# **2021 Water Quality Report**



U.S. Army Corps of Engineers Saint Louis District

Mark Twain Lake Water Quality Conditions: 1984-2021



December 2022

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Prepared for

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#### EXECUTIVE SUMMARY

The United States Army Corps of Engineers' (USACE) commitment to environmental compliance and protection of estuaries, rivers, lakes, and navigable waters arises from the national policy and directives expressed in Federal Statutes, Executive Orders, and internal regulations. These regulations were designed to minimize pollution, maximize recreation, protect aesthetics, preserve natural resources, and promote the comprehensive planning and use of water bodies to enhance the public interest rather than private gain. Therefore, USACE, in the design, construction, management, operation, and maintenance of its facilities, will exert leadership within existing authorities and appropriations in the nationwide effort to protect, enhance, and sustain the quality of the nation's resources. It is USACE policy to comply with requirements of the Clean Water Act and not to degrade existing water quality conditions to the maximum extent that is practicable, consistent with project authorities, Federal legal and regulatory requirements, the public interest, and water control manuals.

The United States Army Corps of Engineers, Saint Louis District (CEMVS), implemented a water quality monitoring program during the 1970s to evaluate how its civil projects may be affecting water resources. Data collected from this effort serves as an invaluable tool for evaluating the significance of annual water quality measurements and tracking long-term trends. Water quality data is provided to the Missouri Department of Natural Resources and the Illinois Environmental Protection Agency to be used as a screening mechanism for the Missouri and Illinois Water Quality Report, which is required every two years by the Clean Water Act Sections 303(d) and 305(b).

The National Water Quality Inventory Report to Congress (305(b) report) is the primary vehicle for informing law makers and the public about general water quality conditions in the United States. This document characterizes our water quality, identifies widespread water quality problems of national significance, and describes various programs implemented to restore and protect our waters. The 2020 water quality report compiled by the Missouri Department of Natural Resources (MDNR) listed the following impairments: Middle Fork Salt River impaired for dissolved oxygen, South Fork Salt River impaired for dissolved oxygen, South Fork Salt River impaired for E. coli, North Fork Salt River and Mark Twain Lake impaired for mercury, and the Salt River below the dam impaired for mercury and dissolved oxygen. Additionally, MDNR has listed Mark Twain Lake as eutrophic.

Water quality sampling in 2021 revealed the following concerns at Mark Twain Lake: dissolved oxygen, Atrazine, chlorophyll-a, iron, manganese, and total phosphorus.

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# INTRODUCTION

The Mark Twain Lake watershed is comprised of 2,318 square miles with an additional 29 square miles draining into the re-regulation pool. The North Fork of the Salt River is the major drainage channel, draining 626 square miles (27% of the drainage area). The North Fork is 88.0 miles in length, has an average gradient of 4.5 feet per mile and has a maximum elevation of approximately 1,000 feet. The Middle Fork, Elk Fork and South Fork of the Salt River are the other major tributaries to Mark Twain Lake. The Middle Fork drains 356 square miles (15%), is 65.4 miles in length, has an average gradient of 5.1 feet per mile, and has a maximum elevation of approximately 940 feet. The Elk Fork drains 262 square miles (11%), is 34.8 miles in length, has an average gradient of 7.9 feet per mile, and has a maximum elevation of approximately 880 feet. The South Fork drains 298 square miles (13%), is 38.0 miles in length, has an average gradient of 7.2 feet per mile, and has a maximum elevation of 880 feet. Combined, the North Fork, Middle Fork, Elk Fork and South Fork drain a total of 1,542 square miles, which is 66% of the Mark Twain Lake watershed.

The Mark Twain Lake watershed is a gently undulating plain in the upstream portion and it becomes more rolling and hillier in the downstream reaches. High rock bluffs border the streams at various locations. The river valleys are characterized by fairly narrow, tortuous courses interspersed by areas of widened bottomlands. Hickory and oak groves are scattered among crop and grazing lands. Strip mining in the South Fork watershed may produce acid runoff. Several clay pits in the southwestern portion of the Mark Twain Lake watershed account for some colloidal suspension, which increases the turbidity of the lake.

Clarence Cannon Dam and Mark Twain Lake are located on the Salt River in northeastern Missouri, generally in Monroe and Ralls Counties. The main dam site is located in Ralls County at mile 63.0 on the Salt River, approximately 12 miles southeast of Monroe City, Missouri. A re-regulation dam is located approximately 9.5 miles downstream from the main dam site. The project area is served on the north by U.S. Highway 24, and on the south by State Highway 154. State Highway 107 bisects the project area from north to south, and provides a major reservoir crossing near Florida, Missouri. State Highway J crosses the main dam and is the primary north-south transportation corridor on the eastern side of the lake.

Several areas have been developed at Mark Twain Lake for the visiting public to enjoy a variety of outdoor recreational experiences. The most common activities engaged in are fishing, boating, water-skiing, sailing, camping, picnicking, swimming, and hunting. Developed facilities available at the lake include a visitor center, four campgrounds, three group camping areas, five picnic areas, 21 boat launching areas, five nature trails, two marinas, and three beaches. Hunting and fishing opportunities are available on all Corps of Engineers lands and waters except where restricted and posted due to recreational development or safety.

Mark Twain Lake is managed and operated by the CEMVS for the authorized purposes of flood risk management in the Salt River Basin, hydroelectric power generation, water supply, fish and wildlife conservation, recreation, and incidental navigation. The lake serves as a heavy recreational usage lake. The land surrounding the lake is used predominately for agriculture. Agricultural runoff and municipal wastewater treatment facilities are the primary potential source of pollution into the Mark Twain Lake watershed. Additional sources are marinas, recreational watercraft discharges and wildlife fecal material runoff.

Water quality is of paramount importance for sustaining ecological integrity and services provided by Mark Twain Lake. Water quality is influenced by a range of both point and nonpoint pollution sources, which may include natural processes, industrial and municipal effluents, and surface runoff from agricultural arenas.

The Saint Louis District of the United States Army Corps of Engineers has implemented a Water Quality Management Plan (WQMP) as part of the operation and maintenance activities associated with managing USACE civil works projects throughout the District which includes, among other reservoirs and rivers, the Mark Twain Lake and watershed. The WQMP addresses surface water quality management issues and adheres to the guidance and requirements specified by Clean Water Act (CWA), as well as the selfimposed Engineering Regulation (ER) 1110-2-8154, "Water Quality and Environmental Management for USACE Civil Works Projects" (USACE, 2018). Water quality monitoring is implemented to fulfill five primary objectives that drive the CEMVS WQMP:

- 1) Establish baseline conditions, identify significant water quality trends, and document problems and accomplishments.
- Ensure that surface water quality, as affected by CEMVS projects, is suitable for project purposes, existing water uses, public health and safety, and in compliance with applicable state and federal water quality standards.
- 3) Provide support to water control, project operations, and navigation for regulations and modifications.
- 4) Investigate special problems, design and implement modifications, and improve water management procedures
- 5) Establish and maintain strong working partnerships and collaborations with appropriate entities within and outside USACE regarding water quality.

This report is intended to document and assess water quality conditions occurring at Mark Twain Lake. The report describes conditions observed in 2021, as well as baseline data collected from 1984-2020. Additional historical data are available upon request.

# MARK TWAIN LAKE WQMP COVERAGE

The WQMP for Mark Twain Lake includes water samples taken at the following locations: major tributaries (MTL-5, MTL-9, MTL-11, MTL-13), main body of the lake (MTL-22, MTL-33, MTL-66, MTL-77, Indian Creek Marina and Blackjack Marina), and just downstream of the dam (MTL-1 and MTL-12). See figures 1 and 2, and Table 1 for a site map and site coordinates.



Figure 1. CEMVS District and Mark Twain Lake



Figure 2. Water Quality (WQ) Sampling Locations in 2021 at Mark Twain Lake

## Sample Location Summary Table

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Sample Location Type	Abbreviation	Site Name	Latitude	Longitude
Major Tributary	TRIB	MTL-5	39.374579	-91.805621
	TRIB	MTL-9	39.488315	-92.001401
	TRIB	MTL-11	39.667697	-91.902400
	TRIB	MTL-13	39.431077	-91.981933
Main Reservoir Surface	RS	MTL-22	39.525360	-91.648120
	RS	MTL-33	39.508150	-91.647435
	RS	MTL-66	39.481451	-91.792267
	RS	MTL-77	39.500849	-91.801118
	RS	MTL-IC MAR	39.518418	-91.727866
	RS	MTL-BJ MAR	39.511730	-91.653858
Reservoir Benthic	RB	MTL-22-15	39.540296	-91.672235
Tail Race (below main dam)	TR	MTL-1	39.526495	-91.638336
Tail Race (below re- regulation dam)	TR	MTL-12	39.570112	-91.570442

#### Table 1: Sample Location Summary and Geographic Location (NAD 1983)

Samples at Marinas are not always taken in the exact same location. All MTL-22 and MTL-22-15 samples prior to 2019 were taken from the previous location (39.540296°, -91.672235°).

# METHODS AND ANALYSIS: WATER QUALITY

### Data Collection and Historical Reference Data

During 2021, water quality samples were collected and analyzed for 13 locations during three separate sampling events (n=39; Table 1). One duplicate sample was also collected during each sampling event for quality control purposes. Samples were collected from the upper one meter of the water column, preserved, and transported to the Applied Research and Development Laboratory (ARDL) in Mount Vernon, Illinois for analysis.

Real-time water quality monitoring is accomplished with multi-parameter sondes (YSI EXOII) placed on the downstream structure of the turbine bay at Clarence Cannon Dam and the upstream side of the re-regulation dam. A profiling water quality monitoring station is installed in the lake just upstream of Clarence Cannon Dam for real-time data collection. The parameters include but are not limited to the following: dissolved oxygen, temperature, specific conductivity, pH, and turbidity.

For the purpose of this report, historical reference data refers to water quality data collected during previous years ranging as far back as 1984 (parameter dependent). Historical reference data are intended to represent the current condition of Mark Twain Lake.

### Statistical Summary and Comparison to Applicable Water Quality Standards

Statistical analyses were performed on water quality monitoring data collected for 13 locations, and classified as TRIB (n= 4), RS (n=6), RB (n=1), and TR (n=2). Descriptive statistics were calculated to describe central tendencies and boxplots created to illustrate comparisons between groups. Monitoring results were compared to applicable water quality standard criteria established by the appropriate state agencies pursuant to the Federal Clean Water Act. If a state water quality standard criteria was not available, recommended criteria from the literature were considered.

Seasonal data are classified as: Winter (December 01 - March 14), Spring (March 15 – May 31), Summer (June 1 – September 15), Fall (September 16 – November 30).

#### **Quality Assurance**

The United States Army Corps of Engineers, Saint Louis District quality assurance procedures considers two primary focus areas: (1) those that involve laboratory analysis of samples, and (2) those concerning the collection and processing of the water samples in the field.

Since 2012, ARDL has analyzed water quality samples for CEMVS. Their quality assurance program includes the use of quality control charts, check standards, field and in-house matrix spikes, laboratory blanks and performance evaluation samples. In

addition, one blind duplicate sample is submitted for at least every 20 samples, or, in this case, every sampling event (one event/day at Mark Twain Lake has 13 samples and one duplicate).

Internal checks are also used for field sampling. This includes adherence to operating procedures for data collection and periodic evaluation of sampling personnel. Field sampling equipment and multimeters are calibrated/serviced in accordance with factory recommendations.

### Water Quality Parameters and Criteria

Parameters used to characterize water quality have been generally accepted criteria for assessing aquatic life and human health include:

**Temperature (Temp)** is important because it controls several aspects of water quality. Colder water holds more dissolved oxygen which is required by aquatic organisms. Plants grow more rapidly and use more oxygen in warmer water. Decomposition of organic matter which uses oxygen is accelerated in warmer water. Temperature can also determine the availability of toxic compounds such as ammonia. Since aquatic organisms are cold blooded, water temperature regulates their metabolism and ability to survive. The number and kinds of organisms that are found in streams or lakes is directly related to temperature. Certain organisms require a specific temperature range, such as Salmonids, which require water temperatures below 20°C. The temperature standard in Missouri is less than a rise of 2.77°C above normal seasonal temperature or less than 32.22°C.

**Dissolved Oxygen (DO)** refers to the measurement of free oxygen molecules (O<sub>2</sub>) that are not bonded to any other elements; thus, oxygen bonded in water (H<sub>2</sub>O) would not be considered in a measurement of dissolved oxygen. Oxygen is dissolved in surface waters through interactions with the atmosphere and as a waste product of photosynthesis (CO<sub>2</sub> + H<sub>2</sub>O (CH<sub>2</sub>O) + O<sub>2</sub>) from phytoplankton and aquatic vegetation. Additional factors influencing DO include temperature, pressure, and salinity.

Dissolved oxygen is required for most aquatic life including fish, invertebrates, bacteria, and plants. Fish and invertebrates utilize DO for respiration through gills and cutaneous breathing, and plants



Figure 1: Dissolved oxygen  $(O_2)$  vs oxygen bonded in water  $(H_2O)$ .

require dissolved oxygen for respiration when photosynthesis is not possible. Smaller microbes and bacteria utilize DO for decomposition of organic materials, a process essential for nutrient cycling. Bottom feeders such as worms and mussels can persist when DO is  $\geq$ 1mg/L, while most inland fish species require a minimum DO of 4mg/L. The DO water quality criteria for Missouri is  $\geq$ 5mg/L.

**Potential of Hydrogen (pH)** is a measure of how acidic or basic water is. Potential of Hydrogen is reported on a logarithmic scale ranging from 0 - 14, with 7.0 being neutral. As pH increases from 7.0, water increases in alkalinity, whereas a decrease from 7.0 indicates an increase in acidity. Since pH is measured on a logarithmic scale, every one-unit change in pH indicates a 10-fold change in acidity; thus, a pH of 6.0 is ten times more acidic than a pH of 7.0 and a pH of 4.0 would be one-thousand times more acidic than a pH of 7.0.

The pH of water varies considerably beyond the local level. Natural variation in bedrock and soil composition through which water moves has been reported as one of the most influential factors. Additional factors include decomposition of organic materials, acidity of local precipitation, discharge of effluents and chemicals, and mining operations.

Most freshwater streams and rivers have a natural pH ranging from 6 to 8. As pH approaches 5 (acidic), less tolerant fish and aquatic invertebrate assemblages may be extirpated, and a pH below 4.5 would be without most desired aquatic life. Conversely, when pH exceeds 9.5 (alkaline), aquatic fish and invertebrates begin to rapidly decrease and beyond 10, fish become extirpated. The pH water quality criteria for Missouri ranges from 6.5 - 9.0.

**Conductivity** is a measure of water's ability to conduct electrical current. In its purist form, water has a *near* neutral charge, indicating that it is an inefficient conductor of electrical current. Thus, the ability to carry electrical current is driven by water soluble ions (atoms and molecules with a charge) such as salts and other inorganic materials. Conductivity is also influenced by water temperature; as temperature increases, conductivity increases. For this reason, conductivity is commonly reported as Specific Conductivity (SpCond), which is the measurement of conductivity at 25 degrees Celsius.

Conductivity in streams and rivers is affected by the geology of the area. Streams running through granite tend to have lower conductivity due to granite being composed of inert material; materials that do not ionize or dissolve into ionic compounds in water. Conversely, streams that run through areas of limestone or clay soils tend to have higher conductivity readings because of the presence of materials that ionize. Conductivity is useful as a general measure of water quality. A stream tends to have a relatively constant range of conductivity that, once established, can be used as a baseline. Significant changes, either increases or decreases, might indicate a source of pollution has been introduced into the water. The pollution source could be a treatment plant, which raises the conductivity, or an oil spill, which would lower the conductivity. In general, there are no water quality criteria for SpCond. The District threshold of 500  $\mu$ S/cm (microsiemens per centimeter) is a rule of thumb value that is often associated with some form of biological impairment.

**Oxidation Reduction Potential (ORP)** is a measurement of the net status of all the oxidation and reduction reactions in a given water sample. Oxidation involves an

exchange of electrons between 2 atoms. The atom that loses an electron is oxidized and the one that gains an electron is reduced. Oxidation reduction potential sensors measure the electrochemical potential between the solution and a reference electrode. Readings are expressed in millivolts. Positive readings indicate increased oxidizing potential and negative readings increased reduction. Oxidation reduction potential values are used much like pH values to determine water quality. While pH readings characterize the state of a system relative to the receiving or donating hydrogen ions (base or acid), ORP readings characterize the relative state of losing or gaining electrons. Generally, ORP readings above 400mV are harmful to aquatic life; however, ORP is a non-specific measurement, which is a reflection of a combination of effects of all the dissolved materials in the water. Therefore, the measurement of ORP in relatively clean water has only limited utility unless a predominant redox-active material is known to be present.

Total Suspended Solids (TSS) concentrations, which cause the photosynthetic activity to be reduced by more than 10% from the seasonably established norm, can have a detrimental effect on aquatic life. Soil particles, organic material, and other debris comprise suspended solids in the water column. Turbidity (FNU) measurements are inverse to suspended solid measurements. As TSS increases, the FNU or water transparency decreases. Total suspended solids can be an important indicator of the type and degree of FNU. Total Suspended Solids measurements represent a combination of Volatile Suspended Solids (VSS), which consist of organic material, and Nonvolatile Suspended Solids (NVSS), which is comprised of inorganic mineral particles in the water. In order to more accurately determine the types and amounts of suspended solids, VSS are analyzed. Volatile suspended solid concentration represents the organic portion of the total suspended solids. Organic material often includes plankton, and additional plant and animal debris present in water. Total VSS indicates the presence of organics in suspension; and, therefore, show additional demand levels of oxygen. Missouri does not currently have a standard criterion for NVSS or VSS.

**Total Organic Carbon (TOC)** is a measure of the amount of organic carbon in a water body. In addition to natural organic substances, TOC includes insecticides and herbicides, as well as domestic and industrial waste. Industrial waste effluent may include carbon-containing compounds with various toxicity levels. Further, a high organic content means an increase in the growth of microorganisms which contribute to the depletion of oxygen supplies.

Currently, there are no state or federal water quality standard criteria set for TOC. Because carbon occurs naturally, its concentration varies based on physical and chemical attributes in a watershed; thus, this study relies on historical reference conditions to identify unfavorable conditions.

<u>Metals Iron (TFe) and Manganese (TMn)</u> (T=total) are nutrients for both plants and animals. Living organisms require trace amounts of metals. However, excessive amounts can be harmful to the organism. Heavy metals exist in surface waters in three

forms: colloidal, particulate, and dissolved. Water chemistry determines the rate of adsorption and desorption of metals to and from sediment. Metals are desorbed from the sediment if the water experiences increases in salinity, decreases in redox potential, or decreases in pH. Metals in surface waters can be from natural or human sources. Metal levels in surface water may pose a health risk to humans and the environment.

**Pesticides** are commonly used throughout much of the agricultural landscape that the Big Muddy River flows. This study considers one insecticide and seven herbicides. Atrazine and Alachlor herbicides are commonly used agricultural chemicals which can be readily transported by rainfall runoff. Both compounds are suspected of causing cancer; and therefore, are monitored for the protection of human and aquatic health. Herbicides which are pesticides used to kill vegetation are the most widely used and sampled. Two of the most widely used herbicides are Atrazine and Alachlor. Atrazine is a preemergence or postemergence herbicide use to control broadleaf weeds and annual grasses. Atrazine is most commonly detected in ground and surface water due to its wide use, and its ability to persist in soil and move in water. Alachlor is a Restricted Use Pesticide (RUP) due to the potential to contaminate groundwater. The water quality standards for the pesticides sampled are located in Table 2.

**Nitrogen** occurs naturally in water through several forms including nitrogen (N2), nitrite (NO2-N), nitrate (NO3-N), ammonia (NH3), and ammonium (NH4). Nitrates are the most commonly reported form of nitrogen and may have a meaningful influence on a water body's trophic status. Algae and other plants use NO3-N as a food source, thus excess levels of NO3-N can promote increases in algae production and hypereutrophic conditions.

In general, NO3-N does not have a *direct* effect on fish or aquatic insects. Missouri has set the standard for NO3-N to 10 mg/L to accommodate safe drinking waters for human and livestock; however, this threshold likely exceeds the concentration that is appropriate for assessing ecosystem health.

**Total Ammonia Nitrogen (TAN)** includes NH3 and NH4. Total ammonia nitrogen is a colorless gas with a strong pungent odor. Ammonia occurs naturally and is a biological requirement for aquatic life, however elevated concentrations can be toxic to freshwater organisms. Unnatural sources of ammonia include, accidental releases of ammonia rich fertilizer, effluent from sewage treatment plants, improper disposal of ammonia products, and livestock waste.

Toxic concentrations for freshwater organisms range from 0.53 – 22.8 mg/L, and are strongly dependent on both pH and temperature. In general, an increase in pH and/or temperature corresponds with an increase in toxicity. Additional information in regards to the relationship between pH, temperature, and ammonia, as it relates to toxicity, can be reviewed in Aquatic Life Ambient Water Quality Criteria for Ammonia – Freshwater (USEPA 2013).

**Total Phosphorus (TP)** is analyzed as phosphorus and has been monitored due to the potential for uptake by nuisance algae. Levels of phosphate can indicate the potential for rapid growth of algae (algae bloom) which can cause serious oxygen depletion during the algae decay process. Phosphorous is typically the limiting nutrient in a water body; therefore, any addition of phosphorous to the ecosystem stimulates the growth of plants and algae. Phosphorous is delivered to lakes and streams by way of runoff from agricultural fields and urban environments. Other sources of phosphorous are anaerobic decomposition of organic matter, leaking sewer systems, and point source pollution. The general standard for phosphorous in lake water is 0.05 mg/L. Dissolved phosphorous, also called **Orthophosphate (PO<sub>4</sub>-P)** is generally found in much smaller concentrations than total phosphorous and is readily available for algal uptake. Orthophosphate concentrations in a water body vary widely over short periods of time as plants take it up and release it.

<u>Chlorophyll a (CHL\_a)</u> is a measure of the amount of algae growing in a waterbody, and therefore can be used to classify trophic status. Although algae are a natural part of freshwater ecosystems, too much algae can cause aesthetic problems such as green scums and bad odors and can result in decreased levels of DO.

<u>Pheophytin a (PHEO a)</u> is a natural degradation product or digestion of CHL\_a. The ratio of PHEO\_a to CHL\_a can provide an indication of the decline or growth in eukaryotic algae and cyanobacteria populations.

<u>Trophic Status</u> is determined using a modified Trophic State Index (TSI), as described by Carlson (1977). Trophic State Index is calculated from secchi-depth transparency, total phosphorus, and chlorophyll-a measurements. Values for these three parameters are converted to an index number ranging from 0-100 according to the following equations:

TSI (Seechi Depth) =  $10(6 - (\ln SD/\ln 2))$ TSI (Chlorophyll-a) = TSI(Chl) =  $10(6 - ((2.04 - 0.68 \ln Chl)/\ln 2))$ TSI (Total Phosphorus) = TSI(TP) =  $10(6 - (\ln (48/TP)/\ln 2))$ 

where In indicates the Natural Logarithm

A TSI average value, calculated as the average of the three individually determined TSI metrics, is used as an overall indicator of a water body's trophic state. The relationship between TSI and trophic condition is defined as follows:

TSI	Trophic Condition
0-40	Oligotrophic
40-60	Mesotrophic
60-70	Eutrophic
70-100	Hypereutrophic

### Laboratory Methods and Water Quality Criteria Summary Table

### Table 2: Metrics, Methods, and Water Quality Criteria Used for Evaluating Water Quality

Metric	Abbreviation	Analysis Method	Water Quality Criteria	Source
Alachlor		EPA Method 8270C	< 2ug/L DWS	Missouri DNR
Ammonia Nitrogen	NH₃	EPA Method 350.1	pH & temp dependent	Missouri DNR
Atrazine	Atrazine	EPA Method 8270C	3 ug/L DWS	Missouri DNR
Bacteria: E. Coliform	E Col	EPA Method 1604	WBC-A: 126, WBC-B: 206, SCR: <1,134 cfu/100mL, DSB: 190 mpn/100ml (geometric mean)	Missouri DNR
Chlorophyll a (1)	Chl_a	SM Method 10200H	Criteria: <30 ug/L, or screening value: <18 ug/L with any other eutrophication impacts	Missouri DNR
Chlorophyll a (2)	Chl_a	SM Method 10200H	< 25mg/cm <sup>3</sup> (Eutrophic Upper Limit)	Carlson 1977
Chlorpyrifos		EPA Method 8270C	< .041 ug/L: chronic or 0.083: acute aquatic life, 20 ug/L DWS	Missouri DNR
Depth	Depth	Multiparameter Meter	Measurements reported at ~1 meter	
Dissolved Oxygen	DO	Multiparameter Meter	Greater than 5.0mg/L	Missouri DNR
Metolachlor		EPA Method 8270C	70 ug/L DWS	Missouri DNR
Metribuzin		EPA Method 8270C	100 ug/L DWS	Missouri DNR
Nitrate as Nitrogen	NO <sub>3</sub>	Green Method	< 10 mg/L	Missouri DNR
Non-Volatile Suspended Solids	NVSS	TSS - VSS		
Orthophosphate	Ortho	EPA Method 365.2		
Pheophytin a	Phpy_a	SM Method 10200H		
Potential of Hydrogen	рН	Multiparameter Meter	Range: 6.5 – 9.0pH 4-day average	Missouri DNR
Secchi Disk	SD		1.093 meters	USEPA*
Specific Conductivity	SpCond	Multiparameter Meter	500 uS/cm	
Temperature	Тетр	Multiparameter Meter	Less than rise of 2.77°C above normal seasonal temp. or above 32.22°C	Missouri DNR
Total Dissolved Solids	TDS	Multiparameter Meter	<250 mg/L	USEPA*

Metric	Abbreviation	Analysis Method	Water Quality Criteria	Source
Total Manganese	TMn	EPA Method 6010C	< 0.05 mg/L	Missouri DNR
Total Organic Carbon	тос	EPA Method 415.1		
Total Iron	TFe	EPA Method 6010C	< 1 mg/L	Missouri DNR
Total Phosphorus	ТР	EPA Method 365.2	Screening value: <0.049 mg/L, with any other eutrophication impacts	Missouri DNR
Trifluralin		EPA Method 8270C	< 5 ug/L: DWS	Missouri DNR
Turbidity	Turb	Multiparameter Meter		
Volatile Suspended Solids	VSS	EPA Method 160.4		

\*1 mg/L is equivalent to 1 drop in two bathtubs and 1 ug/L is equivalent to 1 drop in an Olympic size swimming pool. PWS is public water supply. DWS is drinking water standard. WBC is whole body contact recreation (WBC-A is designated swimming, WBC-B recreation). SCR is secondary contact recreation. DSB is designated swimming beach. The DSB advisory of 190 MPN/100 mL is the level MDNR will post signs notifying visitors that swimming is not recommended. USEPA\* refers to the Federal EPA reference nutrient conditions for level III ecoregion 72 lakes and rivers.

## RESULTS AND SUMMARY STATISTICS: WATER QUALITY



#### Oxidation Reduction Potential: 1986–2020

#### **Oxidation Reduction Potential: 2021**



#### Specific Conductivity: 1984-2020



Specific Conductivity: 2021



	Historical Re	eference 198		<u>2021</u>			
	Location	Mean	Median	n	Mean	Median	n
ORP	RB	159.03	133.00	248	128.75	128.75	2
	RS	255.17	239.00	464	168.32	145.15	12
	TR	286.52	305.50	118	300.75	323.00	4
	TRIB	297.25	314.00	411	193.04	169.00	8
SpCond	RB	238.56	236.00	341	220.53	222.50	3
	RS	208.88	200.00	550	184.90	180.65	18
	TR	207.93	200.50	134	188.75	184.55	6
	TRIB	288.24	266.00	431	415.71	420.70	12

\*This report does not acknowledge a water quality criteria for SpCond or ORP.



Dissolved Oxygen: 2021

Temperature: 2021



#### Temperature: 1984-2020



Red line placed at the 5 mg/L level for DO and 32.22 C for temperature.

	Historical Re	ference 198		<u>2021</u>			
	Location	Mean	Median	n	Mean	Median	n
DO	RS	8.00	7.90	575	8.47	8.43	18
	TR	7.48	7.60	143	7.36	8.02	6
	TRIB	8.41	8.14	445	7.39	7.52	12
Temp	RS	21.14	22.60	574	25.82	26.80	18
	TR	19.05	20.28	143	22.68	23.85	6
	TRIB	19.93	20.70	445	24.64	25.65	12

\* During the three sampling events only one DO reading was recorded below the standard in June at MTL-9 with a concentration of 3.8 mg/L. The standard of 32.22 C was not exceeded in 2021.



\*Data recorded by multi-parameter sonde at Cannon Dam tailrace and re-regulation dam. Purple line placed at the standard of 5 mg/L level. DO measurements fell below the standard at Cannon Dam ~ 51% and at the re-regulation dam ~ 44% of the observations.



\*Temperature data recorded by multi-parameter sonde at Cannon Dam tailrace and re-regulation dam.



<sup>\*</sup>Red lines indicate the upper and lower water quality criteria standards (between 6.5 and 9).

	Historical Re	ference 198		<u>2021</u>			
	Location	Mean	Median	n	Mean	Median	n
рН	RS	7.76	7.70	563	7.93	7.93	12
	TR	7.47	7.40	141	7.73	7.63	4
	TRIB	7.63	7.60	442	7.82	7.81	8

\*All pH readings were within the water quality standard during 2021.



Ammonia Nitrogen: 1984–2020





Ammonia Nitrogen: 2021



	Historical Re		<u>2021</u>				
	Location	Mean	Median	n	Mean	Median	n
NO3-N	RB	0.65	0.47	355	0.63	0.56	3
	RS	0.72	0.56	542	0.46	0.03	12
	TR	0.74	0.67	141	0.47	0.05	6
	TRIB	0.60	0.43	478	0.14	0.03	12
NH3N	RB	0.18	0.06	359	0.17	0.17	3
	RS	0.07	0.03	565	0.09	0.04	12
	TR	0.06	0.04	148	0.08	0.09	6
	TRIB	0.09	0.05	510	0.10	0.06	12

\*All observations of nitrate and ammonia nitrogen were within the water quality standard during 2021.





*Red	line	indicate	es the	TΡ	water	quality	screening	value	of 0.049	mg/L.

	Historical Re	ference 198		<u>2021</u>			
	Location	Mean	Median	n	Mean	Median	n
PO4	RB	0.04	0.02	362			
	RS	0.04	0.02	571			
	TR	0.04	0.02	150			
	TRIB	0.06	0.05	513			
TP	RB	0.18	0.12	360	0.18	0.23	3
	RS	0.14	0.09	575	0.09	0.05	12
	TR	0.12	0.08	150	0.13	0.09	6
	TRIB	0.26	0.20	514	0.19	0.12	12

\*TP exceeded the screening value of 0.049 mg/L at all locations. This study does not acknowledge a water quality standard for PO4. PO4 was not sampled in 2021.



\*Red lines indicate the screening value of 18 and criterion of 30 mg/cu m.

	Historical Re	ference 198		<u>2021</u>			
	Location	Mean	Median	n	Mean	Median	n
Chl_a	RB	5.71	5.40	24			
	RS	8.69	5.00	461	19.48	19.55	12
	TR	5.47	5.60	3			
	TRIB	5.94	2.45	8			

\*The criterion was exceeded once while the screening value was exceeded multiple times, however, based on the geometric mean of 18.45 mg/cu m, only the screening value (18 mg/cu m) was exceeded in 2021. Since 2014, chlorophyll-a samples have only been taken from the lake surface.









<40 = Oligotrophic \_\_\_\_ 40-60 = Mesotrophic \_\_\_\_ 60-70 = Eutrophic \_\_\_ >70 Hypereutrophic



	Historical Re	eference 201		<u>2021</u>			
	Location	Mean	Median	n	Mean	Median	n
TDS	RB	137.36	135.00	11	143.67	145.00	3
	RS	132.40	134.50	60	120.17	117.50	18
	TR	132.30	133.50	10	122.83	120.00	6
	TRIB	186.06	180.00	53	270.25	273.50	12
FNU	RB	33.03	37.84	11	33.75	26.73	3
	RS	28.34	15.38	60	10.25	3.32	18
	TR	18.60	9.32	10	15.58	6.62	6
	TRIB	64.84	36.71	52	27.63	14.76	12

\* All TDS observations were below the standard in 2021. This study does not recognize a standard for turbidity.

Total Suspended Solids: 1984-2020

Total Suspended Solids: 2021



Historical Reference 1984-2020					<u>2021</u>		
	Location	Mean	Median	n	Mean	Median	n
TSS	RB	12.73	7.00	346	8.53	6.80	3
	RS	8.48	6.00	574	5.53	4.80	12
	TR	7.26	5.85	150	5.65	5.00	6
	TRIB	69.08	24.00	517	28.00	18.80	12

\* This study does not recognize a standard for TSS



Historical Reference 1984-2020				<u>2021</u>			
	Location	Mean	Median	n	Mean	Median	n
TOC	RB	6.53	6.10	363	7.03	7.20	3
	RS	6.92	6.50	577	7.65	7.50	12
	TR	6.77	6.30	151	7.10	7.00	6
	TRIB	8.44	7.50	517	7.04	6.40	12

\*This study does not recognize a standard for TOC.



\*Red line indicates the water quality standard of 1 mg/L.



Total Manganese: 2021



\*Red line indicates the standard for manganese of 0.05 mg/L.

	Historical Re	ference 198	<u>2021</u>				
	Location	Mean	Median	n	Mean	Median	n
TFe	RB	1.37	0.85	357	1.91	2.30	3
	RS	1.05	0.60	288			
	TR	1.02	0.63	144	1.12	0.41	6
	TRIB	2.61	1.48	214			
TMn	RB	0.71	0.12	358	0.26	0.17	3
	RS	0.15	0.06	288			
	TR	0.08	0.05	144	0.08	0.06	6
	TRIB	0.22	0.15	214			

\*In 2021 Fe exceeded the standard of 1 mg/L near the lake bottom in front of the dam as well as in the discharges of both the main dam and re-regulation dam. Manganese exceeded the standard of 0.05 mg/L at every sampling event in front of the dam and in the discharges of both the main dam and re-regulation dam.



Historical Reference 1996-2020						<u>2021</u>	
	Location	Mean	Median	n	Mean	Median	n
Alachlor	RB	0.50	0.50	5			
	RS	0.37	0.50	301	0.22	0.22	12
	TR	0.37	0.50	79	0.22	0.22	6
	TRIB	0.37	0.50	368	0.22	0.22	12

\*The criterion of 2 ug/L for Alachlor was not exceeded in 2021 as all observations were under the detection limit.





Atrazine: 2021



Historical Reference 1996-2020					<u>2021</u>		
	Location	Mean	Median	n	Mean	Median	n
Atrazine	RB	0.50	0.50	5			
	RS	0.86	0.56	301	0.88	0.95	12
	TR	0.79	0.56	79	0.73	0.89	6
	TRIB	1.82	0.56	366	0.97	0.24	12

\*The standard of 3 ug/L for Atrazine was exceeded once at MTL-9 in 2021.



Historical Reference 1984-2020				<u>2021</u>			
	Location	Mean	Median	n	Mean	Median	n
Metolachlor	RB	0.52	0.20	32			
	RS	0.92	0.71	181	2.25	2.33	12
	TR	0.89	0.63	43	2.06	2.72	6
	TRIB	0.88	0.24	188	0.64	0.26	12

\*The standard of 70 ug/L for Metolachlor was not exceeded in 2021.



Historical Reference 2007-2020				2021			
	Location	Mean	Median	n	Mean	Median	n
Metribuzin	RB						
	RS	0.22	0.20	146	0.22	0.22	12
	TR	0.21	0.20	37	0.22	0.22	6
	TRIB	0.23	0.20	180	0.26	0.22	12

\*The standard of 100 ug/L for Metribuzin was not exceeded in 2021.



Surface Water Marina E. Coli: 2021



\*Whole body contact recreation standard is geometric mean of <206 cfu/100mL. Secondary body contact recreation standard is geometric mean of <1,134 cfu/100mL.

Historical Reference 2001-2020					20	<u>021</u>	
	Location	Mean	Median	n	Mean	Median	n
E col	MTL-BJ-MAR	35.79	9.00	48	12.00	9.00	3
	MTL-IC-MAR	60.04	10.00	49	40.67	36.00	3

\*Marina bacteria levels did not exceed the water quality standard in 2021.

2021 Mark Twain Lake Swimming Beach Bacteria Le	evels (E. Coli / 100 mL)

Date	Spalding East	Spalding West	Indian Creek
5/4/2021	0	20	0
5/11/2021	1	1	1
5/23/2021	10	10	40
6/1/2021	0	0	0
6/7/2021	0	0	0
6/14/2021	10	10	10
Beaches Close	d Due to High Water		
8/2/2021	180	20	10
8/9/2021	5	5	5
8/15/2021	10	10	10
8/23/2021	20	5	5
8/30/2021	0	0	0

\*Beach bacteria levels did not exceed the standard during 2021.

# DISCUSSION: WATER QUALITY

Water quality metrics assessed by CEMVS can be sporadic and highly variable from year to year, thus long-term data collection using consistent and comparable methodology is critical to identify trends or patterns. In general, conditions observed during 2021 did not deviate far from conditions observed during the reference period (1984-2020); nevertheless, concerns regarding DO, Atrazine, Fe, Mn, TP, and Chl-a were evident. In addition, estimated TSI levels were indicative of a eutrophic system.

During the three sampling events in 2021, DO was recorded below 5 mg/L one time in June at site MTL-9 (4.91 mg/L) in the middle fork of the Salt River. DO readings are taken daily at the Cannon Dam tailrace and at the Re-regulation Dam to monitor conditions in the re-regulation pool and the discharge into the lower Salt River. As with previous years, there were many instances of DO falling under 5 mg/L once the lake stratified and during times of power generation. Approximately 51% and 44% of DO observations were below 5 mg/L at Cannon Dam and the Re-regulation Dam, respectively. Most of these low DO observations occurred during the period June through August when the lake was experiencing a significant high-water event. When the lake stratifies and conditions allow, surface water is spilled through the tainter gates to mix with the anoxic water coming through the turbines to improve the downstream conditions. DO and temperature readings are monitored daily and there is a weekly coordination meeting that occurs between the USACE, state of Missouri, and Southwestern Power Administration to manage this issue.

Pesticides are commonly used throughout much of the agricultural landscape that the Salt River flows. Of the eight pesticides tested, only Atrazine, Metolachlor, and Metribuzin were detected during 2021. Of those three, only Atrazine was found to exceed the criteria. In 2021 the Atrazine drinking water standard (3 ug/L) was exceeded once with a level of 6.83 ug/L at MTL-9 on June 10. Atrazine levels were recorded over the standard frequently in the lake, tailrace, and tributaries historically. The 2021 Atrazine means are similar to the historic Atrazine means. Atrazine and Alachlor herbicides are commonly used agricultural chemicals which can be readily transported by rainfall runoff. Both compounds are suspected of causing cancer; and therefore, were monitored for the protection of human and aquatic health. Atrazine is most commonly detected in ground and surface water due to its wide use, and its ability to persist in soil and move in water. Low levels of pesticides have historically been observed in the tailrace.

Living organisms require trace amounts of metals, but excessive levels can be harmful. TFe exceeded the criterion of 1 mg/L in June near the lake bottom in front of and downstream of Cannon dam as well as below the Re-regulation dam. The mean TFe levels in 2021 were greater than historical levels. Iron cycling is a function of oxidation-reduction processes. Elevated levels of iron near the bottom of a lake is not immediately detrimental to the overall lake system. Iron oxidizes relatively rapidly (minutes to hours);

therefore, any iron released through the discharge should be oxidized in a short period of time. However, the high TFe levels observed downstream of both dams may indicate an upward trend. Similarly, TMn in 2021 exceeded the criterion above and below Cannon dam as well as below the Re-regulation dam. Mean 2021 TMn levels were less than historical levels. Historically, TMn has also exceeded the criterion multiple times in the above and below Cannon dam and below the Re-regulation dam. Future monitoring is imperative to document potential trends.

TP levels have surpassed the criterion of 0.049 mg/L for several years. In 2021 the TP screening value was exceeded at all locations with a mean across all sites of 0.140 mg/L, which is less than the historical mean of 0.215 mg/L. Phosphorus is a limiting nutrient for primary producers (algae and plants) due to its relatively low amount in the environment. Higher inputs of TP and NO3-N into the lake contribute to a highly productive environment which stimulates algal growth that can lead to blooms that deplete the oxygen levels during die off. In addition, blooms can sometimes contain toxins which may be harmful to humans and wildlife.

The screening value of 18 ug/L was exceeded multiple times at various lake locations while the criterion of 30 ug/L was exceeded once in the lake. The 2021 mean CHL a level (19.48 ug/L) was significantly greater than the historical mean (8.84 ug/L). The 2021 samples were taken in June and September which would bias the Chl a levels somewhat high in comparison due to more algal activity in the warmer seasons. The historical data includes a significant number of samples being taken in the fall and winter months. However, MDNR nutrient screening threshold criteria apply to the period of May through September. Therefore, the 2021 observations are relevant. Chl\_a is an indicator of the abundance of phytoplankton. Any water environment with a level recorded above 25 ug/L is considered to be eutrophic (nutrient enrichment increases algal and plant growth and negative effects). The 2021 TSI level, an average of the individual trophic state indexes for secchi depth, CHL\_a, and TP, for Mark Twain Lake was 65.65. Mark Twain Lake is considered eutrophic based on this TSI level. This does not necessarily mean the water quality is poor, but that its trophic level indicates nutrient levels are abundant, which can support an abundance of plants and algae. Long term monitoring and analyses are important to assess changes over time.

# MONITORING PROGRAM RECOMMENDATIONS

The 2020 water quality report compiled by the Missouri Department of Natural Resources (MDNR) listed the following impairments: Middle Fork Salt River impaired for dissolved oxygen, South Fork Salt River impaired for dissolved oxygen and pH, Black Creek Tributary to the North Fork Salt River impaired for E. coli, North Fork Salt River and Mark Twain Lake impaired for mercury, and the Salt River below the dam impaired for mercury and dissolved oxygen. Additionally, MDNR has listed Mark Twain Lake as eutrophic. In order to better understand and monitor these impairments the following additional monitoring is recommended: bacteria and mercury at site MTL-11 and mercury at sites MTL-22, MTL-33, MTL-66, MTL-77, MTL-1, and MTL-12.

In accordance with EM-1110-2-1201, benthic sediment samples should be taken to monitor and assess potential impacts to aquatic and human health. Sediment sampling and analyses occurred at Mark Twain Lake in 2018, and prior to that in 2007. During these last analyses multiple exceedances over the recommended criteria were observed. Identifying trends over time is much more achievable with more consistent data. Contaminated sediments may have negative impacts on ecological processes. It is recommended, if possible, to sample and analyze for sediment metals and nutrients, as well as grain size analyses yearly or every two years.

Given the eutrophic status of Mark Twain Lake it is recommended that Total Nitrogen (TN) be added to the monitoring program. TN is a strong indicator of trophic status and is used by the state of Missouri to capture all lakes trophic status included in the 305(b) report. Similarly, it would strengthen the monitoring program to add CHL\_a to every sample site. Currently CHL\_a is only sampled at the lake sites and not the tributaries or lake discharge. This would allow for a trophic status comparison between the tributaries, lake, and discharge.

According to the Missouri State Code of Regulations 10CSR20-7.031, the parameters TP, TN, and CHL\_a must be sampled a minimum of four times per year in order to calculate a geometric mean to be compared to the state's ecoregion criteria thresholds. Thus, given the eutrophic status of Mark Twain Lake, it is imperative that sampling remain at a minimum of four events per year.

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- USACE. (1987). Engineering and Design: Reservoir Water Quality Analysis. USACE ER 1110-2-1201. Washington D.C.
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APPENDIX A: FIELD DATA

							Sp			
Date	Site	Depth (m)	DO (mg/L)	рH	ORP (mV)	Temp (C)	Cond (µS/cm)	TDS (mg/L)	Turbidity (FNU)	Secchi (in)
6/10/2021	MTL-1	0.5	5.35	NA	NA	17.1	193.5	126	37.3	
6/10/2021	MTL-11	0.4	8.30	NA	NA	27.3	493.7	321	16.7	
6/10/2021	MTL-12	0.7	8.07	NA	NA	18.1	211.3	137	36.7	
6/10/2021	MTL-13	0.4	9.90	NA	NA	28.1	508.1	330	3.8	
6/10/2021	MTL-22	1.1	11.51	NA	NA	25.5	195.1	127	21.9	24
6/10/2021	MTL-22	2.2	7.75	NA	NA	23.8	198.0	129	23.7	
6/10/2021	MTL-22	3.0	6.33	NA	NA	21.9	196.6	128	27.6	
6/10/2021	MTL-22	4.1	5.73	NA	NA	19.8	194.6	127	31.6	
6/10/2021	MTL-22	5.2	5.47	NA	NA	18.8	196.3	128	32.3	
6/10/2021	MTL-22	6.1	5.59	NA	NA	18.3	193.6	126	34.9	
6/10/2021	MTL-22	7.1	5.32	NA	NA	17.5	192.3	125	40.3	
6/10/2021	MTL-22	8.2	5.26	NA	NA	16.3	190.5	124	40.4	
6/10/2021	MTL-22	9.1	5.20	NA	NA	15.6	188.4	122	42.1	
6/10/2021	MTL-22	10.1	4.99	NA	NA	15.1	188.1	122	42.4	
6/10/2021	MTL-22	11.2	4.61	NA	NA	14.2	188.8	123	44.9	
6/10/2021	MTL-22	12.1	4.35	NA	NA	13.4	191.9	125	41.0	
6/10/2021	MTL-22	13.1	4.27	NA	NA	12.4	197.2	128	35.7	
6/10/2021	MTL-22	14.2	4.29	NA	NA	11.7	200.9	131	31.8	
6/10/2021	MTL-22	15.4	4.30	NA	NA	10.8	205.4	134	27.7	
6/10/2021	MTL-22	16.2	4.27	NA	NA	10.5	207.0	135	26.7	
6/10/2021	MTL-33	1.1	12.93	NA	NA	26.4	195.9	127	21.5	27
6/10/2021	MTL-33	2.0	9.14	NA	NA	24.4	199.0	129	22.2	
6/10/2021	MTL-33	3.1	6.70	NA	NA	22.6	199.6	130	25.5	
6/10/2021	MTL-33	4.3	4.98	NA	NA	19.0	200.0	130	33.5	
6/10/2021	MTL-33	5.3	4.91	NA	NA	18.6	200.0	130	34.2	
6/10/2021	MTL-33	6.1	5.26	NA	NA	18.2	196.1	127	34.0	
6/10/2021	MTL-33	7.0	5.23	NA	NA	17.7	194.3	126	34.9	
6/10/2021	MTL-33	8.2	5.14	NA	NA	16.6	194.0	126	36.3	
6/10/2021	MTL-33	9.2	5.15	NA	NA	15.7	190.1	124	40.1	
6/10/2021	MTL-33	10.3	4.45	NA	NA	14.8	195.1	127	37.7	
6/10/2021	MTL-33	11.1	4.50	NA	NA	14.2	192.2	125	40.0	
6/10/2021	MTL-33	12.1	4.43	NA	NA	13.7	192.2	125	38.9	
6/10/2021	MTL-33	13.1	4.21	NA	NA	12.7	197.2	128	37.3	
6/10/2021	MTL-33	14.1	3.69	NA	NA	12.0	201.2	131	30.7	
6/10/2021	MTL-33	15.3	3.57	NA	NA	10.8	207.3	135	27.1	
6/10/2021	MTL-33	16.3	3.50	NA	NA	10.4	208.0	135	26.6	
6/10/2021	MTL-33	17.0	3.10	NA	NA	9.9	210.2	137	25.5	
6/10/2021	MTL-33	18.1	3.03	NA	NA	9.7	210.8	137	25.3	
6/10/2021	MTL-5	1.0	10.22	NA	NA	25.7	384.2	250	47.7	
6/10/2021	MTL-66	1.1	9.71	NA	NA	28.3	201.7	131	28.1	21
6/10/2021	MTL-66	2.0	8.78	NA	NA	26.0	201.2	131	29.2	
6/10/2021	MTL-66	3.1	7.75	NA	NA	24.4	202.5	132	31.1	

							Sp			
Date	Site	Depth (m)	DO (mg/L)	рH	ORP (mV)	Temp (C)	Cond (µS/cm)	TDS (mg/L)	Turbidity (FNU)	Secchi (in)
6/10/2021	MTL-66	4.1	6.17	NA	NA	21.4	203.7	132	33.9	
6/10/2021	MTL-66	5.1	4.71	NA	NA	19.4	202.1	131	38.0	
6/10/2021	MTL-66	6.2	4.09	NA	NA	18.3	200.7	130	41.4	
6/10/2021	MTL-66	7.2	2.74	NA	NA	17.6	202.3	131	45.5	
6/10/2021	MTL-66	8.3	1.23	NA	NA	16.6	202.3	131	48.9	
6/10/2021	MTL-66	9.1	1.41	NA	NA	16.0	198.6	129	52.8	
6/10/2021	MTL-66	10.1	0.82	NA	NA	15.3	197.2	128	55.7	
6/10/2021	MTL-66	11.2	0.72	NA	NA	14.5	195.3	127	63.5	
6/10/2021	MTL-66	12.3	0.66	NA	NA	14.2	195.2	127	64.7	
6/10/2021	MTL-77	0.9	9.86	NA	NA	29.1	203.2	132	29.7	21
6/10/2021	MTL-77	2.0	7.84	NA	NA	25.0	205.2	133	32.1	
6/10/2021	MTL-77	3.1	6.71	NA	NA	23.0	205.4	134	34.2	
6/10/2021	MTL-77	4.1	3.76	NA	NA	19.2	211.2	137	39.1	
6/10/2021	MTL-77	5.1	4.35	NA	NA	18.1	201.4	131	41.2	
6/10/2021	MTL-77	6.1	3.83	NA	NA	17.9	202.4	132	42.4	
6/10/2021	MTL-77	7.0	3.57	NA	NA	17.5	201.4	131	44.2	
6/10/2021	MTL-77	8.1	3.14	NA	NA	17.0	200.3	130	43.7	
6/10/2021	MTL-77	9.1	3.09	NA	NA	16.8	199.0	129	46.4	
6/10/2021	MTL-77	10.1	3.09	NA	NA	15.7	195.1	127	55.5	
6/10/2021	MTL-77	11.1	1.76	NA	NA	15.1	197.4	128	55.9	
6/10/2021	MTL-77	12.3	0.92	NA	NA	13.9	196.2	128	61.9	
6/10/2021	MTL-77	13.1	0.46	NA	NA	12.9	197.6	128	69.9	
6/10/2021	MTL-9	0.4	3.82	NA	NA	24.8	247.5	161	72.5	
6/10/2021	MTL-BJ-MAR	1.2	12.84	NA	NA	30.1	197.1	128	20.9	
6/10/2021	MTL-BJ-MAR	7.6	5.25	NA	NA	17.4	193.5	126	36.2	
6/10/2021	MTL-BJ-MAR	14.7	4.05	NA	NA	12.2	199.6	130	38.0	
6/10/2021	MTL-IC MAR	1.0	8.13	NA	NA	25.4	199.1	129	28.8	
6/10/2021	MTL-IC MAR	6.4	4.82	NA	NA	18.0	196.0	127	43.8	
6/10/2021	MTL-IC MAR	11.3	3.00	NA	NA	14.1	190.8	124	68.6	
9/1/2021	MTL-1	1.0	7.97	7.6	293.2	25.8	177.8	116	5.9	
9/1/2021	MTL-11	0.3	6.03	7.7	156.2	26.0	446.1	290	16.6	
9/1/2021	MTL-12	0.5	5.75	7.6	356.7	27.4	180.8	118	7.4	
9/1/2021	MTL-13	0.0	7.65	7.9	150.0	25.8	344.3	224	8.3	
9/1/2021	MTL-22	1.0	5.75	8.0	208.6	27.2	176.0	114	2.1	
9/1/2021	MTL-22	2.1	4.77	7.7	213.8	26.9	177.2	115	2.3	
9/1/2021	MTL-22	3.0	2.16	7.3	226.2	26.5	178.4	116	3.5	
9/1/2021	MTL-22	4.1	0.91	7.2	210.1	26.0	179.5	117	3.8	
9/1/2021	MTL-22	5.1	0.64	7.1	44.6	25.0	179.5	117	6.2	
9/1/2021	MTL-22	6.1	0.50	7.0	-24.6	23.5	170.4	111	13.0	
9/1/2021	MTL-22	7.1	0.41	7.0	-55.0	21.1	169.0	110	21.9	
9/1/2021	MTL-22	8.1	0.36	7.0	-36.6	19.1	179.6	117	27.5	
9/1/2021	MTL-22	9.0	0.33	7.0	-16.6	16.8	202.9	132	30.4	

Date       Depth (m)       DO (mg/L)       pH       ORP (mV)       Temp (C)       Cond (µS/cm)       TDS (mg/L)       Turbidity (FNU)       Secchi (in)         9/1/2021       MTL-22       10.0       0.29       7.0       -2.7       14.5       209.2       136       33.0       -         9/1/2021       MTL-22       11.1       0.27       7.0       3.8       13.2       208.9       136       31.5       -         9/1/2021       MTL-22       12.0       0.25       7.0       8.9       12.0       210.4       137       28.7         9/1/2021       MTL-22       13.0       0.24       7.0       15.2       11.2       212.4       138       25.5         9/1/2021       MTL-22       14.1       0.22       6.9       25.9       10.6       215.4       140       22.5       -         9/1/2021       MTL-22       16.1       0.20       6.9       39.9       9.6       222.5       145       21.4         9/1/2021       MTL-33       1.1       6.30       8.0       109.0       27.5       179.5       117       2.4								Sp			
DateSite(m)(mg/L)pH(mV)(C)(µS/cm)(mg/L)(FNU)(in)9/1/2021MTL-2210.00.297.0-2.714.5209.213633.09/1/2021MTL-2211.10.277.03.813.2208.913631.59/1/2021MTL-2212.00.257.08.912.0210.413728.79/1/2021MTL-2213.00.247.015.211.2212.413825.59/1/2021MTL-2214.10.226.925.910.6215.414022.59/1/2021MTL-2215.00.216.932.810.2217.814221.69/1/2021MTL-2216.10.206.939.99.6222.514521.49/1/2021MTL-331.16.308.0109.027.5179.51172.4309/1/2021MTL-332.35.677.9114.327.2178.61162.49/1/2021MTL-333.05.307.8118.627.1178.21162.4			Depth	DO		ORP	Temp	Cond	TDS	Turbidity	Secchi
9/1/2021     MTL-22     10.0     0.29     7.0     -2.7     14.5     209.2     136     33.0       9/1/2021     MTL-22     11.1     0.27     7.0     3.8     13.2     208.9     136     31.5       9/1/2021     MTL-22     12.0     0.25     7.0     8.9     12.0     210.4     137     28.7       9/1/2021     MTL-22     13.0     0.24     7.0     15.2     11.2     212.4     138     25.5       9/1/2021     MTL-22     14.1     0.22     6.9     25.9     10.6     215.4     140     22.5       9/1/2021     MTL-22     15.0     0.21     6.9     32.8     10.2     217.8     142     21.6       9/1/2021     MTL-22     16.1     0.20     6.9     39.9     9.6     222.5     145     21.4       9/1/2021     MTL-33     1.1     6.30     8.0     109.0     27.5     179.5     117     2.4     30       9/1/2021     MTL-33     2.3     5.67     7.9     114.3     27.2     178.6     116     2.4    <	Date	Site	(m)	(mg/L)	рН	(mV)	(C)	(µS/cm)	(mg/L)	(FNU)	(in)
9/1/2021     MTL-22     11.1     0.27     7.0     3.8     13.2     208.9     136     31.5       9/1/2021     MTL-22     12.0     0.25     7.0     8.9     12.0     210.4     137     28.7       9/1/2021     MTL-22     13.0     0.24     7.0     15.2     11.2     212.4     138     25.5       9/1/2021     MTL-22     14.1     0.22     6.9     25.9     10.6     215.4     140     22.5       9/1/2021     MTL-22     15.0     0.21     6.9     32.8     10.2     217.8     142     21.6       9/1/2021     MTL-22     16.1     0.20     6.9     39.9     9.6     222.5     145     21.4       9/1/2021     MTL-33     1.1     6.30     8.0     109.0     27.5     179.5     117     2.4     30       9/1/2021     MTL-33     2.3     5.67     7.9     114.3     27.2     178.6     116     2.4       9/1/2021     MTL-33     2.0     5.30     7.8     118.6     27.1     178.2     116     2.4 <td>9/1/2021</td> <td>MTL-22</td> <td>10.0</td> <td>0.29</td> <td>7.0</td> <td>-2.7</td> <td>14.5</td> <td>209.2</td> <td>136</td> <td>33.0</td> <td></td>	9/1/2021	MTL-22	10.0	0.29	7.0	-2.7	14.5	209.2	136	33.0	
9/1/2021     MTL-22     12.0     0.25     7.0     8.9     12.0     210.4     137     28.7       9/1/2021     MTL-22     13.0     0.24     7.0     15.2     11.2     212.4     138     25.5       9/1/2021     MTL-22     14.1     0.22     6.9     25.9     10.6     215.4     140     22.5       9/1/2021     MTL-22     15.0     0.21     6.9     32.8     10.2     217.8     142     21.6       9/1/2021     MTL-22     16.1     0.20     6.9     39.9     9.6     222.5     145     21.4       9/1/2021     MTL-33     1.1     6.30     8.0     109.0     27.5     179.5     117     2.4     30       9/1/2021     MTL-33     2.3     5.67     7.9     114.3     27.2     178.6     116     2.4       9/1/2021     MTL-33     2.0     5.30     7.8     118.6     27.1     178.2     116     2.4	9/1/2021	MTL-22	11.1	0.27	7.0	3.8	13.2	208.9	136	31.5	
9/1/2021     MTL-22     13.0     0.24     7.0     15.2     11.2     212.4     138     25.5       9/1/2021     MTL-22     14.1     0.22     6.9     25.9     10.6     215.4     140     22.5       9/1/2021     MTL-22     15.0     0.21     6.9     32.8     10.2     217.8     142     21.6       9/1/2021     MTL-22     16.1     0.20     6.9     39.9     9.6     222.5     145     21.4       9/1/2021     MTL-33     1.1     6.30     8.0     109.0     27.5     179.5     117     2.4     30       9/1/2021     MTL-33     2.3     5.67     7.9     114.3     27.2     178.6     116     2.4       9/1/2021     MTL-33     2.0     5.30     7.8     118.6     27.1     178.2     116     2.4	9/1/2021	MTL-22	12.0	0.25	7.0	8.9	12.0	210.4	137	28.7	
9/1/2021       MTL-22       14.1       0.22       6.9       25.9       10.6       215.4       140       22.5         9/1/2021       MTL-22       15.0       0.21       6.9       32.8       10.2       217.8       142       21.6         9/1/2021       MTL-22       16.1       0.20       6.9       39.9       9.6       222.5       145       21.4         9/1/2021       MTL-33       1.1       6.30       8.0       109.0       27.5       179.5       117       2.4       30         9/1/2021       MTL-33       2.3       5.67       7.9       114.3       27.2       178.6       116       2.4         9/1/2021       MTL-33       3.0       5.30       7.8       118.6       27.1       178.2       116       2.4	9/1/2021	MTL-22	13.0	0.24	7.0	15.2	11.2	212.4	138	25.5	
9/1/2021       MTL-22       15.0       0.21       6.9       32.8       10.2       217.8       142       21.6         9/1/2021       MTL-22       16.1       0.20       6.9       39.9       9.6       222.5       145       21.4         9/1/2021       MTL-33       1.1       6.30       8.0       109.0       27.5       179.5       117       2.4       30         9/1/2021       MTL-33       2.3       5.67       7.9       114.3       27.2       178.6       116       2.4         9/1/2021       MTL-33       3.0       5.30       7.8       118.6       27.1       178.2       116       2.4	9/1/2021	MTL-22	14.1	0.22	6.9	25.9	10.6	215.4	140	22.5	
9/1/2021       MTL-22       16.1       0.20       6.9       39.9       9.6       222.5       145       21.4         9/1/2021       MTL-33       1.1       6.30       8.0       109.0       27.5       179.5       117       2.4       30         9/1/2021       MTL-33       2.3       5.67       7.9       114.3       27.2       178.6       116       2.4         9/1/2021       MTL-33       3.0       5.30       7.8       118.6       27.1       178.2       116       2.4	9/1/2021	MTL-22	15.0	0.21	6.9	32.8	10.2	217.8	142	21.6	
9/1/2021       MTL-33       1.1       6.30       8.0       109.0       27.5       179.5       117       2.4       30         9/1/2021       MTL-33       2.3       5.67       7.9       114.3       27.2       178.6       116       2.4       30         9/1/2021       MTL-33       2.0       5.30       7.8       118.6       27.1       178.2       116       2.4	9/1/2021	MTL-22	16.1	0.20	6.9	39.9	9.6	222.5	145	21.4	
9/1/2021       MTL-33       2.3       5.67       7.9       114.3       27.2       178.6       116       2.4         9/1/2021       MTL-33       3.0       5.30       7.8       118.6       27.1       178.2       116       2.4	9/1/2021	MTL-33	1.1	6.30	8.0	109.0	27.5	179.5	117	2.4	30
Q/1/2021 MTL 33 3.0 5.30 7.8 119.6 27.1 179.2 116 2.4	9/1/2021	MTL-33	2.3	5.67	7.9	114.3	27.2	178.6	116	2.4	
UTTE UTTE UTTE UTTE UTTE UTTE UTTE UTTE	9/1/2021	MTL-33	3.0	5.30	7.8	118.6	27.1	178.3	116	2.4	
9/1/2021 MTL-33 5.1 0.74 7.1 -66.9 24.7 184.8 120 10.8	9/1/2021	MTL-33	5.1	0.74	7.1	-66.9	24.7	184.8	120	10.8	
9/1/2021 MTL-33 6.2 0.57 7.1 -70.9 22.6 173.4 113 16.2	9/1/2021	MTL-33	6.2	0.57	7.1	-70.9	22.6	173.4	113	16.2	
9/1/2021 MTL-33 7.0 0.48 7.0 -74.9 21.6 174.7 114 19.4	9/1/2021	MTL-33	7.0	0.48	7.0	-74.9	21.6	174.7	114	19.4	
9/1/2021 MTL-33 8.1 0.42 7.0 -63.3 18.9 183.7 119 25.9	9/1/2021	MTL-33	8.1	0.42	7.0	-63.3	18.9	183.7	119	25.9	
9/1/2021 MTL-33 9.1 0.39 7.0 -48.7 16.7 203.2 132 28.6	9/1/2021	MTL-33	9.1	0.39	7.0	-48.7	16.7	203.2	132	28.6	
9/1/2021 MTL-33 10.3 0.36 7.0 -38.3 14.2 212.6 138 28.4	9/1/2021	MTL-33	10.3	0.36	7.0	-38.3	14.2	212.6	138	28.4	
9/1/2021 MTL-33 11.2 0.34 7.0 -33.4 13.3 212.6 138 27.0	9/1/2021	MTL-33	11.2	0.34	7.0	-33.4	13.3	212.6	138	27.0	
9/1/2021 MTL-33 12.1 0.31 7.0 -25.9 11.9 214.1 139 24.8	9/1/2021	MTL-33	12.1	0.31	7.0	-25.9	11.9	214.1	139	24.8	
9/1/2021 MTL-33 13.1 0.30 7.0 -22.7 11.1 216.4 141 22.8	9/1/2021	MTL-33	13.1	0.30	7.0	-22.7	11.1	216.4	141	22.8	
9/1/2021 MTL-33 14.2 0.29 7.0 -16.6 10.2 220.7 143 19.7	9/1/2021	MTL-33	14.2	0.29	7.0	-16.6	10.2	220.7	143	19.7	
9/1/2021 MTL-33 15.2 0.27 7.0 -11.7 9.6 224.7 146 18.8	9/1/2021	MTL-33	15.2	0.27	7.0	-11.7	9.6	224.7	146	18.8	
9/1/2021 MTL-5 0.0 7.38 8.1 138.3 27.4 465.1 302 82.5	9/1/2021	MTL-5	0.0	7.38	8.1	138.3	27.4	465.1	302	82.5	
9/1/2021 MTL-66 1.1 5.94 7.7 131.6 27.4 172.7 112 3.9 39	9/1/2021	MTL-66	1.1	5.94	7.7	131.6	27.4	172.7	112	3.9	39
9/1/2021 MTL-66 2.2 5.38 7.6 135.5 27.1 173.0 112 3.9	9/1/2021	MTL-66	2.2	5.38	7.6	135.5	27.1	173.0	112	3.9	
9/1/2021 MTL-66 3.1 5.21 7.6 137.5 27.1 173.1 112 3.7	9/1/2021	MTL-66	3.1	5.21	7.6	137.5	27.1	173.1	112	3.7	
9/1/2021 MTL-66 4.1 5.11 7.5 139.9 27.1 173.1 112 3.6	9/1/2021	MTL-66	4.1	5.11	7.5	139.9	27.1	173.1	112	3.6	
9/1/2021 MTL-66 5.1 3.62 7.3 147.5 26.9 174.4 113 5.2	9/1/2021	MTL-66	5.1	3.62	7.3	147.5	26.9	174.4	113	5.2	
9/1/2021 MTL-66 6.1 2.32 7.2 101.9 26.5 176.6 115 9.4	9/1/2021	MTL-66	6.1	2.32	7.2	101.9	26.5	176.6	115	9.4	
9/1/2021 MTL-66 7.2 0.53 7.1 -114.0 23.3 196.1 127 52.4	9/1/2021	MTL-66	7.2	0.53	7.1	-114.0	23.3	196.1	127	52.4	
9/1/2021 MTL-66 8.1 0.41 7.0 -125.3 21.7 203.7 132 56.4	9/1/2021	MTL-66	8.1	0.41	7.0	-125.3	21.7	203.7	132	56.4	
9/1/2021 MTL-66 9.2 0.34 7.1 -136.8 20.0 208.6 136 49.3	9/1/2021	MTL-66	9.2	0.34	7.1	-136.8	20.0	208.6	136	49.3	
9/1/2021 MTL-66 10.0 0.29 7.1 -141.6 16.0 246.9 160 22.5	9/1/2021	MTL-66	10.0	0.29	7.1	-141.6	16.0	246.9	160	22.5	
9/1/2021 MTL-77 1.3 7.10 8.1 82.9 28.1 173.4 113 3.1 41	9/1/2021	MTL-77	1.3	7.10	8.1	82.9	28.1	173.4	113	3.1	41
9/1/2021 MTL-77 2.3 6.24 7.8 96.6 27.9 173.6 113 3.4	9/1/2021	MTL-77	2.3	6.24	7.8	96.6	27.9	173.6	113	3.4	
9/1/2021 MTL-77 3.2 5.83 7.7 104.0 27.8 173.6 113 3.7	9/1/2021	MTL-77	3.2	5.83	7.7	104.0	27.8	173.6	113	3.7	
9/1/2021 MTL-77 4.2 5.64 7.7 107.1 27.7 173.6 113 3.8	9/1/2021	MTL-77	4.2	5.64	7.7	107.1	27.7	173.6	113	3.8	
9/1/2021 MTL-77 5.1 4.20 7.4 113.9 27.5 174.0 113 5.6	9/1/2021	MTL-77	5.1	4.20	7.4	113.9	27.5	174.0	113	5.6	
9/1/2021 MTL-77 6.2 0.59 7.1 -69.6 25.4 178.6 116 20.0	9/1/2021	MTL-77	6.2	0.59	7.1	-69.6	25.4	178.6	116	20.0	
9/1/2021 MTL-77 7.1 0.45 7.0 -105.4 23.2 182.5 119 44.1	9/1/2021	MTL-77	7.1	0.45	7.0	-105.4	23.2	182.5	119	44.1	
9/1/2021 MTL-77 8.1 0.39 7.0 -114.4 21.8 179.2 117 42.8	9/1/2021	MTI -77	8.1	0.39	7.0	-114.4	21.8	179.2	117	42.8	
9/1/2021 MTL-77 9.1 0.36 7.0 -120.2 19.7 192.5 125 49.4	9/1/2021	MTI -77	9.1	0.36	7.0	-120.2	19.7	192.5	125	49.4	
9/1/2021 MTL-77 10.2 0.33 7.1 -126.3 17.1 221.4 144 52.0	9/1/2021	MTL-77	10.2	0.33	7.1	-126.3	17.1	221.4	144	52.0	

							Sp			
Date	Site	Depth (m)	DO (mg/l)	nH	ORP (mV)	Temp (C)	Cond (uS/cm)	TDS (mg/l)	Turbidity (FNU)	Secchi (in)
9/1/2021	MTI -77	11 1	0.32	71	-129.8	14.2	244.2	159	52.4	
9/1/2021	MTL -77	12.0	0.29	7.1	-131.5	13.3	247.7	161	52.7	
9/1/2021	MTL-9	0.0	5.76	7.8	143.0	25.6	380.6	247	12.9	
9/1/2021	MTL-BJ-MAR	1.1	6.00	8.3	-39.2	28.0	177.6	115	2.6	
9/1/2021	MTL-BJ-MAR	6.1	0.76	7.1	-64.0	22.7	175.7	114	20.6	
9/1/2021	MTL-BJ-MAR	11.5	1.13	7.2	-45.9	12.9	213.6	139	32.2	
9/1/2021	MTL-IC MAR	0.8	5.50	7.8	50.5	27.5	172.1	112	3.5	
9/1/2021	MTL-IC MAR	4.1	3.22	7.4	25.4	26.6	172.0	112	8.7	
9/1/2021	MTL-IC MAR	8.2	1.03	7.1	-94.5	21.5	170.9	111	31.5	
9/29/2021	MTL-1	0.6	8.84	8.1	352.8	23.4	185.6	121	2.2	
9/29/2021	MTL-11	0.3	8.48	7.8	207.3	23.3	441.5	287	11.0	
9/29/2021	MTL-12	0.1	8.20	7.6	200.3	24.3	183.5	119	4.1	
9/29/2021	MTL-13	0.6	7.10	7.8	181.8	20.1	399.9	260	6.6	
9/29/2021	MTL-22	1.0	9.25	8.1	225.8	22.5	179.0	116	2.1	44
9/29/2021	MTL-22	2.0	8.67	8.0	223.9	22.1	179.1	116	2.0	
9/29/2021	MTL-22	3.0	8.22	7.9	225.2	22.0	179.2	116	2.0	
9/29/2021	MTL-22	4.1	7.73	7.7	226.9	21.9	179.0	116	2.1	
9/29/2021	MTL-22	5.0	7.76	7.7	227.1	21.9	179.7	117	2.0	
9/29/2021	MTL-22	6.0	7.15	7.6	224.4	21.8	180.2	117	3.4	
9/29/2021	MTL-22	7.0	6.14	7.6	224.3	21.4	180.9	118	3.8	
9/29/2021	MTL-22	8.0	5.15	7.4	225.2	20.8	183.3	119	5.3	
9/29/2021	MTL-22	9.0	2.60	7.3	226.1	19.5	190.2	124	10.2	
9/29/2021	MTL-22	10.0	1.00	7.2	231.0	13.9	213.8	139	27.4	
9/29/2021	MTL-22	11.0	0.69	7.1	231.4	12.2	216.1	140	28.5	
9/29/2021	MTL-22	12.0	0.59	7.1	230.4	11.3	219.1	142	27.0	
9/29/2021	MTL-22	13.0	0.53	7.1	229.4	10.8	221.2	144	27.3	
9/29/2021	MTL-22	14.0	0.49	7.0	228.3	10.1	225.9	147	33.2	
9/29/2021	MTL-22	15.0	0.46	7.0	223.5	9.8	229.5	149	37.9	
9/29/2021	MTL-22	16.0	0.38	7.0	-48.4	9.5	234.3	152	54.7	
9/29/2021	MTL-22	16.0	0.44	7.0	217.6	9.6	232.1	151	53.2	
9/29/2021	MTL-33	1.1	8.30	7.8	199.7	22.5	180.9	118	2.0	55
9/29/2021	MTL-33	2.2	6.82	7.6	193.5	21.9	181.2	118	2.0	
9/29/2021	MTL-33	3.1	6.65	7.5	191.7	21.9	181.6	118	2.1	
9/29/2021	MTL-33	4.0	6.52	7.5	182.2	21.8	181.7	118	2.3	
9/29/2021	MTL-33	5.1	6.47	7.5	179.5	21.8	181.7	118	2.4	
9/29/2021	MTL-33	6.1	6.19	7.5	176.5	21.8	182.7	119	2.4	
9/29/2021	MTL-33	7.2	5.05	7.4	172.8	21.2	184.3	120	3.9	
9/29/2021	MTL-33	8.1	2.98	7.3	171.0	20.6	188.5	122	5.9	
9/29/2021	MTL-33	9.1	0.67	7.1	171.3	18.8	195.9	127	11.9	
9/29/2021	MTL-33	10.0	0.52	7.1	172.5	14.1	216.1	140	28.1	
9/29/2021	MTL-33	11.1	0.47	7.0	171.9	11.7	218.8	142	27.5	
9/29/2021	MTL-33	12.3	0.43	7.0	170.4	10.9	221.7	144	27.6	

			50		0.00	-	Sp	TDO		0
Date	Site	Deptn (m)	DO (ma/L)	рΗ	(mV)	(C)	(uS/cm)	ma/L)	(FNU)	Secchi (in)
9/29/2021	MTL-33	13.1	0.41	7.0	169.8	10.5	226.7	147	29.5	()
9/29/2021	MTL-33	14.3	0.36	6.9	169.2	9.7	232.9	151	33.3	
9/29/2021	MTL-33	15.2	0.35	6.9	168.3	9.6	234.8	153	36.0	
9/29/2021	MTL-33	16.2	0.35	6.9	168.3	9.4	237.3	154	38.7	
9/29/2021	MTL-5	0.8	5.97	7.7	364.1	20.1	384.4	250	44.5	
9/29/2021	MTL-66	1.1	6.59	7.5	338.8	21.7	184.1	120	3.8	36
9/29/2021	MTL-66	2.2	5.94	7.4	327.4	21.5	183.2	119	3.3	
9/29/2021	MTL-66	3.2	5.37	7.4	316.4	21.4	184.3	120	5.1	
9/29/2021	MTL-66	4.2	4.65	7.3	311.4	21.4	188.4	122	5.9	
9/29/2021	MTL-66	5.1	4.40	7.3	304.4	21.4	189.3	123	5.9	
9/29/2021	MTL-66	5.1	4.35	7.3	299.0	21.4	189.2	123	5.8	
9/29/2021	MTL-66	6.1	4.16	7.3	291.7	21.3	190.3	124	6.0	
9/29/2021	MTL-66	7.2	3.61	7.2	288.0	21.1	191.7	125	8.2	
9/29/2021	MTL-66	7.2	3.56	7.2	286.4	21.1	191.8	125	8.2	
9/29/2021	MTL-66	8.3	1.64	7.2	281.9	20.6	195.2	127	11.2	
9/29/2021	MTL-66	9.2	0.53	7.0	-48.4	16.7	236.7	154	46.2	
9/29/2021	MTL-66	10.1	0.43	7.0	-91.4	13.4	262.8	171	46.2	
9/29/2021	MTL-77	1.0	9.63	8.1	137.4	22.5	180.9	118	2.9	44
9/29/2021	MTL-77	2.0	8.17	7.8	144.6	22.0	181.8	118	2.8	
9/29/2021	MTL-77	3.1	6.31	7.5	147.3	21.5	182.2	118	3.0	
9/29/2021	MTL-77	4.1	5.89	7.4	146.9	21.3	184.8	120	4.1	
9/29/2021	MTL-77	4.4	5.85	7.4	146.6	21.3	184.5	120	4.0	
9/29/2021	MTL-77	5.1	5.70	7.3	147.5	21.3	185.3	120	4.3	
9/29/2021	MTL-77	6.1	5.62	7.4	145.6	21.2	185.6	121	4.8	
9/29/2021	MTL-77	7.2	5.21	7.3	145.9	21.1	187.4	122	5.7	
9/29/2021	MTL-77	8.2	4.53	7.3	146.2	21.0	189.0	123	6.4	
9/29/2021	MTL-77	9.1	0.70	7.0	4.2	18.6	209.6	136	22.6	
9/29/2021	MTL-77	10.0	0.51	7.0	-69.0	14.8	253.1	165	56.1	
9/29/2021	MTL-77	11.1	0.46	7.0	-88.5	13.0	263.1	171	71.6	
9/29/2021	MTL-9	0.7	8.07	7.8	203.6	21.5	493.1	321	8.5	
9/29/2021	MTL-BJ-MAR	1.1	8.55	7.8	152.9	22.6	180.4	117	2.2	
9/29/2021	MTL-BJ-MAR	4.1	5.97	7.3	16.5	21.9	180.7	117	4.9	
9/29/2021	MTL-BJ-MAR	9.4	1.14	7.2	-38.0	15.3	213.4	139	38.2	
9/29/2021	MTL-IC MAR	1.1	8.57	7.9	421.8	22.4	179.5	117	3.2	
9/29/2021	MTL-IC MAR	4.1	6.15	7.4	84.9	21.6	179.6	117	4.9	
9/29/2021	MTL-IC MAR	8.2	4.37	7.4	40.8	20.6	184.0	120	13.1	

APPENDIX B: LABORATORY DATA



Environmental | Analytical | Management | Safety

PO Box 1566 400 Aviation Drive Mt. Vernon, IL 62864 618-244-3235

www.ardlinc.com

Date: 6/30/21

Lab Name: ARDL, Inc.

ARDL Report No.: 8710

# Project Name: Mark Twain Lake

Customer Name: SLCOE

Samples Received at ARDL: 6/10/21

# CASE NARRATIVE

Customer Sample No.	<u>Date</u> Collected	<u>Lab ID</u> Number	Analyses Requested
MTL-1	6/10/21	8710-01	NP Pesticides, Metals(1), Inorganics(2)
MTL-5	6/10/21	8710-02	NP Pesticides, Metals(1), Inorganics(2)
MTL-13	6/10/21	8710-03	NP Pesticides, Metals(1), Inorganics(2)
MTL-9	6/10/21	8710-04	NP Pesticides, Metals(1), Inorganics(2)
MTL-11	6/10/21	8710-05	NP Pesticides, Metals(1), Inorganics(2)
MTL-12	6/10/21	8710-06	NP Pesticides, Metals(1), Inorganics(2)
MTL-15-0	6/10/21	8710-07	NP Pesticides, Inorganics(2)(3)
MTL-22-0	6/10/21	8710-08	NP Pesticides, Inorganics(2)(3)
MTL-22-15	6/10/21	8710-09	Metals(1), Inorganics(2)
MTL-33-0	6/10/21	8710-10	NP Pesticides, Inorganics(2)(3)
MTL-66-0	6/10/21	8710-11	NP Pesticides, Inorganics(2)(3)
MTL-77-0	6/10/21	8710-12	NP Pesticides, Metals(1), Inorganics(2)(3)
IC MARINA	6/10/21	8710-13	NP Pesticides, Inorganics(2), E Coli
<b>BJ MARINA</b>	6/10/21	8710-14	NP Pesticides, Inorganics(2), E Coli

(1) Including iron and manganese.

(2) Including ammonia, nitrate, orthophosphate, total phosphorus, TOC, TSS and TVSS.

(3) Including chlorophyll-a and pheophytin-a.

The quality control data are summarized as follows:

# NP PESTICIDE FRACTION - METHOD 8270-SIM

# HOLDING TIME

Samples were prepared and analyzed within method specified holding times.

# INITIAL CALIBRATION

The initial calibration passed criteria. The ICV passed criteria.

# **CONTINUING CALIBRATION**

The continuing calibration verification (CCV) passed criteria for all analytes.

# PREPARATION BLANK

The blank met acceptance criteria.

LABORATORY CONTROL SAMPLE The LCS analyses met recovery criteria.

MATRIX SPIKE

The matrix spike and matrix spike duplicate met recovery criteria.

"Test everything, keep the good" 1 Thes. 5:21

# Project Name: Mark Twain Lake

# ARDL Report No.: 8710

# **CASE NARRATIVE (Continued)**

# DUPLICATE

Duplicate analyses are reported as MS/MSD. RPD of the duplicate analyses met criteria.

INTERNAL STANDARDS All internal standard criteria were met.

# SURROGATES

All surrogate recovery criteria were met.

# **INORGANIC FRACTION**

TOC were analyzed by an accredited outside laboratory due to instrument status.

PREPARATION BLANK Results of the preparation blanks were undetected.

# LABORATORY CONTROL SAMPLE

Percent recoveries of all LCS analyses were within control limits.

### MATRIX SPIKE

Percent recoveries of all matrix spikes and matrix spike duplicates were within control limits, except 2 of 2 for ammonia and iron. The parent sample has been flagged appropriately with a 'J' qualifier.

#### DUPLICATE

All duplicate analyses are reported as MS/MSD except chlorophyll-a, pheophytin-a, TSS and TVSS. RPD on all duplicate analyses were within control limits.

# DATA REPORTING QUALIFIERS

The following data reporting qualifiers are used as required:

- ND Indicates parameter was analyzed for but not detected.
- J Indicates an estimated value. This flag is used either when estimating a concentration or this flag indicates analyte(s) associated with a DOD-QSM specified non-compliance pertaining to matrix QC criteria.

# **REPORT ORGANIZATION**

The data in this report appear by sample type (Field sample, preparation blank, laboratory control sample / spike blank, matrix spike /spike duplicate and sample duplicate). Within each sample type the data appear in the order that the analytical methods were discussed in this case narrative. Sample receipt information follows the analytical data.

Release of the data contained in this package has been authorized by the Technical Services Manager or his designee as verified by the following signature.

Dean S. Dickerson Technical Services Manager

Page 2 of 2

ARDL Report 8710 - Page 2 of 40



# Sample & QC Results

Including as appropriate: Field Sample Results Batch QC Prep Blank LCS/Spike Blank Matrix QC MS/MSD Sample Duplicate

ARDL Data Package 8710

N:\ARDL Case Narratives\ARDL Data Package Contents.pdf - Revised June 21, 2019

Authorized By: DSD-QAO

Lab Report No: 008710

Report Date: 06/21/2021

Project No.:Analytical Method: 8270CNELAC Certified - IL100308Prep Method: 3510CField ID:MTL-1ARDL Lab No.:008710-01Desc/Location:MARK TWAIN LAKELab Filename:E0615105Sample Date:06/10/2021Received Date:06/10/2021Sample Time:1500Prep. Date:06/14/2021Matrix:WATERAnalysis Date:06/15/2021Amount Used:900 mLInstrument ID:AG5Final Volume:1 mLQC Batch:B11353% Moisture:NALevel:LOWDataDilutionParameterLODLOQResultFlagUnitsTrifluralin0.2220.222NDUG/L1Atrazine0.2220.222NDUG/L1Metribuzin0.2220.222NDUG/L1Metolachlor0.2220.222NDUG/L1Chorpyrifos0.2220.222NDUG/L1	Project Name:	MARK TWAIN LAKE	Ana	lysis: NE	PESTICID	ES (827	OSIM-MO	D)
NELAC Certified - IL100308Prep Method: 3510CField ID:MTL-1ARDL Lab No.:008710-01Desc/Location:MARK TWAIN LAKELab Filename:E0615105Sample Date:06/10/2021Received Date:06/10/2021Sample Time:1500Prep. Date:06/15/2021Matrix:WATERAnalysis Date:06/15/2021Amount Used:900 mLInstrument ID:AG5Final Volume:1 mLQC Batch:B11353% Moisture:NALevel:LOWDataDilutionParameterLODLOQResultFlagUnitsTrifluralin0.2220.222NDUG/L1Atrazine0.2220.222NDUG/L1Alachlor0.2220.222NDUG/L1Metolachlor0.2220.222NDUG/L1Chlorpyrifos0.2220.222NDUG/L1Cyanazine0.2220.222NDUG/L1	Project No.:		Analytical M	lethod: 82	270C			
Field ID:MTL-1ARDL Lab No.:008710-01Desc/Location:MARK TWAIN LAKELab Filename:E0615105Sample Date:06/10/2021Received Date:06/10/2021Sample Time:1500Prep. Date:06/14/2021Matrix:WATERAnalysis Date:06/15/2021Amount Used:900 mLInstrument ID:AG5Final Volume:1 mLQC Batch:B11353% Moisture:NALevel:LOWDataDilutionParameterLODLOQResultFlagUnitsTrifluralin0.2220.222NDUG/L1Atrazine0.2220.222NDUG/L1Metribuzin0.2220.222NDUG/L1Metolachlor0.2220.222NDUG/L1Metolachlor0.2220.222NDUG/L1Chorpyrifos0.2220.222NDUG/L1	NELAC Certi:	fied - IL100308	Prep M	lethod: 35	510C			
Field ID:MTL-1ARDL Lab No.:008710-01Desc/Location:MARK TWAIN LAKELab Filename:E0615105Sample Date:06/10/2021Received Date:06/10/2021Sample Time:1500Prep. Date:06/14/2021Matrix:WATERAnalysis Date:06/15/2021Amount Used:900 mLInstrument ID:AG5Final Volume:1 mLQC Batch:B11353% Moisture:NALevel:LOWDataDilutionParameterLODLOQResultFlagUnitsTrifluralin0.2220.222NDUG/L1Atrazine0.2220.222NDUG/L1Metribuzin0.2220.222NDUG/L1Alachlor0.2220.222NDUG/L1Metolachlor0.2220.222NDUG/L1Chorpyrifos0.2220.222NDUG/L1Cyanagine0.2220.222NDUG/L1								
Desc/Location:MARK TWAIN LAKELab Filename:E0615105Sample Date:06/10/2021Received Date:06/10/2021Sample Time:1500Prep. Date:06/14/2021Matrix:WATERAnalysis Date:06/15/2021Amount Used:900 mLInstrument ID:AG5Final Volume:1 mLQC Batch:B11353% Moisture:NALevel:LOWDataDilutionParameterTrifluralin0.2220.222NDUG/L1Atrazine0.2220.222NDUG/L1Metribuzin0.2220.222NDUG/L1Alachlor0.2220.222NDUG/L1Metolachlor0.2220.222NDUG/L1Charpyrifos0.2220.222NDUG/L1Cyanazine0.2220.222NDUG/L1	Field ID:	MTL-1		ARDL I	Lab No.:	00871	0-01	
Sample Date:     06/10/2021     Received Date:     06/10/2021       Sample Time:     1500     Prep. Date:     06/14/2021       Matrix:     WATER     Analysis Date:     06/15/2021       Amount Used:     900 mL     Instrument ID:     AG5       Final Volume:     1 mL     QC Batch:     B11353       % Moisture:     NA     Level:     LOW       Data     Dilution       Parameter     LOD     LOQ     Result     Flag     Units     Factor       Trifluralin     0.222     0.222     ND     UG/L     1       Metribuzin     0.222     0.222     ND     UG/L     1       Alachlor     0.222     0.222     ND     UG/L     1       Metolachlor     0.222     0.222     ND     UG/L     1       Chorpyrifos     0.222     0.222     ND     UG/L     1	Desc/Location:	MARK TWAIN LAKE		Lab Fi	llename:	E0615	105	
Sample Time:1500Prep. Date:06/14/2021Matrix:WATERAnalysis Date:06/15/2021Amount Used:900 mLInstrument ID:AG5Final Volume:1 mLQC Batch:B11353% Moisture:NALevel:LOWDataDilutionParameterLODLOQResultFlagTrifluralin0.2220.222NDUG/L1Atrazine0.2220.222NDUG/L1Metribuzin0.2220.222NDUG/L1Alachlor0.2220.222NDUG/L1Metolachlor0.2220.222NDUG/L1Chlorpyrifos0.2220.222NDUG/L1Cyanazine0.2220.222NDUG/L1	Sample Date:	06/10/2021		Receiv	ved Date:	06/10	/2021	
Matrix:WATERAnalysis Date:06/15/2021Amount Used:900 mLInstrument ID:AG5Final Volume:1 mLQC Batch:B11353% Moisture:NALevel:LOWDataDilutionParameterLODLOQResultFlagTrifluralin0.2220.222NDUG/L1Atrazine0.2220.222NDUG/L1Metribuzin0.2220.222NDUG/L1Alachlor0.2220.222NDUG/L1Metolachlor0.2220.222NDUG/L1Chlorpyrifos0.2220.222NDUG/L1Cyanazine0.2220.222NDUG/L1	Sample Time:	1500		Prep.	Date:	06/14	/2021	
Amount Used:900 mLInstrument ID:AG5Final Volume:1 mLQC Batch:B11353% Moisture:NALevel:LOWDataDilutionParameterLODLOQResultFlagUnitsTrifluralin0.2220.222NDUG/L1Atrazine0.2220.222NDUG/L1Metribuzin0.2220.222NDUG/L1Alachlor0.2220.222NDUG/L1Metolachlor0.2220.222NDUG/L1Chlorpyrifos0.2220.222NDUG/L1Cyanazine0.2220.222NDUG/L1	Matrix:	WATER		Analys	sis Date:	06/15	/2021	
Final Volume:1 mLQC Batch:B11353% Moisture:NALevel:LOWParameterLODLOQResultDataDilutionTrifluralin0.2220.222NDUG/L1Atrazine0.2220.222NDUG/L1Metribuzin0.2220.222NDUG/L1Alachlor0.2220.222NDUG/L1Metolachlor0.2220.222NDUG/L1Chlorpyrifos0.2220.222NDUG/L1Cyanazine0.2220.222NDUG/L1	Amount Used:	900 mL		Instru	ument ID:	AG5		
% Moisture:NALevel:LOWParameterLODLOQResultFlagDilutionTrifluralin0.2220.222NDUG/L1Atrazine0.2220.222NDUG/L1Metribuzin0.2220.222NDUG/L1Alachlor0.2220.222NDUG/L1Metolachlor0.2220.222NDUG/L1Chlorpyrifos0.2220.222NDUG/L1Cyanazine0.2220.222NDUG/L1	Final Volume:	1 mL		QC Bat	cch:	B1135	3	
ParameterLODLOQResultDataDilutionTrifluralin0.2220.222NDUnitsFactorTrifluralin0.2220.222NDUG/L1Atrazine0.2220.222NDUG/L1Metribuzin0.2220.222NDUG/L1Alachlor0.2220.222NDUG/L1Metolachlor0.2220.222NDUG/L1Chlorpyrifos0.2220.222NDUG/L1Cyanazine0.2220.222NDUG/L1	<pre>% Moisture:</pre>	NA		Level	:	LOW		
ParameterLODLOQResultFlagUnitsFactorTrifluralin0.2220.222NDUG/L1Atrazine0.2220.222NDUG/L1Metribuzin0.2220.222NDUG/L1Alachlor0.2220.222NDUG/L1Metolachlor0.2220.222NDUG/L1Chlorpyrifos0.2220.222NDUG/L1Cyanazine0.2220.222NDUG/L1								
Parameter       LOD       LOQ       Result       Flag       Units       Factor         Trifluralin       0.222       0.222       ND       UG/L       1         Atrazine       0.222       0.222       ND       UG/L       1         Metribuzin       0.222       0.222       ND       UG/L       1         Alachlor       0.222       0.222       ND       UG/L       1         Metolachlor       0.222       0.222       ND       UG/L       1         Chlorpyrifos       0.222       0.222       ND       UG/L       1						Data		Dilution
Trifluralin     0.222     0.222     ND     UG/L     1       Atrazine     0.222     0.222     ND     UG/L     1       Metribuzin     0.222     0.222     ND     UG/L     1       Alachlor     0.222     0.222     ND     UG/L     1       Metolachlor     0.222     0.222     ND     UG/L     1       Chlorpyrifos     0.222     0.222     ND     UG/L     1       Cyanazine     0.222     0.222     ND     UG/L     1	Parameter		LOD	LOQ	Result	Flag	Units	Factor
Trifluralin     0.222     0.222     ND     UG/L     1       Atrazine     0.222     0.222     ND     UG/L     1       Metribuzin     0.222     0.222     ND     UG/L     1       Alachlor     0.222     0.222     ND     UG/L     1       Metolachlor     0.222     0.222     ND     UG/L     1       Chlorpyrifos     0.222     0.222     ND     UG/L     1       Cyanazine     0.222     0.222     ND     UG/L     1								
Atrazine     0.222     0.222     ND     UG/L     1       Metribuzin     0.222     0.222     ND     UG/L     1       Alachlor     0.222     0.222     ND     UG/L     1       Metolachlor     0.222     0.222     ND     UG/L     1       Chlorpyrifos     0.222     0.222     ND     UG/L     1       Cyanazine     0.222     0.222     ND     UG/L     1	Trifluralin		0.222	0.222	ND		UG/L	1
Metribuzin     0.222     0.222     ND     UG/L     1       Alachlor     0.222     0.222     ND     UG/L     1       Metolachlor     0.222     0.222     0.756     UG/L     1       Chlorpyrifos     0.222     0.222     ND     UG/L     1       Cyanazine     0.222     0.222     ND     UG/L     1	Atrazine		0.222	0.222	ND		UG/L	1
Alachlor     0.222     0.222     ND     UG/L     1       Metolachlor     0.222     0.222     0.756     UG/L     1       Chlorpyrifos     0.222     0.222     ND     UG/L     1       Cvanazine     0.222     0.222     ND     UG/L     1	Metribuzin		0.222	0.222	ND		UG/L	1
Metolachlor       0.222       0.222       0.756       UG/L       1         Chlorpyrifos       0.222       0.222       ND       UG/L       1         Cvanazine       0.222       0.222       ND       UG/L       1	Alachlor		0.222	0.222	ND		UG/L	1
Chlorpyrifos       0.222       0.222       ND       UG/L       1         Cyanazine       0.222       0.222       ND       UG/L       1	Metolachlor		0.222	0.222	0.756		UG/L	1
Cyanazine 0.222 0.222 ND UG/L 1	Chlorpyrifos		0.222	0.222	ND		UG/L	1
	Cyanazine		0.222	0.222	ND		UG/L	1
Pendimethalin 0.222 0.222 ND UG/L 1	Pendimethalin		0.222	0.222	ND		UG/L	1

SURROGATE RECOVERIES:	Limits	Results
Triphenylphosphate	30-130	78%

Surrogate recoveries marked with '\*' indicates they are outside standard limits.

(a) DOD-QSM Accredited Analyte.

Sample 008710-01, NP PESTICIDES (8270SIM-MOD)

008710 Lab Report No: Project Name: MARK TWAIN LAKE

06/30/2021 Report Date: Analysis: Inorganics

1

I

Project No:								Z	ELAC Certi	fied - IL1	00308
ARDL No: Field ID: Received:	008710-01 MTL-1 06/10/202	21	Samp1 Samp Samp	ling Loo ling Do ling T	c'n: MARK ate: 06/1 ime: 1500	: TWAIN LAKE 0/2021			Matrix Moisture	: WATER : NA	
Analyt	Ū.	LOD	год	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
(a) Iron		0.0400	0.0500	Ŀ	2.72	MG/L	3010A	6010C	06/15/21	06/18/21	P7529
(a) Manganese		0.00400	0.00500		0.0251	MG/L	3010A	6010C	06/15/21	06/18/21	P7529
Ammonia Nitroge	ç	0.0200	0.0300	þ	0.113	MG/L	NONE	350.1	NA	06/16/21	06165960
Nitrate as Nitr	uəbo.	0.0380	0.0400		1.37	MG/L	NONE	GREEN	NA	06/11/21	06225973
Phosphorus		0.00800	0.0100		0.234	MG/L	365.2	365.2	06/14/21	06/16/21	06175965
Solids, Total S	uspended	2.0	2.00		3.6	MG/L	NONE	160.2	NA	06/11/21	06165954
Solids, Volatil	e Suspen	2.0	2.00		ND	MG/L	NONE	160.4	NA	06/11/21	06165955
Total Organic C	arbon	0.500	1.00		6.8	MG/L	NONE	415.1	NA	06/22/21	06245980

(a) DOD and/or NELAC Accredited Analyte.

Sample 008710-01, Inorganic Analyses

Lab Report No: 008710

Report Date: 06/21/2021

Project Name:	MARK TWAIN LAKE	Ana	lysis: NH	PESTICID	ES (827	0SIM-MO	D)
Project No.:	cl 1 == 100000	Analytical Me	ethod: 82	270C			
NELAC Certi	fied - IL100308	Prep Me	ethod: 3	510C			
Field ID:	MTL-5		ARDL 1	Lab No.:	00871	L0-02	
Desc/Location:	MARK TWAIN LAKE		Lab F:	ilename:	E0615	5108	
Sample Date:	06/10/2021		Receiv	ved Date:	06/10	)/2021	
Sample Time:	1430		Prep.	Date:	06/14	1/2021	
Matrix:	WATER		Analys	sis Date:	06/15	5/2021	
Amount Used:	900 mL		Instru	ument ID:	AG5		
Final Volume:	1 mL		QC Bat	tch:	B1135	53	
<pre>% Moisture:</pre>	NA		Level	:	LOW		
					Data		Dilution
Parameter		LOD	LOQ	Result	Flag	Units	Factor
Irifluralin		0.222	0.222	ND		UG/L	1
Atrazine		0.222	0.222	1.11		UG/L	1
Metribuzin		(\ '}')	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	115		TIC /T	1
		0.222	0.222	ND		0671	T
Alachlor		0.222	0.222	ND ND		UG/L	1
Alachlor Metolachlor		0.222 0.222 0.222	0.222 0.222 0.222	ND ND 2.43		UG/L UG/L UG/L	1 1
Alachlor Metolachlor Chlorpyrifos		0.222 0.222 0.222 0.222	0.222 0.222 0.222 0.222	ND ND 2.43 ND		UG/L UG/L UG/L	1 1 1
Alachlor Metolachlor Chlorpyrifos Cyanazine		0.222 0.222 0.222 0.222 0.222	0.222 0.222 0.222 0.222 0.222	ND ND 2.43 ND ND		UG/L UG/L UG/L UG/L	1 1 1 1
Alachlor Metolachlor Chlorpyrifos Cyanazine Pendimethalin		0.222 0.222 0.222 0.222 0.222 0.222	0.222 0.222 0.222 0.222 0.222 0.222	ND ND 2.43 ND ND ND		UG/L UG/L UG/L UG/L UG/L	1 1 1 1 1
Alachlor Metolachlor Chlorpyrifos Cyanazine Pendimethalin		0.222 0.222 0.222 0.222 0.222 0.222 0.222	0.222 0.222 0.222 0.222 0.222 0.222	ND ND 2.43 ND ND ND		UG/L UG/L UG/L UG/L UG/L	1 1 1 1 1 1

SURROGATE RECOVERIES:	Limits	Results
Triphenylphosphate	30-130	76%

Surrogate recoveries marked with '\*' indicates they are outside standard limits.

(a) DOD-QSM Accredited Analyte.

Sample 008710-02, NP PESTICIDES (8270SIM-MOD)

ARDL       Report No: 008710       Name: MARK TWAIN LAKE       Name: MARK TWAIN LAKE       to no: 008710-02       Sampling Loc'n: MARK T       I ID: MTL-5       Sampling Loc'n: MARK T       Analyte       LOD     LOQ       Sampling Time: 1430       Nitrogen     0.0200       Nitrogen     0.0200       Nitrogen     0.0190       Nitrogen     0.0100       Volatile Suspended     4.0       4.0     4.00       Yolatile Suspended     4.0       Volatile Suspended     4.0       Volatile Suspended     4.0       Yolatile Suspended     4.0       Yolatile Suspended     4.0	, INC. ve; P.O. Box 1566 1linois 62864	Report Date: 06/30/2021	Analysis: Inorganics NELAC Certified - IL100308	WAIN LAKE MATER 2021 Moisture: NA	Prep Analysis Prep Analysis Run Units Method Date Date Number	MG/L     NONE     350.1     NA     06/16/21     06165960       MG/L     NONE     GREEN     NA     06/11/21     06225973       MG/L     365.2     365.2     06/14/21     06/11/21     06175965       MG/L     NONE     160.2     NA     06/11/21     06175965       MG/L     NONE     160.2     NA     06/11/21     06165954       MG/L     NONE     160.4     NA     06/11/21     06165955       MG/L     NONE     150.4     NA     06/11/21     06165955       MG/L     NONE     415.1     NA     06/22/21     06165955
Report No: 008710 Name: MARK TWAIN LAKE t No: T No: 008710-02 d ID: MTL-5 d ID: MTL-5 d ID: MTL-5 Analyte LOD Analyte LOD Analyte LOD 0.0190 0 0.0190 0 nitrogen 0.0200 0 nitrogen 0.0190 0 vis Suspended 4.0 volatile Suspen 4.0 volatile Suspen 4.0 volatile Suspen 0.500	ARDI 400 Aviation Dri Mt. Vernon, I			Sampling Loc'n: MARK T Sampling Date: 06/10/ Sampling Time: 1430	LOQ Flag Result	0.0300 0.137 0.0200 0.174 0.0100 0.113 4.00 10.8 4.00 10.8 1.00 11.0
		Report No: 008710	Name: MARK TWAIN LAKE t No:	L No: 008710-02 d ID: MTL-5 ived: 06/10/2021	Analyte LOD	Nitrogen 0.0200 0 as Nitrogen 0.0190 0 us 0.00800 0 Total Suspended 4.0 Volatile Suspen 4.0 ganic Carbon 0.500

(a) DOD and/or NELAC Accredited Analyte.

Sample 008710-02, Inorganic Analyses

Lab Report No: 008710

Report Date: 06/21/2021

Project Name: Project No.: NELAC Certi	MARK TWAIN LAKE fied - IL100308	Ar Analytical Prep	Method: 82 Method: 33	PESTICID 270C 510C	DES (8270SIM-	MOD)
Field ID:	MTL-13		ARDL 1	Lab No.:	008710-03	
Desc/Location:	MARK TWAIN LAKE		Lab Fi	ilename:	E0615109	
Sample Date:	06/10/2021		Receiv	ved Date:	06/10/2021	
Sample Time:	1145		Prep.	Date:	06/14/2021	
Matrix:	WATER		Analys	sis Date:	06/15/2021	
Amount Used:	1000 mL		Instru	ument ID:	AG5	
Final Volume:	1 mL		QC Bat	tch:	B11353	
<pre>% Moisture:</pre>	NA		Level	:	LOW	
					Data	Dilution
Parameter		LOD	LOQ	Result	Flag Unit	s Factor
Trifluralin		0.200	0.200	ND	UG/I	1
Atrazine		0.200	0.200	0.910	UG/I	, 1
Metribuzin		0.200	0.200	ND	UG/I	1
Alachlor		0.200	0.200	ND	UG/I	1
Metolachlor		0.200	0.200	0.850	UG/I	. 1
Chlorpyrifos		0.200	0.200	ND	UG/I	. 1
Cyanazine		0.200.	0.200	ND	UG/I	. 1
Pendimethalin		0.200	0.200	ND	UG/I	. 1

SURROGATE RECOVERIES:	Limits	Results
Triphenylphosphate	30-130	78%

Surrogate recoveries marked with '\*' indicates they are outside standard limits.

(a) DOD-QSM Accredited Analyte.

	Box 1566	62864
ARDL, INC.	400 Aviation Drive; P.O.	Mt. Vernon, Illinois

Lab Report No: 008710

Report Date: 06/30/2021

roject Name: MARK TWAI Project No:	CN LAKE						Z	Analysis IELAC Certi	s: Inorgar fied - IL	lics 100308
ARDL No: 008710-03 Field ID: MTL-13 Received: 06/10/202	21	Sampl Samp Samp	ing Loc ling Da ling Ti	:'n: MARK ate: 06/1 .me: 1145	TWAIN LAKE 0/2021			Matrix Moisture	: WATER : NA	
Analyte	LOD	LOQ	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
monia Nitrogen trate as Nitrogen osphorus lids, Total Suspended lids, Volatile Suspen tal Organic Carbon	0.0200 0.0190 0.00800 4.0 0.500	0.0300 0.0200 0.0100 4.00 1.00		0.122 ND 0.0744 8.0 ND 6.9	1/9W 7/9М ЧС/Т ЛОМ 1/9М	NONE NONE 365.2 NONE NONE NONE	350.1 GREEN 365.2 160.2 160.4 415.1	NA NA NA 06/14/21 NA NA NA	06/16/21 06/11/21 06/16/21 06/11/21 06/11/21 06/22/21	06165960 06225973 06175965 06165954 06165955 06245980

(a) DOD and/or NELAC Accredited Analyte.

Sample 008710-03, Inorganic Analyses

Lab Report No: 008710

Report Date: 06/21/2021

Project Name: Project No.: NELAC Certi	MARK TWAIN LAK fied - IL100308	E A Analytical Prep	nalysis: N Method: 8 Method: 3	P PESTICID 270C 510C	DES (827	0SIM-MO	D)
Field ID: Desc/Location: Sample Date: Sample Time: Matrix: Amount Used: Final Volume: % Moisture:	MTL-9 MARK TWAIN LAK 06/10/2021 1100 WATER 1000 mL 1 mL NA	E	ARDL Lab F Recei Prep. Analy Instr QC Ba Level	Lab No.: ilename: ved Date: Date: sis Date: ument ID: tch: :	00871 E0615 06/10 06/14 06/15 AG5 B1135 LOW	0-04 110 /2021 /2021 5/2021	
Parameter		LOD	LOQ	Result	Data Flag	Units	Dilution Factor
Trifluralin		0.200	0.200	ND		UG/L	1
Atrazine		0.200	0.200	6.83		UG/L	1
Metribuzin		0.200	0.200	0.670		UG/L	1
Alachlor		0.200	0.200	ND		UG/L	1
Metolachlor		0.200	0.200	1.39		UG/L	1
Chlorpyrifos		0.200	0.200	ND		UG/L	1
Cyanazine		0.200	0.200	ND		UG/L	1
Pendimethalin		0.200	0.200	ND		UG/L	1

SURROGATE RECOVERIES:	Limits	Results
Triphenylphosphate	30-130	82%

Surrogate recoveries marked with '\*' indicates they are outside standard limits.

(a) DOD-QSM Accredited Analyte.

	Box 1566	62864
ARDL, INC.	400 Aviation Drive; P.O.	Mt. Vernon, Illinois

Lab Report No: 008710

Report Date: 06/30/2021

anics L100308		s Run Number	1 06165960	1 06225973	1 06175965	1 06165954	1 06165955	1 06245980
s: Inorga ified - II	K: WATER e: NA	Analysis Date	06/16/21	06/11/21	06/16/21	06/11/21	06/11/21	06/22/21
Analysi ELAC Cert	Matri: Moisture	Prep Date	NA	NA	06/14/21	NA	NA	NA
Z		Analysis Method	350.1	GREEN	365.2	160.2	160.4	415.1
		Prep Method	NONE	NONE	365.2	NONE	NONE	NONE
	TWAIN LAKE 1/2021	Units	MG/L	MG/L	MG/L	MG/L	MG/L	MG/L
	'n: MARK te: 06/10 me: 1100	Result	0.304	1.16	0.355	45.0	DN	9.7
	ling Loc pling Da pling Ti	Flag						
	Samp Sam Sam	год	0.0300	0.0200	0.0100	10.0	10.0	1.00
N LAKE	E E	LOD	0.0200	0.0190	0.00800	10.0	10.0	0.500
MARK TWAI	008710-04 MTL-9 06/10/202	ب <del>ر</del> ه	en	rogen		Suspended	le Suspen	Carbon
Project Name: Project No:	ARDL No: Field ID: Received:	Analy	Ammonia Nitrog	Nitrate as Nit	Phosphorus	Solids, Total	Solids, Volati	Total Organic

(a) DOD and/or NELAC Accredited Analyte.

Sample 008710-04, Inorganic Analyses

Lab Report No: 008710

Report Date: 06/21/2021

Project Name:	MARK TWAIN LAKE	An	alysis: NE	PESTICIE	DES (827	0SIM-MO	D)
Project No.:		Analytical	Method: 82	270C			
NELAC Certi	fied - IL100308	Prep	Method: 35	510C			
Field ID:	MTL-11		ARDL I	Lab No.:	00871	0-05	
Desc/Location:	MARK TWAIN LAKE		Lab Fi	ilename:	E0615	5111	
Sample Date:	06/10/2021		Receiv	ved Date:	06/10	)/2021	
Sample Time:	1230		Prep.	Date:	06/14	1/2021	
Matrix:	WATER		Analys	sis Date:	06/15	5/2021	
Amount Used:	1000 mL		Instru	ument ID:	AG5		
Final Volume:	1 mL		QC Bat	tch:	B1135	53	
% Moisture:	NA		Level	:	LOW		
			10-10-10-10-10-10-10-10-10-10-10-10-10-1				
					Data		Dilution
Parameter		LOD	LOQ	Result	Data Flag	Units	Dilution Factor
Parameter Trifluralin		LOD	LOQ	Result ND	Data Flag	Units UG/L	Dilution Factor
Parameter Trifluralin Atrazine		LOD 0.200 0.200	LOQ 0.200 0.200	Result ND 0.830	Data Flag	Units UG/L UG/L	Dilution Factor 1 1
Parameter Trifluralin Atrazine Metribuzin		LOD 0.200 0.200 0.200	LOQ 0.200 0.200 0.200	Result ND 0.830 ND	Data Flag	Units UG/L UG/L UG/L	Dilution Factor 1 1 1
Parameter Trifluralin Atrazine Metribuzin Alachlor		LOD 0.200 0.200 0.200 0.200 0.200	LOQ 0.200 0.200 0.200 0.200	Result ND 0.830 ND ND	Data Flag	Units UG/L UG/L UG/L UG/L	Dilution Factor 1 1 1 1 1
Parameter Trifluralin Atrazine Metribuzin Alachlor Metolachlor		LOD 0.200 0.200 0.200 0.200 0.200 0.200	LOQ 0.200 0.200 0.200 0.200 0.200 0.200	Result ND 0.830 ND ND 0.860	Data Flag	Units UG/L UG/L UG/L UG/L UG/L	Dilution Factor 1 1 1 1 1 1 1
Parameter Trifluralin Atrazine Metribuzin Alachlor Metolachlor Chlorpyrifos		LOD 0.200 0.200 0.200 0.200 0.200 0.200 0.200	LOQ 0.200 0.200 0.200 0.200 0.200 0.200 0.200	Result ND 0.830 ND ND 0.860 ND	Data Flag	Units UG/L UG/L UG/L UG/L UG/L UG/L	Dilution Factor 1 1 1 1 1 1 1 1
Parameter Trifluralin Atrazine Metribuzin Alachlor Metolachlor Chlorpyrifos Cyanazine		LOD 0.200 0.200 0.200 0.200 0.200 0.200 0.200 0.200	LOQ 0.200 0.200 0.200 0.200 0.200 0.200 0.200 0.200	Result ND 0.830 ND 0.860 ND ND ND	Data Flag	Units UG/L UG/L UG/L UG/L UG/L UG/L UG/L	Dilution Factor 1 1 1 1 1 1 1 1 1 1
Parameter Trifluralin Atrazine Metribuzin Alachlor Metolachlor Chlorpyrifos Cyanazine Pendimethalin		LOD 0.200 0.200 0.200 0.200 0.200 0.200 0.200 0.200 0.200	LOQ 0.200 0.200 0.200 0.200 0.200 0.200 0.200 0.200 0.200	Result ND 0.830 ND 0.860 ND ND ND ND ND	Data Flag	Units UG/L UG/L UG/L UG/L UG/L UG/L UG/L	Dilution Factor 1 1 1 1 1 1 1 1 1 1 1
Parameter Trifluralin Atrazine Metribuzin Alachlor Metolachlor Chlorpyrifos Cyanazine Pendimethalin		LOD 0.200 0.200 0.200 0.200 0.200 0.200 0.200 0.200	LOQ 0.200 0.200 0.200 0.200 0.200 0.200 0.200 0.200	Result ND 0.830 ND 0.860 ND ND ND ND ND	Data Flag	Units UG/L UG/L UG/L UG/L UG/L UG/L UG/L	Dilution Factor 1 1 1 1 1 1 1 1 1 1

SURROGATE RECOVERIES:	Limits	Results
Triphenylphosphate	30-130	81%

Surrogate recoveries marked with '\*' indicates they are outside standard limits.

(a) DOD-QSM Accredited Analyte.

Sample 008710-05, NP PESTICIDES (8270SIM-MOD)

	Box 1566	62864
ARDL, INC.	400 Aviation Drive; P.O.	Mt. Vernon, Illinois

Lab Report No: 008710

Project Name: MARK TWAIN LAKE

Report Date: 06/30/2021

Analysis: Inorganics

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Project No:							Z	ELAC Certi	fied - ILl	00308
ARDL No: 008710-05 Field ID: MTL-11 Received: 06/10/202	21	Sampl Samp Samp	ing Loc ling Day	'n: MARK te: 06/10 me: 1230	TWAIN LAKE /2021			Matrix Moisture	: WATER : NA	
Analyte	LOD	год	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
Ammonia Nitrogen Nitrate as Nitrogen Phosphorus Solids, Total Suspended Solids, Volatile Suspen Total Organic Carbon	0.0200 0.0190 4.0 4.0 0.500	0.0300 0.0200 4.00 1.00		0.148 ND 0.20 34.8 6.8 7.5	HG/L MG/L MG/L MG/L	NONE NONE 365.2 NONE NONE NONE	350.1 GREEN 365.2 160.2 160.4 415.1	NA NA 06/14/21 NA NA NA	06/16/21 06/11/21 06/16/21 06/11/21 06/11/21	06165960 06225973 06175965 06165954 06165955 06245980

(a) DOD and/or NELAC Accredited Analyte.

Sample 008710-05, Inorganic Analyses

Lab Report No: 008710

Report Date: 06/21/2021

Project Name:	MARK TWAIN LAKE	Aı	nalysis: N	P PESTICIE	DES (827	70SIM-MO	D)
Project No.:		Analytical	Method: 8	270C			
NELAC Certi	fied - IL100308	Prep	Method: 3	510C			
							L
Field ID:	MTL-12		ARDL	Lab No.:	00871	LO-06	
Desc/Location:	MARK TWAIN LAKE		Lab F	'ilename:	E0615	5112	
Sample Date:	06/10/2021		Recei	ved Date:	06/10	)/2021	
Sample Time:	1000		Prep.	Date:	06/14	4/2021	
Matrix:	WATER		Analy	vsis Date:	06/15	5/2021	
Amount Used:	900 mL		Instr	ument ID:	AG5		
Final Volume:	1 mL		QC Ba	tch:	B1139	53	
% Moisture:	NA		Level	.:	LOW		
					Data		Dilution
Parameter		LOD	LOQ	Result	Flag	Units	Factor
Trifluralin		0.222	0.222	ND		UG/L	1
Atrazine		0.222	0.222	0.311		UG/L	1
Metribuzin		0.222	0.222	ND		UG/L	1
Alachlor		0.222	0.222	ND		UG/L	1
Metolachlor		0.222	0.222	0.644		UG/L	1
Chlorpyrifos		0.222	0.222	ND		UG/L	1
Cyanazine		0.222	0.222	ND		UG/L	1
Pendimethalin		0.222	0.222	ND		UG/L	1

SURROGATE RECOVERIES:	Limits	Results
Triphenylphosphate	30-130	72%

Surrogate recoveries marked with '\*' indicates they are outside standard limits.

(a) DOD-QSM Accredited Analyte.

Sample 008710-06, NP PESTICIDES (8270SIM-MOD)

Lab Report No: 008710

Project Name: MARK TWAIN LAKE

Report Date: 06/30/2021

Analysis: Inorganics

Project No:							N	ELAC Certi	fied - IL1	00308
ARDL No: 008710- Field ID: MTL-12 Received: 06/10/2	-06 :021	Samp] Samp Samp	ing Loc ling Da ling Ti	"n: MARK tte: 06/10 me: 1000	TWAIN LAKE /2021			Matrix Moisture	: WATER : NA	
Analyte	LOD	Γοδ	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
(a) Iron	0.0400	0.0500		2.82	MG/L	3010A	6010C	06/15/21	06/18/21	P7529
(a) Manganese	0.00400	0.00500		0.0512	MG/L	3010A	6010C	06/15/21	06/18/21	P7529
Ammonia Nitrogen	0.0200	0.0300		0.115	MG/L	NONE	350.1	NA	06/16/21	06165960
Nitrate as Nitrogen	0.0190	0.0200		1.33	MG/L	NONE	GREEN	NA	06/11/21	06225973
Phosphorus	0.00800	0.0100		0.239	MG/L	365.2	365.2	06/14/21	06/16/21	06175965
Solids, Total Suspende	d 2.50	2.50		6.5	MG/L	NONE	160.2	NA	06/11/21	06165954
Solids, Volatile Suspe	in 2.50	2.50		ND	MG/L	NONE	160.4	NA	06/11/21	06165955
Total Organic Carbon	0.500	1.00		6.9	MG/L	NONE	415.1	NA	06/22/21 (	06245980

(a) DOD and/or NELAC Accredited Analyte.

Sample 008710-06, Inorganic Analyses

Lab Report No: 008710

Report Date: 06/21/2021

Project Name:	MARK TWAIN LAKE	Ana	alysis: NH	PESTICIE	ES (827	0SIM-MO	D)
Project No.:		Analytical N	Method: 82	270C			
NELAC Certi	fied - IL100308	Prep 1	Method: 35	510C			
Field ID:	MTL-15-0		ARDL 1	Lab No.:	00871	L0-07	
Desc/Location:	MARK TWAIN LAKE		Lab F:	llename:	E0615	5113	
Sample Date:	06/10/2021		Receiv	ved Date:	06/10	)/2021	
Sample Time:	1100		Prep.	Date:	06/14	1/2021	
Matrix:	WATER		Analys	sis Date:	06/15	5/2021	
Amount Used:	900 mL		Instru	ument ID:	AG5		
Final Volume:	1 mL		QC Bat	cch:	B1135	53	
% Moisture:	NA		Level	:	LOW		
		All de la companya d					
					Data		Dilution
Parameter		LOD	LOQ	Result	Flag	Units	Factor
Trifluralin		0.222	0.222	ND		UG/L	1
Atrazine		0.222	0.222	ND		UG/L	1
Metribuzin		0.222	0.222	0.289		UG/L	1
Alachlor		0.222	0.222	ND		UG/L	1
Metolachlor		0.222	0.222	3.26		UG/L	1
Chlorpyrifos		0.222	0.222	ND		UG/L	1
Cyanazine		0.222	0.222	ND		UG/L	1
Pendimethalin		0.222	0.222	ND		UG/L	1

SURROGATE RECOVERIES:	Limits	Results	
Triphenylphosphate	30-130	92%	Í

Surrogate recoveries marked with '\*' indicates they are outside standard limits.

(a) DOD-QSM Accredited Analyte.

Sample 008710-07, NP PESTICIDES (8270SIM-MOD)

Lab Report No: 008710

MARK TWAIN LAKE

Project Name: Project No:

Report Date: 06/30/2021

Analysis: Inorganics NELAC Certified - IL100308

ARDL No: 008710-07	7	Sampl	ing Loc	:'n: MARK	TWAIN LAKE			Matrix	K: WATER	
Field ID: MTL-15-0		Samp	ling Da	ate: 06/10	0/2021			Moistur∈	e: NA	
Received: 06/10/202	21	Samp	iling Ti	.me: 1100						
						Prep	Analysis	Prep	Analysis	Run
Analyte	LOD	ГОÕ	Flag	Result	Units	Method	Method	Date	Date	Number
Ammonia Nitrogen	0.0200	0.0300		0.13	MG/L	NONE	350.1	NA	06/16/21	06165960
Chlorophyll-a, Correcte	1.0	1.00		10.9	MG/CU.M.	10200H	10200H	06/11/21	06/14/21	06165953
Nitrate as Nitrogen	0.0190	0.0200		1.68	MG/L	NONE	GREEN	NA	06/11/21	06225973
Pheophytin-a	1.0	1.00		QN	MG/CU.M.	10200H	10200H	06/11/21	06/14/21	06165953
Phosphorus	0.00800	0.0100		0.208	MG/L	365.2	365.2	06/14/21	06/16/21	06175965
Solids, Total Suspended	4.0	4.00		6.0	MG/L	NONE	160.2	NA	06/11/21	06165954
Solids, Volatile Suspen	4.0	4.00		ND	MG/L	NONE	160.4	NA	06/11/21	06165955
Total Organic Carbon	0.500	1.00		7.5	MG/L	NONE	415.1	NA	06/22/21	06245980

(a) DOD and/or NELAC Accredited Analyte.

Sample 008710-07, Inorganic Analyses

Lab Report No: 008710

Report Date: 06/21/2021

Project Name:	MARK TWAIN LAKE	Ana	lysis: NE	PESTICIE	)ES (827	0SIM-MO	D)
Project No.:		Analytical M	1ethod: 82	270C			
NELAC Certi	fied - IL100308	Prep M	Method: 35	510C			
Field ID:	MTL-22-0		ARDL I	Lab No.:	00871	0-08	
Desc/Location:	MARK TWAIN LAKE		Lab Fi	llename:	E0615	114	
Sample Date:	06/10/2021		Receiv	ved Date:	06/10	/2021	
Sample Time:	1320		Prep.	Date:	06/14	/2021	
Matrix:	WATER		Analys	sis Date:	06/15	/2021	
Amount Used:	1000 mL		Instru	ument ID:	AG5		
Final Volume:	1 mL		QC Bat	cch:	B1135	3	
% Moisture:	NA		Level	:	LOW		
					Data		Dilution
Parameter		LOD	LOQ	Result	Flag	Units	Factor
Trifluralin		0.200	0.200	ND		IIG/I.	1
				212		00/1	
Atrazine		0.200	0.200	0.980		UG/L	1
Atrazine Metribuzin		0.200 0.200	0.200 0.200	0.980 ND		UG/L UG/L	1 1
Atrazine Metribuzin Alachlor		0.200 0.200 0.200	0.200 0.200 0.200	0.980 ND ND		UG/L UG/L UG/L	1 1 1
Atrazine Metribuzin Alachlor Metolachlor		0.200 0.200 0.200 0.200	0.200 0.200 0.200 0.200	0.980 ND ND 0.960		UG/L UG/L UG/L UG/L	1 1 1 1
Atrazine Metribuzin Alachlor Metolachlor Chlorpyrifos		0.200 0.200 0.200 0.200 0.200 0.200	0.200 0.200 0.200 0.200 0.200	0.980 ND ND 0.960 ND		UG/L UG/L UG/L UG/L UG/L	1 1 1 1 1
Atrazine Metribuzin Alachlor Metolachlor Chlorpyrifos Cyanazine		0.200 0.200 0.200 0.200 0.200 0.200 0.200	0.200 0.200 0.200 0.200 0.200 0.200	0.980 ND ND 0.960 ND ND		UG/L UG/L UG/L UG/L UG/L UG/L	1 1 1 1 1 1
Atrazine Metribuzin Alachlor Metolachlor Chlorpyrifos Cyanazine Pendimethalin		0.200 0.200 0.200 0.200 0.200 0.200 0.200	0.200 0.200 0.200 0.200 0.200 0.200 0.200	0.980 ND ND 0.960 ND ND ND		UG/L UG/L UG/L UG/L UG/L UG/L	1 1 1 1 1 1 1
Atrazine Metribuzin Alachlor Metolachlor Chlorpyrifos Cyanazine Pendimethalin		0.200 0.200 0.200 0.200 0.200 0.200 0.200	0.200 0.200 0.200 0.200 0.200 0.200 0.200	0.980 ND ND 0.960 ND ND ND		UG/L UG/L UG/L UG/L UG/L UG/L UG/L	1 1 1 1 1 1 1

SURROGATE RECOVERIES:	Limits	Results	
Triphenylphosphate	30-130	70%	
	An		

Surrogate recoveries marked with '\*' indicates they are outside standard limits.

(a) DOD-QSM Accredited Analyte.

Sample 008710-08, NP PESTICIDES (8270SIM-MOD)

	Box 1566	62864
ARDL, INC.	400 Aviation Drive; P.O.	Mt. Vernon, Illinois

Lab Report No: 008710

Report Date: 06/30/2021

Project Name: Project No:	MARK TWAI	IN LAKE						Z	Analysis ELAC Certi	:: Inorgan fied - IL1	ics 00308
ARDL No: Field ID: Received:	008710-08 MTL-22-0 06/10/202		Sampl Samp Samp	Ling Loc ling Dat ling Tir	'n: MARK te: 06/1 me: 1320	TWAIN LAKE 0/2021			Matrix Moisture	:: WATER :: NA	
Analyt	لد ل	LOD	ГОД	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
Ammonia Nitroge	en	0.0200	0.0300		0.118	MG/L	NONE	350.1	NA	06/16/21	06165960
Chlorophyll-a,	Correcte	1.0	1.00		24.4	MG/CU.M.	10200H	10200H	06/11/21	06/14/21	06165953
Nitrate as Nit	rogen	0.0190	0.0200		1.04	MG/L	NONE	GREEN	NA	06/11/21	06225973
Pheophytin-a		1.0	1.00		ND	MG/CU.M.	10200H	10200H	06/11/21	06/14/21	06165953
Phosphorus		0.00800	0.0100		0.161	MG/L	365.2	365.2	06/14/21	06/16/21	06175965
Solids, Total S	Suspended	4.0	4.00		11.2	MG/L	NONE	160.2	NA	06/11/21	06165954
Solids, Volati	le Suspen	4.0	4.00		4.0	MG/L	NONE	160.4	NA	06/11/21	06165955
Total Organic (	Carbon	0.500	1.00		7.3	MG/L	NONE	415.1	NA	06/23/21	06245980

(a) DOD and/or NELAC Accredited Analyte.

Sample 008710-08, Inorganic Analyses

		Ŧ	00 Avi Mt.	ARDI ation Dri Vernon, I	, INC. .ve; P.O. .llinois	Box 156 62864	Q			
Lab Report No: 006	8710						Ŗ	eport Date	: 06/30/20	021
Project Name: MARK TW? Project No:	AIN LAKE						EN IN	Analysis ELAC Certi	: Inorgani fied - IL10	lcs 00308
ARDL No: 008710-0 Field ID: MTL-22-1 Received: 06/10/20	09 15 021	Samp] Samr Samr	ling Loc ling Da ling Ti	"n: MARK 1 te: 06/10/ me: 1320	FWAIN LAKE /2021			Matrix Moisture	: WATER : NA	
Analyte	LOD	ГОД	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
(a) Iron	0.0400	0.0500		2.99	MG/L	3010A	6010C	06/15/21	06/18/21	P7529
(a) Manganese	0.00400	0.00500		0.0378	MG/L	3010A	6010C	06/15/21	06/18/21	P7529
Ammonia Nitrogen	0.0200	0.0300		0.172	MG/L	NONE	350.1	NA	06/16/21 0	06175963
Vitrate as Nitrogen	0.0190	0.0200		1.31	MG/L	NONE	GREEN	NA	06/11/21 0	6225973
shosphorus	0.00800	0.0100		0.234	MG/L	365.2	365.2	06/14/21	06/16/21 0	06175965
Solids, Total Suspended	d 4.0	4.00		6.8	MG/L	NONE	160.2	NA	06/11/21 0	06165954
Solids, Volatile Suspen	n 4.0	4.00		ND	MG/L	NONE	160.4	NA	06/11/21 C	06165955
Cotal Organic Carbon	0.500	1.00		6.7	MG/L	NONE	415.1	NA	06/23/21 0	6245980

(a) DOD and/or NELAC Accredited Analyte.

Sample 008710-09, Inorganic Analyses

Lab Report No: 008710

Report Date: 06/21/2021

Project Name:	MARK TWAIN LAKE	Ana	lysis: NI	P PESTICIE	ES (827	OSIM-MO	D)
Project No.:		Analytical M	ethod: 8	270C			
NELAC Certi	fied - IL100308	Prep M	ethod: 3	510C			
Field ID:	MTL-33-0		ARDL 1	Lab No.:	00871	0-10	
Desc/Location:	MARK TWAIN LAKE		Lab F	ilename:	E0615	5115	
Sample Date:	06/10/2021		Recei	ved Date:	06/10	)/2021	
Sample Time:	1230		Prep.	Date:	06/14	1/2021	
Matrix:	WATER		Analy	sis Date:	06/15	5/2021	
Amount Used:	900 mL		Instr	ument ID:	AG5		
Final Volume:	1 mL		QC Ba	tch:	B1135	53	
<pre>% Moisture:</pre>	NA		Level	:	LOW		
					Data		Dilution
Parameter		LOD	LOQ	Result	Flag	Units	Factor
Trifluralin		0 222	0 222	ND			1
Atrazino		0.222	0.222	1 00			1
Metribuzin		0,222	0.222	ND			1
Alachlor		0.222	0.222	ND			1
Motolachlor		0.222	0.222	0 967			1
Chlorourifoo		0.222	0.222	0.907		UG/L	1
Chiorpyritos		0.222	0.222	ND		UG/L	1
Cyanazine		0.222	0.222	ND		UG/L	1
Pendimethalin		0.222	0.222	ND		UG/L	1

SURROGATE RECOVERIES:	Limits	Results	
Triphenylphosphate	30-130	63%	Í

Surrogate recoveries marked with '\*' indicates they are outside standard limits.

(a) DOD-QSM Accredited Analyte.

Sample 008710-10, NP PESTICIDES (8270SIM-MOD)

Report Date: 06/30/2021	Analysis: Inorganics NELAC Certified - IL100308	Matrix: WATER Moisture: NA	Prep Analysis Run Date Date Number	NA 06/16/21 06175963 06/11/21 06/14/21 06165953 NA 06/11/21 06225973 06/11/21 06/14/21 06165953 06/14/21 06/14/21 06165953 NA 06/11/21 061659554 NA 06/11/21 061659554 NA 06/23/21 06245980
	I		Analysis Method	350.1 10200H GREEN 10200H 365.2 160.2 160.4 415.1
			Prep Method	NONE 10200H NONE 10200H 365.2 NONE NONE NONE
		TWAIN LAKE /2021	Units	MG/L MG/CU.M. MG/CU.M. MG/L MG/L MG/L MG/L
		c'n: MARK ate: 06/10 ime: 1230	Result	0.133 20.0 0.998 ND 0.152 9.6 ND 7.5
		ning Loo npling Da npling T	Flag	
Samp Samp Samp	Samr San San	ΓΟÕ	0.0300 1.00 1.00 1.00 4.00 1.00	
10	N LAKE	1	LOD	0.0200 1.0 1.10 1.0 1.0 4.0 4.0 4.0
Lab Report No: 0087	roject Name: MARK TWAI Project No:	ARDL No: 008710-10 Field ID: MTL-33-0 Received: 06/10/202	Analyte	mmonia Nitrogen hlorophyll-a, Correcte itrate as Nitrogen heophytin-a hosphorus olids, Total Suspended olids, Volatile Suspen otal Organic Carbon

(a) DOD and/or NELAC Accredited Analyte.

Sample 008710-10, Inorganic Analyses

Lab Report No: 008710

Report Date: 06/21/2021

Project Name:	MARK TWAIN LAKE	An	alysis: NH	PESTICIE	DES (827	70SIM-MO	D)
Project No.:	5 - J TT 1 0 0 0 0 0	Analytical	Method: 82				
NELAC Certi	ried - ILIUU3U8	Prep	Method: 3:	510C			
Field ID:	MTL-66-0		ARDL 1	Lab No.:	00871	L0-11	-
Desc/Location:	MARK TWAIN LAKE		Lab F:	ilename:	E0615	5116	
Sample Date:	06/10/2021		Receiv	ved Date:	06/10	)/2021	
Sample Time:	1130		Prep.	Date:	06/14	4/2021	
Matrix:	WATER		Analys	sis Date:	06/15	5/2021	
Amount Used:	900 mL		Instru	ument ID:	AG5		
Final Volume:	1 mL		QC Bat	cch:	B1135	53	
% Moisture:	NA		Level	:	LOW		
					Data		Dilution
Parameter		LOD	LOQ	Result	Flag	Units	Factor
Trifluralin		0.222	0.222	ND		UG/L	1
Atrazine		0.222	0.222	ND		UG/L	1
Metribuzin		0.222	0.222	ND		UG/L	1
Alachlor		0.222	0.222	ND		UG/L	1
Metolachlor		0.222	0.222	2.14		UG/L	1
Chlorpyrifos		0.222	0.222	ND		UG/L	1
Cyanazine		0.222	0.222	ND		UG/L	1
Pendimethalin		0.222	0.222	ND		UG/L	1

SURROGATE RECOVERIES:	Limits	Results
Triphenylphosphate	30-130	76%

Surrogate recoveries marked with '\*' indicates they are outside standard limits.

(a) DOD-QSM Accredited Analyte.

Sample 008710-11, NP PESTICIDES (8270SIM-MOD)

Lab Report No: 008710

Report Date: 06/30/2021

Project Name: Project No:	MARK TWAI	IN LAKE						д	Analysis IELAC Certi	:: Inorgal fied - IL	nics L00308
ARDL No: Field ID: Received:	008710-11 MTL-66-0 06/10/202	21	Samp] Samp Samp	ing Loc ling Da ling Ti	'n: MARK te: 06/1 me: 1130	: TWAIN LAKE 0/2021			Matrix Moisture	C: WATER	
Analy	e tt	LOD	ГОД	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
Ammonia Nitrog	en	0.0200	0.0300		0.245	MG/L	NONE	350.1	NA	06/16/21	06175963
Chlorophyll-a,	Correcte	1.0	1.00		12.7	MG/CU.M.	10200H	10200H	06/11/21	06/14/21	06165953
Nitrate as Nit	rogen	0.0190	0.0200		1.61	MG/L	NONE	GREEN	NA	06/11/21	06225973
Pheophytin-a		1.0	1.00		ND	MG/CU.M.	10200H	10200H	06/11/21	06/14/21	06165953
Phosphorus		0.00800	0.0100		0.195	MG/L	365.2	365.2	06/14/21	06/16/21	06175965
Solids, Total	Suspended	4.0	4.00		6.0	MG/L	NONE	160.2	NA	06/11/21	06165954
Solids, Volati	le Suspen	4.0	4.00		ND	MG/L	NONE	160.4	NA	06/11/21	06165955
Total Organic	Carbon	0.500	1.00		7.5	MG/L	NONE	415.1	NA	06/23/21	06245980

(a) DOD and/or NELAC Accredited Analyte.

Sample 008710-11, Inorganic Analyses

Lab Report No: 008710

Report Date: 06/21/2021

Project Name:	MARK TWAIN LAKE	Ana	lysis: NE	PESTICID	ES (827	0SIM-MO	D)
Project No.:		Analytical Me	ethod: 82	270C			
NELAC Certi	fied - IL100308	Prep Me	ethod: 35	510C			
Field ID:	MTL-77-0		ARDL I	Lab No.:	00871	0-12	
Desc/Location:	MARK TWAIN LAKE		Lab F:	ilename:	E0615	117	
Sample Date:	06/10/2021		Receiv	ved Date:	06/10	/2021	
Sample Time:	1100		Prep.	Date:	06/14	/2021	
Matrix:	WATER		Analys	sis Date:	06/15	/2021	
Amount Used:	900 mL		Instru	ument ID:	AG5		
Final Volume:	1 mL		QC Bat	tch:	B1135	3	
<pre>% Moisture:</pre>	NA		Level	:	LOW		
					Data		Dilution
Parameter		LOD	LOQ	Result	Flag	Units	Factor
			0 000				
Trifluralin		0.222	0.222	ND		UG/L	1
Atrazine		0.222	0.222	ND		UG/L	1
Metribuzin		0.222	0.222	ND		UG/L	1
Alachlor		0.222	0.222	ND		UG/L	1
Metolachlor		0.222	0.222	2.34		UG/L	1
Chlorpyrifos		0.222	0.222	ND		UG/L	1
Cyanazine		0.222	0.222	ND		UG/L	1
Pendimethalin		0.222	0.222	ND		UG/L	1

SURROGATE RECOVERIES:	Limits	Results
Triphenylphosphate	30-130	66%

Surrogate recoveries marked with '\*' indicates they are outside standard limits.

(a) DOD-QSM Accredited Analyte.

Sample 008710-12, NP PESTICIDES (8270SIM-MOD)

Analysis Run Date Numbe	Prep Date	Analysis Method	Prep Method	Units	Result	Flag	ТОД	LOD	te	Analy
: WATER : NA	Matrix Moisture			: TWAIN LAKE 0/2021	'n: MARK te: 06/1 ne: 1100	ling Loc pling Da pling Tin	Samp Sam Sam	12 ) 221	008710-1 MTL-77-0 06/10/20	ARDL No: Field ID: Received:
: Inorganics fied - IL100308	Analysis ILAC Certi	NE						AIN LAKE	MARK TWI	Project Name: Project No:
: 06/30/2021	sport Date	Re						3710	No: 008	Lab Report

Received: 06/10/202	21	Samp	ling Ti	ime: 1100						
Analyte	LOD	LOQ	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
Ammonia Nitrogen	0.0200	0.0300		0.291	MG/L	NONE	350.1	NA	06/16/21	06175963
Chlorophyll-a, Correcte	1.0	1.00		8.6	MG/CU.M.	10200H	10200H	06/11/21	06/14/21	06165953
Nitrate as Nitrogen	0.0190	0.0200		1.64	MG/L	NONE	GREEN	NA	06/11/21	06225973
Pheophytin-a	1.0	1.00		DN	MG/CU.M.	10200H	10200H	06/11/21	06/14/21	06165953
Phosphorus	0.00800	0.0100		0.195	MG/L	365.2	365.2	06/14/21	06/16/21	06175965
Solids, Total Suspended	4.0	4.00		6.0	MG/L	NONE	160.2	NA	06/11/21	06165954
Solids, Volatile Suspen	4.0	4.00		DN	MG/L	NONE	160.4	NA	06/11/21	06165955
Total Organic Carbon	0.500	1.00		7.4	MG/L	NONE	415.1	NA	06/23/21	06245980

(a) DOD and/or NELAC Accredited Analyte.

Sample 008710-12, Inorganic Analyses

Page 1 of 1

ARDL Report 8710 - Page 26 of 40

			4	00 Avia Mt. V	AR ation D /ernon,	DL, INC. rive; P.O. Illinois	Box 156 62864	Q			
Lab Report	No: 008710							Ř	eport Date:	06/30/2	021
Project Name: Project No:	MARK TWAIN	LAKE						N	Analysis: ELAC Certif	Inorgan ied - IL1	ics 00308
ARDL No: Field ID: Received:	008710-13 IC MARINA 06/10/2021		Sampl Samp Samp	ing Loc' ling Dat ling Tin	n: MARF e: 06/1 he: 1045	K TWAIN LAKE L0/2021 5			Matrix: Moisture:	WATER NA	
Analyt	U U	LOD	ГОÕ	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
E. Coliform		1.0	1.00		36.0	COL/100 ML	NONE	1604	NA	06/10/21	06175962

(a) DOD and/or NELAC Accredited Analyte.

Sample 008710-13, Inorganic Analyses

	:: 06/30/2021	: Inorganics fied - IL100308	:: WATER : NA	Analysis Run Date Number	06/10/21 06175962	
	eport Date	Analysis ELAC Certi	Matrix Moisture	Prep Date	NA	
Q	Ŗ	IN		Analysis Method	1604	
Box 1560 62864				Prep Method	NONE	
L, INC. ive; P.O. Illinois			TWAIN LAKE 0/2021	Units	COL/100 ML	
ARD ation Dr Vernon,			'n: MARK te: 06/1( me: 1310	Result	4.0	
400 Avi Mt.			pling Loc mpling Da mpling Ti	Flag		
			Sam Sar Sar	гоб	1.00	
	No: 008710	MARK TWAIN LAKE	008710-14 BJ MARINA 06/10/2021	LOD	1.0	
	Lab Report	Project Name: Project No:	ARDL No: Field ID: Received:	Analyt	E. Coliform	

(a) DOD and/or NELAC Accredited Analyte.

Sample 008710-14, Inorganic Analyses

#### METHOD BLANK REPORT ARDL, Inc. 400 Aviation Drive; P.O. Box 1566 Mt. Vernon, Illinois 62864

Lab Report No: 008710

Report Date: 06/21/2021

Project Name:	MARK TWAIN LAKE	Analy	sis: NP PEST	ICIDES (82	270SIM-MO	( סכ
NELAC Certi	fied - IL100308	Prep Met	hod: 3510C			
Field TD.	NIΛ				710 0101	
Desc/Location:	NA NA		Ish Filonam		15102	
Sample Date:	NA		Lap filenam		10102	
Sample Date.	NA		Received Da	LE: NA	14/2021	
Mataiu.	NA OC Matamial		Prep. Date:	06/.	14/2021	
Matrix:	QC Material		Analysis Da	te: 06/.	15/2021	
Amount Usea:	1000 mL		Instrument	ID: AG5	252	
Final volume:	1 ML		QC Batch:	BII.	353	
<pre>% Moisture:</pre>	NA		Level:	LOW		
			***************************************		Data	·····
Parameter		LOD	LOQ	Result	Flag	Units
Trifluralin	8499, 164 APP-1601-611-614-6-4	0.200	0.200	ND		UG/L
Atrazine		0.200	0.200	ND		UG/L
Metribuzin		0.200	0.200	ND		UG/L
Alachlor		0.200	0.200	ND		UG/L
Metolachlor		0.200	0.200	ND		UG/L
Chlorpyrifos		0.200	0.200	ND		UG/L
Cyanazine		0.200	0.200	ND		UG/L
Pendimethalin		0.200	0.200	ND		UG/L
SURROGATE RECOV	ERIES:	Limit	S	R	esults	

SORROGAIE RECOVERIES:	LILLS	Results	1
Triphenylphosphate	30-130	101%	1
	······································		

Surrogate recoveries marked with '\*' indicates they are outside standard limits.

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(a) DOD-QSM Accredited Analyte.

Blank for Run B11353, NP PESTICIDES (8270SIM-MOD)
Mt. Vernon, IL 400 Aviation Drive; P.O. Box 1566 BLANK SUMMARY REPORT ARDL, INC.

Lab Report No: 008710

Project Name:

Report Date: 06/30/2021

62864

MARK TWAIN LAKE

NELAC Certified - IL100308

											- 1
			Blank		Prep	Analysis	Prep	Analysis		QC Lab	
Analyte	LOD	LOQ	Result	Units	Method	Method	Date	Date	Run	Number	
(a) Iron	0.040	0.050	QN	MG/L	3010A	6010C	06/15/21	06/18/21	P7529	008710-01B1	1
(a) Manganese	0.004	0.005	ND	MG/L	3010A	6010C	06/15/21	06/18/21	P7529	008710-01B1	
Ammonia Nitrogen	0.020	0.030	DN	MG/L	NONE	350.1	NA	06/16/21	06175963	008710-09B1	
Ammonia Nitrogen	0.020	0.030	DN	MG/L	NONE	350.1	NA	06/16/21	06165960	008710-01B1	
Chlorophyll-a, Corre	1.0	1.0	QN	MG/CU.M.	10200H	10200H	06/11/21	06/14/21	06165953	008710-10B1	
Nitrate as Nitrogen	0.019	0.020	QN	MG/L	NONE	GREEN	NA	06/11/21	06225973	008710-01B1	
Pheophytin-a	1.0	1.0	QN	MG/CU.M.	10200H	10200H	06/11/21	06/14/21	06165953	008710-10B1	
Phosphorus	0.008	0.010	QN	MG/L	365.2	365.2	06/14/21	06/16/21	06175965	008706-03B1	
Solids, Total Suspen	1.0	1.0	QN	MG/L	NONE	160.2	NA	06/11/21	06165954	008710-04B1	
Solids, Volatile Sus	1.0	1.0	QN	MG/L	NONE	160.4	NA	06/11/21	06165955	008710-04B1	
Total Organic Carbon	0.50	1.0	QN	MG/L	NONE	415.1	NA	06/22/21	06245980	008710-01B1	

(a) DOD and/or NELAC Accredited Analyte Inorganic Method Blanks for 008710

ARDL,	INC.	BLAN 400	KK SPIKE/S Aviation	SPIKE D Drive;	UPLICATH P.O. Bo	E REPORT Dx 1566	Mt. Vo	ernon,	IL 628	864	
Lab Report No: 008710								Ř	eport Dat	te: 06/	21/2021
Project Name: MARK TWAIN LA Project No.:	KE	Ana	lysis: NP P	ESTICIDE	S (8270SI	( dom-m	Anal	-ytical   Prep	Method: {	8270C 3510C	
Matrix: QC Material Amount Used: 1000 mL			QC Batch: Level:	B113 LOW	53		Prep. Analys	Date: sis Date	06/14/2 : 06/15/2	2021 2021	
		Spike	Spike	Spike	Duplicate	Duplicate	Duplicate	Recovery		RPD	
Parameter	ц	esult	Level	% Rec	Result	Level	% Rec	Limits	RPD	Limit	
Trifluralin		3.71	4	93				30-130			
Atrazine		3.59	4	06	1	1	ł	30-130	1	!	
Metribuzin		3.6	4	06	!	;	ł	30-130	!	1	
Alachlor		3.67	4	92	1	1	1	30-130		-	
Metolachlor		3.55	4	89	1	1	ł	30-130	-	1	
Chlorpyrifos		3.43	4	86			1	30-130		***	
Cyanazine		3.85	4	96			1	30-130		8	
Pendimethalin		3.84	4	96	1	1	1	30-130	1	!	
SUR	ROGATE RE	COVERIES:		Spike	%R Dupli	.cate %R %I	l Limits				
Tri	phenylpho.	sphate			8		30-130				

(a) DOD-QSM Accredited Analyte.

'\*' indicates a recovery outside of standard limits. Spike Blanks for 008710-01, NP PESTICIDES (8270SIM-MOD)

Page 1 of 1

ARDL Report 8710 - Page 31 of 40

ARD	L, INC.	400 A1	LABORZ	ATORY C 1 Drive	P.O.	Box 1	1566	Mt. V	ernon, IL	62864
Lab Report No: 000	8710								Report Da	ite: 06/30/2021
Project Name:	MARK TWA	IN LAKE							NELAC Cer	tified - IL100308
Analyte	LCS 1 Result	LCS 1 Level	LCS 1 % Rec	LCS 2 Result	LCS 2 Level	LCS 2 % Rec	% Rec Limits	Mean % Rec	Analytical Run	QC Lab Number
(a) Iron	5.6	5.0	112	1	1	99 AN	87-115	l	P7529	008710-01C1
(a) Manganese	0.84	0.75	112	ł	1		90-114		P7529	008710-01C1
Ammonia Nitrogen	1.1	1.0	108	ł	1	ł	80-120	1	06165960	008710-01C1
Ammonia Nitrogen	1.1	1.0	108	ł	١	ł	80-120	ł	06175963	008710-09C1
Nitrate as Nitrogen	0.99	1.0	66	ł	}	1	80-120	ł	06225973	008710-01C1
Phosphorus	0.64	0.67	96	1	ł	ł	80-120	ł	06175965	008706-03C1
Total Organic Carbon	19.5	20.0	98	ł	ł	1	76-120	1	06245980	008710-01C1
NOTE: Any values t (a) DOD and/or NEL	abulated above AC Accredited A	marked with nalyte	an asteris	sk are outs	ide of acc	eptable li	mits.			

AI	RDL, TNC.	M 4	ATRIX SP.	IKE/SP ion Dr	IKE DUPL	ICATE REF Rox 156	ORT S6 M	t Vern	n. 11.	62864	
Lab Report No: 008710							2		Report	Date:	06/21/2021
Project Name: MARK TWAI Project No.:	N LAKE	κ.	nalysis: 1	NP PEST	ICIDES (82	70SIM-MOD)		Analyti P	cal Methoo rep Methoo	1: 8270C 1: 3510C	
Field ID: MTL-1	TN TAVE		Prep.	Date:	06/14/202	-T		ARDL Lab	No.: 008	/10-01	
Desc/nocation: MARN 1MA Sample Date: 06/10/20	21		Amoun % Moi:	c usea: sture:	AUU ML		чц	seceived	ame: Date: 06/1	0/2021	
Sample Time: 1500 Matrix: WATER			QC Bat Level	: tch:	B11353 LOW		đ	Inalysis	Date: 06/1	15/2021	
	Sam	ple	SM	WS	MS	MSD	MSD	MSD	% Rec		RPD
Parameter	Res	ult	Result	Level	% Rec	Result	Level	% Rec	Limits	RPD	Limit
Trifluralin	N	D	3.92	4.44	88.3	3.26	4.44	73.3	30-130	18.6	30
Atrazine	N	D	3.88	4.44	87.3	3.47	4.44	78	30-130	11.2	30
Metribuzin	N	D	3.8	4.44	85.5	3.38	4.44	16	30-130	11.8	30
Alachlor	N	Q	3.57	4.44	80.3	3.08	4.44	69.3	30-130	14.7	30
Metolachlor	0	756	4.34	4.44	80.8	3.82	4.44	69	30-130	12.8	30
Chlorpyrifos	IN	Q	3.4	4.44	76.5	2.89	4.44	65	30-130	16.3	30
Cyanazine	IN	Δ	3.97	4.44	89.3	3.6	4.44	81	30-130	9.7	30
Pendimethalin	IN	0	3.74	4.44	84.3	3.16	4.44	71	30-130	17.1	30
	SURROGATE REC	COVERIE	s:		MS &R	MSD &R	&R Lin	nits			
	Triphenylpho:	sphate			92	LL	30-13	0			

(a) DOD-QSM Accredited Analyte.

'nc' indicates sample >4X spike level.

'\*' indicates a recovery outside of standard limits.

Matrix Spikes for 008710-01, NP PESTICIDES (8270SIM-MOD)

Page 1 of 1

ARDL Report 8710 - Page 33 of 40

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E.	Vernon,
REPORJ	Mt.
CATE	1566
DUPLI	. Box
PIKE	; P.O
IKE/S	Drive
RIX SP	ation
MATI	Avia
	400
	INC.
	ARDL,

Lab Report No: 008710

Project Name:

Report Date: 06/30/2021

NELAC Certified - IL100308 MARK TWAIN LAKE

Ammonia Nitrogen         WATER         0.11         2.7         2.0         128 *         2.7         2.0         131 *         75-125         2         20         06165960         008710-01           Nitrate as Nitrogen         WATER         1.4         2.4         1.0         100         2.4         1.0         106         75-125         3         20         0615965         008710-01           Phosphorus         WATER         0.11         0.94         0.83         100         0.96         0.83         102         75-125         3         20         06175955         008710-01           Phosphorus         WATER         0.11         0.94         0.83         100         0.96         0.83         102         75-125         2         20         06175955         008710-01           Cotal Organic Carbon         WATER         6.8         12.3         5.0         110         12.1         5.0         106         76-120         2         20         06245980         008710-01	Analyte (a) Iron (a) Manganese	Sample Matrix WATER	Sample Result 2.7 0.025	MS Result 4.0 0.57	MS Level 1.0 0.50	* Rec 124 * 108	MSD Result 4.2 0.59	MSD Level 1.0 0.50	MSD % Rec 147 * 112	<pre>% Rec Limits 87-115 90-114</pre>	3 6 8 B D	RPD Limit 20	Run P7529 P7529	QC Lab Number 008710-01M
Nitrate as Nitrogen         WATER         1.4         2.4         1.0         106         75-125         3         20         06225973         008710-(           Phosphorus         WATER         0.11         0.94         0.83         100         0.96         0.83         102         75-125         3         20         06175965         008710-(           Ocal Organic Carbon         WATER         6.8         12.3         5.0         110         12.1         5.0         106         75-125         2         20         06175965         008710-(	Ammonia Nitrogen	WATER	0.11	2.7	2.0	128 *	2.7	2.0	131 *	75-125	2	20	06165960	008710-0
Phosphorus         WATER         0.11         0.94         0.83         100         0.96         0.83         102         75-125         2         20         06175965         008710-0           Cotal Organic Carbon         WATER         6.8         12.3         5.0         110         12.1         5.0         106         76-120         2         20         06245980         008710-0	Nitrate as Nitrogen	WATER	1.4	2.4	1.0	100	2.4	1.0	106	75-125	m	20	06225973	008710-0
otal Organic Carbon WATER 6.8 12.3 5.0 110 12.1 5.0 106 76-120 2 20 06245980 008710-0	Phosphorus	WATER	0.11	0.94	0.83	100	0.96	0.83	102	75-125	7	20	06175965	008710-0
	otal Organic Carbon	WATER	6.8	12.3	5.0	110	12.1	5.0	106	76-120	7	20	06245980	008710-0

NOTE: Values tabulated above marked with an asterisk are explained in the associated narrative. (a) DOD and/or NELAC Accredited Analyte.

Inorganic Matrix Spikes for 008710

364	06/30/2021	ed - IL100308	QC Lab Number	008710-10D1 008710-10D1 008710-04D1 008710-04D1
101, IL 628	Report Date:	NELAC Certifi	Analytical Run	06165953 06165953 06165954 061659555
r 5 Mt. Vern			Mean (Smp,D1,D2)	
FE REPORI Box 156(			Percent Diff	N U O N U N
DUPLICA ve; P.O.			Units	MG/CU.M. MG/L MG/L
SAMPLE tion Dri			Second Duplicate	
400 Avia		ζΈ	First Duplicate	19.1 0 10.0 10.0
INC.	0	TWAIN LA	Sample Conc'n	20.0 ND 10.0 10.0
ARDL,	Lab Report No: 00871	Project Name: MARK	Analyte	Chlorophyll-a, Corrected Pheophytin-a Solids, Total Suspended Solids, Volatile Suspend

(a) DOD and/or NELAC Accredited Analyte Sample Duplicates for 008710

# Sample Receipt Information

Including as appropriate:

- COCs
- Cooler Receipts
- Airbills
- Email Communication / Instructions from Customer

ARDL Data Package 8710

Authorized By: DSD-QAO

SPECIFY CHEMICALS ADDED AND FINAL PH IF KNOWN PRESERVATION CHAIN OF CUSTODY RECORD ICED × × × × × × × × × × × × × × SAMPLE LOCATION REMARKS 8710 REMARKS/SPECIAL INSTRUCTIONS: asivisi \*Preserved with H<sub>2</sub>SO<sub>4</sub> #Preserved with HNO<sub>3</sub> × × × × × P.O. Box 1566, 400 Aviation Drive, Mt. Vernon, IL 62864 × × × (618) 244-1149 Fax X × × × × × × × × × × × × X X × × × × × × × × Alleno 6 × × × × × × × × X × × × nature) Received by: (Signature) × X × × × Shipping Ticket No. y (Sig X × × × × × × × × × × × (618) 244-3235 Phone NO. OF CONTAINERS ecenved b GRAB X X Х X X × × × × × × × × × COWP 0621 1100 0/10/21 (1) 0 6/10/21 1200 02 H 1 12/01/0 0011 10/19 6/10/01/1 23D b/10/21 1805 6/0/21 1220 MIGRAI 132D 6/10/21 1145 0/16/21 1660 Sho1 10/9/9 6/10/31 1-310 Time 61/6/31/130 6/10/2/ 1935 TIME Time 6/10/1/ 1950 10/91/9 10131 DATE Date ARDL, Inc. Belinquished by: (Signature) by: (Signature) Beceived for Laboratory by: (Signature) SAMPLE NUMBER 9 PURCHASE ORDER NO: SAMPLERS: (Signature) Mark Twain Lake SUN 3 IC MARINA **BU MARINA** Belinquished by: (S Belinquished by: (S Belinquished by: (S Belinquished by: (S 7 MTL-22-15 0 MTL-33-0 2 MTL-77-0 8 MTL-22-0 MTL-66-0 **MTL-15-0** 14191 **MTL-12 MTL-13 MTL-11** MTL-9 MTL-5 MTL-1 PROJECT -37 0 0

	COOLER RECEIPT F	REPORT			
AR	DL #: 8710	Cooler # <u>L Red</u>	ent <sup>i</sup> 3		
Proj	ect: Mark Twain Lake	Date Received: _06/10/2	0Z		-
A.		0/2021 (Signature) DCB			
1.	Did cooler come with a shipping slip (airbill, etc.)?		YES (	NO	1
	If YES, enter carrier name and airbill number here: ARDL Co	vrier-Valerie			
2.	Were custody seals on outside of cooler?		YES	Ø	N/A
	How many and where?,Seal Date:,Seal Date:,	"Seal Name:	and the second		
3.	Were custody seals unbroken and intact at the date and time of arrival?		YES	NO (	NA
4.	Did you screen samples for radioactivity using a Geiger Counter?	1		NO	-
5.	Were custody papers sealed in a plastic bag? Hand delivelee	(	YES	NO	
6.	Were custody papers filled out properly (ink, signed, etc.)?		YES	NO	N/A
7.	Were custody papers signed in appropriate place by ARDL personnel?			NO	N/A
8.	Was project identifiable from custody papers? If YES, enter project name at	the top of this form		NO	N/A
9.	Was a separate container provided for measuring temperature? YES	_NOObserved Cooler Temp	0,6	sau ;	Tenc
В.	LOG-IN PHASE: Date samples were logged-in: DIA 11/2021	(Signature) DCB Corre	ction factor (	0,0	<u> </u>
10.	Describe type of packing in cooler: LOOSE Ice				
11.	Were all samples sealed in separate plastic bags?		YES	NO	N/A
12.	Did all containers arrive unbroken and were labels in good condition?			NO	
13.	Were sample labels complete?		ÝĒS	NO	
14.	Did all sample labels agree with custody papers?			NO	
15.	Were correct containers used for the tests indicated?			NO	
16.	Was pH correct on preserved water samples?			NO	N/A
17.	Was a sufficient amount of sample sent for tests indicated?			NO	
18.	Were bubbles absent in VOA samples? If NO, list by sample #:		YES	NO	(N/A)
19.	Was the ARDL project coordinator notified of any deficiencies?		YES	NO	NA
	Comments and/or Corrective Action:	Sample T	ransfer		
		Fraction	Fraction		
		/	Area #		
		Walk-In			
		1Arg	Ву		
-		On hul	On		
		010/1/2021			
		Chain-of-Custodv #		Nama and a state of the state o	olaterational of
(E	By: Signature) Date:	,, <b>,</b> ,			

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# COOLER RECEIPT REPORT ARDL, INC.

ardl #: 8710	Cooler # $\underline{ZRed}$ Number of Coolers in Shipment: $\Im$
Project: Mark Twain Lake	Date Received: <u>C/10/202</u>
A. PRELIMINARY EXAMINATION PHASE: Date cooler was opened:	0/202) (Signature) DCR
<ol> <li>Did cooler come with a shipping slip (airbill, etc.)?</li> </ol>	
If YES, enter carrier name and airbill number here: ARDL (	Courier-Valeria
<ol> <li>Were custody seals on outside of cooler?</li> </ol>	YES NO NA
How many and where?	Seal Name:
Were custody seals unbroken and intact at the date and time of arrival?	
A Did you screen samples for radioactivity using a Geiger Counter?	VEQ NO
5. Were custody papers sealed in a plastic bar? Hand deliver	VES NO
Were custody papers seared in a plastic bag	
<ul> <li>Were custody papers signed in appropriate place by APDL personnel?</li> </ul>	VEE NO N/A
Were custody papers signed in appropriate place by ANDE personnel?	the tan of this form
Was project identifiable from custody papers? If YES, enter project name at	NO: Observed Coster Temp () Scrup(
9. Was a separate container provided for measuring temperature? TES	Correction factor_0,0_emp
B. LOG-IN PHASE: Date samples were logged-in: <u>UU111202</u> (	(Signature)
10. Describe type of packing in cooler: LOOSE CE	
11. Were all samples sealed in separate plastic bags?	
12. Did all containers arrive unbroken and were labels in good condition?	
13. Were sample labels complete?	
14. Did all sample labels agree with custody papers?	
15. Were correct containers used for the tests indicated?	
16. Was pH correct on preserved water samples?	
17. Was a sufficient amount of sample sent for tests indicated?	NO
18. Were bubbles absent in VOA samples? If NO, list by sample #:	YES NO (N/A)
19. Was the ARDL project coordinator notified of any deficiencies?	YES NO WA
Comments and/or Corrective Action:	Sample Transfer
	Fraction Fraction
	/)   Area # Area #
	Walk-In
	$By \int C R$ $By$
	On On
	06/11/2021
	Chain of Custody #
(By: Signature) Date:	

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	COOLER RECEIPT F	REPC	DRT					
AR	DI # 8710	Соо	ler # 1	Blue				
		Num	ber of Cool	ers in Shipr	- ment: <u>3</u>		_	
Pro	ject: Mark Twain Lake	Date	e Received:	06/10/2	202/			
A.	PRELIMINARY EXAMINATION PHASE: Date cooler was opened:	0/202	2/(Signature)_	DeB	in		. <u> </u>	
1.	Did cooler come with a shipping slip (airbill, etc.)?	·····	•		YES	ND		
	If YES, enter carrier name and airbill number here: <u>ARDL</u>	Cor	ner-	Valer	il			
2.	Were custody seals on outside of cooler?				YES	NO	) N/A	
	How many and where?,Seal Date:,Seal Date:,	<	,Seal I	Name:			فيعتجدونين	
3.	Were custody seals unbroken and intact at the date and time of arrival?				YES	NO	NA	
4.	Did you screen samples for radioactivity using a Geiger Counter?				ĒS	NO		
5.	Were custody papers sealed in a plastic bag?	¢			YES	NO	)	
6.	Were custody papers filled out properly (ink, signed, etc.)?				YES	) NO	N/A	
7.	Were custody papers signed in appropriate place by ARDL personnel?				YES	NO	N/A	
8.	Was project identifiable from custody papers? If YES, enter project name at	the top	of this form		YES	NO	N/A	
9.	Was a separate container provided for measuring temperature? YES	_NO_	Observe	d Cooler Tem	p. <u>1.4</u>	200	unge Tel	7
В.	LOG-IN PHASE: Date samples were logged-in: 06/11/202/	(Signatı	ure) DCB	Con		40		φ)
10.	Describe type of packing in cooler:		and the Address of the Address of the		*D39.03.XL			
11.	Were all samples sealed in separate plastic bags?				YES	1	N/A	
12.	Did all containers arrive unbroken and were labels in good condition?	• • • • • • • • • • • • • • • •			ÝE9	NO		
13.	Were sample labels complete?				YES	NO		
14.	Did all sample labels agree with custody papers?				YES	NO		
15.	Were correct containers used for the tests indicated?				YES	NO		
16.	Was pH correct on preserved water samples?					NO	N/A	
17.	Was a sufficient amount of sample sent for tests indicated?				(YES)	NO		
18.	Were bubbles absent in VOA samples? If NO, list by sample #:				YES	NO	N/A)	
19.	Was the ARDL project coordinator notified of any deficiencies?				YES	NO	(N/A)	
	Comments and/or Corrective Action:		Freedier	Sample	Transfer			
					Fraction			
-			Area #	1	Area #			
			Walk-	10	By			
			Der					
			On ALL		On			
			Uphil	2021				
			Chain-of-	Custody #			$\geq$	
(E	By: Signature) Date:							

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Environmental | Analytical | Management | Safety

# **Customer Name: SLCOE**

# Project Name: Mark Twain Lake

Samples Received at ARDL: 9/1/21

PO Box 1566 400 Aviation Drive Mt. Vernon, IL 62864 618-244-3235

www.ardlinc.com

Date: 10/12/21

Lab Name: ARDL, Inc.

ARDL Report No.: 8823

# CASE NARRATIVE

Customer Sample No.	<u>Date</u> Collected	<u>Lab ID</u> Number	Analyses Requested
MTL-1	9/01/21	8823-01	NP Pesticides, Metals(1), Inorganics(2)
MTL-5	9/01/21	8823-02	NP Pesticides, Inorganics(2)
MTL-13	9/01/21	8823-03	NP Pesticides, Inorganics(2)
MTL-9	9/01/21	8823-04	NP Pesticides, Inorganics(2)
MTL-11	9/01/21	8823-05	NP Pesticides, Inorganics(2)
MTL-12	9/01/21	8823-06	NP Pesticides, Metals(1), Inorganics(2)
MTL-15-0	9/01/21	8823-07	NP Pesticides, Inorganics(2)
MTL-22-0	9/01/21	8823-08	NP Pesticides, Inorganics(2)
MTL-22-15	9/01/21	8823-09	Metals(1), Inorganics(2)
MTL-33-0	9/01/21	8823-10	NP Pesticides, Inorganics(2)
MTL-66-0	9/01/21	8823-11	NP Pesticides, Inorganics(2)
MTL-77-0	9/01/21	8823-12	NP Pesticides, Inorganics(2)
IC MARINA	9/01/21	8823-13	E. Coli
BJ MARINA	9/01/21	8823-14	E. Coli

(1) Including iron and manganese.

(2) Including ammonia, nitrate, total phosphorus, TOC, TSS and TVSS.

(3) Including chlorophyll-a and pheophytin-a.

The quality control data are summarized as follows:

# NP PESTICIDE FRACTION – METHOD 8270-SIM

# HOLDING TIME

Samples were prepared and analyzed within method specified holding times.

# INITIAL CALIBRATION

The initial calibration passed criteria. The ICV passed criteria.

# **CONTINUING CALIBRATION**

The continuing calibration verification (CCV) passed criteria for all analytes.

# PREPARATION BLANK

The blank met acceptance criteria.

# LABORATORY CONTROL SAMPLE

The LCS analyses met recovery criteria.

# MATRIX SPIKE

The matrix spike and matrix spike duplicate met recovery criteria.

"Test everything, keep the good" 1 Thes. 5:21

# Project Name: Mark Twain Lake

# ARDL Report No.: 8823

# **CASE NARRATIVE (Continued)**

# DUPLICATE

Duplicate analyses are reported as MS/MSD. RPD of the duplicate analyses met criteria.

# INTERNAL STANDARDS

All internal standard criteria were met.

# SURROGATES

All surrogate recovery criteria were met.

# **INORGANIC FRACTION**

TOC were analyzed by an accredited outside laboratory due to instrument status.

PREPARATION BLANK Results of the preparation blanks were undetected.

LABORATORY CONTROL SAMPLE Percent recoveries of all LCS analyses were within control limits.

# MATRIX SPIKE

Percent recoveries of all matrix spikes and matrix spike duplicates were within control limits, except 1 of 2 for nitrate. The parent sample has been flagged appropriately with a 'J' qualifier.

# DUPLICATE

All duplicate analyses are reported as MS/MSD except chlorophyll-a, pheophytin-a, TSS and TVSS. RPD on all duplicate analyses were within control limits.

# DATA REPORTING QUALIFIERS

The following data reporting qualifiers are used as required:

- ND Indicates parameter was analyzed for but not detected.
- J Indicates an estimated value. This flag is used either when estimating a concentration or this flag indicates analyte(s) associated with a DOD-QSM specified non-compliance pertaining to matrix QC criteria.

# REPORT ORGANIZATION

The data in this report appear by sample type (Field sample, preparation blank, laboratory control sample / spike blank, matrix spike /spike duplicate and sample duplicate). Within each sample type the data appear in the order that the analytical methods were discussed in this case narrative. Sample receipt information follows the analytical data.

Release of the data contained in this package has been authorized by the Technical Services Manager or his designee as verified by the following signature.

Dean S. Dickerson Technical Services Manager

Page 2 of 2

# Sample & QC Results

Including as appropriate: Field Sample Results Batch QC Prep Blank LCS/Spike Blank Matrix QC MS/MSD Sample Duplicate

ARDL Data Package 8823

N:\ARDL Case Narratives\ARDL Data Package Contents.pdf - Revised June 21, 2019

Authorized By: DSD-QAO

ARDL Report 8823 - Page 3 of 40

Lab Report No: 008823

Report Date: 09/08/2021

Project Name: Project No.:	MARK TWAIN LAKE	Ar	nalysis: NH Method: 83	PESTICIE	DES (827	/OSIM-MO	D)
NELAC Certi	fied - IL100308	Prep	Method: 3	510C			
Field ID:	MTL-1		ARDL 1	Lab No.:	00882	23-01	
Desc/Location:	MARK TWAIN LAKE		Lab F:	ilename:	E0903	3105	
Sample Date:	09/01/2021		Receiv	ved Date:	09/01	L/2021	
Sample Time:	1050		Prep.	Date:	09/02	2/2021	
Matrix:	WATER		Analy	sis Date:	09/03	3/2021	
Amount Used:	900 mL		Instru	ument ID:	AG5		
Final Volume:	1 mL		QC Bat	tch:	B1139	93	
% Moisture:	NA		Level	:	LOW		
					Data		Dilution
Parameter		LOD	LOQ	Result	Flag	Units	Factor
Trifluralin		0.222	0.222	ND		UG/L	1
Atrazine		0.222	0.222	0.856		UG/L	1
Metribuzin		0.222	0.222	ND		UG/L	1
Alachlor		0.222	0.222	ND		UG/L	1
Metolachlor		0.222	0.222	2.74		UG/L	1
Chlorpyrifos		0.222	0.222	ND		UG/L	1
Cyanazine		0.222	0.222	ND		UG/L	1
Pendimethalin		0.222	0.222	ND		UG/L	1
• • • • • • • • • • • • • • • • • • •	· · · · · · · · · · · · · · · · · · ·						

SURROGATE RECOVERIES:	Limits	Results
Triphenylphosphate	30-130	68%

Surrogate recoveries marked with '\*' indicates they are outside standard limits.

(a) DOD-QSM Accredited Analyte.

	Box 1566	62864
ARDL, INC.	400 Aviation Drive; P.O.	Mt. Vernon, Illinois

008823 Lab Report No:

Report Date: 10/07/2021

organics - IL100308	EER	/sis Run :e Number	L/21 P7616 L/21 P7616 1/21 09166290 ./21 09306361 1/21 09296347 ./21 09146271 ./21 09146274
s: Inc ified -	K: WAT e: NA	Analy Dat	09/21 09/214 09/21 09/24 09/07 09/07
Analysi: WELAC Cert:	Matri Moisture	Prep Date	09/15/21 09/15/21 NA NA 09/23/21 NA NA
A		Analysis Method	6010C 6010C 350.1 GREEN 365.2 160.2 160.4 415.1
		Prep Method	3010A 3010A NONE NONE 365.2 NONE NONE
	TWAIN LAKE 1/2021	Units	1/9W 1/9W 1/9W 1/9W 1/9W 1/9W
	n: MARK ce: 09/0 ne: 1050	Result	0.250 0.119 ND 0.025 0.0787 5.6 ND
	ling Loc pling Dat pling Tir	Flag	
	Samp Sam Sam	ΓΟĞ	0.0500 0.00500 0.0300 0.0200 4.00 4.00
N LAKE		LOD	0.0400 0.00400 0.0200 0.0190 4.00 4.00
MARK TWAI	008823-01 MTL-1 09/01/202	ئ ھ	en rogen Suspended le Suspen Carbon
Project Name: Project No:	ARDL No: Field ID: Received:	Analy	<pre>(a) Iron (a) Manganese Ammonia Nitrog Nitrate as Nit Phosphorus Solids, Total Total Organic</pre>

(a) DOD and/or NELAC Accredited Analyte.

Sample 008823-01, Inorganic Analyses

Lab Report No: 008823

Report Date: 09/08/2021

Project Name: Project No.: NELAC Certi:	MARK TWAIN LAKE fied - IL100308	Ar Analytical Prep	Method: 82 Method: 82	PESTICIE 270C 510C	DES (827	0SIM-MO	D)
Field TD.	MTT5		ARDT. 1	lah No ·	00883	23-02	
Desc/Location:	MARK TWAIN LAKE		Lab F	ilename:	F0002	23-02 8108	
Sample Date:	09/01/2021		Baceir	red Date.	09/01	1/2021	
Sample Time:	1229		Pren	Date:	09/02	2021	
Matrix.	WATER		Analy	sis Date.	09/02	3/2021	
Amount Used:	900 mT		Instru	iment TD:	AG5	, 2021	
Final Volume:	1 mL		OC Bat	tch:	B1139	93	
% Moisture:	NA		Level	:	LOW		
				-			
· · · · · · ·					Data		Dilution
Parameter		LOD	LOQ	Result	Flag	Units	Factor
Trifluralin		0.222	0.222	ND		UG/L	1.
Atrazine		0.222	0.222	ND		UG/L	1
Metribuzin		0.222	0.222	ND		UG/L	1
Alachlor		0.222	0.222	ND		UG/L	1
Metolachlor		0.222	0.222	ND		UG/L	1
Chlorpyrifos		0.222	0.222	ND		UG/L	1
Cyanazine		0.222	0.222	ND		UG/L	1
Pendimethalin		0.222	0.222	ND		UG/L	1
			······				
SURROGATE RECOV	ERIES:	L	ımıts		Re	sults	
Triphenylphosph	ate	30	J-130			578	

Surrogate recoveries marked with '\*' indicates they are outside standard limits.

(a) DOD-QSM Accredited Analyte.

Lab Report No: 008823

Report Date: 10/07/2021

Project Name: M <sup>1</sup> Project No:	ARK TWA.	IN LAKE						N	Analysis ELAC Certi	:: Inorgan fied - IL1	ics 00308
ARDL No: 0( Field ID: M1 Received: 05	08823-0: TL-5 9/01/202	2	Sampl Samp Samp	ing Loc ling Da ling Ti	c'n: MAR ate: 09/ ime: 122	LK TWAIN LAKE 01/2021 9			Matrix Moisture	: WATER : NA	
Analyte		ГОД	LOQ	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
Ammonia Nitrogen		0.0200	0.0300		0.0687	MG/L	NONE	350.1	NA	09/14/21	09166290
Nitrate as Nitrog	gen	0.0190	0.0200	Ŀ	UN	MG/L	NONE	GREEN	NA	09/21/21	09306361
Phosphorus		0.00800	0.0100		0.472	MG/L	365.2	365.2	09/23/21	09/24/21	09296347
Solids, Total Sus	spended	6.67	6.67		82.0	MG/L	NONE	160.2	NA	09/07/21	09146271
Solids, Volatile	Suspen	6.67	6.67		13.3	MG/L	NONE	160.4	NA	09/07/21	09146274
Total Organic Car	rbon	0.50	1.0		5.7	MG/L	NONE	415.1	NA	09/12/21	09246334

(a) DOD and/or NELAC Accredited Analyte.

Sample 008823-02, Inorganic Analyses

Lab Report No: 008823

Report Date: 09/08/2021

Project Name:	MARK TWAIN LAKE	Ana	lysis: NE	PESTICIE	DES (827	0SIM-MO	D)
Project No.:		Analytical M	ethod: 82	270C			
NELAC Certi	fied - IL100308	Prep M	lethod: 35	510C			
Field ID:	MTL-13		ARDL I	Lab No.:	00882	23-03	
Desc/Location:	MARK TWAIN LAKE		Lab Fi	llename:	E0903	3109	
Sample Date:	09/01/2021		Receiv	ved Date:	09/01	L/2021	
Sample Time:	1159		Prep.	Date:	09/02	2/2021	
Matrix:	WATER		Analys	sis Date:	09/03	3/2021	
Amount Used:	900 mL		Instru	ument ID:	AG5		
Final Volume:	1 mL		QC Bat	cch:	B1139	93	
% Moisture:	NA		Level	:	LOW		
					Data		Dilution
Parameter		LOD	LOQ	Result	Flag	Units	Factor
Trifluralin		0 222	0 222	ND			1
Atrazine		0.222	0.222	ND		UG/L	1
Metribuzin		0.222	0.222	ND		UG/L	1
Alachlor		0.222	0.222	ND		UG/L	1
						,	
Metolachlor		0.222	0.222	0.422		UG/L	1
Metolachlor Chlorpyrifos		0.222	0.222	0.422 ND		UG/L UG/L	1 1
Metolachlor Chlorpyrifos Cyanazine		0.222 0.222 0.222	0.222 0.222 0.222	0.422 ND ND		UG/L UG/L UG/L	1 1 1
Metolachlor Chlorpyrifos Cyanazine Pendimethalin		0.222 0.222 0.222 0.222	0.222 0.222 0.222 0.222	0.422 ND ND ND		UG/L UG/L UG/L UG/L	1 1 1 1
Metolachlor Chlorpyrifos Cyanazine Pendimethalin		0.222 0.222 0.222 0.222	0.222 0.222 0.222 0.222	0.422 ND ND ND		UG/L UG/L UG/L UG/L	1 1 1 1

SURROGATE RECOVERIES:	Limits	Results
Triphenylphosphate	30-130	77%

Surrogate recoveries marked with '\*' indicates they are outside standard limits.

(a) DOD-QSM Accredited Analyte.

10	Report Date: 10/07/2021	Analysis: Inorganics NELAC Certified - IL100308	Matrix: WATER Moisture: NA		Analysis Prep Analysis Run	Method Date Date Number	350.1 NA 09/14/21 09166290	GREEN NA 09/21/21 09306361	365.2 09/23/21 09/24/21 09296347	160.2 NA 09/07/21 09146271	160.4 NA 09/07/21 09146274	415.1 NA 09/12/21 09246334
Box 156( 62864					Prep	Method	NONE	NONE	365.2	NONE	NONE	NONE
, INC. Lve; P.O. [llinois			TWAIN LAKE /2021			Units	MG/L	MG/L	MG/L	MG/L	MG/L	MG/L
ARDI Lation Dri Vernon, 1			c'n: MARK : ate: 09/01,			Result	0.0278	0.064	0.105	8.6	ND	7.9
00 Avi Mt.			ling Loc ling Da	T AIITT		Flag	IJ					
4			Sampl Samp	קוונסט		ГОÕ	0.0300	0.0200	0.0100	2.00	2.00	1.0
	323	IN LAKE	~ 5	12		LOD	0.0200	0.0190	0.00800	2.00	2.00	0.50
	Lab Report No: 008	Project Name: MARK TWA. Project No:	ARDL No: 008823-0 Field ID: MTL-13 Possingl. 09/01/202	Vecetved: 02/01/20		Analyte	Ammonia Nitrogen	Nitrate as Nitrogen	Phosphorus	Solids, Total Suspended	Solids, Volatile Suspen	Total Organic Carbon

(a) DOD and/or NELAC Accredited Analyte.

Sample 008823-03, Inorganic Analyses

Lab Report No: 008823

Report Date: 09/08/2021

Project Name:	MARK TWAIN LAKE	An	alysis: NH	PESTICII	DES (827	70SIM-MO	D)
Project No.:		Analytical	Method: 82	270C			
NELAC Certi	fied - IL100308	Prep	Method: 35	510C			
Field TD.	MTTT Q			lab No 1	0000	22 04	
FIELU ID:	MIL-9 MADE THATM LAFE			Lab NO.:	00002 E0002	23-04	
Desc/Localion:	MARK IWAIN DAKE			I Tellame:	E090.	1/2021	
Sample Date:	1050		Recerv	ved Date:	09/0.	2021	
Sample Time:	1059		Prep.	Date:	09/02	2/2021	
Matrix:	WATER		Analys	sis Date:	09/0.	3/2021	
Amount Used:	900 mL		Instru	ument ID:	AG5		
Final Volume:	l mL		QC Bat	tch:	B1139	93	
% Moisture:	NA		Level	:	LOW		
 		TOD	7.00		Data		Dilution
Parameter		LOD	LOQ	Result	Flag	Units	Factor
Trifluralin		0.222	0.222	ND		UG/L	1
Atrazine		0.222	0.222	ND		UG/L	1
Metribuzin		0.222	0.222	ND		UG/L	1
Alachlor		0.222	0.222	ND		UG/L	1
Metolachlor		0.222	0.222	0.278		UG/L	1
Chlorpyrifos		0.222	0.222	ND		UG/L	1
Cyanazine		0.222	0.222	ND		UG/L	1
Pendimethalin		0.222	0.222	ND		UG/L	1
					D -		· · · · · · · · · · · · · · · · · · ·
SUKRUGATE RECOV	EKIES:	L1	.mits		ке	SULTS	

Surrogate recoveries marked with '\*' indicates they are outside standard limits.

30-130

(a) DOD-QSM Accredited Analyte.

Triphenylphosphate

748

	Box 1566	62864
ARDL, INC.	400 Aviation Drive; P.O.	Mt. Vernon, Illinois

Lab Report No: 008823

Report Date: 10/07/2021

Project Name: N Project No:	ARK TWA	CN LAKE						Z	Analysis JELAC Certi	:: Inorgan fied - IL1	lics 00308
ARDL No: C Field ID: N Received: 0	008823-04 1TL-9 19/01/202	. T	Samp1 Samp Samp	ing Loc ling Da ling Ta	c'n: MARK ate: 09/01 ime: 1059	TWAIN LAKE L/2021			Matrix Moisture	:: WATER :: NA	
Analyte	0	LOD	ГОД	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
Ammonia Nitrogen		0.0200	0.0300		QN	MG/L	NONE	350.1	NA	09/14/21	09166290
Nitrate as Nitrc	ngen	0.0190	0.0200		0.025	MG/L	NONE	GREEN	NA	09/21/21	09306361
Phosphorus		0.00800	0.0100		0.126	MG/L	365.2	365.2	09/23/21	09/24/21	09296347
Solids, Total Su	Ispended	4.00	4.00		19.2	MG/L	NONE	160.2	NA	09/07/21	09146271
Solids, Volatile	s Suspen	4.00	4.00		ND	MG/L	NONE	160.4	NA	09/07/21	09146274
Total Organic Ca	irbon	0.50	1.0		5.6	MG/L	NONE	415.1	NA	09/12/21	09246334

(a) DOD and/or NELAC Accredited Analyte.

Sample 008823-04, Inorganic Analyses

Lab Report No: 008823

Report Date: 09/08/2021

Project Name:	MARK TWAIN LAKE	Ana.	lysis: NE	P PESTICIE	ES (827	0SIM-MO	D)
Project No.:	C	Analytical Me		2700			
NELAC Certi	ried - iLiuu308	Prep Me	etnod: 35	STUC			
Field ID:	MTL-11		ARDL I	Lab No.:	00882	3-05	
Desc/Location:	MARK TWAIN LAKE		Lab Fi	ilename:	E0903	8111	
Sample Date:	09/01/2021		Receiv	ved Date:	09/01	/2021	
Sample Time:	1017		Prep.	Date:	09/02	2/2021	
Matrix:	WATER		Analys	sis Date:	09/03	3/2021	
Amount Used:	900 mL		Instru	ument ID:	AG5		
Final Volume:	1 mL		QC Bat	cch:	B1139	93	
% Moisture:	NA		Level	:	LOW		
					Data		Dilution
Parameter		LOD	LOQ	Result	Flag	Units	Factor
Trifluralin		0.222	0.222	ND		UG/L	1
Atrazine		0.222	0.222	ND		UG/L	1
Making Jacon day							1
Metribuzin		0.222	0.222	ND		UG/L	1
Alachlor		0.222 0.222	0.222 0.222	ND ND		UG/L UG/L	1
Alachlor Metolachlor		0.222 0.222 0.222	0.222 0.222 0.222	ND ND ND		UG/L UG/L UG/L	1 1 1
Metribuzin Alachlor Metolachlor Chlorpyrifos		0.222 0.222 0.222 0.222	0.222 0.222 0.222 0.222	ND ND ND ND	、	UG/L UG/L UG/L UG/L	1 1 1 1
Metribuzin Alachlor Metolachlor Chlorpyrifos Cyanazine		0.222 0.222 0.222 0.222 0.222 0.222	0.222 0.222 0.222 0.222 0.222 0.222	ND ND ND ND ND	、	UG/L UG/L UG/L UG/L UG/L	1 1 1 1
Metribuzin Alachlor Metolachlor Chlorpyrifos Cyanazine Pendimethalin		0.222 0.222 0.222 0.222 0.222 0.222 0.222	0.222 0.222 0.222 0.222 0.222 0.222 0.222	ND ND ND ND ND ND	Ň	UG/L UG/L UG/L UG/L UG/L UG/L	1 1 1 1 1
Metribuzin Alachlor Metolachlor Chlorpyrifos Cyanazine Pendimethalin		0.222 0.222 0.222 0.222 0.222 0.222 0.222	0.222 0.222 0.222 0.222 0.222 0.222 0.222	ND ND ND ND ND	、	UG/L UG/L UG/L UG/L UG/L UG/L	1 1 1 1 1 1

SURROGATE RECOVERIES:	Limits	Results
Triphenylphosphate	30-130	74%

Surrogate recoveries marked with '\*' indicates they are outside standard limits.

(a) DOD-QSM Accredited Analyte.

	Box 1566	62864
ARDL, INC.	400 Aviation Drive; P.O.	Mt. Vernon, Illinois

Lab Report No: 008823

Report Date: 10/07/2021

Project Name: MARK Project No:	TWAIN LF	AKE						N	Analysis ELAC Certi	:: Inorgan fied - IL1	ics 00308
ARDL No: 00882 Field ID: MTL-1 Received: 09/01	3-05 1 /2021		Sampl Samp Samp	ing Loo ling Da ling Ti	c'n: MAH ate: 09, ime: 101	KK TWAIN LAKE '01/2021 L7			Matrix Moisture	:: WATER :: NA	
Analyte	D1	9	Γοδ	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
Ammonia Nitrogen	0.0	0200	0.0300		QN	MG/L	NONE	350.1	NA	09/14/21	09166290
Nitrate as Nitrogen	0.0	0190	0.0200		DN	MG/L	NONE	GREEN	NA	09/21/21	09306361
Phosphorus	0.00	0080	0.0100		0.17	MG/L	365.2	365.2	09/23/21	09/24/21	09296347
Solids, Total Suspen	ded 6.	.67	6.67		33.3	MG/L	NONE	160.2	NA	09/07/21	09146271
Solids, Volatile Sus	pen 6.	.67	6.67		QN	MG/L	NONE	160.4	NA	09/07/21	09146274
Total Organic Carbon	0.	50	1.0		5.9	MG/L	NONE	415.1	NA	09/12/21	09246334

(a) DOD and/or NELAC Accredited Analyte.

Sample 008823-05, Inorganic Analyses

Lab Report No:	008823	Re	port Date:	: 09/08/	2021		
Project Name: Project No.: NELAC Certi:	MARK TWAIN LAKE fied - IL100308	An Analytical Prep	alysis: NH Method: 82 Method: 35	P PESTICIE 270C 510C	DES (827	/OSIM-MO	D)
Field ID:	MTL-12		ARDL 1	Lab No.:	00882	23-06	
Desc/Location:	MARK TWAIN LAKE		Lab F:	ilename:	E0903	3112	
Sample Date:	09/01/2021		Receiv	ved Date:	09/01	1/2021	
Sample Time:	1000		Prep.	Date:	09/02	2/2021	
Matrix:	WATER		Analy	sis Date:	09/03	3/2021	
Amount Used:	900 mL		Instr	ument ID:	AG5		
Final Volume:	1 mL		QC Ba	tch:	B113	93	
<pre>% Moisture:</pre>	NA		Level	:	LOW		
					Data	· · · · ·	Dilution
Parameter		LOD	LOQ	Result	Flag	Units	Factor
Trifluralin		0.222	0.222	ND		UG/L	1
Atrazine		0.222	0.222	0.933		UG/L	1
Metribuzin		0.222	0.222	ND		UG/L	1
Alachlor		0.222	0.222	ND		UG/L	1
Metolachlor		0.222	0.222	2.70		UG/L	1
Chlorpyrifos		0.222	0.222	ND		UG/L	1
Cyanazine		0.222	0.222	ND		UG/L	1
Pendimethalin		0.222	0.222	ND		UG/L	1
	EDIEC.		mita		Po	aulta	· · · · · · · · · · · · · · · · · · ·
SOUVOGHIE VECOA	erzeo:	1 با	.mitto		re re	ourco	

Surrogate recoveries marked with '\*' indicates they are outside standard limits.

30-130

(a) DOD-QSM Accredited Analyte.

Triphenylphosphate

Page 1 of 1

73%

400 Aviation Drive; P.O. Box 1566 Mt. Vernon, Illinois 62864 ARDL, INC.

> 008823 Lab Report No:

MARK TWAIN LAKE

Project Name:

Report Date: 10/07/2021

Analysis: Inorganics

I

1

Project No:							Z	ELAC Certi	fied - IL	00308
ARDL No: 008823-0 Field ID: MTL-12 Received: 09/01/20	6 21	Samp] Samp Samp	ling Loc pling Da pling Ti	'n: MARI tte: 09/( me: 100(	K TWAIN LAKE 01/2021			Matrix Moisture	: WATER : NA	
Analyte	TOD	ГОО	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
(a) Iron	0.0400	0.0500		0.579	MG/L	3010A	6010C	09/15/21	09/21/21	P7616
(a) Manganese	0.00400	0.00500		0.175	MG/L	3010A	6010C	09/15/21	09/21/21	P7616
Ammonia Nitrogen	0.0200	0.0300		0.0455	MG/L	NONE	350.1	NA	09/14/21	09166290
Nitrate as Nitrogen	0.0190	0.0200		0.020	MG/L	NONE	GREEN	NA	09/21/21	09306361
Phosphorus	0.00800	0.0100		0.096	MG/L	365.2	365.2	09/23/21	09/24/21	09296347
Solids, Total Suspended	4.00	4.00		11.2	MG/L	NONE	160.2	NA	09/07/21	09146271
Solids, Volatile Suspen	4.00	4.00		ND	MG/L	NONE	160.4	NA	09/07/21	09146274
Total Organic Carbon	0.50	1.0		7.7	MG/L	NONE	415.1	NA	09/12/21	09246334

NA

NONE

MG/L

7.7

1.0

0.50

Total Organic Carbon

(a) DOD and/or NELAC Accredited Analyte.

Sample 008823-06, Inorganic Analyses

Lab Report No: 008823

Report Date: 09/08/2021

Project Name: Project No.:	MARK TWAIN LAKE	Ana Analytical M	lysis: NH Method: 82	PESTICIE 270C	DES (827	0SIM-MO	D)
NELAC Certi	fied - IL100308	Prep M	Method: 35	510C			
Field ID:	MTL-15-0		ARDL 1	Lab No.:	00882	23-07	
Desc/Location:	MARK TWAIN LAKE		Lab F:	ilename:	E0903	3113	
Sample Date:	09/01/2021		Receiv	ved Date:	09/01	L/2021	
Sample Time:	1315		Prep.	Date:	09/02	2/2021	
Matrix:	WATER		Analys	sis Date:	09/03	3/2021	
Amount Used:	1000 mL		Instru	ument ID:	AG5		
Final Volume:	1 mL		QC Bat	cch:	B1139	93	
% Moisture:	NA		Level	:	LOW		
					Data		Dilution
Parameter		LOD	LOQ	Result	Flag	Units	Factor
Trifluralin		0.200	0.200	ND		UG/L	1
Atrazine		0.200	0.200	0.780		UG/L	1
Metribuzin		0.200	0.200	ND		UG/L	1
Alachlor		0.200	0.200	ND		UG/L	1
Metolachlor		0.200	0.200	2.11		UG/L	1
Chlorpyrifos		0.200	0.200	ND		UG/L	1
Cyanazine		0.200	0.200	ND		UG/L	1
Pendimethalin		0.200	0.200	ND		UG/L	1

SURROGATE RECOVERIES:	Limits	Results
Triphenylphosphate	30-130	61%

Surrogate recoveries marked with '\*' indicates they are outside standard limits.

(a) DOD-QSM Accredited Analyte.

008823 Lab Report No: Project Name: MARK TWAIN LAKE

Report Date: 10/07/2021

Analysis: Inorganics

Project No:								Z	ELAC Certi	fied - ILl	00308
ARDL No: Field ID: 1 Received:	008823-07 MTL-15-0 09/01/202		Sampl Samp Samp	ing Loc ling Da ling Ti	'n: MARE te: 09/( me: 131	K TWAIN LAKE 01/2021 5			Matrix Moisture	:: WATER :: NA	
Analyt	υ	LOD	LOQ	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
Ammonia Nitrogei	u u	0.0200	0.0300		QN	MG/L	NONE	350.1	NA	09/14/21	09166290
Chlorophyll-a, (	Correcte	1.00	1.00		20.0	MG/CU.M.	10200H	10200H	09/02/21	09/27/21	09296349
Nitrate as Nitro	ogen	0.0190	0.0200		ND	MG/L	NONE	GREEN	NA	09/21/21	09306361
Pheophytin-a	I	1.00	1.00		1.6	MG/CU.M.	10200H	10200H	09/02/21	09/27/21	09296349
Phosphorus		0.00800	0.0100		0.0441	MG/L	365.2	365.2	09/23/21	09/24/21	09296347
Solids, Total St	uspended	4.00	4.00		4.8	MG/L	NONE	160.2	NA	09/07/21	09146271
Solids, Volatile	e Suspen	4.00	4.00		DN	MG/L	NONE	160.4	NA	09/07/21	09146274
Total Organic Ci	arbon	0.50	1.0		8.0	MG/L	NONE	415.1	NA	09/12/21	09246334

(a) DOD and/or NELAC Accredited Analyte.

Sample 008823-07, Inorganic Analyses

Lab Report No: 008823

Report Date: 09/08/2021

Project Name:	MARK TWAIN LAKE	An	alysis: NE	PESTICIE	DES (827	OSIM-MO	D)
NELAC Certi:	fied - IL100308	Prep	Method: 35	510C			
Field ID:	MTL-22-0		ARDL I	lab No.:	00882	23-08	
Desc/Location:	MARK TWAIN LAKE		Lab Fi	lename:	E0903	3114	
Sample Date:	09/01/2021		Receiv	ved Date:	09/01	/2021	
Sample Time:	1200		Prep.	Date:	09/02	2/2021	
Matrix:	WATER		Analys	sis Date:	09/03	3/2021	
Amount Used:	1000 mL		Instru	ument ID:	AG5		
Final Volume:	1 mL		QC Bat	ch:	B1139	93	
<pre>% Moisture:</pre>	NA		Level	:	LOW		
		· · · · ·			Data		Dilution
Parameter		LOD	LOQ	Result	Flag	Units	Factor
Trifluralin		0.200	0.200	ND		UG/L	1
Atrazine		0.200	0.200	0.620		UG/L	1
Metribuzin		0.200	0.200	ND		UG/L	1
Alachlor		0.200	0.200	ND		UG/L	1
Metolachlor		0.200	0.200	2.03		UG/L	1
Chlorpyrifos		0.200	0.200	ND		UG/L	1
Cyanazine		0.200	0.200	ND		UG/L	1
Pendimethalin		0.200	0.200	ND		UG/L	1
SURROGATE RECOV	ERIES:	Li	mits		Rea	sults	

Surrogate recoveries marked with '\*' indicates they are outside standard limits.

30-130

(a) DOD-QSM Accredited Analyte.

Triphenylphosphate

53%

	Box 1566	62864
ARDL, INC.	400 Aviation Drive; P.O.	Mt. Vernon, Illinois

Lab Report No: 008823

Report Date: 10/07/2021

Project Name: Project No:	MARK TWAI	IN LAKE						Z	Analysis ELAC Certi	: Inorga fied - IL	nics L00308
ARDL No: Field ID: Received:	008823-08 MTL-22-0 09/01/202	21	Samp] Samr Samr	ling Loc ling Da ling Ti	'n: MARK tte: 09/0 me: 1200	K TWAIN LAKE 11/2021			Matrix Moisture	: WATER : NA	
Analy	e e	LOD	LOQ	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
Ammonia Nitrog	en	0.0200	0.0300		QN	MG/L	NONE	350.1	NA	09/14/21	09166290
Chlorophyll-a,	Correcte	1.00	1.00		23.6	MG/CU.M.	10200H	10200H	09/02/21	09/27/21	09296349
Nitrate as Nit	rogen	0.0190	0.0200		0.035	MG/L	NONE	GREEN	NA	09/21/21	09306361
Pheophytin-a		1.00	1.00		1.8	MG/CU.M.	10200H	10200H	09/02/21	09/27/21	09296349
Phosphorus		0.00800	0.0100		0.0355	MG/L	365.2	365.2	09/23/21	09/24/21	09296347
Solids, Total S	Suspended	4.00	4.00		DN	MG/L	NONE	160.2	NA	09/07/21	09146271
Solids, Volati	le Suspen	4.00	4.00		DN	MG/L	NONE	160.4	NA	09/07/21	09146274
Total Organic (	Carbon	0.50	1.0		8.0	MG/L	NONE	415.1	NA	09/12/21	09246334

(a) DOD and/or NELAC Accredited Analyte.

Sample 008823-08, Inorganic Analyses

Lab Report No: 008823

MARK TWAIN LAKE

Project Name:

Report Date: 10/07/2021

Analysis: Inorganics

io:							4	NELAC Certi	fied - IL	00308
8-03	6 10	Samp] Samr	ling Loc oling Da	c'n: MAR ate: 09/	K TWAIN LAKE 01/2021			Matrix Moisture	K: WATER B: NA	
202	21	Sam	pling Ti	ime: 121	CL CL					
	LOD	гоб	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
	0.0400	0.0500	ţ	2.30	MG/L	3010A	6010C	09/15/21	09/21/21	P7616
	0.00400	0.00500		0.569	MG/L	3010A	6010C	09/15/21	09/21/21	P7616
	0.0200	0.0300		0.184	MG/L	NONE	350.1	NA	09/14/21	0916629
	0.0190	0.0200		0.556	MG/L	NONE	GREEN	NA	09/21/21	0930636
	0.00800	0.0100		0.247	MG/L	365.2	365.2	09/23/21	09/24/21	0929634
ded	4.00	4.00		14.0	MG/L	NONE	160.2	NA	09/07/21	09146273
nen	4.00	4.00		ND	MG/L	NONE	160.4	NA	09/07/21	09146274
	0.50	1.0		7.2	MG/L	NONE	415.1	NA	09/12/21	09246334

(a) DOD and/or NELAC Accredited Analyte.

Sample 008823-09, Inorganic Analyses

Lab Report No: 008823 Report Date: 09/08/2021 Project Name: MARK TWAIN LAKE Analysis: NP PESTICIDES (8270SIM-MOD) Project No.: Analytical Method: 8270C NELAC Certified - IL100308 Prep Method: 3510C Field ID: MTL-33-0 ARDL Lab No.: 008823-10 Desc/Location: MARK TWAIN LAKE Lab Filename: E0903115 Received Date: 09/01/2021 Sample Date: 09/01/2021 Sample Time: 1359 Prep. Date: 09/02/2021 Matrix: WATER Analysis Date: 09/03/2021 Amount Used: 1000 mL Instrument ID: AG5 Final Volume: 1 mL QC Batch: B11393 Level: LOW % Moisture: NA Data Dilution LOD LOQ Result Flaq Units Factor Parameter 0.200 0.200 ND UG/L 1 Trifluralin 0.200 0.200 0.910 UG/L Atrazine 1 Metribuzin 0.200 0.200 ND UG/L 1 0.200 0.200 ND UG/L 1 Alachlor 1 Metolachlor 0.200 0.200 2.73 UG/L ND 1 Chlorpyrifos 0.200 0.200 UG/L UG/L 0.200 0.200 ND 1 Cyanazine Pendimethalin 0.200 0.200 ND UG/L 1 Results SURROGATE RECOVERIES: Limits

Surrogate recoveries marked with '\*' indicates they are outside standard limits.

30-130

(a) DOD-QSM Accredited Analyte.

Triphenylphosphate

Page 1 of 1

778

Box 1566 62864 400 Aviation Drive; P.O. Mt. Vernon, Illinois ARDL, INC.

> 008823 Lab Report No:

10/07/2021 Report Date:

Project Name: Project No:	MARK TWA	IN LAKE						N	Analysis ELAC Certi	: Inorgan fied - ILl	ics 00308
ARDL No: Field ID: Received:	008823-1 MTL-33-0 09/01/20	21	Sampj Samr Samr	ling Loc pling Da pling Ti	'n: MARK te: 09/0 me: 1359	K TWAIN LAKE 01/2021			Matrix Moisture	: WATER : NA	
Analyt	Ø	LOD	ГОО	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
Ammonia Nitroge	en	0.0200	0.0300		DN	MG/L	NONE	350.1	NA	09/14/21	09166290
Chlorophyll-a,	Correcte	1.00	1.00		24.0	MG/CU.M.	10200H	10200H	09/02/21	09/27/21	9296349
Nitrate as Nitr	rogen	0.0190	0.0200		ND	MG/L	NONE	GREEN	NA	09/21/21	09306361
Pheophytin-a		1.00	1.00		1.5	MG/CU.M.	10200H	10200H	09/02/21	09/27/21	9296349
Phosphorus		0.00800	0.0100		0.0398	MG/L	365.2	365.2	09/23/21	09/24/21	09296347
Solids, Total 5	Suspended	4.00	4.00		4.4	MG/L	NONE	160.2	NA	09/07/21	09146271
Solids, Volatil	le Suspen	4.00	4.00		4.0	MG/L	NONE	160.4	NA	09/07/21	9146274
Total Organic C	Carbon	0.50	1.0		8.0	MG/L	NONE	415.1	NA	09/12/21 (	9246334

(a) DOD and/or NELAC Accredited Analyte.

Sample 008823-10, Inorganic Analyses

Lab Report No: 008823 Re
Project Name: MARK TWAIN LAKE An

Report Date: 09/08/2021

Project Name:	MARK TWAIN LAKE	An	alysis: NI	P PESTICII	DES (827	OSIM-MO	D)
Project No.:		Analytical	Method: 82	270C			
NELAC Certi:	fied - IL100308	Prep	Method: 3	510C			
Field ID:	MTL-66-0		ARDL 1	Lab No.:	00882	23-11	
Desc/Location:	MARK TWAIN LAKE		Lab F:	ilename:	E0903	3116	
Sample Date:	09/01/2021		Receiv	ved Date:	09/01	/2021	
Sample Time:	1300		Prep.	Date:	09/02	2/2021	
Matrix:	WATER		Analy	sis Date:	09/03	3/2021	
Amount Used:	900 mL		Instru	ument ID:	AG5		
Final Volume:	l mL		QC Bat	tch:	B1139	93	
% Moisture:	NA		Level	:	LOW		
					Data		Dilution
Parameter		LOD	LOQ	Result	Data Flag	Units	Dilution Factor
Parameter		LOD	LOQ	Result	Data Flag	Units	Dilution Factor
Parameter Trifluralin		LOD 0.222	LOQ 0.222	Result	Data Flag	Units UG/L	Dilution Factor 1
Parameter Trifluralin Atrazine		LOD 0.222 0.222	LOQ 0.222 0.222	Result ND 0.878	Data Flag	Units UG/L UG/L	Dilution Factor 1 1
Parameter Trifluralin Atrazine Metribuzin		LOD 0.222 0.222 0.222	LOQ 0.222 0.222 0.222	Result ND 0.878 ND	Data Flag	Units UG/L UG/L UG/L	Dilution Factor 1 1 1
Parameter Trifluralin Atrazine Metribuzin Alachlor		LOD 0.222 0.222 0.222 0.222	LOQ 0.222 0.222 0.222 0.222	Result ND 0.878 ND ND	Data Flag	Units UG/L UG/L UG/L UG/L	Dilution Factor 1 1 1 1
Parameter Trifluralin Atrazine Metribuzin Alachlor Metolachlor		LOD 0.222 0.222 0.222 0.222 0.222	LOQ 0.222 0.222 0.222 0.222 0.222	Result ND 0.878 ND ND 2.31	Data Flag	Units UG/L UG/L UG/L UG/L UG/L	Dilution Factor 1 1 1 1 1 1
Parameter Trifluralin Atrazine Metribuzin Alachlor Metolachlor Chlorpyrifos		LOD 0.222 0.222 0.222 0.222 0.222 0.222 0.222	LOQ 0.222 0.222 0.222 0.222 0.222 0.222 0.222	Result ND 0.878 ND ND 2.31 ND	Data Flag	Units UG/L UG/L UG/L UG/L UG/L UG/L	Dilution Factor 1 1 1 1 1 1 1 1 1
Parameter Trifluralin Atrazine Metribuzin Alachlor Metolachlor Chlorpyrifos Cyanazine		LOD 0.222 0.222 0.222 0.222 0.222 0.222 0.222 0.222	LOQ 0.222 0.222 0.222 0.222 0.222 0.222 0.222 0.222	Result ND 0.878 ND ND 2.31 ND ND	Data Flag	Units UG/L UG/L UG/L UG/L UG/L UG/L UG/L	Dilution Factor 1 1 1 1 1 1 1 1 1 1
Parameter Trifluralin Atrazine Metribuzin Alachlor Metolachlor Chlorpyrifos Cyanazine Pendimethalin		LOD 0.222 0.222 0.222 0.222 0.222 0.222 0.222 0.222 0.222	LOQ 0.222 0.222 0.222 0.222 0.222 0.222 0.222 0.222 0.222 0.222	Result ND 0.878 ND ND 2.31 ND ND ND	Data Flag	Units UG/L UG/L UG/L UG/L UG/L UG/L UG/L	Dilution Factor 1 1 1 1 1 1 1 1 1 1 1 1
Parameter Trifluralin Atrazine Metribuzin Alachlor Metolachlor Chlorpyrifos Cyanazine Pendimethalin		LOD 0.222 0.222 0.222 0.222 0.222 0.222 0.222 0.222 0.222	LOQ 0.222 0.222 0.222 0.222 0.222 0.222 0.222 0.222 0.222	Result ND 0.878 ND 2.31 ND ND ND ND	Data Flag	Units UG/L UG/L UG/L UG/L UG/L UG/L UG/L	Dilution Factor 1 1 1 1 1 1 1 1 1 1

SURROGATE RECOVERIES:	Limits	Results
Triphenylphosphate	30-130	63%

Surrogate recoveries marked with '\*' indicates they are outside standard limits.

(a) DOD-QSM Accredited Analyte.

008823 Lab Report No:

Report Date: 10/07/2021

Project Name: MARK TWA Project No:	IN LAKE						Z	Analysis ELAC Certi	: Inorgan fied - IL1	ics 00308
ARDL No: 008823-11 Field ID: MTL-66-0 Received: 09/01/202	21	Sampl Samp Samp	ing Loc' ling Date ling Time	n: MARK e: 09/01/ e: 1300	TWAIN LAKE /2021			Matrix Moisture	: WATER : NA	
Analyte	LOD	LOQ	Flag 1	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
Ammonia Nitrogen Chlorophyll-a, Correcte Nitrate as Nitrogen Pheophytin-a Phosphorus Solids, Total Suspended Solids, Volatile Suspen Total Organic Carbon	0.0200 1.00 0.0190 1.00 0.00800 4.00 4.00	0.0300 1.00 0.0200 1.00 4.00 4.00 1.0		ND 19.1 ND 3.8 3.8 4.8 ND 8.1	MG/L MG/CU.M. MG/L MG/L MG/L MG/L MG/L MG/L	NONE 10200H NONE 10200H 365.2 NONE NONE NONE	350.1 10200H GREEN 10200H 365.2 160.2 160.4 415.1	NA 09/02/21 NA 09/02/21 09/23/21 NA NA	09/14/21 09/27/21 09/21/21 09/27/21 09/07/21 09/07/21 09/12/21	09166290 09296349 09206349 09296349 09296347 09146271 09146274 09146274

(a) DOD and/or NELAC Accredited Analyte.

Sample 008823-11, Inorganic Analyses

Lab Report No: 008823 Report Date: 09/08/2021 Project Name: MARK TWAIN LAKE Analysis: NP PESTICIDES (8270SIM-MOD) Project No.: Analytical Method: 8270C NELAC Certified - IL100308 Prep Method: 3510C Field ID: MTL-77-0 ARDL Lab No.: 008823-12 Desc/Location: MARK TWAIN LAKE Lab Filename: E0903117 Sample Date: 09/01/2021 Received Date: 09/01/2021 Sample Time: 1326 Prep. Date: 09/02/2021 Matrix: WATER Analysis Date: 09/03/2021 Amount Used: 1000 mL Instrument ID: AG5 Final Volume: 1 mL QC Batch: B11393 % Moisture: NA Level: LOW Data Dilution Parameter LOD LOQ Result Flag Units Factor Trifluralin 0.200 0.200 UG/L ND 1 Atrazine 0.200 0.200 0.830 UG/L 1 Metribuzin 0.200 0.200 ND UG/L 1 Alachlor 0.200 0.200 ND UG/L 1 Metolachlor 0.200 0.200 2.10 UG/L 1 Chlorpyrifos 0.200 0.200 ND 1 UG/L Cyanazine 0.200 0.200 ND UG/L 1 Pendimethalin 0.200 0.200 ND UG/L 1 SURROGATE RECOVERIES: Limits Results

Surrogate recoveries marked with '\*' indicates they are outside standard limits.

30-130

(a) DOD-QSM Accredited Analyte.

Triphenylphosphate

Sample 008823-12, NP PESTICIDES (8270SIM-MOD)

Page 1 of 1

67%
008823 Lab Report No:

Report Date: 10/07/2021

Project Name: Project No:	MARK TWA	IN LAKE						Z	Analysis ELAC Certi	:: Inorgan fied - ILl	ics 00308
ARDL No: Field ID: Received:	008823-1: MTL-77-0 09/01/202	2	Samp] Samr Samr	ling Loc pling Da pling Ti	'n: MARK te: 09/0 me: 1326	t TWAIN LAKE 1/2021			Matrix Moisture	C: WATER S: NA	
Analyt	Φ	гор	ГОД	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
Ammonia Nitroge	Ë	0.0200	0.0300		0.0396	MG/L	NONE	350.1	NA	09/14/21	09166290
Chlorophyll-a,	Correcte	1.00	1.00		15.4	MG/CU.M.	10200H	10200H	09/02/21	09/27/21	9296349
Nitrate as Nitr	ogen	0.0190	0.0200		ND	MG/L	NONE	GREEN	NA	09/21/21	9306361
Pheophytin-a		1.00	1.00		3.6	MG/CU.M.	10200H	10200H	09/02/21	09/27/21	9296349
Phosphorus		0.00800	0.0100		0.0441	MG/L	365.2	365.2	09/23/21	09/24/21	9296347
Solids, Total S	uspended	4.00	4.00		4.8	MG/L	NONE	160.2	NA	09/07/21	9146271
Solids, Volatil	e Suspen	4.00	4.00		ND	MG/L	NONE	160.4	NA	09/07/21	9146274
Total Organic C	arbon	0.50	1.0		7.9	MG/L	NONE	415.1	NA	09/12/21 (	9246335

(a) DOD and/or NELAC Accredited Analyte.

Sample 008823-12, Inorganic Analyses

	te: 10/07/2021	ils: Inorganics tified - IL100308	ix: WATER ire: NA	Analysis Run Date Number	09/01/21 09036223	
	Report Da	Analys NELAC Cer	Matr Moistu	Prep Date	NA	
Q	I	И		Analysis Method	1604	
Box 156 62864				Prep Method	NONE	
DL, INC. rive; P.O. Illinois			K TWAIN LAKE 01/2021 3	Units	COL/100 ML	
AR Lation D Vernon,			c'n: MARU ate: 09/( ime: 124:	Result	24.0	
400 Av: Mt.			pling Loo mpling Da mpling Ta	Flag		
			Sam Sa Sa	LOQ	1.00	
	. 008823	RK TWAIN LAKE	8823-13 MARINA /01/2021	LOD	1.00	
	Lab Report Nc	Project Name: MP Project No:	ARDL No: 00 Field ID: IC Received: 09	Analyte	E. Coliform	

(a) DOD and/or NELAC Accredited Analyte.

Sample 008823-13, Inorganic Analyses

ж 1566 .864	Report Date: 10/08/2021	Analysis: Inorganics NELAC Certified - IL100308	Matrix: WATER Moisture: NA	Prep Analysis Prep Analysis Run lethod Method Date Date Number	NONE 1604 NA 09/01/21 09036223	
ARDL, INC. 400 Aviation Drive; P.O. Bo Mt. Vernon, Illinois 62			Sampling Loc'n: MARK TWAIN LAKE Sampling Date: 09/01/2021 Sampling Time: 1705	LOQ Flag Result Units M	1.00 9.0 COL/100 ML	
	Lab Report No: 008823	Project Name: MARK TWAIN LAKE Project No:	ARDL No: 008823-14 Field ID: BJ-MARINA Received: 09/01/2021	Analyte LOD	E. Coliform 1.00	

(a) DOD and/or NELAC Accredited Analyte.

Sample 008823-14, Inorganic Analyses

#### METHOD BLANK REPORT ARDL, Inc. 400 Aviation Drive; P.O. Box 1566 Mt. Vernon, Illinois 62864

Lab Report No: 008823

Report Date: 09/08/2021

Project Name: Project No.: NELAC Certi:	MARK TWAIN LAKE fied - IL100308	Analy Analytical Met Prep Met	sis: NP PEST hod: 8270C hod: 3510C	ICIDES (82	270SIM-MC	D)
Field ID:	NA		ARDL Lab No	0088	323-01B1	
Desc/Location:	NA		Lab Filenam	ne: E090	03103	
Sample Date:	NA		Received Da	te: NA		
Sample Time:	NA		Prep. Date:	09/0	02/2021	
Matrix:	QC Material		Analysis Da	ate: 09/0	03/2021	
Amount Used:	1000 mL		Instrument	ID: AG5		
Final Volume:	1 mL		QC Batch:	B113	393	
<pre>% Moisture:</pre>	NA		Level:	LOW		
					Data	
Parameter		LOD	LOQ	Result	Flag	Units
Trifluralin		0.200	0.200	ND		UG/L
Atrazine		0.200	0.200	ND		UG/L
Metribuzin		0.200	0.200	ND		UG/L
Alachlor		0.200	0.200	ND		UG/L
Metolachlor		0.200	0.200	ND		UG/L
Chlorpyrifos		0.200	0.200	ND		UG/L
Cyanazine		0.200	0.200	ND		UG/L
Pendimethalin		0.200	0.200	ND		UG/L
SURROGATE RECOV	ERIES:	Limit	S	R	esults	
Triphenylphosph	ate	30-13	30		698	

Surrogate recoveries marked with '\*' indicates they are outside standard limits.

(a) DOD-QSM Accredited Analyte.

Blank for Run B11393, NP PESTICIDES (8270SIM-MOD)

62864 Mt. Vernon, IL 400 Aviation Drive; P.O. Box 1566 BLANK SUMMARY REPORT ARDL, INC.

Lab Report No: 008823

Report Date: 10/07/2021

Project Name: MARK TWAIN LAKE

NELAC Certified - IL100308

			Blank		Prep	Analysis	Prep	Analysis		QC Lab
Analyte	LOD	LOQ	Result	Units	Method	Method	Date	Date	Run	Number
(a) Iron	0.040	0.050	QN	MG/L	3010A	6010C	09/15/21	09/21/21	P7616	008823-01B1
(a) Manganese	0.004	0.005	ND	MG/L	3010A	6010C	09/15/21	09/21/21	P7616	008823-01B1
Ammonia Nitrogen	0.020	0.030	ND	MG/L	NONE	350.1	NA	09/14/21 (	09166290	008823-01B1
Chlorophyll-a, Corre	1.0	1.0	ND	MG/CU.M.	10200H	10200H	09/02/21	09/27/21 (	09296349	008823-07B1
Nitrate as Nitrogen	0.019	0.020	DN	MG/L	NONE	GREEN	NA	09/21/21 (	09306361	008823-02B1
Pheophytin-a	1.0	1.0	ND	MG/CU.M.	10200H	10200H	09/02/21	09/27/21 (	09296349	008823-07B1
Phosphorus	0.008	0.010	ND	MG/L	365.2	365.2	09/23/21	09/24/21 (	09296347	008823-03B1
Solids, Total Suspen	1.0	1.0	DN	MG/L	NONE	160.2	NA	09/07/21 (	09146271	008823-01B1
Solids, Volatile Sus	1.0	1.0	DN	MG/L	NONE	160.4	NA	09/07/21 (	09146274	008823-01B1
Total Organic Carbon	0.50	1.0	QN	MG/L	NONE	415.1	NA	09/12/21 (	09246334	008823-01B1
Total Organic Carbon	0.50	1.0	DN	MG/L	NONE	415.1	NA	09/12/21 (	09246335	008823-11B1

(a) DOD and/or NELAC Accredited Analyte Inorganic Method Blanks for 008823

	ARDL, 1	INC.	400	Aviation	Drive;	P.O. B(	ox 1566	Mt. Ve	rnon,	IL 62864	
Lab Report No: 0	108823								Re	sport Date:	09/08/2021
Project Name: MAR Project No.:	K TWAIN LAKE		Anal	ysis: NP H	ESTICIDE	IS (8270SI	(M-MOD)	Anal	rtical N Prep N	<pre>lethod: 8270 lethod: 3510</pre>	00
Matrix: QC Amount Used: 10	: Material 00 mL			QC Batch: Level:	B113 LOW	393		Prep. I Analys:	Date: Is Date:	09/02/2021 09/03/2021	
		Sp	ike	Spike	Spike	Duplicate	Duplicate	Duplicate	Recovery		RPD
Param	eter	Res	ult	Level	% Rec	Result	Level	% Rec	Limits	RPD	Limit
Triflur	calin	.е	38	4	85	;	1	1	30-130	1	
Atraz	zine	с. С	49	4	87	+	!	****	30-130		
Metrik	nzin	С	55	4	89		1	-	30-130	;	
Alach	lor	m	۲.	4	93	ł		1	30-130		
Metolac	chlor	3.	41	4	85		1	1	30-130	1	-
Chlorpy	/rifos	e	.3	4	83	ł			30-130	1	
Cyana2	zine	 π	76	4	94		1	1	30-130		1
Pendimet	chalin	е С	57	4	89	1	1	5 8	30-130	ł	
	SURROG	SATE RECOV	VERIES:		Spike	%R Dupli	Lcate %R	&R Limits			
	Triphe	enylphospl	hate		.77.	5	-	30-130			

BLANK SPIKE/SPIKE DUPLICATE REPORT

(a) DOD-QSM Accredited Analyte.

'\*' indicates a recovery outside of standard limits.

Spike Blanks for 008823-01, NP PESTICIDES (8270SIM-MOD)

ARI	DL, INC.	400 Av	LABURA riation	LUKI C Drive	DNTRUT	BOX 1	L566	Mt. V∈	rnon, IL	62864
Lab Report No: 00	8823								Report Da	te: 10/07/2021
Project Name:	MARK TWAI	N LAKE							NELAC Cer	tified - IL100308
Analyte	LCS 1 Result	LCS 1 Level	LCS 1 % Rec	LCS 2 Result	LCS 2 Level	LCS 2 % Rec	% Rec Limits	Mean % Rec	Analytical Run	QC Iab Number
(a) Iron	5.0	5.0	100		;	1	87-115		P7616	008823-01C1
(a) Manganese	0.78	0.75	104	ł	ł	ł	90-114		P7616	008823-01C1
Ammonia Nitrogen	0.97	1.0	57	ł	ł	1	80-120	!	09166290	008823-01C1
Nitrate as Nitrogen	0.94	1.0	94	*	1	ł	80-120	-	09306361	008823-02C1
Phosphorus	0.68	0.67	101	1	ł	1	80-120	ł	09296347	008823-03C1
Total Organic Carbon	20.4	20.0	102	1	4	:	76-120	ł	09246334	008823-01C1
Total Organic Carbon	20.8	20.0	104	1	!	1	76-120	ł	09246335	008823-11C1
NOTE: Any values t (a) DOD and/or NEI	tabulated above m LAC Accredited An	arked with alyte	an asteris	k are outs	ide of acc	eptable li	imits.			

<b>ARDI, I</b> Lab Report No: 008823	NC.	MATRIX SP 400 Aviat	IKE/SP] ion Dri	IKE DUPLI ive; P.O.	LCATE REP( Box 156	ORT 6 Mt	Vernon,	, <b>IL</b> ( Report	<b>62864</b> Date: (	09/08/2021
Project Name: MARK TWAIN LAKE Project No.:		Analysis:	NP PESTI	CCIDES (82	70SIM-MOD)		Analytical Prep	Method Method	l: 8270C l: 3510C	
Field ID: MTL-1 Desc/Location: MARK TWAIN LAKE		Prep. Amoun	Date: t Used:	09/02/202 900 mL		AR La	DL Lab No. o Filename	: 0088	23-01	
Sample Date: 09/01/2021 Sample Time: 1050 Matrix: WATER		% Moi QC Ba Level	sture: tch: .:	NA B11393 LOW		An	ceived Dat alysis Dat	e: 09/0 e: 09/0	1/2021 3/2021	
	Sample	SM	SM	WS	USM	MSD	MSD	% Rec		RPD
Parameter	Result	Result	Level	% Rec	Result	Level	% Rec	Limits	RPD	Limit
Trifluralin	DN	3.63	4.44	81.8	3.36	4.44	75.5	30-130	7.9	30
Atrazine	0.856	4.37	4.44	19	4.09	4.44	72.8	30-130	6.6	30
Metribuzin	ND	3.67	4.44	82.5	3.37	4.44	75.8	30-130	8.5	30
Alachlor	UN	3.76	4.44	84.5	3.66	4.44	82.3	30-130	2.7	30
Metolachlor	2.74	6.03	4.44	74	5.86	4.44	70	30-130	б	30
Chlorpyrifos	QN	3.14	4.44	70.8	2.99	4.44	67.3	30-130	5.1	30
Cyanazine	QN	3.74	4.44	84.3	3.43	4.44	77.3	30-130	8.7	30
Pendimethalin	DN	3.48	4.44	78.3	3.26	4.44	73.3	30-130	6.6	30
ATTRACEA.	TE RECOVE			MC 2B	48 USM	4 Limit 48				
				10. 011	VI0. 001	ATMITT NO	0			

(a) DOD-QSM Accredited Analyte.

'nc' indicates sample >4X spike level.

'\*' indicates a recovery outside of standard limits.

Matrix Spikes for 008823-01, NP PESTICIDES (8270SIM-MOD)

ARDL Report 8823 - Page 33 of 40

Page 1 of 1

30-130

64

67

Triphenylphosphate

62864 400 Aviation Drive; P.O. Box 1566 Mt. Vernon, IL MATRIX SPIKE/SPIKE DUPLICATE REPORT ARDL, INC.

Lab Report No: 008823

MARK TWAIN LAKE

Project Name:

Report Date: 10/07/2021

- IL100308 NELAC Certified

	Sample	Sample	SM	SM	SM	MSD	MSD	MSD	% Rec		RPD		QC Lab
Analyte	Matrix	Result	Result	Level	% Rec	Result	Level	% Rec	Limíts	RPD	Limit	Run	Number
(a) Iron	WATER	0.25	1.2	1.0	66	1.3	1.0	100	87-115	Ч	20	P7616	008823-01MS
(a) Manganese	WATER	0.12	0.62	0.50	100	0.63	0.50	102	90-114	7	20	P7616	008823-01MS
Ammonia Nitrogen	WATER	QN	2.1	2.0	103	2.1	2.0	105	75-125	2	20	09166290	008823-01MS
Nitrate as Nitrogen	WATER	QN	0.76	1.0	76	0.74	1.0	74 *	75-125	7	20	09306361	008823-02MS
Phosphorus	WATER	0.11	0.96	0.83	103	0.97	0.83	105	75-125	7	20	09296347	008823-03MS
Total Organic Carbon	WATER	6.6	11.8	5.0	104	11.7	5.0	102	76-120	1	20	09246334	008823-01MS
Total Organic Carbon	WATER	8.1	13.1	5.0	100	13.1	5.0	100	76-120	0	20	09246335	008823-11MS

NOTE: Values tabulated above marked with an asterisk are explained in the associated narrative.

(a) DOD and/or NELAC Accredited Analyte.

Inorganic Matrix Spikes for 008823

864	10/07/2021	ied - IL100308	QC Lab Number	008823-07D1 008823-07D1 008823-01D1 008823-01D1
on, IL 62	Report Date:	NELAC Certif	Analytical Run	09296349 09146271 09146274 09146274
. Mt. Vern			Mean (Smp,D1,D2)	
TE REPORT Box 1566			Percent Diff	0000
: DUPLICA .ve; P.O.			Units	MG/CU.M. MG/L MG/L
SAMPLE ation Dri			Second Duplicate	
400 Avia		KE	First Duplicate	20.0 1.6 ND ND
INC.	б	TWAIN LAN	Sample Conc'n	20.0 5.6 ND
ARDL,	Lab Report No: 00882	Project Name: MARK	Analyte	Chlorophyll-a, Corrected Pheophytin-a Solids, Total Suspended Solids, Volatile Suspend

(a) DOD and/or NELAC Accredited Analyte Sample Duplicates for 008823



# Sample Receipt Information

Including as appropriate:

- COCs
- Cooler Receipts
- Airbills
- Email Communication / Instructions from Customer

ARDL Data Package 8823

**ARDL**, **Inc.** P.O. Box 1566, 400 Aviation Drive, Mt. Vernon, IL 62864 (618) 244-3235 Phone (618) 244-1149 Fax

8823 CHAIN OF CUSTODY RECORD

PRESERVATION
PECIFY SPECIFY CHEMICALS AND FIC ADDED AND FIC FINAL PH F KNOWN
SAMPLE LOCATION
X
X
X
X
X
X
X
X
X
X
X
X
X
X
CTIONS:
CTIONS:

	COOLER RECEIPT	REPORT
ARI	DL #: <u>8823</u>	Cooler # <u>Blue 1</u> Number of Coolers in Shipment: <u>3</u>
Pro	ect: Nork Tunie Lake	Date Received: <u>09/0//202/</u>
A.	PRELIMINARY EXAMINATION PHASE: Date cooler was opened	2/2021 (Signature)
1.	Did cooler come with a shipping slip (airbill, etc.)?	YES (NO)
	If YES, enter carrier name and airbill number here: ARD (	ourier-Valerie
2.	Were custody seals on outside of cooler?	YES NO NA
	How many and where?,Seal Date:	,Seal Name:
3.	Were custody seals unbroken and intact at the date and time of arrival?	
4.	Did you screen samples for radioactivity using a Geiger Counter?	VES NO
5.	Were custody papers sealed in a plastic bag? Hand delive	Ned No
6.	Were custody papers filled out properly (ink, signed, etc.)?	
7.	Were custody papers signed in appropriate place by ARDL personnel?	ÝĒŠ NO N/A
8.	Was project identifiable from custody papers? If YES, enter project name a	t the top of this form
9.	Was a separate container provided for measuring temperature? YES	NO Observed Cooler TempOC
B.	LOG-IN PHASE: Date samples were logged-in:	_(Signature)
10.	Describe type of packing in cooler: <u>COUSE</u> <u>CE</u>	
11.	Were all samples sealed in separate plastic bags?	YES NO N/A
12.	Did all containers arrive unbroken and were labels in good condition?	YES NO
13.	Were sample labels complete?	
14.	Did all sample labels agree with custody papers?	
15.	Were correct containers used for the tests indicated?	
16.	Was pH correct on preserved water samples?	
17.	Was a sufficient amount of sample sent for tests indicated?	
18.	Were bubbles absent in VOA samples? If NO, list by sample #:	YES NO (N/A)
19.	Was the ARDL project coordinator notified of any deficiencies?	YES NO NA
	Comments and/or Corrective Action:	Sample Transfer
		A
		Area # Area #
		By By
		0cB
		0n 09/02/2021 0n
		Chain-of-Custody #
(E	By: Signature) Date:	

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	COOLER RECEIPT ARDL. INC.	<u>REPORT</u>	
ARD	L#: <u>8823</u>	Cooler # <u>Blve</u> Number of Coolers in Shipment: 3	
Proje	ect: Mark Twain Lake	Date Received: 09/01/2021	
A. <u>I</u>	PRELIMINARY EXAMINATION PHASE: Date cooler was opened: 09/0	)2/202/signature)_DCB	
1.	Did cooler come with a shipping slip (airbill, etc.)?		
	If YES, enter carrier name and airbill number here: ARDL	Courier - Valerie	
2.	Nere custody seals on outside of cooler?		)
	How many and where?,Seal Date:	:,Seal Name:	
3.	Were custody seals unbroken and intact at the date and time of arrival?		)
4.	Did you screen samples for radioactivity using a Geiger Counter?,	NO NO	
5.	Were custody papers sealed in a plastic bag?	20 YES	
6.	Were custody papers filled out properly (ink, signed, etc.)?	TES NO N/A	
7.	Were custody papers signed in appropriate place by ARDL personnel?		
8.	Was project identifiable from custody papers? If YES, enter project name a	at the top of this form	۰.
9.	Was a separate container provided for measuring temperature? YES	NO Observed Cooler Temp. 1.7 C	
В.	LOG-IN PHASE: Date samples were logged-in: 09/02/2021	_(Signature)C	
10.	Describe type of packing in cooler: LOOSC C.C.		
11.	Were all samples sealed in separate plastic bags?	YES (NO) N/	ł
12.	Did all containers arrive unbroken and were labels in good condition?		
13.	Were sample labels complete?		
14.	Did all sample labels agree with custody papers?	TES NO	
15.	Were correct containers used for the tests indicated?		
16.	Was pH correct on preserved water samples?		4
17.	Was a sufficient amount of sample sent for tests indicated?		
18.	Were bubbles absent in VOA samples? If NO, list by sample #:	YES NO (N)	$\sum$
19.	Was the ARDL project coordinator notified of any deficiencies?		4)
	Comments and/or Corrective Action:	Sample Transfer	
		All 1	
		Area # Area #	1
		By By	-
		DCB 1	
		09/02/2021 On \	
		Chain-of-Custody #	
(B	v: Signature) Date:		

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	COOLER RECEIPT	REPC	DRT			
	CO22		DIA			
ARI	DL#: 0823	Cool	er# Kld .	- 2		
		Num	ber of Coolers in Shipn	nent:		-
Pro	ect: Mark Twan Lake	Date	Received: <u>09/01/2</u>	021		
A.	PRELIMINARY EXAMINATION PHASE: Date cooler was opened: 09/02	2/202	L(Signature)			
1.	Did cooler come with a shipping slip (airbill, etc.)?			YES	NO	)
	If YES, enter carrier name and airbill number here: ARD	Jour	rier-Valerie	و		
2.	Were custody seals on outside of cooler?			YES	NO <b>(</b>	N/A
	How many and where?,Seal Date:	(	"Seal Name:		The second second second second second	i saran an a
3.	Were custody seals unbroken and intact at the date and time of arrival?			YES	NO	NA
4.	Did you screen samples for radioactivity using a Geiger Counter?	······		(ES)	) NO	
5.	Were custody papers sealed in a plastic bag? Hand define	red.		YES		
6.	Were custody papers filled out properly (ink, signed, etc.)?				NO	N/A
7.	Were custody papers signed in appropriate place by ARDL personnel?				NO	N/A
8.	Was project identifiable from custody papers? If YES, enter project name a	t the top	of this form		NO	N/A
9.	Was a separate container provided for measuring temperature? YES	NOV	Observed Cooler Temp	0.08	) ው ሮ	
В.	LOG-IN PHASE: Date samples were logged-in: 09/02/202/	(Signatu	ure) DCB			
10.	Describe type of packing in cooler: <u>LCOSe</u> (CC					
11.	Were all samples sealed in separate plastic bags?			YES	NO	N/A
12.	Did all containers arrive unbroken and were labels in good condition?			ÉS	NO	
13.	Were sample labels complete?				NO	
14.	Did all sample labels agree with custody papers?				NO	
15.	Were correct containers used for the tests indicated?			YES	NO	
16.	Was pH correct on preserved water samples?			(YES)	NO	N/A
17.	Was a sufficient amount of sample sent for tests indicated?				NO	
18.	Were bubbles absent in VOA samples? If NO, list by sample #:			YES	NO	(N/A)
19.	Was the ARDL project coordinator notified of any deficiencies?			YES	NO	(N/A)
	Comments and/or Corrective Action:		Sample '	Transfer		
			Fraction	Fraction		
			Area#	Area #		
		_	Walk-In	D		
			NOB	Бу		
		-	on 0/02/2221	On		
		-	$  \cup     \cup     \cup   \cup   \cup   \cup   \cup   \cup     \cup     \cup     \cup     \cup     \cup     \cup       \cup       \cup       \cup       \cup       \cup  $	1		
			Chain-of-Custody #			
(E	By: Signature) Date:					

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Environmental | Analytical | Management | Safety

# **Customer Name: SLCOE**

#### Project Name: Mark Twain Lake

Samples Received at ARDL: 9/29/21

PO Box 1566 400 Aviation Drive Mt. Vernon, IL 62864 618-244-3235

www.ardlinc.com

Date: 11/3/21

Lab Name: ARDL, Inc.

ARDL Report No.: 8870

Customer Sample No.	<u>Date</u> <u>Collected</u>	<u>Lab ID</u> <u>Number</u>	Analyses Requested
MTL-1	9/29/21	8870-01	NP Pesticides, Metals(1), Inorganics(2)
MTL-5	9/29/21	8870-02	NP Pesticides, Inorganics(2)
MTL-13	9/29/21	8870-03	NP Pesticides, Inorganics(2)
MTL-9	9/29/21	8870-04	NP Pesticides, Inorganics(2)
MTL-11	9/29/21	8870-05	NP Pesticides, Inorganics(2)
MTL-12	9/29/21	8870-06	NP Pesticides, Metals(1), Inorganics(2)
MTL-15-0	9/29/21	8870-07	NP Pesticides, Inorganics(2)(3)
MTL-22-0	9/29/21	8870-08	NP Pesticides, Inorganics(2)(3)
MTL-22-15	9/29/21	8870-09	Metals(1), Inorganics(2)
MTL-33-0	9/29/21	8870-10	NP Pesticides, Inorganics(2)(3)
MTL-66-0	9/29/21	8870-11	NP Pesticides, Inorganics(2)(3)
MTL-77-0	9/29/21	8870-12	NP Pesticides, Inorganics(2)(3)
IC MARINA	9/29/21	8870-13	E. Coli
<b>BJ MARINA</b>	9/29/21	8870-14	E. Coli

CASE NARRATIVE

(1) Including iron and manganese.

(2) Including ammonia, nitrate, total phosphorus, TOC, TSS and TVSS.

(3) Including chlorophyll-a and pheophytin-a.

The quality control data are summarized as follows:

# NP PESTICIDE FRACTION – METHOD 8270-SIM

# HOLDING TIME

Samples were prepared and analyzed within method specified holding times.

#### **INITIAL CALIBRATION**

The initial calibration passed criteria. The ICV passed criteria.

# CONTINUING CALIBRATION

The continuing calibration verification (CCV) passed criteria for all analytes.

#### PREPARATION BLANK

The blank met acceptance criteria.

"Test everything, keep the good" 1 Thes. 5:21

# Project Name: Mark Twain Lake

# **CASE NARRATIVE (Continued)**

## LABORATORY CONTROL SAMPLE

The LCS analyses met recovery criteria, except as noted below:

<u>Analyte</u>	LCS	<b>Recovery Limit</b>
Alachlor	149%	30-130%
Metolachlor	131%	30-130%
Cyanazine	141%	30-130%
Pendimethalin	134%	30-130%

The associated sample results are flagged with a 'Q' qualifier as appropriate. Metolachlor may be biased high in the reported results.

#### MATRIX SPIKE

The matrix spike and matrix spike duplicate met recovery criteria, except as noted below:

<u>Analyte</u>	MSD Recovery	Recovery Limit
Alachlor	136.8%	30-130%

The parent sample results are flagged with a 'J' qualifier as appropriate.

# **DUPLICATE**

Duplicate analyses are reported as MS/MSD. RPD of the duplicate analyses met criteria.

#### INTERNAL STANDARDS

All internal standard criteria were met.

#### **SURROGATES**

All surrogate recovery criteria were met.

#### **INORGANIC FRACTION**

TOC were analyzed by an accredited outside laboratory due to instrument status.

#### PREPARATION BLANK

Results of the preparation blanks were undetected.

#### LABORATORY CONTROL SAMPLE

Percent recoveries of all LCS analyses were within control limits.

#### MATRIX SPIKE

Percent recoveries of all matrix spikes and matrix spike duplicates were within control limits, except 1 of 2 for nitrate. The parent sample has been flagged appropriately with a 'J' qualifier.

#### DUPLICATE

All duplicate analyses are reported as MS/MSD except chlorophyll-a, pheophytin-a, TSS and TVSS. RPD on all duplicate analyses were within control limits.

Page 2 of 3

# Project Name: Mark Twain Lake

## ARDL Report No.: 8870

## **CASE NARRATIVE (Continued)**

#### DATA REPORTING QUALIFIERS

The following data reporting qualifiers are used as required:

- ND Indicates parameter was analyzed for but not detected.
- J Indicates an estimated value. This flag is used either when estimating a concentration or this flag indicates analyte(s) associated with a DOD-QSM specified non-compliance pertaining to matrix QC criteria.

#### REPORT ORGANIZATION

The data in this report appear by sample type (Field sample, preparation blank, laboratory control sample / spike blank, matrix spike /spike duplicate and sample duplicate). Within each sample type the data appear in the order that the analytical methods were discussed in this case narrative. Sample receipt information follows the analytical data.

Release of the data contained in this package has been authorized by the Technical Services Manager or his designee as verified by the following signature.

Dean S. Dickerson Technical Services Manager

Page 3 of 3



# Sample & QC Results

Including as appropriate: Field Sample Results Batch QC Prep Blank LCS/Spike Blank Matrix QC MS/MSD Sample Duplicate

ARDL Data Package 8870

N:\ARDL Case Narratives\ARDL Data Package Contents.pdf - Revised June 21, 2019

Authorized By: DSD-QAO

Lab Report No: 008870

Report Date: 10/19/2021

Project Name:	MARK TWAIN LAF	E A	Analysis:	NP PESTICI	DES (82	70SIM-MC	D)
Project No.:		Analytical	Method:	8270C			
NELAC Certi	fied - IL100308	Prep	Method:	3510C			
Field ID:	MTL-1		ARDI	Lab No.:	0088	70-01	
Desc/Location:	MARK TWAIN LAP	E	Lab	Filename:	E100	8105	
Sample Date:	09/29/2021		Rece	eived Date:	09/2	9/2021	
Sample Time:	1420		Prep	Date:	09/3	0/2021	
Matrix:	WATER		Anal	lysis Date:	10/0	8/2021	
Amount Used:	900 mL		Inst	rument ID:	AG5		
Final Volume:	1 mL		QC E	Batch:	B114	25	
% Moisture:	NA		Leve	el:	LOW		
					101-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1		
					Data		Dilution
Parameter		LOD	LOQ	Result	Flag	Units	Factor
Trifluralin		0.222	2 0.222	2 ND		UG/L	1
Atrazine		0.222	2 0.222	2 0.989		UG/L	1
Metribuzin		0.222	2 0.222	2 ND		UG/L	1
Alachlor		0.222	2 0.222	2 ND	J	UG/L	1
Metolachlor		0.222	2 0.222	2.76	Q	UG/L	1
Chlorpyrifos		0.222	2 0.222	2 ND		UG/L	1
Cyanazine		0.222	2 0.222	2 ND		UG/L	1
Pendimethalin		0.222	2 0.222	2 ND		UG/L	1

SURROGATE RECOVERIES:	Limits	Results
Triphenylphosphate	30-130	85%

Surrogate recoveries marked with '\*' indicates they are outside standard limits.

(a) DoD and/or NELAC Accredited Analyte.

008870 Lab Report No:

Report Date: 11/03/2021

Project Name: Project No:	MARK TWAI	IN LAKE						4	Analysis ELAC Certi	:: Inorgan fied - IL1	Lcs 00308
ARDL No: Field ID: Received:	008870-01 MTL-1 09/29/202	21	Sampl Samp Samp	ing Loc ling Da ling Tin	'n: MARK te: 09/29 me: 1420	TWAIN LAKE /2021			Matrix Moisture	:: WATER :: NA	
Analyt	Ø	LOD	ΓΟÕ	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
(a) Iron		0.0400	0.0500		0.107	MG/L	3010A	6010C	10/20/21	10/21/21	P7677
(a) Manganese		0.00400	0.00500		0.0425	MG/L	3010A	6010C	10/20/21	10/21/21	P7677
Ammonia Nitroge	ŭ	0.0200	0.0300		0.0829	MG/L	NONE	350.1	NA	10/05/21	0066389
Nitrate as Nitr	ogen	0.0190	0.0200		0.047	MG/L	NONE	GREEN	NA	10/07/21	0126400
Phosphorus		0.00800	0.0100		0.0441	MG/L	365.2	365.2	10/07/21	10/08/21	-0126414
Solids, Total S	uspended	1.0	1.0		2.6	MG/L	NONE	160.2	NA	10/04/21	.0076394
Solids, Volatil	e Suspen	2.00	2.00		DN	MG/L	NONE	160.4	NA	10/04/21	.0076395
Total Organic C	arbon	0.500	1.00		7.5	MG/L	NONE	415.1	NA	10/15/21	.0196426

(a) DOD and/or NELAC Accredited Analyte.

Sample 008870-01, Inorganic Analyses

Lab Report No: 008870

Report Date: 10/12/2021

Project Name:	MARK TWAIN LAKE	Ana	lysis: NH	PESTICII	DES (827	/OSIM-MO	D)
Project No.:		Analytical M	ethod: 82	270C			
NELAC Certi	fied - IL100308	Prep M	ethod: 35	510C			
Field TD:	MTT 5		ו זחמג	Tab No	00007	10 02	
Pleid ID:	MIL-J MADE TWAIN INFE		ARDL I	Lab NO.:	DU00	10-02	
Desc/Localion:	MARK IWAIN LAKE			Ilename:	E1000	0100	
Sample Date:	09/29/2021		Receiv	ved Date:	09/25	9/2021	
Sample Time:	1015		Prep.	Date:	09/30	)/2021	
Matrix:	WATER		Analys	sis Date:	10/08	3/2021	
Amount Used:	800 mL		Instru	ument ID:	AG5		
Final Volume:	1 mL		QC Bat	tch:	B1142	25	
<pre>% Moisture:</pre>	NA		Level	:	LOW		
					Data		Dilution
Parameter		LOD	LOQ	Result	Flag	Units	Factor
Trifluralin		0.250	0.250	ND		UG/L	1
Atrazine		0.250	0.250	0.400		UG/L	1
Metribuzin		0.250	0.250	ND		UG/L	1
Alachlor		0.250	0.250	ND		UG/L	1
Metolachlor		0.250	0.250	ND	Q	UG/L	1
Chlorpyrifos		0.250	0.250	ND		UG/L	1
Cyanazine		0.250	0.250	ND		UG/L	1
Pendimethalin		0.250	0.250	ND		UG/L	1

SURROGATE RECOVERIES:	Limits	Results	
Triphenylphosphate	30-130	83%	

Surrogate recoveries marked with '\*' indicates they are outside standard limits.

(a) DOD-QSM Accredited Analyte.

Lab Report No: 008870

Report Date: 11/03/2021

Project Name: MARK Project No:	TWAIN I	LAKE						N	Analysis ELAC Certi	: Inorgan fied - ILl	ics 00308
ARDL No: 00887 Field ID: MTL-5 Received: 09/29	0-02		Sampl Samp Samp	ing Loc ling Da ling Ta	:'n: MARK ate: 09/29 .me: 1015	TWAIN LAKE 9/2021			Matrix Moisture	: WATER : NA	
Analyte		COD	LOQ	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
Ammonia Nitrogen	0.	.0200	0.0300		0.244	MG/L	NONE	350.1	NA	10/05/21	10066389
Nitrate as Nitrogen	.0	.019	0.020	Ŀ	0.061	MG/L	NONE	GREEN	NA	10/07/21	10126400
Phosphorus	0.0	00800	0.0100		0.329	MG/L	365.2	365.2	10/07/21	10/08/21	10126414
Solids, Total Suspen	ided 6	5.67	6.67		58.7	MG/L	NONE	160.2	NA	10/04/21	10076394
Solids, Volatile Sus	pen 6	5.67	6.67		9.33	MG/L	NONE	160.4	NA	10/04/21	10076395
Total Organic Carbon	.0	.500	1.00		5.8	MG/L	NONE	415.1	NA	10/16/21	10196426

(a) DOD and/or NELAC Accredited Analyte.

Sample 008870-02, Inorganic Analyses

Lab Report No: 008870

Report Date: 10/12/2021

Project Name:	MARK TWAIN LA	4KE	A	nalysis:	NP PES	TICIDE	ES (82'	70SIM-MO	D)
Project No.:			Analytical	Method:	8270C				
NELAC Certi	fied - IL1003	38	Prep	Method:	3510C				
Field ID:	MTL-13			ARD	Lab N	0.:	0088	70-03	
Desc/Location:	MARK TWAIN L	AKE		Lab	Filena	me:	E1008	8109	
Sample Date:	09/29/2021			Rec	eived D	ate:	09/2	9/2021	
Sample Time:	1055			Pre	p. Date	:	09/30	0/2021	
Matrix:	WATER			Ana	lysis D	ate:	10/0	8/2021	
Amount Used:	800 mL			Ins	rument	ID:	AG5		
Final Volume:	1 mL			QC :	Batch:		B114:	25	
% Moisture:	NA			Lev	el:		LOW		
A <u>nnan an an</u>									
							Data		Dilution
Parameter			LOD	LOQ	Res	ult	Flag	Units	Factor
Trifluralin			0.250	0.25	) N	ID		UG/L	1
Atrazine			0.250	0.25	) N	ID		UG/L	1
Metribuzin			0.250	0.25	) N	ID		UG/L	1
Alachlor			0.250	0.25	) N	ID		UG/L	1
Metolachlor			0.250	0.25	) N	ID	Q	UG/L	1
Chlorpyrifos			0.250	0.25	) N	ID		UG/L	1
Cyanazine			0.250	0.25	M C	ID		UG/L	1
Pendimethalin			0.250	0.25	N C	ID		UG/L	1
						····			

SURROGATE RECOVERIES:	Limits	Results
Triphenylphosphate	30-130	87%

Surrogate recoveries marked with '\*' indicates they are outside standard limits.

(a) DOD-QSM Accredited Analyte.

	Box 1566	62864
ARDL, INC.	400 Aviation Drive; P.O.	Mt. Vernon, Illinois

Lab Report No: 008870

Report Date: 11/03/2021

Project Name: MAF Project No:	KK TWAI	IN LAKE						И	Analysis ELAC Certi	:: Inorgan fied - IL1	ics 00308
ARDL No: 008 Field ID: MTL Received: 09/	8870-03 1-13 '29/202		Sampl Samp Samp	ing Loo Ling Da Ling T:	c'n: MARF ate: 09/2 ime: 1055	K TWAIN LAKE 29/2021 5			Matrix Moisture	: WATER : NA	
Analyte		LOD	ГОД	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
Ammonia Nitrogen		0.0200	0.0300		0.0591	MG/L	NONE	350.1	NA	10/05/21	10066389
Nitrate as Nitroge	ų	0.0190	0.0200		0.028	MG/L	NONE	GREEN	NA	10/07/21	10126400
Phosphorus		0.00800	0.0100		0.083	MG/L	365.2	365.2	10/07/21	10/08/21	10126414
Solids, Total Susp	ended	1.0	1.0		3.2	MG/L	NONE	160.2	NA	10/04/21	10076394
Solids, Volatile S	uspen	1.33	1.33		QN	MG/L	NONE	160.4	NA	10/04/21	10076395
Total Organic Carb	uou	0.500	1.00		6.2	MG/L	NONE	415.1	NA	10/16/21	10196426

(a) DOD and/or NELAC Accredited Analyte.

Sample 008870-03, Inorganic Analyses

Lab Report No: 008870

Report Date: 10/12/2021

Project Name:	MARK TWAIN	LAKE	Aı	nalysis: N	P PESTICII	DES (82	70SIM-MO	D)
Project No.:			Analytical	Method: 8	270C			
NELAC Certi	fied - IL100	308	Prep	Method: 3	510C			
Field ID:	MTL-9			ARDL	Lab No.:	0088	70-04	
Desc/Location:	MARK TWAIN	LAKE		Lab F	ilename:	E100	8110	
Sample Date:	09/29/2021			Recei	ved Date:	09/2	9/2021	
Sample Time:	1130			Prep.	Date:	09/3	0/2021	
Matrix:	WATER			Analy	sis Date:	10/0	8/2021	
Amount Used:	900 mL			Instr	ument ID:	AG5		
Final Volume:	1 mL			QC Ba	tch:	B114	25	
% Moisture:	NA			Level	:	LOW		
								······
						Data		Dilution
Parameter			LOD	LOQ	Result	Flag	Units	Factor
Trifiuralin			0.222	0.222	ND		UG/L	1
Atrazine			0.222	0.222	ND		UG/L	1
Metribuzin			0.222	0.222	ND		UG/L	1
Alachlor			0.222	0.222	ND		UG/L	1
Metolachlor			0.222	0.222	0.244	Q	UG/L	1
Chlorpyrifos			0.222	0.222	ND		UG/L	1
Cyanazine			0.222	0.222	ND		UG/L	1
Pendimethalin			0.222	0.222	ND		UG/L	1
at, type=, type=								

SURROGATE RECOVERIES:	Limits	Results	
Triphenylphosphate	30-130	84%	ĺ

Surrogate recoveries marked with '\*' indicates they are outside standard limits.

(a) DOD-QSM Accredited Analyte.

400 Aviation Drive; P.O. Box 1566 Mt. Vernon, Illinois 62864 ARDL, INC.

> 008870 Lab Report No:

11/03/2021 Report Date:

Project Name: MARK TWA Project No:	IN LAKE						N	Analysis ELAC Certi	:: Inorgan fied - IL1	ics 00308
ARDL No: 008870-0 Field ID: MTL-9 Received: 09/29/20	14	Samp Sam Sam	Ling Loo Ling Da Ling Ta	c'n: MARK ate: 09/2 ime: 1130	: TWAIN LAKE 9/2021			Matrix Moisture	: WATER : NA	
Analyte	TOD	Γοδ	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
Ammonia Nitrogen	0.0200	0.0300		0.0564	MG/L	NONE	350.1	NA	10/05/21	10066389
Nitrate as Nitrogen	0.0190	0.0200		0.030	MG/L	NONE	GREEN	NA	10/07/21	10126400
Phosphorus	0.00800	0.0100		0.122	MG/L	365.2	365.2	10/07/21	10/08/21	10126414
Solids, Total Suspended	1 1.0	1.0		18.4	MG/L	NONE	160.2	NA	10/04/21	10076394
Solids, Volatile Suspen	4.00	4.00		4.0	MG/L	NONE	160.4	NA	10/04/21	10076395
Total Organic Carbon	0.500	1.00		6.6	MG/L	NONE	415.1	NA	10/16/21	10196426

(a) DOD and/or NELAC Accredited Analyte.

Sample 008870-04, Inorganic Analyses

Lab Report No: 008870

Report Date: 10/12/2021

Project Name:	MARK TWAIN	LAKE	Aı	nalysis:	NP PESTIC	IDES (82	70SIM-MC	D)
Project No.:			Analytical	Method:	8270C			
NELAC Certi:	fied - IL100	308	Prep	Method:	3510C			
enteren antitutionen allerten en antituten en en estatuten antituten en en estatuten en estatuten en estatuten			-					
Field ID:	MTL-11			ARD	L Lab No.:	0088	70-05	
Desc/Location:	MARK TWAIN	LAKE		Lab	Filename:	E100	8111	
Sample Date:	09/29/2021			Rec	eived Date	: 09/2	9/2021	
Sample Time:	1210			Pre	p. Date:	09/3	0/2021	
Matrix:	WATER			Ana	lysis Date	e: 10/0	8/2021	
Amount Used:	900 mL			Ins	crument ID	: AG5		
Final Volume:	1 mL			QC 1	Batch:	B114	25	
% Moisture:	NA			Lev	el:	LOW		
					······			
						Data		Dilution
Parameter			LOD	LOQ	Result	. Flag	Units	Factor
Trifiuralin			0.222	0.22	2 ND		UG/L	1
Atrazine			0.222	0.22	2 ND		UG/L	1
Metribuzin			0.222	0.22	2 ND		UG/L	1
Alachlor			0.222	0.22	2 ND		UG/L	1
Metolachlor			0.222	0.22	2 ND	Q	UG/L	1
Chlorpyrifos			0.222	0.22	2 ND		UG/L	1
Cyanazine			0.222	0.22	2 ND		UG/L	1
Pendimethalin			0.222	0.22	2 ND		UG/L	1

SURROGATE RECOVERIES:	Limits	Results
Triphenylphosphate	30-130	92%

Surrogate recoveries marked with '\*' indicates they are outside standard limits.

(a) DOD-QSM Accredited Analyte.

400 Aviation Drive; P.O. Box 1566 Mt. Vernon, Illinois 62864 ARDL, INC.

> 008870 Lab Report No:

Report Date: 11/03/2021

lorganics - IL100308	TER	ysis Run te Number	5/21 10066389 7/21 10126400
sis: In rtified	rix: WA 1re: NA	Anal Da	10/0
Analys ELAC Cei	Matı Moistu	Prep Date	NA NA
N		Analysis Method	350.1 GREEN
		Prep Method	NONE
	K TWAIN LAKE 29/2021 0	Units	MG/L MG/L
	'n: MARI ce: 09/: ne: 121(	Result	0.0373 ND
	ling Loc pling Dat pling Tir	Flag	
	Samp. Samp Samp	ТОД	0.0300 0.0200
WAIN LAKE	-05 2021	LOD	0.0200 0.0190
MARK TI	008870. MTL-11 09/29/:	te	yen :rogen
Project Name: Project No:	ARDL No: Field ID: Received:	Analy	Ammonia Nitroç Vitrate as Nit

10/04/21 10076394 10/04/21 10076395 10/08/21 10126414

NA NA NA

160.4 415.1

NONE

10/07/21

365.2 160.2

365.2 NONE NONE

MG/L MG/L MG/L MG/L

0.109 14.0 ND

0.0100

0.00800

1.0

Solids, Total Suspended Solids, Volatile Suspen Total Organic Carbon

Phosphorus

1.0 4.00 1.00

0.500 4.00

5.7

10/16/21 10196426

(a) DOD and/or NELAC Accredited Analyte.

Sample 008870-05, Inorganic Analyses

----Page 1 of

Lab Report No: 008870

Report Date: 10/12/2021

Project Name:	MARK TWAIN LAKE	An	alysis: NI	P PESTICI	DES (82	70SIM-MO	D)
Project No.:		Analytical	Method: 8	270C			
NELAC Certi	fied - IL100308	Prep	Method: 3	510C			
Field ID:	MTL-12		ARDL	Lab No.:	0088	70-06	
Desc/Location:	MARK TWAIN LAKE		Lab F	ilename:	E100	8112	
Sample Date:	09/29/2021		Recei	ved Date:	09/2	9/2021	
Sample Time:	1258		Prep.	Date:	09/30	0/2021	
Matrix:	WATER		Analy	sis Date:	10/0	8/2021	
Amount Used:	900 mL		Instr	ument ID:	AG5		
Final Volume:	1 mL		QC Ba	tch:	B114	25	
% Moisture:	NA		Level	:	LOW		
					Data		Dilution
Parameter		LOD	LOQ	Result	Flag	Units	Factor
Trifluralin		0.222	0.222	ND		UG/L	1
Atrazine		0.222	0.222	1.04		UG/L	1
Metribuzin		0.222	0.222	ND		UG/L	1
Alachlor		0.222	0.222	ND		UG/L	1
Metolachlor		0.222	0.222	2.78	Q	UG/L	1
Chlorpyrifos		0.222	0.222	ND		UG/L	1
Cyanazine		0.222	0.222	ND		UG/L	1
Pendimethalin		0.222	0.222	ND		UG/L	1

SURROGATE RECOVERIES:	Limits	Results	}
Triphenylphosphate	30-130	94%	Í

Surrogate recoveries marked with '\*' indicates they are outside standard limits.

(a) DOD-QSM Accredited Analyte.

Lab Report No: 008870

Report Date: 11/03/2021

Name: ct No:	MARK TWAIN LAKE						И	Analysis WELAC Certi	:: Inorgan fied - IL1	ics 00308
	008870-06 MTL-12 09/29/2021	Sam San San San	oling Loc npling Da npling Ti	"n: MAR tte: 09/ .me: 125	KK TWAIN LAKE 29/2021 8			Matrix Moisture	K: WATER 2: NA	
-yt	e LOD	ГОО	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
	0.040	0 0.0500		0.239	MG/L MG/L	3010A 3010A	6010C 6010C	10/20/21 10/20/21	10/21/21	P7677 P7677
d G	n 0.020	0.0300		0.0995	MG/L	NONE	350.1	NA	10/05/21	10066389

10/04/21 10076395 10/16/21 10196426

NA NA NA

> 160.4 415.1

NONE NONE

10/07/21 10126400 10/08/21 10126414 10/04/21 10076394

NA 10/07/21

> 365.2 160.2

NONE 365.2 NONE

HG/L MG/L MG/L MG/L

0.057 0.0657 4.4

0.0200 0.0100

0.01900.00800

Nitrate as Nitrogen

Phosphorus

ND 7.1

1.0 2.00 1.00

> 2.00 0.500

1.0

Solids, Total Suspended Solids, Volatile Suspen Total Organic Carbon

GREEN

(a) DOD and/or NELAC Accredited Analyte.

Sample 008870-06, Inorganic Analyses

Lab Report No: 008870

Report Date: 10/12/2021

Project Name:	MARK TWAIN LAKE	Ana	lysis: NH	PESTICII	DES (827	70SIM-MO	D)
Project No.:		Analytical M	ethod: 82	270C			
NELAC Certi	fied - IL100308	Prep M	ethod: 3	510C			
Field ID:	MTL-15-0		ARDL 1	Lab No.:	0088	70-07	
Desc/Location:	MARK TWAIN LAKE		Lab F:	ilename:	E1008	3113	
Sample Date:	09/29/2021		Receiv	ved Date:	09/29	9/2021	
Sample Time:	1128		Prep.	Date:	09/30	0/2021	
Matrix:	WATER		Analy	sis Date:	10/08	3/2021	
Amount Used:	800 mL		Instru	ument ID:	AG5		
Final Volume:	1 mL		QC Bat	tch:	B1142	25	
<pre>% Moisture:</pre>	NA		Level	:	LOW		
							•
					Data		Dilution
Parameter		LOD	LOQ	Result	Flag	Units	Factor
		0.050				/	
Trifluralin		0.250	0.250	ND		UG/L	1
Atrazine		0.250	0.250	1.23		UG/L	1
Metribuzin		0.250	0.250	ND		UG/L	1
Alachlor		0.250	0.250	ND		UG/L	1
Metolachlor		0.250	0.250	2.75	Q	UG/L	1
Chlorpyrifos		0.250	0.250	ND		UG/L	1
Cyanazine		0.250	0.250	ND		UG/L	1
Pendimethalin		0.250	0.250	ND		UG/L	1

SURROGATE RECOVERIES:	Limits	Results	
Triphenylphosphate	30-130	85%	

Surrogate recoveries marked with '\*' indicates they are outside standard limits.

(a) DOD-QSM Accredited Analyte.

Lab Report No: 008870

Report Date: 11/03/2021

Project Name: Project No:	MARK TWAIN LAKE			Analysis: Inorganics NELAC Certified - IL1003
ARDL No:	008870-07	Sampling Loc'n:	MARK TWAIN LAKE	Matrix: WATER
Field ID:	MTL-15-0	Sampling Date:	09/29/2021	Moisture: NA
6			) ) 7	

Recerved: 09/29/202	71	Samp	IING TI	Lme: 1128						
Analyte	LOD	ГОО	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
Ammonia Nitrogen	0.0200	0.0300		0.0624	MG/L	NONE	350.1	NA	10/05/21 1	10066389
Chlorophyll-a, Correcte	1.00	1.00		20.9	MG/CU.M.	10200H	10200H	09/30/21	10/07/21 1	10116399
Nitrate as Nitrogen	0.0190	0.0200		0.032	MG/L	NONE	GREEN	NA	10/08/21 1	10126415
Pheophytin-a	1.00	1.00		4.5	MG/CU.M.	10200H	10200H	09/30/21	10/07/21 1	10116399
Phosphorus	0.00800	0.0100		0.0484	MG/L	365.2	365.2	10/07/21	10/08/21 1	10126414
Solids, Total Suspended	1.0	1.0		3.4	MG/L	NONE	160.2	NA	10/04/21 1	L0076394
Solids, Volatile Suspen	2.00	2.00		2.4	MG/L	NONE	160.4	NA	10/04/21 1	L0076395
Total Organic Carbon	0.500	1.00		7.5	MG/L	NONE	415.1	NA	10/16/21 1	L0196426

(a) DOD and/or NELAC Accredited Analyte.

Sample 008870-07, Inorganic Analyses

Lab Report No: 008870

Report Date: 10/12/2021

Project Name:	MARK TWAIN LAKE	An	alysis: NH	P PESTICI	DES (82	70SIM-MO	D)
Project No.:		Analytical	Method: 82	2700			
NELAC Certi	fied - IL100308	Prep	Method: 3	510C			
Field ID:	MTL-22-0		ARDL 1	Lab No.:	0088	70-08	
Desc/Location:	MARK TWAIN LAKE		Lab F:	ilename:	E1008	3114	
Sample Date:	09/29/2021		Receiv	ved Date:	09/2	9/2021	
Sample Time:	1222		Prep.	Date:	09/30	0/2021	
Matrix:	WATER		Analys	sis Date:	10/0	8/2021	
Amount Used:	800 mL		Instru	ument ID:	AG5		
Final Volume:	1 mL		QC Bat	tch:	B114	25	
<pre>% Moisture:</pre>	NA		Level	:	LOW		
					Data		Dilution
Parameter		LOD	LOQ	Result	Flag	Units	Factor
Trifluralin		0.250	0.250	ND		UG/L	1
Atrazine		0.250	0.250	1.23		UG/L	1
Metribuzin		0.250	0.250	ND		UG/L	1
Alachlor		0.250	0.250	ND		UG/L	1
Metolachlor		0.250	0.250	3.01	Q	UG/L	1
Chlorpyrifos		0.250	0.250	ND		UG/L	1
Cyanazine		0.250	0.250	ND		UG/L	1
Pendimethalin		0.250	0.250	ND		UG/L	1
·····			<del>,</del>				

SURROGATE RECOVERIES:	Limits	Results
Triphenylphosphate	30-130	82%

Surrogate recoveries marked with '\*' indicates they are outside standard limits.

(a) DOD-QSM Accredited Analyte.

Lab Report No: 008870

Report Date: 11/03/2021

Project Name: Project No:	MARK TWAIN LAKE			Analysis: Inorganics NELAC Certified - IL100308
ARDL No:	008870-08	Sampling Loc'n:	MARK TWAIN LAKE	Matrix: WATER
Field ID:	MTL-22-0	Sampling Date:	09/29/2021	Moisture: NA
Received:	09/29/2021	Sampling Time:	1222	

Analyte	LOD	год	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
Ammonia Nitrogen	0.0200	0.0300		0.0412	MG/L	NONE	350.1	NA	10/05/21 3	10066389
Chlorophyll-a, Correcte	1.00	1.00		17.0	MG/CU.M.	10200H	10200H	09/30/21	10/07/21 ]	10116399
Nitrate as Nitrogen	0.0190	0.0200		DN	MG/L	NONE	GREEN	NA	10/08/21 ]	10126415
?heophytin-a	1.00	1.00		2.4	MG/CU.M.	10200H	10200H	09/30/21	10/07/21 ]	10116399
shosphorus	0.00800	0.0100		0.0355	MG/L	365.2	365.2	10/07/21	10/08/21 ]	10126414
Solids, Total Suspended	1.0	1.0		3.2	MG/L	NONE	160.2	NA	10/04/21 ]	0076394
Solids, Volatile Suspen	2.00	2.00		2.4	MG/L	NONE	160.4	NA	10/04/21 ]	0076395
Total Organic Carbon	0.500	1.00		7.5	MG/L	NONE	415.1	NA	10/16/21 1	10196426

(a) DOD and/or NELAC Accredited Analyte.

Sample 008870-08, Inorganic Analyses

Box 1566 62864 400 Aviation Drive; P.O. Mt. Vernon, Illinois ARDL, INC.

> 008870 Lab Report No:

11/03/2021 Report Date:

Project Name: <sup>N</sup> Project No:	IARK TWAIN LAKE						N	Analysis ELAC Certi	s: Inorgan fied - IL1	ics 00308
ARDL No: C Field ID: M Received: C	08870-09 ITL-22-15 09/29/2021	Samp Sam Sam	ling Loc pling Da pling Ti	c'n: MARK ate: 09/29 ime: 1231	TWAIN LAKE 9/2021			Matrix Moisture	K: WATER 9: NA	
Analyte	LOD	LoQ	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
(a) Iron	0.0400	0.0500		0.438	MG/L	3010A	6010C	10/20/21	10/21/21	P7677
(a) Manganese	0.00400	0.00500		0.171	MG/L	3010A	6010C	10/20/21	10/21/21	P7677
Ammonia Nitrogen	0.0200	0.0300		0.159	MG/L	NONE	350.1	NA	10/05/21	10066389
Nitrate as Nitrc	ogen 0.0190	0.0200		ND	MG/L	NONE	GREEN	NA	10/08/21	10126415
Phosphorus	0.00800	0.0100		0.0657	MG/L	365.2	365.2	10/07/21	10/08/21	10126414

10/08/21 10126415 10/08/21 10126414 10/04/21 10076394 10/04/21 10076395 10/16/21 10196426

GREEN 365.2 160.2

NONE 365.2 NONE NONE

MG/L MG/L MG/L MG/L MG/L

1.0

Solids, Total Suspended Solids, Volatile Suspen Total Organic Carbon

ND 7.2 4.8

1.00 1.000

4.00 0.500

NA NA NA

160.4 415.1

NONE

(a) DOD and/or NELAC Accredited Analyte.

Sample 008870-09, Inorganic Analyses

Ч ч О Page 1
## ARDL, INC. 400 Aviation Drive; P.O. Box 1566 Mt. Vernon, Illinois 62864

Lab Report No: 008870

Report Date: 10/12/2021

Project Name:	MARK TWAIN LAKE	Ana	alysis: NE	PESTICI	DES (827	70SIM-MO	D)
Project No.:		Analytical M	Method: 82	270C			
NELAC Certi	fied - IL100308	Prep M	Method: 35	510C			
Etald TD.	MTT 22 0			ab No .	00007	70 10	
Pleid ID.	MADE TWATN TAFE			lonamo.	E1000	0-10 0115	
Desc/Location:	MARK IWAIN LARE				DD/20	)/2021	
Sample Date:	1205		Receiv	/ed Date:	09/25	9/2021	
Sample Time:	1305		Prep.	Date:	09/30	)/2021	
Matrix:	WATER		Analys	sis Date:	10/08	3/2021	
Amount Used:	900 mL		Instru	iment ID:	AG5		
Final Volume:	1 mL		QC Bat	ch:	B1142	25	
<pre>% Moisture:</pre>	NA		Level	:	LOW		
					Data		Dilution
Parameter		LOD	LOQ	Result	Flag	Units	Factor
Trifluralin		0.222	0.222	ND		UG/L	1
Atrazine		0.222	0.222	1.18		UG/L	1
Metribuzin		0.222	0.222	ND		UG/L	1
Alachlor		0.222	0.222	ND		UG/L	1
Metolachlor		0.222	0.222	3.01	Q	UG/L	1
Chlorpyrifos		0.222	0.222	ND		UG/L	1
Cyanazine		0.222	0.222	ND		UG/L	1
Pendimethalin		0.222	0.222	ND		UG/L	1
·							

SURROGATE RECOVERIES:	Limits	Results	
Triphenylphosphate	30-130	91%	

Surrogate recoveries marked with '\*' indicates they are outside standard limits.

(a) DOD-QSM Accredited Analyte.

	Box 1566	62864
ARDL, INC.	400 Aviation Drive; P.O.	Mt. Vernon, Illinois

Report Date: 11/03/2021

Project Name: MARK TWA Project No:	AIN LAKE							Analysis ELAC Certi	:: Inorgan fied - IL1	ics 00308
ARDL No: 008870-1 Field ID: MTL-33-0 Received: 09/29/20	21	Sampl Samp Samp	ing Loc' ling Dat ling Tim	n: MARK e: 09/29 e: 1305	TWAIN LAKE /2021			Matrix Moisture	:: WATER :: NA	
Analyte	LOD	гоб	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
Ammonia Nitrogen Chlorophyll-a, Correcte Nitrate as Nitrogen Pheophytin-a Phosphorus Solids, Total Suspended Solids, Volatile Suspen Total Organic Carbon	0.0200 1.00 0.0190 0.00800 1.1.0 1 1.0 1 2.00	0.0300 1.00 0.0200 1.00 1.0 2.00 1.00		0.0368 13.6 ND 3.5 0.0355 2.0 7.3	MG/L MG/CU.M. MG/CU.M. MG/L MG/L MG/L MG/L	NONE 10200H NONE 10200H 365.2 NONE NONE NONE	350.1 10200H GREEN 10200H 365.2 160.2 160.4 415.1	NA 09/30/21 NA 09/30/21 10/07/21 NA NA	10/05/21 10/07/21 10/08/21 10/08/21 10/08/21 10/04/21 10/16/21	10066389 10116399 10126415 10116399 10126414 10076394 10076395 10196426

(a) DOD and/or NELAC Accredited Analyte.

Sample 008870-10, Inorganic Analyses

## ARDL, INC. 400 Aviation Drive; P.O. Box 1566 Mt. Vernon, Illinois 62864

Lab Report No: 008870

Report Date: 10/12/2021

Project Name:	MARK TWAIN LAKE	An	alysis: NH	PESTICIE	DES (827	70SIM-MO	D)
Project No.:		Analytical	Method: 82	270C			
NELAC Certi	fied - IL100308	Prep	Method: 35	510C			
Field ID:	MTL-66-0		ARDL I	Lab No.:	0088	70-11	
Desc/Location:	MARK TWAIN LAKE		Lab F	llename:	E1008	3116	
Sample Date:	09/29/2021		Receiv	ved Date:	09/29	9/2021	
Sample Time:	1055		Prep.	Date:	09/30	)/2021	
Matrix:	WATER		Analys	sis Date:	10/08	3/2021	
Amount Used:	800 mL		Instru	ument ID:	AG5		
Final Volume:	1 mL		QC Bat	ch:	B1142	25	
<pre>% Moisture:</pre>	NA		Level	:	LOW		
					Data		Dilution
Parameter		LOD	LOQ	Result	Flag	Units	Factor
Trifluralin		0.250	0.250	ND		UG/L	1
Atrazine		0.250	0.250	1.21		UG/L	1
Metribuzin		0.250	0.250	ND		UG/L	1
Alachlor		0.250	0.250	ND		UG/L	1
Metolachlor		0.250	0.250	2.61	Q	UG/L	1
Chlorpyrifos		0.250	0.250	ND		UG/L	1
Cyanazine		0.250	0.250	ND		UG/L	1
Pendimethalin		0.250	0.250	ND		UG/L	1

SURROGATE RECOVERIES:	Limits	Results	
Triphenylphosphate	30-130	90%	

Surrogate recoveries marked with '\*' indicates they are outside standard limits.

(a) DOD-QSM Accredited Analyte.

400 Aviation Drive; P.O. Box 1566 62864 Mt Vernon, Illinois ARDL, INC.

> 008870 Lab Report No:

Report Date: 11/03/2021

Project Name: Project No:	MARK TWA	IN LAKE						Z	Analysis IELAC Certi	: Inorgan fied - IL1	ics 00308
ARDL No: Field ID: Received:	008870-1 MTL-66-0 09/29/20	21	Samp] Samp Samp	ling Loo pling Da pling Ti	c'n: MARK ate: 09/2 ime: 1055	: TWAIN LAKE 9/2021			Matrix Moisture	: WATER : NA	
Analyt	U	гор	Тод	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
Ammonia Nitroge	u	0.0200	0.0300		0.0505	MG/L	NONE	350.1	NA	10/05/21	10066389
Chlorophyll-a,	Correcte	1.00	1.00		30.9	MG/CU.M.	10200H	10200H	09/30/21	10/07/21	10116399
Nitrate as Nitr	ogen	0.0190	0.0200		0.109	MG/L	NONE	GREEN	NA	10/08/21	10126415
Pheophytin-a		1.00	1.00		2.2	MG/CU.M.	10200H	10200H	09/30/21	10/07/21	10116399
Phosphorus		0.00800	0.0100		0.070	MG/L	365.2	365.2	10/07/21	10/08/21	10126414
Solids, Total S	uspended	1.0	1.0		5.2	MG/L	NONE	160.2	NA	10/04/21	10076394
Solids, Volatil	e Suspen	2.00	2.00		2.8	MG/L	NONE	160.4	NA	10/04/21	10076395
Total Organic C	arbon	0.500	1.00		7.8	MG/L	NONE	415.1	NA	10/16/21	10196426

(a) DOD and/or NELAC Accredited Analyte.

Sample 008870-11, Inorganic Analyses

----Page 1 of

#### ARDL, INC. 400 Aviation Drive; P.O. Box 1566 Mt. Vernon, Illinois 62864

Lab Report No: 008870

Report Date: 10/12/2021

Project Name:	MARK TWAIN LAKE	L An	alysis: NI	PESTICI	DES (82	70SIM-MO	D)
Project No.:	CL 1 == 1 0 0 0 0 0	Analytical	Method: 82	2700			
NELAC Certi	fied - 1L100308	Prep	Method: 3	510C			
Field ID:	MTL-77-0		ARDL	Lab No.:	0088	70-12	
Desc/Location:	MARK TWAIN LAKE	2	Lab F:	ilename:	E1008	3117	
Sample Date:	09/29/2021		Receiv	ved Date:	09/2	9/2021	
Sample Time:	1113		Prep.	Date:	09/30	0/2021	
Matrix:	WATER		Analy	sis Date:	10/08	8/2021	
Amount Used:	800 mL		Instru	ument ID:	AG5		
Final Volume:	1 mL		QC Bat	tch:	B1142	25	
% Moisture:	NA		Level	:	LOW		
					Data		Dilution
Parameter		LOD	LOQ	Result	Data Flag	Units	Dilution Factor
Parameter 		LOD	LOQ 0.250	Result	Data Flag	Units UG/L	Dilution Factor 1
Parameter Trifluralin Atrazine		LOD 0.250 0.250	LOQ 0.250 0.250	Result ND 1.23	Data Flag	Units UG/L UG/L	Dilution Factor 1 1
Parameter Trifluralin Atrazine Metribuzin		LOD 0.250 0.250 0.250	LOQ 0.250 0.250 0.250	Result ND 1.23 ND	Data Flag	Units UG/L UG/L UG/L	Dilution Factor 1 1 1
Parameter Trifluralin Atrazine Metribuzin Alachlor		LOD 0.250 0.250 0.250 0.250	LOQ 0.250 0.250 0.250 0.250	Result ND 1.23 ND ND	Data Flag	Units UG/L UG/L UG/L UG/L	Dilution Factor 1 1 1 1
Parameter Trifluralin Atrazine Metribuzin Alachlor Metolachlor		LOD 0.250 0.250 0.250 0.250 0.250 0.250	LOQ 0.250 0.250 0.250 0.250 0.250 0.250	Result ND 1.23 ND ND 2.80	Data Flag Q	Units UG/L UG/L UG/L UG/L UG/L	Dilution Factor 1 1 1 1 1 1
Parameter Trifluralin Atrazine Metribuzin Alachlor Metolachlor Chlorpyrifos		LOD 0.250 0.250 0.250 0.250 0.250 0.250 0.250	LOQ 0.250 0.250 0.250 0.250 0.250 0.250 0.250	Result ND 1.23 ND ND 2.80 ND	Data Flag Q	Units UG/L UG/L UG/L UG/L UG/L UG/L	Dilution Factor 1 1 1 1 1 1 1 1 1
Parameter Trifluralin Atrazine Metribuzin Alachlor Metolachlor Chlorpyrifos Cyanazine		LOD 0.250 0.250 0.250 0.250 0.250 0.250 0.250 0.250	LOQ 0.250 0.250 0.250 0.250 0.250 0.250 0.250 0.250	Result ND 1.23 ND ND 2.80 ND ND	Data Flag Q	Units UG/L UG/L UG/L UG/L UG/L UG/L UG/L	Dilution Factor 1 1 1 1 1 1 1 1 1 1
Parameter Trifluralin Atrazine Metribuzin Alachlor Metolachlor Chlorpyrifos Cyanazine Pendimethalin		LOD 0.250 0.250 0.250 0.250 0.250 0.250 0.250 0.250	LOQ 0.250 0.250 0.250 0.250 0.250 0.250 0.250 0.250 0.250	Result ND 1.23 ND 2.80 ND ND ND ND	Data Flag Q	Units UG/L UG/L UG/L UG/L UG/L UG/L UG/L	Dilution Factor 1 1 1 1 1 1 1 1 1 1 1
Parameter Trifluralin Atrazine Metribuzin Alachlor Metolachlor Chlorpyrifos Cyanazine Pendimethalin		LOD 0.250 0.250 0.250 0.250 0.250 0.250 0.250 0.250	LOQ 0.250 0.250 0.250 0.250 0.250 0.250 0.250 0.250	Result ND 1.23 ND 2.80 ND ND ND ND	Data Flag Q	Units UG/L UG/L UG/L UG/L UG/L UG/L UG/L	Dilution Factor 1 1 1 1 1 1 1 1 1 1

SURROGATE RECOVERIES:	Limits	Results
Triphenylphosphate	30-130	84%

Surrogate recoveries marked with '\*' indicates they are outside standard limits.

(a) DOD-QSM Accredited Analyte.

Sample 008870-12, NP PESTICIDES (8270SIM-MOD)

	Box 1566	62864
ARDL, INC.	400 Aviation Drive; P.O.	Mt. Vernon, Illinois

Report Date: 11/03/2021

Project Name: Project No:	MARK TWAI	IN LAKE						Z	Analysis ELAC Certi	: Inorgan: fied - IL1(	Lcs 00308
ARDL No: Field ID: Received:	008870-12 MTL-77-0 09/29/202		Sampl Samr Samr	ing Loc ling Dat ling Tin	'n: MARK te: 09/2: me: 1113	TWAIN LAKE 9/2021			Matrix Moisture	: WATER : NA	
Analy	t e	LOD	год	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
Ammonia Nitrog	en	0.0200	0.0300		0.0391	MG/L	NONE	350.1	NA	10/05/21	0066389
Chlorophyll-a,	Correcte	1.00	1.00		24.5	MG/CU.M.	10200H	10200H	09/30/21	10/07/21	-0116399
Nitrate as Niti	rogen	0.0190	0.0200		0.029	MG/L	NONE	GREEN	NA	10/08/21	.0126415
Pheophytin-a		1.00	1.00		2.2	MG/CU.M.	10200H	10200H	09/30/21	10/07/21	.0116399
Phosphorus		0.00800	0.0100		0.0527	MG/L	365.2	365.2	10/07/21	10/08/21 ]	.0126414
Solids, Total (	Suspended	1.0	1.0		3.8	MG/L	NONE	160.2	NA	10/04/21	.0076394
Solids, Volati	le Suspen	2.00	2.00		2.4	MG/L	NONE	160.4	NA	10/04/21 ]	.0076395
Total Organic (	Carbon	0.500	1.00		7.5	MG/L	NONE	415.1	NA	10/16/21 ]	.0196426

(a) DOD and/or NELAC Accredited Analyte.

Sample 008870-12, Inorganic Analyses

	3/2021	rganics IL100308	R	sis Run e Number	/21 10016370
	te: 11/0	is: Inor tified -	ix: WATE re: NA	Analys Date	09/29/
	keport Da	Analys. ELAC Cer	Matr Moistu	Prep Date	NA
9	щ			Analysis Method	1604
Box 156 62864				Prep Method	NONE
DL, INC. rive; P.O. Illinois			K TWAIN LAKE 29/2021	Units	COL/100 ML
AR ation D Vernon,			'n: MARK te: 09/2 me: 1031	Result	62.0
400 Avi Mt.			ling Loc Ting Da Ipling Ti	Flag	
			Samr San San	ГОQ	1.00
	08870	VAIN LAKE	-13 INA 2021	LOD	1.00
	: No: 00	MARK TV	008870- IC MARI 09/29/2	te	
	Lab Report	Project Name: Project No:	ARDL No: Field ID: Received:	Analy	E. Coliform

(a) DOD and/or NELAC Accredited Analyte.

Sample 008870-13, Inorganic Analyses

	Box 1566	62864
ARDL, INC.	400 Aviation Drive; P.O.	Mt. Vernon, Illinois

Report Date: 11/03/2021

Analysis: Inorganics NELAC Certified - IL100308	Matrix: WATER Moisture: NA	p Analysis Prep Analysis Run od Method Date Date Number
		Pre Metho
	KK TWAIN LAKE '29/2021 '7	Units
	n: MAF e: 09/ e: 131	Result
	pling Loc' mpling Dat mpling Tim	Flag
	Sam Sar Sar	LOQ
RK TWAIN LAKE	8870-14 MARINA /29/2021	LOD
Project Name: MAN Project No:	ARDL No: 008 Field ID: BJ Received: 09/	Analyte

09/29/21 10016370

NA

1604

NONE

COL/100 ML

23.0

1.00

1.00

E. Coliform

(a) DOD and/or NELAC Accredited Analyte.

Sample 008870-14, Inorganic Analyses

### METHOD BLANK REPORT ARDL, Inc. 400 Aviation Drive; P.O. Box 1566 Mt. Vernon, Illinois 62864

Lab Report No: 008870

Report Date: 10/12/2021

Project Name:	MARK TWAIN LAKE	Analy	sis: NP PEST	ICIDES (82	270SIM-MC	D)
Project No.:		Analytical Met	hod: 8270C			
NELAC Certi:	fied - IL100308	Prep Met	hod: 3510C			
Field ID:	NA		ARDL Lab No	.: 0088	370-01B1	
Desc/Location:	NA		Lab Filenam	e: E100	08103	
Sample Date:	NA		Received Da	te: NA		
Sample Time:	NA		Prep. Date:	09/3	30/2021	
Matrix:	QC Material		Analysis Da	te: 10/0	08/2021	
Amount Used:	1000 mL		Instrument	ID: AG5		
Final Volume:	1 mL		QC Batch:	B114	425	
% Moisture:	NA		Level:	LOW		
					Data	
Parameter		LOD	LOQ	Result	Flag	Units
Trifluralin		0.200	0.200	ND		UG/L
Atrazine		0.200	0.200	ND		UG/L
Metribuzin		0.200	0.200	ND		UG/L
Alachlor		0.200	0.200	ND		UG/L
Metolachlor		0.200	0.200	ND		UG/L
Chlorpyrifos		0.200	0.200	ND		UG/L
Cyanazine		0.200	0.200	ND		UG/L
Pendimethalin		0.200	0.200	ND		UG/L

SURROGATE RECOVERIES:	Limits	Results
Triphenylphosphate	30-130	112%

Surrogate recoveries marked with '\*' indicates they are outside standard limits.

(a) DOD-QSM Accredited Analyte.

62864 Mt. Vernon, IL 400 Aviation Drive; P.O. Box 1566 BLANK SUMMARY REPORT ARDL, INC.

Lab Report No: 008870

Report Date: 11/03/2021

Project Name: MARK TWAIN LAKE

NELAC Certified - IL100308

			Blank	-	Prep	Analysis	Prep	Analysis		QC Lab
Analyte	гол	гоб	Kesult	Units	Method	Method	Date	Date	Run	Number
(a) Iron	0.040	0.050	ND	MG/L	3010A	6010C	10/20/21	10/21/21	P7677	008870-06B1
(a) Manganese	0.004	0.005	ND	MG/L	3010A	6010C	10/20/21	10/21/21	P7677	008870-06B1
Ammonia Nitrogen	0.020	0.030	ND	MG/L	NONE	350.1	NA	10/05/21 ]	L0066389	008870-01B1
Chlorophyll-a, Corre	1.0	1.0	ND	MG/CU.M.	10200H	10200H	09/30/21	10/07/21 ]	10116399	008870-07B1
Nitrate as Nitrogen	0.019	0.020	ND	MG/L	NONE	GREEN	NA	10/08/21 ]	10126415	008870-07B1
Nitrate as Nitrogen	0.019	0.020	DN	MG/L	NONE	GREEN	NA	10/07/21	0126400	008870-02B1
Pheophytin-a	1.0	1.0	ND	MG/CU.M.	10200H	10200H	09/30/21	10/07/21 1	10116399	008870-07B1
Phosphorus	0.008	0.010	DN	MG/L	365.2	365.2	10/07/21	10/08/21 ]	0126414	008870-03B1
Solids, Total Suspen	1.0	1.0	DN	MG/L	NONE	160.2	NA	10/04/21 ]	0076394	008870-02B1
Solids, Volatile Sus	1.0	1.0	DN	MG/L	NONE	160.4	NA	10/04/21 ]	0076395	008870-02B1
Total Organic Carbon	0.50	1.0	DN	MG/L	NONE	415.1	NA	10/15/21 ]	0196426	008870-01B1

(a) DOD and/or NELAC Accredited Analyte Inorganic Method Blanks for 008870

	ARDL,	INC.	BLAN 400	K SPIKE/ Aviation	SPIKE     Drive	DUPLICAT P.O. B	E REPORI ox 1566	Mt. V	ernon,	IL 62864	
Lab Report No: 0088	70								Re	port Date:	10/12/2021
Project Name: MARK T Project No.:	WAIN LAKE		Anal	ysis: NP	PESTICID	ES (8270S.	( dom-mi	Ana	Lytical N Prep N	fethod: 827 fethod: 351	00
Matrix: QC Ma Amount Used: 1000	terial mL			QC Batch Level:	: B11 LOW	425		Prep. Analy:	Date: sis Date:	09/30/202 10/08/202	
			pike	Spike	Spike * 700	Duplicate	Duplicate	Duplicate	Recovery	L Q Q Q	RPD Timit
Parameter		Ke	sult	телет	* Kec	Kesutt	телет	ж хөс	SJIMIT	אריט	ר דוודיי
Trifluralin	T	4	. 67	4	117		1	1	30-130	1	1
Atrazine		U)	.05	4	126	1	ł	1	30-130	1	
Metribuzin	-	(1)	.13	4	128	1	1	ł	30-130	1	8
Alachlor		(1)	.97	4	149 *	!	!	1	30-130	1	!
Metolachlor		U)	-23	4	131 *	1	1	ļ	30-130	!	
Chlorpyrifo	S	4	.98	4	125	1	ł		30-130	1	-
Cyanazine		u)	. 64	4	141 *	ł	1	;	30-130	ł	
Pendimethali	ц	43	.34	4	134 *	1	1		30-130	1	
	SURRO	GATE REC	OVERIES:		Spik	e %R Dupl	icate %R	%R Limits			
	Triph	enylphos	phate		105	.3	!	30-130			

(a) DOD-QSM Accredited Analyte.'\*' indicates a recovery outside of standard limits.

Spike Blanks for 008870-01, NP PESTICIDES (8270SIM-MOD)

ARD	L, INC.	400 Av	LABORA riation	TORY C Drive	, P.O.	Box 1	LEGG	Mt. Ve	rnon, IL	62864
Lab Report No: 008	870								Report Da	te: 11/03/2021
Project Name:	MARK TWAI	N LAKE							NELAC Cer	tified - IL100308
Analyte	LCS 1 Result	LCS 1 Level	LCS 1 % Rec	LCS 2 Result	LCS 2 Level	LCS 2 % Rec	% Rec Limits	Mean % Rec	Analytical Run	QC Lab Number
(a) Iron	5.0	5.0	101	1	1	-	87-115		P7677	008870-06C1
(a) Manganese	0.78	0.75	104	ł	ł	ł	90-114	ł	P7677	008870-06C1
Ammonia Nitrogen	1.0	1.0	104		1	1	80-120	ł	10066389	008870-01C1
Nitrate as Nitrogen	0.94	1.0	94		ł	ł	80-120	ł	10126400	008870-02C1
Nitrate as Nitrogen	0.90	1.0	06	ł	1	1	80-120	ł	10126415	008870-07C1
Phosphorus	0.67	0.67	100	ł	1	1	80-120	1	10126414	008870-03C1
Total Organic Carbon	20.5	20.0	103	ł	ł	ł	85-115	ł	10196426	008870-01C1
NOTE: Any values ta (a) DOD and/or NELA	bulated above ma C Accredited Ana	arked with alyte	an asteris	k are outs.	ide of acc	eptable li	imits.			

Inorganic LCS Results for 008870

ARDL, I Lab Report No: 008870	NC.	MATRIX SP 400 Aviat	ion Dri	IKE DUPL ive; P.O	LCATE REP . Box 156	ORT 6 M	t. Verno	<b>n, IL</b> Report	<b>62864</b> Date:	10/12/2021
Project Name: MARK TWAIN LAKE Project No.:		Analysis:	NP PEST]	ICIDES (82	70SIM-MOD)		Analytic Pr	al Method ep Method	1: 8270C 1: 3510C	
Field ID: MTL-1 Desc/Location: MARK TWAIN LAKE		Prep. Amour	Date: tt Used:	09/30/202 900 mL			ARDL Lab N Lab Filena	0.: 0088 me:	370-01	
Sample Date: 09/29/2021 Sample Time: 1420		% Moi OC Ba	sture: tch:	NA B11425		I	Acceived D Analvsis D	ate: 09/2 ate: 10/0	29/2021 18/2021	
Matrix: WATER		Level	••	TOW		-	7			
	Sample	SM	MS	MS	MSD	MSD	MSD	% Rec		RPD
Parameter	Result	Result	Level	% Rec	Result	Level	% Rec	Limits	RPD	Limit
Trifluralin	QN	4.64	4.44	104.5	5.56	4.44	125	30-130	17.9	30
Atrazine	0.989	5.13	4.44	93.3	6.21	4.44	117.5	30-130	19	30
Metribuzin	DN	4.32	4.44	97.3	5.27	4.44	118.5	30-130	19.7	30
Alachlor	QN	5.13	4.44	115.5	6.08	4.44	136.8 *	30-130	16.8	30
Metolachlor	2.76	6.96	4.44	94.5	8.17	4.44	121.8	30-130	16	30
Chlorpyrifos	DN	4.32	4.44	97.3	5.01	4.44	112.8	30-130	14.8	30
Cyanazine	DN	4.74	4.44	106.8	5.64	4.44	127	30-130	17.3	30
Pendimethalin	DN	4.63	4.44	104.3	5.48	4.44	123.3	30-130	16.7	30
SURROG	ATE RECOVER.	IES:		MS %R	MSD %R	8R Lii	mits			

(a) DOD-QSM Accredited Analyte.

30-130

94

79

Triphenylphosphate

'nc' indicates sample >4X spike level.

uc indicates a recovery outside of standard limits.

Matrix Spikes for 008870-01, NP PESTICIDES (8270SIM-MOD)

	62864
	Η
-	Vernon,
REPORT	Mt.
CATE	1566
UPLI	Box
IKE D	Р.О.
PIKE/SP	Drive;
MATRIX SI	Aviation
	400
	INC.
	ARDL,

Report Date: 11/03/2021

IL100308 NELAC Certified MARK TWAIN LAKE Project Name:

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	Sample	Sample	SM	SM	WS	MSD	MSD	USM	% Rec		RPD		ос тар
Analyte	Matrix	Result	Result	Level	% Rec	Result	Level	% Rec	Limits	RPD	Limit	Run	Number
(a) Iron	WATER	0.24	1.2	1.0	98	1.2	1.0	96	87-115	2	20	P7677	008870-06MS
(a) Manganese	WATER	0.077	0.58	0.50	100	0.57	0.50	66	90-114	1	20	P7677	008870-06MS
Ammonia Nitrogen	WATER	0.083	2.0	2.0	96	2.0	2.0	96	75-125	0	20	10066389	008870-01MS
Nitrate as Nitrogen	WATER	0.061	0.80	1.0	74 ×	0.86	1.0	80	75-125	7	20	10126400	008870-02MS
Phosphorus	WATER	0.083	0.90	0.83	98	0.93	0.83	103	75-125	4	20	10126414	008870-03MS
otal Organic Carbon	WATER	7.5	13.0	5.0	110	12.9	5.0	108	76-117	ч	20	10196426	008870-01MS

Inorganic Matrix Spikes for 008870

(a) DOD and/or NELAC Accredited Analyte.

NOTE: Values tabulated above marked with an asterisk are explained in the associated narrative.

62864 Mt. Vernon, IL 400 Aviation Drive; P.O. Box 1566 SAMPLE DUPLICATE REPORT ARDL, INC.

Lab Report No: 008870

Report Date: 11/03/2021

MARK TWAIN LAKE Project Name:

NELAC Certified - IL100308

			A DEAD OF A					
	Sample	First	Second		Percent	Mean	Analytical	QC Lab
Analyte	Conc'n	Duplicate	Duplicate	Units	Diff	(Smp, D1, D2)	Run	Number
Chlorophyll-a, Corrected	20.9	20.9	1	MG/CU.M.	0	1	10116399	008870-07D1
Pheophytin-a	4.5	4.5	!	MG/CU.M.	0		10116399	008870-07D1
Solids, Total Suspended	58.7	58.7		MG/L	0	ľ	10076394	008870-02D1
Solids, Volatile Suspend	9.3	9.3	1	MG/L	0	1	10076395	008870-02D1

(a) DOD and/or NELAC Accredited Analyte Sample Duplicates for 008870



# Sample Receipt Information

Including as appropriate:

- COCs
- Cooler Receipts
- Airbills
- Email Communication / Instructions from Customer

ARDL Data Package 8870

Authorized By: DSD-QAO

ARDL, In	o.a.	). Box 1566, (618) 244	400 Avi -3235 Pi	ation D	rive, M (618)	t. Verr 244-1	юп, IL 1149 F	62864 ax	-+		Ø	1	R	$\bigcirc$		CHAIN	I OF CUSTO	DYR	ECOR	Ð
PROJECT Mark Twain Lake				EKS		S				H	F							<u>e</u>	LESER VAT	NOII
SAMPLERS: (Signature) RICK Artuck: A RUN CECULING	y . was	carkene U		CONTAIN	Y	SA	Og I	EHN N	ISO		asi		$\sim$					ICED	SPEC CHEM ADDEI FINAL KNO	DEALS D AND PH IF OWN
SAMPLE NUMBER	DATE	TIME	GRAB COMP	IO 'ON	SS	2010*	30	dN	STIM	SM	NIC					REM C SAMPLE 1	ARKS JR JOCATION			
/ MTL-1	9/26/10	05 21 10	X	~		X	X	XX		X								X		
2 MTL-5	-	1015	X	n	h.	X	X	>										X		
3 MTL-13		1055	Х	n	M	X	X	X										X		
4 MTL-9	_	1130	X	X	N	X	X	X										X		
5 MTL-11		1210	X	~	M	X	XX	X										X		
¢MTL-12		1254	×	r	Nd	X	X	XX										X		
7MTL-15-0		1128	X	r	X	X	X X	X										X		
FMTL-22-0		ceel	X	r	X	X	X	X										X		
9 MTL-22-15		1261	×	n	N	X	X	X										X		
10 MTL-33-0		1305	X	n	X	X	X	X										X		
i/ MTL-66-0		1055	×	r	XX	X	X	X										X		
17 MTL-77-0		2111	X	<u>x</u>	X	X	X	X										X		
<b>G IC MARINA</b>		1201	×					*.	X	X								X		
ABJ MARINA	1	1312	X						X	X	_							×		
Re			1		-															
the Relinquished by: (Signature)	S/Solute	Time	Baccejy	ed by: (	signat	les)	<u> </u>	FMA	RKS/S	PECIA	T INS.	TRUC	TION	S:						
0288 Relifiquished by (Signature)	9/29/	1919	Receiv	ed by: (	states	rre)	* #	Preser	ved wi ved wi	th H <sub>2</sub> Si th HNC	36					•				1
Bed Received for Lab fratory by: (Signature) ab fratory by:	<sup>Date</sup>	Time 1919	Shippi	ng Tick	et No.															
of PURCHASE ORDER NO:																				

	COOLER RECEIPT ARDL. INC	<u>r Repo</u> C.	RT				
	8870		" Ø	1 1			
AR	DL#: <u>0070</u>	Cool Num	er# <u>///</u> ber of Co	olers in Shipr	- ment <sup>.</sup> 3		
Pro	ject: Mark Twain Lake	Date	Receive	d: <u>09/29/2</u>	2021		
A.	PRELIMINARY EXAMINATION PHASE: Date cooler was opened: 09/2	29/2021	_(Signatur	DCB			
1.	Did cooler come with a shipping slip (airbill, etc.)?				YES	(NO)	>
	If YES, enter carrier name and airbill number here: <u>ARDL</u>	Couri	er-	-Valeri	0		
2.	Were custody seals on outside of cooler?				YES	NO (	N/A
	How many and where?,Seal Dat	te:	,Se	al Name:		loa	
3.	Were custody seals unbroken and intact at the date and time of arrival?				YES	NO	(NA)
4.	Did you screen samples for radioactivity using a Geiger Counter?			•••••		NO	
5.	Were custody papers sealed in a plastic bag? Hand delive	red			YES	NO	>
6.	Were custody papers filled out properly (ink, signed, etc.)?					NO	N/A
7.	Were custody papers signed in appropriate place by ARDL personnel?					NO	N/A
8.	Was project identifiable from custody papers? If YES, enter project name	at the top	of this form			NO	N/A
9.	Was a separate container provided for measuring temperature? YES	NO_	Obse	rved Cooler Temp	o. <u>0.2</u>		
В.	LOG-IN PHASE: Date samples were logged-in: 09/30/2021	(Signatu	re <u>)</u> DC	B	ection factor		<u> </u>
10.	Describe type of packing in cooler: LOOSE ICE	ala ana kan ka talan ta					
11.	Were all samples sealed in separate plastic bags?				YES	NO	<b>)</b> N/A
12.	Did all containers arrive unbroken and were labels in good condition?				ĒS	NO	
13.	Were sample labels complete?		•••••			NO	
14.	Did all sample labels agree with custody papers?				ĒS	NO	
15.	Were correct containers used for the tests indicated?	••••••				) NO	
16.	Was pH correct on preserved water samples?					) NO	N/A
17.	Was a sufficient amount of sample sent for tests indicated?		••••••			) NO	6
18.	Were bubbles absent in VOA samples? If NO, list by sample #:				YES	NO	
19.	Was the ARDL project coordinator notified of any deficiencies?		••••••		YES	NO	(NA)
	Comments and/or Corrective Action:		<b>Fi</b>	Sample	Fransfer		
			All		Fraction	1	
			Area#		Area #		
			MU By	K-In	Bv		
			DCF	>	•		
			093	0/2021	On		
			Chain-	of-Custody #	Contraction and the second second		
(F	By: Signature) Date:		e. anti-		<del> </del>		

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	COOLER RECEIPT RE	PORT		
	RR70	Socier# Blue 1		
ARI	. N	Number of Coolers in Shipment:	S	
Pro	iect: Mark Turain Lake	Date Received: 09/29/2021		
A.	PRELIMINARY EXAMINATION PHASE: Date cooler was opened:	I (Signature) DCB		
1.	Did cooler come with a shipping slip (airbill, etc.)?	YES	NO	)
	If YES, enter carrier name and airbill number here: ARD C	arier-Valerie	$\sim$	
2.	Were custody seals on outside of cooler?	YES	NO	N/A
	How many and where?,Seal Date:	,Seal Name:		
3.	Were custody seals unbroken and intact at the date and time of arrival?	YES	NO	NA
4.	Did you screen samples for radioactivity using a Gejger Counter?		NO	
5.	Were custody papers sealed in a plastic bag?	2	NO	)
6.	Were custody papers filled out properly (ink, signed, etc.)?	YES	) NO	N/A
7.	Were custody papers signed in appropriate place by ARDL personnel?		NO	N/A
8.	Was project identifiable from custody papers? If YES, enter project name at the	e top of this form	NO	N/A
9.	Was a separate container provided for measuring temperature? YESN	IO Observed Cooler Temp. 2.4	C C	
В.	LOG-IN PHASE: Date samples were logged-in: 09/30/20 Z (Sig	gnature) ACB	0.0	
10.	Describe type of packing in cooler: LOOSC [CC			
11.	Were all samples sealed in separate plastic bags?		NO	) <sub>N/A</sub>
12.	Did all containers arrive unbroken and were labels in good condition?	ÝES	) no	
13.	Were sample labels complete?		NO	
14.	Did all sample labels agree with custody papers?		NO	
15.	Were correct containers used for the tests indicated?		NO	
16.	Was pH correct on preserved water samples?		) NO	N/A
17.	Was a sufficient amount of sample sent for tests indicated?		) NO	000
18.	Were bubbles absent in VOA samples? If NO, list by sample #:	YES	NO	(N/A)
19.	Was the ARDL project coordinator notified of any deficiencies?	YES	NO	(N/A)
	Comments and/or Corrective Action:	Sample Transfer		
		A l		
		Area # Area #		
		By By		
		TR J		
		On On On		
-		1071002021		
		Chain-of-Custody #		
(E	By: Signature) Date:			

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	COOLER RECEIPT	REPORT	[				
۸Dr		Cooler #		p7			
ARL		Number	of Coo	lers in Shipn	nent: <u>3</u>		_
Proj	ect: Mark Twain Lake	Date Re	ceived	09/29/2	021		
A.	PRELIMINARY EXAMINATION PHASE: Date cooler was opened: $\frac{O}{29}$	/2021 (Si	ignature)	DCB			
1.	Did cooler come with a shipping slip (airbill, etc.)?				YES	(10	)
	If YES, enter carrier name and airbill number here:	Courit	2-	Valerie	2		
2.	Were custody seals on outside of cooler?				YES	NO	(N/A)
	How many and where?,Seal Date:		,Seal	Name:		hopeneous and a	The Addition of the Addition o
3.	Were custody seals unbroken and intact at the date and time of arrival?				YES	NO	NA
4.	Did you screen samples for radioactivity using a Geiger Counter?	·····			YES	NO	
5.	Were custody papers sealed in a plastic bag? Hand. Ole I. Ven	eel			YES	NO	)
6.	Were custody papers filled out properly (ink, signed, etc.)?					) no	N/A
7.	Were custody papers signed in appropriate place by ARDL personnel?				YES	NO	N/A
8.	Was project identifiable from custody papers? If YES, enter project name a	t the top of th	is form			) NO	N/A
9.	Was a separate container provided for measuring temperature? YES	NO	Observ	ed Cooler Temp Corre	ection factor	; ტ.(	C
В.	LOG-IN PHASE: Date samples were logged-in:	(Signature)	XB				
10.	Describe type of packing in cooler:						
11.	Were all samples sealed in separate plastic bags?				YES	NO	) n/a
12.	Did all containers arrive unbroken and were labels in good condition?					) <sub>NO</sub>	
13.	Were sample labels complete?				YES	NO	
14.	Did all sample labels agree with custody papers?				(YES)	NO	
15.	Were correct containers used for the tests indicated?	•••••				NO	
16.	Was pH correct on preserved water samples?					NO	N/A
17.	Was a sufficient amount of sample sent for tests indicated?				YES	NO	
18.	Were bubbles absent in VOA samples? If NO, list by sample #:				YES	NO	
19.	Was the ARDL project coordinator notified of any deficiencies?				YES	NO	(N/A)
	Comments and/or Corrective Action:	. Fra	action	Sample	Fransfer		
					Taction		
		Are	ea#	1	Area #		
			MK	-111	Ву		
			DCB				
		Or	alan	12021	On		
			430				]
		_ c	hain-ot	f-Custody #			_
(B	y: Signature) Date:						

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# APPENDIX C: 2021 MARK TWAIN LAKE DO AND TEMP PROFILES















