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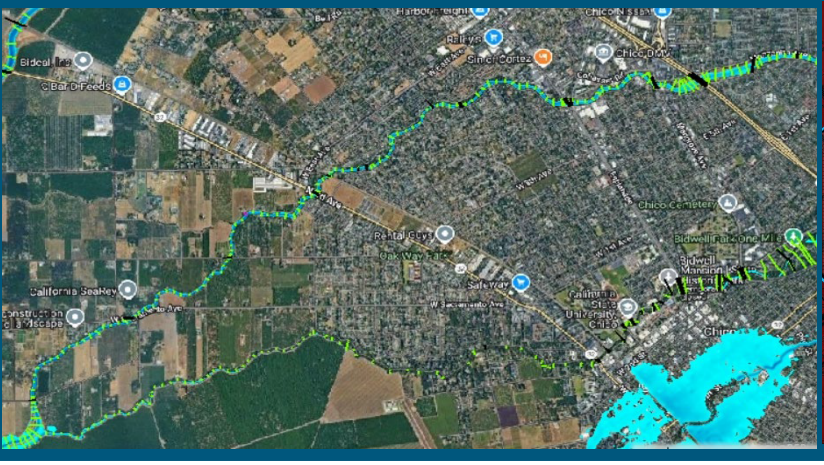


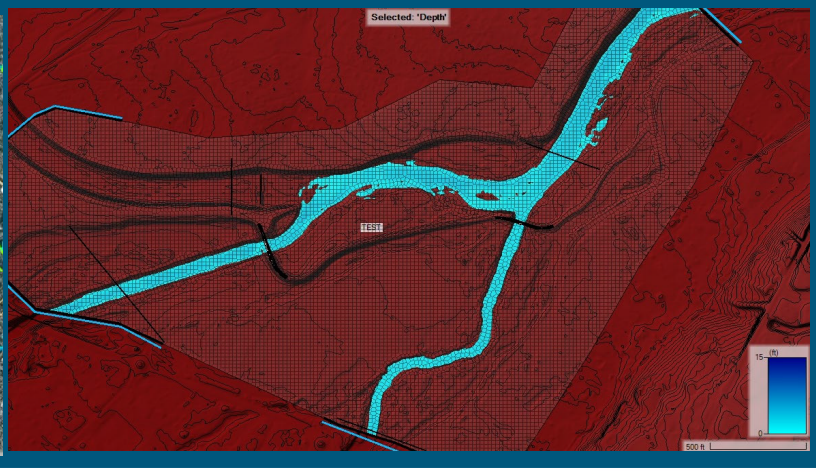
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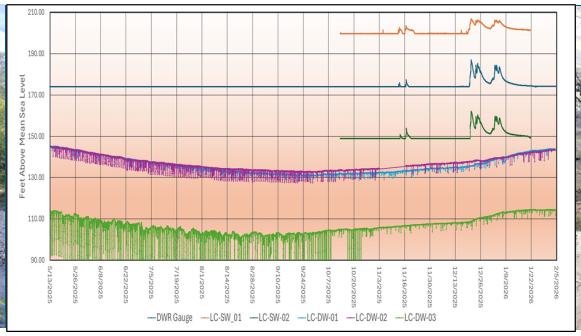
Project Feasibility and Alternatives Report

April 2026



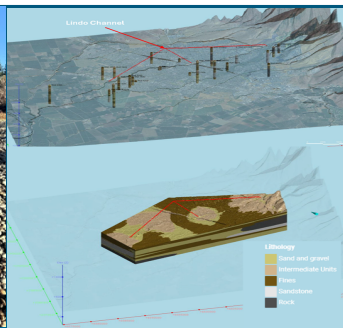












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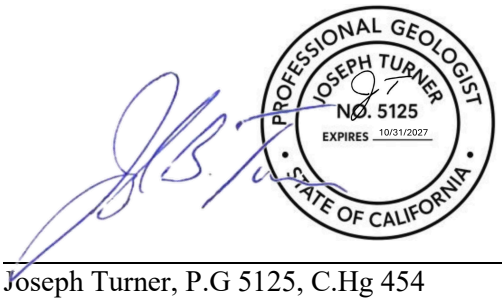
Feasibility of Enhanced Recharge in the Lindo Channel

Prepared for

Vina Groundwater Sustainability Agency

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April 2026

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ACRONYMS AND ABBREVIATIONS

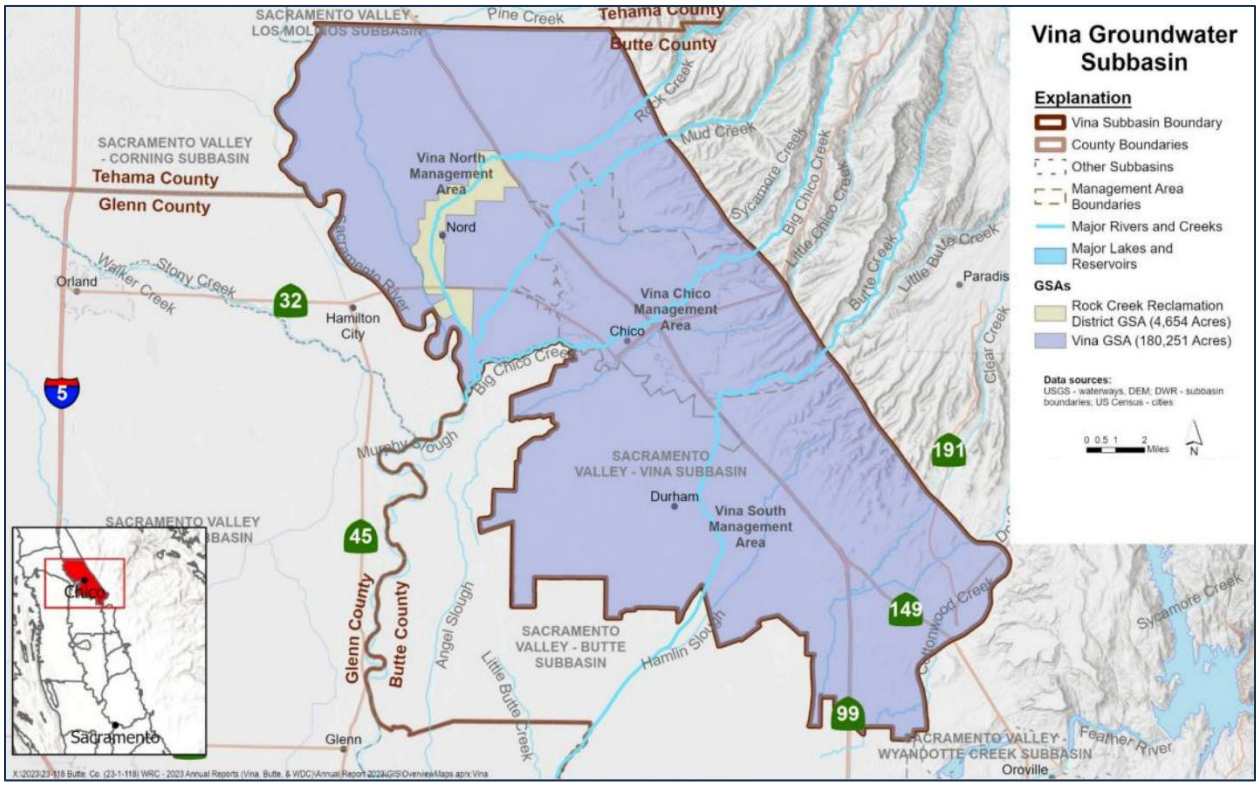
AF / AFY – Acre-Feet / Acre-Feet per Year
AFD – Acre-Feet per Day
ASR – Aquifer Storage and Recovery
ASTR – Aquifer Storage, Transfer, and Recovery
bgs – Below Ground Surface
Ca – Calcium
CDFG / CDFW – California Department of Fish and Game / Fish and Wildlife
CVP – Central Valley Project
cfs – Cubic Feet per Second
DEM – Digital Elevation Model
DWR – California Department of Water Resources
EC – Electrical Conductivity
EPA – U.S. Environmental Protection Agency
EPQS – Elevation Point Query Service
FS – Fact Sheet
GEM – Geo Environmental Management
GMWL – Global Meteoric Water Line
GSA – Groundwater Sustainability Agency
GSP – Groundwater Sustainability Plan
HCO_3 – Bicarbonate
IRMS – Isotope Ratio Mass Spectrometry
MAR – Managed Aquifer Recharge
MCL – Maximum Contaminant Level
mg/L – Milligrams per Liter
MSL – Mean Sea Level
Na – Sodium
NO_3-N – Nitrate as Nitrogen
ORP – Oxidation-Reduction Potential
PVC – Polyvinyl Chloride
Q – Flow / Discharge
R/W – Recharge / Recovery Well
SGMA – Sustainable Groundwater Management Act
SMOW – Standard Mean Ocean Water
TDS – Total Dissolved Solids
UIC – Underground Injection Control
USACE – U.S. Army Corps of Engineers
USGS – U.S. Geological Survey

Preface

The Vina Subbasin

The Vina Subbasin (DWR Basin No. 5-021.57) covers approximately 289 square miles—roughly 185,000 acres—on the western side of Butte County in the Northern Sacramento Valley. The subbasin includes the City of Chico, the communities of Nord and Durham, and the surrounding rural residential and agricultural lands. Approximately 110,000 people reside in the subbasin, with the majority of residents in Chico.

Figure P1 - Vina Groundwater Subbasin.



The Vina Subbasin is predominantly groundwater dependent. Approximately 89 percent of its water supply comes from groundwater, with the remaining 11 percent from surface water. Agricultural irrigation accounts for 91 percent of total water use, supporting orchards, rice, row crops, vineyards, and grazing. Municipal and domestic uses account for the remaining 9 percent.

Groundwater Conditions and the GSP

There are two Groundwater Sustainability Agency's (GSAs) within the Vina Subbasin, the Vina GSA and the Rock Creek Reclamation District (RCRD) GSA that have entered into a cooperative agreement to prepare a single Groundwater Sustainability Plan (GSP). The GSP was submitted in January 2022 (Geosyntec, 2021; GSP), and the California Department of Water Resources (DWR) approved it in July 2023. The GSP estimates the subbasin's sustainable yield at 233,500 acre-feet

per year (AFY), based on historical pumping of approximately 243,500 AFY and an annual storage decrease of approximately 10,000 AFY. Subsequent analysis by Butte County in developing the Recharge Acton Plan suggests the actual annual deficit may be as high as 20,000 AFY based on observed longer-term downward trends in groundwater levels. Although recent wetter years have stabilized groundwater levels, action is still needed to address these longer-term declines and prepare for the next drought. Under SGMA, the subbasin must achieve sustainability by 2042.

Approach to Sustainability

Closing the gap between current groundwater use and sustainable yield requires a portfolio of actions. No single project will likely be sufficient. Grant funds from the California Department of Water Resources (DWR) Sustainable Groundwater Management grant program (SGM grant) funded a suite of feasibility studies and pilot projects conducted in 2024-2026. The Vina and Rock Creek GSAs and their partners—including Butte County, the City of Chico, Durham Irrigation District, Tuscan Water District, and the Agricultural Groundwater Users of Butte County—are advancing a coordinated strategy across four categories:

Demand Reduction and Conservation

Pilot programs for extended orchard replacement and precision irrigation were investigated with SGM grant funds to explore approaches for reducing agricultural water demand. Results of the pilot studies will provide information on potential water savings and costs of the programs.

Groundwater Recharge

The Butte County Recharge Action Plan, adopted by the Board of Supervisors in February 2024, establishes a recharge target of at least 20,000 AFY and prioritizes the Vina Subbasin. The SGM grant funded Recharge Feasibility Analysis identifies potential recharge sites and assesses site feasibility and multi-benefit opportunities throughout the subbasin. Additionally, the Feasibility of Enhanced Recharge in the Lindo Channel study provides the enclosed recharge feasibility and alternatives report.

Increasing Surface Water Supplies

This strategy reduces the reliance on groundwater in the subbasin by identifying and refining surface water supply projects. The Surface Water Supply Feasibility Analysis evaluates opportunities to deliver surface water to farms that currently rely entirely on groundwater, directly offsetting pumping through conjunctive use.

Planning and Partnerships

Inter-basin coordination, partnerships with water districts (e.g., Western Canal Water District, Paradise Irrigation District), engagement with state and federal agencies, and collaboration with local entities such as Tuscan Water District enable the other strategies to succeed.

Purpose of This Feasibility Study and Alternatives Report

The Feasibility of Enhanced Recharge in the Lindo Channel is Component 4 of the SGM Grant. The purpose of this enclosed Project Feasibility and Alternatives Report is to assess the feasibility of increasing natural recharge and raising groundwater levels along Lindo Channel. Allowing additional flows to the unlined, natural Lindo Channel may help improve groundwater levels for

domestic well users and support the channel's aquatic resources and riparian vegetation. The objective of the study is to better understand the possible benefits and barriers of implementing this natural recharge approach. This feasibility study directly supports implementation of the Sustainable Groundwater Management Act (SGMA) within the Vina Subbasin. The analyses presented herein evaluate the potential for enhanced recharge in Lindo Channel to contribute to groundwater-level sustainability, reduce long-term overdraft, and advance progress toward recharge objectives identified in the Vina Subbasin Groundwater Sustainability Plan (GSP). By assessing recharge magnitude, spatial extent, and operational considerations, this study provides technical information to support SGMA-related planning and future project and management decisions.

1. INTRODUCTION

This report presents the project feasibility and alternatives analysis for the Vina Groundwater Sustainability Agency's (GSA) project entitled Feasibility of Enhanced Recharge in Lindo Channel. This work is being conducted in accordance with Contract Number VX0003 between the Vina GSA and Geosyntec Consultants, Inc. (Geosyntec) dated April 4, 2024, as amended on January 31, 2025.

1.1 Overview

The Feasibility of Enhanced Recharge in Lindo Channel project is Component 4 of the Vina GSA 2024 Vina Subbasin GSP Projects and Management Actions Implementation program being funded through a California Department of Water Resources (DWR) Sustainable Groundwater Management Act (SGMA) Implementation Grant, Agreement Number 4600015664. For this project, the Vina GSA is working with the City of Chico and state agencies to assess the feasibility of increasing natural recharge and raising groundwater levels along Lindo Channel. Lindo Channel (historically known as Sandy Gulch) is an 8.5-mile seasonal flood channel running through Chico in Butte County, California (Figure 1). It functions as a diverted branch of Big Chico Creek, only receiving water during winter months when flows are high enough. Water is diverted into the channel from Big Chico Creek at the Five Mile diversion system. Photograph 1 shows the gate system on Big Chico Creek at the Five Mile diversion.



Photograph 1. Gate system on Big Chico Creek at the Five Mile diversion.



Figure 1. Outline of Lindo Channel from Five Mile Diversion to confluence with Big Chico Creek.

Below, the Sandy Gulch Resource Inventory (GEM, 2001) is referenced for high-level background information regarding the physical configuration of the Five Mile diversion system and the general flood-control framework under which Lindo Channel operates. Because descriptions of historical operations and maintenance practices at Five Mile have been documented inconsistently across prior studies and agency records, this feasibility analysis does not rely on GEM (2001) to define specific operational decisions, responsibilities, or practices. Instead, the evaluation presented herein focuses on observed current conditions, measured flow behavior during storm events, and field data collected as part of this study to inform recharge feasibility.

As indicated in the GEM (2001) report, in 1965, the United States Army Corp of Engineers (USACE) completed the Chico, Mud, and Sandy Gulch Channel (Lindo Channel) Improvement and Levee Construction Project (Geo Environmental Management (GEM), 2001). The system consisted of the Five Mile gate system (Photograph 1) discussed above, another near the head of Lindo Channel to divert peak flows, and a weir at the head of Sycamore Bypass, which connected Lindo Channel with Sycamore Creek. Figure 2 shows a schematic of this system as presented in GEM (2001). Photograph 2 shows the current condition of the Lindo Channel gate. Photograph 3 shows an aerial of the current conditions of the Lindo Channel gate and the weir at the head of the Sycamore bypass as provided on Google Earth.



Photograph 2. Photograph of Lindo Channel Gate in 2025.

As discussed in GEM (2001), ssediment and woody debris accumulation occurs at and upstream of the Five Mile diversion and can affect how storm flows enter Lindo Channel during high-flow events. Periodic buildup of material has the potential to partially restrict diversion capacity and influence the timing and magnitude of flow conveyed into the channel.

GEM (2001) also indicated that the California Department of Fish and Game (CDFG) placed constraints on flow maintenance in Sandy Gulch (GEM, 2001). CDFG allows diversion of Big

Chico Creek flow into Sandy Gulch only if flows in Big Chico Creek are maintained at 75 cubic feet per second (cfs) or greater, in order to maintain fish habitat. In the past, it was reported that gravel was manipulated at the fork of the two waterways to direct some water into Sandy Gulch. The timing of these diversions was consistent with the CDFG policy - only during late spring and early summer. Under almost all circumstances surface flows into Sandy Gulch ceases in June or July, because of natural conditions.

As outlined in Agreement Number 4600015664, the scope of the Feasibility of Enhanced Recharge in Lindo Channel project included:

- Develop the flow threshold for diversion, based on water rights, habitat, and downstream beneficial users.
- Estimate expected recharge yield for wet, average, and dry years.
- Evaluate if there are any infrastructure or stream improvement needs related to the current diversion or channel, including stream aggregational trends and diversion structure adequacy.
- Test percolation rates.
- Prepare the project draft implementation plan.
- Assess environmental permitting needs.
- Assess operational requirements and responsibilities associated with flow diversions for groundwater recharge into Lindo Channel.
- Identify maintenance needed to implement revised stormwater flow and implement stormwater flow diversions into Lindo Channel per initial design requirements.
- Install shallow wells and stream gauges to monitor and quantify project benefits and assess potential impacts.

The Vina GSA (via Contract Number VX0003) commissioned Geosyntec, teamed with West Yost Associates (West Yost) to complete this project. After initial results were completed for the project, the scope of work was amended, approved by DWR, as described in the January 31, 2025, amendment to Contract Number VX003) that modified the above scope as follows:

- Install monitoring equipment within existing wells. Shallow wells were not installed as part of the project.
- The project does not identify maintenance needed to implement revised stormwater flow and implement stormwater flow diversions into Lindo Channel per initial design requirements.

For groundwater, it was anticipated the monitoring wells would be installed under a separate contract. However, due to contractual issues, these wells were not installed for this project. Alternatively, existing domestic wells with screen intervals within the first groundwater aquifer (approximately 100 feet below ground surface) were identified and equipped with monitoring equipment.

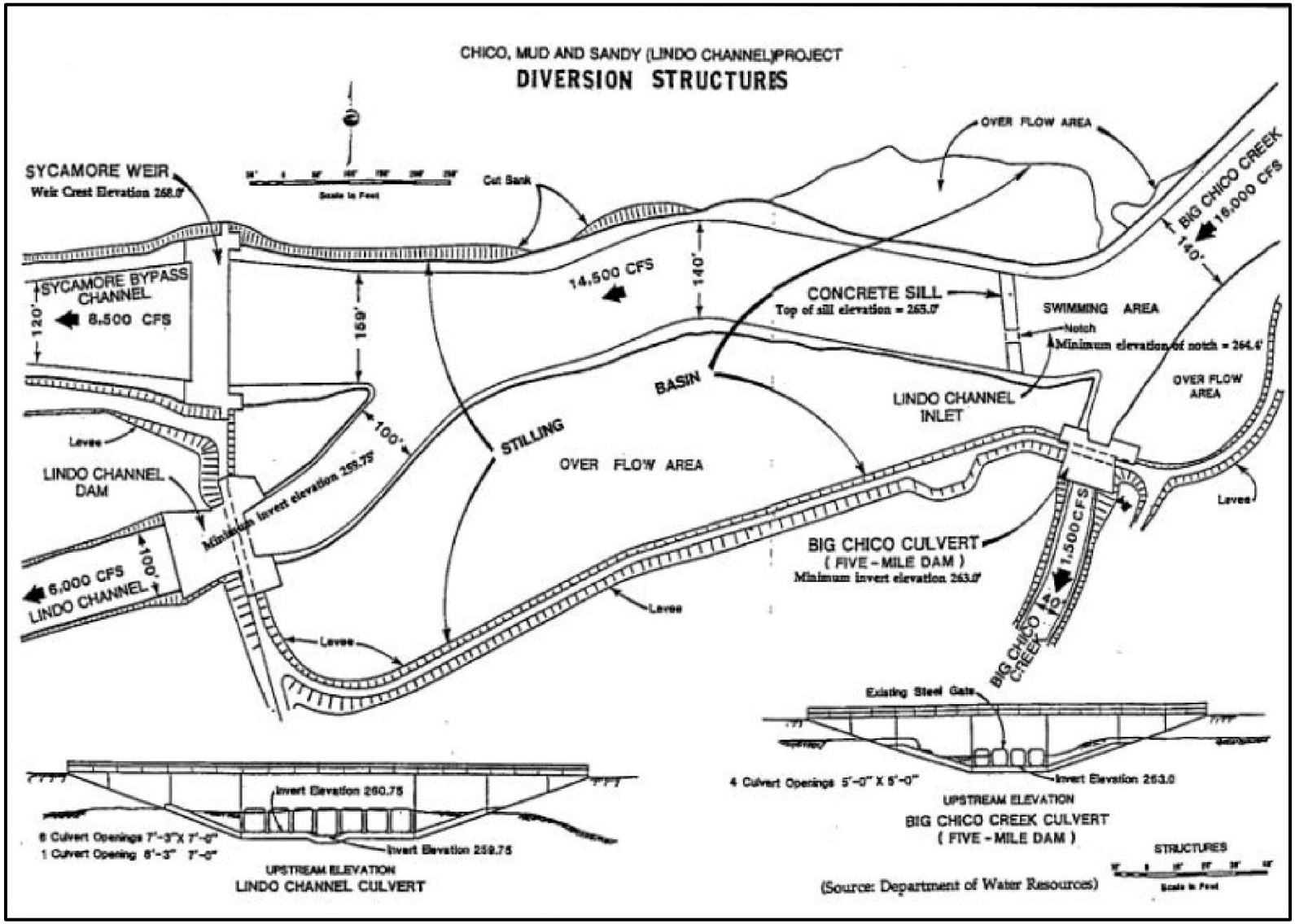


Figure 2. Figure 1.3 from GEM (2001) showing schematic of the Five Mile diversion structures.



Photograph 3. Aerial from Google Earth showing Lindo Channel gate and Sycamore Bypass Weir

1.2 Purpose and Objectives

The purpose of the Lindo Channel Recharge Feasibility project is to assess the feasibility of increasing natural recharge and raising groundwater levels along Lindo Channel. Allowing additional flows to the unlined, natural Lindo Channel may help improve groundwater levels for domestic well users and support the channel's groundwater dependent ecosystems. The objective of the study is to better understand the possible benefits and barriers of implementing this natural recharge approach.

Specific information collected during this project to accomplish these objectives includes:

- Infiltration testing of sediments within Lindo Channel.
- Measurement of flow rates at specific points along Lindo Channel to assess losses in water to recharge from upstream portions to downstream portions.
- Continuous water level measurements from adjacent shallow domestic wells and stilling wells installed within Lindo Channel to provide stream gauge data. Data was also downloaded from an existing DWR staff gauge located within Lindo Channel.

- Collection of water samples from Lindo Channel and the domestic wells to further assess interactions between the shallow groundwater system and water within Lindo Channel. This task was not included within the original scope, but due to cost savings was added to the program.
- Modeling of the Big Chico Creek/Lindo Channel flow split and subsequent estimates of infiltration into Lindo Channel over various discharge events.

The data collected from these tasks is used to evaluate potential alternatives for increasing groundwater recharge within Lindo Channel

This report is intended as a feasibility and alternatives evaluation only. The analyses presented herein are designed to inform the Vina Groundwater Sustainability Agency and its partners about the potential recharge benefits, constraints, and considerations associated with enhanced flows in Lindo Channel. The study does not constitute a final project design, does not authorize construction or operational changes, and does not imply project approval. Any future implementation would require additional technical refinement, environmental review, permitting, funding, and agency approvals. The findings from this feasibility effort are intended to support SGMA implementation by informing strategies to stabilize groundwater levels, reduce overdraft conditions, and augment recharge during wet-year and stormflow conditions.

1.3 Report Organization

The organization of this report has been developed to follow specific objectives of the project as discussed in Section 1.2. Section 2 provides a summary of the hydrogeologic environment in the vicinity of Lindo Channel using existing information. Section 3 summarizes the methods and procedures completed for the field programs discussed in Section 1.2 and Section 4 presents the results of these tasks. Section 5 provides a summary of the modeling results that are provided in detail in the West Yost Technical Memorandum provided in Appendix A. Section 6 presents conclusions and recommendations and references cited are provided in Section 7.

2. PHYSICAL SETTING

This section presents information regarding the physical setting of Lindo Channel including topography, hydrology, geology, and hydrogeology. Information used for this section includes November 1, 2024, Technical Memorandum prepared by West Yost for the project (Appendix B), the GEM (2001) report, geologic boring logs from nearby wells, and data from sites listed on the California GeoTracker webpage.

2.1 Topography

Lindo Channel, officially designated as a flood control waterway in northern Chico, occupies a gently sloping alluvial plain that begins at approximately 279 feet above mean sea level (msl) at the Five Mile diversion and declines to about 138 feet msl near the lower "Sandy Gulch" reach (USGS, 2026a) where it reconnects with Big Chico Creek (Figure 1). Its course extends for roughly 8.5 miles, forming a shallow, linear drainage pathway across the relatively flat valley floor of Butte County. The channel's present topographic form reflects both natural alluvial processes and decades of engineered modifications for flood management; the corridor was widened in the past to reduce urban flooding risk during high runoff events. Functionally, Lindo Channel is a seasonal distributary of Big Chico Creek that conveys water primarily during winter high flow periods when the diversion structure at Five Mile is engaged, leaving a broad, largely dry bed through the summer months. Coarse sandy and gravelly substrates and low gradient conditions characteristic of the Chico alluvial fan, together with management interventions, shape its modern morphology and hydrologic behavior.

2.2 Hydrology

Lindo Channel, historically known as Sandy Gulch, is an intermittent flood overflow channel formed on the Chico Fan, a geomorphic unit created by deposition from Big Chico Creek as it descends from the foothills. The rapid decrease in gradient at the valley margin historically caused Big Chico Creek to deposit coarse sediments, resulting in channel shifting and the development of distributary channels such as Sandy Gulch. These alluvial processes established Sandy Gulch as a natural relief outlet during high flow events, reducing peak flows in the mainstem of Big Chico Creek (GEM, 2001).

Lindo Channel extends approximately 8.5 miles from the Sycamore Bypass near the Five Mile Recreation Area to where it reconnects with Big Chico Creek as shown on Figure 1. It receives flow primarily during storm events and highwater periods when controlled releases from Big Chico Creek exceed the thresholds established by flood control structures. During summer, the channel is dry or carries minimal urban runoff. This regime results from the 1965 flood control improvements, including gated dams and a diversion weir (Figure 2) that regulate flow distribution among Big Chico Creek, Lindo Channel, and the Sycamore/Mud Creek system as discussed in Section 1.1. Under the current operating framework, flows exceeding 1,500 cfs in Big Chico Creek are diverted into Lindo Channel, while higher flows are subsequently routed toward Sycamore Creek.

Lindo Channel reflects the cumulative effects of long-term flood control modifications and sediment management activities that have altered channel form and hydrologic behavior over time. These legacy influences include changes in channel geometry and sediment distribution that affect how water is conveyed and stored during high-flow events. For the purposes of this feasibility

study, detailed historical actions and maintenance practices are not evaluated. Instead, the analysis focuses on present-day channel conditions, sediment characteristics, and observed hydrologic responses that influence infiltration and groundwater-recharge potential."

2.3 Hydrogeology

Lindo Channel is situated on the geomorphic unit referred to as the Chico alluvial fan, a broad depositional surface built from sediments derived from the Cascade foothills and transported by Big Chico Creek and its ancestral distributaries. The geologic framework underlying the channel consists primarily of unconsolidated to semi consolidated alluvial deposits, including permeable sands and gravels, intermediate silty sands, and localized low permeability clay and silt lenses. These material variations strongly influence channel infiltration characteristics and local groundwater behavior.

Regionally, the broader Chico area and adjacent foothills are underlain by the Tuscan Formation and Lovejoy Basalt, both of which play an important role in shaping sediment supply and downstream valley geology. The Tuscan Formation is composed of volcanic ash, lahars, and volcaniclastic sediments (Brown and Caldwell, 2013). Many of the units within the Tuscan Formation are cemented. For example, based on visual observations within Lindo Channel, cemented units directly underlie Lindo Channel from the Five Mile diversion to Highway 99. Beneath it, the Lovejoy Basalt forms resistant bedrock cliffs and contributes durable gravel and cobble fractions to the system.

Hydrogeologic conditions near Lindo Channel are characterized through analysis of two nearby California GeoTracker (https://geotracker.waterboards.ca.gov/) sites located within approximately 0.5 miles of the channel, one at 580 East 10th Street (Geocon, 2010) and one at 2233 Esplanade (Hanover, 2010). Figure 3 shows the location of these sites that collected water levels from shallow-groundwater monitoring wells between 2002 and 2010. All wells from these sites have been abandoned and are no longer present.

Both sites included multiple wells with screened intervals between 10 to 30 feet below ground surface (bgs) and 35 to 50 feet bgs. Hydrographs for selected wells from these sites area presented on Figure 4. As shown in Figure 4, the hydrographs show a distinct separation between shallow and deeper groundwater wells suggesting presence of perched zones. One of the most informative locations was the GeoTracker-listed site at 580 East 10th Street, where monitoring well data documented the presence of a perched shallow groundwater system. According to the site report, the shallow wells were completed in a horizon receiving water directly from the Lindo Channel, demonstrating that localized perching occurs where low-permeability layers restrict vertical drainage. This perched condition suggests that, although the channel bed contains permeable sandy materials conducive to infiltration, underlying finer units could limit deep percolation in some reaches. However, as seen from the field investigations conducted for this project (see Section 4), any perched zones present in the area are most likely localized and water from Lindo Channel does migrate to the first regional groundwater zone in the area where domestic wells have been installed (screen intervals for these wells generally between 50 to 100 feet bgs).

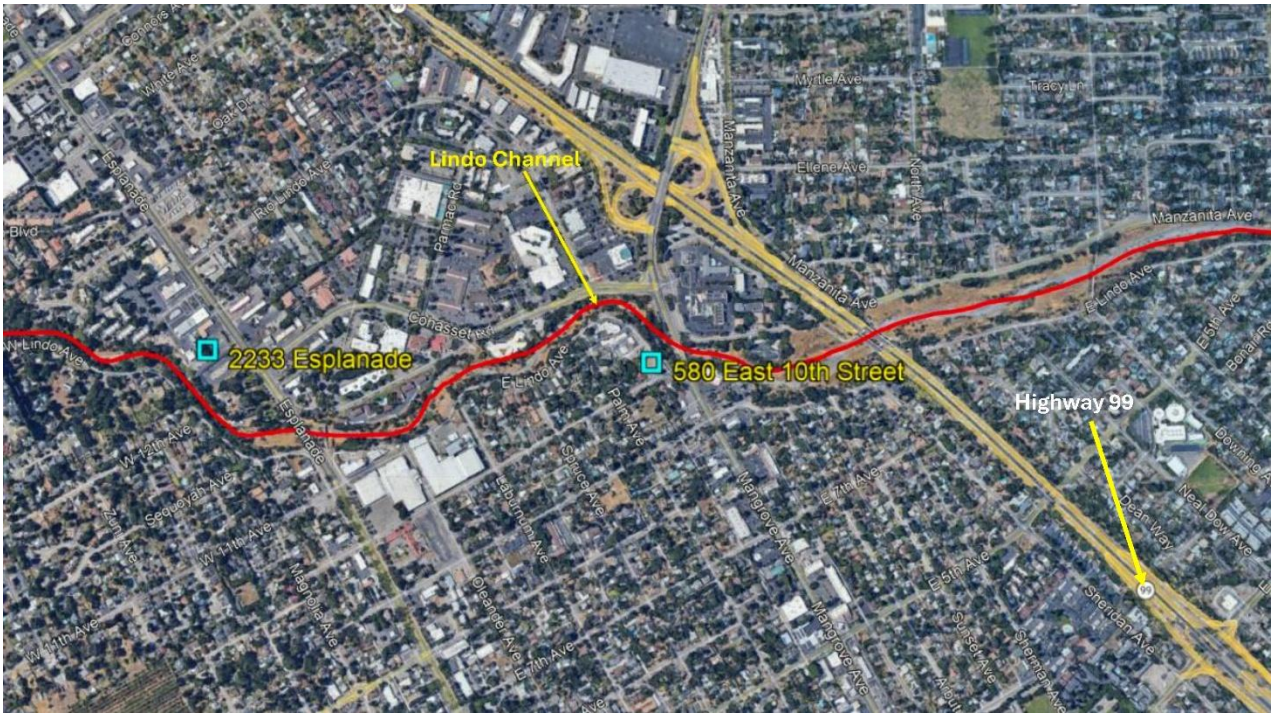


Figure 3. Location of GeoTracker sites.

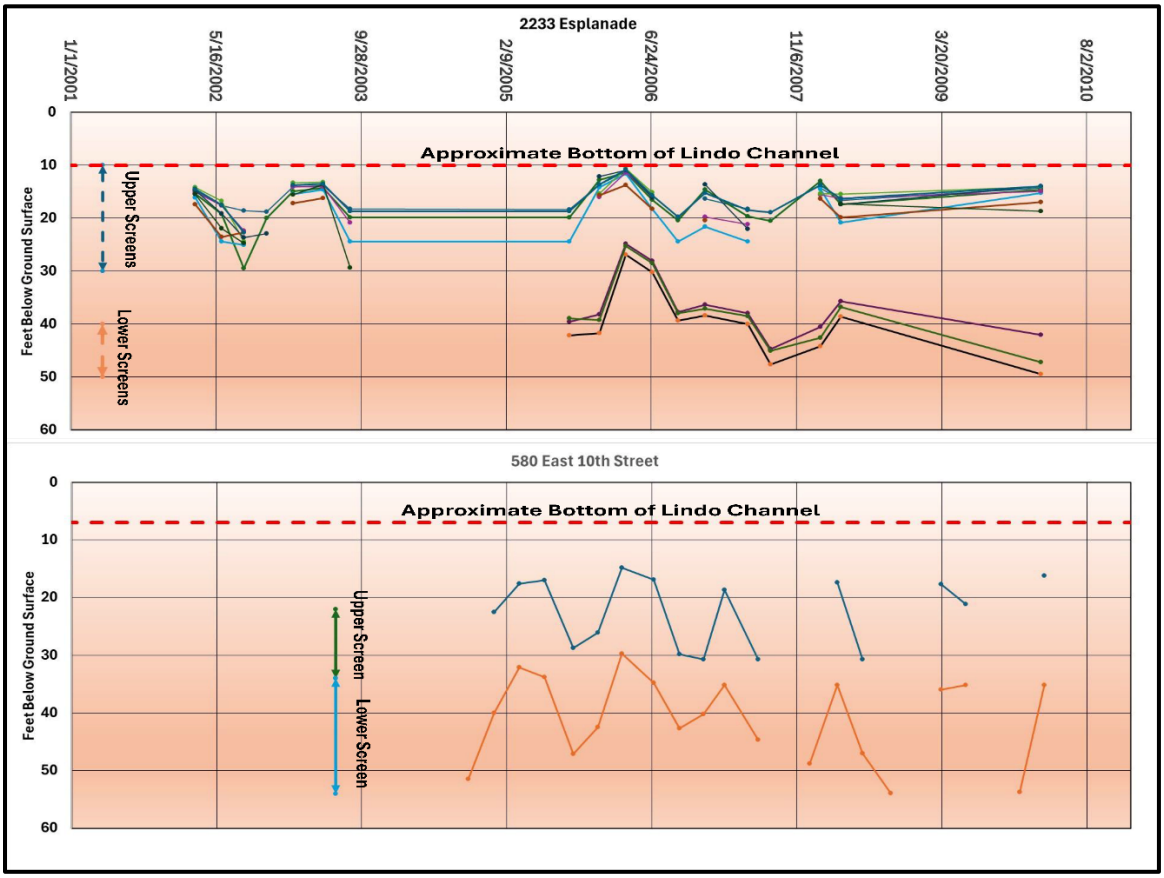


Figure 4. Hydrographs for selected wells from GeoTracker Sites

These findings align with broader geologic modeling of the corridor, which identifies alternating zones of permeable sands and gravels interspersed with cemented sandstones and finer-grained deposits. Hydrogeologically, this results in:

- High near-surface infiltration potential where permeable units dominate.
- Localized perched water tables where fine or cemented layers impede downward movement. Cemented units were observed at the base of Lindo Channel from the Five Mile diversion to where it crosses Highway 99.
- Recharge in downstream reaches, particularly west of Highway 99.

Overall, the hydrogeologic setting of Lindo Channel is characterized by complex layering, perched shallow groundwater, and variable infiltration capacity, all of which influence groundwater recharge potential and the subsurface response to episodic flow events within the channel. To illustrate these layers, existing well logs were used to construct a three-dimensional model using the software package Leapfrog. Figure 5 shows the approximate location of the geologic well logs used for the model as well as a screen shot of the model. Copies of the well logs used for the model are provided in Appendix C.

For Figure 5, what is interpreted as the Tuscan Formation is divided into four units, permeable sands and gravels, intermediate permeable units (silty sands), low permeability fines (silts and clay), and low permeability sandstones (including cemented gravels). The unit referred to as rock could be the Lovejoy basalt, but available geologic well logs are not descriptive enough to confirm this interpretation. As stated above, cemented units appear to be present at the surface of Lindo Channel from the Five Mile diversion to approximately where the channel crosses Highway 99 (Figure 1) and may be more prevalent than is indicated on the geologic well logs. Photograph 4 shows an example of this cemented unit within Lindo Channel. Overall, the model supports the presence of continuous permeable units beneath Lindo Channel and the ability of water from the Channel to migrate down to the upper most groundwater aquifer.



Photograph 4. Photograph showing cemented units near the Lindo Channel gate bridge.

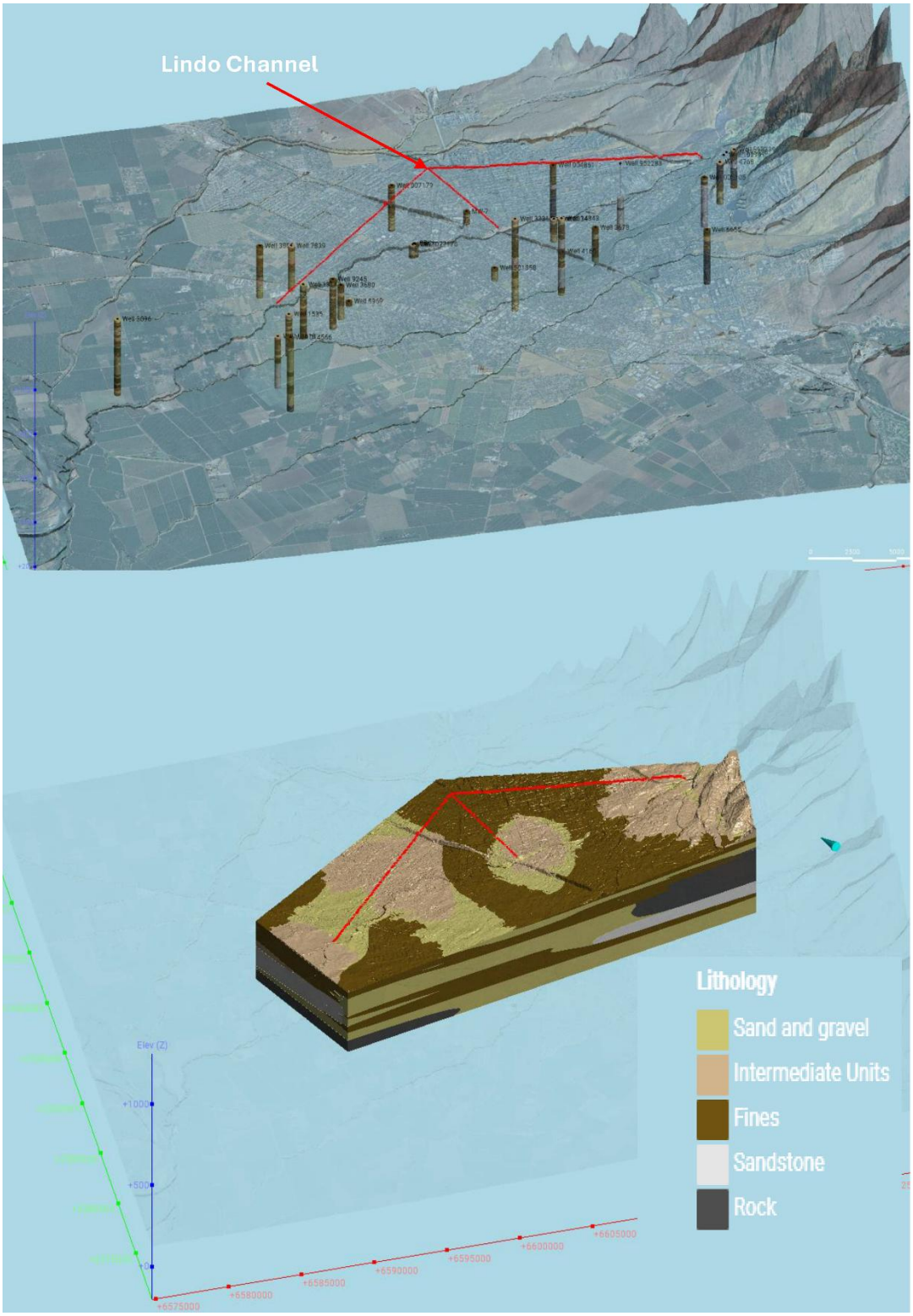


Figure 5. Top figure shows approximate location of well logs used to construct 3-D model. Lower figure shows screen shot of model.

3. FIELD METHODS AND PROCEDURES

As discussed in Section 1.2, field data was collected that included infiltration testing, measurement of flow rates, continuous water level measurements from domestic wells and stilling wells within Lindo Channel, and collection of water samples from the domestic wells and water within Lindo Channel. This section describes the methods and procedures that were used to collect these data.

3.1 Infiltration Tests

Soil Infiltration tests were conducted at two areas within Lindo Channel, designated LC-IN1 and LC-IN2, as shown on Figure 6. At location LC-IN1, the tests were conducted using two different methods. Soil infiltration testing is a measure of the rate at which soil is able to absorb water and were conducted to estimate infiltration rates from Lindo Channel that could serve as a source of groundwater recharge. The first method used was a double ring infiltrometer as shown on Photograph 5. This method was conducted at one location (designated LC-IN1-1B) on finer grained material observed within the channel.



Photograph 5. Double ring infiltrometer set at LC-IN1 location.

Prior to performance of the double ring tests, visible vegetation was cleared from the immediate area below the ring. The double-ring infiltrometer tests were performed at each site following a modified version ASTM Standard D-3385-03. The double-ring used for the project consisted of a 12-inch diameter, 19-inch-tall inner ring and a 24-inch diameter, 20-inch-tall outer ring. Both rings were constructed of 1/8-inch hard-alloy aluminum, and the bottom edge of each ring was beveled to allow penetration of the rings during driving as discussed below. To minimize leakage underneath the rings, bentonite granules were hydrated and placed around the outside edges of both the inner and outer rings. A pressure transducer was placed within the inner ring and programed to record water levels at 1-second intervals.

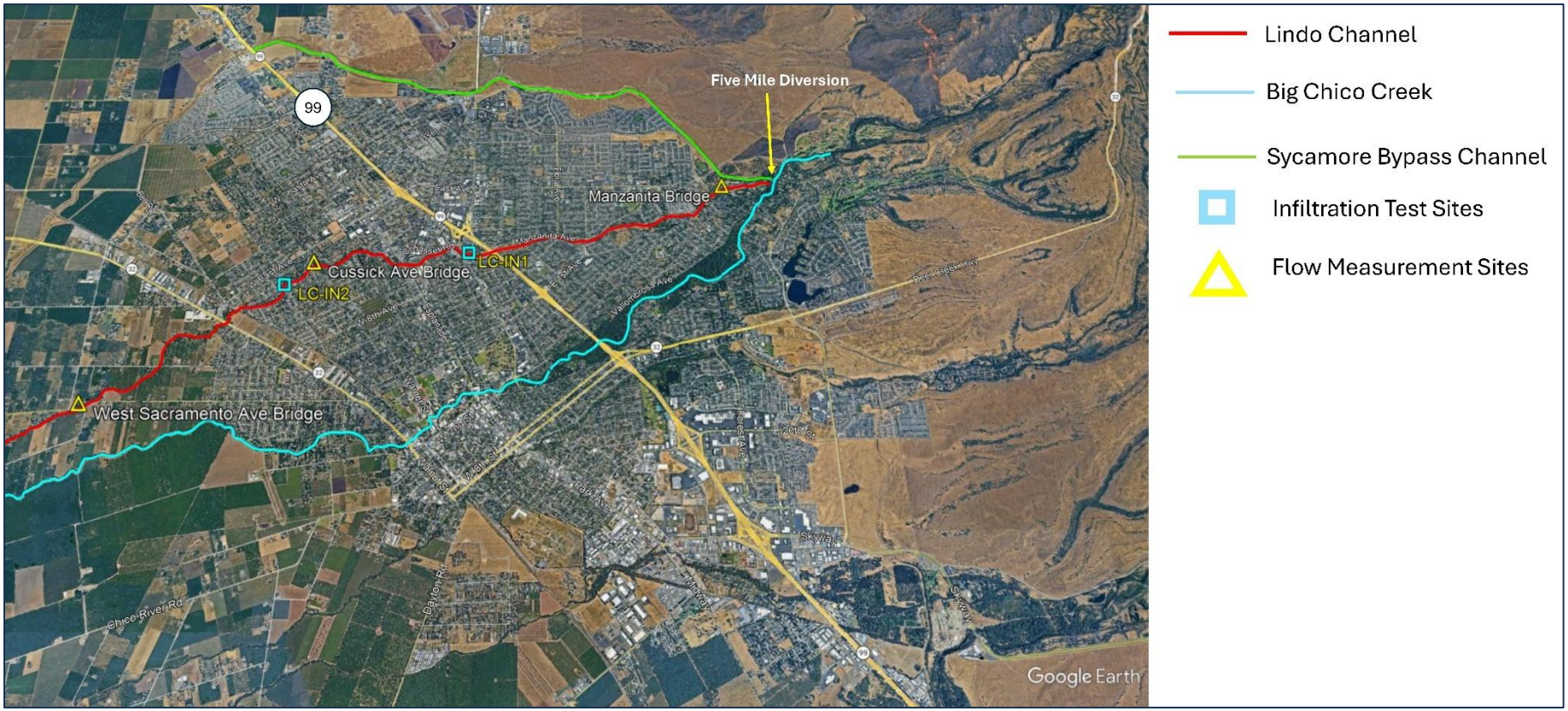


Figure 6. Locations of Infiltration Tests and flow measurements within Lindo Channel.

An In-Situ Inc. Level Troll 700 vented transducer (Photograph 6) was used for the project. The use of vented transducers eliminates the need for barometer and correction of data based on barometric changes.



Photograph 6. In Situ Level Troll 700 transducer

The test was initiated by adding water to each ring until the level was well above the pressure transducer sensor placed in the inner ring. Additional water was added periodically for 1-hour to keep the water levels within each ring at the same approximate level for a period of time to allow saturation of the underlying sediments. A total of 36 ounces of water were added over the hour to keep this constant head. The water was allowed to infiltrate then additional water added to measure rate of water infiltrating from the double ring. The pressure transducers recorded the infiltration of water within the ring. No other double ring infiltrometer tests were conducted due to the hardness of the underlying gravel units and inability to create a seal for the test. A copy of the transducer file for this test is provided in Appendix D.

The second infiltration method used was shallow down-hole permeability tests. The permeability tests were conducted by hand auguring a shallow boring to about 1 foot below ground surface (bgs). A polyvinyl chloride (PVC) casing was then placed within the boring. Prior to placement of the PVC casing, loose soil was removed from the bottom of the boring and a thin layer of sand (less than 3 inches) was placed at the bottom. After placement of the PVC casing, the annular space (outside of PVC casing) was filled with bentonite pellets to minimize water used for the infiltration test coming up the outside of the casing. Two tests were conducted at each of the test locations (labeled as “A” and “B”). During placement, water was added to hydrate the bentonite pellets. Photograph 7 shows one of the setups at the LC-IN2 location. To provide an estimate of the saturated infiltration rate, multiple tests were conducted at each individual test location.

After allowing hydration of the bentonite pellets, a pressure transducer was lowered down the PVC casing and programmed to record water levels at 1-second intervals. To conduct the downhole permeability test, the PVC casing was filled with water, then allowed to infiltrate into the desired materials at the bottom of the boring. Multiple tests were conducted at each location.



Photograph 7. Down hole permeability setup at LC-IN2 location.

For both the double ring and down-hole permeability tests, infiltration rates are calculated from the slope of the line ($y = mx + b$, where m = slope) developed during this process as illustrated on Figure 7. As shown in Figure 7, the pipe was filled three times to provide range of data, and the slopes of the lines were also calculated from different portions of the line as shown in the figure. To provide a range of infiltration estimates, the slope was calculated from different portions of the data that provided straight lines (see Figure 7 for example).

3.2 Flow Rates

On February 7, 2025, flow measurements were collected at three locations within Lindo Channel, Manzanita Avenue Bridge, Cussick Drive Bridge, and West Sacramento Drive Bridge (Figure 6). This day was selected because the only water flowing in the channel was from Big Chico Creek, no storm water from the tributary area adjacent to the channel was entering the channel.

Flow rates were calculated using the United States Geological Survey (USGS) mid-section method. This method divides the stream cross-section into multiple narrow vertical subsections and computes flow through each subsection using measured depth, width, and velocity. The sum of all subsection flows gives total creek discharge. For this project, the wetted width was divided into 10 sections. At each of these 10 locations, the water depth was recorded using a graduated rope and velocity were recorded using a General Oceanics, Inc., Model 2135 Flow meter (Photograph 8). At the Manzanita Avenue Bridge, the wetted width was divided into 11 sections. Photograph 9 shows the setup for collection of a measurement at the Manzanita Avenue Bridge.

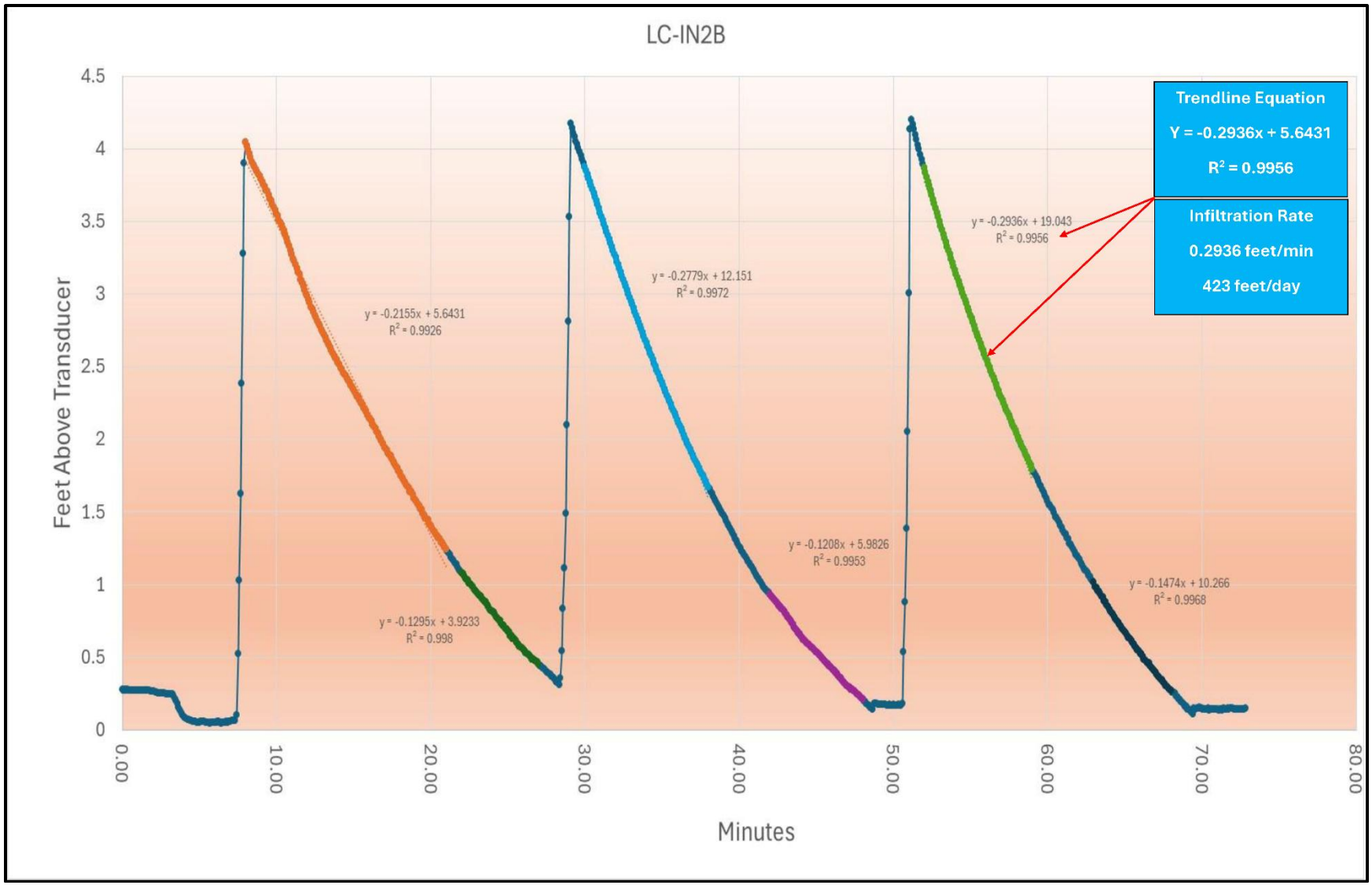
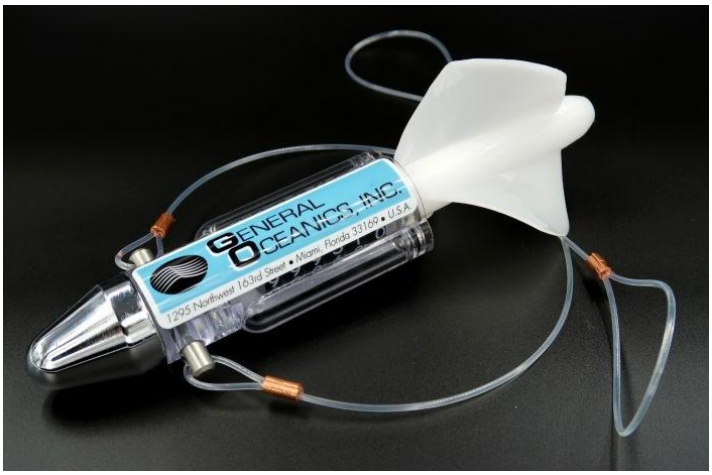


Figure 7. Infiltration rate calculations for test conducted at LC-IN2B. Blue box shows example of how the infiltration rate is calculated.



Photograph 8. Flow meter used for project.



Photograph 9. Collection of flow measurement at one section at the Lindo Channel gate.

Flow is then calculated using the following equation:

$$Q = \sum W \times D \times V$$

Where:
Q = estimated flow at the site (cfs)
W = section width (feet)
D = depth of measurement (feet)
V = velocity (feet per second).

Table 1 provides an example calculation for the measurements collected from the Manzanita Avenue Bridge.

Table 1. Example Calculation of flow in Lindo Channel at Manzanita Avenue Bridge.

Section	Width (Feet)	Water Column Depth (Feet)	Velocity (Feet/Second)	Flow (Cubic Feet/Second)
1	5.20	4	1.2	24.96
2	5.20	4	2.1	43.68
3	5.20	5	4.5	117.00
4	5.20	4	4.0	83.20
5	5.20	6	3.9	121.68
6	5.20	5	3.9	101.40
7	5.20	4	3.2	66.56
8	5.20	6	4	124.80
9	5.20	5	4.2	109.20
10	5.20	2	2.4	24.96
11	5.20	1	1.8	9.36
Total Flow (Sum of Section 1 through 11)				**826.80**

Notes

1. Total wetted length along bridge equals 57.20 feet.
2. Flow at each section is calculated by width x water column depth x velocity.

During the measurements, the water column depth was difficult to measure due to the presence of debris and higher flow rates making it difficult to tag the bottom. As such, the measurements recorded are questionable, but as discussed in Section 42, the error in measurements appears to be the same at each location and the relative difference is used to make assessments of amount of potential water recharged.

3.3 Continuous Water Level Measurements

To assess interactions between water within Lindo Channel and the upper groundwater aquifer, continuous water levels were recorded from stilling wells installed within Lindo Channel and domestic wells located adjacent to Lindo Channel. Stilling wells were installed at two locations, designated LC-SW-01 and LC-SW-02, as shown in Figure 8. A stilling well is a pipe placed within the surface water bodies that allows installation of a pressure transducer to record water levels. In-Situ Rugged Troll 200 pressure transducers were used for this project (Photograph 10). Photograph 11 shows the completed stilling well LC-SW-02 at West Sacramento Avenue. To

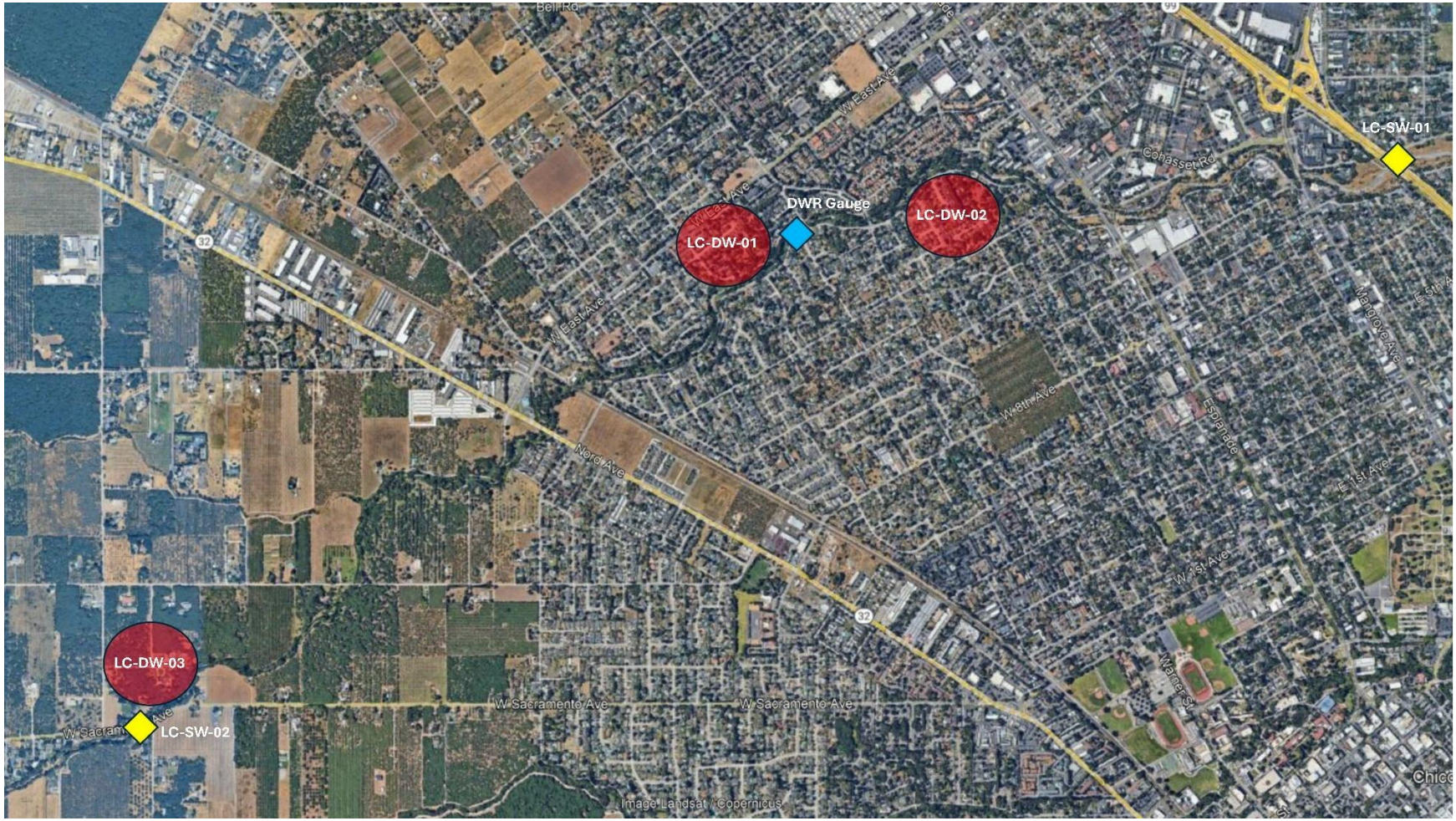


Figure 8. Location of stilling wells, DWR gauge, and domestic wells.

correct the recorded data for barometric changes, an In-Situ Baro Troll was placed at a central location in the City of Chico. Each pressure transducer and the barometer were programed to record data on 15-minute intervals.



Photograph 10. Stilling well LC-SW-02 located on the West Sacramento Avenue Bridge.



Photograph 11. In Situ Rugged Troll 200. In Situ barometer is similar to this transducer.

Table 2 provides the approximate longitude, latitude, and the channel bottom mean sea level (MSL) elevation for the two stilling wells and the DWR gauge. The MSL elevations were estimated from the digital elevation map (DEM) used for the 3-D model discussed in Section 2.3. The transducers were programmed to read water levels as feet above the transducers and were set approximately 4-inches above the ground surface.

To assess water levels within the upper groundwater zone adjacent to Lindo Channel, In Situ Level Troll 700 transducers (Photograph 6) were placed in three domestic wells, designated LC-DW-01

Table 2. Stilling well details

Stilling Well	Latitude	Longitude	Ground Surface Elevation (Feet above msl)
LC-SW-01	39.7513910	-121.8396890	199.58
LC-SW-02	39.730079	-121.901851	148.41
DWR Gauge	39.7491500	-121.8689550	173.00

through LC-DW-03, in the areas shown on Figure 8. These transducers were programmed to record water levels every 15 minutes at the same time as the stilling wells. Known well construction (screen intervals were not reported) details are summarized in Table 3. For wells LC-DW-01 and LC-DW-03, information was written on a wall adjacent to the wells. Information for LC-DW-02 was provided verbally by the well owner. Although flow rates for each well are not known, the pump at LC-DW-03 is larger than the other two domestic wells and is known to pump at a higher rate than those wells.

Table 3. Well construction details for domestic wells.

Well I.D.	Total Depth (Feet)	Pump Depth (Feet)	Well Diameter (Inches)
LC-DW-01	137	75	5
LC-DW-02[1]	100	75	5
LC-DW-03	137.5	100	6

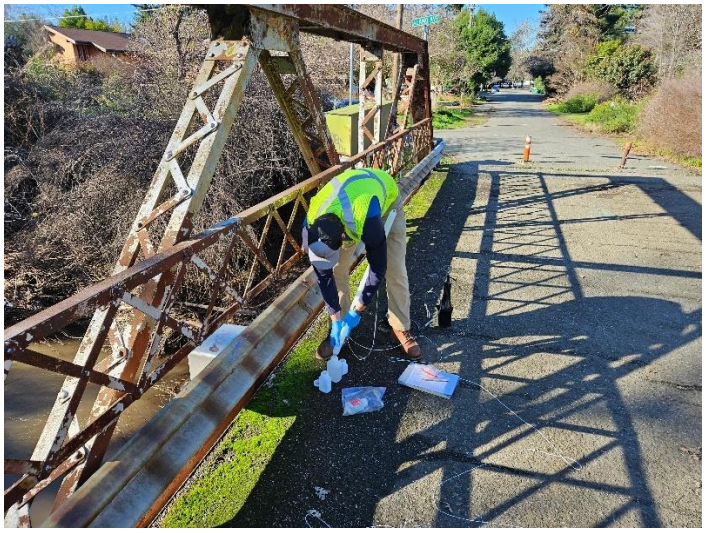
3.4 Water Quality Testing

To help assess interactions between surface water in Lindo Channel and the upper groundwater aquifer below the channel, water samples were collected from the three domestic wells discussed in Section 3.3 and from Lindo Channel. Two rounds of water samples were collected from the domestic wells, on September 19, 2025, and January 7, 2026. No water was flowing in Lindo Channel during the sampling round on September 19, 2025. During the sampling round on January 7, 2026, water was flowing in Lindo Channel since at least December 20, 2025, and a water sample was collected from an area near the DWR staff gauge (Figure 8).

Prior to sampling, the domestic wells were turned on and allowed to run for at least 15 minutes. During this time, field measurements were collected, including pH, temperature, conductivity (Ec), and oxidation/reduction potential (ORP) using a Horiba U-52 Multiparameter Water Quality Meter (Photograph 12). Water samples were collected directly out of a discharge line from the well and placed into containers supplied by the analytical laboratory. The sample from Lindo Channel was collected by lowering a clean disposable bailer from the Cussick Avenue Bridge (Figure 6) then using the bailer to place the water into the laboratory supplied containers (Photograph 13). Field parameters of the Lindo Channel water were also measured using the Horiba U-52. Field measurements were recorded on a field sampling form, copies of which are provided in Appendix E.



Photograph 12. Horiba U-52 meter.



Photograph 13. Collection Lindo Channel water sample from Cussick Avenue Bridge

Samples were submitted for analysis of the parameters listed in Table 4. A duplicate sample was collected from LC-DW-03 and submitted for the same analysis. A field blank was also collected using distilled water. Samples submitted for cation analysis were filtered in the field using a 0.45-micron filter. Samples were submitted to Enthalpy Analytical located in Orange, California.

Table 4. List of analytes

Analyte	Method
Cations Calcium Iron Magnesium Manganese Potassium Sodium	EPA Method 200.8
Anions Chloride Nitrate, as Nitrogen Sulfate	EPA Method 300.0
Alkalinity	Standard Method 2320B
Total Dissolved Solids	Standard Method 2540C
Stable Isotopes Oxygen 18 Deuterium	Headspace Equilibration using GasBench-IRMS

4. RESULTS

This section presents the results of field activities outlined in Section 3; specifically:

- Section 3.1 provides the results from the infiltration testing conducted at two areas within Lindo Channel.
- Section 3.2 provides the results of flow measurements collected within Lindo Channel.
- Section 3.3 provides the results of continuous water level measurements.
- Section 3.4 provides the results of water quality sampling.

4.1 Infiltration Testing

As discussed in Section 3.1, infiltration rates from the downhole permeability tests and the one double ring infiltrometer test are calculated from slope of straight line portions of the plot of time versus falling water levels, as illustrated on Figure 7, Values collected from this method are considered estimates of infiltration rates and were used to provide a range of values used in the West Yost modeling discussed in Section 5 and Appendix B.

Three tests were conducted at LC-IN-1, and two tests were conducted at LC-IN-2. For each individual test site, the standpipes for tests were filled multiple times. The plots for each of the tests are presented in Appendix F with the results summarized on Table 5. As seen in Table 5, measured infiltration rates ranged from 13 feet per day (feet/day) to 491 feet/day with an average value of 262 feet/day. These values are consistent with the saturated hydraulic conductivity of well sorted sands and gravels as observed at the surface of the channel and the range reflects some areas with no gravels to areas with abundant gravels. The high average number is consistent with the observance that most of areas contain gravel. Using this information, West Yost used a range of 30 feet/day to 100 feet/day within their model as discussed in Section 5 and Appendix B.

4.2 Flow Measurements

Table 6 summarizes the flow measurements collected on February 7, 2025, at the Manzanita Avenue, Cussick Drive, and West Sacramento Avenue bridges, as discussed in Section 3.2 (Figure 6). As noted previously, individual subsection measurements were affected by debris and high velocities, introducing similar uncertainty at all three sites; however, the reach scale trend is consistent and meaningful. Using the Manzanita Avenue Bridge (representing the Highway 99 inflow) as the upstream reference point, measured discharge declined from 826.80 cfs to 666.54 cfs at Cussick Drive and further to 529.19 cfs at West Sacramento Avenue, indicating progressive channel losses attributable to groundwater recharge. These reductions correspond to approximately 318 acre-feet per day (AFD) of loss between Highway 99 and Cussick Drive and about 590 AFD between Highway 99 and West Sacramento Avenue. To normalize recharge along the channel, we mapped the centerline distances from Highway 99 to each downstream section and calculated per foot loss rates. Based on these distances, recharge averages roughly 0.04–0.11 AFD per linear foot of channel. Although debris and high flow turbulence affected the precision of velocity and depth measurements, the consistent downstream decrease in discharge, combined with the mapped channel lengths, demonstrates that substantial recharge begins near the Highway 99 crossing and continues downstream through the Cussick and West Sacramento Avenue reaches.

Stilling well stage data from LCSW01 at Highway 99, the DWR gauge at Cussick Drive, and LCSW02 at West Sacramento Avenue consistently show coordinated rises and recessions during periods when Lindo Channel conveyed water. Periods where the hydrographs flatten out represent times when the channel was dry; these intervals were excluded from interpretation. When water was present, however, all three stations recorded strongly synchronized changes in stage, indicating that surface water was being conveyed along the entire reach. Notably, the onset of dynamic fluctuations at LCSW01 marks the beginning of sustained hydraulic connectivity at the Highway 99 crossing—the same location where measured discharge on February 7, 2025, began to decline downstream, reflecting substantial channel losses and recharge. The downstream persistence of stage variability at both the DWR gauge and LCSW02 further supports this interpretation: even as measured flows decreased at each successive bridge, the stilling wells continued to show active hydrographs, demonstrating that water remained in the channel long enough to infiltrate. Taken together, the stage records and the documented downstream reductions in flow confirm that meaningful groundwater recharge initiates at the Highway 99 reach and continues through the Cussick Avenue and West Sacramento Avenue sections of Lindo Channel.

4.3 Continuous Water Levels

As discussed in Section 3.3, continuous water levels were collected from three domestic wells, two stilling wells, and the DWR gauge located at the Cussick Avenue bridge (Figure 8) to help assess interactions between water in Lindo Channel and the upper groundwater aquifer. Figure 9 presents the hydrographs for each of these points. As seen on this figure, these hydrographs provide a clear picture of how Lindo Channel interacts with the shallow groundwater system. In the surface water record, periods where the hydrograph plots as a straight, flat line correspond to times when no water was present in the channel and confirms that Lindo Channel is intermittent, carrying flow only during storm events or controlled releases, and otherwise remaining dry.

Across the record from May 2025 through February 2026, the three domestic wells show the same overall short-term behavior: saw-toothed hydrographs with frequent, sharp dips that coincide with pump on periods (operational drawdown), and recovery to a steadier baseline once the pumps cycle off. Where they differ is in absolute head and longer term drift: LCDW01 and LCDW02 sit at similar elevations and track each other closely, each showing a gentle net decline over the monitoring period, while LCDW03 is regionally down-gradient and several tens of feet lower in head and exhibits a modest net rise, suggesting stronger local recharge influences or lighter sustained pumping near that well. All three wells exhibit clear seasonal variation consistent with the irrigation year—water levels are relatively higher in late spring, decline through the summer/fall pumping season, and rebound during the winter months. In terms of magnitude, the seasonal range (looking past the pump induced troughs) is on the order of roughly ten feet, with LCDW02 typically showing the smallest seasonal swing and LCDW01/03 a bit larger. In short: same short-term pumping signatures across all wells; LCDW01 and LCDW02 behave similarly with a slight downward trend; LCDW03 differs by sitting lower and trending upward, with a comparable seasonal cycle superimposed.

Table 5. Summary of infiltration test results

Location I.D.	Test Location	Date	Test Number	Time Interval (Minutes)		Infiltration Rate		Water Level Above Transducer	
				Start	End	Feet/Minute	Feet/Day	Start	End
LC-IN-1	LC-IN-1A	11/14/2025	1	3	10	0.2396	345	3.43	1.73
				17	25	0.08	115	0.71	0.06
			2	30	35	0.1806	260	3.88	2.95
				40	67	0.0772	111	2.22	0.16
			3	75	83	0.1557	224	4.38	3.19
				89	119	0.0756	109	2.65	0.53
	LC-IN-1B	11/14/2025	1	2	7	0.0187	26	0.64	0.54
				20	60	0.0087	13	0.96	0.55
LC-IN-2	LC-IN-2A	11/15/2025	1	3	5	0.32	460	3.25	2.59
				7	9	0.29	411	2.05	1.48
				12	16	0.18	257	0.82	0.12
			2	21	24	0.34	491	3.21	2.18
				26	30	0.21	299	1.63	0.8
				32	34	0.15	209	0.39	0.1
			3	42	46	0.33	475	3.38	2.06
				49	57	0.18	254	1.45	0.06
	LC-IN-2B	11/15/2025	1	8	13	0.22	310	4.04	1.24
				22	27	0.13	186	1.08	0.45
			2	30	38	0.28	400	3.88	1.67
				42	48	0.12	174	0.93	0.21
			3	52	59	0.29	423	3.87	1.78
				63	68	0.15	212	1.01	0.27

Table 6. Summary of Flow Measurements.

Section	Width (Feet)	Water Column Depth (Feet)	Velocity (Feet/Second)	Flow (Cubic Feet/Second)
Manzanita Avenue Bridge				
1	5.20	4	1.2	24.96
2	5.20	4	2.1	43.68
3	5.20	5	4.5	117.00
4	5.20	4	4.0	83.20
5	5.20	6	3.9	121.68
6	5.20	5	3.9	101.40
7	5.20	4	3.2	66.56
8	5.20	6	4	124.80
9	5.20	5	4.2	109.20
10	5.20	2	2.4	24.96
11	5.20	1	1.8	9.36
			Total Flow	**826.80**
Cussick Avenue Bridge				
1	4.6	3	0.1	1.38
2	4.6	5	0.5	11.5
3	4.6	6	2.1	57.96
4	4.6	8	2.8	103.04
5	4.6	8	3.3	121.44
6	4.6	8	3.4	125.12
7	4.6	8	2.5	92
8	4.6	7	2.5	80.5
9	4.6	6	1.5	41.4
10	4.6	5	1.4	32.2
			Total Flow	**666.54**

Table 6 (continued)

Section	Width (Feet)	Water Column Depth (Feet)	Velocity (Feet/Second)	Flow (Cubic Feet/Second)
1	4.25	1	0.33	1.39
2	4.25	3	1.77	22.59
3	4.25	5	2.20	46.71
4	4.25	6	2.76	70.28
5	4.25	6	2.33	59.40
6	4.25	7	2.13	63.44
7	4.25	6	1.61	40.99
8	4.25	6	1.61	40.99
9	4.25	7	2.56	76.13
10	4.25	6	3.08	78.64
11	4.25	4	1.68	28.61
Total Flow (Sum of Section 1 through 11)				**529.19**

Groundwater in the three domestic wells occurs 40 to 50 feet below ground surface, and the hydrographs clearly show that this shallow system responds measurably to storm driven recharge from Lindo Channel. LCDW03, positioned about 100 feet from the channel, exhibits the most rapid and pronounced rise, with water levels climbing several feet following the stormflow that began on December 20, 2025. This sharp response is consistent with bank storage infiltration entering the alluvium and traveling a short distance before reaching the well. LCDW01, located about 180 feet from the channel, displays a similar but damped signal, still well within the 40 to 50 feet bgs zone but with a more modest rise and a slight delay that reflects additional attenuation as the recharge wave moves laterally away from the channel. LCDW02, at 520 feet, lies far enough from the channel that storm related mounding is more muted; the hydrograph shows a gentle upward step rather than a distinct peak, indicating that recharge has diminished significantly by the time it reaches this distance. Across all wells, once pumping related troughs are removed, groundwater levels rise through the days following the December storm sequence and then gradually decline—an expected signature of bank storage recharge propagating outward from the channel through shallow alluvium where water levels typically reside 40 to 50 feet bgs.

Using the response to the storm event that started on December 20, 2025, groundwater recharge from Lindo Channel was estimated using a one-dimensional Darcy approach. For this approach, recharge is driven by storm related stage increases observed in the Lindo Channel stilling wells and corresponding rises in groundwater levels as discussed above. The event response was

characterized by the magnitude of water-level rise and the lag between peak channel stage and peak groundwater response. Recharge flux (q) is calculated using Darcy's Law:

$$q = K \times i$$

Where:

K = hydraulic conductivity

i = hydraulic gradient calculated as height of water in stream minus height of groundwater.

Volumetric recharge per unit channel length (Q) is calculated as:

$$Q = q \times b$$

Where:

b = the average wetted channel width assumed to be 50 feet for this calculation.

The Q value is converted to acre-feet per day per 1,000 feet of channel. Recharge is then scaled to the full Lindo Channel reach between Highway 99 and the confluence with Big Chico Creek using a centerline length of 5.43 miles as measured in Google Earth (Figure 1). To reflect uncertainty in hydraulic properties, recharge was calculated over a conservatively low range of hydraulic conductivity values from 2 to 100 feet/day. Scaling recharge estimates from a unit length basis to the full Lindo Channel reach represents a key assumption in this analysis. The approach assumes that the analyzed reach between Highway 99 and the downstream confluence behaves, in aggregate, as a sequence of hydraulically similar channel segments during periods of active flow, such that recharge estimated per 1,000 feet can reasonably be extrapolated over the full centerline length. In reality, infiltration capacity and recharge efficiency are spatially variable due to changes in channel geometry, sediment texture, cementation, and depth to groundwater.

To address this variability and associated uncertainty, recharge was calculated across a broad and deliberately conservative range of hydraulic conductivity values (2 to 100 feet per day), spanning conditions from partially cemented or fine reaches to coarse, highly permeable gravel deposits. This range brackets values measured directly in the field and encompasses uncertainty associated with spatial heterogeneity. As a result, the scaled recharge estimates presented in Table 7 are not intended to represent precise predictions but rather order of magnitude bounds on likely event scale recharge during periods when the channel is conveying water.

Importantly, the principal findings of this feasibility study do not rely on the upper end of this range. Independent lines of evidence, including downstream decreases in measured flow (Section 4.2), groundwater level responses observed in adjacent wells (Section 4.3), and the West Yost flow split and infiltration modeling (Section 5), all indicate that substantial recharge occurs when Lindo Channel is active. Taken together, these converging analyses support the conclusion that recharge during storm events is most likely on the order of greater than 100 acre-feet per day across the analyzed reach, even under conservative hydraulic assumptions."

Table 7 summarizes the results of these calculations. As seen on this table, calculated groundwater recharges during storm events in Lindo Channel ranged from a low of 8 acre-feet per day to a high of 3,130 acre-feet per day. These values are consistent with the model results from West Yost (Section 5) and the calculations from flow measurements discussed in Section 4.2 indicating that groundwater recharge is most likely greater than 100 acre-feet per day for the reach from Highway 99 to the confluence with Big Chico Creek, when water is flowing in Lindo Channel.

4.4 Water Quality

Table 8 summarized the results of water quality testing from the three domestic wells and from Lindo Channel. Appendix G provides copies of the analytical laboratory reports. As discussed in Section 3.4, these samples were collected to assess if interactions could be observed between surface waters in Lindo Channel and the first encountered groundwater. The sampling round on September 19, 2025, was collected when no water was in Lindo Channel and the sample on January 7, 2026, was collected after water was present within Lindo Channel for several weeks.

Water chemistry and facies changes from September 19, 2025 (when the channel was dry) to January 7, 2026 (after the December 20 to 24, 2025 storm event) show that Lindo Channel is actively recharging the near bank aquifer. The Lindo Channel sample collected near Cussick Avenue Bridge is a very dilute calcium-bicarbonate (Ca–HCO_3) water, markedly less mineralized than the three domestic wells. Plotting the data on a Piper diagram (Figure 10), the January 2026 well points shift toward the stream endmember, remaining HCO_3 dominated on the anion triangle but moving slightly toward the Ca corner compared to September 2025, with the largest translation at the well closest to the channel (LCDW03, 100 ft). On Durov diagram (Figure 11), the same samples move toward lower conductivity/Total dissolved solids (TDS) and lower pH, again most strongly at LCDW03, consistent with mixing with a cool, weakly buffered recharge pulse. Temperature and redox corroborate that new, low ionic strength channel water reached the wells: well temperatures cooled toward the stream (e.g., LCDW03 from 16.1 °C to 14.5 °C, stream 13.7 °C), and Eh and conductivity dropped toward channel values. Nitrate decreased or remained low, consistent with dilution by stream water. Collectively, these Piper/Durov shifts plus temperature/EC/Eh trends provide multiple, independent lines of evidence that stormflow in Lindo Channel recharged the shallow aquifer and displaced more mineralized groundwater, with the magnitude of the signal decreasing with distance from the channel.

These data were also used to estimate groundwater recharge rates by using binary mixing between each well's September composition (pre-recharge groundwater) and the January Lindo Channel sample (recharge endmember). Using TDS as a near conservative tracer, the fraction of channel water in each well on January 7, 2026, is:

- LC-DW-03 (100 ft): TDS ≈ 0.37 (TDS 180 → 140 mg/L; stream 72 mg/L)
- LC-DW-02 (520 ft): TDS ≈ 0.29 (280 → 220 mg/L; stream 72 mg/L)
- LC-DW-01 (178 ft): TDS ≈ 0.10 (170 → 160 mg/L; stream 72 mg/L)

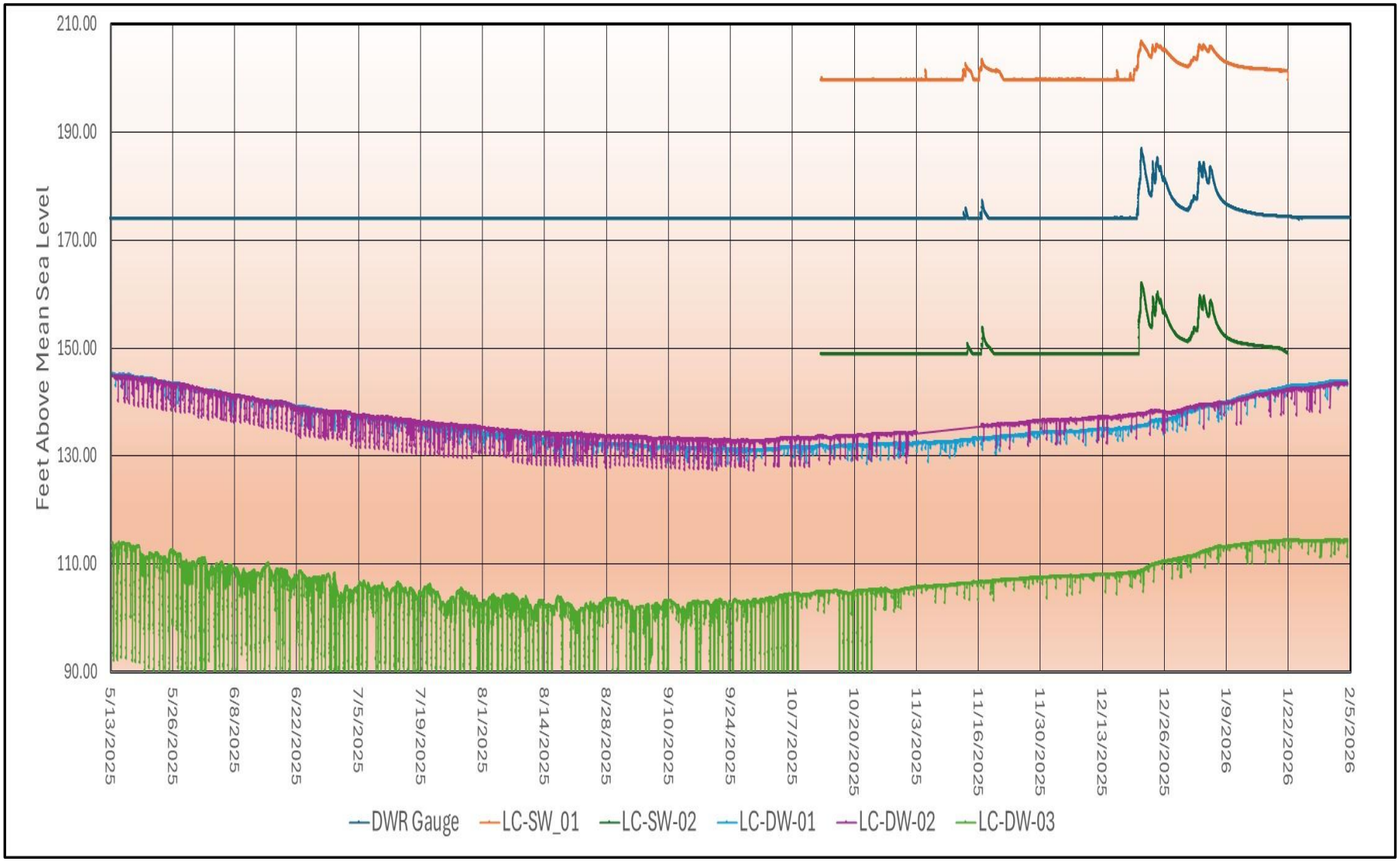


Figure 9. Hydrographs for domestic wells and stilling wells.

Table 7. Summary of Estimated Groundwater Recharge using Groundwater Level Responses to Storm Events in Lindo **Channel.**

Well I.D.	*Distance to Channel (Feet)*	*Groundwater Rise (Feet)*	*Lag From Channel Peak (Hours)*	*Recharge AFD per 1,000 feet*					*Total Recharge for Lindo Channel[1] (Acre-Feet per Day)*
				K = 2 ft/day	**K = 10 ft/day**	**K = 24 ft/day**	**K = 50 ft/day**	**K = 100 ft/day**	
LC-DW-01	100	1.41	50	2.18	10.92	26.20	54.58	109.16	63 to 3,130
LC-DW-02	178	1.05	50	0.88	4.41	10.58	22.04	44.08	25 to 1,264
LC-DW-03	520	0.77	50	0.29	1.46	3.50	7.29	14.58	8 to 418

1. Total recharge from Highway 99 to confluence with Big Chico Creek.

Table 8. Summary of analytical results for water samples

Sample I.D.	Date	Ca	Fe	Mg	Mn	K	Na	Cl	NO3 (as N)	SO4	Alkalinity	TDS	T	pH	Eh	Ec	Deuterium	Oxygen-18
		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg CaCO3/L	mg/L	Degrees C	pH units	MV	µhmos/cm	SMOW-^2H	SMOW-^{18}O
LC-DW-01	9/19/2025	15	<0.05	13	<0.01	<0.5	11	3.6	0.75	2.8	99	170	16.72	7.22	397	220	-54.5	-9.96
	1/7/2026	17	<0.05	14	<0.01	<1.0	17	4	0.63	2.7	120	160	13.27	5.83	128	193	-65.4	-9.93
LC-DW-02	9/19/2025	29	<0.05	21	<0.01	0.82	15	10	3.5	8.5	160	280	17.33	7.34	327	365	-52.8	-9.89
	1/7/2026	30	<0.05	23	<0.01	<1	17	11	2.5	7.6	170	220	16.28	6.44	132	346	-63.3	-9.77
LC-DW-03	9/19/2025	15	<0.05	10	<0.01	0.67	11	5.5	0.42	4.1	91	180	16.13	7.66	356	200	-54.4	-9.96
	1/7/2026	15	<0.05	11	<0.01	<1	12	3.9	<0.4	3.7	89	140	14.46	6.65	152	135	-67.3	-10.22
LC-DW-04[1]	9/19/2025	14	<0.05	10	<0.01	0.66	11	5.3	0.38	3.7	88	180	16.13	7.66	356	200	-59.7	-10.3
Lindo Channel	1/7/2026	8	<0.05	3.8	<0.01	0.66	3.1	1	0.71	2.1	36	72	13.69	5.76	142	46	-61.1	-9.93

Notes:

mg/L = milligrams per Liter

mg CaCO3/L = milligrams of calcium carbonate per Liter

MV = millivolts

µhmos/cm = micromos per centimeter

SMOW = Standard mean ocean water

1. LC-DW-O4 is a duplicate sample of LC-DW-03 on 9/19/2025

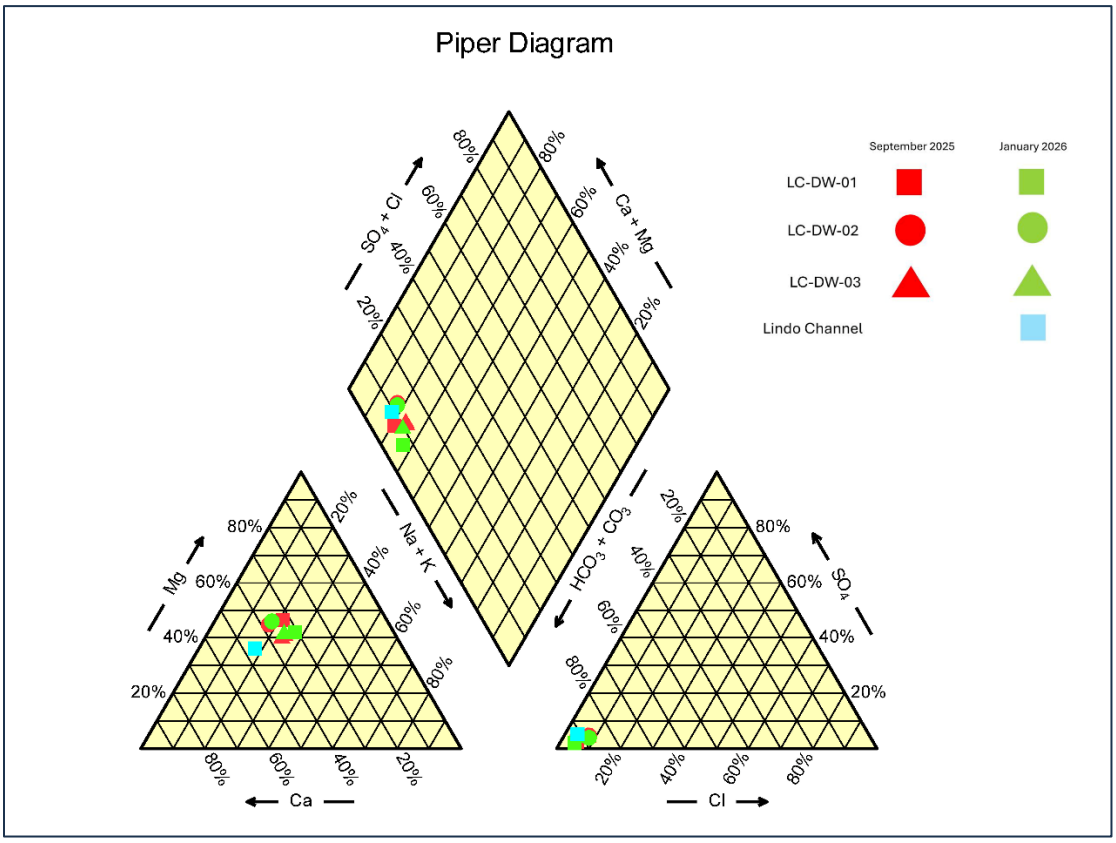


Figure 10. Piper Diagram

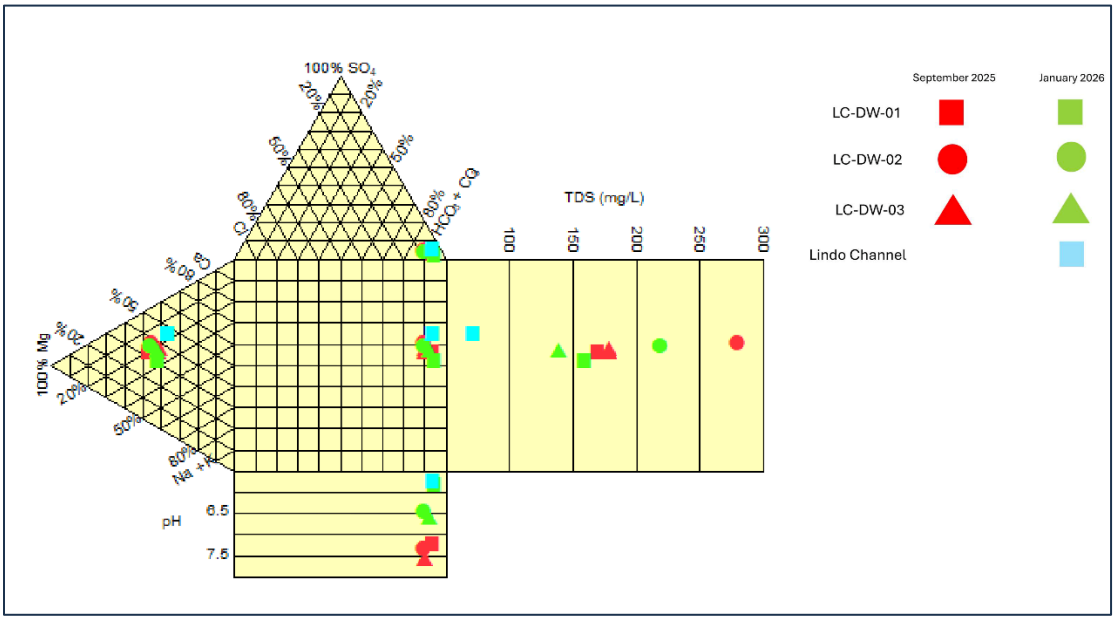


Figure 11. Durov Diagram

From the water level analysis discussed in Section 4.3, the Darcy based recharge per 1,000 ft of channel was computed as:

- LCDW03: 26.21 acre-ft/day per 1,000 ft
- LCDW01: 10.58 acre-ft/day per 1,000 ft
- LCDW02: 3.51 acre-ft/day per 1,000 ft

Multiplying those rates by the chemistry derived mixing fractions above gives a chemistry weighted share of Darcy recharge that is attributable to new channel water in the sampled interval:

- Per 1,000 feet of channel
    - LC-DW-03: 26.21 x 0.37 ≈ 9.7 acre-feet/day
    - LC-DW-01: 10.58 x 0.10 ≈ 1.1 acre-feet/day
    - LC-DW-02: 3.51 x 0.29 ≈1.0 acre-feet per day
- Scaled to the full Lindo Channel reach (5.43 mi)
    - LC-DW-03: ~279 acre-feet/day
    - LC-DW-01: ~31 acre-feet/day
    - LC-DW-02: ~29 acre-feet/day

These should be interpreted as event average, chemistry supported fluxes for the post storm sampling day, and, because they are diluted by legacy groundwater in the well screens, they represent an underestimation of instantaneous seepage rates at the channel boundary.

Isotopes confirm channel to aquifer recharge. As seen on Figure 12, the January 7, 2026 samples from the three domestic wells plot close to the Global Meteoric Water Line and toward the more depleted (lighter) values measured in the Lindo Channel during winter flow, consistent with rapid transmission of recent meteoric water from the channel into the shallow alluvium after the December 20, 2025 storm. The $\delta^{18}O$ shifted to more negative values in January 2026 relative to September 2025 samples in all wells, aligning with the winter creek/river signatures documented for the region (Upper Watershed / Lower Foothills inputs) and the regional observation that waters plotting along the GMWL without evaporative enrichment reflect direct meteoric recharge. The Butte County Stable Isotope Recharge Study (Brown and Caldwell, 2017) found that winter creek flows and shallow groundwater in the North/Chico area cluster on or near the GMWL with $\delta^{18}O$ about –9 to –11.5‰, indicating limited evaporation and active creek/river recharge to shallow zones, a pattern seen reproduced at the domestic wells following the storm (Brown and Caldwell, 2017, Findings 1 and 4). These findings also highlight that isotope seasonality in local creeks (e.g., Butte/Big Chico/Little Chico) imprints on adjacent groundwater after high flow events, especially near channels, as observed at LCDW03 (100 ft), which shows the strongest winter shift toward the stream endmember. For more information regarding isotopes throughout the basin, the Brown and Caldwell (2017) report is available at: https://www.buttecounty.net/1264/Stable-Isotope-Recharge-Project.

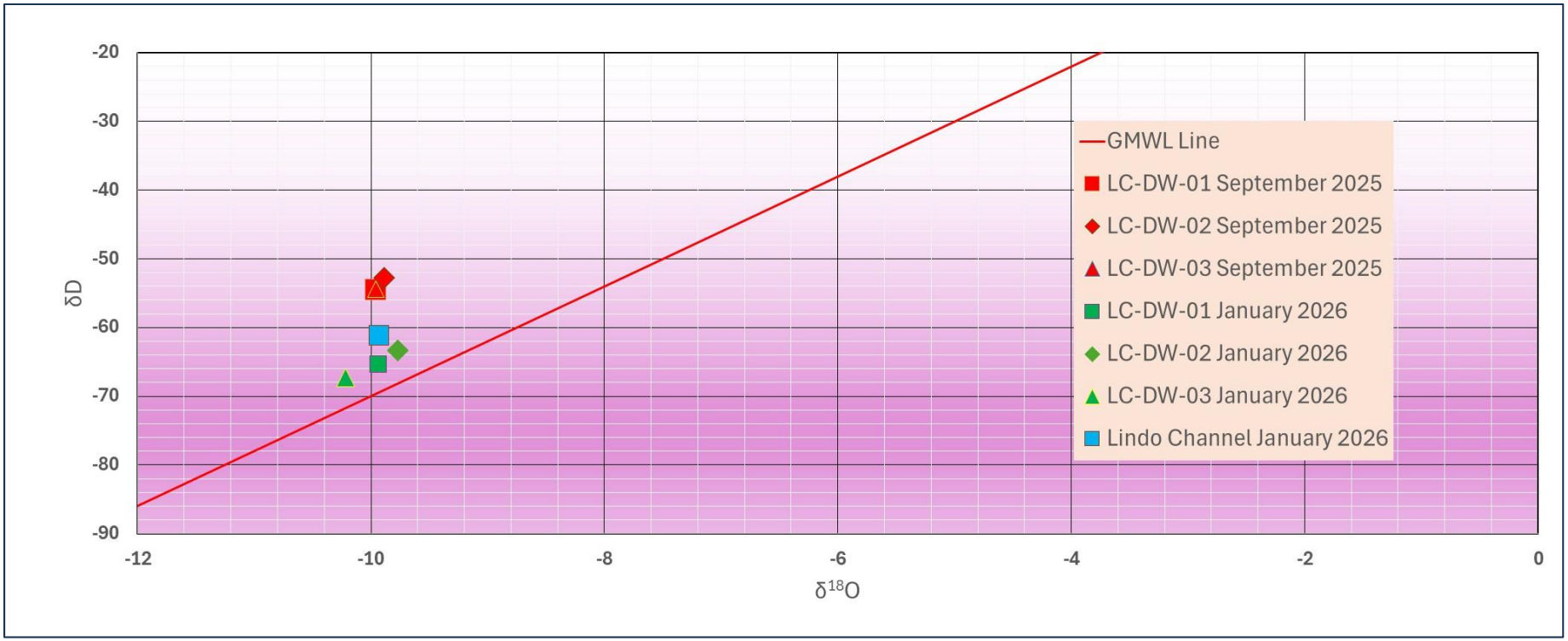


Figure 12. Stable Isotope data plotted relative to GMWL line.

5. SUMMARY OF WEST YOST MODELING

West Yost completed a series of hydrologic and hydraulic modeling evaluations to quantify how varying Big Chico Creek flow conditions influence the split of water between the mainstem, Lindo Channel, and the Sycamore/Mud Creek system, and to estimate the resulting groundwater recharge potential within Lindo Channel (Appendix A and B). The modeling incorporated channel geometry, historic and recent flow records, infiltration test results, and a range of saturated hydraulic conductivity values informed by field measurements.

West Yost developed an updated representation of the Five Mile diversion structures to evaluate the conditions under which water is delivered to Lindo Channel. The model assessed flow behavior under various storm events accounting for gravel accumulation and diversion structure performance. Results indicate that Lindo Channel receives more flow than Big Chico Creek for the relatively frequent events modeled with some water lost to Sycamore/Mud Creek, and that modest increases in delivered flow result in disproportionately higher recharge than siphoning portions of a large, infrequent event due to high infiltration capacity downstream of Highway 99.

Using a measured infiltration rate (24 ft/day) from the low range of observed values 30–100 ft/day, West Yost simulated the channel hydraulics through the unlined channel bed and calculated infiltration from channel hydraulic parameters. Calculated recharge volumes exceeded 600 acre-feet per day during a historic 2-year storm event, with peak values above 750 acre-feet per day during a historic 10-year storm event.

Scenario modeling evaluated changes in sediment management and modifications to the Sycamore Weir. Results showed that increasing the number of moderate storm events in which Lindo Channel receives flow provides the largest increase in annual recharge. Even small increases in percentage of water diverted produced meaningful improvements in total recharge.

Key findings from the report included:

- Lindo Channel is capable of high-volume, rapid groundwater recharge under a wide range of stormflow conditions.
- Recharge is strongly controlled by the initial flow delivered at Five Mile.
- The Highway 99 to Cussick Avenue reach consistently shows the highest infiltration and recharge efficiency.
- Increasing diversion days provides the greatest marginal gain in annual recharge.

6. SUMMARY, CONCLUSIONS, NEXT STEPS, AND KEY TAKEWAYS

6.1 Summary and Conclusion

The Feasibility of Enhanced Recharge in Lindo Channel project evaluates whether increasing flows into the natural, unlined Lindo Channel can meaningfully improve groundwater levels in the Vina Subbasin. Field investigations, including infiltration testing, flow measurements, continuous groundwater monitoring, and water quality sampling, demonstrate that the channel has a high capacity for groundwater recharge. Infiltration rates measured in the channel sediments range from 13 to 491 feet per day, consistent with well sorted sands and gravels observed in the channel bed. Flow measurements collected during periods when only diverted Big Chico Creek water was present show clear and progressive downstream losses of discharge, indicating substantial infiltration beginning near Highway 99 and continuing through the Cussick Avenue and West Sacramento Avenue reaches.

Groundwater levels recorded in adjacent domestic wells respond measurably to storm driven channel flows, with the magnitude and timing of the response varying by distance from the channel. Wells closest to Lindo Channel show rapid rises following storm events, confirming bank storage recharge into the shallow aquifer. Water quality and isotopic data further support this interaction: after winter flow events, groundwater chemistry shifts toward the dilute calcium bicarbonate signature of Lindo Channel water, and stable isotopes move toward more depleted winter meteoric values, indicating active channel-to-aquifer recharge. These data, combined with Darcy-based recharge calculations, suggest that during storm events the channel provides well over 100 acre-feet per day of groundwater recharge across the studied reach.

Collectively, the hydrologic, hydrogeologic, and geochemical evidence demonstrates that Lindo Channel is an effective and reliable conduit for enhancing shallow groundwater recharge under existing conditions. Recharge benefits appear strongest near Highway 99 and diminish gradually with distance from the channel but still propagate hundreds of feet into the surrounding aquifer. Based on the findings, it is our opinion that operational diversion of additional flows into Lindo Channel, when consistent with habitat and water rights constraints, could provide meaningful improvements to groundwater levels for nearby well users and support local groundwater dependent ecosystems. Continued monitoring, refinement of diversion criteria, and evaluation of needed infrastructure improvements are recommended to support future implementation.

The West Yost study accomplished two important goals to aid in understanding the hydraulic function of the flow split at Big Chico Creek and Lindo Channel. The first accomplishment is a two-dimensional model of the flow split, which had not been developed previously. The two-dimensional model builds upon previous efforts that relied on one-dimensional models for identifying the flow distribution at the split and increases the understanding of the flow distribution during relatively low discharge events in Big Chico Creek. The second accomplishment is developing an estimate of recharge in Lindo Channel during relatively low flow events and how the volume of water infiltrated during a single runoff event can increase with small changes in the flow distribution at the flow split. These results together illustrate that maximizing water from the most common events provides the greatest benefit to groundwater recharge over long periods.

From a SGMA implementation perspective, the results of this feasibility study indicate that Lindo Channel represents an effective mechanism for augmenting groundwater recharge during storm events and wet years, consistent with the recharge-focused management actions identified in the

Vina Subbasin GSP. The observed infiltration rates, documented groundwater level responses, and estimated recharge volumes indicate that enhanced flows could contribute meaningfully to groundwater level stabilization and long-term reduction of basin-scale overdraft when integrated with the broader portfolio of SGMA projects and management actions.

The findings presented in this report are intended to support long term planning under SGMA by identifying opportunities, constraints, and relative benefits associated with enhanced groundwater recharge in Lindo Channel. While the study identifies potentially promising alternatives and operational concepts, it does not commit the Vina GSA or its partners to project implementation. Advancement of any alternative would require further engineering evaluation, environmental analysis, coordination with regulatory agencies and stakeholders, and formal approval processes.

6.2 Recommended Next Steps for Increasing Flow Down Lindo Channel

The recommended next steps are to further analyze and refine alternatives based on the modeling presented here and considering the ecological impacts, constraints, and benefits of each of the alternatives. The selected alternatives should minimize impacts to Lindo Channel and Big Chico Creek while creating greater infiltration opportunities. Some alternatives recommended for additional environmental impacts analysis are provided below. These alternatives are not presented in ranked order. Any future refinement of alternatives should consider how enhanced recharge operations align with SGMA sustainability criteria and contribute to meeting groundwater level and recharge objectives identified in the GSP.

1. Modification of the Sycamore Bypass Weir that will allow for a temporary increase in crest height during frequent, relatively low flow events, which can be lowered during high flow events to maintain the flood control functionality of the system. Preventing water from leaving the Big Chico Creek – Lindo Channel system will enhance groundwater recharge.

2. Modifying the Lindo Channel bed to create temporary sinuosity and ponding for low flows. This action enhances groundwater infiltration by increasing the time water flowing down the Channel is in contact with the channel bed. Where modifications can be accomplished without significant impacts to habitat functions, enhanced groundwater recharge can be realized.

3. Storm drain improvements that prevent water from leaving the Big Chico Creek – Lindo Channel watershed will benefit recharge. In addition, housing and infrastructure reduce hydrologic loss, decrease infiltration, and increase runoff. Any modifications to the storm drain system that diverts runoff to the streams will enhance groundwater recharge. A study should be conducted to examine existing drainage patterns and explore opportunities to deliver water to Lindo Channel.

4. Identify opportunities to divert sheet flow to Lindo Channel that would otherwise drain to Sacramento River. Diverting sheet flows for frequent low flow events to Lindo Channel without disturbing environmental functions and values would enhance ground water recharge. Although recharge is occurring on agricultural lands where diversions of sheet flows could be made, it is expected that those agricultural lands have much lower permeability than within Lindo Channel.

5. Install permanent monitoring wells in areas west of Highway 99 to document groundwater recharge. The project's domestic wells, stilling wells, and DWR gauges show channel

water levels and groundwater responses are highly dynamic. Integrating this information into a real-time operations framework, like a "managed aquifer recharge dashboard," would allow operators to further identify the optimal times for allowing water to flow in Lindo channel while maintaining required flows in Big Chico Creek.

6. Engage in Multiagency Coordination and Long-Term Permitting. Long-term increases in flows to Lindo Channel will require coordinated planning with:
    - California Department of Fish and Wildlife
    - United States Army Corps of Engineers
    - Central Valley Flood Protection Board
    - Department of Water Resources
    - City of Chico
    - Butte County Public Works
    - Local water right holders
    - Other stakeholder groups (e.g., Cal Trout, Butte Environmental Council, etc.)

    Developing a programmatic permitting strategy (rather than event-by-event approvals) will greatly increase operational flexibility and reduce delays during short lived storm opportunities.

6.3 Key Takeaways

The following key takeaways summarize the primary findings, observations, and implications of this feasibility study.

- **Lindo Channel has strong recharge potential:** Field data, modeling, and water quality evidence consistently demonstrate that Lindo Channel can rapidly infiltrate storm and low flow water and effectively recharge the shallow groundwater system.
- **Recharge benefits are measurable and significant:** Groundwater level responses observed in nearby domestic wells, together with flow losses and modeling results, indicate that recharge during storm events commonly exceeds 100 acre-feet per day for the Lindo Channel reach from Highway 99 to the confluence with Big Chico Creek and can be substantially higher during sustained high flow periods.
- **Recharge supports SGMA objectives:** Enhanced recharge in Lindo Channel could meaningfully contribute to groundwater level stabilization, reduction of long-term overdraft, and advancement of recharge targets identified in the Vina Subbasin Groundwater Sustainability Plan (GSP). **Benefits are greatest downstream of Highway 99:** Multiple lines of evidence show that the Highway 99 to West Sacramento Avenue reach consistently provides the highest recharge efficiency due to favorable channel materials and hydrogeologic conditions.
- **Operational flexibility matters more than structural changes:** Modeling results indicate that increasing the frequency and duration of beneficial diversion events—while

maintaining habitat and water rights constraints—provides greater long-term recharge benefit than large, fixed infrastructure modifications.

- **This study informs future decisions, not implementation:** The analysis is feasibility level only. Any future project advancement would require additional engineering design, environmental review, permitting, funding, and coordination with regulatory agencies and stakeholders.

7. REFERENCES

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APPENDICES

APPENDIX A

West Yost Technical Memorandum

WEST YOST
Water. Engineered.

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MEMORANDUM

DATE: March 12, 2026

Project No.: 1123-80-24-01
SENT VIA: EMAIL

TO: Joseph B. Turner, PG, CHG
Senior Consultant
Geosyntec Consultants Inc.
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FROM: David A. Jaffe, PhD, PE, BC.WRE
Principal Engineer
West Yost
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SUBJECT: Lindo Channel Recharge Analysis

1 INTRODUCTION

This work is part of a larger effort under SGM grant VX0005 to assess opportunities to increase surface water recharge in Lindo Channel. This work includes the following elements:

1. Assess likely ecological flow requirements,
2. Compute expected recharge for relatively common events,
3. Evaluate potential flow diversions into Lindo Channel to increase total recharge,
4. Recommend improvements to increase recharge in Lindo Channel

The assessment of likely ecological flow requirements was presented in a previous technical memorandum, which can be found in Appendix A1. The approach and results of the remaining elements of the study are described here.

The study examines hydrology and hydraulics of Lindo Channel from upstream of the flow split from Big Chico Creek at Bidwell Park Golf Course to the confluence with Big Chico Creek (approximately 8.5 miles), Chico California (Figure 1). Several hydraulic structures are present in Lindo Channel, and a description of the structures can be found in USACE (1961) and USACE (1965). A description of the Big Chico Creek watershed and the creeks can be found in GEM (2001).

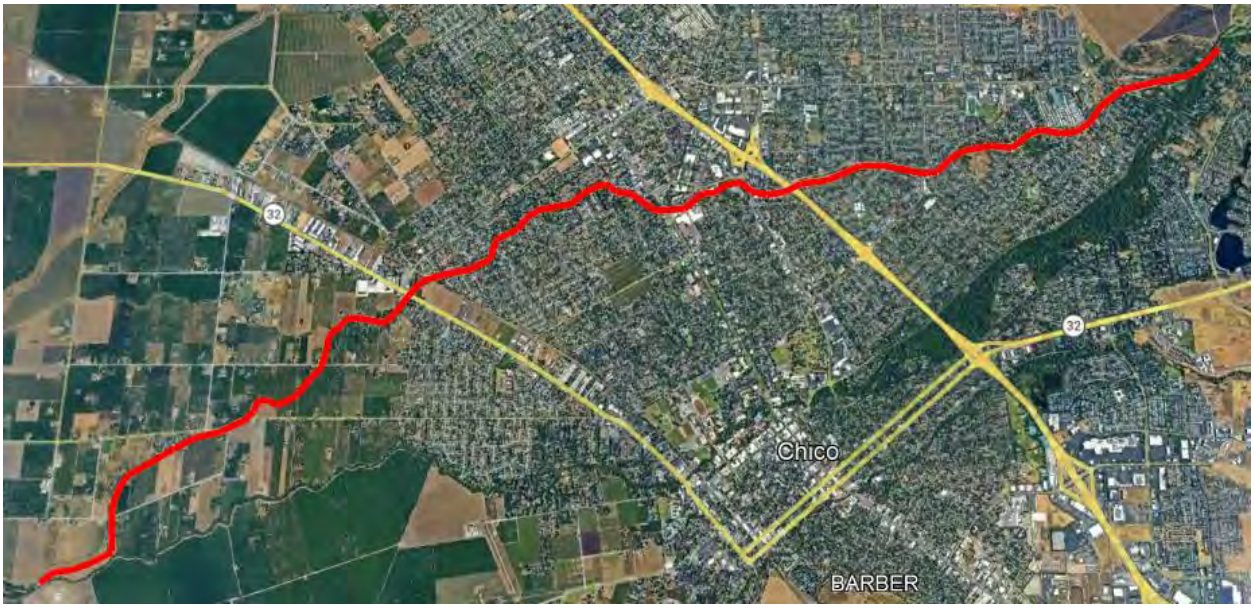


Figure 1. Lindo Channel (red), Chico, California

2 HYDROLOGY

2.1 Gage Data

To analyze infiltration in the Big Chico Creek system historical hydrologic data for the stream was obtained for the Big Chico Creek Stream Gage (BIC) from the California Data Exchage Center (CDEC). Hourly and 15-minute discharge (CFS) data is available for the gage beginning March 1997. The gage is located near Bidwell Park Golf Course at Golf Course Road.

The hourly gage data was uploaded into HEC-SSP for analysis. The hourly data was chosen instead of the 15-minute data because the latter data set many gaps that reconstruction of the data would lead to uncertainty. The gage data and the HEC-SSP analysis can be found in Appendix A2.

2.2 HEC-SSP Analysis

2.2.1 Return Period Calculations

Hourly data from BIC was loaded in HEC-DSS. To calculate return periods (annual probability) for individual storm events a statistical distribution must be selected. Reviewing test statistics, including KS and CS of the data indicated that the Gumbell distribution has the best fit to the gage data. However, Log-Pearson Type III (LP3) (Figure 2) was ultimately selected as the most representative distribution because the Gumbell distribution produced negative values for discharge for the most frequent events (e.g., 1-year, 2-year).

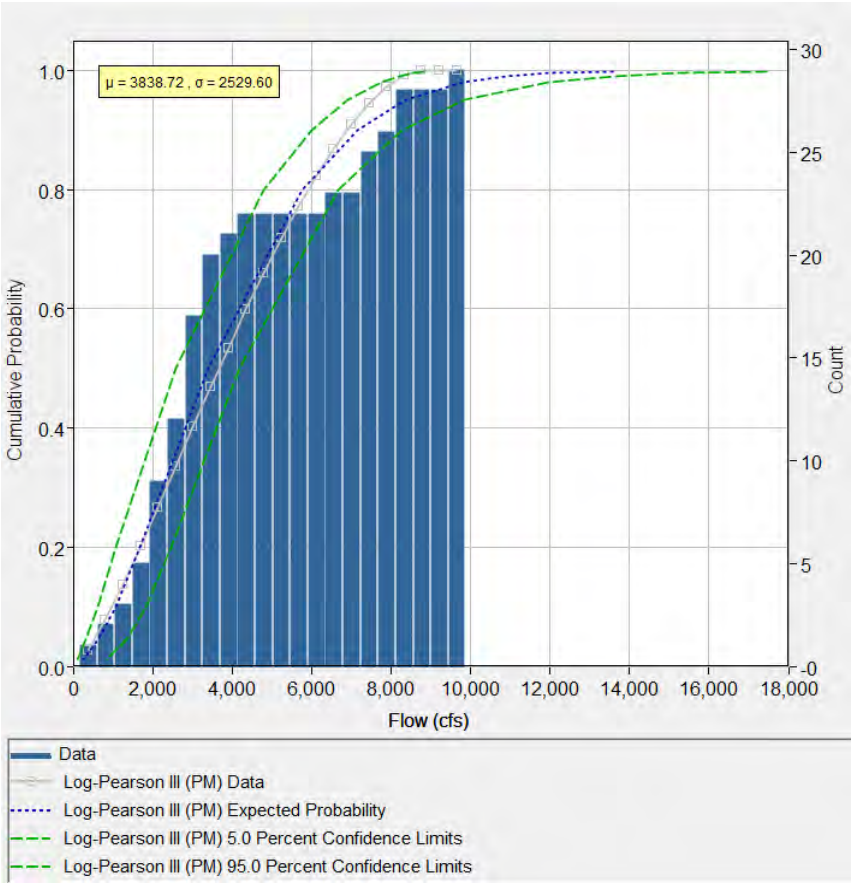


Figure 2. Log-Pearson Type III Cumulative probabilities by discharge for Big Chico Creek gage (BIC)

The flood flow frequency calculations were performed using LP3 and the discharges for 1-, 2-, and 10-year return periods. The results are shown in Table 1. Once the representative discharges were determined the gage data was reviewed to find representative historical events to use for numerical modeling. The approach to use historical events is preferred over the development of synthetic hydrographs for infiltration analysis because the total runoff volume and hydrograph shape of historic events may not be well represented by numerical methods.

Table 1. Discharge by return period for Big Chico Stream Gage (BIC)

Return Period (Years)	Discharge (CFS)	Representative Historical Event
1	254	1/18/12
2	3388	1/13/16
10	7163	3/14/23

2.2.1 Selection of Representative Hydrographs

The complete record for the BIC gage was reviewed and peak discharges for all events in the gage record that approximated the results (+/- 10% of the peak) of the flood flow frequency analysis for the 1-, 2-, and 10- year events were identified. The hydrographs for each return period were then compared for duration, hydrograph qualitative shape, and total volume. One event for each return period was selected for infiltration numerical modeling. It should be noted that every runoff event creates a unique hydrograph depending on the characteristics of the precipitation, antecedent soil moisture, and other watershed characteristics. For the purposes of this study a "perfect" hydrograph doesn't need to be identified, but rather one that is representative of the common hydrologic characteristics for each return period. The dates of the selected representative historic hydrographs are shown in Table 1. Table 2 compares the flood flow frequency peak discharges with the selected historical hydrograph peak discharges.

Table 2. Flood flow frequency (FFF) peak discharge and selected representative (SR) peak discharge by return period for Big Chico Stream Gage (BIC)

Return Period (Years)	FFF Discharge (CFS)	SR Discharge (CFS)
1	254	250
2	3388	3463
10	7163	7163

The selected representative hydrographs (Appendix A2) are used for modeling of the flow split at Big Chico Creek and Lindo Channel to determine the flows down each channel for infiltration modeling.

3 SPLIT FLOW HYDRAULIC MODELING

3.1 HEC-RAS Two-Dimensional Model

3.1.1 Model Topography

A HEC-RAS two-dimensional model of the flow split of Big Chico Creek and Lindo Channel was developed to determine the discharges flowing down each channel. At the time of writing no other studies have used two-dimensional modeling to determine the flow split between the two streams. At a public engagement and stakeholder meeting on project progress (11/13/24) members of the public offered anecdotal comments about the flow distribution. No qualitative or quantitative anecdotal information subsequently became available for flow split model calibration or verification.

Two different terrains were used to model the flow splits: 1) a terrain derived from LiDAR representing existing conditions, and 2) a terrain developed based on as-built plans for the system of US Army Corps of Engineers (USACE) flood control structures present at the split. The existing conditions terrain was taken from a previously developed Wood Rogers one-dimensional model of the system with the terrain dated November 2021. The as-built terrain was created by NorthStar for flood modeling and is dated March 2025. The differences between the two terrains largely result in accumulation of sediment after the construction of the USACE flood control facilities. The existing conditions terrain data is shown in Figure 3. Both terrain data sets are provided in Appendix A3.

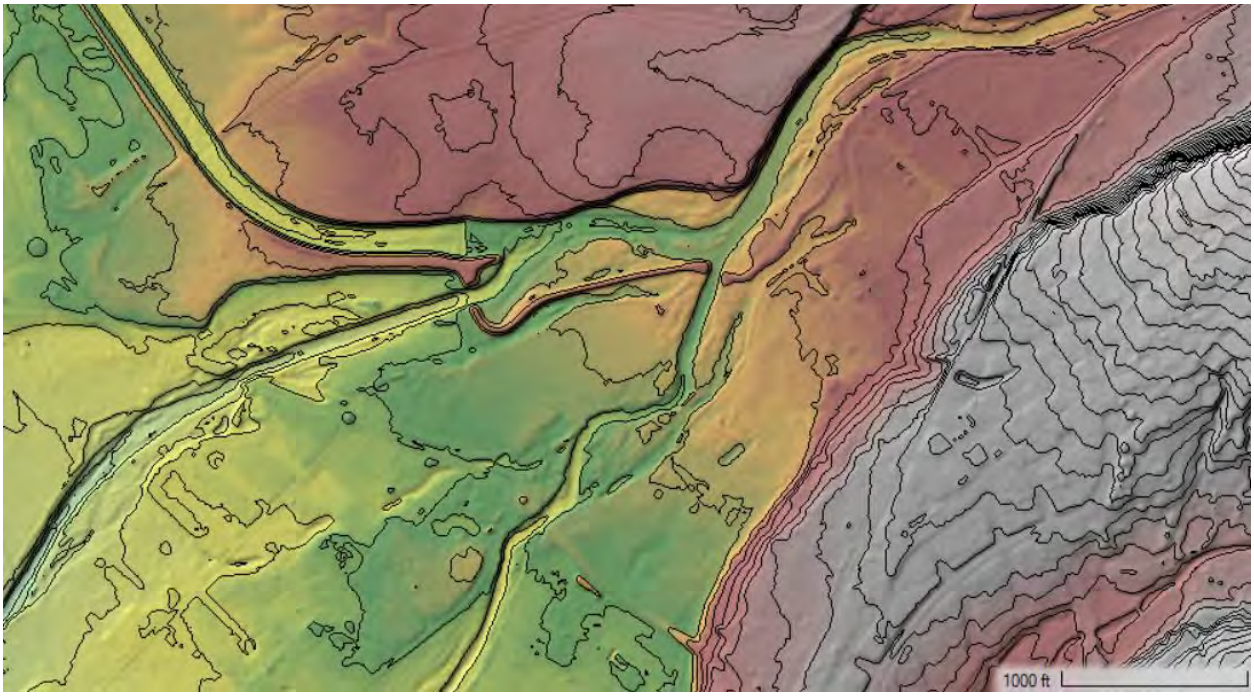


Figure 3. Existing conditions terrain data of Big Chico Creek at the Lindo Channel flow split. Note that the bridges and other structures have been removed from the terrain.

3.1.1 Model Development

The two-dimensional HEC-RAS model was assembled using either the existing or as-built terrain data. Bridge data was taken from the Wood Rogers one-dimensional model. Manning's values were taken from the Wood Rogers model and adjusted based on engineering judgement. The inflow hydrographs were taken from the flood flow frequency analysis for the 1-, 2-, and 10-year discharges and the downstream boundary condition assumed normal depth. The model mesh is 20 feet. All HEC-RAS model files are included in Appendix A3.

3.1.1 Model Results

The flow split model was run for six scenarios including the existing and as-built terrains for the 1-, 2-, and 10-year hydrographs. An example of the model output flow distribution is shown in Figure 4 and the flow distribution for the six model runs is shown in Table 3. The table shows an increase in discharge in Lindo Channel below the flow split for the as-built condition terrain compared to the existing condition terrain for all return periods modeled. Likewise, there was a decrease in discharge in Big Chico Creek below the flow split for the as-built condition terrain compared to the existing condition terrain for all return periods modeled. It is important to note that the maximum discharge in each channel may not sum to the peak discharge at the upstream boundary because of channel storage and resulting from water discharging to the Sycamore Bypass Channel to the northwest of the split (Figure 4). Hydrographs based on the flow split modeling output become the inflow boundary conditions for the one-dimensional infiltration modeling.

One additional flow split model run was completed for the 2-year event. The additional run includes a modification to the Sycamore Bypass Weir so that the weir crest is raised approximately 2 feet. The intent of the run is to assess if raising the weir temporarily using an inflatable gate or related equipment during low flow events will divert additional volume down Lindo Channel. Note that neither Lindo Channel nor

Big Chico Creek are at flood stage when water begins to spill into Sycamore Bypass in the modeling. The results are shown in Figure 5. The results indicate that preventing low flows from entering Sycamore Bypass increases the total volume of water available for infiltration in Lindo Channel. Note the decreased breakout upstream of Lindo Channel and the increased breakout in Lindo Channel downstream of the flow split.



Figure 4. Example two-dimensional split flow model output for the existing terrain condition 2-year hydrograph.

Table 3. Discharge below the Big Chico Creek / Lindo Channel flow split for the existing (EX) and as-built (AB) terrains

Return Period (Years)	EX Discharge (CFS)	AB Discharge (CFS)
Lindo Channel		
1	212	248
2	1888	2126
10	2976	2996
Big Chico Creek		
1	36	0
2	432	87
10	768	362



Figure 5. Model output for the two-dimensional split flow model output for the existing terrain with raised Sycamore weir condition 2-year hydrograph.

4 INFILTRATION MODELING

4.1 HEC-RAS One-Dimensional Model

The Wood Rogers one-dimensional HEC-RAS model was used to develop hydraulic output for infiltration calculations. The only changes to the Wood Rogers model were updates to the inflow hydrographs to represent outflow from the two-dimensional split flow model. The model files and inflow hydrographs are found in Appendix A3. It is noted that the hydrographs used for infiltration modeling represent a "leaky weir" scenario, while the split flow modeling output from the two-dimensional modeling doesn't account for these losses. The difference in total discharge is about one percent and does not change the conclusions derived from infiltration modeling. An example of the one-dimensional inflow hydrographs is shown in Figure 6.

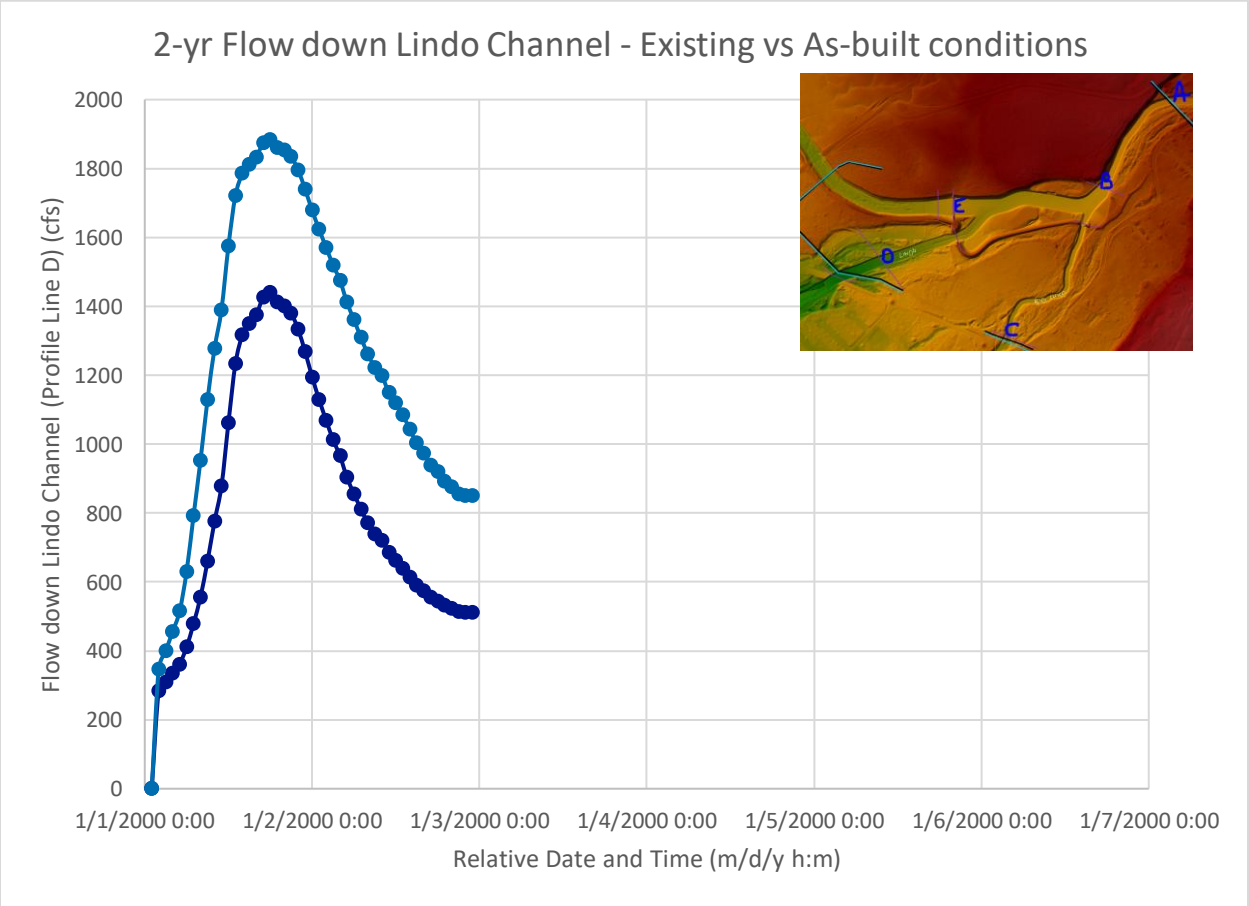


Figure 6. Example of the inflowing hydrograph for the one-dimensional HEC-RAS model. The hydrographs show the two-dimensional model output for the existing and as-built terrain conditions. Light blue represents the as-built condition and dark blue represents the existing condition.

4.2 Infiltration Calculations

Infiltration is calculated for every model cross section at every time step. Using the hydraulic output the volume of infiltration is calculated as:

$$V_{inf} = \Delta t \;\; b \;\; L \;\; R_{inf} \qquad (1)$$

where V_{inf} is the infiltrated volume, Δt is the model time step, b is the model hydraulic top width, L is the distance between model cross sections, and R_{inf} is the infiltration rate. The infiltration rate is fixed at 1 inch/hour and is taken from measurements by Geosyntec conducted as part of this study. It is assumed that there are no saturated soils, and the infiltration rate is constant in time and does not vary in the along-stream direction. Each model parameter is calculated at every cross section at every time step, and the sum of the infiltrated volume is the total volume infiltrated during the runoff event. This approach is simpler than others (i.e., Green-Ampt, etc.) but doesn't require calibration or verification. Total infiltration volume was calculated for the six events shown in Table 2.

4.3 Model Results

An example of the infiltrated volume is shown in Figure 7a-c. Figure 7a and 7b show discharge and incremental infiltration volume vs. time for the 2-year existing bed condition and as-built bed condition model runs, respectively. Both figures show that the peak infiltration rate lags slightly behind the peak of the hydrograph entering the model domain, which is the result of the time for the channel filling with runoff. Both figures also show that the rate of change in infiltration rate is at a flatter slope than the recession rate of the falling limb of the hydrograph. This difference results from a relatively narrow channel bottom with relatively steep banks so that the channel bottom is inundated during most of the falling limb of the hydrograph. Figure 7c compares the cumulative infiltration volume vs. time for the 2-year existing condition and the as-built condition. The figure shows that the as-built condition allows for a 6% increase in infiltration (734 acft) over the existing condition (696 acft) in Lindo Channel because more water flows down Lindo Channel in the as-built condition. The 38 acft increase is more than could reasonably be diverted from the peak of the hydrograph during a flood event. The 10-year discharge event as-built bed condition shows a similar increase (7%) in total infiltrated volume (31,791 acft) compared to the existing bed condition (29,646 acft) (see Appendix).

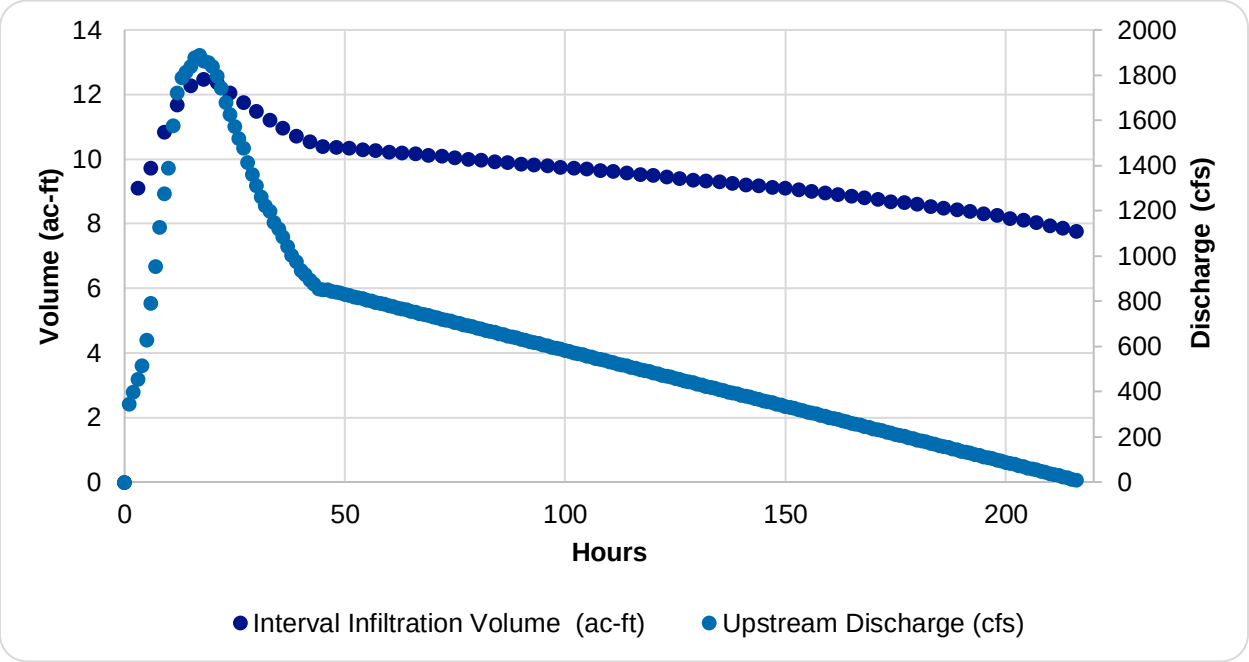


Figure 7a. Discharge and Incremental Infiltration Volume in Lindo Channel vs. Time for the 2-year existing bed condition

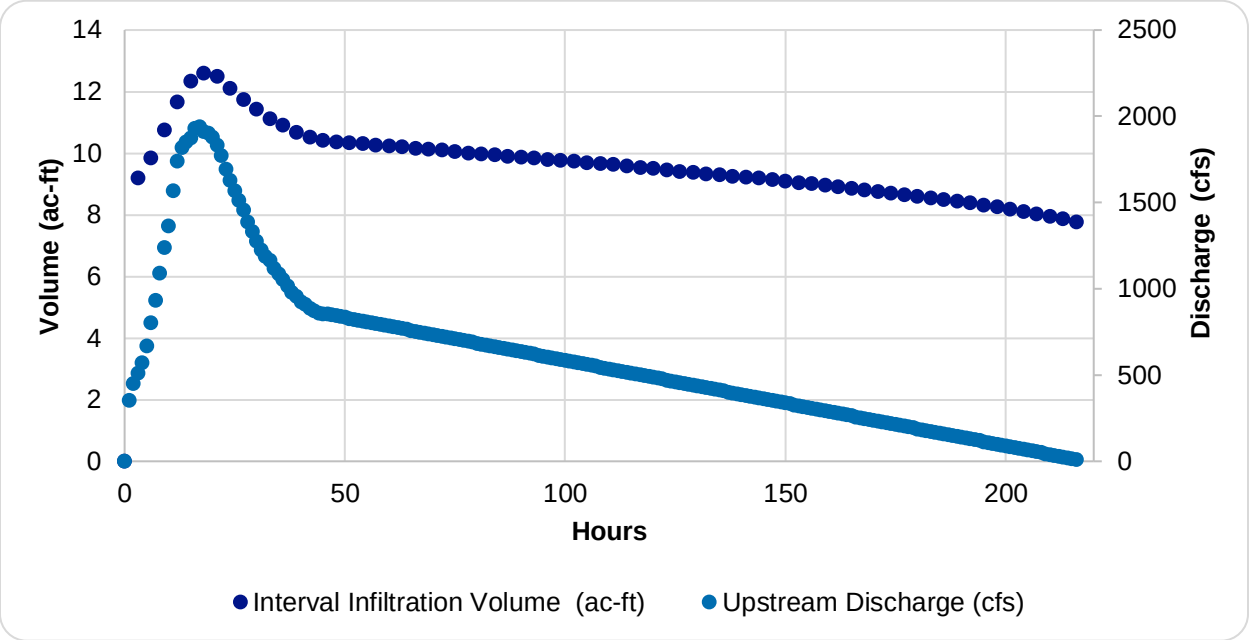


Figure 7b. Discharge and Incremental Infiltration Volume in Lindo Channel vs. Time for the 2-year as-built bed condition

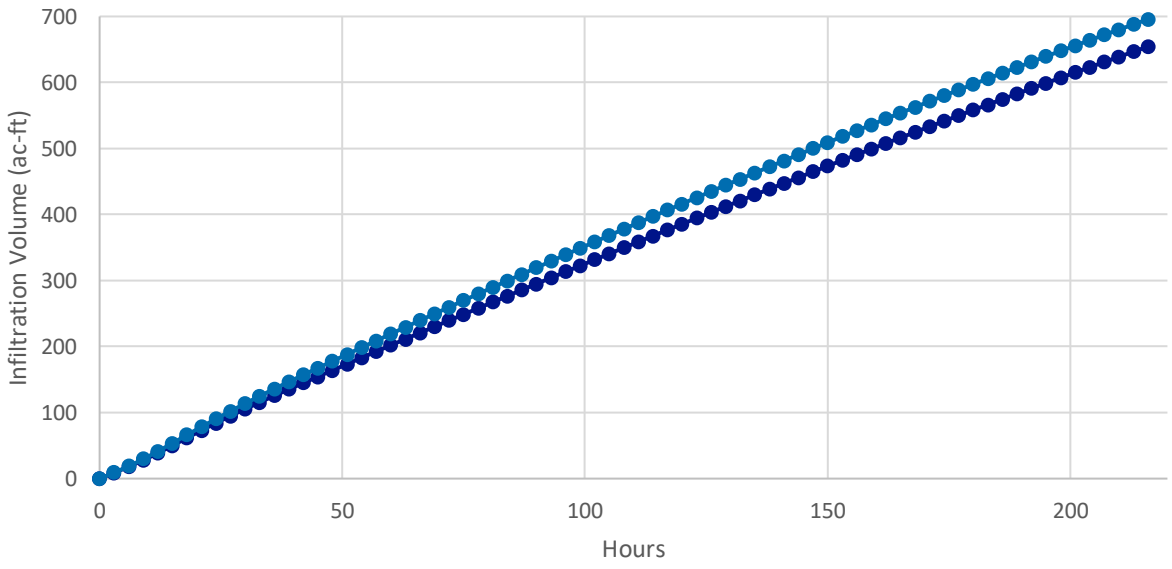


Figure 7c. 2-year Storm Cumulative Infiltration Volume in Lindo Channel, existing and as-built condition vs. time. Light blue represents the as-built condition and dark blue represents the existing condition.

5 RECOMMENDATIONS

The present study has accomplished two important goals to aid in understanding the hydraulic function of the flow split at Big Chico Creek and Lindo Channel. The first accomplishment is a two-dimensional model of the flow split, which had not been developed previously. The two-dimensional model builds upon previous efforts that relied on one-dimensional models for identifying the flow distribution at the split and increases the understanding of the flow distribution during relatively low discharge events in Big Chico Creek. The second accomplishment is developing an estimate of recharge in Lindo Channel during relatively low flow events and how the volume of water infiltrated during a single runoff event can increase with small changes in the flow distribution at the flow split. These results together illustrate that maximizing the amount of water from the most common events provides the greatest benefit to groundwater recharge over long periods.

The recommended next step is to further analyze and refine alternatives based on the modeling presented here and considering the ecological impacts, constraints and benefits of each of the alternatives. The selected alternatives should minimize impacts (ecological, hydrologic, etc.) to Lindo Channel and Big Chico Creek while creating greater infiltration opportunities. Some alternatives recommended for additional environmental impacts analysis include the following:

1. Modification to the Sycamore Bypass Weir that will allow for a temporary increase in crest height during frequent, relatively low flow events, and which can be lowered during high flow events to maintain the flood control functionality of the system. Preventing water from leaving the Big Chico Creek – Lindo Channel system will enhance groundwater recharge.
2. Grading in the Lindo Channel bed that creates temporary sinuosity and ponding for low flows. This alternative enhances ground water infiltration by increasing the time water flowing down the Channel is in contact with the bed. Where grading can be accomplished without significant impacts to habitat functions and groundwater recharge can be realized.
3. Storm drain improvements that prevent water from leaving the Big Chico Creek – Lindo Channel watershed will benefit recharge. In addition, existing impervious portions of the watershed (e.g., housing, roadways, infrastructure, etc.) have historically reduced hydrologic loss, decreasing infiltration, and increasing runoff. Any modifications to the storm drain system that diverts runoff to Lindo Channel will enhance groundwater recharge. A study should be conducted to examine existing drainage patterns and explore opportunities to deliver water to Lindo Channel.
4. Identify opportunities to divert sheet flow – shallow surface runoff - to Lindo Channel that would otherwise drain to Sacramento River. Diverting sheet flows for frequent low flow events to Lindo Channel without disturbing environmental functions would enhance ground water recharge. Although recharge is occurring on agricultural lands where diversions of sheet flows could be made, it is expected that those agricultural lands have much lower permeability than within Lindo Channel.

6 REFERENCES

Geo Environmental Management 2001. Sandy Gulch (Lindo Channel) Resource Inventory. Techni al Report for City of Chico Parks Department. July.

United States Army Corps of Engineers (USACE) 1961. Chico and Mud Creeks and Sany Gulch General Design. Design Memorandum No. 5 Sacramento River and Major and Minor Tributaries, California. June.

United States Army Corps of Engineers (USACE) 1965. Operation and Maintenance Manual for Chico and Mod Creeks and Sandy Gulch, Sacramento River and manor and minor Tributaries Project, California. May.

7 APPENDICIES

A1. Ecological Flows Assessment

A2. HEC-DSS

A3. HEC-RAS

A4. Infiltration Calculations

APPENDIX B

West Yost Supporting Technical Memorandum

WEST YOST
Water. Engineered.

23692 Birtcher Drive
Lake Forest CA 92630

949.420.3030 phone
530.756.5991 fax
westyost.com

TECHNICAL MEMORANDUM

DATE: November 1, 2024

Project No.: 1123-80-24-01
SENT VIA: EMAIL

TO: Vina Groundwater Sustainability Agency

FROM: David A. Jaffe, PhD, PE, D.WRE

REVIEWED BY: DRAFT

SUBJECT: Ecological Flow Recommendation for Lindo Creek Diversion (DRAFT)

BACKGROUND AND OBJECTIVES

Goals:

1. Estimate volume of flow for in-stream recharge in Vina Creek/Lindo Channel.
2. Estimate the volume of water that needs to remain in Big Chico Creek for riparian habitat, fish passage and other environmental benefits.

Background

The California Environmental Flows Framework (CEFF) was developed by the California Water Quality Monitoring Council in partnership with UC Davis. The Environmental Flows Framework is based on Functional Flows, which are components of the hydrograph that perform specific ecologic or geomorphic functions at different times throughout the year. Function Flows are used to develop "scientifically defensible environmental flow recommendations that balance human and ecosystem needs for in-stream flows."[1]. CEFF calculations use stream gage data provided by the user.

In collaboration with the Environmental Flows Framework, USGS and the Nature Conservancy developed the Natural Flows Database (NFD). Natural Flows uses a state-wide statistical model that generates estimates of natural flows, which are defined for wet, dry, and moderate climatic

[1] California Environmental Flows Framework. Accessed 9/1/2024. https://ceff.sf.ucdavis.edu/frameworkoverview

conditions that output streamflow estimates for streams without anthropogenic modification. The Natural Flows database estimates functional flows based on the following flow predictor variables: watershed characteristics, rainfall and, temperature data. The relationship between flow predictor variables was established using machine learning models developed from reference stream gages.

Gao et al. (2018)[2] (hereafter, Gao) used separate calibrations of the Soil and Water Assessment Tool (SWAT) based on wet and dry years to improve simulation efficiency in a watershed with high interannual rainfall variability. The authors employed a relative deviation percentage method to separate the rainfall record into wet and dry years based on long-term annual runoff. To separate the annual runoff into wet and dry years, years that annual runoff was greater than the mean annual runoff were identified as wet years, while those that were less than the mean annual runoff were identified as dry years.

Setting

The Big Chico Creek watershed is in Tehama and Butte Counties, California, and has a total watershed area of approximately 235 square miles. The headwaters of the Creek are located near Colby Mountain and the total stream length is approximately 46 miles from the headwaters to the confluence with the Sacramento River. The Creek travels through the City of Chico upstream of Sacramento River. Big Chico Creek flow is partially diverted into Lindo Channel at Five-Mile Dam. Lindo Channel is a natural, ephemeral stream on the Chico alluvial fan. The Channel was modified above Manzanita Avenue, Chico, for flood control purposes in the early 1960's. The Channel runs east to west, parallel to Big Chico Creek, for approximately eight miles before it confluences with Big Chico Creek approximately 2.5 miles upstream of the Sacramento River.

[2] Gao, X., X. Chen, T. Biggs, and H. Yao (2018) Separating Wet and Dry Years to Improve Calibration of SWAT in Barrett Watershed, Southern California. *Water* **2018**, *10*, 274; doi:10.3390/w10030274.

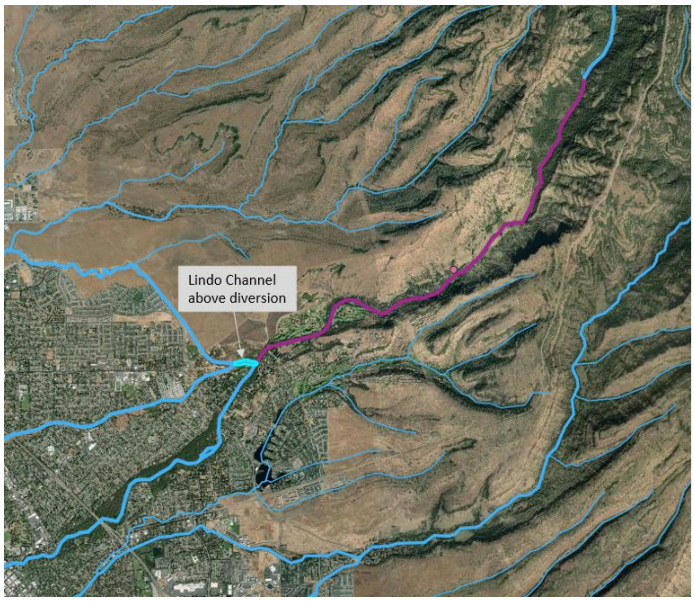


Figure 1. Location of Lindo Channel Diversion Below Big Chico Creek (Pink)

Approach

Environmental flow statistics are calculated using CEFF, NFD and Gao and results of the calculations are compared. CEFF and Gao use local gage data (CDEC gage BIC-20) for the period of the gage record (1997 to present). Examining older gage data near BIC-20 (Big Chico C NR Chico CA – 11384000, active 1960 – 1971) suggests that the historical data is statistically insufficiently like BIC-20. Therefore, it is not recommended to augment BIC-20 historical data with 11384000 data. The CEFF and Gao calculations provide a point of reference for achieving environmental flow targets in Big Chico Creek and as well as in Lindo Channel. The calculations also address environmental benefits on both channels while providing guidance for management of the Lindo Channel diversion. Finally, the calculations provide a baseline for potential recharge volume for a range of annual runoff conditions in the Channel.

BIC-20 gage data was input into the CEFF calculator, which output a broad spectrum of average functional flow values for each year of gage data. The gage data statistics were developed after Gao to separate each annual runoff volume into wet, average, or dry year categories. Finally, NFD statistics were generated for the reach of the Creek directly above the diversion.

Table 1 compares the environmental flow statistics for Big Chico Creek near Lindo Channel using CEFF and NFD. For most statistical categories NFD regional regression discharge values under-predict CEFF gage-based statistics by more than 10%. When NFD over predicts CEFF statistics the difference in values is greater than 10% for all categories. Despite the relatively short period of record (27 years) CEFF appears to be the preferable environmental flow statistical approach since it is based on flow data at the stream project reach instead of regional regression.

Table 1: Comparison of CEFF and NSD environmental flow statistics for Big Chico Creek at BIC-20.

CEFF Functional Flow Parameters	CEFF	NFD			
	Average All Years[i]	All Years	Wet Years	Moderate Years	Dry Years
Fall pulse magnitude	89 cfs	65 cfs	97 cfs	71 cfs	54 cfs
Fall pulse timing	27 cfs	10/23	10/20	10/25	10/25
Fall pulse duration	4 days	9 days	-	-	-
Wet-season low baseflow	63 cfs	70 cfs	94 cfs	71 cfs	42 cfs
Wet-season median baseflow	231 cfs	205 cfs	355 cfs	206 cfs	129 cfs
Wet-season timing	79 cfs	12/5	12/4	12/4	12/14
Wet-season duration	79 cfs	142 days	149 days	142 days	126 days
2-year flood magnitude	1906 cfs	2360 cfs	-	-	-
5-year flood magnitude	3159 cfs	-	-	-	-
10-year flood magnitude	3589 cfs	-	-	-	-
2-year flood duration	4 cfs	3 days	-	-	-
5-year flood duration	1 cfs	-	-	-	-
10-year flood duration	1 cfs	-	-	-	-
2-year flood frequency	2 cfs	2 occurrences	-	-	-
5-year flood frequency	1 cfs	-	-	-	-
10-year flood frequency	1 cfs	-	-	-	-
Spring recession magnitude	1364 cfs	551 cfs	858 cfs	549 cfs	341
Spring timing	158 cfs	4/20	4/19	4/27	4/18
Spring duration	88 cfs	51 cfs	50 cfs	51 cfs	53 cfs
Spring rate of change	0 cfs	6.6%	-	-	-
Dry-season median baseflow	28 cfs	18 cfs	25 cfs	19 cfs	13 cfs
Dry-season high baseflow	46 cfs	36 cfs	46 cfs	36 cfs	29 cfs
Dry-season timing	247 cfs	6/22	6/23	6/27	6/22
Dry-season duration	200 cfs	161 cfs	161 cfs	159 cfs	162 cfs

[i] CEFF Flows are not seasonally dependent, 50th percentile annual flows are reported.

The environmental flow statistics for Big Chico Creek near Lindo Channel using CEFF and Gao methodologies are compared in **Table 2**. Discharges calculated using the two methodologies differed by an average of 8%. The difference between CEFF and Gao discharges (8%) is smaller than the difference between CEFF and NFD discharges (>10%). This is the expected outcome since the CEFF and Gao methods use the same BIC-20 gage data. Approximately two thirds of the years are statistically dry (20 of 28 years based on Gao deviation percentage), as shown in the 'Gao Water Year Type' column.

Table 2. CEFF and Gao flow statistics for Big Chico Creek near Lindo Channel

Water Year	CEFF Discharge (cfs)[ii]	Gao Discharge (cfs)	Gao Water Year Type
1997	0	5	DRY
1998	266	240	WET
1999	169	143	WET
2000	122	107	DRY
2001	74	65	DRY
2002	112	98	DRY
2003	287	269	WET
2004	141	129	DRY
2005	124	110	DRY
2006	348	331	WET
2007	62	62	DRY
2008	78	78	DRY
2009	112	100	DRY
2010	133	133	DRY
2011	209	196	WET
2012	76	64	DRY
2013	82	80	DRY
2014	42	40	DRY
2015	-	37	DRY
2016	-	113	DRY
2017	-	445	WET
2018	-	83	DRY
2019	-	296	WET
2020	61	61	DRY
2021	36	36	DRY
2022	77	77	DRY
2023	214	214	WET
2024	163	127	DRY

[ii] The CEFF calculator does not accept water year flow data with more than 7 total days of missing data and more than 1 consecutive day of missing data. Therefore, water years 2014 - 2018 have been excluded from the CEFF calculation table.

Rating Curve and Runoff Volume

Wet and dry years were determined based on volume of annual runoff using the Gao method. The Gao method calculates the average annual runoff for each year of the period of record (from volumetric rate gage data in cubic feet per second), then calculates the relative deviation percentage for each year from the annual average runoff. The relative deviation percentage shows how big of a positive or negative difference one year's value is from the average. Once found, the positive and negative relative deviation from the annual average signifies a wet or dry year, respectively, based on the sign. In other words, whether the annual runoff for a given year is below or above the annual average runoff of all years signifies whether it is a dry or wet year, respectively.

As shown in Table 3, the BIC-20 gage data indicates that a dry year occurs 71% of the time over the period of record. While the wet year median runoff is 62% higher than the annual average runoff, the dry year median runoff is 51% lower than the annual average runoff. The number of Below Rating Table (BRT) values that were recorded each year is also shown in Table 3. When the gage records BRT then the depth of flow at the gage is lower than the gage was set up to record. Years with higher BRT counts suggest dry periods because a longer duration of time low accounted for flows were not sufficient to be recorded by the gage. It is important to note that years with a high number of BRT values can still be statistically wet based on the total volume of runoff for the year. In such a year the total runoff volume can remain sufficiently high because of one or more high runoff-volume events during the year. During the 2011-2017 drought period in California the gage recorded the third highest BRT count in 2017 (the two highest annual BRT counts were also occurred during this period in 2015 and 2016) but was considered a wet year by total runoff volume. A similar high BRT count/high annual total runoff volume occurred again in 2019. This data suggests that the stream may be moving into a period with high total annual runoff with lower or more intermittent base flow.

Table 3. Wet And Dry Annual Runoff Volume By Relative Deviation Percent At Gauge Bic-20

Water Year	Annual Runoff (Acft)	Relative Deviation %	Wet Or Dry?	"Below Rating Table" Count Per Water Year
1997	3,408	-96.5	DRY	18
1998	173,421	79.4	WET	76
1999	103,500	7.1	WET	94
2000	77,594	-19.7	DRY	38
2001	46,710	-51.7	DRY	118
2002	71,098	-26.4	DRY	42
2003	195,074	101.8	WET	8
2004	93,713	-3.1	DRY	7
2005	79,598	-17.7	DRY	-
2006	239,575	147.8	WET	1
2007	44,607	-53.9	DRY	-
2008	56,410	-41.6	DRY	-
2009	72,207	-25.3	DRY	-
2010	96,088	-0.6	DRY	-
2011	141,925	46.8	WET	-
2012	46,577	-51.8	DRY	2
2013	57,853	-40.2	DRY	-
2014	28,932	-70.1	DRY	-
2015	26,866	-72.2	DRY	5994
2016	81,874	-15.3	DRY	7385
2017	322,262	233.4	WET	4117
2018	60,430	-37.5	DRY	7363
2019	214,062	121.4	WET	2981
2020	44,205	-54.3	DRY	-
2021	26,242	-72.9	DRY	-
2022	55,415	-42.7	DRY	-
2023	154,935	60.3	WET	-
2024	92,018	-4.8	DRY	-
Median	**74,900**		**% Dry**	**71%**
Average	**96,664**		**% Wet**	**29%**

A comparison of rating table values is shown in **Table 4**, where 12% of the values in the BIC-20 gage data reported as "below rating table", or "BRT". When the gage reads a BRT value, the streamflow is below a minimum threshold, and cannot be recorded by the gage. Years with higher "BRT" detection levels signify dry periods.

Table 4. Non-numerical values found in BIC-20 gage data

Count of specific values in "flow" column			
BRT	ART	BLANKS	Total Count
28244	12171	422	238,249
12%	5%	0.2%	

Recommendations

Both CEFF and Gao are based on stream gage data from BIC-20 and produce results that are similar. The NFD data, by contrast, is based on regional regression and produces statistics that are less similar than the gage-based methods. It is recommended to use CEFF and Gao results in lieu of NFD results for recharge calculations, environmental compliance, and operational decisions. Additionally, it is recommended to continue to exploit gage data for understanding drought and potential future conditions.

APPENDIX C

Geologic Well Logs

ORIGINAL
File with DWR

NOV 2 3 2015

Page 1 of 1

Owner's Well No. _____

STATE OF CALIFORNIA
WELL COMPLETION REPORT
Refer to Instruction Pamphlet
No. 0952283

DWR USE ONLY — DO NOT FILL IN
22N/01E-12
STATE WELL NO./STATION NO.
LATITUDE LONGITUDE
APN/TRS/OTHER

Date Work Began 7-28-15, Ended _____

Local Permit Agency Butte County Health Dept

Permit No. EHWS15-0143 Permit Date 7-27-15

GEOLOGIC LOG

ORIENTATION (✓) X VERTICAL ___ HORIZONTAL ___ ANGLE ___ (SPECIFY)

DRILLING METHOD Air Rotary FLUID Q-Foam

DEPTH FROM SURFACE Ft.	to Ft.	DESCRIPTION *Describe material, grain size, color, etc.*
0		Existing Well
150	195	Sandstone
195	206	Volcanic Rock & Gravels
206	300	Sandstone with layers Of Cemented Sand & Gravels

TOTAL DEPTH OF BORING _____ (Feet)

TOTAL DEPTH OF COMPLETED WELL 300 (Feet)

WELL OWNER

Name _____

Mailin _____

CITY STATE ZIP

WELL LOCATION

Address 2635 Cactus Lane

City Chico

County Butte

APN Book 016 Page 330 Parcel 048

Township 016 Range 120 Section 019 Trakit#

Lat ___ DEG. ___ MIN. ___ SEC. N

Long ___ DEG. ___ MIN. ___ SEC. W

LOCATION SKETCH

NORTH

WEST EAST

SOUTH

Illustrate or Describe Distance of Well from Roads, Buildings, Fences, Rivers, etc. and attach a map. Use additional paper if necessary. ***PLEASE BE ACCURATE & COMPLETE.***

ACTIVITY (✓)

___ NEW WELL

XX MODIFICATION/REPAIR
___ Deepen
___ Other (Specify)

___ DESTROY *(Describe Procedures and Materials Under "GEOLOGIC LOG")*

USES (✓)

XX WATER SUPPLY
___ Domestic ___ Public
___ Irrigation ___ Industrial

___ MONITORING
___ TEST WELL
___ CATHODIC PROTECTION
___ HEAT EXCHANGE
___ DIRECT PUSH
___ INJECTION
___ VAPOR EXTRACTION
___ SPARGING
___ REMEDIATION
___ OTHER (SPECIFY)

WATER LEVEL & YIELD OF COMPLETED WELL

DEPTH TO FIRST WATER _____ (Ft.) BELOW SURFACE

DEPTH OF STATIC WATER LEVEL _____ (Ft.) & DATE MEASURED _____

ESTIMATED YIELD * 100+ (GPM) & TEST TYPE Air Lift

TEST LENGTH _____ (Hrs.) TOTAL DRAWDOWN _____ (Ft.)

** May not be representative of a well's long-term yield.*

DEPTH FROM SURFACE Ft.	to Ft.	BORE-HOLE DIA. (Inches)	CASING (S) TYPE (✓) BLANK	SCREEN	CON-DUCTOR	FILL PIPE	MATERIAL / GRADE	INTERNAL DIAMETER (Inches)	GAUGE OR WALL THICKNESS	SLOT SIZE IF ANY (Inches)
0	150	8					Existing Casing			
0	300	6					PVC	4	Liner	

DEPTH FROM SURFACE Ft.	to Ft.	ANNULAR MATERIAL TYPE CE-MENT (✓)	BEN-TONITE (✓)	FILL (✓)	FILTER PACK (TYPE/SIZE)

ATTACHMENTS (✓)

___ Geologic Log
___ Well Construction Diagram
___ Geophysical Log(s)
___ Soil/Water Chemical Analyses
___ Other _____

ATTACH ADDITIONAL INFORMATION, IF IT EXISTS.

CERTIFICATION STATEMENT

I, the undersigned, certify that this report is complete and accurate to the best of my knowledge and belief.

NAME W. S. Heitman Drilling (PERSON, FIRM, OR CORPORATION) (TYPED OR PRINTED)

ADDRESS P. O. Box 1010, Red Bluff, CA 96080 CITY STATE ZIP

Signed W S Heitman Jr C-57 LICENSED WATER WELL CONTRACTOR

8-10-15 DATE SIGNED

386577 C-57 LICENSE NUMBER

DWR 188 REV. 05-03

IF ADDITIONAL SPACE IS NEEDED, USE NEXT CONSECUTIVELY NUMBERED FORM

OSP 03 78836

State of California

Well Completion Report

Form DWR 188 Complete 6/14/2023

WCR2023-004861

Owner's Well Number: 2 | Date Work Began: 04/11/2023 | Date Work Ended: 04/17/2023

Local Permit Agency: Butte County Public Health

Secondary Permit Agency: | Permit Number: EHWS 22-0098 | Permit Date: 08/30/2022

Well Owner (must remain confidential pursuant to Water Code 13752)

Name: XXXXXXXXXXXXXXXXXXX

Mailing Address: XXXXXXXXXXXXXXXXXXX

XXXXXXXXXXXXXXXXXXX

City: XXXXXXXXXXXXXXXXXXX | State: XX | Zip: XXXXX

Planned Use and Activity

Activity: New Well

Planned Use: Water Supply Domestic

Well Location

Address: 2830 Mariposa AVE

City: Chico | Zip: 95973 | County: Butte

Latitude: 39 Deg. 46 Min. 1.2327 Sec. N | Longitude: -121 Deg. 49 Min. 26.8096 Sec. W

Dec. Lat.: 39.7670091 | Dec. Long.: -121.8241138

Vertical Datum: | Horizontal Datum: WGS84

Location Accuracy: | Location Determination Method:

APN: 016-290-075

Township: 22 N

Range: 01 E

Section: 13

Baseline Meridian: Mount Diablo

Ground Surface Elevation:

Elevation Accuracy:

Elevation Determination Method:

Borehole Information

Orientation: Vertical | Specify:

Drilling Method: Direct Rotary | Drilling Fluid: Bentonite

Total Depth of Boring: 300 Feet

Total Depth of Completed Well: 300 Feet

Water Level and Yield of Completed Well

Depth to first water: 120 (Feet below surface)

Depth to Static Water Level: 106 (Feet) | Date Measured: 04/17/2023

Estimated Yield*: 150 (GPM) | Test Type: Air Lift

Test Length: 3 (Hours) | Total Drawdown: (feet)

*May not be representative of a well's long term yield.

Geologic Log - Free Form

Depth from Surface Feet to Feet		Description
0	18	brown clay with cobbles
18	23	brown clay
23	80	silty brown clay with inbedded rocks
80	100	sandstone and granite
100	120	brown clay with stringers
120	195	hard volcanic rock
195	200	fractured rock
200	220	hard rock
220	300	hard black obsidian

Casings

Casing #	Depth from Surface Feet to Feet		Casing Type	Material	Casings Specificatons	Wall Thickness (inches)	Outside Diameter (inches)	Screen Type	Slot Size if any (inches)	Description
1	0	200	Blank	PVC	OD: 5.563 in. | SDR: 17 | Thickness: 0.327 in.	0.327	5.563			
1	200	300	Screen	PVC	OD: 5.563 in. | SDR: 17 | Thickness: 0.327 in.	0.327	5.563	Milled Slots	0.032	

Annular Material

Depth from Surface Feet to Feet		Fill	Fill Type Details	Filter Pack Size	Description
0	83	Bentonite	Other Bentonite		
83	300	Filter Pack	Other Gravel Pack	1/4	pea gravel

Other Observations:

Borehole Specifications

Depth from Surface Feet to Feet		Borehole Diameter (inches)
0	300	10.75

Certification Statement

I, the undersigned, certify that this report is complete and accurate to the best of my knowledge and belief

Name: WILDROSE DRILLING LLC
Person, Firm or Corporation

3301 INDUSTRIAL AVE | Rocklin | CA |
Address | City | State | Zip

Signed: *electronic signature received* | 04/24/2023 | 1072636
C-57 Licensed Water Well Contractor | Date Signed | C-57 License Number

DWR Use Only

CSG #	State Well Number	Site Code	Local Well Number

N — Latitude Deg/Min/Sec

W — Longitude Deg/Min/Sec

TRS:

APN:

State of California

Well Completion Report

Form DWR 188 Complete 1/28/2024

WCR2023-012926

Owner's Well Number | Date Work Began | Date Work Ended 11/23/2023

Local Permit Agency Butte County Public Health

Secondary Permit Agency | Permit Number EHWS22-0100 | Permit Date 09/30/2023

Well Owner (must remain confidential pursuant to Water Code 13752)

Name XXXXXXXXXXXXXXXXXXX

Mailing Address XXXXXXXXXXXXXXXXXXX

XXXXXXXXXXXXXXXXXXX

City XXXXXXXXXXXXXXXXXXX State XX Zip XXXXX

Planned Use and Activity

Activity Deepen

Planned Use Water Supply Domestic

Well Location

Address 30 Scooter LN

City Chico Zip 95928 County Butte

Latitude 39 Deg. 46 Min. 1.0419 Sec. N Longitude -121 Deg. 48 Min. 48.713 Sec. W

Dec. Lat. 39.7669561 Dec. Long. -121.8135314

Vertical Datum | Horizontal Datum WGS84

Location Accuracy | Location Determination Method

APN 016-120-006

Township 22 N

Range 01 E

Section 13

Baseline Meridian Mount Diablo

Ground Surface Elevation

Elevation Accuracy

Elevation Determination Method

Borehole Information

Orientation Vertical Specify

Drilling Method Direct Rotary Drilling Fluid Bentonite

Total Depth of Boring 200 Feet

Total Depth of Completed Well 200 Feet

Water Level and Yield of Completed Well

Depth to first water (Feet below surface)

Depth to Static Water Level 131 (Feet) Date Measured 11/28/2023

Estimated Yield* 25 (GPM) Test Type Air Lift

Test Length 2 (Hours) Total Drawdown (feet)

*May not be representative of a well's long term yield.

Geologic Log - Free Form

Depth from Surface Feet to Feet		Description
0	136	Existing well
136	200	Lava Gravel

Casings

Casing #	Depth from Surface Feet to Feet		Casing Type	Material	Casings Specificatons	Wall Thickness (inches)	Outside Diameter (inches)	Screen Type	Slot Size if any (inches)	Description
1	0	160	Blank	PVC	OD: 5.563 in. | SDR: 21 | Thickness: 0.265 in.					
1	160	200	Screen	PVC	OD: 5.563 in. | SDR: 21 | Thickness: 0.265 in.			Milled Slots	0.032	

Other Observations:

Borehole Specifications

Depth from Surface Feet to Feet		Borehole Diameter (inches)
0	200	8

Certification Statement

I, the undersigned, certify that this report is complete and accurate to the best of my knowledge and belief

Name: KELLER DRILLING AND PUMP
Person, Firm or Corporation

2767 HEGAN LANE	CHICO	CA	95928
Address	City	State	Zip

Signed	*electronic signature received*	11/29/2023	1038857
	C-57 Licensed Water Well Contractor	Date Signed	C-57 License Number

DWR Use Only

CSG #	State Well Number	Site Code	Local Well Number

					N
					W

Latitude Deg/Min/Sec **Longitude Deg/Min/Sec**

TRS:

APN:

State of California

Well Completion Report

Form DWR 188 Complete 8/24/2023

WCR2023-007179

Owner's Well Number | Date Work Began: 06/14/2023 | Date Work Ended: 06/16/2023

Local Permit Agency: Butte County Public Health

Secondary Permit Agency | Permit Number: EHWS23-0039 | Permit Date: 05/25/2023

Well Owner (must remain confidential pursuant to Water Code 13752)

Name: XXXXXXXXXXXXXXXXXXX

Mailing Address: XXXXXXXXXXXXXXXXXXX

XXXXXXXXXXXXXXXXXXX

City: XXXXXXXXXXXXXXXXXXX | State: XX | Zip: XXXXX

Planned Use and Activity

Activity: New Well

Planned Use: Water Supply Domestic

Well Location

Address:

City: | Zip: | County: Butte

Latitude: 39 Deg. 46 Min. 6.6 Sec. N | Longitude: -121 Deg. 51 Min. 24.8399 Sec. W

Dec. Lat.: 39.7685 | Dec. Long.: -121.8569

Vertical Datum: | Horizontal Datum: WGS84

Location Accuracy: | Location Determination Method:

APN: 007-200-056

Township: 22 N

Range: 01 E

Section: 15

Baseline Meridian: Mount Diablo

Ground Surface Elevation:

Elevation Accuracy:

Elevation Determination Method:

Borehole Information

Orientation: Vertical | Specify:

Drilling Method: Direct Rotary | Drilling Fluid: Bentonite

Total Depth of Boring: 200 Feet

Total Depth of Completed Well: 200 Feet

Water Level and Yield of Completed Well

Depth to first water: (Feet below surface)

Depth to Static Water Level: 59 (Feet) | Date Measured: 06/16/2023

Estimated Yield*: 200 (GPM) | Test Type:

Test Length: (Hours) | Total Drawdown: (feet)

*May not be representative of a well's long term yield.

Geologic Log - Free Form

Depth from Surface Feet to Feet		Description
0	6	clay
6	10	gravel
10	16	clay
16	19	gravel
19	32	clay
32	36	gravel
36	57	clay
57	64	gravel
64	69	clay
69	72	gravel
72	75	clay
75	78	gravel
78	95	clay
95	128	fractured clay

128	131	gravel
131	139	clay
139	149	gravel
149	154	clay
154	165	gravel
165	167	clay
167	194	gravel
194	200	clay

Casings

Casing #	Depth from Surface Feet to Feet		Casing Type	Material	Casings Specificatons	Wall Thickness (inches)	Outside Diameter (inches)	Screen Type	Slot Size if any (inches)	Description
1	0	180	Blank	PVC	OD: 5.563 in. | SDR: 17 | Thickness: 0.327 in.	0.327	5.563			
1	180	200	Screen	PVC	OD: 5.563 in. | SDR: 17 | Thickness: 0.327 in.	0.327	5.563	Milled Slots	0.032	

Annular Material

Depth from Surface Feet to Feet		Fill	Fill Type Details	Filter Pack Size	Description
0	80	Cement	Portland Cement/Neat Cement		
80	200	Filter Pack	6 x 16		

Other Observations:

Borehole Specifications

Depth from Surface Feet to Feet		Borehole Diameter (inches)
0	200	11

Certification Statement

I, the undersigned, certify that this report is complete and accurate to the best of my knowledge and belief

Name: SULLIVAN DRILLING INC (Person, Firm or Corporation)

P O BOX 1227 (Address) | ORLAND (City) | CA (State) | 95963 (Zip)

Signed: *electronic signature received* (C-57 Licensed Water Well Contractor) | 06/26/2023 (Date Signed) | 656504 (C-57 License Number)

DWR Use Only

CSG #	State Well Number	Site Code	Local Well Number

N — Latitude Deg/Min/Sec

W — Longitude Deg/Min/Sec

TRS:

APN:

State of California

Well Completion Report

Form DWR 188 Complete 11/14/2016

WCR2016-007839

Owner's Well Number: 1 | Date Work Began: 09/27/2016 | Date Work Ended: 10/04/2016

Local Permit Agency: Butte County Public Health

Secondary Permit Agency: | Permit Number: EHWS16-0090 | Permit Date: 07/21/2016

Well Owner (must remain confidential pursuant to Water Code 13752)

Name: XXXXXXXXXXXXXXXXXXX

Mailing Address: XXXXXXXXXXXXXXXXXXX

XXXXXXXXXXXXXXXXXXX

City: XXXXXXXXXXXXXXXXXXX | State: XX | Zip: XXXXX

Planned Use and Activity

Activity: New Well

Planned Use: Water Supply Domestic

Well Location

Address: 2936 Alamo AVE

City: Chico | Zip: 95973 | County: Butte

Latitude: Deg. Min. Sec. N | Longitude: Deg. Min. Sec. W

Dec. Lat.: 39.7554690 | Dec. Long.: -121.8806918

Vertical Datum: | Horizontal Datum: WGS84

Location Accuracy: | Location Determination Method:

APN: 042-030-032-000

Township: 22 N

Range: 01 E

Section: 16

Baseline Meridian: Mount Diablo

Ground Surface Elevation:

Elevation Accuracy:

Elevation Determination Method:

Borehole Information

Orientation: Vertical | Specify:

Drilling Method: Direct Rotary | Drilling Fluid: Bentonite

Total Depth of Boring: 202 Feet

Total Depth of Completed Well: 200 Feet

Water Level and Yield of Completed Well

Depth to first water: 35 (Feet below surface)

Depth to Static Water Level: 49 (Feet) | Date Measured: 10/04/2016

Estimated Yield*: 160 (GPM) | Test Type: Air Lift

Test Length: 1 (Hours) | Total Drawdown: 151 (feet)

*May not be representative of a well's long term yield.

Geologic Log - Free Form

Depth from Surface Feet to Feet		Description
0	6	Chico loam brown dirt
6	20	Brown sandy clay
20	35	Cobbles and gravel
35	50	Sand and silt with very thin occasional layers of gravel
50	70	Gravelly clay with thin sand layers
70	75	Sand and gravel
75	105	Light yellowish brown sticky clay
105	115	Hard brown clay
115	150	Sandy Brown dirt with very fine gravel
150	175	Sandy Brown dirt with very fine gravel turning into dirty sand
175	181	Clean course gray and white sand
181	194	Dirty sand
194	202	6" of cobbles white and gray turning to course sand

Casings

Casing #	Depth from Surface Feet to Feet		Casing Type	Material	Casings Specificatons	Wall Thickness (inches)	Outside Diameter (inches)	Screen Type	Slot Size if any (inches)	Description
1	0	8	Blank	PVC	OD: 8.625 in. | SDR: 21 | Thickness: 0.410 in.	0.41	8.625			
2	0	130	Blank	PVC	OD: 4.950 in. | SDR: 17 | Thickness: 0.291 in.	0.291	4.95			
3	130	200	Screen	PVC	OD: 4.950 in. | SDR: 17 | Thickness: 0.291 in.	0.291	4.95	Milled Slots	0.032	

Annular Material

Depth from Surface Feet to Feet		Fill	Fill Type Details	Filter Pack Size	Description
0	75	Cement	10.3 Sack Mix		
75	201	Filter Pack	8 x 16		

Other Observations:

Borehole Specifications

Depth from Surface Feet to Feet		Borehole Diameter (inches)
0	10	13
10	202	9

Certification Statement

I, the undersigned, certify that this report is complete and accurate to the best of my knowledge and belief

Name: CHICO CONSTRUCTION INC
Person, Firm or Corporation

35 JESSICA WAY (Address) | COHASSET (City) | CA (State) | 95973 (Zip)

Signed: *electronic signature received* (C-57 Licensed Water Well Contractor) | 11/13/2016 (Date Signed) | 780265 (C-57 License Number)

DWR Use Only

CSG #	State Well Number	Site Code	Local Well Number

N — Latitude Deg/Min/Sec

W — Longitude Deg/Min/Sec

TRS:

APN:

State of California

Well Completion Report

Form DWR 188 Complete 5/10/2023

WCR2023-003855

Owner's Well Number 1 | Date Work Began 03/08/2023 | Date Work Ended 03/13/2023

Local Permit Agency Butte County Public Health

Secondary Permit Agency | Permit Number EHWS23-0027 | Permit Date 03/07/2023

Well Owner (must remain confidential pursuant to Water Code 13752)

Name XXXXXXXXXXXXXXXXXXX

Mailing Address XXXXXXXXXXXXXXXXXXX

XXXXXXXXXXXXXXXXXXX

City XXXXXXXXXXXXXXXXXXX | State XX | Zip XXXXX

Planned Use and Activity

Activity New Well

Planned Use Water Supply Domestic

Well Location

Address 3167 ALOHA LN

City CHICO | Zip 95973 | County Butte

Latitude 39 Deg. 45 Min. 23.8643 Sec. N | Longitude -121 Deg. 53 Min. 12.8255 Sec. W

Dec. Lat. 39.756629 | Dec. Long. -121.886896

Vertical Datum | Horizontal Datum WGS84

Location Accuracy 5 Ft | Location Determination Method GPS

APN 042-020-083-000

Township 22 N

Range 01 E

Section 17

Baseline Meridian Mount Diablo

Ground Surface Elevation 162

Elevation Accuracy 10 Ft

Elevation Determination Method GPS

Borehole Information

Orientation Vertical | Specify

Drilling Method Direct Rotary | Drilling Fluid Bentonite

Total Depth of Boring 230 Feet

Total Depth of Completed Well 230 Feet

Water Level and Yield of Completed Well

Depth to first water 35 (Feet below surface)

Depth to Static Water Level 69 (Feet) | Date Measured 03/13/2023

Estimated Yield* 85 (GPM) | Test Type Air Lift

Test Length 5 (Hours) | Total Drawdown 0 (feet)

*May not be representative of a well's long term yield.

Geologic Log - Lite

Depth from Surface Feet to Feet		Material Type	Material Color	Material Texture	Material Description
0	35	Clay	Brown	Clayey	SOIL/CLAY
35	50	Gravel	Black & White	Gravely	GRAVEL LITTLE SANDS
50	135	Clay	Brown	Clayey	GUMMIE CLAY
135	170	Clayey Gravel	Brown	Gravely	CLAY W/ GRAVEL STRINGERS
170	190	Gravel	Black & White	W/Sand	GRAVEL W/ SAND
190	210	Gravel	Black & White	Gravely	GRAVEL W/ CLAY STRINGERS
210	230	Gravel	Black & White	Clayey	CLAY W/ GRAVEL STRINGERS

Casings

Casing #	Depth from Surface Feet to Feet		Casing Type	Material	Casings Specificatons	Wall Thickness (inches)	Outside Diameter (inches)	Screen Type	Slot Size if any (inches)	Description
1	0	120	Blank	PVC	OD: 5.563 in. | SDR: 21 | Thickness: 0.265 in.	0.265	5.563			
1	120	180	Screen	PVC	OD: 5.563 in. | SDR: 21 | Thickness: 0.265 in.	0.265	5.563	Milled Slots	32	.032
1	180	200	Blank	PVC	OD: 5.563 in. | SDR: 21 | Thickness: 0.265 in.	0.265	5.563			
1	200	220	Screen	PVC	OD: 5.563 in. | SDR: 21 | Thickness: 0.265 in.	0.265	5.563	Milled Slots	32	.032
1	220	230	Blank	PVC	OD: 5.563 in. | SDR: 21 | Thickness: 0.265 in.	0.265	5.563			W/5" CAP INSTALLED

Annular Material

Depth from Surface Feet to Feet		Fill	Fill Type Details	Filter Pack Size	Description
0	84	Cement	Portland Cement/Neat Cement	450 GALLONS NEAT CEMENY PUMPED WITH TRIMMING PIPE W/ 5X5X5.5	W/ 6'X6'X5.5" CONCRET SLAB
84	230	Filter Pack	Other Gravel Pack	#6 SILICA	2 BAGS

Other Observations:

Borehole Specifications

Depth from Surface Feet to Feet		Borehole Diameter (inches)
0	230	10.75

Certification Statement

I, the undersigned, certify that this report is complete and accurate to the best of my knowledge and belief

Name: VICS WELL DRILLING INC (Person, Firm or Corporation)

3807 SIERRA HWY UNIT #6 (Address) | ACTON (City) | CA (State) | 93510 (Zip)

Signed: *electronic signature received* (C-57 Licensed Water Well Contractor) | 03/20/2023 (Date Signed) | 886439 (C-57 License Number)

Attachments

PHIL CAUFFIELD DRILLERS REPORT.docx - Other

042-020-083 EHWS23-0027 WELL PERMIT ISSUED 3-7-2023.pdf - Permit

DWR Use Only

CSG #	State Well Number	Site Code	Local Well Number

N — Latitude Deg/Min/Sec

W — Longitude Deg/Min/Sec

TRS:

APN:

State of California

Well Completion Report

Form DWR 188 Complete 2/2/2024

WCR2023-013142

Owner's Well Number: 2300 KENNEDY | Date Work Began: 11/07/2023 | Date Work Ended: 11/09/2023

Local Permit Agency: Butte County Public Health

Secondary Permit Agency: | Permit Number: EHWS23-0107 | Permit Date: 10/20/2023

Well Owner (must remain confidential pursuant to Water Code 13752)

Name: XXXXXXXXXXXXXXXXXXX

Mailing Address: XXXXXXXXXXXXXXXXXXX

XXXXXXXXXXXXXXXXXXX

City: XXXXXXXXXXXXXXXXXXX | State: XX | Zip: XXXXX

Planned Use and Activity

Activity: New Well

Planned Use: Water Supply Domestic

Well Location

Address: 2300 KENNEDY AVE

City: CHICO | Zip: 95973 | County: Butte

Latitude: 39 Deg. 44 Min. 37.5899 Sec. N | Longitude: -121 Deg. 53 Min. 17.1779 Sec. W

Dec. Lat.: 39.743775 | Dec. Long.: -121.888105

Vertical Datum: NAVD88 | Horizontal Datum: WGS84

Location Accuracy: Unknown | Location Determination Method: GPS

APN: 042-090-051

Township: 22 N

Range: 01 E

Section: 20

Baseline Meridian: Mount Diablo

Ground Surface Elevation: 174

Elevation Accuracy: Unknown

Elevation Determination Method: Digital Aerial Photo

Borehole Information

Orientation: Vertical | Specify:

Drilling Method: Direct Rotary | Drilling Fluid: Bentonite

Total Depth of Boring: 240 Feet

Total Depth of Completed Well: 230 Feet

Water Level and Yield of Completed Well

Depth to first water: (Feet below surface)

Depth to Static Water Level: 54 (Feet) | Date Measured: 11/22/2023

Estimated Yield*: 20 (GPM) | Test Type:

Test Length: (Hours) | Total Drawdown: (feet)

*May not be representative of a well's long term yield.

Geologic Log - Free Form

Depth from Surface Feet to Feet		Description
0	20	SANDY GRAVEL & CLAY
20	30	CLAY
30	50	SMALL GRAVEL / CLAY
50	55	CLAY
55	60	FINE GRAVEL / SAND
60	90	CLAY
90	100	SMALL GRAVEL
100	170	CLAY
170	180	3/4-INCH GRAVEL
180	240	SANDY CLAY

Casings

Casing #	Depth from Surface Feet to Feet		Casing Type	Material	Casings Specificatons	Wall Thickness (inches)	Outside Diameter (inches)	Screen Type	Slot Size if any (inches)	Description
1	0	170	Blank	PVC	OD: 5.563 in. | SDR: 17 | Thickness: 0.327 in.	0.327	5.563			
1	170	190	Screen	PVC	OD: 5.563 in. | SDR: 17 | Thickness: 0.327 in.	0.327	5.563	Milled Slots	0.032	
1	190	210	Blank	PVC	OD: 5.563 in. | SDR: 17 | Thickness: 0.327 in.	0.327	5.563			
1	210	230	Screen	PVC	OD: 5.563 in. | SDR: 17 | Thickness: 0.327 in.	0.327	5.563	Milled Slots	0.032	w/ END CAP
1	230	240	No Casing Installed	Other	N/A					NO CASING

Annular Material

Depth from Surface Feet to Feet		Fill	Fill Type Details	Filter Pack Size	Description
0	80	Bentonite	High Solids		SANITARY SEAL
80	240	Filter Pack	Other Gravel Pack	#4	WELL PACK

Other Observations:

Borehole Specifications

Depth from Surface Feet to Feet		Borehole Diameter (inches)
0	240	10.25

Certification Statement

I, the undersigned, certify that this report is complete and accurate to the best of my knowledge and belief

Name: WELL INDUSTRIES INC (Person, Firm or Corporation)

3282 HIGHWAY 32 (Address) | CHICO (City) | CA (State) | 95973 (Zip)

Signed: *electronic signature received* (C-57 Licensed Water Well Contractor) | 12/05/2023 (Date Signed) | 812678 (C-57 License Number)

DWR Use Only

CSG #	State Well Number	Site Code	Local Well Number

N — Latitude Deg/Min/Sec

W — Longitude Deg/Min/Sec

TRS:

APN:

State of California

Well Completion Report

Form DWR 188 Complete 2/2/2024

WCR2023-013142

Owner's Well Number: 2300 KENNEDY | Date Work Began: 11/07/2023 | Date Work Ended: 11/09/2023

Local Permit Agency: Butte County Public Health

Secondary Permit Agency: | Permit Number: EHWS23-0107 | Permit Date: 10/20/2023

Well Owner (must remain confidential pursuant to Water Code 13752)

Name: XXXXXXXXXXXXXXXXXXX

Mailing Address: XXXXXXXXXXXXXXXXXXX

XXXXXXXXXXXXXXXXXXX

City: XXXXXXXXXXXXXXXXXXX | State: XX | Zip: XXXXX

Planned Use and Activity

Activity: New Well

Planned Use: Water Supply Domestic

Well Location

Address: 2300 KENNEDY AVE

City: CHICO | Zip: 95973 | County: Butte

Latitude: 39 Deg. 44 Min. 37.5899 Sec. N | Longitude: -121 Deg. 53 Min. 17.1779 Sec. W

Dec. Lat.: 39.743775 | Dec. Long.: -121.888105

Vertical Datum: NAVD88 | Horizontal Datum: WGS84

Location Accuracy: Unknown | Location Determination Method: GPS

APN: 042-090-051

Township: 22 N

Range: 01 E

Section: 20

Baseline Meridian: Mount Diablo

Ground Surface Elevation: 174

Elevation Accuracy: Unknown

Elevation Determination Method: Digital Aerial Photo

Borehole Information

Orientation: Vertical | Specify:

Drilling Method: Direct Rotary | Drilling Fluid: Bentonite

Total Depth of Boring: 240 Feet

Total Depth of Completed Well: 230 Feet

Water Level and Yield of Completed Well

Depth to first water: (Feet below surface)

Depth to Static Water Level: 54 (Feet) | Date Measured: 11/22/2023

Estimated Yield*: 20 (GPM) | Test Type:

Test Length: (Hours) | Total Drawdown: (feet)

*May not be representative of a well's long term yield.

Geologic Log - Free Form

Depth from Surface Feet to Feet		Description
0	20	SANDY GRAVEL & CLAY
20	30	CLAY
30	50	SMALL GRAVEL / CLAY
50	55	CLAY
55	60	FINE GRAVEL / SAND
60	90	CLAY
90	100	SMALL GRAVEL
100	170	CLAY
170	180	3/4-INCH GRAVEL
180	240	SANDY CLAY

Casings

Casing #	Depth from Surface Feet to Feet		Casing Type	Material	Casings Specificatons	Wall Thickness (inches)	Outside Diameter (inches)	Screen Type	Slot Size if any (inches)	Description
1	0	170	Blank	PVC	OD: 5.563 in. | SDR: 17 | Thickness: 0.327 in.	0.327	5.563			
1	170	190	Screen	PVC	OD: 5.563 in. | SDR: 17 | Thickness: 0.327 in.	0.327	5.563	Milled Slots	0.032	
1	190	210	Blank	PVC	OD: 5.563 in. | SDR: 17 | Thickness: 0.327 in.	0.327	5.563			
1	210	230	Screen	PVC	OD: 5.563 in. | SDR: 17 | Thickness: 0.327 in.	0.327	5.563	Milled Slots	0.032	w/ END CAP
1	230	240	No Casing Installed	Other	N/A					NO CASING

Annular Material

Depth from Surface Feet to Feet		Fill	Fill Type Details	Filter Pack Size	Description
0	80	Bentonite	High Solids		SANITARY SEAL
80	240	Filter Pack	Other Gravel Pack	#4	WELL PACK

Other Observations:

Borehole Specifications

Depth from Surface Feet to Feet		Borehole Diameter (inches)
0	240	10.25

Certification Statement

I, the undersigned, certify that this report is complete and accurate to the best of my knowledge and belief

Name: WELL INDUSTRIES INC (Person, Firm or Corporation)

3282 HIGHWAY 32 (Address) | CHICO (City) | CA (State) | 95973 (Zip)

Signed: *electronic signature received* (C-57 Licensed Water Well Contractor) | 12/05/2023 (Date Signed) | 812678 (C-57 License Number)

DWR Use Only

CSG #	State Well Number	Site Code	Local Well Number

N — Latitude Deg/Min/Sec

W — Longitude Deg/Min/Sec

TRS:

APN:

22N/1E-21 M

ORIGINAL

File with DWR

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES

WATER WELL DRILLERS REPORT

Do not fill in

No. 088914?

Notice of Intent No. _____

Local Permit No. or Date _____

State Well No. _____

Other Well No. _____

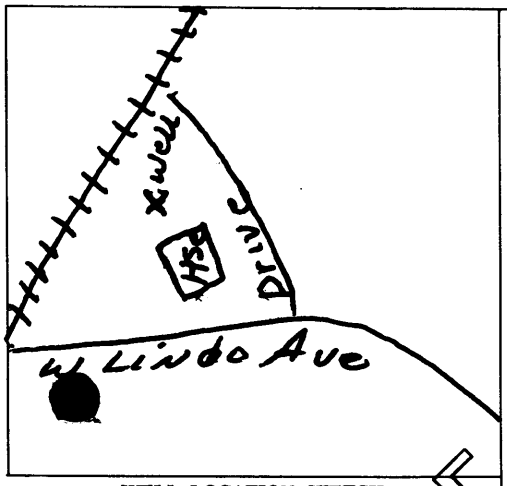
(2) LOCATION OF WELL (See instructions):

County Butte Owner's Well Number

Well address if different from above W Lindo-Chico

Township 22N Range 1E Section 16 21

Distance from cities, roads, railroads, fences, etc. _____



WELL LOCATION SKETCH

(3) TYPE OF WORK:

New Well [X] Deepening [ ]
Reconstruction [ ]
Reconditioning [ ]
Horizontal Well [ ]
Destruction [ ] (Describe destruction materials and procedures in Item 12)

(4) PROPOSED USE:

Domestic [X]
Irrigation [ ]
Industrial [ ]
Test Well [ ]
Stock [ ]
Municipal [ ]
Other [ ]

(5) EQUIPMENT:

Rotary [X] Reverse [ ]
Cable [ ] Air [ ]
Other [ ] Bucket [ ]

(6) GRAVEL PACK:

Yes [ ] No [X] Size _____
Diameter of bore _____
Packed from _____ to _____ ft.

(7) CASING INSTALLED:

Steel [X] Plastic [ ] Concrete [ ]

From ft.	To ft.	Dia. in.	Gage or Wall
0	63	6 5/8	10

(8) PERFORATIONS:

Type of perforation or size of screen

From ft.	To ft.	Slot size

(9) WELL SEAL:

Was surface sanitary seal provided? Yes [X] No [ ] If yes, to depth 22 ft.
Were strata sealed against pollution? Yes [ ] No [X] Interval _____ ft.
Method of sealing Bentonite Annular

(10) WATER LEVELS:

Depth of first water, if known _____ ft.
Standing level after well completion 35 ft.

(11) WELL TESTS:

Was well test made? Yes [X] No [ ] If yes, by whom? driller
Type of test Pump [ ] Bailer [ ] Air lift [X]
Depth to water at start of test 35 ft. At end of test 35 ft
Discharge 100 gal/min after 1/2 hours Water temperature _____
Chemical analysis made? Yes [ ] No [X] If yes, by whom? _____
Was electric log made? Yes [ ] No [X] If yes, attach copy to this report

(12) WELL LOG:

Total depth 136 ft. Depth of completed well _____ ft.

from ft.	to ft.	Formation (Describe by color, character, size or material)
0	6	Soil
6	25	tan clay
25	34	Cemented grvl
34	51	red clay
51	55	loose rocks
55	110	hard red clay
110	132	red sandy clay
132	136	red shale rocks

CONFIDENTIAL NOT FOR PUBLIC INSPECTION WATER CODE SEC. 13752

SEP 1 1987

Work started July 19 86 Completed July 19 86

WELL DRILLER'S STATEMENT:

00803

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

SIGNED Joe Besser (Well Driller)

NAME W J Besser Well Drilling (Person, firm, or corporation) (Typed or printed)

Address 3820 Keefer

City Chico Zip 95926

License No. 290998 Date of this report 7-23-86

DWR 188 (REV. 7-76) IF ADDITIONAL SPACE IS NEEDED, USE NEXT CONSECUTIVELY NUMBERED FORM

22N/1E-21 M

ORIGINAL

File with DWR

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES

WATER WELL DRILLERS REPORT

Do not fill in

No. 088930 ?

Notice of Intent No. A.P. 43-62-028

Local Permit No. or Date

State Well No.

Other Well No.

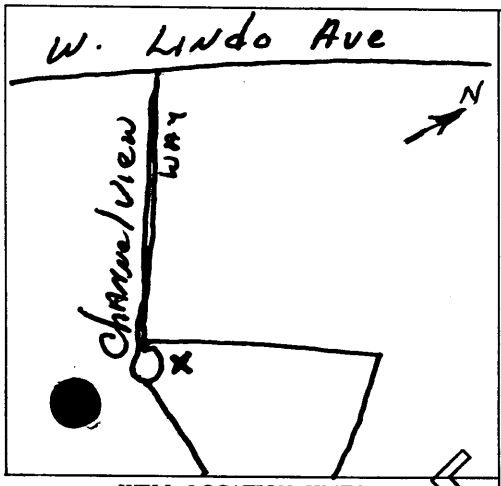
(2) LOCATION OF WELL (See instructions):

County Butte Owner's Well Number

Well address if different from above Channel View Way-Chico

Township 22N Range 1E Section 21

Distance from cities, roads, railroads, fences, etc.



WELL LOCATION SKETCH

(3) TYPE OF WORK:

New Well [X] Deepening [ ]
Reconstruction [ ]
Reconditioning [ ]
Horizontal Well [ ]
Destruction [ ] (Describe destruction materials and procedures in Item 12)

(4) PROPOSED USE:

Domestic [ ]
Irrigation [ ]
Industrial [ ]
Test Well [ ]
Stock [ ]
Municipal [ ]
Other [ ]

(5) EQUIPMENT:

Rotary [X] Reverse [ ]
Cable [ ] Air [ ]
Other [ ] Bucket [ ]

(6) GRAVEL PACK:

Yes [ ] No [X] Size
Diameter of bore
Packed from to ft.

(7) CASING INSTALLED:

Steel [X] Plastic [ ] Concrete [ ]

From ft.	To ft.	Dia. in.	Gage or Wall
0	81	6	12

(8) PERFORATIONS:

Type of perforation or size of screen

From ft.	To ft.	Slot size

(9) WELL SEAL:

Was surface sanitary seal provided? Yes [X] No [ ] If yes, to depth 27 ft.
Were strata sealed against pollution? Yes [ ] No [X] Interval ft.
Method of sealing Bentonite Annular space

(10) WATER LEVELS:

Depth of first water, if known ft.
Standing level after well completion 14 ft.

(11) WELL TESTS:

Was well test made? Yes [X] No [ ] If yes, by whom? driller
Type of test Pump [ ] Bailer [ ] Air lift [X]
Depth to water at start of test 14 ft. At end of test 14 ft
Discharge 50 plus gal/min after 1/2 hours Water temperature
Chemical analysis made? Yes [ ] No [X] If yes, by whom?
Was electric log made? Yes [ ] No [X] If yes, attach copy to this report

(12) WELL LOG:

Total depth 96 ft. Depth of completed well ft.

from ft. to ft. Formation (Describe by color, character, size or material)

0 - 18 loam soil
18 - 46 red clay
46 - 66 red clay rocks
66 - 90 red clay
90 - 96 sand gravel

NOT FOR PUBLIC USE
WATER CODE SEC. 13752
NOT DELIVERED

APR 23 1990

Work started Oct 19 86 Completed Oct 19 86

WELL DRILLER'S STATEMENT:

0808

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

SIGNED Joe Besser (Well Driller)

NAME W J Besser Well Drilling (Person, firm, or corporation) (Typed or printed)

Address 3820 Keefer Rd

City Chico Zip 95926

License No. 290998 Date of this report 10-28-86

DWR 188 (REV. 7-76) IF ADDITIONAL SPACE IS NEEDED, USE NEXT CONSECUTIVELY NUMBERED FORM

22N/01E-21M

ORIGINAL

File with DWR

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES

WATER WELL DRILLERS REPORT

Do not fill in

No. 184703

Notice of Intent No.

Local Permit No. or Date

State Well No.

Other Well No.

(2) LOCATION OF WELL (See instructions):

County Butte Owner's Well Number

Well address if different from above

Township 22N Range 1E Section 21

Distance from cities, roads, railroads, fences, etc.
off East Street - Channel

Gwynn
Lindo canal
W Lindo
0

WELL LOCATION SKETCH

(3) TYPE OF WORK:

New Well X Deepening ☐
Reconstruction ☐
Reconditioning ☐
Horizontal Well ☐
Destruction ☐ (Describe destruction materials and procedures in Item 12)

(4) PROPOSED USE:

Domestic X
Irrigation ☐
Industrial ☐
Test Well ☐
Stock ☐
Municipal ☐
Other ☐

(5) EQUIPMENT:

Rotary X Reverse ☐
Cable ☐ Air X
Other ☐ Bucket ☐

(6) GRAVEL PACK:

Yes ☐ No X Size
Diameter of bore
Packed from to ft.

(7) CASING INSTALLED:

Steel X Plastic ☐ Concrete ☐

From ft.	To ft.	Dia. in.	Gage or Wall
0	86	6 5/8	12

(8) PERFORATIONS:

Type of perforation or size of screen

From ft.	To ft.	Slot size

(9) WELL SEAL:

Was surface sanitary seal provided? Yes X No ☐ If yes, to depth 21 ft.
Were strata sealed against pollution? Yes X No ☐ Interval ft.
Method of sealing concrete grout

APR 06 1987

(10) WATER LEVELS:

Depth of first water, if known 21 ft.
Standing level after well completion 40 ft.

(11) WELL TESTS:

Was well test made? Yes X No ☐ If yes, by whom? driller
Type of test Pump ☐ Bailer ☐ Air lift X
Depth to water at start of test ft. At end of test ft
Discharge 60 gal/min after hours Water temperature
Chemical analysis made? Yes ☐ No X If yes, by whom?
Was electric log made? Yes ☐ No X If yes, attach copy to this report

(12) WELL LOG:

Total depth 86 ft. Depth of completed well 88 ft.

from ft.	to ft.	Formation (Describe by color, character, size of material)
0	21	Top soil
21	32	Gravel
32	36	Clay
36	42	Rock & clay.
42	68	Clay
68	82	Gravel & clay
82	86	Gravel

Work started 6/3 19 86 Completed 6/3 19 86

WELL DRILLER'S STATEMENT: 00936

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

SIGNED W.S. Heitman / K.K. (Well Driller)

NAME W. S. Heitman (Person, firm, or corporation) (Typed or printed)

Address 623 Buckingham Place

City Chico, Ca. Zip 95926

License No. 324874 Date of this report 6/4/86

COPY NOT FOR PUBLIC USE
WATER CODE SEC. 13752

DWR 188 (REV. 7-76) IF ADDITIONAL SPACE IS NEEDED, USE NEXT CONSECUTIVELY NUMBERED FORM

ORIGINAL
File with DWR

Page 1 of 1

STATE OF CALIFORNIA

WELL COMPLETION REPORT

Refer to Instruction Pamphlet

FEB 24 1994

DWR

DWR USE ONLY — DO NOT FILL IN
22N/1E-21M
STATE WELL NO./STATION NO.
LATITUDE LONGITUDE
APN/TRS/OTHER

Owner's Well No. B-1

No. 573349

Date Work Began 11-10-93 Ended 11-11-93

Local Permit Agency Butte County Health Dept.

Permit No. _____ Permit Date 11-08-93

GEOLOGIC LOG

ORIENTATION (✓) X VERTICAL ___ HORIZONTAL ___ ANGLE ___ (SPECIFY)

DEPTH TO FIRST WATER 40 (Ft.) BELOW SURFACE

DEPTH FROM SURFACE Ft.	to Ft.	DESCRIPTION *Describe material, grain size, color, etc.*
0	8	Brown sandy silt
8	22	Tan silty sand
22	50.5	Light brown silty clay

TOTAL DEPTH OF BORING 50.5 (Feet)

TOTAL DEPTH OF COMPLETED WELL 50.5 (Feet)

WELL OWNER

WELL LOCATION

Address 2030 Alamo Avenue

City Chico

County Butte

APN Book 42 Page 45 Parcel 46

or Township 22N Range 1E Section 20 21

or Latitude ___ DEG. ___ MIN. ___ SEC. NORTH Longitude ___ DEG. ___ MIN. ___ SEC. WEST

LOCATION SKETCH

NORTH

WEST — See attached map — EAST

SOUTH

Illustrate or Describe Distance of Well from Landmarks such as Roads, Buildings, Fences, Rivers, etc.
PLEASE BE ACCURATE & COMPLETE.

ACTIVITY (✓)

X NEW WELL

MODIFICATION/REPAIR

___ Deepen

___ Other (Specify)

___ DESTROY *(Describe Procedures and Materials Under "GEOLOGIC LOG")*

PLANNED USE(S) (✓)

X MONITORING

WATER SUPPLY

___ Domestic

___ Public

___ Irrigation

___ Industrial

___ "TEST WELL"

___ CATHODIC PROTECTION

___ OTHER (Specify)

DRILLING METHOD auger FLUID none

WATER LEVEL & YIELD OF COMPLETED WELL

DEPTH OF STATIC WATER LEVEL n/a (Ft.) & DATE MEASURED _____

ESTIMATED YIELD* n/a (GPM) & TEST TYPE _____

TEST LENGTH _____ (Hrs.) TOTAL DRAWDOWN _____ (Ft.)

* *May not be representative of a well's long-term yield.*

CASING(S)

DEPTH FROM SURFACE Ft.	to Ft.	BORE-HOLE DIA. (Inches)	TYPE (✓) BLANK	SCREEN	CONDUCTOR	FILL PIPE	MATERIAL/GRADE	INTERNAL DIAMETER (Inches)	GAUGE OR WALL THICKNESS	SLOT SIZE IF ANY (Inches)
0	35.5	8	x				PVC	2	Sch40	
35.5	50.5	8		x			PVC	2	Sch40	.010

ANNULAR MATERIAL

DEPTH FROM SURFACE Ft.	to Ft.	TYPE CEMENT (✓)	BENTONITE (✓)	FILL (✓)	FILTER PACK (TYPE/SIZE)
0	30	x	x		
30	33.5		x		granular
33.5	50.5			x	2/16 sand

FEB 28 1994

ATTACHMENTS (✓)

___ Geologic Log

___ Well Construction Diagram

___ Geophysical Log(s)

___ Soil/Water Chemical Analyses

___ Other _____

ATTACH ADDITIONAL INFORMATION, IF IT EXISTS.

CERTIFICATION STATEMENT

I, the undersigned, certify that this report is complete and accurate to the best of my knowledge and belief.

NAME Diamond Core Drilling, Inc. 1382
(PERSON, FIRM, OR CORPORATION) (TYPED OR PRINTED)

ADDRESS P.O. Box 491925 CITY Redding STATE CA ZIP 96049

Signed Gary E. Dayton
WELL DRILLER/AUTHORIZED REPRESENTATIVE

DATE SIGNED 2-17-94

C-57 LICENSE NUMBER 512406

DWR 188 REV. 7-90

IF ADDITIONAL SPACE IS NEEDED, USE NEXT CONSECUTIVELY NUMBERED FORM

ORIGINAL
File with DWR

MAY 07 [illegible]

STATE OF CALIFORNIA
WELL COMPLETION REPORT
Refer to Instruction Pamphlet

Page ___ of ___

Owner's Well No. ___

No. 783422

Date Work Began ___ Ended 3-15-01

Local Permit Agency Butte

Permit No. 296152 Permit Date 3-15-01

DWR USE ONLY — DO NOT FILL IN

22N/01E-21 M

STATE WELL NO./STATION NO.

LATITUDE LONGITUDE

APN/TRS/OTHER

GEOLOGIC LOG

ORIENTATION (✓) ✓ VERTICAL ___ HORIZONTAL ___ ANGLE ___ (SPECIFY)

DRILLING METHOD ___ FLUID ___

DEPTH FROM SURFACE Ft.	to Ft.	DESCRIPTION *Describe material, grain size, color, etc.*
0	10	Soil
10	50	Sand & Gravel
50	130	Sand & clay
130	190	Sand & gravel

TOTAL DEPTH OF BORING 190 (Feet)

TOTAL DEPTH OF COMPLETED WELL 190 (Feet)

WELL LOCATION

Address 2328 Alamo Ave

City Chico Ca

County Butte

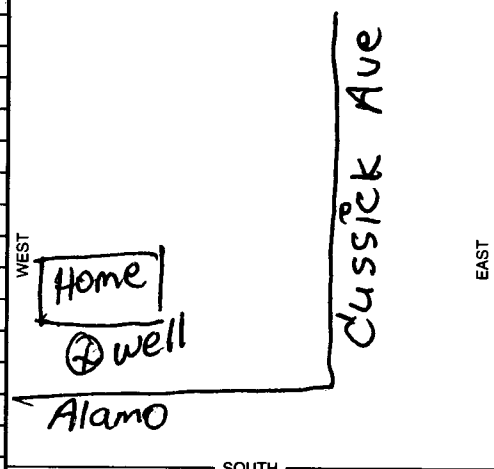
APN Book 042 Page 730 Parcel 003

Township 22N Range 01E Section 21

Latitude ___ DEG. ___ MIN. ___ SEC. NORTH

Longitude ___ DEG. ___ MIN. ___ SEC. WEST

LOCATION SKETCH



Illustrate or Describe Distance of Well from Roads, Buildings, Fences, Rivers, etc. and attach a map. Use additional paper if necessary. ***PLEASE BE ACCURATE & COMPLETE.***

ACTIVITY (✓)

X NEW WELL

MODIFICATION/REPAIR
___ Deepen
___ Other (Specify)

___ DESTROY *(Describe Procedures and Materials Under "GEOLOGIC LOG")*

PLANNED USES (✓)

WATER SUPPLY
X Domestic ___ Public
___ Irrigation ___ Industrial

___ MONITORING
___ TEST WELL
___ CATHODIC PROTECTION
___ HEAT EXCHANGE
___ DIRECT PUSH
___ INJECTION
___ VAPOR EXTRACTION
___ SPARGING
___ REMEDIATION
___ OTHER (SPECIFY)

WATER LEVEL & YIELD OF COMPLETED WELL

DEPTH TO FIRST WATER ___ (Ft.) BELOW SURFACE

DEPTH OF STATIC WATER LEVEL 20 (Ft.) & DATE MEASURED 3-16-01

ESTIMATED YIELD * 40 (GPM) & TEST TYPE AIR Lift

TEST LENGTH 2 (Hrs.) TOTAL DRAWDOWN ___ (Ft.)

** May not be representative of a well's long-term yield.*

DEPTH FROM SURFACE Ft.	to Ft.	BORE-HOLE DIA. (Inches)	CASING (S) TYPE (✓) BLANK	SCREEN	CON-DUCTOR	FILL PIPE	MATERIAL / GRADE	INTERNAL DIAMETER (Inches)	GAUGE OR WALL THICKNESS	SLOT SIZE IF ANY (Inches)
0	130	12	✓				PVC	6.0	CL200	
130	190	12	✓	✓			PVC	6.0	CL200	.40

DEPTH FROM SURFACE Ft.	to Ft.	ANNULAR MATERIAL TYPE CEMENT (✓)	BENTONITE (✓)	FILL (✓)	FILTER PACK (TYPE/SIZE)
0	80	✓			

MAY 16 2001

ATTACHMENTS (✓)

___ Geologic Log
___ Well Construction Diagram
___ Geophysical Log(s)
___ Soil/Water Chemical Analyses
___ Other ___

ATTACH ADDITIONAL INFORMATION, IF IT EXISTS.

CERTIFICATION STATEMENT

I, the undersigned, certify that this report is complete and accurate to the best of my knowledge and belief.

NAME Earl Watson Well Drilling
(PERSON, FIRM, OR CORPORATION) (TYPED OR PRINTED)

8015 Cohasset Rd Chico Ca 95973
ADDRESS CITY STATE ZIP

Signed Earl Watson 3-16-01 C 09780
WELL DRILLER/AUTHORIZED REPRESENTATIVE DATE SIGNED C-57 LICENSE NUMBER

DWR 188 REV. 11-97

IF ADDITIONAL SPACE IS NEEDED, USE NEXT CONSECUTIVELY NUMBERED FORM

ORIGINAL
File with DWR

Page 1 of 1
Owner's Well No. _____

STATE OF CALIFORNIA
WELL COMPLETION REPORT
Refer to Instruction Pamphlet
No. 0902163

DWR USE ONLY — DO NOT FILL IN
22N/01E-21
STATE WELL NO./STATION NO.
LATITUDE LONGITUDE
APN/TRS/OTHER

Date Work Began 07-27-04, Ended 07-30-04
Local Permit Agency BUTTE CO. HEALTH DEPT.
Permit No. 407882 Permit Date 06-22-04

GEOLOGIC LOG

ORIENTATION (✓) ✓ VERTICAL ___ HORIZONTAL ___ ANGLE ___ (SPECIFY)
DRILLING METHOD MUD ROTORY BENTONITE

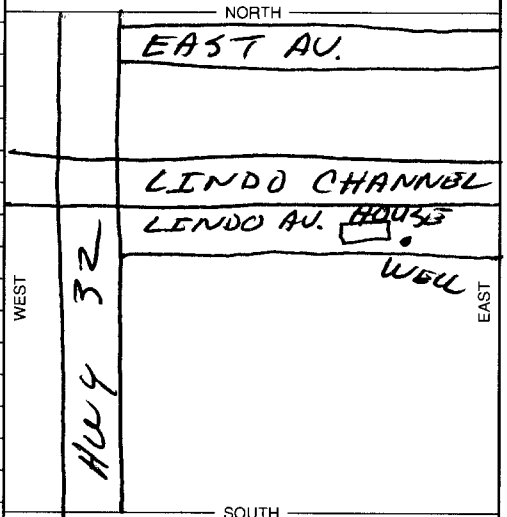
DEPTH FROM SURFACE Ft.	to Ft.	DESCRIPTION *Describe material, grain size, color, etc.*
0	20	SANDY SOIL
20	30	COBBLES
30	45	CLAY AND GRAVEL
45	70	SAND AND GRAVEL
70	90	CLAY AND GRAVEL
90	125	SANDY CLAY
125	205	SAND AND GRAVEL

TOTAL DEPTH OF BORING 210 (Feet)
TOTAL DEPTH OF COMPLETED WELL 205 (Feet)

WELL LOCATION

Address 1135 W. LINDO AV.
City CHICO
County BUTTE
APN Book 043 Page 610 Parcel 002
Township 22N Range 01E Section 21
Lat ___ DEG. ___ MIN. ___ SEC. N Long ___ DEG. ___ MIN. ___ SEC. W

LOCATION SKETCH



Illustrate or Describe Distance of Well from Roads, Buildings, Fences, Rivers, etc. and attach a map. Use additional paper if necessary. ***PLEASE BE ACCURATE & COMPLETE.***

ACTIVITY (✓)
✓ NEW WELL
MODIFICATION/REPAIR
___ Deepen
___ Other (Specify)
___ DESTROY *(Describe Procedures and Materials Under "GEOLOGIC LOG")*

USES (✓)
WATER SUPPLY
✓ Domestic ___ Public
___ Irrigation ___ Industrial
MONITORING ___
TEST WELL ___
CATHODIC PROTECTION ___
HEAT EXCHANGE ___
DIRECT PUSH ___
INJECTION ___
VAPOR EXTRACTION ___
SPARGING ___
REMEDIATION ___
OTHER (SPECIFY) ___

WATER LEVEL & YIELD OF COMPLETED WELL

DEPTH TO FIRST WATER 20 (Ft.) BELOW SURFACE
DEPTH OF STATIC WATER LEVEL 60 (Ft.) & DATE MEASURED 07-30-04
ESTIMATED YIELD * 150 (GPM) & TEST TYPE AIR LIFT
TEST LENGTH 1 (Hrs.) TOTAL DRAWDOWN N/A (Ft.)
** May not be representative of a well's long-term yield.*

CASING (S)

DEPTH FROM SURFACE Ft.	to Ft.	BORE-HOLE DIA. (Inches)	TYPE (✓) BLANK	SCREEN	CON-DUCTOR	FILL PIPE	MATERIAL / GRADE	INTERNAL DIAMETER (Inches)	GAUGE OR WALL THICKNESS	SLOT SIZE IF ANY (Inches)
0	145	12 3/4	✓				P.V.C.	6	CL 200	N/A
145	205	12 3/4		✓			P.V.C.	6	CL 200	.032

ANNULAR MATERIAL

DEPTH FROM SURFACE Ft.	to Ft.	TYPE CEMENT (✓)	BENTONITE (✓)	FILL (✓)	FILTER PACK (TYPE/SIZE)
0	95	✓			7 SACK SLURRY
95	205				3/8" PEA GRAVEL

DEC 22 2004

ATTACHMENTS (✓)

___ Geologic Log
___ Well Construction Diagram
___ Geophysical Log(s)
___ Soil/Water Chemical Analyses
___ Other _____

ATTACH ADDITIONAL INFORMATION, IF IT EXISTS.

CERTIFICATION STATEMENT

I, the undersigned, certify that this report is complete and accurate to the best of my knowledge and belief.

NAME NORTH STATE DRILLING (PERSON, FIRM, OR CORPORATION) (TYPED OR PRINTED)
#6 FREIGHT LN. CHICO CA. 95973
ADDRESS CITY STATE ZIP
Signed Tim Wattmon C-57 LICENSED WATER WELL CONTRACTOR
10-06-04 DATE SIGNED
812678 C-57 LICENSE NUMBER

DWR 188 REV. 05-03 IF ADDITIONAL SPACE IS NEEDED, USE NEXT CONSECUTIVELY NUMBERED FORM OSP 03 78836

State of California

Well Completion Report

Form DWR 188 Complete 5/3/2019

WCR2019-003680

Owner's Well Number: DC-GB-0023 | Date Work Began: 02/25/2019 | Date Work Ended: 03/01/2019

Local Permit Agency: Butte County Public Health

Secondary Permit Agency: | Permit Number: WP0000998 | Permit Date: 02/05/2019

Well Owner (must remain confidential pursuant to Water Code 13752)

Name: XXXXXXXXXXXXXXXXXXX

Mailing Address: XXXXXXXXXXXXXXXXXXX

XXXXXXXXXXXXXXXXXXX

City: XXXXXXXXXXXXXXXXXXX | State: XX | Zip: XXXXX

Planned Use and Activity

Activity: New Well

Planned Use: Cathodic Protection

Well Location

Address: 1276 W 12th ST

City: Chico | Zip: 95926 | County: Butte

Latitude: 39 Deg. 44 Min. 32.6328 Sec. N | Longitude: -121 Deg. 52 Min. 24.9887 Sec. W

Dec. Lat.: 39.742398 | Dec. Long.: -121.873608

Vertical Datum: | Horizontal Datum: WGS84

Location Accuracy: | Location Determination Method:

APN: 043-660-024

Township: 22 N

Range: 01 E

Section: 21

Baseline Meridian: Mount Diablo

Ground Surface Elevation:

Elevation Accuracy:

Elevation Determination Method:

Borehole Information

Orientation: Vertical | Specify:

Drilling Method: Sonic | Drilling Fluid: None

Total Depth of Boring: 150 Feet

Total Depth of Completed Well: 150 Feet

Water Level and Yield of Completed Well

Depth to first water: (Feet below surface)

Depth to Static Water Level: (Feet) | Date Measured:

Estimated Yield*: (GPM) | Test Type:

Test Length: (Hours) | Total Drawdown: (feet)

*May not be representative of a well's long term yield.

Geologic Log - Free Form

Depth from Surface Feet to Feet		Description
0	27	Brown Silt
27	45	Medium gravel with silt
45	87	Clayey silt
87	129	Brown silt with gravel
129	150	Small gravel with silt

Casings

Casing #	Depth from Surface Feet to Feet		Casing Type	Material	Casings Specificatons	Wall Thickness (inches)	Outside Diameter (inches)	Screen Type	Slot Size if any (inches)	Description
1	0	50	Blank	PVC	N/A	0.147	2			SCH 80
1	50	150	Screen	PVC	N/A	0.147	2	Milled Slots	0.01	SCH 80

Annular Material

Depth from Surface Feet to Feet		Fill	Fill Type Details	Filter Pack Size	Description
0	41	Cement	Portland Cement/Neat Cement		
41	43	Bentonite	Other Bentonite		Medium Chips
43	150	Filter Pack	Other Gravel Pack		Asbury coke breeze

Other Observations:

Borehole Specifications

Depth from Surface Feet to Feet		Borehole Diameter (inches)
0	150	8

Certification Statement

I, the undersigned, certify that this report is complete and accurate to the best of my knowledge and belief

Name: CASCADE DRILLING L P (Person, Firm or Corporation)

P O BOX 1184 (Address) | WOODINVILLE (City) | WA (State) | 98072 (Zip)

Signed: *electronic signature received* (C-57 Licensed Water Well Contractor) | 03/15/2019 (Date Signed) | 938110 (C-57 License Number)

DWR Use Only

CSG #	State Well Number	Site Code	Local Well Number

				N						W

Latitude Deg/Min/Sec **Longitude Deg/Min/Sec**

TRS:

APN:

State of California

Well Completion Report

Form DWR 188 Complete 9/13/2020

WCR2020-009245

Owner's Well Number | Date Work Began 07/13/2020 | Date Work Ended 07/16/2020

Local Permit Agency Butte County Public Health

Secondary Permit Agency | Permit Number EHWS18-0100 | Permit Date 02/10/2020

Well Owner (must remain confidential pursuant to Water Code 13752)

Name XXXXXXXXXXXXXXXXXXX

Mailing Address XXXXXXXXXXXXXXXXXXX

XXXXXXXXXXXXXXXXXXX

City XXXXXXXXXXXXXXXXXXX State XX Zip XXXXX

Planned Use and Activity

Activity New Well

Planned Use Water Supply Domestic

Well Location

Address 30 Guynn Bridge CT

City Chico Zip 95926 County Butte

Latitude 39 Deg. 44 Min. 38.3999 Sec. N Longitude -121 Deg. 52 Min. 29.6399 Sec. W

Dec. Lat. 39.744 Dec. Long. -121.8749

Vertical Datum | Horizontal Datum WGS84

Location Accuracy | Location Determination Method

APN 042-430-015

Township

Range

Section

Baseline Meridian

Ground Surface Elevation

Elevation Accuracy

Elevation Determination Method

Borehole Information

Orientation Vertical Specify

Drilling Method Direct Rotary Drilling Fluid Bentonite

Total Depth of Boring 220 Feet

Total Depth of Completed Well 220 Feet

Water Level and Yield of Completed Well

Depth to first water (Feet below surface)

Depth to Static Water Level 40 (Feet) Date Measured 07/16/2020

Estimated Yield* (GPM) Test Type

Test Length (Hours) Total Drawdown (feet)

*May not be representative of a well's long term yield.

Geologic Log - Free Form

Depth from Surface Feet to Feet		Description
0	27	Clay
27	38	Gravel
38	72	Clay
72	78	Gravel
78	198	Clay
198	212	Gravel
212	215	Clay
215	217	Gravel
217	220	Clay

Casings

Casing #	Depth from Surface Feet to Feet		Casing Type	Material	Casings Specificatons	Wall Thickness (inches)	Outside Diameter (inches)	Screen Type	Slot Size if any (inches)	Description
1	0	200	Blank	PVC	OD: 6.625 in. | SDR: 17 | Thickness: 0.390 in.	0.39	6.625			
1	200	220	Screen	PVC	OD: 6.625 in. | SDR: 17 | Thickness: 0.390 in.	0.39	6.625	Milled Slots	0.032	

Annular Material

Depth from Surface Feet to Feet		Fill	Fill Type Details	Filter Pack Size	Description
0	80	Cement	Portland Cement/Neat Cement		
80	220	Filter Pack	Other Gravel Pack	6 x 16 and 6 x 12 mix	

Other Observations:

Borehole Specifications

Depth from Surface Feet to Feet		Borehole Diameter (inches)
0	220	12

Certification Statement

I, the undersigned, certify that this report is complete and accurate to the best of my knowledge and belief

Name: SULLIVAN DRILLING INC
Person, Firm or Corporation

P O BOX 1227 (Address) | ORLAND (City) | CA (State) | 95963 (Zip)

Signed: *electronic signature received* (C-57 Licensed Water Well Contractor) | 07/22/2020 (Date Signed) | 656504 (C-57 License Number)

DWR Use Only

CSG #	State Well Number	Site Code	Local Well Number

N — Latitude Deg/Min/Sec

W — Longitude Deg/Min/Sec

TRS:

APN:

State of California

Well Completion Report

Form DWR 188 Complete 9/13/2020

WCR2020-009245

Owner's Well Number | Date Work Began 07/13/2020 | Date Work Ended 07/16/2020

Local Permit Agency Butte County Public Health

Secondary Permit Agency | Permit Number EHWS18-0100 | Permit Date 02/10/2020

Well Owner (must remain confidential pursuant to Water Code 13752)

Name XXXXXXXXXXXXXXXXXXX

Mailing Address XXXXXXXXXXXXXXXXXXX

XXXXXXXXXXXXXXXXXXX

City XXXXXXXXXXXXXXXXXXX State XX Zip XXXXX

Planned Use and Activity

Activity New Well

Planned Use Water Supply Domestic

Well Location

Address 30 Guynn Bridge CT

City Chico Zip 95926 County Butte

Latitude 39 Deg. 44 Min. 38.3999 Sec. N Longitude -121 Deg. 52 Min. 29.6399 Sec. W

Dec. Lat. 39.744 Dec. Long. -121.8749

Vertical Datum | Horizontal Datum WGS84

Location Accuracy | Location Determination Method

APN 042-430-015

Township

Range

Section

Baseline Meridian

Ground Surface Elevation

Elevation Accuracy

Elevation Determination Method

Borehole Information

Orientation Vertical Specify

Drilling Method Direct Rotary Drilling Fluid Bentonite

Total Depth of Boring 220 Feet

Total Depth of Completed Well 220 Feet

Water Level and Yield of Completed Well

Depth to first water (Feet below surface)

Depth to Static Water Level 40 (Feet) Date Measured 07/16/2020

Estimated Yield* (GPM) Test Type

Test Length (Hours) Total Drawdown (feet)

*May not be representative of a well's long term yield.

Geologic Log - Free Form

Depth from Surface Feet to Feet		Description
0	27	Clay
27	38	Gravel
38	72	Clay
72	78	Gravel
78	198	Clay
198	212	Gravel
212	215	Clay
215	217	Gravel
217	220	Clay

Casings

Casing #	Depth from Surface Feet to Feet		Casing Type	Material	Casings Specificatons	Wall Thickness (inches)	Outside Diameter (inches)	Screen Type	Slot Size if any (inches)	Description
1	0	200	Blank	PVC	OD: 6.625 in. | SDR: 17 | Thickness: 0.390 in.	0.39	6.625			
1	200	220	Screen	PVC	OD: 6.625 in. | SDR: 17 | Thickness: 0.390 in.	0.39	6.625	Milled Slots	0.032	

Annular Material

Depth from Surface Feet to Feet		Fill	Fill Type Details	Filter Pack Size	Description
0	80	Cement	Portland Cement/Neat Cement		
80	220	Filter Pack	Other Gravel Pack	6 x 16 and 6 x 12 mix	

Other Observations:

Borehole Specifications

Depth from Surface Feet to Feet		Borehole Diameter (inches)
0	220	12

Certification Statement

I, the undersigned, certify that this report is complete and accurate to the best of my knowledge and belief

Name: SULLIVAN DRILLING INC
Person, Firm or Corporation

P O BOX 1227 (Address) | ORLAND (City) | CA (State) | 95963 (Zip)

Signed: *electronic signature received* (C-57 Licensed Water Well Contractor) | 07/22/2020 (Date Signed) | 656504 (C-57 License Number)

DWR Use Only

CSG #	State Well Number	Site Code	Local Well Number

N — Latitude Deg/Min/Sec

W — Longitude Deg/Min/Sec

TRS:

APN:

ORIGINAL
File with DWR

Page 1 of 1

STATE OF CALIFORNIA
WELL COMPLETION REPORT
Refer to Instruction Pamphlet

No. 1077176

DWR USE ONLY — DO NOT FILL IN
22N/01E-22
STATE WELL NO./STATION NO.
LATITUDE LONGITUDE
APN/TRS/OTHER

Owner's Well No. OB-2
Date Work Began 7-08-04, Ended 7-08-04
Local Permit Agency Butte County Environmental Health
Permit No. 404832 Permit Date 5-25-04

GEOLOGIC LOG

ORIENTATION (✓) X VERTICAL ___ HORIZONTAL ___ ANGLE ___ (SPECIFY)
DRILLING METHOD hollow stem auger FLUID none

DEPTH FROM SURFACE Ft.	to Ft.	DESCRIPTION *Describe material, grain size, color, etc.*
0	15	Silt w/sand
15	17	Silty sand
17	22	Silty sand w/gravel
22	25	Well graded sand w/silt
25	33	Silty sand w/gravel
33	36	Silty sand
36	41	Silty sand w/gravels
41	50	Silt
50	53	Silt w/sand
53	54	Lean clay
54	55.5	Silt w/sand

TOTAL DEPTH OF BORING 55.5 (Feet)
TOTAL DEPTH OF COMPLETED WELL 55 (Feet)

WELL OWNER

WELL LOCATION

Address 2233 Esplanade
City Chico
County Butte
APN Book 006 Page 120 Parcel 032
Township 22N Range 01E Section 22
Lat ___ DEG. ___ MIN. ___ SEC. N Long ___ DEG. ___ MIN. ___ SEC. W

LOCATION SKETCH

NORTH
WEST See attached map EAST
SOUTH

Illustrate or Describe Distance of Well from Roads, Buildings, Fences, Rivers, etc. and attach a map. Use additional paper if necessary. ***PLEASE BE ACCURATE & COMPLETE.***

ACTIVITY (✓)

X NEW WELL
MODIFICATION/REPAIR
___ Deepen
___ Other (Specify)
___ DESTROY *(Describe Procedures and Materials Under "GEOLOGIC LOG")*

USES (✓)
WATER SUPPLY
___ Domestic ___ Public
___ Irrigation ___ Industrial
___ MONITORING
___ TEST WELL
___ CATHODIC PROTECTION
___ HEAT EXCHANGE
___ DIRECT PUSH
___ INJECTION
___ VAPOR EXTRACTION
___ SPARGING
___ REMEDIATION
X OTHER (SPECIFY) observation

WATER LEVEL & YIELD OF COMPLETED WELL

DEPTH TO FIRST WATER 22 (Ft.) BELOW SURFACE
DEPTH OF STATIC WATER LEVEL 48.76/22.86 (Ft.) & DATE MEASURED 7-20-04
ESTIMATED YIELD * n/a (GPM) & TEST TYPE ___
TEST LENGTH ___ (Hrs.) TOTAL DRAWDOWN ___ (Ft.)
** May not be representative of a well's long-term yield.*

CASING (S)

DEPTH FROM SURFACE Ft.	to Ft.	BORE-HOLE DIA. (Inches)	TYPE (✓) BLANK	SCREEN	CONDUCTOR	FILL PIPE	MATERIAL / GRADE	INTERNAL DIAMETER (Inches)	GAUGE OR WALL THICKNESS	SLOT SIZE IF ANY (Inches)
0	15	10	x				PVC	2	Sch40	
15	30	10		x			PVC	2	Sch40	.020
0	40	10	x				PVC	2	Sch40	
40	55	10		x			PVC	2	Sch40	.020
							(Dual Completion Well)			

ANNULAR MATERIAL

DEPTH FROM SURFACE Ft.	to Ft.	TYPE CEMENT (✓)	BENTONITE (✓)	FILL (✓)	FILTER PACK (TYPE/SIZE)
0	2	x			Concrete
2	11.5		x		30% solid
11.5	13		x		Chips
13	31			x	#3 Sand
31	38		x		Pellets
38	55.5			x	#3 Sand

ATTACHMENTS (✓)

___ Geologic Log
___ Well Construction Diagram
___ Geophysical Log(s)
___ Soil/Water Chemical Analyses
X Other site map

ATTACH ADDITIONAL INFORMATION, IF IT EXISTS.

CERTIFICATION STATEMENT

I, the undersigned, certify that this report is complete and accurate to the best of my knowledge and belief.

NAME Diamond Core Drilling, Inc.
(PERSON, FIRM, OR CORPORATION) (TYPED OR PRINTED)

ADDRESS P.O. Box 491928 CITY Redding STATE CA ZIP 96049

Signed [signature] C-57 LICENSED WATER WELL CONTRACTOR
DATE SIGNED 8-13-04
C-57 LICENSE NUMBER 512406

DWR 188 REV. 05-03

IF ADDITIONAL SPACE IS NEEDED, USE NEXT CONSECUTIVELY NUMBERED FORM

OSP 03 78836

ORIGINAL
File Original, Duplicate and Triplicate with the
DIVISION OF WATER RESOURCES
P. O. BOX 388
SACRAMENTO 5, CALIFORNIA

WATER WELL DRILLERS REPORT

CONFIDENTIAL
(Sections 7076, 7077, 7078, Water Code)
STATE OF CALIFORNIA—DEPARTMENT OF PUBLIC WORKS
DIVISION OF WATER RESOURCES

Do Not Fill In

State Well No.
Other Well No. 22N/1E-33C
Region 3331

(1) DRILLER: (person, firm, or corporation)

Name N. R. JESSEE 22-A
Address RT 3 BOX 389
CHICO, CALIF.

(2) Proposed Use (Check)

Domestic	☐	Industrial	☐
Irrigation	☐	Test Well	☐
Municipal	☒	Other	☐

Equipment

Rotary	☐
Cable	☒
Dug Well	☐
Other	☐

(3) CASING:

50	ft. of	20	in	3/4"	lb./ga. casing	50 left in well
33¼	"	16	"	#10	" "	33¼ " " "
261	"	10	"	#10	" "	261 " " "
	"		"		" "	" " "

SHOES: - 1x12x20", 1x12x16"

Type and size of shoe or well ring TWO 5/8x¼x10"

(4) PERFORATIONS:

Type of perforator used MILLS

Perforated	ft. to	ft.	holes per	in.
" 168	" 229	" 12	" " 12	"
" 262	" 295	" 12	" " 12	"
" 310	" 350	" 12	" " 12	"
" 350	" 396	" 15	" " 12	"
"	"	"	" "	"
"	"	"	" "	"
"	"	"	" "	"
"	"	"	" "	"
"	"	"	" "	"

CONFIDENTIAL WELL LOG
Water Code Section 13752.
These data are restricted to governmental agencies for use in making studies.

Diameter of perforations 1/2 in., length 3 in.

(5) WATER LEVELS:

FEB 2 1983

Was electric log made of well? ☐ Yes ☒ No If yes, attach copy.

Depth at which water was first found	3¼ ft.
Standing level before perforating	31 ft.
Standing level after perforating	31 ft.
Note your observation of any change in water level while drilling	
Was a surface sanitary seal provided?	YES

(6) WELL PUMPING TEST:

Capacity 1800 gal./min. 80 ft. draw down

Was well gravel packed? NO

Were any strata sealed against pollution? NO

Temperature Was a chemical analysis made? NO Attach copy

If abandoned was well capped?

(7) TYPE OF WORK (check):

New well ☒ Reconditioning of well ☐
Deepening existing well ☐

(8) LOCATION OF WELL:

County BUTTE
R. F. D. or Street No. MANZANITA AVE. CHICO
CALIFORNIA WATER WELL # CHICO STATION 22 IN CITY OF CHICO (OUTSIDE) 200 ft. NORTH OF MANZANITA AVE. 450 ft. WEST OF CERES AVE.

(9) WELL LOG:

CONFIDENTIAL LOG
Water Code Sec. 13752

Total depth of well 600 ft.

Formation: Mention size of water gravel—

0	ft. to 11	ft.	Soil
11	" 27	"	Gravel
27	" 47	"	Clay, little Gravel
47	" 62	"	Gravelly Clay
62	" 74	"	Dirty Gravel
74	" 78	"	Gravelly Clay
78	" 85	"	Dirty Gravel
85	" 106	"	Clay & Gravel
106	" 110	"	Clay
110	" 118	"	Gravelly Clay
118	" 124	"	Gravel & Clay
124	" 132	"	Gravelly Clay
132	" 141	"	Sandy Clay
141	" 168	"	Gravelly Clay
168	" 180	"	Clay & Gravel
180	" 201	"	Gravelly Clay
201	" 212	"	Clay & Gravel
21222	221	"	Gravelly Clay
221	" 229	"	Dirty Gravel
229	" 237	"	Clay
237	" 249	"	Clay & Gravel
249	" 262	"	Clay
262	" 267	"	Gravel & Clay
267	" 270	"	Gravelly Clay
270	" 301	"	Gravel & Clay
301	" 306	"	Sandy Clay
306	" 318	"	Gravel & Clay
318	" 331	"	Cement Gravel
331	" 340	"	Gravel & Clay
340	" 349	"	Gravelly Clay
349	" 361	"	Dirty Gravel
361	" 396	"	Sand & Gravel
396	" 398	"	Clay
398	" 400	"	Sandstone
400	" 412	"	Gravel & Volcanic Ash

Work started 1/7/54 19 . Completed 1/10/54 19

Date of Report April 24, 1954 . 19

WELL DRILLER'S STATEMENT:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

[Signed] N. R. Jessee

By E Larsen

License No. 69138 Classification C-57

Dated April 2, 1954, 19

46370 7-51 30M QUIN ① SPO

ORIGINAL
File Original, Duplicate and Triplicate with the
DIVISION OF WATER RESOURCES
P. O. BOX 1079
SACRAMENTO 5, CALIFORNIA

LOCATION NOT CHECKED

SUPPLEMENTAL SHEET

LOCATION NOT CHECKED

Do Not Fill In

WATER WELL DRILLERS REPORT

(Sections 7076, 7077, 7078, Water Code)

State Well No. _____
Other Well No. 22N/1E-23
Region _____

(5) Well log (continued):
Total depth of well 600 ft.

Give details of formations penetrated, such as silt, peat, muck, sand, gravel, clay, shale, sandstone, hardpan, rock. Include size of gravel (diameter) and sand (fine, medium, coarse), color of material, structure (loose, packed, cemented, soft, hard, brittle).

Depth From Ground Surface				
412	ft. to	419	ft.	Clay
419	" "	440	"	Clay, Sandy Clay & Soft Sandstone
440	" "	462	"	Dirty Gravel
462	" "	471	"	Sand
471	" "	478	"	Sandy Volcanic Ash
478	" "	496	"	Gravel
496	" "	552	"	Ash & Sandy Clay
552	" "	558	"	Volcanic Ash
558	" "	579	"	Gravelly Ash
579	" "	589	"	Sandy Ash
589	" "	596	"	Sandstone
596	" "	600	"	Volcanic Ash

CALIFORNIA WATER SERVICE CHICO #22

DRILLED BY N. R. JESSEE

If additional space is required continue on DWR Form No. 246—Supplement, and attach to respective report copies.

REED & HUGHES

Well Drillers

CHICO, CALIFORNIA

3331

22/1E-23

BUTTE CO.

May 16, 1953.

WELL LOG

Well 1371 E LINDO AVE
45-56-

0'	5'	surface soil
5'	15'	coarse creek gravel
15'	63'	red clay
63'	83'	hard red clay (brittle)
83'	90'	gravel
90'	97'	sand w/ streaks of hard clay
97'	100'	gravel

Set 48'-8" Hard Red Casing-30'- 10 ga.-16'-12 ga.
Cement surface seal installed at 17' through 10" conductor

Water level 16'

CONFIDENTIAL WELL LOG

Water Code Section 13752.
These data are restricted to governmental agencies for use in making studies.

FEB 2 1993

ORIGINAL
File with DWR

WATER WELL DRILLERS REPORT

(Sections 7079, 7080, 7081, 7082, Water Code)

THE RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES

CONFIDENTIAL LOG
Water Code Sec. 13752
No. 4160
State Well No. 22N/1E-23
Other Well No. 38-01 CHICO

(1) OWNER:

(2) LOCATION OF WELL:
County BUTTE Owner's number, if any 38-01
Township, Range, and Section
Distance from cities, roads, railroads, etc. 80 ft. [redacted] east of 99 Freeway, 200 ft. south of Palmetto Avenue, Chico

(3) TYPE OF WORK (check): New Well [#] Deepening [ ] Reconditioning [ ] Destroying [ ]
If destruction, describe material and procedure in Item 11.

(4) PROPOSED USE (check): Domestic [ ] Industrial [ ] Municipal [#] Irrigation [ ] Test Well [ ] Other [ ]

(5) EQUIPMENT: Rotary [ ] Cable [#] Other [ ]

(6) CASING INSTALLED: STEEL: SINGLE [#] DOUBLE [#] OTHER:

From ft.	To ft.	Diam.	Gage or Wall
0	784	20	1/4"
[redacted]	784	16	#10dbl

If gravel packed

Diameter of Bore	From ft.	To ft.
[redacted]	[redacted]	
16"	89	500

Size of shoe or well ring: 1x15x16" Size of [redacted] 12"
Describe joint 16" dbl welded staggered

(7) PERFORATIONS OR SCREEN: Type of perforation or name of screen MOSS

From ft.	To ft.	Perf. per row	Rows per ft.	in. x in.
300	316	18 holes per ft.		5/32x2"
369	376	12 "	" "	same
424	437	18 "	" "	"
576	585	18 "	" "	"
620	664	12 "	" "	"

(8) CONSTRUCTION: 668-681 18 per ft. "
Was a surface sanitary seal provided? Yes [#] No [ ] To what depth 84 ft.
Were any strata sealed against pollution? Yes [#] No [ ] 84' If yes, note depth of strata
From 0 ft. to 84 ft.
From ft. to ft.
Method of sealing Cement grout between casings

(9) WATER LEVELS:
Depth at which water was first found, if known 16 ft.
Standing level before perforating, if known ft.
Standing level after perforating and developing 62 ft.

(10) WELL TESTS:
Was pump test made? Yes [#] No [ ] If yes, by whom? self
[redacted] 1800 gal./min. with 79 ft. drawdown after hrs.
Temperature of water Was a chemical analysis made? Yes [ ] No [ ]
Was electric log made of well? Yes [ ] No [#] If yes, attach copy

(11) WELL LOG:
Total depth 784 ft. Depth of completed well 784 ft.
Formation: Describe by color, character, size of material, and structure

ft. to	ft.	Formation
0	12'	Topsoil
12	16	Large Gravel & Clay
16	29	Dirty Gravel & Clay
29	50	Brown Sandy Clay
50	61	Gravel
61	70	Sand & Small Gravel
70	99	Soft Brown Clay
99	113	Cement Gravel
113	118	Brown Clay
118	122	Large Gravel
122	147	Brown Clay & Large Gravel
147	160	Brown Clay & Small Gravel
160	188	Packed Sand, some Gravel
188	248	Brown Clay
248	254	Lava
254	258	Brown Clay
258	272	Lava Ash
272	290	Lava Gravel & Sand
290	297	Sand
297	313	Lava Gravel to 1½" diameter
313	320	Volcanic Ash
320	326	Lava Sand
326	369	Volcanic Ash
369	376	Coarse Lava Sand
376	401	Volcanic Ash
401	409	Sand
409	416	Lava
416	421	Sand
421	433	Lava Gravel to 1" diameter
433	460	Volcanic Ash
460	469	Lava Sand
469	488	Volcanic Ash
488	498	LavaSand
498	513	Volcanic Ash
513	527	Lava Sand
527	543	Lava Ash
543	551	Lava Sand

CONFIDENTIAL WELL LOG
Water Code Section 13752 These data are restricted to governmental agencies for use making studies.
FEB 2 1983

Started 1/19 19 67 Completed 4/21 19 67

WELL DRILLER'S STATEMENT:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.
Plotted and Coded

NAME H. R. JESSEE As Well 22N/1E-23R1
(Person, firm, or corporation) (Typed or printed)
Address RT. 2 BOX 389
CHICO, CALIF.
(Signature)
License No. 6983 Dated 4/24/67

SKETCH LOCATION OF WELL ON REVERSE SIDE

56291-950 10-65 50M TRIP

ORIGINAL
File Original, Duplicate and Triplicate with the
DIVISION OF WATER RESOURCES
P. O. BOX 1079
SACRAMENTO 5, CALIFORNIA

SUPPLEMENTAL SHEET
Log #4160 continued

Do Not Fill In
State Well No.
Other Well No.
Region 22N/1E-23

WATER WELL DRILLERS REPORT

(Sections 7076, 7077, 7078, Water Code)

(5) Well log (continued):
Total depth of well 784 ft.

Give details of formations penetrated, such as silt, peat, muck, sand, gravel, clay, shale, sandstone, hardpan, rock. Include size of gravel (diameter) and sand (fine, medium, coarse), color of material, structure (loose, packed, cemented, soft, hard, brittle).

Depth From Ground Surface				
551	ft. to	578	ft.	Lava Ash
578	" "	587	"	Lava Gravel to 1" diameter
587	" "	610	"	Sand
610	" "	620	"	Volcanic Ash
620	" "	664	"	Small Gravel
664	" "	668	"	Small Gravel & Sand
668	" "	681	"	Gravel to 1" diameter
681	" "	687	"	Volcanic Ash, hard drilling
687	" "	705	"	Sand
705	" "	715	"	Volcanic Ash
715	" "	734	"	Sand
734	" "	747	"	Volcanic Ash
747	" "	767	"	Sand
767	" "	779	"	Sand with a trace of Volcanic Ash
779	" "	784	"	Hard Volcanic Ash

CONFIDENTIAL WELL LOG
Water Code Section 13752.
These data are restricted to governmental agencies for use in making studies.

FEB 2 1983

Plotted and Coded
As Well 22N/1E-23 B80

If additional space is required continue on DWR Form No. 246—Supplement, and attach to respective report copies.

DWR Form No. 246—Supplement REGIONAL WATER POLLUTION CONTROL BOARD COPY

23973 3-50 20M QUIN SPO

LOCATION NOT CHECKED

ORIGINAL
File Original, Duplicate and Triplicate with the
REGIONAL WATER POLLUTION
CONTROL BOARD No. 5
(Insert appropriate number)

WATER WELL DRILLERS REPORT
(Sections 7076, 7077, 7078, Water Code)
STATE OF CALIFORNIA

Do Not Fill In
No 14843

State Well No.
Other Well No. 22N/1E-23

22N/1E-23P
Jun 13

CONFIDENTIAL LOG
Water Code Sec. 13752

(2) LOCATION OF WELL:

County BUTTE Owner's number, if any—
R. F. D. or Street No. Well #24-01 CHICO
Outside City of Chico
250 ft. south of Longfellow Ave.
60 ft. west
60 ft. south of Lindo Ave.

(3) TYPE OF WORK (check):

New well ☒ Deepening ☐ Reconditioning ☐ Abandon ☐
If abandonment, describe material and procedure in Item 11.

(4) PROPOSED USE (check):

Domestic ☐ Industrial ☐ Municipal ☒
Irrigation ☐ Test Well ☐ Other ☐

(5) EQUIPMENT:

Rotary ☐
Cable ☒
Dug Well ☐

(6) CASING INSTALLED:

SINGLE ☒ DOUBLE ☒

				Gage or Wall
From 0 ft. to 74	ft.	20	Diam.	1/4
" 0 " 384	"	16	"	#10 dbl
364 " 600	"	10"	"	1/4"

Two 5/8x6x10" Shoes
3/4 x 6" by 20" Shoe
1x1/4x16" Shoe
Type and size of shoe or well ring
Describe joint Welded Collared

If gravel packed

Diameter of Bore	from ft.	to ft.
	"	"
	"	"
	"	"

Size of gravel:

CONFIDENTIAL WELL LOG
Water Code Section 13752.
These data are restricted to governmental agencies for use in making studies.

(7) PERFORATIONS:

Type of perforator used Mills
Size of perforations 3/8 3 in., length, by 3/8 in.

From	ft. to	ft.	Perf. per row	Rows per ft.
176	187			
198	350			
364	600			

FEB 2 1983

(8) CONSTRUCTION:

Was a surface sanitary seal provided? ☒ Yes ☐ No To what depth 74 ft.
Were any strata sealed against pollution? ☒ Yes ☐ No If yes, note depth of strata 74

From	ft. to	ft.
"	"	"

Method of Sealing Cemented between 16 & 20"

(9) WATER LEVELS:

Depth at which water was first found 15 15 ft.
Standing level before perforating 60 ft.
Standing level after perforating 60 ft.

(10) WELL TESTS:

Was a pump test made? ☒ Yes ☐ No If yes, by whom?
Yield: 2,000 gal./min. with 99 ft. draw down after 8 hrs.
Temperature of water Was a chemical analysis made? ☐ Yes ☒ No
Was electric log made of well? ☐ Yes ☒ No

(11) WELL LOG:

Total depth 600 ft. Depth of completed well 600 ft.

Formation: *Describe by color, character, size of material, and structure.*

0	ft. to 7	ft.	SOIL
7	" 19	"	Coarse Loose Gravel
19	" 21	"	Clay & Gravel
21	" 41	"	Red Clay
41	" 54	"	Red Sandy Clay
54	" 65	"	Red Soft Clay
65	" 68	"	Dirty Gravel to 1"
68	" 88	"	Red Clay
88	" 89	"	Cement Gravel
89	" 95	"	Clay & Gravel
95	" 99	"	Red Clay
99	" 129	"	Dirty Gravel, stood up
129	" 176	"	Red Clay Hardpan
176	" 186	"	Cement Gravel
186	" 198	"	Red Clay
198	" 200	"	Dirty Gravel
200	" 215	"	Brown Clay Hardpan
215	" 255	"	Cement Gravel & Large Rocks
255	" 290	"	Lava Ash & Rocks
290	" 296	"	Lava Ash & Fine Gravel
296	" 307	"	Lava Ash, Sand, & Fine Gravel
307	" 331	"	Brown Hardpan
331	" 343	"	Black Sand & Fine Gravel
343	" 372	"	Brown Sandy Hardpan
372	" 391	"	Sandstone
391	" 452	"	Sandstone streaked with Brown Hardpan
452	" 468	"	Fine Lava Gravel & Sand
468	" 486	"	Brown Sandy Hardpan
486	" 498	"	Cemented Lava Gravel
498	" 514	"	Lava Ash
514	" 521	"	Hard Lava Gravel
521	" 535	"	Fine Lava Gravel & Ash
535	" 538	"	Sandy Lava Ash
538	" 550	"	Brown Hardpan
550	" 556	"	Brown Sandy Hardpan
556	" 562	"	Coarse Lava Sand
562	" 591	"	Black Sand & Lava Ash
591	" 600	"	Solid Lava Ash
74	"	"	
	"	"	CONFIDENTIAL Section 7076.1, Water Code
	"	"	

Work started 19 , Completed 2/17/55 19

WELL DRILLER'S STATEMENT:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME N. R. Jessee
(Person, firm, or corporation) (Typed or printed)
Address Rt. 3 Box 389
Chico, Calif
[Signed] N R Jessee by E Larson
Well Driller

License No. 69838 Dated October 15, 1955

95609 3-54 50M QUIN ® SPO
DWR FORM NO. 246 (REV. 3-54)

RECEIVED

AUG 1 3 1993

DWR

ORIGINAL
File with DWR

Page 1 of 2

Owner's Well No. CMW104-AR

Date Work Began 04/29/93 , Ended 04/29/93

Local Permit Agency Butte Co Environmental Health Division

Permit No. _____ Permit Date _____

STATE OF CALIFORNIA
WELL COMPLETION REPORT
Refer to Instruction Pamphlet

No. 501858

DWR USE ONLY — DO NOT FILL IN
22N/01E-23M9
STATE WELL NO./STATION NO.
LATITUDE LONGITUDE
APN/TRS/OTHER

GEOLOGIC LOG

ORIENTATION (✓) ✓ VERTICAL ___ HORIZONTAL ___ ANGLE ___ (SPECIFY)

DEPTH TO FIRST WATER 10 (Ft.) BELOW SURFACE

DEPTH FROM SURFACE Ft.	to Ft.	DESCRIPTION *Describe material, grain size, color, etc.*
		See attached Geologic Log and construction Details.

TOTAL DEPTH OF BORING 51 (Feet)

TOTAL DEPTH OF COMPLETED WELL 50.5 (Feet)

WELL LOCATION

Address SPRUCE Ave. Btwn E 1st and E 3rd Ave

City Chico

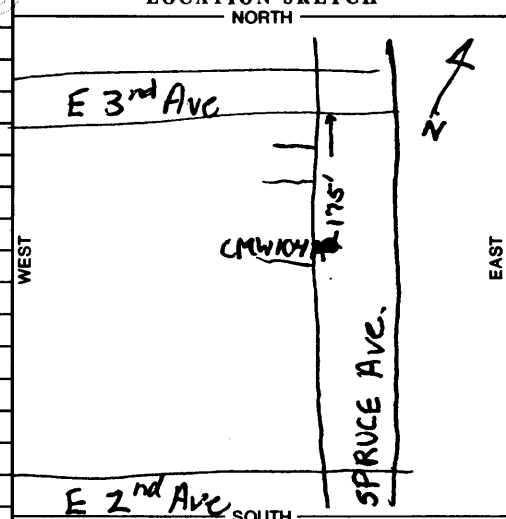
County Butte

APN Book 003 Page 007 Parcel 076-007

Township or 22N Range 1E Section 23

Latitude DEG. MIN. SEC. NORTH Longitude DEG. MIN. SEC. WEST

LOCATION SKETCH



Illustrate or Describe Distance of Well from Landmarks such as Roads, Buildings, Fences, Rivers, etc. PLEASE BE ACCURATE & COMPLETE.

ACTIVITY (✓)

✓ NEW WELL

MODIFICATION/REPAIR

___ Deepen

___ Other (Specify)

___ DESTROY (Describe Procedures and Materials Under "GEOLOGIC LOG")

PLANNED USE(S)

(✓)

✓ MONITORING

WATER SUPPLY

___ Domestic

___ Public

___ Irrigation

___ Industrial

___ "TEST WELL"

___ CATHODIC PROTECTION

___ OTHER (Specify)

DRILLING METHOD Hollow Stem Auger FLUID —

WATER LEVEL & YIELD OF COMPLETED WELL

DEPTH OF STATIC WATER LEVEL 19.91 (Ft.) & DATE MEASURED 05/03/93

ESTIMATED YIELD* _____ (GPM) & TEST TYPE _____

TEST LENGTH _____ (Hrs.) TOTAL DRAWDOWN _____ (Ft.)

* *May not be representative of a well's long-term yield.*

CASING(S)

DEPTH FROM SURFACE Ft.	to Ft.	BORE-HOLE DIA. (Inches)	TYPE (✓) BLANK	SCREEN	CONDUCTOR	FILL PIPE	MATERIAL/GRADE	INTERNAL DIAMETER (Inches)	GAUGE OR WALL THICKNESS	SLOT SIZE IF ANY (Inches)
0.5	40	12.25	✓				Sch 40 PVC	4"	1/4"	—
40	50	"		✓			"	"	"	0.020

ANNULAR MATERIAL

DEPTH FROM SURFACE Ft.	to Ft.	TYPE CEMENT (✓)	BENTONITE (✓)	FILL (✓)	FILTER PACK (TYPE/SIZE)
0.5	35	✓			
35	37		✓		
37	50				Sand #3

AUG 20 1993

ATTACHMENTS (✓)

✓ Geologic Log

✓ Well Construction Diagram

___ Geophysical Log(s)

___ Soil/Water Chemical Analyses

___ Other _____

ATTACH ADDITIONAL INFORMATION, IF IT EXISTS.

CERTIFICATION STATEMENT

I, the undersigned, certify that this report is complete and accurate to the best of my knowledge and belief.

NAME Layne Western Co. 147
(PERSON, FIRM, OR CORPORATION) (TYPED OR PRINTED)

ADDRESS P.O. Box 1324 CITY Woodland STATE CA ZIP 95776

Signed Kenneth Wilson WELL DRILLER/AUTHORIZED REPRESENTATIVE

DATE SIGNED 8-3-93

C-57 LICENSE NUMBER

DWR 188 REV. 7-90

IF ADDITIONAL SPACE IS NEEDED, USE NEXT CONSECUTIVELY NUMBERED FORM

URS
100 California Street, Suite 500
San Francisco, CA 94111-4529
TEL (415) 774-2700
FAX (415) 398-1904

SOIL BORING AND MONITORING WELL INSTALLATION LOG

Boring No. CMW104A
Page 1 of 1

Project DTSC Chico GW
Location Chico, California
Drilled By Layne Western
Drilling Method Hollow Stem Auger
Bit Type Finger bit Bit Size 8 1/2
Sampling Method CA Modified Split Spoon

Project Number 41-65582.1202
Start Date-Time 04/29/93 - 14:45 Finish Date-Time 04/29/93 - 16:30
Logged By MS Reviewed By BER
Weather/Temp (° F) 70's - 80's
Field Monitoring Equip. PID
Surface Conditions Near curb road bed - no asphalt.
Spruce Ave. btwn. E 2nd and E 3rd Aves.
Ground Surface Elevation 199.98 ft. MSL

Water Level Information				
Depth to Groundwater (ft.)				
Date - Time				
Depth of Hole (feet)				

Sample Number	Sampled Depth Interval	Field Monitoring Data (ppm)	Blows/6"	Depth (feet)	Well Completion Diagram	Graphic Log	Soil Group Symbol (USCS)	Soil Description
	No Samples			5			ML	CLAYEY, SANDY SILT, mod. plasticity, 20% very fine sand, dark brown, moist, and soft.
				10			GM	SANDY SILTY GRAVEL (GM), well graded, 50% 1" - 1 1/2", 20% 1/2" - 1", 10% coarse sand, 20% fine sand and silt, subangular to subrounded, brown 7.5YR, very moist, and dense.
				15				Clay lense.
								Gravel, cobbles to 6" subrounded.
				20				Gravel.
				25				GW encountered at 23 feet during drilling. SILTY, SANDY GRAVEL, well graded, subangular to subrounded, brown 7.5YR4/4, saturated, very dense, from bottom of auger plug.
				30				
				35				SILTY SANDY GRAVEL, well graded, subangular to subrounded, brown 7.5YR4/4, saturated, and dense.
				40				
				45			SP	SAND, poorly graded, 10% silt, 10% fine sand, 70% medium sand, 10% coarse sand, arkosic (quartz, calcite, mica plag (?)), subangular, dark brown, 7.5YR3/3, saturated, medium dense.
				50			ML CL	SILTY CLAY, plastic, 2% white (calcite?) nodules, brown 7.5YR3/3, moist, and stiff.
								Bottom of boring at 51.0 feet.

REMARKS:

State of California

Well Completion Report

Form DWR 188 Complete 5/3/2019

WCR2019-003678

Owner's Well Number: DC-GB-0022 | Date Work Began: 03/04/2019 | Date Work Ended: 03/08/2019

Local Permit Agency: Butte County Public Health

Secondary Permit Agency: | Permit Number: WP0000999 | Permit Date: 02/05/2019

Well Owner (must remain confidential pursuant to Water Code 13752)

Name: XXXXXXXXXXXXXXXXXXX

Mailing Address: XXXXXXXXXXXXXXXXXXX

XXXXXXXXXXXXXXXXXXX

City: XXXXXXXXXXXXXXXXXXX | State: XX | Zip: XXXXX

Planned Use and Activity

Activity: New Well

Planned Use: Cathodic Protection

Well Location

Address: 1385 Hawthorne AVE

City: Chico | Zip: 95926 | County: Butte

Latitude: 39 Deg. 44 Min. 53.9447 Sec. N | Longitude: -121 Deg. 49 Min. 11.1359 Sec. W

Dec. Lat.: 39.748318 | Dec. Long.: -121.81976

Vertical Datum: | Horizontal Datum: WGS84

Location Accuracy: | Location Determination Method:

APN: 045-441-008

Township: 22 N

Range: 01 E

Section: 24

Baseline Meridian: Mount Diablo

Ground Surface Elevation:

Elevation Accuracy:

Elevation Determination Method:

Borehole Information

Orientation: Vertical | Specify:

Drilling Method: Sonic | Drilling Fluid: None

Total Depth of Boring: 150 Feet

Total Depth of Completed Well: 150 Feet

Water Level and Yield of Completed Well

Depth to first water: (Feet below surface)

Depth to Static Water Level: (Feet) | Date Measured:

Estimated Yield*: (GPM) | Test Type:

Test Length: (Hours) | Total Drawdown: (feet)

*May not be representative of a well's long term yield.

Geologic Log - Free Form

Depth from Surface Feet to Feet		Description
0	24	Brown Silt
24	45	Medium gravel with silt
45	90	Clayey silt with gravel
90	129	Brown silt with gravel
129	150	Small gravel with silt

Casings

Casing #	Depth from Surface Feet to Feet		Casing Type	Material	Casings Specificatons	Wall Thickness (inches)	Outside Diameter (inches)	Screen Type	Slot Size if any (inches)	Description
1	0	50	Blank	PVC	N/A	0.147	2			SCH 80
1	50	150	Screen	PVC	N/A	0.147	2	Milled Slots	0.01	SCH 80

Annular Material

Depth from Surface Feet to Feet		Fill	Fill Type Details	Filter Pack Size	Description
0	41	Cement	Portland Cement/Neat Cement		
41	43	Bentonite	Other Bentonite		Medium Chips
43	150	Filter Pack	Other Gravel Pack		Asbury coke breeze

Other Observations:

Borehole Specifications

Depth from Surface Feet to Feet		Borehole Diameter (inches)
0	150	8

Certification Statement

I, the undersigned, certify that this report is complete and accurate to the best of my knowledge and belief

Name: CASCADE DRILLING L P (Person, Firm or Corporation)

P O BOX 1184 (Address) | WOODINVILLE (City) | WA (State) | 98072 (Zip)

Signed: *electronic signature received* (C-57 Licensed Water Well Contractor) | 03/15/2019 (Date Signed) | 938110 (C-57 License Number)

DWR Use Only

CSG #	State Well Number	Site Code	Local Well Number

				N						W

Latitude Deg/Min/Sec **Longitude Deg/Min/Sec**

TRS:

APN:

*The free Adobe Reader may be used to view and complete this form. However, software must be purchased to complete, save, and reuse a saved form.

File Original with DWR

State of California

Well Completion Report

Refer to Instruction Pamphlet

No. e0266600

MAY 21 2015

Page 1 of 4

Owner's Well Number FC-MW-11B

Date Work Began 03/04/2015 Date Work Ended 3/5/2015

Local Permit Agency Butte County Public Health

Permit Number WP0000528 Permit Date 2/18/15

DWR Use Only – Do Not Fill In

State Well Number/Site Number

N W

Latitude Longitude

APN/TRS/Other

Geologic Log

Orientation ◉ Vertical ○ Horizontal ○ Angle Specify

Drilling Method HSA Drilling Fluid

Depth from Surface Feet	to Feet	Description Describe material, grain size, color, etc
0	1	Road Base/Fill
1	15	Sandy Silt (ML), dark brown (7.5YR 3/3)
15	21	Sand w/Silt (SP), dark reddish brown (5YR 3/4)
21	23	Silty Sand w/Cobbles (SM), brown (5YR 4/3)
23	45	No lith collected to 45 ft bgs due to cobbles.
45	53	Silty Sand (SM), dark brown (7.5YR 3/3)
53	58	No recovery
58	60	Silty Sand (SM), dark brown (7.5YR 3/3)
60	63	Sand (SP), dark brown (7.5YR 3/3)
63	65	Sandy Silty (ML), dark brown (7.5YR 3/3)

Total Depth of Boring 65 Feet

Total Depth of Completed Well 65 Feet

Well Owner

[redacted]

Well Location

Address 660 Mangrove Ave

City Chico County Butte

Latitude ___ Deg. ___ Min. ___ Sec. N Longitude ___ Deg. ___ Min. ___ Sec. W

Datum ___ Dec. Lat. ___ Dec. Long. ___

APN Book 003 Page 280 Parcel 039

Township 22N Range 01E Section 20

Location Sketch

(Sketch must be drawn by hand after form is printed.)

North

West East

South

Illustrate or describe distance of well from roads, buildings, fences, rivers, etc. and attach a map. Use additional paper if necessary. **Please be accurate and complete.**

Activity

◉ New Well
○ Modification/Repair
○ Deepen
○ Other
○ Destroy
Describe procedures and materials under "GEOLOGIC LOG"

Planned Uses

○ Water Supply
☐ Domestic ☐ Public
☐ Irrigation ☐ Industrial
○ Cathodic Protection
○ Dewatering
○ Heat Exchange
○ Injection
◉ Monitoring
○ Remediation
○ Sparging
○ Test Well
○ Vapor Extraction
○ Other

Water Level and Yield of Completed Well

Depth to first water ___ (Feet below surface)

Depth to Static Water Level ___ (Feet) Date Measured ___

Estimated Yield * ___ (GPM) Test Type ___

Test Length ___ (Hours) Total Drawdown ___ (Feet)

*May not be representative of a well's long term yield.

Casings

Depth from Surface Feet	to Feet	Borehole Diameter (Inches)	Type	Material	Wall Thickness (Inches)	Outside Diameter (Inches)	Screen Type	Slot Size if Any (Inches)
0	50	8	Blank	PVC Sch. 40		2		
50	60	8	Screen	PVC Sch. 40		2	Milled Slots	0.010
60	65	8	Blank	PVC Sch. 40		2		

Annular Material

Depth from Surface Feet	to Feet	Fill	Description
0	44	Cement	
44	47	Bentonite	
47	48	Filter Pack	#30 Sand
48	65	Filter Pack	#2/12 Sand

Attachments

☑ Geologic Log
☑ Well Construction Diagram
☐ Geophysical Log(s)
☐ Soil/Water Chemical Analyses
☑ Other Location map

Attach additional information, if it exists.

Certification Statement

I, the undersigned, certify that this report is complete and accurate to the best of my knowledge and belief

Name National EWP
Person, Firm or Corporation

2086 East Main Street Woodland CA 95776
Address City State Zip

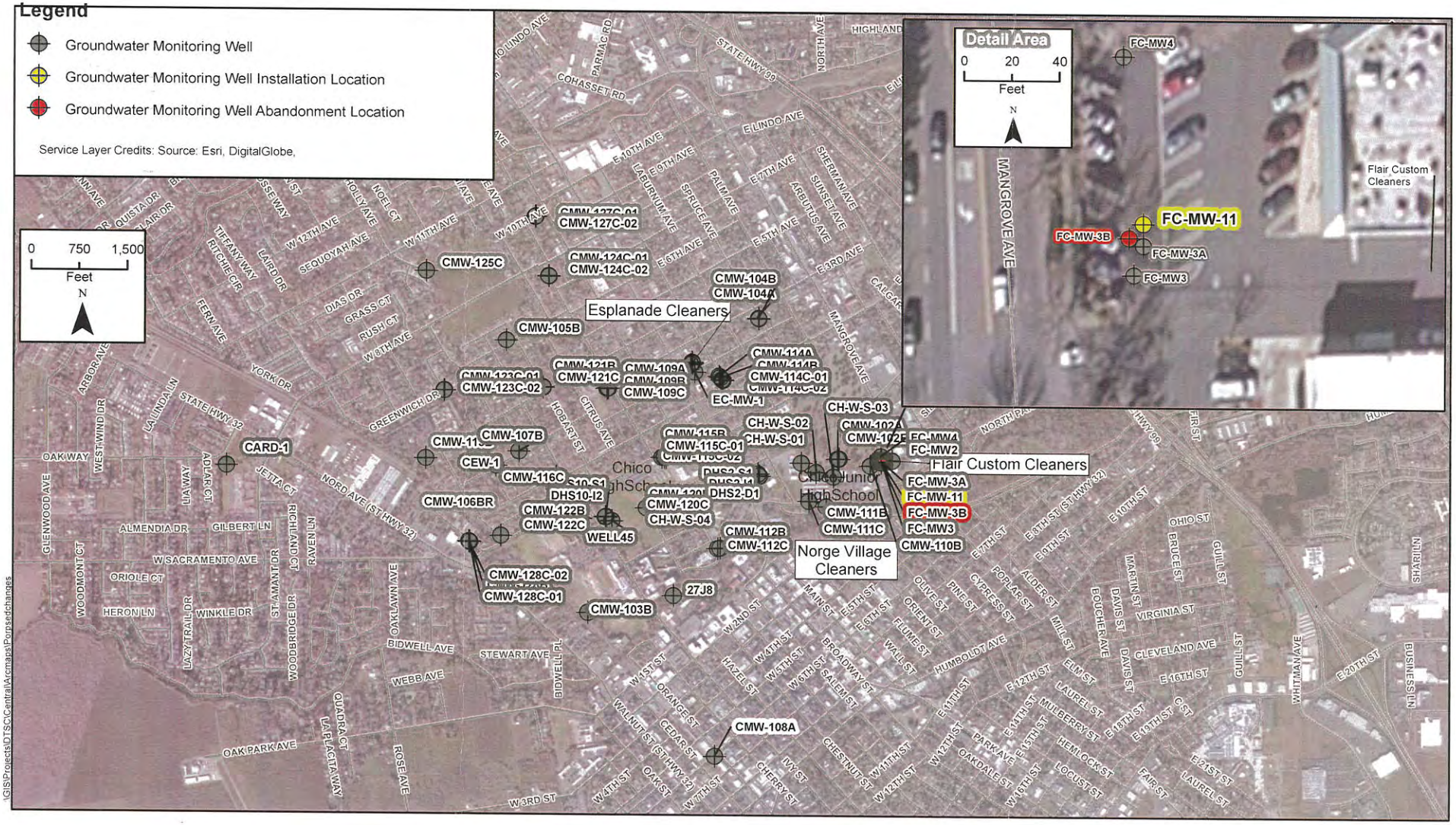
Signed [signature]
C-57 Licensed Water Well Contractor

5/15/15
Date Signed

953646
C-57 License Number

DWR 188 REV. 1/2006

IF ADDITIONAL SPACE IS NEEDED, USE NEXT CONSECUTIVELY NUMBERED FORM



URS

Well Abandonment and Replacement Location Map

Central Plume- Shallow Zone Aquifer

Chico, California

Figure 2-1

*The free Adobe Reader may be used to view and complete this form. However, software must be purchased to complete, save, and reuse a saved form.

File Original with DWR

State of California

Well Completion Report

Refer to Instruction Pamphlet

No. e0266600

MAY 2 1 2015

Page 1 of 4

Owner's Well Number FC-MW-11B

Date Work Began 03/04/2015 Date Work Ended 3/5/2015

Local Permit Agency Butte County Public Health

Permit Number WP0000528 Permit Date 2/18/15

DWR Use Only – Do Not Fill In

22N/01E-26

State Well Number/Site Number

N

W

Latitude

Longitude

APN/TRS/Other

Geologic Log

Orientation ◉ Vertical ○ Horizontal ○ Angle Specify

Drilling Method HSA Drilling Fluid

Depth from Surface Feet	to Feet	Description Describe material, grain size, color, etc
0	1	Road Base/Fill
1	15	Sandy Silt (ML), dark brown (7.5YR 3/3)
15	21	Sand w/Silt (SP), dark reddish brown (5YR 3/4)
21	23	Silty Sand w/Cobbles (SM), brown (5YR 4/3)
23	45	No lith collected to 45 ft bgs due to cobbles.
45	53	Silty Sand (SM), dark brown (7.5YR 3/3)
53	58	No recovery
58	60	Silty Sand (SM), dark brown (7.5YR 3/3)
60	63	Sand (SP), dark brown (7.5YR 3/3)
63	65	Sandy Silty (ML), dark brown (7.5YR 3/3)

Total Depth of Boring 65 Feet

Total Depth of Completed Well 65 Feet

Well Owner

[redacted]

Well Location

Address 660 Mangrove Ave

City Chico County Butte

Latitude ___ Deg. ___ Min. ___ Sec. N Longitude ___ Deg. ___ Min. ___ Sec. W

Datum ___ Dec. Lat. ___ Dec. Long. ___

APN Book 003 Page 280 Parcel 039

Township 22N Range 01E Section 26

Location Sketch

(Sketch must be drawn by hand after form is printed.)

North

West East

South

Illustrate or describe distance of well from roads, buildings, fences, rivers, etc. and attach a map. Use additional paper if necessary. **Please be accurate and complete.**

Activity

◉ New Well
○ Modification/Repair
○ Deepen
○ Other
○ Destroy
Describe procedures and materials under "GEOLOGIC LOG"

Planned Uses

○ Water Supply
☐ Domestic ☐ Public
☐ Irrigation ☐ Industrial
○ Cathodic Protection
○ Dewatering
○ Heat Exchange
○ Injection
◉ Monitoring
○ Remediation
○ Sparging
○ Test Well
○ Vapor Extraction
○ Other

Water Level and Yield of Completed Well

Depth to first water ___ (Feet below surface)

Depth to Static Water Level ___ (Feet) Date Measured ___

Estimated Yield * ___ (GPM) Test Type ___

Test Length ___ (Hours) Total Drawdown ___ (Feet)

*May not be representative of a well's long term yield.

Casings

Depth from Surface Feet	to Feet	Borehole Diameter (Inches)	Type	Material	Wall Thickness (Inches)	Outside Diameter (Inches)	Screen Type	Slot Size if Any (Inches)
0	50	8	Blank	PVC Sch. 40		2		
50	60	8	Screen	PVC Sch. 40		2	Milled Slots	0.010
60	65	8	Blank	PVC Sch. 40		2		

Annular Material

Depth from Surface Feet	to Feet	Fill	Description
0	44	Cement	
44	47	Bentonite	
47	48	Filter Pack	#30 Sand
48	65	Filter Pack	#2/12 Sand

Attachments

☑ Geologic Log
☑ Well Construction Diagram
☐ Geophysical Log(s)
☐ Soil/Water Chemical Analyses
☑ Other Location map

Attach additional information, if it exists.

Certification Statement

I, the undersigned, certify that this report is complete and accurate to the best of my knowledge and belief

Name National EWP
Person, Firm or Corporation

2086 East Main Street Woodland CA 95776
Address City State Zip

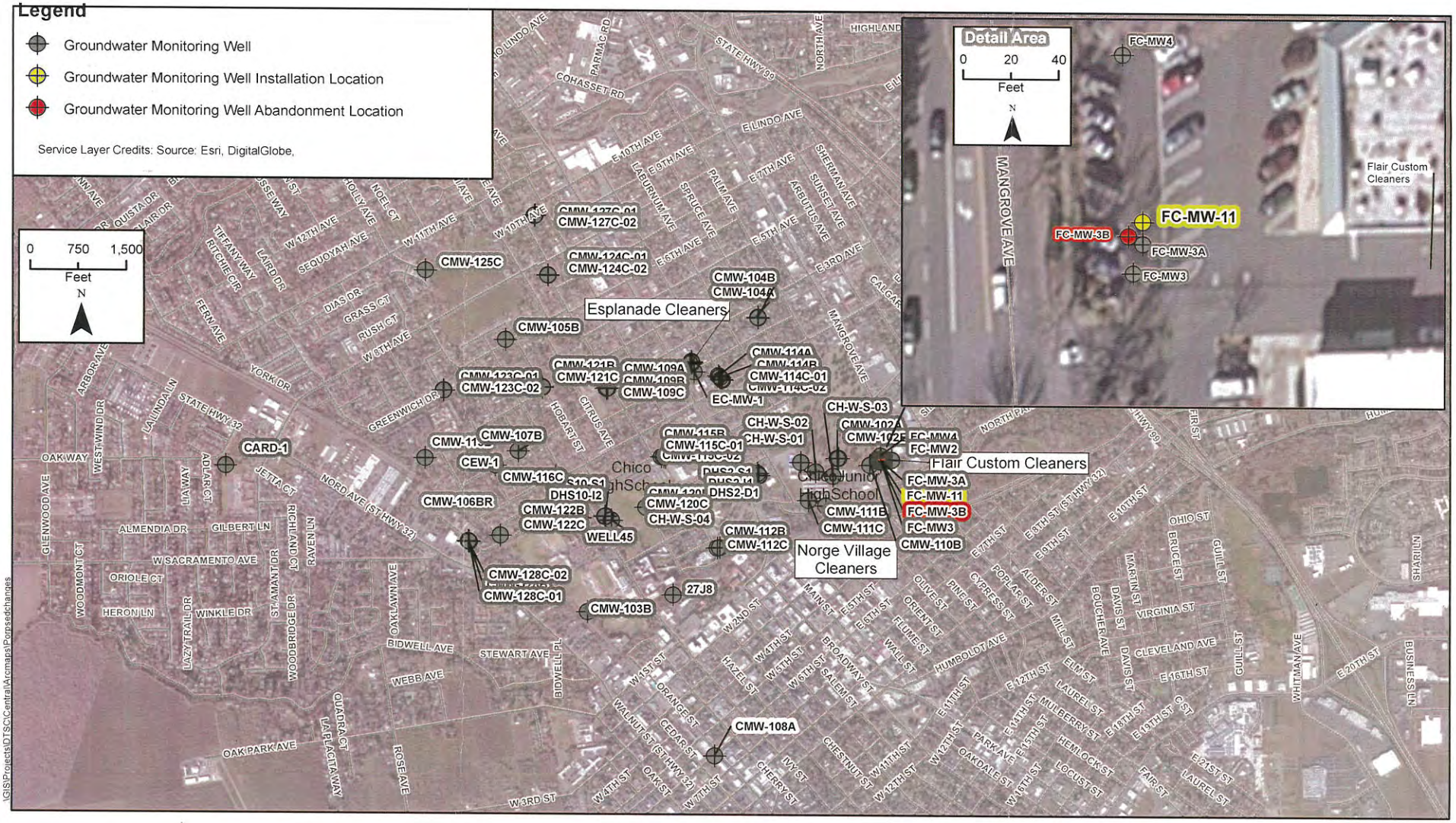
Signed [signature]
C-57 Licensed Water Well Contractor

5/15/15
Date Signed

953646
C-57 License Number

DWR 188 REV. 1/2006

IF ADDITIONAL SPACE IS NEEDED, USE NEXT CONSECUTIVELY NUMBERED FORM



Well Abandonment and Replacement Location Map

Central Plume- Shallow Zone Aquifer
Chico, California

Figure 2-1

State of California

Well Completion Report

Form DWR 188 Complete 11/1/2016

WCR2016-007202

Owner's Well Number 9-03 | Date Work Began 08/08/2016 | Date Work Ended 10/11/2016

Local Permit Agency Butte County Public Health

Secondary Permit Agency | Permit Number EHWL16-0011 | Permit Date 05/16/2016

Well Owner (must remain confidential pursuant to Water Code 13752)

Name XXXXXXXXXXXXXXXXXXX

Mailing Address XXXXXXXXXXXXXXXXXXX

XXXXXXXXXXXXXXXXXXX

City XXXXXXXXXXXXXXXXXXX State XX Zip XXXXX

Planned Use and Activity

Activity New Well

Planned Use Water Supply Public

Well Location

Address 515 Olive ST

City Chico Zip 95926 County Butte

Latitude Deg. Min. Sec. N Longitude Deg. Min. Sec. W

Dec. Lat. 39.7307700 Dec. Long. -121.8338800

Vertical Datum Horizontal Datum WGS84

Location Accuracy Location Determination Method

APN 004186001

Township 22 N

Range 01 E

Section 26

Baseline Meridian Mount Diablo

Ground Surface Elevation

Elevation Accuracy

Elevation Determination Method

Borehole Information

Orientation Vertical Specify

Drilling Method Reverse Circulation Drilling Fluid Water

Total Depth of Boring 727 Feet

Total Depth of Completed Well 590 Feet

Water Level and Yield of Completed Well

Depth to first water (Feet below surface)

Depth to Static Water Level 88.98 (Feet) Date Measured 10/11/2016

Estimated Yield* 1000 (GPM) Test Type Pump

Test Length 12 (Hours) Total Drawdown (feet)

*May not be representative of a well's long term yield.

Geologic Log - Free Form

Depth from Surface Feet to Feet		Description
0	80	Sandy silt with gravel and cobbles, reddish brown to brown
80	120	Sandy silt with clay, reddish brown to brown. Trace gravel
120	170	Gravel with sand, blue to grey. Gravel very fine to coarse, rounded to angular. Sand is brown, fine to very coarse.
170	220	Sandy silt with gravel, reddish brown. Poorly indurated mudstone/volcanic mudflow. Gravel is fine to coarse, rounded to angular.
220	270	Gravel with sand, gravel is fine to very coarse, sub-round to sub-angular. Sand is fine to very coarse.
270	340	Gravel with sand, gravel is fine to coarse. Poorly indurated reddish brown sandstone, fine to very coarse.
340	390	Gravel and sandstone lenses. Gravel is fine to coarse, sub-angular to sub-round. Sandstone poorly indurated, reddish brown, fine to very coarse.
390	440	Sand with gravel, very dark brown to blue-black. Sand is very fine to medium, round to angular. Gravel very fine to fine, round to angular.
440	460	Sand and clay lenses, dark brown. Poorly indurated light brown mudstone/very fine sandstone.
460	520	Sandstone and sand with gravel, dark brown. Trace gravel very fine to medium.
520	540	Sandstone, with silty sand. Poorly indurated light brown sandstone/mudstone.
540	580	Gravel and sand, dark brown to blue-black. Gravel is very fine to medium.
580	610	Sandstone, dark brown, poorly indurated.
610	680	Sandstone with gravel, dark brown to blue-black. Gravel very fine to coarse, round to angular.

680	727	Gravel with sandstone/sand, blue-black. Gravel is very fine to coarse, round to angular.

Casings

Casing #	Depth from Surface Feet to Feet		Casing Type	Material	Casings Specificatons	Wall Thickness (inches)	Outside Diameter (inches)	Screen Type	Slot Size if any (inches)	Description
1	0	50	Conductor or Fill Pipe	Mild Steel	N/A	0.375	36			Conductor
2	0	300	Blank	Copper-Bearing Steel	Nominal Size: 16 in. | Thickness: 5/16 in. | OD: 16-5/8 in.	0.3125	16.625			
2	300	380	Screen	Copper-Bearing Steel	Nominal Size: 16 in. | Thickness: 5/16 in. | OD: 16-5/8 in.	0.3125	16.625	Louver	0.05	
2	380	390	Blank	Copper-Bearing Steel	Nominal Size: 16 in. | Thickness: 5/16 in. | OD: 16-5/8 in.	0.3125	16.625			
2	390	435	Screen	Copper-Bearing Steel	Nominal Size: 16 in. | Thickness: 5/16 in. | OD: 16-5/8 in.	0.3125	16.625	Louver	0.05	
2	435	460	Blank	Copper-Bearing Steel	Nominal Size: 16 in. | Thickness: 5/16 in. | OD: 16-5/8 in.	0.3125	16.625			
2	460	510	Screen	Copper-Bearing Steel	Nominal Size: 16 in. | Thickness: 5/16 in. | OD: 16-5/8 in.	0.3125	16.625	Louver	0.05	
2	510	540	Blank	Copper-Bearing Steel	Nominal Size: 16 in. | Thickness: 5/16 in. | OD: 16-5/8 in.	0.3125	16.625			
2	540	580	Screen	Copper-Bearing Steel	Nominal Size: 16 in. | Thickness: 5/16 in. | OD: 16-5/8 in.	0.3125	16.625	Louver	0.05	
2	580	590	Blank	Copper-Bearing Steel	Nominal Size: 16 in. | Thickness: 5/16 in. | OD: 16-5/8 in.	0.3125	16.625			
3	0	250	Other: Sounding Tube	Mild Steel	N/A	0.216	3			
4	0	280	Conductor or Fill Pipe	Mild Steel	N/A	0.216	4			Gravel Fill Pipe

Annular Material

Depth from Surface Feet to Feet		Fill	Fill Type Details	Filter Pack Size	Description
0	260	Cement	10.3 Sack Mix		
260	600	Filter Pack	Other Gravel Pack	#8	SRI
600	620	Bentonite	Non Hydrated Bentonite		
620	727	Other Fill	See description.		Native Material

Other Observations:

Borehole Specifications

Depth from Surface Feet to Feet		Borehole Diameter (inches)
0	50	48
50	600	28
600	727	18

Certification Statement

I, the undersigned, certify that this report is complete and accurate to the best of my knowledge and belief

Name: ROADRUNNER DRILLING & PUMP COMPANY INC (Person, Firm or Corporation)

80 BEE JAY WAY (Address) | WOODLAND (City) | CA (State) | 95776 (Zip)

Signed: *electronic signature received* (C-57 Licensed Water Well Contractor) | 10/17/2016 (Date Signed) | 803909 (C-57 License Number)

Attachments

683-15Chico Stn 9-03 EL 5.pdf - Geophysical Log

683-15Chico 9-03 Dev.pdf - Geophysical Log

683-15Chico 9-03 XY 5Caliper.pdf - Geophysical Log

DWR Use Only

CSG #	State Well Number	Site Code	Local Well Number

N — Latitude Deg/Min/Sec

W — Longitude Deg/Min/Sec

TRS:

APN:

State of California

Well Completion Report

Form DWR 188 Complete 9/23/2022

WCR2022-008969

Owner's Well Number: SB-15 | Date Work Began: 01/22/2022 | Date Work Ended: 01/27/2022

Local Permit Agency: Butte County Public Health

Secondary Permit Agency: | Permit Number: WP0001358 | Permit Date: 01/21/2022

Well Owner (must remain confidential pursuant to Water Code 13752)

Name: XXXXXXXXXXXXXXXXXXX

Mailing Address: XXXXXXXXXXXXXXXXXXX

XXXXXXXXXXXXXXXXXXX

City: XXXXXXXXXXXXXXXXXXX | State: XX | Zip: XXXXX

Planned Use and Activity

Activity: New Well

Planned Use: Other

Specify: Boring

Well Location

Address: 330 Nord AVE

City: Chico | Zip: 95926 | County: Butte

Latitude: 39 (Deg.) 44 (Min.) 16.2956 (Sec.) N | Longitude: -121 (Deg.) 52 (Min.) 23.1236 (Sec.) W

Dec. Lat.: 39.7378599 | Dec. Long.: -121.8730899

Vertical Datum: | Horizontal Datum: WGS84

Location Accuracy: | Location Determination Method:

APN: 043-230-033-000

Township: 22 N

Range: 01 E

Section: 28

Baseline Meridian: Mount Diablo

Ground Surface Elevation:

Elevation Accuracy:

Elevation Determination Method:

Borehole Information

Orientation: Vertical | Specify:

Drilling Method: Direct Push | Drilling Fluid: None

Total Depth of Boring: 15 Feet

Total Depth of Completed Well: 15 Feet

Water Level and Yield of Completed Well

Depth to first water: (Feet below surface)

Depth to Static Water Level: (Feet) | Date Measured:

Estimated Yield*: (GPM) | Test Type:

Test Length: (Hours) | Total Drawdown: (feet)

*May not be representative of a well's long term yield.

Geologic Log - Free Form

Depth from Surface Feet to Feet		Description
0	15	Clayey Silt

Casings

Casing #	Depth from Surface Feet to Feet		Casing Type	Material	Casings Specificatons	Wall Thickness (inches)	Outside Diameter (inches)	Screen Type	Slot Size if any (inches)	Description
1	0	15	No Casing Installed	PVC	N/A		0.0833			Temporary PVC Pipe

Annular Material

Depth from Surface Feet to Feet		Fill	Fill Type Details	Filter Pack Size	Description
0	15	Cement	Portland Cement/Neat Cement		Type II/V

Other Observations:

Borehole Specifications

Depth from Surface Feet to Feet		Borehole Diameter (inches)
0	15	2

Certification Statement

I, the undersigned, certify that this report is complete and accurate to the best of my knowledge and belief

Name: T S A DRILLING INC DBA PENECORE DRILLING (Person, Firm or Corporation)

220 NORTH EAST ST (Address) | WOODLAND (City) | CA (State) | 95776 (Zip)

Signed: *electronic signature received* (C-57 Licensed Water Well Contractor) | 08/02/2022 (Date Signed) | 906899 (C-57 License Number)

Attachments

Site Plan Map.pdf - Location Map

DWR Use Only

CSG #	State Well Number	Site Code	Local Well Number

N — **Latitude Deg/Min/Sec**

W — **Longitude Deg/Min/Sec**

TRS:

APN:

State of California

Well Completion Report

Form DWR 188 Complete 9/23/2022

WCR2022-008969

Owner's Well Number: SB-15 | Date Work Began: 01/22/2022 | Date Work Ended: 01/27/2022

Local Permit Agency: Butte County Public Health

Secondary Permit Agency: | Permit Number: WP0001358 | Permit Date: 01/21/2022

Well Owner (must remain confidential pursuant to Water Code 13752)

Name: XXXXXXXXXXXXXXXXXXX

Mailing Address: XXXXXXXXXXXXXXXXXXX

XXXXXXXXXXXXXXXXXXX

City: XXXXXXXXXXXXXXXXXXX | State: XX | Zip: XXXXX

Planned Use and Activity

Activity: New Well

Planned Use: Other

Specify: Boring

Well Location

Address: 330 Nord AVE

City: Chico | Zip: 95926 | County: Butte

Latitude: 39 (Deg.) 44 (Min.) 16.2956 (Sec.) N | Longitude: -121 (Deg.) 52 (Min.) 23.1236 (Sec.) W

Dec. Lat.: 39.7378599 | Dec. Long.: -121.8730899

Vertical Datum: | Horizontal Datum: WGS84

Location Accuracy: | Location Determination Method:

APN: 043-230-033-000

Township: 22 N

Range: 01 E

Section: 28

Baseline Meridian: Mount Diablo

Ground Surface Elevation:

Elevation Accuracy:

Elevation Determination Method:

Borehole Information

Orientation: Vertical | Specify:

Drilling Method: Direct Push | Drilling Fluid: None

Total Depth of Boring: 15 Feet

Total Depth of Completed Well: 15 Feet

Water Level and Yield of Completed Well

Depth to first water: (Feet below surface)

Depth to Static Water Level: (Feet) | Date Measured:

Estimated Yield*: (GPM) | Test Type:

Test Length: (Hours) | Total Drawdown: (feet)

*May not be representative of a well's long term yield.

Geologic Log - Free Form

Depth from Surface Feet to Feet		Description
0	15	Clayey Silt

Casings

Casing #	Depth from Surface Feet to Feet		Casing Type	Material	Casings Specificatons	Wall Thickness (inches)	Outside Diameter (inches)	Screen Type	Slot Size if any (inches)	Description
1	0	15	No Casing Installed	PVC	N/A		0.0833			Temporary PVC Pipe

Annular Material

Depth from Surface Feet to Feet		Fill	Fill Type Details	Filter Pack Size	Description
0	15	Cement	Portland Cement/Neat Cement		Type II/V

Other Observations:

Borehole Specifications

Depth from Surface Feet to Feet		Borehole Diameter (inches)
0	15	2

Certification Statement

I, the undersigned, certify that this report is complete and accurate to the best of my knowledge and belief

Name: T S A DRILLING INC DBA PENECORE DRILLING (Person, Firm or Corporation)

220 NORTH EAST ST (Address) | WOODLAND (City) | CA (State) | 95776 (Zip)

Signed: *electronic signature received* (C-57 Licensed Water Well Contractor) | 08/02/2022 (Date Signed) | 906899 (C-57 License Number)

Attachments

Site Plan Map.pdf - Location Map

DWR Use Only

CSG #	State Well Number	Site Code	Local Well Number

N — **Latitude Deg/Min/Sec**

W — **Longitude Deg/Min/Sec**

TRS:

APN:

State of California

Well Completion Report

Form DWR 188 Complete 2/28/2023

WCR2023-001535

Owner's Well Number | Date Work Began | Date Work Ended 01/26/2023

Local Permit Agency Butte County Public Health

Secondary Permit Agency | Permit Number EHWS22-0037 | Permit Date 04/28/2022

Well Owner (must remain confidential pursuant to Water Code 13752)

Name XXXXXXXXXXXXXXXXXXX

Mailing Address XXXXXXXXXXXXXXXXXXX

XXXXXXXXXXXXXXXXXXX

City XXXXXXXXXXXXXXXXXXX State XX Zip XXXXX

Planned Use and Activity

Activity New Well

Planned Use Water Supply Domestic

Well Location

Address

City Zip County Butte

Latitude 39 Deg. 44 Min. 11.3099 Sec. N Longitude -121 Deg. 53 Min. 8.6171 Sec. W

Dec. Lat. 39.736475 Dec. Long. -121.885727

Vertical Datum Horizontal Datum WGS84

Location Accuracy Location Determination Method

APN 042-130-008

Township 22 N

Range 01 E

Section 28

Baseline Meridian Mount Diablo

Ground Surface Elevation

Elevation Accuracy

Elevation Determination Method

Borehole Information

Orientation Vertical Specify

Drilling Method Direct Rotary Drilling Fluid Bentonite

Total Depth of Boring 185 Feet

Total Depth of Completed Well 185 Feet

Water Level and Yield of Completed Well

Depth to first water (Feet below surface)

Depth to Static Water Level 54 (Feet) Date Measured 01/26/2023

Estimated Yield* 80 (GPM) Test Type

Test Length (Hours) Total Drawdown (feet)

*May not be representative of a well's long term yield.

Geologic Log - Free Form

Depth from Surface Feet to Feet		Description
0	11	black soil
11	18	sandy gravel
18	27	clay
27	31	gravel
31	48	clay
48	58	gravel
58	70	clay
70	82	gravel
82	91	clay
91	99	gravel
99	118	clay
118	127	gravel
127	141	clay
141	153	gravel

153	155	clay
155	162	gravel
162	165	clay
165	180	gravel
180	185	clay

Casings

Casing #	Depth from Surface Feet to Feet		Casing Type	Material	Casings Specificatons	Wall Thickness (inches)	Outside Diameter (inches)	Screen Type	Slot Size if any (inches)	Description
1	0	165	Blank	PVC	OD: 5.563 in. | SDR: 17 | Thickness: 0.327 in.	0.327	5.563			
1	165	185	Screen	PVC	OD: 5.563 in. | SDR: 17 | Thickness: 0.327 in.	0.327	5.563	Milled Slots	0.035	

Annular Material

Depth from Surface Feet to Feet		Fill	Fill Type Details	Filter Pack Size	Description
0	25	Bentonite	Non Hydrated Bentonite		3/8 chip
25	185	Filter Pack	6 x 16		

Other Observations:

Borehole Specifications

Depth from Surface Feet to Feet		Borehole Diameter (inches)
0	185	10

Certification Statement

I, the undersigned, certify that this report is complete and accurate to the best of my knowledge and belief

Name: SULLIVAN DRILLING INC (Person, Firm or Corporation)

P O BOX 1227 (Address) | ORLAND (City) | CA (State) | 95963 (Zip)

Signed: *electronic signature received* (C-57 Licensed Water Well Contractor) | 02/01/2023 (Date Signed) | 656504 (C-57 License Number)

DWR Use Only

CSG #	State Well Number	Site Code	Local Well Number

N — Latitude Deg/Min/Sec

W — Longitude Deg/Min/Sec

TRS:

APN:

State of California

Well Completion Report

Form DWR 188 Complete 2/28/2023

WCR2023-001535

Owner's Well Number | Date Work Began | Date Work Ended 01/26/2023

Local Permit Agency Butte County Public Health

Secondary Permit Agency | Permit Number EHWS22-0037 | Permit Date 04/28/2022

Well Owner (must remain confidential pursuant to Water Code 13752)

Name XXXXXXXXXXXXXXXXXXX

Mailing Address XXXXXXXXXXXXXXXXXXX

XXXXXXXXXXXXXXXXXXX

City XXXXXXXXXXXXXXXXXXX State XX Zip XXXXX

Planned Use and Activity

Activity New Well

Planned Use Water Supply Domestic

Well Location

Address

City Zip County Butte

Latitude 39 Deg. 44 Min. 11.3099 Sec. N Longitude -121 Deg. 53 Min. 8.6171 Sec. W

Dec. Lat. 39.736475 Dec. Long. -121.885727

Vertical Datum Horizontal Datum WGS84

Location Accuracy Location Determination Method

APN 042-130-008

Township 22 N

Range 01 E

Section 28

Baseline Meridian Mount Diablo

Ground Surface Elevation

Elevation Accuracy

Elevation Determination Method

Borehole Information

Orientation Vertical Specify

Drilling Method Direct Rotary Drilling Fluid Bentonite

Total Depth of Boring 185 Feet

Total Depth of Completed Well 185 Feet

Water Level and Yield of Completed Well

Depth to first water (Feet below surface)

Depth to Static Water Level 54 (Feet) Date Measured 01/26/2023

Estimated Yield* 80 (GPM) Test Type

Test Length (Hours) Total Drawdown (feet)

*May not be representative of a well's long term yield.

Geologic Log - Free Form

Depth from Surface Feet to Feet		Description
0	11	black soil
11	18	sandy gravel
18	27	clay
27	31	gravel
31	48	clay
48	58	gravel
58	70	clay
70	82	gravel
82	91	clay
91	99	gravel
99	118	clay
118	127	gravel
127	141	clay
141	153	gravel

153	155	clay
155	162	gravel
162	165	clay
165	180	gravel
180	185	clay

Casings

Casing #	Depth from Surface Feet to Feet		Casing Type	Material	Casings Specificatons	Wall Thickness (inches)	Outside Diameter (inches)	Screen Type	Slot Size if any (inches)	Description
1	0	165	Blank	PVC	OD: 5.563 in. | SDR: 17 | Thickness: 0.327 in.	0.327	5.563			
1	165	185	Screen	PVC	OD: 5.563 in. | SDR: 17 | Thickness: 0.327 in.	0.327	5.563	Milled Slots	0.035	

Annular Material

Depth from Surface Feet to Feet		Fill	Fill Type Details	Filter Pack Size	Description
0	25	Bentonite	Non Hydrated Bentonite		3/8 chip
25	185	Filter Pack	6 x 16		

Other Observations:

Borehole Specifications

Depth from Surface Feet to Feet		Borehole Diameter (inches)
0	185	10

Certification Statement

I, the undersigned, certify that this report is complete and accurate to the best of my knowledge and belief

Name: SULLIVAN DRILLING INC (Person, Firm or Corporation)

P O BOX 1227 (Address) | ORLAND (City) | CA (State) | 95963 (Zip)

Signed: *electronic signature received* (C-57 Licensed Water Well Contractor) | 02/01/2023 (Date Signed) | 656504 (C-57 License Number)

DWR Use Only

CSG #	State Well Number	Site Code	Local Well Number

N — Latitude Deg/Min/Sec

W — Longitude Deg/Min/Sec

TRS:

APN:

State of California

Well Completion Report

Form DWR 188 Complete 2/1/2023

WCR2022-014566

Owner's Well Number: 2 | Date Work Began: 12/05/2022 | Date Work Ended: 12/09/2022

Local Permit Agency: Butte County Public Health

Secondary Permit Agency: | Permit Number: EHWS22-0127 | Permit Date: 09/29/2022

Well Owner (must remain confidential pursuant to Water Code 13752)

Name: XXXXXXXXXXXXXXXXXXX

Mailing Address: XXXXXXXXXXXXXXXXXXX

XXXXXXXXXXXXXXXXXXX

City: XXXXXXXXXXXXXXXXXXX | State: XX | Zip: XXXXX

Planned Use and Activity

Activity: New Well

Planned Use: Water Supply Domestic

Well Location

Address: 2221 WEST SACRAMWNTO AVE AVE

City: CHICO | Zip: 95973 | County: Butte

Latitude: 39 Deg. 43 Min. 48.9756 Sec. N | Longitude: -121 Deg. 53 Min. 12.746 Sec. W

Dec. Lat.: 39.730271 | Dec. Long.: -121.8868739

Vertical Datum: | Horizontal Datum: WGS84

Location Accuracy: 5 Ft | Location Determination Method: GPS

APN: 042-160-045

Township: 22 N

Range: 01 E

Section: 29

Baseline Meridian: Mount Diablo

Ground Surface Elevation: 234

Elevation Accuracy: 10 Ft

Elevation Determination Method: GPS

Borehole Information

Orientation: Vertical | Specify:

Drilling Method: Direct Rotary | Drilling Fluid: Bentonite

Total Depth of Boring: 330 Feet

Total Depth of Completed Well: 330 Feet

Water Level and Yield of Completed Well

Depth to first water: 40 (Feet below surface)

Depth to Static Water Level: 54 (Feet) | Date Measured: 12/09/2022

Estimated Yield*: 35 (GPM) | Test Type: Air Lift

Test Length: 4 (Hours) | Total Drawdown: 0 (feet)

*May not be representative of a well's long term yield.

Geologic Log - Lite

Depth from Surface Feet to Feet		Material Type	Material Color	Material Texture	Material Description
0	40	Clay	Brown	Clayey	SOIL/CLAY
40	105	Gravel	Black & White	Gravely	GRAVEL LITTLE SANDS W/ CLAY
105	150	Gravel	Black & White	Gravely	GRAVEL VERY LITTLE SAND
150	170	Clay	Brown	Clayey	CLAY DRY
170	210	Gravel	Black & White	Gravely	GRAVEL W/ SAND
210	250	Clay	Brown	Clayey	CLAY
250	300	Gravel	Black & White	Gravely	GRAVEL W/ SAND WATER BEARING
300	330	Rock	Brown	Clayey	CLAY W/GRAVEL

Casings

Casing #	Depth from Surface Feet to Feet		Casing Type	Material	Casings Specificatons	Wall Thickness (inches)	Outside Diameter (inches)	Screen Type	Slot Size if any (inches)	Description
1	0	120	Blank	PVC	OD: 5.563 in. | SDR: 17 | Thickness: 0.327 in.	0.327	5.563			
1	120	200	Screen	PVC	OD: 5.563 in. | SDR: 17 | Thickness: 0.327 in.	0.327	5.563	Milled Slots	32	.032
1	200	240	Blank	PVC	OD: 5.563 in. | SDR: 17 | Thickness: 0.327 in.	0.327	5.563			
1	240	320	Screen	PVC	OD: 5.563 in. | SDR: 17 | Thickness: 0.327 in.	0.327	5.563	Milled Slots	32	.032
1	320	330	Blank	PVC	OD: 5.563 in. | SDR: 17 | Thickness: 0.327 in.	0.327	5.563			W/5" CAP INSTALLED

Annular Material

Depth from Surface Feet to Feet		Fill	Fill Type Details	Filter Pack Size	Description
0	22	Bentonite	Non Hydrated Bentonite	3/8" CHIPS DUMPED FROM SURFACE WHILE ADDING WATER	W/ 5'X5'X5.5" CONCRET SLAB
22	330	Filter Pack	Other Gravel Pack	#6 SILICA	3 BAGS

Other Observations:

Borehole Specifications

Depth from Surface Feet to Feet		Borehole Diameter (inches)
0	330	10.75

Certification Statement

I, the undersigned, certify that this report is complete and accurate to the best of my knowledge and belief

Name: VICS WELL DRILLING INC (Person, Firm or Corporation)

3807 SIERRA HWY UNIT #6 (Address) | ACTON (City) | CA (State) | 93510 (Zip)

Signed: *electronic signature received* (C-57 Licensed Water Well Contractor) | 12/12/2022 (Date Signed) | 886439 (C-57 License Number)

Attachments

042-160-045 EHWS22-0127 Well Permit Issued 09-29-2022.pdf - Permit

DISINFECTION WALTER JUHL.pdf - Other

DIR, PROPERTY LINES.pdf - Location Map

PLOT PLAN#1.jpg - Location Map

WALT JUHL DRILLERS REPORT.docx - Other

DWR Use Only

CSG #	State Well Number	Site Code	Local Well Number

N — Latitude Deg/Min/Sec

W — Longitude Deg/Min/Sec

TRS:

APN:

State of California

Well Completion Report

Form DWR 188 Complete 12/20/2023

WCR2023-011619

Owner's Well Number | Date Work Began: 09/07/2023 | Date Work Ended: 09/08/2023

Local Permit Agency: Butte County Public Health

Secondary Permit Agency | Permit Number: EHWS23-0060 | Permit Date: 08/18/2023

Well Owner (must remain confidential pursuant to Water Code 13752)

Name: XXXXXXXXXXXXXXXXXXX

Mailing Address: XXXXXXXXXXXXXXXXXXX

XXXXXXXXXXXXXXXXXXX

City: XXXXXXXXXXXXXXXXXXX | State: XX | Zip: XXXXX

Planned Use and Activity

Activity: New Well

Planned Use: Water Supply Domestic

Well Location

Address: 2315 W Sacramento AVE

City: Chico | Zip: 95926 | County: Butte

Latitude: 39 Deg. 43 Min. 51.5647 Sec. N | Longitude: -121 Deg. 53 Min. 21.5674 Sec. W

Dec. Lat.: 39.7309902 | Dec. Long.: -121.8893243

Vertical Datum | Horizontal Datum: WGS84

Location Accuracy | Location Determination Method

APN: 042-160-023

Township: 22 N

Range: 01 E

Section: 29

Baseline Meridian: Mount Diablo

Ground Surface Elevation

Elevation Accuracy

Elevation Determination Method

Borehole Information

Orientation: Vertical | Specify

Drilling Method: Other - Air Rotary | Drilling Fluid: Foam

Total Depth of Boring: 230 Feet

Total Depth of Completed Well: 230 Feet

Water Level and Yield of Completed Well

Depth to first water: 54 (Feet below surface)

Depth to Static Water Level: 51 (Feet) | Date Measured: 09/08/2023

Estimated Yield*: 100 (GPM) | Test Type: Air Lift

Test Length: (Hours) | Total Drawdown: (feet)

*May not be representative of a well's long term yield.

Geologic Log - Free Form

Depth from Surface Feet to Feet		Description
0	7	Top Soil
7	54	Clay
54	58	Sand / Gravel
58	76	Clay
76	90	Sand / Pea Gravel
90	115	Clay
115	177	Sandstone
177	181	Sand / Gravel
181	230	Sandstone

Casings

Casing #	Depth from Surface Feet to Feet		Casing Type	Material	Casings Specificatons	Wall Thickness (inches)	Outside Diameter (inches)	Screen Type	Slot Size if any (inches)	Description
1	0	220	Blank	Low Carbon Steel	Grade: ASTM A53	0.156	6.725			
2	210	230	Blank	PVC	N/A	0.5	4.5			Certa-Lok Liner

Annular Material

Depth from Surface Feet to Feet		Fill	Fill Type Details	Filter Pack Size	Description
0	23	Bentonite	Non Hydrated Bentonite		
23	230	Other Fill	See description.		No Fill

Other Observations:

Borehole Specifications

Depth from Surface Feet to Feet		Borehole Diameter (inches)
0	23	12
23	230	6

Certification Statement

I, the undersigned, certify that this report is complete and accurate to the best of my knowledge and belief

Name: W.S. HEITMAN DRILLING & PUMPS
Person, Firm or Corporation

623 BUCKINGHAM PLACE (Address) | CHICO (City) | CA (State) | 95973 (Zip)

Signed: *electronic signature received* (C-57 Licensed Water Well Contractor) | 10/23/2023 (Date Signed) | 386577 (C-57 License Number)

DWR Use Only

CSG #	State Well Number	Site Code	Local Well Number

N — Latitude Deg/Min/Sec

W — Longitude Deg/Min/Sec

TRS:

APN:

State of California

Well Completion Report

Form DWR 188 Complete 5/9/2021

WCR2021-003096

Owner's Well Number | Date Work Began | Date Work Ended 02/25/2021

Local Permit Agency Butte County Public Health

Secondary Permit Agency | Permit Number EHWL20-0009 | Permit Date

Well Owner (must remain confidential pursuant to Water Code 13752)

Name XXXXXXXXXXXXXXXXXXX

Mailing Address XXXXXXXXXXXXXXXXXXX

XXXXXXXXXXXXXXXXXXX

City XXXXXXXXXXXXXXXXXXX State XX Zip XXXXX

Planned Use and Activity

Activity New Well

Planned Use Water Supply Irrigation - Agriculture

Well Location

Address 12005 Meridian Rd

City Chico Zip 95973 County Butte

Latitude 39 Deg. 44 Min. 28.68 Sec. N

Longitude -121 Deg. 55 Min. 11.6399 Sec. W

Dec. Lat. 39.7413 Dec. Long. -121.9199

Vertical Datum | Horizontal Datum WGS84

Location Accuracy | Location Determination Method

APN 039-600-006

Township 22 N

Range 01 W

Section 24

Baseline Meridian Mount Diablo

Ground Surface Elevation

Elevation Accuracy

Elevation Determination Method

Borehole Information

Orientation Vertical Specify

Drilling Method Reverse Circulation Drilling Fluid Bentonite

Total Depth of Boring 340 Feet

Total Depth of Completed Well 340 Feet

Water Level and Yield of Completed Well

Depth to first water (Feet below surface)

Depth to Static Water Level 25 (Feet) Date Measured 02/25/2021

Estimated Yield* (GPM) Test Type

Test Length (Hours) Total Drawdown (feet)

*May not be representative of a well's long term yield.

Geologic Log - Free Form

Depth from Surface Feet to Feet		Description
0	10	gravel
10	16	clay
16	20	gravel
20	32	clay
32	65	gravel
65	76	clay
76	91	gravel
91	117	clay
117	124	gravel
124	164	sandy clay
164	216	gravel
216	232	sand & clay
232	245	gravel
245	254	clay
254	260	gravel

260	283	clay
283	291	gravel
291	317	clay
317	329	gravel
329	340	clay

Casings

Casing #	Depth from Surface Feet to Feet		Casing Type	Material	Casings Specificatons	Wall Thickness (inches)	Outside Diameter (inches)	Screen Type	Slot Size if any (inches)	Description
1	0	160	Blank	PVC	OD: 17.400 in. | SDR: 17 | Thickness: 1.024 in.	1.024	17.4			
1	160	210	Screen	PVC	OD: 17.400 in. | SDR: 17 | Thickness: 1.024 in.	1.024	17.4	Milled Slots	0.05	
1	210	230	Blank	PVC	OD: 17.400 in. | SDR: 17 | Thickness: 1.024 in.	1.024	17.4			
1	230	250	Screen	PVC	OD: 17.400 in. | SDR: 17 | Thickness: 1.024 in.	1.024	17.4	Milled Slots	0.05	
1	250	280	Blank	PVC	OD: 17.400 in. | SDR: 17 | Thickness: 1.024 in.	1.024	17.4			
1	280	340	Screen	PVC	OD: 17.400 in. | SDR: 17 | Thickness: 1.024 in.	1.024	17.4	Milled Slots	0.05	

Annular Material

Depth from Surface Feet to Feet		Fill	Fill Type Details	Filter Pack Size	Description
0	30	Cement	10.3 Sack Mix		
30	340	Filter Pack	Other Gravel Pack		6x16 6x12

Other Observations:

Borehole Specifications

Depth from Surface Feet to Feet		Borehole Diameter (inches)
0	340	28

Certification Statement

I, the undersigned, certify that this report is complete and accurate to the best of my knowledge and belief

Name: SULLIVAN DRILLING INC
Person, Firm or Corporation

P O BOX 1227 (Address) | ORLAND (City) | CA (State) | 95963 (Zip)

Signed: *electronic signature received* (C-57 Licensed Water Well Contractor) | 03/11/2021 (Date Signed) | 656504 (C-57 License Number)

DWR Use Only

CSG #	State Well Number	Site Code	Local Well Number

N — Latitude Deg/Min/Sec

W — Longitude Deg/Min/Sec

TRS:

APN:

22N/2E-17 18

ORIGINAL

File with DWR

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES

WATER WELL DRILLERS REPORT

Do not fill in

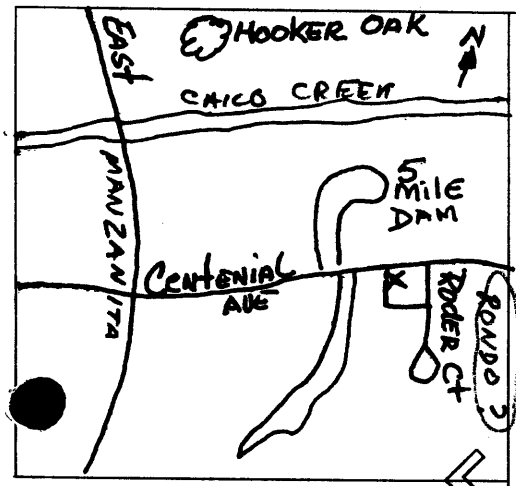
No. 102791

[redacted] of Intent No.
Local Permit No. or Date

State Well No. CONFIDENTIAL LOG
Other Well No. ~~Water Code Sec. 13752~~

(1) [redacted]
Address
City

(2) LOCATION OF WELL (See instructions):
County Butte Owner's Well Number
Well address if different from above
Township 22N Range 2 E Section ~~17~~ 18
Distance from cities, roads, railroads, fences, etc. On Centennial Ave
#8 Rondo Ct. ?



WELL LOCATION SKETCH

(3) TYPE OF WORK:
New Well [X] Deepening [ ]
Reconstruction [ ]
Reconditioning [ ]
Horizontal Well [ ]
Destruction [ ] (Describe destruction materials and procedures in Item 12)

(4) PROPOSED USE:
Domestic [X]
Irrigation [ ]
Industrial [ ]
Test Well [ ]
Stock [ ]
Municipal [ ]
Other [ ]

(5) EQUIPMENT:
Rotary [X] Reverse [ ]
Cable [ ] Air [ ]
Other [ ] Bucket [ ]

(6) GRAVEL PACK:
Yes [ ] No [X] Size
Diameter of bore
Packed from to ft.

(7) CASING INSTALLED:
Steel [X] Plastic [ ] Concrete [ ]

From ft.	To ft.	Dia. in.	Gage or Wall
0	65	6"	.188

(8) PERFORATIONS:
Type of perforation or size of screen

From ft.	To ft.	Slot size

(9) WELL SEAL:
Was surface sanitary seal provided? Yes [X] No [ ] If yes, to depth 20 ft.
Were strata sealed against pollution? Yes [ ] No [X] Interval ft.
Method of sealing Bentonite

(10) WATER LEVELS:
Depth of first water, if known 35 ft.
Standing level after well completion 20 ft.

(11) WELL TESTS:
Was well test made? Yes [ ] No [X] If yes, by whom?
Type of test Pump [ ] Bailer [ ] Air lift [X]
Depth to water at start of test ft. At end of test ft
[redacted] arge 80 gal/min after hours Water temperature
[redacted]ical analysis made? Yes [ ] No [X] If yes, by whom?
Was electric log made? Yes [ ] No [X] If yes, attach copy to this report

(12) WELL LOG: Total depth 120 ft. Depth of completed well 120 ft.

from ft.	to ft.	Formation (Describe by color, character, size or material)
0	4	Vina Loam
4	20	Boulders
20	30	Clay and sand
30	60	Clay streaks
60	100	Clay and Gravel
100	105	Sand stone
105	108	Gravel (Coarse)
108	120	Brown sandstone

CONFIDENTIAL LOG NOT FOR PUBLIC USE WATER CODE SEC. 13752

Work started 7-30- 19 80 Completed 7-30- 19 80

WELL DRILLER'S STATEMENT:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

SIGNED /s/ Jay D. Plummer (Well Driller)
NAME J.C. Plummer & Co. (Person, firm, or corporation) (Typed or printed)
Address 745 Cherry St.
City Chico, CA. Zip 95926
License No. 279572 Date of this report 10-20-80

DWR 188 (REV. 7-76) IF ADDITIONAL SPACE IS NEEDED, USE NEXT CONSECUTIVELY NUMBERED FORM

ORIGINAL
File with DWR

Page 1 of 1

Owner's Well No. _____

Date Work Began 4-24-92, Ended 4-24-92

Local Permit Agency Butte County Health Dept.

Permit No. 11-02-93 Permit Date 4-21-92

STATE OF CALIFORNIA

WELL COMPLETION REPORT

Refer to Instruction Pamphlet

No. 393426

DWR USE ONLY — DO NOT FALSIFY

22N/02E-18M

STATE WELL NO./STATION NO.

LATITUDE LONGITUDE

APN/TRS/OTHER

GEOLOGIC LOG

ORIENTATION (✓) X VERTICAL ___ HORIZONTAL ___ ANGLE ___ (SPECIFY)

DEPTH TO FIRST WATER 16 (Ft.) BELOW SURFACE

DEPTH FROM SURFACE Ft.	to Ft.	DESCRIPTION *Describe material, grain size, color, etc.*
0	4	Top soil
4	14	Sand & gravel
14	18	Lava cap
18	46	Clay & cobbles
46	71	Clay
71	86	Cemented sand & gravel
86	170	Hard brown clay w/rock seams
170	197	Sandstone
197	200	Gravel

TOTAL DEPTH OF BORING _____ (Feet)

TOTAL DEPTH OF COMPLETED WELL 200 (Feet)

WELL LOCATION

CITY STATE ZIP

Address 26 Parkside Court

City Chico, CA

County Butte

APN Book 11 Page 02 Parcel 93

or Township 22N Range 02E Section 18

or Latitude ___ DEG. ___ MIN. ___ SEC. NORTH Longitude ___ DEG. ___ MIN. ___ SEC. WEST

LOCATION SKETCH

NORTH / WEST / EAST / SOUTH

Illustrate or Describe Distance of Well from Landmarks such as Roads, Buildings, Fences, Rivers, etc.
PLEASE BE ACCURATE & COMPLETE.

ACTIVITY (✓)

X NEW WELL

MODIFICATION/REPAIR

___ Deepen

___ Other (Specify)

___ DESTROY *(Describe Procedures and Materials Under "GEOLOGIC LOG")*

PLANNED USE(S) (✓)

___ MONITORING

WATER SUPPLY

X Domestic

___ Public

___ Irrigation

___ Industrial

___ "TEST WELL"

___ CATHODIC PROTECTION

___ OTHER (Specify)

DRILLING METHOD Air rotary FLUID quick foam

WATER LEVEL & YIELD OF COMPLETED WELL

DEPTH OF STATIC WATER LEVEL 135 (Ft.) & DATE MEASURED 5-5-92

ESTIMATED YIELD* 30 (GPM) & TEST TYPE air lift

TEST LENGTH ___ (Hrs.) TOTAL DRAWDOWN ___ (Ft.)

* *May not be representative of a well's long-term yield.*

CASING(S)

DEPTH FROM SURFACE Ft.	to Ft.	BORE-HOLE DIA. (Inches)	TYPE (✓) BLANK	SCREEN	CONDUCTOR	FILL PIPE	MATERIAL/GRADE	INTERNAL DIAMETER (Inches)	GAUGE OR WALL THICKNESS	SLOT SIZE IF ANY (Inches)
0	88	6-5/8					steel	6	10	
86	200	6-5/8					pvc liner 4			

ANNULAR MATERIAL

DEPTH FROM SURFACE Ft.	to Ft.	TYPE CEMENT (✓)	BENTONITE (✓)	FILL (✓)	FILTER PACK (TYPE/SIZE)
0	42	X			

MAY 22 1992

ATTACHMENTS (✓)

___ Geologic Log

___ Well Construction Diagram

___ Geophysical Log(s)

___ Soil/Water Chemical Analyses

___ Other _____

ATTACH ADDITIONAL INFORMATION, IF IT EXISTS.

CERTIFICATION STATEMENT

I, the undersigned, certify that this report is complete and accurate to the best of my knowledge and belief.

NAME W. S. Heitman (PERSON, FIRM, OR CORPORATION) (TYPED OR PRINTED) 936

ADDRESS 623 Buckingham Place CITY Chico, Ca. STATE 95926 ZIP

Signed W. S. Heitman WELL DRILLER/AUTHORIZED REPRESENTATIVE

5-6-92 DATE SIGNED

324874 C-57 LICENSE NUMBER

DWR 188 REV. 7-90

IF ADDITIONAL SPACE IS NEEDED, USE NEXT CONSECUTIVELY NUMBERED FORM

ORIGINAL
File with DWR

JUN 1[illegible]

Page ___ of ___

Owner's Well No. ___

Date Work Began May 95 Ended May 95

Local Permit Agency Butte Co Envito. Health Dept

Permit No. ___ Permit Date 2-16-95

STATE OF CALIFORNIA
WELL COMPLETION REPORT
Refer to Instruction Pamphlet

No. 563389

DWR USE ONLY — DO NOT FILL IN
22N/02E-18M
STATE WELL NO./STATION NO.
LATITUDE LONGITUDE
APN/TRS/OTHER

GEOLOGIC LOG

ORIENTATION (✓) ✓ VERTICAL ___ HORIZONTAL ___ ANGLE ___ (SPECIFY)

DEPTH TO FIRST WATER 8 (Ft.) BELOW SURFACE

DEPTH FROM SURFACE Ft.	to Ft.	DESCRIPTION *Describe material, grain size, color, etc.*
0	8	TOP Soil
8	15	Gravel + rocks
15	18	Cemented rocks
18	40	Clay
40	78	Sandstone
78	140	lava
140	168	Tan Clay
168	173	Cemented gravel

TOTAL DEPTH OF BORING 173 (Feet)
TOTAL DEPTH OF COMPLETED WELL 173 (Feet)

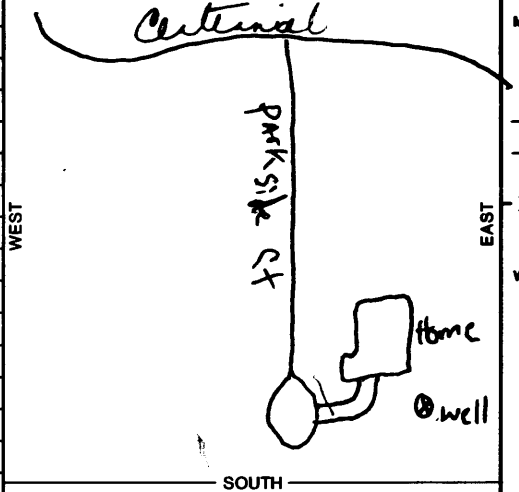
WELL OWNER

City ___ STATE ___ ZIP ___

WELL LOCATION

Address 1074 Pankside Ct
City Chico
County Butte
APN Book 011 Page 020 Parcel 090
or Township 22N Range 02E Section 18
or Latitude ___ DEG. ___ MIN. ___ SEC. NORTH Longitude ___ DEG. ___ MIN. ___ SEC. WEST

LOCATION SKETCH



Illustrate or Describe Distance of Well from Landmarks such as Roads, Buildings, Fences, Rivers, etc.
PLEASE BE ACCURATE & COMPLETE.

ACTIVITY (✓)

X NEW WELL
MODIFICATION/REPAIR
___ Deepen
___ Other (Specify)
___ DESTROY (Describe Procedures and Materials Under "GEOLOGIC LOG")

PLANNED USE(S) (✓)

___ MONITORING
WATER SUPPLY
X Domestic
___ Public
___ Irrigation
___ Industrial
___ "TEST WELL"
___ CATHODIC PROTECTION
___ OTHER (Specify)

DRILLING METHOD Rotary FLUID ___

WATER LEVEL & YIELD OF COMPLETED WELL

DEPTH OF STATIC WATER LEVEL 40 (Ft.) & DATE MEASURED May 95
ESTIMATED YIELD* 75 (GPM) & TEST TYPE air
TEST LENGTH 1/2 (Hrs.) TOTAL DRAWDOWN 0 (Ft.)
** May not be representative of a well's long-term yield.*

CASING(S)

DEPTH FROM SURFACE Ft.	to Ft.	BORE-HOLE DIA. (Inches)	TYPE (✓) BLANK	SCREEN	CONDUCTOR	FILL PIPE	MATERIAL/GRADE	INTERNAL DIAMETER (Inches)	GAUGE OR WALL THICKNESS	SLOT SIZE IF ANY (Inches)
0	15				X		Steel	10 3/8	156	
0	48						Steel	6 5/8	134	
0	173			X			PVCF480	4"	160	1x1/8x4
								Bottom 40 ft.		

ANNULAR MATERIAL

DEPTH FROM SURFACE Ft.	to Ft.	TYPE CEMENT (✓)	BENTONITE (✓)	FILL (✓)	FILTER PACK (TYPE/SIZE)
0	20		X		
				JUN 28 1996	

ATTACHMENTS (✓)

___ Geologic Log
___ Well Construction Diagram
___ Geophysical Log(s)
___ Soil/Water Chemical Analyses
___ Other ___

ATTACH ADDITIONAL INFORMATION, IF IT EXISTS.

CERTIFICATION STATEMENT

I, the undersigned, certify that this report is complete and accurate to the best of my knowledge and belief.

NAME Jim Berger Well Drilling
(PERSON, FIRM, OR CORPORATION) (TYPED OR PRINTED)

ADDRESS 4550 Berger Court CITY Chico STATE CA ZIP 95926

Signed Carmen K Berger
WELL DRILLER/AUTHORIZED REPRESENTATIVE

DATE SIGNED 5-15-95

C-57 LICENSE NUMBER 642583

DWR 188 REV. 7-90

IF ADDITIONAL SPACE IS NEEDED, USE NEXT CONSECUTIVELY NUMBERED FORM

State of California

Well Completion Report

Form DWR 188 Auto-Completed 7/5/2021

WCR2021-005105

Owner's Well Number | Date Work Began: 09/06/2019 | Date Work Ended: 09/09/2019

Local Permit Agency: Butte County Public Health

Secondary Permit Agency | Permit Number: EHWS 19-0114 | Permit Date: 08/02/2019

Well Owner (must remain confidential pursuant to Water Code 13752)

Name: XXXXXXXXXXXXXXXXXXX

Mailing Address: XXXXXXXXXXXXXXXXXXX

XXXXXXXXXXXXXXXXXXX

City: XXXXXXXXXXXXXXXXXXX | State: XX | Zip: XXXXX

Planned Use and Activity

Activity: New Well

Planned Use: Water Supply Domestic

Well Location

Address: 216 Centennial

City: Chico | Zip: 95928 | County: Butte

Latitude: 39 Deg. 45 Min. 25.3907 Sec. N | Longitude: -121 Deg. 47 Min. 42.8027 Sec. W

Dec. Lat.: 39.757053 | Dec. Long.: -121.795223

Vertical Datum | Horizontal Datum: WGS84

Location Accuracy | Location Determination Method

APN: 018-010-135

Township: 22 N

Range: 02 E

Section: 18

Baseline Meridian: Mount Diablo

Ground Surface Elevation

Elevation Accuracy

Elevation Determination Method

Borehole Information

Orientation: Vertical | Specify

Drilling Method: Other - Air Rotary | Drilling Fluid: Foam

Total Depth of Boring: 220 Feet

Total Depth of Completed Well: 220 Feet

Water Level and Yield of Completed Well

Depth to first water (Feet below surface)

Depth to Static Water Level: 143 (Feet) | Date Measured: 09/09/2019

Estimated Yield*: 75 (GPM) | Test Type: Air Lift

Test Length (Hours) | Total Drawdown (feet)

*May not be representative of a well's long term yield.

Geologic Log - Free Form

Depth from Surface Feet to Feet		Description
0	4	Top Soil
4	14	Cobbles & Clay
14	25	Clay
25	32	Clay & Gravel
32	125	Sandstone With Layers of Clay
125	220	Sandstone With Layers of Cemented Gravel

Casings

Casing #	Depth from Surface Feet to Feet		Casing Type	Material	Casings Specificatons	Wall Thickness (inches)	Outside Diameter (inches)	Screen Type	Slot Size if any (inches)	Description
1	0	40	Blank	Low Carbon Steel	Grade: ASTM A53	0.156	6.725			
2	5	220	Blank	PVC	N/A	0.5	4.5			Certa-Lok Liner

Annular Material

Depth from Surface Feet to Feet		Fill	Fill Type Details	Filter Pack Size	Description
0	22	Bentonite	Non Hydrated Bentonite		
22	220	Other Fill	See description.		No Fill

Other Observations:

Borehole Specifications

Depth from Surface Feet to Feet		Borehole Diameter (inches)
0	22	10
22	220	6

Certification Statement

I, the undersigned, certify that this report is complete and accurate to the best of my knowledge and belief

Name: W.S. HEITMAN WELL DRILLING
Person, Firm or Corporation

623 BUCKINGHAM PLACE (Address) | CHICO (City) | CA (State) | 95973 (Zip)

Signed: *electronic signature received* (C-57 Licensed Water Well Contractor) | 04/29/2021 (Date Signed) | 386577 (C-57 License Number)

DWR Use Only

CSG #	State Well Number	Site Code	Local Well Number

			N					W

Latitude Deg/Min/Sec **Longitude Deg/Min/Sec**

TRS:

APN:

State of California

Well Completion Report

Form DWR 188 Complete 6/6/2023

WCR2023-004768

Owner's Well Number: 1 | Date Work Began: 01/26/2022 | Date Work Ended: 02/03/2022

Local Permit Agency: Butte County Public Health

Secondary Permit Agency: | Permit Number: EHWS21-0193 | Permit Date: 12/16/2021

Well Owner (must remain confidential pursuant to Water Code 13752)

Name: XXXXXXXXXXXXXXXXXXX

Mailing Address: XXXXXXXXXXXXXXXXXXX

XXXXXXXXXXXXXXXXXXX

City: XXXXXXXXXXXXXXXXXXX | State: XX | Zip: XXXXX

Planned Use and Activity

Activity: New Well

Planned Use: Water Supply Domestic

Well Location

Address: 0 CENTENNIAL AVE

City: CHICO | Zip: 95928 | County: Butte

Latitude: 39 Deg. 45 Min. 37.332 Sec. N | Longitude: -121 Deg. 47 Min. 28.4279 Sec. W

Dec. Lat.: 39.76037 | Dec. Long.: -121.79123

Vertical Datum: | Horizontal Datum: WGS84

Location Accuracy: 5 Ft | Location Determination Method: GPS

APN: 018-020-072

Township: 22 N

Range: 02 E

Section: 18

Baseline Meridian: Mount Diablo

Ground Surface Elevation: 273

Elevation Accuracy: 10 Ft

Elevation Determination Method: GPS

Borehole Information

Orientation: Vertical | Specify:

Drilling Method: Direct Rotary | Drilling Fluid: Bentonite

Total Depth of Boring: 185 Feet

Total Depth of Completed Well: 185 Feet

Water Level and Yield of Completed Well

Depth to first water: 25 (Feet below surface)

Depth to Static Water Level: 52 (Feet) | Date Measured: 02/03/2022

Estimated Yield*: 85 (GPM) | Test Type: Air Lift

Test Length: 4 (Hours) | Total Drawdown: 0 (feet)

*May not be representative of a well's long term yield.

Geologic Log - Lite

Depth from Surface Feet to Feet		Material Type	Material Color	Material Texture	Material Description
0	5	Soil or Organic	Brown	Organic	TOP SOIL BROWN
5	85	Rock	Black & White	Gravely	COBLES WITH SAND
85	125	Clay	Brown	Clayey	GUMMIE CLAY
125	185	Gravel	Black & White	Gravely	MULTI COLOR GRAVEL WATER BEARING

Casings

Casing #	Depth from Surface Feet to Feet		Casing Type	Material	Casings Specificatons	Wall Thickness (inches)	Outside Diameter (inches)	Screen Type	Slot Size if any (inches)	Description
1	0	120	Blank	PVC	OD: 4.500 in. | Thickness: 0.337 in.	0.337	4.5			
1	120	180	Screen	PVC	OD: 4.500 in. | Thickness: 0.337 in.	0.337	4.5	Milled Slots	32	.032
1	180	185	Blank	PVC	OD: 4.500 in. | Thickness: 0.337 in.	0.337	4.5			4" CAP INSTALLED

Annular Material

Depth from Surface Feet to Feet		Fill	Fill Type Details	Filter Pack Size	Description
0	102	Cement	Portland Cement/Neat Cement	550 GALLONS NEAT CEMENY PUMPED WITH TRIMMING PIPE	W/ 8'X8'X7.5" CONCRET SLAB
102	185	Filter Pack	Other Gravel Pack	#6 SILICA	1 BAG

Other Observations:
WE HAD TO PREFORM A 100' SANITARY SEAL AS PER COUNTY REQUIREMENTS SO WE DRILLED A 12" BORE HOLE TO 102' INSTALLED 100' OF 1/4" WALL STELL AND PUMP 2 PALLETS OF PORTLAND MIX FOR SEAL/ THEN DRILLED TO 185' W/ 8" BIT AND INSTALLED 4" SDR 17 LINER WITH #6 SILCA GRAVEL PACK

Borehole Specifications

Depth from Surface Feet to Feet		Borehole Diameter (inches)
0	102	12.75
102	185	8

Certification Statement

I, the undersigned, certify that this report is complete and accurate to the best of my knowledge and belief

Name: VICS WELL DRILLING INC (Person, Firm or Corporation)

3807 SIERRA HWY UNIT #6 (Address) | ACTON (City) | CA (State) | 93510 (Zip)

Signed: *electronic signature received* (C-57 Licensed Water Well Contractor) | 04/20/2023 (Date Signed) | 886439 (C-57 License Number)

Attachments

20220202_120852.jpg - Photo

018-020-072 EHWS21-0193 Well Permit Isssued 12-16-2021.pdf - Permit

DRILLERS REPORT.docx - Other

DISINFECTION STATEMENT.pdf - Other

DWR Use Only

CSG #	State Well Number	Site Code	Local Well Number

N — Latitude Deg/Min/Sec

W — Longitude Deg/Min/Sec

TRS:

APN:

State of California

Well Completion Report

Form DWR 188 Auto-Completed 7/20/2020

WCR2020-006655

Owner's Well Number | Date Work Began: 02/21/2020 | Date Work Ended: 02/26/2020

Local Permit Agency: Butte County Public Health

Secondary Permit Agency | Permit Number: EHWS 19-0165 | Permit Date: 09/05/2019

Well Owner (must remain confidential pursuant to Water Code 13752)

Name: XXXXXXXXXXXXXXXXXXX

Mailing Address: XXXXXXXXXXXXXXXXXXX

XXXXXXXXXXXXXXXXXXX

City: XXXXXXXXXXXXXXXXXXX | State: XX | Zip: XXXXX

Planned Use and Activity

Activity: New Well

Planned Use: Water Supply Domestic

Well Location

Address: 2258 Dorado Cerro

City: Chico | Zip: 95928 | County: Butte

Latitude: 39 Deg. 44 Min. 37.3199 Sec. N | Longitude: -121 Deg. 47 Min. 52.4399 Sec. W

Dec. Lat.: 39.7437 | Dec. Long.: -121.7979

Vertical Datum | Horizontal Datum: WGS84

Location Accuracy | Location Determination Method

APN: 002-070-027

Township: 22 N

Range: 02 E

Section: 19

Baseline Meridian: Mount Diablo

Ground Surface Elevation

Elevation Accuracy

Elevation Determination Method

Borehole Information

Orientation: Vertical | Specify

Drilling Method: Other - Air Rotary | Drilling Fluid: Foam

Total Depth of Boring: 240 Feet

Total Depth of Completed Well: 240 Feet

Water Level and Yield of Completed Well

Depth to first water | (Feet below surface)

Depth to Static Water Level | (Feet) | Date Measured: 02/26/2020

Estimated Yield*: 75 (GPM) | Test Type

Test Length | (Hours) | Total Drawdown | (feet)

*May not be representative of a well's long term yield.

Geologic Log - Free Form

Depth from Surface Feet to Feet		Description
0	24	Clay
24	33	Cobbles
33	39	Gravels
39	44	Sandstone & Rock
44	56	Clay
56	61	Volcanic Rock and Sandstone
61	83	Clay & Seams of Sandstone
83	146	Volcanic Rock Formation
146	155	Cemented Gravels
155	240	Hard Volcanic Formation

Casings

Casing #	Depth from Surface Feet to Feet		Casing Type	Material	Casings Specificatons	Wall Thickness (inches)	Outside Diameter (inches)	Screen Type	Slot Size if any (inches)	Description
1	0	87	Blank	Low Carbon Steel	Grade: ASTM A53	0.156	6.725			
1	87	240	Blank	Other	N/A	0.5	4.5			PVC Liner

Annular Material

Depth from Surface Feet to Feet		Fill	Fill Type Details	Filter Pack Size	Description
0	80	Cement	10.3 Sack Mix		
80	240	Other Fill	See description.		No Fill

Other Observations:

Borehole Specifications

Depth from Surface Feet to Feet		Borehole Diameter (inches)
0	80	10
80	240	6

Certification Statement

I, the undersigned, certify that this report is complete and accurate to the best of my knowledge and belief

Name: W.S. HEITMAN WELL DRILLING
Person, Firm or Corporation

623 BUCKINGHAM PLACE (Address) | CHICO (City) | CA (State) | 95973 (Zip)

Signed: *electronic signature received* (C-57 Licensed Water Well Contractor) | 05/21/2020 (Date Signed) | 386577 (C-57 License Number)

DWR Use Only

CSG #	State Well Number	Site Code	Local Well Number

			N					W

Latitude Deg/Min/Sec **Longitude Deg/Min/Sec**

TRS:

APN:

Hanover, Inc.
2205 Nord Ave.
Chico, CA 95926

Well Log

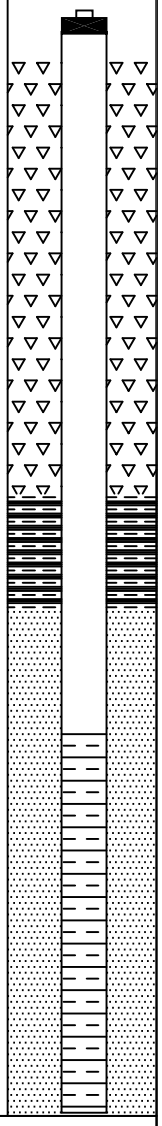
Project Number: LED-101B-2		**Well Number:** MW-9	
Project Name: Ledford Beacon		**Location:** 2233 Espladade Ave., Chico, CA.	
Drilling Contractor: Diamond Core		**Logged By:** Mason McKellips	
Drilling Method: H.S.A	**Date Started:** 7-9-04	**Total Depth:** 35.5 ft.	**Depth to Water:** 23
Borehole Dia. (in): 8	**Completed:** 7-9-04	**Surface Elev.:**	**TOC Elev.:**
Blank Casing: 20 ft. **Type:** SCH 40 **Dia. (in):** 2 **Interval (ft bgs):** 20 - 0.5		**Surface Seal Type:** Smooth Grout 30 **Interval (ft bgs) From:** 14.0 **To:** 0.5	
Screen: 15 ft. **Type:** SCH-40 **Slot:** .020 **Dia. (in):** 2 **Interval (ft bgs):** 35.0 - 20.0		**Filter Pack Type:** #3 Monterey Sand **Interval (ft bgs) From:** 35.5 **To:** 17.0	

Remarks: The boring was drilled with 8" continuous flight hollow stem augers. Samples were collected from return materials and using Standard Penetration Technique (SPT) with a Modified California Split Spoon sampler.

Depth (ft)	Sample No.	Sample Type	Blow Count	USCS Code	Material Description	PID (ppm)
6	1	grab	N/A	ML	Silt with sand - About 20% medium to fine sand; about 80% fines with no plasticity Brown, soft, poorly graded, dry.	
11	2	grab	N/A	ML	Silt with sand - About 20% medium to fine sand; about 80% fines with no plasticity Brown, soft, poorly graded, dry.	
16	3		8/21/17	ML	Silt with sand - About 30% fine sand; about 70% fines with no plasticity. Brown, very stiff, poorly graded, dry.	0.9
17					Slight drill chatter (gravels) at 17.0 feet.	
21	4		50-3	SM	Silty sand with gravel - About 20% coarse to fine gravels; 40% coarse to fine sand; about 40% fines with no plasticity. Brown, very dense, well graded, damp to wet.	3.5
23					Soft, dramatic increase in travel at 23.0 feet.	
24				SP-SM	Poorly graded sand with silt - About 90% medium to fine sand; about 10% fines with no plasticity. Brown, loose, poorly graded, wet.	
26	5		50-5	SW-SM	Well graded sand with silt and gravel - About 20% coarse to fine gravels; 70% coarse to fine sand; about 10% fines with no plasticity. Brown, very dense, well graded, wet.	

Water Level

Well Const.



Hanover, Inc.
2205 Nord Ave.
Chico, CA 95926

Well Log

Project Number: LED-101B-2.		**Well Number:** MW-9	
Project Name: Ledford Beacon		**Location:** 2233 Esplanade Ave., Chico, CA.	
Drilling Contractor: Diamond Core		**Logged By:** Mason McKellips	
Drilling Method: H.S.A	**Date Started:** 7-9-04	**Total Depth:** 35.5 ft.	**Depth to Water:** 23.0 ft.
Borehole Dia. (in): 8	**Completed:** 7-9-04	**Surface Elev.:**	**TOC Elev.:**

Remarks: Due to heavy turbitity during well set, one extra foot of sand was added to the sand pack.

Depth (ft)	Sample No.	Sample Type	Blow Count	Graphic Log	USCS Code	Material Description	Water Level	PID (ppm)	Well Const.
31	6		50-6		SW-SM	Well graded sand with silt and gravel - About 20 % coarse to fine gravels; about 70 % coarse to fine sands; about 10 % fines with no plasticity. Brown, well graded, very dense, wet.			
36	7	grab	N/A		SW-SM	Well graded sand with silt and gravel - About 30 % coarse to fine gravels; about 60 % coarse to fine sands; about 10 % fines with no plasticity. Brown, well graded, very dense, wet.			

Hanover, Inc.
2205 Nord Ave.
Chico, CA 95926

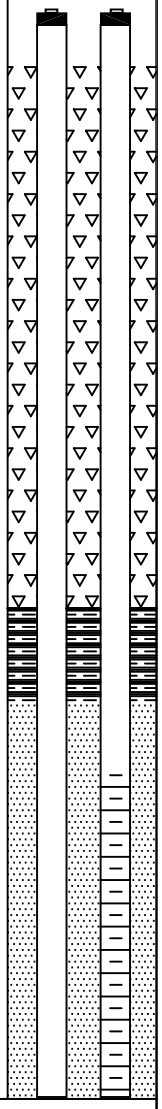
Well Log

Project Number: LED-101B-2		**Well Number:** OB-1	
Project Name: Ledford Beacon		**Location:** 2233 Espladade Ave., Chico, CA.	
Drilling Contractor: Diamond Core		**Logged By:** Mason McKellips	
Drilling Method: H.S.A	**Date Started:** 7-7-04	**Total Depth:** 55.0 ft.	**Depth to Water:** 24.0 ft.
Borehole Dia. (in): 10	**Completed:** 7-7-04	**Surface Elev.:**	**TOC Elev.:**
Blank Casing: 35 & 22 ft. **Type:** SCH 40 **Dia. (in):** 2 **Interval (ft bgs):** 35 - 0.5 & 22 - 0.5		**Surface Seal Type:** Smooth Grout 30 **Interval (ft bgs) From:** 17.0 **To:** 0.5	
Screen: 20 & 10 ft. **Type:** SCH-40 **Slot:** .020 **Dia. (in):** 2 **Interval (ft bgs):** 55-35 & 32-22		**Filter Pack Type:** #3 Monterey Sand **Interval (ft bgs) From:** 55.0 - 34.0 **And:** 32.0 - 19.5	

Remarks: The boring was drilled with 10" continuous flight hollow stem augers. Samples were collected from return materials and using Standard Penetration Technique (SPT) with a Modified California Split Spoon sampler.

Depth (ft)	Sample No.	Sample Type	Blow Count	Graphic Log	USCS Code	Material Description	Water Level	PID (ppm)
6	1	grab	N/A		ML	Silt with sand - About 20% medium to fine sand; about 80% fines with no plasticity Dark brown, poorly graded, dry.		
11	2	grab	N/A		ML	Silt with sand - About 30% fine sand; about 70% fines with no plasticity Dark brown, poorly graded, dry.		
15	3	grab	N/A		ML	Silt with sand - About 30% fine sand; about 70% fines with medium plasticity. Dark brown, poorly graded, damp.		
17						Slight drill chatter (gravels) at 16.0 feet.		
21	4		50-2		SM	Silty sand with gravel - About 30% coarse gravels; 50% coarse to fine sand; about 20% fines with no plasticity. Light brown, very dense, well graded, slightly damp.		
23						Soft, dramatic increase in travel at 24.0 feet.	▽	
26	5		16/18/24		SM	Silty sand - Less than 3% fine gravels; about 70% coarse to fine sand; about 30% fines with no plasticity. Red-brown, medium dense, well graded, damp with 5 % black Mn. vainlets.		974.4

Well Const.



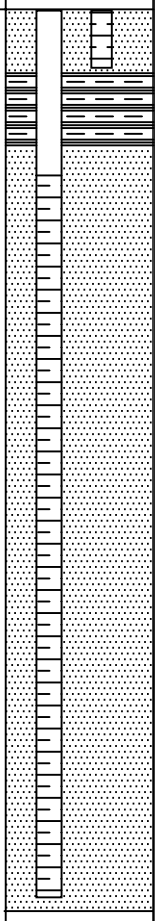
Hanover, Inc.
2205 Nord Ave.
Chico, CA 95926

Well Log

Project Number: LED-101B-2.		**Well Number:** OB-1	
Project Name: Ledford Beacon		**Location:** 2233 Esplanade Ave., Chico, CA.	
Drilling Contractor: Diamond Core		**Logged By:** Mason McKellips	
Drilling Method: H.S.A	**Date Started:** 7-7-04	**Total Depth:** 55.0 ft.	**Depth to Water:** 24.0 ft.
Borehole Dia. (in): 10	**Completed:** 7-7-04	**Surface Elev.:**	**TOC Elev.:**

Remarks:

Depth (ft)	Sample No.	Sample Type	Blow Count	USCS Code	Material Description	Water Level	PID (ppm)
31	6		N/A	SP-SM	Poorly graded sand with silt - About 70 % medium to fine sands; about 10 % fines with no plasticity. Gray-brown, poorly graded, damp to wet with a strong petroleum odor.		1619.9
36	7		50-3	SM	Silty sand with gravels - About 15 % fine gravels; about 60 % coarse to fine sands; about 25% fines with no plasticity. Brown, well graded, very dense, wet.		
41	8		50-3	SM	Silty sand with gravels - About 15 % fine gravels; about 60 % coarse to fine sands; about 25% fines with no plasticity. Brown, well graded, very dense, wet.		
46	9		4/9/12	SM	Silty sand - About 70% medium to fine sands; about 30 % fines with no plasticity. Light gray, poorly graded, medium dense, wet.		41.7
51	10		9/9/12	ML	Silt - About 10% fine sands; about 90 % fines with no plasticity. Brown, poorly graded, stiff, wet.		
55				ML	Silt with sand - About 20 % fine sands; about 80 % fines with no plasticity. Brown, poorly graded, very stiff, damp to wet.		
56	11		12/18/21				



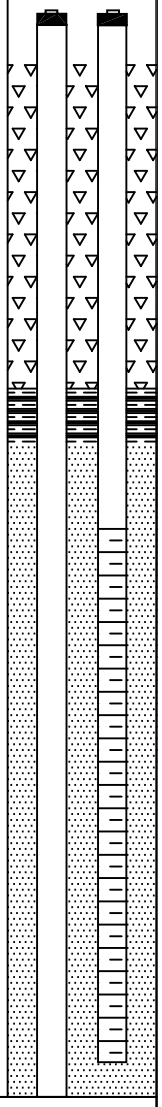
Hanover, Inc.
2205 Nord Ave.
Chico, CA 95926

Well Log

Project Number: LED-101B-2		**Well Number:** OB-2	
Project Name: Ledford Beacon		**Location:** 2233 Espladade Ave., Chico, CA.	
Drilling Contractor: Diamond Core		**Logged By:** Mason McKellips	
Drilling Method: H.S.A	**Date Started:** 7-8-04	**Total Depth:** 55.0 ft.	**Depth to Water:** 22.0 ft.
Borehole Dia. (in): 10	**Completed:** 7-8-04	**Surface Elev.:**	**TOC Elev.:**
Blank Casing: 40 & 15 ft. **Type:** SCH 40 **Dia. (in):** 2 **Interval (ft bgs):** 40 - 0.5 & 15 - 0.5		**Surface Seal Type:** Smooth Grout 30 **Interval (ft bgs) From:** 11.5 **To:** 0.5	
Screen: 15 & 15 ft. **Type:** SCH-40 **Slot:** .020 **Dia. (in):** 2 **Interval (ft bgs):** 55-40 & 30-15		**Filter Pack Type:** #3 Monterey Sand **Interval (ft bgs) From:** 55.0 - 38.0 **And:** 31.0 - 13.0	

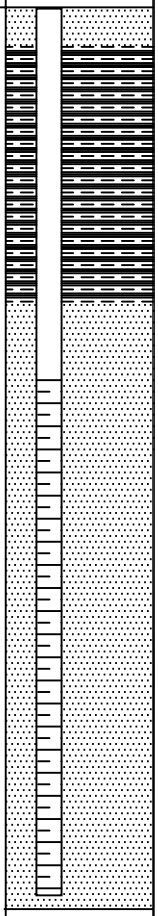
Remarks: The boring was drilled with 10" continuous flight hollow stem augers. Samples were collected from return materials and using Standard Penetration Technique (SPT) with a Modified California Split Spoon sampler.

Depth (ft)	Sample No.	Sample Type	Blow Count	Graphic Log	USCS Code	Material Description	Water Level	PID (ppm)	Well Const.
6	1	grab	N/A		ML	Silt with sand - About 20% medium to fine sand; about 80% fines with no plasticity Dark brown, poorly graded, dry.			
11	2	grab	N/A		ML	Silt with sand - About 30% fine sand; about 70% fines with no plasticity Dark brown, poorly graded, dry.			
15					SM	Silty sand - About 60% medium to fine sand; about 40% fines with no plasticity.		7.6	
16	3		6/7/13			Brown, poorly graded, medium dense, damp.			
17						Slight drill chatter (gravels) at 17.0 feet.			
21	4		50-2		SM	Silty sand with gravel - About 25% coarse gravels; about 30% coarse to fine sand; about 45% fines with no plasticity. Brown, very dense, well graded, damp to wet.			
22						Soft, dramatic increase in travel at 22.0 feet.			
23					SW-SM	Well graded sand with silt - About 90% coarse to fine sand; about 10% fines with no plasticity. Brown, well graded, loose, wet.			
25						Picked up gravel at 25 feet.			
26	5		50-4		SM	Silty sand with gravel - About 20% coarse gravels; about 60% coarse to fine sand; about 20% fines with no plasticity. Brown, very dense, well graded, wet.		2.4	



Hanover, Inc. 2205 Nord Ave. Chico, CA 95926		**Well Log**	
Project Number: LED-101B-2.		**Well Number:** OB-2	
Project Name: Ledford Beacon		**Location:** 2233 Esplanade Ave., Chico, CA.	
Drilling Contractor: Diamond Core		**Logged By:** Mason McKellips	
Drilling Method: H.S.A	**Date Started:** 7-8-04	**Total Depth:** 55.0 ft.	**Depth to Water:** 22.0 ft.
Borehole Dia. (in): 10	**Completed:** 7-8-04	**Surface Elev.:**	**TOC Elev.:**
Remarks:			

Depth (ft)	Sample No.	Sample Type	Blow Count	USCS Code	Material Description	Water Level	PID (ppm)
31	6	grab	N/A	SM	Silty sand with gravels - About 20% coarse to fine gravels; about 60% coarse to fine sands; about 20% fines with no plasticity. Brown, well graded, wet.		
32					Out of gravels at 31 feet.		
33				SM	Silty sand - About 60% medium to fine sands; about 40% fines with no plasticity. Brown, slightly well graded, wet.		
34							
35					picked up gravels at 36 feet.		
36	7		50-4	SM	Silty sand with gravels - About 20% fine gravels; about 60% coarse to fine sands; about 20% fines with no plasticity. Brown, well graded, very dense, wet.		3.7
37							
38							
39							
40							
41	8		5/9/13	ML	Silt - About 10% medium to fine sands; about 90% fines with no to low plasticity. Light brown, poorly graded, stiff, damp.		3.2
42							
43							
44							
45							
46	9		11/17/19	ML	Silt - About 10% medium to fine sands; about 90% fines with no to low plasticity. Light brown, poorly graded, very stiff, slighty damp.		
47							
48							
49							
50	10		19/37/40	ML	Silt with sand - About 20% fine sands; about 80% fines with no plasticity. Red-brown, poorly graded, hard, damp to wet with moderate cementation.		
51							
52							
53				CL	Lean clay - About 100% fines with medium to high plasticity. Brown, very stiff, slightly damp with a very low Est. K.		
54							
55	11	grab	N/A	ML	Silt with sand - About 30% medium to fine sands; about 70% fines with no plasticity. Red-brown, poorly graded, damp to wet with moderate cementation.		
56							
57							
58							
59							
60							
61							
62							
63							
64							
65							



APPENDIX D

Infiltration Test Transducer Files

Location Properties
Location Name = Lindo Channel
Location ID = 7fa9282c-4ded-442a-be8f-a09537037366

Report Properties
Start Time = 2025-01-14 11:54:49.380
Duration = 01:59:06
Readings = 1430
Time Offset = -08:00:00

Instrument Properties
Device Model = Level TROLL 700
Device SN = 909663
Device Firmware = 3.06

Log Properties
Log Name = LC-In 1A
Log Type = Fast Linear
Log File Number = 33
Log ID = e59399c1-6b59-5a5a-a12b-06283b3b52ef
Interval = 00:00:05

Date Time	Pressure (p	Temperatu	Depth (ft) (909663)
1/14/2025 11:54:49	-0.13674	71.26217	-0.31572
1/14/2025 11:54:54	-0.13649	71.21031	-0.31514
1/14/2025 11:54:59	-0.13608	71.18309	-0.31421
1/14/2025 11:55:04	-0.13586	71.1494	-0.3137
1/14/2025 11:55:09	-0.13633	71.11696	-0.31479
1/14/2025 11:55:14	-0.13612	71.09364	-0.31429
1/14/2025 11:55:19	-0.13673	71.06766	-0.3157
1/14/2025 11:55:24	-0.13847	71.04821	-0.31973
1/14/2025 11:55:29	-0.13929	71.02361	-0.32161
1/14/2025 11:55:34	-0.1408	71.00803	-0.3251
1/14/2025 11:55:39	-0.14274	70.98987	-0.32959
1/14/2025 11:55:44	-0.14376	70.96524	-0.33193
1/14/2025 11:55:49	-0.14413	70.94969	-0.33278
1/14/2025 11:55:54	-0.14501	70.9367	-0.33481
1/14/2025 11:55:59	-0.14628	70.91852	-0.33777
1/14/2025 11:56:04	-0.14728	70.90688	-0.34007
1/14/2025 11:56:09	-0.14562	70.88094	-0.33623
1/14/2025 11:56:14	-0.13721	70.86276	-0.31681
1/14/2025 11:56:19	-0.06853	70.80179	-0.15824
1/14/2025 11:56:24	0.223765	70.69804	0.516667

1/14/2025 11:56:29	0.481674	70.53325	1.112171
1/14/2025 11:56:34	0.786162	70.35417	1.815223
1/14/2025 11:56:39	1.204508	70.18672	2.781172
1/14/2025 11:56:44	1.582049	70.01926	3.652903
1/14/2025 11:56:49	1.626302	69.85828	3.755081
1/14/2025 11:56:54	1.617029	69.70247	3.733669
1/14/2025 11:56:59	1.604752	69.54663	3.705322
1/14/2025 11:57:04	1.591342	69.40501	3.674359
1/14/2025 11:57:09	1.580397	69.26085	3.649087
1/14/2025 11:57:14	1.570055	69.12311	3.625207
1/14/2025 11:57:19	1.55832	68.99704	3.598113
1/14/2025 11:57:24	1.547939	68.8788	3.574143
1/14/2025 11:57:29	1.536743	68.74232	3.548292
1/14/2025 11:57:34	1.525614	68.61881	3.522595
1/14/2025 11:57:39	1.513597	68.5018	3.494848
1/14/2025 11:57:44	1.501143	68.38995	3.466093
1/14/2025 11:57:49	1.487613	68.27683	3.434851
1/14/2025 11:57:54	1.475019	68.16238	3.405772
1/14/2025 11:57:59	1.462873	68.04922	3.377727
1/14/2025 11:58:04	1.450698	67.95295	3.349618
1/14/2025 11:58:09	1.439462	67.85407	3.323674
1/14/2025 11:58:14	1.428573	67.75388	3.298531
1/14/2025 11:58:19	1.415906	67.65108	3.269283
1/14/2025 11:58:24	1.404265	67.55868	3.242404
1/14/2025 11:58:29	1.392819	67.46236	3.215976
1/14/2025 11:58:34	1.381273	67.38425	3.189317
1/14/2025 11:58:39	1.370569	67.29575	3.164602
1/14/2025 11:58:44	1.360293	67.21239	3.140875
1/14/2025 11:58:49	1.349239	67.13167	3.115352
1/14/2025 11:58:54	1.339754	67.05356	3.093451
1/14/2025 11:58:59	1.330319	66.97151	3.071664
1/14/2025 11:59:04	1.321477	66.89208	3.051248
1/14/2025 11:59:09	1.312111	66.82175	3.029623
1/14/2025 11:59:14	1.302602	66.74619	3.007669
1/14/2025 11:59:19	1.292564	66.67326	2.98449
1/14/2025 11:59:24	1.280881	66.60553	2.957515
1/14/2025 11:59:29	1.269096	66.53516	2.930303
1/14/2025 11:59:34	1.258964	66.46738	2.906909
1/14/2025 11:59:39	1.250395	66.39442	2.887124
1/14/2025 11:59:44	1.24257	66.35144	2.869055
1/14/2025 11:59:49	1.23337	66.29929	2.847814
1/14/2025 11:59:54	1.224193	66.24979	2.826624
1/14/2025 11:59:59	1.21349	66.17026	2.80191
1/14/2025 12:00:04	1.20367	66.10381	2.779236

1/14/2025 12:00:09	1.194225	66.05687	2.757429
1/14/2025 12:00:14	1.184655	65.99299	2.735332
1/14/2025 12:00:19	1.174833	65.93825	2.712653
1/14/2025 12:00:24	1.16582	65.88351	2.691841
1/14/2025 12:00:29	1.155154	65.82872	2.667215
1/14/2025 12:00:34	1.146451	65.7818	2.647119
1/14/2025 12:00:39	1.137167	65.72833	2.625683
1/14/2025 12:00:44	1.129481	65.67485	2.607937
1/14/2025 12:00:49	1.118818	65.63574	2.583317
1/14/2025 12:00:54	1.109838	65.58359	2.562581
1/14/2025 12:00:59	1.101806	65.53923	2.544035
1/14/2025 12:01:04	1.093882	65.48446	2.525739
1/14/2025 12:01:09	1.083983	65.44661	2.502882
1/14/2025 12:01:14	1.075185	65.40096	2.482569
1/14/2025 12:01:19	1.064982	65.36446	2.45901
1/14/2025 12:01:24	1.055575	65.3214	2.437291
1/14/2025 12:01:29	1.046436	65.28099	2.416189
1/14/2025 12:01:34	1.03872	65.24443	2.398372
1/14/2025 12:01:39	1.031113	65.20529	2.380807
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1/14/2025 12:02:04	0.989522	65.02523	2.284776
1/14/2025 12:02:09	0.980828	64.98477	2.264702
1/14/2025 12:02:14	0.973014	64.94954	2.24666
1/14/2025 12:02:19	0.964592	64.91951	2.227212
1/14/2025 12:02:24	0.95772	64.87645	2.211346
1/14/2025 12:02:29	0.950492	64.84643	2.194656
1/14/2025 12:02:34	0.944144	64.81251	2.179999
1/14/2025 12:02:39	0.937068	64.78249	2.16366
1/14/2025 12:02:44	0.929918	64.75639	2.147152
1/14/2025 12:02:49	0.921708	64.72635	2.128196
1/14/2025 12:02:54	0.914262	64.69633	2.111003
1/14/2025 12:02:59	0.906766	64.6676	2.093694
1/14/2025 12:03:04	0.900079	64.64412	2.078254
1/14/2025 12:03:09	0.893206	64.618	2.062385
1/14/2025 12:03:14	0.886718	64.58537	2.047405
1/14/2025 12:03:19	0.879663	64.56578	2.031116
1/14/2025 12:03:24	0.873542	64.53835	2.016981
1/14/2025 12:03:29	0.867122	64.52398	2.002157
1/14/2025 12:03:34	0.860395	64.507	1.986626
1/14/2025 12:03:39	0.853308	64.49004	1.970262
1/14/2025 12:03:44	0.846514	64.45609	1.954575

1/14/2025 12:03:49	0.838655	64.43782	1.936427
1/14/2025 12:03:54	0.830863	64.4117	1.918437
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1/14/2025 12:04:24	0.78473	64.35946	1.811918
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1/14/2025 12:04:34	0.770116	64.33337	1.778175
1/14/2025 12:04:39	0.762358	64.32813	1.760261
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1/14/2025 12:05:14	0.710156	64.25497	1.639727
1/14/2025 12:05:19	0.703373	64.24844	1.624065
1/14/2025 12:05:24	0.698362	64.24715	1.612497
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1/14/2025 12:05:59	0.661105	64.1897	1.526471
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1/14/2025 12:06:09	0.650112	64.16223	1.501089
1/14/2025 12:06:14	0.645272	64.15572	1.489914
1/14/2025 12:06:19	0.639833	64.1505	1.477353
1/14/2025 12:06:24	0.634366	64.1505	1.46473
1/14/2025 12:06:29	0.630518	64.14528	1.455845
1/14/2025 12:06:34	0.626261	64.13875	1.446017
1/14/2025 12:06:39	0.622377	64.13745	1.43705
1/14/2025 12:06:44	0.617274	64.12309	1.425266
1/14/2025 12:06:49	0.613455	64.10609	1.416449
1/14/2025 12:06:54	0.608255	64.11131	1.404443
1/14/2025 12:06:59	0.602135	64.11263	1.390312
1/14/2025 12:07:04	0.597315	64.09824	1.379183
1/14/2025 12:07:09	0.592011	64.09433	1.366936
1/14/2025 12:07:14	0.587358	64.08911	1.356191
1/14/2025 12:07:19	0.581372	64.0878	1.342369
1/14/2025 12:07:24	0.576135	64.0865	1.330277

1/14/2025 12:07:29	0.571717	64.09043	1.320077
1/14/2025 12:07:34	0.565859	64.0878	1.306552
1/14/2025 12:07:39	0.561987	64.07346	1.29761
1/14/2025 12:07:44	0.558701	64.06432	1.290023
1/14/2025 12:07:49	0.556334	64.0656	1.284558
1/14/2025 12:07:54	0.553597	64.05124	1.278237
1/14/2025 12:07:59	0.548788	64.05907	1.267135
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1/14/2025 12:08:39	0.510983	64.03294	1.179845
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1/14/2025 12:08:49	0.498405	64.04207	1.150801
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1/14/2025 12:32:04	1.149207	66.00996	2.653484
1/14/2025 12:32:09	1.143644	65.9995	2.640639
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1/14/2025 12:32:49	1.094472	65.94347	2.527103
1/14/2025 12:32:54	1.087725	65.93957	2.511523
1/14/2025 12:32:59	1.082759	65.93561	2.500057
1/14/2025 12:33:04	1.075837	65.92652	2.484075

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1/14/2025 12:33:14	1.063984	65.92781	2.456706
1/14/2025 12:33:19	1.057731	65.9148	2.442268
1/14/2025 12:33:24	1.05165	65.91348	2.428227
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1/14/2025 12:33:34	1.039055	65.90043	2.399147
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1/14/2025 12:33:44	1.026887	65.90306	2.37105
1/14/2025 12:33:49	1.021759	65.89392	2.35921
1/14/2025 12:33:54	1.015993	65.89262	2.345897
1/14/2025 12:33:59	1.010223	65.88351	2.332573
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1/14/2025 13:18:24	1.360657	62.89836	3.141714
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1/14/2025 13:18:54	1.348111	62.84472	3.112747
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1/14/2025 13:20:09	1.297182	62.72437	2.995152
1/14/2025 13:20:14	1.293149	62.72044	2.98584
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1/14/2025 13:21:59	1.212176	62.64065	2.798878
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1/14/2025 13:24:54	1.120108	62.58962	2.586294
1/14/2025 13:24:59	1.117236	62.58308	2.579663
1/14/2025 13:25:04	1.115166	62.57918	2.574883
1/14/2025 13:25:09	1.112014	62.58179	2.567607
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1/14/2025 13:41:19	0.542998	63.05923	1.253765
1/14/2025 13:41:24	0.538014	63.07095	1.242259
1/14/2025 13:41:29	0.532207	63.07359	1.228849
1/14/2025 13:41:34	0.527876	63.06706	1.218849
1/14/2025 13:41:39	0.522048	63.08145	1.205393
1/14/2025 13:41:44	0.517141	63.07752	1.194062
1/14/2025 13:41:49	0.512332	63.08276	1.182957
1/14/2025 13:41:54	0.507486	63.08798	1.17177
1/14/2025 13:41:59	0.50312	63.10238	1.161688
1/14/2025 13:42:04	0.498922	63.10499	1.151996
1/14/2025 13:42:09	0.494281	63.11545	1.14128
1/14/2025 13:42:14	0.489954	63.12328	1.131289
1/14/2025 13:42:19	0.485322	63.12853	1.120594
1/14/2025 13:42:24	0.480984	63.13506	1.110578
1/14/2025 13:42:29	0.47642	63.13113	1.100039
1/14/2025 13:42:34	0.473782	63.13899	1.093947
1/14/2025 13:42:39	0.470726	63.16253	1.086891
1/14/2025 13:42:44	0.467246	63.16382	1.078857

1/14/2025 13:42:49	0.464375	63.16645	1.072228
1/14/2025 13:42:54	0.461036	63.17428	1.064518
1/14/2025 13:42:59	0.457227	63.1795	1.055722
1/14/2025 13:43:04	0.454438	63.18214	1.049284
1/14/2025 13:43:09	0.450313	63.17821	1.039759
1/14/2025 13:43:14	0.447792	63.19389	1.033937
1/14/2025 13:43:19	0.444215	63.18736	1.025678
1/14/2025 13:43:24	0.44158	63.19257	1.019594
1/14/2025 13:43:29	0.43681	63.20304	1.008581
1/14/2025 13:43:34	0.43239	63.2096	0.998375
1/14/2025 13:43:39	0.428699	63.21089	0.989852
1/14/2025 13:43:44	0.424243	63.22136	0.979563
1/14/2025 13:43:49	0.421364	63.22658	0.972917
1/14/2025 13:43:54	0.418646	63.23312	0.96664
1/14/2025 13:43:59	0.416333	63.23704	0.9613
1/14/2025 13:44:04	0.414078	63.23575	0.956094
1/14/2025 13:44:09	0.411289	63.25797	0.949653
1/14/2025 13:44:14	0.407426	63.25143	0.940734
1/14/2025 13:44:19	0.40595	63.26712	0.937326
1/14/2025 13:44:24	0.405092	63.27234	0.935344
1/14/2025 13:44:29	0.405475	63.28673	0.93623
1/14/2025 13:44:34	0.405475	63.29327	0.93623
1/14/2025 13:44:39	0.406779	63.30109	0.93924
1/14/2025 13:44:44	0.407075	63.30634	0.939925
1/14/2025 13:44:49	0.406752	63.30895	0.939177
1/14/2025 13:44:54	0.405959	63.3168	0.937347
1/14/2025 13:44:59	0.402498	63.32466	0.929356
1/14/2025 13:45:04	0.40035	63.32988	0.924396
1/14/2025 13:45:09	0.398315	63.3338	0.919697
1/14/2025 13:45:14	0.397508	63.3338	0.917834
1/14/2025 13:45:19	0.395872	63.3521	0.914056
1/14/2025 13:45:24	0.394843	63.35734	0.911679
1/14/2025 13:45:29	0.392597	63.34424	0.906495
1/14/2025 13:45:34	0.391099	63.35992	0.903037
1/14/2025 13:45:39	0.389165	63.36778	0.89857
1/14/2025 13:45:44	0.388205	63.37431	0.896353
1/14/2025 13:45:49	0.38771	63.38217	0.895211
1/14/2025 13:45:54	0.386165	63.37563	0.891643
1/14/2025 13:45:59	0.385137	63.39	0.889269
1/14/2025 13:46:04	0.382776	63.3939	0.883817
1/14/2025 13:46:09	0.38165	63.39783	0.881219
1/14/2025 13:46:14	0.378923	63.41093	0.874922
1/14/2025 13:46:19	0.376775	63.41354	0.869961
1/14/2025 13:46:24	0.374897	63.42922	0.865626

1/14/2025 13:46:29	0.371638	63.43444	0.858101
1/14/2025 13:46:34	0.368987	63.44754	0.851979
1/14/2025 13:46:39	0.367154	63.45144	0.847746
1/14/2025 13:46:44	0.366175	63.46188	0.845486
1/14/2025 13:46:49	0.365985	63.46713	0.845049
1/14/2025 13:46:54	0.364798	63.46844	0.842307
1/14/2025 13:46:59	0.363399	63.48019	0.839076
1/14/2025 13:47:04	0.361496	63.4828	0.834683
1/14/2025 13:47:09	0.362024	63.49195	0.835902
1/14/2025 13:47:14	0.360915	63.4972	0.833342
1/14/2025 13:47:19	0.358915	63.49849	0.828723
1/14/2025 13:47:24	0.356284	63.51025	0.822648
1/14/2025 13:47:29	0.353702	63.5181	0.816686
1/14/2025 13:47:34	0.351757	63.52593	0.812196
1/14/2025 13:47:39	0.349111	63.53249	0.806086
1/14/2025 13:47:44	0.347805	63.53903	0.80307
1/14/2025 13:47:49	0.34567	63.54817	0.798142
1/14/2025 13:47:54	0.343796	63.55471	0.793814
1/14/2025 13:47:59	0.342513	63.56776	0.790852
1/14/2025 13:48:04	0.341187	63.56647	0.78779
1/14/2025 13:48:09	0.339976	63.56908	0.784994
1/14/2025 13:48:14	0.337179	63.58344	0.778536
1/14/2025 13:48:19	0.336465	63.58998	0.776888
1/14/2025 13:48:24	0.334198	63.59783	0.771654
1/14/2025 13:48:29	0.33251	63.59127	0.767756
1/14/2025 13:48:34	0.329805	63.60305	0.76151
1/14/2025 13:48:39	0.328355	63.62005	0.758162
1/14/2025 13:48:44	0.326944	63.62659	0.754903
1/14/2025 13:48:49	0.324942	63.63442	0.750281
1/14/2025 13:48:54	0.322839	63.64356	0.745425
1/14/2025 13:48:59	0.320002	63.65142	0.738875
1/14/2025 13:49:04	0.31834	63.66578	0.735038
1/14/2025 13:49:09	0.316112	63.67364	0.729893
1/14/2025 13:49:14	0.31449	63.68539	0.726147
1/14/2025 13:49:19	0.312671	63.69454	0.721947
1/14/2025 13:49:24	0.309945	63.69193	0.715653
1/14/2025 13:49:29	0.306084	63.7063	0.706739
1/14/2025 13:49:34	0.304314	63.70105	0.702652
1/14/2025 13:49:39	0.30126	63.72069	0.6956
1/14/2025 13:49:44	0.298555	63.73115	0.689355
1/14/2025 13:49:49	0.295757	63.72462	0.682893
1/14/2025 13:49:54	0.293594	63.73245	0.6779
1/14/2025 13:49:59	0.29332	63.74681	0.677266
1/14/2025 13:50:04	0.292146	63.75988	0.674555

1/14/2025 13:50:09	0.293083	63.76774	0.676719
1/14/2025 13:50:14	0.292541	63.77425	0.675468
1/14/2025 13:50:19	0.29156	63.786	0.673203
1/14/2025 13:50:24	0.291206	63.79385	0.672385
1/14/2025 13:50:29	0.289471	63.80822	0.66838
1/14/2025 13:50:34	0.291323	63.81347	0.672655
1/14/2025 13:50:39	0.291346	63.82652	0.672708
1/14/2025 13:50:44	0.291784	63.84088	0.67372
1/14/2025 13:50:49	0.291407	63.85659	0.67285
1/14/2025 13:50:54	0.291216	63.86571	0.67241
1/14/2025 13:50:59	0.29194	63.86442	0.674081
1/14/2025 13:51:04	0.291172	63.86703	0.672307
1/14/2025 13:51:09	0.290725	63.86832	0.671275
1/14/2025 13:51:14	0.290276	63.901	0.670238
1/14/2025 13:51:19	0.289217	63.90883	0.667792
1/14/2025 13:51:24	0.286464	63.91012	0.661436
1/14/2025 13:51:29	0.28457	63.92059	0.657063
1/14/2025 13:51:34	0.281776	63.94541	0.650613
1/14/2025 13:51:39	0.279831	63.95456	0.646121
1/14/2025 13:51:44	0.277762	63.96632	0.641344
1/14/2025 13:51:49	0.274291	63.97807	0.633329
1/14/2025 13:51:54	0.272766	63.98721	0.629809
1/14/2025 13:51:59	0.270522	63.99636	0.624627
1/14/2025 13:52:04	0.268306	64.00812	0.619511
1/14/2025 13:52:09	0.266713	64.01726	0.615832
1/14/2025 13:52:14	0.267026	64.02509	0.616555
1/14/2025 13:52:19	0.267909	64.02773	0.618593
1/14/2025 13:52:24	0.268415	64.0486	0.619763
1/14/2025 13:52:29	0.269562	64.05646	0.62241
1/14/2025 13:52:34	0.270042	64.06432	0.62352
1/14/2025 13:52:39	0.269402	64.07736	0.622041
1/14/2025 13:52:44	0.268378	64.09433	0.619677
1/14/2025 13:52:49	0.266538	64.05777	0.615427
1/14/2025 13:52:54	0.26371	64.05385	0.608898
1/14/2025 13:52:59	0.260247	64.08519	0.600903
1/14/2025 13:53:04	0.256128	64.08519	0.591392
1/14/2025 13:53:09	0.253611	64.07604	0.585579
1/14/2025 13:53:14	0.251017	64.07736	0.579591
1/14/2025 13:53:19	0.248923	64.07867	0.574756
1/14/2025 13:53:24	0.246278	64.0878	0.568649
1/14/2025 13:53:29	0.24399	64.12698	0.563366
1/14/2025 13:53:34	0.239121	64.12309	0.552123
1/14/2025 13:53:39	0.237184	64.12309	0.547651
1/14/2025 13:53:44	0.23367	64.12309	0.539537

1/14/2025 13:53:49	0.231545	64.12309	0.534629
1/14/2025 13:53:54	0.228395	64.13353	0.527358

Log Notes

2025-01-14 11:54:49.317 Started

2025-01-14 13:53:57.163 Stopped

Location Properties
Location Name = Lindo Channel
Location ID = 7fa9282c-4ded-442a-be8f-a09537037366

Report Properties
Start Time = 2025-01-14 12:47:55.073
Duration = 01:08:11
Readings = 819
Time Offset = -08:00:00

Instrument Properties
Device Model = Level TROLL 700
Device SN = 911746
Device Firmware = 3.06

Log Properties
Log Name = LC-In 1B
Log Type = Fast Linear
Log File Number = 34
Log ID = dc28d1a8-32b9-59a6-83f2-41b0eb0e3980
Interval = 00:00:05

Date Time	Pressure (psi) (9	Temperature (Â°F) (91	Depth (ft) (911746)
1/14/2025 12:47:55	0.046498537	76.9599	0.10736367
1/14/2025 12:48:00	0.045615196	76.9599	0.10532407
1/14/2025 12:48:05	0.044192553	76.9638	0.10203923
1/14/2025 12:48:10	0.043604136	76.956024	0.1006806
1/14/2025 12:48:15	0.042690516	76.953476	0.09857108
1/14/2025 12:48:20	0.041835785	76.941826	0.09659753
1/14/2025 12:48:25	0.040951014	76.92766	0.09455462
1/14/2025 12:48:30	0.04044342	76.907	0.093382604
1/14/2025 12:48:35	0.039386034	76.88118	0.09094113
1/14/2025 12:48:40	0.03920436	76.85533	0.09052165
1/14/2025 12:48:45	0.038930893	76.83208	0.08989022
1/14/2025 12:48:50	0.038281202	76.803696	0.08839011
1/14/2025 12:48:55	0.037691355	76.77401	0.087028176
1/14/2025 12:49:00	0.037445307	76.74174	0.086460054
1/14/2025 12:49:05	0.036864042	76.7004	0.08511793
1/14/2025 12:49:10	0.03762746	76.65648	0.08688064
1/14/2025 12:49:15	0.050112247	76.58417	0.11570763
1/14/2025 12:49:20	0.078451395	76.44467	0.18114184
1/14/2025 12:49:25	0.12460947	76.23024	0.2877194
1/14/2025 12:49:30	0.20596933	75.95119	0.47557682

1/14/2025 12:49:35	0.20861697	75.65524	0.48169017
1/14/2025 12:49:40	0.25204206	75.36952	0.58195734
1/14/2025 12:49:45	0.28115034	75.09802	0.64916736
1/14/2025 12:49:50	0.27793384	74.83415	0.6417406
1/14/2025 12:49:55	0.27664018	74.58188	0.6387536
1/14/2025 12:50:00	0.27500224	74.337296	0.6349716
1/14/2025 12:50:05	0.27372193	74.10692	0.6320155
1/14/2025 12:50:10	0.2720914	73.86744	0.6282506
1/14/2025 12:50:15	0.27093482	73.64989	0.6255801
1/14/2025 12:50:20	0.27007294	73.43359	0.62359005
1/14/2025 12:50:25	0.26950455	73.221146	0.6222776
1/14/2025 12:50:30	0.26938343	73.01643	0.621998
1/14/2025 12:50:35	0.26888776	72.81685	0.6208535
1/14/2025 12:50:40	0.26872396	72.62373	0.6204753
1/14/2025 12:50:45	0.2683611	72.43831	0.6196374
1/14/2025 12:50:50	0.2674582	72.254234	0.6175527
1/14/2025 12:50:55	0.26799774	72.084335	0.6187985
1/14/2025 12:51:00	0.26645684	71.91311	0.6152406
1/14/2025 12:51:05	0.26656008	71.74576	0.61547893
1/14/2025 12:51:10	0.26421785	71.58615	0.6100708
1/14/2025 12:51:15	0.2639203	71.43175	0.6093838
1/14/2025 12:51:20	0.2630489	71.28375	0.60737175
1/14/2025 12:51:25	0.26181436	71.13835	0.6045212
1/14/2025 12:51:30	0.26040602	70.9982	0.6012694
1/14/2025 12:51:35	0.25910425	70.86311	0.5982637
1/14/2025 12:51:40	0.25776792	70.72549	0.5951781
1/14/2025 12:51:45	0.25568962	70.5956	0.5903794
1/14/2025 12:51:50	0.2542858	70.48387	0.58713806
1/14/2025 12:51:55	0.25348234	70.35396	0.5852829
1/14/2025 12:52:00	0.252074	70.23575	0.5820311
1/14/2025 12:52:05	0.25177884	70.1292	0.58134955
1/14/2025 12:52:10	0.25040627	70.01483	0.5781803
1/14/2025 12:52:15	0.2494719	69.90437	0.57602286
1/14/2025 12:52:20	0.2494719	69.80296	0.57602286
1/14/2025 12:52:25	0.24926996	69.69379	0.57555664
1/14/2025 12:52:30	0.24866843	69.60406	0.5741677
1/14/2025 12:52:35	0.24863935	69.50787	0.57410055
1/14/2025 12:52:40	0.24843955	69.414215	0.5736393
1/14/2025 12:52:45	0.24783325	69.3232	0.5722393
1/14/2025 12:52:50	0.24814057	69.239944	0.5729489
1/14/2025 12:52:55	0.24767041	69.15408	0.5718633
1/14/2025 12:53:00	0.24630737	69.07605	0.5687161
1/14/2025 12:53:05	0.2458744	68.994064	0.56771636
1/14/2025 12:53:10	0.24503446	68.91994	0.565777

1/14/2025 12:53:15	0.24419856	68.84314	0.5638469
1/14/2025 12:53:20	0.24373269	68.7677	0.5627712
1/14/2025 12:53:25	0.24293065	68.70134	0.5609193
1/14/2025 12:53:30	0.2436645	68.62845	0.5626138
1/14/2025 12:53:35	0.24363542	68.55687	0.5625467
1/14/2025 12:53:40	0.24443984	68.49312	0.564404
1/14/2025 12:53:45	0.24299192	68.42799	0.5610608
1/14/2025 12:53:50	0.24266148	68.36554	0.56029785
1/14/2025 12:53:55	0.24192381	68.30822	0.5585946
1/14/2025 12:54:00	0.24102569	68.24576	0.5565208
1/14/2025 12:54:05	0.24102569	68.18718	0.5565208
1/14/2025 12:54:10	0.2400899	68.13379	0.5543601
1/14/2025 12:54:15	0.24012637	68.08168	0.5544444
1/14/2025 12:54:20	0.23912024	68.02571	0.5521212
1/14/2025 12:54:25	0.23902774	67.98012	0.5519076
1/14/2025 12:54:30	0.23784995	67.92413	0.54918814
1/14/2025 12:54:35	0.23704457	67.87593	0.54732853
1/14/2025 12:54:40	0.23628068	67.82384	0.5455648
1/14/2025 12:54:45	0.23621249	67.778244	0.54540735
1/14/2025 12:54:50	0.23567295	67.73526	0.54416156
1/14/2025 12:54:55	0.23544669	67.68576	0.5436391
1/14/2025 12:55:00	0.23397255	67.6519	0.54023534
1/14/2025 12:55:05	0.23347616	67.59979	0.53908926
1/14/2025 12:55:10	0.24570799	67.56719	0.56733215
1/14/2025 12:55:15	0.27829552	67.51509	0.64257574
1/14/2025 12:55:20	0.31889486	67.43039	0.73631835
1/14/2025 12:55:25	0.350029	67.33656	0.8082061
1/14/2025 12:55:30	0.38271785	67.25708	0.8836836
1/14/2025 12:55:35	0.40823793	67.16583	0.9426088
1/14/2025 12:55:40	0.43772674	67.06026	1.0106975
1/14/2025 12:55:45	0.43627644	66.9586	1.0073488
1/14/2025 12:55:50	0.43494081	66.86475	1.0042648
1/14/2025 12:55:55	0.4342904	66.765625	1.0027632
1/14/2025 12:56:00	0.4337573	66.67175	1.0015322
1/14/2025 12:56:05	0.4331777	66.58829	1.000194
1/14/2025 12:56:10	0.43379736	66.49567	1.0016247
1/14/2025 12:56:15	0.43317127	66.410904	1.000179
1/14/2025 12:56:20	0.43308544	66.32741	0.99998087
1/14/2025 12:56:25	0.4327588	66.25307	0.9992266
1/14/2025 12:56:30	0.432261	66.17085	0.9980772
1/14/2025 12:56:35	0.43263316	66.0939	0.9989365
1/14/2025 12:56:40	0.4321351	66.0221	0.99778664
1/14/2025 12:56:45	0.42402434	65.95036	0.9790591
1/14/2025 12:56:50	0.42246222	65.87988	0.97545224

1/14/2025 12:56:55	0.4229915	65.81334	0.9766743
1/14/2025 12:57:00	0.42443204	65.74676	0.9800005
1/14/2025 12:57:05	0.42440224	65.68147	0.97993165
1/14/2025 12:57:10	0.42500687	65.62275	0.9813276
1/14/2025 12:57:15	0.42480516	65.56397	0.980862
1/14/2025 12:57:20	0.42427158	65.50394	0.97962993
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1/14/2025 13:41:10	0.27425003	63.06453	0.6332348
1/14/2025 13:41:15	0.27370477	63.04882	0.6319758
1/14/2025 13:41:20	0.2725258	63.073677	0.6292536
1/14/2025 13:41:25	0.27295494	63.107735	0.6302445
1/14/2025 13:41:30	0.2734208	63.07109	0.6313202
1/14/2025 13:41:35	0.27422476	63.047527	0.63317645
1/14/2025 13:41:40	0.27175355	63.05928	0.62747055
1/14/2025 13:41:45	0.271528	63.088097	0.6269497
1/14/2025 13:41:50	0.27191424	63.07763	0.62784153
1/14/2025 13:41:55	0.27139425	63.040962	0.626641
1/14/2025 13:42:00	0.2718618	63.040962	0.6277205
1/14/2025 13:42:05	0.2704203	63.052746	0.62439215
1/14/2025 13:42:10	0.26819348	63.05928	0.6192504
1/14/2025 13:42:15	0.26694846	63.08024	0.61637574
1/14/2025 13:42:20	0.2678063	63.105125	0.61835647
1/14/2025 13:42:25	0.26809978	63.06321	0.6190341
1/14/2025 13:42:30	0.26708412	63.06453	0.61668897
1/14/2025 13:42:35	0.26800776	63.02528	0.6188216
1/14/2025 13:42:40	0.2633624	63.0567	0.6080956
1/14/2025 13:42:45	0.26498866	63.05928	0.61185056
1/14/2025 13:42:50	0.26699162	63.05928	0.61647534
1/14/2025 13:42:55	0.26652384	63.023964	0.6153953
1/14/2025 13:43:00	0.26896477	63.073677	0.62103134
1/14/2025 13:43:05	0.26734948	63.06846	0.6173017
1/14/2025 13:43:10	0.2693262	63.086803	0.62186587
1/14/2025 13:43:15	0.2674582	63.084167	0.6175527
1/14/2025 13:43:20	0.26697755	63.040962	0.6164429
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1/14/2025 13:43:30	0.26515198	63.022644	0.6122277
1/14/2025 13:43:35	0.26816463	63.043602	0.61918384
1/14/2025 13:43:40	0.26603198	63.040962	0.6142596
1/14/2025 13:43:45	0.2633047	63.06192	0.6079624
1/14/2025 13:43:50	0.26732373	63.040962	0.61724216
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1/14/2025 13:44:15	0.26748443	63.05928	0.61761326
1/14/2025 13:44:20	0.26407933	63.06585	0.609751
1/14/2025 13:44:25	0.26704216	63.033108	0.61659205
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1/14/2025 13:44:35	0.26534605	63.035744	0.61267585
1/14/2025 13:44:40	0.2648549	63.005642	0.6115418
1/14/2025 13:44:45	0.26465774	63.046234	0.6110865
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1/14/2025 13:44:55	0.26404142	63.073677	0.6096635
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1/14/2025 13:45:05	0.26143622	63.026596	0.6036481
1/14/2025 13:45:10	0.26258564	63.014786	0.60630214
1/14/2025 13:45:15	0.2611451	63.014786	0.60297596
1/14/2025 13:45:20	0.26027536	62.999077	0.6009678
1/14/2025 13:45:25	0.2595682	63.052746	0.59933496
1/14/2025 13:45:30	0.26236987	63.043602	0.6058039
1/14/2025 13:45:35	0.2611451	63.072384	0.60297596
1/14/2025 13:45:40	0.26170444	63.042282	0.6042675
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1/14/2025 13:45:50	0.25843263	63.082848	0.5967129
1/14/2025 13:45:55	0.2594595	63.014786	0.59908396
1/14/2025 13:46:00	0.25655603	63.00825	0.5923799
1/14/2025 13:46:05	0.25687432	63.004326	0.59311485
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1/14/2025 13:46:35	0.25149417	62.995148	0.58069223
1/14/2025 13:46:40	0.24946523	63.014786	0.5760075
1/14/2025 13:46:45	0.25162768	63.020004	0.5810005
1/14/2025 13:46:50	0.24724889	63.000397	0.57089
1/14/2025 13:46:55	0.2483449	63.000397	0.5734207
1/14/2025 13:47:00	0.24918795	63.046234	0.5753672
1/14/2025 13:47:05	0.24793196	63.016106	0.5724672
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1/14/2025 13:47:15	0.24556899	62.995148	0.5670112
1/14/2025 13:47:20	0.24419427	63.005642	0.563837
1/14/2025 13:47:25	0.24439526	63.037064	0.56430113
1/14/2025 13:47:30	0.24332428	63.003006	0.56182826
1/14/2025 13:47:35	0.24315071	63.006958	0.5614275
1/14/2025 13:47:40	0.24158978	63.00825	0.5578233
1/14/2025 13:47:45	0.24329972	63.031815	0.5617715
1/14/2025 13:47:50	0.24321175	63.038353	0.5615684
1/14/2025 13:47:55	0.23956108	62.98076	0.55313915
1/14/2025 13:48:00	0.24028516	63.02789	0.55481094
1/14/2025 13:48:05	0.2413373	62.986004	0.5572403
1/14/2025 13:48:10	0.24316931	63.006958	0.56147045

1/14/2025 13:48:15	0.24296618	63.023964	0.56100136
1/14/2025 13:48:20	0.24260712	63.02789	0.5601723
1/14/2025 13:48:25	0.24245834	63.001686	0.5598288
1/14/2025 13:48:30	0.23963237	62.999077	0.5533037
1/14/2025 13:48:35	0.24245834	62.997787	0.5598288
1/14/2025 13:48:40	0.23949957	62.984688	0.55299705
1/14/2025 13:48:45	0.2393229	62.986004	0.5525892
1/14/2025 13:48:50	0.23943019	62.97686	0.5528369
1/14/2025 13:48:55	0.24069452	63.009544	0.5557562
1/14/2025 13:49:00	0.2393229	62.989906	0.5525892
1/14/2025 13:49:05	0.24094915	63.004326	0.55634415
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1/14/2025 13:49:20	0.23872113	63.016106	0.55119973
1/14/2025 13:49:25	0.24055076	63.01086	0.5554243
1/14/2025 13:49:30	0.23989677	62.951973	0.5539142
1/14/2025 13:49:35	0.23714781	62.98076	0.54756695
1/14/2025 13:49:40	0.23838902	62.931015	0.55043286
1/14/2025 13:49:45	0.23738956	63.005642	0.5481252
1/14/2025 13:49:50	0.23777676	63.023964	0.54901916
1/14/2025 13:49:55	0.23802829	62.937584	0.54959995
1/14/2025 13:50:00	0.23921537	62.98732	0.55234087
1/14/2025 13:50:05	0.23963237	62.97027	0.5533037
1/14/2025 13:50:10	0.23778725	62.928406	0.54904336
1/14/2025 13:50:15	0.23953867	62.940163	0.55308735
1/14/2025 13:50:20	0.2390697	62.931015	0.5520045
1/14/2025 13:50:25	0.23744011	62.97551	0.54824185
1/14/2025 13:50:30	0.23617601	62.942802	0.54532313
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1/14/2025 13:50:50	0.23534298	62.932335	0.54339963
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1/14/2025 13:51:00	0.23534298	62.924454	0.54339963
1/14/2025 13:51:05	0.23524928	62.98732	0.5431833
1/14/2025 13:51:10	0.23438191	62.94409	0.5411806
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1/14/2025 13:51:25	0.23772097	62.942802	0.54889035
1/14/2025 13:51:30	0.23732042	62.941483	0.54796547
1/14/2025 13:51:35	0.23844194	62.984688	0.55055505
1/14/2025 13:51:40	0.24183083	62.96768	0.5583798
1/14/2025 13:51:45	0.24125719	62.92709	0.55705535
1/14/2025 13:51:50	0.24901366	62.95719	0.5749648

1/14/2025 13:51:55	0.25018764	62.868176	0.57767546
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1/14/2025 13:52:20	0.24332428	62.921844	0.56182826
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1/14/2025 13:52:30	0.2454617	62.920555	0.56676346
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1/14/2025 13:52:40	0.24837303	62.913986	0.5734856
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1/14/2025 13:52:50	0.24990654	62.94541	0.5770264
1/14/2025 13:52:55	0.25061655	62.91528	0.5786658
1/14/2025 13:53:00	0.24885464	62.88389	0.57459766
1/14/2025 13:53:05	0.2459321	62.90745	0.56784964
1/14/2025 13:53:10	0.2502947	62.890423	0.57792264
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1/14/2025 13:53:25	0.24670553	62.924454	0.56963545
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1/14/2025 13:53:40	0.24648905	62.941483	0.56913555
1/14/2025 13:53:45	0.24715233	62.92709	0.5706671
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1/14/2025 13:53:55	0.24793196	62.89174	0.5724672
1/14/2025 13:54:00	0.24550462	62.90745	0.5668626
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1/14/2025 13:54:10	0.24566126	62.85771	0.56722426
1/14/2025 13:54:15	0.24647808	62.90745	0.5691103
1/14/2025 13:54:20	0.24494386	62.924454	0.56556773
1/14/2025 13:54:25	0.24550462	62.889107	0.5668626
1/14/2025 13:54:30	0.24686217	62.900887	0.5699971
1/14/2025 13:54:35	0.24526381	62.86029	0.56630653
1/14/2025 13:54:40	0.24478006	62.86554	0.5651896
1/14/2025 13:54:45	0.24316931	62.902233	0.56147045
1/14/2025 13:54:50	0.24403238	62.94541	0.5634632
1/14/2025 13:54:55	0.2427404	62.904816	0.56048006
1/14/2025 13:55:00	0.24385834	62.86686	0.56306136
1/14/2025 13:55:05	0.24153876	62.916595	0.5577055
1/14/2025 13:55:10	0.24254203	62.84983	0.560022
1/14/2025 13:55:15	0.24071407	62.89435	0.55580133
1/14/2025 13:55:20	0.23941994	62.882595	0.55281323
1/14/2025 13:55:25	0.24120855	62.843292	0.55694306
1/14/2025 13:55:30	0.23557305	62.902233	0.5439309

1/14/2025 13:55:35	0.23626947	62.88389	0.5455389
1/14/2025 13:55:40	0.2422278	62.885178	0.5592965
1/14/2025 13:55:45	0.24210095	62.87993	0.5590036
1/14/2025 13:55:50	0.2416327	62.898277	0.5579224
1/14/2025 13:55:55	0.24081492	62.900887	0.5560342
1/14/2025 13:56:00	0.2388959	62.89435	0.5516032
1/14/2025 13:56:05	0.23882842	62.88389	0.55144745

Log Notes

2025-01-14 12:47:55.011 Started

2025-01-14 13:56:05.845 Stopped

Location Properties
Location Name = Lindo Channel
Location ID = 7fa9282c-4ded-442a-be8f-a09537037366

Report Properties
Start Time = 2025-01-15 09:48:32.233
Duration = 01:05:56
Readings = 792
Time Offset = -08:00:00

Instrument Properties
Device Model = Level TROLL 700
Device SN = 911746
Device Firmware = 3.06

Log Properties
Log Name = LC-In 2A
Log Type = Fast Linear
Log File Number = 35
Log ID = 29bf9266-0e78-519c-bbbc-5a58d81b70fd
Interval = 00:00:05

Date Time	Pressure (psi) (911746)	Temperature (Â°F) (911746)
1/15/2025 9:48:32	-0.00266552	53.698357
1/15/2025 9:48:37	-0.008656979	53.732742
1/15/2025 9:48:42	0.041715145	53.786957
1/15/2025 9:48:47	-0.032596588	53.830605
1/15/2025 9:48:52	-0.033663273	53.880867
1/15/2025 9:48:57	-0.04226923	53.90333
1/15/2025 9:49:02	-0.034184217	53.93242
1/15/2025 9:49:07	-0.03898239	53.94961
1/15/2025 9:49:12	-0.04366827	53.966805
1/15/2025 9:49:17	-0.047207832	53.973427
1/15/2025 9:49:22	-0.050038576	53.98268
1/15/2025 9:49:27	-0.051970243	53.9893
1/15/2025 9:49:32	-0.05347562	53.98268
1/15/2025 9:49:37	-0.055235147	53.98268
1/15/2025 9:49:42	-0.056658745	53.974743
1/15/2025 9:49:47	-0.059333324	53.95755
1/15/2025 9:49:52	-0.0693593	53.925827
1/15/2025 9:49:57	0.07273102	53.86631
1/15/2025 9:50:02	0.25252652	53.76979
1/15/2025 9:50:07	0.48506355	53.645454

1/15/2025 9:50:12	0.76257825	53.534355
1/15/2025 9:50:17	1.1862118	53.419247
1/15/2025 9:50:22	1.5762291	53.304165
1/15/2025 9:50:27	1.603129	53.19565
1/15/2025 9:50:32	1.5845816	53.09243
1/15/2025 9:50:37	1.5669819	52.978584
1/15/2025 9:50:42	1.5510601	52.8899
1/15/2025 9:50:47	1.5364118	52.83958
1/15/2025 9:50:52	1.5206226	52.748257
1/15/2025 9:50:57	1.5058231	52.680717
1/15/2025 9:51:02	1.4914113	52.60656
1/15/2025 9:51:07	1.4774802	52.523117
1/15/2025 9:51:12	1.4632616	52.45028
1/15/2025 9:51:17	1.4486264	52.381393
1/15/2025 9:51:22	1.4344072	52.313858
1/15/2025 9:51:27	1.4203076	52.24099
1/15/2025 9:51:32	1.4061863	52.176086
1/15/2025 9:51:37	1.3925277	52.10984
1/15/2025 9:51:42	1.3779792	52.04093
1/15/2025 9:51:47	1.3649975	51.94551
1/15/2025 9:51:52	1.3520921	51.877922
1/15/2025 9:51:57	1.3394179	51.806343
1/15/2025 9:52:02	1.3259871	51.74803
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1/15/2025 9:52:27	1.2696757	51.461678
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1/15/2025 9:52:37	1.2472472	51.36486
1/15/2025 9:52:42	1.2366064	51.31976
1/15/2025 9:52:47	1.225311	51.270706
1/15/2025 9:52:52	1.2140818	51.22959
1/15/2025 9:52:57	1.2029173	51.187157
1/15/2025 9:53:02	1.192476	51.146038
1/15/2025 9:53:07	1.1815765	51.10624
1/15/2025 9:53:12	1.1691658	51.06243
1/15/2025 9:53:17	1.1572449	51.02398
1/15/2025 9:53:22	1.1465366	50.989483
1/15/2025 9:53:27	1.1356738	50.951004
1/15/2025 9:53:32	1.123292	50.911205
1/15/2025 9:53:37	1.1118648	50.887337
1/15/2025 9:53:42	1.1005688	50.85814
1/15/2025 9:53:47	1.0891442	50.819664

1/15/2025 9:53:52	1.0777161	50.79445
1/15/2025 9:53:57	1.0664237	50.75995
1/15/2025 9:54:02	1.056176	50.730755
1/15/2025 9:54:07	1.0460601	50.705544
1/15/2025 9:54:12	1.0357544	50.67898
1/15/2025 9:54:17	1.0261006	50.651104
1/15/2025 9:54:22	1.0163143	50.621933
1/15/2025 9:54:27	1.00653	50.60598
1/15/2025 9:54:32	0.99726987	50.579445
1/15/2025 9:54:37	1.0210445	50.548904
1/15/2025 9:54:42	1.0114574	50.523663
1/15/2025 9:54:47	1.0016077	50.50776
1/15/2025 9:54:52	0.9902096	50.44536
1/15/2025 9:54:57	0.97540665	50.46129
1/15/2025 9:55:02	0.9666035	50.438713
1/15/2025 9:55:07	0.9407966	50.425472
1/15/2025 9:55:12	0.9304879	50.409542
1/15/2025 9:55:17	0.92083526	50.39891
1/15/2025 9:55:22	0.90930367	50.37768
1/15/2025 9:55:27	0.8990977	50.348457
1/15/2025 9:55:32	0.8878658	50.33651
1/15/2025 9:55:37	0.87755895	50.319237
1/15/2025 9:55:42	0.86725044	50.30333
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1/15/2025 9:55:52	0.8466315	50.288692
1/15/2025 9:55:57	0.83513904	50.267464
1/15/2025 9:56:02	0.8251569	50.250214
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Log Notes

2025-01-15 09:48:32.171 Started

2025-01-15 10:54:31.045 Stopped

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Location Properties
Location Name = Lindo Channel
Location ID = 7fa9282c-4ded-442a-be8f-a09537037366

Report Properties
Start Time = 2025-01-15 09:36:24.951
Duration = 01:12:51
Readings = 875
Time Offset = -08:00:00

Instrument Properties
Device Model = Level TROLL 700
Device SN = 909663
Device Firmware = 3.06

Log Properties
Log Name = LC-In 2B
Log Type = Fast Linear
Log File Number = 34
Log ID = 3b0c9ded-a235-5ee8-a82d-52b0da52bfb2
Interval = 00:00:05

Date Time	Pressure (psi) (909663)	Temperature (Â°F) (909663)
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1/15/2025 9:36:55	0.11732912	51.474228
1/15/2025 9:37:00	0.11772537	51.449043
1/15/2025 9:37:05	0.11791992	51.42122
1/15/2025 9:37:10	0.11769724	51.396057
1/15/2025 9:37:15	0.11781454	51.370872
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Log Notes

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0.65696806
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0.6341982
0.62244505
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1.5944273
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1.5488911
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1.4240385
1.4086883
1.3911858
1.3766294
1.3569467
1.346736
1.3210573
1.3133899
1.2839812
1.2752755
1.2608359
1.2463642
1.2256302
1.205735
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0.9100125
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0.14604464
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APPENDIX E

Water Quality Field Sampling Forms

Low Flow Sampling Form

Sheet _____ of _____

Job No: 60160546 | Date: _____ | Initials: _____

Site: LMAD CHANNEL | Start Time: _____ | Weather: _____

Well ID: LC-DW-02 | Finish Time: _____ | Key No.: _____

1. Well Water Level/Pump Information

a. Well Diameter (in) _____

b. M.P. Desc. (e.g., 2" PVC, notched) _____

c. M.P. Elevation (ft) _____

d. G.S. Elevation (ft) _____

e. Depth to bottom from M.P. (ft) _____

f. Initial depth to water from M.P. (ft) _____

g. Water column length [e-f (ft)] _____

h. Depth to top of screen (ft) _____

i. Depth to pump intake (ft) _____

j. Saturated well volume (gal) (ex. 0.17 gal/ft for 2" well; 0.66 gal/ft for 4" well) _____

2. Field Water Quality Measurements

a. EquipmentDescription (type, model number, serial number)

Pump: _____

Meters _____

Flow through cell _____

b. Purging Information

Time	Cumulative Purge Vol. (L)	Pump Rate (ml/min)	Temp (deg C)	Conductivty (uS/cm)	Dis. Oxy. (mg/l)	Redox (mV)	pH	Turbidity (NTU)	Water Level (ft)
1025			16.42	0.398	8.15	127	6.99	23.0	
1030			16.27	0.394	8.62	133	5.91	0.0	
1035			16.28	0.396	8.29	132	5.94	0.0	

3. Sample Collection Information

Sample ID	Time Collected	Container Type/No./Vol.	Preservation	Analytical Method
1.				
2.				
3.				
4.				

notes: NA = not applicable NM = not measured/recorded

4. Comments:

Low Flow Sampling Form

Sheet 1 of 1

Job No: 5101446 | Date: 1-7-26 | Initials: ZL

Site: Linda Chapel | Start Time: | Weather: Sunny

Well ID: LC-DW-03 | Finish Time: | Key No:

1. Well Water Level/Pump Information

a. Well Diameter (in)
b. M.P. Desc. (e.g.: 2" PVC, notched)
c. M.P. Elevation (ft)
d. G.S. Elevation (ft)
e. Depth to bottom from M.P. (ft)
f. Initial depth to water from M.P. (ft)
g. Water column length [e-f (ft)]
h. Depth to top of screen (ft)
i. Depth to pump intake (ft)
j. Saturated well volume (gal) (ex. 0.17 gal/ft for 2" well, 0.66 gal/ft for 4" well)

2. Field Water Quality Measurements

a. EquipmentDescription (type, model number, serial number)

Pump
Meters
Flow through cell

b. Purging Information

Time	Cumulative Purge Vol. (L)	Pump Rate (ml/min)	Temp (deg C)	Conductivty (uS/cm)	Dis. Oxy. (mg/l)	Redox (mV)	pH	Turbidity (NTU)	Water Level (ft)
1255			14.35	0.189	107.2	102	6.24	0.0	
1300			13.32	0191	103.2	120	5.87	0.0	
1305			13.27	0193	109.5	138	5.83	0.0	

3. Sample Collection Information

Sample ID	Time Collected	Container Type/No./Vol.	Preservation	Analytical Method
1.				
2.				
3.				
4.				

notes: NA = not applicable NM = not measured/recorded

4. Comments:

Low Flow Sampling Form

Sheet 1 of 1

Job No	5181.41	Date	1-7-26	Initials	ZL
Site	Lake Chanel	Start Time	1400	Weather	Sunny
Well ID	LC-DW-03	Finish Time		Key No	

1. Well Water Level/Pump Information

a. Well Diameter (in)		f. Initial depth to water from M.P. (ft)	
b. M.P. Desc. (e.g., 2" PVC, notched)		g. Water column length [e-f (ft)]	
c. M.P. Elevation (ft)		h. Depth to top of screen (ft)	
d. G.S. Elevation (ft)		i. Depth to pump intake (ft)	
e. Depth to bottom from M.P. (ft)		j. Saturated well volume (gal) (ex. 0.17 gal/ft for 2" well, 0.66 gal/ft for 4" well)	

2. Field Water Quality Measurements

a. EquipmentDescription (type, model number, serial number)

Pump

Meters

Flow through cell

b. Purging Information

Time	Cumulative Purge Vol. (L)	Pump Rate (ml/min)	Temp (deg C)	Conductivty (uS/cm)	Dis. Oxy. (mg/l)	Redox (mV)	pH	Turbidity (NTU)	Water Level (ft)
1405			14.46	0.135	86.0	152	5.65	0.0	

3. Sample Collection Information

	Sample ID	Time Collected	Container Type/No./Vol.	Preservation	Analytical Method
1.					
2.					
3.					
4.					

notes NA = not applicable NM = not measured/recorded

4. Comments

Groundwater Monitoring Well Sampling Form

Sheet 1 of 1

Job No. SFO154B
Site Lindo Channel
Well ID LC-PW-01

Date: 9/19/25
Start Time: 1420
Finish Time: 1515

Initials ZL
Weather Sunny
Key No.

1. Well Water Level/Pump Information:

a. Well Diameter (in)
b. M.P. Desc. (e.g., 2" PVC, notched)
c. M.P. Elevation (ft)
d. G.S. Elevation (ft)
e. Depth of well from G.S. (ft)
f. Initial depth to water from M.P. (ft)
g. Water column length [d-e+f](ft)
h. Depth to top of screen (ft)
i. Depth to pump intake (ft)
j. Saturated well volume (gal)

2. Field Water Quality Measurements

a. Equipment Description (type, model number, serial number)

Pump: Sampled post pressure tank from domestic well
Meters
Flow through cell

b. Purging Information

Time:	Cumulative Purge Vol. (gal)	Pump Rate (gal/min)	Temp (deg C)	Conductivty (m-ohm/cm)	Dis. Oxy. (mg/l)	Redox (mV)	pH	Turbidity (NTU)	Water Level (ft)
1440			18.72	0.222	9.02	339	7.67	0	
1443			17.72	0.214	11.26	360	7.52	0	
1446			16.93	0.220	9.38	374	7.36	0	
1449			16.71	0.221	9.61	382	7.27	0	
1452			16.73	0.220	9.08	390	7.20	0	
1455			16.72	0.220	11.32	397	7.22	0	
1500	Sample taken								

3. Sample Collection Information

	Sample ID	Time Collected	Container Type/No./Vol.	Preservation	Analytical Method
1.	LC-PW-01	1500			
2.					
3.					
4.					

notes: NA = not applicable NM = not measured/recorded

4. Comments:

Groundwater Monitoring Well Sampling Form

Sheet 1 of 1

Job No. SF0154B | Date: 9-19-25 | Initials ZL

Site Lindo Channel | Start Time: 1240 | Weather Sunny

Well ID LC-DW-02 | Finish Time: 1310 | Key No.

1. Well Water Level/Pump Information:

a. Well Diameter (in) _____ | f. Initial depth to water from M.P. (ft) _____

b. M.P. Desc. (e.g., 2" PVC, notched) _____ | g. Water column length [d-e+f](ft) _____

c. M.P. Elevation (ft) _____ | h. Depth to top of screen (ft) _____

d. G.S. Elevation (ft) _____ | i. Depth to pump intake (ft) _____

e. Depth of well from G.S. (ft) _____ | j. Saturated well volume (gal) _____

2. Field Water Quality Measurements

a. Equipment Description (type, model number, serial number)

Pump: Post pressure tank

Meters _____

Flow through cell _____

b. Purging Information

Time:	Cumulative Purge Vol. (gal)	Pump Rate (gal/min)	Temp (deg C)	Conductivty (m-ohm/cm)	Dis. Oxy. (mg/l)	Redox (mV)	pH	Turbidity (NTU)	Water Level (ft)
1240	purge tank white active pump								
1300			19.21	0.416	7.69	297			
1301			17.72	0.373	8.52	313			
1302			17.40	0.365	7.59	325			
1303			17.33	0.365	7.70	327			
1305	sample taken								

3. Sample Collection Information

	Sample ID	Time Collected	Container Type/No./Vol.	Preservation	Analytical Method
1	LC-DW-02	1305			
2					
3					
4					

notes: NA = not applicable NM = not measured/recorded

4 Comments:

Groundwater Monitoring Well Sampling Form

Sheet 1 of 1

Job No. BF0154B
Site Linda Channel
Well ID ~~LC-DW-03~~ LC-DW-03

Date: 9-19-25
Start Time: 1330
Finish Time: 1415

Initials ZL
Weather Sunny
Key No.

1. Well Water Level/Pump Information:

a. Well Diameter (in)
b. M.P. Desc. (e.g., 2" PVC, notched)
c. M.P. Elevation (ft)
d. G.S. Elevation (ft)
e. Depth of well from G.S. (ft)
f. Initial depth to water from M.P. (ft)
g. Water column length [d-e+f](ft)
h. Depth to top of screen (ft)
i. Depth to pump intake (ft)
j. Saturated well volume (gal)

2. Field Water Quality Measurements

a. Equipment Description (type, model number, serial number)

Pump: outfall in direct line with well pump
Meters
Flow through cell

b. Purging Information

Time:	Cumulative Purge Vol. (gal)	Pump Rate (gal/min)	Temp (deg C)	Conductivty (m-ohm/cm)	Dis. Oxy. (mg/l)	Redox (mV)	pH	Turbidity (NTU)	Water Level (ft)
1350			18.66	0.215	11.54	328	7.63		
1353			16.40	0.199	10.26	339	7.68		
1356			16.19	0.200	9.24	348	7.61		
1359			16.13	0.200	9.02	356	7.66		
1405		Sample taken							

3. Sample Collection Information

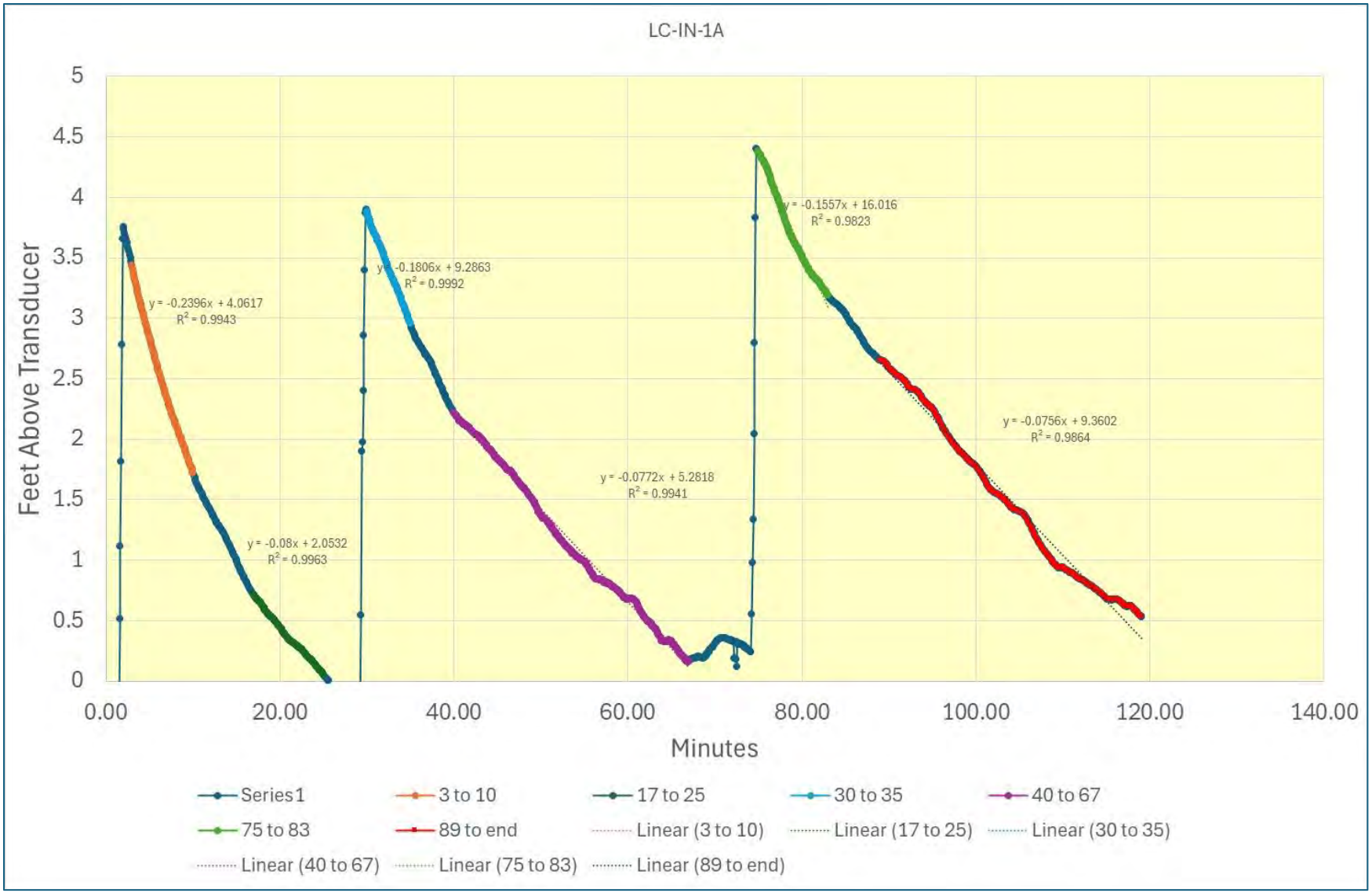
Sample ID	Time Collected	Container Type/No /Vol	Preservation	Analytical Method
1 LC-DW-03	1405			
2 DUP LC-DW-04	1610			
3				
4				

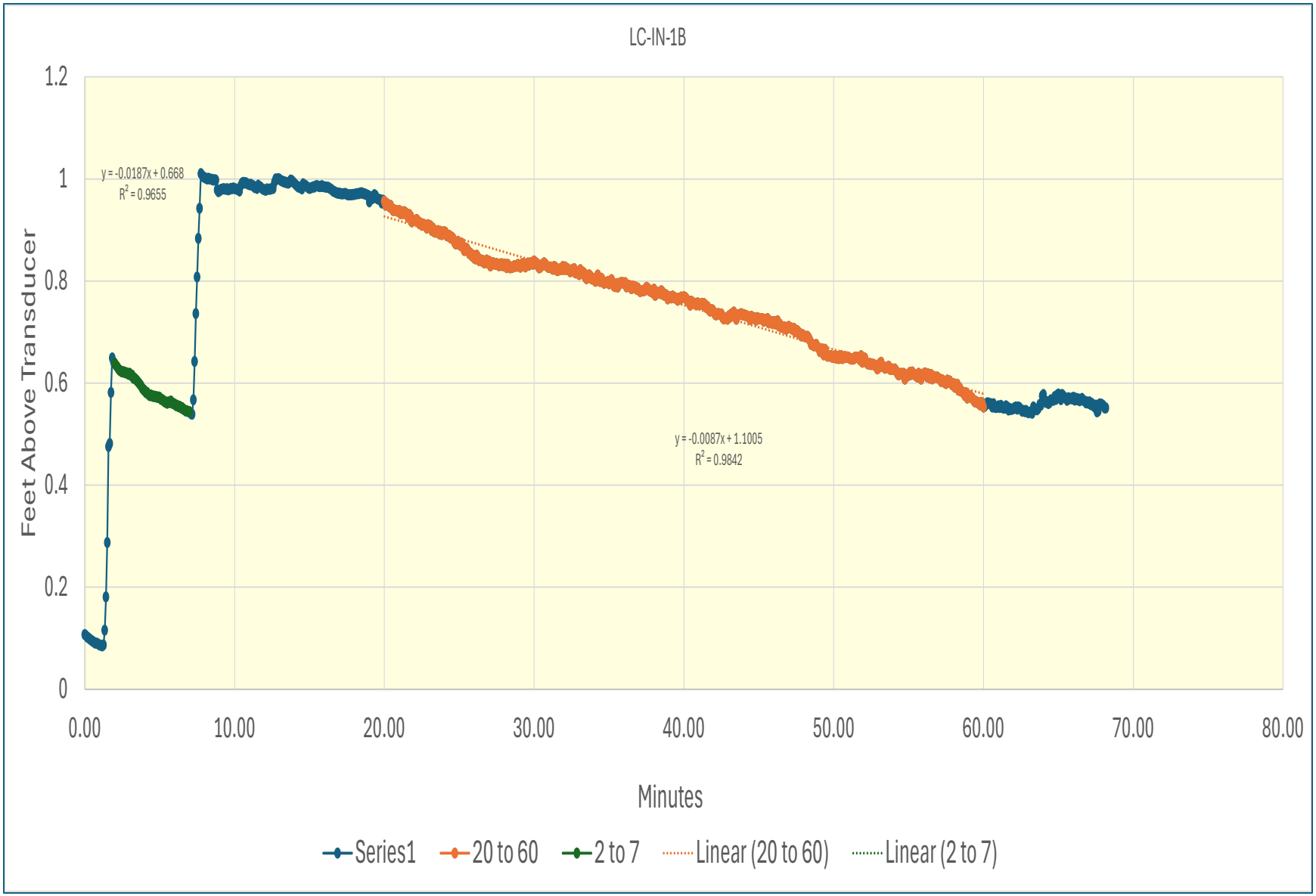
notes: NA = not applicable NM = not measured/recorded

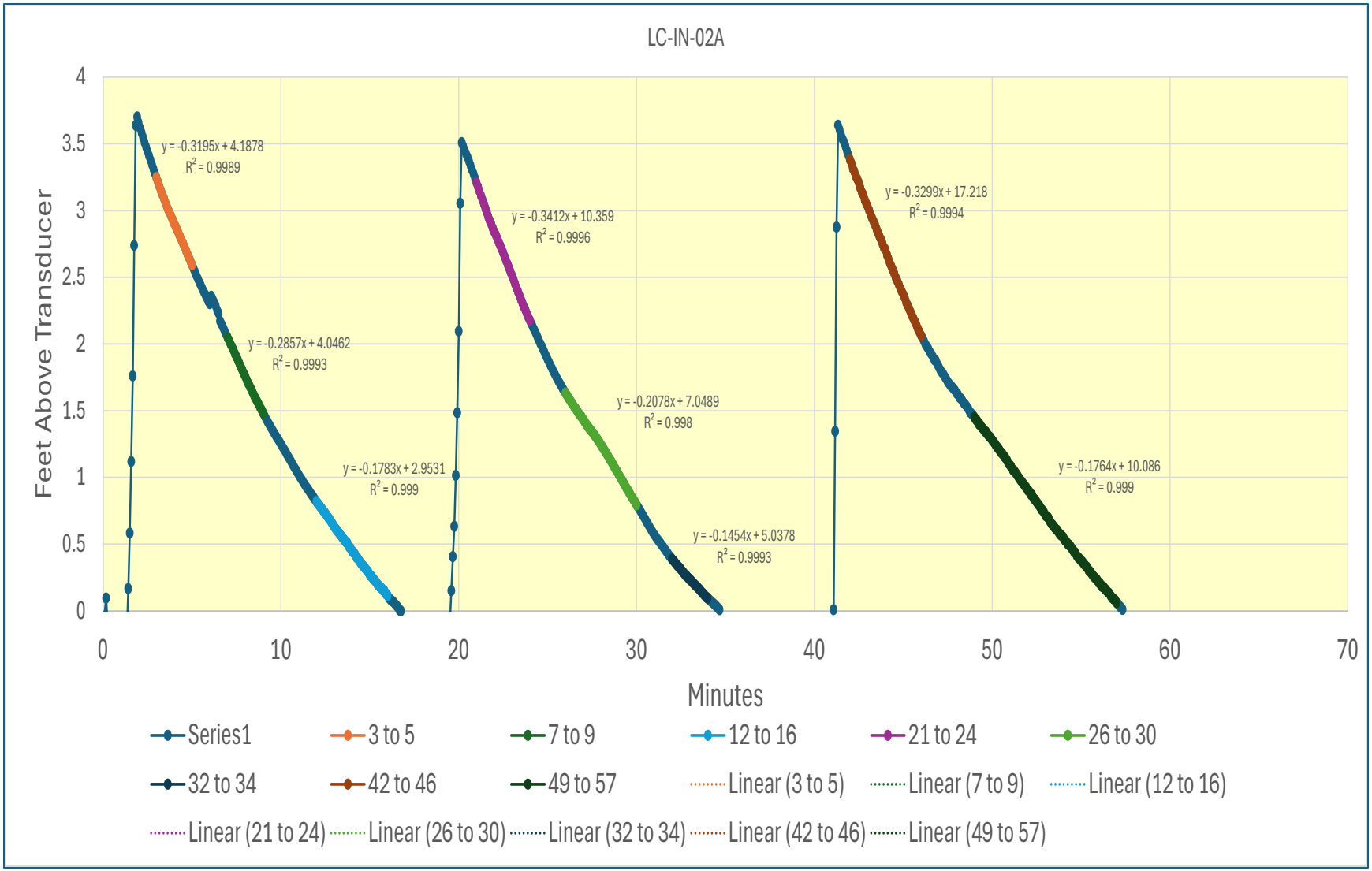
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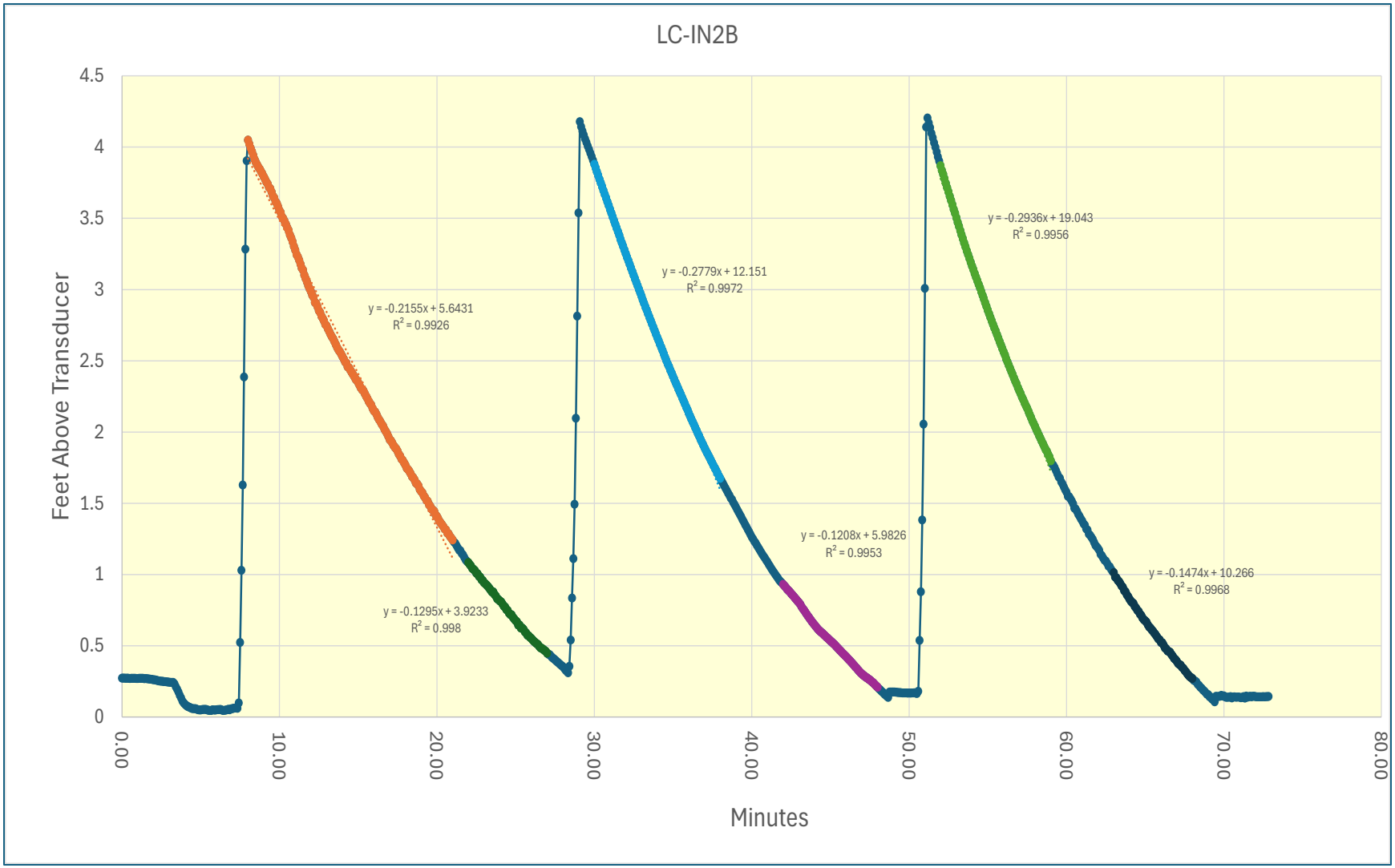
APPENDIX F

Infiltration Test Plots


LC-IN-1A
Feet Above Transducer
Minutes
0
0.5
1
1.5
2
2.5
3
3.5
4
4.5
5
0.00
20.00
40.00
60.00
80.00
100.00
120.00
140.00
y = -0.2396x + 4.0617
R² = 0.9943
y = -0.08x + 2.0532
R² = 0.9963
y = -0.1806x + 9.2863
R² = 0.9992
y = -0.0772x + 5.2818
R² = 0.9941
y = -0.1557x + 16.016
R² = 0.9823
y = -0.0756x + 9.3602
R² = 0.9864
Series1
3 to 10
17 to 25
30 to 35
40 to 67
75 to 83
89 to end
Linear (3 to 10)
Linear (17 to 25)
Linear (30 to 35)
Linear (40 to 67)
Linear (75 to 83)
Linear (89 to end)


LC-IN-1B
1.2
1
0.8
0.6
0.4
0.2
0
Feet Above Transducer
y = -0.0187x + 0.668
R² = 0.9655
y = -0.0087x + 1.1005
R² = 0.9842
0.00
10.00
20.00
30.00
40.00
50.00
60.00
70.00
80.00
Minutes
Series1
20 to 60
2 to 7
Linear (20 to 60)
Linear (2 to 7)


LC-IN-02A
Feet Above Transducer
Minutes
y = -0.3195x + 4.1878
R² = 0.9989
y = -0.2857x + 4.0462
R² = 0.9993
y = -0.1783x + 2.9531
R² = 0.999
y = -0.3412x + 10.359
R² = 0.9996
y = -0.2078x + 7.0489
R² = 0.998
y = -0.1454x + 5.0378
R² = 0.9993
y = -0.3299x + 17.218
R² = 0.9994
y = -0.1764x + 10.086
R² = 0.999
Series1
3 to 5
7 to 9
12 to 16
21 to 24
26 to 30
32 to 34
42 to 46
49 to 57
Linear (3 to 5)
Linear (7 to 9)
Linear (12 to 16)
Linear (21 to 24)
Linear (26 to 30)
Linear (32 to 34)
Linear (42 to 46)
Linear (49 to 57)


LC-IN2B
Feet Above Transducer
Minutes
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
0.00
10.00
20.00
30.00
40.00
50.00
60.00
70.00
80.00
y = -0.2155x + 5.6431
R² = 0.9926
y = -0.1295x + 3.9233
R² = 0.998
y = -0.2779x + 12.151
R² = 0.9972
y = -0.1208x + 5.9826
R² = 0.9953
y = -0.2936x + 19.043
R² = 0.9956
y = -0.1474x + 10.266
R² = 0.9968

APPENDIX G

Laboratory Analytical Reports

Enthalpy Analytical
931 West Barkley Ave
Orange, CA 92868
(714) 771-6900

enthalpy.com

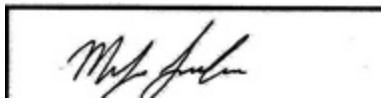
Lab Job Number : 542703
Report Level : II
Report Date : 10/27/2025

Analytical Report *prepared for:*

Michael van den Enden
Geosyntec Consultants
3043 Gold Canal Drive
Suite 100
Rancho Cordova, CA 95670

Project: BUTTE COUNTY - Lindo Channel

Authorized for release by:



Miguel Gamboa, Project Manager
miguel.gamboa@enthalpy.com

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the above signature which applies to this PDF file as well as any associated electronic data deliverable files. The results contained in this report meet all requirements of NELAP and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

CA ELAP# 1338, CA ELAP #1338-S1, NELAP# 4038, SCAQMD LAP# 18LA0518, LACSD ID# 10105, ORELAP# 4197

ENTHALPY ANALYTICAL

Sample Summary

Michael van den Enden
Geosyntec Consultants
3043 Gold Canal Drive
Suite 100
Rancho Cordova, CA
95670

Lab Job #:	542703
Project No:	BUTTE COUNTY
Location:	Lindo Channel
Date Received:	09/22/25

Sample ID	Lab ID	Collected	Matrix
LC-DW-02	542703-001	09/19/25 13:05	Water
LC-DW-03	542703-002	09/19/25 14:05	Water
LC-DW-01	542703-003	09/19/25 15:00	Water
LC-DW-04	542703-004	09/19/25 16:10	Water
LC-DW-05	542703-005	09/22/25 13:55	Water

ENTHALPY ANALYTICAL

Case Narrative

Geosyntec Consultants
3043 Gold Canal Drive
Suite 100
Rancho Cordova, CA 95670
Michael van den Enden

Lab Job Number: 542703
Project No: BUTTE COUNTY
Location: Lindo Channel
Date Received: 09/22/25

This data package contains sample and QC results for five water samples, requested for the above referenced project on 09/23/25. The samples were received in good condition.

Ion Chromatography (EPA 300.0):

- High recoveries were observed for chloride and sulfate in the MSD of LC-DW-02 (lab # 542703-001); the associated RPDs were within limits.
- Nitrogen, nitrate was analyzed outside of hold time; affected data was qualified with "H".
- No other analytical problems were encountered.

Total Dissolved Solids (TDS) (SM2540C):

- High RPD was observed for total dissolved solids in the SDUP for batch 382675; the parent sample was not a project sample.
- No other analytical problems were encountered.

ENTHALPY ANALYTICAL

Chain of Custody Record

Lab No:

Page: 1 of 1

Login 542703

Turn Around Time (rush by advanced notice only)

Standard:	X	5 Day:		3 Day:	
2 Day:		1 Day:		Custom TAT	

Matrix: **A** = Air **S** = Soil/Solid **W** = Water **DW** = Drinking Water **P** = Product **O** = Oil **SD** = Sediment **T** = Tissue **WP** = Wipe **WW** = Wastewater **X** = Other

Sample Type: **C** = Composite **G** = Grab or Discrete **B** = Blank **O** = Other

Preservatives: **0** = none **1** = $Na_2S_2O_3$ **2** = HCl **3** = HNO_3 **4** = H_2SO_4 **5** = NaOH

Sample Receipt Temp and Notes: (lab use only)

CUSTOMER INFORMATION		PROJECT INFORMATION	
Company:	Geosyntec Consultants	Name:	Lindo Channel
Report To:	Mike van den Eden	Number:	
Email:	MvandenEden@geosyntec.com	P.O. #:	
Address:	3034 Gold Canal Dr, Suite 100	Address:	
	Rancho Cordova, CA		
Phone:	(916) 637-8048	Global ID:	
Fax:		Sampled By:	Z. Laforet

	Sample ID	Sampling Date	Sampling Time (24 hr)	Matrix	Sample Type	Pres.	Cont. No.	Cont. Size	Initials	EPA 300.0 (Sulfate, Nitrate, Chloride) Field Filtered	EPA 200.8 (Ca, Fe, Mn, K, Mg, Na)	TDS, Alkalinity	2H & 18O					Test Instructions / Comments
1	LC-DW-02	9/19/2025	13:05	W	G	3	4		ZL	X	X	X	X					
2	LC-DW-03	9/19/2025	14:05	W	G	3	4		ZL	X	X	X	X					
3	LC-DW-01	9/19/2025	15:00	W	G	3	4		ZL	X	X	X	X					
4	LC-DW-04	9/19/2025	16:10	W	G	3	4		ZL	X	X	X	X					
5	LC-DW-05	~~9/19/2025~~ 9/22/25	1355	W	G	3	4		ZL	X	X	X	X					
6																		
7																		
8																		
9																		
10																		

	Signature	Print Name	Company / Title	Date / Time
[1] Relinquished By:		Michael VandenEden	Geosyntec	9/22/25 1356
[1] Received By:	Angela Smith	Angela Smith	Enthalpy	9/22/25 1356
[2] Relinquished By:	Angela Smith	Angela Smith	Enthalpy	9/22/25 1800
[2] Received By:		JKR	Ent	9/23/25 0830
[3] Relinquished By:				
[3] Received By:				

SAMPLE RECEIPT CHECKLIST

Section 1: General Info
Date Received: 9/22/25 WO# 542703 Client: Geosyntec

Section 2: Shipping / Custody
Are custody seals present? ☐ Yes ☒ No
Custody seals intact on arrival? ☒ N/A ☐ Yes ☐ No ☐ On cooler / box ☐ On samples
☒ Courier ☐ Walk-In ☐ Field Sampling ☐ Shipping Info: _____

Section 3a: Condition / Packaging
☐ Outside 0.0 - 6.0°C (0.0 - 10.0°C for microbiology) (PM notified)
Date Opened: 9/22/25 By (initials): bh Type of ice used: ☒ Wet ☐ Blue/Gel ☐ None
☒ Samples received on ice directly from the field; cooling process had begun. (if checked, skip temperatures)
☐ Sample matrix doesn't require cooling (e.g. air, bulk PCB). (if checked, skip temperatures)
If no cooler: Observed/Adjusted Temp (°C): ____/____ Thermometer/IR Gun: IR16 CF: +0.1°C
Cooler Temp (°C) #1: 3.7 / 3.8 #2: ____/____ #3: ____/____ #4: ____/____ #5: ____/____ #6: ____/____

Section 3b: Microbiology Samples
☒ No microbiology samples submitted (skip 3b)
☐ Within temp range 0.0 - 10.0°C or received on ice directly from field.
☐ Adequate headspace for microbiology analysis.

Section 3c: Air Samples
☒ No air samples submitted (skip 3c)
☐ 1.4L Canisters ☐ 6L Canisters ☐ Tedlar Bags ☐ MCE Cassettes ☐ Sorbent Tubes ☐ Other _____

Section 4: Containers / Labels / Samples	YES	NO	N/A
1) Were custody papers present, filled properly, and legible?	X		
2) Is the sampler's name present on the CoC?	X		
3) Were containers received in good condition (unbroken / unopened / uncompromised)?	X		
4) Were the samples bagged? (required for microbiology samples; recommended for soil samples)	X		
5) Were all of, and only, the correct samples received?	X		
6) Are sample labels present, legible, and in agreement with the CoC?	X		
7) Does the container count match the CoC?	X		
8) Was sufficient sample volume / mass received for the analyses requested?	X		
9) Were samples received in proper containers for the analyses requested?	X		
10) Were samples received with > 1/2 holding time remaining?	9-22 bh X	X	
11) Are samples properly preserved as indicated by CoC / labels?	X		
12) Unpreserved VOAs received - If necessary, was the hold time changed in LIMS?			X
13) Are VOA vials free from headspace/bubbles > 6mm?			X

Section 5: Explanations / Comments
(If no comments are made, then no discrepancies noted.)
-003 Note CoC time does not match time on bottles
-001 thru -004 received out of hold time

☐ No additional discrepancies

Date Logged 9/22/25 By (print) Brenda Hamilton (sign) Brenda Hamilton
Date Labeled 9/22/25 By (print) Angela Smith (sign) Angela Smith

SAMPLE RECEIPT CHECKLIST

Section 1: General Info

Date Received: 9/23/25 WO# 542703 Client: GEOSYNTEC

Section 2: Shipping / Custody **Are custody seals present?** ☒ Yes ☐ No

Custody seals intact on arrival? ☐ N/A ■ Yes ☐ No ■ On cooler / box ☐ On samples

☐ Courier ☐ Walk-In ☐ Field Sampling ■ Shipping Info: INTRASTATE

Section 3a: Condition / Packaging ☐ **Outside 0.0 - 6.0°C (0.0 - 10.0°C for microbiology) (PM notified)**

Date Opened 9/23/25 By (initials) FPD Type of ice used: ■ Wet ☐ Blue/Gel ☐ None

☐ Samples received on ice directly from the field; cooling process had begun. (if checked, skip temperatures)

☐ Sample matrix doesn't require cooling (e.g. air, bulk PCB). (if checked, skip temperatures)

If no cooler: Observed/Adjusted Temp (°C): ____ / ____ Thermometer/IR Gun: IR11 CF: +0.1

Cooler Temp (°C) #1: 3.8 / 3.9 #2: ____ / ____ #3: ____ / ____ #4: ____ / ____ #5: ____ / ____ #6: ____ / ____

Section 3b: Microbiology Samples ■ **No microbiology samples submitted (skip 3b)**

☐ Within temp range 0.0 - 10.0°C or received on ice directly from field.

☐ Adequate headspace for microbiology analysis.

Section 3c: Air Samples ■ **No air samples submitted (skip 3c)**

☐ 1.4L Canisters ☐ 6L Canisters ☐ Tedlar Bags ☐ MCE Cassettes ☐ Sorbent Tubes ☐ Other ____

Section 4: Containers / Labels / Samples	YES	NO	N/A
1) Were custody papers present, filled properly, and legible?	X		
2) Is the sampler's name present on the CoC?	X		
3) Were containers received in good condition (unbroken / unopened / uncompromised)?	X		
4) Were the samples bagged? (required for microbiology samples; recommended for soil samples)	X		
5) Were all of, and only, the correct samples received?	X		
6) Are sample labels present, legible, and in agreement with the CoC?	X		
7) Does the container count match the CoC?	X		
8) Was sufficient sample volume / mass received for the analyses requested?	X		
9) Were samples received in proper containers for the analyses requested?	X		
10) Were samples received with > 1/2 holding time remaining?		X	
11) Are samples properly preserved as indicated by CoC / labels?	X		
12) Unpreserved VOAs received - If necessary, was the hold time changed in LIMS?			X
13) Are VOA vials free from headspace/bubbles > 6mm?			X

Section 5: Explanations / Comments

(If no comments are made, then no discrepancies noted.)

See previous checklist

☐ **No additional discrepancies**

Date Logged 9/22/25 **By (print)** SAC **(sign)** ____

Date Labeled 9/22/25 **By (print)** SAC **(sign)** ____

ENTHALPY ANALYTICAL

Metals Analytical Report

Lab #: 542703 **Project#:** BUTTE COUNTY

Client: Geosyntec Consultants **Location:** Lindo Channel

Field ID: LC-DW-02 **DF:** 1.000 **Prepared:** 09/23/25
Type: SAMPLE **Batch#:** 382704 **Prep:** EPA 3015A
Lab ID: 542703-001 **Sampled:** 09/19/25 **Analysis:** EPA 200.8
Matrix: Water **Received:** 09/22/25 **Analyst:** DXC

542703-001 Analyte	Result	RL	Units	Analyzed
Calcium	**29,000**	500	ug/L	09/23/25
Iron	ND	50	ug/L	09/23/25
Magnesium	**21,000**	200	ug/L	09/23/25
Manganese	ND	10	ug/L	09/23/25
Potassium	**820**	500	ug/L	09/24/25
Sodium	**15,000**	1,000	ug/L	09/23/25

Field ID: LC-DW-03 **DF:** 1.000 **Prepared:** 09/23/25
Type: SAMPLE **Batch#:** 382704 **Prep:** EPA 3015A
Lab ID: 542703-002 **Sampled:** 09/19/25 **Analysis:** EPA 200.8
Matrix: Water **Received:** 09/22/25 **Analyst:** DXC

542703-002 Analyte	Result	RL	Units	Analyzed
Calcium	**15,000**	500	ug/L	09/23/25
Iron	ND	50	ug/L	09/23/25
Magnesium	**10,000**	200	ug/L	09/23/25
Manganese	ND	10	ug/L	09/23/25
Potassium	**670**	500	ug/L	09/24/25
Sodium	**11,000**	1,000	ug/L	09/23/25

Field ID: LC-DW-01 **DF:** 1.000 **Prepared:** 09/23/25
Type: SAMPLE **Batch#:** 382704 **Prep:** EPA 3015A
Lab ID: 542703-003 **Sampled:** 09/19/25 **Analysis:** EPA 200.8
Matrix: Water **Received:** 09/22/25 **Analyst:** DXC

542703-003 Analyte	Result	RL	Units	Analyzed
Calcium	**15,000**	500	ug/L	09/23/25
Iron	ND	50	ug/L	09/23/25
Magnesium	**13,000**	200	ug/L	09/23/25
Manganese	ND	10	ug/L	09/23/25
Potassium	ND	500	ug/L	09/24/25
Sodium	**11,000**	1,000	ug/L	09/23/25

Field ID: LC-DW-04 **DF:** 1.000 **Prepared:** 09/23/25
Type: SAMPLE **Batch#:** 382704 **Prep:** EPA 3015A
Lab ID: 542703-004 **Sampled:** 09/19/25 **Analysis:** EPA 200.8
Matrix: Water **Received:** 09/22/25 **Analyst:** DXC

542703-004 Analyte	Result	RL	Units	Analyzed
Calcium	**14,000**	500	ug/L	09/23/25
Iron	ND	50	ug/L	09/23/25
Magnesium	**10,000**	200	ug/L	09/23/25
Manganese	ND	10	ug/L	09/23/25
Potassium	**660**	500	ug/L	09/24/25
Sodium	**11,000**	1,000	ug/L	09/23/25

ENTHALPY ANALYTICAL

Metals Analytical Report

Lab #: 542703 **Project#:** BUTTE COUNTY

Client: Geosyntec Consultants **Location:** Lindo Channel

Field ID: LC-DW-05 **DF:** 1.000 **Prepared:** 09/23/25

Type: SAMPLE **Batch#:** 382704 **Prep:** EPA 3015A

Lab ID: 542703-005 **Sampled:** 09/22/25 **Analysis:** EPA 200.8

Matrix: Water **Received:** 09/22/25 **Analyst:** DXC

542703-005 Analyte	Result	RL	Units	Analyzed
Calcium	ND	500	ug/L	09/23/25
Iron	ND	50	ug/L	09/23/25
Magnesium	ND	200	ug/L	09/23/25
Manganese	ND	10	ug/L	09/23/25
Potassium	ND	500	ug/L	09/24/25
Sodium	ND	500	ug/L	09/24/25

Type: BLANK **Batch#:** 382704 **Analysis:** EPA 200.8

Lab ID: QC1296321 **Prepared:** 09/23/25 **Analyst:** DXC

Matrix: Water **Analyzed:** 09/23/25

DF: 1.000 **Prep:** EPA 3015A

QC1296321 Analyte	Result	RL	Units
Calcium	ND	320	ug/L
Iron	ND	50	ug/L
Magnesium	ND	200	ug/L
Manganese	ND	10	ug/L
Potassium	ND	250	ug/L
Sodium	ND	250	ug/L

Legend

ND: Not Detected

RL: Reporting Limit

ENTHALPY ANALYTICAL

Metals Analytical Report: Batch QC

Lab #: 542703 **Project#:** BUTTE COUNTY

Client: Geosyntec Consultants **Location:** Lindo Channel

Type: LCS **Batch#:** 382704 **Analysis:** EPA 200.8

Lab ID: QC1296322 **Prepared:** 09/23/25 **Analyst:** DXC

Matrix: Water **Analyzed:** 09/23/25

DF: 1.000 **Prep:** EPA 3015A

QC1296322 Analyte	Spiked	Result	%REC	Limits	Units
Calcium	5,100	4,978	98	85-115	ug/L
Iron	500.0	497.8	100	85-115	ug/L
Magnesium	5,100	4,725	93	85-115	ug/L
Manganese	100.0	97.60	98	85-115	ug/L
Sodium	5,100	4,578	90	85-115	ug/L

ENTHALPY ANALYTICAL

Metals Analytical Report: Batch QC

Lab #: 542703 **Project#:** BUTTE COUNTY

Client: Geosyntec Consultants **Location:** Lindo Channel

Field ID: ZZZZZZZZZZ **DF:** 1.000 **Analyzed:** 09/23/25

Type: MS **Batch#:** 382704 **Prep:** EPA 3015A

MSS Lab ID: 542569-001 **Sampled:** 09/18/25 **Analysis:** EPA 200.8

Lab ID: QC1296323 **Received:** 09/19/25 **Analyst:** DXC

Matrix: Water **Prepared:** 09/23/25

QC1296323 Analyte	MSS Result	Spiked	Result	%REC	Limits	Units	Qual
Calcium	19,260	5,100	25,060	114	70-130	ug/L	
Iron	57.76	500.0	566.7	102	70-130	ug/L	
Magnesium	6,839	5,100	12,030	102	70-130	ug/L	
Manganese	17.99	100.0	119.4	101	70-130	ug/L	
Sodium	23,530	5,100	29,200	111	70-130	ug/L	NM

Field ID: ZZZZZZZZZZ **DF:** 1.000 **Analyzed:** 09/23/25

Type: MSD **Batch#:** 382704 **Prep:** EPA 3015A

MSS Lab ID: 542569-001 **Sampled:** 09/18/25 **Analysis:** EPA 200.8

Lab ID: QC1296324 **Received:** 09/19/25 **Analyst:** DXC

Matrix: Water **Prepared:** 09/23/25

QC1296324 Analyte	Spiked	Result	%REC	Limits	Units	RPD	Lim	Qual
Calcium	5,100	24,480	103	70-130	ug/L	2	20	
Iron	500.0	552.0	99	70-130	ug/L	3	20	
Magnesium	5,100	11,890	99	70-130	ug/L	1	20	
Manganese	100.0	118.8	101	70-130	ug/L	1	20	
Sodium	5,100	28,390	95	70-130	ug/L	3	20	NM

Legend

NM: Not Meaningful

RPD: Relative Percent Difference

ENTHALPY ANALYTICAL

Enthalpy Analytical Report

Lab #: 542703 **Project#:** BUTTE COUNTY
Client: Geosyntec Consultants **Location:** Lindo Channel

Field ID: LC-DW-02 **DF:** 1.000 **Prepared:** 09/23/25 14:53
Type: SAMPLE **Batch#:** 382672 **Prep:** METHOD
Lab ID: 542703-001 **Sampled:** 09/19/25 13:05 **Analysis:** EPA 300.0
Matrix: Filtrate **Received:** 09/22/25 **Analyst:** KUM

542703-001 Analyte	Result	RL	Units	Analyzed	Qual
Chloride	**10**	1.0	mg/L	09/24/25 13:18	
Nitrogen, Nitrate	**3.5**	0.10	mg/L	09/24/25 13:18	H
Sulfate	**8.5**	1.0	mg/L	09/24/25 13:18	

Field ID: LC-DW-03 **DF:** 1.000 **Prepared:** 09/23/25 14:53
Type: SAMPLE **Batch#:** 382672 **Prep:** METHOD
Lab ID: 542703-002 **Sampled:** 09/19/25 14:05 **Analysis:** EPA 300.0
Matrix: Filtrate **Received:** 09/22/25 **Analyst:** KUM

542703-002 Analyte	Result	RL	Units	Analyzed	Qual
Chloride	**5.5**	1.0	mg/L	09/24/25 14:09	
Nitrogen, Nitrate	**0.42**	0.10	mg/L	09/24/25 14:09	H
Sulfate	**4.1**	1.0	mg/L	09/24/25 14:09	

Field ID: LC-DW-01 **DF:** 1.000 **Prepared:** 09/23/25 14:53
Type: SAMPLE **Batch#:** 382672 **Prep:** METHOD
Lab ID: 542703-003 **Sampled:** 09/19/25 15:00 **Analysis:** EPA 300.0
Matrix: Filtrate **Received:** 09/22/25 **Analyst:** KUM

542703-003 Analyte	Result	RL	Units	Analyzed	Qual
Chloride	**3.6**	1.0	mg/L	09/24/25 14:26	
Nitrogen, Nitrate	**0.75**	0.10	mg/L	09/24/25 14:26	H
Sulfate	**2.8**	1.0	mg/L	09/24/25 14:26	

Field ID: LC-DW-04 **DF:** 1.000 **Prepared:** 09/23/25 14:53
Type: SAMPLE **Batch#:** 382672 **Prep:** METHOD
Lab ID: 542703-004 **Sampled:** 09/19/25 16:10 **Analysis:** EPA 300.0
Matrix: Filtrate **Received:** 09/22/25 **Analyst:** KUM

542703-004 Analyte	Result	RL	Units	Analyzed	Qual
Chloride	**5.3**	1.0	mg/L	09/23/25 18:27	
Nitrogen, Nitrate	**0.38**	0.10	mg/L	09/24/25 14:43	H
Sulfate	**3.7**	1.0	mg/L	09/23/25 18:27	

Field ID: LC-DW-05 **DF:** 1.000 **Prepared:** 09/23/25 14:53
Type: SAMPLE **Batch#:** 382672 **Prep:** METHOD
Lab ID: 542703-005 **Sampled:** 09/22/25 13:55 **Analysis:** EPA 300.0
Matrix: Filtrate **Received:** 09/22/25 **Analyst:** KUM

542703-005 Analyte	Result	RL	Units	Analyzed
Chloride	ND	1.0	mg/L	09/23/25 19:17
Nitrogen, Nitrate	ND	0.10	mg/L	09/23/25 19:17
Sulfate	ND	1.0	mg/L	09/23/25 19:17

ENTHALPY ANALYTICAL

Enthalpy Analytical Report

Lab #: 542703 **Project#:** BUTTE COUNTY

Client: Geosyntec Consultants **Location:** Lindo Channel

Type:	BLANK	**Batch#:**	382672	**Analysis:**	EPA 300.0
Lab ID:	QC1296218	**Prepared:**	09/23/25 14:53	**Analyst:**	KUM
Matrix:	Water	**Analyzed:**	09/24/25 12:45		
DF:	1.000	**Prep:**	METHOD		

QC1296218 Analyte	Result	RL	Units
Chloride	ND	1.0	mg/L
Nitrogen, Nitrate	ND	0.10	mg/L
Sulfate	ND	1.0	mg/L

Legend

H: Holding time was exceeded

ND: Not Detected

RL: Reporting Limit

Enthalpy Analytical Report: Batch QC

Lab #: 542703 **Project#:** BUTTE COUNTY

Client: Geosyntec Consultants **Location:** Lindo Channel

Type: LCS **Batch#:** 382672 **Analysis:** EPA 300.0

Lab ID: QC1296219 **Prepared:** 09/23/25 14:53 **Analyst:** KUM

Matrix: Water **Analyzed:** 09/24/25 13:02

DF: 1.000 **Prep:** METHOD

QC1296219 Analyte	Spiked	Result	%REC	Limits	Units
Chloride	50.00	46.41	93	90-110	mg/L
Nitrogen, Nitrate	4.518	4.409	98	90-110	mg/L
Sulfate	25.00	25.07	100	90-110	mg/L

Enthalpy Analytical Report: Batch QC

Lab #: 542703 **Project#:** BUTTE COUNTY

Client: Geosyntec Consultants **Location:** Lindo Channel

Field ID:	LC-DW-02	**DF:**	1.000	**Analyzed:**	09/24/25 13:35
Type:	MS	**Batch#:**	382672	**Prep:**	METHOD
MSS Lab ID:	542703-001	**Sampled:**	09/19/25 13:05	**Analysis:**	EPA 300.0
Lab ID:	QC1296222	**Received:**	09/22/25	**Analyst:**	KUM
Matrix:	Filtrate	**Prepared:**	09/23/25 14:53		

QC1296222 Analyte	MSS Result	Spiked	Result	%REC	Limits	Units
Chloride	10.41	100.0	126.5	116	80-123	mg/L
Nitrogen, Nitrate	3.481	9.036	13.29	109	80-123	mg/L
Sulfate	8.540	50.00	68.14	119	79-124	mg/L

Field ID:	LC-DW-02	**DF:**	1.000	**Analyzed:**	09/24/25 13:52
Type:	MSD	**Batch#:**	382672	**Prep:**	METHOD
MSS Lab ID:	542703-001	**Sampled:**	09/19/25 13:05	**Analysis:**	EPA 300.0
Lab ID:	QC1296223	**Received:**	09/22/25	**Analyst:**	KUM
Matrix:	Filtrate	**Prepared:**	09/23/25 14:53		

QC1296223 Analyte	Spiked	Result	%REC	Limits	Units	RPD	Lim
Chloride	100.0	138.2	128 *	80-123	mg/L	9	20
Nitrogen, Nitrate	9.036	14.27	119	80-123	mg/L	7	20
Sulfate	50.00	75.11	133 *	79-124	mg/L	10	20

Legend

*: Value is outside QC limits

RPD: Relative Percent Difference

ENTHALPY ANALYTICAL

Alkalinity

Lab #: 542703 **Project#:** BUTTE COUNTY
Client: Geosyntec Consultants **Location:** Lindo Channel

Field ID: LC-DW-02 **DF:** 2.500 **Analyzed:** 09/23/25
Type: SAMPLE **Batch#:** 382710 **Prep:** METHOD
Lab ID: 542703-001 **Sampled:** 09/19/25 **Analysis:** SM2320B
Matrix: Water **Received:** 09/22/25 **Analyst:** WWC

542703-001 Analyte	Result	RL	Units
Alkalinity, Bicarbonate, as CaCO3	**160**	13	mg/L
Alkalinity, Carbonate, as CaCO3	ND	13	mg/L
Alkalinity, Hydroxide, as CaCO3	ND	13	mg/L
Alkalinity, Total as CaCO3	**160**	13	mg/L

Field ID: LC-DW-03 **DF:** 2.500 **Analyzed:** 09/23/25
Type: SAMPLE **Batch#:** 382710 **Prep:** METHOD
Lab ID: 542703-002 **Sampled:** 09/19/25 **Analysis:** SM2320B
Matrix: Water **Received:** 09/22/25 **Analyst:** WWC

542703-002 Analyte	Result	RL	Units
Alkalinity, Bicarbonate, as CaCO3	**91**	13	mg/L
Alkalinity, Carbonate, as CaCO3	ND	13	mg/L
Alkalinity, Hydroxide, as CaCO3	ND	13	mg/L
Alkalinity, Total as CaCO3	**91**	13	mg/L

Field ID: LC-DW-01 **DF:** 2.500 **Analyzed:** 09/23/25
Type: SAMPLE **Batch#:** 382710 **Prep:** METHOD
Lab ID: 542703-003 **Sampled:** 09/19/25 **Analysis:** SM2320B
Matrix: Water **Received:** 09/22/25 **Analyst:** WWC

542703-003 Analyte	Result	RL	Units
Alkalinity, Bicarbonate, as CaCO3	**99**	13	mg/L
Alkalinity, Carbonate, as CaCO3	ND	13	mg/L
Alkalinity, Hydroxide, as CaCO3	ND	13	mg/L
Alkalinity, Total as CaCO3	**99**	13	mg/L

Field ID: LC-DW-04 **DF:** 2.500 **Analyzed:** 09/23/25
Type: SAMPLE **Batch#:** 382710 **Prep:** METHOD
Lab ID: 542703-004 **Sampled:** 09/19/25 **Analysis:** SM2320B
Matrix: Water **Received:** 09/22/25 **Analyst:** WWC

542703-004 Analyte	Result	RL	Units
Alkalinity, Bicarbonate, as CaCO3	**88**	13	mg/L
Alkalinity, Carbonate, as CaCO3	ND	13	mg/L
Alkalinity, Hydroxide, as CaCO3	ND	13	mg/L
Alkalinity, Total as CaCO3	**88**	13	mg/L

ENTHALPY ANALYTICAL

Alkalinity

Lab #: 542703 **Project#:** BUTTE COUNTY
Client: Geosyntec Consultants **Location:** Lindo Channel

Field ID: LC-DW-05 **DF:** 0.5000 **Analyzed:** 09/23/25
Type: SAMPLE **Batch#:** 382710 **Prep:** METHOD
Lab ID: 542703-005 **Sampled:** 09/22/25 **Analysis:** SM2320B
Matrix: Water **Received:** 09/22/25 **Analyst:** WWC

542703-005 Analyte	Result	RL	Units
Alkalinity, Bicarbonate, as CaCO3	ND	2.5	mg/L
Alkalinity, Carbonate, as CaCO3	ND	2.5	mg/L
Alkalinity, Hydroxide, as CaCO3	ND	2.5	mg/L
Alkalinity, Total as CaCO3	ND	2.5	mg/L

Type: BLANK **DF:** 1.000 **Prep:** METHOD
Lab ID: QC1296341 **Batch#:** 382710 **Analysis:** SM2320B
Matrix: Drinking Water **Analyzed:** 09/23/25 **Analyst:** WWC

QC1296341 Analyte	Result	RL	Units
Alkalinity, Bicarbonate, as CaCO3	ND	2.0	mg/L
Alkalinity, Carbonate, as CaCO3	ND	5.0	mg/L
Alkalinity, Hydroxide, as CaCO3	ND	5.0	mg/L
Alkalinity, Total as CaCO3	ND	2.0	mg/L

Legend
ND: Not Detected
RL: Reporting Limit

ENTHALPY ANALYTICAL

Alkalinity: Batch QC

Lab #: 542703 **Project#:** BUTTE COUNTY

Client: Geosyntec Consultants **Location:** Lindo Channel

Type: LCS **DF:** 10.00 **Prep:** METHOD

Lab ID: QC1296342 **Batch#:** 382710 **Analysis:** SM2320B

Matrix: Drinking Water **Analyzed:** 09/23/25 **Analyst:** WWC

QC1296342 Analyte	Spiked	Result	%REC	Limits	Units
Alkalinity, Total as CaCO3	1,000	925.0	92	90-110	mg/L

ENTHALPY ANALYTICAL

Alkalinity: Batch QC

Lab #: 542703 **Project#:** BUTTE COUNTY

Client: Geosyntec Consultants **Location:** Lindo Channel

Field ID:	LC-DW-05	**DF:**	0.5000	**Prep:**	METHOD
Type:	SDUP	**Batch#:**	382710	**Analysis:**	SM2320B
MSS Lab ID:	542703-005	**Sampled:**	09/22/25	**Analyst:**	WWC
Lab ID:	QC1296343	**Received:**	09/22/25		
Matrix:	Water	**Analyzed:**	09/23/25		

QC1296343 Analyte	MSS Result	Result	RL	Units	RPD	Lim
Alkalinity, Bicarbonate, as CaCO3	<2.500	**1.658**	1.000	mg/L	NC	20
Alkalinity, Carbonate, as CaCO3	<2.500	<2.500	2.500	mg/L	NC	20
Alkalinity, Hydroxide, as CaCO3	<2.500	<2.500	2.500	mg/L	NC	20
Alkalinity, Total as CaCO3	<2.500	**1.658**	1.000	mg/L	NC	20

Legend

NC: Not Calculated

RL: Reporting Limit

RPD: Relative Percent Difference

ENTHALPY ANALYTICAL

Total Dissolved Solids (TDS)

Lab #: 542703 **Project#:** BUTTE COUNTY

Client: Geosyntec Consultants **Location:** Lindo Channel

Field ID: LC-DW-02 **Batch#:** 382675 **Prep:** METHOD
Type: SAMPLE **Sampled:** 09/19/25 **Analysis:** SM2540C
Lab ID: 542703-001 **Received:** 09/22/25 **Analyst:** RDL
Matrix: Water **Prepared:** 09/23/25
DF: 2.000 **Analyzed:** 09/24/25

542703-001 Analyte	Result	RL	Units
Total Dissolved Solids	**280**	20	mg/L

Field ID: LC-DW-03 **Batch#:** 382675 **Prep:** METHOD
Type: SAMPLE **Sampled:** 09/19/25 **Analysis:** SM2540C
Lab ID: 542703-002 **Received:** 09/22/25 **Analyst:** RDL
Matrix: Water **Prepared:** 09/23/25
DF: 1.000 **Analyzed:** 09/24/25

542703-002 Analyte	Result	RL	Units
Total Dissolved Solids	**180**	10	mg/L

Field ID: LC-DW-01 **Batch#:** 382675 **Prep:** METHOD
Type: SAMPLE **Sampled:** 09/19/25 **Analysis:** SM2540C
Lab ID: 542703-003 **Received:** 09/22/25 **Analyst:** RDL
Matrix: Water **Prepared:** 09/23/25
DF: 1.000 **Analyzed:** 09/24/25

542703-003 Analyte	Result	RL	Units
Total Dissolved Solids	**170**	10	mg/L

Field ID: LC-DW-04 **Batch#:** 382675 **Prep:** METHOD
Type: SAMPLE **Sampled:** 09/19/25 **Analysis:** SM2540C
Lab ID: 542703-004 **Received:** 09/22/25 **Analyst:** RDL
Matrix: Water **Prepared:** 09/23/25
DF: 1.000 **Analyzed:** 09/24/25

542703-004 Analyte	Result	RL	Units
Total Dissolved Solids	**180**	10	mg/L

Field ID: LC-DW-05 **Batch#:** 383158 **Prep:** METHOD
Type: SAMPLE **Sampled:** 09/22/25 **Analysis:** SM2540C
Lab ID: 542703-005 **Received:** 09/22/25 **Analyst:** RDL
Matrix: Water **Prepared:** 09/29/25
DF: 1.000 **Analyzed:** 09/30/25

542703-005 Analyte	Result	RL	Units
Total Dissolved Solids	ND	10	mg/L

ENTHALPY ANALYTICAL

Total Dissolved Solids (TDS)

Lab #: 542703 **Project#:** BUTTE COUNTY

Client: Geosyntec Consultants **Location:** Lindo Channel

Type:	BLANK	**Batch#:**	382675	**Analysis:**	SM2540C
Lab ID:	QC1296225	**Prepared:**	09/23/25	**Analyst:**	RDL
Matrix:	Water	**Analyzed:**	09/24/25		
DF:	1.000	**Prep:**	METHOD		

QC1296225 Analyte	Result	RL	Units
Total Dissolved Solids	ND	10	mg/L

Type:	BLANK	**Batch#:**	383158	**Analysis:**	SM2540C
Lab ID:	QC1298080	**Prepared:**	09/29/25	**Analyst:**	RDL
Matrix:	Water	**Analyzed:**	09/30/25		
DF:	0.5000	**Prep:**	METHOD		

QC1298080 Analyte	Result	RL	Units
Total Dissolved Solids	ND	5.0	mg/L

Legend

ND: Not Detected

RL: Reporting Limit

ENTHALPY ANALYTICAL

Total Dissolved Solids (TDS): Batch QC

Lab #: 542703 **Project#:** BUTTE COUNTY

Client: Geosyntec Consultants **Location:** Lindo Channel

Type: LCS **Batch#:** 382675 **Analysis:** SM2540C

Lab ID: QC1296226 **Prepared:** 09/23/25 **Analyst:** RDL

Matrix: Water **Analyzed:** 09/24/25

DF: 1.000 **Prep:** METHOD

QC1296226 Analyte	Spiked	Result	%REC	Limits	Units
Total Dissolved Solids	1,000	1,021	102	90-110	mg/L

Type: LCS **Batch#:** 383158 **Analysis:** SM2540C

Lab ID: QC1298081 **Prepared:** 09/29/25 **Analyst:** RDL

Matrix: Water **Analyzed:** 09/30/25

DF: 0.5000 **Prep:** METHOD

QC1298081 Analyte	Spiked	Result	%REC	Limits	Units
Total Dissolved Solids	1,000	1,011	101	90-110	mg/L

Field ID: ZZZZZZZZZZ **DF:** 1.000 **Analyzed:** 09/24/25

Type: SDUP **Batch#:** 382675 **Prep:** METHOD

MSS Lab ID: 542372-012 **Sampled:** 09/17/25 **Analysis:** SM2540C

Lab ID: QC1296227 **Received:** 09/17/25 **Analyst:** RDL

Matrix: Water **Prepared:** 09/23/25

QC1296227 Analyte	MSS Result	Result	RL	Units	RPD	Lim
Total Dissolved Solids	13.00	**18.00**	10.00	mg/L	32 *	5

Field ID: ZZZZZZZZZZ **DF:** 1.000 **Analyzed:** 09/24/25

Type: SDUP **Batch#:** 382675 **Prep:** METHOD

MSS Lab ID: 542704-001 **Sampled:** 09/22/25 **Analysis:** SM2540C

Lab ID: QC1296228 **Received:** 09/22/25 **Analyst:** RDL

Matrix: Water **Prepared:** 09/23/25

QC1296228 Analyte	MSS Result	Result	RL	Units	RPD	Lim
Total Dissolved Solids	197.0	**195.0**	10.00	mg/L	1	5

Field ID: ZZZZZZZZZZ **DF:** 2.000 **Analyzed:** 09/30/25

Type: SDUP **Batch#:** 383158 **Prep:** METHOD

MSS Lab ID: 543085-001 **Sampled:** 09/26/25 **Analysis:** SM2540C

Lab ID: QC1298082 **Received:** 09/26/25 **Analyst:** RDL

Matrix: Water **Prepared:** 09/29/25

QC1298082 Analyte	MSS Result	Result	RL	Units	RPD	Lim
Total Dissolved Solids	1,056	**1,094**	20.00	mg/L	4	5

ENTHALPY ANALYTICAL

Total Dissolved Solids (TDS): Batch QC

Lab #: 542703		**Project#:** BUTTE COUNTY	
Client: Geosyntec Consultants		**Location:** Lindo Channel	
Field ID: ZZZZZZZZZZ	**DF:** 2.000	**Analyzed:** 09/30/25	
Type: SDUP	**Batch#:** 383158	**Prep:** METHOD	
MSS Lab ID: 543115-003	**Sampled:** 09/26/25	**Analysis:** SM2540C	
Lab ID: QC1298083	**Received:** 09/26/25	**Analyst:** RDL	
Matrix: Water	**Prepared:** 09/29/25		

QC1298083 Analyte	MSS Result	Result	RL	Units	RPD	Lim
Total Dissolved Solids	490.0	**500.0**	20.00	mg/L	2	5

Legend

***:** Value is outside QC limits

RL: Reporting Limit

RPD: Relative Percent Difference

Laboratory Job Number 542703

Subcontracted Products

UC Davis SIF

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ENVIRONMENTAL SCIENCES

^{18}O and ^{2}H of Water by Headspace Equilibration using GasBench-IRMS

Methodology

Equilibration methods use CO_2 or H_2 in the headspace to isotopically equilibrate with water in the sample vial [1,2]. If necessary, the same sample vial can be utilized for both ^{18}O and ^{2}H measurements, provided a new cap is fitted prior to the second equilibration.

For ^{18}O, water samples are pipetted (200 µL) into 12 mL Labco Exetainer vials and flushed with 0.3 % CO_2 in helium for 5 minutes at 100 mL/min. Vials are held at 30 ºC in a thermostated tray for 24 hours prior to isotopic measurement.

Analysis of headspace CO_2 for ^{18}O is then performed on a Thermo Scientific GasBench II coupled to a Thermo Scientific Delta V Advantage isotope-ratio mass spectrometer. An autosampler utilizing a 2-hole sampling needle pushes CO_2 out of the vial and into a 100 µL sample loop. Once the loop is adequately flushed, pulses of sample gas are injected into the IRMS for isotopic measurement. Water is removed from the gas stream using a Nafion dryer, and sample CO_2 is chromatographically separated from other gases using an Agilent PoraPLOT Q GC column (25 m x 0.32 mm ID x 10 µm film thickness, 50 ºC, 2 mL/min).

For ^{2}H, water samples are pipetted (200 µL) into 12 mL Labco Exetainer vials containing platinum catalytic rods and flushed with 2.0 % H_2 in helium for 5 minutes at 100 mL/min. Vials are held at 30 ºC in a thermostated tray for 40 minutes prior to isotopic measurement.

Analysis of headspace H_2 for ^{2}H is performed on a Thermo Scientific GasBench II coupled to a Thermo Scientific Delta V Advantage isotope-ratio mass spectrometer. An autosampler utilizing a 2-hole sampling needle pushes H_2 out of the vial and into a 100 µL sample loop. Once the loop is adequately flushed, pulses of sample gas are injected into the IRMS for isotopic measurement. Water is removed from the gas stream using a Nafion dryer, and sample H_2 is chromatographically separated from other gases using an Agilent PoraPLOT Q GC column (25 m x 0.32 mm ID x 10 µm film thickness, 50 ºC, 2 mL/min).

One of every ten samples is analyzed in duplicate; further replicates may be analyzed if initial measurements fall outside expected measurement error. Replicates of the quality control and assurance reference materials are measured every ten samples.

Calibration and Reporting of Stable Isotope Ratios

Calibration procedures for water stable isotope ratios are applied identically across reference and sample materials and are directly traceable to the primary isotopic reference material, Vienna Standard Mean Ocean Water (VSMOW).

First, a pure CO_2 or H_2 reference gas is used to calculate provisional isotopic values of the sample peaks. Next, isotopic values are adjusted for changes in instrumental drift using an in-house reference material (e.g., SIF-3). Finally, measurements are scale-normalized to the primary reference material using three certified standard reference materials (i.e., SMOW2, GISP2, and SLAP2) available from USGS, NIST, and the IAEA.

Final quality assessment is based on the accuracy and precision of the unbiased quality control materials, which include a certified standard reference material (i.e., USGS47) and $\delta^{18}O$- and $\delta^{2}H$-calibrated waters (i.e., SIF1-8). Enriched waters are further calibrated against a suite of enriched standards including ER-1C1, ER-3A, ER-4A, ER-5A, High en, IAEA-608, and IAEA-609.

Quality assurance reference materials: SMOW2, GISP2, SLAP2
Quality control reference materials: USGS47, SIF 1-8

Measurement Uncertainty

Sample materials are inherently variable in composition, and measurement error may vary between different sample types due to differences in composition. Mean measurement error (σ) and accuracy, as determined by replicate measurements of the quality control and assurance materials, must fall below expected measurement error (± 0.20 ‰ for $\delta^{18}O$ and ± 2.0 ‰ for $\delta^{2}H$). Accuracy and precision of the co-measured calibrated quality control and assurance materials are provided with data reports.

Revision Date

September 6, 2019

Approved By

Richard Doucett



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[2] Duhr A, Hilkert AW. GasBench II: Automated H_2/H_2O equilibration for δD determination on aqueous samples using Thermo Scientific GasBench II. *ThermoFinnigan Flash Report No. G32*. Bremen (DE): 2001.

Glossary

°C	degree Celsius
%	percent
‰	per mil; 1 ‰ is equivalent to 0.001 or 1 mUr
^{2}H	stable isotope of hydrogen; mass number of 2
^{18}O	stable isotope of oxygen; mass number of 18
δ	delta notation for isotopic composition; in per mil (“‰”) or mUr; 1 ‰ equals 1 mUr
µL	microliter
µm	micron or micrometer
σ	standard deviation
CO_2	carbon dioxide
GC	gas chromatograph
GISP2	Greenland Ice Sheet Precipitation 2 water prepared by the IAEA; formal name is GRESP (Greenland Summit Precipitation)
H_2	dihydrogen
IAEA	International Atomic Energy Agency
ID	inner diameter
IRMS	isotope-ratio mass spectrometry
m	meter

min	minute
mL	milliliter
mm	millimeter
mUr	milliurey; 1 mUr is equivalent to 0.001 or 1 ‰
NIST	National Institute of Standards and Technology
QA	quality assurance; overall laboratory measures to ensure measurement quality
QC	quality control; activities and procedures used to evaluate quality requirements
RSIL	USGS Reston Stable Isotope Laboratory, Reston, Virginia
SIF	Stable Isotope Facility
SIF-3	water reference material
SIF-4	water reference material
SLAP2	Standard Light Antarctic Precipitation 2 water prepared by the IAEA Isotope Hydrology Lab, 2006
SMOW2	Standard Mean Ocean Water 2 water prepared by the IAEA Isotope Hydrology Lab, 2006; formal name is VSMOW2 (Vienna Standard Mean Ocean Water 2)
USGS	United States Geological Survey
USGS47	Lake Louise Drinking Water prepared by H. Qi et al., RSIL
VSMOW	Vienna Standard Mean Ocean Water; primary reference for measurements of oxygen and hydrogen isotopes

General Resources

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Stable Isotope Facility Data Report

Principal Investigator:	John Goyette	Email:	john.goyette@enthalpy.com
Researcher	Miguel Gamboa	Email:	miguel.gamboa@enthalpy.com
Institution:	Enthalpy Analytical		
Project:	Lindo Channel Butte County		
Submission Date:	October 14, 2025		
Completion Date:	October 23, 2025		
Report Date (pending payment):	October 23, 2025		
Analysis:	^{18}O and ^{2}H of Water by Headspace Equilibration using GasBench-IRMS		

	$\delta^{2}H$	$\delta^{18}O$
Mean SD for sample material replicates in this project:	±0.8 ‰	±0.05 ‰
Mean SD for reference material replicates in this project:	±1.3 ‰	±0.08 ‰
Mean absolute accuracy for calibrated reference materials within:	±0.6 ‰	±0.04 ‰

Notes:

Sample count to be charged: 5
Additional charges:

Reported by: Richard R. Doucett
rrdoucett@ucdavis.edu

Please review your data in a timely fashion, so that we may fully address any questions or concerns.

Samples

Sample ID	δ^2H_{VSMOW} (‰)	$\delta^{18}O_{VSMOW}$ (‰)	Comments	^2H Analysis #	^{18}O Analysis #
LC-DW-02	-52.8	-9.89		ICECUBE-65869	ICECUBE-65960
LC-DW-02	-51.0	-9.88	replicate	ICECUBE-65870	ICECUBE-65961
LC-DW-03	-54.4	-10.32		ICECUBE-65766	ICECUBE-65962
LC-DW-01	-54.5	-9.96		ICECUBE-65767	ICECUBE-65963
LC-DW-04	-59.7	-10.30		ICECUBE-65768	ICECUBE-65964
LC-DW-05	-53.4	-8.99		ICECUBE-65769	ICECUBE-65965

L7
L1D

Reference Materials

Summary	δ^2H_{VSMOW} (‰) Expected	δ^2H_{VSMOW} (‰) Mean	δ^2H_{VSMOW} (‰) Standard deviation	$\delta^{18}O_{VSMOW}$ (‰) Expected	$\delta^{18}O_{VSMOW}$ (‰) Mean	$\delta^{18}O_{VSMOW}$ (‰) Standard deviation	Use
SIF-2	-312.0	-311.2	1.1	-39.24	-39.18	0.13	Quality control
SIF-3	-200.8	-201.5	0.9	-25.89	-25.92	0.05	Quality control
SIF-4	-150.1	-150.4	0.6	-19.90	-19.92	0.10	Quality control
SIF-5	-76.8	-77.1	0.9	-10.59	-10.53	0.10	Quality control
SIF-6	-45.9	-46.2	2.3	-6.91	-6.91	0.02	Scale correction
SIF-7	-26.1	-25.2	2.7	-4.81	-4.82	0.08	Drift correction
SIF-8	20.9	20.8	0.5	2.45	2.50	0.04	Scale correction
GISP	-189.5	-191.1	1.1	-24.76	-24.82	0.12	Scale correction

Reference	δ^2H_{VSMOW} (‰)	$\delta^{18}O_{VSMOW}$ (‰)	Comments	^2H Analysis #	^{18}O Analysis #
SIF-7	-22.5	-4.73		ICECUBE-65688	ICECUBE-65884
SIF-7	-29.4	-4.81		ICECUBE-65700	ICECUBE-65896
SIF-7	-22.6	-4.80		ICECUBE-65714	ICECUBE-65910
SIF-7	-25.3	-4.82		ICECUBE-65728	ICECUBE-65924
SIF-7	-27.4	-4.81		ICECUBE-65742	ICECUBE-65938
SIF-7	-24.3	-4.96		ICECUBE-65770	ICECUBE-65966
SIF-7 Average	-25.2	-4.82			
SIF-7 StdDev	2.7	0.08			
SIF-8	21.3	2.52		ICECUBE-65691	ICECUBE-65887
SIF-8	21.0	2.46		ICECUBE-65692	ICECUBE-65888
SIF-8	20.3	2.53		ICECUBE-65693	ICECUBE-65889
SIF-8 Average	20.8	2.50			
SIF-8 StdDev	0.5	0.04			
SIF-6	-48.8	-6.90		ICECUBE-65694	ICECUBE-65890
SIF-6	-44.3	-6.89		ICECUBE-65695	ICECUBE-65891
SIF-6	-45.5	-6.93		ICECUBE-65696	ICECUBE-65892
SIF-6 Average	-46.2	-6.91			
SIF-6 StdDev	2.3	0.02			
GISP	-190.0	-24.70		ICECUBE-65697	ICECUBE-65893
GISP	-191.0	-24.94		ICECUBE-65698	ICECUBE-65894
GISP	-192.3	-24.82		ICECUBE-65699	ICECUBE-65895
GISP Average	-191.1	-24.82			
GISP StdDev	1.1	0.12			
SIF-2	-310.1	-39.21		ICECUBE-65689	ICECUBE-65885
SIF-2	-310.8	-39.01		ICECUBE-65715	ICECUBE-65911
SIF-2	-311.5	-39.18		ICECUBE-65743	ICECUBE-65939
SIF-2	-312.7	-39.33		ICECUBE-65771	ICECUBE-65967
SIF-2 Average	-311.2	-39.18			
SIF-2 StdDev	1.1	0.13			
SIF-4	-151.0	-19.89		ICECUBE-65690	ICECUBE-65886
SIF-4	-150.6	-19.82		ICECUBE-65716	ICECUBE-65912
SIF-4	-150.3	-19.89		ICECUBE-65744	ICECUBE-65940
SIF-4	-149.6	-20.06		ICECUBE-65772	ICECUBE-65968
SIF-4 Average	-150.4	-19.92			
SIF-4 StdDev	0.6	0.10			
SIF-5	-77.9	-10.44		ICECUBE-65701	ICECUBE-65897
SIF-5	-76.1	-10.53		ICECUBE-65729	ICECUBE-65925
SIF-5	-77.4	-10.63		ICECUBE-65773	ICECUBE-65969
SIF-5 Average	-77.1	-10.53			
SIF-5 StdDev	0.9	0.10			
SIF-3	-200.5	-25.89		ICECUBE-65702	ICECUBE-65898
SIF-3	-201.9	-25.89		ICECUBE-65730	ICECUBE-65926
SIF-3	-202.2	-25.97		ICECUBE-65774	ICECUBE-65970
SIF-3 Average	-201.5	-25.92			
SIF-3 StdDev	0.9	0.05			

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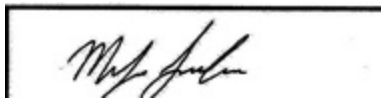
Lab Job Number : 550445
Report Level : II
Report Date : 02/04/2026

Analytical Report *prepared for:*

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Project: BUTTE COUNTY

Authorized for release by:



Miguel Gamboa, Project Manager
miguel.gamboa@enthalpy.com

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CA ELAP# 1338, CA ELAP #1338-S1, NELAP# 4038, SCAQMD LAP# 18LA0518, LACSD ID# 10105, ORELAP# 4197

ENTHALPY ANALYTICAL

Sample Summary

Joe Turner
Geosyntec Consultants
3043 Gold Canal Drive
Suite 100
Rancho Cordova, CA
95670

Lab Job #:	550445
Project No:	BUTTE COUNTY
Date Received:	01/08/26

Sample ID	Lab ID	Collected	Matrix
LC-DW-02	550445-001	01/07/26 10:35	Water
LC-DW-01	550445-002	01/07/26 13:05	Water
LC-DW-03	550445-003	01/07/26 14:15	Water
FB20260107	550445-004	01/07/26 13:20	Water

Case Narrative

Geosyntec Consultants
3043 Gold Canal Drive
Suite 100
Rancho Cordova, CA 95670
Joe Turner

Lab Job Number: 550445
Project No: BUTTE COUNTY
Date Received: 01/08/26

This data package contains sample and QC results for four water samples, requested for the above referenced project on 01/09/26. The samples were received in good condition.

Metals (EPA 200.8):

- High recoveries were observed for calcium, magnesium, and sodium in the MS/MSD of LC-DW-01 (lab # 550445-002); the LCS was within limits, and the associated RPDs were within limits.
- No other analytical problems were encountered.

Ion Chromatography (EPA 300.0):

- Responses exceeding the instrument's linear range were observed for chloride in the MS/MSD for batch 392104; affected data was qualified with "E".
- No other analytical problems were encountered.

Alkalinity (SM2320B):
No analytical problems were encountered.

Total Dissolved Solids (TDS) (SM2540C):
No analytical problems were encountered.

Nitrate (EPA 300.0):
CLS in Rancho Cordova, CA performed the analysis (see sublab report section for certifications). Please see the CLS case narrative.

Isotopic Hydrogen & Oxygen ():
UC Davis SIF in Davis, CA performed the analysis (see sublab report section for certifications). Please see the UC Davis SIF case narrative.

Login 550445

Enthalpy Analytical - Orange

931 W. Barkley Avenue, Orange, CA 92868

Phone 714-771-6900

Chain of Custody Record

Lab No: 550445

Page: 1 of 1

Turn Around Time (rush by advanced notice only)

Standard:	X	5 Day:		3 Day:	
2 Day:		1 Day:		Custom TAT:	

Matrix: W = Water; DW = Drinking Water; S = Soil / Solid; WP = Wipe; SEA = Sea Water; O = Other

Preservatives: 1 = $Na_2S_2O_3$; 2 = HCl; 3 = HNO_3; 4 = H_2SO_4; 5 = NaOH; 6 = Other

Sample Receipt Temp: 1R/0 1.7/1.9 (lab use only)

CUSTOMER INFORMATION		PROJECT INFORMATION	
Company:	Geosyntec	Quote #:	540621
Report To:	Joe Turner	Proj. Name:	
Email:	JTurner@Geosyntec.com	Proj. #:	SF0154B/B
Address:	11020 White Rock Road	P.O. #:	
	Suite 120 Rancho Cordova, CA	Address:	
~~Phone:~~	95670	Global ID:	
~~Fax:~~ Phone	916-637-8327	Sampled By:	Joe Lewis/Zac Lafaro

	Sample ID	Sampling Date	Sampling Time	Matrix	Number of Containers	Preservative	2H+18O (Subcontract)	Alkalinity, TDS	Ca, Fe, Mn, K, Mg, Na	Chloride, Nitrate, Sulfate ~~SO4~~							Test Instructions / Comments
1	LC-DW-02	01/07/26	1035	GW	~~3~~ 4		X	X	X	X							
2	LC-DW-01	01/7/26	1305	GW	4		X	X	X	X							
3	LC-DW-03	1/7/26	1415	GW	4		X	X	X	X							
4	FB20260107	1/7/26	1320	GW	3			X	X	X							
5																	
6																	
7																	
8																	
9																	
10																	

	Signature	Print Name	Company / Title	Date / Time
[1] Relinquished By:	Joe Lewis	Joe Lewis	Geosyntec / Staff Prof.	1/8/2026 0905
[1] Received By:	Brenda Hamilton	Brenda Hamilton	EA/SCM	1/8/26 0905
[2] Relinquished By:				
[2] Received By:		JKR	EA	1/8/26 1230
[3] Relinquished By:				
[3] Received By:				

SAMPLE RECEIPT CHECKLIST

Section 1: General Info
Date Received: 1/8/26 WO# 550445 Client: Geosyntec

Section 2: Shipping / Custody — **Are custody seals present?** ☐ Yes ☑ No
Custody seals intact on arrival? ☑ N/A ☐ Yes ☐ No ☐ On cooler / box ☐ On samples
☐ Courier ☑ Walk-In ☐ Field Sampling ☐ Shipping Info: _____

Section 3a: Condition / Packaging — ☐ **Outside 0.0 - 6.0°C (0.0 - 10.0°C for microbiology) (PM notified)**
Date Opened 1/8/26 By (initials) _____ Type of ice used: ☑ Wet ☐ Blue/Gel ☐ None
☐ Samples received on ice directly from the field; cooling process had begun. (if checked, skip temperatures)
☐ Sample matrix doesn't require cooling (e.g. air, bulk PCB). (if checked, skip temperatures)
If no cooler: Observed/Adjusted Temp (°C): _____ / _____ Thermometer/IR Gun: 16 CF: +0.1°C
Cooler Temp (°C) #1: 5.5 / 5.6 #2: ____/____ #3: ____/____ #4: ____/____ #5: ____/____ #6: ____/____

Section 3b: Microbiology Samples — ☑ **No microbiology samples submitted (skip 3b)**
☐ Within temp range 0.0 - 10.0°C or received on ice directly from field.
☐ Adequate headspace for microbiology analysis.

Section 3c: Air Samples — ☑ **No air samples submitted (skip 3c)**
☐ 1.4L Canisters ☐ 6L Canisters ☐ Tedlar Bags ☐ MCE Cassettes ☐ Sorbent Tubes ☐ Other _____

Section 4: Containers / Labels / Samples	YES	NO	N/A
1) Were custody papers present, filled properly, and legible?	✓		
2) Is the sampler's name present on the CoC?	✓		
3) Were containers received in good condition (unbroken / unopened / uncompromised)?	✓		
4) Were the samples bagged? (required for microbiology samples; recommended for soil samples)	✓		
5) Were all of, and only, the correct samples received?	✓		
6) Are sample labels present, legible, and in agreement with the CoC?	✓		
7) Does the container count match the CoC?	✓		
8) Was sufficient sample volume / mass received for the analyses requested?	✓		
9) Were samples received in proper containers for the analyses requested?	✓		
10) Were samples received with > 1/2 holding time remaining?		✓	
11) Are samples properly preserved as indicated by CoC / labels?	✓		
12) Unpreserved VOAs received - If necessary, was the hold time changed in LIMS?			✓
13) Are VOA vials free from headspace/bubbles > 6mm?			✓

Section 5: Explanations / Comments
(If no comments are made, then no discrepancies noted.)
001, 002, 003 - < 1/2 Hold time for Nitrate.
ALL - Split Anions into 125mL for Sub.

☐ **No additional discrepancies**

Date Logged 1/8/26 **By (print)** Joel Tillman **(sign)** _____
Date Labeled 1/8/26 **By (print)** Joel Tillman **(sign)** _____

SAMPLE RECEIPT CHECKLIST

Section 1: General Info

Date Received: 01/09/26 WO# 550445 Client: Geosyntec

Section 2: Shipping / Custody **Are custody seals present?** ☐ Yes ☒ No

Custody seals intact on arrival? ■ N/A ☐ Yes ☐ No ☐ On cooler / box ☐ On samples

☐ Courier ☐ Walk-In ☐ Field Sampling ■ Shipping Info: Intrastate

Section 3a: Condition / Packaging ☐ **Outside 0.0 - 6.0°C (0.0 - 10.0°C for microbiology) (PM notified)**

Date Opened 01/09/26 By (initials) JXR Type of ice used: ■ Wet ☐ Blue/Gel ☐ None

☐ Samples received on ice directly from the field; cooling process had begun. (if checked, skip temperatures)

☐ Sample matrix doesn't require cooling (e.g. air, bulk PCB). (if checked, skip temperatures)

If no cooler: Observed/Adjusted Temp (°C): _____ / _____ Thermometer/IR Gun: IR10 CF: +0.2

Cooler Temp (°C) #1: 1.7 / 1.9 #2: ____/____ #3: ____/____ #4: ____/____ #5: ____/____ #6: ____/____

Section 3b: Microbiology Samples ■ **No microbiology samples submitted (skip 3b)**

☐ Within temp range 0.0 - 10.0°C or received on ice directly from field.

☐ Adequate headspace for microbiology analysis.

Section 3c: Air Samples ■ **No air samples submitted (skip 3c)**

☐ 1.4L Canisters ☐ 6L Canisters ☐ Tedlar Bags ☐ MCE Cassettes ☐ Sorbent Tubes ☐ Other _____

Section 4: Containers / Labels / Samples	YES	NO	N/A
1) Were custody papers present, filled properly, and legible?	X		
2) Is the sampler's name present on the CoC?	X		
3) Were containers received in good condition (unbroken / unopened / uncompromised)?	X		
4) Were the samples bagged? (required for microbiology samples; recommended for soil samples)	X		
5) Were all of, and only, the correct samples received?	X		
6) Are sample labels present, legible, and in agreement with the CoC?	X		
7) Does the container count match the CoC?	X		
8) Was sufficient sample volume / mass received for the analyses requested?	X		
9) Were samples received in proper containers for the analyses requested?	X		
10) Were samples received with > 1/2 holding time remaining?	X		
11) Are samples properly preserved as indicated by CoC / labels?	X		
12) Unpreserved VOAs received - If necessary, was the hold time changed in LIMS?			X
13) Are VOA vials free from headspace/bubbles > 6mm?			X

Section 5: Explanations / Comments

(If no comments are made, then no discrepancies noted.)

See previous checklist

☐ **No additional discrepancies**

Date Logged 01/08/26 **By (print)** SAC **(sign)** _____

Date Labeled 01/08/26 **By (print)** SAC **(sign)** _____

ENTHALPY ANALYTICAL

Metals Analytical Report

Lab #: 550445 **Project#:** BUTTE COUNTY

Client: Geosyntec Consultants **Location:**

Field ID: LC-DW-02 **DF:** 1.000 **Prepared:** 01/09/26
Type: SAMPLE **Batch#:** 392154 **Prep:** EPA 3015A
Lab ID: 550445-001 **Sampled:** 01/07/26 **Analysis:** EPA 200.8
Matrix: Water **Received:** 01/08/26 **Analyst:** DXC

550445-001 Analyte	Result	RL	Units	Analyzed
Calcium	**30,000**	500	ug/L	01/10/26
Iron	ND	50	ug/L	01/10/26
Magnesium	**23,000**	250	ug/L	01/10/26
Manganese	ND	10	ug/L	01/10/26
Potassium	ND	1,000	ug/L	01/12/26
Sodium	**17,000**	500	ug/L	01/10/26

Field ID: LC-DW-01 **DF:** 1.000 **Prepared:** 01/09/26
Type: SAMPLE **Batch#:** 392154 **Prep:** EPA 3015A
Lab ID: 550445-002 **Sampled:** 01/07/26 **Analysis:** EPA 200.8
Matrix: Water **Received:** 01/08/26 **Analyst:** DXC

550445-002 Analyte	Result	RL	Units	Analyzed
Calcium	**17,000**	500	ug/L	01/10/26
Iron	ND	50	ug/L	01/10/26
Magnesium	**14,000**	250	ug/L	01/10/26
Manganese	ND	10	ug/L	01/10/26
Potassium	ND	1,000	ug/L	01/12/26
Sodium	**12,000**	500	ug/L	01/10/26

Field ID: LC-DW-03 **DF:** 1.000 **Prepared:** 01/09/26
Type: SAMPLE **Batch#:** 392154 **Prep:** EPA 3015A
Lab ID: 550445-003 **Sampled:** 01/07/26 **Analysis:** EPA 200.8
Matrix: Water **Received:** 01/08/26 **Analyst:** DXC

550445-003 Analyte	Result	RL	Units	Analyzed
Calcium	**15,000**	500	ug/L	01/12/26
Iron	ND	50	ug/L	01/12/26
Magnesium	**11,000**	250	ug/L	01/12/26
Manganese	ND	10	ug/L	01/12/26
Potassium	ND	1,000	ug/L	01/12/26
Sodium	**12,000**	1,000	ug/L	01/12/26

Field ID: FB20260107 **DF:** 1.000 **Prepared:** 01/09/26
Type: SAMPLE **Batch#:** 392154 **Prep:** EPA 3015A
Lab ID: 550445-004 **Sampled:** 01/07/26 **Analysis:** EPA 200.8
Matrix: Water **Received:** 01/08/26 **Analyst:** DXC

550445-004 Analyte	Result	RL	Units	Analyzed
Calcium	ND	500	ug/L	01/12/26
Iron	ND	50	ug/L	01/12/26
Magnesium	ND	250	ug/L	01/12/26
Manganese	ND	10	ug/L	01/12/26
Potassium	ND	1,000	ug/L	01/12/26
Sodium	ND	1,000	ug/L	01/12/26

ENTHALPY ANALYTICAL

Metals Analytical Report

Lab #: 550445 **Project#:** BUTTE COUNTY

Client: Geosyntec Consultants **Location:**

Type:	BLANK	**DF:**	1.000	**Prep:**	EPA 3015A
Lab ID:	QC1329411	**Batch#:**	392154	**Analysis:**	EPA 200.8
Matrix:	Water	**Prepared:**	01/09/26	**Analyst:**	DXC

QC1329411 Analyte	Result	RL	Units	Analyzed
Calcium	ND	500	ug/L	01/10/26
Iron	ND	50	ug/L	01/10/26
Magnesium	ND	250	ug/L	01/10/26
Manganese	ND	10	ug/L	01/10/26
Potassium	ND	500	ug/L	01/13/26
Sodium	ND	500	ug/L	01/10/26

Legend

ND: Not Detected

RL: Reporting Limit

ENTHALPY ANALYTICAL

Metals Analytical Report: Batch QC

Lab #: 550445 **Project#:** BUTTE COUNTY

Client: Geosyntec Consultants **Location:**

Type: LCS **DF:** 1.000 **Prep:** EPA 3015A

Lab ID: QC1329412 **Batch#:** 392154 **Analysis:** EPA 200.8

Matrix: Water **Prepared:** 01/09/26 **Analyst:** DXC

QC1329412 Analyte	Spiked	Result	%REC	Limits	Units	Analyzed
Calcium	5,100	5,321	104	85-115	ug/L	01/10/26
Iron	500.0	497.8	100	85-115	ug/L	01/10/26
Magnesium	5,100	4,907	96	85-115	ug/L	01/10/26
Manganese	100.0	107.9	108	85-115	ug/L	01/10/26
Potassium	6,000	6,473	108	85-115	ug/L	01/13/26
Sodium	5,100	5,001	98	85-115	ug/L	01/10/26

ENTHALPY ANALYTICAL

Metals Analytical Report: Batch QC

Lab #: 550445 **Project#:** BUTTE COUNTY

Client: Geosyntec Consultants **Location:**

Field ID: LC-DW-02 **DF:** 1.000 **Prep:** EPA 3015A

Type: MS **Batch#:** 392154 **Analysis:** EPA 200.8

MSS Lab ID: 550445-001 **Sampled:** 01/07/26 **Analyst:** DXC

Lab ID: QC1329413 **Received:** 01/08/26

Matrix: Water **Prepared:** 01/09/26

QC1329413 Analyte	MSS Result	Spiked	Result	%REC	Limits	Units	Analyzed	Qual
Calcium	29,750	5,100	34,850	100	70-130	ug/L	01/10/26	NM
Iron	<29.13	500.0	486.4	97	70-130	ug/L	01/10/26	
Magnesium	22,770	5,100	27,260	88	70-130	ug/L	01/10/26	NM
Manganese	<4.470	100.0	105.1	105	70-130	ug/L	01/10/26	
Potassium	983.1	6,000	7,093	102	70-130	ug/L	01/13/26	
Sodium	17,140	5,100	22,060	97	70-130	ug/L	01/10/26	

Field ID: LC-DW-02 **DF:** 1.000 **Prep:** EPA 3015A

Type: MSD **Batch#:** 392154 **Analysis:** EPA 200.8

MSS Lab ID: 550445-001 **Sampled:** 01/07/26 **Analyst:** DXC

Lab ID: QC1329414 **Received:** 01/08/26

Matrix: Water **Prepared:** 01/09/26

QC1329414 Analyte	Spiked	Result	%REC	Limits	Units	RPD	Lim	Analyzed	Qual
Calcium	5,100	34,640	96	70-130	ug/L	1	20	01/10/26	NM
Iron	500.0	481.7	96	70-130	ug/L	1	20	01/10/26	
Magnesium	5,100	27,620	95	70-130	ug/L	1	20	01/10/26	NM
Manganese	100.0	103.9	104	70-130	ug/L	1	20	01/10/26	
Potassium	6,000	7,286	105	70-130	ug/L	3	20	01/13/26	
Sodium	5,100	21,130	78	70-130	ug/L	4	20	01/10/26	

Legend

NM: Not Meaningful

RPD: Relative Percent Difference

ENTHALPY ANALYTICAL

Metals Analytical Report: Batch QC

Lab #: 550445 **Project#:** BUTTE COUNTY

Client: Geosyntec Consultants **Location:**

Field ID:	LC-DW-01	**DF:**	1.000	**Analyzed:**	01/13/26
Type:	MS	**Batch#:**	392154	**Prep:**	EPA 3015A
MSS Lab ID:	550445-002	**Sampled:**	01/07/26	**Analysis:**	EPA 200.8
Lab ID:	QC1329415	**Received:**	01/08/26	**Analyst:**	DXC
Matrix:	Water	**Prepared:**	01/09/26		

QC1329415 Analyte	MSS Result	Spiked	Result	%REC	Limits	Units
Calcium	16,580	5,100	24,500	155 *	70-130	ug/L
Iron	<29.13	500.0	555.3	111	70-130	ug/L
Magnesium	13,610	5,100	21,830	161 *	70-130	ug/L
Manganese	<4.470	100.0	110.6	111	70-130	ug/L
Potassium	646.0	6,000	6,982	106	70-130	ug/L
Sodium	12,010	5,100	19,060	138 *	70-130	ug/L

Field ID:	LC-DW-01	**DF:**	1.000	**Analyzed:**	01/13/26
Type:	MSD	**Batch#:**	392154	**Prep:**	EPA 3015A
MSS Lab ID:	550445-002	**Sampled:**	01/07/26	**Analysis:**	EPA 200.8
Lab ID:	QC1329416	**Received:**	01/08/26	**Analyst:**	DXC
Matrix:	Water	**Prepared:**	01/09/26		

QC1329416 Analyte	Spiked	Result	%REC	Limits	Units	RPD	Lim
Calcium	5,100	24,780	161 *	70-130	ug/L	1	20
Iron	500.0	571.6	114	70-130	ug/L	3	20
Magnesium	5,100	22,650	177 *	70-130	ug/L	4	20
Manganese	100.0	113.2	113	70-130	ug/L	2	20
Potassium	6,000	7,041	107	70-130	ug/L	1	20
Sodium	5,100	19,640	149 *	70-130	ug/L	3	20

Legend

*: Value is outside QC limits

RPD: Relative Percent Difference

ENTHALPY ANALYTICAL

Enthalpy Analytical Report

Lab #: 550445 **Project#:** BUTTE COUNTY

Client: Geosyntec Consultants **Location:**

Field ID: LC-DW-02 **Batch#:** 392104 **Prep:** METHOD
Type: SAMPLE **Sampled:** 01/07/26 10:35 **Analysis:** EPA 300.0
Lab ID: 550445-001 **Received:** 01/08/26 **Analyst:** KUM
Matrix: Water **Prepared:** 01/09/26 10:45
DF: 1.000 **Analyzed:** 01/09/26 18:57

550445-001 Analyte	Result	RL	Units
Chloride	**11**	1.0	mg/L
Sulfate	**7.6**	1.0	mg/L

Field ID: LC-DW-01 **Batch#:** 392104 **Prep:** METHOD
Type: SAMPLE **Sampled:** 01/07/26 13:05 **Analysis:** EPA 300.0
Lab ID: 550445-002 **Received:** 01/08/26 **Analyst:** KUM
Matrix: Water **Prepared:** 01/09/26 10:45
DF: 1.000 **Analyzed:** 01/09/26 19:57

550445-002 Analyte	Result	RL	Units
Chloride	**4.0**	1.0	mg/L
Sulfate	**2.7**	1.0	mg/L

Field ID: LC-DW-03 **Batch#:** 392104 **Prep:** METHOD
Type: SAMPLE **Sampled:** 01/07/26 14:15 **Analysis:** EPA 300.0
Lab ID: 550445-003 **Received:** 01/08/26 **Analyst:** KUM
Matrix: Water **Prepared:** 01/09/26 10:45
DF: 1.000 **Analyzed:** 01/09/26 20:16

550445-003 Analyte	Result	RL	Units
Chloride	**3.9**	1.0	mg/L
Sulfate	**3.7**	1.0	mg/L

Field ID: FB20260107 **Batch#:** 392104 **Prep:** METHOD
Type: SAMPLE **Sampled:** 01/07/26 13:20 **Analysis:** EPA 300.0
Lab ID: 550445-004 **Received:** 01/08/26 **Analyst:** KUM
Matrix: Water **Prepared:** 01/09/26 10:45
DF: 1.000 **Analyzed:** 01/09/26 20:36

550445-004 Analyte	Result	RL	Units
Chloride	ND	1.0	mg/L
Sulfate	ND	1.0	mg/L

Type: BLANK **Batch#:** 392104 **Analysis:** EPA 300.0
Lab ID: QC1329250 **Prepared:** 01/09/26 10:45 **Analyst:** KUM
Matrix: Water **Analyzed:** 01/09/26 12:00
DF: 1.000 **Prep:** METHOD

QC1329250 Analyte	Result	RL	Units
Chloride	ND	1.0	mg/L
Sulfate	ND	1.0	mg/L

ENTHALPY ANALYTICAL

Enthalpy Analytical Report

Lab #: 550445 **Project#:** BUTTE COUNTY

Client: Geosyntec Consultants **Location:**

Legend

ND: Not Detected

RL: Reporting Limit

ENTHALPY ANALYTICAL

Enthalpy Analytical Report: Batch QC

Lab #: 550445 **Project#:** BUTTE COUNTY

Client: Geosyntec Consultants **Location:**

Type: LCS **Batch#:** 392104 **Analysis:** EPA 300.0

Lab ID: QC1329251 **Prepared:** 01/09/26 10:45 **Analyst:** KUM

Matrix: Water **Analyzed:** 01/09/26 12:19

DF: 1.000 **Prep:** METHOD

QC1329251 Analyte	Spiked	Result	%REC	Limits	Units
Chloride	50.00	47.91	96	90-110	mg/L
Sulfate	25.00	26.03	104	90-110	mg/L

Enthalpy Analytical Report: Batch QC

Lab #: 550445 **Project#:** BUTTE COUNTY

Client: Geosyntec Consultants **Location:**

Field ID: ZZZZZZZZZZ	**DF:** 1.000	**Analyzed:**	01/09/26 13:38
Type: MS	**Batch#:** 392104	**Prep:**	METHOD
MSS Lab ID: 550486-001	**Sampled:** 01/08/26 08:29	**Analysis:**	EPA 300.0
Lab ID: QC1329252	**Received:** 01/08/26	**Analyst:**	KUM
Matrix: Water	**Prepared:** 01/09/26 10:45		

QC1329252 Analyte	MSS Result	Spiked	Result	%REC	Limits	Units
Chloride	1.715	100.0	101.1	99	80-123	mg/L
Sulfate	<0.2470	50.00	50.61	101	79-124	mg/L

Field ID: ZZZZZZZZZZ	**DF:** 1.000	**Analyzed:**	01/09/26 13:58
Type: MSD	**Batch#:** 392104	**Prep:**	METHOD
MSS Lab ID: 550486-001	**Sampled:** 01/08/26 08:29	**Analysis:**	EPA 300.0
Lab ID: QC1329253	**Received:** 01/08/26	**Analyst:**	KUM
Matrix: Water	**Prepared:** 01/09/26 10:45		

QC1329253 Analyte	Spiked	Result	%REC	Limits	Units	RPD	Lim
Chloride	100.0	104.5	103	80-123	mg/L	3	20
Sulfate	50.00	52.33	105	79-124	mg/L	3	20

Legend

RPD: Relative Percent Difference

Enthalpy Analytical Report: Batch QC

Lab #: 550445 **Project#:** BUTTE COUNTY
Client: Geosyntec Consultants **Location:**

Field ID:	ZZZZZZZZZZ	**DF:**	1.000	**Analyzed:**	01/09/26 15:58
Type:	MS	**Batch#:**	392104	**Prep:**	METHOD
MSS Lab ID:	550514-001	**Sampled:**	01/08/26 09:50	**Analysis:**	EPA 300.0
Lab ID:	QC1329254	**Received:**	01/08/26	**Analyst:**	KUM
Matrix:	Water	**Prepared:**	01/09/26 10:45		

QC1329254 Analyte	MSS Result	Spiked	Result	%REC	Limits	Units	Qual
Chloride	205.7	100.0	304.0 E	98	80-123	mg/L	
Sulfate	330.1	50.00	327.0 E	-6	79-124	mg/L	NM

Field ID:	ZZZZZZZZZZ	**DF:**	1.000	**Analyzed:**	01/09/26 16:18
Type:	MSD	**Batch#:**	392104	**Prep:**	METHOD
MSS Lab ID:	550514-001	**Sampled:**	01/08/26 09:50	**Analysis:**	EPA 300.0
Lab ID:	QC1329255	**Received:**	01/08/26	**Analyst:**	KUM
Matrix:	Water	**Prepared:**	01/09/26 10:45		

QC1329255 Analyte	Spiked	Result	%REC	Limits	Units	RPD	Lim	Qual
Chloride	100.0	302.5 E	97	80-123	mg/L	NC	20	
Sulfate	50.00	326.5 E	-7	79-124	mg/L	NC	20	NM

Legend

E: Response exceeds instrument's linear range
NC: Not Calculated
NM: Not Meaningful
RPD: Relative Percent Difference

ENTHALPY ANALYTICAL

Alkalinity

Lab #: 550445 **Project#:** BUTTE COUNTY

Client: Geosyntec Consultants **Location:**

Field ID: LC-DW-02 **DF:** 1.667 **Analyzed:** 01/10/26
Type: SAMPLE **Batch#:** 392170 **Prep:** METHOD
Lab ID: 550445-001 **Sampled:** 01/07/26 **Analysis:** SM2320B
Matrix: Water **Received:** 01/08/26 **Analyst:** ARM

550445-001 Analyte	Result	RL	Units
Alkalinity, Bicarbonate, as CaCO3	**170**	8.3	mg/L
Alkalinity, Carbonate, as CaCO3	ND	8.3	mg/L
Alkalinity, Hydroxide, as CaCO3	ND	8.3	mg/L
Alkalinity, Total as CaCO3	**170**	8.3	mg/L

Field ID: LC-DW-01 **DF:** 1.667 **Analyzed:** 01/10/26
Type: SAMPLE **Batch#:** 392170 **Prep:** METHOD
Lab ID: 550445-002 **Sampled:** 01/07/26 **Analysis:** SM2320B
Matrix: Water **Received:** 01/08/26 **Analyst:** ARM

550445-002 Analyte	Result	RL	Units
Alkalinity, Bicarbonate, as CaCO3	**120**	8.3	mg/L
Alkalinity, Carbonate, as CaCO3	ND	8.3	mg/L
Alkalinity, Hydroxide, as CaCO3	ND	8.3	mg/L
Alkalinity, Total as CaCO3	**120**	8.3	mg/L

Field ID: LC-DW-03 **DF:** 1.667 **Analyzed:** 01/10/26
Type: SAMPLE **Batch#:** 392170 **Prep:** METHOD
Lab ID: 550445-003 **Sampled:** 01/07/26 **Analysis:** SM2320B
Matrix: Water **Received:** 01/08/26 **Analyst:** ARM

550445-003 Analyte	Result	RL	Units
Alkalinity, Bicarbonate, as CaCO3	**89**	8.3	mg/L
Alkalinity, Carbonate, as CaCO3	ND	8.3	mg/L
Alkalinity, Hydroxide, as CaCO3	ND	8.3	mg/L
Alkalinity, Total as CaCO3	**89**	8.3	mg/L

Field ID: FB20260107 **DF:** 0.5000 **Analyzed:** 01/10/26
Type: SAMPLE **Batch#:** 392170 **Prep:** METHOD
Lab ID: 550445-004 **Sampled:** 01/07/26 **Analysis:** SM2320B
Matrix: Water **Received:** 01/08/26 **Analyst:** ARM

550445-004 Analyte	Result	RL	Units
Alkalinity, Bicarbonate, as CaCO3	ND	2.5	mg/L
Alkalinity, Carbonate, as CaCO3	ND	2.5	mg/L
Alkalinity, Hydroxide, as CaCO3	ND	2.5	mg/L
Alkalinity, Total as CaCO3	ND	2.5	mg/L

ENTHALPY ANALYTICAL

Alkalinity

Lab #: 550445 **Project#:** BUTTE COUNTY

Client: Geosyntec Consultants **Location:**

Type:	BLANK	**DF:**	1.000	**Prep:**	METHOD
Lab ID:	QC1329469	**Batch#:**	392170	**Analysis:**	SM2320B
Matrix:	Water	**Analyzed:**	01/10/26	**Analyst:**	ARM

QC1329469 Analyte	Result	RL	Units
Alkalinity, Bicarbonate, as CaCO3	ND	2.0	mg/L
Alkalinity, Carbonate, as CaCO3	ND	2.0	mg/L
Alkalinity, Hydroxide, as CaCO3	ND	5.0	mg/L
Alkalinity, Total as CaCO3	ND	2.0	mg/L

Legend

ND: Not Detected

RL: Reporting Limit

ENTHALPY ANALYTICAL

Alkalinity: Batch QC

Lab #: 550445 **Project#:** BUTTE COUNTY

Client: Geosyntec Consultants **Location:**

Type: LCS **DF:** 1.000 **Prep:** METHOD

Lab ID: QC1329470 **Batch#:** 392170 **Analysis:** SM2320B

Matrix: Water **Analyzed:** 01/10/26 **Analyst:** ARM

QC1329470 Analyte	Spiked	Result	%REC	Limits	Units
Alkalinity, Total as CaCO3	100.0	95.87	96	90-110	mg/L

ENTHALPY ANALYTICAL

Alkalinity: Batch QC

Lab #: 550445 **Project#:** BUTTE COUNTY

Client: Geosyntec Consultants **Location:**

Field ID:	ZZZZZZZZZZ	**DF:**	1.000	**Prep:**	METHOD
Type:	SDUP	**Batch#:**	392170	**Analysis:**	SM2320B
MSS Lab ID:	550293-001	**Sampled:**	01/06/26	**Analyst:**	ARM
Lab ID:	QC1329472	**Received:**	01/06/26		
Matrix:	Water	**Analyzed:**	01/10/26		

QC1329472 Analyte	MSS Result	Result	RL	Units	RPD	Lim
Alkalinity, Bicarbonate, as CaCO3	36.82	**37.39**	2.000	mg/L	2	20
Alkalinity, Carbonate, as CaCO3	<2.000	<2.000	2.000	mg/L	NC	20
Alkalinity, Hydroxide, as CaCO3	<5.000	<5.000	5.000	mg/L	NC	20
Alkalinity, Total as CaCO3	36.82	**37.39**	2.000	mg/L	2	20

Legend

NC: Not Calculated

RL: Reporting Limit

RPD: Relative Percent Difference

ENTHALPY ANALYTICAL

Total Dissolved Solids (TDS)

Lab #: 550445 **Project#:** BUTTE COUNTY

Client: Geosyntec Consultants **Location:**

Field ID: LC-DW-02 **Batch#:** 392380 **Prep:** METHOD
Type: SAMPLE **Sampled:** 01/07/26 **Analysis:** SM2540C
Lab ID: 550445-001 **Received:** 01/08/26 **Analyst:** AAB
Matrix: Water **Prepared:** 01/13/26
DF: 2.000 **Analyzed:** 01/14/26

550445-001 Analyte	Result	RL	Units
Total Dissolved Solids	**220**	20	mg/L

Field ID: LC-DW-01 **Batch#:** 392532 **Prep:** METHOD
Type: SAMPLE **Sampled:** 01/07/26 **Analysis:** SM2540C
Lab ID: 550445-002 **Received:** 01/08/26 **Analyst:** CDR
Matrix: Water **Prepared:** 01/14/26
DF: 1.000 **Analyzed:** 01/16/26

550445-002 Analyte	Result	RL	Units
Total Dissolved Solids	**160**	10	mg/L

Field ID: LC-DW-03 **Batch#:** 392380 **Prep:** METHOD
Type: SAMPLE **Sampled:** 01/07/26 **Analysis:** SM2540C
Lab ID: 550445-003 **Received:** 01/08/26 **Analyst:** AAB
Matrix: Water **Prepared:** 01/13/26
DF: 1.000 **Analyzed:** 01/14/26

550445-003 Analyte	Result	RL	Units
Total Dissolved Solids	**140**	10	mg/L

Field ID: FB20260107 **Batch#:** 392380 **Prep:** METHOD
Type: SAMPLE **Sampled:** 01/07/26 **Analysis:** SM2540C
Lab ID: 550445-004 **Received:** 01/08/26 **Analyst:** AAB
Matrix: Water **Prepared:** 01/13/26
DF: 1.000 **Analyzed:** 01/14/26

550445-004 Analyte	Result	RL	Units
Total Dissolved Solids	ND	10	mg/L

Type: BLANK **Batch#:** 392380 **Analysis:** SM2540C
Lab ID: QC1330293 **Prepared:** 01/13/26 **Analyst:** AAB
Matrix: Water **Analyzed:** 01/14/26
DF: 1.000 **Prep:** METHOD

QC1330293 Analyte	Result	RL	Units
Total Dissolved Solids	ND	10	mg/L

ENTHALPY ANALYTICAL

Total Dissolved Solids (TDS)

Lab #: 550445 **Project#:** BUTTE COUNTY

Client: Geosyntec Consultants **Location:**

Type:	BLANK	**Batch#:**	392532	**Analysis:**	SM2540C
Lab ID:	QC1330766	**Prepared:**	01/14/26	**Analyst:**	CDR
Matrix:	Water	**Analyzed:**	01/16/26		
DF:	1.000	**Prep:**	METHOD		

QC1330766 Analyte	Result	RL	Units
Total Dissolved Solids	ND	10	mg/L

Legend

ND: Not Detected

RL: Reporting Limit

ENTHALPY ANALYTICAL

Total Dissolved Solids (TDS): Batch QC

Lab #: 550445 **Project#:** BUTTE COUNTY

Client: Geosyntec Consultants **Location:**

Type: LCS **Batch#:** 392380 **Analysis:** SM2540C

Lab ID: QC1330294 **Prepared:** 01/13/26 **Analyst:** AAB

Matrix: Water **Analyzed:** 01/14/26

DF: 1.000 **Prep:** METHOD

QC1330294 Analyte	Spiked	Result	%REC	Limits	Units
Total Dissolved Solids	1,000	1,009	101	90-110	mg/L

Type: LCS **Batch#:** 392532 **Analysis:** SM2540C

Lab ID: QC1330767 **Prepared:** 01/14/26 **Analyst:** CDR

Matrix: Water **Analyzed:** 01/16/26

DF: 1.000 **Prep:** METHOD

QC1330767 Analyte	Spiked	Result	%REC	Limits	Units
Total Dissolved Solids	1,000	1,029	103	90-110	mg/L

Field ID: ZZZZZZZZZZ **DF:** 10.00 **Analyzed:** 01/14/26

Type: SDUP **Batch#:** 392380 **Prep:** METHOD

MSS Lab ID: 550426-001 **Sampled:** 01/07/26 **Analysis:** SM2540C

Lab ID: QC1330295 **Received:** 01/07/26 **Analyst:** AAB

Matrix: Water **Prepared:** 01/13/26

QC1330295 Analyte	MSS Result	Result	RL	Units	RPD	Lim
Total Dissolved Solids	10,090	**10,100**	100.0	mg/L	0	5

Field ID: ZZZZZZZZZZ **DF:** 4.000 **Analyzed:** 01/16/26

Type: SDUP **Batch#:** 392532 **Prep:** METHOD

MSS Lab ID: 550714-005 **Sampled:** 01/12/26 **Analysis:** SM2540C

Lab ID: QC1330768 **Received:** 01/12/26 **Analyst:** CDR

Matrix: Water **Prepared:** 01/14/26

QC1330768 Analyte	MSS Result	Result	RL	Units	RPD	Lim
Total Dissolved Solids	3,612	**3,476**	40.00	mg/L	4	5

Field ID: ZZZZZZZZZZ **DF:** 4.000 **Analyzed:** 01/16/26

Type: SDUP **Batch#:** 392532 **Prep:** METHOD

MSS Lab ID: 550714-006 **Sampled:** 01/12/26 **Analysis:** SM2540C

Lab ID: QC1330769 **Received:** 01/12/26 **Analyst:** CDR

Matrix: Water **Prepared:** 01/14/26

QC1330769 Analyte	MSS Result	Result	RL	Units	RPD	Lim
Total Dissolved Solids	5,916	**5,812**	40.00	mg/L	2	5

Legend

RL: Reporting Limit

RPD: Relative Percent Difference

Laboratory Job Number 550445

Subcontracted Products

CLS

CALIFORNIA LABORATORY SERVICES
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January 19, 2026

CLS Work Order #: 26A0381
COC #:

Miguel Gamboa
Enthalpy Analytical - Orange
931 W. Barkley Avenue
Orange, CA 92868

Project Name: EO-550445

Enclosed are the results of analyses for samples received by the laboratory on 01/08/26 14:42. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that the results are in compliance both technically and for completeness.

Analytical results are attached to this letter. Please call if we can provide additional assistance.

Sincerely,

Daniel Johnson
Technical Director

CA SWRCB ELAP Accreditation/Registration number 1233

26A0387

ENTHALPY ANALYTICAL
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Orange, CA 92868
(714) 771-6900

Subcontract Laboratory:
CLS
3249 Fitzgerald Rd
Rancho Cordova, CA 95742
ATTN:
PO #: Required, to be sent via email

Enthalpy Order: EO-550445
PM: Miguel Gamboa
Email: miguel.gamboa@enthalpy.com
CC: incomingreports@enthalpy.com
Phone: (714) 771-6900

Results Due: Standard TAT
Report Level: II
Report To: RL
EDDs: CLS Lab Standard Excel Transfer EDD (3 tabs)

Notes:

Sample ID	Collected	Lab ID	# Cont.	Matrix	Analysis Requested	Comment
LC-DW-02	07-JAN-2026 10:35	550445-001	1	Water	EPA 300.0 Nitrate	
LC-DW-01	07-JAN-2026 13:05	550445-002	1	Water	EPA 300.0 Nitrate	
LC-DW-03	07-JAN-2026 14:15	550445-003	1	Water	EPA 300.0 Nitrate	
FB20260107	07-JAN-2026 13:20	550445-004	1	Water	EPA 300.0 Nitrate	

Notes:	Relinquished By:	Received By:
	Anthony Charles	
	Date: 1-8-26 14:42	Date: 1/8/26 1442
	Date:	Date:
	Date:	Date:

4.8.14.6

Enthalpy Analytical - Orange	Project:	EO-550445	
931 W. Barkley Avenue	Project Number:	[none]	**CLS Work Order #: 26A0381**
Orange, CA 92868	Project Manager:	Miguel Gamboa	COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
LC-DW-02 (26A0381-01) Water Sampled: 01/07/26 10:35 Received: 01/08/26 14:42									
Nitrate as N	**2.5**	0.40	mg/L	1	2600138	01/08/26	01/08/26	EPA 300.0	
LC-DW-01 (26A0381-02) Water Sampled: 01/07/26 13:05 Received: 01/08/26 14:42									
Nitrate as N	**0.63**	0.40	mg/L	1	2600138	01/08/26	01/09/26	EPA 300.0	
LC-DW-03 (26A0381-03) Water Sampled: 01/07/26 14:15 Received: 01/08/26 14:42									
Nitrate as N	ND	0.40	mg/L	1	2600138	01/08/26	01/09/26	EPA 300.0	
FB20260107 (26A0381-04) Water Sampled: 01/07/26 13:20 Received: 01/08/26 14:42									
Nitrate as N	ND	0.40	mg/L	1	2600138	01/08/26	01/09/26	EPA 300.0	

Enthalpy Analytical - Orange	Project:	EO-550445	
931 W. Barkley Avenue	Project Number:	[none]	**CLS Work Order #: 26A0381**
Orange, CA 92868	Project Manager:	Miguel Gamboa	COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2600138 - General Prep										
Blank (2600138-BLK1)				Prepared & Analyzed: 01/08/26						
Nitrate as N	ND	0.40	mg/L							
LCS (2600138-BS1)				Prepared & Analyzed: 01/08/26						
Nitrate as N	5.08	0.40	mg/L	5.00		102	80-120			
LCS Dup (2600138-BSD1)				Prepared & Analyzed: 01/08/26						
Nitrate as N	5.08	0.40	mg/L	5.00		102	80-120	0.07	20	
Matrix Spike (2600138-MS1)		**Source: 26A0263-04**		Prepared & Analyzed: 01/08/26						
Nitrate as N	7.60	0.40	mg/L	5.00	2.81	96	80-120			
Matrix Spike (2600138-MS2)		**Source: 26A0381-01**		Prepared: 01/08/26 Analyzed: 01/09/26						
Nitrate as N	7.02	0.40	mg/L	5.00	2.50	90	80-120			

Enthalpy Analytical - Orange	Project:	EO-550445	
931 W. Barkley Avenue	Project Number:	[none]	**CLS Work Order #: 26A0381**
Orange, CA 92868	Project Manager:	Miguel Gamboa	COC #:

Notes and Definitions

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit (or method detection limit when specified)
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

Laboratory Job Number 550445

Subcontracted Products

UC Davis SIF

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COLLEGE OF AGRICULTURAL AND
ENVIRONMENTAL SCIENCES

^{18}O and ^{2}H of Water by Headspace Equilibration using GasBench-IRMS

Methodology

Equilibration methods use CO_2 or H_2 in the headspace to isotopically equilibrate with water in the sample vial [1,2]. If necessary, the same sample vial can be utilized for both ^{18}O and ^{2}H measurements, provided a new cap is fitted prior to the second equilibration.

For ^{18}O, water samples are pipetted (200 µL) into 12 mL Labco Exetainer vials and flushed with 0.3 % CO_2 in helium for 5 minutes at 100 mL/min. Vials are held at 30 ºC in a thermostated tray for 24 hours prior to isotopic measurement.

Analysis of headspace CO_2 for ^{18}O is then performed on a Thermo Scientific GasBench II coupled to a Thermo Scientific Delta V Advantage isotope-ratio mass spectrometer. An autosampler utilizing a 2-hole sampling needle pushes CO_2 out of the vial and into a 100 µL sample loop. Once the loop is adequately flushed, pulses of sample gas are injected into the IRMS for isotopic measurement. Water is removed from the gas stream using a Nafion dryer, and sample CO_2 is chromatographically separated from other gases using an Agilent PoraPLOT Q GC column (25 m x 0.32 mm ID x 10 µm film thickness, 50 ºC, 2 mL/min).

For ^{2}H, water samples are pipetted (200 µL) into 12 mL Labco Exetainer vials containing platinum catalytic rods and flushed with 2.0 % H_2 in helium for 5 minutes at 100 mL/min. Vials are held at 30 ºC in a thermostated tray for 40 minutes prior to isotopic measurement.

Analysis of headspace H_2 for ^{2}H is performed on a Thermo Scientific GasBench II coupled to a Thermo Scientific Delta V Advantage isotope-ratio mass spectrometer. An autosampler utilizing a 2-hole sampling needle pushes H_2 out of the vial and into a 100 µL sample loop. Once the loop is adequately flushed, pulses of sample gas are injected into the IRMS for isotopic measurement. Water is removed from the gas stream using a Nafion dryer, and sample H_2 is chromatographically separated from other gases using an Agilent PoraPLOT Q GC column (25 m x 0.32 mm ID x 10 µm film thickness, 50 ºC, 2 mL/min).

One of every ten samples is analyzed in duplicate; further replicates may be analyzed if initial measurements fall outside expected measurement error. Replicates of the quality control and assurance reference materials are measured every ten samples.

Calibration and Reporting of Stable Isotope Ratios

Calibration procedures for water stable isotope ratios are applied identically across reference and sample materials and are directly traceable to the primary isotopic reference material, Vienna Standard Mean Ocean Water (VSMOW).

First, a pure CO_2 or H_2 reference gas is used to calculate provisional isotopic values of the sample peaks. Next, isotopic values are adjusted for changes in instrumental drift using an in-house reference material (e.g., SIF-3). Finally, measurements are scale-normalized to the primary reference material using three certified standard reference materials (i.e., SMOW2, GISP2, and SLAP2) available from USGS, NIST, and the IAEA.

Final quality assessment is based on the accuracy and precision of the unbiased quality control materials, which include a certified standard reference material (i.e., USGS47) and $\delta^{18}O$- and $\delta^{2}H$-calibrated waters (i.e., SIF1-8). Enriched waters are further calibrated against a suite of enriched standards including ER-1C1, ER-3A, ER-4A, ER-5A, High en, IAEA-608, and IAEA-609.

Quality assurance reference materials: SMOW2, GISP2, SLAP2
Quality control reference materials: USGS47, SIF 1-8

Measurement Uncertainty

Sample materials are inherently variable in composition, and measurement error may vary between different sample types due to differences in composition. Mean measurement error (σ) and accuracy, as determined by replicate measurements of the quality control and assurance materials, must fall below expected measurement error (± 0.20 ‰ for $\delta^{18}O$ and ± 2.0 ‰ for $\delta^{2}H$). Accuracy and precision of the co-measured calibrated quality control and assurance materials are provided with data reports.

Revision Date

September 6, 2019

Approved By

Richard Doucett



References

[1] Hilkert AW, Avak H. GasBench II: Isotope analysis of water, fruit juice, and wine using the Thermo Scientific GasBench II IRMS. *ThermoFinnigan Flash Report No. G30*. Bremen (DE): 1999.

[2] Duhr A, Hilkert AW. GasBench II: Automated H_2/H_2O equilibration for δD determination on aqueous samples using Thermo Scientific GasBench II. *ThermoFinnigan Flash Report No. G32*. Bremen (DE): 2001.

Glossary

°C	degree Celsius
%	percent
‰	per mil; 1 ‰ is equivalent to 0.001 or 1 mUr
^{2}H	stable isotope of hydrogen; mass number of 2
^{18}O	stable isotope of oxygen; mass number of 18
δ	delta notation for isotopic composition; in per mil (“‰”) or mUr; 1 ‰ equals 1 mUr
µL	microliter
µm	micron or micrometer
σ	standard deviation
CO_2	carbon dioxide
GC	gas chromatograph
GISP2	Greenland Ice Sheet Precipitation 2 water prepared by the IAEA; formal name is GRESP (Greenland Summit Precipitation)
H_2	dihydrogen
IAEA	International Atomic Energy Agency
ID	inner diameter
IRMS	isotope-ratio mass spectrometry
m	meter

min	minute
mL	milliliter
mm	millimeter
mUr	milliurey; 1 mUr is equivalent to 0.001 or 1 ‰
NIST	National Institute of Standards and Technology
QA	quality assurance; overall laboratory measures to ensure measurement quality
QC	quality control; activities and procedures used to evaluate quality requirements
RSIL	USGS Reston Stable Isotope Laboratory, Reston, Virginia
SIF	Stable Isotope Facility
SIF-3	water reference material
SIF-4	water reference material
SLAP2	Standard Light Antarctic Precipitation 2 water prepared by the IAEA Isotope Hydrology Lab, 2006
SMOW2	Standard Mean Ocean Water 2 water prepared by the IAEA Isotope Hydrology Lab, 2006; formal name is VSMOW2 (Vienna Standard Mean Ocean Water 2)
USGS	United States Geological Survey
USGS47	Lake Louise Drinking Water prepared by H. Qi et al., RSIL
VSMOW	Vienna Standard Mean Ocean Water; primary reference for measurements of oxygen and hydrogen isotopes

General Resources

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COLLEGE OF AGRICULTURAL AND
ENVIRONMENTAL SCIENCES

Stable Isotope Facility Data Report

Principal Investigator:	John Goyette	Email:	john.goyette@enthalpy.com
Researcher	Miguel Gamboa	Email:	miguel.gamboa@enthalpy.com

Institution: Enthalpy Analytical

Project: Lindo Channel Butte County

Submission Date: December 18, 2025
Completion Date: January 16, 2026
Report Date (pending payment): January 23, 2026

Analysis: ^{18}O and ^{2}H of Water by Headspace Equilibration using GasBench-IRMS

	$\delta^{2}H$	$\delta^{18}O$
Mean SD for sample material replicates in this project:	±0.6 ‰	±0.05 ‰
Mean SD for reference material replicates in this project:	±1.7 ‰	±0.05 ‰
Mean absolute accuracy for calibrated reference materials within:	±0.6 ‰	±0.03 ‰

Notes:

Sample count to be charged: 7
Additional charges:

Reported by: Richard R. Doucett
rrdoucett@ucdavis.edu

Please review your data in a timely fashion, so that we may fully address any questions or concerns.

Samples

Sample ID	$\delta^{2}H_{VSMOW}$ (‰)	$\delta^{18}O_{VSMOW}$ (‰)	Comments	^{2}H Analysis #	^{18}O Analysis #
VP-MW-01	-76.3	-11.10		ICECUBE-69519	ICECUBE-69695
VP-MW-01	-75.8	-11.07	replicate	ICECUBE-69520	ICECUBE-69696
VP-COMANCHE CREEK	-60.5	-9.59		ICECUBE-69521	ICECUBE-69697
LC-LINDO CHANNEL	-61.1	-9.93		ICECUBE-69522	ICECUBE-69698
FD20260107	-72.8	-11.09		ICECUBE-69523	ICECUBE-69699
LC-DW-02	-63.3	-9.77		ICECUBE-69524	ICECUBE-69700
LC-DW-01	-65.4	-9.93		ICECUBE-69525	ICECUBE-69701
LC-DW-03	-67.3	-10.22		ICECUBE-69526	ICECUBE-69702

Reference Materials

Summary	δ^2H_{VSMOW} (‰) Expected	δ^2H_{VSMOW} (‰) Mean	δ^2H_{VSMOW} (‰) Standard deviation	$\delta^{18}O_{VSMOW}$ (‰) Expected	$\delta^{18}O_{VSMOW}$ (‰) Mean	$\delta^{18}O_{VSMOW}$ (‰) Standard deviation	Use
SIF-2	-312.0	-311.6	2.8	-39.24	-39.20	0.04	Quality control
SIF-3	-200.8	-201.2	1.1	-25.89	-25.90	0.02	Quality control
SIF-4	-150.1	-150.4	1.3	-19.90	-19.91	0.04	Quality control
SIF-5	-76.8	-75.9	1.5	-10.59	-10.60	0.07	Quality control
SIF-6	-45.9	-46.2	3.0	-6.91	-6.84	0.04	Scale correction
SIF-7	-26.1	-25.4	2.8	-4.81	-4.82	0.06	Drift correction
SIF-8	20.9	20.3	0.3	2.45	2.45	0.07	Scale correction
GRESP	-258.0	-259.2	0.7	-33.40	-33.45	0.03	Scale correction

Reference	δ^2H_{VSMOW} (‰)	$\delta^{18}O_{VSMOW}$ (‰)	Comments	^2H Analysis #	^{18}O Analysis #
SIF-7	-23.0	-4.74		ICECUBE-69466	ICECUBE-69642
SIF-7	-28.6	-4.78		ICECUBE-69478	ICECUBE-69654
SIF-7	-22.0	-4.86		ICECUBE-69489	ICECUBE-69665
SIF-7	-28.4	-4.79		ICECUBE-69504	ICECUBE-69680
SIF-7	-26.4	-4.88		ICECUBE-69516	ICECUBE-69692
SIF-7	-24.3	-4.89		ICECUBE-69531	ICECUBE-69707
SIF-7 Average	-25.4	-4.82			
SIF-7 StdDev	2.8	0.06			
SIF-8	19.9	2.38		ICECUBE-69469	ICECUBE-69645
SIF-8	20.4	2.48		ICECUBE-69470	ICECUBE-69646
SIF-8	20.4	2.50		ICECUBE-69471	ICECUBE-69647
SIF-8 Average	20.3	2.45			
SIF-8 StdDev	0.3	0.07			
SIF-6	-49.2	-6.81		ICECUBE-69472	ICECUBE-69648
SIF-6	-43.3	-6.82		ICECUBE-69473	ICECUBE-69649
SIF-6	-45.9	-6.89		ICECUBE-69474	ICECUBE-69650
SIF-6 Average	-46.2	-6.84			
SIF-6 StdDev	3.0	0.04			
GRESP	-258.8	-33.43		ICECUBE-69475	ICECUBE-69651
GRESP	-258.7	-33.48		ICECUBE-69476	ICECUBE-69652
GRESP	-260.0	-33.44		ICECUBE-69477	ICECUBE-69653
GRESP Average	-259.2	-33.45			
GRESP StdDev	0.7	0.03			
SIF-2	-308.3	-39.16		ICECUBE-69467	ICECUBE-69643
SIF-2	-310.4	-39.19		ICECUBE-69490	ICECUBE-69666
SIF-2	-314.1	-39.19		ICECUBE-69517	ICECUBE-69693
SIF-2	-313.8	-39.27		ICECUBE-69532	ICECUBE-69708
SIF-2 Average	-311.6	-39.20			
SIF-2 StdDev	2.8	0.04			
SIF-4	-149.2	-19.86		ICECUBE-69468	ICECUBE-69644
SIF-4	-151.3	-19.93		ICECUBE-69491	ICECUBE-69667
SIF-4	-151.8	-19.91		ICECUBE-69518	ICECUBE-69694
SIF-4	-149.3	-19.94		ICECUBE-69533	ICECUBE-69709
SIF-4 Average	-150.4	-19.91			
SIF-4 StdDev	1.3	0.04			
SIF-5	-77.6	-10.52		ICECUBE-69479	ICECUBE-69655
SIF-5	-75.0	-10.64		ICECUBE-69505	ICECUBE-69681
SIF-5	-75.0	-10.65		ICECUBE-69534	ICECUBE-69710

SIF-5 Average	-75.9	-10.60		
SIF-5 StdDev	1.5	0.07		
SIF-3	-202.2	-25.87	ICECUBE-69480	ICECUBE-69656
SIF-3	-201.4	-25.90	ICECUBE-69506	ICECUBE-69682
SIF-3	-200.0	-25.92	ICECUBE-69535	ICECUBE-69711
SIF-3 Average	-201.2	-25.90		
SIF-3 StdDev	1.1	0.02		

Enthalpy Analytical
931 West Barkley Ave
Orange, CA 92868
(714) 771-6900

enthalpy.com

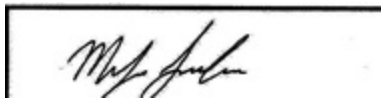
Lab Job Number : 550446
Report Level : II
Report Date : 02/04/2026

Analytical Report *prepared for:*

Joe Turner
Geosyntec Consultants
3043 Gold Canal Drive
Suite 100
Rancho Cordova, CA 95670

Project: BUTTE COUNTY

Authorized for release by:



Miguel Gamboa, Project Manager
miguel.gamboa@enthalpy.com

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the above signature which applies to this PDF file as well as any associated electronic data deliverable files. The results contained in this report meet all requirements of NELAP and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

CA ELAP# 1338, CA ELAP #1338-S1, NELAP# 4038, SCAQMD LAP# 18LA0518, LACSD ID# 10105, ORELAP# 4197

ENTHALPY ANALYTICAL

Sample Summary

Joe Turner
Geosyntec Consultants
3043 Gold Canal Drive
Suite 100
Rancho Cordova, CA
95670

Lab Job #: 550446
Project No: BUTTE COUNTY
Date Received: 01/08/26

Sample ID	Lab ID	Collected	Matrix
VP-MW-01	550446-001	01/07/26 11:30	Water
VP-COMANCHE CREEK	550446-002	01/07/26 12:15	Water
LC-LINDO CHANNEL	550446-003	01/07/26 13:40	Water
FD20260107	550446-004	01/07/26 12:00	Water

Case Narrative

Geosyntec Consultants
3043 Gold Canal Drive
Suite 100
Rancho Cordova, CA 95670
Joe Turner

Lab Job Number: 550446
Project No: BUTTE COUNTY
Date Received: 01/08/26

This data package contains sample and QC results for four water samples, requested for the above referenced project on 01/09/26. The samples were received in good condition.

Volatile Organics by GC/MS (EPA 8260B):
No analytical problems were encountered.

Metals (EPA 200.8):

- High recoveries were observed for calcium, magnesium, and sodium in the MS/MSD of LC-DW-01 (lab # 550445-002); the LCS was within limits, and the associated RPDs were within limits.
- No other analytical problems were encountered.

Ion Chromatography (EPA 300.0):

- Responses exceeding the instrument's linear range were observed for chloride in the MS/MSD for batch 392104; affected data was qualified with "E".
- No other analytical problems were encountered.

Alkalinity (SM2320B):
No analytical problems were encountered.

Total Dissolved Solids (TDS) (SM2540C):
No analytical problems were encountered.

Nitrate (EPA 300.0):
CLS in Rancho Cordova, CA performed the analysis (see sublab report section for certifications). Please see the CLS case narrative.

Isotopic Hydrogen & Oxygen ():
UC Davis SIF in Davis, CA performed the analysis (see sublab report section for certifications). Please see the UC Davis SIF case narrative.

Login 550446

Enthalpy Analytical - Orange

931 W. Barkley Avenue, Orange, CA 92868

Phone 714-771-6900

Chain of Custody Record

Lab No: 550446

Page: 1 of 1

Turn Around Time (rush by advanced notice only)

Standard: X | 5 Day: | 3 Day:

2 Day: | 1 Day: | Custom TAT:

Matrix:

W = Water | DW = Drinking Water | S = Soil / Solid

WP = Wipe | SEA = Sea Water | O = Other

Preservatives:

1 = $Na_2S_2O_3$ | 2 = HCl

3 = HNO_3 | 4 = H_2SO_4

5 = NaOH | 6 = Other

Sample Receipt Temp:

(lab use only)

CUSTOMER INFORMATION		PROJECT INFORMATION	
Company:	Geosyntec	Quote #:	540671
Report To:	Joe Turner	Proj. Name:	
Email:	JTurner@Geosyntec.com	Proj. #:	SF154C/B/4
Address:	11020 White Rock Road	P.O. #:	
	Suite 120 Rancho Cordova, CA	Address:	
~~Phone:~~	95620	Global ID:	
~~Fax:~~ Phone	916-637-8327	Sampled By:	Joe Lewis/Zac Lutfort

	Sample ID	Sampling Date	Sampling Time	Matrix	Number of Containers	Preservative	1,4 + 1,8D (surrogates)	Alkalinity, TDS	Ca, Fe, Mn, K, Mg, Na	Chloride, Nitrate, sulfate	VOCs					Test Instructions / Comments
1	VP-MW-01	1/7/26	~~1130~~	GW	7		X	X	X	X	X					
2	VP-Comanche Creek	1/7/26	1215	GW	4		X	X	X	X						
3	LC-Lindo Channel	1/7/26	1340	GW	4		X	X	X	X						
4	FD 20260107	1/7/26	~~1130~~ 1200	GW	7		X	X	X	X	X					
5																
6																
7																
8																
9																
10																

	Signature	Print Name	Company / Title	Date / Time
[1] Relinquished By:	Joe Lewis	Joe Lewis	Geosyntec / Staff Prof.	1/8/2026 0905
[1] Received By:	Brenda Hamilton	Brenda Hamilton	EA / SCM	1/8/26 0905
[2] Relinquished By:				
[2] Received By:		JK2	EA	1/9/26 0830
[3] Relinquished By:				
[3] Received By:				

SAMPLE RECEIPT CHECKLIST

Section 1: General Info
Date Received: 1/8/26 WO# 550446 Client: Geosyntec

Section 2: Shipping / Custody **Are custody seals present?** ☐ Yes ☑ No
Custody seals intact on arrival? ☑ N/A ☐ Yes ☐ No ☐ On cooler / box ☐ On samples
☐ Courier ☑ Walk-In ☐ Field Sampling ☐ Shipping Info: _____

Section 3a: Condition / Packaging ☐ **Outside 0.0 - 6.0°C (0.0 - 10.0°C for microbiology) (PM notified)**
Date Opened 1/8/26 By (initials) _____ Type of ice used: ☑ Wet ☐ Blue/Gel ☐ None
☐ Samples received on ice directly from the field; cooling process had begun. (if checked, skip temperatures)
☐ Sample matrix doesn't require cooling (e.g. air, bulk PCB). (if checked, skip temperatures)
If no cooler: Observed/Adjusted Temp (°C): _____ / _____ Thermometer/IR Gun: IR 16 CF: +0.1°C
Cooler Temp (°C) #1: 5.5 / 5.6 #2: ____/____ #3: ____/____ #4: ____/____ #5: ____/____ #6: ____/____

Section 3b: Microbiology Samples ☑ **No microbiology samples submitted (skip 3b)**
☐ Within temp range 0.0 - 10.0°C or received on ice directly from field.
☐ Adequate headspace for microbiology analysis.

Section 3c: Air Samples ☑ **No air samples submitted (skip 3c)**
☐ 1.4L Canisters ☐ 6L Canisters ☐ Tedlar Bags ☐ MCE Cassettes ☐ Sorbent Tubes ☐ Other _____

Section 4: Containers / Labels / Samples	YES	NO	N/A
1) Were custody papers present, filled properly, and legible?	✓		
2) Is the sampler's name present on the CoC?	✓		
3) Were containers received in good condition (unbroken / unopened / uncompromised)?	✓		
4) Were the samples bagged? (required for microbiology samples; recommended for soil samples)	✓		
5) Were all of, and only, the correct samples received?	✓		
6) Are sample labels present, legible, and in agreement with the CoC?		✓	
7) Does the container count match the CoC?	✓		
8) Was sufficient sample volume / mass received for the analyses requested?	✓		
9) Were samples received in proper containers for the analyses requested?	✓		
10) Were samples received with > 1/2 holding time remaining?		✓	
11) Are samples properly preserved as indicated by CoC / labels?	✓		
12) Unpreserved VOAs received - If necessary, was the hold time changed in LIMS?			✓
13) Are VOA vials free from headspace/bubbles > 6mm?	✓		

Section 5: Explanations / Comments
(If no comments are made, then no discrepancies noted.)
-001 All Sample ID on labels is 'VP-MW01', CoC is 'VP-MW-01'.
-002. All Sample Time on labels is 1220, CoC is 1218
-All - Split sample into 125mL for Sub.
All - < ½ Hold time for Nitrate.

☐ **No additional discrepancies**

Date Logged 1/8/26 **By (print)** Joel Tillman **(sign)** _____
Date Labeled 1/8/26 **By (print)** Joel Tillman **(sign)** _____

SAMPLE RECEIPT CHECKLIST

Section 1: General Info

Date Received: 01/09/26 WO# 550446 Client: Geosyntec

Section 2: Shipping / Custody **Are custody seals present?** ☐ Yes ☒ No

Custody seals intact on arrival? ■ N/A ☐ Yes ☐ No ☐ On cooler / box ☐ On samples

☐ Courier ☐ Walk-In ☐ Field Sampling ■ Shipping Info: Intrastate

Section 3a: Condition / Packaging ☐ **Outside 0.0 - 6.0°C (0.0 - 10.0°C for microbiology) (PM notified)**

Date Opened 01/09/26 By (initials) JXR Type of ice used: ■ Wet ☐ Blue/Gel ☐ None

☐ Samples received on ice directly from the field; cooling process had begun. (if checked, skip temperatures)

☐ Sample matrix doesn't require cooling (e.g. air, bulk PCB). (if checked, skip temperatures)

If no cooler: Observed/Adjusted Temp (°C): ____ / ____ Thermometer/IR Gun: IR10 CF: +0.2

Cooler Temp (°C) #1: 1.7 / 1.9 #2: ____ / ____ #3: ____ / ____ #4: ____ / ____ #5: ____ / ____ #6: ____ / ____

Section 3b: Microbiology Samples ■ **No microbiology samples submitted (skip 3b)**

☐ Within temp range 0.0 - 10.0°C or received on ice directly from field.

☐ Adequate headspace for microbiology analysis.

Section 3c: Air Samples ■ **No air samples submitted (skip 3c)**

☐ 1.4L Canisters ☐ 6L Canisters ☐ Tedlar Bags ☐ MCE Cassettes ☐ Sorbent Tubes ☐ Other ____

Section 4: Containers / Labels / Samples	YES	NO	N/A
1) Were custody papers present, filled properly, and legible?	X		
2) Is the sampler's name present on the CoC?	X		
3) Were containers received in good condition (unbroken / unopened / uncompromised)?	X		
4) Were the samples bagged? (required for microbiology samples; recommended for soil samples)	X		
5) Were all of, and only, the correct samples received?	X		
6) Are sample labels present, legible, and in agreement with the CoC?		X	
7) Does the container count match the CoC?	X		
8) Was sufficient sample volume / mass received for the analyses requested?	X		
9) Were samples received in proper containers for the analyses requested?	X		
10) Were samples received with > 1/2 holding time remaining?	X		
11) Are samples properly preserved as indicated by CoC / labels?	X		
12) Unpreserved VOAs received - If necessary, was the hold time changed in LIMS?			X
13) Are VOA vials free from headspace/bubbles > 6mm?	X		

Section 5: Explanations / Comments

(If no comments are made, then no discrepancies noted.)

See previous checklist

☐ **No additional discrepancies**

Date Logged 01/08/26 **By (print)** SAC **(sign)** ____

Date Labeled 01/08/26 **By (print)** SAC **(sign)** ____

ENTHALPY ANALYTICAL

Enthalpy Analytical Report

Lab #: 550446 **Project#:** BUTTE COUNTY

Client: Geosyntec Consultants **Location:**

Field ID:	VP-MW-01	**Batch#:**	392445	**Prep:**	EPA 5030B
Lab ID:	550446-001	**Sampled:**	01/07/26	**Analysis:**	EPA 8260B
Matrix:	Water	**Received:**	01/08/26	**Analyst:**	HMN
DF:	1.000	**Analyzed:**	01/14/26		

550446-001 Analyte	Result	RL	Units
Freon 12	ND	0.5	ug/L
Chloromethane	ND	0.5	ug/L
Vinyl Chloride	ND	0.5	ug/L
Bromomethane	ND	1.0	ug/L
Chloroethane	ND	0.5	ug/L
Trichlorofluoromethane	ND	0.5	ug/L
Acetone	ND	20	ug/L
Freon 113	ND	0.5	ug/L
1,1-Dichloroethene	ND	0.5	ug/L
Methylene Chloride	ND	10	ug/L
MTBE	ND	0.5	ug/L
trans-1,2-Dichloroethene	ND	0.5	ug/L
1,1-Dichloroethane	ND	0.5	ug/L
2-Butanone	ND	5.0	ug/L
cis-1,2-Dichloroethene	ND	0.5	ug/L
2,2-Dichloropropane	ND	0.5	ug/L
Chloroform	ND	0.5	ug/L
Bromochloromethane	ND	0.5	ug/L
1,1,1-Trichloroethane	ND	0.5	ug/L
1,1-Dichloropropene	ND	0.5	ug/L
Carbon Tetrachloride	ND	0.5	ug/L
1,2-Dichloroethane	ND	0.5	ug/L
Benzene	ND	0.5	ug/L
Trichloroethene	ND	0.5	ug/L
1,2-Dichloropropane	ND	0.5	ug/L
Bromodichloromethane	ND	0.5	ug/L
Dibromomethane	ND	0.5	ug/L
4-Methyl-2-Pentanone	ND	5.0	ug/L
cis-1,3-Dichloropropene	ND	0.5	ug/L
Toluene	ND	0.5	ug/L
trans-1,3-Dichloropropene	ND	0.5	ug/L
1,1,2-Trichloroethane	ND	0.5	ug/L
1,3-Dichloropropane	ND	0.5	ug/L
Tetrachloroethene	ND	0.5	ug/L
Dibromochloromethane	ND	0.5	ug/L
1,2-Dibromoethane	ND	0.5	ug/L
Chlorobenzene	ND	0.5	ug/L
1,1,1,2-Tetrachloroethane	ND	0.5	ug/L
Ethylbenzene	ND	0.5	ug/L
m,p-Xylenes	ND	1.0	ug/L
o-Xylene	ND	0.5	ug/L
Styrene	ND	0.5	ug/L
Bromoform	ND	1.0	ug/L
Propylbenzene	ND	0.5	ug/L
Isopropylbenzene	ND	0.5	ug/L
1,1,2,2-Tetrachloroethane	ND	0.5	ug/L

ENTHALPY ANALYTICAL

Enthalpy Analytical Report

Lab #: 550446 **Project#:** BUTTE COUNTY

Client: Geosyntec Consultants **Location:**

550446-001 Analyte	Result	RL	Units
1,2,3-Trichloropropane	ND	0.5	ug/L
Bromobenzene	ND	1.0	ug/L
1,3,5-Trimethylbenzene	ND	0.5	ug/L
2-Chlorotoluene	ND	0.5	ug/L
4-Chlorotoluene	ND	0.5	ug/L
tert-Butylbenzene	ND	0.5	ug/L
1,2,4-Trimethylbenzene	ND	0.5	ug/L
sec-Butylbenzene	ND	0.5	ug/L
para-Isopropyl Toluene	ND	0.5	ug/L
1,3-Dichlorobenzene	ND	0.5	ug/L
1,4-Dichlorobenzene	ND	0.5	ug/L
n-Butylbenzene	ND	0.5	ug/L
1,2-Dichlorobenzene	ND	0.5	ug/L
1,2-Dibromo-3-Chloropropane	ND	2.0	ug/L
1,2,4-Trichlorobenzene	ND	0.5	ug/L
Hexachlorobutadiene	ND	2.0	ug/L
Naphthalene	ND	2.0	ug/L
1,2,3-Trichlorobenzene	ND	0.5	ug/L
Isopropyl Ether (DIPE)	ND	0.5	ug/L
Ethyl tert-Butyl Ether (ETBE)	ND	0.5	ug/L
tert-Butyl Alcohol (TBA)	ND	10	ug/L
Methyl tert-Amyl Ether (TAME)	ND	0.5	ug/L
Xylene (total)	ND	0.5	ug/L

550446-001 Surrogate	%REC	Limits
Dibromofluoromethane	112	70-130
1,2-Dichloroethane-d4	102	70-130
Toluene-d8	102	70-130
Bromofluorobenzene	98	70-130

Legend

ND: Not Detected

RL: Reporting Limit

ENTHALPY ANALYTICAL

Enthalpy Analytical Report

Lab #: 550446 **Project#:** BUTTE COUNTY

Client: Geosyntec Consultants **Location:**

Field ID:	FD20260107	**Batch#:**	392445	**Prep:**	EPA 5030B
Lab ID:	550446-004	**Sampled:**	01/07/26	**Analysis:**	EPA 8260B
Matrix:	Water	**Received:**	01/08/26	**Analyst:**	HMN
DF:	1.000	**Analyzed:**	01/14/26		

550446-004 Analyte	Result	RL	Units
Freon 12	ND	0.5	ug/L
Chloromethane	ND	0.5	ug/L
Vinyl Chloride	ND	0.5	ug/L
Bromomethane	ND	1.0	ug/L
Chloroethane	ND	0.5	ug/L
Trichlorofluoromethane	ND	0.5	ug/L
Acetone	ND	20	ug/L
Freon 113	ND	0.5	ug/L
1,1-Dichloroethene	ND	0.5	ug/L
Methylene Chloride	ND	10	ug/L
MTBE	ND	0.5	ug/L
trans-1,2-Dichloroethene	ND	0.5	ug/L
1,1-Dichloroethane	ND	0.5	ug/L
2-Butanone	ND	5.0	ug/L
cis-1,2-Dichloroethene	ND	0.5	ug/L
2,2-Dichloropropane	ND	0.5	ug/L
Chloroform	ND	0.5	ug/L
Bromochloromethane	ND	0.5	ug/L
1,1,1-Trichloroethane	ND	0.5	ug/L
1,1-Dichloropropene	ND	0.5	ug/L
Carbon Tetrachloride	ND	0.5	ug/L
1,2-Dichloroethane	ND	0.5	ug/L
Benzene	ND	0.5	ug/L
Trichloroethene	ND	0.5	ug/L
1,2-Dichloropropane	ND	0.5	ug/L
Bromodichloromethane	ND	0.5	ug/L
Dibromomethane	ND	0.5	ug/L
4-Methyl-2-Pentanone	ND	5.0	ug/L
cis-1,3-Dichloropropene	ND	0.5	ug/L
Toluene	ND	0.5	ug/L
trans-1,3-Dichloropropene	ND	0.5	ug/L
1,1,2-Trichloroethane	ND	0.5	ug/L
1,3-Dichloropropane	ND	0.5	ug/L
Tetrachloroethene	ND	0.5	ug/L
Dibromochloromethane	ND	0.5	ug/L
1,2-Dibromoethane	ND	0.5	ug/L
Chlorobenzene	ND	0.5	ug/L
1,1,1,2-Tetrachloroethane	ND	0.5	ug/L
Ethylbenzene	ND	0.5	ug/L
m,p-Xylenes	ND	1.0	ug/L
o-Xylene	ND	0.5	ug/L
Styrene	ND	0.5	ug/L
Bromoform	ND	1.0	ug/L
Propylbenzene	ND	0.5	ug/L
Isopropylbenzene	ND	0.5	ug/L
1,1,2,2-Tetrachloroethane	ND	0.5	ug/L

ENTHALPY ANALYTICAL

Enthalpy Analytical Report

Lab #: 550446 **Project#:** BUTTE COUNTY

Client: Geosyntec Consultants **Location:**

550446-004 Analyte	Result	RL	Units
1,2,3-Trichloropropane	ND	0.5	ug/L
Bromobenzene	ND	1.0	ug/L
1,3,5-Trimethylbenzene	ND	0.5	ug/L
2-Chlorotoluene	ND	0.5	ug/L
4-Chlorotoluene	ND	0.5	ug/L
tert-Butylbenzene	ND	0.5	ug/L
1,2,4-Trimethylbenzene	ND	0.5	ug/L
sec-Butylbenzene	ND	0.5	ug/L
para-Isopropyl Toluene	ND	0.5	ug/L
1,3-Dichlorobenzene	ND	0.5	ug/L
1,4-Dichlorobenzene	ND	0.5	ug/L
n-Butylbenzene	ND	0.5	ug/L
1,2-Dichlorobenzene	ND	0.5	ug/L
1,2-Dibromo-3-Chloropropane	ND	2.0	ug/L
1,2,4-Trichlorobenzene	ND	0.5	ug/L
Hexachlorobutadiene	ND	2.0	ug/L
Naphthalene	ND	2.0	ug/L
1,2,3-Trichlorobenzene	ND	0.5	ug/L
Isopropyl Ether (DIPE)	ND	0.5	ug/L
Ethyl tert-Butyl Ether (ETBE)	ND	0.5	ug/L
tert-Butyl Alcohol (TBA)	ND	10	ug/L
Methyl tert-Amyl Ether (TAME)	ND	0.5	ug/L
Xylene (total)	ND	0.5	ug/L

550446-004 Surrogate	%REC	Limits
Dibromofluoromethane	108	70-130
1,2-Dichloroethane-d4	98	70-130
Toluene-d8	101	70-130
Bromofluorobenzene	99	70-130

Legend

ND: Not Detected

RL: Reporting Limit

Enthalpy Analytical Report: Batch QC

Lab #: 550446 **Project#:** BUTTE COUNTY
Client: Geosyntec Consultants **Location:**

Type: BS **DF:** 1.000 **Prep:** EPA 5030B
Lab ID: QC1330524 **Batch#:** 392445 **Analysis:** EPA 8260B
Matrix: Water **Analyzed:** 01/14/26 **Analyst:** HMN

QC1330524 Analyte	Spiked	Result	%REC	Limits	Units
1,1-Dichloroethene	50.00	59.56	119	69-128	ug/L
MTBE	50.00	54.93	110	66-125	ug/L
Benzene	50.00	50.47	101	76-121	ug/L
Trichloroethene	50.00	54.92	110	76-124	ug/L
Toluene	50.00	49.61	99	76-120	ug/L
Chlorobenzene	50.00	54.36	109	78-120	ug/L

QC1330524 Surrogate	%REC	Limits
Dibromofluoromethane	109	70-130
1,2-Dichloroethane-d4	106	70-130
Toluene-d8	102	70-130
Bromofluorobenzene	102	70-130

Type: BSD **DF:** 1.000 **Prep:** EPA 5030B
Lab ID: QC1330525 **Batch#:** 392445 **Analysis:** EPA 8260B
Matrix: Water **Analyzed:** 01/14/26 **Analyst:** HMN

QC1330525 Analyte	Spiked	Result	%REC	Limits	Units	RPD	Lim
1,1-Dichloroethene	50.00	60.63	121	69-128	ug/L	2	23
MTBE	50.00	56.24	112	66-125	ug/L	2	22
Benzene	50.00	51.32	103	76-121	ug/L	2	21
Trichloroethene	50.00	59.95	120	76-124	ug/L	9	22
Toluene	50.00	52.44	105	76-120	ug/L	6	21
Chlorobenzene	50.00	57.29	115	78-120	ug/L	5	20

QC1330525 Surrogate	%REC	Limits
Dibromofluoromethane	108	70-130
1,2-Dichloroethane-d4	98	70-130
Toluene-d8	103	70-130
Bromofluorobenzene	94	70-130

Legend

RPD: Relative Percent Difference

Enthalpy Analytical Report: Batch QC

Lab #: 550446 **Project#:** BUTTE COUNTY

Client: Geosyntec Consultants **Location:**

Type: BLANK **DF:** 1.000 **Prep:** EPA 5030B

Lab ID: QC1330529 **Batch#:** 392445 **Analysis:** EPA 8260B

Matrix: Water **Analyzed:** 01/14/26 **Analyst:** HMN

QC1330529 Analyte	Result	RL	Units
Freon 12	ND	0.5	ug/L
Chloromethane	ND	0.5	ug/L
Vinyl Chloride	ND	0.5	ug/L
Bromomethane	ND	1.0	ug/L
Chloroethane	ND	0.5	ug/L
Trichlorofluoromethane	ND	0.5	ug/L
Acetone	ND	20	ug/L
Freon 113	ND	0.5	ug/L
1,1-Dichloroethene	ND	0.5	ug/L
Methylene Chloride	ND	10	ug/L
MTBE	ND	0.5	ug/L
trans-1,2-Dichloroethene	ND	0.5	ug/L
1,1-Dichloroethane	ND	0.5	ug/L
2-Butanone	ND	5.0	ug/L
cis-1,2-Dichloroethene	ND	0.5	ug/L
2,2-Dichloropropane	ND	0.5	ug/L
Chloroform	ND	0.5	ug/L
Bromochloromethane	ND	0.5	ug/L
1,1,1-Trichloroethane	ND	0.5	ug/L
1,1-Dichloropropene	ND	0.5	ug/L
Carbon Tetrachloride	ND	0.5	ug/L
1,2-Dichloroethane	ND	0.5	ug/L
Benzene	ND	0.5	ug/L
Trichloroethene	ND	0.5	ug/L
1,2-Dichloropropane	ND	0.5	ug/L
Bromodichloromethane	ND	0.5	ug/L
Dibromomethane	ND	0.5	ug/L
4-Methyl-2-Pentanone	ND	5.0	ug/L
cis-1,3-Dichloropropene	ND	0.5	ug/L
Toluene	ND	0.5	ug/L
trans-1,3-Dichloropropene	ND	0.5	ug/L
1,1,2-Trichloroethane	ND	0.5	ug/L
1,3-Dichloropropane	ND	0.5	ug/L
Tetrachloroethene	ND	0.5	ug/L
Dibromochloromethane	ND	0.5	ug/L
1,2-Dibromoethane	ND	0.5	ug/L
Chlorobenzene	ND	0.5	ug/L
1,1,1,2-Tetrachloroethane	ND	0.5	ug/L
Ethylbenzene	ND	0.5	ug/L
m,p-Xylenes	ND	1.0	ug/L
o-Xylene	ND	0.5	ug/L
Styrene	ND	0.5	ug/L
Bromoform	ND	1.0	ug/L
Propylbenzene	ND	0.5	ug/L
Isopropylbenzene	ND	0.5	ug/L
1,1,2,2-Tetrachloroethane	ND	0.5	ug/L
1,2,3-Trichloropropane	ND	0.5	ug/L
Bromobenzene	ND	1.0	ug/L

ENTHALPY ANALYTICAL

Enthalpy Analytical Report: Batch QC

Lab #: 550446 **Project#:** BUTTE COUNTY

Client: Geosyntec Consultants **Location:**

QC1330529 Analyte	Result	RL	Units
1,3,5-Trimethylbenzene	ND	0.5	ug/L
2-Chlorotoluene	ND	0.5	ug/L
4-Chlorotoluene	ND	0.5	ug/L
tert-Butylbenzene	ND	0.5	ug/L
1,2,4-Trimethylbenzene	ND	0.5	ug/L
sec-Butylbenzene	ND	0.5	ug/L
para-Isopropyl Toluene	ND	0.5	ug/L
1,3-Dichlorobenzene	ND	0.5	ug/L
1,4-Dichlorobenzene	ND	0.5	ug/L
n-Butylbenzene	ND	0.5	ug/L
1,2-Dichlorobenzene	ND	0.5	ug/L
1,2-Dibromo-3-Chloropropane	ND	2.0	ug/L
1,2,4-Trichlorobenzene	ND	0.5	ug/L
Hexachlorobutadiene	ND	2.0	ug/L
Naphthalene	ND	2.0	ug/L
1,2,3-Trichlorobenzene	ND	0.5	ug/L
Isopropyl Ether (DIPE)	ND	0.5	ug/L
Ethyl tert-Butyl Ether (ETBE)	ND	0.5	ug/L
tert-Butyl Alcohol (TBA)	ND	10	ug/L
Methyl tert-Amyl Ether (TAME)	ND	0.5	ug/L
Xylene (total)	ND	0.5	ug/L

QC1330529 Surrogate	%REC	Limits
Dibromofluoromethane	108	70-130
1,2-Dichloroethane-d4	101	70-130
Toluene-d8	101	70-130
Bromofluorobenzene	100	70-130

Legend

ND: Not Detected

RL: Reporting Limit

Enthalpy Analytical Report: Batch QC

Lab #: 550446 **Project#:** BUTTE COUNTY

Client: Geosyntec Consultants **Location:**

Field ID: ZZZZZZZZZZ **DF:** 1.000 **Prep:** EPA 5030B
Type: MS **Batch#:** 392445 **Analysis:** EPA 8260B
MSS Lab ID: 550542-002 **Sampled:** 01/08/26 **Analyst:** HMN
Lab ID: QC1330611 **Received:** 01/08/26
Matrix: Water **Analyzed:** 01/14/26

QC1330611 Analyte	MSS Result	Spiked	Result	%REC	Limits	Units
1,1-Dichloroethene	<0.1050	20.00	25.16	126	62-131	ug/L
MTBE	0.3932	20.00	22.24	109	61-124	ug/L
Benzene	<0.1327	20.00	20.32	102	70-123	ug/L
Trichloroethene	<0.1462	20.00	23.71	119	65-131	ug/L
Toluene	<0.1192	20.00	20.68	103	69-120	ug/L
Chlorobenzene	<0.1235	20.00	22.34	112	72-121	ug/L

QC1330611 Surrogate	%REC	Limits
Dibromofluoromethane	109	70-130
1,2-Dichloroethane-d4	101	70-130
Toluene-d8	103	70-130
Bromofluorobenzene	100	70-130

Field ID: ZZZZZZZZZZ **DF:** 1.000 **Prep:** EPA 5030B
Type: MSD **Batch#:** 392445 **Analysis:** EPA 8260B
MSS Lab ID: 550542-002 **Sampled:** 01/08/26 **Analyst:** HMN
Lab ID: QC1330612 **Received:** 01/08/26
Matrix: Water **Analyzed:** 01/14/26

QC1330612 Analyte	Spiked	Result	%REC	Limits	Units	RPD	Lim
1,1-Dichloroethene	20.00	21.44	107	62-131	ug/L	16	31
MTBE	20.00	20.58	101	61-124	ug/L	8	30
Benzene	20.00	18.21	91	70-123	ug/L	11	31
Trichloroethene	20.00	21.07	105	65-131	ug/L	12	31
Toluene	20.00	17.82	89	69-120	ug/L	15	29
Chlorobenzene	20.00	20.22	101	72-121	ug/L	10	29

QC1330612 Surrogate	%REC	Limits
Dibromofluoromethane	108	70-130
1,2-Dichloroethane-d4	100	70-130
Toluene-d8	101	70-130
Bromofluorobenzene	96	70-130

Legend

RPD: Relative Percent Difference

ENTHALPY ANALYTICAL

Metals Analytical Report

Lab #: 550446 **Project#:** BUTTE COUNTY

Client: Geosyntec Consultants **Location:**

Field ID: VP-MW-01 **Batch#:** 392154 **Prep:** EPA 3015A
Type: SAMPLE **Sampled:** 01/07/26 **Analysis:** EPA 200.8
Lab ID: 550446-001 **Received:** 01/08/26 **Analyst:** DXC
Matrix: Water **Prepared:** 01/09/26
DF: 1.000 **Analyzed:** 01/10/26

550446-001 Analyte	Result	RL	Units
Calcium	**15,000**	500	ug/L
Iron	**290**	50	ug/L
Magnesium	**13,000**	250	ug/L
Manganese	**35**	10	ug/L
Potassium	ND	500	ug/L
Sodium	**5,000**	500	ug/L

Field ID: VP-COMANCHE CREEK **Batch#:** 392154 **Prep:** EPA 3015A
Type: SAMPLE **Sampled:** 01/07/26 **Analysis:** EPA 200.8
Lab ID: 550446-002 **Received:** 01/08/26 **Analyst:** DXC
Matrix: Water **Prepared:** 01/09/26
DF: 1.000 **Analyzed:** 01/10/26

550446-002 Analyte	Result	RL	Units
Calcium	**17,000**	500	ug/L
Iron	**120**	50	ug/L
Magnesium	**7,300**	250	ug/L
Manganese	ND	10	ug/L
Potassium	**1,600**	500	ug/L
Sodium	**6,200**	500	ug/L

Field ID: LC-LINDO CHANNEL **Batch#:** 392154 **Prep:** EPA 3015A
Type: SAMPLE **Sampled:** 01/07/26 **Analysis:** EPA 200.8
Lab ID: 550446-003 **Received:** 01/08/26 **Analyst:** DXC
Matrix: Water **Prepared:** 01/09/26
DF: 1.000 **Analyzed:** 01/10/26

550446-003 Analyte	Result	RL	Units
Calcium	**8,000**	500	ug/L
Iron	ND	50	ug/L
Magnesium	**3,800**	250	ug/L
Manganese	ND	10	ug/L
Potassium	**660**	500	ug/L
Sodium	**3,100**	500	ug/L

ENTHALPY ANALYTICAL

Metals Analytical Report

Lab #: 550446 **Project#:** BUTTE COUNTY

Client: Geosyntec Consultants **Location:**

Field ID:	FD20260107	**Batch#:**	392154	**Prep:**	EPA 3015A
Type:	SAMPLE	**Sampled:**	01/07/26	**Analysis:**	EPA 200.8
Lab ID:	550446-004	**Received:**	01/08/26	**Analyst:**	DXC
Matrix:	Water	**Prepared:**	01/09/26		
DF:	1.000	**Analyzed:**	01/10/26		

550446-004 Analyte	Result	RL	Units
Calcium	**16,000**	500	ug/L
Iron	**310**	50	ug/L
Magnesium	**13,000**	250	ug/L
Manganese	**32**	10	ug/L
Potassium	ND	500	ug/L
Sodium	**5,400**	500	ug/L

Type:	BLANK	**DF:**	1.000	**Prep:**	EPA 3015A
Lab ID:	QC1329411	**Batch#:**	392154	**Analysis:**	EPA 200.8
Matrix:	Water	**Prepared:**	01/09/26	**Analyst:**	DXC

QC1329411 Analyte	Result	RL	Units	Analyzed
Calcium	ND	500	ug/L	01/10/26
Iron	ND	50	ug/L	01/10/26
Magnesium	ND	250	ug/L	01/10/26
Manganese	ND	10	ug/L	01/10/26
Potassium	ND	500	ug/L	01/13/26
Sodium	ND	500	ug/L	01/10/26

Legend

ND: Not Detected

RL: Reporting Limit

ENTHALPY ANALYTICAL

Metals Analytical Report: Batch QC

Lab #: 550446 **Project#:** BUTTE COUNTY

Client: Geosyntec Consultants **Location:**

Type: LCS **DF:** 1.000 **Prep:** EPA 3015A

Lab ID: QC1329412 **Batch#:** 392154 **Analysis:** EPA 200.8

Matrix: Water **Prepared:** 01/09/26 **Analyst:** DXC

QC1329412 Analyte	Spiked	Result	%REC	Limits	Units	Analyzed
Calcium	5,100	5,321	104	85-115	ug/L	01/10/26
Iron	500.0	497.8	100	85-115	ug/L	01/10/26
Magnesium	5,100	4,907	96	85-115	ug/L	01/10/26
Manganese	100.0	107.9	108	85-115	ug/L	01/10/26
Potassium	6,000	6,473	108	85-115	ug/L	01/13/26
Sodium	5,100	5,001	98	85-115	ug/L	01/10/26

ENTHALPY ANALYTICAL

Metals Analytical Report: Batch QC

Lab #: 550446 **Project#:** BUTTE COUNTY

Client: Geosyntec Consultants **Location:**

Field ID: LC-DW-02 **DF:** 1.000 **Prep:** EPA 3015A

Type: MS **Batch#:** 392154 **Analysis:** EPA 200.8

MSS Lab ID: 550445-001 **Sampled:** 01/07/26 **Analyst:** DXC

Lab ID: QC1329413 **Received:** 01/08/26

Matrix: Water **Prepared:** 01/09/26

QC1329413 Analyte	MSS Result	Spiked	Result	%REC	Limits	Units	Analyzed	Qual
Calcium	29,750	5,100	34,850	100	70-130	ug/L	01/10/26	NM
Iron	<29.13	500.0	486.4	97	70-130	ug/L	01/10/26	
Magnesium	22,770	5,100	27,260	88	70-130	ug/L	01/10/26	NM
Manganese	<4.470	100.0	105.1	105	70-130	ug/L	01/10/26	
Potassium	983.1	6,000	7,093	102	70-130	ug/L	01/13/26	
Sodium	17,140	5,100	22,060	97	70-130	ug/L	01/10/26	

Field ID: LC-DW-02 **DF:** 1.000 **Prep:** EPA 3015A

Type: MSD **Batch#:** 392154 **Analysis:** EPA 200.8

MSS Lab ID: 550445-001 **Sampled:** 01/07/26 **Analyst:** DXC

Lab ID: QC1329414 **Received:** 01/08/26

Matrix: Water **Prepared:** 01/09/26

QC1329414 Analyte	Spiked	Result	%REC	Limits	Units	RPD	Lim	Analyzed	Qual
Calcium	5,100	34,640	96	70-130	ug/L	1	20	01/10/26	NM
Iron	500.0	481.7	96	70-130	ug/L	1	20	01/10/26	
Magnesium	5,100	27,620	95	70-130	ug/L	1	20	01/10/26	NM
Manganese	100.0	103.9	104	70-130	ug/L	1	20	01/10/26	
Potassium	6,000	7,286	105	70-130	ug/L	3	20	01/13/26	
Sodium	5,100	21,130	78	70-130	ug/L	4	20	01/10/26	

Legend

NM: Not Meaningful

RPD: Relative Percent Difference

ENTHALPY ANALYTICAL

Metals Analytical Report: Batch QC

Lab #: 550446 **Project#:** BUTTE COUNTY

Client: Geosyntec Consultants **Location:**

Field ID:	LC-DW-01	**DF:**	1.000	**Analyzed:**	01/13/26
Type:	MS	**Batch#:**	392154	**Prep:**	EPA 3015A
MSS Lab ID:	550445-002	**Sampled:**	01/07/26	**Analysis:**	EPA 200.8
Lab ID:	QC1329415	**Received:**	01/08/26	**Analyst:**	DXC
Matrix:	Water	**Prepared:**	01/09/26		

QC1329415 Analyte	MSS Result	Spiked	Result	%REC	Limits	Units
Calcium	16,580	5,100	24,500	155 *	70-130	ug/L
Iron	<29.13	500.0	555.3	111	70-130	ug/L
Magnesium	13,610	5,100	21,830	161 *	70-130	ug/L
Manganese	<4.470	100.0	110.6	111	70-130	ug/L
Potassium	646.0	6,000	6,982	106	70-130	ug/L
Sodium	12,010	5,100	19,060	138 *	70-130	ug/L

Field ID:	LC-DW-01	**DF:**	1.000	**Analyzed:**	01/13/26
Type:	MSD	**Batch#:**	392154	**Prep:**	EPA 3015A
MSS Lab ID:	550445-002	**Sampled:**	01/07/26	**Analysis:**	EPA 200.8
Lab ID:	QC1329416	**Received:**	01/08/26	**Analyst:**	DXC
Matrix:	Water	**Prepared:**	01/09/26		

QC1329416 Analyte	Spiked	Result	%REC	Limits	Units	RPD	Lim
Calcium	5,100	24,780	161 *	70-130	ug/L	1	20
Iron	500.0	571.6	114	70-130	ug/L	3	20
Magnesium	5,100	22,650	177 *	70-130	ug/L	4	20
Manganese	100.0	113.2	113	70-130	ug/L	2	20
Potassium	6,000	7,041	107	70-130	ug/L	1	20
Sodium	5,100	19,640	149 *	70-130	ug/L	3	20

Legend

*: Value is outside QC limits

RPD: Relative Percent Difference

ENTHALPY ANALYTICAL

Enthalpy Analytical Report

Lab #: 550446 **Project#:** BUTTE COUNTY

Client: Geosyntec Consultants **Location:**

Field ID: VP-MW-01 **Batch#:** 392104 **Prep:** METHOD
Type: SAMPLE **Sampled:** 01/07/26 11:30 **Analysis:** EPA 300.0
Lab ID: 550446-001 **Received:** 01/08/26 **Analyst:** KUM
Matrix: Water **Prepared:** 01/09/26 10:45
DF: 1.000 **Analyzed:** 01/09/26 20:56

550446-001 Analyte	Result	RL	Units
Chloride	**2.0**	1.0	mg/L
Sulfate	**9.8**	1.0	mg/L

Field ID: VP-COMANCHE CREEK **Batch#:** 392104 **Prep:** METHOD
Type: SAMPLE **Sampled:** 01/07/26 12:15 **Analysis:** EPA 300.0
Lab ID: 550446-002 **Received:** 01/08/26 **Analyst:** KUM
Matrix: Water **Prepared:** 01/09/26 10:45
DF: 1.000 **Analyzed:** 01/09/26 21:16

550446-002 Analyte	Result	RL	Units
Chloride	**2.4**	1.0	mg/L
Sulfate	**4.7**	1.0	mg/L

Field ID: LC-LINDO CHANNEL **Batch#:** 392104 **Prep:** METHOD
Type: SAMPLE **Sampled:** 01/07/26 13:40 **Analysis:** EPA 300.0
Lab ID: 550446-003 **Received:** 01/08/26 **Analyst:** KUM
Matrix: Water **Prepared:** 01/09/26 10:45
DF: 1.000 **Analyzed:** 01/09/26 21:36

550446-003 Analyte	Result	RL	Units
Chloride	**1.0**	1.0	mg/L
Sulfate	**2.1**	1.0	mg/L

Field ID: FD20260107 **Batch#:** 392104 **Prep:** METHOD
Type: SAMPLE **Sampled:** 01/07/26 12:00 **Analysis:** EPA 300.0
Lab ID: 550446-004 **Received:** 01/08/26 **Analyst:** KUM
Matrix: Water **Prepared:** 01/09/26 10:45
DF: 1.000 **Analyzed:** 01/09/26 21:56

550446-004 Analyte	Result	RL	Units
Chloride	**2.1**	1.0	mg/L
Sulfate	**11**	1.0	mg/L

Type: BLANK **Batch#:** 392104 **Analysis:** EPA 300.0
Lab ID: QC1329250 **Prepared:** 01/09/26 10:45 **Analyst:** KUM
Matrix: Water **Analyzed:** 01/09/26 12:00
DF: 1.000 **Prep:** METHOD

QC1329250 Analyte	Result	RL	Units
Chloride	ND	1.0	mg/L
Sulfate	ND	1.0	mg/L

ENTHALPY ANALYTICAL

Enthalpy Analytical Report

Lab #: 550446 **Project#:** BUTTE COUNTY

Client: Geosyntec Consultants **Location:**

Legend

ND: Not Detected

RL: Reporting Limit

ENTHALPY ANALYTICAL

Enthalpy Analytical Report: Batch QC

Lab #: 550446 **Project#:** BUTTE COUNTY

Client: Geosyntec Consultants **Location:**

Type: LCS **Batch#:** 392104 **Analysis:** EPA 300.0

Lab ID: QC1329251 **Prepared:** 01/09/26 10:45 **Analyst:** KUM

Matrix: Water **Analyzed:** 01/09/26 12:19

DF: 1.000 **Prep:** METHOD

QC1329251 Analyte	Spiked	Result	%REC	Limits	Units
Chloride	50.00	47.91	96	90-110	mg/L
Sulfate	25.00	26.03	104	90-110	mg/L

Enthalpy Analytical Report: Batch QC

Lab #: 550446 **Project#:** BUTTE COUNTY
Client: Geosyntec Consultants **Location:**

Field ID: ZZZZZZZZZZ **DF:** 1.000 **Analyzed:** 01/09/26 13:38
Type: MS **Batch#:** 392104 **Prep:** METHOD
MSS Lab ID: 550486-001 **Sampled:** 01/08/26 08:29 **Analysis:** EPA 300.0
Lab ID: QC1329252 **Received:** 01/08/26 **Analyst:** KUM
Matrix: Water **Prepared:** 01/09/26 10:45

QC1329252 Analyte	MSS Result	Spiked	Result	%REC	Limits	Units
Chloride	1.715	100.0	101.1	99	80-123	mg/L
Sulfate	<0.2470	50.00	50.61	101	79-124	mg/L

Field ID: ZZZZZZZZZZ **DF:** 1.000 **Analyzed:** 01/09/26 13:58
Type: MSD **Batch#:** 392104 **Prep:** METHOD
MSS Lab ID: 550486-001 **Sampled:** 01/08/26 08:29 **Analysis:** EPA 300.0
Lab ID: QC1329253 **Received:** 01/08/26 **Analyst:** KUM
Matrix: Water **Prepared:** 01/09/26 10:45

QC1329253 Analyte	Spiked	Result	%REC	Limits	Units	RPD	Lim
Chloride	100.0	104.5	103	80-123	mg/L	3	20
Sulfate	50.00	52.33	105	79-124	mg/L	3	20

Legend

RPD: Relative Percent Difference

Enthalpy Analytical Report: Batch QC

Lab #: 550446 **Project#:** BUTTE COUNTY
Client: Geosyntec Consultants **Location:**

Field ID:	ZZZZZZZZZZ	**DF:**	1.000	**Analyzed:**	01/09/26 15:58
Type:	MS	**Batch#:**	392104	**Prep:**	METHOD
MSS Lab ID:	550514-001	**Sampled:**	01/08/26 09:50	**Analysis:**	EPA 300.0
Lab ID:	QC1329254	**Received:**	01/08/26	**Analyst:**	KUM
Matrix:	Water	**Prepared:**	01/09/26 10:45		

QC1329254 Analyte	MSS Result	Spiked	Result	%REC	Limits	Units	Qual
Chloride	205.7	100.0	304.0 E	98	80-123	mg/L	
Sulfate	330.1	50.00	327.0 E	-6	79-124	mg/L	NM

Field ID:	ZZZZZZZZZZ	**DF:**	1.000	**Analyzed:**	01/09/26 16:18
Type:	MSD	**Batch#:**	392104	**Prep:**	METHOD
MSS Lab ID:	550514-001	**Sampled:**	01/08/26 09:50	**Analysis:**	EPA 300.0
Lab ID:	QC1329255	**Received:**	01/08/26	**Analyst:**	KUM
Matrix:	Water	**Prepared:**	01/09/26 10:45		

QC1329255 Analyte	Spiked	Result	%REC	Limits	Units	RPD	Lim	Qual
Chloride	100.0	302.5 E	97	80-123	mg/L	NC	20	
Sulfate	50.00	326.5 E	-7	79-124	mg/L	NC	20	NM

Legend

E: Response exceeds instrument's linear range
NC: Not Calculated
NM: Not Meaningful
RPD: Relative Percent Difference

ENTHALPY ANALYTICAL

Alkalinity

Lab #: 550446 **Project#:** BUTTE COUNTY

Client: Geosyntec Consultants **Location:**

Field ID: VP-MW-01 **DF:** 2.500 **Analyzed:** 01/16/26
Type: SAMPLE **Batch#:** 392710 **Prep:** METHOD
Lab ID: 550446-001 **Sampled:** 01/07/26 **Analysis:** SM2320B
Matrix: Water **Received:** 01/08/26 **Analyst:** WWC

550446-001 Analyte	Result	RL	Units
Alkalinity, Bicarbonate, as CaCO3	**84**	13	mg/L
Alkalinity, Carbonate, as CaCO3	ND	13	mg/L
Alkalinity, Hydroxide, as CaCO3	ND	13	mg/L
Alkalinity, Total as CaCO3	**84**	13	mg/L

Field ID: VP-COMANCHE CREEK **DF:** 2.500 **Analyzed:** 01/16/26
Type: SAMPLE **Batch#:** 392710 **Prep:** METHOD
Lab ID: 550446-002 **Sampled:** 01/07/26 **Analysis:** SM2320B
Matrix: Water **Received:** 01/08/26 **Analyst:** WWC

550446-002 Analyte	Result	RL	Units
Alkalinity, Bicarbonate, as CaCO3	**68**	13	mg/L
Alkalinity, Carbonate, as CaCO3	ND	13	mg/L
Alkalinity, Hydroxide, as CaCO3	ND	13	mg/L
Alkalinity, Total as CaCO3	**68**	13	mg/L

Field ID: LC-LINDO CHANNEL **DF:** 1.000 **Analyzed:** 01/16/26
Type: SAMPLE **Batch#:** 392710 **Prep:** METHOD
Lab ID: 550446-003 **Sampled:** 01/07/26 **Analysis:** SM2320B
Matrix: Water **Received:** 01/08/26 **Analyst:** WWC

550446-003 Analyte	Result	RL	Units
Alkalinity, Bicarbonate, as CaCO3	**36**	5.0	mg/L
Alkalinity, Carbonate, as CaCO3	ND	5.0	mg/L
Alkalinity, Hydroxide, as CaCO3	ND	5.0	mg/L
Alkalinity, Total as CaCO3	**36**	5.0	mg/L

Field ID: FD20260107 **DF:** 2.500 **Analyzed:** 01/16/26
Type: SAMPLE **Batch#:** 392710 **Prep:** METHOD
Lab ID: 550446-004 **Sampled:** 01/07/26 **Analysis:** SM2320B
Matrix: Water **Received:** 01/08/26 **Analyst:** WWC

550446-004 Analyte	Result	RL	Units
Alkalinity, Bicarbonate, as CaCO3	**79**	13	mg/L
Alkalinity, Carbonate, as CaCO3	ND	13	mg/L
Alkalinity, Hydroxide, as CaCO3	ND	13	mg/L
Alkalinity, Total as CaCO3	**79**	13	mg/L

ENTHALPY ANALYTICAL

Alkalinity

Lab #: 550446 **Project#:** BUTTE COUNTY

Client: Geosyntec Consultants **Location:**

Type:	BLANK	**DF:**	1.000	**Prep:**	METHOD
Lab ID:	QC1331370	**Batch#:**	392710	**Analysis:**	SM2320B
Matrix:	Water	**Analyzed:**	01/16/26	**Analyst:**	WWC

QC1331370 Analyte	Result	RL	Units
Alkalinity, Bicarbonate, as CaCO3	ND	2.0	mg/L
Alkalinity, Carbonate, as CaCO3	ND	2.0	mg/L
Alkalinity, Hydroxide, as CaCO3	ND	2.0	mg/L
Alkalinity, Total as CaCO3	ND	2.0	mg/L

Legend

ND: Not Detected

RL: Reporting Limit

ENTHALPY ANALYTICAL

Alkalinity: Batch QC

Lab #: 550446 **Project#:** BUTTE COUNTY

Client: Geosyntec Consultants **Location:**

Type: LCS **DF:** 1.000 **Prep:** METHOD

Lab ID: QC1331371 **Batch#:** 392710 **Analysis:** SM2320B

Matrix: Water **Analyzed:** 01/16/26 **Analyst:** WWC

QC1331371 Analyte	Spiked	Result	%REC	Limits	Units
Alkalinity, Total as CaCO3	100.0	94.16	94	90-110	mg/L

ENTHALPY ANALYTICAL

Alkalinity: Batch QC

Lab #: 550446 **Project#:** BUTTE COUNTY

Client: Geosyntec Consultants **Location:**

Field ID:	ZZZZZZZZZZ	**DF:**	2.500	**Prep:**	METHOD
Type:	SDUP	**Batch#:**	392710	**Analysis:**	SM2320B
MSS Lab ID:	550285-001	**Sampled:**	01/06/26	**Analyst:**	WWC
Lab ID:	QC1331372	**Received:**	01/06/26		
Matrix:	Water	**Analyzed:**	01/16/26		

QC1331372 Analyte	MSS Result	Result	RL	Units	RPD	Lim
Alkalinity, Bicarbonate, as CaCO3	140.6	**147.4**	5.000	mg/L	5	20
Alkalinity, Carbonate, as CaCO3	<5.000	<5.000	5.000	mg/L	NC	20
Alkalinity, Hydroxide, as CaCO3	<5.000	<5.000	5.000	mg/L	NC	20
Alkalinity, Total as CaCO3	140.6	**147.4**	5.000	mg/L	5	20

Legend

NC: Not Calculated

RL: Reporting Limit

RPD: Relative Percent Difference

ENTHALPY ANALYTICAL

Total Dissolved Solids (TDS)

Lab #: 550446 **Project#:** BUTTE COUNTY

Client: Geosyntec Consultants **Location:**

Field ID: VP-MW-01 **Batch#:** 392262 **Prep:** METHOD
Type: SAMPLE **Sampled:** 01/07/26 **Analysis:** SM2540C
Lab ID: 550446-001 **Received:** 01/08/26 **Analyst:** JAG
Matrix: Water **Prepared:** 01/12/26
DF: 1.000 **Analyzed:** 01/14/26

550446-001 Analyte	Result	RL	Units
Total Dissolved Solids	**160**	10	mg/L

Field ID: VP-COMANCHE CREEK **Batch#:** 392262 **Prep:** METHOD
Type: SAMPLE **Sampled:** 01/07/26 **Analysis:** SM2540C
Lab ID: 550446-002 **Received:** 01/08/26 **Analyst:** JAG
Matrix: Water **Prepared:** 01/12/26
DF: 1.000 **Analyzed:** 01/14/26

550446-002 Analyte	Result	RL	Units
Total Dissolved Solids	**100**	10	mg/L

Field ID: LC-LINDO CHANNEL **Batch#:** 392262 **Prep:** METHOD
Type: SAMPLE **Sampled:** 01/07/26 **Analysis:** SM2540C
Lab ID: 550446-003 **Received:** 01/08/26 **Analyst:** JAG
Matrix: Water **Prepared:** 01/12/26
DF: 1.000 **Analyzed:** 01/14/26

550446-003 Analyte	Result	RL	Units
Total Dissolved Solids	**72**	10	mg/L

Field ID: FD20260107 **Batch#:** 392262 **Prep:** METHOD
Type: SAMPLE **Sampled:** 01/07/26 **Analysis:** SM2540C
Lab ID: 550446-004 **Received:** 01/08/26 **Analyst:** JAG
Matrix: Water **Prepared:** 01/12/26
DF: 1.000 **Analyzed:** 01/14/26

550446-004 Analyte	Result	RL	Units
Total Dissolved Solids	**310**	10	mg/L

Type: BLANK **Batch#:** 392262 **Analysis:** SM2540C
Lab ID: QC1329858 **Prepared:** 01/12/26 **Analyst:** JAG
Matrix: Water **Analyzed:** 01/14/26
DF: 1.000 **Prep:** METHOD

QC1329858 Analyte	Result	RL	Units
Total Dissolved Solids	ND	10	mg/L

Legend
ND: Not Detected
RL: Reporting Limit

ENTHALPY ANALYTICAL

Total Dissolved Solids (TDS): Batch QC

Lab #: 550446 **Project#:** BUTTE COUNTY

Client: Geosyntec Consultants **Location:**

Type: LCS **Batch#:** 392262 **Analysis:** SM2540C

Lab ID: QC1329859 **Prepared:** 01/12/26 **Analyst:** JAG

Matrix: Water **Analyzed:** 01/14/26

DF: 1.000 **Prep:** METHOD

QC1329859 Analyte	Spiked	Result	%REC	Limits	Units
Total Dissolved Solids	1,000	1,009	101	90-110	mg/L

Field ID: ZZZZZZZZZZ **DF:** 2.000 **Analyzed:** 01/14/26

Type: SDUP **Batch#:** 392262 **Prep:** METHOD

MSS Lab ID: 550351-001 **Sampled:** 01/07/26 **Analysis:** SM2540C

Lab ID: QC1329897 **Received:** 01/07/26 **Analyst:** JAG

Matrix: Water **Prepared:** 01/12/26

QC1329897 Analyte	MSS Result	Result	RL	Units	RPD	Lim
Total Dissolved Solids	2,018	**1,998**	20.00	mg/L	1	5

Field ID: ZZZZZZZZZZ **DF:** 20.00 **Analyzed:** 01/14/26

Type: SDUP **Batch#:** 392262 **Prep:** METHOD

MSS Lab ID: 550475-001 **Sampled:** 01/08/26 **Analysis:** SM2540C

Lab ID: QC1329898 **Received:** 01/08/26 **Analyst:** JAG

Matrix: Water **Prepared:** 01/12/26

QC1329898 Analyte	MSS Result	Result	RL	Units	RPD	Lim
Total Dissolved Solids	61,460	**62,020**	200.0	mg/L	1	5

Legend

RL: Reporting Limit

RPD: Relative Percent Difference

Laboratory Job Number 550446

Subcontracted Products

CLS

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January 19, 2026

CLS Work Order #: 26A0382
COC #:

Miguel Gamboa
Enthalpy Analytical - Orange
931 W. Barkley Avenue
Orange, CA 92868

Project Name: EO-550446

Enclosed are the results of analyses for samples received by the laboratory on 01/08/26 14:42. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that the results are in compliance both technically and for completeness.

Analytical results are attached to this letter. Please call if we can provide additional assistance.

Sincerely,

Daniel Johnson
Technical Director

CA SWRCB ELAP Accreditation/Registration number 1233

26A0382

ENTHALPY ANALYTICAL

931 West Barkley Ave
Orange, CA 92868
(714) 771-6900

Subcontract Laboratory:
CLS
3249 Fitzgerald Rd
Rancho Cordova, CA 95742
ATTN:
PO #: Required, to be sent via email

Enthalpy Order: EO-550446
PM: Miguel Gamboa
Email: miguel.gamboa@enthalpy.com
CC: incomingreports@enthalpy.com
Phone: (714) 771-6900

Results Due: Standard TAT
Report Level: II
Report To: RL
EDDs: CLS Lab Standard Excel Transfer EDD (3 tabs)

Notes:

Sample ID	Collected	Lab ID	# Cont.	Matrix	Analysis Requested	Comment
VP-MW-01	07-JAN-2026 11:30	550446-001	1	Water	EPA 300.0 Nitrate	
VP-COMANCHE CREEK	07-JAN-2026 12:15	550446-002	1	Water	EPA 300.0 Nitrate	
LC-LINDO CHANNEL	07-JAN-2026 13:40	550446-003	1	Water	EPA 300.0 Nitrate	
FD20260107	07-JAN-2026 12:00	550446-004	1	Water	EPA 300.0 Nitrate	

Notes:	Relinquished By:	Received By:
	Anthony Chaves	
	Date: 1-8-26 14:42	Date: 1/8/26 1442
	Date:	Date:
	Date:	Date:

4.8/4.6

Enthalpy Analytical - Orange	Project:	EO-550446	
931 W. Barkley Avenue	Project Number:	[none]	**CLS Work Order #: 26A0382**
Orange, CA 92868	Project Manager:	Miguel Gamboa	COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
VP-MW-01 (26A0382-01) Water Sampled: 01/07/26 11:30 Received: 01/08/26 14:42									
Nitrate as N	**1.6**	0.40	mg/L	1	2600138	01/08/26	01/09/26	EPA 300.0	
VP-COMANCHE CREEK (26A0382-02) Water Sampled: 01/07/26 12:15 Received: 01/08/26 14:42									
Nitrate as N	**0.81**	0.40	mg/L	1	2600138	01/08/26	01/09/26	EPA 300.0	
LC-LINDO CHANNEL (26A0382-03) Water Sampled: 01/07/26 13:40 Received: 01/08/26 14:42									
Nitrate as N	**0.71**	0.40	mg/L	1	2600138	01/08/26	01/09/26	EPA 300.0	
FD20260107 (26A0382-04) Water Sampled: 01/07/26 12:00 Received: 01/08/26 14:42									
Nitrate as N	**1.8**	0.40	mg/L	1	2600138	01/08/26	01/09/26	EPA 300.0	

Enthalpy Analytical - Orange	Project:	EO-550446	
931 W. Barkley Avenue	Project Number:	[none]	**CLS Work Order #: 26A0382**
Orange, CA 92868	Project Manager:	Miguel Gamboa	COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2600138 - General Prep										
Blank (2600138-BLK1)				Prepared & Analyzed: 01/08/26						
Nitrate as N	ND	0.40	mg/L							
LCS (2600138-BS1)				Prepared & Analyzed: 01/08/26						
Nitrate as N	5.08	0.40	mg/L	5.00		102	80-120			
LCS Dup (2600138-BSD1)				Prepared & Analyzed: 01/08/26						
Nitrate as N	5.08	0.40	mg/L	5.00		102	80-120	0.07	20	
Matrix Spike (2600138-MS1)		**Source: 26A0263-04**		Prepared & Analyzed: 01/08/26						
Nitrate as N	7.60	0.40	mg/L	5.00	2.81	96	80-120			
Matrix Spike (2600138-MS2)		**Source: 26A0381-01**		Prepared: 01/08/26 Analyzed: 01/09/26						
Nitrate as N	7.02	0.40	mg/L	5.00	2.50	90	80-120			

Enthalpy Analytical - Orange	Project:	EO-550446	
931 W. Barkley Avenue	Project Number:	[none]	**CLS Work Order #: 26A0382**
Orange, CA 92868	Project Manager:	Miguel Gamboa	COC #:

Notes and Definitions

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit (or method detection limit when specified)
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

Laboratory Job Number 550446

Subcontracted Products

UC Davis SIF

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COLLEGE OF AGRICULTURAL AND
ENVIRONMENTAL SCIENCES

^{18}O and ^{2}H of Water by Headspace Equilibration using GasBench-IRMS

Methodology

Equilibration methods use CO_2 or H_2 in the headspace to isotopically equilibrate with water in the sample vial [1,2]. If necessary, the same sample vial can be utilized for both ^{18}O and ^{2}H measurements, provided a new cap is fitted prior to the second equilibration.

For ^{18}O, water samples are pipetted (200 µL) into 12 mL Labco Exetainer vials and flushed with 0.3 % CO_2 in helium for 5 minutes at 100 mL/min. Vials are held at 30 ºC in a thermostated tray for 24 hours prior to isotopic measurement.

Analysis of headspace CO_2 for ^{18}O is then performed on a Thermo Scientific GasBench II coupled to a Thermo Scientific Delta V Advantage isotope-ratio mass spectrometer. An autosampler utilizing a 2-hole sampling needle pushes CO_2 out of the vial and into a 100 µL sample loop. Once the loop is adequately flushed, pulses of sample gas are injected into the IRMS for isotopic measurement. Water is removed from the gas stream using a Nafion dryer, and sample CO_2 is chromatographically separated from other gases using an Agilent PoraPLOT Q GC column (25 m x 0.32 mm ID x 10 µm film thickness, 50 ºC, 2 mL/min).

For ^{2}H, water samples are pipetted (200 µL) into 12 mL Labco Exetainer vials containing platinum catalytic rods and flushed with 2.0 % H_2 in helium for 5 minutes at 100 mL/min. Vials are held at 30 ºC in a thermostated tray for 40 minutes prior to isotopic measurement.

Analysis of headspace H_2 for ^{2}H is performed on a Thermo Scientific GasBench II coupled to a Thermo Scientific Delta V Advantage isotope-ratio mass spectrometer. An autosampler utilizing a 2-hole sampling needle pushes H_2 out of the vial and into a 100 µL sample loop. Once the loop is adequately flushed, pulses of sample gas are injected into the IRMS for isotopic measurement. Water is removed from the gas stream using a Nafion dryer, and sample H_2 is chromatographically separated from other gases using an Agilent PoraPLOT Q GC column (25 m x 0.32 mm ID x 10 µm film thickness, 50 ºC, 2 mL/min).

One of every ten samples is analyzed in duplicate; further replicates may be analyzed if initial measurements fall outside expected measurement error. Replicates of the quality control and assurance reference materials are measured every ten samples.

Calibration and Reporting of Stable Isotope Ratios

Calibration procedures for water stable isotope ratios are applied identically across reference and sample materials and are directly traceable to the primary isotopic reference material, Vienna Standard Mean Ocean Water (VSMOW).

First, a pure CO_2 or H_2 reference gas is used to calculate provisional isotopic values of the sample peaks. Next, isotopic values are adjusted for changes in instrumental drift using an in-house reference material (e.g., SIF-3). Finally, measurements are scale-normalized to the primary reference material using three certified standard reference materials (i.e., SMOW2, GISP2, and SLAP2) available from USGS, NIST, and the IAEA.

Final quality assessment is based on the accuracy and precision of the unbiased quality control materials, which include a certified standard reference material (i.e., USGS47) and $\delta^{18}O$- and $\delta^{2}H$-calibrated waters (i.e., SIF1-8). Enriched waters are further calibrated against a suite of enriched standards including ER-1C1, ER-3A, ER-4A, ER-5A, High en, IAEA-608, and IAEA-609.

Quality assurance reference materials: SMOW2, GISP2, SLAP2
Quality control reference materials: USGS47, SIF 1-8

Measurement Uncertainty

Sample materials are inherently variable in composition, and measurement error may vary between different sample types due to differences in composition. Mean measurement error (σ) and accuracy, as determined by replicate measurements of the quality control and assurance materials, must fall below expected measurement error (± 0.20 ‰ for $\delta^{18}O$ and ± 2.0 ‰ for $\delta^{2}H$). Accuracy and precision of the co-measured calibrated quality control and assurance materials are provided with data reports.

Revision Date

September 6, 2019

Approved By

Richard Doucett



References

[1] Hilkert AW, Avak H. GasBench II: Isotope analysis of water, fruit juice, and wine using the Thermo Scientific GasBench II IRMS. *ThermoFinnigan Flash Report No. G30*. Bremen (DE): 1999.

[2] Duhr A, Hilkert AW. GasBench II: Automated H_2/H_2O equilibration for δD determination on aqueous samples using Thermo Scientific GasBench II. *ThermoFinnigan Flash Report No. G32*. Bremen (DE): 2001.

Glossary

°C	degree Celsius
%	percent
‰	per mil; 1 ‰ is equivalent to 0.001 or 1 mUr
^{2}H	stable isotope of hydrogen; mass number of 2
^{18}O	stable isotope of oxygen; mass number of 18
δ	delta notation for isotopic composition; in per mil (“‰”) or mUr; 1 ‰ equals 1 mUr
µL	microliter
µm	micron or micrometer
σ	standard deviation
CO_2	carbon dioxide
GC	gas chromatograph
GISP2	Greenland Ice Sheet Precipitation 2 water prepared by the IAEA; formal name is GRESP (Greenland Summit Precipitation)
H_2	dihydrogen
IAEA	International Atomic Energy Agency
ID	inner diameter
IRMS	isotope-ratio mass spectrometry
m	meter

min	minute
mL	milliliter
mm	millimeter
mUr	milliurey; 1 mUr is equivalent to 0.001 or 1 ‰
NIST	National Institute of Standards and Technology
QA	quality assurance; overall laboratory measures to ensure measurement quality
QC	quality control; activities and procedures used to evaluate quality requirements
RSIL	USGS Reston Stable Isotope Laboratory, Reston, Virginia
SIF	Stable Isotope Facility
SIF-3	water reference material
SIF-4	water reference material
SLAP2	Standard Light Antarctic Precipitation 2 water prepared by the IAEA Isotope Hydrology Lab, 2006
SMOW2	Standard Mean Ocean Water 2 water prepared by the IAEA Isotope Hydrology Lab, 2006; formal name is VSMOW2 (Vienna Standard Mean Ocean Water 2)
USGS	United States Geological Survey
USGS47	Lake Louise Drinking Water prepared by H. Qi et al., RSIL
VSMOW	Vienna Standard Mean Ocean Water; primary reference for measurements of oxygen and hydrogen isotopes

General Resources

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ENVIRONMENTAL SCIENCES

Stable Isotope Facility Data Report

Principal Investigator:	John Goyette	Email:	john.goyette@enthalpy.com
Researcher	Miguel Gamboa	Email:	miguel.gamboa@enthalpy.com
Institution:	Enthalpy Analytical		
Project:	Lindo Channel Butte County		
Submission Date:	December 18, 2025		
Completion Date:	January 16, 2026		
Report Date (pending payment):	January 23, 2026		
Analysis:	^{18}O and ^{2}H of Water by Headspace Equilibration using GasBench-IRMS		

	$\delta^{2}H$	$\delta^{18}O$
Mean SD for sample material replicates in this project:	±0.6 ‰	±0.05 ‰
Mean SD for reference material replicates in this project:	±1.7 ‰	±0.05 ‰
Mean absolute accuracy for calibrated reference materials within:	±0.6 ‰	±0.03 ‰

Notes:

Sample count to be charged: 7
Additional charges:

Reported by: Richard R. Doucett
rrdoucett@ucdavis.edu

Please review your data in a timely fashion, so that we may fully address any questions or concerns.

Samples

Sample ID	$\delta^{2}H_{VSMOW}$ (‰)	$\delta^{18}O_{VSMOW}$ (‰)	Comments	^{2}H Analysis #	^{18}O Analysis #
VP-MW-01	-76.3	-11.10		ICECUBE-69519	ICECUBE-69695
VP-MW-01	-75.8	-11.07	replicate	ICECUBE-69520	ICECUBE-69696
VP-COMANCHE CREEK	-60.5	-9.59		ICECUBE-69521	ICECUBE-69697
LC-LINDO CHANNEL	-61.1	-9.93		ICECUBE-69522	ICECUBE-69698
FD20260107	-72.8	-11.09		ICECUBE-69523	ICECUBE-69699
LC-DW-02	-63.3	-9.77		ICECUBE-69524	ICECUBE-69700
LC-DW-01	-65.4	-9.93		ICECUBE-69525	ICECUBE-69701
LC-DW-03	-67.3	-10.22		ICECUBE-69526	ICECUBE-69702

Reference Materials

Summary	δ^2H_{VSMOW} (‰) Expected	δ^2H_{VSMOW} (‰) Mean	δ^2H_{VSMOW} (‰) Standard deviation	$\delta^{18}O_{VSMOW}$ (‰) Expected	$\delta^{18}O_{VSMOW}$ (‰) Mean	$\delta^{18}O_{VSMOW}$ (‰) Standard deviation	Use
SIF-2	-312.0	-311.6	2.8	-39.24	-39.20	0.04	Quality control
SIF-3	-200.8	-201.2	1.1	-25.89	-25.90	0.02	Quality control
SIF-4	-150.1	-150.4	1.3	-19.90	-19.91	0.04	Quality control
SIF-5	-76.8	-75.9	1.5	-10.59	-10.60	0.07	Quality control
SIF-6	-45.9	-46.2	3.0	-6.91	-6.84	0.04	Scale correction
SIF-7	-26.1	-25.4	2.8	-4.81	-4.82	0.06	Drift correction
SIF-8	20.9	20.3	0.3	2.45	2.45	0.07	Scale correction
GRESP	-258.0	-259.2	0.7	-33.40	-33.45	0.03	Scale correction

Reference	δ^2H_{VSMOW} (‰)	$\delta^{18}O_{VSMOW}$ (‰)	Comments	^2H Analysis #	^{18}O Analysis #
SIF-7	-23.0	-4.74		ICECUBE-69466	ICECUBE-69642
SIF-7	-28.6	-4.78		ICECUBE-69478	ICECUBE-69654
SIF-7	-22.0	-4.86		ICECUBE-69489	ICECUBE-69665
SIF-7	-28.4	-4.79		ICECUBE-69504	ICECUBE-69680
SIF-7	-26.4	-4.88		ICECUBE-69516	ICECUBE-69692
SIF-7	-24.3	-4.89		ICECUBE-69531	ICECUBE-69707
SIF-7 Average	-25.4	-4.82			
SIF-7 StdDev	2.8	0.06			
SIF-8	19.9	2.38		ICECUBE-69469	ICECUBE-69645
SIF-8	20.4	2.48		ICECUBE-69470	ICECUBE-69646
SIF-8	20.4	2.50		ICECUBE-69471	ICECUBE-69647
SIF-8 Average	20.3	2.45			
SIF-8 StdDev	0.3	0.07			
SIF-6	-49.2	-6.81		ICECUBE-69472	ICECUBE-69648
SIF-6	-43.3	-6.82		ICECUBE-69473	ICECUBE-69649
SIF-6	-45.9	-6.89		ICECUBE-69474	ICECUBE-69650
SIF-6 Average	-46.2	-6.84			
SIF-6 StdDev	3.0	0.04			
GRESP	-258.8	-33.43		ICECUBE-69475	ICECUBE-69651
GRESP	-258.7	-33.48		ICECUBE-69476	ICECUBE-69652
GRESP	-260.0	-33.44		ICECUBE-69477	ICECUBE-69653
GRESP Average	-259.2	-33.45			
GRESP StdDev	0.7	0.03			
SIF-2	-308.3	-39.16		ICECUBE-69467	ICECUBE-69643
SIF-2	-310.4	-39.19		ICECUBE-69490	ICECUBE-69666
SIF-2	-314.1	-39.19		ICECUBE-69517	ICECUBE-69693
SIF-2	-313.8	-39.27		ICECUBE-69532	ICECUBE-69708
SIF-2 Average	-311.6	-39.20			
SIF-2 StdDev	2.8	0.04			
SIF-4	-149.2	-19.86		ICECUBE-69468	ICECUBE-69644
SIF-4	-151.3	-19.93		ICECUBE-69491	ICECUBE-69667
SIF-4	-151.8	-19.91		ICECUBE-69518	ICECUBE-69694
SIF-4	-149.3	-19.94		ICECUBE-69533	ICECUBE-69709
SIF-4 Average	-150.4	-19.91			
SIF-4 StdDev	1.3	0.04			
SIF-5	-77.6	-10.52		ICECUBE-69479	ICECUBE-69655
SIF-5	-75.0	-10.64		ICECUBE-69505	ICECUBE-69681
SIF-5	-75.0	-10.65		ICECUBE-69534	ICECUBE-69710

SIF-5 Average	-75.9	-10.60		
SIF-5 StdDev	1.5	0.07		
SIF-3	-202.2	-25.87	ICECUBE-69480	ICECUBE-69656
SIF-3	-201.4	-25.90	ICECUBE-69506	ICECUBE-69682
SIF-3	-200.0	-25.92	ICECUBE-69535	ICECUBE-69711
SIF-3 Average	-201.2	-25.90		
SIF-3 StdDev	1.1	0.02		