each element of the alternatives is rated independently in order to develop an overall rating for each of the alternatives. The two variable elements evaluated include Henderson Reservoir and ARSA sprayfields improved and expanded use versus decommissioning those facilities. It has yet to be determined if the Henderson reservoir retention alternative is viable and is, to some extent, outside of the control of the Regional Partners.

A narrative description of the basis for rating each of the alternatives is presented in **Table 5-12**. The detailed rating spreadsheets are provided in **Appendix E**.

<b>Decision Factor</b>	Comments
Institutional Issues/ Public Acceptance	Alternatives 1 and 2 involve a similar level of reliance on the RAS property for storage and disposal/recycling of regional flow though Alternative 2 is slightly preferred since the ARSA sprayfields would continue to be in operation and would allow for some flexibility in the event of a future contractual dispute. There is also an increased risk for Alternative 1 that additional storage would need to be developed elsewhere.
Ease of O&M	Continued operation of Henderson Reservoir and the ARSA sprayfields will require ARSA staff to continue to manage the storage and distribution of recycled water, in addition to the operation of the new regional storage and disposal system. As a result, it is expected that Alternative 1 (which assumes decommissioning of Henderson reservoir and the ARSA sprayfields) would be favorable to Alternative 2 from the perspective of operational simplicity. An offsetting consideration is that having Henderson Reservoir as part of the system offers the Regional Partners more operational flexibility to address varying flows and seasonal conditions.
Implementation Time/ Constructability	The time and constructability to implement Alternatives 1 and 2 would be similar; however, Alternative 2 would be preferred since there would be some flexibility in the timing of the reservoir construction afforded by the continued operation of the Henderson Reservoir.
Permits/Regulatory	The storage and land disposal of recycled water for both alternatives requires permitting with the Regional Water Board, and this carries an associated element of risk, though there would be no significant differences between the alternatives.
Legal/Right-of-Way	Alternatives 1 and 2 will require a similar amount of negotiation and allowances with the property owner for construct the new RAS Reservoir. Additionally right of way will need to be acquired to serve both sprayfields. Alternative 1 is slightly more favorable than Alternative 2 because additional right of way will be required to serve more of the Dry Creek sprayfield area.
Environmental Impact	The environmental impact for the storage and disposal development would be similar for both alternatives. However, the potential environmental impacts related to decommissioning the dam in Alternative can be significant. Any habitats that have been created with the development of the dam will be affected. Direct environmental impacts may occur within active construction zones, such as for the dam decommissioning, which can impact surface waters (i.e. local creeks) as well as the subsurface (i.e. soil and groundwater).

#### Table 5-12: Basis for Rating Alternatives for each Decision Factor

### 5.5 Conclusions

If the Henderson Reservoir outlet can be repaired without triggering further improvement to the dam, then Alternative 2 is preferred. Alternative 2 has the best non-economic analysis score and the lowest present worth cost of all alternatives. This alternative would include expansion of the ARSA sprayfields, which would require less development of Dry Creek sprayfields to supplement reuse/disposal.

If repair of the Henderson Reservoir outlet is not a viable option and the reservoir and sprayfields must be decommissioned, then Alternative 1 would be preferred. This alternative is less preferred primarily due to the additional storage required and sprayfield development at RAS, which would require additional infrastructure and right-of-way to supply it with recycled water.

Phasing opportunities for these storage alternatives are limited. Sprayfield development can be phased in accordance with disposal needs; however, realistically, it is expected that the property owner will likely prefer to develop all sprayfields simultaneously so that they will not need to operate two separate irrigation systems or reduce crop production.

## 5.5.1 Operation of COWRP

One of City of Ione's stated goals for this study is to continue the operation of the COWRP and beneficial reuse of tertiary effluent for irrigation of COGC. Based on a spreadsheet dated May 20, 2015 provided by City of Ione and ARSA, the estimated annual operational costs are \$274,284 to operate and maintain the COWRP facility, with revenue from the sale of recycled water to COGC equivalent to \$70,000. If the Regional Partners or COGC decide to end this use of recycled water, additional acreage would be needed at the Dry Creek and/or Woodard Bottom sprayfields. The additional sprayfield capacity estimated to replace COGC demand is 72 acres. Enlargement of planned conveyance systems may also be needed.

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# SECTION 6 – RECOMMENDED FACILITIES PROJECT PLAN

This section presents the Capital Improvement Plan (CIP) for the preferred alternative (Regional Alternative 2), addresses cost-sharing between the Regional Partners, and discusses potential opportunities for funding.

## 6.1 Recommended Alternative Description

The preferred alternative is Regional Alternative 2. For this alternative it is assumed the use of Henderson Reservoir will continue, the existing ARSA disposal system will be expanded, and the ARSA conveyance pipeline will be improved. The regional system would involve the construction of a new secondary effluent disposal system on the existing Woodard Bottom and Dry Creek irrigation fields, and new storage constructed at the proposed site of the RAS reservoir. This alternative provides adequate storage and disposal capacity through to the 25-year planning horizon of this study. A detailed description of this alternative is provided in **SECTION 5**. A preliminary letter of interest/intent to use recycled water when it becomes available to the Woodard Bottom and Dry Creek irrigation fields has been provided by the landowner and is included as **Appendix F**.

Regional facilities are assumed to be those facilities that benefit all Regional Partners, including all pumping, conveyance, and storage facilities beginning downstream of the lone ponds and continuing to and including the proposed reuse sites. The Regional Partners are still in discussions regarding the potential apportionment of the costs associated with ARSA pipeline improvements and conversion of ranch lands to recycled water irrigation (tailwater control system, onsite piping, outlet control, etc.). Note that these elements are essential components of the recommended alternative.

The Regional Partners may seek outside grant and loan funding to plan, design, and construct these projects; and may also seek grant and loan funding for related improvements to infrastructure upstream of the regional system in order to facilitate implementation of the regional project and provide the means to convey and reuse all projected flows. This could include repair and upgrade of the ARSA pipeline and construction of sprayfield expansions in the ARSA system.

## 6.2 Capital Improvement Plan

This section presents a CIP for development of the regional system as a series of construction projects. As discussed in **SECTION 5**, options to phase construction of the regional system in accordance with demand growth are limited due to the configuration of existing and proposed facilities. With the exception of new sprayfield development, the conveyance and storage elements are envisioned to consist of a single new reservoir and single transmission lines between facilities which are more economical on a life-cycle cost basis to construct in one step, sized for buildout.

## 6.2.1 Project 1: Pumping and Conveyance from Ione Ponds to Woodard Bottom

The intent of this project is to convey recycled water to the new reuse/disposal site at Woodard Bottom and eventually fill the proposed RAS reservoir when construction of that facility is complete. The objective would be to first construct recycled water supply conveyance consisting of approximately 6,400 feet of 16-inch force main from the lone Ponds to the irrigation supply point at Woodard Bottom. This alignment would include crossing a drainage on Dave Burbeck Road via either bridge mounting or trenchless pipeline construction, crossing a decommissioned railroad on Dave Burbeck Road, and crossing Sutter Creek at an existing weir and pumphouse. The potential for Native American grinding rock sites along the alignment exists. Potential environmental impacts would be assessed in a future phase of project development and may result in adjustments to the pipeline alignment or construction techniques.

A 3,000 gpm pump station would be constructed at the lone Ponds to serve the pipeline and eventually fill the reservoir. Pump installation could be completed in phases as capacity needs increase over time. Assuming a triplex pump station, all components of the pump station would be constructed and two of the three pumps would be installed as part of Phase 1. The final pump would be installed as a second phase in Project 2. The proposed design of the pump station and phasing will be determined during detail design.

There are approximately 115 acres of available irrigation area within the Woodard Bottom property. Retrofit of the site to permit irrigation with recycled water in compliance with Title 22 regulations will require purchase and installation of wheel line irrigation systems, water delivery pumps from the reservoir to the sprayfields, and tailwater containment and return systems, constructed in accordance with SWRCB requirements. The recycled water would be used for irrigation of fodder crops for pasture for animals not producing milk for human consumption. The Regional Partners are discussing how the costs of site retrofit may be apportioned.

## 6.2.2 Project 2: Construct Rancho Arroyo Seco (RAS) Reservoir

Project 2 is to construct the new 1,068 AF reservoir at RAS as well as the conveyance pipeline from the irrigation supply point at Woodard Bottom up to the reservoir. The third pump would also be installed at the 3,000 gpm pump station constructed as a second phase of Project 1.

The new reservoir would be constructed in a single phase and reuse native materials to the extent possible. Construction would include excavation for the reservoir, grading, and construction of the perimeter dike as well as construction of the access road up to and around the reservoir. It may be possible to phase construction of the reservoir depending on site-specific findings and phasing needs. Phasing of reservoir construction would require further study in the Feasibility Study phase.

The conveyance pipeline would be a 16-inch forcemain, approximately 4,400 feet in length. A separate parallel 16-inch gravity pipeline (2,300 feet) would be constructed to serve Woodard Bottom from the reservoir. It is assumed that Woodard Bottom can be supplied via gravity based on a preliminary review of existing topography.

## 6.2.3 Project 3: Gravity Conveyance from RAS Reservoir to Dry Creek Irrigation

Project 3 will be to construct the 24-inch gravity pipeline (2,100 feet) to serve Dry Creek from the reservoir. It is assumed that Dry Creek can be supplied via gravity based on a preliminary review of existing topography.

There are approximately 403 acres of available irrigation area within the Dry Creek property of which 335 acres would be needed to meet projected disposal needs. Retrofit of the site to permit irrigation with recycled water in compliance with Title 22 regulations will require purchase and installation of wheel line irrigation systems, water delivery pumps from the reservoir to the sprayfields, and tailwater containment and return systems, constructed in accordance with SWRCB requirements. The recycled water would be used for irrigation of fodder crops for pasture for animals not producing milk for human consumption. The Regional Partners are discussing how the costs of site retrofit may be apportioned.

The property owner will have the option to convert all 403 acres to recycled water use sites if desired. The 24-inch pipeline will have enough capacity to accommodate the demand up to the 403 acres.

## 6.3 Implementation Schedule

**Table 6-1** presents a preliminary schedule for each of the projects.

 Table 6-1: Proposed Implementation Schedule

Task	Start	End
Preliminary Agency/Landowner Agreements	Aug 2016	Jan 2017
Initial Funding Agreement	Jan 2017	May 2017
Preliminary Design	May 2017	Dec 2017
Detailed Design	Dec 2017	Dec 2018
Environmental Clearances	Dec 2017	Dec 2018
Final Landowner Agreements	May 2018	Dec 2018
Final Funding Agreement	Sep 2018	Dec 2018
Construction – ARSA System Improvements (Pipeline Improvements and Bowers and Hoskins Sprayfield Expansions)	Feb 2019	Feb 2021
Construction – Project 1 (Pumping and Conveyance from Ione Ponds to Woodard Bottom)	Feb 2019	Feb 2021
Construction – Project 2 (Construct RAS Reservoir)	Feb 2019	Feb 2022
Construction – Project 3 (Gravity Conveyance from RAS Reservoir to Dry Creek Irrigation)	Implement W	/hen Needed

# 6.4 Summary of Potential Environmental Impacts

Direct environmental impacts may occur within active construction zones, which can impact surface waters (i.e. local creeks) as well as the subsurface (i.e. soil and groundwater). The disruption of habitat can affect native species as well as migratory birds, if trees or areas within the construction zones are identified as nesting sites. As mentioned above, the potential for Native American grinding rock sites along the proposed alignment exists. Long-term impacts associated with recycled water irrigation activities can include surface water quality if there is active runoff from irrigation sites. To mitigate this, tailwater return systems will be in place to capture any potential runoff.

Indirect impacts may occur to the watershed where construction is occurring; runoff from construction areas can affect downstream waterways. Another indirect impact will be to the current irrigation supply source water. Assuming the landowner is using surface water, this project will provide the landowner an alternate source so that it will not be necessary to use surface water, making surface water available to downstream habitats and water rights. This is expected to be a beneficial impact.

Potential environmental impacts would be assessed in a future phase of project development and may result in adjustments to the pipeline alignment or construction techniques. Any environmental assessment conducted will be in compliance with the California Environmental Quality Act (CEQA) or CEQA-Plus, as necessary, to mitigate any potential impacts and meet potential funding requirements.

### 6.4.1 Climate Change

While the overall impact to climate change may be small, it is the intent to implement energy efficient facilities where possible. Pumps may be equipped with variable frequency drives (VFD). VFDs can vary the output speed of the motor to meet the water demand conditions. Using recycled water is considered an adaptation measure to the effects of climate change and will help to reduce the impact to the surface water and groundwater resources.

## 6.5 Summary of Costs

This section presents the engineers opinions of probable project cost associated with the construction of the proposed regional facilities as well as the estimated annual O&M cost to operate those facilities.

### 6.5.1 Capital Cost Estimate

**Table 6-2** provides a summary of the engineer's opinions of probable project cost for each element of the regional projects described above. Refer to **SECTION 5.3.1** for a discussion of how these costs were derived.

#### Table 6-2: Capital Improvement Plan Estimated Capital Cost

Project and Components	Cost (\$Millions)
Project 1: Pump Station and Forcemain	\$3.56
Pump Station (2 of 3 pumps) at Pond 5	\$1.07
6,400 feet of 16-inch force main from Pond 5 to Woodard Bottom	\$2.49
Project 2: Reservoir and Conveyance/Woodard Bottom Supply	\$15.92
Pump Station (3 of 3 pumps)	\$0.15
RAS Reservoir Buildout	\$13.07
4,400 feet of 16-inch force main from Woodard Bottom to RAS	\$1.71
2,300 feet of 16-inch gravity pipeline from RAS to Woodard Bottom	\$0.99
Project 3: Gravity Pipeline	\$1.36
2,100 feet of 24-inch gravity pipeline from RAS to Dry Creek	\$1.36
Total Estimated Construction Costs	\$20.84
Engineering, Legal, Admin, etc. @ 25%	\$5.21
Total Capital Costs	\$26.05
Total Annual Recycled Water Demand (AF/Y)	2,232
Unit Cost (\$/AF)	\$11,671

Notes:

1. All costs in February 2015 dollars. Capital costs include a 35% construction contingency.

 The Regional Partners are still in discussions regarding the potential apportionment of the costs associated with ARSA pipeline improvements and retrofit of ranch lands to recycled water irrigation (tailwater control system, onsite piping, outlet control, etc.). These costs currently not included above. However these elements will need to be implemented in conjunction with the recommended alternative.

### 6.5.2 Operations and Maintenance (O&M) Cost Estimate

Regional facilities requiring O&M by the Regional Partners will include the operation of the pump station and COWRP. It is expected that the O&M for the pump station will require staffing, compliance reporting, energy, and a reserve fund for rehabilitation and replacement of parts. **Table 6-3** provides an estimate of annual costs for the regional facilities' O&M.

Table 6-3: Estimated	Annual Costs for	Regional Pum	ping, Storage, a	nd Disposal Facilities

Components	No. of Units	\$/Unit	Cost
Operations Staff (hours)	2,080 hours	\$50	\$104,000
Pump Station Operation (121 hp x 12 hrs/day)	396,300 kWh	\$0.10	\$39,600
Annual Reporting (quarterly and annual reporting)	5 reports	\$2,500	\$12,500
Annual Replacement Reserve Fund <sup>1</sup>	1	\$38,900	\$38,900
Total Estimated Annual Costs	\$195,000		

Notes:

1. Annual replacement reserve fund for the pump station is assumed to be the annualized cost of 100% of the present worth construction cost every 40 years.

Based on a spreadsheet dated May 20, 2015 provided by City of Ione and ARSA, the estimated annual operational costs for the COWRP are \$274,284 to operate and maintain the COWRP facility. These costs include salary and employees benefits, utilities (water and power), general

facility maintenance, chemicals, professional and contractual services, permitting and administration fees, sludge costs, and capital replacement.

# 6.6 Regional Partners Cost-Sharing

All regional projects will be developed for the intended purpose of managing regional effluent. As such, the cost to develop facilities will be borne by all entities under a regional agreement, which has yet to be developed. Cost-sharing would be applied to both capital projects and O&M costs for the various regional facilities. Possible cost-sharing scenarios are as follows:

- Cost based on contractual flows: The Regional Partners can use the contractual maximum flows as the basis for determining percentage of cost that each entity is responsible for. This is most appropriate for apportioning the capital cost of facilities based on the concept that each Regional Partner is purchasing a percentage of the total system capacity and is allocated that share of capacity in the governing agreement. Reservoir capital cost sharing could be calculated based on maximum storage volume utilized by each entity in a 100RP rainfall condition, while conveyance system cost sharing could be calculated based on maximum day flow.
- Cost based on actual flows: The Regional Partners can use measured annual average flows as the basis for determining percentage of cost that each entity is responsible for. This is most appropriate for apportioning the O&M cost of facilities based on the concept that the annual total volume discharged by each Regional Partner largely determines the O&M cost of operating the system. O&M costs would be apportioned each year based on current average flows.

Note that, historically, the Regional Partners have specified contractual flows as maximum annual totals with monthly limitations on flows. The future agreement will likely also incorporate monthly maximum volumes to address how the Regional Partners will coordinate their discharges with the seasonal variations of rainfall and sprayfield capacity. The future agreement may also specify instantaneous maximum flows to address the peak conveyance capacity of pipelines and pump stations. The agreement could address how these flows would be measured, tallied, and reported, and how the Regional Partners would work together to coordinate operation of the system.

As an example, a possible cost-sharing scenario is presented in **Table 6-4** in which capital costs are proportioned based on projected "2036 High" flows assuming no percolation at the lone ponds, development of GRR with no credit taken for potential recycled water use on-site, and CDCR using their current contractual flow limit (see **Table 3-13**).

<b>Regional Partner</b>	2036 High Flows	% Responsibility	Cost Breakdown (\$M)
ARSA/Sutter Creek	1,547	48.3%	\$12.58
CDCR	341	10.6%	\$2.76
City of Ione	1,318	41.1%	\$10.71
Total	3,206	100%	\$26.05

#### Table 6-4: Example Capital Cost-Sharing Scenario

# 6.7 Funding Opportunities

There are a number of funding opportunities that are available for financing recycled water projects. A list of funding programs, eligibility requirements, and funding terms are provided in **Table 6-5**.

Table	6-5:	Funding	Орро	rtunities
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Purpose	Eligibility Requirements	Eligible Uses	Funding Limits	Funding Limits Terms/Dates			
California Infrastructure and Economic Development Bank (I-Bank) – Infrastructure State Revolving Fund (ISRF) Program (Loan)							
<ul> <li>Provide financing for public infrastructure projects such as:</li> <li>environmental mitigation</li> <li>port facilities</li> <li>power and communications transmission or distribution facilities</li> <li>public transit</li> <li>solid waste collection and disposal</li> <li>defense conversion</li> <li>military infrastructure</li> </ul>	Applicant may be any subdivision of a local or state government. Applicant may also be a company, corporation, association, partnership, firm, or other entity or group of entities organized as a public benefit not-for-profit entity engaged in business or operations within the state. Certain projects may require such entities to apply in conjunction with a Sponsor. Project must promote economic development and attracts, creates, and sustains long-term employment opportunities.	<ul> <li>Construct or modify:</li> <li>educational, cultural, and social facilities</li> <li>public infrastructure, purchase and install pollution control or noise abatement equipment</li> <li>parks and recreation facilities</li> <li>docks, harbors, piers, marinas</li> <li>facilities for and/or transmission or distribution of electrical energy, natural gas, and telecommunication</li> <li>air and rail transport of goods, including parking facilities</li> <li>transfer stations, recycling centers, sanitary landfills, waste conversion and recycling facilities</li> <li>facilities for successfully converting military bases</li> <li>facilities on or near a military installation that enhance military operations acquire land in conjunction with such project</li> </ul>	\$50,000 to \$25 million or more with Board approval	<ul> <li>The interest rate benchmark is</li> <li>Thompson's Municipal Market Data Index.</li> <li>Staff may adjust the interest rate based upon factors that include:</li> <li>Unemployment,</li> <li>Medium Household Income,</li> <li>Environmental,</li> <li>Other special circumstances</li> <li>The I-Bank Board has final approval of the interest rate. Maximum 30 year term</li> <li>Open application process</li> </ul>			

Purpose	Eligibility Requirements	Eligible Uses	Funding Limits	Funding Limits Terms/Dates		
California Department of Water Resources – Integrated Regional Water Management (Prop 1 - Planning and Implementation Grant)						
Grant funds for development and revisions of IRWM Plans, and implementation of projects in IRWM Plans. Goals of Projects: (a) help water infrastructure systems adapt to climate change, including, but not limited to, sea level rise, (b) provide incentives for water agencies throughout each watershed to collaborate in managing the region's water resources and setting regional priorities for water infrastructure, and (c) improve regional water self- reliance consistent with Section 85021.	Public Agencies, Nonprofit Organizations 501(c)(3) qualified to do business in California, Federally recognized Indian Tribes, State Indian Tribes listed on NAHC consultation list, Public Utilities, Mutual Water Companies	<ul> <li>Including, but not limited to:</li> <li>Water reuse and recycling</li> <li>Water-use efficiency and water conservation</li> <li>Surface and underground water storage,</li> <li>Water conveyance facilities,</li> <li>Watershed protection, restoration, and management projects,</li> <li>Conjunctive use ,</li> <li>Water desalination projects,</li> <li>Decision support tools,</li> <li>Improvement of water quality,</li> <li>Storm water resource management</li> </ul>	Proposition 1 bond funding allocation for the entire program is \$510 million to 12 funding areas. \$51M for Disadvantaged Community (DAC) Involvement Grants and Expenditures; \$51M for DAC Project Grants; \$5M for Planning Grant Solicitation; and \$367.3M for Implementation Grants. Relevant solicitation documents will have max/min amount of funds available and funding limits.	DWR anticipates to release the final 2016 IRWM Guidelines, Planning Grant Proposal Solicitation Package (PSP), and DAC Involvement (DACI) Request For Proposals (RFP) in June 2016. Schedule for solicitations for DAC projects and implementation program has not been established yet.		
State Water Resources Control Board – Water Recycling Funding Program – Construction Loan and Grant Program						
Provide construction loans and grants for water recycling projects	Public Agencies, Water Utilities regulated by the CPUC, Federally recognized Tribes, and Mutal Water Companies with the intent to construct Municipal wastewater reclamation facilities.	Construction of water recycling distribution, storage, pumping, treatment, including groundwater recharge facilities and spreading basins	Prop 13 Construction grants are limited to 25 percent of the eligible construction cost or \$4 million whichever is less. Prop 1 grants are limited to 35% of the eligible construction cost or \$15 million whichever is less.	Continuous application process Interest rate is ½ of the general obligation bond Repayment term of 30 years		
US Bureau of Reclamation – WaterSMART: Title XVI Water Reclamation and Reuse Program (Grants and Cooperative Agreements)						
Provide Federal funding for the study or construction of projects that reclaim and reuse municipal, industrial, domestic or agricultural wastewater and naturally impaired ground or surface waters.	No requirements for studies. Project-specific construction authorization is required to receive Federal funds for construction	Reclaimed water can be used for a variety of purposes such as environmental restoration, fish and wildlife, groundwater recharge, municipal, domestic, industrial, agricultural, power generation, or recreation.	The maximum Federal cost share for studies is 50% and for construction is the lesser of \$20 million or 25% of the total project costs.	None		

## **SECTION 7 – REFERENCES**

Amador Regional Sanitation Authority, City of Ione, and California Department of Corrections and Rehabilitation at Mule Creek State Prison, Agreement to Regulate Use of Henderson/Preston Wastewater Disposal System, September 18, 2007.

California Financing Coordinating Committee, 2015 Funding Fairs – Infrastructure Financing for the 21st Century, July 2015.

California Regional Water Quality Control Board – Central Valley Region, Order No. 93-240, Water Reclamation Requirements for Amador County Regional Outfall and Castle Oaks Golf Course and Development, Amador Regional Sanitation Authority, City of Ione, and Portlock International, Ltd., Amador County, November 5, 1993.

Dexter Wilson Engineering, Inc., Analysis of Piping System from Preston Reservoir to Castle Oaks Water Reclamation Facility, June 10, 2015.

Dexter Wilson Engineering, Inc., water balance files (4) – CDCR341 Output Current-Contractual calc with perc (Steven).xlsx, CDCR341 Output Current-Contractual calc with perc.xlsx, CDCR341 Output growth calc with perc (Steven).xlsx, and CDCR341 Output growth calc without perc (Steven).xlsx, October-November 2014.

GHD, Inc., City of Ione – Revised Report of Waste Discharge: Modifications to City Wastewater Treatment Plant, September 28, 2012.

HDR, Amador Regional Sanitation Authority Master Plan DRAFT – City of Sutter Creek, Updated February 2010.

HydroScience Engineers, City of Sutter Creek and Amador Regional Sanitation Authority – Wastewater Master Plan DRAFT, November 26, 2012.

Jones et.al, Pumping Station Design – Revised Third Edition, 2008

Lee & Ro, Inc. and PMC, City of Ione – Wastewater Master Plan, December 2, 2009.

State Water Resources Control Board – Division of Financial Assistance (Division), Water Recycling Funding Program (WFRP) Plan of Study (POS) Approval, Amador Regional Sanitation Agency (Agency), Regional Water Recycling Feasibility Study (Study) WRFP Study No. 3526-010, January 17, 2014.

Winzler & Kelly, City of Ione – Alternative Analysis: Wastewater Plant Compliance DRAFT, June 15, 2012.

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APPENDIX A ARSA, City of Ione, and CDCR Regional Water Recycling Feasibility Study 2009 Lease Agreement and 2007 Disposal Agreement

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#### DEPARTMENT OF GENERAL SERVICES REAL ESTATE SERVICES DIVISION

#### STATE OF CALIFORNIA

#### LEASE COVERING PREMISES LOCATED AT

Mule Creek Prison and Preston Youth Correctional Facility

Lessee: Amador Regional Sanitation Authority

GROUND LEASE

Lease No.: L-2070

AGENCY

Amador County

Department of Corrections and Rehabilitation

REAL PROPERTY NOS.: 43 and 1575

This Lease, dated for reference purposes only, January 1, 2009, by and between the State of California, acting by and through the Director of General Services (DGS), with the consent of the California Department of Corrections and Rehabilitation (CDCR), hereinafter collectively referred to as STATE, and the Amador Regional Sanitation Authority (ARSA), a joint powers authority, hereinafter referred to as LESSEE.

#### RECITALS

WHEREAS, CDCR has under its jurisdiction certain real properties located in the County of Amador, State of California, commonly known as the Mule Creek State Prison (MCSP) and the Preston Youth Correctional Facility, formerly known as Ione Youth Authority, and hereinafter referred to as "Preston"; and

WHEREAS, pursuant to Government Code (GC) Section 14672.100, the Director of the Department of General Services, with the consent of CDCR, may lease real property appurtenant to or part of Preston, which real property is located in Amador County and further described in this Lease to ARSA (LESSEE) for a term not to exceed thirty (30) years and at a rate of one dollar (\$1.00) per year for its continued use as a wastewater delivery and disposal system; and

WHEREAS, CDCR owns a series of pipelines and reservoirs, each of which interconnect to allow the transport of water and or wastewater, which is known as Henderson/Preston System. The Henderson/Preston System, hereinafter referred to as the "Premises", is depicted in "Supplement #2 to Appendix L of Amador County Wastewater Management Plan", dated November 1977, and hereinafter referred to as the "Water Plan". Per the Water Plan, said Premises is composed of an upper element and a lower element. The upper element consists of the area from the outfall of the Sutter Creek Treatment Plant to Preston, including all pipelines, rights of way, reservoirs, and water rights. The lower element includes the components that lie below Preston Forebay to the outfall of the pipeline where it enters Castle Oaks property, including Preston Reservoir. Said Water Plan defines and illustrates the elements of the Henderson/Preston System, is marked Exhibit "A", consists of two (2) pages and is attached hereto and by this reference made a part hereof; and

WHEREAS, the City of Ione, LESSEE and CDCR, entered into the "Agreement to Regulate Use of Henderson/Preston Wastewater Disposal System", hereinafter referred to as "Agreement for Wastewater", dated September 18, 2007. Said Agreement governs the wastewater disposal rights and obligations among the parties to the Agreement, is marked Exhibit "B", which consists of nine (9) pages, and is attached hereto and by this reference made a part hereof; and

WHEREAS, LESSEE currently occupies the Premises per the "Agreement for Wastewater Management" dated March 22, 1977, which agreement shall be superseded by this Lease and the Agreement for Wastewater; and

WHEREAS, STATE is willing to lease the Premises to the LESSEE, and LESSEE is willing to lease the Premises from STATE, on the conditions set forth herein.

**NOW, THEREFORE**, it is hereby mutually agreed as follows:

STATE OF CALIFORNIA

#### WITNESSETH

DESCRIPTION

1. STATE does hereby lease to LESSEE, and LESSEE hereby hires from STATE, the Premises, as further described and depicted in the Water Plan, Exhibit "A" to this Lease.

TERM

USE

The term of this Lease shall be for a period of twenty-nine (29) years eight (8) months to commence on January 1, 2009, and shall terminate on September 18, 2037, to coincide with the termination date of the Agreement for Wastewater.

**3.** (a) LESSEE agrees to use the leased Premises to transport water and wastewater through the Premises pursuant to the Agreement for Wastewater, attached hereto as Exhibit "B", and by this reference made a part hereof.

(b) All activities upon the Premises will be conducted hereunder only in a manner which will not interfere with the orderly operation of the MCSP and Preston.

#### LESSEE'S OBLIGATION FOR WATER DIVERSION

4. (a) LESSEE agrees to annually divert a minimum of 250 acre/feet of water and a maximum of 1,100 acre/feet, from the Sutter Creek point of diversion in order to maintain STATE's water rights, as is more particularly described in the Water Plan, Exhibit "A" to this Lease. STATE reserves all of its water rights including the water rights for diversion from Sutter Creek at a maximum level of 1,100 acre/feet; and

(b) LESSEE shall maintain and supply upon reasonable request documentation of water diversion rates. Said documentation shall be sent to:

> Department of Corrections and Rehabilitation Facilities Management Branch 9838 Old Placerville Road, Suite B Sacramento, California 95827

(c) STATE reserves its claim to receive not less than 250 acre/feet of water annually for use at Preston.

RENT

**5.** The first annual rent payment shall be paid by the LESSEE in the amount of ONE DOLLAR AND 00/100s (\$1.00), due and payable on January 1, 2009. Rent shall be payable annually in advance for the duration of the Lease, or at the LESSEE's option, shall be paid in one lump sum in advance.

# All rent payments shall be addressed and delivered to:

Department of General Services Accounts Receivable PAL (L-2070) P.O. Box 989053 West Sacramento, CA. 95798-9053

FEE

6. LESSEE will reimburse DGS for its costs related to the lease, including, but not limited to, any survey costs, title transfer fees, administrative costs, and department staff time. DGS will invoice for the fees and payment shall be made to DGS at the address shown above and shall be made by February 1, 2009.

#### STATE OF CALIFORNIA

#### DEPARTMENT OF GENERAL SERVICES REAL ESTATE SERVICES DIVISION

#### LESSEE'S ACCESS RIGHTS

7. During the term of this Lease, STATE hereby grants to LESSEE and its contractors, agents, employees, representatives or licensees, the non exclusive temporary right to access, at any and all times and at any and all places, upon STATE lands and easements identified as the Premises. LESSEE has acquired or shall acquire all access rights for the lands not owned by STATE, at LESSEE's own expense.

#### CONDITION OF PREMISES

8. (a) LESSEE has visited and inspected said Premises and it is agreed that the Premises stated herein, and on the attached Exhibit "A", is not described using a legal description and that the description is approximate. It is also acknowledged by all parties to this Lease, that the Premises will be leased "as-is" and the STATE does not warrant or guarantee the condition of the system, its pipelines, ponds, dams, equipment and appurtenances included hereunder.

(b) LESSEE agrees, pursuant to the "Surrender of Premises" clause of this Lease, to surrender up to STATE the Premises with any real property improvements therein, in at least the same condition as when received, reasonable use and wear thereof and damage by act of God, or by the elements excepted.

TERMINATION

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9. The parties to this Lease hereto recognize that the Premises leased hereunder is part of a wastewater system, regulated under the California Water Code, and that termination of this Lease is not practicable nor feasible as it would render an essential utility service inoperable, with no alternate means readily available to STATE and LESSEE to dispose of their effluent that is not in violation of their other permit obligations. Therefore, the parties to this Lease have deleted any reference herein to termination of this Lease for breach, and instead expressly agree that injunctive relief to cure any actual or threatened breach is appropriate, and agree that either party shall be entitled to seek equitable injunctive relief from a court of competent jurisdiction to enforce compliance with the obligations hereunder. Neither party shall be entitled to defend such action on the basis that injunctive relief is improper, or that monetary damages are adequate. In the event of a violation of an injunctive order issued under this provision, in a subsequent proceeding to enforce the injunction, a court may, should it deem it appropriate, issue an order terminating the lease thereafter, on such terms as may be just and which will not work undue hardship on the parties to this Lease.

# HOLD OVER

**10.** Any holding over after the expiration of said term or any extension thereof, with the written consent of STATE, shall be deemed a tenancy only from month to month. Otherwise, the terms and conditions specified in lease shall remain applicable.

#### UTILITIES

11. LESSEE agrees to pay at its sole cost and expense any and all water, electric, gas and other utility charges or any other charges payable in connection with LESSEE's use of said Premises during the term of this Lease. No utilities will be provided by STATE and STATE assumes no liability for the existence or nonexistence of utilities.

#### REGULATION BY STATE

**12.** LESSEE agrees to cooperate with the MCSP and or Preston to ensure that activities conducted on the Premises, or persons brought onto the Premises to conduct such activities, do not interfere with the orderly operation of the facilities.

#### AGREEMENT TO REGULATE

**13.** LESSEE hereby agrees to continue to operate the Premises in accordance with those guidelines found within the Agreement for Wastewater as outlined in the attached Exhibit "B".

#### **IMPROVEMENTS**

14. (a) STATE hereby grants to LESSEE the right to, at its sole cost and expense, improve the Premises. Said improvements include but are not limited to, installing, operating, maintaining, repairing and removing and or demolishing components of the wastewater system. Additionally, LESSEE shall keep the Premises fully functional and operational, in accordance with generally accepted and recommended practices and procedures and in compliance with all applicable federal, state and local laws and regulations, any and all improvements including, but not limited to any pipelines, valves and valve boxes, ponds, dams, equipment, pipes and pipelines, valves, wells, pumps, electrical panels, meter socket and wiring or other improvements existing on the Premises or constructed upon the Premises by LESSEE.

(b) LESSEE hereby assumes, at its sole expense; without limitation, the cost of any necessary improvements as defined in paragraph (a) immediately preceding this paragraph of this Lease, as well as environmental impact reports, engineering reports, government permits, or any other applicable regulatory compliance items.

(c) Prior to making any needed improvements to the Premises, LESSEE shall submit plans, specifications, and/or drawings, as applicable, in writing to the STATE. LESSEE and shall receive STATE's written consent to proceed with such improvements. Said consent will not be unreasonably withheld.

(d) LESSEE agrees that in no event shall STATE be required to perform any maintenance on or make repairs or alterations to the leased Premises of any nature whatsoever.

(e) When making any necessary excavation on the Premises, LESSEE shall make such excavation in a manner that will cause the least damage to the surface of the ground, and shall replace the earth so removed by it and restore the surface of the ground and any improvement thereon to as near the same condition as existed prior to said excavation as practicable.

15. (a) During continuance in force of this Lease, LESSEE shall keep the leased Premises free from any liens arising out of any work performed, materials furnished, or obligations incurred by LESSEE and shall indemnify, hold harmless and defend STATE from such liens and encumbrances arising out of any work performed or materials furnished by or at the direction of LESSEE or contractors of LESSEE. Notice is hereby given that STATE shall not be liable for any work or materials furnished to LESSEE on credit and no mechanic's or other lien for any such work or materials shall attach to or affect STATE's interest in the leased Premises based on any work or materials supplied to LESSEE or anybody claiming through LESSEE. LESSEE shall within thirty (30) days after being furnished a notice of filing of any such lien, take action, whether by bonding or otherwise, to remove or satisfy any such lien.

(b) STATE shall have the right at all times to post and keep posted on the leased Premises any notices, that STATE deems proper for its protection and the protection of the leased Premises and STATE from liens. If, nevertheless, any

LIENS

such lien shall be recorded, LESSEE shall, within sixty (60) days after notice from STATE, pay, settle, or otherwise release such lien, or deposit into escrow with a reputable bank or trust company in California a sum sufficient to satisfy such lien, in full. In the event of unsuccessful termination of any litigation in connection with such lien and under the terms of which it shall be obligated to pay such lien upon the unsuccessful termination of such litigation, then, upon the failure of LESSEE to comply with said requirements, STATE may pay or otherwise dispose of said lien, or defend, settle, or compromise any lawsuit brought to foreclose the same, in its sole discretion, and all amounts so paid by it or any loss sustained by STATE on that account, including reasonable amount for its attorney's fees, shall be repaid to STATE and shall be in addition to any other payments by way of rents, or otherwise, required under the terms of this Lease. A failure to pay any such sum within thirty (30) days after mailing of bill therefore to LESSEE shall constitute a breach of this Lease.

# NOTICES

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**16.** (a) All notices or other communications required or permitted hereunder shall be in writing, and shall be personally delivered (including by means of professional messenger service) or sent by overnight courier, or sent by registered or certified mail, postage prepaid, return receipt requested to the addresses set forth below.

(b) All such notices or other communications shall be deemed received upon the earlier of (i) if personally delivered or sent by overnight courier, the date of delivery to the address of the person to receive such notice, (ii) if mailed as provided above, on the date of receipt or rejection, when received by the other party if received Monday through Friday between 6:00a.m. and 5:00p.m. Pacific Time so long as such day is not a state or federal holiday and otherwise on the next day provided that if the next day is Saturday, Sunday, or a state or federal holiday, such notice shall be effective on the following business day.

# To the LESSEE.

To the DGS:

To CDCR:

STATE

ARSA Attn.: Rob Duke General Manager 18 Main Street Sutter Creek, CA 95685 (209) 267-5647 (phone)

Department of General Services Real Estate Services Division-SOLD (L-2070) 707 Third Street, MS 505 Post Office Box 989052 West Sacramento, California 95798-9052 (916) 375-4025 (phone)

California Department of Corrections Attn.: Warden Mule Creek State Prison 4001 Highway 104 Sutter Creek, CA 95685 (209) 274-5225 (phone)

California Department of Corrections Attn.: Superintendent Preston Youth Correctional Facility (PYCS) 201 Waterman Road Ione, CA 95640

#### STATE OF CALIFORNIA

#### DEPARTMENT OF GENERAL SERVICES REAL ESTATE SERVICES DIVISION

NOTICES (CONTINUED)

#### (209) 274-8102 (phone)

(c) The address to which notices may be mailed as aforesaid to either party, may be changed by written notice given by subject party to the other, as hereinbefore provided; but nothing herein contained shall preclude the giving of any such notice by personal service.

SUBLETTING

**17.** LESSEE shall not assign this Lease in any event and shall not sublet the leased Premises or any part thereof and will not permit the use of the leased Premises by anyone other than the LESSEE without prior written consent by the STATE.

RECOVERY OF

**18.** If action is brought by any parties to this Lease for any breach hereof, or to restrain the breach of any agreement contained herein, the prevailing party in such action shall be entitled to the amount in attorney's fees in said action as the court shall determine to be reasonable, which shall be fixed by the court as part of the costs of said action.

#### PARTNERSHIP DISCLAIMER

**19.** LESSEE, and any and all agents and employees of LESSEE, shall act in an independent capacity and not as officers or employees of STATE. Nothing herein contained shall be construed as constituting the parties to this Lease herein as partners.

#### HOLD HARMLESS

**20.** (a) This Lease is made upon the express condition that STATE is to be free from all liability and claims for damages by reason of any injury to any person or persons, including LESSEE, or property of any kind whatsoever and to whomsoever belonging, including LESSEE, from any cause or causes whatsoever while in, upon, or in any way connected with the Premises during the term of this Lease or any occupancy hereunder, except those arising out of the sole negligence of STATE.

(b) LESSEE agrees to defend, indemnify and hold harmless STATE from all liability, loss, cost or obligation on account of or arising out of LESSEE's use and/or occupancy of the Premises during the Lease term or any such injury or loss, however occurring.

(c) LESSEE further agrees to provide necessary Workers' Compensation Insurance for all employees of LESSEE upon said Premises at the LESSEE's own cost and expense.

#### INSURANCE

21. STATE acknowledges that LESSEE is self-insured in whole or in part as to any of the below described types and levels of coverage. LESSEE shall provide STATE with written acknowledgment of this fact at the time of the execution of this Lease. Said acknowledgement shall contain the STATE Lease Number, L-2070. If, at any time after the execution of this Lease, LESSEE abandons its self-insured status, LESSEE shall immediately notify STATE of this fact and shall comply with all of the terms and conditions of this "Insurance" clause pertaining to policies of insurance in regard to those types and levels of insurance as follows:

# COMMERCIAL GENERAL LIABILITY

LESSEE shall maintain general liability with limits of not less than \$1,000,000 aggregate for bodily injury and property damage liability combined. The policy shall include coverage for liabilities arising out of Premises, operations, independent contractors, products, completed operations, personal & advertising injury, and liability assumed under an insured contract. This insurance shall apply separately to each insured against whom claim is made or suit is brought subject to the LESSEE's limit of liability.

The policy must include State of California, Department of General Services, LESSEE, and their officers, agents, employees and servants as additional insureds, but only insofar as the operations under the Lease are concerned.

#### AUTOMOBILE LIABILITY

LESSEE shall maintain motor vehicle liability with limits of not less than \$1,000,000 per accident for bodily injury and property damage. The State of California and Department of General Services are to be additional insured with respect to liability arising out of all vehicles owned, hired and non-owned.

#### WORKERS' COMPENSATION

LESSEE shall maintain statutory workers' compensation and employer's liability coverage for all its employees who will be engaged in the performance of the Lease, including special coverage extensions where applicable. Employer's liability limits of \$1,000,000 shall be required, and the policy shall include a waiver of subrogation in favor of the State of California.

#### GENERAL REQUIREMENTS

LESSEE shall ensure that the following general requirements are met:

(a) Insurance Companies must be acceptable to Department of General Services, Office of Risk and Insurance Management.

(b) LESSEE shall provide STATE with a true copy of the policy in place providing coverage for General Liability, within thirty (30) days after each insurance policy renewal.

(c) Coverage needs to be in-force for complete term of this Lease. If insurance expires during the term of the Lease, a new certificate must be received by the STATE at least ten (10) days prior to the expiration of this insurance. This new insurance must still meet the terms of the original contract.

(d) Insurance policies shall contain a provision that coverage will not be cancelled without thirty (30) days prior written notice to STATE.

(e) LESSEE is responsible for any deductible or self-insured retention contained within the insurance program.

(f) In the event LESSEE fails to keep in effect at all times the specified insurance coverage, STATE may, in addition to any other remedies it may have, terminate this Lease upon the occurrence of such event, subject to the provisions of this Lease.

(g) Any insurance required to be carried shall be primary, and not excess, to any other insurance carried by STATE.

It is agreed that STATE shall not be liable for the payment of any premiums or assessments on the required insurance coverage.

# NON-DISCRIMINA-

22. LESSEE agrees that it will not discriminate against any employee or applicant for employment because of race, color, religion, ancestry, national origin, sex, age or physical handicap. LESSEE agrees to take action to ensure that applicants for employment and employees are treated during employment without regard to their race, color, religion, ancestry, national origin, sex, age or physical handicap. (See California Government Code Sections 12920-12994 for further details.)

Remedies for willful violation:

(a) STATE may determine a willful violation of the Fair Employment Practices provision to have occurred upon receipt of a final judgment having the effect from a court in an action to which LESSEE was a party, or upon receipt of a written notice from the Fair Employment Practices Commission that is has investigated and determined that the LESSEE has violated the Fair Employment Practices Act and has issued an order pursuant to the appropriate provisions of the Government Code.

(b) STATE shall have the right to seek appropriate legal relief, whether monetary or injunctive, as a result of said breach, and consistent with the provisions of the "Termination and Injunctive Relief" clause of this Lease.

#### AMERICANS WITH DISABILITIES ACT

**23.** Where applicable, LESSEE shall comply with all federal requirements established under the 28 Code of Regulations, Part 36, Americans with Disabilities Act, to ensure the Premises is accessible to all participants and to provide equally effective communications.

LOSSES

TAXES /

24. STATE will not be responsible for losses or damage to personal property, equipment or materials of the LESSEE and all losses shall be reported to STATE immediately upon discovery.

**25.** STATE will not be liable for any debts or claims that arise from the operation of this Lease.

**26.** LESSEE agrees to pay all lawful taxes, assessments, or charges which at any time may be levied upon interest in this agreement. It is understood that this lease may create a possessory interest subject to property taxation and LESSEE may be subject to the payment of property taxes levied on such interest.

# PROTECTION OF PREMISES

DEBT LIABILITY DISCLAIMER

ASSESSMENTS

27. No removal of soil in excess of five (5) cubic yards, or dumping of refuse by LESSEE, except for transport of wastewater as contemplated by this Lease, is permitted in any area of the Premises, and LESSEE shall not commit or suffer to be committed any waste or nuisance upon the Premises; and LESSEE agrees not to cut or remove any trees, larger than four (4) inches in diameter and measured at three (3) feet in height, thereon except as approved in writing by STATE and LESSEE further agrees that at all times to exercise due diligence in the protection of the Premises against damage or destruction by fire or other causes.

PROPERTY RESTRICTIONS **28.** LESSEE shall comply with the following with respect to activities on the Premises:

(a) LESSEE shall not permit hunting on the Premises but shall not be required to post "No Hunting" signs; and

#### DEPARTMENT OF GENERAL SERVICES REAL ESTATE SERVICES DIVISION

#### STATE OF CALIFORNIA

(b) Compliance to any and all rules and regulations by governing agencies to include EPA, Department of Health or local water quality board must be strictly adhered to; and

(c) Should LESSEE desire to use pesticides on the area (either herbicides, rodenticides or insecticides) all applicable Environmental Protection Agency (EPA) both state and federal, standards must be met and prior approval must be received from STATE as not all EPA approved pesticides will be permitted.

#### AERIAL APPLICATIONS

**29.** Any aerial applications of any pesticides on the Premises shall be in compliance with the California Food and Agriculture Code (FAC), Section 12972 and Title 3, California Code of Regulations (3 CCR), Section 6614.

LESSEE shall notify the Warden and Superintendent in writing within three (3) business days in advance, of any aerial application and a completed Material Safety Data Sheet (MSDS) shall accompany the notice. LESSEE shall ensure that there will be minimal to no drift over the prison site adjacent to the subject Premises. LESSEE shall insure that any aircraft used for any aerial application will not encroach into the airspace of the MCSP and Preston.

WEED ABATE-MENT

ENVIRONMENTAL COMPLIANCE AND HAZARDOUS WASTE **30.** Any weed burning operations on the leased Premises will be carried out pursuant to local ordinances and at LESSEE's own cost and expense. LESSEE will inform MCSP and Preston in advance of any weed burning operations.

**31.** (a) <u>Compliance</u>. LESSEE shall be solely responsible for determining the applicability of and for complying with all applicable federal, state and local environmental, natural resources, zoning laws and regulations, including but not limited to CERCLA (42 USC 9601.14), SARA [42 USC 11021(e)], or Resources Conservation and Recovery Act of 1976 (RCRA), Pub. L. 94-580 (1976), 42 USC 6901 et seq. and amendments, including the Hazardous and Solid Waste Amendments of 1984 (HSWA), Pub. L. 98-616 (1984), with respect to LESSEE's activities on the Premises. LESSEE agrees that it shall comply with all applicable laws, federal, state, and local, existing during the term of this Lease pertaining to the use, storage, generation, treatment, transportation, and disposal of LESSEE's hazardous substances (including petroleum and petroleum derivatives) as that term is defined in such applicable law.

(b) <u>Copies of Materials</u>. LESSEE shall maintain copies of Material Safety Data Sheets (MSDS) and hazardous waste manifests, if any, for all hazardous materials used or transported on or from the Premises. MSDS and manifests shall be provided to the CDCR Facilities Management Division upon its request. If LESSEE is required to prepare a Business Plan, as specified by Health and Safety Code Section 25500 et seq., or a Hazardous Waste Contingency Plan, as specified in 22 CCR 66264.51 et seq., then a copy of the plan shall be submitted first to the Facilities Management Division for review and written approval.

(c) <u>Spill Reporting; Cleanup</u>. Any spill or release of a hazardous substance or material to the air, soil, surface water, or groundwater will be immediately reported to STATE as well as to appropriate government agencies, and shall be promptly and fully cleaned up and the Premises (including soils, surface water, and groundwater) restored to its original condition or such condition as approved by the applicable government agency with jurisdiction.

(d) <u>RCRA Facility Prohibited</u>. LESSEE shall not apply to become a "permitted" RCRA hazardous waste storage or disposal facility on the Premises.

(e) <u>Inspection</u>. STATE or its representatives reserve inspection rights pursuant to the "STATE's Rights to Enter" clause of this Lease.

<u>Termination</u>. Any violation of federal, state, or local environmental law by LESSEE, which continues unaddressed for a period of thirty (30) days from the date LESSEE receives notice of such violation, shall be grounds for STATE to pursue specific performance and injunctive relief in accordance with the "Termination and Injunctive Relief" clause of this Lease. STATE shall not have the right to pursue remedies under said clause if LESSEE commences addressing the violation within such thirty (30) day period and, thereafter, diligently pursues remediation of the violation.

(f) <u>Indemnification by LESSEE</u>. In addition to any other indemnity set forth herein, LESSEE shall fully indemnify, defend, and hold harmless STATE and its agents and representatives for any violation of environmental, hazardous waste, hazardous materials (including petroleum and petroleum derivatives), and/or natural resources law caused by LESSEE or LESSEE's agents or representatives. Furthermore, LESSEE shall reimburse the STATE for any and all costs and liability related to investigation, clean up, settlement amounts, and/or fines, including attorneys' fees, incurred by the STATE for such violation.

(g) <u>Indemnification by STATE</u>. In the event a government order is issued naming LESSEE as a potentially responsible party, or LESSEE incurs any other loss, cost, expense (including attorney's fees) or liability during or after the term of the Lease in connection with contamination which pre-existed LESSEE's obligations and occupancy under this Lease, or which was caused by STATE, STATE will hold harmless and defend LESSEE in connection therewith and shall be solely responsible as between LESSEE and STATE for all efforts, liabilities, losses, costs and expenses therefore, including attorney's fees. LESSEE shall have the burden of proof that the condition pre-existed the LESSEE's use and occupancy of the Premises or was caused by STATE.

#### SURRENDER OF PREMISES

**32.** (a) All personal property and equipment that is nonessential to the wastewater operations on the Premises shall be removed by LESSEE, at its sole cost and expense within thirty (30) days after expiration or termination of LESSEE's tenancy.

(b) Should LESSEE fail to remove said nonessential personal property and equipment within thirty (30) days after expiration or termination of the Lease, STATE may do so at the risk of LESSEE. Upon written demand by STATE, LESSEE shall immediately pay all costs and expenses associated with the removal of said property belonging to LESSEE.

(c) LESSEE may, however, with written consent of STATE, abandon in place any and all of LESSEE's nonessential personal property and equipment, whereupon, as abandoned, title to said improvements will vest in STATE.

#### STATE OF CALIFORNIA

#### RELOCATION

**33.** In the event that Court should terminate this Lease for a refusal to obey an injunctive order as provided in the "Termination and Injunctive Relief" clause of this Lease, LESSEE acknowledges and agrees that it has no claim against STATE for Relocation Payments, Relocation Advisory Assistance, or costs pursuant to the Government Code sections 7260 et seq, or any regulations implementing or interpreting such sections. LESSEE further agrees that it has no claim in either law or equity against STATE for damages or other relief should the Lease be so terminated, and waives any such claims it may have.

#### STATE'S RIGHT TO ENTER

**34.** During the term of this Lease, there shall be and is hereby expressly reserved to STATE and to any of its agencies, contractors, agents, employees, representatives or licensees, the right at any and all times, and any and all places, to temporarily enter upon said Premises for survey, inspection, or any other lawful STATE purposes.

#### EASEMENTS AND RIGHTS OF WAY

**35.** This lease is subject to all existing easements and rights of way. STATE further reserves the right to grant additional public utility easements as may be necessary and LESSEE hereby consents to the granting of any such easement, as long as such easement does not interfere with the operations of LESSEE's established uses. If the right to grant such easement is exercised, the public utility or their contractor will be required to reimburse LESSEE for any damages caused by the construction work on the easement area.

**36.** LESSEE agrees not to interfere, in any way, with the interests of any person or persons that may presently, or in the future, hold oil, gas, or other mineral interests upon or under said Premises; nor shall LESSEE, in any way,

**37.** The terms of this Lease and covenants and agreements herein contained shall apply to and shall bind and inure to the benefit of the heirs, representatives,

MINERAL RIGHTS

BINDING

**38.** LESSEE shall be responsible for maintaining all underground utilities to include all pipelines connecting to the Premises.

**39.** Time is of the essence for each and all of the provisions, covenants and conditions of this Lease.

interfere with the rights of ingress and egress of said interest holders.

assigns and successors in interest of the parties to this Lease hereto.

CLAUSE HEADINGS

WAIVER

**40.** All clause headings contained herein are for convenience of reference only and are not intended to define or limit the scope of any provision of this Lease.

**41.** If STATE waives the performance of any term, covenant or condition contained in this Lease, such waiver shall not be deemed to be a waiver of that or any subsequent term, covenant or condition. Failure by STATE to enforce any of the terms, covenants or conditions of this Lease for any length of time shall not be deemed to waive or decrease STATE'S right to insist thereafter upon strict performance by LESSEE. Waiver by STATE of any term, covenant, or condition contained in this Lease may only be made by a written document properly signed by an authorized STATE representative.

#### **SEVERABILITY**

**42.** If any term, covenant, condition, or provision of this Lease or any application thereof, to any extent, is found invalid, void, or unenforceable by a court of competent jurisdiction, the remainder of this Lease will not be affected thereby, and will be valid and enforceable to the fullest extent permitted by law.

#### STATE OF CALIFORNIA

This Lease contains all currently enforceable agreements between STATE and LESSEE. In addition, this Lease and with Exhibit B are intended to be compatible and work together and collectively supersede all prior agreements between STATE and LESSEE. There have been no representations by STATE or understandings made between STATE and LESSEE other than those set forth in this Lease and its exhibits. This Lease may not be modified except by a written instrument duly executed by the parties to this Lease hereto.

IN WITNESS WHEREOF, this agreement has been executed by the parties to this Lease hereto as of the date written below.

#### STATE OF CALIFORNIA

DIRECTOR OF DEPARTMENT OF GENERAL SERVICES

By:

**TONY PSIHOPAIDAS**, Manager State Owned Leasing & Development 707 Third Street, MS-505 West Sacramento, CA 95605 (916) 375-4025

Execution Øate

Consent:

#### DEPARTMENT OF CORRECTIONS

Bv:

**DEBORAH HYSEN**, Chief Deputy Secretary Facility Planning, Construction, and Management

#### LESSEE:

AMADOR REGIONAL SANITATION AUTHORITY, a Joint Powers Authority

Bν ROB DUKE, General Manage

28-09

Date Signed

Approved as to form:

MCDONOUGH HOLLAND & ALLEN

HARRIET STEINER Attorneys for ARSA

#### Approved as to form:

CALIFORNIA DEPARTMENT OF CORRECTIONS AND REHABILISTATION, OFFICE OF LEGAL AFFAIRS SWANBERG, Senior Staff Counsel Attorney for CDCR LESSEE: ARSA Page 12 of 12

#### Approval Recommended:

DEPARTMENT OF GENERAL SERVICES REAL ESTATE SERVICES DIVISION State Owned Leasing and Development

Bv: PAMELA DYER,

Associate Real Estate Office

Lease No.: L-2070

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DESIGN SERVICES

PAGE 02/16

# EXHIBIT A

SUTTER CREEK - IONE OUTFALL

WASTEWATER

RECLAMATION PROJECT

SUPPLEMENT #2

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APPENDIX L

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AMADOR COUNTY

WASTEWATER HAHAGEMENT PLAN

NOVEMBER, 1977 PROJECT ND. 75-0995



# EXHIBIT B

#### AGREEMENT TO REGULATE USE OF HENDERSON/PRESTON WASTEWATER DISPOSAL SYSTEM

This agreement is made this <u>M</u> day of <u>Mimbl</u>, 2007, by and between the California Department of Corrections and Rehabilitation, a California State Agency ("CDCR"), the City of Ione, a municipality formed pursuant to the laws of the State of California ("Ione"), and the Amador Regional Sanitation Authority, a joint powers agency formed pursuant to the laws of the State of California ("ARSA") (collectively, CDCR, Ione, and ARSA, shall be referred to as the "Parties"). The Parties hereby agree as follows:

WHEREAS, as settlement of past litigation, Ione and ARSA entered into an agreement and grant of easement entitled "Preston Farmlands Wastewater Disposal Contract and Grant of Easement" dated July 30, 1990 ("1990 Settlement Agreement"); and,

WHEREAS, the 1990 Settlement Agreement has been amended or assigned by the parties to the 1990 Settlement Agreement; and,

WHEREAS, this agreement will reallocate and govern the wastewater disposal rights and obligations among the Parties, but will not alter the 1990 Settlement Agreement, any and all amendments thereto, and any agreements implementing the 1990 Settlement Agreement, as those agreements govern the relationship and obligations between Ione or ARSA and any developer of the Preston Farmlands, as referred to in the agreements and amendments, and their successors and assigns and except as those agreements govern the relationship and obligations between Ione or ARSA and their successors and assigns and except as those agreements govern the relationship and obligations between Ione or ARSA and the present and future owners, operators, and lessees of the Castle Oaks Golf Course and their successors and assigns; and,

WHEREAS, pursuant to the 1990 Settlement Agreement, as amended, Ione was required to pay ARSA an annual payment (currently \$20,000.00), which payment Ione in turn imposed on Castle Oaks Golf Course. The Parties intend to eliminate such fee for Ione and for Castle Oaks Golf Course by not including it herein as part of this agreement; and,

WHEREAS, this agreement does not extend to, or otherwise affect, Portlock International, Ltd.'s obligation to pay for operation of the Ione Tertiary Plant, which obligation ends December 31, 2013 and is governed by other agreements; and

WHEREAS, CDCR owns a series of pipelines and reservoirs, including Henderson Reservoir, Preston Forebay and Preston Reservoir, each of which is interconnected so as to allow the transport of water and or wastewater from a point of diversion along Sutter Creek to the Preston Reservoir, in Ione, California ("Henderson/Preston System") (described in Exhibit 1); and,

WHEREAS, CDCR and ARSA have in place a lease agreement whereby ARSA has the right to use the Henderson/Preston System, subject to the terms and conditions contained therein, which lease expires in July 2008 ("ARSA/CDCR Lease"); currently ARSA uses the Henderson/Preston System to transport ARSA's secondary-treated wastewater to Preston Reservoir and then to Ione for treatment, disposal and use; and

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WHEREAS, ARSA and CDCR intend to execute a new lease or extend the existing ARSA/CDCR lease governing the use of the Henderson/Preston System. The new or extended lease will be for thirty (30) years. With regard to the lower system (as hereinatter described), the lease will contain a five (5) year cancellation clause that can be invoked by either party, subject to ARSA's continuing obligations to supply secondary treated wastewater to the CDCR's Preston Youth Correctional Facility and to maintain CDCR's water right from Sutter Creek, which obligations shall remain in effect unaffected by any such cancellation as will their rights to usage to the extent necessary to carry out those obligations; and

WHEREAS, this agreement will govern the relationship and respective rights between the Parties with regard to the Henderson/Preston System; and,

WHEREAS, the upper Henderson/Preston System as referred to in this agreement includes the parts of the Henderson/Preston System from the outfall of the Sutter Creek Treatment Plant to Preston Youth Correctional Facility, including all pipelines, rights of way, reservoirs, water rights, etc; and,

WHEREAS, the lower Henderson/Preston System as referred to in this agreement includes the components of the Henderson/Preston System from below Preston Forebay to the outfall of the pipeline where it enters Castle Oaks property, including Preston Reservoir; and,

WHEREAS, ARSA will continue to deliver effluent to the Ione tertiary plant subject to the five-year termination clause provided herein in sections 8a and 8b; and,

WHEREAS, CDCR operates Mule Creek State Prison ("MCSP") and the Preston Youth Correctional Facility, both located within Ione City limits, and which two facilities along with the California Department of Forestry utilize the wastewater treatment plant at MCSP for their wastewater disposal; and,

WHEREAS, Ione operates two wastewater treatment plants, a portion of one treatment plant is located within the boundaries of Ione providing secondary level treatment of wastewater, and the other located in Amador County providing tertiary treatment of wastewater; and,

WHEREAS, each of the Parties' wastewater disposal systems are interrelated and interconnected; and,

WHEREAS, all of the Parties wish to work together to achieve a solution that addresses their respective wastewater needs; and,

WHEREAS, a water balance study was conducted by Lee and Ro, Inc. and completed on April 11, 2007 to determine the amount, if any, of surplus disposal capacity that currently exists in the Henderson/Preston System; and

WHEREAS, the water balance study resulted in an estimated surplus capacity that is allocated pursuant to this agreement.

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IT IS AGREED by and among the parties hereto as follows:

1. Pursuant to the water balance and on the effective date of this agreement, the surplus capacity described above is allocated and each party's total allowable discharge to Preston Reservoir is as follows:

	Total Allowable Discharge to Henderson/Preston System
ARSA	650 acre-feet (af)
CDCR	350 af (counted against ARSA's 650 af
	disposal amount)
Ione	150 af (this amount is essentially a negative
	capacity amount to the extent that it
	relieves Ione of the obligation to take this
	amount from the other Parties)

2. Ione shall be obligated annually to accept from ARSA/CDCR a combined total of 650 af of secondarily treated wastewater for disposal. The method and location of disposal shall be the concern and obligation of Ione.

3. CDCR may dispose of up to 350 af (increased from its current allowance of 130 af) of treated wastewater into Preston Reservoir annually. CDCR's 350 af allowance shall be counted against ARSA's 650 af disposal right.

4. The effluent discharged to Preston Reservoir must be in compliance with the Waste Discharge Requirements established by the Regional Water Quality Control Board for the discharging party, and shall not contain constituents that cause the Ione tertiary plant to violate its Waste Discharge Requirements. Each party agrees to share all non-privileged wastewater effluent quality data with the other parties including monthly, quarterly, and annual reports submitted to the Central Valley Regional Water Quality Control Board. This information shall be furnished in a timely fashion to permit the City of Ione tertiary plant staff to evaluate potential impacts to operation of the plant. If requested, data shall be transmitted by facsimile or email. Such requests shall include all public information and shall not be limited to monitoring data that the party is required to provide pursuant to its Waste Discharge Requirements.

5. Unless otherwise agreed upon by the parties, discharges from Preston Reservoir to Ione, on a monthly basis, shall be as follows:

a. October 1 through March 31st: discharges shall be limited to 10 af per month;

b.

April 1 through September 31st: discharges shall be limited to 95 af per month; and

The above limitations may be waived by agreement of the parties in the event of an emergency and where necessary for the prevention of environmental damage or civil liabilities attendant to wastewater violations, and in such event and prior to any deviation from these limits the parties agree to meet and confer and attempt to reach mutual agreement regarding the exceedance amounts necessary to accomplish the prevention or mitigation of the emergency.

6. Subject to five-year termination clauses in sections 8a and 8b, in any year, ARSA and CDCR will continue to provide effluent from Preston Reservoir to the Ione tertiary plant for use on the Castle Oaks Golf Course, if such effluent is available. As provided for in the 1990 Agreement, as amended, Castle Oaks Golf Course will continue to utilize wastewater treated at the Ione tertiary plant prior to using water from any other source until December 31, 2013.

7. From the effective date of this agreement, ARSA agrees to eliminate all flows to Ione's secondary treatment ponds within four years. ARSA holds existing deeded disposal rights, transmittal rights, and rights of way and easements, to dispose of 1300 acre feet of treated effluent on the former Noble Ranch (County Assessor parcel numbers: 011330001501; 011330002501; and 011330003501) comprising approximately 850 acres of arable ranch land. A golf course resort has been entitled to be constructed on the property to be known as "Gold Rush Golf, LLC." A mitigated negative declaration for this project, including effluent disposal options, was adopted February 18, 2003, under City of Sutter Creek Resolution Number 02-03-27. Portions of the project have been constructed (e.g. conduit construction under the Highway 49 Bypass) and the remainder will be completed prior to the four-year deadline described in this section. The completion of the effluent disposal options are independent of the construction of the golf course resort project.

8. This agreement will be in effect for thirty (30) years from the time of its enactment, subject to the following:

With regard to the lower Henderson/Preston System, ARSA agrees to eliminate all flows to the lower Henderson/Preston System within five years of receiving a written request to this effect from Ione, CDCR, or MCSP. Such written notice may only be given after Ione and CDCR have resolved how to provide adequate reclaimed water for both Castle Oaks Golf Course and Preston Youth Correctional Facility. Such resolution may include completing any necessary environmental review pursuant to CEQA for the new source of water; a contract between the new provider of water, MCSP, Ione, the golf course operator; and any necessary permits of modifications to existing permits pursuant to the Porter-Cologne Water Quality Control Act (Cal. Water Code, §§ 13000 et. seq.).

′ b.

a.

ARSA shall have a right to cancel all discharges to the lower Henderson/Preston System five (5)years after it gives written notice to Ione and CDCR of its intent. ARSA agrees to work with the Parties to attempt to coincide its withdrawal with the c her parties' ability to find an alternate, water source.

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9. Beginning January 1, 2015, each party whose wastewater is being treated at the Ione Tertiary Plant agrees to pay a proportionate share of the tertiary plant operation and maintenance costs based on the amount of flows the party contributes to the tertiary plant. If any of the parties has withdrawn flows prior to 2014, that party will have no such operation and maintenance obligation. Each party's "proportionate share" will be defined by the JPA proposed herein, if it is formed. If the JPA is not formed, "proportionate share" will be defined by joint agreement of the Parties. To the extent that additional treatment, beyond what the discharging party is required to perform, is necessary to allow recycled water use of water treated at the Ione Tertiary Plant, that party will not be required to pay for such additional treatment, unless required under this agreement. Where the tertiary treated water from the Ione Tertiary Plant is sold to a recycled water user, the revenue generated from the sale will be distributed to the Parties in proportion to the amount of water the each party contributed to the tertiary plant.

10. MCSP shall endeavor to reduce its wastewater disposal into Preston Reservoir as soon as possible by implementing projects, which may include some or all of the following:

Installing flushometers on toilets located in cells at MCSP; and

Installing shower timers, as able, at MCSP.

In addition, CDCR shall conduct a preliminary feasibility study to determine the cost and feasibility for CDCR to increase the Preston Reservoir Dam height by sixteen (16) inches, increasing the capacity of the reservoir thereby.

11. To implement the provisions of this agreement, the Parties may prepare implementation memoranda, as opposed to amendments to this agreement, unless all Parties agree an amendment is necessary. Such implementation agreements may be executed by authorized representatives of the Parties.

12. The Parties to this agreement agree to explore and work towards creating a Joint Powers Authority to develop a sub-regional wastewater master plan for the Ione Valley. This plan may involve the following elements:

> Developing a permanent source of reclaimed water for the Castle Oaks Golf Course, Preston Youth Correctional Facility and other potential reclaimed water users within the Ione area.

b.

b.

Developing a master plan and joint projects to improve the treatment and disposal capabilities of the MCSP and Ione wastewater facilities.

C.

ARSA's participation in the JPA will end when ARSA's discharges to the lower Henderson/Preston System end pursuant to sections 8a and 8b of this agreement.

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13. Each of the Parties shall work to obtain all necessary permits, approvals, and authorizations to carry out this agreement in compliance with all pertinent Federal, State, and local laws and regulations.

14. In the event of a breach or default of this agreement, the aggrieved party will give written notice to the other parties within ten (10) days. After receiving such written notice, the Parties will meet and confer in an attempt to bring the violating party into compliance with this agreement. If, after meeting and conferring, the Parties fail to agree upon a plan to bring the violating party into compliance, the Parties may pursue meditation or other means agreed upon by the parties, including other remedies available by law.

15. Such non-performance provisions shall not apply if the nature of the breach or default is the result of a force majeure occurrence or is otherwise of a nature such that it cannot be fully cured within thirty (30) days, the party in default shall have such additional time as is reasonably necessary to cure the default so long as the party in default is proceeding diligently to complete the necessary cure after service of written notice by a non-defaulting party.

16. Each party retains any and all remedies it may have at law or in equity against each and every party hereto for breach of any duty established by this agreement.

17. Invalidation of any of the provisions contained in this agreement, or of the application thereof to any party by judgment or court order, shall in no way affect any of the other provisions hereof or the application thereof to any other party and said agreement shall remain in full force and effect except for the invalidated provision.

18. This agreement may be amended only by written instrument signed by all the parties.

19. Any notice to any party shall be in writing and by fax or email and given by delivering the notice to such party in person or by sending the notice by registered or certified mail, return receipt requested with postage prepaid, to the party's mailing address. The respective mailing addresses of the parties are:

City:

City Manager City of Ione Post Office Box 398 Ione, CA 95640

ARSA:

Rob Duke General Manager 18 Main Street Sutter Creek, CA 95685

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CDCR:

Warden Mule Creek State Prison 4001 Highway 104 Ione, CA 95640

Either party may change its mailing address at any time by giving written solice of such change to the other parties in the manner provided herein at least ten (10) days price to the date such change is effected. All notices shall be deemed given, received, made or construnticated on the delivery date or attempted delivery date shown on the return receipt.

20. Nothing contained in this agreement shall act as a prohibition on the formation of additional contracts and agreements by and between the Parties to further implement the intentions of the Parties.

21. Failure of a party to insist upon the strict performance of any of the provisions of this agreement by any other party, irrespective of the length of time for which such failure continues, shall not constitute a waiver of such party's right to demand strict compliance by the other party in the future. No waiver by a party of an act constituting breach or default shall be effective or binding upon such party unless the waiver is made in writing by such party, and no such waiver shall be implied from any omission by a party to take any action with respect to such breach or default under any provision of this agreement.

22. This agreement may be signed in counterparts, and shall have the same force and effect as if all signatures existed on the same document.

CITY OF IONE

Dated:

4-20-191

4-26-0

By: Jerry Sherman

Mayor, City of Ione

Approved as to form:

Dated:

STOEL RIVES LLP By:

Timothy M. Taylor Attorneys for the City of Ione

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Dated: <u>9-18-07</u> Approvid as to form: -1a1/A7

ARSA By: Rob Dy 2 General Manager

Dated:

MCDONOUGH HOLLAND & ALLEN В Harriet steiner

Attorneys for ARSA

Dated:

CDCR By:

Deboral: Hysen Chief Deputy Secretary Facility Planning, Construction, and Management

Approved as to form:

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CALIFORNIA DEPARTMENT OF CORRECTIONS AND REHABILITATION, OFFICE OF LEGAL AFFAI RS

Dated:

By:

Chris Swanberg Senior Staff Counsel Attorneys for CDCR

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ARSA Dated: By: Rob Duke General Manager Approved as to form MCDONOUGH HOLLAND & ALLEN Dated: By: Harriet Steiner Attorneys for ARSA Dated: CDCR By: Deborah Hysen Chief Deputy Secretary Facility Planning, Construction, and Management Approved as to form: CALIFORA DEPARTMENT OF CORRE **ETIONS** BILITATION, OFFICE OF LE AND REH AFFAIR Dated: By Chris Swanberg Senior Staff Counsel Attorneys for CDCR

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# APPENDIX B ARSA, City of Ione, and CDCR Regional Water Recycling Feasibility Study ARSA Board of Directors' and Ione City Council Agendas

www.hydroscience.com

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# **REGULAR MEETING STARTS AT 6:00 P.M.**

Mayor Dan Epperson Vice Mayor Patrick Weart Council Member Dominic Atlan Council Member Dale Haney Council Member Ron Smylie

Tuesday, October 20, 2015 Ione City Hall 1 E. Main Street Ione, CA 95640

# THE CITY OF IONE IS A GENERAL LAW CITY DEDICATED TO PROVIDING LEADERSHIP, ACCOUNTABILITY, AND FISCAL INTEGRITY WHILE PROMOTING ECONOMIC OPPORTUNITIES AND MAINTAINING A HIGH QUALITY OF LIFE FOR OUR CITIZENS

### PLEASE LIMIT PUBLIC COMMENT/TESTIMONY TO FOUR MINUTES Gov't. Code §54954.3

The Ione City Council welcomes, appreciates, and encourages participation in the City Council Meeting. The City Council reserves the right to reasonably limit the total time for public comment on any particular noticed agenda item as it may deem necessary.

Full staff reports and associated documents are available for public review at the Office of the City Clerk, City Hall, 1 E. Main Street, Ione, CA. Hard copies may be obtained for 10 cents per page. Documents that are not available when the agenda is posted will be made available for public review at the meeting.

# AGENDA

# A. ROLL CALL

# B. CLOSED SESSION AGENDA: 5:30 PM

- Conference with Legal Counsel Existing Litigation Pursuant to Government Code Section 54956.9(d)(1) – City of Ione v. JTS Communities
- Conference with Legal Counsel Consideration of Initiation of Litigation Pursuant to Government Code Section 54956.9(d)(4) – 1 Case
- C. PLEDGE OF ALLEGIANCE
- D. APPROVAL OF AGENDA
- E. PRESENTATIONS/ANNOUNCEMENTS:
  - Presentation to Jackson Rancheria for Donation of Police Vehicle and Equipment to the Ione Police Department – Police Chief Tracy Busby

# F. PUBLIC COMMENT: EACH SPEAKER IS LIMITED TO 4 MINUTES

NOTE: This is the time for members of the public who wish to be heard on matters that do not appear on the Agenda. Persons may address the City Council at this time on any subject within the jurisdiction of the Ione City Council.

You may also request that a matter appearing on the Consent Calendar be pulled and discussed separately. Please be mindful of the **4 minute time limit per person**.

Pursuant to the Brown Act, the City Council may not take action or engage in a detailed discussion on an item that does not appear on the Agenda. However, matters that require Council action will be referred to staff for a report and/or recommendation for possible action at a future Council meeting.

#### Is there any person in the audience who wishes to address the Council at this time?

<u>Notice to the Public:</u> All matters listed under this category are considered to be routine by the City Council and will be enacted by one motion. Unless a specific request is made by a Councilmember or the public, the Consent Calendar will not be read. However, if discussion is required, that item will be removed from the Consent Calendar and considered separately.

#### G. CONSENT CALENDAR:

- 1. Approval of Treasurer's Report September, 2015
- 2. Approval of Audited Warrants and Claims
- 3. Confirm appointment of Planning Commissioners, Mark Gebhardt and Kim

Smith for four year terms expiring October, 2019

- H. PUBLIC HEARING: None
- I. REGULAR AGENDA:
  - 4. Approval of Monthly Budget Report September, 2015
  - 5. Sutter Creek Water Storage Discussion
  - 6. Resolution No. 2015-51 Resolution of the City Council of the City of Ione Establishing a City Attorney RFP Review Ad Hoc Committee
  - 7. Resolution No. 2015-52 Resolution of the City Council of the City of Ione Establishing a City Planning Services RFP Review Ad Hoc Committee
  - 8. Appointing Council and Planning Commission Members to the City Attorney RFP Review Ad Hoc Committee and the Planning Services Ad Hoc Committee
  - 9. Declaring Planning Commission Vacancy
  - 10. Raw Water Line Update Verbal
  - 11. Castle Oaks Development Agreement Second Amendment Update
- J. WRITTEN CORRESPONDENCE: None

# K. CITY MANAGER REPORTS

# L. CITY COUNCIL COMMITTEE REPORTS

# M. CITY COUNCIL COMMENTS/FUTURE AGENDA ITEMS

# N. ADJOURNMENT

#### NOTICE REGARDING CHALLENGES TO DECISIONS

Pursuant to all applicable laws and regulations, including without limitation, California Government Code Section 65009 and or California Public Resources Code Section 21177, if you wish to challenge in court any of the above decisions (regarding planning, zoning and/or environmental decisions), you may be limited to raising only those issues you or someone else raised at the public hearing(s) described in this notice/agenda, or in written correspondence delivered to the City at, or prior to, this public hearing.

#### ADA COMPLIANCE STATEMENT

In compliance with the American with Disabilities Act, if you need special assistance to participate in this meeting, please contact City Clerk Janice Traverso at (209) 274-2412, ext. 102. Notification 24 hours prior to the meeting will enable the City to make reasonable arrangements to ensure accessibility to this meeting.

I, Janice Traverso, the City Clerk of the City of Ione, declare under the penalty that the foregoing agenda for the October 20, 2015 meeting of the Ione City Council was posted on October 16, 2015 at the office of the City of Ione City Hall at 1 East Main Street, Ione, CA 95640 and was available for public review at that location.

Signed this 16h day of October, 2015 at Ione, California

Janice Traverso, City Clerk, City of Ione

# **REGULAR MEETING STARTS AT 6:00 P.M.**

Mayor Dan Epperson Vice Mayor Patrick Weart Council Member Dominic Atlan Council Member Dale Haney Council Member Ron Smylie

Tuesday, August 18, 2015 Ione City Hall 1 E. Main Street Ione, CA 95640

# THE CITY OF IONE IS A GENERAL LAW CITY DEDICATED TO PROVIDING LEADERSHIP, ACCOUNTABILITY, AND FISCAL INTEGRITY WHILE PROMOTING ECONOMIC OPPORTUNITIES AND MAINTAINING A HIGH QUALITY OF LIFE FOR OUR CITIZENS

### PLEASE LIMIT PUBLIC COMMENT/TESTIMONY TO FOUR MINUTES Gov't. Code §54954.3

The Ione City Council welcomes, appreciates, and encourages participation in the City Council Meeting. The City Council reserves the right to reasonably limit the total time for public comment on any particular noticed agenda item as it may deem necessary.

Full staff reports and associated documents are available for public review at the Office of the City Clerk, City Hall, 1 E. Main Street, Ione, CA. Hard copies may be obtained for 10 cents per page. Documents that are not available when the agenda is posted will be made available for public review at the meeting.

# AGENDA

# A. ROLL CALL

# B. CLOSED SESSION AGENDA: 5:00 PM

- Conference with Legal Counsel Pursuant to Government Code 54956.9; Existing Litigation, Two (2) Cases: (1) <u>United States Department of Justice v.</u> <u>City of Ione, (Real Party in Interest Janet Lynch, Complaint No. 15DRS-02-</u> 41; and (2) <u>JTS Communities v. Pisor Industries</u>, Notice of Claim dated August 6, 2015 (40 Min.)
- Conference with Legal Counsel Consideration of Initiation of Litigation Pursuant to Government Code Section 54956.9 or Potential Litigation Pursuant to Subdivision (d)(2) of Government Code Section 54956.9; 1 Case (20 Min.)

# C. PLEDGE OF ALLEGIANCE

# D. APPROVAL OF AGENDA

E. PRESENTATIONS/ANNOUNCEMENTS: None

#### F. PUBLIC COMMENT: EACH SPEAKER IS LIMITED TO 4 MINUTES

NOTE: This is the time for members of the public who wish to be heard on matters that do not appear on the Agenda. Persons may address the City Council at this time on any subject within the jurisdiction of the Ione City Council.

You may also request that a matter appearing on the Consent Calendar be pulled and discussed separately. Please be mindful of the 4 minute time limit per person.

Pursuant to the Brown Act, the City Council may not take action or engage in a detailed discussion on an item that does not appear on the Agenda. However, matters that require Council action will be referred to staff for a report and/or recommendation for possible action at a future Council meeting.

#### Is there any person in the audience who wishes to address the Council at this time?

<u>Notice to the Public:</u> All matters listed under this category are considered to be routine by the City Council and will be enacted by one motion. Unless a specific request is made by a Councilmember or the public, the Consent Calendar will not be read. However, if discussion is required, that item will be removed from the Consent Calendar and considered separately.

- G. CONSENT CALENDAR:
  - Approval of City Council Meeting Minutes: June 2, 2015, June 16, 2015, July 7, 2015
  - 2. Approval of Audited Warrants and Claim
  - 3. Approval of Treasurer's Report July, 2015
  - 4. Acceptance of Resignation of Planning Commissioner, Doug Hawkins and Authorize the City Clerk to advertise for Vacancy
- H. PUBLIC HEARING:
  - ORDINANCE NO. 473-Introduce and waive the full reading, by substitution of title only, an Ordinance of the City Council of the City of Ione Amending Chapter 6.04 of the Ione Municipal Code Relating to Animal Dog Licensing and Control

#### I. REGULAR AGENDA:

- 6. Approval of Monthly Budget Report July, 2015 (Estimates Only)
- Adoption of Resolution No. 2015-48 Authorizing Worker's Compensation Insurance Coverage for all Non-Paid City Volunteers
- 8. Discussion regarding Shared Services with other Cities
- 9. Discussion on Contract Extension with Coastland Engineering
- 10. Wastewater Update

- 11. Adoption of Resolution No. 2015-49 –Regarding the Preservation of the Historic Preston School of Industry
- J. WRITTEN CORRESPONDENCE: None
- K. CITY MANAGER REPORTS
- L. CITY COUNCIL COMMITTEE REPORTS

# M. CITY COUNCIL COMMENTS/FUTURE AGENDA ITEMS

# N. ADJOURNMENT

#### NOTICE REGARDING CHALLENGES TO DECISIONS

Pursuant to all applicable laws and regulations, including without limitation, California Government Code Section 65009 and or California Public Resources Code Section 21177, if you wish to challenge in court any of the above decisions (regarding planning, zoning and/or environmental decisions), you may be limited to raising only those issues you or someone else raised at the public hearing(s) described in this notice/agenda, or in written correspondence delivered to the City at, or prior to, this public hearing.

# ADA COMPLIANCE STATEMENT

In compliance with the American with Disabilities Act, if you need special assistance to participate in this meeting, please contact City Clerk Janice Traverso at (209) 274-2412, ext. 102. Notification 24 hours prior to the meeting will enable the City to make reasonable arrangements to ensure accessibility to this meeting.

I, Janice Traverso, the City Clerk of the City of Ione, declare under the penalty that the foregoing agenda for the August 18, 2015 meeting of the Ione City Council was posted on August 14, 2015 at the office of the City of Ione City Hall at 1 East Main Street, Ione, CA 95640 and was available for public review at that location.

Signed this 14th day of August, 2015 at Ione, California

Janice Traverso, City Clerk, City of Ione

# **REGULAR MEETING STARTS AT 6:00 P.M.**

Mayor Dan Epperson Vice Mayor Patrick Weart Council Member Dominic Atlan Council Member Dale Haney Council Member Ron Smylie

> Tuesday, June 2, 2015 Ione City Hall 1 E. Main Street Ione, CA 95640

# THE CITY OF IONE IS A GENERAL LAW CITY DEDICATED TO PROVIDING LEADERSHIP, ACCOUNTABILITY, AND FISCAL INTEGRITY WHILE PROMOTING ECONOMIC OPPORTUNITIES AND MAINTAINING A HIGH QUALITY OF LIFE FOR OUR CITIZENS

# PLEASE LIMIT PUBLIC COMMENT/TESTIMONY TO FOUR MINUTES Gov't. Code §54954.3

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# <u>AGENDA</u>

# A. ROLL CALL

- B. CLOSED SESSION AGENDA: 5:30 PM
  - It is intention of the City Council to Conference with Legal Counsel pursuant to Subdivision (b) Government Code Section 54956.9; Anticipation of Litigation (3) Cases
- C. PLEDGE OF ALLEGIANCE
- D. APPROVAL OF AGENDA
- E. PRESENTATIONS/ANNOUNCEMENTS: None

# F. PUBLIC COMMENT: EACH SPEAKER IS LIMITED TO 4 MINUTES

NOTE: This is the time for members of the public who wish to be heard on matters that do not appear on the Agenda. Persons may address the City Council at this time on any subject within the jurisdiction of the Ione City Council.

You may also request that a matter appearing on the Consent Calendar be pulled and discussed separately. Please be mindful of the **4 minute time limit per person**.

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Is there any person in the audience who wishes to address the Council at this time?

# G. APPROVAL OF CONSENT CALENDAR:

<u>Notice to the Public:</u> All matters listed under this category are considered to be routine by the City Council and will be enacted by one motion. Unless a specific request is made by a Councilmember or the public, the Consent Calendar will not be read. However, if discussion is required, that item will be removed from the Consent Calendar and considered separately.

1. Approve and Authorize the Interim City Manager to Enter into an Agreement with Dexter Wilson Engineering, Inc. to Provide a Conceptual Study of a Recycled Water Piepline to Take Treated Wastewater from Mule Creek State Prison to Woodard Bottom on Greenrock Ranch

# H. PUBLIC HEARING:

- 2. FISCAL YEAR BUDGET 2015/2016 The City Council will consider adopting Resolution No. 2015-26 approving the Budget for the 2015/2016 Fiscal Year
- 3. ORDINANCE NO. 472-Introduce and waive the full reading, by substitution of title only, an Ordinance of the City Council of the City of Ione Amending Chapter 5.06 of the Ione Municipal Code Relating to When Business License Taxes are Payable
- I. REGULAR AGENDA:
  - 4. Discussion/Action and/or Adopt a Resolution on City Policy on Interfund Transfers
  - 5. Discussion and take Action as Appropriate on the Unimin Raw Water Line and the Foothill Raw Water Pipeline Project for Irrigation and Potable Supply for Fire Protection at and near Howard Park
  - 6. Discussion/Action on Valve Replacement Maintenance Project-Tertiary Treatment Plant

# J. WRITTEN CORRESPONDENCE:

- 7. Amador Water Agency-Notice of Inflationary Adjustment to Water Rates and Charges Hearing July 21, 2015
- K. CITY MANAGER REPORTS
- L. CITY COUNCIL COMMITTEE REPORTS
- M. CITY COUNCIL COMMENTS/FUTURE AGENDA ITEMS
- N. ADJOURNMENT

#### NOTICE REGARDING CHALLENGES TO DECISIONS

Pursuant to all applicable laws and regulations, including without limitation, California Government Code Section 65009 and or California Public Resources Code Section 21177, if you wish to challenge in court any of the above decisions (regarding planning, zoning and/or environmental decisions), you may be limited to raising only those issues you or someone else raised at the public hearing(s) described in this notice/agenda, or in written correspondence delivered to the City at, or prior to, this public hearing.

# ADA COMPLIANCE STATEMENT

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I, Janice Traverso, the City Clerk of the City of Ione, declare under the penalty that the foregoing agenda for the June 2, 2015 meeting of the Ione City Council was posted on May 29, 2015 at the office of the City of Ione City Hall at 1 East Main Street, Ione, CA 95640 and was available for public review at that location.

Signed this 29th day of May, 2015 at Ione, California

Janice Traverso, City Clerk, City of Ione

# **REGULAR MEETING STARTS AT 6:00 P.M.**

Mayor Dan Epperson Vice Mayor Patrick Weart Council Member Dale Haney Council Member Lloyd Oneto Council Member Ron Smylie

Tuesday, June 3, 2014 Ione City Hall 1 E. Main Street Ione, CA 95640

# THE CITY OF IONE IS A GENERAL LAW CITY DEDICATED TO PROVIDING LEADERSHIP, ACCOUNTABILITY, AND FISCAL INTEGRITY WHILE PROMOTING ECONOMIC OPPORTUNITIES AND MAINTAINING A HIGH QUALITY OF LIFE FOR OUR CITIZENS

# PLEASE LIMIT PUBLIC COMMENT/TESTIMONY TO FIVE MINUTES Gov't. Code §54954.3

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# AGENDA

# A. ROLL CALL:

# B. CLOSED SESSION AGENDA: 5:00 PM

- It is the intention of the City Council to meet in Closed Session to discuss potential litigation pursuant to Government Code Section 54956.9(b); Conference with Legal Counsel- Two (2) Cases (Est. time: 30 minutes)
- Conference with Labor Negotiations Pursuant to Government Code Section 54957.6
  - a. Agency Negotiators -- Ed Pattison, Dave Andres
  - b. Employee Organization: Ione Police Officers Association

# C. PLEDGE OF ALLEGIANCE

- D. APPROVAL OF AGENDA
- E. PRESENTATIONS/ANNOUNCEMENTS/PROCLAMATIONS: None
# F. PUBLIC COMMENT: EACH SPEAKER IS LIMITED TO 5 MINUTES

NOTE: This is the time for members of the public who wish to be heard on matters that do not appear on the Agenda. Persons may address the City Council at this time on any subject within the jurisdiction of the Ione City Council.

You may also request that a matter appearing on the Consent Calendar be pulled and discussed separately. Please be mindful of the 5 minute time limit per person.

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# Is there any person in the audience who wishes to address the Council at this time?

# G. APPROVAL OF CONSENT CALENDAR:

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- 1. Approval of Agreement for Amador County Little League West and its Use of the Baseball/Softball Fields at Howard Park
- 2. Approval of Contract Amendment with Coastland Civil Engineering for 30% Design Improvements Associated with CDCR Pipeline
- 3. Discussion/action on Potential Resolution of Auditor Finding FS13-2 related to Howard Park Purchase and Sewer Annexation Fee Credit

# H. PUBLIC HEARING: None

# I. REGULAR AGENDA:

4. Presentation of Draft Budget for Fiscal Year 2014-2015 (Handout at meeting)

# J. WRITTEN CORRESPONDENCE: None.

# K. CITY MANAGER REPORTS:

# L. CITY COUNCIL COMMITTEE REPORTS:

- M. CITY COUNCIL COMMENTS/FUTURE AGENDA ITEMS:
- N. ADJOURNMENT

#### NOTICE REGARDING CHALLENGES TO DECISIONS

Pursuant to all applicable laws and regulations, including without limitation, California Government Code Section 65009 and or California Public Resources Code Section 21177, if you wish to challenge in court any of the above decisions (regarding planning, zoning and/or environmental decisions), you may be limited to raising only those issues you or someone else raised at the public hearing(s) described in this notice/agenda, or in written correspondence delivered to the City at, or prior to, this public hearing.

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I, Janice Traverso, the City Clerk of the City of Ione, declare under the penalty that the foregoing agenda for the June 3, 2014 meeting of the Ione City Council was posted on May 30, 2014 at the office of the City of Ione City Hall at 1 East Main Street, Ione, CA 95640 and was available for public review at that location.

Signed this 30th day of May, 2014 at Ione, California

Janice Traverso, City Clerk, City of Ione

# REGULAR MEETING STARTS AT 6:00 P.M.

Mayor Dan Epperson Vice Mayor Patrick Weart Council Member Dale Haney Council Member Lloyd Oneto Council Member Ron Smylie

Tuesday, May 20, 2014 Ione City Hall 1 E. Main Street Ione, CA 95640

# THE CITY OF IONE IS A GENERAL LAW CITY DEDICATED TO PROVIDING LEADERSHIP, ACCOUNTABILITY, AND FISCAL INTEGRITY WHILE PROMOTING ECONOMIC OPPORTUNITIES AND MAINTAINING A HIGH QUALITY OF LIFE FOR OUR CITIZENS

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# <u>AGENDA</u>

# A. ROLL CALL:

# B. CLOSED SESSION AGENDA: 5:00 PM

- Conference with legal counsel pursuant to government code section 54956.9(d)(2) potential litigation: three (3) cases
- Conference with Labor Negotiations Pursuant to Government Code Section 54957.6
  - a. Agency Negotiators Ed Pattison, Dave Andres
  - b. Employee Organization: Ione Police Officers Association

# C. PLEDGE OF ALLEGIANCE

D. APPROVAL OF AGENDA

# E. PRESENTATIONS/ANNOUNCEMENTS/PROCLAMATIONS:

1. Amador County Recreation Agency Funding for Fiscal Year 2014/2015-Carolyn Fregulia-Acting Executive Director, Amador County Recreation Agency

# F. PUBLIC COMMENT: EACH SPEAKER IS LIMITED TO 5 MINUTES

NOTE: This is the time for members of the public who wish to be heard on matters that do not appear on the Agenda. Persons may address the City Council at this time on any subject within the jurisdiction of the Ione City Council.

You may also request that a matter appearing on the Consent Calendar be pulled and discussed separately. Please be mindful of the **5 minute time limit per person**.

Pursuant to the Brown Act, the City Council may not take action or engage in a detailed discussion on an item that does not appear on the Agenda. However, matters that require Council action will be referred to staff for a report and/or recommendation for possible action at a future Council meeting.

# Is there any person in the audience who wishes to address the Council at this time?

# G. APPROVAL OF CONSENT CALENDAR:

<u>Notice to the Public:</u> All matters listed under this category are considered to be routine by the City Council and will be enacted by one motion. Unless a specific request is made by a Councilmember or the public, the Consent Calendar will not be read. However, if discussion is required, that item will be removed from the Consent Calendar and considered separately.

- 2. Approval of Audited Warrants and Claims and Miscellaneous Activity for Wells Fargo Checking Account other than Warrants
- 3. Approval of Treasurer's Report April, 2014
- 4. Adoption of Ordinance No. 469 Adopting the Second Amendment to the Development Agreement with Wildflower Investments, LLC for the Wildflower Project and waive the full reading by substitution of title only

# H. PUBLIC HEARING: None

- I. REGULAR AGENDA:
  - 5. Discussion/action authorizing City Manager to execute agreement between City of Ione and California Department of Corrections & Rehabilitation for Payment of Mitigation Measures Identified in the Final Environmental Impact Report, Level II Infill Correctional Facilities Project, Mule Creek State Prison
  - Discussion/action authorizing City Manager to execute Memorandum of Understanding for Secondary Effluent Disposal Utility Services, Mule Creek State Prison between the City of Ione and the California Department of Corrections & Rehabilitation
  - 7. Discussion/action authorizing City Manager to execute Pool Management Agreement between the City of Ione and the Amador County Recreation Agency

- 8. Discussion/action adopting Resolution No. 1937 of the City Council of the City of Ione authorizing Examination of Sales, Use and Transactions Tax Records and execute Agreement between the City of Ione and HdL Companies for Sales Tax and Management Services, Mule Creek Station Prison Level II Infill Correctional Facilities Project
- 9. Discussion/action adopting Resolution No. 1936 Affirming the importance of Community Schools, Ione Elementary and Ione Junior High School and to Request the Abandonment of any Plan by the Amador County Unified School District Board to Close any City of Ione School
- 10. Presentation of Monthly Budget Report April, 2014
- J. WRITTEN CORRESPONDENCE:
- K. CITY MANAGER REPORTS:
- L. CITY COUNCIL COMMITTEE REPORTS:
- M. CITY COUNCIL COMMENTS/FUTURE AGENDA ITEMS:

# N. ADJOURNMENT

#### NOTICE REGARDING CHALLENGES TO DECISIONS

Pursuant to all applicable laws and regulations, including without limitation, California Government Code Section 65009 and or California Public Resources Code Section 21177, if you wish to challenge in court any of the above decisions (regarding planning, zoning and/or environmental decisions), you may be limited to raising only those issues you or someone else raised at the public hearing(s) described in this notice/agenda, or in written correspondence delivered to the City at, or prior to, this public hearing.

# ADA COMPLIANCE STATEMENT

In compliance with the American with Disabilities Act, if you need special assistance to participate in this meeting, please contact City Clerk Janice Traverso at (209) 274-2412, ext. 102. Notification 24 hours prior to the meeting will enable the City to make reasonable arrangements to ensure accessibility to this meeting.

I, Janice Traverso, the City Clerk of the City of Ione, declare under the penalty that the foregoing agenda for the May 20, 2014 meeting of the Ione City Council was posted on May 16, 2014 at the office of the City of Ione City Hall at 1 East Main Street, Ione, CA 95640 and was available for public review at that location.

Signed this 16th day of May, 2014 at Ione, California

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Janice Traverso, City Clerk, City of Ione

# **REGULAR MEETING STARTS AT 6:00 P.M.**

Mayor Dan Epperson Vice Mayor Patrick Weart Council Member Dale Haney Council Member Lloyd Oneto Council Member Ron Smylie

Tuesday, February 18, 2014 Ione City Hall 1 E. Main Street Ione, CA 95640

# THE CITY OF IONE IS A GENERAL LAW CITY DEDICATED TO PROVIDING LEADERSHIP, ACCOUNTABILITY, AND FISCAL INTEGRITY WHILE PROMOTING ECONOMIC OPPORTUNITIES AND MAINTAINING A HIGH QUALITY OF LIFE FOR OUR CITIZENS

# PLEASE LIMIT PUBLIC COMMENT/TESTIMONY TO FIVE MINUTES Gov't. Code §54954.3

The Ione City Council welcomes, appreciates, and encourages participation in the City Council Meeting. The City Council reserves the right to reasonably limit the total time for public comment on any particular noticed agenda item as it may deem necessary.

Full staff reports and associated documents are available for public review at the Office of the City Clerk, City Hall, 1 E. Main Street, Ione, CA. Hard copies may be obtained for 10 cents per page. Documents that are not available when the agenda is posted will be made available for public review at the meeting.

# **AGENDA**

A. ROLL CALL:

- B. CLOSED SESSION AGENDA: 5:30 PM
  - It is the intention of the City Council to conference with legal counsel in Closed Session pursuant to Paragraph (4) of Subdivision (d) of Section 54956.9 (One Case – 30 minutes)
- C. PLEDGE OF ALLEGIANCE
- D. APPROVAL OF AGENDA
- E. PRESENTATIONS/ANNOUNCEMENTS/PROCLAMATIONS: None.

F.- PUBLIC COMMENT: **EACH SPEAKER IS LIMITED TO 5 MINUTES** NOTE: This is the time for members of the public who wish to be heard on matters that do not appear on the Agenda. Persons may address the City Council at this time on any subject within the jurisdiction of the Ione City Council. You may also request that a matter appearing on the Consent Calendar be pulled and discussed separately. Please be mindful of the **5 minute time limit per person**.

Pursuant to the Brown Act, the City Council may not take action or engage in a detailed discussion on an item that does not appear on the Agenda. However, matters that require Council action will be referred to staff for a report and/or recommendation for possible action at a future Council meeting.

# Is there any person in the audience who wishes to address the Council at this time?

# G. APPROVAL OF CONSENT CALENDAR:

<u>Notice to the Public:</u> All matters listed under this category are considered to be routine by the City Council and will be enacted by one motion. Unless a specific request is made by a Councilmember or the public, the Consent Calendar will not be read. However, if discussion is required, that item will be removed from the Consent Calendar and considered separately.

- 1. Approval of minutes: December 3, 2013, December 17, 2013
- 2. Approval of Audited Warrants and Claims and Miscellaneous Activity for Wells Fargo Checking Account other than Warrants
- 3. Treasurer's Report, January, 2014
- Adoption of Resolution No. 1929 Accepting the Improvements constructed with Phase 1A of the WWTP Compliance Project and Authorizing the City Engineer to file the Notice of Completion
- 5. Adoption of Resolution No. 1930 Authorizing the Placement of Delinquent Unpaid Sewer Bills upon the 2013-2014 Amador County Tax Rolls

# H. PUBLIC HEARING: None.

# I. REGULAR AGENDA:

- 6. Discussion/action accepting the financial audit of fiscal year 2012/2013 Larry Bain
- 7. Introduction and Discussion of the Draft Capital Improvement Program for Fiscal Years 2013/2014 2018/19
- 8. Discussion/action to consider approval of capital improvement project for mitigation funding from the California Department of Corrections and Rehabilitation Mule Creek Infill Project No Staff Report
- 9. Discussion/action approving Groundwater Monitoring and Regulatory Reporting Services for the City's Wastewater Treatment Facilities
- 10. Discussion/action to authorize bidding the Removal of Biosolids from Pond 1 at the Wastewater Treatment Plant
- 11. Discussion/action to consider approval of the Union Pacific Railroad-City of Ione Land Lease Agreement

# J. WRITTEN CORRESPONDENCE: None

K. CITY MANAGER REPORTS:

L. CITY COUNCIL COMMITTEE REPORTS:

M. CITY COUNCIL COMMENTS/FUTURE AGENDA ITEMS:

N. ADJOURNMENT

#### NOTICE REGARDING CHALLENGES TO DECISIONS

Pursuant to all applicable laws and regulations, including without limitation, California Government Code Section 65009 and or California Public Resources Code Section 21177, if you wish to challenge in court any of the above decisions (regarding planning, zoning and/or environmental decisions), you may be limited to raising only those issues you or someone else raised at the public hearing(s) described in this notice/agenda, or in written correspondence delivered to the City at, or prior to, this public hearing.

# ADA COMPLIANCE STATEMENT

In compliance with the American with Disabilities Act, if you need special assistance to participate in this meeting, please contact City Clerk Janice Traverso at (209) 274-2412, ext. 102. Notification 24 hours prior to the meeting will enable the City to make reasonable arrangements to ensure accessibility to this meeting.

I, Janice Traverso, the City Clerk of the City of Ione, declare under the penalty that the foregoing agenda for the February 18, 2014 meeting of the Ione City Council was posted on February 14, 2014 at the office of the City of Ione City Hall at 1 East Main Street, Ione, CA 95640 and was available for public review at that location.

Signed this 14th day of February, 2014 at Ione, California

Janice Traverso, City Clerk, City of Ione

Amador Regional Sanitation Authority

# A G E N D A December 15, 2015 1:30 P.M. Special Meeting SUTTER CREEK COMMUNITY BUILDING 33 CHURCH STREET, SUTTER CREEK

#### 1. CALL TO ORDER AND ESTABLISH A QUORUM -1:30 P.M

#### 2. PLEDGE OF ALLEGIANCE TO THE FLAG

**3. PUBLIC FORUM** – Discussion items only, no action to be taken. Any person may address the Board at this time upon any subject within the jurisdiction of the Amador Regional Sanitation Authority; however, any matter that requires action may be referred to staff and/or Committee for a report and recommendation for possible action at a subsequent Board meeting. Please note – there is a five (5) minute limit per topic.

#### 4. INFORMATION/CORRESPONDENCE – For Information Only.

- A. 2015 November Monthly Monitoring Report
- \* B. Correspondence with CDCR re Ione Termination Letter
- **5. CONSENT AGENDA** *Items listed on the consent agenda are considered routine and may be enacted in one motion. Any item may be removed for discussion at the request of the Board or the Public.*
- \* A. Approval of Minutes of November 19, 2015
- \* B. Warrants- December

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\* C. November Financial Statement

#### 6. GENERAL MANAGER'S REPORT

- A. Regional Study-Staff will provide a report comparing alternatives from Regional Study and Master Plan.
  - B. Henderson Dam Repair Update
  - 1. Response to DSOD re 8-25-15 Inspection
- \* 2. Letter to DSOD re Video
- \* C. Preston Reservoir dump valve cycling
  - D. System Status Report- Staff will provide a status update
    - E. Central Valley Regional Water Quality Control Board (CVRWQCB) Meeting with Ione- Staff will provide an oral report.

#### 7. ADMINISTRATIVE MATTERS

- \* A. Request from Auburn Indian Community re proposed projects
- \* B. General Manager's hours and per diem reimbursements

# 8. CLOSED SESSION-

- A. CONFERENCE WITH LEGAL COUNSEL-ANTICIPATED LITIGATION Initiation of litigation pursuant to paragraph (4) of subdivision (d) of Section 59456.9 (1) Potential case
- B. PUBLIC EMPLOYMENT Pursuant to Government Code Section 54957(c)(1) Title: General Manager

#### 9. REPORT FROM CLOSED SESSION

# **10. ADJOURNMENT**

\* Attachments

#### The next scheduled meeting is WEDNESDAY, January 20th, 10:00 A.M at SUTTER CREEK COMMUNITY BUILDING 33 CHURCH STREET, SUTTER CREEK

# A G E N D A November 19, 2015 2:00 PM Special Board Meeting SUTTER CREEK COMMUNITY BUILDING 33 CHURCH STREET, SUTTER CREEK

# 1. CALL TO ORDER AND ESTABLISH A QUORUM - 2:00 PM

# 2. PLEDGE OF ALLEGIANCE TO THE FLAG

3. **PUBLIC FORUM** – Discussion items only, no action to be taken. Any person may address the Board at this time upon any subject within the jurisdiction of the Amador Regional Sanitation Authority; however, any matter that requires action may be referred to staff and/or Committee for a report and recommendation for possible action at a subsequent Board meeting. Please note – there is a five (5) minute limit per topic.

# 4. INFORMATION/CORRESPONDENCE – For Information Only.

- A. 2015 October Monthly Monitoring Report
- **5. CONSENT AGENDA** *Items listed on the consent agenda are considered routine and may be enacted in one motion. Any item may be removed for discussion at the request of the Board or the Public.*
- \* A. Approval of Minutes of October 28, 2015
- \* B. Warrants-November

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\* C. October Financial Statements

# 6. GENERAL MANAGER'S REPORT- Items for information and discussion

- A. Regional Study-Staff will provide an oral update regarding the status of the Regional Study
- 1. Objection Letter from Pope Ranch
- 2. Email exchange with Santec re Reimbursement
- B. Henderson Dam Repair Update
- 1. Letter to DSOD
  - 2. Dam Inspection 8-25-15
  - 3. Response to 8-25-15 Inspection report
  - C. System Status Report-Staff will provide a status update
  - 1. System Tracking Report and graphs
- 2. Email exchange with Perc Water re Ione flows
  - 3. Letter to Ione from GM

#### 7. ADMINISTRATIVE MATTERS

- A. RFP for Audit Services
  - 1. Review and approve Engagement Letter
- B. Ione Agreement
  - 1. Letter from Ione City Attorney to RWQCB
  - 2. Ione Invoice for Engineering and Response letter
  - C. General Managers hours and per diem reimbursements

# 8. CLOSED SESSION

A. CONFERENCE WITH LEGAL COUNSEL-ANTICIPATED LITIGATION Initiation of litigation pursuant to paragraph (4) of subdivision (d) of Section 59456.9: 1 potential case

# 9. REPORT FROM CLOSED SESSION

#### **10. ADJOURNMENT**

#### \* Attachments

# The next scheduled meeting is TUESDAY, December 15, 1:30 PM at SUTTER CREEK COMMUNITY BUILDING 33 CHURCH STREET, SUTTER CREEK

Amador Regional Sanitation Authority

# AGENDA October 28, 2015 10:00 A.M. Regular Session SUTTER CREEK COMMUNITY BUILDING **33 CHURCH STREET, SUTTER CREEK** CALL TO ORDER AND ESTABLISH A OUORUM -10:00 A.M

#### 2. PLEDGE OF ALLEGIANCE TO THE FLAG

3. **PUBLIC FORUM** – Discussion items only, no action to be taken. Any person may address the Board at this time upon any subject within the jurisdiction of the Amador Regional Sanitation Authority; however, any matter that requires action may be referred to staff and/or Committee for a report and recommendation for possible action at a subsequent *Board meeting. Please note – there is a five (5) minute limit per topic.* 

#### 4. **CLOSED SESSION-**

1.

A. CONFERENCE WITH LEGAL COUNSEL-ANTICIPATED LITIGATION Initiation of litigation pursuant to paragraph (4) of subdivision (d) of Section 59456.9 (1) Potential case

#### **REPORT FROM CLOSED SESSION** 5.

#### **INFORMATION/CORRESPONDENCE** – For Information Only. 6.

- \* A. 2015 September Monthly Monitoring Report
- 7. **CONSENT AGENDA** – Items listed on the consent agenda are considered routine and may be enacted in one motion. Any item may be removed for discussion at the request of the Board or the Public.
- A. Approval of Minutes of September 29, 2015 \*
- B. Warrants- October \*
- C. September Financial Statements \*

#### **ADMINISTRATIVE MATTERS** 8.

- A. RFP for Audit Services-Review Proposals and Select Auditor- Staff Report, Proposal recaps and cost comparison.
- B. Appoint Treasurer and move funds to Umpqua Bank- Staff Report \* 1. Approve Resolution 15-16-02
- \* C. Advocation Inc.- Cancel membership- Staff Report and Quarterly Letter
  - D. State Controller's Annual Report- Staff Report and Annual Report
  - E. General Managers hours and per diem reimbursements

#### 9. **GENERAL MANAGER'S REPORT**

- \* A. Presentation by Bob Sleppy regarding plan for disposing Mule Creek effluent on an Ione ranch \*
  - B. Regional Study-Staff will provide an oral update regarding the status of the Regional Study
    - C. Henderson Dam Repair Update-Request for extension, review proposal with DSOD: Report on meeting with DSOD
- \* D. System Status Report- Staff will provide a status update

# **10. ADJOURNMENT**

\* Attachments

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#### The next scheduled meeting is WEDNESDAY, November 25th, 10:00 A.M at SUTTER CREEK COMMUNITY BUILDING **33 CHURCH STREET, SUTTER CREEK**

Amador Regional Sanitation Authority

# A G E N D A September 29, 2015 10:00 A.M. Regular Session SUTTER CREEK COMMUNITY BUILDING 33 CHURCH STREET, SUTTER CREEK

# 1. CALL TO ORDER AND ESTABLISH A QUORUM -10:00 A.M

# 2. PLEDGE OF ALLEGIANCE TO THE FLAG

3. **PUBLIC FORUM** – Discussion items only, no action to be taken. Any person may address the Board at this time upon any subject within the jurisdiction of the Amador Regional Sanitation Authority; however, any matter that requires action may be referred to staff and/or Committee for a report and recommendation for possible action at a subsequent Board meeting. Please note – there is a five (5) minute limit per topic.

#### 4. CLOSED SESSION-

 A. CONFERENCE WITH LEGAL COUNSEL-ANTICIPATED LITIGATION Initiation of litigation pursuant to paragraph (4) of subdivision (d) of Section 59456.9 (1) Potential case

# 5. REPORT FROM CLOSED SESSION

- 6. INFORMATION/CORRESPONDENCE For Information Only.
  - A. 2015 August Monthly Monitoring Report
- 7. **CONSENT AGENDA** *Items listed on the consent agenda are considered routine and may be enacted in one motion. Any item may be removed for discussion at the request of the Board or the Public.*
- \* A. Approval of Minutes of August 26, 2015
- \* B. Warrants- September
- \* C. August Financial Statement

# 8. ADMINISTRATIVE MATTERS

\* A. RFP for Audit Services

#### 9. GENERAL MANAGER'S REPORT

- A. Regional Study-Staff will provide an oral update regarding the status of the Regional Study
- B. Henderson Dam Repair Update-Request for extension, review proposal with DSOD
- \* C. System Status Report- Staff will provide a status update
- \* D. Request to Ione regarding flows

# **10. ADJOURNMENT**

\* Attachments

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# The next scheduled meeting is WEDNESDAY, October 28th, 10:00 A.M at SUTTER CREEK COMMUNITY BUILDING 33 CHURCH STREET, SUTTER CREEK

Amador Regional Sanitation Authority

# A G E N D A August 26, 2015 9:30 A.M. Special Meeting 10:00 A.M. Regular Session SUTTER CREEK COMMUNITY BUILDING 33 CHURCH STREET, SUTTER CREEK

# 1. CALL TO ORDER AND ESTABLISH A QUORUM -9:30 A.M

# 2. PLEDGE OF ALLEGIANCE TO THE FLAG

3. **PUBLIC FORUM** – Discussion items only, no action to be taken. Any person may address the Board at this time upon any subject within the jurisdiction of the Amador Regional Sanitation Authority; however, any matter that requires action may be referred to staff and/or Committee for a report and recommendation for possible action at a subsequent Board meeting. Please note – there is a five (5) minute limit per topic.

# 4. CLOSED SESSION-

 A. CONFERENCE WITH LEGAL COUNSEL-ANTICIPATED LITIGATION Initiation of litigation pursuant to paragraph (4) of subdivision (d) of Section 59456.9 (1) Potential case

# 5. **REPORT FROM CLOSED SESSION**

- 6. INFORMATION/CORRESPONDENCE For Information Only.
- \* A. 2015 July Monthly Monitoring Report
- \* B. Annual Report-Preston Reservoir
- \* C. SDRMA- President's Special Acknowledgement Award
- 7. **CONSENT AGENDA** Items listed on the consent agenda are considered routine and may be enacted in one motion. Any item may be removed for discussion at the request of the Board or the Public.
- \* A. Approval of Minutes of July 22, 2015
- \* B. Warrants- August

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\* C. July Financial Statement

# 8. ENGINEER'S REPORT-Items for information and discussion

- A. Henderson Dam Repair- Review and Discuss Final Report
  - 1. Review Final Report and Authorize General Manager and Engineer to submit to DSOD for concurrence
  - 2. Henderson pond solids sampling, testing and report- Authorize General Manager to contract with Synagro to sample and test pond solids.
  - 3. Site Cleanup Sub Account Program (SCAP)-Authorize General Manager to apply for funding.
- \* B. System Status Report

# 9. ADMINISTRATIVE MATTERS

A. Umpqua Bank Signature Card-Review and Adopt Resolution for Signature Cards

# **10. GENERAL MANAGER'S REPORT**

- A. Regional Study-Staff will provide an oral update regarding the status of the Regional Study
- B. Letters to SWRCB regarding grants, response and SWRCB authorization to proceed.
  - C. Authorize General Manager to pursue planning Grant and Construction Grants for the Henderson Dam Under Drain and sludge removal Project in conjunction with a larger Water recycling and Agricultural grant for upgrades to Henderson, testing pod solids, upgrades to existing irrigation systems, additional irrigation sources, system automation, potential storage sites, SCADA and solar systems.

# **10. ADJOURNMENT**

\* Attachments

### The next scheduled meeting is WEDNESDAY, September 23rd, 10:00 A.M at SUTTER CREEK COMMUNITY BUILDING 33 CHURCH STREET, SUTTER CREEK

Amador Regional Sanitation Authority

# A G E N D A July 22, 2015 10:00 A.M. Regular Session SUTTER CREEK COMMUNITY BUILDING 33 CHURCH STREET, SUTTER CREEK

# 1. CALL TO ORDER AND ESTABLISH A QUORUM -10:00 A.M

# 2. PLEDGE OF ALLEGIANCE TO THE FLAG

3. **PUBLIC FORUM** – Discussion items only, no action to be taken. Any person may address the Board at this time upon any subject within the jurisdiction of the Amador Regional Sanitation Authority; however, any matter that requires action may be referred to staff and/or Committee for a report and recommendation for possible action at a subsequent Board meeting. Please note – there is a five (5) minute limit per topic.

# 4. CLOSED SESSION-None

# 5. REPORT FROM CLOSED SESSION-None

#### 6. INFORMATION/CORRESPONDENCE – For Information Only.

- A. 2015 June Monthly Monitoring Report- to be distributed at the meeting.
- \* B. Board Member Stipends
- 7. **CONSENT AGENDA** *Items listed on the consent agenda are considered routine and may be enacted in one motion.* Any item may be removed for discussion at the request of the Board or the Public.
- \* A. Approval of Minutes of June 24, 2015
- \* B. Warrants- July
- \* C. June Financial Statement

#### 8. ENGINEER'S REPORT-Items for information and discussion

- A. Henderson Dam Repair Update- Staff will provide a status update
- B. System Status Report- to be distributed at the meeting.

#### 9. ADMINISTRATIVE MATTERS

- \* A. CFCC Funding Fair- Authorize General Manager to attend CFCC Funding Fair presented by SWRCB, DWR, I-Bank, HUD, and others at the Truckee Town Hall in August.
  - B. County Auditor's Correspondence-Information and Signers Sheet

# 10. GENERAL MANAGER'S REPORT

- A. Regional Study-Staff will provide an oral update regarding the status of the Regional Study
- B. Central Valley Regional Water Quality Control Board (CVRWQCB) Correspondence

# **10. ADJOURNMENT**

\* Attachments

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### The next scheduled meeting is WEDNESDAY, August 26th, 10:00 A.M at SUTTER CREEK COMMUNITY BUILDING 33 CHURCH STREET, SUTTER CREEK

Amador Regional Sanitation Authority

# A G E N D A June 24, 2015 10:00 A.M. Regular Session SUTTER CREEK COMMUNITY BUILDING 33 CHURCH STREET, SUTTER CREEK

# 1. CALL TO ORDER AND ESTABLISH A QUORUM -10:00 A.M

# 2. PLEDGE OF ALLEGIANCE TO THE FLAG

3. **PUBLIC FORUM** – Discussion items only, no action to be taken. Any person may address the Board at this time upon any subject within the jurisdiction of the Amador Regional Sanitation Authority; however, any matter that requires action may be referred to staff and/or Committee for a report and recommendation for possible action at a subsequent Board meeting. Please note – there is a five (5) minute limit per topic.

# 4. CLOSED SESSION

- A. CONFERENCE WITH LEGAL COUNSEL-ANTICIPATED LITIGATION Initiation of litigation pursuant to paragraph (4) of subdivision (d) of Section 59456.9:
   1 potential case
  - potential case
- B. PUBLIC EMPLOYMENT Pursuant to Government Code Section 54957(c)(1) Title: General Manager

# C. CONFERENCE WITH LABOR NEGOTIATORS

Pursuant to Government Code Section 54957.6 Agency designated representatives: Gary Ghio, Interim General Manager, Harriet Steiner, Legal Counsel Unrepresented employee: General Manager

# 5. REPORT FROM CLOSED SESSION

- 6. INFORMATION/CORRESPONDENCE For Information Only.
  - A. 2015 April Monthly Monitoring Report
- \* B. 2015 May Monthly Monitoring report
- 7. **CONSENT AGENDA** Items listed on the consent agenda are considered routine and may be enacted in one motion. Any item may be removed for discussion at the request of the Board or the Public.
- \* A. Approval of Minutes of April 22, 2015
- \* B. Approval of Minutes of May 27, 2015- Adjournment
- \* C. Warrants- May

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- \* D. Warrants-June
- \* E. April Financial Statement
- \* F. May Financial Statement

# 8. GENERAL MANAGER'S REPORT-Items for information and discussion

- A. Regional Study-Staff will provide an oral update regarding the status of the Regional Study
- B. Henderson Dam Repair Update- Staff will provide a status update
- C. System Status Report-Staff will provide an oral status update
- \* D. Central Valley Regional Water Quality Control Board (CVRWQCB) Correspondence

# 9. ADMINISTRATIVE MATTERS

A. Consideration of Agreement for Appointment- General Manager

# **10. ADJOURNMENT**

\* Attachments

# The next scheduled meeting is WEDNESDAY, July 22nd, 10:00 A.M at SUTTER CREEK COMMUNITY BUILDING 33 CHURCH STREET, SUTTER CREEK

Amador Regional Sanitation Authority

# A G E N D A June 3, 2015 10:00 A.M. Regular Session THE AMADOR COUNTY HEALTH & HUMAN SERVICES OFFICE CONFERENCE ROOM "E"

# 1. CALL TO ORDER AND ESTABLISH A QUORUM -10:00 A.M

# 2. PLEDGE OF ALLEGIANCE TO THE FLAG

**3. PUBLIC FORUM** – Discussion items only, no action to be taken. Any person may address the Board at this time upon any subject within the jurisdiction of the Amador Regional Sanitation Authority; however, any matter that requires action may be referred to staff and/or Committee for a report and recommendation for possible action at a subsequent Board meeting. Please note – there is a five (5) minute limit per topic.

# 4. CLOSED SESSION

- A. CONFERENCE WITH LEGAL COUNSEL-ANTICIPATED LITIGATION Initiation of litigation pursuant to paragraph (4) of subdivision (d) of Section 59456.9:
  - 1 potential case
- B. PUBLIC EMPLOYMENT Pursuant to Government Code Section 54957(c)(1) Title: General Manager

# C. CONFERENCE WITH LABOR NEGOTIATORS

Pursuant to Government Code Section 54957.6 Agency designated representatives: Gary Ghio, Interim General Manager, Harriet Steiner, Legal Counsel Unrepresented employee: General Manager

# 5. REPORT FROM CLOSED SESSION

# 6. INFORMATION/CORRESPONDENCE – For Information Only.

- A. 2015 April Monthly Monitoring Report
- 7. **CONSENT AGENDA** Items listed on the consent agenda are considered routine and may be enacted in one motion. Any item may be removed for discussion at the request of the Board or the Public.
  - A. Approval of Minutes of April 22, 2015
- \* B. Warrants

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\* C. April Financial Statement

# 8. GENERAL MANAGER'S REPORT-Items for information and discussion

- A. Regional Study-Staff will provide an oral update regarding the status of the Regional Study
- B. Henderson Dam Repair Update- Staff will provide a status update
- C. System Status Report-Staff will provide an oral status update
- \* D. Central Valley Regional Water Quality Control Board (CVRWQCB) Correspondence

# 9. ADMINISTRATIVE MATTERS

A. Consideration of Agreement for Appointment- General Manager

# **10. ADJOURNMENT**

\* Attachments

# The next scheduled meeting is WEDNESDAY, June 24th, 10:00 A.M at SUTTER CREEK COMMUNITY BUILDING 33 CHURCH STREET, SUTTER CREEK

Amador Regional Sanitation Authority

# A G E N D A May 27, 2015 10:00 A.M. Regular Session SUTTER CREEK COMMUNITY BUILDING 33 CHURCH STREET, SUTTER CREEK

# 1. CALL TO ORDER AND ESTABLISH A QUORUM -10:00 A.M

# 2. PLEDGE OF ALLEGIANCE TO THE FLAG

3. **PUBLIC FORUM** – Discussion items only, no action to be taken. Any person may address the Board at this time upon any subject within the jurisdiction of the Amador Regional Sanitation Authority; however, any matter that requires action may be referred to staff and/or Committee for a report and recommendation for possible action at a subsequent Board meeting. Please note – there is a five (5) minute limit per topic.

# 4. CLOSED SESSION

- A. CONFERENCE WITH LEGAL COUNSEL-ANTICIPATED LITIGATION Initiation of litigation pursuant to paragraph (4) of subdivision (d) of Section 59456.9:
  - 1 potential case
- B. PUBLIC EMPLOYMENT Pursuant to Government Code Section 54957(c)(1) Title: General Manager
- C. CONFERENCE WITH LABOR NEGOTIATORS Pursuant to Government Code Section 54957.6 Agency designated representatives: Gary Ghio, Interim General Manager, Harriet Steiner, Legal Counsel Unrepresented employee: General Manager

# 5. REPORT FROM CLOSED SESSION

- 6. **INFORMATION/CORRESPONDENCE** For Information Only.
- \* A. 2015 April Monthly Monitoring Report
- 7. **CONSENT AGENDA** Items listed on the consent agenda are considered routine and may be enacted in one motion. Any item may be removed for discussion at the request of the Board or the Public.
  - A. Approval of Minutes of April 22, 2015
- \* B. Warrants

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\* C. April Financial Statement

# 8. GENERAL MANAGER'S REPORT-Items for information and discussion

- A. Regional Study-Staff will provide an oral update regarding the status of the Regional Study
- B. Henderson Dam Repair Update- Staff will provide a status update
- C. System Status Report-Staff will provide an oral status update
- D. Central Valley Regional Water Quality Control Board (CVRWQCB) Correspondence

# 9. ADMINISTRATIVE MATTERS

A. Consideration of Agreement for Appointment- General Manager

# **10. ADJOURNMENT**

\* Attachments

# The next scheduled meeting is WEDNESDAY, June 24th, 10:00 A.M at SUTTER CREEK COMMUNITY BUILDING 33 CHURCH STREET, SUTTER CREEK

Amador Regional Sanitation Authority

# A G E N D A April 22, 2015 10:00 A.M. Regular Session THE AMADOR COUNTY HEALTH & HUMAN SERVICES OFFICE CONFERENCE ROOM "E"

# 1. CALL TO ORDER AND ESTABLISH A QUORUM -10:00 A.M

# 2. PLEDGE OF ALLEGIANCE TO THE FLAG

3. **PUBLIC FORUM** – Discussion items only, no action to be taken. Any person may address the Board at this time upon any subject within the jurisdiction of the Amador Regional Sanitation Authority; however, any matter that requires action may be referred to staff and/or Committee for a report and recommendation for possible action at a subsequent Board meeting. Please note – there is a five (5) minute limit per topic.

#### 4. INFORMATION/CORRESPONDENCE – For Information Only.

- \* A. 2015 February Monthly Monitoring Report
- \* B. 2015 March Monthly Monitoring Report
- **5. CONSENT AGENDA** *Items listed on the consent agenda are considered routine and may be enacted in one motion. Any item may be removed for discussion at the request of the Board or the Public.* 
  - A. Approval of Minutes of March 25, 2015
- \* B. Approval of Minutes of the April 7, 2015 Special Meeting
- \* C. Warrants

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\* D. March Financial Statement

# 6. ADMINISTRATIVE MATTERS

#### A. General Manager position update

# 7. GENERAL MANAGER'S REPORT-Items for information and discussion

- A. Regional Study-Staff will provide an oral update regarding the status of the Regional Study
- B. Henderson Dam Repair Update- Staff will provide a status update
- \* C. System Status Report-Staff will provide an oral status update

#### 8. CLOSED SESSION

- A. CONFERENCE WITH LEGAL COUNSEL-ANTICIPATED LITIGATION Initiation of litigation pursuant to paragraph (4) of subdivision (d) of Section 59456.9: 1 potential case
- \* B. CONFERENCE WITH REAL PROPERTY NEGOTIATORS

Pursuant to Section 54954.5

Property: APN 11-090-022 Agency Negotiator: Gary Ghio, Interim General Manager & Harriet Steiner, Attorney Under Negotiation: N/A

# 9. ADJOURNMENT

\* Attachments

# The next scheduled meeting is WEDNESDAY, MAY 27<sup>th</sup>, 10:00 A.M at SUTTER CREEK COMMUNITY BUILDING 33 CHURCH STREET, SUTTER CREEK

Amador Regional Sanitation Authority

"Servicing Amador City, Martell, & Sutter Creek"

# AGENDA March 25, 2015 10:00 A.M. Regular Session SUTTER CREEK COMMUNITY BUILDING **33 CHURCH STREET, SUTTER CREEK**

#### 1. CALL TO ORDER AND ESTABLISH A QUORUM -10:00 A.M

#### 2. PLEDGE OF ALLEGIANCE TO THE FLAG

- 3. PUBLIC FORUM - Discussion items only, no action to be taken. Any person may address the Board at this time upon any subject within the jurisdiction of the Amador Regional Sanitation Authority; however, any matter that requires action may be referred to staff and/or Committee for a report and recommendation for possible action at a subsequent Board meeting. Please note – there is a five (5) minute limit per topic.
- **INFORMATION/CORRESPONDENCE** For Information Only. 4. \*
  - A. 2015 January Monthly Monitoring Report
  - B. 10-11, 11-12, 12-13, 13-14 Audited Financial Statements
- CONSENT AGENDA Items listed on the consent agenda are considered routine and may be enacted in one motion. 5. Any item may be removed for discussion at the request of the Board or the Public.
  - A. Approval of Minutes of February 25, 2015
  - B. Warrants

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C. February Financial Statement \*

#### **ADMINISTRATIVE MATTERS** 6.

- A. General Manager position update
  - 1. Form an Ad-Hoc Interview Committee
- \* B. Ione (Perc Water) request for treated wastewater to tertiary plant
- \* C. RFP for Wastewater Disposal Options

#### 7. **GENERAL MANAGER'S REPORT**

- A. Regional Study-Staff will provide an update regarding the status of the Regional Study
- B. CDCR NOP SEIR-Staff will provide an update regarding CDCR's NOP SEIR
- C. Henderson Dam Repair Update- Staff will provide a status update
  - D. System Status Report-Staff will provide a status update

#### 8. **CLOSED SESSION**

A. CONFERENCE WITH LEGAL COUNSEL - ANTICIPATED LITIGATION Initiation of litigation pursuant to paragraph (4) OF subdivision (d) of Section 59456.9:1 potential case

#### Adjournment: 9.

\* Attachments

# The next scheduled meeting is WEDNESDAY, APRIL 22<sup>ND</sup>, 10:00 A.M at THE AMADOR COUNTY HEALTH & HUMAN SERVICES OFFICE **CONFERENCE ROOM "E"**

Amador Regional Sanitation Authority

"Servicing Amador City, Martell, & Sutter Creek"

# A G E N D A FEBRUARY 25, 2015 10:00 A.M. Regular Session AMADOR COUNTY HEALTH & HUMAN SERVICES OFFICE CONFERENCE ROOM "E" 1087 CONDUCTOR BLVD, SUTTER CREEK

1. CALL TO ORDER AND ESTABLISH A QUORUM -10:00 A.M

#### 2. PLEDGE OF ALLEGIANCE TO THE FLAG

#### 3. ELECTION OF OFFICERS

4. **PUBLIC FORUM** – Discussion items only, no action to be taken. Any person may address the Board at this time upon any subject within the jurisdiction of the Amador Regional Sanitation Authority; however, any matter that requires action may be referred to staff and/or Committee for a report and recommendation for possible action at a subsequent Board meeting. Please note – there is a five (5) minute limit per topic.

#### 5. INFORMATION/CORRESPONDENCE – For Information Only.

- A. 2014 December Monthly Monitoring Report
- B. 2014 Annual Bio Solids Monitoring Report

6. CONSENT AGENDA – Items listed on the consent agenda are considered routine and may be enacted in one motion. Any item may be removed for discussion at the request of the Board or the Public.

- \* A. Approval of Minutes of January 28, 2015
- \* B. Approval of Minutes of December 17, 2014
- \* C. Approval of Minutes of November 26, 2014
- \* D. Approval of Minutes of October 22, 2014
- \* E. Approval of Minutes of October 8, 2014

#### 7. ADMINISTRATIVE MATTERS

- \* A. General Manager Options- Discuss job description, timeframes and costs associated with filling General Manager position
- \* B. Budget Update-Adopt Resolution \*\*\* Amendment 1, amending the FY 14-15 ARSA Budget
- \* C. Past RWCQB permit fees and past billing to the City of Ione
- D. City of Sutter Creek loan

#### 8. GENERAL MANAGER'S REPORT

- A. Regional Study-Staff will provide an oral update regarding the status of the Regional Study
- B. CDCR NOP SEIR-Staff will provide an update regarding CDCR's NOP SEIR
- C. Henderson Dam Repair Update- Staff will provide a status update
- \* D. System Status Report-Staff will provide an oral status update

# 9. ADJOURNMENT

\* Attachments

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Amador Regional Sanitation Authority

# **MEETING AGENDA**

Wednesday – January 28, 2015

# AMADOR COUNTY HEALTH & HUMAN SERVICES OFFICE <u>CONFERENCE ROOM "E"</u> 10877 Conductor Blvd. Sutter Creek, CA 95685

# <u>11:00 A.M.</u>

PROCEEDINGS OF THIS MEETING ARE TAPE RECORDED. PLEASE TURN OFF ALL CELL PHONES, PAGERS AND WIRELESS DEVICES.

### 1. CALL TO ORDER

# 2. PLEDGE OF ALLEGIANCE

- 3. <u>AGENDA</u>: Approval of agenda for this date; any and all off-agenda items must be approved by the Board of Directors.
- 4. **PUBLIC MATTERS NOT ON AGENDA**: Discussion items only, no action to be taken. Any person may address the Board at this time upon any subject within the jurisdiction of the Amador Regional Sanitation Authority; however, any matter that requires action may be referred to staff and/or Committee for a report and recommendation for possible action at a subsequent Board meeting. Please note there is a five (5) minute limit per topic.
- <u>CHANGE OF REPRESENTATION ON ARSA BOARD FOR AMADOR CITY</u> Discussion/Action The ARSA Board will recognize and welcome Tim Knox from the Amador City Council. Mr. Knox will replace outgoing Amador City Council representative Susan Bragstad.

#### 6. <u>AGENDA</u>: – Discussion and Action all matters.

- A. Approval of Minutes
  - i. April 25, 2012
  - ii. June 26, 2013
  - iii. June 25, 2014
  - iv. August 27, 2014 Special Meeting
  - v. August 27, 2014
- B. GENERAL MANAGER OPTIONS
  - i. The Board will receive a report from the City of Sutter Creek regarding Sutter Creek City Manager acting as ARSA Manager.
  - ii. The Board will provide direction to staff on the General Manager recruitment process.
- C. MANAGER'S REPORT The Manager will provide the Board with a verbal report on any additional District matters and future agenda items.
  - i. City of Ione Request for State Water Resources Control Board Reimbursement for Annual Permit Fees \$14,929.00 correspondence dated January 9, 2015.
  - ii. Housekeeping Matters Memorandum dated January 22, 2015
  - iii. ARSA/Ione/CDCR Regional Water Recycling Study Update.

# 7. <u>CLOSED SESSION</u>

A. CONFERENCE WITH LEGAL COUNSEL - ANTICIPATED LITIGATION

Initiation of litigation pursuant to paragraph (4) of subdivision (d) of Section 54956.9: 1 potential case.

#### ADJOURNMENT: The meeting will adjourn to the next regular meeting of Wednesday, February 25, 2015.

In compliance with the Americans with Disabilities Act, if you are a disabled person and you need a disability-related modification or accommodation to participate in this meeting, please contact Mary Beth Van Voorhis at (209) 267-5647 ext. 245 or (209) 267-0639 (fax). Requests must be made as early as possible, and at least two-full business days before the start of the meeting.

Any writing that is distributed to a majority of the Board by any person in connection with an agenda item is a disclosable public record (subject to any exemption under the Public Records Act) and is available for inspection at the City of Sutter Creek, Amador Regional Sanitation Authority (ARSA), 18 Main St., Sutter Creek, CA 95685 during regular business hours. Any public documents distributed to the Board less than 72 hours prior to a meeting will be available at the City of Sutter Creek.

#### 18 Main Street Sutter Creek, CA 95685 TELEPHONE (209) 267-5647 FAX (209) 267-0639 TTY 711

# Amador Regional Sanitation Authority

"Servicing Amador City, Martell, & Sutter Creek"

# **MEETING AGENDA**

Wednesday – December 17, 2014

# 33 Church Street Sutter Creek, CA 95685

# 10:00 A.M.

PROCEEDINGS OF THIS MEETING ARE TAPE RECORDED. PLEASE TURN OFF ALL CELL PHONES, PAGERS AND WIRELESS DEVICES.

# 1. CALL TO ORDER

# 2. PLEDGE OF ALLEGIANCE

# 3. CLOSED SESSION

- A. CONFERENCE WITH LEGAL COUNSEL ANTICIPATED LITIGATION Initiation of litigation pursuant to paragraph (4) of subdivision (d) of Section 54956.9: 1 potential case.
- 4. <u>AGENDA</u>: Approval of agenda for this date; any and all off-agenda items must be approved by the Board of Directors.
- 5. <u>PUBLIC MATTERS NOT ON AGENDA</u>: Discussion items only, no action to be taken. Any person may address the Board at this time upon any subject within the jurisdiction of the Amador Regional Sanitation Authority; however, any matter that requires action may be referred to staff and/or Committee for a report and recommendation for possible action at a subsequent Board meeting. Please note there is a five (5) minute limit per topic.
- 6. <u>AGENDA</u>: Discussion and Action all matters.
  - A. GENERAL MANAGER OPTIONS The Board will discuss and provide direction to staff on options to fill the ARSA Manager position.
  - B. MANAGER'S REPORT The Manager will provide the Board with a verbal report on any additional District matters and future agenda items.
    - i. California Water Boards (CVRWQCB) correspondence dated December 10, 2014 IN SUPPORT OF REGIONAL WASTEWATER PLANNING EFFORTS FOR WESTERN AMADOR COUNTY.
    - ii. Henderson Dam and Division of Safety of Dams (DSOD) requirements.
    - iii. ARSA/Ione/CDCR Regional Water Recycling Study Update.

ADJOURNMENT: The meeting will adjourn to the next regular meeting of January 28, 2015.

In compliance with the Americans with Disabilities Act, if you are a disabled person and you need a disability-related modification or accommodation to participate in this meeting, please contact Mary Beth Van Voorhis at (209) 267-5647 ext. 245 or (209) 267-0639 (fax). Requests must be made as early as possible, and at least two-full business days before the start of the meeting.

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# 18 Main Street Sutter Creek, CA 95685 TELEPHONE (209) 267-5647 FAX (209) 267-0639 TTY 711





# **MEETING**

# **CANCELLATION NOTICE**

The Amador Regional Sanitation Authority Board Meeting Scheduled for Wednesday, July 23, 2014 Has Been Cancelled

The next regular meeting of the ARSA Board will be held on:

Wednesday, August 27, 2014 10:00 A.M. *Amador County Transportation Commission Conference Room* 117 Valley View Drive, Sutter Creek, CA 95685

DATE POSTED: Friday, July 18, 2014

18 Main Street ♦ Sutter Creek, CA 95685 ♦ TELEPHONE (209) 267-5647 ♦ FAX (209) 267-0639 ♦ TTY 711

Amador Regional Sanitation Authority

# AGENDA

Wednesday – June 25, 2014

Community Building 33 Church Street Sutter Creek, CA 95685

# 10:00 A.M.

PROCEEDINGS OF THIS MEETING ARE TAPE RECORDED. PLEASE TURN OFF ALL CELL PHONES, PAGERS AND WIRELESS DEVICES.

# 1. CALL TO ORDER

# 2. PLEDGE OF ALLEGIANCE

- 3. <u>AGENDA</u>: Approval of agenda for this date; any and all off-agenda items must be approved by the Board of Directors.
- 4. <u>PUBLIC MATTERS NOT ON AGENDA</u>: Discussion items only, no action to be taken. Any person may address the Board at this time upon any subject within the jurisdiction of the Amador Regional Sanitation Authority; however, any matter that requires action may be referred to staff and/or Committee for a report and recommendation for possible action at a subsequent Board meeting. Please note there is a five (5) minute limit per topic.
- 5. <u>AGENDA</u>: Discussion and Action all items.
  - A. 2014-2015 Preliminary Budget review (discussion only).
  - B. ARSA Water Recycling Grant #13-711-550.
    - i. Status update (discussion only).
    - ii. Ad-Hoc Committee Member selection (action requested).
- 6. MANAGER'S REPORT: Discussion only.
  - A. The Manager will provide the Board with a verbal report on any additional District matters and future agenda items.

# 7. CITY OF IONE UPDATE

- 8. **<u>NEXT MEETING</u>**: The next regular meeting is scheduled for Wednesday, July 23, 2014.
- 9. ADJOURNMENT

In compliance with the Americans with Disabilities Act, if you are a disabled person and you need a disability-related modification or accommodation to participate in this meeting, please contact Mary Beth Van Voorhis at (209) 267-5647 ext. 245 or (209) 267-0639 (fax). Requests must be made as early as possible, and at least two-full business days before the start of the meeting.

Any writing that is distributed to a majority of the Board by any person in connection with an agenda item is a disclosable public record (subject to any exemption under the Public Records Act) and is available for inspection at the City of Sutter Creek, Amador Regional Sanitation Authority (ARSA), 18 Main St., Sutter Creek, CA 95685 during regular business hours. Any public documents distributed to the Board less than 72 hours prior to a meeting will be available at the City of Sutter Creek.

# 18 Main Street ♦ Sutter Creek, CA 95685 ♦ TELEPHONE (209) 267-5647 ♦ FAX (209) 267-0639 ♦ TTY 711

Amador Regional Sanitation Authority

# AGENDA

# Wednesday - May 28, 2014

Community Building 33 Church Street Sutter Creek, CA 95685

# 10:00 A.M.

PROCEEDINGS OF THIS MEETING ARE TAPE RECORDED. PLEASE TURN OFF ALL CELL PHONES, PAGERS AND WIRELESS DEVICES.

# 1. CALL TO ORDER

# 2. PLEDGE OF ALLEGIANCE

- 3. <u>AGENDA</u>: Approval of agenda for this date; any and all off-agenda items must be approved by the Board of Directors.
- 4. <u>PUBLIC MATTERS NOT ON AGENDA</u>: Discussion items only, no action to be taken. Any person may address the Board at this time upon any subject within the jurisdiction of the Amador Regional Sanitation Authority; however, any matter that requires action may be referred to staff and/or Committee for a report and recommendation for possible action at a subsequent Board meeting. Please note there is a five (5) minute limit per topic.
- 5. AGENDA: Discussion and Action all items.
  - A. Approval of Minutes December 18, 2013

# 6. MANAGER'S REPORT: Discussion only.

- A. ARSA Water Recycling Grant #13-711-550 Status.
- B. Consulting Services Agreement between ARSA and HydroScience Engineers Recycling Grant Feasibility Study.
- C. Henderson Dam Dept. of Water Resources Inspection Report received April 21, 2014.
- D. Preston Dam Dept. of Water Resources Inspection Report received May 19, 2014.
- E. Richardson and Company Audit Status 2010/11, 2011/12, 2012/13.
- F. The Manager will provide the Board with a verbal report on any additional District matters and future agenda items.

# 7. CITY OF IONE UPDATE

- 8. NEXT MEETING: The next regular meeting is scheduled for Wednesday, June 25, 2014.
- 9. ADJOURNMENT

In compliance with the Americans with Disabilities Act, if you are a disabled person and you need a disability-related modification or accommodation to participate in this meeting, please contact Mary Beth Van Voorhis at (209) 267-5647 ext. 245 or (209) 267-0639 (fax). Requests must be made as early as possible, and at least two-full business days before the start of the meeting.

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Amador Regional Sanitation Authority

# AGENDA

# Wednesday – March 26, 2014

Community Building 33 Church Street Sutter Creek, CA 95685

# 10:00 A.M.

PROCEEDINGS OF THIS MEETING ARE TAPE RECORDED. PLEASE TURN OFF ALL CELL PHONES, PAGERS AND WIRELESS DEVICES.

# 1. CALL TO ORDER

# 2. PLEDGE OF ALLEGIANCE

- 3. <u>AGENDA</u>: Approval of agenda for this date; any and all off-agenda items must be approved by the Board of Directors.
- 4. <u>PUBLIC MATTERS NOT ON AGENDA</u>: Discussion items only, no action to be taken. Any person may address the Board at this time upon any subject within the jurisdiction of the Amador Regional Sanitation Authority; however, any matter that requires action may be referred to staff and/or Committee for a report and recommendation for possible action at a subsequent Board meeting. Please note there is a five (5) minute limit per topic.
- 5. <u>AGENDA</u>: Discussion and Action all items.
  - A. REQUEST FOR PROPOSALS (RFP) FOR ARSA DISPOSAL OPERATIONS AND MAINTENANCE. The Ad-Hoc Committee performed their review of the RFP's received on March 3, 2014 from AQuality Water Management and PERC Water on March 12, 2014. The Ad-Hoc Committee will review their findings and recommendation to the Board.
- 6. MANAGER'S REPORT: Discussion only.
  - A. Budget Summary & Monthly Expense Report 2013/2014 at December 31, 2013.
  - B. ARSA Water Recycling Study Grant
  - C. The Manager will provide the Board with a verbal report on any additional District matters and future agenda items.

# 7. CITY OF IONE UPDATE

8. NEXT MEETING: The next regular meeting is scheduled for Wednesday, April 23, 2014.

# 9. ADJOURNMENT

In compliance with the Americans with Disabilities Act, if you are a disabled person and you need a disability-related modification or accommodation to participate in this meeting, please contact Mary Beth Van Voorhis at (209) 267-5647 ext. 245 or (209) 267-0639 (fax). Requests must be made as early as possible, and at least two-full business days before the start of the meeting.

Any writing that is distributed to a majority of the Board by any person in connection with an agenda item is a disclosable public record (subject to any exemption under the Public Records Act) and is available for inspection at the City of Sutter Creek, Amador Regional Sanitation Authority (ARSA), 18 Main St., Sutter Creek, CA 95685 during regular business hours. Any public documents distributed to the Board less than 72 hours prior to a meeting will be available at the City of Sutter Creek.

# **Amador Regional Sanitation Authority**

# AGENDA

Wednesday – May 22, 2013 Community Building 33 Church Street Sutter Creek, CA 95685

#### 10:00 A.M.

#### PROCEEDINGS OF THIS MEETING ARE TAPE RECORDED. PLEASE TURN OFF ALL CELL PHONES, PAGERS AND WIRELESS DEVICES.

#### 1. CALL TO ORDER

#### 2. PLEDGE OF ALLEGIANCE

- 3. <u>AGENDA</u>: Approval of agenda for this date; any and all off-agenda items must be approved by the Board of Directors.
- 4. <u>PUBLIC MATTERS NOT ON AGENDA</u>: Discussion items only, no action to be taken. Any person may address the Board at this time upon any subject within the jurisdiction of the Amador Regional Sanitation Authority; however, any matter that requires action may be referred to staff and/or Committee for a report and recommendation for possible action at a subsequent Board meeting. Please note there is a five (5) minute limit per topic.
- <u>CHANGE OF REPRESENTATION ON ARSA BOARD FOR AMADOR CITY</u> Discussion / Action The ARSA Board will recognize and welcome Tim Knox from the Amador City Council. Mr. Knox will be replacing outgoing Amador City Council representative John Swift.
- 6. **<u>CONSENT AGENDA</u>**: Items listed on the consent agenda are considered routine and may be enacted by one motion. Any item may be removed for discussion and made a part of the regular agenda at the request of a Board member(s).
  - A. Approval of Minutes April 1, 2013
- 7. <u>AGENDA</u>: Discussion / Action all items.
  - A. Approval of Monthly Expenditure Reports March 31, 2013 \$14,564.25
- 8. MANAGERS REPORT: Discussion only.
  - A. The Manager will provide the Board with a verbal report on additional District matters and future agenda items.
    - Recycled water planning grant and scope of work project update.
    - Update on Central Valley Regional Water Quality Control Board Inspection

#### 9. <u>CITY OF IONE UPDATE</u>

- 10. **<u>NEXT MEETING</u>**: The next regular meeting is scheduled for Wednesday, June 26, 2013.
- 11. ADJOURNMENT

In compliance with the Americans with Disabilities Act, if you are a disabled person and you need a disability-related modification or accommodation to participate in this meeting, please contact Mary Beth Van Voorhis at (209) 267-5647 ext. 245 or (209) 267-0639 (fax). Requests must be made as early as possible, and at least two-full business days before the start of the meeting.

Any writing that is distributed to a majority of the Board by any person in connection with an agenda item is a disclosable public record (subject to any exemption under the Public Records Act) and is available for inspection at the City of Sutter Creek, Amador Regional Sanitation Authority (ARSA), 18 Main St., Sutter Creek, CA 95685 during regular business hours. Any public documents distributed to the Board less than 72 hours prior to a meeting will be available at the City of Sutter Creek.

#### AGENDA

#### Monday - April 1, 2013 **Community Building** 33 Church Street Sutter Creek, CA 95685

#### 3:00 P.M.

#### PROCEEDINGS OF THIS MEETING ARE TAPE RECORDED. PLEASE TURN OFF ALL CELL PHONES, PAGERS AND WIRELESS DEVICES.

- 1. CALL TO ORDER
- 2. PLEDGE OF ALLEGIANCE
- AGENDA: Approval of agenda for this date; any and all off-agenda items must be approved by the Board of 3. Directors.
- PUBLIC MATTERS NOT ON AGENDA: Discussion items only, no action to be taken. Any person may address the 4. Board at this time upon any subject within the jurisdiction of the Amador Regional Sanitation Authority: however, any matter that requires action may be referred to staff and/or Committee for a report and recommendation for possible action at a subsequent Board meeting. Please note - there is a five (5) minute limit per topic.
- ELECTION OF OFFICERS Discussion / Action 5 Annual Election of Board Chairman and Vice Chairman
- CONSENT AGENDA: Items listed on the consent agenda are considered routine and may be enacted by one motion. Any item may be removed for discussion and made a part of the regular agenda at the request of a Board member(s).
  - A. Approval of Minutes October 24, 2012
  - B. Approval of Minutes December 13, 2012
- 7. AGENDA: Discussion / Action all items.
  - A. Approval of Resolution #12-13-02 2012/2013 Mid-Year Budget Adjustments @ December 31, 2012 -Net Change = \$0.00.

B. Approval of Monthly Expenditure Reports

July 31, 2012	\$21,878.09
August 30, 2012	\$20,136.62
September 30, 2012	\$22,083.48
ISF Expenses 1 <sup>st</sup> Qtr.	\$10,136.00
October 31, 2012	\$61,092.39
November 30, 2012	\$19,992.90
December 31, 2012	\$64,531.96
January 31, 2013	\$26,138.17
February 28, 2013	\$30,838.52
Total YTD Expenses	\$276,828.13

#### RECYCLED WATER PLANNING GRANT & SCOPE OF WORK AND MEMORANDUM OF UNDERSTANDING WITH THE CITY OF IONE AND THE CALIFORNIA DEPT. OF CORRECTIONS FOR ARSA TO SERVE AS THE LEAD AGENCY WITH RESPECT TO THE REGIONAL STUDY RECYCLED WATER PLANNING GRANT: Discussion 7 Action.

- A. Approval of Resolution #12-13-03 authorizing an application for a Water Recycling Planning Grant from the State Water Resources Control Board for the Regional Wastewater Planning effort.
- B. Approval of Resolution #12-13-04 for the Scope of Work for the Water Recycling Planning Grant Project with the City of Ione and the California Dept. of Corrections and Rehabilitation; agreeing ARSA will serve as the lead agency for this grant and authorizing the ARSA Manager to enter into a Professional Services Agreement to perform this work and to enter into a Memorandum of Understanding with Ione & CDCR related to this Grant. Total grant \$75,000. Agencies (Ione, CDCR, ARSA) will match the \$75,000 grant @ \$25,000 per agency. Scope of Work not to exceed \$150,000.

#### 9. MANAGERS REPORT: Discussion only.

- A. The Manager will provide the Board with a verbal report on additional District matters and future agenda items.
  - Correspondence dated March 6, 2013 to Amador County Board of Supervisors Sutter Gold Mining Company Operations
  - Correspondence dated February 1, 2013 to California Department of Corrections and Rehabilitation Notice of Preparation of an Environmental Impact Report for Potential Level II Infill Sites

#### **10. CITY OF IONE UPDATE**

11. NEXT MEETING: The next regular meeting is scheduled for Wednesday, April 24, 2012.

#### 12. ADJOURNMENT

In compliance with the Americans with Disabilities Act, if you are a disabled person and you need a disability-related modification or accommodation to participate in this meeting, please contact Mary Beth Van Voorhis at (209) 267-5647 ext. 245 or (209) 267-0639 (fax). Requests must be made as early as possible, and at least two-full business days before the start of the meeting

Any writing that is distributed to a majority of the Board by any person in connection with an agenda item is a disclosable public record (subject to any exemption under the Public Records Act) and is available for inspection at the City of Sutter Creek. Amador Regional Sanitation Authority (ARSA), 18 Main St., Sutter Creek, CA 95685 during regular business hour Any public documents distributed to the Board less than 72 hours prior to a meeting will be available at the City of Sutter Creek.

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# APPENDIX C

ARSA, City of Ione, and CDCR Regional Water Recycling Feasibility Study Water Balances developed by Dexter Wilson

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				CDCR 2	30 AFY: 2016	Low Projectic	n							
	Assun	ptions:	Preston Reser The assumed Storage Pond Storage Pond Storage Pond	voir has Area Percolation r 5 has an area 6 has an area 7 has an area	is ranging from ate for the tw a of 4.35 Acre a of 3.45 Acre a of 4.38 Acre	m 0 Acres whe o Reservoirs is s and a volum s and a volum s and a volum	en empty to 18 5 100 Gallons e of 52.17 Act e of 27.62 Act e of 30.69 Act	3 when full. It per Day or 0.0 re-Feet. re-Feet and a re-Feet and a	ts Capacity is 01 Acre-Feet p Perc rate of C Perc rate of C	235 Acre-Fee per Month. ).80 Acre-Fee ).46 Acre-Fee	et. et per Day. et per Day.		Percolation Pon Perc Year Rou Perc in Winte () No Perc	ıds 6&7 und :r
Re	move Henderson 🗹 Remove Preston 📘	Ar	n Additional	377.41 113.17	Acre-Ft of Sto Acres of Spray	<i>rarage is Requ</i> y Field Require	<i>iired</i> ed to Empty P	ond 5 and Pro	oposed Stora	ge				
Month	N	lovember	December	January	February	March	April	May	June	July	August	September	October	Total
Rainfall Dry Year	In In	0.82	1.64 3.45	2.05	1.98	1.23	0.82	0.57	0.19	0.00	0.00	0.06	0.77	9.36 20.28
Rainfall 25 Year	In	4.69	7.63	6.64	3.48	2.95	5.62	1.78	0.03	0.00	0.00	0.00	2.88	32.82
Rainfall 100 Year	In	5.44	8.85	7.70	4.03	3.42	6.51	2.06	0.04	0.00	0.00	0.00	3.34	38.05
	m	1.08	0.55	0.55	0.80	1.78	5.22	5.42	7.25	6.59	7.51	5.01	2.90	41.02
Month	Ν	lovember	December	January	February	March	April	May	June	July	August	September	October	Total
Sutter Creek														
Sutter Creek WWTP Effluent	AF	80.81	66.26	51.26	36.03	33.79	33.12	34.24	35.13	41.18	51.70	77.23	77.90	618.65
CDCR CDCR Effluent to Preston Reservoir	AF	3.80	3.80	34.60	34.60	34.60	34.60	34.60	34.60	3.80	3.80	3.80	3.80	230.40
Preston Reservoir														
Preston Reservoir Maximum Available Storage	AF	235.00	235.00	235.00	235.00	235.00	235.00	235.00	235.00	235.00	235.00	235.00	235.00	
Water in Storage at Beginning of Month	AF	0.00	85.00	164.84	235.00	235.00	235.00	235.00	176.25	117.50	58.75	0.00	0.00	0.00 840.05
Precipitation	AF	8.16	13.28	11.55	6.05	5.13	9.77	3.09	0.06	0.00	0.00	0.00	5.01	62.09
Evaporation	AF	1.62	0.83	0.83	1.29	2.67	4.83	8.13	10.88	12.89	10.97	7.52	4.35	66.78
Percolation Water Available to be Applied to Storage or Effluent	- ΑF	0.01	0.01	0.01 261.41	0.01	0.01	0.01	0.01	0.01 235.16	0.01	0.01	0.01	0.01	0.11 2386 59
Water Applied(+)/Removed(-) from Storage	AF	85.00	79.84	70.16	510.50	505.04	507.05	-58.75	-58.75	-58.75	-58.75	75.51	02.55	0.00
End of Month Storage Effluent	AF AF	85.00 6.14	164.84	235.00	235.00	235.00	235.00	176.25	117.50 117.66	58.75 90.84	0.00	0.00	0.00	1542.34 844.25
Ione Ione Wastewater Effluent	AF	26.95	30.69	28.20	28.20	29.44	25.70	25.70	24.46	24.46	24.46	24.46	25.70	318.43
Total Water Influent to Ione	AF	33.09	33.35	54.61	103.57	100.28	98.35	148.24	142.12	115.29	127.74	97.96	108.06	1162.68
Discharge-Irrigation														
Water Available for Application	AF	33.09	33.35	54.61	103.57	100.28	98.35	148.24	142.12	115.29	127.74	97.96	108.06	1162.68
Needed Applied Water at Town Field	AF	0.00	0.00	0.00	0.00	0.00	0.00	34.31	52.62	60.87	52.47	38.59	9.36	248.23
Needed Applied Water at City Field	AF	0.00	0.00	0.00	0.00	0.00	0.00	7.92	12.14	14.05	12.11	8.91	2.16	57.28
Total Need Water Remaining after Irrigation	AF	0.00	0.00	0.00 54.61	0.00	0.00	0.00 98.35	89.31 58.94	-0.30	164.82 -49.52	142.08 -14.34	104.50 -6.54	19.49 88.57	662.62 500.06
Percolation Ponds 6 and 7				=0.04						=0.04				
Combined Pond Capacity Water Available	AF	58.31 33.09	58.31 33.35	58.31 54.61	58.31 103.57	58.31 100.28	58.31 98.35	58.31 58.94	58.31	58.31	58.31	58.31	58.31 88.57	699.71 570.76
Applied Water to Perc Ponds	AF	33.09	16.97	-4.66	-2.06	-1.06	-2.14	2.20	0.00	0.00	0.00	0.00	18.11	60.46
Water in Storage from previous Month	AF	0.00	35.93	58.31	58.31	58.31	58.31	58.31	58.31	53.60	47.98	43.20	39.92	570.48
Summative Ponds Percolation Rate Summative Ponds Evaporation Loss	AF	0.01	0.01	0.01	0.01	0.01	2.10	0.01 3.54	0.01 4.73	0.01 5.60	0.01	0.01	0.01	0.11 29.05
Summative Ponds Rainfall Gains	AF	3.55	5.77	5.02	2.63	2.23	4.25	1.34	0.03	0.00	0.00	0.00	2.18	27.01
End of Month Water	AF	35.93	74.68	117.57	163.94	159.65	158.80	115.04	53.60	47.98	43.20	39.92	128.77	1139.09
Pond 5 Storage	Ar	0.00	10.37	39.20	105.05	101.55	100.49	50.75	0.00	0.00	0.00	0.00	70.40	510.50
Pond 5 Capacity	AF	52.17	52.17	52.17	52.17	52.17	52.17	52.17	52.17	52.17	52.17	52.17	52.17	626.05
Water In Storage from Previous Month	AF	0.00	1.97	21.55	52.17	52.17	52.17	52.17	52.17	49.56	46.60	0.00	0.00	380.53
Rainfall Gain	AF	1.97	3.21	2.79	105.65	1.24	2.36	0.75	0.00	0.00	0.00	0.00	1.21	15.00
Evaporation Loss	AF	0.00	0.01	0.08	0.31	0.65	1.17	1.96	2.63	2.96	2.37	0.00	0.00	12.13
Discharge to Needed Proposed Storage	AF	0.00	0.00	31.35	106.78	101.94	101.68	55.52	0.00	0.00	0.00	0.00	19.50	416.77
End of Month Storage	AF	1.97	21.55	52.17	52.17	52.17	52.17	52.17	49.56	46.60	0.00	0.00	35.66	416.19
Needed Proposed Storage														
Pond 5 Influent	AF	0.00	0.00	31.35	106.78	101.94	101.68	55.52	0.00	0.00	0.00	0.00	19.50	416.77
Water in Storage from Previous Month	AF	0.00	0.00	0.00	31.35	138.13	240.07	341.75	321.61	200.97	61.34	0.00	0.00	1335.22
End of Month Storage	AF	0.00	0.00	31.35	138.13	240.07	341.75	321.61	200.97	61.34	0.00	0.00	19.50	397.27 1354.72
Spray Fields (summer only)														
Acres Required								75 66	120 65	120 63	120.26	00 57	16 51	113.17
Discharge from Proposed Storage to Spray Fields								75.66	120.05	139.62	61.34	0.00	0.00	397.27
Discharge from Pond 5 to Spray Fields								0.00	0.00	0.00	59.02	88.53	16.51	164.06

				CDCR 2	30 AFY: 2021	Low Projectic	on							
	Assu	imptions:	Preston Reser The assumed Storage Pond Storage Pond Storage Pond	voir has Arec Percolation r 5 has an are 6 has an are 7 has an are	as ranging from ate for the tw a of 4.35 Acre a of 3.45 Acre a of 4.38 Acre	n O Acres whe o Reservoirs is s and a volum s and a volum s and a volum	en empty to 18 s 100 Gallons le of 52.17 Act le of 27.62 Act le of 30.69 Act	3 when full. In per Day or 0.0 re-Feet. re-Feet and a re-Feet and a	ts Capacity is . D1 Acre-Feet p Perc rate of C Perc rate of C	235 Acre-Fee per Month. 0.80 Acre-Fee 0.46 Acre-Fee	et. et per Day. et per Day.		Percolation Pon Perc Year Rou Perc in Winter	ds 6&7 nd
Re	move Henderson Remove Preston	I Ai	n Additional	461.15 145.71	Acre-Ft of Sto Acres of Spray	rarage is Requ / Field Require	<i>uired</i> ed to Empty P	ond 5 and Pre	oposed Storag	ge				
Month		November	December	lanuary	February	March	Anril	May	lune	luly	Διισμετ	Sentember	October	Total
		Hovember	Detember	Junuary	rebruiry	march	74971	may	June	July	Hugust	Deptember	ottobei	rotai
Rainfall Dry Year O Rainfall Normal Year O Rainfall 25 Year O	in in in	0.82 2.57 4.69	1.64 3.45 7.63	2.05 3.97 6.64	1.98 3.58 3.48	1.23 3.35 2.95	0.82 1.86 5.62	0.57 0.85 1.78	0.19 0.26 0.03	0.00 0.04 0.00	0.00 0.06 0.00	0.06 0.29 0.00	0.77 1.20 2.88	9.36 20.28 32.82
Rainfall 100 Year 💩 Pan Evaporation	In In	5.44 1.08	8.85 0.55	7.70 0.55	4.03 0.86	3.42 1.78	6.51 3.22	2.06 5.42	0.04 7.25	0.00 8.59	0.00 7.31	0.00 5.01	3.34 2.90	38.05 41.62
Month		November	December	January	February	March	April	May	June	July	August	September	October	Total
Sutter Creek Sutter Creek WWTP Effluent	AF	98.30	80.60	62.35	43.83	41.10	40.29	41.65	42.74	50.09	62.89	93.94	94.76	752.54
CDCR CDCR Effluent to Preston Reservoir	AF	3.80	3.80	34.60	34.60	34.60	34.60	34.60	34.60	3.80	3.80	3.80	3.80	230.40
Preston Reservoir Preston Reservoir Maximum Available Storage Water in Storage at Beginning of Month	AF	235.00	235.00	235.00	235.00	235.00	235.00	235.00	235.00	235.00	235.00	235.00	235.00	0.00
Influent	AF	102.10	83.00	96.95	78.43	75.70	74.89	76.25	77.34	53.89	66.69	97.74	98.56	982.94
Precipitation	AF	8.16	13.28	11.55	6.05	5.13	9.77	3.09	0.06	0.00	0.00	0.00	5.01	62.09
Evaporation	AF	1.62	0.83	0.83	1.29	2.67	4.83	8.13	10.88	12.89	10.97	7.52	4.35	66.78
Water Available to be Applied to Storage or Effluen	t AF	108.63	181.84	272.51	318.18	313.15	314.82	306.20	242.77	158.50	114.47	90.22	99.21	2520.47
Water Applied(+)/Removed(-) from Storage	AF	85.00	79.84	70.16				-58.75	-58.75	-58.75	-58.75			0.00
End of Month Storage Effluent	AF AF	85.00 23.63	164.84 17.00	235.00 37.51	235.00 83.18	235.00 78.15	235.00 79.82	176.25 129.95	117.50 125.27	58.75 99.75	0.00 114.47	0.00 90.22	0.00 99.21	1542.34 978.13
lone														
lone Wastewater Effluent Total Water Influent to Ione	AF AF	30.85 54.48	34.59 51.59	32.10 69.60	32.10 115.27	33.34 111.49	29.61 109.42	29.61 159.56	28.36 153.63	28.36 128.11	28.36 142.83	28.36 118.58	29.61 128.82	365.23 1343.37
Discharge-Irrigation Water Available for Application	AF	54.48	51.59	69.60	115.27	111.49	109.42	159.56	153.63	128.11	142.83	118.58	128.82	1343.37
Needed Applied Water at Castle Oak	AF	0.00	0.00	0.00	0.00	0.00	0.00	47.08	77.65	89.90	77.50	57.00	7.98	357.10
Needed Applied Water at Town Field	AF	0.00	0.00	0.00	0.00	0.00	0.00	34.31	52.62	60.87	52.47	38.59	9.36	248.23
Total Need	AF	0.00	0.00	0.00	0.00	0.00	0.00	7.92	12.14	164.82	142.08	104.50	2.16	57.28
Water Remaining after Irrigation	AF	54.48	51.59	69.60	115.27	111.49	109.42	70.25	11.21	-36.71	0.74	14.08	109.32	680.75
Percolation Ponds 6 and 7														
Combined Pond Capacity	AF	58.31	58.31	58.31	58.31	58.31	58.31	58.31	58.31	58.31	58.31	58.31	58.31	699.71
Applied Water to Perc Ponds	AF	54.48	-4.42	-4.66	-2.06	-1.06	-2.14	2.20	4.71	0.00	0.74	14.08	-0.28	60.46
Water in Storage from previous Month	AF	0.00	57.32	58.31	58.31	58.31	58.31	58.31	58.31	58.31	52.69	48.66	58.31	625.14
Summative Ponds Percolation Rate	AF	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.11
Summative Ponds Evaporation Loss	AF AF	0.70	0.36	0.36	2.63	1.16	2.10	3.54	4.73	5.60	4.77	3.27	1.89 2.18	29.05
End of Month Water	AF	57.32	114.31	132.57	175.64	170.86	169.87	126.36	64.80	52.69	48.66	59.45	167.91	1340.45
Extra Effluent to Pond 5	AF	0.00	56.01	74.26	117.33	112.56	111.56	68.05	6.49	0.00	0.00	1.15	109.60	657.00
Pond 5 Storage	A.E.	52.17	52.17	E2 17	52.17	52.17	E2 17	E2 17	52.17	E2 17	E2 17	E2 17	E2 17	626.05
Water In Storage from Previous Month	AF	0.00	1.97	52.17	52.17	52.17	52.17	52.17	52.17	52.17	49.06	0.00	0.00	416.23
Influent	AF	0.00	56.01	74.26	117.33	112.56	111.56	68.05	6.49	0.00	0.00	1.15	109.60	657.00
Rainfall Gain	AF	1.97	3.21	2.79	1.46	1.24	2.36	0.75	0.01	0.00	0.00	0.00	1.21	15.00
Evaporation Loss Discharge to Needed Proposed Storage	AF	0.00	9.01	76.85	118.48	113.15	112.75	66.83	2.63	3.11	2.49	0.00	58.64	12.53
Discharge to Irrigation/Spray Fields	AF AF	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	86.52	113.98	21.26	221.75
Needed Proposed Storage		1.57	52.17	52.17	52.17	52.17	52.17	52.17	-2.2.	15.00	0.00	0.00	50.51	
Pond 5 Influent	AF	0.00	9.01	76.85	118.48	113.15	112.75	66.83	3.88	0.00	0.00	0.00	58.64	559.59
Water in Storage from Previous Month	AF	0.00	0.00	9.01	85.86	204.34	317.49	430.24	399.66	248.21	68.45	0.00	0.00	1763.27
Discharge to Irrigation/Spray Fields End of Month Storage	AF AF	0.00 0.00	0.00 9.01	0.00 85.86	0.00 204.34	0.00 317.49	0.00 430.24	97.41 399.66	155.33 248.21	179.76 68.45	68.45 0.00	0.00 0.00	0.00 58.64	500.95 1821.91
Spray Fields (summer only) Acres Required														145.71
AF Required								97.41	155.33	179.76	154.97	113.98	21.26	722.70
Discharge from Proposed Storage to Spray Fields Discharge from Pond 5 to Spray Fields								97.41 0.00	155.33 0.00	179.76 0.00	68.45 86.52	0.00 113.98	0.00 21.26	500.95 221.75

				CDCR 2	30 AFY: 2026	Low Projectic	n						-	
	Assu	mptions:	Preston Reser The assumed Storage Pond Storage Pond Storage Pond	voir has Area Percolation r 5 has an are 6 has an are 7 has an are	as ranging from rate for the tw a of 4.35 Acre a of 3.45 Acre a of 4.38 Acre	m 0 Acres whe o Reservoirs is s and a volum s and a volum s and a volum	n empty to 18 100 Gallons e of 52.17 Aci e of 27.62 Aci e of 30.69 Aci	8 when full. It per Day or 0.0 re-Feet. re-Feet and a re-Feet and a	ts Capacity is . D1 Acre-Feet p Perc rate of C Perc rate of C	235 Acre-Fee per Month. ).80 Acre-Fee ).46 Acre-Fee	et. et per Day. et per Day.		Percolation Pon Perc Year Rou Perc in Winter () No Perc	nds 6&7
Re	move Henderson Remove Preston		n Additional	545.03 183.30	Acre-Ft of Sto Acres of Spray	rarage is Requ y Field Require	<i>uired</i> ed to Empty P	ond 5 and Pro	oposed Storag	ge				
Month		November	December	January	February	March	April	May	June	July	August	September	October	Total
Rainfall Dry Year	In	0.82	1.64	2.05	1.98	1.23	0.82	0.57	0.19	0.00	0.00	0.06	0.77	9.36
Rainfall 25 Year	In	4.69	7.63	6.64	3.48	2.95	5.62	1.78	0.03	0.00	0.00	0.00	2.88	32.82
Rainfall 100 Year	In	5.44	8.85	7.70	4.03	3.42	6.51	2.06	0.04	0.00	0.00	0.00	3.34	38.05
Pan Evaporation	In	1.08	0.55	0.55	0.86	1.78	3.22	5.42	7.25	8.59	7.31	5.01	2.90	41.62
Month		November	December	January	February	March	April	May	June	July	August	September	October	Total
Sutter Creek														
Sutter Creek WWTP Effluent	AF	116.02	95.12	73.58	51.73	48.51	47.55	49.15	50.44	59.12	74.23	110.87	111.84	888.16
CDCR CDCR Effluent to Preston Reservoir	AF	3.80	3.80	34.60	34.60	34.60	34.60	34.60	34.60	3.80	3.80	3.80	3.80	230.40
Dresten Deserveir														
Preston Reservoir Maximum Available Storage	AF	235.00	235.00	235.00	235.00	235.00	235.00	235.00	235.00	235.00	235.00	235.00	235.00	
Water in Storage at Beginning of Month	AF	0.00	85.00	164.84	235.00	235.00	235.00	235.00	176.25	117.50	58.75	0.00	0.00	0.00
Influent Brocipitation	AF	119.82	98.92	108.18	86.33	83.11	82.15	83.75	85.04	62.92	78.03	114.67	115.64	1118.56
Evaporation	AF	1.62	0.83	0.83	1.29	2.67	4.83	8.13	10.88	12.89	10.97	7.52	4.35	66.78
Percolation	AF	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.11
Water Available to be Applied to Storage or Effluent	AF	126.35	196.36	283.74	326.08	320.56	322.08	313.70	250.47	167.53	125.81	107.15	116.29	2656.09
End of Month Storage	AF	85.00	79.84 164.84	235.00	235.00	235.00	235.00	-58.75	-58.75	-58.75	-58.75	0.00	0.00	1542 34
Effluent	AF	41.35	31.52	48.74	91.08	85.56	87.08	137.45	132.97	108.78	125.81	107.15	116.29	1113.75
lone														
lone Wastewater Effluent Total Water Influent to lone	AF AF	34.75 76.10	38.49 70.01	36.00 84.73	36.00 127.07	37.24 122.80	33.51 120.58	33.51 170.96	32.26 165.23	32.26 141.04	32.26 158.07	32.26 139.41	33.51 149.80	412.04 1525.80
Discharge-Irrigation														
Water Available for Application Needed Applied Water at Castle Oak	AF	76.10	70.01	84.73	127.07	122.80	120.58	170.96	165.23	141.04 89.90	158.07	139.41	149.80 7.98	1525.80 357.10
Needed Applied Water at Town Field	AF	0.00	0.00	0.00	0.00	0.00	0.00	34.31	52.62	60.87	52.47	38.59	9.36	248.23
Needed Applied Water at City Field	AF	0.00	0.00	0.00	0.00	0.00	0.00	7.92	12.14	14.05	12.11	8.91	2.16	57.28
Total Need Water Remaining after Irrigation	AF	0.00 76.10	0.00 70.01	0.00 84.73	0.00 127.07	0.00 122.80	0.00 120.58	89.31 81.65	142.42 22.81	164.82 -23.78	142.08 15.98	104.50 34.91	19.49 130.31	662.62 863.18
Percolation Ponds 6 and 7		50.24	50.24	50.24	50.24	50.24	50.24	50.24	50.24	50.24	50.24	50.24	50.34	600 74
Combined Pond Capacity Water Available	AF AF	58.31 76.10	58.31 70.01	58.31 84.73	58.31 127.07	58.31 122.80	58.31 120 58	58.31 81.65	58.31 22.81	58.31	58.31	34.91	58.31 130.31	886.96
Applied Water to Perc Ponds	AF	55.47	-5.41	-4.66	-2.06	-1.06	-2.14	2.20	4.71	0.00	10.39	3.28	-0.28	60.46
Water in Storage from previous Month	AF	0.00	58.31	58.31	58.31	58.31	58.31	58.31	58.31	58.31	52.69	58.31	58.31	635.78
Summative Ponds Percolation Rate	AF AF	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.11 29.05
Summative Ponds Rainfall Gains	AF	3.55	5.77	5.02	2.63	2.23	4.25	1.34	0.03	0.00	0.00	0.00	2.18	27.01
End of Month Water	AF	78.94	133.73	147.70	187.44	182.17	181.03	137.76	76.40	52.69	63.90	89.94	188.89	1520.59
Extra Effluent to Pond 5	AF	20.63	/5.42	89.39	129.13	123.87	122.72	79.45	18.10	0.00	5.59	31.63	130.58	826.50
Pond 5 Capacity	AF	52.17	52.17	52.17	52.17	52.17	52.17	52.17	52.17	52.17	52.17	52.17	52.17	626.05
Water In Storage from Previous Month	AF	0.00	22.60	52.17	52.17	52.17	52.17	52.17	52.17	52.17	49.06	0.00	0.00	436.86
Influent Rainfall Gain	AF	20.63	75.42	89.39	129.13	123.87	122.72	79.45	18.10	0.00	5.59	31.63	130.58	826.50
Evaporation Loss	AF	0.00	0.09	0.20	0.31	0.65	2.50	1.96	2.63	3.11	2.49	0.00	0.00	12.61
Discharge to Needed Proposed Storage	AF	0.00	48.97	91.98	130.28	124.46	123.91	78.23	15.48	0.00	0.00	0.00	79.62	692.94
Discharge to Irrigation/Spray Fields End of Month Storage	AF AF	0.00 22.60	0.00 52.17	0.00 52.17	0.00 52.17	0.00 52.17	0.00 52.17	0.00 52.17	0.00 52.17	0.00 49.06	125.71 0.00	143.38 0.00	26.74 25.43	295.83 462.28
Noodod Bropped Storage														
Pond 5 Influent	AF	0.00	48.97	91.98	130.28	124.46	123.91	78.23	15.48	0.00	0.00	0.00	79.62	692.94
Water in Storage from Previous Month	AF	0.00	0.00	48.97	140.95	271.23	395.69	519.61	475.30	295.38	69.24	0.00	0.00	2216.37
Discharge to Irrigation/Spray Fields	AF	0.00	0.00	0.00	0.00	0.00	0.00	122.54	195.40	226.14	69.24	0.00	0.00	613.32
	AF	0.00	48.97	140.95	2/1.23	292.09	213'01	475.30	295.38	09.24	0.00	0.00	/9.62	2295.99
Acres Required														183.30
AF Required								122.54	195.40	226.14	194.95	143.38	26.74	909.15
Discharge from Proposed Storage to Spray Fields Discharge from Pond 5 to Spray Fields								0.00	195.40 0.00	226.14	69.24 125.71	0.00 143.38	26.74	ь13.32 295.83

				CDCR	230 AFY: 2031	Low Projection	on							
	А	ssumptions	Preston Res The assume Storage Por Storage Por Storage Por	ervoir has Are d Percolation d 5 has an are d 6 has an are d 7 has an are	as ranging from rate for the tw ea of 4.35 Acre ea of 3.45 Acre ea of 4.38 Acre	m 0 Acres whe to Reservoirs i ts and a volum ts and a volum ts and a volum	en empty to 18 s 100 Gallons he of 52.17 Act he of 27.62 Act he of 30.69 Act	8 when full. In per Day or 0.0 re-Feet. re-Feet and a re-Feet and a	ts Capacity is D1 Acre-Feet p Perc rate of C Perc rate of C	235 Acre-Fee per Month. 0.80 Acre-Fee 0.46 Acre-Fee	et. et per Day. et per Day.		Percolation Por Perc Year Rou Perc in Winte	nds 6&7 und
Re	emove Henderso Remove Presto	on 🗹 on 🗖	An Additional	627.35 220.18	Acre-Ft of Sto Acres of Spra	<i>rarage is Req</i> i y Field Requir	<i>uired</i> ed to Empty P	ond 5 and Pro	oposed Stora	ge				
Month		Novem	er December	January	February	March	April	May	lune	luby	August	Sentember	October	Total
		Novenia	er beceniber	January	rebruary	Waren	Арпі	Ividy	June	July	August	September	October	Total
Rainfall Dry Year C Rainfall Normal Year C Rainfall 25 Year C Rainfall 100 Year C Pan Evaporation		In C In 2 In 4 In 5 In 1	.82 1.64 .57 3.44 .69 7.63 .44 8.85 .08 0.55	4 2.05 5 3.97 8 6.64 5 7.70 5 0.55	1.98 3.58 3.48 4.03 0.86	1.23 3.35 2.95 3.42 1.78	0.82 1.86 5.62 6.51 3.22	0.57 0.85 1.78 2.06 5.42	0.19 0.26 0.03 0.04 7.25	0.00 0.04 0.00 0.00 8.59	0.00 0.06 0.00 0.00 7.31	0.06 0.29 0.00 0.00 5.01	0.77 1.20 2.88 3.34 2.90	9.36 20.28 32.82 38.05 41.62
Month		Novemb	er December	January	February	March	April	May	June	July	August	September	October	Total
Sutter Creek Sutter Creek WWTP Effluent	F	AF 133	.28 109.2	3 84.54	59.42	55.73	54.62	56.47	57.95	67.92	85.28	127.38	128.48	1020.35
CDCR Effluent to Preston Reservoir	A	AF 3	.80 3.80	34.60	34.60	34.60	34.60	34.60	34.60	3.80	3.80	3.80	3.80	230.40
Preston Reservoir		VE 220	00 235 0	335.00	235.00	235.00	235.00	235.00	235.00	235.00	235 00	235.00	235.00	
Water in Storage at Beginning of Month	F I	AF (	.00 255.00	) 255.00 ) 164.84	235.00	235.00	235.00	235.00	176.25	117.50	235.00 58.75	235.00	235.00	0.00
Influent	1	AF 137	.08 113.08	3 119.14	94.02	90.33	89.22	91.07	92.55	71.72	89.08	131.18	132.28	1250.75
Precipitation	A	AF 8	.16 13.2	3 11.55	6.05	5.13	9.77	3.09	0.06	0.00	0.00	0.00	5.01	62.09
Evaporation	, F	4F 1 4F (	.62 0.8:	3 0.83 I 0.01	1.29	2.67	4.83	8.13	10.88	12.89	10.97	7.52	4.35	66.78 0.11
Water Available to be Applied to Storage or Effluen	t 4	AF 143	.62 210.5	2 294.69	333.77	327.78	329.15	321.02	257.97	176.32	136.85	123.65	132.93	2788.29
Water Applied(+)/Removed(-) from Storage	1	AF 85	.00 79.84	1 70.16				-58.75	-58.75	-58.75	-58.75			0.00
End of Month Storage Effluent	4	AF 85 AF 58	.00 164.84 .62 45.68	4 235.00 3 59.69	235.00 98.77	235.00 92.78	235.00 94.15	176.25 144.77	117.50 140.47	58.75 117.57	0.00 136.85	0.00 123.65	0.00 132.93	1542.34 1245.95
lone														
lone Wastewater Effluent Total Water Influent to lone	4	AF 38 AF 97	.65 42.39 .27 88.0	9 39.90 7 99.59	39.90 138.67	41.14 133.93	37.41 131.56	37.41 182.18	36.16 176.63	36.16 153.74	36.16 173.01	36.16 159.81	37.41 170.34	458.85 1704.79
Discharge-Irrigation														
Water Available for Application	A	AF 97	.27 88.0	7 99.59	138.67	133.93	131.56	182.18	176.63	153.74	173.01	159.81	170.34	1704.79
Needed Applied Water at Castle Oak	1	AF C	.00 0.00	0.00	0.00	0.00	0.00	34.31	52.62	60.87	52.47	38.59	9.36	248.23
Needed Applied Water at City Field	F	AF C	.00 0.00	0.00	0.00	0.00	0.00	7.92	12.14	14.05	12.11	8.91	2.16	57.28
Total Need Water Remaining after Irrigation	4	AF ( AF 97	.00 0.00 .27 88.0	0.00 7 99.59	0.00 138.67	0.00 133.93	0.00 131.56	89.31 92.87	142.42 34.22	164.82 -11.08	142.08 30.93	104.50 55.31	19.49 150.85	662.62 1042.18
Percolation Ponds 6 and 7														
Combined Pond Capacity	¢.	AF 58	.31 58.3	L 58.31	58.31	58.31	58.31	58.31	58.31	58.31	58.31	58.31	58.31	699.71
Water Available	1	AF 97	.27 88.0	7 99.59	138.67	133.93	131.56	92.87	34.22	0.00	30.93	55.31	150.85	1053.26
Applied Water to Perc Ponds	, A	AF 55	.47 -5.4	L -4.66	-2.06	-1.06	-2.14	2.20	4.71	0.00	10.39	3.28	-0.28	60.46
Summative Ponds Percolation Rate	,	AF C	.00 58.5.	L 56.51	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.11
Summative Ponds Evaporation Loss	4	AF C	.70 0.30	5 0.36	0.56	1.16	2.10	3.54	4.73	5.60	4.77	3.27	1.89	29.05
Summative Ponds Rainfall Gains	A	AF 3	.55 5.7	5.02	2.63	2.23	4.25	1.34	0.03	0.00	0.00	0.00	2.18	27.01
End of Month Water Extra Effluent to Pond 5	P I	AF 100 AF 41	.10 151.7	9 162.56 3 104.25	199.04	193.30	192.00	148.98 90.67	87.81 29.50	52.69	78.84	52.03	209.43	1686.89
Pond 5 Storage			.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		110.75	194.99	155.05	50.07	25.50	0.00	20.04	52.05	19111	552.00
Pond 5 Capacity	A	AF 52	.17 52.1	7 52.17	52.17	52.17	52.17	52.17	52.17	52.17	52.17	52.17	52.17	626.05
Influent	1	AF (1	.00 43.7	3 104.25	140.73	134.99	133.69	90.67	29.50	0.00	20.54	52.03	151.12	458.02 992.80
Rainfall Gain	1	AF 1	.97 3.2	2.79	1.46	1.24	2.36	0.75	0.01	0.00	0.00	0.00	1.21	15.00
Evaporation Loss	4	AF C	.00 0.1	0.20	0.31	0.65	1.17	1.96	2.63	3.11	2.49	0.00	0.00	12.69
Discharge to Needed Proposed Storage	, A	AF C	.00 88.1	L 106.84	141.88	135.58	134.89	89.45	26.89	0.00	14.93	0.00	100.16	838.73
End of Month Storage	ļ	AF 43	.77 52.1	7 52.17	52.17	52.17	52.17	52.17	52.17	49.06	0.00	0.00	20.05	478.07
Needed Proposed Storage Pond 5 Influent	1	AF (	.00 88.1	106.84	141 89	135 58	134 89	89.45	26.89	0.00	14 03	0.00	100.16	838 73
Water in Storage from Previous Month	1		.00 0.00	88.11	194.95	336.83	472.41	607.30	549.56	341.73	70.09	14.93	0.00	2675.93
Discharge to Irrigation/Spray Fields End of Month Storage	A A	AF C AF C	.00 0.00 .00 88.1	0.00 L 194.95	0.00 336.83	0.00 472.41	0.00 607.30	147.19 549.56	234.72 341.73	271.64 70.09	70.09 14.93	14.93 0.00	0.00 100.16	738.57 2776.09
Spray Fields (summer only) Acres Required														220.18
AF Required								147.19	234.72	271.64	234.17	172.23	32.12	1092.08
Discharge from Pond 5 to Spray Fields								0.00	0.00	0.00	164.08	157.30	32.12	353.50

					CDCR 2	30 AFY: 2036	Low Projectic	n							
		Assump	otions: F S S	Preston Reser The assumed Storage Pond Storage Pond Storage Pond	voir has Arec Percolation r 5 has an are 6 has an are 7 has an are	as ranging from rate for the two a of 4.35 Acre a of 3.45 Acre a of 4.38 Acre	n O Acres whe o Reservoirs is s and a volum s and a volum s and a volum s and a volum	n empty to 18 100 Gallons e of 52.17 Act e of 27.62 Act e of 30.69 Act	8 when full. It per Day or 0.0 re-Feet. re-Feet and a re-Feet and a	s Capacity is . D1 Acre-Feet p Perc rate of 0 Perc rate of 0	235 Acre-Fee per Month. 0.80 Acre-Fee 0.46 Acre-Fee	et. et per Day. et per Day.		Percolation Pon Perc Year Rou Perc in Winter	ids 6&7 ind r
R	emove Hender Remove Pres	son 🗹 ton 🗖	An	Additional	719.13 253.28	Acre-Ft of Sto Acres of Spray	rarage is Requ / Field Require	<i>uired</i> ed to Empty P	ond 5 and Pro	oposed Storag	ge				
Month		No	wember	December	lanuary	February	March	April	May	lune	lubz	August	Sentember	October	Total
		140	veniber	December	January	rebruary	Waren	Артт	ividy	June	July	August	September	October	Total
Rainfall Dry Year O Rainfall Normal Year O Rainfall 25 Year O Rainfall 100 Year O Pan Evaporation		In In In In	0.82 2.57 4.69 5.44 1.08	1.64 3.45 7.63 8.85 0.55	2.05 3.97 6.64 7.70 0.55	1.98 3.58 3.48 4.03 0.86	1.23 3.35 2.95 3.42 1.78	0.82 1.86 5.62 6.51 3.22	0.57 0.85 1.78 2.06 5.42	0.19 0.26 0.03 0.04 7.25	0.00 0.04 0.00 0.00 8.59	0.00 0.06 0.00 0.00 7.31	0.06 0.29 0.00 0.00 5.01	0.77 1.20 2.88 3.34 2.90	9.36 20.28 32.82 38.05 41.62
Month		No	vember	December	January	February	March	April	Mav	June	July	August	September	October	Total
Sutter Creek Sutter Creek WWTP Effluent		AF	148.12	121.44	93.95	66.04	61.93	60.70	62.76	64.40	75.48	94.77	141.55	142.78	1133.91
CDCR Effluent to Preston Reservoir		AF	3.80	3.80	34.60	34.60	34.60	34.60	34.60	34.60	3.80	3.80	3.80	3.80	230.40
Preston Reservoir		٨F	235 00	225 00	225 00	225 00	225 00	235.00	235 00	235 00	225 00	225 00	225 00	225 00	
Water in Storage at Beginning of Month		AF	255.00 0.00	235.00 85.00	235.00 164.84	235.00	235.00	235.00	235.00	235.00 176.25	235.00 117.50	235.00 58.75	235.00	235.00	0.00
Influent		AF	151.92	125.24	128.55	100.64	96.53	95.30	97.36	99.00	79.28	98.57	145.35	146.58	1364.31
Precipitation		AF	8.16	13.28	11.55	6.05	5.13	9.77	3.09	0.06	0.00	0.00	0.00	5.01	62.09
Evaporation		AF	1.62	0.83	0.83	1.29	2.67	4.83	8.13	10.88	12.89	10.97	7.52	4.35	66.78
Water Available to be Applied to Storage or Effluer	nt	AF	158.45	222.68	304.10	340.38	333.99	335.23	327.31	264.42	183.88	146.34	137.83	147.23	2901.85
Water Applied(+)/Removed(-) from Storage		AF	85.00	79.84	70.16				-58.75	-58.75	-58.75	-58.75			0.00
End of Month Storage Effluent		AF AF	85.00 73.45	164.84 57.84	235.00 69.10	235.00 105.38	235.00 98.99	235.00 100.23	176.25 151.06	117.50 146.92	58.75 125.13	0.00 146.34	0.00 137.83	0.00 147.23	1542.34 1359.51
lone															
lone Wastewater Effluent Total Water Influent to Ione		AF AF	42.55 116.00	46.29 104.13	43.80 112.90	43.80 149.18	45.05 144.03	41.31 141.54	41.31 192.36	40.06 186.98	40.06 165.19	40.06 186.40	40.06 177.89	41.31 188.54	505.65 1865.16
Discharge-Irrigation															
Water Available for Application		AF	116.00	104.13	112.90	149.18	144.03	141.54	192.36	186.98	165.19	186.40	177.89	188.54	1865.16
Needed Applied Water at Castle Oak		AF	0.00	0.00	0.00	0.00	0.00	0.00	34.31	52.62	60.87	52.47	38.59	9.36	248.23
Needed Applied Water at City Field		AF	0.00	0.00	0.00	0.00	0.00	0.00	7.92	12.14	14.05	12.11	8.91	2.16	57.28
Total Need Water Remaining after Irrigation		AF AF	0.00 116.00	0.00 104.13	0.00 112.90	0.00 149.18	0.00 144.03	0.00 141.54	89.31 103.06	142.42 44.57	164.82 0.38	142.08 44.32	104.50 73.39	19.49 169.05	662.62 1202.54
Percolation Ponds 6 and 7															
Combined Pond Capacity		AF	58.31	58.31	58.31	58.31	58.31	58.31	58.31	58.31	58.31	58.31	58.31	58.31	699.71
Applied Water to Perc Ponds		AF	55.47	-5.41	-4.66	-2.06	-1.06	-2.14	2.20	44.57	0.38	44.32	3.28	-0.28	1202.54 60.46
Water in Storage from previous Month		AF	0.00	58.31	58.31	58.31	58.31	58.31	58.31	58.31	58.31	53.07	58.31	58.31	636.16
Summative Ponds Percolation Rate		AF	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.11
Summative Ponds Evaporation Loss		AF	0.70	0.36	0.36	0.56	1.16	2.10	3.54	4.73	5.60	4.77	3.27	1.89	29.05
End of Month Water		AF	118.84	167.85	175.87	209.55	203.40	201.98	159.16	98.16	53.07	92.61	128.42	227.63	1836.55
Extra Effluent to Pond 5		AF	60.53	109.54	117.56	151.24	145.09	143.67	100.85	39.85	0.00	34.31	70.11	169.32	1142.08
Pond 5 Storage			52.47	52.47	52.47	52.47	52.47	52.47	52.47	52.47	52.47	52.47	52.47	52.47	626.05
Pond 5 Capacity Water In Storage from Previous Month		AF AF	52.17	52.17	52.17	52.17	52.17	52.17	52.17	52.17	52.17	52.17	52.17	52.17	626.05 466.43
Influent		AF	60.53	109.54	117.56	151.24	145.09	143.67	100.85	39.85	0.00	34.31	70.11	169.32	1142.08
Rainfall Gain		AF	1.97	3.21	2.79	1.46	1.24	2.36	0.75	0.01	0.00	0.00	0.00	1.21	15.00
Evaporation Loss		AF	0.00	0.20	0.20	0.31	0.65	1.17	1.96	2.63	3.11	2.49	0.00	0.00	12.72
Discharge to Irrigation/Spray Fields		AF	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	198.36	169.43	19.02	386.80
End of Month Storage		AF	52.17	52.17	52.17	52.17	52.17	52.17	52.17	52.17	49.06	0.00	0.00	33.16	499.58
Needed Dreesed Stores															
Pond 5 Influent		AF	10.33	112.55	120.15	152.39	145.69	144.87	99.64	37.24	0.00	28.70	17.94	118.36	987.85
Water in Storage from Previous Month		AF	0.00	10.33	122.88	243.03	395.42	541.11	685.97	616.28	383.51	71.02	28.70	17.94	3116.19
Discharge to Irrigation/Spray Fields End of Month Storage		AF AF	0.00 10.33	0.00 122.88	0.00 243.03	0.00 395.42	0.00 541.11	0.00 685.97	169.32 616.28	270.02 383.51	312.48 71.02	71.02 28.70	28.70 17.94	17.94 118.36	869.49 3234.56
Spray Fields (summer only) Acres Required															253.28
AF Required									169.32	270.02	312.48	269.38	198.13	36.96	1256.29
Discharge from Proposed Storage to Spray Fields Discharge from Pond 5 to Spray Fields									169.32 0.00	270.02 0.00	312.48 0.00	71.02 198.36	28.70 169.43	17.94 19.02	869.49 386.80

				CDCR 3	41 AFY: 2016	High Projectio	on							
	Assu	mptions:	Preston Reser The assumed Storage Pond Storage Pond Storage Pond	voir has Arec Percolation r 5 has an are 6 has an are 7 has an are	as ranging from rate for the two a of 4.35 Acre a of 3.45 Acre a of 4.38 Acre	n O Acres whe o Reservoirs is s and a volum s and a volum s and a volum s and a volum	en empty to 18 s 100 Gallons le of 52.17 Act le of 27.62 Act le of 30.69 Act	3 when full. In per Day or 0.0 re-Feet. re-Feet and a re-Feet and a	ts Capacity is D1 Acre-Feet p Perc rate of C Perc rate of C	235 Acre-Fee per Month. ).80 Acre-Fee ).46 Acre-Fee	et. et per Day. et per Day.		Percolation Pon Perc Year Rou Perc in Winte	nds 6&7 und r
Re	move Henderson [ Remove Preston ]	∃ Ar	n Additional	538.28 173.42	Acre-Ft of Sto Acres of Spray	rarage is Requ / Field Require	<i>uired</i> ed to Empty P	ond 5 and Pro	oposed Stora	ge				
Month		November	December	lanuary	February	March	Anril	May	lune	luly	Διισμετ	Sentember	October	Total
										,				
Rainfall Dry Year C Rainfall Normal Year C Rainfall 25 Year C Rainfall 100 Year C Pan Evaporation	in In In In	0.82 2.57 4.69 5.44 1.08	1.64 3.45 7.63 8.85 0.55	2.05 3.97 6.64 7.70 0.55	1.98 3.58 3.48 4.03 0.86	1.23 3.35 2.95 3.42 1.78	0.82 1.86 5.62 6.51 3.22	0.57 0.85 1.78 2.06 5.42	0.19 0.26 0.03 0.04 7.25	0.00 0.04 0.00 0.00 8.59	0.00 0.06 0.00 0.00 7.31	0.06 0.29 0.00 0.00 5.01	0.77 1.20 2.88 3.34 2.90	9.36 20.28 32.82 38.05 41.62
Month		November	December	January	February	March	April	May	June	July	August	September	October	Total
				,									-	
Sutter Creek Sutter Creek WWTP Effluent	AF	85.68	70.25	54.35	38.20	35.83	35.12	36.30	37.25	43.66	54.82	81.88	82.60	655.95
CDCR CDCR Effluent to Preston Reservoir	AF	5.60	5.60	51.34	51.34	51.34	51.34	51.34	51.34	5.60	5.60	5.60	5.60	336.04
Preston Reservoir		225.00	225.00	225.00	225.00	225.00	225.00	225.00	225.00	325.00	225.00	335.00	225.00	
Water in Storage at Beginning of Month	AF	235.00 0.00	235.00 85.00	235.00 164.84	235.00	235.00	235.00	235.00 235.00	235.00 176.25	235.00 117.50	235.00	235.00	235.00	0.00
Influent	AF	91.28	75.85	105.69	89.54	87.17	86.46	87.64	88.59	49.26	60.42	87.49	88.20	997.59
Precipitation	AF	8.16	13.28	11.55	6.05	5.13	9.77	3.09	0.06	0.00	0.00	0.00	5.01	62.09
Evaporation	AF	1.62	0.83	0.83	1.29	2.67	4.83	8.13	10.88	12.89	10.97	7.52	4.35	66.78
Water Available to be Applied to Storage or Effluent	t AF	97.81	173.29	281.24	329.29	324.62	326.38	317.59	254.02	153.87	108.20	79.96	88.85	2535.12
Water Applied(+)/Removed(-) from Storage	AF	85.00	79.84	70.16				-58.75	-58.75	-58.75	-58.75			0.00
End of Month Storage Effluent	AF AF	85.00 12.81	164.84 8.45	235.00 46.24	235.00 94.29	235.00 89.62	235.00 91.38	176.25 141.34	117.50 136.52	58.75 95.12	0.00 108.20	0.00 79.96	0.00 88.85	1542.34 992.78
Ione Ione Wastewater Effluent Total Water Influent to Ione	AF AF	40.46 53.27	44.20 52.65	41.71 87.95	41.71 135.99	42.95 132.57	39.21 130.60	39.21 180.56	37.97 174.49	37.97 133.09	37.97 146.16	37.97 117.93	39.21 128.07	480.54 1473.32
Discharge-Irrigation														
Water Available for Application	AF	53.27	52.65	87.95	135.99	132.57	130.60	180.56	174.49	133.09	146.16	117.93	128.07	1473.32
Needed Applied Water at Castle Oak	AF AF	0.00	0.00	0.00	0.00	0.00	0.00	47.08	77.65	89.90 60.87	77.50 52.47	38 59	7.98	357.10 248.23
Needed Applied Water at City Field	AF	0.00	0.00	0.00	0.00	0.00	0.00	7.92	12.14	14.05	12.11	8.91	2.16	57.28
Total Need Water Remaining after Irrigation	AF AF	0.00 53.27	0.00 52.65	0.00 87.95	0.00 135.99	0.00 132.57	0.00 130.60	89.31 91.25	142.42 32.07	164.82 -31.73	142.08 4.08	104.50 13.43	19.49 108.57	662.62 810.71
Combined Pond Canacity	۵F	58 31	58 31	58 31	58 31	58 31	58 31	58 31	58 31	58 31	58 31	58 31	58 31	699 71
Water Available	AF	53.27	52.65	87.95	135.99	132.57	130.60	91.25	32.07	0.00	4.08	13.43	108.57	842.43
Applied Water to Perc Ponds	AF	53.27	-3.21	-4.66	-2.06	-1.06	-2.14	2.20	4.71	0.00	4.08	9.59	-0.28	60.46
Water in Storage from previous Month	AF	0.00	56.11	58.31	58.31	58.31	58.31	58.31	58.31	58.31	52.69	52.00	58.31	627.27
Summative Ponds Percolation Rate Summative Ponds Evaporation Loss	AF	0.01	0.01	0.01	0.01	0.01	2.10	0.01	0.01	0.01	0.01	0.01	0.01	0.11 29.05
Summative Ponds Rainfall Gains	AF	3.55	5.77	5.02	2.63	2.23	4.25	1.34	0.03	0.00	0.00	0.00	2.18	27.01
End of Month Water	AF	56.11	114.17	150.91	196.36	191.94	191.04	147.36	85.66	52.69	52.00	62.15	167.16	1467.55
Extra Effluent to Pond 5	AF	0.00	55.86	92.60	138.05	133.63	132.73	89.05	27.36	0.00	0.00	3.84	108.85	781.97
Pond 5 Storage	AF	52.17	52.17	52.17	52.17	52.17	52.17	52.17	52.17	52.17	52.17	52.17	52.17	626.05
Water In Storage from Previous Month	AF	0.00	1.97	52.17	52.17	52.17	52.17	52.17	52.17	52.17	49.06	0.00	0.00	416.23
Influent	AF	0.00	55.86	92.60	138.05	133.63	132.73	89.05	27.36	0.00	0.00	3.84	108.85	781.97
Rainfall Gain	AF	1.97	3.21	2.79	1.46	1.24	2.36	0.75	0.01	0.00	0.00	0.00	1.21	15.00
Discharge to Needed Proposed Storage	AF	0.00	8.86	95.20	139.20	134.23	133.93	87.83	2.03	0.00	0.00	0.00	57.89	681.87
Discharge to Irrigation/Spray Fields	AF	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	75.23	135.66	25.30	236.19
End of Month Storage	AF	1.97	52.17	52.17	52.17	52.17	52.17	52.17	52.17	49.06	0.00	0.00	26.87	443.09
Needed Proposed Storage														
Pond 5 Influent	AF	0.00	8.86	95.20	139.20	134.23	133.93	87.83	24.74	0.00	0.00	0.00	57.89	681.87
Water in Storage from Previous Month	AF	0.00	0.00	8.86	104.06	243.26	377.48	511.41 115 02	483.30	323.17	109.21	0.00	0.00	2160.75
End of Month Storage	AF	0.00	8.86	104.06	243.26	377.48	511.41	483.30	323.17	109.21	0.00	0.00	57.89	2218.64
Spray Fields (summer only) Acres Required														173.42
AF Required								115.93	184.88	213.96	184.44	135.66	25.30	860.17
Discharge from Proposed Storage to Spray Fields Discharge from Pond 5 to Spray Fields								115.93 0.00	184.88 0.00	213.96 0.00	109.21 75.23	0.00 135.66	0.00 25.30	623.98 236.19

					CDCR 3	41 AFY: 2021	High Projectio	on							
	,	Assump	itions: F S S S	Preston Reser The assumed Storage Pond Storage Pond Storage Pond	voir has Arec Percolation r 5 has an are 6 has an are 7 has an are	is ranging from ate for the two a of 4.35 Acres a of 3.45 Acres a of 4.38 Acres	n O Acres whe o Reservoirs is s and a volum s and a volum s and a volum s and a volum	n empty to 18 100 Gallons   e of 52.17 Acr e of 27.62 Acr e of 30.69 Acr	8 when full. It per Day or 0.0 re-Feet. re-Feet and a re-Feet and a	s Capacity is . )1 Acre-Feet p Perc rate of 0 Perc rate of 0	235 Acre-Fee per Month. ).80 Acre-Fee ).46 Acre-Fee	rt. t per Day. t per Day.		Percolation Pon Perc Year Rou Perc in Winte	ids 6&7 ind r
R	emove Henders. Remove Prest	son ☑ ton □	An	Additional	744.81 263.46	Acre-Ft of Stor Acres of Spray	rarage is Requ Field Require	<i>iired</i> ed to Empty P	ond 5 and Pro	oposed Storag	ge				
Month		No	vombor	Docombor	lanuary	Fobruary	March	April	May	luno	lubz	August	Contombor	Octobor	Total
		NU	veniber	December	January	rebiuary	Widi Cil	Артт	ividy	Julie	July	August	September	October	TOTAL
Rainfall Dry Year C Rainfall Normal Year C Rainfall 25 Year C Rainfall 100 Year C Pan Evaporation		In In In In	0.82 2.57 4.69 5.44 1.08	1.64 3.45 7.63 8.85 0.55	2.05 3.97 6.64 7.70 0.55	1.98 3.58 3.48 4.03 0.86	1.23 3.35 2.95 3.42 1.78	0.82 1.86 5.62 6.51 3.22	0.57 0.85 1.78 2.06 5.42	0.19 0.26 0.03 0.04 7.25	0.00 0.04 0.00 0.00 8.59	0.00 0.06 0.00 0.00 7.31	0.06 0.29 0.00 0.00 5.01	0.77 1.20 2.88 3.34 2.90	9.36 20.28 32.82 38.05 41.62
Month		No	vombor	Docombor	lanuany	Fobruary	March	April	May	luno	lubz	August	Sontombor	Octobor	Total
Month		INO	veniber	December	January	rebruary	Widten	April	ividy	Julie	July	August	September	October	TOLAI
Sutter Creek Sutter Creek WWTP Effluent		AF	115.57	94.76	73.30	51.53	48.33	47.37	48.97	50.25	58.89	73.94	110.45	111.41	884.76
CDCR Effluent to Preston Reservoir		AF	5.60	5.60	51.34	51.34	51.34	51.34	51.34	51.34	5.60	5.60	5.60	5.60	336.04
Preston Reservoir Preston Reservoir Maximum Available Storage		ΔE	235.00	235.00	235.00	235.00	235.00	235.00	235.00	235.00	235.00	235.00	235.00	235.00	
Water in Storage at Beginning of Month		AF	0.00	85.00	164.84	235.00	235.00	235.00	235.00	176.25	117.50	58.75	0.00	0.00	0.00
Influent		AF	121.17	100.36	124.64	102.87	99.67	98.70	100.31	101.59	64.49	79.54	116.05	117.01	1226.40
Precipitation		AF	8.16	13.28	11.55	6.05	5.13	9.77	3.09	0.06	0.00	0.00	0.00	5.01	62.09
Percolation		AF	0.01	0.03	0.03	0.01	0.01	4.83	0.01	0.01	0.01	0.01	0.01	0.01	0.11
Water Available to be Applied to Storage or Effluer	۱t	AF	127.70	197.80	300.20	342.61	337.12	338.63	330.26	267.01	169.10	127.32	108.53	117.66	2763.94
Water Applied(+)/Removed(-) from Storage		AF	85.00	79.84	70.16	225.00	225.00	225.00	-58.75	-58.75	-58.75	-58.75	0.00	0.00	0.00
Effluent		AF	42.70	32.96	65.20	107.61	102.12	103.63	176.25	117.50	110.35	127.32	108.53	117.66	1221.60
lone															
Ione Wastewater Effluent Total Water Influent to Ione		AF AF	57.87 100.57	61.61 94.57	59.12 124.31	59.12 166.73	60.36 162.48	56.62 160.25	56.62 210.63	55.38 204.89	55.38 165.73	55.38 182.70	55.38 163.90	56.62 174.29	689.46 1911.05
Discharge-Irrigation															
Water Available for Application		AF	100.57	94.57	124.31	166.73	162.48	160.25	210.63	204.89	165.73	182.70	163.90	174.29	1911.05
Needed Applied Water at Castle Oak		AF	0.00	0.00	0.00	0.00	0.00	0.00	34.31	52.62	60.87	52.47	38.59	9.36	248.23
Needed Applied Water at City Field		AF	0.00	0.00	0.00	0.00	0.00	0.00	7.92	12.14	14.05	12.11	8.91	2.16	57.28
Total Need Water Remaining after Irrigation		AF AF	0.00 100.57	0.00 94.57	0.00 124.31	0.00 166.73	0.00 162.48	0.00 160.25	89.31 121.32	142.42 62.47	164.82 0.91	142.08 40.61	104.50 59.40	19.49 154.79	662.62 1248.44
Percolation Ponds 6 and 7															
Combined Pond Capacity		AF	58.31	58.31	58.31	58.31	58.31	58.31	58.31	58.31	58.31	58.31	58.31	58.31	699.71
Water Available		AF	100.57	94.57	124.31	166.73	162.48	160.25	121.32	62.47	0.91	40.61	59.40	154.79	1248.44
Applied Water to Perc Ponds Water in Storage from previous Month		AF	55.47	-5.41 58.31	-4.66 58.31	-2.06	-1.06	-2.14 58.31	2.20	4.71	0.91 58.31	9.48 53.61	3.28 58.31	-0.28	636.69
Summative Ponds Percolation Rate		AF	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.11
Summative Ponds Evaporation Loss		AF	0.70	0.36	0.36	0.56	1.16	2.10	3.54	4.73	5.60	4.77	3.27	1.89	29.05
Summative Ponds Rainfall Gains		AF AF	3.55	5.77	5.02	2.63 227.10	2.23	4.25	1.34	0.03	0.00	0.00	0.00	2.18	27.01
Extra Effluent to Pond 5		AF	45.10	99.97	128.97	168.79	163.54	162.39	119.12	57.76	0.00	31.13	56.13	155.07	1187.98
Pond 5 Storage															
Pond 5 Capacity		AF	52.17	52.17	52.17	52.17	52.17	52.17	52.17	52.17	52.17	52.17	52.17	52.17	626.05
Influent		AF	45.10	99.97	128.97	168.79	163.54	162.39	119.12	57.76	0.00	49.08	56.13	155.07	1187.98
Rainfall Gain		AF	1.97	3.21	2.79	1.46	1.24	2.36	0.75	0.01	0.00	0.00	0.00	1.21	15.00
Evaporation Loss		AF	0.00	0.18	0.20	0.31	0.65	1.17	1.96	2.63	3.11	2.49	0.00	0.00	12.70
Discharge to Irrigation/Spray Fields		AF	0.00	97.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.55	180.56	34.49	377.12
End of Month Storage		AF	47.07	52.17	52.17	52.17	52.17	52.17	52.17	52.17	49.06	0.00	0.00	17.68	479.01
Needed Proposed Storage															
Pond 5 Influent		AF	0.00	97.90	131.56	169.94	164.13	163.58	117.90	55.15	0.00	25.53	3.95	104.11	1033.76
Water in Storage from Previous Month Discharge to Irrigation/Spray Fields		AF AF	0.00	0.00	97.90 0.00	229.47	399.40 0.00	563.54 0.00	727.12 176.13	668.90 280 87	443.18 325.04	118.14 118.14	25.53	3.95	3277.13
End of Month Storage		AF	0.00	97.90	229.47	399.40	563.54	727.12	668.90	443.18	118.14	25.53	3.95	104.11	3381.24
Spray Fields (summer only) Acres Required															263.46
AF Required									176.13	280.87	325.04	280.21	206.09	38.44	1306.77
Discharge from Proposed Storage to Spray Fields Discharge from Pond 5 to Spray Fields									1/6.13 0.00	280.87 0.00	325.04 0.00	118.14 162.07	25.53 180.56	3.95 34.49	929.65 377.12

				CDCR 3	41 AFY: 2026	High Projectio	on							
	Assur	nptions:	Preston Reser The assumed Storage Pond Storage Pond Storage Pond	voir has Arec Percolation r 5 has an are 6 has an are	as ranging from rate for the two a of 4.35 Acres a of 3.45 Acres a of 4.38 Acres	n 0 Acres whe o Reservoirs is s and a volum s and a volum s and a volum	n empty to 18 100 Gallons e of 52.17 Act e of 27.62 Act e of 30 69 Act	3 when full. It per Day or 0.0 re-Feet. re-Feet and a	s Capacity is . )1 Acre-Feet p Perc rate of ( Perc rate of (	235 Acre-Fee ber Month. 0.80 Acre-Fee 0.46 Acre-Fee	et. t per Day.		Percolation Pon Perc Year Rou Perc in Winte	ds 6&7 Ind r
Remo	ove Henderson	1 Ar	n Additional	992.48 360.54	Acre-Ft of Stor	rarage is Requ v Field Require	<i>vired</i> ed to Empty P	ond 5 and Pro	posed Storag	ie	t per buy.	I	<b>W</b> No rec	
										·				
Month		November	December	January	February	March	April	May	June	July	August	September	October	Total
Rainfall Dry Year	In	0.82	1.64	2.05	1.98	1.23	0.82	0.57	0.19	0.00	0.00	0.06	0.77	9.36
Rainfall Normal Year	In	2.57	3.45	3.97	3.58	3.35	1.86	0.85	0.26	0.04	0.06	0.29	1.20	20.28
Rainfall 25 Year	In	4.69	7.63	6.64	3.48	2.95	5.62	1.78	0.03	0.00	0.00	0.00	2.88	32.82
Pan Evaporation	In	1.08	0.55	0.55	0.86	1.78	3.22	5.42	7.25	8.59	7.31	5.01	2.90	41.62
Month		November	December	January	February	March	April	May	June	July	August	September	October	Total
Sutter Creek														
Sutter Creek WWTP Effluent	AF	145.46	119.26	92.26	64.85	60.82	59.61	61.63	63.24	74.12	93.07	139.01	140.22	1113.57
CDCR CDCR Effluent to Preston Reservoir	AF	5.60	5.60	51.34	51.34	51.34	51.34	51.34	51.34	5.60	5.60	5.60	5.60	336.04
Preston Reservoir														
Preston Reservoir Maximum Available Storage	AF	235.00	235.00	235.00	235.00	235.00	235.00	235.00	235.00	235.00	235.00	235.00	235.00	
Water in Storage at Beginning of Month	AF	0.00	85.00	164.84	235.00	235.00	235.00	235.00	176.25	117.50	58.75	0.00	0.00	1455 22
Precipitation	AF	8.16	13.28	143.00	6.05	5.13	9.77	3.09	0.06	0.00	0.00	0.00	5.01	62.09
Evaporation	AF	1.62	0.83	0.83	1.29	2.67	4.83	8.13	10.88	12.89	10.97	7.52	4.35	66.78
Percolation	AF	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.11
Water Applied(+)/Removed(-) from Storage	AF	85.00	79.84	70.16	333.54	349.01	330.88	-58.75	-58.75	-58.75	-58.75	137.05	140.47	0.00
End of Month Storage	AF	85.00	164.84	235.00	235.00	235.00	235.00	176.25	117.50	58.75	0.00	0.00	0.00	1542.34
Effluent	AF	72.59	57.47	84.16	120.94	114.61	115.88	166.67	162.51	125.58	146.44	137.09	146.47	1450.41
lone														
Ione Wastewater Effluent Total Water Influent to Ione	AF AF	75.28 147.87	79.02 136.48	76.53 160.68	76.53 197.47	77.77 192.39	74.03 189.91	74.03 240.70	72.79 235.30	72.79 198.37	72.79 219.23	72.79 209.88	74.03 220.51	898.37 2348.78
Discharge-Irrigation														
Water Available for Application	AF	147.87	136.48	160.68	197.47	192.39	189.91	240.70	235.30	198.37	219.23	209.88	220.51	2348.78
Needed Applied Water at Castle Oak	AF AF	0.00	0.00	0.00	0.00	0.00	0.00	47.08	77.65	89.90 60.87	77.50	57.00	7.98	357.10 248 23
Needed Applied Water at City Field	AF	0.00	0.00	0.00	0.00	0.00	0.00	7.92	12.14	14.05	12.11	8.91	2.16	57.28
Total Need	AF	0.00	0.00	0.00	0.00	0.00	0.00	89.31	142.42	164.82	142.08	104.50	19.49	662.62
Water Remaining after Irrigation	AF	147.87	136.48	160.68	197.47	192.39	189.91	151.40	92.88	33.55	77.15	105.38	201.01	1686.17
Percolation Ponds 6 and 7														
Combined Pond Capacity	AF	58.31	58.31	58.31	58.31	58.31	58.31	58.31	58.31	58.31	58.31	58.31	58.31	699.71
Applied Water to Perc Ponds	AF	147.87	-5.41	-4.66	-2.06	-1.06	-2.14	2.20	92.88	33.55 5.61	4.78	3.28	-0.28	60.46
Water in Storage from previous Month	AF	0.00	58.31	58.31	58.31	58.31	58.31	58.31	58.31	58.31	58.31	58.31	58.31	641.40
Summative Ponds Percolation Rate	AF	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.11
Summative Ponds Evaporation Loss	AF	3.55	5.77	5.02	2.63	2.23	4.25	3.54 1.34	4.73	0.00	4.77	3.27	2.18	29.05
End of Month Water	AF	150.71	200.20	223.65	257.83	251.76	250.36	207.50	146.47	86.25	130.68	160.41	259.60	2325.41
Extra Effluent to Pond 5	AF	92.40	141.89	165.34	199.52	193.45	192.05	149.19	88.16	27.94	72.37	102.10	201.29	1625.71
Pond 5 Storage	A.F.	E3 17	E3 17	E3 17	E2 17	E3 17	53 17	53 17	53 17	E2 17	E0 17	ED 17	E3 17	626.05
Water In Storage from Previous Month	AF	0.00	52.17	52.17	52.17	52.17	52.17	52.17	52.17	52.17	52.17	0.00	0.00	469.54
Influent	AF	92.40	141.89	165.34	199.52	193.45	192.05	149.19	88.16	27.94	72.37	102.10	201.29	1625.71
Rainfall Gain	AF	1.97	3.21	2.79	1.46	1.24	2.36	0.75	0.01	0.00	0.00	0.00	1.21	15.00
Discharge to Needed Proposed Storage	AF	42.20	144.90	167.93	200.67	194.04	193.24	1.96	85.55	24.82	69.72	49.93	150.33	1471.32
Discharge to Irrigation/Spray Fields	AF	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	252.31	212.31	2.68	467.29
End of Month Storage	AF	52.17	52.17	52.17	52.17	52.17	52.17	52.17	52.17	52.17	0.00	0.00	49.49	519.03
Needed Proposed Storage														
Pond 5 Influent	AF	42.20	144.90	167.93	200.67	194.04	193.24	147.98	85.55	24.82	69.72	49.93	150.33	1471.32
Discharge to Irrigation/Sprav Fields	AF	0.00	42.20	187.10	555.03 0.00	555.70 0.00	0.00	942.99 241.03	849.94 384.36	551.13 444.81	131.15	69.72	49.93	4484.63 1320.99
End of Month Storage	AF	42.20	187.10	355.03	555.70	749.74	942.99	849.94	551.13	131.15	69.72	49.93	150.33	4634.97
Spray Fields (summer only) Acres Required														360.54
AF Required								241.03	384.36	444.81	383.46	282.03	52.60	1788.28
Discharge from Proposed Storage to Spray Fields Discharge from Pond 5 to Spray Fields								241.03 0.00	384.36 0.00	444.81 0.00	131.15 252.31	69.72 212.31	49.93 2.68	1320.99 467.29

				CDCR 3	41 AFY: 2031	High Projectio	on							
	Assu	imptions:	Preston Reser The assumed Storage Pond Storage Pond Storage Pond	rvoir has Arec Percolation r 5 has an are 6 has an are 7 has an are	as ranging from rate for the two ra of 4.35 Acres ra of 3.45 Acres ra of 4.38 Acres	n 0 Acres whe o Reservoirs is s and a volum s and a volum s and a volum	n empty to 18 100 Gallons e of 52.17 Aci e of 27.62 Aci e of 30.69 Aci	8 when full. It per Day or 0.0 re-Feet. re-Feet and a re-Feet and a	ts Capacity is 01 Acre-Feet µ Perc rate of 0 Perc rate of 0	235 Acre-Fee per Month. ).80 Acre-Fee ).46 Acre-Fee	et. et per Day. et per Day.		Percolation Pon Perc Year Rou Perc in Winte No Perc	nds 6&7
Re	move Henderson Remove Preston		n Additional	1210.22 457.24	Acre-Ft of Sto Acres of Spray	rarage is Requ / Field Require	<i>uired</i> ed to Empty P	ond 5 and Pro	oposed Stora	ge				
Month		November	December	January	February	March	April	May	June	July	August	September	October	Total
Rainfall Dry Year	In	0.82	1.64	2.05	1.98	1.23	0.82	0.57	0.19	0.00	0.00	0.06	0.77	9.36
Rainfall 25 Year	In	4.69	7.63	6.64	3.48	2.95	5.62	1.78	0.03	0.00	0.00	0.00	2.88	32.82
Rainfall 100 Year	In	5.44	8.85	7.70	4.03	3.42	6.51	2.06	0.04	0.00	0.00	0.00	3.34	38.05
Pan Evaporation	In	1.08	0.55	0.55	0.86	1.78	3.22	5.42	7.25	8.59	7.31	5.01	2.90	41.62
Month		November	December	January	February	March	April	May	June	July	August	September	October	Total
Sutter Creek														
Sutter Creek WWTP Effluent	AF	175.13	143.59	111.08	78.08	73.23	71.77	74.20	76.14	89.24	112.05	167.37	168.82	1340.70
CDCR CDCR Effluent to Preston Reservoir	AF	5.60	5.60	51.34	51.34	51.34	51.34	51.34	51.34	5.60	5.60	5.60	5.60	336.04
Preston Reservoir														
Preston Reservoir Maximum Available Storage	AF	235.00	235.00	235.00	235.00	235.00	235.00	235.00	235.00	235.00	235.00	235.00	235.00	
Water in Storage at Beginning of Month	AF	0.00	85.00	164.84	235.00	235.00	235.00	235.00	176.25	117.50	58.75	0.00	0.00	0.00
Precipitation	AF	8.16	149.19	162.42	6.05	5.13	9.77	3.09	0.06	0.00	0.00	0.00	5.01	62.09
Evaporation	AF	1.62	0.83	0.83	1.29	2.67	4.83	8.13	10.88	12.89	10.97	7.52	4.35	66.78
Percolation	AF	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.11
Water Applied(+)/Removed(-) from Storage	AF	85.00	79.84	70.16	305.17	302.02	303.04	-58.75	-58.75	-58.75	-58.75	105.44	175.07	0.00
End of Month Storage	AF	85.00	164.84	235.00	235.00	235.00	235.00	176.25	117.50	58.75	0.00	0.00	0.00	1542.34
Effluent	AF	102.26	81.79	102.97	134.17	127.02	128.04	179.24	175.41	140.70	165.42	165.44	175.07	1677.54
lone														
lone Wastewater Effluent Total Water Influent to Ione	AF AF	92.69 194.95	96.43 178.22	93.94 196.91	93.94 228.10	95.18 222.20	91.44 219.48	91.44 270.68	90.20 265.60	90.20 230.90	90.20 255.62	90.20 255.64	91.44 266.52	1107.29 2784.83
Discharge-Irrigation		404.05	470.00	400.04	220.40	222.20	240.40	270.00	265.60	220.00	255.62	255.64	266 52	2704.02
Needed Applied Water at Castle Oak	AF	194.95	1/8.22	0.00	228.10	0.00	219.48	47.08	265.60	230.90	255.62	255.64	266.52	2784.83 357.10
Needed Applied Water at Town Field	AF	0.00	0.00	0.00	0.00	0.00	0.00	34.31	52.62	60.87	52.47	38.59	9.36	248.23
Needed Applied Water at City Field	AF	0.00	0.00	0.00	0.00	0.00	0.00	7.92	12.14	14.05	12.11	8.91	2.16	57.28
Water Remaining after Irrigation	AF	194.95	178.22	196.91	228.10	222.20	219.48	181.38	142.42	164.82 66.08	142.08	104.50	247.02	2122.21
Percolation Ponds 6 and 7	45	F0 21	F0 21	F0 31	F0 31	F0 31	F0 21	F0 21	F0 21	F0 21	F0 21	F0 24	F0 31	600 71
Water Available	AF	194.95	178.22	196.91	228.10	222.20	219.48	181.38	123.19	66.08	113.54	151.14	247.02	2122.21
Applied Water to Perc Ponds	AF	55.47	-5.41	-4.66	-2.06	-1.06	-2.14	2.20	4.71	5.61	4.78	3.28	-0.28	60.46
Water in Storage from previous Month	AF	0.00	58.31	58.31	58.31	58.31	58.31	58.31	58.31	58.31	58.31	58.31	58.31	641.40
Summative Ponds Percolation Rate	AF	0.01	0.01	0.01	0.01	1.16	2.10	3.54	4.73	5.60	4.77	3.27	1.89	29.05
Summative Ponds Rainfall Gains	AF	3.55	5.77	5.02	2.63	2.23	4.25	1.34	0.03	0.00	0.00	0.00	2.18	27.01
End of Month Water	AF	197.79	241.93	259.87	288.47	281.57	279.93	237.48	176.78	118.77	167.07	206.17	305.61	2761.45
Pond 5 Storage	AF	139.48	183.62	201.57	230.16	223.26	221.62	1/9.1/	118.47	60.47	108.76	147.86	247.30	2061.75
Pond 5 Capacity	AF	52.17	52.17	52.17	52.17	52.17	52.17	52.17	52.17	52.17	52.17	52.17	52.17	626.05
Water In Storage from Previous Month	AF	0.00	52.17	52.17	52.17	52.17	52.17	52.17	52.17	52.17	52.17	0.00	0.00	469.54
Influent Bainfall Gain	AF AF	139.48	183.62	201.57	230.16	223.26	221.62	179.17	118.47	60.47	108.76	147.86	247.30	2061.75
Evaporation Loss	AF	0.00	0.20	0.20	0.31	0.65	1.17	1.96	2.63	3.11	2.65	0.00	0.00	12.88
Discharge to Needed Proposed Storage	AF	89.28	186.63	204.16	231.31	223.86	222.81	177.96	115.86	57.35	106.11	95.69	196.34	1907.36
Discharge to Irrigation/Spray Fields End of Month Storage	AF AF	0.00 52.17	0.00 52.17	0.00 52.17	0.00 52.17	0.00 52.17	0.00 52.17	0.00 52.17	0.00 52.17	0.00 52.17	334.32 0.00	251.56 0.00	0.00 52.17	585.88 521.71
Needed Proposed Storage														
Pond 5 Influent	AF	89.28	186.63	204.16	231.31	223.86	222.81	177.96	115.86	57.35	106.11	95.69	196.34	1907.36
Water in Storage from Previous Month	AF	0.00	89.28	275.91	480.07	711.38	935.24	1158.05	1030.33	658.75	151.98	106.11	95.69	5692.79
End of Month Storage	AF	89.28	275.91	480.07	711.38	935.24	1158.05	1030.33	467.45 658.75	504.11 151.98	106.11	95.69	225.32	1082.04 5918.10
Spray Fields (summer only) Acres Required														457.24
AF Required								305.67	487.45	564.11	486.31	357.67	66.71	2267.92
Discharge from Proposed Storage to Spray Fields Discharge from Pond 5 to Spray Fields								305.67 0.00	487.45 0.00	564.11 0.00	151.98 334.32	106.11 251.56	66.71 0.00	1682.04 585.88

					CDCR 3	41 AFY: 2036	High Projectio	on							
	,	Assump	tions:	Preston Reser The assumed Storage Pond Storage Pond Storage Pond	voir has Arec Percolation r 5 has an are 6 has an are 7 has an are	as ranging from rate for the tw a of 4.35 Acre a of 3.45 Acre a of 4.38 Acre	n 0 Acres whe o Reservoirs is s and a volum s and a volum s and a volum	n empty to 18 100 Gallons e of 52.17 Act e of 27.62 Act e of 30 69 Act	3 when full. It per Day or 0.0 re-Feet. re-Feet and a	s Capacity is . )1 Acre-Feet p Perc rate of ( Perc rate of (	235 Acre-Fee ber Month. 0.80 Acre-Fee 0.46 Acre-Fee	et. t per Day.		Percolation Pon Perc Year Rou Perc in Winte	ds 6&7 Ind r
Re	emove Henders Remove Prest	ion 🗹	Ar	Additional	1416.52 549.94	Acre-Ft of Stor	rarage is Requ V Field Require	<i>vired</i> ed to Empty P	ond 5 and Pro	posed Stora	ie	t per buy.	I	<b>G</b> No rec	
Month		No	vember	December	January	February	March	April	May	June	July	August	September	October	Total
Rainfall Dry Year		In	0.82	1.64	2.05	1.98	1.23	0.82	0.57	0.19	0.00	0.00	0.06	0.77	9.36
Rainfall Normal Year		In	2.57	3.45	3.97	3.58	3.35	1.86	0.85	0.26	0.04	0.06	0.29	1.20	20.28
Rainfall 25 Year		In	4.69	7.63	6.64	3.48	2.95	5.62	1.78	0.03	0.00	0.00	0.00	2.88	32.82
Pan Evaporation		In	1.08	0.55	0.55	0.86	1.78	3.22	5.42	7.25	8.59	7.31	5.01	2.90	41.62
Month		No	vember	December	January	February	March	April	May	June	July	August	September	October	Total
Sutter Creek															
Sutter Creek WWTP Effluent		AF	202.14	165.74	128.21	90.12	84.52	82.84	85.64	87.88	103.01	129.33	193.18	194.86	1547.48
CDCR CDCR Effluent to Preston Reservoir		AF	5.60	5.60	51.34	51.34	51.34	51.34	51.34	51.34	5.60	5.60	5.60	5.60	336.04
Preston Reservoir															
Preston Reservoir Maximum Available Storage		AF	235.00	235.00	235.00	235.00	235.00	235.00	235.00	235.00	235.00	235.00	235.00	235.00	0.00
Influent		AF	207.74	85.00 171.34	164.84	235.00 141.46	235.00	235.00 134.18	235.00 136.98	176.25	108.61	58.75 134.93	198.78	200.46	1889.13
Precipitation		AF	8.16	13.28	11.55	6.05	5.13	9.77	3.09	0.06	0.00	0.00	0.00	5.01	62.09
Evaporation		AF	1.62	0.83	0.83	1.29	2.67	4.83	8.13	10.88	12.89	10.97	7.52	4.35	66.78
Water Available to be Applied to Storage or Effluen	t	AF	214.27	268.78	355.11	381.21	373.31	374.11	366.93	304.65	213.21	182.71	191.26	201.11	3426.66
Water Applied(+)/Removed(-) from Storage		AF	85.00	79.84	70.16				-58.75	-58.75	-58.75	-58.75			0.00
End of Month Storage Effluent		AF AF	85.00 129.27	164.84 103.94	235.00 120.11	235.00 146.21	235.00 138.31	235.00 139.11	176.25 190.68	117.50 187.15	58.75 154.46	0.00 182.71	0.00 191.26	0.00 201.11	1542.34 1884.32
lone															
lone Wastewater Effluent Total Water Influent to Ione		AF AF	110.29 239.56	114.03 217.96	111.54 231.64	111.54 257.75	112.78 251.10	109.04 248.15	109.04 299.73	107.80 294.95	107.80 262.26	107.80 290.50	107.80 299.05	109.04 310.16	1318.49 3202.81
Discharge-Irrigation															
Water Available for Application		AF	239.56	217.96	231.64	257.75	251.10	248.15	299.73	294.95	262.26	290.50	299.05	310.16	3202.81
Needed Applied Water at Castle Oak		AF AF	0.00	0.00	0.00	0.00	0.00	0.00	47.08 34.31	77.65	89.90 60.87	77.50 52.47	57.00 38.59	7.98	357.10 248.23
Needed Applied Water at City Field		AF	0.00	0.00	0.00	0.00	0.00	0.00	7.92	12.14	14.05	12.11	8.91	2.16	57.28
Total Need		AF	0.00	0.00	0.00	0.00	0.00	0.00	89.31	142.42	164.82	142.08	104.50	19.49	662.62
Water Remaining after Irrigation		AF	239.56	217.96	231.64	257.75	251.10	248.15	210.42	152.53	97.44	148.42	194.55	290.66	2540.19
Percolation Ponds 6 and 7															
Combined Pond Capacity		AF	58.31	58.31	58.31	58.31	58.31	58.31	58.31	58.31	58.31	58.31	58.31	58.31	699.71
Applied Water to Perc Ponds		AF	239.50	-5.41	-4.66	-2.06	-1.06	-2.14	210.42	4.71	5.61	4.78	3.28	-0.28	2540.19
Water in Storage from previous Month		AF	0.00	58.31	58.31	58.31	58.31	58.31	58.31	58.31	58.31	58.31	58.31	58.31	641.40
Summative Ponds Percolation Rate		AF	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.11
Summative Ponds Rainfall Gains		AF	3.55	5.77	5.02	2.63	2.23	4.25	1.34	0.03	0.00	0.00	0.00	2.18	23.03
End of Month Water		AF	242.40	281.68	294.61	318.11	310.47	308.60	266.53	206.13	150.14	201.95	249.58	349.25	3179.44
Extra Effluent to Pond 5 Pond 5 Storage		AF	184.09	223.37	236.30	259.80	252.16	250.29	208.22	147.82	91.83	143.64	191.28	290.94	2479.73
Pond 5 Capacity		AF	52.17	52.17	52.17	52.17	52.17	52.17	52.17	52.17	52.17	52.17	52.17	52.17	626.05
Water In Storage from Previous Month		AF	0.00	52.17	52.17	52.17	52.17	52.17	52.17	52.17	52.17	52.17	0.00	0.00	469.54
Influent Rainfall Gain		AF	184.09	223.37	236.30	259.80	252.16	250.29	208.22	147.82	91.83	143.64	191.28	290.94	2479.73
Evaporation Loss		AF	0.00	0.20	0.20	0.31	0.65	1.17	1.96	2.63	3.11	2.65	0.00	0.00	12.88
Discharge to Needed Proposed Storage		AF	133.89	226.38	238.89	260.95	252.75	251.48	207.00	145.20	88.72	140.99	139.10	239.98	2325.34
Discharge to Irrigation/Spray Fields		AF	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	412.02	289.19	0.00	701.21
Line of Month Storage			52.17	32.17	52.17	52.17	52.17	32.17	52.17	52.17	52.17	0.00	0.00	52.17	521.71
Needed Proposed Storage			122.00	226.26	220.00	200.05	252 75	254.40	207.00	145.30	00.70	140.00	100.40	220.00	2225.2
Water in Storage from Previous Month		AF	153.89	226.38	238.89 360.27	260.95 599.16	252.75	251.48	1364.35	145.20	68.72 762.64	140.99	139.10	239.98 139.10	2525.34 6849.95
Discharge to Irrigation/Spray Fields		AF	0.00	0.00	0.00	0.00	0.00	0.00	367.64	586.27	678.48	172.88	140.99	80.24	2026.50
End of Month Storage		AF	133.89	360.27	599.16	860.11	1112.86	1364.35	1203.70	762.64	172.88	140.99	139.10	298.85	7148.80
Spray Fields (summer only) Acres Required															549.94
AF Required									367.64	586.27	678.48	584.90	430.18	80.24	2727.71
Discharge from Proposed Storage to Spray Fields Discharge from Pond 5 to Spray Fields									367.64 0.00	586.27 0.00	678.48 0.00	172.88 412.02	140.99 289.19	80.24 0.00	2026.50 701.21
n de la constante d															

					CDCR 3	41 AFY: 2016	Low Projectio	n							
		Assum	ptions:	Preston Reser The assumed Storage Pond Storage Pond Storage Pond	voir has Area Percolation r 5 has an are 6 has an are 7 has an are	s ranging from ate for the two a of 4.35 Acres a of 3.45 Acres a of 4.38 Acres	n O Acres whe o Reservoirs is s and a volum s and a volum s and a volum	n empty to 18 : 100 Gallons e of 52.17 Acı e of 27.62 Acı e of 30.69 Acı	3 when full. It per Day or 0.0 re-Feet. re-Feet and a re-Feet and a	s Capacity is . 11 Acre-Feet µ Perc rate of 0 Perc rate of 0	235 Acre-Fee ber Month. 0.80 Acre-Fee 0.46 Acre-Fee	t. t per Day. t per Day.		Percolation Por Perc Year Rou Perc in Winte	ds 6&7
	Remove He Remove	enderson 🗹 e Preston 🗌	Ar	n Additional	116.81 38.92	Acre-Ft of Stor Acres of Spray	rarage is Requ Field Require	<i>iired</i> ed to Empty P	ond 5 and Pro	posed Storag	ge		L	-	
Month		N	ovember	December	lanuary	February	March	Anril	May	lune	luly	Διισμετ	Sentember	October	Total
			ovember	Detember	sundary	rebruury	march	, thu	indy	June	July	rugust	September	occoser	Total
Rainfall Dry Year		In	0.82	1.64	2.05	1.98	1.23	0.82	0.57	0.19	0.00	0.00	0.06	0.77	9.36
Rainfall 25 Year		In	4.69	7.63	6.64	3.48	2.95	5.62	1.78	0.20	0.04	0.00	0.23	2.88	32.82
Rainfall 100 Year		In	5.44	8.85	7.70	4.03	3.42	6.51	2.06	0.04	0.00	0.00	0.00	3.34	38.05
Pan Evaporation		In	1.08	0.55	0.55	0.86	1.78	3.22	5.42	7.25	8.59	7.31	5.01	2.90	41.62
Month		N	ovember	December	January	February	March	April	Mav	June	July	August	September	October	Total
Sutter Creek Sutter Creek WWTP Effluent		AF	80.81	66.26	51.26	36.03	33.79	33.12	34.24	35.13	41.18	51.70	77.23	77.90	618.65
CDCR CDCR Effluent to Preston Reservoir		AF	3.80	3.80	34.60	34.60	34.60	34.60	34.60	34.60	3.80	3.80	3.80	3.80	230.40
Preston Reservoir Preston Reservoir Maximum Available Storage		ΔF	235.00	235.00	235.00	235.00	235.00	235.00	235.00	235.00	235.00	235.00	235.00	235.00	
Water in Storage at Beginning of Month		AF	0.00	85.00	164.84	235.00	235.00	235.00	235.00	176.25	117.50	58.75	0.00	0.00	0.00
Influent		AF	84.61	70.06	85.86	70.63	68.39	67.72	68.84	69.73	44.98	55.50	81.03	81.70	849.05
Precipitation		AF AF	8.16	13.28	11.55	6.05	5.13 2.67	9.77	3.09	0.06	0.00	0.00	0.00	5.01	62.09
Percolation		AF	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.11
Water Available to be Applied to Storage or Effl	luent	AF	91.14	167.50	261.41	310.38	305.84	307.65	298.79	235.16	149.59	103.28	73.51	82.35	2386.59
End of Month Storage		AF	85.00	164.84	235.00	235.00	235.00	235.00	176.25	117.50	58.75	0.00	0.00	0.00	1542.34
Effluent		AF	6.14	2.66	26.41	75.38	70.84	72.65	122.54	117.66	90.84	103.28	73.51	82.35	844.25
lone															
lone Wastewater Effluent Total Water Influent to Ione		AF AF	26.95 33.09	30.69 33.35	28.20 54.61	28.20 103.57	29.44 100.28	25.70 98.35	25.70 148.24	24.46 142.12	24.46 115.29	24.46 127.74	24.46 97.96	25.70 108.06	318.43 1162.68
Discharge-Irrigation		A.E.	22.00	22.25	E4 61	102 57	100.28	09.25	149.24	142 12	115 20	127.74	07.06	109.06	1167.69
Needed Applied Water at Castle Oak		AF	0.00	0.00	0.00	0.00	0.00	0.00	47.08	77.65	89.90	77.50	57.00	7.98	357.10
Needed Applied Water at Town Field		AF	0.00	0.00	0.00	0.00	0.00	0.00	34.31	52.62	60.87	52.47	38.59	9.36	248.23
Needed Applied Water at City Field Total Need		AF AF	0.00	0.00	0.00	0.00	0.00	0.00	7.92	12.14 142.42	14.05 164.82	12.11 142.08	8.91 104.50	2.16 19.49	57.28
Water Remaining after Irrigation		AF	33.09	33.35	54.61	103.57	100.28	98.35	58.94	-0.30	-49.52	-14.34	-6.54	88.57	500.06
Percolation Ponds 6 and 7															
Combined Pond Capacity		AF	58.31	58.31	58.31	58.31	58.31	58.31	58.31	58.31	58.31	58.31	58.31	58.31	699.71
Water Available		AF	33.09	33.35	54.61 54.61	103.57	100.28	98.35 35.54	58.94	0.00	0.00	0.00	0.00	88.57 88.57	570.76 395.25
Water in Storage from previous Month		AF	0.00	0.00	0.00	20.33	58.31	58.31	58.31	58.31	15.92	0.00	0.00	0.00	269.48
Summative Ponds Percolation Rate		AF	37.69	38.94	38.94	35.18	38.94	37.69	38.94	37.69	38.94	38.94	37.69	38.94	458.54
Summative Ponds Evaporation Loss Summative Ponds Rainfall Gains		AF AF	0.70	0.36	0.36	0.56 2.63	1.16	2.10	3.54 1.34	4.73	5.60	4.77	3.27	1.89 2.18	29.05 27.01
End of Month Water		AF	0.00	0.00	20.33	90.79	120.72	121.12	76.11	15.92	0.00	0.00	0.00	49.91	494.89
Extra Effluent to Pond 5		AF	0.00	0.00	0.00	32.49	62.41	62.81	17.80	0.00	0.00	0.00	0.00	0.00	175.50
Pond 5 Storage															
Pond 5 Capacity Water In Storage from Previous Month		AF AF	52.17	52.17	52.17	52.17	52.17 41.84	52.17 52.17	52.17 52.17	52.17 52.17	52.17 49.56	52.17 46.60	52.17	52.17	626.05 330.29
Influent		AF	0.00	0.00	0.00	32.49	62.41	62.81	17.80	0.00	0.00	0.00	0.00	0.00	175.50
Rainfall Gain		AF	1.97	3.21	2.79	1.46	1.24	2.36	0.75	0.01	0.00	0.00	0.00	1.21	15.00
Discharge to Needed Proposed Storage		AF	0.00	0.01	0.02	0.05	52.81	64.00	16.58	0.00	0.00	0.00	0.72	0.00	133.39
Discharge to Irrigation/Spray Fields		AF	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	23.54	30.45	5.68	59.67 330.29
end of Month Storage		Ar	1.57	5.17	7.54	+1.04	32.17	52.17	52.17	-5.50	-0.00	20.09	0.00	0.00	550.29
Needed Proposed Storage Pond 5 Influent		AF	0.00	0.00	0.00	0.00	52.81	64.00	16.58	0.00	0.00	0.00	0.00	0.00	133.39
Water in Storage from Previous Month		AF	0.00	0.00	0.00	0.00	0.00	52.81	116.81	107.37	65.87	17.85	0.00	0.00	360.71
Discharge to Irrigation/Spray Fields End of Month Storage		AF AF	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 52.81	0.00 116.81	26.02 107.37	41.49 65.87	48.02 17.85	17.85 0.00	0.00 0.00	0.00 0.00	133.39 360.71
Spray Fields (summer only) Acres Required															38.92
AF Required									26.02	41.49	48.02	41.40	30.45	5.68	193.05
Discharge from Proposed Storage to Spray Field Discharge from Pond 5 to Spray Fields	is								26.02 0.00	41.49 0.00	48.02 0.00	17.85 23.54	0.00 30.45	0.00 5.68	133.39 59.67

			Preston Reser The assumed Storage Pond Storage Pond Storage Pond	voir has Area Percolation r 5 has an are 6 has an are 7 has an are	as ranging from ate for the two a of 4.35 Acres a of 3.45 Acres a of 4.38 Acres	n 0 Acres whe o Reservoirs is s and a volum s and a volum s and a volum	n empty to 18 100 Gallons   e of 52.17 Acr e of 27.62 Acr e of 30.69 Acr	when full. It per Day or 0.0 e-Feet. e-Feet and a e-Feet and a	s Capacity is 2 11 Acre-Feet p Perc rate of 0 Perc rate of 0	235 Acre-Fee er Month. .80 Acre-Fee .46 Acre-Fee	et. et per Day. et per Day.		Percolation Por Perc Year Rou Perc in Winte No Perc	nds 6&7 und er
	Remove Henderson Remove Preston	☑ Ar	Additional	207.59 63.39	Acre-Ft of Stor Acres of Spray	rarage is Requ / Field Require	ired d to Empty Po	ond 5 and Pro	posed Storag	e				
Month		November	December	January	February	March	April	May	June	July	August	September	October	Tota
Rainfall Dry Year O	In	0.82	1.64	2.05	1.98	1.23	0.82	0.57	0.19	0.00	0.00	0.06	0.77	
Rainfall Normal Year	In	2.57	3.45	3.97	3.58	3.35	1.86	0.85	0.26	0.04	0.06	0.29	1.20	2
Rainfall 100 Year	In	5.44	8.85	7.70	4.03	3.42	6.51	2.06	0.04	0.00	0.00	0.00	3.34	
Pan Evaporation	In	1.08	0.55	0.55	0.86	1.78	3.22	5.42	7.25	8.59	7.31	5.01	2.90	,
Month		November	December	January	February	March	April	May	June	July	August	September	October	Tot
Sutter Creek														
Sutter Creek WWTP Effluent	AF	98.30	80.60	62.35	43.83	41.10	40.29	41.65	42.74	50.09	62.89	93.94	94.76	75
CDCR CDCR Effluent to Preston Reservoir	AF	3.80	3.80	34.60	34.60	34.60	34.60	34.60	34.60	3.80	3.80	3.80	3.80	23
Preston Reservoir														
Preston Reservoir Maximum Available Storage	AF	235.00	235.00	235.00	235.00	235.00	235.00	235.00	235.00	235.00	235.00	235.00	235.00	
water in Storage at Beginning of Month	AF	0.00	85.00	164.84 96 95	235.00	235.00	235.00	235.00	176.25	53 80	58.75	0.00	0.00	0
Precipitation	AF	8.16	13.28	11.55	6.05	5.13	9.77	3.09	0.06	0.00	0.00	0.00	5.01	1
Evaporation	AF	1.62	0.83	0.83	1.29	2.67	4.83	8.13	10.88	12.89	10.97	7.52	4.35	
Percolation	AF	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	
water Available to be Applied to Storage or Efflue Water Applied(+)/Removed(-) from Storage	ent AF	108.63	181.84 79.84	272.51	318.18	313.15	314.82	306.20 -58.75	-58 75	158.50 -58.75	-58 75	90.22	99.21	25
End of Month Storage	AF	85.00	164.84	235.00	235.00	235.00	235.00	176.25	117.50	58.75	0.00	0.00	0.00	15
Effluent	AF	23.63	17.00	37.51	83.18	78.15	79.82	129.95	125.27	99.75	114.47	90.22	99.21	9
lone Ione Wastewater Effluent	ΔF	30.85	34.59	32.10	32.10	33.34	29.61	29.61	28.36	28.36	28.36	28.36	29.61	31
Total Water Influent to Ione	AF	54.48	51.59	69.60	115.27	111.49	109.42	159.56	153.63	128.11	142.83	118.58	128.82	13
Discharge-Irrigation	AF	54 40	51 50	60 60	115 27	111 40	100 43	150 54	153 63	128 11	1/12 02	119 50	179 07	13.
Needed Applied Water at Castle Oak	AF	0.00	0.00	0.00	0.00	0.00	0.00	47.08	77.65	89.90	77.50	57.00	7.98	13
Needed Applied Water at Town Field	AF	0.00	0.00	0.00	0.00	0.00	0.00	34.31	52.62	60.87	52.47	38.59	9.36	24
Needed Applied Water at City Field	AF	0.00	0.00	0.00	0.00	0.00	0.00	7.92	12.14	14.05	12.11	8.91	2.16	5
i otal Need Water Remaining after Irrigation	AF AF	0.00 54.48	0.00 51.59	0.00 69.60	0.00 115.27	0.00 111.49	0.00 109.42	89.31 70.25	142.42 11.21	164.82 -36.71	142.08 0.74	104.50 14.08	19.49 109.32	68 68
Percolation Pond 6														
Rainfall Gain	AF	1.56	2.54	2.21	1.16	0.98	1.87	0.59	0.01	0.00	0.00	0.00	0.96	
Percolation Loss Evaporation Loss	AF AF	23.89 0.31	24.69 0.16	24.69 0.16	22.30 0.25	24.69 0.51	23.89 0.93	24.69 1.56	23.89 2.08	24.69 2.47	24.69 2.10	23.89 1.44	24.69 0.83	
Percolation Pond 7														
Rainfall Gain	AF	1.99	3.23	2.81	1.47	1.25	2.38	0.75	0.01	0.00	0.00	0.00	1.22	
Percolation Loss	AF	13.80	14.26	14.26	12.88	14.26	13.80	14.26	13.80	14.26	14.26	13.80	14.26	
Evapuration Loss	AF	0.39	0.20	0.20	0.31	0.65	1.18	1.98	2.65	3.14	2.0/	1.83	1.06	
Percolation Ponds 6 and 7 Combined Pond Capacity	AF	58.31	58.31	58.31	58.31	58.31	58.31	58.31	58.31	58.31	58.31	58.31	58.31	6
Water Available	AF	54.48	51.59	69.60	115.27	111.49	109.42	70.25	11.21	0.00	0.74	14.08	109.32	7
Applied Water to Perc Ponds	AF	54.48	51.59	54.89	33.11	37.87	35.54	41.14	11.21	0.00	0.74	14.08	96.97	4
water in storage from previous Month Summative Ponds Percolation Rate	AF	0.00	19.64 38.94	37.70 38.94	58.31 35.18	58.31 38.94	58.31 37.69	58.31 38.94	58.31 37.69	27.12	0.00	0.00	0.00	37
Summative Ponds Evaporation Loss	AF	0.70	0.36	0.36	0.56	1.16	2.10	3.54	4.73	5.60	4.77	3.27	1.89	-+.
Summative Ponds Rainfall Gains	AF	3.55	5.77	5.02	2.63	2.23	4.25	1.34	0.03	0.00	0.00	0.00	2.18	:
End of Month Water Extra Effluent to Pond 5	AF AF	19.64 0.00	37.70 0.00	73.02 14.72	140.47 82.17	131.93 73.62	132.19 73.88	87.42 29.11	27.12 0.00	0.00 0.00	0.00 0.00	0.00 0.00	70.67 12.36	7.
Pond 5 Storage														
Pond 5 Capacity	AF	52.17	52.17	52.17	52.17	52.17	52.17	52.17	52.17	52.17	52.17	52.17	52.17	6
Water In Storage from Previous Month	AF	0.00	1.97	5.17	22.66	52.17	52.17	52.17 20 1 1	52.17	49.56	46.60	19.80	0.00	3
Rainfall Gain	AF	1.97	3.21	2.79	1.46	1.24	2.36	0.75	0.01	0.00	0.00	0.00	1.21	20
Evaporation Loss	AF	0.00	0.01	0.02	0.14	0.65	1.17	1.96	2.63	2.96	2.37	0.69	0.00	1
Discharge to Needed Proposed Storage	AF	0.00	0.00	0.00	53.98	74.21	75.07	27.89	0.00	0.00	0.00	0.00	0.00	2
End of Month Storage	AF	1.97	5.17	22.66	52.17	52.17	52.17	52.17	49.56	46.60	24.44 19.80	49.59	9.25	35
Needed Proposed Storage									_	_	_			
Pond 5 Influent Water in Storage from Previous Month	AF	0.00	0.00	0.00	53.98	74.21	75.07	27.89	0.00	0.00	0.00	0.00	0.00	2
Discharge to Irrigation/Spray Fields End of Month Storage	AF AF	0.00	0.00	0.00	0.00	0.00	0.00	42.38	67.58 121.20	78.21	42.99	0.00	0.00	2:
Spray Fields (summer only)														
Acres Required														
AF Required								42.38	67.58	78.21	67.42	49.59	9.25	3
Discharge from Pronosed Storage to Spray Fields								42 38	67 58	78 21	12 00	0.00	0.00	2

				CDCR 3	41 AFY: 2026	Low Projectio	n						-	
	Assun	nptions:	Preston Reser The assumed Storage Pond Storage Pond Storage Pond	voir has Area Percolation r 5 has an area 6 has an area 7 has an area	is ranging from ate for the two a of 4.35 Acres a of 3.45 Acres a of 4.38 Acres	n 0 Acres whe o Reservoirs is s and a volum s and a volum s and a volum	n empty to 18 5 100 Gallons e of 52.17 Act e of 27.62 Act e of 30.69 Act	3 when full. It per Day or 0.0 re-Feet. re-Feet and a re-Feet and a	s Capacity is . )1 Acre-Feet p Perc rate of C Perc rate of C	235 Acre-Fee Der Month. 1.80 Acre-Fee 1.46 Acre-Fee	rt. t per Day. t per Day.		Percolation Pon Perc Year Rou Perc in Winter No Perc	ds 6&7 Ind
Re	emove Henderson Remove Preston	] Ar	n Additional	313.82 90.41	Acre-Ft of Stor Acres of Spray	rarage is Requ / Field Require	<i>uired</i> ed to Empty P	ond 5 and Pro	posed Storag	ge				
Month	٩	lovember	December	January	February	March	April	May	June	July	August	September	October	Total
Rainfall Dry Year O	ln In	0.82	1.64 3.45	2.05	1.98	1.23	0.82	0.57	0.19	0.00	0.00	0.06	0.77	9.36 20.28
Rainfall 25 Year	In	4.69	7.63	6.64	3.48	2.95	5.62	1.78	0.03	0.00	0.00	0.00	2.88	32.82
Rainfall 100 Year	In	5.44	8.85	7.70	4.03	3.42	6.51	2.06	0.04	0.00	0.00	0.00	3.34	38.05
		1.08	0.55	0.55	0.80	1.78	5.22	5.42	7.25	8.59	7.51	5.01	2.90	41.02
Month	١	lovember	December	January	February	March	April	May	June	July	August	September	October	Total
Sutter Crook														
Sutter Creek WWTP Effluent	AF	116.02	95.12	73.58	51.73	48.51	47.55	49.15	50.44	59.12	74.23	110.87	111.84	888.16
CDCR CDCR Effluent to Preston Reservoir	AF	3.80	3.80	34.60	34.60	34.60	34.60	34.60	34.60	3.80	3.80	3.80	3.80	230.40
Preston Reservoir Preston Reservoir Maximum Available Storage	ΔF	235.00	235.00	235.00	235.00	235.00	235.00	235.00	235.00	235.00	235.00	235.00	235.00	
Water in Storage at Beginning of Month	AF	0.00	85.00	164.84	235.00	235.00	235.00	235.00	176.25	117.50	58.75	0.00	0.00	0.00
Influent	AF	119.82	98.92	108.18	86.33	83.11	82.15	83.75	85.04	62.92	78.03	114.67	115.64	1118.56
Evaporation	AF	8.16	0.83	0.83	1.29	2.67	9.77 4.83	8.13	10.88	12.89	10.00	7.52	4.35	62.09
Percolation	AF	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.11
Water Available to be Applied to Storage or Effluen	t AF	126.35	196.36	283.74	326.08	320.56	322.08	313.70	250.47	167.53	125.81	107.15	116.29	2656.09
End of Month Storage	AF	85.00	164.84	235.00	235.00	235.00	235.00	176.25	117.50	58.75	0.00	0.00	0.00	1542.34
Effluent	AF	41.35	31.52	48.74	91.08	85.56	87.08	137.45	132.97	108.78	125.81	107.15	116.29	1113.75
lone														
Ione Wastewater Effluent Total Water Influent to Ione	AF AF	34.75 76.10	38.49 70.01	36.00 84.73	36.00 127.07	37.24 122.80	33.51 120.58	33.51 170.96	32.26 165.23	32.26 141.04	32.26 158.07	32.26 139.41	33.51 149.80	412.04 1525.80
Discharge-Irrigation								100.00						
Water Available for Application Needed Applied Water at Castle Oak	AF	76.10 0.00	/0.01	84.73	127.07	122.80	120.58	170.96	165.23	141.04 89.90	158.07	139.41 57.00	149.80 7.98	1525.80 357.10
Needed Applied Water at Town Field	AF	0.00	0.00	0.00	0.00	0.00	0.00	34.31	52.62	60.87	52.47	38.59	9.36	248.23
Needed Applied Water at City Field	AF	0.00	0.00	0.00	0.00	0.00	0.00	7.92	12.14	14.05	12.11	8.91	2.16	57.28
Water Remaining after Irrigation	AF	76.10	70.01	84.73	127.07	122.80	120.58	89.31	22.81	-23.78	142.08	104.50 34.91	130.31	863.18
Percolation Ponds 6 and 7														
Combined Pond Capacity	AF	58.31	58.31	58.31	58.31	58.31	58.31	58.31	58.31	58.31	58.31	58.31	58.31	699.71
Water Available	AF	76.10	70.01	84.73	127.07	122.80	120.58	81.65	22.81	0.00	15.98	34.91	130.31	886.96
Water in Storage from previous Month	AF	0.00	41.26	58.31	58.31	58.31	58.31	58.31	58.31	38.73	0.00	0.00	0.00	429.84
Summative Ponds Percolation Rate	AF	37.69	38.94	38.94	35.18	38.94	37.69	38.94	37.69	38.94	38.94	37.69	38.94	458.54
Summative Ponds Evaporation Loss Summative Ponds Bainfall Gains	AF AF	0.70	0.36	0.36	0.56	1.16	2.10	3.54	4.73	5.60	4.77	3.27	1.89 2.18	29.05 27.01
End of Month Water	AF	41.26	77.74	108.76	152.28	143.24	143.35	98.82	38.73	0.00	0.00	0.00	91.65	895.82
Extra Effluent to Pond 5	AF	0.00	19.43	50.45	93.97	84.93	85.04	40.51	0.00	0.00	0.00	0.00	33.34	407.68
Pond 5 Storage	45	52.17	52.17	52.17	52.17	52.17	52.17	52.17	52.17	52.17	52.17	52.17	52.17	626.05
Water In Storage from Previous Month	AF	0.00	1.97	24.61	52.17	52.17	52.17	52.17	52.17	49.56	46.60	11.46	0.00	395.05
Influent	AF	0.00	19.43	50.45	93.97	84.93	85.04	40.51	0.00	0.00	0.00	0.00	33.34	407.68
Rainfall Gain Evaporation Loss	AF	1.97	3.21	2.79	1.46	1.24	2.36	0.75	2.63	2.96	2.37	0.00	1.21	15.00 12.54
Discharge to Needed Proposed Storage	AF	0.00	0.00	25.59	95.12	85.52	86.23	39.29	0.00	0.00	0.00	0.00	0.00	331.75
Discharge to Irrigation/Spray Fields	AF	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	32.77	70.72	13.19	116.69
End of Month Storage	AF	1.97	24.61	52.17	52.17	52.17	52.17	52.17	49.56	46.60	11.46	0.00	21.36	416.41
Needed Proposed Storage	٨F	0.00	0.00	75 50	05 17	85 57	86.23	30 20	0.00	0.00	0.00	0.00	0.00	321 75
Water in Storage from Previous Month	AF	0.00	0.00	0.00	25.59	120.70	206.23	292.46	271.31	174.93	63.38	0.00	0.00	1154.60
Discharge to Irrigation/Spray Fields End of Month Storage	AF AF	0.00	0.00	0.00	0.00	0.00	0.00	60.44 271 31	96.38 174 93	111.54 63.38	63.38 0.00	0.00	0.00	331.75 1154 60
and or wrong resources	Ar	0.00	0.00	20.09	120.70	200.23	2.72.40	271.31	1/4.55	03.38	0.00	0.00	0.00	1134.00
Spray Fields (summer only) Acres Required														90.41
AF Required								60.44	96.38	111.54	96.16	70.72	13.19	448.44
Discharge from Proposed Storage to Spray Fields Discharge from Pond 5 to Spray Fields								60.44 0.00	96.38 0.00	111.54 0.00	63.38 32.77	0.00 70.72	0.00 13.19	331.75 116.69

				CDCR 3	41 AFY: 2031	Low Projectio	n							
	Assu	mptions:	Preston Reser The assumed Storage Pond Storage Pond Storage Pond	voir has Arec Percolation r 5 has an are 6 has an are 7 has an are	as ranging from rate for the tw a of 4.35 Acre a of 3.45 Acre a of 4.38 Acre	n 0 Acres whe o Reservoirs is s and a volum s and a volum s and a volum	n empty to 18 100 Gallons e of 52.17 Act e of 27.62 Act e of 30.69 Act	3 when full. In per Day or 0.0 re-Feet. re-Feet and a re-Feet and a	s Capacity is . 11 Acre-Feet p Perc rate of 0 Perc rate of 0	235 Acre-Fee ber Month. 0.80 Acre-Fee 0.46 Acre-Fee	rt. t per Day. t per Day.		Percolation Pon Perc Year Rou Perc in Winte	ds 6&7 Ind r
Rer	nove Henderson Remove Preston	I Ar	n Additional	414.76 120.11	Acre-Ft of Sto Acres of Spray	rarage is Requ / Field Require	<i>iired</i> ed to Empty P	ond 5 and Pro	oposed Storag	ge				
Month		November	December	January	February	March	April	May	June	July	August	September	October	Total
Rainfall Dry Year	In	0.82	1.64	2.05	1.98	1.23	0.82	0.57	0.19	0.00	0.00	0.06	0.77	9.36
Rainfall Normal Year	In	2.57	3.45	3.97	3.58	3.35	1.86	0.85	0.26	0.04	0.06	0.29	1.20	20.28
Rainfall 25 Year	In	4.69	7.63	6.64	3.48	2.95	5.62	1.78	0.03	0.00	0.00	0.00	2.88	32.82
Pan Evaporation	In	1.08	0.55	0.55	0.86	1.78	3.22	5.42	7.25	8.59	7.31	5.01	2.90	41.62
Month		November	December	January	February	March	April	May	June	July	August	September	October	Total
Sutter Creek	٨F	133 28	109.28	84 54	59.42	55 73	54.62	56 47	57.05	67.92	85.28	177 38	128 /8	1020 35
CDCR	Ar	133.28	105.28	04.34	35.42	33.73	54.02	50.47	57.55	07.52	03.20	127.38	120.40	1020.33
CDCR Effluent to Preston Reservoir	AF	3.80	3.80	34.60	34.60	34.60	34.60	34.60	34.60	3.80	3.80	3.80	3.80	230.40
Preston Reservoir Maximum Available Storage	AF	235.00	235.00	235.00	235.00	235.00	235.00	235.00	235.00	235.00	235.00	235.00	235.00	
Water in Storage at Beginning of Month	AF	0.00	85.00	164.84	235.00	235.00	235.00	235.00	176.25	117.50	58.75	0.00	0.00	0.00
Influent	AF	137.08	113.08	119.14	94.02	90.33	89.22	91.07	92.55	71.72	89.08	131.18	132.28	1250.75
Evaporation	AF	8.16	13.28	0.83	1.29	2.67	9.77	3.09	10.88	12.89	10.97	7.52	4.35	62.09
Percolation	AF	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.11
Water Available to be Applied to Storage or Effluent	AF	143.62	210.52	294.69	333.77	327.78	329.15	321.02	257.97	176.32	136.85	123.65	132.93	2788.29
End of Month Storage	AF	85.00	164.84	235.00	235.00	235.00	235.00	-58.75	-58.75	-58.75	-38.75	0.00	0.00	1542.34
Effluent	AF	58.62	45.68	59.69	98.77	92.78	94.15	144.77	140.47	117.57	136.85	123.65	132.93	1245.95
lone														
lone Wastewater Effluent Total Water Influent to Ione	AF AF	38.65 97.27	42.39 88.07	39.90 99.59	39.90 138.67	41.14 133.93	37.41 131.56	37.41 182.18	36.16 176.63	36.16 153.74	36.16 173.01	36.16 159.81	37.41 170.34	458.85 1704.79
Discharge-Irrigation														
Water Available for Application	AF	97.27	88.07	99.59	138.67	133.93	131.56	182.18	176.63	153.74	173.01	159.81	170.34	1704.79 357.10
Needed Applied Water at Castle Oak	AF	0.00	0.00	0.00	0.00	0.00	0.00	34.31	52.62	60.87	52.47	38.59	9.36	248.23
Needed Applied Water at City Field	AF	0.00	0.00	0.00	0.00	0.00	0.00	7.92	12.14	14.05	12.11	8.91	2.16	57.28
Total Need Water Remaining after Irrigation	AF AF	0.00 97.27	0.00 88.07	0.00 99.59	0.00 138.67	0.00 133.93	0.00 131.56	89.31 92.87	142.42 34.22	164.82 -11.08	142.08 30.93	104.50 55.31	19.49 150.85	662.62 1042.18
Percolation Ponds 6 and 7	45	F0 21	F0 31	F0 21	F0 31	F0 31	F0 21	F0 21	F0 21	F0 21	F0 31	F0 31	F9 21	600 71
Water Available	AF	97.27	88.07	99.59	138.67	133.93	131.56	92.87	34.22	0.00	30.93	55.31	150.85	1053.26
Applied Water to Perc Ponds	AF	93.15	33.53	34.28	33.11	37.87	35.54	41.14	34.22	0.00	30.93	55.31	82.61	511.69
Water in Storage from previous Month	AF	0.00	58.31	58.31	58.31	58.31	58.31	58.31	58.31	50.13	5.58	0.00	14.35	478.23
Summative Ponds Percolation Rate	AF	37.69	38.94	38.94	0.56	38.94	2.10	38.94	4.73	38.94 5.60	38.94	37.69	38.94	458.54
Summative Ponds Rainfall Gains	AF	3.55	5.77	5.02	2.63	2.23	4.25	1.34	0.03	0.00	0.00	0.00	2.18	27.01
End of Month Water	AF	62.42	112.85	123.62	163.87	154.36	154.32	110.04	50.13	5.58	0.00	14.35	126.54	1078.11
Pond 5 Storage	Ar	4.12	54.54	05.51	105.50	96.05	90.01	51.75	0.00	0.00	0.00	0.00	08.23	541.57
Pond 5 Capacity	AF	52.17	52.17	52.17	52.17	52.17	52.17	52.17	52.17	52.17	52.17	52.17	52.17	626.05
Water In Storage from Previous Month	AF	0.00	6.09	52.17	52.17	52.17	52.17	52.17	52.17	49.56	46.60	0.00	0.00	415.27
Rainfall Gain	AF	4.12	54.54 3.21	2.79	105.56	96.05	2.36	0.75	0.00	0.00	0.00	0.00	1.21	541.57
Evaporation Loss	AF	0.00	0.02	0.20	0.31	0.65	1.17	1.96	2.63	2.96	2.37	0.00	0.00	12.26
Discharge to Needed Proposed Storage	AF	0.00	11.64	67.90	106.71	96.65	97.21	50.51	0.00	0.00	0.00	0.00	17.27	447.90
End of Month Storage	AF	6.09	52.17	52.17	52.17	52.17	52.17	52.17	49.56	46.60	0.00	0.00	34.65	449.92
Needed Proposed Storage														
Pond 5 Influent	AF	0.00	11.64	67.90	106.71	96.65	97.21	50.51	0.00	0.00	0.00	0.00	17.27	447.90
Water in Storage from Previous Month	AF	0.00	0.00	11.64	79.55	186.26	282.91	380.11	350.34	222.30	74.12	0.00	0.00	1587.23
End of Month Storage	AF	0.00	11.64	79.55	186.26	282.91	380.11	350.34	222.30	74.12	0.00	0.00	17.27	430.63
Spray Fields (summer only)														120.14
AF Required								80.29	128.04	148.18	127.74	93.95	17.52	595.72
Discharge from Proposed Storage to Spray Fields								80.29	128.04	148.18	74.12	0.00	0.00	430.63
Discharge from Pond 5 to Spray Fields								0.00	0.00	0.00	53.62	93.95	17.52	165.10

					CDCR 3	41 AFY: 2036	Low Projectio	n							
		Assum	ptions:	Preston Reser The assumed Storage Pond Storage Pond Storage Pond	voir has Arec Percolation r 5 has an are 6 has an are 7 has an are	as ranging from ate for the tw a of 4.35 Acre a of 3.45 Acre a of 4.38 Acre	n 0 Acres whe o Reservoirs is s and a volum s and a volum s and a volum	n empty to 18 5 100 Gallons e of 52.17 Act e of 27.62 Act e of 30.69 Act	8 when full. It per Day or 0.0 re-Feet. re-Feet and a re-Feet and a	ts Capacity is . D1 Acre-Feet p Perc rate of C Perc rate of C	235 Acre-Fee per Month. 0.80 Acre-Fee 0.46 Acre-Fee	et. et per Day. et per Day.		Percolation Pon Perc Year Rou Perc in Winter No Perc	ids 6&7 ind
F	Remove Hender	rson 🗹 ston 🗖	An	Additional	488.80 151.62	Acre-Ft of Sto Acres of Spray	rarage is Requ / Field Require	<i>iired</i> ed to Empty P	ond 5 and Pro	oposed Storag	ge				
Month		N	ovember	December	lanuary	February	March	April	May	lune	July	August	September	October	Total
			ovember	Detember	Junuary	rebruiry	march	7.pm	indy	June	July	rugust	September	ottobei	, otai
Rainfall Dry Year O Rainfall Normal Year O Rainfall 25 Year O Rainfall 100 Year Pan Evaporation		In In In In	0.82 2.57 4.69 5.44 1.08	1.64 3.45 7.63 8.85 0.55	2.05 3.97 6.64 7.70 0.55	1.98 3.58 3.48 4.03 0.86	1.23 3.35 2.95 3.42 1.78	0.82 1.86 5.62 6.51 3.22	0.57 0.85 1.78 2.06 5.42	0.19 0.26 0.03 0.04 7.25	0.00 0.04 0.00 0.00 8.59	0.00 0.06 0.00 0.00 7.31	0.06 0.29 0.00 0.00 5.01	0.77 1.20 2.88 3.34 2.90	9.36 20.28 32.82 38.05 41.62
Month		N	ovember	Docombor	lanuany	Fobruary	March	April	May	luno	luby	August	Contombor	Octobor	Total
		IN	ovenibei	December	January	rebruary	IVIAICII	Артт	ividy	Julie	July	Augusi	September	OCIODEI	TULAI
Sutter Creek Sutter Creek WWTP Effluent CDCR		AF	148.12	121.44	93.95	66.04	61.93	60.70	62.76	64.40	75.48	94.77	141.55	142.78	1133.91
CDCR Effluent to Preston Reservoir		AF	3.80	3.80	34.60	34.60	34.60	34.60	34.60	34.60	3.80	3.80	3.80	3.80	230.40
Preston Reservoir Preston Reservoir Maximum Available Storage		AF	235.00	235.00	235.00	235.00	235.00	235.00	235.00	235.00	235.00	235.00	235.00	235.00	
Water in Storage at Beginning of Month		AF	0.00	85.00	164.84	235.00	235.00	235.00	235.00	176.25	117.50	58.75	0.00	0.00	0.00
Influent		AF	151.92	125.24	128.55	100.64	96.53	95.30	97.36	99.00	79.28	98.57	145.35	146.58	1364.31
Precipitation		AF AF	8.16	13.28	11.55	6.05 1.29	5.13	9.77	3.09	0.06	0.00	0.00	0.00	5.01	62.09 66.78
Percolation		AF	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.11
Water Available to be Applied to Storage or Efflue	nt	AF	158.45	222.68	304.10	340.38	333.99	335.23	327.31	264.42	183.88	146.34	137.83	147.23	2901.85
Water Applied(+)/Removed(-) from Storage		AF	85.00	79.84	70.16	235.00	235.00	235.00	-58.75	-58.75	-58.75	-58.75	0.00	0.00	0.00
Effluent		AF	73.45	57.84	69.10	105.38	98.99	100.23	151.06	146.92	125.13	146.34	137.83	147.23	1359.51
Ione Ione Wastewater Effluent Total Water Influent to Ione		AF AF	42.55 116.00	46.29 104.13	43.80 112.90	43.80 149.18	45.05 144.03	41.31 141.54	41.31 192.36	40.06 186.98	40.06 165.19	40.06 186.40	40.06 177.89	41.31 188.54	505.65 1865.16
Discharge-Irrigation															
Water Available for Application Needed Applied Water at Castle Oak		AF AF	116.00	104.13	112.90	149.18	144.03	141.54	192.36 47.08	186.98	165.19 89.90	186.40	177.89	188.54	1865.16 357.10
Needed Applied Water at Town Field		AF	0.00	0.00	0.00	0.00	0.00	0.00	34.31	52.62	60.87	52.47	38.59	9.36	248.23
Needed Applied Water at City Field		AF	0.00	0.00	0.00	0.00	0.00	0.00	7.92	12.14	14.05	12.11	8.91	2.16	57.28
Total Need Water Remaining after Irrigation		AF AF	0.00 116.00	0.00	0.00 112.90	0.00 149.18	0.00 144.03	0.00 141.54	89.31 103.06	142.42 44.57	164.82 0.38	142.08 44.32	104.50 73.39	19.49 169.05	662.62 1202.54
Percolation Ponds 6 and 7 Combined Pond Capacity		ΔF	58 31	58 31	58 31	58 31	58 31	58 31	58 31	58 31	58 31	58 31	58 31	58 31	699 71
Water Available		AF	116.00	104.13	112.90	149.18	144.03	141.54	103.06	44.57	0.38	44.32	73.39	169.05	1202.54
Applied Water to Perc Ponds		AF	93.15	33.53	34.28	33.11	37.87	35.54	41.14	42.39	0.38	44.32	73.39	49.79	518.89
Water in Storage from previous Month		AF	0.00	58.31	58.31	58.31	58.31	58.31	58.31	58.31	58.31	14.14	14.74	47.18	542.53
Summative Ponds Evaporation Loss		AF	0.70	0.36	0.36	0.56	1.16	2.10	38.54	4.73	5.60	4.77	37.03	1.89	29.05
Summative Ponds Rainfall Gains		AF	3.55	5.77	5.02	2.63	2.23	4.25	1.34	0.03	0.00	0.00	0.00	2.18	27.01
End of Month Water Extra Effluent to Rond 5		AF	81.16	128.91	136.93	174.39	164.46 106.16	164.30	120.23	60.48 2.17	14.14	14.74	47.18	177.56	1284.49 683.65
Pond 5 Storage		Ar	22.65	70.01	78.02	110.08	100.10	105.55	01.52	2.17	0.00	0.00	0.00	119.20	083.03
Pond 5 Capacity		AF	52.17	52.17	52.17	52.17	52.17	52.17	52.17	52.17	52.17	52.17	52.17	52.17	626.05
Influent		AF	22.85	24.82 70.61	52.17	52.17	52.17	52.17 105.99	52.17	2.17	0.00	48.64	0.00	119.26	438.22
Rainfall Gain		AF	1.97	3.21	2.79	1.46	1.24	2.36	0.75	0.01	0.00	0.00	0.00	1.21	15.00
Evaporation Loss		AF	0.00	0.09	0.20	0.31	0.65	1.17	1.96	2.63	3.09	2.47	0.00	0.00	12.57
Discharge to Needed Proposed Storage Discharge to Irrigation/Spray Fields		AF	0.00	46.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	91.85	118.60	22.12	232.57
End of Month Storage		AF	24.82	52.17	52.17	52.17	52.17	52.17	52.17	51.73	48.64	0.00	0.00	30.05	468.27
Needed Bronored Storage															
Pond 5 Influent		AF	0.00	46.37	81.21	117.23	106.75	107.19	60.70	0.00	0.00	0.00	0.00	68.30	587.74
Water in Storage from Previous Month		AF	0.00	0.00	46.37	127.58	244.81	351.56	458.75	418.09	256.46	69.40	0.00	0.00	1973.02
Discharge to Irrigation/Spray Fields		AF	0.00	0.00	0.00	0.00	0.00	0.00	101.36	161.63	187.05	69.40	0.00	0.00	519.45
LING OF MIDILIT SLUTAGE		АГ	0.00	40.37	127.58	244.81	321.50	458.75	418.09	200.40	09.40	0.00	0.00	08.30	2041.31
Spray Fields (summer only) Acres Required															151.62
AF Required									101.36	161.63	187.05	161.25	118.60	22.12	752.02
Discharge from Proposed Storage to Spray Fields Discharge from Pond 5 to Spray Fields									101.36 0.00	161.63 0.00	187.05 0.00	69.40 91.85	0.00 118.60	0.00 22.12	519.45 232.57

				CDCR 3	341 AFY: 2016	Full Projectio	on							
	As	sumptions:	Preston Reser The assumed Storage Pond Storage Pond Storage Pond	voir has Area Percolation I 5 has an are 6 has an are 7 has an are	as ranging from rate for the two ra of 4.35 Acre ra of 3.45 Acre ra of 4.38 Acre	m 0 Acres whe o Reservoirs is s and a volum s and a volum s and a volum	en empty to 18 s 100 Gallons he of 52.17 Act he of 27.62 Act he of 30.69 Act	8 when full. In per Day or 0.0 re-Feet. re-Feet and a re-Feet and a	ts Capacity is D1 Acre-Feet p Perc rate of C Perc rate of C	235 Acre-Fee per Month. ).80 Acre-Fee ).46 Acre-Fee	et. et per Day. et per Day.		Percolation Por Perc Year Rou Perc in Winte	nds 6&7 und r
	रेemove Hendersor Remove Prestor		n Additional	284.61 85.89	Acre-Ft of Sto Acres of Spray	<i>rarage is Requ</i> y Field Require	<i>uired</i> ed to Empty P	ond 5 and Pro	oposed Stora	ge				
Month		November	December	lanuary	February	March	April	May	lune	lubz	August	Sentember	October	Total
Month		November	Determber	January	rebruary	Waren	Арті	Ividy	June	July	August	September	October	Total
Rainfall Dry Year O Rainfall Normal Year O Rainfall 25 Year O Rainfall 100 Year O Pan Evaporation	in in in in in	0.82 2.57 4.69 5.44 1.08	1.64 3.45 7.63 8.85 0.55	2.05 3.97 6.64 7.70 0.55	1.98 3.58 3.48 4.03 0.86	1.23 3.35 2.95 3.42 1.78	0.82 1.86 5.62 6.51 3.22	0.57 0.85 1.78 2.06 5.42	0.19 0.26 0.03 0.04 7.25	0.00 0.04 0.00 0.00 8.59	0.00 0.06 0.00 0.00 7.31	0.06 0.29 0.00 0.00 5.01	0.77 1.20 2.88 3.34 2.90	9.36 20.28 32.82 38.05 41.62
Month		November	December	January	February	March	April	May	June	July	August	September	October	Total
Sutter Creek Sutter Creek WWTP Effluent	AF	85.68	70.25	54.35	38.20	35.83	35.12	36.30	37.25	43.66	54.82	81.88	82.60	655.95
CDCR CDCR Effluent to Preston Reservoir	AF	5.60	5.60	51.34	51.34	51.34	51.34	51.34	51.34	5.60	5.60	5.60	5.60	336.04
Preston Reservoir			225.00	225.00	225.00	225.00	225.00	225.00	225.00	325.00	225.00	335.00	225.00	
Water in Storage at Beginning of Month	1A 1A	- 235.00	235.00 85.00	235.00 164.84	235.00	235.00 235.00	235.00	235.00	235.00 176.25	235.00 117.50	235.00	235.00	235.00	0.00
Influent	Af	91.28	75.85	105.69	89.54	87.17	86.46	87.64	88.59	49.26	60.42	87.49	88.20	997.59
Precipitation	AF	8.16	13.28	11.55	6.05	5.13	9.77	3.09	0.06	0.00	0.00	0.00	5.01	62.09
Evaporation	AF	1.62	0.83	0.83	1.29	2.67	4.83	8.13	10.88	12.89	10.97	7.52	4.35	66.78
Water Available to be Applied to Storage or Efflue	ent Af	97.81	173.29	281.24	329.29	324.62	326.38	317.59	254.02	153.87	108.20	79.96	88.85	2535.12
Water Applied(+)/Removed(-) from Storage	A	85.00	79.84	70.16				-58.75	-58.75	-58.75	-58.75			0.00
End of Month Storage	AF	85.00	164.84	235.00	235.00	235.00	235.00	176.25	117.50	58.75	0.00	0.00	0.00	1542.34
Effluent	AF	12.81	8.45	46.24	94.29	89.62	91.38	141.34	136.52	95.12	108.20	79.96	88.85	992.78
lone														
lone Wastewater Effluent Total Water Influent to Ione	AF Af	40.46 53.27	44.20 52.65	41.71 87.95	41.71 135.99	42.95 132.57	39.21 130.60	39.21 180.56	37.97 174.49	37.97 133.09	37.97 146.16	37.97 117.93	39.21 128.07	480.54 1473.32
Discharge-Irrigation														
Water Available for Application	AF	53.27	52.65	87.95	135.99	132.57	130.60	180.56	174.49	133.09	146.16	117.93	128.07	1473.32
Needed Applied Water at Castle Oak	Al	- 0.00	0.00	0.00	0.00	0.00	0.00	47.08	52.62	89.90 60.87	52.47	38.59	7.98 9.36	248.23
Needed Applied Water at City Field	AF	0.00	0.00	0.00	0.00	0.00	0.00	7.92	12.14	14.05	12.11	8.91	2.16	57.28
Total Need	AF	0.00	0.00	0.00	0.00	0.00	0.00	89.31	142.42	164.82	142.08	104.50	19.49	662.62
Water Remaining after Irrigation	AF	53.27	52.65	87.95	135.99	132.57	130.60	91.25	32.07	-31.73	4.08	13.43	108.57	810.71
Percolation Ponds 6 and 7														
Combined Pond Capacity	AF	58.31	58.31	58.31	58.31	58.31	58.31	58.31	58.31	58.31	58.31	58.31	58.31	699.71
Water Available	AF	53.27	52.65	87.95	135.99	132.57	130.60	91.25	32.07	0.00	4.08	13.43	108.57	842.43
Applied water to Perc Ponds Water in Storage from previous Month	Al	- 53.27	52.65 18.43	37.55	58.31	37.87 58.31	35.54 58.31	41.14	32.07 58.31	47.99	4.08	13.43	96.97	455.17 398.95
Summative Ponds Percolation Rate	A	37.69	38.94	38.94	35.18	38.94	37.69	38.94	37.69	38.94	38.94	37.69	38.94	458.54
Summative Ponds Evaporation Loss	AF	0.70	0.36	0.36	0.56	1.16	2.10	3.54	4.73	5.60	4.77	3.27	1.89	29.05
Summative Ponds Rainfall Gains	AF	3.55	5.77	5.02 91.22	2.63	2.23	4.25	1.34	0.03	0.00	0.00	0.00	2.18	27.01
Extra Effluent to Pond 5	AI	= 0.00	0.00	32.91	102.89	94.70	95.05	50.11	0.00	0.00	0.00	0.00	11.61	387.27
Pond 5 Storage		5 53 17	52 17	52.17	E2 17	53 17	E2 17	E2 17	E2 17	52 17	52 17	52.17	52 17	626.05
Water In Storage from Previous Month	AF	- 52.17	1.97	52.17	40.86	52.17	52.17	52.17	52.17	49.56	46.60	31.17	0.00	384.01
Influent	AF	0.00	0.00	32.91	102.89	94.70	95.05	50.11	0.00	0.00	0.00	0.00	11.61	387.27
Rainfall Gain	AF	1.97	3.21	2.79	1.46	1.24	2.36	0.75	0.01	0.00	0.00	0.00	1.21	15.00
Evaporation Loss	AF	= 0.00	0.01	0.02	0.24	0.65	1.17	1.96	2.63	2.96	2.37	1.09	0.00	13.09
Discharge to Irrigation/Spray Fields	AF	= 0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.06	67.18	12.53	92.78
End of Month Storage	AF	1.97	5.17	40.86	52.17	52.17	52.17	52.17	49.56	46.60	31.17	0.00	0.29	384.30
Needed Proposed Storage														
Pond 5 Influent	Al	0.00	0.00	0.00	92.79	95.29	96.25	48.89	0.00	0.00	0.00	0.00	0.00	333.22
Water in Storage from Previous Month	Ar	0.00	0.00	0.00	0.00	92.79	188.08	284.33	275.80	184.24	78.28	0.00	0.00	1103.52
Discharge to Irrigation/Spray Fields	AF	0.00	0.00	0.00	0.00	0.00	0.00	57.42	91.56	105.96	78.28	0.00	0.00	333.22
Ling of Month Storage	Al	0.00	0.00	0.00	92.79	199.08	264.33	275.80	164.24	/8.28	0.00	0.00	0.00	1103.52
Spray Fields (summer only) Acres Required								F7 43	04.50	105.00	04.05	(7.0	43.53	85.89
AF Required								57.42	91.56 91 56	105.96 105.96	91.35 78 79	67.18	12.53	426.00
Discharge from Pond 5 to Spray Fields								0.00	0.00	0.00	13.06	67.18	12.53	92.78

				CDCR 3	341 AFY: 2021	Full Projectio	n							
	As	sumptions:	Preston Reser The assumed Storage Pond Storage Pond Storage Pond	rvoir has Arec Percolation r 5 has an are 6 has an are 7 has an are	as ranging from rate for the two rate of 4.35 Acre ra of 3.45 Acre ra of 4.38 Acre	n O Acres whe o Reservoirs is s and a volum s and a volum s and a volum s and a volum	n empty to 18 100 Gallons e of 52.17 Act e of 27.62 Act e of 30.69 Act	8 when full. It per Day or 0.0 re-Feet. re-Feet and a re-Feet and a	ts Capacity is D1 Acre-Feet p Perc rate of C Perc rate of C	235 Acre-Fee per Month. ).80 Acre-Fee ).46 Acre-Fee	et. et per Day. et per Day.		Percolation Pon Perc Year Rou Perc in Winte	ids 6&7 ind
R	lemove Henderson Remove Prestor		n Additional	528.50 161.79	Acre-Ft of Sto Acres of Spray	rarage is Requ / Field Require	<i>uired</i> ed to Empty P	ond 5 and Pro	oposed Stora	ge				
Month		November	December	lanuary	February	March	Anril	May	lune	luly	Διισμετ	Sentember	October	Total
		Hovember	December	Junuary	rebruiry	march	7.pm	indy	June	July	rugust	September	October	Total
Rainfall Dry Year O Rainfall Sy Year O Rainfall 25 Year O Rainfall 100 Year O Pan Evaporation	In In In In	0.82 2.57 4.69 5.44 1.08	1.64 3.45 7.63 8.85 0.55	2.05 3.97 6.64 7.70 0.55	1.98 3.58 3.48 4.03 0.86	1.23 3.35 2.95 3.42 1.78	0.82 1.86 5.62 6.51 3.22	0.57 0.85 1.78 2.06 5.42	0.19 0.26 0.03 0.04 7.25	0.00 0.04 0.00 0.00 8.59	0.00 0.06 0.00 0.00 7.31	0.06 0.29 0.00 0.00 5.01	0.77 1.20 2.88 3.34 2.90	9.36 20.28 32.82 38.05 41.62
Month		Novombor	Docombor	lanuany	Fobruary	March	April	May	luno	lukz	August	Contombor	Octobor	Total
Month		November	December	January	rebruary	Widfull	Арп	ividy	June	July	August	September	October	TOLAI
Sutter Creek Sutter Creek WWTP Effluent	AF	115.57	94.76	73.30	51.53	48.33	47.37	48.97	50.25	58.89	73.94	110.45	111.41	884.76
CDCR Effluent to Preston Reservoir	AF	5.60	5.60	51.34	51.34	51.34	51.34	51.34	51.34	5.60	5.60	5.60	5.60	336.04
Preston Reservoir Preston Reservoir Maximum Available Storage	ΔF	235.00	235.00	235.00	235.00	235.00	235.00	235.00	235.00	235.00	235.00	235.00	235.00	
Water in Storage at Beginning of Month	AF	: 0.00	85.00	164.84	235.00	235.00	235.00	235.00	176.25	117.50	58.75	0.00	0.00	0.00
Influent	AF	121.17	100.36	124.64	102.87	99.67	98.70	100.31	101.59	64.49	79.54	116.05	117.01	1226.40
Precipitation Evanoration	AF AF	8.16	13.28	11.55	6.05 1.29	5.13	9.77	3.09	0.06	0.00	0.00	0.00	5.01	62.09 66.78
Percolation	AF	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.11
Water Available to be Applied to Storage or Efflue	nt AF	127.70	197.80	300.20	342.61	337.12	338.63	330.26	267.01	169.10	127.32	108.53	117.66	2763.94
Water Applied(+)/Removed(-) from Storage	AF	85.00	79.84	70.16	235.00	235.00	235.00	-58.75	-58.75	-58.75	-58.75	0.00	0.00	0.00
Effluent	AF	42.70	32.96	65.20	107.61	102.12	103.63	154.01	149.51	110.35	127.32	108.53	117.66	1221.60
Ione Ione Wastewater Effluent Total Water Influent to Ione	AF	57.87 100.57	61.61 94.57	59.12 124.31	59.12 166.73	60.36 162.48	56.62 160.25	56.62 210.63	55.38 204.89	55.38 165.73	55.38 182.70	55.38 163.90	56.62 174.29	689.46 1911.05
Discharge-Irrigation														
Water Available for Application	AF	100.57	94.57	124.31	166.73	162.48	160.25	210.63	204.89	165.73	182.70	163.90	174.29	1911.05 357.10
Needed Applied Water at Town Field	AF	: 0.00	0.00	0.00	0.00	0.00	0.00	34.31	52.62	60.87	52.47	38.59	9.36	248.23
Needed Applied Water at City Field	AF	0.00	0.00	0.00	0.00	0.00	0.00	7.92	12.14	14.05	12.11	8.91	2.16	57.28
Total Need	AF	0.00	0.00	0.00	0.00	0.00	0.00	89.31	142.42	164.82	142.08	104.50	19.49	662.62
water remaining after imgation	Ar	100.57	94.57	124.31	100.75	102.48	100.25	121.32	62.47	0.91	40.61	59.40	154.79	1246.44
Percolation Ponds 6 and 7					=									
Combined Pond Capacity Water Available	AF	58.31	58.31 94.57	58.31	58.31	58.31 162.48	58.31	58.31	58.31	58.31	58.31	58.31	58.31 154.79	699.71 1248.44
Applied Water to Perc Ponds	AF	93.15	33.53	34.28	33.11	37.87	35.54	41.14	42.39	0.91	40.61	59.40	66.95	518.89
Water in Storage from previous Month	AF	0.00	58.31	58.31	58.31	58.31	58.31	58.31	58.31	58.31	14.67	11.57	30.02	522.73
Summative Ponds Percolation Rate	AF	37.69	38.94	38.94	35.18	38.94	37.69	38.94	37.69	38.94	38.94	37.69	38.94	458.54
Summative Ponds Evaporation Loss	AF	3.55	5.77	5.02	2.63	2.23	4.25	1.34	0.03	0.00	4.77	0.00	2.18	29.05
End of Month Water	AF	65.73	119.35	148.34	191.93	182.91	183.02	138.49	78.39	14.67	11.57	30.02	146.15	1310.58
Extra Effluent to Pond 5	AF	7.42	61.04	90.04	133.62	124.60	124.71	80.19	20.08	0.00	0.00	0.00	87.84	729.55
Pond 5 Capacity	AF	52.17	52.17	52.17	52.17	52.17	52.17	52.17	52.17	52.17	52.17	52.17	52.17	626.05
Water In Storage from Previous Month	AF	0.00	9.39	52.17	52.17	52.17	52.17	52.17	52.17	52.17	49.06	0.00	0.00	423.65
Influent Reinfoll Coin	AF	7.42	61.04	90.04	133.62	124.60	124.71	80.19	20.08	0.00	0.00	0.00	87.84	729.55
Evaporation Loss	AF	0.00	0.04	0.20	0.31	0.65	2.50	1.96	2.63	3.11	2.49	0.00	0.00	12.56
Discharge to Needed Proposed Storage	AF	0.00	21.43	92.63	134.77	125.20	125.91	78.97	17.47	0.00	0.00	0.00	36.88	633.25
Discharge to Irrigation/Spray Fields	AF	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	55.96	126.56	23.61	206.13
End of Month Storage	Ar	9.59	52.17	52.17	52.17	52.17	52.17	52.17	52.17	49.00	0.00	0.00	26.50	452.21
Needed Proposed Storage														
Pond 5 Influent	AF	0.00	21.43	92.63	134.77	125.20	125.91	78.97	17.47	0.00	0.00	0.00	36.88	633.25
Discharge to Irrigation/Sprav Fields	AF	0.00	0.00	21.43	114.06	248.83 0.00	574.03 0.00	499.94 108.16	470.74	515.73 199.61	116.12	0.00	0.00	2160.88 596.37
End of Month Storage	AF	0.00	21.43	114.06	248.83	374.03	499.94	470.74	315.73	116.12	0.00	0.00	36.88	2197.76
Spray Fields (summer only) Acres Required														161.79
AF Required								108.16	172.48	199.61	172.08	126.56	23.61	802.50
Discharge from Pond 5 to Spray Fields								108.16	0.00	0.00	55.96	126.56	23.61	206.13

	Assumj	ptions: Pi Ti Si Si Si	reston Reserv he assumed F corage Pond E corage Pond E corage Pond E	ooir has Area Percolation ro 5 has an area 6 has an area 7 has an area	s ranging from the for the two of 4.35 Acres of 3.45 Acres of 4.38 Acres	n O Acres whe o Reservoirs is and a volum and a volum and a volum	n empty to 18 100 Gallons , e of 52.17 Act e of 27.62 Act e of 30.69 Act	8 when full. It per Day or 0.0 re-Feet. re-Feet and a re-Feet and a	s Capacity is 2 11 Acre-Feet p Perc rate of 0 Perc rate of 0	235 Acre-Fee er Month. .80 Acre-Fee .46 Acre-Fee	t. t per Day. t per Day.	4 4 4	Percolation Por Perc Year Rou Perc in Winte	nds 68:7 – Ind r
F	Remove Henderson 🗹 Remove Preston 📘	An .	Additional	742.31 / 258.87 /	A <i>cre-Ft of Stor</i> Acres of Spray	arage is Requ Field Require	<i>ired</i> d to Empty P	ond 5 and Pro	posed Storag	e				
Nonth	No	ovember (	December	January	February	March	April	May	June	July	August	September	October	Total
tainfall Dry Year	In	0.82	1.64	2.05	1.98	1.23	0.82	0.57	0.19	0.00	0.00	0.06	0.77	g
tainfall Normal Year	In	2.57	3.45	3.97	3.58	3.35	1.86	0.85	0.26	0.04	0.06	0.29	1.20	20
tainfall 25 Year	In	4.69 5.44	7.63	5.64	3.48	2.95	5.62	2.06	0.03	0.00	0.00	0.00	2.88	3.
an Evaporation	In	1.08	0.55	0.55	0.86	1.78	3.22	5.42	7.25	8.59	7.31	5.01	2.90	4:
fonth	No	ovember (	December	January	February	March	April	May	June	July	August	September	October	Tota
utter Creek														
utter Creek WWTP Effluent	AF	145.46	119.26	92.26	64.85	60.82	59.61	61.63	63.24	74.12	93.07	139.01	140.22	111
DCR DCR Effluent to Preston Reservoir	AF	5.60	5.60	51.34	51.34	51.34	51.34	51.34	51.34	5.60	5.60	5.60	5.60	33
reston Reservoir														
reston Reservoir Maximum Available Storage	AF	235.00	235.00	235.00	235.00	235.00	235.00	235.00	235.00	235.00	235.00	235.00	235.00	
vater in Storage at Beginning of Month	AF	0.00	85.00	164.84	235.00	235.00	235.00	235.00	176.25	117.50	58.75	0.00	0.00	
ifluent	AF	151.06 8 16	124.86	143.60	116.19	112.16 E 12	110.95	112.97	114.58	79.72	98.67	144.61	145.82	145
vaporation	AF	1.62	0.83	0.83	1.29	2.67	4.83	8.13	10.88	12.89	10.97	7.52	4.35	6
ercolation	AF	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	
Vater Available to be Applied to Storage or Efflue	nt AF	157.59	222.31	319.16	355.94	349.61	350.88	342.92	280.01	184.33	146.44	137.09	146.47	299
Vater Applied(+)/Removed(-) from Storage	AF	85.00	79.84	70.16	225.00	225.00	225.00	-58.75	-58.75	-58.75	-58.75	0.00	0.00	15
ffluent	AF	72.59	104.84 57.47	255.00 84.16	120.94	255.00	255.00 115.88	166.67	162.51	125.58	146.44	137.09	146.47	154
one														
ne Wastewater Effluent otal Water Influent to Ione	AF AF	75.28 147.87	79.02 136.48	76.53 160.68	76.53 197.47	77.77 192.39	74.03 189.91	74.03 240.70	72.79 235.30	72.79 198.37	72.79 219.23	72.79 209.88	74.03 220.51	89 234
ischarge-Irrigation														
Vater Available for Application	AF	147.87	136.48	160.68	197.47	192.39	189.91	240.70	235.30	198.37	219.23	209.88	220.51	234
eeded Applied Water at Castle Oak	AF	0.00	0.00	0.00	0.00	0.00	0.00	47.08	77.65	89.90	77.50	57.00	7.98	35
leeded Applied Water at City Field	AF	0.00	0.00	0.00	0.00	0.00	0.00	7,92	12.14	14.05	12.11	56.59 8.91	2.16	24
otal Need	AF	0.00	0.00	0.00	0.00	0.00	0.00	89.31	142.42	164.82	142.08	104.50	19.49	66
Vater Remaining after Irrigation	AF	147.87	136.48	160.68	197.47	192.39	189.91	151.40	92.88	33.55	77.15	105.38	201.01	168
ercolation Pond 6														
tainfall Gain	AF	1.56	2.54	2.21	1.16	0.98	1.87	0.59	0.01	0.00	0.00	0.00	0.96	
vaporation Loss	AF	0.31	0.16	24.69 0.16	0.25	24.69 0.51	23.89	24.69 1.56	23.89	24.69	24.69	23.89	24.69 0.83	
Percolation Pond 7														
tainfall Gain	AF	1.99	3.23	2.81	1.47	1.25	2.38	0.75	0.01	0.00	0.00	0.00	1.22	
ercolation Loss vaporation Loss	AF	13.80 0.39	14.26 0.20	14.26 0.20	12.88 0.31	14.26 0.65	13.80 1.18	14.26 1.98	13.80 2.65	14.26 3.14	14.26 2.67	13.80 1.83	14.26 1.06	
errelation Danda C and 7														
ombined Pond Capacity	AF	58.31	58.31	58.31	58.31	58.31	58.31	58.31	58.31	58.31	58.31	58.31	58.31	69
Vater Available	AF	147.87	136.48	160.68	197.47	192.39	189.91	151.40	92.88	33.55	77.15	105.38	201.01	168
opplied Water to Perc Ponds	AF	93.15	33.53	34.28	33.11	37.87	35.54	41.14	42.39	33.55	54.71	40.96	38.66	51
Vater in Storage from previous Month	AF	0.00	58.31 38 0/	58.31 38 GA	58.31 35.19	58.31 38 Q/	58.31 37.60	58.31 38 0/	58.31 37.60	58.31 38 0/	47.31 38 Q4	58.31	58.31 38 QA	63
ummative Ponds Evaporation Loss	AF	0.70	0.36	0.36	0.56	1.16	2.10	3.54	4.73	5.60	4.77	3.27	1.89	43
ummative Ponds Rainfall Gains	AF	3.55	5.77	5.02	2.63	2.23	4.25	1.34	0.03	0.00	0.00	0.00	2.18	2
nd of Month Water xtra Effluent to Pond 5	AF AF	113.03 54.72	161.26 102.95	184.71 126.40	222.67 164.36	212.82 154.51	212.68 154.37	168.57 110.26	108.79 50.49	47.31 0.00	80.74 22.44	122.73 64.42	220.66 162.36	185 116
ond 5 Storage														
ond 5 Capacity	AF	52.17	52.17	52.17	52.17	52.17	52.17	52.17	52.17	52.17	52.17	52.17	52.17	62
Vater In Storage from Previous Month	AF	0.00	52.17	52.17	52.17	52.17	52.17	52.17	52.17	52.17	49.06	0.00	0.00	46
ainfall Gain	AF	54.72 1.97	3.21	2.79	1.46	1.24	154.37	0.75	0.01	0.00	22.44	0.00	1.21	116
vaporation Loss	AF	0.00	0.20	0.20	0.31	0.65	1.17	1.96	2.63	3.11	2.49	0.00	0.00	1
ischarge to Needed Proposed Storage	AF	4.52	105.96	128.99	165.51	155.11	155.57	109.04	47.87	0.00	16.83	12.25	111.40	101
ischarge to Irrigation/Spray Fields nd of Month Storage	AF AF	0.00 52.17	0.00 52.17	0.00 52.17	0.00 52.17	0.00 52.17	0.00 52.17	0.00 52.17	0.00 52.17	0.00 49.06	171.16 0.00	185.67 0.00	25.52 26.65	38 49
leeded Proposed Storage														
ond 5 Influent	AF	4.52	105.96	128.99	165.51	155.11	155.57	109.04	47.87	0.00	16.83	12.25	111.40	101
vater in Storage from Previous Month ischarge to Irrigation/Spray Fields	AF AF	0.00	4.52 0.00	110.49 0.00	239.48	404.99 0.00	560.09 0.00	715.66 173.06	651.64 275.97	423.54 319.38	104.16 104.16	16.83 16.83	12.25 12.25	324 90
nd of Month Storage	AF	4.52	110.49	239.48	404.99	560.09	715.66	651.64	423.54	104.16	16.83	12.25	111.40	335
pray Fields (summer only) cres Required													·	25
FRequired								173.06	275.97	319.38	275.33	202.50	37.77	128
								473.00			40440			00

					CDCR 3	41 AFY: 2031	Full Projectio	n							
		Assum	ptions: F S S	Preston Reser The assumed Storage Pond Storage Pond Storage Pond	voir has Arec Percolation r 5 has an are 6 has an are 7 has an are	is ranging from ate for the tw a of 4.35 Acre a of 3.45 Acre a of 4.38 Acre	n O Acres whe o Reservoirs is s and a volum s and a volum s and a volum	n empty to 18 100 Gallons e of 52.17 Act e of 27.62 Act e of 30.69 Act	8 when full. It per Day or 0.0 re-Feet. re-Feet and a re-Feet and a	s Capacity is . D1 Acre-Feet p Perc rate of 0 Perc rate of 0	235 Acre-Fee per Month. 0.80 Acre-Fee 0.46 Acre-Fee	et. et per Day. et per Day.		Percolation Pon Perc Year Rou Perc in Winter	ıds 6&7 .ind r
	Remove Hend Remove Pr	lerson 🗹 reston 🗖	An ]	Additional	982.89 355.57	Acre-Ft of Sto Acres of Spray	rarage is Requ Field Require	<i>uired</i> ed to Empty P	ond 5 and Pro	oposed Storag	ge				
Month		N	ovember	December	lanuary	February	March	April	May	lune	lubz	August	Sentember	October	Total
Month			overnber	December	January	rebruary	Waren	Артт	ividy	June	July	August	September	October	1000
Rainfall Dry Year C Rainfall Normal Year C Rainfall 25 Year C Rainfall 100 Year C Pan Evaporation		In In In In	0.82 2.57 4.69 5.44 1.08	1.64 3.45 7.63 8.85 0.55	2.05 3.97 6.64 7.70 0.55	1.98 3.58 3.48 4.03 0.86	1.23 3.35 2.95 3.42 1.78	0.82 1.86 5.62 6.51 3.22	0.57 0.85 1.78 2.06 5.42	0.19 0.26 0.03 0.04 7.25	0.00 0.04 0.00 0.00 8.59	0.00 0.06 0.00 0.00 7.31	0.06 0.29 0.00 0.00 5.01	0.77 1.20 2.88 3.34 2.90	9.36 20.28 32.82 38.05 41.62
														<b>0</b> + 1	
Month		N	ovember	December	January	February	March	April	May	June	July	August	September	October	Total
Sutter Creek Sutter Creek WWTP Effluent		AF	175.13	143.59	111.08	78.08	73.23	71.77	74.20	76.14	89.24	112.05	167.37	168.82	1340.70
CDCR Effluent to Preston Reservoir		AF	5.60	5.60	51.34	51.34	51.34	51.34	51.34	51.34	5.60	5.60	5.60	5.60	336.04
Preston Reservoir Preston Reservoir Maximum Available Storage Water in Storage at Beginning of Month		AF AF	235.00 0.00	235.00 85.00	235.00 164.84	235.00 235.00	235.00 235.00	235.00 235.00	235.00 235.00	235.00 176.25	235.00 117.50	235.00 58.75	235.00 0.00	235.00 0.00	0.00
Influent		AF	180.73	149.19	162.42	129.42	124.57	123.11	125.54	127.48	94.84	117.65	172.97	174.42	1682.34
Precipitation		AF	8.16	13.28	11.55	6.05	5.13	9.77	3.09	0.06	0.00	0.00	0.00	5.01	62.09
Percolation		AF	0.01	0.03	0.03	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.11
Water Available to be Applied to Storage or Efflue	ent	AF	187.26	246.63	337.97	369.17	362.02	363.04	355.49	292.91	199.45	165.42	165.44	175.07	3219.88
Water Applied(+)/Removed(-) from Storage		AF	85.00	79.84	70.16	225.00	225.00	225.00	-58.75	-58.75	-58.75	-58.75	0.00	0.00	0.00
Effluent		AF	102.26	81.79	102.97	134.17	127.02	128.04	179.24	175.41	140.70	165.42	165.44	175.07	1677.54
lone															
lone Wastewater Effluent Total Water Influent to Ione		AF AF	92.69 194.95	96.43 178.22	93.94 196.91	93.94 228.10	95.18 222.20	91.44 219.48	91.44 270.68	90.20 265.60	90.20 230.90	90.20 255.62	90.20 255.64	91.44 266.52	1107.29 2784.83
Discharge-Irrigation															
Water Available for Application Needed Applied Water at Castle Oak		AF AF	194.95	1/8.22	196.91	228.10	222.20	219.48	270.68	265.60	230.90	255.62	255.64	266.52	2784.83
Needed Applied Water at Town Field		AF	0.00	0.00	0.00	0.00	0.00	0.00	34.31	52.62	60.87	52.47	38.59	9.36	248.23
Needed Applied Water at City Field		AF	0.00	0.00	0.00	0.00	0.00	0.00	7.92	12.14	14.05	12.11	8.91	2.16	57.28
Total Need Water Remaining after Irrigation		AF AF	0.00 194.95	0.00 178.22	0.00 196.91	0.00 228.10	0.00 222.20	0.00 219.48	89.31 181.38	142.42 123.19	164.82 66.08	142.08 113.54	104.50 151.14	19.49 247.02	662.62 2122.21
Percolation Ponds 6 and 7															
Combined Pond Capacity		AF	58.31	58.31	58.31	58.31	58.31	58.31	58.31	58.31	58.31	58.31	58.31	58.31	699.71
Water Available		AF	194.95	178.22	196.91	228.10	222.20	219.48	181.38	123.19	66.08	113.54	151.14	247.02	2122.21
Water in Storage from previous Month		AF	93.15	58.31	34.28 58.31	58.31	37.87 58.31	35.54 58.31	41.14 58.31	42.39 58.31	44.55 58.31	43.71 58.31	40.96	58.55	518.89 641.40
Summative Ponds Percolation Rate		AF	37.69	38.94	38.94	35.18	38.94	37.69	38.94	37.69	38.94	38.94	37.69	38.94	458.54
Summative Ponds Evaporation Loss		AF	0.70	0.36	0.36	0.56	1.16	2.10	3.54	4.73	5.60	4.77	3.27	1.89	29.05
Summative Ponds Rainfall Gains End of Month Water		AF AF	3.55	203.00	5.02 220.94	2.63	2.23	4.25	1.34 198.55	0.03	0.00	0.00	0.00	2.18	27.01
Extra Effluent to Pond 5		AF	101.80	144.69	162.63	195.00	184.33	183.94	140.24	80.79	21.53	69.82	110.18	208.37	1603.32
Pond 5 Storage															
Pond 5 Capacity		AF	52.17	52.17	52.17	52.17	52.17	52.17	52.17	52.17	52.17	52.17	52.17	52.17	626.05
Influent		AF	101.80	52.17 144.69	162.63	52.17 195.00	52.17 184.33	52.17 183.94	52.17	52.17 80.79	21.53	69.82	110.18	208.37	469.54
Rainfall Gain		AF	1.97	3.21	2.79	1.46	1.24	2.36	0.75	0.01	0.00	0.00	0.00	1.21	15.00
Evaporation Loss		AF	0.00	0.20	0.20	0.31	0.65	1.17	1.96	2.63	3.11	2.65	0.00	0.00	12.88
Discharge to Needed Proposed Storage Discharge to Irrigation/Spray Fields		AF AF	51.60	147.70	165.22	196.14	184.92	185.13	139.02	78.18	18.42	67.17	58.01 210.97	157.41	1448.93 478.26
End of Month Storage		AF	52.17	52.17	52.17	52.17	52.17	52.17	52.17	52.17	52.17	0.00	0.00	52.17	521.71
Needed Proposed Storage															
Pond 5 Influent		AF	51.60	147.70	165.22	196.14	184.92	185.13	139.02	78.18	18.42	67.17	58.01	157.41	1448.93
Water in Storage from Previous Month Discharge to Irrigation/Spray Fields		AF AF	0.00	51.60	199.30	364.52 0.00	560.66 0.00	745.58	930.72 237 71	832.03 379.06	531.15 438.68	110.88 110.89	67.17 67.17	58.01 51.88	4451.64
End of Month Storage		AF	51.60	199.30	364.52	560.66	745.58	930.72	832.03	531.15	110.88	67.17	58.01	163.54	4615.17
Spray Fields (summer only) Acres Required															355.57
AF Required Discharge from Proposed Storage to Spray Fields									237.71	379.06	438.68	378.18	278.14	51.88 51.89	1763.65
Discharge from Pond 5 to Spray Fields									0.00	0.00	438.68	267.29	210.97	0.00	478.26

	Accu	motions		CDCR 3	341 AFY: 2036	Full Projectio	n							
	Assu	mptions:	Preston Reser The assumed Storage Pond Storage Pond Storage Pond	voir has Area Percolation ro 5 has an area 6 has an area	s ranging from ate for the two a of 4.35 Acres a of 3.45 Acres	0 Acres when Reservoirs is and a volume and a volume	n empty to 18 100 Gallons pe of 52.17 Acre of 27.62 Acre	when full. Its er Day or 0.01 Feet. Feet and a Pe	Capacity is 23 Acre-Feet pe erc rate of 0.8	15 Acre-Feet. r Month. 10 Acre-Feet p	per Day.		Percolation Pon Perc Year Rou Perc in Winter	ds 6&7 
	Remove Henderson Remove Preston		An Additional	1189.19 448.27	Acre-Ft of Stor	rarage is Require	<i>iired</i> ed to Empty Po	and 5 and Prop	posed Storage	2			•	
Month		November	December	January	February	March	April	May	June	July	August	September	October	Total
											· · ·			
Rainfall Dry Year	In In	0.82	1.64 3.45	2.05 3.97	1.98 3.58	1.23	0.82	0.57	0.19	0.00	0.00	0.06	0.77	9.36 20.28
Rainfall 25 Year	In	4.69	7.63	6.64	3.48	2.95	5.62	1.78	0.03	0.00	0.00	0.00	2.88	32.82
Rainfall 100 Year	In	5.44	8.85	7.70	4.03	3.42	6.51 3.22	2.06	0.04	0.00	0.00	0.00	3.34	38.05 41.62
		1.00	0.55	0.55	0.00	1.70	5.22	5.42	7.25	0.55	7.51	5.01	2.50	41.02
Month		November	December	January	February	March	April	May	June	July	August	September	October	Total
Sutter Creek Sutter Creek WWTP Effluent	AF	202.14	165.74	128.21	90.12	84.52	82.84	85.64	87.88	103.01	129.33	193.18	194.86	1547.48
CDCR CDCR Effluent to Preston Reservoir	AF	5.60	5.60	51.34	51.34	51.34	51.34	51.34	51.34	5.60	5.60	5.60	5.60	336.04
Preston Reservoir Preston Reservoir Maximum Available Storage	ΔF	235.00	235 00	235.00	235.00	235.00	235.00	235.00	235.00	235.00	235.00	235.00	235.00	
Water in Storage at Beginning of Month	AF	0.00	85.00	164.84	235.00	235.00	235.00	235.00	176.25	117.50	58.75	0.00	0.00	0.00
Influent Precipitation	AF	207.74	171.34	179.55	141.46	135.86	134.18	136.98	139.22	108.61	134.93	198.78	200.46	1889.13
Evaporation	AF	1.62	0.83	0.83	1.29	2.67	4.83	8.13	10.88	12.89	10.97	7.52	4.35	66.78
Percolation	AF	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.11
Water Available to be Applied to Storage or Efflue Water Applied(+)/Removed(-) from Storage	nt AF AF	214.27 85.00	268.78	355.11 70.16	381.21	3/3.31	3/4.11	-58.75	-58.75	-58.75	-58.75	191.26	201.11	3426.66 0.00
End of Month Storage	AF	85.00	164.84	235.00	235.00	235.00	235.00	176.25	117.50	58.75	0.00	0.00	0.00	1542.34
Effluent	AF	129.27	103.94	120.11	146.21	138.31	139.11	190.68	187.15	154.46	182.71	191.26	201.11	1884.32
lone														
lone Wastewater Effluent Total Water Influent to Ione	AF AF	110.29 239.56	114.03 217.96	111.54 231.64	111.54 257.75	112.78 251.10	109.04 248.15	109.04 299.73	107.80 294.95	107.80 262.26	107.80 290.50	107.80 299.05	109.04 310.16	1318.49 3202.81
Pond 5 Storage Rend 5 Maximum Canacity	A.E.	52.17	E2 17	52.17	53 17	E2 17	52 17	E2 17	E2 17	52.17	E2 17	52.17	52.17	
Pond 5 Influent	AF	239.56	217.96	231.64	257.75	251.10	248.15	299.73	294.95	262.26	290.50	299.05	310.16	
Rainfall Gain	AF	1.97	3.21	2.79	1.46	1.24	2.36	0.75	0.01	0.00	0.00	0.00	1.21	
Percolation Loss Evaporation Loss	AF	0.01	0.01	0.01	0.01	0.01	0.01	0.01	2.63	0.01 3.11	2.65	0.01	0.01	
Total Water Available for Application	AF	241.13	220.96	234.22	258.89	251.68	249.34	298.50	292.32	259.14	287.85	297.23	310.31	
Discharge-Irrigation														
Water Available for Application	AF	239.56	217.96	231.64	257.75	251.10	248.15	299.73	294.95	262.26	290.50	299.05	310.16	3202.81
Needed Applied Water at Castle Oak Needed Applied Water at Town Field	AF	0.00	0.00	0.00	0.00	0.00	0.00	47.08 34.31	77.65 52.62	89.90 60.87	77.50 52.47	57.00 38.59	7.98 9.36	357.10 248.23
Needed Applied Water at City Field	AF	0.00	0.00	0.00	0.00	0.00	0.00	7.92	12.14	14.05	12.11	8.91	2.16	57.28
Total Need Water Remaining after Irrigation	AF AF	0.00 239.56	0.00 217.96	0.00 231.64	0.00 257.75	0.00 251.10	0.00 248.15	89.31 210.42	142.42 152.53	164.82 97.44	142.08 148.42	104.50 194.55	19.49 290.66	662.62 2540.19
Percolation Pond 6														
Rainfall Gain Percolation Loss	AF AF	1.56 23.89	2.54	2.21	1.16 22.30	0.98 24.69	1.87	0.59	0.01	0.00	0.00	0.00	0.96 24.69	
Evaporation Loss	AF	0.31	0.16	0.16	0.25	0.51	0.93	1.56	2.08	2.47	2.10	1.44	0.83	
Percolation Pond 7														
Rainfall Gain	AF	1.99	3.23	2.81	1.47	1.25	2.38	0.75	0.01	0.00	0.00	0.00	1.22	
Percolation Loss Evaporation Loss	AF AF	13.80 0.39	14.26 0.20	14.26 0.20	12.88 0.31	14.26 0.65	13.80 1.18	14.26 1.98	13.80 2.65	14.26 3.14	14.26 2.67	13.80 1.83	14.26 1.06	
Combined Pond Capacity	AF	58.31	58.31	58.31	58.31	58.31	58.31	58.31	58.31	58.31	58.31	58.31	58.31	699.71
Water Available	AF	239.56	217.96	231.64	257.75	251.10	248.15	210.42	152.53	97.44	148.42	194.55	290.66	2540.19
Water in Storage from previous Month	AF	93.15	58.31	34.28 58.31	58.31	58.31	35.54 58.31	41.14 58.31	42.39	44.55 58.31	43.71 58.31	40.96	58.55	518.89 641.40
Summative Ponds Percolation Rate	AF	37.69	38.94	38.94	35.18	38.94	37.69	38.94	37.69	38.94	38.94	37.69	38.94	458.54
Summative Ponds Evaporation Loss Summative Ponds Rainfall Gains	AF	0.70	0.36	0.36	2.63	2.23	2.10 4.25	3.54 1.34	4.73	5.60 0.00	4.77	3.27	1.89 2.18	29.05 27.01
End of Month Water	AF	204.72	242.74	255.67	282.95	271.53	270.92	227.59	168.45	111.20	163.02	211.91	310.31	2721.01
Extra Effluent to Pond 5	AF	146.41	184.44	197.36	224.64	213.22	212.61	169.28	110.14	52.89	104.71	153.60	252.01	2021.30
Pond 5 Storage	45	52.17	52.17	52.17	53.17	52.17	52.17	52.17	52.17	52.17	52.17	52.17	52.17	626.05
Water In Storage from Previous Month	AF	0.00	52.17	52.17	52.17	52.17	52.17	52.17	52.17	52.17	52.17	0.00	0.00	469.54
Influent Rainfall Gain	AF	146.41	184.44	197.36	224.64	213.22	212.61	169.28	110.14	52.89	104.71	153.60	252.01	2021.30
Evaporation Loss	AF	0.00	0.20	0.20	0.31	0.65	2.50	1.96	2.63	3.11	2.65	0.00	0.00	12.88
Discharge to Needed Proposed Storage	AF	96.21	187.44	199.95	225.79	213.82	213.80	168.06	107.52	49.78	102.06	101.43	201.05	1866.91
End of Month Storage	AF	52.17	52.17	52.17	52.17	52.17	52.17	52.17	52.17	52.17	344.99	248.60	52.17	593.59 521.71
Needed Proposed Storage														
Pond 5 Influent	AF	96.21	187.44	199.95	225.79	213.82	213.80	168.06	107.52	49.78	102.06	101.43	201.05	1866.91
Water in Storage from Previous Month Discharge to Irrigation/Spray Fields	AF AF	0.00	96.21 0.00	283.66 0.00	483.61 0.00	709.40 0.00	923.21 0.00	1137.02 299.68	1005.40 477.88	635.04 553.05	131.78 131.78	102.06	101.43 65.40	5608.81 1629.85
End of Month Storage	AF	96.21	283.66	483.61	709.40	923.21	1137.02	1005.40	635.04	131.78	102.06	101.43	237.07	5845.87
Spray Fields (summer only)														
Acres Required														448.27
AF Required Discharge from Proposed Storage to Spray Fields								299.68 299.68	477.88 477 88	553.05 553.05	476.77 131 79	350.65	65.40 65.40	2223.43 1629 85
Discharge from Pond 5 to Spray Fields								0.00	0.00	0.00	344.99	248.60	0.00	593.59
1														

# **APPENDIX D**

ARSA, City of Ione, and CDCR Regional Water Recycling Feasibility Study Detailed Cost Estimates

# ARSA, Ione, & CDCR

Recycled Water Feasibility Study Pipeline Quantities / Unit Costs for ARSA pipeline replacement

Pipeline Unit Costs
Gravity sewer w/manholes: \$25/in-diameter
+ 35% Construction Contingency

Pipeline from	LF	Data Source
ARSA Line to Henderson	20,500	HSe estimate from map
Henderson to Preston Reservoir	22,300	HSe estimate from map

# ARSA Pipeline Replacement Cost (over 25-year planning period)

Item	Unit Cost	Unit	Quantity	Es	timated Cost
27" Gravity Pipeline	\$675	LF	20,500	\$	13,837,500
15" Gravity Pipeline	\$375	LF	22,300	\$	8,362,500
Subtotal				\$	22,200,000
35% Construction Contingency	35%	of Subtotal	1	\$	7,770,000
Removal of Exist. Pipe	10%	of Subtotal	1	\$	2,220,000
Engineering, Legal, Admin, etc.	25%	of Subtotal	1	\$	5,550,000
Total Present Replacement Cost				\$	37,740,000
Annual Replacement Cost over 2	5 Years (3%	Interest Rate)		\$	2,167,328

## Henderson Cost Considerations

Henderson Decommission		
Excavate Existing Dam	\$513,000	
(42,000 CY)	\$563,670	Oct. 12
	\$600,000	Feb. 15

Henderson Sludge Removal									
ac-ft*	\$/ac-ft*	tot est							
44	\$20,000	\$880,000							
	\$21,975	\$966,900	Oct-12						
* costs and volumes form 2-12	* costs and volumes form 2-11-2009 Eugene Weatherby Rpt								
	\$23,350	\$1,027,400	Feb-15						
		\$1,387,000	plus 35% contingency						

Henderson Outlet Repair	
Sub-Total	\$ 48,750.00
Mobilization	\$ 2,437.50
30% Bid Escalation Contingency	\$ 66,543.75
25% Conceptual Level Contingency	\$ 16,635.94
Total	\$ 83,179.69
plus 35% contingency	\$ 112,292.58
	\$ 112,000.00

Sprayfield Cost Estimates				Feb-15	Units
ENR Cost Index			<u> </u>	9961.75	<i></i>
Sprayfields			Ş	7,200	\$/ac
Contingency			Ş	2,520	35%
Total (New Sprayfields)			Ş	9,700	Ş/ac
ENR Cost Index					Units
Sprayfields			\$	4,200	\$/ac
Contingency			\$	1,470	35%
Total (Expansion Sprayfields)			\$	5,700	\$/ac
ARSA Sprayfield Development					
Bowers Ranch (ex.)	24	ас	\$	-	
Bowers Ranch	16	ac	\$	91,200	
Hoskins Ranch (ex.)	24	ac	\$	-	
Hoskins Ranch	36	ac	\$	205,200	
Total	100		\$	296,400	
ARSA Sprayfield	0	ас	\$	-	
Woodard Bottom	28	ас	\$	272,000	
Dry Creek	522	ас	\$	5,063,000	
Total	550		\$	5,335,000	
Alternative 1					
ARSA Sprayfield	0	ас	\$	-	
Woodard Bottom	115	ac	\$	1,116,000	
Dry Creek	403	ac	\$	3,909,000	
Total	518		\$	5,025,000	
Alternative 2					
ARSA Sprayfield	100	ac	\$	296,400	
Woodard Bottom	115	ac	\$	1,116,000	
Dry Creek	335	ac	\$	3,250,000	
Total	550		\$	4,662,000	

#### Pipeline and Punp Station Cost Estimates

		\$/u	nit		Alt	ern	ative 1	Alternative 2		
Pressurized Pipe to WB	ft-in	\$	18		115,200	\$	2,799,000	102,400	\$	2,488,000
Pressurized Pipe WB to RAS	ft-in	\$	18		79,200	\$	1,925,000	70,400	\$	1,711,000
Total Pressure Pipe						\$	4,724,000		\$	4,199,000
Gravity Pipe to WB	ft-in	\$	20		82,800	\$	2,236,000	36,800	\$	994,000
Gravity Pipe to DC	ft-in	\$	20		75,600	\$	2,041,000	50,400	\$	1,361,000
Total Gravity Pipe						\$	4,277,000		\$	2,355,000
Total						\$	18,200,000		\$	13,300,000
Pump Station Pump Cost Curve	GPM	\$	400	\$ 300	4,000	\$	2,160,000	3,000	\$	1,215,000

All costs include 35% contingency





p as the wet well); suction lift; (3) wet ected to the motor suction lift to selfsubmersible pump otor. The data for Figure 29-4 are for ot for two, which ne, which is an en-. With one excepot affect the costs. ation is due to the tor, Parshall flume, medes screw pump ons because it is an icated" to a degree.



**Figure 29-3.** Construction costs of submersible-pump wastewater pumping stations. No standby power = solid circles; has standy power = open circles. The numbers are TDH in feet.

#### Water Pumping

In general, high speed (1800 rev/min) is common up to 150 kW (200 hp), and 1200 rev/min is usual for larger pumps.

#### Raw Water Pumping

All of the pumping stations shown in Figure 29-5 were constructed in lakes or on the banks of rivers where deep structures, sheet piling, or coffer dams were required. The high cost of pumping station No. 1 is attributed (1) partly to facilities designed for two pumps with space for four more and a dual electrical feeder for standby power, and (2) partly to minimal bid competition and the construction of a lake intake. Pumping stations Nos. 3 and 4 have traveling screens, No. 3 has a massive (3.3-m- or 11-

ft-thick) foundation of tremie concrete, and No. 4 has prestressed rock anchors.

The TDH varied from 15.8 to 73 m (52 to 240 ft). The stations with the lowest relative cost (Nos. 2 and 6) had nearly the highest and lowest heads, whereas the stations with highest relative costs (Nos. 1, 3, 4, and 5) also had the lowest (No. 1) to the highest (No. 5) heads. Head is evidently a minor consideration in raw water pumping.

#### Service Pumping

The TDHs for the finished water pumping stations shown in Figure 29-6, which vary from 43 to 114 m (140 to 375 ft), seem to have no correlation with cost. The station with the highest head was moderate in relative cost, and the station with the lowest head was the most expensive. The remaining data fit a similarly

#### Rancho Arroyo Seco Reservoir

		ROUNDED								
DESCRIPTION - NO PHASE, +1000 AC-FT, MAX ELEV @370', Base @327', Slopes 3:1	QUANITITY	QUANITITY	UNIT	UNIT COST	TOTAL		Parameter	Value	Unit	
AREA =1,350,000 SF, PERIMETER = 4,700 LF							Top Perimeter	47	'00 LF	
EXCAVATION (Fill Balance)	587500	587500	CY	5.5	\$	3,231,250	Bottom Perimeter	36	00 LF	
FILL AT DIKES, RE-USE NATIVE Soil, aver 125 CY/LF	587500	587500	CY	7	\$	4,112,500	Pond Surface Area	13500	00 SF	
SCARIFY & COMPACT POND BASE	816000	816000	SF	0	Ś	-	Base Surface Area	8160	00 SF	
FINAL GRADING, POND BASE & DIKE WALLS INTERIOR ELEVATION	1018100	1018100	SF	0.3	\$	305,430	Pond Surface Area	3	1.0 AC	
BOTTOM DOUBLE SEAM FUSION @ POND BASE	816000	816000	SF	0	\$	-	Base Surface Area	1	8.7 AC	
10oz. GEO TEXTILE FABRIC	1018100	1018100	SF	0	\$	-	Elevation Top	3	70 FT	
60MIL DOUBLE SIDED HDPE LINING OVER 10oz. GEO TEXTILE FABRIC	1018100	1018100	SF	0	\$	-	Elevation Base	3	27 FT	
ROCK BALLAST, 2.15 TH, ABOVE FABRIC	64978	65000	CY	0	\$	-	Height		43 FT	
FACING CLASS RSP (rock slope protection) METHOD B, (fabric; RSP backing #2 - 1-1/4" th; 1/4 ton							-			
RSR 3)	202100	202100	SF	4	\$	808,400	Volume (Trapezoid)	465690	00 SF	
IMPORTED FILL MATERIAL	0	0	CY	25	\$	-		106	9.1 AF	
					\$	8,457,580				
TOP OF DIKE :										
SILTY SAND MATERIAL W/90% COMPACTION	11489	11500	CY	35	Ś	402.500				
PROVIDE ANCHOR TRENCH. allow trench	5170	5200	LF	0	Ś	-				
FILL TRENCHES W/ SILTY SAND. 1' th	287	300	CY	0	Ś	-				
CLASS 2 AGGREGATE BASE ROAD	4787	4800	CY	60	Ś	288.000				
ADD FOR FINAL GRADING W/ SLOPE AND FINISHING	222310	222300	SF	0.5	\$	111,150				
GEO TEVTILE EARDIC	51700	51700	SE.	0.75	ć	29 775				
4" CONCRETE PAVING W/ WELDED WIRE FABRIC	51700	51700	SF	0.75	\$	361,900				
12' WIDE ACCESS ROADS OUTSIDE DIKE 80 LE										
SCARIEV & COMPACT ROAD BASE	960	1000	SE	1 25	¢	1 250				
CLASS 2 AGGREGATE BASE 8" th $@$ ACCESS BOAD	24	30	CY	60	ś	1 800				
HYDRO-SEED EMBANKMENT OTHER SIDE OF DIKE	42300	42300	SE	0.4	š	16,920				
				••••	\$	1,222,295				
				SUBTOTAL	\$	9,679,875				
			CON	ITINGENCY 35% TOTAL	\$ \$	3,387,956 13.067.831				

COST/AF	\$ 13,068
Additional 400 AF for Alt. 2	\$ 5,227,133

### I. Alternative Cost Summary

ITEM DESCRIPTION		OTY III	ЛТ	UNIT PRICE	TOTAL
A. NON-CONSTRUCTION		011 01		TRICL	TRICE
Eng/Legal/Admin	Ι	25%	of	\$20,836,275.00	\$5,209,069
Sub-Total A:					\$5,209,069
B. CONSTRUCTION					
Lift Station Pressure Pipelines Gravity Pipelines Earth work: Ex., Backfill Comp. Reservoir Sub-Total Construction: Contingencies Sub-Total B:		3,000 172,800 87,200 1 35%	gpm in-ft in-ft Days LS of	\$300.00 \$18.00 \$20.00 \$4,000.00 \$9,679,875.00 \$15,434,275.00	\$900,000 \$3,110,400 \$1,744,000 \$0 \$9,679,875 \$15,434,275 \$5,402,000 \$20,836,275
C. SUMMARY					
Non-Construction: Construction:					\$5,209,069 \$20,836,275
TOTAL PROJECT Total Cost Project Cost (Rounded to Nearest \$1,000):					\$26,045,344 <b>\$26,045,000</b>

#### II. Annual Costs

Average Flow (gpm)							300
Pressure (ft)							12
Pump Efficiency							75%
Motor Efficiency							90%
Power (Hp)							
Lift Station							121.3
	Total (Hp)						121.3
Power Cost (kwH)	ļ	396,299	I	at	I	\$0.10	\$39,630
Labor							
Operators	1	2,080	1	hours per year		\$50.00	\$104,000
Senior Operator		0		hours per year		\$80.00	\$0
	Total per year					•	\$104,000
Reporting							
Continuous		0	1	LS	1	\$0.00	\$0
Weekly		0		EA		\$0.00	\$0
Quarterly		4		EA		\$2,500.00	\$10,000
Annual		1		EA		\$2,500.00	\$2,500
Tri-annually		0.00		EA		\$0.00	\$0
	Total per year						\$12,500
ANNUAL COST DED VEAD.							¢156 120

## III. Annual Replacement Reserve Fund

Lift Station Pumps	Time to Replace Interest Rate Est 40 3.00%	t. Present Cost \$900,000.00 \$38,936							
ANNUAL REPLACEMENT RESERVE PER YEAR:									
IV. Total Annual Costs									
Annual Costs Annualized Replacement Costs		\$156,130 \$38,936							

Annual Costs	\$156,130
Annualized Replacement Costs	\$38,936
TOTAL ANNUAL COSTS	\$195,066

APPENDIX E ARSA, City of Ione, and CDCR Regional Water Recycling Feasibility Study Detailed Non-Economic Analysis Rating Spreadsheets

www.hydroscience.com

		Factor B										
Factor vs Factor		Institutional Issues/ Public Acceptance	Ease of O&M	Implementation Time / Constructability	Permits/Regulatory	Legal/Right-of-Way	Environmental	Total	Normalized Total			
	Institutional Issues/ Public Acceptance		4	4	3	4	3	18	9			
	Ease of O&M	2		4	2	4	2	14	7			
or A	Implementation Time / Constructability	2	2		2	4	1	11	6			
Fact	Permits/Regulatory	3	4	4		5	3	19	10			
	Legal/Right-of-Way	2	2	2	1		2	9	5			
	Environmental	3	4	5	3	4		19	10			

If Factor A is:	Factor A	Factor B
Much more important than Factor B	5	1
More important than Factor B	4	2
Equal in importance to Factor B	3	3
Less important than Factor B	2	4
Much less important than Factor B	1	5

ALTERNATIVE	VE DECISION FACTOR												- b		
	Institutional Issues/ Public Acceptance		Ease of O&M		Implemantation Time / Constructability		Permits/Regulatory		Legal/Right-of-Way		Environmental		Total Weighted Rating Higher Value Preferre	k (1=most preferrable =least prefereable)	
	9		7		6		10		5		10			Ranl 6	
	R	WR	R	WR	R	WR	R	WR	R	WR	R	WR	WR		
Alternative 1	3	27	3	21	3	18	3	30	3	15	3	30	141	2	
Alternative 2	4	36	3	21	4	24	3	30	2	10	4	40	161	1	

# APPENDIX F ARSA, City of Ione, and CDCR ater Recycling Feasibility Study

Regional Water Recycling Feasibility Study Letters of Interest/Intent

www.hydroscience.com
# Amador Ranch Associates, LLC

**RANCHO ARROYO SECO** 

May 18, 2016

To Whom it May Concern:

The purpose of this letter is to document the landowners' interest in the use of recycled water and intent to accept recycled water for the purpose of irrigation when it becomes available. The use of recycled water will be in compliance with California Code of Regulations (CCR) Title 22 regulations and the State Water Resources Control Board requirements.

As the landowner, or designated representative thereof, for the Rancho Arroyo Seco property, I would like to indicate my interest in the future use of recycled water on said property(ies) for the purpose of irrigation. It is my intent to use recycled water upon it becoming available to the identified property. I understand that the availability of recycled water is not guaranteed at this time and that the quality of recycled water is expected to be categorized as "Undisinfected Secondary." Allowable uses for Undisinfected Secondary under Title 22 of the CCR include:

- (1) Orchards where the recycled water does not come into contact with the edible portion of the crop,
- (2) Vineyards where the recycled water does not come into contact with the edible portion of the crop,
- (3) Non food-bearing trees (Christmas tree farms are included in this category provided no irrigation with recycled water occurs for a period of 14 days prior to harvesting or allowing access by the general public),
- (4) Fodder and fiber crops and pasture for animals not producing milk for human consumption,
- (5) Seed crops not eaten by humans,
- (6) Food crops that must undergo commercial pathogen-destroying processing before being consumed by humans, and
- (7) Ornamental nursery stock and sod farms provided no irrigation with recycled water occurs for a period of 14 days prior to harvesting, retail sale, or allowing access by the general public.

It is also understand that no recycled water used for irrigation, or soil that has been irrigated with recycled water, shall come into contact with the edible portion of food crops eaten raw by humans unless it is disinfected tertiary recycled water, per Title 22 regulations.

This letter does not bind the landowner, and acceptance of recycled water will be contingent upon reaching an acceptable agreement by all parties involved including the Amador Regional Sanitation District, the City of Ione, the California Department of Corrections and Rehabilitation, and the landowner.

Thomas M. Swett

Print Name

Signature Date

Amador Regional Sanitation Authority

## Karl Drexel, General Manager

"Servicing Amador City, Martell, & Sutter Creek"



May 2, 2016

Amador Regional Sanitation Authority 18 Main St. Sutter Creek, CA 95685

RE: Irrigation with ARSA Secondary Treated Wastewater

Dear ARSA Board of Directors,

As the landowner, or designated representative thereof, for the Hoskins Property, Assessor Parcel Number 011-090-022, I would like to indicate my interest in the future use of recycled water on said property for the purpose of irrigation. It is my intent to use recycled water upon it becoming available to my property. I understand that the availability of recycled water is not guaranteed at this time and that the quality of recycled water is expected to be categorized as "Undisinfected Secondary." Allowable uses for Undisinfected Secondary under Title 22 of the CCR include:

- (1) Orchards where the recycled water does not come into contact with the edible portion of the crop,
- (2) Vineyards where the recycled water does not come into contact with the edible portion of the crop,
- (3) Non food-bearing trees (Christmas tree farms are included in this category provided no irrigation with recycled water occurs for a period of 14 days prior to harvesting or allowing access by the general public),
- (4) Fodder and fiber crops and pasture for animals not producing milk for human consumption,
- (5) Seed crops not eaten by humans,
- (6) Food crops that must undergo commercial pathogen-destroying processing before being consumed by humans, and
- (7) Ornamental nursery stock and sod farms provided no irrigation with recycled water occurs for a period of 14 days prior to harvesting, retail sale, or allowing access by the general public.

It is also understood that no recycled water used for irrigation, or soil that has been irrigated with recycled water, shall come into contact with the edible portion of food crops eaten raw by humans unless it is disinfected tertiary recycled water, per Title 22 regulations.

This letter does not bind the landowner or the discharger at this time, and acceptance of recycled water will be contingent upon reaching an acceptable agreement between discharger, state regulators and the landowner.

HOSKIN'S

Print Name

16/2016 Signaturé

"Servicing Amador City, Martell, & Sutter Creek"

May 2, 2016



Amador Regional Sanitation Authority 18 Main St. Sutter Creek, CA 95685

RE: Irrigation with ARSA Secondary Treated Wastewater

Dear ARSA Board of Directors,

As the landowner, or designated representative thereof, for the Bryson Ranch, Assessor Parcel Number 011-070-012, I would like to indicate my interest in the future use of recycled water on said property for the purpose of irrigation. It is my intent to use recycled water upon it becoming available to my property. I understand that the availability of recycled water is not guaranteed at this time and that the quality of recycled water is expected to be categorized as "Undisinfected Secondary." Allowable uses for Undisinfected Secondary under Title 22 of the CCR include:

- (1) Orchards where the recycled water does not come into contact with the edible portion of the crop,
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- (6) Food crops that must undergo commercial pathogen-destroying processing before being consumed by humans, and
- (7) Ornamental nursery stock and sod farms provided no irrigation with recycled water occurs for a period of 14 days prior to harvesting, retail sale, or allowing access by the general public.

It is also understood that no recycled water used for irrigation, or soil that has been irrigated with recycled water, shall come into contact with the edible portion of food crops eaten raw by humans unless it is disinfected tertiary recycled water, per Title 22 regulations.

This letter does not bind the landowner or the discharger at this time, and acceptance of recycled water will be contingent upon reaching an acceptable agreement between discharger, state regulators and the landowner.

K L. BRYSONI Print Name

Kut Byun 5-5-16 Signature Date

"Servicing Amador City, Martell, & Sutter Creek"

May 2, 2016

Amador Regional Sanitation Authority 18 Main St. Sutter Creek, CA 95685

RE: Irrigation with ARSA Secondary Treated Wastewater

Dear ARSA Board of Directors,

As the landowner, or designated representative thereof, for the Bryson Ranch, Assessor Parcel Number 011-070-012, I would like to indicate my interest in the future use of recycled water on said property for the purpose of irrigation. It is my intent to use recycled water upon it becoming available to my property. I understand that the availability of recycled water is not guaranteed at this time and that the quality of recycled water is expected to be categorized as "Undisinfected Secondary." Allowable uses for Undisinfected Secondary under Title 22 of the CCR include:

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This letter does not bind the landowner or the discharger at this time, and acceptance of recycled water will be contingent upon reaching an acceptable agreement between discharger, state regulators and the landowner.

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in Uneto 5-6-16



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HYDROSCIENCE ENGINEERS, INC. is a civil engineering firm that plans, designs, and manages the construction of water, wastewater, and recycled water projects. With offices in Sacramento, Berkeley, San Jose, and Concord we understand and address the complex water and wastewater needs of Northern California.

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