# SOUTHERN CALIFORNIA EDISON Bishop Creek Hydroelectric Project (FERC Project No. 1394)



## FINAL LICENSE APPLICATION FINAL TECHNICAL REPORTS VOLUME III



JUNE 2022

# SOUTHERN CALIFORNIA EDISON Bishop Creek Hydroelectric Project (FERC Project No. 1394)



## FINAL LICENSE APPLICATION FINAL TECHNICAL REPORTS VOLUME III (3 OF 4)



**JUNE 2022** 

#### FINAL TECHNICAL REPORTS IN THIS FILE

Bishop Creek Reservoirs Fish Distribution Study (AQ 4)

Bishop Creek Water Quality Technical Study (AQ 5)

Bishop Creek Sediment and Geomorphology Study (AQ 6)

## SOUTHERN CALIFORNIA EDISON Bishop Creek Hydroelectric Project (FERC Project No. 1394)





### FINAL TECHNICAL REPORT BISHOP CREEK RESERVOIRS FISH DISTRIBUTION (AQ 4)



An EDISON INTERNATIONAL® Company

JUNE 2022

### **SOUTHERN CALIFORNIA EDISON**

Bishop Creek Hydroelectric Project (FERC Project No. 1394)

### FINAL TECHNICAL REPORT BISHOP CREEK RESERVOIRS FISH DISTRIBUTION (AQ 4)

Southern California Edison 1515 Walnut Grove Ave Rosemead, CA 91770

June 2022

Support from:



Stillwater Sciences

and



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#### 1.0 INTRODUCTION

Project operations may directly or indirectly influence fish resources occupying Project waters, primarily by regulating water levels of reservoirs, or by altering flows in stream reaches. Within in Project reservoirs, indirect effects on fisheries may result from altered habitat due to reservoir water level management or increased public access. The Bishop Creek Reservoirs Fish Distribution Study (AQ 4) characterizes fish species composition and distribution within the two Project reservoirs (South Lake and Lake Sabrina) and Longley Lake following methods described in Study AQ 4, approved by the Federal Energy Regulatory Commission (FERC) on November 4, 2019. This report includes the results of reservoir population sampling in South Lake, Lake Sabrina, and Longley Lake and bathymetric surveys of South Lake and Lake Sabrina, completed during 2020. Information on stream fish populations is included in the Bishop Creek Fish Distribution Study (AQ 3) Final Technical Report (SCE 2021a).

Data and preliminary results for this survey were previously reviewed with the Bishop Creek Aquatics Technical Working Group (TWG) in May 2020, following distribution of Progress Report #2 on April 14, 2020.

Further data was provided in the Intial Study Report filed with FERC on November 10 2020. This report builds on those two previous reports but does not draw conclusions about potential Project effects. These analyses will be completed in conjunction with the rest of relicensing studies as part of the overall National Environmental Policy Act (NEPA) process and in consultation with the aquatics TWG.

#### 2.0 REVIEW OF EXISTING INFORMATION

Project facilities, including thirteen dams and diversions and five powerhouses, are sited along Bishop Creek and nearby Birch and McGee creeks. Bishop Creek has a total drainage area of approximately 70 square miles from its headwaters to the confluence with the Owens River. South Lake and Lake Sabrina are the major storage reservoirs in the watershed (Figure 3.1-1). SCE manages the water releases from the storage reservoirs for purposes of hydro-generation and meeting water allocation requirements in accordance with the Chandler Decree (1922). Longley Lake Dam discharges water to McGee Creek which is diverted to Birch Creek and then to Bishop Creek via Bishop Creek Powerhouse No. 2.

This network of creeks and reservoirs supports both stocked and self-sustaining nonnative trout fisheries, including brown trout (*Salmo trutta*), brook trout (*Salvelinus fontinalis*), and rainbow trout (*Oncorhynchus mykiss*). The California Department of Fish and Wildlife (CDFW) introduced each of these three non-native trout species and manages them to support angling harvest. Naturally-spawned trout from tributary headwater creeks upstream of the reservoirs may migrate downstream into Project reservoirs; however, the Project reservoirs also have a heavily stocked put-and-take rainbow trout fishery. The abundance of rainbow trout in the reservoirs is primarily a function of stocking intervals and angler catch rates, and residency time for most stocked rainbow trout in the reservoirs is believed to be very short (N. Buckmaster, CDFW personal communication). "Catchable" size rainbow trout (roughly 12 inches) were scheduled for frequent stocking in South Lake and Lake Sabrina during 2020; no other fish species were included in CDFW's stocking schedule for the Bishop Creek watershed in 2020 (CDFW 2019). While no stocking currently occurs at Longley Lake, brook trout were historically stocked there and a population is currently present.

Owens suckers (Catostomus fumeiventris; California species of special concern) were Lake Sabrina Buckmaster, informally introduced into (N. CDFW, personal communication). The species' native range includes waters of the Owens River Valley, but it has also become established in the Santa Clara River via water transfers from the Owens Aqueduct. Adult Owens suckers were observed spawning in a shallow arm of Lake Sabrina near the eastern end of the dam during a field visit in early June 2018. EA Engineering (1987) netted an unidentified sucker from Lake Sabrina, which the authors speculated was an Owens sucker. Although there is potential for spillover from Lake Sabrina to downstream reaches of Bishop Creek, Owens suckers are not believed to have colonized other portions of the watershed and were not observed during 2020 surveys (SCE 2021a).

Owens suckers prefer soft-bottomed runs in cool-water streams and the bottoms of lakes and reservoirs. Owens suckers feed at night on aquatic insects, algae, detritus and organic matter, and spawn from early May through early July. Literature on Owens sucker spawning in resevoirs is limited; however, in Crowley Reservoir, spawning occurs in large aggregations near springs and gravel patches along the shoreline at depths of 1–2 meters as well as in tributary streams (Moyle 2002). Larval suckers become juveniles at approximately 19–22 millimeters (mm) total length (TL) and hide under cover along stream margins and in backwaters. Within the Owens River, Owens suckers are most common in stream reaches with long runs and few riffles (Deinstadt et al. 1986, as cited in CDFW n.d.) where habitat is characterized by fine substrate, water temperatures ranging from 7–13 degrees Celsius (°C), and pH ranging from 7.9–8.0 (CDFW n.d.). Adult Owens suckers are bottom-oriented in pool habitat and in lakes regardless of depth (CDFW n.d.).

#### 3.0 STUDY OBJECTIVES

Objectives of the Study include the following:

- Characterize populations and status of fish species in Lake Sabrina and South Lake
  - Document presence and/or absence of Owens suckers in Lake Sabrina and South Lake
  - Assess distribution of other fish species in Project reservoirs
- Evaluate select, localized water quality parameters that may affect the growth and distribution of fish species
- Ensure that future Project facilities and operations are not inconsistent with the Desired Conditions described in the Land Management Plan for the Inyo National Forest (INF) (USDA 2019) as they relate to ecological sustainability and diversity of plant and animal communities

#### 3.1 STUDY AREA

The study area includes South Lake, Lake Sabrina, and Longley Lake (Figure 3.1-1). Individual fish sampling sites within each Project reservoir are described below. South Lake is situated in the upper end of South Fork Bishop Creek at an elevation of 9,750 ft and is the largest of the Project reservoirs with a storage of 12,883 acre-feet at normal maximum reservoir level. Lake Sabrina is located on Middle Fork Bishop Creek at an elevation of 9,131 ft and has a net storage capacity of 8,376 acre-feet at normal maximum reservoir level. Longley Lake is located at the headwaters of McGee Creek at an elevation of 10,708 ft and is the smallest reservoir included in this study with a surface area of approximately 10 acres.



Figure 3.1-1 Bishop Creek Reservoir Fish Distribution survey locations, South Lake, Lake Sabrina, and Longley Lake

#### 4.0 METHODS

Reservoir fish surveys were conducted from June 3 to 16, 2020 and September 7 to 11, 2020. Fish sampling methods included:

- Weekly daytime boat electrofishing and beach seining surveys targeting Owens sucker spawning habitat to document the presence and/or absence of Owens suckers at Lake Sabrina and South Lake during the spawning season (June);
- Early and late summer night electrofishing surveys to characterize reservoir fish population assemblages in Lake Sabrina and South Lake (September); and
- A single, late-summer gill netting effort to characterize the reservoir fish population assemblage in Longley Lake (September).

Additionally, South Lake and Lake Sabrina bathymetry was mapped using vesselmounted, single beam echo-sounder systems from July 27 to August 6, 2020 to allow assessment of fish habitat in the reservoirs.

#### 4.1 OWENS SUCKER SURVEYS

Owens sucker surveys were conducted in Lake Sabrina and South Lake during the peak spawning season to increase the likelihood of capture. Surveys were conducted in each reservoir once per week over a three-week period between June 3 and 16, 2020. Monitoring locations targeted suitable spawning habitat (i.e., shallow locations with flowing or well-aerated water and coarse sand and/or gravel substrates) but also included locations along the reservoir margins with larger substrate (i.e., boulders) to get full coverage of available habitat (Figure 4.1-1 and Figure 4.1-2). Start and end points for each sample site were obtained using a handheld global positioning system (GPS), and electrofishing shock time was recorded for each pass.

Surveys were conducted during the day using standard beach seining and boat electrofishing methods (Reynolds 1996). Suitable beach seine locations (e.g., shallow water free of obstructions such as large rocks and woody debris) were rare in both reservoirs; therefore, boat electrofishing was used as the primary method. During each monitoring event, biologists recorded the date and time of sampling; measured *in situ* water conditions approximately 1 meter below the water surface, including temperature, dissolved oxygen (DO), conductivity, and pH using a calibrated YSI<sup>™</sup> Pro Plus multiparameter meter; and noted other conditions including water clarity and weather conditions (i.e., air temperature, wind speed, and cloud cover/precipitation). Photos were taken at each monitoring location to document general habitat conditions, which primarily focused on bank substrate types (e.g., sand, gravel, boulders), shoreline steepness, and tributary inflow. Observations of Owens suckers spawning activities (e.g., redd formations or spent adults) were also documented during surveys.



Figure 4.1-1 Lake Sabrina Boat Electrofishing Locations



Figure 4.1-2 South Lake Boat Electrofishing Locations

As fish were captured (netted), they were placed in aerated containers with ambient reservoir water until the completion of each pass. Captured fish were processed after sampling at each location. Fish data recorded included species identification, fork length (FL; mm), TL (mm), and weight (grams [g]). A subset of 27 Owens suckers were fatally captured to obtain operculum samples for fish aging and scale samples; all other captured fish were returned to the source water immediately following processing. Operculum bones were removed and placed in individually labeled envelopes. Scales were taken from the left side of the body below the dorsal fin and above the lateral line and placed in individually labeled envelopes. Scales samples were also collected opportunistically from other species (e.g., rainbow trout and brook trout). Operculum and scale samples will be sent to the CDFW Bishop field office for future analyses.

#### 4.2 RESERVOIR FISH ASSEMBLAGE SURVEYS

Reservoir fish assemblage surveys were conducted in Lake Sabrina and South Lake using nighttime boat electrofishing from June 10 to 12, 2020 and September 9 to 11, 2020. Four sites, ranging from approximately 1,600 feet (ft) to 2,200 ft in length, were established along the shorelines of both lakes. Sample sites were established in representative near-shore habitat (Figure 4.1-1 and Figure 4.1-2). Start and end points for each sample site were obtained using hand-held GPS. Electrofishing shock time was recorded. As fish were captured (netted), they were placed in aerated containers with reservoir water until the completion of the pass. Captured fish were processed after sampling at each location. Fish data recorded included species identification, FL (mm), TL (mm), and weight (g). Water temperature and DO profiles were measured with a YSI<sup>™</sup> Pro Plus multiparameter meter near the dam of each reservoir. Measurements were recorded at one-meter intervals from the water surface to the substrate.

Reservoir fish assemblage surveys were conducted at Longley Lake using gill netting on September 7 and 8, 2020. Two gill nets, approximately 80-feet-long by 6-feet-tall with variable mesh sizes ranging from 0.75 inch to 2.50 inches, were deployed in different sections of the reservoir (Figure 4.2-1). One net was deployed at the cove in front of the dam with each end attached to the shore and the middle section resting on the reservoir bottom at a depth of approximately 20 feet. The other net was deployed near the southeast corner of the reservoir, oriented perpendicular to the shoreline with one end attached to the shore and the other end anchored in water approximately 20 ft deep. Both gill nets were deployed for two extended periods spanning from 1500 on September 7 to midnight on September 8, 2021 and from approximately 0100 to 1200 on September 8, 2021. Captured fish were placed in an aerated container with ambient reservoir water for processing. Fish data recorded included species identification, FL (mm), TL (mm), and weight (g). Date, time, sample duration, and prevailing weather conditions for each net set period were recorded. Water temperature and DO were measured with a YSI<sup>™</sup> Pro Plus multiparameter meter calibrated at the lake.



Figure 4.2-1 Longley Lake Gill Net Placement, September 2020

#### 4.3 RESERVOIR BATHYMETRY

South Lake and Lake Sabrina reservoir bathymetry was mapped between July 27 and August 6, 2020. Prior to conducting the reservoir bathymetry surveys, semi-permanent benchmarks were installed in large bedrock outcrops at both reservoirs. Benchmark coordinates were established with National Geodetic Survey Online Positioning User Service (NGS OPUS) processing service. The benchmarks were used as the Global Navigation Satellite System (GNSS) base station location for each subsequent reservoir bathymetry and water surface elevation survey. CEEPULSE 200-kiloHertz (kHz) single beam and Ohmex SonarMite 235-kHz single-beam systems were used to measure reservoir depth.

A 16-foot aluminum survey vessel with a 20-horsepower outboard motor and an electric trolling motor were utilized to survey deep, open-water reservoir areas, and an inflatable kayak was utilized to survey the perimeters and other shallow water areas. Both singlebeam systems consisted of a transducer hardwired to a small, portable black box echo processing unit with processed depths output via cable or Bluetooth. For each system, the transducer was mounted directly beneath a global navigation satellite system (GNSS) real-time kinematic (RTK) antenna or robotic total station (RTS) prism, and depth soundings were fed directly to Trimble TSC3 survey controllers and recorded by the survey software. With this setup, precise horizontal and vertical coordinates were recorded simultaneously with depth soundings as a RTS tracked the survey vessel as it moved along transect lines.

Planning transect lines were created prior to fieldwork and loaded on the survey controllers to serve as a navigation guide and ensure adequate transect spacing. The planning transect lines were created with a nominal minimum grid spacing of 200 ft in open water and adjusted to increase transect density in shallow water areas, which were identified as the most likely critical Owens sucker spawning habitat. During data collection, the survey vessels moved along transect lines at speeds up to approximately 4 knots and continuously recorded position and depth at time intervals ranging from 2–5 seconds. Small course corrections or irregular vessel tracks occurred where it was necessary to avoid obstructions and other recreational vessels and to remain on track when strong winds made it difficult to navigate in straight survey lines.

A bar check was performed at the start of each survey day to ensure adequate function of the echo sounder systems. The bar check consisted of holding the sounder in a fixed position over a flat hard surface (bedrock or boat ramp) and comparing continuous depth soundings to physical depth measurements. Cross track survey lines were also conducted to evaluate bathymetry reliability.

#### 4.4 OWENS SUCKER AND RESERVOIR FISH ASSEMBLAGE ANALYSIS METHODS

Fish population data were entered into an Excel spreadsheet for reduction, tabulation, and summary. Capture data were summarized by species composition and capture method. In addition, length-frequency histograms were developed for all fish species captured to estimate age-class structure and growth rates. Breaks or modalities within

the histogram were evaluated for each trout species and compared to available literature to determine approximate age classes.

Fish capture results are reported both as total catch and in terms of catch per unit effort (CPUE). CPUE for fishes captured by beach seine and electrofishing was calculated by dividing number of fish of each species captured by the total surface area of water sampled using site lengths obtained with the hand-held GPS and widths that were estimated based on the boat's distance from shore and the effective shock area around the anodes. CPUE for fishes captured by gill net was calculated by dividing the number of fish captured by the dimensions of the gill net and the length of time fished (e.g., fish/[ft<sup>2</sup> x hr]). CPUE was summarized by reservoir and species.

The weight-to-length relationship of individual trout was assessed as a method of identifying the nutritional state or health of the fish related to size and growth. Condition factor (Ricker 1975), a measure of this nutritional state, was calculated for each trout. Individual condition factors (k) were calculated by the following formula:

 $k = \frac{\text{wet weight (g)} \times 10^5}{[\text{fork length (mm)}]^3}$ 

The mean condition of trout was calculated by averaging individual condition factors for each trout species at each sample site.

#### 5.0 MODIFICATIONS TO METHODS

The methods for the reservoir fish assemblage surveys described in the Study Plan approved by FERC on November 4, 2019 stated that sampling for Owens suckers would include a site visit to each monitoring station at least once per week during the spawning season (approximately early May through early July) to confirm presence/absence of the species. This design assumed that suckers would be potentially difficult to collect. However, large schools of Owens suckers were observed congregating in shallow water along the lake margins in early June and were observed building redds by mid-June with sufficiently high number of fish captured at Lake Sabrina (n = 105) to confirm presence. These data and observations collected between June 3 and June 16, 2020 were adequate to characterize the Owens sucker population, identify spawning areas, and observe spawning activity. Therefore, the surveys were concluded on June 16, 2020.

Total gill net set times in Longley Lake included one approximately 9-hour set time and one approximately 11-hour set time, which were both slightly less than the 12-hour set times included in the study plan. Sampling at Longley Lake occurred during severe wildfire events nearby that complicated already difficult access conditions. These conditions required longer than anticipated travel time to and from the lake, and premature termination of the sampling due to safety concerns, which resulted in a minor decrease in total set times for gill nets. However, sampling periods included times of day when trout species are most active (evening, night, and dawn hours) and when capture efficiency is highest, and it is anticipated that fish capture data collected during this study are sufficient to characterize the fish population in Longley Lake.

Owens sucker opercula were collected for fish age analysis by CDFW; however, opercula aging is not yet complete and is not part of this study.

#### 6.0 RESULTS

#### 6.1 HABITAT CONDITIONS

Both South Lake and Lake Sabrina showed signs of thermal stratification during the June sampling effort, while DO levels remained similar throughout the water column (Figure 6.1-1 and Figure 6.1-2). Thermal stratification occurred between 5 and 6 meters below the water surface in South Lake and between 6 and 8 meters below the water surface in Lake Sabrina. Water temperatures ranged from 6.0°C to 10.9°C in South Lake and from 9.5°C to 12.8°C in Lake Sabrina. Thermal stratification was not observed during the September sampling effort with both South Lake and Lake Sabrina showing uniform temperatures throughout the water column. DO levels in South Lake were slightly lower during September than in June. Equipment malfunction during the September effort resulted in unreliable DO readings below the water surface in Lake Sabrina; however, DO levels measured near the water surface (with a different instrument) showed a similar decrease in levels compared to surface DO levels observed at South Lake. Water temperatures at Longley Lake were slighly lower than the other two reservoirs, but DO levels were simlar between all three reservoirs (Table 6.1-1). Overall, water temperatures were cool and DO levels were high throughout the study area in June with warmer water temperatures and lower DO levels measured in September, although still within the suitable range for the four fish species observed during this study. Sample site conditions are provided in Appendix A and habitat overview photographs are included in Appendix Β.



Figure 6.1-1 Water Temperature and Dissolved Oxygen Profiles for South Lake, June and September 2020



Figure 6.1-2 Water Temperature and Dissolved Oxygen Profiles for Lake Sabrina, June and September 2020

### Table 6.1-1 Water Quality Conditions at Fish Sampling Locations in Project Reservoirs during June and September 2020

			olved /gen	Conductivity				Water			
Reservoir	Survey Month	mg/L <sup>1</sup>		μS/cm <sup>2</sup> (25 °C)		μS/cm <sup>2</sup> (adjusted to °C)		Temperature (°C)		рН	
		min	max	min	max	min	max	min	max	min	max
South	June	8.60	10.06	15.0	25.8	18.5	25.8	11.4	12.7	5.57	7.9
Lake	Sept.	6.42	6.42	14.6	16.0	17.7	19.8	15.5	15.8	8.13	8.43
Lake	June	8.18	9.94	14.5	19.4	14.1	19.2	9.6	11.2	6.36	7.04
Sabrina	Sept.	5.83	6.21	13.0	13.1	15.6	15.6	16.4	16.6	8.07	8.46
Longley Lake	Sept.	6.31	6.31	7.0	7.0	9.2	9.2	12.8	12.8	7.85	7.85

<sup>1</sup> milligrams per liter (mg/L)

<sup>2</sup> microsiemens per centimeter ( $\mu$ S/cm)

#### 6.2 SPECIES COMPOSITION AND DISTRIBUTION

A total of 677 fish were captured during the June and September 2020 reservoir surveys (including combined Owens sucker and reservoir fish assemblage surveys). The captured species indicate that the fishery in South Lake, Lake Sabrina, and Longley Lake is composed of coldwater trout species. Lake Sabrina also supports a large self-sustaining population of Owens suckers (Table 6.2-1), which were numerically the most abundant fish species captured in Lake Sabrina. Owens suckers were not observed in South Lake or Longley Lake. Of trout species, rainbow trout were the most abundant in Lake Sabrina and South Lake (Figure 6.2-1 and Figure 6.2-2), likely as a result of frequent stocking, while brook trout was the only fish species captured in Longley Lake (Figure 6.2-3). Catch-per-unit-effort (CPUE) for fishes captured during spring and fall showed some variability by gear type, location, and season (Table 6.2-2). Overall, CPUE was fairly similar when comparing similar methods between South Lake and Lake Sabrina, while gill netting in Longley Lake had the highest CPUE.

Family	Scientific	Common	Lake Sabrina		South Lake		Longley Lake	Total	
	Name	Name	JUNE <sup>1</sup>	Sept.	JUNE <sup>1</sup>	Sept.	Sept.		
	Salmo trutta	Brown Trout	1	0	26	31	0	58	
Salmonidae	Oncorhynchus mykiss	Rainbow Trout	81	58	128	48	0	315	
	Salvelinus fontinalis	Brook Trout	27	19	57	24	27	154	
Catostomidae	Catostomus fumeiventris	Owens Sucker	105	45	0	0	0	150	
Total			214	122	211	103	27	677	

#### Table 6.2-1 Fish Species and Number Captured during 2020 Reservoir Sampling

<sup>1</sup> Results for June include fish captured during day electrofishing and beach seining conducted during the Owens sucker surveys and the night boat electrofishing surveys conducted for the reservoir fish assemblage surveys. Only night electrofishing was conducted in Lake Sabrina and South Lake during the September sampling effort.







Figure 6.2-2 Fish Species Composition for Lake Sabrina during 2020 Sampling



Figure 6.2-3 Fish Species Composition for Longley Lake, September 2020

		Catch per Unit Effort (CPUE) <sup>1</sup> x 1,000							
Reservoir	Method	Brown trout	Rainbo w trout	Brook trout	Owens Sucker	Total			
	Jui	ne Sampling	Efforts						
	Daytime Boat Electrofishing	0.07	0.31	0.25	0.00	0.63			
South Lake	Nighttime Boat Electrofishing	0.16	0.85	0.13	0.00	1.15			
	Beach Seine	0.07	0.07 0.07 1.13		0.00	1.28			
Lako	Daytime Boat Electrofishing	0	0.20	0.10	0.25	0.55			
Sabrina	Nighttime Boat Electrofishing	0.01	0.48	0.12	0.64	1.25			
	Septe	mber Sampl	ing Efforts						
South Lake	Nighttime Boat Electrofishing	0.28	0.43	0.22	0.00	0.93			
Lake Sabrina	Nighttime Boat Electrofishing	0.00	0.69	0.22	0.53	1.44			
Longley Lake	Gill Net	0.00	0.00	2.12	0.00	2.12			

#### Table 6.2-2 Fish Catch per Unit Effort by Survey Method During 2020 Sampling

<sup>1</sup> CPUE Gill Nets= Fish/(ft<sup>2</sup> x hr), CPUE Electrofisher and Beach Seine= Fish/ft<sup>2</sup>

#### 6.3 AGE CLASS DISTRIBUTION

Length-frequency histograms were generated to assess age classes for fish species captured and were compared with length-at-age information provided by Moyle (2002). Growth rates for the trout species captured during this study are highly variable (Moyle 2002), and rainbow trout reared in hatcheries likely grow at different rates compared with naturally produced fish. Little information exists on the growth rates of Owens suckers, so length frequency was compared with age classes of a similar species, Tahoe suckers (*Catostomus tahoensis*). Despite this variation, the length-frequency distribution of fish observed in all three reservoirs indicated multiple age classes were present, including young-of-the-year (YOY) fish, suggesting natural reproduction is occuring for most species in these locations. Age classes for fishes within the individual Project reservoirs are discussed below.

#### 6.3.1 SOUTH LAKE

Fish captured in South Lake were all members of the family Salmonidae, including brown trout, rainbow trout, and brook trout ranging from approximately 50–550 mm FL. Brown trout included fish expected to be within all age classes from YOY up to approximately age 3+; rainbow trout included fish expected to be within all age classes from YOY to well over age 3+; and brook trout included fish expected to be within all age classes from YOY to YOY up to 3+ (Figure 6.3-1 through Figure 6.3-3).



Figure 6.3-1 Length Frequency Histogram for Brown Trout Captured in South Lake during 2020 Sampling



Figure 6.3-2 Length Frequency Histogram for Rainbow Trout Captured in South Lake during 2020 Sampling



Figure 6.3-3 Length Frequency Histogram for Brook Trout Captured in South Lake during 2020 Sampling

#### 6.3.2 LAKE SABRINA

Fish captured in Lake Sabrina included fish from the family Salmonidae, including brown trout, rainbow trout, and brook trout ranging from approximately 50–650 mm FL, and Owens suckers (family Catastomidae) ranging from approximately 70–380 mm FL. The size distribution of rainbow trout and brook trout captured in Lake Sabrina indicate multiple age classes are present with some fish from both species expected to fall within the YOY age class (Figure 6.3-4 and Figure 6.3-5). A single brown trout was captured that was approximately 650 mm FL which is expected to be in the 5+ age class or older (Figure 6.3-5). Owens suckers likely included fish within all age classes from YOY to age 6+ or older (Figure 6.3-6); however, age and growth have not been well documented for this species.



#### Figure 6.3-4 Length Frequency Histogram for Rainbow Trout Captured in Lake Sabrina during 2020 Sampling



#### Figure 6.3-5 Length Frequency Histogram for Brook Trout and Brown Trout Captured in Lake Sabrina during 2020 Sampling



Figure 6.3-6 Length Frequency Histogram for Owens Suckers Captured in Lake Sabrina during 2020 Sampling

#### 6.3.3 LONGLEY LAKE

Brook trout were the only fish species captured in Longley Lake, and the narrow size distribution makes estimating age structure difficult. The brook trout captured in Longley Lake ranged from 190–255 mm FL and the observed sizes likely fall within the 2+ and 3+ age classes, based on size-at-age estimates for brook trout reported in Moyle (2002) and observations in Lake Sabrina (Figure 6.3-7). The absence of brook trout less than 190 mm FL is likely a result of the gill net mesh size which is selective for fish larger than 100 mm.



Figure 6.3-7 Length Frequency Histogram for Fish Captured in Longley Lake during 2020 Sampling

#### 6.4 FISH CONDITION

The mean trout condition within the Project reservoirs sampled in 2020 ranged from 1.06– 1.34<sup>1</sup>, indicating that trout were generally in good condition (Table 6.4-1). Length and weight data for all fish captured during this study are provided in Appendix C.

<sup>&</sup>lt;sup>1</sup> Condition factors in western Sierra Nevada streams typically range from 0.8 to 2.0, with a mean condition factor generally 1.2 or below (Beak 1991; EA, 1987; Ebasco Environmental 1993; Wilcox, 1994; Hanson Environmental 2005), while Rabe (1967) reported the condition factor to be between 0.9 and 1.1 for rainbow trout in Alpine lakes. Arismendi et al., (2011) cites broader ranges (0.5 to 2.0); however, condition is dependent on the sampling season, species, strain of trout, state of sexual maturity, and the way fish length is defined (e.g., fork length, total length, or standard length), which is not often documented with the results.

### Table 6.4-1 Condition Factors (k) for Fish Captured in Project Reservoirs during 2020 Sampling Effort

Bacanyair	Species	Number	Fork Ler	Average					
Reservoir	Species	captured	min	max	k-value <sup>1</sup>				
June Sampling Effort									
	Brook trout	57	85	280	1.16				
South Lake	Brown trout	26	68	330	1.08				
	Rainbow trout	128	58	437	1.12				
	Brook trout	27	77	239	1.19				
Laka Cabrina	Brown trout	1	648	648	2				
Lake Sabrina	Rainbow trout	81	44	380	1.11				
	Owens sucker	105	114	360	1.34				
	Septe	ember Sampling	Effort						
	Brook trout	24	195	255	1.12				
South Lake	Brown trout	31	180	313	1.06				
	Rainbow trout	48	168	168	1.07				
	Brook trout	19	130	246	1.22				
Laka Cabrina	Brown trout	0	na	na	Na				
Lake Sabina	Rainbow trout	58	90	495	1.12				
	Owens sucker	45	61	375	1.26				
Longley Lake	Brook Trout	27	190	255	1.27				

Notes: -- Not calculated, mm = millimeters, na = not applicable

<sup>1</sup> Fish condition factor

<sup>2</sup> Fish weight exceeded scale capacity

#### 6.5 RESERVOIR BATHYMETRY

Bathymetric surveys were conducted at water surfacce elevations of 9,753 feet in South Lake and 9,124 feet in Lake Sabrina. Based on the mapping and normal surface elevations of South Lake (9,751.3 feet) and Lake Sabrina (9,131.6 feet), the maximum depth of South Lake would be 223 ft and the maximum depth of Lake Sabrina would be 252 feet. The maximum depth was located near the middle of the northern section of South Lake (Figure 6.5-1) and near the middle section of Lake Sabrina (Figure 6.5-2). Based on the relatively steep reservoir shorelines and limited littoral zones in these reservoirs, overall nutrient levels are anticipated to be low and the productivity is likely limited.

Areas with suitable spawning depths for Owens suckers (i.e., water between 3- and 6-feet-deep) are primarily located along the reservoir margins in both lakes. In South Lake, additional spawning habitat may be provided by a large shoal when water surface elevations reach approximately 9,725 feet, or by a second shoal when the water surface elevation reaches approximately 9,700 feet (Figure 6.5-1). In Lake Sabrina, the littoral

zone is realtively restricted, and areas with low gradients may provide suitable spawning habitat that extend well beyond the lake margins, especially along the north shore along the northern section of the reservoir (Figure 6.5-2), and available habitat is likely to be similar under a range of water surface elevations.



Figure 6.5-1 Bathymetry Map for South Lake





Figure 6.5-2 Bathymetry Map for Lake Sabrina
# 7.0 DISCUSSION

# 7.1 LOCALIZED WATER QUALITY PARAMETERS THAT MAY AFFECT THE GROWTH AND DISTRIBUTION OF FISH SPECIES

The cold-water temperatures and generally high oxygen levels measured in all three reservoirs throughout the study are suitable for trout. Optimal temperatures for growth of rainbow trout are approximately 15–18 °C, but a wide range of temperatures can be tolerated (Moyle 2002). At low temperatures, rainbow trout can tolerate DO levels around 2 mg/L, but growth normally requires DO levels near saturation (Moyle 2002). DO saturation levels are approximately 7 mg/L at 9,000 feet elevation in water that is 15°C, and DO saturation is slightly lower at 10,000 feet. Both brown trout and brook trout require similar conditions for growth but can occur over a wider range of temperature and DO levels (Moyle 2002). Therefore, localized water quality parameters are expected to support sufficient periods of growth for trout in these reservoirs (Table 6.1-1).

#### 7.2 FISH POPULATIONS AND DISTRIBUTION IN PROJECT RESERVOIRS

### 7.2.1 SOUTH LAKE

Fish populations in South Lake are made up of a mix of hatchery and naturally produced trout. YOY brown trout, rainbow trout, and brook trout were captured during reservoir surveyes suggesting some natural reproduction occurs for each species. Multiple age classes of all three trout species were captured in South Lake during 2020 even though stocking records indicate only rainbow trout were stocked in South Lake during 2019 and 2020 (CDFW 2019). Relatively high numbers of rainbow trout captured in South Lake appeared to be of hatchery descent based on observations of worn fins and other deformities on rainbow trout captured during the study. No other species showed signs of hatchery descent. Angling pressure appears to be high in South Lake based on several fish captured with fishing line in their stomachs and mouths. No Owens suckers were captured or observed in South Lake during this study.

### 7.2.2 LAKE SABRINA

Fish populations in Lake Sabrina are made up of a mix of hatchery and naturally produced trout along with a seemingly large population of naturally reproducing Owens suckers. YOY rainbow trout and brook trout were captured during reservoir surveys suggesting some natural reproduction occurs for these species. Unlike in South Lake, brown trout were nearly absent from the catch, with only a single brown trout captured . Rainbow trout is the only species currently stocked by CDFW and were the most abundant trout species. While hatchery fish cannot always be distinguished from naturally produced fish, a high proportion of rainbow trout captured in Lake Sabrina showed signs indicative of fish from hatchery orgins, such as worn fins and other physical deformities. Angling pressure appears to be greater at Lake Sabrina compared to South Lake, which may account for the near absence of brown trout observed. Several captured fish had fishing line in their stomachs and mouths. Owens suckers appear to have established a self-sustaining population within Lake Sabrina, based on their high relative abundance and age-class distribution, which included fish ranging from YOY to the 6+ age class or older.

## 7.2.3 LONGLEY LAKE

A self-sustaining population of brook trout occurs within Longley Lake. Brook trout density appears to be higher at Longley Lake than at South Lake or Lake Sabrina, as indicated by higher CPUE for fish captured at Longley Lake, even though no stocking currently occurs. The sampling method used at Longley Lake was selective for larger fish, so no YOY fish were captured; however, natural reproduction is likely occuring based on the high abundance of fish and observations of relatively young age 2+ to 3+ fish captured. Overall, brook trout were fairly small in size, but this is typical of high elevation populations in California (Moyle 2002).

#### 7.3 INYO NATIONAL FOREST DESIRED CONDITIONS

Results from this study provide only a limited basis for comparison with the Desired Conditions described in the Land Management Plan for the INF (USDA 2019). The conditions included in the Land Management Plan focus on ecological sustainability and diversity of plant and animal communities, both native and non-native; however, heavy angling pressure in South Lake and Lake Sabrina likely limit self-sustaining populations of non-native game species (i.e., trout). Both South Lake and Lake Sabrina are managed as a put-and-take fishery where heavy stocking occurs followed by rapid removal from heavy angling pressure. However, these fisheries do appear to be contributing to economies to the local communities as evident by the marinas and resorts associated with South Lake and Lake Sabrina. Furthermore, no native fish were present within this section of the watershed prior to stocking, so no risk is being posed by non-native game fish species. Therefore, these conditions meet the criteria included in desired condition (SPEC-FW-DC)-05 as listed below:

**(SPEC-FW-DC) 05:** The Inyo National Forest provides high quality hunting and fishing opportunities. Habitat for non-native fish and game species is managed in locations and ways that do not pose substantial risk to native species, while still contributing to economies of local communities.

Only Longley Lake appears to support sufficient numbers of brook trout to support a sustainable population of non-native game fish. Owens suckers, while not historically present in the upper Bishop Creek watershed, are native to the basin and appear to have established a self-sustaining population within Lake Sabrina. These populations meet the criteria included under the desired condition (SPEC-FW-DC)-01 as listed below:

**(SPEC-FW-DC) 01:** Sustainable populations of native and desirable non-native, plant and animal species are supported by healthy ecosystems, essential ecological processes, and land stewardship activities, and reflect the diversity, quantity, quality, and capability of natural habitats on the Inyo National Forest.

#### 8.0 CONSULTATION SUMMARY

Biologists contacted CDFW on May 21, June 1, and June 2, 2020 to coordinate the reservoir sampling approach and CDFW's aging of Owens sucker opercula collected during the June 2020 surveys. SCE distributed periodic progress reports on the following schedule:

- Progress Report 1: December 19, 2019
- Progress Report 2: April 14, 2020
- Progress Report 3: July 24, 2020
- Initial Study Report (Progress Report 4): October 30, 2020
- Initial Study Meeting: November 10, 2020
- Progress Report 1: March 2, 2021
- Progress Report 2: May 28, 2021
- Progress Report 3: August 27, 2021
- Updated Study Report Filing: November 4, 2021
- Updated Study Report Meeting: November 18, 2021

Three progress reports were filed in 2021 after the ISR, as identified above. This Final Technical Report was submitted to agencies and stakeholders for a 60-day review period on May 14, 2021. The comment period was extended, at the request of the agencies, and comments received on this report are shown in Table 8.1-1. A meeting was held with CDFW and USFS on October 6, 2021 to discuss those comments received as well as SCE's draft responses to them. SCE held a Project Effects meeting on October 28, 2021 for all stakeholders and agencies to discuss what project effects (if any) had been identified through the implementation of each of the approved study plans.

The Updated Study Report (USR) was filed with FERC on November 4, 2021, and a USR Meeting was held on November 18, 2021. At this meeting, SCE only discussed those studies which were still in progress at the time of the ISR (Water Quality, Sediment and Geomorphology, Operations Model, Recreation Use and Needs, Recreation Facilities Condition Assessment, Project Lands and Boundary, and Cultural and Tribal Studies). The Reservoir Fish Distrbution Study was not discussed at the USR, and thus received no comments.

Comment Number	Study	Date of Comment	Entity	Comments	SCE Response
1	Fish Distribution Study (Reservoirs) – AQ 4	October 4, 2021	CDFW	CDFW agrees that most rainbow trout captured are hatchery-origin. A plot showing this should be included if data was collected on what percentage of rainbow trout had worn fins. <u>October 14, 2021, CDFW Updated</u> <u>Comment:</u> Size of planted trout will be from 1-inch up to 18-inches, but most trout stocked will be around 7-10 inches. Fin wear has been established as a useful indicator of hatchery origin in some systems.	Data collection on fin wear was not included as part of this study plan. However, crews did collect incidental information on general fish health including fish origin as hatchery, wild, or unknown based on fin wear, fish deformities, and coloration. From that qualitative data, a large portion of rainbow trout (53% in Sabrina and 57% in South Lake) appeared to be of hatchery origin, with 27% to 30% identified as unknown origin, while 14% to 18% appeared to be wild. Information on recruitment is also available in the Length- Frequency histograms (i.e., age-class distribution plots), which suggest some natural reproduction is occurring in both South Lake and Lake Sabrina
				document hatchery trout in the EF Carson in 2008.	Exhibit E of the Draft License Application (DLA).
2	Fish Distribution Study (Reservoirs) – AQ 4	October 4, 2021	CDFW	Brook trout recruitment in Longley reservoir appears to be limited (no young of the year were captured)- was there a reason for this. <u>October 14, 2021, CDFW Updated</u> <u>Comment:</u> Trout are typically stream spawners. Very little spawning occurs in the reservoir. However, at times Brook trout may be able to spawn in the lakes with sufficient groundwater inflow, and it may	SCE employed gillnets to collect presence- absence data in Longley Reservoir at the recommendation of CDFW and USFS. Neither the gear nor the study methodology was designed to collect YOY trout. This comment is addressed in Section 8.5 of Exhibit E of the DLA.
				be the case in Longley.	

Comment Number	Study	Date of Comment	Entity	Comments	SCE Response
				Minnow traps or e-fishing the shoreline may have helped to document YOY presence in Longley. Tiered study using unbaited minnow traps in the stream up steams (not in reservoirs) to capture YOY and document spawn could also have been used. CDFW understands we are past proposing new studies. Recruitment should be expressed as survival to age 1. Recruitment and spawn are two different things.	
3	Fish Distribution Study (Reservoirs) – AQ 4	October 4, 2021	CDFW	Use ArcGIS to make Owens sucker (Catostomus fumeiventris) suitability maps a different reservoir levels and use Project operational knowledge to determine when and how Project operations (e.g., increasing or decreasing reservoir levels) could impact the quality or quantity of Owens sucker habitat. <u>October 14, 2021, CDFW Updated Comment:</u> <sup>2</sup> Owens sucker are a CDFW species of special concern. They are not a nuisance species, and they are not a game species. The Sabrina population is the least genetically diverse population of Owens sucker, but it is still the only native fish in the Project area. CDFW interest	Suitability mapping for sucker habitat in Project Reservoirs is outside the scope of the FERC approved study plan. However, general habitat availability can be assessed from the bathymetry figures included in the Technical Report. The bathymetry figure for Lake Sabrina show areas with low gradients that likely provide suitable spawning habitat extend well beyond the lake margins, especially along the north shore along the northern section of the reservoir, and available habitat is likely to be similar under a range of water surface elevations. A large and robust population of Owens sucker was observed in Lake Sabrina while no Owens sucker were observed in South Lake during this study. In Lake Sabrina, spawning behavior was observed with Owens sucker congregating in large groups along sand and gravel substrate along most of the reservoir shoreline, and redds were observed within the back of coves at the southern end of the

<sup>2</sup> <u>https://wildlife.ca.gov/Conservation/SSC/Fishes</u> and <u>https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=104359&inline</u>.

Comment Number	Study	Date of Comment	Entity	Comments	SCE Response
				for Owens sucker are conservation of the species.	reservoir. Owens sucker spawning typically occurs during the late spring and early summer when reservoir levels are rising. Current and proposed reservoir operations appear to be supporting a healthy population.
					Exhibit E of the DLA.

#### 9.0 REFERENCES

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APPENDIX A

**RESERVOIR SAMPLE SITE CONDITIONS** 

Tuble II I Itebel (on Bumple bite Conditions Dutuy bune und beptember 202)	Table A-1	Reservoir	Sample Sit	e Conditions	s Data, Jun	e and Sep	tember 2020
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			0.1					Total	Sample time (seconds,	Wat	er Dept Site)	h (at	-	Disso Oxy	olved gen	Cond			Depth	
Reservoir		Site Location	Site	Site width	Sample	Start	End	Area Fished	except where							µS/cm <sup>2</sup>	μS/cm <sup>2</sup> (adjusted	Water Temp.	of YSI reading	
Name	Survey	Description	(ft)	(ft)	Date	Time	Time	(ft²)	noted)	Max.	Avg.	Min.	рН	(mg/l) <sup>1</sup>	(%)	(25 °C)	to °C)	(°C)	(ft):	Weather
			1	T		I		June	e Sampling	1				T			[	T	T	
Lake Sabrina	Owens Sucker	East of southern Inlet	700	20	6/4/2020	12:30	13:30	14,000	1,281	8.0	4.0	2.0	7.04	9.94	92.7	14.4	19.1	12.2	3.0	overcast
Lake Sabrina	Owens Sucker	North shore, western end of lake	1,455	15	6/4/2020	15:15	15:45	21,825	913	8.0	4.0	2.0	7.04	9.94	92.7	14.4	19.1	12.2	3.0	overcast, warm breezy
Lake Sabrina	Owens Sucker	Cove just north of main inlet	200	20	6/4/2020	14:50	15:05	4,000	348	10.0	6.0	4.0	7.04	9.94	92.7	14.4	19.1	12.2	3.0	overcast, sprinkling, breezy
Lake Sabrina	Owens Sucker	Cove near marina	400	20	6/4/2020	10:50	11:30	8,000	932	8.5	5.0	2.0	6.84	9.74	88.7	15.0	19.4	12.7	3.0	Clear, p- cloudy, hot
Lake Sabrina	Owens Sucker	Cove near marina	1,000	20	6/8/2020	12:15	12:40	20,000	566	7.0	5.0	3.0								clear, breezy
Lake Sabrina	Owens Sucker	North shore mid reservoir	700	10	6/8/2020	13:20	13:41	7,000	755	10.0	4.0	2.0								clear, breezy
Lake Sabrina	Owens Sucker	Near SW Trib	1,600	10	6/8/2020	14:50	15:24	16,000	1,432	15.0	5.0	1.0								clear, sunny, breezy
Lake Sabrina	Night Efishing	Cove at dam	2,177	15	6/11/2020	20:40	21:10	32,655	1,406	10.0	4.0	2.0		8.61	81.6			12.8	3.0	clear, windy
Lake Sabrina	Night Efishing	Cove near marina	1,821	15	6/11/2020	22:30	23:00	27,315	1,379	10.0	4.0	1.0		8.61	81.6			12.8	3.0	clear, breezy
Lake Sabrina	Night Efishing	Northwest shore	1,698	15	6/11/2020	23:49	0:30	25,470	1,231	12.0	4.0	2.0		8.61	81.6			12.8	3.0	clear, breezy
Lake Sabrina	Night Efishing	Tributaries	1,643	15	6/11/2020	1:20	1:46	24,645	1,002	10.0	5.0	1.0		8.61	81.6			12.8	3.0	clear, cool
Lake Sabrina	Owens Sucker	South shore, western end of lake	1,000	15	6/16/2020	11:00	11:30	15,000	778	15.0	5.0	2.0	6.36	8.18	76.0	19.2	14.5	12.2	2.0	clear, windy
Lake Sabrina	Owens Sucker	North shore, western end of lake	1,500	15	6/16/2020	12:25	13:00	22,500	1,070	15.0	5.0	2.0	6.36	8.18	76.0	19.2	14.5	12.2	2.0	clear, windy
Lake Sabrina	Owens Sucker	Cove at dam	1,000	10	6/16/2020	10:15	10:45	10,000	904	8.0	5.0	2.0	6.91	8.64	78.9	14.1	19.2	11.4	2.0	clear, windy
South Lake	Seine	Inlet 3	140	90	6/3/2020	13:23	14:23	12,600	na	4.0	2.0	0.5	7.67	10.06	89.7	17.7	24.5	10.5	3.0	clear, breezy
South Lake	Seine	Inlet 1	50	30	6/3/2020	11:32	12:23	1,500	na	5.0	3.0	0.0	7.29	10.00	92.7	15.0	21.1	10.1	3.0	clear, light breeze
South Lake	Owens Sucker	Inlet 1 (northern inlet) to Inlet 2	2,000	20	6/9/2020	12:13	13:03	40,000	2,093	8.0	4.0	1.0	5.92	8.66	78.2	17.5	24.0	11.0	3.0	sunny, breezy
South Lake	Owens Sucker	Inlet 2 to inlet 3	1,500	20	6/9/2020	14:00	14:50	30,000	1,125	10.0	4.0	1.0	5.92	8.66	78.2	17.5	24.0	11.0	3.0	cloudy, breezy
South Lake	Owens Sucker	North of Launch Ramp	150	15	6/9/2020	16:00	16:10	2,250	141	10.0	5.0	1.0	5.57	8.60	76.1	18.3	25.8	9.6	3.0	sunny, breezy
South Lake	Night Efishing	South Shore	1,743	15	6/10/2020	2:20	2:45	26,145	1,031	10.0	5.0	1.0								clear, cold, calm
South Lake	Night Efishing	Inlet 2 to Inlet 3	1,634	15	6/10/2020	0:20	0:52	24,510	809	8.0	3.0	1.0								clear, calm
South Lake	Night Efishing	Inlet 1 (northern inlet) to Inlet 2	1,614	20	6/10/2020	22:50	23:37	32,280	1,581	12.0	4.0	2.0								clear, calm
South Lake	Night Efishing	North Shore	1,882	15	6/10/2020	3:10	3:40	28,230	1,259	15.0	5.0	2.0								clear, cold, calm
South Lake	Owens Sucker	Inlet 3	200	20	6/15/2020	12:25	13:00	4,000	1,053	8.0	3.0	1.0	6.78	8.75	77.3	16.0	22.3	10.3	3.0	cloudy
South Lake	Owens Sucker	Inlet 2	750	15	6/15/2020	13:10	13:50	11,250	1,083	10.0	4.0	2.0	6.78	8.75	77.3	16.0	22.3	10.3	3.0	clear, windy

								Total	Sample time (seconds.	Wat	er Dept Site)	th (at		Disso Oxy	lved gen	Cond	luctivity		Depth	
Reservoir Name	Survey	Site Location Description	Site length (ft)	Site width (ft)	Sample Date	Start Time	End Time	Area Fished (ft <sup>2</sup> )	except where noted)	Max.	Avg.	Min.	рН	(mg/l) <sup>1</sup>	(%)	μS/cm <sup>2</sup> (25 °C)	μS/cm <sup>2</sup> (adjusted to °C)	Water Temp. (°C)	of YSI reading (ft):	Weather
South Lake	Owens Sucker	South Shore	1,000	15	6/15/2020	13:55	14:35	15,000	923	15.0	5.0	2.0	6.09	9.28	84.1	22.5	18.5	10.8	2.0	clear, breezy
								Septem	ber Sampling											
Lake Sabrina	Night Efishing	NW Shore	1,698	15	9/10/2020	0:00	0:31	25,470	1,125	12.0	5.0	2.0	8.15	6.01	62.3	15.6	13.0	16.4	3.0	clear
Lake Sabrina	Night Efishing	Cove near Marina	1,821	15	09/09/2020	22:21	22:58	27,315	1,424	12.0	4.0	1.5	8.26	5.83	59.9	15.6	13.1	16.4	3.0	clear
Lake Sabrina	Night Efishing	NW Shore to trib	1,643	15	9/10/2020	0:44	1:20	24,645	1,426	15.0	4.0	1.5	8.46	6.07	62.3	15.6	13.1	16.6	3.0	clear
Lake Sabrina	Night Efishing	Cove near Dam	2,177	15	9/9/2020	20:50	21:43	32,655	1,772	14.0	5.0	2.0	8.07	6.21	63.5	15.6	13.1	16.4	3.0	clear
South Lake	Night Efishing	South Shore	1,743	15	9/11/2020	23:40	23:59	26,145	26,145	12.0	6.0	2.0	8.13	6.42	64.4	19.8	16.0	15.5	3.0	clear, cold
South Lake	Night Efishing	Inlet 2 to Inlet 3	1,634	15	9/11/2020	22:15	22:38	24,510	24,510	10.0	5.0	2.0	8.13	6.42	64.4	19.8	16.0	15.5	3.0	clear, cold
South Lake	Night Efishing	Inlet 1 (northern inlet) to Inlet 2	1,614	20	9/11/2020	20:51	21:16	32,280	32,280	10.0	6.0	2.0	8.13	6.42	64.4	19.8	16.0	15.5	3.0	clear, cold
South Lake	Night Efishing	North Shore	1,882	15	9/11/2020	20:00	20:20	28,230	28,230	10.0	6.0	2.0	8.43	6.42	64.4	17.7	14.6	15.8	3.0	clear, cold
Longley Lake	Gill net	Gill net 2, set 2	80	1	9/8/2020	2:00	12:20	80	10 hr 20 min	20.0	8.0	2.0	7.85	6.31	59.8	9.2	7.0	12.8	2.0	clear, smoky, cold
Longley Lake	Gill net	gill net 1, set 2	80	1	9/8/2020	1:15	12:15	80	11 hrs	20.0	8.0	2.0	7.85	6.31	59.8	9.2	7.0	12.8	2.0	clear, smoky, cold
Longley Lake	Gill net	Gill net 2	80	1	9/7/2020	16:00	1:30	80	9.50 hrs	20.0	8.0	2.0	7.85	6.31	59.8	9.2	7.0	12.8	2.0	smoky, windy
Longley Lake	Gill net	Gill net 1	80	1	9/7/2020	15:30	0:30	80	9 hrs	20.0	8.0	2.0	7.85	6.31	59.3	9.2	7.0	12.8	2.0	smoky, windy

<sup>1</sup> milligrams per liter (mg/L)

<sup>2</sup> microsiemens per centimeter (µS/cm)

APPENDIX B

**RESERVOIR SAMPLE SITE PHOTOS** 



Figure B-1 South Lake, shoreline conditions south of inlet 1 (northern inlet), June 3, 2020



Figure B-2 South Lake, shoreline conditions at inlet 1 (northern inlet), June 3, 2020



Figure B-3 South Lake, shoreline conditions at western end of lake, June 3, 2020



Figure B-4 South Lake, shoreline conditions at southern inlet, June 3, 2020



Figure B-5 Lake Sabrina, shoreline conditions at southern inlet, June 4, 2020



Figure B-6 Lake Sabrina, steep shoreline conditions east of southern inlet, June 4, 2020



Figure B-7 Lake Sabrina, general site overview looking west from mid-lake, June 4, 2020



Figure B-8 Lake Sabrina, general site overview looking east from mid-lake, June 8, 2020



Figure B-9 Longley Lake, gill net #1 placement and general site conditions, September 14, 2020



Figure B-10 Longley Lake, gill net #2 placement and general site conditions, September 14, 2020

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June 2022

APPENDIX C

**RESERVOIR FISH CAPTURE DATA** 

Becomin		Sample	Sample Period (day or	Oracias	Fork Length	Total Length	Weight	k-	Otolith/ Scale Sample	Oninin	Natas
Reservoir	Site ID	Method	night)	Species	(mm)	(mm)	(g)	value	U	Origin	Notes
South Lake	Inlet 3	Seine	Day	brook trout	78	83	4.6	0.97	none	unknown	
South Lake	Inlet 3	Seine	Day	brook trout	79	83	4.7	0.95	none	unknown	
South Lake	Inlet 3	Seine	Day	brook trout	85	94	6.4	1.04	none	unknown	Missing part of tail
South Lake	Inlet 3	Seine	Day	brook trout	88	93	6.6	0.97	none	unknown	
South Lake	Inlet 3	Seine	Day	brook trout	89	93	7.5	1.06	SL-2	unknown	
South Lake	Inlet 3	Seine	Day	brook trout	89	94	7.1	1.01	none	unknown	
South Lake	Inlet 3	Seine	Day	brook trout	90	94	8.2	1.12	none	unknown	
South Lake	Inlet 3	Seine	Day	brook trout	90	95	6.5	0.89	none	unknown	
South Lake	Inlet 3	Seine	Day	brook trout	90	95	6.9	0.95	none	unknown	
South Lake	Inlet 3	Seine	Day	brook trout	90	94	7.4	1.02	none	unknown	
South Lake	Inlet 3	Seine	Day	brook trout	91	96	7.8	1.04	none	unknown	
South Lake	Inlet 3	Seine	Day	brook trout	93	97	8.4	1.04	none	unknown	
South Lake	Inlet 3	Seine	Day	brook trout	94	99	8.4	1.01	none	unknown	
South Lake	Inlet 3	Seine	Day	brook trout	94	100	7.7	0.93	none	unknown	
South Lake	Inlet 3	Seine	Day	brook trout	108	113	11	0.87	none	unknown	
South Lake	Inlet 3	Seine	Day	brook trout	118	125	17.6	1.07	SL-1	unknown	
South Lake	Inlet 3	Seine	Day	brown trout	81	86	5.4	1.02	none	unknown	
South Lake	Inlet 3	Seine	Day	rainbow trout	51	54	1.4	1.06	none	unknown	
South Lake	Inlet 1 to Inlet 2	E-fish	Day	brook trout	85	89	6.8	1.11	none	unknown	
South Lake	Inlet 1 to Inlet 2	E-fish	Day	brook trout	88	93	8.9	1.31	none	unknown	

#### Table C-1South Lake Fish Capture Data, June 2020

Peservoir	Site ID	Sample	Sample Period (day or	Species	Fork Length	Total Length	Weight	k-	Otolith/ Scale Sample	Origin	Notos
South Lako	Inlot 1 to Inlot 2	E fich	Dov	brook trout	150	167	(9) 60	1 10	nono	unknown	notes
South Lake			Day	brook trout	139	107	00	1.49			
South Lake	Inlet 1 to Inlet 2	E-lish	Day	brook trout	172	181	60	1.18	SL2-7	unknown	
South Lake	Inlet 1 to Inlet 2	E-fish	Day	brook trout	184	192	70	1.12	none	unknown	
South Lake	Inlet 1 to Inlet 2	E-fish	Day	brook trout	213	221	110	1.14	none	unknown	
South Lake	Inlet 1 to Inlet 2	E-fish	Day	brook trout	215	224	110	1.11	SL2-9	unknown	Jaw deformed
South Lake	Inlet 1 to Inlet 2	E-fish	Day	brook trout	221	230	120	1.11	SL2-10	unknown	
South Lake	Inlet 1 to Inlet 2	E-fish	Day	brook trout	225	235	80	0.70	SL2-1	unknown	
South Lake	Inlet 1 to Inlet 2	E-fish	Day	brook trout	225	236	70	0.61	SL2-2	unknown	Injured
South Lake	Inlet 1 to Inlet 2	E-fish	Day	brook trout	238	252	160	1.19	SL2-8	unknown	
South Lake	Inlet 1 to Inlet 2	E-fish	Day	brook trout	253	255	140	0.86	SL2-5	unknown	
South Lake	Inlet 1 to Inlet 2	E-fish	Day	brown trout	265	279	110	0.59	SL2-12	unknown	Dead before capture
South Lake	Inlet 1 to Inlet 2	E-fish	Day	brown trout	315	329	340	1.09	SL2-11	unknown	
South Lake	Inlet 1 to Inlet 2	E-fish	Day	rainbow trout	233	247	170	1.34	SL2-6	wild	Ripe male
South Lake	Inlet 1 to Inlet 2	E-fish	Day	rainbow trout	235	250	130	1.00	none	hatchery	Unhealthy
South Lake	Inlet 1 to Inlet 2	E-fish	Day	rainbow trout	313	322	280	0.91	SL2-3	unknown	Mature/ripe male
South Lake	Inlet 1 to Inlet 2	E-fish	Day	rainbow trout	313	320	280	0.91	none	unknown	Ripe female
South Lake	Inlet 1 to Inlet 2	E-fish	Day	rainbow trout	315	322	310	0.99	SL2-4	unknown	Ripe female
South Lake	Inlet 2 to Inlet 3	E-fish	Day	brook trout	93	96	8.6	1.07	none	unknown	
South Lake	Inlet 2 to Inlet 3	E-fish	Day	brook trout	100	104	10.3	1.03	none	unknown	
South Lake	Inlet 2 to Inlet 3	E-fish	Day	brook trout	160	165	40	0.98	none	unknown	
South Lake	Inlet 2 to Inlet 3	E-fish	Day	brook trout	180	189	90	1.54	none	unknown	

Reservoir	Site ID	Sample Method	Sample Period (day or night)	Species	Fork Length (mm)	Total Length (mm)	Weight (a)	k- value <sup>1</sup>	Otolith/ Scale Sample ID	Origin	Notes
South Lake	Inlet 2 to Inlet 3	E-fish	Dav	brook trout	202	210	120	1.46	none	unknown	
South Lake	Inlet 2 to Inlet 3	E-fish	y Dav	brook trout	210	221	130	1 40	none	unknown	
South Lake	Inlet 2 to Inlet 3	E-fish	Dav	brook trout	211	221	120	1 28	none	unknown	
South Lake	Inlet 2 to Inlet 3	E-fish	Day	brook trout	231	238	130	1.20	none	unknown	
South Lake	Inlet 2 to Inlet 3	E fich	Day	brook trout	233	243	130	1.03	none	unknown	
South Lake			Day	brook trout	233	243	140	1.00	none		
South Lake	iniet 2 to iniet 3	E-IISN	Day	Drook trout	234	245	140	1.09	none	unknown	
South Lake	Inlet 2 to Inlet 3	E-fish	Day	brown trout	82	86	5.9	1.07	none	unknown	
South Lake	Inlet 2 to Inlet 3	E-fish	Day	brown trout	330	345	320	0.89	SL2-18	unknown	
South Lake	Inlet 2 to Inlet 3	E-fish	Day	rainbow trout	58	61	2.4	1.23	none	unknown	
South Lake	Inlet 2 to Inlet 3	E-fish	Day	rainbow trout	146	154	50	1.61	none	unknown	Dark w/ parr marks
South Lake	Inlet 2 to Inlet 3	E-fish	Day	rainbow trout	149	156	41.1	1.24	none	wild	Mature male
South Lake	Inlet 2 to Inlet 3	E-fish	Day	rainbow trout	162	171	60	1.41	none	unknown	Parr marks
South Lake	Inlet 2 to Inlet 3	E-fish	Day	rainbow trout	180	194	30	0.51	SL2-17	unknown	Dark color
South Lake	Inlet 2 to Inlet 3	E-fish	Day	rainbow trout	199	215	120	1.52	none	unknown	
South Lake	Inlet 2 to Inlet 3	E-fish	Day	rainbow trout	211	222	100	1.06	none	hatchery	
South Lake	Inlet 2 to Inlet 3	E-fish	Day	rainbow trout	241	256	180	1.29	SL2-14	unknown	Dark color
South Lake	Inlet 2 to Inlet 3	E-fish	Day	rainbow trout	268	284	220	1.14	SL2-15	wild	Mature male & dark
South Lake	Inlet 2 to Inlet 3	E-fish	Day	rainbow trout	275	280	190	0.91	SL2-16	unknown	
South Lake	Inlet 2 to Inlet 3	E-fish	Day	rainbow trout	291	304	100	0.41	none	unknown	
South Lake	Inlet 2 to Inlet 3	E-fish	Day	rainbow trout	314	322	240	0.78	SL2-13	unknown	Male, mature & dark

Reservoir	Site ID	Sample Method	Sample Period (day or night)	Species	Fork Length (mm)	Total Length (mm)	Weight (g)	k- value <sup>1</sup>	Otolith/ Scale Sample ID	Origin	Notes
SouthLake	Inlet 2 to Inlet 3	F-fich	Dav	rainhow trout	315	323	170	0.54	none	unknown	Ripe female, missing
South Lake	Inlet 2 to Inlet 3	E-fish	Day	rainbow trout	325	334	341	0.04	none	unknown	
South Lake	Inlet 2 to Inlet 3	E-fish	Day	rainbow trout	350	380	520	1.21	none	hatchery	All fins worn & operculum partially missing
South Lake	North from launch ramp	E-fish	Day	NO FISH				No Entry	none	unknown	
South Lake	Inlet 2	E-fish	Night	brook trout	219	228	130	1.24	none	unknown	
South Lake	Inlet 2	E-fish	Night	brook trout	225	234	150	1.32	none	unknown	
South Lake	Inlet 2	E-fish	Night	brook trout	241	249	180	1.29	none	unknown	
South Lake	Inlet 2	E-fish	Night	brook trout	250	263	180	1.15	SL3-18	unknown	
South Lake	Inlet 2	E-fish	Night	brook trout	254	261	180	1.10	SL3-11	unknown	
South Lake	Inlet 2	E-fish	Night	brook trout	280	293	190	0.87	SL3-15	unknown	
South Lake	Inlet 2	E-fish	Night	brown trout	238	250	180	1.34	SL3-12	unknown	
South Lake	Inlet 2	E-fish	Night	brown trout	265	279	220	1.18	none	unknown	
South Lake	Inlet 2	E-fish	Night	brown trout	266	280	210	1.12	none	unknown	
South Lake	Inlet 2	E-fish	Night	brown trout	269	275	190	0.98	none	hatchery	
South Lake	Inlet 2	E-fish	Night	brown trout	278	287	260	1.21	none	unknown	
South Lake	Inlet 2	E-fish	Night	brown trout	291	305	320	1.30	none	unknown	
South Lake	Inlet 2	E-fish	Night	brown trout	309	321	240	0.81	SL3-19	unknown	Skinny
South Lake	Inlet 2	E-fish	Night	rainbow trout	125	134	40	2.05	SL3-21	wild	

		Sample	Sample Period (day or		Fork Length	Total Length	Weight	k-	Otolith/ Scale Sample		
Reservoir	Site ID	Method	night)	Species	(mm)	(mm)	(g)	value <sup>1</sup>	ID	Origin	Notes
South Lake	Inlet 2	E-fish	Night	rainbow trout	159	167	70	1.74	SL3-20	wild	
South Lake	Inlet 2	E-fish	Night	rainbow trout	240	240	140	1.01	none	hatchery	
South Lake	Inlet 2	E-fish	Night	rainbow trout	245	256	140	0.95	none	hatchery	Skinny
South Lake	Inlet 2	E-fish	Night	rainbow trout	247	261	220	1.46	SL3-17	wild	
South Lake	Inlet 2	E-fish	Night	rainbow trout	250	263	180	1.15	SL3-13	wild	Dark male, ripe
South Lake	Inlet 2	E-fish	Night	rainbow trout	275	285	220	1.06	SL3-16	wild	
South Lake	Inlet 2	E-fish	Night	rainbow trout	280	295	290	1.32	none	hatchery	
South Lake	Inlet 2	E-fish	Night	rainbow trout	280	296	250	1.14	SL3-14	wild	Male
South Lake	Inlet 2	E-fish	Night	rainbow trout	280	300	260	1.18	none	hatchery	
South Lake	Inlet 2	E-fish	Night	rainbow trout	285	305	290	1.25	none	hatchery	
South Lake	Inlet 2	E-fish	Night	rainbow trout	287	295	280	1.18	none	unknown	
South Lake	Inlet 2	E-fish	Night	rainbow trout	290	300	280	1.15	none	hatchery	
South Lake	Inlet 2	E-fish	Night	rainbow trout	291	297	270	1.10	none	hatchery	
South Lake	Inlet 2	E-fish	Night	rainbow trout	295	311	320	1.25	SL3-10	unknown	
South Lake	Inlet 2	E-fish	Night	rainbow trout	295	305	310	1.21	none	hatchery	
South Lake	Inlet 2	E-fish	Night	rainbow trout	300	320	370	1.37	none	hatchery	
South Lake	Inlet 2	E-fish	Night	rainbow trout	301	315	240	0.88	none	unknown	
South Lake	Inlet 2	E-fish	Night	rainbow trout	302	311	280	1.02	none	unknown	
South Lake	Inlet 2	E-fish	Night	rainbow trout	303	319	350	1.26	none	hatchery	
South Lake	Inlet 2	E-fish	Night	rainbow trout	303	321	360	1.29	none	hatchery	
South Lake	Inlet 2	E-fish	Night	rainbow trout	305	310	320	1.13	none	hatchery	
South Lake	Inlet 2	E-fish	Night	rainbow trout	307	315	290	1.00	none	hatchery	

	011 15	Sample	Sample Period (day or	<b>.</b> .	Fork Length	Total Length	Weight	k-	Otolith/ Scale Sample		<b>N</b> <i>L</i>
Reservoir	Site ID	Method	night)	Species	(mm)	(mm)	(g)	value <sup>1</sup>	ID	Origin	Notes
South Lake	Inlet 2	E-fish	Night	rainbow trout	309	317	300	1.02	none	hatchery	
South Lake	Inlet 2	E-fish	Night	rainbow trout	310	320	330	1.11	none	hatchery	
South Lake	Inlet 2	E-fish	Night	rainbow trout	310	321	370	1.24	none	hatchery	
South Lake	Inlet 2	E-fish	Night	rainbow trout	311	315	350	1.16	none	hatchery	
South Lake	Inlet 2	E-fish	Night	rainbow trout	316	331	330	1.05	none	unknown	
South Lake	Inlet 2	E-fish	Night	rainbow trout	318	331	320	1.00	none	hatchery	
South Lake	Inlet 2	E-fish	Night	rainbow trout	320	331	380	1.16	none	hatchery	
South Lake	Inlet 2	E-fish	Night	rainbow trout	325	332	380	1.11	none	hatchery	
South Lake	Inlet 2	E-fish	Night	rainbow trout	325	331	360	1.05	none	hatchery	
South Lake	Inlet 2	E-fish	Night	rainbow trout	328	351	350	0.99	none	wild	
South Lake	Inlet 2	E-fish	Night	rainbow trout	335	345	470	1.25	none	hatchery	
South Lake	Inlet 2	E-fish	Night	rainbow trout	335	345	380	1.01	none	hatchery	
South Lake	Inlet 2	E-fish	Night	rainbow trout	340	358	470	1.20	none	hatchery	
South Lake	Inlet 2	E-fish	Night	rainbow trout	344	351	470	1.15	none	hatchery	
South Lake	Inlet 2	E-fish	Night	rainbow trout	345	355	460	1.12	none	hatchery	
South Lake	Inlet 2	E-fish	Night	rainbow trout	347	355	460	1.10	none	hatchery	
South Lake	Inlet 2	E-fish	Night	rainbow trout	360	366	510	1.09	none	hatchery	
South Lake	Inlet 2	E-fish	Night	rainbow trout	365	390	550	1.13	none	hatchery	
South Lake	Inlet 2	E-fish	Night	rainbow trout	365	380	550	1.13	none	hatchery	
South Lake	Inlet 2	E-fish	Night	rainbow trout	110	119	30	2.25	SL3-22	unknown	
South Lake	South Shore	E-fish	Night	brook trout	125	132	20	1.02	SL3-25	wild	
South Lake	South Shore	E-fish	Night	brown trout	285	296	220	0.95	none	unknown	

_	<b>0</b> 11 <b>15</b>	Sample	Sample Period (day or		Fork Length	Total Length	Weight	k-	Otolith/ Scale Sample		
Reservoir	Site ID	Method	night)	Species	(mm)	(mm)	(g)	value <sup>1</sup>	ID	Origin	Notes
South Lake	South Shore	E-fish	Night	rainbow trout	139	148	45	1.68	SL3-23	wild	
South Lake	South Shore	E-fish	Night	rainbow trout	187	198	90	1.38	SL3-26	unknown	
South Lake	South Shore	E-fish	Night	rainbow trout	235	250	140	1.08	SL3-24	wild	
South Lake	South Shore	E-fish	Night	rainbow trout	280	293	270	1.23	none	hatchery	
South Lake	South Shore	E-fish	Night	rainbow trout	295	315	290	1.13	none	wild	Pretty fish
South Lake	South Shore	E-fish	Night	rainbow trout	323	338	410	1.22	none	unknown	
South Lake	South Shore	E-fish	Night	rainbow trout	355	375	440	0.98	none	hatchery	
South Lake	South Shore	E-fish	Night	rainbow trout	360	370	540	1.16	none	hatchery	
South Lake	North shore	E-fish	Night	brook trout	117	122	20	1.25	SL3-32	unknown	
South Lake	North shore	E-fish	Night	brook trout	188	195	80	1.20	SL3-31	unknown	
South Lake	North shore	E-fish	Night	brook trout	239	252	140	1.03	none	unknown	
South Lake	North shore	E-fish	Night	brown trout	250	263	210	1.34	none	unknown	
South Lake	North shore	E-fish	Night	brown trout	250	265	220	1.41	none	unknown	
South Lake	North shore	E-fish	Night	rainbow trout	162	173	70	1.65	none	unknown	
South Lake	North shore	E-fish	Night	rainbow trout	182	195	80	1.33	none	unknown	
South Lake	North shore	E-fish	Night	rainbow trout	290	305	280	1.15	none	unknown	
South Lake	North shore	E-fish	Night	rainbow trout	300	312	220	0.81	none	Hatchery	
South Lake	North shore	E-fish	Night	brook trout	199	210	120	1.52	SL3-30	unknown	
South Lake	North shore	E-fish	Night	brook trout	214	221	110	1.12	none	unknown	
South Lake	North shore	E-fish	Night	brook trout	230	245	130	1.07	none	unknown	
South Lake	North shore	E-fish	Night	brown trout	264	275	180	0.98	none	unknown	
South Lake	North shore	E-fish	Night	brown trout	270	284	220	1.12	none	unknown	

Reservoir	Site ID	Sample	Sample Period (day or night)	Species	Fork Length (mm)	Total Length (mm)	Weight	k- value <sup>1</sup>	Otolith/ Scale Sample	Origin	Notes
South Lake	North shore	E-fish	Night	rainbow trout	141	150	40	1 43	none	wild	Holes
South Lake	North shore	E-fish	Night	rainbow trout	177	191	80	1 44	none	wild	
South Lake	North shore	E-fish	Night	rainbow trout	182	195	70	1.14	SI 3-28	unknown	
South Lake	North shore	E-fish	Night	rainbow trout	207	225	100	1.10	SI 3-27	unknown	
South Lake	North shore	E-fish	Night	rainbow trout	220	238	140	1.31	none	hatchery	Tapered body, deformed
South Lake	North shore	E-fish	Night	rainbow trout	240	265	170	1.23	none	hatchery	
South Lake	North shore	E-fish	Night	rainbow trout	268	275	200	1.04	none	hatchery	
South Lake	North shore	E-fish	Night	rainbow trout	280	300	250	1.14	none	hatchery	
South Lake	North shore	E-fish	Night	rainbow trout	280	291	220	1.00	none	hatchery	
South Lake	North shore	E-fish	Night	rainbow trout	288	300	160	0.67	none	unknown	Skinny, likely hatchery
South Lake	North shore	E-fish	Night	rainbow trout	290	298	240	0.98	none	hatchery	
South Lake	North shore	E-fish	Night	rainbow trout	292	307	270	1.08	none	hatchery	
South Lake	North shore	E-fish	Night	rainbow trout	295	319	290	1.13	none	unknown	
South Lake	North shore	E-fish	Night	rainbow trout	300	300	290	1.07	none	hatchery	
South Lake	North shore	E-fish	Night	rainbow trout	300	310	280	1.04	none	unknown	
South Lake	North shore	E-fish	Night	rainbow trout	310	325	320	1.07	none	hatchery	
South Lake	North shore	E-fish	Night	rainbow trout	312	320	285	0.94	none	hatchery	
South Lake	North shore	E-fish	Night	rainbow trout	324	335	330	0.97	none	hatchery	Female, mature
South Lake	North shore	E-fish	Night	rainbow trout	325	340	340	0.99	none	hatchery	
South Lake	North shore	E-fish	Night	rainbow trout	357	375	450	0.99	SL3-29	wild	
South Lake	Inlet 1	E-fish	Night	brook trout	163	171	70	1.62	none	unknown	

		Sample	Sample Period (day or		Fork Length	Total Length	Weight	k-	Otolith/ Scale Sample		
Reservoir	Site ID	Method	night)	Species	(mm)	(mm)	(g)	value <sup>1</sup>	ID	Origin	Notes
South Lake	Inlet 1	E-fish	Night	brook trout	216	229	130	1.29	none	unknown	
South Lake	Inlet 1	E-fish	Night	brown trout	261	275	220	1.24	SL3-4	unknown	
South Lake	Inlet 1	E-fish	Night	brown trout	262	277	220	1.22	SL3-5	unknown	
South Lake	Inlet 1	E-fish	Night	brown trout	269	281	220	1.13	SL3-6	unknown	
South Lake	Inlet 1	E-fish	Night	brown trout	287	299	220	0.93	SL3-3	unknown	
South Lake	Inlet 1	E-fish	Night	brown trout	288	301	240	1.00	none	unknown	
South Lake	Inlet 1	E-fish	Night	brown trout	318	335	320	1.00	SL3-8	unknown	
South Lake	Inlet 1	E-fish	Night	rainbow trout	139	146	50	1.86	SL3-9	unknown	
South Lake	Inlet 1	E-fish	Night	rainbow trout	181	191	80	1.35	SL3-7	unknown	
South Lake	Inlet 1	E-fish	Night	rainbow trout	240	253	110	0.80	none	hatchery	Skinny
South Lake	Inlet 1	E-fish	Night	rainbow trout	245	262	150	1.02	none	hatchery	Unhealthy (thin)
South Lake	Inlet 1	E-fish	Night	rainbow trout	249	260	150	0.97	none	hatchery	
South Lake	Inlet 1	E-fish	Night	rainbow trout	259	270	190	1.09	none	wild	Male, ripe
South Lake	Inlet 1	E-fish	Night	rainbow trout	280	294	150	0.68	none	hatchery	Fishing line w/ weight hanging from mouth
South Lake	Inlet 1	E-fish	Night	rainbow trout	294	300	230	0.91	none	unknown	
South Lake	Inlet 1	E-fish	Night	rainbow trout	306	321	230	0.80	none	unknown	
South Lake	Inlet 1	E-fish	Night	rainbow trout	308	315	320	1.10	none	hatchery	Female expelling eggs
South Lake	Inlet 1	E-fish	Night	rainbow trout	310	319	260	0.87	SL3-2	wild	
South Lake	Inlet 1	E-fish	Night	rainbow trout	321	347	330	1.00	none	hatchery	

Reservoir	Site ID	Sample Method	Sample Period (day or night)	Species	Fork Length (mm)	Total Length (mm)	Weight (g)	k- value <sup>1</sup>	Otolith/ Scale Sample ID	Origin	Notes
South Lake	Inlet 1	E-fish	Night	rainbow trout	322	329	330	0.99	none	hatchery	
South Lake	Inlet 1	E-fish	Night	rainbow trout	325	340	350	1.02	none	hatchery	
South Lake	Inlet 1	E-fish	Night	rainbow trout	331	345	260	0.72	SL3-1	unknown	Silver color, but no worn fins
South Lake	Inlet 1	E-fish	Night	rainbow trout	331	348	400	1.10	none	hatchery	
South Lake	Inlet 1	E-fish	Night	rainbow trout	345	363	380	0.93	none	hatchery	Worn pectoral fins
South Lake	Inlet 1	E-fish	Night	rainbow trout	353	358	470	1.07	none	hatchery	
South Lake	Inlet 1	E-fish	Night	rainbow trout	358	372	440	0.96	none	hatchery	
South Lake	Inlet 1	E-fish	Night	rainbow trout	365	370	500	1.03	none	hatchery	
South Lake	Inlet 3	E-fish	Day	brook trout	95	101	11.5	1.34	SL-1	unknown	
South Lake	Inlet 3	E-fish	Day	brook trout	236	245	140	1.07	none	unknown	
South Lake	Inlet 3	E-fish	Day	brook trout	244	254	160	1.10	none	unknown	
South Lake	Inlet 3	E-fish	Day	brown trout	282	296	220	0.98	none	unknown	
South Lake	Inlet 3	E-fish	Day	rainbow trout	62	65	3	1.26	none	wild	
South Lake	Inlet 3	E-fish	Day	rainbow trout	271	290	210	1.06	none	hatchery	
South Lake	Inlet 3	E-fish	Day	rainbow trout	329	351	370	1.04	none	wild	
South Lake	Inlet 3	E-fish	Day	rainbow trout	349	365	460	1.08	none	hatchery	
South Lake	Inlet 2	E-fish	Day	brook trout	154	162	41.7	1.14	SL-2	unknown	
South Lake	Inlet 2	E-fish	Day	rainbow trout	331	338	360	0.99	none	unknown	Ripe female
South Lake	South Shore	E-fish	Day	brown trout	68	71	2.8	0.89	none	unknown	
South Lake	South Shore	E-fish	Day	brown trout	324	334	380	1.12	SL-3	unknown	
South Lake	South Shore	E-fish	Day	rainbow trout	72	75	3.5	0.94	none	unknown	

Reservoir	Site ID	Sample Method	Sample Period (day or night)	Species	Fork Length (mm)	Total Length (mm)	Weight (g)	k- value <sup>1</sup>	Otolith/ Scale Sample ID	Origin	Notes
South Lake	South Shore	E-fish	Day	rainbow trout	153	157	35	0.98	none	unknown	Mort
South Lake	South Shore	E-fish	Day	rainbow trout	228	241	120	1.01	none	unknown	Mature male
South Lake	South Shore	E-fish	Day	rainbow trout	231	247	150	1.22	none	unknown	
South Lake	South Shore	E-fish	Day	rainbow trout	280	287	190	0.87	none	unknown	
South Lake	South Shore	E-fish	Day	rainbow trout	288	300	290	1.21	none	unknown	Mature male
South Lake	South Shore	E-fish	Day	rainbow trout	437	446	700	0.84	SL-4	unknown	

<sup>1</sup> Fish condition factor

Reservoir	Site ID	Sample Method	Sample Period (day or night)	Species	Fork Length (mm)	Total Length (mm)	Weight	k- value <sup>1</sup>	Otolith/ Scale Sample	Origin	Notes
	Cove near	method	ingity	Owens		()	(9/	Value		ongin	Notes
Lake Sabrina	marina	E-fish	Day	sucker	249	266	130.0	0.84	SAB-2	unknown	
	Cove near			Owens							
Lake Sabrina	marina	E-fish	Day	sucker	260	275	165.0	0.94	SAB-1	unknown	
	Cove near			Owens							
Lake Sabrina	marina	E-fish	Day	sucker	265	281	180.0	0.97	SAB-3	unknown	
Lake Sabrina	cove near marina	E-fish	Day	rainbow trout	300	319	220.0	0.81	SAB-4	unknown	
Lake Sabrina	East of southern inlet	E-fish	Day	Owens sucker	115	121	20.9	1.37	SAB-9	unknown	
Lake Sabrina	East of southern inlet	E-fish	Day	Owens sucker	127	135	20.1	0.98	SAB- 12	unknown	
Lake Sabrina	East of southern inlet	E-fish	Day	Owens sucker	160	170	56.4	1.38	SAB-8	unknown	
Lake Sabrina	East of southern inlet	E-fish	Day	Owens sucker	218	230	70.0	0.68	none	unknown	
Lake Sabrina	East of southern inlet	E-fish	Day	Owens sucker	245	260	150.0	1.02	none	wild	
Lake Sabrina	East of southern inlet	E-fish	Day	Owens sucker	261	282	160.0	0.90	SAB-6	unknown	
Lake Sabrina	East of southern inlet	E-fish	Day	Owens sucker	263	284	290.0	1.59	SAB- 10	unknown	
Lake Sabrina	East of southern inlet	E-fish	Day	Owens sucker	268	287	180.0	0.94	none	unknown	
Lake Sabrina	East of southern inlet	E-fish	Day	Owens sucker	288	305	260.0	1.09	none	unknown	
Lake Sabrina	East of southern inlet	E-fish	Day	Owens sucker	305	325	340.0	1.20	SAB-5	unknown	

#### Table C-2Lake Sabrina Fish Capture Data, June 2020

		Sample	Sample Period		Fork	Total	Waight	Le .	Otolith/ Scale		
Reservoir	Site ID	Method	night)	Species	(mm)	(mm)	(g)	k- value <sup>1</sup>	ID	Origin	Notes
	East of			Owens							
Lake Sabrina	southern inlet	E-fish	Day	sucker	318	335	390.0	1.21	SAB-7	unknown	
Lake Sabrina	East of southern inlet	E-fish	Day	rainbow trout	201	212	106.7	1.31	SAB- 14	wild	Mature male (milted)
Lake Sabrina	East of southern inlet	E-fish	Dav	rainbow trout	250	265	210.0	1.34	SAB- 15	wild	
Lako Sabrina	East of	E fich	Dov	rainbow trout	261	272	200.0	1 1 2	SAB-	wild	Photos
Lake Sabilia	Southern inlet	E-11511	Day		201	212	200.0	1.12	13	wiiu	Stub nose mort
Lake Sabrina	East of southern inlet	E-fish	Day	rainbow trout	298	314	200.0	0.76	SAB- 11	hatchery	found floating before capture
Lake Sabrina	East of southern inlet	E-fish	Day	rainbow trout	314	320	320.0	1.03	none	unknown	Missing eyeball
	Cove just north of main										
Lake Sabrina	inlet	E-fish	Day	none				na	none	unknown	
Lake Sabrina	North Shore, western end of lake	E-fish	Day	brook trout	103	107	10.8	0.99	none	unknown	
Lake Sabrina	North Shore, western end	F-fish	Dav	brook trout	104	109	9.1	0.81	none	unknown	
	North Shore, western end	E fich	Day	Owens	104	100	07.0	1.40	none		
	North Shore,	E-IISN	Day	SUCKER	124	133	21.3	1.43	none	unknown	
Lake Sabrina	western end of lake	E-fish	Day	Owens sucker	146	155	42.4	1.36	none	unknown	
Lake Sabrina	North Shore, western end of lake	E-fish	Day	Owens sucker	224	237	90.0	0.80	none	unknown	

		Sample	Sample Period (day or		Fork Length	Total Length	Weight	k-	Otolith/ Scale Sample		
Reservoir	Site ID	Method	night)	Species	(mm)	(mm)	(g)	value <sup>1</sup>	ID	Origin	Notes
Lake Sabrina	North Shore, western end of lake	E-fish	Day	Owens sucker	266	285	180.0	0.96	none	unknown	
Lake Sabrina	Cove near marina	E-fish	Day	Owens sucker	255	271	No entry	na	none	Unknown	Male
Lake Sabrina	Cove near marina	E-fish	Day	Owens sucker	341	367	450.0	1.13	SAB2- 1	unknown	Female, expelling eggs
Lake Sabrina	North shore mid reservoir	E-fish	Day	brook trout	176	185	100.0	1.83	none	wild	
Lake Sabrina	North shore mid reservoir	E-fish	Day	brook trout	205	215	120.0	1.39	none	wild	
Lake Sabrina	North shore mid reservoir	E-fish	Day	brook trout	230	236	150.0	1.23	none	wild	
Lake Sabrina	North shore mid reservoir	E-fish	Day	brook trout	239	248	160.0	1.17	SAB2- 5	wild	
Lake Sabrina	North shore mid reservoir	E-fish	Day	Owens sucker	160	170	30.0	0.73	none	unknown	Female
Lake Sabrina	North shore mid reservoir	E-fish	Day	Owens sucker	210	225	70.0	0.76	SAB2- 4	unknown	Female w/ eggs, narrow fin w/o tubercles
Lake Sabrina	North shore mid reservoir	E-fish	Day	Owens sucker	223	236	120.0	1.08	none	unknown	Narrow anal fin w/o tubercle. Female
Lake Sabrina	North shore mid reservoir	E-fish	Day	Owens sucker	234	249	150.0	1.17	none	unknown	Female
Lake Sabrina	North shore mid reservoir	E-fish	Day	Owens sucker	245	261	190.0	1.29	none	unknown	Male
Lake Sabrina	North shore mid reservoir	E-fish	Day	Owens sucker	265	285	220.0	1.18	none	unknown	Male
Lake Sabrina	North shore mid reservoir	E-fish	Day	Owens sucker	299	316	290.0	1.08	SAB2- 2	unknown	Female

		Sample	Sample Period (day or		Fork Length	Total Length	Weight	k-	Otolith/ Scale Sample		
Reservoir	Site ID	Method	night)	Species	(mm)	(mm)	(g)	value <sup>1</sup>	ID	Origin	Notes
Lake Sabrina	North shore mid reservoir	E-fish	Day	Owens sucker	300	319	210.0	0.78	SAB2- 3	unknown	Male, wide anal fin w/ tubercles
Lake Sabrina	North shore mid reservoir	E-fish	Day	rainbow trout	150	157	70.0	2.07	none	wild	
Lake Sabrina	North shore mid reservoir	E-fish	Day	rainbow trout	265	275	210.0	1.13	none	hatchery	
Lake Sabrina	Near SW trib	E-fish	Day	brook trout	82	86	6.1	1.11	none	unknown	
Lake Sabrina	Near SW trib	E-fish	Day	brook trout	112	117	12.6	0.90	none	unknown	
Lake Sabrina	Near SW trib	E-fish	Day	brook trout	187	196	73.3	1.12	SAB2- 9	unknown	
Lake Sabrina	Near SW trib	E-fish	Day	brook trout	214	227	110.0	1.12	SAB2- 10	unknown	
Lake Sabrina	Near SW trib	E-fish	Day	Owens sucker	250	268	190.0	1.22	none	unknown	Male
Lake Sabrina	Near SW trib	E-fish	Day	rainbow trout	44	46	1.0	1.17	none	unknown	
Lake Sabrina	Near SW trib	E-fish	Day	rainbow trout	68	72	2.4	0.76	none	unknown	
Lake Sabrina	Near SW trib	E-fish	Day	rainbow trout	228	240	140.0	1.18	none	unknown	
Lake Sabrina	Near SW trib	E-fish	Day	rainbow trout	260	274	170.0	0.97	none	hatchery	Really thin
Lake Sabrina	Near SW trib	E-fish	Day	rainbow trout	260	275	200.0	1.14	SAB2- 7	wild	Mature male
Lake Sabrina	Near SW trib	E-fish	Day	rainbow trout	267	280	220.0	1.16	SAB2- 6	wild	
Lake Sabrina	Near SW trib	E-fish	Day	rainbow trout	276	288	210.0	1.00	none	hatchery	Thin
Lake Sabrina	Near SW trib	E-fish	Day	rainbow trout	282	293	240.0	1.07	none	hatchery	Fungus on anal fin
Lake Sabrina	Near SW trib	E-fish	Day	rainbow trout	288	299	250.0	1.05	none	hatchery	Worn pec fins
Lake Sabrina	Near SW trib	E-fish	Day	rainbow trout	310	319	290.0	0.97	none	hatchery	
Lake Sabrina	Near SW trib	E-fish	Day	rainbow trout	311	320	295.0	0.98	none	unknown	
Lake Sabrina	Near SW trib	E-fish	Day	rainbow trout	313	328	330.0	1.08	none	unknown	Bright silvery/healthy

			Sample Period		Fork	Total			Otolith/ Scale		
Reservoir	Site ID	Sample Method	(day or night)	Species	Length (mm)	Length (mm)	Weight (a)	k- value <sup>1</sup>	Sample	Origin	Notes
		motriou	ingity	000000			(9/	Valuo	SAB2-	Ungin	110100
Lake Sabrina	Near SW trib	E-fish	Day	rainbow trout	350	370	450.0	1.05	8	unknown	Silvery/healthy
Lake Sabrina	Near SW trib	E-fish	Day	rainbow trout	380	393	630.0	1.15	none	hatchery	
									SAB3-		
Lake Sabrina	Tributaries	E-fish	Night	brook trout	195	204	115.0	1.55	28	unknown	
				Owens							
Lake Sabrina	Tributaries	E-fish	Night	sucker	114	121	20.0	1.35	none	unknown	
	<b>-</b> 11 ( )		<b>N</b> P 17	Owens	455	405		4.04	SAB3-		
Lake Sabrina	Iributaries	E-fish	Night	SUCKER	155	165	60.0	1.61	27	unknown	Female
Lake Sabrina	Tributaries	E-fish	Night	sucker	200	212	120.0	1.50	none	unknown	Male
			Ŭ	Owens							
Lake Sabrina	Tributaries	E-fish	Night	sucker	245	264	260.0	1.77	none	unknown	Female
				Owens							
Lake Sabrina	Tributaries	E-fish	Night	sucker	263	279	250.0	1.37	none	unknown	Female
				Owens							
Lake Sabrina	Tributaries	E-fish	Night	sucker	295	313	380.0	1.48	none	unknown	Female
	Tallastanias	E (	NP - L (	Owens	000	040	070.0	4 40			E
Lake Sabrina	Iributaries	E-TISN	Night	SUCKER	296	313	370.0	1.43	none	unknown	Female
Lake Sabrina	Tributaries	E-fish	Niaht	Sucker	300	319	340.0	1.26	none	unknown	Female
				Owens							
Lake Sabrina	Tributaries	E-fish	Night	sucker	310	329	410.0	1.38	none	unknown	Female
			Ŭ	Owens							
Lake Sabrina	Tributaries	E-fish	Night	sucker	329	346	515.0	1.45	none	unknown	Female
				Owens					SAB3-		
Lake Sabrina	Tributaries	E-fish	Night	sucker	360	385	550.0	1.18	26	unknown	Female
Lake Sabrina	Tributaries	E-fish	Night	rainbow trout	289	302	300.0	1.24	none	unknown	
Lake Sabrina	Tributaries	E-fish	Night	rainbow trout	290	305	220.0	0.90	none	hatchery	Skinny/unhealthy
Lake Sabrina	Tributaries	E-fish	Night	rainbow trout	292	306	290.0	1.16	none	unknown	

		Commite	Sample Period		Fork	Total	Mainh (		Otolith/ Scale		
Reservoir	Site ID	Sample	(day or night)	Species	Length (mm)	Length (mm)	weight (a)	K- value <sup>1</sup>	Sample	Origin	Notes
		motriou	ingit/	Cpoolog	()	()	(9/	Value		- Origin	Missing
											operculum and
Lake Sabrina	Iributaries	E-fish	Night	rainbow trout	310	316	320.0	1.07	none	hatchery	fins
Lake Sabrina	Tributaries	E-fish	Night	rainbow trout	316	325	340.0	1.08	none	hatchery	
Lake Sabrina	Tributaries	E-fish	Night	rainbow trout	320	325	300.0	0.92	none	hatchery	
Lake Sabrina	Tributaries	E-fish	Night	rainbow trout	320	335	330.0	1.01	none	hatchery	
Lake Sabrina	Tributaries	E-fish	Night	rainbow trout	321	326	390.0	1.18	none	hatchery	
Lake Sabrina	Tributaries	E-fish	Night	rainbow trout	321	335	340.0	1.03	none	hatchery	
Lake Sabrina	Tributaries	E-fish	Night	rainbow trout	325	335	340.0	0.99	none	hatchery	No fins
Lake Sabrina	Tributaries	E-fish	Night	rainbow trout	327	335	360.0	1.03	none	hatchery	Mature, female
Lake Sabrina	Tributaries	E-fish	Night	rainbow trout	329	341	390.0	1.10	none	hatchery	
Lake Sabrina	Tributaries	E-fish	Night	rainbow trout	355	369	410.0	0.92	none	hatchery	
Lake Sabrina	Tributaries	E-fish	Night	brook trout	77	81	6.2	1.36	none	unknown	
Lake Sabrina	Tributaries	E-fish	Night	brook trout	206	216	120.0	1.37	none	unknown	
Lake Sabrina	Tributaries	E-fish	Night	brook trout	226	237	150.0	1.30	none	unknown	
				Owens							
Lake Sabrina	Tributaries	E-fish	Night	sucker	115	122	40.0	2.63	none	unknown	
									SAB3-		
Lake Sabrina	Tributaries	E-fish	Night	rainbow trout	135	143	40.0	1.63	30	wild	
	Talkardardar	E (	NP als f	and the second second	045	004	450.0	4 5 4	SAB3-		
Lake Sabrina		E-TISN	Night	rainbow trout	215	231	150.0	1.51	29	WIIO	
Lake Sabrina	Tributaries	E-fish	Night	rainbow trout	216	220	140.0	1.39	none	WIID	
Lake Sabrina	Iributaries	E-fish	Night	rainbow trout	242	255	225.0	1.59	none	WIId	
Lake Sabrina	Tributaries	E-fish	Night	rainbow trout	256	267	190.0	1.13	none	wild	
Lake Sabrina	Tributaries	E-fish	Night	rainbow trout	282	296	295.0	1.32	none	wild	
Laka Cabrica	Tributeries	E Cale	Niaht	na ha ha a su tura sut	005	000	000.0	0.05		h a tab an i	Old tapered
Lake Sabrina			Night	rainbow trout	285	302	220.0	0.95	none	natchery	body/ unnealthy
Lake Sabrina			Night	rainbow trout	289	304	240.0	0.99	none		
Lake Sabrina	Iributaries	E-fish	Night	rainbow trout	291	305	300.0	1.22	none	wild	
Lake Sabrina	Tributaries	E-fish	Night	rainbow trout	295	314	280.0	1.09	none	wild	

Reservoir	Site ID	Sample	Sample Period (day or night)	Species	Fork Length (mm)	Total Length (mm)	Weight	k- value <sup>1</sup>	Otolith/ Scale Sample	Origin	Notes
Lake Sabrina	Tributaries	F-fish	Night	rainbow trout	305	325	290.0	1 02	none	unknown	notes
Lake Sabrina	Tributaries	E-fish	Night	rainbow trout	315	324	370.0	1 18	none	hatchery	
Lake Sabrina	Tributaries	E-fish	Night	rainbow trout	357	367	430.0	0.95	none	hatchery	
Lake Cabrina	Induando		rugin		001	001	100.0	0.00	SAB3-	liatoriory	
Lake Sabrina	Cove at dam	E-fish	Night	brook trout	130	139	26.3	1.20	2	unknown	
									SAB3-		
Lake Sabrina	Cove at dam	E-fish	Night	brook trout	195	202	100.0	1.35	13	unknown	
									SAB3-		
Lake Sabrina	Cove at dam	E-fish	Night	brook trout	197	207	90.1	1.18	14	unknown	
									SAB3-		
Lake Sabrina	Cove at dam	E-fish	Night	brook trout	215	223	110.0	1.11	12	unknown	
Laba Cabrina	Course at slave	E Cale	Nicolat	Owens	000	044	000.0	4.04			Mala
Lake Sabrina	Cove at dam	E-fisn	Night	SUCKER	230	244	200.0	1.64	none SAR2	unknown	Iviale
Lake Sabrina	Cove at dam	E_fich	Night	Owens	222	245	160.0	1 26	SADS- 7	unknown	Male
	Cove at uam	L-11311	Nigiti	Owens	200	243	100.0	1.20	SAB3-		
Lake Sabrina	Cove at dam	E-fish	Night	sucker	240	255	200.0	1.45	9	unknown	Male
				Owens					SAB3-		
Lake Sabrina	Cove at dam	E-fish	Night	sucker	246	260	210.0	1.41	10	unknown	Male
				Owens					SAB3-		
Lake Sabrina	Cove at dam	E-fish	Night	sucker	248	262	220.0	1.44	11	unknown	Male
				Owens							
Lake Sabrina	Cove at dam	E-fish	Night	sucker	254	270	230.0	1.40	none	unknown	Male
		E (	NP als f	Owens	055	070	000.0	4 00			N 4 - 1 -
Lake Sabrina	Cove at dam	E-TISN	Night	SUCKER	255	270	220.0	1.33	none	unknown	Male
Lake Sabrina	Cove at dam	F-fish	Night	owens	255	270	230.0	1 30	none	unknown	Mala
		L-11311	INIGIT	Owens	200	210	230.0	1.59	none		
Lake Sabrina	Cove at dam	E-fish	Night	sucker	265	278	250.0	1.34	none	unknown	Male
				Owens							
Lake Sabrina	Cove at dam	E-fish	Night	sucker	265	280	240.0	1.29	none	unknown	Male
Reservoir	Site ID	Sample Method	Sample Period (day or night)	Species	Fork Length (mm)	Total Length (mm)	Weight (g)	k- value <sup>1</sup>	Otolith/ Scale Sample ID	Origin	Notes
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				Owens							
Lake Sabrina	Cove at dam	E-fish	Night	sucker	265	285	260.0	1.40	none	unknown	Male
Lake Sabrina	Cove at dam	E-fish	Night	Owens sucker	270	290	290.0	1.47	none	unknown	Male
				Owens							
Lake Sabrina	Cove at dam	E-fish	Night	sucker	270	285	260.0	1.32	none	unknown	Male
Lake Sabrina	Cove at dam	E-fish	Night	Owens sucker	270	283	280.0	1.42	none	unknown	Male
				Owens							
Lake Sabrina	Cove at dam	E-fish	Night	sucker	272	290	310.0	1.54	none	unknown	Female
Lake Sabrina	Cove at dam	E-fish	Night	Owens sucker	275	290	290.0	1.39	none	unknown	Female
				Owens							
Lake Sabrina	Cove at dam	E-fish	Night	sucker	277	295	300.0	1.41	none	unknown	Female
Laka Cabrina	Cause at dam	E fich	Niaht	Owens	070	200	220.0	4 5 4			Mala
Lake Sabrina	Cove at dam	E-IISII	Nigrit	Sucker	210	290	330.0	1.54	none	unknown	Male
Lake Sabrina	Cove at dam	E-fish	Night	sucker	280	292	250.0	1.14	none	unknown	Male
				Owens							
Lake Sabrina	Cove at dam	E-fish	Night	sucker	288	304	310.0	1.30	none	unknown	Male
				Owens							
Lake Sabrina	Cove at dam	E-fish	Night	sucker	295	310	350.0	1.36	none	unknown	Female
Lake Sabrina	Cove at dam	E-fish	Night	Owens sucker	304	320	420.0	1.49	none	unknown	Female, fat
				Owens							
Lake Sabrina	Cove at dam	E-fish	Night	sucker	305	320	320.0	1.13	none	unknown	Female
Laka Cabrica	Course at days	E Cab	Nilaht	Owens	040	007	440.0	4.00			
Lake Sabrina	Cove at dam	E-TISN	INIGHT	SUCKER	310	327	410.0	1.38	none	unknown	
Lake Sabrina	Cove at dam	E-fish	Night	Sucker	315	332	440.0	1.41	5AB3- 1	unknown	
				Owens	0.0	002					
Lake Sabrina	Cove at dam	E-fish	Night	sucker	315	332	420.0	1.34	none	unknown	Female

Reservoir	Site ID	Sample Method	Sample Period (day or night)	Species	Fork Length (mm)	Total Length (mm)	Weight (a)	k- value <sup>1</sup>	Otolith/ Scale Sample ID	Origin	Notes
				Owens	()	()	(3)				
Lake Sabrina	Cove at dam	E-fish	Night	sucker	320	340	520.0	1.59	none	unknown	Female
			Ŭ	Owens							
Lake Sabrina	Cove at dam	E-fish	Night	sucker	340	355	520.0	1.32	none	unknown	Male
				Owens					SAB3-		
Lake Sabrina	Cove at dam	E-fish	Night	sucker	350	370	580.0	1.35	8	unknown	Female
									SAB3-		
Lake Sabrina	Cove at dam	E-fish	Night	rainbow trout	240	255	130.0	0.94	3	unknown	
Lake Sabrina	Cove at dam	E-fish	Night	rainbow trout	263	272	160.0	0.88	none	hatchery	
Lake Sabrina	Cove at dam	E-fish	Night	rainbow trout	277	290	180.0	0.85	none	hatchery	
									SAB3-		
Lake Sabrina	Cove at dam	E-fish	Night	rainbow trout	280	291	250.0	1.14	6	unknown	Mort, ripe female
Lake Sabrina	Cove at dam	E-fish	Night	rainbow trout	290	303	260.0	1.07	none	hatchery	
Lake Sabrina	Cove at dam	E-fish	Night	rainbow trout	290	300	300.0	1.23	none	hatchery	
									SAB3-		
Lake Sabrina	Cove at dam	E-fish	Night	rainbow trout	305	315	290.0	1.02	5	unknown	
Lake Sabrina	Cove at dam	E-fish	Night	rainbow trout	307	315	280.0	0.97	none	hatchery	
									SAB3-		
Lake Sabrina	Cove at dam	E-fish	Night	rainbow trout	330	340	350.0	0.97	4	unknown	
Lake Sabrina	Cove at dam	E-fish	Night	rainbow trout	335	350	400.0	1.06	none	hatchery	No dorsal fin
	Cove near								SAB3-		
Lake Sabrina	marina	E-fish	Night	brook trout	215	224	120.0	1.21	18	unknown	
	Cove near	E C.1	NP b /	has all transf	004	007	4 4 0 0	4.05	SAB3-		
Lake Sabrina	marina	E-TISN	Night	Drook trout	224	237	140.0	1.25		unknown	
Laka Sabrina	Cove near	E fich	Night	Owens	115	101	22.0	1 15	SAB3-	unknown	
Lake Sabrina	manna Covo poor	E-IISN	Night	SUCKER	115	121	22.0	1.45	20	unknown	
Lake Sabrina	marina	F-fish	Night	Sucker	127	13/	32.3	1 59	10	unknown	
		L-11911	night	Owens	121	134	52.5	1.00	13		
Lake Sabrina	marina	E-fish	Night	sucker	216	231	140.0	1 39	none	unknown	
	Cove near			Owens	2.0	201					
Lake Sabrina	marina	E-fish	Night	sucker	245	260	210.0	1.43	none	unknown	Male

Reservoir	Site ID	Sample Method	Sample Period (day or night)	Species	Fork Length (mm)	Total Length (mm)	Weight (q)	k- value¹	Otolith/ Scale Sample ID	Origin	Notes
	Cove near		57	Owens			(3/				
Lake Sabrina	marina	E-fish	Night	sucker	245	262	210.0	1.43	none	unknown	Male
	Cove near			Owens							
Lake Sabrina	marina	E-fish	Night	sucker	249	267	210.0	1.36	none	unknown	Male
	Cove near			Owens							
Lake Sabrina	marina	E-fish	Night	sucker	255	271	240.0	1.45	none	unknown	Male
	Cove near			Owens							
Lake Sabrina	marina	E-fish	Night	sucker	263	280	240.0	1.32	none	unknown	Male
	Cove near			Owens							
Lake Sabrina	marina	E-fish	Night	sucker	267	282	260.0	1.37	none	unknown	Male
	Cove near			Owens							
Lake Sabrina	marina	E-fish	Night	sucker	273	290	260.0	1.28	none	unknown	Male
	Cove near			Owens							
Lake Sabrina	marina	E-fish	Night	sucker	275	295	300.0	1.44	none	unknown	Female
	Cove near			Owens							
Lake Sabrina	marina	E-fish	Night	sucker	291	312	300.0	1.22	none	unknown	Male
	Cove near			Owens							
Lake Sabrina	marina	E-fish	Night	sucker	295	314	350.0	1.36	none	unknown	Male
	Cove near			Owens							
Lake Sabrina	marina	E-fish	Night	sucker	298	318	300.0	1.13	none	unknown	Male
	Cove near			Owens							
Lake Sabrina	marina	E-fish	Night	sucker	308	327	360.0	1.23	none	unknown	Female
	Cove near								SAB3-		
Lake Sabrina	marina	E-fish	Night	rainbow trout	248	255	160.0	1.05	16	unknown	
	Cove near		<b>N</b> 12 <b>1</b> <i>1</i>		0.05	070	400.0	0.00			
Lake Sabrina	marina	E-fish	Night	rainbow trout	265	273	160.0	0.86	none	unknown	
	Cove near	<b>–</b> <i>e</i> - 1	Nicola	natala averte en t	000	077	000.0	4.40			Din a fami ala
Lake Sabrina	marina	E-TISN	Night	rainbow trout	268	211	230.0	1.19	none	unknown	Ripe temale
Laka Sabrina	Cove near	E fich	Night	rainhour travit	220	244	E00 0	1 20	SAB3-	unknown	
Lake Sabrina	Northwoot	E-IISN	inight		330	341	0.000	1.39	15	UNKNOWN	
Laka Cabring	Northwest	E fich	Niaht	hroat trout	100	000	00.0	4.04	SAB3-	unlunguur	
Lake Sabrina	snore	E-TISN	INIGNT	DIOOK Trout	190	203	90.0	1.31	23	unknown	

Reservoir	Site ID	Sample Method	Sample Period (day or night)	Species	Fork Length (mm)	Total Length (mm)	Weight (q)	k- value <sup>1</sup>	Otolith/ Scale Sample ID	Origin	Notes
	Northwest		Ŭ /	•						Ŭ	
Lake Sabrina	shore	E-fish	Night	brook trout	216	223	140.0	1.39	none	unknown	
	Northwest										
Lake Sabrina	shore	E-fish	Night	brook trout	222	222	130.0	1.19	none	unknown	
	Northwest			Owens					SAB3-		
Lake Sabrina	shore	E-fish	Night	sucker	120	124	25.0	1.45	25	unknown	
	Northwest			Owens					SAB3-		
Lake Sabrina	shore	E-fish	Night	sucker	160	172	70.0	1.71	24	unknown	Male
	Northwest							No	SAB3-		Brown trout too
Lake Sabrina	shore	E-fish	Night	brown trout	648	648		Entry	21	wild	large to weigh
	Northwest			Owens							
Lake Sabrina	shore	E-fish	Night	sucker	211	221	140.0	1.49	none	unknown	
	Northwest			Owens							
Lake Sabrina	shore	E-fish	Night	sucker	228	245	190.0	1.60	none	unknown	Male
	Northwest			Owens							
Lake Sabrina	shore	E-fish	Night	sucker	240	255	250.0	1.81	none	unknown	Female
	Northwest			Owens							
Lake Sabrina	shore	E-fish	Night	sucker	241	256	200.0	1.43	none	unknown	Male
	Northwest			Owens							
Lake Sabrina	shore	E-fish	Night	sucker	249	263	200.0	1.30	none	unknown	Male
	Northwest			Owens							
Lake Sabrina	shore	E-fish	Night	sucker	250	265	230.0	1.47	none	unknown	Female
	Northwest			Owens							
Lake Sabrina	shore	E-fish	Night	sucker	260	279	260.0	1.48	none	unknown	Male
	Northwest			Owens							
Lake Sabrina	shore	E-fish	Night	sucker	268	285	270.0	1.40	none	unknown	Male
	Northwest			Owens							
Lake Sabrina	shore	E-fish	Night	sucker	288	308	345.0	1.44	none	unknown	
	Northwest			Owens			050.0				
Lake Sabrina	shore	E-fish	Night	sucker	289	306	350.0	1.45	none	unknown	Female
	Northwest			Owens			100 -				
Lake Sabrina	shore	E-tish	Night	sucker	306	323	420.0	1.47	none	unknown	

		Sampla	Sample Period		Fork	Total	Woight	k.	Otolith/ Scale		
Reservoir	Site ID	Method	night)	Species	(mm)	(mm)	(g)	value <sup>1</sup>	ID	Origin	Notes
	Northwest			Owens							
Lake Sabrina	shore	E-fish	Night	sucker	315	333	440.0	1.41	none	unknown	Female
	Northwest			Owens							
Lake Sabrina	shore	E-fish	Night	sucker	345	370	670.0	1.63	none	unknown	Female
	Northwest										
Lake Sabrina	shore	E-fish	Night	rainbow trout	186	202	110.0	1.71	none	unknown	
	Northwest				004		445.0	4.40	SAB3-		
Lake Sabrina	shore	E-fish	Night	rainbow trout	201	216	115.0	1.42	- 22	unknown	
Laka Sabrina	Northwest	E fich	Night	rainhour trout	206	222	120.0	1 40		unknown	
Lake Sabrina	Northwoot	E-IISI	Night		206		130.0	1.49	none	unknown	
Lake Sabrina	shore	F-fish	Night	rainbow trout	253	271	200.0	1 24	none	unknown	
	Northwest		Night		200	211	200.0	1.27	none	dilkilowii	
Lake Sabrina	shore	E-fish	Night	rainbow trout	263	276	290.0	1.59	none	hatcherv	
	Northwest										
Lake Sabrina	shore	E-fish	Night	rainbow trout	275	288	170.0	0.82	none	hatchery	Unhealthy/skinny
	Northwest										
Lake Sabrina	shore	E-fish	Night	rainbow trout	281	291	270.0	1.22	none	hatchery	
	Northwest										
Lake Sabrina	shore	E-fish	Night	rainbow trout	291	314	300.0	1.22	none	unknown	
	Northwest										
Lake Sabrina	shore	E-fish	Night	rainbow trout	299	310	210.0	0.79	none	hatchery	Missing eye
	Northwest										
Lake Sabrina	shore	E-fish	Night	rainbow trout	312	327	260.0	0.86	none	hatchery	Unhealthy/skinny
Laka Cabrina	Northwest	E fich	Nicht		242	220	240.0	0.70		h a tab a m i	
Lake Sabrina	Shore	E-IISN	Night	rainbow trout	313	320	240.0	0.78	none	natchery	
Lake Sabrina	shore	E_fich	Night	rainbow trout	320	350	100.0	1 1 2	nono	unknown	
	Northweet	L-11511	Night		529	550	400.0	1.12	none	UINIOWII	
Lake Sabrina	shore	E-fish	Niaht	rainbow trout	341	360	470.0	1.19	none	hatcherv	
				Owens	0.11						
Lake Sabrina	Cove at dam	E-fish	Day	sucker	274	292	260.0	1.26	none	unknown	

Reservoir	Site ID	Sample	Sample Period (day or night)	Species	Fork Length	Total Length (mm)	Weight	k- value <sup>1</sup>	Otolith/ Scale Sample	Origin	Notes
Reserven	South shore	Mictilou	ingity	Opecies	(1111)	()	(9)	Value		Oligin	Hotes
	western end										
Lake Sabrina	of lake	E-fish	Dav	brook trout	133	137	19.8	0.84	SB4-2	unknown	
	South shore,										
	western end										
Lake Sabrina	of lake	E-fish	Day	brook trout	167	178	52.0	1.12	none	unknown	
	South shore,										
	western end		_								
Lake Sabrina	of lake	E-fish	Day	brook trout	204	211	70.0	0.82	none	unknown	
	South shore,			0							
Laka Cabrina	western end	E fich	Dev	Owens	000	054	200.0	1 10		un lun au un	Mala
Lake Sabrina	OI lake	E-IISN	Day	SUCKER	239	254	200.0	1.40	none	unknown	wale
	South Shore,			Owens							
Lake Sabrina	of lake	F-fish	Dav	sucker	275	291	310.0	1 49	none	unknown	Female
	South shore.		Day		2.0		01010				1 officio
	western end										
Lake Sabrina	of lake	E-fish	Day	rainbow trout	226	235	180.0	1.56	none	wild	
	South shore,		-								
	western end										
Lake Sabrina	of lake	E-fish	Day	rainbow trout	270	284	160.0	0.81	none	hatchery	Silvery, no eye
	South shore,										
	western end	E (	D	and the second second	070	000	100.0	0.00			
Lake Sabrina	Of lake	E-fish	Day	rainbow trout	278	290	190.0	0.88	none	wild	
	South shore,										
Lake Sabrina	of lake	F-fish	Dav	rainbow trout	270	200	105.0	0 90	none	hatcherv	
	South shore	L-11311	Day		219	230	135.0	0.30	none	rateriery	
	western end										
Lake Sabrina	of lake	E-fish	Day	rainbow trout	287	298	150.0	0.63	none	hatcherv	
	South shore,										
	western end										
Lake Sabrina	of lake	E-fish	Day	rainbow trout	350	366	465.0	1.08	SB4-1	unknown	

Reservoir	Site ID	Sample Method	Sample Period (day or night)	Species	Fork Length (mm)	Total Length (mm)	Weight (g)	k- value <sup>1</sup>	Otolith/ Scale Sample ID	Origin	Notes
	North Shore, western end										
Lake Sabrina	of lake	E-fish	Day	brook trout	210	223	90.0	0.97	none	unknown	
Lake Sabrina	North Shore, western end of lake	E-fish	Day	Owens sucker	152	161	60.0	1.71	SB4-3	unknown	Female
Lake Sabrina	North Shore, western end of lake	F-fish	Day	Owens	310	322	370.0	1 24	none	unknown	Female

<sup>1</sup> Fish condition factor

				Fork	Total			Otolith/ Scale		
Decembrain		Sample	Crasica	Length	Length	Weight	<b>k</b> -	Sample	Oninin	Natas
Reservoir	Site ID	Method	Species	(mm)	(mm)	(g)	value'	ID	Origin	Notes
South Lake	South Shore	E-fish	brook trout	195	200	97.6	1.32	none	wild	
South Lake	South Shore	E-fish	brown trout	180	190	68.9	1.18	none	wild	
South Lake	South Shore	E-fish	rainbow trout	260	273	208.9	1.19	none	hatchery	
South Lake	South Shore	E-fish	brown trout	261	272	174.3	0.98	none	wild	
South Lake	Inlet 2- inlet 3	E-fish	rainbow trout	508	520.7	1,896.0	1.45	none	hatchery	75% fish caught at mouth of inlet
South Lake	Inlet 2- inlet 3	E-fish	rainbow trout	546.1	558.8	2,721.6	1.67	none	hatchery	Mort
South Lake	Inlet 2- inlet 3	E-fish	rainbow trout	520.7	527.1	2,268.0	1.61	none	hatchery	Mort
South Lake	Inlet 2- inlet 3	E-fish	brown trout	280	295	no entry	na	none	wild	
South Lake	Inlet 2- inlet 3	E-fish	brook trout	214	224	112.1	1.14	none	wild	
South Lake	Inlet 2- inlet 3	E-fish	brook trout	250	261	156.0	1.00	none	wild	
South Lake	Inlet 2- inlet 3	E-fish	brook trout	206	216	113.8	1.30	none	wild	
South Lake	Inlet 2- inlet 3	E-fish	brown trout	260	272	163.4	0.93	none	wild	
South Lake	Inlet 2- inlet 3	E-fish	brook trout	245	260	152.9	1.04	none	wild	
South Lake	Inlet 2- inlet 3	E-fish	brook trout	240	254	148.9	1.08	none	wild	
South Lake	Inlet 2- inlet 3	E-fish	brown trout	240	250	150.6	1.09	none	wild	
South Lake	Inlet 2- inlet 3	E-fish	brook trout	234	241	118.0	0.92	none	wild	
South Lake	Inlet 2- inlet 3	E-fish	brook trout	220	227	117.4	1.10	none	wild	
South Lake	Inlet 2- inlet 3	E-fish	brown trout	280	292	no entry	na	none	wild	No weight too heavy
South Lake	Inlet 2- inlet 3	E-fish	brown trout	270	283	no entry	na	none	wild	No weight too heavy
South Lake	Inlet 2- inlet 3	E-fish	brook trout	240	247	142.9	1.03	none	wild	
South Lake	Inlet 2- inlet 3	E-fish	rainbow trout	375	393	no entry	na	none	hatchery	No weight too heavy
South Lake	Inlet 2- inlet 3	E-fish	brown trout	290	296	no entry	na	none	wild	
South Lake	Inlet 2- inlet 3	E-fish	rainbow trout	320	340	no entry	na	none	hatchery	No weight too heavy
South Lake	Inlet 2- inlet 3	E-fish	rainbow trout	248	264	no entry	na	none	hatchery	No weight too heavy
South Lake	Inlet 2- inlet 3	E-fish	rainbow trout	340	358	no entry	na	none	unknown	No weight too heavy

#### Table C-3 South Lake Fish Capture Data During Nighttime Boat Electrofishing, September 2020

		Comula		Fork	Total	Weight.	le.	Otolith/ Scale		
Reservoir	Site ID	Method	Species	(mm)	(mm)	(g)	k- value <sup>1</sup>	ID	Origin	Notes
South Lake	Inlet 2- inlet 3	E-fish	rainbow trout	312	322	no entry	na	none	hatchery	No weight too heavy
South Lake	Inlet 2- inlet 3	E-fish	rainbow trout	308	323	no entry	na	none	unknown	No weight too heavy
South Lake	Inlet 2- inlet 3	E-fish	rainbow trout	365	372	no entry	na	none	hatchery	No weight too heavy
South Lake	Inlet 2- inlet 3	E-fish	brown trout	280	293	no entry	na	none	wild	No weight too heavy
South Lake	Inlet 2- inlet 3	E-fish	rainbow trout	345	363	no entry	na	none	unknown	No weight too heavy
South Lake	Inlet 2- inlet 3	E-fish	rainbow trout	360	378	no entry	na	none	hatchery	No weight too heavy
South Lake	Inlet 2- inlet 3	E-fish	brown trout	265	275	no entry	na	none	wild	No weight too heavy
South Lake	Inlet 2- inlet 3	E-fish	rainbow trout	325	335	no entry	na	none	hatchery	No weight too heavy
South Lake	Inlet 2- inlet 3	E-fish	rainbow trout	320	330	no entry	na	none	hatchery	No weight too heavy
South Lake	Inlet 2- inlet 3	E-fish	rainbow trout	335	352	no entry	na	none	hatchery	No weight too heavy
South Lake	Inlet 2- inlet 3	E-fish	rainbow trout	385	400	no entry	na	none	hatchery	Mort
South Lake	Inlet 2- inlet 3	E-fish	rainbow trout	330	345	no entry	na	none	hatchery	Mort
South Lake	Inlet 2- inlet 3	E-fish	rainbow trout	345	360	no entry	na	none	hatchery	Mort
South Lake	Inlet 2- inlet 3	E-fish	brook trout	230	241	144.6	1.19	none	wild	
South Lake	Inlet 2- inlet 3	E-fish	brook trout	230	240	133.4	1.10	none	wild	
South Lake	Inlet 2- inlet 3	E-fish	rainbow trout	323	338	no entry	na	none	hatchery	Mort
South Lake	Inlet 2- inlet 3	E-fish	brook trout	255	265	172.8	1.04	none	wild	
South Lake	Inlet 2- inlet 3	E-fish	brook trout	223	238	131.0	1.18	none	wild	
South Lake	Inlet 2- inlet 3	E-fish	rainbow trout	300	312	no entry	na	none	hatchery	Mort
South Lake	Inlet 2- inlet 3	E-fish	rainbow trout	337	355	no entry	na	none	hatchery	Mort
South Lake	Inlet 2- inlet 3	E-fish	brown trout	273	283	no entry	na	none	wild	Mort
South Lake	Inlet 2- inlet 3	E-fish	brown trout	271	283	no entry	na	none	wild	Mort
South Lake	Inlet 2- inlet 3	E-fish	brown trout	255	267	164.9	0.99	none	wild	
South Lake	Inlet 2- inlet 3	E-fish	brown trout	260	270	161.5	0.92	none	wild	
South Lake	Inlet 2- inlet 3	E-fish	rainbow trout	233	248	148.9	1.18	none	unknown	
South Lake	Inlet 2- inlet 3	E-fish	brown trout	265	278	no entry	na	none	wild	Mort
South Lake	Inlet 2- inlet 3	E-fish	brook trout	228	236	138.8	1.17	none	wild	

				Fork	Total			Otolith/ Scale		
Boconvoir	Site ID	Sample	Species	Length	Length	Weight	k-	Sample	Origin	Notos
South Lake	Inlot 2 inlot 2		brown trout	200	202	(g)	value		Ungin	Notes
	Iniet 2- Iniet 3			290	302	no entry	na	none	wiid	
South Lake	Inlet 2- inlet 3	E-fish	brown trout	275	292	no entry	na	none	WIID	
South Lake	Inlet 2- inlet 3	E-fish	brown trout	248	258	no entry	na	none	wild	
South Lake	Inlet 2- inlet 3	E-fish	brook trout	215	226	99.8	1.00	none	wild	
South Lake	Inlet 2- inlet 3	E-fish	brown trout	280	292	no entry	na	none	wild	
South Lake	Inlet 2- inlet 3	E-fish	brook trout	235	242	139.8	1.08	none	wild	
South Lake	Inlet 2- inlet 3	E-fish	brown trout	270	283	no entry	na	none	wild	
South Lake	Inlet 1- Inlet 2	E-fish	rainbow trout	308	318	255.0	0.87	none	hatchery	
South Lake	Inlet 1- Inlet 2	E-fish	rainbow trout	293	302	240.0	0.95	none	hatchery	
South Lake	Inlet 1- Inlet 2	E-fish	rainbow trout	400	421	520.0	0.81	none	hatchery	
South Lake	Inlet 1- Inlet 2	E-fish	rainbow trout	328	350	335.0	0.95	none	wild	
South Lake	Inlet 1- Inlet 2	E-fish	rainbow trout	325	340	345.0	1.01	none	hatchery	
South Lake	Inlet 1- Inlet 2	E-fish	rainbow trout	330	350	370.0	1.03	none	hatchery	
South Lake	Inlet 1- Inlet 2	E-fish	rainbow trout	320	333	300.0	0.92	none	unknown	
South Lake	Inlet 1- Inlet 2	E-fish	rainbow trout	335	350	345.0	0.92	none	hatchery	
South Lake	Inlet 1- Inlet 2	E-fish	rainbow trout	365	380	495.0	1.02	none	hatchery	Minimal fin wearing
South Lake	Inlet 1- Inlet 2	E-fish	rainbow trout	320	329	270.0	0.82	none	hatchery	
South Lake	Inlet 1- Inlet 2	E-fish	rainbow trout	340	360	330.0	0.84	none	hatchery	
South Lake	Inlet 1- Inlet 2	E-fish	rainbow trout	295	300	190.0	0.74	none	hatchery	
South Lake	Inlet 1- Inlet 2	E-fish	rainbow trout	328	344	334.5	0.95	none	hatchery	
South Lake	Inlet 1- Inlet 2	E-fish	rainbow trout	310	326	334.5	1.12	none	hatchery	
South Lake	Inlet 1- Inlet 2	E-fish	rainbow trout	330	338	334.5	0.93	none	hatchery	
South Lake	Inlet 1- Inlet 2	E-fish	rainbow trout	262	277	170.1	0.95	none	unknown	Mort
South Lake	Inlet 1- Inlet 2	E-fish	rainbow trout	182	192	70.9	1.18	none	wild	
South Lake	Inlet 1- Inlet 2	E-fish	brown trout	271	289	243.8	1.22	none	wild	
South Lake	Inlet 1- Inlet 2	E-fish	brown trout	273	285	226.8	1.11	none	wild	
South Lake	Inlet 1- Inlet 2	E-fish	brown trout	265	278	187.1	1.01	none	wild	

				Fork	Total		_	Otolith/ Scale		
Posorvoir	Site ID	Sample	Spacios	Length	Length	Weight	k-	Sample	Origin	Notos
South Lake	Inlet 1- Inlet 2	F-fish	brown trout	272	285	( <b>9</b> ) 215.5		none	wild	NOLES
South Lake	Inlet 1 Inlet 2	E fich	brown trout	212	200	210.0	0.06	nono	wild	
South Lake			brown trout	294	309	243.0	0.90	none	wiid	
South Lake	Inlet 1- Inlet 2	E-fish	brown trout	260	2/1	226.8	1.29	none	WIId	
South Lake	Inlet 1- Inlet 2	E-fish	brown trout	313	327	328.9	1.07	none	wild	
South Lake	Inlet 1- Inlet 2	E-fish	brown trout	280	291	187.1	0.85	none	wild	
South Lake	Inlet 1- Inlet 2	E-fish	brown trout	210	223	102.1	1.10	none	wild	
South Lake	Inlet 1- Inlet 2	E-fish	brook trout	238	248	141.7	1.05	none	wild	
South Lake	Inlet 1- Inlet 2	E-fish	brook trout	219	231	130.4	1.24	none	wild	
South Lake	Inlet 1- Inlet 2	E-fish	brook trout	242	250	141.7	1.00	none	wild	
South Lake	Inlet 1- Inlet 2	E-fish	brook trout	223	234	130.4	1.18	none	wild	
South Lake	Inlet 1- Inlet 2	E-fish	brook trout	230	237	187.1	1.54	none	wild	
South Lake	Inlet 1- Inlet 2	E-fish	brook trout	202	212	102.1	1.24	none	wild	
South Lake	Inlet 1- Inlet 2	E-fish	brook trout	245	253	158.8	1.08	none	wild	
South Lake	Inlet 1- Inlet 2	E-fish	brook trout	238	243	113.4	0.84	none	wild	
South Lake	Inlet 1- Inlet 2	E-fish	rainbow trout	205	225	85.0	0.99	none	wild	
South Lake	Inlet 1- Inlet 2	E-fish	rainbow trout	168	178	56.7	1.20	none	wild	
South Lake	Inlet 1- Inlet 2	E-fish	brown trout	250	265	170.1	1.09	none	wild	
South Lake	Inlet 1- Inlet 2	E-fish	brown trout	250	262	187.1	1.20	none	wild	
South Lake	North Shore	E-fish	rainbow trout	280	289	250.0	1.14	none	hatchery	Worn fins
South Lake	North Shore	E-fish	rainbow trout	260	271	125.0	0.71	none	unknown	Snake-like, skinny
South Lake	North Shore	E-fish	rainbow trout	287	297	290.0	1.23	none	hatchery	
South Lake	North Shore	E-fish	rainbow trout	306	332	460.0	1.61	none	unknown	
South Lake	North Shore	E-fish	rainbow trout	257	266	175.0	1.03	none	hatchery	
South Lake	North Shore	E-fish	rainbow trout	300	312	270.0	1.00	none	hatchery	

<sup>1</sup> Fish condition factor

Reservoir	Site ID	Sample Method	Species	Fork Length (mm)	Total Length (mm)	Weight (g)	k- value <sup>1</sup>	Otolith/ Scale Sample ID	Origin	Notes
Lake Sabrina	NW shore	E-fish	Owens sucker	368	391	570.0	1.14	none	wild	
Lake Sabrina	NW shore	E-fish	Owens sucker	256	273	250.0	1.49	none	wild	
Lake Sabrina	NW shore	E-fish	rainbow trout	217	224	140.0	1.37	none	hatchery	Worn fins
Lake Sabrina	NW shore	E-fish	rainbow trout	321	328	335.0	1.01	none	hatchery	Worn fins
Lake Sabrina	NW shore	E-fish	rainbow trout	296	301	270.0	1.04	none	hatchery	Worn fins
Lake Sabrina	NW shore	E-fish	rainbow trout	220	232	135.0	1.27	none	hatchery	Worn fins
Lake Sabrina	NW shore	E-fish	rainbow trout	230	240	150.0	1.23	none	unknown	
Lake Sabrina	NW shore	E-fish	rainbow trout	205	216	100.0	1.16	none	unknown	
Lake Sabrina	NW shore	E-fish	rainbow trout	196	210	100.0	1.33	none	unknown	
Lake Sabrina	NW shore	E-fish	rainbow trout	120	129	20.0	1.16	none	wild	
Lake Sabrina	Cove near marina	E-fish	Owens sucker	139	147	55.0	2.05	none	wild	
Lake Sabrina	Cove near marina	E-fish	Owens sucker	220	233	165.0	1.55	none	wild	
Lake Sabrina	Cove near marina	E-fish	Owens sucker	305	324	375.0	1.32	none	wild	
Lake Sabrina	Cove near marina	E-fish	Owens sucker	182	192	115.0	1.91	none	wild	
Lake Sabrina	Cove near marina	E-fish	Owens sucker	250	264	190.0	1.22	none	wild	
Lake Sabrina	Cove near marina	E-fish	Owens sucker	244	260	210.0	1.45	none	wild	
Lake Sabrina	Cove near marina	E-fish	Owens sucker	263	277	240.0	1.32	none	wild	
Lake Sabrina	Cove near marina	E-fish	Owens sucker	305	324	295.0	1.04	none	wild	
Lake Sabrina	Cove near marina	E-fish	Owens sucker	299	316	220.0	0.82	none	wild	
Lake Sabrina	Cove near marina	E-fish	Owens sucker	240	256	190.0	1.37	none	wild	
Lake Sabrina	Cove near marina	E-fish	Owens sucker	244	260	225.0	1.55	none	wild	
Lake Sabrina	Cove near marina	E-fish	Owens sucker	257	275	250.0	1.47	none	wild	
Lake Sabrina	Cove near marina	E-fish	Owens sucker	157	166	60.0	1.55	none	wild	
Lake Sabrina	Cove near marina	E-fish	Owens sucker	175	185	80.0	1.49	none	wild	
Lake Sabrina	Cove near marina	E-fish	brook trout	190	199	95.0	1.39	none	unknown	

#### Table C-4 Lake Sabrina Fish Capture Data During Nighttime Boat Electrofishing, September 2020

		Sample		Fork Length	Total Length	Weight	k-	Otolith/ Scale Sample		
Reservoir	Site ID	Method	Species	(mm)	(mm)	(g)	value <sup>1</sup>	ID	Origin	Notes
Lake Sabrina	Cove near marina	E-fish	brook trout	195	206	105.0	1.42	none	unknown	
Lake Sabrina	Cove near marina	E-fish	brook trout	220	232	130.0	1.22	none	unknown	
Lake Sabrina	Cove near marina	E-fish	rainbow trout	345	360	380.0	0.93	none	hatchery	Worn fins
Lake Sabrina	Cove near marina	E-fish	rainbow trout	310	319	275.0	0.92	none	hatchery	Worn fins
Lake Sabrina	Cove near marina	E-fish	rainbow trout	333	341	275.0	0.74	none	hatchery	Worn fins
Lake Sabrina	Cove near marina	E-fish	rainbow trout	187	200	90.0	1.38	none	unknown	
Lake Sabrina	Cove near marina	E-fish	rainbow trout	257	267	190.0	1.12	none	unknown	
Lake Sabrina	Cove near marina	E-fish	rainbow trout	252	266	190.0	1.19	none	unknown	
Lake Sabrina	Cove near marina	E-fish	rainbow trout	156	163	50.0	1.32	none	wild	
Lake Sabrina	Cove near marina	E-fish	brook trout	227	239	140.0	1.20	none	unknown	
Lake Sabrina	Tributaries	E-fish	rainbow trout	482.6	495.3	1485.0	1.32	none	hatchery	Worn top of caudal fin
Lake Sabrina	Tributaries	E-fish	rainbow trout	495.3	508	1750.0	1.44	none	hatchery	Worn top of caudal fin
Lake Sabrina	Tributaries	E-fish	Owens sucker	375	395	1105.0	2.10	none	wild	
Lake Sabrina	Tributaries	E-fish	rainbow trout	325	346	320.0	0.93	none	hatchery	
Lake Sabrina	Tributaries	E-fish	rainbow trout	250	255	175.0	1.12	none	hatchery	
Lake Sabrina	Tributaries	E-fish	rainbow trout	335	351	0.0	na	none	hatchery	Very thin
Lake Sabrina	Tributaries	E-fish	rainbow trout	326	341	330.0	0.95	none	hatchery	Hook and line sticking out of mouth
Lake Sabrina	Tributaries	E-fish	rainbow trout	310	325	295.0	0.99	none	hatchery	
Lake Sabrina	Tributaries	E-fish	rainbow trout	188	205	150.0	2.26	none	hatchery	
Lake Sabrina	Tributaries	E-fish	rainbow trout	340	357	275.0	0.70	none	hatchery	Very tiny/snake-like
Lake Sabrina	Tributaries	E-fish	rainbow trout	305	320	275.0	0.97	none	hatchery	
Lake Sabrina	Tributaries	E-fish	rainbow trout	280	291	220.0	1.00	none	hatchery	
Lake Sabrina	Tributaries	E-fish	rainbow trout	361	371	430.0	0.91	none	hatchery	

		Sample		Fork Length	Total Length	Weight	k-	Otolith/ Scale Sample		
Reservoir	Site ID	Method	Species	(mm)	(mm)	(g)	value <sup>1</sup>	ID	Origin	Notes
Lake Sabrina	Tributaries	E-fish	rainbow trout	355	364	430.0	0.96	none	hatchery	Ripe female, spraying eggs
Lake Sabrina	Tributaries	E-fish	rainbow trout	340	355	370.0	0.94	none	hatchery	
Lake Sabrina	Tributaries	E-fish	rainbow trout	306	319	275.0	0.96	none	hatchery	
Lake Sabrina	Tributaries	E-fish	rainbow trout	350	365	420.0	0.98	none	hatchery	
Lake Sabrina	Tributaries	E-fish	rainbow trout	240	249	165.0	1.19	none	hatchery	
Lake Sabrina	Tributaries	E-fish	rainbow trout	309	320	240.0	0.81	none	hatchery	
Lake Sabrina	Tributaries	E-fish	brook trout	180	188	75.0	1.29	none	unknown	
Lake Sabrina	Tributaries	E-fish	brook trout	131	136	35.0	1.56	none	unknown	
Lake Sabrina	Tributaries	E-fish	rainbow trout	365	379	400.0	0.82	none	wild	
Lake Sabrina	Tributaries	E-fish	rainbow trout	306	333	300.0	1.05	none	wild	
Lake Sabrina	Tributaries	E-fish	rainbow trout	185	193	150.0	2.37	none	wild	
Lake Sabrina	Tributaries	E-fish	rainbow trout	264	273	195.0	1.06	none	wild	
Lake Sabrina	Tributaries	E-fish	brook trout	131	141	25.0	1.11	none	wild	
Lake Sabrina	Tributaries	E-fish	Owens sucker	335	356	490.0	1.30	none	wild	
Lake Sabrina	Tributaries	E-fish	Owens sucker	240	255	220.0	1.59	none	wild	
Lake Sabrina	Tributaries	E-fish	rainbow trout	290	304	220.0	0.90	none	hatchery	
Lake Sabrina	Tributaries	E-fish	brook trout	190	200	75.0	1.09	none	unknown	
Lake Sabrina	Tributaries	E-fish	Owens sucker	285	305	290.0	1.25	none	wild	
Lake Sabrina	Tributaries	E-fish	rainbow trout	158	169	60.0	1.52	none	wild	
Lake Sabrina	Tributaries	E-fish	brook trout	246	248	160.0	1.07	none	wild	
Lake Sabrina	Tributaries	E-fish	brook trout	212	219	105.0	1.10	none	wild	
Lake Sabrina	Tributaries	E-fish	rainbow trout	90	95	8.4	1.15	none	wild	
Lake Sabrina	Tributaries	E-fish	brook trout	144	152	36.0	1.21	none	wild	
Lake Sabrina	Tributaries	E-fish	brook trout	145	154	32.6	1.07	none	wild	
Lake Sabrina	Tributaries	E-fish	brook trout	189	198	67.0	0.99	none	wild	
Lake Sabrina	Tributaries	E-fish	brook trout	130	137	25.5	1.16	none	wild	
Lake Sabrina	Tributaries	E-fish	brook trout	150	160	43.6	1.29	none	wild	

		0		Fork	Total			Otolith/ Scale		
Reservoir	Site ID	Method	Species	(mm)	(mm)	(g)	к- value <sup>1</sup>	Sample ID	Origin	Notes
Lake Sabrina	Tributaries	E-fish	rainbow trout	113	120	15.5	1.07	none	wild	
Lake Sabrina	Tributaries	E-fish	Owens sucker	61	65	3.2	1.41	none	wild	
Lake Sabrina	Cove at Dam	E-fish	Owens sucker	320	334	395.0	1.21	none	wild	
Lake Sabrina	Cove at Dam	E-fish	Owens sucker	276	292	310.0	1.47	none	wild	
Lake Sabrina	Cove at Dam	E-fish	Owens sucker	269	275	265.0	1.36	none	wild	
Lake Sabrina	Cove at Dam	E-fish	Owens sucker	318	335	380.0	1.18	none	wild	
Lake Sabrina	Cove at Dam	E-fish	Owens sucker	300	316	360.0	1.33	none	wild	
Lake Sabrina	Cove at Dam	E-fish	Owens sucker	280	298	320.0	1.46	none	wild	
Lake Sabrina	Cove at Dam	E-fish	Owens sucker	295	313	385.0	1.50	none	wild	Male- super long anal fin
Lake Sabrina	Cove at Dam	E-fish	Owens sucker	260	275	275.0	1.56	none	wild	
Lake Sabrina	Cove at Dam	E-fish	Owens sucker	187	203	110.0	1.68	none	wild	
Lake Sabrina	Cove at Dam	E-fish	Owens sucker	250	266	240.0	1.54	none	wild	
Lake Sabrina	Cove at Dam	E-fish	Owens sucker	241	257	220.0	1.57	none	wild	
Lake Sabrina	Cove at Dam	E-fish	Owens sucker	248	264	250.0	1.64	none	wild	
Lake Sabrina	Cove at Dam	E-fish	Owens sucker	178	197	no entry	na	none	wild	
Lake Sabrina	Cove at Dam	E-fish	Owens sucker	237	253	210.0	1.58	none	wild	
Lake Sabrina	Cove at Dam	E-fish	Owens sucker	233	247	195.0	1.54	none	wild	
Lake Sabrina	Cove at Dam	E-fish	Owens sucker	189	200	no entry	na	none	wild	
Lake Sabrina	Cove at Dam	E-fish	Owens sucker	276	293	no entry	na	none	wild	
Lake Sabrina	Cove at Dam	E-fish	Owens sucker	237	252	no entry	na	none	wild	
Lake Sabrina	Cove at Dam	E-fish	Owens sucker	243	258	no entry	na	none	wild	
Lake Sabrina	Cove at Dam	E-fish	Owens sucker	262	278	220.0	1.22	none	wild	
Lake Sabrina	Cove at Dam	E-fish	Owens sucker	260	273	260.0	1.48	none	wild	
Lake Sabrina	Cove at Dam	E-fish	Owens sucker	183	193	no entry	na	none	wild	
Lake Sabrina	Cove at Dam	E-fish	Owens sucker	258	268	250.0	1.46	none	wild	
Lake Sabrina	Cove at Dam	E-fish	Owens sucker	182	191	105.0	1.74	none	wild	
Lake Sabrina	Cove at Dam	E-fish	rainbow trout	262	266	245.0	1.36	none	hatchery	Worn fins
Lake Sabrina	Cove at Dam	E-fish	rainbow trout	240	243	200.0	1.45	none	hatchery	Worn fins
Lake Sabrina	Cove at Dam	E-fish	rainbow trout	161	172	65.0	1.56	none	unknown	Fat
Lake Sabrina	Cove at Dam	E-fish	rainbow trout	290	295	no entry	na	none	unknown	

				Fork	Total			Otolith/ Scale		
Bosonyoir	Sito ID	Sample	Spacios	Length	Length	Weight	k-	Sample	Origin	Notos
	Sile ID	The field	Species	(1111)	(1111)	(9)			Ungin	INDIES
Lake Sabrina	Cove at Dam	E-fish	rainbow trout	151	160	50.0	1.45	none	unknown	
Lake Sabrina	Cove at Dam	E-fish	brook trout	210	219	120.0	1.30	none	unknown	
Lake Sabrina	Cove at Dam	E-fish	rainbow trout	264	276	165.0	0.90	none	hatchery	Worn fins
Lake Sabrina	Cove at Dam	E-fish	brook trout	214	223	130.0	1.33	none	unknown	
Lake Sabrina	Cove at Dam	E-fish	rainbow trout	269	278	220.0	1.13	none	unknown	
Lake Sabrina	Cove at Dam	E-fish	rainbow trout	152	163	40.0	1.14	none	unknown	
Lake Sabrina	Cove at Dam	E-fish	rainbow trout	261	274	210.0	1.18	none	unknown	
Lake Sabrina	Cove at Dam	E-fish	rainbow trout	280	285	235.0	1.07	none	hatchery	Photos of worn fins
Lake Sabrina	Cove at Dam	E-fish	brook trout	167	175	55.0	1.18	none	unknown	
Lake Sabrina	Cove at Dam	E-fish	rainbow trout	264	272	195.0	1.06	none	hatchery	
Lake Sabrina	Cove at Dam	E-fish	rainbow trout	226	233	135.0	1.17	none	hatchery	
Lake Sabrina	Cove at Dam	E-fish	rainbow trout	276	291	240.0	1.14	none	unknown	
Lake Sabrina	Cove at Dam	E-fish	rainbow trout	325	335	395.0	1.15	none	hatchery	Fishing line out of anal vent
Lake Sabrina	Cove at Dam	E-fish	rainbow trout	275	286	285.0	1.37	none	hatchery	
Lake Sabrina	Cove at Dam	E-fish	rainbow trout	196	204	90.0	1.20	none	hatchery	
Lake Sabrina	Cove at Dam	E-fish	rainbow trout	310	314	325.0	1.09	none	hatchery	Worn fins
Lake Sabrina	Cove at Dam	E-fish	brook trout	231	247	150.0	1.22	none	unknown	

<sup>1</sup> Fish condition factor

		Sample		Fork Length	Total Length	Weight	k-	Otolith/ Scale Sample		
Reservoir	Site ID	Method	Species	(mm)	(mm)	(g)	value <sup>1</sup>	ID	Origin	Notes
Longley Lake	Gill net 1, set 1	gill net	brook trout	211	221	105.0	1.12	LR-1	wild	Mort
Longley Lake	Gill net 1, set 1	gill net	brook trout	215	222	105.0	1.06	LR-2	wild	
Longley Lake	Gill net 1, set 1	gill net	brook trout	205	213	85.0	0.99	LR-3	wild	
Longley Lake	Gill net 1, set 1	gill net	brook trout	214	224	105.0	1.07	LR-4	wild	
Longley Lake	Gill net 1, set 1	gill net	brook trout	190	200	90.0	1.31	LR-5	wild	
Longley Lake	Gill net 1, set 2	gill net	brook trout	203	212	120.0	1.43	none	wild	Mort
Longley Lake	Gill net 1, set 2	gill net	brook trout	207	217	95.0	1.07	none	wild	
Longley Lake	Gill net 2, set 1	gill net	brook trout	220	228	120.0	1.13	LR-6	wild	
Longley Lake	Gill net 2, set 1	gill net	brook trout	192	203	80.0	1.13	LR-7	wild	
Longley Lake	Gill net 2, set 1	gill net	brook trout	219	231	135.0	1.29	LR-8	wild	Mort
Longley Lake	Gill net 2, set 1	gill net	brook trout	197	206	105.0	1.37	LR-9	wild	
Longley Lake	Gill net 2, set 1	gill net	brook trout	194	206	105.0	1.44	LR-10	wild	
Longley Lake	Gill net 2, set 1	gill net	brook trout	191	198	105.0	1.51	LR-11	wild	Mort
Longley Lake	Gill net 2, set 1	gill net	brook trout	215	224	120.0	1.21	LR-12	wild	
Longley Lake	Gill net 2, set 1	gill net	brook trout	255	205	225.0	1.36	LR-13	wild	Mort
Longley Lake	Gill net 2, set 1	gill net	brook trout	210	217	125.0	1.35	LR-14	wild	
Longley Lake	Gill net 2, set 1	gill net	brook trout	194	207	85.0	1.16	LR-15	wild	
Longley Lake	Gill net 2, set 1	gill net	brook trout	211	221	120.0	1.28	none	wild	
Longley Lake	Gill net 2, set 1	gill net	brook trout	218	221	120.0	1.16	none	wild	
Longley Lake	Gill net 2, set 1	gill net	brook trout	203	209	135.0	1.61	none	wild	Mort
Longley Lake	Gill net 2, set 1	gill net	brook trout	221	231	150.0	1.39	none	wild	
Longley Lake	Gill net 2, set 1	gill net	brook trout	193	199	115.0	1.60	none	wild	
Longley Lake	Gill net 2, set 1	gill net	brook trout	190	204	105.0	1.53	none	wild	
Longley Lake	Gill net 2, set 2	gill net	brook trout	237	252	170.0	1.28	none	wild	
Longley Lake	Gill net 2, set 2	gill net	brook trout	228	238	120.0	1.01	none	wild	

Table C-5 Longley Lake Ginnetting Fish Capture Data, September 2	2020	0
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Reservoir	Site ID	Sample Method	Species	Fork Length (mm)	Total Length (mm)	Weight (g)	k- value <sup>1</sup>	Otolith/ Scale Sample ID	Origin	Notes
Longley Lake	Gill net 2, set 2	gill net	brook trout	208	215	120.0	1.33	none	wild	
Longley Lake	Gill net 2, set 2	gill net	brook trout	215	226	110.0	1.11	none	wild	

<sup>1</sup> Fish condition factor

# SOUTHERN CALIFORNIA EDISON Bishop Creek Hydroelectric Project (FERC Project No. 1394)



## FINAL TECHNICAL REPORT BISHOP CREEK WATER QUALITY TECHNICAL STUDY (AQ 5)



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JUNE 2022

### **SOUTHERN CALIFORNIA EDISON**

Bishop Creek Hydroelectric Project (FERC Project No. 1394)

## FINAL TECHNICAL REPORT BISHOP CREEK WATER QUALITY TECHNICAL STUDY (AQ 5)

Southern California Edison 1515 Walnut Grove Ave Rosemead, CA 91770

June 2022

Prepared by:



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#### LIST OF APPENDICES

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Acronyms	
°C	degrees Celsius
°F	degrees Fahrenheit
μS/cm	microSiemens per centimeter
Α	
AQ 4	Final Technical Report Bishop Creek Reservoirs Fish Distribution Study
В	
Basin Plan	Water Quality Control Plan
BCWQIP	Bishop Creek Water Quality Implementation Plan
Bishop Creek Project	Bishop Creek Hydroelectric Project
BWS	below water surface
C	
Са	Calcium
CDWP	California Drinking Water Program
CFR	Code of Federal Regulation
cfu	colony forming unit
cfs	cubic feet per second
CWA	Clean Water Act
D	
DLA	Draft License Application
DO	dissolved oxygen
_	
	_ , . ,
E COII	Escherichia coli
F	
FERC	Federal Energy Regulatory Commission

1	
ILP	Integrated Licensing Process
ISR	Initial Study Report
L	
LRWQCB	Lahontan Region Water Quality Control Board
М	
MPN	most probable number
MCL	maximum contaminant level
mg/L	milligrams per liter
ml	milliliter
msl	mean sea level
MST	microbial source tracking methods
Ν	
ND	not detected
NOI	Notification of Intent
NTU	Nephelometric turbidity units
Ρ	
PAD	Pre-Application Document
Project	Bishop Creek Hydroelectric Project
R	
RSP	Revised Study Plan
RWQCB	Regional Water Quality Control Board)
S	
SCE	Southern California Edison Company
SMCL	secondary maximum contaminant level
SNARL	Sierra Nevada Aquatic Research Laboratory
SOP	Standard Operating Procedure

SWAMP SWRCB	Surface Water Ambient Monitoring Program State Water Resources Control Board
Т	
TDS	total dissolved solids
TWG	Technical Working Group
U	
USEPA	United States Environmental Protection Agency
USFS	U.S. Forest Service
USGS	U.S. Geological Survey
USR	Updated Study Report

#### 1.0 INTRODUCTION

#### 1.1. BACKGROUND

Southern California Edison Company (SCE) is the licensee, owner, and operator of the Bishop Creek Hydroelectric Project (Project) Federal Energy Regulatory Commission (FERC) Project No. 1394. The Project is located on Bishop Creek in Inyo County, California, approximately 5 miles southwest of the city of Bishop (Figure 1.1-1). SCE operates Bishop Creek Project under a 30-year license issued by FERC on July 19, 1994. As the current license is due to expire on June 30, 2024, SCE initiated the formal relicensing process utilizing the Integrated Licensing Process (ILP) by filing the Notification of Intent (NOI) and Pre-Application Document (PAD) with FERC on May 1, 2019.

During the Technical Working Group (TWG) meetings, and in written comments, stakeholders identified the need to develop an understanding of water quality parameters in the Project area. Draft study plans were distributed with the PAD and revised after receiving comments pursuant to 18 CFR § 5.9 (Code of Federal Regulation). FERC approved the Revised Study Plan (RSP) with its Study Plan Determination on November 4, 2019. As described in Section 7.0 of this document, SCE kept FERC and the TWGs informed regarding study plan implementation. After filing the Updated Study Report (USR) with FERC on November 4, 2021, SCE held an USR meeting on November 18, 2021. Preliminary data on the water quality study program was presented in the USR; this Water Quality Annual Report builds on those materials and presents the results of the 2021 monitoring program.



#### Figure 1.1-1 Project Location Map

#### 2.0 PROJECT NEXUS

Although the Project is located in a relatively clean granitic watershed with limited factors to impact water quality, stakeholders expressed a need to establish baseline conditions for the future. Water storage and diversion activities could affect water quality in the Bishop Creek Project waters or contribute to water quality issues downstream.

The goals and objectives of this study were to:

- Monitor water quality<sup>1</sup> for 2 years on a regular basis at multiple monitoring sites:
  - **Above-Project**: establish reference baseline conditions of inflow from natural runoff in the watershed
  - In-Project: assess how/if water quality changes throughout various facilities within the Project Area (i.e., various depths and locations in South Lake and Lake Sabrina, powerhouse discharges)
  - **Below-Project**: assess any/all potential impacts Project operations may have on water quality that is leaving the Project Area
- Monitor water temperature for 2 years on a regular basis at multiple monitoring sites
  - **Above-Project:** establish reference baseline conditions of inflow from natural runoff in watershed
  - In-Project: assess how/if water temperature changes throughout various facilities within Project Area (various depths and locations in South Lake and Lake Sabrina, powerhouse discharges)
  - Below-Project: assess any/all impacts Project operations may have on water temperature that is leaving the Project Area
- Ensure that future Project facilities and operations are:
  - Consistent with the water quality goals and objectives for Bishop Creek in the Water Quality Control Plan (Basin Plan) for the Lahontan Region (LRWQCB, 1995)
  - Consistent with the desired conditions described in the 2018 Land Management Plan for the Inyo National Forest for Social and Economic Sustainability and Multiple Uses with the desired conditions described in "Land Management Plan for the Inyo National Forest" (USDA, 2019) as

<sup>&</sup>lt;sup>1</sup> For the purposes of this study, water quality was monitored for dissolved oxygen (DO), water temperature, turbidity, conductivity, total dissolved solids, orthophosphate, nitrate, total nitrogen, and *E.coli*.

they relate to ecological sustainability and diversity of plant and animal communities.

#### 3.0 REVIEW OF EXISTING INFORMATION

#### 3.1. WATER QUALITY BENEFICIAL USES, OBJECTIVES, GOALS

The state of California is responsible for maintaining water quality standards through the federal Clean Water Act (CWA). The State Water Resources Control Board (SWRCB) and Lahontan Regional Water Quality Control Board (LRWQCB) are responsible for the protection of beneficial uses of water resources within its jurisdiction and use planning, permitting, and enforcement authorities to meet this responsibility. Every water body within the LRWQCB jurisdiction is designated a set of beneficial uses that are protected by appropriate water quality objectives as described in the Basin Plan for the Lahontan Region (LRWQCB, 1995).

For smaller tributary streams in which beneficial uses are not specifically designated, they are granted with the same beneficial uses as the streams, lakes, or reservoirs to which they are a tributary. Table 3.1-1 lists the water bodies to which this Project drains and their beneficial use designations.

The Basin Plan defines the beneficial use abbreviations as the following:

- **Municipal and Domestic Supply (MUN)** Uses of water for community, military, or individual water supply systems including, but not limited to, drinking water supply.
- **Agricultural Supply (AGR)** Beneficial uses of waters used for farming, horticulture, or ranching, including, but not limited to, irrigation, stock watering, and support of vegetation for range grazing.
- Industrial Process Supply (PRO) Uses of water for industrial activities that depend primarily on water quality.
- Industrial Service Supply (IND) Uses of water for industrial activities that do not depend primarily on water quality including, but not limited to, mining, cooling water supply, geothermal energy production, hydraulic conveyance, gravel washing, fire protection, or oil well re-pressurization.
- **Ground Water Recharge (GWR)** Beneficial uses of waters used for natural or artificial recharge of ground water for purposes of future extraction, maintenance of water quality, or halting of saltwater intrusion into freshwater aquifers.
- **Freshwater Replenishment (FRSH)** Beneficial uses of waters used for natural or artificial maintenance of surface water quantity or quality (e.g., salinity).
- Hydropower Generation (POW) Uses of water for hydroelectric power generation.
- Water Contact Recreation (REC-1) Uses of water for recreational activities involving body contact with water, where ingestion of water is reasonably possible. These uses include, but are not limited to, swimming, wading, water-skiing, skin and scuba diving, surfing, whitewater activities, fishing, or use of natural hot springs.

- Non-Contact Water Recreation (REC-2) Uses of water for recreational activities involving proximity to water, but not normally involving body contact with water where ingestion of water is reasonably possible. These uses include, but are not limited to, picnicking, sunbathing, hiking, beachcombing, camping, boating, tide pool and marine life study, hunting, sightseeing, and aesthetic enjoyment in conjunction with the above activities.
- **Commercial and Sportfishing (COMM)** Beneficial uses of waters used for commercial or recreational collection of fish or other organisms including, but not limited to, uses involving organisms intended for human consumption.
- **Cold Freshwater Habitat (COLD)** Uses of water that support cold water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates.
- Wildlife Habitat (WILD) Uses of water that support terrestrial or wetland ecosystems including, but not limited to, preservation and enhancement of terrestrial habitats or wetlands, vegetation, wildlife (e.g., mammals, birds, reptiles, amphibians, invertebrates), or wildlife water and food sources.
- **Preservation of Biological Habitats of Special Significance (BIOL)** Beneficial uses of waters that support designated areas or habitats, such as established refuges, parks, sanctuaries, ecological reserves, and Areas of Special Biological Significance (ASBS), where the preservation and enhancement of natural resources requires special protection.
- Spawning, Reproduction, and/or Early Development (SPWN) Uses of water that support high quality aquatic habitats suitable for reproduction and early development of fish.

The water quality objectives include both numeric and narrative standards for surface water that are based on criteria that protect both human health and aquatic life. If water quality is maintained at levels consistent with these objectives, beneficial uses are considered protected. Applicable water quality objectives and standards in the Basin Plan are provided in Table 3.1-2 and Table 3.1-3.

											Ber	neficia	I Use									
SURFACE WATER BODY	MUN	AGR	PRO	QNI	GWR	FRSH	NAV	POW	REC1	REC-2	COMM	AQUA	WARM	согр	SAL	WILD	BIOL	RARE	MIGR	SPWN	WQE	FLD
	Municipal and Domestic Supply	Agricultural Supply	Industrial Process Supply	Industrial Service Supply	Groundwater Recharge	Freshwater Replenishment	Navigation	Hydropower Gen.	Water Contact Recreation	Non-Contact Water Recreation	Commercial and Sport Fishing	Aquaculture	Warm Freshwater Habitat	Cold Freshwater Habitat	Inland Saline Water Habitat	Wildlife Habitat	Special Biological Habitats	Rare, Threatened & Endangered Species	Migration of Aquatic Organisms	Spawning, Reproduction & Dev.	Water Quality Enhancement	Flood Peak Attenuation/Flood Water Storage
Upper Owens Hy	ydrolog	gic Are	ea Hyd	Irologi	ic Unit	603.20	0															
McGee Creek	x	x			x	x		х	x	X	x			Х		X	X			x		
Bishop Creek (above intakes)	x	x						x	X	x	x			x		x				x		
Intake 2 Reservoir	x							x	х	X	х			Х		x						
Bishop Creek (below intakes)	x							x	X	x	x			x		x				x		
Bishop Creek (below last Powerhouse)	x	x		x	x				x	x	x			x		x				x		

#### Table 3.1-1. Water Body Beneficial Use Designations
# <u>Table 3.1-2. Water Quality Objectives for Hydrologic Unit 603.20 - Upper Owens</u> <u>River Hydrologic Unit</u>

Constituent/ Parameter	Water Quality Objective
Ammonia	Shall not exceed the values in Tables 3-1 to 3-4 in LRWQCB Basin Plan.
Bacteria	The fecal coliform concentration during any 30-day period shall not exceed a log mean of 20/100 milliliters (ml), nor shall more than 10 percent of all samples collected during any 30-day period exceed 40/100 ml.
Biostimulatory Substances	Waters shall not contain biostimulatory substances in concentrations that promote aquatic growths to the extent that such growths cause nuisance or adversely affect the water for beneficial uses.
Chemical Constituents	Waters designated as MUN shall not contain concentrations of chemical constituents exceeding the maximum contaminant level (MCL) or secondary maximum contaminant level (SMCL) based upon drinking water standards specified in Title 22.
Chlorine, total residual	For the protection of aquatic life, total chlorine residual shall not exceed either a median value of 0.002 mg/L or a maximum value of 0.003 mg/L. Median values shall be based on daily measurements taken within any 6-month period.
Color	Water shall be free of discoloration that causes nuisance or adversely affects beneficial uses.
Dissolved Oxygen (DO)	The DO concentration, as percent saturation, shall not be depressed by more than 10 percent, nor shall the minimum DO concentration be less than 80 percent of saturation. For waters with the beneficial uses of COLD, COLD with SPWN, WARM, and WARM with SPWN, the minimum DO concentration shall not be less than that specified in Table 3-6 of the LRWQCB Basin Plan.
Floating Material	Water shall not contain floating material, including solids, liquids, foams, and scum, in concentrations that cause nuisance or adversely affect beneficial uses.
Oil & Grease	Waters shall not contain oils, greases, waxes, or other materials in concentrations that cause nuisance, result in a visible film or coating on the surface of the water or on objects in the water that cause nuisance, or that otherwise adversely affect the water for beneficial uses.
рН	In fresh waters with designated beneficial uses of COLD or WARM, changes in normal ambient pH levels shall not exceed 0.5 pH units. For all other waters of the region, the pH shall not be depressed below 6.5 nor raised above 8.5.
Radioactivity	Radionuclides shall not be present in concentrations that are deleterious to human, plant, animal, or aquatic life or that result in the accumulation of radionuclides in the food web to an extent that presents a hazard to human, plant, animal, or aquatic life.
Sediment	The suspended sediment load and suspended sediment discharge rate of surface waters shall not be altered in such a manner as to cause nuisance or adversely affect beneficial uses.
Settleable Material	Waters shall not contain substances in concentrations that result in the deposition of material that causes nuisance or adversely affects beneficial uses.
Suspended Material	Waters shall not contain suspended material in concentrations that cause nuisance or adversely affect beneficial uses.
Tastes and Odors	Waters shall not contain taste or odor-producing substances in concentrations that impart undesirable tastes or odors to fish or other edible products of aquatic origin that cause nuisance, or that adversely affect the water for beneficial uses.

Temperature	The natural receiving water temperature of intrastate waters shall not be altered unless it can be demonstrated to the satisfaction of the Regional Water Quality Control Board (RWQCB) that such alteration in temperature does not adversely affect beneficial uses.
Toxicity	All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life.
Turbidity	Waters shall be free of changes in turbidity that cause nuisance or adversely affect the water for beneficial uses. Increases in turbidity shall not exceed natural levels by more than 10 percent.

Source: LRWQCB, 1995

# Table 3.1-3. Water Quality Objectives for Certain Water Bodies in Upper Owens River Hydrologic Unit

Surface Waters		Objective (mg/L) <sup>a,b</sup>									
Surface waters	TDS	CI	F	В	NO <sub>3</sub> -N	Total N	PO <sub>4</sub>				
Lako Sabrina	<u>10</u>	<u>2.0</u>	<u>0.10</u>	<u>0.05</u>	<u>0.2</u>	<u>0.3</u>	<u>0.03</u>				
Lake Sabrina	17	3.0	0.10	0.05	0.3	0.6	0.05				
South Laka	<u>12</u>	<u>3.7</u>	<u>0.10</u>	<u>0.02</u>	<u>0.1</u>	<u>0.1</u>	<u>0.03</u>				
South Lake	20	4.3	0.10	0.02	0.1	0.4	0.04				
Bishop Creek (Intake	<u>27</u>	<u>1.9</u>	<u>0.15</u>	<u>0.02</u>	<u>0.1</u>	<u>0.1</u>	<u>0.05</u>				
2)	29	3.0	0.15	0.02	0.2	0.4	0.09				

Source: LRWQCB, 1995

a Annual average value/90th percentile value.

b Objectives are in mg/L and are defined as follows:

B = Boron

CI = Chloride

F = Fluoride

N = Nitrogen, Total

NO<sub>3</sub>-N = Nitrate as Nitrogen

 $PO_4$  = Orthophosphate, dissolved

TDS = Total Dissolved Solids (Total Filterable Residue)

### 3.2. PREVIOUS INVESTIGATIONS

### 3.2.1. BISHOP CREEK

In 1974, Environmental Science and Engineering (ESE, 1975) in cooperation with the University of California at Los Angeles conducted an environmental baseline study of the water quality of Bishop Creek. The report concluded that the water quality of Bishop Creek was excellent and displayed the following characteristics:

• Total dissolved solids (TDS) remained very low throughout the summer, less than 30 milligrams per liter (mg/L)

- Calcium (Ca) was the predominant cation in all sampled waters and surface water composition reflected the general geology of the drainage basin
- Nitrate and phosphate levels were low, generally less than 0.10 mg/L and 0.05 mg/L, respectively

Water temperatures generally increased downstream; the report further stated that Ca was the dominant cation and that the North Fork of Bishop Creek had higher values than other drainages and appeared to be related to the geology (marble roof pendants) that is found in the upper reaches of the North Fork. In addition, the report noted that as flow decreased in Bishop Creek increases in various ions were noted and was attributed to groundwater providing a larger percentage of the baseflow of the stream. The groundwater generally has more contact time with the underlying bedrock resulting in higher concentrations of major ions (ESE, 1975).

The ESE report (1975) determined that, similar water characteristics reported from previous investigations, increasing dissolved constituents coincides with decreasing elevation. The dominant anion was bicarbonate, and the dominant cations were Ca and sodium. In addition, the water quality of Bishop Creek at the furthest downstream site (below Plant No. 6) had lower concentrations of alkalinity and dissolved constituents. The 1975 ESE Report stated that the likely reason for the decrease was the routing of water for power generation purposes. Table 3.2-1 and Table 3.2-2 provide a summary of the water quality characteristics for the various watersheds sampled.

Minor amounts of boron, barium, aluminum, iron, and manganese were found in the various drainages with the highest levels generally found in Bishop Creek below the confluence with South Fork.

### 3.2.2. SOUTH LAKE AND LAKE SABRINA

In 1986, the University of California at Riverside conducted a water quality investigation of Bishop Creek and selected eastern Sierra Nevada lakes for SCE (Lund, n.d.). The results of that investigation are presented in the following text.

Like most Sierra reservoirs, South Lake and Lake Sabrina have very steep sides and considerable annual fluctuations in surface elevations which severely limit the production of littoral aquatic vegetation. There have been no comprehensive limnological studies of these lakes. Limited water quality profiling of the lakes was conducted from June 1986 until November 1987 and are presented in Table 3.2-3 and Table 3.2-4. Field measurements of water temperature, pH and DO was conducted at one location on each lake. In general, water temperature varied from lows of 32.3 degrees Fahrenheit (°F) in March to 59.7°F in late August. Overall, water temperature decreased with increasing depth. DO ranged from 11.98 mg/L in early March to 2.44 mg/L in late August and was generally above 100 percent saturation except in August when DO values dropped to less than 38 percent saturation.

# Table 3.2-1. Bishop Creek – Project No. 1394 Physical and Chemical Characteristics of North and Middle Forks of Bishop Creek June-November 1974

	Sample Location												
	S1	S2	S2A	S3	S4	S6	S6A	S7	S8	S19 Creek 39	Bishop ( @ Hwy (*)		
Parameter	Range	Range	Range	Range	Range	Range	Range	Range	Range	Sprin g	Fall		
Ca (mg/L)	1.7-3.7	2.3-4.9	1.9-2.9	1.9-3.2	2.2-2.6	2.3-3.0	2.3-3.3	2.1-2.7	2.1-3.0	9.6	8.8		
Magnesium (mg/L)	0.1-0.16	0.13-0.18	0.12-0.16	0.14-0.22	0.17-0.19	0.18-0.22	0.18-0.23	0.13-0.22	0.13-0.16	0.7	0.5		
Sodium (mg/L)	0.4-0.8	0.8-1.1	0.6-1.0	0.5-1.0	0.6-0.8	0.80.8-1.1	0.7-1.1	0.8-1.2	0.6-0.7	4.5	3.4		
Nitrate as N (mg/L)	0.03-0.11	0.08-0.13	0.05-0.12	0.05-0.1	0.05-0.12	0.05-0.13	0.06-0.12	0.06-0.12	0.06-0.1	0.3	0.8		
Phosphate as P (mg/L)	0.03-0.04	0.02-0.05	0.02-0.05	0.02-0.04	0.02-0.05	0.02-0.03	0.01-0.03	0.01-0.04	0.01-0.03				
TDS (mg/L)	6-27	8-26	7-20	8-21	9-16	11-21	20	11-21	8-10				
Water Temperature (deg °C)	10.0-11.5	8.5-11.0	10.0-13.5	9.0-13.5	10.0-14.0	10.0-15.0	12.5-14.5	11.0-15.0	9.9-15.0	12.5	8.5		
pH (units)	5.5-7.5	5.0-7.1	5.0-8.8	5.0-7.4	5.0-6.8	5.0-8.2	5.5-7.2	5.0-8.4	5.0-7.3	7.5	7.29		
DO (mg/L)	6.6-8.1	6.7-9.4	6.8-9.1	6.8-8.8	6.8-7.5	6.4-8.6	6.3-7.7	7.46.6-8.1	6.2-7.8	9.2	9.3		

Source: ESE, 1975

(\*) Spring: May 1974; Fall: November 1974

(--) indicates analysis not performed.

### <u>Table 3.2-2. Physical and Chemical Characteristics of Middle and South Forks of Bishop Creek, McGee Creek and</u> <u>Birch Creek (<sup>a, b</sup>) May 1986 - December 1987</u>

	Watershed/Sample Locations (c)									
	Middle Fork of Bishop Creek	South Fork of Bishop Creek	Bishop Creek Below South Fork	McGee Creek	North Fork of Birch Creek	South Fork of BIRCH CREEK				
Parameter	1, 2, 3, 4	1S, 2S, 3S, 4S	5, 6, 7, 8, 9, 10, 17	11, 12	13, 14,	15, 16				
Calcium (mg/L)	1.3-10.0	2.5-47.3	4.1-20	2.58-10.3	5.5-13.9	13.8-15.3				
Magnesium (mg/L)	0.1-0.9	0.3-5.7	0.4-4.9	0.20-0.77	0.3-0.5	1.34-1.59				
Sodium (mg/L)	0.3-2.7	0.7-4.8	1.2-16.7	1.00-2.77	1.8-2.5	1.93-2.85				
Potassium (mg/L)	0.04-1.0	0.4-3.3	0.1-2.0	0.50-1.67	0.6-1.3	1.38-1.56				
ANC (µeq/L) (d)	122-447	146-2,532	235-1,537	153-651	321-789	893-1,006				
Chloride (mg/L)	0.1-0.5	0.2-1.0	0.2-5.6	0.12-0.28	0.2-0.3	0.23-0.25				
Nitrate (mg/L)	ND(e)-1.1	ND-0.8	ND-1.2	0.55-0.59	ND-0.5	ND				
Sulfate (mg/L)	0.1-13.3	1.3-23.2	1.7-13.0	1.16-2.76	2.9-3.5	1.78-2.25				
Silica (mg/L)	1.5-9.1	2.52-13.9	5.65-22.7	NS (f)	9.65-11.4	16.63-19.58				
Boron (mg/L)	ND-0.01	ND-0.02	ND-0.04	NS	ND	ND				
Barium (mg/L)	ND	ND-0.019	ND-0.054	NS	ND-0.003	0.001-0.005				
Aluminum (mg/L)	ND-0.07	ND-0.09	ND-0.60	NS	ND-0.16	ND-0.15				
Iron (mg/L)	ND-0.83	ND-0.19	ND-0.74	NS	ND-0.002	0.02-0.04				
Manganese (mg/L)	ND-0.042	ND-0.035	ND-0.028	NS	ND	ND-0.002				

Source: Lund, n.d.

<sup>a</sup> Derived from Lund undated.

<sup>b</sup> Values presented are estimated. Original values were reported in µmoles/L (Lund, n.d.) and converted to mg/L.

° ANC=Acid Neutralizing Capacity.

<sup>d</sup> ND=Not detected (no detection limit provided).

<sup>e</sup> NS=Not sampled.

# Table 3.2-3. 1986 Field Water Quality Depth Profiles for Lake Sabrina

	Depth	Water Temperature	рH	Dissol	ved Oxygen
Date	(meters)	(deg °C)	(units)	mg/L	% Saturation
June 24, 1986	0.5	12.61	7.25	8.31	108.3
	2.5	11.16	7.26	8.72	110.1
	4.5	9.33	7.33	9.07	110.0
	6.5	8.64	7.34	9.31	111.3
	8.5	8.01	7.43	9.46	111.5
	10.3	7.50	7.46	9.59	111.8
August 8, 1986	0.5	15.41	7.27	7.93	109.9
	2.5	15.25	7.23	7.72	106.6
	4.5	15.23	7.25	7.63	105.3
	6.5	14.91	7.45	8.11	111.1
	8.5	14.50	7.71	8.23	111.8
	10.3	14.03	8.06	8.44	113.5
	12.5	12.81	7.89	8.45	110.6
	14.5	10.82	7.65	8.43	105.7
	16.5	10.05	7.30	6.97	85.9
October 27, 1986	0.5	7.29	6.81	9.33	108.3
	2.5	7.29	7.01	8.96	104.0
	4.5	7.31	7.09	8.91	103.4
	6.5	7.30	7.13	8.85	102.7
	8.5	7.26	7.15	8.82	102.3

Source: Lund, n.d.

# Table 3.2-4. 1987 Field Water Quality Depth Profiles for Lake Sabrina

		Water Temperature	pН	Dissol	ved Oxygen
Date	Depth (meters)	(deg °C)	(units)	mg/L	% Saturation
March 18, 1987	0.5	0.14	7.14	11.98	114
	1.0	0.49	7.21	11.03	106
	2.0	1.66	7.26	10.45	105
	3.0	2.24	7.31	10.09	103
	4.0	2.80	7.35	9.70	100
	4.6	2.94	7.38	9.47	98
June 30, 1098	0.0	14.8	*	8.61	121
	0.5	14.5	*	8.70	122
	1.5	14.4	*	8.64	121
	2.5	14.4	*	8.62	120
	3.5	14.3	*	8.64	120
	4.5	14.3	*	8.64	120
	5.5	14.3	*	8.61	120
	6.5	14.2	*	8.74	122
	7.5	13.7	*	9.05	124
	8.5	13.1	*	9.26	126
	9.5	12.8	*	9.41	127
	10.5	12.1	*	9.64	128
	11.5	11.6	*	9.81	128
	12.5	10.5	*	10.41	133
August 24, 1987 <sup>1</sup>	0.5	15.39	7.74	2.58	37
	2.5	15.42	7.69	2.44	35
	4.5	15.42	7.66	2.44	35
	6.5	15.41	7.66	2.44	35
	8.5	15.37	7.62	2.48	35
	10.5	14.91	7.62	2.55	36
	12.5	13.47	7.63	2.60	36
	14.5	12.25	7.78	2.71	36
	15.I	11.92	7.75	2.72	36
November 3, 1987	0.5	8.48	7.04	8.42	102
	2.5	8.50	7.23	8.25	100
	4.5	8.52	9.32	7.87	95
	6.5	8.51	7.55	8.34	101
	8.5	8.53	7.66	8.07	98
	10.5	8.42	7.40	7.82	95
	11.0	8.52	7.66	8.14	99

Source: Lund, n.d.

<sup>1</sup> Low DO readings do not appear to correspond with any reported fish-kill and may be suspect. However, the Lund report shows similar data at other lakes in the Sierras at the same time-period, include Gem and Waugh lakes.

DO inversely followed water temperature and decreased values were observed as water temperatures increased. Values for pH ranged from 6.81 to 9.32; however, most values were between 7 and 8 pH units.

Measurements of the chemical characteristics of the lakes were taken in fall 1985 and are presented in Table 3.2-5. The chemical composition of these lake waters appears typical for reservoirs in the Sierra Nevada elevation and latitude. There are three basic factors which cause the high elevation reservoirs of this portion of the High Sierra to be mineral and nutrient-poor. First, the watersheds are generally undisturbed and support very little human habitation. Second, the substrates in these drainages are dominantly igneous intrusive rocks, and third, the drainages contain very shallow and poorly vegetated soils. The combination of these factors results in very little leaching of minerals and nutrients into waters entering the reservoirs.

	South Lake		Lake S	abrina
Parameter	Surface	Bottom	Surface	Bottom
Calcium (mg/L)	1.98	1.98	1.94	1.88
Magnesium (mg/L)	0.16	0.16	0.11	0.11
Sodium (mg/L)	0.34	0.34	0.18	0.28
Potassium (mg/L)	0.98	0.98	0.78	0.78
Nitrate as N (mg/L)	0.035	0.026	0.016	0.013
Sulfate as S (mg/L)	0.438	0.399	0.136	0.138
Bicarbonate				

# Table 3.2-5. Chemical Characteristics for South Lake and Lake Sabrina<sup>a</sup>

Source: Lund, n.d.

Notes: <sup>a</sup> Samples collected September 1985

As part of the California's Surface Water Ambient Monitoring Program (SWAMP) for perennial streams, the California SWRCB undertook a water quality monitoring program on Bishop Creek from 2013 to 2016. The results of the study are summarized in Table 3.2-6.

The water quality was similar to that observed in previous studies with Ca and sodium the dominant cations. TDS was low, ranging from 25 to 66 mg/L, but averaged above the Basin Plan value of 27 mg/L above Intake No. 2. Water temperature was generally less than 62.6 °F. Two biological parameters detected were fecal coliform and *Escherichia coli* (E coli.) and ranged from 1 to 66 colony forming units (cfu) per100 ml and 1 cfu to 61 cfu per 100 milliliter (ml), respectively; exceeding the basin standard of 20 cfu/100 ml for fecal coliform.

Samples collected over the 2-year period of 2015 and 2016 indicated non-detectable values for fecal coliform or *E. coli* for Bishop Creek (total of three samples) at the U.S. Forest Service (USFS) boundary. Studies conducted by the LRWQCB for Bishop Creek concluded that the impaired portion of Bishop Creek was located below Plant No. 6 and

was likely the result of cattle grazing in or near Bishop Creek and potentially leaking sanitary sewer systems in lower Bishop Creek (Knapp and Craig, 2016).

#### <u>Table 3.2-6. Summary of Swamp Water Quality Sampling on Bishop Creek at</u> <u>National Forest Boundary (Station 603BSP111)</u>

Parameter/Constituent (a)	Units	No. of Samples	Maximum	Minimum	Mean	Basin Standards
Oxygen, dissolved	(mg/L)	1	10.7	10.7	'	varies
Water Temperature	(deg °C)	12	16.4	2.2	9.84	NA
рН	(units)	12	10.3	7	7.97	6.5-8.5 (b)
Alkalinity (as calcium carbonate [CaCO₃])	(mg/L)	12	44	19	30.4	NA (c)
Turbidity	(NTU)	12	1.54	0.33	0.724	5 (d)
Specific Conductance	(µS/cm)	12	104.4	40.7	74.63	900-1,600 (d)
TDS	(mg/L)	12	66	25	46.0	27 (a)
Са	(mg/L)	12	13.7	0.6	7.99	NA
Magnesium	(mg/L)	11	1.63	0.43	1.032	NA
Sodium	(mg/L)	11	4.82	1.1	3.085	NA
Potassium	(mg/L)	10	2.86	0.31	1.636	NA
Chloride	(mg/L)	12	1.6	0.36	0.884	1.9 (a)
Sulfate (as SO <sub>4</sub> )	(mg/L)	12	9.55	3.15	6.157	250-500 (d)
Fluoride	(mg/L)	11	0.143	0.046	0.1014	0.15 (a)
Boron	(mg/L)	12	0.481	0.0058	0.1271	0.2 (a)
Nitrate and Nitrite (as N)	(mg/L)	11	0.0475	0.0065	0.01999	10 (e)
Nitrogen, Total	(mg/L)	12	0.125	0.049	0.0794	0.1 (a)
Phosphorus as P	(mg/L)	9	0.0094	0.0054	0.00752	NA
Orthophosphate as P	(mg/L)	12	0.0132	0.0051	0.00880	0.05 (a)
Fecal Coliform	cfu/100 ml(f)	27	66	1	8.9	20 (g)
E. coli	cfu/100	24	61	1	8.0	100/320 (h)

Source: CEDEN, 2018

Notes:

<sup>a</sup> Basin Plan for Bishop Creek at Intake 2

<sup>b</sup> United States Environmental Protection Agency (USEPA) secondary standard for pH

° NA = Not Applicable – no current MCL

<sup>d</sup> California Drinking Water Program (CDWP) secondary MCL

<sup>e</sup> CDWP primary MCL.

<sup>f</sup>.cfu

<sup>g</sup> Lahontan Basin Plan

<sup>h</sup> Basin Plan for Inland Surface Waters, Enclosed Bays, and Estuaries of California

BOLD Equal to or above current MCLs or notification levels

### 3.3. STUDY AREA

Figure 3.3-1 shows the study areas for the Bishop Creek Water Quality Study.



Figure 3.3-1 Water Quality Technical Study Area

# 4.0 METHODS

This section is a summary of parameters monitored and methodologies used during the study period. Further detail regarding sampling procedures and methods is discussed in Section 4.5 of this document. The overall program is summarized in Table 4.4-1.

#### 4.1. PARAMETERS MONITORED

The Study Plan identified the below parameters to be monitored:

- Water Temperature in degrees Celsius (°C)
- TDS
- DO in mg/l
- Conductivity in µmhos/cm)
- TDS
- Total Nitrogen
- Nitrate (NO<sub>3</sub>) as Nitrogen
- Orthophosphate (PO<sub>4</sub>) as P dissolved
- Turbidity
- Water Clarity (Secchi Disk)
- E. coli

#### 4.2. VERTICAL PROFILES OF DISSOLVED OXYGEN AND WATER TEMPERATURE

Vertical profiles of DO and temperature were collected at the deepest location(s) in South Lake and Lake Sabrina. The purpose of the survey is to identify the timing, extent, and duration of any lake stratification. Vertical profiles of DO and temperature were taken monthly in June and ending in October 2021. The following schedule was proposed for collecting the vertical profiles for each year of the study:

• June, July, August, September, and October

The following sampling locations were proposed:

- Deepest point in Lake Sabrina (estimated at 220-feet-deep at full capacity)
- Deepest Point in South Lake (estimated at 220-feet-deep at full capacity)

When collecting DO and temperature profiles, the same sampling location was visited each time so that the relative change in the profile (DO and temperature) could be determined throughout the summer. DO and temperature readings were taken every meter from the water surface to the lake bottom. Lake surface elevation was recorded during each sampling date.

#### 4.3. BISHOP CREEK DISSOLVED OXYGEN AND TEMPERATURE SAMPLING

Bishop Creek DO and water temperature sampling was conducted during the same periods as the lake sampling, monthly in June and October and bi-monthly from early July and terminating in late September. DO and temperature measurements would be sampled mid-depth in the middle, if accessible, otherwise adjacent to the bank of the stream. DO and water temperature data were recorded using a calibrated hand-held digital instrument. The following sampling locations were sampled:

- North Fork Bishop Creek (background)
- Middle Fork Bishop Creek below Lake Sabrina
- South Fork Bishop Creek below South Lake
- Bishop Creek below Plant No. 2
- Tailwater of Plant No. 2
- Bishop Creek below Plant No. 3
- Tailwater of Plant No. 3
- Bishop Creek below Plant No. 4
- Tailwater of Plant No. 4
- Bishop Creek below Plant No. 5
- Tailwater of Plant No. 5
- Bishop Creek below Plant No. 6
- Tailwater of Plant No. 6

# 4.4. SAMPLING FOR SECCHI DISK, TURBIDITY, CONDUCTIVITY, TOTAL DISSOLVED SOLIDS, ORTHOPHOSPHATE, TOTAL NITROGEN, NITRATE AND *E. COLI*

Sampling for Secchi disk, turbidity, conductivity, TDSs, Orthophosphate, Total Nitrogen, Nitrate, and *E.Coli* was generally conducted starting in June and ending in October. Specific sampling periods for each parameter are described below.

#### 4.4.1. SECCHI DISK READINGS

The sampling period for Secchi disk readings occurred in June, July, August, September, and October. Locations sampled were within the deepest portion of Lake Sabrina and South Lake at the same locations used for water temperature and DO profiles. At each site, one sample was taken using the Secchi disk to approximate depth of the euphotic zone/light penetration.

4.4.2. TURBIDITY, CONDUCTIVITY, TOTAL DISSOLVED SOLIDS, ORTHOPHOSPHATE, TOTAL NITROGEN AND NITRATE

The sampling period for turbidity, conductivity, TDSs, orthophosphate, total nitrogen, and nitrate occurred a minimum of once per month during June, July, August, and late September. Sampling locations included lakes and rivers. Lake sampling occurred within a deep hole of Lake Sabrina and South Lake, and at two points: one point above and one point below the thermocline<sup>2</sup>. The riverine sampling locations included: North Fork Bishop Creek (background); Middle Fork Bishop Creek below Lake Sabrina; South Fork Bishop Creek below South Lake; Bishop Creek below Plant No. 2; Bishop Creek below Plant No. 3; Bishop Creek below Plant No. 4; Bishop Creek below Plant No. 5; and Bishop Creek below Plant No. 6. The U.S. Geological Survey (USGS) sampling protocol and procedures were followed for all sampling events.

#### 4.4.3. *E.* COLI<sup>3</sup>

The sampling frequency for *E. coli* occurred on six separate events starting July 1 and ending August 15. Locations sampled included South Lake and Lake Sabrina, adjacent to the boat ramp; and Intake No. 2 Forebay from an easily accessible location adjacent to the shore.

#### 4.4.4. GENERAL

At each of the creek sampling events the following information was recorded:

- Streamflow in cubic feet per second (cfs)
- Air temperature
- Wind speed and direction
- Percent cloud cover
- Date, duration, and amount of most recent precipitation event (if known or obtainable)

<sup>&</sup>lt;sup>2</sup> A thermocline is the horizontal plane in a thermally stratified lake located at the depth where water temperature decreases most rapidly (greater than 1 °C per meter) with depth.

<sup>&</sup>lt;sup>3</sup> If any sample detects greater than 50 col/100 ml of *E. coli*, microbial source tracking methods (MST [qPCR]) were performed to assess if the *E. coli* originates from humans.

# Table 4.4-1. Locations, Parameters and Sampling Frequency for Water Quality Study

	PARAMETERS										
LOCATION	Water Temperature	Dissolved Oxygen	Secchi Disk	Turbidity	Conductivity	Total Dissolved Solids	Total Kjeldahl Nitrogen (a)	Nitrite + Nitrate as N (a)	Nitrate as N	Orthophosphate as PO4	E. coli
LAKES											
Lake Sabrina											
Deepest Point	J, Jy, A, S, O (b, c)	J, Jy, A, S, O (b)	J, Jy, A, S, O	NA (d)	J, Jy, A, S	J, Jy, A, S	J, Jy, A, S	J, Jy, A, S	J, Jy, A, S	J, Jy, A, S	NA
Adjacent to Boat Ramp	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	July 1-August 15 (e)
South Lake											
Deepest Point	J, Jy, A, S, O (b)	J, Jy, A, S, O (b)	J, Jy, A, S, O	NA	J, Jy, A, S	J, Jy, A, S	J, Jy, A, S	J, Jy, A, S	J, Jy, A, S	J, Jy, A, S	NA
Adjacent to Boat Ramp	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	July 1-August 15 (e)
Intake # 2 Forebay	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	July 1-August 15 (e)
SURFACE FLOWS											
North Fork Bishop Creek (background)	J, 2Jy, 2A, 2S, O	J, 2Jy, 2A, 2S, O	NA	J, Jy, A, S	J, Jy, A, S	J, Jy, A, S	J, Jy, A, S	J, Jy, A, S	J, Jy, A, S	J, Jy, A, S	NA
Middle Fork Bishop Creek below Lake Sabrina	J, 2Jy, 2A, 2S, O	J, 2Jy, 2A, 2S, O	NA	J, Jy, A, S	J, Jy, A, S	J, Jy, A, S	J, Jy, A, S	J, Jy, A, S	J, Jy, A, S	J, Jy, A, S	NA
South Fork Bishop Creek below South Lake	J, 2Jy, 2A, 2S, O	J, 2Jy, 2A, 2S, O	NA	J, Jy, A, S	J, Jy, A, S	J, Jy, A, S	J, Jy, A, S	J, Jy, A, S	J, Jy, A, S	J, Jy, A, S	NA
Bishop Creek below Powerhouse No. 2	J, 2Jy, 2A, 2S, O	J, 2Jy, 2A, 2S, O	NA	J, Jy, A, S	J, Jy, A, S	J, Jy, A, S	J, Jy, A, S	J, Jy, A, S	J, Jy, A, S	J, Jy, A, S	NA
Bishop Creek below Powerhouse No. 3	J, 2Jy, 2A, 2S, O	J, 2Jy, 2A, 2S, O	NA	J, Jy, A, S	J, Jy, A, S	J, Jy, A, S	J, Jy, A, S	J, Jy, A, S	J, Jy, A, S	J, Jy, A, S	NA
Bishop Creek below Powerhouse No. 4	J, 2Jy, 2A, 2S, O	J, 2Jy, 2A, 2S, O	NA	J, Jy, A, S	J, Jy, A, S	J, Jy, A, S	J, Jy, A, S	J, Jy, A, S	J, Jy, A, S	J, Jy, A, S	NA
Bishop Creek below Powerhouse No. 5	J, 2Jy, 2A, 2S, O	J, 2Jy, 2A, 2S, O	NA	J, Jy, A, S	J, Jy, A, S	J, Jy, A, S	J, Jy, A, S	J, Jy, A, S	J, Jy, A, S	J, Jy, A, S	NA
Bishop Creek below Powerhouse No. 6	J, 2Jy, 2A, 2S, O	J, 2Jy, 2A, 2S, O	NA	J, Jy, A, S	J, Jy, A, S	J, Jy, A, S	J, Jy, A, S	J, Jy, A, S	J, Jy, A, S	J, Jy, A, S	NA
Tailwater of Powerhouse No. 2	J, 2Jy, 2A, 2S, O	J, 2Jy, 2A, 2S, O	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tailwater of Powerhouse No. 3	J, 2Jy, 2A, 2S, O	J, 2Jy, 2A, 2S, O	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tailwater of Powerhouse No. 4	J, 2Jy, 2A, 2S, O	J, 2Jy, 2A, 2S, O	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tailwater of Powerhouse No. 5	J, 2Jy, 2A, 2S, O	J, 2Jy, 2A, 2S, O	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tailwater of Powerhouse No. 6	J, 2Jy, 2A, 2S, O	J, 2Jy, 2A, 2S, O	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:

(a) - Lab analysis parameters needed to calculate Total Nitrogen.

(b) -Vertical profile of dissolved oxygen and water temperature at the deepest point on the lake.

(c) – J=June, Jy=July, A=August, S=September, O=October. All locations indicated are sampled once per month unless month is preceded by a number which indicates the number of times samples were collected during that month.

(d) – NA=Not Applicable.

(e) - A total of 6 samples were collected and analyzed during the 45-day period,

#### 4.5. SAMPLING PROCEDURES AND METHODS

This section specifies the procedures used for collecting surface water measurements and/or water quality samples for chemical analysis. Several methods for collecting surface water samples were used, depending on the type of surface water to be sampled (i.e., tailraces, streams, lakes).

#### 4.5.1. LAKE SAMPLING PROCEDURES

Field measurements of DO and water temperature were collected at the deepest portion of the lake based on the 1980 bathymetric survey (refer to Bishop Creek Water Quality Implementation Plan [BCWQIP] [SCE 2020]). The maximum depth for Lake Sabrina and South Lake was initially reported to be 78 feet and 130 feet, respectively. However, subsequent onsite measurements indicated that Lake Sabrina and South Lake were approximately 240-and 223-feet-deep, respectively. Field measurements of DO and water temperature measurements were collected starting at 0.5 meter below the water surface and at 1 meter below water surface and continuing in 1-meter increments until the total depth of the lake was obtained. Measurements were recorded on the appropriate forms and/or field notebook. Copies of the field forms are included in Appendix A.

Secchi disk measurements were collected at the same location as the field measurements for DO and water temperature. The Secchi depth measurement procedures are summarized in Standard Operating Procedure (SOP) for surface water sampling (SW-001) in the BCWQIP (SCE, 2020).

If a thermocline is identified from the monthly field measurements of water temperature and DO, water quality samples for laboratory analysis and field measurement of conductivity were collected at above and below the thermocline. If no thermocline is identified, water samples were collected at one-half of the Secchi depth and 80 percent of the total depth of the lake at the time of sampling.

Water samples for conductivity, TDS, orthophosphate, total nitrogen, and nitrate were collected using either a peristaltic pump or discrete depth sampler (Kemmerer or Van Dorn bottle) in accordance with SOP for surface water sampling (SW-001) in BCWQIP (SCE, 2020). Water samples for *E. coli* and MST (qPCR) were collected near shore using a grab sampling method.

#### 4.5.2. SURFACE WATER SAMPLING PROCEDURES

Surface water sampling refers to the collection of water samples for the purposes of field or laboratory testing of water collected from a flowing water site. A flowing water site can refer to streams and tailraces in which water flows unidirectionally.

Field measurements of DO, turbidity, conductivity, and water temperature were collected from straight reaches having uniform flow, and having a uniform and stable bottom contour, and where constituents are well mixed along the cross-section. Field measurements were collected in accordance with SOP for surface water sampling (SW-001) in BCWQIP (SCE, 2020).

Water samples for laboratory testing were collected using either the grab sample method or swing sampler in accordance with SOP for surface water sampling (SW-001) in BCWQIP (SCE, 2020).

#### 4.5.3. FIELD ANALYTICAL METHODS

Field measurements of DO, turbidity, conductivity, and water temperature were conducted using the methods indicated in Table 4.5-1 and with SOP for surface water sampling (SW-001) in BCWQIP (SCE, 2020).

# Table 4.5-1. Field Methods

Analysis	Method	Method REPORTING Limit
Dissolved Oxygen in mg/L	USEPA 360.1	0.1 mg/L
Water Temperature in <sup>o</sup> C	USEPA 170.1	0.1 °C
Conductivity in µmhos/cm @25 °C	USEPA 120.1	1 μS/cm
Turbidity in NTUs	USEPA 180.1	varies

Notes:

mg/L=milligrams per liter °C=degrees Centigrade µmhos/cm=micro-mhos per centimeter NTU=Nephelometric turbidity units

#### 4.5.4. FIELD CALIBRATION METHODS

The equipment used in collecting field data includes a variety of instruments. Proper maintenance, calibration, and operation of each instrument are the responsibility of the individual assigned to each task. Instruments and equipment used during the study are maintained, calibrated, documented for calibration, and operated according to the manufacturers' guidelines and recommendations and SOP for field instrument calibration (SW-002) in BCWQIP (SCE, 2020).

### 4.5.5. Laboratory Methods

In general, the selected laboratory will adhere to those recommendations promulgated in Title 21, CFR Part 58, Good Laboratory Practices; and criteria described in Methods for Chemical Analysis of Water and Wastes (USEPA 1979; USEPA-600/4-79-202). Water samples collected for chemical analysis during the Bishop Creek Project were tested in accordance with the standard analytical procedures established by the U.S. Environmental Protection Agency (EPA) Methods for Chemical Analysis of Water and Wastes (USEPA 1979; USEPA-600/4-79-202), American Society for Testing and Materials, or Standard Methods for the Examination of Water and Wastewater and are indicated in Table 4.5-2.

ANALYSIS	Method	Method REPORTING Limit (units)	Holding TIME
Total Dissolved Solids	SM 2540C	10 mg/L	7 days
Total Nitrogen by calculation	calculation		
Nitrite + Nitrate as N	USEPA 353.2	0.20 mg/L	28 days
Total Kjeldahl Nitrogen	USEPA 351.2	0.10 mg/L	28 days
Nitrate as N	USEPA 300.0	0.11 mg/L	2 days
Orthophosphate as P	USEPA 365.3	0.10 mg/L	2 days
E. coli	SM 9222G	20 col/100 ml	24 hours*
MST (qPCR)	BacHum or HF183		48 ours

# Table 4.5-2. Laboratory Methods

Notes:

\*- Per SWAMP guidelines for monitoring *E. coli* in ambient water.

SM=Standard Methods for the Examination of Water and Wastewater; USEPA= Method for Chemical Analysis of Waters And Wastes, USEPA-600/4-79-020; N=Nitrogen; P=Phosphorus.

The samples for each analytical parameter were collected and preserved in the appropriate sample containers as presented in Table 4.5-3. The sample containers provided by the analytical laboratories were new, pre-cleaned, pre-loaded with the appropriate preservative, and delivered in a clean cooler.

# Table 4.5-3. Sampling Container and Preservation Requirements

ANALYSIS	Method	Container	Preservation		
Total Dissolved Solids	SM 2540C	500 ml -poly	<6ºC		
Nitrite + Nitrate as N	USEPA 353.2	250 ml - poly	<6ºC, H <sub>2</sub> SO <sub>4</sub>		
Total Kjeldahl Nitrogen	USEPA 351.2	250 ml - poly	<6ºC, H <sub>2</sub> SO <sub>4</sub>		
Nitrate as N	USEPA 300.0	60 ml - poly	<6°C		
Orthophosphate as P	USEPA 365.3	250 ml - poly, filtered	<6°C		
E. coli	SM 9222G	100 ml, glass	<6ºC		
MST (qPCR)	BacHum or HF183	1000 ml, polypropylene	<10ºC		

Notes:

SM=Standard Methods for the Examination of Water and Wastewater; USEPA= Method for Chemical Analysis of Waters and Wastes, USEPA-600/4-79-020; N=Nitrogen; P=Phosphorus; poly=polyethylene; ml=milliliters; °C= degrees centigrade; H<sub>2</sub>SO<sub>4</sub>=sulfuric acid.

#### 4.5.6. SAMPLE LABELING AND CHAIN-OF-CUSTODY

Sample labels were completed for each sample using indelible ink. The labels include sample number and location, type of sample, date and time of sampling, sampler's name (or initials), preservation method, and analyses to be performed. The completed sample labels were affixed to each sample container.

A chain-of-custody record accompanied all samples. During transfer, individuals relinquishing and receiving the samples sign, date, and note the time on the record. The chain-of-custody form documents the sample custody transfer from the sampler, to a courier, to the laboratory.

All laboratory water quality samples were managed in accordance with SOP for Sample Management (SW-003) in BCWQIP (SCE, 2020). All laboratory reports for each sampling period are included in Appendix B.

### 4.5.7. MODIFICATION TO METHODS

The original Study Plan specified the use of the Sierra Nevada Aquatic Research Laboratory (SNARL) to conduct the laboratory analysis of *E. coli* and MST (qPCR). Due to the Covid-19 pandemic, SNARL was not available to conduct the analyses. Weck Laboratories was engaged to conduct the *E. coli* analysis using Standard Method 9223B along with a holding time of 24-hours which followed the SWAMP guidelines for monitoring *E. coli* in ambient water. Source Molecular (acquired by LuminUltra in August 2021), in Florida, was engaged to conduct the MST (qPCR) analysis for any samples that exceeded 50 MPN/100 ml of *E. coli*. Three samples exceeded the 50 MPN/100 ml of *E. coli*, and the MST analysis is reported in Section 5.0.

Additionally, the total depth for both lakes was greater than was previously reported. Equipment used to collect vertical profiles of DO and water temperature were unable to obtain the maximum depth of the lakes during the June 2020 sampling period. Additional equipment was obtained to reach the bottom of the lakes in subsequent profiles conducted in June 2021 through October 2021. Lake profile locations and bathymetry data from the Final Technical Report Bishop Creek Reservoirs Fish Distribution Study (AQ 4) (SCE, 2021) is included in Appendix D.

### 5.0 RESULTS

### 5.1. SOUTH LAKE

### 5.1.1. DISSOLVED OXYGEN AND WATER TEMPERATURE PROFILES

#### 5.1.1.1. June 2021

A DO and water temperature profile was conducted on June 16, 2021, at the deepest point in South Lake. The maximum depth at the profile point on June 16, 2021, was 48.5 meters (159.1 feet) with a lake surface elevation of 9693.20-feet mean sea level (msl). DO ranged from 9.53 mg/L at a depth of 18 meters (59.1 feet) below water surface (BWS) to 0.0 mg/L at a depth of 40 meters (131.2 feet) BWS. In general, DO saturation was above 95 percent and often exceeded 100 percent in the upper portion of the lake. DO saturation declined sharply to less than 10 percent at 35 meters (114.8 feet) BWS (refer to Appendix C, Table C-1). No thermocline was identified.

Figure 5.1-1 presents a profile of DO and water temperature over the surveyed water column and Appendix C (Table C-1) presents the individual values recorded for each depth interval.

### 5.1.1.2. July 2021

The DO and water temperature profile was conducted on July 27, 2021, at the deepest point in South Lake. The maximum depth at the profile point on July 27, 2021, was 44.8 meters (147.0 feet) with a lake surface elevation of 9676.00-feet msl. DO ranged from 8.80 mg/L at a depth of 17 meters (55.8 feet) BWS and 0.00 mg/L at a depth of 33 meters (108.3 feet) BWS. In general, DO saturation was above 95 percent and often exceeded 100 percent in the upper portion of the lake. DO saturation declined sharply to less than 0 percent at 33 meters (108.3 feet) BWS (refer to Appendix C, Table C-2). A thermocline was identified at approximately 15 to 18 meters (49.2 - 59.1 feet) BWS. Figure 5.1-2 presents a profile of DO and water temperature over the surveyed water column and Appendix C (Table C-2) presents the individual values recorded for each depth interval.

### 5.1.1.3. August 2021

The DO and water temperature profile was conducted on August 23, 2021, at the deepest point in South Lake. The maximum depth at the profile point on August 23, 2021, was 39.8 meters (130.6 feet) with a lake surface elevation of 9664.61-feet msl. DO ranged from 8.61 mg/L at a depth of 13.5 meters (44.3 feet) BWS and 0.00 mg/L at a depth of 21 meters (68.9 feet) BWS. In general, DO saturation was above 100 percent in the upper portion of the lake. DO saturation declined sharply to less than 10 percent at 26 meters (85.3 feet) BWS (refer to Appendix C, Table C-3). A thermocline was identified at approximately 11-14 meters (36.1 - 45.9 feet) BWS. Figure 5.1-3 presents a profile of DO and water temperature over the surveyed water column and Appendix C (Table C-3) presents the individual values recorded for each depth interval.



# Figure 5.1-1 South Lake Dissolved Oxygen and Water Temperature Profile June 2021



Figure 5.1-2 South Lake – Dissolved Oxygen and Water Temperature Profile – July 2021



# Figure 5.1-3 South Lake – Dissolved Oxygen and Water Temperature Profile – August 2021

### 5.1.1.4. September 2021

The DO and water temperature profile was conducted on September 21, 2021, at the deepest point in South Lake. The maximum depth at the profile point on September 21, 2021, was 35.1 meters with a lake surface elevation of 9648.37 feet msl. DO ranged from 8.94 mg/L at a depth of 9.25 meters BWS and 0.00 mg/L at a depth of 33 meters BWS. DO saturation was above 100 percent in the upper portion of the lake. DO saturation declined sharply to less than 5 percent at 20 meters BWS (refer to Appendix C, Table C-4). A thermocline was identified at approximately 8 to 10 meters BWS. Figure 5.1-4 presents a profile of DO and water temperature over the surveyed water column and Appendix C (Table C-4) presents the individual values recorded for each depth interval.

# 5.1.1.5. October 2021

The DO and water temperature profile was conducted on October 5, 2021, at the deepest point in South Lake. The maximum depth at the profile point on October 5, 2021, was 32.5 meters with a lake surface elevation of 9641.70-feet msl. DO ranged from 8.51 mg/L at a depth of 9.5 meters BWS and 0.04 mg/L at a depth of 32.5 meters BWS. DO saturation was above 100 percent in the upper portion of the lake. DO saturation declined sharply to less than 5 percent at 18 meters BWS (refer to Appendix C, Table C-5). A thermocline was identified at approximately 7 to 10 meters BWS. Figure 5.1-5 presents a profile of DO and water temperature over the surveyed water column and Appendix C (Table C-5) presents the individual values recorded for each depth interval.

### 5.1.1.6. Summary

The DO and water temperature profiles for South Lake were similar for each monitoring period throughout the summer and early fall. Each exhibited elevated DO readings in the upper two thirds of the lake and extremely low DO readings in the bottom portion of the lake (approximately 12 meters below the outlet). When compared to the previous monitoring period, the ranges for DO in 2021 were similar to ranges observed in 2020 (Table 5.1-1).



# Figure 5.1-4 South Lake – Dissolved Oxygen and Water Temperature Profile – September 2021



# Figure 5.1-5 South Lake – Dissolved Oxygen and Water Temperature Profile – October 2021

Table 5.1-1. Summary of Dissolved Oxygen Levels in South Lake from							
Vertical Transects							
	Laka Surface Elevation	Range of Dissolved Oxygen above/below Outlet (b					

Veer (e)	Lake Surface Elevation	Range of Dissolved Oxygen above/below Outlet (b)					
rear (a)	Range (ft msl)	Position (c)	Maximum	Minimum			
2020	0747.92 0724.02	Above	9.61	7.07			
	9747.02 - 9734.02	Below	8.55	0.00			
2021	0603 20 0641 70	Above	9.53	7.30			
2021	9093.20 - 9041.70	Below	8.94	0.00			

Notes:

a - Five transects were conducted in each calendar year

b - From instantaneous measurements at 1-meter intervals from lake surface to bottom of survey/lake

c - Position above or below lake outlet

Except for the decrease in lake level elevation observed in 2021 versus 2020, the graph for DO versus elevation were similar between monitoring periods (Figure 5.1-6).

The very low DO readings and the rise in water temperature in the lower portion of the lake (Figure 5.1-6) is suggestive of a stratified lake. Boehrer and Schultze (2008) indicated that meromictic lakes can occur when chemically different bottom layer, called a monimolimnion, has continuously been present for a least one annual cycle. Higher concentrations of dissolved substances have increased density sufficiently to resist deep recirculation and the exchange rates with the mixolimnion (the freely circulating upper layer of a meromictic lake) are small enough that chemically different conditions are sustained continuously. Figure 5.1-7 presents an example of DO, water temperature and conductivity with depth in a meromictic lake observed in Germany's Former Mining Area of Merseburg-Ost. As the stratification remained into the 2021 monitoring period, this suggests that South Lake for the monitoring period of 2020-2021 indicates that South Lake is exhibiting the characteristics of a meromictic lake.



# Figure 5.1-6 South Lake - Comparison of 2020 to 2021 Vertical DO Profiles with Lake Elevation



Source: Boehrer & Schultze 2008

# Figure 5.1-7 DO, Water Temperature and Conductivity in a Meromictic Lake in Rassnitzer in Former Mining Area Merseburg-Ost, Germany

### 5.1.2. GENERAL WATER QUALITY OF SOUTH LAKE

### 5.1.2.1. 2021 Monitoring Period

Field water quality testing and laboratory water quality samples were collected during the same time periods that DO profiles were conducted and are presented in Table 5.1-3. Field measurements indicated Secchi disk depth ranged from 6.25 to 13.5 meters BWS between June and October sampling periods. A thermocline was not identified in the June sampling period however thermoclines were detected in the subsequent monitoring periods and ranged from 7 to 10 meters in the October sampling period to 15 to 18 meters in the July sampling period. The following water quality measurements are based on collection of measurements above and below the observed thermoclines (which also corresponds to above and below the outlet of the lake).

Conductivity ranged from 30 microSiemens/cm ( $\mu$ S/cm) to 40  $\mu$ S/cm in the shallow sampling zone and 68  $\mu$ S/cm to 2,230  $\mu$ S/cm in the deeper sampling zone. Laboratory water quality analysis indicated values of TDS ranging from not detected (ND) less than 10 mg/L to 40 mg/L in the shallow sampling zone (above the thermocline) to 36 mg/L to 1,300 mg/L in the deeper sampling zone (below the thermocline).

Nitrate as Nitrogen (NO<sub>3</sub>-N) was ND less than 0.110 to less than 0.230 for all samples collected in South Lake. Total nitrogen as N ranged from ND less than 0.10 to 0.17 mg/L in the shallow sampling zone to ND less than 0.10 mg/L to 5.5 mg/L in the deeper sampling zone. Orthophosphate as phosphorus (PO<sub>4</sub>-P) was not detected in all samples from the shallow sampling zone and ranged from ND less than 0.010 mg/L to 0.12 mg/L in the deeper sampling zone.

### 5.1.2.2. Comparison to 2020 Monitoring Period

During the 2020 monitoring period TDS ranged from ND less than 10 mg/L to 1,100 mg/L for all samples with an average of 18 mg/L for samples collected above the outlet. During the 2021 monitoring period, TDS values were similar ranging from ND less than 10 mg/L to 1,300 mg/L for all samples with an average of 21.5 mg/L for samples collected above the outlet. Total Nitrate as Nitrogen (NO3-N) was not detected in any samples for both monitoring periods. Total Nitrogen (Total-N) was detected and ranged from ND less than 0.30 mg/L to 5.2 mg/L with an average of ND less than 0.30 mg/L for samples collected above the outlet in the 2020 monitoring period. Total-N had similar values in the 2021 monitoring period and ranged from ND less than 0.10 mg/L to 5.5 mg/L for all samples with an average of 0.108 mg/L for samples collected above the outlet. Ortho-Phosphate as P (PO4-P) ranged from ND less than 0.01 mg/L to 0.17 mg/L with an average on ND less than 0.01 mg/L for samples collected above the outlet in the 2021 monitoring period. PO4-P had similar values in the 2021 monitoring period. Total-N be outlet in the 2020 monitoring period above the outlet in the 2020 monitoring period. PO4-P had similar values in the 2021 monitoring period ranging from ND less than 0.01 mg/L to 0.12 mg/L with all samples collected above the outlet reporting ND less than 0.01 mg/L (Table 5.1-3.).

### 5.1.3. BACTERIOLOGICAL

Bacteriological samples were collected between July 1 and August 15, 2021 and analyzed for *E. coli*. A total of seven samples were collected with all samples reporting

non-detect at ND less than 1.0 most probable number in 100 milliliters (MPN/100ml) and are presented in Table 5.1-4.

# 5.1.3.1. Comparison to Basin Plan Objectives

For samples collected above the outlet, TDS averaged 18 mg/L for the 2020 monitoring period and 21.5 mg/L for the 2021 monitoring period which are both above the basin objective for South Lake of 12 mg/L. Considering that South Lake is a headwaters lake in the Bishop Creek drainage, the elevated number appears to reflect background conditions and the original basin plan objectives for South Lake are indicative of limited data used to establish the water quality objectives for South Lake.

NO3-N was not detected in any samples for both monitoring periods. Total-N was not detected in the 2020 monitoring period and averaged 0.1 mg/L for the 2021 monitoring period and equal to the South Lake basin plan objective of 0.1 mg/L. PO4-P was detected but all values were below basin plan objectives for samples collected above the outlet (Table 5.1-2).

# Table 5.1-2. Summary of Laboratory Results for South Lake for Samples Collected above the Outlet Depth for 2020-2021 Monitoring Periods

Year	Parameter	Total Dissolved Solids (mg/L)	Nitrate as N (mg/L)	Total Nitrogen (mg/L)	Ortho phosphate as P (mg/L)
	Maximum	33	ND<0.110	ND<0.30	0.011
2020	Minimum	ND<10	ND<0.110	ND<0.30	ND<0.010
2020	Average*	18	ND<0.110	ND<0.30 (ND<0.10)**	ND<0.010
	Maximum	40	ND<0.110	0.17	ND<0.010
2021	Minimum	ND<10	ND<0.110	ND<0.10	ND<0.010
	Average*	21.5	ND<0.110	0.11	ND<0.010
Basin Objective (a	annual average/90 <sup>th</sup> percentile)	12/20	0.1/0.1	0.1/0.4	0.03/0.04

Notes:

\* Arithmetic average is for all samples collected. For samples with ND values, 1/2 of the ND value was used to calculate average when more than one sample had detectable values, otherwise the ND value was used.

\*\* Data collected during 2020 and 2021 have indicated that TKN makes up the entire amount of Total-N. The average for TKN is used as an average for the 2020 period.

						POSITION IN RELATION		FIELD MEASUREMENTS (a)		LABORATORY ANALYSIS						
							тос	DUTLET					Т	otal Nitroge	n	
				LAKE SURFACE		SAMPLE	Outlet			Conductivity	Total Dissolved	Nitrate as	Total	Nitrite + Nitrate	Total Kjeldahl	Ortho phosphate
VEAR		DΔTE	тімғ	ELEVATION	THERMO-	DEPTH (meters)	Depth (meters)	Above/Below	Secchi Disk Depth	(µS/cm @25°C)	Solids (mg/L)	N (ma/L)	Nitrogen	as N (mg/L)	Nitrogen	as P (mg/L)
	SL-DP-5	6/15/2020	0.15		OLINE	5	36	above	(1101013)	30	(g, _) 15	ND<0.110		ND<0.200		
	SL-DP-31.5	6/15/2020	9:00	9738.50	No	31.5	36	above	10.5	110	16	ND<0.110	ND<0.30	ND<0.200	ND<0.10	0.011
	SL-DP-4	7/28/2020	10:30	0747.00		4	39	above	<u> </u>	30	ND<10	ND<0.110	ND<0.30	ND<0.200	ND<0.10	ND<0.010
	SL-DP-54	7/28/2020	10:05	9747.82	NO	54	39	below	8.5	1,880	1,100	ND<0.110	5.2	ND<0.200	5.2	0.17
	SL-DP-15	8/25/2020	12:20	0741.06	Yes, 17-18	15	37	above	11 75	40	30	ND<0.110	ND<0.30	ND<0.200	ND<0.10	ND<0.010
	SL-DP-20	8/25/2020	11:55	9741.90	meters	20	37	above	11.75	70	33	ND<0.110	ND<0.30	ND<0.200	ND<0.10	ND<0.010
2020	SL-DP-20	9/23/2020	12:05	9736 50	Yes, 34-35	20	35	above	0.75	37	10	ND<0.110	ND<0.30	ND<0.200	ND<0.10	ND<0.010
-	SL-DP-42	9/23/2020	12:50	9730.30	meters	42	35	below	9.10	53	31	ND<0.110	ND<0.30	ND<0.200	ND<0.10	ND<0.010
	(c)	10/5/2020	(c)	9734.02	Yes, 28-35 meters	(c)	(c)	(c)	12.0				(c)			
	Maximum										1,100	ND<0.110	5.2 (e)	ND<0.200	ND<0.10	0.17 (e)
										Minimum	ND<10	ND<0.110	ND<0.30	ND<0.200	ND<0.10	ND<0.010
				1					Arithm	etic Average (d)	18	ND<0.110	ND<0.30	ND<0.200	ND<0.10	0.011
	SL-DP-7	6/16/2021	10:30	9693.20	No	7	22	above	13.5	37	40	ND<0.230	ND<0.10	ND<0.200	ND<0.10	ND<0.010
	SL-DP-40	6/16/2021	11:00			40	22	below		2,230	1,300	ND<0.110	5.5	ND<0.200	5.5	0.12
	SL-DP-10	7/27/2021	9:45	9676.00	Yes, 15-18	10	17	above	8.75	31	23	ND<0.110	0.17	ND<0.200	0.17	ND<0.010
	SL-DP-24	//2//2021	10:15		meters	24	1/	below		73	36	ND<0.110	0.15	ND<0.200	0.15	ND<0.010
	SL-DP-8	8/23/2021	10:30	9664.61	Yes, 11-14	8	13	apove	8.75	40	18	ND<0.110	0.16	ND<0.200	0.16	ND<0.010
2024	SL-DP-20	8/23/2021	10:25			20	13	below		00	40	ND<0.110	ND<0.10	ND<0.200	ND<0.10	0.029
2021		9/21/2021	10.25	9648.37	res, o-10	4	<u> </u>		6.25 50	30	12	ND<0.110	ND<0.10	ND<0.200	ND<0.10	ND<0.010
-	(c)	10/5/2021	(c)	9641.70	Yes, 7-10	(c)	(c)		(c)	30	42	ND < 0.110	(c)	ND~0.200	ND < 0.10	ND<0.010
	( )		( )		meters	( )	( )	( )			1 000					0.40()
	Maximum									Niaximum	1,300	ND<0.230	5.5 (e)	ND<0.200	5.5 (e)	0.12 (e)
	Winimum         ND<10         ND<0.10         ND<0.10         ND<0.200         ND<0.10         NL           Arithmetic Assesses         ND<0.100						ND<0.010									
	Anumeuc Average (u) 21.3 ND<0.110 0.106 ND<0.200 0.106 ND<0.00 ND<0.200 0.106 ND<0.200 0.106 ND<0.200 0.106 ND<0.200 0.106 ND<0.200 0.200							0.02/0.04								
	Dasin Objective (annual average/30m percentile)   12/20   0.1/0.1   0.1/0.4     0.03/0.04															

Table 5.1-3. Field Water Quality Measurements and Laboratory Results of South Lake Samples, June - October 2021

Notes:

a – for dissolved oxygen and water temperature, see vertical profiles

b – at time of sampling

c – no laboratory water quality sample collected

d – average is for samples collected above the outlet. For samples with ND values, ½ of the ND value was used to calculate average when more than one sample had a detectable value, otherwise the ND value was used.

e - maximum values for these constituencies were collected below the outlet

ND = not detected at the indicated detection limit

#### Table 5.1-4. Summary of Water Quality Analysis for E. Coli from Various Lakes in the Bishop Creek Watershed July 1 - August 15, 2020 and 2021

	<i>E. COLI</i> (MPN/100 ml)						
DATE	South Lake Boat Ramp	Lake Sabrina Boat Ramp	Intake 2 Reservoir				
7/13/2020 (a)	ND<1.0	ND<1.0	24				
7/16/2020	1.0	ND<1.0	3.1				
7/27/2020	ND<1.0	ND<1.0	18				
7/30/2020	ND<1.0	ND<1.0	6.3				
7/31/2020	ND<1.0	ND<1.0	6.3				
8/3/2020	ND<1.0	ND<1.0	ND<1.0				
8/5/2020	ND<1.0	3.1	1.0				
2020 Maximum	1.0	3.1	24				
2020 Minimum	ND<1.0	ND<1.0					
2020 Geometric Mean (b)	1.0	1.0 1.21					
7/12/2021 (a)	ND<1.0	ND<1.0	28				
7/15/2021	ND<1.0	ND<1.0	8.6				
7/26/2021	ND<1.0	310 (c)	2.0				
7/28/2021	ND<1.0	6.3	4.1				
7/29/2021	ND<1.0	180 (c)	210 (c)				
8/2/2021	ND<1.0	17	6.3				
8/5/2021	ND<1.0	3.1	5.2				
2021 Maximum	ND<1.0	310	210				
2021 Minimum	ND<1.0	ND<1.0	2.0				
2021 Geometric Mean (b)	ND<1.0	16.3	8.86				
Inland Surface Water Objective	100/320 (d)						

Notes:

a – The initial sampling dates were excluded from the geometric mean calculation as the samples were analyzed outside of the holding time of 24 hours.

b – For samples with ND values, ND value of 1 was used to calculate the geometric mean when more than one sample had a detectable value, otherwise the ND value was used.

c – qPCR analysis was conducted on this sample and the laboratory reported Non-Detect at the method detection limit of 150 human biomarkers per 100 ml. No human DNA was detectable.

d – From Basin Plan for Inland Surface Waters, Enclosed Bays, and Estuaries of California: Geometric Mean/Maximum

#### 5.2. LAKE SABRINA

#### 5.2.1. DISSOLVED OXYGEN AND WATER TEMPERATURE PROFILES

#### 5.2.1.1. June 2021

A DO and water temperature profile was conducted on June 17, 2021, at the deepest point in Lake Sabrina. The maximum depth achieved at the profile point on June 17, 2020, was 65.3 meters with a lake surface elevation of 9099.50-feet msl. DO ranged from 10.16 mg/L at a depth of 14 meters BWS and 4.70 mg/L at a depth of 65.3 meters BWS. A thermocline was identified between 8 to 10 meters BWS. Figure 5.2-1 presents a profile of DO and water temperature over the surveyed water column and Appendix C (Table C-6) presents the individual values recorded for each depth interval.

#### 5.2.1.2. July 2021

The DO and water temperature profile was conducted on July 28, 2021, at the deepest point in Lake Sabrina. The maximum depth at the profile point on July 28, 2021, was 63 meters with a lake surface elevation of 9098.58-feet msl. DO ranged from 9.77 mg/L at a depth of 13 meters BWS and 4.33 mg/L at a depth of 63 meters BWS. DO saturation was above 100 percent in the upper portion of the lake. DO saturation gradually declined to less than 60 percent at 59 meters BWS (refer to Appendix C, Table C-7). A thermocline was identified between 7 to 11 meters BWS. Figure 5.2-2 presents a profile of DO and water temperature over the surveyed water column and Appendix C (Table C-7) presents the individual values recorded for each depth interval.

#### 5.2.1.3. August 2021

A DO and water temperature profile was conducted on August 24, 2021, at the deepest point in Lake Sabrina. The maximum depth at the profile point on August 24, 2021, was 62.2 meters with a lake surface elevation of 9099.31-feet msl. DO ranged from 10.41 mg/L at a depth of 12 meters BWS and 4.23 mg/L at a depth of 62.2 meters BWS. DO saturation was above 100 percent in the upper portion of the lake and gradually declined to less than 60 percent at 60 meters BWS (refer to Appendix C, Table C-8). A thermocline was identified between 9 to 11 meters BWS. Figure 5.2-3 presents a profile of DO and water temperature over the surveyed water column and Appendix C (Table C-8) presents the individual values recorded for each depth interval.



# Figure 5.2-1 Lake Sabrina Dissolved Oxygen and Water Temperature Profile – June 2021



# Figure 5.2-2 Lake Sabrina Dissolved Oxygen and Water Temperature Profile – July 2021



# Figure 5.2-3 Lake Sabrina Dissolved Oxygen and Water Temperature Profile – August 2021
#### 5.2.1.4. September 2021

A DO and water temperature profile was conducted on September 20, 2021, at the deepest point in Lake Sabrina. The maximum depth at the profile point on September 20, 2021, was 62.9 meters with a lake surface elevation of 9096.74-feet msl. DO ranged from 10.31 mg/L at a depth of 13 meters BWS and 2.17 mg/L at a depth of 62.9 meters BWS. DO saturation was above 100 percent in the upper portion of the lake and gradually declined to less than 60 percent at 52 meters BWS (refer to Appendix C, Table C-9). A thermocline was identified between 11 to 16 meters BWS. Figure 5.2-4 presents a profile of DO and water temperature over the surveyed water column and Appendix C (Table C-9) presents the individual values recorded for each depth interval.

#### 5.2.1.5. October 2021

A DO and water temperature profile was conducted on October 5, 2021, at the deepest point in Lake Sabrina. The maximum depth at the profile point on October 5, 2021, was 63.5 meters with a lake surface elevation of 9095.09-feet msl. DO ranged from 10.14 mg/L at a depth of 14 meters BWS and 0.11 mg/L at a depth of 63.5 meters BWS. DO saturation was above 100 percent in the upper portion of the lake. DO saturation gradually declined to less than 10 percent at 63 meters BWS (refer to Appendix C, Table C-10). A thermocline was identified between 12 to 14 meters BWS. Figure 5.2-5 presents a profile of DO and water temperature over the surveyed water column and Appendix C (Table C-10) presents the individual values recorded for each depth interval.

#### 5.2.1.6. Summary

The DO and water temperature profiles for Lake Sabrina were similar for each monitoring period throughout the summer and early fall. Each exhibited elevated DO readings in the upper two thirds of the lake and a gradual decline in DO near the bottom portion of the lake (well below the lake outlet). When compared to the previous monitoring period, the ranges for DO in 2021 were similar to ranges observed in 2020 (Table 5.2-1).

	Lake Surface Elevation	Range of Dissolv	ed Oxygen above a (b)	nd below Outlet
Year (a)	Range (ft msl)	Position (c)	Maximum	Minimum
2020	0119 62 0109 07	Above	9.87	7.00
2020	9110.02 - 9100.97	Below	10.03	0.05
2021	0000 50 0005 00	Above	9.78	7.04
2021	9099.30 - 9093.09	Below	10.41	0.11

# Table 5.2-1. Summary of Dissolved Oxygen Levels in Lake Sabrina from Vertical Transects

Notes:

a – Five transects were conducted in each calendar year.

b – From instantaneous measurements at 1-meter intervals from lake surface to bottom of survey/lake.

c - Position above or below lake outlet.



# Figure 5.2-4 Lake Sabrina – Dissolved Oxygen and Water Temperature Profile – September 2021



Figure 5.2-5 Lake Sabrina – Dissolved Oxygen and Water Temperature Profile – October 2021

Except for the decrease in lake level elevation observed in 2021 versus 2020, the graph for DO versus elevation were similar between monitoring periods (Figure 5.2-6).

#### 5.2.2. GENERAL WATER QUALITY OF LAKE SABRINA

5.2.2.1. 2021 Monitoring Period

Field water quality testing and laboratory water quality samples were collected during the same time periods that DO profiles were conducted and are presented in Table 5.2-2. Field measurements indicated Secchi disk depth of 8.75 to 12.25 meters between June and October sampling periods. Thermoclines were identified during all sampling periods and ranged from 7 to 11 meters in the July sampling period and 11 to 16 meters during the September sampling period. The following measurements are based on collection of measurements above and below the observed thermoclines (which corresponds to above and below the outlet). Conductivity ranged from 23 to 34  $\mu$ S/cm in the shallow zone (above the thermocline) to 26 to 30  $\mu$ S/cm in the deeper zone (below the thermocline).

Laboratory water quality analysis for all sampling periods indicated very low values of TDS ranging from 12 mg/L to 19 mg/L in the shallow sampling zone and 14 mg/L to 24 mg/L in the deeper zone.

NO<sub>3</sub>-N was ND less than 0.110 for all samples collected in Lake Sabrina. Total nitrogen as N ranged from ND less than 0.10 mg/L to 0.11 mg/L in the shallow sampling zone and ND less than 0.10 mg/L to 0.15 mg/L in the deeper sampling zone. PO<sub>4</sub>-P was not detected at ND less than 0.010 mg/L for all samples collected.

### 5.2.2.2. Comparison to 2020 Monitoring

During the 2020 monitoring period, TDS ranged from 11 mg/L to 39 mg/L for all samples with an average of 21 mg/L for samples collected above the outlet. During the 2021 monitoring period, TDS values were similar ranging from 12 mg/L to 24 mg/L for all samples with an average of 16 mg/L for samples collected above the outlet. NO3-N was not detected in any samples for both monitoring periods. Total-N was detected and ranged from ND to 0.30 mg/L to 0.52 mg/L for all samples with an average of ND to 0.30 mg/L to 0.52 mg/L for all samples with an average of ND to 0.30 mg/L for samples collected above the outlet in the 2020 monitoring period. Total-N had similar values in the 2021 monitoring period and ranged from ND to 0.10 mg/L to 0.11 mg/L for all samples with an average of ND to 0.10 mg/L to 0.11 mg/L for all samples with an average of ND to 0.22 mg/L during the 2020 monitoring period for all samples. PO4-P was not detected in the 2021 monitoring period. Table 5.2-2 presents a summary of the laboratory results for Lake Sabrina.

### 5.2.2.3. Comparison to Basin Plan Objectives

For samples collected above the outlet, TDS averaged 21 mg/L for the 2020 monitoring period and 16 mg/L for the 2021 monitoring period which are both above the basin plan objective for Lake Sabrina of 10 mg/L. Considering that Lake Sabrina is a headwaters lake in the Bishop Creek drainage, the elevated number appears to reflect background conditions and the original basin objectives for Lake Sabrina are indicative of limited data used to establish the original water quality objectives.

NO3-N was not detected in any samples for both monitoring periods. Total-N was not detected in the 2020 monitoring period and was detected only once at 0.11 mg/L and averaged ND less than 0.1 mg/L for the 2021 monitoring period and below the Lake Sabrina basin objective of 0.3 mg/L. PO4-P was detected once but all values were below basin objectives for samples collected above the outlet (Table 5.2-2).

#### <u>Table 5.2-2</u> Summary of Laboratory Results for Lake Sabrina for Samples <u>collected above the Outlet Depth for 2020-2021 Monitoring Periods</u>

Year	Parameter	Total Dissolved Solids (mg/L)	Nitrate as N (mg/L)	Total Nitrogen (mg/L)	Ortho phosphate as P (mg/L)
	Maximum	31	ND<0.110	ND<0.30	0.022
2020	Minimum	11	ND<0.110	ND<0.30	ND<0.010
2020	Average*	21	ND<0.110	ND<0.30 (0.1)**	ND<0.010
	Maximum	19	ND<0.110	0.17	ND<0.010
2021	Minimum	12	ND<0.110	ND<0.10	ND<0.010
	Average*	16	ND<0.110	ND<0.10	ND<0.010
Basin Objective (	annual average/90 <sup>th</sup> percentile)	10/17	0.2/0.3	0.3/0.6	0.03/0.05

Notes:

\* Arithmetic average is for all samples collected. For samples with ND values, 1/2 of the ND value was used to calculate average when more than one sample had detectable values, otherwise the ND value was used.

\*\* Data collected during 2020 and 2021 have indicated that TKN makes up the entire amount of Total-N. The average for TKN is used as an average for the 2020 period.



# Figure 5.2-6 Lake Sabrina - Comparison of 2020 with 2021 Vertical DO Profiles with Lake Elevation

							POSITION	IN RELATION	FIELD MEASUREM	IENTS (a)		L	ABORATO		S	
							тос	DUTLET					Т	otal Nitroge	n	
YEAR	SAMPLE DESIGNATION	DATE	ТІМЕ	LAKE SURFACE ELEVATION (b) (ft msl)	THERMO- CLINE	SAMPLE DEPTH (meters)	Outlet Depth (meters)	Above/Below Outlet	Secchi Disk Depth (meters)	Conductivity (µS/cm @25°C)	Total Dissolved Solids (mg/L)	Nitrate as N (mg/L)	Total Nitrogen (mg/L)	Nitrite + Nitrate as N (mg/L)	Total Kjeldahl Nitrogen (mg/L)	Ortho phosphate as P (mg/L)
	LS-DP-8	6/17/2020	9:00	0116 20	Yes, 11-12	8	15	above	7 5	30	16	ND<0.110	ND<0.30	ND<0.200	ND<0.10	ND<0.010
ļ	LS-DP-15	6/17/2020	9:30	9110.20	meters	15	15	above	7.5	20	25	ND<0.110	0.30	ND<0.200	0.30	ND<0.010
ŗ	LS-DP-7	7/29/2020	11:25	0118 62	Yes, 9-14	7	15	above	12.0	20	11	ND<0.110	ND<0.30	ND<0.200	ND<0.10	ND<0.010
ļ	LS-DP-16	7/29/2020	10:55	9110.02	meters	16	15	below	12.0	30	12	ND<0.110	ND<0.30	ND<0.200	ND<0.10	ND<0.010
ļ	LS-DP-8	8/24/2020	12:30	0115 53	Yes, 10-14	8	14	above	10.0	30	31	ND<0.110	ND<0.30	ND<0.200	ND<0.10	ND<0.010
ļ	LS-DP-17	8/24/2020	12:05	0110.00	meters	17	14	below	10.0	40	39	ND<0.110	0.52	ND<0.200	0.52	ND<0.010
2020	LS-DP-7	9/21/2020	11:10	9111 89	Yes, 10-14	7	13	above	10.25	23	20	ND<0.110	ND<0.30	ND<0.200	ND<0.10	0.022
ļ	LS-DP-28	9/21/2020	11:50	0111.00	meters	28	13	below	10.20	39	25	ND<0.110	ND<0.30	ND<0.200	0.11	ND<0.010
	(c)	10/5/2020	(c)	9108.97	Yes, 10-13 meters	(c)	(c)	(c)	11.0				(c)			
ļ										Maximum	39	ND<0.110	0.52	ND<0.200	0.52	0.022
ļ										Minimum	11	ND<0.110	ND<0.30	ND<0.200	ND<0.10	ND<0.010
ļ										Average (d)	21	ND<0.110	ND<0.30	ND<0.200	0.10	ND<0.010
ļ	LS-DP-5	6/17/2021	9:30	9099 50	Yes, 8-10	5	10	above	8 75	23	19	ND<0.110	ND<0.10	ND<0.200	ND<0.10	ND<0.010
ļ	LS-DP-20	6/17/2021	10:00	0000.00	meters	20	10	below	0.75	26	24	ND<0.110	0.11	ND<0.200	0.11	ND<0.010
ļ	LS-DP-5	7/28/2021	9:45	9098 58	Yes, 7-11	5	9	above	12 25	26	12	ND<0.110	0.11	ND<0.200	0.11	ND<0.010
ļ	LS-DP-22	7/28/2021	10:05		meters	22	9	below	12.20	27	20	ND<0.110	0.15	ND<0.200	0.15	ND<0.010
ļ	LS-DP-5	8/24/2021	10:15	9099.31	Yes, 9-11	5	9.5	above	11.75	23	15	ND<0.110	ND<0.10	ND<0.200	ND<0.10	ND<0.010
ļ 1	LS-DP-25	8/24/2021	10:40		meters	25	9.5	below		26	14	ND<0.110	ND<0.10	ND<0.200	ND<0.10	ND<0.010
2021	LS-DP-8	9/20/2021	10:20	9096.74	Yes, 11-16	8	9	above	10.25	34	16	ND<0.110	ND<0.10	ND<0.200	ND<0.10	ND<0.010
ļ	LS-DP-20	9/20/2021	10:45		meters	20	9	below		30	20	ND<0.110	ND<0.10	ND<0.200	ND<0.10	ND<0.010
ļ	(c)	10/5/2021	(c)	9095.09	Yes, 12-14 meters	(c)	(c)	(c)	(c)				(c)			
ļ										Maximum	24	ND<0.110	0.11	ND<0.200	0.11	ND<0.010
ļ										Minimum	12	ND<0.110	ND<0.10	ND<0.200	ND<0.10	ND<0.010
ļ									Arithm	etic Average (d)	16	ND<0.110	ND<0.10	ND<0.200	0.065	ND<0.010
								Basir	n Objective (annual average	e/90 <sup>th</sup> percentile)	10/17	0.2/0.3	0.3/0.6			0.03/0.05

Table 5.2-2. Field Water Quality	v Measurements and Laborator	v Results of Lake Sabrina Sam	ples	, June - Octob

Notes:

a - For dissolved oxygen and water temperature, see vertical profiles.b - At time of sampling.

c – No laboratory water quality sample collected. d - average is for samples collected above the outlet. For samples with ND values, 1/2 of the ND value was used to calculate average when more than one sample had a detectable value, otherwise the ND value was used. ND=Not detected at the indicated detection limit.

# <u>ber 2021</u>

### 5.2.3. BACTERIOLOGICAL

A total of seven samples were collected during the 2020 monitoring period and only one sample had a detectable value of *E. coli* with a value of 3.1 MPN/100 ml. The 2021 monitoring period had five detectable values ranging from 3.1 to 310 MPN/100 ml detectable values for *E. coli*. The geometric mean was calculated at 16.3 MPN/100 ml and was well below the Inland Surface Water Plan objective of 100 MPN/100 ml. The highest value of 310 MPN/100 ml is below the Inland Surface Water Plan objective of 100 MPN/100 ml. The highest value of 310 MPN/100 ml is below the Inland Surface Water Plan objective of 100 MPN/100 ml. The highest value of 320 MPN/100 ml (Table 5.1-4.). Table 5.1-4. summarizes the results for *E. coli* for Lake Sabrina. Two samples exceeded the 50 MPN/100 ml for conducting qPCR analysis; one sample collected on July 26, 2021, had 310 MPN/100 ml and one sample collected on July 29, 2021, had 180 MPN/100 ml. The qPCR analysis revealed that both samples had no detectable human DNA present.

#### 5.3. INTAKE 2 RESERVOIR

#### 5.3.1. BACTERIOLOGICAL

A total of seven samples were collected during the 2020 monitoring period and values ranged from ND less than 1.0 to 24 MPN/100 ml. The geometric mean was calculated at 4.73 MPN which is well below the Inland Surface Water Plan objective of 100 MPN/100 ml. The 2021 monitoring period ranged from 2.0 to 210 MPN/100 ml for *E. coli*. The geometric mean was calculated at 8.86 MPN/100 ml and was well below the Inland Surface Water Plan objective of 100 MPN/100 ml is below the Inland Surface Water Plan objective of 100 MPN/100 ml. The highest value of 210 MPN/100 ml is below the Inland Surface Water Plan 90th percentile objective level of 320 MPN/100 ml (Table 5.1-4.). Table 5.1-4. summarizes the results for *E. coli* for Intake No. 2 Reservoir. One sample exceeded the 50 MPN/100 ml for conducting qPCR analysis; the sample collected on July 29, 2021, had 210 MPN/100 ml. The qPCR analysis revealed that the sample had no detectable human DNA present.

#### 5.4. BISHOP CREEK

#### 5.4.1. DISSOLVED OXYGEN AND WATER TEMPERATURE

#### 5.4.1.1. 2021 Monitoring Period

Water temperature ranged from 8.4 °C to 18.4 °C with the lower values occurring near the upper reaches of Bishop Creek and the higher values generally occurring in the lower reaches of Bishop Creek. DO occurred in a narrow range from 7.08 mg/L to 9.74 mg/L. The oxygen saturation level for the observed water temperature and air pressure was generally above 98 percent and often exceeded 100 percent for all monitored reaches of Bishop Creek.

Table 5.4-1 presents the DO and water temperature values obtained during the June-October 2021 monitoring period.

				MEAN DAILY	AIR TEM	PERATURE	WATER	DISSOLVED	BAROMETRIC	CALCULATED DO
	STATION			DISCHARGE *	Measured	Calculated	TEMPERATURE	OXYGEN	PRESSURE	SATURATION **
LOCATION	DESIGNATION	DATE	TIME	(cfs)	(deg F)	(deg C)	(deg C)	(mg/L)	(in Hg)	(%)
		6/14/2021	10:40	11	70	21.1	14.3	8.27	21.35	113.0%
		7/12/2021	7:30	13	63	17.2	16.2	7.92	21.60	111.4%
		7/26/2021	8:30	13	58	14.4	15.8	7.41	21.40	103.5%
North Fork of Bishon Creek	BC-NE-1	8/5/2021	11:15	12	71	21.7	16.6	7.86	21.55	110.6%
North Fork of Bishop Oreck	DO-INI - I	8/25/2021	10:20	9.0	68	20.0	13.8	8.30	21.40	110.9%
		9/9/2021	11:30	6.4	78	25.6	16.1	8.17	21.47	116.6%
		9/22/2021	10:55	5.8	65	18.3	12.4	8.35	21.55	107.6%
		10/4/2021	11:20	5.8	46	7.8	8.5	8.70	21.43	103.5%
		6/14/2021	11:25	41	70	21.1	8.4	8.61	21.10	103.9%
		7/12/2021	9:45	36	70	21.1	12.7	7.91	21.34	103.4%
		7/26/2021	10:00	35	61	16.1	14.1	7.46	21.15	103.4%
South Fork of Bishop Creek	BC-blw-SI	8/5/2021	12:23	30	71	21.7	15.8	7.26	21.27	101.4%
below South Lake	DO DIW OL	8/25/2021	11:05	29	65	18.3	15.6	7.24	21.25	102.6%
		9/9/2021	12:45	25	71	21.7	15.2	7.40	21.19	104.8%
		9/22/2021	11:45	20	65	18.1	14.3	7.51	21.25	104.1%
		10/4/2021	12:50	24	52	11.1	11.0	7.96	21.13	113.4%
		6/14/2021	9:35	31	64	17.8	14.1	7.44	21.55	100.3%
		7/12/2021	8:55	36	66	18.9	17.4	7.46	21.74	107.2%
		7/26/2021	9:15	14	60	15.6	18.4	7.08	21.55	103.9%
Middle Fork of Bishop Creek	BC-blw-LS	8/5/2021	11:30	14	71	21.7	17.4	7.37	21.69	105.9%
below Lake Sabrina	DO DIW LO	8/25/2021	10:35	15	68	20.0	16.2	7.22	21.55	101.6%
		9/9/2021	12:20	15	72	22.2	16.7	7.25	21.61	102.0%
		9/22/2021	10:20	15	68	20.0	14.2	7.60	21.70	102.4%
		10/4/2021	12:15	16	46	7.8	11.5	7.93	21.56	109.8%
		6/14/2021	12:05	14	74	23.3	12.6	8.73		
		7/13/2021	8:45	14	73	22.8	15.1	8.09	23.22	104.2%
		7/29/2021	10:25	14	69	20.6	14.2	8.21	23.20	103.5%
Bishop Creek below Plant	BC-blw-PH2	8/5/2021	10:45	14	83	28.3	15.3	7.94	23.20	102.3%
No. 2		8/25/2021	9:20	14	67	19.4	13.0	8.47		
		9/9/2021	10:55	13	79	25.8	14.7	8.10	23.18	102.1%
		9/22/2021	10:00	16	69	20.6	11.5	8.68	23.30	112.4%
		10/4/2021	13:45	16	61	16.1	9.1	9.25	23.15	103.9%
		6/14/2021	12:30	6.4	75	23.9	13.9	8.57	23.75	103.0%
		7/13/2021	9:35	6.3	79	26.1	15.8	8.21	23.90	103.1%
		7/29/2021	9:45	6.4	70	21.1	14.6	8.30	23.90	101.9%
Bishop Creek below Plant	BC-blw-PH3	8/5/2021	10:10	6.4	84	28.9	16.5	7.95	23.88	102.0%
No. 3		8/25/2021	8:50	6.4	68	20.0	13.5	8.51	23.85	102.2%
		9/9/2021	10:20	6.4	80	26.7	15.2	8.19	23.88	102.8%
		9/22/2021	9:30	6.5	70	20.9	12.4	8.80	23.95	102.1%
		10/4/2021	14:10	6.5	65	18.3	9.7	9.36	23.84	102.5%
Bishop Creek below	BC-blw-PH4	6/15/2021	8:05	19	74	23.3	12.8	9.14	24.75	103.4%
Powerhouse No. 4		7/13/2021	10:20	20	85	29.4	16.0	8.53	24.89	104.1%

# Table 5.4-1. Dissolved Oxygen and Water Temperature Measurements for Bishop Creek June - October 2021

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				MEAN DAILY		PERATURE	WATER	DISSOLVED	BAROMETRIC	CALCULATED DO
	STATION			DISCHARGE *	Measured	Calculated	TEMPERATURE	OXYGEN	PRESSURE	SATURATION **
LOCATION	DESIGNATION	DATE	TIME	(cfs)	(deg F)	(deg C)	(deg C)	(mg/L)	(in Hg)	(%)
		7/29/2021	9:10	21	70	21.1	15.0	8.60	24.85	102.8%
		8/5/2021	9:45	21	83	28.3	16.4	8.33	24.86	101.7%
		8/25/2021	8:15	21	67	19.4	13.5	8.87	24.80	102.7%
		9/9/2021	9:35	21	80	26.7	15.0	8.62	24.82	104.2%
		9/22/2021	8:45	20	72	22.2	12.2	9.27	24.95	103.6%
		10/4/2021	14:35	21	67	19.4	9.8	9.69	24.79	102.2%
		6/15/2021	8:35	1.0	75	23.9	13.2	8.80	25.15	99.4%
		7/13/2021	10:55	1.1	87	30.6	17.1	8.32	25.21	102.5%
		7/29/2021	8:35	1.2	70	21.1	15.3	8.42	25.20	99.4%
Bishop Creek below Plant		8/5/2021	9:25	1.2	81	27.2	17.0	8.15	25.20	100.4%
No. 5		8/25/2021	7:40	1.3	70	21.1	14.0	8.65	25.15	99.9%
		9/9/2021	8:55	1.3	77	25.0	15.6	8.58	25.17	101.3%
		9/22/2021	8:15	1.3	68	20.2	12.3	9.11	25.35	100.6%
		10/4/2021	14:55	1.1	71	21.7	10.7	9.55	25.15	100.7%
		6/15/2021	9:05	103	76	24.4	12.8	9.30	25.35	102.7%
		7/13/2021	11:20	105	88	31.1	16.8	8.61	25.44	102.6%
		7/29/2021	8:05	79	70	21.1	15.2	8.65	25.45	100.9%
Bishop Creek below Plant		8/5/2021	8:45	74	81	27.2	16.6	8.30	25.44	98.9%
No. 6		8/25/2021	7:15	65	68	20.0	13.6	8.94	25.40	101.0%
		9/9/2021	8:25	57	76	24.4	15.4	8.70	25.41	102.7%
		9/22/2021	7:45	54	67	19.2	11.9	9.36	25.60	109.8%
		10/4/2021	15:15	52	71	21.7	10.5	9.74	25.37	102.7%
				2021 Maximum	88	31.1	18.4	9.74	25.60	116.6%
				2021 Minimum	46	7.8	8.4	7.08	21.10	98.9%
				2021 Average	71	21.4	14.1	8.33	23.36	104.0%

Notes:

\* - Instantaneous measurements made on North Fork of Bishop Creek. All other values were calculated on a mean daily average discharge.

\*\* - Saturation based on calculated DO saturation at reported water temperature and ambient barometric pressure.

### 5.4.1.2. Comparison to 2020 Monitoring Period

During the 2020 monitoring period, DO ranged from 7.12 mg/L to 9.68 mg/L with an average of 8.62 mg/L. During the 2021 monitoring period, DO values were similar ranging from 7.08 mg/L to 9.74 mg/L with an average of 8.33 mg/L. DO saturation for all values during both monitoring periods was above 98 percent saturation. Table 5.4-2 presents a summary of DO and water temperature for Bishop Creek for both monitoring periods.

# Table 5.4-2. Summary of Dissolved Oxygen and Water Temperature for Bishop Creek 2020-2021 Monitoring Periods

Year	Parameter	Water Temperature (deg C)	Dissolved Oxygen (mg/L)	Barometric Pressure (in Hg)	Calculated DO Saturation (%)
	Maximum	17.8	9.68	25.53	124.9%
2020	Minimum	6.9	7.12	21.15	98.0%
	Average*	12.7	8.62	23.36	104.3%
	Maximum	18.4	9.74	25.60	116.6%
2021	Minimum	8.4	7.08	21.10	98.9%
	Average*	14.1	8.33	23.36	104.0%

Notes:

\* Arithmetic average is for all samples collected.

#### 5.4.2. GENERAL WATER QUALITY OF BISHOP CREEK

Field and laboratory water quality samples were collected along Bishop Creek in June, July, August, and September 2021 and are summarized in Table 5.4-3 Turbidity ranged from 1.57 to 6.26 Nephelometric turbidity units (NTU) with the highest concentration at Bishop Creek below Plant No. 5 during the July sampling period. Generally, Bishop Creek had values of turbidity below 5 NTU for all locations and all sampling periods. Conductivity ranged from 23 to 70  $\mu$ S/cm@25°C with the highest concentration observed at Middle Fork of Bishop Creek below Lake Sabrina during the July sampling period. Generally, conductivity increased in value as you progressed downstream in the Bishop Creek watershed.

TDS ranged from 14 mg/L to 46 mg/L with the highest concentration occurring below Plant No. 4 in August 2021.

NO<sub>3</sub>-N was reported to below the detection limit (ND less than 0.110 mg/L) in all samples. Total Nitrogen ranged from ND<0.10 mg/L to 0.37 mg/L with the highest concentration detected in the South Forth of Bishop Creek below South Lake during the September sampling period.

					F	IELD MEAS	JREMENTS	(a)		LA	BORATORY	MEASUREM	ENTS	
												Total Nitroger	n	
					Water	Dissolved				NO <sub>3</sub>	Total	NO <sub>2</sub> + NO <sub>3</sub>		
	STATION			DISCHARGE	Temperature	Oxygen	Turbidity	Conductivity	TDS	as N	Nitrogen	as N	TKN	PO₄ as P
LOCATION	DESIGNATION	DATE	TIME	(cfs) (b)	(deg C)	(mg/L)	(NTU)	(µS/cm@25C)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
		6/14/2021	10:40	11	14.3	8.27	1.96	32	32	ND<0.110	ND<0.10	ND<0.200	ND<0.10	ND<0.010
North Fork of Bishop Creek	BC-NE-1	7/26/2021	8:30	13	15.8	7.41	1.85	30	29	ND<0.110	0.13	ND<0.200	0.13	ND<0.010
North Fork of Dishop Oreck	DO-NI - I	8/25/2021	10:20	9.0	13.8	8.30	2.78	32	25	ND<0.110	0.12	ND<0.200	0.12	ND<0.010
		9/22/2021	10:55	5.8	12.4	8.35	2.23	38	28	ND<0.110	0.17	ND<0.200	0.17	ND<0.010
		6/14/2021	11:25	41	8.4	8.61	1.57	37	37	ND<0.110	0.15	ND<0.200	0.15	ND<0.010
South Fork of Bishop Creek	BC-blw-SI	7/26/2021	10:00	35	14.1	7.46	2.03	33	24	ND<0.110	0.12	ND<0.200	0.12	ND<0.010
below South Lake	DO DIW OL	8/25/2021	11:05	29	15.6	7.24	2.95	31	14	ND<0.110	0.11	ND<0.200	0.11	ND<0.010
		9/22/2021	11:45	20	14.3	7.51	4.68	40	29	ND<0.110	0.37	ND<0.200	0.37	ND<0.010
		6/14/2021	9:35	31	14.1	7.44	2.13	29	26	ND<0.110	0.16	ND<0.200	0.16	ND<0.010
Middle Fork of Bishop Creek	BC-blw-LS	7/26/2021	9:15	14	18.4	7.08	1.75	70	28	ND<0.110	0.12	ND<0.200	0.12	ND<0.010
below Lake Sabrina		8/25/2021	10:35	15	16.2	7.22	2.94	23	14	ND<0.110	0.12	ND<0.200	0.12	ND<0.010
		9/22/2021	10:20	15	14.2	7.60	3.09	29	23	ND<0.110	0.11	ND<0.200	0.11	ND<0.010
		6/14/2021	12:05	14	12.6	8.73	2.45	42	34	ND<0.110	0.19	ND<0.200	0.19	ND<0.010
Bishop Creek below Powerhouse	BC-blw-PH2	7/29/2021	10:25	14	14.2	8.21	3.23	47	45	ND<0.110	ND<0.10	ND<0.200	ND<0.10	0.018
No. 2		8/25/2021	9:20	14	13.0	8.47	3.11	50	27	ND<0.110	0.12	ND<0.200	0.12	ND<0.010
	9/22/2021	10:00	16	11.5	8.68	3.42	54	31	ND<0.110	ND<0.10	ND<0.200	ND<0.10	ND<0.010	
		6/14/2021	12:30	6.4	13.9	8.57	2.24	46	43	ND<0.110	0.11	ND<0.200	0.11	ND<0.010
Bishop Creek below Powerhouse	BC-blw-PH3	7/29/2021	9:45	6.4	14.6	8.30	2.55	50	40	ND<0.110	0.19	ND<0.200	0.19	ND<0.010
No. 3		8/25/2021	8:50	6.4	13.5	8.51	2.12	52	23	ND<0.110	0.19	ND<0.200	0.19	ND<0.010
		9/22/2021	9:30	6.5	12.4	8.80	3.97	58	40	ND<0.110	ND<0.10	ND<0.200	ND<0.10	ND<0.010
		6/15/2021	8:05	19	12.8	9.14	5.60	52	41	ND<0.110	ND<0.10	ND<0.200	ND<0.10	ND<0.010
Bishop Creek below Powerhouse	BC-blw-PH4	7/29/2021	9:10	21	15.0	8.60	2.61	51	43	ND<0.110	0.13	ND<0.200	0.13	ND<0.010
NO. 4		8/25/2021	8:15	21	13.5	8.87	2.64	55	46	ND<0.110	0.11	ND<0.200	0.11	ND<0.010
		9/22/2021	8:45	20	12.2	9.27	2.69	62	35	ND<0.110	ND<0.10	ND<0.200	ND<0.10	ND<0.010
		6/15/2021	8:35	1.0	13.2	8.80	3.31	51	33	ND<0.110	0.13	ND<0.200	0.13	ND<0.010
Bishop Creek below Powerhouse	BC-blw-PH5	7/29/2021	8:35	1.2	15.3	8.42	6.26	52	44	ND<0.110	0.12	ND<0.200	0.12	ND<0.010
NO. 5		8/25/2021	7:40	1.3	14.0	8.65	2.86	54	35	ND<0.110	ND<0.10	ND<0.200	ND<0.10	ND<0.010
		9/22/2021	8:15	1.3	12.3	9.11	3.15	62	19	ND<0.110	ND<0.10	ND<0.200	ND<0.10	ND<0.010
		6/15/2021	9:05	103	12.8	9.30	2.50	47	38	ND<0.110	ND<0.10	ND<0.200	ND<0.10	ND<0.010
Bishop Creek below Powerhouse	BC-blw-PH6	7/29/2021	8:05	79	15.2	8.65	2.89	51	44	ND<0.110	0.12	ND<0.200	0.12	ND<0.010
NO. 6		8/25/2021	7:15	65	13.6	8.94	2.28	56	26	ND<0.110	0.10	ND<0.200	0.10	ND<0.010
		9/22/2021	7:45	54	11.9	9.36	2.61	60	35	ND<0.110	ND<0.10	ND<0.200	ND<0.10	ND<0.010
			:	2021 Maximum	(c)	(c)	6.26	70	46	ND<0.110	0.37	ND<0.200	0.37	0.018
				2021Minimum	(c)	(c)	1.57	23	14	ND<0.110	ND<0.10	ND<0.200	ND<0.10	ND<0.010
				2021 Average	(c)	(c)	2.89	46	32	ND<0.110	0.12	ND<0.200	0.12	ND<0.010

# Table 5.4-3. Field Water Quality Measurements and Laboratory Results of Bishop Creek Samples for Bishop Creek June - September 2021

Notes:

<sup>a</sup> Concurrent measurement when laboratory samples were collected

<sup>b</sup> Instantaneous measurements made on North Fork of Bishop Creek. All other values were calculated on a mean daily average discharge

<sup>c</sup> See Table 5.4-1 for DO and water temperature values.

N= Nitrogen; NO<sub>2</sub>=Nitrite; NO<sub>3</sub>=Nitrate, P= Phosphorus; PO<sub>4</sub>=Orthophosphate; TDS=Total Dissolved Solids; TKN=Total Kjeldahl Nitrogen.

 $PO_4$ -P was detected in only one sample at 0.018 mg/L collected from Bishop Creek below Plant No. 2 during the July sampling period. All other samples were below the detection limit of ND<0.010 mg/L.

#### 5.4.3. COMPARISON TO 2020 MONITORING PERIOD

During the 2020 monitoring period, TDS ranged for all locations along Bishop Creek from ND less than 10 mg/L to 41 mg/L with an average of 26 mg/L. During the 2021 monitoring period, TDS was similar ranging from 14 mg/L to 46 mg/L with an average of 32 mg/L. NO3-N was not detected in any samples for both monitoring periods. Total-N was detected and ranged from ND less than 0.30 mg/L to 1.1 mg/L with an average of 0.19 mg/L in the 2020 monitoring period. Total-N had similar values in the 2021 monitoring period and ranged from ND less than 0.10 mg/L to 0.37 mg/L with an average of 0.12 mg/L. PO4-P was detected but all values were below basin objectives. presents a summary of the laboratory results for Bishop Creek.

# Table 5.4-4. Summary of Laboratory Results for Bishop Creek 2020-2021 Monitoring Periods

Year	Parameter	Total Dissolved Solids (mg/L)	Nitrate as N (mg/L)	Total Nitrogen (mg/L)	Ortho phosphate as P (mg/L)
	Maximum	41	ND<0.110	1.1	0.044
2020	Minimum	ND<10	ND<0.110	ND<0.30	ND<0.010
	Average*	26	ND<0.110	0.19	ND<0.010
	Maximum	46	ND<0.110	0.37	0.018
2021	Minimum	14	ND<0.110	ND<0.10	ND<0.010
	Average*	32	ND<0.110	0.12	ND<0.010
	Bishop	Creek Below L	ake Sabrina**		
	Maximum	30	ND<0.11	0.41	0.017
2020	Minimum	10	ND<0.11	ND<0.30	ND<0.010
2020	Average*	19	ND<0.11	0.2	0.01
	Average***	19	ND<0.11	0.1	0.01
	Maximum	28	ND<0.11	0.16	ND<0.010
2021	Minimum	14	ND<0.11	0.11	ND<0.010
2021	Average*	23	ND<0.11	0.1	ND<0.010
	Average***	23	ND<0.11	0.1	ND<0.010
Basin Objective (	annual average/90 <sup>th</sup> percentile)	27/29	0.1/0.2	0.1/0.4	0.05/0.09

Notes:

\* Arithmetic average is for all samples collected. For samples with ND values, 1/2 of the ND value was used to calculate average when more than one sample had detectable values, otherwise the ND value was used.

\*\* Closest Bishop Creek monitoring location to Basin Plan objective location (Bishop Creek near Intake No. 2).

\*\*\* Arithmetic average is for all samples collected. For samples with ND values, Zero was used for ND values to calculate average when more than one sample had detectable values, otherwise the ND value was used.

#### 5.4.4. COMPARISON TO BASIN PLAN OBJECTIVES

A comparison was made of general water quality for Bishop Creek below Lake Sabrina (BC-blw-LS) to water quality objectives for Bishop Creek near Intake No. 2 in the Basin Plan. For the 2020 monitoring period, TDS ranged from 10 mg/L to 30 mg/L with an average of 19 mg/L which is below the Basin Plan objective of 27 mg/L. During the 2021 monitoring period, TDS was similar ranging from 14 mg/L to 28 mg/L with an average of 23 mg/L which is below the basin plan objective. NO3-N was not detected in any samples for both monitoring periods. Total-N was detected and ranged from ND<0.30 mg/L to 0.41 mg/L with an average of between 0.1 mg/L and 0.2 mg/L in the 2020 monitoring period which is at or slightly above the 0.1 Basin Plan objective. Total-N had similar values in the 2021 monitoring period and ranged from ND less than 0.11 mg/L to 0.16 mg/L with an average of 0.1 mg/L which is equal to the basin plan objective. PO4-P was detected in 2020 but was ND less than 0.010 mg/L in 2021. All values for both periods were below Basin Plan objectives. Table 5.4-4 presents a summary of the laboratory results for Bishop Creek.

#### 5.5. POWERHOUSE TAILWATER

### 5.5.1. FIELD WATER TEMPERATURE AND DISSOLVED OXYGEN

Water temperature ranged from 9.1 °C to 16.8 °C with generally the lower values occurring in tailwater in the powerhouses in the upper reaches of Bishop Creek and the higher values generally occurring in the powerhouse tailraces from the lower reach of Bishop Creek. DO occurred in a very narrow range from 7.77 mg/L to 9.72 mg/L. The oxygen saturation level for the observed water temperature and air pressure at each of the tailraces was generally above 96 percent and often exceeded 100 percent for the monitored tailraces of each of the powerhouses.

Table 5.5-1 presents the field DO and water temperature values obtained from the various tailraces during the June-August 2021 monitoring period.

# <u>Table 5.5-1. Field Water Quality Measurements for Powerhouse Tailwater June - October 2021</u>

						FIELD MEASUREME	NTS		
				Air Ten	perature				CALCULATED
LOCATION	STATION DESIGNATION	DATE	TIME	Measured (deg	Calculated (deg	Water Temperature (deg C)	Dissolved Oxygen (mg/L)	Barometric Pressure (in Hg)	DISSOLVED OXYGEN SATURATION *
		0/44/0004	44.55	- ,		40.4	0.50	00.05	(%)
		6/14/2021	11:55	74	23.3	12.4	8.58	23.05	103.4%
		7/13/2021	8:30	73	22.8	15.4	7.94	23.22	102.3%
<b>-</b>		//29/2021	10:15	69	20.6	14.4	8.06	23.20	101.6%
l ailwater at	TW@PH2	8/5/2021	10:30	83	28.3	16.0	1.11	23.20	102.2%
Powernouse No. 2		8/25/2021	9:10	67	19.4	13.7	8.22	23.15	101.3%
		9/9/2021	10:45	80	26.7	15.3	7.95	23.15	102.4%
		9/22/2021	9:50	69	20.3	11.3	8.72	23.25	112.9%
		10/4/2021	13:30	61	16.1	9.1	9.17	23.11	103.0%
		6/14/2021	12:20	75	23.9	13.2	8.65	23.70	103.9%
		7/13/2021	9:15	79	20.1	15.5	8.22	23.90	103.2%
T - those to most		1/29/2021	9:30	70	21.1	14.4	8.33	23.90	102.3%
Tallwater at	TW@PH3	8/5/2021	10:00	83	28.3	10.2	8.00	23.88	102.6%
Powernouse No. 3		8/25/2021	8:35	68	20.0	13.7	8.40	23.80	101.6%
		9/9/2021	10:00	80	20.7	14.9	8.20	23.84	101.3%
		9/22/2021	9:10	/ I	21.4	13.0	8.04	23.95	102.5%
		10/4/2021	14:00	00 70	10.3	9.6	9.20	23.80	101.3%
		7/12/2021	10:00	73	22.8	12.1	8.99	24.75	101.7%
		7/13/2021	10:00	84	28.9	16.0	8.43	24.85	102.9%
To:huoton of		1/29/2021 9/5/2021	9:00	70		14.7	8.07	24.85	100.2%
Tallwater at	TW@PH4	8/3/2021	9:35	83	28.3	10.3	8.10	24.83	100.8%
Powernouse No. 4		0/20/2021	0.00	00	10.9	15.0	0.09	24.00	102.6%
		9/9/2021	9.20	67	20.7	11.7	0.40	24.00	110.2%
		9/22/2021	0.30	67	19.5	0.0	9.10	24.95	101.0%
		6/15/2021	8:25	75	19.4	12.3	9.57	24.70	07.2%
		7/13/2021	0.25	97	20.6	12.3	8.00	25.15	97.270
		7/20/2021	8.25	70	21.1	14.0	8.44	25.21	99.078
Tailwatar at		8/5/2021	0.25	81	21.1	14.5	8.26	25.20	97.576
Powerhouse No. 5	TW@PH5 —	8/25/2021	7.30	70	21.2	13.7	8.54	25.20	99.078
		<u> </u>	8:45	70	25.0	15.3	8.61	25.15	101.6%
		Q/22/2021	8.00	66	10.0	12.0	8.88	25.17	98.1%
		10/4/2021	14:45	71	21.7	12.0	9.45	25.55	99.7%
		6/15/2021	8:55	76	21.7	13.2	0.14	25.14	103.3%
		7/13/2021	0.55	70	24.4	15.2	9.14	25.55	103.376
		7/20/2021	7:50	70	21.1	10.0	0.59	25.44	102.478
Tailwatan at		9/5/2021	7.50	01	21.1	15.5	0.04	25.45	99.070
Tallwater at Doworbouso No. 6	TW@PH6	0/0/2021	0.00	60	21.2	10.0	0.40	25.44	100.1%
FOWEITIOUSE NO. 0		0/0/2021	0.15	00	20.0	13./	0.09 0.50	25.40	100.4%
		9/9/2021	0.15 7.00	10	24.4	10.0	0.03	25.41	100.7%
		9/22/2021	/:30	00	18.9	12.1	9.07	25.60	99.0%
		10/4/2021	15:05	(1	21.7	10.4	9.72	25.37	102.5%
			2021 Maximum	88	31.1	16.8	9.72	25.60	112.9%
			2021 Minimum	61	16.1	9.1	1.77	23.05	96.5%
			2021 Average	74	23.2	13.8	8.61	24.49	101.6%

Notes:

\* - Saturation based on calculated DO saturation at reported water temperature and ambient barometric pressure.

#### 5.5.2. COMPARISON TO 2020 MONITORING PERIOD

During the 2020 monitoring period, water temperature ranged from 10.5°C to 15.4°C with an average of 12.9°C. During the 2021 monitoring period, water temperature of the powerhouse tailwater was similar ranging from 9.1°C to 16.8°C with an average of 13.8°C. DO ranged from 8.17 mg/L to 9.64 mg/L in 2020 and 7.77 mg/L to 9.72 mg/L in 2021. DO saturation of the powerhouse tailwater averaged over 100 percent for both monitoring periods. Table 5.5-2 summarizes the results for the 2020-2021 monitoring periods.

# Table 5.5-2. Summary of Dissolved Oxygen and Water Temperature for Powerhouse Tailwaters 2020-2021 Monitoring Periods

Year	Parameter	Water Temperature (deg C)	Dissolved Oxygen (mg/L)	Barometric Pressure (in Hg)	Calculated DO Saturation (%)
	Maximum	15.4	9.64	25.54	114.1%
2020	Minimum	10.5	8.17	23.11	95.6%
	Average*	12.9	8.82	24.53	102.9%
	Maximum	16.8	9.72	25.60	112.9%
2021	Minimum	9.1	7.77	23.05	96.5%
	Average*	13.8	8.61	24.49	101.6%

Notes:

\* Arithmetic average is for all samples collected.

### 6.0 DISCUSSION

The Water Quality Study was completed the second year of the proposed 2-year investigation. Water quality data was collected on water quality of upstream lakes and creeks as well as Project facilities. The water quality data will assist in establishing baseline conditions and assist in assessing any impacts that the Project operations may have on the existing water quality. In addition, the water quality data will assist in assuring Project facilities and operations are consistent with the current water quality goals and objectives for Bishop Creek in the Water Quality Control Plan.

### 7.0 CONSULTATION SUMMARY

SCE consulted with the TWGs regularly through the filing of periodic progress reports. The following key milestones were observed:

- Progress Report 1: December 19, 2019
- Progress Report 2: April 14, 2020
- Progress Report 3: July 24, 2020
- Initial Study Report (ISR; Progress Report 4): October 30, 2020
- ISR Meeting: November 10, 2020
- Progress Report 1: March 2, 2021
- Progress Report 2: May 28, 2021
- Progress Report 3: August 27, 2021
- USR filing: November 4, 2021
- USR meeting: November 18, 2021

Eight technical memoranda summarizing the 2019 study implementation were submitted with Progress Report 2. Following the Progress Report 2 filing, SCE hosted a TWG meeting on May 7, 2020, to discuss the 2019 study season, work completed to date and the technical memoranda. After the meeting, TWG members submitted comments on the technical memoranda and SCE provided a general response to those comments as part of Progress Report 3. ISR was filed with FERC on October 30, 2020, and a virtual ISR Meeting was held on November 10, 2020. The SWRCB filed a comment letter during the comment period offering support for the ongoing study program with no requested changes or modifications. No other comments were received from TWG members or stakeholders on the ISR materials or on the previously provided responses to comments.

Three progress reports were filed in 2021 after filing the ISR, as identified above. SCE held a Project Effects meeting on October 28, 2021 for all stakeholders and agencies to discuss what Project effects (if any) were identified through the implementation of each of the approved study plans.

The USR was filed with FERC on November 4, 2021. A Water Quality Technical Memorandum was filed with the USR and was then distributed to agencies and stakeholders for a 60-day review period on November 5, 2021. No comments were received on that memorandum: however, comments were received on the USR as shown in Table 7.1-1.

SCE held a USR meeting held November 18, 2021 to discussed only those studies which were still in progress at the time of the ISR (Water Quality, Sediment and Geomorphology, Operations Model, Recreation Use and Needs, Recreation Facilities Condition Assessment, Project Lands and Boundary, and Cultural and Tribal Studies).

This study was filed with the Draft License Application (DLA) in January 2022. No additional comments were received. Comments received to date on the Water Quality study are included in the table below.

Table 7 7-1. Comment Response Table
-------------------------------------

Comment No.	Study	Date of Comment	Entity	Comment	Response
33	Water Quality Technical Memo	May 21, 2020	CDFW	In Section 5.2, CDFW recommends identifying the range of minimum as well as maximum possible depths in this section, as well as use of consistent units of depth (feet or meters) in future reports.	The Water Quality Study Report will provide the total depth of the lake at the monitoring point at the time of sampling in both feet and meters. This comment is addressed in Section 8.4 of Exhibit E of the Draft License Application.
34	Water Quality Technical Memo	May 21, 2020	CDFW	Section 6.1.1 indicates vertical profiles will be taken at 1-meter increments. To better understand the strength and stability of potential thermal stratification, CDFW recommends adding an additional vertical station at the spacing of 0.5 m wherever the temperature difference between two vertical stations is equal to or greater than 2° C.	SCE does not believe that the additional granularity is warranted for the vertical dissolved oxygen and water temperature profiles planned at South Lake and Lake Sabrina. See note in Section 6.1.1 of the WQ Implementation Plan where thermocline is defined as greater than 1 degree centigrade per meter with depth. The Study Plan as well as the Water Quality Implementation Plan were previously distributed to the TWG for comment (most recently on Feb 14, 2020). The INF and the SWRCB both provided comments which were addressed; at this point, the methods and level of effort have been established. As provided in the ILP process, the TWG can discuss whether a change of methods is warranted during Study Report meeting scheduled for fall of 2020. This comment is addressed in Section 8.4 of Exhibit E of the Draft License Application.
1a	Updated Study Report	December 31, 2021	State Water Board	Section 401 of the Clean Water Act requires any applicant for a federal license or permit for an activity that may result in	As required by 18 CFR 5.23(b), SCE plans to file, no later than 60 days following the date of issuance of the notice of

	Meeting Summary			any discharge to navigable waters, to obtain certification from the State that the discharge will comply with the applicable water quality requirements, including the requirements of section 303 of the Clean Water Act for water quality standards and implementation plans. Clean Water Act section 401 directs that certifications shall prescribe effluent limitations and other conditions necessary to ensure compliance with the Clean Water Act and with any other appropriate requirements of state law, such as the Porter-Cologne Water Quality Control Act (Wat. Code, § 13000 et seq.). Conditions of certification shall become a condition of any federal license or permit subject to certification. The Project will continue to result in a discharge to navigable waters and must obtain certification from the State Water Board as part of relicensing for continued operations	acceptance and ready for environmental analysis provided for in 18 CFR §5.22: (1) a copy of the water certification; (2) a copy of the request for certification, including proof of the date on which the certifying agency received the request; or (3) evidence of waiver of WQC. This comment is addressed in Section 4.2 of Exhibit E of the Draft License Application.
1b	Updated Study Report Meeting Summary	December 31, 2021	State Water Board	A certification issued by the State Water Board for Project relicensing must ensure compliance with the applicable water quality standards in the Lahontan Regional Water Quality Control Board's Water Quality Control Plan for the Lahontan Region (Lahontan Basin Plan). Water quality control plans designate the beneficial uses of water that are to be protected, water quality objectives for the reasonable protection of the beneficial uses and the prevention of nuisance, and a program of implementation to achieve the water quality objectives. (Cal. Wat. Code, §§ 13170, 13241, 13050, subds. (h), (j).) The beneficial uses, together with the water quality objectives contained in the water quality control plans and applicable	This comment is addressed in Section 8.4 of Exhibit E of the DLA.

				anti-degradation requirements, constitute California's water quality standards for purposes of the Clean Water Act. In issuing water quality certification for a project, the State Water Board must ensure consistency with the designated beneficial uses of waters affected by the project, the water quality objectives developed to protect those uses, and anti- degradation requirements. (PUD No. 1 of Jefferson County v. Washington Dept. of Ecology (1994) 511 U.S. 700, 714-719.)	
1c	Updated Study Report Meeting Summary	December 31, 2021	State Water Board	The Project facilities are located on Bishop Creek, McGee Creek, and Birch Creek. The Lahontan Basin Plan sets forth water quality standards for waterbodies in the region including Project-related waters of Bishop Creek, McGee, and Birch Creek, including Sabrina Lake and South Lake. Beneficial uses established by the Lahontan Basin Plan for these waters include municipal and domestic supply; navigation; hydropower generation; water contact recreation; water non-contact recreation; commercial sportfishing; cold freshwater habitat; warm freshwater habitat; wildlife habitat; spawning, reproduction and/or early development and agricultural supply. Additional beneficial uses listed in the Lahontan Basin Plan include groundwater recharge and freshwater replenishment and industrial service supply uses.	This comment is addressed in Section 8.5 of Exhibit E of the DLA.
1	Updated Study Report Meeting Summary	December 31, 2021	State Water Board	In addition to being the state agency with certification authority for the proposed Project relicensing, it is the State Water Board's understanding that it will also be the California Environmental Quality Act (CEQA) lead agency. CEQA requires the lead agency to evaluate a project's potential impacts to environmental resources as well	This comment is addressed in Section 4.8 of Exhibit E of the DLA.

				as identify mitigation measures and alternatives to reduce project impacts. CEQA also requires public input on identified impacts and mitigation measures. CEQA documentation must analyze and evaluate the proposed Project impacts to all relevant resources, including aquatic biological resources, special status species, water quality standards, and water quality control plans. Information from studies and data gathering during FERC's relicensing process may inform CEQA document development. Please note, the State Water Board's preference is to begin the CEQA process following issuance of a Draft License Application in order to provide adequate time to complete the CEQA process prior to taking a final action on SCE's future	
				water quality certification request. In early 2022, State Water Board staff will reach out to SCE's to discuss the CEOA process	
2	Updated Study Report Meeting Summary	December 31, 2021	State Water Board	Data provided in the USR appears to indicate annual averages for Total Dissolved Solids (TDS) in Lake Sabrina, South Lake, and Bishop Creek may be above the Lahontan Basin Plan TDS water quality objectives. Lake Sabrina averages for TDS (2020: 21 mg/L and 2021: 16 mg/L) are above the Lahontan Basin Plan water quality objective of 10 mg/L (annual average). South Lake averages for TDS (2020: 18 mg/L and 2021: 21 mg/L) are above the Lahontan Basin Plan water quality objective of 12 mg/L (annual average). Bishop Creek averages (2021: 32 mg/L) are above the Lahontan Basin Plan water quality objective of 27 mg/L (annual average).	The elevated numbers appear to reflect background conditions, and the original Basin Plan objectives are indicative of limited data used to establish the water quality objectives for Lake Sabrina, South Lake, and Bishop Creek. This comment has been addressed in this Final Technical Report and in Section 8.4 of Exhibit E of the DLA.

		Additionally, USR data indicates Total Nitrogen readings in Bishop Creek (2020: 0.19 mg/L and 2021: 0.12 mg/L) are above the Lahontan Basin Plan water quality objective of 0.1 mg/L.	
		Please provide additional information in the Draft License Application on whether and, if so, how the existing Project may be contributing to TDS and Total Nitrogen concentrations.	
		Additionally, State Water Board staff request that in future reports SCE clearly indicate if any applicable water quality objectives have been exceeded within Project-related waters.	

#### 8.0 **REFERENCES**

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- Environmental Science and Engineering (ESE). 1975. Wilderness Water Quality: Bishop Creek Baseline Study. Prepared in cooperation with University of California at Los Angeles.
- Knapp, R. and Craig, C. 2016. Microbial Source Tracking (MST) at Bacteria –Impaired Waters of the Lahontan Region. Prepared for the California Regional Water Quality Control Board – Lahontan Region. March 2016.
- Lund, L.J., n.d. Water Quality of Bishop Creek and Selected Eastern Sierra Nevada Lakes. University of California at Riverside, Department of Soil and Environmental Sciences.
- Southern California Edison (SCE). 2021. Final Technical Report Bishop Creek Reservoirs Fish Distribution (AQ 4). May 2021.
- SCE, 2020. Initial Study Report: Bishop Creek Hydroelectric Project. October 2020.
- United States Department of Agriculture (USDA). 2019. Land Management Plan for the Inyo National Forest. <u>https://www.fs.usda.gov/Internet/FSE\_DOCUMENTS/fseprd589652.pdf</u>.
- U.S. Environmental Protection agency (USEPA), EPA-600/4-79-202, Method for Chemical Analysis of Waters and Wastes Manual. Cincinnati, OH, 1983.

APPENDIX A

**2021 COMPLETED FIELD FORMS** 

	FIELD FORM
SITE NAME:	BC below LS DATE: 6/14/21 TIME: 9:35a
DRAINAGE:	Bishop Creek INVESTIGATORS: TB JB
PHYSICAL WA	TER QUALITY PARAMETERS WEATHER CONDITIONS
Water Temperat	ture: (%F o ) Dissolved Oxygen: 7.44 (mg/L)
Conductivity:	29 (µmhos/cm@25 °C) Stream or Lake gage reading:
Turbidity:	(NTUs) Air Temperature 104 (For °C) Baro. Pressure 21.5.5 (in Hg)
Winds 8-12	(mph) Cloud cover(%) PrecipitationFogRainSleetHailSnow
Secchi Disk: 🏏	A Depth of Disappear:meters Depth of Reappearance:meters
Visual Condition	of Stream (check all that apply):
Clear Floating Materia	Cloudy Colored
Remarks:	
	Notes
Sample No. No. of Sample B	WATER QUALITY SAMPLE DATA <u>BC- Mw- LS</u> Sample Method: <u>Grab</u> Preservatives: <u>Ice</u> Bottles <u>4</u> Preservatives: <u>H2SU4 in on</u> REMARKS

SITE NAME: North Fork DATE: 6/14/2) TIME: 10;400
DRAINAGE: Bishop Creek INVESTIGATORS: TB JB
PHYSICAL WATER QUALITY PARAMETERS WEATHER CONDITIONS
Water Temperature: 14.3 (F or Dissolved Oxygen: 8.27 (mg/L)
Conductivity: 32 (umhos/cm@25 °C) Stream or the gage reading: 11.3 cfs
Turbidity: 1.96 (NTUs) Air Temperature 70 (°F or °C) Baro. Pressure 21.35 (in Hg)
Winds 1-2 (mph) Cloud cover (%) Precipitation Fog Rain Sleet Hail Snow
Secchi Disk: NN Depth of Disappear:meters Depth of Reappearance:meters
Visual Condition of Stream (check all that apply):
Clear Cloudy Colored
Remarks:Notes
WATER QUALITY SAMPLE DATA
Sample No. <u>SC-NP-</u> Sample Method: <u>Grab</u> Preservatives: <u>Ice</u>
No. of Sample Bottles Preservatives: H324 in evel
SIGNED BY:

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BISHOP CREEK WATER QUALITY S	STUDY
FIELD FORM	4

SITE NAME:	BCDelow SouthLaly DATE: 6/14/21 TIME: 11:25 AM
DRAINAGE:	Bishop Creek INVESTIGATORS: TB JB
PHYSICAL WATER	QUALITY PARAMETERS WEATHER CONDITIONS
Water Temperature	E B.Y (%F or C) Dissolved Oxygen: B.(e) (mg/L)
Conductivity:	37 (#mhos/cm@25 °C) Stream or Lake gage reading: MA
Turbidity: 1.5	(NTUs) Air Temperature 70 (C))Baro. Pressure 21.10 (in Hg
Winds 4-10 (m	ph) Cloud cover(%) PrecipitationFogRainSleetHailSnow
	Depth of Disappear:meters Depth of Reappearance:meters
Visual Condition of	Stream (check all that apply):
Clear K	Cloudy Colored
Remarks:	Notes
	1
	WATER QUALITY SAMPLE DATA
Sample No.	<u>BC-blw - 5L</u> Sample Method: <u>Grab</u> Preservatives: <u>Ice</u>
No. of Sample Bott	es Preservatives:
	REMARKS
SIGNED BY:	REVIEWED BY:

SITE NAME:	Tailwate	- PH2	DATE:	6/14/21	TIME:	11:3
DRAINAGE:	Bishop Creek	INVESTIGATO	RS: TB	JB		
PHYSICAL WA	TER QUALITY PARA	AMETERS		WEATHER CON	DITIONS	
Water Temperat	ure: 12.4	(%F or %)	Dissolved	Oxygen: 8.3	58	(mg/L
Conductivity:	-	(µmhos/cm@25	<sup>o</sup> C) Stream or	Lake gage readir	ng: NA	F
Turbidity:	- (NT	Us) Air Temperati	ure 74 F	on °C) Baro. Press	sure 23.	05
Winds 2-4	(mph) Cloud cover	O (%) Preci	pitation Fo	ı Rain SI	eet Hail	
Secchi Disk: N	A Depth of Disapp	ear:meter	rs Dep	h of Reappearance	ce:	meter
Viewel Condition	of Chaoma (obsola of	11 Ab - A b . ) .		Secchi Dep	th:	me
	of Stream (check al	li that apply):	Colored			
Floating Materia		Other:	_			
Remarks:		No	otes			
Sample No.	NA	WATER QUALITY	Y SAMPLE DA	TA Preservativ	es:	Ice
Sample No. No. of Sample E	NA Bottles	WATER QUALITY	Y SAMPLE DA	TA Preservativ Preservativ	es:	lce
Sample No. No. of Sample E	NA Bottles	WATER QUALITY Sample Met	Y SAMPLE DA thod: <u>Grab</u>	TA Preservativ Preservativ	es:	lce
Sample No. No. of Sample E	NA Bottles	WATER QUALITY Sample Met	Y SAMPLE DA thod: <u>Grab</u> ARKS	TA Preservativ Preservativ	es:	lce
Sample No. No. of Sample E	NA Bottles	WATER QUALITY Sample Met	Y SAMPLE DA	TA Preservativ Preservativ	es:	lce
Sample No. No. of Sample E	MA Bottles	WATER QUALITYSample Met	Y SAMPLE DA	TA Preservativ Preservativ	es:	lce

		1	DATE:	6/14/21	TIME:	12.05
DRAINAGE:	Bishop Creek	INVESTIGAT	ORS: TR	TR	-	
PHYSICAL WAI	ER QUALITY PARA	METERS		WEATHER CONDI	TIONS	
Water Temperat	ure: 12.6	(°F or C)	Dissolved	Oxygen: 0.7	3	(mg/L)
Conductivity:	42	(µmhos/cm@2	25 ºC) Stream o	r Lake gage reading:	1.7	0'
Turbidity: 2.	45 (NTL	Js) Air Tempera	ature <u>74</u> (F	or °C) Baro. Pressur	e	(in H
Winds 2-4	(mph) Cloud cover_	0 (%) Pred	cipitationFo	gRainSlee	tHail_	Snow
Secchi Disk: N	A Depth of Disappe	ear:mete	ers Dep	oth of Reappearance:		meters
				Secchi Depth		meters
Visual Condition	of Stream (check all	that apply):	Colored			
Floating Material		Other:				
Remarks:						
		N	lotes			
	or blue Ol		TY SAMPLE DA	ТА		
Sample No.	BC-blw-ph	WATER QUALIT	TY SAMPLE DA	TA Preservatives		ce
Sample No. No. of Sample B	B <u>C-blw-</u> PH	WATER QUALIT	TY SAMPLE DA ethod: <u>Grab</u> MARKS	TA Preservatives Preservatives	Hyson	ice A in en
Sample No. No. of Sample B	B <u>C-blw-</u> PV	WATER QUALIT 2 Sample Me 4 REM	TY SAMPLE DA ethod: <u>Grab</u> MARKS	TA Preservatives Preservatives	Hzsu	ice
Sample No. No. of Sample B	B <u>C-blw-pb</u>	WATER QUALIT	TY SAMPLE DA ethod: <u>Grab</u> MARKS	TA Preservatives Preservatives	Haser	lce 1 is en

	DATE: DE TRUE.
DRAINAGE:	Bishop Creek INVESTIGATORS: TBJB
PHYSICAL WAT	ER QUALITY PARAMETERS WEATHER CONDITIONS
Water Temperatu	ure: 13.2 (%F or ) Dissolved Oxygen: 8.65 (mg/L)
Conductivity:	(µmhos/cm@25 °C) Stream or Lake gage reading:
Turbidity:	- (NTUs) Air Temperature 75 (Por °C) Baro. Pressure 23.70 (in He
Winds 0-1	(mph) Cloud cover(%) PrecipitationFogRainSleetHailSnow
Secchi Disk: M	Comparies Depth of Reappearance:meters
Visual Condition Clear	of Stream (check all that apply): Cloudy Colored
Floating Material	Other:
Remarks:	Notes
	WATER QUALITY SAMPLE DATA
Sample No.	WATER QUALITY SAMPLE DATA         MATER QUALITY SAMPLE DATA         Sample Method: Grab       Preservatives: lce
Sample No. No. of Sample Bo	WATER QUALITY SAMPLE DATA          MATER QUALITY SAMPLE DATA         Mathematical Sample Method:         Grab       Preservatives:         Data
Sample No. No. of Sample Bo	WATER QUALITY SAMPLE DATA          MATER QUALITY SAMPLE DATA         MATER QUALITY SAMPLE DATA         Sample Method: Grab       Preservatives:         pottles          Dettles          REMARKS

SITE NAME:	BC below	PH3	DATE	011	1/21 TIME	12:300
	Piehen Creek	INVECTIONTOD	DATE.	+8	TP	/
	Dishop Creek	INVESTIGATOR		10	هر	
PHYSICAL WATE		TERS		WEATHER	R CONDITIONS	
Water Temperature	e: 15. 7	(°F or C	Dissolved	Oxygen:	8.57	(mg/L)
Conductivity:	46	(µmhos/cm@25 ⁰	C) Stream or	Lake gage	reading: O	70
Turbidity:2	24 (NTUS)	Air Temperature	- 75 (F	or °C) Baro	Pressure 2	3.75 (in Hg)
Winda 1-2 /	ank) Claud anna 6	(0() Dessial	Territory Free	Dele	Olast	
Secchi Dick: MA	Denth of Disappear:	(%) Precipi motors		b of Reap		allSnow
	Depth of Disappear.	Inclois	Dep	Seco	chi Depth:	meters
Visual Condition of	Stream (check all that	t apply):				
Floating Material	Cloudy	Other:	Colored			
Remarks:						
		Note	es			
		ATER QUALITY S	SAMPLE DA	ΤΑ		
Sample No.	BC-DIW-22	ATER QUALITY S	SAMPLE DA	TA	ervatives:	lce
Sample No. No. of Sample Bot	В <u>с-Ы</u> w-₽₩ tles_₩	ATER QUALITY S Sample Metho	SAMPLE DA <sup>-</sup> od: <u>Grab</u>	TA Prese	ervatives:	Ice Suy in ony
Sample No. No. of Sample Bot	₩. <u>BC-b1w-\$₩</u> thes <u>4</u>	ATER QUALITY S Sample Metho REMAR	SAMPLE DA <sup>-</sup> od: <u>Grab</u> RKS	TA Preso Preso	ervatives:	Ice Suy in ony
Sample No. No. of Sample Bot	W, <u>ВС-ЫW-ЭЮ</u> thes <u>Ч</u>	ATER QUALITY S Sample Metho REMAR	SAMPLE DA <sup>-</sup> od: <u>Grab</u> RKS	TA Prese Prese	ervatives:	lce Soy in one

BISHOP CREEK WATER QUALITY STUDY
FIELD FORM

SITE NAME:	Talvaly	PHY	DATE: 19	15/21 -	IME: 7:5
			-DATE		
DRAINAGE:		- INVESTIGATORS	<u>    1D    </u>	<u> </u>	
PHYSICAL WATER	QUALITY PARAM	IETERS	VVEA	Pac	
Water Temperature:	10-1	_( <sup>e</sup> F or <b>C</b> )	Dissolved Oxy	gen: 0,-	(mg/L)
Conductivity:	-	(µmhos/cm@25 ℃	) Stream or Lake	e gage reading:	NH
Turbidity:	(NTUs	<ul> <li>Air Temperature</li> </ul>	<b>7</b> (°F)or °C	) Baro. Pressure	0-11 <u>)</u> (in
Winds(mp	h) Cloud cover	Ô (%) Precipita	ationFog	_RainSleet	HailSn
Secchi Disk: NA	Depth of Disappea	ar:meters	Depth of	Reappearance:	meters
Visual Condition of S	Stream (check all t	hat apply):		Secchi Depth:	mete
Clear K Floating Material	Cloudy	Other:	Colored		
Remarks					
nemarks.		Notes	3		
Sample No.	NA	WATER QUALITY S Sample Metho	AMPLE DATA d: <u>Grab</u>	Preservatives: Preservatives:	lce
Sample No. No. of Sample Bottle	NA	WATER QUALITY S Sample Metho  REMAR	AMPLE DATA d: <u>Grab</u> KS	Preservatives: Preservatives: _	lce

SITE NAME:	BC below PHY DATE 415 21 THE 2.95
DRAINAGE:	Bishop Creek INVESTIGATORS: TB JB
PHYSICAL WATE	R QUALITY PARAMETERS WEATHER CONDITIONS
Water Temperature	e: 12.8 (%F or ) Dissolved Oxygen: 9.14 (mg/L)
Conductivity:	(μmhos/cm@25 °C) Stream or Lake gage reading:
Turbidity: <u>5</u>	(NTUs) Air Temperature 74 (F) or °C) Baro. Pressure 24.75 (in Hg)
Winds U-1 (n	nph) Cloud cover(%) PrecipitationFogRainSleetHailSnow
Secchi Disk: NA	Depth of Disappear:meters Depth of Reappearance:meters
Visual Condition of	Secchi Depth:meters
Clear K Floating Material	CloudyColored
Remarks:	
	Notes
Sample No.	WATER QUALITY SAMPLE DATA BC-bw-?HY Sample Method: <u>Grab</u> Preservatives: <u>Ice</u>
Sample No. No. of Sample Bot	WATER QUALITY SAMPLE DATA <u>BC-blw-?サリ</u> Sample Method: <u>Grab</u> Preservatives: <u>lce</u> tles <u>リ</u> Preservatives: <u>Hj.S<sup>C</sup>y in on</u> REMARKS

SITE NAME: ]AI	Iwater PHS	DATE: 6	15 2 TIME	0.00
DRAINAGE: Bisho	p Creek INVESTIGATO	RS: TB	TB	
PHYSICAL WATER QUA	LITY PARAMETERS	WE	ATHER CONDITIONS	S
Water Temperature:	2,3 (%For (C)	Dissolved Oxy	rgen: 8.80	(mg/L)
Conductivity:	- (µmhos/cm@25	⁰C) Stream or Lak	e gage reading:	JA
Turbidity:	(NTUs) Air Temperatu	ure 75 Ebr °C	) Baro. Pressure	5. 15 (in Hg)
Winds	oud cover(%) Preci	pitationFog	_RainSleetI	HailSnow
Secchi Disk: NA Depth	of Disappear:meter	s Depth of	Reappearance:	meters
Visual Condition of Stream Clear <u>L</u> Floating Material	n (check all that apply): Cloudy Other:	Colored	Secchi Depth:	meters
Remarks:	· 2			
Sample No. <u>N</u> No. of Sample Bottles	WATER QUALITY	' SAMPLE DATA hod: <u>Grab</u>	Preservatives:	lce
Sample No. <u>N</u> No. of Sample Bottles	WATER QUALITY  WATER QUALITY Sample Meth	' SAMPLE DATA hod: <u>Grab</u>	Preservatives: Preservatives:	Ice
Sample No	WATER QUALITY Sample Meth	Y SAMPLE DATA hod: <u>Grab</u> ARKS	Preservatives: Preservatives:	lce
DRAINAGE:	Bishop Creek INVESTIGATORS: TB JB			
----------------------------------	--			
PHYSICAL WATE	R QUALITY PARAMETERS WEATHER CONDITIONS			
Water Temperature	13.2 (% are) Dissolved Ovygen: 8.80 (mg/l)			
Conductivity:	(#mnos/cm@25 °C) Stream or Lake gage reading:/ H			
Turbidity: 3	(NTUs) Air Temperature <u>45</u> (°F or °C) Baro. Pressure <u>45.5</u> (in Hg			
Winds O (m	nph) Cloud cover(%) PrecipitationFogRainSleetHailSnow			
Secchi Disk: NA	Depth of Disappear:meters Depth of Reappearance:meters			
Viewel Condition of	Secchi Depth:meters			
Clear	Cloudy Colored			
Floating Material	_d_ Other: _ de leaf litter			
Remarks:	Igae growing on rocks in the Streamster			
	NUIES			
Sample No. No. of Sample Bott	WATER QUALITY SAMPLE DATA <u>BC-blw-PH</u> S Sample Method: <u>Grab</u> Preservatives: <u>lce</u> les <u>4</u> Preservatives: <u>Hosey in eng</u> REMARKS			

RAINAGE:	Bishop Creek	INVEST	GATORS:	10	JD		
PHYSICAL WATER	QUALITY PAR	AMETERS		W	EATHER CO	ONDITIONS	
Water Temperature:	13.2	(ºF or C)		ssolved O	kygen:	9.14	(mg/L)
Conductivity:	-	(µmhos/c	m@25 ºC) Str	ream or La	ke gage rea	ding: _/	14
Turbidity:	(NT	Us) Air Ten	nperature 7	6 Por	°C) Baro. Pro	essure 2	5.35 (in Hg)
Winds 0-1 (mp	h) Cloud cover	0 (%)	Precipitation	Fog	Rain	SleetH	ailSnow
Secchi Disk: NA	Depth of Disapp	ear:	_meters	Depth o	of Reappear	ance:	meters
					Secchi D	epth:	meters
Visual Condition of S Clear X Floating Material	Stream (check al Cloud	I that apply): ly Other:	Co	olored	_		
Remarks:			Notes		-		
Sample No	NA	WATER QU	JALITY SAMP	PLE DATA	Preserva	tives:	Ice
Sample No.	NA	WATER QU	JALITY SAMP	PLE DATA	Preserva	tives:	lce
Sample No. No. of Sample Bottle	NA	WATER QU	JALITY SAMP de Method: <u>Gr</u>  REMARKS	PLE DATA	Preserva Preserva	tives:	
Sample No. No. of Sample Bottle	NAs	WATER QU	JALITY SAMP de Method: <u>Gr</u>  REMARKS	PLE DATA	Preserva Preserva	tives:	

SITE NAME: BC below PH6 DATE: 6/15/21 TIME: 9:05	50
DRAINAGE: Bishop Creek INVESTIGATORS: TB JB	
PHYSICAL WATER QUALITY PARAMETERS WEATHER CONDITIONS	
Water Temperature: )2.8 (% or C) Dissolved Oxygen: 9.30 (mg/L)	
Conductivity: 47 (umbos/cm@25 °C) Stream or Lake gage reading: NA	
The state of stream of the second stream of the sec	
Turbidity: (NTUs) Air Temperature (For C) Baro. Pressure (in F	Hg)
Winds (mph) Cloud cover (%) Precipitation Fog Rain Sleet Hail Snow	w
Secchi Disk: NA Depth of Disappear:meters Depth of Reappearance:meters	
Visual Condition of Stream (check all that apply): Secchi Depth:meters	5
Clear Cloudy Colored	
Remarks:Notes	-
WATER QUALITY SAMPLE DATA Sample No. <u>BC-blw-PHb</u> Sample Method: <u>Grab</u> Preservatives: <u>Ice</u>	
No. of Sample Bottles Preservatives: H35Cy in a REMARKS	
SIGNED BY:REVIEWED BY:	-

SITE NAME: South Lak DATE: 6/16/21 TIME: 10:30am
DRAINAGE: Bishop Creek INVESTIGATORS: TB JB
PHYSICAL WATER QUALITY PARAMETERS WEATHER CONDITIONS
Water Temperature: See Archile (°F or °C) Dissolved Oxygen: See Archile (mg/L)
Conductivity: <u>37</u> (µmhos/cm@25 °C) Stream or Lake gage reading: <u>9693.2</u> 'ms]
Turbidity: <u>Stahi</u> (NTUs) Air Temperature <u>55</u> (°For °C) Baro. Pressure <u>21.2</u> (in Hg)
Winds <u>5 - 8 (mph)</u> Cloud cover <u>30 (%)</u> Precipitation <u>Fog</u> Rain <u>Sleet</u> Hail <u>Snow</u>
Secchi Disk: Depth of Disappear: <u>14.5</u> meters Depth of Reappearance: <u>12.5</u> meters
Visual Condition of Stream (check all that apply): Clear Cloudy Colored Colored Cloudy Cloudy Cloudy Cloudy Colored Cloudy C
Remarks: Sample taken at 1/2 Secchi depth: = 7 m depth
No themocline. Notes
WATER QUALITY SAMPLE DATA
Sample No. <u>5L-07</u> Sample Method: <u>Grab</u> Preservatives: <u>Ice</u>
No. of Sample Bottles Preservatives: 1259 in one REMARKS
SIGNED BY: REVIEWED BY:

BISHOP CREEK WATER QUALITY STUD	Y
FIELD FORM	

DRAINAGE:	Bishop Creek INVESTIGATORS: TB JB	
PHYSICAL WAT	ER QUALITY PARAMETERS WEATHER CONDITION	S
Water Temperatu	ure: See Protily (% or %) Dissolved Oxygen: See Prot	(mg/L)
Conductivity:	2230 (µmhos/cm@25 °C) Stream or Lake gage reading: 9	693.2
Turbidity: 52	cchi (NTUs) Air Temperature 55 (°F)r °C) Baro. Pressure	21.2 (in
Winds 5-8	(mph) Cloud cover_30_(%) PrecipitationFogRainSleet	HailSn
Secchi Disk:	Depth of Disappear: <u>14.5</u> meters Depth of Reappearance: <u>12</u>	<u>S</u> meters 3. 5 meters
Visual Condition	of Stream (check all that apply):	meter
Floating Material	Other:	1
Remarks: 50	ample taken in anoxic zone at 40m belo	w swfe
N	o thermocline. Notes	
Samela Na	WATER QUALITY SAMPLE DATA	
Sample No.	WATER QUALITY SAMPLE DATA 5L - 99 - 400 Sample Method: <u>Grab</u> Preservatives:	
Sample No. No. of Sample Bo	WATER QUALITY SAMPLE DATA <u>SL-J9-H0</u> Sample Method: <u>Grab</u> Preservatives: ottles Preservatives: BEMARKS	lce Scy in
Sample No. No. of Sample Bo	WATER QUALITY SAMPLE DATA <u>SL-J9-HO</u> Sample Method: <u>Grab</u> Preservatives: ottles Preservatives: REMARKS	lce Scy in
Sample No. No. of Sample Bo	WATER QUALITY SAMPLE DATA <u>5199-40</u> Sample Method: <u>Grab</u> Preservatives: ottles4 Preservatives: <u>H</u> REMARKS	lce Scy in
Sample No. No. of Sample Bo	WATER QUALITY SAMPLE DATA <u>51-99-40</u> Sample Method: <u>Grab</u> Preservatives: ottles Preservatives: <u>H</u> REMARKS	lce Scy in
Sample No. No. of Sample Bo	WATER QUALITY SAMPLE DATA <u>599-40</u> Sample Method: <u>Grab</u> Preservatives: ottles Preservatives: REMARKS	lce Scy in

SITE NAME:	Lake Sabring DATE: 6/17/21 TIME: 9:30
DRAINAGE:	Bishop Creek INVESTIGATORS: TB JB
PHYSICAL WAT	TER QUALITY PARAMETERS WEATHER CONDITIONS
Vater Temperat	ure: <u>See Frof</u> ; V(°F or °C) Dissolved Oxygen: <u>See Frof</u> ; (mg/L)
Conductivity:	(µmhos/cm@25 ℃) Stream or Lake gage reading: <u>7099.5</u> ms
urbidity: 5	(In Horizontal (In Horizontal Content of the conten
Vinds <u>0-3(</u> m Secchi Disk:	ph) Cloud cover <u>30</u> (%) Precipitation Fog Rain Sleet Hail Snow Depth of Disappear: <u>8</u> meters Depth of Reappearance: <u>5.5</u> meters
/isual Condition	of Stream (check all that apply): Cloudy Colored
ioating Material	
temarks: 1hu	macing at ~ 3-10 m dypth. Sampled at 5 m depth
	Site Drawing
Sample No. No. of Sample B	WATER QUALITY SAMPLE DATA <u>15-09-5</u> Sample Method: <u>Grab</u> Preservatives: <u>lce</u> ottles <u>4</u> Preservatives: <u>by 504 m ove</u> REMARKS

<b>BISHOP CREEK WATER QUALITY STU</b>	DY
FIELD FORM	

DRAINAGE: PHYSICAL WATER Water Temperature Conductivity: Furbidity: <u>Se</u> Winds <u>O-3</u> (mph Secchi Disk: Visual Condition of Clear <u>F</u> Toating Material Remarks: The	Bishop Creek	AVESTIGATORS: ERS F or <sup>e</sup> C) Dise emhos/cm@25 <sup>e</sup> C) Stree NTUs) Air Temperatu (%) Precipitation meters apply): Colo	WEATHER CC solved Oxygen: Sc earn or Lake gage rea are 57 (°F or °C) Fog Rain Depth of Reappeara Secchi D	DNDITIONS DATE: 9099.5 ding: 9099.5 Baro. Pressure SleetAailS ance: 9.5 mete epth: 8.75 mete
PHYSICAL WATER Vater Temperature Conductivity: Furbidity: <u>Sec</u> Vinds <u>0-3</u> (mph Secchi Disk: Visual Condition of Clear <u>-</u> Floating Material Remarks: The	R QUALITY PARAMET         See       Prof:///((()))         26       (())         26       (())         Cloud cover       20         Depth of Disappear:       (())         Stream (check all that a Cloudy       ()         Cloudy       ()	ERS F or <sup>o</sup> C) Disc mhos/cm@25 <sup>o</sup> C) Stree NTUs) Air Temperatu (%) Precipitation meters apply): Colo	WEATHER CC solved Oxygen: <u>Suc</u> eam or Lake gage rea are <u>57</u> (°F or °C) 1 Fog Rain Depth of Reappears Secchi D	DNDITIONS         2       \$\$\frac{1}{2}\$       (mg/L)         ding:       9099.5         ding:       9099.5         Baro.       Pressure       21.6         Sleet       Hail       5         ance:       1.5       mete         epth:       8.75       mete
Water Temperature Conductivity: Furbidity: <u>Sec</u> Winds <u>O-3</u> (mph Secchi Disk: Visual Condition of Clear <u>F</u> Toating Material	Se Profile (s 26 (r 26 (r cloud cover <u>30</u> Depth of Disappear: Stream (check all that a Cloudy c	F or <sup>e</sup> C) Dise emhos/cm@25 <sup>e</sup> C) Stree NTUs) Air Temperatu (%) Precipitation _ meters apply): Colo	solved Oxygen: <u>Sec</u> eam or Lake gage rea are <u>57</u> (°F or °C) Fog Rain Depth of Reappeara Secchi D	ding:       9099.5         ding:       9099.5         Baro.       Pressure         Sleet       Hail         Snce:       1.5         mce:       1.5         mcet       1.5         mete       1.5
Conductivity: Furbidity: <u>Sec</u> Winds <u>O-3</u> (mph Secchi Disk: Visual Condition of Clear <u>F</u> Toating Material Remarks: The	Cloud cover <u>30</u> Depth of Disappear: Stream (check all that a Cloudy	emhos/cm@25 °C) Stree NTUs) Air Temperatu (%) Precipitation _ meters apply): Colo	eam or Lake gage rea re <u>57</u> (°F or °C) Fog Rain Depth of Reappeara Secchi D	ding: <u>9099.5</u> Baro. Pressure <u>1.6</u> Sleet <u>Hail</u> s ance: <u><b>1</b>.5</u> mete epth: <b>8.7</b> 5 me
Furbidity: <u>Se</u> Winds <u>O-3</u> (mph Secchi Disk: Visual Condition of Clear <u>F</u> Toating Material Remarks: The	Cloud cover <u>30</u> Depth of Disappear: Stream (check all that a 	NTUs) Air Temperatu (%) Precipitation _ meters apply): Col	re <u>57</u> (°F or °C) Fog Rain Depth of Reappeara Secchi D	Baro. Pressure SleetHailS ance: mete epth: 8.75 me
Winds 0-3 (mph Secchi Disk: Visual Condition of Clear - Floating Material Remarks: The	Cloud cover <u>30</u> Depth of Disappear: Stream (check all that a Cloudy	(%) Precipitation _ meters apply): Col	Fog Rain Depth of Reappeara	Sleet Hail S ance: <b>1.5</b> mete epth: <b>8.7</b> 5 me
Secchi Disk: /isual Condition of Clear Floating Material	Depth of Disappear: Stream (check all that a Cloudy	meters	Depth of Reappeara Secchi D	epth: 8.75 mete
Visual Condition of Clear Floating Material Remarks: The	Stream (check all that a Cloudy	apply): Col	Secchi D	epth: 8.75 me
Visual Condition of Clear	Stream (check all that a Cloudy	apply): Col		
Floating Material	C		ored	
Remarks: The		ther:		
11.0	rmachne at	~ 8-10m. 50	ampled at 2	on depth
		Site Drawing		
	WA	FER QUALITY SAMPL	E DATA	
Sample No.	15-0P-20	Sample Method: Gra	b Preserva	lives: Ice
Sample No. No. of Sample Bott	<u>L5-0P-20</u> Hes 4	Sample Method: Gra	b Preserva Preserva	ives: Ice
Sample No. No. of Sample Bott	<u>L5-DP-20</u> les <u>4</u>	Sample Method: <u>Gra</u>	b Preserva Preserva	ives: <u>الce</u> ives: <u>المح</u> رب

Page \_\_\_\_ of \_\_\_\_\_

### WATER TEMPERATURE AND DISSOLVED OXYGEN

Location: <u>South La</u>

LAKEP	ROFILE	DA	TA FORM
Lake	6	16	21

DEPTH FROM WATER SURFACE (meters)	WATER TEMPERATURE (⁰C) '	DISSOLVED OXYGEN (mg/L)	DEPTH FROM WATER SURFACE (meters)	WATER TEMPERATURE (°C)	DISSOLVED OXYGEN (mg/L)	
0.5	11.9	8,13	31	4.2	5.72	
1	11.9	8.10	32	4.3	4.54	F
2	11.8	8.11	33	4.3	3.53	1
3	11.7	8.13	34	4.4	2.82	
4	11.6	8.14	35	4.27	0.28	
5	11.6	8.14	36	5,4	0.15	
6	11.6	8,15	37	5.6	0.04	
7	11.5	8.16	38	5.9	0.03	
8	11.4	8.20	39	(0.)	0.03	7
9	11.3	8.24	40	6.1	0.00	
10	11.1	8.27	41	6.3	-0.00	
11	11.0	8.24	42	6.6	-0.00	
12	10.7	8.35	43	6.7	-0.00	1
13	10.4	8,4	44	7.0	-0.00	
14	9.7	8.83	45	7.1	-0.01	
15	9.0	9.12	46	7.4	-0.01	
16	8.7	\$ 9.4	47	7.6	-0.02	1
17	8.0	9.46	48	7.7	-0.02	1
18	7.5	9.53	48.29	7.7	-0.03	B
19	6.9	9.52	50			
20	6.3	9.35	51	-		
21	5.5	9.18	52		1	1
22	4.9	8,91	53			
23	4.6	8.73	54			
24	4.4	8,48	55			]
25	4.3	8.30	56		1	
26	4.2	8.05	57			
27	4.2	7.73	58			1
28	4.2	7.40	59		)	
29	4.2	7.12	60			
30	4.2	6.60	61			

R.P.

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Page \_\_\_\_ of \_\_\_\_

# WATER TEMPERATURE AND DISSOLVED OXYGEN LAKE PROFILE DATA FORM

Location:

650

	DEPTH FROM WATER SURFACE (meters)	WATER TEMPERATURE (°C)	DISSOLVED OXYGEN (mg/L)	DEPTH FROM WATER SURFACE (meters)	WATER TEMPERATURE (ºC)	DISSOLVED OXYGEN (mg/L)
	0.5	13.4	8.21	31	4.5	8.21
	1	13.4	8.23	32	4-5	8.19
	2	13.3	8.23	33	41.5	8.17
	3	13,3	8.24	34	4.5	8.16
	4	13.3	8.24	35	4.4	8.15
	5	13.2	8.25	36	4,4	8.12
	6	12,8	8.43	37	4,4	8.05
	7	12.6	8.50	38	4.4	7.98
	8	11.9	8.77	39	4.4	8.00
2	(9)	10.6	9.39	40	4.3	8.01
	10/	9.6	9,78	41	4.3	8.01
	11	8.7	10.01	42	4,3	8.02
	12	8.3	10.02	43	4,3	8.02
	13	7.7	10.09	44	4.3	8.01
	14	7.1	10.16	45	4,3	7,97
	15	6.6	10,16	46	4.3	7.95
	16	6.3	10.05	47	4.3	7.80
	17	6.0	9,83	48	4,2	7,82
	18	5,6	9,50	49	4.2	7.86
	19	5.5	9.35	50	4.2	7.86
	20	55,2	9.10	51	4,2	7175
	21	5.1	8,84	52	412	7.70
	22	5.0	8.53	53	4.2	7.64
	23	4.9	8.44	54	4.3	7.51
	24	4,8	8,35	55	4,3	7.42
	25	4,7	8,30	56	4.3	7,36
	26	4.6	8,26	57	4.3	7.23
	27	4.6	8,25	58	4.2	7,15
	28	4.6	8,20	- 59	4.2	7.02
	29	4,6	8,20	60	4.2	6.76
	30 🐔	4.5	8.21	61	4.2	6,63

Page 2 of 2

## WATER TEMPERATURE AND DISSOLVED OXYGEN LAKE PROFILE DATA FORM Location: LAKE Sabrina

. . .

DEPTH FROM WATER SURFACE (meters)	WATER TEMPERATURE (°C)	DISSOLVED OXYGEN (mg/L)	DEPTH FROM WATER SURFACE (meters)	WATER TEMPERATURE (°C)	DISSOLVED OXYGEN (mg/L)
62	4.2	6.54	91		
63	4.2	6.06	92		
64	4,2	5,59	93	19	
65	4,2	5.05	94		
66-	4,2	4,70	95		
67			96		
68			97		
69	1		98		
70			99	1	
71	100 million - 100 million	1	100	1 6 4	
72 -			101		
73			102		
74			103	14 · · · · · · · · · · · · · · · · · · ·	
75			104	L MARY I	
76	1.		105		
77			106		
78		( ~	107		
79			108		
80	2		109		· · · · · · · · · · · · · · · · · · ·
81			110		
82			111		
83			112		-
84	2		113		
85			114		
86			115	*15.	
87			116		
88			117	1	
89	1		118		-
90		· · · · ·	119		

65.3

SITE NAME:				-	112 111		
and the second second	North	ForK	C	DATE:	1.0=1 21	_TIME:	7:300
DRAINAGE:	Bishop Creek	INVES	TIGATORS:	TB			
PHYSICAL WATE	R QUALITY PAR	RAMETERS		WE	ATHER COND	ITIONS	
Water Temperature	e: 16, 2	(ºF or		Dissolved Oxy	rgen: 7.	92	(mg/L)
Conductivity:	-	(µmhos/	/cm@25 °C) s	Stream or Lak	e gage reading	13.	.4 cfs
Turbidity:	- (N	TUs) Air Te	emperature_	3 Ebroc	) Baro. Pressu	1re 21.1	(in Hg)
Winds Q - 1 (m	nph) Cloud cove	ar O (%	) Precipitatio	n Fog	Rain Sle	et Hail	Spow
Secchi Disk: MA	Depth of Disap	pear:	meters	Depth of	Reappearance	ə:	meters
					Secchi Dept	n:	meters
Visual Condition of Clear Floating Material	f Stream (check : Clou	all that apply): udy Other:		Colored			
Dementer							
Remarks:			Notes				
		WATER G	QUALITY SAM	IPLE DATA			
Sample No.	NA	WATER C	QUALITY SAM		Preservatives		lce
Sample No. No. of Sample Bot	NA tles	WATER C	QUALITY SAM	IPLE DATA	Preservatives	3:	Ice
Sample No. No. of Sample Bot	A	WATER C	QUALITY SAM nple Method: <u>(</u>  REMARKS	IPLE DATA	Preservatives	s:	Ice
Sample No. No. of Sample Bot	NA tles	WATER C	QUALITY SAM nple Method: <u>(</u> —- REMARKS	IPLE DATA Grab	Preservatives	5:	lce
Sample No. No. of Sample Bot	NA tles	WATER C	QUALITY SAM nple Method: <u>(</u>  REMARKS	IPLE DATA	Preservative: Preservative:	5:	lce
Sample No. No. of Sample Bot	A tles	WATER C	QUALITY SAM	IPLE DATA	Preservatives	5:	
Sample No. No. of Sample Bot	NA tles	WATER G	QUALITY SAM nple Method: <u>(</u> 	IPLE DATA	Preservatives	5: 5:	
Sample No. No. of Sample Bot	MA ties	WATER C	QUALITY SAM	IPLE DATA	Preservatives	s:	
Sample No. No. of Sample Bot	NA tles	WATER C	QUALITY SAM	IPLE DATA	Preservatives	S: S:	lce

SITE NAME: YIN OCY	DAT	E: <u>+/10/0)</u> TIME:	
DRAINAGE: Bishop Creek	INVESTIGATORS:	TB	
PHYSICAL WATER QUALITY PAR	RAMETERS	WEATHER CONDITIONS	
Water Temperature:	(ºF or Diss	olved Oxygen: 7.46	(mg/L)
Conductivity:	(µmhos/cm@25 ºC) Strea	am or Lake gage reading:	-
Turbidity:(N'	TUs) Air Temperature	(°For °C) Baro. Pressure 21.	.74 (in Hg)
Winds Q - (mph) Cloud cove	or O (%) Precipitation	Fog Rain Sleet Ha	ail Snow
Secchi Disk: NA Depth of Disap	pear:meters	Depth of Reappearance:	meters
.,.		Secchi Depth:	meters
Visual Condition of Stream (check a Clear K Clou	all that apply): idy Colo	pred	
Floating Material	Other:		
Remarks:			
	Notes		
	WATER QUALITY SAMPL	E DATA	
Sample No.	WATER QUALITY SAMPLI Sample Method: <u>Grat</u>	E DATA	lce
Sample No	WATER QUALITY SAMPLI Sample Method: <u>Grat</u>	E DATA Preservatives: Preservatives:	lce
Sample No	WATER QUALITY SAMPLI Sample Method: <u>Grat</u> 	E DATA Preservatives: Preservatives:	lce
Sample No	WATER QUALITY SAMPLI Sample Method: Grat	E DATA Preservatives: Preservatives:	lce

DRAINAGE: <u>B</u>	ishop Creek		DRS: T	B		
PHYSICAL WATER G	UALITY PARAM	METERS		WEATHER CON	DITIONS	
Water Temperature:	12.7	(°F or C)	Dissolv	ed Oxygen: 7.	91	(mg/L)
Conductivity:	-	(µmhos/cm@2	5 ºC) Stream	or Lake gage readin	ıg:	
Turbidity:	- <u>(</u> NTU	s) Air Temperat	ture 70	PFor °C) Baro. Press	ure 21. 3	34 (in Hg)
Winds 1 - 2 (mph)	Cloud cover	15 (%) Prec	pitation F	Fog Rain Slo	et Hail	Snow
Secchi Disk:NA D	epth of Disappea	ar:mete	ers D	epth of Reappearance	:e:	meters
Vieual Condition of Str	oom (obook all t	that apply i		Secchi Dep	th:	meters
Clear	Cloudy	Other	Colored	· ·		
		Other:				
Remarks:		N	otes			
		WATER QUALIT	Y SAMPLE D	DATA		
Sample No.	NA	WATER QUALIT Sample Me	Y SAMPLE D	DATA Preservative	es:	lce
Sample No	NA	WATER QUALIT Sample Me	Y SAMPLE [ thod: <u>Grab</u>	DATA Preservative Preservative	95:	lce
Sample No	NA	WATER QUALIT Sample Me	Y SAMPLE D thod: <u>Grab</u>	DATA Preservative Preservative	95:	lce
Sample No	NA	WATER QUALIT Sample Me REM	Y SAMPLE D thod: <u>Grab</u> IARKS	DATA Preservative Preservative	95: 95:	
Sample No	NA	WATER QUALITSample MeREM	Y SAMPLE E thod: <u>Grab</u>	DATA Preservative Preservative	95:	

DRAINAGE: <u>Bishop Creek</u> INVESTIGATORS: <u>TB</u> PHYSICAL WATER QUALITY PARAMETERS WEATHER CONDITIONS Water Temperature: <u>("For %)</u> Dissolved Oxygen: <u>(mg/L)</u> Conductivity: <u>(umhos/cm@25 %)</u> Stream or Lake gage reading: <u>9683.28</u> Turbidity: <u>(umhos/cm@25 %)</u> Stream or Lake gage reading: <u>9683.28</u> Turbidity: <u>(umhos/cm@25 %)</u> Stream or Lake gage reading: <u>9683.28</u> Turbidity: <u>(mph)</u> Cloud cover <u>30</u> (%) Procipitation <u>Fog</u> Rain <u>Sleet</u> <u>Hail</u> <u>Snow</u> Secchi Dak: <u>MA</u> Depth of Disappear: <u>meters</u> Depth of Reappearance: <u>meters</u> Secchi Depth: <u>meters</u> Secchi Depth: <u>secchi Depth</u> ; <u>meters</u> Visual Condition of Stream (check all that apply): Clear <u>K</u> <u>Cloudy</u> <u>Other</u> <u>Colored</u> Floating Material <u>Other</u> <u>Colored</u> <i>Larke</i> is very bw. Approx. 15 bower than dwing Jum trip. Cullecked sample for below usmal boot rawy biochion. Signs of people using this area (footprints). WATER QUALITY SAMPLE DATA Sample No. <u>SL-BR-1</u> <u>Sample Method: Grab</u> Preservatives: <u>loe</u> No. of Sample Bottles <u>2</u> Preservatives: <u>Nøre</u> <u>REMARKS</u> <u>1</u> Wack both <u>1</u> Sowry Mckunlar SIGNED BY: <u>REVIEWED BY:</u>	SITE NAME:	South Lake DATE: 7/12/21 TIME: 11:15av
PHYSICAL WATER QUALITY PARAMETERS       WEATHER CONDITIONS         Water Temperature:	DRAINAGE:	Bishop Creek INVESTIGATORS: TB
Water Temperature:	PHYSICAL WATER	QUALITY PARAMETERS WEATHER CONDITIONS
Conductivity:	Water Temperature	:(ºF or ºC) Dissolved Oxygen:(mg/L)
Turbidity:      (NTUs)       Air Temperature 72 (F) r °C) Baro. Pressure 21.23 (in Hg)         Winds 5-9 (mph)       Cloud cover 30 (%)       PrecipitationRainSleetHailSnow         Secchi Disk:       MA Depth of Disappearmeters       Depth of Reappearance:meters         Secchi Depth:      meters       Depth of Reappearance:meters         Visual Condition of Stream (check all that apply):       Cloudy       Cloudy         Clear       X       Cloudy       Other:Colored         Remarks:      Notes	Conductivity:	(μmhos/cm@25 °C) Stream or Lake gage reading: <u>9683.28</u>
Winds 5-9 (mph) Cloud cover 30 (%) PrecipitationFogRainSleetHailSnow         Secchi Disk: NA Depth of Disappear:meters       Depth of Reappearance:meters         Secchi Disk: NA Depth of Disappear:meters       Depth of Reappearance:meters         Visual Condition of Stream (check all that apply):       Colored	Turbidity:	- (NTUs) Air Temperature 72 (°F) or °C) Baro. Pressure 21.23 (in Hg)
Secchi Disk: MA Depth of Disappear:metersmeters	Winds 5-9 (m)	ph) Cloud cover_ <u>30</u> (%) PrecipitationFogRainSleetHailSnow
Secchi Depth:meters         Visual Condition of Stream (check all that apply):         Colored         Floating Material         Notes         Remarks:	Secchi Disk: NA	Depth of Disappear:meters Depth of Reappearance:meters
Visual Condition of Stream (check all mat apply): Clear Colored Floating Material Outer: Colored Remarks: Notes Lake is very bw. Approx. 15 bover than dwing Jumy trip. Collected sample for below usual boot ramp bootion. Signs of people using this area (footprints). WATER QUALITY SAMPLE DATA Sample No. <u>SL-BR-1</u> Sample Method: <u>Grab</u> Preservatives: <u>loe</u> No. of Sample Bottles <u>2</u> Preservatives: <u>None</u> REMARKS <u>1 Wack bottle</u> <u>1 Source Molecular</u> SIGNED BY: <u>Reviewed BY:</u>	Viewel Condition of	Stream (check all that analy)
Floating Material       Other:         Remarks:       Notes         Lake is very low. Approx. 15 lower than during         Jury trip. Collected sample for below usual         boot ramp bootion. Signs of people using this         area (footprints).         WATER QUALITY SAMPLE DATA         Sample No.       S1-BR-1         Sample Bottles       2         Preservatives:       Ice         REMARKS         1       Sourcy Molecular         SIGNED BY:       REVIEWED BY:		Cloudy Colored
Notes         Notes         Lake is very low. Approx. 15' lower than during         Jum trip. Collected sample for below usual         boot ramp location. Signs of people using this         area (footprints).         WATER QUALITY SAMPLE DATA         Sample No. SL-BR-1 Sample Method: Grab Preservatives: loe         REMARKS         1       Warter Wolkenlar         SIGNED BY:	Floating Material	Other:
House       House <td< td=""><td>Remarks:</td><td>Notes</td></td<>	Remarks:	Notes
Lake is very bw. Approx. 15 bower than dwing Jum trip. Collected sample for below usual boot ramp bootion. Signs of people using this area (footprints). WATER QUALITY SAMPLE DATA Sample No. <u>S1-BR-1</u> Sample Method: <u>Grab</u> Preservatives: <u>loe</u> No. of Sample Bottles <u>2</u> Preservatives: <u>None</u> REMARKS <u>1 Wack bottb</u> <u>1 Source Molecular</u> SIGNED BY: <u>Reviewed By:</u>		
WATER QUALITY SAMPLE DATA Sample No. <u>51-BR-1</u> Sample Method: <u>Grab</u> Preservatives: <u>lce</u> No. of Sample Bottles <u>2</u> Preservatives: <u>None</u> REMARKS <u>1 Wack bottb</u> <u>1 Source Molecular</u> SIGNED BY: <u>REVIEWED BY:</u>	area (	(tootprine).
Sample No. <u>51-BR-1</u> Sample Method: <u>Grab</u> Preservatives: <u>lce</u> No. of Sample Bottles <u>2</u> Preservatives: <u>None</u> REMARKS <u>1 Weck bottle</u> <u>1 Source Molecular</u> SIGNED BY: <u>REVIEWED BY:</u>		WATER QUALITY SAMPLE DATA
No. of Sample Bottles REMARKS 1 Weck both 1 Source Molecular SIGNED BY: REVIEWED BY:	Sample No.	5L-BR-1 Sample Method: Grab Preservatives: Ice
REMARKS 1 Weck both 1 Source Molecular SIGNED BY: REVIEWED BY:	No. of Sample Bottle	es Preservatives: None
1 Weck both 1 Source Molecular SIGNED BY: REVIEWED BY:		REMARKS
SIGNED BY:REVIEWED BY:		k h ul
SIGNED BY:REVIEWED BY:	1 WRC	<u>K</u> US HU
SIGNED BY:REVIEWED BY:	1 Sour	4 Molecular
SIGNED BY:REVIEWED BY:		
SIGNED BY:REVIEWED BY:		
	SIGNED BY:	REVIEWED BY:

SITE NAME:	
DRAINAGE:	Bishop Creek INVESTIGATORS: TB
PHYSICAL WAT	ER QUALITY PARAMETERS WEATHER CONDITIONS
Water Temperatu	are: (ºF or ºC) Dissolved Oxygen: (mg/L)
Conductivity:	(µmhos/cm@25 °C) Stream or Lake gage reading:
Turbidity:	- (NTUs) Air Temperature 76 (°F) or °C) Baro. Pressure 21.68 (in Hg)
Winds 5 - 11	(mph) Cloud cover_30 (%) PrecipitationFogRainSleetHailSnow
Secchi Disk: NA	A Depth of Disappear:meters Depth of Reappearance:meters
Visual Condition	of Stream (check all that apply):
Clear Floating Material	Cloudy Colored
Remarks:	
	Notes
Sample No. No. of Sample Bo	WATER QUALITY SAMPLE DATA          LS-BR-1       Sample Method: Grab       Preservatives:
Sample No. No. of Sample Bo	WATER QUALITY SAMPLE DATA          L5-B2-1       Sample Method: Grab       Preservatives:
Sample No. No. of Sample Bo	WATER QUALITY SAMPLE DATA          LS-BR-1       Sample Method: Grab       Preservatives:         pottles        Preservatives:         REMARKS       Jot Hb
Sample No. No. of Sample Bo	WATER QUALITY SAMPLE DATA <u>L5-BR-1</u> Sample Method: <u>Grab</u> Preservatives: <u>Ice</u> pottles <u>2</u> Preservatives: <u>Nonc</u> REMARKS <u>bothb</u> <u>Moleculor bothe</u>
Sample No. No. of Sample Bo	WATER QUALITY SAMPLE DATA <u>L5-BL-1</u> Sample Method: <u>Grab</u> Preservatives: <u>Ice</u> pottles <u>2</u> Preservatives: <u>Nonc</u> REMARKS <u>bothb</u> <u>Moleculor bothle</u>
Sample No. No. of Sample Bo	WATER QUALITY SAMPLE DATA <u>L.5-BR-1</u> Sample Method: <u>Grab</u> Preservatives: <u>lce</u> pottles <u>2</u> Preservatives: <u>Nonc</u> REMARKS <u>bothb</u> <u>Moleculor bothle</u>
Sample No. No. of Sample Bo	WATER QUALITY SAMPLE DATA <u>L5-BR-1</u> Sample Method: <u>Grab</u> Preservatives: <u>Ice</u> pottles <u>2</u> Preservatives: <u>Nonc</u> REMARKS <u>bothb</u> <u>moleculor bothle</u> REVIEWED BY:

	+3
DRAINAGE:	Bishop Creek INVESTIGATORS: 1 D
PHYSICAL WA	TER QUALITY PARAMETERS WEATHER CONDITIONS
Vater Tempera	ure: (%F or %C) Dissolved Oxygen: (mg/L)
Conductivity:	(µmhos/cm@25 ℃) Stream or Lake gage reading:
urbidity:	(NTUs) Air Temperature 79 (F) or °C) Baro. Pressure 22.49 (in I
Vinds <u>3-7</u>	(mph) Cloud cover(%) PrecipitationFogRainSleetHailSnot
ecchi Disk: N	A Depth of Disappear:meters Depth of Reappearance:meters
/isual Condition	of Stream (check all that apply): Cloudy Colored Colored
loating wateria	Other:
lemarks:	Notes
	WATER QUALITY SAMPLE DATA
Sample No.	WATER QUALITY SAMPLE DATA TUTA-RES-) Sample Method: Grab Preservatives: Ice
ample No.	WATER QUALITY SAMPLE DATA TYT2-RES-1         Sample Method: Grab         Preservatives:           sottles          Preservatives:           REMARKS         REMARKS
ample No. lo. of Sample E	WATER QUALITY SAMPLE DATA           Image: Apple Reservatives:       Ice         Image: Apple Reservatives:       Ice <tr< td=""></tr<>
ample No. lo. of Sample E	WATER QUALITY SAMPLE DATA          TMT2-RES-1       Sample Method: Grab       Preservatives:
iample No. lo. of Sample E	WATER QUALITY SAMPLE DATA TUTZ-RES-1_Sample Method: Grab_Preservatives: Ice NottlesPreservatives: Mone REMARKS We both reg Molentor beth
iample No. lo. of Sample E	WATER QUALITY SAMPLE DATA <u>TVJ2-RES-1</u> Sample Method: <u>Grab</u> Preservatives: <u>Ice</u> sottles <u>2</u> Preservatives: <u>NG VC</u> REMARKS <u>REMARKS</u>

						8.20-
SITE NAME: 10	ailuat	PH2	DATE:	7 13 21	TIME:	0.300
DRAINAGE: B	shop Creek	INVESTIGATOR	RS:	TB		
PHYSICAL WATER G	UALITY PARAM	ETERS		WEATHER CO	NDITIONS	
Water Temperature:	15.4	(%F or (C))	Dissolve	d Oxygen:	1.94	(mg/L)
Conductivity:	-	(µmhos/cm@25	<sup>o</sup> C) Stream o	or Lake gage rea	ding:	
Turbidity:	- (NTUs)	Air Temperatu	re 73 (F	Dor °C) Baro. Pre	essure 23	22 (in Hg)
Winds 2 - 3 (mph)	Cloud cover 1	0 (%) Precin	vitation Fr	ng Bain	Sleet Ha	ail Snow
Secchi Disk: NA D	epth of Disappear	meters	B De	pth of Reappear	ance:	eneters
				Secchi D	epth:	meters
Visual Condition of Str	eam (check all th	at apply):	Colored			
Floating Material		Other:				
Remarks:						
		Not	es			
		VATER QUALITY	SAMPLE DA	ата		
Sample No.	NĄ	VATER QUALITY _ Sample Meth	SAMPLE DA	ATA _ Preserva	tives:	lce
Sample No	NA	VATER QUALITY Sample Meth	SAMPLE DA	ATA Preserva Preserva	tives:	lce
Sample No	NĄ	VATER QUALITY _ Sample Meth	SAMPLE DA	ATA _ Preserva Preserva	tives:	lce
Sample No.	NA	VATER QUALITY _ Sample Meth	SAMPLE DA	ATA Preserva Preserva	tives:	

DRAINAGE: Bishop Cree	k INVESTIGATORS:	TB		20
PHYSICAL WATER QUALITY F	ARAMETERS	WEATHER CO	NDITIONS	
Water Temperature: 15.1	(%For (C))	Dissolved Oxygen:	3.09 (mg/l)	
Conductivity	(umbos/cm@25 %C)	Streem or Loke goge ree	ding: 1.7'	
			23 22	
Turbidity:	(NTUs) Air Temperature_	<u>4 ) (°F or °C) Baro. Pre</u>	essure <u>00.00 (</u> in F	-lg)
Winds <u>0 - (</u> mph) Cloud c	over_10_(%) Precipitat	ionFogRain	SleetHailSnov	N
Secchi Disk: NA Depth of Dis	sappear:meters	Depth of Reappeara	ance:meters	
Visual Condition of Stream (che	ak all that apply).	Secchi D	epth: meters	
Clear Clear	cloudy	Colored		
Floating Material	Other:			
Remarks:	Notas			-
	WATER QUALITY SA	MPLE DATA		
Sample No.	WATER QUALITY SA Sample Method:	MPLE DATA <u>Grab</u> Preserva	tives: <u>Ice</u>	
Sample No	WATER QUALITY SA Sample Method:	MPLE DATA <u>Grab</u> Preserva Preserva	tives: <u>Ice</u>	
Sample No	WATER QUALITY SA Sample Method:  REMARK	MPLE DATA <u>Grab</u> Preservat Preservat S	tives: <u>Ice</u>	

SITE NAME: Ja	ilwater 1-	43	DATE:	7 13 21	_TIME:	9.150
DRAINAGE: Bist	op Creek IN	/ESTIGATORS:	TB	3		
PHYSICAL WATER QU		RS	1	WEATHER COND	ITIONS	
Water Temperature:	5.5 (%	or	Dissolved	Oxygen: 8-	23	(mg/L)
Conductivity:	(µm	hos/cm@25 ºC)	) Stream or	Lake gage reading		
Turbidity:	(NTUs) A	ir Temperature_	79 (F)	or °C) Baro. Pressu	are <u>23.</u>	90 (in Hg)
Winds 2 - 4 (mph)	Cloud cover_10	(%) Precipita	tionFog	RainSle	etHail	Snow
Secchi Disk: NA Dep	th of Disappear:	meters	Depth	h of Reappearance	ə:	meters
Visual Condition of Strop	m (aback all that an	nhu).		Secchi Dept	h:	meters
Clear Floating Material	Cloudy Oth	er:	Colored			
Remarks:						
		Notes				
Sample No	WATE A/ A	R QUALITY SA		A		
Sample No.	waте <u>М А</u>	ER QUALITY SA	AMPLE DAT	A Preservative:	S:	Ice
Sample No	wate <u>M A</u>	ER QUALITY SA Sample Method	AMPLE DAT	A Preservatives Preservatives	s:	Ice
Sample No	WATE	ER QUALITY SA Sample Method  REMARK	AMPLE DAT	A Preservative Preservative	S: S:	

	21 h. DII3 [12] 21 9.25
SITE NAME:	<u>BL Delow FH</u> DATE: <u>+15/21</u> TIME: <u>7.350</u>
DRAINAGE:	Bishop Creek INVESTIGATORS: TB
PHYSICAL WAT	ER QUALITY PARAMETERS WEATHER CONDITIONS
Water Temperatu	re: 15.8 (%F or %) Dissolved Oxygen: 8.21 (mg/L)
Conductivity:	(µmhos/cm@25 ℃) Stream or Lake gage reading:O. 7 ′
Turbidity:	- (NTUs) Air Temperature 79 (For °C) Baro. Pressure 23,90 (in Hg)
Winds O	mph) Cloud cover 10 (%) Precipitation Fog Rain Sleet Hail Snow
Secchi Disk: NA	Depth of Disappear:meters Depth of Reappearance:meters
	Secchi Depth:meters
Visual Condition Clear Floating Material	of Stream (check all that apply): CloudyColored Other:
Remarks:	
	Notes
	WATER QUALITY SAMPLE DATA
Sample No.	WATER QUALITY SAMPLE DATA         NA       Sample Method: Grab       Preservatives:
Sample No. No. of Sample Bo	WATER QUALITY SAMPLE DATA          MA       Sample Method: Grab       Preservatives:         ottles       Preservatives:
Sample No. No. of Sample Bo	WATER QUALITY SAMPLE DATA          MA       Sample Method: Grab       Preservatives:         ottles       Preservatives:         REMARKS
Sample No. No. of Sample Bo	WATER QUALITY SAMPLE DATA          NA       Sample Method: Grab       Preservatives:       Ice         ottles       Preservatives:       Ice         REMARKS
Sample No. No. of Sample Bo	WATER QUALITY SAMPLE DATA
Sample No. No. of Sample Bo	WATER QUALITY SAMPLE DATA
Sample No. No. of Sample Bo	WATER QUALITY SAMPLE DATA          MA       Sample Method: Grab       Preservatives:       Ice         ottles       Preservatives:       Ice         REMARKS       REMARKS

STENAME.	2 PH DATE: 7/13/21 TIME:	10:000
DRAINAGE: Bishon Creek	INVESTIGATORS TR	
	AMIETERS WEATHER CONDITIONS	
Water Temperature: 16.0	( <sup>Q</sup> F or ( <sup>Q</sup> C)) Dissolved Oxygen: <u>X. 4</u> )	(mg/L)
Conductivity:	(µmhos/cm@25 °C) Stream or Lake gage reading:	
Turbidity:(N	TUs) Air Temperature <u>84</u> (For °C) Baro. Pressure <u>24.</u>	85 (in Hg)
Winds 2-4 (mph) Cloud cove	ar 10 (%) Precipitation Fog Rain Sleet Hai	I Snow
Secchi Disk: MA_ Depth of Disap	pear:meters Depth of Reappearance:	meters
T, IV	Secchi Depth:	meters
Visual Condition of Stream (check a	all that apply):	
Floating Material	Other:	
Remarks:		-
	Notes	
Sample No.	WATER QUALITY SAMPLE DATA Sample Method: Grab Preservatives:	Ice
Sample No. <u>N Á</u>	WATER QUALITY SAMPLE DATA Sample Method: <u>Grab</u> Preservatives:	Ice
Sample No	WATER QUALITY SAMPLE DATA Sample Method: Grab Preservatives: Preservatives: Preservatives:	lce
Sample No	WATER QUALITY SAMPLE DATASample Method: Grab Preservatives: Preservatives: REMARKS	Ice
Sample No	WATER QUALITY SAMPLE DATASample Method: Grab Preservatives: Preservatives: REMARKS	lce
Sample No	WATER QUALITY SAMPLE DATA Sample Method: Grab Preservatives: Preservatives: REMARKS	
Sample No. NA No. of Sample Bottles	WATER QUALITY SAMPLE DATASample Method: Grab Preservatives: Preservatives: REMARKS	

E A MALO E				.0		
RAINAGE:	Bishop Creek	INVESTIGAT	ORS:	FB		
HYSICAL WATE	R QUALITY PARA	METERS		WEATHER	CONDITIONS	
/ater Temperatu	re: 16.0	(ºF or <sup>o</sup> C)	Disso	lved Oxygen:	8.53	(mg/L)
onductivity:	-	(µmhos/cm@2	5 ºC) Strea	m or Lake gage i	reading:	-
urbidity:	(NT	Us) Air Tempera	ture 85	(For °C) Baro.	Pressure 24	
/inds_0-1_(r	nph) Cloud cover	10 (%) Pred	cipitation	_FogRain _	SleetH	ailSnow
ecchi Disk: NA	Depth of Disapp	ear:mete	ers	Depth of Reappe	earance:	meters
isual Condition c	f Stream (check al	that apply).		Secch	i Depth:	meters
lear X loating Material	Cloud	yOther:	Color	ed	а.	
emarks:						
		N	lotes			
		WATER OLIAL IT		DATA		
ample No.	NA	WATER QUALIT	Y SAMPLE	DATA	vatives.	Ice
ample No. o. of Sample Bo	A	WATER QUALIT	Y SAMPLE	DATA Preser	vatives:	Ice
ample No. o. of Sample Bo	 	WATER QUALIT	TY SAMPLE ethod: <u>Grab</u> MARKS	DATA Preser Preser	vatives: vatives:	Ice
ample No. o. of Sample Bo	A	WATER QUALIT Sample Me	TY SAMPLE ethod: <u>Grab</u> MARKS	DATA Preser Preser	vatives:	

DRAINAGE: Bisnop Cree	KINVESTIGATORS:	D	
PHYSICAL WATER QUALITY P	ARAMETERS	WEATHER CONDITIONS	5
Water Temperature: 16 -	5 (°F or C) Diss	olved Oxygen: 8.21	(mg/L)
Conductivity:	(µmhos/cm@25 °C) Strea	am or Lake gage reading:	-
Turbidity:	(NTUs) Air Temperature <u>87</u>	For °C) Baro. Pressure	5.21 (in Hg)
Winds 3-7 (mph) Cloud co	ver 0 (%) Precipitation	Fog Rain Sleet H	-lail Snow
Secchi Disk:	appear:meters	Depth of Reappearance:	meters
		Secchi Depth:	meters
Visual Condition of Stream (chec Clear Cl Floating Material	k all that apply): oudy Colo	ored	
Remarks:	Notes		
	WATER QUALITY SAMPLE	E DATA	
Sample No.	WATER QUALITY SAMPLE Sample Method: Grat	E DATA	lce
Sample No	WATER QUALITY SAMPLE Sample Method: Grat	E DATA Preservatives: Preservatives:	lce
Sample No. <u>N À</u> No. of Sample Bottles	WATER QUALITY SAMPLE Sample Method: Grab	E DATA Preservatives: Preservatives:	
Sample No	WATER QUALITY SAMPLE Sample Method: Grat  REMARKS	E DATA Preservatives: Preservatives:	

DRAINAGE: Bishop Cre	eek INVESTIGATORS:	TB	
PHYSICAL WATER QUALITY	PARAMETERS	WEATHER CONDITIONS	
Water Temperature: 17.	(%F or (6) Dis	ssolved Oxygen: 8.32	(mg/L)
Conductivity:	(µmhos/cm@25 °C) Str	ream or Lake gage reading:	
Furbidity:	(NTUs) Air Temperature	For °C) Baro. Pressure 2.	5.21 (in Hg)
Winds O - 1 (mph) Cloud	cover_10_(%) Precipitation	FogRainSleetH	lailSnow
Secchi Disk: NA Depth of D	isappear:meters	Depth of Reappearance:	meters
Visual Condition of Stream (ch	ack all that anniv).	Secchi Depth:	meters
Clear K	Cloudy Co	blored	
	Other:		
Remarks:	Notes		
	WATER QUALITY SAMP	PLE DATA	
Sample No. <u>NA</u>	WATER QUALITY SAMP	PLE DATA	lce
Sample No. <u>NA</u> No. of Sample Bottles	WATER QUALITY SAMP Sample Method: <u>Gr</u>	PLE DATA ab Preservatives: Preservatives:	lce
Sample No. <u>NA</u> No. of Sample Bottles	WATER QUALITY SAMP Sample Method: Gr  REMARKS	PLE DATA abPreservatives: Preservatives:	lce
Sample No. <u>NA</u> No. of Sample Bottles	WATER QUALITY SAMP Sample Method: Gr	PLE DATA <u>ab</u> Preservatives: Preservatives:	lce
Sample No. <u>NA</u> No. of Sample Bottles	WATER QUALITY SAMP Sample Method: Gr	PLE DATA           ab         Preservatives:           Preservatives:	lce
Sample No. <u>NA</u> No. of Sample Bottles	WATER QUALITY SAMP Sample Method: Gr REMARKS	PLE DATA           rab         Preservatives:           Preservatives:	

SITE NAME: Je	ilwater PH6 DATE: 7/13/21 TIME: 11:10
DRAINAGE: Bis	hop Creek INVESTIGATORS: TB
PHYSICAL WATER QU	ALITY PARAMETERS WEATHER CONDITIONS
Water Temperature:	U. 6 (F or ) Dissolved Oxygen: 8.59 (mg/L)
Conductivity:	(μmhos/cm@25 °C) Stream or Lake gage reading:
Turbidity:	(NTUs) Air Temperature_ <u>88</u> (For °C) Baro. Pressure <b>25.44</b> (in Hg
Winds 4-19 (mph)	Cloud cover_15_(%) PrecipitationFogRainSleetHailSnow
Secchi Disk: NA De	oth of Disappear:meters Depth of Reappearance:meters
Vieual Condition of Stro	Secchi Depth:meters
Clear Floating Material	Cloudy Colored Other:
Remarks:	
	Notes
	WATER QUALITY SAMPLE DATA
Sample No.	Sample Method: Grab Preservatives: Ice
No. of Sample Dottles	REMARKS

	Rr hola	FITU	DATE		NE: 11. aug
SITE NAME:	DC DEPT		DATE.	<u></u>	
DRAINAGE:	Bishop Creek	INVESTIGATO	DRS: 1	-D	
PHYSICAL WATE	ER QUALITY PARA	METERS		WEATHER CONDITIO	NS
Water Temperatu	re: 16.8	(°F or (°C)	Dissolved	d Oxygen: 8.61	(mg/L)
Conductivity:	-	(µmhos/cm@2	5 ºC) Stream o	r Lake gage reading:	-
Turbidity:	- (NT	Us) Air Tempera	ture 88 (°F	or °C) Baro. Pressure	25.44 (in Hg)
Winds () - 1	mph) Cloud cover	15 (%) Pres	vinitation Fo	n Rain Sleet	Hail Snow
Secchi Disk: N.	Depth of Disapp	ear: mete	ers Dep	oth of Reappearance:	meters
				Secchi Depth:	meters
Visual Condition of Clear	of Stream (check al Cloud	l that apply): y Other:	Colored		
Remarks:					
		N	otes		
Sample No. No. of Sample Bc	XA	WATER QUALIT	Y SAMPLE DA	TA Preservatives: Preservatives:	Ice
Sample No. No. of Sample Bo	XA	WATER QUALIT Sample Me	Y SAMPLE DA ethod: <u>Grab</u> IARKS	TA Preservatives: Preservatives:	
Sample No. No. of Sample Bo	A	WATER QUALIT Sample Me	Y SAMPLE DA othod: <u>Grab</u> MARKS	TA Preservatives: Preservatives:	

		1		
SITE NAME:	South La	LeDATE	7 15 21	TIME: 12:05
DRAINAGE:	Bishop Creek INVES	TIGATORS:	TB	
PHYSICAL WATER	QUALITY PARAMETERS		WEATHER CONDIT	IONS
Water Temperature:	(ºF or º	C) Disso	lved Oxygen:	(mg/L)
Conductivity:	— (µmhos	/cm@25 °C) Stream	n or Lake gage reading:	9682.18
Turbidity:	(NTUs) Air T	emperature 70	(F)r °C) Baro. Pressure	21.16 (in Hg)
gusts to	25mph	Descision for		
Secchi Disk: NA	Depth of Disappear:	meters	_FogRainSleet	HailSnow
			Saashi Danthi	
Visual Condition of S Clear <u> </u>	tream (check all that apply) Cloudy Other:	Colore	ed	
Remarks: LaVe	level low,	for below Notes	original bea	tramp
Sample No. 51 No. of Sample Bottle	WATER C BR - 1 San s S	QUALITY SAMPLE nple Method: <u>Grab</u>	DATA Preservatives: Preservatives:	ice No No
Sample No. 51 No. of Sample Bottle	WATER ( BR - 1 San s _ 2	QUALITY SAMPLE nple Method: <u>Grab</u> 	DATA Preservatives: Preservatives: _	Ice No No
Sample No. 51 No. of Sample Bottle:	WATER C BR -1 San s San	QUALITY SAMPLE nple Method: <u>Grab</u> 	DATA Preservatives: Preservatives:	Ice Nord
Sample No. 51 No. of Sample Bottle: 1 Weck 1 Sow 4	WATER C BR-1 San s San Maleul ~	QUALITY SAMPLE nple Method: <u>Grab</u> REMARKS	DATA Preservatives: Preservatives: _	Ice Norry
Sample No. 51 No. of Sample Bottles 1 Weck 1 Sowle	WATER C BR-1 San s San Muleul ~	QUALITY SAMPLE nple Method: <u>Grab</u> REMARKS	DATA Preservatives: Preservatives: _	Ice No No
Sample No. 51 No. of Sample Bottles 1 Weck 1 Sowle	WATER C BR-1 San s Maleul ~	QUALITY SAMPLE	DATA Preservatives: Preservatives:	Ice Nord
Sample No. 51 No. of Sample Bottles 1 Weck 1 Sowle SIGNED BY:	WATER C BR-1 San s _2 Muleul-r	QUALITY SAMPLE nple Method: <u>Grab</u> REMARKS	DATA Preservatives: Preservatives: 3Y:	Ice No No

SITE NAME:	LANC JAJITTA DATE: 1715 21 TIME: 18.30
DRAINAGE:	Bishop Creek INVESTIGATORS: TB
PHYSICAL WAT	ER QUALITY PARAMETERS WEATHER CONDITIONS
Water Temperatu	ire: (ºF or ºC) Dissolved Oxygen: (mg/L)
Conductivity:	(μmhos/cm@25 °C) Stream or Lake gage reading: 9097.69
Turbidity:	- (NTUs) Air Temperature 74 (For °C) Baro. Pressure 21.62 (in Hg
Winds 4-10	gusts to 13 (mph) Cloud cover 15 (%) Precipitation Fog Bain Sleet Hail Snow
Secchi Disk: M	Depth of Disappear:meters Depth of Reappearance:meters
	Secchi Depth:meters
Visual Condition	of Stream (check all that apply): Cloudy Colored
Floating Material	Other:
Remarks:	Notes
	WATER QUALITY SAMPLE DATA
Sample No.	WATER QUALITY SAMPLE DATA <u>LS-BR-1</u> Sample Method: <u>Grab</u> Preservatives: <u>Ice</u>
Sample No. No. of Sample Bo	WATER QUALITY SAMPLE DATA         LS-BR-1       Sample Method: Grab       Preservatives:        2       Preservatives:
Sample No. No. of Sample Bo	WATER QUALITY SAMPLE DATA
Sample No. No. of Sample Bo	WATER QUALITY SAMPLE DATA         L S - BR - 1       Sample Method: Grab       Preservatives:         ottles      2       Preservatives:         REMARKS       K
Sample No. No. of Sample Bo	WATER QUALITY SAMPLE DATA <u>LS-BR-1</u> Sample Method: <u>Grab</u> Preservatives: <u>Ice</u> ottles <u>2</u> Preservatives: <u>Ice</u> REMARKS CK Arce Moleculor
Sample No. No. of Sample Bo	WATER QUALITY SAMPLE DATA <u>LS-BR-1</u> Sample Method: <u>Grab</u> Preservatives: <u>Ice</u> pottles <u>2</u> Preservatives: <u>Ice</u> REMARKS CK Arce Moleculor
Sample No. No. of Sample Bo	WATER QUALITY SAMPLE DATA <u>LS-BR-1</u> Sample Method: <u>Grab</u> Preservatives: <u>lce</u> pottles <u>2</u> Preservatives: <u>cK</u> <u>Arce Molecular</u>

SITE NAME:	Indaile & KISLUDIY DATE: <u>+115/21</u> TIME: 12.50
DRAINAGE:	Bishop Creek INVESTIGATORS: TB
PHYSICAL WA	TER QUALITY PARAMETERS WEATHER CONDITIONS
Water Temperat	rure: (ºF or ºC) Dissolved Oxygen: (mg/L)
Conductivity:	(μmhos/cm@25 °C) Stream or Lake gage reading:
Turbidity:	(NTUs) Air Temperature 77 (F)r °C) Baro. Pressure 22.44 (in H
Winds 2-5	(mph) Cloud cover 15 (%) Precipitation Fog Rain Sleet Hail Snow
Secchi Disk: N	A Depth of Disappear:meters Depth of Reappearance:meters
	Secchi Depth: meters
Clear	of Stream (check all that apply): Cloudy Colored
Floating Materia	Other:
Remarks:	Algae marts floating on switch
Sample No. No. of Sample E	WATER QUALITY SAMPLE DATA <u>JMTZ-RES-1</u> Sample Method: <u>Grab</u> Preservatives: <u>Ice</u> Nottles <u>2</u> Preservatives: <u>Mone</u>
Sample No. No. of Sample E	WATER QUALITY SAMPLE DATA JATA-RES-1 Sample Method: Grab Preservatives: Ice Nottles Preservatives: Mane REMARKS
Sample No. No. of Sample E	WATER QUALITY SAMPLE DATA JMJ2-RES-1 Sample Method: <u>Grab</u> Preservatives: <u>Ice</u> Nottles <u>2</u> Preservatives: <u>Monu</u> REMARKS
Sample No. No. of Sample E <u>1 W e</u> <u>1 Sow</u>	WATER QUALITY SAMPLE DATA JMTZ-RES-1 Sample Method: <u>Grab</u> Preservatives: <u>lce</u> nottles <u>2</u> Preservatives: <u>Mone</u> REMARKS K K K K K

SITE NAME:	Norm	I. N	DATE.	10000	I IME:	
DRAINAGE:	Bishop Creek	INVESTIGAT	ORS: TB	JB		
PHYSICAL WAT	ER QUALITY PARA	METERS		WEATHER CON	DITIONS	
Water Temperati	ure: 15.8	(ºF or C)	Dissolv	ed Oxygen: 7	.41	(ma/L)
Conductivity:	37	(µmhos/cm@2	25 ºC) Stream	or Lake gage read		3 cts
Turbidity:	85 (NTI	Air Tempera	ature 58 /	For °C) Baro Pres	sure 21.	40 (in Ha)
					Suro per	<u>    (</u> ((( ( ) g)
Winds 0-1	(mph) Cloud cover_	<u>50 (%)</u> Pre	cipitationF	ogRainS	leetHai	ISnow
Secchi Disk: N	A Depth of Disappe	ear:mete	ers Do	epth of Reappeara	nce:	meters
Visual Condition	of Stream (check all	that apply):		Secchi De	ptn:	meters
Clear Floating Material	Cloudy	Other:	Colored			
Remarks: So	me smoke	in air				
		N	lotes			
		WATER QUALIT	TY SAMPLE D	ATA		
Sample No.	BC-NF-1	WATER QUALIT	TY SAMPLE D ethod: <u>Grab</u>	ATA Preservati	Ves:	lce
Sample No. No. of Sample B	<u>BC-NF-1</u> ottles <u>4</u>	WATER QUALIT	TY SAMPLE D ethod: <u>Grab</u>	ATA Preservati Preservati	ves: ves:_ <u></u> S	lce by in one
Sample No. No. of Sample B	BC-NF-1 ottles	WATER QUALIT Sample Me	TY SAMPLE D ethod: <u>Grab</u> MARKS	ATA Preservati Preservati	ves: ves:_ <u>}}_2S'</u>	lce by in one
Sample No. No. of Sample B	BC-NF-1 ottles 4	WATER QUALIT	TY SAMPLE D ethod: <u>Grab</u> MARKS	ATA Preservati Preservati	ves: Has	lce oy in one

SITE NAME:	"lidele for	1-	_DATE: _	TAUR	_IIME:	
DRAINAGE:	Bishop Creek	INVESTIGATOR	S: TB	JB		_
PHYSICAL WAT	R QUALITY PARAME	TERS	V	VEATHER CONDI	TIONS	
Water Temperatu	e: 18.4	(9F 0 00)	Dissolved (	Dxygen: 7.0	8	(mg/L)
Conductivity:	0.07	(µmhos/cm@25 º	C) Stream or L	.ake gage reading	-	
Turbidity:	75 (NTUs)	Air Temperature	60 (F)	r ⁰C) Baro. Pressu	re 21.5	5 <u>5 (</u> in Hg
Winds 0 -1	nph) Cloud cover_3	O (%) Precipi	tationFog	RainSlee	etHail _	Snow
Secchi Disk: N	Depth of Disappear:	meters	Depth	of Reappearance		_meters
Visual Condition Clear	f Stream (check all tha Cloudy	t apply): Other:	Colored	Secchi Depth	):	meters
Remarks:						
		Note	s			
Sample No. No. of Sample Bo	W B <u>C-blw-LS</u> ttles	ATER QUALITY : Sample Metho	SAMPLE DAT	A Preservatives Preservatives	s: <u>1) 501</u>	lce { i^ or
Sample No. No. of Sample Bo	W B <u>C-blw-LS</u> ttles	ATER QUALITY : Sample Metho REMAI	SAMPLE DAT	A Preservatives Preservatives	s: <u>1) 500</u>	lce { 1^ or

	FIELD FORM
SITE NAME:	South Fork DATE: 7/24/21 TIME: 10:00 a
DRAINAGE:	Bishop Creek INVESTIGATORS: TB JB
PHYSICAL WAT	ER QUALITY PARAMETERS WEATHER CONDITIONS
Water Temperatu	Ire: 14.1 (%F or (G) Dissolved Oxygen: 7.46 (mg/L)
Conductivity:	33 (µmhos/cm@25 °C) Stream or Lake gage reading:
Turbidity: _2.	03 (NTUs) Air Temperature 6 (For °C) Baro. Pressure 21.15 (in Hg)
Winds 1-3	(mph) Cloud cover_25_(%) PrecipitationFogRainSleetHailSnow
Secchi Disk:	Depth of Disappear:meters Depth of Reappearance:meters
Visual Condition	of Stream (check all that apply):
Clear K Floating Material	Cloudy Colored
Remarks:	
	Notes
Sample No. No. of Sample Bo	WATER QUALITY SAMPLE DATA BC-blw-SL Sample Method: <u>Grab</u> Preservatives: <u>Ice</u> pttles <u>H_SOY</u> ; none REMARKS

	1 1	1 Ka					10 '000
SITE NAME:	South	Larve	DA1	те: <u>7</u>	26a)	TIME:	12.00
DRAINAGE:	Bishop Creek	INVEST		TB :	JB		
PHYSICAL WAT	ER QUALITY PAP	RAMETERS		WEA	ATHER CON	DITIONS	
Water Temperat	ure:	(ºF or ºC)	Dis	solved Oxy	gen:	-	(mg/L)
Conductivity:	-	(µmhos/c	m@25 ºC) Stre	eam or Lake	e gage readin	g:	
Turbidity:	- (N	TUs) Air Ten	mperature 02	For °C	c) Baro. Press	ure 21.	10 (in Hg)
Winds 4-9	(mph) Cloud cove	er 25 (%)	Precipitation	Fog	Rain Sle	et Hai	Snow
Secchi Disk: M	A. Depth of Disap	pear:	_meters	Depth of	Reappearance	:e:	meters
					Secchi Dep	th:	meters
Visual Condition	of Stream (check a Clou	all that apply): udy	Col	ored			
Floating Material		Other:					
Remarks:	Ke lower	than	mid-J	nlyv	isit	_	
			Notes	0			_
Sample No.	51 <u>––</u> B <b>R</b> –– ottles	WATER QU Samp	JALITY SAMPL le Method: <u>Gra</u>	.E DATA ıb	Preservative	es: es:	
Sample No.	51 <u>-B</u> 2- ottles	WATER QL Samp	JALITY SAMPL le Method: <u>Gra</u>  REMARKS	LE DATA	Preservative Preservative	95: 95: <i>Mov</i>	
Sample No.	51 <u>-B</u> 2- ottles	WATER QU	JALITY SAMPL le Method: <u>Gra</u>  REMARKS	.E DATA .b	Preservative	95: 95:Mov	
Sample No. No. of Sample B	5 <u>L-B</u> Z- ottles <u>C</u> <u>k</u> Molecn	WATER QU	JALITY SAMPL le Method: <u>Gra</u>  REMARKS	.E DATA .b	Preservative	95: 95:	
Sample No.	52 <u>-B</u> Z- ottles <u>C</u> <u>K</u> Molecn	WATER QU	JALITY SAMPL le Method: <u>Gra</u> REMARKS	.E DATA .b	Preservative	95: 95:	
Sample No. No. of Sample B	52 <u>-B</u> ottles <u>C</u> <u>e</u> Molecn	WATER QU	JALITY SAMPL le Method: <u>Gra</u> - REMARKS	E DATA	Preservative	95: 95: <i></i>	

BISHOP C	CREEK WA	TER QUA	LITY STU	DY
	FIELD	FORM		

DRAINAGE:	Bishop Creek		RS: TB	IR	
PHYSICAL WATE	R QUALITY PARAM	IETERS		WEATHER CONDIT	IONS
Water Temperatu	e:	(ºF or ºC)	Dissolved	Oxygen:	(mg/L)
Conductivity:		(µmhos/cm@25	<sup>o</sup> C) Stream or	Lake gage reading:	
Turbidity:	- (NTUs	s) Air Temperatu	re UL (F)	or ⁰C) Baro. Pressure	21.55 (in
Winds 4-7 (1	nph) Cloud cover	40 (%) Precip	bitationFog	RainSleet	HailSno
Secchi Disk: N	- Depth of Disappea	r:meters	B Dept	h of Reappearance:	meters
Visual Condition of	f Stream (check all th	nat apply).		Secchi Depth:	meter
Clear K Floating Material	Cloudy	Other:	Colored ,		
Remarks:		Net			
		WATER QUALITY	SAMPLE DAT		
Sample No.	L-5-BR-1	WATER QUALITY Sample Meth	SAMPLE DAT	A Preservatives:	lce
Sample No. No. of Sample Bo	1-5-818-1	WATER QUALITY Sample Meth	SAMPLE DAT	TA Preservatives: Preservatives:	Ice
Sample No. No. of Sample Bo	1-5-818-1	WATER QUALITY Sample Meth ? REMA	SAMPLE DAT	TA Preservatives: Preservatives:	lce None
Sample No. No. of Sample Bo	1-5-818-1	WATER QUALITY Sample Meth } REMA	SAMPLE DAT	A Preservatives: Preservatives:	lce None
Sample No. No. of Sample Bo	L <u>S-BR-1</u> Itles 2 Molecule	WATER QUALITY Sample Meth	SAMPLE DAT	A Preservatives: Preservatives:	lce None

DRAINAGE:	Bishop Creek INVESTIGATORS: TB JB
PHYSICAL WA	TER QUALITY PARAMETERS WEATHER CONDITIONS
Nater Temperat	ture: - (ºF or ºC) Dissolved Oxygen: - (mg/L)
Conductivity:	(umbos/cm@25 °C) Stream or Lake gage reading:
Furbidity:	- (NTLIS) Air Temperature (27 (E) Proc Pressure 22, 15 (in b
2.0	
Winds 3-0	_(mph) Cloud cover1O(%) PrecipitationFogRainSleetHailSnov
Secchi Disk: N	Characteric Control Co
/isual Condition	of Stream (check all that apply):
lear Kateria	Cloudy Colored
Remarks:	
	Notes
Sample No. No. of Sample E	WATER QUALITY SAMPLE DATA DMT-RES-1 Sample Method: Grab Preservatives: lce Sottles 2 Preservatives: Num
Sample No. No. of Sample E	WATER QUALITY SAMPLE DATA <u>DMT-RES-1</u> Sample Method: <u>Grab</u> Preservatives: <u>Ice</u> Bottles <u>2</u> Preservatives: <u>Num</u> REMARKS
Sample No. No. of Sample E	WATER QUALITY SAMPLE DATA TMT-RES-1 Sample Method: Grab Preservatives: Ice Bottles 2 Preservatives: Non REMARKS
Sample No. No. of Sample E ال ليون ر	WATER QUALITY SAMPLE DATA  DMT-RES-1 Sample Method: Grab Preservatives: Ice  Sottles 2 Preservatives: Nam REMARKS  K
Sample No. No. of Sample E	WATER QUALITY SAMPLE DATA DMT-RES-1 Sample Method: Grab Preservatives: loe Bottles 2 Preservatives: Now REMARKS K K K K K K K K K K K K K

BISH	OP CR	EEK WA	TER QI	JALITY	STUDY	
		FIELD	FORM			

	00.11	CDATE	+12+	al_time:		
DRAINAGE:	Bishop Creek INVES	STIGATORS:	HS JD			
PHYSICAL WAT	R QUALITY PARAMETERS		WEATHER O	CONDITIONS		
Water Temperatu	e: See prestile (%For 9	C) Disso	lved Oxygen: 5	ee profile	(mg/L)	
Conductivity:	(µmhos	c/cm@25 ºC) Strea	m or Lake gage re	eading: <u>94</u>	076	
Turbidity: 50	sts to 16	emperature 55	(For °C) Baro. F	Pressure 21.	<u>16 (</u> in	
Winds 4-6	nph) Cloud cover 10 (%	6) Precipitation	_FogRain	_SleetHa	ailSno	
Secchi Disk: Y	Depth of Disappear: 9.5	<u>meters</u>	Depth of Reappe	arance: <u>8</u>	meters	
Vieual Condition	f Stream (aback all that apply)		Secchi	Depth: 8.	75 meters	
Clear	Cloudy	Color	ed			
Floating Material	Other:					
Remarks:		Notes				
6	at 10m dauth					
Sample No.	WATER ( DL-DP-10 Sar H	QUALITY SAMPLE	DATA Preser	vatives:		
Sample No. No. of Sample Bo	WATER ( 5 <u>L-DP-10</u> Sar titles <u>4</u>	QUALITY SAMPLE nple Method: <u>Grab</u>  REMARKS	DATA Presen Presen	vatives:	Ice Soy in or	
SITE NAME:	South	halfe	DATE:	7/27/21	TIME:	10:15
--------------------------------	----------------------	--	--	-----------------------------------	------------------	---------
DRAINAGE:	Bishop Creek	INVESTIGAT	TORS: TB	3B		
PHYSICAL WAT	ER QUALITY PARA	METERS		WEATHER CON	DITIONS	
Water Temperati	ure: See predile	(ºF or ºC)	Dissolved	Oxygen: 54	prodile	(mg/L)
Conductivity:	_73	(µmhos/cm@	25 ºC) Stream or	Lake gage readir	ng: 967	16'
Turbidity: 53	ecchi (NTL	Js) Air Temper	ature 55 (F)	or ⁰C) Baro. Press	sure 21.1	0 (in H
Winds 4-6	(mph) Cloud cover_	10 (%) Pre	cipitation Foo	Rain Sl	eet Hail	Snov
Secchi Disk: Y	Depth of Disappe	ear: 9,5 me	ters Dept	h of Reappearance	: <u>8</u>	meters
Visual Condition	of Stream (abook all	that apply).		Secchi Dep	th: 8.7	Smeters
Clear	Cloudy		Colored .			
rioating Material		Other:				
Remarks:			Notes			
Say		all in				
Jayree						
Sample No.	51-DP-2	WATER QUALI	TY SAMPLE DAT ethod: <u>Grab</u>	A Preservative	еs:	
Sample No. No. of Sample Bo	<u>51-DP-Z</u>	WATER QUALI WATER QUALI Sample M	TY SAMPLE DAT ethod: <u>Grab</u> MARKS	A Preservative Preservative	ес: <u>Ну5°ц</u>	inon
Sample No. No. of Sample Bo	51-DP-2	WATER QUALI Sample M 4 RE	TY SAMPLE DAT ethod: <u>Grab</u> MARKS	A Preservative Preservative	еs: <u>Ну5°ц</u>	inon

SITE NAME:	
DRAINAGE:	Bishop Creek INVESTIGATORS: TB JB
PHYSICAL WAT	ER QUALITY PARAMETERS WEATHER CONDITIONS
Water Temperati	re: <u>See profile</u> (°F or °C) Dissolved Oxygen: <u>See profile</u> (mg/L)
Conductivity:	ab (umhos/cm@25 °C) Stream or Lake gage reading: 9098.58
Turbidity: 51	cchi (NTUs) Air Temperature 58 (For °C) Baro. Pressure 21.70 (in Hg
Winds 3-6	(mph) Cloud cover <u>5</u> ° (%) Precipitation Fog Rain Sleet Hail Snow
Secchi Disk:	Depth of Disappear: <u>13</u> meters Depth of Reappearance: <u>11,5</u> meters
Vieuel Canditian	Steechi Depth: 12.25 meters
Clear	Cloudy Colored
Floating Material	Other:
Remarks:	Notes
	Juc & Sint qui
Sample No. No. of Sample B	WATER QUALITY SAMPLE DATA <u>L5-09-5</u> Sample Method: <u>Grab</u> Preservatives: <u>Ice</u> preservatives: <u>H3</u> Say in on
Sample No. No. of Sample B	WATER QUALITY SAMPLE DATA <u>L5-DP-5</u> Sample Method: <u>Grab</u> Preservatives: <u>lce</u> pottes <u>4</u> Preservatives: <u>H3-Sey in en</u> REMARKS

SITE NAME:	Lake Sabning DATE: 7/28/21 TIME: 10:05
DRAINAGE:	Bishop Creek INVESTIGATORS: TB JB
PHYSICAL WAT	TER QUALITY PARAMETERS WEATHER CONDITIONS
Water Temperat	ure: See profil (%For %C) Dissolved Oxygen: See profile (mg/L)
Conductivity:	27 (µmhos/cm@25 °C) Stream or Lake gage reading: <u>9098.58</u>
	cchi (NTUs) Air Temperature 58 (For °C) Baro. Pressure 21.70 (in Hg
Winds 3-6	(mph) Cloud cover <u>50</u> (%) Precipitation Fog Rain Sleet Hail Snow
Secchi Disk:	Depth of Disappear: 13 meters Depth of Reappearance: 1.5 meters
Visual Condition	of Stream (check all that apply):
Clear	Cloudy Colored
-loating Material	Other:
Remarks:	Notes
	WATER QUALITY SAMPLE DATA
Sample No.	WATER QUALITY SAMPLE DATA L <u>5-09-22</u> Sample Method: <u>Grab</u> Preservatives: <u>lce</u>
Sample No. ∛o. of Sample B	WATER QUALITY SAMPLE DATA L <u>5-DP-22</u> Sample Method: <u>Grab</u> Preservatives: <u>Ice</u> ottles <u>Y</u> Preservatives: <u>Ice</u> Preservatives: <u>H550y in owe</u> REMARKS
Sample No.	WATER QUALITY SAMPLE DATA <u>LS-DP-22</u> Sample Method: <u>Grab</u> Preservatives: <u>lce</u> preservatives: <u>JSQy in ow</u> REMARKS

BISHOP CREEK WATER OUAL ITY STUDY

				2	
DRAINAGE:	Bishop Creek	INVESTIGATOR	s: TB	JR	
PHYSICAL WATE	R QUALITY PARAM	IETERS	WE	ATHER CONDITION	ONS
Vater Temperatur		_(ºF or ºC)	Dissolved Ox	ygen:	(mg/L)
Conductivity:		µmhos/cm@25 ه	C) Stream or Lak	e gage reading: _	9098.58
Furbidity:	- (NTUs	) Air Temperature	e 65 (For %	C) Baro. Pressure_	21.56 (in Hg
Vinds 3-6 (n	ph) Cloud cover	50 (%) Precipit	tationFog	_RainSleet _	HailSnow
	Depth of Disappea	r:meters	Depth of	f Reappearance:	meters
				Secchi Depth:	meters
lisual Condition o	Stream (check all the Cloudy	nat apply):	Colored		
loating Material		Other:	-		
Remarks:					
		Note	es		
Sample No. No. of Sample Bot	LS-BR-1	WATER QUALITY S	SAMPLE DATA od: <u>Grab</u>	Preservatives: _	lce Name
Sample No. No. of Sample Bot	L <u>S-BR-1</u>	WATER QUALITY S Sample Metho  REMAF	SAMPLE DATA od: <u>Grab</u>	Preservatives: _ Preservatives: _	lce Nerve
Sample No. No. of Sample Bot	L <u>S-BR-1</u>	WATER QUALITY S Sample Metho  REMAF	SAMPLE DATA od: <u>Grab</u> RKS	Preservatives: Preservatives:	lce Nerve
Sample No. No. of Sample Bot	LS-BR-1	WATER QUALITY S Sample Metho REMAR	SAMPLE DATA od: <u>Grab</u> RKS	Preservatives: _ Preservatives: _	ice Nerve
Sample No. No. of Sample Bot	L <u>S-BR-1</u> des2	WATER QUALITY S Sample Metho REMAR	SAMPLE DATA od: <u>Grab</u> RKS	Preservatives: _ Preservatives: _	Ice Nerve
ample No. Io. of Sample Bot	L <u>S-BR-1</u> des2	WATER QUALITY S Sample Metho REMAR	SAMPLE DATA od: <u>Grab</u> RKS	Preservatives: Preservatives:	lce Nave
ample No. lo. of Sample Bot	L <u>S-BR-1</u> les _2	WATER QUALITY S Sample Metho  REMAP	SAMPLE DATA od: <u>Grab</u> RKS	Preservatives: _ Preservatives: _	Ice Name

	Bishan Crack INIVESTICATORS TR TR
DRAINAGE:	Bishop Creek INVESTIGATORS: 113 JU
PHYSICAL WATE	R QUALITY PARAMETERS WEATHER CONDITIONS
Water Temperatu	e: (%F or %C) Dissolved Oxygen: (mg/L)
Conductivity:	(µmhos/cm@25 °C) Stream or Lake gage reading:
Turbidity:	(NTUs) Air Temperature 65 (For °C) Baro. Pressure 22. 15 (in H
Winds 6 - 1 (	mph) Cloud cover_ <u>40</u> (%) PrecipitationFogRainSleetHailSnov
Secchi Disk: N	P Depth of Disappear:meters Depth of Reappearance:meters
Visual Condition	of Stream (check all that apply): Secchi Depth: meters
Clear Floating Material	Cloudy Colored
Domorka	
Remarks:	Notes
	WATER QUALITY SAMPLE DATA
Sample No.	WATER QUALITY SAMPLE DATA
Sample No. No. of Sample Bo	WATER QUALITY SAMPLE DATA <u>JWTJ-REJ-</u> ) Sample Method: <u>Grab</u> Preservatives: <u>Ice</u> ttles 3 Preservatives: MMM
Sample No. No. of Sample Bo	WATER QUALITY SAMPLE DATA           DMTD-RED-1         Sample Method: Grab         Preservatives:
Sample No. No. of Sample Bo	WATER QUALITY SAMPLE DATA           DMTD-RES-)         Sample Method: Grab         Preservatives:
Sample No. No. of Sample Bo	WATER QUALITY SAMPLE DATA           DMT2-RES-)         Sample Method: Grab         Preservatives:
Sample No. No. of Sample Bo	WATER QUALITY SAMPLE DATA           JUT 3- RE 5-)         Sample Method: Grab         Preservatives:           ttles          Preservatives:           REMARKS          Mdburb
Sample No. No. of Sample Bo	WATER QUALITY SAMPLE DATA           TMT2-RES-)         Sample Method: Grab         Preservatives:         Ice           ttles         2         Preservatives:         McM           REMARKS         MdbcmM         MdbcmM

RAINAGE:	Bishop Creek	INVESTIGATOR	s: TB	JB	
HYSICAL WAT	ER QUALITY PARAME	TERS	٧	EATHER CONDIT	IONS
Vater Temperatu	re:	(ºF or ºC)	Dissolved 0	Dxygen:	(mg/L)
conductivity:		(µmhos/cm@25 %	C) Stream or L	ake gage reading:	9676.54
urbidity:	— (NTUs)	Air Temperature	e 66 @ or	⁰C) Baro. Pressure	21.10 (in H
Vinds 1-3	mph) Cloud cover	O (%) Precipit	tationFog	RainSleet	HailSnow
ecchi Disk: N	Depth of Disappear:	meters	Depth	of Reappearance:	meters
isual Condition	of Stream (check all the	t apply):		Secchi Depth:	meters
lear loating Material	Cloudy	Other:	Colored _		
emarks:					
		Note	s		
ample No.	W. <u>5L-BR-1</u> ottles 2	ATER QUALITY S	SAMPLE DAT/ od: <u>Grab</u>	A Preservatives:	Ice
ample No.	W. <u>5L-BR-1</u> ottles <u>2</u>	ATER QUALITY S Sample Metho REMAR	SAMPLE DAT/ od: <u>Grab</u>	A Preservatives: Preservatives:	Ice
ample No. o. of Sample Bu 1 Weck Sow	W. <u>SL-BR-1</u> ottles <u>2</u> <u>ce Malecula</u>	ATER QUALITY S Sample Metho REMAR	SAMPLE DAT/ od: <u>Grab</u> RKS	A Preservatives: Preservatives:	Ice

SITE NAME: 1041				-		
DRAINAGE: Bish	p Creek	INVESTIGATORS:	TB	JB	_	_
PHYSICAL WATER QUA	LITY PARAMET	ERS	W	EATHER CONDITION	ONS	
Water Temperature:	5.3	ºF or ºC)	Dissolved Ox	kygen: <u>8.5</u> 2	1	(mg/L)
Conductivity:	- (	µmhos/cm@25 ℃)	Stream or La	ke gage reading: _	-	_
Turbidity:	(NTUs)	Air Temperature_	70 @or	°C) Baro. Pressure_	25.4	5 (in Hg
Winds O (mph) C	loud cover 7	0_(%) Precipitat	tionFog	RainSleet _	Hail	Snow
Secchi Disk: NA Dept	of Disappear:_	meters	Depth o	of Reappearance:		meters
				Secchi Depth:		meters
Clear Condition of Stream Clear Clear Clear	n (check all that Cloudy	apply): Dther:	Colored	_		
Remarks:						
		Notes				
	WA	TER QUALITY SA	MPLE DATA			
Sample No.	WA WA	TER QUALITY SA Sample Method:	MPLE DATA	Preservatives: _	lc	
Sample No.	wа <u>₩А</u>	TER QUALITY SA Sample Method:	MPLE DATA	Preservatives: Preservatives:	lc	
Sample No.	wа	TER QUALITY SA Sample Method:  REMARK	MPLE DATA	Preservatives: Preservatives:	lc	

SITE NAME:	000 1	10	DATE: 4		
DRAINAGE:	Bishop Creek	INVESTIGATORS	TB	JB	
PHYSICAL WAT	R QUALITY PARAM	ETERS	WE	ATHER CONDITIO	NS
Water Temperatu	e: 15.3	(%F or 🕥	Dissolved Ox	ygen: 8.65	(mg/L)
Conductivity:	51	(µmhos/cm@25 ºC	) Stream or Lak	ke gage reading:	-
Turbidity:	2.89 (NTUS)	) Air Temperature	70 (F) or "	C) Baro. Pressure	25.45 (in Hg
Winds Q	mph) Cloud cover	70 (%) Precipit	ation For	Rain Sleet	Hail Snow
Secchi Disk:	<ul> <li>Depth of Disappear</li> </ul>	r:meters	Depth o	f Reappearance:	meters
<i>.</i>				Secchi Depth:	meters
Visual Condition Clear Floating Material	of Stream (check all th Cloudy	Other:	Colored	-	
Remarks:	· · · · · · · · · · · · · · · · · · ·				
		Notes	5		
Sample No.	BC-DIW-PILL	NATER QUALITY S	AMPLE DATA d: <u>Grab</u>	Preservatives:	lce
Sample No. No. of Sample Bo	BC-blw-PI46 ttles 4	WATER QUALITY S         2       Sample Methor	AMPLE DATA d: <u>Grab</u> KS	Preservatives: Preservatives:	Ice 2504 in Ane

DRAINAGE	Dishan Orack	INIVECTIONTO		72	
DRAINAGE.	Bishop Creek		RS: <u>JJ</u>		alst -
PHYSICAL WA	TER QUALITY PARA	METERS		WEATHER CONDITI	IONS
Water Tempera	ture: 14.9	(°F or (C))	Dissolved	Oxygen: 8.44	(mg/L)
Conductivity:		(µmhos/cm@25	<sup>o</sup> C) Stream or	r Lake gage reading: _	-
Turbidity:	- (NTL	Js) Air Temperatu	Ire 70 F	or °C) Baro. Pressure	25.20 (in H
Winds $O - 1$	(mph) Cloud cover_	80 (%) Precip	pitationFo	gRainSleet	HailSnow
Secchi Disk: N	A Depth of Disappe	ear:meters	s Dep	th of Reappearance:	meters
				Secchi Depth:	meters
Visual Conditior Clear D	of Stream (check all	that apply): /	Colored		
Floating Materia	·	Other:	_		
Remarks:					
		Not	tes		
Sample No.	NA	WATER QUALITY Sample Meth	SAMPLE DA	TA _ Preservatives: _	lce
Sample No. No. of Sample E	NA sottles	WATER QUALITY	SAMPLE DA	TA Preservatives: _ Preservatives: _	lce
Sample No. No. of Sample E	NA	WATER QUALITY Sample Meth	SAMPLE DA nod: <u>Grab</u> ARKS	TA . Preservatives: _ Preservatives: _	lce
Sample No. No. of Sample E	NA	WATER QUALITYSample Meth	SAMPLE DA nod: <u>Grab</u> ARKS	TA Preservatives: _ Preservatives: _	lce
Sample No. No. of Sample E	NA sottles	WATER QUALITYSample MethREMA	SAMPLE DA nod: <u>Grab</u> ARKS	TA Preservatives: Preservatives: _	lce
Sample No. No. of Sample E	NA	WATER QUALITYSample Meth	SAMPLE DA nod: <u>Grab</u> ARKS	TA Preservatives: Preservatives:	lce
Sample No. No. of Sample E	NA	WATER QUALITYSample MethREMA	SAMPLE DA nod: <u>Grab</u>	TA Preservatives: Preservatives:	lce

SITE NAME:	BC blw P	#5	DATE: 7	20/21	TIME:	0.350
DRAINAGE:	Bishop Creek	INVESTIGATOR	S: TB :	JB		
PHYSICAL WATE	R QUALITY PARAME	TERS	WE	EATHER CONDIT	IONS	
Water Temperatu	e: 15.3	(%F or 🐑	Dissolved Ox	kygen: 8.46	2	(mg/L)
Conductivity:	52	(µmhos/cm@25 º	C) Stream or Lal	ke gage reading:	-	
Turbidity:	6.26(NTUS)	Air Temperature	- 70 (For "	°C) Baro. Pressure	25.2	ک (in Hg
Winds 0-1 (	nph) Cloud cover 8	O (%) Precipit	tation Fog	Rain Sleet	Hail	Snow
Secchi Disk: N	<ul> <li>Depth of Disappear:,</li> </ul>	meters	Depth o	of Reappearance:		meters
				Secchi Depth:		meters
Visual Condition of Clear	f Stream (check all tha Cloudy	t apply):	Colored			
Floating Material		Other:				
Remarks: 50	me a gae or	n creek k	p for			
			2			_
Sample No. No. of Sample Bo	W. B <u>C-b1w-PH3</u> ttles <u>4</u>	ATER QUALITY S	SAMPLE DATA	Preservatives: Preservatives:	Hz SOy	ce

				·	2		
DRAINAGE:	Bishop Creek	INVESTIG	ATORS: T	5 1	B		
PHYSICAL WAT	ER QUALITY PAR	AMETERS		WEA	THER COND	ITIONS	
Water Temperate	ure: 14,7	(°F or 🕤	Diss	solved Oxy	gen: 8.5	57	(mg/L)
Conductivity:	-	(µmhos/cm)	@25 ºC) Stre	am or Lake	e gage reading	g:	0-
Turbidity:	- (NT	Us) Air Temp	erature 70	) (For °C	) Baro. Pressu	Ire 24.	05_(in Hg
Winds 0-2	(mph) Cloud cover	70 (%) F	Precipitation _	Fog	_RainSle	et <u>Ha</u>	ilSnow
Secchi Disk: N	Depth of Disap	bear:m	neters	Depth of	Reappearance	ə:	meters
Viewel Condition					Secchi Dept	h:	meters
Clear K Floating Material	Cloue	dy Other:	Col	ored			
Remarks:				_			
			Notes				
		WATER OUA		EDATA			
	ND	WATER QUA	LITY SAMPL	E DATA			
Sample No.	NĄ	WATER QUA	LITY SAMPL Method: <u>Gra</u>	E DATA	Preservative	s:	lce
Sample No. No. of Sample Bo	NA	WATER QUAI	LITY SAMPL Method: <u>Gra</u> REMARKS	E DATA	Preservative	s: s:	Ice
Sample No. No. of Sample Bo	NA	WATER QUA Sample R	LITY SAMPL Method: <u>Gra</u> REMARKS	E DATA	Preservative	s: s:	lce

DRAINAGE.	Bishon Creek INVESTIGATORS TR TR
PHYSICAL WA	TER QUALITY PARAMETERS WEATHER CONDITIONS
Water Tempera	ture: 15.0 (%F or C) Dissolved Oxygen: 8.60 (mg/L)
Conductivity:	
Turbidity:	2.61 (NTUs) Air Temperature 70 (For °C) Baro. Pressure 24,85 (in H
Winds 0-2	(mph) Cloud cover(%) PrecipitationFogRainSleetHailSnow
Secchi Disk: N	A Depth of Disappear:meters Depth of Reappearance:meters
	Secchi Depth: meters
Visual Conditior	o of Stream (check all that apply): Cloudy Colored
loating Materia	Other:
Remarks:	
	Notes
	÷.
	WATER QUALITY SAMPLE DATA
Sample No.	WATER QUALITY SAMPLE DATA BL-blw-PHH Sample Method: Grab Preservatives: Ice
Sample No. No. of Sample B	WATER QUALITY SAMPLE DATA <u>BL-DW-PH</u> Sample Method: <u>Grab</u> Preservatives: <u>Ice</u> Bottles <u>4</u> Preservatives: <u>La 504 in order</u>
Sample No. No. of Sample B	WATER QUALITY SAMPLE DATA <u>BL-blw-PH</u> Sample Method: <u>Grab</u> Preservatives: <u>Ice</u> Sottles <u>4</u> Preservatives: <u>1, 504 in order</u> REMARKS
Sample No. No. of Sample F	WATER QUALITY SAMPLE DATA <u>BL-blw-PH</u> Sample Method: <u>Grab</u> Preservatives: <u>Ice</u> Sottles <u></u> REMARKS
Sample No. No. of Sample I	WATER QUALITY SAMPLE DATA <u>BL-DIW-PH</u> Sample Method: <u>Grab</u> Preservatives: <u>Ice</u> Bottles <u>J</u> Preservatives: <u>Ice</u> REMARKS
Sample No. No. of Sample I	WATER QUALITY SAMPLE DATA <u>BL-DIW-PH</u> Sample Method: <u>Grab</u> Preservatives: <u>Ice</u> Bottles <u>J</u> Preservatives: <u>H_504 in order</u> REMARKS
Sample No. No. of Sample B	WATER QUALITY SAMPLE DATA <u>BL-blw-PH</u> Sample Method: <u>Grab</u> Preservatives: <u>lce</u> Bottles <u>J</u> Preservatives: <u>H_SQ_ir_erve</u> REMARKS

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DRAINAGE:	Bishop Creek	INVESTIGATOR	s: TD	JB	
PHYSICAL WATEF	QUALITY PARAME	ETERS	v		IS
Water Temperature	14.4	(°F or (C))	Dissolved (	Dxvgen: 8 32	(ma/L)
Conductivity	-	(umbos/cm@25 %	C) Stroom or I		
		(#initios/cin(@20 4			3 98
	<u> </u>	Air Temperature	e <u>70 (°E</u> 6)	°C) Baro. Pressure_	(in H
Winds $O - 1$ (m)	oh) Cloud cover	10 (%) Precipit	tationFog	RainSleet	HailSnow
Secchi Disk: NA	Depth of Disappear:	meters	Depth	of Reappearance:	meters
Visual Condition of	Stream (check all tha	at apply):		Secchi Depth:	meters
Clear K	Cloudy	Othor	Colored _		
Remarks:		Note	s		
	W	ATER QUALITY S	SAMPLE DAT/	4	
Sample No.	м Х/А	ATER QUALITY S	SAMPLE DAT/	A Preservatives:	Ice
Sample No. No. of Sample Bottle	W <u>X/A</u> es	ATER QUALITY S	SAMPLE DAT/	A Preservatives: Preservatives:	lce
Sample No. No. of Sample Bottle	W X/A es	ATER QUALITY S Sample Metho	SAMPLE DAT/ od: <u>Grab</u>	A Preservatives: Preservatives:	lce
Sample No. No. of Sample Bottle	W X/A	ATER QUALITY S Sample Metho	SAMPLE DATA	A Preservatives: Preservatives:	Ice
Sample No. No. of Sample Bottle	W X/A es	ATER QUALITY S	SAMPLE DAT/ od: <u>Grab</u>	A Preservatives: Preservatives:	Ice
Sample No. No. of Sample Bottle	W X/A es	ATER QUALITY S	SAMPLE DATA	A Preservatives: Preservatives:	
Sample No. No. of Sample Bottle	W X/A 	ATER QUALITY S	SAMPLE DAT/ od: <u>Grab</u>	A Preservatives: Preservatives:	Ice

4

SITE NAME:	$\underline{D} \underbrace{-D} \underbrace{-D}$
DRAINAGE:	Bishop Creek INVESTIGATORS: TB JB
PHYSICAL WAT	R QUALITY PARAMETERS WEATHER CONDITIONS
Water Temperatu	re: 14.6 (%F or %C) Dissolved Oxygen: 8.30 (mg/L)
Conductivity:	50 (μmhos/cm@25 °C) Stream or Lake gage reading: 0.72
Turbidity: 2.	55 (NTUs) Air Temperature 70 (For °C) Baro. Pressure 23.90 (in He
Winds O-1	mph) Cloud cover 70 (%) Procinitation For Poin Shot Hoil Show
Secchi Disk: UA	Depth of Disappear:meters Depth of Reappearance:meters
1- 1	Secchi Depth: meters
Visual Condition Clear Floating Material	of Stream (check all that apply): Cloudy Colored Other:
Remarks:	Notos
Sample No. No. of Sample Bo	WATER QUALITY SAMPLE DATA <u>BC-DIW-PH3</u> Sample Method: <u>Grab</u> Preservatives: <u>Ice</u> ttles <u>4</u> Preservatives: <u>H504 in on</u>
Sample No. No. of Sample Bo	WATER QUALITY SAMPLE DATA          BC-01w-PH3 Sample Method: Grab       Preservatives: Ice         ttles          Preservatives: H_50y in one         REMARKS

SITE NAME:	101.000						
DRAINAGE:	Bishop Creek	INVESTIG	ATORS:	TB	JB		
PHYSICAL WAT	ER QUALITY PA	RAMETERS		WEA	THER CONE	ITIONS	
Water Temperat	ure: 14.4	(ºF or ºC)	Dis	solved Oxy	gen: 8.0	6	(mg/L)
Conductivity:	-	(µmhos/cm	@25 ºC) Stre	eam or Lake	e gage reading	j:	
Turbidity:	- (1	NTUs) Air Temp	perature 6	1 (For °C	) Baro. Pressu	ure 23.	20 (in Hg
Winds 1-3	(mph) Cloud cov	er_70_(%) I	Precipitation	Fog	Rain Sle	et Ha	il Snow
Secchi Disk: N	A Depth of Disa	ppear:n	neters	Depth of	Reappearance	ə:	meters
Viewel Orendinian					Secchi Dept	h:	meters
Clear Floating Material	Clo	all that apply): udy Other:	Col	ored			
Remarks:							
			Notes				
	113	WATER QUA	LITY SAMPL	.E DATA			
Sample No.	NA	WATER QUA Sample	LITY SAMPL Method: <u>Gra</u>	.E DATA	Preservative	s:	Ice
Sample No. No. of Sample B	NA	WATER QUA Sample 	ALITY SAMPL Method: <u>Gra</u>	LE DATA	Preservative	s:	Ice
Sample No. No. of Sample B	NA	WATER QUA Sample F	LITY SAMPL Method: <u>Gra</u> REMARKS	E DATA	Preservative: Preservative:	s:	Ice
Sample No. No. of Sample B	NA	WATER QUA Sample	ALITY SAMPL Method: <u>Gra</u> REMARKS	LE DATA	Preservative	s:	

	BC-DIW-PHA DATE: 1/29/21 TIME: 10:25
DRAINAGE:	Bishop Creek INVESTIGATORS: TB JB
PHYSICAL WATE	R QUALITY PARAMETERS WEATHER CONDITIONS
Water Temperature	e: 14.2 (% or ) Dissolved Oxygen: 8.2 (mg/L)
Conductivity:	ЧЛ (µmhos/cm@25 °C) Stream or Lake gage reading: <u>1.74'</u>
Turbidity: 3.	23 (NTUs) Air Temperature 19 (Por °C) Baro. Pressure 23.20 (in Hg)
Winds O-1 (m	nph) Cloud cover 70 (%) Precipitation Fog Bain Sleet Hail Snow
Secchi Disk: // /	Depth of Disappear:meters Depth of Reappearance:meters
1017	Secchi Depth: meters
Visual Condition of Clear Floating Material	Stream (check all that apply): Cloudy Colored Colored Colored Colored
Remarks:	
ionanio.	Notes
Sample No.	WATER QUALITY SAMPLE DATA RC-blw-PH2 Sample Method: Grab Preservatives:
Sample No.	WATER QUALITY SAMPLE DATA <u>BC-blw-PH2</u> Sample Method: <u>Grab</u> Preservatives: <u>Ice</u> Hes H
Sample No. No. of Sample Bott	WATER QUALITY SAMPLE DATA <u>BC-blw-PH2</u> Sample Method: <u>Grab</u> Preservatives: <u>Ice</u> les <u>1</u> Preservatives: <u>H2504 in one</u> REMARKS
Sample No.	WATER QUALITY SAMPLE DATA <u>BC-blw-PH2</u> Sample Method: <u>Grab</u> Preservatives: <u>Ice</u> tes <u>4</u> Preservatives: <u>H2504 in one</u> REMARKS
Sample No.	WATER QUALITY SAMPLE DATA <u>BC-blw-PH2</u> Sample Method: <u>Grab</u> Preservatives: <u>Ice</u> tles <u>1</u> Preservatives: <u>H250 y in one</u> REMARKS
Sample No. No. of Sample Bott	WATER QUALITY SAMPLE DATA <u>BC-blw-PH2</u> Sample Method: <u>Grab</u> Preservatives: <u>Ice</u> tes <u>1</u> Preservatives: <u>H350 y in one</u> REMARKS

SITE NAME:			AIE: <u>/</u>	129/21	_TIME:	
DRAINAGE:	Bishop Creek INV	ESTIGATORS:	TB :	JB	-	
PHYSICAL WAT	ER QUALITY PARAMETER	S	WE	ATHER CONDI	TIONS	
Water Temperat	rre:(ºF c	or ºC) D	issolved Ox	ygen:		(mg/L)
Conductivity:	- (µmh	nos/cm@25 ºC) S	tream or Lak	ke gage reading:	96	76
Turbidity:	– (NTUs) Ai	r Temperature_	4 Por "	C) Baro. Pressu	re 21.1	0(in Hg
Winds 2 - 4	mph) Cloud cover 80	(%) Precipitation	- Fog	Rain Slee	t Hail	Snow
Secchi Disk: N	Depth of Disappear:	meters	Depth of	f Reappearance	:	_meters
				Secchi Depth		meters
Visual Condition Clear	of Stream (check all that app Cloudy	ly):	olored			
Floating Materia	Othe	er:				
Remarks:			_			
		Notes				
	WATE	R QUALITY SAMP	PLE DATA			
Sample No.	WATE 5L-BR-1 s	R QUALITY SAMF	PLE DATA	Preservatives		lce
Sample No. No. of Sample B	WATE <u> SL-BR-1</u> s ottles 2	R QUALITY SAMF Sample Method: <u>G</u>	PLE DATA	Preservatives	: :	lce
Sample No. No. of Sample B	WATE <u>5L-BR-)</u> s ottles <u>2</u>	R QUALITY SAMP ample Method: G REMARKS	PLE DATA	Preservatives Preservatives		lce
Sample No. No. of Sample B	WATE <u>SL-BR-)</u> s ottles <u>2</u>	R QUALITY SAMF Sample Method: <u>G</u>  REMARKS	PLE DATA	Preservatives Preservatives	:	lce
Sample No. No. of Sample B	WATER 5L-BR-1 southers 2 $\chi$	R QUALITY SAMF Sample Method: <u>G</u>  REMARKS	PLE DATA	Preservatives Preservatives	:	lce
Sample No. No. of Sample B	WATER <u>SL-BR-)</u> s ottles <u>2</u> X re Neleinla	R QUALITY SAMF sample Method: <u>G</u>  REMARKS	PLE DATA	Preservatives Preservatives	: : Nory	lce
Sample No. No. of Sample B	WATER <u>SL-BR-1</u> s ottles <u>2</u> <u>X</u> <u>re Neleinla</u>	R QUALITY SAMP ample Method: G REMARKS	PLE DATA	Preservatives Preservatives	:	lce
Sample No. No. of Sample B	WATER <u>SL-BR-)</u> s ottles <u>2</u> X re Ndeinla	R QUALITY SAMP sample Method: <u>G</u>  REMARKS	PLE DATA	Preservatives	:	lce

			1	1.	
DRAINAGE:	Bishop Creek INVES	STIGATORS:	BJB		
PHYSICAL WAT	ER QUALITY PARAMETERS		WEATH	ER CONDITION	IS
Water Temperat	re:(ºF or º	PC) Dis	solved Oxyger	n:	(mg/L)
Conductivity:	(µmhos	s/cm@25 ºC) Str	eam or Lake ga	age reading:	098.5
Turbidity:	– (NTUs) Air T	emperature 6	E(°F)or ℃) B	aro. Pressure	L].60 (in Hg
Winds 0-1	(mph) Cloud cover 90 (9	6) Precipitation	Eog Ba	in Sleet	Hail Spow
Secchi Disk: ), /	Depth of Disappear:	meters	Depth of Re	appearance:	onow
10,	1		S	ecchi Depth:	meters
Visual Condition	of Stream (check all that apply)	: 	ored		
Floating Materia	Other:				
Remarks:					
		Notes			
	WATER O	QUALITY SAMPI	LE DATA		
Sample No.	WATER ( LS - BR-1) Sar	QUALITY SAMPI nple Method: <u>Gra</u>	LE DATA	eservatives:	lce
Sample No. No. of Sample B	WATER ( <u>LS-BR-)</u> Sar ottles <u>2</u>	QUALITY SAMPI nple Method: <u>Gra</u>	.E DATA abPr Pr	eservatives:	lce Vany
Sample No. No. of Sample B	WATER ( <u>LS-BR-)</u> Sar ottles <u>2</u>	QUALITY SAMPI nple Method: <u>Gra</u>  REMARKS	.E DATA ab Pr Pr	eservatives:	lce Vary
Sample No. No. of Sample B	WATER ( <u>LS-BR-)</u> Sar puttles <u>2</u>	QUALITY SAMPI nple Method: <u>Gra</u>  REMARKS	-E DATA ab Pr Pr	eservatives:	lce Vanj
Sample No. No. of Sample B	WATER ( <u>LS-BR-1</u> Sar pottles <u>2</u> <u>K</u> <u>K</u> <u>K</u>	QUALITY SAMPI nple Method: <u>Gra</u>  REMARKS	-E DATA ab Pr Pr	eservatives:	lce Vary
Sample No. No. of Sample B	WATER ( <u>LS-BR-1</u> Sar puttles <u>2</u> <u>K</u> <u>K</u> <u>K</u> <u>K</u>	QUALITY SAMPI nple Method: <u>Gra</u>  REMARKS	.E DATA ab Pr Pr	eservatives:	lce Vary
Sample No. No. of Sample B	WATER Of $LS-BR-1$ Sar ottles <u>2</u> K K K Mcle cular	QUALITY SAMPI nple Method: <u>Gra</u>  REMARKS	LE DATA	eservatives:	lce Vany
Sample No. No. of Sample B	WATER ( <u>LS-BR-)</u> Sar puttles <u>2</u> <u>K</u> <u>ce</u> Mdechlar	QUALITY SAMPI nple Method: <u>Gra</u> REMARKS	LE DATA ab Pr Pr	eservatives:	Ice Vary

DAINIAOE	<b>B</b> '. <b>I D</b>		D	~	
RAINAGE:	Bishop Creek	- INVESTIGATO	RS: TD	JB	
HYSICAL WAT	ER QUALITY PARAM	METERS		WEATHER CONDIT	TIONS
Vater Temperat	ure:	(°F or °C)	Dissolve	d Oxygen:	(mg/L)
conductivity:		(µmhos/cm@25	<sup>o</sup> C) Stream o	r Lake gage reading:	-
urbidity:	(NTUs	s) Air Temperatu	ure <u>68</u> E	or °C) Baro. Pressur	e 22.40 (in Hg)
/inds_0-1	(mph) Cloud cover_	70 (%) Preci	pitationFo	gRainSleet	HailSnow
ecchi Disk: N	A Depth of Disappea	ar:meters	s Dep	oth of Reappearance:	meters
isual Condition	of Stream (check all th	hat apply):		Secchi Depth:	meters
lear	Cloudy		Colored		
oating Material		Other:	-		
emarks:					-
ample No.	FUT2-RES-	WATER QUALITY	SAMPLE DA	TA	
ample No.	TUT2-RES-	WATER QUALITY	SAMPLE DA	TA Preservatives:	
ample No. 5. of Sample Bo	TUTZ-RES-	WATER QUALITY	SAMPLE DA	TA Preservatives: Preservatives:	lce None
ample No. 5. of Sample Bo	TUTZ-RES-	WATER QUALITY	SAMPLE DA nod: <u>Grab</u>	TA Preservatives: Preservatives:	Ice
ample No. b. of Sample Bo	TATZ-RES-	WATER QUALITY	SAMPLE DA	TA Preservatives: Preservatives:	Ice None
ample No. b. of Sample Bo <u>J Wed</u>	TUTZ-RES- ottles <u>C</u> <u>e</u> Moluculov	WATER QUALITY	SAMPLE DA	TA Preservatives: Preservatives:	Ice None
ample No. 5. of Sample Bo 1 Wed Source	<u>FUTZ-RES</u> ottles <u>C</u> <u>e</u> Moluculor	WATER QUALITY	SAMPLE DA nod: <u>Grab</u>	TA Preservatives: Preservatives:	lce None

SUBARCE Top 17.4°C.

Page \_ of \_\_\_\_

# WATER TEMPERATURE AND DISSOLVED OXYGEN

TD ~ 46m Location

	LAKE PROFILE D	ATA	FORM
:	South Lake 7	27	121
_			

	DEPTH FROM WATER SURFACE (meters)	WATER TEMPERATURE (°C)	DISSOLVED OXYGEN (mg/L)	DEPTH FROM WATER SURFACE (meters)	WATER TEMPERATURE (°C)	DISSOLVED OXYGEN (mg/L)	
	0.5	17.4	7.31	31	5.4	Ø.Ø3	
	1	17.4	7.33	32	5.7	\$.\$1	- DTH
	2	17.4	7.34	33	5.9	Ø.ØØ	=39A
	3	17.4	7.34	34	6.1	0.09	* NL
	4	17.3	7.35	35	6.3	0.06	-1
	5	17.1	7.44	36	6.5	\$.\$3	
	6	16.9	7.48	37	6.7	0.02	
	7	16.8	7.60	38	6.9	Ø.Ø1	
	8	16.5	7.53	39	7.1	$-\phi.\phi1$	
	9	16.4	7.57	40	7,3	$-\phi, \phi_{1}$	
*	10	16.1	7.68	41	7.5	$-\phi.\phi2$	
	11	16.0	7.85	42	7.6	- Ø. Ø2	
	12	15.4	8.13	43	7.7	-0.03	
	13	14.8	8.27	44	7.7	-0.04	
T	14	14. 2	8.26	48 44.75	7.8	-Ø.ØA	
.6.	15	13.5	8.16	46			
12.000	16	10,6	8.08	47		1	
16.5m 7	16:5	8.4	8.64	- 48		1/	
	18	5.8	8.8Ø	49		V	
	19	5.1	8.65	50		1	
	20	4.8	8.40	.51			
	21	4.7	8.15	52	X		
	22	4.5	7.80	53			
	23	4.4	7.42	54			
*	24	44	6.91	55		1	
	25	4.4	6.29	56			
	26	4,4	5,32	57	V	( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( )	
	27	4.4	4,46	58 /			
	28	4.\$5	2.55	59 /			
	29	4.6	1.03	60			
	30	4.8	0.13	61			

L	Location:	Lake Sabr	2 Mg	E DATA FOR	8/21	
D	DEPTH FROM WATER SURFACE (meters)	WATER TEMPERATURE (°C)	DISSOLVED OXYGEN (mg/L)	DEPTH FROM WATER SURFACE (meters)	WATER TEMPERATURE (°C)	DISSOLVED OXYGEN (mg/L)
	0.5	18.1	7.08	31	4,5	7.54
	1	18.1	7.06	32	4,5	7.53
	2	18.1	7.05	33	4.5	7.52
	3	18.1	7.04	34	4.5	7.51
	4	18.1	7.04	35	4.4	7.49
	5	18.0	7.14	36	4.4	7.48
	6	17.4	7.32	37	4.4	7.44
	7	16.8	7.58	38	4.4	7.43
F	8	15.5	8.75	39	4.3	7.40
F	9	13,4	9,00	40	4.3	7,# 38
	10	11.2	9.42	41	4.3	7.38
	11	10.2	9.62	42	4.3	7.38
	12	9,3	9.7	43	4.3	7.38
	13	8,5	9.77	44	4.3	7.34
	14	7.9	9.76	45	4.2	7.32
	15	7.3	9.75	46	4.3	7.20
	16	6.7	9.56	47	4,3	7.10
	17	6.3	9.30	48	4,3	6.95
	18	6.0	9.13	49	4.3	16.85
	19	5.8	8.95	50	4.3	6.74
	20	5.5	8.61	51	4.3	6.60
	21	5,3	8.38	52	4.3	6.40
	22	5.2	8.10	53	4.3	6.32
	23	5.1	7,85	54	4.23	6.29
	24	4.9	7,83	55	4.3	6.28
	25	4.8	7.77	56	4.3	\$5.9
	26	4.8	7.71	57	4.3	5.91
	27	4.7	7.62	58	4.3	5.75
	28	4.6	7.61	59	4.3	5.25
	29	4.6	7.57	60	4.3	5.02
	30	4.6	7.56	61	4.3	4.67

C 30 me CAMENA

(61.8 BOT)

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# WATER TEMPERATURE AND DISSOLVED OXYGEN

Location: SABRINA -

LAKE PROFILE DATA FORM 7/28/21

DEPTH FROM WATER SURFACE (meters)	WATER TEMPERATURE (°C)	DISSOLVED OXYGEN (mg/L)	DEPTH FROM WATER SURFACE (meters)	WATER TEMPERATURE (°C)	DISSOLVED OXYGEN (mg/L)
62	4.3	4.43	91	. **	
63	4.3	4.33	92		
64	1		93		
65			94		
66			95		
67			96		
68			97		
69		/	98		
70		/	99	1	
71			100		
72			101		
73			102	6 424	
74			103	1. 28. 2	
75			104	· . · ·	
76			105		
77			106	-1.	
78			107		
79			108		
80			109	6	
81			110	14 C	
82	/		111		
83	1		112		
84		1	113		
85			114		
86 1	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		115		
87			116		
88			117		
89			118		
90			119		

(67.2m)

(672) m N 37.20327 ~ 102099

DRAINAGE: <u>Bisho</u> PHYSICAL WATER QUA Water Temperature: Conductivity: Turbidity: Winds <u>3-U</u> (mph) Cl Secchi Disk: MA Depth Visual Condition of Stream Clear Floating Material Remarks:	p Creek IN\ ITY PARAMETER (%F) (m (MTUs) A (MTUs) A oud cover of Disappear; (check all that ap) Cloudy Oth	VESTIGATORS: RS or °C) hos/cm@25 °C) ir Temperature ( 	<u>TB</u> Wi Dissolved Ox Stream or La ( <u>64</u> (F) or d tionFog Depth of Colored	<u>JB</u> EATHER COND kygen: ke gage reading °C) Baro. Pressu RainSlee of Reappearance Secchi Depth	ITIONS 	_(mg/L) <u>20</u> _(in Hg) Snow meters meters
PHYSICAL WATER QUA Water Temperature: Conductivity: Turbidity: Winds <u>3-4</u> (mph) C Secchi Disk: NA Depth Visual Condition of Stream Clear Floating Material Remarks:	.ITY PARAMETEF	RS or °C) hos/cm@25 °C) ir Temperature ( 	Wi Dissolved Ox Stream or La ( <u>6</u> <u>)</u> (F) or tionFog Depth of Colored	EA THER COND kygen: ke gage reading °C) Baro. Pressu RainSlee of Reappearance Secchi Depth	ITIONS 	_(mg/L) 20(in Hg) Snow meters meters
Water Temperature: Conductivity: Turbidity: Winds <u>3-4</u> (mph) C Secchi Disk: NA Depth Visual Condition of Stream Clear Floating Material Remarks:	(PF (µm (NTUs) A oud cover of Disappear: (check all that app Cloudy Oth	or <sup>Q</sup> C) hos/cm@25 <sup>Q</sup> C) ir Temperature ( 	Dissolved Ox Stream or La ( <u>6</u> <u>1</u> (F) or <sup>4</sup> tionFog Depth of Colored	kygen: ke gage reading °C) Baro. Pressu RainSlee of Reappearance Secchi Depth		(mg/L) 20 (in Hg) Snow Snow meters meters
Conductivity: Turbidity: Winds 3 - 4 (mph) Cl Secchi Disk: NA Depth Visual Condition of Stream Clear Floating Material Remarks:	<pre>(µm(NTUs) AO of Disappear: (check all that appOthOth</pre>	hos/cm@25 °C) ir Temperature_( (%) Precipitat meters ply): er:	Stream or La	ke gage reading °C) Baro. Pressu RainSlee of Reappearance Secchi Depth	: re21. etHail_ :	20 (in Hg) Snow meters meters
Turbidity: Winds <u>3-Y</u> (mph) C Secchi Disk: NA Depth Visual Condition of Stream Clear Floating Material Remarks:	(NTUs) A	ir Temperature_( _(%) Precipitat meters ply): er:	(64) (F) or f tionFog Depth c	°C) Baro. Pressu RainSlee of Reappearance Secchi Depth	re_ <u>21.</u> etHail_ e:	<u>20</u> (in Hg) Snow meters meters
Winds <u>34</u> (mph) C Secchi Disk: <i>WA</i> Depth Visual Condition of Stream Clear Floating Material Remarks:	oud cover of Disappear: (check all that app Cloudy Oth	_(%) Precipitatmeters ply): er:	tionFog Depth c Colored	RainSlee of Reappearance Secchi Depth	etHail	Snow _meters meters
Secchi Disk: NA Depth Visual Condition of Stream Clear Floating Material Remarks:	of Disappear; (check all that ap Cloudy Oth	meters	Depth o	of Reappearance Secchi Depth	: !:	_meters meters
Visual Condition of Strean Clear Floating Material Remarks:	(check all that ap Cloudy Oth	ply): er:	Colored	Secchi Depth	:	meters
Clear Floating Material	Cloudy Oth	er:	Colored			
Remarks:	Oth	er:	-			
Remarks:		Notos				
		Notes				
	WATE	R QUALITY SA	MPLE DATA			
Sample No. 5L -	3R-1 :	Sample Method:	Grab	Preservatives	e <u> </u>	се
No. of Sample Bottles	2			Preservatives	: Non	1
		REMARK	S			
1 Weck						
1 Source Mal	laker		_			_
	FI Par	DEV/IE				

DRAINAGE:	Bishop Creek INVESTIGATORS: TB JB
PHYSICAL WAT	ER QUALITY PARAMETERS WEATHER CONDITIONS
Vater Temperati	ure: (ºF or ºC) Dissolved Oxygen: (mg/L)
Conductivity:	(μmhos/cm@25 °C) Stream or Lake gage reading:
Furbidity:	(NTUs) Air Temperature 69(For °C) Baro. Pressure 21.65 (in Hg)
Winds 3-4	(mph) Cloud cover(%) PrecipitationFogRainSleetHailSnow
Secchi Disk: N	A Depth of Disappear:meters Depth of Reappearance:meters
visual Condition	of Stream (check all that apply):
Clear Floating Material	Cloudy Colored
Remarks:	
	Notes
Sample No.	WATER QUALITY SAMPLE DATA <u>L5-BR-)</u> Sample Method: <u>Grab</u> Preservatives: <u>Ice</u> ottles 2 Preservatives: VGNL
Sample No. No. of Sample B	WATER QUALITY SAMPLE DATA <u>L5-BR-)</u> Sample Method: <u>Grab</u> Preservatives: <u>Ice</u> ottles <u>2</u> Preservatives: <u>Nove</u> REMARKS
Sample No. No. of Sample B	WATER QUALITY SAMPLE DATA          L5-BR-)       Sample Method: Grab       Preservatives:
Sample No. No. of Sample B <u>1 Weck</u> <u>1 Sove G</u>	WATER QUALITY SAMPLE DATA          LS-BR-]       Sample Method: Grab       Preservatives:       Ice         ottles       2       Preservatives:       None         REMARKS       Mohundary

	Intaly 2 Keseudi DATE: 3 2 21 TIME: 12:30pr
DRAINAGE:	Bishop Creek INVESTIGATORS: TB JB
PHYSICAL WATER	QUALITY PARAMETERS WEATHER CONDITIONS
Water Temperature:	(ºF or ºC) Dissolved Oxygen:(mg/L)
Conductivity:	(μmhos/cm@25 °C) Stream or Lake gage reading:
Turbidity:	(NTUs) Air Temperature 74 (F)or °C) Baro. Pressure 22.50 (in Hg)
Winds 1 - 2 (mp	h) Cloud cover_5(%) PrecipitationFogRainSleetHailSnow
Secchi Disk: MA	Depth of Disappear:meters Depth of Reappearance:meters
Visual Condition of S Clear	Stream (check all that apply): Cloudy Colored
Floating Material	Other:
Remarks:	Notes
	WATER QUALITY SAMPLE DATA
Sample No.	WATER QUALITY SAMPLE DATA
Sample No. D	WATER QUALITY SAMPLE DATA <u>MT2-RES-1</u> Sample Method: <u>Grab</u> Preservatives: <u>Ice</u> IS <u>2</u> Preservatives: <u>Vorg</u> REMARKS
Sample No. D No. of Sample Bottle	WATER QUALITY SAMPLE DATA <u>MT2-RES-1</u> Sample Method: <u>Grab</u> Preservatives: <u>Ice</u> <u>BS</u> <u>Preservatives: <u>Nong</u> REMARKS</u>
Sample No. D No. of Sample Bottle ) Weck ] Sovre N	WATER QUALITY SAMPLE DATA <u>MTD-RES-1</u> Sample Method: <u>Grab</u> Preservatives: <u>Ice</u> Preservatives: <u>None</u> REMARKS

SITE NAME:	BC	Below	PH-6	DATE:	8/5/21	TIME:	8:45A
DRAINAGE:	Bishop C	Creek	INVESTIGATOR	RS: KI	) \$	TB	
PHYSICAL WAT	ER QUALIT		TERS		WEATHER		
Water Temperat	ure:		(9F or (9C))	Dissolve	ed Oxygen:	0.50	<u>) (</u> mg/L)
Conductivity:		(NITUR)	µmnos/cm@25 ء مند Tomporatur	°C) Stream	or Lake gage	Procesure 25	<u>. 44</u> (in Ma)
	-	(N105)	All Temperatur		jor C) baro.	Plessure_00	<u>••7 (</u> in rig,
Winds V	(mph) Cloud	d cover_0	(%) Precipi	itationF	ogRain _	SleetHa	ailSnow
N/	1 Depuiror	Disappear.	Ineters	De	Seccl	ni Depth:	meters
Visual Condition	of Stream (c	heck all that Cloudy	apply):	Colored			
Floating Material		- 7	Other:	_			
Remarks:			Note	es			
Sample No	Nį	wª A	ATER QUALITY :	SAMPLE D	ATA	nuativas:	
Sample No. No. of Sample B	N//	A wa	ATER QUALITY :	SAMPLE D. od: <u>Grab</u>	ATA Prese Prese	rvatives:	lce
Sample No. No. of Sample B	N/.	A,	ATER QUALITY S Sample Metho REMAI	SAMPLE D od: <u>Grab</u> RKS	ATA Prese Prese	rvatives:	lce
Sample No. No. of Sample B	N/.	A,	TER QUALITY Sample Metho	SAMPLE D. od: <u>Grab</u> RKS	ATA Prese Prese	rvatives:	lce

SITE NAME:	TOTILOUREY ITIC DATE: 0/5/21 TIME: 0/5/1/
DRAINAGE:	Bishop Creek INVESTIGATORS: KD - TB
PHYSICAL WAT	ER QUALITY PARAMETERS WEATHER CONDITIONS
Water Temperatu	rre: 16.6 (%F or (%G) Dissolved Oxygen: 8.40 (mg/L)
Conductivity:	(#mhos/cm@25 °C) Stream or Lake gage reading:
Turbidity:	(NTUs) Air Temperature 81 (Fbr °C) Baro. Pressure 25.44 (in H
Winds	(mph) Cloud coverO(%) PrecipitationFogRainSleetHailSnow
Secchi Disk:	Depth of Disappear:meters Depth of Reappearance:meters
Visual Condition Clear Floating Material	of Stream (check all that apply): Cloudy Colored Colo
Remarks:	
	Notes
Sample No. No. of Sample Bo	WATER QUALITY SAMPLE DATA          MA       Sample Method: Grab       Preservatives:         ottles        Preservatives:         REMARKS

	Bishon Creek		STIGATOP	s KD	STR		
			HARIOR				
PHYSICAL WAT	ER QUALITY PAR	RAMETERS	~		WEATHER C	ONDITIONS	
Water Temperatu	re: 10.0	(ºF or (	0	Dissolve	d Oxygen:	0.20	(mg/L)
Conductivity:		(µmhos	s/cm@25 º	C) Stream o	r Lake gage re	ading:	
Turbidity:	(N	TUs) Air T	emperature	e_ 91 (PF	or °C) Baro. F	Pressure 25	. 20 (in Hg)
Winds 0	mph) Cloud cove	er O (9	%) Precipi	itation Fo	q Rain	Sleet H	ail Snow
Secchi Disk:	Depth of Disap	pear:	meters	Dej	oth of Reappea	arance:	meters
Visual Condition	of Stream (check	all that apply	):		Oeccili	Deptn	meters
Clear Y Floating Material	Clou	Other:	-	Colored			
Remarks:							
tomarks.			Note	es			
		WATER	QUALITY :	SAMPLE DA	лта		
Sample No.	NA	WATER Sa	QUALITY S	SAMPLE DA	ATA _ Preserv	vatives:	lce
Sample No. No. of Sample Bo	NA ottles	WATER Sa	QUALITY S	SAMPLE DA	\TA _ Preserv Preserv	vatives:	lce
Sample No. No. of Sample Bo	NA ottles	WATER Sa	QUALITY S	SAMPLE D/ od: <u>Grab</u> RKS	NTA _ Preserv Preserv	/atives:	lce

SITE NAME.		101	DATE	=: <u>-07</u>		TIME:	
DRAINAGE:	Bishop Creek	INVESTIGA	ATORS: K	D -	IB		
PHYSICAL WATE	R QUALITY PAR	AMETERS		WEA	THER CONI	DITIONS	
Water Temperature	17	(°F or (°C)	Diss	olved Oxyg	ien: 8.	15	(mg/L)
Conductivity:	-	(µmhos/cm@	@25 ºC) Strea	am or Lake	gage readin	g:	
Turbidity:	(N*	TUs) Air Tempe	erature <u>81</u>	Or °C)	Baro. Press	ure 25	.20 (in Hg
Winds <u>0</u> (m	ph) Cloud cove	r <u>0</u> (%) P	recipitation	_Fog	RainSle	eet <u>Hai</u>	ISnow
Secchi Disk: NA	Depth of Disap	pear:m	eters	Depth of F	Reappearanc	:e:	meters
Visual Condition of Clear Floating Material	Stream (check a Clou	ll that apply): dy Other:	Colo	red		un	meters
Remarks:			Notes				
Sample No. No. of Sample Bott	<u>N</u> A	WATER QUAL Sample I	.ITY SAMPLE Method: <u>Grab</u>	E DATA	Preservative Preservative	25:	lce
Sample No. No. of Sample Bott	NA es	WATER QUAL Sample I	LITY SAMPLE Method: <u>Grab</u> EMARKS	E DATA	Preservative	95: 95:	lce

		1.	DATE		0	TIME:	
DRAINAGE:	Bishop Creek	INVESTIG/	ATORS: F	DI	8		
PHYSICAL WATE	R QUALITY PAR	AMETERS		WEAT	HER CONDIT	IONS	
Water Temperature	16.3	(%F or ⓒ	Disso	olved Oxyge	n: <u>8.16</u>	1	(mg/L)
Conductivity:	-	(µmhos/cm(	@25 ºC) Strea	m or Lake g	age reading:	-	-
Turbidity:	<u> </u>	Us) Air Temp	erature <u>83</u>	(For °C) E	Baro. Pressure	24.8	33_(in Hç
Winds1(m	ph) Cloud cover	(%) P	Precipitation	_FogR	ainSleet	Hail	Snow
Secchi Disk:	Depth of Disapp	ear:m	ieters	Depth of Re	eappearance:	-	_meters
NA				5	Secchi Depth:		meters
Clear Floating Material	Cloud	li that apply): ly Other:	Color	ed	-		
Remarks:						_	
			Notes				
Sample No	N/A.	WATER QUA	LITY SAMPLE	DATA			
Sample No.	NA-	WATER QUA	LITY SAMPLE Method: <u>Grab</u>	E DATA	reservatives:		Ice
Sample No. No. of Sample Bot	NA	WATER QUA Sample R	LITY SAMPLE Method: <u>Grab</u> REMARKS	E DATA	reservatives:		lce
Sample No. No. of Sample Bot	NA des	WATER QUA Sample  R	LITY SAMPLE Method: <u>Grab</u> REMARKS	E DATA	reservatives:		lce

SITE NAME:	0-0-0				-101		
DRAINAGE:	Bishop Creek	INVEST	GATORS:	TB	KD		
PHYSICAL WAT	R QUALITY PARA	AMETERS		WE	ATHER CONE	DITIONS	
Water Temperatu	re:_16.4	(ºF or (°C)	) Di	ssolved Oxy	gen: 8.	33	(mg/L)
Conductivity:	-	(µmhos/ci	m@25 ºC) St	ream or Lak	e gage readin	g: -	_
Turbidity:	(NT	Us) Air Tem	nperature 8	3 (°F or °C	) Baro. Press	ure 24.	86 (in Ho
1-2		0					, ,
Secchi Disk:	nph) Cloud cover	<u>(%)</u>	Precipitation	Fog	_RainSle	etHai	ISnow
NA NA		cal	Ineters	Deptitor	Secchi Dept		meters
Visual Condition of Clear	of Stream (check al Cloud	l that apply): y Other:	C	olored			
Remarks:			-				
			Notes				
Sample No.	NA	WATER QU Sampl	JALITY SAMP	LE DATA	Preservative	s:	lce
Sample No. No. of Sample Bo	MA	WATER QU	IALITY SAMP le Method: <u>Gr</u> - REMARKS	LE DATA	Preservative Preservative	ns:	Ice
Sample No. No. of Sample Bo	MA	WATER QU	IALITY SAMP le Method: <u>Gr</u> REMARKS	LE DATA	Preservative Preservative	95: 95:	Ice

		PH-3	DATE: 8	5/21 TIN	ле:
	Bishop Creek	INVESTIGATORS	KD	\$ TR	
PHYSICAL WATE		METERS	WE	THER CONDITION	NS
Water Temperatur	. 16.2	(%E or (°C))		men: 8.00	(mg/l.)
				gen. 0.00	(iiig/L)
Conductivity:		(µmnos/cm@25 ℃)	83 (C)	e gage reading:	3 80
Turbidity:	(NTU	Js) Air Temperature_	G (°F)or °C	c) Baro. Pressure	<u>, , , , , , , , , , , , , , , , , , , </u>
Winds 1-2 (n	nph) Cloud cover_	(%) Precipita	tionFog	_RainSleet	_HailSnow
Secchi Disk:	Depth of Disappe	ear:meters	Depth of	Reappearance:	meters
۲۰۰۱ م Visual Condition	of Stream (check all	that apply):		Secchi Depth:	meters
Clear /	Cloudy	Other:	Colored		
Remarks:		Notes			
		WATER QUALITY S/	AMPLE DATA		
Sample No.	_NA	WATER QUALITY S/	AMPLE DATA	Preservatives:	lce
Sample No. No. of Sample Bo	NA ttles	WATER QUALITY S/	AMPLE DATA	Preservatives: Preservatives:	lce
Sample No. No. of Sample Bo	NA ttles	WATER QUALITY S/ Sample Method  REMARI	AMPLE DATA d: <u>Grab</u> KS	Preservatives: Preservatives:	Ice
Sample No. No. of Sample Bo	JA ttles	WATER QUALITY S/ Sample Method  REMARI	AMPLE DATA	Preservatives: Preservatives:	lce

1

	10		100	4 -	<u></u>	
DRAINAGE:	Bishop Creek	INVESTIGA	TORS:	A	115	
PHYSICAL WAT	ER QUALITY PARA	AMETERS		WEATHER CONDI	TIONS	
Water Temperat	ure: 16.5	(°F or ⓒ	Dissolved	l Oxygen:	95	(mg/L)
Conductivity:		(µmhos/cm@	25 ºC) Stream or	Lake gage reading:	0.7 -	A
Turbidity:	(NT	Us) Air Temper	rature <u>84</u> E	or °C) Baro. Pressur	e 23.88	(in Hg
Winds	(mph) Cloud cover	(%) Pro	ecipitationFog	gRainSlee	tHail	Snow
Secchi Disk:	Depth of Disapp	ear:me	ters Dep	th of Reappearance:	n	neters
	of Stream (aback al	I that apply :		Secchi Depth:	:	meters
Clear Condition Clear Floating Material	Cloud	lyOther:	Colored			
Remarks:						
		18	Notes			
		WATER QUALI	TY SAMPLE DA	TA		
Sample No.	NA	WATER QUALI Sample M	TY SAMPLE DA	TA Preservatives:	:lc	6
Sample No. No. of Sample B	NA	WATER QUALI	TY SAMPLE DA	TA Preservatives: Preservatives:	: Ic	e
Sample No. No. of Sample B	NA	WATER QUALI	TY SAMPLE DA' lethod: <u>Grab</u>	TA Preservatives: Preservatives:	:ic	e

SITE NAME:	Tailwater	- PH-	-2 DA		15/21	ТІМ	E: 10:301
DRAINAGE:	Bishop Creek	INVESTI	GATORS:	KD	TR	>	
PHYSICAL WATER	QUALITY PARAM	ETERS		WE	EATHER C	ONDITION	S
Water Temperature	16.0	_(ºF or ⁰C)	) Dis	solved Ox	kygen:	7.77	(mg/L)
Conductivity:	-	 (μmhos/c	m@25 ºC) Str	eam or La	ke gage re	ading:	_
Turbidity:	a	(NTUs)	Air Temperat	ure 83	(For °C)	Baro. Pres	ssure 23. 2 in Hg
Winds 2-4 (mph)	Cloud cover	0 (%)	Precipitation	Fog	Rain	Sleet	Hail Snow
Secchi Disk:	Depth of Disappea	IC	_meters	Depth o	of Reappea	irance:	meters
NA					Secchi	Depth:	meters
Visual Condition of Clear	Stream (check all th Cloudy	nat apply):	Co	lored			
Floating Material		Other:					
Remarks:							
			Site Drawing				
		WATER QU	JALITY SAMP	LE DATA			
Sample No.	NA	WATER QU Samp	JALITY SAMP ole Method: <u>Gr</u>	LE DATA	Preserv	atives:	Ice
Sample No. No. of Sample Bottl	NA es	WATER QU Samp	JALITY SAMP ble Method: <u>Gr</u>	LE DATA	Preserv Preserv	atives:	lce
Sample No. No. of Sample Bottl	NA es	WATER QU Samp	JALITY SAMP ole Method: <u>Gr</u>  REMARKS	LE DATA	Preserv Preserv	atives:	Ice
Sample No. No. of Sample Bottl	NA es	WATER QU Samp	JALITY SAMP ole Method: <u>Gr</u>  REMARKS	LE DATA	Preserv Preserv	atives:	lce
Sample No. No. of Sample Bottl	MA es	WATER QU Samp	JALITY SAMP ble Method: <u>Gr</u> REMARKS	LE DATA	Preserv Preserv	atives:	Ice
Sample No. No. of Sample Bottl	NA	WATER QU Samp	JALITY SAMP ole Method: <u>Gr</u> REMARKS	LE DATA	Preserv Preserv	atives:	Ice

BISHOP CREEK WATER QUALITY STUDY

BISHOP CREEK WATER QUALITY STUDY
FIELD FORM

SITE NAME:	BC below	PH-2		DATE:	15/21	TIME:	10:4
DRAINAGE:	Bishop Creek	INVEST	IGATORS:	140	TB		
PHYSICAL WATE	R QUALITY PARA	METERS		WE	ATHER CON	DITIONS	1
Water Temperatur	e: 153	(ºF or C	) (	Dissolved Ox	ygen: ].	94	(mg/L)
Conductivity:	-	(µmhos/c	:m@25 ºC) s	Stream or La	ke gage readir	g: 1.7:	z ft
Turbidity:	-	(NTUs)	Air Temper	rature 83	(For °C) Ba	ro. Pressur	e23.2
Winds (mpt	n) Cloud cover	<u>(%)</u>	Precipitatio	on Fog	RainSl	etHai	ISr
Secchi Disk:	Depth of Disapp	ear:	meters	Depth o	f Reappearanc	:e:	meters
Visual Condition	f Stream (check al	that apply):			Secchi Dep	th:	mete
Clear /	Cloud	y Other:		Colored			
Pemarke <sup>.</sup>		ourior.					
Nemarks.							
			Site Drawin	g			
			Site Drawin	g			
		WATER QU	Site Drawing	g IPLE DATA			
Sample No.	NA	WATER QU	Site Drawing JALITY SAM	g IPLE DATA Grab	Preservative	25:	Ice
Sample No. No. of Sample Bot	NA	WATER QU	Site Drawing JALITY SAM ble Method: <u>(</u>	g IPLE DATA Grab	Preservative	95:	Ice
Sample No. No. of Sample Bot	NA	WATER QU	Site Drawing JALITY SAM ble Method: <u>(</u> 	g IPLE DATA Grab	Preservative	PS:	Ice
Sample No. No. of Sample Bot	NA	WATER QU	Site Drawing JALITY SAM ble Method: <u>(</u> 	g IPLE DATA Grab	Preservative	PS:	Ice
Sample No. No. of Sample Bot	NA	WATER QU	Site Drawing JALITY SAM ble Method: <u>(</u> 	g IPLE DATA Grab	Preservative	PS:	Ice

BISHOP CREEK WATER QUALITY STUDY
FIELD FORM

SITE NAME:	North Fork DATE: 8/5/21 TIME: 11:15/						
DRAINAGE:	Bishop Creek INVESTIGATORS: KD TB						
PHYSICAL WAT	ER QUALITY PARAMETERS WEATHER CONDITIONS						
Water Temperatu	ure: 16.6 (% ol@) Dissolved Oxygen: 7.86 (mg/L)						
Conductivity:	(µmhos/cm@25 °C) Stream or Lake gage reading:						
Turbidity:	(NTUs) Air Temperature 1 (For °C) Baro. Pressure 21.55 (ir						
Winds 2-11	(mph) Cloud cover(%) PrecipitationFogRainSleetHailSn						
Secchi Disk:	Depth of Disappear:meters Depth of Reappearance:meters						
Visual Condition	of Stream (check all that apply):						
Clear	Cloudy Colored						
Floating Material	Other:						
Remarks:	Notes						
Sample No. No. of Sample Bo	WATER QUALITY SAMPLE DATA <u>NA</u> Sample Method: <u>Grab</u> Preservatives: <u>Ice</u> ottles						
Sample No. No. of Sample Bo	WATER QUALITY SAMPLE DATA <a href="https://www.water.com">NA</a> <a href="https://www.water.com">Mater.com</a> <a href="https://www.water.com"></a> Mater.com <a href="https://www.water.com"></a> Preservatives:						
Sample No. No. of Sample Bo	WATER QUALITY SAMPLE DATA          NA       Sample Method: Grab       Preservatives:       Ice         ottles       Preservatives:       Ice         REMARKS       Preservatives:       Ice						
Sample No. No. of Sample Bo	WATER QUALITY SAMPLE DATA          NA       Sample Method: Grab       Preservatives:       Ice         ottles       Preservatives:       REMARKS						
Sample No. No. of Sample Bo	WATER QUALITY SAMPLE DATA NA Sample Method: Grab Preservatives: ottles Preservatives: REMARKS						
Sample No. No. of Sample Bo	WATER QUALITY SAMPLE DATA 						
Sample No. No. of Sample Bo	WATER QUALITY SAMPLE DATA          NA       Sample Method: Grab       Preservatives:         ottles       Preservatives:         REMARKS						
SITE NAME:	MOORE	INK	D/		15/21	TIME:	11-5-19
--	------------------	-----------------------------------	---	-------------	---------------	-----------	-----------
DRAINAGE:	Bishop Creek	INVESTI	GATORS:	TB	KD		
PHYSICAL WAT	ER QUALITY PAI	RAMETERS		W	EATHER CO	NDITIONS	
Water Temperate	ure: 17.L	(%F or %)	D	issolved O	xygen:	1.37	(mg/L)
Conductivity:	-	(µmhos/cr	m@25 ºC) Si	tream or La	ake gage read	ling:	-
Turbidity:		ITUs) Air Tem	perature	H @ or	°C) Baro. Pre	ssure 21.	69 (in Hg
Winds 8-12	(mph) Cloud cov	er <u>0</u> (%)	Precipitation	Fog_	Rain	SleetHa	ilSnow
Secchi Disk:	Depth of Disa	opear:	meters	Depth	of Reappeara	nce:	meters
Visual Condition Clear / Floating Material	of Stream (check	all that apply): udy Other:	c	olored	Secchi De	epth:	meters
Remarks:			Notos				
		WATER QU	JALITY SAMI				
Sample No.	NA	WATER QU Samp	JALITY SAM	PLE DATA	Preservat	ives:	lce
Sample No. No. of Sample B	<u>NA</u>	WATER QU Samp	JALITY SAMI le Method: <u>G</u>	PLE DATA	Preservat	ives:	Ice
Sample No. No. of Sample B	<u>NA</u>	WATER QU Samp	VALITY SAMI le Method: <u>G</u>  REMARKS	PLE DATA	Preservat	ives:	Ice
Sample No. No. of Sample B	_NAottles	WATER QU Samp	JALITY SAMI le Method: <u>G</u>  REMARKS	PLE DATA	Preservat	ives:	lce

BISHOP CREEK WATER QUALITY STUDY
FIELD FORM

SITE NAME.			vr	TR		11 1011
DRAINAGE:	Bishop Creek	INVESTIGAT	ORS: PL	ID	_	
PHYSICAL WAT	ER QUALITY PA	RAMETERS		WEATHER CONE	DITIONS	
Nater Temperat	ure:	(ºF or ºC)	Dissolve	d Oxygen:	-	(mg/L)
Conductivity:		(µmhos/cm@2	25 ºC) Stream	or Lake gage reading	g: 909	9.69 F+
Furbidity:	- (1	NTUs) Air Tempera	ature 71 (	or °C) Baro. Press	ure 21.	65 (in Hg
Winds 9-16	(mph) Cloud cov	er <u>0</u> (%) Pre	cipitationF	ogRainSle	etHail	Snow
Secchi Disk:	Depth of Disa	ppear:met	ters De	pth of Reappearanc	e:	meters
Visual Condition Clear <u>V</u> Floating Materia	of Stream (check Clo	all that apply): oudy Other:	Colored			meters
Remarks:			Notes			
	15-80	WATER QUALI	TY SAMPLE D	4TA		
Sample No.	<u>LS-BR-</u>	WATER QUALI <u> </u>	TY SAMPLE D	ATA _ Preservative	95:	lce N1
Sample No. No. of Sample E	<u>LS-BP</u>	WATER QUALI Sample M 2	TY SAMPLE D	ATA Preservative Preservative	95:	Ice N ð
Sample No. No. of Sample E	<u>LS-BZ</u>	WATER QUALI Sample M 2 RE	TY SAMPLE D lethod: <u>Grab</u> MARKS	ATA Preservative Preservative	95: 95:	Ice N a
Sample No. No. of Sample E 1 W	LS-BR-	WATER QUALI Sample M 2 RE	TY SAMPLE D lethod: <u>Grab</u> MARKS	ATA Preservative Preservative	95: 95:	Ice N ð
Sample No. No. of Sample E <u>1 W</u> <u>1 50</u>	<u>LS-BR</u> nottles eck wrce p	WATER QUALI Sample M 2 RE nolecylar	TY SAMPLE D	ATA Preservative Preservative	95: 95:	Ice N a
Sample No. No. of Sample E 1 W 1 50	<u>LS-BR</u> nottles eck wrce n	WATER QUALI Sample M 2 RE nolecylar	TY SAMPLE D	ATA Preservative Preservative	95: 95:	Ice N a

DRAINAGE:	Bishop C	Creek	INVESTIGA	ATORS:	KD	TP	3		
PHYSICAL WAT	ER QUALIT	Y PARAME	TERS		W	EATHER	CONDITION	IS	
Water Temperatu	re:	-	(ºF or ºC)	D	issolved O	kygen:	-		(mg/L)
Conductivity:		2.00	(µmhos/cm@	@25 °C) S	tream or La	ke gage r	eading:	-	_
Turbidity:	-	(NTUs)	Air Tempe	erature7	C Oor	C) Baro.	Pressure 2	2.4	<u>4 (</u> in Hg)
Winds 4-12	mph) Cloue	d cover_C	)(%) P	recipitatior	Fog	Rain	Sleet	Hail _	Snow
Secchi Disk:	Depth of	Disappear:	m	eters	Depth o	of Reappe	arance:		meters
N // Visual Condition	よ of Stream (c	beck all that	apply).			Secch	i Depth:	_	meters
Clear Clear		Cloudy	Other:	С	olored	-			
Pomarka: Al	aal r	nots	flant	ina	Veser	Noir	surfer	02	
nelliaiks.	J-11	N/O	10010	Notes				0	
	· ,								
Samala Ma	INT	w 7RF	ATER QUAL	LITY SAME	PLE DATA				
Sample No.	INT	2-R <u>5</u> -	ATER QUAL 2 Sample I	_ITY SAMF Method: <u>G</u>	PLE DATA	Preser	vatives:		
Sample No. No. of Sample Bo	<u>INT:</u>	z-R <u>F</u> 5-	ATER QUAL 2 Sample I	LITY SAMF Method: G EMARKS	PLE DATA	Preser	vatives:		ce One
Sample No. No. of Sample Bo	INT	z-R <u>F5</u> -	ATER QUAL 2 Sample I	LITY SAMF Method: <u>G</u> EMARKS	PLE DATA	Preser	vatives: vatives:	I.	se One
Sample No. No. of Sample Bo <u>1 Wec</u> <u>1 Jan</u>	<u>INT</u> attles	z-RES- 2 Mole	ATER QUAL 2 Sample I RI 2CUICI M	LITY SAMF Method: <u>G</u> EMARKS	PLE DATA	Preser	vatives: vatives:	I.	se One

SHE NAME.							
DRAINAGE:	Bishop Creek	INVEST	IGATORS:	KD	TB	_	
PHYSICAL WAT	ER QUALITY PAR	AMETERS		WE	ATHER CONE	DITIONS	
Water Temperate	re: 15.8	(ºF o (°C)	) 0	issolved Oxy	rgen: 7	.26	(mg/L)
Conductivity:		(µmhos/c	:m@25 ºC) St	ream or Lak	e gage reading	g:	
Turbidity:	- <u>(</u> N1	Us) Air Ter	mperature <u>7</u> [	Dor °C	c) Baro. Press	ure 21.	27 (in Hç
Winds 4 - 8	mph) Cloud cover	<u> </u>	Precipitation	Fog	_RainSle	et <u>Hai</u> l	Snow
Secchi Disk:	Depth of Disap	pear:	_meters	Depth of	Reappearanc	e:	meters
	of Stream (check a	ll that apply):			Secchi Dept	h:	meters
Clear Clear	Cloue	dy		olored			
		Other:					
Remarks:			Notes		6		
		WATER QU	JALITY SAMF	PLE DATA			
Sample No.	NĄ	WATER QU	JALITY SAMF	PLE DATA	Preservative	s:	lce
Sample No. No. of Sample Br	NA ottles	WATER QU	JALITY SAMF	PLE DATA	Preservative Preservative	s: s:	lce
Sample No. No. of Sample Bo	N_A	WATER QU	JALITY SAMF ble Method: <u>G</u>  REMARKS	PLE DATA	Preservative Preservative	s: s:	lce
Sample No. No. of Sample Be	NA	WATER QU	JALITY SAMF ole Method: <u>G</u>  REMARKS	PLE DATA	Preservative	s: s:	lce

SITE NAME:		LARE	DATE		IME: 12	- DOL
DRAINAGE:	Bishop Creek	INVESTIGATO	RS: K	) TB		
PHYSICAL WA	TER QUALITY PARA	METERS	١	WEATHER CONDITI	ONS	
Water Temperat	ure:	(ºF or ºC)	Dissolved	Oxygen:	(m	g/L)
Conductivity:		(µmhos/cm@25	ºC) Stream or I	_ake gage reading: _	967	3.73
Turbidity:	- <u>(</u> NTU	Js) Air Temperatu	ure 68 @	r ⁰C) Baro. Pressure	21.17	(in Hg
Winds 12-24	(mph) Cloud cover_	0 (%) Precij	pitationFog	RainSleet _	Hail	_Snow
Secchi Disk:	L Depth of Disappe	ear:meter	s Depth	of Reappearance:	me	ters
Visual Condition	of Stream (check all	that apply).		Secchi Depth:		meters
Clear	Cloudy	y	Colored			
Pomarke:						
Nemarks.		No	otes			
		WATER QUALITY	SAMPLE DAT	Α		
Sample No.	<u>SL-BR-1</u>	WATER QUALITY Sample Meti	' SAMPLE DAT hod: <u>Grab</u>	A Preservatives:		
Sample No. No. of Sample E	<u>SL-BR-1</u> sottles	WATER QUALITY Sample Meth	' SAMPLE DAT hod: <u>Grab</u>	A Preservatives: _ Preservatives: _	ice Now	
Sample No. No. of Sample E	<u>5L-BR-1</u>	WATER QUALITY Sample Meth 2 REMA	Y SAMPLE DAT hod: <u>Grab</u>	A Preservatives: _ Preservatives: _	ice Nom	
Sample No. No. of Sample E 1 W	<u>5L-BR-1</u> sottles	WATER QUALITY Sample Meth 2 REMA	Y SAMPLE DAT hod: <u>Grab</u>	A Preservatives: _ Preservatives: _	Ice Nojv	2
Sample No. No. of Sample E <u>1</u> <u>0</u> <u>5</u>	SL-BR-1 sottles	WATER QUALITY Sample Meth 2 REMA	Y SAMPLE DAT hod: <u>Grab</u>	A Preservatives: _ Preservatives: _	Ice Nojv	2
Sample No. No. of Sample E <u>1</u> <u>0</u> <u>5</u>	S <u>L-BR-1</u> Bottles	WATER QUALITY Sample Meth 2 REM/	Y SAMPLE DAT hod: <u>Grab</u>	A Preservatives: _ Preservatives: _	Ice Nojv	2
Sample No. No. of Sample E <u>1</u> <u>0</u> <u>5</u>	S <u>L-BR-1</u> Bottles	WATER QUALITY Sample Meth 2 REM/	Y SAMPLE DAT hod: <u>Grab</u>	A Preservatives: _ Preservatives: _	Ice Nojv	2

; <u>b</u> (mg/L) <u>ele4. le</u> / m. <u>7.95 (in Hg</u> tail Snow
5. (mg/L) <u>ele4.</u> le/'m, <u>7.95 (</u> in Hg tail Snow
<u>6</u> (mg/L) <u>ele4.</u> le/ m. <u>7.95 (</u> in Hg tail Snow
<u>ele4.</u> (l/m. <u>7.95 (</u> in Hg
<u>2.9.5 (</u> in Hg
1ail Snow
ail Snow
meters
75 meters
las
Shuir the
MIN ON

SITE NAME:	111					
	South L.	or K	DATE:	8/23/21	_TIME:	11:05a
DRAINAGE:	Bishop Creek	INVESTIGATO	RS: TB	JB		
PHYSICAL WATE	R QUALITY PARAME	ETERS	1	WEATHER COND	ITIONS	
Water Temperatur	re: see profile	(ºF or ºC)	Dissolved	Oxygen: See	prefil	_(mg/L)
Conductivity:	68	(µmhos/cm@25	<sup>9</sup> C) Stream or	Lake gage reading	966	4. lel ms
Turbidity: Sec	chi (NTUS)	Air Temperat	ure 65 (F)	r ⁰C) Baro. Pressu	re20.9	<u>5 (in Hg)</u>
Winds 4-8 (1	mph) Cloud cover	0 (%) Prec	ipitationFog	RainSlee	etHail _	Snow
Secchi Disk: Y	Depth of Disappear:	9.5 meter	rs Depth	n of Reappearance	8	_meters
Visual Condition c	of Stream (check all tha	at apply):		Secchi Depth	8.72	meters
Clear Floating Material	Cloudy	Other:	Colored _			
Remarks: 50	nokey					
	0-	No	otes			
4						
	W		SAMPLE DAT	A		
Sample No.	SL-07-20	ATER QUALITY	Y SAMPLE DAT	A Preservatives	K	Ice
Sample No. No. of Sample Bo	W <u>5L-0P-20</u> Itles <u>4</u>	ATER QUALITY	Y SAMPLE DAT hod: <u>Grab</u> ARKS	A Preservatives Preservatives	:: <u>Н<sub>д</sub> So,</u>	lce y in one
Sample No. No. of Sample Bo	w <u>5L-0P-20</u> ttles <u>4</u>	ATER QUALITY	Y SAMPLE DAT hod: <u>Grab</u> ARKS	A Preservatives Preservatives	:- <u>Н</u> д 50	y in one
Sample No. No. of Sample Bo	W <u>5L-0P-20</u> Ittles <u>4</u>	ATER QUALITY	Y SAMPLE DAT	A Preservatives Preservatives	:: <u>Н</u> д So	yin one

# WATER TEMPERATURE AND DISSOLVED OXYGEN

DEPTH WA1 SURF (met	FROM			1		1
	ER ACE ers)	WATER TEMPERATURE (°C)	DISSOLVED OXYGEN (mg/L)	DEPTH FROM WATER SURFACE (meters)	WATER TEMPERATURE (°C)	DISSOLVED OXYGEN (mg/L)
0.	5	16,1	7.43	31	6.52	0.01
1		16.0	7.41	32	6.3	0.01
2		16.0	7,40	33	6.6	0.00
3		16.0	7.40	34	6.9	0.00
4		16.0	7,39	35	7.1	0.00
5		16.0	7.39	36	7.3	0.00
6		16.0	7.38	37	7.5	0,00
7		16.0	7.38	38	7.6	0.00
8		16.0	7.38	39	7.7	0.00
9		16.0	7,37	39.8	7,7	0.00
10	)	15.7	7.38	41		
1.		15.6	7,36	42		
12	T	14.2	7.30	43		
1:	3	9,3	8,30	- 44		
	5	6.1	8.61	- 45		
14.5	5	5.5	8.46	- 46	1	
16	5 1	4.8	8.06	47		
17	7	4.6	7.88	48		
18	3	4.5	7.55	49		
19	)	4,5	7.26	50	1	
20	)	4.5	6.95	51		
2		4.5	6.30	52	A.	
22	2	4,5	5.50	53		
23	3	4.4	4.87	54		
24	ł	4.5	3.27	55		
25	5	4.6	1.40	56		
26	6	5.0	0.15	57		
27	7	54	0.06	58		
28	3	5.7	0.05	59		

SITE NAME:	Lake Sabring DATE: 8 24/21 TIME: 10:150'
DRAINAGE:	ishop Creek INVESTIGATORS: TB JB
PHYSICAL WATER	UALITY PARAMETERS WEATHER CONDITIONS
Water Temperature:	see profile (%For %C) Dissolved Oxygen: see profile (mg/L)
Conductivity:	23 (umhos/cm@25 °C) Stream or Lake gage reading: 9099.31 ms
Turbidity: 5200	(In Hg) Air Temperature 65 (€ Ar °C) Baro. Pressure 21.50 (in Hg)
Winds 2 - 8 (mph	) Cloud cover(%) PrecipitationFogRainSleetHailSnow
Secchi Disk: V	hepth of Disappear: <u>12</u> , <u>5</u> meters Depth of Reappearance: <u>11</u> meters Secchi Depth: <u>11.75</u> meters
Visual Condition of St	ream (check all that apply):
Floating Material	Other:
Remarks:	
	Notes
Sample No.	WATER QUALITY SAMPLE DATA <u>5 - DP-5</u> Sample Method: <u>Grab</u> Preservatives: <u>Ice</u> H Preservatives: <u>HaSou in em</u>
	REMARKS
SIGNED BY:	REVIEWED BY:

SITE NAME: Lake Sabring DATE: 8/24/21 TIME: 10:40an
DRAINAGE: Bishop Creek INVESTIGATORS: TB JR
PHYSICAL WATER QUALITY RARAMETERS WEATHER CONDITIONS
Water Temperature: 5-20 profile (%F or %C) Dissolved Oxygen: 500 profile (mg/L)
Conductivity: 26 (#mhos/cm@25 °C) Stream or Lake gage reading: 9099.31 ms)
Turbidity: <u>Secchi</u> (NTUs) Air Temperature <u>65</u> Dor °C) Baro. Pressure <u>21.50</u> (in Hg)
Winds <u> み-名 (</u> mph) Cloud cover <u>(</u> (%) Precipitation <u>Fog</u> Rain <u>Sleet</u> Hail <u>Snow</u>
Secchi Disk: Y Depth of Disappear: <u>12.5</u> meters Depth of Reappearance: <u>11</u> meters
Visual Condition of Stream (check all that apply):
Floating Material Other:
Remarks: clear, vary little smalle in ovir
Notes
WATER QUALITY SAMPLE DATA
Sample No. <u>LS-JP-25</u> Sample Method: <u>Grab</u> Preservatives: <u>Ice</u>
No. of Sample Bottles Preservatives: H_504 in one
REMARKS
SIGNED BY:

Page 1 of 2

WATER TEMPERATURE AND DISSOLVED OXYGEN

508FACE 16.3 ppm 7.63 ppm

Location: Lake Sabrina 8/24/21

	DEPTH FROM WATER SURFACE (meters)	WATER TEMPERATURE (°C)	DISSOLVED OXYGEN (mg/L)	DEPTH FROM WATER SURFACE (meters)	WATER TEMPERATURE (°C)	DISSOLVED OXYGEN (mg/L)	GARMIN
	0.5	16.4	7.62	31	4,6	7.09	
	1	16.4	7.61	32	4.6	7.08	
	2	16.4	7.61	33	4.6	6.98	-
	3	16.4	7.60	34	4.5	6.95	
	4	16.4	7.59	35	4.5	6.97	
	5	16.4	7.59	36	4,5	6.96	
	6	16.4	7,58	37	4.5	6.93	
	7	16.4	7.61	38	4.5	6.93	
	8	16.4	7.63	39	4.4	6.97	
1001	9	15.5 T	8.76	40	4.4	6.98	
	10	13.4	9.65	- 41	4.4	7.10	
(rro	10.5	11.9	10.39	42	4.4	6.90	
2ª	12	10.1	10.41	43	4.4	6.88	
	13	9.3	10.38	44	4.3	6.83	
	14	8.5	10.38	45	4.3	6.72	
	15	7.6	10.26	46	4.3	6.69	
	16	7.1	10.01	47	4.3	6.45	
	17	6.5 1	9.63	48	4.3	6.28	
	18	6.1	9,40	49	4.3	6.26	MAUFE
	19	5.8	8.95	50	4.5	6.46	K
	20	5.7	8.65	51	4,4	6.46	
	21	5.3	8,10	52	4.4	6.38	
	22	5.2	7,93	53	4.4	6.23	
	23	5.1	7.75	54	4,4	6.16	
	24	5.0	7.59	55	4,4	6.00	
- •	25	4.8	7.49	56	4.4	5.98	
Move =>	26	4,8	7,46	57	4.3	5.92	
	27	4.7	7.37	58	4.3	5,84	
	28	4.7	7.22	59	4.3	5.76	
	29	4.7	7.07	60	4.3	5.65	
	30	4.6	7.08	61	4.3	5.40	

Page 2 of 2

# WATER TEMPERATURE AND DISSOLVED OXYGEN

LAKE PROFILE DATA FORM

DEPTH FROM WATER SURFACE (meters)	WATER TEMPERATURE (°C)	DISSOLVED OXYGEN (mg/L)	DEPTH FROM WATER SURFACE (meters)	WATER TEMPERATURE (°C)	DISSOLVED OXYGEN (mg/L)
62	4.3	4,45	91		
63 62.2	4.3	4.23	92		
64			93		
65			94		
66			. 95		
67			96		
68			97		
69			98		
70			99		
71			100		
72			101		
73			102		
74			103		
75			104		
76			105		
77			106		
78			107		
79			108		
80			109		
81			110		
82			111		
83			112		
84			113		
85			114		
86			115		
87			116		
88			117		
89			118		
90			119		

GPR41N 566.5

	1001100000	HO	DATE:	0/25/21	_TIME:	1.000
DRAINAGE:	Bishop Creek	INVESTIGATOR	RS: <u>T</u> 1	3 IR		
PHYSICAL WA	TER QUALITY PARAME	TERS		WEATHER CONE	DITIONS	
Water Tempera	ture: 13.7	(°F or C)	Dissolve	d Oxygen:8.	89	(mg/L)
Conductivity:	-	(µmhos/cm@25 g	<sup>o</sup> C) Stream o	r Lake gage reading	g:	
Turbidity:	- (NTUs)	Air Temperatur	re 08 (F	or ⁰C) Baro. Press	are 25.	<u> (in Hg)</u>
Winds 1 - 2	(mph) Cloud cover (	D_(%) Precipi	itationFo	gRainSle	et Hail	Snow
Secchi Disk: N	A Depth of Disappear:	meters	. Der	oth of Reappearance	e:	meters
		1.5		Secchi Dept	h:	meters
Clear	Cloudy	apply):	Colored			
Floating Materia	al	Other:	_			
Remarks: <u>&gt;1</u>	gett whisty	SMEI	es			
Sample No.		ATER QUALITY : Sample Metho	SAMPLE DA	TA Preservative	s:I	C8
Sample No. No. of Sample I	W/ NA 3ottles	ATER QUALITY : Sample Metho	SAMPLE DA	TA _ Preservative Preservative	s:l s:	ce
Sample No. No. of Sample I	W/ NA Bottles	ATER QUALITY : Sample Metho REMA	SAMPLE DA od: <u>Grab</u> RKS	TA Preservative Preservative	s:I s:	ce
Sample No. No. of Sample I	W/ NA Bottles	ATER QUALITY : Sample Metho REMA	SAMPLE DA od: <u>Grab</u> RKS	TA Preservative Preservative	s:I s:	Ce
Sample No. No. of Sample I	W/ NA Bottles	ATER QUALITY : Sample Metho REMA	SAMPLE DA od: <u>Grab</u> RKS	TA Preservative Preservative	s:I s:	Ce
Sample No. No. of Sample I	W/  Bottles	ATER QUALITY : Sample Metho REMA	SAMPLE DA od: <u>Grab</u> RKS	TA _ Preservative Preservative	s:	Ce

SITE NAME: BC below PH6 DATE: 8/25/21 TIME: 7:15	50
DRAINAGE: Bishop Creek INVESTIGATORS: TB JB	
PHYSICAL WATER QUALITY PARAMETERS WEATHER CONDITIONS	
Water Temperature: 13.6 (%F or (C)) Dissolved Oxygen: 8.94 (mg/L)	
Conductivity: 50 (µmhos/cm@25 °C) Stream or Lake gage reading:	
Turbidity: 2.28 (NTUs) Air Temperature 68 (Dor °C) Baro. Pressure 25, 40 (in	Hg)
Winds / 2 (mph) Cloud cover (%) Precipitation Fog Rain Sleet Hail Sn	ow
Secchi Disk: NA Depth of Disappear:meters Depth of Reappearance:meters	
Visual Condition of Stream (check all that apply): Clear X Cloudy Colored Floating Material Other:	rs
Remarks:	_
WATER QUALITY SAMPLE DATA	
Sample No. <u>DC-DIW-140</u> Sample Method: <u>Grab</u> Preservatives: <u>Ice</u>	
No. of Sample Bottles/ Preservatives: H3-204 in c	

DRAINAGE: <u>Bishop Creek</u> INVESTIGATORS: <u>TB</u> <u>JB</u> PHYSICAL WATER QUALITY PARAMETERS WEATHER CONDITIONS Water Temperature: <u>13.7</u> (* or <u>G</u> ) Dissolved Oxyger: <u>8.5.4</u> (mg/L) Conductivity: <u>(umhos/cm@25.9C) Streem or Lake gage reading: _</u> Turbidity: <u>(NTUs)</u> Air Temperature <u>PO</u> <u>Geor</u> *C) Baro. Pressure <u>25.15</u> (in Hg Winds <u>O</u> (mph) Cloud cover <u>O</u> (%) Precipitation _Fog _Rain _Sleet _Hall _Snow Secchi Disk: <u>MA</u> Depth of Disappearmeters Depth of Reappearance:meters Visual Condition of Stream (check all that apply): <u>Clear</u> <u>Secchi Depth:meters</u> Notes WATER QUALITY SAMPLE DATA Sample No. <u>MA</u> Sample Method: <u>Grab</u> Preservatives: <u>Lee</u> No. of Sample Bottles REMARKS SIGNED BYREVIEWED BY:		AIWAAN	PH5	DATE:	8/25/21	TIME:	7:300
PHYSICAL WATER QUALITY PARAMETERS       WEATHER CONDITIONS         Water Temperature:       13.7       (% or 6)       Dissolved Oxygen:       8.5.5.4/(mg/L)         Conductivity:	DRAINAGE: Bis	shop Creek	INVESTIGAT	ORS: 7	BJB		
Water Temperature:       13.7       (% or 6)       Dissolved Oxygen:       8.54       (mg/L)         Conductivity:	PHYSICAL WATER Q	JALITY PARAM	METERS		WEATHER CON	DITIONS	
Conductivity:	Water Temperature:	13.7	(°F or ACI)	Dissol	ved Oxvaen: 8.	54	(ma/L)
Turbidity:      (NTUs)       Air Temperature_PD_Gbr *C) Baro. Pressure 25:15 (in Hg         Winds_Q_(mph)       Cloud cover_Q_(%)       PrecipitationFogRainSleetHailSnow         Secchi Disk:       WA       Depth of Disappeer:meters       Depth of Reappearance:meters         Visual Condition of Stream (check all that apply):       Cloudy       Cloudy       Colored	Conductivity:	-	(umbos/cm@2	25 °C) Stream			_(
Winds_Q(mph)       Cloud cover_Q_(%)       PrecipitationFogRainSleetHallSnow         Secchi Disk:       MA       Depth of Disappearmeters       Depth of Reappearance:meters         Secchi Disk:       MA       Depth of Disappearmeters       Secchi Depth:meters         Visual Condition of Stream (check all that apply):       Colored	Turbidity:	(NTU:	s) Air Tempera	ature 70	(Eor °C) Baro. Press	ure 25.	15 (in Hg)
Secchi Disk: MA Depth of Disappearmeters Depth of Reappearance:meters Secchi Depth:meters Secchi Depth:Notes Secchi Depth:Notes Secchi Depth:Notes Secchi Depth:	Winds (mph)	Cloud cover	<u>(%)</u> Pre	cipitation	FogRainSl	eet <u>Hail</u>	Snow
Visual Condition of Stream (check all that apply): Clear Cloudy Other:Colored Floating Material Other: Colored Remarks: Notes Notes WATER QUALITY SAMPLE DATA WATER QUALITY SAMPLE DATA Sample No Sample Method: Grab Preservatives: No. of Sample Bottles Preservatives: REMARKS SIGNED BY: SIGNED BY: REVIEWED BY:	Secchi Disk: NA De	opth of Disappea	ar:mete	ers D	Depth of Reappearance	:e:	_meters
Visual Condition of Stream (check all that apply): Clear CloudyColored Floating Material Other: Remarks: Notes WATER QUALITY SAMPLE DATA Sample No XA Sample Method: Grab Preservatives: No. of Sample Bottles Preservatives: REMARKS SIGNED BY REVIEWED BY:					Secchi Dep	th:	meters
Remarks:	Clear Floating Material	eam (check all t Cloudy	Other:	Colore			
WATER QUALITY SAMPLE DATA          WATER QUALITY SAMPLE DATA         Sample No.	Remarks:						
WATER QUALITY SAMPLE DATA Sample No Sample Method: Grab Preservatives: No. of Sample Bottles Preservatives: REMARKS SIGNED BY:			N	lotes			
No. of Sample Bottles							
REMARKS SIGNED BY:REVIEWED BY:	Sample No.	NA	WATER QUALIT Sample Me	TY SAMPLE I	DATA	95:	Ice
	Sample No	NA	WATER QUALIT Sample Me	TY SAMPLE I	DATA Preservative	95:	lce
SIGNED BY:REVIEWED BY:	Sample No	NA	WATER QUALIT Sample Me REN	TY SAMPLE I ethod: <u>Grab</u> MARKS	DATA Preservative Preservative	95:	Ice
	Sample No No. of Sample Bottles	NA	WATER QUALIT Sample Me  REN	TY SAMPLE I ethod: <u>Grab</u> MARKS	DATA Preservative Preservative	95: 95:	

SITE NAME:	DC DC DC 000 111 DATE: 2725 721 TIME: 1. 100
	-2 -2
DRAINAGE:	Bishop Creek INVESTIGATORS: TB JB
PHYSICAL WAT	ER QUALITY PARAMETERS WEATHER CONDITIONS
Water Temperatu	re: $14.0$ (°F or °C) Dissolved Oxygen: $8.05$ (mg/L)
Conductivity:	54 (µmhos/cm@25 °C) Stream or Lake gage reading:
Turbidity: 2	86 (NTUs) Air Temperature 70 (For °C) Baro. Pressure 25.15 (in Hg
Winds O	mph) Cloud cover (%) Precipitation Fog Rain Sleet Hail Snow
Secchi Disk: NA	Depth of Disappear:meters Depth of Reappearance:meters
	Secchi Depth: meters
Visual Condition	of Stream (check all that apply): CloudyColored
loating Material	Other:
Remarks:	Notes
Sample No. No. of Sample Bo	WATER QUALITY SAMPLE DATA <u>BC-blw-PH5</u> Sample Method: <u>Grab</u> Preservatives: <u>lce</u> ttles <u>4</u> Preservatives: <u>H2504 in on</u> REMARKS

DRAINAGE:	Bishop Creek	INVESTIGAT	TORS: TB	JB		
PHYSICAL WAT		AMETERS		WEATHER CONDI	TIONS	
Water Temperatu	re: 13.10	(SE or CD)	Dissolu	ad Owner: 2 /a	9	(mg/l)
	-	("mbas/am@"			-	(ing/L)
		(µnnos/cm@2	25 =C) Stream	or Lake gage reading:	24 B	2
l urbidity:	(N	TUs) Air Tempera	ature 00 (	Fjor °C) Baro. Pressul	e 2 1.0	<u>     (</u> In Hg
Winds 0 - 1	mph) Cloud cove	r <u>0</u> (%) Pre	cipitationF	ogRainSlee	tHail	Snow
Secchi Disk: N	↓ Depth of Disap	pear:met	ters Do	epth of Reappearance		meters
Visual Condition Clear <u>K</u> Floating Material	of Stream (check a	all that apply): dy Other:	Colored	Secchi Depth		meters
Remarks:						
		ſ	Notes			
	NA	WATER QUALI	TY SAMPLE D	ATA		
Sample No.	NA	WATER QUALI	TY SAMPLE D ethod: <u>Grab</u>	ATA Preservatives	:l	Ce
Sample No. No. of Sample Bo	NA	WATER QUALI Sample M	TY SAMPLE D ethod: <u>Grab</u> MARKS	ATA Preservatives Preservatives	I	C8
Sample No. No. of Sample Bo	MA	WATER QUALI Sample M REI	TY SAMPLE D ethod: <u>Grab</u> MARKS	ATA Preservatives Preservatives	:l	ce

	BC hale OILH Plandar Print
SITE NAME:	DE DE DE TE DATE: $\frac{\delta}{\delta 5} \frac{\delta}{\delta 1}$ TIME: $\frac{\delta}{\delta 15}$
DRAINAGE:	Bishop Creek INVESTIGATORS: TB JB
PHYSICAL WAT	R QUALITY PARAMETERS WEATHER CONDITIONS
Water Temperatu	e: 13.5 (% or %) Dissolved Oxygen: 8.87 (mg/L)
Conductivity:	55 (µmhos/cm@25 °C) Stream or Lake gage reading:
Turbidity: <u>2.</u>	Le Y (NTUs) Air Temperature 67 (For °C) Baro. Pressure 24.80 (in )
Winds 0 - 1 (	nph) Cloud cover(%) PrecipitationFogRainSleetHailSno
Secchi Disk: NA	Depth of Disappear:meters Depth of Reappearance:meters
Visual Condition o Clear K Floating Material	f Stream (check all that apply): CloudyColored
Remarks:	
	Notes
	WATER QUALITY SAMPLE DATA
Sample No.	WATER QUALITY SAMPLE DATA <u>BC-DIW-PHH</u> Sample Method: <u>Grab</u> Preservatives: <u>Ice</u>
Sample No. No. of Sample Bo	WATER QUALITY SAMPLE DATA          BC-blw-PHH       Sample Method: Grab       Preservatives:
Sample No. No. of Sample Bo	WATER QUALITY SAMPLE DATA <u>BC-blw-PH4</u> Sample Method: <u>Grab</u> Preservatives: <u>lce</u> tles <u>4</u> Preservatives: <u>Hacoy in on</u> REMARKS
Sample No. No. of Sample Bo	WATER QUALITY SAMPLE DATA <u>BC-blw-PH4</u> Sample Method: <u>Grab</u> Preservatives: <u>lce</u> ttes <u>4</u> Preservatives: <u>H2594 in on</u> REMARKS

DRAINAGE:	Bishop Creek	INVESTIGAT	ORS: $T^2$	o JB	_TIME: <u>O</u>	
PHYSICAL WATER	QUALITY PARAM	ETERS		WEATHER CONDI	TIONS	
Water Temperature	13.7	(%F or (CD)	Dissolv	ed Oxygen: 2 L	16 1	ma/l )
Oraduati ita		_(	E 90) o:		-	ng/L)
Conductivity:		(µmnos/cm@23	5 ºC) Stream	or Lake gage reading:	13 00	_
Turbidity:	(NTUs)	) Air Tempera	ture 00 (°	F)or °C) Baro. Pressu	re 2 3. 8C	2(in Hg)
Winds 1-2 (mp	h) Cloud cover(	(%) Prec	cipitationF	ogRainSlee	t <u>Hail</u>	Snow
Secchi Disk: NA	Depth of Disappear	r:mete	ers De	epth of Reappearance	:m	eters
Viewal Canditian of C				Secchi Depth	:	meters
Clear	Cloudy		Colored			
loating Material		Other:				
Remarks:		N				
	v	WATER QUALIT	Y SAMPLE D	ATA		
Sample No.	NA	NATER QUALIT	Y SAMPLE D	ATA Preservatives	:lce	
Sample No.	v NA s	WATER QUALIT Sample Me	Y SAMPLE D ethod: <u>Grab</u>	ATA Preservatives Preservatives	:lce	
Sample No.	v  s	NATER QUALIT _ Sample Me 	Y SAMPLE D othod: <u>Grab</u>	ATA Preservatives Preservatives	:lce	
Sample No.	v MA	NATER QUALIT Sample Me 	Y SAMPLE D ethod: <u>Grab</u> IARKS	ATA Preservatives Preservatives	:ice	
Sample No.	v v s	NATER QUALIT Sample Me  REM	Y SAMPLE D ethod: <u>Grab</u> IARKS	ATA Preservatives Preservatives	:ice	
Sample No.	v NA s	NATER QUALIT _ Sample Me  REM	Y SAMPLE D ethod: <u>Grab</u> IARKS	ATA Preservatives Preservatives	:ice	
Sample No.	NA	NATER QUALIT _ Sample Me	Y SAMPLE D hthod: <u>Grab</u>	ATA Preservatives Preservatives	:lce	
Sample No.	NA	WATER QUALIT Sample Me REM	Y SAMPLE D othod: <u>Grab</u> IARKS	ATA Preservatives Preservatives	:lce	

SITE NAME: BC below PH3 DATE: 8/25/21 TIME: 8:500
DRAINAGE: Bishop Creek INVESTIGATORS: TB JB
PHYSICAL WATER QUALITY PARAMETERS WEATHER CONDITIONS
Water Temperature: 13.5 (F or C) Dissolved Oxygen: 8.51 (mg/L)
Conductivity: 52 (µmhos/cm@25 °C) Stream or Lake gage reading: 0,7 feet
Turbidity: 2.12 (NTUs) Air Temperature 68 (F) or °C) Baro. Pressure 23.85 (in Hg)
Winds <u>1 - 2 (</u> mph) Cloud cover <u>6</u> (%) Precipitation <u>Fog</u> Rain <u>Sleet</u> Hail <u>Snow</u>
Secchi Disk: NA Depth of Disappear:meters Depth of Reappearance:meters
Secchi Depth: meters
Clear Cloudy Colored Stream (check all that apply): Clear Cloudy Colored Cloudy Colored Cloudy Colored Cloudy Cloudy Colored Cloudy
Remarks:
Notes
WATER QUALITY SAMPLE DATA Sample No. $\underline{BC-bw-PH3}$ Sample Method: <u>Grab</u> Preservatives: <u>Ice</u>
No. of Sample Bottles
SIGNED BY:REVIEWED BY:

PHYSICAL WATER Q	JALITY PARAMI	ETERS	s: <u>1</u> 0	VEATHER CONDITIO	ONS
Vater Temperature:	13.7	(ºF or 🕥	Dissolved 0	Oxygen: 8.22	(mg/L)
conductivity:	-	(µmhos/cm@25 º	C) Stream or L	_ake gage reading: _	-
urbidity:	(NTUs)	Air Temperature	67 FD	r ⁰C) Baro. Pressure_	23.15 (in Hg)
Vinds 1 - 3 (mph)	Cloud cover	(%) Precipi	tationFog	Rain Sleet	Hail Snow
ecchi Disk: NA De	pth of Disappear	meters	Depth	of Reappearance:	meters
isual Condition of Stre	am (check all th	at apply):		Secchi Depth: _	meters
Clear Anterial	Cloudy	Other:	Colored _		
			-		
lemarks:		Note	s		and a provide the second s
	ν	VATER QUALITY S	SAMPLE DATA	Α	
Sample No.	v NA	VATER QUALITY S	SAMPLE DAT	A Preservatives: _	lce
Sample No	v NA	VATER QUALITY S	SAMPLE DAT	A Preservatives: _ Preservatives: _	lce
Sample No lo. of Sample Bottles	v NA	VATER QUALITY S _ Sample Metho  REMAN	SAMPLE DAT, od: <u>Grab</u>	A Preservatives: _ Preservatives: _	lce

SITE NAME:	oc delow fra c	DAIL	10-3/01	_TIME:	
DRAINAGE:	Bishop Creek INVESTIGATORS:	TB	JB		
PHYSICAL WATER	QUALITY PARAMETERS	WE	ATHER CONDIT	TIONS	
Water Temperature:	13.0 (%F or (C)	Dissolved Ox	ygen: 8.4	7	(mg/L)
Conductivity:	50 (µmhos/cm@25 ℃) ;	Stream or Lak	ke gage reading:	1.7	5'
Turbidity: 3.	(NTUs) Air Temperature	07 (For o	C) Baro. Pressure	e	(in Hg)
Winds O - 1 (mg	) Cloud cover $O$ (%) Precipitation	on Foa	Rain Sleet	Hail	Snow
Secchi Disk: NA	Depth of Disappear:meters	Depth o	f Reappearance:		meters
			Secchi Depth:		meters
Visual Condition of S Clear K Floating Material	tream (check all that apply): Cloudy Other:	Colored	-		
Remarks:					
	Notes				
Sample No.	WATER QUALITY SAN <u>C-blw-PH2</u> Sample Method: <u>4</u> REMARKS	IPLE DATA Grab	Preservatives: Preservatives:	<u>на</u> На 50у	in one

SITE NAME:	North Fork DATE: 8/25/21 TIME: 10:200
DRAINAGE:	Bishop Creek INVESTIGATORS: TB JB
PHYSICAL WAT	ER QUALITY PARAMETERS WEATHER CONDITIONS
Water Temperatu	ure: 13.8 (%F or 6) Dissolved Oxygen: 8.30 (mg/L)
Conductivity:	32 (µmhos/cm@25 °C) Stream or Lake gage reading: 8.95 cfs
Turbidity:	. 7-8 (NTUs) Air Temperature <u>68</u> (F) or °C) Baro. Pressure <u>21.40</u> (in Hg)
Winds 1 - 2	(mph) Cloud cover(%) PrecipitationFogRainSleetHailSnow
Secchi Disk: NA	Depth of Disappear:meters Depth of Reappearance:meters
Visual Condition	of Stream (check all that apply):
lear X loating Material	Cloudy Colored
Remarks:	
	Notes
Sample No. No. of Sample Bo	WATER QUALITY SAMPLE DATA          BC - NF - 1       Sample Method: Grab       Preservatives: Ice         ottles       4       Preservatives: Hasoy in an REMARKS

SITE NAME:	Trilade Po			/ /		
DRAINAGE:	Bishop Creek	INVESTIGATO	RS: TB	JB		
PHYSICAL WAT	ER QUALITY PARAME	TERS		WEATHER CO	NDITIONS	
Water Temperat	ure: 16.2	(°F or C)	Dissolve	ed Oxygen: 7	.22	(mg/L)
Conductivity:	23	(µmhos/cm@25	°C) Stream	or Lake gage read	ding:	
Turbidity:	.94 (NTUS)	Air Temperate	ure 686	or ⁰C) Baro. Pre	ssure 21	55 (in Hg)
Winds 5-15	(mph) Cloud cover	) (%) Preci	nitation E	og Rain	Sleet Ha	I Snow
Secchi Disk: M	A Depth of Disappear:	meter	s De	pth of Reappeara	ince:	onow
				Secchi D	epth:	meters
Visual Condition	of Stream (check all that Cloudy	t apply):	Colored			
Floating Material		Other:				
Remarks:			_			
		No	otes			
					-	
	W	ATER QUALITY	SAMPLE D	ATA	-	
Sample No.	W. BC-blw-LS	ATER QUALITY Sample Met	Y SAMPLE D	ATA Preservat	ives:	lce
Sample No. No. of Sample B	WA BC-blw-LS pottles 4	ATER QUALITY Sample Met	' SAMPLE D	ATA Preservat Preservat	ives:	lce by in one
Sample No. No. of Sample B	W BC-blw-LS ottles 4	ATER QUALITY Sample Met	Y SAMPLE D hod: <u>Grab</u>	ATA Preservat Preservat	ives:	lce
Sample No. No. of Sample B	WA BC-blw-LS pottles 4	ATER QUALITY Sample Met	Y SAMPLE D hod: <u>Grab</u>	ATA Preservat Preservat	ives:	lce by in one
Sample No. No. of Sample B	W. BC-blw-LS ottles 4	ATER QUALITY Sample Met	Y SAMPLE D	ATA Preservat Preservat	ives:	lce
Sample No. No. of Sample B	W/ BC-blw-LS ottles 4	ATER QUALITY Sample Met	Y SAMPLE D	ATA Preservat Preservat	ives:	lce by in one
Sample No. No. of Sample B	W/ BC-blw-LS ottles 4	ATER QUALITY Sample Met	Y SAMPLE D	ATA Preservat Preservat	ives:	lce by in one

DRAINAGE: <u>Bishop Creek</u> INVESTIGATORS: <u>TB</u> PHYSICAL WATER QUALITY PARAMETERS W Water Temperature: <u>15.6</u> (%F or (C) Dissolved O Conductivity: <u>31</u> (µmhos/cm@25 °C) Stream or La Turbidity: <u>2.95</u> (NTUs) Air Temperature <u>65</u> (For	JB       reather conditions       xygen:     7.24 (mg/L)
PHYSICAL WATER QUALITY PARAMETERS W Water Temperature: 15.6 (°F or °C) Dissolved O Conductivity: 31 (µmhos/cm@25 °C) Stream or La Turbidity: 3.95 (NTUs) Air Temperature 65 °F or	rEATHER CONDITIONS xygen: 7.24 (mg/L)
Water Temperature: 15.6 (%F or $(C)$ Dissolved O Conductivity: 31 (µmhos/cm@25 %C) Stream or La Turbidity: 2.95 (NTUs) Air Temperature 65 (For	xygen: <u>7.24</u> (mg/L)
Conductivity: <u>3</u> (µmhos/cm@25 °C) Stream or La Turbidity: <u>3.95</u> (NTUs) Air Temperature <u>65</u> (For	aka gaga raading:
Turbidity: 2.95 (NTUs) Air Temperature 65 For	ske gage reading.
	°C) Baro. Pressure 21.25 (in Hg)
Winds $5 - 12$ (mph) Cloud cover $O$ (%) Precipitation Fog	Rain Sleet Hail Snow
Secchi Disk: NA Depth of Disappear:meters Depth	of Reappearance:meters
Visual Condition of Stream (check all that apply):	Secchi Depth: meters
Clear Cloudy Colored _	
Remarks:	
WATER OUALITY SAMPLE DATA	
Sample No. BC-blw-SL Sample Method: Grab	Preservatives: Ice
. 1	Preservatives: 42504 in one
No. of Sample Bottles	6
No. of Sample Bottles REMARKS	
No. of Sample Bottles REMARKS	

2

				2	1		
DRAINAGE:	Bishop Creek	INVESTIGAT	ORS:	TB			
PHYSICAL WATER	QUALITY PARAME	TERS		WEATH	ER CONDITIC	ONS	
Water Temperature	15.8	(°F or C)	Dissol	ved Oxygen:	8.53	-	(mg/L)
Conductivity:	-	(µmhos/cm@2	5 ºC) Stream	n or Lake ga	ge reading:	-	_
Turbidity:	(NTUs)	Air Tempera	ture 76	(For °C) Ba	ro. Pressure	25.4	1(in Hg
Winds 1-2 (m	ph) Cloud cover_C	<u>) (%)</u> Pred	cipitation	FogRai	nSleet	_Hail _	Snow
Secchi Disk:NK	Depth of Disappear:	mete	ers [	Depth of Rea	ppearance:	_	meters
Visual Condition of	Stroom (abook all the	t opphy:		Se	cchi Depth:	_	meters
	Cloudy	арруу.	Colore	ed	-		
-loating Material`		Other:	_				
Remarks:		N	lotes				
		ATER QUALIT	Y SAMPLE	DATA			
Sample No.	NA	ATER QUALIT	Y SAMPLE	DATA Pre	servatives:		ce
Sample No. No. of Sample Bott	W W 	ATER QUALIT	Y SAMPLE	DATA Pre Pre	servatives: servatives:		ce
Sample No. No. of Sample Bott	W NA es	ATER QUALIT Sample Me	Y SAMPLE ethod: <u>Grab</u> MARKS	DATA Pre Pre	servatives:		ce

DRAINAGE: Bishop Cree	k INVESTIGATORS: TB	
PHYSICAL WATER QUALITY P.	ARAMETERS	WEATHER CONDITIONS
Water Temperature: 15.4	(°F or C) Dissolved	Oxygen: 8.70 (mg/L)
Conductivity:	(µmhos/cm@25 °C) Stream or	Lake gage reading:
Turbidity:	(NTUs) Air Temperature 760	or °C) Baro. Pressure <u>25.4</u> (in Hg)
Winds 1 - 2 (mph) Cloud co	verO(%) PrecipitationFog	RainSleetHailSnow
Secchi Disk: NA Depth of Dis	appear:meters Dept	h of Reappearance:meters
Visual Condition of Stream (chec	k all that apply):	Secchi Depth: meters
Clear Cl	oudy Colored .	
	Uther:	
Remarks:	Notes	
	WATER QUALITY SAMPLE DAT	A
Sample No.	WATER QUALITY SAMPLE DAT Sample Method: <u>Grab</u>	A Preservatives: <u>lce</u>
Sample No	WATER QUALITY SAMPLE DAT Sample Method: Grab	A Preservatives:
Sample No. <u>NA</u> No. of Sample Bottles	WATER QUALITY SAMPLE DAT Sample Method: Grab	A Preservatives: <u>Ice</u> Preservatives:
Sample No. <u>NA</u> No. of Sample Bottles	WATER QUALITY SAMPLE DAT Sample Method: Grab REMARKS	A Preservatives: lce Preservatives:
Sample No. <u>NA</u> No. of Sample Bottles	WATER QUALITY SAMPLE DAT Sample Method: Grab REMARKS	A Preservatives: lce Preservatives:

(PE OPCI)	WEATHE	RCONDITIONS	
(PE of PC))		011	
	Dissolved Oxygen:	8.61	(mg/L)
(µmhos/cm@25 °C	) Stream or Lake gag	e reading:	-
TUs) Air Temperature	77 (For °C) Bar	o. Pressure 25	5.17 (in Hg)
er O (%) Precipita	ation Fog Rair	n Sleet H	ail Snow
pear:meters	Depth of Reap	pearance:	meters
	Sec	chi Depth:	meters
all that apply): idy Other:	Colored	-	
Neter			
WATER QUALITY S	AMPLE DATA		
Sample Method	d: <u>Grab</u> Pre	servatives:	lce
	Pre	servatives:	
REMAR	KS		
	(#mhos/cm@25 °C TUs) Air Temperature r(%) Precipita pear:meters all that apply): dy Other: Notes Notes WATER QUALITY S. Sample Method REMAR	(µmhos/cm@25 °C) Stream or Lake gag         TUs) Air Temperature       Image: Colored         r	(#mhos/cm@25 °C) Stream or Lake gage reading:         TUs) Air Temperature 77 (F) r °C) Baro. Pressure 2         r(%) PrecipitationFogRainSleetH         pear:meters       Depth of Reappearance:         Baro. Pressure 2         all that apply):      Colored

RAINAGE: Bishop Creek	INVESTIGATORS:	TB			
HYSICAL WATER QUALITY PARA	METERS	WEA	THER CONDITIC	ONS	
Vater Temperature: 15.6	(°F o( °C))	Dissolved Oxy	gen: 8,58	(mg/L)	
conductivity:	(µmhos/cm@25 ℃)	Stream or Lake	a gage reading:	-	
urbidity: <u> </u>	Js) Air Temperature	77 (For °C	) Baro. Pressure	25.17 (in h	Hg)
/inds O - 1 (mph) Cloud cover	O (%) Precipita	tion Fog	Rain Sleet	Hail Sno	w
ecchi Disk: NA Depth of Disappe	ear:meters	Depth of	Reappearance:	meters	
			Secchi Depth:	meters	5
lear Cloudy		Colored			
loating Material	Other:	-			
emarks:	Notes				-
	WATER QUALITY SA	MPLE DATA			
ample No.	WATER QUALITY SA	MPLE DATA	Preservatives:	lce	
ample No	WATER QUALITY SA Sample Method	MPLE DATA	Preservatives: Preservatives:	lce	
ample No	WATER QUALITY SA Sample Method	MPLE DATA	Preservatives: Preservatives:	lce	
ample No	WATER QUALITY SA Sample Method	MPLE DATA	Preservatives: Preservatives:	lce	
ample No	WATER QUALITY SA Sample Method  REMARH	MPLE DATA	Preservatives: Preservatives:	lce	

OTTE TWINE.					,		
DRAINAGE:	Bishop Creek	INVESTIG	ATORS:	TB			
PHYSICAL WAT	ER QUALITY PARA	METERS		WEA	THER CONDI	TIONS	
Water Temperatu	re: 15.0	(ºF or @C)	Diss	olved Oxyg	gen: 8.42	8	(mg/L)
Conductivity:	-	(µmhos/cm(	@25 ºC) Stre	am or Lake	gage reading		100
Turbidity:	<u> </u>	Js) Air Tempe	erature 80	For °C)	) Baro. Pressu	re 24	. 80 (in Hg)
Winds 2-4	mph) Cloud cover_	0 (%) P	Precipitation _	Fog	Rain Slee	etHai	ISnow
Secchi Disk: N	- Depth of Disappe	ear:m	eters	Depth of I	Reappearance	:	meters
Visual Condition	of Stream (check all	that apply).			Secchi Depth		meters
Clear K	Cloudy	Other:	Cold	ored			
Domorko:		ouier.					
Remarks.			Notes	-			
		WATER QUAL	LITY SAMPL	E DATA			
Sample No.	NA	WATER QUAL Sample	LITY SAMPL Method: <u>Gral</u>	E DATA	Preservatives	::	lce
Sample No. No. of Sample Bo	NA-	WATER QUAL Sample	LITY SAMPL Method: <u>Gral</u>	E DATA	Preservatives	::	lce
Sample No. No. of Sample Bo		WATER QUAI Sample	LITY SAMPL Method: <u>Gral</u> EMARKS	E DATA	Preservatives	s:	lce
Sample No. No. of Sample Bo		WATER QUAL Sample R	LITY SAMPL Method: <u>Gral</u> EMARKS	E DATA	Preservatives	::	lce

	Delow PHY	DATE: 99	a TIME:	9:350
DRAINAGE: Bishop	Creek INVESTIGATOF	RS: TB		
PHYSICAL WATER QUALI	TY PARAMETERS	WEATHE	R CONDITIONS	
Water Temperature: 5.	0 (%F or 🕑	Dissolved Oxygen:	8.62	(mg/L)
Conductivity:	(µmhos/cm@25	<sup></sup> <sup>⁰</sup> C) Stream or Lake gag	e reading:	
Turbidity:	(NTUs) Air Temperatur	re 80 (°F or °C) Bar	Pressure 24.8	32 (in Hg)
Winds ) - 2 (mph) Clas		itation For Dain	Class Unit	Carry
Secchi Disk: NA Depth c	of Disappear: meters	Depth of Reap	SleetHall _	Snow
		Sec	chi Depth:	meters
Visual Condition of Stream ( Clear Floating Material	check all that apply): Cloudy Other:	Colored		
Remarks:				
	Note	es		
Sample No.	WATER QUALITY	SAMPLE DATA od: <u>Grab</u> Pres	ervatives:	lce
Sample No	WATER QUALITY	SAMPLE DATA od: <u>Grab</u> Pres Pres	ervatives:	lce
Sample No	WATER QUALITY	SAMPLE DATA od: <u>Grab</u> Pres Pres RKS	ervatives:	lce
Sample No No. of Sample Bottles	WATER QUALITY Sample Meth	SAMPLE DATA od: <u>Grab</u> Pres Pres RKS	ervatives:	

		FIELD	FORM			
SITE NAME:	Tailwo	ter PH3	DATE:	99	2	10:00
DRAINAGE:	Bishop Creek		DRS: TB			
PHYSICAL WATE	R QUALITY PAR	RAMETERS		WEATHE	R CONDITIONS	
Water Temperatur	e: 14.9	(ºF or OC)	Dissolve	ed Oxygen:	8.25	(mg/L)
Conductivity:	-	(µmhos/cm@2	5 ºC) Stream	or Lake gag	e reading:	-
Turbidity:	(N	ITUs) Air Temperat		For °C) Bar	o. Pressure 23	5.84 (in Hg)
Ninds 1-3 (r	mph) Cloud cove	ar 10 (%) Prec	cipitation E	og Bain	Sleet Ha	ail Snow
Secchi Disk: N	Depth of Disap	opear:mete	ers De	epth of Reap	pearance:	meters
				Sec	chi Depth:	meters
/isual Condition of Clear	f Stream (check Clou	all that apply): udy	Colored			
Floating Material		Other:				
Remarks:		N	otes			
Sample No.	NA	WATER QUALIT Sample Me	Y SAMPLE D	ATA Pres	servatives:	lce
Sample No. No. of Sample Bo	NA ttles	WATER QUALIT Sample Me	Y SAMPLE D	ATA Pres Pres	servatives:	lce
Sample No. No. of Sample Bo	NA ttles	WATER QUALIT Sample Me	Y SAMPLE D ethod: <u>Grab</u> IARKS	ATA Pres	servatives:	lce
Sample No. No. of Sample Bo	NA	WATER QUALITSample Me	Y SAMPLE D hthod: <u>Grab</u>	ATA Pres	servatives:	

SITE NAME:	below f		DATE:	77121	TIME:	10,000
DRAINAGE: Bisho	p Creek I	NVESTIGATOF	RS: TI	3	_	
PHYSICAL WATER QUAI	LITY PARAMET	ERS		WEATHER CO	NDITIONS	
Water Temperature:	5.2 (	²F or ⁰C)	Dissolve	d Oxygen:	7.19	(mg/L)
Conductivity:	- ()	umhos/cm@25	<sup>o</sup> C) Stream o	r Lake gage read	ing: <u>0</u> .	69
Turbidity:	(NTUs)	Air Temperatur	re 80 (F	or °C) Baro. Pre	ssure 23	.88 (in Hg)
Winds 1-2 (mph) Cl	oud cover0	(%) Precip	bitationFo	gRainS	SleetHai	ISnow
Secchi Disk: NA Depth	of Disappear:	meters	s Dej	oth of Reappeara	nce:	meters
	(			Secchi De	pth:	meters
Clear Floating Material	Cloudy	other:	Colored			
Remarks:						
		Note	es			
	WA	TER QUALITY	SAMPLE DA	TA		
Sample No.	wa <sup>-</sup>	TER QUALITY	SAMPLE DA	TA	/es:	Ice
Sample No.	wa <sup>-</sup>	TER QUALITY	SAMPLE DA	TA Preservati	/es:	Ice
Sample No	wa <sup>*</sup>	TER QUALITY	SAMPLE DA od: <u>Grab</u> RKS	TA _ Preservati Preservati	/es:	lce
Sample No No. of Sample Bottles	wa <sup>-</sup>	TER QUALITY : Sample Metho REMA	SAMPLE DA od: <u>Grab</u> RKS	TA _ Preservati Preservati	/es:	
Sample No No. of Sample Bottles	WA /A	TER QUALITY : Sample Metho REMA	SAMPLE DA od: <u>Grab</u> RKS	TA _ Preservati Preservati	/es:	

DRAINAGE: Bish	op Creek INVE		ГВ		
PHYSICAL WATER QUA	LITY PARAMETERS	6	WEATHER C	ONDITIONS	
ater Temperature:	15.3 (Fo	rC) Diss	olved Oxygen:	7.95	(mg/L)
conductivity:	(µmh	os/cm@25 °C) Stre	am or Lake gage re	ading:	
urbidity:	(NTUs) Air	Temperature 80	(For °C) Baro. P	ressure 23.	15 (in Hg)
/inds_3-6(mph) c	Cloud cover 15	(%) Precipitation _	FogRain	_SleetHa	ilSnow
ecchi Disk: NA Dept	h of Disappear:	meters	Depth of Reappea	rance:	meters
isual Condition of Stream	m (check all that appl	v).	Secchi	Depth:	meters
lear <u>&amp;</u> loating Material	Cloudy	Colo	pred		
emarks PH2 1	esevoir abo	wt 2-3	ower the	in usi	na)
onditto.		Notes			
	WATEF	QUALITY SAMPL	E DATA		
ample No.	watef VA s	R QUALITY SAMPL ample Method: <u>Gra</u>	E DATA	atives:	lce
ample No.	watef ⊻Às	R QUALITY SAMPL ample Method: <u>Gra</u>	E DATA D Preserva Preserva	atives:	lce
ample No	WATEF VA s	R QUALITY SAMPL ample Method: <u>Gra</u>  REMARKS	E DATA pPreserva Preserva	atives:	lce

DRAINAGE: Bishop C	reek INVESTIGATORS: T	B
PHYSICAL WATER QUALITY	PARAMETERS	WEATHER CONDITIONS
Vater Temperature: 14.	7 (%F or (C) Disso	olved Oxygen: <b>8.10</b> (mg/L)
Conductivity:	(µmhos/cm@25 °C) Strea	m or Lake gage reading: 1.62'
urbidity:	(NTUs) Air Temperature 78.5	(in Hg)
Vinds (mph) Cloud	cover(%) Precipitation	_FogRainSleetHailSnow
NA Departon	Disappediineters	Secchi Depth: meters
/isual Condition of Stream (cl	neck all that apply): Cloudy Color	ed
loating Material	Other:	
Remarks:		
	Notes	
Sample No	WATER QUALITY SAMPLE Sample Method: Grab	DATA Preservatives: Ice Preservatives:
Sample No	WATER QUALITY SAMPLE Sample Method: Grab REMARKS	DATA Preservatives: Ice Preservatives:

	FIELD FORM						
SITE NAME;	North Fork DATE: 9921 TIME: 11:30						
RAINAGE:	Bishop Creek INVESTIGATORS: TB						
PHYSICAL WA	TER QUALITY PARAMETERS WEATHER CONDITIONS						
Nater Tempera	ture: 1(a,) (% o() Dissolved Oxygen: 8.17 (mg/L)						
Conductivity:	(µmhos/cm@25 °C) Stream or Lake gage reading: 6.4 cfs						
Furbidity:	(NTUs) Air Temperature 78 (For °C) Baro. Pressure 21, 47 (in Hg)						
Winds 1-3	(mph) Cloud cover 20 (%) Precipitation Fog Rain Sleet Hail Snow						
Secchi Disk: )	/ A_Depth of Disappear:meters Depth of Reappearance:meters						
Visual Condition	Secchi Depth:meters						
	Cloudy Colored						
remarks:	Notes						
	WATER QUALITY SAMPLE DATA						
Sample No.	WATER QUALITY SAMPLE DATA						
Sample No. No. of Sample E	WATER QUALITY SAMPLE DATA          NA       Sample Method: Grab       Preservatives:       Ice         Sottles       Preservatives:						
Sample No. No. of Sample E	WATER QUALITY SAMPLE DATA          Nh       Sample Method: Grab       Preservatives:         Sottles       Preservatives:         REMARKS						
Sample No. No. of Sample E	WATER QUALITY SAMPLE DATA          Nh       Sample Method: Grab       Preservatives:         Bottles       Preservatives:         REMARKS						
Sample No. No. of Sample E	WATER QUALITY SAMPLE DATA          Nh       Sample Method: Grab       Preservatives:         Bottles       Preservatives:         REMARKS						
Sample No. No. of Sample E	WATER QUALITY SAMPLE DATA          Nh       Sample Method: Grab       Preservatives:         Bottles       Preservatives:         REMARKS						
Sample No. No. of Sample E	WATER QUALITY SAMPLE DATA          Nh       Sample Method: Grab       Preservatives:       Ice         Bottles       Preservatives:       REMARKS						
Sample No. No. of Sample E	WATER QUALITY SAMPLE DATA          MA       Sample Method: Grab       Preservatives:         Bottles       Preservatives:         REMARKS						
				0	'		
---------------------------------	-----------------------------	--------------	--------------------------------------	--------------	----------------	--------	-----------
DRAINAGE:	Bishop Creek	INVESTIC	ATORS:	TIS			
PHYSICAL WATE	R QUALITY PARA	METERS		WEAT	HER CONDI	TIONS	
Water Temperatur	16.7	_(°F • (°C)	Diss	olved Oxyge	en: 7. 2	25	(mg/L)
Conductivity:		(µmhos/cm	@25 ºC) Stre	am or Lake g	gage reading:	-	
Turbidity:	- (NTL	Js) Air Tem	perature_77	(°F or °C)	Baro. Pressur	-21.	6 (in Hg)
Winds 3-9 (n	ph) Cloud cover_	20 (%)	Precipitation	Fog F	Rain Sleet	: Hail	Snow
Secchi Disk: NA	Depth of Disappe	ear:r	neters	Depth of R	eappearance:		meters
				1	Secchi Depth:	e	meters
Clear	Stream (check all Cloudy	that apply):	Cold	ored			
Floating Material		Other:					
Remarks:			Notes				
	A. A.	WATER QUA	ALITY SAMPL	E DATA			
Sample No.	NA	WATER QUA	ALITY SAMPL a Method: <u>Gral</u>	E DATA	Preservatives:		Ice
Sample No. No. of Sample Bot	MA	WATER QUA	ALITY SAMPL e Method: <u>Gral</u>	E DATA	Preservatives:		Ice

SITE NAME:	Down For A DATE: 91912 TIME: 12.48
	Bishon Creek INVESTIGATORS TB
PHYSICAL WATE	
Water Temperatu	
Conductivity.	
	(NTUS) Air Temperature <u>FT</u> (F or C) Baro. Pressure <u>FT</u> (In Hg
Winds d- 4 (r	nph) Cloud cover <u>40</u> (%) Precipitation Fog Rain Sleet Hail Snow
Secchi Disk: N	Depth of Disappear:meters Depth of Reappearance:meters
Visual Condition of Clear	f Stream (check all that apply): Cloudy Colored Colored Colored
Remarks:	
	Notes
Sample No. No. of Sample Bot	WATER QUALITY SAMPLE DATA          MATER QUALITY SAMPLE DATA         Mathematical Sample Method: Grab       Preservatives:         tles          Mathematical REMARKS       Preservatives:

HYSICAL WATER QUALITY PARAMETERS       WEATHER CONDITIONS         Vater Temperature:       See prof. ("F or %)       Dissolved Oxygen:       See prof. (mg/L)         vonductivity:       JH       (umhos/cm@25 %) Stream or Lake gage reading:       909 (b. 74 %)         urbidity:       Sec.h.;       (NTUs)       Air Temperature       Sec.f.;       r%) Precipitation       Fog       Rain       Steet       Alian       Snow         website       Y       Depth of Disappear:       1       meters       Depth of Reappearance:       9, 5       meters         isual Condition of Stream (check all that apply):       Iser       Colored       Secchi Depth:       10.25 meters         isual Condition of Stream (check all that apply):       Iser       Colored       Secchi Depth:       10.25 meters         isual Condition of Stream (check all that apply):       Iser       Colored       Secchi Depth:       10.25 meters         isual Condition of Stream (check all that apply):       Iser       Colored       Sechi Depth:       10.25 meters         iser       Notes       Notes       Notes       Notes       Sechi Depth:       10.25 Meters         water QUALITY SAMPLE DATA       Sample Not.       LS-DP - 8       Sample Method: Grab       Preservatives:       Lee         o. of	HYSICAL WATER QUALITY RARAMETERS WEATHER CONDITIONS Vater Temperature: <u>See profile</u> (# or %) Dissolved Oxygen: <u>See profile</u> (n	
Vater Temperature:       Set Prof. (mg/L) (# For %C) Dissolved Oxygen:       Set Prof. (mg/L) (mg/L)         bonductivity:	Vater Temperature: <u>See profile</u> (# or %) Dissolved Oxygen: <u>See profile</u> (n	
Conductivity:	311 90.01	ng/L)
Turbidity:       Secchi       (NTUs)       Air Temperature       Sechi proc) Baro. Pressure       Al-55 (in High Minds         Winds       H-8 (mph)       Cloud cover       (%)       Precipitation       Fog       Rain       Sleet       Hail       Snow         Secchi Disk:       Y       Depth of Disappear:       11       meters       Depth of Reappearance:       9.5       meters         Visual Condition of Stream (check all that apply):       Colored	Conductivity:(µmhos/cm@25 °C) Stream or Lake gage reading:	,74.
Winds <u>H - B</u> (mph) Cloud cover       (%) PrecipitationFogRainSleetHailSnow         Secchi Disk: Y Depth of Disappear11 meters Depth of Reappearance: 9,5 meters         Secchi Depth: 10.25 meters         Visual Condition of Stream (check all that apply):         Clear         Cloudy Other:         Cloudy Other:         Cloudy Other:         Notes         Notes         WATER QUALITY SAMPLE DATA         Sample No.       LS-DP- 8         Sample No.       Sample Method: Grab         Yeservatives:       Ice         No. of Sample Bottles       H         Ho. of Sample Bottles       H         Ho. of Sample Bottles       H         Ho. of Sample Bottles       H	Turbidity: Secchi (NTUs) Air Temperature 52 (°F) r °C) Baro. Pressure 21-53	<u>5 (</u> in Hg)
Secchi Disk: Y       Depth of Disappear: 11 meters       Depth of Reappearance: 9,5 meters         Secchi Depth: 10.25 meters       Secchi Depth: 10.25 meters         Visual Condition of Stream (check all that apply):       Colored	Winds <u> 4 – 8 (</u> mph) Cloud cover <b>O</b> (%) PrecipitationFogRainSleetHail	Snow
Visual Condition of Stream (check all that apply):       Colored         Clear       Colored         -Toating Material       Other:         Remarks:       Notes         Notes       Watter QUALITY SAMPLE DATA         Sample No.       LS-DP-8       Sample Method: Grab       Preservatives:       Ice         No. of Sample Bottles       H       Preservatives:       Ice       REMARKS	Secchi Disk: Y Depth of Disappear: <u>11</u> meters Depth of Reappearance: <u>9,5</u> m	eters
Colored	Visual Condition of Stream (check all that apply):	meters
Remarks:	Clear Cloudy Other: Colored	
Notes         WATER QUALITY SAMPLE DATA         Sample No.         LS-DP-8         Sample Method: Grab         Preservatives:		
WATER QUALITY SAMPLE DATA Sample No. <u>LS-DP-8</u> Sample Method: <u>Grab</u> Preservatives: <u>Ice</u> No. of Sample Bottles <u>Hasoyinem</u> REMARKS	Remarks: Notes	
WATER QUALITY SAMPLE DATA Sample No. <u>LS-DP-8</u> Sample Method: <u>Grab</u> Preservatives: <u>Ice</u> No. of Sample Bottles <u>HaSoyinen</u> REMARKS		
Sample No. <u>25 DP 0</u> Sample Method: <u>Grab</u> Preservatives: <u>Ice</u> No. of Sample Bottles <u>Hadoy in and</u> REMARKS		-
No. of Sample Bottles Preservatives: <u>173.50 4 1 A 2 V 4</u> REMARKS	WATER QUALITY SAMPLE DATA	
REWARKS	WATER QUALITY SAMPLE DATA Sample No. <u>LS-DP-8</u> Sample Method: <u>Grab</u> Preservatives: <u>Ice</u>	
	WATER QUALITY SAMPLE DATA Sample No. <u>LS-DP-8</u> Sample Method: <u>Grab</u> Preservatives: <u>Ice</u> No. of Sample Bottles <u>Ha504</u> Preservatives: <u>Ha504</u>	iver
	WATER QUALITY SAMPLE DATA Sample No. <u>L5-DP-8</u> Sample Method: <u>Grab</u> Preservatives: <u>Ice</u> No. of Sample Bottles <u>4</u> Preservatives: <u>H5504</u> REMARKS	inen
	WATER QUALITY SAMPLE DATA Sample No. <u>LS-DP-8</u> Sample Method: <u>Grab</u> Preservatives: <u>Ice</u> No. of Sample Bottles <u>4</u> Preservatives: <u>Hafoy</u> REMARKS	inon
	WATER QUALITY SAMPLE DATA Sample No. <u>LS-DP-8</u> Sample Method: <u>Grab</u> Preservatives: <u>Ice</u> No. of Sample Bottles <u>4</u> Preservatives: <u>Ha504</u> REMARKS	inong

DRAINAGE:       Bishop Creek       INVESTIGATORS:       TB       TB         PHYSICAL WATER QUALITY PARAMETERS       WEATHER CONDITIONS         Water Temperature:       See price       (rF or 9C)       Dissolved Oxygen:       See price       (mg/L)         Conductivity:       3.0       (whos/cm@25 %) Stream or Lake gage reading:       9.0 %L.74 %         Turbidity:       Secchi       (NTUs)       Air Temperature.       Sec for %C) Baro. Pressure.       21.55 (in Hg)         Winds       1.2 (mph)       Cloud cover       (%) Precipitation       Fog_ Rain       Steet       Hall       Snow         Secchi Disk:       V       Depth of Disappear:       Imeters       Depth of Reappearance:       9.5 meters         Visual Condition of Stream (check all that apply):       Colored	SITE NAME: Lalle Sabring DATE: 9/20/21 TIME: 10:450
PHYSICAL WATER QUALITY PARAMETERS       WEATHER CONDITIONS         Water Temperature:       See frail (PF or *C)       Dissolved Oxygen:       See frail (mg/L)         Conductivity:       30       (whos/cm@25 *C) Stream or Lake gage reading:       90%.74 *         Turbidity:       Secchi (NTUs)       Air Temperature_52 (F) or *C) Baro. Pressure 21:55 (in Hg)         Ninds       1-2 (mph)       Cloud cover_0_(%)       PrecipitationFogRainSleetHallSnow         Secchi Disk:       Y       Depth of Disappear:	DRAINAGE: Bishop Creek INVESTIGATORS: TB, TB
Water Temperature:       Support       (#F or %C)       Dissolved Oxygen:       Support       Support       (mg/L)         Conductivity:       30       (umhos/cm@25 %C) Stream or Lake gage reading:       90.90.4.74 m         Turbidity:       Secch       (NTUs)       Air Temperature:       52.76 m* C) Baro. Pressure:       21.55 (in Hg)         Winds       J-21 (mph)       Cloud cover       (%)       Precipitation       FogRainSteetHail	PHYSICAL WATER QUALITY PARAMETERS WEATHER CONDITIONS
Conductivity: <u>30</u> (whos/cm@25 %C) Stream or Lake gage reading: <u>9096</u> .74 ~ Turbidity: <u>Secch</u> (NTUs) Air Temperature <u>52</u> for %C) Baro. Pressure <u>21.55</u> (in Hg) Winds <u>1-3</u> (mph) Cloud cover <u>0</u> (%) Precipitation <u>Fog</u> Rain <u>Sleet</u> <u>Hall</u> <u>Snow</u> Secchi Disk: <u>7</u> Depth of Disappear. <u>11</u> meters Depth of Reappearance: <u>9.5</u> meters Secchi Depth: <u>10.35</u> meters Visual Condition of Stream (check all that apply): <u>Cloudy</u> <u>Cloudy</u> <u>Colored</u> =	Water Temperature: See Nrof. ( (PF or °C) Dissolved Oxygen: See Nrof. ( (mg/L)
Turbidity:       Social (NTUs)       Air Temperature       Social (In Hg)         Winds       Image: Social (In Hg)       Control (In Hg)         Winds       Image: Social (In Hg)       Control (In Hg)         Secchi Disk:       Y       Depth of Disappear:       Image: Social (In Hg)         Secchi Disk:       Y       Depth of Disappear:       Image: Social (In Hg)         Visual Condition of Stream (check all that apply):       Colored       Social (In Hg)         Clear       Cloudy       Colored       Social (In Hg)         Visual Condition of Stream (check all that apply):       Colored       Social (In Hg)         Clear       Other:       Colored       Social (In Hg)         WATER QUALITY SAMPLE DATA       Somple No.       LS - D - D Sample Method: Grab       Preservatives: Hg Solg (In env)         REMARKS       Final (In Hg)       Preservatives: Hg Solg (In env)       REMARKS	Conductivity: 30 (umhos/cm@25 °C) Stream or Lake gage reading: 9096.74
Winds       1.3 (mph)       Cloud cover	Turbidity: Secchi (NTUs) Air Temperature 52 (For °C) Baro. Pressure 21.55 (in Hg)
Secchi Disk:       You Depth of Disappear:       Image: Secchi Depth of Reappearance:       9.5 meters         Visual Condition of Stream (check all that apply):       Colored       Image: Secchi Depth:       10.25 meters         Clear       Colored       Image: Colored       Image: Colored       Image: Colored       Image: Colored         Remarks:       Notes       Image: Colored       Image: Colo	Winds L - 2 (mph) Cloud cover (%) Precipitation Fog Rain Sleet Hail Snow
1       Secchi Depth: 10.25 meters         Visual Condition of Stream (check all that apply):       Colored	Secchi Disk: V Depth of Disappear:meters Depth of Reappearance:meters
Visual condition of stream (check all that appy):       Colored         Clear       Colored         Floating Meterial          Remarks:	Secchi Depth: <u>10.25</u> meters
Remarks:	Clear Cloudy Colored Floating Material Other:
WATER QUALITY SAMPLE DATA         Sample No.       LS - DP - 2D Sample Method: Grab       Preservatives:         No. of Sample Bottles       H       Preservatives:         REMARKS           Signed by           Signed by           BEVIEWED BY	Remarks:
WATER QUALITY SAMPLE DATA Sample No. <u>LS-DP-2D</u> Sample Method: <u>Grab</u> Preservatives: <u>lce</u> No. of Sample Bottles <u>H_Sdy; now</u> REMARKS	Notes
WATER QUALITY SAMPLE DATA Sample No. <u>L5-DF-2D</u> Sample Method: <u>Grab</u> Preservatives: <u>Ice</u> No. of Sample Bottles <u>H_504</u> ; norr REMARKS	
WATER QUALITY SAMPLE DATA Sample No. <u>L5-DF-2D</u> Sample Method: <u>Grab</u> Preservatives: <u>Ice</u> No. of Sample Bottles <u>H</u> _504 in ord REMARKS SIGNED BY: REVIEWED BY:	
Sample No. <u>L5-DP-2D</u> Sample Method: <u>Grab</u> Preservatives: <u>Ice</u> No. of Sample Bottles <u>H_564; non</u> REMARKS SIGNED BY:	
No. of Sample Bottles	Sample No. LS - NP - 2D Sample Mathed: Croh Breastructives:
REMARKS	No of Semple Rottles
SIGNED BY:	REMARKS
SIGNED BY:	
SIGNED BY	
SIGNED BY	
SIGNED BY: REVIEWED BY:	
	SIGNED BY:REVIEWED BY:

SITE NAME:	South La	.14	DATE:	7/21/21	TIME:	10, 25 0
DRAINAGE:	Bishop Creek IN	VESTIGATORS:		JB		
PHYSICAL WATER	QUALITY RARAMETE	ERS	v	EATHER CON	DITIONS	
Water Temperature	See pretiv (9)	<sup>=</sup> or ºC)	Dissolved (	Dxygen: Sul	prosile	_(mg/L)
Conductivity:	<u> </u>	mhos/cm@25 ºC)	Stream or L	ake gage readir	ng: 96	48.37 m
Turbidity: Sec	ch, (NTUS)	Air Temperature_	61050	°C) Baro. Press	sure 21. 2	25 (in Hg)
Winds 1-3 (m	ab) Cloud cover 0	(%) Precipitat	ion For	Rain SI	eet Hail	Snow
Secchi Disk: V	Depth of Disappear:	F_meters	Depth	of Reappearan	ce: 5.5	eneters
)				Secchi Dep	oth: 6.2	5 meters
Visual Condition of Clear	Stream (check all that a Cloudy	ipply):	Colored			
Floating Material		ther:	-			
Remarks: 500	okey					
	U	Notes				
Sample No. No. of Sample Bot	WAT 5 <u>L-D9-4</u> les <u>4</u>	TER QUALITY SA Sample Method	MPLE DAT.	A Preservativ Preservativ	res: res: <u>HJSƏ</u>	lce 4 in one

DRAINAGE:	Bishop Creek INVESTIGATORS: 15 JD
PHYSICAL WAT	ER QUALITY PARAMETERS WEATHER CONDITIONS
Water Temperatu	re: <u>See prof. (</u> @For @C) Dissolved Oxygen: <u>See prof. (</u> mg/L)
Conductivity:	9D (µmhos/cm@25 °C) Stream or Lake gage reading: 9648.37 m
Turbidity: 52	Chi (NTUs) Air Temperature 6 (For °C) Baro. Pressure 21.25 (in Hg)
Winds 1-3 (	mph) Cloud cover(%) PrecipitationFogRainSleetHailSnow
Secchi Disk: Y	Depth of Disappear: 7 meters Depth of Reappearance: 5.5 meters
	Secchi Depth: <u>6:25</u> meters
Clear	Cloudy Colored Colored
Floating Material	Other:
Remarks: 5r	New
Sample No. No. of Sample Bo	WATER QUALITY SAMPLE DATA

DRAINAGE:       Bishop Greek       INVESTIGATORS:      B       TB         DRAINAGE:       Bishop Greek       INVESTIGATORS:      B       TB         PHYSICAL WATER QUALITY PARAMETERS       WEATHER CONDITIONS         Water Temperature:       [2,1]       (#f or %)       Dissolved Oxygen:       9,07       (mgl.)         Conductivity:		PH6	ATE: 9/12/21 TIME	7:30
Draindy-dee:			TR TR	
PHYSICAL WATER QUALITY PARAMETERS       WEATHER CONDITIONS         Water Temperature:       12,1       (# or %)       Dissolved Oxygen:       9,07       (mg/t)         Conductivity:	DRAINAGE: BISNOP Creek	INVESTIGATORS:		
Water Temperature:       12,1       (# or %)       Dissolved Oxygen:       9,07       (mg/t)         Conductivity:	PHYSICAL WATER QUALITY PARAM	METERS	WEATHER CONDITIONS	
Conductivity:	Water Temperature: 12.1	(ºF or ºC) D	issolved Oxygen: 9,07	(mg/L)
Turbidity:      (NTUs)       Air Temperature (%) of some of the server o	Conductivity:	(µmhos/cm@25 °C) Si	tream or Lake gage reading:	-
Winds      (mph)       Cloud cover      (%)       PrecipitationFogRainSteetHailSnow.         Secchi Disk:       MA       Depth of Disappear:meters       Depth of Reappearance:meters         Visual Condition of Stream (check all that apply):	Turbidity:(NTU:	s) Air Temperature	e(°F or °C) Baro. Pressure_22	5.60(in Hg)
Secchi Disk: MA Depth of Disappearmeters       Depth of Reappearance:meters         Secchi Depth:meters       Secchi Depth:meters         Visual Condition of Stream (check all that apply):       Colored	Winds	(%) Precipitation	nFogRainSleetH	ailSnow
Secchi Depth:      meters         Clear       Cloudy       Colored         Floating Material      Other:      Colored         Remarks:      Notes         Smokke Rilleo Aire - Hazy         WATER QUALITY SAMPLE DATA         Sample No.	Secchi Disk: NA Depth of Disappea	/ ar:meters	Depth of Reappearance:	meters
Vacar Columnol of Shear (Check an that apply). Colored	Viewal Condition of Stream (shock all t	that another	Secchi Depth:	meters
Remarks:	Clear Cloudy	C	olored	
Notes          Smoke Filles Air - Hazy         WATER QUALITY SAMPLE DATA         Sample No.       MA         Sample Method:       Grab         Preservatives:       Ice         No. of Sample Bottles       Preservatives:         REMARKS	Bemarke:			
Smokke Filles Airz - Hazy         WATER QUALITY SAMPLE DATA         Sample No.       NA         Sample Method:       Grab         Preservatives:       Ice         No. of Sample Bottles       Preservatives:         REMARKS	Cinarka.	Notes		
WATER QUALITY SAMPLE DATA Sample No Sample Method: Grab Preservatives: No. of Sample Bottles Preservatives: REMARKS				
Sample No Sample Method: <u>Grab</u> Preservatives: Ice		WATER QUALITY SAME		
No. of Sample Bottles Preservatives: REMARKS				
REMARKS	Sample No.	Sample Method: <u>G</u>	rab Preservatives:	lce
	Sample No	Sample Method: <u>G</u>	rab Preservatives: Preservatives:	lce
	Sample No	Sample Method: <u>G</u>	rab Preservatives: Preservatives:	lce
	Sample No. <u>MA</u> No. of Sample Bottles	Sample Method: <u>G</u>  REMARKS	rab Preservatives: Preservatives:	lce
SIGNED BY REVIEWED BY	Sample No	Sample Method: <u>G</u>  REMARKS	rab Preservatives: Preservatives:	lce

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DRAINAGE: Bishop Creek INVESTIGATORS: TR TR
We a ther conditions
Water Temperature: (1.) (4+ or 4C) Dissolved Oxygen: (mg/L)
Conductivity:(#mhos/cm@25 °C) Stream or Lake gage reading:
Turbidity: <u>Z, (a)</u> (NTUs) Air Temperature <u>Cers</u> (°F or °C) Baro. Pressure <u>Z5, (a)</u> (in He
Winds <u>O - (</u> mph) Cloud cover <u>(</u> %) Precipitation <u>Fog</u> Rain <u>Sleet</u> Hail <u>Snow</u>
Secchi Disk: NA Depth of Disappear:meters Depth of Reappearance:meters
Visual Condition of Stream (check all that apply): Clear Cloudy Colored Floating Material Other:
Remarks:
Notes
WATER QUALITY SAMPLE DATA Sample No. <u>BC-blw-PHb</u> Sample Method: <u>Grab</u> Preservatives: <u>Ice</u>
WATER QUALITY SAMPLE DATA Sample No. <u>BC-blw-PHb</u> Sample Method: <u>Grab</u> Preservatives: <u>Ice</u> No. of Sample Bottles <u>4</u> Preservatives: <u>H350y in on</u> REMARKS

SITE NAME: 10-1WATCH THO DATE: 1/22/21 TIME: 0.000
DRAINAGE: Bishop Creek INVESTIGATORS: JB TB
PHYSICAL WATER QUALITY PARAMETERS WEATHER CONDITIONS
Water Temperature: 12, 0 (% or %) Dissolved Oxygen: 8,88 (mg/L)
Conductivity: (µmhos/cm@25 °C) Stream or Lake gage reading:
Turbidity: - (NTUs) Air Temperature 66.2 For °C) Baro. Pressure 25.35 (in H
Winds O <sup>-1</sup> (mph) Cloud cover (%) Precipitation For Bain Sleet Hail Snow
Secchi Disk: // A Depth of Disappear:meters Depth of Reappearance:meters
Secchi Depth: meters
Visual Condition of Stream (check all that apply): Clear Cloudy Colored Cloudy Floating Material Other:
Remarks:
Notes
WATER QUALITY SAMPLE DATA
Sample No. NA Sample Method: Grab Preservatives: Ice
No. of Sample Bottles Preservatives:
No. of Sample Bottles Preservatives:
No. of Sample Bottles Preservatives: REMARKS

SITE NAME:       BC blow PHS       DATE:       9/22/21       TIME:       8:15 c         DRAINAGE:       Bishop Creek       INVESTIGATORS:       TB       TB         PHYSICAL WATER QUALITY PARAMETERS       WEATHER CONDITIONS         Water Temperature:       12.3       (°F or °C)       Dissolved Oxygen:       9.11       (mg/L)         Conductivity:      G2       (umbos/cm@25 °C) Stream or Lake gage reading:	
DRAINAGE: Bishop Creek INVESTIGATORS:TB	SITE NAME: BC below PH5 DATE: 9/22/21 TIME: 8:15 a.
PHYSICAL WATER QUALITY PARAMETERS       WEATHER CONDITIONS         Water Temperature:       12,3       (* or *C)       Dissolved Oxygen:       9,11       (mg/L)         Conductivity:	DRAINAGE: Bishop Creek INVESTIGATORS: JB TB
Water Temperature:       12.3       (% or %)       Dissolved Oxygen:       9.11       (mg/L)         Conductivity:	PHYSICAL WATER QUALITY PARAMETERS WEATHER CONDITIONS
Conductivity: <u>62</u> (umhos/cm@25 °C) Stream or Lake gage reading:	Water Temperature: 12.3 (% or %) Dissolved Oxygen: 9.11 (mg/L)
Turbidity:       3,15       (NTUs)       Air Temperature (\$3.3 c) or *C) Baro. Pressure 25.35 (in Hg)         Winds C_1 (mph)       Cloud cover       (%)       PrecipitationFogRainSleetHallSnow         Secchi Disk:       MA       Depth of Disappear:meters       Depth of Reeppearance:meters         Secchi Disk:       MA       Depth of Disappear:meters       Depth of Reeppearance:meters         Visual Condition of Stream (check all that apply):       Colored	Conductivity: <u>GZ</u> (µmhos/cm@25 °C) Stream or Lake gage reading:
Winds O(mph)       Cloud cover(%)       PrecipitationFogRainSleetHallSnow         Secchi Disk:       M       Depth of Disappear:meters       Depth of Reappearance:meters         Visual Condition of Stream (check all that apply):       Colored	Turbidity: 3,15 (NTUs) Air Temperature 68.3 For °C) Baro. Pressure 25.35 (in Hg)
Secchi Disk: WA Depth of Disappearmeters Depth of Reappearance:meters Secchi Depth:meters Secchi Depth:meters Cloudy ClearCloudy Other:Colored	Winds O -1 (mph) Cloud cover (%) Precipitation Fog Rain Sleet Hail Snow
Secchi Depth:	Secchi Disk: NA Depth of Disappear:meters Depth of Reappearance:meters
Visual Condition of Sireal (Check all that apply): Colored	Viewel Candition of Stream (shock all that apply)
Ploating Material     Other:       Remarks:	Clear Cloudy Colored
Notes         SMOKEY HAZY AIR         WATER QUALITY SAMPLE DATA         Sample No.       BC-blw-PHS Sample Method: Grab       Preservatives: Ice         No. of Sample Bottles        Preservatives: Ice         REMARKS	Floating Material Other:
WATER QUALITY SAMPLE DATA Sample No. <u>BC-blw-PH5</u> Sample Method: <u>Grab</u> Preservatives: <u>Ice</u> No. of Sample Bottles <u>4</u> Preservatives: <u>HaSO4 in ormana</u> REMARKS SIGNED BY	Remarks:Notes
WATER QUALITY SAMPLE DATA Sample No. <u>BC-blw-PH5</u> Sample Method: <u>Grab</u> Preservatives: <u>lce</u> No. of Sample Bottles <u>4</u> Preservatives: <u>H3504 in en</u> REMARKS SIGNED BY:	
Sample No.     DC-0100-1115     Sample Method: Grab     Preservatives:     Ice       No. of Sample Bottles     4     Preservatives:     H3504 in on       REMARKS	WATER QUALITY SAMPLE DATA
REMARKS	Sample No. <u>DC-0,00-1715</u> Sample Method: <u>Grab</u> Preservatives: <u>Ice</u>
	REMARKS
SIGNED BY: REVIEWED BY:	
	SIGNED BY:

SITE NAME:       Tail Walk       PH 4       DATE:       9/22/21         DRAINAGE:       Bishop Creek       INVESTIGATORS:       TB       JB         PHYSICAL WATER QUALITY PARAMETERS       WEATHER CO         Water Temperature:       II.7       (%F or G)       Dissolved Oxygen:       C         Conductivity:	
DRAINAGE: <u>Bishop Creek</u> INVESTIGATORS: <u>TB</u> <u>B</u> PHYSICAL WATER QUALITY PARAMETERS WEATHER CO Water Temperature: <u>11,7</u> (°F or <u>6</u> ) Dissolved Oxygen: <u>C</u> Conductivity: <u>(mhos/cm@25 °C) Stream or Lake gage read</u> Turbidity: <u>(nTUs)</u> Air Temperature <u>Grif</u> (°F or °C) Baro. Pre- Winds <u>(mph)</u> Cloud cover <u>(%)</u> (%) Precipitation <u>Fog</u> <u>Rain</u> Secchi Disk: <u>MA</u> Depth of Disappear: <u>meters</u> Depth of Reappeara Secchi Disk: <u>MA</u> Depth of Disappear: <u>Cloudy</u> <u>Colored</u> <u>Secchi Di</u> Yisual Condition of Stream (check all that apply): Clear <u>Cloudy</u> <u>Other</u> <u>Colored</u> <u>Secchi Di</u> Remarks: <u>Notes</u> SMOCCEX HM2X WATER QUALITY SAMPLE DATA Sample No. <u>MA</u> Sample Method: <u>Grab</u> Preservat No. of Sample Bottles <u>Preservat</u>	IDITIONS <u>18</u> (mg/L) ng: sure <u>24.95</u> (in Hg) leetHailSnow nce:meters pth:meters
PHYSICAL WATER QUALITY PARAMETERS       WEATHER CO         Water Temperature:       11.7       (% or 6)       Dissolved Oxygen:       C         Conductivity:	IDITIONS <u>18</u> (mg/L) ng: sure <u>24.95</u> (in Hg) leetHailSnow nce:meters pth:meters
Water Temperature:       11.7       (% or 6)       Dissolved Oxygen:          Conductivity:	<u>118</u> (mg/L) ng: sure <u>24.95</u> (in Hg) leetHailSnow nce:meters pth:meters
Conductivity:	ng: sure <u>24.95 (</u> in Hg) leetHailSnow nce:meters pth:meters
Furbidity:      (NTUs)       Air Temperature        (% F or °C) Baro. Pre         Winds       (mph)       Cloud cover       (%)       Precipitation       Fog       Rain	sure <u>24.95 (</u> in Hgj leet <u>Hail</u> Snow nce: <u>meters</u> pth: <u>meters</u>
Winds       (mph) Cloud cover       (%) PrecipitationFogRain         Secchi Disk:       MA Depth of Disappear: meters       Depth of Reappeara         Secchi Disk:       MA Depth of Disappear: meters       Depth of Reappeara         Visual Condition of Stream (check all that apply):       Colored       Secchi D         Clear       Cloudy       Colored       Colored         Toating Material        Notes	leetHailSnow ice:meters pth:meters
Secchi Disk: MA Depth of Disappear:meters Depth of Reappeara Secchi D //sual Condition of Stream (check all that apply): ClearColoredColored Toating MaterialOther:Colored Remarks:Notes SMOKEY HM2Y WATER QUALITY SAMPLE DATA Sample No Sample Method: Grab Preservat No. of Sample Bottles Preservat	oce:meters
Visual Condition of Stream (check all that apply):       Colored         Cloudy       Other:      Colored         Remarks:      Notes         SMOKEX       HM2X         WATER QUALITY SAMPLE DATA         Sample No.       MA         Sample Bottles	oth: meters
Visual Condition of Stream (check all that apply): Clear Colored Colored  Premarks: Notes  SMOKEY ++**2Y  WATER QUALITY SAMPLE DATA WATER QUALITY SAMPLE DATA Sample No Sample Method: Grab Preservat Vo. of Sample Bottles Preservat	
Contact of Sample Bottles       Other:	
Remarks:       Notes         SMOKEY HKZY         WATER QUALITY SAMPLE DATA         Sample No.       MA         Sample No.       MA         Sample No.       MA         Sample Bottles       Preservat	
WATER QUALITY SAMPLE DATA Sample No Sample Method: Grab Preservat Jo. of Sample Bottles Preservat	
WATER QUALITY SAMPLE DATA Sample No. <u>NA</u> Sample Method: <u>Grab</u> Preservat	
No. of Sample Bottles Preservat	
	ves: Ice
REMARKS	ves: lce
	/es:
SIGNED BY:	/es:

BISHOP CREEK WATER QUALITY STUDY
FIELD FORM

SITE NAME:	BC below PH4 DATE: 9/22/21 TIME: 8:450
DRAINAGE:	Bishop Creek INVESTIGATORS: JB TB
PHYSICAL WATER	QUALITY PARAMETERS WEATHER CONDITIONS
Water Temperature:	12. Z (%F or %C) Dissolved Oxygen: 9, Z7 (mg/L)
Conductivity:	(a) (µmhos/cm@25 °C) Stream or Lake gage reading:
Turbidity: 2,6	(NTUs) Air Temperature 72,0,0°F) or °C) Baro. Pressure 24,95 (in Hg)
ch .	id in the second se
Winds (mpl	n) Cloud cover(%) PrecipitationFogRainSleetHailSnow
Deccill Disk. NA	Septil of Disappearinders Septil of reappearanceinders Secchi Depth: meters
Visual Condition of S Clear Floating Material	tream (check all that apply): Cloudy Colored Colored Colored
Remarks:	
	Notes
	KET AIK
	KET AIK
	WATER QUALITY SAMPLE DATA
Sample No.	WATER QUALITY SAMPLE DATA SC-blw-PHY Sample Method: Grab Preservatives: lce
Sample No.	WATER QUALITY SAMPLE DATA <u>SC-blw-PH4</u> Sample Method: <u>Grab</u> Preservatives: <u>lce</u> <u>y</u> Preservatives: <u>H2504 in one</u> REMARKS
Sample No.	WATER QUALITY SAMPLE DATA SC-blw-PHY Sample Method: Grab Preservatives: Ice s _4_ Preservatives: H2504 in one REMARKS

		PHD	9	122121	TIME	7:100
SITE NAME:	lailwater.		_DATE: _	100 101		
DRAINAGE:	Bishop Creek II	NVESTIGATORS	S: JB	TB		
PHYSICAL WATE	QUALITY PARAMET	ERS	W	EATHER CONDIT	IONS	
Water Temperature	13.0 (	For ℃)	Dissolved O	xygen: <u>8,0</u>	64	(mg/L)
Conductivity:	- (4	mhos/cm@25 ºC	C) Stream or La	ke gage reading:	-	-
Turbidity:	(NTUs)	Air Temperature	70,5 (°F or	C) Baro. Pressure	23.9	5 (in Hg)
Winds 🔘 (m	ph) Cloud cover	(%) Precipit	ation Fog	Rain Sleet	Hail	Snow
Secchi Disk:	Depth of Disappear:	meters	Depth o	f Reappearance:		meters
,,				Secchi Depth:		meters
Visual Condition of Clear	Stream (check all that a Cloudy	apply):	Colored			
Floating Material		other:	-			
Remarks:	+LUME .	#3				
	WA	TER QUALITY S	AMPLE DATA			
Sample No.	wa NA	TER QUALITY S Sample Methor	AMPLE DATA	Preservatives:	lc	28
Sample No. No. of Sample Bott	WA 	TER QUALITY S Sample Method	AMPLE DATA	Preservatives: Preservatives:	lc	:e
Sample No. No. of Sample Bott	WA NA	TER QUALITY S Sample Methor	AMPLE DATA d: <u>Grab</u>	Preservatives: Preservatives:	Ic	;e
Sample No. No. of Sample Bott	WA  les	TER QUALITY S Sample Methor	AMPLE DATA d: <u>Grab</u>	Preservatives: Preservatives:	lc	
Sample No. No. of Sample Bot	WA NA	TER QUALITY S Sample Methor	AMPLE DATA d: <u>Grab</u>	Preservatives: Preservatives:	ic	:e
Sample No. No. of Sample Bot	WA NA les	TER QUALITY S Sample Methor REMAR	AMPLE DATA d: <u>Grab</u>	Preservatives: Preservatives:		:e
Sample No. No. of Sample Bott	WA NA les	TER QUALITY S Sample Methor REMAR	AMPLE DATA d: <u>Grab</u>	Preservatives: Preservatives:		.e
Sample No. No. of Sample Bott	WA NA les	TER QUALITY S Sample Methor REMAR	AMPLE DATA d: <u>Grab</u> KS	Preservatives: Preservatives:		.e

CITE MANE.	BC helow PHS DATE 7/22/21 THAT. 9'30 a
DRAINAOE	Biches Greek INVERTIGATORS TR TR
DRAINAGE:	
PHYSICAL WAT	ER QUALITY PARAMETERS WEATHER CONDITIONS
Water Temperat	ure: 12.4 (%F or (%C) Dissolved Oxygen: 5.80 (mg/L)
Conductivity:	5% (µmhos/cm@25 °C) Stream or Lake gage reading: $9,70$
Turbidity: 3	Air Temperature (NTUs) Air Temperature (For °C) Baro. Pressure 23, 95 (in Hg)
Winds_0-1	(mph) Cloud cover(%) PrecipitationFogRainSleetHailSnow
Secchi Disk: N	Depth of Disappear:meters Depth of Reappearance:meters
Visual Condition	of Stream (sheek all that apply):
Clear	Cloudy Colored
Floating Material	SEE DECIE PERMUNICIPALITY
Remarks:	Notes
	WATER QUALITY SAMPLE DATA
Sample No.	WATER QUALITY SAMPLE DATA BC-blw-9H3 Sample Method: Grab Preservatives: lce
Sample No. No. of Sample B	WATER QUALITY SAMPLE DATA          BC-blw-pH3       Sample Method: Grab       Preservatives: Ice         ottles       4       Preservatives: H_3.504 in one
Sample No. No. of Sample B	WATER QUALITY SAMPLE DATA          BC-blw-PH3       Sample Method: Grab       Preservatives: Ice         ottles       4       Preservatives: H_2SOY in one         REMARKS
Sample No. No. of Sample B	WATER QUALITY SAMPLE DATA          BC-blw-PH3       Sample Method: Grab       Preservatives:         ottles        Preservatives:         REMARKS       REMARKS
Sample No. No. of Sample B	WATER QUALITY SAMPLE DATA <u>BC-blw-9H3</u> Sample Method: <u>Grab</u> Preservatives: <u>Ice</u> ottles <u>4</u> Preservatives: <u>H3504 in ord</u> REMARKS
Sample No. No. of Sample B	WATER QUALITY SAMPLE DATA          BC-blw-PH3       Sample Method: Grab       Preservatives: Ice         ottles       4       Preservatives: H_3SOY in one         REMARKS
Sample No. No. of Sample B	WATER QUALITY SAMPLE DATA           BC-blw-pH3         Sample Method: Grab         Preservatives: Ice           ottles         4         Preservatives: H3504 in own           REMARKS         REMARKS
Sample No. No. of Sample B	WATER QUALITY SAMPLE DATA          BC-blw-PH3       Sample Method: Grab       Preservatives: loe         ottles       4       Preservatives: H_2SOY in one         REMARKS

SITE NAME	Tailwad	VITA		11 del del	1100-	
	Bishon Creek	INVESTIGAT	OPS: TR	TR		
PHYSICAL WAT		METEDO		WEATHER CON		
Water Temperatu			Disaster		77	· · · · · · · · · · · · · · · · · · ·
vvater remperatu	re:	(*+ or *C)	Dissolve	ed Oxygen:	12	(mg/L)
Conductivity:		(µmhos/cm@2	25 °C) Stream	or Lake gage readin	ig:	25
Turbidity:	<u> </u>	Us) Air Tempera	ature 6 80 (°	F or °C) Baro. Press	ure <u>23</u>	. <u>L</u> 5 (in Hg)
Winds	mph) Cloud cover	(%) Pre	cipitationF	ogRainSle	eetHai	ISnow
Secchi Disk: N	Depth of Disapp	ear:met	ers De	pth of Reappearance	:e:	meters
Visual Condition Clear Floating Material	of Stream (check al Cloud	l that apply): y Other:	Colored	Secchi Dep	th:	meters
Remarks:	LOWE	E THAN	s "NON	wood F	102	_
i tomanto.		N	Votes			
Sample No	NA	WATER QUALIT	TY SAMPLE D	ATA		Ice
Sample No.	NA	WATER QUALIT	TY SAMPLE D	ATA Preservative	95:	Ice
Sample No. No. of Sample Bo		WATER QUALIT Sample Ma	TY SAMPLE D. ethod: <u>Grab</u>	ATA Preservative Preservative	95:	Ice
Sample No. No. of Sample Bo		WATER QUALIT Sample Ma	TY SAMPLE D. ethod: <u>Grab</u> MARKS	ATA Preservative Preservative	95:	

SITE NAME:	BC below PH2 DATE: 9/22/21 TIME: 10:000
DRAINAGE:	Bishop Creek INVESTIGATORS: TB JB
PHYSICAL WATER	QUALITY PARAMETERS WEATHER CONDITIONS
Water Temperature	
Conductivity:	
Turbidity: 3.	42 (NTUs) Air Temperature <u>69,16</u> or °C) Baro. Pressure <u>23.30</u> (in Hg)
Winds (m	ph) Cloud cover(%) PrecipitationFogRainSleetHailSnow
Secchi Disk: NA	Depth of Disappear:meters Depth of Reappearance:meters
Visual Condition of Clear	Stream (check all that apply): Cloudy Other
	ER LISSS BRADIAL AROUS
Remarks:	Notes
	WATER QUALITY SAMPLE DATA
Sample No.	BC-61w-PH2 Sample Method: Grab Preservatives: Ice
No. of Sample Bottle	es Preservatives: H3504 in one REMARKS
SIGNED BY:	

DRAINAGE:	Bishop Creek	INVESTIGATOR	ns: TB	JB	
PHYSICAL WAT	ER QUALITY PARAME	- ETERS	WE	ATHER CONDITION	IS
Water Temperati	. 14.7	(%E or (C))		(nen: 71.0	(mg/l )
Canduativitu	29	(umbac/am@25.9			(iiig/L)
2	21	(µnnos/cni@25 -		e gage reading:	170
lurbidity:	<u>, 0 / (</u> NTUs)	Air Temperatur	re <u>uro</u> (°F or °C	C) Baro. Pressure_2	<u>(in Hg)</u>
Winds <u>4-6</u>	mph) Cloud cover	K (%) Precipi	itationFog	_RainSleet	HailSnow
Secchi Disk: NA	Depth of Disappear:	meters	Depth of	Reappearance:	meters
Visual Condition	of Stream (check all that	at apply):		Secchi Depth:	meters
Clear X	Cloudy	Other:	Colored		
Pomorko:	Lows	R FIO	A THE	~ "wae	MAI
Remarks:		Note	es	AP NOU	
	86 H. 14	/ATER QUALITY :	SAMPLE DATA		
Sample No.	BC-blw-LS	ATER QUALITY	SAMPLE DATA od: <u>Grab</u>	Preservatives:	Ice
Sample No. No. of Sample Bo	BC-blw-LS ttles	ATER QUALITY	SAMPLE DATA od: <u>Grab</u> RKS	Preservatives: Preservatives: #	lce Soy in on
Sample No. No. of Sample Bo	M BC-blw-LS ttles	ATER QUALITY	SAMPLE DATA od: <u>Grab</u> RKS	Preservatives: Preservatives: #2	lce Soy in on

<b>BISHOP CREEK WATER QUALITY STUDY</b>
FIELD FORM

RAINAGE: Bishop Creek	INVESTIGATORS: TB	JB	
PHYSICAL WATER QUALITY PAR		WEATHER CONDITIONS	
Vater Temperature: 12,4	(ºF or ºC) Dissolve	d Oxvaen: 8,25	(ma/L)
Conductivity: 38	(µmhos/cm@25 °C) Stream of	or Lake gage reading: 5.	8 cts
Furbidity: 2,73 (N	TUs) Air Temperature 65 (P	For °C) Baro. Pressure Z1.5	5 (in Hg)
Minds 01 (much) Cloud and	Ch (W) Descisioning E		0
Secchi Disk: NA Depth of Disap	pear: meters De	pgRainSleetHail pth of Reappearance:	Snow
pri i i		Secchi Depth:	meters
Visual Condition of Stream (check a Clear Clou Floating Material	all that apply): dy Colored Other:		
Remarks:	Notes		
SHADKEN		5	
Flow field me		·8 CD 8.	
flow field me		600	
flow field me		.8 (1) 8	
flow field me			
Flow field me	WATER QUALITY SAMPLE D/		
Sample No. <u>BC-NF-</u>	WATER QUALITY SAMPLE D/	ATA Preservatives:	ce
Sample No. <u>BC-NF-</u> No. of Sample Bottles	WATER QUALITY SAMPLE D/	ATA Preservatives: Preservatives: <u></u>	ce in one
Sample No. <u>BC-NF-</u> No. of Sample Bottles	WATER QUALITY SAMPLE D/	ATA Preservatives: Preservatives: <u></u>	ce in one
Sample No. <u>BC-NF-</u> No. of Sample Bottles	WATER QUALITY SAMPLE D/ Sample Method: Grab 4 REMARKS	ATA Preservatives: Preservatives: #2.504	in one

SITE NAME	
OTTE MANUE.	South Fork DATE: 9/22/21 TIME: 11:45
DRAINAGE:	Bishop Creek INVESTIGATORS: TB JB
PHYSICAL WATE	R QUALITY PARAMETERS WEATHER CONDITIONS
Water Temperatur	re: 14.3 (% or (c) Dissolved Oxygen: 7,51 (mg/L)
Conductivity:	4 O (µmhos/cm@25 °C) Stream or Lake gage reading:
Turbidity: 4.	68 (NTUs) Air Temperature 64.6 (For °C) Baro. Pressure 21,25 (in Hg
Winds A-8 (n	nph) Cloud cover(%) PrecipitationFogRainSleetHailSnow
Secchi Disk:NA	Depth of Disappear:meters Depth of Reappearance:meters
Visual Condition o	of Stream (check all that apply):
Clear X Floating Material	Cloudy Colored Other:
Remarks:	14AR ON NOLICS IN CREEK
	Notes
TA	HICK SMOKE VISAMING < AM
	WATER QUALITY SAMPLE DATA
Sample No.	BC-blw-5L sample Mathedi Crah
Sample No.	Sample Method: Grab Preservatives: Ice
No. of Sample Bot	ttles <u> </u>
	REMARKS
_	
	- M Para

иря = 46m 9°C реглана I 8.15 Sunface I 8.15 Location: <u>L</u>

Page \_\_\_\_\_ of \_\_\_\_\_

WATER TEMPERATURE AND DISSOLVED OXYGEN

	LAKE PROF	LE DA	TA	FORM	1
9/6	Sabring	9	20	21	
		1			

	DEPTH FROM WATER SURFACE (meters)	WATER TEMPERATURE (°C)	DISSOLVED OXYGEN (mg/L)	DEPTH FROM WATER SURFACE (meters)	WATER TEMPERATURE (°C)	DISSOLVED OXYGEN (mg/L)
	0.5	14.0	\$.08	31	4.6	7,20
	1	14.0	8.05	32	4.6	7,30
	2	14.1	8,02	33	4.5	7.18
	3	14,1	8.00	34	4,5	7.19
	4	14.1	7.99	35	4.5	7.33
	5	14.1	7,98	36	4.5	7.02
	6	14.1	7.97	37	4.4	7.07
Ja	7	14,1	7.96	38	4.4	7,14
Some	8	14.1	7.96	39	4.4	7.19
	9	14.1	7.95	40	4.4	7.25
	10	14.1	7.95	41	4.4	7.02
т	11	13,3	8.44	42	4.4	6.83
ot 1	11.5	12.0	9,41	43	4.3	6.85
Mr. N.	12.5	9,0	10.29	- 44	4.3	6.89
there	14	8.3	10.26	45	4.4	6.63
	15	7.7	10.15	46	4.3	6.62
-	16	7,1	10.04	47	4.4	6.44
	17	6.7	9.80	48	4,4	6.30
	18	6.4	9,50	49	4,4	6.15
V	19	6.0	9.16	50	4.3	6.07
sorre	20	5,7	8.74	51	4,4	5.85
	21	5.5	\$,3\$	52	4.3	5.50
	22	5.4	8.15	53	4.3	5,40
	23	5.2	7.95	54	4,3	5.02
	24	5.0	8.00	55	4.3	4.75
	25	5,0	7.53	56	4.3	4,45
	26	4.8	7.47	57	4.3	4.20
	27	4.8	7.35	58	4.3	3.50
	28	4.7	7,44	59	4.3	3.45
	29	4.7	7.37	60	4.3	3.37
	30	4.6	7.36	61	4.3	3.31

Page 2 of 2

# WATER TEMPERATURE AND DISSOLVED OXYGEN LOCATION: LAKE PROFILE DATA FORM

	DEPTH FROM WATER SURFACE (meters)	WATER TEMPERATURE (°C)	DISSOLVED OXYGEN (mg/L)	DEPTH FROM WATER SURFACE (meters)	WATER TEMPERATURE (°C)	DISSOLVED OXYGEN (mg/L)
	62	4.3	2.89	91		
BOTA	63 62.9	4,4	2.17	92		
/	64			93		_
GPS	65			94		
15.8m	66			95		
0/	67			96		
	68			97		
	69			98		
	70			99		
	71			100		
-4.2.2.44	72			101		
	73			102		
	74			103		
	75			104		
	76			105		
	77			106		
	78			107		
	79			108		4
	80			109		
	81			110		
	82			111		
	83			112		
	84			113		
	85			114		
	86			115		
	87			116		
	88			117		
	89			118		
	90			119		

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WATER TEMPERATURE AND DISSOLVED OXYGEN LAKE PROFILE DATA FORM

SUBACE GAMM 14 C37.4 m C37.4 m

OC

DEPTH FROM WATER SURFACE (meters)	WATER TEMPERATURE (°C)	DISSOLVED OXYGEN (mg/L)	DEPTH FROM WATER SURFACE (meters)	WATER TEMPERATURE (°C)	DISSOLVEI OXYGEN (mg/L)
0.5	13.3	7.70	31	7.4	Ø.Ø3
1	13.3	7.69	32	7.5	$\phi.\phi$
2	13.3	7.67	33	7.6	Ø.ØØ
3	13.2	7.67	34	7.7	Ø.Ø1
\$ 4	13.2	7.67	35-1m	7.7	Ø.ØØ
5	13.2	7.67	36	1	
6	13.2	7.66	37		
7	13.1	7.65	38		
- 8	12.3	7.83	39		
9 8.5	8.4	8.15	40		
10 9.5	6.9	8.82	41		
11	5.4	8.43	42	$\wedge$	
12	5.1	8.10	43		
13	4.9	7.76	44		
14	4.8	7.40	45		
15	4.7	6.80	46	/	
- 🕶 🖬 16	4.6	5.66	47	/	
17	4.6	4.95	48		
18	4.6	4.02	49		
19	4.7	Z.50	50		
20	4.8	Ø.23	51		
21	5.1	Ø.13	52		
22	5.5	6.08	53		
23	5.8	Ø.06	54		/
24	5.9	0.05	55	/	
25	61	Ø.Ø5	56		
26	6.3	0.04	57	/	
27	6.5	\$.03	58	/	/
28	6.7	Ø. Ø2	59	/	
29	6.9	0.02	60	/	
30	7.2	0 62	61	/	

BOTTOM

	NOV WI	FORK	DATE:	10/4/21 TIM	E: 11:20 a
	Pichon Crook	INVESTIGATO	Be TR	+13	
		INVESTIGATOR	10. 10		
PHYSICAL WATER C		TERS	V		IS v
Water Temperature:	8.5	(°F or C)	Dissolved C	Dxygen: 8. 70	(mg/L)
Conductivity:	-	(µmhos/cm@25	<sup>o</sup> C) Stream or L	ake gage reading:	5-8 cts
Turbidity:	(NTUs)	Air Temperatu	me 46 Por	°C) Baro. Pressure_	21.43 (in Hg)
Winds(mph	) Cloud cover 100	(%) Precip	pitationFog_	RainSleet	HailSnow
Secchi Disk: NA D	epth of Disappear:	meters	B Depth	of Reappearance:	meters
	and the standard states			Secchi Depth:	meters
Clear K Floating Material	Cloudy	other:	Colored _	-	
Remarks: Veru	Smoken	1			
	) (	Not	tes		
	*				
	W	ATER QUALITY	SAMPLE DAT/	4	
Sample No	W. NA	ATER QUALITY	SAMPLE DAT/	A Preservatives:	lce
Sample No	w. NA	ATER QUALITY	SAMPLE DAT/	A Preservatives: Preservatives:	lce
Sample No	w. NA	ATER QUALITY Sample Meth	SAMPLE DAT/ nod: <u>Grab</u>	A Preservatives: Preservatives:	Ice
Sample No No. of Sample Bottles	WA NA	ATER QUALITY Sample Meth	SAMPLE DATA nod: <u>Grab</u>	A Preservatives: Preservatives:	lce
Sample No No. of Sample Bottles	WA NA	ATER QUALITY Sample Meth	SAMPLE DAT/ nod: <u>Grab</u>	A Preservatives: Preservatives:	

DRAINAGE:	Bishop Creek	INVESTIGATO		R TB		1
PHYSICAL WATE		METERS		WEATHER CON	DITIONS	
Water Temperatu	. 11.5	(%E or (6))	Dissolut	d Owner: 7	93	(ma/l.)
		_(-+ 0)(-C)			12	(IIIg/L)
Conductivity:			G=C) Stream	or Lake gage readu	ופ:	510
Turbidity:	(NTU	Js) Air Temperat	-Smoll	For °C) Baro. Press	sure 01-2	(in Hg)
Winds 0 (	mph) Cloud cover	00 (%) Prec	ipitationF	ogRainSI	eetHai	ISnow
Secchi Disk: y A	Depth of Disappe	ear:mete	rs De	epth of Reappearan	ce:	meters
Visual Condition of	of Stream (check all	that apply):		Secchi Dep	oth:	meters
Clear Konterial	Cloudy	Other:	Colored			
Remarks Ve-	y smoke	ч				
itomanto.	2	N	otes			
		WATER QUALIT	Y SAMPLE D	ATA		
Sample No.	NA~	WATER QUALIT Sample Me	Y SAMPLE D	ATA Preservativ	es:	lce
Sample No. No. of Sample Bo	MA ttles	WATER QUALIT Sample Me	Y SAMPLE D	ATA Preservativ Preservativ	es:	lce
Sample No. No. of Sample Bo	MA	WATER QUALIT Sample Me 	Y SAMPLE D thod: <u>Grab</u> IARKS	ATA Preservativ Preservativ	es:	Ice
Sample No. No. of Sample Bo	MA	WATER QUALIT	Y SAMPLE D. thod: <u>Grab</u> IARKS	ATA Preservativ Preservativ	es:	lce
Sample No. No. of Sample Bo	MA	WATER QUALIT	Y SAMPLE D. thod: <u>Grab</u> IARKS	ATA Preservativ Preservativ	es:	lce

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	FIELD FORM
SITE NAME:	South Fork DATE: 10 4 21 TIME: 12:50
DRAINAGE:	Bishop Creek INVESTIGATORS: JB TB
PHYSICAL WAT	TER QUALITY PARAMETERS WEATHER CONDITIONS
Water Temperati	ure: <u>11.0</u> (% or ) Dissolved Oxygen: <u>7.96</u> (mg/L)
Conductivity:	(μmhos/cm@25 ℃) Stream or Lake gage reading:
Turbidity:	(NTUs) Air Temperature 52 (°F or °C) Baro. Pressure 21.13 (in Hg)
Winds 1-2	(mph) Cloud cover_100 (%) PrecipitationFogRainSleetHailSnow
Secchi Disk: )V	Depth of Disappear:meters Depth of Reappearance:meters
Visual Condition	of Stream (check all that apply):
Clear X	Cloudy Colored Cloudy
	an smalle
Remarks:	Notes
	WATER QUALITY SAMPLE DATA
Sample No.	WATER QUALITY SAMPLE DATA          MA       Sample Method: Grab       Preservatives:       Ice
Sample No. No. of Sample B	WATER QUALITY SAMPLE DATA          MA       Sample Method: Grab       Preservatives:         ottles       Preservatives:         REMARKS
Sample No. No. of Sample B	WATER QUALITY SAMPLE DATA          MA       Sample Method: Grab       Preservatives:       Ice         ottles       Preservatives:       REMARKS

DRAINAGE: Bisho	p Creek INVESTIGATORS: TB JB	1
PHYSICAL WATER QUAL	LITY PARAMETERS WEATHER CONDITIONS	
Vater Temperature:	9.1 (% o ) Dissolved Oxygen: 9.17 (mg/	L)
Conductivity:	(µmhos/cm@25 ºC) Stream or Lake gage reading:	
urbidity:	(NTUS) Air Temperature 61 (For °C) Baro. Pressure 23.11	(in Hg
Vinds <u>0~\</u> (mph) Cl	loud cover(%) PrecipitationFogRainSleetHailS	Snow
ecchi Disk: NA Depth	of Disappear:meters Depth of Reappearance:mete	rs
isual Condition of Stream	(check all that apply):	eters
lear Aterial	Cloudy Colored	
Veria SI	mokey	
emarks:	Notes	
	WATER QUALITY SAMPLE DATA	
ample No.	WATER QUALITY SAMPLE DATA	
ample No	WATER QUALITY SAMPLE DATA           MA         Sample Method: Grab         Preservatives:           Preservatives:         Preservatives:	
ample No.	WATER QUALITY SAMPLE DATA          MA       Sample Method: Grab       Preservatives:          Preservatives:          Preservatives:          REMARKS	
ample No.	WATER QUALITY SAMPLE DATA          MA       Sample Method: Grab       Preservatives:          Preservatives:          Preservatives:          REMARKS	

PHYSICAL WATER Q			we		TIONS	
Water Temperature:	-1.1	-(°F or (°C))	Dissolved Ox	ygen: <u>Too</u>	5	(mg/L)
Conductivity:	-	_(µmhos/cm@25 ⁰	C) Stream or Lak	ke gage reading:	1.2	5
Turbidity:	(NTUs)	Air Temperature	e le le For «	C) Baro. Pressur	e 23.	15 (in Hg)
Winds (mph)	Cloud cover 1	(0) (%) Precipit	tation Fog	Rain Slee	t Hail	Snow
Secchi Disk: NA De	pth of Disappear	:meters	Depth of	f Reappearance:		meters
1011				Secchi Depth:		meters
Visual Condition of Stre Clear <u>V</u> Floating Material	eam (check all th Cloudy	at apply): Other:	Colored	-		
Remarks:		Note	s			
Stream .	weir gad	ge at 1.c	8 Leet.			
Stream .	weir gad	ge at 1.c	8 Jut.			
Stream .	weir gad	ge at 1.2	8 feet. SAMPLE DATA			
Stream	NA	ge at 1.2 VATER QUALITY S Sample Metho	SAMPLE DATA	Preservatives		lce
Sample No	NA	ye at 1.2 VATER QUALITY S Sample Metho	SAMPLE DATA	Preservatives		lce
Stream Sample No.	NA	ye at 1.2 VATER QUALITY S _ Sample Metho  REMAF	SAMPLE DATA	Preservatives: Preservatives:		

SITE NAME:	Tailwater	PH3	DATE: 10	2 4/21 TIN	ME: 2:00,1
DRAINAGE	Bisher Creek		-+R	TR	1. <u> </u>
DRAINAGE:	Bishop Creek II	NVESTIGATORS:	: <u> </u>	00	
PHYSICAL WATE		ERS	WE	ATHER CONDITIO	NS
Water Temperature	<u>9.6</u> (°	For <sup>(</sup> <sup>Q</sup> C)	Dissolved Ox	ygen: 9,25	)(mg/L)
Conductivity:	(µ	mhos/cm@25 ºC)	) Stream or Lak	e gage reading:	-
Turbidity:	(NTUs)	Air Temperature_	65 (Bor %	C) Baro. Pressure	73.80 (in Hg)
Winds O - (m	ph) Cloud cover 100	(%) Precipita	ationFog	_RainSleet	_HailSnow
Secchi Disk: NA	Depth of Disappear:	meters	Depth of	Reappearance:	meters
Visual Condition of	Stream (check all that a	(vlage		Secchi Depth:	meters
Clear X	Cloudy	ther	Colored		
rioating waterial			-		
Remarks:		Notes			
	TAW	TER QUALITY SA	AMPLE DATA		
Sample No.	war MA	TER QUALITY SA Sample Method:	AMPLE DATA	Preservatives:	lce
Sample No. No. of Sample Bot	WAT 	TER QUALITY SA Sample Method:	AMPLE DATA	Preservatives: Preservatives:	Ice
Sample No. No. of Sample Bott	WA1 	FER QUALITY SA Sample Method:  REMARK	AMPLE DATA	Preservatives: Preservatives:	
Sample No. No. of Sample Bot	WAT  MA les	TER QUALITY SA Sample Method:  REMARK	AMPLE DATA	Preservatives: Preservatives:	
Sample No. No. of Sample Bot	WAT MA- les	TER QUALITY SA Sample Method: REMARK	AMPLE DATA	Preservatives: Preservatives:	

	14/2 TIME: 2.10 M
DRAINAGE: Bishop Creek INVESTIGATORS:	JB
PHYSICAL WATER QUALITY PARAMETERS WE	ATHER CONDITIONS
Water Temperature: 9.7 (%F or (6) Dissolved Oxy	/gen: 9.36 (mg/L)
Conductivity: (µmhos/cm@25 °C) Stream or Lak	e gage reading: 0.7
Turbidity: (NTUs) Air Temperature 195 (°F o) °C	C) Baro. Pressure 3.84 (in Hg)
Winds Q -1 (mph) Cloud cover (00 (%) Precipitation For	Rain Sleet Hail Snow
Secchi Disk: MA Depth of Disappear:meters Depth of	Reappearance:meters
· · · · · · · · · · · · · · · · · · ·	Secchi Depth: meters
Visual Condition of Stream (check all that apply): Clear Cloudy Colored Floating Material Other:	_
Remarks:	
Notes	
WATER QUALITY SAMPLE DATA	
WATER QUALITY SAMPLE DATA Sample No Sample Method: <u>Grab</u>	Preservatives: Ice
WATER QUALITY SAMPLE DATA Sample No Sample Method: <u>Grab</u>	Preservatives:
WATER QUALITY SAMPLE DATA Sample No Sample Method: <u>Grab</u> No. of Sample Bottles REMARKS	Preservatives: <u>Ice</u> Preservatives:

SITE NAME: JONT		-	TR -	-R	
DRAINAGE: Bishop	Creek INVEST	IGATORS:	10 -		
PHYSICAL WATER QUALI	TY PARAMETERS		WEATHE	R CONDITIONS	
Water Temperature:	9 (°F or °C	Diss	olved Oxygen:	9.57	(mg/L)
Conductivity:	(µmhos/c	cm@25 ºC) Stre	am or Lake gage	e reading:	-
Turbidity:	(NTUs) Air Tei	mperature 07	(°F)or °C) Bar	o. Pressure <u>24</u>	.76 (in Ho
Winds O (mph) Clo	ud cover 90 (%)	Precipitation _	FogRain	SleetH	ailSnow
Secchi Disk: NA Depth o	f Disappear:	_meters	Depth of Reap	pearance:	meters
Visual Condition of Stream	check all that apply).		Sec	chi Depth:	meters
Clear	Cloudy	Cole	ored		
Floating Material	Other:				
Remarks:		Notes			
	WATER Q	UALITY SAMPL	E DATA		
Sample No.	WATER QI	UALITY SAMPL	E DATA	ervatives:	Ice
Sample No.	WATER QI A Sami	UALITY SAMPL ple Method: <u>Gra</u>	E DATA	ervatives:	Ice
Sample No	WATER QI	UALITY SAMPL ple Method: <u>Gra</u> — REMARKS	E DATA <u>p</u> Pres Pres	ervatives:	Ice
Sample No.	WATER QI	UALITY SAMPL ple Method: <u>Gra</u>  REMARKS	E DATA D Pres Pres	ervatives:	

	Dior	FIELD F	ORM	STUDY	
SITE NAME:	BC bel	ow PHY		0/4/21 TIME	2:350
DRAINAGE:	Bishop Creek	INVESTIGATORS	: TB	JB	1
PHYSICAL WAT	ER QUALITY PAR	RAMETERS	WE	EATHER CONDITIONS	
Water Temperatu	re: 9.8	(%F o (%C))	Dissolved O	xygen: 9.69	(mg/L)
Conductivity:	-	(µmhos/cm@25 °C	C) Stream or La	ke gage reading:	-
Turbidity:	- (N	TUs) Air Temperature	67 (F)	C) Baro. Pressure <u>24</u>	79 (in Hg)
Winds O	mph) Cloud cove	ar 90 (%) Precipita	ationFog	RainSleetH	ailSnow
Secchi Disk: N	Depth of Disap	pear:meters	Depth o	f Reappearance:	meters
Visual Condition	of Stroom (abook	all that apply:		Secchi Depth:	meters
	Clou	idy	Colored		
Floating Material		Other:	-		
Remarks:		Notor			
					8
Sample No. No. of Sample Bo		WATER QUALITY S Sample Method	AMPLE DATA	Preservatives: Preservatives:	lce

ORM
DATE: 10/4/21 TIME: 2:45
TB JB
WEATHER CONDITIONS
Dissolved Oxygen: 9-45 (mg/L)
>) Stream or Lake gage reading:
71 (For °C) Baro. Pressure 25.14 (in Hg)
mol4 ationFogRainSleetHailSnow
Depth of Reappearance:meters
Secchi Depth: meters
Colored
\$
AMPLE DATA d: <u>Grab</u> Preservatives: <u>Ice</u> Preservatives:
KS

DNS <u>5</u> (mg/L) <u>25.15 (</u> in Hg _HailSnow meters meters
MS (mg/L) <u>25.15</u> (in Hg Hail <u>Snow</u> meters meters
5(mg/L)  
Snow Snow meters meters
2 <u>5.15</u> (in Hg _HailSnow meters meters
_HailSnow meters meters
meters
meters
Ice

		FIELD F	ORM	01001	
	nilwate	PH6	DATE: K	) <u>4/21</u> TIN	AE: 3:05
DRAINAGE: Bis	shop Creek	INVESTIGATORS	TB	JB	
PHYSICAL WATER QU	JALITY PARAME	TERS	WE	ATHER CONDITION	NS
Water Temperature:	10.4	(°F or °C)	Dissolved Ox	ygen: 9.77	<u>ζ (mg/L)</u>
Conductivity:	-	(µmhos/cm@25 ℃	) Stream or La	<pre>ce gage reading:</pre>	-
Turbidity:	(NTUs)	Air Temperature	71 For "	C) Baro. Pressure <u>3</u>	5.37 (in Hg)
Winds 2-3 (mph)	Cloud cover 8	O (%) Precipita	ationFog	RainSleet	_HailSnow
Secchi Disk: NA-De	pth of Disappear:	meters	Depth o	f Reappearance:	meters
Visual Condition of Stre	eam (check all the	at apply):		Secchi Depth:	meters
Clear <u>X</u> Floating Material	Cloudy	Other:	Colored		
Remarks:					
		Notes	5		
Sample No	NA	'ATER QUALITY S/	AMPLE DATA 1: <u>Grab</u>	Preservatives:	Ice
Sample No No. of Sample Bottles	NA	/ATER QUALITY S/ Sample Method REMARI	AMPLE DATA d: <u>Grab</u> KS	Preservatives: Preservatives:	

PHYSICAL WAT	ER QUALITY PA	RAMETERS	-	WE	ATHER CONDI	TIONS	-
Vater Temperatu	re: 10-5	(°F 01		issolved Ox	/gen: 9	74	(mg/L)
Conductivity:	-	(µmhos/	cm@25 ℃) S	tream or Lak	e gage reading		
furbidity:	- (	NTUs) Air Te	emperature 7	-1 (PF or or	C) Baro. Pressu	re 25	.37(in Hg)
Vinds 1-3	mph) Cloud cov	ver 80 (%	) Precipitation	Fog	Rain Slee	et Ha	il Snow
Secchi Disk: N	A Depth of Disa	appear:	meters	Depth of	Reappearance	:	meters
liquel Condition	of Otrogona (object	II Ab - 4 1 - 4			Secchi Depth	:	meters
Clear K		oudy	c	olored			
Dating Material		Other:					
Remarks:			Notes				
	NA	WATER Q	UALITY SAMI	PLE DATA	Dresservatives		
Sample No.	<u>NA</u>	WATER Q Sam	UALITY SAMI	PLE DATA	Preservatives		Ice
Sample No. No. of Sample Bo	NA	WATER Q Sam	UALITY SAMI ple Method: <u>G</u> 	PLE DATA	Preservatives Preservatives		Ice

SITE NAME:	Lake Sabrina DATE: 10/5/21 TIME: 9:000
DRAINAGE:	Bishop Creek INVESTIGATORS: TB JB DM
PHYSICAL WA1 Water Temperat	ure:(°F or °C) Dissolved Oxygen:(mg/L)
Conductivity:	(µmhos/cm@25 ℃) Stream or Lake gage reading:9095.0℃
Turbidity:	- (NTUs) Air Temperature 49 (F) or °C) Baro. Pressure 21.45 (in Hg)
Winds Secchi Disk: N Visual Condition Clear Floating Material	(mph) Cloud cover (%) Precipitation Fog Rain Sleet Hail Snow A Depth of Disappear: meters Depth of Reappearance: meters Secchi Depth: meters of Stream (check all that apply): Cloudy Other: Colored SURFACE
Remarks:	Notes
Lake	level Elev. @ 9095.09 ft ms)
Lake	timile level clev. @ 9095.09 ft ms)
Lave Sample No.	WATER QUALITY SAMPLE DATA          WATER QUALITY SAMPLE DATA
LaVe Sample No. No. of Sample B	WATER QUALITY SAMPLE DATA          WATER QUALITY SAMPLE DATA
Lave Sample No. No. of Sample B	WATER QUALITY SAMPLE DATA   WATER QUALITY SAMPLE DATA

BISHOP CREEK WATER QUALITY STUDY
BISHOP	CREEK WA	TER QUA	LITY ST	UDY
	FIELD	FORM		

SITE NAME:	South JAKE DATE: 10/5/21 TIME: 11:45
DRAINAGE.	Bishop Creek INVESTIGATORS TB/TB/DM
PHYSICAL WATE	R QUALITY PARAMETERS WEATHER CONDITIONS
Water Temperatur	e:(°F or °C) Dissolved Oxygen:(mg/L)
Conductivity:	(#mhos/cm@25 °C) Stream or Lake gage reading: 9641.70
Turbidity:	(NTUs) Air Temperature 53, 5 °F or °C) Baro. Pressure 21,00 (in H
Winds 6-12	nph) Cloud cover_50 (%) PrecipitationFogRainSleetHailSnow
Secchi Disk: NA	Depth of Disappear:meters Depth of Reappearance:meters
	Secchi Depth: meters
Visual Condition o	f Stream (check all that apply):
Floating Material	Other:
Remarks: H	PEANY SMOKE JOOR VISABILTY
Noniarka.	Notes
	14 Cleo, C - (0-11, 70 mo)
	teuel Cleo, C - (0-41, 70 mo)
	WATER QUALITY SAMPLE DATA
Sample No.	WATER QUALITY SAMPLE DATA          WATER QUALITY SAMPLE DATA
Sample No. No. of Sample Bot	WATER QUALITY SAMPLE DATA          WATER QUALITY SAMPLE DATA
Sample No. No. of Sample Bot	WATER QUALITY SAMPLE DATA          WATER QUALITY SAMPLE DATA
Sample No. No. of Sample Bot	WATER QUALITY SAMPLE DATA          WATER QUALITY SAMPLE DATA
Sample No. No. of Sample Bot	WATER QUALITY SAMPLE DATA          WATER QUALITY SAMPLE DATA
Sample No. No. of Sample Bot	WATER QUALITY SAMPLE DATA          WATER QUALITY SAMPLE DATA
Sample No. No. of Sample Bot	WATER QUALITY SAMPLE DATA          MA       Sample Method: Grab       Preservatives:       Ice         ttles       Preservatives:       Ice         REMARKS       REMARKS       Ice
Sample No. No. of Sample Bot	WATER QUALITY SAMPLE DATA          WATER QUALITY SAMPLE DATA

GARMIN 66.7 C

Page 1 of 2

### WATER TEMPERATURE AND DISSOLVED OXYGEN

Location:

	LAKE PROFILE	DATA	FC	RM
TAKE	SABRINA	D	5	21

1	2.	1	0	C	-
0	0	11	8	5.	١

DEPTH FROM WATER SURFACE (meters)	WATER TEMPERATURE (°C)	DISSOLVED OXYGEN (mg/L)	DEPTH FROM WATER SURFACE (meters)	WATER TEMPERATURE (°C)	DISSOLVED OXYGEN (mg/L)
0.5	12.1	8.09	31	4.6	7.35
1	12.2	8.09	32	4.5	7.37
2	12.2	8.08	33	4.5	7.35
3	12.2	8.08	34	4.5	7.40
4	12.2	8.08	35	4.5	7.40
5	12.2	8.07	36	4.4	7.41
6	12.2	8.07	37	4.4	7.41
7	12.2	8.07	38	4,3	7.41
8	12.2	8.07	39	4.3	7.40
9	12.2	8.07	40	4.3	7.39
10	12.2	8.07	41	4.3	7.40
11	12.1	8.09	42	4.3	6.90
12	11.9	8.28	43	4.3	6.89
12.5	11.3	8,75	44	4.3	6.70
13.5	8.3	10.06	- 45	4,3	6.72
15	7.6	10.08	46	4.3	6.55
16	7.1	9.87	47	4.3	6.52
17	6.6	9.71	48	4.3	6.46
18	6.3	9.54	49	4.3	6.23
19	6.0	9.27	50	4.3	6.06
20	5.7	8,84	51	4.3	5.80
21	5.5	8.20	* 52	4.3	5.58
22	5.2	7.90	53	4.4	5.26
23	5.1	7.70	54	4.4	4.70
24	5.0	7.32	55	4.4	4.44
25	4.9	7.30	56	4.4	4.19
26	4.7	7,50	57	4.4	3.54
27	4.7	7.47	58	4.4	3.25
28	4.6	7.45	59	4.4	2.95
29	4.6	7.42	60	4.4	2,37
30	4.6	7.38	61	4.4	1.90

Page 2 of 2

### WATER TEMPERATURE AND DISSOLVED OXYGEN

LOCATION: LAKE PROFILE DATA FORM

	DEPTH FROM WATER SURFACE (meters)	WATER TEMPERATURE (°C)	DISSOLVED OXYGEN (mg/L)	DEPTH FROM WATER SURFACE (meters)	WATER TEMPERATURE (°C)	DISSOLVED OXYGEN (mg/L)
	62	4.4	1.55	91		
	63	4.4	Ø.25	\92		1
ROTOM	-64 63.5	4.4	Ø.11	93		
-	65		/	94		
	66			95		
	67			96		
	68			97		
	69			98		
	70			99	/	
	71			100		
	72			101		
	73			102		
	74			103	$\backslash$	
	75	$\wedge$		104		
	76			105	$\wedge$	
	77		(	106		
	78			107		
	79			108		1
	80			109		1
	81			110 /		
	82 /			111 /		
	83 /			112/		
	84			1/3		
	85			/14		
	86/			115		
	8/1			<u>∧ 116</u>		
	188			/ 117		
	89			118		
	90			119		

Page \_ l\_ of \_ l\_

LAKE PROFILE DATA FO	DRM	٨
SOUTH JAKE 10	5	2)

Location:	South	KE PROFIL	E DATA FOR	RM 5/21	
DEPTH FROM WATER SURFACE (meters)	WATER TEMPERATURE (°C)	DISSOLVED OXYGEN (mg/L)	DEPTH FROM WATER SURFACE (meters)	WATER TEMPERATURE (°C)	DISSOLVED OXYGEN (mg/L)
0.5	10.7	8.63	31	7.6	0.06
1	10.7	8.02	32	7.7	0.05
2	10,6	8.02	33-32.5	7.7	0.04
3	10.5	50.8	34	1	1 /
4	10.5	8.01	35		
5	10.5	8.01	36		
6	10.4	8.02	37		
7	10.2	8.01	38		
8	9.0	8.25	39		
	7,3	8,49	40		/
10	5.6	8.31	41		
11	5.2	7.92	42		
12	4.9	7.40	43		
13	4.8	6.80	44		
14	4.7	5.57	45	$\wedge$	
15	4.7	4,70	46		
16	4.7	3.30	47		
17	4.7	2,10	48		
18	4.9	Ø.25	49		
19	5,1	Ø.19	50		
20	5,5	Ø.14	51		
21	5.7	Ø,11	52		
22	5,9	0.09	53		
23	6.0	\$,08	54		
24	6.2	Ø.07	55		
25	6,5	\$.06	56		
26	6.7	0,05	57		
27	6.9	0.1015	58		
28	7.2	0,10	59	/	
29	7.3	\$.09	60		
20	75	07	61		

APPENDIX B

**2021 LABORATORY REPORTS** 



FINAL REPORT

Work Orders:	1F15018	Report Date:	6/29/2021
		Received Date:	6/15/2021
Project <sup>.</sup>	2KLE010102	Turnaround Time:	Normal
i i ojecu		Phones:	(714) 751-7373
		Fax:	(714) 545-8883
Attn:	Michael P. Donovan	P.O. #:	
Client:	Psomas - Santa Ana, CA 3 Hutton Centre Dr., Ste. 200 Santa Ana, CA 92707	Billing Code:	

Dear Michael P. Donovan,

Enclosed are the results of analyses for samples received 6/15/21 with the Chain-of-Custody document. The samples were received in good condition, at 2.4 °C and on ice. All analyses met the method criteria except as noted in the case narrative or in the report with data qualifiers.

Sam	ple Results							
Sample: Bo	C-blw-LS				Sampleo	d: 06/14/21	9:35 by Jim Burto	on, Todd Bear
11	F15018-01 (Water)							
Analyte			Result	MRL	Units	Dil	Analyzed	Qualifier
Method: [CALC]				Instr: [CALC]				
Batch ID: [CALC	]	Preparation: [CALC]		Prepared: 06/21	/21 15:38			Analyst: YMT
Nitrogen, Total			0.16	0.10	mg/l	1	06/23/21	
Method: EPA 300	.0			Instr: LC12				
Batch ID: W1F0	948	Preparation: _NONE (LC)		Prepared: 06/15	/21 12:00			Analyst: jan
Nitrate as N			ND	110	ug/l	1	06/16/21 03:10	
Method: EPA 351	.2			Instr: AA06				
Batch ID: W1F1	220	Preparation: _NONE (WETCHEM)		Prepared: 06/21,	/21 15:38			Analyst: YMT
TKN			0.16	0.10	mg/l	1	06/23/21	
Method: EPA 353	.2			Instr: AA01				
Batch ID: W1F0	910	Preparation: _NONE (WETCHEM)		Prepared: 06/15,	/21 14:24			Analyst: sar
NO2+NO3 as N	۱		- ND	200	ug/l	1	06/15/21	
Method: EPA 365	.3			Instr: UVVIS04				
Batch ID: W1F0	912	Preparation: _NONE (WETCHEM)		Prepared: 06/15,	/21 14:33			Analyst: ssi
o-Phosphate as	s P		- ND	0.010	mg/l	1	06/15/21 15:23	
Method: SM 2540	)C			Instr: OVEN01				
Batch ID: W1F1	005	Preparation: _NONE (WETCHEM)		Prepared: 06/16	/21 12:27			Analyst: ism
Total Dissolve	d Solids		26	10	mg/l	1	06/17/21	



BC-NF-1

Sample:

# Certificate of Analysis

FINAL REPORT

#### (Continued)

Sampled: 06/14/21 10:40 by Jim Burton, Todd Bear

1F15018-02 (Water)							
Analyte	Resu	ult	MRL	Units	Dil	Analyzed	Qualifier
Method: [CALC]		h	nstr: [CALC]				
Batch ID: [CALC]	Preparation: [CALC]	P	repared: 06/21/2	21 15:38			Analyst: YMT
Nitrogen, Total	N	ID	0.10	mg/l	1	06/23/21	
Method: EPA 300.0		h	nstr: LC12				
Batch ID: W1F0948	Preparation: _NONE (LC)	P	Prepared: 06/15/2	21 12:00			Analyst: jan
Nitrate as N		ID	110	ug/l	1	06/16/21 03:28	
Method: FPA 351 2		h	nstr: AA06				
Batch ID: W1E1220	Preparation: NONE (WETCHEM)		Prenared: 06/21/2	01 15.38			Analyst: VMT
TKN	None (werchein)	ID	0.10	ma/l	1	06/23/21	Analyse. Thirt
				3			
Method: EPA 353.2		lı lı	nstr: AA01				
Batch ID: W1F0910	Preparation: _NONE (WETCHEM)	P	repared: 06/15/2	21 14:24		00/15/01	Analyst: sar
NO2+NO3 as N	N	1D	200	ug/I	1	06/15/21	
Method: EPA 365.3		h	nstr: UVVIS04				
Batch ID: W1F0912	Preparation: _NONE (WETCHEM)	P	repared: 06/15/2	21 14:33			Analyst: ssi
o-Phosphate as P	N	1D	0.010	mg/l	1	06/15/21 15:23	
Method: SM 2540C		i.	nstr: OVFN01				
Batch ID: W1E1005	Proparation: NONE (WETCHEM)		Prepared: 06/16/2	01 10.07			Analyst: ism
Total Dissolved Solids		32	10	ma/l	1	06/17/21	Analyse. Isin
		-		5			
Sample: BC-blw-SL				Sampled:	06/14/21 1	1:25 by Jim Burto	on, Todd Bear
1F15018-03 (Water)							
Analyte	Resu	ult	MRL	Units	Dil	Analyzed	Qualifier
Method: [CALC]		h	nstr: [CALC]				
Batch ID: [CALC]	Preparation: [CALC]	P	Prepared: 06/21/2	21 15:38			Analyst: YMT
Nitrogen, Total	· · · · · · · · · · · · · · · · · · ·	15	0.10	mg/l	1	06/23/21	
Method: EPA 300.0		h	nstr: LC12				
Batch ID: W1F0948	Preparation: NONE (LC)	Р	<b>repared:</b> 06/15/2	21 12:00			Analvst: ian
Nitrate as N	N	ID.	110	ug/l	1	06/16/21 04:22	<b>,</b> j
M-44 - 4 FDA 251 2							
Method: EPA 351.2		11	nstr: AAU6	4 4 5 2 0			
Batch ID: WIF1220	Preparation: _NONE (WEICHEM)	۲ ۱۶	o 10	21 15:38	1	06/22/21	Analyst: YMI
IKN	U.	15	0.10	my/i	1	00/23/21	
Method: EPA 353.2		h	nstr: AA01				
Batch ID: W1F0910	Preparation: _NONE (WETCHEM)	P	repared: 06/15/2	21 14:24			Analyst: sar
NO2+NO3 as N	N	1D	200	ug/l	1	06/15/21	
		h	nstr: UVVIS04				
Method: EPA 365.3							
Method: EPA 365.3 Batch ID: W1F0912	Preparation: _NONE (WETCHEM)	P	Prepared: 06/15/2	21 14:33			Analyst: ssi
Method: EPA 365.3 Batch ID: W1F0912 o-Phosphate as P	Preparation: _NONE (WETCHEM)	P ID	Prepared: 06/15/2 0.010	21 14:33 mg/l	1	06/15/21 15:24	Analyst: ssi
Method: EPA 365.3 Batch ID: W1F0912 o-Phosphate as P	Preparation: _NONE (WETCHEM)	P ID	Prepared: 06/15/2 0.010	21 14:33 mg/l	1	06/15/21 15:24	Analyst: ssi
Method: EPA 365.3 Batch ID: W1F0912 o-Phosphate as P Method: SM 2540C	Preparation: _NONE (WETCHEM)	ID II	Prepared: 06/15/2 0.010 nstr: OVEN01	21 14:33 mg/l	1	06/15/21 15:24	Analyst: ssi
Method: EPA 365.3 Batch ID: W1F0912 o-Phosphate as P Method: SM 2540C Batch ID: W1F1005 Total Dissolved Solids	Preparation: _NONE (WETCHEM) N Preparation: _NONE (WETCHEM)	P ID II P 37	Prepared: 06/15/2 0.010 nstr: OVEN01 Prepared: 06/16/2	21 14:33 mg/l 21 12:27 mg/l	1	06/15/21 15:24	Analyst: ssi Analyst: ism



Sample:

Sample Results

BC-blw-PH2

# Certificate of Analysis

FINAL REPORT

#### (Continued)

Sampled: 06/14/21 12:05 by Jim Burton, Todd Bear

1F15018-04 (Water)						
Analyte	Result	MRL	Units	Dil	Analyzed	Qualifier
Method: [CALC]		Instr: [CALC]				
Batch ID: [CALC]	Preparation: [CALC]	Prepared: 06/21/	21 15:38			Analyst: YMT
Nitrogen, Total	0.19	0.10	mg/l	1	06/23/21	
Method: EPA 300.0		Instr: LC12				
Batch ID: W1F0948	Preparation: _NONE (LC)	Prepared: 06/15/	21 12:00			Analyst: jan
Nitrate as N	ND	110	ug/l	1	06/16/21 04:40	
Method: EPA 351 2		Instr: AA06				
Batch ID: W1E1220	Preparation: NONE (WETCHEM)	Prenared: 06/21/	21 15.38			Analyst: VMT
TKN	0.19	0.10	ma/l	1	06/23/21	Analyse. Hill
Method: EPA 353.2		Instr: AA01				
Batch ID: W1F0910	Preparation: _NONE (WETCHEM)	Prepared: 06/15/	21 14:24			Analyst: sar
NO2+NO3 as N	ND	200	ug/l	1	06/15/21	
Method: EPA 365.3		Instr: UVVIS04				
Batch ID: W1F0912	Preparation: _NONE (WETCHEM)	Prepared: 06/15/	21 14:33			Analyst: ssi
o-Phosphate as P	ND	0.010	mg/l	1	06/15/21 15:24	
Method: SM 2540C		Instr: OVEN01				
Batch ID: W1E1005	Preparation: NONE (WETCHEM)	Prenared: 06/16/	21 12.27			Analyst. ism
Total Dissolved Solids	34	10	ma/l	1	06/17/21	Analyse. Ishi
		-	5			
Sample: BC-blw-PH3			Samp	led: 06/14/21	12:30 by Jim Burto	on, Todd Bear
Sample: BC-blw-PH3 1F15018-05 (Water)			Samp	led: 06/14/21	12:30 by Jim Burto	on, Todd Bear
Sample: BC-blw-PH3 1F15018-05 (Water) Analyte	Result	MRL	Samp Units	led: 06/14/21 Dil	12:30 by Jim Burto Analyzed	on, Todd Bear Qualifier
Sample: BC-blw-PH3 1F15018-05 (Water) Analyte Method: [CALC]	Result	MRL Instr: [CALC]	Samp Units	led: 06/14/21 Dil	12:30 by Jim Burto	on, Todd Bear <b>Qualifier</b>
Sample:         BC-blw-PH3           1F15018-05 (Water)           Analyte           Method:         [CALC]           Batch ID:         [CALC]	Result Preparation: [CALC]	MRL Instr: [CALC] Prepared: 06/21/	Samp <b>Units</b> 21 15:38	led: 06/14/21 Dil	12:30 by Jim Burto	on, Todd Bear Qualifier Analyst: YMT
Sample:         BC-blw-PH3           1F15018-05 (Water)           Analyte           Method: [CALC]           Batch ID: [CALC]           Nitrogen, Total	Result Preparation: [CALC] 0.11	MRL Instr: [CALC] Prepared: 06/21/ 0.10	Samp Units 21 15:38 mg/l	led: 06/14/21 Dil 1	12:30 by Jim Burto Analyzed 06/23/21	on, Todd Bear Qualifier Analyst: YMT
Sample: BC-blw-PH3 1F15018-05 (Water)  Analyte  Method: [CALC] Batch ID: [CALC] Nitrogen, Tota  Method: EPA 300.0	Result Preparation: [CALC] 0.11	MRL Instr: [CALC] Prepared: 06/21/ 0.10 Instr: LC12	Samp Units 21 15:38 mg/l	led: 06/14/21 Dil 1	12:30 by Jim Burto Analyzed 06/23/21	on, Todd Bear Qualifier Analyst: YMT
Sample:         BC-blw-PH3           1F15018-05 (Water)           Analyte           Method:         [CALC]           Batch ID:         [CALC]           Nitrogen, Total	Result Preparation: [CALC] 0.11 Preparation: _NONE (LC)	MRL Instr: [CALC] Prepared: 06/21/ 0.10 Instr: LC12 Prepared: 06/15/	Samp Units 21 15:38 mg/l 21 12:00	led: 06/14/21 Dil	12:30 by Jim Burto Analyzed 06/23/21	on, Todd Bear Qualifier Analyst: YMT Analyst: jan
Sample:         BC-blw-PH3           1F15018-05 (Water)           Analyte           Method:         [CALC]           Batch ID:         [CALC]           Nitrogen, Total	Result Preparation: [CALC] 0.11 Preparation: _NONE (LC) ND	MRL Instr: [CALC] Prepared: 06/21/ 0.10 Instr: LC12 Prepared: 06/15/ 110	Samp Units 21 15:38 mg/l 21 12:00 ug/l	led: 06/14/21 Dil 1	12:30 by Jim Burto Analyzed 06/23/21 06/16/21 04:58	on, Todd Bear Qualifier Analyst: YMT Analyst: jan
Sample:       BC-blw-PH3         1F15018-05 (Water)         Analyte         Method: [CALC]         Batch ID: [CALC]         Nitrogen, Total         Method: EPA 300.0         Batch ID: W1F0948         Nitrate as N         Method: EPA 351.2	Result Preparation: [CALC] 0.11 Preparation: _NONE (LC) ND	MRL Instr: [CALC] Prepared: 06/21/ 0.10 Instr: LC12 Prepared: 06/15/ 110	Samp Units 21 15:38 mg/l 21 12:00 ug/l	led: 06/14/21 Dil 1	12:30 by Jim Burto Analyzed 06/23/21 06/16/21 04:58	on, Todd Bear Qualifier Analyst: YMT Analyst: jan
Sample: BC-blw-PH3 1F15018-05 (Water) Analyte Method: [CALC] Batch ID: [CALC] Nitrogen, Total Method: EPA 300.0 Batch ID: W1F0948 Nitrate as N Method: EPA 351.2 Batch ID: W1F1220	Result         Preparation: [CALC]         0.11         Preparation: _NONE (LC)         ND         Preparation: NONE (WETCHEM)	MRL Instr: [CALC] Prepared: 06/21/ 0.10 Instr: LC12 Prepared: 06/15/ 110 Instr: AA06 Prepared: 06/21/	Samp Units 21 15:38 mg/l 21 12:00 ug/l 21 15:38	led: 06/14/21 Dil 1	12:30 by Jim Burto Analyzed 06/23/21 06/16/21 04:58	Qualifier Qualifier Analyst: YMT Analyst: jan
Sample:       BC-blw-PH3         1F15018-05 (Water)         Analyte         Method: [CALC]         Batch ID: [CALC]         Nitrogen, Total         Method: EPA 300.0         Batch ID: W1F0948         Nitrate as N	Result         Preparation: [CALC]         0.11         Preparation: _NONE (LC)         ND         Preparation: _NONE (WETCHEM)         0.11	MRL Instr: [CALC] Prepared: 06/21/ 0.10 Instr: LC12 Prepared: 06/15/ 110 Instr: AA06 Prepared: 06/21/ 0.10	Samp Units 21 15:38 mg/l 21 12:00 ug/l 21 15:38 mg/l	led: 06/14/21 Dil 1 1	12:30 by Jim Burto Analyzed 06/23/21 06/16/21 04:58	Qualifier Qualifier Analyst: YMT Analyst: jan Analyst: YMT
Sample:       BC-blw-PH3         1F15018-05 (Water)         Analyte         Method: [CALC]         Batch ID: [CALC]         Nitrogen, Total         Method: EPA 300.0         Batch ID: W1F0948         Nitrate as N         Method: EPA 351.2         Batch ID: W1F1220         TKN	Result         Preparation: [CALC]         0.11         Preparation: _NONE (LC)         ND         Preparation: _NONE (WETCHEM)         0.11	MRL Instr: [CALC] Prepared: 06/21/ 0.10 Instr: LC12 Prepared: 06/15/ 110 Instr: AA06 Prepared: 06/21/ 0.10	Samp Units 21 15:38 mg/l 21 12:00 ug/l 21 15:38 mg/l	led: 06/14/21 Dil 1 1	12:30 by Jim Burto Analyzed 06/23/21 06/16/21 04:58	Qualifier Analyst: YMT Analyst: jan Analyst: YMT
Sample: BC-blw-PH3 1F15018-05 (Water) Analyte  Method: [CALC] Batch ID: [CALC] Method: EPA 300.0 Batch ID: W1F0948 Nitrate as N Method: EPA 351.2 Batch ID: W1F1220 TKN  Method: EPA 353.2	Result         Preparation: [CALC]         0.11         Preparation: _NONE (LC)         ND         Preparation: _NONE (WETCHEM)         0.11	MRL Instr: [CALC] Prepared: 06/21/ 0.10 Instr: LC12 Prepared: 06/15/ 110 Instr: AA06 Prepared: 06/21/ 0.10 Instr: AA01	Samp Units 21 15:38 mg/l 21 12:00 ug/l 21 15:38 mg/l	led: 06/14/21 Dil 1 1	12:30 by Jim Burto Analyzed 06/23/21 06/16/21 04:58 06/23/21	on, Todd Bear Qualifier Analyst: YMT Analyst: jan Analyst: YMT
Sample:       BC-blw-PH3         1F15018-05 (Water)         Analyte         Method:       [CALC]         Batch ID:       [CALC]         Nitrogen, Total         Method:       EPA 300.0         Batch ID:       W1F0948         Nitrate as N         Method:       EPA 351.2         Batch ID:       W1F1220         TKN       TKN	Result         Preparation: [CALC]         0.11         Preparation: _NONE (LC)         ND         Preparation: _NONE (WETCHEM)         0.11         Preparation: _NONE (WETCHEM)         0.11	MRL Instr: [CALC] Prepared: 06/21/ 0.10 Instr: LC12 Prepared: 06/15/ 110 Instr: AA06 Prepared: 06/21/ 0.10 Instr: AA01 Prepared: 06/15/	Samp Units 21 15:38 mg/l 21 12:00 ug/l 21 15:38 mg/l 21 14:24	led: 06/14/21 Dil 1 1	12:30 by Jim Burto Analyzed 06/23/21 06/16/21 04:58 06/23/21	Qualifier Qualifier Analyst: YMT Analyst: jan Analyst: YMT Analyst: sar
Sample:       BC-blw-PH3         1F15018-05 (Water)         Analyte         Method:       [CALC]         Batch ID:       [CALC]         Method:       EPA 300.0         Batch ID:       W1F0948         Nitrate as N       Nitrate         Method:       EPA 351.2         Batch ID:       W1F1220         TKN       TKN         Method:       EPA 353.2         Batch ID:       W1F0910         N02+NO3 as N       NO2	Result         Preparation: [CALC]         0.11         Preparation: _NONE (LC)         ND         Preparation: _NONE (WETCHEM)         0.11         Preparation: _NONE (WETCHEM)         ND         ND	MRL           Instr: [CALC]           Prepared: 06/21/ 0.10           Instr: LC12           Prepared: 06/15/ 110           Instr: AA06           Prepared: 06/21/ 0.10           Instr: AA06           Prepared: 06/21/ 0.10           Instr: AA01           Prepared: 06/15/ 200	Samp Units 21 15:38 mg/l 21 12:00 ug/l 21 15:38 mg/l 21 14:24 ug/l	led: 06/14/21	12:30 by Jim Burto Analyzed 06/23/21 06/16/21 04:58 06/23/21	Qualifier Qualifier Analyst: YMT Analyst: jan Analyst: YMT Analyst: sar
Sample:       BC-blw-PH3         1F15018-05 (Water)         Analyte         Method:       [CALC]         Batch ID:       [CALC]         Method:       EPA 30.0.         Batch ID:       W1F0948         Nitrate as N       Nitrate         Method:       EPA 351.2.         Batch ID:       W1F1220         TKN       Method:         Method:       EPA 353.2.         Batch ID:       W1F0910         NO2+NO3 as N       Social Soc	Result         Preparation: [CALC]         0.11         Preparation: _NONE (LC)         ND         Preparation: _NONE (WETCHEM)         0.11         Preparation: _NONE (WETCHEM)         0.11         Preparation: _NONE (WETCHEM)         ND	MRL           Instr: [CALC]           Prepared: 06/21/ 0.10           Instr: LC12           Prepared: 06/15/ 110           Instr: AA06           Prepared: 06/21/ 0.10           Instr: AA06           Prepared: 06/21/ 0.10           Instr: AA01           Prepared: 06/15/ 200           Instr: UVVIS04	Samp Units 21 15:38 mg/l 21 12:00 ug/l 21 15:38 mg/l 21 14:24 ug/l	led: 06/14/21	12:30 by Jim Burto Analyzed 06/23/21 06/16/21 04:58 06/23/21	on, Todd Bear Qualifier Analyst: YMT Analyst: jan Analyst: YMT Analyst: sar
Sample:       BC-blw-PH3         1F15018-05 (Water)         Analyte         Method:       [CALC]         Batch ID:       [CALC]         Nitrogen, Total       (CAUC)         Batch ID:       (W1F0948)         Nitrate as N       (CAUC)         Method:       EPA 351.2         Batch ID:       (W1F1220)         TKN       (CAUC)         Method:       EPA 353.2         Batch ID:       (W1F0910)         NO2+NO3 as N       (CAUC)         Method:       EPA 365.3         Batch ID:       (W1F0912)	Result         Preparation: [CALC]         0.11         Preparation: _NONE (LC)         ND         Preparation: _NONE (WETCHEM)         0.11         Preparation: _NONE (WETCHEM)         ND         Preparation: _NONE (WETCHEM)         ND	MRL Instr: [CALC] Prepared: 06/21/ 0.10 Instr: LC12 Prepared: 06/15/ 110 Instr: AA06 Prepared: 06/21/ 0.10 Instr: AA01 Prepared: 06/15/ 200 Instr: UVVIS04 Prepared: 06/15/	Samp Units 21 15:38 mg/l 21 12:00 ug/l 21 15:38 mg/l 21 14:24 ug/l 21 14:33	led: 06/14/21	12:30 by Jim Burto Analyzed 06/23/21 06/16/21 04:58 06/23/21	on, Todd Bear Qualifier Analyst: YMT Analyst: jan Analyst: YMT Analyst: sar Analyst: ssi
Sample:       BC-blw-PH3         1F15018-05 (Water)         Analyte         Method:       [CALC]         Batch ID:       [CALC]         Nitrogen, Total       Image: Comparison of the second of the	Result         Preparation: [CALC]         0.11         Preparation: _NONE (LC)         ND         Preparation: _NONE (WETCHEM)         0.11         Preparation: _NONE (WETCHEM)         ND         Preparation: _NONE (WETCHEM)         ND         Preparation: _NONE (WETCHEM)         ND	MRL Instr: [CALC] Prepared: 06/21/ 0.10 Instr: LC12 Prepared: 06/15/ 110 Instr: AA06 Prepared: 06/21/ 0.10 Instr: AA01 Prepared: 06/15/ 200 Instr: UVVIS04 Prepared: 06/15/ 0.010	Samp Units 21 15:38 mg/l 21 12:00 ug/l 21 15:38 mg/l 21 14:24 ug/l 21 14:33 mg/l	led: 06/14/21	12:30 by Jim Burto Analyzed 06/23/21 06/16/21 04:58 06/23/21 06/15/21	on, Todd Bear Qualifier Analyst: YMT Analyst: jan Analyst: YMT Analyst: sar Analyst: ssi
Sample:       BC-blw-PH3         1F15018-05 (Water)         Analyte         Method:       [CALC]         Batch ID:       [CALC]         Nitrogen, Total       Comparing         Method:       EPA 300.0         Batch ID:       W1F0948         Nitrate as N       Comparing         Method:       EPA 351.2         Batch ID:       W1F1220         TKN       Comparing         Method:       EPA 353.2         Batch ID:       W1F0910         NO2+NO3 as N       Comparing         Method:       EPA 365.3         Batch ID:       W1F0912         o-Phosphate       as P	Result         Preparation: [CALC]         0.11         Preparation: _NONE (LC)         ND         Preparation: _NONE (WETCHEM)         0.11         Preparation: _NONE (WETCHEM)         ND         Preparation: _NONE (WETCHEM)         ND         Preparation: _NONE (WETCHEM)         ND	MRL Instr: [CALC] Prepared: 06/21/ 0.10 Instr: LC12 Prepared: 06/15/ 110 Instr: AA06 Prepared: 06/21/ 0.10 Instr: AA01 Prepared: 06/15/ 200 Instr: UVVIS04 Prepared: 06/15/ 0.010	Samp Units 21 15:38 mg/l 21 12:00 ug/l 21 15:38 mg/l 21 14:24 ug/l 21 14:33 mg/l	led: 06/14/21	12:30 by Jim Burto Analyzed 06/23/21 06/16/21 04:58 06/15/21 06/15/21	Qualifier Qualifier Analyst: YMT Analyst: jan Analyst: YMT Analyst: sar Analyst: ssi
Sample:       BC-blw-PH3         1F15018-05 (Water)         Analyte         Method:       [CALC]         Batch ID:       [CALC]         Method:       EPA 30.0.         Batch ID:       W1F0948         Nitrate as N       Nitrate         Method:       EPA 351.2.         Batch ID:       W1F1220         TKN       NO2+NO3 as N         NO2+NO3 as N       SACANANCA         Batch ID:       W1F0910         NO2+NO3 as N       SACANANCA         Method:       EPA 35.3.         Batch ID:       W1F0910         NO2+NO3 as N       SACANANCA         Method:       EPA 35.3.         Batch ID:       W1F0912         o-Phosphate as P       SACANANCA         Method:       SM 2540C         Batch ID:       W1F1005	Result         Preparation: [CALC]         0.11         Preparation: _NONE (LC)         ND         Preparation: _NONE (WETCHEM)         0.11         Preparation: _NONE (WETCHEM)         ND         Preparation: _NONE (WETCHEM)         ND         Preparation: _NONE (WETCHEM)         ND         Preparation: _NONE (WETCHEM)         ND         Preparation: _NONE (WETCHEM)         ND	MRL Instr: [CALC] Prepared: 06/21/ 0.10 Instr: LC12 Prepared: 06/15/ 110 Instr: AA06 Prepared: 06/21/ 0.10 Instr: AA01 Prepared: 06/15/ 200 Instr: UVVIS04 Prepared: 06/15/ 0.010 Instr: OVEN01 Prepared: 06/16/	Samp Units 21 15:38 mg/l 21 12:00 ug/l 21 15:38 mg/l 21 14:24 ug/l 21 14:33 mg/l 21 12:27	led: 06/14/21	12:30 by Jim Burto Analyzed 06/23/21 06/16/21 04:58 06/15/21 06/15/21	Qualifier Qualifier Analyst: YMT Analyst: jan Analyst: YMT Analyst: sar Analyst: ssi



### Quality Control Results

## **Certificate of Analysis**

FINAL REPORT

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AIIIOIIS	Dy IC,	LFA	Methou	500.0

				Spike	Source		%REC		RPD	
Analyte	Result	MRL	Units	Level	Result	%REC	Limits	RPD	Limit	Qualifier
Nitrate as N	· ND	110	ua/l	Prepared & Ana	lyzed: 06/15	/21				
			ug, .							
LCS (W1F0948-BS1) Nitrate as N	998	110	ua/l	Prepared & Ana	lyzed: 06/15	100	90-110			
		110	ugn	1000		100	00 110			
Matrix Spike (W1F0948-MS1) Nitrate as N	Source: 1F07013-01	1100	ua/l	Prepared: 06/15/21	Analyzed: 0	6/16/21 QQ	84-115			
	11100	1100	ugn	10000	1100	00	04-110			
Matrix Spike (W1F0948-MS2)	Source: 1F07013-03	1100	ug/l	Prepared: 06/15/21	Analyzed: 0	6/16/21 100	84 115			
	11100	1100	ug/i	10000	1100	100	04-115			
Matrix Spike Dup (W1F0948-MSD1)	Source: 1F07013-01	1100		Prepared: 06/15/21	Analyzed: 0	6/16/21	04 115	0.4	20	
Nitrate as N	17800	1100	ug/i	10000	7790	100	84-115	0.4	20	
Matrix Spike Dup (W1F0948-MSD2)	Source: 1F07013-03	1100		Prepared: 06/15/21	Analyzed: 0	6/16/21	04.445			
Nitrate as N	11100	1100	ug/l	10000	1160	100	84-115	0.09	20	
Conventional Chemistry/Physical Parameters by APHA/	EPA/ASTM Methods									
				Spike	Source		%REC		RPD	
Analyte	Result	MRL	Units	Level	Result	%REC	Limits	RPD	Limit	Qualifier
Batch: W1F0910NONE (WETCHEM)										
Blank (W1F0910-BLK1)	ND	200	ug/l	Prepared & Ana	lyzed: 06/15	5/21				
NO21NO3 as N		200	ug/i							
LCS (W1F0910-BS1)	000	200		Prepared & Ana	lyzed: 06/15	5/21	00.440			
NO2+NO3 as N	- 989	200	ug/i	1000		99	90-110			
Matrix Spike (W1F0910-MS1)	Source: 1F07004-07			Prepared & Ana	lyzed: 06/15	5/21				
NO2+NO3 as N	- 7340	200	ug/l	2000	5310	102	90-110			
Matrix Spike (W1F0910-MS2)	Source: 1F07013-07			Prepared & Ana	lyzed: 06/15	6/21				
NO2+NO3 as N	7510	200	ug/l	2000	5310	110	90-110			
Matrix Spike Dup (W1F0910-MSD1)	Source: 1F07004-07			Prepared & Ana	lyzed: 06/15	6/21				
NO2+NO3 as N	7310	200	ug/l	2000	5310	100	90-110	0.4	20	
Matrix Spike Dup (W1F0910-MSD2)	Source: 1F07013-07			Prepared & Ana	lyzed: 06/15	5/21				
NO2+NO3 as N	7470	200	ug/l	2000	5310	108	90-110	0.5	20	
Batch: W1F0912NONE (WETCHEM)										
Blank (W1F0912-BLK1)				Prepared & Ana	lyzed: 06/15	5/21				
o-Phosphate as P	- ND	0.010	mg/l							
LCS (W1F0912-BS1)				Prepared & Ana	lvzed: 06/15	/21				
o-Phosphate as P	0.206	0.010	mg/l	0.200		103	88-111			
Matrix Spike (W1E0012 MS1)	Source: 1515022-01			Propared & Apa	ward: 06/15	:/21				
o-Phosphate as P	0.305	0.010	mg/l	0.200	0.110	98	85-112			
	6 1515022.01		Ū	<b>D</b>						
o-Phosphate as P	0 301	0.010	ma/l	0 200	0 110	96	85-112	1	20	
				0.200					_•	
Batch: W1F1005NONE (WETCHEM)										
Blank (W1F1005-BLK1)		10		Prepared: 06/16/21	Analyzed: 0	6/17/21				
Iotal Dissolved Solids	ND	10	mg/l							
LCS (W1F1005-BS1)				Prepared: 06/16/21	Analyzed: 0	6/17/21				
Total Dissolved Solids	810	10	mg/l	824		98	96-102			



### Quality Control Results

# **Certificate of Analysis**

FINAL REPORT

(Continued)

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods (Continued)

				Spike	Source		%REC		RPD	
Analyte	Result	MRL	Units	Level	Result	%REC	Limits	RPD	Limit	Qualifier
Batch: W1F1005NONE (WETCHEM) (Continued)										
Duplicate (W1F1005-DUP1)	Source: 1E24085-01		F	Prepared: 06/16/2	21 Analyzed: 0	6/17/21				
Total Dissolved Solids	893	10	mg/l		892			0.1	10	
Duplicate (W1F1005-DUP2)	Source: 1F15037-01		F	Prepared: 06/16/2	21 Analyzed: 0	6/17/21				
Total Dissolved Solids	975	10	mg/l		959			2	10	
Batch: W1F1220NONE (WETCHEM)										
Blank (W1F1220-BLK1)			F	Prepared: 06/21/2	21 Analyzed: 0	6/23/21				
TKN	ND	0.10	mg/l							
Blank (W1F1220-BLK2)			F	Prepared: 06/21/2	21 Analyzed: 0	6/23/21				
ТКМ		0.10	mg/l							
LCS (W1F1220-BS1)			F	Prepared: 06/21/2	21 Analyzed: 0	6/23/21				
ТКМ	0.955	0.10	mg/l	1.00		95	90-110			
LCS (W1F1220-BS2)			F	Prepared: 06/21/2	21 Analyzed: 0	6/23/21				
TKN	0.950	0.10	mg/l	1.00		95	90-110			
Matrix Spike (W1F1220-MS1)	Source: 1F10020-07		F	Prepared: 06/21/2	21 Analyzed: 0	6/23/21				
TKN	1.22	0.10	mg/l	1.00	0.285	94	90-110			
Matrix Spike (W1F1220-MS2)	Source: 1F15018-04		F	Prepared: 06/21/2	21 Analyzed: 0	6/23/21				
ТКМ	1.08	0.10	mg/l	1.00	0.185	90	90-110			
Matrix Spike Dup (W1F1220-MSD1)	Source: 1F10020-07		F	Prepared: 06/21/2	21 Analyzed: 0	6/23/21				
TKN	1.24	0.10	mg/l	1.00	0.285	96	90-110	1	10	
Matrix Spike Dup (W1F1220-MSD2)	Source: 1F15018-04		F	Prepared: 06/21/2	21 Analyzed: 0	6/23/21				
TKN	1.09	0.10	mg/l	1.00	0.185	91	90-110	0.6	10	



FINAL REPORT

### Notes and Definitions

ltem	Definition
%REC	Percent Recovery
Dil	Dilution
MRL	The minimum levels, concentrations, or quantities of a target variable (e.g., target analyte) that can be reported with a specified degree of confidence The MRL is also known as Limit of Quantitation (LOQ)
ND	NOT DETECTED at or above the Method Reporting Limit (MRL). If Method Detection Limit (MDL) is reported, then ND means not detected at or above the MDL.

RPD Relative Percent Difference

Source Sample that was matrix spiked or duplicated.

Any remaining sample(s) will be disposed of one month from the final report date unless other arrangements are made in advance.

All results are expressed on wet weight basis unless otherwise specified.

All samples collected by Weck Laboratories have been sampled in accordance to laboratory SOP Number MIS002.

**Reviewed by:** 

1: State

Chris Samatmanakit Project Manager



DoD-ELAP ANAB #L2457 • DoD-ISO ANAB # • ELAP-CA #1132 • EPA-UCMR #CA00211 • Guam-EPA #17-008R • HW-DOH # • ISO17025 ANAB #L2457.01 • LACSD #10143 • NELAP-OR #4047 • NJ-DEP #CA015 • NV-DEP #NAC 445A • SCAQMD #93LA1006

This is a complete final report. The information in this report applies to the samples analyzed in accordance with the chain-of-custody document. Weck Laboratories certifies that the test results meet all requirements of TNI unless noted by qualifiers or written in the Case Narrative. This analytical report must be reproduced in its entirety.

### Weck Laboratories 14859 Clark Avenue City of Industry, CA 91745 (626) 336-2139

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					С	HAIN	I OF CU	ST	ODY	/ FC	DRN	1		15	15	21	Q	Page	1 of 1
Client Name/Address:			Project/	PO Num	nber:									Analys	is Req	uired	<u></u>		
PSOMAS 3 HUTTON CENTRE DRIVE, SUITE SANTA ANA, CA 92707	200		2KLE010102			300.0	EPA Method	SM2540C	y EPA	Aethod	ation								
Project Manager:			Phone	Phone Number:		1 pg	<b>64</b>	lids S	gent	PAN	alcult								
MICHAEL P. DONOVAN (mpdonovn/	@cox.net)		(714) 328-5234		A Meth	ae-OF	/ed Sol	N Nitro	ц Ч И С	n by ci									
Sampler: Jim Burton, Todd Bear			Fax Number: 714.545.8883				ldsot	isso	eldal 351	03.8	troge			ĺ					
Sample Description	Sample Matrix	Container Type	# of Cont.	Sampl	ing Date	Time	Preservation	Litrate-	Orthopt 365.3	Total D	Total KJ	402+N 153.2	otal Ni						
BC-blw-LS	water	60 ml Poly	1	لإك	4/21	9:35	None	X	100			20	- <del>-</del>			[		S	Decial Instructions
	water	250 ml Poły	1			1	None	-	x							<u> </u>		Filter	ed with 0.45
	water	500 ml Poly	1				None			X									
<u>_</u>	water	250 mi Poly	1		Ļ	T	H2SO4	1			X	x	x						
BC-NF-1	water	60 ml Poly	1	6 14	121	10:40	None	x											····
	water	250 ml Poly	1	1	í	1	None		X								<u><u></u>+ −<u></u>+</u>	Filten	
	water	500 ml Poły	1				None			х						· ·	<b>}−−−</b>  −	1 101	
	water	250 ml Poly	1		<u>L</u>	L	H2SO4				x	x	х	_					······
BC-blw-SL	water	60 ml Poly	1	6 1	1/21	11:250	None	x											
	water	250 ml Poiy	1		<u>í</u>	1	None		X		1							Filter	ed with 0.45m
	water	500 mi Poły	1				None			х									
-L	water	250 mł Poly	1		<u>بل</u> ر	L	H2SO4				x	X	х					_	
BC-blw- PH2	water	60 ml Poly	1	6/1-	(]21	12:050	None	X											
	water	250 ml Poly	1				None		X					-				Filter	ad with 0.450
	water	500 ml Poły	1				None			X									
	water	250 mi Poly	1	-	L	1	H2SO4				x	X	X						••••••••••••••••••••••••••••••••••••••
BC-DW-PH3	water	60 ml Poly	1	6 34	1/21	12:300	- None	X							_				• • • • • • • • • • • • • • • • • • •
<b>\</b>	water	250 ml Poly	1	. 1			None		X						!			Filtere	ei with 0.45u
	water	500 ml Poly	1				None	_		X									
	water	250 mí Poly	1		<u> </u>	1	H2SO4				х	x	x						
Reinquished By:	0/14/21	Date /Time:	pm	Receive	diby:		ß		· · · · · ·	•		Date /T	ime:			Tuma Same	round Tim Day	e: (Chec 72 H	() ours
Polinguistied By: +4444 (	12/15/	Date /Time:	ı	Receive	d by: 	fQ.	AF					Date /T	ime:	2-		24 Ho 48 Ho		5 Da	ys nal X
reinquisned By:		Date /Time;		Receive	din Labb	¢:						Ďаte /Т	ime:			Samp Intact	le Integrity	(Check) On łi	» x 2.4"

P33



FINAL REPORT

Work Orders:	1F16006	Report Date:	7/01/2021
		Received Date:	6/16/2021
Project <sup>.</sup>	2KLE010102	Turnaround Time:	Normal
i i ojecu		Phones:	(714) 751-7373
		Fax:	(714) 545-8883
Attn:	Michael P. Donovan	P.O. #:	
Client:	Psomas - Santa Ana, CA 3 Hutton Centre Dr., Ste. 200 Santa Ana, CA 92707	Billing Code:	

Dear Michael P. Donovan,

Enclosed are the results of analyses for samples received 6/16/21 with the Chain-of-Custody document. The samples were received in good condition, at 3.4 °C and on ice. All analyses met the method criteria except as noted in the case narrative or in the report with data qualifiers.

Sample Results						
Sample: BC-blw-PH4			Samp	oled: 06/15/2	1 8:05 by Jim Burto	on, Todd Bear
1F16006-01 (Water)						
Analyte	Rest	ult MRL	Units	Dil	Analyzed	Qualifier
Method: [CALC]		Instr: [CAL	.C]			
Batch ID: [CALC]	Preparation: [CALC]	Prepared:	06/25/21 17:30			Analyst: YMT
Nitrogen, Total	· · · · · · · · · · · · · · · · · · ·	ND 0.10	mg/l	1	06/29/21	
Method: EPA 300.0		Instr: LC12	2			
Batch ID: W1F0976	Preparation: _NONE (LC)	Prepared:	06/16/21 10:53			Analyst: jan
Nitrate as N	N	ID 110	ug/l	1	06/16/21 22:18	
Method: EPA 351.2		Instr: AA0	6			
Batch ID: W1F1512	Preparation: _NONE (WETCHEM)	Prepared:	06/25/21 17:30			Analyst: YMT
ТКМ	N	ND 0.10	mg/l	1	06/29/21	
Method: EPA 353.2		Instr: AA0	1			
Batch ID: W1F1059	Preparation: _NONE (WETCHEM)	Prepared:	06/17/21 10:22			Analyst: sar
NO2+NO3 as N	N	ND 200	ug/l	1	06/17/21	
Method: EPA 365.3		Instr: UVV	IS04			
Batch ID: W1F1019	Preparation: _NONE (WETCHEM)	Prepared:	06/16/21 17:02			Analyst: ssi
o-Phosphate as P	N	ND 0.010	mg/l	1	06/16/21 17:44	
Method: SM 2540C		Instr: OVE	N01			
Batch ID: W1F1005	Preparation: _NONE (WETCHEM)	Prepared:	06/16/21 12:27			Analyst: ism
Total Dissolved Solids	4	<b>41</b> 10	mg/l	1	06/17/21	



Sample:

Sample Results

BC-blw-PH5

# Certificate of Analysis

FINAL REPORT

#### (Continued)

Sampled: 06/15/21 8:35 by Jim Burton, Todd Bear

1F16006-02 (Water)						
Analyte	Result	MRL	Units	Dil	Analyzed	Qualifier
Method: [CALC]		Instr: [CALC]				
Batch ID: [CALC]	Preparation: [CALC]	Prepared: 06/25	/21 17:30			Analyst: YMT
Nitrogen, Total	0.13	0.10	mg/l	1	06/29/21	
Method: EPA 300.0		Instr: LC12				
Batch ID: W1F0976	Preparation: _NONE (LC)	<b>Prepared:</b> 06/16	/21 10:53			Analyst: jan
Nitrate as N	ND	110	ug/l	1	06/16/21 22:36	
Mothod: EDA 251 2		Instr: AAO6				
Poteb ID: W151512	Proposition: NONE (METCHENA)	Drepared: 06/25	/21 17:20			Amaluate VMT
		0 10	/21 17.50	1	06/29/21	Analyst: MMT
	0.13	0.10	ing/i		00/23/21	
Method: EPA 353.2		Instr: AA01				
Batch ID: W1F1059	Preparation: _NONE (WETCHEM)	Prepared: 06/17,	/21 10:22			Analyst: sar
NO2+NO3 as N	ND	200	ug/l	1	06/17/21	
Method: EPA 365.3		Instr: UVVIS04				
Batch ID: W1F1019	Preparation: _NONE (WETCHEM)	Prepared: 06/16	/21 17:02			Analyst: ssi
o-Phosphate as P	ND	0.010	mg/l	1	06/16/21 17:44	
Method: SM 2540C		Instr: OVENI01				
	Proposition: NONE (METCHENA)	Drepared: 06/16	/21 12.27			Analyst icm
Total Dissolved Solids	Preparation: _NONE (WEICHEM)	10	ma/l	1	06/17/21	Analyst: ISIII
		10	iiig/i	•	00,11121	
Sample: BC-blw-PH6			Samp	oled: 06/15/2	1 9:05 by Jim Burto	on, Todd Bear
1E16006 02 (Mater)						
ir iouuo-us (water)						
Analyte	Result	MRL	Units	Dil	Analyzed	Qualifier
Analyte Method: [CALC]	Result	MRL Instr: [CALC]	Units	Dil	Analyzed	Qualifier
Analyte Method: [CALC] Batch ID: [CALC]	Result Preparation: [CALC]	MRL Instr: [CALC] Prepared: 06/25,	<b>Units</b> /21 17:30	Dil	Analyzed	Qualifier Analyst: YMT
Analyte Method: [CALC] Batch ID: [CALC] Nitrogen, Total	Result Preparation: [CALC]	MRL Instr: [CALC] Prepared: 06/25, 0.10	Units /21 17:30 mg/l	Dil 1	Analyzed 06/29/21	Qualifier Analyst: YMT
Analyte Method: [CALC] Batch ID: [CALC] Nitrogen, Total Method: EPA 300.0	Result Preparation: [CALC] ND	MRL Instr: [CALC] Prepared: 06/25, 0.10 Instr: LC12	Units /21 17:30 mg/l	Dil 1	<b>Analyzed</b> 06/29/21	Qualifier Analyst: YMT
Analyte Method: [CALC] Batch ID: [CALC] Nitrogen, Total Method: EPA 300.0 Batch ID: W1E0976	Result Preparation: [CALC] ND Preparation: NONE (LC)	MRL Instr: [CALC] Prepared: 06/25, 0.10 Instr: LC12 Prepared: 06/16	Units /21 17:30 mg/l /21 10:53	Dil 1	Analyzed	Qualifier Analyst: YMT
Analyte Method: [CALC] Batch ID: [CALC] Nitrogen, Total Method: EPA 300.0 Batch ID: W1F0976 Nitrate as N	Result Preparation: [CALC] ND Preparation: _NONE (LC) ND	MRL Instr: [CALC] Prepared: 06/25, 0.10 Instr: LC12 Prepared: 06/16, 110	Units /21 17:30 mg/l /21 10:53 ug/l	<b>Dil</b> 1	Analyzed 06/29/21 06/16/21 22:54	Qualifier Analyst: YMT Analyst: jan
Analyte Method: [CALC] Batch ID: [CALC] Nitrogen, Total Method: EPA 300.0 Batch ID: W1F0976 Nitrate as N	Result         Preparation: [CALC]         ND         Preparation: _NONE (LC)         ND	MRL Instr: [CALC] Prepared: 06/25, 0.10 Instr: LC12 Prepared: 06/16, 110	Units /21 17:30 mg/l /21 10:53 ug/l	<b>Dil</b> 1	Analyzed 06/29/21 06/16/21 22:54	Qualifier Analyst: YMT Analyst: jan
Analyte Method: [CALC] Batch ID: [CALC] Nitrogen, Total Method: EPA 300.0 Batch ID: W1F0976 Nitrate as N Method: EPA 351.2	Result         Preparation: [CALC]         ND         Preparation: _NONE (LC)         ND	MRL Instr: [CALC] Prepared: 06/25, 0.10 Instr: LC12 Prepared: 06/16, 110 Instr: AA06	Units /21 17:30 mg/l /21 10:53 ug/l	<b>Dil</b> 1	Analyzed 06/29/21 06/16/21 22:54	Qualifier Analyst: YMT Analyst: jan
Analyte Method: [CALC] Batch ID: [CALC] Nitrogen, Total Method: EPA 300.0 Batch ID: W1F0976 Nitrate as N Method: EPA 351.2 Batch ID: W1F1512	Result         Preparation: [CALC]         ND         Preparation: _NONE (LC)         ND         Preparation: _NONE (WETCHEM)	MRL Instr: [CALC] Prepared: 06/25, 0.10 Instr: LC12 Prepared: 06/16, 110 Instr: AA06 Prepared: 06/25,	Units /21 17:30 mg/l /21 10:53 ug/l /21 17:30	<b>Dil</b> 1	Analyzed 06/29/21 06/16/21 22:54	Qualifier Analyst: YMT Analyst: jan Analyst: YMT
Analyte Method: [CALC] Batch ID: [CALC] Nitrogen, Total Method: EPA 300.0 Batch ID: W1F0976 Nitrate as N Method: EPA 351.2 Batch ID: W1F1512 TKN	Result         Preparation: [CALC]         ND         Preparation: _NONE (LC)         ND         Preparation: _NONE (WETCHEM)         ND	MRL Instr: [CALC] Prepared: 06/25, 0.10 Instr: LC12 Prepared: 06/16, 110 Instr: AA06 Prepared: 06/25, 0.10	Units /21 17:30 mg/l /21 10:53 ug/l /21 17:30 mg/l	<b>Dil</b> 1 1 1	Analyzed 06/29/21 06/16/21 22:54	Qualifier Analyst: YMT Analyst: jan Analyst: YMT
Analyte         Method: [CALC]         Batch ID: [CALC]         Nitrogen, Total         Method: EPA 300.0         Batch ID: W1F0976         Nitrate as N         Method: EPA 351.2         Batch ID: W1F1512         TKN         Method: EPA 353.2	Result         Preparation: [CALC]         ND         Preparation: _NONE (LC)         ND         Preparation: _NONE (WETCHEM)         ND	MRL Instr: [CALC] Prepared: 06/25, 0.10 Instr: LC12 Prepared: 06/16, 110 Instr: AA06 Prepared: 06/25, 0.10	Units /21 17:30 mg/l /21 10:53 ug/l /21 17:30 mg/l	<b>Dil</b> 1 1	Analyzed 06/29/21 06/16/21 22:54 06/29/21	Qualifier Analyst: YMT Analyst: jan Analyst: YMT
Analyte         Method: [CALC]         Batch ID: [CALC]         Nitrogen, Total         Method: EPA 300.0         Batch ID: W1F0976         Nitrate as N         Method: EPA 351.2         Batch ID: W1F1512         TKN         Method: EPA 353.2         Batch ID: W1F1059	Result         Preparation: [CALC]         ND         Preparation: _NONE (LC)         Preparation: _NONE (WETCHEM)         ND         Preparation: _NONE (WETCHEM)         Preparation: _NONE (WETCHEM)	MRL Instr: [CALC] Prepared: 06/25, 0.10 Instr: LC12 Prepared: 06/16, 110 Instr: AA06 Prepared: 06/25, 0.10 Instr: AA01 Prepared: 06/17,	Units /21 17:30 mg/l /21 10:53 ug/l /21 17:30 mg/l /21 10:22	<b>Dil</b> 1 1	Analyzed 06/29/21 06/16/21 22:54 06/29/21	Qualifier Analyst: YMT Analyst: jan Analyst: YMT
Analyte         Method: [CALC]         Batch ID: [CALC]         Nitrogen, Total         Method: EPA 300.0         Batch ID: W1F0976         Nitrate as N         Method: EPA 351.2         Batch ID: W1F1512         TKN         Method: EPA 353.2         Batch ID: W1F1059         NO2+NO3 as N	Result         Preparation: [CALC]         ND         Preparation: _NONE (LC)         Preparation: _NONE (WETCHEM)         ND         Preparation: _NONE (WETCHEM)         ND         ND         ND         ND         ND         ND         ND         ND         ND	MRL Instr: [CALC] Prepared: 06/25, 0.10 Instr: LC12 Prepared: 06/16, 110 Instr: AA06 Prepared: 06/25, 0.10 Instr: AA01 Prepared: 06/17, 200	Units /21 17:30 mg/l /21 10:53 ug/l /21 17:30 mg/l /21 10:22 ug/l	Dil 1 1 1 1	Analyzed 06/29/21 06/16/21 22:54 06/29/21	Qualifier Analyst: YMT Analyst: jan Analyst: YMT Analyst: Sar
Analyte Method: [CALC] Batch ID: [CALC] Nitrogen, Total Method: EPA 300.0 Batch ID: W1F0976 Nitrate as N Method: EPA 351.2 Batch ID: W1F1512 TKN Method: EPA 353.2 Batch ID: W1F1059 NO2+NO3 as N	Result         Preparation: [CALC]         ND         Preparation: _NONE (LC)         ND         Preparation: _NONE (WETCHEM)         Preparation: _NONE (WETCHEM)         ND         Preparation: _NONE (WETCHEM)         ND	MRL Instr: [CALC] Prepared: 06/25, 0.10 Instr: LC12 Prepared: 06/16, 110 Instr: AA06 Prepared: 06/25, 0.10 Instr: AA01 Prepared: 06/17, 200 Instr: UVVIS04	Units /21 17:30 mg/l /21 10:53 ug/l /21 17:30 mg/l /21 10:22 ug/l	Dil 1 1 1 1	Analyzed 06/29/21 06/16/21 22:54 06/29/21	Qualifier Analyst: YMT Analyst: jan Analyst: YMT Analyst: sar
Analyte         Method: [CALC]         Batch ID: [CALC]         Nitrogen, Total         Method: EPA 300.0         Batch ID: W1F0976         Nitrate as N         Method: EPA 351.2         Batch ID: W1F1512         TKN         Method: EPA 353.2         Batch ID: W1F1059         NO2+NO3 as N         Method: EPA 365.3         Batch ID: W1F1019	Result         Preparation: [CALC]         ND         Preparation: _NONE (LC)         ND         Preparation: _NONE (WETCHEM)         Preparation: _NONE (WETCHEM)         ND         Preparation: _NONE (WETCHEM)         ND         Preparation: _NONE (WETCHEM)         ND	MRL Instr: [CALC] Prepared: 06/25, 0.10 Instr: LC12 Prepared: 06/16, 110 Instr: AA06 Prepared: 06/25, 0.10 Instr: AA01 Prepared: 06/17, 200 Instr: UVVIS04 Prepared: 06/16	Units /21 17:30 mg/l /21 10:53 ug/l /21 17:30 mg/l /21 10:22 ug/l	<b>Dil</b>	Analyzed 06/29/21 06/16/21 22:54 06/29/21	Qualifier Analyst: YMT Analyst: jan Analyst: YMT Analyst: sar
Analyte         Method: [CALC]         Batch ID: [CALC]         Nitrogen, Total         Method: EPA 300.0         Batch ID: W1F0976         Nitrate as N         Method: EPA 351.2         Batch ID: W1F1512         TKN         Method: EPA 353.2         Batch ID: W1F1059         NO2+NO3 as N         Method: EPA 365.3         Batch ID: W1F1019         o-Phosphate as P	Result         Preparation: [CALC]         ND         Preparation: _NONE (LC)         ND         Preparation: _NONE (WETCHEM)         Preparation: _NONE (WETCHEM)         ND         Preparation: _NONE (WETCHEM)         ND         Preparation: _NONE (WETCHEM)         ND	MRL Instr: [CALC] Prepared: 06/25, 0.10 Instr: LC12 Prepared: 06/16, 110 Instr: AA06 Prepared: 06/25, 0.10 Instr: AA01 Prepared: 06/17, 200 Instr: UVVIS04 Prepared: 06/16, 0.010	Units /21 17:30 mg/l /21 10:53 ug/l /21 17:30 mg/l /21 10:22 ug/l /21 17:02 mg/l	Dil 1 1 1 1 1	Analyzed 06/29/21 06/16/21 22:54 06/29/21 06/17/21 06/17/21	Qualifier Analyst: YMT Analyst: jan Analyst: YMT Analyst: sar Analyst: ssi
Analyte         Method: [CALC]         Batch ID: [CALC]         Nitrogen, Total         Method: EPA 300.0         Batch ID: W1F0976         Nitrate as N         Method: EPA 351.2         Batch ID: W1F1512         TKN         Method: EPA 353.2         Batch ID: W1F1059         NO2+NO3 as N         Method: EPA 365.3         Batch ID: W1F1019         o-Phosphate as P	Result         Preparation: [CALC]         ND         Preparation: _NONE (LC)         ND         Preparation: _NONE (WETCHEM)         ND         Preparation: _NONE (WETCHEM)         ND         Preparation: _NONE (WETCHEM)         ND         Preparation: _NONE (WETCHEM)         ND	MRL Instr: [CALC] Prepared: 06/25, 0.10 Instr: LC12 Prepared: 06/16, 110 Instr: AA06 Prepared: 06/25, 0.10 Instr: AA01 Prepared: 06/17, 200 Instr: UVVIS04 Prepared: 06/16, 0.010	Units /21 17:30 mg/l /21 10:53 ug/l /21 17:30 mg/l /21 10:22 ug/l /21 17:02 mg/l	Dil 1 1 1 1 1 1 1	Analyzed 06/29/21 06/16/21 22:54 06/29/21 06/17/21 06/16/21 17:45	Qualifier Analyst: YMT Analyst: jan Analyst: YMT Analyst: sar
Analyte         Method: [CALC]         Batch ID: [CALC]         Nitrogen, Total         Method: EPA 300.0         Batch ID: W1F0976         Nitrate as N         Method: EPA 351.2         Batch ID: W1F1512         TKN         Method: EPA 353.2         Batch ID: W1F1059         NO2+NO3 as N         Method: EPA 365.3         Batch ID: W1F1019         o-Phosphate as P         Method: SM 2540C	Result         Preparation: [CALC]         ND         Preparation: _NONE (LC)         ND         Preparation: _NONE (WETCHEM)         Preparation: _NONE (WETCHEM)         ND         Preparation: _NONE (WETCHEM)         ND         Preparation: _NONE (WETCHEM)         ND         Preparation: _NONE (WETCHEM)         ND	MRL           Instr: [CALC]           Prepared: 06/25, 0.10           Instr: LC12           Prepared: 06/16, 110           Instr: AA06           Prepared: 06/25, 0.10           Instr: AA01           Prepared: 06/17, 200           Instr: UVVIS04           Prepared: 06/16, 0.010           Instr: OVEN01	Units /21 17:30 mg/l /21 10:53 ug/l /21 17:30 mg/l /21 10:22 ug/l /21 17:02 mg/l	Dil 1 1 1 1 1 1 1	Analyzed 06/29/21 06/16/21 22:54 06/29/21 06/17/21 06/17/21	Qualifier Analyst: YMT Analyst: jan Analyst: YMT Analyst: sar
Analyte         Method: [CALC]         Batch ID: [CALC]         Nitrogen, Total         Method: EPA 300.0         Batch ID: W1F0976         Nitrate as N         Method: EPA 351.2         Batch ID: W1F1512         TKN         Method: EPA 353.2         Batch ID: W1F1059         NO2+NO3 as N         Method: EPA 365.3         Batch ID: W1F1019         o-Phosphate as P         Method: SM 2540C         Batch ID: W1F1005	Result         Preparation: [CALC]         ND         Preparation: _NONE (LC)         Preparation: _NONE (WETCHEM)         Preparation: _NONE (WETCHEM)         ND         Preparation: _NONE (WETCHEM)         ND         Preparation: _NONE (WETCHEM)         ND         Preparation: _NONE (WETCHEM)         ND         Preparation: _NONE (WETCHEM)         ND	MRL Instr: [CALC] Prepared: 06/25, 0.10 Instr: LC12 Prepared: 06/16, 110 Instr: AA06 Prepared: 06/25, 0.10 Instr: AA01 Prepared: 06/17, 200 Instr: UVVIS04 Prepared: 06/16, 0.010 Instr: OVEN01 Prepared: 06/16, 10	Units /21 17:30 mg/l /21 10:53 ug/l /21 17:30 mg/l /21 10:22 ug/l /21 17:02 mg/l /21 12:27	Dil 1 1 1 1 1 1 1 1 1	Analyzed 06/29/21 06/16/21 22:54 06/29/21 06/17/21 06/17/21	Qualifier Analyst: YMT Analyst: jan Analyst: YMT Analyst: sar Analyst: ssi Analyst: ssi



### Quality Control Results

## **Certificate of Analysis**

FINAL REPORT

Anions	hy IC	FΡΔ	Method	300.0
Amons	Dy IC,	EPA	wethou	500.0

5										
				Spike	Source		%REC		RPD	
Analyte	Result	MRL	Units	Level	Result	%REC	Limits	RPD	Limit	Qualifier
Batch: WIP0976NONE (LC)										
Blank (W1F0976-BLK1) Nitrate as N	ND	110	ua/l	Prepared & Ar	alyzed: 06/16	5/21				
		110	ug/i							
LCS (W1F0976-BS1)	1000	110	ug/l	Prepared & Ar	nalyzed: 06/16	100	00 110			
Nitrate as N	- 1000	110	ug/i	1000		100	90-110			
Matrix Spike (W1F0976-MS1)	Source: 1F14042-04	1100		Prepared & Ar	nalyzed: 06/16	5/21	04.445			
Nitrate as N	10700	1100	ug/l	10000	450	102	84-115			
Matrix Spike (W1F0976-MS2)	Source: 1F15033-04			Prepared: 06/16/2	1 Analyzed: 0	6/17/21				
Nitrate as N	10600	1100	ug/l	10000	440	102	84-115			
Matrix Spike Dup (W1F0976-MSD1)	Source: 1F14042-04			Prepared & Ar	nalyzed: 06/16	5/21				
Nitrate as N	10700	1100	ug/l	10000	450	102	84-115	0.2	20	
Matrix Spike Dup (W1F0976-MSD2)	Source: 1F15033-04			Prepared: 06/16/2	1 Analyzed: 0	6/17/21				
Nitrate as N	10600	1100	ug/l	10000	440	101	84-115	0.2	20	
Conventional Chemistry/Physical Parameters by APHA/	EPA/ASTM Methods									
				Spike	Source		%REC		RPD	
Analyte	Result	MRL	Units	Level	Result	%REC	Limits	RPD	Limit	Qualifier
Batch: W1F1005NONE (WETCHEM)										
Blank (W1F1005-BLK1)				Prepared: 06/16/2	1 Analyzed: 0	6/17/21				
Total Dissolved Solids	n ND	10	mg/l							
LCS (W1F1005-BS1)				Prepared: 06/16/2	1 Analyzed: 0	6/17/21				
Total Dissolved Solids	810	10	mg/l	824		98	96-102			
Duplicate (W1F1005-DUP1)	Source: 1E24085-01			Prepared: 06/16/2	1 Analyzed: 0	6/17/21				
Total Dissolved Solids	893	10	mg/l		892			0.1	10	
Duplicate (W1F1005-DUP2)	Source: 1F15037-01			Prepared: 06/16/2	1 Analyzed: 0	6/17/21				
Total Dissolved Solids	- 975	10	mg/l		959	•, •, •, = •		2	10	
				_						
Blank (W1F1019-BLK1)	ND	0.010	ma/l	Prepared & Ar	halyzed: 06/16	5/21				
		0.010	iiig/i							
LCS (W1F1019-BS1)	0.000	0.040	···· ·· //	Prepared & Ar	halyzed: 06/16	5/21	00.444			
o-Phosphate as P	0.202	0.010	mg/i	0.200		101	88-111			
Matrix Spike (W1F1019-MS1)	Source: 1D04002-01			Prepared & Ar	halyzed: 06/16	5/21				
o-Phosphate as P	0.365	0.010	mg/l	0.200	0.170	98	85-112			
Matrix Spike Dup (W1F1019-MSD1)	Source: 1D04002-01			Prepared & Ar	alyzed: 06/16	5/21				
o-Phosphate as P	0.369	0.010	mg/l	0.200	0.170	99	85-112	1	20	
Batch: W1F1059NONE (WETCHEM)										
Blank (W1F1059-BLK1)				Prepared & Ar	alyzed: 06/17	7/21				
NO2+NO3 as N	- · ND	200	ug/l							
LCS (W1F1059-BS1)				Prepared & Ar	nalyzed: 06/17	7/21				
NO2+NO3 as N	1030	200	ug/l	1000	, <u>j</u> , <b>v</b> , i	103	90-110			
Duplicate (W1E1059-DUP1)	Source: 1517005.01			Droparad & A-	alvzod. 06/17	7/21				
NO2+NO3 as N	- 304	200	ug/l	Frepareu & Ar	298	121		2	20	
			U.	<b>D</b>						
matrix spike (W1+1059-M51) NO2+NO3 as N	- 2390	200	ua/l	2000	298 298	105	90-110			
	_000	200	ugn	2000	200	100	00-110			



### Quality Control Results

# **Certificate of Analysis**

FINAL REPORT

(Continued)

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods (Continued)

				Spike	Source		%REC		RPD	
Analyte	Result	MRL	Units	Level	Result	%REC	Limits	RPD	Limit	Qualifier
Batch: W1F1059NONE (WETCHEM) (Continued)										
Matrix Spike (W1F1059-MS2)	Source: 1F16005-01			Prepared & A	nalyzed: 06/17	/21				
NO2+NO3 as N	7210	200	ug/l	2000	5210	100	90-110			
Matrix Spike Dup (W1F1059-MSD1)	Source: 1F17005-01			Prepared & A	nalyzed: 06/17	/21				
NO2+NO3 as N	2400	200	ug/l	2000	298	105	90-110	0.4	20	
Matrix Spike Dup (W1F1059-MSD2)	Source: 1F16005-01			Prepared & A	nalyzed: 06/17	/21				
NO2+NO3 as N	7190	200	ug/l	2000	5210	99	90-110	0.3	20	
Batch: W1F1512NONE (WETCHEM)										
Blank (W1F1512-BLK1)			P	Prepared: 06/25/2	21 Analyzed: 0	6/29/21				
TKN	ND	0.10	mg/l							
Blank (W1F1512-BLK2)			P	Prepared: 06/25/2	21 Analyzed: 0	6/29/21				
TKN	ND	0.10	mg/l							
LCS (W1F1512-BS1)			P	Prepared: 06/25/2	21 Analyzed: 0	6/29/21				
TKN	1.02	0.10	mg/l	1.00		102	90-110			
LCS (W1F1512-BS2)			P	Prepared: 06/25/2	21 Analyzed: 0	6/29/21				
TKN	1.01	0.10	mg/l	1.00		101	90-110			
Matrix Spike (W1F1512-MS1)	Source: 1F15051-09		P	Prepared: 06/25/2	21 Analyzed: 0	6/29/21				
TKN	1.15	0.10	mg/l	1.00	0.123	103	90-110			
Matrix Spike (W1F1512-MS2)	Source: 1F15096-03		P	Prepared: 06/25/2	21 Analyzed: 0	6/29/21				
TKN	1.36	0.10	mg/l	1.00	0.488	88	90-110			MS-01
Matrix Spike Dup (W1F1512-MSD1)	Source: 1F15051-09		P	Prepared: 06/25/2	21 Analyzed: 0	6/29/21				
TKN	1.09	0.10	mg/l	1.00	0.123	97	90-110	5	10	
Matrix Spike Dup (W1F1512-MSD2)	Source: 1F15096-03		P	Prepared: 06/25/2	21 Analyzed: 0	6/29/21				
TKN	1.50	0.10	mg/l	1.00	0.488	101	90-110	10	10	



### Notes and Definitions

Certificate of Analysis

FINAL REPORT

ltem	Definition
MS-01	The spike recovery for this QC sample is outside of established control limits possibly due to sample matrix interference.
%REC	Percent Recovery
Dil	Dilution
MRL	The minimum levels, concentrations, or quantities of a target variable (e.g., target analyte) that can be reported with a specified degree of confidence. The MRL is also known as Limit of Quantitation (LOQ)
ND	NOT DETECTED at or above the Method Reporting Limit (MRL). If Method Detection Limit (MDL) is reported, then ND means not detected at or above the MDL.
RPD	Relative Percent Difference
Source	Sample that was matrix spiked or duplicated.
Any remai	ining sample(s) will be disposed of one month from the final report date unless other arrangements are made in advance

All results are expressed on wet weight basis unless otherwise specified.

All samples collected by Weck Laboratories have been sampled in accordance to laboratory SOP Number MIS002.

Reviewed by:

State

Chris Samatmanakit Project Manager



DoD-ELAP ANAB #L2457 • DoD-ISO ANAB # • ELAP-CA #1132 • EPA-UCMR #CA00211 • Guam-EPA #17-008R • HW-DOH # • ISO17025 ANAB #L2457.01 • LACSD #10143 • NELAP-OR #4047 • NJ-DEP #CA015 • NV-DEP #NAC 445A • SCAQMD #93LA1006

This is a complete final report. The information in this report applies to the samples analyzed in accordance with the chain-of-custody document. Weck Laboratories certifies that the test results meet all requirements of TNI unless noted by qualifiers or written in the Case Narrative. This analytical report must be reproduced in its entirety.

### Weck Laboratories 14859 Clark Avenue City of Industry, CA 91745 (626) 336-2139

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City of Industry, CA 917 (626) 336-2139	45																		Ĭ	-16	,00	6
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Client Name/Address:			Project	PO Nu	imber:									· · · · · ·		Â	nalys	is Req	uired		<u> </u>	
PSOMAS 3 HUTTON CENTRE DRIVE, SUIT SANTA ANA, CA 92707	ГЕ 200		2KLE010102					0.008	EPA Method	SM2540C	oy EPA	dethod	ation									
Project Manager:		• •• ••	Phone	Numbe	 Я:					1 g	8	lds	gent	PAI								
MICHAEL P. DONOVAN (mpdonovn@cox.net)			(714)	328-5	5234					A Meth	ae-OP	ved Sol	h Nitro		n by ce							
Sampler: Jim Burton, Todd Bear			FaxNu	mber:	714.5	45.88	83			L L	hospl	lisso	<jelde d 351</jelde 	4 351 VO3 6	litroge							1
Sample Description	Sample Matrix	Container Type	# of Cont	Sam	npling l	Date	Tir	ne	Preservation	Vitrate	Orthop 865.3	Total D	Total K	402+V	otal N							Creaties I have the state
BG-blw-PH4	water	60 ml Polv	1	6	15	21	12:0	15	None	x	10	<u> </u>	1		╧╋						╉╍──	Special instructions
	water	250 ml Polv	1	+-/	<del>بر چر</del> ۱		1		None		x				+	+				+	+	Filtered with 0.45
	water	500 ml Poly	1						None		<u> </u>	x			+	+				+	+	Finered With 0.45µ
	water	250 ml Poly	1		1			-	H2SO4	<u> </u>			X	X	$+\overline{\mathbf{x}}$	+				+	<u>+</u>	1
BC-blw- PH5	water	60 mi Poly	1	6	15	21	8:	20	Ar-None	x				+	<u> </u>	+			1	+	+	1
	water	250 mi Poly	1		1		١		None		X		1		+			<del>.</del>			+	Filtered with 0.45a
	water	500 ml Poly	1						None			x		-	<u> </u>	-				+	+	The state of the
	water	250 mi Poly	1		Ţ		-	<b></b>	H2SO4				X	X	X	1				+	<u> </u>	
BC-blw-PH6	water	60 mi Poły	1	61	15	2)	9:0	250	-None	x			1							+	1	
<u> </u>	water	250 ml Poly	1		1		1		None		Х			-						<u> </u>	1	Filtered with 0.45u
	water	500 mł Poly	1						None			X			1						1	
	water	250 ml Poly	1						H2SO4				X	X	X					1	$\square$	
	water	60 mi Poły	1						None	X									1		1	
	water	250 ml Poly	1						None		X										1	Filtered with 0.45µ
	water	500 mí Poly	1						None			Х						· · · · · · · · · · · · · · · · · · ·		1		1
	water	250 ml Poly	1				<u> </u>		H2SO4				X	X	X	Τ					1	
	water	60 ml Poly	1						None	Х										1		1
	water	250 ml Poly	1						None		<b>X</b>										1	Filtered with 0.45µ
	water	500 ml Poly	1					_	None			X										
Dolinewished Dec	water	250 mi Poly	1						H2SO4				X	X	X							
Pelinquished by:	6/15/	2 11:	30an	Receiv	ved by	:	420	<u>-χ</u>						Date	/Time:				Tum Sam	around e Day	Time:	(Check) 72 Hours
FLJLX	CIT	Date/Time: 21 のフ	8	Receiv	ved by	H	<b>}</b> .							Date	/Time:				24 H			5 Days
Relinquished By:	- when	Date /Time:	· · · ·	Receiv	ved in	Lab B	ye.							Date	/Time:				Sam	ple inter	arity: (	Check)
l		·		L															Intac	t	(	On ice X

3.44 7-0234



FINAL REPORT

Work Orders:	1F17034	Report Date:	7/01/2021
		Received Date:	6/17/2021
Project:	2KLE010102	Turnaround Time:	Normal
		Phones:	(714) 751-7373
		Fax:	(714) 545-8883
Attn:	Michael P. Donovan	P.O. #:	
Client:	Psomas - Santa Ana, CA 3 Hutton Centre Dr., Ste. 200 Santa Ana, CA 92707	Billing Code:	

Dear Michael P. Donovan,

A

Enclosed are the results of analyses for samples received 6/17/21 with the Chain-of-Custody document. The samples were received in good condition, at 1.8 °C and on ice. All analyses met the method criteria except as noted in the case narrative or in the report with data qualifiers.

Sample Results							
Sample: SL-DP-7				Sample	d: 06/16/2 <sup>-</sup>	1 10:30 by Jim Burto	on, Todd Bear
1F17034-01 (Water)							
Analyte	R	lesult	MRL	Units	Dil	Analyzed	Qualifier
Method: [CALC]			Instr: [CALC]				
Batch ID: [CALC]	Preparation: [CALC]		Prepared: 06/25	/21 17:30			Analyst: YMT
Nitrogen, Total		ND	0.10	mg/l	1	06/29/21	
Method: EPA 300.0			Instr: LC12				
Batch ID: W1F1046	Preparation: _NONE (LC)		Prepared: 06/17	/21 09:19			Analyst: jan
Nitrate as N		ND	230	ug/l	2	06/17/21 15:19	A-01
Method: EPA 351.2			Instr: AA06				
Batch ID: W1F1512	Preparation: _NONE (WETCHEM)		Prepared: 06/25	/21 17:30			Analyst: YMT
TKN		ND	0.10	mg/l	1	06/29/21	
Method: EPA 353.2			Instr: AA01				
Batch ID: W1F1075	Preparation: _NONE (WETCHEM)		Prepared: 06/18	/21 08:01			Analyst: sar
NO2+NO3 as N		ND	200	ug/l	1	06/18/21	
Method: EPA 365.3			Instr: UVVIS04				
Batch ID: W1F1087	Preparation: _NONE (WETCHEM)		Prepared: 06/17	/21 17:10			Analyst: ssi
o-Phosphate as P		ND	0.010	mg/l	1	06/17/21 17:48	
Method: SM 2540C			Instr: OVEN01				
Batch ID: W1F1235	Preparation: _NONE (WETCHEM)		Prepared: 06/21	/21 17:32			Analyst: blg
Total Dissolved Solids		40	10	mg/l	1	06/22/21	



FINAL REPORT

#### (Continued)

Sample: SL-DP-40

1F17034-02 (Water)

Sample Results

Sampled: 06/16/21 11:00 by Jim Burton, Todd Bear

1F17034-02 (Water)							
Analyte		Result	MRL	Units	Dil	Analyzed	Qualifier
Method: [CALC]			Instr: [CALC]				
Batch ID: [CALC]	Preparation: [CALC]		Prepared: 06/25	/21 17:30			Analyst: YMT
Nitrogen, Total		5.5	0.20	mg/l	1	06/29/21	
Method: EPA 300.0			Instr: LC12				
Batch ID: W1F1046	Preparation: _NONE (LC)		Prepared: 06/17,	/21 09:19			Analyst: jan
Nitrate as N		ND	110	ug/l	1	06/17/21 15:37	
Method: EPA 351.2			Instr: AA06				
Batch ID: W1F1512	Preparation: _NONE (WETCHEM)		Prepared: 06/25,	/21 17:30			Analyst: YMT
ТКМ		5.5	2.0	mg/l	1	06/29/21	
Method: EPA 353.2			Instr: AA01				
Batch ID: W1F1075	Preparation: _NONE (WETCHEM)		Prepared: 06/18	/21 08:01			Analyst: sar
NO2+NO3 as N		ND	200	ug/l	1	06/18/21	
Method: EPA 365.3			Instr: UVVIS04				
Batch ID: W1F1087	Preparation: _NONE (WETCHEM)		Prepared: 06/17,	/21 17:10			Analyst: ssi
o-Phosphate as P		0.12	0.010	mg/l	1	06/17/21 17:49	
Method: SM 2540C			Instr: OVEN01				
Batch ID: W1F1235	Preparation: _NONE (WETCHEM)		Prepared: 06/21,	/21 17:32			Analyst: blg
Total Dissolved Solids		1300	10	mg/l	1	06/22/21	



### Quality Control Results

## **Certificate of Analysis**

FINAL REPORT

Anions	hy IC	FΡΔ	Method	300.0
Amons	Dy IC,	EPA	wethou	500.0

				Spike	Source		%REC		RPD	
Analyte	Result	MRL	Units	Level	Result	%REC	Limits	RPD	Limit	Qualifier
				<b>D</b>		7/04				
Nitrate as N	ND	110	ua/l	Prepared & P	nalyzed: 06/1	//21				
			-9.1							
LCS (W1F1046-BS1) Nitrate as N	980	110	ua/l	Prepared & A	nalyzed: 06/1	7/21 98	90-110			
		110	ug/i	1000			00 110			
Matrix Spike (W1F1046-MS1) Nitrate as N	Source: 1F16080-03	1100	ua/l	Prepared & A	5660	100	84-115			
		1100	ug/i	10000	0000	100	04-110			
Matrix Spike (W1F1046-MS2)	Source: 1F16080-04	1100	ug/l	Prepared & A	nalyzed: 06/1	7/21 07	84-115			
	10000	1100	ugn	10000	5070	51	04-110			
Matrix Spike Dup (W1F1046-MSD1)	Source: 1F16080-03	1100	ug/l	Prepared & A	nalyzed: 06/1	100	94 115	0.2	20	
Nillale as N	15000	1100	ug/i	10000	5000	100	04-115	0.5	20	
Matrix Spike Dup (W1F1046-MSD2)	Source: 1F16080-04	1100		Prepared & A	nalyzed: 06/1	7/21	04.445	0.4	00	
Nitrate as N	15300	1100	ug/l	10000	5670	96	84-115	0.4	20	
Conventional Chemistry/Physical Parameters by APH	A/EPA/ASTM Methods	5								
				Spike	Source		%REC		RPD	
Analyte	Result	MRL	Units	Level	Result	%REC	Limits	RPD	Limit	Qualifier
Batch: W1F1075NONE (WETCHEM)										
Blank (W1F1075-BLK1)	ND		i	Prepared: 06/17/2	21 Analyzed: (	)6/18/21				
NO2+NO3 as N	ND	200	ug/l							
LCS (W1F1075-BS1)			I	Prepared: 06/17/2	21 Analyzed: (	06/18/21				
NO2+NO3 as N	1030	200	ug/l	1000		103	90-110			
Matrix Spike (W1F1075-MS1)	Source: 1C02003-02	<u>!</u>	i	Prepared: 06/17/2	21 Analyzed: (	06/18/21				
NO2+NO3 as N	8250	200	ug/l	2000	6240	100	90-110			
Matrix Spike (W1F1075-MS2)	Source: 1F11086-01		I	Prepared: 06/17/2	21 Analyzed: (	06/18/21				
NO2+NO3 as N	26000	800	ug/l	8000	17300	109	90-110			
Matrix Spike Dup (W1F1075-MSD1)	Source: 1C02003-02	2	1	Prepared: 06/17/2	21 Analyzed: (	06/18/21				
NO2+NO3 as N	8240	200	ug/l	2000	6240	100	90-110	0.1	20	
Matrix Spike Dup (W1F1075-MSD2)	Source: 1F11086-01		,	Prepared: 06/17/2	21 Analvzed: (	06/18/21				
NO2+NO3 as N	- 26000	800	ug/l	8000	17300	109	90-110	0	20	
Batch: W1E1087 - NONE (WETCHEM)										
o-Phosphate as P	ND	0.010	ma/l	Prepared & P	nalyzed: 06/1	//21				
		0.010								
LCS (W1F1087-BS1)	0.202	0.010	ma/l	Prepared & A	nalyzed: 06/1	7/21 101	88 111			
0-Filosphale as F	0.202	0.010	ing/i	0.200		101	00-111			
Matrix Spike (W1F1087-MS1)	Source: 1F17034-01	0.040		Prepared & A	nalyzed: 06/1	7/21	05.440			
o-Phosphate as P	- 0.199	0.010	mg/l	0.200	ND	100	85-112			
Matrix Spike Dup (W1F1087-MSD1)	Source: 1F17034-01			Prepared & A	nalyzed: 06/1	7/21				
o-Phosphate as P	- 0.192	0.010	mg/l	0.200	ND	96	85-112	4	20	
Batch: W1F1235NONE (WETCHEM)										
Blank (W1F1235-BLK1)				Prepared: 06/21/2	21 Analyzed: (	)6/22/21				
Total Dissolved Solids		10	mg/l							
LCS (W1F1235-BS1)				Prepared: 06/21/2	21 Analvzed (	06/22/21				
Total Dissolved Solids	834	10	mg/l	824	,	101	96-102			



### Quality Control Results

# **Certificate of Analysis**

FINAL REPORT

(Continued)

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods (Continued)

				Spike	Source		%REC		RPD	
Analyte	Result	MRL	Units	Level	Result	%REC	Limits	RPD	Limit	Qualifier
Batch: W1F1235NONE (WETCHEM) (Continued)										
Duplicate (W1F1235-DUP1)	Source: 1C02003-02	2		Prepared: 06/21/2	1 Analyzed: 0	6/22/21				
Total Dissolved Solids	2010	10	mg/l		1980			2	10	
Duplicate (W1F1235-DUP2)	Source: 1C02003-0	3		Prepared: 06/21/2	1 Analyzed: 0	6/22/21				
Total Dissolved Solids	2210	10	mg/l		2260			2	10	
Batch: W1F1512NONE (WETCHEM)										
Blank (W1F1512-BLK1)				Prepared: 06/25/2	1 Analyzed: 0	6/29/21				
TKN	ND	0.10	mg/l							
Blank (W1F1512-BLK2)				Prepared: 06/25/2	1 Analyzed: 0	6/29/21				
TKN	ND	0.10	mg/l							
LCS (W1F1512-BS1)				Prepared: 06/25/2	1 Analyzed: 0	6/29/21				
TKN	1.02	0.10	mg/l	1.00		102	90-110			
LCS (W1F1512-BS2)				Prepared: 06/25/2	1 Analyzed: 0	6/29/21				
TKN	1.01	0.10	mg/l	1.00		101	90-110			
Matrix Spike (W1F1512-MS1)	Source: 1F15051-09	)		Prepared: 06/25/2	1 Analyzed: 0	6/29/21				
TKN	1.15	0.10	mg/l	1.00	0.123	103	90-110			
Matrix Spike (W1F1512-MS2)	Source: 1F15096-03	3		Prepared: 06/25/2	1 Analyzed: 0	6/29/21				
TKN	1.36	0.10	mg/l	1.00	0.488	88	90-110			MS-01
Matrix Spike Dup (W1F1512-MSD1)	Source: 1F15051-09	)		Prepared: 06/25/2	1 Analyzed: 0	6/29/21				
TKN	1.09	0.10	mg/l	1.00	0.123	97	90-110	5	10	
Matrix Spike Dup (W1F1512-MSD2)	Source: 1F15096-03	3		Prepared: 06/25/2	1 Analyzed: 0	6/29/21				
ТКМ	1.50	0.10	mg/l	1.00	0.488	101	90-110	10	10	



### Notes and Definitions

Certificate of Analysis

FINAL REPORT

ltem	Definition
A-01	Sample ran at 2x dilution by mistake. The MDL and MRL were raised due to such error.
MS-01	The spike recovery for this QC sample is outside of established control limits possibly due to sample matrix interference.
%REC	Percent Recovery
Dil	Dilution
MRL	The minimum levels, concentrations, or quantities of a target variable (e.g., target analyte) that can be reported with a specified degree of confidence. The MRL is also known as Limit of Quantitation (LOQ)
ND	NOT DETECTED at or above the Method Reporting Limit (MRL). If Method Detection Limit (MDL) is reported, then ND means not detected at or above the MDL.
RPD	Relative Percent Difference
Source	Sample that was matrix spiked or duplicated.
Any remaii	ning sample(s) will be disposed of one month from the final report date unless other arrangements are made in advance.

All results are expressed on wet weight basis unless otherwise specified.

All samples collected by Weck Laboratories have been sampled in accordance to laboratory SOP Number MIS002.

#### **Reviewed by:**

: State

Chris Samatmanakit Project Manager



#### DoD-ELAP ANAB #L2457 • DoD-ISO ANAB # • ELAP-CA #1132 • EPA-UCMR #CA00211 • Guam-EPA #17-008R • HW-DOH # • ISO17025 ANAB #L2457.01 • LACSD #10143 • NELAP-OR #4047 • NJ-DEP #CA015 • NV-DEP #NAC 445A • SCAQMD #93LA1006

This is a complete final report. The information in this report applies to the samples analyzed in accordance with the chain-of-custody document. Weck Laboratories certifies that the test results meet all requirements of TNI unless noted by qualifiers or written in the Case Narrative. This analytical report must be reproduced in its entirety.

### Weck Laboratories 14859 Clark Avenue City of Industry, CA 91745 (626) 336-2139

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					C	CHA	IN	OF CU	ST	ODY	/ FC	DRN	1						P	age of 1
Client Name/Address:			Project	/PO Ni	imber:				1						Analy	sis Req	uired			
PSOMAS 3 HUTTON CENTRE DRIVE, SUITE SANTA ANA, CA 92707	PSOMAS 3 HUTTON CENTRE DRIVE, SUITE 200 SANTA ANA, CA 92707			2KLE010102					900.0	EPA Method	SM2540C	oy EPA	Viethod	ation						
Project Manager.			Phone	Numbe	я: 				B	Ş	spij	gent	PAI	alcul						
MICHAEL P. DONOVAN (mpdonovn@cox.net)		(714) 328-5234					A Met	hae-OF	ved So	hi Nitro	ы. И. В.	en by ci								
Sampler: Jim Burton, Todd Bear			Fax Nu	mber:	714.545.8	883			山之	dsot	loss	jelda 351.	8	frog					1	
Sample Description	Sample Matrix	Container Type	# of Cont.	Sam	pling Date	Tin	пе	Preservation	Nitrate-	Orthopt 365.3	Total Di	Total Kj Method	NO2+N 353.2	Total Ni						Special Instructions
SL-DP-7	water	60 mi Poly	1	6	1621	10;	30.	None	X	1		1 <del>-</del>	1	1				<u>├</u> ──	<u> </u>	
<u> </u>	water	250 ml Poly	1		1		· ·	None		X	[	1	1			-	<u> </u>	┼──┥		Filtered with 0.45u
	water	500 ml Poly	1		1	Τ		None		1	x	1								
	water	250 ml Poly	1		Т.	7	-	H2SO4			1	X	X	x		<u> </u>		┼──┤		
5- DP-40	water	60 mi Poły	1	6	14/21	11:0	0 a	None	x	1.	[				1	1 -	1	+		1
	water	250 ml Poly	1		۱í		1	None		X		Γ								Filtered with 0.45u
	water	500 ml Poly	1				a' vir w	None			x	1		<u> </u>					· · · · ·	
	water	250 ml Poly	1			1	Ļ	H2SO4				X	x	x						1
·	water	60 ml Poly	1	R			1	None	х				[				1			
	water	250 ml Poly	1	$[ \ ]$			Γ	None		X									[	Filtered with 0.45µ
	water	500 ml Poly	1					None			X					<u> </u>				
	water	250 ml Poly	1			$\mathbf{V}$		H2SO4				X	x	x						
	water	60 ml Poly	1	-	$\sim$	1		None	Х							-				· · · · · · · · · · · · · · · · · · ·
	water	250 mł Poly	1					None		X										Filtered with 0.45u
	water	500 ml Poly	1			N		None		1	X				1					
	water	250 ml Poly	1			$\backslash$		H2SO4				x	X	X						
	water	60 mi Poly	1				X	None	Х		<b></b>			[						
	water	250 ml Poly	1				Y	Noné		X										Fittered with 0.45u
	water	500 mi Poly	1	/				None			X									
	water	250 mi Poly	1					H2SO4				X	х	x						· · · · · · · · · · · · · · · · · · ·
Retinquished By:	6/14/0	/Date/Time: チ/ 1.45	jm	Receiv	ved by:	Fe	9	En ,					Date /1	Time:	-		Tuma Same	ຼ ∋round T ∋ Day	īme:	(Check) 72 Hours
Relinquished By: Fells	·	Date /Time:		Receiv	ved by:	-	<del></del>	Jamp	$\sim$			Ø	Date /I	lime: Di l	520		24 Ho 48 Ho	ours _		5 Days Normal X
Reinquished By:		Date /Time:		Réceir	ved in Lab	Бу:	,	-					Date //	lime:			Samp	lintegr	rity: ((	Check) On ice

1.8° TOZSY



FINAL REPORT

Work Orders:	1F18035	Report Date:	7/09/2021
		Received Date:	6/18/2021
Project.	2KLE010102	Turnaround Time:	Normal
i loject.		Phones:	(714) 751-7373
		Fax:	(714) 545-8883
Attn:	Michael P. Donovan	P.O. #:	
Client:	Psomas - Santa Ana, CA 3 Hutton Centre Dr., Ste. 200 Santa Ana, CA 92707	Billing Code:	

#### DoD-ELAP ANAB #ADE-2882 • DoD-ISO ANAB # • ELAP-CA #1132 • EPA-UCMR #CA00211 • Guam-EPA #17-008R • HW-DOH #4047 • ISO17025 ANAB #L2457.01 • LACSD #10143 • NELAP-OR #4047 • NJ-DEP #CA015 • NV-DEP #NAC 445A • SCAQMD #93LA1006

This is a complete final report. The information in this report applies to the samples analyzed in accordance with the chain-of-custody document. Weck Laboratories certifies that the test results meet all requirements of TNI unless noted by qualifiers or written in the Case Narrative. This analytical report must be reproduced in its entirety.

Dear Michael P. Donovan,

Enclosed are the results of analyses for samples received 6/18/21 with the Chain-of-Custody document. The samples were received in good condition, at 3.8 °C and on ice. All analyses met the method criteria except as noted in the case narrative or in the report with data qualifiers.

Reviewed by:

1: State

Chris Samatmanakit Project Manager





#### Psomas - Santa Ana, CA 3 Hutton Centre Dr., Ste. 200 Santa Ana, CA 92707

# **Certificate of Analysis**

FINAL REPORT

Project Number: 2KLE010102

Project Manager: Michael P. Donovan

Reported: 07/09/2021 12:12

### Sample Summary

Sample Name	Sampled By	Lab ID	Matrix	Sampled	Qualifiers
LS-DP-5	Jim Burton, Todd Bear	1F18035-01	Water	06/17/21 09:30	
LS-DP-20	Jim Burton, Todd Bear	1F18035-02	Water	06/17/21 10:00	



**FINAL REPORT** 

Psomas - Santa Ana, CA 3 Hutton Centre Dr., Ste. 200 Santa Ana, CA 92707

Batch ID: W1F1235

**Total Dissolved Solids** 

Project Number: 2KLE010102

Prepared: 06/21/21 17:32

mg/l

1

10

Reported: 07/09/2021 12:12

Analyst: blg

06/22/21

Project Manager: Michael P. Donovan

Sample Res	ults				
Sample: LS-DP-5			Sampled: 06/17	7/21 9:30 by Jim Bur	ton, Todd Bear
1F18035-01 (Wa	ter)				
Analyte	Result	MRL U	nits Dil	Analyzed	Qualifier
Anions by IC, EPA Method 300.0					
Method: EPA 300.0		Instr: LC12			
Batch ID: W1F1116	Preparation: _NONE (LC)	Prepared: 06/18/21 1	1:51		Analyst: jan
Nitrate as N	ND	110 u	g/l 1	06/18/21 16:32	
Conventional Chemistry/Physical	Parameters by APHA/EPA/ASTM Methods				
Method: [CALC]		Instr: [CALC]			
Batch ID: [CALC]	Preparation: [CALC]	Prepared: 06/28/21 18	3:34		Analyst: ymt
Nitrogen, Total	ND	0.10 m	.g/l 1	07/08/21	
Method: EPA 351.2		Instr: AA06			
Batch ID: W1F1616	Preparation: _NONE (WETCHEM)	Prepared: 06/28/21 18	3:34		Analyst: ymt
TKN	ND	0.10 m	.g/l 1	07/08/21	
Method: EPA 353.2		Instr: AA01			
Batch ID: W1F1119	Preparation: _NONE (WETCHEM)	Prepared: 06/18/21 12	2:27		Analyst: SAR
NO2+NO3 as N	ND	200 u	g/l 1	06/18/21	
Method: EPA 365.3		Instr: UVVIS04			
Batch ID: W1F1121	Preparation: _NONE (WETCHEM)	Prepared: 06/18/21 1	3:19		Analyst: ssi
o-Phosphate as P	ND	0.010 m	.g/l 1	06/18/21 13:38	
Method: SM 2540C		Instr: OVEN01			

19

Preparation: \_NONE (WETCHEM)



FINAL REPORT

Psomas - Santa Ana, CA 3 Hutton Centre Dr., Ste. 200	Project Number:	2KLE010102			07/	Reported: 09/2021 12:12
Santa Ana, CA 92707	Project Manager:	Michael P. Donovan				
Sample Results						(Continued)
Sample: LS-DP-20			Sample	ed: 06/17/2	1 10:00 by Jim Bur	ton, Todd Bear
1F18035-02 (Water)						
Analyte	Result	MRL	Units	Dil	Analyzed	Qualifier
Anions by IC, EPA Method 300.0						
Method: EPA 300.0		Instr: LC12				
Batch ID: W1F1116	Preparation: _NONE (LC)	Prepared: 06/18/21	11:51			Analyst: jan
Nitrate as N	ND	110	ug/l	1	06/18/21 16:50	
Conventional Chemistry/Physical Parameters	by APHA/EPA/ASTM Methods					
Method: [CALC]		Instr: [CALC]				
Batch ID: [CALC]	Preparation: [CALC]	Prepared: 06/28/21	18:34			Analyst: ymt
Nitrogen, Total	0.11	0.10	mg/l	1	07/08/21	
Method: EPA 351.2		Instr: AA06				
Batch ID: W1F1616	Preparation: _NONE (WETCHEM)	Prepared: 06/28/21	18:34			Analyst: ymt
TKN	0.11	0.10	mg/l	1	07/08/21	
Method: EPA 353.2		Instr: AA01				
Batch ID: W1F1119	Preparation: _NONE (WETCHEM)	Prepared: 06/18/21	12:27			Analyst: SAR
NO2+NO3 as N	ND	200	ug/l	1	06/18/21	
Method: EPA 365.3		Instr: UVVIS04				
Batch ID: W1F1121	Preparation: _NONE (WETCHEM)	Prepared: 06/18/21	13:19			Analyst: ssi
o-Phosphate as P	ND	0.010	mg/l	1	06/18/21 13:39	
Method: SM 2540C		Instr: OVEN01				
Batch ID: W1F1235	Preparation: _NONE (WETCHEM)	Prepared: 06/21/21	17:32			Analyst: blg
Total Dissolved Solids	24	10	mg/l	1	06/22/21	



FINAL REPORT

Psomas - Santa Ana, CA 3 Hutton Centre Dr., Ste. 200 Santa Ana, CA 92707

#### Project Number: 2KLE010102

Project Manager: Michael P. Donovan

Reported: 07/09/2021 12:12

Quality Control Results

Anions by IC, EPA Method 300.0										
				Spike	Source		%REC		RPD	
Analyte	Result	MRL	Units	Level	Result	%REC	Limits	RPD	Limit	Qualifier
Batch: W1F1116 - EPA 300.0										
Blank (W1F1116-BLK1)				Prepared & A	nalyzed: 06/	18/21				
Nitrate as N	ND	110	ug/l							
Blank (W1F1116-BLK2)			Pr	epared: 06/18/2	1 Analyzed:	06/21/2	1			
Nitrate as N	ND	110	ug/l							QC-2
LCS (W1F1116-BS1)				Prepared & A	nalyzed: 06/	18/21				
Nitrate as N	985	110	ug/l	1000		98	90-110			
LCS (W1F1116-BS2)			Pr	epared: 06/18/2	1 Analyzed:	06/21/2	1			
Nitrate as N	903	110	ug/l	1000	,	90	90-110			QC-2
Matrix Spike (W1F1116-MS1)	Source: 1F16050-0	2	Pr	epared: 06/18/2	1 Analyzed:	06/21/2	1			
Nitrate as N	19100	- 1100	ug/l	10000	10300	88	84-115			
Matrix Spike Dup (W1E1116-MSD1)	Source: 1E16050-0	2	Dr	opared: 06/18/2	1 Analyzod	06/21/2	1			
Nitrate as N	18800	1100	ug/l	10000	10300	85	84-115	2	20	
Quality Control Room	ulto									
Quality Control Res	uits									
Conventional Chemistry/Physical Parameters	by APHA/EPA/ASTM Metho	ods								
				Spike	Source		%REC		RPD	
Analyte	Result	MRL	Units	Level	Result	%REC	Limits	RPD	Limit	Qualifier
Batch: W1F1119 - EPA 353.2										
Blank (W1F1119-BLK1)				Prepared & A	nalyzed: 06/	18/21				
NO2+NO3 as N	ND	200	ug/I							
LCS (W1F1119-BS1)				Prepared & A	nalyzed: 06/	18/21				
NO2+NO3 as N	1000	200	ug/l	1000		100	90-110			
Duplicate (W1F1119-DUP1)	Source: 1F18033-0	1		Prepared & A	nalyzed: 06/	18/21				
NO2+NO3 as N	4890	200	ug/l		4840			1	20	
Matrix Spike (W1F1119-MS1)	Source: 1F18033-0	1		Prepared & A	nalyzed: 06/	18/21				
NO2+NO3 as N	6910	200	ug/l	2000	4840	104	90-110			
Matrix Spike Dup (W1F1119-MSD1)	Source: 1F18033-0	1		Prepared & A	nalyzed: 06/	18/21				
NO2+NO3 as N	6880	200	ug/l	2000	4840	102	90-110	0.4	20	
Batch: W1F1121 - EPA 365.3										
Rlank (W1E1121-RI K1)				Prenared & A	nalvzed: 06/	18/21				
o-Phosphate as P	ND	0.010	mg/l	Trepared & A	naryzeu. 00/	10/21				
LCS (W1E1121 BS1)				Propared 9: A	nalu <del>r</del> od: 06/	10/21				
o-Phosphate as P	0.206	0.010	mg/l	0.200	nalýzeu: 06/	103	88-111			
	<b>6</b>		5	D		10/21				
viatrix Spike (W1F1121-MS1) o-Phosphate as P	Source: 1F18035-0	0.010	ma/l	0.200	nalyzed: 06/' ND	10/21	85-112			
			5							

 Matrix Spike Dup (W1F1121-MSD1)
 Source: 1F18035-01
 Prepared & Analyzed: 06/18/21

 o-Phosphate as P
 0.201
 0.010
 mg/l
 0.200
 ND
 100
 85-112
 0.5
 20

Batch: W1F1235 - SM 2540C

Blank (W1F1235-BLK1)

Prepared: 06/21/21 Analyzed: 06/22/21

1F18035



FINAL REPORT

Psomas - Santa Ana, CA 3 Hutton Centre Dr., Ste. 200 Santa Ana, CA 92707 Project Number: 2KLE010102

Project Manager: Michael P. Donovan

Reported: 07/09/2021 12:12

(Continued)

### Quality Control Results

Conventional Chemistry/	Physical Parameters by APH	IA/EPA/ASTM Methods	(Continued	(b							
					Spike	Source		%REC		RPD	
Analyte		Result	MRL	Units	Level	Result	%REC	Limits	RPD	Limit	Qualifier
Batch: W1F1235 - SM 2540	C (Continued)										
Blank (W1F1235-BLK1)				Pre	oared: 06/21/21	Analyzed:	06/22/21				
Total Dissolved Solids		ND	10	mg/l							
LCS (W1F1235-BS1)				Pre	pared: 06/21/21	Analyzed:	06/22/21				
Total Dissolved Solids		834	10	mg/l	824		101	96-102			
Duplicate (W1F1235-DUP	1)	Source: 1C02003-02		Pre	pared: 06/21/21	Analyzed:	06/22/21				
Total Dissolved Solids		2010	10	mg/l		1980			2	10	
Duplicate (W1F1235-DUP	2)	Source: 1C02003-03		Pre	pared: 06/21/21	Analyzed:	06/22/21				
Total Dissolved Solids		2210	10	mg/l		2260			2	10	
Batch: W1F1616 - EPA 351	.2										
Blank (W1F1616-BLK1)				Pre	pared: 06/28/21	Analyzed:	07/08/21				
TKN		ND	0.10	mg/l		-					
Blank (W1F1616-BLK2)				Pre	pared: 06/28/21	Analyzed:	07/08/21				
TKN		ND	0.10	mg/l							
LCS (W1F1616-BS1)				Pre	pared: 06/28/21	Analyzed:	07/08/21				
TKN		1.06	0.10	mg/l	1.00		106	90-110			
LCS (W1F1616-BS2)				Pre	pared: 06/28/21	Analyzed:	07/08/21				
TKN		1.08	0.10	mg/l	1.00		108	90-110			
Matrix Spike (W1F1616-M	1S1)	Source: 1F16025-01		Pre	pared: 06/28/21	Analyzed:	07/08/21				
TKN		1.37	0.10	mg/l	1.00	0.566	81	90-110			MS-01
Matrix Spike (W1F1616-M	152)	Source: 1F23032-04		Pre	pared: 06/28/21	Analyzed:	07/08/21				
TKN		1.53	0.10	mg/l	1.00	0.355	118	90-110			MS-01
Matrix Spike Dup (W1F16	16-MSD1)	Source: 1F16025-01		Pre	pared: 06/28/21	Analyzed:	07/08/21				
TKN		0.857	0.10	mg/l	1.00	0.566	29	90-110	46	10	MS-01
Matrix Spike Dup (W1F16	16-MSD2)	Source: 1F23032-04		Pre	pared: 06/28/21	Analyzed:	07/08/21				
TKN		1.56	0.10	mg/l	1.00	0.355	121	90-110	2	10	MS-01



FINAL REPORT

Psomas - Santa Ana, CA 3 Hutton Centre Dr., Ste. 200 Santa Ana, CA 92707

#### Project Number: 2KLE010102

Project Manager: Michael P. Donovan

Reported: 07/09/2021 12:12

### Notes and Definitions

Item	Definition
MS-01	The spike recovery for this QC sample is outside of established control limits possibly due to sample matrix interference.
QC-2	This QC sample was reanalyzed to complement samples that require re-analysis on different date. See analysis date.
%REC	Percent Recovery
Dil	Dilution
MRL	The minimum levels, concentrations, or quantities of a target variable (e.g., target analyte) that can be reported with a specified degree of confidence. The MRL is also known as Limit of Quantitation (LOQ)
ND	NOT DETECTED at or above the Method Reporting Limit (MRL). If Method Detection Limit (MDL) is reported, then ND means not detected at or above the MDL.
RPD	Relative Percent Difference
Source	Sample that was matrix spiked or duplicated.
Any remai	ning sample(s) will be disposed of one month from the final report date unless other arrangements are made in advance.

All results are expressed on wet weight basis unless otherwise specified.

All samples collected by Weck Laboratories have been sampled in accordance to laboratory SOP Number MIS002.

### Weck Laboratories 14859 Clark Avenue City of Industry, CA 91745 (626) 336-2139

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Client Name/Address:		<u> </u>	Project	PO Number:									Analysis	Require	<u></u>		
PSOMAS 3 HUTTON CENTRE DRIVE, SUITE SANTA ANA, CA 92707	E 200		2KLE	010102			0.00	EPA Method	SM2540C	y EPA	Aethod	ation					
Project Manager:			Phone	Number			603	24 E	8	enb	A A	cula				-	
MICHAEL P. DONOVAN (mpdonov	n@cox.net)		(714)	328-5234			A Meth	tae-OP(	/ed Sali	1 Nitrog	s N - E	n by ca					
Sampler: Jim Burton, Todd Bear	·····		Fax Nu	mber: 714.545.88	83		L L	hospi	lissol	jeldal 1351.	403 a	litroge					
Sample Description	Sample Matrix	Container Type	# of Cont.	Sampling Date	Time	Preservation	Nitrate	Orthop 365.3	Total D	Total K Methoo	NO2+h 353.2	Total N					Special Instructions
LS-DP-5	water	60 ml Poly	1	6/17/21	9:300	None	x									1	
	water	250 mi Poly	1			None		X	[								Filtered with 0.45n
	water	500 mi Poly	1			None			x	T							
	water	250 ml Poly	1	<u> </u>	1	H2SO4				X	х	х					
LS-DP-20	water	60 mi Poły	1	6 721	10:00 0	None	X							· [			
	water	250 ml Poly	1	1	1	None		x		1				- [-			Eiltered with 0.45u
	water	500 mi Poly	1			None			x	1						+	Theoreman of the
<u> </u>	water	250 ml Poly	1			H2SO4			-	x	X	x				1	
\/	water	60 ml Poly	1	1		None	х							·			
	water	250 ml Poly	1			None		x								1	Filtered with 0.45.
	water	500 mi Poly	1			None			x							+	
	water	250 ml Poly	1		7	H2SO4				x	х	x				+	
	water	60 ml Poły	1		7	None	х										
X	water	250 ml Poly	1	Х		None		X								+	Filtered with 0.45
	water	500 ml Poly	1		$\overline{\mathbf{N}}$	None			х								i neace with 0.40µ
	water	250 ml Poly	1			H2\$04				x	x	x					· · · · · · · · · · · · · · · · · · ·
	water	60 mi Poły	1			None	X									1	
	water	250 ml Poły	1			None		x					-  -	-+-		<u> </u>	Filtered with 0.45
	water	500 mi Poly	1			None			х								1 more and 01404
	water	250 ml Poly	1	1		H2SO4				х	x	x	-+			1	
Relinquished By:	13/21	Date /Time: //:/5/ Date /Time:	am	Received by:	· · · · · · · · · · · · · · · · · · ·			•			Date /T	ime:	······	Tu 	irnaround Ime Day	Time:	(Check) 72 Hours
relev	6	(8)27		dM								IS .		24	Hours		5 Days Normal X
Keinquished By:		Date /Time:		Received in Lab b	y:						Date /T	ine:		Se	mple inte	sgrity: (	Check) On Ice <u>2.8</u>

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FINAL REPORT

Work Orders:	1G14015	Report Date:	7/22/2021
		Received Date:	7/14/2021
Project:	2KLE010102	Turnaround Time:	Normal
		Phones:	(714) 751-7373
		Fax:	(714) 545-8883
Attn:	Michael P. Donovan	P.O. #:	
Client:	Psomas - Santa Ana, CA 3 Hutton Centre Dr., Ste. 200 Santa Ana, CA 92707	Billing Code:	

Dear Michael P. Donovan :

Enclosed are the results of analyses for samples received 7/14/2021 with the Chain-of-Custody document. The samples were received in good condition, at 4.7 °C and on ice. All analysis met the method criteria except as noted in the case narrative or in the report with data qualifiers.

58	imple Results						
Sample:	SL-BR-1					Sampled: 07/12/21	11:15 by Client
	1G14015-01 (Water)						
Analyte		Result	MRL	Units	Dil	Analyzed	Qualifier
Method: SM	9223B		Instr: INC12				
Batch ID: \	W1G0973	Preparation: _NONE (MICROBIOLOGY)	Prepared: 07	//14/21 18:20			Analyst: slh
E. coli			1.0	MPN/100ml	1	07/15/21	O-09
Sample:	LS-BR-1					Sampled: 07/12/21	11:45 by Client
	1G14015-02 (Water)						
Analyte		Result	MRL	Units	Dil	Analyzed	Qualifier
Method: SM	9223B		Instr: INC12				
Batch ID: \							
	W1G0973	Preparation: _NONE (MICROBIOLOGY)	Prepared: 07	//14/21 18:20			Analyst: slh
E. coli	N1G0973	Preparation: _NONE (MICROBIOLOGY)	<b>Prepared:</b> 07 1.0	7/14/21 18:20 MPN/100ml	1	07/15/21	Analyst: slh O-09
E. coli Sample:	N1G0973	Preparation: _NONE (MICROBIOLOGY) ND	<b>Prepared:</b> 07 1.0	7/14/21 18:20 MPN/100ml	1	07/15/21 Sampled: 07/12/21	Analyst: slh O-09 12:05 by Client
E. coli	N1G0973 INT-RES-1 1G14015-03 (Water)	Preparation: _NONE (MICROBIOLOGY) ND	<b>Prepared:</b> 07 1.0	7/14/21 18:20 MPN/100ml	1	07/15/21 Sampled: 07/12/21	Analyst: slh O-09 12:05 by Client
E. coli Sample: Analyte	W1G0973 INT-RES-1 1G14015-03 (Water)	Preparation: _NONE (MICROBIOLOGY) ND Result	Prepared: 07 1.0 MRL	/14/21 18:20 MPN/100ml Units	1 Dil	07/15/21 Sampled: 07/12/21 Analyzed	Analyst: slh O-09 12:05 by Client Qualifier
E. coli Sample: Analyte Method: SM	V1G0973 INT-RES-1 1G14015-03 (Water) 9223B	Preparation: _NONE (MICROBIOLOGY) ND Result	Prepared: 07 1.0 MRL Instr: INC12	/14/21 18:20 MPN/100ml Units	1 Dil	07/15/21 Sampled: 07/12/21 Analyzed	Analyst: slh O-09 12:05 by Client Qualifier
E. coli Sample: Analyte Method: SM Batch ID: V	V1G0973 INT-RES-1 1G14015-03 (Water) 9223B V1G0973	Preparation: _NONE (MICROBIOLOGY) ND Result Preparation: _NONE (MICROBIOLOGY)	Prepared: 07 1.0 MRL Instr: INC12 Prepared: 07	/14/21 18:20 MPN/100ml Units //14/21 18:20	1 Dil	07/15/21 Sampled: 07/12/21 Analyzed	Analyst: slh O-09 12:05 by Client Qualifier Analyst: slh



FINAL REPORT

### Notes and Definitions

ltem	Definition
O-09	This sample was received with the EPA recommended holding time expired.
%REC	Percent Recovery
Dil	Dilution
MRL	The minimum levels, concentrations, or quantities of a target variable (e.g., target analyte) that can be reported with a specified degree of confidence. The MRL is also known as Limit of Quantitation (LOQ)
ND	NOT DETECTED at or above the Method Reporting Limit (MRL). If Method Detection Limit (MDL) is reported, then ND means not detected at or above the MDL.
RPD	Relative Percent Difference

Any remaining sample(s) will be disposed of one month from the final report date unless other arrangements are made in advance.

All results are expressed on wet weight basis unless otherwise specified.

All samples collected by Weck Laboratories have been sampled in accordance to laboratory SOP Number MIS002.

### Analyses Accreditation Summary

Analyte	CAS #	Not By NELAP	ANAB ISO 17025
SM 9223B in Water			
E. coli		$\checkmark$	
Reviewed by:			

1: State

Chris Samatmanakit Project Manager



#### DoD-ELAP ANAB #ADE-2882 • DoD-ISO ANAB # • ELAP-CA #1132 • EPA-UCMR #CA00211 • Guam-EPA #17-008R • HW-DOH #4047 • ISO17025 ANAB #L2457.01 • LACSD #10143 • NELAP-OR #4047 • NJ-DEP #CA015 • NV-DEP #NAC 445A • SCAQMD #93LA1006

This is a complete final report. The information in this report applies to the samples analyzed in accordance with the chain-of-custody document. Weck Laboratories certifies that the test results meet all requirements of TNI unless noted by qualifiers or written in the Case Narrative. This analytical report must be reproduced in its entirety.

### Weck Laboratories 14859 Clark Avenue City of Industry, CA 91745 (626) 336-2139

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Client Name/Address:			Project	/PON	Num	ber:								-,		Analy	sis Rec	uired	7			
PSOMAS 3 HUTTON CENTRE DRIVE, SU SANTA ANA, CA 92707	ITE 200		2KLE	0101	102					) by												
Project Manager:	<u> </u>		Phone	Num	ber:					1				1								
MICHAEL P. DONOVAN (mpdon	ovn@cox.net)		(714)	328-	-52	34				coli (E												
Sampler: Jim Burton, Todd Bear			Fax Nu	mber	. 71	4.545.88	83		<u> </u>	23B		1		1				ł				
Sample Description	Sample Matrix	Container Type	#of Cont.	Sa	mpli	ng Date	Time	Preserva	tion	Escher SM 92:		1					-				Special Instr	uctions
5L-BR-1	water	125 ml poly	1	7/	12	121	11.15A	Sterile- N	lone	x					1			<u> </u>	1	+	24-Hour Hold ti	me*
LS-BR-1	water	125 ml poly	1	7	112	121	11:450	Sterile-N	lone	X			1			1	1	1	1	1	24-Hour Hold th	me*
INT-RES-1	water	125 mi poly	1	17	1	2 al	12:050	Sterile- N	lone	X									1	$\square$	24-Hour Hold ti	me*
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Relinquished By:		Date /Time:		Reg	eive	din Labi	oy:							Date /	Time:			Sam	pie Inte	grity:	(Check) On Ice	
* Per Lohantan Surface Water Ambient N	Aonitoring Program	n (SWAMP) for an	nbient w	ater															Т	02	34 4,	7°C



FINAL REPORT

Work Orders:	1G16026	Report Date:	7/22/2021
		Received Date:	7/16/2021
Project:	2KLE010102	Turnaround Time:	Normal
		Phones:	(714) 751-7373
		Fax:	(714) 545-8883
Attn:	Michael P. Donovan	P.O. #:	
Client:	Psomas - Santa Ana, CA 3 Hutton Centre Dr., Ste. 200 Santa Ana, CA 92707	Billing Code:	

Dear Michael P. Donovan :

Enclosed are the results of analyses for samples received 7/16/2021 with the Chain-of-Custody document. The samples were received in good condition, at 3.8 °C and on ice. All analysis met the method criteria except as noted in the case narrative or in the report with data qualifiers.

Sa	mple Results						
Sample:	SL-BR-1					Sampled: 07/15/21 1	2:05 by Client
	1G16026-01 (Water)						
Analyte		Result	MRL	Units	Dil	Analyzed	Qualifier
Method: SM	9223B		Instr: INC12				
Batch ID: \	W1G0973	Preparation: _NONE (MICROBIOLOGY)	Prepared: 07	7/16/21 11:58			Analyst: atd
E. coli		ND	1.0	MPN/100ml	1	07/17/21	
Sample:	LS-BR-1					Sampled: 07/15/21 1	2:30 by Client
	1G16026-02 (Water)						
Analyte		Result	MRL	Units	Dil	Analyzed	Qualifier
Method: SM	9223B		Instr: INC12				
Batch ID: \	W1G0973	Preparation: _NONE (MICROBIOLOGY)	Prepared: 07	7/16/21 11:58			Analyst: atd
E. coli		ND					
		IND	1.0	MPN/100ml	1	07/17/21	
Sample:	INT2-RES-1	ND	1.0	MPN/100ml	1	07/17/21 Sampled: 07/15/21 1	2:50 by Client
Sample:	INT2-RES-1 1G16026-03 (Water)	ND	1.0	MPN/100ml	1	07/17/21 Sampled: 07/15/21 1.	2:50 by Client
Sample: Analyte	INT2-RES-1 1G16026-03 (Water)	Result	1.0 MRL	MPN/100ml	1 Dil	07/17/21 Sampled: 07/15/21 1. Analyzed	2:50 by Client Qualifier
Sample: Analyte Method: SM	INT2-RES-1 1G16026-03 (Water) 9223B	Result	1.0 MRL Instr: INC12	MPN/100ml	1 Dil	07/17/21 Sampled: 07/15/21 1. Analyzed	2:50 by Client Qualifier
Sample: Analyte Method: SM Batch ID: \	INT2-RES-1 1G16026-03 (Water) 9223B W1G0973	Result Preparation: _NONE (MICROBIOLOGY)	1.0 MRL Instr: INC12 Prepared: 07	MPN/100ml Units 7/16/21 11:58	1 Dil	07/17/21 Sampled: 07/15/21 1. Analyzed	2:50 by Client Qualifier Analyst: atd


Notes and Definitions

ltem	Definition
%REC	Percent Recovery
Dil	Dilution
MRL	The minimum levels, concentrations, or quantities of a target variable (e.g., target analyte) that can be reported with a specified degree of confidence. The MRL is also known as Limit of Quantitation (LOQ)
ND	NOT DETECTED at or above the Method Reporting Limit (MRL). If Method Detection Limit (MDL) is reported, then ND means not detected at or above the MDL.
RPD	Relative Percent Difference

Any remaining sample(s) will be disposed of one month from the final report date unless other arrangements are made in advance.

All results are expressed on wet weight basis unless otherwise specified.

All samples collected by Weck Laboratories have been sampled in accordance to laboratory SOP Number MIS002.

### Analyses Accreditation Summary

Analyte	CAS #	Not By NELAP	ANAB ISO 17025
SM 9223B in Water			
E. coli		$\checkmark$	

Reviewed by:

1: State

Chris Samatmanakit Project Manager



DoD-ELAP ANAB #ADE-2882 • DoD-ISO ANAB # • ELAP-CA #1132 • EPA-UCMR #CA00211 • Guam-EPA #17-008R • HW-DOH #4047 • ISO17025 ANAB #L2457.01 • LACSD #10143 • NELAP-OR #4047 • NJ-DEP #CA015 • NV-DEP #NAC 445A • SCAQMD #93LA1006

This is a complete final report. The information in this report applies to the samples analyzed in accordance with the chain-of-custody document. Weck Laboratories certifies that the test results meet all requirements of TNI unless noted by qualifiers or written in the Case Narrative. This analytical report must be reproduced in its entirety.

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Project Manager;	<u> </u>		Phone I	Numbe	21.			3		•	1				1					
MICHAEL P. DONOVAN (mpdonovi	n@cox.net)		(714)	328-5	5234			coli (E												
Sampler: Jim Burton, Todd Bear	Sampler: Jim Burton, Todd Bear				714.545.88	83		srichia 223B												
Sample Description	Sample Matrix	Container Type	# of Cont.	Sam	pling Date	Time	Preservation	Esche SM 92											Sneciat Ins	structions
5L-BR-1	water	125 ml poly	1	7	15/21	12:050	Sterile- None	X				1			1		†		24-Hour Hold	time*
15-BR-1	water	125 ml poly	1	17	listai	12:30	Sterile-None	X					Γ		1		1	1	24-Hour Hold	time*
INT2-RES-1	water	125 mi poly	1	1	Ispi	12:00	Sterile-None	X									1		24-Hour Hold	time*
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* Per Lohantan Surface Water Ambient Mon	itorina Program	n (SWAMP) for an	hient w			-										Intac			On Ice	

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FINAL REPORT

Work Orders:	1G27020	Report Date:	8/10/2021
		Received Date:	7/27/2021
Project:	2KLE010102	Normal	
		Phones:	(714) 751-7373
		Fax:	(714) 545-8883
Attn:	Michael P. Donovan	P.O. #:	
Client:	Psomas - Santa Ana, CA 3 Hutton Centre Dr., Ste. 200 Santa Ana, CA 92707	Billing Code:	

Dear Michael P. Donovan :

Enclosed are the results of analyses for samples received 7/27/2021 with the Chain-of-Custody document. The samples were received in good condition, at 2.0 °C and on ice. All analysis met the method criteria except as noted in the case narrative or in the report with data qualifiers.

Sa	ample Results							
Sample:	SL-BR-1					Sampled: 07/26/21 1	2:00 by Client	
	1G27020-01 (Water)							
Analyte		Result	MRL	Units	Dil	Analyzed	Qualifier	
Method: SM	9223B		Instr: INC12					
Batch ID:	W1H0520	Preparation: _NONE (MICROBIOLOGY)	Prepared: 07	/27/21 11:54			Analyst: rea	
E. coli		ND	1.0	MPN/100ml	1	07/28/21		
Sample:	LS-BR-1					Sampled: 07/26/21 1	2:40 by Client	
	1G27020-02 (Water)							
Analyte		Result	MRL	Units	Dil	Analyzed	Qualifier	
Method: SM	9223B		Instr: INC12					
Batch ID:	W1H0520	Preparation: _NONE (MICROBIOLOGY)	Prepared: 07	//27/21 11:54		Analyst: rea		
E. coli		310	1.0	MPN/100ml	1	07/28/21		
Sample:	INT2-RES-1					Sampled: 07/26/21 1	3:00 by Client	
Sample:	INT2-RES-1 1G27020-03 (Water)					Sampled: 07/26/21 1	3:00 by Client	
Sample: Analyte	INT2-RES-1 1G27020-03 (Water)	Result	MRL	Units	Dil	Sampled: 07/26/21 1 Analyzed	3:00 by Client Qualifier	
Sample: Analyte Method: SM	INT2-RES-1 1G27020-03 (Water) 9223B	Result	MRL Instr: INC12	Units	Dil	Sampled: 07/26/21 1 Analyzed	3:00 by Client Qualifier	
Sample: Analyte Method: SM Batch ID: 1	INT2-RES-1 1G27020-03 (Water) 9223B W1H0520	Result Preparation: _NONE (MICROBIOLOGY)	MRL Instr: INC12 Prepared: 07	<b>Units</b> 1/27/21 11:54	Dil	Sampled: 07/26/21 1 Analyzed	3:00 by Client Qualifier Analyst: rea	



Notes and Definitions

ltem	Definition
%REC	Percent Recovery
Dil	Dilution
MRL	The minimum levels, concentrations, or quantities of a target variable (e.g., target analyte) that can be reported with a specified degree of confidence. The MRL is also known as Limit of Quantitation (LOQ)
ND	NOT DETECTED at or above the Method Reporting Limit (MRL). If Method Detection Limit (MDL) is reported, then ND means not detected at or above the MDL.
RPD	Relative Percent Difference

Any remaining sample(s) will be disposed of one month from the final report date unless other arrangements are made in advance.

All results are expressed on wet weight basis unless otherwise specified.

All samples collected by Weck Laboratories have been sampled in accordance to laboratory SOP Number MIS002.

### Analyses Accreditation Summary

Analyte	CAS #	Not By NELAP	ANAB ISO 17025
SM 9223B in Water			
E. coli		$\checkmark$	

Reviewed by:

1: State

Chris Samatmanakit Project Manager



#### DoD-ELAP ANAB #ADE-2882 • DoD-ISO ANAB # • ELAP-CA #1132 • EPA-UCMR #CA00211 • Guam-EPA #17-008R • HW-DOH #4047 • ISO17025 ANAB #L2457.01 • LACSD #10143 • NELAP-OR #4047 • NJ-DEP #CA015 • SCAQMD #93LA1006

This is a complete final report. The information in this report applies to the samples analyzed in accordance with the chain-of-custody document. Weck Laboratories certifies that the test results meet all requirements of TNI unless noted by qualifiers or written in the Case Narrative. This analytical report must be reproduced in its entirety.

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Client Name/Address:			Project	/PO	Numb	юг:							_		Алају	sis Rec	uired			
PSOMAS 3 HUTTON CENTRE DRIVE, SU SANTA ANA, CA 92707	ITE 200		2KLE	2KLE010102				) by												
Project Manager:			Phone Number:				8		1											
AICHAEL P. DONOVAN (mpdonovn@cox.net)			(714)	328	-523	4			coll (E											
Sampler: Jim Burton, Todd Bear				Imber	r. 714	.545.88	83		srichia 223B											
Sample Description	Sample Matrix	Container Type	# of Cont.	Sa	amplin .r	g Date	Time	Preservation	Esche SM 92											Special Instruc
<u>3L-BR-1</u>	water	125 mi poly	1	7	126	21	12:00 p	Sterile- None	X											24-Hour Hold time
<u>LJ-BR-1</u>	water	125 ml poly	1	Ľ	<u>'</u>		12:400	Sterile- None	X									1	1	24-Hour Hold time
INT2-RES-1	water	125 ml poly	1	L.	<u></u>		1:000	Sterile-None	X				1							24-Hour Hold time
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FINAL REPORT

Work Orders:	1G27021	Report Date:	8/17/2021
		Received Date:	7/27/2021
Project:	2KLE010102	Normal	
i lojeet.		Phones:	(714) 751-7373
		Fax:	(714) 545-8883
Attn:	Michael P. Donovan	P.O. #:	
Client:	Psomas - Santa Ana, CA 3 Hutton Centre Dr., Ste. 200 Santa Ana, CA 92707	Billing Code:	

DoD-ELAP ANAB #ADE-2882 • DoD-ISO ANAB # • ELAP-CA #1132 • EPA-UCMR #CA00211 • Guam-EPA #17-008R • HW-DOH #4047 • ISO17025 ANAB #L2457.01 • LACSD #10143 • NELAP-OR #4047 • NJ-DEP #CA015 • SCAQMD #93LA1006

This is a complete final report. The information in this report applies to the samples analyzed in accordance with the chain-of-custody document. Weck Laboratories certifies that the test results meet all requirements of TNI unless noted by qualifiers or written in the Case Narrative. This analytical report must be reproduced in its entirety.

Dear Michael P. Donovan,

Enclosed are the results of analyses for samples received 7/27/21 with the Chain-of-Custody document. The samples were received in good condition, at 2.0 °C and on ice. All analyses met the method criteria except as noted in the case narrative or in the report with data qualifiers.

Reviewed by:

1: State

Chris Samatmanakit Project Manager





#### Psomas - Santa Ana, CA 3 Hutton Centre Dr., Ste. 200 Santa Ana, CA 92707

# **Certificate of Analysis**

FINAL REPORT

Project Number: 2KLE010102

Project Manager: Michael P. Donovan

Reported: 08/17/2021 11:48

### Sample Summary

Sample Name	Sampled By	Lab ID	Matrix	Sampled	Qualifiers
BC-NF-1	Jim Burton, Todd Bear	1G27021-01	Water	07/26/21 08:30	
BC-blw-LS	Jim Burton, Todd Bear	1G27021-02	Water	07/26/21 09:15	
BC-blw-SL	Jim Burton, Todd Bear	1G27021-03	Water	07/26/21 10:00	



**FINAL REPORT** 

Reported: 08/17/2021 11:48

Psomas - Sar 3 Hutton Cent	nta Ana, CA tre Dr., Ste. 200	Project		<b>Re</b> 08/17/2021				
Santa Ana, C	A 92707	Project I	Project Manager: Michael P. Donovan					
Sa	mple Results							
Sample:	BC-NF-1				Sampl	led: 07/26/2	21 8:30 by Jim Bur	ton, Todd Bear
	1G27021-01 (Water)							
Analyte			Result	MRL	Units	Dil	Analyzed	Qualifier
Anions by IC, E	PA Method 300.0							
Method: EPA	300.0			Instr: LC12				
Batch ID: W	/1G1369	Preparation: _NONE (LC)		<b>Prepared:</b> 07/27	/21 11:23			Analyst: jan
Nitrate as N			ND	110	ug/l	1	07/28/21 00:43	

### Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Conventional Chemistry/Physical Para	imeters by APHA/EPA/ASTWI Methods				
Method: [CALC]		Instr: [CALC]			
Batch ID: [CALC]	Preparation: [CALC]	Prepared: 08/06/21 1	7:42		Analyst: YMT
Nitrogen, Total	0.13	0.10 n	ng/l 1	08/10/21	
Method: EPA 351.2		Instr: AA06			
Batch ID: W1H0454	Preparation: _NONE (WETCHEM)	Prepared: 08/06/21 1	7:42		Analyst: YMT
TKN	0.13	0.10 n	ng/l 1	08/10/21	
Method: EPA 353.2		Instr: AA01			
Batch ID: W1G1532	Preparation: _NONE (WETCHEM)	Prepared: 07/28/21 1	7:44		Analyst: ISM
NO2+NO3 as N	ND	200 u	ıg/l 1	07/29/21	
Method: EPA 365.3		Instr: UVVIS04			
Batch ID: W1G1443	Preparation: _NONE (WETCHEM)	Prepared: 07/27/21 1	6:28		Analyst: sbn
o-Phosphate as P	ND	0.010 n	ng/l 1	07/27/21 17:06	
Method: SM 2540C		Instr: OVEN01			
Batch ID: W1G1670	Preparation: _NONE (WETCHEM)	Prepared: 07/30/21 1	7:30		Analyst: blg
Total Dissolved Solids		10 n	ng/l 1	08/02/21	



FINAL REPORT

Psomas - Sa	anta Ana, CA atre Dr., Ste. 200	Project Number:	Project Number: 2KLE010102				
Santa Ana, C	CA 92707	Project Manager:	Michael P. Donovan			00/	17/2021 11.40
Sa	mple Results						(Continued)
Sample:	BC-blw-LS			Sample	ed: 07/26/	/21 9:15 by Jim Bur	ton, Todd Bear
	1G27021-02 (Water)						
Analyte		Result	MRL	Units	Dil	Analyzed	Qualifier
Anions by IC,	EPA Method 300.0						
Method: EPA	300.0		Instr: LC12				
Batch ID: V	W1G1369	Preparation: _NONE (LC)	Prepared: 07	/27/21 11:23			Analyst: jan
Nitrate as I	Ν	ND	110	ug/l	1	07/28/21 01:01	
Conventional (	Chemistry/Physical Parameter	s by APHA/EPA/ASTM Methods					
Method: [CA	LC]		Instr: [CALC]				
Batch ID: [	CALC]	Preparation: [CALC]	Prepared: 08	/09/21 19:20			Analyst: YMT
Nitrogen,	Total	0.12	0.10	mg/l	1	08/11/21	
Method: EPA	351.2		Instr: AA06				
Batch ID: V	W1H0569	Preparation: _NONE (WETCHEM)	Prepared: 08	/09/21 19:20			Analyst: YMT
TKN		0.12	0.10	mg/l	1	08/11/21	
Method: EPA	353.2		Instr: AA01				
Batch ID: V	W1G1532	Preparation: _NONE (WETCHEM)	Prepared: 07	/28/21 17:44			Analyst: ISM
NO2+NO3	as N	ND	200	ug/l	1	07/29/21	
Method: EPA	365.3		Instr: UVVIS0	4			
Batch ID: V	W1G1443	Preparation: _NONE (WETCHEM)	Prepared: 07	/27/21 16:28			Analyst: sbn
o-Phospha	ate as P	ND	0.010	mg/l	1	07/27/21 17:08	
Method: SM	2540C		Instr: OVEN0	1			
Batch ID: V	W1G1670	Preparation: _NONE (WETCHEM)	Prepared: 07	/30/21 17:30			Analyst: blg
Total Diss	olved Solids	28	10	mg/l	1	08/02/21	



FINAL REPORT

Psomas - Santa Ana, CA 3 Hutton Centre Dr., Ste. 200	Project Number: 2KLE010102			Reported 08/17/2021 11:4					
Santa Ana, CA 92707	Project Manager:	Michael P. Donovan							
Sample Results						(Continued)			
Sample: BC-blw-SL			Samp	led: 07/26/2	21 10:00 by Jim Bur	ton, Todd Bear			
1G27021-03 (Water)									
Analyte	Result	MRL	Units	Dil	Analyzed	Qualifier			
Anions by IC, EPA Method 300.0									
Method: EPA 300.0		Instr: LC12							
Batch ID: W1G1369	Preparation: _NONE (LC)	Prepared: 07/27/2	21 11:23			Analyst: jan			
Nitrate as N	ND	110	ug/l	1	07/28/21 01:19				
Conventional Chemistry/Physical Parameters	by APHA/EPA/ASTM Methods								
Method: [CALC]		Instr: [CALC]							
Batch ID: [CALC]	Preparation: [CALC]	Prepared: 08/09/2	21 19:20			Analyst: YMT			
Nitrogen, Total	0.12	0.10	mg/l	1	08/11/21				
Method: EPA 351.2		Instr: AA06							
Batch ID: W1H0569	Preparation: _NONE (WETCHEM)	Prepared: 08/09/2	21 19:20			Analyst: YMT			
TKN	0.12	0.10	mg/l	1	08/11/21				
Method: EPA 353.2		Instr: AA01							
Batch ID: W1G1532	Preparation: _NONE (WETCHEM)	Prepared: 07/28/2	21 17:44			Analyst: ISM			
NO2+NO3 as N	ND	200	ug/l	1	07/29/21				
Method: EPA 365.3		Instr: UVVIS04							
Batch ID: W1G1443	Preparation: _NONE (WETCHEM)	Prepared: 07/27/2	21 16:28			Analyst: sbn			
o-Phosphate as P	ND	0.010	mg/l	1	07/27/21 17:09				
Method: SM 2540C		Instr: OVEN01							
Batch ID: W1G1670	Preparation: _NONE (WETCHEM)	Prepared: 07/30/2	21 17:30			Analyst: blg			
Total Dissolved Solids		10	mg/l	1	08/02/21				



FINAL REPORT

Psomas - Santa Ana, CA 3 Hutton Centre Dr., Ste. 200 Santa Ana, CA 92707

Project Number: 2KLE010102

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Reported: 08/17/2021 11:48

Project Manager:	Michael P. Donova
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Quality	Control	Results	

Anions by IC, EPA Method 300.0										
				Spike	Source		%REC		RPD	
Analyte	Result	MRL	Units	Level	Result	%REC	Limits	RPD	Limit	Qualifier
				D						
Nitrate as N	ND	110	ug/l	Prepared & Ana	lyzed: 07/2	//21				
LCS (W1G1369-BS1)				Prepared & Ana	lvzed: 07/2	7/21				
Nitrate as N	1040	110	ug/l	1000	,,	104	90-110			
Matrix Spike (W1G1369-MS1) Nitrate as N	<b>Source: 1G21005-01</b>	1100	Pre ua/l	epared: 07/27/21 10000	Analyzed: ( 3090	97	84-115			
			3							
Nitrate as N	Source: 1G21005-01	1100	ug/l	10000	3090	96	84-115	0.7	20	
Quality Control Results	5									
Conventional Chemistry/Physical Parameters by A	PHA/EPA/ASTM Methods									
				Spike	Source		%REC		RPD	
Analyte	Result	MRL	Units	Level	Result	%REC	Limits	RPD	Limit	Qualifier
Batch: W1G1443 - EPA 365.3										
Blank (W1G1443-BLK1)				Prepared & Ana	lyzed: 07/2	7/21				
o-Phosphate as P	ND	0.010	mg/l							
LCS (W1G1443-BS1)				Prepared & Ana	lyzed: 07/2	7/21				
o-Phosphate as P	0.200	0.010	mg/l	0.200		100	88-111			
Matrix Spike (W1G1443-MS1)	Source: 1G27021-01			Prepared & Ana	lyzed: 07/2	7/21				
o-Phosphate as P	0.198	0.010	mg/l	0.200	ND	99	85-112			
Matrix Spike Dup (W1G1443-MSD1)	Source: 1G27021-01			Prepared & Ana	lyzed: 07/2	7/21				
o-Phosphate as P	0.200	0.010	mg/l	0.200	ND	100	85-112	1	20	
Batch: W1G1532 - EPA 353.2										
Blank (W1G1532-BLK1)			Pre	epared: 07/28/21	Analyzed: (	07/29/21				
NO2+NO3 as N	ND	200	ug/l							
LCS (W1G1532-BS1)			Pre	pared: 07/28/21	Analyzed: (	07/29/21				
NO2+NO3 as N	1010	200	ug/l	1000		101	90-110			
Matrix Spike (W1G1532-MS1)	Source: 1G27003-06		Pre	epared: 07/28/21	Analyzed: (	07/29/21				
NO2+NO3 as N	2900	200	ug/l	2000	1010	94	90-110			
Matrix Spike (W1G1532-MS2)	Source: 1G28064-04		Pre	pared: 07/28/21	Analyzed: (	07/29/21				
NO2+NO3 as N	2230	200	ug/l	2000	219	101	90-110			
Matrix Spike Dup (W1G1532-MSD1)	Source: 1G27003-06		Pre	pared: 07/28/21	Analyzed: (	07/29/21				
NO2+NO3 as N	2910	200	ug/l	2000	1010	95	90-110	0.3	20	
Matrix Spike Dup (W1G1532-MSD2)	Source: 1G28064-04		Pre	epared: 07/28/21	Analyzed: (	)7/29/21				
NO2+NO3 as N	2190	200	ug/l	2000	219	99	90-110	2	20	
Batch: W1G1670 - SM 2540C										
Blank (W1G1670-BLK1)			Pre	epared: 07/30/21	Analyzed: (	08/02/21				
Total Dissolved Solids		10	mg/l							
Blank (W1G1670-BLK2)			Pre	epared: 07/30/21	Analyzed: (	08/02/21				
1G27021										Page 6 of 9
										1 uye 0 01 0



FINAL REPORT

Psomas - Santa Ana, CA 3 Hutton Centre Dr., Ste. 200 Santa Ana, CA 92707 Project Number: 2KLE010102

Project Manager: Michael P. Donovan

08/17/2021 11:48

Reported:

(Continued)

### Quality Control Results

Conventional Chemistry/Physical Parameters by APHA	A/EPA/ASTM Methods (	Continued)								
				Spike	Source		%REC		RPD	
Analyte	Result	MRL	Units	Level	Result	%REC	Limits	RPD	Limit	Qualifier
Batch: W1G1670 - SM 2540C (Continued)										
Blank (W1G1670-BLK2)			P	Prepared: 07/30/21	Analyzed:	08/02/21				
Total Dissolved Solids	ND	10	mg/l							
LCS (M1C1670 BS1)				managed, 07/20/21	Analyzada	00/02/21				
Total Dissolved Solids	823	10	ma/l	repared: 07/50/21	Analyzeu:	00/02/21	96-102			
			J.							
LCS (W1G1670-BS2)	007	10	P	Prepared: 07/30/21	Analyzed:	08/02/21	00 400			
Iotal Dissolved Solids	807	10	mg/i	824		98	96-102			
Duplicate (W1G1670-DUP1)	Source: 1G27053-01		P	Prepared: 07/30/21	Analyzed:	08/02/21				
Total Dissolved Solids	983	10	mg/l		957			3	10	
Duplicate (W1G1670-DUP2)	Source: 1G27064-01		Р	Prepared: 07/30/21	Analvzed:	08/02/21				
Total Dissolved Solids	572	10	mg/l	•	593			4	10	
Durlingto (MICICTO DUD)	Courses 1C2C047 00DE	4			Analyzada	00/02/21				
Total Dissolved Solids	Source: 1G26047-08RE	10	ma/l	repared: 07/30/21	6210	08/02/21		0.8	10	
			J.							
Batch: W1H0454 - EPA 351.2										
Blank (W1H0454-BLK1)			P	Prepared: 08/06/21	Analyzed:	08/10/21				
TKN	ND	0.10	mg/l							
LCS (W1H0454-BS1)			P	Prepared: 08/06/21	Analyzed:	08/10/21				
TKN	1.01	0.10	mg/l	1.00	-	101	90-110			
Matrix Spike (W1H0454-MS1)	Source: 1627017-05		P	Prepared: 08/06/21	Analyzed	08/10/21				
TKN	1.34	0.10	mg/l	1.00	0.344	100	90-110			
Matrix Spike Dup (W1H0454-MSD1)	Source: 1G27017-05	0.10	P mg/l	repared: 08/06/21	Analyzed:	102	00 110	2	10	
	1.50	0.10	mg/i	1.00	0.044	102	30-110	2	10	
Batch: W1H0569 - EPA 351.2										
Blank (W1H0569-BLK1)			P	Prepared: 08/09/21	Analyzed:	08/11/21				
TKN	ND	0.10	mg/l							
LCS (W1H0569-BS1)			Р	Prepared: 08/09/21	Analvzed:	08/11/21				
TKN	- 0.969	0.10	mg/l	1.00		97	90-110			
Matrix Saika (W1H0560 MS1)	Source: 1627017.02		D	Proparad: 09/09/21	Applyzod	00/11/21				
TKN	1.23	0.10	mg/l	1.00	0.238	99	90-110			
			2							
Matrix Spike Dup (W1H0569-MSD1)	Source: 1G27017-02	0.10	P ma/l	repared: 08/09/21	Analyzed:	101	90-110	1	10	
	1.20	5.10	<u></u>	1.00	0.200		55 110		10	



Psomas - Santa Ana, CA 3 Hutton Centre Dr., Ste. 200 Santa Ana, CA 92707

# **Certificate of Analysis**

FINAL REPORT

Project Number: 2KLE010102

Project Manager: Michael P. Donovan

**Reported:** 08/17/2021 11:48

### Notes and Definitions

ltem	Definition
%REC	Percent Recovery
Dil	Dilution
MRL	The minimum levels, concentrations, or quantities of a target variable (e.g., target analyte) that can be reported with a specified degree of confidence. The MRL is also known as Limit of Quantitation (LOQ)
ND	NOT DETECTED at or above the Method Reporting Limit (MRL). If Method Detection Limit (MDL) is reported, then ND means not detected at or above the MDL.
RPD	Relative Percent Difference
Source	Sample that was matrix spiked or duplicated.

Any remaining sample(s) will be disposed of one month from the final report date unless other arrangements are made in advance.

All results are expressed on wet weight basis unless otherwise specified.

All samples collected by Weck Laboratories have been sampled in accordance to laboratory SOP Number MIS002.

### Weck Laboratories 14859 Clark Avenue City of Industry, CA 91745 (626) 336-2139

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					С	HA	IN	OF CU	ST	ODY	۲FC	DRN	1	16	27	b	21		Pa	ane la l
Client Name/Address:			Project	PO Num	iber:			-						<u>.                                    </u>	Analys	sis Req	uired			······································
PSOMAS 3 HUTTON CENTRE DRIVE, SUI' SANTA ANA, CA 92707	TE 200		2KLE010102			300.0	EPA Method	M2540C	y EPA	Vethod	ation									
Project Manager.		Phone	Number:					po	8	lids	gent	PAA	alcula							
MICHAEL P. DONOVAN (mpdonovn@cox.net)			(714)	328-52	34				A Met	E E	ed So	Nitro	Ч И И	n by c						
Sampler: Jim Burton, Todd Bear		Fax Nu	Fax Number: 714.545.8883			N EP	hdsor	issolv	jeldah 351.5	03 as	Ioger			ł						
Sample Description	Sample Matrix	Container Type	# of Cont.	Sampl	ing Date	Tim	ne	Preservation	ditrate-	Orthopl 865.3	Total D	fotal K	402+N	otał Ni						<b>0</b>
BC-NF-1	water	60 ml Poly	1	7/2	6/21	8:3	50.	None	X	<u> </u>			2 00							Special Instructions
	water	250 ml Poly	1	[r]	1-1-	1		None		X			-							Filtered with 0.45u
	water	500 m Poly	1				-	None			X	1								1 110100 Will 0.43µ
	water	250 ml Poly	1		L	1		H2SO4				x	x	x				-		
BC-bhu-LS	water	60 ml Poły	1	72	121	9:1	54	None	х											· · · ·
<b>\</b>	water	250 mi Poly	1	1	7	1	_	None	· · · · ·	X							· · ·	<u> </u>		Filtered with 0.45
	water	500 ml Poly	1					None			x						-			Theorem with 0.40µ
<b>_</b>	water	250 ml Poly	1		-,	╵╺┷		H2SO4				x	X	x						
BC-blw-SL	water	60 miPoły	1	7/20	121	10:00	00	None	Х				· · ·							
	water	250 mi Poly	1		1	1		None		x										Filtered with 0.450
	water	500 ml Poly	1					None			Х									indice national
	water	250 ml Poly	1		<b></b>	T	•	H2SO4				X	X	x						· · · · ·
$\rightarrow$ /	water	60 mi Poly	1					None	X											
$\rightarrow$	water	250 ml Poly	1					None		X										Filtered with 0.450
	water	500 ml Poly	1					None			Х									
	water	250 ml Poly	_ 1	[				H2SO4				Х	Х	X						
	water	60 mil Poly	1					None	X											
	water	250 mi Poly	1					None		X										Filtered with 0.450
	water	500 mí Poly	1	· .				None			Х									
Contract Design	water	250 ml Poly	1			ł		H2SO4				х	Х	x						
	buls	Date /Time;		Receive	d by:								Date /ī	ime:	ł		Tuma	round T	ime: (	Check)
Relinquished By:	10-10	Date/Time:	,	Received	d by:	Ś							Date/T	ime:			Same 24 Ho	Day purs		72 Hours 5 Days
Relinguished By:		Date /Time:		Received	d in Lab o	y:	·						Date /T	ime:			48 Ho Samp	e Integri		Normal
				L													Intact			On Ice

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FINAL REPORT

Work Orders:	1G28049	Report Date:	8/24/2021
		Received Date:	7/28/2021
Project:	2KLE010102	Turnaround Time:	Normal
i loject.		Phones:	(714) 751-7373
		Fax:	(714) 545-8883
Attn:	Michael P. Donovan	P.O. #:	
Client:	Psomas - Santa Ana, CA 3 Hutton Centre Dr., Ste. 200 Santa Ana, CA 92707	Billing Code:	

DoD-ELAP ANAB #ADE-2882 • DoD-ISO ANAB # • ELAP-CA #1132 • EPA-UCMR #CA00211 • Guam-EPA #17-008R • HW-DOH #4047 • ISO17025 ANAB #L2457.01 • LACSD #10143 • NELAP-OR #4047 • NJ-DEP #CA015 • SCAQMD #93LA1006

This is a complete final report. The information in this report applies to the samples analyzed in accordance with the chain-of-custody document. Weck Laboratories certifies that the test results meet all requirements of TNI unless noted by qualifiers or written in the Case Narrative. This analytical report must be reproduced in its entirety.

Dear Michael P. Donovan,

Enclosed are the results of analyses for samples received 7/28/21 with the Chain-of-Custody document. The samples were received in good condition, at 3.4 °C and on ice. All analyses met the method criteria except as noted in the case narrative or in the report with data qualifiers.

Reviewed by:

1: State

Chris Samatmanakit Project Manager





#### Psomas - Santa Ana, CA 3 Hutton Centre Dr., Ste. 200 Santa Ana, CA 92707

# **Certificate of Analysis**

FINAL REPORT

Project Number: 2KLE010102

Project Manager: Michael P. Donovan

**Reported:** 08/24/2021 17:03

### Sample Summary

Sample Name	Sampled By	Lab ID	Matrix	Sampled	Qualifiers
SL-DP-10	Jim Burton, Todd Bear	1G28049-01	Water	07/27/21 09:45	
SL-DP-24	Jim Burton, Todd Bear	1G28049-02	Water	07/27/21 10:15	



FINAL REPORT

Psomas - Santa Ana, CA 3 Hutton Centre Dr., Ste. 200 Santa Ana, CA 92707 Project Number: 2KLE010102

**Reported:** 08/24/2021 17:03

Project Manager: Michael P. Donovan

Sample Results	>				
Sample: SL-DP-10			Sampled: 07/2	7/21 9:45 by Jim Bur	ton, Todd Bear
1G28049-01 (Water)					
Analyte	Result	MRL L	Jnits Dil	Analyzed	Qualifier
Anions by IC, EPA Method 300.0					
Method: EPA 300.0		Instr: LC12			
Batch ID: W1G1476	Preparation: _NONE (LC)	Prepared: 07/28/21 0	)9:33		Analyst: jan
Nitrate as N	ND	110	ug/l 1	07/28/21 19:27	
Conventional Chemistry/Physical Param	eters by APHA/EPA/ASTM Methods				
Method: [CALC]		Instr: [CALC]			
Batch ID: [CALC]	Preparation: [CALC]	Prepared: 08/11/21 1	13:32		Analyst: ymt
Nitrogen, Total	0.17	0.10 r	ng/l 1	08/17/21	
Method: EPA 351.2		Instr: AA06			
Batch ID: W1H0763	Preparation: _NONE (WETCHEM)	Prepared: 08/11/21 1	13:32		Analyst: ymt
TKN	0.17	0.10 r	mg/l 1	08/17/21	
Method: EPA 353.2		Instr: AA01			
Batch ID: W1G1532	Preparation: _NONE (WETCHEM)	Prepared: 07/28/21 1	17:44		Analyst: ISM
NO2+NO3 as N	ND	200	ug/l 1	07/29/21	
Method: EPA 365.3		Instr: UVVIS04			
Batch ID: W1G1529	Preparation: _NONE (WETCHEM)	Prepared: 07/28/21 1	16:53		Analyst: sbn
o-Phosphate as P	ND	0.010 r	mg/l 1	07/28/21 18:16	
Method: SM 2540C		Instr: OVEN01			
Batch ID: W1H0056	Preparation: _NONE (WETCHEM)	Prepared: 08/02/21 1	17:06		Analyst: blg
Total Dissolved Solids	23	10 r	mg/l 1	08/03/21	



FINAL REPORT

Psomas - Santa Ana, CA 3 Hutton Centre Dr. Ste. 200	Project Number:	Project Number: 2KLE010102				Reported: 24/2021 17:03
Santa Ana, CA 92707	Project Manager:	Michael P. Donovan			00/	24/2021 11:00
Sample Results						(Continued)
Sample: SL-DP-24			Sample	ed: 07/27/2	1 10:15 by Jim Bur	ton, Todd Bear
1G28049-02 (Water)						
Analyte	Result	MRL	Units	Dil	Analyzed	Qualifier
Anions by IC, EPA Method 300.0						
Method: EPA 300.0		Instr: LC12				
Batch ID: W1G1476	Preparation: _NONE (LC)	Prepared: 07/28/21	09:33			Analyst: jan
Nitrate as N		110	ug/l	1	07/28/21 19:45	
Conventional Chemistry/Physical Parameter	s by APHA/EPA/ASTM Methods					
Method: [CALC]		Instr: [CALC]				
Batch ID: [CALC]	Preparation: [CALC]	Prepared: 08/11/21	13:32			Analyst: YMT
Nitrogen, Total	0.15	0.10	mg/l	1	08/13/21	
Method: EPA 351.2		Instr: AA06				
Batch ID: W1H0763	Preparation: _NONE (WETCHEM)	Prepared: 08/11/21	13:32			Analyst: YMT
ΤΚΝ	0.15	0.10	mg/l	1	08/13/21	
Method: EPA 353.2		Instr: AA01				
Batch ID: W1G1532	Preparation: _NONE (WETCHEM)	Prepared: 07/28/21	17:44			Analyst: ISM
NO2+NO3 as N	ND	200	ug/l	1	07/29/21	
Method: EPA 365.3		Instr: UVVIS04				
Batch ID: W1G1529	Preparation: _NONE (WETCHEM)	Prepared: 07/28/21	16:53			Analyst: sbn
o-Phosphate as P	ND	0.010	mg/l	1	07/28/21 18:19	
Method: SM 2540C		Instr: OVEN01				
Batch ID: W1H0056	Preparation: _NONE (WETCHEM)	Prepared: 08/02/21	17:06			Analyst: blg
Total Dissolved Solids	36	10	mg/l	1	08/03/21	



FINAL REPORT

Psomas - Santa Ana, CA 3 Hutton Centre Dr., Ste. 200 Santa Ana, CA 92707 Project Number: 2KLE010102

Project Manager: Michael P. Donovan

**Reported:** 08/24/2021 17:03

Quality Control Results

				Spike	Source		%REC		RPD	
Analyte	Result	MRL	Units	Level	Result	%REC	Limits	RPD	Limit	Qualifier
Batch: W1G1476 - EPA 300.0										
Blank (W1G1476-BLK1) Nitrate as N	• • • • • ND	110	ug/l	Prepared & An	alyzed: 07/2	28/21				
LCS (W1G1476-BS1)				Prepared & An	alyzed: 07/2	28/21				
Nitrate as N	1070	110	ug/l	1000		107	90-110			
Matrix Spike (W1G1476-MS1)	Source: 1G19015-01			Prepared & An	alyzed: 07/2	28/21				
Nitrate as N	- 19000	1100	ug/l	10000	8810	102	84-115			
Matrix Spike (W1G1476-MS2)	Source: 1G19015-03			Prepared & An	alyzed: 07/2	28/21				
Nitrate as N	- 15100	1100	ug/l	10000	5890	92	84-115			
Matrix Spike Dup (W1G1476-MSD1)	Source: 1G19015-01			Prepared & An	alyzed: 07/2	28/21				
Nitrate as N	- 18900	1100	ug/l	10000	8810	101	84-115	0.4	20	
Matrix Spike Dup (W1G1476-MSD2)	Source: 1G19015-03			Prepared & An	alyzed: 07/2	28/21				
Nitrate as N	- 15100	1100	ug/l	10000	5890	92	84-115	0.1	20	
Quality Control Results										
Conventional Chemistry/Physical Parameters by APH	IA/EPA/ASTM Methods									
				Spike	Source		%REC		RPD	
Analyte	Result	MRL	Units	Level	Result	%REC	Limits	RPD	Limit	Qualifier
Batch: W1G1529 - EPA 365.3										
Blank (W1G1529-BLK1) o-Phosphate as P	•••••ND	0.010	mg/l	Prepared & An	alyzed: 07/2	28/21				
LCC (W1C1520 BC1)										
LCS (WIGIS29-BSI)				Prepared & An	alyzed: 07/2	28/21				
o-Phosphate as P	0.202	0.010	mg/l	Prepared & An 0.200	alyzed: 07/2	2 <b>8/21</b> 101	88-111			
o-Phosphate as P Matrix Spike (W1G1529-MS1)	0.202 Source: 1G28049-01	0.010	mg/l	Prepared & An 0.200 Prepared & An	alyzed: 07/2 alyzed: 07/2	28/21 101 28/21	88-111			
o-Phosphate as P Matrix Spike (W1G1529-MS1) o-Phosphate as P	<ul> <li>0.202</li> <li>Source: 1G28049-01</li> <li>0.207</li> </ul>	0.010	mg/l mg/l	Prepared & An           0.200         0.200           Prepared & An         0.200	alyzed: 07/2 alyzed: 07/2 ND	28/21 101 28/21 104	88-111 85-112			
CCS (W1G1529-BS1)         o-Phosphate as P         Matrix Spike (W1G1529-MS1)         o-Phosphate as P         Matrix Spike Dup (W1G1529-MSD1)	<ul> <li>0.202</li> <li>Source: 1G28049-01</li> <li>0.207</li> <li>Source: 1G28049-01</li> </ul>	0.010	mg/l mg/l	Prepared & An 0.200 Prepared & An 0.200 Prepared & An	alyzed: 07/2 alyzed: 07/2 ND alyzed: 07/2	28/21 101 28/21 104 28/21	88-111 85-112			
o-Phosphate as P Matrix Spike (W1G1529-MS1) o-Phosphate as P Matrix Spike Dup (W1G1529-MSD1) o-Phosphate as P	<ul> <li>0.202</li> <li>Source: 1628049-01</li> <li>0.207</li> <li>Source: 1628049-01</li> <li>0.206</li> </ul>	0.010	mg/l mg/l mg/l	Prepared & An 0.200 Prepared & An 0.200 Prepared & An 0.200	alyzed: 07/2 alyzed: 07/2 ND alyzed: 07/2 ND	28/21 101 28/21 104 28/21 103	88-111 85-112 85-112	0.5	20	
Autrix Spike (W1G1529-MS1)         o-Phosphate as P         Matrix Spike Dup (W1G1529-MSD1)         o-Phosphate as P         Batch: W1G1532 - EPA 353.2	<ul> <li>0.202</li> <li>Source: 1G28049-01</li> <li>0.207</li> <li>Source: 1G28049-01</li> <li>0.206</li> </ul>	0.010	mg/l mg/l mg/l	Prepared & An 0.200 Prepared & An 0.200 Prepared & An 0.200	alyzed: 07/2 alyzed: 07/2 ND alyzed: 07/2 ND	28/21 101 28/21 104 28/21 103	88-111 85-112 85-112	0.5	20	
CCS (WIGI529-BS1)         o-Phosphate as P         Matrix Spike (WIG1529-MS1)         o-Phosphate as P         Matrix Spike Dup (WIG1529-MSD1)         o-Phosphate as P         Batch: WIG1532 - EPA 353.2         Blank (WIG1532-BLK1)	<ul> <li>0.202</li> <li>Source: 1G28049-01</li> <li>0.207</li> <li>Source: 1G28049-01</li> <li>0.206</li> </ul>	0.010	mg/l mg/l mg/l	Prepared & An           0.200           Prepared & An           0.200           Prepared & An           0.200           Prepared & An           0.200	alyzed: 07/2 ND alyzed: 07/2 ND	28/21 101 28/21 104 28/21 103 07/29/21	88-111 85-112 85-112	0.5	20	
CCS (W1G1529-BS1)         o-Phosphate as P         Matrix Spike (W1G1529-MS1)         o-Phosphate as P         Matrix Spike Dup (W1G1529-MSD1)         o-Phosphate as P         Batch: W1G1532 - EPA 353.2         Blank (W1G1532-BLK1)         NO2+NO3 as N	<ul> <li>0.202</li> <li>Source: 1628049-01</li> <li>0.207</li> <li>Source: 1628049-01</li> <li>0.206</li> </ul>	0.010 0.010 0.010 200	mg/l mg/l mg/l ug/l	Prepared & An 0.200 Prepared & An 0.200 Prepared & An 0.200 epared: 07/28/21	alyzed: 07/2 ND alyzed: 07/2 ND	28/21 101 28/21 104 28/21 103 07/29/21	88-111 85-112 85-112	0.5	20	
LCS (WIGI529-BS1)         o-Phosphate as P         Matrix Spike (WIG1529-MS1)         o-Phosphate as P         Matrix Spike Dup (WIG1529-MSD1)         o-Phosphate as P         Batch: WIG1532 - EPA 353.2         Blank (WIG1532-BLK1)         NO2+NO3 as N         LCS (WIG1532-BS1)	<ul> <li>0.202</li> <li>Source: 1G28049-01</li> <li>0.207</li> <li>Source: 1G28049-01</li> <li>0.206</li> </ul>	0.010 0.010 0.010 200	mg/l mg/l mg/l Pre	Prepared & An 0.200 Prepared & An 0.200 Prepared & An 0.200 epared: 07/28/21	alyzed: 07/2 ND alyzed: 07/2 ND	28/21 101 28/21 104 28/21 103 07/29/21	88-111 85-112 85-112	0.5	20	
LCS (WIGI529-BS1)         o-Phosphate as P         Matrix Spike (WIG1529-MS1)         o-Phosphate as P         Matrix Spike Dup (WIG1529-MSD1)         o-Phosphate as P         Batch: WIG1532 - EPA 353.2         Blank (WIG1532-BLK1)         NO2+NO3 as N         LCS (WIG1532-BS1)         NO2+NO3 as N	<ul> <li>0.202</li> <li>Source: 1628049-01</li> <li>0.207</li> <li>Source: 1628049-01</li> <li>0.206</li> </ul>	0.010 0.010 0.010 200	mg/l mg/l mg/l ug/l Pre ug/l	Prepared & An 0.200 Prepared & An 0.200 Prepared & An 0.200 epared: 07/28/21 1000	alyzed: 07/2 ND alyzed: 07/2 ND Analyzed: Analyzed:	28/21 101 28/21 104 28/21 103 07/29/21 07/29/21 101	88-111 85-112 85-112 90-110	0.5	20	
LCS (WIGI529-BS1)         o-Phosphate as P         Matrix Spike (WIG1529-MS1)         o-Phosphate as P         Matrix Spike Dup (WIG1529-MSD1)         o-Phosphate as P         Batch: WIG1532 - EPA 353.2         Blank (WIG1532-BLK1)         NO2+NO3 as N         LCS (WIG1532-BS1)         NO2+NO3 as N         Matrix Spike (WIG1532-MS1)	<ul> <li>0.202</li> <li>Source: 1628049-01</li> <li>0.207</li> <li>Source: 1628049-01</li> <li>0.206</li> <li>0.206</li> <li>0.206</li> <li>0.201</li> <li>0.206</li> <li>0.201</li> <li>0.201</li></ul>	0.010 0.010 0.010 200 200	mg/l mg/l mg/l ug/l Pre ug/l	Prepared & An           0.200           Prepared & An           0.200           Prepared & An           0.200           Prepared & An           0.200           epared: 07/28/21           epared: 07/28/21           1000           epared: 07/28/21	alyzed: 07/2 ND alyzed: 07/2 ND Analyzed: Analyzed:	28/21 101 28/21 104 28/21 103 07/29/21 07/29/21 101 07/29/21	88-111 85-112 85-112 90-110	0.5	20	
LCS (WIGI529-BS1)         o-Phosphate as P         Matrix Spike (WIG1529-MS1)         o-Phosphate as P         Matrix Spike Dup (WIG1529-MSD1)         o-Phosphate as P         Batch: WIG1532 - EPA 353.2         Blank (WIG1532-BLK1)         NO2+NO3 as N         LCS (WIG1532-BS1)         NO2+NO3 as N         Matrix Spike (WIG1532-MS1)         NO2+NO3 as N	<ul> <li>0.202</li> <li>Source: 1628049-01</li> <li>0.207</li> <li>Source: 1628049-01</li> <li>0.206</li> <li>0.206</li></ul>	0.010 0.010 0.010 200 200	mg/l mg/l mg/l Pre ug/l Pre ug/l	Prepared & An 0.200 Prepared & An 0.200 Prepared & An 0.200 epared: 07/28/21 1000 epared: 07/28/21 2000	alyzed: 07/2 ND alyzed: 07/2 ND Analyzed: Analyzed: 1010	28/21 101 28/21 104 28/21 103 07/29/21 101 07/29/21 94	88-111 85-112 85-112 90-110	0.5	20	
LCS (WIGI529-BS1)         o-Phosphate as P         Matrix Spike (WIG1529-MS1)         o-Phosphate as P         Matrix Spike Dup (WIG1529-MSD1)         o-Phosphate as P         Batch: WIG1532 - EPA 353.2         Blank (WIG1532-BLK1)         NO2+NO3 as N         LCS (WIG1532-BS1)         NO2+NO3 as N         Matrix Spike (WIG1532-MS1)         NO2+NO3 as N         Matrix Spike (WIG1532-MS1)         NO2+NO3 as N	<ul> <li>0.202</li> <li>Source: 1628049-01</li> <li>0.207</li> <li>Source: 1628049-01</li> <li>0.206</li> <li>0.206</li></ul>	0.010 0.010 200 200 200	mg/l mg/l mg/l ug/l Pre ug/l Pre	Prepared & An 0.200 Prepared & An 0.200 Prepared & An 0.200 Prepared: 07/28/21 epared: 07/28/21 1000 epared: 07/28/21 2000	alyzed: 07/2 ND alyzed: 07/2 ND Analyzed: 07/2 ND Analyzed: 1010	28/21 101 28/21 104 28/21 103 07/29/21 07/29/21 07/29/21 94 07/29/21	88-111 85-112 85-112 90-110 90-110	0.5	20	
LCS (WIGI529-BS1)         o-Phosphate as P         Matrix Spike (WIG1529-MS1)         o-Phosphate as P         Matrix Spike Dup (WIG1529-MSD1)         o-Phosphate as P         Batch: WIG1532 - EPA 353.2         Blank (WIG1532-BLK1)         NO2+NO3 as N         LCS (WIG1532-BS1)         NO2+NO3 as N         Matrix Spike (WIG1532-MS1)         NO2+NO3 as N         Matrix Spike (WIG1532-MS1)         NO2+NO3 as N	<ul> <li>0.202</li> <li>Source: 1628049-01</li> <li>0.207</li> <li>Source: 1628049-01</li> <li>0.206</li> <li>0.206</li></ul>	0.010 0.010 0.010 200 200 200	mg/l mg/l mg/l mg/l Pre ug/l Pre ug/l	Prepared & An 0.200 Prepared & An 0.200 Prepared & An 0.200 Prepared & An 0.200 epared: 07/28/21 1000 epared: 07/28/21 2000	alyzed: 07/2 ND alyzed: 07/2 ND Analyzed: 07/2 ND Analyzed: 1010 Analyzed: 219	28/21 101 28/21 104 28/21 103 07/29/21 07/29/21 07/29/21 94 07/29/21	88-111 85-112 85-112 90-110 90-110	0.5	20	
LCS (WIGI529-BS1)         o-Phosphate as P         Matrix Spike (WIG1529-MS1)         o-Phosphate as P         Matrix Spike Dup (WIG1529-MSD1)         o-Phosphate as P         Batch: WIG1532 - EPA 353.2         Blank (WIG1532-BLK1)         NO2+NO3 as N         LCS (WIG1532-BS1)         NO2+NO3 as N         Matrix Spike (WIG1532-MS1)         NO2+NO3 as N         Matrix Spike (WIG1532-MS2)         NO2+NO3 as N         Matrix Spike (WIG1532-MS2)         NO2+NO3 as N	<ul> <li>0.202</li> <li>Source: 1628049-01</li> <li>0.207</li> <li>Source: 1628049-01</li> <li>0.206</li> <li>0.206</li> <li>Source: 1627003-06</li> <li>Source: 1627003-06</li> <li>Source: 1627003-06</li> <li>Source: 1627003-06</li> </ul>	0.010 0.010 200 200 200	mg/l mg/l mg/l rg/l Pre ug/l Pre ug/l Pre	Prepared & An 0.200 Prepared & An 0.200 Prepared & An 0.200 Prepared & An 0.200 epared: 07/28/21 1000 epared: 07/28/21 2000 epared: 07/28/21 2000	alyzed: 07/2 ND alyzed: 07/2 ND Analyzed: Analyzed: 1010 Analyzed: 219	28/21 101 28/21 104 28/21 103 07/29/21 07/29/21 07/29/21 07/29/21 07/29/21	88-111 85-112 85-112 90-110 90-110	0.5	20	
LCS (WIGI529-BS1)         o-Phosphate as P         Matrix Spike (WIG1529-MS1)         o-Phosphate as P         Matrix Spike Dup (WIG1529-MSD1)         o-Phosphate as P         Batch: WIG1532 - EPA 353.2         Blank (WIG1532-BLK1)         NO2+NO3 as N         LCS (WIG1532-BS1)         NO2+NO3 as N         Matrix Spike (WIG1532-MS1)         NO2+NO3 as N         Matrix Spike (WIG1532-MS1)         NO2+NO3 as N         Matrix Spike (WIG1532-MS2)         NO2+NO3 as N         Matrix Spike Dup (WIG1532-MSD1)         NO2+NO3 as N	<ul> <li>0.202</li> <li>Source: 1628049-01</li> <li>0.207</li> <li>Source: 1628049-01</li> <li>0.206</li> <li>0.206</li></ul>	0.010 0.010 200 200 200 200	mg/l mg/l mg/l mg/l Pre ug/l Pre ug/l Pre ug/l	Prepared & An 0.200 Prepared & An 0.200 Prepared & An 0.200 Prepared & An 0.200 epared: 07/28/21 2000 epared: 07/28/21 2000 epared: 07/28/21 2000	alyzed: 07/2 ND alyzed: 07/2 ND Analyzed: 07/2 ND Analyzed: 1010 Analyzed: 219 Analyzed: 219	28/21 101 28/21 104 28/21 103 07/29/21 07/29/21 94 07/29/21 101 07/29/21 95	88-111 85-112 85-112 90-110 90-110 90-110	0.5	20	
LCS (WIGI529-BS1)         o-Phosphate as P         Matrix Spike (WIG1529-MS1)         o-Phosphate as P         Matrix Spike Dup (WIG1529-MSD1)         o-Phosphate as P         Batch: WIG1532 - EPA 353.2         Blank (WIG1532-BLK1)         NO2+NO3 as N         LCS (WIG1532-BS1)         NO2+NO3 as N         Matrix Spike (WIG1532-MS1)         NO2+NO3 as N         Matrix Spike (WIG1532-MS1)         NO2+NO3 as N         Matrix Spike (WIG1532-MS2)         NO2+NO3 as N         Matrix Spike Dup (WIG1532-MSD1)         NO2+NO3 as N	<ul> <li>0.202</li> <li>Source: 1628049-01</li> <li>0.207</li> <li>Source: 1628049-01</li> <li>0.206</li> <li>0.206</li> <li>0.206</li> <li>0.206</li> <li>0.206</li> <li>Source: 1627003-06</li> <li>2230</li> <li>Source: 1627003-06</li> <li>2910</li> <li>Source: 1628064-04</li> <li>2910</li> </ul>	0.010 0.010 200 200 200 200	mg/l mg/l mg/l Pre ug/l Pre ug/l Pre ug/l Pre	Prepared & An 0.200 Prepared & An 0.200 Prepared & An 0.200 Prepared & An 0.200 epared: 07/28/21 2000 epared: 07/28/21 2000 epared: 07/28/21 2000 epared: 07/28/21	alyzed: 07/2 ND alyzed: 07/2 ND alyzed: 07/2 ND Analyzed: 1010 Analyzed: 219 Analyzed: 1010	28/21 101 28/21 104 28/21 103 07/29/21 07/29/21 07/29/21 07/29/21 07/29/21 95	88-111 85-112 85-112 90-110 90-110 90-110	0.5	20	

1G28049



FINAL REPORT

Psomas - Santa Ana, CA 3 Hutton Centre Dr., Ste. 200 Santa Ana, CA 92707

#### Project Number: 2KLE010102

Project Manager: Michael P. Donovan

08/24/2021 17:03

Reported:

### **Quality Control Results**

- 1	Continued)
	Continueu)

Conventional Chemistry/Physical Parameters	s by APHA/EPA/ASTM Meth	ods (Continue	d)							
				Spike	Source		%REC		RPD	
Analyte	Result	MRL	Units	Level	Result	%REC	Limits	RPD	Limit	Qualifier
Batch: W1H0056 - SM 2540C										
Blank (W1H0056-BLK1)			Prep	oared: 08/02/2	21 Analyzed:	08/03/21				
Total Dissolved Solids	ND	10	mg/l							
LCS (W1H0056-BS1)			Prep	oared: 08/02/2	21 Analyzed:	08/03/21				
Total Dissolved Solids	797	10	mg/l	824		97	96-102			
Duplicate (W1H0056-DUP1)	Source: 1G28049-0	02	Prep	oared: 08/02/2	21 Analyzed:	08/03/21				
Total Dissolved Solids		10	mg/l		36.0			3	10	
Batch: W1H0763 - EPA 351.2										
Blank (W1H0763-BLK1)			Pren	oared: 08/11/2	21 Analyzed:	08/13/21				
TKN	ND	0.10	mg/l		,, <b>,</b>					
Blank (W1H0763-BLK2)			Prep	oared: 08/11/2	21 Analyzed:	08/17/21				
TKN	ND	0.10	mg/l							
LCS (W1H0763-BS1)			Prep	oared: 08/11/2	21 Analyzed:	08/13/21				
TKN	0.988	0.10	mg/l	1.00	-	99	90-110			
LCS (W1H0763-BS2)			Prep	oared: 08/11/2	21 Analyzed:	08/17/21				
TKN	1.04	0.10	mg/l	1.00	-	104	90-110			
Matrix Spike (W1H0763-MS1)	Source: 1G28049-(	01	Prep	oared: 08/11/2	21 Analyzed:	08/13/21				
TKN	1.21	0.10	mg/l	1.00	0.166	105	90-110			
Matrix Spike (W1H0763-MS2)	Source: 1G28049-(	01	Prep	oared: 08/11/2	21 Analyzed:	08/17/21				
TKN	1.20	0.10	mg/l	1.00	0.166	103	90-110			
Matrix Spike Dup (W1H0763-MSD1)	Source: 1G28049-(	01	Prep	oared: 08/11/2	21 Analyzed:	08/13/21				
TKN	1.24	0.10	mg/l	1.00	0.166	107	90-110	2	10	
Matrix Spike Dup (W1H0763-MSD2)	Source: 1G28049-0	01	Prep	oared: 08/11/2	21 Analyzed:	08/17/21				
TKN	1.22	0.10	mg/l	1.00	0.166	105	90-110	1	10	



Psomas - Santa Ana, CA 3 Hutton Centre Dr., Ste. 200 Santa Ana, CA 92707

# **Certificate of Analysis**

FINAL REPORT

Project Number: 2KLE010102

Project Manager: Michael P. Donovan

Reported: 08/24/2021 17:03

### Notes and Definitions

ltem	Definition
%REC	Percent Recovery
Dil	Dilution
MRL	The minimum levels, concentrations, or quantities of a target variable (e.g., target analyte) that can be reported with a specified degree of confidence. The MRL is also known as Limit of Quantitation (LOQ)
ND	NOT DETECTED at or above the Method Reporting Limit (MRL). If Method Detection Limit (MDL) is reported, then ND means not detected at or above the MDL.
RPD	Relative Percent Difference
Source	Sample that was matrix spiked or duplicated.

Any remaining sample(s) will be disposed of one month from the final report date unless other arrangements are made in advance.

All results are expressed on wet weight basis unless otherwise specified.

All samples collected by Weck Laboratories have been sampled in accordance to laboratory SOP Number MIS002.

### Weck Laboratories 14859 Clark Avenue City of Industry, CA 91745 (626) 336-2139

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					С	HAIN	OF CU	STO	ODY	′ FC	DRN	/		G	12	80	49	Page of
Client Name/Address:			Project	/PO Nu	mber:								·	Analys	is Requ	lired	<u></u>	
PSOMAS 3 HUTTON CENTRE DRIVE, SUITE SANTA ANA, CA 92707	E 200		2KLE	01010	2			0.00	EPA Method	SM2540C	y EPA	Aethod	ation					
Project Manager:			Phone	Number				8	8	8	lent	¥.	louis .					
MICHAEL P. DONOVAN (mpdonovr	1@cox.net)	)	(714)	328-5	234			AMeth	nae-OP(	ved Soli	hi Nitrog 2	sN-EF	en by ca					
Sampler: Jim Burton, Todd Bear			Fax Number: 714.545.8883			山	lqsorio	Dissol	(jelda d 351.	jeldat 1 351. 103 a	litroge		:					
Sample Description	Sample Matrix	Container Type	#of Cont.	Sam	pling Date	Time	Preservation	Nitrate	Orthop 365.3	Total [	Total Metho	NO2+1 353.2	rotal N					Special Instruction
SL-DP-10	water	60 ml Poły	1	7	27/21	9:45	None	X				1						
	water	250 ml Poly	1	1	$\overline{\mathbf{N}}$		None		X									Filtered with 0.45
	water	500 ml Poly	1	1	1		None			x								
<b>_</b>	water	250 ml Poly	1		<u>ь</u>	-+-	H2SO4		1		x	x	x					
<u>SL-DP-24</u>	water	60 ml Poly	1	7/2	7/2-1	10:15	None	X	1			1 .		·				
	water	250 ml Poly	1		า่	1	None		X						-			Filtered with 0.45u
	water	500 ml Poły	1		}		None			X	1							r nored with 0.45µ
	water	250 ml Poly	1		<b>_</b>		H2SO4				x	X	х					
	water	60 ml Poly	1				None	X										
	water	250 ml Poly	1				None		x									Filtered with 0.45
	water	500 ml Poly	1			Ì	None			X								T morea warr 0.46µ
	water	250 ml Poły	1				H2SO4				x	x	X	-				
	water	60 mi Poly	1		_		None	х										
	water	250 ml Poly	1				None		X									Filtered with D 45a
X	water	500 ml Poly	1				None			x						····		Pittered with 0.45p
	water	250 ml Poly	1				H2SQ4				x	x	x		-			
	water	60 ml Poly	1				None	Х										
	water	250 mì Poly	1				None		х									Filtered with 0.45u
	water	500 mi Poly	1				None			Х								7 #10/00 Will 0.404
	water	250 ml Poly	1				H2\$04				x	x	x					
Relinquished By:	21	Date /Time:		Receiv	ed by:	A		<u> </u>	L	·	L	Date /T	ime:			Tuma Same	round Tim Dev	e: (Check) 72 Hours
		Date Title FI25121		Receiv	A.	Į –						Date/T	ime 3 L	/		24 Ho 48 Ho	urs urs	5 Days Normal X
Kelinquished By:		Date /Time:		Receiv	ed in Lab t	y:						Date /1	ime:			Sampl	ie <b>in e</b> grity	

- 1 ------



FINAL REPORT

Work Orders:	1G29036	Report Date:	8/27/2021
		Received Date:	7/29/2021
Project:	2KLE010102	Turnaround Time:	Normal
i loject.		Phones:	(714) 751-7373
		Fax:	(714) 545-8883
Attn:	Michael P. Donovan	P.O. #:	
Client:	Psomas - Santa Ana, CA 3 Hutton Centre Dr., Ste. 200 Santa Ana, CA 92707	Billing Code:	

DoD-ELAP ANAB #ADE-2882 • DoD-ISO ANAB # • ELAP-CA #1132 • EPA-UCMR #CA00211 • Guam-EPA #17-008R • HW-DOH #4047 • ISO17025 ANAB #L2457.01 • LACSD #10143 • NELAP-OR #4047 • NJ-DEP #CA015 • SCAQMD #93LA1006

This is a complete final report. The information in this report applies to the samples analyzed in accordance with the chain-of-custody document. Weck Laboratories certifies that the test results meet all requirements of TNI unless noted by qualifiers or written in the Case Narrative. This analytical report must be reproduced in its entirety.

Dear Michael P. Donovan,

Enclosed are the results of analyses for samples received 7/29/21 with the Chain-of-Custody document. The samples were received in good condition, at 5.0 °C and on ice. All analyses met the method criteria except as noted in the case narrative or in the report with data qualifiers.

Reviewed by:

1: State

Chris Samatmanakit Project Manager





#### Psomas - Santa Ana, CA 3 Hutton Centre Dr., Ste. 200 Santa Ana, CA 92707

# **Certificate of Analysis**

FINAL REPORT

Project Number: 2KLE010102

Project Manager: Michael P. Donovan

Reported: 08/27/2021 14:57

### Sample Summary

Sample Name	Sampled By	Lab ID	Matrix	Sampled	Qualifiers
LS-DP-5	Jim Burton, Todd Bear	1G29036-01	Water	07/28/21 09:45	
LS-DP-22	Jim Burton, Todd Bear	1G29036-02	Water	07/28/21 10:05	



FINAL REPORT

Psomas - Santa Ana, CA 3 Hutton Centre Dr., Ste. 200 Santa Ana, CA 92707 Project Number: 2KLE010102
Project Manager: Michael P. Donovan

Reported: 08/27/2021 14:57

### Sample Results

Sample:	LS-DP-5				Sampled:	07/28/2	1 9:45 by Jim Burt	on, Todd Bear
	1G29036-01 (Water)							
Analyte			Result	MRL	Units	Dil	Analyzed	Qualifier
Anions by IC, I	EPA Method 300.0							
Method: EPA	300.0			Instr: LC12				
Batch ID: W	/1G1554	Preparation: _NONE (LC)		Prepared: 07/29/2	21 10:40			Analyst: jan
Nitrate as N	• • • • • • • • • • • • • • • • • • • •		ND	110	ug/l	1	07/29/21 19:20	
Conventional C	hemistry/Physical Parameters b	y APHA/EPA/ASTM Methods						
Method: [CAL	.C]			Instr: [CALC]				
Batch ID: [C	CALC]	Preparation: [CALC]		Prepared: 08/13/2	21 14:30			Analyst: YMT
Nitrogen, T	otal		0.11	0.10	mg/l	1	08/17/21	
Method: EPA	351.2			Instr: AA06				
Batch ID: W	/1H0962	Preparation: _NONE (WETCHEM)		Prepared: 08/13/2	21 14:30			Analyst: YMT
<b>TKN</b>			0.11	0.10	mg/l	1	08/17/21	
Method: EPA	353.2			Instr: AA01				
Batch ID: W	/1H0312	Preparation: _NONE (WETCHEM)		Prepared: 08/04/2	21 21:09			Analyst: ism
NO2+NO3	as N		ND	200	ug/l	1	08/05/21	
Method: EPA	365.3			Instr: UVVIS04				
Batch ID: W	/1G1594	Preparation: _NONE (WETCHEM)		Prepared: 07/29/2	21 17:15		Ar	nalyst: UVVIS04
o-Phosphat	te as P		ND	0.010	mg/l	1	07/30/21 09:02	
Method: SM 2	2540C			Instr: OVEN01				
Batch ID: W	/1H0190	Preparation: _NONE (WETCHEM)		Prepared: 08/03/2	21 18:30			Analyst: blg
Total Disso	lved Solids		12	10	mg/l	1	08/04/21	



FINAL REPORT

Psomas - Santa Ana, CA	Project Number:	2KLE010102		0	Reported:
Santa Ana, CA 92707	Project Manager:	Michael P. Donovan		08	5/27/2021 14:57
Sample Results					(Continued)
Sample: LS-DP-22			Sampled: 07/	/28/21 10:05 by Jim Bu	urton, Todd Bear
1G29036-02 (Water)					
Analyte	Result	MRL	Units D	Dil Analyzed	Qualifier
Anions by IC, EPA Method 300.0					
Method: EPA 300.0		Instr: LC12			
Batch ID: W1G1554	Preparation: _NONE (LC)	Prepared: 07/29/21	10:40		Analyst: jan
Nitrate as N	ND	110	ug/l	1 07/29/21 20:14	
Conventional Chemistry/Physical Parameters b	y APHA/EPA/ASTM Methods				
Method: [CALC]		Instr: [CALC]			
Batch ID: [CALC]	Preparation: [CALC]	Prepared: 08/13/21	14:30		Analyst: YMT
Nitrogen, Total	0.15	0.10	mg/l	1 08/17/21	
Method: EPA 351.2		Instr: AA06			
Batch ID: W1H0962	Preparation: _NONE (WETCHEM)	Prepared: 08/13/21	14:30		Analyst: YMT
TKN	0.15	0.10	mg/l	1 08/17/21	
Method: EPA 353.2		Instr: AA01			
Batch ID: W1H0312	Preparation: _NONE (WETCHEM)	Prepared: 08/04/21	21:09		Analyst: ism
NO2+NO3 as N	ND	200	ug/l	1 08/05/21	
Method: EPA 365.3		Instr: UVVIS04			
Batch ID: W1G1594	Preparation: _NONE (WETCHEM)	Prepared: 07/29/21	17:15		Analyst: UVVIS04
o-Phosphate as P	ND	0.010	mg/l	1 07/30/21 09:04	
Method: SM 2540C		Instr: OVEN01			
Batch ID: W1H0190	Preparation: _NONE (WETCHEM)	Prepared: 08/03/21	18:30		Analyst: blg
Total Dissolved Solids	20	10	mg/l	1 08/04/21	



**FINAL REPORT** 

Psomas - Santa Ana, CA 3 Hutton Centre Dr., Ste. 200 Santa Ana, CA 92707

#### Project Number: 2KLE010102

Project Manager: Michael P. Donovan

**Reported:** 08/27/2021 14:57

### **Quality Control Results**

Anions by IC, E	PA Method 300.0
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				Spike	Source		%REC		RPD	
Analyte	Result	MRL	Units	Level	Result	%REC	Limits	RPD	Limit	Qualifier
Batch: W1G1554 - EPA 300.0										
Blank (W1G1554-BLK1)				Prepared & Ar	nalyzed: 07/2	29/21				
Nitrate as N	ND	110	ug/l		-					
LCS (W1G1554-BS1)				Prepared & Ar	nalyzed: 07/2	29/21				
Nitrate as N	1020	110	ug/l	1000		102	90-110			
Matrix Spike (W1G1554-MS1)	Source: 1G09009-	05		Prepared & Ar	nalyzed: 07/2	29/21				
Nitrate as N	9580	1100	ug/l	10000	ND	96	84-115			
Matrix Spike (W1G1554-MS2)	Source: 1G09009-	06		Prepared & Ar	nalyzed: 07/2	29/21				
Nitrate as N	9500	1100	ug/l	10000	ND	95	84-115			
Matrix Spike Dup (W1G1554-MSD1)	Source: 1G09009-	05		Prepared & Ar	nalyzed: 07/2	29/21				
Nitrate as N	9550	1100	ug/l	10000	ND	96	84-115	0.3	20	
Matrix Spike Dup (W1G1554-MSD2)	Source: 1G09009-	06		Prepared & Ar	nalyzed: 07/2	29/21				
Nitrate as N	9510	1100	ug/l	10000	ND	95	84-115	0.1	20	

### **Quality Control Results**

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

				Spike	Source		%REC		RPD	
Analyte	Result	MRL	Units	Level	Result	%REC	Limits	RPD	Limit	Qualifier
Batch: W1G1594 - EPA 365.3										
Blank (W1G1594-BLK1)			Pre	oared: 07/29/2	1 Analyzed	: 07/30/2 <sup>.</sup>	1			
o-Phosphate as P	ND	0.010	mg/l							
LCS (W1G1594-BS1)			Pre	oared: 07/29/2	1 Analyzed	: 07/30/2 <sup>.</sup>	1			
o-Phosphate as P	0.202	0.010	mg/l	0.200		101	88-111			
Matrix Spike (W1G1594-MS1)	Source: 1G29036	-01	Pre	oared: 07/29/2	1 Analyzed	: 07/30/2 <sup>.</sup>	1			
o-Phosphate as P	0.201	0.010	mg/l	0.200	ND	100	85-112			
Matrix Spike Dup (W1G1594-MSD1)	Source: 1G29036	-01	Pre	oared: 07/29/2	1 Analyzed	: 07/30/2 <sup>.</sup>	1			
o-Phosphate as P	0.201	0.010	mg/l	0.200	ND	100	85-112	0	20	
Batch: W1H0190 - SM 2540C										
Blank (W1H0190-BLK1)			Pre	oared: 08/03/2	1 Analyzed	: 08/04/2 <sup>-</sup>	1			
Total Dissolved Solids	ND	10	mg/l							
LCS (W1H0190-BS1)			Pre	oared: 08/03/2	1 Analyzed	: 08/04/2 <sup>-</sup>	1			
Total Dissolved Solids	816	10	mg/l	824		99	96-102			
Duplicate (W1H0190-DUP1)	Source: 1G29055	-01	Pre	oared: 08/03/2	1 Analyzed	: 08/04/2 <sup>-</sup>	1			
Total Dissolved Solids	2280	10	mg/l		2290			0.4	10	
Duplicate (W1H0190-DUP2)	Source: 1G29055	-02	Pre	oared: 08/03/2	1 Analyzed	: 08/04/2 <sup>-</sup>	1			
Total Dissolved Solids	4390	10	mg/l		4410			0.5	10	
Batch: W1H0312 - EPA 353.2										
Blank (W1H0312-BLK1)			Pre	oared: 08/04/2	1 Analyzed	: 08/05/2 <sup>.</sup>	1			
NO2+NO3 as N	ND	200	ug/l							
LCS (W1H0312-BS1)			Pre	oared: 08/04/2	1 Analyzed	: 08/05/2 <sup>-</sup>	1			
1G29036										Page 5 of 7



FINAL REPORT

Psomas - Santa Ana, CA 3 Hutton Centre Dr., Ste. 200 Santa Ana, CA 92707

#### Project Number: 2KLE010102

Project Manager: Michael P. Donovan

08/27/2021 14:57

Reported:

(Continued)

### Quality Control Results

Conventional Chemistry/Physical Parameters by APH	A/EPA/ASTM Methods	(Continued)								
				Spike	Source		%REC		RPD	
Analyte	Result	MRL	Units	Level	Result	%REC	Limits	RPD	Limit	Qualifier
Batch: W1H0312 - EPA 353.2 (Continued)										
LCS (W1H0312-BS1)			Prepare	ed: 08/04/21	Analyzed: (	08/05/21				
NO2+NO3 as N	1020	200	ug/l	1000		102	90-110			
Matrix Spike (W1H0312-MS1)	Source: 1H04067-03		Prepare	ed: 08/04/21	Analyzed: (	08/05/21				
NO2+NO3 as N	29600	1000	ug/l	10000		296	90-110			
Matrix Spike (W1H0312-MS2)	Source: 1H04068-01		Prepare	ed: 08/04/21	Analyzed: (	08/05/21				
NO2+NO3 as N	6640	200	ug/l	2000	4650	100	90-110			
Matrix Spike Dup (W1H0312-MSD1)	Source: 1H04067-03		Prepare	ed: 08/04/21	Analyzed: (	08/05/21				
NO2+NO3 as N	29600	1000	ug/l	10000		296	90-110	0	20	
Matrix Spike Dup (W1H0312-MSD2)	Source: 1H04068-01		Prepare	ed: 08/04/21	Analyzed: 0	08/05/21				
NO2+NO3 as N	6610	200	ug/l	2000	4650	98	90-110	0.5	20	
Batch: W1H0962 - EPA 351.2										
Blank (W1H0962-BLK1)			Prepare	ed: 08/13/21	Analyzed: (	08/17/21				
TKN	ND	0.10	mg/l							
LCS (W1H0962-BS1)			Prepare	ed: 08/13/21	Analyzed: (	08/17/21				
TKN	1.04	0.10	mg/l	1.00		104	90-110			
Matrix Spike (W1H0962-MS1)	Source: 1G30092-01		Prepare	ed: 08/13/21	Analyzed: (	08/17/21				
TKN	1.01	0.10	mg/l	1.00	ND	101	90-110			
Matrix Spike Dup (W1H0962-MSD1)	Source: 1G30092-01		Prepare	ed: 08/13/21	Analyzed: (	08/17/21				
TKN	0.991	0.10	mg/l	1.00	ND	99	90-110	2	10	



Psomas - Santa Ana, CA 3 Hutton Centre Dr., Ste. 200 Santa Ana, CA 92707

# **Certificate of Analysis**

FINAL REPORT

Project Manager: Michael P. Donovan

Project Number: 2KLE010102

Reported: 08/27/2021 14:57

### Notes and Definitions

ltem	Definition
%REC	Percent Recovery
Dil	Dilution
MRL	The minimum levels, concentrations, or quantities of a target variable (e.g., target analyte) that can be reported with a specified degree of confidence. The MRL is also known as Limit of Quantitation (LOQ)
ND	NOT DETECTED at or above the Method Reporting Limit (MRL). If Method Detection Limit (MDL) is reported, then ND means not detected at or above the MDL.
RPD	Relative Percent Difference
Source	Sample that was matrix spiked or duplicated.

Any remaining sample(s) will be disposed of one month from the final report date unless other arrangements are made in advance.

All results are expressed on wet weight basis unless otherwise specified.

All samples collected by Weck Laboratories have been sampled in accordance to laboratory SOP Number MIS002.

Weck Laboratories 14859 Clark Avenue City of Industry, CA 91745 (626) 336-2139

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(626) 336-2139																IJ	UA			6	290	36
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roject Manager.			Phone	Num	ber;		<u>u.</u>			6 po	8	ds S	l e	A A	louis			1				
ICHAEL P. DONOVAN (mpdonovr	@cox.net)		(714)	328-	-5234	4				A Meth	tae-OP	ved Sol	hi Nitro	38 N - E	en by ca							
ampler: Jim Burton, Todd Bear Fax				Imber	r: 714.	.545.88	83			ЦЦ ЧЦ	ldsoh	issol	(jelda d 351	103 a	itrogei	]		ł				
Sample Description	Sample Matrix	Container Type	# of Cont.	Sa	empling	g Date	Ta	ne	Preservation	Nitrate	Orthop 365.3	Total D	Total K Methoc	NO2+h 353.2	Total N						Snecia	Instruction
L3-BP-5	water	60 ml Poly	1	7	28	21	19.2	150	None	X			1		<u> </u>					$\uparrow$		1 1134 404011
	water	250 ml Poly	1.	1	$\gamma'$				None		X							-			Filtered wi	 th 0.45μ
,	water	500 ml Poly	1						None			Х								<u> </u>		<u></u>
	water	250 ml Poly	1		<u> </u>	<u>.</u>	-+	-	H2SO4				X	X	X				1		<u></u>	
<u>-S-DP-22</u>	water	60 ml Poly	1	ר	20	21	10:	05 a	None	Х			Γ						1	1	1	
	water	250 ml Poly	1		<u> </u>		1		None		X									<b> </b>	Filtered wi	th 0.45u
	water	500 ml Poly	1						None			Х						-	<u> </u>			
	water	250 ml Poly	1		<u>_</u>		1	•	H2SO4				X	X	х					<u> </u>	+	
×/	water	60 ml Poly	1						None	Х									<u> </u>		<u>†                                    </u>	
	water	250 ml Poly	1						None		X							1		[	Filtered wit	th 0.45u
	water	500 ml Poly	1						None			X								<u> </u>		
	water	250 ml Poly	1						H2SO4				Х	х	x							
	water	60 ml Poly	1						None	X										<u> </u>	1	
	water	250 ml Poły	1						None		X										Filtered wit	h 0.45u
	water	500 mi Poly	1						None			Х				:						
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FINAL REPORT

Work Orders:	1G29038	Report Date:	8/10/2021
		Received Date:	7/29/2021
Project:	2KLE010102	Turnaround Time:	Normal
		Phones:	(714) 751-7373
		Fax:	(714) 545-8883
Attn:	Michael P. Donovan	P.O. #:	
Client:	Psomas - Santa Ana, CA 3 Hutton Centre Dr., Ste. 200 Santa Ana, CA 92707	Billing Code:	

Dear Michael P. Donovan :

Enclosed are the results of analyses for samples received 7/29/2021 with the Chain-of-Custody document. The samples were received in good condition, at 5.0 °C and on ice. All analysis met the method criteria except as noted in the case narrative or in the report with data qualifiers.

Sa	mple Results						
Sample:	LS-BR-1					Sampled: 07/28/21 1	2:05 by Client
	1G29038-01 (Water)						
Analyte		Result	MRL	Units	Dil	Analyzed	Qualifier
Method: SM	9223B		Instr: INC12				
Batch ID: V	V1H0520	Preparation: _NONE (MICROBIOLOGY)	Prepared: 07,	/29/21 12:03			Analyst: slh
E. coli		6.3	1.0	MPN/100ml	1	07/30/21	
Sample:	SL-BR-1					Sampled: 07/28/21 1	2:40 by Client
	1G29038-02 (Water)						
Analyte		Result	MRL	Units	Dil	Analyzed	Qualifier
Method: SM	9223B		Instr: INC12				
Batch ID: V	V1H0520	Preparation: _NONE (MICROBIOLOGY)	Prepared: 07,	/29/21 12:03			Analyst: slh
E. coli		ND	1.0	MPN/100ml	1	07/30/21	
Sample:	INT2-RES-1					Sampled: 07/28/21 1	2:15 by Client
	1G29038-03 (Water)						
Analyte		Result	MRL	Units	Dil	Analyzed	Qualifier
Method: SM	9223B		Instr: INC12				
Batch ID: V	V1H0520	Preparation: _NONE (MICROBIOLOGY)	Prepared: 07,	/29/21 12:03			Analyst: slh
E. coli		4.1	1.0	MPN/100ml	1	07/30/21	



Notes and Definitions

ltem	Definition
%REC	Percent Recovery
Dil	Dilution
MRL	The minimum levels, concentrations, or quantities of a target variable (e.g., target analyte) that can be reported with a specified degree of confidence. The MRL is also known as Limit of Quantitation (LOQ)
ND	NOT DETECTED at or above the Method Reporting Limit (MRL). If Method Detection Limit (MDL) is reported, then ND means not detected at or above the MDL.
RPD	Relative Percent Difference

Any remaining sample(s) will be disposed of one month from the final report date unless other arrangements are made in advance.

All results are expressed on wet weight basis unless otherwise specified.

All samples collected by Weck Laboratories have been sampled in accordance to laboratory SOP Number MIS002.

### Analyses Accreditation Summary

Analyte	CAS #	Not By NELAP	ANAB ISO 17025
SM 9223B in Water			
E. coli		$\checkmark$	

Reviewed by:

1: State

Chris Samatmanakit Project Manager



#### DoD-ELAP ANAB #ADE-2882 • DoD-ISO ANAB # • ELAP-CA #1132 • EPA-UCMR #CA00211 • Guam-EPA #17-008R • HW-DOH #4047 • ISO17025 ANAB #L2457.01 • LACSD #10143 • NELAP-OR #4047 • NJ-DEP #CA015 • SCAQMD #93LA1006

This is a complete final report. The information in this report applies to the samples analyzed in accordance with the chain-of-custody document. Weck Laboratories certifies that the test results meet all requirements of TNI unless noted by qualifiers or written in the Case Narrative. This analytical report must be reproduced in its entirety.

### Weck Laboratories 14859 Clark Avenue City of Industry, CA 91745 (626) 336-2139

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Cllent Name/Address:			Project	PON	Number:		· · · · · · · · · · · · · · · · · · ·	1						Analy	sis Rec	uired				
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Project Manager:			Phone	Numi	ber:		• • •	0				1								
MICHAEL P. DONOVAN (mpdonovr	n@cox.net)		(714)	328-	-5234			coli (E												
Sampler: Jim Burton, Todd Bear			Fax Nu	mber	: 714.545.8	383		richia 23B				1	ł							
Sample Description	Sample Matrix	Container Type	#of Cont.	Sa	mpling Date	Time	Preservation	Esche SM 92						ļ					Canadia	l handar attau a
LS-BR-1	water	125 mi poły	1	7/	28/21	12:050	Sterile-None	X	1									+	24-Hour H	lold time*
SL-BR-1	water	125 mi poly	1	14/	23/2	12:40	Sterile- None	X		T -					1	1			24-Hour H	lold time*
FMT2-RES-1	water	125 ml poly	1		28 21	12:15	Sterile- None	X	1						1		1	1	24-Hour H	loid time*
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Relinquished By:	121	Date/Time:		Rec	eived by:		<u>L</u>	<u> </u>	I	I		Date /	l Fime:	L	<b>L</b>	Turna Same	around e Day	Time:	(Check) 72 Hours	1
Kelinguished By: Faller	7/29	Date Time:		Rece	eived by	1 3	· ~ 70	230	1			Date /	Time:	3V	1	24 H	ours _		5 Days	
Relinquished By:		Date /Time:		Rece	eived in Lab	by:			•			Date /	Time:			Samp	ole Inter t	grity:	(Check) On ice	

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\* Per Lohantan Surface Water Ambient Monitoring Program (SWAMP) for ambient water



FINAL REPORT

Work Orders:	1G30022	Report Date:	8/27/2021
		Received Date:	7/30/2021
Project:	2KLE010102	Turnaround Time:	Normal
i loject.		Phones:	(714) 751-7373
		Fax:	(714) 545-8883
Attn:	Michael P. Donovan	P.O. #:	
Client:	Psomas - Santa Ana, CA 3 Hutton Centre Dr., Ste. 200 Santa Ana, CA 92707	Billing Code:	

DoD-ELAP ANAB #ADE-2882 • DoD-ISO ANAB # • ELAP-CA #1132 • EPA-UCMR #CA00211 • Guam-EPA #17-008R • HW-DOH #4047 • ISO17025 ANAB #L2457.01 • LACSD #10143 • NELAP-OR #4047 • NJ-DEP #CA015 • SCAQMD #93LA1006

This is a complete final report. The information in this report applies to the samples analyzed in accordance with the chain-of-custody document. Weck Laboratories certifies that the test results meet all requirements of TNI unless noted by qualifiers or written in the Case Narrative. This analytical report must be reproduced in its entirety.

Dear Michael P. Donovan,

Enclosed are the results of analyses for samples received 7/30/21 with the Chain-of-Custody document. The samples were received in good condition, at 2.8 °C and on ice. All analyses met the method criteria except as noted in the case narrative or in the report with data qualifiers.

Reviewed by:

1: State

Chris Samatmanakit Project Manager

1G30022





#### Psomas - Santa Ana, CA 3 Hutton Centre Dr., Ste. 200 Santa Ana, CA 92707

### Sample Summary

# Certificate of Analysis

FINAL REPORT

Project Number: 2KLE010102

Project Manager: Michael P. Donovan

**Reported:** 08/27/2021 14:59

Sample Name	Sampled By	Lab ID	Matrix	Sampled	Qualifiers
BC-BLW-PH6	Jim Burton, Todd Bear	1G30022-01	Water	07/29/21 08:05	
BC-BLW-PH5	Jim Burton, Todd Bear	1G30022-02	Water	07/29/21 08:35	
BC-BLW-PH4	Jim Burton, Todd Bear	1G30022-03	Water	07/29/21 09:10	
BC-BLW-PH3	Jim Burton, Todd Bear	1G30022-04	Water	07/29/21 09:45	
BC-BLW-PH2	Jim Burton, Todd Bear	1G30022-05	Water	07/29/21 10:25	



**FINAL REPORT** 

Reported: 08/27/2021 14:59

Psomas - Sar 3 Hutton Cent Santa Ana, Ca	nta Ana, CA tre Dr., Ste. 200 A  92707	Project Nun Project Man	nber: ager:	2KLE010102 Michael P. Donovan			30	<b>Reported</b> 8/27/2021 14:5
Sa	mple Results							
Sample:	BC-BLW-PH6				Samp	oled: 07/29/2	1 8:05 by Jim Bu	irton, Todd Bear
	1G30022-01 (Water)							
Analyte		Re	esult	MRL	Units	Dil	Analyzed	Qualifier
Anions by IC, E	PA Method 300.0							
Method: EPA	300.0			Instr: LC12				
Batch ID: W	1G1628	Preparation: _NONE (LC)		Prepared: 07/30/	21 10:53			Analyst: jan
Nitrate as N			ND	110	ug/l	1	07/30/21 18:17	

#### nventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods 1

Conventional Chemistry/Physical Parar	meters by APHA/EPA/ASTM Methods				
Method: [CALC]		Instr: [CALC]			
Batch ID: [CALC]	Preparation: [CALC]	Prepared: 08/13/21 14:30			Analyst: YMT
Nitrogen, Total	0.12	0.10 mg/l	1	08/17/21	
Method: EPA 351.2		Instr: AA06			
Batch ID: W1H0962	Preparation: _NONE (WETCHEM)	Prepared: 08/13/21 14:30			Analyst: YMT
ΤΚΝ	0.12	0.10 mg/l	1	08/17/21	
Method: EPA 353.2		Instr: AA01			
Batch ID: W1H0865	Preparation: _NONE (WETCHEM)	Prepared: 08/12/21 14:31			Analyst: ism
NO2+NO3 as N	ND	200 ug/l	1	08/13/21	
Method: EPA 365.3		Instr: UVVIS04			
Batch ID: W1G1655	Preparation: _NONE (WETCHEM)	Prepared: 07/30/21 15:22			Analyst: sbn
o-Phosphate as P	ND	0.010 mg/l	1	07/30/21 15:49	
Method: SM 2540C		Instr: OVEN01			
Batch ID: W1H0280	Preparation: _NONE (WETCHEM)	Prepared: 08/04/21 15:28			Analyst: blg
Total Dissolved Solids		10 mg/l	1	08/05/21	


Psomas - Sa 3 Hutton Cer	anta Ana, CA ntre Dr. Ste. 200	Project Number:	2KLE010102			08/	Reported: 27/2021 14:59
Santa Ana, C	CA 92707	Project Manager:	Michael P. Donovan			00,	21,2021 11.00
Sa	ample Results						(Continued)
Sample:	BC-BLW-PH5			Sample	ed: 07/29/	/21 8:35 by Jim Bur	ton, Todd Bear
	1G30022-02 (Water)						
Analyte		Result	MRL	Units	Dil	Analyzed	Qualifier
Anions by IC,	EPA Method 300.0						
Method: EPA	A 300.0		Instr: LC12				
Batch ID: \	W1G1628	Preparation: _NONE (LC)	Prepared: 07/	30/21 10:53			Analyst: jan
Nitrate as	Ν		110	ug/l	1	07/30/21 18:34	
Conventional	Chemistry/Physical Parameters	s by APHA/EPA/ASTM Methods					
Method: [CA	ALC]		Instr: [CALC]				
Batch ID: [	[CALC]	Preparation: [CALC]	Prepared: 08/	13/21 14:30			Analyst: YMT
Nitrogen,	Total	0.12	0.10	mg/l	1	08/17/21	
Method: EPA	A 351.2		Instr: AA06				
Batch ID: \	W1H0962	Preparation: _NONE (WETCHEM)	Prepared: 08/	13/21 14:30			Analyst: YMT
TKN		0.12	0.10	mg/l	1	08/17/21	
Method: EPA	A 353.2		Instr: AA01				
Batch ID: \	W1H0865	Preparation: _NONE (WETCHEM)	Prepared: 08/	/12/21 14:31			Analyst: ism
NO2+NO3	as N	ND	200	ug/l	1	08/13/21	
Method: EPA	A 365.3		Instr: UVVIS04	1			
Batch ID: \	W1G1655	Preparation: _NONE (WETCHEM)	Prepared: 07/	30/21 15:22			Analyst: sbn
o-Phospha	ate as P	ND	0.010	mg/l	1	07/30/21 15:51	
Method: SM	2540C		Instr: OVEN01				
Batch ID: \	W1H0280	Preparation: _NONE (WETCHEM)	Prepared: 08/	04/21 15:28			Analyst: blg
Total Diss	olved Solids		10	mg/l	1	08/05/21	



Psomas - Sa	nta Ana, CA	Project Number:	2KLE010102				Reported:
3 Hutton Cen Santa Ana	ntre Dr., Ste. 200	Project Manager	Michael P. Donovan			08	/27/2021 14:59
Sa	mple Results	r tojoot munugot.					(Continued)
Sample:	BC-BLW-PH4			Sam	pled: 07/29/21	9:10 by Jim Bu	rton, Todd Bear
	1G30022-03 (Water)						
Analyte		Result	MRL	Units	Dil	Analyzed	Qualifier
Anions by IC, I	EPA Method 300.0						
Method: EPA	300.0		Instr: LC12				
Batch ID: W	V1G1628	Preparation: _NONE (LC)	Prepared: 07/30/	21 10:53			Analyst: jan
Nitrate as N	Ν	ND	110	ug/l	1	07/30/21 18:52	
Conventional C	Chemistry/Physical Parameter	s by APHA/EPA/ASTM Methods					
Method: [CAI	LC]		Instr: [CALC]				
Batch ID: [0	CALC]	Preparation: [CALC]	Prepared: 08/13/	21 14:30			Analyst: YMT
Nitrogen, T	Total	0.13	0.10	mg/l	1	08/17/21	
Method: EPA	351.2		Instr: AA06				
Batch ID: W	V1H0962	Preparation: _NONE (WETCHEM)	<b>Prepared:</b> 08/13/	21 14:30			Analyst: YMT
TKN		0.13	0.10	mg/l	1	08/17/21	
Method: EPA	353.2		Instr: AA01				
Batch ID: W	V1H0865	Preparation: _NONE (WETCHEM)	<b>Prepared:</b> 08/12/	21 14:31			Analyst: ism
NO2+NO3	as N	ND	200	ug/l	1	08/13/21	
Method: EPA	. 365.3		Instr: UVVIS04				
Batch ID: W	V1G1655	Preparation: _NONE (WETCHEM)	<b>Prepared:</b> 07/30/	21 15:22			Analyst: sbn
o-Phosphat	te as P	ND	0.010	mg/l	1	07/30/21 15:52	
Method: SM	2540C		Instr: OVEN01				
Batch ID: W	V1H0280	Preparation: _NONE (WETCHEM)	Prepared: 08/04/	21 15:28			Analyst: blg
Total Disso	olved Solids	43	10	mg/l	1	08/05/21	



Psomas - Sa	anta Ana, CA ntre Dr., Ste. 200	Project Number:	2KLE010102			08/	Reported:
Santa Ana, C	CA 92707	Project Manager: Michael P. Donovan				00/	21/2021 14.00
Sa	ample Results						(Continued)
Sample:	BC-BLW-PH3			Sample	ed: 07/29/	/21 9:45 by Jim Bur	ton, Todd Bear
	1G30022-04 (Water)						
Analyte		Result	MRL	Units	Dil	Analyzed	Qualifier
Anions by IC,	EPA Method 300.0						
Method: EPA	A 300.0		Instr: LC12				
Batch ID: \	W1G1628	Preparation: _NONE (LC)	Prepared: 07/	/30/21 10:53			Analyst: jan
Nitrate as	Ν		110	ug/l	1	07/30/21 19:10	
Conventional	Chemistry/Physical Parameters	s by APHA/EPA/ASTM Methods					
Method: [CA	ALC]		Instr: [CALC]				
Batch ID: [	[CALC]	Preparation: [CALC]	Prepared: 08/	/13/21 14:30			Analyst: YMT
Nitrogen,	Total	0.19	0.10	mg/l	1	08/17/21	
Method: EPA	A 351.2		Instr: AA06				
Batch ID: \	W1H0962	Preparation: _NONE (WETCHEM)	Prepared: 08/	/13/21 14:30			Analyst: YMT
TKN		0.19	0.10	mg/l	1	08/17/21	
Method: EPA	A 353.2		Instr: AA01				
Batch ID: \	W1H0865	Preparation: _NONE (WETCHEM)	Prepared: 08/	/12/21 14:31			Analyst: ism
NO2+NO3	as N	ND	200	ug/l	1	08/13/21	
Method: EPA	A 365.3		Instr: UVVIS04	4			
Batch ID: \	W1G1655	Preparation: _NONE (WETCHEM)	Prepared: 07/	/30/21 15:22			Analyst: sbn
o-Phospha	ate as P	ND	0.010	mg/l	1	07/30/21 15:52	
Method: SM	2540C		Instr: OVEN01	I			
Batch ID: \	W1H0280	Preparation: _NONE (WETCHEM)	Prepared: 08/	/04/21 15:28			Analyst: blg
Total Diss	olved Solids	40	10	mg/l	1	08/05/21	



Psomas - Santa Ana, CA 3 Hutton Centre Dr., Ste. 200	Project Number:	Project Number: 2KLE010102						
Santa Ana, CA 92707	Project Manager:	Michael P. Donovan						
Sample Res	ults				(Continued)			
Sample: BC-BLW-PH2		San	npled: 07/29	/21 10:25 by Jim Bu	rton, Todd Bear			
1G30022-05 (Wa	ter)							
Analyte	Result	MRL Units	Dil	Analyzed	Qualifier			
Anions by IC, EPA Method 300.0								
Method: EPA 300.0		Instr: LC12						
Batch ID: W1G1628	Preparation: _NONE (LC)	Prepared: 07/30/21 10:53			Analyst: jan			
Nitrate as N	ND	110 ug/l	1	07/30/21 19:28				
Conventional Chemistry/Physical	Parameters by APHA/EPA/ASTM Methods							
Method: [CALC]		Instr: [CALC]						
Batch ID: [CALC]	Preparation: [CALC]	Prepared: 08/13/21 14:30			Analyst: YMT			
Nitrogen, Total	ND	0.10 mg/l	1	08/17/21				
Method: EPA 351.2		Instr: AA06						
Batch ID: W1H0962	Preparation: _NONE (WETCHEM)	Prepared: 08/13/21 14:30			Analyst: YMT			
TKN	ND	0.10 mg/l	1	08/17/21				
Method: EPA 353.2		Instr: AA01						
Batch ID: W1H0865	Preparation: _NONE (WETCHEM)	Prepared: 08/12/21 14:31			Analyst: ism			
NO2+NO3 as N	ND	200 ug/l	1	08/13/21				
Method: EPA 365.3		Instr: UVVIS04						
Batch ID: W1G1655	Preparation: _NONE (WETCHEM)	Prepared: 07/30/21 15:22			Analyst: sbn			
o-Phosphate as P	0.018	0.010 mg/l	1	07/30/21 15:53				
Method: SM 2540C		Instr: OVEN01						
Batch ID: W1H0280	Preparation: _NONE (WETCHEM)	Prepared: 08/04/21 15:28			Analyst: blg			
Total Dissolved Solids	45	10 mg/l	1	08/05/21				



**FINAL REPORT** 

Psomas - Santa Ana, CA 3 Hutton Centre Dr., Ste. 200 Santa Ana, CA 92707

Project Number: 2KLE010102

Project Manager: Michael P. Donovan

Reported: 08/27/2021 14:59

#### **Quality Control Results**

Anions by IC,	EPA	Method 300.0	
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				Spike	Source		%REC		RPD	
Analyte	Result	MRL	Units	Level	Result	%REC	Limits	RPD	Limit	Qualifier
Batch: W1G1628 - EPA 300.0										
Blank (W1G1628-BLK1)				Prepared & Ana	lyzed: 07/3	0/21				
Nitrate as N		110	ug/l							
LCS (W1G1628-BS1)				Prepared & Ana	lyzed: 07/3	0/21				
Nitrate as N	1030	110	ug/l	1000		103	90-110			
Matrix Spike (W1G1628-MS1)	Source: 1G29050-01			Prepared & Ana	lyzed: 07/3	0/21				
Nitrate as N	- 14800	1100	ug/l	10000	5460	93	84-115			
Matrix Spike (W1G1628-MS2)	Source: 1G29050-02			Prepared & Ana	lyzed: 07/3	0/21				
Nitrate as N	- 14500	1100	ug/l	10000	5040	94	84-115			
Matrix Spike Dup (W1G1628-MSD1)	Source: 1G29050-01			Prepared & Ana	lyzed: 07/3	0/21				
Nitrate as N	- 14900	1100	ug/l	10000	5460	95	84-115	1	20	
Matrix Spike Dup (W1G1628-MSD2)	Source: 1G29050-02			Prepared & Ana	lyzed: 07/3	0/21				
Nitrate as N	- 14500	1100	ug/l	10000	5040	95	84-115	0.5	20	

### **Quality Control Results**

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Spike Source %REC		RPD	
Analyte Result MRL Units Level Result %REC Limits	RPD	Limit	Qualifier
Batch: W1G1655 - EPA 365.3			
Blank (W1G1655-BLK1) Prepared & Analyzed: 07/30/21			
o-Phosphate as P ND 0.010 mg/l			
LCS (W1G1655-BS1) Prepared & Analyzed: 07/30/21			
o-Phosphate as P 0.206 0.010 mg/l 0.200 103 88-111			
Matrix Spike (W1G1655-MS1) Source: 1G30022-01 Prepared & Analyzed: 07/30/21			
o-Phosphate as P 0.206 0.010 mg/l 0.200 0.00300 102 85-112			
Matrix Spike Dup (W1G1655-MSD1) Source: 1G30022-01 Prepared & Analyzed: 07/30/21			
o-Phosphate as P 0.206 0.010 mg/l 0.200 0.00300 102 85-112	0	20	
Batch: W1H0280 - SM 2540C			
Blank (W1H0280-BLK1) Prepared: 08/04/21 Analyzed: 08/05/21			
Total Dissolved Solids ND 10 mg/l			
LCS (W1H0280-BS1) Prepared: 08/04/21 Analyzed: 08/05/21			
Total Dissolved Solids 822 10 mg/l 824 100 96-102			
Duplicate (W1H0280-DUP1) Source: 1H02101-03 Prepared: 08/04/21 Analyzed: 08/05/21			
Total Dissolved Solids3850010mg/l38400	0.3	10	
Duplicate (W1H0280-DUP2) Source: 1H02101-04 Prepared: 08/04/21 Analyzed: 08/05/21			
Total Dissolved Solids289010mg/l2890	0.1	10	
Batch: W1H0865 - EPA 353.2			
Blank (W1H0865-BLK1) Prepared: 08/12/21 Analyzed: 08/13/21			
NO2+NO3 as N ND 200 ug/l			
NO2+NO3 as N ND 200 ug/l   LCS (W1H0865-BS1) Prepared: 08/12/21 Analyzed: 08/13/21			



FINAL REPORT

Psomas - Santa Ana, CA 3 Hutton Centre Dr., Ste. 200 Santa Ana, CA 92707

#### Project Number: 2KLE010102

Project Manager: Michael P. Donovan

08/27/2021 14:59

**Reported:** 

(Continued)

#### Quality Control Results

Conventional Chemistry/Physical Parameters b	y APHA/EPA/ASTM Met	nods (Continue	d)							
				Spike	Source		%REC		RPD	
Analyte	Result	MRL	Units	Level	Result	%REC	Limits	RPD	Limit	Qualifier
Batch: W1H0865 - EPA 353.2 (Continued)										
LCS (W1H0865-BS1)			Pre	pared: 08/12/2	1 Analyzed	: <b>08/13/2</b> 1	1			
NO2+NO3 as N	1010	200	ug/l	1000	-	101	90-110			
Matrix Spike (W1H0865-MS1)	Source: 1G29055	-01	Pre	pared: 08/12/2	1 Analyzed	: 08/13/21	1			
NO2+NO3 as N	2210	200	ug/l	2000	202	100	90-110			
Matrix Spike (W1H0865-MS2)	Source: 1G29055	-02	Pre	pared: 08/12/2	1 Analyzed	: 08/13/21	1			
NO2+NO3 as N	2050	200	ug/l	2000	54.5	100	90-110			
Matrix Spike Dup (W1H0865-MSD1)	Source: 1G29055	-01	Pre	pared: 08/12/2	1 Analyzed	: <b>08/13/2</b> 1	1			
NO2+NO3 as N	2230	200	ug/l	2000	202	101	90-110	0.9	20	
Matrix Spike Dup (W1H0865-MSD2)	Source: 1G29055	-02	Prej	pared: 08/12/2	1 Analyzed	: <b>08/13/2</b> 1	1			
NO2+NO3 as N	2060	200	ug/l	2000	54.5	100	90-110	0.5	20	
Batch: W1H0962 - EPA 351.2										
Blank (W1H0962-BLK1)			Pre	pared: 08/13/2	1 Analyzed	: <b>08/17/2</b> 1	1			
TKN	ND	0.10	mg/l							
LCS (W1H0962-BS1)			Pre	pared: 08/13/2	1 Analyzed	: <b>08/17/2</b> 1	1			
TKN	1.04	0.10	mg/l	1.00		104	90-110			
Matrix Spike (W1H0962-MS1)	Source: 1G30092	-01	Pre	pared: 08/13/2	1 Analyzed	: <b>08/17/2</b> 1	1			
TKN	1.01	0.10	mg/l	1.00	ND	101	90-110			
Matrix Spike Dup (W1H0962-MSD1)	Source: 1G30092	-01	Pre	pared: 08/13/2	1 Analyzed	: 08/17/21	1			
TKN	0.991	0.10	mg/l	1.00	ND	99	90-110	2	10	



Psomas - Santa Ana, CA 3 Hutton Centre Dr., Ste. 200 Santa Ana, CA 92707

# **Certificate of Analysis**

FINAL REPORT

Project Manager: Michael P. Donovan

Project Number: 2KLE010102

Reported: 08/27/2021 14:59

### Notes and Definitions

ltem	Definition
%REC	Percent Recovery
Dil	Dilution
MRL	The minimum levels, concentrations, or quantities of a target variable (e.g., target analyte) that can be reported with a specified degree of confidence. The MRL is also known as Limit of Quantitation (LOQ)
ND	NOT DETECTED at or above the Method Reporting Limit (MRL). If Method Detection Limit (MDL) is reported, then ND means not detected at or above the MDL.
RPD	Relative Percent Difference
Source	Sample that was matrix spiked or duplicated.

Any remaining sample(s) will be disposed of one month from the final report date unless other arrangements are made in advance.

All results are expressed on wet weight basis unless otherwise specified.

All samples collected by Weck Laboratories have been sampled in accordance to laboratory SOP Number MIS002.

#### Weck Laboratories 14859 Clark Avenue City of Industry, CA 91745 (626) 336-2139

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					CH	IAIN	OF CU	STO	ODY	′ FC	DRN	1		1				P:	age	of	
Client Name/Address:		· .	Project/	PO Number										Analys	is Requ	ired			<u> </u>		
PSOMAS 3 HUTTON CENTRE DRIVE, SUIT SANTA ANA, CA 92707	E 200		2KLE0	010102				0,003	EPA Method	SM2540C	oy EPA	Nethod	ation					1	-		
Project Manager:			Phone	Number:				8	2	sbi	gent	Ā	alcut						ļ		
MICHAEL P. DONOVAN (mpdonov	n@cox.net)		(714) :	328-5234				PA Meth	hae-OP	ved Sol	h Nitro	35 N - E	en by ca								
Sampler: Jim Burton, Todd Bear			Fax Nu:	mber: 714.54	5.8883			Ξ	hosp	isso	jelde I 351	<sup>0</sup>	litrog								
Sample Description	Sample Matrix	Container Type	#of Cont.	Sampling Da	ate	Time	Preservation	Nitrate	Orthop 365.3	Total D	Total K Method	NO2+h	Total N						Speci	al Instructio	000
BC-blw-PH6	water	60 ml Poly	1	7/29/21	8	:05 0	Mone None	<sup>1</sup> x			1	<u> </u>					11				
<u> </u>	water	250 ml Poly	1	1			None		Ύχ						Í				Filtered w	/ith 0.45u	
	water	500 ml Poły	1	_			None	1		x	1	-	_					-			
	water	250 ml Poly	1	_		T	H2SO4				'x	'x	' X						· · · ·		
BC-blw-PHS	water	60 ml Poly	1	7/29/21	8	350	- None	X			1										
	water	250 ml Poly	1			١	None		X								$\square$		Filtered w		
	water	500 ml Poly	1				Noné	Γ		Х			_	1							
	water	250 ml Poly	1	· ·		1	H2SO4				X	X	Х								
BC- 61w-P44	water	60 ml Poly	1	7/29/2	19	Ti log	None	X									<u>                                     </u>		[		
I	water	250 mł Poly	1	11		ļ	None		X										Eiltered w	ith 0.45u	
	water	500 ml Poly	1				None			х	T										
<b></b>	water	250 mi Poly	1			1	H2SO4				X	x	х					$\neg \uparrow$	· · · · · · · · · · · · · · · · · · ·		
BC-blw-PH3	water	60 ml Poly	1	7/29/21	C	1:450	None	X									┼╼╾┼				<u> </u>
	water	250 ml Poly	1			1	None		x		†						+ + + + + + + + + + + + + + + + + + +		Eiltared w		
· · · · · · · · · · · · · · · · · · ·	water	500 mi Poly	1	i.		1	None			X							╞──┤			<u>ато</u>	
<u>_</u>	water	250 ml Poly	1	<b>-</b>	-	1	H2SO4				X	x	x					-+	[		
BC-blw-PH2	water	60 ml Poły	1	7/29/2	I H	0:25	None	x									<u> </u> +		[		
	water	250 ml Poły	1	1		1	None		x								┝──╂	-+	Filtered w		
	water	500 mi Poly	1				None			X	<u> </u>									110.404	
	, water	250 ml Poly	1				H2SO4				x	x	x				+				
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FINAL REPORT

Work Orders:	1G30023	Report Date:	8/10/2021
		Received Date:	7/30/2021
Project:	2KLE010102	Turnaround Time:	Normal
		Phones:	(714) 751-7373
		Fax:	(714) 545-8883
Attn:	Michael P. Donovan	P.O. #:	
Client:	Psomas - Santa Ana, CA 3 Hutton Centre Dr., Ste. 200 Santa Ana, CA 92707	Billing Code:	

Dear Michael P. Donovan :

Enclosed are the results of analyses for samples received 7/30/2021 with the Chain-of-Custody document. The samples were received in good condition, at 2.8 °C and on ice. All analysis met the method criteria except as noted in the case narrative or in the report with data qualifiers.

Sa	ample Results						
Sample:	LS-BR-1			Sample	d: 07/29/2 <sup>.</sup>	1 11:45 by Jim Burto	on, Todd Bear
	1G30023-01 (Water)						
Analyte		Result	MRL	Units	Dil	Analyzed	Qualifier
Method: SM	9223B		Instr: INC12				
Batch ID:	W1H0520	Preparation: _NONE (MICROBIOLOGY)	Prepared: 07	//30/21 11:17			Analyst: slh
E. coli		180	1.0	MPN/100ml	1	07/31/21	
Sample:	SL-BR-1			Sample	d: 07/29/2 <sup>-</sup>	1 12:10 by Jim Burto	on, Todd Bear
	1G30023-02 (Water)						
Analyte		Result	MRL	Units	Dil	Analyzed	Qualifier
Method: SM	9223B		Instr: INC12				
Batch ID:	W1H0520	Preparation: _NONE (MICROBIOLOGY)	Prepared: 07	//30/21 11:17			Analyst: slh
E. coli		ND	1.0	MPN/100ml	1	07/31/21	
Sample:	INT2-RES-1			Sample	d: 07/29/2 <sup>-</sup>	1 12:20 by Jim Burto	on, Todd Bear
	1G30023-03 (Water)						
Analyte		Result	MRL	Units	Dil	Analyzed	Qualifier
Method: SM	9223B		Instr: INC12				
Method: SM Batch ID: 1	9223B W1H0520	Preparation: _NONE (MICROBIOLOGY)	Instr: INC12 Prepared: 07	7/30/21 11:17			Analyst: slh



Notes and Definitions

ltem	Definition
%REC	Percent Recovery
Dil	Dilution
MRL	The minimum levels, concentrations, or quantities of a target variable (e.g., target analyte) that can be reported with a specified degree of confidence. The MRL is also known as Limit of Quantitation (LOQ)
ND	NOT DETECTED at or above the Method Reporting Limit (MRL). If Method Detection Limit (MDL) is reported, then ND means not detected at or above the MDL.
RPD	Relative Percent Difference

Any remaining sample(s) will be disposed of one month from the final report date unless other arrangements are made in advance.

All results are expressed on wet weight basis unless otherwise specified.

All samples collected by Weck Laboratories have been sampled in accordance to laboratory SOP Number MIS002.

### Analyses Accreditation Summary

Analyte	CAS #	Not By NELAP	ANAB ISO 17025
SM 9223B in Water			
E. coli		$\checkmark$	

Reviewed by:

1: State

Chris Samatmanakit Project Manager



#### DoD-ELAP ANAB #ADE-2882 • DoD-ISO ANAB # • ELAP-CA #1132 • EPA-UCMR #CA00211 • Guam-EPA #17-008R • HW-DOH #4047 • ISO17025 ANAB #L2457.01 • LACSD #10143 • NELAP-OR #4047 • NJ-DEP #CA015 • SCAQMD #93LA1006

This is a complete final report. The information in this report applies to the samples analyzed in accordance with the chain-of-custody document. Weck Laboratories certifies that the test results meet all requirements of TNI unless noted by qualifiers or written in the Case Narrative. This analytical report must be reproduced in its entirety.

#### Weck Laboratories 14859 Clark Avenue City of Industry, CA 91745 (626) 336-2139

# 1630023

						С	HAIN	OF CU	ST	OD	Y FC	DRN	/						Pa	age L of	r I
Client Name/Address: Project/F						oject/PO Number: Ana							Analy	lysis Required							
PSOMAS 3 HUTTON CENTRE DRIVE, SUIT SANTA ANA, CA 92707	re 200		2KLE	0101	102				Vd (			-									
Project Manager:			Phone	Num	ber:				3							1					
MICHAEL P. DONOVAN (mpdono	vn@cox.net)		(714)	328	-523	4			coli (E										-		
Sampler: Jim Burton, Todd Bear			Fax Nu	mber	: 71	1.545.88	383		richia 23B								}				
Sample Description	Sample Matrix	Container Type	# of Cont.	Sa	mpiir	ig Date	Time	Preservation	Esche SM 92											Special Inst	ructions
SL-BR-	water	125 ml poly	1	7	an	21	11:450	Sterile-None	x		<u> </u>		1				1	1		24-Hour Hold ti	me*
<u>L5-BR-1</u>	water	125 mi poly	1	7	29	21	12:100	Sterile-None	X								1			24-Hour Hold ti	me*
INTZ-RES-1	water	125 mi poly	1	7	129	1/21	12:200	Sterile- None	X			-								24-Hour Hold ti	me*
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Relinquished By:		Date /Time:		Rec	eived	in Lab I	by:						Date /	Time:			Sam	ple Integ t	nity: (	Check) On Ice	
* Per Lohantan Surface Water Ambient Mi	enitoring Progra	m (SWAMP) for an	nbient w	/ater				<u> </u>										2.	<u>а;</u> с	70 23-	)



FINAL REPORT

Work Orders:	1H03039	Report Date:	8/18/2021
		Received Date:	8/3/2021
Project:	2KLE010102	Turnaround Time:	Normal
		Phones:	(714) 751-7373
		Fax:	(714) 545-8883
Attn:	Michael P. Donovan	P.O. #:	
Client:	Psomas - Santa Ana, CA 3 Hutton Centre Dr., Ste. 200 Santa Ana, CA 92707	Billing Code:	

Dear Michael P. Donovan :

Enclosed are the results of analyses for samples received 8/3/2021 with the Chain-of-Custody document. The samples were received in good condition, at 3.1 °C and on ice. All analysis met the method criteria except as noted in the case narrative or in the report with data qualifiers.

Sa	mple Results						
Sample:	SL-BR-1			Sample	d: 08/02/2	1 11:50 by Jim Burto	on, Todd Bear
	1H03039-01 (Water)						
Analyte		Result	MRL	Units	Dil	Analyzed	Qualifier
Method: SM	9223B		Instr: INC12				
Batch ID: \	V1H0289	Preparation: _NONE (MICROBIOLOGY)	Prepared: 08	3/03/21 11:48			Analyst: slh
E. coli		ND	1.0	MPN/100ml	1	08/04/21	
Sample:	LS-BR-1			Sample	d: 08/02/2	1 12:15 by Jim Burto	on, Todd Bear
	1H03039-02 (Water)						
Analyte		Result	MRL	Units	Dil	Analyzed	Qualifier
Method: SM	9223B		Instr: INC12				
Batch ID: \	V1H0289	Preparation: _NONE (MICROBIOLOGY)	Prepared: 08	3/03/21 11:48			Analyst: slh
E. coli			1.0	MPN/100ml	1	08/04/21	
Sample:	INT2-RES-1			Sample	d: 08/02/2	1 12:30 by Jim Burto	on, Todd Bear
	1H03039-03 (Water)						
Analyte		Result	MRL	Units	Dil	Analyzed	Qualifier
Method: SM	9223B		Instr: INC12				
			<b>B</b> 1.00	0.02/21 11.40			
Batch ID: \	V1H0289	Preparation: _NONE (MICROBIOLOGY)	Prepared: 08	5/03/21 11:48			Analyst: sin



Notes and Definitions

ltem	Definition
%REC	Percent Recovery
Dil	Dilution
MRL	The minimum levels, concentrations, or quantities of a target variable (e.g., target analyte) that can be reported with a specified degree of confidence. The MRL is also known as Limit of Quantitation (LOQ)
ND	NOT DETECTED at or above the Method Reporting Limit (MRL). If Method Detection Limit (MDL) is reported, then ND means not detected at or above the MDL.
RPD	Relative Percent Difference

Any remaining sample(s) will be disposed of one month from the final report date unless other arrangements are made in advance.

All results are expressed on wet weight basis unless otherwise specified.

All samples collected by Weck Laboratories have been sampled in accordance to laboratory SOP Number MIS002.

### Analyses Accreditation Summary

Analyte	CAS #	Not By NELAP	ANAB ISO 17025
SM 9223B in Water			
E. coli		$\checkmark$	

Reviewed by:

1: State

Chris Samatmanakit Project Manager



DoD-ELAP ANAB #ADE-2882 • DoD-ISO ANAB # • ELAP-CA #1132 • EPA-UCMR #CA00211 • Guam-EPA #17-008R • HW-DOH #4047 • ISO17025 ANAB #L2457.01 • LACSD #10143 • NELAP-OR #4047 • NJ-DEP #CA015 • SCAQMD #93LA1006

This is a complete final report. The information in this report applies to the samples analyzed in accordance with the chain-of-custody document. Weck Laboratories certifies that the test results meet all requirements of TNI unless noted by qualifiers or written in the Case Narrative. This analytical report must be reproduced in its entirety.

#### Weck Laboratories 14859 Clark Avenue City of Industry, CA 91745 (626) 336-2139

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PSOMAS 3 HUTTON CENTRE DRIVE, SU SANTA ANA, CA 92707	ITE 200		Project	/PO Number: 010102			py (						Analy	sis Rec	luired			
Project Manager: MICHAEL P. DONOVAN (mpdon	iovn@cox.net)		Phone Number: (714) 328-5234				soli (E. coli											
Sampler: Jim Burton, Todd Bear		- <u></u>	Fax Nu	mber: 714.545.88	83		ichia ( 23B		2									
Sample Description	Sample Matrix	Container Type	# of Cont.	Sampling Date	Time	Preservation	Escher SM 92											
<u>51-BR-1</u>	water	125 ml poly	1	8/2/21	11:50	Sterile None	<u>x</u>				1	<u> </u>	<u> </u>	-	+			Special Instruction
<u>L5-BR-1</u>	water	125 mi poly	1		12:15	Sterile-None	x	1		1	1	<u> </u>		†				24-Hour Hold time*
RES-1	water	125 mi poly	1		12:30	Sterile- None	x	1	<u> </u>	1		1	1	1			·	24-Hour Hold time*
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er Lohantan Surface Water Ambient M	Ionitoring Preasan	(SWAMP) for am	hient w												Intact			On Ice

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FINAL REPORT

Work Orders:	1H06031	Report Date:	8/19/2021
		Received Date:	8/6/2021
Project:	+ 2KLE010102	Turnaround Time:	Normal
		Phones:	(714) 751-7373
		Fax:	(714) 545-8883
Attn:	Michael P. Donovan	P.O. #:	
Client:	Psomas - Santa Ana, CA 3 Hutton Centre Dr., Ste. 200 Santa Ana, CA 92707	Billing Code:	

Dear Michael P. Donovan :

Enclosed are the results of analyses for samples received 8/6/2021 with the Chain-of-Custody document. The samples were received in good condition, at 4.0 °C and on ice. All analysis met the method criteria except as noted in the case narrative or in the report with data qualifiers.

Sa	mple Results						
Sample:	LS-BR-1					Sampled: 08/05/21	11:40 by Client
	1H06031-01 (Water)						
Analyte		Result	MRL	Units	Dil	Analyzed	Qualifier
Method: SM	9223B		Instr: INC12				
Batch ID: V	V1H0947	Preparation: _NONE (MICROBIOLOGY)	Prepared: 08	8/06/21 11:55			Analyst: atd
E. coli		3.1	1.0	MPN/100ml	1	08/07/21	O-15
Sample:	INT2-RES-1					Sampled: 08/05/21	12:10 by Client
	1H06031-02 (Water)						
Analyte		Result	MRL	Units	Dil	Analyzed	Qualifier
Method: SM	9223B		Instr: INC12				
Batch ID: V	V1H0947	Preparation: _NONE (MICROBIOLOGY)	Prepared: 08	8/06/21 11:55			Analyst: atd
E. coli		5.2	1.0	MPN/100ml	1	08/07/21	
Sample:	SL-BR-1					Sampled: 08/05/21	12:35 by Client
	1H06031-03 (Water)						
Analyte		Result	MRL	Units	Dil	Analyzed	Qualifier
Method: SM	9223B		Instr: INC12				
Batch ID: V	W1H0947	Preparation: _NONE (MICROBIOLOGY)	Prepared: 08	8/06/21 11:55			Analyst: atd
E coli		ND	4.0	MDN1/4001	4	00/07/01	



FINAL REPORT

#### Notes and Definitions

ltem	Definition
O-15	The sample was received with the recommended holding time nearly expired. It was analyzed as soon as possible but the maximum holding time was slightly exceeded.
%REC	Percent Recovery
Dil	Dilution
MRL	The minimum levels, concentrations, or quantities of a target variable (e.g., target analyte) that can be reported with a specified degree of confidence. The MRL is also known as Limit of Quantitation (LOQ)
ND	NOT DETECTED at or above the Method Reporting Limit (MRL). If Method Detection Limit (MDL) is reported, then ND means not detected at or above the MDL.
RPD	Relative Percent Difference
Any remai	ning sample(s) will be disposed of one month from the final report date unless other arrangements are made in advance.

All results are expressed on wet weight basis unless otherwise specified.

All samples collected by Weck Laboratories have been sampled in accordance to laboratory SOP Number MIS002.

#### Analyses Accreditation Summary

Analyte	CAS #	Not By NELAP	ANAB ISO 17025
SM 9223B in Water			
E. coli		$\checkmark$	
Reviewed by:			

: State

Chris Samatmanakit Project Manager



DoD-ELAP ANAB #ADE-2882 • DoD-ISO ANAB # • ELAP-CA #1132 • EPA-UCMR #CA00211 • Guam-EPA #17-008R • HW-DOH #4047 • ISO17025 ANAB #L2457.01 • LACSD #10143 • NELAP-OR #4047 • NJ-DEP #CA015 • SCAQMD #93LA1006

This is a complete final report. The information in this report applies to the samples analyzed in accordance with the chain-of-custody document. Weck Laboratories certifies that the test results meet all requirements of TNI unless noted by qualifiers or written in the Case Narrative. This analytical report must be reproduced in its entirety.

#### Weck Laboratories 14859 Clark Avenue City of Industry, CA 91745 (626) 336-2139

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PSOMAS 3 HUTTON CENTRE DRIVE, SU SANTA ANA, CA 92707	JITE 200		2KLE010102			li) by												
Project Manager.			Phone	Number:			13	}		ł		1	1				ł	
MICHAEL P. DONOVAN (mpdonovn@cox.net)			(714)	328-5234			coll (E											
Sampler <del>: Jim Buston,</del> Todd Bear			Fax Nu	mber: 714.545.88	83		1chia									-		
Sample Description	Sample Matrix	Container Type	# of Cant.	Sampling Date	Time	Preservation	Esche SM 92											Special Instructions
LS-BR-1	water	125 ml poly	1	815121	11-HOAM	Sterile- None	X	-								İ		24-Hour Hold time*
INT2-RES-1	water	125 mi poly	1	8/5/21	12:10PM	Sterile-None	X		L								<u> </u>	24-Hour Hold time*
SL-BR-1	water	125 mi poly	1	8 5 21	12:35PM	Sterile- None	X						<u> </u>					24-Hour Hold time*
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FINAL REPORT

Work Orders:	1H24033	Report Date:	9/20/2021
		Received Date:	8/24/2021
Project:	2KLE010102	Turnaround Time:	Normal
		Phones:	(714) 751-7373
		Fax:	(714) 545-8883
Attn:	Michael P. Donovan	P.O. #:	
Client:	Psomas - Santa Ana, CA 3 Hutton Centre Dr., Ste. 200 Santa Ana, CA 92707	Billing Code:	

DoD-ELAP ANAB #ADE-2882 • DoD-ISO ANAB # • ELAP-CA #1132 • EPA-UCMR #CA00211 • Guam-EPA #17-008R • HW-DOH #4047 • ISO17025 ANAB #L2457.01 • LACSD #10143 • NELAP-OR #4047 • NJ-DEP #CA015 • SCAQMD #93LA1006

This is a complete final report. The information in this report applies to the samples analyzed in accordance with the chain-of-custody document. Weck Laboratories certifies that the test results meet all requirements of TNI unless noted by qualifiers or written in the Case Narrative. This analytical report must be reproduced in its entirety.

Dear Michael P. Donovan,

Enclosed are the results of analyses for samples received 8/24/21 with the Chain-of-Custody document. The samples were received in good condition, at 2.9 °C and on ice. All analyses met the method criteria except as noted in the case narrative or in the report with data qualifiers.

Reviewed by:

1: State

Chris Samatmanakit Project Manager





#### Psomas - Santa Ana, CA 3 Hutton Centre Dr., Ste. 200 Santa Ana, CA 92707

# **Certificate of Analysis**

FINAL REPORT

Project Number: 2KLE010102

Project Manager: Michael P. Donovan

Reported: 09/20/2021 16:13

#### Sample Summary

Sample Name	Sampled By	Lab ID	Matrix	Sampled	Qualifiers
SL-DP-8	Jim Burton, Todd Bear	1H24033-01	Water	08/23/21 10:30	
SL-DP-20	Jim Burton, Todd Bear	1H24033-02	Water	08/23/21 11:05	



FINAL REPORT

Psoma	s - Santa Ana, CA	Project Number:	2KLE010102
3 Hutto	n Centre Dr., Ste. 200		
Santa A	na, CA 92707	Project Manager:	Michael P. Do
	Sample Results		

Reported: 13

lichael P. Donovan

09/20/2021	16:

Sample:	SL-DP-8				Sample	ed: 08/23/2	21 10:30 by Jim Bur	ton, Todd Bear
	1H24033-01 (Water)							
Analyte			Result	MRL	Units	Dil	Analyzed	Qualifier
Anions by IC,	EPA Method 300.0							
Method: EPA	300.0			Instr: LC12				
Batch ID: V	V1H1589	Preparation: _NONE (LC)		Prepared: 08	8/24/21 09:14			Analyst: jan
Nitrate as I	Ν		ND	110	ug/l	1	08/24/21 17:52	
Conventional (	Chemistry/Physical Parameters	by APHA/EPA/ASTM Methods						
Method: [CA	LC]			Instr: [CALC]				
Batch ID: [	CALC]	Preparation: [CALC]		Prepared: 09	/16/21 15:57			Analyst: YMT
Nitrogen,	Total		0.16	0.10	mg/l	1	09/16/21	
Method: EPA	351.2			Instr: AA06				
Batch ID: V	V1H1638	Preparation: _NONE (WETCHEM	1)	Prepared: 08	3/24/21 12:44			Analyst: YMT
TKN			0.16	0.10	mg/l	1	08/26/21	
Method: EPA	353.2			Instr: AA01				
Batch ID: V	V1I1086	Preparation: _NONE (WETCHEM	1)	Prepared: 09	/16/21 15:57			Analyst: ISM
NO2+NO3	as N		ND	200	ug/l	1	09/16/21	
Method: EPA	365.3			Instr: UVVISC	)4			
Batch ID: V	V1H1663	Preparation: _NONE (WETCHEM	1)	Prepared: 08	8/24/21 13:59			Analyst: sbn
o-Phospha	ite as P		ND	0.010	mg/l	1	08/24/21 15:46	
Method: SM	2540C			Instr: OVEN0	1			
Batch ID: V	V1H1862	Preparation: _NONE (WETCHEM	1)	Prepared: 08	8/26/21 13:03			Analyst: blg
Total Diss	olved Solids		- 18	10	mg/l	1	08/26/21	



Psomas - Santa Ana, CA	Project Number:	2KLE010102			00/	Reported:
Santa Ana, CA 92707	Project Manager:	Michael P. Donovan			097.	20/2021 10.13
Sample Results						(Continued)
Sample: SL-DP-20			Sampled: 0	8/23/21	11:05 by Jim Bur	ton, Todd Bear
1H24033-02 (Water)						
Analyte	Result	MRL	Units	Dil	Analyzed	Qualifier
Anions by IC, EPA Method 300.0						
Method: EPA 300.0		Instr: LC12				
Batch ID: W1H1589	Preparation: _NONE (LC)	Prepared: 08/24/21	09:14			Analyst: jan
Nitrate as N	ND	110	ug/l	1	08/24/21 18:46	
Conventional Chemistry/Physical Parameters b	y APHA/EPA/ASTM Methods					
Method: [CALC]		Instr: [CALC]				
Batch ID: [CALC]	Preparation: [CALC]	Prepared: 09/16/21	15:57			Analyst: YMT
Nitrogen, Total	ND	0.10	mg/l	1	09/16/21	
Method: EPA 351.2		Instr: AA06				
Batch ID: W1H1638	Preparation: _NONE (WETCHEM)	Prepared: 08/24/21	12:44			Analyst: YMT
TKN	ND	0.10	mg/l	1	08/26/21	
Method: EPA 353.2		Instr: AA01				
Batch ID: W111086	Preparation: _NONE (WETCHEM)	Prepared: 09/16/21	15:57			Analyst: ISM
NO2+NO3 as N	ND	200	ug/l	1	09/16/21	
Method: EPA 365.3		Instr: UVVIS04				
Batch ID: W1H1663	Preparation: _NONE (WETCHEM)	Prepared: 08/24/21	13:59			Analyst: sbn
o-Phosphate as P	0.029	0.010	mg/l	1	08/24/21 15:48	
Method: SM 2540C		Instr: OVEN01				
Batch ID: W1H1862	Preparation: _NONE (WETCHEM)	Prepared: 08/26/21	13:03			Analyst: blg
Total Dissolved Solids	46	10	mg/l	1	08/26/21	



**FINAL REPORT** 

Psomas - Santa Ana, CA 3 Hutton Centre Dr., Ste. 200 Santa Ana, CA 92707

Project Number: 2KLE010102

Project Manager: Michael P. Donovan

Reported: 09/20/2021 16:13

#### **Quality Control Results**

Anions by IC, E	PA Method 300.0
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				Spike	Source		%REC		RPD	
Analyte	Result	MRL	Units	Level	Result	%REC	Limits	RPD	Limit	Qualifier
Batch: W1H1589 - EPA 300.0										
Blank (W1H1589-BLK1)				Prepared & Ana	lyzed: 08/2	4/21				
Nitrate as N		110	ug/l							
LCS (W1H1589-BS1)				Prepared & Ana	lyzed: 08/2	24/21				
Nitrate as N	2150	110	ug/l	2000		107	90-110			
Matrix Spike (W1H1589-MS1)	Source: 1H23045-07			Prepared & Ana	lyzed: 08/2	4/21				
Nitrate as N	- 26700	1100	ug/l	20000	5330	107	84-115			
Matrix Spike (W1H1589-MS2)	Source: 1H23045-08			Prepared & Ana	lyzed: 08/2	4/21				
Nitrate as N	- 26700	1100	ug/l	20000	5300	107	84-115			
Matrix Spike Dup (W1H1589-MSD1)	Source: 1H23045-07			Prepared & Ana	lyzed: 08/2	4/21				
Nitrate as N	26600	1100	ug/l	20000	5330	106	84-115	0.2	20	
Matrix Spike Dup (W1H1589-MSD2)	Source: 1H23045-08			Prepared & Ana	lyzed: 08/2	4/21				
Nitrate as N	26700	1100	ug/l	20000	5300	107	84-115	0.1	20	

### **Quality Control Results**

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

				Spike	Source		%REC		RPD	
Analyte	Result	MRL	Units	Level	Result	%REC	Limits	RPD	Limit	Qualifier
Batch: W1H1638 - EPA 351.2										
Blank (W1H1638-BLK1)			Prep	oared: 08/24/2	1 Analyzed:	08/26/2	1			
TKN	• • • • • • • • • • • • ND	0.10	mg/l							
LCS (W1H1638-BS1)			Prep	oared: 08/24/2	1 Analyzed:	08/26/2	1			
TKN	1.01	0.10	mg/l	1.00		101	90-110			
Matrix Spike (W1H1638-MS1)	Source: 1H24046-	-02	Prep	oared: 08/24/2	1 Analyzed:	08/26/2 <sup>-</sup>	1			
ТКМ	1.28	0.10	mg/l	1.00	0.230	105	90-110			
Matrix Spike Dup (W1H1638-MSD1)	Source: 1H24046-	-02	Prep	oared: 08/24/2	1 Analyzed:	08/26/2	1			
TKN	1.27	0.10	mg/l	1.00	0.230	104	90-110	0.3	10	
Batch: W1H1663 - EPA 365.3										
Blank (W1H1663-BLK1)				Prepared & A	nalyzed: 08/2	24/21				
o-Phosphate as P	ND	0.010	mg/l		-					
LCS (W1H1663-BS1)				Prepared & A	nalyzed: 08/2	24/21				
o-Phosphate as P	0.206	0.010	mg/l	0.200		103	88-111			
Matrix Spike (W1H1663-MS1)	Source: 1H24033-	-01		Prepared & A	nalyzed: 08/2	24/21				
o-Phosphate as P	0.215	0.010	mg/l	0.200	0.00300	106	85-112			
Matrix Spike Dup (W1H1663-MSD1)	Source: 1H24033-	-01		Prepared & A	nalyzed: 08/2	24/21				
o-Phosphate as P	0.214	0.010	mg/l	0.200	0.00300	106	85-112	0.5	20	
Batch: W1H1862 - SM 2540C										
Blank (W1H1862-BLK1)				Prepared & A	nalyzed: 08/2	26/21				
Total Dissolved Solids	ND	10	mg/l		-					
LCS (W1H1862-BS1)				Prepared & A	nalyzed: 08/2	26/21				
1H24033										Page 5 of 7



%REC

FINAL REPORT

Psomas - Santa Ana, CA 3 Hutton Centre Dr., Ste. 200 Santa Ana, CA 92707 Project Number: 2KLE010102

Project Manager: Michael P. Donovan

Spike

Source

09/20/2021 16:13

**Reported:** 

**Quality Control Results** 

(Continued)

RPD

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods (Contin	ued)

Analyte	Result	MRL	Units	Level	Result	%REC	Limits	RPD	Limit	Qualifier
Batch: W1H1862 - SM 2540C (Continued)										
LCS (W1H1862-BS1)				Prepared & A	nalyzed: 08/2	26/21				
Total Dissolved Solids	831	10	mg/l	824	-	101	96-102			
Duplicate (W1H1862-DUP1)	Source: 1H25001-01			Prepared & A	nalyzed: 08/2	26/21				
Total Dissolved Solids	84000	10	mg/l		83700			0.4	10	
Duplicate (W1H1862-DUP2)	Source: 1H25092-01			Prepared & A	nalyzed: 08/2	26/21				
Total Dissolved Solids	9950	10	mg/l		10100			1	10	
Batch: W1I1086 - EPA 353.2										
Blank (W1I1086-BLK1)				Prepared & A	nalyzed: 09/	16/21				
NO2+NO3 as N		200	ug/l							
LCS (W1I1086-BS1)				Prepared & A	nalyzed: 09/	16/21				
NO2+NO3 as N	991	200	ug/l	1000		99	90-110			
Matrix Spike (W1I1086-MS1)	Source: 1107039-03			Prepared & A	nalyzed: 09/	16/21				
NO2+NO3 as N	2400	200	ug/l	2000	320	104	90-110			
Matrix Spike (W1I1086-MS2)	Source: 1107039-05			Prepared & A	nalyzed: 09/	16/21				
NO2+NO3 as N	2460	200	ug/l	2000	426	102	90-110			
Matrix Spike Dup (W1I1086-MSD1)	Source: 1107039-03			Prepared & A	nalyzed: 09/	16/21				
NO2+NO3 as N	2360	200	ug/l	2000	320	102	90-110	2	20	
Matrix Spike Dup (W1I1086-MSD2)	Source: 1107039-05			Prepared & A	nalyzed: 09/	16/21				
NO2+NO3 as N	2470	200	ug/l	2000	426	102	90-110	0.4	20	



Psomas - Santa Ana, CA 3 Hutton Centre Dr., Ste. 200 Santa Ana, CA 92707

# **Certificate of Analysis**

FINAL REPORT

Project Number: 2KLE010102

Project Manager: Michael P. Donovan

**Reported:** 09/20/2021 16:13

### Notes and Definitions

ltem	Definition
%REC	Percent Recovery
Dil	Dilution
MRL	The minimum levels, concentrations, or quantities of a target variable (e.g., target analyte) that can be reported with a specified degree of confidence. The MRL is also known as Limit of Quantitation (LOQ)
ND	NOT DETECTED at or above the Method Reporting Limit (MRL). If Method Detection Limit (MDL) is reported, then ND means not detected at or above the MDL.
RPD	Relative Percent Difference
Source	Sample that was matrix spiked or duplicated.

Any remaining sample(s) will be disposed of one month from the final report date unless other arrangements are made in advance.

All results are expressed on wet weight basis unless otherwise specified.

All samples collected by Weck Laboratories have been sampled in accordance to laboratory SOP Number MIS002.

#### Weck Laboratories 14859 Clark Avenue City of Industry, CA 91745 (626) 336-2139

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(020) 000	2100													1	10	lin	10			
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Client Name/Addre	SS:			Project	PO Nur	nber;	-		È					`	Analys	sis Requ	ired		, ago	
PSOMAS 3 HUTTON CE SANTA ANA, C	NTRE DRIVE, SUITE A 92707	200		2KLE	010102	2			300.0	EPA Method	SM2540C	by EPA	Method	lation				-		
Project Manager.				Phone	Number	:			B	ş	şb	gen	A					·		
MICHAEL P. DO	ONOVAN (mpdonovni	@cox.net)		(714) 328-5234				PA Meti	hae-OF	ved So	h Nitro	N SK	en by c							
Sampler: Jim Burto	n, Todd Bear			Fax Number: 714.545.8883					ldsou	issol	jelda 1351	103.6	itrog							
Sampl	e Description	Sample Matrix	Container Type	# of Cont	Samp	king Date	Time	Preservation	litrate	Dithop 65.3	otal D	otal K Nethoc	102+N 53.2	NIENO						
SL-DP-	ර්	water	60 mì Poly	1	8/23	21	10:300	None	X			┟╴╸	4.0					┊╼╉		Special Instructions
		water	250 mi Poly	1	1	/ I	1	None		x				<u> </u>					Filt	ered with 0.45u
		water	500 ml Poly	1				None			x	t	1					÷		
<u></u>		water	250 ml Poly	1		-		H2SO4	1			X	x	x				1 1		
5L-DP-2	20	water	60 ml Poly	· 1	8/23	slal	11:050	-> None	X									i		
		water	250 mi Poly	1	Ľ	í	1	None		X			1					÷- †-	Filtr	ered with 0.45u
		water	500 ml Poly	1				None			X									
		water	250 ml Poly	_ 1	-	-	<u> </u>	H2SO4				X	X	Х						
£	/	water	60 ml Poly	_1_	$\Delta =$		/	None	X			1	Ì							······································
	/	water	250 ml Poly	1				None		X									Filt	ared with 0.45µ
	/	water	500 ml Poly	1		$\underline{\ }$		None			X									
<u> </u>	/	water	250 ml Poly	1			<u>/</u>	H2SO4				X	X	X						····
	_/	water	60 miPoly	1		X		None	X											
···	$\searrow$	water	250 mi Poly	1		$-\square$	L	None		X		l							Füte	ered with 0.45µ
	$ \land $	water	500 ml Poly	1			$\backslash$	None			X									·
/		water	250 ml Poiy	1	L,	/		H2SO4				X	X	Х						
		water	60 miPoły	1	/			None	X											, , , , , , , , , , , , , , , , ,
		water	250 ml Poly	_1	⊢ /_			None		X									Filte	ared with 0.45µ
		water	500 mi Poly	1	$\square$		<u> </u>	None			X									
Relinguished Bur		water	250 ml Poly	1	<u> </u>		<u> </u>	H2SO4				X	X	Х						
	El Paul	2/22/	21 1:25	nm	Receive	ed by:							Date //	ïme:			Turna	round Tin	ne: (Che	eck)
Relinquished By:	Fordow		Date /Time:	1 –	Receive	stigy/				· · ·			Date /T	ime:			Same 24 Ho	unay unis		Hours
Relinquiched Pur	pencer	<u> </u>	12412		<u>_</u> #	<u></u>							/	10:1	$\overline{\mathcal{O}}$		48 Ho	urs	Nc	лтла:X
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FINAL REPORT

Work Orders:	1H25027	Report Date:	9/22/2021
		Received Date:	8/25/2021
Project.	2KLE010102	Turnaround Time:	Normal
rigeet.		Phones:	(714) 751-7373
		Fax:	(714) 545-8883
Attn:	Michael P. Donovan	P.O. #:	
Client:	Psomas - Santa Ana, CA 3 Hutton Centre Dr., Ste. 200 Santa Ana, CA 92707	Billing Code:	

#### ELAP-CA #1132 • EPA-UCMR #CA00211 • Guam-EPA #17-008R • HW-DOH #4047 • LACSD #10143 • NELAP-OR #4047 • NJ-DEP #CA015 • SCAQMD #93LA1006

This is a complete final report. The information in this report applies to the samples analyzed in accordance with the chain-of-custody document. Weck Laboratories certifies that the test results meet all requirements of TNI unless noted by qualifiers or written in the Case Narrative. This analytical report must be reproduced in its entirety.

Dear Michael P. Donovan,

Enclosed are the results of analyses for samples received 8/25/21 with the Chain-of-Custody document. The samples were received in good condition, at 1.2 °C and on ice. All analyses met the method criteria except as noted in the case narrative or in the report with data qualifiers.

Reviewed by:

1: State

Chris Samatmanakit Project Manager





#### Psomas - Santa Ana, CA 3 Hutton Centre Dr., Ste. 200 Santa Ana, CA 92707

# **Certificate of Analysis**

FINAL REPORT

Project Number: 2KLE010102

Project Manager: Michael P. Donovan

**Reported:** 09/22/2021 11:05

#### Sample Summary

Sample Name	Sampled By	Lab ID	Matrix	Sampled	Qualifiers
LS-DP-5	Jim Burton, Todd Bear	1H25027-01	Water	08/24/21 10:15	
LS-DP-25	Jim Burton, Todd Bear	1H25027-02	Water	08/24/21 10:40	



FINAL REPORT

Psomas - Santa Ana, CA 3 Hutton Centre Dr., Ste. 200 Santa Ana, CA 92707 Project Number: 2KLE010102

**Reported:** 09/22/2021 11:05

Project Manager: Michael P. Donovan

Sample Result	ts					
Sample: LS-DP-5			Sample	ed: 08/24/2	21 10:15 by Jim Burt	ton, Todd Bear
1H25027-01 (Water	)					
Analyte	Result	MRL	Units	Dil	Analyzed	Qualifier
Anions by IC, EPA Method 300.0						
Method: EPA 300.0		Instr: LC12				
Batch ID: W1H1719	Preparation: _NONE (LC)	Prepared: 08/25/	21 09:34			Analyst: jan
Nitrate as N	ND	110	ug/l	1	08/25/21 17:14	
Conventional Chemistry/Physical Para	ameters by APHA/EPA/ASTM Methods					
Method: [CALC]		Instr: [CALC]				
Batch ID: [CALC]	Preparation: [CALC]	Prepared: 09/16/	21 15:57			Analyst: YMT
Nitrogen, Total	ND	0.10	mg/l	1	09/16/21	
Method: EPA 351.2		Instr: AA06				
Batch ID: W1H2152	Preparation: _NONE (WETCHEM)	Prepared: 08/31/	21 13:18			Analyst: YMT
TKN	ND	0.10	mg/l	1	09/02/21	
Method: EPA 353.2		Instr: AA01				
Batch ID: W1I1086	Preparation: _NONE (WETCHEM)	Prepared: 09/16/	21 15:57			Analyst: ISM
NO2+NO3 as N	ND	200	ug/l	1	09/16/21	
Method: EPA 365.3		Instr: UVVIS04				
Batch ID: W1H1762	Preparation: _NONE (WETCHEM)	Prepared: 08/25/	21 14:01			Analyst: sbn
o-Phosphate as P	ND	0.010	mg/l	1	08/25/21 15:49	
Method: SM 2540C		Instr: OVEN01				
Batch ID: W1H1970	Preparation: _NONE (WETCHEM)	Prepared: 08/27/	21 16:53			Analyst: blg
Total Dissolved Solids	15	10	mg/l	1	08/30/21	



Psomas - Santa Ana, CA 3 Hutton Centre Dr., Ste. 200	Project Number	<b>Rep</b> 09/22/2021					
Santa Ana, CA 92707	Project Manager	Michael P. Donovan					
Sample Results				(Continued)			
Sample: LS-DP-25			Sampl	ed: 08/24/2	21 10:40 by Jim Bur	ton, Todd Bear	
1H25027-02 (Water)							
Analyte	Result	MRL	Units	Dil	Analyzed	Qualifier	
Anions by IC, EPA Method 300.0							
Method: EPA 300.0		Instr: LC12					
Batch ID: W1H1719	Preparation: _NONE (LC)	Prepared: 08/25/	21 09:34			Analyst: jan	
Nitrate as N		110	ug/l	1	08/25/21 17:32		
Conventional Chemistry/Physical Parameters	by APHA/EPA/ASTM Methods						
Method: [CALC]		Instr: [CALC]					
Batch ID: [CALC]	Preparation: [CALC]	Prepared: 09/16/	21 15:57			Analyst: YMT	
Nitrogen, Total	ND	0.10	mg/l	1	09/16/21		
Method: EPA 351.2		Instr: AA06					
Batch ID: W1H2152	Preparation: _NONE (WETCHEM)	Prepared: 08/31/	21 13:18			Analyst: YMT	
TKN		0.10	mg/l	1	09/02/21		
Method: EPA 353.2		Instr: AA01					
Batch ID: W1I1086	Preparation: _NONE (WETCHEM)	Prepared: 09/16/	21 15:57			Analyst: ISM	
NO2+NO3 as N	ND	200	ug/l	1	09/16/21		
Method: EPA 365.3		Instr: UVVIS04					
Batch ID: W1H1762	Preparation: _NONE (WETCHEM)	Prepared: 08/25/	21 14:01			Analyst: sbn	
o-Phosphate as P	ND	0.010	mg/l	1	08/25/21 15:53		
Method: SM 2540C		Instr: OVEN01					
Batch ID: W1H1970	Preparation: _NONE (WETCHEM)	Prepared: 08/27/	21 16:53			Analyst: blg	
Total Dissolved Solids		10	mg/l	1	08/30/21		



FINAL REPORT

Psomas - Santa Ana, CA 3 Hutton Centre Dr., Ste. 200 Santa Ana, CA 92707

#### Project Number: 2KLE010102

Project Manager: Michael P. Donovan

**Reported:** 09/22/2021 11:05

Quality Control Results

Anions by IC, EPA Method 300.0										
				Spike	Source		%REC		RPD	
Analyte	Result	MRL	Units	Level	Result	%REC	Limits	RPD	Limit	Qualifier
Batch: W1H1719 - EPA 300.0										
Blank (W1H1719-BLK1) Nitrate as N	ND	110	ug/l	Prepared & Ar	nalyzed: 08/2	25/21				
LCS (W1H1719-BS1)				Prepared & Ar	nalyzed: 08/2	25/21				
Nitrate as N	2130	110	ug/l	2000		107	90-110			
Matrix Spike (W1H1719-MS1)	Source: 1H18003-03			Prepared & Ar	nalyzed: 08/2	25/21				
Nitrate as N	23300	1100	ug/l	20000	1320	110	84-115			
Matrix Spike (W1H1719-MS2)	Source: 1H18003-05			Prepared & Ar	nalyzed: 08/2	25/21				
Nitrate as N	27900	1100	ug/l	20000	6240	108	84-115			
Matrix Spike Dup (W1H1719-MSD1)	Source: 1H18003-03			Prepared & Ar	nalyzed: 08/2	25/21				
Nitrate as N	23300	1100	ug/l	20000	1320	110	84-115	0.04	20	
Matrix Spike Dup (W1H1719-MSD2)	Source: 1H18003-05			Prepared & Ar	nalyzed: 08/2	25/21				
Nitrate as N	27800	1100	ug/l	20000	6240	108	84-115	0.2	20	
Quality Control Result	S									
Conventional Chemistry/Physical Parameters by	APHA/EPA/ASTM Methods									
				Spike	Source		%REC		RPD	
Analyte	Result	MRL	Units	Level	Result	%REC	Limits	RPD	Limit	Qualifier
Batch: W1H1762 - EPA 365.3										
Blank (W1H1762-BLK1) o-Phosphate as P	ND	0.010	mg/l	Prepared & Ar	nalyzed: 08/2	25/21				
LCS (W1H1762-BS1)				Prepared & Ar	nalyzed: 08/2	25/21				
o-Phosphate as P	0.200	0.010	mg/l	0.200		100	88-111			
Matrix Spike (W1H1762-MS1)	Source: 1H25027-01			Prepared & Ar	nalyzed: 08/2	25/21				
o-Phosphate as P	0.195	0.010	mg/l	0.200	ND	97	85-112			
Matrix Spike Dup (W1H1762-MSD1)	Source: 1H25027-01			Prepared & Ar	nalyzed: 08/2	25/21				
o-Phosphate as P	0.196	0.010	mg/l	0.200	ND	98	85-112	0.5	20	
Batch: W1H1970 - SM 2540C										
Blank (W1H1970-BLK1)			Prej	pared: 08/27/2	1 Analyzed:	08/30/21	l			
Total Dissolved Solids	ND	10	mg/l							
LCS (W1H1970-BS1)			Pre	pared: 08/27/2	1 Analyzed:	08/30/21	l			
Total Dissolved Solids	804	10	mg/l	824		98	96-102			
Duplicate (W1H1970-DUP1)	Source: 1H06002-12		Pre	pared: 08/27/2	1 Analyzed:	08/30/21	l			
Total Dissolved Solids	584	10	mg/l		608			4	10	
Duplicate (W1H1970-DUP2)	Source: 1H11007-01		Pre	pared: 08/27/2	1 Analyzed:	08/30/21	I			
Total Dissolved Solids	1450	10	mg/l		1400			4	10	
Batch: W1H2152 - EPA 351.2										
Blank (W1H2152-BLK1)			Pre	pared: 08/31/2	1 Analyzed:	09/02/21	1			
TKN	ND	0.10	mg/l		-					
Blank (W1H2152-BLK2)			Pre	pared: 08/31/2	1 Analyzed:	09/02/21	I			

1H25027



FINAL REPORT

Psomas - Santa Ana, CA 3 Hutton Centre Dr., Ste. 200 Santa Ana, CA 92707 Project Number: 2KLE010102

Project Manager: Michael P. Donovan

09/22/2021 11:05

Reported:

(Continued)

#### Quality Control Results

Conventional Chemistry/Physical Parameters	by APHA/EPA/ASTM Meth	ods (Continue	d)							
				Spike	Source		%REC		RPD	
Analyte	Result	MRL	Units	Level	Result	%REC	Limits	RPD	Limit	Qualifier
Batch: W1H2152 - EPA 351.2 (Continued)										
Blank (W1H2152-BLK2)			Pre	pared: 08/31/2	1 Analyzed:	09/02/2 <sup>-</sup>	1			
TKN	ND	0.10	mg/l							
LCS (W1H2152-BS1)			Pre	pared: 08/31/2	1 Analyzed:	09/02/2 <sup>-</sup>	1			
TKN	0.986	0.10	mg/l	1.00		99	90-110			
LCS (W1H2152-BS2)			Pre	pared: 08/31/2	1 Analyzed:	09/02/2	1			
TKN	0.968	0.10	mg/l	1.00		97	90-110			
Matrix Spike (W1H2152-MS1)	Source: 1H25027-	-01	Pre	pared: 08/31/2	1 Analyzed:	09/02/2	1			
TKN	1.07	0.10	mg/l	1.00	ND	107	90-110			
Matrix Snike (W1H2152-MS2)	Source: 1H25102.	.01	Dro	nared: 08/31/2	1 Analyzed	09/02/2	1			
TKN	1.03	0.10	mg/l	1.00	ND	103	<b>90-110</b>			
Matrix Saika Dup (W1H2152 MSD1)	Source: 1425027	01	Bro	narod: 09/21/2	1 Analuzada	00/02/2	1			
TKN	1.06	0.10	mg/l	1.00	ND	106	90-110	0.3	10	
Matrix Spike Dup (M/142152 MSD2)	Seures: 1425102	01	Drea	narad: 09/21/2	1 Analyzada	00/02/2	4			
TKN	1.03	0.10	mg/l	1.00	ND	103	90-110	0.8	10	
			0							
Batch: W111086 - EPA 353.2										
Blank (W1I1086-BLK1)				Prepared & A	nalyzed: 09/	16/21				
NO2+NO3 as N	ND	200	ug/l							
LCS (W111086-BS1)				Prepared & A	nalyzed: 09/	16/21				
NO2+NO3 as N	991	200	ug/l	1000		99	90-110			
Matrix Spike (W1I1086-MS1)	Source: 1107039-0	)3		Prepared & A	nalyzed: 09/	16/21				
NO2+NO3 as N	2400	200	ug/l	2000	320	104	90-110			
Matrix Spike (W1I1086-MS2)	Source: 1107039-0	)5		Prepared & A	nalyzed: 09/	16/21				
NO2+NO3 as N	2460	200	ug/l	2000	426	102	90-110			
Matrix Spike Dup (W1 1086-MSD1)	Source: 1107039-0	)3		Prepared & A	nalvzed: 09/	16/21				
NO2+NO3 as N	2360	200	ug/l	2000	320	102	90-110	2	20	
Matrix Spike Dup (W1 1086-MSD2)	Source: 1107039-0	)5		Prepared & A	nalvzed: 09/	16/21				
NO2+NO3 as N	2470	200	ua/l	2000	426	102	90-110	0.4	20	



Psomas - Santa Ana, CA 3 Hutton Centre Dr., Ste. 200 Santa Ana, CA 92707

# **Certificate of Analysis**

FINAL REPORT

Project Number: 2KLE010102

Project Manager: Michael P. Donovan

Reported: 09/22/2021 11:05

### Notes and Definitions

ltem	Definition
%REC	Percent Recovery
Dil	Dilution
MRL	The minimum levels, concentrations, or quantities of a target variable (e.g., target analyte) that can be reported with a specified degree of confidence. The MRL is also known as Limit of Quantitation (LOQ)
ND	NOT DETECTED at or above the Method Reporting Limit (MRL). If Method Detection Limit (MDL) is reported, then ND means not detected at or above the MDL.
RPD	Relative Percent Difference
Source	Sample that was matrix spiked or duplicated.

Any remaining sample(s) will be disposed of one month from the final report date unless other arrangements are made in advance.

All results are expressed on wet weight basis unless otherwise specified.

All samples collected by Weck Laboratories have been sampled in accordance to laboratory SOP Number MIS002.

#### Weck Laboratories 14859 Clark Avenue City of Industry, CA 91745 (626) 336-2139

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					CHAIN		<u>SI</u>	UDY	<u>'                                    </u>		1		112	10	$\sigma$		Page	e
Client Name/Address:			Project/	PO Number:			<u> </u>		1	1	1	<u> </u>	Analys	sis Regu	ired			
PSOMAS 3 HUTTON CENTRE DRIVE, SUITE SANTA ANA, CA 92707	200		2KLE(	2KLE010102				EPA Metho	SM2540C	nby EPA	Method	liation						
Project Manager:			Phone	Number:			물	Q.	olids	ogen	L¶.	alc						
MICHAEL P. DONOVAN (mpdonovn	@cox.net)		(714)	714) 328-5234				hae-O	Ived Sc	ahl Nitro	as N - E	en by c						
Sampler: Jim Burton, Todd Bear			FaxNu	Fax Number: 714.545.8883			- III Z	phosp	Disso	Kjelda od 351	NO3	Nitrog						
Sample Description	Sample Matrix	Container Type	# of Cont.	Sampling Da	e Time	Preservation	Nitrat	Ortho 365.3	Total	Total Metho	NO2+ 353.2	Total						Special Instructions
L5-DP-5	water	60 ml Poly	1	8/24/21	10:150	~ None	X											
	water	250 ml Poly	1	///		None		X									F	iltered with 0.45µ
	water	500 ml Poly	1			None			x									
	water	250 mi Poły	1			H2SO4				X	X	X						
LS-DP-25	water	60 mi Poły	1	8/24/21	10:40	a~ None	X											
	water	250 ml Poly	1	<u>' \'</u>		None		X									Ē	iltered with 0.45µ
	water	500 ml Poly	1			None			X									
	water	250 ml Poly	1	╺╼┶╴	-	H2SO4				Х	X	X						
	water	60 ml Poly	1	$\sum$		None	X	-									ŀ	
	water	250 ml Poly	1			None		X									F	iltered with 0.45µ
	water	500 mi Poly	1			None			X									
	water	250 ml Poly	1			H2SO4				X	X	x						
	water	60 mi Poly	1			None	X											
<u> </u>	water	250 mi Poly	1		$\Lambda$	None		X									F	iltered with 0.45µ
	water	500 mi Poly	1	/	Ύ\	None			X									
	water	250 ml Poly	1	L		H2SO4				X	X	X						
	water	60 ml Poly	1		$  \rangle$	None	X											
	water	250 ml Poly	1		$\perp$	None		x									Fi	iltered with 0.45µ
	water	500 ml Poly	1			None			X						_			
	water	250 ml Poły	1			H2SO4				X	X	х						
Relinquished By:	8/24	Date/Time:	150~	Received by:		••••••••••••••••••••••••••••••••••••••					Date /1	'ime:			Tuma Same	round Tin Day	ne: (C	heck) 72 Hours
Feder	1 81	1/1 me: 25/2/	1	Received by:	O					10	Pate/	ijme:			24 Ho 48 Ho	นกร	¦	5 Days
Relinguished By:		Date /Time:		Received in La	b by:					- <u>(</u>	Date /	ime:			Sampi	le Integrity	y: (Ch	eck) Dn Ice

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FINAL REPORT

Work Orders:	1H26021	Report Date:	9/20/2021
		Received Date:	8/26/2021
Project:	2KLE010102	Turnaround Time:	Normal
riojec.		Phones:	(714) 751-7373
		Fax:	(714) 545-8883
Attn:	Michael P. Donovan	P.O. #:	
Client:	Psomas - Santa Ana, CA 3 Hutton Centre Dr., Ste. 200 Santa Ana, CA 92707	Billing Code:	

DoD-ELAP ANAB #ADE-2882 • DoD-ISO ANAB # • ELAP-CA #1132 • EPA-UCMR #CA00211 • Guam-EPA #17-008R • HW-DOH #4047 • ISO17025 ANAB #L2457.01 • LACSD #10143 • NELAP-OR #4047 • NJ-DEP #CA015 • SCAQMD #93LA1006

This is a complete final report. The information in this report applies to the samples analyzed in accordance with the chain-of-custody document. Weck Laboratories certifies that the test results meet all requirements of TNI unless noted by qualifiers or written in the Case Narrative. This analytical report must be reproduced in its entirety.

Dear Michael P. Donovan,

Enclosed are the results of analyses for samples received 8/26/21 with the Chain-of-Custody document. The samples were received in good condition, at 1.4 °C and on ice. All analyses met the method criteria except as noted in the case narrative or in the report with data qualifiers.

Reviewed by:

1: State

Chris Samatmanakit Project Manager





#### Psomas - Santa Ana, CA 3 Hutton Centre Dr., Ste. 200 Santa Ana, CA 92707

### Sample Summary

# **Certificate of Analysis**

FINAL REPORT

#### Project Number: 2KLE010102

Project Manager: Michael P. Donovan

**Reported:** 09/20/2021 16:15

Sample Name	Sampled By	Lab ID	Matrix	Sampled	Qualifiers
BC-blw-PH6	Jim Burton, Todd Bear	1H26021-01	Water	08/25/21 07:15	
BC-blw-PH5	Jim Burton, Todd Bear	1H26021-02	Water	08/25/21 07:40	
BC-blw-PH4	Jim Burton, Todd Bear	1H26021-03	Water	08/25/21 08:15	
BC-blw-PH3	Jim Burton, Todd Bear	1H26021-04	Water	08/25/21 08:50	
BC-blw-PH2	Jim Burton, Todd Bear	1H26021-05	Water	08/25/21 09:20	
BC-NF-1	Jim Burton, Todd Bear	1H26021-06	Water	08/25/21 10:20	
BC-blw-LS	Jim Burton, Todd Bear	1H26021-07	Water	08/25/21 10:35	
BC-blw-SL	Jim Burton, Todd Bear	1H26021-08	Water	08/25/21 11:05	



# **Certificate of Analysis**

FINAL REPORT

09/20/2021 16:15

Reported:

A final of the second second second second second						
Psomas - Santa Ana, CA 3 Hutton Centre Dr., Ste, 200	Project Number: 2KLE010102			<b>Reported</b> 09/20/2021 16:1		
Santa Ana, CA 92707	Project Manager:	Michael P. Donovan				
Sample Results						
Sample: BC-blw-PH6			Sampled: 08/25/21	7:15 by Jim Burton, Todd Bear		
1H26021-01 (Water)						
Analyte	Result	MRL Ur	nits Dil	Analyzed Qualifier		
Anions by IC, EPA Method 300.0						
Method: EPA 300.0		Instr: LC12				
Batch ID: W1H1830	Preparation: _NONE (LC)	Prepared: 08/26/21 09	9:23	Analyst: jan		
Nitrate as N	ND	110 u	g/l 1	08/26/21 16:41		
Conventional Chemistry/Physical Parameters by	APHA/EPA/ASTM Methods					
Method: [CALC]		Instr: [CALC]				
Batch ID: [CALC]	Preparation: [CALC]	Prepared: 09/14/21 19	9:49	Analyst: SBN		
Nitrogen, Total	0.10	0.10 m	ıg/l 1	09/17/21		
Method: EPA 351.2		Instr: AA06				
Batch ID: W110024	Preparation: _NONE (WETCHEM)	Prepared: 09/01/21 09	9:50	Analyst: SBN		
ТКМ	0.10	0.10 m	ıg/l 1	09/03/21		
Method: EPA 353.2		Instr: AA01				
Batch ID: W110903	Preparation: _NONE (WETCHEM)	Prepared: 09/14/21 19	9:49	Analyst: ism		

Batch ID: W1I0903	Preparation: _NONE (WETCHEM)	<b>Prepared:</b> 09/14	4/21 19:49			Analyst: ism
NO2+NO3 as N	ND	200	ug/l	1	09/17/21	
Method: EPA 365.3		Instr: UVVIS04				
Batch ID: W1H1864	Preparation: _NONE (WETCHEM)	Prepared: 08/2	6/21 13:06			Analyst: sbn
o-Phosphate as P	ND	0.010	mg/l	1	08/26/21 14:07	
Method: SM 2540C		Instr: OVEN01				
Batch ID: W1H1971	Preparation: _NONE (WETCHEM)	Prepared: 08/2	7/21 16:56			Analyst: blg
Total Dissolved Solids	26	10	mg/l	1	08/31/21	


Psomas - Sa	anta Ana, CA atre Dr. Ste. 200	Project Number: 2KLE010102				Reported:				
Santa Ana, C	CA 92707	Project Manager:	Michael P. Donovan			03/	20/2021 10.15			
Sample Results					(Continued)					
Sample:	BC-blw-PH5			Sample	ed: 08/25/	21 7:40 by Jim Bur	ton, Todd Bear			
	1H26021-02 (Water)									
Analyte		Result	MRL	Units	Dil	Analyzed	Qualifier			
Anions by IC,	EPA Method 300.0									
Method: EPA	300.0		Instr: LC12							
Batch ID: V	W1H1830	Preparation: _NONE (LC)	Prepared: 08/	/26/21 09:23			Analyst: jan			
Nitrate as I	Ν	ND	110	ug/l	1	08/26/21 16:59				
Conventional (	Chemistry/Physical Parameters	s by APHA/EPA/ASTM Methods								
Method: [CA	LC]		Instr: [CALC]							
Batch ID: [	CALC]	Preparation: [CALC]	Prepared: 09/	/14/21 19:49			Analyst: SBN			
Nitrogen, T	Fotal	ND	0.10	mg/l	1	09/17/21				
Method: EPA	351.2		Instr: AA06							
Batch ID: V	W1I0024	Preparation: _NONE (WETCHEM)	Prepared: 09/	/01/21 09:50			Analyst: SBN			
TKN			0.10	mg/l	1	09/03/21				
Method: EPA	353.2		Instr: AA01							
Batch ID: V	W1I0903	Preparation: _NONE (WETCHEM)	Prepared: 09/	/14/21 19:49			Analyst: ism			
NO2+NO3	as N	ND	200	ug/l	1	09/17/21				
Method: EPA	365.3		Instr: UVVIS04	4						
Batch ID: V	W1H1864	Preparation: _NONE (WETCHEM)	Prepared: 08/	/26/21 13:06			Analyst: sbn			
o-Phospha	ate as P	ND	0.010	mg/l	1	08/26/21 14:08				
Method: SM	2540C		Instr: OVEN01							
Batch ID: V	W1H1971	Preparation: _NONE (WETCHEM)	Prepared: 08/	/27/21 16:56			Analyst: blg			
Total Diss	olved Solids		10	mg/l	1	08/31/21				



Psomas - Sai 3 Hutton Cen	nta Ana, CA htre Dr. Ste. 200	Project Number:	Project Number: 2KLE010102				
Santa Ana, C	CA 92707	Project Manager:	Michael P. Donovan			007	20/2021 10.10
Sample Results							(Continued)
Sample:	BC-blw-PH4			Sample	ed: 08/25/	/21 8:15 by Jim Bur	ton, Todd Bear
	1H26021-03 (Water)						
Analyte		Result	MRL	Units	Dil	Analyzed	Qualifier
Anions by IC, I	EPA Method 300.0						
Method: EPA	300.0		Instr: LC12				
Batch ID: W	V1H1830	Preparation: _NONE (LC)	Prepared: 08	/26/21 09:23			Analyst: jan
Nitrate as N	Ν	ND	110	ug/l	1	08/26/21 17:17	
Conventional C	Chemistry/Physical Parameters	s by APHA/EPA/ASTM Methods					
Method: [CAI	LC]		Instr: [CALC]				
Batch ID: [0	CALC]	Preparation: [CALC]	Prepared: 09	/14/21 19:49			Analyst: SBN
Nitrogen, T	Total	0.11	0.10	mg/l	1	09/17/21	
Method: EPA	351.2		Instr: AA06				
Batch ID: W	V1I0024	Preparation: _NONE (WETCHEM)	Prepared: 09	/01/21 09:50			Analyst: SBN
TKN		0.11	0.10	mg/l	1	09/03/21	
Method: EPA	353.2		Instr: AA01				
Batch ID: W	V1I0903	Preparation: _NONE (WETCHEM)	Prepared: 09	/14/21 19:49			Analyst: ism
NO2+NO3	as N	ND	200	ug/l	1	09/17/21	
Method: EPA	365.3		Instr: UVVIS0	)4			
Batch ID: W	V1H1864	Preparation: _NONE (WETCHEM)	Prepared: 08	/26/21 13:06			Analyst: sbn
o-Phosphat	te as P	ND	0.010	mg/l	1	08/26/21 14:09	
Method: SM	2540C		Instr: OVEN0	1			
Batch ID: W	V1H1971	Preparation: _NONE (WETCHEM)	Prepared: 08	/27/21 16:56			Analyst: blg
Total Disso	olved Solids	46	10	mg/l	1	08/31/21	



Psomas - Sa	anta Ana, CA atre Dr. Ste. 200	Project Number:	Reported:				
Santa Ana, C	CA 92707	Project Manager:	Michael P. Donovan			03/	20/2021 10.13
Sample Results							(Continued)
Sample:	BC-blw-PH3			Sample	ed: 08/25/	/21 8:50 by Jim Bur	ton, Todd Bear
	1H26021-04 (Water)						
Analyte		Result	MRL	Units	Dil	Analyzed	Qualifier
Anions by IC,	EPA Method 300.0						
Method: EPA	300.0		Instr: LC12				
Batch ID: V	W1H1830	Preparation: _NONE (LC)	Prepared: 08/	/26/21 09:23			Analyst: jan
Nitrate as I	Ν	ND	110	ug/l	1	08/26/21 17:34	
Conventional (	Chemistry/Physical Parameters	s by APHA/EPA/ASTM Methods					
Method: [CA	LC]		Instr: [CALC]				
Batch ID: [0	CALC]	Preparation: [CALC]	Prepared: 09/	/14/21 19:49			Analyst: SBN
Nitrogen,	Total	0.19	0.10	mg/l	1	09/17/21	
Method: EPA	351.2		Instr: AA06				
Batch ID: V	W1I0024	Preparation: _NONE (WETCHEM)	Prepared: 09/	/01/21 09:50			Analyst: SBN
TKN		0.19	0.10	mg/l	1	09/03/21	
Method: EPA	353.2		Instr: AA01				
Batch ID: V	W1I0903	Preparation: _NONE (WETCHEM)	Prepared: 09/	/14/21 19:49			Analyst: ism
NO2+NO3	as N	ND	200	ug/l	1	09/17/21	
Method: EPA	365.3		Instr: UVVIS04	4			
Batch ID: V	W1H1864	Preparation: _NONE (WETCHEM)	Prepared: 08/	/26/21 13:06			Analyst: sbn
o-Phospha	ate as P	ND	0.010	mg/l	1	08/26/21 14:09	
Method: SM	2540C		Instr: OVEN01	1			
Batch ID: V	W1H1971	Preparation: _NONE (WETCHEM)	Prepared: 08/	/27/21 16:56			Analyst: blg
Total Disso	olved Solids		10	mg/l	1	08/31/21	



Psomas - Sa 3 Hutton Cer	anta Ana, CA ntre Dr. Ste. 200	Project Number:	09/	Reported: 09/20/2021 16:15			
Santa Ana, C	CA 92707	Project Manager:	Michael P. Donovan			00,	20,2021 10.10
Sample Results							(Continued)
Sample:	BC-blw-PH2			Sample	ed: 08/25/	21 9:20 by Jim Bur	ton, Todd Bear
	1H26021-05 (Water)						
Analyte		Result	MRL	Units	Dil	Analyzed	Qualifier
Anions by IC,	EPA Method 300.0						
Method: EPA	A 300.0		Instr: LC12				
Batch ID: \	W1H1830	Preparation: _NONE (LC)	<b>Prepared:</b> 08/26	6/21 09:23			Analyst: jan
Nitrate as	Ν	ND	110	ug/l	1	08/26/21 17:52	
Conventional	Chemistry/Physical Parameters	s by APHA/EPA/ASTM Methods					
Method: [CA	ALC]		Instr: [CALC]				
Batch ID: [	[CALC]	Preparation: [CALC]	<b>Prepared:</b> 09/14	4/21 19:49			Analyst: SBN
Nitrogen,	Total	0.12	0.10	mg/l	1	09/17/21	
Method: EPA	A 351.2		Instr: AA06				
Batch ID: \	W1I0024	Preparation: _NONE (WETCHEM)	Prepared: 09/07	1/21 09:50			Analyst: SBN
TKN		0.12	0.10	mg/l	1	09/03/21	
Method: EPA	A 353.2		Instr: AA01				
Batch ID: \	W1I0903	Preparation: _NONE (WETCHEM)	Prepared: 09/14	4/21 19:49			Analyst: ism
NO2+NO3	3 as N	ND	200	ug/l	1	09/17/21	
Method: EPA	A 365.3		Instr: UVVIS04				
Batch ID: \	W1H1864	Preparation: _NONE (WETCHEM)	<b>Prepared:</b> 08/26	6/21 13:06			Analyst: sbn
o-Phospha	ate as P	ND	0.010	mg/l	1	08/26/21 14:10	
Method: SM	I 2540C		Instr: OVEN01				
Batch ID: \	W1H1971	Preparation: _NONE (WETCHEM)	<b>Prepared:</b> 08/27	7/21 16:56			Analyst: blg
Total Diss	olved Solids	27	10	mg/l	1	08/31/21	



Psomas - Santa Ana, CA	Project Number:	2KLE010102				Reported:
3 Hutton Centre Dr., Ste. 200	Project Monogory	Michael B. Deneven			09/	20/2021 16:15
Santa Ana, CA 92707	Project Manager:	Michael P. Donovan				
Sample Results						(Continued)
Sample: BC-NF-1			Samp	led: 08/25/2	21 10:20 by Jim Bur	ton, Todd Bear
1H26021-06 (Water)						
Analyte	Result	MRL	Units	Dil	Analyzed	Qualifier
Anions by IC, EPA Method 300.0						
Method: EPA 300.0		Instr: LC12				
Batch ID: W1H1830	Preparation: _NONE (LC)	Prepared: 08/26/2	1 09:23			Analyst: jan
Nitrate as N	ND	110	ug/l	1	08/26/21 18:10	
Conventional Chemistry/Physical Parameters	by APHA/EPA/ASTM Methods					
Method: [CALC]		Instr: [CALC]				
Batch ID: [CALC]	Preparation: [CALC]	Prepared: 09/14/2	1 19:49			Analyst: SBN
Nitrogen, Total	0.12	0.10	mg/l	1	09/17/21	
Method: EPA 351.2		Instr: AA06				
Batch ID: W110024	Preparation: _NONE (WETCHEM)	Prepared: 09/01/2	1 09:50			Analyst: SBN
ТКМ	0.12	0.10	mg/l	1	09/03/21	
Method: EPA 353.2		Instr: AA01				
Batch ID: W110903	Preparation: _NONE (WETCHEM)	Prepared: 09/14/2	1 19:49			Analyst: ism
NO2+NO3 as N	ND	200	ug/l	1	09/17/21	
Method: EPA 365.3		Instr: UVVIS04				
Batch ID: W1H1864	Preparation: _NONE (WETCHEM)	Prepared: 08/26/2	1 13:06			Analyst: sbn
o-Phosphate as P	ND	0.010	mg/l	1	08/26/21 14:10	
Method: SM 2540C		Instr: OVEN01				
Batch ID: W1H1971	Preparation: _NONE (WETCHEM)	Prepared: 08/27/2	1 16:56			Analyst: blg
Total Dissolved Solids	25	10	mg/l	1	08/31/21	



Psomas - Sar 3 Hutton Cen	nta Ana, CA tre Dr., Ste. 200	Project Number:	<b>Reported:</b> 09/20/2021 16:15				
Santa Ana, C	A 92707	Project Manager:	Michael P. Donovan				
Sample Results							(Continued)
Sample:	BC-blw-LS			Sample	d: 08/25/	21 10:35 by Jim Bur	ton, Todd Bear
	1H26021-07 (Water)						
Analyte		Result	MRL	Units	Dil	Analyzed	Qualifier
Anions by IC, E	EPA Method 300.0						
Method: EPA	300.0		Instr: LC12				
Batch ID: W	/1H1830	Preparation: _NONE (LC)	Prepared: 08	/26/21 09:23			Analyst: jan
Nitrate as N	۱	ND	110	ug/l	1	08/26/21 18:28	
Conventional C	Chemistry/Physical Parameters	s by APHA/EPA/ASTM Methods					
Method: [CAL	_C]		Instr: [CALC]				
Batch ID: [C	CALC]	Preparation: [CALC]	Prepared: 09	/14/21 19:49			Analyst: SBN
Nitrogen, T	Total	0.12	0.10	mg/l	1	09/17/21	
Method: EPA	351.2		Instr: AA06				
Batch ID: W	/110024	Preparation: _NONE (WETCHEM)	Prepared: 09	/01/21 09:50			Analyst: SBN
<b>TKN</b>		0.12	0.10	mg/l	1	09/03/21	
Method: EPA	353.2		Instr: AA01				
Batch ID: W	/110903	Preparation: _NONE (WETCHEM)	Prepared: 09	/14/21 19:49			Analyst: ism
NO2+NO3	as N	ND	200	ug/l	1	09/17/21	
Method: EPA	365.3		Instr: UVVIS0	4			
Batch ID: W	/1H1866	Preparation: _NONE (WETCHEM)	Prepared: 08	/26/21 13:08			Analyst: sbn
o-Phosphat	te as P	ND	0.010	mg/l	1	08/26/21 14:18	
Method: SM 2	2540C		Instr: OVEN0	1			
Batch ID: W	/1H1971	Preparation: _NONE (WETCHEM)	Prepared: 08	/27/21 16:56			Analyst: blg
Total Disso	olved Solids		10	mg/l	1	08/31/21	



Psomas - Santa Ana, CA 3 Hutton Centre Dr. Ste 200	Project Number:	Project Number: 2KLE010102					
Santa Ana, CA 92707	Project Manager:	Project Manager: Michael P. Donovan					
Sample Res	ults						
Sample: BC-blw-SL		Sam	npled: 08/25	/21 11:05 by Jim Bur	ton, Todd Bear		
1H26021-08 (W	ater)						
Analyte	Result	MRL Units	Dil	Analyzed	Qualifier		
Anions by IC, EPA Method 300.0							
Method: EPA 300.0		Instr: LC12					
Batch ID: W1H1830	Preparation: _NONE (LC)	Prepared: 08/26/21 09:23			Analyst: jan		
Nitrate as N	ND	110 ug/l	1	08/26/21 19:22			
Conventional Chemistry/Physical	Parameters by APHA/EPA/ASTM Methods						
Method: [CALC]		Instr: [CALC]					
Batch ID: [CALC]	Preparation: [CALC]	Prepared: 09/14/21 19:49			Analyst: SBN		
Nitrogen, Total	0.11	0.10 mg/l	1	09/17/21			
Method: EPA 351.2		Instr: AA06					
Batch ID: W1I0024	Preparation: _NONE (WETCHEM)	Prepared: 09/01/21 09:50			Analyst: SBN		
TKN	0.11	0.10 mg/l	1	09/03/21			
Method: EPA 353.2		Instr: AA01					
Batch ID: W1I0903	Preparation: _NONE (WETCHEM)	Prepared: 09/14/21 19:49			Analyst: ism		
NO2+NO3 as N	ND	200 ug/l	1	09/17/21			
Method: EPA 365.3		Instr: UVVIS04					
Batch ID: W1H1866	Preparation: _NONE (WETCHEM)	Prepared: 08/26/21 13:08			Analyst: sbn		
o-Phosphate as P	ND	0.010 mg/l	1	08/26/21 14:19			
Method: SM 2540C		Instr: OVEN01					
Batch ID: W1H1971	Preparation: _NONE (WETCHEM)	Prepared: 08/27/21 16:56			Analyst: blg		
Total Dissolved Solids		10 mg/l	1	08/31/21			



%REC

Limits

%REC

**FINAL REPORT** 

RPD

Limit

RPD

Psomas - Santa Ana, CA 3 Hutton Centre Dr., Ste. 200 Santa Ana, CA 92707

### Project Number: 2KLE010102

Project Manager: Michael P. Donovan

Units

Spike

Level

Source

Result

Reported: 09/20/2021 16:15

Qualifier

MRL

### **Quality Control Results**

Anions by IC, EPA Method 300.0	
Analyte	Result
Batch: W1H1830 - EPA 300.0	

Batch: WTH1830 - EPA 300.0										
Blank (W1H1830-BLK1)				Prepared & Analy	/zed: 08/2	5/21				
Nitrate as N	ND	110	ug/l							
LCS (W1H1830-BS1)				Prepared & Analy	/zed: 08/2	5/21				
Nitrate as N	2200	110	ug/l	2000		110	90-110			
Matrix Spike (W1H1830-MS1)	Source: 1H16015-01			Prepared & Analy	/zed: 08/2	5/21				
Nitrate as N	- 21200	1100	ug/l	20000	ND	106	84-115			
Matrix Spike (W1H1830-MS2)	Source: 1H16015-02			Prepared & Analy	/zed: 08/2	5/21				
Nitrate as N	- 20900	1100	ug/l	20000	ND	104	84-115			
Matrix Spike Dup (W1H1830-MSD1)	Source: 1H16015-01			Prepared & Analy	/zed: 08/2	5/21				
Nitrate as N	- 21200	1100	ug/l	20000	ND	106	84-115	0.3	20	
				Droporod & Apol						
Matrix Spike Dup (W1H1830-MSD2)	Source: 1H16015-02			Prepareu & Anaiy	/zeu: 00/20	5/21				

### **Quality Control Results**

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

				Spike	Source		%REC		RPD	
Analyte	Result	MRL	Units	Level	Result	%REC	Limits	RPD	Limit	Qualifier
Batch: W1H1864 - EPA 365.3										
Blank (W1H1864-BLK1)				Prepared & A	nalyzed: 08/2	6/21				
o-Phosphate as P	ND	0.010	mg/l							
LCS (W1H1864-BS1)				Prepared & A	nalyzed: 08/2	26/21				
o-Phosphate as P	0.207	0.010	mg/l	0.200		104	88-111			
Matrix Spike (W1H1864-MS1)	Source: 1H25072-0	01		Prepared & A	nalyzed: 08/2	26/21				
o-Phosphate as P	0.230	0.010	mg/l	0.200	0.0210	104	85-112			
Matrix Spike Dup (W1H1864-MSD1)	Source: 1H25072-0	01		Prepared & A	nalyzed: 08/2	26/21				
o-Phosphate as P	0.230	0.010	mg/l	0.200	0.0210	104	85-112	0	20	
Batch: W1H1866 - EPA 365.3										
Blank (W1H1866-BLK1)				Prepared & A	nalyzed: 08/2	26/21				
o-Phosphate as P	ND	0.010	mg/l		-					
LCS (W1H1866-BS1)				Prepared & A	nalyzed: 08/2	26/21				
o-Phosphate as P	0.212	0.010	mg/l	0.200		106	88-111			
Matrix Spike (W1H1866-MS1)	Source: 1H26021-(	07		Prepared & A	nalyzed: 08/2	26/21				
o-Phosphate as P	0.212	0.010	mg/l	0.200	0.00900	102	85-112			
Matrix Spike Dup (W1H1866-MSD1)	Source: 1H26021-(	07		Prepared & A	nalyzed: 08/2	26/21				
o-Phosphate as P	0.210	0.010	mg/l	0.200	0.00900	100	85-112	0.9	20	
Batch: W1H1971 - SM 2540C										
Blank (W1H1971-BLK1)			Pre	pared: 08/27/2	1 Analyzed:	08/31/21	I			
Total Dissolved Solids	ND	10	mg/l		-					
LCS (W1H1971-BS1)			Pre	epared: 08/27/2	1 Analyzed:	08/31/21	I			
1H26021										Page 11 of 12



FINAL REPORT

Psomas - Santa Ana, CA 3 Hutton Centre Dr., Ste. 200 Santa Ana, CA 92707 Project Number: 2KLE010102

Project Manager: Michael P. Donovan

Reported: 09/20/2021 16:15

(Continued)

### Quality Control Results

Conventional Chemistry/Physical Parameters by APH	HA/EPA/ASTM Methods	(Continued)								
				Spike	Source		%REC		RPD	
Analyte	Result	MRL	Units	Level	Result	%REC	Limits	RPD	Limit	Qualifier
Batch: W1H1971 - SM 2540C (Continued)										
LCS (W1H1971-BS1)				Prepared: 08/27/21	Analyzed:	08/31/21				
Total Dissolved Solids	838	10	mg/l	824		102	96-102			
Duplicate (W1H1971-DUP1)	Source: 1H16018-01			Prepared: 08/27/21	Analyzed:	08/31/21				
Total Dissolved Solids	4510	10	mg/l	-	4390			3	10	
Duplicate (W1H1971-DUP2)	Source: 1H16018-02			Prepared: 08/27/21	Analyzed.	08/31/21				
Total Dissolved Solids	1680	10	mg/l	1100/21/21	1630	00/51/21		3	10	
Batch: W110024 - EPA 351.2										
Riank (W110024-RI K1)				Propared: 09/01/21	Analyzed	00/03/21				
TKN	ND	0.10	mg/l	Prepared: 09/01/21	Analyzeu:	09/05/21				
			0							
Blank (W1I0024-BLK2)	ND	0.10	ma/l	Prepared: 09/01/21	Analyzed:	09/03/21				
		0.10	mg/i							
LCS (W110024-BS1)				Prepared: 09/01/21	Analyzed:	09/03/21				
IKN	1.04	0.10	mg/l	1.00		104	90-110			
LCS (W110024-BS2)				Prepared: 09/01/21	Analyzed:	09/03/21				
TKN	1.03	0.10	mg/l	1.00		103	90-110			
Matrix Spike (W110024-MS1)	Source: 1H26021-01			Prepared: 09/01/21	Analyzed:	09/03/21				
TKN	1.14	0.10	mg/l	1.00	0.102	103	90-110			
Matrix Snike (W110021-MS2)	Source: 1426021-05			Propared: 09/01/21	Analyzed	00/03/21				
TKN	1.13	0.10	mg/l	1.00	0.119	101	90-110			
Matrix Spike Dup (W110024-MSD1) TKN	Source: 1H26021-01	0.10	ma/l	Prepared: 09/01/21	Analyzed: 0 102	101	90-110	2	10	
		0.10	iiig/i	1.00	0.102	101	00 110	-	10	
Matrix Spike Dup (W110024-MSD2)	Source: 1H26021-05	0.40		Prepared: 09/01/21	Analyzed:	09/03/21	00.440	0.0	40	
IKN	1.14	0.10	mg/l	1.00	0.119	102	90-110	0.9	10	
Batch: W1I0903 - EPA 353.2										
Blank (W1I0903-BLK1)				Prepared: 09/14/21	Analyzed:	09/17/21				
NO2+NO3 as N	ND	200	ug/l							
LCS (W110903-BS1)				Prepared: 09/14/21	Analyzed.	09/17/21				
NO2+NO3 as N	1010	200	ug/l	1000	Analyzeu.	101	90-110			
	a			<b>D</b>		~~ ~~ ~~ ~~ ~				
Matrix Spike (W110903-MS1) NO2+NO3 as N	Source: 1101057-01	800	ua/l	8000	9680	102	90-110			
			ug/.			.02	00 110			
Matrix Spike (W110903-MS2)	Source: 1108061-01	200		Prepared: 09/14/21	Analyzed:	09/17/21	00.440			
INUZTINUJ AS IN	1300	200	ug/l	2000	5280	104	90-110			
Matrix Spike Dup (W110903-MSD1)	Source: 1101057-01			Prepared: 09/14/21	Analyzed:	09/17/21				
NO2+NO3 as N	17900	800	ug/l	8000	9680	102	90-110	0	20	
Matrix Spike Dup (W110903-MSD2)	Source: 1108061-01			Prepared: 09/14/21	Analyzed:	09/17/21				
NO2+NO3 as N	7340	200	ug/l	2000	5280	103	90-110	0.1	20	



Psomas - Santa Ana, CA 3 Hutton Centre Dr., Ste. 200 Santa Ana, CA 92707

# **Certificate of Analysis**

FINAL REPORT

Project Number: 2KLE010102

Project Manager: Michael P. Donovan

Reported: 09/20/2021 16:15

### Notes and Definitions

ltem	Definition
%REC	Percent Recovery
Dil	Dilution
MRL	The minimum levels, concentrations, or quantities of a target variable (e.g., target analyte) that can be reported with a specified degree of confidence. The MRL is also known as Limit of Quantitation (LOQ)
ND	NOT DETECTED at or above the Method Reporting Limit (MRL). If Method Detection Limit (MDL) is reported, then ND means not detected at or above the MDL.
RPD	Relative Percent Difference
Source	Sample that was matrix spiked or duplicated.

Any remaining sample(s) will be disposed of one month from the final report date unless other arrangements are made in advance.

All results are expressed on wet weight basis unless otherwise specified.

All samples collected by Weck Laboratories have been sampled in accordance to laboratory SOP Number MIS002.

### Weck Laboratories 14859 Clark Avenue City of Industry, CA 91745 (626) 336-2139

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CHAIN OF CUSTODY FORM         (M.A.OV.21)         Pege 1 of	
Client Name/Address:       Project/PO Number:       Analysis Required         PSOMAS       3 HUTTON CENTRE DRIVE, SUITE 200       2KLE010102       000000000000000000000000000000000000	2
PSOMAS 3 HUTTON CENTRE DRIVE, SUITE 200 SANTA ANA, CA 92707     2KLE010102     00 00 00 00 00 00 00 00 00 00 00 00 00	
Project Manager:       Phone Number:       000000000000000000000000000000000000	
MICHAEL P. DONOVAN (mpdonovn@cox.net)       (714) 328-5234       Vestor	I
Sampler: Jim Burton, Todd Bear       Fax Number: 714:545.8883       III       IIII       IIII       IIII       IIII       IIII       IIII       IIII       IIII       IIIII       IIIIIIII       IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	
Sample Description       Sample Matrix       Container Type       # of Cont.       Sampling Date       Time       Preservation       Image for graph of	
BC - blw - pH (a)       water       60 ml Poly       1       8 (2 - bl / 2 - bl	ons
water         250 ml Poly         1         None         X         I         Filtered with 0.45µ           water         500 ml Poly         1         None         X         I         I         Filtered with 0.45µ           water         500 ml Poly         1         None         X         I         I         I           water         250 ml Poly         1         I         H2SO4         X         X         I         I           I3C-b1w-PH5         water         80 ml Poly         1         I         J         None         X         X         I         I           water         250 ml Poly         1         I         J         None         X         I         I         I           water         250 ml Poly         1         I         None         X         I	
water         500 ml Poly         1         None         X         I         I         None         X         I         I         I         I         I         None         X         I <thi< th=""></thi<>	
L       water       250 mi Poly       1       L       H2SO4       X	
IDC-b1w-PH5       water       80 ml Poly       1       8/85/2/7;40 an None       X       Image: Constraint of the state of the s	
water         250 ml Poly         1         None         X         Image: Constraint of the state of the s	
water         500 ml Poly         1         None         X         I           water         250 ml Poly         1         -         H2SO4         X         X         I           BC-b1w-PHH         water         60 ml Poly         1         8/25/21         8:15 an None         X         X         I	
L         water         250 ml Poly         1         L         L         H2SO4         X         X         X           BC-b1w-PH4         water         60 ml Poly         1         8/25/21         8:15 am None         X	
BC-blw-PHH water 60 ml Poly 1 8/25/21 8:15am None X	
water 250 ml Poly 1 None X Fittered with 0.45µ	
water 500 ml Poly 1 None X	1
→ water 250 mi Poly 1 → H2804 X X X	
BC-b1w-P#3 water 60 ml Poly 1 8/25/21 8:50 an None X	
water 250 mt Poly 1 None X Filtered with 0.45µ	
water 500 ml Poly 1 None X	
water 250 ml Poly 1 1 H2SO4 X X X	
BC-DIW-PH2 water 60 ml Poly 1 8/25/21 9:20 que None X	
water 250 mt Poly 1 None X Fittered with 0.45µ	
water 500 ml Poly 1 None X	
→ water 250 ml Poly 1 → → H2SO4 X X X	
Relinquished By: Date /Time: Date /Time: Check) Same Day 72 Hours	
Relinquished By:     Ted DA     Pate of time:     State of time:     5 Days       10.50     48 Hours     Normal     X	-
Relinquished By: Date /Time: Referved in Lab by: Date /Time: Sample Integrity: (Check) Intact _ / On ice	

### Weck Laboratories 14859 Clark Avenue City of Industry, CA 91745 (626) 336-2139

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					С	HA	IN	OF CU	ST	ODY	' FC	DRM	1		12	26(	)2	1	Pa	age _ 2 of 2
Client Name/Address:			Project/	PONumb	er:			· · · ·						<b>`</b>	Analys	sis Requ	uired			
PSOMAS 3 HUTTON CENTRE DRIVE, SUITI SANTA ANA, CA 92707	E 200		2KLE(	010102					300.0	EPA Method	SM2540C	by EPA	Method	lation						
Project Manager:			Phone	Number:					ğ	90¢	spilo	Daen	A							
MICHAEL P. DONOVAN (mpdonovi	n@cox.net)		(714)	328-523	4				A Mel	hae-O	ved Sc	hl Nitre 2	1 - N SE	enbyc						
Sampler: Jim Burton, Todd Bear	· · · · ·		Fax Nu	mber: 714	.545.88	83	-		E Z	hosp	<b>Jisso</b>	(jelda 1351	§ .	litrog						
Sample Description	Sample Matrix	Container Type	# of Cont.	Samplin	g Date	Tin	ne	Preservation	Nitrate	Orthop 365.3	Totai E	Total K Methoc	NO2+N 353.2	Total N						Special Instructions
BC-NF-1	water	60 ml Poly	1	8 25	bi	10:0	200	- None	X										·	
	water	250 mi Poły	1	1	/ '			None		X										Filtered with 0.45µ
	water	500 mi Poly	1					None			Х									
	water	250 ml Poly	1	1		4	-	H2SO4				X	X	X						
BC-DIW-L3	water	60 ml Poly	1	8/25	121	10!	350	~ None	X											
	water	250 ml Poly	1	L' 1'		1		None		X							_			Filtered with 0.45µ
	water	500 ml Poly	1					None			X									
	water	250 ml Poły	1	<u> </u>	<u>į.</u>	1	- 1	H2SO4				X	Х	Х						
BC-DIW-SL	water	60 ml Poly	1	8 25	121	11:0	54	~ None	X											
	water	250 mi Poly	1	<u> </u>		1		None		Х										Filtered with 0.45µ
	water	500 mi Poly	1					None			X									
	water	250 mi Poly	1				-	H2SO4				X	X	X						
	water	60 ml Poły	1	$\sum$			$\square$	None	X											
	water	250 ml Poly	1					None		X										Filtered with 0.45µ
	water	500 ml Poly	1	``````````````````````````````````````				None	1		X									
	water	250 ml Poly	1		$\underline{}$	<u>í</u>		H2SO4	-			X	X	X						
	water	60 mí Poly	1		$\square$	<u>k</u>		None	X											
	water	250 mi Poly	1		<u> </u>	$\left  \right\rangle$		None		X										Filtered with 0.45µ
·	water	500 ml Poly	1				$\mathbf{i}$	None			X									
	- water	250 ml Poly	1	/			N	H2SO4				X	X	X						
Polinguished By:	25/2/	Date/Time:	m	Received	by:								Date /1	ime:			Turna Same	round T Day	ime:	(Check) 72 Hours
Feder	8h			Received	SX.							1	Date /T かな	inte:			24 Ho	urs _		5 Days
Relinquished By:		Date /Time:		Received	in Lab k	oy:	· · ·	·····				U	Date /T	ime:			48 Ho Seren	NUS	ite de la	Normal X
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FINAL REPORT

Work Orders:	1121015	Report Date:	10/08/2021
		Received Date:	9/21/2021
Project:	2KLE010102	Turnaround Time:	Normal
i lojecti		Phones:	(714) 751-7373
		Fax:	(714) 545-8883
Attn:	Michael P. Donovan	P.O. #:	
Client:	Psomas - Santa Ana, CA 3 Hutton Centre Dr., Ste. 200 Santa Ana, CA 92707	Billing Code:	

#### ELAP-CA #1132 • EPA-UCMR #CA00211 • Guam-EPA #17-008R • HW-DOH #4047 • LACSD #10143 • NELAP-OR #4047 • NJ-DEP #CA015 • SCAQMD #93LA1006

This is a complete final report. The information in this report applies to the samples analyzed in accordance with the chain-of-custody document. Weck Laboratories certifies that the test results meet all requirements of TNI unless noted by qualifiers or written in the Case Narrative. This analytical report must be reproduced in its entirety.

Dear Michael P. Donovan,

Enclosed are the results of analyses for samples received 9/21/21 with the Chain-of-Custody document. The samples were received in good condition, at 2.7 °C and on ice. All analyses met the method criteria except as noted in the case narrative or in the report with data qualifiers.

Reviewed by:

1: State

Chris Samatmanakit Project Manager





### Psomas - Santa Ana, CA 3 Hutton Centre Dr., Ste. 200 Santa Ana, CA 92707

# **Certificate of Analysis**

FINAL REPORT

Project Number: 2KLE010102

Project Manager: Michael P. Donovan

Reported: 10/08/2021 16:13

### Sample Summary

Sample Name	Sampled By	Lab ID	Matrix	Sampled	Qualifiers
LS-DP-8	Jim Burton, Todd Bear	1121015-01	Water	09/20/21 10:20	
LS-DP-20	Jim Burton, Todd Bear	1121015-02	Water	09/20/21 10:45	



**FINAL REPORT** 

Psomas - Santa Ana, CA 3 Hutton Centre Dr., Ste. 200 Santa Ana, CA 92707

Project Number: 2KLE010102

Reported: 10/08/2021 16:13

Project Manager: Michael P. Donovan

Sample Results
----------------

Sample:	LS-DP-8				Sampled:	09/20/21	10:20 by Jim Burt	on, Todd Bear
	1121015-01 (Water)							
Analyte		F	Result	MRL	Units	Dil	Analyzed	Qualifier
Anions by IC, EP	A Method 300.0							
Method: EPA 30	00.0			Instr: LC12				
Batch ID: W1	1329	Preparation: _NONE (LC)		Prepared: 09/21/	21 10:07			Analyst: jan
Nitrate as N			ND	110	ug/l	1	09/21/21 19:34	
Conventional Che	emistry/Physical Parameters by A	APHA/EPA/ASTM Methods						
Method: *** DE	FAULT SPECIFIC METHOD ***			Instr: [CALC]				
Batch ID: [CA	LC]	Preparation: [CALC]		Prepared: 09/23/	21 13:21			Analyst: YMT
Nitrogen, Tota	al		ND	0.10	mg/l	1	09/23/21	
Method: EPA 35	51.2			Instr: AA06				
Batch ID: W1	1348	Preparation: _NONE (WETCHEM)		Prepared: 09/22/	21 18:00			Analyst: YMT
TKN			ND	0.10	mg/l	1	09/23/21	
Method: EPA 35	53.2			Instr: AA01				
Batch ID: W1	1560	Preparation: _NONE (WETCHEM)		Prepared: 09/23/	21 13:21			Analyst: ism
NO2+NO3 as	• N		ND	200	ug/l	1	09/23/21	
Method: EPA 36	55.3			Instr: UVVIS04				
Batch ID: W1	1371	Preparation: _NONE (WETCHEM)		Prepared: 09/21/	21 15:17			Analyst: sbn
o-Phosphate	as P		ND	0.010	mg/l	1	09/21/21 17:38	
Method: SM 25	40C			Instr: OVEN01				
Batch ID: W1	1726	Preparation: _NONE (WETCHEM)		Prepared: 09/27/	21 12:11			Analyst: blg
Total Dissolv	ed Solids		16	10	mg/l	1	09/27/21	



Psomas - Santa Ana, CA	Project Number:	2KLE010102			10	Reported:
Santa Ana, CA 92707	Project Manager:	Michael P. Donovan			10/	00/2021 10.13
Sample Results						(Continued)
Sample: LS-DP-20			Samp	led: 09/20/2	1 10:45 by Jim Bur	ton, Todd Bear
1l21015-02 (Water)						
Analyte	Result	MRL	Units	Dil	Analyzed	Qualifier
Anions by IC, EPA Method 300.0						
Method: EPA 300.0		Instr: LC12				
Batch ID: W1I1329	Preparation: _NONE (LC)	Prepared: 09/21/2	1 10:07			Analyst: jan
Nitrate as N	ND	110	ug/l	1	09/21/21 20:46	
Conventional Chemistry/Physical Parameters	by APHA/EPA/ASTM Methods					
Method: *** DEFAULT SPECIFIC METHOD ***		Instr: [CALC]				
Batch ID: [CALC]	Preparation: [CALC]	Prepared: 09/23/2	1 13:21			Analyst: YMT
Nitrogen, Total	ND	0.10	mg/l	1	09/23/21	
Method: EPA 351.2		Instr: AA06				
Batch ID: W1I1348	Preparation: _NONE (WETCHEM)	Prepared: 09/22/2	1 18:00			Analyst: YMT
ТКМ	ND	0.10	mg/l	1	09/23/21	
Method: EPA 353.2		Instr: AA01				
Batch ID: W1I1560	Preparation: _NONE (WETCHEM)	Prepared: 09/23/2	1 13:21			Analyst: ism
NO2+NO3 as N	ND	200	ug/l	1	09/23/21	
Method: EPA 365.3		Instr: UVVIS04				
Batch ID: W1I1371	Preparation: _NONE (WETCHEM)	Prepared: 09/21/2	1 15:17			Analyst: sbn
o-Phosphate as P	ND	0.010	mg/l	1	09/21/21 17:39	
Method: SM 2540C		Instr: OVEN01				
Batch ID: W1I1726	Preparation: _NONE (WETCHEM)	<b>Prepared:</b> 09/27/2	1 12:11			Analyst: blg
Total Dissolved Solids	20	10	mg/l	1	09/27/21	



**FINAL REPORT** 

Psomas - Santa Ana, CA 3 Hutton Centre Dr., Ste. 200 Santa Ana, CA 92707

### Project Number: 2KLE010102

nia at M Michael P. Donovan

Reported: 10/08/2021 16:13

Project	Manager:	IVIIC

				Spike	Source		%REC		RPD	
Analyte	Result	MRL	Units	Level	Result	%REC	Limits	RPD	Limit	Qualifier
Batch: W1I1329 - EPA 300.0										
Blank (W1I1329-BLK1)				Prepared & Ana	lyzed: 09/2	1/21				
Nitrate as N		110	ug/l							
LCS (W1I1329-BS1)				Prepared & Ana	lyzed: 09/2	1/21				
Nitrate as N	2020	110	ug/l	2000		101	90-110			
Matrix Spike (W1I1329-MS1)	Source: 1102003-01			Prepared & Ana	lyzed: 09/2	1/21				
Nitrate as N	- 19400	1100	ug/l	20000	ND	97	84-115			
Matrix Spike (W1I1329-MS2)	Source: 1102003-02			Prepared & Ana	lyzed: 09/2	1/21				
Nitrate as N	- 19600	1100	ug/l	20000	ND	98	84-115			
Matrix Spike Dup (W1I1329-MSD1)	Source: 1102003-01			Prepared & Ana	lyzed: 09/2	1/21				
Nitrate as N	- 19200	1100	ug/l	20000	ND	96	84-115	0.7	20	
Matrix Spike Dup (W1I1329-MSD2)	Source: 1102003-02			Prepared & Ana	lyzed: 09/2	1/21				
Nitrate as N	- 19700	1100	ug/l	20000	ND	98	84-115	0.3	20	

### **Quality Control Results**

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

				Spike	Source		%REC		RPD	
Analyte	Result	MRL	Units	Level	Result	%REC	Limits	RPD	Limit	Qualifier
Batch: W1I1348 - EPA 351.2										
Blank (W1I1348-BLK1)			Prep	oared: 09/22/2	1 Analyzed:	09/23/21	I			
TKN	ND	0.10	mg/l		-					
Blank (W1I1348-BLK2)			Prep	oared: 09/22/2	1 Analyzed:	09/23/21	l			
ТКМ	ND	0.10	mg/l		-					
LCS (W1I1348-BS1)			Prep	oared: 09/22/2	1 Analyzed:	09/23/21	l			
ТКМ	0.981	0.10	mg/l	1.00	-	98	90-110			
LCS (W1I1348-BS2)			Prep	oared: 09/22/2	1 Analyzed:	09/23/21	I			
TKN	0.934	0.10	mg/l	1.00		93	90-110			
Matrix Spike (W1I1348-MS1)	Source: 1121027-0	01	Prep	oared: 09/22/2	1 Analyzed:	09/23/21	I			
ТКМ	1.23	0.10	mg/l	1.00	0.246	99	90-110			
Matrix Spike (W1I1348-MS2)	Source: 1121027-0	)2	Prep	oared: 09/22/2	1 Analyzed:	09/23/21	l			
TKN	1.10	0.10	mg/l	1.00	0.152	95	90-110			
Matrix Spike Dup (W1I1348-MSD1)	Source: 1121027-0	01	Prep	oared: 09/22/2	1 Analyzed:	09/23/21	l			
ТКМ	1.19	0.10	mg/l	1.00	0.246	94	90-110	4	10	
Matrix Spike Dup (W1I1348-MSD2)	Source: 1121027-0	)2	Prep	oared: 09/22/2	1 Analyzed:	09/23/21	I			
TKN	1.11	0.10	mg/l	1.00	0.152	96	90-110	0.6	10	
Batch: W1I1371 - EPA 365.3										
Blank (W1I1371-BLK1)				Prepared & A	nalyzed: 09/2	21/21				
o-Phosphate as P	ND	0.010	mg/l							
LCS (W1I1371-BS1)				Prepared & A	nalyzed: 09/2	21/21				
o-Phosphate as P	0.197	0.010	mg/l	0.200		98	88-111			



FINAL REPORT

Psomas - Santa Ana, CA 3 Hutton Centre Dr., Ste. 200 Santa Ana, CA 92707

### Project Number: 2KLE010102

Project Manager: Michael P. Donovan

10/08/2021 16:13 (Continued)

Reported:

### Quality Control Results

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods (Continued)	

				Spike	Source		%REC		RPD	
Analyte	Result	MRL	Units	Level	Result	%REC	Limits	RPD	Limit	Qualifier
Batch: W1I1371 - EPA 365.3 (Continued)										
Matrix Spike (W1I1371-MS1)	Source: 1121015-01	l		Prepared & A	nalyzed: 09/	21/21				
o-Phosphate as P	0.197	0.010	mg/l	0.200	0.00600	96	85-112			
Matrix Spike Dup (W1I1371-MSD1)	Source: 1121015-01	l		Prepared & A	nalyzed: 09/	21/21				
o-Phosphate as P	0.205	0.010	mg/l	0.200	0.00600	100	85-112	4	20	
Batch: W1I1560 - EPA 353.2										
Blank (W1I1560-BLK1)				Prepared & A	nalyzed: 09/	23/21				
NO2+NO3 as N	ND	200	ug/l							
LCS (W1I1560-BS1)				Prepared & A	nalyzed: 09/	23/21				
NO2+NO3 as N	1010	200	ug/l	1000		101	90-110			
Matrix Spike (W1I1560-MS1)	Source: 1122055-01	l		Prepared & A	nalyzed: 09/	23/21				
NO2+NO3 as N	4940	200	ug/l	2000	3020	96	90-110			
Matrix Spike (W1I1560-MS2)	Source: 1123023-01	I		Prepared & A	nalyzed: 09/	23/21				
NO2+NO3 as N	2100	200	ug/l	2000	ND	105	90-110			
Matrix Spike Dup (W1I1560-MSD1)	Source: 1122055-01	I		Prepared & A	nalyzed: 09/	23/21				
NO2+NO3 as N	4950	200	ug/l	2000	3020	96	90-110	0.2	20	
Matrix Spike Dup (W1I1560-MSD2)	Source: 1123023-01	l		Prepared & A	nalyzed: 09/	23/21				
NO2+NO3 as N	2120	200	ug/l	2000	ND	106	90-110	0.9	20	
Batch: W1I1726 - SM 2540C										
Blank (W1I1726-BLK1)				Prepared & A	nalyzed: 09/	27/21				
Total Dissolved Solids	ND	10	mg/l							
LCS (W1I1726-BS1)				Prepared & A	nalyzed: 09/	27/21				
Total Dissolved Solids	810	10	mg/l	824		98	96-102			
Duplicate (W1I1726-DUP1)	Source: 1F08004-02	2		Prepared & A	nalyzed: 09/	27/21				
Total Dissolved Solids	2200	10	mg/l		2150			3	10	
Duplicate (W1I1726-DUP2)	Source: 1F08004-03	3		Prepared & A	nalyzed: 09/	27/21				
Total Dissolved Solids	1760	10	mg/l		1720			2	10	



Psomas - Santa Ana, CA 3 Hutton Centre Dr., Ste. 200 Santa Ana, CA 92707

# **Certificate of Analysis**

FINAL REPORT

Project Manager: Michael P. Donovan

Project Number: 2KLE010102

Reported: 10/08/2021 16:13

### Notes and Definitions

ltem	Definition
%REC	Percent Recovery
Dil	Dilution
MRL	The minimum levels, concentrations, or quantities of a target variable (e.g., target analyte) that can be reported with a specified degree of confidence. The MRL is also known as Limit of Quantitation (LOQ)
ND	NOT DETECTED at or above the Method Reporting Limit (MRL). If Method Detection Limit (MDL) is reported, then ND means not detected at or above the MDL.
RPD	Relative Percent Difference
Source	Sample that was matrix spiked or duplicated.

Any remaining sample(s) will be disposed of one month from the final report date unless other arrangements are made in advance.

All results are expressed on wet weight basis unless otherwise specified.

All samples collected by Weck Laboratories have been sampled in accordance to laboratory SOP Number MIS002.

### Weck Laboratories 14859 Clark Avenue City of Industry, CA 91745 (626) 336-2139

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Client Name/Address:			Project/	PO Number:				<u> </u>		,				Analys	is Requ	rired				
PSOMAS 3 HUTTON CENTRE DRIVE, SUITI SANTA ANA, CA 92707	E 200		2KLE(	E010102			300.0	EPA Method	SM2540C	by EPA	Method	lation								
Project Manager:			Phone	Number:			· · · ·	ğ	Š.	lde.	gen	۲d	alout							
MICHAEL P. DONOVAN (mpdonov	n@cox.net)		(714)	(714) 328-5234			PA Meti	EPA Mel sphae-O	olved Sc	ahl Nitro	as N - E	jen by c								
Sampler: Jim Burton, Todd Bear			Fax Nu	mber: 714.545.8	883			ļŗ	lsou	Disso	(jeld	ğ	lite I							
Sample Description	Sample Matrix	Container Type	# of Cont	Sampling Dat	•	Time	Preservation	Nitrate	Orthop 365.3	Total D	Total M Methoo	NO2+1 353.2	Total N						Special Ir	nstructions
LS-DP-2	water	60 ml Poly	1	9/20/21	10	: <i>Э</i> 0	an None	X												
	water	250 mi Poly	1	· · ·	_	1	None		X										Filtered with	0.45 <u>µ</u>
	water	500 ml Poly	_1			1	None			X										
	water	250 ml Poly	1			<u>+</u>	H2SO4				X	X	X							
1-5-01-20	water	60 mi Poly	1	9/20/21	10	1,45	Annone	x												
	water	250 mi Poly	_ 1	<u> </u>			None		X			•							Filtered with	0.45µ
	water	500 mt Poly	1				None			X										
	water	250 ml Poly	1	<u> </u>		<b>_</b>	H2SO4			[	X	X	Х							<u></u>
<u> </u>	water	60 ml Poły	1	$\backslash$		/	None	X												
	water	250 ml Poly	1	$\backslash$		$\square$	None		X										Filtered with	0.45µ
	water	500 ml Poly	1	<u> </u>		/	None			X										
	water	250 ml Poly	1		]/		H2SO4				X	X	х							· · · ·
	water	60 ml Poly	1		Ι		None	X												· · · · · · · · · · · · · · · · · · ·
	water	250 ml Poly	1				None		X		<u> </u>								Filtered with	0.45µ
<u>```_``_`</u>	water	500 mi Poly	1		X		None			х										
	water	250 mi Poly	1	1			H2SO4				X	X	Х							
	water	60 ml Poly	1			$\langle $	None	X											A.	
	water	250 mi Poly	1			$\boldsymbol{\Lambda}$	None		X		ļ								Filtered with	0,45u
	water	500 ml Poly	1				None			х										
/	water	250 ml Poly	1				H2SO4				x	х	х							
Relinquished By:	· ispn	Date /Time:	2/	Received by:							<u> </u>	Date /1	îme:	<b>.</b>		Turna Same	round T Day	ime: (	Check) 72 Hours _	·-··
Fredry	9	77121 91	8	Received by	Ħ	2.						Date /T	ïme:			24 Ho 48 Ho	urs		5 Days _ Normai	
rcentquisned by:		Date /Time:		Received in Lat	by:							Date /T	ime.			Samp	le Integr	ity: (C	heck) On ice	
																-	2	.76	7-0770	>

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FINAL REPORT

Work Orders:	1122034	Report Date:	10/08/2021
		Received Date:	9/22/2021
Project:	2KLE010102	Turnaround Time:	Normal
Tioject.		Phones:	(714) 751-7373
		Fax:	(714) 545-8883
Attn:	Michael P. Donovan	P.O. #:	
Client:	Psomas - Santa Ana, CA 3 Hutton Centre Dr., Ste. 200 Santa Ana, CA 92707	Billing Code:	

#### ELAP-CA #1132 • EPA-UCMR #CA00211 • Guam-EPA #17-008R • HW-DOH #4047 • LACSD #10143 • NELAP-OR #4047 • NJ-DEP #CA015 • SCAQMD #93LA1006

This is a complete final report. The information in this report applies to the samples analyzed in accordance with the chain-of-custody document. Weck Laboratories certifies that the test results meet all requirements of TNI unless noted by qualifiers or written in the Case Narrative. This analytical report must be reproduced in its entirety.

Dear Michael P. Donovan,

Enclosed are the results of analyses for samples received 9/22/21 with the Chain-of-Custody document. The samples were received in good condition, at 2.1 °C and on ice. All analyses met the method criteria except as noted in the case narrative or in the report with data qualifiers.

**Reviewed by:** 

1: State

Chris Samatmanakit Project Manager





### Psomas - Santa Ana, CA 3 Hutton Centre Dr., Ste. 200 Santa Ana, CA 92707

# **Certificate of Analysis**

FINAL REPORT

Project Number: 2KLE010102

Project Manager: Michael P. Donovan

**Reported:** 10/08/2021 16:14

Sample Summary

Sample Name	Sampled By	Lab ID	Matrix	Sampled	Qualifiers
SL-DP-4	Jim Burton, Todd Bear	1122034-01	Water	09/21/21 10:25	
SL-DP-16	Jim Burton, Todd Bear	1122034-02	Water	09/21/21 10:50	



**FINAL REPORT** 

Psomas - Santa Ana, CA 3 Hutton Centre Dr., Ste. 200 Santa Ana, CA 92707

Batch ID: W1I1768

Total Dissolved Solids

Project Number: 2KLE010102

Reported: 10/08/2021 16:14

Project Manager: Michael P. Donovan

Sample F	Results						
Sample: SL-DP-4				Sample	d: 09/21/2	1 10:25 by Jim Bur	ton, Todd Bear
1122034-0	1 (Water)						
Analyte		Result	MRL	Units	Dil	Analyzed	Qualifier
nions by IC, EPA Method	300.0						
Method: EPA 300.0			Instr: LC12				
Batch ID: W1I1452	Preparation: _NONI	E (LC)	<b>Prepared:</b> 09/22	2/21 10:39			Analyst: jan
Nitrate as N		ND	110	ug/l	1	09/23/21 03:34	
Conventional Chemistry/Ph	ysical Parameters by APHA/EPA/ASTM Me	thods					
Method: *** DEFAULT SPEC	CIFIC METHOD ***		Instr: [CALC]				
Batch ID: [CALC]	Preparation: [CALC]		<b>Prepared:</b> 09/23	3/21 13:21			Analyst: YMT
Nitrogen, Total		ND	0.10	mg/l	1	09/23/21	
Method: EPA 351.2			Instr: AA06				
Batch ID: W1I1348	Preparation: _NONI	E (WETCHEM)	<b>Prepared:</b> 09/22	2/21 18:00			Analyst: YMT
TKN		ND	0.10	mg/l	1	09/23/21	
Method: EPA 353.2			Instr: AA01				
Batch ID: W1I1560	Preparation: _NON	E (WETCHEM)	<b>Prepared:</b> 09/23	3/21 13:21			Analyst: ism
NO2+NO3 as N		ND	200	ug/l	1	09/23/21	
Method: EPA 365.3			Instr: UVVIS04				
Batch ID: W1I1482	Preparation: _NONI	E (WETCHEM)	<b>Prepared:</b> 09/22	2/21 15:17			Analyst: sbn
o-Phosphate as P		ND	0.010	mg/l	1	09/22/21 16:00	
Method: SM 2540C			Instr: OVEN01				

ND

Prepared: 09/27/21 16:27

mg/l

1

10

Preparation: \_NONE (WETCHEM)

Analyst: blg

09/28/21



Psomas - Santa Ana, CA Project Number: 2KLE010102							Reported:
3 Hutton Cent Santa Ana, CA	re Dr., Ste. 200 A 92707	Project Manager:	Michael P. Donovan			10/	08/2021 16:14
Sar	mple Results						(Continued)
Sample:	SL-DP-16			Sample	d: 09/21/	21 10:50 by Jim Bur	ton, Todd Bear
	1122034-02 (Water)						
Analyte		Result	MRL	Units	Dil	Analyzed	Qualifier
Anions by IC, E	PA Method 300.0						
Method: EPA 3	300.0		Instr: LC12				
Batch ID: W	111452	Preparation: _NONE (LC)	Prepared: 09,	/22/21 10:39			Analyst: jan
Nitrate as N		ND	110	ug/l	1	09/23/21 04:28	
Conventional Cl	hemistry/Physical Parameters	s by APHA/EPA/ASTM Methods					
Method: *** D	EFAULT SPECIFIC METHOD ***		Instr: [CALC]				
Batch ID: [C/	ALC]	Preparation: [CALC]	Prepared: 09,	/23/21 13:21			Analyst: YMT
Nitrogen, To	tal	ND	0.10	mg/l	1	09/23/21	
Method: EPA 3	351.2		Instr: AA06				
Batch ID: W	111348	Preparation: _NONE (WETCHEM)	Prepared: 09,	/22/21 18:00			Analyst: YMT
TKN			0.10	mg/l	1	09/23/21	
Method: EPA 3	353.2		Instr: AA01				
Batch ID: W	111560	Preparation: _NONE (WETCHEM)	Prepared: 09,	/23/21 13:21			Analyst: ism
NO2+NO3 a	as N	ND	200	ug/l	1	09/23/21	
Method: EPA 3	365.3		Instr: UVVISO	4			
Batch ID: W	111482	Preparation: _NONE (WETCHEM)	Prepared: 09,	/22/21 15:17			Analyst: sbn
o-Phosphate	e as P	ND	0.010	mg/l	1	09/22/21 16:03	
Method: SM 2	540C		Instr: OVEN0	1			
Batch ID: W	111768	Preparation: _NONE (WETCHEM)	Prepared: 09	/27/21 16:27			Analyst: blg
Total Dissol	lved Solids	42	10	mg/l	1	09/28/21	



**FINAL REPORT** 

Psomas - Santa Ana, CA 3 Hutton Centre Dr., Ste. 200 Santa Ana, CA 92707

Project Number: 2KLE010102

Project Manager: Michael P. Donovan

Reported: 10/08/2021 16:14

**Quality Control Results** 

Anions by IC, EPA Method 300.0										
				Spike	Source		%REC		RPD	
Analyte	Result	MRL	Units	Level	Result	%REC	Limits	RPD	Limit	Qualifier
Batch: W111452 - EPA 300.0										
Blank (W111452-BLK1)	ND	110	ug/l	Prepared & An	alyzed: 09/	22/21				
	Ind Ind	110	uy/i							
LCS (W111452-BS1)	00.40	440		Prepared & An	alyzed: 09/	22/21				
Nitrate as N	2040	110	ug/I	2000		102	90-110			
Matrix Spike (W1I1452-MS1)	Source: 1110015-01		Prep	oared: 09/22/21	Analyzed:	09/23/21	l			
Nitrate as N	22800	1100	ug/l	20000	2570	101	84-115			
Matrix Spike (W1I1452-MS2)	Source: 1120080-01		Prep	oared: 09/22/21	Analyzed:	09/23/21	l			
Nitrate as N	26000	1100	ug/l	20000	5940	100	84-115			
Matrix Spike Dup (W1I1452-MSD1)	Source: 1110015-01		Prep	oared: 09/22/21	Analyzed:	09/23/21				
Nitrate as N	22900	1100	ug/l	20000	2570	102	84-115	0.5	20	
Matrix Spike Dup (W111452-MSD2)	Source: 1120080-01		Prer	pared: 09/22/21	Analyzed:	09/23/21	1			
Nitrate as N	25900	1100	ug/l	20000	5940	100	84-115	0.3	20	
Quality Control Pos	ulto									
Quality Control Res	Suits									
Conventional Chemistry/Physical Parameters	s by APHA/EPA/ASTM Method	s								
				Spike	Source		%REC		RPD	
Analyte	Result	MRL	Units	Level	Result	%REC	Limits	RPD	Limit	Qualifier
Batch: W1I1348 - EPA 351.2										
Blank (W1I1348-BLK1)			Prep	oared: 09/22/21	Analyzed:	09/23/21	I			
TKN	ND	0.10	mg/l							
Blank (W1I1348-BLK2)			Prep	oared: 09/22/21	Analyzed:	09/23/21	I			
ТКМ	ND	0.10	mg/l							
LCS (W1I1348-BS1)			Prep	oared: 09/22/21	Analyzed:	09/23/21	l			
ΤΚΝ	0.981	0.10	mg/l	1.00	-	98	90-110			
LCS (W111348-BS2)			Prec	oared: 09/22/21	Analyzed:	09/23/21	1			
TKN	0.934	0.10	mg/l	1.00		93	90-110			
Matrix Spike (W111348-MS1)	Source: 1121027-01		Pror	ared: 09/22/21	Analyzed	09/23/21	1			
TKN	1.23	0.10	mg/l	1.00	0.246	99	90-110			
Matrix Switz (11/11/240 MC2)	Courses 1121027 02		Dura			00/22/21	1			
TKN		0.10	mg/l	1.00	0.152	95	90-110			
			-							
Matrix Spike Dup (W111348-MSD1) TKN	Source: 1121027-01	0 10	Prep ma/l	22/21 1 00	0 246	94	90-110	4	10	
		0110			0.2.10	0.	000	•		
Matrix Spike Dup (W111348-MSD2)	Source: 1121027-02	0.10	Prep mg//	ared: 09/22/21	Analyzed:	09/23/21	00 110	0.6	10	
INN		0.10	mg/i	1.00	0.152	90	90-110	0.0	10	
Batch: W1I1482 - EPA 365.3										
Blank (W1I1482-BLK1)				Prepared & An	alyzed: 09/	22/21				
o-Phosphate as P	• • • • • • • • • • • ND	0.010	mg/l							
LCS (W1I1482-BS1)				Prepared & An	alyzed: 09/	22/21				
o-Phosphate as P	0.199	0.010	mg/l	0.200		100	88-111			
1I22034										Page 5 of 1



%REC

Limits

85-112

85-112

FINAL REPORT

Psomas - Santa Ana, CA 3 Hutton Centre Dr., Ste. 200 Santa Ana, CA 92707

### Project Number: 2KLE010102

Project Manager: Michael P. Donovan

10/08/2021 16:14

**Reported:** 

Qualifier

**Quality Control Results** 

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods (Continued)

(Continued)

RPD

Limit

20

RPD

2

				Spike	Source	
Analyte	Result	MRL	Units	Level	Result	%REC
Batch: W1I1482 - EPA 365.3 (Continued)						
Matrix Spike (W1I1482-MS1)	Source: 1122034-0	)1		Prepared & A	nalyzed: 09/	22/21
o-Phosphate as P	0.196	0.010	mg/l	0.200	ND	98
Matrix Spike Dup (W1I1482-MSD1)	Source: 1122034-0	)1		Prepared & A	nalyzed: 09/	22/21
o-Phosphate as P	0.199	0.010	mg/l	0.200	ND	100
Batch: W1I1560 - EPA 353.2						
Blank (W1I1560-BLK1)				Prepared & A	nalyzed: 09/	23/21

Batch: W1I1560 - EPA 353.2										
Blank (W1I1560-BLK1)				Prepared & Ar	nalvzed: 09/2	23/21				
NO2+NO3 as N	ND	200	ug/l		,					
LCS (W111560-BS1)				Prenared & Ar	nalvzed: 09/2	2/21				
NO2+NO3 as N	1010	200	ug/l	1000		101	90-110			
Matrix Saika (W111560 MS1)	Source: 1122055-01			Propored & Ar	nalu <del>r</del> od: 09/2	02/21				
NO2+NO3 as N	4940	200	ug/l	2000	3020	96	90-110			
			Ū							
Matrix Spike (W1I1560-MS2)	Source: 1123023-01			Prepared & Ar	nalyzed: 09/2	23/21				
NO2+NO3 as N	2100	200	ug/l	2000	ND	105	90-110			
Matrix Spike Dup (W1I1560-MSD1)	Source: 1122055-01			Prepared & Ar	nalyzed: 09/2	23/21				
NO2+NO3 as N	4950	200	ug/l	2000	3020	96	90-110	0.2	20	
Matrix Spike Dup (W1I1560-MSD2)	Source: 1123023-01			Prepared & Ar	nalvzed: 09/2	23/21				
NO2+NO3 as N	2120	200	ug/l	2000	ND	106	90-110	0.9	20	
Potch: W111769 SM 2540C										
Batch. W11700 - SW 2540C										
Blank (W1I1768-BLK1)			Pre	pared: 09/27/2	1 Analyzed:	09/28/2	1			
Total Dissolved Solids	ND	10	mg/l							
LCS (W1I1768-BS1)			Pre	pared: 09/27/2	1 Analyzed:	09/28/2	1			
Total Dissolved Solids	814	10	mg/l	824		99	96-102			
Duplicate (W1I1768-DUP1)	Source: 1121059-01		Pre	pared: 09/27/2	1 Analvzed:	09/28/2	1			
Total Dissolved Solids		10	mg/l		916			3	10	
Duplicate (W111768-DLIP2)	Source: 1121094-01		Pro	nared: 09/27/2	1 Analyzed:	09/28/2	1			
Total Dissolved Solids	1880	10	ma/l	puicu. 05/21/2	1880	03/20/2		0.1	10	



Psomas - Santa Ana, CA 3 Hutton Centre Dr., Ste. 200 Santa Ana, CA 92707

# **Certificate of Analysis**

FINAL REPORT

Project Number: 2KLE010102

Project Manager: Michael P. Donovan

Reported: 10/08/2021 16:14

### Notes and Definitions

ltem	Definition
%REC	Percent Recovery
Dil	Dilution
MRL	The minimum levels, concentrations, or quantities of a target variable (e.g., target analyte) that can be reported with a specified degree of confidence. The MRL is also known as Limit of Quantitation (LOQ)
ND	NOT DETECTED at or above the Method Reporting Limit (MRL). If Method Detection Limit (MDL) is reported, then ND means not detected at or above the MDL.
RPD	Relative Percent Difference
Source	Sample that was matrix spiked or duplicated.

Any remaining sample(s) will be disposed of one month from the final report date unless other arrangements are made in advance.

All results are expressed on wet weight basis unless otherwise specified.

All samples collected by Weck Laboratories have been sampled in accordance to laboratory SOP Number MIS002.

### Weck Laboratories 14859 Clark Avenue City of Industry, CA 91745 (626) 336-2139

					C	HA	IN	OF CU	ST	DDY	Γ <mark>Γ</mark>	DRN	1	<u> </u>		62	03	9	Pa	ge of
Client Name/Address:			Project	/PO Nu	nber:					1.0		1			Analys	sis Requ	uired	r		
PSOMAS 3 HUTTON CENTRE DRIVE, SUITE SANTA ANA, CA 92707	E 200		2KLE	01010	2				300.0	EPA Methor	SM2540C	1by EPA	Method	ulation						
Project Manager:			Phone	Number	, ,				R R	PO PO	olids	ger	₽	ଅସ						
MICHAEL P. DONOVAN (mpdonovr	n@cox.net)		(714)	328-5	234				PA Met	ohae O	Nved Sc	ahi Nih 1.2	as N - I	gen by						
Sampler: Jim Burton, Todd Bear			Fax Nu	mber: 7	14.545.88	83			۳,	sou	<u> </u>	d 35	S N	Nitro				1		
Sample Description	Sample Matrix	Container Type	# of Cont	Sam	ling Date	Tir	ne	Preservation	Nitrate	Ortho; 365.3	Total	Total 3 Metho	NO2+ 353.2	Total						Special Instructions
34-DP-4	water	60 ml Poly	1	9/2	1/21	10:	25.	🛶 None	X			L						- <b>-</b>		*
	water	250 ml Poly	1	Ľ	۱´			None		X		<u> </u>								Filtered with 0.45µ
	water	500 ml Poly	1	ļ	L.,.,			None			<u>X</u>									
·····	water	250 ml Poly	1				<b>_</b>	H2804				X	X	X						
5L-0P-16	water	60 ml Poly	1	92	1/21	10.	$\mathcal{D}$	<b>∼~</b> None	X											
	water	250 ml Poly	1	<b></b>	<u>′</u>			None		X										Filtered with 0.45µ
	water	500 ml Poly	1					None			X									
	-water	-250 ml Poly-	1				_	— H2\$04—				<b>X</b>	X	<u> </u>						
<u> </u>	water	60 ml Poly	1	$\Lambda_{-}$		<u> </u>		None	X											········
	water	250 ml Poly	1	$\square$	<u> </u>			None		X										Filtered with 0.45µ
	water	500 ml Poly	1	<u>`</u>	/	/		None			Х									
	water	250 ml Poly	1		<u> </u>			H2SO4				X	X	X						
	water	60 mi Poly	1			<u>/</u>		None	X											
	water	250 ml Poly	1		$-\gamma$	1		None		X			····							Filtered with 0.45µ
	water	500 ml Poly	1	L	$\_ \triangle$			None			X									
	water	250 ml Poly	1			Д_		H2SO4				X	X	<u>X</u>						· · · · · · · · · · · · · · · · · · ·
	water	60 ml Poły	1		/	$\vdash$		None	<u>X</u>											
	water	250 ml Poly	1	/		<u> </u>	$\leftarrow$	None	·····	X						···· -·				Filtered with 0.45µ
	water	500 ml Poły	1		<del></del>	<b> </b>	4	None			X									
	water	250 mi Poly	1	<u> </u>		L		H2SO4				X	X	X						(Chaola)
ellingu/shed By	1/21/21	Date / Time:	pro	Receiv	ed by:	~1							Date //	ime.			Same	Day_		72 Hours
terriquished by. Ted UP	-	9/22/	21	Receiv		go.								170	4		48 Ho	urs		Normal X
elinquished By:	····	Date /Time:		Receiv	ed in Laip I	oy:	·····						Date /T	ime:			Samp	le Integi	ity: (C	Check)



FINAL REPORT

Work Orders:	1123020	Report Date:	10/08/2021
		Received Date:	9/23/2021
Project:	2KLE010102	Turnaround Time:	Normal
Project:		Phones:	(714) 751-7373
		Fax:	(714) 545-8883
Attn:	Michael P. Donovan	P.O. #:	
Client:	Psomas - Santa Ana, CA 3 Hutton Centre Dr., Ste. 200 Santa Ana, CA 92707	Billing Code:	

#### ELAP-CA #1132 • EPA-UCMR #CA00211 • Guam-EPA #17-008R • HW-DOH #4047 • LACSD #10143 • NELAP-OR #4047 • NJ-DEP #CA015 • SCAQMD #93LA1006

This is a complete final report. The information in this report applies to the samples analyzed in accordance with the chain-of-custody document. Weck Laboratories certifies that the test results meet all requirements of TNI unless noted by qualifiers or written in the Case Narrative. This analytical report must be reproduced in its entirety.

Dear Michael P. Donovan,

Enclosed are the results of analyses for samples received 9/23/21 with the Chain-of-Custody document. The samples were received in good condition, at 4.3 °C and on ice. All analyses met the method criteria except as noted in the case narrative or in the report with data qualifiers.

**Reviewed by:** 

1: State

Chris Samatmanakit Project Manager





### Psomas - Santa Ana, CA 3 Hutton Centre Dr., Ste. 200 Santa Ana, CA 92707

### Sample Summary

# **Certificate of Analysis**

FINAL REPORT

#### Project Number: 2KLE010102

Project Manager: Michael P. Donovan

**Reported:** 10/08/2021 16:16

Sample Summary					
Sample Name	Sampled By	Lab ID	Matrix	Sampled	Qualifiers
BC-BLW-PH6	Jim Burton, Todd Bear	1123020-01	Water	09/22/21 07:45	
BC-BLW-PH5	Jim Burton, Todd Bear	1123020-02	Water	09/22/21 08:15	
BC-BLW-PH4	Jim Burton, Todd Bear	1123020-03	Water	09/22/21 08:45	
BC-BLW-PH3	Jim Burton, Todd Bear	1123020-04	Water	09/22/21 09:30	
BC-BLW-PH2	Jim Burton, Todd Bear	1123020-05	Water	09/22/21 10:00	
BC-BLW-LS	Jim Burton, Todd Bear	1123020-06	Water	09/22/21 10:20	
BC-NF-1	Jim Burton, Todd Bear	1123020-07	Water	09/22/21 10:55	
BC-BLW-SL	Jim Burton, Todd Bear	1123020-08	Water	09/22/21 11:45	



FINAL REPORT

Psomas - Santa Ana, CA 3 Hutton Centre Dr., Ste. 200 Santa Ana, CA 92707 Project Number: 2KLE010102
Project Manager: Michael P. Donovan

**Reported:** 10/08/2021 16:16

### Sample Results

Sample:	BC-BLW-PH6				Sam	pled: 09/22/21	7:45 by Jim Bur	ton, Todd Bear
	1123020-01 (Water)							
Analyte			Result	MRL	Units	Dil	Analyzed	Qualifier
Anions by IC,	EPA Method 300.0							
Method: EPA	300.0			Instr: LC12				
Batch ID: V	V1I1524	Preparation: _NONE (LC)		Prepared: 09/23/2	1 09:42			Analyst: jan
Nitrate as I	Ν		- ND	110	ug/l	1	09/23/21 17:02	
Conventional (	Chemistry/Physical Parameters by	/ APHA/EPA/ASTM Methods						
Method: ***	DEFAULT SPECIFIC METHOD ***			Instr: [CALC]				
Batch ID: [	CALC]	Preparation: [CALC]		Prepared: 09/23/2	1 16:31			Analyst: SBN
Nitrogen, T	ōtal		ND	0.10	mg/l	1	09/29/21	
Method: EPA	351.2			Instr: AA06				
Batch ID: V	V1I1543	Preparation: _NONE (WETCHEM)	)	Prepared: 09/23/2	1 11:44			Analyst: SBN
TKN			- ND	0.10	mg/l	1	09/29/21	
Method: EPA	353.2			Instr: AA01				
Batch ID: V	V1I1581	Preparation: _NONE (WETCHEM)	)	Prepared: 09/23/2	1 16:31			Analyst: ism
NO2+NO3	as N		- ND	200	ug/l	1	09/23/21	
Method: EPA	365.3			Instr: UVVIS04				
Batch ID: V	V1I1578	Preparation: _NONE (WETCHEM)	)	Prepared: 09/23/2	1 16:13			Analyst: sbn
o-Phospha	te as P		ND	0.010	mg/l	1	09/23/21 17:38	
Method: SM	2540C			Instr: OVEN01				
Batch ID: V	V1I1835	Preparation: _NONE (WETCHEM)	)	Prepared: 09/28/2	1 10:46			Analyst: blg
Total Disso	olved Solids		35	10	mg/l	1	09/29/21	



Psomas - Santa Ana, CA 3 Hutton Centre Dr. Ste. 200	Project Number:	2KLE010102			10	Reported:
Santa Ana, CA 92707	Project Manager:	Michael P. Donovan			10/	100/2021 10.10
Sample Results						(Continued)
Sample: BC-BLW-PH5			Sample	d: 09/22/21	8:15 by Jim Bu	rton, Todd Bear
1123020-02 (Water)						
Analyte	Result	MRL	Units	Dil	Analyzed	Qualifier
Anions by IC, EPA Method 300.0						
Method: EPA 300.0		Instr: LC12				
Batch ID: W1I1524	Preparation: _NONE (LC)	Prepared: 09/23/2	1 09:42			Analyst: jan
Nitrate as N	ND	110	ug/l	1	09/23/21 17:20	
Conventional Chemistry/Physical Parameters	by APHA/EPA/ASTM Methods					
Method: *** DEFAULT SPECIFIC METHOD ***		Instr: [CALC]				
Batch ID: [CALC]	Preparation: [CALC]	Prepared: 09/23/2	1 16:31			Analyst: SBN
Nitrogen, Total	ND	0.10	mg/l	1	09/29/21	
Method: EPA 351.2		Instr: AA06				
Batch ID: W1I1543	Preparation: _NONE (WETCHEM)	Prepared: 09/23/2	1 11:44			Analyst: SBN
TKN	ND	0.10	mg/l	1	09/29/21	
Method: EPA 353.2		Instr: AA01				
Batch ID: W1I1581	Preparation: _NONE (WETCHEM)	Prepared: 09/23/2	1 16:31			Analyst: ism
NO2+NO3 as N	ND	200	ug/l	1	09/23/21	
Method: EPA 365.3		Instr: UVVIS04				
Batch ID: W1I1578	Preparation: _NONE (WETCHEM)	Prepared: 09/23/2	1 16:13			Analyst: sbn
o-Phosphate as P	ND	0.010	mg/l	1	09/23/21 17:39	
Method: SM 2540C		Instr: OVEN01				
Batch ID: W1I1835	Preparation: _NONE (WETCHEM)	Prepared: 09/28/2	1 10:46			Analyst: blg
Total Dissolved Solids		10	mg/l	1	09/29/21	



Psomas - Santa Ana, CA	Project Number:	2KLE010102		10	Reported:
Santa Ana, CA 92707	Project Manager:	Michael P. Donovan		10/	08/2021 10:10
Sample Resu	lts				(Continued)
Sample: BC-BLW-PH4			Sampled: 09/22/21	8:45 by Jim Bur	ton, Todd Bear
1123020-03 (Water	)				
Analyte	Result	MRL Ur	nits Dil	Analyzed	Qualifier
Anions by IC, EPA Method 300.0					
Method: EPA 300.0		Instr: LC12			
Batch ID: W1I1524	Preparation: _NONE (LC)	Prepared: 09/23/21 09	):42		Analyst: jan
Nitrate as N	ND	110 u <u>ş</u>	g/l 1	09/23/21 17:38	
Conventional Chemistry/Physical Pa	rameters by APHA/EPA/ASTM Methods				
Method: *** DEFAULT SPECIFIC MET	HOD ***	Instr: [CALC]			
Batch ID: [CALC]	Preparation: [CALC]	Prepared: 09/23/21 16	:31		Analyst: SBN
Nitrogen, Total	ND	0.10 m	g/l 1	09/29/21	
Method: EPA 351.2		Instr: AA06			
Batch ID: W1I1543	Preparation: _NONE (WETCHEM)	Prepared: 09/23/21 11	:44		Analyst: SBN
TKN	ND	0.10 m	g/l 1	09/29/21	
Method: EPA 353.2		Instr: AA01			
Batch ID: W1I1581	Preparation: _NONE (WETCHEM)	Prepared: 09/23/21 16	5:31		Analyst: ism
NO2+NO3 as N	ND	200 ug	g/l 1	09/23/21	
Method: EPA 365.3		Instr: UVVIS04			
Batch ID: W1I1578	Preparation: _NONE (WETCHEM)	Prepared: 09/23/21 16	5:13		Analyst: sbn
o-Phosphate as P	ND	0.010 m	g/l 1	09/23/21 17:39	
Method: SM 2540C		Instr: OVEN01			
Batch ID: W1I1835	Preparation: _NONE (WETCHEM)	Prepared: 09/28/21 10	):46		Analyst: blg
Total Dissolved Solids	35	10 m	g/l 1	09/29/21	



Psomas - Santa Ana, CA 3 Hutton Centre Dr. Ste. 200	Project Number:	2KLE010102			10	Reported:
Santa Ana, CA 92707	Project Manager:	Michael P. Donovan			10/	100/2021 10.10
Sample Results						(Continued)
Sample: BC-BLW-PH3			Sample	d: 09/22/21	9:30 by Jim Bu	rton, Todd Bear
1123020-04 (Water)						
Analyte	Result	MRL	Units	Dil	Analyzed	Qualifier
Anions by IC, EPA Method 300.0						
Method: EPA 300.0		Instr: LC12				
Batch ID: W1I1524	Preparation: _NONE (LC)	Prepared: 09/23/27	1 09:42			Analyst: jan
Nitrate as N	ND	110	ug/l	1	09/23/21 17:56	
Conventional Chemistry/Physical Parameters	by APHA/EPA/ASTM Methods					
Method: *** DEFAULT SPECIFIC METHOD ***		Instr: [CALC]				
Batch ID: [CALC]	Preparation: [CALC]	Prepared: 09/28/27	I 18:30			Analyst: YMT
Nitrogen, Total	ND	0.10	mg/l	1	09/30/21	
Method: EPA 351.2		Instr: AA06				
Batch ID: W1I1732	Preparation: _NONE (WETCHEM)	<b>Prepared:</b> 09/28/2 <sup>-</sup>	18:30			Analyst: YMT
TKN	ND	0.10	mg/l	1	09/30/21	
Method: EPA 353.2		Instr: AA01				
Batch ID: W111581	Preparation: _NONE (WETCHEM)	Prepared: 09/23/2	16:31			Analyst: ism
NO2+NO3 as N	ND	200	ug/l	1	09/23/21	
Method: EPA 365.3		Instr: UVVIS04				
Batch ID: W1I1578	Preparation: _NONE (WETCHEM)	Prepared: 09/23/27	I 16:13			Analyst: sbn
o-Phosphate as P	ND	0.010	mg/l	1	09/23/21 17:40	
Method: SM 2540C		Instr: OVEN01				
Batch ID: W1I1835	Preparation: _NONE (WETCHEM)	Prepared: 09/28/2	10:46			Analyst: blg
Total Dissolved Solids	40	10	mg/l	1	09/29/21	



Psomas - Santa Ana, CA	Project Number:	2KLE010102			10	Reported:
Santa Ana, CA 92707	Project Manager:	Michael P. Donovan			10/	00/2021 10.10
Sample Results						(Continued)
Sample: BC-BLW-PH2			Sampl	ed: 09/22/7	21 10:00 by Jim Bur	ton, Todd Bear
1123020-05 (Water)						
Analyte	Result	MRL	Units	Dil	Analyzed	Qualifier
Anions by IC, EPA Method 300.0						
Method: EPA 300.0		Instr: LC12				
Batch ID: W1I1524	Preparation: _NONE (LC)	Prepared: 09/23/2	1 09:42			Analyst: jan
Nitrate as N	ND	110	ug/l	1	09/23/21 18:14	
Conventional Chemistry/Physical Parameters	by APHA/EPA/ASTM Methods					
Method: *** DEFAULT SPECIFIC METHOD ***		Instr: [CALC]				
Batch ID: [CALC]	Preparation: [CALC]	Prepared: 09/28/2	1 18:30			Analyst: YMT
Nitrogen, Total	ND	0.10	mg/l	1	09/30/21	
Method: EPA 351.2		Instr: AA06				
Batch ID: W1I1732	Preparation: _NONE (WETCHEM)	Prepared: 09/28/2	1 18:30			Analyst: YMT
TKN	ND	0.10	mg/l	1	09/30/21	
Method: EPA 353.2		Instr: AA01				
Batch ID: W111581	Preparation: _NONE (WETCHEM)	Prepared: 09/23/2	1 16:31			Analyst: ism
NO2+NO3 as N	ND	200	ug/l	1	09/23/21	
Method: EPA 365.3		Instr: UVVIS04				
Batch ID: W1I1578	Preparation: _NONE (WETCHEM)	Prepared: 09/23/2	1 16:13			Analyst: sbn
o-Phosphate as P	ND	0.010	mg/l	1	09/23/21 17:41	
Method: SM 2540C		Instr: OVEN01				
Batch ID: W111835	Preparation: _NONE (WETCHEM)	Prepared: 09/28/2	1 10:46			Analyst: blg
Total Dissolved Solids	31	10	mg/l	1	09/29/21	



Psomas - Santa Ana, CA	Project Number:	2KLE010102			10	Reported:
Santa Ana, CA 92707	Project Manager:	Michael P. Donovan			10,	100/2021 10.10
Sample Results						(Continued)
Sample: BC-BLW-LS			Samp	led: 09/22/2	21 10:20 by Jim Bu	rton, Todd Bear
1123020-06 (Water)						
Analyte	Result	MRL	Units	Dil	Analyzed	Qualifier
Anions by IC, EPA Method 300.0						
Method: EPA 300.0		Instr: LC12				
Batch ID: W1I1524	Preparation: _NONE (LC)	Prepared: 09/23/2	09:42			Analyst: jan
Nitrate as N	ND	110	ug/l	1	09/23/21 18:32	
Conventional Chemistry/Physical Parameters I	by APHA/EPA/ASTM Methods					
Method: *** DEFAULT SPECIFIC METHOD ***		Instr: [CALC]				
Batch ID: [CALC]	Preparation: [CALC]	Prepared: 09/28/2	1 18:30			Analyst: YMT
Nitrogen, Total	0.11	0.10	mg/l	1	09/30/21	
Method: EPA 351.2		Instr: AA06				
Batch ID: W1I1732	Preparation: _NONE (WETCHEM)	Prepared: 09/28/2	18:30			Analyst: YMT
ΤΚΝ	0.11	0.10	mg/l	1	09/30/21	
Method: EPA 353.2		Instr: AA01				
Batch ID: W1I1581	Preparation: _NONE (WETCHEM)	Prepared: 09/23/2	1 16:31			Analyst: ism
NO2+NO3 as N	ND	200	ug/l	1	09/23/21	
Method: EPA 365.3		Instr: UVVIS04				
Batch ID: W1/1578	Preparation: _NONE (WETCHEM)	Prepared: 09/23/2	1 16:13			Analyst: sbn
o-Phosphate as P	ND	0.010	mg/l	1	09/23/21 17:42	
Method: SM 2540C		Instr: OVEN01				
Batch ID: W1I1835	Preparation: _NONE (WETCHEM)	Prepared: 09/28/2	10:46			Analyst: blg
Total Dissolved Solids	23	10	mg/l	1	09/29/21	


FINAL REPORT

Psomas - Santa Ana, CA	Project Number:	2KLE010102			10	Reported:
Santa Ana, CA 92707	Project Manager:	Michael P. Donovan			10/	08/2021 16:16
Sample Results						(Continued)
Sample: BC-NF-1			Samp	led: 09/22/2	21 10:55 by Jim Bur	ton, Todd Bear
1123020-07 (Water)						
Analyte	Result	MRL	Units	Dil	Analyzed	Qualifier
Anions by IC, EPA Method 300.0						
Method: EPA 300.0		Instr: LC12				
Batch ID: W1I1524	Preparation: _NONE (LC)	Prepared: 09/23/27	09:42			Analyst: jan
Nitrate as N	ND	110	ug/l	1	09/23/21 18:50	
Conventional Chemistry/Physical Parameters I	oy APHA/EPA/ASTM Methods					
Method: *** DEFAULT SPECIFIC METHOD ***		Instr: [CALC]				
Batch ID: [CALC]	Preparation: [CALC]	Prepared: 09/28/27	18:30			Analyst: YMT
Nitrogen, Total	0.17	0.10	mg/l	1	09/30/21	
Method: EPA 351.2		Instr: AA06				
Batch ID: W1I1732	Preparation: _NONE (WETCHEM)	Prepared: 09/28/27	18:30			Analyst: YMT
ТКМ	0.17	0.10	mg/l	1	09/30/21	
Method: EPA 353.2		Instr: AA01				
Batch ID: W1I1581	Preparation: _NONE (WETCHEM)	Prepared: 09/23/27	16:31			Analyst: ism
NO2+NO3 as N	ND	200	ug/l	1	09/23/21	
Method: EPA 365.3		Instr: UVVIS04				
Batch ID: W111578	Preparation: _NONE (WETCHEM)	Prepared: 09/23/27	1 16:13			Analyst: sbn
o-Phosphate as P	ND	0.010	mg/l	1	09/23/21 17:43	
Method: SM 2540C		Instr: OVEN01				
Batch ID: W1I1835	Preparation: _NONE (WETCHEM)	Prepared: 09/28/2	1 10:46			Analyst: blg
Total Dissolved Solids	28	10	mg/l	1	09/29/21	



FINAL REPORT

Psomas - Santa Ana, CA	Project Number:	2KLE010102			10/	Reported:
Santa Ana, CA 92707	Project Manager:	Michael P. Donovan			10/	06/2021 10.10
Sample Results						(Continued)
Sample: BC-BLW-SL			Sample	d: 09/22/2	21 11:45 by Jim Bur	ton, Todd Bear
1123020-08 (Water)						
Analyte	Result	MRL	Units	Dil	Analyzed	Qualifier
Anions by IC, EPA Method 300.0						
Method: EPA 300.0		Instr: LC12				
Batch ID: W1I1524	Preparation: _NONE (LC)	Prepared: 09/23/21	09:42			Analyst: jan
Nitrate as N		110	ug/l	1	09/23/21 19:44	
Conventional Chemistry/Physical Parameters b	oy APHA/EPA/ASTM Methods					
Method: *** DEFAULT SPECIFIC METHOD ***		Instr: [CALC]				
Batch ID: [CALC]	Preparation: [CALC]	Prepared: 09/28/21	18:30			Analyst: YMT
Nitrogen, Total	0.37	0.10	mg/l	1	09/30/21	
Method: EPA 351.2		Instr: AA06				
Batch ID: W1I1732	Preparation: _NONE (WETCHEM)	Prepared: 09/28/21	18:30			Analyst: YMT
TKN	0.37	0.10	mg/l	1	09/30/21	
Method: EPA 353.2		Instr: AA01				
Batch ID: W1I1581	Preparation: _NONE (WETCHEM)	Prepared: 09/23/21	16:31			Analyst: ism
NO2+NO3 as N	ND	200	ug/l	1	09/23/21	
Method: EPA 365.3		Instr: UVVIS04				
Batch ID: W1I1578	Preparation: _NONE (WETCHEM)	Prepared: 09/23/21	16:13			Analyst: sbn
o-Phosphate as P		0.010	mg/l	1	09/23/21 17:43	
Method: SM 2540C		Instr: OVEN01				
Batch ID: W1I1835	Preparation: _NONE (WETCHEM)	Prepared: 09/28/21	10:46			Analyst: blg
Total Dissolved Solids		10	mg/l	1	09/29/21	



FINAL REPORT

Psomas - Santa Ana, CA 3 Hutton Centre Dr., Ste. 200 Santa Ana, CA 92707

#### Project Number: 2KLE010102

Project Manager: Michael P. Donovan

Reported: 10/08/2021 16:16

Quality Control Results

Anions by IC, EPA Method 300.0										
				Spike	Source		%REC		RPD	
Analyte	Result	MRL	Units	Level	Result	%REC	Limits	RPD	Limit	Qualifier
Batch: W1I1524 - EPA 300.0										
Blank (W1I1524-BLK1)				Prepared & A	nalyzed: 09/2	23/21				
Nitrate as N	ND	110	ug/l							
LCS (W1I1524-BS1)				Prepared & A	nalyzed: 09/2	23/21				
Nitrate as N	2020	110	ug/l	2000		101	90-110			
Matrix Spike (W1I1524-MS1)	Source: 1117004-0	2		Prepared & A	nalyzed: 09/2	23/21				
Nitrate as N	29200	1100	ug/l	20000	8630	103	84-115			
Matrix Spike (W1I1524-MS2)	Source: 1120070-0	1		Prepared & A	nalyzed: 09/2	23/21				
Nitrate as N	20300	1100	ug/l	20000	406	100	84-115			
Matrix Spike Dup (W1I1524-MSD1)	Source: 1117004-0	2		Prepared & A	nalyzed: 09/2	23/21				
Nitrate as N	29100	1100	ug/l	20000	8630	103	84-115	0.3	20	
Matrix Spike Dup (W1I1524-MSD2)	Source: 1120070-0	1		Prepared & A	nalyzed: 09/2	23/21				
Nitrate as N	20200	1100	ug/l	20000	406	99	84-115	0.4	20	
Quality Control Re	sults									
Quality Control 110	ouno									
Conventional Chemistry/Physical Parameter	ers by APHA/EPA/ASTM Metho	ods								
				Spike	Source		%REC		RPD	
Analyte	Result	MRL	Units	Level	Result	%REC	Limits	RPD	Limit	Qualifier
Batch: W111543 - EPA 351.2										
Blank (W1I1543-BLK1)			Pre	pared: 09/23/2	1 Analyzed:	09/29/2	1			
TKN	ND	0.10	mg/l							
Blank (W1I1543-BLK2)			Pre	pared: 09/23/2	1 Analyzed:	09/29/2 <sup>-</sup>	1			
ТКМ	ND	0.10	mg/l							
Blank (W1I1543-BLK3)			Pre	pared: 09/23/2	1 Analyzed:	10/06/2	1			
TKN	ND	0.10	mg/l							
LCS (W1I1543-BS1)			Pre	pared: 09/23/2	1 Analyzed:	09/29/2 <sup>.</sup>	1			
TKN	1.10	0.10	mg/l	1.00		110	90-110			
LCS (W1I1543-BS2)			Pre	pared: 09/23/2	1 Analyzed:	09/29/2 <sup>.</sup>	1			
TKN	1.10	0.10	mg/l	1.00		110	90-110			
LCS (W1I1543-BS3)			Pre	pared: 09/23/2	1 Analyzed:	10/06/2	1			
TKN	1.03	0.10	mg/l	1.00	-	103	90-110			

Source: 1122090-16

Source: 1123020-02

Source: 1123020-02RE1

Source: 1122090-16

Source: 1123020-02

0.10

0.10

0.10

0.10

mg/l

mg/l

mg/l

mg/l

1.02

1.17

1.06

1.01

1I23020

TKN

TKN

TKN

TKN

Matrix Spike (W1I1543-MS1)

Matrix Spike (W1I1543-MS2)

Matrix Spike (W1I1543-MS3)

Matrix Spike Dup (W1I1543-MSD1)

Matrix Spike Dup (W1I1543-MSD2)

Prepared: 09/23/21 Analyzed: 09/29/21

Prepared: 09/23/21 Analyzed: 09/29/21

Prepared: 09/23/21 Analyzed: 10/06/21

Prepared: 09/23/21 Analyzed: 09/29/21

Prepared: 09/23/21 Analyzed: 09/29/21

ND

ND

0.0654

ND

102

117

99

101

90-110

90-110

90-110

90-110

0.8

10

1.00

1.00

1.00

1.00

MS-01



FINAL REPORT

Psomas - Santa Ana, CA 3 Hutton Centre Dr., Ste. 200 Santa Ana, CA 92707 Project Number: 2KLE010102

Project Manager: Michael P. Donovan

10/08/2021 16:16

Reported:

**Quality Control Results** 

(Continued)

(	Conventional Chemistry/Physical Parameters by APHA	A/EPA/ASTM Meth	ods (Continued)								
					Spike	Source		%REC		RPD	
	Analyte	Result	MRL	Units	Level	Result	%REC	Limits	RPD	Limit	Qualifie
Ba	atch: W111543 - EPA 351.2 (Continued)										
1	Matrix Spike Dup (W111543-MSD2)	Source: 1123020-0	0.40		Prepared: 09/23/21	Analyzed:	09/29/21	00.440	2	10	MC 04
	IKN	1.14	0.10	mg/i	1.00	ND	114	90-110	3	10	1012-01
I	Matrix Spike Dup (W111543-MSD3)	Source: 1123020-0	D2RE1		Prepared: 09/23/21	Analyzed:	10/06/21				
	IKN	1.17	0.10	mg/l	1.00	0.0654	110	90-110	10	10	
Ba	atch: W1I1578 - EPA 365.3										
I	Blank (W1I1578-BLK1)				Prepared & Ana	lyzed: 09/2	23/21				
	o-Phosphate as P	ND	0.010	mg/l							
I	LCS (W1I1578-BS1)				Prepared & Ana	lyzed: 09//	23/21				
	o-Phosphate as P	0.210	0.010	mg/l	0.200		105	88-111			
1	Matrix Spike (W1I1578-MS1)	Source: 1122090-0	01		Prepared & Ana	lyzed: 09/2	23/21				
	o-Phosphate as P	0.233	0.010	mg/l	0.200	0.0310	101	85-112			
	Matrix Spike Dup (W111578-MSD1)	Source: 1122090-0	01		Prepared & Ana	lvzed: 09//	23/21				
	o-Phosphate as P	0.232	0.010	mg/l	0.200	0.0310	100	85-112	0.4	20	
Ra	atch: W111581 - FPA 353 2										
					D	1					
	NO2+NO3 as N	ND	200	ug/l	Prepared & Ana	ilyzed: 09//	23/21				
				0							
	LCS (W111581-BS1) NO2+NO3 as N	1020	200	ua/l	Prepared & Ana 1000	lyzed: 09/7	2 <b>3/21</b> 102	90-110			
	Matrix Spike (W111581-MS1) NO2+NO3 as N	Source: 1101005-0	200	ua/l	Prepared & Ana 2000	1yzed: 09/2 2910	2 <b>3/21</b> 102	90-110			
		1000	200	ugn	2000	2010	102	00 110			
	Matrix Spike Dup (W111581-MSD1)	Source: 1101005-0	200	ua/l	Prepared & Ana	2010	23/21 104	90-110	0.6	20	
		4300	200	ug/i	2000	2310	104	30-110	0.0	20	
Ba	atch: W1I1732 - EPA 351.2										
1	Blank (W1I1732-BLK1)				Prepared: 09/28/21	Analyzed:	09/30/21				
	TKN	ND	0.10	mg/l							
I	Blank (W1I1732-BLK2)				Prepared: 09/28/21	Analyzed:	09/30/21				
	TKN	ND	0.10	mg/l							
I	LCS (W111732-BS1)				Prepared: 09/28/21	Analyzed:	09/30/21				
	TKN	1.05	0.10	mg/l	1.00		105	90-110			
I	LCS (W1I1732-BS2)				Prepared: 09/28/21	Analyzed:	09/30/21				
	TKN	1.02	0.10	mg/l	1.00		102	90-110			
I	Matrix Spike (W1I1732-MS1)	Source: 1123020-0	)4		Prepared: 09/28/21	Analyzed:	09/30/21				
	ΤΚΝ	1.07	0.10	mg/l	1.00	0.0765	99	90-110			
I	Matrix Spike (W1I1732-MS2)	Source: 1123020-0	)5		Prepared: 09/28/21	Analyzed:	09/30/21				
	TKN	1.04	0.10	mg/l	1.00	0.0897	95	90-110			
I	Matrix Spike Dup (W1I1732-MSD1)	Source: 1123020-0	)4		Prepared: 09/28/21	Analvzed:	09/30/21				
	TKN	1.07	0.10	mg/l	1.00	0.0765	99	90-110	0.1	10	
	Matrix Spike Dup (W111732-MSD2)	Source: 1123020-0	)5		Prepared: 09/28/21	Analyzed	09/30/21				
		254100. 1125020-0				. maryzeu.					



%REC

Limits

%REC

FINAL REPORT

Reported: 10/08/2021 16:16

Qualifier

(Continued)

RPD

RPD Limit

Psomas - Santa Ana, CA	Pro	ject Number:	2KLE0101	102	
3 Hutton Centre Dr., Ste. 200					
Santa Ana, CA 92707	Proj	ect Manager:	Michael P.	Donovan	
Quality Control Res	ults				
Conventional Chemistry/Physical Parameters	by APHA/EPA/ASTM Meth	nods (Continue	ed)		
				Spike	Source
Analyte	Result	MRL	Units	Level	Result

Batch: W111732 - EPA 351.2 (Continued)										
Matrix Spike Dup (W1I1732-MSD2)	Source: 1123020-05	;	Prep	oared: 09/28/21	Analyzed: 09	/30/21				
ΤΚΝ	1.07	0.10	mg/l	1.00	0.0897	98	90-110	3	10	
Batch: W1I1835 - SM 2540C										
Blank (W1I1835-BLK1)			Prep	oared: 09/28/21	Analyzed: 09	/29/21				
Total Dissolved Solids	ND	10	mg/l							
LCS (W1I1835-BS1)			Prep	oared: 09/28/21	Analyzed: 09	/29/21				
Total Dissolved Solids	829	10	mg/l	824		101	96-102			
Duplicate (W1I1835-DUP1)	Source: 1122043-01		Prep	oared: 09/28/21	Analyzed: 09	/29/21				
Total Dissolved Solids	2760	10	mg/l		2880			4	10	
Duplicate (W1I1835-DUP2)	Source: 1122095-01		Prep	oared: 09/28/21	Analyzed: 09	/29/21				
Total Dissolved Solids	1060	10	mg/l		1040			2	10	



FINAL REPORT

Psomas - Santa Ana, CA 3 Hutton Centre Dr., Ste. 200 Santa Ana, CA 92707

#### Project Number: 2KLE010102

Project Manager: Michael P. Donovan

Reported: 10/08/2021 16:16

### Notes and Definitions

ltem	Definition
MS-01	The spike recovery for this QC sample is outside of established control limits possibly due to sample matrix interference.
%REC	Percent Recovery
Dil	Dilution
MRL	The minimum levels, concentrations, or quantities of a target variable (e.g., target analyte) that can be reported with a specified degree of confidence. The MRL is also known as Limit of Quantitation (LOQ)
ND	NOT DETECTED at or above the Method Reporting Limit (MRL). If Method Detection Limit (MDL) is reported, then ND means not detected at or above the MDL.
RPD	Relative Percent Difference
Source	Sample that was matrix spiked or duplicated.

Any remaining sample(s) will be disposed of one month from the final report date unless other arrangements are made in advance.

All results are expressed on wet weight basis unless otherwise specified.

All samples collected by Weck Laboratories have been sampled in accordance to laboratory SOP Number MIS002.

#### Weck Laboratories 14859 Clark Avenue City of Industry, CA 91745 (626) 336-2139

## 1123020

		C	HAIN	OF CU	ST	ODY	′ FC	DRM	1						Pa	age 1 of 2
Client Name/Address:	Project/PO	) Number:			<u> </u>			,		<b></b>	Analys	sis Req	uired			
PSOMAS 3 HUTTON CENTRE DRIVE, SUITE 200 SANTA ANA, CA 92707	2KLE010	0102			300.0	EPA Method	SM2540C	by EPA	Method	lletion						
Project Manager:	Phone Nur	mber:			pg	ğ	lids	l in the second se	A A A	alou						
MICHAEL P. DONOVAN (mpdonovn@cox.net)	(714) 320	8-5234			PA Met	ohae-OF	Ived So	ahl Nitro	as N - E	jen by c						
Sampler: Jim Burton, Todd Bear	Fax Numbe	er: 714.545.888	33			hos	Disec	d 35	ğ							
Sample Description Sample Matrix Container Ty	e #of S Cont. S	Sampling Date	Time	Preservation	Nitrate	Orthop 365.3	Total I	Total I Metho	NO2+ 353.2	Fotal						Special Instructions
BC-DW-PH6 water 60 ml Poly	1 9	122 21	7.45	None	X								1			
water 250 ml Pol	1		1	None		X										Filtered with 0.45µ
water 500 ml Pol	1			None			X									
water 250 ml Pol	1			H2SO4				X	X	X						
BC-blw-PH5 water 60 ml Poly	19	12221	8:15	None	х											
water 250 ml Pol	1	1		None		X										Filtered with 0.45µ
water 500 mi Pol	1			None			Х									
water 250 ml Pol	1	<u> </u>		H2SO4				X	X	X						
BC-blw-PH4 water 60 mi Poly	1 9	12221	8:45	> None	X											
water 250 ml Pol	1	i í	1	None		X										Filtered with 0.45µ
water 500 ml Pol	1			None			X									
water 250 ml Pol	1	<u> </u>	<u> </u>	H2SO4				X	Х	X						
BC-blw-PH3 water 60 ml Poly	1 9	22 21	9:300	🛰 None	X											
water 250 ml Pol	1 **	<u> </u>		None		X										Filtered with 0.45µ
water 500 ml Pol	1			None			X									
water 250 ml Pol	1		<u> </u>	H2SO4				X	X	X						
BC-bW-PH2 water 60 ml Poly	1 9	122 21	10:00	a-None	X											
water 250 ml Pol		<u> </u>		None		X										Filtered with 0.45µ
water 500 ml Poh	1			None			X									
water 250 ml Pol			L	H2SO4				X	Х	X						
Relinquished By: Date /Time: Relinquished By: Frd Lt Date /Time: 9/23/2/	13:30 Re	eceived by:	270 .						Date /T Date /T	ime: ime:			Tuma Same 24 Ho 48 Ho	around 7 Day _ Durs Durs	'ime: (	Check) 72 Hours 5 Days NormalX
Relinguished By: Date /Time:	Re	eceived in Lab by	l.						Date /T	ime:			Samp Intact	ie Integ	rity: (C	Check) On Ice <u>4.3</u> <sup>4</sup>

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#### Weck Laboratories 14859 Clark Avenue City of Industry, CA 91745 (626) 336-2139

## 1223020

						C	HA	IN	OF CU	ST(	DDY	' FC	RN	1						Pa	ge <u>2</u> of <u>2</u>
Client Name/Addre	SS;			Project	PONumb	Э <b>?</b> :										Analys	is Requ	lired			
PSOMAS 3 HUTTON CE SANTA ANA, C	NTRE DRIVE, SUIT A 92707	e 200		2KLE	010102					300.0	EPA Method	SM2540C	by EPA	Method	itation						
Project Manager:	· · · · · · · · · · · · · · · · · · ·			Phone	Number:					臣	Q.	lide	l lag	AG	alor						
MICHAEL P. DO	ONOVAN (mpdonov	/n@cox.net)		(714)	328-5234	4				EPA Met	phae-O	ofved Sc	ahl Nitro 1.2	as N - E	gen by c						
Sampler: Jim Burto	n, Todd Bear			Fax Nu	mber: 714	545.88	83			L L L	sohos	Diase	deld 35	NO3	Zitro					:	
Sample	e Description	Sample Matrix	Container Type	# of Cont.	Sampling	g Date	Tim	'n	Preservation	Nitrate	Orthor 365.3	Total I	Total I Metho	NO2+ 353.2	Total						Special Instructions
BC-bl	W-LS	water	60 ml Poly	1	9/22	21	10:2	20	None	X											
	1	water	250 ml Poly	1					None		X										Filtered with 0.45µ
		water	500 ml Poly	1					None			Х									
	<u></u>	water	250 mf Poly	1	1		1	-	H2SO4				Х	X	X						
BC-NF	<u>&gt;- \</u>	water	60 ml Poly	1	9 22	2)	10:5	55	None	X											
	1	water	250 ml Poly	1	L' i				None		X										Filtered with 0.45µ
		water	500 mi Poly	1					None			X									
-		water	250 mi Poly	1	سلس ]	1	<u> </u>	-	H2SO4				X	Х	X						
BC-blv	<u>v-5L</u>	water	60 ml Poly	1	9/22	21	11:4	15	>n None	X											
1		water	250 ml Poly	1	• \	· ·			None		X										Filtered with 0.45µ
		water	500 ml Poly	1					None			X									
		water	250 ml Poly	1	-		Ţ	-	H2SO4				X	Х	Х						
	/	water	60 ml Poly	1	1				None	X											
		water	250 ml Poly	1	$\sum$		N	I	None		X										Filtered with 0.45µ
		water	500 mi Poly	1			$\square$		None			Х									
	$\times$	water	250 mi Poly	1	L X		LΥ		H2SO4				X	Х	X						
IN	$\left( \right)$	water	60 ml Poly	1			$  \Lambda$		None	Х											
		water	250 ml Poly	1			17	$\sum$	None		X										Filtered with 0.45µ
		water	500 ml Poly	1	1		1/	N	None			Х									
		water	250 ml Poly	1	1		l		H2SO4				X	х	x						
Relinquished By Plant Pl					Received by:  Date /Time:  Turnaround Time:  (Check)    Received by:					Check) 72 Hours 5 Days NormalX											
Relinquished By:			Received	n Lab b	iy:							Date /T	ime:			Samp Intact	e (ntegr	ity: (C	$\frac{2}{\text{On ice}} \frac{4.3^{\circ}}{4.3^{\circ}}$		

T-0254



15280 NW 79th Court, Suite 107 Miami Lakes, Florida 33016



Fecal Host

#### Fecal Host Quantification ID Test Results Report Detection and quantification of the fecal host associated gene biomarker by quantitative Polymerase Chain Reaction (qPCR) DNA analytical technology

ND: Not Det DNQ: Detected, Not Quantifiable ROQ: Detected, Quantifiable

Submitter: Psomas Report Generated: December 22, 2021

SM #	Sample ID	Date Collected	Time Collected	Analysis Requested	Ct, Rep1	Ct, Rep2	Marker Quantified	Results Qualifier	LOD (Limit of detection)	LOQ (Limit of Quantification)	Result Unit
SM21L13019	LS-BR-1	7/26/2021	12:40 PM	Human_HF183	ND	ND	0.00E+00	ND	1.50E+02	5.00E+02	copies per 100ml
SM21L13020	LS-BR-1	7/29/2021	12:10 PM	Human_HF183	ND	ND	0.00E+00	ND	1.50E+02	5.00E+02	copies per 100ml
SM21L13021	INT2-RES-1	7/29/2021	12:20 PM	Human_HF183	ND	ND	0.00E+00	ND	1.50E+02	5.00E+02	copies per 100ml
	1				1						

Reported Results Authorized By: Anda Quintero, Quality Manager





15280 NW 79th Court, Suite 107 Miami Lakes, Florida 33016

#### Fecal Host Quantification ID Test Results Report

Sample Processing and Analysis Information

Submitter: Psomas Report Generated: December 22, 2021

SM #	Sample ID	Analysis Requested	Sample Type	Processed Date	Extraction Date	Analysis Date	Amount Processed	Amount Processed Unit	Extracted DNA/RNA Volume (ul)	PCR Input Volume (ul)	PCR Plate ID	Sample Comments
SM21L13019	LS-BR-1	Human_HF183	Water	7/28/2021	12/20/2021	12/20/2021	100	ml	100	2	20211220_q01	
SM21L13020	LS-BR-1	Human HF183	Water	8/2/2021	12/20/2021	12/20/2021	100	ml	100	2	20211220 q01	
SM21L13021	INT2-RES-1	Human HF183	Water	8/2/2021	12/20/2021	12/20/2021	100	ml	100	2	20211220 q01	

Reported Results Authorized By: Anda Quintero, Quality Manager





15280 NW 79th Court, Suite 107 Miami Lakes, Florida 33016

#### Fecal Host Quantification ID Test Results Report

qPCR Analysis QAQC information

Submitter: Psomas Report Generated: December 22, 2021

Analysis Requested	PCR Plate ID	Y-intercept	Slope	R^2	Efficiency %	NTC1 (no template control)	NTC2 (no template control)	NTC3 (no template control)	Positive control Ct (if applicable)	Comments
Human_HF183	20211220_q01	36.285	-3.361	1	98.395	ND	ND	ND		

Reported Results Authorized By: Anda Quintero, Quality Manager

Revision 2.2 Effective Date: 11/11/2021

Results reported herein apply only to the sample matrices as received.

Results reported herein relate to the genetic material extracted from the sample matrix processed and included in the analysis.

#### Submitter: Psomas Report Generated: December 22, 2021

#### Non-Detect (ND) Results

In sample(s) classified as non-detect, the host-associated fecal gene biomarker(s) was either not detected in test replicates, one replicate was detected at a cycle threshold greater than 35 and the other was not, or one replicate was detected at a cycle threshold less than 35 and the other was not after repeated analysis.

#### Detected Not Quantified (DNQ) Results

In sample(s) classified as Detected Not Quantified (DNQ), the host-associated fecal biomarker was detected in both test replicates but in quantities below the limit of quantification (LOQ, see below). This result indicates that fecal indicators associated with the respective host was present in the sample(s) but in low concentrations, and the confidence of such quantification will be lower than that declared by the definition of LOQ.

#### Quantifiable Results (ROQ)

Sample results are within the range of quantification of calibration curves (standard curves) of a validation qPCR method. For most qPCR assays, the range is 1E1 to 1E5 copies/reaction. Copy number measurements reported are relative, not absolute, quantification.

#### LOD (Limit of Detection, lower)

A general consensus was reached around the definition of the LOD as the lowest amount of analyte, which can be detected with more than a stated percentage of confidence (95%), but, not necessarily quantified as an exact value. It must be noted that LOD is not a limiting value and therefore, that Ct vlaues below the LOD cannot automatically be considered as negative. From the definition of LOD, it is evident that values below LOD are absolutely valid in terms of microornanism prescence. However, the probabality of their repeated detection is lower than 95%.

#### LOQ (Limit of Quantification, lower)

The LOQ was defined as the smallest amount of analyte, which can be measured and quantified with defined precision and accuracy under the experimental conditions by the method under validation. Numerically, the LOQ is defined as the lowest concentration of analyte, which gives a predefined variability (coeffecient of variation, CV) of under 25%.

#### Inhibition check

A 1:10 dilution of the original sample is analyzed togther each time with the undiluted sample to evaluate the effect of PCR inhibition. If the sample is inhibited, where 1:10 dilution produces a high signal than undiluted sample, the 1:10 dilution results will be used for quantification. The use of 1:10 dilution sample results will be reflected in Analytical Volume(ul). For example, if the analytical volume for undiluted sample is 2ul, the analytical volume for 1:10 dilution will be 0.2ul.

#### **Fecal Reference Samples**

The client is encouraged to submit fecal samples from suspected sources in the surrounding area in order to gain a better understanding of the concentration of the hostassociated biomarker with the regional population. A more precise interpretation would be available to the client with the submittal of such baseline samples.

#### **Result Interpretations**

The presence of the biomarker does not signify the presence or absence of that form of fecal pollution conclusively. The most reliable way to accurately test for contamination is to combine genetic testing with scientifically sound and adequate study design appropriate for the environmental quality questions to be answered or issues to be resolved.

#### **Additional Testing**

A portion of all samples has been frozen and will be archived for 3 months. The client is encouraged to perform additional tests on the sample(s) for other hosts suspected of contributing to the fecal contamination.

#### Qualitification Assay Results (Detected/Non-Detected only)

Such results are only reported as Detected or Non-Detected without quantification. Non-Detected results are defined as stated above, and Detected results are defined as detected Ct in both replicate qPCR reactions.

#### Limitation of Damages – Repayment of Service Price

It is agreed that in the event of breach of any warranty or breach of contract, or negligence of LuminUltra Technologies Inc, as well as its agents or representatives, the liability of the company shall be limited to the repayment, to the purchaser (submitter), of the individual analysis price paid by him/her to LuminUltra Technologies Inc. The company shall not be liable for any damages, either direct or consequentialLuminUltra Technologies Inc provides analytical services on a PRIME CONTRACT BASIS ONLY. Terms are available upon request. The sample(s) cited in this report may be used for research purposes after an archiving period of 3 months from the date of this report. Research includes, but is not limited to internal validation studies and peer-reviewed research publications. Anonymity of the sample(s), including the exact geographic location will be maintained by assigning an arbitrary internal reference. These anonymous samples will only be grouped by state / province of origin for research purposes. The client must contact LuminUltra Technologies Inc in writing within 10 days from the date of this report if he/she does not wish for their submitted sample(s) to be used for any type of future research.

#### **DNA Analytical Method Explanation**

Water Samples: Each submitted water sample is filtered through 0.45 micron membrane filter(s). Each filter is placed in a separate, sterile 2ml disposable tube containing a unique mix of beads and lysis buffer. The sample is homogenized for and the DNA extracted per kit manufacturer's protocol. Devitations to these procedures may occur at the client's request.

Non-Water Samples: Each non-water sample submitted by the client is processed as per internal laboratory extraction procedures. An extracted DNA sample is proceed directly to PCR analysis. Details available upon request.

Amplifications to detect the target gene biomarker were run in a final reaction volume of 20ul sample extract, forward primer, reverse primer, probe and an optimized buffer. All assays are run in duplicate. Quantification is achieved by extrapolating target gene copy numbers from a standard curve generated from serial dilutions of known gene copy numbers.

For quality control purposes, a positive control and a negative control, were run alongside the sample(s) to ensure a properly functioning reaction and reveal any false negatives or false positives.

APPENDIX C

2021 LAKE VERTICAL PROFILE DATA SHEETS

### SOUTH LAKE DISSOLVED OXYGEN AND WATER TEMPERATURE PROFILE

	Date	e of Profile:	6/16/2021		Estimated		
La	ke Surface	Elevation:	9693.20	•	Barometric	21.20	
Outlat Di	no Elovativ	$\frac{1}{1}$	0621	•	Pressure (in		
Outlet Pl		Sir (it/iiisi).	9021		Hg)		
Water Surface Elevation	Depth of N	leasurement	Water Temperature	Change in Water Temperature	Dissolved Oxygen	% O <sub>2</sub>	
(ft msl)	Feet	Meters	(deg C)	(deg C)	(mg/L)	Saturation*	
9693.2	0.0	0					
9691.6	1.6	0.5	11.9		8.13	115.8%	
9689.9	3.3	1	11.9	0.0	8.10	115.4%	
9686.6	6.6	2	11.8	0.1	8.11	115.5%	
9683.4	9.8	3	11.7	0.1	8.13	115.8%	
9680.1	13.1	4	11.6	0.1	8.14	116.0%	
9676.8	16.4	5	11.6	0.0	8.14	116.0%	
9673.5	19.7	6	11.6	0.0	8.15	116.1%	
9670.2	23.0	7	11.5	0.1	8.16	116.3%	
9667.0	26.2	8	11.4	0.1	8.20	116.8%	
9663.7	29.5	9	11.3	0.1	8.24	117.4%	
9660.4	32.8	10	11.1	0.2	8.27	117.8%	
9657.1	36.1	11	11.0	0.1	8.24	117.4%	
9653.8	39.4	12	10.7	0.3	8.35	105.7%	
9650.5	42.7	13	10.4	0.3	8.40	106.3%	
9647.3	45.9	14	9.7	0.7	8.83	109.1%	
9644.0	49.2	15	9.0	0.7	9.12	112.7%	
9640.7	52.5	16	8.7	0.3	9.40	113.4%	
9637.4	55.8	17	8.0	0.7	9.46	114.1%	
9634.1	59.1	18	7.5	0.5	9.53	112.2%	
9630.9	62.3	19	6.9	0.6	9.52	109.3%	
9627.6	65.6	20	6.3	0.6	9.35	107.3%	
9624.3	68.9	21	5.5	0.8	9.18	102.7%	
9621.0	72.2	22	4.9	0.6	8.91	97.1%	< <outlet< td=""></outlet<>
9617.7	75.5	23	4.6	0.3	8.73	95.2%	
9614.5	78.7	24	4.4	0.2	8.48	92.4%	
9611.2	82.0	25	4.3	0.1	8.30	90.5%	
9607.9	85.3	26	4.2	0.1	8.05	87.7%	
9604.6	88.6	27	4.2	0.0	7.73	84.3%	
9601.3	91.9	28	4.2	0.0	7.40	80.7%	
9598.1	95.1	29	4.2	0.0	7.12	77.6%	
9594.8	98.4	30	4.2	0.0	6.60	71.9%	
9591.5	101.7	31	4.2	0.0	5.72	62.3%	
9588.2	105.0	32	4.3	-0.1	4.54	49.5%	
9584.9	108.3	33	4.3	0.0	3.53	38.5%	
9581.7	111.5	34	4.4	-0.1	2.82	30.7%	
9578.4	114.8	35	4.7	-0.3	0.28	3.1%	
9575.1	118.1	36	5.4	-0.7	0.15	1.7%	

### SOUTH LAKE DISSOLVED OXYGEN AND WATER TEMPERATURE PROFILE

	Date	of Profile:	6/16/2021		Estimated	
La	ke Surface	Elevation:	9693.20	I	Barometric Brossuro (in	21.20
Outlet Pi	pe Elevatio	on (ft/msl):	9621	I	Hg)	
	Depth of M	easurement		Change in		
Water Surface			Water	Water	Dissolved	
Elevation			Temperature	Temperature	Oxygen	% O <sub>2</sub>
(ft msl)	Feet	Meters	(deg C)	(deg C)	(mg/L)	Saturation*
9571.8	121.4	37	5.6	-0.2	0.04	0.4%
9568.5	124.7	38	5.9	-0.3	0.03	0.3%
9565.2	128.0	39	6.1	-0.2	0.03	0.3%
9562.0	131.2	40	6.1	0.0	0.00	0.0%
9558.7	134.5	41	6.3	-0.2	0.00	0.0%
9555.4	137.8	42	6.6	-0.3	0.00	0.0%
9552.1	141.1	43	6.7	-0.1	0.00	0.0%
9548.8	144.4	44	7.0	-0.3	0.00	0.0%
9545.6	147.6	45	7.1	-0.1	-0.01	-0.1%
9542.3	150.9	46	7.4	-0.3	-0.01	-0.1%
9539.0	154.2	47	7.6	-0.2	-0.02	-0.2%
9535.7	157.5	48	7.7	-0.1	-0.02	-0.2%
9534.1	159.1	48.5	7.7	0.0	-0.03	-0.4%
		Maximum	11.9		9.53	117.8%
		Minimum	4.2		-0.03	-0.4%

### SOUTH LAKE DISSOLVED OXYGEN AND WATER TEMPERATURE PROFILE

	Date	e of Profile:	7/27/2021		Barometric		
La	ke Surface	e Elevation:	9676.00	-	Pressure (in	21.18	
Outlet Pi	pe Elevati	on (ft/msl):	9621	•	Hg)		
	Depth of N	leasurement		Change in			1
Water Surface			Water	Water	Dissolved	% O <sub>2</sub>	
Elevation			Temperature	Temperature	Oxygen	Saturation	
(ft msl)	Feet	Meters	(deg C)	(deg C)*	(mg/L)	**	
9676							
9674.4	1.6	0.5	17.4		7.31	108.0%	
9672.7	3.3	1	17.4	0.0	7.33	108.3%	
9669.4	6.6	2	17.4	0.0	7.34	108.5%	
9666.2	9.8	3	17.4	0.0	7.34	108.5%	
9662.9	13.1	4	17.3	0.1	7.35	108.6%	
9659.6	16.4	5	17.1	0.2	7.44	110.0%	
9656.3	19.7	6	16.9	0.2	7.48	108.3%	
9653.0	23.0	7	16.8	0.1	7.60	110.0%	
9649.8	26.2	8	16.5	0.3	7.53	109.0%	
9646.5	29.5	9	16.4	0.1	7.57	109.6%	
9643.2	32.8	10	16.1	0.3	7.68	111.2%	
9639.9	36.1	11	16.0	0.1	7.85	113.6%	
9636.6	39.4	12	15.4	0.6	8.13	115.2%	1
9633.3	42.7	13	14.8	0.6	8.27	114.6%	1
9630.1	45.9	14	14.2	0.6	8.26	114.5%	1
9626.8	49.2	15	13.5	0.7	8.16	110.6%	
9625.1	50.9	15.5	11.6		8.08	115.1%	
9623.5	52.5	16	10.6	2.9	8.27	104.7%	
9621.9	54.1	16.5	8.4	3.2	8.64	104.2%	
9620.2	55.8	17	7.1	3.5	8.80	103.6%	< <outlet< td=""></outlet<>
9616.9	59.1	18	5.8	1.3	8.80	98.4%	
9613.7	62.3	19	5.1	0.7	8.65	96.8%	
9610.4	65.6	20	4.8	0.3	8.40	91.6%	
9607.1	68.9	21	4.7	0.1	8.15	88.8%	
9603.8	72.2	22	4.5	0.2	7.80	85.0%	
9600.5	75.5	23	4.4	0.1	7.42	80.9%	
9597.3	78.7	24	4.4	0.0	6.91	75.3%	
9594.0	82.0	25	4.4	0.0	6.29	68.6%	
9590.7	85.3	26	4.4	0.0	5.32	58.0%	
9587.4	88.6	27	4.4	0.0	4.46	48.6%	
9584.1	91.9	28	4.5	-0.1	2.55	27.8%	
9580.9	95.1	29	4.6	-0.1	1.03	11.2%	
9577.6	98.4	30	4.8	-0.2	0.13	1.4%	
9574.3	101.7	31	5.4	-0.6	0.03	0.3%	
9571.0	105.0	32	5.7	-0.3	0.01	0.1%	

### SOUTH LAKE DISSOLVED OXYGEN AND WATER TEMPERATURE PROFILE

Date of Profile			7/27/2021		Barometric	
La	ike Surface	e Elevation:	9676.00		Pressure (in	21.18
Outlet Pi	pe Elevati	on (ft/msl):	9621	I	Hg)	
Water Surface Elevation (ft msl)	Depth of M Feet	leasurement Meters	Water Temperature (deg C)	Change in Water Temperature (deg C)*	Dissolved Oxygen (mg/L)	% O <sub>2</sub> Saturation **
9567.7	108.3	33	5.9	-0.2	0.00	0.0%
9564.5	111.5	34	6.1	-0.2	0.09	1.0%
9561.2	114.8	35	6.3	-0.2	0.06	0.7%
9557.9	118.1	36	6.5	-0.2	0.03	0.3%
9554.6	121.4	37	6.7	-0.2	0.02	0.2%
9551.3	124.7	38	6.9	-0.2	0.01	0.1%
9548.0	128.0	39	7.1	-0.2	-0.01	-0.1%
9544.8	131.2	40	7.3	-0.2	-0.01	-0.1%
9541.5	134.5	41	7.5	-0.2	-0.02	-0.2%
9538.2	137.8	42	7.6	-0.1	-0.02	-0.2%
9534.9	141.1	43	7.7	-0.1	-0.03	-0.4%
9531.6	144.4	44	7.7	0.0	-0.04	-0.5%
9529.0	147.0	44.8	7.8	-0.1	-0.04	-0.5%
		Maximum	17.4		8.80	115.2%
		Minimum	4.4		-0.04	-0.5%

\* - **Bold** values indicate thermocline (1 deg change in one meter).

### SOUTH LAKE DISSOLVED OXYGEN AND WATER TEMPERATURE PROFILE

	Date	e of Profile:	8/23/2021		Barometric		
La	ke Surface	Elevation:	9664.61	-	Pressure	20.95	
<b>Outlet Pi</b>	pe Elevatio	on (ft/msl):	9621	-	(in Hg)		
	Depth of N	leasurement		Change in			1
Water Surface			Water	Water	Dissolved	% O <sub>2</sub>	
Elevation			Temperature	Temperature	Oxygen	Saturation	
(ft msl)	Feet	Meters	(deg C)	(deg C)*	(mg/L)	**	
9664.61	0.0	0	16.1		7.47	108.1%	
9663.0	1.6	0.5	16.1		7.43	107.5%	
9661.3	3.3	1	16.0	0.1	7.41	107.3%	
9658.0	6.6	2	16.0	0.0	7.40	107.1%	
9654.8	9.8	3	16.0	0.0	7.40	107.1%	
9651.5	13.1	4	16.0	0.0	7.39	107.0%	
9648.2	16.4	5	16.0	0.0	7.39	107.0%	
9644.9	19.7	6	16.0	0.0	7.38	106.8%	
9641.6	23.0	7	16.0	0.0	7.38	106.8%	
9638.4	26.2	8	16.0	0.0	7.38	106.8%	
9635.1	29.5	9	16.0	0.0	7.37	106.7%	
9631.8	32.8	10	15.7	0.3	7.38	104.6%	
9628.5	36.1	11	15.6	0.1	7.36	104.3%	
9625.2	39.4	12	14.2	1.4	7.30	101.2%	
9623.6	41.0	12.5	11.8	2.4	7.56	107.7%	
9622.0	42.7	13	9.3	2.5	8.30	102.6%	
9620.3	44.3	13.5	7.1	2.2	8.61	101.3%	<<0ι
9618.7	45.9	14	6.1	1.0	8.57	98.4%	
9617.0	47.6	14.5	5.5	0.6	8.46	94.6%	
9615.4	49.2	15	5.3	0.2	8.31	93.0%	
9612.1	52.5	16	4.8	0.5	8.06	87.8%	
9608.8	55.8	17	4.6	0.2	7.88	85.9%	
9605.6	59.1	18	4.5	0.1	7.55	82.3%	
9602.3	62.3	19	4.5	0.0	7.26	79.1%	
9599.0	65.6	20	4.5	0.0	6.95	75.8%	
9595.7	68.9	21	4.5	0.0	6.30	68.7%	
9592.4	72.2	22	4.5	0.0	5.50	59.9%	
9589.2	75.5	23	4.4	0.1	4.87	53.1%	
9585.9	78.7	24	4.5	-0.1	3.27	35.6%	
9582.6	82.0	25	4.6	-0.1	1.40	15.3%	
9579.3	85.3	26	5.0	-0.4	0.15	1.7%	
9576.0	88.6	27	5.4	-0.4	0.06	0.7%	
9572.7	91.9	28	5.7	-0.3	0.05	0.6%	
9569.5	95.1	29	5.9	-0.2	0.03	0.3%	
9566.2	98.4	30	6.0	-0.1	0.02	0.2%	
9562.9	101.7	31	6.2	-0.2	0.01	0.1%	
9559.6	105.0	32	6.3	-0.1	0.01	0.1%	
9556.3	108.3	33	6.6	-0.3	0.00	0.0%	

<Outlet

### SOUTH LAKE DISSOLVED OXYGEN AND WATER TEMPERATURE PROFILE

Date of Profile:			8/23/2021		Barometric	
La	ke Surface	Elevation:	9664.61		Pressure	20.95
Outlet Pipe Elevation (ft/msl):		9621		(in Hg)		
	Depth of N	leasurement		Change in		
Water Surface			Water	Water	Dissolved	% O <sub>2</sub>
Elevation			Temperature	Temperature	Oxygen	Saturation
(ft msl)	Feet	Meters	(deg C)	(deg C)*	(mg/L)	**
9553.1	111.5	34	6.9	-0.3	0.00	0.0%
9549.8	114.8	35	7.1	-0.2	0.00	0.0%
9546.5	118.1	36	7.3	-0.2	0.00	0.0%
9543.2	121.4	37	7.5	-0.2	0.00	0.0%
9539.9	124.7	38	7.6	-0.1	0.00	0.0%
9536.7	128.0	39	7.7	-0.1	0.00	0.0%
9534.0	130.6	39.8	7.7	0.0	-0.01	-0.1%
		Maximum	16.1		8.61	107.7%
		Minimum	4.4		-0.01	-0.1%

\* - **Bold** values indicate thermocline (1 deg change in one meter).

### SOUTH LAKE DISSOLVED OXYGEN AND WATER TEMPERATURE PROFILE

	Date o	of Profile:	9/21/2021	_	Barometric		
Lake	Surface E	levation:	9648.37	-	Pressure	21.25	
Outlet Pipe I	Elevatior	n (ft/msl):	9621	•	(in Hg)		
	Dep	oth of		Change in			1
Water Surface	Measu	irement	Water	Water	Dissolved	% O <sub>2</sub>	
Elevation			Temperature	Temperature	Oxygen	Saturation	
(ft msl)	Feet	Meters	(deg C)	(deg C)*	(mg/L)	**	
9648.37	0.0	0	13.5		7.75		1
9646.7	1.6	0.5	13.3		7.70	104.4%	
9645.1	3.3	1	13.3	0.0	7.69	104.3%	
9641.8	6.6	2	13.3	0.0	7.67	104.0%	
9638.5	9.8	3	13.2	0.1	7.67	104.0%	
9635.2	13.1	4	13.2	0.0	7.67	104.0%	
9632.0	16.4	5	13.2	0.0	7.67	104.0%	
9628.7	19.7	6	13.2	0.0	7.66	103.9%	
9625.4	23.0	7	13.1	0.1	7.65	103.7%	
9622.1	26.2	8	12.3	0.8	7.83	103.8%	-
9620.5	27.9	8.5	11.1		8.15	116.1%	< <outlet< td=""></outlet<>
9619.7	28.7	8.75	9.6		8.71	107.6%	-
9618.8	29.5	9	8.4	3.9	8.91	107.5%	_
9618.0	30.3	9.25	7.4		8.94	105.2%	_
9617.2	31.2	9.5	6.9	4.2	8.82	101.2%	
9615.6	32.8	10	5.9	2.5	8.84	98.9%	-
9612.3	36.1	11	5.4	0.5	8.43	94.3%	-
9609.0	39.4	12	5.1	0.3	8.10	90.6%	
9605.7	42.7	13	4.9	0.2	7.76	84.6%	
9602.4	45.9	14	4.8	0.1	7.40	80.7%	
9599.2	49.2	15	4.7	0.1	6.80	74.1%	-
9595.9	52.5	10	4.6	0.1	5.66	61.7%	
9592.6	55.8	17	4.6	0.0	4.95	54.0%	-
9589.5	59.1	10	4.0	0.0	4.02	45.6%	
9580.0	65.6	20	4.7	-0.1	2.50	27.2%	
9582.8	68.9	20	4.8 5 1	-0.1	0.23	1.5%	
9575.5	72.2	21	5.5	-0.3	0.13	0.9%	
9572.9	75.5	22	5.5	-0.3	0.06	0.7%	
9569.6	78.7	23	5.9	-0.1	0.05	0.6%	
9566.3	82.0	25	6.1	-0.2	0.05	0.6%	
9563.1	85.3	26	6.3	-0.2	0.04	0.5%	
9559.8	88.6	27	6.5	-0.2	0.03	0.3%	1
9556.5	91.9	28	6.7	-0.2	0.02	0.2%	1
9553.2	95.1	29	6.9	-0.2	0.02	0.2%	1
9549.9	98.4	30	7.2	-0.3	0.02	0.2%	1
9546.7	101.7	31	7.4	-0.2	0.03	0.4%	1
9543.4	105.0	32	7.5	-0.1	0.01	0.1%	1
9540.1	108.3	33	7.6	-0.1	0.00	0.0%	1

### SOUTH LAKE DISSOLVED OXYGEN AND WATER TEMPERATURE PROFILE

	Date of Profile			_	Barometric	
Lake	Surface E	levation:	9648.37		Pressure	21.25
Outlet Pipe Elevation (ft/msl):			9621		(in Hg)	
Water Surface	Depth of Measurement		Water	Change in Water	Dissolved	% 0 <sub>2</sub>
Elevation			Temperature	Temperature	Oxygen	Saturation
(ft msl)	Feet	Meters	(deg C)	(deg C)*	(mg/L)	**
9536.8	111.5	34	7.7	-0.1	0.01	0.1%
9533.2	115.2	35.1	7.7	0.0	0.00	0.0%
		Maximum	13.5		8.94	116.1%
		Minimum	4.6		0.00	0.0%

\* - **Bold** values indicate thermocline (1 deg change in one meter).

### SOUTH LAKE DISSOLVED OXYGEN AND WATER TEMPERATURE PROFILE

	Date	of Profile:	10/5/2021		Barometric		
La	ke Surface	Elevation:	9641.70	-	Pressure	21.00	
Outlet Pip	oe Elevatio	on (ft/msl):	9621	-	(in Hg)		
	Depth of N	leasurement		Change in			1
Water Surface			Water	Water	Dissolved	% O <sub>2</sub>	
Elevation			Temperature	Temperature	Oxygen	Saturation	
(ft msl)	Feet	Meters	(deg C)	(deg C)*	(mg/L)	**	
9641.7	0.0	0	10.6		8.03		
9640.1	1.6	0.5	10.7		8.03	101.6%	
9638.4	3.3	1	10.7	0.0	8.02	101.5%	
9635.1	6.6	2	10.6	0.1	8.02	101.5%	
9631.9	9.8	3	10.5	0.1	8.02	101.5%	
9628.6	13.1	4	10.5	0.0	8.01	101.4%	
9625.3	16.4	5	10.5	0.0	8.01	101.4%	
9622.0	19.7	6	10.4	0.1	8.02	101.5%	< <outlet< td=""></outlet<>
9618.7	23.0	7	10.2	0.2	8.01	101.4%	
9615.5	26.2	8	9.0	1.2	8.25	102.0%	
9614.6	27.1	8.25	8.3		8.41	101.4%	
9613.8	27.9	8.5	7.3		8.49	99.9%	
9612.2	29.5	9	6.6	2.4	8.39	96.3%	
9610.5	31.2	9.5	5.9		8.51	95.2%	
9608.9	32.8	10	5.6	1.0	8.31	93.0%	
9605.6	36.1	11	5.2	0.4	7.92	88.6%	
9602.3	39.4	12	4.9	0.3	7.40	80.7%	
9599.0	42.7	13	4.8	0.1	6.80	74.1%	
9595.8	45.9	14	4.7	0.1	5.57	60.7%	
9592.5	49.2	15	4.7	0.0	4.70	51.2%	
9589.2	52.5	16	4.7	0.0	3.30	36.0%	
9585.9	55.8	17	4.7	0.0	2.10	22.9%	
9582.6	59.1	18	4.9	-0.2	0.25	2.7%	
9579.4	62.3	19	5.1	-0.2	0.19	2.1%	
9576.1	65.6	20	5.5	-0.4	0.14	1.6%	
9572.8	68.9	21	5.7	-0.2	0.11	1.2%	
9569.5	72.2	22	5.9	-0.2	0.09	1.0%	
9566.2	75.5	23	6.0	-0.1	0.08	0.9%	
9563.0	78.7	24	6.2	-0.2	0.07	0.8%	
9559.7	82.0	25	6.5	-0.3	0.06	0.7%	
9556.4	85.3	26	6.7	-0.2	0.05	0.6%	
9553.1	88.6	27	6.9	-0.2	0.15	1.7%	
9549.8	91.9	28	7.2	-0.3	0.10	1.2%	
9546.6	95.1	29	7.3	-0.1	0.09	1.1%	
9543.3	98.4	30	7.5	-0.2	0.07	0.8%	
9540.0	101.7	31	7.6	-0.1	0.06	0.7%	

### SOUTH LAKE DISSOLVED OXYGEN AND WATER TEMPERATURE PROFILE

	Date of Profile			_	Barometric	
La	ke Surface	Elevation:	9641.70		Pressure	21.00
Outlet Pipe Elevation (ft/msl):			9621		(in Hg)	
	Depth of N	leasurement		Change in		
Water Surface			Water	Water	Dissolved	% O <sub>2</sub>
Elevation			Temperature	Temperature	Oxygen	Saturation
(ft msl)	Feet	Meters	(deg C)	(deg C)*	(mg/L)	**
9536.7	105.0	32	7.7	-0.1	0.05	0.6%
9535.1	106.6	32.5	7.7	0.0	0.04	0.5%
		Maximum	10.7		8.51	102.0%
		Minimum	4.7		0.04	0.5%

\* - **Bold** values indicate thermocline (1 deg change in one meter).

#### LAKE SABRINA DISSOLVED OXYGEN AND WATER TEMPERATURE PROFILE

	Date	e of Profile:	6/17/2021		Estimated Barometric		
	Lake Surface	e Elevation:	9099.50		Barometric	21.60	
Outlet	Pipe Elevati	on (ft/msl):	9068		(in Hg)		
Water	Depth of M	easurement		Change in	\ <u></u>		
Surface			Water	Water	Dissolved	% O <sub>2</sub>	
Elevation			Temperature	Temperature	Oxygen	Saturation	
(ft msl)	Feet	Meters	(deg C)	(deg C)*	(mg/L)	**	
9099.5	0.0	0					
9097.9	1.6	0.5	13.4		8.21	108.2%	
9096.2	3.3	1	13.4	0.0	8.23	108.5%	
9092.9	6.6	2	13.3	0.1	8.23	108.5%	
9089.7	9.8	3	13.3	0.0	8.24	108.6%	
9086.4	13.1	4	13.3	0.0	8.24	108.6%	
9083.1	16.4	5	13.2	0.1	8.25	108.7%	
9079.8	19.7	6	12.8	0.4	8.43	108.6%	
9076.5	23.0	7	12.6	0.2	8.50	109.5%	
9073.3	26.2	8	11.9	0.7	8.77	121.5%	
9070.0	29.5	9	10.6	1.3	9.39	115.5%	
9066.7	32.8	10	9.6	1.0	9.78	117.5%	< <outlet< td=""></outlet<>
9063.4	36.1	11	8.7	0.9	10.01	117.4%	
9060.1	39.4	12	8.3	0.4	10.02	117.5%	
9056.8	42.7	13	7.7	0.6	10.09	115.4%	
9053.6	45.9	14	7.1	0.6	10.16	116.2%	
9050.3	49.2	15	6.6	0.5	10.16	113.4%	
9047.0	52.5	16	6.3	0.3	10.05	112.1%	
9043.7	55.8	17	6.0	0.3	9.83	109.7%	
9040.4	59.1	18	5.6	0.4	9.50	103.3%	
9037.2	62.3	19	5.5	0.1	9.35	101.7%	
9033.9	65.6	20	5.2	0.3	9.10	99.0%	
9030.6	68.9	21	5.1	0.1	8.84	96.1%	
9027.3	72.2	22	5.0	0.1	8.53	92.8%	
9024.0	75.5	23	4.9	0.1	8.44	89.4%	
9020.8	78.7	24	4.8	0.1	8.35	88.5%	
9017.5	82.0	25	4.7	0.1	8.30	88.0%	
9014.2	85.3	26	4.6	0.1	8.26	87.5%	
9010.9	88.6	27	4.6	0.0	8.25	87.4%	
9007.6	91.9	28	4.6	0.0	8.20	86.9%	
9004.4	95.1	29	4.6	0.0	8.20	86.9%	
9001.1	98.4	30	4.5	0.1	8.21	87.0%	
8997.8	101.7	31	4.5	0.0	8.21	87.0%	
8994.5	105.0	32	4.5	0.0	8.19	86.8%	
8991.2	108.3	33	4.5	0.0	8.17	86.6%	
8988.0	111.5	34	4.5	0.0	8.16	86.5%	
8984.7	114.8	35	4.4	0.1	8.15	86.4%	
8981.4	118.1	36	4.4	0.0	8.12	86.0%	

#### LAKE SABRINA DISSOLVED OXYGEN AND WATER TEMPERATURE PROFILE

	Date	e of Profile:	6/17/2021		Estimated	
	Lake Surface	e Elevation:	9099.50	-	Barometric	21.60
Outlet	Pipe Elevati	on (ft/msl):	9068		(in Hg)	
Water	Depth of Me	easurement		Change in		
Surface			Water	Water	Dissolved	% O <sub>2</sub>
Elevation			Temperature	Temperature	Oxygen	Saturation
(ft msl)	Feet	Meters	(deg C)	(deg C)*	(mg/L)	**
8978.1	121.4	37	4.4	0.0	8.05	85.3%
8974.8	124.7	38	4.4	0.0	7.98	84.6%
8971.5	128.0	39	4.4	0.0	8.00	84.8%
8968.3	131.2	40	4.3	0.1	8.01	84.9%
8965.0	134.5	41	4.3	0.0	8.01	84.9%
8961.7	137.8	42	4.3	0.0	8.02	85.0%
8958.4	141.1	43	4.3	0.0	8.02	85.0%
8955.1	144.4	44	4.3	0.0	8.01	84.9%
8951.9	147.6	45	4.3	0.0	7.97	84.5%
8948.6	150.9	46	4.3	0.0	7.95	84.2%
8945.3	154.2	47	4.3	0.0	7.80	82.7%
8942.0	157.5	48	4.2	0.1	7.82	82.9%
8938.7	160.8	49	4.2	0.0	7.86	83.3%
8935.5	164.0	50	4.2	0.0	7.86	83.3%
8932.2	167.3	51	4.2	0.0	7.75	82.1%
8928.9	170.6	52	4.2	0.0	7.70	81.6%
8925.6	173.9	53	4.2	0.0	7.64	81.0%
8922.3	177.2	54	4.3	-0.1	7.51	79.6%
8919.1	180.4	55	4.3	0.0	7.42	78.6%
8915.8	183.7	56	4.3	0.0	7.36	78.0%
8912.5	187.0	57	4.3	0.0	7.23	76.6%
8909.2	190.3	58	4.2	0.1	7.15	75.8%
8905.9	193.6	59	4.2	0.0	7.02	74.4%
8902.7	196.8	60	4.2	0.0	6.76	71.6%
8899.4	200.1	61	4.2	0.0	6.63	70.3%
8896.1	203.4	62	4.2	0.0	6.54	69.3%
8892.8	206.7	63	4.2	0.0	6.06	64.2%
8889.5	210.0	64	4.2	0.0	5.59	59.2%
8886.2	213.3	65	4.2	0.0	5.05	53.5%
8885.3	214.2	65.3	4.2	0.0	4.70	49.8%
		Maximum	13.4		10.16	121.5%
		Minimum	4.2		4.70	49.8%

\* - **Bold** values indicate thermocline (1 deg change in one meter).

	Date	e of Profile:	7/28/2021		Barometric		
Lake Surface Elevation:		9098.58	•	Pressure	21.70		
Outlet Pipe Elevation (ft/msl):			9068	-	(in Hg)		
	Depth of N	leasurement		Change in			1
Water Surface			Water	Water	Dissolved	% O <sub>2</sub>	
Elevation			Temperature	Temperature	Oxygen	Saturation	
(ft msl)	Feet	Meters	(deg C)	(deg C)*	(mg/L)	**	
9098.58	0.0	0					
9096.9	1.6	0.5	18.1		7.08	103.9%	
9095.3	3.3	1	18.1	0.0	7.06	103.6%	
9092.0	6.6	2	18.1	0.0	7.05	103.4%	
9088.7	9.8	3	18.1	0.0	7.04	103.3%	
9085.5	13.1	4	18.1	0.0	7.04	103.3%	
9082.2	16.4	5	18.0	0.1	7.14	104.7%	
9078.9	19.7	6	17.4	0.6	7.32	105.2%	4
9075.6	23.0	7	16.8	0.6	7.58	106.7%	4
9074.0	24.6	7.5	15.5		8.45	116.4%	4
9072.3	26.2	8	14.5	2.3	8.75	117.9%	4
9070.7	27.9	8.5	13.4	2.1	9.00	118.6%	4
9069.1	29.5	9	12.5	2.0	9.20	118.6%	< <outlet< td=""></outlet<>
9065.8	32.8	10	11.2	1.3	9.42	130.5%	4
9062.5	36.1	11	10.2	1.0	9.62	118.4%	4
9059.2	39.4	12	9.3	0.9	9.70	116.6%	4
9055.9	42.7	13	8.5	0.8	9.77	114.6%	4
9052.6	45.9	14	7.9	0.6	9.76	111.7%	4
9049.4	49.2	15	7.3	0.6	9.75	111.6%	4
9046.1	52.5	16	6.7	0.6	9.56	106.7%	-
9042.8	55.8	17	6.3	0.4	9.30	103.8%	4
9039.5	59.1	18	6.0	0.3	9.13	101.9%	4
9036.2	62.3	19	5.8	0.2	8.95	97.3%	4
9033.0	65.6	20	5.5	0.3	8.61	93.6%	4
9029.7	68.9	21	5.3	0.2	8.38	91.1%	-
9026.4	72.2	22	5.2	0.1	8.10	88.1%	-
9023.1	75.5	23	5.1	0.1	7.85	85.4%	-
9019.8	/8./	24	4.9	0.2	7.83	83.0% 93.2%	-
9010.0	02.0	25	4.0	0.1	7.77	02.5% 91.7%	4
9013.3	89.5	20	4.0	0.0	7.71	81.770 80.7%	-
9006.7	01.0	27	4.7	0.1	7.02	80.7%	-
9003.7	91.9	28	4.0	0.1	7.01	80.0%	-
9000.4	98.4	30	4.0	0.0	7.57	80.2%	-
8996.9	101 7	31	4.5	0.0	7.50	79.9%	1
8993.6	101.7	32	4.5	0.1	7.54	79.8%	-
8990 3	108 3	32	4 5	0.0	7 52	79.7%	1
8987.0	111 5	34	4 5	0.0	7.51	79.6%	1
8983.8	114.8	35	4.4	0.1	7.49	79.4%	1
8980.5	118.1	36	4.4	0.0	7.48	79.3%	1
8977.2	121.4	37	4.4	0.0	7.44	78.8%	1
							-

Date of Profile:			7/28/2021		Barometric	
La	ke Surface	Elevation:	9098.58		Pressure	21.70
Outlet Pi	pe Elevatio	on (ft/msl):	9068	1	(in Hg)	
	Depth of N	leasurement		Change in		
Water Surface			Water	Water	Dissolved	% O <sub>2</sub>
Elevation			Temperature	Temperature	Oxygen	Saturation
(ft msl)	Feet	Meters	(deg C)	(deg C)*	(mg/L)	**
8973.9	124.7	38	4.4	0.0	7.43	78.7%
8970.6	128.0	39	4.3	0.1	7.40	78.4%
8967.3	131.2	40	4.3	0.0	7.38	78.2%
8964.1	134.5	41	4.3	0.0	7.38	78.2%
8960.8	137.8	42	4.3	0.0	7.38	78.2%
8957.5	141.1	43	4.3	0.0	7.38	78.2%
8954.2	144.4	44	4.3	0.0	7.34	77.8%
8950.9	147.6	45	4.2	0.1	7.32	77.6%
8947.7	150.9	46	4.3	-0.1	7.20	76.3%
8944.4	154.2	47	4.3	0.0	7.10	75.2%
8941.1	157.5	48	4.3	0.0	6.95	73.6%
8937.8	160.8	49	4.3	0.0	6.85	72.6%
8934.5	164.0	50	4.3	0.0	6.74	71.4%
8931.3	167.3	51	4.3	0.0	6.60	69.9%
8928.0	170.6	52	4.3	0.0	6.40	67.8%
8924.7	173.9	53	4.3	0.0	6.32	67.0%
8921.4	177.2	54	4.3	0.0	6.29	66.7%
8918.1	180.4	55	4.3	0.0	6.28	66.5%
8914.9	183.7	56	4.3	0.0	5.99	63.5%
8911.6	187.0	57	4.3	0.0	5.91	62.6%
8908.3	190.3	58	4.3	0.0	5.75	60.9%
8905.0	193.6	59	4.3	0.0	5.25	55.6%
8901.7	196.8	60	4.3	0.0	5.02	53.2%
8898.4	200.1	61	4.3	0.0	4.67	49.5%
8895.2	203.4	62	4.3	0.0	4.43	46.9%
8891.9	206.7	63	4.3	0.0	4.33	45.9%
		Maximum	18.1		9.77	130.5%
		Minimum	4.2		4.33	45.9%

\* - **Bold** values indicate thermocline (1 deg change in one meter).

	Date	e of Profile:	8/24/2021		Barometric		
Lake Surface Elevation:			9099.31		Pressure	21.50	
Outlet P	ipe Elevati	on (ft msl):	9068		(in Hg)		
	Depth of N	leasurement		Change in			1
Water Surface	•		Water	Water	Dissolved	% O <sub>2</sub>	
Elevation			Temperature	Temperature	Oxygen	Saturation	
(ft msl)	Feet	Meters	(deg C)	(deg C)*	(mg/L)	**	
9099.31	0.0	0	16.3		7.63	108.9%	
9097.7	1.6	0.5	16.4		7.62	108.7%	
9096.0	3.3	1	16.4	0.0	7.61	108.6%	
9092.7	6.6	2	16.4	0.0	7.61	108.6%	
9089.5	9.8	3	16.4	0.0	7.60	108.5%	
9086.2	13.1	4	16.4	0.0	7.59	108.3%	
9082.9	16.4	5	16.4	0.0	7.59	108.3%	
9079.6	19.7	6	16.4	0.0	7.58	108.2%	
9076.3	23.0	7	16.4	0.0	7.61	108.6%	
9073.1	26.2	8	16.4	0.0	7.63	108.9%	
9069.8	29.5	9	15.5	0.9	8.76	122.4%	
9068.1	31.2	9.5	14.6		9.65	131.9%	< <out< td=""></out<>
9066.5	32.8	10	13.4	2.1	10.29	137.5%	
9064.9	34.4	10.5	11.9	2.7	10.39	145.9%	
9063.2	36.1	11	11.0	2.4	10.39	145.9%	
9059.9	39.4	12	10.1	0.9	10.41	129.9%	
9056.7	42.7	13	9.3	0.8	10.38	126.5%	
9053.4	45.9	14	8.5	0.8	10.38	123.4%	
9050.1	49.2	15	7.6	0.9	10.26	119.0%	
9046.8	52.5	16	7.1	0.5	10.01	116.1%	
9043.5	55.8	17	6.5	0.6	9.63	109.0%	
9040.3	59.1	18	6.1	0.4	9.40	106.4%	
9037.0	62.3	19	5.8	0.3	8.95	98.7%	
9033.7	65.6	20	5.7	0.1	8.65	95.4%	
9030.4	68.9	21	5.3	0.4	8.10	89.3%	
9027.1	72.2	22	5.2	0.1	7.93	87.5%	
9023.9	75.5	23	5.1	0.1	7.75	85.5%	
9020.6	78.7	24	5.0	0.1	7.59	83.7%	
9017.3	82.0	25	4.8	0.2	7.49	80.5%	
9014.0	85.3	26	4.8	0.0	7.46	80.2%	
9010.7	88.6	27	4.7	0.1	7.37	79.2%	
9007.4	91.9	28	4.7	0.0	7.22	77.6%	
9004.2	95.1	29	4.7	0.0	7.07	76.0%	
9000.9	98.4	30	4.6	0.1	7.08	76.1%	
8997.6	101.7	31	4.6	0.0	7.09	76.2%	
8994.3	105.0	32	4.6	0.0	7.08	76.1%	1
8991.0	108.3	33	4.6	0.0	6.98	75.0%	]
8987.8	111.5	34	4.5	0.1	6.95	74.7%	
8984.5	114.8	35	4.5	0.0	6.97	74.9%	
8981.2	118.1	36	4.5	0.0	6.96	74.8%	

tlet

	Date	e of Profile:	8/24/2021		Barometric	
La	ke Surface	Elevation:	9099.31		Pressure	21.50
Outlet Pi	ipe Elevati	on (ft msl):	9068		(in Hg)	
	Depth of M	leasurement		Change in		
Water Surface			Water	Water	Dissolved	% O <sub>2</sub>
Elevation			Temperature	Temperature	Oxygen	Saturation
(ft msl)	Feet	Meters	(deg C)	(deg C)*	(mg/L)	**
8977.9	121.4	37	4.5	0.0	6.93	74.5%
8974.6	124.7	38	4.5	0.0	6.93	74.5%
8971.4	128.0	39	4.4	0.1	6.97	74.9%
8968.1	131.2	40	4.4	0.0	6.98	75.0%
8964.8	134.5	41	4.4	0.0	7.10	76.3%
8961.5	137.8	42	4.4	0.0	6.90	74.1%
8958.2	141.1	43	4.4	0.0	6.88	73.9%
8955.0	144.4	44	4.3	0.1	6.83	73.4%
8951.7	147.6	45	4.3	0.0	6.72	72.2%
8948.4	150.9	46	4.3	0.0	6.69	71.9%
8945.1	154.2	47	4.3	0.0	6.45	69.3%
8941.8	157.5	48	4.3	0.0	6.28	67.5%
8938.5	160.8	49	4.3	0.0	6.26	67.3%
8935.3	164.0	50	4.5	-0.2	6.46	69.4%
8932.0	167.3	51	4.4	0.1	6.46	69.4%
8928.7	170.6	52	4.4	0.0	6.38	68.6%
8925.4	173.9	53	4.4	0.0	6.23	66.9%
8922.1	177.2	54	4.4	0.0	6.16	66.2%
8918.9	180.4	55	4.4	0.0	6.00	64.5%
8915.6	183.7	56	4.4	0.0	5.98	64.3%
8912.3	187.0	57	4.3	0.1	5.92	63.6%
8909.0	190.3	58	4.3	0.0	5.84	62.8%
8905.7	193.6	59	4.3	0.0	5.76	61.9%
8902.5	196.8	60	4.3	0.0	5.65	60.7%
8899.2	200.1	61	4.3	0.0	5.40	58.0%
8895.9	203.4	62	4.3	0.0	4.45	47.8%
8895.2	204.1	62.2	4.3	0.0	4.23	45.5%
		Maximum	16.4		10.41	145.9%
		Minimum	4.3		4.23	45.5%

\* - **Bold** values indicate thermocline (1 deg change in one meter).

	Date	e of Profile:	9/20/2021	_	Barometric		
La	ke Surface	Elevation:	9096.74	-	Pressure	21.55	55
Outlet Pi	ipe Elevati	on (ft msl):	9068	-	(in Hg)	ו Hg)	
Water Surface Elevation	Depth of N	leasurement	Water Temperature	Change in Water Temperature	Dissolved Oxygen	% O <sub>2</sub> Saturation	
(ft msl)	Feet	Meters	(deg C)	(deg C)*	(mg/I)	**	
0006.74	0.0	0	12.0	(ueg ej	9.15		-
9090.74	1.6	05	14.0		8.15	108.9%	4
9093.5	2.2	0.5	14.0	0.0	8.05	108.5%	4
9090.2	6.6	2	14.1	-0.1	8.02	108.1%	1
9086.9	9.8	3	14.1	0.0	8.00	107.8%	1
9083.6	13.1	4	14.1	0.0	7.99	107.7%	1
9080.3	16.4	5	14.1	0.0	7.98	107.5%	1
9077.1	19.7	6	14.1	0.0	7.97	107.4%	1
9073.8	23.0	7	14.1	0.0	7.96	107.3%	1
9070.5	26.2	8	14.1	0.0	7.96	107.3%	1
9067.2	29.5	9	14.1	0.0	7.95	107.1%	< <outlet< td=""></outlet<>
9063.9	32.8	10	14.1	0.0	7.95	107.1%	1
9060.7	36.1	11	13.3	0.8	8.44	111.2%	1
9059.0	37.7	11.5	12.0		9.41	121.3%	1
9057.4	39.4	12	10.0	3.3	10.18	125.3%	1
9055.7	41.0	12.5	9.4	2.6	10.29	123.6%	1
9054.1	42.7	13	9.0	1.0	10.31	123.9%	
9050.8	45.9	14	8.3	0.7	10.26	120.3%	
9047.5	49.2	15	7.7	0.6	10.15	116.1%	
9044.2	52.5	16	7.1	0.6	10.04	114.9%	
9041.0	55.8	17	6.7	0.4	9.80	109.4%	
9037.7	59.1	18	6.4	0.3	9.50	106.0%	
9034.4	62.3	19	6.0	0.4	9.16	102.2%	
9031.1	65.6	20	5.7	0.3	8.74	95.1%	4
9027.8	68.9	21	5.5	0.2	8.38	91.1%	4
9024.6	72.2	22	5.4	0.1	8.15	88.6%	4
9021.3	75.5	23	5.2	0.2	7.95	86.5%	4
9018.0	78.7	24	5.0	0.2	8.00	87.0%	4
9014.7	82.0	25	5.0	0.0	7.53	81.9%	4
9011.4	85.3	26	4.8	0.2	7.47	79.2%	4
9008.2	88.6	27	4.8	0.0	7.35	77.9%	4
9004.9	91.9	28	4.7	0.1	7.44	78.8%	4
9001.6	95.1	29	4.7	0.0	7.37	78.1%	4
8998.3	98.4	30	4.6	0.1	7.36	78.0%	4
8995.0	101.7	31	4.6	0.0	7.20	76.3%	4
8991.8	105.0	32	4.6	0.0	7.30	//.4%	4
8988.5	108.3	33	4.5	0.1	/.18	/6.1%	4
8985.2	111.5	34	4.5	0.0	7.19	/6.2%	4
8981.9	114.8	35	4.5	0.0	7.33	71.1%	4
89/8.0	121.4	30	4.5	0.0	7.02	74.4%	4
09/5.3	121.4	5/	4.4	0.1	1.07	/4.9%	1

Date of Profile:			9/20/2021		Barometric	
La	ke Surface	Elevation:	9096.74	•	Pressure	21.55
Outlet Pi	ipe Elevati	on (ft msl):	9068		(in Hg)	
	Depth of N	leasurement		Change in		
Water Surface			Water	Water	Dissolved	% O <sub>2</sub>
Elevation			Temperature	Temperature	Oxygen	Saturation
(ft msl)	Feet	Meters	(deg C)	(deg C)*	(mg/L)	**
8972.1	124.7	38	4.4	0.0	7.14	75.7%
8968.8	128.0	39	4.4	0.0	7.19	76.2%
8965.5	131.2	40	4.4	0.0	7.25	76.8%
8962.2	134.5	41	4.4	0.0	7.02	74.4%
8958.9	137.8	42	4.4	0.0	6.83	72.4%
8955.7	141.1	43	4.3	0.1	6.85	72.6%
8952.4	144.4	44	4.3	0.0	6.89	73.0%
8949.1	147.6	45	4.4	-0.1	6.63	70.3%
8945.8	150.9	46	4.3	0.1	6.62	70.1%
8942.5	154.2	47	4.4	-0.1	6.44	68.2%
8939.3	157.5	48	4.4	0.0	6.30	66.8%
8936.0	160.8	49	4.4	0.0	6.15	65.2%
8932.7	164.0	50	4.3	0.1	6.07	64.3%
8929.4	167.3	51	4.4	-0.1	5.85	62.0%
8926.1	170.6	52	4.3	0.1	5.50	58.3%
8922.9	173.9	53	4.3	0.0	5.40	57.2%
8919.6	177.2	54	4.3	0.0	5.02	53.2%
8916.3	180.4	55	4.3	0.0	4.75	50.3%
8913.0	183.7	56	4.3	0.0	4.45	47.2%
8909.7	187.0	57	4.3	0.0	4.20	44.5%
8906.5	190.3	58	4.3	0.0	3.50	37.1%
8903.2	193.6	59	4.3	0.0	3.45	36.6%
8899.9	196.8	60	4.3	0.0	3.37	35.7%
8896.6	200.1	61	4.3	0.0	3.31	35.1%
8893.3	203.4	62	4.3	0.0	2.89	30.6%
8890.4	206.4	62.9	4.4	-0.1	2.17	23.0%
		Maximum	14.1		10.31	125.3%
		Minimum	4.3		2.17	23.0%

\* - **Bold** values indicate thermocline (1 deg change in one meter).

	Date	e of Profile:	10/5/2021	_	Barometric		
Lake Surface Elevation:			9095.09	-	Pressure	21.45	
Outlet Pi	pe Elevatio	on (ft/msl):	9068	-	(in Hg)		
	Depth of N	leasurement		Change in			1
Water Surface			Water	Water	Dissolved	% O <sub>2</sub>	
Elevation			Temperature	Temperature	Oxygen	Saturation	
(ft msl)	Feet	Meters	(deg C)	(deg C)*	(mg/L)	**	
9095.09	0.0	0	12.1		8.09		
9093.4	1.6	0.5	12.1		8.09	105.7%	
9091.8	3.3	1	12.2	-0.1	8.08	105.6%	
9088.5	6.6	2	12.2	0.0	8.08	105.6%	
9085.2	9.8	3	12.2	0.0	8.08	105.6%	
9082.0	13.1	4	12.2	0.0	8.08	105.6%	
9078.7	16.4	5	12.2	0.0	8.07	105.5%	
9075.4	19.7	6	12.2	0.0	8.07	105.5%	
9072.1	23.0	7	12.2	0.0	8.07	105.5%	
9068.8	26.2	8	12.2	0.0	8.07	105.5%	< <outlet< td=""></outlet<>
9065.6	29.5	9	12.2	0.0	8.07	105.5%	-
9062.3	32.8	10	12.2	0.0	8.07	105.5%	-
9059.0	36.1	11	12.1	0.1	8.09	105.7%	_
9055.7	39.4	12	11.9	0.2	8.28	116.3%	
9054.1	41.0	12.5	11.3		8.75	122.9%	
9052.4	42.7	13	10.0	1.9	9.62	120.0%	
9050.8	44.3	13.5	8.6	2.7	10.06	119.6%	
9049.2	45.9	14	8.3	1.7	10.14	120.6%	
9045.9	49.2	15	7.6	0.7	10.08	117.0%	
9042.0	52.5	10	7.1	0.5	9.87	114.5%	
9039.5	55.6	10	6.0	0.3	9.71	109.9%	
9030.0	62.3	10	<u> </u>	0.3	9.34	108.0%	
9029.5	65.6	20	5.7	0.3	8.84	97.5%	_
9026.2	68.9	20	5.7	0.3	8.04	90.4%	
9022.9	72.2	21	5.2	0.2	7 90	87.1%	
9019.6	75.5	23	5.1	0.1	7.70	84.9%	
9016.4	78.7	24	5.0	0.1	7.32	80.7%	
9013.1	82.0	25	4.9	0.1	7.30	78.4%	
9009.8	85.3	26	4.7	0.2	7.50	80.6%	
9006.5	88.6	27	4.7	0.0	7.47	80.3%	
9003.2	91.9	28	4.6	0.1	7.45	80.1%	
8999.9	95.1	29	4.6	0.0	7.42	79.7%	
8996.7	98.4	30	4.6	0.0	7.38	79.3%	
8993.4	101.7	31	4.6	0.0	7.35	79.0%	
8990.1	105.0	32	4.5	0.1	7.37	79.2%	1
8986.8	108.3	33	4.5	0.0	7.35	79.0%	
8983.5	111.5	34	4.5	0.0	7.40	79.5%	
8980.3	114.8	35	4.5	0.0	7.40	79.5%	
8977.0	118.1	36	4.4	0.1	7.41	79.6%	
8973.7	121.4	37	4.4	0.0	7.41	79.6%	

Date of Profile:			10/5/2021		Barometric	
La	ke Surface	Elevation:	9095.09		Pressure	21.45
Outlet Pi	pe Elevatio	on (ft/msl):	9068	1	(in Hg)	
	Depth of N	leasurement		Change in		
Water Surface			Water	Water	Dissolved	% O <sub>2</sub>
Elevation			Temperature	Temperature	Oxygen	Saturation
(ft msl)	Feet	Meters	(deg C)	(deg C)*	(mg/L)	**
8970.4	124.7	38	4.3	0.1	7.41	79.6%
8967.1	128.0	39	4.3	0.0	7.40	79.5%
8963.9	131.2	40	4.3	0.0	7.39	79.4%
8960.6	134.5	41	4.3	0.0	7.40	79.5%
8957.3	137.8	42	4.3	0.0	6.90	74.1%
8954.0	141.1	43	4.3	0.0	6.89	74.0%
8950.7	144.4	44	4.3	0.0	6.70	72.0%
8947.5	147.6	45	4.3	0.0	6.72	72.2%
8944.2	150.9	46	4.3	0.0	6.55	70.4%
8940.9	154.2	47	4.3	0.0	6.52	70.1%
8937.6	157.5	48	4.3	0.0	6.46	69.4%
8934.3	160.8	49	4.3	0.0	6.23	66.9%
8931.0	164.0	50	4.3	0.0	6.06	65.1%
8927.8	167.3	51	4.3	0.0	5.80	62.3%
8924.5	170.6	52	4.3	0.0	5.58	60.0%
8921.2	173.9	53	4.4	-0.1	5.26	56.5%
8917.9	177.2	54	4.4	0.0	4.70	50.5%
8914.6	180.4	55	4.4	0.0	4.44	47.7%
8911.4	183.7	56	4.4	0.0	4.19	45.0%
8908.1	187.0	57	4.4	0.0	3.54	38.0%
8904.8	190.3	58	4.4	0.0	3.25	34.9%
8901.5	193.6	59	4.4	0.0	2.95	31.7%
8898.2	196.8	60	4.4	0.0	2.37	25.5%
8895.0	200.1	61	4.4	0.0	1.90	20.4%
8891.7	203.4	62	4.4	0.0	1.55	16.7%
8888.4	206.7	63	4.4	0.0	0.25	2.7%
8886.8	208.3	63.5	4.4	0.0	0.11	1.2%
		Maximum	12.2		10.14	122.9%
		Minimum	4.3		0.11	1.2%

\* - **Bold** values indicate thermocline (1 deg change in one meter).

APPENDIX D

LAKE VERTICAL PROFILE LOCATIONS AND BATHYMETRY



## Legend

South Lake Vertical Profile Area

## Figure D-1 South Lake Vertical Profile Area



## Legend

Lake Sabrina Vertical Profile Area

# Figure D-2 Lake Sabrina Vertical Profile Area


Figure 7.5-1 Bathymetry Map for South Lake





Figure 7.5-2 Bathymetry Map for Lake Sabrina



# SOUTHERN CALIFORNIA EDISON Bishop Creek Hydroelectric Project (FERC Project No. 1394)



# BISHOP CREEK SEDIMENT AND GEOMORPHOLOGY FINAL TECHNICAL REPORT (AQ 6)



June 2022

# SOUTHERN CALIFORNIA EDISON

# Bishop Creek Hydroelectric Project (FERC Project No. 1394)

# FINAL TECHNICAL REPORT (AQ 6) BISHOP CREEK SEDIMENT AND GEOMORPHOLOGY

Southern California Edison 1515 Walnut Grove Ave Rosemead, CA 91770

June 2022

Support from:



Stillwater Sciences

and



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# **APPENDICES**

Appendix A	Tracer Rock Substrate Mobility Evaluation

Appendix B Pfankuch Forms

#### ACRONYMS

Bishop Creek Project	Bishop Creek Hydroelectric Project
BKF	bankfull elevation
CDFW	California Department of Fish and Game
cfs	cubic feet per second
cm	centimeters
СҮ	cubic yards
FERC	Federal Energy Regulatory Commission
FLD	an approximate elevation of twice the bankfull depth
FLPMA	Federal Land Policy and Management Act
GPS	global positioning system
ISR	Initial Study Report
LADWP	Los Angeles Department of Water and Power
LWM	large woody material
mm	millimeters
NGS OPUS	National Geodetic Survey Online Positioning User Service
O&M	operations and maintenance
PIT	passive integrated transponder
Project	Bishop Creek Hydroelectric Project
RIP	riparian within floodplain
RTK GNSS	Real-Time Kinematic Global navigation satellite system
RTS	Real Time Service
SCE	Southern California Edison
SLA	Simons, Li, & Associates
SWRCB	State Water Resources Control Board

TWG	Technical Working Group
USFS	U.S. Forestry Service
USGS	U.S. Geological Survey
WET	Wetted Channel

# 1.0 INTRODUCTION

During the Technical Working Group (TWG) meetings, stakeholders identified the need to understand the sediment dynamics in Bishop Creek, including understanding what flows mobilize sediment and what Bishop Creek Hydroelectric Project (Bishop Creek Project, or Project) operations could be modified to mobilize sediments (assumed to be gravels suitable for spawning/rearing habitat) and large woody material (LWM) from forebays above the diversion dams into reaches that have a low sediment supply. This study focused on the reaches between Powerhouse No. 2 and 6, to provide additional information pertaining to riparian and fisheries habitat assessments, and to report the development of operations and maintenance (O&M) plans that have the potential to reduce maintenance needs of the Bishop Creek Project by limiting the accumulation of sediment in the forebays.

This Sediment and Geomorphology Report summarizes the objectives, methods, results, and discussion of findings of the study.

# 2.0 REVIEW OF EXISTING INFORMATION

The analysis for this study relied on existing data gathered as part of the existing Bishop Creek Project license, and additional data gathered to support the understanding of flow and sediment dynamics in the study reach. Therefore, this section reviews sources of existing data and discusses limitations on stream flow management at the Bishop Creek Project.

#### 2.1 GEOMORPHOLOGICAL DATA

As part of the study investigating stream geomorphology and riparian vegetation, the Simons, Li, & Associates (SLA) Report (Simons 1990) evaluated stream channel processes in the Bishop Creek Project area. This report included a review of the Bishop Creek Project geomorphology, hydrology, hydraulics, and incipient motion of particles at six locations from the confluence of the South Fork and the Middle Fork of Bishop Creek to Powerhouse No. 6. The reader is referenced to the SLA Report (Simons 1990) for a summary of geology and hydrology near the Bishop Creek Project. This Sediment and Geomorphology Report covers the following:

- Overview of site geology
- Baseline geomorphic survey from 1989 field work
- Eight cross-sections and a longitudinal profile at each of six monitoring sites
- Bed particle size, bar particle size, and incipient motion analyses
- Pre-instream flow hydrology summary

Following completion of the SLA Report, riparian vegetation monitoring (Read 2015; Read and Sada 2013; Psomas 2005) and aquatic habitat monitoring (Read and Sada 2013; Psomas 2005) have occurred approximately every 5 years at the Bishop Creek Project as part of the current license. These reports, described in Sections 2.1.1 and 2.1.2 below, provide good historical data spanning an approximate 30-year period.

- 2.1.1 RIPARIAN MONITORING
  - Baseline (1991 to 1993) and repeat surveys (field surveys in 2004, 2009, 2014, and 2019)
  - Re-surveyed cross-sections that can be used to indicate channel stability
  - Riparian tree sizing, age, and mortality
  - Presence of LWM in the riparian zone
  - Geomorphic parameter summary by site

#### 2.1.2 AQUATIC HABITAT MONITORING

- Baseline (1991 to 1993) and repeat surveys (field surveys in 2005 and 2009)
- Characterization of channel width, depth, and velocity during three seasons in a monitoring year
- Substrate size distributions for each study reach
- Substrate embeddedness

After the SLA Report, Sites 3, 4, 5, and 6 were located and served as the basis for the study reaches in this report. The subsequent riparian vegetation and aquatic habitat monitoring surveys generally aligned with the initial geomorphic study sites, but over time, some sites were abandoned due to vandalism and site disturbance. While the post-1993 (after the start of minimum instream flows) study sites may not align directly with the proposed study reaches for this Study Plan, the information will be useful for calibrating a hydraulic model and understanding channel geomorphology.

Subsequent to the SLA Report, Sada and Hawkins (1997) performed an evaluation of the impacts of released impoundment sediment (fines, sands, and gravel) on sediment depth in pools, substrate type in pools, and pool bottom elevations. This report evaluated conditions immediately downstream of Intake 3 and Intake 4 twice prior to sediment release, immediately after a sediment release, and after a 200 cubic feet per second (cfs), 24-hour flushing flow for these areas. Sada and Hawkins (1997) determined that the released sediment, while equally deposited in riffles and pools (filling some to depths of more than 50 centimeters [cm] immediately after the release), generally was transported to the next intake impoundment by the flushing flow. The study determined that the substrate in the pools was substantially different when comparing the pre-sediment release and post-flushing flow conditions in any of the pools below Intake 3 and in 12 of 15 pools below Intake 4. The study determined there were no differences in pool substrate coverage by sediment in either reach when comparing pre-sediment releases and postflushing flow conditions, regardless of the transport of the sediment 1300 meters and 2500 meters downstream of Intakes 3 and 4, respectively. The substrate in the pools post sediment release and prior to flushing flows was generally smaller than 1.5-inches gravel and larger than medium sand 0.012 inch, with sand being most frequently encountered. Additional information contained in this report includes:

- Turbidity monitoring during background conditions, the sediment release, and flushing flows
- Pool characteristics and substrate elevations for 15 pools in each reach
- Sediment depth, coverage, and composition for each study reach
- Summary of fish rescue and mortality during the study

To manage sediment in the impoundments, Southern California Edison (SCE) periodically removed sediment from the intake impoundments to maintain storage capacity and minimize the potential for sediment to be pulled through the powerhouses. The largest removal effort in the past 40 years occurred in response to historic flooding from Tropical Storm Olivia in 1982 that resulted in the failure of the North Lake Reservoir dam (peak flows estimated at 1,720 cfs in Bishop Creek (Sierra Hydrotech 1983). Shortly after this flood, sediment was removed from Intakes 3, 4, 5 and 6 to restore storage capacity (Simon 1990). Sediment was removed from Intake 2 in the late 1980s or early 1990s; Intake 2 had adequate capacity up until that time. The Intake 2 sediment removal effort resulted in the excavation of approximately 50,000 cubic yards (CY) of sediment from the impoundment (sediment that was primarily generated from the dam failure; Charles Partridge, SCE Project Staff, personal communication)). Since these removal efforts, periodic drawdowns of the intake impoundments have occurred, primarily for maintenance of necessary structures. However there has been no regular sediment removal, sediment sluicing, or drawdown program. More recently, in 2009, 2010, and 2011, SCE removed sediment from Intakes 6, 4 and 5, generating approximately 1,200 CY, 1,500 CY and 2,000 CY of material, respectively (Charles Partridge, SCE Project Staff, personal communication). Assuming approximately 25 years between sediment removals and excavation to similar extents during both excavations, the estimated sediment loading (bed load) at Intakes 6, 4, and 5 may average approximately of 50 to 80 CY per year. According to Bishop Creek Project staff, there is minimal LWM that drops into the sediment of the impoundments (based on the recently excavated sediment). Bishop Creek Project staff indicated that while some LWM may sink, most washes over the spillway and there were no issues with large LWM flows clogging the intake structures. SCE staff did state that a larger LWM and sediment load could occur if a higher runoff vear follows a few years of lower flows: and/or when the upstream beaver dams were blown out and the accumulated sediment and beaver dam materials were released.

Just downstream of the Bishop Creek Project Powerhouse No. 6 outlet, the Los Angeles Department of Water and Power (LADWP) operates a small diversion structure to supply the Main Indian ditch diversion with water. This impoundment is 3-feet to 5-feet-deep and has sediment removed more frequently than the Bishop Creek Project impoundments (Charles Partridge, SCE Project Staff, personal communication).

# 2.2 PROJECT HYDROLOGY AND FLOW MANAGEMENT

The Bishop Creek Project's relatively extensive Bishop Creek daily stream discharge (i.e., flow) dataset was utilized to evaluate channel geomorphology and sediment transport in this reach. The Operations Model Study Report (completed as part of this relicensing effort) can be used in parallel with this study to evaluate potential flow releases to mobilize sediment throughout the Bishop Creek Project. In addition, annual hydrographs and peak annual flows for the study reaches, developed by SCE, were used to evaluate sediment transport in the study reach.

As described in the Operations Model Study Report, flow at the site varies, depending on the amount of runoff and the SCE release schedule, which is dictated by snowpack, snow melt, spring rain events, drought, power demand, and irrigation. In Bishop Creek above Powerhouse No. 6 (U.S. Geological Survey [USGS] Gauge 10271200), calculated daily mean flows (water years 1994 to 2020) range from 0.1 cfs to 453 cfs, with peak runoff generally occurring from June to August, as the snow melts in the higher mountain elevations. Over a recent 27 year period (1994-2020), annual peak daily runoff values ranged from 15 cfs to 453 cfs in Bishop Creek (Table 2.2-1) most of which have more than 20 years of data available. These gauges were utilized where necessary to evaluate flow conditions in the study reaches, including peak annual flows, average flows, and estimations of bankfull based on flow-event return period. These peak flows may be the channel-forming flow in Bishop Creek and thereby an important flow to evaluate as part of this study.

The Bishop Creek Project utilizes water from Bishop Creek to generate electricity, but there are minimum pass-by flows between the diversion dams. These pass-by flows and downstream minimum flows are documented in Section 2.3. Other sources of water input between the junction of the South Fork and Middle Fork to Powerhouse No. 6 include three tributaries, of which the largest is Coyote Creek, which enters Bishop Creek upstream of Powerhouse No. 4. SCE has stream gauges installed at many locations in the watershed (Figure 2.2-1) most of which have more than 20 years of data available. These gauges were utilized where necessary to evaluate flow conditions in the study reaches, including peak annual flows, average flows, and estimations of bankfull based on flow-event return period.

### Table 2.2-1 Annual Peak Stream Flows in Bishop Creek above Powerhouse No. 6 since the Occurrence of Bypass Flows

Water Year	Date	Daily Mean Stream-Flow (cfs)		
1994	September 29, 1994	71		
1995	July 31, 1995	421		
1996	July 29, 1996	197		
1997	January 3, 1997	250		
1998	July 23, 1998	453		
1999	November 4, 1998	189		
2000	November 4, 1999	163		
2001	July 8, 2001	367		
2002	November 6, 2001	194		
2003	October 1, 2002	86		
2004	June 8, 2004	180		
2005	July 19, 2005	283		
2006	July 24, 2006	310		
2007 June 20, 2007		83		
2008	May 22, 2008	138		
2009	July 03, 2009	77		
2010 July 17, 2010		362		
2011 April 8, 2011		236		
2012	August 16, 2012	41		
2013	July 24, 2013	113		
2014	March 19, 2014	15		
2015	November 20, 2014	55		
2016	June 30, 2016	116		
2017	July 15, 2017	421		
2018	July 24, 2018	334		
2019	June 16, 2019	230		
2020	November 21, 2019	74		
27	-year Annual Peak Stream Flow Average:	202		

Source: USGS 2022



Figure 2.2-1 Stream Flow Gauging Stations along Bishop Creek.

#### 2.3 **REGULATORY AND LEGAL CONSTRAINTS**

Bishop Creek Project operations are subject to adjudicated water rights and other agreements that provide for non-power uses. The Chandler Decree is one of the primary controlling documents. The Sales Agreement between Southern Sierra Power Company and the LADWP addresses SCE's obligations with respect to the waters of Bishop Creek. Within these constraints, SCE manages the releases from the storage reservoirs, for purposes of hydro-generation and meeting water allocation requirements.

The Sales Agreement provides for seasonal maximum carry-over limits of 2,147 acrefeet, as measured on or about April 1, annually. Variances from this requirement have been obtained on a case-by-case basis in the past, by mutual-agreement between SCE and LADWP. SCE meets with the U.S. Forestry Service (USFS) annually to determine seasonal minimum storage requirements for recreation purposes; and annual flushing flows.

The Chandler Decree and State Water Resources Control Board (SWRCB) water rights licenses determine how flows are allocated and used, as follows:

- Seasonal diversion and accumulation limit not to exceed historically measured use (i.e., not to exceed current Bishop Creek Project capacity), including an annual limit of 1,400-acre feet from Green Creek
- Instantaneous diversion limit at all locations not to exceed historically measured use (i.e., not to exceed current Bishop Creek Project capacity), including a daily average limit of one cfs for domestic use
- Minimum Bishop Creek Project flow-through (downstream delivery) requirements, for senior downstream water rights holders, are measured below Powerhouse No. 6, as required by the Chandler Decree (Table 2.3-1)
- Minimum instream flow requirement of 0.25 cfs at the Birch Creek diversion, for senior downstream water rights holders, as stipulated by the Chandler Decree
- Minimum instream flow requirement of 1.6 cfs during the irrigation season, and 0.4 cfs at other times, through the Abelour Ditch, for senior downstream water rights holders in the Rocking K Subdivision

Time Period	Daily Average Flow (cfs)	Instantaneous Minimum Flow (cfs)
April 1-15	44	33
April 16-30	68	51
May 1-15	87	65
May 16-31	98	74
June 1 - Jul 31	106	90
August 1-31	106	80
September 1-15	76	57
September 16-30	58	44

#### Table 2.3-1 Daily Average Flow Requirements for Flow below Powerhouse No. 6

Source: Chandler Decree, 1929

In addition, there are required minimum instream flow requirements within the Bishop Creek Project that are mandated by Article 105 of the FERC license, as follows:

- Lake Sabrina to Intake 2: no less than 13 cfs or natural flows, whichever is less, year-round
- South Lake to South Fork Diversion: no less than 13 cfs or natural flows, whichever is less, year- round
- Intake 2 to Powerhouse No. 2: no less than 10 cfs from Friday of the last weekend in April thru October 31; no less than 7 cfs for the remainder of the year; or no less than 5 cfs in all months of dry years
- Southfork Diversion: no less than 10 cfs from Friday of the last weekend in April thru October 31; no less than 7 cfs for the remainder of the year
- Powerhouse No. 2 to Powerhouse No. 3: no less than 13 cfs year-round
- Powerhouse No. 3 to Powerhouse No. 4: no less than 5 cfs year-round
- Powerhouse No. 4 to Powerhouse No. 5: no less than 18 cfs year-round (Article 105)<sup>1</sup>
- Release from Powerhouse No. 6: per Chandler Decree (Table 2.3-1)

<sup>&</sup>lt;sup>1</sup> Article 114 required 18 cfs (or the natural streamflow, whichever is less), however this license condition was removed by Order dated February 1, 1995 because of a conflict with the Energy Policy Act of 1992, which changed how the Federal Land Policy and Management Act (FLPMA) treated lands which had been previously subject to a reservation under Section 24 of the Federal Power Act. The remaining language in Article 105 ambiguous as to whether the minimum flow requirement is 12 cfs or some greater amount negotiated with the California Department of Fish and Game (CDFW). Historically SCE has released 18 cfs.

### 3.0 STUDY OBJECTIVES

This Sediment and Geomorphology Study seeks to develop an understanding of sediment dynamics in Bishop Creek by analyzing relationships between sediment and flow dynamics in Bishop Creek. This study will assist SCE and stakeholders in understanding how Bishop Creek Project operations interact with sediment transport in Bishop Creek. To meet this goal, this study has the following objectives:

- Determine flow conditions that mobilize sediment and LWM in the stream channel and from forebays
- Characterize the particle size distribution of mobile sediment
- Evaluate how flow operations (flow release timing, magnitude, and duration) affect sediment transport
- Better understand how sediment flushing flows could impact reaches below Powerhouse No. 6

# 3.1 STUDY AREA

Figure 3.1-1 presents the study area for the Bishop Creek Sediment and Geomorphology Study. The study area focused on the areas of Bishop Creek that could potentially be modified by changes in Bishop Creek Project operation; Lake Sabrina, South Lake, and sections of Bishop Creek down to the Intake for Powerhouse No. 3 were not included in this study. The study area focused on the six of the seven<sup>2</sup> proposed monitoring sites identified in Figure 3.1-1. This included five monitoring sites (monitoring Sites 3 through 6, including a split site at Site 4.1 and Site 4.2) that align with the monitoring sites established by SLA (1990), as well as one new monitoring site (Site 7) to characterize channel substrates and dimensions downstream of the junction with Coyote Creek.

Monitoring Sites 3 through 6 were selected because of their inclusion in earlier stream monitoring studies (Read 2015; Simons 1990). These sites were located at the lower end of each reach between powerhouses, which should be in more equilibrium with the stream channel relative to any site just downstream of the diversion dam where there would likely be less sediment. Monitoring Site 1 referenced in the SLA Report was omitted from the proposed study area because it had a high frequency of disturbance (due to the nearby campground), as noted in previous studies in this area. Monitoring Site 7 is a new site established for this study. It should be noted that the numbers assigned to the Bishop Creek sites correspond to the chronological order in which the sites were established prior to 1991, not their relative location along the stream. In order from upstream to downstream on Bishop Creek, the monitoring sites were numbered, Sites 4.2, 4.1, 7, 3, 5, and 6. Of these, Site 3 was originally selected because it represents one of the two

<sup>&</sup>lt;sup>2</sup> Seven sites were originally proposed, but Site 2 was excluded based on site conditions, as described in Section 5 of this report.

major physiographic valley types present along Bishop Creek; Sites 4 through 6 were selected because they were considered to be sensitive to changes in streamflow or to have vegetation (or wildlife) of special interest (Read 2015; Sada 2010). In 1991, Site 4 was divided into two monitoring sites due to the change in slope and channel characteristics in this stream section; this aligns with the riparian vegetation monitoring sites. This numbering scheme was retained to maintain continuity between monitoring activities. It should be noted that Sites 4.2, 4.1, 2, and 7 were in the study reach that was evaluated for sediment flushing flow as part of the Sada and Hawkins study (1997).



Note: Site 2 was excluded based on field conditions; refer to Section 5



# 4.0 METHODS

The Bishop Creek Sediment and Geomorphology Study, as outlined in the Revised Study Plan approved by the TWG, included five primary, intertwined tasks:

- 1. Field surveys;
- 2. An assessment of LWM;
- 3. An estimate of annual sediment loading;
- 4. An evaluation of substrate mobility, and
- 5. An evaluation of flushing flows on sediment mobility and LWM dynamics.

These tasks serve to clarify the objectives of this study by increasing SCE's understanding of sediment and LWM dynamics in Bishop Creek. The general sequence of steps to complete these tasks, with additional detail, is provided below:

- Perform preliminary field reconnaissance to confirm SLA Report sites (Sites 2 through 6), recover cross-sections, and select a location for monitoring Site 7. Confirm "typical" sediment size by sampling bulk piles of sediment previously excavated from impoundments throughout the Bishop Creek Project (to identify the typical sizing of sediment found in the impoundments)
- 2. Compile and review data from the in-stream flow period (1994 to 2018) for peak annual flows and flow duration curves for the gauge nearest each site
- 3. Perform cross-section survey, substrate characterization, bankfull flow evaluation, and LWM assessment at each monitoring site
- 4. Perform bedload sediment transport measurements during estimated bankfull flows at the most upstream (monitoring Site 4.2) and most downstream (monitoring Site 6) sites
- 5. Utilize the FlowSed sediment transport model to estimate annual sediment loads at monitoring Site 4.2 and monitoring Site 6
- 6. Evaluate potential bed substrate mobility under bankfull, and flood flows, including impacts of possible flushing flows
- 7. Comment on the potential benefits, disadvantages, and outcomes of using flushing flows to mobilize sediment and LWM through the Bishop Creek Project
- 8. Develop a summary report that outlines the methods, field work, conclusions, and recommendations as they pertain to sediment and LWM in the Bishop Creek study reach

Methods for this Study Plan Steps 4 and 5 have been modified, per the revisions described in Section 5, with steps 6 through 8 being completed in 2021.

# 4.1 TASK1: FIELD SURVEYS

The first part of Task 1 (Task 1A) was a field reconnaissance visit, in July 2019, to recover the eight cross-sections at each of the monitoring Sites 2 through 6 (from the SLA Report Sites 2 through 6), establish a new Site 7, and evaluate nearby locations at each for sediment sampling. The prior cross-sections were marked in the field in 1989 with rebar and aluminum tags marked S1 through S8 from downstream to upstream. Some of the sites were recoverable after approximately 30 years. For this study, field staff surveyed one cross-section in each of three separate riffles (in the upstream two-thirds of the riffle) at each site as part of a later field effort. Sediment mobility was calculated in riffles; therefore, any cross-sections in a pool, run or glide would not adequately represent the sediment transport capacity of the reach. If the SLA Report cross-sections were not in suitable locations, new cross-sections were selected, as the sediment transport modeling requires cross-sections to be in the active portion of the riffle. During the field reconnaissance visit, the location of Site 7 was evaluated and modified, based on field conditions. After this visit, the sites each had three cross-sections identified in a riffle reach suitable for evaluation of sediment transport with additional survey and data collection.

To inform sediment sampler size selection and support the evaluation of sediment transport, a sieve analysis of previously excavated sediment was performed during this initial site visit. Field staff consulted with plant operators to understand the frequency of sediment removal, frequency of drawdowns, feasibility of flushing deposited sediment, and LWM mobilization at each of these impoundments. The particle size of sediments previously excavated from the impoundments was determined by sieve analysis in the field for three composite samples at identified piles of excavated sediment, including samples from removed sediment from Intakes 2, 4, 5, 6, and the LADWP impoundment directly downstream of Powerhouse No. 6. The composite samples included a sample from approximately 6-inches-below the existing surface at three well-spaced locations to minimize any sorting of particles by erosion processes on the surface of the excavated sediment.

The second part of Task 1 (Task 1B) was to collect additional field data, including crosssection and longitudinal surveys, bed substrate characterization, and bankfull bed sediment transport measurements needed to support subsequent analytical tasks.

Fieldwork for Task 1B was conducted in September 2019. For each of the 18 crosssections in the SLA Report, the survey utilized the same local datum as the SLA Report to the extent possible. Three new cross-sections were established at monitoring Site 7. Each cross-section used the same cross-section endpoints (rebar), if they were recovered; otherwise, new rebar monuments were established well outside the bankfull channel. Each monument (recovered and new) was recorded with a sub-meter global positioning system (GPS). The survey captured major breaks in topography along the cross-section, the bankfull elevation (if a defined feature could be identified in the field), and the water level; generally based on the USFS protocol (Harrelson et al. 1994). Photos of each cross-section were taken facing upstream, downstream, and the left and right banks (relative to the downstream direction) to document the conditions at the time of the survey. Additionally, representative photos of the bed substrate as well as a photo of active bars in the site reach were captured. To inform bed substrate mobility, a Wolman pebble count<sup>3</sup> (minimum 100 samples) was performed within the active riffles at each site, as well as a bar sediment sample (grab sample to determine D<sub>84</sub> particle size), if any bars were present in the site reach. This generally aligned with the methods and approach utilized in the SLA Report, which allows for comparisons with the prior study. To characterize the slopes at each site, a longitudinal profile was established through the monitoring site cross-sections with a length of approximately 20 times the bankfull width or through three riffle-pool sequences, whichever was less. This visit included a modified Pfankuch Channel Stability Rating (Rosgen 2014) to evaluate the condition of the channel and inform sediment transport calculations.

The cross-section survey was conducted in sufficient detail to capture any change in grade and characterize channel geometry, following standard survey procedures established by the USFS (Harrelson et al. 1994). This included capturing the bankfull elevation on both banks, the edge of water during the surveys, and the thalweg elevation. The survey approach ensured that all topographic breaks across the channel cross-section and all cross-section elevations within a given site were measured. Photos of each cross-section were taken facing upstream, downstream, towards left bank, and towards the right bank to document site conditions during the time of survey.

A longitudinal profile of the channel thalweg was surveyed through the length and extended upstream and downstream of the cross-sections for a minimum total length of 20 times the bankfull width or a minimum of three pool riffle sequences, whichever was shorter. The longitudinal profile survey followed procedures established by the USFS (Harrelson et al.1994), including surveying a sufficient number of points with which to capture the topography of pools, riffles, and other habitat features, as well as other significant breaks in channel gradient.

A Wolman style pebble count (Wolman 1954) was performed to characterize channel bed particle size distribution on the full width of the stream bed along cross-sections and representative channel locations. Pebble counts entailed measuring the intermediate axis (b-axis) of 100 particles in the immediate vicinity of a cross-section transect. All silt- and sand-sized particles were classified as less than 2 millimeters (mm). At Sites 4.1 and 4.2, a number of the established cross-sections were primarily composed of large immobile framework boulders and standard Wolman style pebble counts would not inform potential streambed mobility or adequately characterize overall particle size distribution; therefore,

<sup>&</sup>lt;sup>3</sup> The pebble count procedure (Wolman, 1954) is the measurement of 100 randomly selected stones from a homogeneous population on a riverbed or bar, which yields reproducible size distribution curves for surficial deposits of gravel and cobbles. <u>https://onlinelibrary.wiley.com/doi/pdf/10.1111/j.1752-1688.1997.tb04084.x</u>,

the area over which pebble counts were conducted was expanded to better inform sediment dynamics. Representative photos of channel bed substrate were collected throughout the study sites.

Additional cross-section and longitudinal profile surveys were conducted as part of the Tracer Rock Study (Appendix A) at Sites 4.1, 4.2, and 6 (Figure 3.1-1) July 27–August 6, 2020 utilizing Trimble S7 Real Time Service (RTS) and Trimble R12 Real-Time Kinematic Global navigation satellite system (RTK GNSS) survey equipment. Two semi-permanent benchmarks were installed near each study site to facilitate future monitoring efforts. The benchmarks consisted of a small magnetic nail and shiner set in large boulders or bedrock near ground level. Coordinates for one benchmark (primary benchmark) were obtained at each site by submitting static RTK GNSS observations to the National Geodetic Survey Online Positioning User Service (NGS OPUS). Coordinates for the secondary benchmark (backup), existing cross-section endpins, and all cross-section and longitudinal profile points were measured using standard RTK GNSS and RTS survey techniques and tied into the primary benchmark.

The proposed third part of Task 1 (Task 1C) was to measure bed sediment transport, which was to occur after Task 1B was completed and during a higher flow period (natural or man-made). Note that this subtask was modified as described in Section 5.0, based on field conditions, and as described in the Revised Study Plan to evaluate tracer rock mobility rather than to measure sediment transport loading. The selection of a bankfull flow to evaluate sediment mobility is one of the key drivers of the sediment transport capacity in the system. Due to this sensitivity, bankfull discharge identified in the field during the cross-section surveys was utilized, as in this regulated system, the regional curves and traditional statistical analysis were not as applicable.

The outcome of these field efforts resulted in the following information for use in subsequent analysis of sediment transport in Bishop Creek:

### Site-wide Data

- Pfankuch channel stability rating
- Channel slope (elevation change divided by stream length)
- Riffle Substrate  $D_{50}$  and  $D_{84}$
- D<sub>50</sub>, D<sub>84</sub>, and D<sub>100</sub> for excavated sediments from previously excavated intake sediment disposal piles

### Cross-section Specific Data

- Bankfull cross-section area
- Channel dimensions (width, depth, area)

# 4.2 TASK 2: ASSESSMENT OF LARGE WOOD MATERIAL

To evaluate the presence and potential mobility of LWM at each monitoring site, field staff recorded the size, quantity and likelihood of mobility of LWM in three zones;

- 1. Wetted channel (WET)
- 2. Above the waterline to bankfull elevation (BKF)
- 3. From bankfull up to an approximate elevation of twice the bankfull depth (to characterize LWM available in flood events [FLD]).

LWM that could be mobilized during flooding in the channel was considered as any wood larger than 3-inches in diameter and 4-feet-long that was not reasonably well anchored (e.g. well rooted, live vegetation, or mostly buried material) was excluded in this count. If substantial LWM existed in an area, the average size, length, and approximate quantity were noted. The study length for this assessment was the same as the stream length utilized to measure stream slope. The Bishop Creek Project operators provided input regarding the frequency of LWM mobilization and presence in the system, as described in the existing conditions of the Project.

# 4.3 TASK 3: ANNUAL SEDIMENT LOADING ESTIMATION

Based on field conditions and site safety constraints, this task was modified as described in Section 5, to focus on mobility of individual tracer rocks, rather than annual sediment loading, as such measurements were not feasible during this study. Refer to the Sediment & Geomorphology Study Plan for a review of what was proposed prior to the modified approach.

### 4.4 TASK 4: SUBSTRATE MOBILITY EVALUATION

Note that this task was modified as described in Section 5.0, based on field conditions; the methods summarized in this section are for the modified methodology, with additional detail provided in Appendix A.

Passive integrated transponder (PIT) tagged tracer rocks were deployed to inform sediment transport dynamics at study Sites 4.1, 4.2, and 6 (Figure 3.1-1, same sites as studied in 1990 baseline surveys). Tracer rocks bracketed the range of  $D_{10}$  to  $D_{84}$  particle sizes (32 to 350 mm) present at each site, determined by 2019 pebble counts. Table 4.4-1 describes the particle size classes and total quantity of tracer rocks installed in 2020.

Size Class	B-axis Range (mm)	Quantity
А	32–45	30
В	45–60	30
С	60–90	33
D	90–128	31
E	128–180	31
F	180–256	19
G	256–350	9
	Total:	183

# Table 4.4-1 Tracer Rock Size Classes and Quantities Deployed

Tracer rock size classes A–F were obtained from an out of area aggregate source prior to the start of fieldwork. The out of area tracer rocks had similar lithology (igneous) and physical properties (e.g., specific gravity, sphericity, hardness, mineralogy) to native particles found at the Bishop Creek study sites. Tracer rocks in size class G were obtained on-site. The out of area tracer rocks were decontaminated with Virkon® aquatic disinfectant prior to deployment in Bishop Creek. The intermediate axis (B-axis) and mass were recorded for each particle in size classes A-F, but only the B-axis parameter was recorded for size class G particles. PIT tags were inserted into the tracers by drilling a 3/16-inch hole into each particle, cleaning out residual detritus and then sealing the PIT tag in place with a quick cure, high strength concrete and masonry anchoring adhesive. The adhesive was smoothed over to try and mimic natural particle surface texture. The tracer particles were painted a bright, high contrast color with concrete marking paint once the adhesive was dry.

Tracer rocks were deployed along study site cross sections and at other representative geomorphic units at the three study sites. Various geomorphic units were chosen for tracer rock placement to test rock particle mobility in a range of environments. Geomorphic units included riffles, cascades, flat-water sections (runs and glides), and plunge pools. Prior to placement of individual tracer rocks, a rock of similar shape and size was removed from the streambed to create a void space and a similarly sized tracer rock was gently pressed down and worked into the void space to simulate natural streambed particle emplacement. The location of each tracer rock was surveyed with RTS or RTK GNSS equipment, and representative photographs were taken of the tracer locations.

As part of identifying the mobility of sediment in the study reach, an evaluation of sediment mobility was completed, based on the data collected during the field effort. This included an incipient motion calculation using the Shields equation (as used in the SLA Report). In addition to the Shields equation, particle mobility was evaluated using empirical data collected for streams in Colorado and summarized in the River Stability Field Guide, Worksheet 3-14 (Rosgen 2014). The Rosgen (2014) equation tends to show particle mobility at lower flows than the Shields equation and can provide a range of sediment particle size mobility for a given depth/shear stress. The results of the Shields and Rosgen

methods were compared to the mobility anticipated in the SLA Report for the  $D_{65}$  and  $D_{84}$  particle size, as well as to the tracer rocks mobilization results (although not exactly at bankfull flows).

# 5.0 MODIFICATION TO METHODS

As described in the Initial Study Report (ISR) filed October 30, 2020, and subsequent progress reports, modifications were made to the approved study, based on safety and field conditions. These changes were implemented after consultation with the TWGs. A summary of these modifications follows:

- Task 1-Field Studies and Task 3-Annual Sediment Loading Estimation: Omitted the bed sediment sampling field effort and annual sediment loading estimate due to safety concerns and higher than anticipated bankfull conditions identified in this previously that prohibit this data collection.
- Task 4-Substrate Mobility Evaluation: Added a tracer rock study to supplement the previously proposed bed substrate mobility calculations utilizing data available from 2019 field efforts. This tracer rock study was expected to meet the objectives for this study by: confirming that the observations of coarse substrate in the riffles indicate that smaller (less than 60 mm) substrates were mobilized through the Bishop Creek Project during bankfull flows; and providing a better understanding of substrate mobility during a period of normal summer flows and a period of higher spring flows in Bishop Creek. This tracer rock study occurred at previously surveyed riffles at Site 4 (most upstream, steep site) and Site 6 (most downstream, lower gradient) over a period of high flows (near bankfull) and lower flows. This study involved tagging (paint and PIT tag) rocks of desired size classes (32 to 360 mm, capturing most of the surveyed riffle D50 rock sizes), placing the tagged rocks in target riffles, and then locating the tagged rocks after a highflow event to determine if they were mobilized. The schedule was dependent on anticipated flows in Bishop Creek; the placement of tracer rocks occurred July 27–August 6, 2020, with recovery in May 2021 (after an approximately 60-70 cfs pulse flow) and in July 2021 (after an approximately 120 cfs pulse flow).
- Task 5-Flushing Flow Evaluation: This task essentially remained unchanged. SCE relied on previous studies at the site, field data collected during 2019, and the tracer rock study (proposed Task 4) to consider the impacts of utilizing flushing flows to mobilize sediment and large woody material in Bishop Creek, including a qualitative assessment of potential impacts to macroinvertebrates.

# 6.0 RESULTS

The results of the field study are presented in four sections to describe the findings associated with the Bishop Creek channel, substrate, and bankfull flows; the dredged sediment gradations; large woody material in Bishop Creek; and the tracer rock study.

#### 6.1 CHANNEL CROSS SECTIONS, SUBSTRATE, AND BANKFULL FLOWS

As part of the 2019 field survey, three cross-sections were surveyed at each monitoring site. During the reconnaissance trip and field survey trip, the historic SLA cross-sections (eight cross-sections at each site) were evaluated to determine which were in the active portion of a riffle (to better inform sediment transport/mobility assessments). The three most ideal cross-sections for evaluating sediment transport in riffles were surveyed in 2019. For the purposes of analysis, a representative riffle cross-section was selected from the three surveyed cross-sections. Table 6.1-1 summarizes the geometry of each representative cross-section.

Site	Cross Section ID	Bankfull Width (ft)	Bankfull Depth (ft)	Bankfull Area (ft²)	2019 Estimated Bankfull Discharge (cfs)	1990 Estimated Bankfull Discharge (cfs)*
4.1	4.9	30.1	1.1	31.5	128.9	270
4.2	4.4	28.2	1.2	33.2	86.2	100
7	7.1	28.4	1.6	44.2	162.8	N/A
3	3.2	26.7	1.6	42.6	147.3	110-1,500
5	5.3	37.1	1.0	37.0	91.4	800-1,500
6	6.5	16.1	1.3	21.6	59.3	50-165

Table 6.1-1 Representative Cross Section

Notes: Sites were ordered from upstream to downstream and bankfull was estimated based on geomorphic characteristics observed during the 2019 field survey.

\*Simon 1990; Table 8.3.

The variability in bankfull area across sites is expected as each of the reaches has different minimum flows and hydro generation capacities, tributary inputs, and local slopes that dictate this dimension. Further, selecting bankfull elevation in the field can vary between observers, so while bankfull was called by the same crew on these sites, comparison to historic data may introduce another potential difference. A comparison of these values with historic data from the 1990 study is presented in Table 6.1-1.

A Wolman pebble count was conducted in the active riffles at each site to characterize the riffle substrate size. This pebble count was a composite sampling of the active riffles surveyed by the cross-section survey at each site. The riffle substrate  $D_{50}$  (meaning that 50 percent of the particles measured by the pebble count were equal to or less than this value) for the study sites ranged from 139 mm (large cobble) to 597 mm (medium boulder). The riffle substrate  $D_{84}$  for the study sites ranged from 342 mm (small boulder) to 1622 mm (large to very large boulder). The riffle substrate particle size distribution is

provided in Figure 6.1-1 with a representative photo of the riffle substrate provided in Photo 6.1-1. A comparison with historic survey data from the 1990 SLA report shows relatively strong agreement on the  $D_{50}$  particle size found during the 2019 field effort, with the historic data indicating that the  $D_{50}$  particle sizes for Sites 1 to 6 ranging from approximately 200 to 600 mm.



Figure 6.1-1 Riffle Substrate Particle Sizes.



Note: For reference the gravelometer in the creek is approximately 380 mm by 200 mm Photo 6.1-1 Riffle Substrate at Site 6

The representative riffle cross-section geometry, riffle substrate  $D_{50}$ , and bankfull slope were utilized to classify the Rosgen stream type at each site. Bankfull slope was measured in RIVERMorph (publicly available program from RIVERMorph, LLC for storing and analyzing river data) based on the bankfull indicators surveyed in the long profile survey of each site, conducted during 2019. At sites where it was very difficult to find "typical" bankfull indicators (Sites 4.1, 4.2, and 7), head of riffle bed and water surface elevations were utilized to determine channel slope for classification and analysis. The Rosgen Stream Types are provided in Table 6.1-2.

Site	Width / Depth Ratio (W <sub>bkf</sub> /d <sub>bkf</sub> )	Maximum Depth (d <sub>mbkf</sub> , ft)	Entrenchment Ratio (ER)	Riffle Substrate D <sub>50</sub> (mm)	Slope (S, ft/ft)	Rosgen Stream Type
4.1	28.7	2.8	1.7	228	0.048	B3a
4.2	23.9	2.6	2.0	267	0.039	B2
7	18.2	3.5	1.8	597	0.080	B2
3	16.7	3.0	2.5	220	0.041	B3a
5	36.9	1.7	1.1	252	0.050	B3a
6	12.0	2.0	2.0	139	0.029	B3

# Table 6.1-2 Rosgen Stream Classification

At each site, channel stability was evaluated qualitatively during the field survey. These evaluations were documented using the modified Pfankuch Channel Stability Rating (Rosgen 2014) form. Stability ratings for the study sites ranged from fair to good; however, this rating was for free-flowing streams, thus it may not be directly applicable to the more-

regulated Bishop Creek. The completed Pfankuch forms are included as Appendix B of this Final Technical Report.

Based upon a representative cross-section of each site's geometry, bankfull slope, and riffle substrate particle size distribution, the bankfull velocity, discharge, and shear stress were calculated in RIVERMorph. Jarrett's Equation<sup>4</sup> was utilized to calculate the Manning's n coefficient at each site for the estimated bankfull velocity and discharge. The estimated bankfull shear stress was utilized along with the Shields Curve and Colorado Curve to predict the largest movable particle size. The results from the Shield Curve ranged from mobilizing a 198 mm (large cobble) to 660 mm (medium boulder) bed particle for the estimated bankfull discharges. The results from the Colorado Curve resulted in slightly larger particles being mobilized under the same estimated bankfull discharges at each site (ranged from 293 mm/small boulder to 686 mm/medium boulder). Table 6.1-3 shows the predicted largest movable particle size for each study site and provides the historic data (critical particle size and bar sample D<sub>84</sub>) from the earlier 1990 SLA report for comparison, although the earlier study looked at largest movable particle on a bar sample, so it is not a direct comparison.

<sup>&</sup>lt;sup>4</sup> Jarretts equation is: n = 0.39\*(S^0.38)\*(R^-0.16), where S is the energy slope and R is the hydraulic radius of the stream. n-values in steep streams - Kleinschmidt (kleinschmidtgroup.com) accessed January 29, 2022.

#### Table 6.1-3 Predicted Largest Movable Particle under Estimated Bankfull Flow Conditions

Site	Cross- Section ID	Estimated Bankfull Velocity (ft/sec)	Estimated Bankfull Discharge (ft <sup>3</sup> /sec)	Bankfull Shear Stress (Ibs/ft <sup>2</sup> )	Site D₅₀ Riffle Particle Size (mm)	Predict Largest Movable Particle (mm)		1990 SLA Report	
						Shields Curve	Colorado Curve	Site D₅₀ / D₅₄ Substate Size (mm)	Critical Bar Substrate Particle Size * (mm)
4.1	4.9	2.8	128.9	3.6	228	298	392	Not part	of study
4.2	4.4	2.6	86.2	2.8	267	231	328	230 / 645	25-50
7	7.1	3.7	162.8	7.8	597	660	686	Not part	of study
3	3.2	3.5	147.3	4.1	220	341	431	300 / 870	60-135**
5	5.3	2.5	91.4	3.1	252	252	348	300 / 700	85-170
6	6.5	2.7	59.3	2.4	139	198	293	207 / 563	63-126 **

\* Estimated for the stated bankfull flow from critical particle diameters near observed bars as reported in Appendix J of the SLA Report (1990) for a range of F\* values and is provided for high-level comparison only, as this study evaluated bar sample mobility, while the current study evaluated bed substrate mobility in a riffle.

\*\* Estimated from nearest cross sections, as this cross section was not reported in this study.

### 6.2 DREDGED SEDIMENT SIZE CLASSIFICATION

Sieve analyses of the sediment piles dredge from the Bishop Creek Project intakes and the LADWP intake, just below Powerhouse No. 6, were conducted during the 2019 reconnaissance and field survey trips. Generally, the dredge sediment would be a mixture of sand and gravel with some cobble. The dredge sediment D<sub>84</sub> ranged from 6 mm (fine gravel) to 129 mm (large cobble) in the sieved sample; however, there were some larger rocks in the vicinity of the sample that were documented, but not included in the limited sample volume used in this study. The previously dredged sediment particle size distribution (Figure 6.2-1, Photo 6.2-1 and Photo 6.2-2) provided examples of the dredged sediment from Intake 2 and 5 sediment piles, respectively. The results of the dredged sediment sieving and largest observed particles near the sample site are provided in Table 6.2-1. However, it should be noted that due to dredging and relocating of sediments from these intakes, and the uncertainty if the dredged material was all sediment deposited by the channel (or if it was over-excavation of native soils), there is a small level of uncertainty in this data. Despite this uncertainty, field observations generally supported the evidence that most sediment in the intakes was sand and small gravel, with limited cobbles and boulders.



Figure 6.2-1 Dredged Sediment (Intake Impoundment) Particle Sizes



Photo 6.2-1 Sediment Pile from Intake 2



Photo 6.2-2 Sediment Pile from Intake 5

		Largest Nearby			
intake Number	% Sand/Silt (<2mm)	D₅₀ (mm)	D <sub>84</sub> (mm)	Particle* (mm)	
2	69	<2	5.7	300	
4	74	<2	6.0	220	
5	56	<2	22.6	280	
6	43	3.4	64.6	250	
LADWP	26	5.6	128	270	

# Table 6.2-1 Dredged Sediment Grain Sizes

\* within ~5 feet of sampling sites, nearby particles not included in D<sub>50</sub>/D<sub>84</sub> calculations, as it is not clear if this is material mobilized during natural fluvial processes or included due to over-excavation of the sediment.

#### 6.3 LARGE WOODY MATERIAL

During the 2019 field survey, LWM at each site was documented. Only dead wood larger than 4-inches in diameter and longer than 4.5-feet that could be mobilized by flow was documented. The stream channel was divided into three different zones and the location of LWM was categorized into five different zones/combinations of zone; some LWM was only categorized in two different zones. Thus, the location of the LWM was documented as a combination of those two zones. The three zones were WET (in baseflow), BKF, and RIP (riparian within floodplain). Table 6.3-1 summarizes the amount of LWM at each monitoring site and Photo 6.3-1 and Photo 6.3-2 provide the presence/absence of LWM at Sites 3 and 7, respectively. Additional information regarding large wood is provided Section 2.1.
Table 0.3-1 Large WOOdy Waterial
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						Zo	nes						Total
	Site	W	ET	WET	/BKF	BI	٨F	BKF	/RIP	R	IP		TOLAI
Site	Length (ft)	# of pieces	pieces /100 LF	# of pieces	pieces /100 LF	# of pieces	pieces /100 LF	# of pieces	pieces /100 LF	# of pieces	pieces /100 LF	# of pieces	pieces /100 LF
4.1	258	1	0.4	8	3.1	2	0.8	7	2.7	1	0.4	19	7.4
4.2	231	1	0.4	0 0.0		8	3.5	0	0.0	16	6.9	25	10.8
7	290	5	1.7	3	1.0	21	7.2	0	0.0	235	81.0	264	91.0
3	278	0	0.0	5	1.8	0	0.0	0	0.0	3	1.1	8	2.9
5	285	2	0.7	0	0.0	8	2.8	0	0.0	15	5.3	25	8.8
6	249	0	0.0	0.7         0         0.0           0.0         0         0.0		1	0.4	0	0.0	12	4.8	13	5.2



Photo 6.3-1 Minimal LWM within and Along the Site 3 Channel



Note: Location is below the outlet of Coyote Creek Tributary Photo 6.3-2 Substantial LWM in Riparian Zone of Site 7 Channel

### 6.4 SUBSTRATE MOBILITY EVALUATION

As detailed in Sections 4.4 and 5, a Substrate Mobility Evaluation Study was completed to further characterize the particle size distribution of sediments mobilized at or near bankfull flow conditions. PIT tagged rocks were deployed to inform sediment transport dynamics at Sites 4 (comprised on Sites 4.1 and 4.2) and 6 on Bishop Creek (Figure 6.4-1) The tagged tracer rocks were deployed along cross sections, and at other representative geomorphic units between the cross sections, at each study site. Field measurements taken during the study included cross section surveys, longitudinal profile surveys of the channel bed and water surface, surface measurements of bed particle size distribution, deployment and recovery of PIT tagged tracer rocks, and photo documentation. The full report on substrate mobility in Bishop Creek is included as Appendix A to this report, with a summary of the results provided in Section 6.4.1.



Figure 6.4-1 Bishop Creek Tracer Rock Evaluation Study Sites

### 6.4.1 SITE 4 RESULTS

Longitudinal profiles at Site 4 were approximately 550-feet-long during sampling events in 2020 and 2021. The average slope of the reach was calculated at 0.04 ft/ft (4 percent) during both years. No significant changes were apparent between the 2019 and 2020 longitudinal profiles. The cross-section geometry was similar between the two monitoring years, as was when recent cross sections were compared to riparian monitoring effort cross sections surveys since 1990. The bed at all three cross sections was predominantly cobbles, with gravel comprising less than 37 percent and boulders comprising less than 21 percent of the grain size distribution at each cross section. Sand content (less than 2 mm) from the 2020 pebble counts was 4, 16, and 1 percent of the measured particles at cross sections 4.9, 4.7, and 4.2, respectively. A summary of the pebble count data is provided in Table 6.4-1.

Cross Section (XS) ID	Year	D <sub>16</sub> (mm)	D <sub>50</sub> (mm)	D <sub>84</sub> (mm)
4.9	2020	25	78	239
4.7	2020	3	91	323
4.2	2020	43	117	226

## Table 6.4-1 Summary of Pebble Count Data From 2020 for Site 4

<sup>1</sup>Pebble counts were not conducted at Site 4 in 2021 due to limited tracer mobility after the initial flushing flows.

One hundred and sixteen (100 percent) tracer rocks deployed on August 2, 2020, were recovered on May 26, 2021 after a pulse flow of approximately 70 cfs for a period of approximately 1 hour. Tracer rocks displacement calculations between the deployment and first recovery effort revealed that 114 (98 percent) of the recovered tracer rocks at Site 4 had not mobilized. The remaining 2 percent of tracers showed negligible transport distances, with a maximum displacement of 1.75 feet, indicating that short peak flows of 70 cfs do not substantially mobilize particles larger than 32 mm at this site.

A pulse flow of approximately 120 cfs was released to the study reach shortly after the first recovery effort to determine what size particles would mobilize during a higher flow. One hundred and fifteen (98 percent) of the deployed tracer rocks were recovered during the second recovery effort on July 21, 2021. A 24-hour pulse flow of approximately 120 cfs resulted in mobilization of 12 tracers (11 percent) and 17 percent of tracers with diameters less than 60 mm. Ninety-three percent of tracers with diameters greater than 60 mm had no mobilization. The largest mobilized particle had a diameter of 170 mm, although it was only transported 1.5 feet. Tracer movement by particle size is summarized in Figure 6.4-2, but this indicates that particles in the 32-60 mm size classes begin to mobilize more frequently at flows of 120 cfs, but most (over 80 percent) of the tracers less than 60 mm remained in place.



Note: Grain Size Classes Follow Conventions Used in Table 4-1.

Figure 6.4-2 Transport Distance of Tracer Rocks by Particle Size at Site 4 for a flow of 120 cfs in this reach of Bishop Creek

## 6.4.2 SITE 6 RESULTS

Longitudinal profiles at Site 6 were approximately 420-feet-long during sampling events in 2020 and 2021. The average slope of the reach was calculated at 0.02 ft/ft (2 percent) during both years. Cross section profiles were similar across previous years as was recent cross sections were compared to riparian monitoring effort cross sections surveys since 1990. The stream beds at all three cross sections primarily consisted of cobbles and gravel, with boulders comprising less than 21 percent of the pebble counts at each cross section during 2020 and 2021.

The 36 tracers (54 percent of all tracers deployed) that were recovered in the stream channel after a 24-hour flow of approximately 60 cfs were undisturbed and showed no movement from their initial placement locations (31 tracers were disturbed by non-fluvial processes and were not included in these results but were present for the higher flow). Non-fluvial disturbance was determined by observations of lateral and upstream movement of tracer rocks, presumably from anglers or other recreating individuals. This necessitated resetting approximately half of the tracers at Site 6 in May 2021, which resulted in shorter residence times for approximately half of the tracers at Site 6 prior to the second, larger pulse flow. Sixty (90 percent) of the deployed tracer rocks at Site 6 were recovered during the second recovery effort on July 21, 2021. The pulse flow resulted in mobilization of 40 percent (n = 24) of all recovered tracer rocks and 84 percent (n = 16) of tracers less than 60 mm. Eighty percent (n = 34) of tracers greater than 60 mm showed no mobilization. The largest mobilized particle was 197 mm and was

transported 4.5 feet. This was the only mobile particle larger than the highest predicted critical  $D_{50}$  at the site and may have been due to the shorter period of time for the tracer to settle into the surrounding substrate prior to the high flow. Tracer movement by particle size is summarized in Figure 6.4-3. Since no tracers were mobilized at flows of 60 cfs, it was concluded that flows of this magnitude would not typically mobilize substrate particles larger than 32 mm in this reach of Bishop Creek, but at flows of 120 cfs, the majority (84 percent) of particles smaller than 60 mm mobilized at least 1-foot downstream (however, this is also with minimal settling time for the tracers prior to the high flow event).



Note: Grain Size Classes Follow Conventions Used in Table 4-1.

Figure 6.4-3 Transport Distance of Tracer Rock by Particle Size at Site 6 for Flow of 120 cfs in this Reach of Bishop Creek

## 7.0 DISCUSSION

The objective of the study was to better understand sediment dynamics in Bishop Creek. Specifically, the study was designed to understand what size particles were typically mobile in Bishop Creek, evaluate flow conditions under which mobilization of sediment and LWM occurs within the channel, evaluate how Bishop Creek Project operations may affect sediment transport flows, and understand how higher in-stream flows and sediment flushing may affect downstream reaches below Powerhouse No. 6.

## 7.1 SEDIMENT MOBILIZING FLOWS

One study was to evaluate bankfull flow to better understand sediment mobilizing flows in Bishop Creek. Bankfull flow is generally considered the channel forming flow and the point at which the flow just begins to utilize the floodplain and is often determined by review of field conditions and can vary based on site topography, site vegetation, the historic flow regime, and the observer. Since each reach of the study area of Bishop Creek has a different flow, minimum flow requirements, and upland/tributary inputs, the bankfull channel geometry, and bankfull flow of each reach were expected to differ, as shown in Table 6.1-3. Discharge at conditions that in an unregulated system would be equated with a bankfull discharge were estimated to range from approximately 60 cfs (Site 6) to 160 cfs (Site 7) for the Bishop Creek bypass study reaches.

At Site 6, a pulse of 60 cfs, approximately equal to the estimated bankfull discharge, did not mobilize particles greater than 32 mm; however, a pulse of 120 cfs mobilized a majority of particles less than 60 mm at least 1 foot. At Site 4, a pulse flow of 70 cfs did not substantially mobilize particles larger than 32 mm while a pulse flow of 120 cfs (approximately equal to the estimated bankfull discharge) mobilized particles between 32-60 mm more frequently (17 percent of particles mobilized); the pulse flow of 70 cfs did not mobilize any particles approaching the bed 2019 survey D<sub>50</sub> greater than 220 mm, but showed limited (only 4) mobility of particles near the D<sub>50</sub> of 78-117 mm for the substrate surveyed in 2020.

This substrate mobility study, when combined with the analysis of intake sediment and channel substrate sizes, indicates that for higher (bankfull and beyond) flows most of the sand and small gravel size particles flush downstream into the next impoundment, while coarse gravel, cobble, and boulders generally remain stable and in place in the stream channel. The establishment of vegetation along the stream banks further helps to limit the bank erosion and subsequent sediment inputs, thus reducing the overall sediment load in Bishop Creek as compared to unvegetated stream banks.

It is anticipated that a magnitude of flow greater than 60 cfs would be required to mobilize sediment in the 32-60 mm range in the Bishop Creek reaches, with some reaches requiring more than 120 cfs to mobilize most particles in this size range. However, the sand-size particles that dominate the dredged sediment were anticipated to be mobilized at lower flows, but an exact estimate of those threshold flows is not available from the information provided in this study. However, from the Sada and Hawkins study (1997), it is clear that a flushing flow of 200 cfs is capable of moving sand and gravel through the bypass reaches with minimal changes in gradation of the existing substrates. Thus,

depending on the objective, a flushing flow of between 60 and 200 cfs could be considered to either distribute or flush a desired size class of sediment through the system.

Without lowering the intake headpond level, only sediment immediately adjacent to the low-level outlet inlets was anticipated to be mobilized during flushing flows. Lowering the headpond was anticipated to be required to produce adequate shear stress to mobilize sediment from the intake impoundments, where it currently settles under the current operation regime. Thus, any plans to mobilize sediment from the invert elevations of the low level outlet(s).

## 7.2 MOBILE SEDIMENT PARTICLE DISTRIBUTION

It appears that Bishop Creek is relatively stable, even after a summer of near and beyondbankfull flows (140 to 230 cfs) (e.g., such as 2019), as no substantial recent erosion was observed in the vicinity of the monitoring sites. This was further confirmed by limited differences between the cross sections surveys completed in 2020 and 2021, as well as when the 2019 surveys were compared to the early 1990 cross sections. The D<sub>50</sub> of channel substrate observed in the riffles of Bishop Creek during the 2019 field investigation was generally cobbles and boulders (139 to 600 mm, Figure 6.1-1), which aligned relatively well with D<sub>50</sub> particle sizes found at these sites in the SLA Report (1990). This supports the concept that this Bishop Creek channel has reached an equilibrium state with the current flow regime and there is only minor flushing of smaller sediment through the system as small sections of stream bank collapse, or surface runoff carries sediment into the channel from outside the primary Bishop Creek channel (such as Coyote Creek). The bed is well-armored and the substrate of cobbles and small boulders resists additional erosion, with a channel of adequate capacity and vegetated bank condition suitable for efficiently passing the smaller (less than 60 mm) size particles that enter into the system during episodic flows that happen during major runoff events (e.g., greater than 200 cfs) without any substantial changes to channel geometry or bed form.

The estimated bankfull shear stress at each study site was utilized along with the Shields Curve and Colorado Curve to estimate the largest movable particle at bankfull flow. The Shields and Colorado Curves produced largest movable particle sizes from approximately 200 to 660 mm and approximately 300 to 690 mm, respectively. These particle sizes were larger than the riffle substrate  $D_{50}$ , but less than the riffle substrate  $D_{84}$  (325 to 1050 mm, Figure 6.1-1).

The Substrate Mobility Evaluation results confirmed the largest mobilized tracer particle sizes were 170 mm (Site 4) and 197 mm (Site 6, with low "adjustment time" prior to pulse flow), during the 120 cfs pulse flow. These tracer particle sizes were between the  $D_{50}$  and  $D_{84}$  of the respective site riffle substrates and were only mobilized a short distance (shorter than 5 feet). At the lower gradient site (Site 6) with a bankfull estimate flow of 59 cfs, a majority of tracer particles less than 60 mm were mobilized at a flow of 120 cfs, with one particle traveling over 50 feet. While at the higher gradient site (Site 4) with a bankfull estimate flow of 86 to 129 cfs, tracers less 60 mm only began to mobilize during a 120 cfs pulse flow and the furthest tracer in this class traveled approximately 8 feet.

The sediment found in the dredge piles from past dredging at Intakes 2, 4, 5, 6, and the LADWP intake confirm that while there are some large particles that are deposited in the impoundments, the majority of the material is sand and fine gravel (all D<sub>50</sub> values less than 6 mm, most less than 2 mm; Figure 6.2-1). The expected transport of sand-grained material through the system aligns generally with the findings of the Sada and Hawkins (1997) study that examined the pulse of sediment that was released when the low level outlet was opened at Intakes 3 and 4. That study concluded that the intake sediment (fines, sand, gravel, but predominantly sand) was generally deposited within 1.6 miles of the intake and was equally distributed across pools and riffles (Sada and Hawkins 1997). After a flushing flow of 200 cfs for 24 hours was applied, most of the intake sediment in the pools was removed by the flushing flow. In all except 3 of the 30 pools surveyed, there was no substantial change to substrate composition due to the sediment release (Sada and Hawkins 1997).. Based on the Sada & Hawkins study (1997), the smaller size classes of sediment (sand and gravel), such as those in the intake impoundments, are flushed entirely through the system with a pulse flow of 200 cfs. Therefore, it is possible to conclude that the average annual maximum flow over the past 27 years of 202 cfs most of which have more than 20 years of data available. These gauges were utilized where necessary to evaluate flow conditions in the study reaches, including peak annual flows, average flows, and estimations of bankfull based on flow-event return period would effectively flush the size classes of sediment found in the intake impoundments through the bypass reaches, but that particles in the range of the current riffle substrate (D<sub>50</sub> from 140 to 600 mm) were not anticipated to frequently mobilize at this flow.

## 7.3 FLOW OPERATIONS IMPACT ON SEDIMENT TRANSPORT

The timing of higher flow releases is anticipated to have little effect on sediment transport. but could have substantial effect on aquatic organisms if spawning beds were washed out. Further if sediment has more time to become more embedded in the substrate, it may be harder to mobilize, as compared to freshly deposited sediment, as was observed with some of he larger tracer rocks after replacement at Site 6 just prior to the larger flushing flow. The magnitude of flows was anticipated to have a susbtantial impact on sediment transport, with larger flows typically mobilizing larger sizes of substrate. The Substrate Mobility Evaluation revealed no substantial impact to channel substrate at bankfull flow for the two sites evaluted in this study. Low magnitude flows (e.g., less than bankful flow) were not anticipated to provide sediment tranport of the existing bed substate, but may mobilize the size classes of sediment found in the intake impoundments. The duration of flow releases can have a substantial impact on sediment transport, although that impact is reduced as the duration of small flows increases, the sediment supply was limited. and/or the bed becomes armored. In this system with limited sediment availability in the sand and fine gravel size classes of the riffle substrate, the sediment transport was primarily supply limited, thus adding additional flows was not anticipated to mobilize substantially more sediment, unless the flows become large enough to initiate bank erosion or mobilization of the bed substrate. Should sediment transport from the intake impoundments be desired, a flushing flow could be selected to either distribute that sediment throughout the downstream bypass reach or flush it to the next impoundment downstream. If implemented, the selection of any sediment transport flows should be made in consideration of the existing long-term agreement with CDFW (CDFW 2008),

available water resources, seasonal spawning periods, and objectives of the sediment transport.

### 7.4 SEDIMENT AND FLUSHING FLOWS BEYOND PROJECT BOUNDARY

As Bishop Creek leaves the Project boundary, it is managed to meet the minimum flow requirements, but for larger flows, once the reservoirs are full and plant capacity is exceeded (e.g., during spring snowmelt in a wet year), the flow is unregulated. This snowmelt period is often when Bishop Creek experiences its annual peak flow, with flows in the bypass reach exceeding 200 cfs on average. The peak flows in the bypass reach exceed 300 cfs approximately every 5 years. When this peak flow in the bypass reach (within Bishop Creek) joins with any powerhouse discharge at that time, the downstream receiving water bodies could reasonably experience flows in excess of 200 cfs annually, on average. Thus, any combination of a flushing flow in Bishop Creek immediately above Plant 6 and a generation of less than 300 cfs would be within a reasonably anticipated 5-year return period peak flow experienced by downstream reaches.

Under the existing operating scenario, most of the sediment larger than silt that is transported by the bypass reaches of Bishop Creek settles in the next downstream Project intake impoundment, with the exception of the bypass reach between Intake 6 and Powerhouse No. 6, which tends to capture coarser material than the other intake impoundments (Figure 6.2-1). This lowest bypass reach discharges directly to a very small (3 to 5-feet-deep) impoundment managed by LADWP for use in their water management. This intake was reported to be dredged more frequently than the Bishop Creek Project impoundments (Charles Partridge, SCE Project Staff, personal communication).

Powerhouse No. 6 and Bishop Creek (bypass reach between Intake 6 and Powerhouse No. 6) discharge directly into the LADWP Intake. Based on the LADWP Intake's small impoundment size, the intake would not be anticipated to attenuate flushing flows in the bypass reach of Bishop Creek between Intake 6 and Powerhouse No.6. Depending on the storage capacity of the impoundment, the size of sediment particles in transport, the sediment volume released, and the magnitude of flow, the impoundment may capture very little to most of the sediment coming down the bypass reach. Thus, mobilizing sediment from Intake 6 impoundment periodically could reasonably be anticipated to decrease the timespan between necessary dredging of the LADWP Intake.

Bishop Creek has a high gradient while in the mountains and begins to become lower gradient as it reaches the valley floor. As is typical of these types of streams, a downstream fining of the sediment on the substrate typically develops as the gradient is reduced, with larger sediment dropping out first, then the smaller material dropping out as the stream no longer has sediment transport capacity for that size particle. This is evident in the bed substrates, which show that the steepest site (Site 7) has the coarsest bed substrate, while the lowest gradient site (and most downstream site) has the finest bed substrate. As Bishop Creek exits the Project site, it is at a moderate to low gradient, and while the area downstream of Plant 6 was not part of the Project area, it is understood that the lower-gradient slope continues to the Owens River given the valley topography. The fate of sediment released from Bishop Creek beyond the Project would depend on

the downstream channel dimensions and slopes; sediment volume and particle size range; flushing flow magnitude, timing, and duration; and downstream water withdrawal operations. The behavior of the sediment will be highly reliant on concurrent operations of water infrastructure between Plant 6 and the Owens River. SCE anticipates that the Sediment Management Plan will include measures for coordination and communication with downstream operators in order to minimize this potential effect.

Flushing flows larger than bankfull flows may cause an increase in LWM entering the downstream impoundment based on the presence of moderate amounts of LWM above the bankfull elevation. However, the magnitude of flushing flows that are likely to be considered (e.g., less than 200 cfs) are not substantially different than the average peak annual flow. Thus, while LWM may mobilize with the flushing flow, the site infrastructure was likely already set up to handle such inputs.

## 7.5 LARGE WOODY MATERIAL MOBILIZATION FLOWS

For most of the study sites, the LWM present was located within the riparian zone (Table 6.3-1), which was generally inaccessible for transport; except for flows that substantially exceed bankfull flows in the channel. This was not surprising, given the sustained nearbankfull flow in the summer of 2019 prior to that field survey. During that time, LWM in the WET and BKF zones was likely mobilized and deposited in the downstream riparian zone or passed through Project reaches of Bishop Creek. The amount of LWM documented at Site 7 (91 pieces per 100-linear-feet, Table 6.3-1) was disproportionally higher than the amount of LWM documented at the other study sites (3 to 11 pieces per 100-linear-foot, Table 6.3-1). Site 7 was a newly established site to better understand the sediment and LWM transport dynamics in Bishop Creek below an unimpeded major tributary (Coyote Creek), and the results show that this unregulated tributary does tend to carry more LWM than the bypass reaches of Bishop Creek.

As detailed in Section 6.2, a minimal amount of LWM is found on the bottom of the intake impoundments and most LWM washes over the intake impoundment spillways. According to Bishop Creek Project staff, there have been minimal issues with large LWM flows clogging the intake structures. Bishop Creek Project staff did note that larger LWM loads could occur if a higher runoff year follows a few years of lower flows, and/or when the upstream beaver dams were blown out and beaver dam materials were released. Based on this information, it appears that there is minimal ability to capture additional LWM for redistribution in the channel, unless flows substantially exceed bankfull flows or there is an extended period of extremely low flow in the bypass reaches.

### 8.0 CONSULTATION SUMMARY

SCE distributed periodic progress reports on the following schedule:

- Progress Report 1: December 19, 2019
- Progress Report 2: April 14, 2020
- Progress Report 3: July 24, 2020
- Initial Study Report (Progress Report 4): October 30, 2020
- Initial Study Meeting: November 10, 2020
- Progress Report 1: March 2, 2021
- Progress Report 2: May 28, 2021
- Progress Report 3: August 27, 2021
- Updated Study Report Filing: November 4, 2021
- Updated Study Report Meeting: November 18, 2021

Eight technical memoranda (including one for the sediment and geomorphology study) summarizing the 2019 study implementations were submitted with Progress Report 2. Following Progress Report 2, SCE hosted a TWG meeting on May 7, 2020 to discuss the 2019 study season, work completed to date and the technical memoranda. After the meeting, TWG members submitted comments on the technical memoranda and SCE provided a general response to those comments as part of Progress Report 3.

The Initial Study Report (ISR) was filed with FERC on October 30, 2020 and a virtual ISR Meeting was held on November 10, 2020. No additional comments were received from TWG members or stakeholders on the Sediment ISR materials or on the previously provided responses to comments. Three progress reports were filed in 2021 after the ISR, as identified above. The Updated Study Report (USR) was filed with FERC on November 4, 2021, and a USR Meeting was held on November 18, 2021.

Table 7.5-1 provides a summary of comments received to date for this study and responses to those comments.

## Table 7.5-1 Comment Response Table

Comment Number	Study	Date of Comment	Entity	Comments	SCE Response
1	Sediment and Geomorphology Technical Memorandum	May 21, 2020	CDFW	The technical memorandum states that an assessment of LWM was completed in July and September of 2019 but no results were included in the technical memorandum. The technical memorandum should include estimates of instream LWM, discuss historical removal practices, and discuss the feasibility of passing LWM over or around the intake dams, to reduce impact to this component of fish habitat.	The technical reports, provided as a supplement to the progress reports, are interim work-products intended to summarize work to date and help the team prepare for additional field work and were not intended to be full "Study Reports." LWM is discussed in Section 7.5.
2	Sediment and Geomorphology Technical Memorandum	May 21, 2020	CDFW	The technical memorandum states that an assessment of LWM was completed in July and September of 2019 but no results were included.	The technical reports, provided as a supplement to the progress reports, are interim work-products intended to summarize work to date and help the team prepare for additional field work and were not intended to be full "Study Reports. Section 6.3 discusses findings from LWM assessments in this Final Technical Report.
3	Sediment and Geomorphology Technical Memorandum	May 21, 2020	CDFW	This goal/objective was not addressed in the Technical Study Plan but should be addressed after 2020 surveys. [Referring to Evaluate how operations (flow release timing, magnitude, and duration) could be modified to provide sediment transport flows.]	SCE notes CDFW's comment and notes that this comment is discussed in Section 7.3 of this Final Study Report.

Comment Number	Study	Date of Comment	Entity	Comments	SCE Response
4	Sediment and Geomorphology Technical Memorandum	May 21, 2020	CDFW	This goal/objective was not addressed in the Technical Study Plan but should be addressed after 2020 surveys. [Referring to Understand potential sediment inputs and impacts from higher flows to reaches below Powerhouse No. 6 from changes in flow/operations.]	SCE notes CDFW's observation and notes that this comment is discussed in Section 7.4 of this Final Study Report.
5	Updated Study Report Meeting Summary	December 3, 2021	USFS	Are the sites referred to as Sites 4.1 and 4.2 in your results the same as the riparian study sites with the same names?	SCE confirmed that these sites align with the riparian study sites. The sites were established in approximately 1990 as part of monitoring required through the existing license.

Comment Number	Study	Date of Comment	Entity	Comments	SCE Response
6	Sediment and Geomorphology	December 29, 2021	CDFW	The results from the cross-sectional measurements and bed particle size distribution of Bishop Creek in the study area suggest the banks of Bishop Creek are stable and armored within the study area. The Preliminary Application Document also mentions that there is a general armoring of the stream bed due to the presence of glacially deposited stones larger than the stream sediment transport capacity during annual snowmelt runoff. While pre-project conditions are relatively unknown, as the Project has been in operation since 1917, streambed armoring under relatively constant bypass flows is a well-documented phenomenon, suggesting the high degree of stream armoring may be a result of Project effects. Enhanced bank stability of Bishop Creek due to low minimum flows released by Project operations may not be beneficial to CDFW trustee resources (e.g., lack of establishment of woody riparian species that depend on scour and decreases in benthic macroinvertebrate diversity).	SCE appreciates this comment and notes that the current minimum flow requirements were developed to consider a variety of resources, such as riparian vegetation, visual resources, as well as CDFW trustee resources. Following the filing of the DLA, SCE held several PME meetings with agencies, including CDFW, to discuss flows and sediment management in the Project. A Sediment Management Plan (PME-3) and inclusion of Geomorphic Flows (PME-1.4) were developed based on these discussions and is included as part of Appendix B of the FLA. While the Relicensing Team has not identified any Project effects pertaining to flows, sediment or riparian growth, SCE believes these measures, could enhance the existing environment, consistent with the desired conditions of the resource agencies.
7	Sediment and Geomorphology	December 29, 2021	CDFW	Results from the bed particle size distribution assessment/study of Bishop Creek show that the bed of Bishop Creek in the study area is primarily made up of cobbles and gravels with sand content	SCE appreciates this comment, we agree that there is a flow value that could effectively flush sediment. Thresholds have been developed in the Sediment Management Plan being filed with the FLA, as part of Appendix B.

Comment Number	Study	Date of Comment	Entity	Comments	SCE Response
8	Sediment and Geomorphology	December 29, 2021	CDFW	CDFW recommends that SCE consider a sediment management plan for Bishop Creek that uses reintroduction of sediment into Bishop Creek below the forebays and intakes, in conjunction with O&M procedures (i.e., flushing flows) as a tool to benefit public trust resources. CDFW suggests that FERC base the protection mitigation and enhancement (PME) measures for Bishop Creek on the results of recent studies conducted in the FERC Relicensing Process, and not on existing operations.	<ul> <li>While SCE has not identified any Project effects relating to sediment or flows, a Sediment Management Plan for the Bishop Creek Project has been developed and is included as part of Appendix B to the FLA. The was reviewed with stakeholders prior to finalization for the FLA.</li> <li>SCE has no comment on how FERC will evaluate PME measures; environmental studies conducted as part of this relicensing and proposed PME measures in the Draft License Application were developed in response to FERC's Scoping Document 1 to assist FERC with its National Environmental Policy Act (NEPA) analysis.</li> </ul>

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## **APPENDIX A**

## TRACER ROCK SUBSTRATE MOBILITY EVALUATION

# SOUTHERN CALIFORNIA EDISON Bishop Creek Hydroelectric Project (FERC Project No. 1394)



## TECHNICAL MEMORANDUM BISHOP CREEK SUBSTRATE MOBILITY EVALUATION



December 2021

Worksheet 3-10. Pfankuch	(1975) channel stability	rating procedure, a	as modified by Rosgen (199	6, 2001c, 2006b).
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Stream:	Bish	op Creek					Loc	cation:	Site 4	.1				Valley	Type:			Obse	ervers:					Date: 8/26/2020	D
Loca-	Kov	Category	,			Exce	ellent					Go	od					Fa	air					Poor	
tion	ney	Calegory	<b>'</b>		D	Descriptio	n		Rating		D	escriptio	n		Rating		۵	Descriptio	n		Rating		Descri	ption	Rating
6	1	Landform slope	В	ank slo	ope grad	dient <3	0%.		2	Bank slo	ope grac	dient 30-	-40%.		4	Bank s	lope gra	dient 40	-60%.		6	Bank slope	gradient >	60%.	8
banks	2	Mass erosio	n er	lo evide rosion.	ence of	past or	future m	nass	3	Infreque future po	nt. Mos otential.	tly heale	ed over	. Low	6	Freque nearly y	nt or larg	ge, caus I.	ing sed	iment	9	Frequent or yearlong Of	r large, cau R imminent	sing sediment nearly a danger of same.	12
pper	3	Debris jam potential	E: cł	ssentia hannel	ally abse area.	ent from	immedi	iate	2	Present, limbs.	but mo	stly sma	all twigs	s and	4	Modera larger s	ate to he sizes.	avy amo	ounts, m	ostly	6	Moderate to predominar	o heavy am htly larger s	ounts, izes.	8
D	4	Vegetative bank protection	> su ro	90% p uggest pot mas	blant der a deep ss.	nsity. Vi , dense	gor and soil-bind	variety ding	3	70–90% less vigo root mas	density or sugge ss.	v. Fewer est less	r specie dense (	es or or deep	6	50–70% fewer s discont	% density pecies f inuous r	y. Lowei rom a sł oot mas	<sup>.</sup> vigor a nallow, s.	nd	9	<50% densi vigor indica shallow roo	ity plus few iting poor, c it mass.	er species and less liscontinuous and	12
	5	Channel capacity	Ba sta ref Ra	ank heigh age. Wid ference v atio (BHF	hts sufficie lth/depth r width/dept R) = 1.0.	ent to cont ratio depar th ratio = 1	ain the ba ture from I.0. Bank-l	nkfull Height	1	Bankfull sta Width/dept width/depth (BHR) = 1.	age is con h ratio de h ratio = 1 0–1.1.	ntained wit parture fro .0–1.2. Ba	thin banks om referei ank-Heigh	s. nce nt Ratio	2	Bankfull s ratio depa = 1.2–1.4	stage is no arture from I. Bank-He	t contained reference ight Ratio	d. Width/d width/dep (BHR) = 1	epth oth ratio .1–1.3.	3	Bankfull stage common with fl ratio departure Bank-Height Ra	is not containe lows less than from reference atio (BHR) > 1	ed; over-bank flows are bankfull. Width/depth æ width/depth ratio > 1.4. .3.	4
nks	6	Bank rock content	> 12	65% w 2"+ cor	vith larg mmon.	e angula	ar bould	ers.	2	40–65% cobbles	. Mostly 6–12".	/ boulde	ers and	small	4	20–40% class.	%. Most	in the 3-	-6" diarr	neter	6	<20% rock to ck ragments	of gravel sizes, 1–3"	8	
/er ba	7	Obstructions to flow	, R pa Si	locks a attern v table b	nd logs w/o cutt ed.	firmly ir ing or de	nbedde epositio	d. Flow n.	2	Some pre currents a fewer and	esent cau and mino I less firn	using ero: or pool fill n.	sive cros ing. Obs	ss structions	4	Moderat move wi and poo	tely freque ith high flo I filling.	ent, unsta ows caus	ible obst ing bank	ructions cutting	6	Frequent ob cause bank traps full, ch	bstructions cerosion ye hannel mig	and deflectors arlong. Sediment ration occurring.	8
Low	8	Cutting	Li <6	ittle or 1 6".	none. Ir	nfrequer	nt raw ba	anks	4	Some, ir constrict to 12".	ions. Ra	ently at o aw bank	outcurv ks may	es and be up	6	Signific mat ove	ant. Cut erhangs	s 12–24 and slo	" high. F ughing e	Root evident.	12	Almost cont high. Failure	tinuous cut e of overha	s, some over 24" ings frequent.	16
	9	Deposition	Li po	ittle or i oint bai	no enla rs.	rgemen	t of char	nnel or	4	Some ne coarse g	ew bar i Iravel.	ncrease	e, mostl	y from	8	Modera and coa new ba	ate depo arse san irs.	stion of Id on old	new gra and so	ivel me	12	Extensive d particles. Ac	leposit of p ccelerated	redominantly fine bar development.	16
	10	Rock angularity	SI su	harp eo urfaces	dges an s rough.	nd corne	rs. Plan	е	1	Roundeo Surfaces	d corner s smoot	rs and e h and fla	edges. at.		2	Corner: dimens	s and ec ions.	lges wel	l rounde	ed in 2	3	Well rounde smooth.	ed in all dim	nensions, surfaces	4
	11	Brightness	Si G	urfaces Seneral	s dull, d ly not b	lark or s right.	tained.		1	Mostly d surfaces	ull, but	may ha	ve <35%	% bright	2	Mixture mixture	e dull and e range.	d bright,	i.e., 35-	-65%	3	Predominar scoured sur	ntly bright, : rfaces.	> 65%, exposed or	4
ε	12	Consolidation particles	of As	ssorteo verlapp	d sizes to bing.	tightly p	acked o	r	2	Moderat overlapp	ely pacl bing.	ked with	n some		4	Mostly appare	loose as nt overla	sortmer ap.	nt with n	0	6	No packing easily move	evident. Lo	oose assortment,	8
3otto	13	Bottom size distribution	N m	lo size naterial	change 80–100	evident 0%.	. Stable	1	4	Distribut 50–80%	ion shift	t light. S	stable m	naterial	8	Modera materia	ate chan als 20–50	ge in siz 0%.	es. Stal	ole	12	Marked dist materials 0-	tribution ch –20%.	ange. Stable	16
	14	Scouring and deposition	d <t de</t 	5% of t epositio	bottom a on.	affected	by scou	ur or	6	5–30% a constrict steepen.	affected ions and . Some	. Scour d where depositi	at grades ion in p	s ools.	12	30–50% at obsti bends.	% affecter ructions, Some fi	ed. Depo constric lling of p	sits and ctions ar ools.	d scour nd	18	More than 5 flux or chan	50% of the nge nearly y	bottom in a state of vearlong.	24
	15	Aquatic vegetation	Al gr	deposition. Abundant growth moss-like, dark green perennial. In swift water too.						Commor and poo	n. Algae I areas.	e forms i Moss h	in low v iere too	elocity	2	Presen backwa makes	t but spo ater. Sea rocks sli	otty, mos asonal al ick.	stly in gae gro	wth	3	Perennial ty green, shor	ypes scarce t-term bloo	e or absent. Yellow- m may be present.	4
	Excellent to						total =	28				Good	total =	16				Fair	total =	3			Poor total =	4	
Stream ty	/pe	A1 A2 A3 A4 A5 A6 B1 B2 B3 B4 B5 B6			C1	C2	C3	C4	C5	C6	D3	D4	D5 D	06	Crond total -	<b>E</b> 4									
Good (Stat	ole)	38-43         38-43         54-90         60-95         60-95         50-80         38-45         38-45         40-60         40-64         48-68         40-60					40-60	38-50	38-50	60-85	70-90	70-90	60-85	85-107	85-107	85-107 67-	-98	Grand total =	51						
Fair (Mod.	unstable	44-47 44-4	17 9	1-129	96-132	96-142	81-110	46-58	46-58	61-78	65-84 85+	69-88	61-78	51-61	51-61	86-105	91-110	91-110 111+	86-105	108-132	108-132	108-132 99-	125	Existing	B 3a
Stream ty	nstable) 48+ 48+ 130+ 133+ 143+ 111+ 59+ 59+ 79+ n type DA3 DA4 DA5 DA6 E3 E4 E5 E6 E1							F2	F3	F4	62+ F5	62+ F6	G1	G2	G3	G4	G5	G6	133+ 12	.0+	*Potential				
Good (Stat	Stable)         40-63         40-63         40-63         40-63         40-63         50-75         50-75								40-63	60-85	60-85	85-110	85-110	90-115	80-95	40-60	40-60	85-107	85-107	90-112	85-107			stream type =	B3A
Fair (Mod.	unstable	64-86 64-8	64-86	64-86	64-86	76-96	76-96	64-86	86-105	86-105	111-125	111-125	5 116-130	96-110	61-78	61-78	108-120	108-120	113-125	108-120			Modified char	nnel	
Poor (Unsta	able)	87+ 87-	+	87+	87+	87+	97+	97+	87+	106+	106+	126+	126+	131+	111+	79+	79+	121+	121+	126+	121+			stability ratin	g =
																	*Ra	ting is a	djusted	to poten	tial strea	am type, not	existing.	Good	

Worksheet 3-10. Pfankuch (1975) channel stability rating procedure, as modified by Rosgen (1996, 2001c, 2006b).

Stream:	Bish	op Cree	k				Loc	cation:	Site 4	.2				Valley	/ Туре:			Obse	ervers:	GSM,	TAK				Date: 9/13/2019	9
Loca-	Kov	Categor	e v			Exce	ellent					Go	od					Fa	air						Poor	
tion	Ney	Calegoi	У		0	Descriptio	n		Rating		D	escriptio	n		Rating		[	Descriptio	n		Rating			Descri	ption	Rating
6	1	Landform slope		Bank sl	ope gra	dient <3	0%.		2	Bank sl	ope grad	dient 30-	-40%.		4	Bank s	slope gra	dient 40	-60%.		6	Bank sl	ope gradi	ent >	60%.	8
banks	2	Mass erosi	on	No evid erosion	lence of	past or	future m	ass	3	Infreque future p	ent. Mos otential.	tly heale	ed over	. Low	6	Freque nearly	ent or lar yearlong	ge, caus J.	ing sedi	ment	9	Frequer yearlon	nt or large g OR imn	e, cau ninent	sing sediment nearly danger of same.	12
pper	3	Debris jam potential		Essenti channe	ally abs I area.	ent from	immedi	ate	2	Present limbs.	, but mo	ostly sma	all twigs	and	4	Moder: larger :	ate to he sizes.	avy amo	ounts, m	ostly	6	Modera predom	te to hea inantly la	vy am rger s	ounts, izes.	8
5	4	Vegetative bank protection		> 90%   sugges root ma	plant de t a deep iss.	nsity. Vi , dense	gor and soil-bind	variety ding	3	70–90% less vig root ma	6 density or sugge ss.	/. Fewer est less	r specie dense (	s or or deep	6	50–70 <sup>o</sup> fewer s discon	% densit species f tinuous r	y. Lower rom a sl root mas	vigor a nallow, s.	nd	9	<50% d vigor ind shallow	lensity plu dicating p root mas	us few oor, d s.	er species and less iscontinuous and	12
	5	Channel capacity		Bank heig stage. Wi reference Ratio (BH	ghts sufficion dth/depth i width/dep IR) = 1.0.	ent to contratio depa th ratio =	ain the ba rture from 1.0. Bank-l	nkfull Height	1	Bankfull s Width/dep width/dep (BHR) = 1	tage is cor th ratio de th ratio = 1 .0–1.1.	ntained wite parture fro 1.0–1.2. Ba	thin banks om referei ank-Heigh	s. nce nt Ratio	2	Bankfull ratio dep = 1.2–1.4	stage is no parture from 4. Bank-He	t contained reference ight Ratio	d. Width/de width/dep (BHR) = 1	epth oth ratio .1–1.3.	3	Bankfull s common v ratio depa Bank-Heig	tage is not o with flows le irture from re ght Ratio (Bl	containe ss than eferenc HR) > 1	d; over-bank flows are bankfull. Width/depth e width/depth ratio > 1.4. .3.	4
nks	6	Bank rock content		> 65% v 12"+ co	with larg mmon.	e angul	ar bould	ers.	2	40–65% cobbles	6. Mostly 6–12".	/ boulde	ers and	small	4	20–40 <sup>.</sup> class.	%. Most	in the 3-	-6" diam	eter	6	<20% ro or less.	ock fragm	ients o	of gravel sizes, 1–3"	8
/er ba	7	Obstruction to flow	ns	Rocks a pattern Stable I	and logs w/o cutt bed.	i firmly in ing or d	nbedde epositio	d. Flow n.	2	Some pro currents fewer an	esent cau and minc d less firr	using ero or pool fill m.	sive cros ling. Obs	ss tructions	4	Modera move w and poo	itely frequ vith high fl ol filling.	ent, unsta ows caus	ble obsti ng bank	ructions cutting	6	Frequer cause b traps fu	nt obstruc ank eros II, channe	tions ion ye l migr	and deflectors arlong. Sediment ation occurring.	8
Low	8	Cutting		Little or <6".	none. lı	nfrequei	nt raw ba	anks	4	Some, i constric to 12".	ntermitte tions. R	ently at aw bank	outcurv ks may	es and be up	6	Signific mat ov	cant. Cut /erhangs	s 12–24 and slo	" high. F ughing e	Root evident.	12	Almost high. Fa	continuou ailure of o	us cut: verha	s, some over 24" ngs frequent.	16
	9	Deposition		Little or point ba	no enla ars.	rgemen	t of char	nnel or	3	Some n coarse	ew bar i gravel.	increase	e, mostl	y from	8	Modera and co new ba	ate depo arse sar ars.	stion of nd on old	new gra and so	vel me	12	Extensi particle:	ve depos s. Accele	it of pi rated	edominantly fine par development.	16
	10	Rock angularity		Sharp e surface	edges ar s rough.	nd corne	ers. Plan	е	1	Rounde Surface	d corne s smoot	rs and e	edges. at.		2	Corner dimens	rs and eo sions.	lges wel	l rounde	ed in 2	3	Well rou smooth	unded in a	all dim	ensions, surfaces	4
	11	Brightness	rightness Generally not bright.						1	Mostly of surfaces	dull, but s.	may ha	ve <35%	% bright	2	Mixture mixture	e dull an e range.	d bright,	i.e., 35-	-65%	3	Predom scoured	inantly bi surfaces	right, : S.	> 65%, exposed or	4
Ę	12	Consolidation particles	n of	Assorte overlap	ed sizes ping.	tightly p	acked o	r	2	Modera overlap	tely pac ping.	ked with	n some		4	Mostly appare	loose as ent overla	ssortmer ap.	it with n	0	6	No pacł easily m	king evide noved.	ent. Lo	oose assortment,	8
3ott o	13	Bottom size distribution	e	No size materia	change 1 80–100	eviden 0%.	t. Stable		4	Distribu 50–80%	tion shif 5.	t light. S	Stable m	naterial	8	Moder: materia	ate chan als 20–5	ge in siz 0%.	es. Stat	ble	12	Marked materia	distributi Is 0–20%	on cha	ange. Stable	16
	14	Scouring ar deposition	nd	<5% of deposit	bottom ion.	affected	by scou	lr or	6	5–30% constric steeper	affected tions an . Some	I. Scour d where deposit	at e grades ion in p	s ools.	12	30–50 <sup>o</sup> at obst bends.	% affecte tructions, . Some fi	ed. Depo , constric lling of p	sits and tions ar ools.	l scour nd	18	More th flux or c	an 50% c hange ne	of the l early y	pottom in a state of earlong.	24
	15	Aquatic vegetation		Abunda green p	ant grow erennia	th moss I. In swit	-like, da t water t	rk too.	1	Commo and poo	on. Algae ol areas.	e forms i Moss h	in low v iere too	elocity	2	Preser backwa makes	nt but spo ater. Sea rocks sl	otty, mos asonal al ick.	tly in gae gro	wth	3	Perenni green, s	ial types s short-term	scarce n bloo	e or absent. Yellow- m may be present.	4
			Excellent tota										Good	total =	14				Fair	total =	6				Poor total =	4
Stream ty	/pe	A1 A	2	A3	A4	A5	A6	B1	B2	B3	B4	B5	B6	C1	C2	C3	C4	C5	C6	D3	D4	D5	D6		One walk stal	<b>F</b> 4
Good (Stat	ole)	38-43         38-43         54-90         60-95         60-95         50-80         38-45         38-45				40-60	40-64	48-68	40-60	38-50	38-50	60-85	70-90	70-90	60-85	85-107	85-107	85-107	67-98		Grand total =	51				
Fair (Mod.	od. unstable 44-47 44-47 91-129 96-132 96-142 81-110						46-58	46-58	61-78	65-84	69-88	61-78	51-61	51-61	86-105	91-110	91-110	86-105	108-132	108-132	108-132	99-125		Existing	B 2	
Poor (Unsta	Instable) 48+ 48+ 130+ 133+ 143+ 111+							59+	59+	79+	85+	89+	79+	62+	62+	106+	111+	111+	106+	133+	133+	133+	126+		stream type =	02
Stream ty	уре	e DA3 DA4 DA5 DA6 E3 E4							E6	F1	F2	F3	F4	F5	F6	G1	G2	G3	G4	G5	G6				*Potential	B2
Good (Stat	(Stable) 40-63 40-63 40-63 40-63 40-63 50-75								40-63	60-85	60-85	85-110	85-110	90-115	80-95	40-60	40-60	85-107	85-107	90-112	85-107				stream type =	nol
Poor (Linet	uristable able)	04-00 64 87+ <sup>91</sup>	-00 7+	04-80 87+	04-80 87+	87+	70-90 97+	97+	04-80 87+	106+	106+	126+	126+	131+	90-110 111+	79+	01-78 79+	100-120	121+	126+	100-120				stability ratin	
	2210)	011 01		017	0/1	0/+	0/+	U/ T	077	1001	1001	1201	1201	1017		7.51	*Ra	ting is a	djusted	to poten	tial strea	am type,	not exist	ing.	Fair	9 <b>-</b>

Worksheet 3-10. Pfankuch (1975) channel stability rating procedure, as modified by Rosgen (1996, 2001c, 2006b).

Stream:	Bish	nop Cre	ek				Loc	ation:	Site 7	,				Valley	Type:			Obse	ervers:	GSM,	TAK			0	Date: 9/11/2019	9
Loca-	Kov	Categ	onv			Exce	ellent					Go	od					Fa	air					Р	oor	
tion	Ney	Caleg	ory		C	Descriptio	n		Rating		D	escriptio	n		Rating		C	Descriptio	n		Rating		D	escriptio	วท	Rating
6	1	Landform slope	ı	Bank sl	ope gra	dient <3	0%.		2	Bank slo	ope grad	dient 30-	-40%.		4	Bank s	lope gra	dient 40	-60%.		6	Bank slo	ope gradie	nt > 60	!%.	8
banks	2	Mass ero	sion	No evid erosion	lence of	past or	future m	ass	3	Infreque future p	ent. Mos otential.	tly heale	ed over.	. Low	6	Freque nearly	ent or larg yearlong	ge, caus J.	ing sed	iment	9	Frequer yearlon	nt or large, g OR immi	causir nent da	g sediment nearly anger of same.	12
pper	3	Debris jar potential	m	Essenti channe	ally abs I area.	ent from	immedi	ate	2	Present limbs.	, but mo	ostly sma	all twigs	and	4	Modera larger s	ate to he sizes.	avy amo	ounts, m	ostly	6	Modera predom	te to heavy inantly larg	v amou Jer size	nts, ờs.	8
<b>D</b>	4	Vegetativ bank protectior	re n	> 90%   sugges root ma	plant de t a deep iss.	nsity. Vi , dense	gor and soil-bine	variety ding	3	70–90% less vig root ma	6 density or sugge ss.	/. Fewer	specie dense d	s or or deep	6	50–70% fewer s discont	% density species f tinuous r	y. Lower rom a sl root mas	r vigor a nallow, s.	nd	9	<50% d vigor ind shallow	ensity plus dicating po root mass	fewer or, dise	species and less continuous and	12
	5	Channel capacity		Bank heig stage. Wi reference Ratio (BH	ghts sufficie dth/depth i width/dep IR) = 1.0.	ent to cont ratio depai oth ratio = 7	tain the ba rture from 1.0. Bank-l	nkfull Height	1	Bankfull si Width/dep width/dept (BHR) = 1	tage is cor th ratio de th ratio = 1 .0–1.1.	ntained wit parture fro 1.0–1.2. Ba	hin banks om referer ank-Heigh	s. nce it Ratio	2	Bankfull s ratio depa = 1.2–1.4	stage is no arture from 1. Bank-He	t containe reference ight Ratio	d. Width/d width/dep (BHR) = 1	epth oth ratio .1–1.3.	3	Bankfull st common v ratio depa Bank-Heig	age is not con vith flows less rture from refe ht Ratio (BHF	ntained; than ba erence w R) > 1.3.	over-bank flows are nkfull. Width/depth <i>i</i> dth/depth ratio > 1.4.	4
nks	6	Bank rock content	k	> 65% 12"+ co	with larg mmon.	je angul	ar bould	ers.	2	40–65% cobbles	6. Mostly 6–12".	/ boulde	rs and s	small	4	20–40% class.	%. Most	in the 3-	-6" diarr	neter	6	<20% ro or less.	ock fragme	nts of	gravel sizes, 1–3"	8
/er ba	7	Obstruction to flow	ons	Rocks a pattern Stable I	and logs w/o cutt bed.	s firmly ir ting or d	mbedde epositio	d. Flow n.	2	Some pro currents fewer and	esent cau and minc d less firr	using ero: or pool fill m.	sive cros ing. Obs	ss tructions	4	Moderat move wi and poo	tely freque ith high flo I filling.	ent, unsta ows caus	able obst ing bank	ructions cutting	6	Frequer cause b traps ful	nt obstructi ank erosio I, channel	ons an n year migrat	d deflectors long. Sediment ion occurring.	8
Low	8	Cutting		Little or <6".	none. lı	nfrequer	nt raw ba	anks	4	Some, i constric to 12".	ntermitte tions. R	ently at o aw bank	outcurv ks may	es and be up	6	Signific mat ove	ant. Cut erhangs	s 12–24 and slo	" high. F ughing e	Root evident.	12	Almost o high. Fa	continuous illure of ove	cuts, : erhang	some over 24"  s frequent.	16
	9	Depositio	on	Little or point ba	<sup>.</sup> no enla ars.	irgemen	t of char	nnel or	4	Some n coarse g	ew bar i gravel.	increase	e, mostly	y from	8	Modera and coa new ba	ate depo arse san ars.	stion of nd on old	new gra I and so	ivel me	12	Extensiv particles	ve deposit s. Accelera	of preo ted ba	lominantly fine r development.	16
	10	Rock angularity	y	Sharp e surface	edges ar s rough.	nd corne	ers. Plan	е	1	Rounde Surface	d corne s smoot	rs and e th and fla	edges. at.		2	Corner: dimens	s and ec sions.	lges wel	ll rounde	ed in 2	3	Well rou smooth.	inded in al	l dimer	isions, surfaces	4
	11	Brightnes	ss	Surface Genera	es dull, d	lark or s right.	tained.		1	Mostly of surfaces	dull, but s.	may ha	ve <35%	% bright	2	Mixture mixture	e dull and e range.	d bright,	i.e., 35-	-65%	3	Predom scoured	inantly brig surfaces.	ght, > 6	5%, exposed or	4
Ę	12	Consolidat particles	tion of	Assorte overlap	ed sizes ping.	tightly p	acked o	r	2	Modera overlap	tely pac ping.	ked with	some		4	Mostly appare	loose as nt overla	ssortmer ap.	nt with n	0	6	No pack easily m	king eviden loved.	it. Loos	e assortment,	8
3otto	13	Bottom si distributio	ize on	No size materia	change Il 80–100	evident 0%.	t. Stable		4	Distribu 50–80%	tion shif 5.	t light. S	table m	aterial	8	Modera materia	ate chan als 20–50	ge in siz 0%.	es. Stal	ole	12	Marked material	distribution s 0–20%.	n chan	ge. Stable	16
	14	Scouring deposition	and n	<5% of deposit	bottom ion.	affected	l by scou	IL OL	6	5–30% constric steepen	affected tions an . Some	<ol> <li>Scour</li> <li>where</li> <li>depositi</li> </ol>	at grades ion in po	s ools.	12	30–50% at obstr bends.	% affecte ructions, Some fi	ed. Depo , constric lling of p	osits and ctions ar pools.	d scour nd	18	More the flux or c	an 50% of hange nea	the bo Irly yea	ttom in a state of arlong.	24
	15	Aquatic vegetatio	n	Abunda green p	ant grow berennia	th moss I. In swif	-like, da ft water t	rk :00.	1	Commo and poc	on. Algae ol areas.	e forms i Moss h	in low v ere too	elocity	2	Presen backwa makes	it but spo ater. Sea rocks sli	otty, mos asonal a ick.	stly in Igae gro	wth	3	Perenni green, s	al types so hort-term l	arce o bloom	r absent. Yellow- may be present.	4
						Exc	cellent	total =	30				Good	total =	8				Fair	total =	6				Poor total =	8
Stream t	уре	A1 A2 A3 A4 A5 A6				B1	B2	B3	B4	B5	B6	C1	C2	C3	C4	C5	C6	D3	D4	D5	D6			50		
Good (Stat	ole)	38-43 38-43 54-90 60-95 60-95 50-80 3					38-45	38-45	40-60	40-64	48-68	40-60	38-50	38-50	60-85	70-90	70-90	60-85	85-107	85-107	85-107	67-98		Grand total =	52	
Fair (Mod.	r (Mod. unstable 44-47 44-47 91-129					96-142	81-110	46-58	46-58	61-78	65-84	69-88	61-78	51-61	51-61	86-105	91-110	91-110	86-105	108-132	108-132	108-132	99-125		Existing	B2
Poor (Unst	Unstable) 48+ 48+ 130+ 133+ 143+ 111+							59+	59+	79+	85+	89+	79+	62+	62+	106+	111+	111+	106+	133+	133+	133+	126+		stream type =	
Stream t	eam type DA3 DA4 DA5 DA6 E3 E4							E5	E6	F1	F2	F3	F4	F5	F6	G1	G2	G3	G4	G5	G6				*Potential	B2
Good (Stat	00 (Stable) 40-63 40-63 40-63 40-63 40-63 50-75 3								40-03 64-86	86-105	00-85 86-105	05-110	05-110	90-115	00-95 96-110	40-60 61-78	40-60 61-78	05-107 108-120	108-107	90-112	108-107				Modified char	nel
Poor (Unst	able)	87+	87+	87+	87+	87+	97+	97+	87+	106+	106+	126+	126+	131+	111+	79+	79+	121+	121+	126+	121+				stability ratin	a =
(	,	ıl_		1	1	1	1				-	-				1	*Ra	ting is a	djusted	to poten	tial strea	am type,	not existin	g.	Fair	-

Worksheet 3-10. Pfankuch (1975) channel stability rating procedure, as modified by Rosgen (1996, 2001c, 2006b).

Stream:	Bish	op Cree	k				Lo	cation:	Site 3	;				Valley	Type:			Obse	ervers:	GSM	,TAK			I	Date: 9/10/2019	9
Loca-	Kov	Categor	'V			Exce	ellent					Go	od					Fa	air					P	oor	
tion	Ксу	Oategol	y		C	Descriptio	n		Rating		D	escriptio	n		Rating		[	Descriptio	n		Rating		De	escripti	on	Rating
6	1	Landform slope		Bank sl	ope gra	dient <3	0%.		2	Bank slo	ope grad	dient 30-	-40%.		4	Bank s	lope gra	dient 40	-60%.		6	Bank slo	pe gradier	nt > 60	)%.	8
bank	2	Mass erosi	on	No evid erosion	ence of	past or	future n	nass	3	Infreque future p	ent. Mos otential.	tly heale	ed over	. Low	6	Freque nearly	ent or larg yearlong	ge, caus	ing sed	iment	9	Frequen yearlong	t or large, OR immir	causir nent d	ng sediment nearly anger of same.	12
pper	3	Debris jam potential	1	Essentia channel	ally abs area.	ent from	immed	iate	2	Present limbs.	, but mo	stly sm	all twigs	s and	4	Modera larger :	ate to he sizes.	avy amo	ounts, m	ostly	6	Moderat predomi	e to heavy nantly larg	amou er size	ınts, ∋s.	8
<b>D</b>	4	Vegetative bank protection	:	> 90% p suggest root ma	blant de a deep ss.	nsity. Vi , dense	gor and soil-bin	variety ding	3	70–90% less vige root ma	o density or sugge ss.	/. Fewer est less	r specie dense (	es or or deep	6	50–709 fewer s discon	% density species f tinuous r	y. Lowei rom a sł oot mas	r vigor a nallow, s.	nd	9	<50% de vigor ind shallow	ensity plus licating poo root mass.	fewer or, dis	species and less continuous and	12
	5	Channel capacity	   	Bank heig stage. Wio reference Ratio (BH	hts sufficie dth/depth i width/dep R) = 1.0.	ent to cont ratio depar th ratio = 1	ain the ba rture from 1.0. Bank-	inkfull Height	1	Bankfull st Width/dep width/dept (BHR) = 1	age is cor th ratio de h ratio = 1 .0–1.1.	ntained wit parture fro .0–1.2. Ba	thin banks om refere ank-Heigh	s. nce nt Ratio	2	Bankfull ratio dep = 1.2–1.4	stage is no arture from 4. Bank-He	t contained reference ight Ratio	d. Width/d width/dep (BHR) = 1	epth oth ratio .1–1.3.	3	Bankfull sta common w ratio depar Bank-Heigl	age is not con ith flows less ture from refe ht Ratio (BHR	tained; than ba rence v ?) > 1.3.	over-bank flows are nkfull. Width/depth vidth/depth ratio > 1.4.	4
nks	6	Bank rock content	:	> 65% \ 12"+ co	vith larg mmon.	e angula	ar bould	lers.	2	40–65% cobbles	. Mostly 6–12".	/ boulde	ers and	small	4	20–409 class.	%. Most	in the 3-	-6" diarr	neter	6	<20% ro or less.	ck fragmei	nts of	gravel sizes, 1–3"	8
/er ba	7	Obstruction to flow	IS	Rocks a pattern Stable b	and logs w/o cutt ped.	firmly ir ing or de	nbedde epositio	d. Flow n.	2	Some pre currents fewer and	esent cau and mino d less firr	using ero or pool fill m.	sive cros ling. Obs	ss structions	4	Modera move w and poo	tely freque ith high flo ol filling.	ent, unsta ows caus	able obst ing bank	ructions cutting	6	Frequen cause ba traps full	t obstructio ank erosion , channel r	ons ar n year migrat	d deflectors long. Sediment ion occurring.	8
Low	8	Cutting		Little or <6".	none. lı	nfrequer	nt raw b	anks	4	Some, in constric to 12".	ntermitte tions. R	ently at aw bank	outcurv ks may	es and be up	6	Signific mat ov	cant. Cut erhangs	s 12–24 and slo	" high. F ughing e	Root evident.	12	Almost c high. Fai	continuous ilure of ove	cuts, erhanç	some over 24" js frequent.	16
	9	Deposition		Little or point ba	no enla ırs.	rgemen	t of cha	nnel or	4	Some n coarse (	ew bar i gravel.	ncrease	e, mostl	y from	8	Modera and co new ba	ate depo arse san ars.	stion of d on old	new gra I and so	ivel me	12	Extensiv particles	e deposit o . Accelerat	of pre ted ba	dominantly fine r development.	16
	10	Rock angularity		Sharp e surface:	dges ar s rough.	nd corne	ers. Plan	ie	1	Rounde Surface	d corne s smoot	rs and e h and fl	edges. at.		2	Corner dimens	s and ec sions.	lges wel	l rounde	ed in 2	3	Well rou smooth.	nded in all	dime	nsions, surfaces	4
	11	Brightness Generally not bright							1	Mostly of surfaces	dull, but 8.	may ha	ve <359	% bright	2	Mixture mixture	e dull and e range.	d bright,	i.e., 35-	-65%	3	Predomi scoured	nantly brig surfaces.	ht, > 6	35%, exposed or	4
ε	12	Consolidation	n of	Assorte overlap	d sizes ping.	tightly p	acked o	r	2	Moderat overlapp	tely pac bing.	ked with	n some		4	Mostly appare	loose as ent overla	sortmer	nt with n	0	6	No pack easily m	ing eviden oved.	t. Loo	se assortment,	8
3otto	13	Bottom size distribution	)	No size materia	change I 80–100	e evident 0%.	t. Stable	•	4	Distribut 50–80%	tion shif	t light. S	Stable m	naterial	8	Modera materia	ate chan als 20–50	ge in siz )%.	es. Stal	ole	12	Marked materials	distribution s 0–20%.	n chan	ge. Stable	16
	14	Scouring an deposition	nd	<5% of depositi	bottom on.	affected	by sco	ur or	6	5–30% constric steepen	affected tions an . Some	. Scour d where deposit	at e grade: ion in p	s ools.	12	30–509 at obst bends.	% affecte ructions, Some fi	ed. Depo constric lling of p	osits and ctions ar oools.	d scour nd	18	More tha flux or cl	an 50% of t nange nea	the bo rly yea	ttom in a state of arlong.	24
	15	Aquatic vegetation		Abunda green p	nt grow erennia	th moss I. In swif	-like, da t water	ırk too.	1	Commo and poc	n. Algae I areas.	e forms i Moss h	in low v iere too	velocity	2	Preser backwa makes	it but spo ater. Sea rocks sli	otty, mos isonal al ick.	stly in Igae gro	wth	3	Perennia green, sl	al types sca hort-term b	arce c bloom	r absent. Yellow- may be present.	4
						Exc	cellent	total =	30				Good	total =	12				Fair	total =	3				Poor total =	4
Stream ty	/pe	A1 A	2	A3	A4	A5	A6	B1	B2	B3	B4	B5	B6	C1	C2	C3	C4	C5	C6	D3	D4	D5	D6	Γ	Grand total -	40
Good (Stab	le)	38-43 38-43 54-90 60-95 60-95 50-80 38-45 38-45 40-60 40					40-64	48-68	40-60	38-50	38-50	60-85	70-90	70-90	60-85	85-107	85-107	85-107	67-98	_	Evicting	49				
Poor (Unsta	able)	44-47 44 48+ 48	14-47 44-47 91-129 96-132 96-142 81-110 46-58 48+ 48+ 130+ 133+ 143+ 111+ 59+						40-56 59+	79+	85+	89+	79+	62+	62+	106+	111+	111+	106+	133+	133+	133+	126+		stream type =	B3a
Stream ty	type DA3 DA4 DA5 DA6 E3 E4 E5 E6							E6	F1	F2	F3	F4	F5	F6	G1	G2	G3	G4	G5	G6		<b>.</b>		*Potential	B3A	
Good (Stab	le)	40-63 40-63 40-63 40-63 40-63 50-75 50							40-63	60-85	60-85	85-110	85-110	90-115	80-95	40-60	40-60	85-107	85-107	90-112	85-107				stream type =	DUA
Fair (Mod.)	unstable	64-86 64	-86 7+	64-86 87+	64-86 87+	64-86	76-96 07+	76-96	64-86 87+	86-105	86-105	111-125	111-125	116-130	96-110	61-78	61-78	108-120	108-120	113-125	108-120				Modified chan	nnel a -
	1010)	017 0	1 -	01+	0/+	0/+	51+	5/+	074	100+	100+	1207	120+	131+	111+	194	*Rat	ting is a	djusted	to poten	tial strea	am type, i	not existing	g.	Good	9 -

Worksheet 3-10. Pfankuch (19	<li>75) channel stability rating</li>	procedure, as modified by Rose	jen (1996, 2001c, 2006b).
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Stream:	Bish	op Creek				Loo	cation:	Site 5	e 5 Valley Type:					Observers: GSM, TAK							Date: 9/10/2019					
Loca-	Kov	Category			Exce	ellent					Go	od				Fair					Poor					
tion	Ney	Category		[	Descriptio	n		Rating		D	escriptio	n		Rating	Description			Description Rating Description				ption	Rating			
(0	1	Landform slope	Bank s	lope gra	idient <3	0%.		2	Bank slo	ope grad	dient 30-	-40%.		4	Bank s	lope gra	dient 40	-60%.		6 Bank slope gradient >				60%.	8	
banks	2	Mass erosion	No evi erosior	dence of n.	f past or	future m	nass	3	Infreque future p	ent. Mos otential.	tly heale	ed over	. Low	6	Freque nearly	ent or larg yearlong	ge, caus J.	ing sed	iment	9	Freque yearlon	nt or larg g OR imr	e, cau minent	sing sediment nearly danger of same.	12	
pper	3	Debris jam potential	Essent channe	ially abs el area.	ent from	immed	iate	2	Present limbs.	, but mo	ostly sma	all twigs	s and	4	Modera larger s	ate to he sizes.	avy amo	ounts, m	nostly	6	Modera predom	ite to hea inantly la	avy am arger s	ounts, izes.	8	
D	4	Vegetative bank protection	> 90% sugges root ma	plant de st a deep ass.	ensity. Vi o, dense	gor and soil-bin	variety ding	3	70–90% less vige root ma	density or sugge ss.	/. Fewer est less	· specie dense (	es or or deep	6	50–70% fewer s discont	% densit species f tinuous r	y. Lowe rom a sl root mas	r vigor a nallow, s.	nd	9	<50% d vigor in shallow	lensity pl dicating p root mas	us few poor, d ss.	er species and less iscontinuous and	12	
	5	Channel capacity	Bank hei stage. W reference Ratio (Bl	ghts suffici /idth/depth e width/dep HR) = 1.0.	ient to cont ratio depa oth ratio = 7	tain the ba rture from 1.0. Bank-	inkfull Height	1	Bankfull st Width/dep width/dept (BHR) = 1	age is cor th ratio de h ratio = 1 .0–1.1.	ntained wit parture fro 1.0–1.2. Ba	hin banks om refere ank-Heigh	s. nce nt Ratio	2	Bankfull s ratio depa = 1.2–1.4	stage is no arture from 4. Bank-He	t containe reference ight Ratio	d. Width/d width/dep (BHR) = 1	epth oth ratio .1-1.3.	3	Bankfull s common ratio depa Bank-Hei	tage is not with flows le arture from r ght Ratio (B	containe ess than referenc 3HR) > 1	d; over-bank flows are bankfull. Width/depth e width/depth ratio > 1.4. .3.	4	
nks	6	Bank rock content	> 65% 12"+ c	with larg ommon.	ge angul	ar bould	lers.	2	40–65% cobbles	. Mostly 6–12".	/ boulde	rs and	small	4	20–40% class.	%. Most	in the 3-	-6" diarr	neter	6	<20% r or less.	ock fragn	nents o	of gravel sizes, 1–3"	8	
/er ba	7	Obstructions to flow	Rocks pattern Stable	and logs w/o cut bed.	s firmly ir ting or d	nbedde epositio	d. Flow n.	2	Some pre currents fewer and	esent cau and minc d less firr	using ero: or pool fill m.	sive cros ing. Obs	ss structions	4	Moderat move wi and poo	tely freque ith high fle ol filling.	ent, unsta ows caus	able obst ing bank	ructions cutting	6	Freque cause b traps fu	nt obstrue oank eros II, channe	ctions sion ye el migr	and deflectors arlong. Sediment ation occurring.	8	
Low	8	Cutting	Little o <6".	r none. I	nfrequer	nt raw ba	anks	4	Some, in constric to 12".	ntermitte tions. R	ently at o aw bank	outcurv ks may	es and be up	6	Signific mat ov	cant. Cut erhangs	s 12–24 and slo	" high. F ughing e	Root evident.	12	Almost continuous cuts high. Failure of overhar			s, some over 24" ngs frequent.	16	
	9	Deposition	Little o point b	r no enla ars.	argemen	t of chai	nnel or	4	Some n coarse (	ew bar i gravel.	increase	e, mostl	y from	8	Modera and coa new ba	ate depo arse san ars.	stion of nd on old	new gra I and so	avel me	12	Extensive deposit of pr particles. Accelerated b			edominantly fine bar development.	16	
	10	Rock angularity	Sharp surface	edges a es rough	nd corne	ers. Plan	ie	1	Rounde Surface	d corne s smoot	rs and e th and fla	edges. at.		2	Corner dimens	s and ec sions.	lges we	l rounde	ed in 2	3	Well rounded in a smooth.			all dimensions, surfaces		
	11	Brightness	Surfac Genera	es dull, c ally not b	dark or s bright.	tained.		1	Mostly of surfaces	dull, but 3.	may ha	ve <359	% bright	2	Mixture mixture	e dull and e range.	d bright,	i.e., 35-	-65%	3	Predom scoured	ninantly b	oright, : s.	> 65%, exposed or	4	
ε	12	Consolidation of particles	of Assort overlap	ed sizes oping.	tightly p	acked o	r	2	Moderat overlapp	tely pac bing.	ked with	some		4	Mostly appare	loose as nt overla	ssortmer ap.	nt with n	0	6	No pacl easily n	king evid noved.	ent. Lo	.oose assortment,		
3otto	13	Bottom size distribution	No size materia	e change al 80–10	e evident 0%.	t. Stable	)	4	Distribut 50–80%	tion shif	t light. S	table m	naterial	8	Modera materia	ate chan als 20–50	ge in siz 0%.	es. Stal	ble	12	Marked materia	ed distribution change. Stable ials 0–20%.		16		
	14	Scouring and deposition	<5% oʻ deposi	f bottom tion.	affected	by scou	ur or	6	5–30% constric steepen	affected tions an . Some	I. Scour d where depositi	at grades ion in p	s ools.	12	30–50% at obst bends.	% affecte ructions, Some fi	ed. Depo , constrie lling of p	osits and ctions ar oools.	d scour nd	18	More than 50% of the flux or change nearly			oottom in a state of earlong.	24	
	15	Aquatic vegetation	Abund green	ant grow perennia	rth moss al. In swif	-like, da ft water	ırk too.	1	Commo and poo	n. Algae I areas.	e forms i Moss h	in low v ere too	velocity	2	Present but spotty, mostly in backwater. Seasonal algae growth makes rocks slick.			owth	3	Perenn green, s	ial types short-terr	scarce n bloo	or absent. Yellow- m may be present.	4		
					Exc	cellent	total =	29				Good	total =	8	Fair total =		9				Poor total =	8				
Stream ty	/pe	A1 A2	A3	A4	A5	A6	B1	B2	B3	B4	B5	B6	C1	C2	C3	C4	C5	C6	D3	D4	D5	D6		Crond total -	EA	
Good (Stat	ile) upstable	38-43 38-43	3 54-90	60-95 96-132	60-95 96-142	50-80 81-110	38-45	38-45	40-60	40-64	48-68	40-60	38-50	38-50 51-61	60-85 86-105	70-90	70-90	60-85 86-105	85-107	85-107	85-107	67-98 99-125		Grand total =	54	
Poor (Unsta	able)	48+ 48+	130+	133+	143+	111+	40-38 59+	40-58 59+	79+	85+	89+	79+	62+	62+	31         86-105         91-110         91-110         86-105         108-132           .+         106+         111+         111+         106+         133+		133+	133+	126+		stream type =	B3a				
Stream ty	/pe	DA3 DA4	DA5	DA6	E3	E4	E5	E6	F1	F2	F3	F4	F5	F6	G1	G2	G3	G4	G5	G6				*Potential	B3A	
Good (Stat	ole)	40-63 40-63	3 40-63	40-63	40-63	50-75	50-75	40-63	60-85	60-85	85-110	85-110	90-115	80-95	40-60	40-60	85-107	85-107	90-112	85-107				stream type =	BOA	
Fair (Mod.	unstable	64-86 64-8	64-86	64-86	64-86	76-96	76-96	64-86	86-105	86-105	111-125	111-125	5 116-130	96-110	61-78	61-78	108-120	108-120	113-125	108-120				Modified char	nnel	
Poor (Unsta	adie)	8/+ 8/+	8/+	87+	87+	97+	97+	8/+	106+	106+	126+	126+	131+	111+	79+	/9+ *Ro	121+ ting is a	121+ diustod	126+	121+ tial strop	am type	not evice	ting	Stability ratin	ig =	
1																гa	ապոշն	ujuəted	io poten	וומו שוופט	ан туре,	I UL EXISI	ung.	GOOD		

Worksheet 3-10. Pfankuch (19	<li>75) channel stability rating</li>	procedure, as modified by Rose	jen (1996, 2001c, 2006b).
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Stream:	Bish	op Creel	k				Loc	ation:	Site 6	e 6 Valley Type:					Observers: GSM, TAK						Date: 9/9/2019					
Loca-	Kov	Categor	~			Exce	ellent				Good Fair						Poor									
tion	Rey	Categor	У		۵	Descriptio	n		Rating		D	escriptio	n		Rating	Description			Rating			Descri	ption	Rating		
(0	1	Landform slope	I	Bank sl	ope gra	dient <3	0%.		2	Bank slo	ope grad	dient 30-	-40%.		4	Bank s	lope gra	dient 40	-60%.		6	Bank slope gradient > 6			60%.	8
banks	2	Mass erosio	on (	No evid erosion	ence of	past or	future m	nass	3	Infreque future p	ent. Mos otential.	tly heale	ed over	. Low	6	Freque nearly :	ent or larg yearlong	ge, caus I.	sing sed	iment	9	Frequent or large, causi yearlong OR imminent			sing sediment nearly danger of same.	12
pper	3	Debris jam potential	l	Essentia channel	ally abs I area.	ent from	immedi	ate	2	Present limbs.	, but mo	ostly sma	all twigs	s and	4	Modera larger s	ate to he sizes.	avy amo	ounts, m	nostly	6	Modera predom	ite to hea inantly la	avy am arger s	ounts, izes.	8
5	4	Vegetative bank protection	2	> 90% p suggest root ma	olant de t a deep ss.	nsity. Vi ), dense	gor and soil-bind	variety ding	3	70–90% less vig root ma	density or sugge ss.	/. Fewer est less	· specie dense (	es or or deep	6	50–70% fewer s discont	% density species f tinuous r	y. Lowe rom a sl oot mas	r vigor a hallow, s.	nd	9	<50% c vigor in shallow	lensity pl dicating p root mag	us few poor, d ss.	er species and less iscontinuous and	12
	5	Channel capacity	E s F	Bank heig stage. Wic reference Ratio (BH	hts sufficient dth/depth width/dep R) = 1.0.	ent to cont ratio depai oth ratio = 7	ain the ba rture from 1.0. Bank-l	nkfull Height	1	Bankfull si Width/dep width/dept (BHR) = 1	tage is cor th ratio de th ratio = 1 .0-1.1.	ntained wit parture fro 1.0–1.2. Ba	hin banks om refere ank-Heigh	s. nce nt Ratio	2	Bankfulls ratio depa = 1.2–1.4	stage is no arture from 1. Bank-He	t containe reference ight Ratio	d. Width/d width/dep (BHR) = 1	epth oth ratio .1-1.3.	3	Bankfull s common ratio depa Bank-Hei	tage is not with flows le arture from r ght Ratio (E	containe ess than referenc 3HR) > 1	d; over-bank flows are bankfull. Width/depth e width/depth ratio > 1.4. .3.	4
nks	6	Bank rock content		> 65% \ 12"+ co	with larg mmon.	je angul	ar bould	ers.	2	40–65% cobbles	5. Mostly 6–12".	/ boulde	rs and	small	4	20–40% class.	%. Most	in the 3-	-6" diam	neter	6	<20% r or less.	ock fragn	nents	of gravel sizes, 1–3"	8
/er ba	7	Obstruction to flow	IS I	Rocks a pattern Stable b	and logs w/o cutt ped.	s firmly ir ting or d	nbedde epositio	d. Flow n.	2	Some pro currents fewer and	esent cau and minc d less firr	using ero: or pool fill m.	sive cros ing. Obs	ss structions	4	Moderat move wi and poo	tely freque ith high flo I filling.	ent, unsta ows caus	able obst ing bank	ructions cutting	6	Freque cause t traps fu	nt obstru oank eros II, chann	ctions sion ye el migr	and deflectors arlong. Sediment ation occurring.	8
Low	8	Cutting		Little or <6".	none. li	nfrequer	nt raw ba	anks	4	Some, i constric to 12".	ntermitte tions. R	ently at o aw bank	outcurv ks may	es and be up	6	Signific mat ov	ant. Cut erhangs	s 12–24 and slo	" high. I ughing e	Root evident.	12	Almost continuous cuts high. Failure of overhar			s, some over 24" ngs frequent.	16
	9	Deposition	l	Little or point ba	no enla ars.	argemen	t of char	nnel or	4	Some n coarse g	ew bar i gravel.	increase	e, mostl	y from	8	Modera and coa new ba	ate depo arse san ars.	stion of Id on old	new gra d and so	avel me	12	Extensive deposit of properticles. Accelerated b			edominantly fine par development.	16
	10	Rock angularity		Sharp e surface:	edges ar s rough.	nd corne	ers. Plan	е	1	Rounde Surface	d corne s smoot	rs and e th and fla	edges. at.		2	Corner dimens	s and ec sions.	lges we	ll rounde	ed in 2	3	Well ro smooth	Il rounded in all dimensions, surfaces			4
	11	Brightness	5	Surface Genera	s dull, d lly not b	dark or s oright.	tained.		1	Mostly of surfaces	dull, but s.	may ha	ve <359	% bright	2	Mixture mixture	e dull and e range.	d bright,	i.e., 35-	-65%	3	Predom scoured	ninantly b d surface	oright, : s.	> 65%, exposed or	
ε	12	Consolidation particles	n of <i>i</i>	Assorte overlap	d sizes ping.	tightly p	acked o	r	2	Modera overlap	tely pac bing.	ked with	some		4	Mostly appare	loose as nt overla	sortmei ap.	nt with n	0	6	No pac easily n	king evid noved.	ent. Lo	oose assortment,	
3otto	13	Bottom size distribution	e l	No size materia	change I 80–10	e evident 0%.	t. Stable		4	Distribu 50–80%	tion shif 5.	t light. S	table m	naterial	8	Modera materia	ate chan als 20–50	ge in siz 0%.	zes. Stal	ble	12	Marked materia	distribut ls 0–20%	ion cha 6.	on change. Stable	
	14	Scouring ar deposition	nd .	<5% of depositi	bottom ion.	affected	by scou	ır or	6	5–30% constric steepen	affected tions an . Some	l. Scour d where depositi	at grades ion in p	s ools.	12	30–50% at obst bends.	% affecte ructions, Some fi	ed. Depo constrie lling of p	osits and ctions a bools.	d scour nd	18	18 More than 50% of the flux or change nearly			oottom in a state of earlong.	24
	15	Aquatic vegetation	ļ	Abunda green p	int grow erennia	th moss I. In swif	-like, da t water t	rk too.	1	Commo and poc	n. Algae I areas.	e forms i Moss h	in low v ere too	elocity	2	Present but spotty, mostly in backwater. Seasonal algae growth makes rocks slick.			owth	3	Perenn green, :	ial types short-terr	scarce n bloo	e or absent. Yellow- m may be present.	4	
						Exc	cellent	total =	16				Good	total =	36	Fair total =		0				Poor total =	12			
Stream ty	/pe	A1 A	2	A3	A4	A5	A6	B1	B2	B3	B4	B5	B6	C1	C2	C3	C4	C5	C6	D3	D4	D5	D6		Crond total	64
Good (Stat	ole)	38-43 38-	-43	54-90	60-95	60-95	50-80	38-45	38-45	40-60	40-64	48-68	40-60	38-50	38-50	60-85	70-90	70-90	60-85	85-107	85-107	85-107	67-98		Grand total =	64
Pair (Mod. Poor (Unst	unstable able)	44-47 44-48+ 48	-47 8+	130+	96-132 133+	96-142 143+	111+	46-58 59+	46-58 59+	61-78 79+	65-84 85+	69-88 89+	61-78 79+	62+	62+	106+	91-110 111+	91-110 111+	106+	108-132 133+	108-132	108-132	99-125 126+		stream type =	B 3
Stream ty	уре	DA3 D/	A4	DA5	DA6	E3	E4	E5	E6	F1	F2	F3	F4	F5	F6	G1	G2	G3	G4	G5	G6				*Potential	B3
Good (Stat	ole)	40-63 40-	-63	40-63	40-63	40-63	50-75	50-75	40-63	60-85	60-85	85-110	85-110	90-115	80-95	40-60	40-60	85-107	85-107	90-112	85-107			1	stream type =	
Fair (Mod.	unstable	64-86 64	-86	64-86	64-86	64-86	76-96	76-96	64-86	86-105	86-105	111-125	111-125	5 116-130	96-110	61-78	61-78	108-120	108-120	113-125	108-120				Modified char	nnel
Poor (Unst	adle)	8/+ 87	/+	87+	8/+	87+	97+	97+	8/+	106+	106+	126+	126+	131+	111+	79+	/9+ *Poi	121+	121+	126+	121+		not ovice	ting	Stability ratin	ig =
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## **SOUTHERN CALIFORNIA EDISON**

## Bishop Creek Hydroelectric Project (FERC Project No. 1394)

## TECHNICAL MEMORANDUM BISHOP CREEK SUBSTRATE MOBILITY EVALUATION

Southern California Edison 1515 Walnut Grove Ave Rosemead, CA 91770

December 2021

Support from:



Stillwater Sciences

and



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## 1.0 INTRODUCTION

This Technical Memorandum summarizes results from supplemental field investigations conducted as part of Task 4 – Substrate Mobility Evaluation from the Sediment and Geomorphology Study, as described in the Modification to Methods of the Initial Study Report (section 12.5). The primary goals of Task 4 are to (1) characterize the particle size distribution of sediments mobilized at or near bankfull flow condition, and (2) evaluate hydraulic conditions required to mobilize D<sub>65</sub> and D<sub>84</sub> particle sizes. This tracer study primarily looks at the first goal, as based on estimated bankfull conditions for these sites.

## 2.0 STUDY AREA AND BACKGROUND

The Study Area included two study sites in the Bishop Creek watershed, Site 4 and Site 6. Site 4 is comprised of two contiguous sub-sites, 4.1 and 4.2, which are treated as one site for this Technical Memorandum. Both sites are downstream of Project reservoirs (i.e., South Lake and Lake Sabrina) (Figure 1) and located on natural stream reaches between a powerhouse intake impoundment and the associated powerhouse (a penstock carries flow parallel to the creek).

Bishop Creek is approximately 10 miles long and has a drainage area of approximately 70 square miles from its headwaters to its confluence with the Owens River. The Bishop Creek watershed drains the eastern side of the Sierra Nevada Range and joins Owens River near Bishop, California. This section of the watershed ranges in elevation from approximately 4,900 feet (ft) to 8,500 ft. Bishop Creek is separated into multiple segments by a series of powerhouses and intakes (Figure 1). The channel form is characterized by high gradient, coarse-grained, cascade and step-pool morphology.



Figure 1. Bishop Creek Tracer Rock Study Site Overview

### 2.1 HYDROLOGY

Annual peak and 15-minute flow data were used to evaluate hydrology driving sediment transport at Sites 4 and 6. Daily flow data were obtained from Southern California Edison (SCE) for Bishop Creek below Intake 6 and Intake 3, which correspond to the flow in Bishop Creek at Sites 6 and 4, respectively. Fifteen-minute flow data were evaluated for the period of March 2020 to September 2021 to determine the magnitude and duration of high flow events that occurred over the duration of the tracer rock study. Annual peak flow data were obtained from U.S. Geological Survey (USGS) Gage ID 10271200, which is approximately 0.3 miles downstream of Site 6 (on Bishop Creek above Plant 6) and has a total record of 27 years under current in-stream flow requirements. Annual peak flow data are not available for Site 4. Because of this, Site 6 peak flow data were prorated using a standard flow transference formula based on drainage area ratios (Waananen and Crippen 1977):

 $Q_u = Q_g(A_u/A_g)$ 

 $Q_u = Ungaged discharge$ 

Q<sub>g</sub> = Gaged discharge

 $A_u = Ungaged drainage area$ 

 $A_g = Gaged drainage area.$ 

A flood frequency analysis was performed in accordance with Bulletin 17C (USGS 2019) for USGS Gage ID 10271200 using the Hydrologic Engineering Center's statistical software package (HEC-SSP) (USACE 2019). Table 1 presents peak discharges up to the 20-year recurrence interval (5% annual exceedance probability). Annual peak flows in Bishop Creek ranged from 15 cubic feet per second (cfs) to 453 cfs over the last 27 years (water years 1994 to 2020) (Figure 2). The largest flow on record (453 cfs) had a return period of approximately 20 years (Figure 3).

Table 1. Flood frequency flows for USGS Gage ID 10271200

Annual Exceedance Probability (%)	Site 6 Instantaneous Peak Flow (cfs)	Site 4 Instantaneous Peak Flow (cfs) <sup>1</sup>
5	487	342
10	403	283
20	313	220
50	176	124

<sup>1</sup> Discharge values were prorated by drainage area using equation 1.  $A_g = 104 \text{ mi}^2$ ,  $A_u = 73 \text{ mi}^2$ .

(1)


Figure 2. Instantaneous maximum annual peak flow record for water years 1994– 2020 at USGS Gage ID 10271200 (Site 6)



Figure 3. Flood frequency analysis for USGS Gage ID 10271200 (Site 6)

The Project utilizes water from Bishop Creek to generate electricity. Instream flow releases are made within bypass reaches as described in Section 12.2.3 of the PAD (Southern California Edison 2019). Other sources of water input between the junction of South Fork Bishop Creek and Middle Fork Bishop Creek and Powerhouse No. 6 include limited inter-basin transfers from Birch and McGee Creeks (directly into the penstocks) and three tributaries. The largest tributary, Coyote Creek, is unregulated and enters Bishop Creek upstream of Powerhouse No. 4, between Sites 4 and 6.

As described in the Operations Model Study Plan, flow at the site varies depending on the amount of runoff, instream minimum flow requirements, and SCE's release schedule, which is dictated by snowpack, snow melt, spring rain events, drought, power demand, and irrigation. In Bishop Creek, peak runoff generally occurs from June to August, as the snow melts in the higher mountain elevations. A discussion of general project hydrology and operations is available in SCE (2019).

## 3.0 METHODS

### 3.1 FIELD MEASUREMENTS

Field measurements at Study Sites 4 and 6 included cross section surveys, longitudinal profile surveys of the channel bed and water surface, surface measurements of bed particle size distribution, deployment, and recovery of Passive Integrated Transponder (PIT) tagged tracer rocks, and photo documentation.

Tracer rock deployments were conducted at Sites 4 and 6 between August 2 and August 6, 2020. Tracer rock recovery efforts 1 and 2 were conducted on May 26 and July 20, 2021, respectively.

#### 3.1.1 LONGITUDINAL PROFILES AND CROSS SECTIONS

Cross section and longitudinal profile surveys were conducted at the study sites utilizing Trimble S7 robotic total station (RTS) and Trimble R10-2 Real-time kinematic Global Navigation Satellite System (RTK GNSS) survey equipment. Temporary control points were installed near each study site, and coordinates were established by submitting static GNSS observations to the National Geodetic Survey Online Positioning User Service (NGS OPUS).

Cross section surveys were conducted in sufficient detail to capture significant changes in grade and characterize channel geometry generally following standard survey procedures as described by the U.S. Dept. of Agriculture, Forest Service (Forest Service) (Harrelson et al. 1994). The cross section surveys extended above bankfull on both banks and included measurements of the edge of water and thalweg. Indicators of bankfull flow elevation, including water stain lines, vegetation transitions, and channel bank slope breaks were noted, and the approximate bankfull locations were recorded. Photos of each cross section were taken facing upstream, downstream, towards left bank, and towards the right bank to document site conditions during the time of survey.

A longitudinal profile of the channel thalweg was surveyed through the length of the site and extended upstream and downstream of the cross sections for a minimum total length of 20 times the bankfull width. Survey point spacing averaged 3 ft, with denser spacing in topographically complex areas. The longitudinal profile survey followed procedures described by the Forest Service (Harrelson et al.1994), including surveying enough points to capture the topography of pools, riffles, and other habitat features, as well as other significant breaks in channel gradient.

### 3.1.2 SUBSTRATE CHARACTERIZATION

Wolman pebble counts (Wolman 1954) were conducted to characterize channel bed particle size distribution along cross sections and representative channel locations. Pebble counts were conducted in 2020 and 2021 at Site 6 and 2020 at Site 4. Pebble counts entailed measuring the intermediate axis (b-axis) of 100 particles in the immediate vicinity of a cross section transect. All silt- and sand-sized particles were classified as <2 millimeters (mm).

### 3.1.3 TRACER ROCKS

Passive Integrated Transponder (PIT)-tagged tracer rocks were deployed to inform sediment transport dynamics at sites 4 (consisting of sites 4.1 4.2) and 6. Tracer rocks bracketed the average range of D10 to D84 particle sizes (32 to 350 mm) based on 2019 pebble counts for these sites (Kleinschmidt 2020). Table 2 describes the particle size classes and total quantity of tracer rocks installed in 2020.

Size Class	Size Class B-axis Range (mm)		Quantity
A	22.45	4	18
	32-45	6	12
В	45-64	4	18
	43-04	6	12
С	64.00	4	22
	64–90	6	11
D	90–128	4	19
		6	12
E	128–180	4	19
		6	12
F	180-256	180-256 4 14	
	100-230	6	5
G	256-350	4	6
	200 000	6	3
To		4	116
10	lai	6	67

#### Table 2. Tracer rock size classes and quantities by site

<sup>1</sup> Sites 4.1 and 4.2 were treated as a single site (Site 4) for the tracer rock study because the sites are contiguous and tracer rocks were deployed between the two sites as well as at the cross sections.

Tracer rock size classes A–F were obtained from an out-of-area aggregate source prior to the start of fieldwork. The out-of-area tracer rocks had similar lithology (igneous) and physical properties (e.g., specific gravity, sphericity, hardness, mineralogy) to native particles found at the Bishop Creek study sites. Tracer rocks in size class G were obtained on site. The out-of-area tracer rocks were decontaminated with Virkon® aquatic disinfectant prior to deployment in Bishop Creek. The intermediate axis (B-axis) and mass were recorded for each particle in size classes A-F, but only the B-axis parameter was recorded for size class G particles. PIT tags were inserted into the tracers by drilling a 3/16-inch hole into each particle and sealing the PIT tag in place with a quick cure, high strength concrete and masonry anchoring adhesive. The adhesive was smoothed over to mimic natural particle surface texture. The tracer particles were painted a bright, high-contrast color with concrete marking paint once the adhesive was dry.

Tracer rocks were deployed along cross sections and at other representative geomorphic units between the cross sections at each study site. Various geomorphic units were chosen for tracer rock placement to test rock particle mobility in a range of environments. Geomorphic units included riffles, cascades, flat-water sections (runs and glides), and plunge pools. Prior to placement of individual tracer rocks, a rock of similar shape and size was removed from the streambed to create a void space and a similarly sized tracer rock was gently pressed down and worked into the void space to simulate natural streambed particle emplacement. The location of each tracer rock was surveyed with RTS or RTK GNSS equipment, and representative photographs were taken of the tracer locations.

#### 3.2 ANALYSIS

#### 3.2.1 LONGITUDINAL PROFILES AND CROSS SECTIONS

Results from the 2021 cross section and longitudinal profile surveys during tracer recovery were compared with surveys from 2019 and 2020 to assess geomorphic change (e.g., aggradation or incision). The 2019 profiles and cross sections were completed as part of the larger Sediment & Geomorphology Study using local benchmarks and laser level surveying, so there may be some differences in precision between the 2019 and 2020/2021 surveys. Because the longitudinal profiles do not start and stop at endpins, there is likely some uncertainty in aligning the 2019, 2020, and 2021 surveys. Despite differences in longitudinal profile alignments, changes were quantified by comparing reach-average slope between monitoring years. Cross sections were evaluated for instances of aggradation or incision.

#### 3.2.2 BED PARTICLE SIZE DISTRIBUTIONS

Bed particle size distribution data were used to calculate commonly used bed particle size metrics: the particle size for which 16% of the distribution is finer ( $D_{16}$ ), the particle size for which 50% of the distribution is finer ( $D_{50}$ , or the median size), and the particle size for which 84% of the distribution is finer ( $D_{84}$ ). Particle sizes were binned by size class using half-phi intervals and plotted using cumulative distribution functions (Bunte and Abt 2001).

#### 3.2.3 SEDIMENT MOBILITY

Tracer rock displacement lengths were quantified between deployment and recovery effort 1, and recovery effort 1 and recovery effort 2. Tracer rocks with a displacement greater than 1 ft were considered mobilized. Sediment mobility was assessed at each study site using the channel shear stresses estimated from a Hydrologic Engineering Center's River Analysis System (HEC-RAS) hydraulic model for the largest pulse flow during tracer deployment, particle size data from the pebble counts, and the Shields relationship (equation 2) to compute the critical shear stresses acting on the channel bed during specific flows.

$$\tau_{crit}^* = \frac{\tau_b}{(\rho_s - \rho)gD_{50}}$$

(2)

Where:

 $\tau^*_{crit}$  is the critical Shields number (unitless)

 $\tau_b$  is basal shear stress (pascals)

 $\rho$  is the density of water (kilograms per square meter [kg/m<sup>3</sup>])

 $\rho_s$  is the particle density, (assumed 2,650 [kg/m<sup>3</sup>])

g is acceleration due to gravity (meters per second squared  $[m/s^2]$ )

 $D_{50}$  is the median particle size (mm)

Equation 2 can then be rearranged to solve for critical  $D_{50}$  (i.e., the median particle size likely to be mobilized for a given shear stress) under a given flow at each cross section.

$$D_{50}_{crit} = \frac{\tau_b}{(\rho_s - \rho)g\tau^*_{crit}} \tag{3}$$

To estimate shear stresses ( $\tau_b$ ) acting on the channel bed at each study site, flow hydraulics were modeled using the U.S. Army Corps of Engineers' (USACE) HEC-RAS. HEC-RAS is a one-dimensional hydraulic model that is widely used for estimating general flow characteristics. This was a simple HEC-RAS model, constructed for the purpose of estimating shear stress. This one-dimensional model assumes a uniform velocity across the channel but can partition flow into channel and overbank sections. Flow is modeled based on cross sections and topography between the cross sections is assumed to be uniform. The geometry used in the HEC-RAS model was derived from the channel cross section surveys and the discharge was set equal to the largest pulse flows released by SCE during each tracer deployment. Manning's n roughness values ranging between 0.05 and 0.055 were applied in the main channel and overbanks, respectively. The roughness values were estimated based on dominant substrate cover in the channel and vegetation density in overbank areas, using a combination of field observations and professional judgement.

### 4.0 RESULTS

#### 4.1 SITE 4

The following sections provide results from the 2020 surveys (during tracer installation) at Site 4 and a comparison with data collected in 2019 during separate study elements. Due to the limited mobility of the tracers observed during the tracer recovery efforts in 2021 at this site, the profile and cross section were not resurveyed. An overview of Site 4 and the survey extents are provided in Figure 4.





### 4.1.1 LONGITUDINAL PROFILE AND CROSS SECTIONS

The 2020 longitudinal profile was 550 ft long and extended 75 ft upstream of cross section 4.9 and 110 ft downstream of cross section 4.2 (Figure 4 and Figure 5). The reach average slope, calculated as a best-fit line to the long profile, was 0.04 (4%) in 2019 and 2020. No significant changes were apparent between the 2019 and 2020 longitudinal profiles, and minor variability in elevations between the two profiles is likely a result of profile alignment and/or survey point density.



#### Figure 5. Longitudinal profile for Site 4. Leader lines indicate cross section locations along longitudinal profile. Inset photos show representative conditions of each cross section during 2020 surveys.

Cross sections from 2019 and 2020 are provided in Figure 6 through Figure 8. The cross section geometry was generally similar between the two monitoring years. Differences in bed elevation (e.g., cross section 4.4 between stations 35 and 45) between the monitoring years likely reflect variation in survey point locations rather than topographic changes. Apparent differences in cross section 4.5 are due to the 2019 cross section including survey points on large wood, where the 2020 cross section did not.



Figure 6. Cross sections 4.2 and 4.3. Stationing is from left to right bank looking downstream.





Figure 7. Cross sections 4.4 and 4.5. Stationing is from left to right bank looking downstream.



Figure 8. Cross sections 4.7 and 4.9. Stationing is from left to right bank looking downstream.

## 4.1.2 BED PARTICLE SIZE DISTRIBUTIONS

Pebble counts were conducted at three cross section locations selected to best represent the variety of channel geometry and bed sediment conditions at Site 4. The bed at all three cross sections was predominantly made up of cobbles, with gravel comprising less than 37% and boulders comprising less than 21% of the grain size distribution at each cross section. Sand content (<2 mm) from the 2020 pebble counts was 4, 16, and 1% of the measured particles at cross sections 4.9, 4.7, and 4.2, respectively. A summary of the pebble count data is provided in Table 3 and a plot of the particle size distributions at each cross section is provided in Figure 9.

Pebble counts conducted during 2019 pooled multiple locations within Sites 4.1 and 4.2 as one count and therefore are not directly comparable to the cross section-specific pebble counts conducted in 2020. Although there was spatial variability in the pebble count locations between monitoring years, the 2019 and 2020 particle size distributions were plotted together to evaluate changes. The 2019 particle size distributions were coarser than the 2020 distributions (Figure 9). Differences between the 2019 and 2020 particle size distributions suggest that the bed fined between monitoring years. These differences may be due to measurement bias, variability in collection methods, and pebble count locations.

Cross Section (XS) ID	Year <sup>1</sup>	D16 (mm)	D50 (mm)	D84 (mm)
4.9	2020	25	78	239
4.7	2020	3	91	323
4.2	2020	43	117	226

#### Table 3.Summary of pebble count data from 2020 for Site 4

<sup>1</sup> Pebble counts were not conducted at Site 4 in 2021 due to limited tracer mobility after flushing flows.



# Figure 9. 2020 and 2019 particle size distributions at Site 4. 2020 pebble counts were conducted along cross sections. 2019 pebble counts were conducted at multiple riffles throughout the site.

#### 4.1.3 TRACER ROCKS

One hundred and seventeen tracer rocks were deployed at Site 4 between August 2 and August 6, 2020. Tracer rock recovery surveys were conducted on May 26 and July 20, 2021. Pulse flows of approximately 70 cfs (recurrence interval of ~1.2 years) and 120 cfs (recurrence interval of ~1.6 years) were released to the study reach before recovery effort 1 and recovery effort 2, respectively (Figure 10).



Figure 10. Hydrograph for Bishop Creek below Intake 3 (Site 4). Tracer deployment and recovery survey dates are annotated with arrows.

One hundred and seventeen (100%) of the tracer rocks deployed on August 2, 2020, were recovered on May 26, 2021 after a pulse flow of approximately 70 cfs for a period of approximately 1 hour. Tracer rocks displacement calculations between the deployment and first recovery effort showed that 114 (98%) of the recovered tracer rocks at Site 4 had not mobilized. The remaining 2% of mobile tracers showed negligible transport distances, with a maximum displacement of 1.75 ft. A pulse flow of approximately 120 cfs was released to the study reach shortly after the first recovery effort (Figure 11).



# Figure 11. Hydrograph of pulse flow at Site 4 that occurred prior to the second tracer recovery effort.

One hundred and fifteen (98%) of the deployed tracer rocks were recovered during the second recovery effort on July 21, 2021. The pulse flow shown in Figure 11 had a magnitude of approximately 120 cfs and a duration of approximately 24 hours. This flow resulted in mobilization of twelve tracers (11%) and 17% of tracers with diameters <60 mm. Ninety-three percent of tracers with diameters >60 mm showed no mobilization. The largest mobilized particle had a diameter 170 mm, although it was only transported 1.5 ft. There were no mobile particles larger than highest predicted critical D50 at the site (D50<sub>crit</sub> = 206 mm at XS 4.7). Table 4 provides the channel shear stresses from HEC-RAS and the critical D50 at each cross section location. Tracer movement by particle size is summarized in Figure 12.

# Table 4. Predicted critical D50 and modeled channel shear stress at Site 4 crosssections during a discharge of 120 cfs

Cross section	Channel shear stress (pascals)	Predicted critical D50 (mm)	
4.9	105	147	
4.7	148	206	
4.5	77	105	
4.4	91	123	
4.3	134	184	
4.2	144	199	



# Figure 12. Transport distance of tracer rocks by particle size at Site 4 between recovery effort 1 and recovery effort 2 (after 120 cfs flushing flow). Grain size classes follow conventions used in Table 2.

## 4.2 SITE 6

The following sections provide results from the 2020 (tracer deployment) and 2021 (tracer recovery 1 and 2) surveys at Site 6, and a comparison with data collected in 2019 during a separate study element. An overview of Site 6 and the survey extents are provided in Figure 13. Cross sections are numbered sequentially from downstream to upstream.



Figure 13. Site 6 overview.

#### 4.2.1 LONGITUDINAL PROFILE AND CROSS SECTIONS

The 2020 and 2021 longitudinal profiles were approximately 420 ft long and extended 100 ft upstream of cross section 6.8 and 160 ft downstream of cross section 6.5 (Figure 14). The 2019 long profile was 250 ft long and extended 35 ft upstream of cross section 6.8 and 60 ft downstream of cross section 6.5. The reach average slope, calculated as a

best-fit line to the long profile, was 0.02 (2%) during all three monitoring years. The 2020 and 2021 longitudinal profiles are generally similar, and apparent differences in the two profiles are likely a result of slight misalignment or variability in survey point locations rather than changes in channel morphology. Apparent changes between the 2019 and the 2020 long profiles, particularly between stations 75 and 125, suggest channel aggradation but may be a result of misalignment and/or different survey point spacing.



# Figure 14. Site 6 longitudinal profiles from 2019, 2020, and 2021. Leader lines indicate cross section locations along longitudinal profile. Inset photos show representative conditions of each cross section during 2020 surveys.

Cross sections from 2019 through 2021 are provided in Figure 15 through Figure 17. The cross section geometry was generally similar between the three monitoring years. Minor differences in bed elevation (e.g., cross section 6.5 at station 35) between the monitoring years likely reflect variation in survey point locations rather than topographic changes.



Figure 15. Cross section 6.5 during 2019, 2020, and 2021. Stationing is from left to right bank looking downstream



Figure 16. Cross section 6.6 during 2019, 2020, and 2021. Stationing is from left to right bank looking downstream.



Figure 17. Cross section 6.8 during 2019, 2020, and 2021. Stationing is from left to right bank looking downstream.

### 4.2.2 BED PARTICLE SIZE DISTRIBUTIONS

The bed at all three cross sections at this site was primarily made up of cobbles and gravel, with boulders comprising less than 21% of the pebble counts at each cross section in 2020 and 2021. Relative to the 2020 measurements, the bed coarsened at cross sections 6.6 and 6.5 (Figure 18 and Figure 19), with increases of cobble-sized material. The bed at cross section 6.8 remained mostly stable between 2020 and 2021 but showed a slight decrease in the coarse fraction of the particle size distribution (Figure 20). The amount of gravel decreased by 15% between 2020 and 2021 at cross sections 6.8 and 6.5 and decreased by 26% at cross section 6.6. A summary of the pebble count data from 2020 and 2021 is provided in Table 5 and plots of the particle size distributions at each cross section are provided in Figure 18 through Figure 20.

Pebble counts conducted during 2019 grouped the entire site as one count and therefore are not directly comparable to the cross section-specific pebble counts conducted in 2020. To compare the 2019 and 2020 particle size distributions, all three cross sectional pebble counts conducted during 2020 were grouped into a single distribution and plotted with the 2019 data. The 2019 distribution was coarser overall (Figure 21). Differences in the particle size distributions may be due to measurement bias and variability in collection methods.

Cross Section	6	.8	6	.6	6	.5
Year	2020	2021	2020	2021	2020	2021
D16 (mm)	17	18	23	60	4	23
D50 (mm)	76	74	69	130	58	137
D84 (mm)	283	177	58	137	199	256





Figure 18. Particle size distributions at cross section 6.5 during 2020 and 2021



Figure 19. Particle size distributions at cross section 6.6 during 2020 and 2021







# Figure 21. Particle size distributions at Site 6 during 2019 and 2020. Particle size data from 2019 was conducted throughout Site 6 riffles. Particle size data from 2020 was conducted at cross sections and grouped into a single distribution.

### 4.2.3 TRACER ROCKS

Sixty-seven tracer rocks were deployed at Site 6 between July 29 and August 1, 2020. Tracer rock recovery surveys were conducted on May 26 and July 20, 2021. Pulse flows of approximately 60 cfs and 120 cfs were released to the Project reach before recovery effort 1 and recovery effort 2, respectively (Figure 22).



Figure 22. Hydrograph for Bishop Creek below Intake 6 (Site 6). Tracer deployment and recovery survey dates are annotated with arrows.

Sixty-two (93%) of the deployed tracer rocks were recovered during the first recovery effort on May 26, 2021. However, 31 (46%) of the total tracer rocks deployed at Site 6 had been heavily disturbed by non-fluvial processes prior to the recovery effort. The remaining 36 (54%) tracers that were recovered in the stream channel were undisturbed and showed no movement from their initial placement locations. Non-fluvial disturbance was determined by observations of lateral and upstream movement of tracer rocks, presumably from anglers or other recreating individuals. This necessitated resetting approximately half of the tracers at Site 6 in May 2021, which resulted in shorter residence times for approximately half of the tracers at Site 6 prior to the second, larger pulse flow. The pulse flow on June 9, 2021 had a peak discharge of 120 cfs and a duration of approximately 24 hours (Figure 23).



Figure 23. Magnitude and duration of pulse flow that occurred prior to the second tracer recovery effort

Sixty (90%) of the deployed tracer rocks were recovered during the second recovery effort on July 21, 2021. The pulse flow shown in Figure 23 resulted in mobilization of 40% (n = 24) of all recovered tracer rocks and 84% (n = 16) of tracers <60 mm. Eighty percent (n = 34) of tracers >60 mm showed no mobilization. The largest mobilized particle was 197 mm and was transported 4.5 ft. This was the only mobile particle larger than the highest predicted critical D<sub>50</sub> at the site. Table 4 provides the channel shear stresses from HEC-RAS and associated critical D<sub>50</sub> at each cross section location based on the pulse flow of 120 cfs. Tracer movement by particle size is summarized in Figure 24.

# Table 6. Predicted critical D50 and modeled channel shear stress at Site 6 cross sections during a discharge of 120 cfs.

Cross section	Channel shear stress (pascals)	Predicted critical D50 (mm)
6.8	101	141
6.6	81	116
6.5	72	100



Figure 24. Transport distance of tracer rocks by particle size at Site 6 between recovery effort 1 and recovery effort 2. Grain size classes follow conventions used in Table 2.

## 5.0 DISCUSSION

Tracer rock disturbance by non-fluvial processes and associated lower particle residence time in the streambed prior to the larger pulse flow may partially explain higher transport distances observed at Site 6. Resetting the tracers at Site 6 on May 26, 2021 resulted in the tracer rocks having less than two weeks in the streambed prior to the larger pulse flow, where the tracer rocks at Site 4 had approximately 10 months in the streambed prior to the larger pulse flow. Shorter residence times of tracers in the streambed are likely associated with smaller degrees of embeddedness, which can affect the mobility of streambed particles (Parker 2008).

The smaller transport distances observed at Site 4 are likely a more accurate depiction of sediment mobility in these reaches because the tracer rocks had longer residence times in the streambed, which is a more accurate representation of native particles.

### 6.0 REFERENCES

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# SOUTHERN CALIFORNIA EDISON

Bishop Creek Hydroelectric Project (FERC Project No. 1394)

> APPENDIX A Photo Log



Figure A-1. Cross section 4.9 in August 2020, view upstream from mid channel.



Figure A-2. Cross section 4.9 in August 2020, view downstream from mid channel.



Figure A-3. Cross section 4.9 in August 2020, view of left bank from right bank.



Figure A-4. Cross section 4.9 in August 2020, view of right bank from left bank.



Figure A-5. Cross section 4.9 in August 2020, view of tracers from right bank.



Figure A-6. Cross section 4.9 in August 2020, view of tracers from left bank.



Figure A-7. Cross section 4.9 in August 2020, close up view of right bank pin.



Figure A-8. Cross section 4.9 in August 2020, landscape view of right bank pin.



Figure A-9. Cross section 4.9 in August 2020, close up view of left bank pin.



Figure A-10. Cross section 4.9 in August 2020, landscape view of left bank pin.



Figure A-11. Cross section 4.7 in August 2020, view upstream from mid channel.



Figure A-12. Cross section 4.7 in August 2020, view downstream from mid channel.


Figure A-13. Cross section 4.7 in August 2020, view of left bank from right bank.



Figure A-14. Cross section 4.7 in August 2020, view of right bank from left bank.



Figure A-15. Cross section 4.7 in August 2020, view of tracers from right bank.



Figure A-16. Cross section 4.7 in August 2020, view of tracers from left bank.



Figure A-17. Cross section 4.7 in August 2020, close up view of right bank pin.



Figure A-18. Cross section 4.7 in August 2020, landscape view of right bank pin.



Figure A-19. Cross section 4.7 in August 2020, close up view of left bank pin.



Figure A-20. Cross section 4.7 in August 2020, landscape view of left bank pin.



Figure A-21. Cross section 4.5 in August 2020, view upstream from mid channel.



Figure A-22. Cross section 4.5 in August 2020, view downstream from mid channel.



Figure A-23. Cross section 4.5 in August 2020, view of left bank from right bank.



Figure A-24. Cross section 4.5 in August 2020, view of right bank from left bank.



Figure A-25. Cross section 4.5 in August 2020, view of tracers from left bank.



Figure A-26. Cross section 4.5 in August 2020, landscape view of right bank pin.



Figure A-27. Cross section 4.5 in August 2020, close up view of left bank pin.



Figure A-28. Cross section 4.5 in August 2020, landscape view of left bank pin.



Figure A-29. Cross section 4.4 in August 2020, view upstream from mid channel.



Figure A-30. Cross section 4.4 in August 2020, view downstream from mid channel.



Figure A-31. Cross section 4.4 in August 2020, view of left bank from right bank.



Figure A-32. Cross section 4.4 in August 2020, view of right bank from left bank.



Figure A-33. Cross section 4.4 in August 2020, view of tracers from right bank.



Figure A-34. Cross section 4.4 in August 2020, view of tracers from left bank.



Figure A-35. Cross section 4.4 in August 2020, close up view of right bank pin.



Figure A-36. Cross section 4.4 in August 2020, landscape view of right bank pin.



Figure A-37. Cross section 4.4 in August 2020, close up view of left bank pin.



Figure A-38. Cross section 4.4 in August 2020, landscape view of left bank pin.



Figure A-39. Cross section 4.3 in August 2020, view upstream from mid channel.



Figure A-40. Cross section 4.3 in August 2020, view downstream from mid channel.



Figure A-41. Cross section 4.3 in August 2020, view of left bank from right bank.



Figure A-42. Cross section 4.3 in August 2020, view of right bank from left bank.



Figure A-43. Cross section 4.3 in August 2020, view of tracers from right bank.



Figure A-44. Cross section 4.3 in August 2020, view of tracers from left bank.



Figure A-45. Cross section 4.3 in August 2020, close up view of right bank pin.



Figure A-46. Cross section 4.3 in August 2020, landscape view of right bank pin.



Figure A-47. Cross section 4.3 in August 2020, close up view of left bank pin.



Figure A-48. Cross section 4.3 in August 2020, landscape view of left bank pin.



Figure A-49. Cross section 4.2 in August 2020, view upstream from mid channel.



Figure A-50. Cross section 4.2 in August 2020, view downstream from mid channel.



Figure A-51. Cross section 4.2 in August 2020, view of left bank from right bank.



Figure A-52. Cross section 4.2 in August 2020, view of right bank from left bank.



Figure A-53. Cross section 4.2 in August 2020, view of tracers from right bank.



Figure A-54. Cross section 4.2 in August 2020, view of tracers from left bank.



Figure A-55. Cross section 4.2 in August 2020, close up view of right bank pin.



Figure A-56. Cross section 4.2 in August 2020, landscape view of right bank pin.



Figure A-57. Cross section 4.2 in August 2020, close up view of left bank pin.



Figure A-58. Cross section 4.2 in August 2020, landscape view of left bank pin.



Figure A-61. Cross section 6.8 in August 2020, view upstream from mid channel.



Figure A-62. Cross section 6.8 in August 2020, view downstream from mid channel.



Figure A-63. Cross section 6.8 in August 2020, view of left bank from right bank.



Figure A-64. Cross section 6.8 in August 2020, view of right bank from left bank.



Figure A-65. Cross section 6.8 in August 2020, view of tracers from right bank.



Figure A-66. Cross section 6.8 in August 2020, view of tracers from left bank.



Figure A-67. Cross section 6.8 in August 2020, close up view of right bank pin.



Figure A-68. Cross section 6.8 in August 2020, landscape view of right bank pin.



Figure A-69. Cross section 6.8 in August 2020, close up view of left bank pin.



Figure A-70. Cross section 6.8 in August 2020, landscape view of left bank pin.



Figure A-71. Cross section 6.6 in August 2020, view upstream from mid channel.



Figure A-72. Cross section 6.6 in August 2020, view downstream from mid channel.



Figure A-73. Cross section 6.6 in August 2020, view of left bank from right bank.



Figure A-74. Cross section 6.6 in August 2020, view of right bank from left bank.



Figure A-75. Cross section 6.6 in August 2020, view of tracers from right bank.



Figure A-76. Cross section 6.6 in August 2020, view of tracers from left bank.



Figure A-77. Cross section 6.6 in August 2020, close up view of right bank pin.



Figure A-78. Cross section 6.6 in August 2020, landscape view of right bank pin.



Figure A-79. Cross section 6.6 in August 2020, close up view of left bank pin.



Figure A-80. Cross section 6.6 in August 2020, landscape view of left bank pin.



Figure A-81. Cross section 6.5 in August 2020, view upstream from mid channel.



Figure A-82. Cross section 6.5 in August 2020, view downstream from mid channel.



Figure A-83. Cross section 6.5 in August 2020, view of left bank from right bank.



Figure A-84. Cross section 6.5 in August 2020, view of right bank from left bank.



Figure A-87. Cross section 6.5 in August 2020, view of tracers from right bank.



Figure A-88. Cross section 6.5 in August 2020, view of tracers from left bank.


Figure A-89. Cross section 6.5 in August 2020, close up view of right bank pin.



Figure A-90. Cross section 6.5 in August 2020, landscape view of right bank pin.



Figure A-91. Cross section 6.5 in August 2020, close up view of left bank pin.



Figure A-92. Cross section 6.5 in August 2020, landscape view of left bank pin.

# SOUTHERN CALIFORNIA EDISON

Bishop Creek Hydroelectric Project (FERC Project No. 1394)

> APPENDIX B Tracer Coordinates

Site 4 T	racers
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	Daint			Οι	riginal Placement	:	Last Fou	nd Location (July	2021)
Tracer ID	Color	(mm)	PIT Tag Code	Northing (ft)	Easting (ft)	Elevation (ft)	Northing (ft)	Easting (ft)	Elevation (ft)
A-3	yellow	45	986112100280859	2,355,331.20	6,693,999.28	6,544.42	2,355,331.47	6,694,001.72	6,543.96
A-5	yellow	42	986112100298737	2,355,301.92	6,693,897.15	6,549.29	2,355,301.54	6,693,897.11	6,549.22
A-11	yellow	41	986112100298043	2,355,192.31	6,693,812.88	6,558.04	2,355,190.66	6,693,813.05	6,558.20
A-12	yellow	42	986112100283940	2,355,301.85	6,694,049.66	6,542.99	2,355,302.73	6,694,049.79	6,542.95
A-13	yellow	43	986112100279682	2,355,299.53	6,693,906.35	6,549.52	2,355,299.62	6,693,906.27	6,549.67
A-14	yellow	36	986112100288814	2,355,296.31	6,693,908.50	6,549.94	2,355,296.31	6,693,908.41	6,549.85
A-16	yellow	40	986112100290299	2,355,197.07	6,693,805.23	6,556.86	2,355,197.13	6,693,805.17	6,556.86
A-18	yellow	35	986112100288773	2,355,263.34	6,693,865.94	6,551.82		not recovered	
A-19	yellow	39	986112100290596	2,355,313.83	6,693,942.48	6,546.95	2,355,313.26	6,693,942.40	6,547.09
A-21	yellow	39	986112100280202	2,355,203.79	6,693,811.34	6,556.37	2,355,203.58	6,693,811.37	6,556.26
A-22	yellow	35	986112100279748	2,355,297.36	6,694,102.79	6,539.92	2,355,297.33	6,694,102.62	6,539.89
A-23	yellow	45	986112100298437	2,355,214.02	6,693,835.94	6,557.01	2,355,213.97	6,693,835.85	6,557.12
A-24	yellow	42	986112100279994	2,355,300.82	6,694,102.39	6,540.08	2,355,300.57	6,694,102.24	6,539.94
A-25	yellow	41	986112100284194	2,355,300.36	6,694,102.62	6,540.22	2,355,244.34	6,693,849.13	6,552.91
A-26	yellow	44	986112100291935	2,355,242.32	6,693,848.82	6,552.92	2,355,299.51	6,693,897.88	6,548.98
A-27	yellow	44	986112100280372	2,355,299.44	6,693,898.34	6,549.01	2,355,285.12	6,694,102.73	6,540.10
A-28	yellow	44	986112100280072	2,355,285.24	6,694,102.96	6,540.05	2,355,243.58	6,694,137.92	6,537.23
A-29	yellow	38	986112100278894	2,355,243.83	6,694,137.01	6,537.25	2,355,316.68	6,694,006.05	6,544.67
B-2	blue	60	986112100289313	2,355,295.99	6,693,900.87	6,549.06		not recovered	
B-4	blue	48	986112100294959	2,355,301.98	6,694,103.17	6,540.31	2,355,301.73	6,694,104.29	6,540.29
B-5	blue	54	986112100283978	2,355,297.92	6,694,102.83	6,540.01	2,355,297.78	6,694,101.99	6,540.14
B-6	blue	51	986112100279932	2,355,297.49	6,693,906.96	6,549.93	2,355,298.41	6,693,907.47	6,549.99
B-8	blue	59	986112100290868	2,355,308.29	6,694,051.52	6,541.96	2,355,308.71	6,694,053.66	6,541.52
B-9	blue	57	986112100280365	2,355,306.32	6,693,900.79	6,549.77	2,355,306.12	6,693,900.53	6,549.71
B-15	blue	54	986112100296419	2,355,284.27	6,694,101.95	6,540.05	2,355,279.79	6,694,108.73	6,539.89
B-16	blue	51	986112100295944	2,355,219.95	6,693,810.55	6,556.43	2,355,219.88	6,693,810.44	6,556.24

	Delat			Οι	riginal Placement		Last Fou	nd Location (July	2021)
Tracer ID	Color	B-AXIS (mm)	PIT Tag Code	Northing (ft)	Easting (ft)	Elevation (ft)	Northing (ft)	Easting (ft)	Elevation (ft)
B-17	blue	56	986112100281350	2,355,195.06	6,693,809.64	6,556.80	2,355,195.15	6,693,809.61	6,556.84
B-18	blue	56	986112100293290	2,355,244.54	6,694,137.75	6,537.02	2,355,244.42	6,694,137.75	6,536.87
B-22	blue	57	986112100291392	2,355,321.24	6,694,009.29	6,543.80	2,355,321.48	6,694,009.46	6,543.71
B-23	blue	54	986112100297929	2,355,246.64	6,694,140.04	6,536.77	2,355,246.37	6,694,139.85	6,536.75
B-24	blue	56	986112100293303	2,355,200.85	6,693,800.92	6,555.80	2,355,200.63	6,693,800.85	6,556.07
B-26	blue	57	986112100281625	2,355,333.41	6,693,999.98	6,544.89	2,355,332.37	6,694,000.53	6,544.75
B-27	blue	49	986112100282879	2,355,259.29	6,693,871.60	6,551.39	2,355,259.37	6,693,871.67	6,551.40
B-28	blue	56	986112100282939	2,355,304.82	6,693,894.97	6,549.56	2,355,304.85	6,693,895.13	6,549.64
B-29	blue	59	986112100297430	2,355,219.12	6,693,830.77	6,554.55	2,355,220.22	6,693,829.63	6,554.67
B-30	blue	48	986112100279077	2,355,316.12	6,693,941.63	6,546.27	2,355,315.71	6,693,941.58	6,546.41
C-1	orange	69	986112100258401	2,355,284.25	6,694,100.29	6,540.04	2,355,284.66	6,694,100.11	6,539.94
C-2	orange	62	986112100258387	2,355,337.21	6,694,000.76	6,544.53	2,355,337.07	6,694,001.11	6,544.54
C-3	orange	71	986112100281585	2,355,178.02	6,693,787.55	6,557.77	2,355,178.18	6,693,787.50	6,557.81
C-5	orange	85	986112100258432	2,355,297.83	6,693,899.64	6,548.83	2,355,297.78	6,693,899.60	6,548.92
C-7	orange	74	986112100258541	2,355,289.93	6,694,106.21	6,539.29	2,355,289.87	6,694,106.17	6,539.27
C-8	orange	86	986112100258525	2,355,304.49	6,693,902.21	6,549.48	2,355,304.47	6,693,902.19	6,549.51
C-9	orange	72	986112100258443	2,355,207.00	6,693,805.74	6,555.93	2,355,207.04	6,693,805.91	6,556.11
C-10	orange	74	986112100258416	2,355,303.77	6,693,895.82	6,549.36	2,355,303.73	6,693,895.91	6,549.46
C-11	orange	82	986112100258478	2,355,280.56	6,694,105.73	6,539.97	2,355,280.46	6,694,105.47	6,540.04
C-12	orange	77	986112100258459	2,355,283.38	6,694,105.62	6,540.26	2,355,283.63	6,694,108.03	6,540.05
C-13	orange	66	986112100258435	2,355,304.13	6,694,049.92	6,542.94	2,355,304.40	6,694,049.82	6,542.94
C-15	orange	71	986112100258499	2,355,299.05	6,693,906.64	6,549.99	2,355,298.99	6,693,906.66	6,550.00
C-16	orange	88	986112100258394	2,355,258.25	6,693,873.39	6,552.81	2,355,258.11	6,693,872.64	6,552.81
C-17	orange	63	986112100258377	2,355,197.81	6,693,802.35	6,556.41	2,355,199.47	6,693,801.30	6,556.17
C-18	orange	63	986112100258479	2,355,332.03	6,694,000.57	6,544.68	2,355,332.42	6,694,000.28	6,544.56
C-19	orange	77	986112100258487	2,355,191.17	6,693,802.11	6,556.76	2,355,191.06	6,693,802.18	6,556.79
C-21	orange	89	986112100258452	2,355,229.75	6,693,820.75	6,555.19	2,355,229.84	6,693,820.86	6,555.07
C-22	orange	64	986112100258393	2,355,289.66	6,694,102.33	6,539.64	2,355,289.96	6,694,102.38	6,539.59

	Doint			0	riginal Placement		Last Fou	nd Location (July	2021)
Tracer ID	Color	(mm)	PIT Tag Code	Northing (ft)	Easting (ft)	Elevation (ft)	Northing (ft)	Easting (ft)	Elevation (ft)
C-23	orange	90	986112100258528	2,355,327.84	6,694,015.55	6,543.68	2,355,327.91	6,694,015.28	6,543.65
C-24	orange	88	986112100290195	2,355,211.02	6,693,791.88	6,558.86	2,355,211.12	6,693,791.67	6,558.86
C-25	orange	66	986112100289218	2,355,314.17	6,693,941.67	6,547.06	2,355,313.86	6,693,941.88	6,547.15
C-26	orange	70	986112100283594	2,355,244.96	6,694,138.10	6,536.93	2,355,244.76	6,694,137.93	6,537.03
D-2	yellow	100	986112100258379	2,355,249.80	6,694,143.49	6,535.17	2,355,247.18	6,694,144.47	6,535.85
D-3	yellow	115	986112100258371	2,355,310.07	6,694,051.74	6,542.11	2,355,310.28	6,694,051.27	6,542.04
D-5	yellow	109	986112100258509	2,355,278.70	6,694,100.14	6,541.76	2,355,278.11	6,694,100.04	6,541.64
D-7	yellow	102	986112100258560	2,355,262.17	6,693,867.50	6,551.92	2,355,261.86	6,693,867.73	6,551.81
D-13	yellow	111	986112100258472	2,355,288.14	6,694,101.28	6,539.85	2,355,288.28	6,694,101.33	6,540.00
D-14	yellow	103	986112100258425	2,355,320.14	6,693,938.64	6,545.72	2,355,321.83	6,693,944.36	6,545.67
D-18	yellow	106	986112100258493	2,355,292.18	6,694,104.57	6,539.24	2,355,292.01	6,694,104.52	6,539.30
D-19	yellow	112	986112100283712	2,355,177.06	6,693,781.66	6,557.76	2,355,177.02	6,693,781.64	6,557.81
D-20	yellow	95	986112100258500	2,355,306.86	6,693,899.55	6,550.16	2,355,306.94	6,693,899.47	6,550.15
D-21	yellow	96	986112100258442	2,355,302.73	6,693,903.47	6,549.56	2,355,302.85	6,693,903.45	6,549.54
D-22	yellow	124	986112100258533	2,355,206.33	6,693,795.71	6,556.96	2,355,205.76	6,693,795.79	6,557.04
D-24	yellow	128	986112100258410	2,355,212.23	6,693,838.52	6,557.13	2,355,212.23	6,693,838.40	6,557.33
D-25	yellow	96	986112100298504	2,355,245.34	6,694,139.27	6,536.78	2,355,245.10	6,694,139.18	6,536.79
D-26	yellow	122	986112100298555	2,355,281.87	6,694,104.23	6,540.32	2,355,281.68	6,694,104.04	6,540.18
D-27	yellow	110	986112100258399	2,355,293.26	6,693,903.58	6,549.88	2,355,293.14	6,693,903.26	6,549.86
D-28	yellow	103	986112100258458	2,355,201.51	6,693,799.38	6,555.97	2,355,201.27	6,693,799.65	6,556.19
D-29	yellow	114	986112100258388	2,355,296.77	6,693,900.20	6,548.96	2,355,296.62	6,693,900.22	6,548.93
D-30	yellow	114	986112100258513	2,355,318.66	6,694,007.89	6,544.50	2,355,318.76	6,694,007.39	6,544.57
D-31	yellow	118	986112199258409	2,355,327.83	6,693,996.64	6,544.07	2,355,328.15	6,693,996.21	6,544.11
E-4	blue	138	986112100258414	2,355,247.53	6,694,142.21	6,535.64	2,355,247.39	6,694,142.17	6,535.62
E-5	blue	134	986112100280016	2,355,180.52	6,693,790.31	6,557.93	2,355,180.50	6,693,790.09	6,557.89
E-6	blue	138	986112100258422	2,355,324.37	6,694,011.57	6,544.17	2,355,324.33	6,694,011.34	6,544.20
E-7	blue	158	986112100258543	2,355,294.82	6,693,901.02	6,549.28	2,355,294.88	6,693,900.83	6,549.29
E-9	blue	142	986112100258440	2,355,321.54	6,693,944.72	6,545.56	2,355,321.82	6,693,944.68	6,545.57

	Deint			0	riginal Placement	;	Last Fou	nd Location (July	2021)
Tracer ID	Color	(mm)	PIT Tag Code	Northing (ft)	Easting (ft)	Elevation (ft)	Northing (ft)	Easting (ft)	Elevation (ft)
E-11	blue	170	986112100258538	2,355,291.67	6,694,094.97	6,538.93	2,355,290.45	6,694,096.05	6,538.82
E-12	blue	139	986112100258392	2,355,265.84	6,693,865.73	6,552.56	2,355,265.67	6,693,865.72	6,552.53
E-13	blue	132	986112100258531	2,355,280.46	6,694,103.45	6,540.45	2,355,278.90	6,694,104.95	6,540.15
E-14	blue	128	986112100258521	2,355,301.22	6,693,897.29	6,549.24	2,355,301.27	6,693,897.28	6,549.32
E-16	blue	136	986112100258390	2,355,205.68	6,693,796.03	6,556.94	2,355,205.88	6,693,796.19	6,556.98
E-19	blue	158	986112100258455	2,355,222.63	6,693,827.04	6,555.29	2,355,222.60	6,693,826.95	6,555.20
E-20	blue	178	986112100258434	2,355,188.19	6,693,806.99	6,558.06	2,355,188.48	6,693,806.96	6,558.22
E-21	blue	170	986112100258398	2,355,325.11	6,693,995.29	6,544.77	2,355,325.32	6,693,995.20	6,544.80
E-22	blue	151	986112100291983	2,355,172.91	6,693,782.79	6,558.10	2,355,172.95	6,693,782.56	6,558.16
E-25	blue	152	986112100258363	2,355,298.73	6,693,908.02	6,550.23	2,355,298.89	6,693,908.02	6,550.22
E-27	blue	158	986112100258431	2,355,313.70	6,694,053.51	6,542.48	2,355,313.98	6,694,053.52	6,542.17
E-28	blue	144	986112100258381	2,355,197.09	6,693,803.84	6,557.15	2,355,197.00	6,693,803.54	6,557.07
E-29	blue	129	986112100258474	2,355,300.82	6,693,905.16	6,549.97	2,355,300.90	6,693,905.08	6,549.97
E-31	blue	153	986112100258524	2,355,253.45	6,694,147.19	6,536.55	2,355,253.72	6,694,147.11	6,536.61
F-1	orange	198	986112100258476	2,355,299.34	6,694,100.48	6,540.90	2,355,299.27	6,694,100.16	6,540.88
F-3	orange	181	986112100258556	2,355,223.32	6,693,832.37	6,555.46	2,355,223.12	6,693,832.00	6,555.44
F-9	orange	180	986112100258482	2,355,306.51	6,693,894.05	6,549.96	2,355,306.57	6,693,893.90	6,550.09
F-10	orange	193	986112100258445	2,355,294.57	6,694,096.98	6,538.16	2,355,294.43	6,694,096.57	6,538.19
F-11	orange	180	986112100258549	2,355,315.43	6,694,052.79	6,543.68	2,355,315.51	6,694,052.77	6,543.79
F-12	orange	200	986112100258546	2,355,329.61	6,693,998.84	6,544.36	2,355,330.07	6,693,998.89	6,544.31
F-13	orange	220	986112100258429	2,355,219.71	6,693,816.68	6,556.26	2,355,219.87	6,693,816.71	6,556.09
F-14	orange	185	986112100258413	2,355,194.37	6,693,808.43	6,557.32	2,355,194.42	6,693,808.18	6,557.43
F-15	orange	210	986112100258536	2,355,286.62	6,694,107.00	6,540.07	2,355,286.50	6,694,106.71	6,539.98
F-16	orange	205	986112100258375	2,355,335.93	6,693,999.81	6,544.72	2,355,336.30	6,694,000.21	6,544.74
F-17	orange	210	896112100258427	2,355,260.53	6,693,870.22	6,552.16	2,355,260.45	6,693,870.12	6,552.05
F-18	orange	190	986112100258514	2,355,260.53	6,693,870.22	6,552.16	2,355,248.70	6,693,845.68	6,554.50
F-19	orange	194	986112100258447	2,355,293.43	6,693,901.66	6,549.80	2,355,293.40	6,693,901.46	6,549.79
F-20	orange	183	986112100258522	2,355,321.76	6,693,937.51	6,545.69	2,355,321.24	6,693,938.83	6,545.58

	Daint			01	riginal Placement	;	Last Fou	nd Location (July	2021)
Tracer ID	Color	(mm)	PIT Tag Code	Northing (ft)	Easting (ft)	Elevation (ft)	Northing (ft)	Easting (ft)	Elevation (ft)
F-21	orange	185	986112100258436	2,355,199.98	6,693,798.93	6,556.14	2,355,199.73	6,693,798.74	6,556.18
G-4	blue	320	986112100283920	2,355,198.99	6,693,800.59	6,556.63	2,355,198.71	6,693,800.64	6,556.66
G-5	blue	260	986112100289274	2,355,195.11	6,693,806.59	6,557.33	2,355,194.96	6,693,806.61	6,557.26
G-6	blue	270	986112100280431	2,355,175.59	6,693,789.00	6,558.55	2,355,175.49	6,693,789.07	6,558.51
G-8	blue	275	986112100289864	2,355,294.92	6,693,895.98	6,549.06	2,355,294.81	6,693,895.85	6,548.85
G-9	blue	258	986112100283565	2,355,298.96	6,694,049.76	6,544.59	2,355,299.00	6,694,049.49	6,544.67
G-10	blue	300	98611210093614	2,355,289.34	6,694,110.11	6,539.88	2,355,289.26	6,694,109.83	6,539.96

### Site 6 Tracers

	Daint			Οι	riginal Placement	t	Last Fou	nd Location (July	2021)
Tracer ID	Color	(mm)	PIT Tag Code	Northing (ft)	Easting (ft)	Elevation (ft)	Northing (ft)	Easting (ft)	Elevation (ft)
A-1	yellow	34	986112100283912	2,373,427.60	6,717,006.99	4,560.89	2,373,431.69	6,717,009.46	4,560.01
A-2	yellow	36	986112100298399	2,373,412.15	6,716,989.45	4,560.77	2,373,413.79	6,716,994.19	4,561.16
A-4	yellow	37	986112100280396	2,373,447.03	6,717,035.78	4,559.82		not recovered	
A-6	yellow	38	986112100278885	2,373,348.72	6,716,948.58	4,563.24	2,373,348.70	6,716,948.58	4,563.16
A-7	yellow	42	986112100295408	2,373,292.76	6,716,914.35	4,565.44	2,373,305.37	6,716,920.89	4,564.30
A-8	yellow	40	986112100280516	2,373,309.42	6,716,923.37	4,564.38	2,373,310.97	6,716,921.15	4,564.12
A-9	yellow	32	986112100278928	2,373,329.86	6,716,926.41	4,564.42	2,373,381.89	6,716,959.64	4,562.13
A-10	yellow	31	986112100278987	2,373,431.26	6,717,004.19	4,560.70	2,373,432.76	6,717,013.11	4,560.08
A-15	yellow	39	986112100294813	2,373,353.51	6,716,940.65	4,561.96	2,373,352.51	6,716,940.72	4,561.99
A-17	yellow	40	986112100278966	2,373,306.88	6,716,925.66	4,564.80		not recovered	
A-20	yellow	39	986112100283422	2,373,398.60	6,716,973.12	4,561.76		not recovered	
A-30	yellow	41	986112100283400	2,373,395.89	6,716,977.14	4,561.27	2,373,401.86	6,716,983.90	4,560.44
B-1	blue	53	986112100284748	2,373,426.24	6,717,008.05	4,561.29	2,373,434.95	6,717,011.59	4,560.12
B-3	blue	47	986112100298328	2,373,393.74	6,716,977.81	4,561.48	2,373,409.26	6,716,986.82	4,561.05
B-7	blue	49	986112100289497	2,373,352.04	6,716,940.84	4,561.99	2,373,369.21	6,716,950.74	4,562.04
B-10	blue	56	986112100298316	2,373,398.17	6,716,975.97	4,561.32		not recovered	
B-11	blue	56	986112100298135	2,373,307.09	6,716,929.47	4,565.53	2,373,307.14	6,716,925.97	4,564.72
B-12	blue	47	986112100298759	2,373,325.45	6,716,927.22	4,564.49	2,373,339.16	6,716,929.85	4,561.98
B-13	blue	56	986112100297656	2,373,442.49	6,717,040.25	4,560.57		not recovered	
B-14	blue	50	986112100279549	2,373,285.64	6,716,914.12	4,566.08	2,373,294.85	6,716,912.58	4,565.42
B-19	blue	54	986112100278832	2,373,292.74	6,716,913.96	4,565.43		not recovered	
B-20	blue	60	986112100279159	2,373,433.69	6,717,002.75	4,560.27	2,373,430.22	6,717,011.22	4,560.68
B-21	blue	59	986112100291205	2,373,371.38	6,716,959.89	4,561.35	2,373,371.03	6,716,961.78	4,561.38
B-25	blue	48	986112100284474	2,373,309.95	6,716,922.70	4,564.35	2,373,317.08	6,716,924.74	4,564.42
C-4	orange	70	986112100258557	2,373,311.21	6,716,920.72	4,564.11	2,373,311.75	6,716,920.87	4,563.98
C-6	orange	67	986112100258527	2,373,349.98	6,716,938.37	4,561.97	2,373,349.97	6,716,938.37	4,561.95

	Doint			01	riginal Placement	:	Last Fou	nd Location (July	2021)
Tracer ID	Color	(mm)	PIT Tag Code	Northing (ft)	Easting (ft)	Elevation (ft)	Northing (ft)	Easting (ft)	Elevation (ft)
C-14	orange	75	986112100258418	2,373,293.21	6,716,914.46	4,565.55	2,373,304.60	6,716,922.45	4,564.42
C-20	orange	75	986112100258373	2,373,425.75	6,717,009.17	4,561.43	2,373,425.31	6,717,007.91	4,561.24
C-27	orange	87	986112100279350	2,373,373.46	6,716,960.67	4,561.19	2,373,373.53	6,716,960.68	4,561.27
C-28	orange	87	986112100289366	2,373,395.27	6,716,975.45	4,561.41	2,373,395.28	6,716,975.21	4,561.31
C-29	orange	99	986112100281375	2,373,414.69	6,716,987.67	4,560.58	2,373,414.68	6,716,991.08	4,560.87
C-30	orange	90	986112100279987	2,373,309.16	6,716,923.91	4,564.63	2,373,309.06	6,716,924.16	4,564.80
C-31	orange	79	986112100289071	2,373,402.32	6,716,974.18	4,561.82	2,373,398.14	6,716,973.45	4,561.68
C-32	orange	78	986112100295473	2,373,301.80	6,716,920.95	4,564.38	2,373,301.99	6,716,920.77	4,564.42
C-33	orange	75	986112100289760	2,373,427.86	6,717,007.40	4,561.01	2,373,429.64	6,717,009.35	4,560.85
D-1	yellow	106	986112100258481	2,373,282.83	6,716,923.46	4,566.62	2,373,282.85	6,716,923.38	4,566.67
D-4	yellow	120	986112100258469	2,373,310.98	6,716,923.17	4,564.57	2,373,310.69	6,716,923.46	4,564.53
D-6	yellow	102	986112100258491	2,373,433.68	6,717,004.09	4,560.28	2,373,429.89	6,717,001.58	4,560.76
D-8	yellow	114	986112100258384	2,373,412.34	6,716,987.58	4,560.66	2,373,420.92	6,716,990.59	4,561.01
D-9	yellow	96	986112100258480	2,373,424.98	6,717,009.42	4,561.57	2,373,426.69	6,717,010.16	4,561.47
D-10	yellow	119	986112100258380	2,373,397.70	6,716,974.68	4,561.48	2,373,397.01	6,716,976.26	4,561.67
D-11	yellow	96	986112100281712	2,373,326.23	6,716,927.26	4,564.56	2,373,325.83	6,716,927.76	4,564.28
D-12	yellow	102	986112100258370	2,373,360.00	6,716,950.72	4,561.58	2,373,359.99	6,716,950.83	4,561.59
D-15	yellow	97	986112100258488	2,373,351.30	6,716,943.79	4,562.73	2,373,350.49	6,716,947.39	4,563.16
D-16	yellow	111	986112100258554	2,373,394.61	6,716,976.23	4,561.37	2,373,394.71	6,716,976.27	4,561.52
D-17	yellow	116	986112100258451	2,373,309.18	6,716,926.33	4,564.94	2,373,309.46	6,716,926.53	4,564.92
D-23	yellow	99	986112100258376	2,373,439.49	6,717,040.52	4,561.00	2,373,441.69	6,717,041.99	4,560.58
E-1	blue	128	986112100258510	2,373,319.64	6,716,931.65	4,564.63	2,373,320.89	6,716,931.63	4,564.48
E-2	blue	145	986112100258364	2,373,428.04	6,717,006.12	4,561.11	2,373,428.06	6,716,998.84	4,560.88
E-3	blue	155	986112100258534	2,373,430.18	6,717,006.34	4,560.62	2,373,431.02	6,717,001.40	4,560.76
E-8	blue	142	986112100258420	2,373,292.40	6,716,913.14	4,565.86		not recovered	
E-10	blue	130	986112100258504	2,373,374.51	6,716,961.71	4,561.41	2,373,374.39	6,716,961.69	4,561.49
E-15	blue	148	986112100258365	2,373,444.23	6,717,034.15	4,560.29	2,373,444.62	6,717,034.41	4,560.13
E-17	blue	141	986112100258403	2,373,347.03	6,716,952.46	4,564.03	2,373,347.06	6,716,952.41	4,563.89

	Doint			0	riginal Placement	;	Last Fou	nd Location (July	2021)
Tracer ID	Color	(mm)	PIT Tag Code	Northing (ft)	Easting (ft)	Elevation (ft)	Northing (ft)	Easting (ft)	Elevation (ft)
E-18	blue	141	pit tag stopped	2,373,308.00	6,716,922.00	4,564.00	2,373,310.15	6,716,922.86	4,564.90
E-23	blue	141	986112100258502	2,373,397.37	6,716,978.82	4,560.97	2,373,395.86	6,716,978.97	4,561.61
E-24	blue	169	986112100258378	2,373,287.45	6,716,911.74	4,565.95	2,373,287.53	6,716,911.99	4,565.97
E-26	blue	170	986112100298383	2,373,309.62	6,716,928.96	4,564.77	2,373,309.79	6,716,928.70	4,564.77
E-30	blue	131	986112100258453	2,373,400.26	6,716,975.17	4,561.48	2,373,391.13	6,716,971.67	4,561.37
F-2	orange	201	986112100258415	2,373,432.68	6,717,004.34	4,560.54	2,373,432.71	6,717,004.17	4,560.81
F-5	orange	209	986112100258419	2,373,327.39	6,716,930.18	4,564.57	2,373,326.92	6,716,929.93	4,564.54
F-6	orange	229	986112100258558	2,373,309.75	6,716,925.60	4,565.25	2,373,309.82	6,716,925.36	4,565.30
F-7	orange	197	986112100258426	2,373,397.21	6,716,975.99	4,561.80	2,373,405.01	6,716,978.86	4,561.21
F-8	orange	180	986112100258503	2,373,404.40	6,716,973.75	4,562.88	2,373,397.24	6,716,974.72	4,561.75
G-1	blue	290	986112100258477	2,373,402.44	6,716,975.70	4,562.30	2,373,402.47	6,716,975.73	4,562.31
G-2	blue	300	986112100258382	2,373,424.97	6,717,008.58	4,561.66	2,373,425.16	6,717,008.75	4,561.74
G-3	blue	345	986112100258395	2,373,308.69	6,716,924.90	4,565.63	2,373,308.67	6,716,924.90	4,565.69

### **APPENDIX B**

### **2019 PFANKUCH FORMS**



Stream:	Bishop	Creek,	CA				S	Site ID:	#	3				Stream	Type:	Bi		Obse	ervers:	TAX	165	in		Date: 9-10-1	9	
I ocation	May	Cateo		Excellent Description							1.4.4	Go	bod		<b>1</b> . 12	1.2	111	F	air	1.0.0	1	-		Poor	125	Assigned
LOCE IIII	rany	Careg	ory	1000	(	Descriptio	n	211	Rating	20		Descriptio	ก	di Ho	Rating	100		Descriptio	A	7 11	Rating	101100	Des	cription	Rating	Rating
agar i	1	Landform slope	ו	Bank sl	ope grad	dient <30	1%.		2	Bank slo	ope grad	dient 30-	-40%.		4	Bank sl	lope grad	dient 40-	-60%.		6	Bank slope	gradient >	· 60%.	8	
banks	2:	Mass ero	sion	No evid erosion	ence of	past or f	uture ma	ass	3	Infreque future p	ent. Mos olential	tly heale	ed over, l	_ow	6	Freque nearly y	nt or larg /earlong	je, causi	ng sedir	nent	9	Frequent or yearlong OF	· large, cau R imminen	using sediment nearly It danger of same.	12	
per	3	Debris ja potential	m	Essenti channe	ally abse I area.	ent from	immedia	ite	2	Present limbs.	, but mo	ostly sma	all twigs a	and	4	Modera larger s	ite to hei izes.	avy amo	unts, mo	ostly	6	Moderate to larger sizes	heavy an	nounts, predominantly	8	
ň	4	Vegetativ bank protection	re 1	> 90% p sugges root ma	plant der t a deep ss.	nsity. Vig , dense,	or and v soil-bind	ariety ling	3	70–90% vigor su mass.	density ggest le	y. Fewer ess dens	species se or dee	or less p rool	6	50-70% species root ma	6 density from a Iss.	/ Lower shallow,	vigor an disconti	d fewer nuous	9	<50% densi vigor indical shallow root	ity plus few ting poor, o t mass.	ver species and less discontinuous, and	12	
	5	Channel capacity		Bank heig stage, Wii width/dept 1,0,	hts suffici dth/depth r th ratio = 1	ent to cont ratio depart .0. Bank-H	ain the bar ure from r eight Ratio	kfull eference o (BHR) =	1	Bankfull s Width/dep width/dept (BHR) = 1	tage is co th ratio de th ratio = 1 .0–1.1.	ntained wit parture fro .0-1.2. Ba	thin banks, om referend ank-Height	se Ratio	2	Bankfull s departure 1,2–1,4, E	itage is no from refer Bank-Heigh	t contained ence width nt Ratio (Bl	l. Width/de /depth rati HR) = 1.1-	pth ratio o ≃ 1,3.	3	Bankfull stage common with fl departure from Height Ratio (B	ls not contain lows less than reference wi BHR) > 1.3	ned; over-bank flows are n bankfull, Width/depth ratio dth/depth ratio > 1.4, Bank-	4	
ks	6	Bank roci content	k	> 65% v 12"+ co	with large	e angula	r boulde	rs.	3	40—65% cobbles	6–12".	/ boulde	rs and si	nalł	4	20-40% class.	6. Most i	n the 3-	6" diame	eter	6	<20% rock l less.	fragments	of gravel sizes, 1–3" or	8	
er bai	7	Obstructi flow	ons to	Rocks a pattern bed,	and logs w/o cutti	firmly in ing or de	bedded position	. Flow Stable	2	Some pro currents fewer and	esent cau and mino d less firr	using ero: or pool filli m.	sive cross ing, Obstr	uctions	4	Moderati move wi and pool	ely freque th high flo I filling.	ent, unsta ows causi	ble obstru ng bank o	uctions sutting	6	Frequent of bank erosio channel mic	ostructions in yearlong gration occ	and deflectors cause g. Sediment traps full, curring.	8	
Low	8	Cutting		Little or none. Infrequent raw banks				nks		Some, i constric 12".	ntermitte tions. R	entiy at o aw bank	sulcurve s may b	s and e up to	6	Signific overhai	ant. Cut ngs and	s 12–24' sloughir	'high. R Ig evidel	oot mat ht.	12	Almost cont Failure of or	tinuous cut verhangs t	ts, some over 24" high, frequent,	16	
S. A.	g	Depositio	'n	Little or no enlargement of channel or point bars. Sharp edges and corners, Plane surfaces rough.					Some n coarse	ew bar i gravel.	increase	e, mostly	from	8	Modera coarse bars.	ite depo sand on	stion of r old and	some n	el and ew	12	Extensive d particles, Ac	eposit of p ccelerated	predominantly fine bar development.	16		
\$50	10	Rock angularity	1	Sharp edges and corners, Plane surfaces rough.					1	Rounde smooth	d come and flat	rs and e	edges. Si	urfaces	2	Corners dimens	s and ed ions.	ges well	-rounde	d in two	3	Well-rounde smooth	ed in all din	nensions, surfaces	4	
and the second	11	Brightnes	s	Sharp edges and corners, Plane surfaces rough. Surfaces dull, dark, or stained. Generally not bright.					1	Mostly of surface:	iull, but s.	may hav	ve <35%	bright	2	Mixture mixture	duli and range.	l bright, i	.e., 35–6	65%	3	Predominar scoured sur	ntly bright, rfaces.	> 65%, exposed or	4	
E	12	Consolidat particles	tion of	Assorte overlap	d sizes l ping	tightly pa	cked or		2	Modera overlap	tely pac. ping.	ked with	some		(1)	Mostly I appare	loose as nt overla	sortmen ip.	t with no		6	No packing easily move	evident L al	oose assortment,	8	
Botto	13	Bottom si distributio	ize on	No size 80–100	change %.	evident	Stable	material	4	Distribul 50–80%	tion shift 5.	l light, S	table ma	terial	8	Modera materia	ite chang Is 20–50	ge in sizo )%.	es. Stabl	e	12	Marked dist 020%.	ribution ch	ange. Stable materials	16	
	14	Scouring depositio	and n	<5% of depositi	bottom a ion.	affected	by scou	ror	6	5-30% and whe depositi	affected ere grad on in po	les steep les steep ools.	at consti pen. Son	ne	12	30–50% at obstr bends.	6 affecte uctions, Some fil	d. Depo constric ling of p	sits and tions, ar ools,	d	18	More than 5 or change n	50% of the tearly year	bottom in a state of flux long.	24	
	15	Aquatic vegetatio	'n	Abunda perenni	int growi al. In sw	th moss- ift water	like, dar too.	k green	1	Commo and poo	on. Algae ol areas	e forms i Moss h	in low ve ere too.	locity	2	Present Season slick.	t but spo nal algae	otty, mos growth	lly in ba makes r	ckwater, ocks	3	Perennial ty green, shor	pes scarc t-term bloc	e or absent. Yellow- om may be present.	4	
						Exc	ellent '	Total =					Good	Total =					Fair	Total =				Poor Total =		
Stream type		A1	A2	A3	A4	A5	A6	B1	B2	B3	B4	<b>B</b> 5	86	C1	C2	CJ	C4	Cå	C6	DS	D4	D6 0	16	Grand Total =	BB.	1 40
Good (Stable)		38-43	38-43	54-90	60-95	60-95	50-80	38-45	38-45	40-60	40-64	48-68	40-60	38-50	38-50	60-85	70-90	70-90	60-85	85-107	85-107	85-107 67	-98	Fuisting Charge		- 71
Fair (Mod. unst	able)	44-47	44-47	91-129	96-132	96-142	81-110	46-58	46-58	61-/8 79+	65-64 85+	69-86 89+	79+	51-61 62+	51-61	106+	111+	111+	106+	108-132	133+	133+ 17	26+	Type =		
Stream byp	in the second	48+ DA3	48+	DAS	DAR	F3	F4	E5	E6	F1	F2	F3	E4	F5	F6	G1	G2	G3	64	G5	G6	1337 12		*Potential Stream	1	
Good (Stable)	.,,	40-63	40-63	40-63	40-63	40-63	50-75	50-75	40-63	60-85	60-85	85-110	85-110	90-115	80-95	40-60	40-60	85-107	85-107	90-112	85-107			Type =	110	2.7
Fair (Mod, unst	able)	64-86	64-86	64-86	64-86	64-86	76-96	76-96	64-86	86-105	86-105	111-125	111-125	116-130	96-110	61-78	61-78	108-120	108-120	113-125	108-120			Modified chan	nel	1.71.6
Poor (Unstable)		87+	87+	87+	87+	87+	97+	97+	87+	106+	106+	126+	126+	131+	111+	79+	79+	121+	121+	126+	121+			stability rating	]=	18 5
														*R	ating i	s adjus	ted to	potenti	al stre	am typ	e, not e	existing str	eam typ	e		Con the Inc.

Stream:	Bishop	Creek, (	CA				5	Site ID:	4.	100	0.05			Stream	Type:	8		Obse	ervers;						Date:		
Location	Kow	Catego	TV.	1.4	-	Exce	ellent	1.1	2140	- 1		Go	bod	rie's		100		- Fa	sir	1.1.2				1	Poor		Assigned
Loca tion	roby	outego	.,			Descriptio	ฑ		Rating	12,14		Descriptio	n		Ratino		ε	Descriptio	n		Rating	1000		Desc	cription	Rating	Rating
	1	Landform slope		Bank slo	ope grad	dient <3	0%.		2	Bank sl	ope grad	dient 30-	-40%.		4	Bank sk	ope grad	dient 40-	-60%.		6	Bank slo	ope grad	dient >	60%.	8	
banks	2	Mass eros	ion	No evid erosion	lence of	past or t	future ma	ass	3	Infreque future p	ent, Mos otential,	tly heale	ed over, l	_ow	6	Frequer nearly y	nt or larg rearlong.	je, causi	ng sedir	nent	9	Frequen yearlong	t or larg OR im	je, cau mineni	ising sediment nearly t danger of same.	12	
oper	3	Debris jam potential		Essentia channel	ally abse I area.	ent from	immedia	ate	2	Preseni limbs.	, but mo	ostly sma	all twigs a	and	4	Modera larger s	le lo hea izes,	avy amo	unts, mo	ostly	6	Moderate larger siz	e to hea zes.	avy am	ounts, predominantly	8	
วั	*	Vegetative bank protection		> 90% p suggest root ma	plant der t a deep iss.	nsity. Vig , dense,	or and v soil-bind	rariety ling	3	70–90% vigor su mass.	density ggest le	/. Fewer ess dens	species e or dee	or less p rool	6	50-70% species root ma	6 density from a s ss.	, Lower shallow,	vigor an disconti	d fewer nuous	9	<50% de vigor ind shallow r	ensity p licating root ma	lus few poor, c iss.	ver species and less discontinuous, and	12	
	5	Channel capacity		Bank heig stage, Wic width/dept 1.0.	hts sufficie dth/depth r th ratio = 1	ent to cont atio depar .0. Bank-H	ain the bar ture from r leight Ratio	kfull eference o (BHR) =	1	Bankfull s Width/dep width/dep1 (BHR) = 1	tage is co th ratio de h ratio = 1 .0–1.1.	ntained wit parture fro 1.0–1.2. Ba	hin banks om referend onk-Height	e Ratio		Bankfull s departure 1.2–1.4. E	tage is not from refer lank-Heigh	t contained ence width it Ratio (Bł	Widih/de /depth rati IR) = 1_1-	plh ratio o = 1,3,	3	Bankfull st common wi departure fi Height Rati	age is not hith flows I from refer io (BHR)	ess than ence wid > 1.3.	ed; over-bank flows are 1 bankfull, Width/depth ratio dth/depth ratio > 1.4, Bank-	4	
lks	6	Bank rock content		> 65% v 12"+ co	with large	e angula	ar boulde	rs	2	40–65% cobbles	Mostly 6–12"	/ boulder	rs and sr	nall	4	20-40% class	6. Most i	n the 3-	6" diame	eter	6	<20% ro less.	ck fragi	ments	of gravel sizes, 1–3" or	8	T.
rer bai	7	Obstruction flow	ns to	Rocks and logs firmly imbedded, Flo pattern w/o cutting or deposition. Sta bed, Little or none, Infrequent raw banks <6",				, Flow , Stable	2	Some pro currents fewer an	esent cai and mino d less firr	using eros or pool filli m	sive cross ng, Obstr	uctions	4	Moderate move wit and pool	ely freque h high fla filling.	int, unstal ws causir	ole obstru ng bank o	uctions :ulting	6	Frequen bank ero channel	t obstru osion ye migratio	ictions arlong	and deflectors cause . Sediment traps full, urring.	8	
Low	8	Cutting		Little or none, Infrequent raw banks <6". Little or no enlargement of channel or point bars.				nks	•	Some, i constric 12"	ntermitte tions, R	ently at c aw bank	s may be	s and e up to	6	Signification overhar	ant. Cuts ngs and	s 12–24" sloughin	high. R g evider	oot mat ht	12	Almost c Failure o	continuc of overh	ous cut angs fi	is, some over 24" high. requent	16	
701	g	Deposition		<6". Little or no enlargement of channel of point bars. Sharp edges and corners, Plane				nel or	A	Some n coarse	ew bar i gravel.	increase	, mostly	from	8	Modera coarse bars.	te depos sand on	old and	ew grav some n	el and ew	12	Extensiv particles.	e depo . Accele	sil of p erated	redominantly fine bar development.	16	
	10	Rock angularity		Little or no enlargement of channel c point bars. Sharp edges and corners, Plane surfaces rough.					1	Rounde smooth	d corne and flat	rs and e	dges. Si	Infaces	2	Corners dimensi	s and ed ions.	ges well	rounde	∃ in t₩o	3	Well-rou smooth.	nded in	all din	nensions, surfaces	•	
100	11	Brightness		Surface General	is dull, da Ily not br	ark, or s ight.	tained.		1	Mostly o surface	iuli, but s.	may hav	/e <35%	bright	2	Mixture mixture	dull and range.	bright, i	e., 35–6	65%	3	Predomi scoured	inantly b surface	pright, : es.	> 65%, exposed or	4	
ε	12	Consolidatio particles	n of	Assorte overlap	d sizes t ping	tightly pa	acked or		2	Modera overlap	tely pac ping	ked with	some		3	Mostly I apparer	oose as: nt overla	sortmeni p.	with no		6	No packi easily mo	ing evic oved.	lent. Lo	oose assortment,	8	
Botto	13	Bottom siz distribution	e	No size 80–100'	change %.	evident	. Stable	material	4	Distribu 50–80%	tion shift	t light, St	table ma	terial	8	Modera materia	te chang ls 20–50	ge in size 1%.	es. Stabl	e	12	Marked ( 0	distribul	tion ch	ange, Stable materials	16	
the second	14	Scouring a deposition	nd	<5% of depositi	bottom a ion.	affected	by scou	ror	6	5-30% and whe depositi	affected ere grad on in po	l. Scour : les steep ols.	at constr ben. Som	ictions 1e	12	30-50% at obstr bends.	affecte uctions, Some fil	d. Depo: constrict ling of po	silis and lions, an pols.	scour	18	More tha or chang	an 50% je nearl	of the ly year	bottom in a state of flux long.	24	
	15	Aquatic vegetation		Abunda perennia	int growt al. In swi	h moss- ift water	like, dar too.	k green	1	Commo and poo	n, Algae I areas.	e forms i Moss he	n low ve ere too,	ocity	2	Present Season slick.	l but spo al algae	tty, mos growth i	ily in bao nakes r	ckwater. ocks	3	Perennia green, si	al types hort-ler	scarce m bloo	e or absent. Yellow- m may be present.	4	
						Exc	ellent <sup>-</sup>	Fotal =					Good 1	「otal =					Fair	Fotal =					Poor Total =		
Stream type	les per	A1 .	A2	AJ	A4	A5	A6	B1	B2	B3	B4	85	86	C1	C2	C3	C4	Că	CS	D3	D4	D6	D6		Grand Total =	To the start	NEI
Good (Stable)		38-43 3	8-43	54-90	60-95	60-95	50-80	38-45	38-45	40-60	40-64	48-68	40-60	38-50	38-50	60-85	70-90	70-90	60-85	85-107	85-107	85-107	67-98			1.5	151
Fair (Mod, unsta	ible)	44-47 4	4-47	91-129	96-132	96-142	81-110	46-58	46-58	61-78	65-84	69-88	61-78	51-61	51-61	86-105	91-110	91-110	86-105	108-132	108-132	108-132	99-125		Existing Stream		
Poor (Unstable)		48+	+8+	130+	133+	143+	111+	59+	59+	79+	85+	89+	79+	62+	62+	106+	111+	111+	106+	133+	133+	133+	126+	l	Type =		
Stream type	And the second	DA3 C	AA	DA5	DAG	E3	E4	E5	E6	F1	F2	F3	F4	P5	P6	G1	GZ	G3	64	GS	G6				Potential Stream	2 12L	
Good (Stable)		40-63 4	u-b3	40-63	40-63	40-63	30-75	50-/5 76.06	40-63	60-85 96 105	60-85	50-110	50-11U	90-115	80-95	40-60	40-60 51.70	00-107	409 120	90-112	00-107				Hodified about	land	
Poor (Unstable)	iniis)	87+	+-00	87+	87+	87+	97+	97+	87+	106+	106+	126+	126+	131+	111+	79+	79+	121+	121+	126+	121+				stability ratin	g =	1111
			-											*R	ating i	s adjus	ted to	potenti	a/ strea	am typ	e, not e	xisting	stream	n type			

Stream:	Bishop	Creek, (	CA					Site ID:	4.	ζ				Stream	Type:			Obs	ervers:	Gs	m	TA1-			Date: 🭳	1311	9	
Loca-tion	Kilw	Catego	TV	1895	See.	Exc	ellent				Rinks	G	bood	Dia A			1.10	F	air		10	1000			Poor		1	Assigned
Carlo State	_	Start 1		100	-	Descriptio	n		Rating	1000	service	Descriptio	on		Rating	12.2	21423	Descriptio	an an an an an an an an an an an an an a		Rating	1000		Descr	iption		Rating	Rating
	1	Landform slope		Bank sl	lope grad	dient <3	0%.		2	Bank s	lope gra	dient 30-	-40%.			Bank s	lope gra	dient 40-	-60%.		6	Bank slop	e gradie	ent > 6	60%.		8	
bankı	2	Mass eros	ion	No evid erosion	lence of	past or	future m	ass	3	Infrequ future p	ent, Mos iotential,	stly heale	ed over,	Low	6	Freque nearly y	ent or larg	ge, caus I.	ing sedii	ment	9	Frequent of yearlong (	or large, DR imml	, caus inent	ing sediment na danger of same	earty	12	
oper	3	Debris jam potential		Essenti channe	ally abse I area,	ent from	immedia	ate	2	Presen limbs,	t, but mo	ostly sma	all twigs	and		Modera larger s	ate to he sizes	avy amo	unts, m	ostly	6	Moderate larger size	to heav	y amo	ounts, predomin	antiy	8	
'n	4	Vegetative bank protection		> 90% p sugges root ma	plant der t a deep iss.	nsity, Vie , dense,	gor and y , soil-bind	variety ding	3	70–90% vigor st mass	6 densit Iggest le	y, Fewer ess dens	r species se or dee	or less p root	6	50–70% species root ma	% densit s from a ass.	y. Lower shallow,	vigor ar disconti	nd fewer nuous	9	<50% den vigor indic shallow ro	sity plus ating po ot mass	s fewe bor, di S.	er species and le scontinuous, ar	ess Id	12	
	5	Channel capacity		Bank heig stage, Wid width/dept 1.0.	phis suffici dlh/depth r lh ratio = 1	ent to contratio depar .0. Bank-ł	tain the bat ture from r leight Rati	nkfull reference o (BHR) =	1	Bankfull ( Width/dep width/dep (BHR) = 1	itage is co oth ratio de th ratio = 1 1.0–1.1.	ntained wit eparture fro 1,0–1.2. Ba	thin banks, om referen ank-Height	ce Ratio	2	Bankfull s departure 1.2–1.4. i	stage .s no e from refe Bank-Heig	ot contained rence width ht Ratio (B	1. Width/de v/depthrat HR) = 1.1-	epth ratio io = ·1.3,	3	Bankfull stag common with departure fro Height Ratio	e is not co flows less m reference (BHR) > 1	ontaine s than i ce widt 1.3	d; over-bank flows a bankfull. Width/dept h/depth ratio > 1.4.	ire h ratio Bank-	4	
sks	6	Bank rock content		> 65% v 12"+ co	with large	e angula	ar boulde	ers,	3	40–65% cobbles	6 Mosth 6-12"	y boulde	ers and s	mail	4	20-409 class	%, Most i	in the 3-	6" diam	eter	6	<20% rock less.	( fragme	ents o	f gravel sizes, 1	-3" or	8	
/er bai	7	Obstruction flow	ns to	Rocks a pattern bed.	and logs w/o cutti	firmly in ing or de	nbedded eposition	I. Flow I. Stable	2	Some pr currents fewer an	esent ca and mino d less fin	using ero: or pool filli m.	sive cross ing, Obstr	uctions	4	Moderat move wi and poo	tely freque ith high flo I filling.	ent, unsta ows causi	ble obstri ng bank d	uctions	6	Frequent o bank erosi channel m	obstructi ion year ligration	ions a rlong, occu	and deflectors c Sediment traps rring.	ause full,	8	
Low	8	Cutting		Little or <6"	none, In	frequen	ot raw ba	inks		Some, constric 12",	intermitt tions. R	ently at c aw bank	outcurve ks may b	s and e up to	6	Signific overha	ant. Cut ngs and	s 12–24' sloughir	' high, R ng evide	oot mat nt.	12	Almost con Failure of a	ntinuous overhan	s cuts ngs fre	, some over 24 equent	' high	16	
E.ST.	9	Deposition		Little or point ba	no enlai ars,	rgement	of chan	nel or	4	Some r coarse	new bar gravel,	increase	e, mostly	from	8	Modera coarse bars.	sand on	stion of r old and	new grav some n	vel and ew	12	Extensive particles. A	deposit Accelera	of pro	edominantly fina ar developmen	è t.	16	
	10	Rock angularity		Sharp e surface:	edges an s rough.	id come	rs, Plane	e	1	Rounde smooth	ed come and flat	ers and e	edges. Si	urfaces	2	Corner: dimens	s and ed sions.	iges well	rounde	d in two	3	Well-round smooth.	ded in al	U dime	ensions, surface	es		
LE .	11	Brightness		Surface Genera	es dull, di Ily not br	ark, or s right.	tained.		1	Mostly surface	dull, but s.	may hav	ve <35%	bright	2	Mixture mixture	dull and range.	l bright, i	.e., 35–(	65%	3	Predomina scoured si	antly brig urfaces.	ght, >	65%, exposed	or	4	
E	12	Consol <del>i</del> datio particles	n of	Assorte overlap	ed sizes l ping.	tightly pa	acked or		Ø	Modera overlap	itely pac ping	ked with	some		3	Mostly appare	loose as nt overla	sortmen ap	t with no		6	No packing easily mov	g evider /ed.	nt. Lo	ose assortment		8	3
Sotto	13	Bottom size	e	No size 80–100	change %.	evident	. Stable	material		Distribu 50–80%	tion shif 6.	t light. Si	table ma	terial	8	Modera materia	ate chang als 20-50	ge in sizo D%.	es. Stab	le	12	Marked dis 0–20%,	stributio	n cha	nge. Stable ma	terials	16	
	14	Scouring a deposition	nd	<5% of depositi	bottom a ion.	affected	by scou	r or	6	5-30% and wh deposit	affected ere grad ion in po	I. Scour les steep ools.	at constr pen. Son	ictions 1e	12	30–50% at obstr bends.	% affecte ructions, Some fil	ed. Depo constric lling of p	sits and tions, ar ools.	scour Id	18	More than or change	50% of nearly y	f the b yearlo	ottom in a state	offlux	24	
1.85	15	Aquatic vegetation		Abunda perenni	ant growi al. In sw	ih moss ift water	like, dar too.	k green	1	Commo and poo	on, Algae of areas.	e forms i Moss h	in low ve ere too.	locity	2	Presen Seasor slick.	t but spo nal algae	otty, mos growth	lly in ba makes r	ckwater. ocks	3	Perennial I green, sho	types so ont-term	carce bloon	or absent. Yello n may be prese	nt.	4	
						Exc	eilent '	Total =					Good	Fotal =					Fair	Total =					Роог Т	otał =		
Stream type		A1 /	A2	A3	AA	A5	AS	81	B2	83	B4	85	86	C1	C2	C3	C4	Cē	C6	D3	D4	D5	D6		Grand Tet-1	_	altr	101
Good (Stable)		38-43 3	8-43	54-90	60-95	60-95	50-80	38-45	38-45	40-60	40-64	48-68	40-60	38-50	38-50	60-85	70-90	70-90	60-85	85-107	85-107	85-107 6	7-98		Grand Total	-	1	220
Fair (Mod, unsta	ble)	44-47 44-47 91-129 96-132 96-142 81-110					46-58	46-58	61-78	65-84	69-88	61-78	51-61	51-61	86-105	91-110	91-110	86-105	108-132	108-132	108-132 9	9-125		Existing Stre	am	124		
Poor (Unstable)	_	48+ 4	8+	130+	133+	143+	111+	59+	59+	79+	85+	89+	79+	62+	62+	106+	111+	111+	106+	133+	133+	133+ 1	126+		Type =			
Good (Stable)		40-53 44	1.63	40-63	40.63	40-63	50-75	50-75	40-63	60-85	60-85	85-110	85-110	PD	80-95	40-60	40.60	63	85.107	80 113	85.107				Type =	ream		
Fair (Mod. unsta	ble)	64-86 6	4-86	64-86	64-86	64-86	76-96	76-96	64-86	86-105	86-105	111-125	111-125	116-130	96-110	61-78	61-78	108-120	108-120	113-125	108-120				Modified	chann	el 1	
Poor (Unstable)	. ,	87+ 6	7+	87+	87+	87+	97+	97+	87+	106+	106+	126+	126+	131+	111+	79+	79+	121+	121+	126+	121+				stability	rating	=	
			-											*R	ating i	s adjus	sted to	potenti	al stre	am typ	e, not e	xisting st	tream t	type			0.2	

#### **Pfankuch Channel Rating**

Store         Nov         Cardyon Decades         Nov         Decades         Nov         Pair         Pair<	Stream:	Stream: Bishop Creek, CA Site ID: 5 Stream Type: A1 Observers: TAK (SCM Date: 1												Date: 9-10-19		1											
Visit         Visit <th< th=""><th>Location</th><th>Ken</th><th>Caten</th><th>0.04</th><th>1000</th><th>The second</th><th>Exc</th><th>ellent</th><th></th><th>-</th><th></th><th></th><th>G</th><th>ood</th><th></th><th></th><th>T</th><th>1</th><th>F</th><th>air</th><th></th><th></th><th>A CONTRACTOR OF THE</th><th>1.12</th><th>Poor</th><th>1000</th><th>And</th></th<>	Location	Ken	Caten	0.04	1000	The second	Exc	ellent		-			G	ood			T	1	F	air			A CONTRACTOR OF THE	1.12	Poor	1000	And
Image: second	Loca non	tury	goig		Description			Rating			Descripti	on		Reting	Description		Rating	Description				Assigned					
State         2         Name scale         Non-ordering and state data in the properties of the propertis of the properties of the properties of the properties		1	Landform slope		Bank s	stope gra	adient <3	30%.		2	Bank s	lope gra	idient 30	-40%.		4	Bank s	lope gra	dient 40	-60%.		6	Bank slope gra	adient >	60%.	8	PLOUBIN
Section and account of the section of the sectin of the section of the section of the section of the se	banks	2	Mass ero:	sion	No evid erosior	dence of	of past or future mass			3	Infrequ future p	ent. Mos otential	stly heal	ed over,	Low	6	Frequent or large, causing sediment nearly yearlong.					9	Frequent or lar yearlong OR in	rge, cau mminen	using sediment nearly It danger of same.	12	
Image: Set of plant control (set on a set of the set of control (set of control (set on a set of the set of control (set on a set of the set of control (set on a set of the set of control (set on a set of the set of control (set on a set of the set of control (set on a set of the set of control (set on a set of the set of control (set on a set of the set of control (set on a set of the set of control (set on a set of the set of control (set on a set of the set of control (set on a set of the set of control (set on a set of the set of control (set on a set of the set of control	pper	3	Debris jar potential	n	Essentially absent from immediate channel area.			2	Presen limbs,	t, but me	ostly sm	all twigs	and	4	Modera larger s	ate to he sizes,	avy amo	ounts, m	ostly	6	Moderate to he larger sizes.	eavy an	nounts, predominantly	8			
9       Chunced       Performant       1       Build lings a context with build lings.       2       Performant       Performant       Performant       4         9       Performant       Performant <td>5</td> <td>4</td> <td>Vegetativ bank protection</td> <td>è</td> <td colspan="4">&gt; 90% plant density, Vigor and variety suggest a deep, dense, soil-binding root mass.</td> <td>3</td> <td>70–90% vigor st mass,</td> <td>6 densit Iggest le</td> <td>y. Fewer ess dens</td> <td>r species se or dee</td> <td>s or less ep root</td> <td>6</td> <td>50–70° specie: root ma</td> <td>% densit s from a ass.</td> <td>y. Lower shallow,</td> <td>vigor ar discont</td> <td>nd fewer inuous</td> <td>9</td> <td>&lt;50% density vigor indicating shallow root m</td> <td>plus fev ) poor, ( ass.</td> <td>ver species and less discontinuous, and</td> <td>12</td> <td></td>	5	4	Vegetativ bank protection	è	> 90% plant density, Vigor and variety suggest a deep, dense, soil-binding root mass.				3	70–90% vigor st mass,	6 densit Iggest le	y. Fewer ess dens	r species se or dee	s or less ep root	6	50–70° specie: root ma	% densit s from a ass.	y. Lower shallow,	vigor ar discont	nd fewer inuous	9	<50% density vigor indicating shallow root m	plus fev ) poor, ( ass.	ver species and less discontinuous, and	12		
Set Encident         6         Bark rock (rock rock rock rock rock rock rock rock		61	Channel capacity		Bank heights sufficient to contain the bankfulf stage. Width/depth ratio departure from reference width/depth ratio = 1.0. Bank-Height Ratio (BHR) 1.0.				inkfulf reference io (BHR) =	1	Bankfull stage is contained within banks. Width/depth ratio departure from reference width/depth ratio ≈ 1,0–1.2, Bank-Height Ratio (BHR) = 1,0–1,1.					2	Bankfull : departure 1,2-1,4, l	stage is no e from refe Bank-Heig	ot containe rence widt ht Ratio (B	d. Width/de h/depth rat HR) = 1_1-	epth ratio tio = -1.3,	3	Bankfull stage is n common with flows departure from refe Height Ratio (BHR	4			
Process         Production to frequent obstructions and logs firmly inheaded. Flow bed.         Some present autage gradue cross and more point in the cultures and more point in the cultures and more point in the cultures and more point in the cultures and more point in the cultures and more point in the cultures and more point in the cultures and more point in the cultures and more point in the cultures and more point in the cultures and more point in the cultures and more point in the cultures and the constructions. State department of channel in the cultures and the construction of the cultures and the construction of the cultures and the construction of the cultures and the construction of the cultures and the construction of the cultures and the construction of the cultures and the construction of the cultures and the construction of the cultures and the construction of the cultures and the construction of the cultures and the construction of the cultures and the construction of the cultures and the construction of the cultures and the construction of the cultures and the cultures and the construction of the cultures and the construction of the cultures and the construction of the cultures and the construction of the cultures and the construction of the cultures and the construction of the cultures and the cultures and the construction of the cultures and the construction of the cultures and the culture the cultures and the cultures and the cultures	nks	E	Bank rock content		> 65% with large angular boulders. 12"+ common.				ers.	2	40-65% cobbles	40–65%. Mostly boulders and small cobbles 6–12".					20-409 class,	%. Most	in the 3-	6" diam	eter .	6	<20% rock frag less	ments	of gravel sizes, 1-3" or	8	
6       Cutting       Little or none. Infrequent raw banks       6       Spontcant Cuts 12-24 high. Root mat       12       Amost continuous cuts, some over 124 high. Factor of countings frequent.       16         9       Deposition       Little or none. Infrequent raw banks       7       Some now bank may be up to the orase gravel.       6       Spontcant Cuts 12-24 high. Root mat       12       Amost continuous cuts, some over 124 high. Factor of countings frequent.       16         9       Deposition       Little or none. Infrequent raw banks       7       Roundad conners and edges. Surfaces       2       Conners and edges weil-ounded in two and some how an increase, mostly from barts.       3       Veilenave deposition of predominantly freq dations. Surfaces       6         11       Brightness       Surfaces found, cark, or stained.       1       Moderide conners and edges. Surfaces       2       Conners and edges weil-ounded in two dimensions.       9       Predominantly high, e5(%, exposed of easity moved.       0         11       Brightness       Surfaces found sizes lightly poeted of vertapping.       1       Moderide particles.       2       Moderide particles.       3       Predominantly high, e5(%, exposed of easity moved.       4       Adsky lobes assortment with no apparent overtapping.       18       Moderide particles.       18       Moderide particles.       18       Moderide parts       20       Soft de	ver ba	7	Obstructio flow	ins to	<ul> <li>Rocks and logs firmly imbedded. Flow pattern w/o cutting or deposition. Stable bed.</li> </ul>				2	Some pr currents fewer an	esent car and mind d less fin	using ero or paol fill m.	sive cros: ing, Obstr	s ructions	4	Moderat move wi and poo	tely frequ ith high fle I filling.	ent, unsta ows causi	ible obstr ng bank	uctions cutting	6	Frequent obstr bank erosion y channel migral	uctions earlong tion occ	and deflectors cause ). Sediment traps full, surring.	8		
9       Deposition       Luitle or no enlargement of channel or incorase, mostly from point bars.       8       Moderate deposition of new graveal and on oil and some new bar, bars.       12       Extensive deposit of predominantly fine particles. Accelerate data development.       16         10       Rock, and grave and on oil and some new bar increase, mostly from bars.       1       Rock and fine and final.       1       Rock and fina	Lov	8	Cutting		Little or none, Infrequent raw banks <6".				4	Some, constric 12".	ntermitte tions, R	ently at o aw bank	outcurve ks may b	es and be up to	8	Signific overha	ant. Cut ngs and	s 12–24' sloughir	'high, R ng evide	tool mat int,	12	Almost continu Failure of over	16	ti i			
In angular bit state         Share edges and corners. Plane surfaces is under an under under an under under an under under an under under under an unde		9	Deposition	1	Little or point ba	r no enla ars,	rgemen	t of chan	inel or	4	Some r coarse	ew bar gravel.	increase	e, mostly	from	8	Modera coarse bars.	ate depo sand or	stion of r old and	new grav some n	vel and iew	12	Extensive depo particles. Acce	osit of p lerated	redominantly fine bar development.	16	
11       Brightness       Surfaces dul, dat, or stained. Generally not bright.       1       Mostly dul, but may have <35% bright surfaces.       2       Misture dul and bright, i.e., 35–65%, misture range.       3       Predominantly bright, > 65%, exposed or socured surfaces.       6       No packing evident. Lose assortment, easity moved.       8         12       Consolidation of particles       Assorted sizes tightly packed or overlapping.       Predominantly bright, > 65%, exposed or overlapping.       No packing evident. Lose assortment, easity moved.       8         13       Bottoms: distribution       No packing evident. Stable material 80–100%.       Operations (No packing evident. Lose assortment)       8         14       Scouring and deposition       c5% of bottom affected by scour or deposition.       6       No packing evident. Lose assortment essortment with no begosition in pools.       10         15       Aquatic vegetation       Advatation of packing evident. In swft water too.       6       Scouring and deposition in pools.       10       Common. Algae forms in low velocity and pool areas. Moss here too.       2       Present but spoty, mostly in backwater.       3       Perennial type scace or absent. Yellow- green, short-tem bloom may be present.       4         16       Scouring subject and big as to backwater.       10       Common. Algae forms in low velocity and pool areas. Moss here too.       2       Present but spoty, mostly in backwater.       3	144.4	10	Rock angularity		Sharp e surface	edges ar es rough	nd come -	ers. Plane	e	1	Rounded comers and edges. Sur smooth and flat.					2	Corners and edges well-rounded in two dimensions.					3	Well-rounded i smooth	n all din	nensions, surfaces	4	8 7
12       Cancekdation of particles       Assorted sizes tightly packed or overlapping.       Noderately packed with some prevelapping.       4       Mostly loss assortment with no apparent overlap.       6       No packing evident. Losse assortment, easily moved.       8         13       Bottom size distribution       Assize change evident. Stable materials 80-100%.       Consolidation of verlapping.       Assize change evident. Stable materials 50-80%.       Assize change evident. Stable materials 50-80%.       B       Moderate change in sizes. Stable materials 20-50%.       12       Marked distribution change. Stable materials 60-20%.       16         14       Scouring and deposition in opols.       5% of bottom affected by source deposition noots.       1       Common. Algae forms in low velocity and where grades steepen. Some deposition in pols.       2       Present but spotty mostly in backwater. Scesonal algae growth makes rocks sick.       1       More than 50% of the bottom in a state of flux or change ensity yeardong.       24         15       Aquatic vegetalion       Audant growth moss-like, daw grew prennial. In swff water loo.       1       Common. Algae forms in low velocity and polal areas. Moss here too.       2       Present but spotty mostly in backwater. Sceosnol algae growth makes rocks sick.       3       Preenial types scare or absent. Yellow- green, short-term bloom may be present.       4         66       44       44       45       56       64       65       64 <td< td=""><td></td><td>11</td><td>Brightness</td><td>5</td><td>Surface Genera</td><td>es dull, d ally not b</td><td>lark, or s right.</td><td>stained,</td><td></td><td>1</td><td>Mostly of surface</td><td>iuli, but s.</td><td>may hav</td><td>ve &lt;35%</td><td>bright</td><td>2</td><td>Mixture mixture</td><td>dull and range,</td><td>l bright, i</td><td>.e., 35–6</td><td>65%</td><td>3</td><td>Predominantly scoured surfact</td><td>bright, es.</td><td>&gt; 65%, exposed or</td><td>4</td><td></td></td<>		11	Brightness	5	Surface Genera	es dull, d ally not b	lark, or s right.	stained,		1	Mostly of surface	iuli, but s.	may hav	ve <35%	bright	2	Mixture mixture	dull and range,	l bright, i	.e., 35–6	65%	3	Predominantly scoured surfact	bright, es.	> 65%, exposed or	4	
13       Bottom size distribution       No size change evident. Stable material 80–100%.       0       Moderate change in size. Stable material 20–50%.       12       Marked distribution change. Stable material 0–20%.       16         14       Scouring and deposition.       C% of bottom affected by sourion.       6       Same and the praterial 0–80%.       8       Moderate change in size. Stable material 20–50%.       12       Marked distribution change. Stable material 0–20%.       16       24         14       Scouring and deposition.       c% of bottom affected by souring and where grades steepen. Some deposition in pools.       10       Common. Algae forms in low velocity and pool areas. Moss here too.       12       Marked distribution change. Stable material 0–20%.       16       24         15       Aquat: vegetation       Abundant growth moss-like, dark green perennial. In swift water loo.       11       Common. Algae forms in low velocity and pool areas. Moss here too.       22       Present but spoty. mastly in backwater. Stack.       30       04       05	E	12	Consolidation particles	on of	Assorte overlap	ed sizes ping.	tightly p	acked or	(	2	Modera overlap	Moderately packed with some overlapping.				4	Mostly appare	loose as nt overla	sortmen ap.	t with no	)	6	No packing evi easily moved.	ident. L	oose assortment,	8	. 1
14       Scouring and teposition.       c5% of bottom affected by scour or deposition.       66       S-30% affected. Scour at constrictions and where grades steepen. Some deposition in pools.       30-50% affected. Deposite and scour at obstructions, constrictions, and bends. Some filling of pools.       18       More than 50% of the bottom in a state of flux or change nearly yeadong.       24         15       Aquaic vegetation       Abundant growth moss-like, dark green pernial. In swift water too.       1       Common. Algae forms in low velocity and pool areas. Moss here too.       2       Present but spotty. mostly in backwater. Scannel algae growth mikes rocks       30       Pernial types scarce or absent. Yellow-green, short-term bloom may be present.       4         Stream type       A1       A2       A3       A4       A5       A5       B1       B2       B3       B4       B6       C1       C2       C3       C4       C5       C4       D5       D6	Botto	13	Bottom siz distributior	:e 1	No size 80–100	e change )%.	eviden	t. Stable	material	4	Distribu 50–80%	Distribution shift light. Stable material 50–80%.				8	Modera materia	ate chan als 20–50	ge in size 0%.	es. Stab	le	12	Marked distribu 0-20%,	ution ch	ange. Stable materials	16	
15       Aquatic vegetation       Abundant growth moss-like, dark		14	Scouring a deposition	and	<5% of bottom affected by scour or deposition.				6	5-30% and who depositi	affected ere grad on in po	l. Scour les steep ools.	at constr pen. Son	rictions ne	12	30–50% at obstr bends.	6 affecte ructions, Some fil	ed. Depo constric ling of po	sits and tions, an pols,	scour	18	More than 50% or change near	of the ny year	bottom in a state of flux long.	24		
Stream type       A1       A2       A3       A4       A5       A6       B1       B2       B3       B4       B5       B6       C1       C2       C3       C4       C5       C6       D3       D4       D5       D5       D60 T Otal =       D70 T Otal =		15	Aquatic Abundant growth moss-like, dark green vegetation perennial. In swift water too,						k green	1	Commo and poo	Common. Algae forms in low velocity and pool areas. Moss here too.					Present but spotty, mostly in backwater. Seasonal algae growth makes rocks slick.					3	Perennial types scarce or absent. Yellow- green, short-term bloom may be present.				
Stream type       A1       A2       A3       A4       A5       A6       B1       B2       B3       B4       B5       C1       C2       C3       O4       C5       C1       D3       O4       D5       D5         Good (Stable)       38-43       38-43       54-90       60-95       50-80       38-45       38-45       40-60       40-64       48-68       40-60       38-50       38-50       60-85       70-90       70-90       60-85       85-107       106+1       111       111       111       111       111       111       111       111       111       111       111       111       116+1       38-10       86-105       86-105       86-105       86-105       86-105       86-105       86-105			Excellent Total =											Good	Total =					Fair	Total =				Poor Total =		
Gaod (Stable)       38-43       54-30       60-95       60-95       60-95       60-95       60-95       60-95       60-95       60-95       85-107       10-1       10-1       10-1       86-105       85-107       86-10       85-107       86-10       86-105       86-10       86-10       86-10       86-10       86-105       86-10       86-105       86-10       86-105       86-10       86-105 <td>Stream type</td> <td>u.</td> <td>A1</td> <td>A2</td> <td>A3</td> <td>A4</td> <td>A5</td> <td>A6</td> <td>B1</td> <td>82</td> <td>83</td> <td>B4</td> <td>85</td> <td>86</td> <td>C1</td> <td>62</td> <td>C3</td> <td>04</td> <td>CS</td> <td>CE</td> <td>Da</td> <td>D4</td> <td>D6 D6</td> <td>1</td> <td></td> <td>1 2</td> <td>-1</td>	Stream type	u.	A1	A2	A3	A4	A5	A6	B1	82	83	B4	85	86	C1	62	C3	04	CS	CE	Da	D4	D6 D6	1		1 2	-1
Fair (Mod. unstable)       44.47       91.49       91.919       96.142       96.142       81.10       46.68       61.78       65.84       69.88       61.78       51.61       51.61       51.61       91.10       91	Good (Stable)		38-43 3	8-43	54-90	60-95	60-95	50-80	38-45	38-45	40-60	40-64	48-68	40-60	38-50	38-50	60-85	70-90	70-90	60-85	85-107	85-107	85-107 67-98	1	Grand Total =		0-54
Poor (Unstable)       (48+)       48+       130+       133+       114+       59+       59+       79+       85+       89+       79+       62+       62+       106+       111+       111+       106+       133+       133+       133+       126+         Stream type       DA3       DA4       DA5       DA6       E3       E4       E6       F1       F2       F3       F4       F5       F6       61       G2       G3       G4       G5       G6       G5       G6       G5       G61       G2       G3       G4       G5       G6       G5       F3	Fair (Mod. unstable)		44-47 4	4-47	91-129	96-132	96-142	81-110	46-58	46-58	61-78	65-84	69-88	61-78	51-61	51-61	86-105	91-110	91-110	86-105	108-132	108-132	108-132 99-125		Existing Stream	200	12 1 11 21
Stream type         DA3         DA4         DA5         DA6         E3         E4         E5         F1         F2         F3         F4         F5         F6         G1         G2         G3         G4         G5         G6         FPotential Stream           Good (Stable)         40-63         40-63         40-63         40-63         40-63         50-75         50-75         40-63         60-85         65-10         90-115         80-95         40-60         85-107         90-112         85-107         90-125         108-120         108-120         108-120         108-120         108-120         108-120         108-120         108-120         108-120         108-120         113-125         108-120         108-120         113-125         108-120         113-125         108-120         113-125         108-120         113-125         108-120         113-125         108-120         113-125         108-120         113-125         108-120         113-125         108-120         113-125         113-125         108-120         113-125         121+         121+         121+         121+         121+         121+         121+         121+         121+         121+         121+         121+         121+         121+	Poor (Unstable)	-	48+	48+	130+	133+	143+	111+	59+	59+	79+	85+	89+	79+	62+	62+	106+	111+	111+	106+	133+	133+	133+ 126+		Type =	1-170	
Good (stable)       40-53       40-63       40-63       40-63       50-75       50-75       40-63       60-85       65-10       85-10       90-15       80-95       40-60       40-60       85-107       90-112       85-107 <t< td=""><td colspan="2">Stream type</td><td>DA3 (</td><td>DA4</td><td>DAS</td><td>DAG</td><td>E3</td><td>E4</td><td>E5</td><td>EG</td><td>F1</td><td>F2</td><td>F3</td><td>F4</td><td><b>F</b>5</td><td><b>F6</b></td><td>61</td><td>G2</td><td>G3</td><td><b>G4</b></td><td>GS</td><td>G6</td><td></td><td></td><td>*Potential Stream</td><td>in the l</td><td></td></t<>	Stream type		DA3 (	DA4	DAS	DAG	E3	E4	E5	EG	F1	F2	F3	F4	<b>F</b> 5	<b>F6</b>	61	G2	G3	<b>G4</b>	GS	G6			*Potential Stream	in the l	
r and (windy, unistability)       04-00 <t< td=""><td>Good (Stable)</td><td>(ali</td><td>40-63 4</td><td>0-63</td><td>40-63</td><td>40-63</td><td>40-63</td><td>50-75</td><td>50-75</td><td>40-63</td><td>60-85</td><td>60-85</td><td>85-110</td><td>85-110</td><td>90-115</td><td>80-95</td><td>40-60</td><td>40-60</td><td>85-107</td><td>85-107</td><td>90-112</td><td>85-107</td><td></td><td></td><td>Type =</td><td>1100</td><td></td></t<>	Good (Stable)	(ali	40-63 4	0-63	40-63	40-63	40-63	50-75	50-75	40-63	60-85	60-85	85-110	85-110	90-115	80-95	40-60	40-60	85-107	85-107	90-112	85-107			Type =	1100	
*Rating is adjusted to potential stream type, not existing stream type	Poor (Unstable)	112)	87+	87+	04-80 87+	87+	87+	97+	/6-96 97+	64-86 A7+	1064	86-105 106+	111-125	111-125	116-130	96-110	61-78	61-78	108-120	108-120	113-125	108-120			Modified chan	nel	- C 15 3
	(onstable)					07.	071	31.	317	017	100+	100+	1207	120+	*R	ating is	s adius	ted to	potenti	121+ a/ strea	126+ am type	121+	xisting stream	n type	stability rating	-	

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Stream: Bishop Creek, CA Site ID: 6 Stream Type: B1 Observers: TAK/65M											Date: 9-9-19																
Loca-tion	Kev	Category		E		Exce	ellent				Good							F	alr			Poor					Assigned
LOOU LIGHT			<u>'</u>		(	Descriptio	n		Rating	Description				Rating	Description		Rating	Description				Rating	Rating				
	1	Landform slope		Bank sk	ope grad	dient <30	)%.		2	Bank sl	ope gra	dient 30-	-40%.	(	4	Bank slope gradient 40–60%.				6	Bank sk	ope grad	dient >	60%.	8	4	
banks	2	Mass erosio	in I	No evidence of past or future mass erosion.			3	Infrequent, Mostly healed over, Low future potential.					6	Frequent or large, causing sediment nearly yearlong.					9	Frequent or large, causing sediment nearly yearlong OR imminent danger of same.							
pper	3	Debris jam potential	l	Essentially absent from immediate channel area.			2	Present limbs.	, but mo	ostly sma	all twigs a	and (	4	Modera larger s	ate to hea	avy amo	unts, m	ostly	6	Moderate to heavy an larger sizes.			nounts, predominantly	8			
ň	4	Vegetative bank . protection	2	> 90% plant density. Vigor and variety suggest a deep, dense, soil-binding root mass.				3	70–90% vigor su mass.	density ggest le	y. Fewer ess dens	species e or dee	or less p root	6	50–70% species root ma	6 density from a s ass.	/.Lower shallow,	vigor ar disconti	id fewer nuous	9	<50% de vigor inc shallow	ensity pl licating root ma	lus few poor, o ss.	ver species and less discontinuous, and	12		
1	5	Channel capacity	8 s y 1	Bank heights sufficient to contain the bankfull stage. Widh/depth ratio departure from refere widh/depth ratio = 1.0. Bank-Height Ratio (BH 1.0.				nkfull reference o (BHR) =	1	Bankfull stage is contained within banks. Widbh/depth ratio departure from reference widbh/depth ratio = 1.0–1.2, Bank-Height Ratio (BHR) = 1.0–1.1.					2	Bankfull s departure 1.2–1.4, F	stage is no from refer Bank-Heigh	t contained ence width nt Ratio (B	i, Width/de //depth_rat HR) = 1.1-	epth ratio o = •1.3	3	Bankfull si common w departure Height Rat	age is not ith flows I from refer io (BHR)	contain ess thar ence wid > 1_3	ed; over-bank flows are n bankfull, Width/depth ratio dth/depth ratio > 1.4, Bank-	4	
lks	6	Bank rock content	, i	> 65% with large angular boulders. 12"+ common.					2	40–65% cobbles	. Mostly 6 <del>.</del> 12".	y boulde	rs and sr	nall	4	20-40% class	6. Most i	n the 3	6" diam	eter	6	<20% ro less.	ock fragi	nents	of gravel sizes, 1–3" or	8	
er bar	7	Obstructions flow	s to I	Rocks and logs firmly imbedded. Flow pattern w/o cutting or deposition. Stable bed.					2	Some pro currents fewer and	esent car and mino d less fin	using ero or pool filli m.	sive cross ing, Obstri	uctions	4	Moderat move wi and poo	ely freque th high flo I filling.	ent, unsta ows causi	ble obstri ng bank o	uctions	6	Frequer bank ero channel	it obstru osion ye migratio	arlons	and deflectors cause Sediment traps full, urring,	8	
Low	8	Cutting	ļ	Little or none. Infrequent raw banks <6"						Some, i constric 12".	ntermitte tions. R	ently at ( aw bank	s may b	s and e up to (	6	Şignific øverha	ant. Cuts ngs and	s 12–24' sloughir	high. R Ig evide	oot mat nt.	12	Almost o Failure o	continue of overh	ous cul angs f	ts, some over 24" high. requent.	16	
	9 Deposition Little or no enlargement of channel or point bars.							nel or	4	Some new bar increase, mostly from coarse gravel.						Modera coarse bars.	ate depos sand on	stion of r old and	new grav some n	vel and ew	12	Extensiv particles	e depo , Accele	sit of p erated	redominantly fine bar development.	16	
	10	Rock angularity		Sharp edges and corners, Plane surfaces rough.						Rounde smooth	d corne and flat	ers and e	dges, Su	urfaces	2	Corners dimens	s and ed ions.	ges well	-rounde	d in two	3	Well-rou smooth	inded in	all din	nensions, surfaces	4	
	11	Brightness		Surfaces dull, dark, or stained. Generally not bright.						Mostly of surface:	lull, but 3.	may hav	/e <35%	bright	2	Mixture mixture	duli and range.	bright, i	e., 35–6	65%	3	Predominantly bright, scoured surfaces.			> 65%, exposed or	4	
ε	12	Consolidation of particles		Assorted sizes tightly packed or overlapping.						Modera overlap	tely pac bing.	ked with	some	(	4	Mostly appare	loose as nt overla	sortmen 	t with no		6	No pack easily m	ing evid oved.	lent, L	oose assortment,	8	
Sotto	13	Bottom size distribution		No size change evident. Stable material 80–100%.						Distribut 50–80%	ion shif	tlight. S	table ma	terial	8	Modera materia	ite chang Is 20–50	geinsiz )%.	es. Stab	le	12	Marked 020%,	distribul	ion ch	ange. Stable materials	16	
	14	Scouring an deposition	d	<5% of bottom affected by scour or deposition.						5-30% affected. Scour al constrictions and where grades steepen. Some deposition in pools.					×2	30–50% affected. Deposits and scour al obstructions, constrictions, and bends. Some filling of pools.					18	More that or chang	an 50% ge nearl	of the y year	bottom in a state of flux long.	24	
	15	Aquatic vegetation	/ F	Abunda perennia	nt growi al. In sw	th moss- ift water	like, dar too.	k green	1	Common. Algae forms in low velocity and pool areas. Moss here too.						Present but spotty, mostly in backwater. Seasonal algae growth makes rocks slick					3	Perennia green, s	al types hort-ter	scarce m bloo	e or absent. Yellow- om may be present.		
		Excellent Total =											Good 1	Fotal =					Fair	Total =					Poor Total =	E	
Stream type		A1 A	2	A3	A4	A5	A6	B1	B2	B3	B4	B5	B6	C1	C2	C3	C4	C5	C6	D3	D4	D5	D6				
Good (Stable)		38-43 38-	43	54-90	60-95	60-95	50-80	38-45	38-45	40-60	40-64	48-68	40-60	38-50	38-50	60-85	70-90	70-90	60-85	85-107	85-107	85-107	67-98		Grand Total =		64
Fair (Mod. unsta	ble)	44-47 44-	47	91-129	96-132	96-142	81-110	46-58	46-5B	61-78	65-84	69-88	61-78	51-61	51-61	86-105	91-110	91-110	86-105	108-132	108-132	108-132	99-125		Existing Stream		
Poor (Unstable)		48+ 48	1+	130+	133+	143+	111+	59+	59+	79+	85+	89+	79+	62+	62+	106+	111+	111+	106+	133+	133+	133+	126+		Type =		
Stream type		DA3 DA	4	DA5	DA6	E3	E4	E5	E6	F1	F2	F3	F4	F5	F6	G1	G2	G3	G4	G5	G6				*Potential Stream	100	
Good (Stable)		40-63 40-	63	40-63	40-63	40-63	50-75	50-75	40-63	60-85	60-85	85-110	85-110	90-115	80-95	40-60	40-60	85-107	85-107	90-112	85-107				Type =	-	1
Fair (Mod. unstable)		87+ 87	H-86 64-86 64-86 64-86 76-96 75-96		/6-96 97+	64-86 87+	86-105 106+	oc-100 108-120				stability rating =				ST DE											
	-	0,. 0,	- 1	V1 7	0/1		3/7	<u></u>		1001	1001	1201	1201	*R	ating i	s adjus	ted to	potenti	a/ stre	am typ	e. not e	xistina	stream	n type	Stability ratin	9-	

**Pfankuch Channel Rating** 

Stream: Bishop Creek, CA Site ID:														Stream	Type:			Obse	ervers:								
Location	Ken	Category	PY I		1.10	Exce	ellent	Carr.				Go	bod					Fa	air 👘			CONTRACT OF	Assigned				
Loca-bon	reisy	Catego		Sec		Descriptio	n		Rating	0.401.90		Descriptic	ก	mas I.	Rating			Descriptio	n 🚽		Rating		-	Descr	iption	Rating	Rating
(inset	1	Landform slope		Bank slo	ope grad	dient <30	)%.		2	Bank slope gradient 30-40%.					4	Bank slope gradient 40–60%. 6						Bank slo	pe gradi	8			
banks	2:	Mass erosi	on	No evidence of past or future mass erosion.			3	Infrequent, Mostly healed over, Low future potential.				_ow	6	Frequent or large, causing sediment 9					Frequent yearlong	t or large OR imn	12						
per	3	Debris jam potential		Essentially absent from immediate channel area.			2	Present limbs.	Present, but mostly small twigs and limbs.					Modera larger s	Moderate to heavy amounts, mostly larger sizes.					Moderate to heavy am larger sizes,			ounts, predominantly	8			
Ď	4	Vegetative bank protection		> 90% p suggest root ma	% plant density. Vigor and variety jest a deep, dense, soil-binding mass.					70–90% vigor su mass	density ggest le	/. Fewer ess dens	species e or dee	or less p root	6	50–70% species root ma	6 density from a suss.	y. Lower shallow,	vigor an disconti	id fewer nuous	9	<50% de vigor ind shallow r	ensity plu icating p root mas	us fewe boor, di ss.	er species and less iscontinuous, and	12	
	5	Channel capacity		Bank heights sufficient to contain the bankfull stage, Width/depth ratio departure from reference width/depth ratio = 1,0, Bank-Height Ratio (BHR) = 1,0,					1	Bankfull si Width/dep width/dept (BHR) = 1	tage is co th ratio de h ratio = 1 .0–1.1.	ntained wite parture fro .0-1.2. Ba	hin banks. om referend ank-Height	ce Ratio	2	Bankfull stage is not contained, Width/depth ratio departure from reference width/depth ratio = 3 1.2–1.4. Bank-Height Ratio (BHR) = 1.1–1.3.				Bankfull sti common wi departure fi Height Rati	age is not o ith flows le rom refere io (BHR) >	4					
lks	6	Bank rock content		> 65% with large angular boulders, 12"+ common.					2	40–65%. Mostly boulders and small cobbles 6–12".						20-40%. Most in the 3-6" diameter 6				6	<20% ro less.	ck fragri	nents o	of gravel sizes, 1–3" or	8		
er bar	7	Obstruction flow	ns to	Rocks and logs firmly imbedded. Flow pattern w/o cutting or deposition. Stable bed.					2	Some pre currents fewer and	esent car and mino d less fin	using ero: or pool filli m	sive cross ing, Obstr	uctions	4	Moderately frequent, unstable obstructions move with high flows causing bank cutting 6 and pool filling,						Frequent bank ero channel	t obstruc ision yea migratio	ctions a arlong. n occu	and deflectors cause Sediment traps full, rrring.	8	
Low	8	Cutting		Little or none. Infrequent raw banks <6".					0	Some, intermittently at outcurves and constrictions. Raw banks may be up to 12".					6	Signific: overhar	Significant, Cuts 12–24" high, Root mat overhangs and sloughing evident.						ontinuo. If overha	16			
	g,	Deposition		Little or no enlargement of channel or point bars.						Some n coarse	ew bar gravel	increase	e, mostły	from	8	Modera coarse bars.	ite depos sand on	stion of r old and	new grav some n	vel and ew	12	Extensiv particles.	e depos . Accelei	it of pro	edominantly fine par development.	16	
123	10	Rock angularity		Sharp edges and corners, Plane surfaces rough.					1	Rounded corners and edges. Surfaces smooth and flat.					2	Corners dimens	s and ed ions,	ges well	-rounde	d in two	3	Well-rou smooth	nded in	all dim	ensions, surfaces	4	
	11	Brightness		Surfaces dull, dark, or stained. Generally not bright.					1	Mostly of surfaces	lull, but s.	may hav	/e <35%	bright	2	Mixture mixture	dull and range.	bright, i	e., 35-6	65%	3	Predomi scoured	nantly bi surface:	right, > s.	65%, exposed or		
ε	12	Consolidation particles	n of	Assorte overlap	d sizes t ping.	tightly pa	acked or		2	Moderately packed with some overlapping.						Mostly I appare	loose as nt overla	sortmen: p.	t with no		6	No packi easily mo	8				
otto	13	Bottom siz	e	No size 80–100	change %,	evident	. Stable	material	4	Distribul 50–80%	lion shif	t light. S	table ma	terial	8	Modera materia	ite chang Is 20–50	ge in size )%.	es, Stab	le	12	Marked ( 0–20%,	16				
	14	Scouring a deposition	nd	<5% of depositi	bottom a	affected	by scou	r or	6	5-30% and whe depositi	affected ere grad on in po	l, Scour les steej pols.	at constr pen. Son	rictions ne	12	30–50% affected. Deposits and scour at obstructions, constrictions, and 18 bends, Some filling of pools.					18	More that or chang	an 50% o je nearly	24			
	15	Aquatic vegetation		Abunda perenni	int growt al. In sw	th moss- rift water	-like, dar too.	k green	1	Commo and poo	on. Alga olareas	e forms i . Moss h	in low ve ere too,	locity	2	Presen Season slick.	t but spo ial algae	tty, mos growth	tly in ba makes r	ckwater. ocks	3	Perennial types scarce or absent, Yellow- green, short-term bloom may be present,					
Excellent Total =											Good '	Total =					Fair	Total =					Poor Total ≑				
Stream typ		A1	A2	A3	A4	A5	AS	B1	B2	<b>B</b> 3	<b>B4</b>	85	BG	C1	C2	CJ	C4	Ci	C6	D3	D4	D6	D6		Grand Total =	1.18	A 57
Good (Stable)	_	38-43 3	B-43	54-90	60-95	60-95	50-80	38-45	38-45	40-60	40-64	48-68	40-60	38-50	38-50	60-85	70-90	70-90	60-85	85-107	85-107	85-107	67-98				0 24
Fair (Mod. unst	able)	44-47 4	4-47	91-129	96-132	96-142	81-110	46-58	46-58	61-78	65-84	69-88	61-78	51-61	51-61	86-105	91-110	91-110	86-105	108-132	108-132	108-132	99-125		Existing Stream		
Poor (Unstable	Poor (Unstable)		48+	130+	133+	143+	111+	59+	59+	79+	85+	89+	79+	62+	62+	106+	111+	111+	106+	133+	133+	133+	126+		Type =	100	
Stream typ	•	DA3 E	DA4	DAS	DAG	E3	E4	E5	E6	F1	FZ	F3	P4	P5	P6	61	G2	95 107	85 107	00 112	85 107				Type =	- m.	
Good (Stable)	Good (Stable)		u-63	40-63	40-63	40-63	76.06	76.04	40-63	85,105	86,105	111 125	111 125	116-130	96-110	61-78	61-78	108-120	108-120	113-125	108-107				Modified char	nel	A PARTIE
Poor (Unstable	apië)	54-86 64-86 64-86 64-86 87+ 87+ 87+ 87+		87+ 97+ 97+		87+	106+ 106+		126+	126+	131+	111+	79+	79+	121+	121+	126+	121+				stability ratin	g =	1010			
- an (anotable														*R	ating i	is adjus	ted to	potenti	al stre	am typ	e, not e	existing	stream	type	TRACE IN		Red T

e.