

2020 Water Quality Report

U.S. Army Corps of Engineers Saint Louis District

Rend Lake Water Quality Conditions: 1972-2020



June 2021

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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 USACEs 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. Currently the Illinois Environmental Protection Agency (IEPA, 2018) has listed Rend Lake as impaired for aesthetic quality and fish consumption caused by total suspended solids and mercury, respectively. The Big Muddy River upstream of Rend Lake is impaired for aquatic life and fish consumption with the sources listed as dissolved oxygen, pH, total phosphorus, sedimentation/siltation and mercury. The other main tributary, Casey Fork, is impaired for fish consumption and aquatic life. The sources are listed as polychlorinated biphenyls, chloride, iron, dissolved oxygen, pH, and total suspended solids. The smaller tributaries Gun Creek and Atchison Creek aguatic life is impaired by dissolved oxygen. Immediately downstream of Rend Lake, the Big Muddy River is impaired for aquatic life and fish consumption caused by sedimentation/siltation, mercury, and polychlorinated biphenyls.

Water quality sampling in 2020 revealed the following concerns at Rend Lake: dissolved oxygen, Atrazine, chlorophyll, manganese, and phosphorus.

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INTRODUCTION

The Big Muddy River Watershed is located in Southern Illinois and encompasses a drainage area of approximately 2,390 square miles within the following counties: Franklin, Jackson, Jefferson, Marion, Perry, Union Washington, and Williamson. The Big Muddy River originates in Jefferson County, southeast of Centralia, Illinois and flows southward for approximately 156 miles, where it joins the Mississippi River, just south of Grand Tower, Illinois in Jackson County. Major tributaries of the Big Muddy River include: Beaucoup Creek, Little Muddy River, Casey Creek, Middle Fork of the Big Muddy, and Crab Orchard Creek. Lakes and reservoirs within the Big Muddy River Watershed include: Kinkaid Lake, Rend Lake, Crab Orchard Lake, Devil's Kitchen Lake, Little Grassy Lake, and Cedar Lake.

The Rend Lake Watershed is located in south-central Illinois. It flows generally in a southerly direction and drains approximately 311,000 acres, located in the following four counties: Jefferson, Franklin, Washington, and Marion. Elevation within the watershed ranges from 642.0 feet NGVD (National Geodetic Vertical Datum) in the northern portion of the watershed to 396.0 feet NGVD at the outfall of the Rend Lake dam at the southern extent of the watershed. Approximately 37,400 people reside within the Rend Lake Watershed and the average precipitation is approximately 41.1 inches per year. Land cover data for the watershed indicate the largest percentage of area is used for crop production (35%). Approximately 27% of the watershed area is forest and 20% of the watershed is pasture.

Rend Lake is located in Franklin and Jefferson counties, about three miles northwest of Benton, Illinois. The dam is located on the Big Muddy River, 103.7 miles upstream from its confluence with the Mississippi River. The Rend Lake project is comprised of 40,840 acres of land and water. The lake has a water surface area of 20,633 acres at the normal operating pool elevation of 405.0 feet NGVD. At this pool elevation the lake shoreline is approximately 162 miles; and extends upstream from the dam approximately 13 miles. Roughly 10 miles above the main dam are two sub-impoundment dams: one on the Big Muddy River and the other on the Casey Fork River. These sub-impoundments are used for regulating water levels for fish and wildlife management activities. The lake width varies from 1.5 to 3 miles. The depth is fairly shallow, with a maximum depth of about 35 feet near the main dam, when the pool elevation is at 405.0 feet NGVD. The Rend Lake project contains 53 recreation areas, with 756 campsites, 104 picnic sites, 30 boat ramps, 235 marina slips and over 34 miles of trails. Each year, on average, over two-million people visit the lake, which annually generates nearly \$35 million in visitor spending within 30-miles of the project.

There is virtually no municipal or industrial use of groundwater in the area because of the abundant water supply provided by Rend Lake, which serves as the major municipal water supply for approximately 300,000 residents of Southern Illinois. This water supply system is managed by the Rend Lake Conservancy District (RLCD), which is the largest public water supply system (1,800 square miles) in the State of Illinois and draws nearly

13 million gallons of water per day from Rend Lake. Also, the lake provides industrial water supply for a coal mine in the area, which is managed by Adena Resources.

Rend Lake is managed and operated by the CEMVS for the authorized purposes of flood risk management, water supply, water quality, fish and wildlife conservation, recreation, and area redevelopment. 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 Rend 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 the Big Muddy River and Rend 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 (CEMVS) of United States Army Corps of Engineers (USACE) has implemented a Water Quality Management Plan (WQMP) as part of the operation and maintenance activities associated with managing USACEs' civil works projects throughout the District which includes, among other reservoirs and rivers, the Big Muddy River and Rend Lake. 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 self-imposed 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.
- 2) 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 Rend Lake. The report describes conditions observed in 2020, as well as baseline data collected from 1972-2019. Additional historical data are available upon request.

REND LAKE WQMP COVERAGE

The WQMP for Rend Lake includes water samples taken at the following locations: major tributaries (REN-7 and REN-5), main body of the lake (REN-2, REN-3, REN-4, REN-8, and Rend Marina), and just downstream of the dam (REN-1). See figures 1 and 2, and Table 1 for a site map and site coordinates.

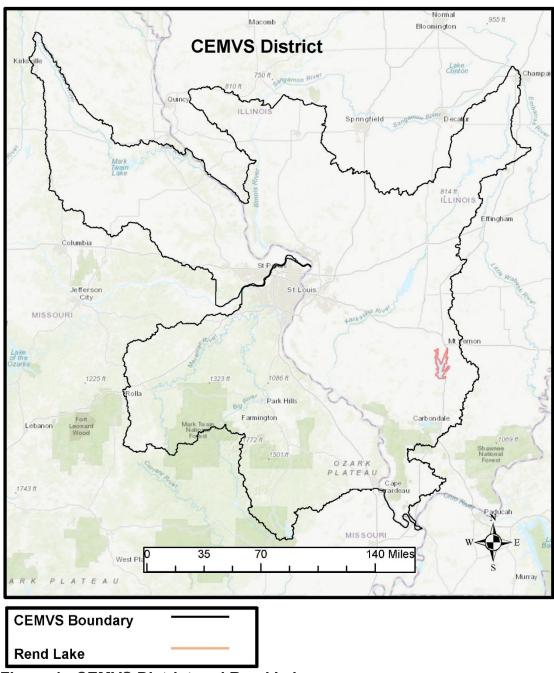


Figure 1. CEMVS District and Rend Lake

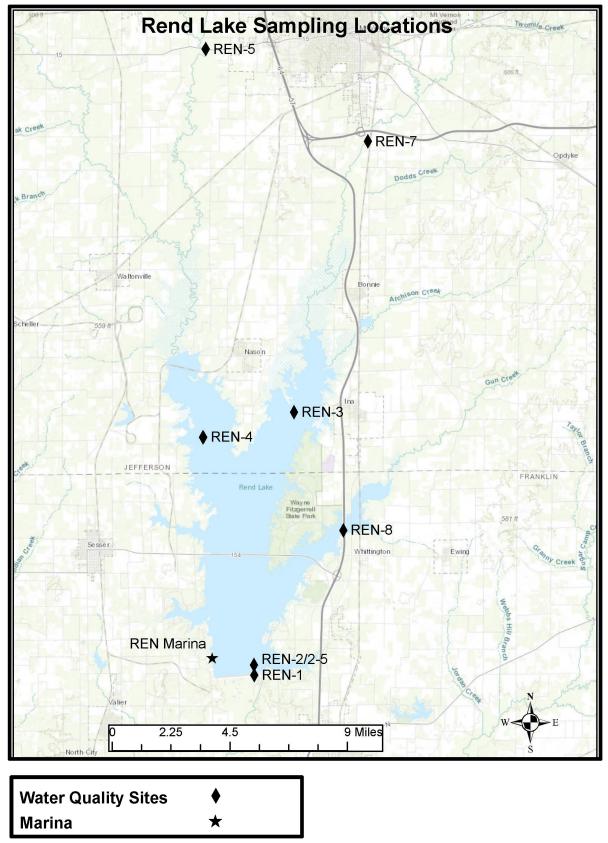


Figure 2. Water Quality (WQ) Sampling Locations at Rend Lake

Sample Location Summary Table

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

Sample Location Type	Abbreviation	Site Name	Latitude	Longitude
Major Tributary	TRIB	REN-5	38.309795	-88.988575
	TRIB	REN-7	38.2695630	-88.8987040
Main Reservoir Surface	RS	REN-2	38.039294	-88.961891
	RS	REN-3	38.1517450	-88.9395220
	RS	REN-4	38.1407880	-88.9899850
	RS	REN-8	38.1002570	-88.9123030
	RS	REN-MAR	38.044727	-88.985267
Reservoir Benthic	RB	REN-2-5	38.039294	-88.961891
Tail Race (below dam)	TR	REN-1	38.0369550	-88.9615650

Samples at Marinas are not always taken in the exact same location.

METHODS AND ANALYSIS: WATER QUALITY

Data Collection and Historical Reference Data

During 2020, water quality samples were collected and analyzed for 9 locations during four separate sampling events (n=36; Table 1). One duplicate sample was also collected during each sampling event for quality control purposes. With the exception of the benthic sample location REN 2-5 in front of the dam, 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.

For the purpose of this report, historical reference data refers to water quality data collected during the previous years ranging as far back as 1972 (parameter dependent) at Rend Lake. Historical reference data are intended to represent the current condition of Rend Lake.

Statistical Summary and Comparison to Applicable Water Quality Standards

Statistical analyses for 2020 data were performed on water quality monitoring data collected for 9 locations, and classified as TRIB (n= 2), RS (n=5), RB (n=1), and TR (n=1). For comparison, statistical analyses were also performed on historical water quality monitoring data and, although some sampling locations have been removed, they were classified in the same manner. Descriptive statistics were calculated to describe central tendencies and corresponding 95% confidence levels for the mean. 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 Rend Lake has 9 samples and one duplicate).

Internal checks are also used for field sampling. These include 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. Water temperature criteria for warm water bodies in Illinois is within 2.8°C of the seasonal norm.

Dissolved Oxygen (DO) refers to the measurement of free oxygen molecules (O₂) that are not bonded to any other elements; thus, oxygen bonded in water (H₂O) 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 (CO₂ + H₂O = (CH₂O) + O₂) 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

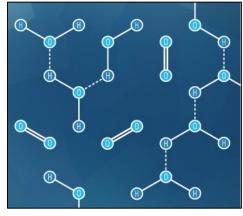


Figure 1: Dissolved oxygen (O_2) vs oxygen bonded in water (H_2O) .

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 $\geq 1 \text{mg/L}$, while most inland fish species require a minimum DO of 4 mg/L. The DO water quality criteria for Illinois is $\geq 5 \text{mg/L}$.

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 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 Illinois ranges from 6.5 - 9.0.

<u>Conductivity</u> 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 μ S/cm 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. Illinois does not currently have a standard criteria for TSS, 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.

Metals Iron (TFe) and Manganese (TMn) (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, were 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.

<u>Nitrogen</u> 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. Illinois has set criteria standards 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).

<u>Total Phosphorus (TP)</u> 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 (algal 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**₄-**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 - (In SD/In 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))
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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
40-50	Mesotrophic
50-70	Eutrophic
70-100	Hypereutrophic

Laboratory Methods and Water Quality Criteria Summary Table

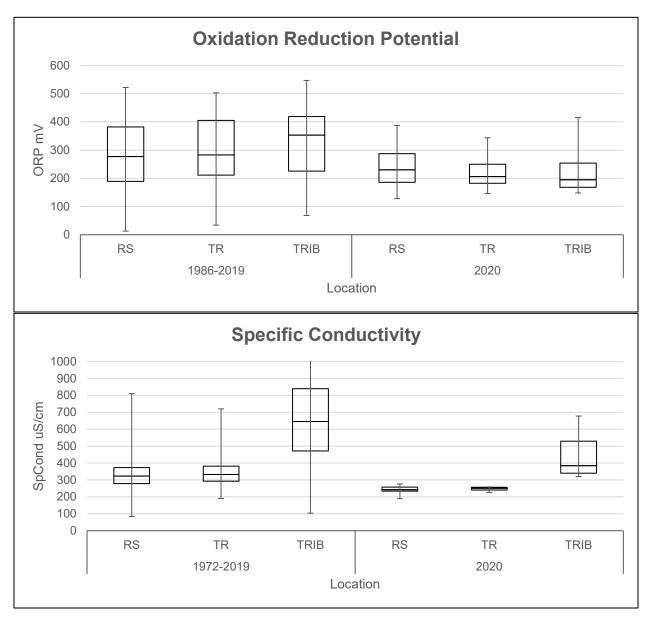
Table 2: Metrics, Methods, and Water Quality Criteria Used for Evaluating Water Quality

<u>Metric</u>	Abbreviation	Analysis Method	Water Quality Criteria	<u>Source</u>
Alachlor		EPA Method 8270C	< 2μg/L PWS or <1100 μg/L: aquatic life	Illinois EPA
Ammonia Nitrogen	NH ₃	EPA Method 350.1	<15 mg/L	United States EPA
Atrazine	Atrazine	9 μg/L: Chronic or 82 μg/L: Acute or 3 μg/L EPA Method 8270C DWS		Illinois EPA
Bacteria: E. Coliform	E Col	EPA Method 1604	< 235 E. Col per 100/mL for single sample	Illinois EPA
Chlorophyll a	Chl_a	SM Method 10200H	< 25mg/cm ³ (Eutrophic Upper Limit)	Carlson 1977
Chlorpyrifos		EPA Method 8270C	< 0.11 μg/L: aquatic life	Illinois EPA
Cyanazine		EPA Method 8270C	< 30 μg/L: chronic or < 370 μg/L acute (aquatic life)	Illinois EPA
Depth	Depth	Multiparameter Meter	Measurements reported at ~1 meter	
Dissolved Oxygen	DO	Multiparameter Meter	Greater than 5.0mg/L	Illinois EPA
Metolachlor		EPA Method 8270C	30.4 μg/L: Chronic or 380 μg/L: Acute	Illinois EPA
Metribuzin		EPA Method 8270C	8.4 mg/L: aquatic life or 8.3 mg/L: human health	Illinois EPA
Nitrate as Nitrogen	NO ₃	Green Method	< 10 mg/L	Illinois EPA
Non-Volatile Suspended Solids	NVSS	TSS - VSS		
Orthophosphate	Ortho	EPA Method 365.2		
Pendmethalin		EPA Method 8270C	< 30 μg/L: chronic or < 350 μg/L acute (aquatic life)	Illinois EPA
Pheophytin a	Phpy_a	SM Method 10200H		
Potential of Hydrogen	pН	Multiparameter Meter	Range: 6.5 – 9.0pH	Illinois EPA
Specific Conductivity	SpCond	Multiparameter Meter	500 μS/cm	
Temperature	Temp	Multiparameter Meter	Less than rise of 2.8°C above normal seasonal temperature	Illinois EPA
Total Dissolved Solids	TDS	Multiparameter Meter	< 500 mg/L	Illinois EPA
Total Manganese	TMn	EPA Method 6010C	< 1 mg/L	Illinois EPA

<u>Metric</u>	Abbreviation	Analysis Method	Water Quality Criteria	<u>Source</u>
Total Organic Carbon	TOC	EPA Method 415.1		
Total Iron	TFe	EPA Method 6010C < 1 mg/L		Illinois EPA
Total Phosphorus	TP	EPA Method 365.2	Method 365.2 Less than 0.05 mg/L	
Total Suspended Solids	TSS	EPA Method 160.2		
Trifluralin		EPA Method 8270C	< 1.1 μg/L: chronic or < 26 μg/L acute (aquatic life)	Illinois EPA
Turbidity	Turb	Multiparameter Meter		
Volatile Suspended Solids	VSS	EPA Method 160.4		

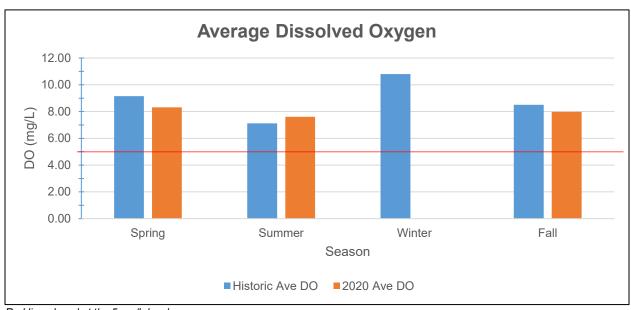
^{*1} mg/L is equivalent to 1 drop in two bathtubs and 1 ug/L is equivalent to 1 drop in an Olympic size swimming pool. PWS is public water supply. DWS is drinking water standard.

RESULTS AND SUMMARY STATISTICS: WATER QUALITY



	<u>Histori</u>	cal Refere	ence 1973-	<u> 2019</u>			202	<u>20</u>	
					CL				CL
	Location	Mean	Median	Count	(95.0%)	Mean	Median	Count	(95.0%)
SpCond	RS	328.95	323.00	750	5.30	243.47	242.95	20	8.88
	TR	341.27	332.50	226	8.96	246.63	250.60	4	23.38
	TRIB	702.39	645.00	369	38.04	438.66	384.05	8	108.81
ORP	RS	282.78	277.00	406	10.71	239.28	229.80	20	34.67
	TR	309.96	323.50	110	21.94	225.70	206.35	4	134.07
	TRIB	327.82	353.00	179	17.31	229.81	194.90	8	79.92

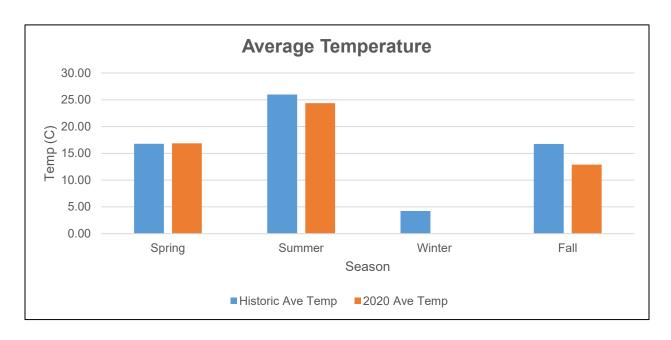
^{*}This report does not acknowledge a water quality criteria for SpCond or ORP.



Red line placed at the 5 mg/L level.

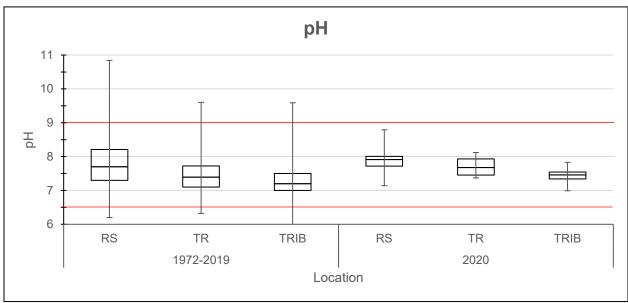
	<u>H</u>	istorical	Reference	1973-201	<u>9</u>		2	<u> 2020</u>	
					CL				CL
Season	Location	Mean	Median	Count	(95.0%)	Mean	Median	Count	(95.0%)
Spring	RS	10.03	10.00	215	0.27	9.24	8.71	10	1.17
	TR	8.92	9.10	74	0.59	6.96	6.96	2	42.63
	TRIB	7.75	7.90	123	0.38	8.27	8.43	4	3.64
Summer	RS	7.91	7.80	326	0.23	8.24	7.17	5	1.90
	TR	6.33	6.80	95	0.42	8.01	8.01	1	
	TRIB	5.66	5.62	125	0.38	5.82	5.82	2	5.02
Fall	RS	9.30	9.40	139	0.35	9.40	9.52	5	0.65
	TR	9.03	9.25	40	0.54	9.99	9.99	1	
	TRIB	5.73	5.88	47	0.51	3.43	3.43	2	21.28
Winter	RS	11.27	11.90	71	0.63				
	TR	12.00	12.30	24	0.97				
	TRIB	9.89	10.80	68	0.67				

^{*} DO was recorded below the standard at REN-1 in May and at REN-5 in November 2020. All other observations met the Illinois state standard.



	<u>H</u>	istorical	Reference	1973-20°	<u>19</u>		<u>20</u>	<u> 20</u>	
					CL				CL
Season	Location	Mean	Median	Count	(95.0%)	Mean	Median	Count	(95.0%)
Spring	RS	16.94	16.45	220	0.72	15.96	15.13	10	4.45
	TR	15.85	16.05	74	1.06	13.52	13.52	2	58.17
	TRIB	17.04	17.91	128	0.71	15.62	15.83	4	10.96
Summer	RS	26.91	27.00	325	0.28	25.44	25.30	5	0.52
	TR	25.41	25.85	94	0.45	25.70	25.70	1	
	TRIB	24.02	24.00	128	0.60	21.05	21.05	2	13.34
Fall	RS	17.46	18.00	142	0.82	13.56	13.20	5	0.91
	TR	17.35	18.00	40	1.49	12.90	12.90	1	
	TRIB	14.25	14.00	49	1.33	11.20	11.20	2	20.33
Winter	RS	4.47	5.00	71	0.73				
	TR	3.71	4.00	24	1.15				
	TRIB	4.17	3.00	67	0.91				

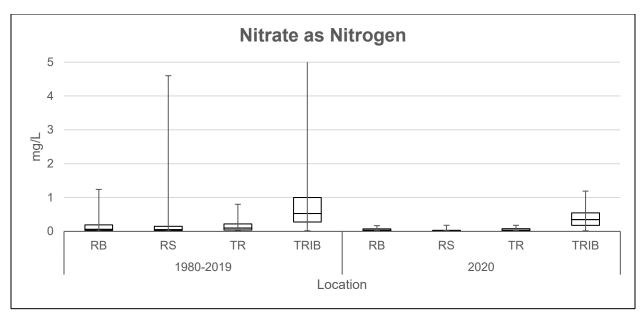
^{*} All temperatures were within acceptable range of water quality criteria during 2020.

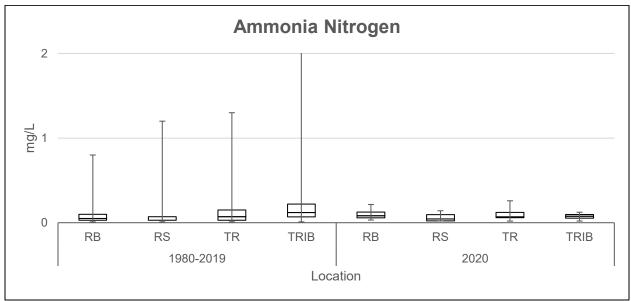


*Red lines indicate the upper and lower water quality criteria standards (between 6.5 and 9).

		<u>H</u>	istorical R			2020			
·				CL					CL
	Location	Mean	Median	Count	(95.0%)	Mean	Median	Count	(95.0%)
рН	RS	7.81	7.70	748	0.05	7.88	7.91	20	0.18
	TR	7.41	7.39	230	0.06	7.71	7.68	4	0.55
	TRIB	7.27	7.20	359	0.05	7.43	7.46	8	0.22

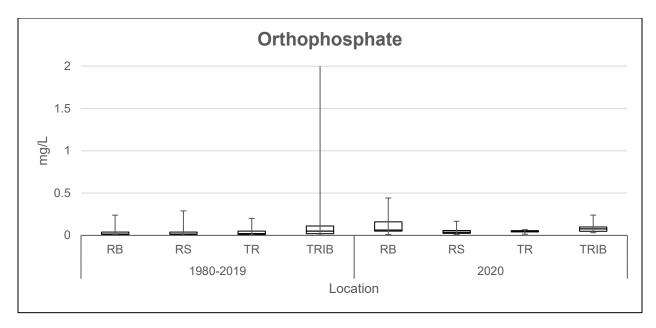
^{*}All pH readings were within water quality standards during 2020.

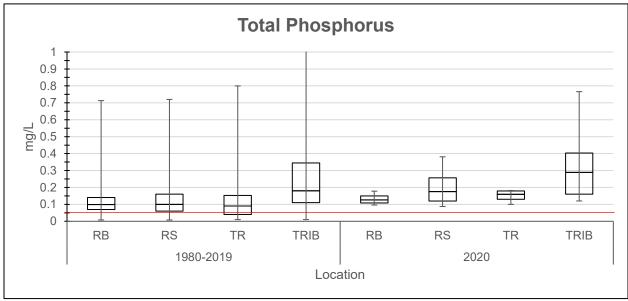




		Histo	rical Refe	rence 198	<u>80-2019</u>		2	<u> 2020</u>	
					CL				
	Location	Mean	Median	Count	(95.0%)	Mean	Median	Count	CL (95.0%)
NO3N	RB	0.14	0.06	176	0.03	0.06	0.03	4	0.12
	RS	0.13	0.05	746	0.02	0.04	0.02	16	0.03
	TR	0.16	0.10	234	0.02	0.07	0.03	4	0.12
	TRIB	0.88	0.53	367	0.12	0.43	0.35	8	0.33
NH3N	RB	0.08	0.05	172	0.01	0.10	0.08	4	0.13
	RS	0.06	0.03	679	0.01	0.06	0.04	16	0.02
	TR	0.12	0.07	202	0.02	0.11	0.07	4	0.16
	TRIB	0.62	0.12	303	0.21	0.07	0.08	8	0.03

^{*}All observations of nitrate and ammonia nitrogen were within the water quality standard.

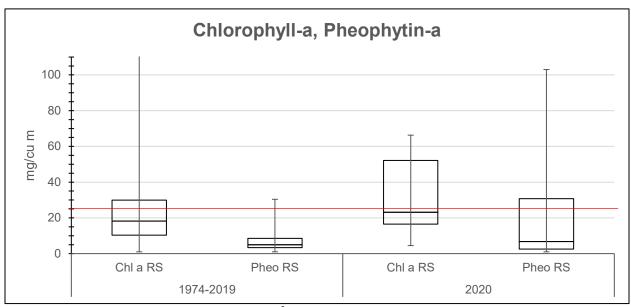




*Red line indicates the water quality standard of 0.05 mg/L.

		Histo	rical Refe	<u>2020</u>					
	CL								CL
	Location	Mean	Median	Count	(95.0%)	Mean	Median	Count	(95.0%)
Ortho	RB	0.03	0.02	175	0.01	0.15	0.06	4	0.32
	RS	0.03	0.02	727	0.00	0.05	0.04	16	0.02
	TR	0.04	0.02	217	0.01	0.05	0.05	4	0.04
	TRIB	0.34	0.05	366	0.10	0.09	80.0	8	0.06
TP	RB	0.12	0.10	186	0.01	0.13	0.13	4	0.06
	RS	0.13	0.10	782	0.01	0.19	0.18	16	0.05
	TR	0.11	0.09	238	0.01	0.15	0.16	4	0.06
	TRIB	0.54	0.18	379	0.11	0.33	0.29	8	0.18

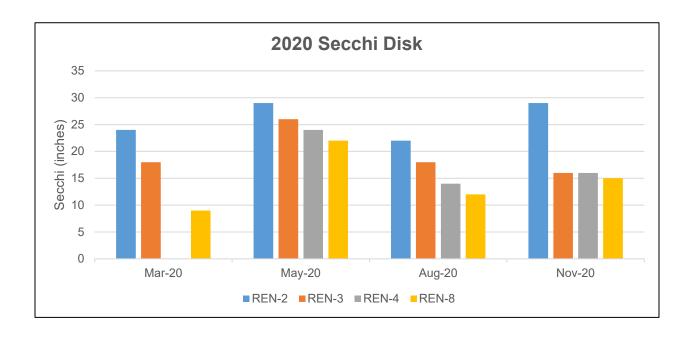
^{*}Total phosphorus exceeded the proposed criteria of 0.05 mg/L for all locations. This study does not acknowledge a water quality criteria for orthophosphate.

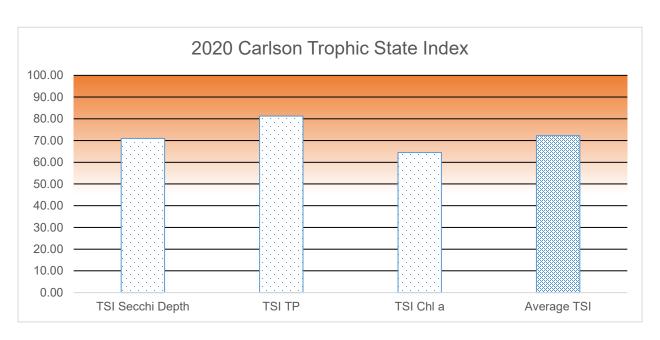


*Red line indicates the water quality standard of 25 mg/cm³. See Carlson 1977.

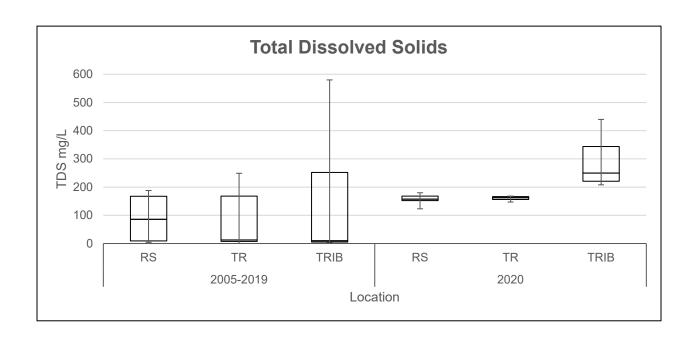
		Hist		2	2020				
	Location	Mean	Median	Count	CL(95.0%)	Mean	Median	Count	CL(95.0%)
Chl a	RS	23.64	18.20	503	1.77	31.72	23.15	16	11.37
Pheo a	RS	7.02	5.00	463	0.48	21.97	6.75	16	16.08

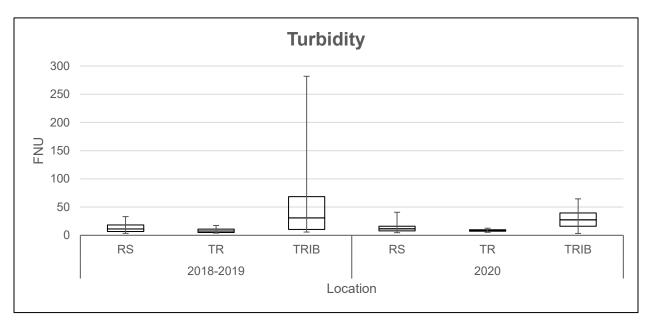
^{*}The proposed criteria for chlorophyll-a of 25mg/cm³ was exceeded at all the lake sites at least one time in 2020. This study does not acknowledge a criteria for pheophytin.





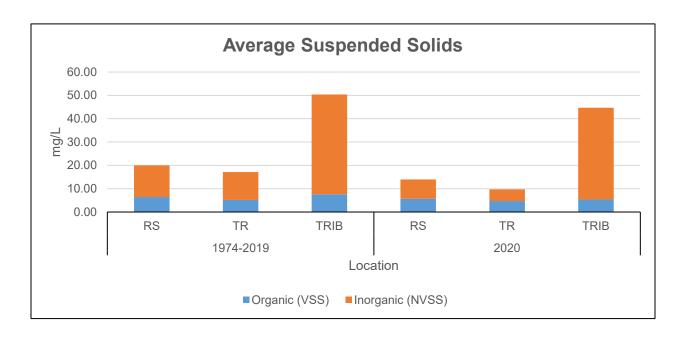
<40 = Oligotrophic ___ 40-50 = Mesotrophic ___ 50-70 = Eutrophic ___ >70 Hypereutrophic





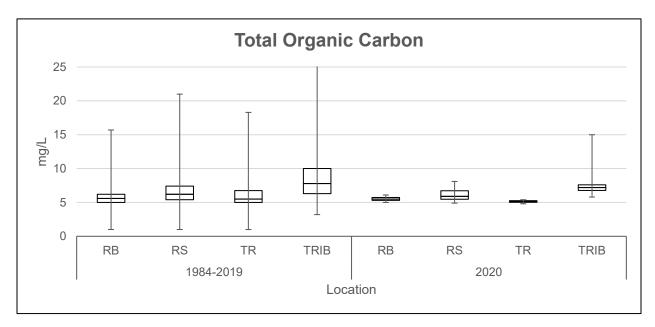
		Histo	rical Refe	rence 20		<u>2020</u>					
			CL								
	Location	Mean	Median	Count	(95.0%)	Mean	Median	Count	(95.0%)		
FNU	RS	13.06	11.26	38	2.59	14.46	11.58	20	4.56		
	TR	8.78	7.66	8	4.05	8.73	8.57	4	4.75		
	TRIB	57.55	30.66	16	39.24	29.08	27.31	8	17.01		
TDS	RS	85.80	86.00	75	17.83	158.10	157.00	20	5.82		
	TR	87.12	12.58	17	45.89	160.00	162.50	4	15.10		
	TRIB	128.17	9.54	36	57.74	285.13	249.50	8	70.70		

^{*} All observations of TDS were within the referenced water quality standard during 2020.



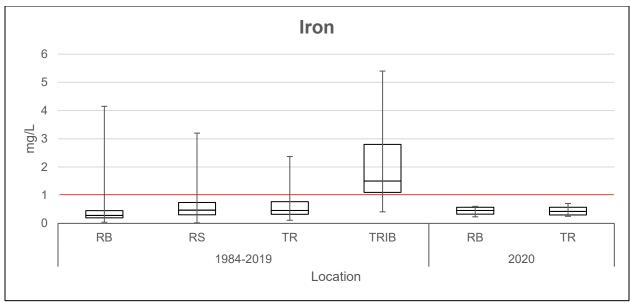
		Hist	orical Ref	erence 1	974-2019	<u>2020</u>				
	Location	Mean	Median	Count	CL(95.0%)	Mean	Median	Count	CL(95.0%)	
TSS	RS	19.92	15.75	726	1.57	13.99	12.80	16	3.78	
	TR	17.04	13.00	219	2.03	9.70	9.40	4	2.67	
	TRIB	50.33	30.55	328	7.11	44.70	29.40	8	47.93	
VSS	RS	6.44	6.00	717	0.27	5.66	4.60	16	1.28	
	TR	5.20	5.00	215	0.43	4.70	4.00	4	2.23	
	TRIB	7.56	5.00	325	0.81	5.38	4.20	8	2.65	
NVSS	RS	13.56	9.20	726	1.42	8.33	7.60	16	3.17	
	TR	11.93	8.30	219	1.77	5.00	5.20	4	1.10	
	TRIB	42.84	24.90	328	6.46	39.32	25.20	8	45.44	

^{*}The solids data measured in 2020 were comparable to the historical data..

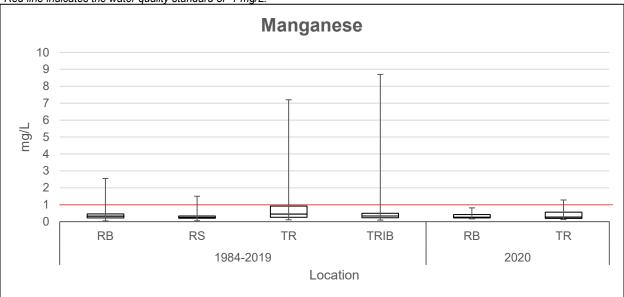


	<u>H</u>	istorical Re	eference 19	<u>2020</u>					
Location	Mean	Median	Count	CL(95.0%)	Mean	Median	Count	CL(95.0%)	
RB	5.86	5.60	148	0.29	5.53	5.50	4	0.73	
RS	6.77	6.20	525	0.20	6.13	5.90	16	0.48	
TR	6.35	5.50	150	0.41	5.13	5.15	4	0.40	
TRIB	8.79	7.80	201	0.63	7.99	7.20	8	2.43	

^{*}This study does not recognize a water quality criteria for TOC.



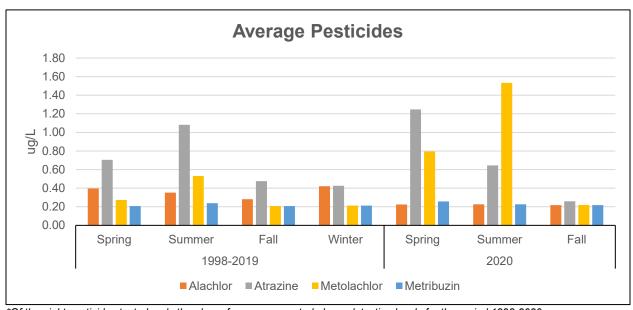




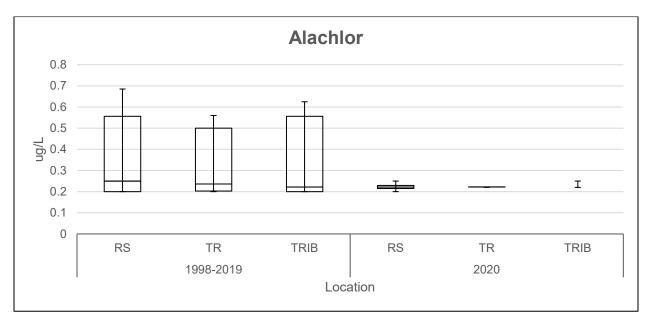
*Red line indicates the water quality standard of 1 mg/L.

		<u>Hist</u>	orical Ref	erence 1	984-201 <u>9</u>	<u>2020</u>				
	Location	Mean	Median	Count	CL(95.0%)	Mean	Median	Count	CL(95.0%)	
Iron	RB	0.44	0.28	147	0.08	0.44	0.46	4	0.28	
	RS	0.59	0.47	234	0.06					
	TR	0.58	0.46	145	0.06	0.45	0.42	4	0.33	
	TRIB	2.06	1.50	65	0.34					
Mang	RB	0.41	0.32	147	0.05	0.38	0.26	4	0.47	
	RS	0.28	0.25	234	0.02					
	TR	0.77	0.45	145	0.16	0.49	0.27	4	0.85	
	TRIB	0.65	0.33	65	0.31					

^{*}In 2020 manganese exceeded the standard of 1 mg/L at REN-1 once in May. All other measurements for manganese and iron were within the state standards.

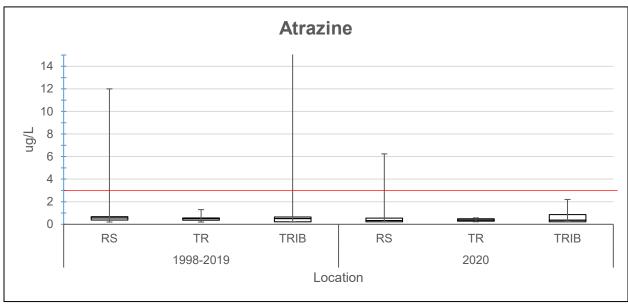


*Of the eight pesticides tested, only the above four were reported above detection levels for the period 1998-2020.



		Hist	torical Re	<u>2020</u>					
	Location	Mean	Median	Count	CL(95.0%)	Mean	Median	Count	CL(95.0%)
Alachlor	RS	0.37	0.25	231	0.02	0.22	0.22	16	0.01
	TR	0.36	0.24	58	0.04	0.22	0.22	4	0.00
	TRIB	0.37	0.22	111	0.03	0.23	0.22	8	0.01

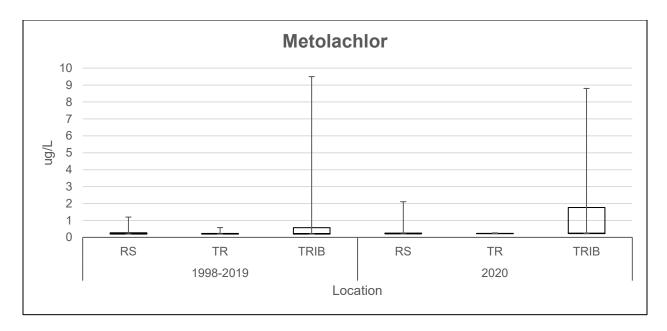
^{*}All measurements of Alachlor were within the water quality criteria in 2020.



*Red line indicates the water quality standard of 3 ug/L DWS.

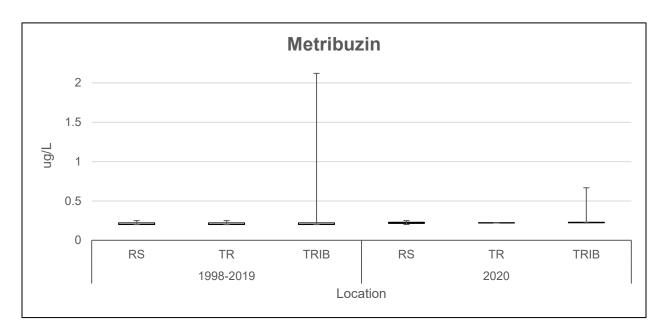
		Hist	orical Refe		<u>2020</u>				
	Location	Mean	Median	Count	CL(95.0%)	Mean	Median	Count	CL(95.0%)
Atrazine	RS	0.76	0.56	232	0.15	1.02	0.33	16	0.88
	TR	0.51	0.50	58	0.06	0.39	0.38	4	0.25
	TRIB	1.29	0.50	111	0.68	0.74	0.36	8	0.66

^{*}Atrazine exceeded the water quality criteria twice in May 2020.



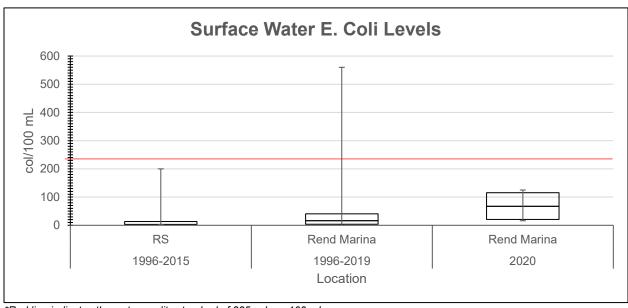
		Histo	orical Refe	erence 19	98-2019	<u>2020</u>				
					CL(95.0				CL(95.0	
	Location	Mean	Median	Count	%)	Mean	Median	Count	%)	
Metolachlor	RS	0.30	0.22	120	0.03	0.43	0.22	16	0.27	
	TR	0.26	0.22	30	0.04	0.23	0.22	4	0.04	
	TRIB	0.73	0.22	58	0.38	1.95	0.24	8	2.69	

^{*}Metolachlor did not exceed water quality criteria in 2020.



		Histo	rical Refe	<u>2020</u>					
	Location	Mean	Median	Count	CL(95.0%)	Mean	Median	Count	CL(95.0%)
Metribuzin	RS	0.21	0.20	128	0.00	0.22	0.22	16	0.01
	TR	0.21	0.20	32	0.00	0.22	0.22	4	0.00
	TRIB	0.26	0.20	62	0.07	0.28	0.22	8	0.13

^{*}Metribuzin did not exceed water quality criteria in 2020.



*Red line indicates the water quality standard of 235 col per 100 mL.

Historical Reference 1996-2019 2020									
				CL				CL	
Marina Location	Mean	Median	Count	(95.0%)	Mean	Median	Count	(95.0%)	
Rend Marina	45.84	16.00	44	28.63	68.75	67.00	4	91.88	
RS	16.81	3.00	48	11.03					

^{*}Marina bacteria levels did not exceed the water quality standard in 2020.

	2020 Swimming Beach Bacteria Levels (E. Coli / 100mL)												
	Dale M	iller	North Ma	ırcum	Sandusky								
	Shallow	Deep	Shallow	Deep	Shallow	Deep							
6/3/2020	6.3	1	307.6	1	55.6	9.7							
6/16/2020	1	3.1	1	1	261.3	10.8							
6/17/2020	n/a	n/a	n/a	n/a	6.3	1							
6/29/2020	15.8	16.1	14.6	24.6	66.3	45.7							
7/14/2020	1	1	1	2	4.1	6.3							
7/27/2020	1	1	3.1	4.1	17.1	4.1							
8/10/2020	93.3	105	37.9	13.4	38.8	9.7							
8/24/2020	3.1	5.2	2	1	2	2							

^{*}Beach bacteria levels exceeded the reference water quality criterion twice in 2020.

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 2020 did not deviate far from conditions observed during the reference period (2014-2018); nevertheless, concerns regarding DO, Atrazine, Mn, and TP were evident. In addition, CHL_a and subsequent TSI levels were indicative of a hyper eutrophic system.

With a few exceptions, all DO levels recorded in 2020 were above the 5 mg/L standard. On May 26 2020 DO was recorded at 3.6 mg/L at REN-1. At the time of this sampling the sluice gate was closed, allowing no flow. Similar readings have been observed at REN-1 in previous years. On November 12 2020 DO was recorded at 1.8 mg/L at REN-5 during a time of very low flow. There have been 46 events since 1972 that DO was recorded below the standard at REN-5 compared with 21 events at the other main tributary, REN-7, and 23 events at REN-1, the controlled discharge. Given that both main tributaries are impaired for DO, and the historical data, these few low readings in 2020 are not out of the ordinary. All other parameters measured at that time (pH, ORP, SpCond, Temp, TDS, & Turb) were within the normal ranges. The historic average DO level (8.9 mg/L) is similar to the 2020 average DO levels (7.97 mg/L).

Pesticides are commonly used throughout much of the agricultural landscape that the Big Muddy River flows. Of the eight pesticides tested, only Alachlor, Atrazine, Metolachlor, and Metribuzin were detected between 1998 and 2020. Of those four, only Atrazine was found to exceed the criteria in 2020. The Atrazine drinking water standard (3 ug/L) was exceeded on May 26 2020 at REN-4 and REN-8 with a level of 3.31 ug/L and 6.24 ug/L respectively. Atrazine levels were recorded over the standard multiple times in the tributaries historically. The 2020 Atrazine average (0.849 ug/L) is comparable to the historic Atrazine average (0.87 ug/L). 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. Only low levels of pesticides have been observed in the tailrace.

Total suspended solids can affect water quality by increasing temperature through the absorption of sunlight by suspended particles in the water column, and consequently reduce DO. TSS are also strongly correlated with water clarity and the presence of Macrophytes. Given that Rend lake and its tributaries are impaired by TSS it is imperative to continue monitoring TSS trends. The historic mean and median TSS data are greater than 2020 data. Thus, the 2020 TSS data indicate normal levels in comparison to the historical range.

Living organisms require trace amounts of metals, but excessive levels can be harmful. TFe did not exceed the criterion of 1 mg/L in 2020. The mean TFe concentrations in

2020 were similar to the historical data. 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. TFe levels in the tailrace in 2020 were found to be less than the criterion and similar to the levels in front of the dam. TMn in 2020 exceeded the criterion once in the tailrace in May. Historically, TMn has exceeded the criterion multiple times in the tailrace and once in front of the dam. The mean concentrations of TMn in 2020 were less than the historical values.

TP levels have surpassed the 0.05 mg/L criterion for several years. In 2020 the TP criterion was exceeded at all locations with a mean concentration across all sites of 0.21 mg/L compared to the historical mean of 0.22 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.

Although there is not a state criterion for CHL_a the proposed standard of 25 mg/cm³ was exceeded at all the lake sampling locations at least once in 2020. The 2020 mean CHL_a concentration (31.72 mg/cm³) was greater than the historical mean (23.64 mg/cm³). CHL_a is an indicator of the abundance of phytoplankton. Any water environment with a level recorded above 25 mg/cm³ is considered to be eutrophic (nutrient enrichment increases algal and plant growth and negative effects). The 2020 TSI level, an average of the individual trophic state indexes for secchi depth, CHL_a, and TP, for Rend Lake was 72.25. Rend Lake is considered hyper-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 in trophic levels over time.

Swimming beach bacteria levels exceeded the criterion twice in 2020 in June at North Marcum and Sandusky beaches, but the samples immediately following were low. All remaining parameters evaluated during the 2020 water quality monitoring effort were within designated criteria or within historical reference norms.

MONITORING PROGRAM RECOMMENDATIONS

The Illinois Environmental Protection Agency (IEPA, 2018) has listed Rend Lake and its tributaries with multiple water quality impairments. In order to better understand the causes of these impairments the following additional monitoring is recommended: chemical and in-situ data collected downstream of the spillway (previously unsampled), include mercury for site REN-1, augment current sampling suite at REN-7 (Casey Fork) to include chloride, iron, mercury, and augment the current sampling suite at site REN-5 (Big Muddy River) as well as all the lake sites to include mercury.

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 Rend 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 hypereutrophic status of Rend Lake it is recommended that Nitrite (NO₂) and Total Khejdahl Nitrogen (TKN) be added to the monitoring program. Doing so would allow CEMVS to evaluate Total Nitrogen (TN), which is a strong indicator of trophic status. 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.

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- IEPA. (2018). https://www2.illinois.gov/epa/topics/water-quality/watershed-management/tmdls/Pages/303d-list.aspx

APPENDIX A: FIELD DATA

Date	Location	Depth (m)	Temp (°C)	ORP (mV)	Sp Cond (µS/cm)	рН	ODO (% Sat)	ODO (mg/L)	TDS (mg/L)	Turbidity (FNU)	Secchi (in)
3/26/2020	REN-1	0.5	8.9	194.2	226.4	7.5	89.2	10.3	147	8.1	()
3/26/2020	REN-2	1.1	9.1	219.2	224.1	7.4	93.3	10.8	146	7.7	24
3/26/2020	REN-2-5	7.0	8.8	228.1	225.3	7.2	88.1	10.2	146	9.1	
3/26/2020	REN-3	1.0	10.4	187.4	231.5	7.6	102.1	11.4	150	13.2	18
3/26/2020	REN-4	0.9	10.2	217.8	233.4	7.2	81.3	9.1	152	40.8	
3/26/2020	REN-5	0.9	8.8	199.5	397.5	7.2	88.5	10.3	258	64.6	
3/26/2020	REN-7	1.1	10.6	226.8	326.1	7.0	91.9	10.2	212	45.1	
3/26/2020	REN-8	1.0	11.1	220.2	189.8	7.1	90.6	10.0	123	38.6	9
3/26/2020	REN-MAR	1.1	10.1	189.8	223.6	7.9	104.8	11.8	145	7.0	
5/26/2020	REN-1	1.2	18.1	146.3	245.3	7.4	38.0	3.6	159	12.5	
5/26/2020	REN-2	1.0	19.2	160.1	234.6	7.7	76.5	7.1	153	7.6	29
5/26/2020	REN-2-5	5.0	18.0	184.4	237.5	7.4	52.6	5.0	154	9.7	
5/26/2020	REN-3	1.2	22.8	145.4	240.8	7.8	94.6	8.1	156	11.2	26
5/26/2020	REN-4	1.1	22.4	127.9	243.8	7.8	92.8	8.1	158	11.9	24
5/26/2020	REN-5	0.8	21.1	173.8	552.0	7.6	67.3	6.0	359	34.8	
5/26/2020	REN-7	0.9	22.0	150.3	521.0	7.8	76.0	6.6	339	18.4	
5/26/2020	REN-8	1.1	23.1	182.0	243.8	7.7	91.7	7.8	156	10.6	22
5/26/2020	REN-MAR	1.0	21.3	150.0	233.6	8.0	93.3	8.3	152	7.3	
8/5/2020	REN-1	0.3	25.7	343.8	255.9	8.1	98.2	8.0	166	9.1	
8/5/2020	REN-2	1.0	26.1	357.6	253.5	8.8	125.5	10.2	165	8.5	22
8/5/2020	REN-2-5	4.9	25.7	343.0	254.9	8.3	93.9	7.7	166	8.8	
8/5/2020	REN-3	1.1	25.1	318.8	262.5	8.0	86.2	7.1	171	15.7	18
8/5/2020	REN-4	1.1	25.1	338.7	276.3	8.6	117.1	9.7	180	20.2	14
8/5/2020	REN-5	0.5	20.0	415.3	370.6	7.4	59.7	5.4	241	19.8	
8/5/2020	REN-7	0.0	22.1	334.4	320.3	7.5	71.3	6.2	208	37.7	
8/5/2020	REN-8	1.0	25.6	387.6	241.6	7.9	87.8	7.2	157	20.3	12
8/5/2020	REN-MAR	1.2	25.3	306.7	255.0	8.1	86.8	7.1	166	8.4	
11/12/2020	REN-1	1.0	12.9	218.5	258.9	7.9	94.7	10.0	168	5.3	

Date	Location	Depth (m)	Temp (°C)	ORP (mV)	Sp Cond (µS/cm)	рН	ODO (% Sat)	ODO (mg/L)	TDS (mg/L)	Turbidity (FNU)	Secchi (in)
11/12/2020	REN-2	0.9	13.0	259.4	257.8	7.9	91.3	9.6	168	4.7	29
11/12/2020	REN-2-5	6.2	12.7	278.1	258.0	7.8	89.7	9.5	168	5.2	
11/12/2020	REN-3	1.1	14.2	239.4	260.6	8.0	92.9	9.5	169	15.7	16
11/12/2020	REN-4	1.1	13.2	253.5	262.0	8.1	96.3	10.1	170	17.6	16
11/12/2020	REN-5	0.9	9.6	190.3	677.5	7.5	15.4	1.8	440	8.9	
11/12/2020	REN-7	0.3	12.8	148.1	344.3	7.4	48.3	5.1	224	3.3	
11/12/2020	REN-8	1.1	14.5	242.9	242.1	8.0	87.2	8.9	157	14.9	15
11/12/2020	REN-MAR	1.1	12.9	281.2	259.0	7.9	84.1	8.9	168	7.4	

APPENDIX B: LABORATORY DATA



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

www.ardlinc.com

Customer Name: SLCOE

Date: 4/20/20

Project Name: Rend Lake

Lab Name: ARDL, Inc.

Samples Received at ARDL: 3/26/20

ARDL Report No.: 8590

CASE NARRATIVE

<u>Customer</u>	<u>Date</u>	<u>Lab ID</u>	
Sample No.	Collected	<u>Number</u>	Analyses Requested
Ren-1	03/26/20	8590-01	NP Pesticides, Metals(1), Inorganics(2)
Ren-2-0	03/26/20	8590-02	NP Pesticides, Inorganics(2)(3)
Ren-2-5	03/26/20	8590-03	Metals(1), Inorganics(2)
Ren-3	03/26/20	8590-04	NP Pesticides, Inorganics(2)(3)
Ren-4	03/26/20	8590-05	NP Pesticides, Inorganics(2)(3)
Ren-5	03/26/20	8590-06	NP Pesticides, Inorganics(2)
Ren-7	03/26/20	8590-07	NP Pesticides, Inorganics(2)
Ren-8	03/26/20	8590-08	NP Pesticides, Inorganics(2)(3)
Ren-15-0	03/26/20	8590-09	NP Pesticides, Inorganics(2)(3)
Ren-RL-Mar	03/26/20	8590-10	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.

CONTINUING CALIBRATION

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

PREPARATION BLANK

The blank met acceptance criteria.

LABORATORY CONTROL SAMPLE

The LCS analyses met recovery criteria.

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

Page 1 of 3

Project Name: Rend Lake

ARDL Report No.: 8590

CASE NARRATIVE (Continued)

MATRIX SPIKE

The matrix spike and matrix spike duplicate met recovery criteria.

DUPLICATE

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

INTERNAL STANDARD

All internal standard criteria were met.

<u>SURROGATE</u>

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 within acceptable limits.

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.

Project Name: Rend Lake

ARDL Report No.: 8590

CASE NARRATIVE (Continued)

DATA REPORTING QUALIFIERS

The following data reporting qualifiers are used as required:

ND - Indicates parameter was analyzed for but not detected.

 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



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

8590

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

Authorized By: DSD-QAO

Lab Report No: 008590 Report Date: 04/08/2020

Project Name:	REND LAKE	Ana	lysis: NI	PESTICIE	DES (827	OSIM-MO	D)
Project No.:		Analytical Me	ethod: 82	270C			
NELAC Certi:	fied - IL100308	Prep Me	ethod: 35	510C			
Field ID:	REN-1		ARDL 1	Lab No.:	00859	90-01	
Desc/Location:	REND LAKE		Lab F	ilename:	E040	7005	
Sample Date:	03/26/2020		Recei	ved Date:	03/26	5/2020	
Sample Time:	1005		Prep.	Date:	03/31	L/2020	
Matrix:	WATER		Analys	sis Date:	04/07	7/2020	
Amount Used:	900 mL		Instr	ument ID:	AG5		
Final Volume:	1 mL		QC Bat	tch:	B1120)3	
% 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 RECOVERIES:	Limits	Results	
Triphenylphosphate	30-130	87%	

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

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

Lab Report No: 008590	290						Η.	Report Date:	: 04/15/2020	020
Project Name: REND LAKE Project No:	[-]						2	Analysis: Inorganics NELAC Certified - IL100308	: Inorganics fied - IL1003	ics 00308
ARDL No: 008590-01 Field ID: REN-1 Received: 03/26/2020	1	Sampl Samp Samp	Sampling Loc'n: Sampling Date: Sampling Time:	'n: REND LAKE te: 03/26/2020 me: 1005	LAKE /2020			Matrix: Moisture:	: WATER : NA	
Analyte	LOD	TOO	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
(a) Iron (a) Manganese Ammonia Nitrogen Nitrate as Nitrogen Phosphorus, -ortho Solids, Total Suspended Solids, Volatile Suspen Total Organic Carbon	0.0400 0.00400 0.0200 0.0190 0.00800 0.00800 4.0	0.0500 0.0500 0.0300 0.0200 0.0100 4.00 4.00		0.526 0.128 0.0618 ND 0.10 0.0135 9.6 ND 5.4	MG/L MG/L MG/L MG/L MG/L MG/L MG/L	3010A 3010A NONE NONE NONE NONE NONE NONE	6010C 6010C 350.1 GREEN 365.2 365.2 160.2 160.4	03/30/20 03/30/20 NA NA 04/02/20 NA NA	04/02/20 04/02/20 04/01/20 04/03/20 03/27/20 03/31/20 03/31/20 04/04/20	P7350 P7350 04065176 04065174 04065178 03315165 04025170 04025171

(a) DOD and/or NELAC Accredited Analyte.

Sample 008590-01, Inorganic Analyses

Lab Report No: 008590 Report Date: 04/08/2020

Project Name:	REND LAKE	Ana	lysis: NE	PESTICII	ES (827	70SIM-MO	D)
Project No.:		Analytical Me	ethod: 82	270C			
NELAC Certi	fied - IL100308	Prep Me	ethod: 35	510C			
Field ID:	REN-2-0		ARDL I	Lab No.:	00859	90-02	
Desc/Location:	REND LAKE		Lab Fi	llename:	E040	7008	
Sample Date:	03/26/2020		Recei	red Date:	03/26	6/2020	
Sample Time:	1025		Prep.	Date:	03/33	1/2020	
Matrix:	WATER		Analys	sis Date:	04/07	7/2020	
Amount Used:	1000 mL		Instru	ument ID:	AG5		
Final Volume:	1 mL		QC Bat	ch:	B1120	03	
% 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	ND		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	ND		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	74%	İ

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

⁽a) DOD-QSM Accredited Analyte.

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(a) DOD and/or NELAC Accredited Analyte.

Sample 008590-02, Inorganic Analyses

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

Lab Report No: 008590	590						æ	Report Date:	: 04/15/2020	020
Project Name: REND LAKE Project No:	E	And the second s					Z	Analysis: ELAC Certif	Analysis: Inorganics NELAC Certified - IL100308	ics 00308
ARDL No: 008590-03 Field ID: REN-2-5 Received: 03/26/2020	3 20	Sampling Samplin Samplin	ampling Loc'n: Sampling Date: Sampling Time:	'n: REND LAKE te: 03/26/2020 me: 1025	.AKE /2020			Matrix: Moisture:	: WATER : NA	
Analyte	TOD	TOO	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
(a) Iron (a) Manganese Ammonia Nitrogen Nitrate as Nitrogen Phosphorus Phosphorus, -ortho Solids, Total Suspended Solids, Volatile Suspen Total Organic Carbon	0.0400 0.00400 0.0200 0.0190 0.00800 4.0 4.0	0.0500 0.00500 0.0300 0.0100 0.0100 4.00 1.00		0.559 0.167 0.0315 ND 0.113 0.0109 36.0 5.2	MG/L MG/L MG/L MG/L MG/L MG/L MG/L	3010A 3010A NONE NONE 365.2 NONE NONE NONE	6010C 6010C 350.1 GREEN 365.2 365.2 160.2 160.4	03/30/20 03/30/20 NA NA 04/02/20 NA NA NA	04/02/20 04/02/20 04/04/20 04/01/20 04/03/20 03/27/20 03/31/20 03/31/20 04/04/20	P7350 P7350 04065176 04065174 04065178 03315165 04025170

(a) DOD and/or NELAC Accredited Analyte.

Sample 008590-03, Inorganic Analyses

Lab Report No: 008590 Report Date: 04/08/2020

2	REND LAKE		_	PESTICI	DES (827	70SIM-MO	D)
Project No.:		Analytical M	ethod: 82	270C			
NELAC Certi:	fied - IL100308	Prep M	ethod: 35	510C			
Field ID:	REN-3		ARDL 1	Lab No.:	00859	90-04	
Desc/Location:	REND LAKE		Lab F:	ilename:	E040	7009	
Sample Date:	03/26/2020		Recei	ved Date:	03/26	5/2020	
Sample Time:	1130		Prep.	Date:	03/33	1/2020	
Matrix:	WATER		Analys	sis Date:	04/07	7/2020	
Amount Used:	900 mL		Instr	ument ID:	AG5		
Final Volume:	1 mL		QC Bat	ch:	B1120)3	
% 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 RECOVERIES:	Limits	Results	
Triphenylphosphate	30-130	80%	į
			ĺ

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

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

Project Name: REND LAKE Project No:							Z	Analysis: Inorganics NELAC Certified - IL100308	: Inorganics fied - IL1003	lcs)0308
		Sampling	1	Loc'n: REND LAKE	LAKE			Matrix:		
Field ID: REN-3 Received: 03/26/2020	0	Samp Samp	Sampling Da Sampling Ti	Date: 03/26 Time: 1130	03/26/2020 1130			Moisture:	: NA	
m king na kalapulan kalabah kalabah kang mengangan mengang mengang mengang mengang mengang mengang mengang men						Prep	Analysis	Prep	Analysis	Run
Analyte	LOD	Z T O J	Flag	Result	Units	Method	Method	Date	Date	Number
Ammonia Nitrogen	0.0200	0.0300		ND	MG/L	NONE	350.1	NA	04/04/20	04065176
Chlorophyll-a, Correcte	1.0	1.00		23.6	MG/CU.M.	10200H	10200H	03/26/20	03/31/20	04015167
Nitrate as Nitrogen	0.0190	0.0200		QN	MG/L	NONE	GREEN	NA	04/01/20	04065174
Pheophytin-a	1.0	1.00		2.5	MG/CU.M.	10200H	10200H	03/26/20	03/31/20	04015167
Phosphorus	0.00800	0.0100		0.122	MG/L	365.2	365.2	04/02/20	04/03/20	04065178
Phosphorus, -ortho	0.00800.0	0.0100		0.0187	MG/L	NONE	365.2	NA	03/27/20	03315165
Solids, Total Suspended	4.0	4.00		11.2	MG/L	NONE	160.2	NA	03/31/20	04025170
Solids, Volatile Suspen	4.0	4.00		NO	MG/L	NONE	160.4	NA	03/31/20	04025171
Total Organic Carbon	0.500	1.00		5.5	MG/L	NONE	415.1	NA	04/04/20	04065180

(a) DOD and/or NELAC Accredited Analyte.

Sample 008590-04, Inorganic Analyses

Lab Report No: 008590 Report Date: 04/08/2020

Project Name:	REND LAKE	Ana	lysis: N	P PESTICII	DES (82	70SIM-MO	D)
Project No.:		Analytical M	ethod: 82	270C			
NELAC Certi:	fied - IL100308	Prep M	ethod: 3	510C			
Field ID:	REN-4		ARDL	Lab No.:	00859	90-05	
Desc/Location:	REND LAKE		Lab F	ilename:	E040	7010	
Sample Date:	03/26/2020		Recei	ved Date:	03/26	6/2020	
Sample Time:	1300		Prep.	Date:	03/33	1/2020	
Matrix:	WATER		Analy	sis Date:	04/0	7/2020	
Amount Used:	900 mL		Instr	ument ID:	AG5		
Final Volume:	1 mL		QC Bat	tch:	B1120)3	
% 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 RECOVERIES:	Limits	Results	
Triphenylphosphate	30-130	60%	
			1

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

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

Report Date: 04/15/2020	Analysis: Inorganics NELAC Certified - IL100308	Matrix: WATER Moisture: NA	Analysis Prep Analysis Run Method Date Date Number	350.1 NA 04/04/20 04065176 10200H 03/26/20 03/31/20 04015167 10200H 03/26/20 03/31/20 04015167 365.2 04/02/20 04/03/20 04015167 160.2 NA 03/27/20 03315165 160.4 NA 03/31/20 04025170 160.4 NA 03/31/20 04025171 1415.1 NA 04/04/20 04065180
				н н
			Prep Method	NONE 10200H NONE 10200H 365.2 NONE NONE NONE
		REND LAKE 03/26/2020 1300	Units	MG/L MG/CU.M. MG/L MG/L MG/L MG/L MG/L MG/L MG/L
			Result	0.035 17.2 0.049 2.5 0.20 0.0472 14.4 ND
		Sampling Loc'n: Sampling Date: Sampling Time:	FI Pa Q	
		Samplin Sampli Sampli	ООЛ	0.0300 1.00 1.00 0.0100 0.0100 4.00 4.00
069		0;	TOD	0.0200 1.0 0.0190 1.0 0.00800 0.00800 4.0
Lab Report No: 008590	Project Name: REND LAKE Project No:	ARDL No: 008590-05 Field ID: REN-4 Received: 03/26/2020	Analyte	Ammonia Nitrogen Chlorophyll-a, Correcte Nitrate as Nitrogen Pheophytin-a Phosphorus, -ortho Solids, Total Suspended Solids, Volatile Suspen Total Ordanic Carbon

(a) DOD and/or NELAC Accredited Analyte.

Lab Report No: 008590 Report Date: 04/08/2020

Project Name:	REND LAKE	Ana	lysis: NI	PESTICII	DES (827	70SIM-MO	D)
Project No.:		Analytical M	ethod: 82	270C			
NELAC Certi	fied - IL100308	Prep M	ethod: 3	510C			
Field ID:	REN-5		ARDL 1	Lab No.:	00859	90-06	
Desc/Location:	REND LAKE		Lab F:	ilename:	E0407	7011	
Sample Date:	03/26/2020		Recei	ved Date:	03/26	5/2020	
Sample Time:	0900		Prep.	Date:	03/31	L/2020	
Matrix:	WATER		Analys	sis Date:	04/07	7/2020	
Amount Used:	900 mL		Instr	ument ID:	AG5		
Final Volume:	1 mL		QC Bat	ch:	B1120)3	
% 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 RECOVERIES:	Limits	Results	
Triphenylphosphate	30-130	77%	İ
			1

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

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

04/15/2020	Inorganics d - IL100308	WATER NA	Analysis Run Date Number	04/04/20 04065176 04/01/20 04065174 04/03/20 04065178 03/27/20 03315165 03/31/20 04025170 03/31/20 04025171
Report Date: 0	Analysis: Inorganics NELAC Certified - IL100308	Matrix: W Moisture: N	Prep Ana Date D	NA 04/ NA 04/ 04/02/20 04/ NA 03/ NA 03/ NA 03/ NA 04/
Rej	NE		Analysis Method	350.1 GREEN 365.2 365.2 160.2 160.4
			Prep Method	NONE NONE 365.2 NONE NONE NONE
		AKE /2020	Units	MG/L MG/L MG/L MG/L MG/L MG/L
		oc'n: REND LAKE Date: 03/26/2020 Time: 0900	Result	0.0732 0.105 0.321 0.0394 44.0 ND
		Sampling Loc'n: Sampling Date: Sampling Time:	Flag	
		Samp Sam Sam	COT	0.0300 0.0200 0.0100 0.0100 6.67 6.67
069		9	LOD	0.0200 0.0190 0.00800 6.67 6.67
Lab Report No: 008590	Project Name: REND LAKE Project No:	ARDL No: 008590-06 Field ID: REN-5 Received: 03/26/2020	Analyte	Ammonia Nitrogen Nitrate as Nitrogen Phosphorus, Phosphorus, -ortho Solids, Total Suspended Solids, Volatile Suspen Total Organic Carbon

(a) DOD and/or NELAC Accredited Analyte.

Sample 008590-06, Inorganic Analyses

Lab Report No: 008590 Report Date: 04/08/2020

Project Name:	REND LAKE	Ana	lysis: NE	PESTICII	DES (827	70SIM-MO	D)
Project No.:		Analytical Me	ethod: 82	270C			
NELAC Certi	fied - IL100308	Prep Me	ethod: 35	510C			
Field ID:	REN-7		ARDL I	Lab No.:	00859	90-07	
Desc/Location:	REND LAKE		Lab Fi	llename:	E0407	7012	
Sample Date:	03/26/2020		Receiv	red Date:	03/26	5/2020	
Sample Time:	1345		Prep.	Date:	03/31	1/2020	
Matrix:	WATER		Analys	sis Date:	04/07	7/2020	
Amount Used:	900 mL		Instr	ument ID:	AG5		
Final Volume:	1 mL		QC Bat	ch:	B1120)3	
% 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 RECOVERIES:	Limits	Results	
Triphenylphosphate	30-130	70%	ĺ

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

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

Lab Report No: 008590	590						Ř	Report Date:	: 04/15/2020	020
Project Name: REND LAKE Project No:	ы						Z	Analysis: ELAC Certif	Analysis: Inorganics NELAC Certified - IL100308	ics 00308
ARDL No: 008590-07 Field ID: REN-7 Received: 03/26/2020	7 20	Sampling Sampling Sampling	ממו	Loc'n: REND LAKE Date: 03/26/2020 Time: 1345	LAKE /2020			Matrix: Moisture:	: WATER : NA	
Analyte	LOD	TOO	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
Ammonia Nitrogen Nitrate as Nitrogen Phosphorus, -ortho Solids, Total Suspended Solids, Volatile Suspen Total Organic Carbon	0.0200 0.0190 0.00800 0.00800 10.0 10.0	0.0300 0.0200 0.0100 0.0100 10.0 10.0		0.0624 0.204 0.766 0.0809 182 12.0 6.9	MG/L MG/L MG/L MG/L MG/L MG/L	NONE NONE 365.2 NONE NONE NONE NONE	350.1 GREEN 365.2 365.2 160.2 160.4	NA NA 04/02/20 NA NA NA NA	04/04/20 04/01/20 04/03/20 03/27/20 03/31/20 03/31/20	04065176 04065174 04065178 03315165 04025170 04025171

(a) DOD and/or NELAC Accredited Analyte.

Lab Report No: 008590 Report Date: 04/08/2020

Project Name:	REND LAKE	Ana	lysis: NE	PESTICII	DES (827	OSIM-MO	D)
Project No.:		Analytical M	ethod: 82	270C			
NELAC Certi:	fied - IL100308	Prep M	ethod: 35	510C			
Field ID:	REN-8		ARDL 1	Lab No.:	00859	90-08	
Desc/Location:	REND LAKE		Lab F	ilename:	E0407	7013	
Sample Date:	03/26/2020		Recei	ved Date:	03/26	5/2020	
Sample Time:	1100		Prep.	Date:	03/31	1/2020	
Matrix:	WATER		Analys	sis Date:	04/07	7/2020	
Amount Used:	1000 mL		Instr	ument ID:	AG5		
Final Volume:	1 mL		QC Bat	ch:	B1120)3	
% 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	ND		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	ND		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	74%	ĺ
			į

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

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

Lab Report No: 008590	290						K,	Report Date:	: 04/15/2020	120
Project Name: REND LAKE Project No:	ы ы						Z	Analysis: Inorganics NELAC Certified - IL100308	: Inorganics fied - IL1003	10308
ARDL No: 008590-08 Field ID: REN-8 Received: 03/26/2020	8 20	Sampling Samplin Samplin	ampling Loc'n: Sampling Date: Sampling Time:		REND LAKE 03/26/2020 1100			Matrix: Moisture:	: WATER : NA	
Analyte	LOD	TOO	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
Ammonia Nitrogen Chlorophyll-a, Correcte Nitrate as Nitrogen Pheophytin-a Phosphorus Phosphorus, -ortho Solids, Total Suspended Solids, Volatile Suspen Total Organic Carbon	0.0200 1.0 0.0190 1.0 0.00800 0.00800 4.0 4.0	0.0300 1.00 1.00 0.0100 0.0100 4.00 1.00		ND 56.3 0.143 14.3 0.256 0.0576 20.4 4.4	MG/L MG/CU.M. MG/L MG/L MG/L MG/L MG/L	NONE 10200H NONE 10200H 365.2 NONE NONE NONE	350.1 10200H GREEN 10200H 365.2 365.2 160.2 160.4	NA 03/26/20 NA 03/26/20 04/02/20 NA NA NA	04/04/20 04065176 03/31/20 04015167 04/01/20 04015167 03/31/20 04015167 04/03/20 04065178 03/27/20 03315165 03/31/20 04025170 03/31/20 04025171 04/04/20 04065180	04065176 04015167 04065174 04015167 04065178 03315165 04025170

(a) DOD and/or NELAC Accredited Analyte.

Lab Report No: 008590 Report Date: 04/08/2020

Project Name:	REND LAKE	Ana	lysis: NE	PESTICII	DES (827	70SIM-MO	D)
Project No.:		Analytical Me	ethod: 82	270C			
NELAC Certi	fied - IL100308	Prep Me	ethod: 35	510C			
Field ID:	REN-15-0		ARDL I	Lab No.:	00859	90-09	
Desc/Location:	REND LAKE		Lab Fi	ilename:	E0407	7014	
Sample Date:	03/26/2020		Receiv	ved Date:	03/26	5/2020	
Sample Time:	0830		Prep.	Date:	03/33	1/2020	
Matrix:	WATER		Analys	sis Date:	04/07	7/2020	
Amount Used:	900 mL		Instru	ument ID:	AG5		
Final Volume:	1 mL		QC Bat	ch:	B1120	03	
% Moisture:	NA		Level	1	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 RECOVERIES:	Limits	Results	
Triphenylphosphate	30-130	69%	Ì

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

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

<pre>Project Name: KEND LAKE Project No:</pre>								Analysis: Inorganics NFLAC Certified - IL100308	: Inorganics	ics 00308
ARDL No: 008590-09 Field ID: REN-15-0 Received: 03/26/2020	0	Sampl Samp Samp	Sampling Loc'n: Sampling Date: Sampling Time:		REND LAKE 03/26/2020 0830			Matrix: Moisture:	: WATER : NA	
Analyte	LOD	TOO	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
Ammonia Nitrogen	0.0200	0.0300		0.202	MG/L	NONE	350.1	NA	04/04/20 04065176	04065176
Chlorophyll-a, Correcte	1.0	1.00		22.7	MG/CU.M.	10200H	10200H	03/26/20		04015167
Nitrate as Nitrogen	0.0190	0.0200		NO	MG/I	NONE	GREEN	NA	04/01/20	04065174
Pheophytin-a	1.0	1.00		3.4	MG/CU.M.	10200H	10200H	03/26/20	03/31/20	04015167
Phosphorus	0.00800	0.0100		0.122	MG/L	365.2	365.2	04/02/20	04/03/20	04065178
Phosphorus, -ortho	0.00800	0.0100		0.0239	MG/L	NONE	365.2	NA		03315165
Solids, Total Suspended	4.0	4.00		9.6	MG/L	NONE	160.2	NA	03/31/20	04025170
Solids, Volatile Suspen	4.0	4.00		ΩN	MG/L	NONE	160.4	NA	03/31/20	04025171
Total Organic Carbon	002	00		U U	MC /T	NOME	11 11 1	K17	00//0//0	04065180

(a) DOD and/or NELAC Accredited Analyte.

Sample 008590-09, Inorganic Analyses

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

Report Date: 04/15/2020	Analysis: Inorganics NELAC Certified - IL100308	Matrix: WATER	Analysis Run Date Number	03/26/20 03305160
port Date	Analysis LAC Certi	Matrix: Moisture:	Prep Date	NA
Re	HN		Prep Analysis Method Method	1604
			Prep Method	NONE
		REND LAKE 03/26/2020 1150	Units	COL/100 ML NONE
		1	Result	22.0
		ampling Loc'n: Sampling Date: Sampling Time:	Flag	
		Samp Samp Samp	700	1.00
069	ы	2 20	гор	1.0
No: 0085	REND LAKE	ARDL No: 008590-10 ield ID: REN-RL-MAR eceived: 03/26/2020	t e	
Lab Report No: 008590	Project Name: REND LAKE Project No:	ARDL No: 008590-10 Field ID: REN-RL-MAR Received: 03/26/2020	Analyte	E. Coliform

(a) DOD and/or NELAC Accredited Analyte.

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

Lab Report No: 008590 Report Date: 04/08/2020

,	REND LAKE		is: NP PEST	CICIDES (8	270SIM-M	IOD)
Project No.:		Analytical Meth	od: 8270C			
NELAC Certi	fied - IL100308	Prep Meth	od: 3510C			
Field ID:	NA		ARDL Lab No	008	590-01B1	
Desc/Location:	NA		Lab Filenam	ne: E04	07003	
Sample Date:	NA		Received Da	ate: NA		
Sample Time:	NA		Prep. Date:	03/	31/2020	
Matrix:	QC Material		Analysis Da	ate: 04/	07/2020	
Amount Used:	1000 mL		Instrument	ID: AG5		
Final Volume:	1 mL		QC Batch:	B11:	203	
% 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	93%	

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

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

62864

Lab Report No: 008590	06:							Report Date:		04/15/2020
Project Name:	REND LAKE	4KE			Appropriate and the second sec			NELAC	NELAC Certified	ed - IL100308
Analyte	LOD	Ŏ01	Blank Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run	QC Lab Number
(a) Iron	0.040	0.050	- QN	MG/L	3010A	6010C	03/30/20	04/02/20	P7350	008589-01B1
(a) Manganese	0.004	0.005	N	MG/L	3010A	6010C	03/30/20	04/02/20	P7350	008589-01B1
Ammonia Nitrogen	0.020	0.030	QN	MG/L	NONE	350.1	NA	04/04/20 (04065176	008590-01B1
Chlorophyll-a, Corre	1.0	1.0	N N	MG/CU.M.	10200H	10200H	03/26/20	03/31/20 (04015167	008590-02B1
E. Coliform	1.0	1.0	QN	COL/100 ML	NONE	1604	NA	03/26/20	03305160	008590-10B1
Nitrate as Nitrogen	0.019	0.020	Q.	MG/L	NONE	GREEN	NA	04/01/20 (04065174	008590-02B1
Pheophytin-a	1.0	1.0	N	MG/CU.M.	10200H	10200H	03/26/20	03/31/20 (04015167	008590-02B1
Phosphorus	0.008	0.010	R	MG/L	365.2	365.2	04/02/20	04/03/20 (04065178	008590-09B1
Phosphorus, -ortho	0.008	0.010	N	MG/L	NONE	365.2	NA	03/27/20	03315165	008590-06B1
Solids, Total Suspen	1.0	1.0	N	MG/L	NONE	160.2	NA	03/31/20 (04025170	008590-03B1
Solids, Volatile Sus	1.0	1.0	N	MG/L	NONE	160.4	NA	03/31/20 (04025171	008590-03B1
Total Organic Carbon	0.50	1.0	N ON	MG/L	NONE	415.1	NA	04/04/20 (04065180	008589-12B1

(a) DOD and/or NELAC Accredited Analyte Inorganic Method Blanks for 008590

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

62864

04/08/2020 Renort Date: 002200 Lab Report No:

Lab Report No:	008590							Re	Report Date:	: 04/08/2020	70
Project Name: REND LAKE Project No.:	REND LAKE	Al	Analysis: NP	1	PESTICIDES (8270SIM-MOD)	IM-MOD)	Anal	Analytical Method: Prep Method:		8270C 3510C	
Matrix: Amount Used:	QC Material 1000 mL	.1	QC Batch: Level:		B11203 LOW		Prep. Date: Analysis Da	Date: is Date:	Prep. Date: 03/31/2020 Analysis Date: 04/07/2020	20	
	Parameter	Spike Result	Spike Level	Spike % Rec	Duplicate Result	Duplicate Level	Duplicate % Rec	Recovery	RPD	RPD	
T	Trifluralin	3.29	4	82	1			30-130	i		
	Atrazine	3.42	4	86	}	}	1	30-130	1	!	
I	Metribuzin	3.36	4	84	}	}	1	30-130	}	-	
	Alachlor	3.21	4	80	1	}	1	30-130	!	i I	
Me	Metolachlor	3.52	4	88	1	!	1	30-130	}	1	
ប៊	Chlorpyrifos	3.43	4	86	I I	!	1	30-130	}	+	
•	Cyanazine	3.87	4	76	}	-	1	30-130	1	!	
Pel	Pendimethalin	3.19	4	80	!	;	}	30-130	1	1	
		SURROGATE RECOVERIES:		Spik	Spike %R Dupl	Duplicate %R	%R Limits				

SURROGATE RECOVERIES:	Spike %R	Duplicate %R	%R Limits
Triphenylphosphate	92.5	;	30-130

Spike Blanks for 008590-01, NP PESTICIDES (8270SIM-MOD) '*' indicates a recovery outside of standard limits.

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

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04/15/2020
ort Date:
Report
0
lo: 008590
Lab Report No:
Н

Project Name:	REND LAKE								NELAC Cer	NELAC Certified - 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	QC Lab Number
(a) Iron	5.2	5.0	103		1		87-115	!	P7350	008589-01C1
(a) Manganese	08.0	0.75	107	1	1	}	90-114	1	P7350	008589-01C1
Ammonia Nitrogen	66.0	1.0	66	}	!	1	80-120	}	04065176	008590-01C1
Nitrate as Nitrogen	0.98	1.0	86	}	1	1	80-120	}	04065174	008590-02C1
Phosphorus	0.68	0.67	101	1	1	1	80-120	}	04065178	008590-09C1
Phosphorus, -ortho	0.10	0.10	102	!	1	;	80-120	1	03315165	008590-06C1
Total Organic Carbon	17.9	20.0	0	ļ	}	ł	76-120	;	04065180	008589-12C1

NOTE: Any values tabulated above marked with an asterisk are outside of acceptable limits.

Inorganic LCS Results for 008590

⁽a) DOD and/or NELAC Accredited Analyte

ر الا الا	ARDL, INC.	INC.	MATRIX 400 Av		E/SPIKE n Drive;	SPIKE/SPIKE DUPLICATE ation Drive; P.O. Box		REPORT 1566 M	Mt. Ver	Vernon, IL	62864	0606/80/70
Project No.:	KEND LAKE		Analys	sis: NP	PESTICIDES		(8270SIM-MOD)		Analytical Prep	ical Met	1.0.0	
Field ID: Desc/Location: Sample Date: Sample Time: Matrix:	REN-1 REND LAKE 03/26/2020 1005 WATER			Prep. Date: Amount Used: % Moisture: QC Batch: Level:	o	03/31/2020 900 mL NA B11203 LOW		द म स द	ARDL Lab No.: Lab Filename: Received Date Analysis Date	No.: name: Date: Date:	008590-01 03/26/2020 04/07/2020	0.0
Ç		Sample	6	MS	MS	MS t	MSD	MSD	MSD	% Rec		RPD
Parameter	eter	Result	Re	Result	Level	% %	Result	телет	* Keo	Limits	TS KFD	рішіс
Trifluralin	ralin	QN	2	.67	4.44	09	3.09	4.44	69.5	30-130	0 14.7	30
Atrazine	zine	QN	т	.24	4.44	73	3.5	4.44	78.8	30-130	0 7.6	30
Metribuzin	ouzin	QN	т	60.	4.44	69.5	3.31	4.44	74.5	30-130	6-9 0	30
Alachlor	lor	QN	m	3.02	4.44	89	т	4.44	67.5	30-130	0.7	30
Metolachlor	chlor	QN	m	3.28	4.44	73.8	3.41	4.44	76.8	30-130	0 4	30
Chlorpyrifos	rifos	ND	2	2.96	4.44	66.5	3.19	4.44	71.8	30-130	9.7 0	30
Cyanazine	zine	QN	m	3.24	4.44	73	3.54	4.44	79.8	30-130	8.8 0	30
Pendimethalin	thalin	QN	8	2.57	4.44	57.8	2.93	4.44	99	30-130	0 13.3	30

SURROGATE RECOVERIES:	MS &R	MSD &R	%R Limits
Triphenylphosphate	70	82	30-130

^{&#}x27;nc' indicates sample >4X spike level.

^{&#}x27;*' indicates a recovery outside of standard limits. Matrix Spikes for 008590-01, NP PESTICIDES (8270SIM-MOD)

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

Project Name:	le:	REND LAKE									NELAC	Certif	NELAC Certified - IL100308
							of the contraction of the contra						
	Sample	Sample	MS	MS	MS	MSD	MSD	MSD	% Rec		RPD		QC Lab
Analyte	Matrix	Result	Result	Level	% Rec	Result	Level	% Rec	Limits	RPD	Limit	Run	Number
(a) Iron	WATER	0.53	1.6	1.0	107	1.6	1.0	108	87-115	Н	20	P7350	008590-01MS
(a) Manganese	WATER	0.13	0.69	0.50	111	0.68	0.50	110	90-114	н	20	P7350	008590-01MS
Ammonia Nitrogen	WATER	0.062	2.2	2.0	107	2.1	2.0	102	75-125	Ŋ	20	04065176	008590-01MS
Nitrate as Nitrogen	WATER	QN	0.75	1.0	75	0.73	1.0	73 *	75-125	2	20	04065174	008590-02MS
Phosphorus	WATER	0.12	96.0	0.83	101	0.97	0.83	102	75-125	0	20	04065178	008590-09MS
Phosphorus, -ortho	WATER	0.039	0.14	0.10	101	0.14	0.10	104	75-125	2	20	03315165	008590-06MS
Total Organic Carbon	WATER	6.8	11.7	5.0	86	12.0	5.0	104	76-120	ო	20	04065180	008590-08MS

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

⁽a) DOD and/or NELAC Accredited Analyte.

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

Lab Report No: 008590	0.						Report Date: 04/15/2020	04/15/2020
Project Name: REND LAKE	LAKE						NELAC Certifi	NELAC Certified - IL100308
							-	
	Sample	First	Second		Percent	Mean	Analytical	QC Lab
Analyte	Conc'n	Conc'n Duplicate	Duplicate	Units	Diff	(Smp, D1, D2)	Run	Number
Chlorophyll-a, Corrected	22.7	23.6		MG/CU.M.	4	1 1	04015167	008590-02D1
Pheophytin-a	8.4	8.2	1	MG/CU.M.	2	!	04015167	008590-02D1
Solids, Total Suspended	36.0	36.0		MG/L	0		04025170	008590-03D1
Solids, Volatile Suspend	5.2	4.8	!	MG/L	∞	-	04025171	008590-03D1

(a) DOD and/or NELAC Accredited Analyte Sample Duplicates for 008590



Sample Receipt Information

Including as appropriate:

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

ARDL Data Package 8590

ARDL, Inc. P.O. Box 1566, 400 Aviation Drive, Mt. Vernon, IL 62864 (618) 244-3235 Phone (210) 244-3135 Phone

CHAIN OF CUSTODY RECORD

		y 1															•				
PRESERVATION	SPECIFY CHEMICALS ADDED AND FINAL pH IF KNOWN																				
PRES	ICED		×	×	×	×	×	×	×	×	×	×									
		REMARKS OR SAMPLE LOCATION																			
																					6
																	NS:				02
																	REMARKS/SPECIAL INSTRUCTIONS:				a
	Q.	MSN															STRU				
	110	SH	×														L IZ				
	411	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\										X				_	ECLA				
	N-CI	NOS/N NOS/N NOS/N	×		×	7											KS/SF				
	CHIN	VEON	×	×		×	×	×	×	×	×						MARI				
1	SVA SOUTH	SON.	×	×	×	×	×	×	×	×	×						REN				
	001/1	38	×	×	×	×	×	_	×	×	×						- ,	0			
0	SY	10145	X	×	×	×	X	×	×	×	×						tyre)	ture)			
		$\mathcal{S}_{\mathcal{S}_{\mathcal{S}_{\mathcal{S}_{\mathcal{S}}}}}$	N.A.	X	M	×	X	M	1	×	×					-	(Signature)	Signature	St No.		
	CONTAIN		×	×	×	×	X	×	×	×	×								Ticke		
5001	T	GRAB	×	×	×	×	×	×	×	×	×	×				_	Received b	Received b	Shipping Ticket No.		
	6	COMP							,		0						S)	New Year	Shi		
	Greeling	TIME CO20	1005	1025	1025	1130	V.E/		1345	()0	\$30	1150					Time	Time /#20	Time	270	
	00	DATE 26-7	3-26	3-56	3-26	3-52	3-26	3-20	3-76	3-76	3-26	3-26					3-2C	Date	tory by: Date Time	7100	
	4	1						4	,								1	1		100 A	١
	(a)		.,								*	24.7					ature)	Signature)	y by:	MY.	.O.
	SAMPLERS: (Signature)	SAMPLE NUMBER			10						. (ar					Relinquished by: (Signature)	18 C	poratory by:	de	o PURCHASE ORDER NO:
ke	S: (S)	PLE		2 - 0	2-5	. ~	+	10	7	~	Ren – 15-0	Ren-RL-Mar					ed by:	Sep pa	A DE		EOR
PROJECT Rend Lake	PLER	SAM	1-1	1-2	1-2	1 - 3	1-4	1-5	1-7	1-8	1 - 1	I-RI					quishe	chnquished 45	Received for Kignature)		HAS
PROJECT Rend La	SAM	7.	Ren	Ren	Ren	Ren	Ren	Ren	Ren	Ren-	Ren	Ren					Relin	TE S	TE CO.	2	PURC
	J			N	0	+	00	P	4	30		0		Α	RDL	. Re		8590	- Page	31	of 33

COOLER RECEIPT REPORT ARDL, INC.

ARI	ol#: <u>8590</u>	Cod	oler# 1 Blue			
		Nur	mber of Coolers in Ship	ment:) 	
Pro	ect: 1200 Lake	Dat	e Received: <u>03/2/</u>	12020		
Α.	PRELIMINARY EXAMINATION PHASE: Date cooler was opened: 03/2	26/20	248 gnature) NCB			
1.	Did cooler come with a shipping slip (airbill, etc.)?			YES	(NO)
	If YES, enter carrier name and airbill number here:	COU	RIER		_	
2.	Were custody seals on outside of cooler?			YES	NO	(N/A
	How many and where?,Seal Date	e:	,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 Geiger Counter?		•••••	(YES)	NO	
5.	Were custody papers sealed in a plastic bag? See Note:			YES	(VO)
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	at the top	o of this form	YES	NO	N/A
9.	Was a separate container provided for measuring temperature? YES	NO_		1p. <u>2,3 </u>	2	
B.	LOG-IN PHASE: Date samples were logged-in: 5312612020	∑(Signat	ure) DCB Cor	rection factor_ <u>C</u>), ()	c
10.	Describe type of packing in cooler: LOCSE CE					
11.	Were all samples sealed in separate plastic bags?				NO) N/A
12.	Did all containers arrive unbroken and were labels in good condition?			(YES)	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?	••••••		VES.	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:	7	Sample	Transfer	***	
			Fraction	Fraction		
	of hand detirered by Valence	┤ ;	Area#	Area #		
	l	,	Wolk-In	7 lica #		
			BY	Ву		
		-	On	On		
			03/26/2020			
						_
/15	y: Signature) \(\text{\text{P}} \\ \text{\text{B}} \\ \text{Date: (1)3/2/0/2020} \)		Chain-of-Custody #	*	WE HAVE	
	y: Signature) ()(1/5 Date: (1),5/2012020					

M:\ADMIN\FORMS\COOLER RECEIPT REPORT.doc Rev. 02/22/17

COOLER RECEIPT REPORT ARDL, INC.

ARI	DL #: <u>8590</u>	Cooler# 2 (Treen))		
	, , , , , , , , , , , , , , , , , , ,	Number of Coolers in Shipm			_
Pro	ject: Rond Lake_	Date Received: 03/2(0/	2020		
A.	PRELIMINARY EXAMINATION PHASE: Date cooler was opened: 03/20	6/202(Signature) DCB			
1.	Did cooler come with a shipping slip (airbill, etc.)?		YES (NO)	
	If YES, enter carrier name and airbill number here:	OURIER			-
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 Geiger Counter?			NO	
5.	Were custody papers sealed in a plastic bag?See Mta		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	NOObserved Cooler Temp.	18		
B.	LOG-IN PHASE: Date samples were logged-in: 0312612020	Signature) PCB	ction factor_ <i>C</i>		c
10.	Describe type of packing in cooler: LCOSE CE			W	
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?			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?		(YES)	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 #:	AND THE RESERVE OF THE PARTY OF	YES	NO	N/A
19.	Was the ARDL project coordinator notified of any deficiencies?		YES	NO	N/A
	Comments and/or Corrective Action:	Sample Ti			
	CoC hand delivered by Valerie	Fraction	Fraction		
-'	TO Name agreed by vame	Area#	Area #		
	•	Walk-In			
			Ву		
		4	On		
		03/26/2020			
		Chain-of-Custody#			
(E	y: Signature) Date: 03/2/0/2020	Sham or Subtody if	-		



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

PO Box 1566

www.ardlinc.com

Customer Name: SLCOE

Date: 6/16/20

Project Name: Rend Lake

Lab Name: ARDL, Inc.

Samples Received at ARDL: 5/26/20

ARDL Report No.: 8616

CASE NARRATIVE

Customer	<u>Date</u>	<u>Lab ID</u>	
Sample No.	Collected	Number	Analyses Requested
Ren-1	5/26/20	8616-01	NP Pesticides, Metals(1), Inorganics(2)
Ren-2-0	5/26/20	8616-02	NP Pesticides, Inorganics(2)(3)
Ren-2-5	5/26/20	8616-03	Metals(1), Inorganics(2)
Ren-3	5/26/20	8616-04	NP Pesticides, Inorganics(2)(3)
Ren-4	5/26/20	8616-05	NP Pesticides, Inorganics(2)(3)
Ren-5	5/26/20	8616-06	NP Pesticides, Inorganics(2)
Ren-7	5/26/20	8616-07	NP Pesticides, Inorganics(2)
Ren-8	5/26/20	8616-08	NP Pesticides, Inorganics(2)(3)
Ren-15-0	5/26/20	8616-09	NP Pesticides, Inorganics(2)(3)
Ren-RL-Mar	5/26/20	8616-10	Inorganics(2)(3), 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.

CONTINUING CALIBRATION

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

DUPLICATE

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

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

Page 1 of 2

Project Name: Rend Lake ARDL Report No.: 8616

CASE NARRATIVE (Continued)

INTERNAL STANDARD

All internal standard criteria were met.

SURROGATE

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 within acceptable limits.

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 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 except for TSS and pheophytin-a. The parent samples have been flagged appropriately with a 'J' qualifier.

DATA REPORTING QUALIFIERS

The following data reporting qualifiers are used as required:

- ND Indicates parameter was analyzed for but not detected.
- 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



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

8616

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

Authorized By: DSD-QAO

Lab Report No: 008616 Report Date: 06/02/2020

Project Name:	REND LAKE	Ana	lysis: NE	PESTICII	DES (827	70SIM-MO	D)
Project No.:		Analytical M	ethod: 82	270C			
NELAC Certi	fied - IL100308	Prep M	ethod: 35	510C			
Field ID:	REN-1		ARDL I	Lab No.:	00861	16-01	
Desc/Location:	REND LAKE		Lab F	llename:	E0529	9005	
Sample Date:	05/26/2020		Recei	ved Date:	05/26	5/2020	
Sample Time:	1215		Prep.	Date:	05/28	3/2020	
Matrix:	WATER		Analys	sis Date:	05/29	9/2020	
Amount Used:	900 mL		Instr	ument ID:	AG5		
Final Volume:	1 mL		QC Bat	ch:	B1122	20	
% 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	0.567		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 RECOVERIES:	Limits	Results	
Triphenylphosphate	30-130	90%	1
			- 1

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

(a) DOD-QSM Accredited Analyte.

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Project Name: REND LAKE Project No:							Z	Analysis: Inorganics NELAC Certified - IL100308	: Inorganics fied - IL1003	ics)0308
ARDL No: 008616-01 Field ID: REN-1 Received: 05/26/2020	0	Samplin Sampli Sampli	Sampling Loc'n: Sampling Date: Sampling Time:		REND LAKE 05/26/2020 1215			Matrix: Moisture:	: WATER : NA	
Analyte	LOD	TOO	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
(a) Iron	0.0400	0.0500		0.707	MG/L	3010A	6010C	05/27/20	05/28/20	P7371
(a) Manganese	0.00400	0.00500		1.28	MG/L	3010A	6010C	05/27/20	05/28/20	P7371
Ammonia Nitrogen	0.0200	0.0300		0.259	MG/L	NONE	350.1	NA	06/02/20	06035342
Nitrate as Nitrogen	0.0190	0.0200	ט	ND	MG/L	NONE	GREEN	NA	05/28/20	05295321
Phosphorus	0.00800.0	0.0100		0.178	MG/I	365.2	365.2	06/02/20	06/02/20	06035344
Phosphorus, -ortho	0.00800.0	0.0100		0.0498	MG/L	NONE	365.2	NA	05/27/20	05295334
Solids, Total Suspended	4.0	4.00		9.2	MG/I	NONE	160.2	NA	05/29/20	06015336
Solids, Volatile Suspen	4.0	4.00		ND	MG/L	NONE	160.4	NA	05/29/20	06015337
Total Organic Carbon	0.500	1.00		4.8	MG/I	NONE	415.1	NA	06/06/20	06125369

(a) DOD and/or NELAC Accredited Analyte.

Lab Report No: 008616 Report Date: 06/02/2020

Project Name:	REND LAKE	Ana	lysis: N	P PESTICII	DES (82	70SIM-MO	D)
Project No.:		Analytical M	ethod: 82	270C			
NELAC Certi	fied - IL100308	Prep M	ethod: 35	510C			
Field ID:	REN-2-0	***************************************	ARDL 1	Lab No.:	00863	16-02	
Desc/Location:	REND LAKE		Lab F	ilename:	E0529	8008	
Sample Date:	05/26/2020		Recei	ved Date:	05/2	6/2020	
Sample Time:	0935		Prep.	Date:	05/28	3/2020	
Matrix:	WATER		Analys	sis Date:	05/29	9/2020	
Amount Used:	900 mL		Instr	ument ID:	AG5		
Final Volume:	1 mL		QC Bat	ch:	B1122	20	
% 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	0.600		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		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%	j
			- 1

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

(a) DOD-QSM Accredited Analyte.

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Lab Report No: 008616	516						K	Report Date:	: 06/12/2020	020
Project Name: REND LAKE Project No:	r)						Z	Analysis: Inorganics NELAC Certified - IL100308	: Inorganics fied - IL1003	ics 00308
ARDL No: 008616-02 Field ID: REN-2-0 Received: 05/26/2020	0 0 0	Sampl: Samp. Samp.	Sampling Loc'n: Sampling Date: Sampling Time:		REND LAKE 05/26/2020 0935			Matrix: Moisture:	MATER NA	
Analyte	LOD	TOŌ	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
Ammonia Nitrogen Chlorophyll-a, Correcte Nitrate as Nitrogen Pheophytin-a Phosphorus, -ortho Solids, Total Suspended Solids, Volatile Suspen Total Organic Carbon	0.0200 1.0 0.0190 1.0 0.00800 0.00800 4.0 4.0	0.0300 1.00 0.0200 1.00 0.0100 4.00 1.00		0.125 4.5 ND ND 0.0873 0.0342 5.6 ND	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 365.2 365.2 160.2 160.4	NA 05/27/20 NA 05/27/20 06/02/20 NA NA NA	06/02/20 05/28/20 05/28/20 05/28/20 06/02/20 05/27/20 05/29/20 05/29/20 06/06/20	06035342 05295329 05295321 05295329 06035344 05295334 06015336 06015336

(a) DOD and/or NELAC Accredited Analyte.

Sample 008616-02, Inorganic Analyses

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

Report Date: 06/12/2020	Analysis: Inorganics NELAC Certified - IL100308	Matrix: WATER Moisture: NA	Prep Analysis Prep Analysis Run Method Method Date Date Number	3010A 6010C 05/27/20 05/28/20 P7371 3010A 6010C 05/27/20 05/28/20 P7371 NONE 350.1 NA 06/02/20 06035342 NONE GREEN NA 05/28/20 05295321 365.2 365.2 06/02/20 06/02/20 06035344 NONE 160.2 NA 05/27/20 05295334 NONE 160.4 NA 05/29/20 06015336 NONE 415.1 NA 06/06/20 06125369
		REND LAKE 05/26/2020 0945	Units	MG/L MG/L MG/L MG/L MG/L MG/L MG/L
			Result	0.605 0.814 0.215 ND 0.096 0.442 12.0 ND 5.0
		Sampling Loc'n: Sampling Date: Sampling Time:	LOQ Flag	0.0500 0.00500 0.0300 0.0200 0.0100 4.00 1.00
16	VIII () () () () () () () () ()	C	LOD	0.0400 0.00400 0.0200 0.0190 0.00800 4.0 4.0
Lab Report No: 008616	Project Name: REND LAKE Project No:	ARDL No: 008616-03 Field ID: REN-2-5 Received: 05/26/2020	Analyte	(a) Iron (a) Manganese Ammonia Nitrogen Nitrate as Nitrogen Phosphorus Phosphorus, -ortho Solids, Total Suspended Solids, Volatile Suspen Total Organic Carbon

(a) DOD and/or NELAC Accredited Analyte.

Lab Report No: 008616 Report Date: 06/02/2020

Project Name:	REND LAKE	Ana	lysis: NE	PESTICII	DES (827	0SIM-MO	D)
Project No.:		Analytical Me	ethod: 82	270C			
NELAC Certi:	fied - IL100308	Prep Me	ethod: 35	510C			
Field ID:	REN-3		ARDL I	Lab No.:	00861	6-04	
Desc/Location:	REND LAKE		Lab F	llename:	E0529	9009	
Sample Date:	05/26/2020		Recei	red Date:	05/26	5/2020	
Sample Time:	1045		Prep.	Date:	05/28	3/2020	
Matrix:	WATER		Analys	sis Date:	05/29	9/2020	
Amount Used:	800 mL		Instru	ument ID:	AG5		
Final Volume:	1 mL		QC Bat	ch:	B1122	20	
% Moisture:	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	2.56		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	0.738		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	79%	j

⁽a) DOD-QSM Accredited Analyte.

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Lab Report No: 008616	616						щ	Report Date:	: 06/12/2020	120
Project Name: REND LAKE Project No:	M						Z	Analysis: ELAC Certifi	Analysis: Inorganics NELAC Certified - IL100308	.cs 0308
ARDL No: 008616-04 Field ID: REN-3 Received: 05/26/2020	20	Sampli Sampl Sampl	Sampling Loc'n: Sampling Date: Sampling Time:	n: REND LAKE e: 05/26/2020 e: 1045	CAKE 72020			Matrix: Moisture:	: WAIER : NA	
Analyte	TOD	TOO	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
Ammonia Nitrogen Chlorophyll-a, Correcte Nitrate as Nitrogen Pheophytin-a Phosphorus, Phosphorus, -ortho Solids, Total Suspended Solids, Volatile Suspen Total Organic Carbon	0.0200 1.0 0.0190 1.0 0.00800 0.00800 4.0 4.0	0.0300 1.00 0.0200 1.00 0.0100 4.00 4.00		0.101 6.4 0.027 ND 0.105 0.0291 8.8 ND ND	MG/L MG/CU.M. MG/L MG/L MG/L MG/L MG/L	NONE 10200H NONE 10200H 365.2 NONE NONE	350.1 10200H GREEN 10200H 365.2 365.2 160.2 160.4	NA 05/27/20 NA 05/27/20 06/02/20 NA NA NA	06/02/20 06035342 05/28/20 05295329 05/28/20 05295329 06/02/20 06035344 05/27/20 05295334 05/29/20 06015336 05/29/20 06015336	06035342 05295329 05295321 05295329 06035344 05295334 06015336 06015336

(a) DOD and/or NELAC Accredited Analyte.

Sample 008616-04, Inorganic Analyses

Lab Report No: 008616 Report Date: 06/02/2020

Project Name:	REND LAKE	Ana	lysis: NE	PESTICI	DES (827	70SIM-MO	D)
Project No.:		Analytical M	ethod: 82	270C			
NELAC Certi	fied - IL100308	Prep M	ethod: 35	510C			
Field ID:	REN-4		ARDL I	Lab No.:	00863	16-05	
Desc/Location:	REND LAKE		Lab Fi	llename:	E0529	9010	
Sample Date:	05/26/2020		Recei	red Date:	05/26	6/2020	
Sample Time:	1100		Prep.	Date:	05/28	3/2020	
Matrix:	WATER		Analys	sis Date:	05/29	9/2020	
Amount Used:	800 mL		Instru	ment ID:	AG5		
Final Volume:	1 mL		QC Bat	ch:	B1122	20	
% Moisture:	·NA		Level	1	LOW		
					Data		Dilution
Parameter		LOD	LOQ	Result	Flag	Units	Factor
Trifluralin		0.250	0.250	ND		UG/L	1
Atrazine		0.250	0.250	3.31		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	1.10		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	101%	1
			1

⁽a) DOD-QSM Accredited Analyte.

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

Lab Report No: 008616	116						α	Report Date:	: 06/12/2020	020
Project Name: REND LAKE Project No:							Z	Analysis: Inorganics NELAC Certified - IL100308	: Inorganics fied - IL1003	ics 00308
ARDL No: 008616-05 Field ID: REN-4 Received: 05/26/2020	0	Sampl Samp Samp	Sampling Loc'n: Sampling Date: Sampling Time:		REND LAKE 05/26/2020 1100			Matrix: Moisture:	: WATER : NA	
Analyte	LOD	700T	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
Ammonia Nitrogen Chlorophyll-a, Correcte Nitrate as Nitrogen Pheophytin-a Phosphorus, Phosphorus, Cottho Solids, Total Suspended Solids, Volatile Suspen Total Organic Carbon	0.0200 1.0 0.0190 1.0 0.00800 0.00800 4.0 4.0	0.0300 1.00 0.0200 1.00 0.0100 4.00 4.00	p	0.0898 4.5 0.053 ND 0.122 0.042 6.8 ND	MG/L MG/CU.M. MG/L MG/L 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 365.2 365.2 160.2	NA 05/27/20 NA 05/27/20 06/02/20 NA NA NA	06/02/20 05/28/20 05/28/20 05/28/20 06/02/20 05/29/20 05/29/20	06035342 05295329 05295321 05295329 06035344 06015336 06015337

(a) DOD and/or NELAC Accredited Analyte.

Sample 008616-05, Inorganic Analyses

Lab Report No: 008616 Report Date: 06/02/2020

-	REND LAKE		nalysis: NI		DES (82	70SIM-MO	D)
Project No.:		Analytical					
NELAC Certi	fied - IL100308	Prep	Method: 3	510C			
Field ID:	REN-5		ARDL 1	Lab No.:	00863	16-06	
Desc/Location:	REND LAKE		Lab F	ilename:	E0529	9011	
Sample Date:	05/26/2020		Recei	ved Date:	05/2	6/2020	
Sample Time:	0830		Prep.	Date:	05/28	3/2020	
Matrix:	WATER		Analy	sis Date:	05/29	9/2020	
Amount Used:	900 mL		Instr	ument ID:	AG5		
Final Volume:	1 mL		QC Bat	tch:	B1122	20	
% 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	2.20		UG/L	1
Metribuzin		0.222	0.222	0.667		UG/L	1
Alachlor		0.222	0.222	ND		UG/L	1
Metolachlor		0.222	0.222	4.97		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	101%	į

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

(a) DOD-QSM Accredited Analyte.

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

Lab Report No: 008616	616						K.	Report Date:	: 06/12/2020	020
Project Name: REND LAKE Project No:	H						Z	Analysis: Inorganics NELAC Certified - IL100308	: Inorganics fied - IL1003	ics 00308
ARDL No: 008616-06 Field ID: REN-5	9	Sampl Samp	Sampling Loc'n: Sampling Date:		REND LAKE 05/26/2020			Matrix: Moisture:	: WATER : NA	
	2	4	5					A CONTRACTOR OF THE PARTY OF TH	e de la companya de l	
						Prep	Analysis	Prep	Analysis	Run
Analyte	LOD	Ŏ01	Flag	Result	Units	Method	Method	Date	Date	Number
Ammonia Nitrogen	0.0200	0.0300		0.117	MG/L	NONE	350.1	NA	06/02/20 06035342	06035342
Nitrate as Nitrogen	0.0190	0.0200		1.19	MG/L	NONE	GREEN	NA	05/28/20	05295321
Phosphorus	0.800.0	0.0100		0.161	MG/I	365.2	365.2	06/02/20	06/02/20	06035344
Phosphorus, -ortho	0.00800	0.0100		0.0524	MG/L	NONE	365.2	NA	05/27/20	05295334
Solids, Total Suspended	6.67	6.67		41.3	MG/L	NONE	160.2	NA	05/29/20	06015336
Solids, Volatile Suspen	6.67	6.67		ND	MG/L	NONE	160.4	NA	05/29/20	06015337
Total Organic Carbon	0.500	1.00		7.1	MG/L	NONE	415.1	NA	06/06/20	06125369

(a) DOD and/or NELAC Accredited Analyte.

Lab Report No: 008616 Report Date: 06/02/2020

Project Name:	REND LAKE	Ana	lysis: NF	PESTICII	DES (827	0SIM-MO	D)
Project No.:		Analytical M	ethod: 82	270C			
NELAC Certi	fied - IL100308	Prep M	ethod: 35	510C			
Field ID:	REN-7		ARDL 1	Lab No.:	00861	L6-07	<u> </u>
Desc/Location:	REND LAKE		Lab F:	llename:	E0529	9012	
Sample Date:	05/26/2020		Recei	red Date:	05/26	5/2020	
Sample Time:	1315		Prep.	Date:	05/28	3/2020	
Matrix:	WATER		Analys	sis Date:	05/29	9/2020	
Amount Used:	900 mL		Instr	ument ID:	AG5		
Final Volume:	1 mL		QC Bat	ch:	B1122	20	
% 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	0.467		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 RECOVERIES:	Limits	Results	1
Triphenylphosphate	30-130	100%	
			.

⁽a) DOD-QSM Accredited Analyte.

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

Lab Report No: 008616	1616						д	Report Date:	: 06/12/2020	020
Project Name: REND LAKE Project No:	H						4	Analysis: Inorganics NELAC Certified - IL100308	: Inorganics fied - IL1003	ics 00308
ARDL No: 008616-07 Field ID: REN-7 Received: 05/26/2020	17	Sampl Samp Samp	Sampling Loc'n: Sampling Date: Sampling Time:	o'n: REND LAKE ate: 05/26/2020 me: 1315	LAKE /2020			Matrix: Moisture:	: WATER : NA	
Analyte	TOD	TOO	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
Ammonia Nitrogen Nitrate as Nitrogen Phosphorus, -ortho Solids, Total Suspended Solids, Volatile Suspen Total Organic Carbon	0.0200 0.0190 0.00800 0.00800 1 4.0 4.0	0.0300 0.0200 0.0100 0.0100 4.00 4.00	Ь	0.0793 0.423 0.157 0.0316 27.2 ND 5.8	MG/L MG/L MG/L MG/L MG/L MG/L	NONE NONE 365.2 NONE NONE NONE NONE	350.1 GREEN 365.2 365.2 160.2 160.4	NA NA 06/02/20 NA NA NA	06/02/20 06035342 05/28/20 05295321 06/02/20 06035344 05/27/20 05295334 05/29/20 06015336 05/29/20 06015337 06/06/20 06125369	06035342 05295321 06035344 05295334 06015336 06015337

(a) DOD and/or NELAC Accredited Analyte.

Sample 008616-07, Inorganic Analyses

Lab Report No: 008616 Report Date: 06/02/2020

Project Name:	REND LAKE	Ana	lysis: NE	PESTICII	DES (827	OSIM-MO	D)
Project No.:		Analytical Me	ethod: 82	270C			
NELAC Certi	Fied - IL100308	Prep Me	ethod: 35	510C			
Field ID:	REN-8		ARDL I	Lab No.:	00861	6-08	
Desc/Location:	REND LAKE		Lab F	llename:	E0529	9013	
Sample Date:	05/26/2020		Recei	red Date:	05/26	5/2020	
Sample Time:	1000		Prep.	Date:	05/28	3/2020	
Matrix:	WATER		Analys	sis Date:	05/29	9/2020	
Amount Used:	800 mL		Instr	ument ID:	AG5		
Final Volume:	1 mL		QC Bat	ch:	B1122	20	
% Moisture:	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	6.24		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	2.11		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	1
Triphenylphosphate	30-130	94%	1
			1

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

(a) DOD-QSM Accredited Analyte.

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

008616 Report Date: 06/12/2020 Analysis: Inorganics NELAC Certified - IL100308	008616-08 Sampling Loc'n: REND LAKE Matrix: WATER REN-8 Sampling Date: 05/26/2020 Moisture: NA 05/26/2020 Sampling Time: 1000	Prep Analysis Prep Analysis Run LOD LOQ Flag Result Units Method Method Date Date Number	NONE 350.1 NA 06/02/20	Chlorophyll-a, Correcte 1.0 1.00 51.7 MG/CU.M. 10200H 10200H 05/27/20 05/28/20 05295329	Nitrate as Nitrogen 0.0190 0.0200 ND MG/L NONE GREEN NA 05/28/20 05295321	1.0 1.00 11.2 MG/CU.M. 10200H 10200H 05/27/20 05/28/20 05295329	0.00800 0.0100 0.113 MG/L 365.2 365.2 06/02/20 06/02/20 06035344	Phosphorus, -ortho 0.00800 0.0100 0.0135 MG/L NONE 365.2 NA 05/27/20 05295334	Solids, Total Suspended 4.0 4.00 5.2 MG/L NONE 160.2 NA 05/29/20 06015336	Solids, Volatile Suspen 4.0 4.00 4.8 MG/L NONE 160.4 NA 05/29/20 06015337	
	6-08		0				0				Total Organic Carbon 0 500

(a) DOD and/or NELAC Accredited Analyte.

Sample 008616-08, Inorganic Analyses

Lab Report No: 008616 Report Date: 06/02/2020

Project Name:	REND LAKE	Ana	lysis: NE	PESTICII	DES (827	70SIM-MO	D)
Project No.:		Analytical M	ethod: 82	270C			
NELAC Certi:	fied - IL100308	Prep M	ethod: 35	510C			
Field ID:	REN-15-0		ARDL I	Lab No.:	00861	L6-09	
Desc/Location:	REND LAKE		Lab F	llename:	E0529	9014	
Sample Date:	05/26/2020		Recei	ved Date:	05/26	5/2020	
Sample Time:	1120		Prep.	Date:	05/28	3/2020	
Matrix:	WATER		Analys	sis Date:	05/29	9/2020	
Amount Used:	800 mL		Instr	ument ID:	AG5		
Final Volume:	1 mL		QC Bat	ch:	B1122	20	
% Moisture:	NA		Level	:	LOW		
A					Data		Dilution
Parameter		LOD	LOQ	Result	Flag	Units	Factor
Trifluralin		0.250	0.250	ND		UG/L	1
Atrazine		0.250	0.250	3.34		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	1.11		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	107%	

⁽a) DOD-QSM Accredited Analyte.

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

Project Name: REND LAKE Project No: ARDL No: 008616-09 Field ID: REN-15-0 Received: 05/26/2020		Sampl Samp Samp	Sampling Loc'n: Sampling Date: Sampling Time:		REND LAKE 05/26/2020 1120			Analysis: Inorganics NELAC Certified - IL100308 Matrix: WATER Moisture: NA	: Inorganics fied - IL1003 : WATER : NA	1cs 00308
Analyte	LOD	TOO	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
Ammonia Nitrogen	0.0200	0.0300		0.105	MG/L	NONE	350.1	NA	06/02/20 06035342	06035342
Chlorophyll-a, Correcte	1.0	1.00		8.2	MG/CU.M.	10200H	10200H	05/27/20	05/28/20	05295329
Nitrate as Nitrogen	0.0190	0.0200		0.056	MG/L	NONE	GREEN	NA	05/28/20	05295321
Pheophytin-a	1.0	1.00		2.6	MG/CU.M.	10200H	10200H	05/27/20	05/28/20	05295329
Phosphorus	0.00800	0.0100		0.161	MG/L	365.2	365.2	06/02/20	06/02/20	06035344
Phosphorus, -ortho	0.00800	0.0100		0.0265	MG/L	NONE	365.2	NA	05/27/20	05295334
Solids, Total Suspended	4.0	4.00		8.4	MG/L	NONE	160.2	NA	05/29/20	06015336
Solids, Volatile Suspen	4.0	4.00		ND	MG/L	NONE	160.4	NA	05/29/20	06015337
Total Organic Carbon	0.500	1 00		7	MC/T.	NONE	115 1	KIN	06/90/90	06125369

(a) DOD and/or NELAC Accredited Analyte.

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

Lab Report No:	No: 008616	91						Re	port Date	Report Date: 06/12/2020	20
Project Name: Project No:	REND LAKE							NE	Analysis LAC Certi	Analysis: Inorganics NELAC Certified - IL100308	.cs 10308
ARDL No: Field ID: Received:	008616-10 REN-RL-MAR 05/26/2020	~ ~	Samp] Samp Samp	Sampling Loc'n: Sampling Date: Sampling Time:	ampling Loc'n: REND LAKE Sampling Date: 05/26/2020 Sampling Time: 1200	REND LAKE 05/26/2020 1200			Matrix: Moisture:	Matrix: WATER	
Analyte	t e	LOD	707	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
E. Coliform		1.0	1.00		125	COL/100 ML	NONE	1604	NA	05/26/20 05275315	5275315

(a) DOD and/or NELAC Accredited Analyte.

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

Lab Report No: 008616 Report Date: 06/02/2020

Project Name:	REND LAKE	Analys	is: NP PEST	CICIDES (82	270SIM-M	OD)
Project No.:		Analytical Meth	od: 8270C			
NELAC Certi:	fied - IL100308	Prep Meth	od: 3510C			
Field ID:	NA		ARDL Lab No	0086	616-01B1	
Desc/Location:	NA		Lab Filenam	ne: E052	29003	
Sample Date:	NA		Received Da	ate: NA		
Sample Time:	NA		Prep. Date:	: 05/2	28/2020	
Matrix:	QC Material		Analysis Da	ate: 05/2	29/2020	
Amount Used:	1000 mL		Instrument	ID: AG5		
Final Volume:	1 mL		QC Batch:	B11:	220	
% 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	97%	

⁽a) DOD-QSM Accredited Analyte.

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

62864

06/12/2020
Date:
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Project Name:	REND LAKE	4KE						NELA	C Certifi	NELAC Certified - IL100308
Analyte	LOD	TOO	Blank Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run	QC Lab Number
(a) Iron	0.040	0.050	ND	MG/L	3010A	6010C	05/27/20	05/28/20	P7371	008614-01B1
(a) Manganese	0.004	0.005	ND	MG/L	3010A	6010C	05/27/20	05/28/20	P7371	008614-01B1
Ammonia Nitrogen	0.020	0:030	ND	MG/L	NONE	350.1	NA	06/02/20 06035342	06035342	008616-01B1
Chlorophyll-a, Corre	1.0	1.0	ND	MG/CU.M.	10200H	10200Н	05/27/20	05/28/20 05295329	05295329	008616-05B1
E. Coliform	1.0	1.0	ND	COL/100 ML	NONE	1604	NA	05/26/20 05275315	05275315	008616-10B1
Nitrate as Nitrogen	0.019	0.020	ND	MG/L	NONE	GREEN	NA	05/28/20 05295321	05295321	008616-01B1
Pheophytin-a	1.0	1.0	ND	MG/CU.M.	10200H	10200H	05/27/20	05/28/20 05295329	05295329	008616-05B1
Phosphorus	0.008	0.010	ND	MG/I	365.2	365.2	06/02/20	06/02/20 06035344	06035344	008616-02B1
Phosphorus, -ortho	0.008	0.010	ND	MG/L	NONE	365.2	NA	05/27/20	05295334	008616-04B1
Solids, Total Suspen	1.0	1.0	QN	MG/L	NONE	160.2	NA	05/29/20	06015336	008616-07B1
Solids, Volatile Sus	1.0	1.0	NO	MG/L	NONE	160.4	NA	05/29/20 06015337	06015337	008616-07B1
Total Organic Carbon	0.50	1.0	ND	MG/L	NONE	415.1	NA	06/06/20 06125369	06125369	008616-01B1

(a) DOD and/or NELAC Accredited Analyte Inorganic Method Blanks for 008616

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

62864

Lab Report No:	008616							Rep	ort Date:	Report Date: 06/02/2020
Project Name: REND LAKE Project No.:	REND LAKE	Analysi	s: NP	STICIDES	PESTICIDES (8270SIM-MOD)	f-MOD)	Analy	rtical Me Prep Me	Analytical Method: 8270C Prep Method: 3510C	20
Matrix: Amount Used:	QC Material 1000 mL		QC Batch: Level:	B11220 LOW	0:		Prep. Date: Analysis Da	Jate:	Prep. Date: 05/28/2020 Analysis Date: 05/29/2020	
ũ	Parameter	Spike Result	Spike Spike Spike	Spike I	Duplicate Result	Duplicate	Duplicate % Rec	Recovery	RPD	RPD Limit
TE	Trifluralin	2.98	4	75	-	1		30-130	1	
	Atrazine	3.51	4	88	}	i i	!	30-130	!	1
Ä	Metribuzin	3.35	4	84	1	}	1	30-130	1	1
	Alachlor	2.16	4	54	i T	1	1	30-130	1	1
Mei	Metolachlor	3.52	4	88	1	i	;	30-130	1	1
Ch.	Chlorpyrifos	2.9	4	73	1	}	1	30-130	1	1
Ú	Cyanazine	3.79	4	95	i i	1	1	30-130	1	1
Pen	Pendimethalin	3.3	4	83	ş P	1	1	30-130	1	1

%R Limits	30-130
Duplicate %R	!
Spike %R	92
SURROGATE RECOVERIES:	Triphenylphosphate

^{&#}x27;*' indicates a recovery outside of standard limits. Spike Blanks for 008616-01, NP PESTICIDES (8270SIM-MOD)

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

Lab Report No: 008616	9								Report Dat	Report Date: 06/12/2020
Project Name:	REND LAKE								NELAC Cert	NELAC Certified - IL100308
	LCS 1	LCS 1	LCS 1	LCS 2	LCS 2	LCS 2	* Rec	Mean	Analytical	QC Lab
Analyte	Result	Level	% Rec	Result	Level	% Rec	Limits	% Rec	Run	Number
(a) Iron	4.9	5.0	66	-	-	4 9	87-115	tie de	P7371	008614-01C1
(a) Manganese	0.77	0.75	103	;	;	;	90-114	;	P7371	008614-01C1
Ammonia Nitrogen	1	1.0	100	;	;	;	80-120	;	06035342	008616-01C1
Nitrate as Nitrogen	0.93	1.0	93	;	;	1	80-120	1	05295321	008616-01C1
Phosphorus	0.72	0.67	108	1	1	;	80-120	;	06035344	008616-02C1
Phosphorus, -ortho	0.091	0.10	91	1	1	;	80-120	i	05295334	008616-04Cl
Total Organic Carbon	18.4	20.0	92	1	1	3	76-120	1	06125369	008616-01C1

NOTE: Any values tabulated above marked with an asterisk are outside of acceptable limits.

Inorganic LCS Results for 008616

⁽a) DOD and/or NELAC Accredited Analyte

	Vernon,
	Mt.
REPORT	1566
ATE	Box
DUPLICAT	P.0.
/SPIKE	Drive;
SPIKE/	Aviation C
MATRIX	Avi
MAT	400
	INC.
	ARDI,

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06/02/2020 Limit RPD 30 30 30 30 Prep Method: 3510C Analytical Method: 8270C Received Date: 05/26/2020 Analysis Date: 05/29/2020 Report Date: 008616-01 RPD 1.6 2.6 0.3 4.4 Н Limits % Rec 30-130 30-130 30-130 30-130 30-130 30-130 ARDL Lab No.: Lab Filename: 48.5 65.3 % Rec 87 78 78 MSD 4.44 4.44 4.44 4.44 Level 4.44 MSD Analysis: NP PESTICIDES (8270SIM-MOD) Result 4.03 2.16 3.87 3.47 3.27 2.9 MSD 05/28/2020 % Rec 77.8 76.8 83.3 48 67 B11220 900 mL MS LOW Amount Used: Prep. Date: % Moisture: Level 4.44 4.44 4.44 4.44 4.44 MS QC Batch: Level: Result 4.02 3.41 2.13 2.98 3.04 3.7 MS Result Sample 0.567 g g QN Q g 05/26/2020 Desc/Location: REND LAKE Project Name: REND LAKE 008616 REN-1 WATER 1215 Chlorpyrifos Metribuzin Metolachlor rrifluralin Parameter Atrazine Alachlor Lab Report No: Project No.: Sample Date: Sample Time: Field ID: Matrix:

SURROGATE RECOVERIES:	MS &R	MSD &R	%R Limits
Triphenylphosphate	82	87	30-130

9.4 6.1

30-130 30-130

86

4.44

3.82

94.5 71.3

4.44 4.44

4.2

8 8

Pendimethalin

Cyanazine

3.17

75.8

4.44

3.37

Matrix Spikes for 008616-01, NP PESTICIDES (8270SIM-MOD) '*' indicates a recovery outside of standard limits.

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

06/12/2020
ate:
Report D
: 008616
Lab Report No:

Project Name:		REND LAKE									NELAC	Certifi	NELAC Certified - IL100308
	Sample	Sample	MS	W.S	MS	MSD	MSD	MSD	* Rec		RPD		QC Lab
Analyte	Matrix	Result	Result	Level	% Rec	Result	Level	% Rec	Limits	RPD	Limit	Run	Number
(a) Iron	WATER	0.71	1.7	1.0	66	1.7	1.0	97	87-115	-	20	P7371	008616-01MS
(a) Manganese	WATER	1.3	1.8	0.50	103	1.8	0.50	100	90-114	٦	20	P7371	008616-01MS
Ammonia Nitrogen	WATER	0.26	2.3	2.0	102	2.4	2.0	106	75-125	ю	20	06035342	008616-01MS
Nitrate as Nitrogen	WATER	QN	99.0	1.0	* 99	0.64	1.0	* 49	75-125	ю	20	05295321	008616-01MS
Phosphorus	WATER	0.087	0.93	0.83	101	0.94	0.83	103	75-125	2	20	06035344	008616-02MS
Phosphorus, -ortho	WATER	0.029	0.13	0.10	106	0.13	0.10	103	75-125	2	20	05295334	008616-04MS
Total Organic Carbon	WATER	4.8	8.6	5.0	66	6.6	5.0	101	76-120	н	20	06125369	008616-01MS

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

⁽a) DOD and/or NELAC Accredited Analyte.

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

Lab Report No: 008616	516						Report Date: 06/12/2020	06/12/2020
Project Name: REND LAKE	LAKE	Assemble 2					NELAC Certifi	NELAC Certified - IL100308
Analyte	Sample Conc'n	Sample First Second Conc'n Duplicate Duplicate	Second Duplicate	Units	Percent Diff	Mean (Smp, D1, D2)	Analytical Run	QC Lab Number
Chlorophyll-a, Corrected	1 4.5	8.2		MG/CU.M.	58*		05295329	008616-05D1
Pheophytin-a	ND	0	1	MG/CU.M.	NC	i	05295329	008616-05D1
Solids, Total Suspended	1 27.2	21.6	1	MG/L	23*	1	06015336	008616-07D1
Solids, Volatile Suspend	I ND	0	!	MG/L	NC		06015337	008616-07D1

See Case Narrative for exceptions. * indicates that agreement between duplicates is greater than 20%. (a) DOD and/or NELAC Accredited Analyte Sample Duplicates for 008616



Sample Receipt Information

Including as appropriate:

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

ARDL Data Package 8616

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

(618) 244-1149 Fax

CHAIN OF CUSTODY RECORD

X X X X X X X X X X X X X X X X X X X	
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X X X X X X X X X X X X X X X X X X X	X x 5289
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X X	X X X X
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REMARKS/SPECIAL INSTRUCTIONS: One sample missing a labe for sample Ren-3-0. for sample Ren-3-0. DEB 05/20/2020	X X x oci
REMARKS/SPECIAL INSTRUCTIONS: O'NL Sample Missing a labe for sample Ren-3-0. DEB 05/20/2020	X 0001
REMARKS/SPECIAL INSTRUCTIONS: One sample missing a laba elimination was presumed to be for sample Ren-3-0. DEB 05/20/2020	
REMARKS/SPECIAL INSTRUCTIONS: O'M, Sample Missing a labe for sample Ren-3-0. for sample Ren-3-0. DEB 05/210/2020	
REMARKS/SPECIAL INSTRUCTIONS: O'IN Sample Missing a labor glimination was presumed to be for sample Ren-3-0. Gample Ren-3-0. Deb 05/20/2020	
REMARKS/SPECIAL INSTRUCTIONS: One sample missing a laboral point of limination was presumed to be for sample Ren-3-0. Gample Ren-3-0. Deb 05/20/2020	
enarks/special instructions: One sample missing a laborablimation was presumed to be for sample Ren-3-0. Deb 05/20/2020	. '
for sample Ren-3-0.	Time Received by (Signature)
2 Ren-3-0. DEB 05/20/2020	Time Received by: (Signature)
05/26/2020	Time Shipping Ticket No.
	STE UNEMICAN OSTEBIA 1400

C PURCHASE ORDER NO:

COOLER RECEIPT REPORT ARDL, INC. Number of Coolers in Shipment: Date Received: 05/26/2020 PRELIMINARY EXAMINATION PHASE: Date cooler was opened: 65/26/26/26 Signature)YES (ÑO) Did cooler come with a shipping slip (airbill, etc.)?..... If YES, enter carrier name and airbill number here: ARDL Were custody seals on outside of cooler?.....YES N/A How many and where?_ Seal Date: ,Seal Name: Were custody seals unbroken and intact at the date and time of arrival?.....YES 3. Did you screen samples for radioactivity using a Geiger Counter?......(YES) NO 4. Were custody papers sealed in a plastic bag? Hand Delivered YES 5. Were custody papers filled out properly (ink, signed, etc.)? See Note on CoC YES N/A 6. Were custody papers signed in appropriate place by ARDL personnel? NO N/A 7. NO N/A 8. Ambient NO V Observed Cooler Temp. 1, L Was a separate container provided for measuring temperature? YES_ 9. Correction factor LOG-IN PHASE: Date samples were logged-in: (5/26/2020 (Signature)) B. Describe type of packing in cooler: Loos e (NO) N/A NO Did all containers arrive unbroken and were labels in good condition? NO Were sample labels complete? Did all sample labels agree with custody papers? See Note on CoC NO Were correct containers used for the tests indicated? NO Was pH correct on preserved water samples?..... NO N/A Was a sufficient amount of sample sent for tests indicated?.... NO YES NO Were bubbles absent in VOA samples? If NO, list by sample #:_ Was the ARDL project coordinator notified of any deficiencies?..... NO Comments and/or Corrective Action: Sample Transfer Fraction Fraction Area# By On

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Date:

(By: Signature)

512612020

Chain-of-Custody #

COOLER RECEIPT REPORT ARDL, INC.

ARI	DL#: 8616	Cooler # Blue (2 of 2) Number of Coolers in Shipmer			
Pro	ject: Rend Lake	Date Received: 05/26/2			,
Α.	PRELIMINARY EXAMINATION PHASE: Date cooler was opened: 05				
	Did cooler come with a shipping slip (airbill, etc.)?		VES ((NÕ)	
1.	If YES, enter carrier name and airbill number here:		123		
				<u></u>	
2.	Were custody seals on outside of cooler?			NO	N/A
	How many and where?,Seal D	ate:,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 Geiger Counter?		(ÉS)	NO	
5.	Were custody papers sealed in a plastic bag?. Hand deliver			NO	
6.	Were custody papers filled out properly (ink, signed, etc.)? See	Vote	(ES)	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	ne at the top of this form	(YES)	NO	N/A
9.	Was a separate container provided for measuring temperature? YES_	NO Observed Cooler Temp	18 c	Am	biend
В.	LOG-IN PHASE: Date samples were logged-in: 05/21/202		on factor(*	<u>ں، ر</u>	C
10.	Describe type of packing in cooler: Loose ce	100 Mark Mark Mark Mark Mark Mark Mark Mark			*****
11.	Were all samples sealed in separate plastic bags?		YES ((Ng)	N/A
12.	Did all containers arrive unbroken and were labels in good condition?	See Note	YES (NÓ	,
13.	Were sample labels complete? See Note		YES	60	
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?		YES)	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	NA
19.	Was the ARDL project coordinator notified of any deficiencies?			NO	N/A
	Comments and/or Corrective Action:	Sample Tra	nsfer		
6	1111		action		
	he Sample missing a label-	All	ea#		
	Sea Note on CoC.	Area# Area	sa #		
) w 100 01 (By By	- 1		
_		bCB On Or			
		05/26/2020	. 1		
		00,-0.2000			
		Chain-of-Custody #			
(E	By: Signature) DCB Date: 05/210/2020				

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

www.ardlinc.com

Date: 9/1/20

Lab Name: ARDL, Inc.

ARDL Report No.: 8636

Customer Name: SLCOE

Project Name: Rend Lake

Samples Received at ARDL: 8/5/20

CASE NARRATIVE

Customer	Date	Lab ID	
Sample No.	Collected	Number	Analyses Requested
REN-1	8/05/20	8636-01	NP Pesticides, Metals(1), Inorganics(2)
REN-2-0	8/05/20	8636-02	NP Pesticides, Inorganics(2)(3)
REN-2-5	8/05/20	8636-03	Metals(1), Inorganics(2)
REN-3	8/05/20	8636-04	NP Pesticides, Inorganics(2)(3)
REN-4	8/05/20	8636-05	NP Pesticides, Inorganics(2)(3)
REN-5	8/05/20	8636-06	NP Pesticides, Inorganics(2)
REN-7	8/05/20	8636-07	NP Pesticides, Inorganics(2)
REN-8	8/05/20	8636-08	NP Pesticides, Inorganics(2)(3)
REN-15-0	8/05/20	8636-09	NP Pesticides, Inorganics(2)(3)
REN-RL-MAR	8/05/20	8636-10	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.

CONTINUING CALIBRATION

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

DUPLICATE

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

INTERNAL STANDARD

All internal standard criteria were met.

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

Page 1 of 2

Project Name: Rend Lake

ARDL Report No.: 8636

CASE NARRATIVE (Continued)

SURROGATE

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 all 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 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, except for pheophytin-a. The parent sample has been flagged appropriately with a 'J' qualifier.

DATA REPORTING QUALIFIERS

The following data reporting qualifiers are used as required:

- ND Indicates parameter was analyzed for but not detected.
- 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



Including as appropriate:

Field Sample Results

Batch QC

Prep Blank

LCS/Spike Blank

Matrix QC

MS/MSD

Sample Duplicate

ARDL Data Package

8636

Lab Report No: 008636 Report Date: 08/10/2020

Project Name:	REND LAKE	Ana	lysis: NE	PESTICII	DES (82	70SIM-MO	D)
Project No.:		Analytical Me	ethod: 82	270C			
NELAC Certi	fied - IL100308	Prep M	ethod: 35	510C			
Field ID:	REN-1		ARDL 1	Lab No.:	00863	36-01	The state of the s
Desc/Location:	REND LAKE		Lab Fi	ilename:	E0807	7005	
Sample Date:	08/05/2020		Recei	ved Date:	08/05	5/2020	
Sample Time:	1020		Prep.	Date:	08/00	6/2020	
Matrix:	WATER		Analys	sis Date:	08/0	7/2020	
Amount Used:	900 mL		Instr	ument ID:	AG5		
Final Volume:	1 mL		QC Bat	tch:	B1125	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	0.456		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	0.267		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	69%	- Constitution
			1

⁽a) DOD-QSM Accredited Analyte.

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

Project No: Project No: ARDL No: 008636-01 Field ID: REN-1 Received: 08/05/2020	LOD	Sampl Samp Samp	Sampling Loc'n: Sampling Date: Sampling Time:	ns ns	REND LAKE 08/05/2020 1020 1t Units	Prep	N Analysis Method	Analysis: Inorganics NELAC Certified - IL100308 Matrix: WATER Moisture: NA Prep Analysis Ru Date Date Numb	: Inorganics fied - IL1003 : WATER : NA : NA Analysis Date Nu	Lcs 00308 Run Number
(a) Iron (a) Manganese Ammonia Nitrogen Nitrate as Nitrogen Phosphorus Phosphorus, -ortho Solids, Total Suspended Solids, Volatile Suspen Total Organic Carbon	0.0400 0.00400 0.0200 0.0190 0.00800 0.00800 4.0	0.0500 0.00500 0.0300 0.0100 0.0100 4.00 1.00	ט	0.316 0.327 0.0543 0.045 0.182 0.068 12.0 6.8	MG/L MG/L MG/L MG/L MG/L MG/L MG/L MG/L	3010A 3010A NONE NONE 365.2 NONE NONE NONE	6010C 6010C 350.1 GREEN 365.2 365.2 160.2 160.4	08/10/20 08/10/20 NA NA 08/25/20 NA NA NA	08/13/20 08/13/20 08/12/20 08/11/20 08/26/20 08/06/20 08/10/20 08/10/20	P7404 P7404 08125460 08255517 08275521 08115455 08135467 08135468

(a) DOD and/or NELAC Accredited Analyte.

Lab Report No: 008636 Report Date: 08/10/2020

Project Name: Project No.:	REND LAKE	Anal Analytical Me	_	PESTICII	DES (827	70SIM-MO	D)
	fied - IL100308		ethod: 35				
Field ID:	REN-2-0		ARDL I	Lab No.:	00863	36-02	V-V-V-V-V-V-V-V-V-V-V-V-V-V-V-V-V-V-V-
Desc/Location:	REND LAKE		Lab Fi	llename:	E0807	7008	
Sample Date:	08/05/2020		Receiv	red Date:	08/05	5/2020	
Sample Time:	1115		Prep.	Date:	08/06	5/2020	
Matrix:	WATER		Analys	sis Date:	08/07	7/2020	
Amount Used:	900 mL		Instru	ument ID:	AG5		
Final Volume:	1 mL		QC Bat	ch:	B1125	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	0.367		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 RECOVERIES:	Limits	Results	-
Triphenylphosphate	30-130	55%	

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

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

Lab Report No: 008636	536						ĸ	Report Date:	: 08/31/2020	20
Project Name: REND LAKE Project No:	63	-					Z	Analysis: Inorganics NELAC Certified - IL100308	: Inorganics fied - IL1003	.cs 0308
ARDL No: 008636-02 Field ID: REN-2-0 Received: 08/05/2020	0	Sampl Samp Samp	Sampling Loc'n: Sampling Date: Sampling Time:		REND LAKE 08/05/2020 1115			Matrix: Moisture:	: WATER : NA	
Analyte	LOD	ŎОΊ	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
Ammonia Nitrogen Chlorophyll-a, Correcte Nitrate as Nitrogen Pheophytin-a Phosphorus, -ortho Solids, Total Suspended Solids, Volatile Suspen Total Organic Carbon	0.0200 1.0 0.0190 1.0 0.00800 0.00800 4.0 4.0	0.0300 1.00 0.0200 1.00 0.0100 4.00 1.00	ь	0.0428 53.6 ND 65.3 0.20 0.0628 8.0 6.8	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 365.2 365.2 160.2 160.4	NA 08/06/20 NA 08/06/20 08/25/20 NA NA NA	08/12/20 C 08/11/20 C 08/11/20 C 08/11/20 C 08/11/20 C 08/26/20 C 08/10/20 C 08/10/20 C 08/14/20 C 08/14/20 C	08125460 08135472 08255517 08135472 08275521 08115455 08135467 08135468

(a) DOD and/or NELAC Accredited Analyte.

Sample 008636-02, Inorganic Analyses

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

	8 0		Run Number	P7404 P7404 08125460 08255517 08275521 08115455 08135467 08135467
08/31/2020	Inorganics d - IL1003(1
	: Inorg fied - I	MATER NA	Analysis Date	08/13/20 08/13/20 08/12/20 08/11/20 08/26/20 08/06/20 08/10/20
Report Date:	Analysis: Inorganics NELAC Certified - IL100308	Matrix: Moisture:	Prep Date	08/10/20 08/10/20 NA NA 08/25/20 NA NA NA
ø.	Z		Analysis Method	6010C 6010C 350.1 GREEN 365.2 365.2 160.2 160.4
			Prep Method	3010A 3010A NONE NONE 365.2 NONE NONE NONE
		LAKE /2020	Units	MG/L MG/L MG/L MG/L MG/L MG/L MG/L
		'n: REND LAKE te: 08/05/2020 me: 1130	Result	0.233 0.286 0.0971 0.040 0.178 0.0654 10.4 6.0
*		Sampling Loc'n: Sampling Date: Sampling Time:	Flag	
		Samplin Sampli Sampli	ÖOT	0.0500 0.00500 0.0300 0.0200 0.0100 4.00 4.00
536	ы	8 02	LOD	0.0400 0.00400 0.0200 0.0190 0.00800 4.0 4.0 4.0
t No: 008636	REND LAKE	008636-03 REN-2-5 08/05/2020	yte	gen trogen ortho Suspended ile Suspen
Lab Report No:	Project Name: Project No:	ARDL No: Field ID: Received:	Analyte	(a) Iron (a) Manganese Ammonia Nitrogen Nitrate as Nitrogen Phosphorus, -ortho Solids, Total Suspended Solids, Volatile Suspen

(a) DOD and/or NELAC Accredited Analyte.

Lab Report No: 008636 Report Date: 08/10/2020

Project Name:	REND LAKE	Ana	lysis: NE	PESTICIO	DES (827	OSIM-MO	D)
Project No.:		Analytical Me	ethod: 82	270C			
NELAC Certi	fied - IL100308	Prep Me	ethod: 35	510C			
Field ID:	REN-3		ARDL I	Lab No.:	00863	36-04	
Desc/Location:	REND LAKE		Lab Fi	ilename:	E0807	7009	
Sample Date:	08/05/2020		Recei	ved Date:	08/05	5/2020	
Sample Time:	1215		Prep.	Date:	08/06	5/2020	
Matrix:	WATER		Analys	sis Date:	08/07	7/2020	
Amount Used:	800 mL		Instru	ument ID:	AG5		
Final Volume:	1 mL		QC Bat	ch:	B1125	53	
% Moisture:	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	0.463		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	0.250		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	73%	

⁽a) DOD-QSM Accredited Analyte.

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

Lab Report No: 008636	536						K	Report Date:	: 08/31/2020	20
Project Name: REND LAKE Project No:	t I						Z	Analysis: Inorganics NELAC Certified - IL100308	: Inorganics fied - IL1003	.cs 0308
ARDL No: 008636-04 Field ID: REN-3 Received: 08/05/2020	20	Sampl Samp Samp	Sampling Loc'n: Sampling Date: Sampling Time:		REND LAKE 08/05/2020 1215			Matrix: Moisture:	: WATER : NA	
Analyte	TOD	TOO	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
Ammonia Nitrogen Chlorophyll-a, Correcte Nitrate as Nitrogen Pheophytin-a Phosphorus Phosphorus, -ortho Solids, Total Suspended Solids, Volatile Suspen Total Organic Carbon	0.0200 1.0 0.0190 1.0 0.00800 0.00800 4.0 4.0	0.0300 1.00 1.00 0.0100 0.0100 4.00 1.00		0.141 45.4 ND 49.3 0.278 0.107 15.6 7.6	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 365.2 365.2 160.2 160.4	NA 08/06/20 NA 08/06/20 08/25/20 NA NA NA	08/12/20 08125460 08/11/20 08135472 08/11/20 08135472 08/26/20 08275521 08/06/20 08115455 08/10/20 08115467 08/10/20 08135467	08125460 08135472 08255517 08135472 08275521 08115455 08135467 08135468

(a) DOD and/or NELAC Accredited Analyte.

Sample 008636-04, Inorganic Analyses

Lab Report No: 008636 Report Date: 08/10/2020

	REND LAKE		_	PESTICII	DES (827	OSIM-MO	D)
Project No.:		Analytical Me					
NELAC Certi	fied - IL100308	Prep Me	ethod: 35	510C			
Field ID:	REN-4		ARDL I	Lab No.:	00863	86-05	
Desc/Location:	REND LAKE		Lab F	llename:	E0807	010	
Sample Date:	08/05/2020		Recei	red Date:	08/05	5/2020	
Sample Time:	1245		Prep.	Date:	08/06	5/2020	
Matrix:	WATER		Analys	sis Date:	08/07	7/2020	
Amount Used:	900 mL		Instr	ument ID:	AG5		
Final Volume:	1 mL		QC Bat	ch:	B1125	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	0.522		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	0.267		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	73%	İ
			1

⁽a) DOD-QSM Accredited Analyte.

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

FIGJECT Name: NEWD LAND								Analysis:	: Inorganics	ics
ARDL No: 008636-05 Field ID: REN-4 Received: 08/05/2020	0	Sampl Samp Samp	Sampling Loc'n: Sampling Date: Sampling Time:		REND LAKE 08/05/2020 1245		2	NELAC Certified - IL100308 Matrix: WATER Moisture: NA	fied - ILI : WATER : NA	800308
Analyte	LOD	TOO	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
Ammonia Nitrogen	0.0200	0.0300		0.102	MG/L	NONE	350.1	NA	08/12/20 08125460	08125460
Chlorophyll-a, Correcte	1.0	1.00		41.8	MG/CU.M.	10200H	10200H	08/06/20	08/11/20	08135472
Nitrate as Nitrogen	0.0190	0.0200		ND	MG/L	NONE	GREEN	NA	08/11/20	08255517
Pheophytin-a	1.0	1.00		54.8	MG/CU.M.	10200H	10200H	08/06/20	08/11/20	08135472
Phosphorus	0.00800	0.0100		0.381	MG/L	365.2	365.2	08/25/20	08/26/20	08275521
, -ortho	0.00800.0	0.0100		0.167	MG/L	NONE	365.2	NA	08/06/20	08115455
Solids, Total Suspended	4.0	4.00		18.8	MG/L	NONE	160.2	NA	08/10/20	08135467
Solids, Volatile Suspen	4.0	4.00		9.2	MG/L	NONE	160.4	NA	08/10/20	08135468
Total Organic Carbon	005	1		7 1	T/ UM	NOME	7. 7. 7.	KIN	06/06/80	082551K

(a) DOD and/or NELAC Accredited Analyte.

Sample 008636-05, Inorganic Analyses

Lab Report No: 008636 Report Date: 08/10/2020

	REND LAKE		-	PESTICII	DES (827	OSIM-MO	D)
Project No.:		Analytical Me					
NELAC Certit	fied - IL100308	Prep Me	ethod: 35	510C			
Field ID:	REN-5		ARDL I	Lab No.:	00863	86-06	
Desc/Location:	REND LAKE		Lab Fi	llename:	E0807	011	
Sample Date:	08/05/2020		Recei	red Date:	08/05	5/2020	
Sample Time:	0945		Prep.	Date:	08/06	5/2020	
Matrix:	WATER		Analys	sis Date:	08/07	/2020	
Amount Used:	900 mL		Instru	ument ID:	AG5		
Final Volume:	1 mL		QC Bat	ch:	B1125	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	0.544		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	0.700		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	63%	į

⁽a) DOD-QSM Accredited Analyte.

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

	ω α		Run mber	5460 5517 5521 5455 5467 5468
2020	nics 100300		ž	08125460 08255517 08275521 08115455 08135467 08135468
. 08/31/2020	: Inorganics Fied - IL1003	WATER NA	Analysis Date	08/12/20 08125460 08/11/20 08255517 08/26/20 08275521 08/06/20 08115455 08/10/20 08135467 08/10/20 08135468
Report Date:	Analysis: Inorganics NELAC Certified - IL100308	Matrix: Moisture:	Prep Date	NA NA 08/25/20 NA NA NA
Ř	N		Analysis Method	350.1 GREEN 365.2 365.2 160.2 160.4
			Prep Method	NONE NONE 365.2 NONE NONE NONE NONE
		LAKE /2020	Units	MG/L MG/L MG/L MG/L MG/L MG/L
		'n: REND LAKE te: 08/05/2020 me: 0945	Result	0.0904 0.269 0.256 0.0861 19.6 ND 7.5
		Sampling Loc'n: Sampling Date: Sampling Time:	Flag	
		Sampl Samp Samp	ЙОТ	0.0300 0.0200 0.0100 4.00 4.00
636	田	6 20	TOD	0.0200 0.0190 0.00800 0.00800 4.0 4.0
Lab Report No: 008636	Project Name: REND LAKE Project No:	ARDL No: 008636-06 Field ID: REN-5 Received: 08/05/2020	Analyte	Ammonia Nitrogen Nitrate as Nitrogen Phosphorus, -ortho Solids, Total Suspended Solids, Volatile Suspen Total Organic Carbon

(a) DOD and/or NELAC Accredited Analyte.

Lab Report No: 008636 Report Date: 08/10/2020

Project Name:	REND LAKE		_	PESTICI	DES (827	OSIM-MO	D)
Project No.:		Analytical Me	ethod: 82	270C			
NELAC Certi	fied - IL100308	Prep Me	ethod: 35	510C			
Field ID:	REN-7		ARDL I	Lab No.:	00863	36-07	
Desc/Location:	REND LAKE		Lab Fi	llename:	E0807	7012	
Sample Date:	08/05/2020		Recei	red Date:	08/05	5/2020	
Sample Time:	1415		Prep.	Date:	08/06	5/2020	
Matrix:	WATER		Analys	sis Date:	08/07	7/2020	
Amount Used:	900 mL		Instru	ument ID:	AG5		
Final Volume:	1 mL		QC Bat	ch:	B1125	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	1.78		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	8.80		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	71%	

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

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

Project Name: REND LAKE Project No:							N	Analysis: Inorganics NELAC Certified - IL100308	: Inorganics fied - IL1003	ics 00308
ARDL No: 008636-07		Sampl	Sampling Loc'n:	c'n: REND LAKE	LAKE			Matrix:	: WATER	
Field ID: REN-7 Received: 08/05/2020	0	Samp Samp	Sampling Date: Sampling Time:	ate: 08/05/2020 ime: 1415	/2020			Moisture:	: NA	
The state of the s						Prep	Analysis	Prep	Analysis	Run
Analyte	ГОР	TOO	Flag	Result	Units	Method	Method	Date	Date	Number
Ammonia Nitrogen	0.0200	0.0300		0.124	MG/L	NONE	350.1	NA	08/12/20 08125460	08125460
Nitrate as Nitrogen	0.0190	0.0200		0.801	MG/L	NONE	GREEN	NA	08/11/20	08255517
Phosphorus	0.00800	0.0100		0.394	MG/L	365.2	365.2	08/25/20	08/26/20	08275521
Phosphorus, -ortho	0.00800	0.0100		0.143	MG/L	NONE	365.2	NA	08/06/20	08115455
Solids, Total Suspended	4.0	4.00		31.6	MG/L	NONE	160.2	NA	08/10/20	08135467
Solids, Volatile Suspen	4.0	4.00		4.4	MG/L	NONE	160.4	NA	08/10/20	08135468
Total Organic Carbon	0.500	1.00		6.4	MG/L	NONE	415.1	NA	08/20/20	08255516

(a) DOD and/or NELAC Accredited Analyte.

Sample 008636-07, Inorganic Analyses

Lab Report No: 008636 Report Date: 08/10/2020

Project Name: Project No.:	REND LAKE	Ana Analytical M	-	P PESTICII	DES (82	70SIM-MC	D)
	fied - IL100308	-					
NELAC Certi	ried - ILIUU308	Prep M	ethod: 35	210C			
Field ID:	REN-8		ARDL 1	Lab No.:	00863	36-08	
Desc/Location:	REND LAKE		Lab F:	ilename:	E080'	7013	
Sample Date:	08/05/2020		Recei	ved Date:	08/09	5/2020	
Sample Time:	1145		Prep.	Date:	08/0	6/2020	
Matrix:	WATER		Analys	sis Date:	08/0	7/2020	
Amount Used:	900 mL		Instr	ument ID:	AG5		
Final Volume:	1 mL		QC Bat	tch:	B112	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	0.378		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	0.222		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	50%

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

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

0	308		Run Number	08125460 08135472 08255517 08135472 08275521 08115455 08135467 08135468
08/31/2020	Analysis: Inorganics NELAC Certified - IL100308	WATER NA	Analysis Date N	08/12/20 08125460 08/11/20 08135472 08/11/20 08135472 08/11/20 08135472 08/26/20 08275521 08/06/20 08115455 08/10/20 08135467 08/10/20 08135468
Report Date:	Analysis: ELAC Certif	Matrix: Moisture:	Prep Date	NA 08/06/20 NA 08/06/20 08/25/20 NA NA NA
Ř	IN IN		Analysis Method	350.1 10200H GREEN 10200H 365.2 365.2 160.2 160.4
			Prep Method	NONE 10200H NONE 10200H 365.2 NONE NONE NONE
		REND LAKE 08/05/2020 1145	Units	MG/L MG/CU.M. MG/L MG/L MG/L MG/L MG/L MG/L
			Result	0.0453 66.3 ND 103 0.291 0.0472 25.6 12.0
		Sampling Loc'n: Sampling Date: Sampling Time:	Flag	
		Samp Sam Sam	COOI	0.0300 1.00 1.00 0.0100 0.0100 4.00 1.00
36		0	LOD	0.0200 1.0 0.0190 1.0 0.00800 0.00800 4.0 4.0
Lab Report No: 008636	Project Name: REND LAKE Project No:	ARDL No: 008636-08 Field ID: REN-8 Received: 08/05/2020	Analyte	Ammonia Nitrogen Chlorophyll-a, Correcte Nitrate as Nitrogen Pheophytin-a Phosphorus Phosphorus, -ortho Solids, Total Suspended Solids, Volatile Suspen Total Organic Carbon

(a) DOD and/or NELAC Accredited Analyte.

Sample 008636-08, Inorganic Analyses

Lab Report No: 008636 Report Date: 08/10/2020

	REND LAKE		-	PESTICII	DES (827	OSIM-MO	D)
Project No.:		Analytical Me					
NELAC Certi	fied - IL100308	Prep Me	ethod: 35	510C			
Field ID:	REN-15-0		ARDL I	Lab No.:	00863	86-09	
Desc/Location:	REND LAKE		Lab Fi	llename:	E0807	014	
Sample Date:	08/05/2020		Recei	red Date:	08/05	/2020	
Sample Time:	1230		Prep.	Date:	08/06	5/2020	
Matrix:	WATER		Analys	sis Date:	08/07	/2020	
Amount Used:	800 mL		Instru	ument ID:	AG5		
Final Volume:	1 mL		QC Bat	ch:	B1125	53	
% Moisture:	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	0.488		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	0.263		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	78%	

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

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

Lab Report No: 008636	536						д,	Report Date:	: 08/31/2020	020
Project Name: REND LAKE Project No:	67						2	Analysis: Inorganics NELAC Certified - IL100308	: Inorganics fied - IL1003	ics 00308
ARDL No: 008636-09 Field ID: REN-15-0 Received: 08/05/2020	6	Sampl Samp Samp	Sampling Loc'n: Sampling Date: Sampling Time:	'n: REND LAKE te: 08/05/2020 me: 1230	LAKE /2020			Matrix: Moisture:	: WATER : NA	
Analyte	TOD	TOD	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
Ammonia Nitrogen Chlorophyll-a, Correcte Nitrate as Nitrogen Pheophytin-a Phosphorus, -ortho Solids, Total Suspended Solids, Volatile Suspen Total Organic Carbon	0.0200 1.0 0.0190 1.0 0.00800 0.00800 4.0 4.0	0.0300 1.00 0.0200 1.00 0.0100 4.00 1.00		0.0472 46.3 ND 52.2 0.273 0.102 16.8 7.6	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 365.2 365.2 160.2 160.4	NA 08/06/20 NA 08/06/20 08/25/20 NA NA NA	08/12/20 08125460 08/11/20 08135472 08/11/20 08135472 08/26/20 08275521 08/06/20 08115455 08/10/20 08115467 08/10/20 08135467	08125460 08135472 08255517 08135472 08275521 08115455 08135467 08135468

(a) DOD and/or NELAC Accredited Analyte.

Sample 008636-09, Inorganic Analyses

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

11/2020	ganics IL100308	, and the second	is Run Number	08/05/20 08075447
te: 08/3	Analysis: Inorganics AC Certified - IL1003	ix: WATER re: NA	Analysis Date	/90/80
Report Date: 08/31/2020	Analysis: Inorganics NELAC Certified - IL100308	Matrix: Moisture:	Prep Date	NA
μ	2		Prep Analysis Method Method	1604
			Prep Method	NONE
		REND LAKE 08/05/2020 1315	Units	COL/100 ML NONE
		'n: REND te: 08/05 me: 1315	Flag Result	16.0
		Sampling Loc'n: REND LAKE Sampling Date: 08/05/2020 Sampling Time: 1315	Flag	
		San Sar Sar	TOO	1.00
3636	Ð.	10 4AR 320	TOD	1.0
No: 008	REND LAR	008636-10 REN-RL-MAR 08/05/2020	t e	
Lab Report No: 008636	Project Name: REND LAKE Project No:	ARDL No: 008636-10 Field ID: REN-RL-MAI Received: 08/05/2020	Analyte	E. Coliform

(a) DOD and/or NELAC Accredited Analyte.

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

Lab Report No: 008636 Report Date: 08/10/2020

Project Name: Project No.:	REND LAKE	Analytical Meth	sis: NP PEST nod: 8270C	ICIDES (82	270SIM-MO	D)
NELAC Certi	fied - IL100308	Prep Metl	nod: 3510C			
Field ID:	NA	**************************************	ARDL Lab No	.: 0086	536-01B1	
Desc/Location:	NA		Lab Filenam	e: E080	07003	
Sample Date:	NA		Received Da	te: NA		
Sample Time:	NA		Prep. Date:	08/0	06/2020	
Matrix:	QC Material		Analysis Da	te: 08/0	07/2020	
Amount Used:	1000 mL		Instrument	ID: AG5		
Final Volume:	1 mL		QC Batch:	B112	253	
% 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	81%	ļ

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

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

Lab Report No: 008636

Report Date: 08/31/2020

62864

Analyte	LOD	001	Blank Result	Units	Prep	Analysis Method	Prep Date	Analysis Date	Run	QC Lab Number
(a) Iron	0.040	0.050	QN	MG/L	3010A	6010C	08/10/20	08/13/20	P7404	008636-01B1
(a) Manganese	0.004	0.005	NO	MG/L	3010A	6010C	08/10/20	08/13/20	P7404	008636-01B1
Ammonia Nitrogen	0.020	0.030	NO	MG/L	NONE	350.1	NA	08/12/20	08125460	008636-01B1
Chlorophyll-a, Corre	1.0	1.0	ND	MG/CU.M.	10200H	10200H	08/06/20	08/11/20	08135472	008636-02B1
E. Coliform	1.0	1.0	ND	COL/100 ML	NONE	1604	NA	08/02/20	08075447	008636-10B1
Nitrate as Nitrogen	0.019	0.020	ND	MG/L	NONE	GREEN	NA	08/11/20	08255517	008636-01B1
Pheophytin-a	1.0	1.0	ND	MG/CU.M.	10200H	10200H	08/06/20	08/11/20	08135472	008636-02B1
Phosphorus	0.008	0.010	NO	MG/L	365.2	365.2	08/25/20	08/26/20	08275521	008636-02B1
Phosphorus, -ortho	0.008	0.010	ND	MG/L	NONE	365.2	NA	08/06/20	08115455	008636-02B1
Solids, Total Suspen	1.0	1.0	ND	MG/L	NONE	160.2	NA	08/10/20	08135467	008636-06B1
Solids, Volatile Sus	1.0	1.0	QN	MG/L	NONE	160.4	NA	08/10/20	08135468	008636-06B1
Total Organic Carbon	0.50	1.0	QN	MG/L	NONE	415.1	NA	08/14/20	08255515	008636-01B1
Total Organic Carbon	0.50	1.0	ND	MG/L	NONE	415.1	NA	08/20/20	08255516	008637-02B1

(a) DOD and/or NELAC Accredited Analyte Inorganic Method Blanks for 008636

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

62864

	1	&R Limits	Duplicate &R	Spike &R Dur	ias		SITEROGATE RECOVERTES:	SOURCE
!	30-130	!	1	1	93	4	3.73	Pendimethalin
!!	30-130	1	1	1	06	4	3.59	Cyanazine
:	30-130	1	!	}	06	4	3.58	Chlorpyrifos
1 1	30-130	•	1	1	68	4	3.56	Metolachlor
1 1	30-130	!	1	}	06	4	3.61	Alachlor
:	30-130	!	}	1	68	4	3.56	Metribuzin
:	30-130	1	1	1	88	4	3.5	Atrazine
!	30-130	1	1	1	91	4	3.62	Trifluralin
RPD Limit	Limits	& Rec	Level	Result	% Rec	Level	Result	Parameter
Y RPD	Recovery	Duplicate	Duplicate	Duplicate	Spike	Spike	Spike	
08/06/2020 :: 08/07/2020	Prep. Date: Analysis Date:	Prep Anal		B11253 LOW		QC Batch: Level:		Matrix: QC Material Amount Used: 1000 mL
Analytical Method: 8270C Prep Method: 3510C	alytical Prep	And	SIM-MOD)	PESTICIDES (8270SIM-MOD)	PESTICI	Analysis: NP	An	Project Name: REND LAKE Project No.:
Report Date: 08/10/2020	1-14							Lab Report No: 008636

SURROGATE RECOVERIES:	Spike %R	Duplicate %R	%R Limits
Triphenylphosphate	79	1	30-130

^{&#}x27;*' indicates a recovery outside of standard limits. Spike Blanks for 008636-01, NP PESTICIDES (8270SIM-MOD)

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

020	00308										
Report Date: 08/31/2020	NELAC Certified - IL100308	QC Lab	Number	008636-01C1	008636-01C1	008636-01C1	008636-01C1	008636-02C1	008636-02C1	008636-01C1	008637-02C1
Report Dat	NELAC Cert	Analytical	Run	P7404	P7404	08125460	08255517	08275521	08115455	08255515	08255516
		Mean	% Rec	1	1	!	1	!	1	1	1
		% Rec	Limits	87-115	90-114	80-120	80-120	80-120	80-120	90-110	90-110
		LCS 2	% Rec	!	ŀ	;	i	ŧ	1	!	ì
		LCS 2	Level	1	1	;	1	1	1	1	!
		LCS 2	Result	1	ł	;	1	ŀ	;	1	1
		LCS 1	% Rec	101	105	86	86	94	26	86	103
		rcs 1	Level	5.0	0.75	1.0	1.0	0.67	0.10	20.0	20.0
8636	REND LAKE	LCS 1	Result	5.0	0.79	86.0	0.98	0.63	0.097	19.6	20.5
Lab Report No: 008636	Project Name:		Analyte	(a) Iron	(a) Manganese	Ammonia Nitrogen	Nitrate as Nitrogen	Phosphorus	Phosphorus, -ortho	Total Organic Carbon	Total Organic Carbon

NOTE: Any values tabulated above marked with an asterisk are outside of acceptable limits. (a) DOD and/or NELAC Accredited Analyte

Inorganic LCS Results for 008636

ARDL, INC. Lab Report No: 008636	INC.	MATRI 400 A	× 5	SPIKE/SPIKE ation Drive;	KE DUPLICATE ve; P.O. Box	CATE REPORT Box 1566		Mt. Vernon, $_{ m Re}$	on, IL Report	62864 Date:	08/10/2020
Project Name: REND LAKE Project No.:		Analy	ysis: NP	P PESTICIDES		(8270SIM-MOD)		Analyti	Analytical Method: Prep Method:	d: 8270C d: 3510C	
Field ID: REN-1 Desc/Location: REND LAKE Sample Date: 08/05/2020 Sample Time: 1020			Prep. Date: Amount Used: % Moisture:	e e e	08/06/2020 900 mL NA			ARDL Lab No.: Lab Filename: Received Date		008636-01 08/05/2020	
			Level:		LOW		•			0	
	Sample	40	MS	MS	MS	MSD	MSD	MSD	% Rec		RPD
Parameter	Result		Result	Level	% Rec	Result	Level	* Rec	Limits	RPD	Limit
Trifluralin	QN		3.63	4.44	81.8	3.44	4.44	77.5	30-130	5.3	30
Atrazine	0.456	10	4.12	4.44	82.5	3.72	4.44	73.5	30-130	10.2	30
Metribuzin	QN		3.71	4.44	83.5	3.3	4.44	74.3	30-130	11.7	30
Alachlor	ND		3.84	4.44	86.5	3.59	4.44	80.8	30-130	6.9	30
Metolachlor	0.267	_	4.02	4.44	84.5	3.9	4.44	81.8	30-130	3.1	30
Chlorpyrifos	QN		3.6	4.44	81	3.42	4.44	77	30-130	5.1	30
Cyanazine	QN		3.72	4.44	83.8	3.34	4.44	75.3	30-130	10.7	30
Pendimethalin	QN		3.84	4.44	86.5	3.67	4.44	82.5	30-130	4.7	30

SURROGATE RECOVERIES:	MS &R	MSD %R	%R Limits
Triphenylphosphate	73	69	30-130

^{&#}x27;*' indicates a recovery outside of standard limits.

Matrix Spikes for 008636-01, NP PESTICIDES (8270SIM-MOD)

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

Report Date: 08/31/2020 Lab Report No: 008636

Project Name:		REND LAKE									NELAC	Certifi	NELAC Certified - IL100308
Analyte	Sample Matrix	Sample Result	MS Result	MS Level	MS % Rec	MSD Result	MSD Level	MSD % Rec	% Rec Limits	RPD	RPD Limit	Run	QC Lab Numbe <i>r</i>
(a) Iron	WATER	0.32	1.3	1.0	103	1.3	1.0	101	87-115	н	20	P7404	008636-01MS
(a) Manganese	WATER	0.33	0.86	0.50	106	0.85	0.50	105	90-114	m	20	P7404	008636-01MS
Ammonia Nitrogen	WATER	0.054	2.1	2.0	100	2.1	2.0	103	75-125	က	20	08125460	008636-01MS
Nitrate as Nitrogen	WATER	0.045	0.77	1.0	72 *	0.78	1.0	74 *	75-125	2	20	08255517	008636-01MS
Phosphorus	WATER	0.20	1.0	0.83	86	1.0	0.83	66	75-125	п	20	08275521	008636-02MS
Phosphorus, -ortho	WATER	0.063	0.16	0.10	100	0.17	0.10	103	75-125	2	20	08115455	008636-02MS
Total Organic Carbon	WATER	5.1	10.6	5.0	110	10.7	5.0	112	76-120	1	15	08255515	008636-01MS

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

Inorganic Matrix Spikes for 008636

⁽a) DOD and/or NELAC Accredited Analyte.

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

Lab Report No: 008636	91						Report Date: 08/31/2020	08/31/2020
Project Name: REND LAKE	LAKE	The state of the s					NELAC Certifi	NELAC Certified - IL100308
	Sample	First	Second		Percent	Mean	Analytical	QC Lab
Analyte	Conc'n	Conc'n Duplicate	Duplicate	Units	Diff	Diff (Smp, D1, D2)	Run	Number
Chlorophyll-a, Corrected 53.6	53.6	59.9	-	MG/CU.M.	11		08135472	008636-02D1
Pheophytin-a	65.3	50.7	!	MG/CU.M.	25*	ļ	08135472	008636-02D1
Solids, Total Suspended	19.6	20.0	!	MG/L	2	Į Į	08135467	008636-06D1
Solids, Volatile Suspend	ND	0	1	MG/L	NC	!	08135468	008636-06D1

See Case Narrative for exceptions. * indicates that agreement between duplicates is greater than 20%. (a) DOD and/or NELAC Accredited Analyte

Sample Duplicates for 008636



Including as appropriate:

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

ARDL Data Package 8636

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

8636

CHAIN OF CUSTODY RECORD

SAMPLERS: (Signature) Ber Gruding / Sake Lembut SAMPLE NUMBER DATE TIME	88	7			\	\	-	-	-		•		,	•		•				z
_ ∞	(E)		_	2	4	1	1	\	\	_	_	_	-		\	_				
Bar Graling / Jake Lamber + SAMPLE NUMBER DATE TIME	MIAT		0		0		34		\			\	\		\	_		<u> </u>		SIS
SAMPLE NUMBER DATE TIME			V	di	7-7	B	706 4/1	70		Q.	\	\		\				ICE	FINAL PH IF	H_
	COMP GRAB	7.5.5.7 Chloric 20.507 2.0.0.0	CPICS	207	4	103/NSON 100/NSON	d'A		5%	ENISH						R	REMARKS OR SAMPLE LOCATION			
Ren – 1	×	×		X	×	×	×		X									×		
-	×	×	X	X	×	×												×		
-2-5	×	×	~	X	×		×											×	L.	
	×	×	X	X	×	×												×		
Ren - 4	×	×	X	X	×	×												X		
5	×	×	~	X	×	×												X		
7	×	×	~	X	×	×												×		
8	×	×	X	X	×	×												X		
Ren – 15-0	×	×	XX	X	×	×										٠.		X		
Ren-RL-Mar	×							×		-								X		
AF																				
RDL																				
Rep	/	2																		
Relinquished by: (Signature) Date Time	Received by		(Signature)	()	3 X	REMARKS/SPECIAL INSTRUCTIONS	KS/S	SPEC	IAL I	NST	RUC	NOL	IS:							
Date	Received by: (Signature)	Sign :	ature	5	_															
	Shipping Ticket No.	ricket																		
Wallow Plenneman Oslosiospo 142																				
ಲ್ಲ ಟ್ರೌURCHASE ORDER NO:																				

COOLER RECEIPT REPORT ARDL, INC.

ARI	DL#: 8636	Cooler # Blue 4 of 2 Number of Coolers in Shipment:2
	ect: Rend Lake	•
Pro	ect: Kend Lake	Date Received: <u>08/05/2026</u>
A.	PRELIMINARY EXAMINATION PHASE: Date cooler was opened:	5/202(Signature) DCB
1.	Did cooler come with a shipping slip (airbill, etc.)?	YES (NO
	If YES, enter carrier name and airbill number here:	Courier-Valerie
2.	Were 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?	YES NO MA
4.	Did you screen samples for radioactivity using a Geiger Counter?	(ES) NO
5.	Were custody papers sealed in a plastic bag?	XES 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 at	the top of this formYES NO N/A
9.	Was a separate container provided for measuring temperature? YES	NO Observed Cooler Temp. 1.2 C C Correction factor 0.0 C
В.	LOG-IN PHASE: Date samples were logged-in: 08/05/2020	(Signature) DCB
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?	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?	
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 (VA)
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
		By By By
		On On On
-		08/05/2020
		Chain-of-Custody #
	By: Signature) Date:	

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COOLER RECEIPT REPORT ARDL, INC.

		Cooler# Blue 2 of 2
	~ A ! !	Number of Coolers in Shipment:
		Date Received: <u>08/05/2020</u>
A. <u>j</u>	PRELIMINARY EXAMINATION PHASE: Date cooler was opened: 08/05/2	2020(Signature) DCB
1.	Did cooler come with a shipping slip (airbill, etc.)?	YES NO
	If YES, enter carrier name and airbill number here:	ourier-Valerie
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 Geiger Counter?	YES NO
5.	Were custody papers sealed in a plastic bag?	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 at the	e top of this formYES NO N/A
	Was a separate container provided for measuring temperature? YES1	<i>i</i> . <i>I</i>
В.	LOG-IN PHASE: Date samples were logged-in: <u>08/05/2026</u> (Si	gnature) DCB Correction factor C . C . C
10.	Describe type of packing in cooler: Loose Ice	
	Were all samples sealed in separate plastic bags?	YES NO N/A
12.	Did all containers arrive unbroken and were labels in good condition?	MES NO
	Were sample labels complete?	
14.	Did all sample labels agree with custody papers?	NO
15.	Were correct containers used for the tests indicated?	MES NO
16.	Was pH correct on preserved water samples?	WES NO N/A
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 WA
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
		By By
_		On On
		08/05/2020
		Chain-of-Custody #
(B	y: Signature) Date:	Cham-or-Ouslody #

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

www.ardlinc.com

Customer Name: SLCOE

Date: 12/16/20

Project Name: Rend Lake

Lab Name: ARDL, Inc.

Samples Received at ARDL: 11/12/20

ARDL Report No.: 8683

CASE NARRATIVE

Customer	<u>Date</u>	<u>Lab ID</u>	
Sample No.	Collected	<u>Number</u>	Analyses Requested
REN-1	11/12/20	8683-01	NP Pesticides, Metals(1), Inorganics(2)
REN-2-0	11/12/20	8683-02	NP Pesticides, Inorganics(2)(3)
REN-2-5	11/12/20	8683-03	Metals(1), Inorganics(2)
REN-3	11/12/20	8683-04	NP Pesticides, Inorganics(2)(3)
REN-4	11/12/20	8683-05	NP Pesticides, Inorganics(2)(3)
REN-5	11/12/20	8683-06	NP Pesticides, Inorganics(2)
REN-7	11/12/20	8683-07	NP Pesticides, Inorganics(2)
REN-8	11/12/20	8683-08	NP Pesticides, Inorganics(2)(3)
REN-15-0	11/12/20	8683-09	NP Pesticides, Inorganics(2)(3)
REN-RL-MAR	11/12/20	8683-10	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.

CONTINUING CALIBRATION

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

PREPARATION BLANK

The blank met acceptance criteria.

LABORATORY CONTROL SAMPLE

The LCS analyses met recovery criteria.

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

Page 1 of 3

Project Name: Rend Lake ARDL Report No.: 8683

CASE NARRATIVE (Continued)

MATRIX SPIKE

The matrix spike and matrix spike duplicate met recovery criteria.

DUPLICATE

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

INTERNAL STANDARD

All internal standard criteria were met.

SURROGATE

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.

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.

Project Name: Rend Lake ARDL Report No.: 8683

CASE NARRATIVE (Continued)

DATA REPORTING QUALIFIERS

The following data reporting qualifiers are used as required:

ND - Indicates parameter was analyzed for but not detected.

 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



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

8683

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

Authorized By: DSD-QAO

Lab Report No: 008683 Report Date: 11/24/2020

Project Name:	REND LAKE	Ana	lysis: N	PESTICII	DES (827	70SIM-MO	D)
Project No.:		Analytical Me	ethod: 82	270C			
NELAC Certi:	fied - IL100308	Prep Me	ethod: 3	510C			
Field ID:	REN-1		ARDL 1	Lab No.:	00868	33-01	
Desc/Location:	REND LAKE		Lab F	ilename:	E1119	9005	
Sample Date:	11/12/2020		Recei	ved Date:	11/12	2/2020	
Sample Time:	0945		Prep.	Date:	11/16	6/2020	
Matrix:	WATER		Analy	sis Date:	11/19	9/2020	
Amount Used:	900 mL		Instr	ument ID:	AG5		
Final Volume:	1 mL		QC Bat	ch:	B1128	34	
% 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	0.300		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 RECOVERIES:	Limits	Results	
Triphenylphosphate	30-130	79%	ĺ

⁽a) DOD-QSM Accredited Analyte.

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

Project Name: REND LAKE Project No:	E1						4	Analysis: Inorganics NELAC Certified - IL100308	: Inorganics fied - IL1003	ics 30308
ARDL No: 008683-01 Field ID: REN-1 Received: 11/12/2020	. 0	Sampl Samp Samp	Sampling Loc'n: Sampling Date: Sampling Time:		REND LAKE 11/12/2020 0945			Matrix: Moisture:	: WATER : NA	
Analyte	TOD	ŎOI	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
(a) Iron	0.0400	0.0500		0.253	MG/L	3010A	6010C	11/20/20	11/23/20	P7461
(a) Manganese	0.00400	0.00500		0.214	MG/L	3010A	6010C	11/20/20	11/23/20	P7461
Ammonia Nitrogen	0.0200	0.0300		0.0764	MG/L	NONE	350.1	NA	11/17/20	11185704
Nitrate as Nitrogen	0.0190	0.0200		0.181	MG/L	NONE	GREEN	NA	11/19/20	11205715
Phosphorus	0.800.0	0.0100		0.135	MG/L	365.2	365.2	12/01/20	12/02/20	12045738
Phosphorus, -ortho	0.800.0	0.0100		0.0524	MG/L	NONE	365.2	NA	11/13/20	11185701
Solids, Total Suspended	4.0	4.00		8.0	MG/L	NONE	160.2	NA	11/17/20	11235717
Solids, Volatile Suspen	4.0	4.00		ND	MG/I	NONE	160.4	NA	11/17/20	11235718
Total Organic Carbon	0.500	1.00		5.2	MG/T,	NONE	415.1	NA	11/26/20	12035734

(a) DOD and/or NELAC Accredited Analyte.

Lab Report No: 008683 Report Date: 11/24/2020

Project Name:	REND LAKE	Ana	lysis: NE	PESTICI	DES (827	0SIM-MO	D)
Project No.:		Analytical Me	ethod: 82	270C			
NELAC Certi:	fied - IL100308	Prep Me	ethod: 35	510C			
Field ID:	REN-2-0		ARDL I	Lab No.:	00868	33-02	
Desc/Location:	REND LAKE		Lab F	ilename:	E1119	8008	
Sample Date:	11/12/2020		Recei	ved Date:	11/12	2/2020	
Sample Time:	1040		Prep.	Date:	11/16	5/2020	
Matrix:	WATER		Analys	sis Date:	11/19	9/2020	
Amount Used:	900 mL		Instr	ument ID:	AG5		
Final Volume:	1 mL		QC Bat	tch:	B1128	34	
% 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	0.300		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 RECOVERIES:	Limits	Results	
Triphenylphosphate	30-130	78%	
			- 1

⁽a) DOD-QSM Accredited Analyte.

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

Report Date: 12/15/2020	Analysis: Inorganics NELAC Certified - IL100308	Matrix: WATER Moisture: NA	Prep Analysis Run Date Date Number	NA 11/17/20 11185704 11/13/20 12/02/20 12035735 NA 11/19/20 11205715 11/13/20 12/02/20 12035732 12/01/20 12/02/20 12045738 NA 11/13/20 11185701 NA 11/17/20 11235718 NA 11/17/20 1235718
Re	NE		Analysis Method	350.1 10200H GREEN 10200H 365.2 365.2 160.2
	, , , , , , , , , , , , , , , , , , ,		Prep Method	NONE 10200H NONE 10200H 365.2 NONE NONE NONE
		REND LAKE 11/12/2020 1040	Units	MG/L MG/CU.M. MG/L MG/L MG/L MG/L MG/L MG/L
			Result	0.093 20.0 0.178 4.2 0.126 0.0602 7.6 ND
		Sampling Loc'n: Sampling Date: Sampling Time:	Flag	
		Samp Samp Samp	ŎOI	0.0300 1.00 0.0200 1.00 0.0100 4.00 4.00
83		0	LOD	0.0200 1.0 0.0190 1.0 0.00800 0.00800 4.0 4.0
Lab Report No: 008683	Project Name: REND LAKE Project No:	ARDL No: 008683-02 Field ID: REN-2-0 Received: 11/12/2020	Analyte	Ammonia Nitrogen Chlorophyll-a, Correcte Nitrate as Nitrogen Pheophytin-a Phosphorus, -ortho Solids, Total Suspended Solids, Volatile Suspen Total Organic Carbon

(a) DOD and/or NELAC Accredited Analyte.

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

END LAKE 08683-03 Sampling Loc' EN-2-5 Sampling Dat 1/12/2020 Sampling Tim LOD LOQ Flag 0.0400 0.0500				4			070
08683-03 Sampling Loc's Sampling Loc's Sampling Dat Sampling Tim LOD LOQ Flag 0.0400 0.0500 0.00500				4	Analysis: Inorganics NELAC Certified - IL100308	: Inorganics fied - IL1003	ics 00308
LOD LOQ Flag 0.0400 0.0500 0.00400 0.00500		REND LAKE 11/12/2020 1040			Matrix: Moisture:	: WATER : NA	
0.0400 0.0500 0.00400 0.00500	Flag Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
Ammonia Nitrogen 0.0200 0.0300 0 Nitrate as Nitrogen 0.0190 0.0200 0 Phosphorus, -ortho 0.00800 0.0100 0.0100 Solids, Total Suspended 6.67 6.67 1.1 Solids, Volatile Suspen 6.67 6.67 0.010	0.363 0.243 0.066 0.171 0.139 0.0628 11.3 ND	MG/L MG/L MG/L MG/L MG/L MG/L MG/L MG/L	3010A 3010A NONE NONE 365.2 NONE NONE NONE	6010C 6010C 350.1 GREEN 365.2 365.2 160.2 160.4	11/20/20 11/20/20 NA NA 12/01/20 NA NA NA	11/23/20 11/23/20 11/17/20 11/19/20 12/02/20 11/13/20 11/17/20	P7461 P7461 11185704 11205715 12045738 11185701 11235717 11235718

(a) DOD and/or NELAC Accredited Analyte.

Sample 008683-03, Inorganic Analyses

Lab Report No: 008683 Report Date: 11/24/2020

Project Name: Project No.:	REND LAKE	Ana Analytical M		P PESTICII 270C	DES (82	70SIM-MO	D)
_	fied - IL100308	-	ethod: 3				
Field ID:	REN-3		ARDL 1	Lab No.:	00868	33-04	
Desc/Location:	REND LAKE		Lab F:	ilename:	E111	9009	
Sample Date:	11/12/2020		Recei	ved Date:	11/12	2/2020	
Sample Time:	1150		Prep.	Date:	11/1	6/2020	
Matrix:	WATER		Analy	sis Date:	11/1	9/2020	
Amount Used:	900 mL		Instr	ument ID:	AG5		
Final Volume:	1 mL		QC Bat	tch:	B112	34	
% 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	0.278		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:	Lim	its	0.2476	Re	sults	

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

30-130

Triphenylphosphate

74%

⁽a) DOD-QSM Accredited Analyte.

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

(a) DOD and/or NELAC Accredited Analyte.

Sample 008683-04, Inorganic Analyses

Lab Report No: 008683 Report Date: 11/24/2020

Project Name: Project No.:	REND LAKE	Analytical Me	_	PESTICII 270C	ES (827	70SIM-MO	D)
NELAC Certi	fied - IL100308	Prep Me	ethod: 35	510C			
Field ID:	REN-4		ARDL 1	Lab No.:	00868	33-05	
Desc/Location:	REND LAKE		Lab F:	ilename:	E1119	9010	
Sample Date:	11/12/2020		Receiv	ved Date:	11/12	2/2020	
Sample Time:	1215		Prep.	Date:	11/16	5/2020	
Matrix:	WATER		Analys	sis Date:	11/19	9/2020	
Amount Used:	1000 mL		Instr	ument ID:	AG5		
Final Volume:	1 mL		QC Bat	tch:	B1128	34	
% 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	0.260		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	ND		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	76%	
			- 1

⁽a) DOD-QSM Accredited Analyte.

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

Lab Report No: 008683	583						14	Report Date:	: 12/15/2020	120
Project Name: REND LAKE Project No:	ы						A	Analysis: Inorganics NELAC Certified - IL100308	: Inorganics fied - IL1003	.cs 00308
ARDL No: 008683-05 Field ID: REN-4 Received: 11/12/2020	20	Sampl Samp Samp	Sampling Loc'n: Sampling Date: Sampling Time:		REND LAKE 11/12/2020 1215			Matrix: Moisture:	: WATER : NA	
Analyte	LOD	COI	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
Ammonia Nitrogen Chlorophyll-a, Correcte Nitrate as Nitrogen Pheophytin-a Phosphorus Phosphorus, -ortho Solids, Total Suspended Solids, Volatile Suspen Total Organic Carbon	0.0200 1.0 0.0190 1.0 0.00800 0.00800 4.0 4.0	0.0300 1.00 0.0200 1.00 0.0100 4.00 1.00		ND 14.5 ND 3.3 0.165 0.0265 22.8 4.8 5.4	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 365.2 365.2 160.2 160.4	NA 11/13/20 NA 11/13/20 12/01/20 NA NA NA	11/17/20 11185704 12/02/20 12035732 11/19/20 11205715 12/02/20 12035732 12/02/20 12045738 11/13/20 11185701 11/17/20 11235717 11/17/20 12035736	11185704 12035732 11205715 12035732 12045738 11185701 11235717 11235718

(a) DOD and/or NELAC Accredited Analyte.

Sample 008683-05, Inorganic Analyses

Lab Report No: 008683 Report Date: 11/24/2020

Project Name: Project No.:	REND LAKE	Anal Analytical Me	_	PESTICII 270C	ES (827	70SIM-MO	D)
_	fied - IL100308	-	ethod: 35				
Field ID:	REN-5		ARDL I	Lab No.:	00868	33-06	
Desc/Location:	REND LAKE		Lab Fi	llename:	E1119	9011	
Sample Date:	11/12/2020		Receiv	red Date:	11/12	2/2020	
Sample Time:	0841		Prep.	Date:	11/16	5/2020	
Matrix:	WATER		Analys	sis Date:	11/19	9/2020	
Amount Used:	900 mL		Instru	ument ID:	AG5		
Final Volume:	1 mL		QC Bat	ch:	B1128	34	
% 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	0.233		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%	

⁽a) DOD-QSM Accredited Analyte.

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

020	iics .00308		Run Number	11/17/20 11185704 11/19/20 11205715	12045738	11235717	11235718	12035736
: 12/15/2020	: Inorganics fied - IL1003	: WATER : NA	Analysis Date	11/17/20 11185704 11/19/20 11205715	12/02/20	11/17/20	11/17/20	11/27/20
Report Date:	Analysis: Inorganics NELAC Certified - IL100308	Matrix: Moisture:	Prep Date	NA NA	12/01/20 NA	NA	NA	NA
ŭ	Z		Analysis Method	350.1 GREEN	365.2	160.2	160.4	415.1
			Prep Method	NONE	365.2 NONE	NONE	NONE	NONE
		AKE /2020	Units	MG/L MG/L	MG/L	MG/L	MG/L	MG/L
		'n: REND LAKE te: 11/12/2020 me: 0841	Result	0.0275 ND	0.433	10.01	4.0	15.0
		Sampling Loc'n: Sampling Date: Sampling Time:	Flag	p				
		Sampl Samp Samp	COT	0.0300	0.0100	4.00	4.00	1.00
583	ы	000	ГОР	0.0200	0.00800	4.0	4.0	0.500
Lab Report No: 008683	Project Name: REND LAKE Project No:	ARDL No: 008683-06 Field ID: REN-5 Received: 11/12/2020	Analyte	Ammonia Nitrogen Nitrate as Nitrogen	Phosphorus Phosphorus	Solids, Total Suspended	Solids, Volatile Suspen	Total Organic Carbon

(a) DOD and/or NELAC Accredited Analyte.

Lab Report No: 008683 Report Date: 11/24/2020

Project Name: Project No.:	REND LAKE	Analytical Me	2	PESTICII	DES (827	70SIM-MO	D)
-	El TT 100200	-					
NELAC Certi	fied - IL100308	Prep Me	ethod: 35	510C			
Field ID:	REN-7		ARDL 1	Lab No.:	00868	33-07	
Desc/Location:	REND LAKE		Lab F	llename:	E1119	9012	
Sample Date:	11/12/2020		Receiv	ved Date:	11/12	2/2020	
Sample Time:	1400		Prep.	Date:	11/16	5/2020	
Matrix:	WATER		Analys	sis Date:	11/19	9/2020	
Amount Used:	800 mL		Instr	ument ID:	AG5		
Final Volume:	1 mL		QC Bat	ch:	B1128	34	
% Moisture:	NA		Level	:	LOW		
					Data		Dilution
Parameter		LOD	LOQ	Result	Flag	Units	Factor
Trifluralin		0.250	0.250	ND	1000	UG/L	1
Atrazine		0.250	0.250	ND		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		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	1
Triphenylphosphate	30-130	78%	İ
			1

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

(a) DOD-QSM Accredited Analyte.

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

	80		Run Number	11185704	12045738	11185701 11235717	11235718	12035736
12/15/2020	Inorganics d - IL1003	· ·		20 1118				
	Inorgied -	WATER	Analysis Date	11/17/20 11185704 11/19/20 11205715	12/02/20	11/13/20 11/17/20	11/17/20	11/27/20
Report Date:	Analysis: Inorganics NELAC Certified - IL100308	Matrix: Moisture:	Prep Date	AN	/20	NA NA	NA	NA
Ř	Z Z		Analysis Method	350.1 GREEN	365.2	365.2 160.2	160.4	415.1
	,		Prep Method	NONE	365.2	NONE	NONE	NONE
		.AKE /2020	Units	MG/L MG/L	MG/L	MG/L MG/L	MG/L	MG/L
		n: REND LAKE :e: 11/12/2020 ne: 1400	Result	ND 0.456	0.118	0.0706	ND	7.9
		Sampling Loc'n: Sampling Date: Sampling Time:	Flag					
		Sampli Sampl	ŎOI	0.0300	0.0100	0.0100	1.33	1.00
583		00	LOD	0.0200	0.00800	0.00800 1.33	1.33	0.500
Lab Report No: 008683	Project Name: REND LAKE Project No:	ARDL No: 008683-07 Field ID: REN-7 Received: 11/12/2020	Analyte	Ammonia Nitrogen Nitrate as Nitrogen	Phosphorus	Phosphorus, -ortho Solids, Total Suspended	Solids, Volatile Suspen	Total Organic Carbon

(a) DOD and/or NELAC Accredited Analyte.

Lab Report No: 008683 Report Date: 11/24/2020

Project Name:	REND LAKE		_	P PESTICII	DES (82	70SIM-MO	D)
Project No.:		Analytical Mo	ethod: 82	270C			
NELAC Certi	fied - IL100308	Prep Me	ethod: 3	510C			
Field ID:	REN-8		ARDL	Lab No.:	00868	33-08	
Desc/Location:	REND LAKE		Lab F:	ilename:	E1119	9013	
Sample Date:	11/12/2020		Recei	ved Date:	11/12	2/2020	
Sample Time:	1120		Prep.	Date:	11/1	6/2020	
Matrix:	WATER		Analy	sis Date:	11/19	9/2020	
Amount Used:	1000 mL		Instr	ument ID:	AG5		
Final Volume:	1 mL		QC Bat	tch:	B1128	84	
% 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	ND		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	ND		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	69%	

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

(a) DOD-QSM Accredited Analyte.

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

Report Date: 12/15/2020	Analysis: Inorganics NELAC Certified - IL100308	Matrix: WATER Moisture: NA	Prep Analysis Run Date Date Number	NA 11/17/20 11185704 11/13/20 12/02/20 12035732 NA 11/19/20 11205715 11/13/20 12/02/20 12035732 12/01/20 12/02/20 12045738 NA 11/13/20 11235717 NA 11/17/20 11235717 NA 11/17/20 11235718
Rej	NE		Analysis Method	350.1 10200H GREEN 10200H 365.2 365.2 160.2
			Prep	NONE 10200H NONE 10200H 365.2 NONE NONE NONE
		REND LAKE 11/12/2020 1120	Units	MG/L MG/CU.M. MG/L MG/L MG/L MG/L MG/L MG/L
		' '	Result	ND 59.9 ND 24.6 0.265 0.0213 23.8 8.12 6.6
		Sampling Loc'n: Sampling Date: Sampling Time:	Flag	
		Samp Samy Samy	ŎOI	0.0300 1.00 1.00 0.0100 0.0100 6.25 6.25
۳ 8		0	LOD	0.0200 1.0 0.0190 1.0 0.00800 0.00800 6.25 6.25
Lab Report No: 008683	Project Name: REND LAKE Project No:	ARDL No: 008683-08 Field ID: REN-8 Received: 11/12/2020	Analyte	Ammonia Nitrogen Chlorophyll-a, Correcte Nitrate as Nitrogen Pheophytin-a Phosphorus, -ortho Solids, Total Suspended Solids, Volatile Suspen Total Organic Carbon

(a) DOD and/or NELAC Accredited Analyte.

Sample 008683-08, Inorganic Analyses

Lab Report No: 008683 Report Date: 11/24/2020

Project Name: Project No.:	REND LAKE	Analytical Me	_	PESTICII 270C	DES (827	0SIM-MO	D)
-	fied - IL100308		ethod: 35				
Field ID:	REN-15-0		ARDL 1	Lab No.:	00868	33-09	
Desc/Location:	REND LAKE		Lab F	ilename:	E1119	9014	
Sample Date:	11/12/2020		Receiv	ved Date:	11/12	2/2020	
Sample Time:	0915		Prep.	Date:	11/16	5/2020	
Matrix:	WATER		Analys	sis Date:	11/19	9/2020	
Amount Used:	900 mL		Instr	ument ID:	AG5		
Final Volume:	1 mL		QC Bat	ch:	B1128	34	
% 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	0.256		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 RECOVERIES:	Limits	Results	
Triphenylphosphate	30-130	66%	
			- 1

⁽a) DOD-QSM Accredited Analyte.

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

ARDL No: 008683-09 Field ID: REN-15-0 Received: 11/12/2020 Analyte	LOD	Sampl Samp Samp	Sampling Loc'n: Sampling Date: Sampling Time:	ns	REND LAKE 11/12/2020 0915 1t Units	Prep	N Analysis Method	Analysis: Inorganics NELAC Certified - IL100308 Matrix: WATER Moisture: NA Prep Analysis Ru Date Date Numb	: Inorganics fied - IL1003 : WATER : NA : NA Analysis Date Nu	ics 00308 Run Number
Ammonia Nitrogen Chlorophyll-a, Correcte Nitrate as Nitrogen Pheophytin-a Phosphorus Phosphorus, -ortho Solids, Total Suspended Solids, Volatile Suspen Total Organic Carbon	0.0200 1.0 0.0190 1.0 0.00800 0.00800 4.0	0.0300 1.00 1.00 0.0100 0.0100 4.00		ND 14.5 ND 3.3 0.182 0.0265 23.2 4.8	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 365.2 365.2 160.2	NA 11/13/20 NA 11/13/20 12/01/20 NA NA NA	11/17/20 12/02/20 11/19/20 12/02/20 12/02/20 11/13/20 11/17/20	11185704 12035732 11205715 12035732 12045738 11185701 11235717 11235718

(a) DOD and/or NELAC Accredited Analyte.

Sample 008683-09, Inorganic Analyses

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

12/15/2020	Analysis: Inorganics NELAC Certified - IL100308	WATER NA	Analysis Run Date Number	11/12/20 11165693
Report Date: 12/15/2020	Analysis: LAC Certifie	Matrix: Moisture:	Prep Ar Date	NA 11
Re	NEI		Prep Analysis Method Method	1604
			Prep Method	NONE
		REND LAKE 11/12/2020 1250	Units	COL/100 ML NONE
		n: REND e: 11/1% e: 1250	Result	112
		Sampling Loc'n: REND LAKE Sampling Date: 11/12/2020 Sampling Time: 1250	Flag	
		Sampl Samp Samp	700	1.00
1683	E	.0 IAR 120	TOD	1.0
No: 008	REND LAKE	008683-10 REN-RL-MAR 11/12/2020	Φ	
Lab Report No: 008683	Project Name: Project No:	ARDL No: 008683-10 Field ID: REN-RL-MAR Received: 11/12/2020	Analyte	E. Coliform

(a) DOD and/or NELAC Accredited Analyte.

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

Lab Report No: 008683 Report Date: 11/24/2020

Project Name: REND LA Project No.:	AKE Analy Analytical Met	rsis: NP PEST	ICIDES (82	270SIM-MC	DD)
NELAC Certified - 1	IL100308 Prep Met	hod: 3510C			
Field ID: NA		ARDL Lab No	.: 0086	583-01B1	
Desc/Location: NA		Lab Filenam	e: E111	19003	
Sample Date: NA		Received Da	te: NA		
Sample Time: NA		Prep. Date:	11/3	L6/2020	
Matrix: QC Mate	erial	Analysis Da	te: 11/3	19/2020	
Amount Used: 1000 ml	և	Instrument	ID: AG5		
Final Volume: 1 mL		QC Batch:	B112	284	
% Moisture: NA		Level:	LOW		
			33,745	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:	Limit	LS.	Re	esults	
Triphenylphosphate	30-1	30		81%	

⁽a) DOD-QSM Accredited Analyte.

400 Aviation Drive; P.O. Box 1566 BLANK SUMMARY REPORT

Lab Report No: 008683

62864 Mt. Vernon, IL ARDL, INC. Report Date: 12/15/2020

Project Name:	REND LAKE	4KE						NELAC	Certifi	NELAC Certified - IL100308
Analyte	LOD	ÕOI	Blank Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run	QC Lab Number
(a) Iron	0.040	0.050	ND	MG/L	3010A	6010C	11/20/20	11/23/20	P7461	008683-01B1
(a) Manganese	0.004	0.005	ND	MG/I	3010A	6010C	11/20/20	11/23/20	P7461	008683-01B1
Ammonia Nitrogen	0.020	0.030	QN	MG/L	NONE	350.1	NA	11/17/20 1	11185704	008683-01B1
Chlorophyll-a, Corre	1.0	1.0	QN	MG/CU.M.	10200H	10200H	11/13/20	12/02/20 1	12035732	008683-04B1
E. Coliform	1.0	1.0	QN	COL/100 ML	NONE	1604	NA	11/12/20 1	11165693	008683-10B1
Nitrate as Nitrogen	0.019	0.020	ΩN	MG/L	NONE	GREEN	NA	11/19/20 1	11205715	008683-03B1
Pheophytin-a	1.0	1.0	QN	MG/CU.M.	10200H	10200H	11/13/20	12/02/20 1	12035732	008683-04B1
Phosphorus	0.008	0.010	QN	MG/L	365.2	365.2	12/01/20	12/02/20 1	12045738	008683-02B1
Phosphorus, -ortho	0.008	0.010	N	MG/L	NONE	365.2	NA	11/13/20 1	11185701	008683-02B1
Solids, Total Suspen	1.0	1.0	QN	MG/L	NONE	160.2	NA	11/17/20 1	11235717	008683-01B1
Solids, Volatile Sus	1.0	1.0	N	MG/L	NONE	160.4	NA	11/17/20 1	1235718	008683-01B1
Total Organic Carbon	0.50	1.0	N	MG/L	NONE	415.1	NA	11/26/20 1	12035734	008683-01B1
Total Organic Carbon	0.50	1.0	NO	MG/L	NONE	415.1	NA	11/27/20 1	12035736	008683-02B1
Total Organic Carbon	0.50	1.0	ND	MG/L	NONE	415.1	NA	11/28/20 1	12035737	008683-09B1

(a) DOD and/or NELAC Accredited Analyte Inorganic Method Blanks for 008683

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

62864

Lab Report No:	. 008683							Rep	Report Date:	11/24/2020
Project Name: REND LAKE Project No.:	REND LAKE	Ana	Analysis: NP F	NP PESTICIDES (8270SIM-MOD)	s (8270sI	[M-MOD)	Anal	ytical Me Prep Me	Analytical Method: 8270C Prep Method: 3510C	00
Matrix: Amount Used:	QC Material 1000 mL		QC Batch: Level:	B11284 LOW	84		Prep. I Analys:	Date: is Date:	Prep. Date: 11/16/2020 Analysis Date: 11/19/2020	00
		Spike	Spike	Spike	Duplicate	Duplicate	Duplicate	Recovery		RPD
14	rarameter	Kesult	Level	* Rec	Result	Level	* Xec	Limits	RPD	Limit
IL	Trifluralin	3.44	4	98	1	1	1	30-130	1	1
	Atrazine	3.4	4	85	1	!	1	30-130	1	1
Σ	Metribuzin	3.28	4.	82	1		I I	30-130	1	1
	Alachlor	3.41	4	85	1	1	;	30-130	1	;
Me	Metolachlor	3.45	4	86	1	!	1	30-130	!	!
Ch	Chlorpyrifos	3.47	4	87	;	ì	!	30-130	1	1
O.	Cyanazine	3.52	4	88	;	1	1	30-130	;	!
Pen	Pendimethalin	3.44	4	98	į	1		30-130	ł	!
	SURROG	SURROGATE RECOVERIES:		Spike %R		Duplicate %R	%R Limits			
				1 4						

30-130

74.3

Triphenylphosphate

(a) DOD-QSM Accredited Analyte.

^{&#}x27;*' indicates a recovery outside of standard limits. Spike Blanks for 008683-01, NP PESTICIDES (8270SIM-MOD)

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

0	308												
Report Date: 12/15/2020	NELAC Certified - IL100308	QC Lab	Number	008683-01C1	008683-01C1	008683-01C1	008683-03C1	008683-02C1	008683-02C1	008683-01C1	008683-02C1	008683-09C1	
Report Da	NELAC Cer	Analytical	Run	P7461	P7461	11185704	11205715	12045738	11185701	12035734	12035736	12035737	
		Mean	% Rec	-	}	;	;	ì	!	1	1	1	
		% Rec	Limits	87-115	90-114	80-120	80-120	80-120	80-120	76-120	76-120	76-120	
			LCS 2	% Rec	1	1	1	1	1	;	;	1	1
		LCS 2	Level	1	ł	1	1	į	!	;	1	;	
		LCS 2	Result	20 100	1	;	i	1	;	;	!	1	
		LCS 1	% Rec	100	105	96	66	66	94	103	102	103	
		LCS 1	Level	5.0	0.75	1.0	1.0	0.67	0.10	20.0	20.0	20.0	
8683	REND LAKE	LCS 1	Result	5.0	0.79	96.0	66.0	99.0	0.094	20.5	20.4	20.5	
Lab Report No: 008683	Project Name:		Analyte	(a) Iron	(a) Manganese	Ammonia Nitrogen	Nitrate as Nitrogen	Phosphorus	Phosphorus, -ortho	Total Organic Carbon	Total Organic Carbon	Total Organic Carbon	

NOTE: Any values tabulated above marked with an asterisk are outside of acceptable limits.

⁽a) DOD and/or NELAC Accredited Analyte

2 Lab Report No: 008683	ARDL, INC.		MATRIX Si 400 Avia	: SPIKE/SPIKE iation Drive;		DUPLICATE REPORT P.O. Box 1566		Mt. Vernon, $_{ m R}$	n, IL Report	62864 Date:	11/24/2020
Project Name: REND LAKE Project No.:	LAKE		Analysis:	NP	PESTICIDES (82	(8270SIM-MOD)		Analytic Pr	Analytical Method: Prep Method:	d: 8270C d: 3510C	
Field ID: REN-1 Desc/Location: REND Sample Date: 11/12 Sample Time: 0945 Matrix: WATER	REN-1 REND LAKE 11/12/2020 0945 WATER		Prep. Amount % Mois QC Bat Level:	Prep. Date: Amount Used: % Moisture: QC Batch: Level:	11/16/2020 900 mL NA B11284 LOW	0		ARDL Lab No.: Lab Filename: Received Date Analysis Date		008683-01 11/12/2020 11/19/2020	
Parameter		Sample Result	MS Result	MS	MS % Rec	MSD Result I	MSD Level	MSD % Rec	% Rec Limits	RPD	RPD Limit
Trifluralin		QN	4.22	4.44	95	3.92	4.44	88.3	30-130	7.4	30
Atrazine		0.300	4.38	4.44	91.8	4.04	4.44	84.3	30-130	7.9	30
Metribuzin Alachlor		ON ON	3.09	4.44	8 6	3.68	4.44	82.8	30-130	80 00 L. C.	30
Metolachlor		QN	4.16	4.44	93.5	3.89	4.44	87.5	30-130	9.9	30
Chlorpyrifos		QN	4.01	4.44	90.3	3.79	4.44	85.3	30-130	5.7	30
Cyanazine		ND	4.22	4.44	95	3.96	4.44	68	30-130	6.5	30
Pendimethalin		QN	4.37	4.44	98.3	4.03	4.44	8.06	30-130	7.9	30

SURROGATE RECOVERIES:	MS &R	MSD %R	%R Limits
Triphenylphosphate	83	79	30-130

'nc' indicates sample >4X spike level. (a) DOD-QSM Accredited Analyte.

Matrix Spikes for 008683-01, NP PESTICIDES (8270SIM-MOD) '*' indicates a recovery outside of standard limits.

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

Lab Report No: 008683	No: 0086	83								Repor	Report Date:		12/15/2020
Project Name:		REND LAKE									NELAC	Certifi	NELAC Certified - IL100308
	Sample	Sample	MS	MS	MS	MSD	MSD	MSD	% Rec		RPD		QC Lab
Analyte	Matrix	Result	Result	Level	% Rec	Result	Level	% Rec	Limits	RPD	Limit	Run	Number
(a) Iron	WATER	0.25	1.3	1.0	109	1.2	1.0	86	87-115	80	20	P7461	008683-01MS
(a) Manganese	WATER	0.21	0.74	0.50	106	0.74	0.50	105	90-114	٦	20	P7461	008683-01MS
Ammonia Nitrogen	WATER	0.076	2.0	2.0	26	2.0	2.0	86	75-125	1	20	11185704	008683-01MS
Nitrate as Nitrogen	WATER	0.17	1.1	1.0	91	1.1	1.0	91	75-125	0	20	11205715	008683-03MS
Phosphorus	WATER	0.13	96.0	0.83	101	0.98	0.83	103	75-125	8	20	12045738	008683-02MS
Phosphorus, -ortho	WATER	090.0	0.16	0.10	100	0.15	0.10	68	75-125	7	20	11185701	008683-02MS
Total Organic Carbon	WATER	5.2	10.2	5.0	100	10.1	5.0	86	76-120	1	20	12035734	008683-01MS

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

Inorganic Matrix Spikes for 008683

⁽a) DOD and/or NELAC Accredited Analyte.

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

	ω			7	7	1
12/15/2020	led - IL10030	QC Lab Number	008683-04D1	008683-04D1	008683-01D1	008683-01D1
Report Date: 12/15/2020	NELAC Certified - IL100308	Analytical Run	12035732	12035732	11235717	11235718
		Mean (Smp,D1,D2)	1	1	ŀ	1
		Percent Diff	0	0	0	NC
		Units	MG/CU.M.	MG/CU.M.	MG/L	MG/L
		Second Duplicate	1	1	!	1
		First Duplicate	19.1	5.1	8.0	0
m	LAKE	Sample Conc'n	19.1	5.1	8.0	ND
Lab Report No: 008683	Project Name: REND LAKE	Analyte	Chlorophyll-a, Corrected	Pheophytin-a	Solids, Total Suspended	Solids, Volatile Suspend

(a) DOD and/or NELAC Accredited Analyte Sample Duplicates for 008683



Sample Receipt Information

Including as appropriate:

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

ARDL Data Package 8683

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

(618) 244-1149 Fax

CHAIN OF CUSTODY RECORD

PROJECT Rend Lake					0	_	1															PRESERVATION	/ATION
SAMPLERS: (Signature)			CONTAIN		SAL	OBY	Val.		NEUN	Will state of the	10	Q									ICED		SPECIFY CHEMICALS ADDED AND FINAL PH IF KNOWN
SAMPLE NUMBER	DATE TIME	COMP		\mathcal{S}	30143	38	Sar Y	A SAN	YOU'V	1.6.1	5 W	Min					SAI	REMARKS OR SAMPLE LOCATION	REMARKS OR PLE LOCAT	NOL			
Ren – 1	11-12 0945	×	X		×	×	×	×	×		×					1					×		
Ren-2-0	0401 21-11	×	×	×	X	×	×	X													×		
2-5		×	X		X	×	×		×												×		
Ren – 3	11-12 1150	×	×	×	X	×	×	×													×		
Ren – 4	5121 21-11	×	X	×	X	×	×	X													×		
5	11-12 841	×	×		×	×	×	X													×		
Ren – 7	11-121400	×	×		×	×	×	×													×		
8	QC11 21-11	×	X	×	X	×	×	X													X		
Ren – 15-0	5160 21-11	×	X	×	X	×	×	X													X		
Ren-RL-Mar	11-12 1250	×								×											×		
				_																			
ARD																							
				_																			
Relinquished by: (Signature)	Date Time 11-12 1406	Received by:	d by:		gnature)	13	RE	MAR	REMARKS/SPECIAL INSTRUCTIONS	PEC	[AL I	NST	RUC	LION	:S	-							
Minquished by (Signature),	Date 12 Time				Signature)																		
	Date Time	Shipping Ticket No.	g Ticke	t No																			

QURCHASE ORDER NO: _ E

COOLER RECEIPT REPORT ARDL, INC.

ARI	ol#: 8683	Cooler # Red
		Number of Coolers in Shipment:
Pro	ol#: <u>Blob 3</u> ject: <u>Rend Lake</u>	Date Received: 11/1312020
Α.	PRELIMINARY EXAMINATION PHASE: Date cooler was opened: 11/13	Plaozo (Signature) DCB
1.	Did cooler come with a chipping clip (girbill, etc.)?	YES (NO)
	If YES, enter carrier name and airbill number here:	Courier - Valerie
2.	Were custody seals on outside of cooler?	
	How many and where?,Seal Date	£
3.	Were custody seals unbroken and intact at the date and time of arrival?	£
	Did you screen samples for radioactivity using a Geiger Counter?	
4.	Were custody papers sealed in a plastic bag?	
5.		
6.	Were custody papers filled out properly (ink, signed, etc.)?	
7.	Were custody papers signed in appropriate place by ARDL personnel?	
8.	Was project identifiable from custody papers? If YES, enter project name a	
9.	Was a separate container provided for measuring temperature? YES	NO V Observed Cooler Temp. Correction factor O10 C
B.	LOG-IN PHASE: Date samples were logged-in: 11/13/2070	_(Signature) DCB
10.	Describe type of packing in cooler: Loose (ce	
11.	Were all samples sealed in separate plastic bags?	YES (10) N/A
12.	Did all containers arrive unbroken and were labels in good condition?	
13.	Were sample labels complete?	(YES) NO
14.	Did all sample labels agree with custody papers?	
15.	Were correct containers used for the tests indicated?	YES NO
16.		
17.	Was a sufficient amount of sample sent for tests indicated?	Constant of the Constant of th
18.		
19.	Was the ARDL project coordinator notified of any deficiencies?	
г	Comments and/or Corrective Action:	Sample Transfer
	Comments and/or Corrective Action.	Fraction Fraction
		Area #
		By By
		DCB
		0n 0n 0n 0n
		[[[]]]
		Chain-of-Custody #
(E	By: Signature) Date:	

COOLER RECEIPT REPORT ARDL, INC.

ARE	DL #: <u>8683</u>	Cooler # Blue
	0 1 1.	Number of Coolers in Shipment:
Proj	ect: Kend Lake	Date Received: 11/13/2020
Α.	PRELIMINARY EXAMINATION PHASE: Date cooler was opened:	13/2020 (Signature) DCB
	Did cooler come with a shipping slip (airbill, etc.)?	Courier - Valerie
	Were custody seals on outside of cooler?	
	How many and where?,Seal Da	
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?	2
5.	Were custody papers sealed in a plastic bag? — Aud Delive	2/lld YES (NO)
6.	Were custody papers filled out properly (ink, signed, etc.)?	
7.	Were custody papers signed in appropriate place by ARDL personnel?	
8.	Was project identifiable from custody papers? If YES, enter project name	ne at the top of this/form
9.	Was a separate container provided for measuring temperature? YES_	NO Observed Cooler Temp. O, T c Sample
B.	LOG-IN PHASE: Date samples were logged-in: 11/1312020	Correction factor
10.	Describe type of packing in cooler: LOSE CE	
11.	Were all samples sealed in separate plastic bags?	YES 🔞 N/A
12.	Did all containers arrive unbroken and were labels in good condition?	NO
13.	Were sample labels complete?	
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?	
17.	Was a sufficient amount of sample sent for tests indicated?	YÈS) NO
18.	Were bubbles absent in VOA samples? If NO, list by sample #:	YES NO WA
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 By
		On On
		1/13/2020
		Chain-of-Custody #
/_	Date:	