

# Reservoir 29

Geotechnical, Geophysical, and  
Geochemical Evaluation

Public Works Project No.: CDC2315208641

March 12, 2024 | Project Number: CJ235079



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March 12, 2024

Commonwealth Engineers, Inc.  
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Indianapolis, IN 46237

**Attn:** Mr. Dale Gick, P.E.  
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**RE:** Geotechnical, Geophysical, and Geochemical Evaluation  
Reservoir 29  
Linton, Indiana  
Terracon Project No. CJ235079

Dear Dale:

We have completed our geotechnical, geophysical, and geochemical evaluation of the Reservoir 29 in Linton, Indiana. This report presents the results of our observations and the exploratory field and laboratory testing programs, as well as our analyses of the existing conditions. The dam is regulated and owned by IDNR (State ID 77-24) and is classified with a hazard rating of low. The purpose of our work was to complete an evaluation of the seepage via geophysical testing along with a seepage analysis, in addition to completing geochemical testing of samples of water from the facility.

We appreciate the opportunity to provide our services to you. If you have any questions or require further assistance with the project, feel free to contact the undersigned.

Sincerely,

**Terracon Consultants, Inc.**

A handwritten signature in black ink, appearing to read 'Kellen P. Heavin'.

Kellen P. Heavin, P.E.

Senior Project Engineer

PEB

A handwritten signature in black ink, appearing to read 'Matt Melton'.

Matt Melton, P.E.

Senior Engineer

Table of Contents

Table of Contents ..... ii

1.0 Introduction ..... 1

    1.1 General..... 1

    1.2 Purpose and Scope of Services..... 1

    1.3 Provided Site Information and History..... 2

2.0 General Site Conditions ..... 2

    2.1 Physical Setting ..... 2

    2.2 Geological Setting ..... 2

3.0 Exploratory Field and Laboratory Testing Programs ..... 3

    3.1 General..... 3

    3.2 Geotechnical Exploratory Methods and Sample Collection ..... 3

    3.3 Geophysical Assessment ..... 3

    3.4 Geochemical Sample Collection ..... 4

    3.5 Laboratory Observations and Testing ..... 5

4.0 Subsurface Conditions ..... 5

    4.1 Drilling and Laboratory Assessment ..... 5

        4.1.1 Dam Embankment and Foundation Soil Conditions ..... 5

        4.1.2 Culvert Replacement Soil Conditions..... 6

    4.2 Geophysical Findings ..... 7

    4.3 Geochemical Findings ..... 7

5.0 Analyses ..... 8

    5.1 Seepage Analysis Methodology ..... 8

    5.2 Seepage Analysis Material Properties ..... 9

    5.3 Seepage Analyses Results ..... 9

    5.4 Discussion ..... 9

        5.4.1 Seepage ..... 9

    5.5 Geotechnical Considerations for Culvert Replacement ..... 10

|                  |                                                                                |    |
|------------------|--------------------------------------------------------------------------------|----|
| 6.0              | Concluding Remarks .....                                                       | 11 |
| Appendix A    12 |                                                                                |    |
| A.1              | Field Methods for Exploration and Sampling Soils .....                         | 12 |
| A.2              | Unified Soil Classification System / General Notes .....                       | 12 |
| Appendix B    13 |                                                                                |    |
| B.1              | Test Boring Location Plan (Drawing No. CJ235079.A1) .....                      | 13 |
| B.2              | Log of Test Borings (3) .....                                                  | 13 |
| B.3              | Grain Size Distribution (2 pages).....                                         | 13 |
| B.4              | Geophysical Survey Map (Exhibit 1).....                                        | 13 |
| B.5              | ERI Lines (Exhibits 2 and 3) .....                                             | 13 |
| Appendix C    14 |                                                                                |    |
| C.1              | Seepage Analysis – Existing Conditions with Functioning Sand Blanket .....     | 14 |
| C.2              | Seepage Analysis – Existing Conditions with Non-Functioning Sand Blanket    14 |    |
| Appendix D    15 |                                                                                |    |
| D.1              | Table 4 Groundwater Data.....                                                  | 15 |
| D.2              | Low-Flow Test Report (14 pages) .....                                          | 15 |
| D.3              | Geochemical Analysis Test Results (36 pages) .....                             | 15 |



## List of Tables

Table 1 General Soil Profile with Select Field and Laboratory Testing Values .....6

Table 2 Material Properties .....9

# 1.0 Introduction

## 1.1 General

Commonwealth Engineers, Inc. (Commonwealth) requested our services to provide an evaluation of the earthen embankment dam at Reservoir 29 in Linton, Indiana. The evaluation consisted of a subsurface exploration, laboratory testing and seepage analysis. In addition, geophysical exploration and geochemical laboratory testing were performed to aid in and provide additional information regarding the seepage observed at this facility. This report presents the results of our observations, exploratory field and laboratory testing programs, and analyses.

## 1.2 Purpose and Scope of Services

The purpose of our services is to:

- Provide an evaluation of the subsurface conditions at the embankment;
- Analyze the seepage through the embankment in the existing condition; and
- Provide geotechnical considerations for a new culvert that is planned to replace an existing pipe at the entrance to the facility.

Our scope of work included:

- Completing two test borings, one at the crest and one near the midpoint of the slope, near an area of observed seepage. Also, a boring was completed near the entrance to the facility in the area of a planned replacement to an existing culvert;
- Completing a laboratory testing program sufficient to determine index characteristics of the soil;
- Completing a seepage analysis of the cross section of the embankment where seepage is occurring
- Completing a geophysical survey of the embankment
- Completing geochemical testing of water obtained from the reservoir, from existing monitoring wells, and the seepage; and
- Preparing a geotechnical report summarizing our observations from the field activities and the results of the laboratory testing activities.

### 1.3 Provided Site Information and History

Based on information provided by Commonwealth, we understand the dam for Reservoir 29 is comprised of two segments, one oriented in an east-west direction and one oriented in a north-south direction. These segments are approximately 1,300 and 1,100 ft long, respectively. From a provided survey, the dam is approximately 45 ft high.

From our conversation during a virtual meeting on February 22, 2023, as well as a paper published on the dam from the Canadian Society of Agricultural Engineering (Paper No. 892055), we understand that the dam was constructed in phases to supply water for coal mining activity between the 1930s and 1960s. The dam was modified in 1988 during a drought. These modifications included construction of a principal and auxiliary spillway and a sand blanket drain at the toe of the embankment. The blanket drain was wrapped in a geotextile and the upstream and downstream extents are protected by riprap. Nine monitoring wells were also constructed at this time. However, we understand that these have not been used or maintained in some time and may be unreliable.

We understand that seepage has been observed upstream of a portion of the blanket drain near the location where the orientation of the dam changes. The seepage exhibits rust staining. Representatives of IDNR have requested professional engineering services to evaluate the seepage through the dam to guide future possible improvements.

## 2.0 General Site Conditions

### 2.1 Physical Setting

The Reservoir 29 is located along an unnamed tributary of Brewer Ditch in Section 36, Township 7 North, Range 8 West, near Linton, Indiana.

### 2.2 Geological Setting

The dam lies within an area that was previously surface mined for the Hymera Coal Member. The Hymera Coal Member was mined using both surface and underground mining techniques. Windrows indicative of surface mining marks the landscape in the vicinity of the Reservoir 29 facility.

## 3.0 Exploratory Field and Laboratory Testing Programs

### 3.1 General

Our subsurface exploration consisted of performing a test boring along the crest of the embankment and one near the midpoint of the dam, above the aforementioned seepage. The locations and depth of the borings were selected by Terracon with input from Commonwealth. The test borings were staked in the field by Terracon personnel, and the elevations at the test boring locations were interpolated from the survey provided by Commonwealth, with the locations selected by roughly using the surrounding landmarks and visual distance determination.

### 3.2 Geotechnical Exploratory Methods and Sample Collection

The exploratory test borings were performed on November 10 and 11, 2023 using 3¼-in. I.D. hollow stem augers to advance the boreholes. Relatively disturbed samples of the soil strata were obtained at continuous intervals with a split-spoon sampler using Standard Penetration Test (SPT) procedures (ASTM D 1586). Following the completion of our field activities, each borehole was backfilled with tremied bentonite grout created using 25 lb of bentonite powder, 94 lb of Portland cement, and 30 gallons of water. Further details of the drilling and sampling procedures are provided in Appendix A.

### 3.3 Geophysical Assessment

Terracon performed geophysical exploration services consisting of Electrical Resistivity Imaging (ERI) and Electromagnetic Induction (EMI). The purpose of the geophysical exploration was to characterize the subsurface and locate potential water seepage within the Reservoir 29 Dam.

**EMI** – Terracon used a frequency domain electromagnetic induction (FDEMI) system consisting of a Geonics EM-31 system with a data logger to collect EMI data. The system induces a dual phase electromagnetic wave through the subsurface (approximate depth of 15 feet) to measure terrain conductivity and magnetic susceptibility. The terrain conductivity provides information on the lateral variation of the electrical conductivity of the subsurface. These changes in conductivity can arise from natural changes in soil composition, water saturation, and changes in bedrock elevation. The magnetic susceptibility phase is useful when locating buried metallic objects. The EMI survey was completed in a series of lines, approximately parallel to the crest of the dam. The surveyed area is outlined on Exhibit 1.

**ERI** – The ERI method uses an array of electrodes inserted into the ground to measure the subsurface resistivity profile. The survey uses potential and current electrodes that function independently to measure the potential field. A transmitting current dipole is followed by a series of potential dipoles which measure the resulting voltage gradient at each station. As the transmitting dipole is advanced along the electrodes, the resulting gradient measurements are collected as a 2D section below the survey array. Terracon used an ERI system consisting of an Advanced Geosciences Inc. (AGI) SuperSting R8 control unit. After field collection, the resistivity data was processed using EarthImager 2D (engineered by AGI), an inversion and modeling software package, and plotted using Golden Software’s Surfer software. The resulting ERI profiles were interpreted based on the observed changes in the earth resistivity that can indicate changes in soil, bedrock, voids, and saturation. Four (4) ERI lines were completed along the dam with two (2) lines near the crest and two (2) near the downstream side of the toe of the dam. Exhibit 1 displays the ERI line locations.

### 3.4 Geochemical Sample Collection

The overall objective of the groundwater sampling activities was to evaluate the current and future potential for acidified draining of the geologic materials within the investigation area, which are thought to potentially include coal and coal derived minerals, in the event they are exposed to oxidizing environments through future dewatering activities. This phenomenon, which is akin to acid mine drainage, could occur when sulfide minerals present in coal [e.g., pyrite and marcasite ( $\text{FeS}_2$ )] are exposed to oxygen and form acidic, sulfate-rich drainage through the oxidation of sulfides to sulfates.

Select accessible, locatable pre-existing monitoring wells, along with one existing groundwater seep, were sampled by Terracon staff on December 4, 2023, in order to evaluate current groundwater conditions. All monitoring wells were purged of approximately five well volumes prior to sampling. Following purging, and after allowing water levels to re-equilibrate, the depth to groundwater in each monitoring well was measured to a resolution of  $\pm 0.01$  foot using an electronic water probe. Sampling of the monitoring wells was then conducted in general accordance with the Indiana Department of Environmental Management’s (IDEM) Micro-Purge Sampling Guidance. Low flow purging was conducted at each monitoring well using a QED Sample Pro Positive Displacement Bladder Pump in conjunction with a multi-probe, in-line flow cell. New sampling tubing and pump bladders were utilized for each monitoring well. In addition, down-hole equipment was decontaminated with an Alconox detergent solution and distilled water after sampling each monitoring well. Low flow sampling notes are provided in Appendix D. Groundwater samples were collected and placed in labeled, laboratory-provided sample containers, stored on ice, and transferred to EnVision Laboratories, Inc. in Indianapolis, Indiana using chain-of-custody protocols. The samples were analyzed for total and dissolved iron and aluminum via USEPA 6010; sulfide,

sulfate and chloride via USEPA Method 4500, and Alkalinity by USEPA Method 2320B. Laboratory analytical reports are provided in Appendix D.

### 3.5 Laboratory Observations and Testing

Soil classifications on the logs are in accordance with the Unified Soil Classification System (USCS). Further details of the classification system are provided in Appendix A. Tests on representative soil samples were performed in general accordance with ASTM specifications. The boring logs represent our interpretation of the individual samples and field logs. Stratification lines on the boring logs represent the approximate boundary between soil types; although, the transitions may actually be more gradual.

For the geochemical testing, ENVision Laboratories, Inc. was used to evaluate concentrations of aluminum and iron, and First Environmental Laboratories, Inc. was used to test concentrations of sulfides and sulfates as well as alkalinity and chloride content.

## 4.0 Subsurface Conditions

### 4.1 Drilling and Laboratory Assessment

For informational purposes as it relates to the discussion in this section, the USCS differentiates coarse-grained (granular) and fine-grained (typically cohesive) soils by the percent (by mass) of particles passing the No. 200 sieve ( $P_{200}$ ). Soils containing more than 50 percent fine-grained particles (i.e., more than 50 percent passing the No. 200 sieve) are typically described as “cohesive,” and less than 50 percent as “granular.” In addition, the Atterberg limits are commonly used to define the various states of fine-grained soils. Specifically, the liquid limit (LL) is the moisture content that defines the limit between a “liquid state” and a “plastic state,” and the plastic limit (PL) is the moisture content that defines the limit between a “plastic state” and a “semi-solid state.” The plasticity index (PI) is the difference between the LL and the PL and is an indicator of the workability and sensitivity to moisture in addition to deformational characteristics.

Based on the results of our drilling program, we have developed a model of the subsurface for use in the seepage analysis.

#### 4.1.1 Dam Embankment and Foundation Soil Conditions

The soils comprising the embankment typically consist of lean clay (CL) with various amounts of sand. Exceptions include layers of shale and siltstone fragments as well as layers of sandy silt (ML). The sandy silt layers were black and contained fragments of coal. A layer of clayey sand (SC) was observed near the bottom of the embankment. Underlying the embankment

soils, the borings encountered black, highly weathered shale bedrock. The elevation of the shale was about 488 to 492.

The consistency of the embankment soils was typically medium stiff to very stiff for the lean clays as measured from hand penetrometer readings that were typically in the range of 1 to 2¼ tons/sq ft (tsf). However, the SPT N-values typically ranged from 1 to 8 in the cohesive soils. Moisture contents of the embankment soils typically ranged from 13 to 29 percent.

The relative density of the silty and clayey sand layers was typically very loose to loose based on SPT N-value criteria. Thin layers of medium dense soil were also observed.

The shale was described as soft to hard based on the ability to scratch recovered samples with a metallic object.

The general composition and index properties of the soils comprising the explored stratigraphy for the dam are shown in Table 2.

**Table 1**  
**General Soil Profile with Select Field and Laboratory Testing Values**

| Layer           | USCS | P <sub>200</sub> | SPT    | Atterberg                | q <sub>p</sub> |
|-----------------|------|------------------|--------|--------------------------|----------------|
|                 |      | (%)              | (N)    | (LL range)<br>(PI range) | (tsf)          |
| Embankment Fill | CL   | 62 – 94          | 1 – 14 | 31 – 39<br>9 – 18        | 1½ – 3         |
|                 | ML   | 60               | 1 – 4  | Not Plastic              | NA             |
|                 | SC   | 38               | 2 – 28 | 36<br>14                 | 1 – 3          |

#### 4.1.2 Culvert Replacement Soil Conditions

Near the new culvert, the subsurface profile consisted of sandy lean clay (CL) to a depth of 6 ft that was underlaid by weathered shale that extended to the maximum depth explored. The moisture content of the CL soils ranged from 13 to 14 percent. Atterberg limits performed on a sample of the shallow sandy lean clay indicated a liquid limit of 37 and a plasticity index of 15.

## 4.2 Geophysical Findings

The terrain conductivity map is displayed on Exhibit 1. Low conductivity is indicated by red colors, that may represent dry or sandy material. The blue colors indicate high conductivity areas, that may represent water saturated areas or zones with high clay content within 15 feet of the surface. Areas of high conductivity that may indicate water seepage are outlined in pink on Exhibit 1.

The cross-sectional images generated from the ERI testing are attached as Exhibits 2 and 3. The images are representations of the electrical resistivity of the subsurface. In general, interpretation of the images is based on the following:

- Higher resistivity values (red, orange, and yellow) are indicative of soils high in sand content or bedrock.
- Lower resistivity values (blue and purple) are indicative of clay soils and areas of increased water saturation.
- Our interpretation of the resistivity data is overlaid on the ERI profiles and is based on our experience with the method as well as test borings SB-101 and SB-102. Low resistivity anomalies that may indicate potential seepage pathways are outlined in pink on the profiles. The anomalies are also displayed in plan-view on Exhibit 1.
- There appears to be three (3) distinct layers on the ERI profiles that are delineated with black dotted lines.
  - A higher resistivity layer near the surface, approximately 10 to 20 feet thick.
  - A lower resistivity layer immediate below that may indicate clay or saturated soils. The thickness ranges from 10 to 60 feet along the southern end and 10 to 30 feet thick along the northern end.
  - A higher resistivity layer at the bottom of the profiles that may indicate bedrock.

## 4.3 Geochemical Findings

Groundwater data collected from the investigation area are summarized in Table 3 and indicate a geochemical environment ranging between oxic to moderately reducing conditions based on field measurements of dissolved oxygen and oxidation-reduction potential (ORP), and on laboratory analysis of dissolved iron concentrations. As is typically the case in most geologic environments, concentrations of dissolved iron were generally observed to increase with decreasing ORP and dissolved oxygen values, in particular with ORP values below 0 mV. In all cases sulfide concentrations in groundwater were reported at concentrations below

laboratory detection levels. Given the relatively high concentrations of sulfate observed in most samples (<5 to 426 mg/L), the absence of detectable sulfide concentrations suggests a geologic environment that is currently conducive to the oxidation of sulfides to sulfates, thus is representative of conditions conducive to the formation of acidic drainage from sulfide minerals where present. These conditions are coupled with observed pH levels ranging between 6.06 and 7.16, which are typical of groundwater conditions in Indiana, and not representative of significantly depressed pH values due to the oxidation of sulfide minerals. It is also of note that alkalinity values observed in groundwater during the sampling were generally relatively high (<20 to 600 mg/L), thus there is a relatively strong buffering effect for pH in the investigation area. Collectively, the data do not suggest a strong potential for significant acidification through sulfide mineral oxidation. Considering the low pH and other values, it is our opinion that a risk of chemical interaction with limestone aggregate is low.

## 5.0 Analyses

### 5.1 Seepage Analysis Methodology

We completed a seepage analysis using Geostudio 2021 R2 and the subprogram Seep/W. Seepage analyses models the flow of fluid through the embankment and is dependent on the elevation of the water level behind the dam and the hydraulic properties of the soils through which it flows. Seepage was evaluated by creating a model with hydraulic conductivity parameters derived based on generally accepted correlations and typical values for the soils encountered based on the results on the index testing.

For our analysis, the embankment soils were separated into the shale and siltstone fragments observed at higher elevations and cohesive soils observed in the lower elevations. In addition, though not present in our test borings, we included the sand blanket drain. The profile was generated based on the strata observed in our boring logs as well as cross sections provided for the 1988 modifications.

We began our seepage analysis by building a model of the embankment from the cross section and our test boring data. This model included the sand blanket drain and we initially assumed an unobstructed path for seepage to the drain, allowing the model to predict the seepage path and flow rate. We then introduced an impermeable boundary at the interface and extent of the blanket drain to simulate the geotextile encapsulating the blanket drain becoming clogged with sediment.

## 5.2 Seepage Analysis Material Properties

The material properties in Table 2 below were used in our seepage analyses. Values were determined from published typical values as well as built-in ranges in the software for the observed soil/rock materials, as well as our professional experience.

**Table 2**  
**Material Properties**

| Layer Name                    | Saturated Hydraulic Conductivity ft / sec |
|-------------------------------|-------------------------------------------|
| Shale and Siltstone Fragments | 0.016                                     |
| Cohesive Soils                | Used a cohesive soil function in Seep W   |
| Sand Blanket                  | 0.0328                                    |
| Bedrock                       | Considered impermeable                    |

## 5.3 Seepage Analyses Results

Our model behaved predicably considering the condition of the sand blanket drain. When the seepage path to the sand blanket drain was unobstructed, the phreatic surface through the embankment was lower and exited the embankment at the toe. However, when the sand blanket drain was “obstructed”, the phreatic surface through the embankment rose to just above the sand blanket drain. The location of the seepage observed at the facility and predicted by Seep W are relatively consistent.

Considering an area of seepage 1 ft<sup>2</sup> in size, our model estimated a quantity of seepage of about 2 gal/minute. We did not complete measurement of the seepage as part of our evaluation, but if the flow of the seepage has been quantified, we can update our seepage model.

## 5.4 Discussion

### 5.4.1 Seepage

Evaluation of our seepage model with real world conditions was limited as active seepage was not measured as part of our scope of services. Therefore, our analysis was primarily used to establish a feasible phreatic surface as well as evaluate the possible contribution of a clogged geotextile to the existing conditions. The results of the seepage analysis correlated well with

the observed real world conditions with regard to behavior of the phreatic surface. In addition, the depth to the phreatic surface predicted by our seepage analysis is consistent with the depth of a zone of low resistivity along Line 1. As previously stated, low resistivity is indicative of clay soils and areas of increased water saturation. Considering our model closely resembles the real word conditions, it is our opinion that it is feasible that the geotextile adjacent to the sand drain has become clogged, resulting in the observed real world seepage.

## 5.5 Geotechnical Considerations for Culvert Replacement

The placement of the new pipe culvert is not anticipated to increase the load on the underlying soils above that from the existing structure and overburden. Subsurface conditions near the invert are anticipated to consist of very stiff to hard lean clay. As even otherwise relatively stiff cohesive foundation soils will deteriorate when exposed to excessive moisture and repeated construction traffic, consideration should be given to the timing of the excavation to establish the foundation grade relative to the preparation of the soil and sequencing of other activities. Maintaining a dry excavation during construction will be critical to the performance of the foundation soils. We recommend that the culvert be bedded on no less than 8 inches of No. 8 aggregate or as otherwise directed by the pipe manufacturer. Hand- or remote-guided vibratory compactors are recommended for compacting the bedding and material on either side of the structure. We recommend the placement of fill to be in accordance with ISS 715. Furthermore, we recommend the first several lifts of granular backfill over the structure be compacted with small vibratory compactors to provide proper compaction and to prevent damage to the pipe from heavier, high-energy compactors.

We understand that the culvert could include headwalls. Based on our observations at Boring Culvert 1, the conditions exposed at the foundation grade are anticipated to consist of very stiff sandy lean clay or weathered shale. Note that 8 in. of coarse aggregate No. 8 is typically placed at the foundation grade to provide uniform support for the walls. However, in lieu of the coarse aggregate, we recommend that a mud mat consisting of a 4-in. thick layer of lean concrete (e.g., ISS Class B concrete) be placed below the wall footing. The mud mat will create a level base for the excavations and provide a better working surface. We recommend that the minimum footing width of the foundation be 18 in.

Headwall foundations may be designed in accordance with the table below.

**TABLE 3: GEOTECHNICAL PARAMETERS FOR HEADWALL DESIGN**

|                                                                                                   |                           |
|---------------------------------------------------------------------------------------------------|---------------------------|
| Foundation Bearing Soil Type                                                                      | Sandy Lean Clay (assumed) |
| Friction Angle between Headwall and Backfill (deg) <sup>1</sup>                                   | 20                        |
| Estimated Unit Weight of Structure Backfill, $\gamma_{\text{moist/saturated}}$ (pcf) <sup>1</sup> | 120                       |
| Angle of Friction between Footing and Foundation Soil ( $\delta$ , deg) <sup>2</sup>              | NA                        |
| Undrained Cohesion of Foundation Soil (C, ksf)                                                    | 3,000                     |
| Adhesion of Foundation Soil ( $C_a$ , psf)                                                        | 2,000                     |
| Internal Friction Angle of Foundation Soil ( $\phi$ , deg)                                        | N/A                       |
| Factored Bearing Resistance (psf) <sup>3</sup>                                                    | 6,000                     |
| Resistance Factor ( $\phi$ )                                                                      | 0.45                      |
| Nominal Bearing Resistance (psf)                                                                  | 15,000                    |

1. Assuming B borrow or a like material.
2. 4 in. of lean concrete (mud mat) placed below the headwall footing
3. Minimum footing width of 18 in. and assuming no more than 2 ft of scour during the design life of the structure

All backfill behind the headwalls should be placed to a minimum of 95 percent of the maximum dry density as determined by AASHTO T 99 (standard Proctor). In addition, we recommend that the granular soils used as backfill extend horizontally from the back of the headwall a distance equal to half the wall height. Furthermore, compaction of backfill within 3 ft of the walls should be performed with a hand-guided compactor to avoid over-stressing.

## 6.0 Concluding Remarks

In closing, this evaluation has been completed in accordance with generally accepted geotechnical engineering practices. The conclusions contained within this report are based on the subsurface information from geophysical assessment and a few widely spaced exploratory borings. It is important to recognize that subsurface conditions can vary over relatively short distances. If any changes to the condition of the dam are observed in future inspections, we recommend that Terracon be retained to update our analyses as necessary.

## **Appendix A**

A.1 Field Methods for Exploration and Sampling Soils

A.2 Unified Soil Classification System / General Notes

## **FIELD METHODS FOR EXPLORING AND SAMPLING SOILS AND ROCK**

### **A. Boring Procedures Between Samples**

The boring is extended downward, between samples, by a hollow stem auger, continuous flight auger, driven and washed-out casing, or rotary boring with drilling mud or water.

### **B. Standard Penetration Test and Split-Barrel Sampling of Soils**

(ASTM\* Designation: D 1586)

This method consists of driving a 2-in. outside diameter split-barrel sampler using a 140-lb weight falling freely through a distance of 30 in. The sampler is first seated 6 in. into the material to be sampled and then driven 12 in. The number of blows required to drive the sampler the final 12 in. is recorded on the Log of Test Boring and known as the Standard Penetration Resistance or N-value. Recovered samples are first classified as to texture by the field personnel. Later in the laboratory, the field classification is reviewed by a geotechnical engineer who observes each sample.

### **C. Thin-walled Tube Sampling of Soils**

(ASTM\* Designation: D 1587)

This method consists of hydraulically pushing a 2-in. or 3-in. outside diameter thin wall tube into the soil, usually cohesive types. Relatively undisturbed samples are recovered.

### **D. Soil Investigation and Sampling by Auger Borings**

(ASTM\* Designation: D 1452)

This method consists of augering a hole and removing representative soil samples from the auger flight or bucket at 5-ft intervals or with each change in the substrata. Relatively disturbed samples are obtained and its use is therefore limited to situations where it is satisfactory to determine approximate subsurface profile.

### **E. Diamond Core Drilling for Site Investigation**

(ASTM\* Designation: D 2113)

This method consists of advancing a hole in rock or other hard strata by rotating downward a single tube or double tube core barrel equipped with a cutting bit. Diamond, tungsten carbide, or other cutting agents may be used for the bit. Wash water is used to remove the cuttings. Normally, a 3-in. outside diameter by 2-in. inside diameter coring bit is used unless otherwise noted. The rock or hard material recovered within the core barrel is examined in the field and laboratory. Cores are stored in partitioned boxes and the length of recovered material is expressed as a percentage of the actual distance penetrated.

\* American Society for Testing and Materials, Philadelphia, PA



# UNIFIED SOIL CLASSIFICATION SYSTEM / GENERAL NOTES

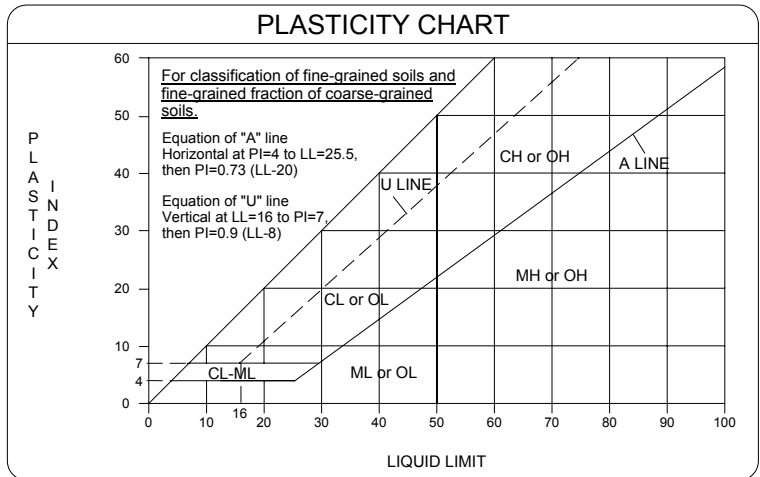
| FINE-GRAINED SOILS |                           | COARSE-GRAINED SOILS |                     | RELATIVE PROPORTIONS |                               | ORGANIC CONTENT BY COMBUSTION METHOD |          |
|--------------------|---------------------------|----------------------|---------------------|----------------------|-------------------------------|--------------------------------------|----------|
| CONSISTENCY        | UNCONFINED STRENGTH (tsf) | RELATIVE DENSITY     | N-VALUE* (Blows/ft) | TERM                 | DEFINING RANGE BY % OF WEIGHT | SOIL DESCRIPTION                     | LOI      |
| Very Soft          | <0.25                     | Very Loose           | 0 - 4               | Trace                | 0 - 5                         | Trace Organic Matter                 | 0 - 5%   |
| Soft               | 0.25 - 0.5                | Loose                | 4 - 10              | Little               | 5 - 12                        | Little Organic Matter                | 5 - 12%  |
| Medium Stiff       | 0.5 - 1.0                 | Medium Dense         | 10 - 30             | Some                 | 12 - 35                       | Organic Silt/Clay                    | 12 - 35% |
| Stiff              | 1.0 - 2.0                 | Dense                | 30 - 50             | And                  | 35 - 50                       | Sedimentary Peat                     | 35 - 50% |
| Very Stiff         | 2.0 - 4.0                 | Very Dense           | 50+                 |                      |                               | Fibrous and Woody Peat               | 50%±     |
| Hard               | >4.0                      |                      |                     |                      |                               |                                      |          |

| UNIFIED SOIL CLASSIFICATION AND SYMBOL CHART           |                                                          |                              |                        |                                                                                                                   |  |
|--------------------------------------------------------|----------------------------------------------------------|------------------------------|------------------------|-------------------------------------------------------------------------------------------------------------------|--|
| MAJOR DIVISIONS                                        |                                                          |                              | SYMBOLS & DESCRIPTIONS |                                                                                                                   |  |
| COARSE-GRAINED SOILS                                   | GRAVEL AND GRAVELLY SOILS                                | CLEAN GRAVELS                | GW                     | WELL GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES                                                     |  |
|                                                        |                                                          | Little or no fines           | GP                     | POORLY GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES                                                   |  |
|                                                        | More than 50% of coarse fraction retained on No. 4 sieve | GRAVELS WITH FINES           | GM                     | SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES                                                                          |  |
|                                                        |                                                          | Appreciable amount of fines  | GC                     | CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES                                                                         |  |
|                                                        | SAND AND SANDY SOILS                                     | CLEAN SANDS                  | SW                     | WELL GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES                                                             |  |
|                                                        |                                                          | Little or no fines           | SP                     | POORLY GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES                                                           |  |
|                                                        | More than 50% of coarse fraction passing No. 4 sieve     | SANDS WITH FINES             | SM                     | SILTY SANDS, SAND-SILT MIXTURES                                                                                   |  |
|                                                        |                                                          | Appreciable amount of fines  | SC                     | CLAYEY SANDS, SAND-CLAY MIXTURES                                                                                  |  |
| FINE-GRAINED SOILS                                     | SILTS AND CLAYS                                          | LIQUID LIMIT LESS THAN 50    | ML                     | INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SAND OR CLAYEY SILTS WITH SLIGHT PLASTICITY |  |
|                                                        |                                                          |                              | CL                     | INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS SANDY CLAYS, SILTY CLAYS, LEAN CLAYS                  |  |
|                                                        |                                                          |                              | OL                     | ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY                                                           |  |
|                                                        | SILTS AND CLAYS                                          | LIQUID LIMIT GREATER THAN 50 | MH                     | INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS, ELASTIC SILT                                |  |
|                                                        |                                                          |                              | CH                     | INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS                                                                     |  |
|                                                        |                                                          |                              | OH                     | ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS                                                         |  |
| HIGHLY ORGANIC SOILS                                   |                                                          |                              | PT                     | PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENT                                                                |  |
| NOTE: DUAL SYMBOLS USED FOR BORDERLINE CLASSIFICATIONS |                                                          |                              |                        |                                                                                                                   |  |

NOTE: DUAL SYMBOLS USED FOR BORDERLINE CLASSIFICATIONS

| GRAIN SIZE TERMINOLOGY |                       |                        |
|------------------------|-----------------------|------------------------|
| SOIL FRACTION          | PARTICLE SIZE         | US STANDARD SIEVE SIZE |
| Boulders               | Larger than 12-in.    | Larger than 12-in.     |
| Cobbles                | 3 to 12-in.           | 3 to 12-in.            |
| Gravel                 | Coarse                | 3/4 to 3-in.           |
|                        | Fine                  | 4.75 mm to 3/4-in.     |
| Sand                   | Coarse                | 2.00 to 4.75 mm        |
|                        | Med                   | 0.425 to 2.00 mm       |
|                        | Fine                  | 0.075 to 0.425 mm      |
| Silt                   | 0.005 to 0.075 mm     | Smaller than #200      |
| Clay                   | Smaller than 0.005 mm | Smaller than #200      |

Plasticity characteristics differentiate between silt and clay.



| EXPLORATORY SAMPLING ABBREVIATIONS |                                      |     |                                 |
|------------------------------------|--------------------------------------|-----|---------------------------------|
| AS                                 | - Auger Sample                       | PID | - Photo-Ionization Detector     |
| BF                                 | - Backfilled Upon Completion         | PMT | - Borehole Pressuremeter Test   |
| BS                                 | - Bag Sample                         | PT  | - 3-in. O.D. Piston Sample      |
| C                                  | - Casing: Size 2½-in., NW; 4-in., HW | PTS | - Peat Sample                   |
| COA                                | - Clean-Out Auger                    | RB  | - Rock Bit                      |
| CS                                 | - Continuous Sampler                 | RC  | - Rock Core                     |
| CW                                 | - Clear Water                        | REC | - Recovery                      |
| DC                                 | - Driven Casing                      | RQD | - Rock Quality Designation      |
| DM                                 | - Drilling Mud                       | RS  | - Rock Sounding                 |
| FA                                 | - Flight Auger                       | S   | - Soil Sounding                 |
| FT                                 | - Fish Tail                          | SS  | - 2-in. O.D. Split-Spoon Sample |
| HA                                 | - Hand Auger                         | ST  | - Thin-Walled Tube Sample       |
| HSA                                | - Hollow Stem Auger                  | VS  | - Vane Shear Test               |
| NW                                 | - No Water Encountered               | WPT | - Water Pressure Test           |

| LABORATORY TEST ABBREVIATIONS |                                        |
|-------------------------------|----------------------------------------|
| qp                            | - Hand Penetrometer Reading, tsf       |
| qu                            | - Unconfined Compressive Strength, tsf |
| W                             | - Moisture Content, %                  |
| LL                            | - Liquid Limit, %                      |
| PL                            | - Plastic Limit, %                     |
| PI                            | - Plasticity Index, %                  |
| SL                            | - Shrinkage Limit, %                   |
| LOI                           | - Loss on Ignition, %                  |
| γ <sub>d</sub>                | - Dry Unit Weight, pcf                 |
| pH                            | - Hydrogen-Ion Concentration           |
| P <sub>200</sub>              | - Percent Passing a No. 200 Sieve      |

\*The penetration resistance, N, is the summation of the number of blows required to effect two successive 6" penetrations of the 2" O.D. split-spoon sampler. The sampler is driven with a 140 lb weight falling 30" and is seated to a depth of 6" before commencing the standard penetration test.

## **Appendix B**

B.1 Test Boring Location Plan (Drawing No. CJ235079.A1)

B.2 Log of Test Borings (3)

B.3 Grain Size Distribution (2 pages)

B.4 Geophysical Survey Map (Exhibit 1)

B.5 ERI Lines (Exhibits 2 and 3)

VICINITY MAP  
1:350,000

## NOTES

## LEGEND

## TEST BORING LOCATION PLAN

|               |  |
|---------------|--|
| PROJECT ENG.: |  |
|---------------|--|



[illegible]

Logged by

Boring Started  
11-11-2023

Boring Completed  
11-11-2023

## Boring Log No. SB-101

| Graphic Log                                                                         | Location: See <a href="#">Exploration Plan</a><br>Latitude: 38.9983° Longitude: -87.2422°           | Depth (Ft.) | Water Level Observations | Sample Type | Recovery (in.) | Field Test Results  | HP (tsf) | Strength Test |                            |            | Water Content (%) | Dry Unit Weight (pcf) | Atterberg Limits |  |
|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|-------------|--------------------------|-------------|----------------|---------------------|----------|---------------|----------------------------|------------|-------------------|-----------------------|------------------|--|
|                                                                                     |                                                                                                     |             |                          |             |                |                     |          | Test Type     | Compressive Strength (tsf) | Strain (%) |                   |                       | LL-PL-PI         |  |
|    | Depth (Ft.) Elevation.: 536 (Ft.)<br>0.2 TOPSOIL 535.8                                              |             |                          |             |                |                     |          |               |                            |            |                   |                       |                  |  |
|                                                                                     | FILL - SHALE AND SILTSTONE FRAGMENTS, gray, moist, medium dense                                     |             |                          |             | 8              | 7-10-14-10<br>N=24  |          |               |                            |            |                   |                       |                  |  |
|                                                                                     |                                                                                                     |             |                          |             | 16             | 10-13-13-12<br>N=26 |          |               |                            |            |                   |                       |                  |  |
|                                                                                     |                                                                                                     | 5           |                          |             | 16             | 7-7-9-10<br>N=16    |          |               |                            |            |                   |                       |                  |  |
|                                                                                     |                                                                                                     |             |                          |             | 12             | 5-6-6-10<br>N=12    |          |               |                            |            |                   |                       |                  |  |
|   | FILL - SANDY LEAN CLAY (CL), gray, moist, stiff, with cobbles near 12 ft, with some sand near 15 ft | 10          |                          |             | 4              | 4-2-4-3<br>N=6      |          |               |                            |            |                   |                       |                  |  |
|                                                                                     |                                                                                                     |             |                          |             | 7              | 2-3-3-3<br>N=6      | 2.0 (HP) |               |                            |            | 13.5              |                       |                  |  |
|                                                                                     |                                                                                                     |             |                          |             | 12             | 1-2-2-1<br>N=4      | 1.5 (HP) |               |                            |            | 23.0              |                       |                  |  |
|                                                                                     |                                                                                                     | 15          |                          |             | 8              | 1-1-1-1<br>N=2      | 2.0 (HP) |               |                            |            | 22.8              |                       | 32-21-11         |  |
|                                                                                     |                                                                                                     |             |                          |             | 12             | 1-1-1-1<br>N=2      | 1.5 (HP) |               |                            |            |                   |                       |                  |  |
|  | FILL - SILTY CLAY (CL-ML), brown, moist, stiff                                                      | 20          |                          |             | 18             | 0-0-1-3<br>N=1      | 1.5 (HP) |               |                            |            | 26.0              |                       |                  |  |
|                                                                                     |                                                                                                     |             |                          |             | 24             | 1-3-3-3<br>N=6      | 1.5 (HP) |               |                            |            | 24.9              |                       | 39-21-18         |  |
|                                                                                     |                                                                                                     |             |                          |             | 18             | 0-1-1-2<br>N=2      | 1.5 (HP) |               |                            |            |                   |                       |                  |  |
|                                                                                     |                                                                                                     | 25          |                          |             | 20             | 0-1-2-3<br>N=3      | 2.0 (HP) |               |                            |            | 29.1              |                       |                  |  |
|                                                                                     |                                                                                                     |             |                          |             | 24             | 1-1-2-2<br>N=3      | 1.5 (HP) |               |                            |            | 19.3              |                       |                  |  |
|  | FILL - SANDY SILT (ML), black, wet, very loose, with coal fragments                                 | 29.0        |                          |             | 12             | 1-1-3-4<br>N=4      | 1.5 (HP) |               |                            |            | 24.1              |                       |                  |  |
|                                                                                     |                                                                                                     | 30          |                          |             |                |                     |          |               |                            |            |                   |                       |                  |  |

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (If any).

See [Supporting Information](#) for explanation of symbols and abbreviations.

Water Level Observations  
 28 ft while drilling  
No water observed at completion of drilling

Drill Rig  
B-57  
  
Hammer Type  
Automatic  
  
Driller  
J.R.

Notes

Advancement Method  
3/4" HSA  
  
Abandonment Method  
Boring backfilled with bentonite grout upon completion

Logged by  
  
Boring Started  
11-10-2023  
Boring Completed  
11-10-2023

## Boring Log No. SB-101

| Graphic Log | Location: See <a href="#">Exploration Plan</a><br>Latitude: 38.9983° Longitude: -87.2422°         | Depth (Ft.) | Water Level Observations | Sample Type | Recovery (in.) | Field Test Results  | HP (tsf)     | Strength Test |                            |            | Water Content (%) | Dry Unit Weight (pcf) | Atterberg Limits |  |
|-------------|---------------------------------------------------------------------------------------------------|-------------|--------------------------|-------------|----------------|---------------------|--------------|---------------|----------------------------|------------|-------------------|-----------------------|------------------|--|
|             |                                                                                                   |             |                          |             |                |                     |              | Test Type     | Compressive Strength (tsf) | Strain (%) |                   |                       | LL-PL-PI         |  |
|             | Depth (Ft.) Elevation.: 536 (Ft.)                                                                 |             |                          |             |                |                     |              |               |                            |            |                   |                       |                  |  |
|             | <u>FILL - SANDY SILT (ML)</u> , black, wet, very loose, with coal fragments (continued)           | 36.0        |                          |             | 14             | 0-0-1-1<br>N=1      |              |               |                            |            |                   |                       |                  |  |
|             |                                                                                                   |             |                          |             | 16             | 1-1-2-2<br>N=3      | 1.0<br>(HP)  |               |                            |            | 49.4              |                       | NP               |  |
|             |                                                                                                   |             |                          |             | 18             | 1-1-1-1<br>N=2      | 1.0<br>(HP)  |               |                            |            |                   |                       |                  |  |
|             | <u>FILL - LEAN CLAY (CL)</u> , gray, moist, stiff, with silt seams near 37 ft and 39 ft           | 40.0        |                          |             | 18             | 1-1-1-1<br>N=2      | 2.25<br>(HP) |               |                            |            | 25.3              |                       |                  |  |
|             |                                                                                                   |             |                          |             | 16             | 0-1-1-1<br>N=2      | 2.0<br>(HP)  |               |                            |            | 18.0              |                       |                  |  |
|             | <u>CLAYEY SAND (SC)</u> , brown, moist, stiff to very stiff, with silt seams near 41 ft and 45 ft | 48.0        |                          |             | 6              | 0-1-2-2<br>N=3      |              |               |                            |            |                   |                       |                  |  |
|             |                                                                                                   |             |                          |             | 24             | 0-1-1-1<br>N=2      | 1.0<br>(HP)  |               |                            |            | 12.7              |                       |                  |  |
|             |                                                                                                   |             |                          |             | 18             | 0-5-13-14<br>N=18   |              |               |                            |            |                   |                       |                  |  |
|             |                                                                                                   |             |                          |             | 18             | 10-13-15-18<br>N=28 | 3.0<br>(HP)  |               |                            |            | 19.5              |                       |                  |  |
|             | <u>HIGHLY WEATHERED SHALE</u> , black, soft                                                       | 52.0        |                          |             | 12             | 17-29-22-25<br>N=51 |              |               |                            |            |                   |                       |                  |  |
|             |                                                                                                   |             |                          |             | 14             | 14-22-29-47<br>N=51 | 4.5+<br>(HP) |               |                            |            |                   |                       |                  |  |
|             | Boring Terminated at 52 Feet                                                                      |             |                          |             |                |                     |              |               |                            |            |                   |                       |                  |  |

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (If any).

See [Supporting Information](#) for explanation of symbols and abbreviations.

Water Level Observations  
 28 ft while drilling  
No water observed at completion of drilling

Drill Rig  
B-57  
  
Hammer Type  
Automatic  
  
Driller  
J.R.

Notes

Advancement Method  
3/4" HSA  
  
Abandonment Method  
Boring backfilled with bentonite grout upon completion

Logged by  
  
Boring Started  
11-10-2023  
Boring Completed  
11-10-2023

## Boring Log No. SB-102

| Graphic Log | Location: See <a href="#">Exploration Plan</a><br>Latitude: 38.9981° Longitude: -87.2422°            | Depth (Ft.) | Water Level Observations | Sample Type | Recovery (in.) | Field Test Results | HP (tsf)  | Strength Test |                            |            | Water Content (%) | Dry Unit Weight (pcf) | Atterberg Limits |  |
|-------------|------------------------------------------------------------------------------------------------------|-------------|--------------------------|-------------|----------------|--------------------|-----------|---------------|----------------------------|------------|-------------------|-----------------------|------------------|--|
|             |                                                                                                      |             |                          |             |                |                    |           | Test Type     | Compressive Strength (tsf) | Strain (%) |                   |                       | LL-PL-PI         |  |
|             | Depth (Ft.) Elevation.: 526 (Ft.)                                                                    |             |                          |             |                |                    |           |               |                            |            |                   |                       |                  |  |
|             | 0.2 TOPSOIL 525.8                                                                                    |             |                          |             |                |                    |           |               |                            |            |                   |                       |                  |  |
|             | LEAN CLAY WITH SAND (CL), brown, moist, very stiff to hard                                           |             |                          |             | 4              | 3-10-12-13<br>N=22 | 4.5+ (HP) |               |                            |            | 12.0              |                       |                  |  |
|             |                                                                                                      |             |                          |             | 15             | 3-4-4-4<br>N=8     | 3.5 (HP)  |               |                            |            | 18.9              |                       |                  |  |
|             | 4.0 522                                                                                              |             |                          |             |                |                    |           |               |                            |            |                   |                       |                  |  |
|             | FILL - SHALE FRAGMENTS, gray, soft                                                                   |             |                          |             | 7              | 4-6-20-8<br>N=26   | 4.5+ (HP) |               |                            |            |                   |                       |                  |  |
|             |                                                                                                      | 5           |                          |             | 12             | 10-5-4-3<br>N=9    | 4.5+ (HP) |               |                            |            |                   |                       |                  |  |
|             | 8.0 518                                                                                              |             |                          |             |                |                    |           |               |                            |            |                   |                       |                  |  |
|             | FILL - SANDY LEAN CLAY (CL), brown to gray below 14 ft, moist, stiff to hard, with cobbles           |             |                          |             | 6              | 4-2-3-5<br>N=5     | 1.75 (HP) |               |                            |            | 16.5              |                       |                  |  |
|             |                                                                                                      | 10          |                          |             | 14             | 4-6-8-4<br>N=14    | 3.5 (HP)  |               |                            |            | 11.3              |                       |                  |  |
|             |                                                                                                      |             |                          |             | 12             | 3-4-6-7<br>N=10    | 1.75 (HP) |               |                            |            | 21.7              |                       | 31-22-9          |  |
|             |                                                                                                      | 15          |                          |             | 10             | 4-5-7-7<br>N=12    | 1.25 (HP) |               |                            |            | 20.0              |                       |                  |  |
|             |                                                                                                      |             |                          |             | 6              | 7-6-6-5<br>N=12    | 2.5 (HP)  |               |                            |            | 15.6              |                       |                  |  |
|             | 18.0 508                                                                                             |             |                          |             |                |                    |           |               |                            |            |                   |                       |                  |  |
|             | FILL - SANDY SILT (ML), black, wet, very loose, with coal fragments                                  |             |                          |             | 14             | 1-1-1-1<br>N=2     |           |               |                            |            |                   |                       |                  |  |
|             | 20.0 506                                                                                             |             |                          |             |                |                    |           |               |                            |            |                   |                       |                  |  |
|             | LEAN CLAY (CL), brown, moist, very stiff                                                             |             |                          |             | 13             | 1-1-2-2<br>N=3     | 3.0 (HP)  |               |                            |            | 24.5              |                       |                  |  |
|             | 22.0 504                                                                                             |             |                          |             |                |                    |           |               |                            |            |                   |                       |                  |  |
|             | SILTY CLAY (CL-ML), black, moist, stiff                                                              |             |                          |             | 16             | 0-0-2-2<br>N=2     | 2.0 (HP)  |               |                            |            | 29.2              |                       |                  |  |
|             | 24.0 502                                                                                             |             |                          |             |                |                    |           |               |                            |            |                   |                       |                  |  |
|             | CLAYEY SAND (SC), brown, moist, loose to medium dense, with cobbles near 29 ft, with sand near 31 ft |             |                          |             | 12             | 1-4-4-5<br>N=8     | 3.0 (HP)  |               |                            |            | 23.1              |                       |                  |  |
|             |                                                                                                      | 25          |                          |             | 16             | 2-3-8-5<br>N=11    | 2.75 (HP) |               |                            |            | 22.5              |                       | 36-22-14         |  |
|             |                                                                                                      |             |                          |             | 12             | 2-3-3-2<br>N=6     | 2.5 (HP)  |               |                            |            | 15.8              |                       |                  |  |
|             |                                                                                                      | 30          |                          |             |                |                    |           |               |                            |            |                   |                       |                  |  |

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (if any).

See [Supporting Information](#) for explanation of symbols and abbreviations.

Water Level Observations  
 6 ft while drilling  
 No water observed at completion of drilling

Drill Rig  
B-57  
  
Hammer Type  
Automatic  
  
Driller  
J.R.

Notes

Advancement Method  
3 3/4" HSA  
  
Abandonment Method  
Boring backfilled with bentonite grout upon completion

Logged by  
  
Boring Started  
11-10-2023  
Boring Completed  
11-11-2023

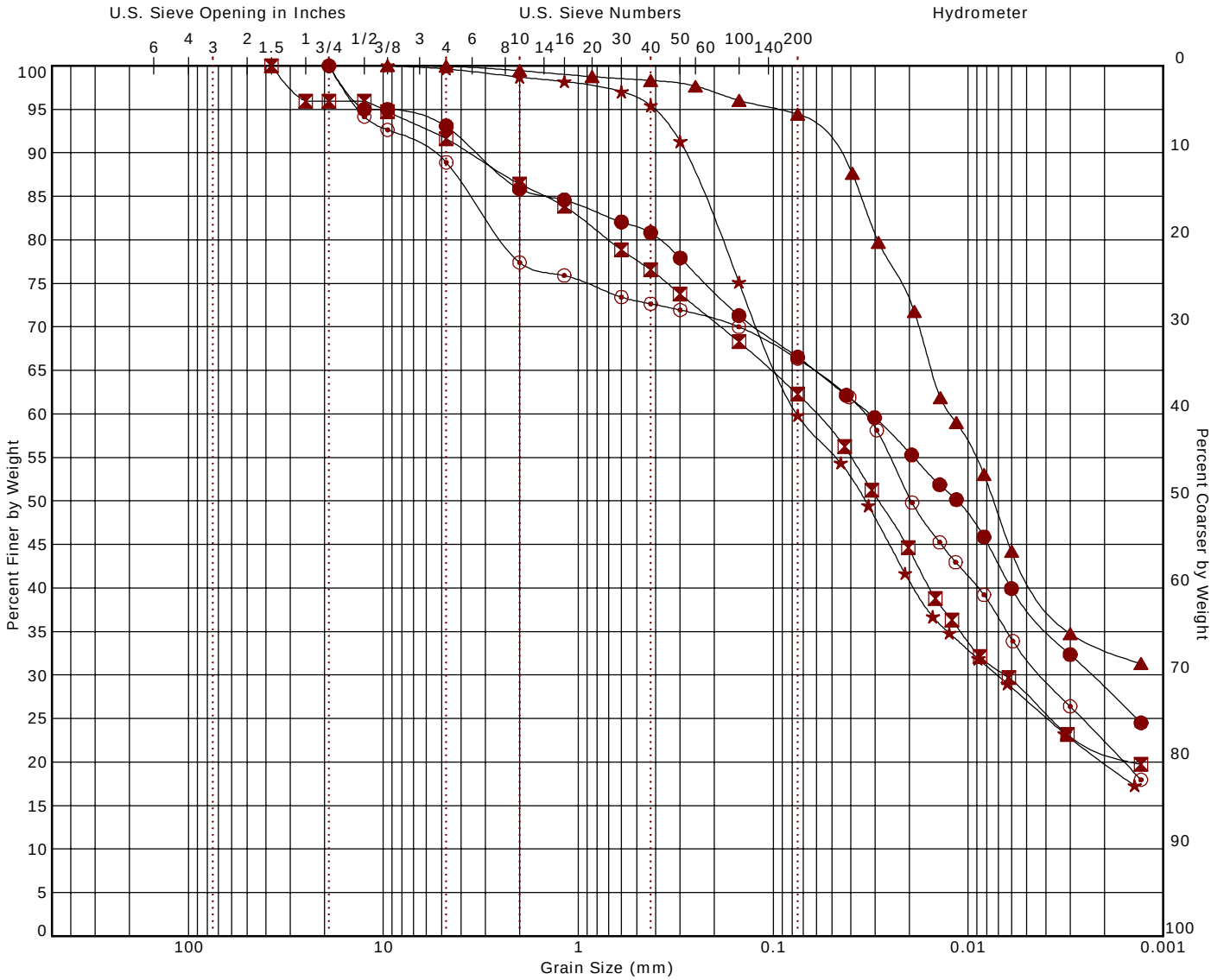
Boring Log No. SB-102

| Graphic Log                                                                       | Location: See <a href="#">Exploration Plan</a><br><br>Latitude: 38.9981° Longitude: -87.2422°<br><br>Depth (Ft.)                      Elevation.: 526 (Ft.) | Depth (Ft.) | Water Level Observations | Sample Type | Recovery (in.) | Field Test Results  | HP (tsf)  | Strength Test |                            |            | Water Content (%) | Dry Unit Weight (pcf) | Atterberg Limits |  |
|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|--------------------------|-------------|----------------|---------------------|-----------|---------------|----------------------------|------------|-------------------|-----------------------|------------------|--|
|                                                                                   |                                                                                                                                                             |             |                          |             |                |                     |           | Test Type     | Compressive Strength (tsf) | Strain (%) |                   |                       | LL-PL-PI         |  |
|  | CLAYEY SAND (SC), brown, moist, loose to medium dense, with cobbles near 29 ft, with sand near 31 ft (continued)                                            | 32.0        |                          |             | 4              | 1-1-6-6<br>N=7      | 2.75 (HP) |               |                            |            | 11.0              |                       |                  |  |
|  | SANDY SILTY CLAY (CL-ML), gray, moist, hard                                                                                                                 | 34.0        |                          |             | 14             | 11-13-14-15<br>N=27 | 4.5+ (HP) |               |                            |            | 13.7              |                       |                  |  |
|  | HIGHLY WEATHERED SHALE, black, hard                                                                                                                         | 36.0        |                          |             |                | 13-50/5"            | 4.5+ (HP) |               |                            |            |                   |                       |                  |  |
|                                                                                   | Boring Terminated at 36 Feet                                                                                                                                |             |                          |             |                |                     |           |               |                            |            |                   |                       |                  |  |

|       |                                                                                                                                                                                                                                            |                                                                                                                                                                                    |                                                                                 |
|-------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|
| Notes | See <a href="#">Exploration and Testing Procedures</a> for a description of field and laboratory procedures used and additional data (If any).<br>See <a href="#">Supporting Information</a> for explanation of symbols and abbreviations. | Water Level Observations<br> 6 ft while drilling<br>No water observed at completion of drilling | Drill Rig<br>B-57<br><br>Hammer Type<br>Automatic<br><br>Driller<br>J.R.        |
|       |                                                                                                                                                                                                                                            | Advancement Method<br>3¼" HSA<br><br>Abandonment Method<br>Boring backfilled with bentonite grout upon completion                                                                  | Logged by<br><br>Boring Started<br>11-10-2023<br>Boring Completed<br>11-11-2023 |

Grain Size Distribution

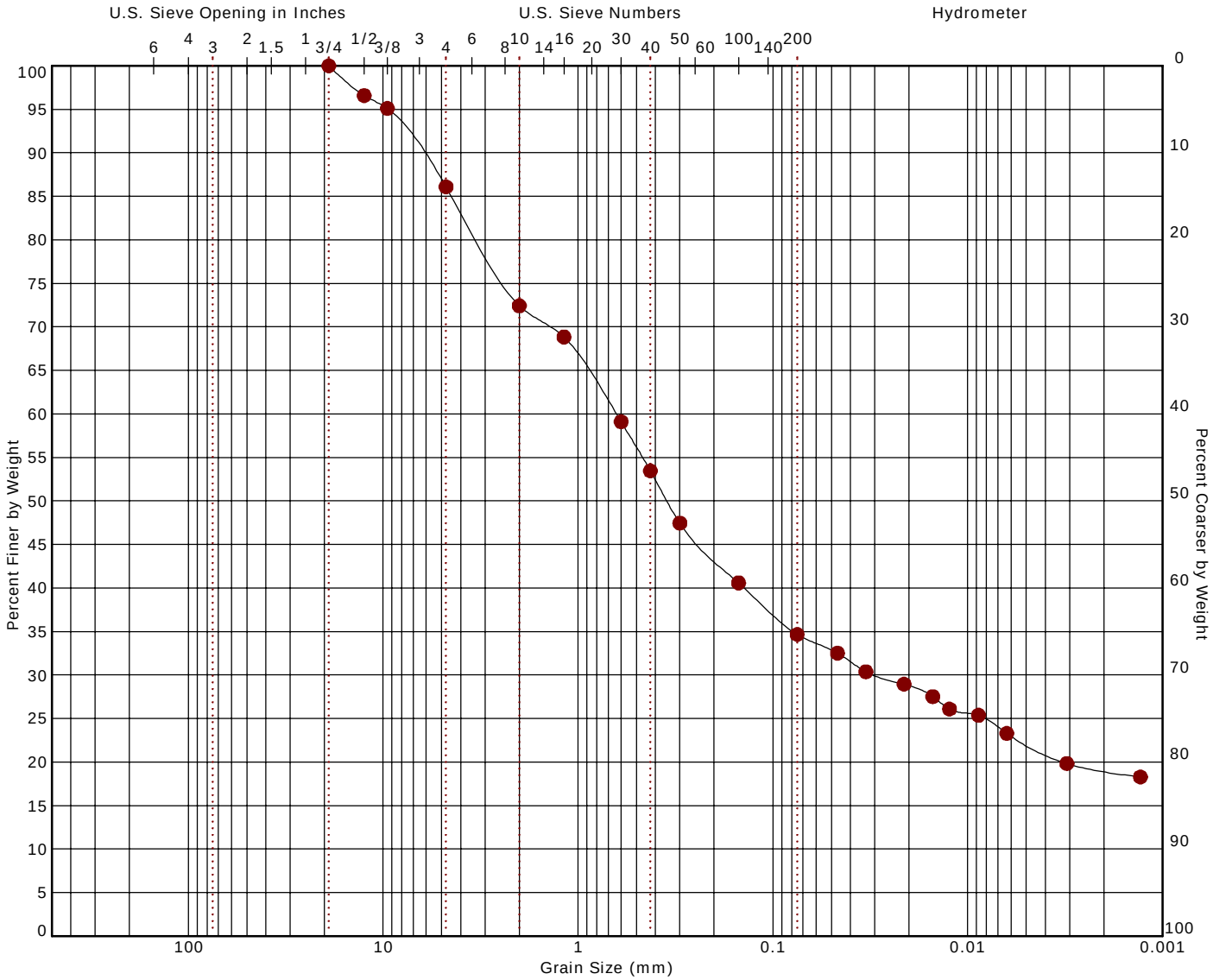
ASTM D422 / ASTM C136



| Cobbles     |            | Gravel              |                 | Sand            |                 |                 | Silt or Clay |       |        |       |       |
|-------------|------------|---------------------|-----------------|-----------------|-----------------|-----------------|--------------|-------|--------|-------|-------|
|             |            | coarse              | fine            | coarse          | medium          | fine            |              |       |        |       |       |
| Boring ID   | Depth (Ft) | USCS Classification |                 |                 | USCS            | AASHTO          | LL           | PL    | PI     | Cc    | Cu    |
| ● Culvert 1 | 3.5 - 5    | SANDY LEAN CLAY     |                 |                 | CL              | SANDY LEAN CLAY | 37           | 22    | 15     |       |       |
| ▣ SB-101    | 14 - 16    | SANDY LEAN CLAY     |                 |                 | CL              | SANDY LEAN CLAY | 32           | 21    | 11     |       |       |
| ▲ SB-101    | 20 - 22    | LEAN CLAY           |                 |                 | CL              | LEAN CLAY       | 39           | 21    | 18     |       |       |
| ★ SB-101    | 32 - 34    | SANDY SILT          |                 |                 | ML              | SANDY SILT      | NP           | NP    | NP     |       |       |
| ⊙ SB-102    | 12 - 14    | SANDY LEAN CLAY     |                 |                 | CL              | SANDY LEAN CLAY | 31           | 22    | 9      |       |       |
| Boring ID   | Depth (Ft) | D <sub>100</sub>    | D <sub>60</sub> | D <sub>30</sub> | D <sub>10</sub> | %Cobbles        | %Gravel      | %Sand | %Fines | %Silt | %Clay |
| ● Culvert 1 | 3.5 - 5    | 19                  | 0.032           | 0.002           |                 | 0.0             | 6.9          | 26.6  |        | 28.6  | 37.9  |
| ▣ SB-101    | 14 - 16    | 37.5                | 0.061           | 0.006           |                 | 0.0             | 8.4          | 29.3  |        | 34.6  | 27.7  |
| ▲ SB-101    | 20 - 22    | 9.5                 | 0.012           |                 |                 | 0.0             | 0.1          | 5.5   |        | 52.7  | 41.7  |
| ★ SB-101    | 32 - 34    | 9.5                 | 0.076           | 0.007           |                 | 0.0             | 0.4          | 39.8  |        | 32.8  | 27.0  |
| ⊙ SB-102    | 12 - 14    | 19                  | 0.035           | 0.004           |                 | 0.0             | 11.1         | 22.6  |        | 34.3  | 32.1  |

# Grain Size Distribution

ASTM D422 / ASTM C136



| Cobbles            |            | Gravel              |                 | Sand            |                 |             | Silt or Clay |       |        |       |       |
|--------------------|------------|---------------------|-----------------|-----------------|-----------------|-------------|--------------|-------|--------|-------|-------|
|                    |            | coarse              | fine            | coarse          | medium          | fine        |              |       |        |       |       |
| Boring ID          | Depth (Ft) | USCS Classification |                 |                 | USCS            | AASHTO      | LL           | PL    | PI     | Cc    | Cu    |
| <div></div> SB-102 | 26 - 28    | CLAYEY SAND         |                 |                 | SC              | CLAYEY SAND | 36           | 22    | 14     |       |       |
|                    |            |                     |                 |                 |                 |             |              |       |        |       |       |
|                    |            |                     |                 |                 |                 |             |              |       |        |       |       |
|                    |            |                     |                 |                 |                 |             |              |       |        |       |       |
| Boring ID          | Depth (Ft) | D <sub>100</sub>    | D <sub>60</sub> | D <sub>30</sub> | D <sub>10</sub> | %Cobbles    | %Gravel      | %Sand | %Fines | %Silt | %Clay |
| <div></div> SB-102 | 26 - 28    | 19                  | 0.639           | 0.03            |                 | 0.0         | 13.9         | 51.4  |        | 12.5  | 22.2  |
|                    |            |                     |                 |                 |                 |             |              |       |        |       |       |
|                    |            |                     |                 |                 |                 |             |              |       |        |       |       |

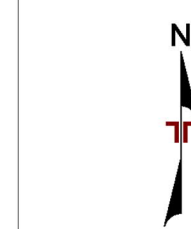
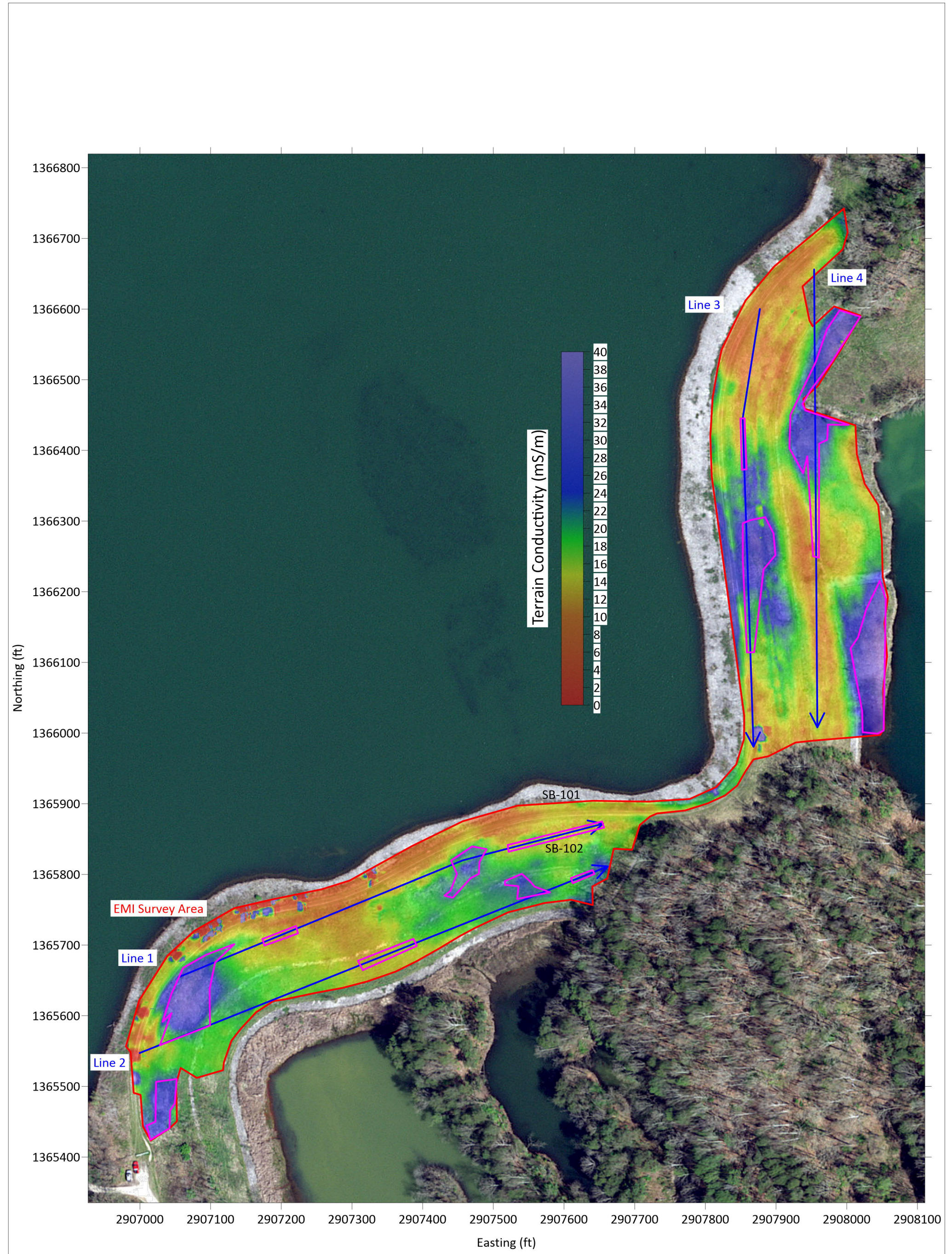


DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

|                  |     |             |            |
|------------------|-----|-------------|------------|
| Project Manager: | KPH | Project No. | CJ235079   |
| Drawn by:        | KJS | Scale:      | As Shown   |
| Checked by:      | SEB | File Name:  | Res-29     |
| Approved by:     | KPH | Date:       | 12/21/2023 |

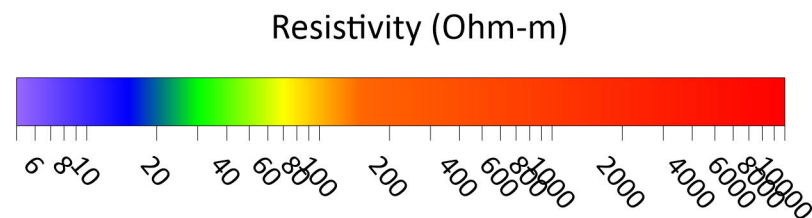
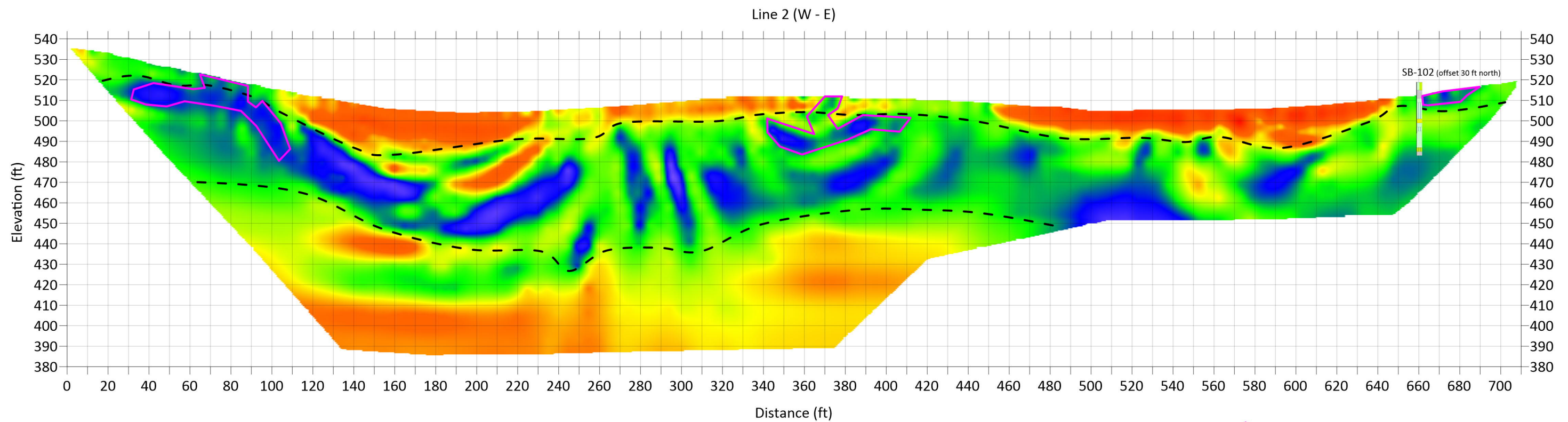
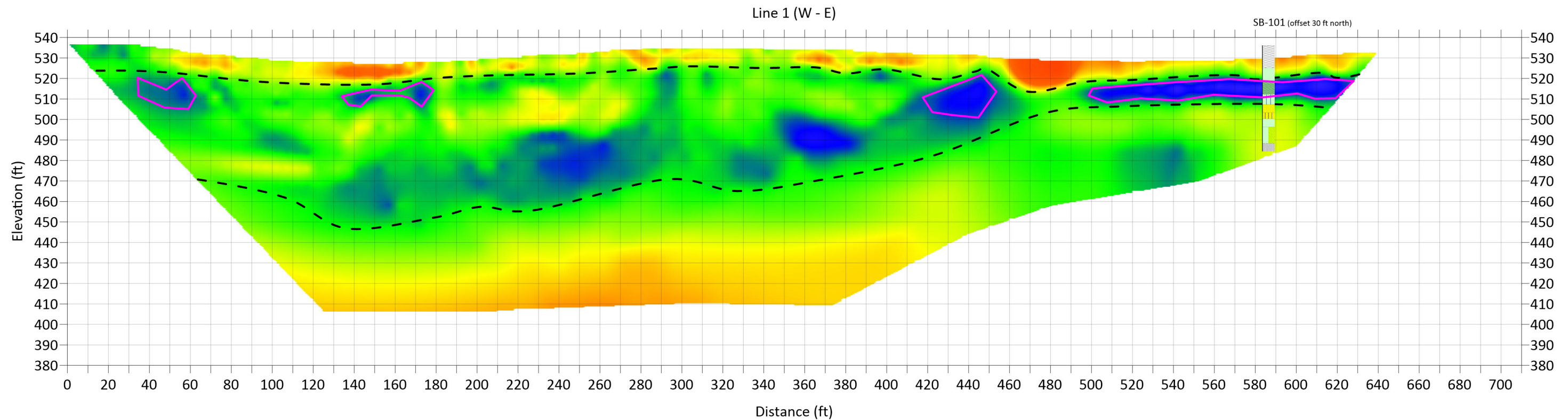


Explore with us

611 Lunken Park Drive  
Cincinnati, Ohio 45226

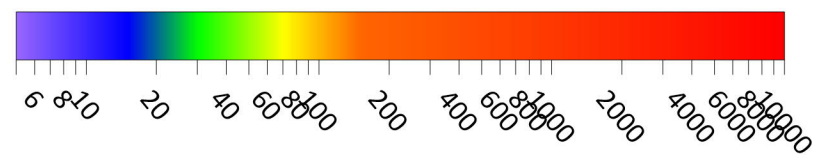
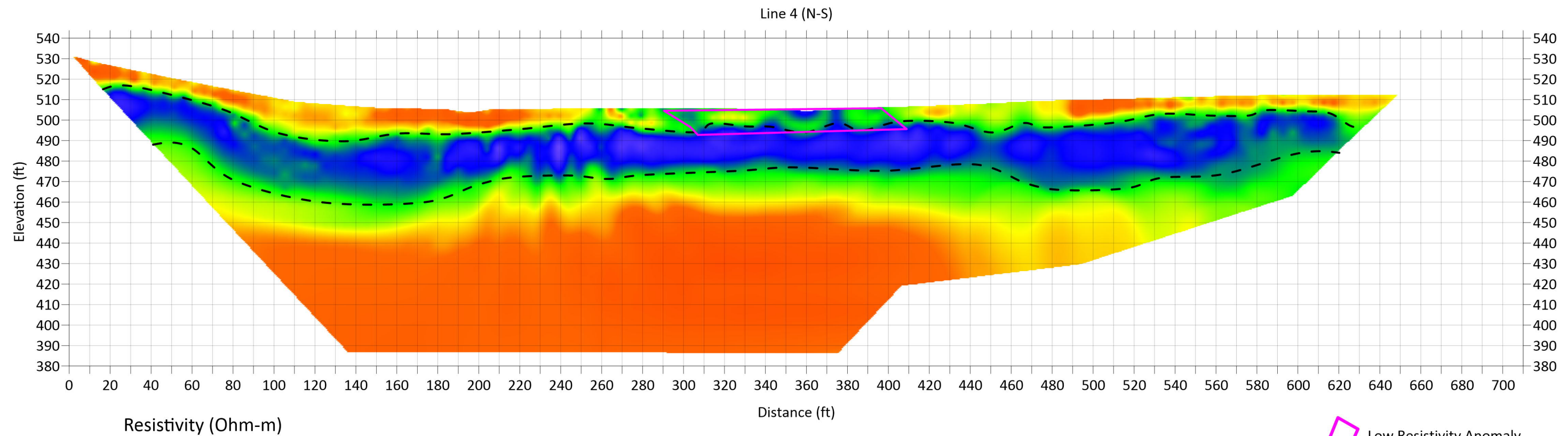
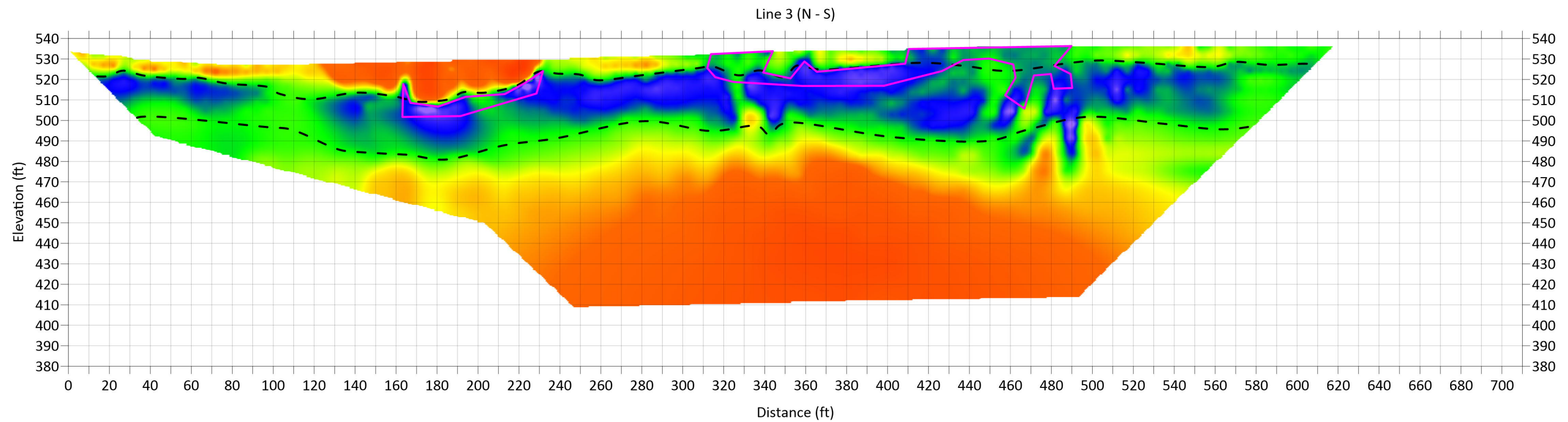
|                                 |
|---------------------------------|
| Geophysical Survey Map          |
| Reservoir 29 Seepage Evaluation |
| Greene County, Indiana          |

|         |
|---------|
| EXHIBIT |
| 1       |



Low Resistivity Anomaly  
(Potential Seepage)

|                         |                         |                                                                                                                                          |                                 |         |
|-------------------------|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|---------|
| Project Manager:<br>KPH | Project No.<br>CJ235079 | <br>611 Lunken Park Drive<br>Cincinnati, Ohio 45226 | ERI Lines 1 & 2                 | EXHIBIT |
| Drawn by:<br>KJS        | Scale:<br>As Shown      |                                                                                                                                          | Reservoir 29 Seepage Evaluation | 2       |
| Checked by:<br>SEB      | File Name:<br>Res-29    |                                                                                                                                          | Greene County, Indiana          |         |
| Approved by:<br>KPH     | Date:<br>12/21/2023     |                                                                                                                                          |                                 |         |



Low Resistivity Anomaly  
(Potential Seepage)

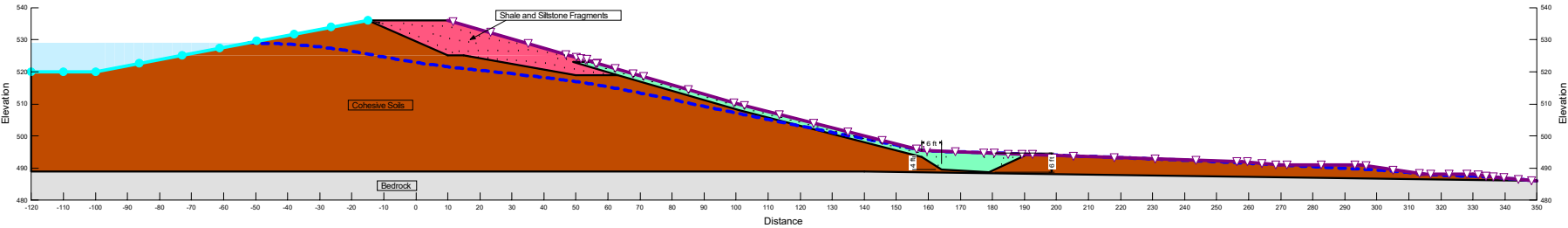
|                         |                         |                                                                                                                                                                                 |                                 |  |                  |
|-------------------------|-------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|--|------------------|
| Project Manager:<br>KPH | Project No.<br>CJ235079 |  <b>Terracon</b><br>Explore with us<br><br>611 Lunken Park Drive<br>Cincinnati, Ohio 45226 | ERI Lines 3 & 4                 |  | EXHIBIT<br><br>3 |
| Drawn by:<br>KJS        | Scale:<br>As Shown      |                                                                                                                                                                                 | Reservoir 29 Seepage Evaluation |  |                  |
| Checked by:<br>SEB      | File Name:<br>Res-29    |                                                                                                                                                                                 | Greene County, Indiana          |  |                  |
| Approved by:<br>KPH     | Date:<br>12/21/2023     |                                                                                                                                                                                 |                                 |  |                  |

## **Appendix C**

C.1 Seepage Analysis – Existing Conditions with Functioning Sand Blanket

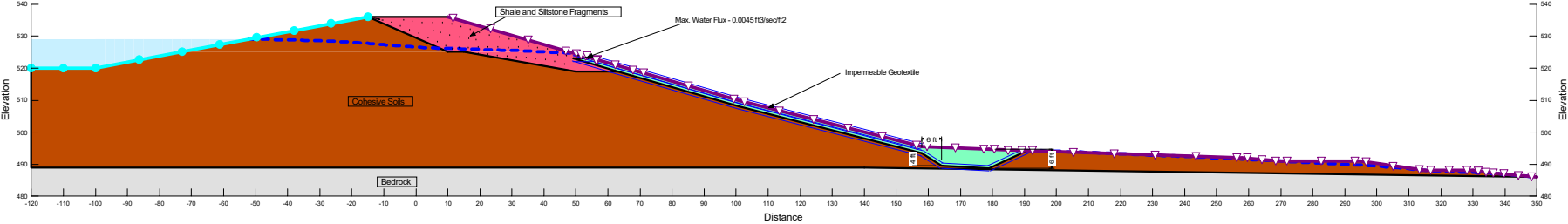
C.2 Seepage Analysis – Existing Conditions with Non-Functioning Sand Blanket

Existing Conditions with Functioning Sand Blanket



| Color                                     | Name                          | Sat Kx (ft/sec) | K-Function     |
|-------------------------------------------|-------------------------------|-----------------|----------------|
| <span style="color: brown;">■</span>      | Bedrock                       |                 |                |
| <span style="color: orange;">■</span>     | Cohesive Soils                |                 | Cohesive Soils |
| <span style="color: lightgreen;">■</span> | Sand Blanket                  | 0.0328          |                |
| <span style="color: pink;">■</span>       | Shale and Siltstone Fragments | 0.016           |                |

Existing Conditions with Non-Functioning Sand Blanket



| Color                                     | Name                          | Sat Kx (ft/sec) | K-Function     |
|-------------------------------------------|-------------------------------|-----------------|----------------|
| <span style="color: brown;">■</span>      | Bedrock                       |                 |                |
| <span style="color: orange;">■</span>     | Cohesive Soils                |                 | Cohesive Soils |
| <span style="color: lightgreen;">■</span> | Sand Blanket                  | 0.0328          |                |
| <span style="color: pink;">■</span>       | Shale and Siltstone Fragments | 0.016           |                |

## **Appendix D**

D.1 Table 4 Groundwater Data

D.2 Low-Flow Test Report (14 pages)

D.3 Geochemical Analysis Test Results (36 pages)

Table 4 Groundwater Data  
Reservoir 29 Seepage Evaluation  
Linton, Indiana  
Terracon Project No. CJ235079

|                                   |                  |           | Aluminum | Aluminum, Dissolved | Iron  | Iron, Dissolved | Sulfide | Sulfate | Alkalinity | Chloride | pH    | Temperature | ORP   | Conductivity | Turbidity | Dissolved Oxygen |
|-----------------------------------|------------------|-----------|----------|---------------------|-------|-----------------|---------|---------|------------|----------|-------|-------------|-------|--------------|-----------|------------------|
| R2 Long Term - Residential (µg/L) |                  |           | 20000    | 20000               | 10000 | 10000           |         |         |            |          |       |             |       |              |           |                  |
| Boring ID                         | Total Depth (ft) | Date      | µg/L     | µg/L                | µg/L  | µg/L            | mg/L    | mg/L    | mg/L       | mg/L     | units | °C          | mV    | µS/cm        | NTU       | mg/L             |
| MW - 2 (1.0")                     | 49.72            | 12/4/2023 | < 1000   | < 1000              | 560   | < 100           | < 0.05  | < 5.0   | 600        | 19       | 6.98  | 13.5        | 158   | 1056.6       | 208.7     | 3.02             |
| MW - 2 (1.5")                     | 23.18            | 12/4/2023 | DRY      |                     |       |                 |         |         |            |          |       |             |       |              |           |                  |
| MW - 3 (1.5")                     | 25.73            | 12/4/2023 | 4600     | < 1000              | 15600 | 320             | < 1.25  | 127     | 124        | 8.0      | 6.60  | 12.9        | -84.9 | 542.58       | 1131.9    | 0.89             |
| MW - 4 (1.5")                     | 28.26            | 12/5/2023 | 2300     | < 1000              | 63400 | 31000           | < 1.25  | 292     | 400        | 7.0      | 6.06  | 13.5        | -64.0 | 1679.8       | 971.2     | 0.45             |
| MW - 5 (1.5")                     | 28.03            | 12/5/2023 | 50700    | < 1000              | 49000 | 8700            | < 2.5   | 232     | < 20       | 7.0      | 6.41  | 8.11        | -13.4 | 0.41         | 6.97      | 0.9              |
| MW - 6 (1.5")                     | 25.55            | 12/5/2023 | < 1000   | < 1000              | 10600 | 2200            | < 1.25  | 426     | 192        | 5.0      | 6.61  | 15.0        | -117  | 1169.9       | 1899.1    | 0.05             |
| MW - 7 (1.0")                     | 45.16            | 12/5/2023 | < 1000   | < 1000              | 820   | < 100           | < 0.05  | 70      | 330        | 4.0      | 7.16  | 12.5        | 110   | 754.75       | 104.73    | 8.00             |
| MW - 7 (1.5")                     | 18.77            | 12/5/2023 | < 1000   | < 1000              | 150   | < 100           | < 0.05  | 328     | 250        | 4.0      | 6.99  | 15.3        | 29.6  | 1024.3       | 65.04     | 6.55             |
| SEEP                              | --               | 12/5/2023 | < 1000   | < 1000              | 19000 | 520             | < 0.05  | 258     | 240        | 5.0      | --    | --          | --    | --           | --        | --               |

- Exceeds IDEM Residential Tap Water Screening Levels

# Low-Flow Test Report:

Test Date / Time: 12/4/2023 1:37:47 PM

Project: Cj235079

Operator Name: P Danzl Tauer

|                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                   |                                                                        |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|
| <b>Location Name: MW2(1)</b><br><b>Latitude: 38.99741952</b><br><b>Longitude: -87.24437792</b><br><b>Well Diameter: 1 in</b><br><b>Casing Type: Pvc</b><br><b>Screen Length: 5 ft</b><br><b>Top of Screen: 44.72 ft</b><br><b>Total Depth: 49.72 ft</b><br><b>Initial Depth to Water: 22.94 ft</b> | <b>Pump Type: Bladder</b><br><b>Tubing Type: Poly</b><br><b>Tubing Inner Diameter: 0.17 in</b><br><b>Tubing Length: 55 ft</b><br><b>Pump Intake From TOC: 47 ft</b><br><b>Estimated Total Volume Pumped: 5975 ml</b><br><b>Flow Cell Volume: 130 ml</b><br><b>Final Flow Rate: 100 ml/min</b><br><b>Final Draw Down: 12.62 ft</b> | <b>Instrument Used: Aqua TROLL 600</b><br><b>Serial Number: 707273</b> |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|

## Test Notes:

## Low-Flow Readings:

| Date Time         | Elapsed Time | pH      | Temperature | Specific Conductivity | RDO Concentration | Turbidity  | ORP      | Depth to Water | Flow          |
|-------------------|--------------|---------|-------------|-----------------------|-------------------|------------|----------|----------------|---------------|
|                   |              | +/- 0.1 | +/- 0.5     | +/- 3 %               | +/- 0.3           | +/- 10     | +/- 10   |                |               |
| 12/4/2023 1:37 PM | 00:00        | 7.41 pH | 14.48 °C    | 1,263.7 µS/cm         | 9.98 mg/L         | 90.63 NTU  | 123.5 mV | 22.94 ft       | 100.00 ml/min |
| 12/4/2023 1:41 PM | 03:59        | 7.51 pH | 14.39 °C    | 1,170.3 µS/cm         | 11.27 mg/L        | 110.04 NTU | 98.3 mV  | 22.94 ft       | 100.00 ml/min |
| 12/4/2023 1:45 PM | 07:58        | 7.44 pH | 14.38 °C    | 1,153.5 µS/cm         | 11.45 mg/L        | 121.45 NTU | 81.0 mV  | 22.94 ft       | 100.00 ml/min |
| 12/4/2023 1:49 PM | 11:57        | 7.37 pH | 14.32 °C    | 1,142.8 µS/cm         | 11.16 mg/L        | 162.78 NTU | 81.9 mV  | 22.94 ft       | 100.00 ml/min |
| 12/4/2023 1:53 PM | 15:56        | 7.30 pH | 14.09 °C    | 1,131.5 µS/cm         | 10.51 mg/L        | 173.61 NTU | 85.7 mV  | 22.94 ft       | 100.00 ml/min |
| 12/4/2023 1:57 PM | 19:55        | 7.21 pH | 13.82 °C    | 1,129.6 µS/cm         | 9.49 mg/L         | 156.12 NTU | 107.4 mV | 22.94 ft       | 100.00 ml/min |
| 12/4/2023 2:01 PM | 23:54        | 7.15 pH | 14.05 °C    | 1,125.6 µS/cm         | 7.97 mg/L         | 179.98 NTU | 129.7 mV | 22.94 ft       | 100.00 ml/min |
| 12/4/2023 2:05 PM | 27:53        | 7.11 pH | 14.16 °C    | 1,124.1 µS/cm         | 6.90 mg/L         | 231.46 NTU | 123.4 mV | 22.94 ft       | 100.00 ml/min |
| 12/4/2023 2:09 PM | 31:52        | 7.08 pH | 14.18 °C    | 1,117.4 µS/cm         | 6.06 mg/L         | 249.09 NTU | 127.1 mV | 22.94 ft       | 100.00 ml/min |
| 12/4/2023 2:13 PM | 35:51        | 7.06 pH | 14.29 °C    | 1,105.9 µS/cm         | 5.38 mg/L         | 226.54 NTU | 140.3 mV | 22.94 ft       | 100.00 ml/min |
| 12/4/2023 2:17 PM | 39:50        | 7.04 pH | 14.26 °C    | 1,091.0 µS/cm         | 4.83 mg/L         | 244.55 NTU | 147.9 mV | 22.94 ft       | 100.00 ml/min |
| 12/4/2023 2:21 PM | 43:49        | 7.02 pH | 13.95 °C    | 1,081.5 µS/cm         | 4.37 mg/L         | 261.39 NTU | 150.0 mV | 22.94 ft       | 100.00 ml/min |
| 12/4/2023 2:25 PM | 47:48        | 7.01 pH | 13.76 °C    | 1,072.3 µS/cm         | 3.98 mg/L         | 243.41 NTU | 152.0 mV | 22.94 ft       | 100.00 ml/min |
| 12/4/2023 2:29 PM | 51:47        | 7.00 pH | 13.95 °C    | 1,067.9 µS/cm         | 3.59 mg/L         | 229.83 NTU | 153.8 mV | 22.94 ft       | 100.00 ml/min |

|                      |       |         |          |                  |           |            |          |          |               |
|----------------------|-------|---------|----------|------------------|-----------|------------|----------|----------|---------------|
| 12/4/2023<br>2:33 PM | 55:46 | 6.99 pH | 13.69 °C | 1,062.6<br>μS/cm | 3.29 mg/L | 209.25 NTU | 156.5 mV | 22.94 ft | 100.00 ml/min |
| 12/4/2023<br>2:37 PM | 59:45 | 6.98 pH | 13.54 °C | 1,056.6<br>μS/cm | 3.02 mg/L | 208.70 NTU | 158.0 mV | 22.94 ft | 100.00 ml/min |

Samples

|            |              |
|------------|--------------|
| Sample ID: | Description: |
|------------|--------------|

# Low-Flow Test Report:

Test Date / Time: 12/4/2023 3:37:48 PM  
Project: Cj235079  
Operator Name: P Danzl Tauer

|                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                 |                                                                        |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|
| <b>Location Name:</b> MW3(1.5)<br><b>Latitude:</b> 38.99778815<br><b>Longitude:</b> -87.24413868<br><b>Well Diameter:</b> 1.5 ft<br><b>Casing Type:</b> Pvc<br><b>Screen Length:</b> 5 ft<br><b>Top of Screen:</b> 20 ft<br><b>Total Depth:</b> 25.73 ft<br><b>Initial Depth to Water:</b> 10.33 ft | <b>Pump Type:</b> Bladder<br><b>Tubing Type:</b> Poly<br><b>Tubing Inner Diameter:</b> 0.17 in<br><b>Tubing Length:</b> 25 ft<br><b>Pump Intake From TOC:</b> 23 ft<br><b>Estimated Total Volume Pumped:</b> 2904 ml<br><b>Flow Cell Volume:</b> 130 ml<br><b>Final Flow Rate:</b> 60 ml/min<br><b>Final Draw Down:</b> -0.5 ft | <b>Instrument Used:</b> Aqua TROLL 600<br><b>Serial Number:</b> 707273 |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|

## Test Notes:

## Low-Flow Readings:

| Date Time         | Elapsed Time | pH      | Temperature | Specific Conductivity | RDO Concentration | Turbidity   | ORP      | Depth to Water | Flow         |
|-------------------|--------------|---------|-------------|-----------------------|-------------------|-------------|----------|----------------|--------------|
|                   |              | +/- 0.1 | +/- 0.5     | +/- 3 %               | +/- 0.3           | +/- 10      | +/- 10   |                |              |
| 12/4/2023 3:37 PM | 00:00        | 6.55 pH | 13.08 °C    | 598.69 µS/cm          | 1.41 mg/L         | 2,957.2 NTU | -83.9 mV | 10.33 ft       | 60.00 ml/min |
| 12/4/2023 3:42 PM | 04:24        | 6.54 pH | 13.48 °C    | 587.87 µS/cm          | 0.80 mg/L         | 2,845.0 NTU | -76.9 mV | 10.33 ft       | 60.00 ml/min |
| 12/4/2023 3:46 PM | 08:48        | 6.53 pH | 13.92 °C    | 584.37 µS/cm          | 0.22 mg/L         | 2,508.1 NTU | -75.2 mV | 10.33 ft       | 60.00 ml/min |
| 12/4/2023 3:51 PM | 13:12        | 6.54 pH | 14.09 °C    | 583.23 µS/cm          | 0.58 mg/L         | 2,815.3 NTU | -76.2 mV | 10.33 ft       | 60.00 ml/min |
| 12/4/2023 3:55 PM | 17:36        | 6.54 pH | 13.74 °C    | 582.38 µS/cm          | 0.86 mg/L         | 2,802.2 NTU | -77.8 mV | 10.33 ft       | 60.00 ml/min |
| 12/4/2023 3:59 PM | 22:00        | 6.56 pH | 13.52 °C    | 572.53 µS/cm          | 0.16 mg/L         | 2,371.4 NTU | -81.0 mV | 10.33 ft       | 60.00 ml/min |
| 12/4/2023 4:04 PM | 26:24        | 6.58 pH | 13.41 °C    | 567.09 µS/cm          | 0.42 mg/L         | 1,789.8 NTU | -83.1 mV | 10.33 ft       | 60.00 ml/min |
| 12/4/2023 4:08 PM | 30:48        | 6.58 pH | 13.20 °C    | 562.60 µS/cm          | 0.47 mg/L         | 1,548.9 NTU | -83.6 mV | 10.33 ft       | 60.00 ml/min |
| 12/4/2023 4:13 PM | 35:12        | 6.59 pH | 13.15 °C    | 558.03 µS/cm          | 0.64 mg/L         | 1,553.1 NTU | -84.3 mV | 10.33 ft       | 60.00 ml/min |
| 12/4/2023 4:17 PM | 39:36        | 6.59 pH | 13.15 °C    | 551.00 µS/cm          | 0.74 mg/L         | 1,496.1 NTU | -85.0 mV | 10.33 ft       | 60.00 ml/min |
| 12/4/2023 4:21 PM | 44:00        | 6.59 pH | 13.09 °C    | 545.98 µS/cm          | 0.85 mg/L         | 1,354.5 NTU | -84.8 mV | 10.33 ft       | 60.00 ml/min |
| 12/4/2023 4:26 PM | 48:24        | 6.60 pH | 12.88 °C    | 542.58 µS/cm          | 0.89 mg/L         | 1,131.9 NTU | -84.9 mV | 10.33 ft       | 60.00 ml/min |

## Samples

| Sample ID: | Description: |
|------------|--------------|
|------------|--------------|

Created using VuSitu from In-Situ, Inc.

# Low-Flow Test Report:

Test Date / Time: 12/5/2023 5:37:04 PM  
Project: Cj235079  
Operator Name: P Danzl Tauer

|                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                       |                                                                        |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|
| <b>Location Name:</b> Mw4(1.5)<br><b>Latitude:</b> 38.99784909<br><b>Longitude:</b> -87.24379002<br><b>Well Diameter:</b> 1.5 in<br><b>Casing Type:</b> Pvc<br><b>Screen Length:</b> 5 ft<br><b>Top of Screen:</b> 23.26 ft<br><b>Total Depth:</b> 28.26 ft<br><b>Initial Depth to Water:</b> 15.61 ft | <b>Pump Type:</b> Bladder<br><b>Tubing Type:</b> Poly<br><b>Tubing Inner Diameter:</b> 0.17 in<br><b>Tubing Length:</b> 29 ft<br><b>Pump Intake From TOC:</b> 27.5 ft<br><b>Estimated Total Volume Pumped:</b> 2823.333 ml<br><b>Flow Cell Volume:</b> 130 ml<br><b>Final Flow Rate:</b> 70 ml/min<br><b>Final Draw Down:</b> -3.5 ft | <b>Instrument Used:</b> Aqua TROLL 600<br><b>Serial Number:</b> 707273 |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|

Test Notes:

Low-Flow Readings:

| Date Time         | Elapsed Time | pH      | Temperature | Specific Conductivity | RDO Concentration | Turbidity   | ORP      | Depth to Water | Flow         |
|-------------------|--------------|---------|-------------|-----------------------|-------------------|-------------|----------|----------------|--------------|
|                   |              | +/- 0.1 | +/- 0.5     | +/- 3 %               | +/- 0.3           | +/- 10      | +/- 10   |                |              |
| 12/5/2023 5:37 PM | 00:00        | 6.10 pH | 12.56 °C    | 1,586.9 µS/cm         | 1.00 mg/L         | 2,531.5 NTU | -53.7 mV | 15.61 ft       | 70.00 ml/min |
| 12/5/2023 5:41 PM | 04:02        | 6.09 pH | 13.35 °C    | 1,618.9 µS/cm         | 0.73 mg/L         | 4,916.6 NTU | -59.1 mV | 15.61 ft       | 70.00 ml/min |
| 12/5/2023 5:45 PM | 08:04        | 6.09 pH | 13.53 °C    | 1,621.7 µS/cm         | 0.75 mg/L         | 2,153.1 NTU | -61.3 mV | 15.61 ft       | 70.00 ml/min |
| 12/5/2023 5:49 PM | 12:06        | 6.09 pH | 13.65 °C    | 1,620.8 µS/cm         | 0.75 mg/L         | 1,788.0 NTU | -61.3 mV | 15.61 ft       | 70.00 ml/min |
| 12/5/2023 5:53 PM | 16:08        | 6.09 pH | 13.62 °C    | 1,624.3 µS/cm         | 0.76 mg/L         | 667.74 NTU  | -61.3 mV | 15.61 ft       | 70.00 ml/min |
| 12/5/2023 5:57 PM | 20:10        | 6.08 pH | 13.60 °C    | 1,642.1 µS/cm         | 0.73 mg/L         | 371.20 NTU  | -60.8 mV | 15.61 ft       | 70.00 ml/min |
| 12/5/2023 6:01 PM | 24:12        | 6.08 pH | 13.58 °C    | 1,658.0 µS/cm         | 0.73 mg/L         | 495.92 NTU  | -61.0 mV | 15.61 ft       | 70.00 ml/min |
| 12/5/2023 6:05 PM | 28:14        | 6.07 pH | 13.54 °C    | 1,667.0 µS/cm         | 0.68 mg/L         | 522.29 NTU  | -61.4 mV | 15.61 ft       | 70.00 ml/min |
| 12/5/2023 6:09 PM | 32:16        | 6.07 pH | 13.61 °C    | 1,671.8 µS/cm         | 0.62 mg/L         | 495.75 NTU  | -62.1 mV | 15.61 ft       | 70.00 ml/min |
| 12/5/2023 6:13 PM | 36:18        | 6.07 pH | 13.58 °C    | 1,683.2 µS/cm         | 0.53 mg/L         | 397.40 NTU  | -63.1 mV | 15.61 ft       | 70.00 ml/min |
| 12/5/2023 6:17 PM | 40:20        | 6.06 pH | 13.54 °C    | 1,679.8 µS/cm         | 0.45 mg/L         | 971.19 NTU  | -64.0 mV | 15.61 ft       | 70.00 ml/min |

Samples

| Sample ID: | Description: |
|------------|--------------|
|------------|--------------|

# Low-Flow Test Report:

Test Date / Time: 12/5/2023 10:58:17 AM  
Project: Cj235079  
Operator Name: P Danzl Tauer

|                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                           |                                                                        |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|
| <b>Location Name:</b> Mw4(1.5)<br><b>Latitude:</b> 38.99766578<br><b>Longitude:</b> -87.24397<br><b>Well Diameter:</b> 1.5 in<br><b>Casing Type:</b> Pvc<br><b>Screen Length:</b> 5 ft<br><b>Top of Screen:</b> 23 ft<br><b>Total Depth:</b> 28.26 ft<br><b>Initial Depth to Water:</b> 15.61 ft | <b>Pump Type:</b> Bladder<br><b>Tubing Type:</b> Poly<br><b>Tubing Inner Diameter:</b> 0.17 in<br><b>Tubing Length:</b> 25 ft<br><b>Pump Intake From TOC:</b> 26 ft<br><b>Estimated Total Volume Pumped:</b> 0 ml<br><b>Flow Cell Volume:</b> 130 ml<br><b>Final Flow Rate:</b> 60 ml/min<br><b>Final Draw Down:</b> 0 ft | <b>Instrument Used:</b> Aqua TROLL 600<br><b>Serial Number:</b> 707273 |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|

Test Notes:

Low-Flow Readings:

| Date Time          | Elapsed Time | pH      | Temperature | Specific Conductivity | RDO Concentration | Turbidity  | ORP      | Depth to Water | Flow         |
|--------------------|--------------|---------|-------------|-----------------------|-------------------|------------|----------|----------------|--------------|
|                    |              | +/- 0.1 | +/- 0.5     | +/- 3 %               | +/- 0.3           | +/- 10     | +/- 10   |                |              |
| 12/5/2023 10:58 AM | 00:00        | 6.61 pH | 6.77 °C     | 262.49 µS/cm          | 11.23 mg/L        | 916.84 NTU | -62.1 mV | 15.61 ft       | 60.00 ml/min |

Samples

| Sample ID: | Description: |
|------------|--------------|
|------------|--------------|

# Low-Flow Test Report:

Test Date / Time: 12/5/2023 3:56:26 PM  
Project: Cj235079  
Operator Name: P Danzl Tauer

|                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                 |                                                                        |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|
| <b>Location Name: Mw5(1.5)</b><br><b>Latitude: 38.99791605</b><br><b>Longitude: -87.24388342</b><br><b>Well Diameter: 1.5 in</b><br><b>Casing Type: Pvc</b><br><b>Screen Length: 5 ft</b><br><b>Top of Screen: 23.03 ft</b><br><b>Total Depth: 28.03 ft</b><br><b>Initial Depth to Water: 16.14 ft</b> | <b>Pump Type: Bladder</b><br><b>Tubing Type: Poly</b><br><b>Tubing Inner Diameter: 0.17 in</b><br><b>Tubing Length: 28 ft</b><br><b>Pump Intake From TOC: 27 ft</b><br><b>Estimated Total Volume Pumped: 3332 ml</b><br><b>Flow Cell Volume: 130 ml</b><br><b>Final Flow Rate: 70 ml/min</b><br><b>Final Draw Down: 0.32 ft</b> | <b>Instrument Used: Aqua TROLL 600</b><br><b>Serial Number: 707273</b> |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|

## Test Notes:

## Low-Flow Readings:

| Date Time         | Elapsed Time | pH      | Temperature | Specific Conductivity | RDO Concentration | Turbidity | ORP      | Depth to Water | Flow         |
|-------------------|--------------|---------|-------------|-----------------------|-------------------|-----------|----------|----------------|--------------|
|                   |              | +/- 0.1 | +/- 0.5     | +/- 3 %               | +/- 0.3           | +/- 10    | +/- 10   |                |              |
| 12/5/2023 3:56 PM | 00:00        | 6.06 pH | 13.08 °C    | 606.01 µS/cm          | 0.05 mg/L         | 0.00 NTU  | -43.6 mV | 16.14 ft       | 70.00 ml/min |
| 12/5/2023 4:00 PM | 03:58        | 6.07 pH | 11.81 °C    | 435.26 µS/cm          | 0.91 mg/L         | 0.00 NTU  | -48.3 mV | 16.14 ft       | 70.00 ml/min |
| 12/5/2023 4:04 PM | 07:56        | 6.39 pH | 10.69 °C    | 0.89 µS/cm            | 0.11 mg/L         | 6.87 NTU  | -79.5 mV | 16.14 ft       | 70.00 ml/min |
| 12/5/2023 4:08 PM | 11:54        | 6.41 pH | 10.17 °C    | 0.76 µS/cm            | 0.11 mg/L         | 7.39 NTU  | -74.5 mV | 16.14 ft       | 70.00 ml/min |
| 12/5/2023 4:12 PM | 15:52        | 6.35 pH | 9.78 °C     | 0.74 µS/cm            | 0.23 mg/L         | 6.93 NTU  | -55.4 mV | 16.14 ft       | 70.00 ml/min |
| 12/5/2023 4:16 PM | 19:50        | 6.36 pH | 9.46 °C     | 0.64 µS/cm            | 0.41 mg/L         | 6.90 NTU  | -46.5 mV | 16.14 ft       | 70.00 ml/min |
| 12/5/2023 4:20 PM | 23:48        | 6.32 pH | 9.20 °C     | 0.66 µS/cm            | 0.38 mg/L         | 7.98 NTU  | -44.8 mV | 16.14 ft       | 70.00 ml/min |
| 12/5/2023 4:24 PM | 27:46        | 6.36 pH | 8.95 °C     | 0.60 µS/cm            | 0.56 mg/L         | 6.98 NTU  | -41.6 mV | 16.14 ft       | 70.00 ml/min |
| 12/5/2023 4:28 PM | 31:44        | 6.37 pH | 8.73 °C     | 0.54 µS/cm            | 0.65 mg/L         | 6.94 NTU  | -33.2 mV | 16.14 ft       | 70.00 ml/min |
| 12/5/2023 4:32 PM | 35:42        | 6.38 pH | 8.55 °C     | 0.50 µS/cm            | 0.73 mg/L         | 6.97 NTU  | -26.0 mV | 16.14 ft       | 70.00 ml/min |
| 12/5/2023 4:36 PM | 39:40        | 6.38 pH | 8.39 °C     | 0.46 µS/cm            | 0.80 mg/L         | 6.95 NTU  | -21.1 mV | 16.14 ft       | 70.00 ml/min |
| 12/5/2023 4:40 PM | 43:38        | 6.40 pH | 8.25 °C     | 0.44 µS/cm            | 0.86 mg/L         | 6.96 NTU  | -17.0 mV | 16.14 ft       | 70.00 ml/min |
| 12/5/2023 4:44 PM | 47:36        | 6.41 pH | 8.11 °C     | 0.41 µS/cm            | 0.91 mg/L         | 6.97 NTU  | -13.4 mV | 16.14 ft       | 70.00 ml/min |



# Low-Flow Test Report:

Test Date / Time: 12/5/2023 2:24:17 PM

Project: Cj235079

Operator Name: P Danzl Tauer

|                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                 |                                                                        |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|
| <b>Location Name: Mw6(1.5)</b><br><b>Latitude: 38.99795374</b><br><b>Longitude: -87.24315521</b><br><b>Well Diameter: 1.5 in</b><br><b>Casing Type: Pvc</b><br><b>Screen Length: 5 ft</b><br><b>Top of Screen: 20.55 ft</b><br><b>Total Depth: 25.55 ft</b><br><b>Initial Depth to Water: 15.98 ft</b> | <b>Pump Type: Bladder</b><br><b>Tubing Type: Poly</b><br><b>Tubing Inner Diameter: 0.17 in</b><br><b>Tubing Length: 24 ft</b><br><b>Pump Intake From TOC: 24 ft</b><br><b>Estimated Total Volume Pumped: 3367 ml</b><br><b>Flow Cell Volume: 130 ml</b><br><b>Final Flow Rate: 70 ml/min</b><br><b>Final Draw Down: -1.5 ft</b> | <b>Instrument Used: Aqua TROLL 600</b><br><b>Serial Number: 707273</b> |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|

## Test Notes:

## Low-Flow Readings:

| Date Time         | Elapsed Time | pH      | Temperature | Specific Conductivity | RDO Concentration | Turbidity   | ORP       | Depth to Water | Flow         |
|-------------------|--------------|---------|-------------|-----------------------|-------------------|-------------|-----------|----------------|--------------|
|                   |              | +/- 0.1 | +/- 0.5     | +/- 3 %               | +/- 0.3           | +/- 10      | +/- 10    |                |              |
| 12/5/2023 2:24 PM | 00:00        | 6.85 pH | 14.74 °C    | 1,128.5 µS/cm         | 0.00 mg/L         | 0.00 NTU    | -118.4 mV | 15.98 ft       | 70.00 ml/min |
| 12/5/2023 2:27 PM | 03:42        | 6.85 pH | 14.57 °C    | 1,146.2 µS/cm         | 0.00 mg/L         | 0.00 NTU    | -123.0 mV | 15.98 ft       | 70.00 ml/min |
| 12/5/2023 2:31 PM | 07:24        | 6.83 pH | 15.04 °C    | 1,244.0 µS/cm         | 0.00 mg/L         | 0.00 NTU    | -122.2 mV | 15.98 ft       | 70.00 ml/min |
| 12/5/2023 2:35 PM | 11:06        | 6.77 pH | 15.08 °C    | 1,260.7 µS/cm         | 0.00 mg/L         | 199.69 NTU  | -120.9 mV | 15.98 ft       | 70.00 ml/min |
| 12/5/2023 2:39 PM | 14:48        | 6.72 pH | 15.04 °C    | 1,244.8 µS/cm         | 0.02 mg/L         | 2,186.0 NTU | -118.8 mV | 15.98 ft       | 70.00 ml/min |
| 12/5/2023 2:42 PM | 18:30        | 6.68 pH | 15.26 °C    | 1,220.6 µS/cm         | 0.02 mg/L         | 3,935.1 NTU | -117.6 mV | 15.98 ft       | 70.00 ml/min |
| 12/5/2023 2:46 PM | 22:12        | 6.65 pH | 15.29 °C    | 1,207.9 µS/cm         | 0.05 mg/L         | 4,790.7 NTU | -117.4 mV | 15.98 ft       | 70.00 ml/min |
| 12/5/2023 2:50 PM | 25:54        | 6.64 pH | 15.32 °C    | 1,198.7 µS/cm         | 0.06 mg/L         | 2,762.2 NTU | -117.3 mV | 15.98 ft       | 70.00 ml/min |
| 12/5/2023 2:53 PM | 29:36        | 6.63 pH | 15.31 °C    | 1,192.2 µS/cm         | 0.07 mg/L         | 1,961.9 NTU | -117.1 mV | 15.98 ft       | 70.00 ml/min |
| 12/5/2023 2:57 PM | 33:18        | 6.62 pH | 15.18 °C    | 1,187.9 µS/cm         | 0.06 mg/L         | 1,893.9 NTU | -116.7 mV | 15.98 ft       | 70.00 ml/min |
| 12/5/2023 3:01 PM | 37:00        | 6.62 pH | 15.20 °C    | 1,181.7 µS/cm         | 0.04 mg/L         | 3,969.2 NTU | -116.7 mV | 15.98 ft       | 70.00 ml/min |
| 12/5/2023 3:04 PM | 40:42        | 6.62 pH | 15.13 °C    | 1,176.8 µS/cm         | 0.05 mg/L         | 1,382.0 NTU | -116.8 mV | 15.98 ft       | 70.00 ml/min |
| 12/5/2023 3:08 PM | 44:24        | 6.61 pH | 15.09 °C    | 1,172.6 µS/cm         | 0.06 mg/L         | 1,494.6 NTU | -116.7 mV | 15.98 ft       | 70.00 ml/min |
| 12/5/2023 3:12 PM | 48:06        | 6.61 pH | 14.99 °C    | 1,169.9 µS/cm         | 0.05 mg/L         | 1,899.1 NTU | -116.8 mV | 15.98 ft       | 70.00 ml/min |

Samples

| Sample ID: | Description: |
|------------|--------------|
|------------|--------------|

# Low-Flow Test Report:

Test Date / Time: 12/5/2023 11:03:11 AM  
Project: Cj235079  
Operator Name: P Danzl Tauer

|                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                    |                                                                        |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|
| <b>Location Name:</b> MW7(1)<br><b>Latitude:</b> 38.99799396<br><b>Longitude:</b> -87.24263499<br><b>Well Diameter:</b> 1 in<br><b>Casing Type:</b> Pvc<br><b>Screen Length:</b> 5 ft<br><b>Top of Screen:</b> 40 ft<br><b>Total Depth:</b> 45.16 ft<br><b>Initial Depth to Water:</b> 24.43 ft | <b>Pump Type:</b> Bladder<br><b>Tubing Type:</b> Poly<br><b>Tubing Inner Diameter:</b> 0.17 in<br><b>Tubing Length:</b> 45 ft<br><b>Pump Intake From TOC:</b> 43 ft<br><b>Estimated Total Volume Pumped:</b> 3888.5 ml<br><b>Flow Cell Volume:</b> 130 ml<br><b>Final Flow Rate:</b> 70 ml/min<br><b>Final Draw Down:</b> 13.84 ft | <b>Instrument Used:</b> Aqua TROLL 600<br><b>Serial Number:</b> 707273 |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|

## Test Notes:

## Low-Flow Readings:

| Date Time          | Elapsed Time | pH      | Temperature | Specific Conductivity | RDO Concentration | Turbidity  | ORP      | Depth to Water | Flow         |
|--------------------|--------------|---------|-------------|-----------------------|-------------------|------------|----------|----------------|--------------|
|                    |              | +/- 0.1 | +/- 0.5     | +/- 3 %               | +/- 0.3           | +/- 10     | +/- 10   |                |              |
| 12/5/2023 11:03 AM | 00:00        | 7.03 pH | 11.46 °C    | 865.51 µS/cm          | 9.34 mg/L         | 829.07 NTU | 112.4 mV | 24.43 ft       | 70.00 ml/min |
| 12/5/2023 11:08 AM | 05:03        | 7.47 pH | 13.09 °C    | 745.26 µS/cm          | 10.90 mg/L        | 363.12 NTU | 94.4 mV  | 24.43 ft       | 70.00 ml/min |
| 12/5/2023 11:13 AM | 10:06        | 7.46 pH | 13.34 °C    | 739.31 µS/cm          | 10.11 mg/L        | 273.60 NTU | 61.6 mV  | 24.43 ft       | 70.00 ml/min |
| 12/5/2023 11:18 AM | 15:09        | 7.42 pH | 13.37 °C    | 741.84 µS/cm          | 8.86 mg/L         | 215.53 NTU | 95.4 mV  | 24.43 ft       | 70.00 ml/min |
| 12/5/2023 11:23 AM | 20:12        | 7.35 pH | 13.41 °C    | 742.32 µS/cm          | 7.95 mg/L         | 198.81 NTU | 104.8 mV | 24.43 ft       | 70.00 ml/min |
| 12/5/2023 11:28 AM | 25:15        | 7.33 pH | 13.37 °C    | 751.25 µS/cm          | 7.14 mg/L         | 179.87 NTU | 109.1 mV | 24.43 ft       | 70.00 ml/min |
| 12/5/2023 11:33 AM | 30:18        | 7.30 pH | 13.23 °C    | 751.97 µS/cm          | 6.44 mg/L         | 163.84 NTU | 112.4 mV | 24.43 ft       | 70.00 ml/min |
| 12/5/2023 11:38 AM | 35:21        | 7.29 pH | 13.43 °C    | 752.56 µS/cm          | 6.10 mg/L         | 144.61 NTU | 115.0 mV | 24.43 ft       | 70.00 ml/min |
| 12/5/2023 11:43 AM | 40:24        | 7.32 pH | 13.23 °C    | 752.09 µS/cm          | 5.76 mg/L         | 113.27 NTU | 119.5 mV | 24.43 ft       | 70.00 ml/min |
| 12/5/2023 11:48 AM | 45:27        | 7.24 pH | 12.53 °C    | 756.02 µS/cm          | 7.11 mg/L         | 188.11 NTU | 113.5 mV | 24.43 ft       | 70.00 ml/min |
| 12/5/2023 11:53 AM | 50:30        | 7.17 pH | 12.39 °C    | 758.50 µS/cm          | 7.70 mg/L         | 167.47 NTU | 109.8 mV | 24.43 ft       | 70.00 ml/min |
| 12/5/2023 11:58 AM | 55:33        | 7.16 pH | 12.49 °C    | 754.75 µS/cm          | 8.00 mg/L         | 104.73 NTU | 110.0 mV | 24.43 ft       | 70.00 ml/min |

## Samples

Samples

| Sample ID: | Description: |
|------------|--------------|
|------------|--------------|

# Low-Flow Test Report:

Test Date / Time: 12/5/2023 12:51:18 PM

Project: Cj235079

Operator Name: P Danzl Tauer

|                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                     |                                                                        |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|
| <b>Location Name: Mw7(1.5)</b><br><b>Latitude: 38.99808328</b><br><b>Longitude: -87.24266909</b><br><b>Well Diameter: 1.5 in</b><br><b>Casing Type: Pvc</b><br><b>Screen Length: 5 ft</b><br><b>Top of Screen: 13.77 ft</b><br><b>Total Depth: 18.77 ft</b><br><b>Initial Depth to Water: 16.28 ft</b> | <b>Pump Type: Bladder</b><br><b>Tubing Type: Poly</b><br><b>Tubing Inner Diameter: 0.17 in</b><br><b>Tubing Length: 20 ft</b><br><b>Pump Intake From TOC: 18 ft</b><br><b>Estimated Total Volume Pumped: 3364.667 ml</b><br><b>Flow Cell Volume: 130 ml</b><br><b>Final Flow Rate: 70 ml/min</b><br><b>Final Draw Down: 0.02 ft</b> | <b>Instrument Used: Aqua TROLL 600</b><br><b>Serial Number: 707273</b> |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|

## Test Notes:

## Low-Flow Readings:

| Date Time          | Elapsed Time | pH      | Temperature | Specific Conductivity | RDO Concentration | Turbidity  | ORP     | Depth to Water | Flow         |
|--------------------|--------------|---------|-------------|-----------------------|-------------------|------------|---------|----------------|--------------|
|                    |              | +/- 0.1 | +/- 0.5     | +/- 3 %               | +/- 0.3           | +/- 10     | +/- 10  |                |              |
| 12/5/2023 12:51 PM | 00:00        | 7.20 pH | 13.26 °C    | 818.22 µS/cm          | 6.84 mg/L         | 606.53 NTU | 57.4 mV | 16.28 ft       | 70.00 ml/min |
| 12/5/2023 12:54 PM | 03:27        | 7.01 pH | 14.85 °C    | 911.30 µS/cm          | 3.82 mg/L         | 552.02 NTU | 20.5 mV | 16.28 ft       | 70.00 ml/min |
| 12/5/2023 12:58 PM | 06:54        | 7.00 pH | 15.13 °C    | 933.19 µS/cm          | 5.19 mg/L         | 543.01 NTU | 8.5 mV  | 16.28 ft       | 70.00 ml/min |
| 12/5/2023 1:01 PM  | 10:21        | 7.00 pH | 15.36 °C    | 950.69 µS/cm          | 5.96 mg/L         | 554.25 NTU | 5.5 mV  | 16.28 ft       | 70.00 ml/min |
| 12/5/2023 1:05 PM  | 13:48        | 6.99 pH | 15.43 °C    | 966.80 µS/cm          | 6.20 mg/L         | 320.52 NTU | 6.9 mV  | 16.28 ft       | 70.00 ml/min |
| 12/5/2023 1:08 PM  | 17:15        | 7.01 pH | 15.41 °C    | 979.14 µS/cm          | 6.33 mg/L         | 278.92 NTU | 11.1 mV | 16.28 ft       | 70.00 ml/min |
| 12/5/2023 1:12 PM  | 20:42        | 7.00 pH | 15.35 °C    | 990.19 µS/cm          | 6.31 mg/L         | 196.92 NTU | 14.8 mV | 16.28 ft       | 70.00 ml/min |
| 12/5/2023 1:18 PM  | 27:22        | 6.98 pH | 15.42 °C    | 1,003.4 µS/cm         | 6.48 mg/L         | 243.42 NTU | 19.9 mV | 16.28 ft       | 70.00 ml/min |
| 12/5/2023 1:22 PM  | 30:49        | 6.98 pH | 15.42 °C    | 1,011.6 µS/cm         | 6.36 mg/L         | 134.60 NTU | 21.9 mV | 16.28 ft       | 70.00 ml/min |
| 12/5/2023 1:25 PM  | 34:16        | 6.98 pH | 15.48 °C    | 1,015.0 µS/cm         | 6.46 mg/L         | 102.12 NTU | 24.9 mV | 16.28 ft       | 70.00 ml/min |
| 12/5/2023 1:29 PM  | 37:43        | 6.98 pH | 15.48 °C    | 1,016.7 µS/cm         | 6.44 mg/L         | 99.95 NTU  | 26.3 mV | 16.28 ft       | 70.00 ml/min |
| 12/5/2023 1:32 PM  | 41:10        | 6.99 pH | 15.42 °C    | 1,019.6 µS/cm         | 6.54 mg/L         | 83.95 NTU  | 27.9 mV | 16.28 ft       | 70.00 ml/min |
| 12/5/2023 1:35 PM  | 44:37        | 6.98 pH | 15.37 °C    | 1,021.6 µS/cm         | 6.54 mg/L         | 70.18 NTU  | 28.4 mV | 16.28 ft       | 70.00 ml/min |
| 12/5/2023 1:39 PM  | 48:04        | 6.99 pH | 15.30 °C    | 1,024.3 µS/cm         | 6.55 mg/L         | 65.04 NTU  | 29.6 mV | 16.28 ft       | 70.00 ml/min |

| Sample ID: | Description: |
|------------|--------------|
|------------|--------------|

Created using VuSitu from In-Situ, Inc.

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**ENVision Laboratories, Inc.**  
1439 Sadlier Circle West Drive  
Indianapolis, IN 46239  
Tel: 317.351.8632  
Fax: 317.351.8639  
[www.envisionlaboratories.com](http://www.envisionlaboratories.com)

Mr. Scott Hoppel  
Terracon  
351 Transfer Dr.  
Indianapolis, IN 46214

December 19, 2023

ENVision Project Number: 2023-2480  
Client Project Name: CJ235079

Dear Mr. Hoppel,

Please find the attached analytical report for the samples received December 6, 2023. All test methods performed were fully compliant with local, state, and federal EPA methods unless otherwise noted. The project was analyzed as requested on the enclosed chain of custody record. Please review the comments section for additional information about your results or Quality Control data.

Feel free to contact me if you have any questions or comments regarding your analytical report or service.

Thank you for your business. ENVision Laboratories looks forward to working with you on your next project.

Yours Sincerely,

A handwritten signature in black ink that reads 'David Norris'.

David Norris

Client Services Manager  
ENVision Laboratories, Inc.



## Analytical Report

**ENVision Laboratories, Inc.**  
1439 Sadlier Circle West Drive  
Indianapolis, IN 46239  
Tel: 317.351.8632  
Fax: 317.351.8639  
[www.envisionlaboratories.com](http://www.envisionlaboratories.com)

**Client Name:** TERRACON

**Project ID:** CJ235079

**Client Project Manager:** SCOTT HOPPEL

**ENVision Project Number:** 2023-2480

**Analytical Method:** EPA 6010  
**Prep Method:** EPA 3010A

**Client Sample ID:** MW2 (1) **Sample Collection Date/Time:** 12/4/23 14:45  
**Envision Sample Number:** 23-20236 **Sample Received Date/Time:** 12/6/23 10:08  
**Sample Matrix:** water

| <u>Compounds</u> | <u>Sample Results (ug/L)</u> | <u>Reporting Limit (ug/L)</u> | <u>Flags</u> |
|------------------|------------------------------|-------------------------------|--------------|
| Aluminum, total  | < 1000                       | 1000                          |              |
| Iron, total      | 560                          | 100                           |              |

ICP Analysis Date/Time: 12-7-23/17:47  
Analyst Initials: gjd  
Date Digested: 12/6/2023  
Initial Sample Volume: 50 mL  
Final Volume: 50 mL  
**Analytical Batch:** 120723icp

| <u>Compounds</u>    | <u>Sample Results (ug/L)</u> | <u>Reporting Limit (ug/L)</u> | <u>Flags</u> |
|---------------------|------------------------------|-------------------------------|--------------|
| Aluminum, dissolved | < 1000                       | 1000                          |              |
| Iron, dissolved     | < 100                        | 100                           |              |

ICP Analysis Date/Time: 12-7-23/17:49  
Analyst Initials: gjd  
Date Digested: 12/6/2023  
Initial Sample Volume: 50 mL  
Final Volume: 50 mL  
**Analytical Batch:** 120723icp



## Analytical Report

**ENVision Laboratories, Inc.**  
1439 Sadlier Circle West Drive  
Indianapolis, IN 46239  
Tel: 317.351.8632  
Fax: 317.351.8639  
[www.envisionlaboratories.com](http://www.envisionlaboratories.com)

**Client Name:** TERRACON

**Project ID:** CJ235079

**Client Project Manager:** SCOTT HOPPEL

**ENVision Project Number:** 2023-2480

**Analytical Method:** EPA 6010  
**Prep Method:** EPA 3010A

**Client Sample ID:** MW3 (1.5) **Sample Collection Date/Time:** 12/4/23 16:30  
**Envision Sample Number:** 23-20237 **Sample Received Date/Time:** 12/6/23 10:08  
**Sample Matrix:** water

| <u>Compounds</u> | <u>Sample Results (ug/L)</u> | <u>Reporting Limit (ug/L)</u> | <u>Flags</u> |
|------------------|------------------------------|-------------------------------|--------------|
| Aluminum, total  | 4,600                        | 1000                          |              |
| Iron, total      | 15,600                       | 100                           |              |

ICP Analysis Date/Time: 12-7-23/17:52  
Analyst Initials: gjd  
Date Digested: 12/6/2023  
Initial Sample Volume: 50 mL  
Final Volume: 50 mL  
**Analytical Batch:** 120723icp

| <u>Compounds</u>    | <u>Sample Results (ug/L)</u> | <u>Reporting Limit (ug/L)</u> | <u>Flags</u> |
|---------------------|------------------------------|-------------------------------|--------------|
| Aluminum, dissolved | < 1000                       | 1000                          |              |
| Iron, dissolved     | 320                          | 100                           |              |

ICP Analysis Date/Time: 12-7-23/17:54  
Analyst Initials: gjd  
Date Digested: 12/6/2023  
Initial Sample Volume: 50 mL  
Final Volume: 50 mL  
**Analytical Batch:** 120723icp



## Analytical Report

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**Client Name:** TERRACON

**Project ID:** CJ235079

**Client Project Manager:** SCOTT HOPPEL

**ENVision Project Number:** 2023-2480

**Analytical Method:** EPA 6010  
**Prep Method:** EPA 3010A

**Client Sample ID:** MW4 (1.5)      **Sample Collection Date/Time:** 12/5/23 18:20  
**Envision Sample Number:** 23-20238      **Sample Received Date/Time:** 12/6/23 10:08  
**Sample Matrix:** water

| <u>Compounds</u> | <u>Sample Results (ug/L)</u> | <u>Reporting Limit (ug/L)</u> | <u>Flags</u> |
|------------------|------------------------------|-------------------------------|--------------|
| Aluminum, total  | 2,300                        | 1000                          |              |
| Iron, total      | 63,400                       | 100                           |              |

**ICP Analysis Date/Time:** 12-7-23/17:56  
**Analyst Initials:** gjd  
**Date Digested:** 12/6/2023  
**Initial Sample Volume:** 50 mL  
**Final Volume:** 50 mL  
**Analytical Batch:** 120723icp

| <u>Compounds</u>    | <u>Sample Results (ug/L)</u> | <u>Reporting Limit (ug/L)</u> | <u>Flags</u> |
|---------------------|------------------------------|-------------------------------|--------------|
| Aluminum, dissolved | < 1000                       | 1000                          |              |
| Iron, dissolved     | 31,000                       | 100                           |              |

**ICP Analysis Date/Time:** 12-7-23/17:58  
**Analyst Initials:** gjd  
**Date Digested:** 12/6/2023  
**Initial Sample Volume:** 50 mL  
**Final Volume:** 50 mL  
**Analytical Batch:** 120723icp



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**Client Name:** TERRACON

**Project ID:** CJ235079

**Client Project Manager:** SCOTT HOPPEL

**ENVision Project Number:** 2023-2480

**Analytical Method:** EPA 6010  
**Prep Method:** EPA 3010A

**Client Sample ID:** MW-5 (1.5) **Sample Collection Date/Time:** 12/5/23 16:45  
**Envision Sample Number:** 23-20239 **Sample Received Date/Time:** 12/6/23 10:08  
**Sample Matrix:** water

| <u>Compounds</u> | <u>Sample Results (ug/L)</u> | <u>Reporting Limit (ug/L)</u> | <u>Flags</u> |
|------------------|------------------------------|-------------------------------|--------------|
| Aluminum, total  | 50,700                       | 1000                          |              |
| Iron, total      | 49,000                       | 100                           |              |

ICP Analysis Date/Time: 12-7-23/18:01  
Analyst Initials: gjd  
Date Digested: 12/6/2023  
Initial Sample Volume: 50 mL  
Final Volume: 50 mL  
**Analytical Batch:** 120723icp

| <u>Compounds</u>    | <u>Sample Results (ug/L)</u> | <u>Reporting Limit (ug/L)</u> | <u>Flags</u> |
|---------------------|------------------------------|-------------------------------|--------------|
| Aluminum, dissolved | < 1000                       | 1000                          |              |
| Iron, dissolved     | 8,700                        | 100                           |              |

ICP Analysis Date/Time: 12-7-23/18:03  
Analyst Initials: gjd  
Date Digested: 12/6/2023  
Initial Sample Volume: 50 mL  
Final Volume: 50 mL  
**Analytical Batch:** 120723icp



## Analytical Report

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**Client Name:** TERRACON

**Project ID:** CJ235079

**Client Project Manager:** SCOTT HOPPEL

**ENVision Project Number:** 2023-2480

**Analytical Method:** EPA 6010  
**Prep Method:** EPA 3010A

**Client Sample ID:** MW6 (1.5)      **Sample Collection Date/Time:** 12/5/23 15:15  
**Envision Sample Number:** 23-20240      **Sample Received Date/Time:** 12/6/23 10:08  
**Sample Matrix:** water

| <u>Compounds</u> | <u>Sample Results (ug/L)</u> | <u>Reporting Limit (ug/L)</u> | <u>Flags</u> |
|------------------|------------------------------|-------------------------------|--------------|
| Aluminum, total  | < 1000                       | 1000                          |              |
| Iron, total      | <b>10,600</b>                | 100                           |              |

ICP Analysis Date/Time: 12-7-23/18:05  
Analyst Initials: gjd  
Date Digested: 12/6/2023  
Initial Sample Volume: 50 mL  
Final Volume: 50 mL  
**Analytical Batch:** 120723icp

| <u>Compounds</u>    | <u>Sample Results (ug/L)</u> | <u>Reporting Limit (ug/L)</u> | <u>Flags</u> |
|---------------------|------------------------------|-------------------------------|--------------|
| Aluminum, dissolved | < 1000                       | 1000                          |              |
| Iron, dissolved     | <b>2,200</b>                 | 100                           |              |

ICP Analysis Date/Time: 12-7-23/18:08  
Analyst Initials: gjd  
Date Digested: 12/6/2023  
Initial Sample Volume: 50 mL  
Final Volume: 50 mL  
**Analytical Batch:** 120723icp



## Analytical Report

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**Client Name:** TERRACON

**Project ID:** CJ235079

**Client Project Manager:** SCOTT HOPPEL

**ENVision Project Number:** 2023-2480

**Analytical Method:** EPA 6010  
**Prep Method:** EPA 3010A

**Client Sample ID:** MW7 (1) **Sample Collection Date/Time:** 12/5/23 12:15  
**Envision Sample Number:** 23-20241 **Sample Received Date/Time:** 12/6/23 10:08  
**Sample Matrix:** water

| <u>Compounds</u> | <u>Sample Results (ug/L)</u> | <u>Reporting Limit (ug/L)</u> | <u>Flags</u> |
|------------------|------------------------------|-------------------------------|--------------|
| Aluminum, total  | < 1000                       | 1000                          |              |
| Iron, total      | 820                          | 100                           |              |

**ICP Analysis Date/Time:** 12-7-23/18:14  
**Analyst Initials:** gjd  
**Date Digested:** 12/6/2023  
**Initial Sample Volume:** 50 mL  
**Final Volume:** 50 mL  
**Analytical Batch:** 120723icp

| <u>Compounds</u>    | <u>Sample Results (ug/L)</u> | <u>Reporting Limit (ug/L)</u> | <u>Flags</u> |
|---------------------|------------------------------|-------------------------------|--------------|
| Aluminum, dissolved | < 1000                       | 1000                          |              |
| Iron, dissolved     | < 100                        | 100                           |              |

**ICP Analysis Date/Time:** 12-7-23/18:17  
**Analyst Initials:** gjd  
**Date Digested:** 12/6/2023  
**Initial Sample Volume:** 50 mL  
**Final Volume:** 50 mL  
**Analytical Batch:** 120723icp



## Analytical Report

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**Client Name:** TERRACON

**Project ID:** CJ235079

**Client Project Manager:** SCOTT HOPPEL

**ENVision Project Number:** 2023-2480

**Analytical Method:** EPA 6010  
**Prep Method:** EPA 3010A

**Client Sample ID:** MW7 (1.5)      **Sample Collection Date/Time:** 12/5/23 13:45  
**Envision Sample Number:** 23-20242      **Sample Received Date/Time:** 12/6/23 10:08  
**Sample Matrix:** water

| <u>Compounds</u> | <u>Sample Results (ug/L)</u> | <u>Reporting Limit (ug/L)</u> | <u>Flags</u> |
|------------------|------------------------------|-------------------------------|--------------|
| Aluminum, total  | < 1000                       | 1000                          |              |
| Iron, total      | 150                          | 100                           |              |

ICP Analysis Date/Time: 12-7-23/18:19  
Analyst Initials: gjd  
Date Digested: 12/6/2023  
Initial Sample Volume: 50 mL  
Final Volume: 50 mL  
**Analytical Batch:** 120723icp

| <u>Compounds</u>    | <u>Sample Results (ug/L)</u> | <u>Reporting Limit (ug/L)</u> | <u>Flags</u> |
|---------------------|------------------------------|-------------------------------|--------------|
| Aluminum, dissolved | < 1000                       | 1000                          |              |
| Iron, dissolved     | < 100                        | 100                           |              |

ICP Analysis Date/Time: 12-7-23/18:21  
Analyst Initials: gjd  
Date Digested: 12/6/2023  
Initial Sample Volume: 50 mL  
Final Volume: 50 mL  
**Analytical Batch:** 120723icp



## Analytical Report

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**Client Name:** TERRACON

**Project ID:** CJ235079

**Client Project Manager:** SCOTT HOPPEL

**ENVision Project Number:** 2023-2480

**Analytical Method:** EPA 6010  
**Prep Method:** EPA 3010A

**Client Sample ID:** SEEP  
**Envision Sample Number:** 23-20243  
**Sample Matrix:** water

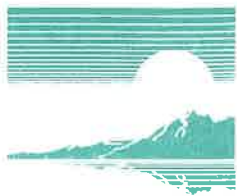
**Sample Collection Date/Time:** 12/5/23 11:15  
**Sample Received Date/Time:** 12/6/23 10:08

| <u>Compounds</u> | <u>Sample Results (ug/L)</u> | <u>Reporting Limit (ug/L)</u> | <u>Flags</u> |
|------------------|------------------------------|-------------------------------|--------------|
| Aluminum, total  | < 1000                       | 1000                          |              |
| Iron, total      | <b>19,000</b>                | 100                           |              |

ICP Analysis Date/Time: 12-7-23/18:23  
Analyst Initials: gjd  
Date Digested: 12/6/2023  
Initial Sample Volume: 50 mL  
Final Volume: 50 mL  
**Analytical Batch:** 120723icp

| <u>Compounds</u>    | <u>Sample Results (ug/L)</u> | <u>Reporting Limit (ug/L)</u> | <u>Flags</u> |
|---------------------|------------------------------|-------------------------------|--------------|
| Aluminum, dissolved | < 1000                       | 1000                          |              |
| Iron, dissolved     | <b>520</b>                   | 100                           |              |

ICP Analysis Date/Time: 12-7-23/18:26  
Analyst Initials: gjd  
Date Digested: 12/6/2023  
Initial Sample Volume: 50 mL  
Final Volume: 50 mL  
**Analytical Batch:** 120723icp



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IL ELAP / NELAC Accreditation # 100292

1600 Shore Road • Naperville, Illinois 60563 • Phone (630) 778-1200 • Fax (630) 778-1233

December 18, 2023

Mr. David Norris

**ENVISION LABORATORIES, INC.**

1439 Sadlier Circle West Drive

Indianapolis, IN 46239

Project ID: 2023-2480

First Environmental File ID: 23-10919

Date Received: December 08, 2023

Dear Mr. David Norris:

The above referenced project was analyzed as directed on the enclosed chain of custody record.

All Quality Control criteria as outlined in the methods and current IL ELAP/NELAP have been met unless otherwise noted. QA/QC documentation and raw data will remain on file for future reference. Our accreditation number is 100292 and our current certificate is number:

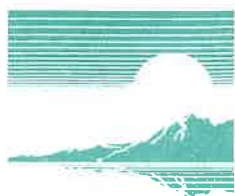
1002922023-11: effective 08/29/2023 through 02/28/2024.

I thank you for the opportunity to be of service to you and look forward to working with you again in the future. Should you have any questions regarding any of the enclosed analytical data or need additional information, please contact me at (630) 778-1200.

Sincerely,

Joy Geraci

Project Manager



## Case Narrative

**ENVISION LABORATORIES, INC.**

Lab File ID: **23-10919**

Project ID: **2023-2480**

Date Received: **December 08, 2023**

All quality control criteria, as outlined in the methods, have been met except as noted below or on the following analytical report.

The results in this report apply to the samples in the following table:

| Laboratory Sample ID | Client Sample Identifier | Date/Time Collected |       |
|----------------------|--------------------------|---------------------|-------|
| 23-10919-001         | 23-20236/MW2 (1)         | 12/4/2023           | 14:45 |
| 23-10919-002         | 23-20237/MW3 (1.5)       | 12/4/2023           | 16:30 |
| 23-10919-003         | 23-20238/MW4 (1.5)       | 12/5/2023           | 18:20 |
| 23-10919-004         | 23-20239/MW5 (1.5)       | 12/5/2023           | 16:45 |
| 23-10919-005         | 23-20240/MW6 (1.5)       | 12/5/2023           | 15:15 |
| 23-10919-006         | 23-20241/MW7 (1)         | 12/5/2023           | 12:15 |
| 23-10919-007         | 23-20242/MW (1.5)        | 12/5/2023           | 13:45 |
| 23-10919-008         | 23-20243/SEEP            | 12/5/2023           | 11:15 |

### Sample Batch Comments:

Sample acceptance criteria were met.

---



## Case Narrative

**ENVISION LABORATORIES, INC.**

Lab File ID: **23-10919**

Project ID: **2023-2480**

Date Received: **December 08, 2023**

All quality control criteria, as outlined in the methods, have been met except as noted below or on the following analytical report.

The following is a definition of flags that may be used in this report:

| Flag | Description                                                                                                          | Flag | Description                                                                                              |
|------|----------------------------------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------------------|
| A    | Method holding time is 15 minutes from collection. Lab analysis was performed as soon as possible.                   |      |                                                                                                          |
| B    | Analyte was found in the method blank.                                                                               | L    | LCS recovery outside control limits.                                                                     |
| <    | Analyte not detected at or above the reporting limit.                                                                | M    | MS recovery outside control limits; LCS acceptable.                                                      |
| C    | Sample received in an improper container for this test.                                                              | P    | Chemical preservation pH adjusted in lab.                                                                |
| D    | Surrogates diluted out; recovery not available.                                                                      | Q    | Result was determined by a GC/MS database search.                                                        |
| E    | Estimated result; concentration exceeds calibration range.                                                           | S    | Analysis was subcontracted to another laboratory.                                                        |
| G    | Surrogate recovery outside control limits.                                                                           | T    | Result is less than three times the MDL value.                                                           |
| H    | Analysis or extraction holding time exceeded.                                                                        | W    | Reporting limit elevated due to sample matrix.                                                           |
| I    | ICVS % rec outside 95-105% but within 90-110%                                                                        |      |                                                                                                          |
| J    | Estimated result; concentration is less than routine RL but greater than MDL.                                        | N    | Analyte is not part of our NELAC accreditation or accreditation may not be available for this parameter. |
| RL   | Routine Reporting Limit (Lowest amount that can be detected when routine weights/volumes are used without dilution.) | ND   | Analyte was not detected using a library search routine; No calibration standard was analyzed.           |



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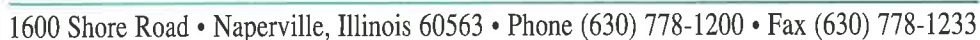
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**Analytical Report**

**Client:** ENVISION LABORATORIES, INC.  
**Project ID:** 2023-2480  
**Sample ID:** 23-20236/MW2 (1)  
**Sample No:** 23-10919-001

**Date Collected:** 12/04/23  
**Time Collected:** 14:45  
**Date Received:** 12/08/23  
**Date Reported:** 12/18/23

| Analyte                                                           | Result                        | R.L. | Units | Flags |
|-------------------------------------------------------------------|-------------------------------|------|-------|-------|
| <b>Sulfide</b><br>Analysis Date: 12/12/23                         | <b>Method: 4500S2,D 2011</b>  |      |       |       |
| Sulfide                                                           | < 0.05                        | 0.05 | mg/L  | H P   |
| <b>Sulfate</b><br>Analysis Date: 12/11/23                         | <b>Method: 4500SO4,E 2011</b> |      |       |       |
| Sulfate                                                           | < 5                           | 5    | mg/L  |       |
| <b>Alkalinity, Total (CaCO3)</b><br>Analysis Date: 12/18/23 11:00 | <b>Method: 2320B 2011</b>     |      |       |       |
| Alkalinity, Total (CaCO3)                                         | 600                           | 20   | mg/L  |       |
| <b>Chloride</b><br>Analysis Date: 12/11/23                        | <b>Method: 4500Cl, E 2011</b> |      |       |       |
| Chloride                                                          | 19                            | 2    | mg/L  |       |





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**Analytical Report**

**Client:** ENVISION LABORATORIES, INC.  
**Project ID:** 2023-2480  
**Sample ID:** 23-20238/MW4 (1.5)  
**Sample No:** 23-10919-003

**Date Collected:** 12/05/23  
**Time Collected:** 18:20  
**Date Received:** 12/08/23  
**Date Reported:** 12/18/23

| Analyte                                                        | Result | R.L. | Units | Flags |
|----------------------------------------------------------------|--------|------|-------|-------|
| <b>Sulfide</b> Method: 4500S2,D 2011                           |        |      |       |       |
| Analysis Date: 12/12/23                                        |        |      |       |       |
| Sulfide                                                        | < 1.25 | 0.05 | mg/L  | W P   |
| <b>Sulfate</b> Method: 4500SO4,E 2011                          |        |      |       |       |
| Analysis Date: 12/11/23                                        |        |      |       |       |
| Sulfate                                                        | 292    | 5    | mg/L  |       |
| <b>Alkalinity, Total (CaCO<sub>3</sub>)</b> Method: 2320B 2011 |        |      |       |       |
| Analysis Date: 12/18/23 11:00                                  |        |      |       |       |
| Alkalinity, Total (CaCO <sub>3</sub> )                         | 400    | 20   | mg/L  |       |
| <b>Chloride</b> Method: 4500Cl, E 2011                         |        |      |       |       |
| Analysis Date: 12/11/23                                        |        |      |       |       |
| Chloride                                                       | 7      | 2    | mg/L  |       |



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**Analytical Report**

**Client:** ENVISION LABORATORIES, INC.

**Project ID:** 2023-2480

**Sample ID:** 23-20239/MW5 (1.5)

**Sample No:** 23-10919-004

**Date Collected:** 12/05/23

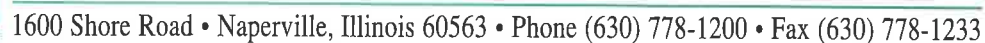
**Time Collected:** 16:45

**Date Received:** 12/08/23

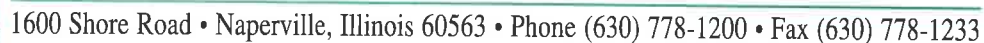
**Date Reported:** 12/18/23

| Analyte                                             | Result | R.L. | Units | Flags |
|-----------------------------------------------------|--------|------|-------|-------|
| <b>Sulfide</b> Method: 4500S2,D 2011                |        |      |       |       |
| Analysis Date: 12/12/23                             |        |      |       |       |
| Sulfide                                             | < 2.5  | 0.05 | mg/L  | W P   |
| <b>Sulfate</b> Method: 4500SO4,E 2011               |        |      |       |       |
| Analysis Date: 12/11/23                             |        |      |       |       |
| Sulfate                                             | 232    | 5    | mg/L  |       |
| <b>Alkalinity, Total (CaCO3)</b> Method: 2320B 2011 |        |      |       |       |
| Analysis Date: 12/18/23 11:00                       |        |      |       |       |
| Alkalinity, Total (CaCO3)                           | < 20   | 20   | mg/L  |       |
| <b>Chloride</b> Method: 4500Cl, E 2011              |        |      |       |       |
| Analysis Date: 12/11/23                             |        |      |       |       |
| Chloride                                            | 7      | 2    | mg/L  |       |

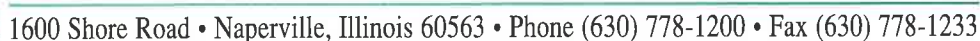




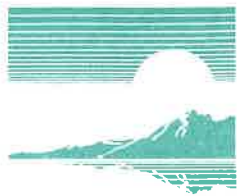
**Date Reported:** 12/18/23



**Date Reported:** 12/18/23



**Date Reported:** 12/18/23



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## Quality Control Summary

Client: ENVISION LABORATORIES, INC.

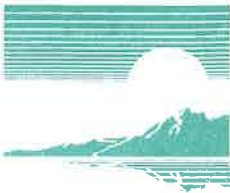
Lab File ID: 23-10919

Project ID: 2023-2480

| QC Lab#         | Time<br>QC Code | Parameter                              | Reported<br>Result            | Units                   | QC Result | %R Limits<br>Low High     | RPD<br>Limit |
|-----------------|-----------------|----------------------------------------|-------------------------------|-------------------------|-----------|---------------------------|--------------|
| Parameter:      |                 | Alkalinity, Total (CaCO <sub>3</sub> ) | Analytical Method: 2320B 2011 | Analytical WS #: 239748 |           | Analysis Date: 12/18/2023 |              |
| 23-10918-001MS  | MS              | Alkalinity, Total (CaCO <sub>3</sub> ) | 380                           | mg/L                    | %R: 88    | 75 - 125                  |              |
| 23-10918-001MSD | MSD             | Alkalinity, Total (CaCO <sub>3</sub> ) | 384                           | mg/L                    | %R: 90    | 75 - 125                  | RPD: 1 20    |
| 23-10922-002MS  | MS              | Alkalinity, Total (CaCO <sub>3</sub> ) | 11000                         | mg/L                    | %R: 90    | 75 - 125                  |              |
| 23-10922-002MSD | MSD             | Alkalinity, Total (CaCO <sub>3</sub> ) | 11200                         | mg/L                    | %R: 94    | 75 - 125                  | RPD: 2 20    |
| CCB855466       | CB              | Alkalinity, Total (CaCO <sub>3</sub> ) | < 5                           | mg/L                    | 0         | -                         |              |
| CCVS855468      | CCVS            | Alkalinity, Total (CaCO <sub>3</sub> ) | 96                            | mg/L                    | %R: 96    | 90 - 110                  |              |

\* The QC indicator is outside control limits. %R = percent recovery; RPD = Relative percent difference  
CB = Calibration Blank; CCVS = Continuing Calibration Verification Standard; MS = Matrix Spike;  
MSD = Matrix Spike Duplicate; LCS = Laboratory Control Spike; SURR = Surrogate Spiking Compound;  
PB = Procedure Blank; BLK = Method Blank; D = QCI diluted out.





# First Environmental Laboratories, Inc.

IL ELAP / NELAC Accreditation # 100292

1600 Shore Road • Naperville, Illinois 60563 • Phone (630) 778-1200 • Fax (630) 778-1233

Client: ENVISION LABORATORIES, INC.

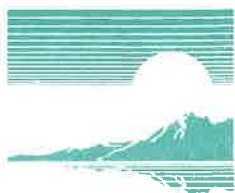
Lab File ID: 23-10919

Project ID: 2023-2480

| QC Lab#                                                                  | Time<br>QC Code | Parameter                         | Reported<br>Result | Units                   | QC Result  | %R Limits<br>Low High     | RPD<br>Limit |
|--------------------------------------------------------------------------|-----------------|-----------------------------------|--------------------|-------------------------|------------|---------------------------|--------------|
| Parameter: Chloride                                                      |                 | Analytical Method: 4500Cl, E 2011 |                    | Analytical WS #: 239522 |            | Analysis Date: 12/11/2023 |              |
| 23-10676-006MS                                                           | MS              | Chloride                          | 47                 | mg/L                    | %R: 83.8 * | 90 - 110                  |              |
| MS outside control limits. All other QCIs are within acceptance limits.  |                 |                                   |                    |                         |            |                           |              |
| 23-10676-006MSD                                                          | MSD             | Chloride                          | 43                 | mg/L                    | %R: 66.8 * | 90 - 110                  | RPD: 8 20    |
| MSD outside control limits. All other QCIs are within acceptance limits. |                 |                                   |                    |                         |            |                           |              |
| 23-10676-008MS                                                           | MS              | Chloride                          | 9                  | mg/L                    | %R: 89.2 * | 90 - 110                  |              |
| MS outside control limits. All other QCIs are within acceptance limits.  |                 |                                   |                    |                         |            |                           |              |
| 23-10676-008MSD                                                          | MSD             | Chloride                          | 9                  | mg/L                    | %R: 81.6 * | 90 - 110                  | RPD: 4 20    |
| MSD outside control limits. All other QCIs are within acceptance limits. |                 |                                   |                    |                         |            |                           |              |
| 23-10750-001MS                                                           | MS              | Chloride                          | 41                 | mg/L                    | %R: 77.4 * | 90 - 110                  |              |
| MS outside control limits. All other QCIs are within acceptance limits.  |                 |                                   |                    |                         |            |                           |              |
| 23-10750-001MSD                                                          | MSD             | Chloride                          | 44                 | mg/L                    | %R: 88.4 * | 90 - 110                  | RPD: 5 20    |
| MSD outside control limits. All other QCIs are within acceptance limits. |                 |                                   |                    |                         |            |                           |              |
| 23-10763-001MS                                                           | MS              | Chloride                          | 9                  | mg/L                    | %R: 89 *   | 90 - 110                  |              |
| MS outside control limits. All other QCIs are within acceptance limits.  |                 |                                   |                    |                         |            |                           |              |
| 23-10763-001MSD                                                          | MSD             | Chloride                          | 8                  | mg/L                    | %R: 64.2 * | 90 - 110                  | RPD: 14 20   |
| MSD outside control limits. All other QCIs are within acceptance limits. |                 |                                   |                    |                         |            |                           |              |
| 23-10919-004MS                                                           | MS              | Chloride                          | 10                 | mg/L                    | %R: 66.4 * | 90 - 110                  |              |
| 23-10919-004MSD                                                          | MSD             | Chloride                          | 12                 | mg/L                    | %R: 108.6  | 90 - 110                  | RPD: 19 20   |
| 23-10923-011MS                                                           | MS              | Chloride                          | 8                  | mg/L                    | %R: 85 *   | 90 - 110                  |              |
| MS outside control limits. All other QCIs are within acceptance limits.  |                 |                                   |                    |                         |            |                           |              |
| 23-10923-011MSD                                                          | MSD             | Chloride                          | 9                  | mg/L                    | %R: 96.8   | 90 - 110                  | RPD: 7 20    |
| CCB853962                                                                | CB              | Chloride                          | < 2                | mg/L                    | 0          | -                         |              |
| CCB853963                                                                | CB              | Chloride                          | < 2                | mg/L                    | 0          | -                         |              |
| CCVS853964                                                               | CCVS            | Chloride                          | 52                 | mg/L                    | %R: 104.3  | 90 - 110                  |              |
| CCVS853970                                                               | CCVS            | Chloride                          | 10                 | mg/L                    | %R: 97.9   | 90 - 110                  |              |
| ICB853965                                                                | CB              | Chloride                          | < 2                | mg/L                    | 0          | -                         |              |
| ICB853966                                                                | CB              | Chloride                          | < 2                | mg/L                    | 0          | -                         |              |
| ICVS853967                                                               | ICVS            | Chloride                          | 50                 | mg/L                    | %R: 99.6   | 90 - 110                  |              |

\* The QC indicator is outside control limits. %R = percent recovery; RPD = Relative percent difference  
 CB = Calibration Blank; CCVS = Continuing Calibration Verification Standard; MS = Matrix Spike;  
 MSD = Matrix Spike Duplicate; LCS = Laboratory Control Spike; SURR = Surrogate Spiking Compound;  
 PB = Procedure Blank; BLK = Method Blank; D = QCI diluted out.





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Client: ENVISION LABORATORIES, INC.

Lab File ID: 23-10919

Project ID: 2023-2480

| QC Lab#                                                                                                                           | Time<br>QC Code | Parameter | Reported<br>Result | Units | QC Result | %R Limits<br>Low High | RPD<br>Limit |
|-----------------------------------------------------------------------------------------------------------------------------------|-----------------|-----------|--------------------|-------|-----------|-----------------------|--------------|
| ICVS853971                                                                                                                        | ICVS            | Chloride  | 10                 | mg/L  | %R: 97.3  | 90 - 110              |              |
| <b>Parameter:</b> Sulfide <b>Analytical Method:</b> 4500S2,D 2011 <b>Analytical WS #:</b> 239589 <b>Analysis Date:</b> 12/12/2023 |                 |           |                    |       |           |                       |              |
| 23-10919-001MS                                                                                                                    | MS              | Sulfide   | 0.20               | mg/L  | %R: 99    | 75 - 125              |              |
| 23-10919-001MSD                                                                                                                   | MSD             | Sulfide   | 0.26               | mg/L  | %R: 129   | * 75 - 125            | RPD: 26 * 20 |
| MSD outside control limits. All other QCIs are within acceptance limits.                                                          |                 |           |                    |       |           |                       |              |
| CCB854230                                                                                                                         | CB              | Sulfide   | < 0.05             | mg/L  | 0         | -                     |              |
| CCB854231                                                                                                                         | CB              | Sulfide   | < 0.05             | mg/L  | 0         | -                     |              |
| CCB854232                                                                                                                         | CB              | Sulfide   | < 0.05             | mg/L  | 0         | -                     |              |
| CCVS854233                                                                                                                        | CCVS            | Sulfide   | 0.50               | mg/L  | %R: 100.2 | 90 - 110              |              |
| CCVS854234                                                                                                                        | CCVS            | Sulfide   | 0.50               | mg/L  | %R: 99.6  | 90 - 110              |              |
| CCVS854235                                                                                                                        | CCVS            | Sulfide   | 0.50               | mg/L  | %R: 101   | 90 - 110              |              |

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 MSD = Matrix Spike Duplicate; LCS = Laboratory Control Spike; SURR = Surrogate Spiking Compound;  
 PB = Procedure Blank; BLK = Method Blank; D = QCI diluted out.





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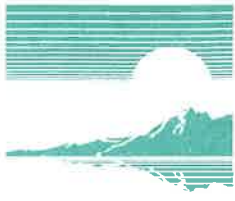
Lab File ID: 23-10919

Project ID: 2023-2480

| QC Lab#                                                                  | Time<br>QC Code | Parameter                                      | Reported<br>Result | Units                   | QC Result   | %R Limits<br>Low High     | RPD<br>Limit |
|--------------------------------------------------------------------------|-----------------|------------------------------------------------|--------------------|-------------------------|-------------|---------------------------|--------------|
| Parameter: Sulfate                                                       |                 | Analytical Method: 4500SO <sub>4</sub> ,E 2011 |                    | Analytical WS #: 239523 |             | Analysis Date: 12/11/2023 |              |
| 23-10676-001MS                                                           | MS              | Sulfate                                        | 8                  | mg/L                    | %R: 136 *   | 90 - 110                  |              |
| MS outside control limits. All other QCIs are within acceptance limits.  |                 |                                                |                    |                         |             |                           |              |
| 23-10676-001MSD                                                          | MSD             | Sulfate                                        | 8                  | mg/L                    | %R: 139.8 * | 90 - 110                  | RPD: 2 20    |
| MSD outside control limits. All other QCIs are within acceptance limits. |                 |                                                |                    |                         |             |                           |              |
| 23-10676-010MS                                                           | MS              | Sulfate                                        | 57                 | mg/L                    | %R: 56.8 *  | 90 - 110                  |              |
| MS outside control limits. All other QCIs are within acceptance limits.  |                 |                                                |                    |                         |             |                           |              |
| 23-10676-010MSD                                                          | MSD             | Sulfate                                        | 58                 | mg/L                    | %R: 62.4 *  | 90 - 110                  | RPD: 2 20    |
| MSD outside control limits. All other QCIs are within acceptance limits. |                 |                                                |                    |                         |             |                           |              |
| 23-10767-001MS                                                           | MS              | Sulfate                                        | 78                 | mg/L                    | %R: 81 *    | 90 - 110                  |              |
| MS outside control limits. All other QCIs are within acceptance limits.  |                 |                                                |                    |                         |             |                           |              |
| 23-10767-001MSD                                                          | MSD             | Sulfate                                        | 77                 | mg/L                    | %R: 75.1 *  | 90 - 110                  | RPD: 2 20    |
| MSD outside control limits. All other QCIs are within acceptance limits. |                 |                                                |                    |                         |             |                           |              |
| 23-10919-001MS                                                           | MS              | Sulfate                                        | 8                  | mg/L                    | %R: 121 *   | 90 - 110                  |              |
| MS outside control limits. All other QCIs are within acceptance limits.  |                 |                                                |                    |                         |             |                           |              |
| 23-10919-001MSD                                                          | MSD             | Sulfate                                        | 8                  | mg/L                    | %R: 119 *   | 90 - 110                  | RPD: 1 20    |
| MSD outside control limits. All other QCIs are within acceptance limits. |                 |                                                |                    |                         |             |                           |              |
| 23-10919-006MS                                                           | MS              | Sulfate                                        | 88                 | mg/L                    | %R: 88.7 *  | 90 - 110                  |              |
| MS outside control limits. All other QCIs are within acceptance limits.  |                 |                                                |                    |                         |             |                           |              |
| 23-10919-006MSD                                                          | MSD             | Sulfate                                        | 83                 | mg/L                    | %R: 64.8 *  | 90 - 110                  | RPD: 6 20    |
| MSD outside control limits. All other QCIs are within acceptance limits. |                 |                                                |                    |                         |             |                           |              |
| 23-10923-009MS                                                           | MS              | Sulfate                                        | 10                 | mg/L                    | %R: 90      | 90 - 110                  |              |
| 23-10923-009MSD                                                          | MSD             | Sulfate                                        | 11                 | mg/L                    | %R: 110.6 * | 90 - 110                  | RPD: 10 20   |
| MSD outside control limits. All other QCIs are within acceptance limits. |                 |                                                |                    |                         |             |                           |              |
| CCB854069                                                                | CB              | Sulfate                                        | < 5                | mg/L                    | 0           | -                         |              |
| CCB854070                                                                | CB              | Sulfate                                        | < 5                | mg/L                    | 0           | -                         |              |
| CCVS854071                                                               | CCVS            | Sulfate                                        | 50                 | mg/L                    | %R: 100.8   | 90 - 110                  |              |
| CCVS854077                                                               | CCVS            | Sulfate                                        | 10                 | mg/L                    | %R: 99.4    | 90 - 110                  |              |
| ICB854072                                                                | CB              | Sulfate                                        | < 5                | mg/L                    | 0           | -                         |              |
| ICB854073                                                                | CB              | Sulfate                                        | < 5                | mg/L                    | 0           | -                         |              |
| ICVS854074                                                               | ICVS            | Sulfate                                        | 51                 | mg/L                    | %R: 102.2   | 90 - 110                  |              |

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 PB = Procedure Blank; BLK = Method Blank; D = QCI diluted out.





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Client: ENVISION LABORATORIES, INC.

Lab File ID: 23-10919

Project ID: 2023-2480

| QC Lab#    | Time<br>QC Code | Parameter | Reported<br>Result | Units | QC Result | %R Limits |      | RPD<br>Limit |
|------------|-----------------|-----------|--------------------|-------|-----------|-----------|------|--------------|
|            |                 |           |                    |       |           | Low       | High |              |
| ICVS854078 | ICVS            | Sulfate   | 10                 | mg/L  | %R: 98.8  | 90        | 110  |              |

\* The QC indicator is outside control limits. %R = percent recovery; RPD = Relative percent difference  
CB = Calibration Blank; C CVS = Continuing Calibration Verification Standard; MS = Matrix Spike;  
MSD = Matrix Spike Duplicate; LCS = Laboratory Control Spike; SURR = Surrogate Spiking Compound;  
PB = Procedure Blank; BLK = Method Blank; D = QCI diluted out.







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Fax: 317.351.8639  
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### **EPA 6010B Metals Quality Control Data**

**ENVision Batch Number:** 120723icp

| <b><u>Method Blank (MB):</u></b> | <b><u>MB Results(mg/L)</u></b> | <b><u>Rep Lim (mg/L)</u></b> | <b><u>Flag</u></b> |
|----------------------------------|--------------------------------|------------------------------|--------------------|
| Aluminum, total                  | < 1                            | 1                            |                    |
| Iron, total                      | < 0.1                          | 0.1                          |                    |
| Analysis Date/Time:              | 12-7-23/17:31                  |                              |                    |
| Analyst Initials:                | gjd                            |                              |                    |

| <b><u>Laboratory Control Standard (LCS):</u></b> | <b><u>LCS Results (mg/L)</u></b> | <b><u>LCS Conc.(mg/L)</u></b> | <b><u>% Rec</u></b> | <b><u>Flag</u></b> |
|--------------------------------------------------|----------------------------------|-------------------------------|---------------------|--------------------|
| Aluminum, total                                  | 0.51                             | 0.50                          | 102%                |                    |
| Iron, total                                      | 0.47                             | 0.50                          | 94%                 |                    |
| Analysis Date/Time:                              | 12-7-23/17:29                    |                               |                     |                    |
| Analyst Initials:                                | gjd                              |                               |                     |                    |



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### **EPA 6010B Metals Quality Control Data**

**ENVision Batch Number:** 120723icp

| <b><u>Method Blank (MB):</u></b> | <b><u>MB Results(mg/L)</u></b> | <b><u>Rep Lim (mg/L)</u></b> | <b><u>Flag</u></b> |
|----------------------------------|--------------------------------|------------------------------|--------------------|
| Aluminum, dissolved              | < 1                            | 1                            |                    |
| Iron, dissolved                  | < 0.1                          | 0.1                          |                    |
| Analysis Date/Time:              | 12-7-23/17:27                  |                              |                    |
| Analyst Initials:                | gjd                            |                              |                    |

| <b><u>Laboratory Control Standard (LCS):</u></b> | <b><u>LCS Results (mg/L)</u></b> | <b><u>LCS Conc.(mg/L)</u></b> | <b><u>% Rec</u></b> | <b><u>Flag</u></b> |
|--------------------------------------------------|----------------------------------|-------------------------------|---------------------|--------------------|
| Aluminum, dissolved                              | 0.60                             | 0.50                          | 120%                |                    |
| Iron, dissolved                                  | 0.47                             | 0.50                          | 94%                 |                    |
| Analysis Date/Time:                              | 12-7-23/17:24                    |                               |                     |                    |
| Analyst Initials:                                | gjd                              |                               |                     |                    |



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Flag Number

Comments



# CHAIN OF CUSTODY RECORD

ENVISSION Laboratories, Inc. | 1439 Sadlier Circle West Drive | Indianapolis, IN 46239 | Phone: (317) 351-8632 | Fax: (317) 351-8639

ENVISSION Proj# 2023-2480 Page 1 of 1

|                                                                           |            |                                                              |                   |                                                             |         |         |            |          |                   |                       |                                    |                                        |     |                  |                                |      |       |      |                     |
|---------------------------------------------------------------------------|------------|--------------------------------------------------------------|-------------------|-------------------------------------------------------------|---------|---------|------------|----------|-------------------|-----------------------|------------------------------------|----------------------------------------|-----|------------------|--------------------------------|------|-------|------|---------------------|
| Client: <u>Terraccon</u>                                                  |            | Invoice Address: <u>Same as Report</u>                       |                   | REQUESTED PARAMETERS                                        |         |         |            |          |                   |                       |                                    |                                        |     |                  |                                |      |       |      |                     |
| Report To: <u>7770 W. New York St. Indianapolis, IN 46214</u>             |            | Project Name: <u>CS235079</u>                                |                   | Cooler Temp: <u>2</u> °C                                    |         |         |            |          |                   |                       |                                    |                                        |     |                  |                                |      |       |      |                     |
| Report To: <u>Scott Hoppel</u>                                            |            | Lab Contact: <u>David Morris</u>                             |                   | Samples on Ice? <u>Yes</u> No                               |         |         |            |          |                   |                       |                                    |                                        |     |                  |                                |      |       |      |                     |
| Phone: <u>317-273-1690</u>                                                |            | Sampled by: <u>Peter Dantel-Tauer</u>                        |                   | Custody Seal: <u>Yes</u> No                                 |         |         |            |          |                   |                       |                                    |                                        |     |                  |                                |      |       |      |                     |
| Fax: <u>-</u>                                                             |            | P.O. Number: <u>-</u>                                        |                   | ENVISSION provided bottles: <u>Yes</u> No                   |         |         |            |          |                   |                       |                                    |                                        |     |                  |                                |      |       |      |                     |
| Desired TAT: (Please Circle One)<br>1-day 2-day 3-day Std (5-7 bus. days) |            | QA/QC Required: (circle if applicable)<br>Level III Level IV |                   | VOC vials free of head-space: <u>Yes</u> No                 |         |         |            |          |                   |                       |                                    |                                        |     |                  |                                |      |       |      |                     |
|                                                                           |            |                                                              |                   | Method 5035 collection used? <u>Yes</u> No                  |         |         |            |          |                   |                       |                                    |                                        |     |                  |                                |      |       |      |                     |
|                                                                           |            |                                                              |                   | Collection? <u>Yes</u> No                                   |         |         |            |          |                   |                       |                                    |                                        |     |                  |                                |      |       |      |                     |
|                                                                           |            |                                                              |                   | Please indicate number of containers per preservative below |         |         |            |          |                   |                       |                                    |                                        |     |                  |                                |      |       |      |                     |
| Sample ID                                                                 | Coll. Date | Coll. Time                                                   | Comp (C) Grab (g) | Matrix                                                      | Sulfide | Sulfate | Alkalinity | Chloride | Iron (Fe) - Total | Aluminum (Al) - Total | Iron (Fe) - Dissolved (Lab Filter) | Aluminum (Al) - Dissolved (Lab Filter) | HCl | HNO <sub>3</sub> | H <sub>2</sub> SO <sub>4</sub> | NaOH | Other | None | ENVISSION Sample ID |
| MW2 (1)                                                                   | 7/4/23     | 1445                                                         | G                 | GW                                                          | X       | X       | X          | X        | X                 | X                     | X                                  | X                                      | 1   | 1                | 1                              | 1    | 1     | 1    | 23-20234            |
| MW3 (1.5)                                                                 | ↓          | 1630                                                         | ↓                 | ↓                                                           | X       | X       | X          | X        | X                 | X                     | X                                  | X                                      | 1   | 1                | 1                              | 1    | 1     | 2    | 20237               |
| MW4 (1.5)                                                                 | 7/5/23     | 1820                                                         | ↓                 | ↓                                                           | X       | X       | X          | X        | X                 | X                     | X                                  | X                                      | 1   | 1                | 1                              | 1    | 1     | 2    | 20238               |
| MW5 (1.5)                                                                 | ↓          | 1645                                                         | ↓                 | ↓                                                           | X       | X       | X          | X        | X                 | X                     | X                                  | X                                      | 1   | 1                | 1                              | 1    | 1     | 2    | 20239               |
| MW6 (1.5)                                                                 | ↓          | 1515                                                         | ↓                 | ↓                                                           | X       | X       | X          | X        | X                 | X                     | X                                  | X                                      | 1   | 1                | 1                              | 1    | 1     | 2    | 20240               |
| MW7 (1)                                                                   | ↓          | 1215                                                         | ↓                 | ↓                                                           | X       | X       | X          | X        | X                 | X                     | X                                  | X                                      | 1   | 1                | 1                              | 1    | 1     | 2    | 20241               |
| MW7 (1.5)                                                                 | ↓          | 1345                                                         | ↓                 | ↓                                                           | X       | X       | X          | X        | X                 | X                     | X                                  | X                                      | 1   | 1                | 1                              | 1    | 1     | 2    | 20242               |
| Seep                                                                      | ↓          | 1115                                                         | ↓                 | ↓                                                           | X       | X       | X          | X        | X                 | X                     | X                                  | X                                      | 1   | 1                | 1                              | 1    | 1     | 2    | 20243               |

Comments:

|                                          |  |                      |  |                   |  |                                |  |                       |  |                    |  |
|------------------------------------------|--|----------------------|--|-------------------|--|--------------------------------|--|-----------------------|--|--------------------|--|
| Relinquished by: <u>Pt. Dantel-Tauer</u> |  | Date: <u>12/6/23</u> |  | Time: <u>1008</u> |  | Received by: <u>Shawna Fox</u> |  | Date: <u>12/14/23</u> |  | Time: <u>10:08</u> |  |
|------------------------------------------|--|----------------------|--|-------------------|--|--------------------------------|--|-----------------------|--|--------------------|--|



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Mr. Scott Hoppel  
Terracon  
351 Transfer Dr.  
Indianapolis, IN 46214

December 19, 2023

ENVision Project Number: 2023-2481  
Client Project Name: CJ235079

Dear Mr. Hoppel,

Please find the attached analytical report for the samples received December 6, 2023. All test methods performed were fully compliant with local, state, and federal EPA methods unless otherwise noted. The project was analyzed as requested on the enclosed chain of custody record. Please review the comments section for additional information about your results or Quality Control data.

Feel free to contact me if you have any questions or comments regarding your analytical report or service.

Thank you for your business. ENVision Laboratories looks forward to working with you on your next project.

Yours Sincerely,

A handwritten signature in black ink that reads 'David Norris'.

David Norris

Client Services Manager  
ENVision Laboratories, Inc.



## Analytical Report

**ENVision Laboratories, Inc.**  
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**Client Name:** TERRACON  
**Project ID:** CJ235079  
**Client Project Manager:** SCOTT HOPPEL  
**ENVision Project Number:** 2023-2481

**Analytical Method:** EPA 6010  
**Prep Method:** EPA 3010A

**Client Sample ID:** DRUM  
**Envision Sample Number:** 23-20244  
**Sample Matrix:** water  
**Sample Collection Date/Time:** 12/5/23 19:00  
**Sample Received Date/Time:** 12/6/23 10:08

| <u>Compounds</u> | <u>Sample Results (ug/L)</u> | <u>Reporting Limit (ug/L)</u> | <u>Flags</u> |
|------------------|------------------------------|-------------------------------|--------------|
| Aluminum, total  | 6,500                        | 1000                          |              |
| Iron, total      | 29,000                       | 100                           |              |

**ICP Analysis Date/Time:** 12-7-23/18:28  
**Analyst Initials:** gjd  
**Date Digested:** 12/6/2023  
**Initial Sample Volume:** 50 mL  
**Final Volume:** 50 mL  
**Analytical Batch:** 120723icp

| <u>Compounds</u>    | <u>Sample Results (ug/L)</u> | <u>Reporting Limit (ug/L)</u> | <u>Flags</u> |
|---------------------|------------------------------|-------------------------------|--------------|
| Aluminum, dissolved | < 1000                       | 1000                          |              |
| Iron, dissolved     | < 100                        | 100                           |              |

**ICP Analysis Date/Time:** 12-7-23/18:30  
**Analyst Initials:** gjd  
**Date Digested:** 12/6/2023  
**Initial Sample Volume:** 50 mL  
**Final Volume:** 50 mL  
**Analytical Batch:** 120723icp



**First  
Environmental  
Laboratories, Inc.**

IL ELAP / NELAC Accreditation # 100292

1600 Shore Road • Naperville, Illinois 60563 • Phone (630) 778-1200 • Fax (630) 778-1233

December 18, 2023

Mr. David Norris

**ENVISION LABORATORIES, INC.**

1439 Sadlier Circle West Drive

Indianapolis, IN 46239

Project ID: 2023-2481

First Environmental File ID: 23-10918

Date Received: December 08, 2023

Dear Mr. David Norris:

The above referenced project was analyzed as directed on the enclosed chain of custody record.

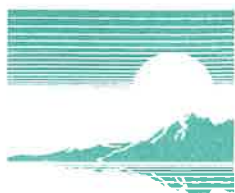
All Quality Control criteria as outlined in the methods and current IL ELAP/NELAP have been met unless otherwise noted. QA/QC documentation and raw data will remain on file for future reference. Our accreditation number is 100292 and our current certificate is number:

1002922023-11: effective 08/29/2023 through 02/28/2024.

I thank you for the opportunity to be of service to you and look forward to working with you again in the future. Should you have any questions regarding any of the enclosed analytical data or need additional information, please contact me at (630) 778-1200.

Sincerely,

Joy Geraci  
Project Manager



## Case Narrative

**ENVISION LABORATORIES, INC.**

Lab File ID: **23-10918**

Project ID: **2023-2481**

Date Received: **December 08, 2023**

All quality control criteria, as outlined in the methods, have been met except as noted below or on the following analytical report.

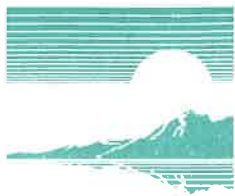
The results in this report apply to the samples in the following table:

| Laboratory Sample ID | Client Sample Identifier | Date/Time Collected |
|----------------------|--------------------------|---------------------|
| 23-10918-001         | 23-20244/Drum            | 12/5/2023 19:00     |

### Sample Batch Comments:

Sample acceptance criteria were met.

---



## Case Narrative

**ENVISION LABORATORIES, INC.**

Lab File ID: **23-10918**

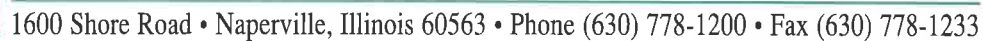
Project ID: **2023-2481**

Date Received: **December 08, 2023**

All quality control criteria, as outlined in the methods, have been met except as noted below or on the following analytical report.

The following is a definition of flags that may be used in this report:

| Flag | Description                                                                                                          | Flag | Description                                                                                              |
|------|----------------------------------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------------------|
| A    | Method holding time is 15 minutes from collection. Lab analysis was performed as soon as possible.                   |      |                                                                                                          |
| B    | Analyte was found in the method blank.                                                                               | L    | LCS recovery outside control limits.                                                                     |
| <    | Analyte not detected at or above the reporting limit.                                                                | M    | MS recovery outside control limits; LCS acceptable.                                                      |
| C    | Sample received in an improper container for this test.                                                              | P    | Chemical preservation pH adjusted in lab.                                                                |
| D    | Surrogates diluted out; recovery not available.                                                                      | Q    | Result was determined by a GC/MS database search.                                                        |
| E    | Estimated result; concentration exceeds calibration range.                                                           | S    | Analysis was subcontracted to another laboratory.                                                        |
| G    | Surrogate recovery outside control limits.                                                                           | T    | Result is less than three times the MDL value.                                                           |
| H    | Analysis or extraction holding time exceeded.                                                                        | W    | Reporting limit elevated due to sample matrix.                                                           |
| I    | ICVS % rec outside 95-105% but within 90-110%                                                                        |      |                                                                                                          |
| J    | Estimated result; concentration is less than routine RL but greater than MDL.                                        | N    | Analyte is not part of our NELAC accreditation or accreditation may not be available for this parameter. |
| RL   | Routine Reporting Limit (Lowest amount that can be detected when routine weights/volumes are used without dilution.) | ND   | Analyte was not detected using a library search routine; No calibration standard was analyzed.           |





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## Quality Control Summary

Client: ENVISION LABORATORIES, INC.

Lab File ID: 23-10918

Project ID: 2023-2481

| QC Lab#         | Time<br>QC Code | Parameter                              | Reported<br>Result            | Units | QC Result               | %R Limits<br>Low High | RPD<br>Limit              |
|-----------------|-----------------|----------------------------------------|-------------------------------|-------|-------------------------|-----------------------|---------------------------|
| Parameter:      |                 | Alkalinity, Total (CaCO <sub>3</sub> ) | Analytical Method: 2320B 2011 |       | Analytical WS #: 239748 |                       | Analysis Date: 12/18/2023 |
| 23-10918-001MS  | MS              | Alkalinity, Total (CaCO <sub>3</sub> ) | 380                           | mg/L  | %R: 88                  | 75 - 125              |                           |
| 23-10918-001MSD | MSD             | Alkalinity, Total (CaCO <sub>3</sub> ) | 384                           | mg/L  | %R: 90                  | 75 - 125              | RPD: 1 20                 |
| 23-10922-002MS  | MS              | Alkalinity, Total (CaCO <sub>3</sub> ) | 11000                         | mg/L  | %R: 90                  | 75 - 125              |                           |
| 23-10922-002MSD | MSD             | Alkalinity, Total (CaCO <sub>3</sub> ) | 11200                         | mg/L  | %R: 94                  | 75 - 125              | RPD: 2 20                 |
| CCB855466       | CB              | Alkalinity, Total (CaCO <sub>3</sub> ) | < 5                           | mg/L  | 0                       | -                     |                           |
| CCVS855468      | CCVS            | Alkalinity, Total (CaCO <sub>3</sub> ) | 96                            | mg/L  | %R: 96                  | 90 - 110              |                           |

\* The QC indicator is outside control limits. %R = percent recovery; RPD = Relative percent difference  
CB = Calibration Blank; CCVS = Continuing Calibration Verification Standard; MS = Matrix Spike;  
MSD = Matrix Spike Duplicate; LCS = Laboratory Control Spike; SURR = Surrogate Spiking Compound;  
PB = Procedure Blank; BLK = Method Blank; D = QCI diluted out.





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Client: ENVISION LABORATORIES, INC.

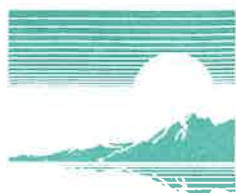
Lab File ID: 23-10918

Project ID: 2023-2481

| QC Lab#                                                                  | Time<br>QC Code | Parameter                         | Reported<br>Result | Units                   | QC Result  | %R Limits<br>Low High     | RPD<br>Limit |
|--------------------------------------------------------------------------|-----------------|-----------------------------------|--------------------|-------------------------|------------|---------------------------|--------------|
| Parameter: Chloride                                                      |                 | Analytical Method: 4500Cl, E 2011 |                    | Analytical WS #: 239522 |            | Analysis Date: 12/11/2023 |              |
| 23-10676-006MS                                                           | MS              | Chloride                          | 47                 | mg/L                    | %R: 83.8 * | 90 - 110                  |              |
| MS outside control limits. All other QCIs are within acceptance limits.  |                 |                                   |                    |                         |            |                           |              |
| 23-10676-006MSD                                                          | MSD             | Chloride                          | 43                 | mg/L                    | %R: 66.8 * | 90 - 110                  | RPD: 8 20    |
| MSD outside control limits. All other QCIs are within acceptance limits. |                 |                                   |                    |                         |            |                           |              |
| 23-10676-008MS                                                           | MS              | Chloride                          | 9                  | mg/L                    | %R: 89.2 * | 90 - 110                  |              |
| MS outside control limits. All other QCIs are within acceptance limits.  |                 |                                   |                    |                         |            |                           |              |
| 23-10676-008MSD                                                          | MSD             | Chloride                          | 9                  | mg/L                    | %R: 81.6 * | 90 - 110                  | RPD: 4 20    |
| MSD outside control limits. All other QCIs are within acceptance limits. |                 |                                   |                    |                         |            |                           |              |
| 23-10750-001MS                                                           | MS              | Chloride                          | 41                 | mg/L                    | %R: 77.4 * | 90 - 110                  |              |
| MS outside control limits. All other QCIs are within acceptance limits.  |                 |                                   |                    |                         |            |                           |              |
| 23-10750-001MSD                                                          | MSD             | Chloride                          | 44                 | mg/L                    | %R: 88.4 * | 90 - 110                  | RPD: 5 20    |
| MSD outside control limits. All other QCIs are within acceptance limits. |                 |                                   |                    |                         |            |                           |              |
| 23-10763-001MS                                                           | MS              | Chloride                          | 9                  | mg/L                    | %R: 89 *   | 90 - 110                  |              |
| MS outside control limits. All other QCIs are within acceptance limits.  |                 |                                   |                    |                         |            |                           |              |
| 23-10763-001MSD                                                          | MSD             | Chloride                          | 8                  | mg/L                    | %R: 64.2 * | 90 - 110                  | RPD: 14 20   |
| MSD outside control limits. All other QCIs are within acceptance limits. |                 |                                   |                    |                         |            |                           |              |
| 23-10919-004MS                                                           | MS              | Chloride                          | 10                 | mg/L                    | %R: 66.4 * | 90 - 110                  |              |
| 23-10919-004MSD                                                          | MSD             | Chloride                          | 12                 | mg/L                    | %R: 108.6  | 90 - 110                  | RPD: 19 20   |
| 23-10923-011MS                                                           | MS              | Chloride                          | 8                  | mg/L                    | %R: 85 *   | 90 - 110                  |              |
| MS outside control limits. All other QCIs are within acceptance limits.  |                 |                                   |                    |                         |            |                           |              |
| 23-10923-011MSD                                                          | MSD             | Chloride                          | 9                  | mg/L                    | %R: 96.8   | 90 - 110                  | RPD: 7 20    |
| CCB853962                                                                | CB              | Chloride                          | < 2                | mg/L                    | 0          | -                         |              |
| CCB853963                                                                | CB              | Chloride                          | < 2                | mg/L                    | 0          | -                         |              |
| CCVS853964                                                               | CCVS            | Chloride                          | 52                 | mg/L                    | %R: 104.3  | 90 - 110                  |              |
| CCVS853970                                                               | CCVS            | Chloride                          | 10                 | mg/L                    | %R: 97.9   | 90 - 110                  |              |
| ICB853965                                                                | CB              | Chloride                          | < 2                | mg/L                    | 0          | -                         |              |
| ICB853966                                                                | CB              | Chloride                          | < 2                | mg/L                    | 0          | -                         |              |
| ICVS853967                                                               | ICVS            | Chloride                          | 50                 | mg/L                    | %R: 99.6   | 90 - 110                  |              |

\* The QC indicator is outside control limits. %R = percent recovery; RPD = Relative percent difference  
 CB = Calibration Blank; CCVS = Continuing Calibration Verification Standard; MS = Matrix Spike;  
 MSD = Matrix Spike Duplicate; LCS = Laboratory Control Spike; SURR = Surrogate Spiking Compound;  
 PB = Procedure Blank; BLK = Method Blank; D = QCI diluted out.





**First  
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IL ELAP / NELAC Accreditation # 100292

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Client: ENVISION LABORATORIES, INC.

Lab File ID: 23-10918

Project ID: 2023-2481

| QC Lab#                                                                                                                           | Time<br>QC Code | Parameter | Reported<br>Result | Units | QC Result | %R Limits<br>Low High | RPD<br>Limit |
|-----------------------------------------------------------------------------------------------------------------------------------|-----------------|-----------|--------------------|-------|-----------|-----------------------|--------------|
| ICVS853971                                                                                                                        | ICVS            | Chloride  | 10                 | mg/L  | %R: 97.3  | 90 - 110              |              |
| <b>Parameter:</b> Sulfide <b>Analytical Method:</b> 4500S2,D 2011 <b>Analytical WS #:</b> 239589 <b>Analysis Date:</b> 12/12/2023 |                 |           |                    |       |           |                       |              |
| 23-10919-001MS                                                                                                                    | MS              | Sulfide   | 0.20               | mg/L  | %R: 99    | 75 - 125              |              |
| 23-10919-001MSD                                                                                                                   | MSD             | Sulfide   | 0.26               | mg/L  | %R: 129   | * 75 - 125            | RPD: 26 * 20 |
| MSD outside control limits. All other QCIs are within acceptance limits.                                                          |                 |           |                    |       |           |                       |              |
| CCB854230                                                                                                                         | CB              | Sulfide   | < 0.05             | mg/L  | 0         | -                     |              |
| CCB854231                                                                                                                         | CB              | Sulfide   | < 0.05             | mg/L  | 0         | -                     |              |
| CCB854232                                                                                                                         | CB              | Sulfide   | < 0.05             | mg/L  | 0         | -                     |              |
| CCVS854233                                                                                                                        | CCVS            | Sulfide   | 0.50               | mg/L  | %R: 100.2 | 90 - 110              |              |
| CCVS854234                                                                                                                        | CCVS            | Sulfide   | 0.50               | mg/L  | %R: 99.6  | 90 - 110              |              |
| CCVS854235                                                                                                                        | CCVS            | Sulfide   | 0.50               | mg/L  | %R: 101   | 90 - 110              |              |

\* The QC indicator is outside control limits. %R = percent recovery; RPD = Relative percent difference  
CB = Calibration Blank; CCVS = Continuing Calibration Verification Standard; MS = Matrix Spike;  
MSD = Matrix Spike Duplicate; LCS = Laboratory Control Spike; SURR = Surrogate Spiking Compound;  
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Client: ENVISION LABORATORIES, INC.

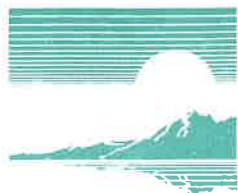
Lab File ID: 23-10918

Project ID: 2023-2481

| QC Lab#                                                                  | Time<br>QC Code | Parameter                         | Reported<br>Result | Units                   | QC Result | %R Limits<br>Low High     |         | RPD<br>Limit |
|--------------------------------------------------------------------------|-----------------|-----------------------------------|--------------------|-------------------------|-----------|---------------------------|---------|--------------|
| Parameter: Sulfate                                                       |                 | Analytical Method: 4500SO4,E 2011 |                    | Analytical WS #: 239523 |           | Analysis Date: 12/11/2023 |         |              |
| 23-10676-001MS                                                           | MS              | Sulfate                           | 8                  | mg/L                    | %R: 136   | * 90 - 110                |         |              |
| MS outside control limits. All other QCIs are within acceptance limits.  |                 |                                   |                    |                         |           |                           |         |              |
| 23-10676-001MSD                                                          | MSD             | Sulfate                           | 8                  | mg/L                    | %R: 139.8 | * 90 - 110                | RPD: 2  | 20           |
| MSD outside control limits. All other QCIs are within acceptance limits. |                 |                                   |                    |                         |           |                           |         |              |
| 23-10676-010MS                                                           | MS              | Sulfate                           | 57                 | mg/L                    | %R: 56.8  | * 90 - 110                |         |              |
| MS outside control limits. All other QCIs are within acceptance limits.  |                 |                                   |                    |                         |           |                           |         |              |
| 23-10676-010MSD                                                          | MSD             | Sulfate                           | 58                 | mg/L                    | %R: 62.4  | * 90 - 110                | RPD: 2  | 20           |
| MSD outside control limits. All other QCIs are within acceptance limits. |                 |                                   |                    |                         |           |                           |         |              |
| 23-10767-001MS                                                           | MS              | Sulfate                           | 78                 | mg/L                    | %R: 81    | * 90 - 110                |         |              |
| MS outside control limits. All other QCIs are within acceptance limits.  |                 |                                   |                    |                         |           |                           |         |              |
| 23-10767-001MSD                                                          | MSD             | Sulfate                           | 77                 | mg/L                    | %R: 75.1  | * 90 - 110                | RPD: 2  | 20           |
| MSD outside control limits. All other QCIs are within acceptance limits. |                 |                                   |                    |                         |           |                           |         |              |
| 23-10919-001MS                                                           | MS              | Sulfate                           | 8                  | mg/L                    | %R: 121   | * 90 - 110                |         |              |
| MS outside control limits. All other QCIs are within acceptance limits.  |                 |                                   |                    |                         |           |                           |         |              |
| 23-10919-001MSD                                                          | MSD             | Sulfate                           | 8                  | mg/L                    | %R: 119   | * 90 - 110                | RPD: 1  | 20           |
| MSD outside control limits. All other QCIs are within acceptance limits. |                 |                                   |                    |                         |           |                           |         |              |
| 23-10919-006MS                                                           | MS              | Sulfate                           | 88                 | mg/L                    | %R: 88.7  | * 90 - 110                |         |              |
| MS outside control limits. All other QCIs are within acceptance limits.  |                 |                                   |                    |                         |           |                           |         |              |
| 23-10919-006MSD                                                          | MSD             | Sulfate                           | 83                 | mg/L                    | %R: 64.8  | * 90 - 110                | RPD: 6  | 20           |
| MSD outside control limits. All other QCIs are within acceptance limits. |                 |                                   |                    |                         |           |                           |         |              |
| 23-10923-009MS                                                           | MS              | Sulfate                           | 10                 | mg/L                    | %R: 90    | 90 - 110                  |         |              |
| 23-10923-009MSD                                                          | MSD             | Sulfate                           | 11                 | mg/L                    | %R: 110.6 | * 90 - 110                | RPD: 10 | 20           |
| MSD outside control limits. All other QCIs are within acceptance limits. |                 |                                   |                    |                         |           |                           |         |              |
| CCB854069                                                                | CB              | Sulfate                           | < 5                | mg/L                    | 0         | -                         |         |              |
| CCB854070                                                                | CB              | Sulfate                           | < 5                | mg/L                    | 0         | -                         |         |              |
| CCVS854071                                                               | CCVS            | Sulfate                           | 50                 | mg/L                    | %R: 100.8 | 90 - 110                  |         |              |
| CCVS854077                                                               | CCVS            | Sulfate                           | 10                 | mg/L                    | %R: 99.4  | 90 - 110                  |         |              |
| ICB854072                                                                | CB              | Sulfate                           | < 5                | mg/L                    | 0         | -                         |         |              |
| ICB854073                                                                | CB              | Sulfate                           | < 5                | mg/L                    | 0         | -                         |         |              |
| ICVS854074                                                               | ICVS            | Sulfate                           | 51                 | mg/L                    | %R: 102.2 | 90 - 110                  |         |              |

\* The QC indicator is outside control limits. %R = percent recovery; RPD = Relative percent difference  
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Client: ENVISION LABORATORIES, INC.

Lab File ID: 23-10918

Project ID: 2023-2481

| QC Lab#    | Time<br>QC Code | Parameter | Reported<br>Result | Units | QC Result | %R Limits |      | RPD<br>Limit |
|------------|-----------------|-----------|--------------------|-------|-----------|-----------|------|--------------|
|            |                 |           |                    |       |           | Low       | High |              |
| ICVS854078 | ICVS            | Sulfate   | 10                 | mg/L  | %R: 98.8  | 90        | 110  |              |

\* The QC indicator is outside control limits. %R = percent recovery; RPD = Relative percent difference  
CB = Calibration Blank; CCVS = Continuing Calibration Verification Standard; MS = Matrix Spike;  
MSD = Matrix Spike Duplicate; LCS = Laboratory Control Spike; SURR = Surrogate Spiking Compound;  
PB = Procedure Blank; BLK = Method Blank; D = QCI diluted out.







**ENVision Laboratories, Inc.**  
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[www.envisionlaboratories.com](http://www.envisionlaboratories.com)

### **EPA 6010B Metals Quality Control Data**

**ENVision Batch Number:** 120723icp

| <b><u>Method Blank (MB):</u></b> | <b><u>MB Results(mg/L)</u></b> | <b><u>Rep Lim (mg/L)</u></b> | <b><u>Flag</u></b> |
|----------------------------------|--------------------------------|------------------------------|--------------------|
| Aluminum, total                  | < 1                            | 1                            |                    |
| Iron, total                      | < 0.1                          | 0.1                          |                    |
| Analysis Date/Time:              | 12-7-23/17:31                  |                              |                    |
| Analyst Initials:                | gjd                            |                              |                    |

| <b><u>Laboratory Control Standard (LCS):</u></b> | <b><u>LCS Results (mg/L)</u></b> | <b><u>LCS Conc.(mg/L)</u></b> | <b><u>% Rec</u></b> | <b><u>Flag</u></b> |
|--------------------------------------------------|----------------------------------|-------------------------------|---------------------|--------------------|
| Aluminum, total                                  | 0.51                             | 0.50                          | 102%                |                    |
| Iron, total                                      | 0.47                             | 0.50                          | 94%                 |                    |
| Analysis Date/Time:                              | 12-7-23/17:29                    |                               |                     |                    |
| Analyst Initials:                                | gjd                              |                               |                     |                    |



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### **EPA 6010B Metals Quality Control Data**

**ENVision Batch Number:** 120723icp

| <b><u>Method Blank (MB):</u></b> | <b><u>MB Results(mg/L)</u></b> | <b><u>Rep Lim (mg/L)</u></b> | <b><u>Flag</u></b> |
|----------------------------------|--------------------------------|------------------------------|--------------------|
| Aluminum, dissolved              | < 1                            | 1                            |                    |
| Iron, dissolved                  | < 0.1                          | 0.1                          |                    |
| Analysis Date/Time:              | 12-7-23/17:27                  |                              |                    |
| Analyst Initials:                | gjd                            |                              |                    |

| <b><u>Laboratory Control Standard (LCS):</u></b> | <b><u>LCS Results (mg/L)</u></b> | <b><u>LCS Conc.(mg/L)</u></b> | <b><u>% Rec</u></b> | <b><u>Flag</u></b> |
|--------------------------------------------------|----------------------------------|-------------------------------|---------------------|--------------------|
| Aluminum, dissolved                              | 0.60                             | 0.50                          | 120%                |                    |
| Iron, dissolved                                  | 0.47                             | 0.50                          | 94%                 |                    |
| Analysis Date/Time:                              | 12-7-23/17:24                    |                               |                     |                    |
| Analyst Initials:                                | gjd                              |                               |                     |                    |



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Flag Number

Comments



2023-2481

Page 1 of 1

Client: T32

Invoice Address: Same as Report

### REQUESTED PARAMETERS

**Sample Integrity:**

Cooler Temp: 7 °C

Report 7770 W. New York St.  
Address:

Subject Name: CS 235079

Report To: Scott Hopper

Lab Contact: David Morris

Phone: 317 - 273-1690

Sampled by: Peter Danz-Tauer

Fax: \_\_\_\_\_

P.O. Number:

Desired TAT: (Please Circle One)  
 1-day 2-day 3-day Std (5-7 bus. days)

QA/QC Required: (circle if applicable)  
Level III      Level IV

[illegible]

**Please indicate number of containers per preservative below**

ENVision provided bottles? Yes No  
VOC vials free of head-space: Yes No N/A  
pH checked? Yes No N/A  
Method 5035 collection used? Yes No  
5035 samples received within 48 hr of  
Collection? Yes No

Samples on Ice? ☒ Yes ☐ No  
Samples Intact? ☒ Yes ☐ No  
Custody Seal: Yes ☒ No ☐

Cooler Temp: 2 °C  
(circle)

**Sample Integrity:**

x: (317) 351-8639

Page 1 of 1

0011

Comments:

**Relinquished by:**

Date \_\_\_\_\_

Time

Received by:

Date \_\_\_\_\_

Time

Det. Det. / Terracon

12/6/23

1008

Shard for

14/23

10:08