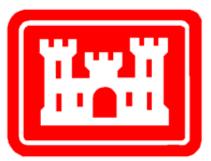
2021 Water Quality Report



U.S. Army Corps of Engineers Saint Louis District

Carlyle Lake Water Quality Conditions: 1971-2021



March 2023

Carlyle Lake Water Quality Conditions: 1971-2021

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, 2020) has listed Carlyle Lake as impaired for total phosphorous and mercury while the Kaskaskia River upstream from the Lake is impaired for fecal coliform, and mercury. In addition, the North Fork Kaskaskia River is impaired for phosphorus, Atrazine, and Terbufos. The lists of sources for these impairments are contaminated sediments, crop production, and unknown sources. The entire Kaskaskia watershed is impaired by the above parameters as well as many others.

Water quality sampling in 2021 revealed the following concerns at Carlyle Lake: bacteria, iron, dissolved oxygen, temperature, pesticides, and total phosphorus.

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INTRODUCTION

The Carlyle Lake watershed encompasses approximately 1,663 square miles and includes all or portions of Bond, Clinton, Effingham, Fayette, Marion, Shelby, and Montgomery counties. The watershed includes the Kaskaskia River between Carlyle Lake Dam and Lake Shelbyville Dam and major tributaries of the Kaskaskia River, including: Big, Richland, Robinson, Becks, Ramsey, Old Hickory, and Hurricane Creeks (respectively) and the East Fork Kaskaskia River. Agriculture is the predominant land use within the watershed. Currently, 82% of the land is used for agricultural purposes. Of that 82%, 63% is cropland and 19% grassland. Since 1978, the number of farms has decreased by 25% and the acreage tilled has decreased by only 6%. Corn and soybeans are important to the region, but producers also grow 25% of the entire state's crop of wheat. Livestock production, including dairy, swine, poultry, and beef cattle is a significant industry, especially in Clinton, Randolph, and Washington Counties.

Carlyle Lake is located in south central Illinois at river mile 94.2 on the Kaskaskia River, upstream from its confluence with the Mississippi River and about one-half mile upstream from the town of Carlyle, Illinois. Carlyle is located in Clinton County, approximately 50 miles east of St. Louis, Missouri. Carlyle Lake is the largest manmade lake in the state and is approximately 12 miles long and 1-3 miles wide and has approximately 24,710 acres of water surface at summer pool elevation 445.0 feet NGVD (National Geodetic Vertical Datum). There are 88 miles of shoreline and approximately 12,800 acres of public land associated with the project. The lake is situated in gently rolling land with alluvial valleys with moderately low relief. The lake provides outdoor recreation opportunities for over 2.5 million visitors annually, which generates over \$80 million in visitor spending within 30- miles of the Lake. There are 41 recreation areas that include: 424 picnic sites, 726 campsites, 670 marina slips, 24 boat ramps, and 25 miles of hiking trails. The CEMVS manages and operates two large reservoirs on the Kaskaskia River, Lake Shelbyville and Carlyle Lake, as well as the 36 mile long navigable channel and lock and dam at the Kaskaskia River Project.

Carlyle Lake is managed and operated by the CEMVS for the authorized purposes of flood risk management, navigation, water supply, water quality, fish and wildlife conservation, and recreation. The lake serves as a heavy recreational usage lake. The land surrounding the lake is used predominately for agriculture. Surrounding communities have existing industrial/commercial operations and residents which discharge wastewater into municipal wastewater treatment plants that ultimately discharge treated water into the Kaskaskia River basin. Agricultural runoff and municipal wastewater treatment facilities are the primary potential source of pollution into the Carlyle 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 Kaskaskia River and Carlyle 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 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 Kaskaskia River and Carlyle 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.
- 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 Carlyle Lake. The report describes conditions observed in 2021, as well as baseline data collected from 1971-2020. Data are available upon request.

CARLYLE LAKE WQMP COVERAGE

The WQMP for Carlyle Lake includes water samples taken at the following locations: major tributaries (CAR-13 and CAR-12), main body of the lake (CAR-4, CAR-2, and the marinas), and just downstream of the dam (CAR-1). See figure 1 and Table 1 for a site map and site coordinates.

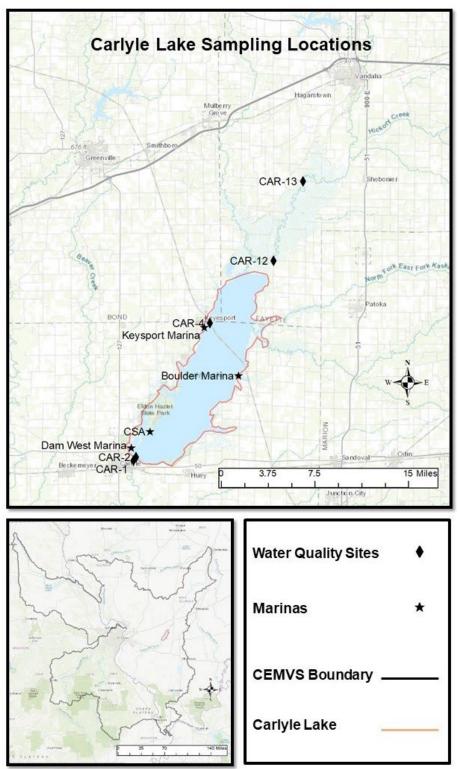


Figure 1. Water Quality (WQ) Sampling Locations in 2019 at Carlyle Lake

Sample Location Summary Table

Sample Location Type	Abbreviation	Site Name	Latitude	Longitude
Major Tributary	TRIB	CAR-13	38.868961	-89.159605
	TRIB	CAR-12	38.868961	-89.193475
Main Reservoir Surface	RS	CAR-2	38.619492	-89.352747
	RS	CAR-4	38.740632	-89.267266
	RS	CAR-BL	38.693092	-89.234040
	RS	CAR-DW	38.627955	-89.358246
	RS	CAR-KP	38.736930	-89.273674
	RS	CAR-CSA	38.642647	-89.336805
Reservoir Benthic	RB	CAR-2-10	38.619492	-89.352747
Tail Race (below dam)	TR	CAR-1	38.616240	-89.355828

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

Samples at Marinas are not always taken in the exact same location. *BL=Boulder Marina, DW=Dam West Marina, KP=Keyesport Marina, CSA=Carlyle Sailing Association.*

METHODS AND ANALYSIS: WATER QUALITY

Data Collection and Historical Reference Data

During 2021, water quality samples were collected and analyzed for 10 locations during four separate sampling events (n=40; Table 1). One duplicate sample was also collected during each sampling event for quality control purposes. Samples were collected from the upper one meter of the water column, preserved, and transported to the Applied Research and Development Laboratory (ARDL) in Mount Vernon, Illinois for analysis.

For the purpose of this report, historical reference data refers to water quality data collected during the previous years ranging as far back as 1971 (parameter dependent) at Carlyle Lake. Historical reference data are intended to represent the current condition of Carlyle Lake.

Statistical Summary and Comparison to Applicable Water Quality Standards

Statistical analyses were performed on water quality monitoring data collected for 10 locations, and classified as TRIB (n= 2), RS (n=6, 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 may have been removed, they were classified in the same manner. Descriptive statistics were calculated to describe central tendencies and boxplots created to illustrate comparisons between groups. Monitoring results were compared to applicable water quality standard criteria established by the appropriate state agencies pursuant to the Federal Clean Water Act. If state water quality standard criteria were 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 Carlyle Lake has 6 lab samples and one duplicate).

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

Water Quality Parameters and Criteria

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

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

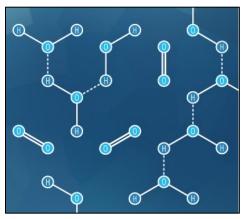


Figure 1: Dissolved oxygen (O_2) vs oxygen bonded in water (H_2O) .

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

Potential of Hydrogen (pH) is a measure of how acidic or basic water is. Potential of Hydrogen is reported on a logarithmic scale ranging from 0 - 14, with 7.0 being neutral. As pH increases from 7.0, water increases in alkalinity, whereas a decrease from 7.0 indicates an increase in acidity. Since pH is measured on a logarithmic scale, every

one-unit change in pH indicates a 10-fold change in acidity; thus, a pH of 6.0 is ten times more acidic than a pH of 7.0 and a pH of 4.0 would be one-thousand times more 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 invertebrate begins to rapidly decrease and beyond 10, fish become extirpated. The pH water quality criteria for Illinois ranges from 6.5 - 9.0.

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

Conductivity in streams and rivers is affected by the geology of the area. Streams running through granite tend to have lower conductivity due to granite being composed of inert material; materials that do not ionize or dissolve into ionic compounds in water. Conversely, streams that run through areas of limestone or clay soils tend to have higher conductivity readings because of the presence of materials that ionize. Conductivity is useful as a general measure of water quality. A stream tends to have a relatively constant range of conductivity that, once established, can be used as a baseline. Significant changes, either increases or decreases, might indicate a source of pollution has been introduced into the water. The pollution source could be a treatment plant, which raises the conductivity, or an oil spill, which would lower the conductivity. In general, there are no water quality criteria for SpCond. The District threshold of 500 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 reflects 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. The Illinois Environmental Protection Agency suggests that generally NVSS above 15 mg/L could highly impair recreational lake use while NVSS of 3 to 7 mg/L may cause slight impairment (Hudson, 1998). Illinois does not currently have 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 Kaskaskia 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.

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

In general, NO3-N does not have a *direct* effect on fish or aquatic insects. 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.

<u>Total Ammonia Nitrogen (TAN)</u> 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 regard to the relationship between pH, temperature, and ammonia, as it relates to toxicity, can be reviewed in Aquatic Life Ambient Water Quality Criteria for Ammonia – Freshwater (USEPA 2013).

Total Phosphorus (TP) is analyzed as phosphorus and has been monitored due to the potential for uptake by nuisance algae. Levels of phosphate can indicate the potential for rapid growth of algae (algae bloom) which can cause serious oxygen depletion during the algae decay process. Phosphorous is typically the limiting nutrient in a water

body; therefore, any addition of phosphorous to the ecosystem stimulates the growth of plants and algae. Phosphorous is delivered to lakes and streams by way of runoff from agricultural fields and urban environments. Other sources of phosphorous are anaerobic decomposition of organic matter, leaking sewer systems, and point source pollution. The general standard for phosphorous in lake water is 0.05 mg/L. Dissolved phosphorous, also called **Orthophosphate (PO₄-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 number 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 many algae can cause aesthetic problems such as green scums and bad odors and can result in decreased levels of DO.

Pheophytin a (PHEO a) 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:</u>

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) = $TSI(TP) = 10(6 - (\ln (48/TP)/\ln 2))$

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

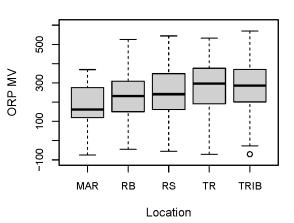
Table 2: Metrics, Methods, and Water Quality Criteria Used for Evaluating Water Quality

Metric	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	NH₃	EPA Method 350.1	<15 mg/L	Illinois EPA
Atrazine	Atrazine	EPA Method 8270C	9 µg/L: Chronic or 82 µg/L: Acute or 3 µg/L 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	< 25 mg/m ³ (Eutrophic Upper Limit)	Carlson 1977
Chlorpyrifos		EPA Method 8270C	< .11 µg/L: aquatic life	Illinois EPA
Cyanazine		EPA Method 8270C	< 30 µg/L: chronic or < 370 ug/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	рН	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

Metric	Abbreviation	Analysis Method	Water Quality Criteria	Source
Total Organic Carbon	тос	EPA Method 415.1		
Total Iron	TFe	EPA Method 6010C	< 1 mg/L	Illinois EPA
Total Phosphorus	ТР	EPA Method 365.2	Less than 0.05 mg/L	Illinois EPA
Total Suspended Solids	TSS	EPA Method 160.2		Illinois EPA
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		

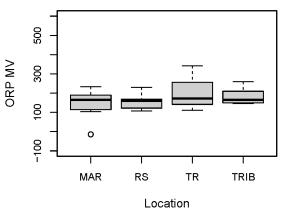
*1 mg/L is equivalent to 1 drop in two bathtubs and 1 ug/L is equivalent to 1 drop in an Olympic size swimming pool. PWS is public water supply. DWS is drinking water standard.

RESULTS AND SUMMARY STATISTICS: WATER QUALITY

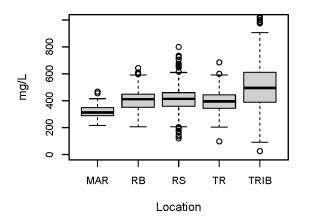


Oxidation Reduction Potential: 1986-2020

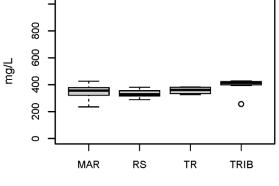
Oxidation Reduction Potential: 2021



Specific Conductivity: 1971-2020



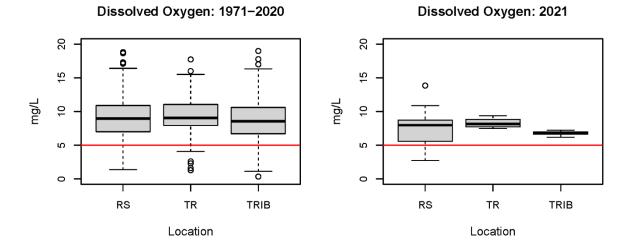
Specific Conductivity: 2021



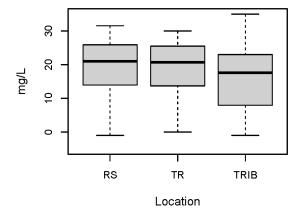
Location

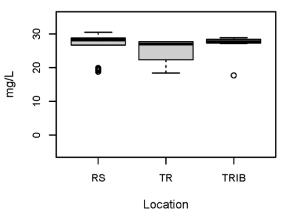
	Historical Re	eference 197	<u> 1-2020</u>			<u>2021</u>	
	Location	Mean	Median	n	Mean	Median	n
ORP	RB	228.07	231.0	134			
	RS	242.74	235.0	277	150.35	161.3	16
	TR	283.03	296.0	132	208.17	172.1	3
	TRIB	278.85	286.5	172	185.70	164.5	5
SpCond	RB	405.18	411.0	239			
	RS	406.99	411.0	637	341.77	334.8	22
	TR	397.38	395.0	248	357.68	361.4	4
	TRIB	518.89	495.0	605	392.44	414.7	7

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



Temperature: 1971–2020



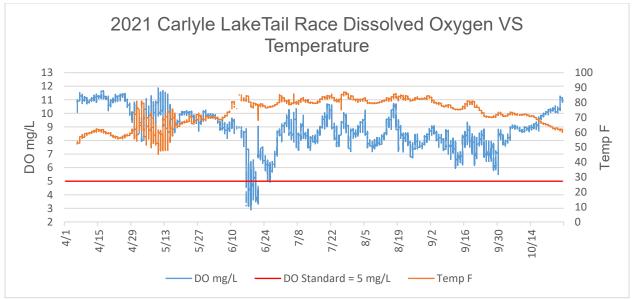


Temperature: 2021

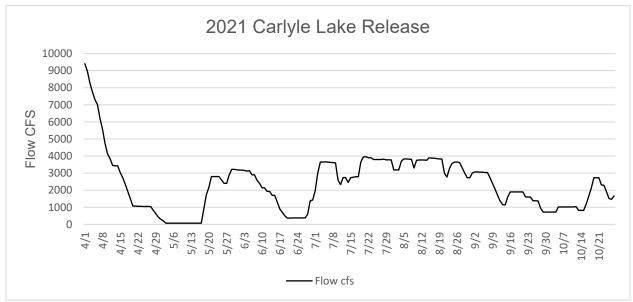
* Red line placed at the 5 mg/L level for DO.

	Historical Reference 1971-2020					<u>2021</u>	
	Location	Mean	Median	n	Mean	Median	n
DO	RS	9.07	8.96	630	7.71	7.96	22
	TR	9.42	9.06	244	8.28	8.15	4
	TRIB	8.65	8.55	594	6.77	6.78	7
Temp	RS	18.88	21.00	639	26.52	28.20	22
	TR	18.83	20.70	250	25.03	27.00	4
	TRIB	15.61	17.60	611	26.53	27.70	7

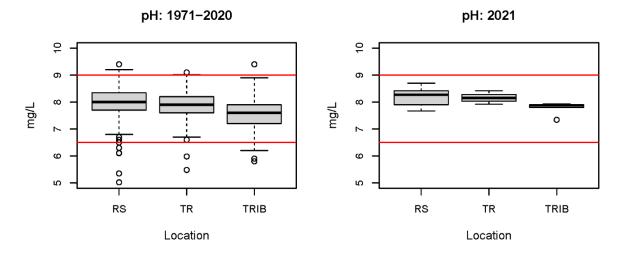
* During the four sampling events surface water DO was measured below the standard twice at two Marinas. In 2021 temperature was recorded above the standard (rise of 2.8° C above the natural temperatures) during the spring. The historical seasonal mean temperature by class was used as the natural temperature.



*Data recorded by multi-parameter sonde at tail race. 15 minute data shown. Red line placed at the 5 mg/L level. DO was recorded below the standard of 5 mg/L during mid-late June coinciding with a low flow. All other observations were greater than 5 mg/L during 2021.



*Daily flow.

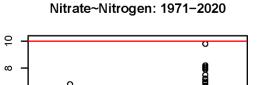


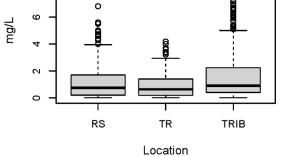
*Red lines indicate the upper and lower water quality criteria standards (9 and 6.5).

Historical	Reference 197	71-2020	<u>2021</u>					
	Location	Mean	Median	n	Mean	Median	n	
рН	RS	7.99	8.0	633	8.18	8.3	16	
	TR	7.87	7.9	247	8.16	8.2	3	
	TRIB	7.56	7.6	598	7.77	7.9	5	

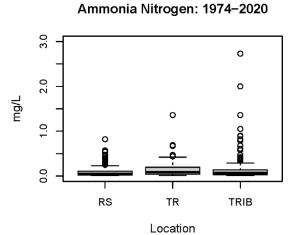
	Historical Reference 1984-2020					<u>2021</u>	
	Location	Mean	Median	n	Mean	Median	n
рН	RS	8.20	8.22	324	8.38	8.46	17
	TR	7.71	7.70	142	8.24	8.08	3
	TRIB	7.78	7.80	202	8.07	7.99	6

*All readings were within water quality standards during 2021.



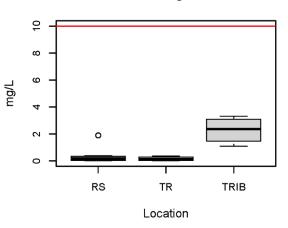


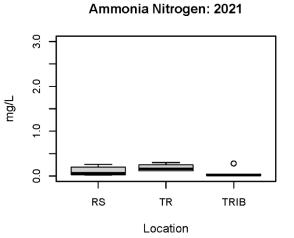
*Red line indicates the water quality standard (10 mg/L).





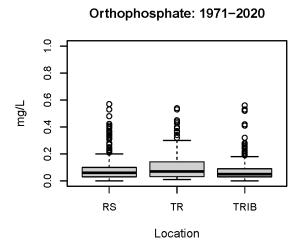
Nitrate~Nitrogen: 2021





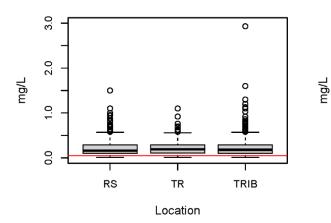
	Historical Re	eference 197	<u>1-2020</u>			<u>2021</u>	
	Location	Mean	Median	n	Mean	Median	n
NO3-N	RS	1.11	0.8	605	0.37	0.2	8
	TR	0.91	0.6	246	0.16	0.1	4
	TRIB	1.63	0.9	598	2.27	2.4	7
NH3N	RS	0.08	0.1	500	0.11	0.1	8
	TR	0.14	0.1	212	0.18	0.2	4
	TRIB	0.12	0.1	417	0.06	0.0	7

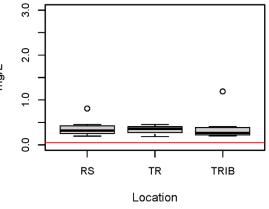
*All observations of nitrate and ammonia nitrogen were within the water quality standard.



Total Phosphorus: 1971-2020

Total Phosphorus: 2021

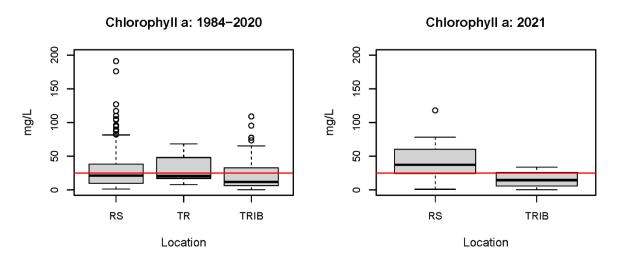




*Red line indicates the water quality standard of 0.05 mg/L.

	Historical Re	ference 19	<u>71-2020</u>			<u>2021</u>	
	Location	Mean	Median	n	Mean	Median	n
PO4	RS	0.08	0.1	600			
	TR	0.10	0.1	243			
	TRIB	0.07	0.1	598			
TP	RS	0.22	0.2	612	0.37	0.3	8
	TR	0.22	0.2	246	0.33	0.4	3
	TRIB	0.23	0.2	609	0.41	0.3	7

*Total phosphorus exceeded the standard of 0.05 mg/L for all locations in 2021. This study does not acknowledge a standard for orthophosphate.

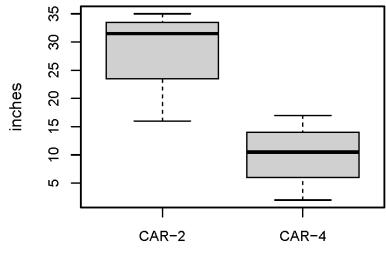


*Red line approximately indicates the reference water quality standard of 25 mg/cm³. See Carlson 1977.

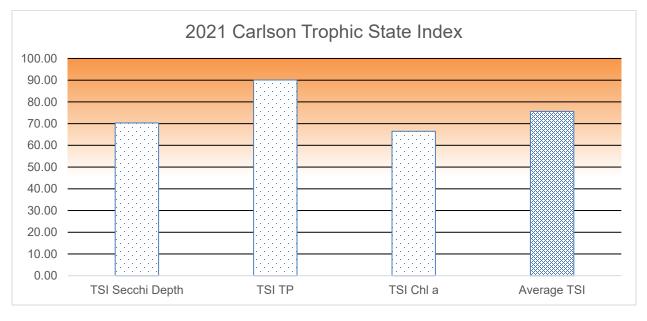
	Historical Reference 1984-2020					<u>2021</u>	
	Location	Mean	Median	n	Mean	Median	n
Chl_a	RS	29.87	21.3	274	45.39	37.2	8
	TR TRIB	32.30 24.11	20.5 11.9	5 64	 15.73	 14.6	4

*The reference standard for chlorophyll-a of 25mg/cm³ was exceeded at the lake sites in July and August in 2021. This study does not acknowledge a standard for pheophytin.

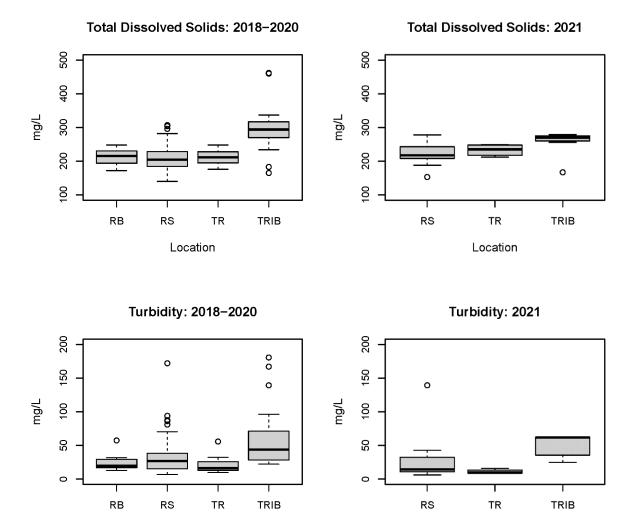
Secchi Depth: 2021



Location



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

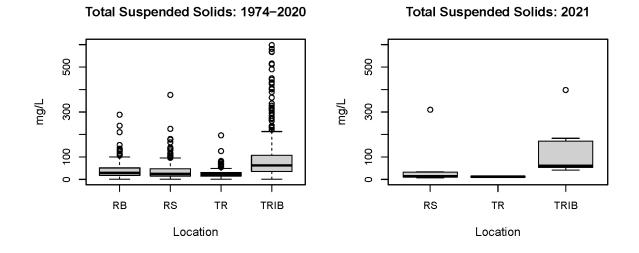


Location



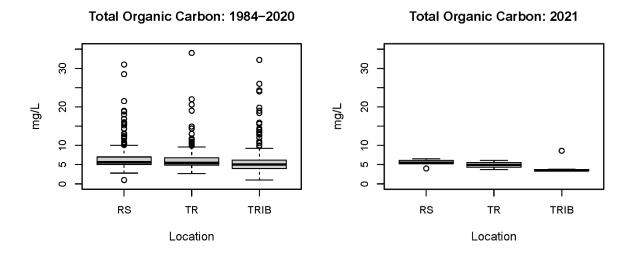
	Historical Re	eference 201	2021				
	Location	Mean	Median	n	Mean	Median	n
TDS	RB	212.17	215.5	12			
	RS	212.29	204.5	56	222.09	217.5	22
	TR	211.50	211.5	12	232.75	235.0	4
	TRIB	296.46	294.0	24	255.29	270.0	7
FNU	RB	24.26	19.5	12			
	RS	40.79	26.8	55	35.50	14.3	22
	TR	20.84	16.0	12	10.81	9.5	4
	TRIB	59.62	43.8	24	89.63	61.7	7

 * All observations of TDS were within the referenced water quality standard.



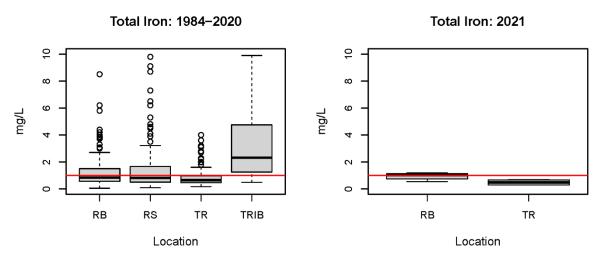
	Historical Re	ference 197		<u>2021</u>			
	Location	Mean	Median	n	Mean	Median	n
TSS	RB	41.47	29.0	225			
	RS	34.36	25.0	513	53.94	14.4	8
	TR	25.40	21.0	214	12.05	11.9	4
	TRIB	105.38	62.5	429	135.14	61.2	7

*The mean total suspended solids data measured in 2021 were greater at RS and TRIB locations, and less at the TR when compared to the historical data. There is no numeric standard for TSS.

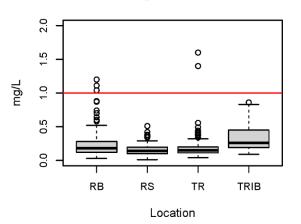


	Historical Re	ference 19		<u>2021</u>			
	Location	Mean	Median	n	Mean	Median	n
TOC	RS	6.53	5.6	310	5.50	5.5	8
	TR	6.63	5.5	146	4.93	5.0	4
	TRIB	6.10	5.0	202	4.24	3.5	7

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

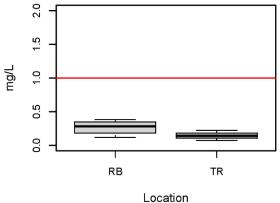


*Red line indicates the water quality standard of 1 mg/L.





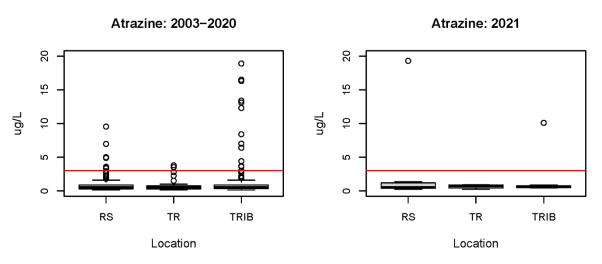
Total Manganese: 2021



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

	Historical Re	ference 198	<u>84-2020</u>			<u>2021</u>			
	Location	Mean	Median	n	Mean	Median	n		
TFe	RB	1.23	0.8	178	0.94	1.0	4		
	RS	1.44	0.8	170					
	TR	0.88	0.7	147	0.48	0.5	4		
	TRIB	3.82	2.3	68					
TMn	RB	0.23	0.2	178	0.27	0.3	4		
	RS	0.16	0.1	160					
	TR	0.19	0.2	145	0.15	0.1	4		
	TRIB	0.33	0.3	61					

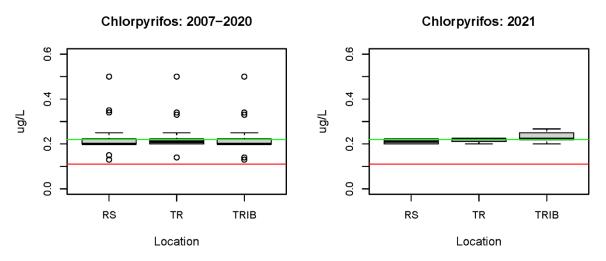
¹In 20</mark>21 iron exceeded the standard of 1 mg/L near the lake bottom in front of the dam twice. Manganese did not exceed the criterion.



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

	Historical Re	ference 199		<u>2021</u>			
	Location	Mean	Median	n	Mean	Median	n
Atrazine	RB	0.69	0.7	2			
	RS	0.95	0.5	120	2.97	0.5	8
	TR	0.70	0.5	60	0.65	0.7	4
	TRIB	1.65	0.5	116	1.95	0.6	7

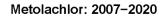
*Atrazine was measured above the DWS criterion of 3 ug/L on May 19, 2021 in the lake and the tributary.



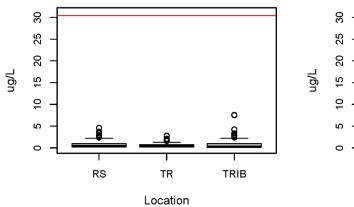
*Green line indicates the detection limit of 0.22 ug/L. Red line indicates the standard of 0.11 ug/L.

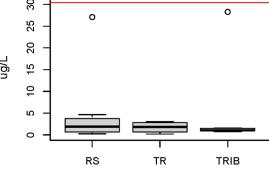
	Historical Re	ference 200		<u>2021</u>			
	Location	Mean	Median	n	Mean	Median	n
Chlorpyrifos	RS	0.22	0.2	82	0.21	0.2	8
	TRIB	0.22	0.2	77	0.23	0.2	6
	RS	0.22	0.2	82	0.21	0.2	8

*The standard of 0.11 ug/L is below the detection limit for Chlorpyrifos. Chlorpyrifos was measured above the detection limit and the standard twice in the tributaries – once in May and once in July 2021.



Metolachlor: 2021

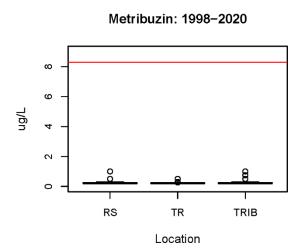




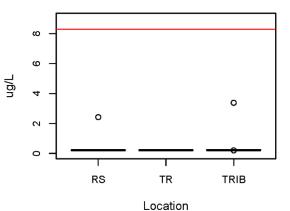
Location

	Historical Re	ference 200		<u>2021</u>	<u>2021</u>		
	Location	Mean	Median	n	Mean	Median	n
Metolachlor	RS	0.85	0.4	82	5.00	1.9	8
	TR	0.75	0.4	41	1.73	1.8	4
	TRIB	0.93	0.3	78	5.00	1.0	7

*Metolachlor did not exceed water quality criteria in 2021.

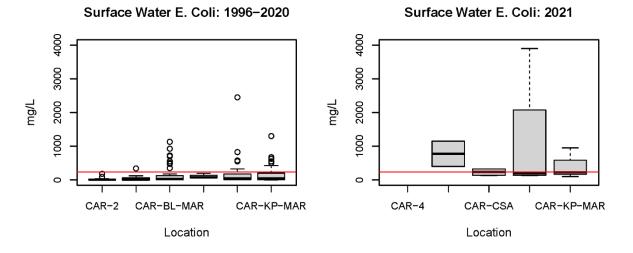






	Historical Re	ference 199		<u>2021</u>			
	Location	Mean	Median	n	Mean	Median	n
Metribuzin	RS	0.32	0.2	93	0.49	0.2	8
	TR	0.22	0.2	41	0.22	0.2	4
	TRIB	0.31	0.2	86	0.67	0.2	7

*Metribuzin did not exceed water quality criteria in 2021.



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

	Historical Ref	erence 2001	-2020		<u>2021</u>			
	Location	Mean	Median	n	Mean	Median	n	
E col	CAR-2	29.00	8.0	13				
	CAR-4	51.38	5.0	13	6250.00	6250.0	1	
	CAR-BL-MAR	149.96	28.0	46	775.00	775.0	2	
	CAR-CSA CAR-DW-	108.67	75.0	3	231.25	237.5	4	
	MAR	159.98	40.0	46	1106.25	200.0	4	
	CAR-KP-MAR	158.72	41.0	46	425.00	225.0	3	

*Marina bacteria levels exceeded the standard throughout the lake during the four sampling events in 2021.

	2021 Swimming Beach Bacteria Levels (E. Coli / 100mL)											
							Carlyle					
			-		0.1	_	Sailing	West	Trade			
			Dam	Harbor	Coles	Boulder	Assoc.	Access	Winds			
-	McNair	Keyesport	West	Light	Creek	Marina	Marina	Marina	Marina			
6/24/2021	32	47	64	164	102	86	54	86	64			
6/30/2021	24	74	14	64	104	54	32	24	106			
7/7/2021	54	68	32	180	148	100	56	112	88			
7/14/2021	67	48	65	176	164	145	122	110	96			
7/21/2021	76	64	32	44	120	22	48	45	200			
7/28/2021	76	110	42	124	98	154	56	142	200+			
8/4/2021	64	63	42	168	146	120	62	148	200+			
8/25/2021	74	68	74	180	165	42	128	170	150			
9/1/2021	32	65	46	154	120	157	86	147	188			
9/8/2021	65	43	61	122	120	145	59	175	180			
9/15/2021	12	40	36	80	120	180	38	24	110			
9/22/2021	54	62	38	123	85	102	46	95	187			
9/29/2021	43	29	38	112	53	75	37	97	112			

*Bacteria levels at the swimming beaches remained below the standard in 2021. Of the additional bacteria samples taken all were below the standard except for two samples at Trade Winds Marina which only indicated a result of greater than 200.

DISCUSSION: WATER QUALITY

Water quality metrics assessed by CEMVS can be sporadic and highly variable from year to year, thus long-term data collection using consistent and comparable methodology is critical to identify trends or patterns. In general, conditions observed during 2021 did not deviate far from conditions observed during the reference period (1971-2020). Nevertheless, concerns regarding bacteria, TP, iron, DO, temperature, and pesticides were evident. In addition, CHL_a and subsequent TSI levels were indicative of a hyper eutrophic system.

E. Coliform levels were observed above the swimming standard of 235 E. Coli per 100/mL (single sample) eight out of the 14 samples during the four sampling events in the lake. The high levels were recorded once at CAR-4 and Keyesport, and twice at CSA, Dam West and Boulder marinas. Bacteria levels can be highly variable and high levels may not necessarily be representative of the entire system. There were significant precipitation events which proceeded the higher bacteria results recorded in May and August. Conversely, all of the swimming beach bacteria results monitored by project staff during the recreation season were below the standard. Given that 2021 high bacteria levels in the Marinas are not swimming areas, there is a lower risk to humans. Long term bacteria monitoring, and analyses will be important to assess changes over time.

Phosphorus levels have surpassed the 0.05 mg/L criterion for several years. In 2021 the TP criterion was exceeded at all locations with a mean concentration across all sites of 0.37 mg/L. This is 65% greater than the historical mean of 0.23 mg/L, but similar to the 2020 mean of 0.36 mg/L. The mean surface NO3-N concentration in 2021 (0.93 mg/L) was comparable with the historic mean (1.22 mg/L) and did not exceed the criterion of 10 mg/L in 2021. 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.

Living organisms require trace amounts of metals, excessive levels can be harmful. TFe exceeded the criterion of 1 mg/L two times at the bottom reservoir location in front of the dam in May and July 2021. Comparably, there are multiple times TFe was high historically (1984-2021) at the same locations. The 2021 TFe mean concentrations were lower (RB: 0.94 mg/L, TR: 0.48) than the historical means (RB: 1.23 mg/L, TR 0.88 mg/L). Iron cycling is a function of oxidation-reduction processes. Elevated levels of iron near the bottom of a lake are not immediately detrimental to the overall lake system. Iron oxidizes relatively rapidly (minutes to hours); therefore, any iron released through the spillway will be oxidized in a short period of time.

In 2020 all 33 discrete observations of DO were within the state guidelines except for Dam West Marina and Boulder Marina. On July 25 DO was recorded at 4.8 mg/L at Dam West Marina while on August 25 DO was recorded at 4.29 mg/L. Since 1972, there

have been 23 routine lake surface measurements observed in the summer in which DO was below 5 mg/L. DO was measured at the tail race in 15-minute intervals from April 6 through October 27, 2021. DO was recorded below the standard of 5 mg/L at the tail race during middle-to-late June. These lower measurements occurred during a period of low outflow. All other measurements of DO were greater than the standard. It is not abnormal during warm air and water temperatures to experience low DO. DO has an inverse relationship with temperature. As temperature increases, the ability of water to contain DO decreases, therefore the DO concentration decreases. Water temperature measurements made during 2021 indicate an increase from the historical data. This finding assumes that the historical reference 1971-2020 is the normal seasonal temperatures. In a comparison of 2021 mean surface temperatures to historical mean temperatures, the water quality standard of <2.8°C was exceeded during the spring (3.71°C). Discrete measurements of temperature were exceeded at multiple locations in the lake during the spring and summer sample events.

Pesticides are commonly used throughout much of the agricultural landscape that the Kaskaskia River flows. Of the eight pesticides tested, only Atrazine, Chlorpyrifos, Metolachlor, and Metribuzin were detected between 1998 and 2021. Of those four, only Atrazine and Chlorpyrifos were found to exceed the criteria. In 2021 the Atrazine drinking water standard (3 ug/L) was exceeded on May 19 in the lake and the tributary. Atrazine levels were recorded over the standard multiple times in the lake and tributaries historically. The 2021 Atrazine overall mean (1.85 ug/L) is slightly greater than the historic Atrazine mean (1.00 ug/L). Atrazine is a commonly used agricultural chemical which can be readily transported by rainfall runoff. Atrazine is suspected of causing cancer; and therefore, is 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. The laboratory detection limit for Chlorpyrifos is lower than the standard of 0.11 ug/L. Chlorpyrifos was measured above the detection limit twice in the tributaries; once in May (0.267 ug/L) and once in July (0.25 ug/L) 2021. The acute standard of 0.11 ug/L is set for the protection of aquatic life. Chlorpyrifos is an insecticide which has been used primarily to control foliage and insect pests since 1965. Low dose exposure may cause minor sickness while high dose exposure may cause serious sickness and even death in humans. Chlorpyrifos does not mix well with water and tends to stick to soil. If it does get into a water body, it will tend to remain on the surface where it will evaporate easily. It will also be broken down by sunlight and bacteria in the environment. The potential for human exposure to Chlorpyrifos in the lake is very low due to its rapid degradation in the environment.

Although there is not a state criterion for CHL_a the proposed standard of 25 mg/cm³ was exceeded at the lake sites in July and August in 2021. The 2021 combined (lake and tributary) CHL_a mean concentration of 30.56 mg/cm³ was similar to the historical mean of 28.76 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 2021 TSI level, an average of the individual trophic state indexes for Secchi depth, CHL_a, and TP, for Carlyle Lake is 75.62. Carlyle 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 over time.

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. Though there are no numeric water quality standards for total solids, Carlyle Lake was previously listed as impaired by TSS, but has been delisted in the latest 303d report. The 2021 TSS mean concentration in the lake (53.94 mg/L) was greater than the historical mean (34.36 mg/L) while the 2021 tail race TSS mean (12.05 mg/L) was lower than the historical mean (25.4 mg/L). However, the 2021 TSS tributary mean concentration was greater (135.14 mg/L) than the historical tributary mean (105.38 mg/L). The higher TSS levels observed in 2021 in the tributary and lake may be due to the significant rain events which occurred in the days preceding the sampling.

All remaining parameters evaluated during the 2021 water quality monitoring effort were within designated criteria or within historical reference norms.

MONITORING PROGRAM RECOMMENDATIONS

The IEPA currently has listed Carlyle Lake as impaired for total phosphorous and mercury while the Kaskaskia River upstream from the Lake is impaired for fecal coliform, and mercury. In addition, the North Fork Kaskaskia River is impaired for phosphorus, Atrazine, and Terbufos. The lists of sources for these impairments are contaminated sediments, crop production, and unknown sources. At present the only tributary being sampled by CEMVS is the Kaskaskia River. IEPA also has the following listed as impaired: Hurricane Creek, North Fork Kaskaskia, and East Fork Kaskaskia. It is recommended to add these three tributaries as well as mercury in the lake to the routine sampling plan to increase the dataset and improve our ability to assess the water quality condition of Carlyle Lake.

In accordance with EM-1110-2-1201, sediment samples should be taken to monitor and assess potential impacts to aquatic and human health. Sediment sampling and analyses occurred at Carlyle 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 above-mentioned high bacteria levels observed at the Marinas in 2020, it is recommended to continue routine bacteria sampling at the marinas while adding the tributaries (CAR-12, CAR-13, and any additional tributaries). This would be useful in capturing a larger picture of bacteria coming into the lake. It may also be useful to execute a review of all NPDES permits and other potential contributors to high bacteria levels in the marinas.

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APPENDIX A: FIELD DATA

					Sp						
Data		Depth	Temp	ORP	Cond		ODO	ODO	TDS	Turbidity	Secchi
Date	Location	(m)	(°C)	(mV)	(µS/cm)	pH	(% Sat)	(mg/L)	(mg/L)	(FNU)	(in)
5/19/2021	CAR-1	0.813	18.4	172.1	382.4	7.92	99.8	9.37	249	15.78	
5/19/2021	CAR-1	2.685	18.8	170.3	384.9	7.98	99.9	9.3	250	14.95	
5/19/2021	CAR-2	0.781	18.8	168.1	381.9	7.92	88	8.2	248	10.75	35
5/19/2021	CAR-2	2.233	18.8	181.7	381.9	7.88	88.4	8.23	248	11.46	
5/19/2021	CAR-2	3.197	18.7	182.1	381.9	7.88	88.1	8.21	248	10.55	
5/19/2021	CAR-2	3.838	18.5	181	381.9	7.88	86.2	8.08	248	13.08	
5/19/2021	CAR-2	4.869	18.6	183.6	381.9	7.85	86.7	8.1	248	13.23	
5/19/2021	CAR-2	6.116	18.3	184	382	7.85	85.6	8.04	248	14.28	
5/19/2021	CAR-2	7.046	18.3	184.3	382.1	7.85	85.4	8.03	248	13.42	
5/19/2021	CAR-2	8.138	18.2	181.2	382	7.88	84.8	7.99	248	86.78	
5/19/2021	CAR-4	1.012	19.3	154.4	313.3	7.67	78.4	7.22	204	256.33	2
5/19/2021	CAR-4	1.783	19.4	154.5	314	7.64	77.7	7.15	204	251.1	
5/19/2021	CAR-4	3.123	19.4	154.5	316.4	7.62	77.7	7.15	206	253.52	
5/19/2021	CAR-4	4.107	19.4	154.6	317.4	7.61	77.5	7.13	206	240.15	
5/19/2021	CAR-4	5.078	19.4	154.4	316.9	7.6	77.7	7.15	206	246.65	
5/19/2021	CAR-13	0.061	17.7	149.8	256.3	7.34	72.1	6.86	167	346.05	
5/19/2021	CAR-CSA	1.189	19.6	156.5	382.8	7.9	90	8.23	249	25.39	
5/19/2021	CAR-DW-MAR	1.098	19.2	181.1	383.8	7.83	75.2	6.94	249	13.21	
5/19/2021	CAR-DW-MAR	1.664	18.7	63.2	382.8	7.78	75.5	7.03	249	14.73	
5/19/2021	CAR-KP-MAR	0.826	19.9	174.6	427.2	7.9	86.8	7.89	278	139.35	
7/6/2021	CAR-1	1.86	26.3		380.1		103.2	8.32	247	8.5	
7/6/2021	CAR-2	1.127	26.7		372.3		135.9	10.87	242	5.98	32
7/6/2021	CAR-2	2.129	26.3		378.5		93.5	7.55	246	5.34	
7/6/2021	CAR-2	3.047	25.9		385.9		48.9	3.97	251	8.68	
7/6/2021	CAR-2	4.206	25.8		387.4		35.7	2.91	252	13.72	
7/6/2021	CAR-2	5.167	25.7		388.5		27.2	2.22	253	18.45	
7/6/2021	CAR-2	5.954	25.6		389.5		22.5	1.84	253	23.92	
7/6/2021	CAR-4	1.219	28.6		331.8		139.8	10.82	216	42.74	17
7/6/2021	CAR-4	2.174	27.9		327.2		101.1	7.91	213	46.32	
7/6/2021	CAR-4	3.072	27.6		329.8		72.2	5.69	214	62.77	

					Sp						
		Depth	Temp	ORP	Cond		ODO	ODO	TDS	Turbidity	Secchi
Date	Location	(m)	(°C)	(mV)	(µS/cm)	рΗ	(% Sat)	(mg/L)	(mg/L)	(FNU)	(in)
7/6/2021	CAR-4	4.112	27		313.5		50.5	4.02	204	65.69	
7/6/2021	CAR-4	5.063	26.8		306.7		44.9	3.59	199	66.25	
7/6/2021	CAR-12	0.5	27.7		428.5		84.7	6.66	279	24.59	
7/6/2021	CAR-13	1.05	27.2		429.1		85.6	6.78	279	61.7	
7/6/2021	CAR-13	2.783	27.2		429.2		85.8	6.8	279	71.48	
7/6/2021	CAR-BL-MAR	1.011	29.9		374.2		129.9	9.83	243	13.58	
7/6/2021	CAR-CSA	1.09	27.7		377.7		130.9	10.3	245	12.49	
7/6/2021	CAR-DW-MAR	1.027	27.5		371.1		110.4	8.71	241	8.94	
7/6/2021	CAR-KP-MAR	1.04	29.3		303.4		181.1	13.85	197	21.22	
7/26/2021	CAR-1	0.899	27.7	341.4	342.6	8.42	101.5	7.98	223	8.49	
7/26/2021	CAR-2	1.203	28.1	230.1	337.7	8.59	89.8	7.02	219	6.72	31
7/26/2021	CAR-2	2.01	28	231.8	339.1	8.58	88.8	6.95	220	6.46	
7/26/2021	CAR-2	3.131	28	234.2	342.8	8.49	83.9	6.57	223	6.43	
7/26/2021	CAR-2	4.259	27.5	248	352.8	8.12	46.7	3.69	229	11.48	
7/26/2021	CAR-2	5.225	27.6	242.5	350.8	8.15	51	4.02	228	10.5	
7/26/2021	CAR-2	6.299	27	250.9	359.7	7.82	17.5	1.39	234	28.46	
7/26/2021	CAR-2	7.212	26.8	221.5	362.9	7.74	5.5	0.44	236	91.65	
7/26/2021	CAR-4	1.07	28.4	166.1	323.2	8.37	71.7	5.57	210	32.21	11
7/26/2021	CAR-4	2.106	28.3	171.5	319.5	8.29	66.1	5.14	208	40.1	
7/26/2021	CAR-4	3.086	28.3	173.9	319	8.27	64.8	5.04	207	65.32	
7/26/2021	CAR-12	0.5	28.1	259	393.1	7.8	79.1	6.18	256	44.17	
7/26/2021	CAR-13	0.5	27.4	209.8	414.7	7.88	83.2	6.57	270	61.86	
7/26/2021	CAR-CSA	1.074	27.9	233.1	330.9	8.26	66.2	5.19	215	33.71	
7/26/2021	CAR-DW-MAR	0.202	28.3	190.1	354.3	8.28	62.6	4.86	230	9.18	
7/26/2021	CAR-DW-MAR	1.005	27.9	199.2	358.7	7.95	34.8	2.72	233	13.89	
8/25/2021	CAR-1	0.239	27.7	111	325.6	8.15	94.8	7.46	212	10.47	
8/25/2021	CAR-2	1.183	28.4	107.6	319.6	8.61	97.6	7.58	208	9.91	16
8/25/2021	CAR-2	2.097	27.9	125.2	321.8	8.42	71.5	5.6	209	9.48	
8/25/2021	CAR-2	3.008	27.4	131.7	326	8.09	42.5	3.36	212	11.55	
8/25/2021	CAR-2	3.973	27.4	133.2	326.2	8.07	39.4	3.12	212	12.49	

					Sp						
		Depth	Temp	ORP	Cond		ODO	ODO	TDS	Turbidity	Secchi
Date	Location	(m)	(°C)	(mV)	(µS/cm)	рΗ	(% Sat)	(mg/L)	(mg/L)	(FNU)	(in)
8/25/2021	CAR-2	5.081	27.4	134.3	326.7	8.05	36.9	2.92	212	13.31	
8/25/2021	CAR-2	5.268	27.3	137.7	327.7	7.92	25.4	2.01	213	29.85	
8/25/2021	CAR-2	6.307	27.3	136.1	327	7.99	33.1	2.62	213	15.75	
8/25/2021	CAR-4	1.146	29.8	122.3	289	8.3	106	8.03	188	38.53	10
8/25/2021	CAR-4	2.291	29.1	122.7	281.7	8.02	78.4	6.01	183	59.04	
8/25/2021	CAR-12	1.425	28.9	164.5	419.2	7.9	93.9	7.23	272	26.83	
8/25/2021	CAR-13	1.102	28.7	145.4	406.2	7.93	92.3	7.13	264	62.24	
8/25/2021	CAR-BL-MAR	1.26	30.5	-14.1	235.1	7.79	57.2	4.29	153	30.09	
8/25/2021	CAR-CSA	1.02	28.8	113.6	320.6	8.7	104.1	8.03	208	14.77	
8/25/2021	CAR-DW-MAR	1.084	28.6	119.8	324.9	8.29	66.7	5.16	211	13.26	
8/25/2021	CAR-KP-MAR	0.393	30.3	103.1	305.5	8.46	110.2	8.29	199	28.81	

APPENDIX B: LABORATORY DATA



Environmental | Analytical | Management | Safety

Customer Name: SLCOE

Project Name: Carlyle Lake/Kaskaskia River

Samples Received at ARDL: 5/19/21

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

www.ardlinc.com

Date: 6/24/21

Lab Name: ARDL, Inc.

ARDL Report No.: 8700

CASE NARRATIVE

Customer	Date	Lab ID	
Sample No.	Collected	<u>Number</u>	Analyses Requested
CAR-1	05/19/21	8700-01	NP Pesticides, Metals(1), Inorganics(2)
CAR-2-0	05/19/21	8700-02	NP Pesticides, Inorganics(2)(3)
CAR-2-10	05/19/21	8700-03	Metals(1), Inorganics(2)
CAR-4	05/19/21	8700-04	NP Pesticides, Inorganics(2)(3), E. Coli
CAR-13	05/19/21	8700-05	NP Pesticides, Inorganics(2)
CAR-15	05/19/21	8700-06	NP Pesticides, Inorganics(2)(3)
CAR-KP-Marina	05/19/21	8700-07	E. Coli
CAR-DW-Marina	05/19/21	8700-08	E. Coli
CAR-CSA	05/19/21	8700-09	E. Coli
KAS-1	05/19/21	8700-10	Inorganics(2)(3)(4), E. Coli
KAS-2	05/19/21	8700-11	Inorganics(2)(3)(4), E. Coli

(1) Including iron and manganese.

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

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

(4) Including nitrite and TKN.

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.

PREPARATION BLANK

The blank met acceptance criteria.

<u>LABORATORY CONTROL SAMPLE</u> The LCS analyses met recovery criteria.

MATRIX SPIKE

The matrix spike and matrix spike duplicate met recovery criteria.

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

Project Name: Carlyle Lake/Kaskaskia River

CASE NARRATIVE (Continued)

DUPLICATE

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

INTERNAL STANDARDS

All internal standard criteria were met.

SURROGATES

All surrogate recovery criteria were met.

INORGANIC FRACTION

TOC analyses were subcontracted to Eurofins - TestAmerica Laboratory Network.

PREPARATION BLANK

Results of the preparation blanks were undetected.

LABORATORY CONTROL SAMPLE

Percent recoveries of all LCS analyses were within control limits.

MATRIX SPIKE

Percent recoveries of all matrix spikes and matrix spike duplicates were within control limits except 1 of 1 for TKN. 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 ammonia, pheophytin-a and TKN. The associated 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.
- J Indicates an estimated value. This flag is used either when estimating a concentration or this flag indicates analyte(s) associated with a DOD-QSM specified non-compliance pertaining to matrix QC criteria.

REPORT ORGANIZATION

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

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

Dean S. Dickerson Technical Services Manager

Page 2 of 2

Sample & QC Results

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

ARDL Data Package 8700

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

Authorized By: DSD-QAO

Lab Report No: 008700

Report Date: 06/04/2021

Project Name:	CARLYLE LAKE/KAS		-	P PESTICII	DES (827	0SIM-MO	D)
Project No.:		Analytical Me					
NELAC Certi	fied - IL100308	Prep Me	ethod: 35	510C			
Field ID:	CAR-1		ARDL I	Lab No.:	00870	0-01	/
Desc/Location:	CARLYLE LAKE/KAS	KASKIA RIV	Lab F	llename:	E0602	2105	
Sample Date:	05/19/2021		Receiv	ved Date:	05/19	9/2021	
Sample Time:	1200		Prep.	Date:	05/21	/2021	
Matrix:	WATER		Analys	sis Date:	06/02	2/2021	
Amount Used:	900 mL		Instru	ument ID:	AG5		
Final Volume:	1 mL		QC Bat	ch:	B1133	36	
% 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	63%	Í

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

(a) DOD-QSM Accredited Analyte.

Sample 008700-01, NP PESTICIDES (8270SIM-MOD)

Lab Report No: 008	007.800						Υ,	Report Date:	: 06/11/2021	021
Project Name: CARLYLE Project No:	LAKE/KASK/	CARLYLE LAKE/KASKASKIA RIVER	с.				Z	Analysis: Inorganics NELAC Certified - IL100308	: Inorganics fied - IL1003	ics 00308
	01	Sampling	ling Lo		CARLYLE LAKE/KASKASKIA RIVER	KASKIA RI	VER	Matrix:	1	
Field ID: CAR-1 Received: 05/19/2021	121	Samr Samr	Sampling Date: Sampling Time:		05/19/2021 1200			Moisture:	: NA	
						Prep	Analysis	Prep	Analysis	Run
Analyte	LOD	ТОQ	Flag	Result	Units	Method	Method	Date	Date	Number
(a) Iron	0.0400	0.0500		0.698	MG/L	3010A	6010C	05/24/21	05/25/21	P7518
(a) Manganese	0.00400	0.00500		0.0727	MG/L	3010A	6010C	05/24/21	05/25/21	P7518
Ammonia Nitrogen	0.020	0.030	Ŀ	0.3	MG/L	NONE	350.1	NA	05/26/21 (06015919
Nitrate as Nitrogen	0.0190	0.0200		0.36	MG/L	NONE	GREEN	NA	05/20/21 (05215886
Phosphorus	0.00800	0.0100		0.187	MG/L	365.2	365.2	05/24/21	05/25/21 (05265907
Solids, Total Suspended	1 2.50	2.50		11.0	MG/L	NONE	160.2	NA	05/20/21 (05245891
Solids, Volatile Suspen	1.0	1.0		ND	MG/L	NONE	160.4	NA	05/20/21 0	05245892
Total Organic Carbon	0.500	1.00		3.7	MG/L	NONE	415.1	NA	05/26/21 0	05285911

(a) DOD and/or NELAC Accredited Analyte.

Sample 008700-01, Inorganic Analyses

Lab Report No: 008700

Report Date: 06/04/2021

Project Name: Project No.:	CARLYLE LAKE/KASKAS Ana	K Ana lytical M			DES (82	70SIM-MO	D)
	fied - IL100308	-	ethod: 35				
Field ID:	CAR-2-0		ARDL I	Lab No.:	00870	00-02	<u></u>
Desc/Location:	CARLYLE LAKE/KASKAS	KIA RIV	Lab Fi	llename:	E0602	2108	
Sample Date:	05/19/2021		Receiv	ved Date:	05/19	9/2021	
Sample Time:	1300		Prep.	Date:	05/23	1/2021	
Matrix:	WATER		Analys	sis Date:	06/02	2/2021	
Amount Used:	900 mL		Instru	ument ID:	AG5		
Final Volume:	1 mL		QC Bat	ch:	B113	36	
<pre>% Moisture:</pre>	NA		Level	:	LOW		
					Data		Dilution
Parameter		LOD	LOQ	Result	Flag	Units	Factor
Trifluralin		0.222	0.222	ND	K.dd	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	71%	
-			

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

(a) DOD-QSM Accredited Analyte.

Sample 008700-02, NP PESTICIDES (8270SIM-MOD)

Project Name: CARL	CARLYLE LAK	AKE/KASKA	NO: UU8/UU CARLYLE LAKE/KASKASKIA RIVER					4 2	Report Date: U0/11/2021 Analysis: Inorganics NFLAC Certified - IL100308	: UN/II/2UZI : Inorganics fied - IL1003	121 ics 00308
ARDL No: Field ID: Received:	008700-02 CAR-2-0 05/19/2021		Sampling Samplin Samplin	1 5 5		CARLYLE LAKE/KASKASKIA RIVER 05/19/2021 1300	KASKIA RI		Matrix: Moisture:	: WATER : NA	
Analyte	e U	LOD	ГОО	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
Ammonia Nitrogen	u e	0.020	0.030		0.26	MG/L	NONE	350.1	NA	05/26/21	06015919
Chlorophyll-a, Correcte	Correcte	1.0	1.0		DN	MG/CU.M.	10200H	10200H	05/20/21	05/24/21	05265906
Nitrate as Nitrogen	rogen	0.0190	0.0200		0.374	MG/L	NONE	GREEN	NA	05/20/21	05215886
Pheophytin-a		1.0	1.0		QN	MG/CU.M.	10200H	10200H	05/20/21	05/24/21	05265906
Phosphorus		0.00800	0.0100		0.195	MG/L	365.2	365.2	05/24/21	05/25/21	05265907
Solids, Total Suspended	Suspended	2.50	2.50		7.5	MG/L	NONE	160.2	NA	05/20/21	05245891
Solids, Volatile Suspen	le Suspen	1.0	1.0		QN	MG/L	NONE	160.4	NA	05/20/21	05245892
Total Organic Carbon	Carbon	0.500	1.00		4.0	MG/L	NONE	415.1	NA	05/26/21	05285911

(a) DOD and/or NELAC Accredited Analyte.

Sample 008700-02, Inorganic Analyses

	Box 1566	62864
ARDL, INC.	00 Aviation Drive; P.O.	Mt. Vernon, Illinois

4

008700 Lab Report No: Project Name: CARLYLE LAKE/KASKASKIA RIVER

Project No:

Report Date: 06/11/2021

Analysis: Inorganics NELAC Certified - IL100308

ARDL No: 008700-03	e	Sampling	ing Loc	Loc'n: CARL	CARLYLE LAKE/KASKASKIA RIVER	SKASKIA RI	VER	Matrix:	:: WATER	
Field ID: CAR-2-10		Samp	Sampling Date:		05/19/2021			Moisture:	: NA	
Keceived: 05/19/2021	21	Samp	Samping Time:	1315 I315						
						Prep	Analysis	Prep	Analysis	Run
Analyte	LOD	ТОÕ	Flag	Result	Units	Method	Method	Date	Date	Number
(a) Iron	0.0400	0.0500		1.18	MG/L	3010A	6010C	05/24/21	05/25/21	P7518
(a) Manganese	0.00400	0.00500		0.118	MG/L	3010A	6010C	05/24/21	05/25/21	P7518
Ammonia Nitrogen	0.020	0.030		0.25	MG/L	NONE	350.1	NA	05/26/21	06015919
Nitrate as Nitrogen	0.0190	0.0200		0.378	MG/L	NONE	GREEN	NA	05/20/21	05215886
Phosphorus	0.00800	0.0100		0.299	MG/L	365.2	365.2	05/24/21	05/25/21	05265907
Solids, Total Suspended	6.67	6.67		109	MG/L	NONE	160.2	NA	05/20/21	05245891
Solids, Volatile Suspen	1.0	1.0		10.0	MG/L	NONE	160.4	NA	05/20/21	05245892
Total Organic Carbon	0.500	1.00		4.1	MG/L	NONE	415.1	NA	05/26/21 05285911	05285911

(a) DOD and/or NELAC Accredited Analyte.

Sample 008700-03, Inorganic Analyses

Lab Report No: 008700

Report Date: 06/04/2021

Project Name:	CARLYLE LAKE/KAS	KASK 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:	CAR-4		ARDL I	Lab No.:	00870	0-04	
Desc/Location:	CARLYLE LAKE/KAS	KASKIA RIV	Lab Fi	llename:	E0602	2109	
Sample Date:	05/19/2021		Receiv	ved Date:	05/19	9/2021	
Sample Time:	1500		Prep.	Date:	05/21	L/2021	
Matrix:	WATER		Analys	sis Date:	06/02	2/2021	
Amount Used:	900 mL		Instru	ument ID:	AG5		
Final Volume:	1 mL		QC Bat	cch:	B1133	36	
% Moisture:	NA		Level	:	LOW		
					Data		Dilution
Parameter		LOD	LOQ	Result	Flag	Units	Factor
Trifluralin		0.222	0.222	ND		UG/L	1
Atrazine		0.889	0.889	19.3		UG/L	4
Metribuzin		0.222	0.222	2.42		UG/L	1
Alachlor		0.222	0.222	ND		UG/L	1
Metolachlor		0.889	0.889	27.1		UG/L	4
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	60%	
			_

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

(a) DOD-QSM Accredited Analyte.

	Lab Report No: 008700	00/						ц	Report Date:	: 06/11/2021	021
Project Name: Project No:	CARLYLE I	AKE/KASKA	CARLYLE LAKE/KASKASKIA RIVER	~				Z	Analysis: Inorganics NELAC Certified - IL100308	: Inorganics fied - IL1003	ics 00308
ARDL No: Field ID: Received:	008700-04 CAR-4 05/19/2021		Sampling Samplin Samplin	רס רס ו		CARLYLE LAKE/KASKASKIA RIVER 05/19/2021 1500	ASKIA RI	VER	Matrix: Moisture:	:: WATER :: NA	
Analyte	ω	LOD	Тоб	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
Ammonia Nitrogen	u	0.020	0.030		0.26	MG/L	NONE	350.1	NA	05/26/21	06015919
Chlorophyll-a, Correcte	Correcte	1.0	1.0		16.2	MG/CU.M.	10200H	10200H	05/20/21	05/24/21	05265906
E. Coliform		1.0	1.00		6250	COL/100 ML	NONE	1604	NA	05/19/21	05215882
Nitrate as Nitroden	oqen	0.0190	0.0200		1.89	MG/L	NONE	GREEN	NA	05/20/21	05215886
Pheophytin-a	1	1.0	1.0	Ŀ	6.5	MG/CU.M.	10200H	10200H	05/20/21	05/24/21	05265906
Phosphorus		0.00800	0.0100		0.809	MG/L	365.2	365.2	05/24/21	05/25/21	05265907
Solids, Total Suspended	uspended	20.0	20.0		310	MG/L	NONE	160.2	NA	05/20/21	05245891
Solids, Volatile Suspen	e Suspen	1.0	1.0		28.0	MG/L	NONE	160.4	NA	05/20/21	05245892
Total Organic Carbon	arbon	0.500	1.00		6.1	MG/L	NONE	415.1	NA	05/26/21	05285911

(a) DOD and/or NELAC Accredited Analyte.

Sample 008700-04, Inorganic Analyses

Lab Report No: 008700

Report Date: 06/07/2021

Project Name: Project No.:	CARLYLE LAKE/KASKAS Ana	K Ana lytical M		PESTICII 270C	DES (827	70SIM-MO	D)
NELAC Certi	fied - IL100308	Prep M	ethod: 35	510C			
Field ID:	CAR-13		ARDL I	Lab No.:	00870	0-05	
Desc/Location:	CARLYLE LAKE/KASKAS	KIA RIV	Lab F:	llename:	E0602	2110	
Sample Date:	05/19/2021		Receiv	ved Date:	05/19	9/2021	
Sample Time:	1600		Prep.	Date:	05/23	L/2021	
Matrix:	WATER		Analys	sis Date:	06/02	2/2021	
Amount Used:	900 mL		Instru	ument ID:	AG5		
Final Volume:	1 mL		QC Bat	.ch:	B1133	36	
% 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	10.1		UG/L	1
Metribuzin		0.222	0.222	3.38		UG/L	1
Alachlor		0.222	0.222	ND		UG/L	1
Metolachlor		0.889	0.889	28.3		UG/L	4
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	56%	ĺ

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

(a) DOD-QSM Accredited Analyte.

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

> 008700 Lab Report No:

Project Name: CARLYLE LAKE/KASKASKIA RIVER

Report Date: 06/11/2021

Analysis: Inorganics

Project No:							N	ELAC Certi	NELAC Certified - IL100308	00308
ARDL No: 008700-05 Field ID: CAR-13 Received: 05/19/2021	05 021	Sampl Samp Samp	Sampling Loc'n: Sampling Date: Sampling Time:		CARLYLE LAKE/KASKASKIA RIVER 05/19/2021 1600	SKASKIA RI'	VER	Matrix: Moisture:	:: WATER :: NA	
Analyte	LOD	LOQ	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
Ammonia Nitrogen	0.020	0.030		0.28	MG/L	NONE	350.1	NA	05/26/21 06015919	06015919
Nitrate as Nitrogen	0.0190	0.0200		3.32	MG/L	NONE	GREEN	NA	05/20/21 05215886	05215886
Phosphorus	0.00800	0.0100		1.19	MG/L	365.2	365.2	05/24/21	05/25/21 05265907	05265907
Solids, Total Suspended	d 16.7	16.7		398	MG/L	NONE	160.2	NA	05/20/21 05245891	05245891
Solids, Volatile Suspen	n 1.0	1.0		28.3	MG/L	NONE	160.4	NA	05/20/21	05245892
Total Organic Carbon	0.500	1.00		8.6	MG/L	NONE	415.1	NA	05/26/21 05285911	05285911

(a) DOD and/or NELAC Accredited Analyte.

Sample 008700-05, Inorganic Analyses

Lab Report No: 008700

CARLYLE LAKE/KASKASKIA RIVER

Project Name: Project No:

Report Date: 06/11/2021

Analysis: Inorganics NELAC Certified - IL100308

ARDL No: Field ID:	ARDL No: 008700-06 ield ID: CAR-15		Samp] Samp	Sampling Loc'n: Sampling Date:	1	CARLYLE LAKE/KASKASKIA RIVER 05/19/2021	KASKIA RI	VER	Matrix: Moisture:	C: WATER B: NA	
Received:	Received: 05/19/2021	П	Samp	Sampling Time:	ime: 1440						
							Prep	Analysis	Prep	Analysis	Run
Analyte	te	LOD	ΓΟŌ	Flag	Result	Units	Method	Method	Date	Date	Number
Ammonia Nitrogen	en	0.020	0.030		0.29	MG/L	NONE	350.1	NA	05/26/21 06015919	06015919
Chlorophyll-a, Correcte	Correcte	1.0	1.0		19.5	MG/CU.M.	10200H	10200H	05/20/21	05/24/21	05265906
Nitrate as Nitrogen	rogen	0.0190	0.0200		1.9	MG/L	NONE	GREEN	NA	05/20/21	05215886
Pheophytin-a		1.0	1.0		10.1	MG/CU.M.	10200H	10200H	05/20/21	05/24/21	05265906
Phosphorus		0.00800	0.0100		0.714	MG/L	365.2	365.2	05/24/21	05/25/21	05265907
Solids, Total Suspended	Suspended	20.0	20.0		342	MG/L	NONE	160.2	NA	05/20/21	05245891
Solids, Volatile Suspen	le Suspen	1.0	1.0		28.0	MG/L	NONE	160.4	NA	05/20/21	05245892
Total Organic Carbon	Carbon	0.500	1.00		5.5	MG/L	NONE	415.1	NA	05/26/21	05285911

(a) DOD and/or NELAC Accredited Analyte.

Sample 008700-06, Inorganic Analyses

	Report Date: 06/11/2021	Analysis: Inorganics NELAC Certified - IL100308	Matrix: WATER Moisture: NA	Prep Analysis Run Date Date Number	NA 05/19/21 05215882	
G	Я	Z	/ER	Analysis Method	1604	
Box 1566 62864			KASKIA RIV	Prep Method	NONE	
ARDL, INC. Aviation Drive; P.O. H. Vernon, Illinois			CARLYLE LAKE/KASKASKIA RIVER 05/19/2021 1515	Units	COL/100 ML	
A iation Vernon				Result	3900	
400 Avi Mt.		/ER	Sampling Loc'n: Sampling Date: Sampling Time:	Flag		
		ASKIA RIV	San	год	1.00	
	Lab Report No: 008700	CARLYLE LAKE/KASKASKIA RIVER	008700-07 CAR-KP-MARINA 05/19/2021	te LOD	1.0	
	Lab Report	Project Name: Project No:	ARDL No: Field ID: Received:	Analyte	E. Coliform	

(a) DOD and/or NELAC Accredited Analyte.

Sample 008700-07, Inorganic Analyses

Aviation Drive; P.O. Box 1566 Mt. Vernon, Illinois 62864	Report Date: 06/11/2021	Analysis: Inorganics NELAC Certified - IL100308	CARLYLE LAKE/KASKASKIA RIVER Matrix: WATER 05/19/2021 1330	Prep Analysis Prep Analysis Run Units Method Method Date Date Number	COL/100 ML NONE 1604 NA 05/19/21 05215882
400 Aviation Drive; P.O Mt. Vernon, Illinois			Sampling Loc'n: CARLYLE LA Sampling Date: 05/19/2021 Sampling Time: 1330	Flag Result	225 CO
4		SKASKIA RIVER	Sampl Samp Samp	ТОО	1.00
	Lab Report No: 008700	CARLYLE LAKE/KASKASKIA RIVER	ARDL No: 008700-08 Field ID: CAR-DW-MARINA Received: 05/19/2021	e LOD	1.0
	Lab Report	Project Name: Project No:	ARDL No: 008700-08 Field ID: CAR-DW-MAR Received: 05/19/2021	Analyte	E. Coliform

ARDL, INC.

(a) DOD and/or NELAC Accredited Analyte.

Sample 008700-08, Inorganic Analyses

	Report Date: 06/11/2021	Analysis: Inorganics NELAC Certified - IL100308	Matrix: WATER Moisture: NA	Prep Analysis Run Date Date Number	NA 05/19/21 05215882
5	Ř	N	/ER	Analysis Method	1604
Box 1566 62864			ASKIA RIV	Prep Method	NONE
ARDL, INC. Aviation Drive; P.O. Ht. Vernon, Illinois			CARLYLE LAKE/KASKASKIA RIVER 05/19/2021 1345	Units	COL/100 ML
AR ation D Vernon,				Result	325
400 Avi Mt.		ER	Sampling Loc'n: Sampling Date: Sampling Time:	Flag	
		ASKIA RIV	S S S S S S S	LOQ	1.00
	008700	CARLYLE LAKE/KASKASKIA RIVER	21	LOD	1.0
		CARLYLE	008700-09 CAR-CSA 05/19/2021	te	
	Lab Report No:	Project Name: Project No:	ARDL No: Field ID: Received:	Analyte	E. Coliform

(a) DOD and/or NELAC Accredited Analyte.

Sample 008700-09, Inorganic Analyses

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

008700 Lab Report No: CARLYLE LAKE/KASKASKIA RIVER

Project Name: Project No:

Report Date: 06/11/2021

NELAC Certified - IL100308

Analysis: Inorganics

ARDL No: 008700-10 Field ID: KAS-1	0	Samp] Samp	Sampling Loc'n: Sampling Loc'n:		CARLYLE LAKE/KASKASKIA RIVER 05/19/2021	ASKIA RIV	VER	Matrix: Moisture.	: WATER • NA	
	21	Sam	Sampling Time:							
Analyte	LOD	LOQ	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
Ammonia Nitrogen	0.020	0.030		0.17	MG/L	NONE	350.1	NA	05/26/21 06015919	06015919
Chlorophyll-a, Correcte	1.0	1.0		24.2	MG/CU.M.	10200H	10200H	05/20/21	05/24/21	05265906
E. Coliform	1.0	1.00		600	COL/100 ML	NONE	1604	NA	05/19/21	05215882
Kjeldahl Nitrogen	0.19	0.20	Ŀ	1.9	MG/L	351.2	351.2	06/04/21	06/10/21	06115931
Nitrate as Nitrogen	0.0190	0.0200		1.49	MG/L	NONE	GREEN	NA	05/20/21	05215886
Nitrite as Nitrogen	0.0200	0.0200		0.089	MG/L	NONE	354.1	NA	05/20/21	05215887
Pheophytin-a	1.0	1.0		10.7	MG/CU.M.	10200H	10200H	05/20/21	05/24/21	05265906
Phosphorus	0.00800	0.0100		0.191	MG/L	365.2	365.2	05/24/21	05/25/21	05265907
Solids, Total Suspended	6.67	6.67		32.7	MG/L	NONE	160.2	NA	05/20/21	05245891

05/24/21 NA NA NA

365.2 NONE NONE NONE

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

Solids, Total Suspended Solids, Volatile Suspen Total Organic Carbon

6.67 1.0 1.00

0.500

1.0

160.4 160.2

415.1

6.1 ND

05/20/21 05245892 05/20/21 05245891

05/26/21 05285911

(a) DOD and/or NELAC Accredited Analyte.

Sample 008700-10, Inorganic Analyses

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

> 008700 Lab Report No:

Report Date: 06/11/2021

Inorganics

Analysis: Inorganics NELAC Certified - IL100308	Matrix: WATER	: NA
Analysis NELAC Certi:	Matrix	Moisture: NA
	Sampling Loc'n: CARLYLE LAKE/KASKASKIA RIVER	05/19/2021
Project Name: CARLYLE LAKE/KASKASKIA RIVER Project No:	Sampling Loc'n:	Sampling Date: 05/19/2021
CARLYLE LA	ARDL No: 008700-11	KAS-2
Project Name: Project No:	ARDL No:	Field ID: KAS-2

Received: 05/19/2021	21	Sam	il guild	Sampling Time: 1100						
Analyte	LOD	ГОО	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
Ammonia Nitrogen	0.020	0.030		0.042	MG/L	NONE	350.1	NA	05/26/21 06015919	06015919
Chlorophyll-a, Correcte	1.0	1.0		72.6	MG/CU.M.	10200H	10200H	05/20/21	05/24/21 05265906	5265906
E. Coliform	1.0	1.00		950	COL/100 ML	NONE	1604	NA	05/19/21 (05215882
Kjeldahl Nitrogen	0.19	0.20		1.6	MG/L	351.2	351.2	06/04/21	06/10/21 (06115931
Nitrate as Nitrogen	0.0190	0.0200		0.772	MG/L	NONE	GREEN	NA	05/20/21 (05215886
Nitrite as Nitrogen	0.0200	0.0200		0.022	MG/L	NONE	354.1	NA	05/20/21 (05215887
Pheophytin-a	1.0	1.0		18.5	MG/CU.M.	10200H	10200H	05/20/21	05/24/21 (05265906
Phosphorus	0.00800	0.0100		0.256	MG/L	365.2	365.2	05/24/21	05/25/21 0	05265907
Solids, Total Suspended	6.67	6.67		40.7	MG/L	NONE	160.2	NA	05/20/21 0	05245891
Solids, Volatile Suspen	1.0	1.0		6.7	MG/L	NONE	160.4	NA	05/20/21 0	05245892
Total Organic Carbon	0.500	1.00		5.0	MG/L	NONE	415.1	NA	05/26/21 (05285911

(a) DOD and/or NELAC Accredited Analyte.

Sample 008700-11, Inorganic Analyses

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

Lab Report No: 008700

Report Date: 06/04/2021

Project Name:	CARLYLE LAKE/KA	SKASK Analys	is: NP PEST	CICIDES (82	70SIM-MOD)		
Project No.:		Analytical Meth	od: 8270C				
NELAC Certi	fied - IL100308	Prep Meth	od: 3510C				
Field ID:	NA		ARDL Lab No	.: 0087	00-01B1		
Desc/Location:	NA		Lab Filenam	ne: E060	2103		
Sample Date:	NA		Received Da	ate: NA			
Sample Time:	NA		Prep. Date:	: 05/2	1/2021		
Matrix:	QC Material		Analysis Da	ate: 06/0	2/2021		
Amount Used:	1000 mL		Instrument	ID: AG5			
Final Volume:	1 mL		QC Batch:	B113	36		
% Moisture:	NA		Level:	LOW			
				8. ^{9.9.9.}	Data		
Parameter		LOD	LOQ	Result	Flag Unit	s	
Trifluralin		0.200	0.200	ND	UG/	'L	
Atrazine		0.200 0.200 ND U					
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/	/ T.	

SURROGATE RECOVERIES:	Limits	Results
Triphenylphosphate	30-130	74%

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

(a) DOD-QSM Accredited Analyte.

Blank for Run B11336, NP PESTICIDES (8270SIM-MOD)

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

Lab Report No: 008700

Report Date: 06/11/2021

1

NELAC Certified - IL100308 CARLYLE LAKE/KASKASKIA RIVER Project Name:

			Blank		Prep	Analysis	Prep	Analysis		QC Lab
Analyte	LOD	гоб	Result	Units	Method	Method	Date	Date	Run	Number
(a) Iron	0.040	0.050	ND	MG/L	3010A	6010C	05/24/21	05/25/21	P7518	008700-01B1
(a) Manganese	0.004	0.005	DN	MG/L	3010A	6010C	05/24/21	05/25/21	P7518	008700-01B1
Ammonia Nitrogen	0.020	0.030	ND	MG/L	NONE	350.1	NA	05/26/21 06015919	06015919	008700-01B1
Chlorophyll-a, Corre	1.0	1.0	ND	MG/CU.M.	10200H	10200H	05/20/21	05/24/21	05265906	008700-04B1
Kjeldahl Nitrogen	0.19	0.20	ND	MG/L	351.2	351.2	06/04/21	06/10/21	06115931	008700-10B1
Nitrate as Nitrogen	0.019	0.020	ND	MG/L	NONE	GREEN	NA	05/20/21	05215886	008700-01B1
Nitrite as Nitrogen	0.020	0.020	DN	MG/L	NONE	354.1	NA	05/20/21	05215887	008700-10B1
Pheophytin-a	1.0	1.0	ND	MG/CU.M.	10200H	10200H	05/20/21	05/24/21	05265906	008700-04B1
Phosphorus	0.008	0.010	ND	MG/L	365.2	365.2	05/24/21	05/25/21	05265907	008700-02B1
Solids, Total Suspen	1.0	1.0	ND	MG/L	NONE	160.2	NA	05/20/21	05245891	008700-03B1
Solids, Volatile Sus	1.0	1.0	ND	MG/L	NONE	160.4	NA	05/20/21	05245892	008700-03B1
Total Organic Carbon	0.50	1.0	ND	MG/L	NONE	415.1	NA	05/26/21	05285911	008700-01B1

(a) DOD and/or NELAC Accredited Analyte Inorganic Method Blanks for 008700

	ARDL, INC.		BLANK SPIKU 400 Aviati	SPIKE/SPIKE DU iation Drive;	UPLICA P.O.	NTE REPORT Box 1566	Mt. Ve	Vernon, IL	LL 62864	
Lab Report No:	008700							Rej	Report Date:	06/04/2021
Project Name: Ci	CARLYLE LAKE/KASKASK		Analysis: NP	PESTICIDES	DES (8270SIM-MOD)	(GOM-MI	Anal	Analytical M		00
Project No.:								Prep Method:	ethod: 3510C	00
Matrix: (QC Material		QC Bate		B11336		Prep. I	Date:	05/21/2021	1
Amount Used:	1000 mL		Level:	LOW	2		Analys	Analysis Date:	06/02/2021	1
		Spike	Spike	Spike	Duplicate	Duplicate	Duplicate	Recovery		RPD
Par.	Parameter	Result	Level	% Rec	Result	Level	\$ Rec	Limits	RPD	Limit
Trif	Trifluralin	2.25	4	56	1	1		30-130		
At.	Atrazine	2.97	4	74		1	-	30-130		
Met.	Metribuzin	2.95	4	74	-	1		30-130		}
AL	Alachlor	2.87	4	72	1	1	}	30-130		1
Meto	Metolachlor	2.92	4	73	ł		-	30-130	1	
Chlo	Chlorpyrifos	2.78	4	70	1	ł	1	30-130		
Cya	Cyanazine	3.11	4	78		ł	!	30-130	ļ	:
Pendi	Pendimethalin	2.94	ъ	74	1	ł	1	30-130	1	-
	SURROG	SURROGATE RECOVERIES:	ES:	Spik	Spike %R Dupl	Duplicate %R 4	%R Limits			
	Triphe	Triphenylphosphate		11	77.3	* 1	30-130			

(a) DOD-QSM Accredited Analyte.'*' indicates a recovery outside of standard limits.Spike Blanks for 008700-01, NP PESTICIDES (8270SIM-MOD)

Page 1 of 1

ARDL Report 8700 - Page 21 of 29

AR	ARDL, INC.	400 A	viation Drive; P.O.	400 Aviation Drive;	; P.O.	Вох	1566	Mt.	Vernon, 🗄	IL 62864
Lab Report No: 00	008700								Report Date:	Date: 06/11/2021
Project Name:	CARLYLE LAKE/KASKASKIA RIVER	LAKE/KAS	KASKIA I	RIVER					NELAC C	NELAC Certified - IL100308
Attriced	LCS 1	LCS 1	LCS 1	LCS 2	LCS 2	LCS 2	& Rec	Mean	Analytical	ul QC Lab Munhar
алутым	resurc	талап	A REC	result	талап	4 MeC	SJIMIT	4 KeC	ипи	TACIJION
(a) Iron	5.1	5.0	102	1	1	1	87-115	-	P7518	008700-01C1
(a) Manganese	0.80	0.75	106	-	1	ł	90-114	1	P7518	008700-01C1
Ammonia Nitrogen	1.1	1.0	105	ł	**	ł	80-120	ł	06015919	008700-01C1
Kjeldahl Nitrogen	1.1	1.0	108	1	ł	ł	80-120	1	06115931	008700-10C1
Nitrate as Nitrogen	0.95	1.0	95	1	!	ł	80-120	ł	05215886	008700-01C1
Nitrite as Nitrogen	1.1	1.0	107		ł	ł	80-120	ł	05215887	008700-10C1
Phosphorus	0.68	0.67	102	1		-	80-120	1	05265907	008700-02C1
Total Organic Carbon	19.5	20.0	98	1	ł	ł	76-120		05285911	008700-01C1
·										
NOTE: Any values tabulated above marked with an (a) DOD and/or NFLAC Accredited Analyte	NOTE; Any values tabulated above marked (a) DOD and/or NELAC Accredited Analyte	larked with alvte		asterisk are outside of acceptable limits.	ide of acc	eptable li	mits.			
		- 7								

Lab Report No:	008700	ARDL, INC. 4	MATRIX SPIKE, 400 Aviation	PIKE/SP] tion Dri	SPIKE/SPIKE DUPLICATE ation Drive; P.O. Box	ICATE REPORT . Box 1566		Mt. Vernon, IL Repoi	n, IL 62864 Report Date:		06/04/2021
Project Name: Project No.:	CARLYLE LAKE/KASKASK		Analysis:	NP	PESTICIDES (82	(8270SIM-MOD)		Analytical Prep	ical Method: Prep Method:	d: 8270C d: 3510C	
Field ID: CAR-1 Desc/Location: CARLYLE LAKE/KASKASKIA RI Sample Date: 05/19/2021 Sample Time: 1200 Matrix: WATER	CAR-1 CARLYLE LAR 05/19/2021 1200 WATER	KE/KASKASKIA		Prep. Date: Amount Used: % Moisture: QC Batch: Level:	05/21/2021 1000 mL NA B11336 LOW		R L R R	ARDL Lab No.: Lab Filename: Received Date Analysis Date		008700-01 05/19/2021 06/02/2021	
		Sample	MS	SM	WS	MSD	MSD	MSD	& Rec		RPD
Para	Parameter	Result	Result	Level	% Rec	Result I	Level	% Rec	Limits	RPD	Limit
Trifl	Trifluralin	QN	2.67	4	66.8	2.61	4	65.3	30-130	2.3	30
Atr	Atrazine	UN	2.87	4	71.8	2.78	4	69.5	30-130	3.2	30
Metr	Metribuzin	QN	2.73	4	68.3	2.62	4	65.5	30-130	4.1	30
Ala	Alachlor	QN	2.62	4	65.5	2.55	4	63.8	30-130	2.7	30
Metol	Metolachlor	DN	2.85	4	71.3	2.77	4	69.3	30-130	2.8	30
Chlor	Chlorpyrifos	QN	2.49	4	62.3	2.49	4	62.3	30-130	0	30
Cyan	Cyanazine	QN	2.85	4	71.3	2.87	4	71.8	30-130	0.7	30
Pendim	Pendimethalin	UN	2.58	ъ	64.5	2.62	4	65.5	30-130	1.5	30
	1 6				479 DX	48 U.M		4			
	מ	SURROGATE RECOVERIES:	ES:		MS %K	MSD %K	*K LIMITS	lts			

(a) DOD-QSM Accredited Analyte.

'nc' indicates sample >4X spike level.

'*' indicates a recovery outside of standard limits. Matrix Spikes for 008700-01, NP PESTICIDES (8270SIM-MOD)

Page l of l

30-130

67

67

Triphenylphosphate

	62864
	ΠL
	Vernon,
REPORT	Mt.
DUPLICATE 1	Box 1566
	P.O. B
SPIKE/SPIKE	Drive;
MATRIX SI	Aviation
	400
	INC.
	ARDL,

Lab Report No: 008700

Report Date: 06/11/2021

1

1

NELAC Certified - IL100308 CARLYLE LAKE/KASKASKIA RIVER Project Name:

	Sample	Sample	SM	SM	SM	MSD	MSD	MSD	% Rec		RPD		QC Lab
Analyte	Matrix	Result	Result	Level	% Rec	Result	Level	% Rec	Limits	RPD	Limit	Run	Number
(a) Iron	WATER	0.70	1.7	1.0	101	1.7	1.0	98	87-115	2	20	P7518	008700-01MS
(a) Manganese	WATER	0.073	0.60	0.50	105	0.58	0.50	102	90-114	ю	20	P7518	008700-01MS
Ammonia Nitrogen	WATER	0.30	2.5	2.0	111	2.0	2.0	85	75-125	23 *	20	06015919	008700-01MS
Kjeldahl Nitrogen	WATER	1.9	1.8	0.80	*	2.7	0.80	105	75-125	42 *	20	06115931	008700-10MS
Nitrate as Nitrogen	WATER	0.36	1.3	1.0	92	1.3	1.0	06	75-125	2	20	05215886	008700-01MS
Phosphorus	WATER	0.20	1.0	0.83	97	1.0	0.83	97	75-125	0	20	05265907	008700-02MS
Total Organic Carbon	WATER	3.7	8.8	5.0	102	9.2	5.0	110	76-120	5	20	05285911	008700-01MS

Inorganic Matrix Spikes for 008700

(a) DOD and/or NELAC Accredited Analyte.

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

Page 1 of 1

ARDL Report 8700 - Page 24 of 29

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

Lab Report No: 008700

CARLYLE LAKE/KASKASKIA RIVER

Project Name:

06/11/2021 Report Date: NELAC Certified - IL100308

QC Lab Number	008700-04D1	008700-04D1	008700-03D1	008700-03D1
Analytical Run	05265906	05265906	05245891	05245892
Mean (Smp,D1,D2)				
Percent Diff	0	30*	10	18
Units	MG/CU.M.	MG/CU.M.	MG/L	MG/L
First Second plicate Duplicate	-	ł		
Sample First Second Conc'n Duplicate Duplicate	16.2	8.8	121	12.0
Sample Conc'n	16.2	6.5	109	10.0
Analyte	Chlorophyll-a, Corrected	Pheophytin-a	Solids, Total Suspended	Solids, Volatile Suspend

Page 1 of 1 See Case Narrative for exceptions. * indicates that agreement between duplicates is greater than 20%. (a) DOD and/or NELAC Accredited Analyte

Sample Duplicates for 008700



Sample Receipt Information

Including as appropriate:

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

ARDL Data Package 8700

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

Authorized By: DSD-QAO

ODY RECORD	PRESERVATION	SPECIFY SPECIFY CHEMICALS ADDED AND FINAL PH IF KNOWN		X	X	X	X	X	X	X	X	X	X	X									
CHAIN OF CUSTODY RECORD			REMARKS OR SAMPLE LOCATION																				
										,													
																			ONS:				
Q		OS.	Shi																REMARKS/SPECIAL INSTRUCTIONS:				
870			NSN B	X			X		1	-	X	X		X	\mathbf{x}	\times			PECIAL IN	th H ₂ SO ₄ th HNO ₃			
2864	R	NEHN N	ST TAN	X X	X	X	X	X	H.	X			M I						MARKS/S	*Preserved with H ₂ SO ₄ #Preserved with HNO ₃			
/e, Mt. Vernon, IL 62864 (618) 244-1149 Fax		Od-1 Ogydi	201	X	X	X	X	X	X	X					XX	××			M RE	₽ ₽ ₽		_	
	0	10000 10000 10000 10000 10000 10000	SSJ	X	XX	X	XX	X	XXXX	XX					XX	XX			(Signature)	Signature)	et No.		
Aviation D ₁ 5 Phone	EKS	TS CONTAIN	ио. он	X	x X	x X	x X	x X	X	x X	x	x	X	X	XXX	X	-		Received by	Received by:	Shipping Ticket No.		
P.O. Box 1566, 400 Aviation Drive, Mt. V (618) 244-3235 Phone (618) 24		Kentshow	COMP	(XX)	1300	1315	1500	1600		0440	1515	1330	Ņ	1345 80-		1100			Time Ree			0081	
P.O. Bo. (6)		Shews Ke	DATE 1	Shelan 1	-	1 12	1	11		1	1 15	1	*	<u>_</u>	0	11	+		S/ISLN 13			02/19/21 18	
nc.				5								a	6										
ARDL, Inc	e	MPLERS: (Signature) Sen Greeling,	SAMPLE NUMBER		0 -	- 10			4	1.0	CAR - KP - Marina	CAR - DW - Marina	CAR BL - Marina		low	RAZI			ORelinquished by: (Signature)	(Signatu	Laboratory by:	Bleuminan	
RD	PROJECT Carlyle Lake	SAMPLERS: (Signature) [Sen Greels	SAMPLF	CAR-1	AR-2-	CAR - 2 -	CAR - 4	CAR - 13	CAR 12	CAR - 15	R-KP.	R-DW	RBL	CAR - CSA	KAS-IRMOI	(HS -) (inquished by	destinguished by	Deceived for La	-	
A	PR(Ca	SAI		C	Z-CAR	3 Cr	t CA		5	CA	CA	CA	B	CA CA		A	RDL	Re	ort 8	200-	Pag	est	Ċ

GURCHASE ORDER NO: _

<u>COOLER RECEIPT REPORT</u> ARDL, INC.									
ARDL #: 8700 Cooler # <u>Ked 1</u>			onti 7						
		اumber of Coolers in Shipm م <i>ر ا</i> اهار		•	-				
Pro	ject: <u>Carly Reake</u>	Date Received: <u>05/19/2</u>	.021						
A.	PRELIMINARY EXAMINATION PHASE: Date cooler was opened: 05/19/20)Z(Signature)							
1.	Did cooler come with a shipping slip (airbill, etc.)?		YES (NO)				
	If YES, enter carrier name and airbill number here: <u>ARDL_Cou</u>	vier-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?			NO					
5.	Were custody papers sealed in a plastic bag? Hand delivered								
6.	Were custody papers filled out properly (ink, signed, etc.)?	is unsigned	YES	NO	N/A				
7.	Were custody papers signed in appropriate place by ARDL personnel?	V			N/A				
8.	Was project identifiable from custody papers? If YES, enter project name at the	top of this form		ОмС	N/A				
9.	Was a separate container provided for measuring temperature? YESN	Observed Cooler Temp.	1.4) M	•				
В.	LOG-IN PHASE: Date samples were logged-in: 05/20/2021 (Sig	nature)_DCB	ction factor_(C				
10.									
11.	Were all samples sealed in separate plastic bags?		YES	\odot	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?			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	N/A				
19.	Was the ARDL project coordinator notified of any deficiencies?		YES	NO	\mathbb{N}^{A}				
	Comments and/or Corrective Action:	Sample T							
		Fraction	Fraction						
		Area #	Area #						
		Walk-In	By						
		DCR	Ly						
			On						
		05/20/2021	1						
		Chain-of-Custody #							
(E	By: Signature) Date:				-				

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COOLER RECEIPT REPORT								
ARDL, INC.								
AR	$DL #: \underline{\mathcal{O} \mathcal{T} \mathcal{O}}$	cooler # $Red Z$ 2						
		Number of Coolers in Shipm	ient: <u> </u>		-			
Pro	pject: <u>UATYPE Lake</u>	Date Received: <u>05/19/</u>	202					
A.	RCUS KASKUR RIVER PRELIMINARY EXAMINATION PHASE: Date cooler was opened: 05/19/2	202 (Signature)	-					
1.	Did cooler come with a shipping slip (airbill, etc.)?		YES	NO				
	If YES, enter carrier name and airbill number here: <u>ARDL</u> C	ourier-Valer	ie					
2.	Were custody seals on outside of cooler?			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? Hand delivered	f ;		NO				
6.	Were custody papers sealed in a plastic bag? <i>Hand delivered</i> Were custody papers filled out properly (ink, signed, etc.)? <u>Cross</u> — <i>thru</i>	s Unsighed	YES	NO	N/A			
7.	Were custody papers signed in appropriate place by ARDL personnel?		\sim		N/A			
8.	Was project identifiable from custody papers? If YES, enter project name at the	e top of this form		NO	N/A			
9.	Was a separate container provided for measuring temperature? YESN	NO Observed Cooler Temp	$\frac{10}{100}$		~			
В.	LOG-IN PHASE: Date samples were logged-in: 05/20/2021 (Sig	gnature) DCB			C			
10.	Describe type of packing in cooler: <u>LOOSE</u>							
11.	Were all samples sealed in separate plastic bags?		YES	NO) _{N/A}			
12.	Did all containers arrive unbroken and were labels in good condition?			NO				
13,	Were sample labels complete?		YES) NO				
14.	Did all sample labels agree with custody papers?		YES	NO NO				
15.	Were correct containers used for the tests indicated?		YES) NO				
16.	Was pH correct on preserved water samples?) NO	N/A			
17.	Was a sufficient amount of sample sent for tests indicated?) NO				
18.	Were bubbles absent in VOA samples? If NO, list by sample #:		YES	NO	(N/A)			
19.	Was the ARDL project coordinator notified of any deficiencies?		YES	NO	(N/A)			
	Comments and/or Corrective Action:	Sample 7						
		Fraction	Fraction					
-		Area #	Area #					
		Walk-In						
		"INCR	Ву					
		On	On					
		05/20/2021						
		Chain-of-Custody #	Managana and and a second s					
(E	By: Signature) Date:	,						

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Environmental | Analytical | Management | Safety

Customer Name: SLCOE

Project Name: Carlyle Lake

Samples Received at ARDL: 7/6/21

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

<u>www.ardlinc.com</u>

Date: 7/26/21

Lab Name: ARDL, Inc.

ARDL Report No.: 8732

CASE NARRATIVE

Customer	Date	Lab ID	
<u>Sample No.</u>	<u>Collected</u>	<u>Number</u>	Analyses Requested
CAR-1	7/06/21	8732-01	NP Pesticides, Metals(1), Inorganics(2)
CAR-2-0	7/06/21	8732-02	NP Pesticides, Inorganics(2)(3)
CAR-2-10	7/06/21	8732-03	Metals(1), Inorganics(2)
CAR-4	7/06/21	8732-04	NP Pesticides, Inorganics(2)(3)
CAR-13	7/06/21	8732-05	NP Pesticides, Inorganics(2)
CAR-12	7/06/21	8732-06	NP Pesticides, Inorganics(2)(3)
CAR-15	7/06/21	8732-07	NP Pesticides, Inorganics(2)(3)
CAR-KP-Marina	7/06/21	8732-08	E. Coli
CAR-DW-Marina	7/06/21	8732-09	E. Coli
CAR-BL-Marina	7/06/21	8732-10	E. Coli
CAR-CSA-Marina	7/06/21	8732-11	E. Coli

(1) Including iron and manganese.

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

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

The quality control data are summarized as follows:

NP PESTICIDE FRACTION – METHOD 8270-SIM

HOLDING TIME

Samples were prepared and analyzed within method specified holding times.

INITIAL CALIBRATION

The initial calibration passed criteria.

CONTINUING CALIBRATION

The continuing calibration verification (CCV) passed criteria for all analytes, except as noted below. The following table shows the exceedances of the CCVs (±20%) and Closing CCVs (±50%).

Analyte	CCV	<u>Closing</u>
Alachlor	+21%	Pass

Note: No alachlor was detected in any field sample.

PREPARATION BLANK

The blank met acceptance criteria.

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

Project Name: Carlyle Lake

CASE NARRATIVE (Continued)

LABORATORY CONTROL SAMPLE

The LCS analyses met recovery criteria.

MATRIX SPIKE

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

<u>Analyte</u>	MS Recovery	MSD Recovery	Recovery Limit
Metolachlor	27.5%	91.5%	30-130%

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

DUPLICATE

Duplicate analyses are reported as MS/MSD. RPD of the duplicate analyses met criteria, except atrazine at 61.8% and metolachlor at 50.1%. The parent sample results are flagged with a 'J' qualifier as appropriate.

INTERNAL STANDARDS

All internal standard criteria were met.

<u>SURROGATES</u>

All surrogate recovery criteria were met.

INORGANIC FRACTION

TOC analyses were subcontracted to Eurofins - TestAmerica Laboratory Network.

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, except for TVSS which was ± the detection limit and therefore acceptable.

DATA REPORTING QUALIFIERS

The following data reporting qualifiers are used as required:

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

Page 2 of 3

Project Name: Carlyle Lake

ARDL Report No.: 8732

CASE NARRATIVE (Continued)

REPORT ORGANIZATION

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

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

Dean S. Dickerson Technical Services Manager

Page 3 of 3



Sample & QC Results

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

ARDL Data Package 8732

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

Authorized By: DSD-QAO

ARDL Report 8732 - Page 4 of 32

Lab Report No: 008732

Report Date: 07/15/2021

Project Name: Project No.: NELAC Certi:	CARLYLE LAKE fied - IL100308	Analytical Me)ES (82 ⁻	70SIM-MO	D)
Field ID:	CAR-1			Lab No.:	00873		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
Desc/Location:				lename:			
Sample Date:	07/06/2021			ved Date:		5/2021	
Sample Time:	0930		-	Date:		7/2021	
Matrix:	WATER		Analys	sis Date:	07/14	4/2021	
Amount Used:	900 mL		Instru	ument ID:	AG5		
Final Volume:	1 mL		QC Bat	cch:	B113	67	
% Moisture:	NA		Level	:	LOW		
			*****		Data		Dilution
Parameter		LOD	LOQ	Result	Flag	Units	Factor
Trifluralin		0.222	0.222	ND		UG/L	1
Atrazine		0.222	0.222	0.856	J	UG/L	1
Metribuzin		0.222	0.222	ND		UG/L	1
Alachlor		0.222	0.222	ND		UG/L	1
Metolachlor		0.222	0.222	3.03	J	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%	Í
		······································	

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

(a) DOD-QSM Accredited Analyte.

Sample 008732-01, NP PESTICIDES (8270SIM-MOD)

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

> 008732 Lab Report No:

CARLYLE LAKE

Project Name:

07/26/2021 Report Date: Analysis: Inorganics

Project No:							Z	ELAC Certi	NELAC Certified - IL100308	00308
ARDL No: 008732-01 Field ID: CAR-1 Received: 07/06/2021	11	Sampling Samplin Samplin	ם מ		CARLYLE LAKE 07/06/2021 0930			Matrix: Moisture:	:: WATER :: NA	
Analyte	LOD	Γοδ	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
(a) Iron	0.0400	0.0500		0.288	MG/L	3010A	6010C	07/19/21	07/20/21	P7553
(a) Manganese	0.00400	0.00500		0.144	MG/L	3010A	6010C	07/19/21	07/20/21	P7553
Ammonia Nitrogen	0.0200	0.0300		0.197	MG/L	NONE	350.1	NA	07/08/21 (07086018
Nitrate as Nitrogen	0.0190	0.0200		0.020	MG/L	NONE	GREEN	NA	07/07/21 (07136037
Phosphorus	0.00800	0.0100		0.355	MG/L	365.2	365.2	07/20/21	07/21/21 (07226079
Solids, Total Suspended	1 4.0	4.00		13.6	MG/L	NONE	160.2	NA	07/07/21 (07126024
Solids, Volatile Suspen	4.0	4.00		6.0	MG/L	NONE	160.4	NA	07/07/21 (07126025
Total Organic Carbon	0.500	1.00		6.1	MG/L	NONE	415.1	NA	07/11/21 (07166058

(a) DOD and/or NELAC Accredited Analyte.

Sample 008732-01, Inorganic Analyses

Lab Report No: 008732

Report Date: 07/15/2021

Project Name: Project No.: NELAC Certi:	CARLYLE LAKE fied - IL100308	Analytical Me	4		DES (82 ⁻	70SIM-MO	D)
Field ID:	CAR-2		ARDL 1	Lab No.:	00873	32-02	
Desc/Location:	CARLYLE LAKE		Lab F:	ilename:	E0714	4108	
Sample Date:	07/06/2021		Receiv	ved Date:	07/00	6/2021	
Sample Time:	1100		Prep.	Date:	07/0	7/2021	
Matrix:	WATER		Analys	sis Date:	07/14	4/2021	
Amount Used:	900 mL		Instru	ument ID:	AG5		
Final Volume:	1 mL		QC Bat	tch:	B113	67	
<pre>% Moisture:</pre>	NA		Level	:	LOW		
					Data		Dilution
Parameter		LOD	LOQ	Result	Flag	Units	Factor
Trifluralin	77	0.222	0.222	ND		UG/L	1
Atrazine		0.222	0.222	0.511		UG/L	1
Metribuzin		0.222	0.222	ND		UG/L	1
Alachlor		0.222	0.222	ND		UG/L	1
Metolachlor		0.222	0.222	2.03		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	54%	

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

(a) DOD-QSM Accredited Analyte.

Sample 008732-02, NP PESTICIDES (8270SIM-MOD)

Lab Report No: 008732

Project Name: CARLYLE LAKE

Report Date: 07/26/2021

Analysis: Inorganics

Project No:							2	IELAC Certi	NELAC Certified - IL100308	00308
ARDL No: 008732-02 Field ID: CAR-2 Received: 07/06/2021	2 21	Sampl Samp Samp	Sampling Loc'n: Sampling Date: Sampling Time:		CARLYLE LAKE 07/06/2021 1100			Matrix: Moisture:	K: WATER 8: NA	
Analyte	ΓOD	LOQ	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
Ammonia Nitrogen	0.0200	0.0300		0.090	MG/L	NONE	350.1	NA	07/08/21 07086018	07086018
Chlorophyll-a, Correcte	1.0	1.00		32.7	MG/CU.M.	10200H	10200H	07/07/21	07/12/21 07146045	07146045
Nitrate as Nitrogen	0.0190	0.0200		DN	MG/L	NONE	GREEN	NA	07/07/21 07136037	07136037
Pheophytin-a	1.0	1.00		з . 5	MG/CU.M.	10200H	10200H	07/07/21	07/12/21	07146045
Phosphorus	0.00800	0.0100		0.269	MG/L	365.2	365.2	07/20/21	07/21/21	07226079
Solids, Total Suspended	4.0	4.00		10.4	MG/L	NONE	160.2	NA	07/07/21 (07126024
Solids, Volatile Suspen	4.0	4.00		6.4	MG/L	NONE	160.4	NA	07/07/21	07126025
Total Organic Carbon	0.500	1.00		6.0	MG/L	NONE	415.1	NA	07/11/21 (07166058

(a) DOD and/or NELAC Accredited Analyte.

Sample 008732-02, Inorganic Analyses

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

Lab Report No: 008732

Report Date: 07/26/2021

Project Name: CARI Project No:	CARLYLE LAKE							N	Analysis: Inorganics NELAC Certified - IL100308	: Inorganics fied - IL1003	ics 00308
ARDL No: 0087 Field ID: CAR- Received: 07/0	008732-03 CAR-2-10 07/06/2021		Sampling Sampling Sampling	ampling Loc'n: Sampling Date: Sampling Time:		CARLYLE LAKE 07/06/2021 1100			Matrix: Moisture:	: WATER : NA	
Analyte	LOD		ΓΟŐ	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
(a) Iron	0.0400	400	0.0500		1.07	MG/L	3010A	6010C	07/19/21	07/20/21	P7553
(a) Manganese	0.00400	400	0.00500		0.314	MG/L	3010A	6010C	07/19/21	07/20/21	P7553
Ammonia Nitrogen	0.0200	200	0.0300		0.0915	MG/L	NONE	350.1	NA	07/08/21 (07086018
Nitrate as Nitrogen	0.0190	190	0.0200		0.049	MG/L	NONE	GREEN	NA	07/07/21 (07136037
Phosphorus	0.00800	300	0.0100		0.377	MG/L	365.2	365.2	07/20/21	07/21/21 (07226079
Solids, Total Suspended	ended 4.0	0	4.00		26.4	MG/L	NONE	160.2	NA	07/07/21 (07126024
Solids, Volatile Suspen	Ispen 4.0	0	4.00		4.4	MG/L	NONE	160.4	NA	07/07/21 (07126025
Total Organic Carbon	on 0.500	00	1.00		5.0	MG/L	NONE	415.1	NA	07/11/21 (07166058

(a) DOD and/or NELAC Accredited Analyte.

Sample 008732-03, Inorganic Analyses

Lab Report No: 008732

Report Date: 07/15/2021

Project Name: Project No.: NELAC Certi:	CARLYLE LAKE fied - IL100308	Analytical Me	4		DES (827	70SIM-MO	D)
Field ID:	CAR-4		ARDL 1	Lab No.:	00873	32-04	
Desc/Location:	CARLYLE LAKE		Lab F:	ilename:	E0714	1109	
Sample Date:	07/06/2021		Receiv	ved Date:	07/06	5/2021	
Sample Time:	1230		Prep.	Date:	07/01	7/2021	
Matrix:	WATER		Analy	sis Date:	07/14	4/2021	
Amount Used:	1000 mL		Instru	ument ID:	AG5		
Final Volume:	1 mL		QC Bat	tch:	B1136	57	
% 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	1.38		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	4.65		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	66%	

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

(a) DOD-QSM Accredited Analyte.

Sample 008732-04, NP PESTICIDES (8270SIM-MOD)

008732 Lab Report No:

Report Date: 07/26/2021

Project Name: CARLYLE LAKE Project No:	LAKE						Z	Analysis ELAC Certi	Analysis: Inorganics NELAC Certified - IL100308	ics 00308
ARDL No: 008732-04 Field ID: CAR-4 Received: 07/06/2021	04 021	Sampling Samplin Samplin	ם מים		CARLYLE LAKE 07/06/2021 1230			Matrix: Moisture:	: WATER : NA	
Analyte	LOD	год	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
Ammonia Nitrogen	0.0200	0.0300	Ŀ	0.0225	MG/L	NONE	350.1	NA	07/08/21 07086018	7086018
Chlorophyll-a, Correcte	e 1.0	1.00		78.1	MG/CU.M.	10200H	10200H	07/07/21	07/12/21	07146045
Nitrate as Nitrogen	0.0190	0.0200		ND	MG/L	NONE	GREEN	NA	07/07/21	07136037
Pheophytin-a	1.0	1.00		15.3	MG/CU.M.	10200H	10200H	07/07/21	07/12/21	07146045
Phosphorus	0.00800	0.0100		0.239	MG/L	365.2	365.2	07/20/21	07/21/21	07226079
Solids, Total Suspended	d 4.0	4.00		16.4	MG/L	NONE	160.2	NA	07/07/21	07126024
Solids, Volatile Suspen	n 4.0	4.00		8.8	MG/L	NONE	160.4	NA	07/07/21	07126025
Total Organic Carbon	0.500	1.00		6.5	MG/L	NONE	415.1	NA	07/11/21 (07166058

(a) DOD and/or NELAC Accredited Analyte.

Sample 008732-04, Inorganic Analyses

Lab Report No: 008732

Report Date: 07/15/2021

Project Name: Project No.:	CARLYLE LAKE	Ana. Analytical Me	-	PESTICIE	DES (827	0SIM-MO	D)
	fied - IL100308		ethod: 35				
Field ID:	CAR-13	2 m · · · · · · · · · · · · · · · · · ·	ARDL 1	Lab No.:	00873	2-05	
Desc/Location:	CARLYLE LAKE		Lab F:	ilename:	E0714	110	
Sample Date:	07/06/2021		Receiv	ved Date:	07/06	/2021	
Sample Time:	1415		Prep.	Date:	07/07	/2021	
Matrix:	WATER		Analys	sis Date:	07/14	/2021	
Amount Used:	900 mL		Instru	ument ID:	AG5		
Final Volume:	1 mL		QC Bat	cch:	B1136	7	
<pre>% Moisture:</pre>	NA		Level	:	LOW		
					Data		Dilution
Parameter		LOD	LOQ	Result	Flag	Units	Factor
Trifluralin		0.222	0.222	ND		UG/L	1
Atrazine		0.222	0.222	0.878		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	1.60		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%	

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

(a) DOD-QSM Accredited Analyte.

Sample 008732-05, NP PESTICIDES (8270SIM-MOD)

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

> 008732 Lab Report No:

Report Date: 07/26/2021

Project Name: CARLY Project No:	CARLYLE LAKE						N	Analysis ELAC Certi	Analysis: Inorganics NELAC Certified - IL100308	ics 00308
ARDL No: 008732-05 Field ID: CAR-13 Received: 07/06/202	008732-05 CAR-13 07/06/2021	Sampling Samplin Samplin	0 0		CARLYLE LAKE 07/06/2021 1415			Matrix: Moisture:	: WATER : NA	
Analyte	LOD	ΓΟŐ	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
Ammonia Nitrogen	0.0200	0.0300		0.0402	MG/L	NONE	350.1	NA	07/08/21 07086018	07086018
Nitrate as Nitrogen Phosphorus	0.0950 0.00800	0.100		3.14 0.269	MG/L MG/L	NONE 365.2	GREEN 365.2	NA 07/20/21	07/07/21 07136037 07/21/21 07226079	07136037 07226079
Solids, Total Suspended		4.00		41.6	MG/L	NONE	160.2	NA	07/07/21 07126024	07126024
Solids, Volatile Suspen	pen 4.0	4.00		ND	MG/L	NONE	160.4	NA	07/07/21	07126025
Total Organic Carbon	0.500	1.00		3.8	MG/L	NONE	415.1	NA	07/11/21 07166058	07166058

(a) DOD and/or NELAC Accredited Analyte.

Sample 008732-05, Inorganic Analyses

Lab Report No: 008732

Report Date: 07/15/2021

Project Name: Project No.: NELAC Certi	CARLYLE LAKE fied - IL100308	Analytical Me	-		DES (827	/OSIM-MO	D)
Field ID:	CAR-12		ARDL 1	Lab No.:	00873	32-06	
Desc/Location:	CARLYLE LAKE		Lab F:	ilename:	E0714	1111	
Sample Date:	07/06/2021		Receiv	ved Date:	07/06	5/2021	
Sample Time:	1505		Prep.	Date:	07/01	7/2021	
Matrix:	WATER		Analy	sis Date:	07/14	4/2021	
Amount Used:	900 mL		Instru	ument ID:	AG5		
Final Volume:	1 mL		QC Bat	tch:	B113	57	
% 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	0.500		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	1.02		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	52%	

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

(a) DOD-QSM Accredited Analyte.

Sample 008732-06, NP PESTICIDES (8270SIM-MOD)

Lab Report No: 008732 Project Name: CARLYLE LAKE Project No: Project No: ARDL No: 008732-06 Field ID: CAR-12 Received: 07/06/2021 Analyte L Ammonia Nitrogen 0. Chlorophyll-a, Correcte 1 Nitrate as Nitrogen 0. Pheophytin-a 0.0	008732 LE LAKE 22-06 22-06 1.0D 1.0 0.0950 0.00800	400 M Sampling Sampling Sampling I.00 1.00 0.100 0.0100 0.0100	400 Aviat: Mt. Ve: mpling Loc'n: sampling Date: Sampling Time: rFlag Re 0 0.00	Aviation Dr Loc'n: CARLY Date: 07/06 Time: 1505 g Result 0.0437 10.9 3.03 1.8 0.204	Aviation Drive; P.O. Mt. Vernon, Illinois g Loc'n: CARLYLE LAKE ng Date: 07/06/2021 ng Time: 1505 lag Result Units 0.0437 MG/L 10.9 MG/L 1.8 MG/CU.M. 0.204 MG/L	Box 1566 62864 Prep / Method NONE 10200H NONE 10200H NONE 10200H S65.2	Analysis Method 350.1 10200H GREEN 10200H 365.2	Report Date: 07/26/2021 Analysis: Inorganics Analysis: Inorganics Matrix: WATER Matrix: WATER Moisture: NA Prep Analysis Rub Date NA 07/08/21 NA 07/07/21 NA 07/07/21 NA 07/07/21 NA 07/07/21 NA 07/07/21 NA 07/07/21 07/07/21 07/1266 07/07/21 07/1261 07/07/21 07/1261 07/07/21 07/2266	: 07/26/2021 : Inorganics fied - IL1003 : WATER : WATER : NA : NA : NA Date Nu 07/02/21 071 07/12/21 071 07/12/21 071 07/12/21 071 07/12/21 071	021 ics 00308 00308 Run Number 07146045 07146045 07136037 07146045
Solids, Total Suspended Solids, Volatile Suspen	а 4.0	4.00 4.00		57.2 4.8	MG/L MG/L	NONE NONE	160.2 160.4	NA NA	07/07/21 07/07/21	07126024 07126025
Total Organic Carbon	0.500	1.00		3.6	MG/L	NONE	415.1	NA	07/11/21	07166058

Sample 008732-06, Inorganic Analyses

Lab Report No: 008732

Report Date: 07/15/2021

Project Name: Project No.: NELAC Certi	CARLYLE LAKE fied - IL100308	Analytical Me	-		DES (827	OSIM-MO	D)
Field ID:	CAR-15		ARDL I	Lab No.:	00873	32-07	
Desc/Location:	CARLYLE LAKE		Lab Fi	llename:	E0714	1112	
Sample Date:	07/06/2021		Receiv	ved Date:	07/06	5/2021	
Sample Time:	1230		Prep.	Date:	07/01	//2021	
Matrix:	WATER		Analys	sis Date:	07/14	1/2021	
Amount Used:	1000 mL		Instru	ument ID:	AG5		
Final Volume:	1 mL		QC Bat	cch:	B1136	57	
% 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	1.39		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	4.68		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	67%	Ì

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

(a) DOD-QSM Accredited Analyte.

Sample 008732-07, NP PESTICIDES (8270SIM-MOD)

008732 Lab Report No:

Report Date: 07/26/2021

Project Name: Project No:	CARLYLE LAKE	AKE						Ν	Analysis: Inorganics NELAC Certified - IL100308	: Inorganics fied - IL1003	ics 00308
ARDL No: Field ID: Received:	008732-07 CAR-15 07/06/2021	н	Sampling Samplin Samplin	ampling Loc'n: Sampling Date: Sampling Time:	_	CARLYLE LAKE 07/06/2021 1230			Matrix: Moisture:	: WATER : NA	
Analyte	t e	LOD	LOQ	ғlag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Numbe <i>r</i>
Ammonia Nitrogen Chlorophyll-a, Correcte Nitrate as Nitrogen Pheophytin-a Phosphorus Solids, Total Suspended Solids, Volatile Suspen Total Organic Carbon		0.0200 1.0 0.0190 1.0 0.00800 4.0 0.500	0.0300 1.00 0.0200 1.00 4.00 4.00 1.00		0.0301 68.1 68.1 0.119 10.7 0.208 21.2 10.4 6.7	MG/L MG/CU.M. MG/CU.M. MG/L MG/L MG/L MG/L	NONE 10200H NONE 10200H 365.2 NONE NONE NONE	350.1 10200H GREEN 10200H 365.2 160.4 415.1	NA 07/07/21 NA 07/07/21 07/20/21 NA NA NA	07/08/21 07086018 07/12/21 07146045 07/07/21 07146045 07/12/21 07146045 07/21/21 07126079 07/07/21 07126024 07/07/21 07126025	07086018 07146045 07136037 07146045 07146045 07126024 07126025 07166058

(a) DOD and/or NELAC Accredited Analyte.

Sample 008732-07, Inorganic Analyses

	Report Date: 07/26/2021	Analysis: Inorganics NELAC Certified - IL100308	Matrix: WATER Moisture: NA	Analysis Prep Analysis Run Method Date Date Number	1604 NA 07/06/21 07136038
Box 1566 62864				Prep <i>1</i> Method	NONE
ARDL, INC. Aviation Drive; P.O. F (t. Vernon, Illinois (CARLYLE LAKE 07/06/2021 1250	Units	COL/100 ML
ARL ation Dr Vernon,				Result	100
400 Avi Mt.			Sampling Loc'n: Sampling Date: Sampling Time:	Flag	
			Samr San San	LOQ	1.00
	No: 008732	CARLYLE LAKE	008732-08 CAR-KP-MARINA 07/06/2021	LOD	1.0
	Lab Report No: 008732	Project Name: C Project No:	ARDL No: 0 Field ID: C Received: 0	Analyte	E. Coliform

Sample 008732-08, Inorganic Analyses

S	Report Date: 07/26/2021	Analysis: Inorganics NELAC Certified - IL100308	Matrix: WATER Moisture: NA	Analysis Prep Analysis Run Method Date Date Number	1604 NA 07/06/21 07136038	
Box 1566 62864				Prep Method	NONE	
ARDL, INC. Aviation Drive; P.O.] ft. Vernon, Illinois			CARLYLE LAKE 07/06/2021 1130	Units	COL/100 ML	
ARI ation Dı Vernon,				Result	150	
400 Avi Mt.			Sampling Loc'n: Sampling Date: Sampling Time:	Flag		
			Samj Sar Sar	ΓΟŐ	1.00	
	Vo: 008732	CARLYLE LAKE	008732-09 CAR-DW-MARINA 07/06/2021	LOD	1.0	
	Lab Report No: 008732	Project Name: C Project No:	ARDL No: 0 Field ID: C Received: 0	Analyte	E. Coliform	

Sample 008732-09, Inorganic Analyses

Box 1566 62864	Report Date: 07/26/2021	Analysis: Inorganics NELAC Certified - IL100308	Matrix: WATER Moisture: NA	Prep Analysis Prep Analysis Run Method Method Date Number	NONE 1604 NA 07/06/21 07136038	
ARDL, INC. 400 Aviation Drive; P.O. Bo Mt. Vernon, Illinois 62			Sampling Loc'n: CARLYLE LAKE Sampling Date: 07/06/2021 Sampling Time: 1303	LOQ Flag Result Units M	1.00 400 COL/100 ML	
	Lab Report No: 008732	Project Name: CARLYLE LAKE Project No:	ARDL No: 008732-10 Field ID: CAR-BL-MARINA Received: 07/06/2021	Analyte LOD	E. Coliform 1.0	

Sample 008732-10, Inorganic Analyses

	Report Date: 07/26/2021	Analysis: Inorganics NELAC Certified - IL100308	Matrix: WATER Moisture: NA	Prep Analysis Run Date Date Number	NA 07/06/21 07136038
و	Re	NE		Analysis Method	1604
Box 1566 62864				Prep Method	NONE
ARDL, INC. Aviation Drive; P.O. Mt. Vernon, Illinois			CARLYLE LAKE 07/06/2021 1120	Units	COL/100 ML
AR ation D Vernon,				Result	125
400 Avi Mt.			Sampling Loc'n: Sampling Date: Sampling Time:	Flag	
			Samr San San	TOQ	1.00
	No: 008732	CARLYLE LAKE	008732-11 CAR-CSA-MARINA 07/06/2021	ce LOD	1.0
	Lab Report No:	Project Name: Project No:	ARDL No: Field ID: Received:	Analyte	E. Coliform

Sample 008732-11, Inorganic Analyses

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

Lab Report No: 008732

Report Date: 07/15/2021

2	YLE LAKE	-	sis: NP PEST	FICIDES (82	270SIM-M) (DC
Project No.:		Analytical Meth				
NELAC Certified	- IL100308	Prep Metl	nod: 3510C			
Field ID: NA			ARDL Lab No	o.: 008 ⁻	732-01B1	
Desc/Location: NA			Lab Filenar	ne: E07	14103	
Sample Date: NA			Received Da	ate: NA		
Sample Time: NA			Prep. Date	: 07/	07/2021	
Matrix: QC M	Material		Analysis Da	ate: 07/	14/2021	
Amount Used: 1000) mL		Instrument	ID: AG5		
Final Volume: 1 ml	L		QC Batch:	B11	367	
% 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	5:	Limit	S	R	esults	
Triphenylphosphate		30-13	0		88%	

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

(a) DOD-QSM Accredited Analyte.

Blank for Run B11367, NP PESTICIDES (8270SIM-MOD)

Page 1 of 1

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

Lab Report No: 008732

CARLYLE LAKE

Project Name:

Report Date: 07/26/2021

62864

NELAC Certified - IL100308

		5	Blank	:	Prep	Analysis	Prep	Analysis	1	QC Lab
Analyte	гол	ТОЙ	Result	Units	Method	Method	Date	Date	Run	Number
(a) Iron	0.040	0.050	QN	MG/L	3010A	6010C	07/19/21	07/20/21	P7553	008732-01B1
(a) Manganese	0.004	0.005	ND	MG/L	3010A	6010C	07/19/21	07/20/21	P7553	008732-01B1
Ammonia Nitrogen	0.020	0.030	DN	MG/L	NONE	350.1	NA	07/08/21 0	07086018	008732-01B1
Chlorophyll-a, Corre	1.0	1.0	QN	MG/CU.M.	1020H	10200H	07/07/21	07/12/21 0	07146045	008732-04B1
Nitrate as Nitrogen	0.019	0.020	DN	MG/L	NONE	GREEN	NA	07/07/21 0	07136037	008732-02B1
Pheophytin-a	1.0	1.0	DN	MG/CU.M.	1020H	10200H	07/07/21	07/12/21 0	07146045	008732-04B1
Phosphorus	0.008	0.010	ND	MG/L	365.2	365.2	07/20/21	07/21/21 0	07226079	008732-07B1
Solids, Total Suspen	1.0	1.0	ND	MG/L	NONE	160.2	NA	07/07/21 0	07126024	008732-01B1
Solids, Volatile Sus	1.0	1.0	ND	MG/L	NONE	160.4	NA	07/07/21 0	07126025	008732-01B1
Total Organic Carbon	0.50	1.0	DN	MG/L	NONE	415.1	NA	07/11/21 0	07166058	008732-01B1

(a) DOD and/or NELAC Accredited Analyte Inorganic Method Blanks for 008732

ARDL	ARDL, INC.	BLANK 400 A	5	/SPIKE] n Drive	DUPLICAT ; P.O. F	SPIKE/SPIKE DUPLICATE REPORT iation Drive; P.O. Box 1566	Mt. Ve	Mt. Vernon, IL		62864
Lab Report No: 008732								Re	Report Date:	ce: 07/15/2021
Project Name: CARLYLE LAKE Project No.:		Ana	Analysis: NP	PESTICIDES		(8270SIM-MOD)	Anal	Analytical N Prep N	ical Method: 8 Prep Method: 3	8270C 3510C
Matrix: QC Material Amount Used: 1000 mL			QC Batch: Level:	1: B11367 LOW	367		Prep. Analys	Prep. Date: Analysis Date:	07/07/2021 07/14/2021	2021 2021
		Spike	Spike	Spike	Duplicate	Duplicate	Duplicate	Recovery		RPD
Parameter	ц	Result	Level	% Rec	Result	Level	% Rec	Limits	RPD	Limit
Trifluralin		3.74	Ą	94	1		-	30-130	-	
Atrazine		3.67	4	92		!		30-130	ł	1
Metribuzin		3.61	4	06	!		1	30-130	1	1
Alachlor		3.97	4	66	{	1	-	30-130	1	!
Metolachlor		3.68	4	92	1	1	1	30-130		!
Chlorpyrifos		3.63	4	91	ł	!	!	30-130	1	!
Cyanazine		3.87	4	97	{	ł	1	30-130	ł	!
Pendimethalin		3.63	4	91	1	-	1	30-130	1	-
St	SURROGATE RECOVERIES:	COVERIES:		Spik	Spike %R Dup	Duplicate %R %	%R Limits			
τ	Triphenylphosphate	sphate		87	87.5	1	30-130			
I										

(a) DOD-QSM Accredited Analyte.

'*' indicates a recovery outside of standard limits. Spike Blanks for 008732-01, NP PESTICIDES (8270SIM-MOD)

Page 1 of 1

ARDL Report 8732 - Page 24 of 32

1: OB3132 Report Late: Report Late: Report Late: NLAC Certifie a: CARLYLE LAKE LK: NE: NE.	1: 008732 2: 008732 Report Date: 07/2 e: CARLYLE LAKE NELAC Certified Enc. 1:: Lids1 Ics1 Ics1 Ics2 Kep Men Analytical Certified 1:: 1:: 1:: 1:: 1:: 1:: 1:: 1:: 0:: 1:: 0::	0: 008732 3: 008732 Report Date: 07/ 1: CARLYLE LAKE ICS 1	A	ARDL, INC.	400 Aviation Drive; P.O.	viatio	ר ד ד ד ר						
Name: CARLYLE LAKE MELAC Ics I LCs I LCs I LCs I LCs I LCs I Mean Analytical unalyte Lcs I LLs I	Image: CARLIXLE LAKE LCS 1 LCS 1 <t< th=""><th>: CARLINES LANS NELAC Certified ics 1 ics 1</th><th>: oN</th><th>008732</th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th></t<>	: CARLINES LANS NELAC Certified ics 1	: oN	008732									
LCS 1 LCS 2 % Rec Mean Analytical Result Level % Rec Result Level % Rec Ken Run 1 0 0 6 0.75 0 8 8753 0.76 0.77 100 90-114 8753 1.0 1.0 1.0 1.0 90-114 8753 1.0 1.0 1.0 1.0 1.0 90-120 0736019 1.0 1.0 1.0 76-120 07166059 20.4 20.0 102 76-120 07166059 20.4 20.0 102 07166059	LICS 1 LCS 2 Rea Mean Analytical Result Level % Rec Result Level % Rec Linits % Rec Run Analytical 4.9 5.0 98 87-115 P 7553 0.76 0.79 102 90-114 7553 1.0 1.0 1.0 1.0 1.0 1.0 97-12 7533 1.0 1.0 1.0 1.0 1.0 90-120 07126039 20.4 20.0 101 - - 07126039 20.4 20.0 102 - - 0712603 20.4 20.0 102 -	LCS 1 LCS 2 Renc Mean Analytical Result Levul % Rec Result Levul % Rec Result % Rec Run Result Levul % Rec Result Levul % Rec 87-115 P P7553 0.76 0.75 102 9 91-116 7753 1.0 1.0 1.0 1.0 1.0 1.0 1.0 7753 1.0 1.0 1.0 1.0 1.0 1.0 90-114 77553 1.0 1.0 1.0 1.0 1.0 90-120 0736059 1.0 1.0 1.0 1.0 90-120 0716059 20.4 20.0 101 16-120 0716059 20.4 20.0 101 16-120 0716059 <		CARLYLE L	AKE								
4.9 5.0 99 87-115 P7553 1.0 1.0 1.0 1.0 1.0 1.0 1.0 P7553 1.0 1.0 1.0 1.0 1.0 1.0 1.0 P7553 1.0 1.0 1.0 1.0 1.0 1.0 1.0 P7563 1.0 1.0 1.0 1.0 1.0 1.0 1.0 P75603 1.0 1.0 1.0 1.0 1.0 1.0 P75603 P75603 20.4 20.0 1.01 P76120 0716603 20.4 20.0 102 76-120 0716603 20.4 20.0 102 76-120 0716603	4.9 5.0 98 67-115 P7553 0.76 0.75 102 67-114 P7553 1.0 1.0 1.03 67-120 07086018 1.0 1.0 1.0 103 60-120 07136037 1.0 1.0 1.0 1.0 1.0 1.0 1.0 07136037 0.68 0.677 101 101 07136037 20.4 20.0 102 76-120 07166058 20.4 20.0 102 76-120 07166058	4.9 5.0 98 67-115 77553 0.76 0.75 102 90-114 77553 1.0 1.0 1.0 103 60-120 77563 1.0 1.0 1.0 100 60-120 07166018 0.68 0.67 101 76-120 07166058 20.4 20.0 102 76-120 07166058	Analyte	LCS 1 Result	LCS 1 Level	LCS 1 % Rec	LCS 2 Result	LCS 2 Level	LCS 2 % Rec	% Rec Limits	Mean * Rec	Analytical Run	QC Lab Number
0.76 0.75 102 90-114 P753 1.0 1.0 103 90-120 07086018 1.0 1.0 100 90-120 07156039 0.68 0.67 101 90-120 07156039 0.68 0.67 101 10 102 0.288 0.67 101 76-120 07166038 20.4 20.0 102 76-120 07166038	0.76 0.73 102 90-114 P7533 1.0 1.0 1.0 1.0 1.0 1.0 07086018 1.0 1.0 1.0 1.0 1.0 0-114 0.68 0.67 101 80-120 07136039 0.68 0.67 101 80-120 07136039 20.4 20.0 102 76-120 07166038	0.76 0.73 102 90-114 F7533 1.0 1.0 1.0 103 80-120 07166018 1.0 1.0 1.0 100 80-120 07156039 0.68 0.67 101 80-120 07156039 20.4 20.0 102 07166038 20.4 20.0 102 07166038 20.4 20.0 102 07166038	a) Iron	4.9	5.0	86	-		1	87-115	+ +	P7553	008732-01C1
1.0 1.1 1.0 1.1 1.0 1.1 1.0 1.1 <th1.1< th=""> <th1.1< th=""> <th1.1< th=""></th1.1<></th1.1<></th1.1<>	1.0 1.0 <th1.0< th=""> <th1.0< th=""> <th1.0< th=""></th1.0<></th1.0<></th1.0<>	1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.1 0.136037 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.1 0.136037 0.68 0.67 101 1.0 1.0 1.0 1.0 1.0 0.15603 20.4 20.0 102 1.0 1.0 1.0 1.0 1.0 1.0 20.4 20.0 102 1.0 1.0 1.0 1.0 1.0 1.0 20.4 20.0 102 1.0 1.0 1.0 1.0 1.0 1.0 1.0 20.4 20.0 102 1.0 1.0 1.0 1.0 1.0 1.0 20.4 20.0 102 1.0 1.0 1.0 1.0 1.0 1.0 20.4 20.0 102 1.0 1.0 1.0 1.0 1.0 1.0 20.4 20.0 1.0 1.0 1.0 1.0 1.0 1.0 20.4 20.0 1.0 1.0 1.0 1.0 1.0 1.0 20.4 20.5 1.0 1.0	a) Manganese	0.76	0.75	102	ł	1	ł	90-114	ł	P7553	008732-01C1
1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 0.13603 0.68 0.67 101 0.1 0.1 0.12609 20.1 101 101 0.12609 20.1 102 102 0.12609 20.1 102 102 0.16608 20.1 102 102 0.16608 20.1 102 102 0.16608 20.1 102 102 16608	1.0 0.13603 1.0 1.0 0.13603 1.0 1.0 1.0 1.0 0.146038 0.146038 1.0 <th1.0< th=""> <th1.0< th=""> <th1.0< th=""></th1.0<></th1.0<></th1.0<>	1.0 1.00 1.0 <td>mmonia Nitrogen</td> <td>1.0</td> <td>1.0</td> <td>103</td> <td>1</td> <td>ł</td> <td>1</td> <td>80-120</td> <td>1</td> <td>07086018</td> <td>008732-01C1</td>	mmonia Nitrogen	1.0	1.0	103	1	ł	1	80-120	1	07086018	008732-01C1
	0.68 0.67 101 80-120 0726079 20.4 20.0 102 76-120 07166058	0:68 0.67 101 80-120 0726079 20.4 20.0 102 76-120 0716608 20.5 102 0716608 100 0716608 100 0716608 100 0716608 100 0716608 100 0716608 100 </td <td>itrate as Nitrogen</td> <td>1.0</td> <td>1.0</td> <td>100</td> <td>1</td> <td>1</td> <td>ł</td> <td>80-120</td> <td>1</td> <td>07136037</td> <td>008732-02C1</td>	itrate as Nitrogen	1.0	1.0	100	1	1	ł	80-120	1	07136037	008732-02C1
	20.4 20.0 102 76-120 07166058	20.4 20.0 102 76-120 07166058	hosphorus	0.68	0.67	101	-	ł		80-120	ŀ	07226079	008732-07C1
			otal Organic Carbon	20.4	20.0	102	1	ł	1	76-120		07166058	008732-01C1

Inorganic LCS Results for 008732

Lab Report No:	ARDL, INC. 008732	INC.	MATRIX SPIKE 400 Aviation	SPIKE/SP ation Dr	SPIKE/SPIKE DUPLICATE ation Drive; P.O. Box		RT	Mt. Vernon, IL Repoi	n, IL Report	62864 Date:	07/15/2021
Project Name: CARLYLE LAKE Project No.:	ARLYLE LAKE		Analysis:	AN	PESTICIDES (82	(8270SIM-MOD)		Analytical Prep	ical Method: Prep Method:	d: 8270C d: 3510C	
Field ID: CAR-1 Desc/Location: CARLYLE LAKE Sample Date: 07/06/2021 Sample Time: 0930 Matrix: WATER	CAR-1 CARLYLE LAKE 07/06/2021 0930 WATER		Pre Pre OC % Punc	Prep. Date: Amount Used: % Moisture: QC Batch: Level:	07/07/2021 900 mL NA B11367 LOW		Z I I	ARDL Lab No.: Lab Filename: Received Date Analysis Date		008732-01 07/06/2021 07/14/2021	
		Sample	MS	WS	MS	MSD	MSD	MSD	% Rec		RPD
Parameter	eter	Result	Result	t Level	% Rec	Result	Level	% Rec	Limits	RPD	Limit
Trifluralin	ralin	QN	2.77	4.44	62.3	4.11	4.44	92.5	30-130	39.1 *	30
Atrazine	zine	0.856	2.64	4.44	40.3	5.01	4.44	93.5	30-130	61.8 *	30
Metribuzin	nizin	DN	2.1	4.44	47.3	4.13	4.44	93	30-130	65.2 *	30
Alachlor	lor	ΠN	2.62	4.44	59	4.53	4.44	102	30-130	53.4 *	30
Metolachlor	chlor	3.03	4.26	4.44	27.5 *	7.1	4.44	91.5	30-130	50.1 *	30
Chlorpyrifos	/rifos	DN	2.73	4.44	61.5	3.91	4.44	88	30-130	35.5 *	30
Cyanazine	zine	DN	2.44	4.44	55	4.3	4.44	96.8	30-130	55 ×	30
Pendimethalin	chalin	ΩN	2.76	4.44	62	4.22	4.44	95	30-130	42 *	30
	SURR	SURROGATE RECOVERIES:	ERIES:		MS %R	MSD &R	%R Limits	nits			

(a) DOD-QSM Accredited Analyte.

'nc' indicates sample >4X spike level.

'*' indicates a recovery outside of standard limits.

Matrix Spikes for 008732-01, NP PESTICIDES (8270SIM-MOD)

Page 1 of 1

30-130

88

55

Triphenylphosphate

ARDL Report 8732 - Page 26 of 32

	ARDL, INC.	INC.	MATRIX SPIKE/SPIKE DUPLIC 400 Aviation Drive; P.O. Box	MATRIX SI Aviation	PIKE/S Drive	SPIKE/SPIKE DUPLICATE REPORT on Drive; P.O. Box 1566 Mt.	UPLICA Box 1	LATE REP 1566 M	EPORT Mt. Veri	r Vernon,	9 TI	62864	
Lab Report	Lab Report No: 008732	0								Repor	Report Date:		07/26/2021
Project Name:		CARLYLE LAKE	AKE								NELAC	NELAC Certified	.ed - IL100308
Analyte	Sample Matrix	Sample Result	MS Result	MS Level	MS & Rec	MSD Result	MSD Level	MSD % Rec	% Rec Limits	QAX	RPD Limit	Run	QC Lab Number
(a) Iron	WATER	0.29	1.3	1.0	97	1.3	1.0	102	87-115	4	20	P7553	008732-01MS
(a) Manganese	WATER	0.14	0.65	0.50	102	0.65	0.50	101	90-114	1	20	P7553	008732-01MS
Ammonia Nitrogen	WATER	0.20	2.2	2.0	98	2.2	2.0	100	75-125	Ч	20	07086018	008732-01MS
Nitrate as Nitrogen	WATER	ND	0.98	1.0	98	0.99	1.0	66	75-125	г	20	07136037	008732-02MS
Phosphorus	WATER	0.21	1.0	0.83	101	1.1	0.83	102	75-125	0	20	07226079	008732-07MS
Total Organic Carbon	WATER	6.1	11.2	5.0	102	11.1	5.0	100	76-120	ы	20	07166058	008732-01MS

Inorganic Matrix Spikes for 008732

(a) DOD and/or NELAC Accredited Analyte.

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

	ARDL, INC.		400 Aviation Drive; P.O. Box 1566	Р.О.	Box	1566	Mt. V	Mt. Vernon, IL	II	62864	
Lab Report No: 008732	008732							Repoi	rt Dat	Report Date: 07/26/2021	
Project Name: CARLYLE LAKE	CARLYLE LI	AKE						NELAC	Cert	NELAC Certified - IL100308	
	Sample	ole First	cst Second		Percent	nt	Mean	Anal	Analytical	l QC Lab	1

SAMPLE DUPLICATE REPORT

: Mean Analytical QC Lab	(Smp,D1,D2) Run Number	07146045 008732-04D1	07146045 008732-04D1	-	07126025 008732-01D1
Percent	Diff	10	11	0	31*
	Units	MG/CU.M.	MG/CU.M.	MG/L	MG/L
Second	Duplicate	1	1	1	
First	Conc'n Duplicate	70.8	13.7	13.6	4.4
Sample	Conc'n	78.1	15.3	13.6	6.0
	Analyte	Chlorophyll-a, Corrected 78.1	Pheophytin-a	Solids, Total Suspended	Solids, Volatile Suspend

Page 1 of 1 See Case Narrative for exceptions. * indicates that agreement between duplicates is greater than 20%.
 (a) DOD and/or NELAC Accredited Analyte
 Sample Duplicates for 008732

Sample Receipt Information

Including as appropriate:

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

ARDL Data Package 8732

Authorized By: DSD-QAO

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6	V		
7	+	-	
2	X)	\$

P.O. Box 1566, 400 Aviation Drive, Mt. Vernon, IL 62864

SPECIFY CHEMICALS ADDED AND FINAL pH IF KNOWN PRESERVATION CHAIN OF CUSTODY RECORD ICED × × × × × × × × × × × × × SAMPLE LOCATION REMARKS 2 2 REMARKS/SPECIAL INSTRUCTIONS: N-SON* 122 - 222 - 222 222 - 202 223 - 202 223 -*Preserved with H₂SO₄ #Preserved with HNO₃ × × × × × × X X (618) 244-1149 Fax × × × × × × × X X X X Mum × × X SENI 'SEL X × × × × × × Received by: (Signature) Received by: (Signature) * X * × × × Shipping Ticket No. allone × × × × × × × (618) 244-3235 Phone NO. OF CONTAINERS GRAB × X × × × X × × X × X < COMP TIWAI 1545 59 0.9 21 1650 0.201 0261 0011 18/9/L 716/21 H415 1/1/2/ 1505 1130 or Time TIME 7/6/21 0430 2921 18/9/16 7/6/21 1100 101/00/20 16/9/1 116/21 10/9/2 1/1/9/12 c7[04[2] 11/9/2 Date DATE ARDL, Inc. MUMMINIAM PROVINCIAN CAR - CSA - Marina Relinquished by: (Signature) O CAR - DW - Marina Relinquished by: (Signature) Received for Laboratory by: 10 CAR - BL - Marina S CAR - KP - Marina SAMPLE NUMBER SAMPLERS: (Signature) Kaleb Rakers o SPURCHASE ORDER NO: Ser Greeting CAR-2-10 0 -Carlyle Lake 4 CAR-12 7 CAR-15 5 CAR-13 RONT CAR-2 4 CAR-4 CAR-1 3 (Signature) PROJECT KAS 2 KAS-1 30 N M ARDL Report 8732 - Page

	COOLER RECEIPT REPORT						
	Q727	RI a					
ARI	$DL #: \underline{OTOL}$	Cooler # Bre 1					
	Calle	Number of Coolers in Shipment:		-			
Pro	ject: Lar lyle Lake	Date Received: 07/06/202/					
A.	PRELIMINARY EXAMINATION PHASE: Date cooler was opened: 07/0	0/202/(Signature)					
1.	Did cooler come with a shipping slip (airbill, etc.)?	YES		>			
	If YES, enter carrier name and airbill number here: ARD Co	surier-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?	,	NO				
5.	Were custody papers sealed in a plastic bag? Land delivered	YES	NO)			
6.	Were custody papers filled out properly (ink, signed, etc.)?		NO	N/A			
7.	Were custody papers signed in appropriate place by ARDL personnel?		NO	N/A			
8.	Was project identifiable from custody papers? If YES, enter project name at	the top of this form	NO	N/A			
9.	Was a separate container provided for measuring temperature? YES		; 0.0	C			
В.	LOG-IN PHASE: Date samples were logged-in: 07/06/202/	(Signature)					
10.	Describe type of packing in cooler:						
11.	Were all samples sealed in separate plastic bags?		NO) n/a			
12.	Did all containers arrive unbroken and were labels in good condition?	(Tes	NO				
13.	Were sample labels complete?		NO				
14.	Did all sample labels agree with custody papers?	(VE)	NO				
15.	Were correct containers used for the tests indicated?		NO				
16.	Was pH correct on preserved water samples?	Š	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 #:		NO	(N/A)			
19.	Was the ARDL project coordinator notified of any deficiencies?	YES	NO	(N/A)			
	Comments and/or Corrective Action:	Sample Transfer					
		Fraction Fraction					
		Area #					
		By By					
		DCB					
		On On On					
		UTIUNILULI					
		Chain-of-Custody #		<u> </u>			
(E	By: Signature) Date:						

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	COOLER RECEIPT REPORT ARDL, INC.							
ARI	DL#: 8732	Cooler # <u>Blve</u> 2 Number of Coolers in Ship	 oment:		_			
Pro	ject: <u>Carlyle Lake</u>	Date Received: 07/0	0/2021					
A.	PRELIMINARY EXAMINATION PHASE: Date cooler was opened:	2021 (Signature) DB	1					
1.	Did cooler come with a shipping slip (airbill, etc.)? If YES, enter carrier name and airbill number here:	, 1/ / -	YES (NO)			
	If YES, enter carrier name and airbill number here: ARL CO	vrier-Valence			<u>. </u>			
2.	Were custody seals on outside of cooler?		YES (NO7	N/A			
	How many and where?,Seal Date:,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?	ĥ	YES	NO				
5.	Were custody papers sealed in a plastic bag? Hand delivered	ŧ	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 t	he top of this form		NO	N/A			
9.	Was a separate container provided for measuring temperature? YES) 0.0	C			
В.		Signature)		0.0				
10.	Describe type of packing in cooler: LOOSC ICC							
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?		1000	NO				
13.	Were sample labels complete?		YES	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?		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:	Sample	Transfer					
		Fraction	Fraction					
			Area #					
		Walk-In						
		^{by} DCR	Ву					
		07/06/2021	On	,				
		Unouped			l			
		Chain-of-Custody #						
(E	By: Signature) Date:							

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

www.ardlinc.com

Environmental | Analytical | Management | Safety

Customer Name: SLCOE

Project Name: Carlyle Lake

Samples Received at ARDL: 7/26/21

Date: 8/18/21

Lab Name: ARDL, Inc.

ARDL Report No.: 8754

CASE NARRATIVE

Customer	Date	Lab ID	
Sample No.	Collected	<u>Number</u>	Analyses Requested
CAR-1	7/26/21	8754-01	NP Pesticides, Metals(1), Inorganics(2)
CAR-2-0	7/26/21	8754-02	NP Pesticides, Inorganics(2)(3)
CAR-2-10	7/26/21	8754-03	Metals(1), Inorganics(2)
CAR-4	7/26/21	8754-04	NP Pesticides, Inorganics(2)(3)
CAR-13	7/26/21	8754-05	NP Pesticides, Inorganics(2)
CAR-12	7/26/21	8754-06	NP Pesticides, Inorganics(2)(3)
CAR-15	7/26/21	8754-07	NP Pesticides, Inorganics(2)(3)
CAR-DW-Marina	7/26/21	8754-08	E. Coli
CAR-CSA-Marina	7/26/21	8754-09	E. Coli

(1) Including iron and manganese.

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

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

The quality control data are summarized as follows:

NP PESTICIDE FRACTION – METHOD 8270-SIM

HOLDING TIME

Samples were prepared and analyzed within method specified holding times.

INITIAL CALIBRATION

The initial calibration passed criteria.

CONTINUING CALIBRATION

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

PREPARATION BLANK

The blank met acceptance criteria.

LABORATORY CONTROL SAMPLE

The LCS analyses met recovery criteria.

MATRIX SPIKE

The matrix spike and matrix spike duplicate met recovery criteria.

DUPLICATE

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

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

Project Name: Carlyle Lake

ARDL Report No.: 8754

CASE NARRATIVE (Continued)

DUPLICATE

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

INTERNAL STANDARDS

All internal standard criteria were met.

SURROGATES

All surrogate recovery criteria were met.

INORGANIC FRACTION

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

<u>PREPARATION BLANK</u> Results of the preparation blanks were undetected.

<u>LABORATORY CONTROL SAMPLE</u> Percent recoveries of all LCS analyses were within control limits.

<u>MATRIX SPIKE</u> 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.

DATA REPORTING QUALIFIERS

The following data reporting qualifiers are used as required:

ND - Indicates parameter was analyzed for but not detected.

REPORT ORGANIZATION

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

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

Dean S. Dickerson Technical Services Manager

Page 2 of 2



Sample & QC Results

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

ARDL Data Package 8754

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

Authorized By: DSD-QAO

Lab Report No: 008754

Report Date: 08/06/2021

	CARLYLE LAKE	Anal Analytical Me	-	P PESTICII	DES (827	0SIM-MO	D)
Project No.:	-						
NELAC CETTI	fied - IL100308	РГер Ме	ethod: 35	5100			
Field ID:	CAR-1		ARDL 1	Lab No.:	00875	54-01	and a second second second
Desc/Location:	CARLYLE LAKE		Lab F:	ilename:	E0803	3105	
Sample Date:	07/26/2021		Receiv	ved Date:	07/20	5/2021	
Sample Time:	0840		Prep.	Date:	07/29	9/2021	
Matrix:	WATER		Analys	sis Date:	08/03	3/2021	
Amount Used:	900 mL		Instru	ument ID:	AG5		
Final Volume:	1 mL		QC Bat	tch:	B1138	B 0	
% 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	0.933		UG/L	1
Metribuzin		0.222	0.222	ND		UG/L	1
Alachlor		0.222	0.222	ND		UG/L	1
Metolachlor		0.222	0.222	2.57		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		Re	sults	

SURROGATE RECOVERIES:	Limits	Results	
Triphenylphosphate	30-130	74%	

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

(a) DOD-QSM Accredited Analyte.

Lab Report No: 008754

Report Date: 08/16/2021

Project Name: CARLYI Project No:	CARLYLE LAKE Analysis: Inorganics NELAC Certified - IL100308									
Field ID: CAR-1										
Analyte	LOD	LOQ	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
(a) Iron	0.0400	0.0500		0.305	MG/L	3010A	6010C	07/29/21	07/30/21	P7561
(a) Manganese	0.00400	0.00500		0.144	MG/L	3010A	6010C	07/29/21	07/30/21	P7561
Ammonia Nitrogen	0.0200	0.0300		0.204	MG/L	NONE	350.1	NA	07/27/21	07296106
Nitrate as Nitrogen	0.0190	0.0200		0.114	MG/L	NONE	GREEN	NA	07/30/21	08036129
Phosphorus	0.00800	0.0100		0.399	MG/L	365.2	365.2	08/12/21	08/13/21	08166163
Solids, Total Suspend	ded 4.00	4.00		10.8	MG/L	NONE	160.2	NA	07/27/21	07306117
Solids, Volatile Susp	en 4.00	4.00		4.4	MG/L	NONE	160.4	NA	07/27/21	07306118
Total Organic Carbon	0.500	1.00		5.0	MG/L	NONE	415.1	NA	08/02/21	08066138

(a) DOD and/or NELAC Accredited Analyte.

Sample 008754-01, Inorganic Analyses

Lab Report No: 008754

Report Date: 08/06/2021

Project No.:	CARLYLE LAKE fied - IL100308	Analytical Me	-		DES (827	/OSIM-MO	D)
Field ID:	CAR-2-0		ARDL 1	Lab No.:	00875	54-02	
<pre>Desc/Location:</pre>	CARLYLE LAKE		Lab F:	llename:	E0803	3108	
Sample Date:	07/26/2021		Receiv	ved Date:	07/20	5/2021	
Sample Time:	0950		Prep.	Date:	07/29	9/2021	
Matrix:	WATER		Analy	sis Date:	08/03	3/2021	
Amount Used:	900 mL		Instru	ument ID:	AG5		
Final Volume:	1 mL		QC Bat	cch:	B1138	30	
% 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	1.02		UG/L	1
Metribuzin		0.222	0.222	ND		UG/L	1
Alachlor		0.222	0.222	ND		UG/L	1
Metolachlor		0.222	0.222	2.82		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%	

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

(a) DOD-QSM Accredited Analyte.

Lab Report No: 008754

Report Date: 08/16/2021

Project Name: CARLYLE Project No:	LAKE	Analysis: Inorganics NELAC Certified - IL1003								
ARDL No: 008754- Field ID: CAR-2-0 Received: 07/26/2	2-0 Sampling Date: 07/26/2021 Moisture: NA									
Analyte	LOD	LOQ	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
Ammonia Nitrogen	0.0200	0.0300		0.0382	MG/L	NONE	350.1	NA	07/27/21	07296106
Chlorophyll-a, Correct	e 1.00	1.00		35.4	MG/CU.M.	10200н	10200H	07/27/21	08/10/21	08126157
Nitrate as Nitrogen	0.0190	0.0200		0.082	MG/L	NONE	GREEN	NA	07/30/21	08036129
Pheophytin-a	1.00	1.00		9.1	MG/CU.M.	10200H	10200H	07/27/21	08/10/21	08126157
Phosphorus	0.00800	0.0100		0.403	MG/L	365.2	365.2	08/12/21	08/13/21	08166163
Solids, Total Suspende	d 4.00	4.00		10.4	MG/L	NONE	160.2	NA	07/27/21	07306117
Solids, Volatile Suspe		4.00		5.2	MG/L	NONE	160.4	NA	07/27/21	07306118
Total Organic Carbon	0.500	1.00		5.5	MG/L	NONE	415.1	NA	08/02/21	08066138

(a) DOD and/or NELAC Accredited Analyte.

Sample 008754-02, Inorganic Analyses

Lab Report No: 008754

Report Date: 08/16/2021

Project Name: Project No:	CARLYLE	LAKE						И	Analysis NELAC Certi	-	
ARDL No: Field ID: Received:	008754-0 CAR-2-10 07/26/20		Sam	ling Lo pling D pling T	ate: 07/26	ZLE LAKE 5/2021			Matrix Moisture		
Analy	te	LOD	LOQ	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
(a) Iron		0.0400	0.0500		0.945	MG/L	3010A	6010C	07/29/21	07/30/21	P7561
(a) Manganese		0.00400	0.00500		0.382	MG/L	3010A	6010C	07/29/21	07/30/21	P7561
Ammonia Nitrog	en	0.0200	0.0300		0.0874	MG/L	NONE	350.1	NA	07/27/21	
Nitrate as Nit	rogen	0.0190	0.0200		0.051	MG/L	NONE	GREEN	NA	07/30/21	08036129
Phosphorus		0.00800	0.0100		0.541	MG/L	365.2	365.2	08/12/21	08/13/21	08166163
Solids, Total	Suspended	4.00	4.00		44.0	MG/L	NONE	160.2	NA	07/27/21	07306117
Solids, Volati	le Suspen	4.00	4.00		6.8	MG/L	NONE	160.4	NA	07/27/21	07306118
Total Organic	Carbon	0.500	1.00		5.0	MG/L	NONE	415.1	NA	08/02/21	08066138

(a) DOD and/or NELAC Accredited Analyte.

Sample 008754-03, Inorganic Analyses

Lab Report No: 008754

Report Date: 08/06/2021

Project No.:	CARLYLE LAKE fied - IL100308	Analytical Me	1		DES (827	70SIM-MO	D)
Field ID:	CAR-4		ARDL 1	Lab No.:	00875	54-04	
Desc/Location:	CARLYLE LAKE		Lab Fi	ilename:	E0803	3109	
Sample Date:	07/26/2021		Receiv	ved Date:	07/20	5/2021	
Sample Time:	1115		Prep.	Date:	07/29	9/2021	
Matrix:	WATER		Analys	sis Date:	08/03	3/2021	
Amount Used:	1000 mL		Instru	ument ID:	AG5		
Final Volume:	1 mL		QC Bat	tch:	B1138	80	
% 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	0.550		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	1.82		UG/L	1
Chlorpyrifos		0.200	0.200	ND		UG/L	1
Cyanazine		0.200	0.200	ND		UG/L	1
Pendimethalin		0.200	0.200	ND		UG/L	1
SURROGATE RECOV	ERIES:	Lim	its		Re	sults	

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

30-130

(a) DOD-QSM Accredited Analyte.

Triphenylphosphate

Page 1 of 1

70%

Lab Report No: 008754

Report Date: 08/16/2021

Project Name: CARLY Project No:	LE LAKE						Ν	Analysis: Inorganics NELAC Certified - IL100308					
ARDL No: 00875 Field ID: CAR-4 Received: 07/26		Sam	ling Loo pling Da pling T:	ate: 07/2	YLE LAKE 5/2021			Matrix Moisture					
Analyte	LOD	LOQ	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number			
Ammonia Nitrogen Chlorophyll-a, Corre Nitrate as Nitrogen Pheophytin-a Phosphorus Solids, Total Suspen Solids, Volatile Sus Total Organic Carbon	0.0190 1.00 0.00800 ded 4.00 spen 4.00	0.0300 1.00 0.0200 1.00 0.0100 4.00 4.00 1.00		0.139 39.0 0.291 13.1 0.299 30.0 6.0 5.4	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 365.2 160.2 160.4 415.1	NA 07/27/21 NA 07/27/21 08/12/21 NA NA NA	08/10/21 07/30/21 08/10/21 08/13/21 07/27/21 07/27/21	07296106 08126157 08036129 08126157 08166163 07306117 07306118 08066138			

(a) DOD and/or NELAC Accredited Analyte.

Sample 008754-04, Inorganic Analyses

Lab Report No: 008754

Report Date: 08/16/2021

Project Name: Project No:	CARLYLE	LAKE	Analysis: Inorganics NELAC Certified - IL10030								
ARDL No: Field ID:	008754-0 CAR-13)5	-	ling Lo oling Da		LE LAKE /2021			Matrix Moisture		
Received:	07/26/20)21	Sam	pling T	ime: 1225						
Analy	rte	LOD	LOQ	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
Ammonia Nitrog	en	0.0200	0.0300		ND	MG/L	NONE	350.1	NA	07/27/21	07296106
Nitrate as Nit	rogen	0.0380	0.0400		2.37	MG/L	NONE	GREEN	NA	07/30/21	08036130
Phosphorus		0.00800	0.0100		0.407	MG/L	365.2	365.2	08/12/21	08/13/21	08166163
Solids, Total	Suspended	6.67	6.67		183	MG/L	NONE	160.2	NA	07/27/21	07306117
Solids, Volati	-		6.67		12.7	MG/L	NONE	160.4	NA	07/27/21	07306118
Total Organic	-	0.500	1.00		3.4	MG/L	NONE	415.1	NA	08/02/21	08066138

(a) DOD and/or NELAC Accredited Analyte.

Sample 008754-05, Inorganic Analyses

Lab Report No: 008754

Report Date: 08/06/2021

Project Name: Project No.:	CARLYLE LAKE	Anal Analytical Me		P PESTICII 270C	DES (827	70SIM-MO	D)
NELAC Certi:	fied - IL100308	Prep Me	ethod: 35	510C			
Field ID:	CAR-13		ARDL I	Lab No.:	00875	54-05	
Desc/Location:	CARLYLE LAKE		Lab F:	llename:	E0803	3110	
Sample Date:	07/26/2021		Receiv	ved Date:	07/20	5/2021	
Sample Time:	1225		Prep.	Date:	07/29	9/2021	
Matrix:	WATER		Analys	sis Date:	08/03	3/2021	
Amount Used:	1000 mL		Instru	ument ID:	AG5		
Final Volume:	1 mL		QC Bat	cch:	B1138	30	
% 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	0.590		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	1.01		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	71%	

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

(a) DOD-QSM Accredited Analyte.

Lab Report No: 008754

Phosphorus

Solids, Total Suspended

Solids, Volatile Suspen

Total Organic Carbon

Report Date: 08/16/2021

08/13/21 08166163

07/27/21 07306117

07/27/21 07306118

08/02/21 08066138

Project Name: Project No:	CARLYLE I	LAKE						Ν	Analysis IELAC Certi	2	
ARDL No:	008754-06	5	Samp	ling Loo	c'n: CARL	YLE LAKE			Matrix	: WATER	
Field ID:	CAR-12		Sam	pling Da	ate: 07/20	5/2021			Moisture	e: NA	
Received:	07/26/202	21	Sam	pling Ti	lme: 1305						
Analy	te	LOD	LOQ	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
Ammonia Nitrog	en	0.0200	0.0300		ND	MG/L	NONE	350.1	NA	07/27/21	07296106
Chlorophyll-a,	Correcte	1.00	1.00		18.2	MG/CU.M.	10200H	10200H	07/27/21	08/10/21	08126157
Nitrate as Nit	rogen	0.0190	0.0200		1.83	MG/L	NONE	GREEN	NA	07/30/21	08036129
Pheophytin-a		1.00	1.00		2.2	MG/CU.M.	10200H	10200H	07/27/21	08/10/21	08126157

0.243

5.6

3.5

61.2

MG/L

MG/L

MG/L

MG/L

365.2

NONE

NONE

NONE

365.2

160.2

160.4

415.1

08/12/21

NA

NA

NA

(a) DOD and/or NELAC Accredited Analyte.

0.00800

4.00

4.00

0.500

0.0100

4.00

4.00

1.00

Sample 008754-06, Inorganic Analyses

Lab Report No: 008754

Report Date: 08/06/2021

Project Name: CARLYLE LAKE Project No.:	Analytical Me	thod: 82		ES (827	0SIM-MO	D)
NELAC Certified - IL100308	Prep Me	ethod: 35	510C			
Field ID: CAR-12		ARDL I	Lab No.:	00875	54-06	
Desc/Location: CARLYLE LAKE		Lab Fi	ilename:	E0803	3111	
Sample Date: 07/26/2021		Receiv	ved Date:	07/26	5/2021	
Sample Time: 1305		Prep.	Date:	07/29	9/2021	
Matrix: WATER		Analys	sis Date:	08/03	3/2021	
Amount Used: 800 mL		Instru	ument ID:	AG5		
Final Volume: 1 mL		QC Bat	tch:	B1138	30	
% 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	0.625		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	1.48		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:	Lim	its		Rea	sults	
Triphenylphosphate	30-3	130			72%	

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

(a) DOD-QSM Accredited Analyte.

Lab Report No: 008754

Report Date: 08/16/2021

Project Name: Project No:	CARLYLE	LAKE						Ν	Analysis NELAC Certi	2	
ARDL No: Field ID: Received:	008754-07Sampling Loc'n:CARLYLE LAKEMatrix:CAR-15Sampling Date:07/26/2021Moisture:07/26/2021Sampling Time:1130										
Analy	te	LOD	LOQ	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
Ammonia Nitrog	en	0.0200	0.0300		0.134	MG/L	NONE	350.1	NA	07/27/21	07296106
Chlorophyll-a,	Correcte	1.00	1.00		35.4	MG/CU.M.	10200H	10200H	07/27/21	08/10/21	08126157
Nitrate as Nit	rogen	0.0190	0.0200		0.365	MG/L	NONE	GREEN	NA	07/30/21	08036129
Pheophytin-a		1.00	1.00		14.8	MG/CU.M.	10200H	10200H	07/27/21	08/10/21	08126157
Phosphorus		0.00800	0.0100		0.282	MG/L	365.2	365.2	08/12/21	08/13/21	08166163
Solids, Total	Suspended	4.00	4.00		28.8	MG/L	NONE	160.2	NA	07/27/21	07306117
Solids, Volati	le Suspen	4.00	4.00		5.2	MG/L	NONE	160.4	NA	07/27/21	07306118
Total Organic	Carbon	0.500	1.00		5.3	MG/L	NONE	415.1	NA	08/02/21	08066138

(a) DOD and/or NELAC Accredited Analyte.

Sample 008754-07, Inorganic Analyses

Lab Report No: 008754

Report Date: 08/06/2021

Project Name: Project No.: NELAC Certi	CARLYLE LAKE fied - IL100308	Analytical Me	-		ES (827	0SIM-MO	D)			
Field ID:	CAR-15		ARDL I	Lab No.:	00875	54-07				
Desc/Location:	CARLYLE LAKE		Lab Fi	llename:	E0803	3112				
Sample Date:	07/26/2021		Receiv	ved Date:	07/20	5/2021				
Sample Time:	1130		Prep.	Date:	07/29	9/2021				
Matrix:	WATER		Analysis Date: 08/03/2021							
Amount Used:	1000 mL		Instru	ument ID:	AG5					
Final Volume:	1 mL		QC Bat	cch:	B1138	30				
% 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	0.600		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	1.99		UG/L	1			
Chlorpyrifos		0.200	0.200	ND		UG/L	1			
Cyanazine		0.200	0.200	ND		UG/L	1			
Pendimethalin		0.200	0.200	ND		UG/L	1			
SURROGATE RECOV	ERIES:	Lim	its		Re	sults				
Triphenylphosph	ate	30-	80%							

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

(a) DOD-QSM Accredited Analyte.

Project Name: Project No:	CARLYL	E LAKE					Analysis: Inorganics NELAC Certified - IL100308						
ARDL No: Field ID: Received:		-MARINA	Sa	pling Loo mpling Da mpling T:		YLE LAKE 6/2021	Matrix: WATER Moisture: NA						
Analy	rte	LOD	LOQ	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number		
E. Coliform		1.0	1.0		250	COL/100 ML	NONE	1604	NA	07/26/21	07286101		

(a) DOD and/or NELAC Accredited Analyte.

Sample 008754-08, Inorganic Analyses

Lab Report No: 008754

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Report Date: 08/16/2021

Project Name: Project No:	CARLYL	E LAKE					Analysis: Inorganics NELAC Certified - IL10030						
ARDL No: Field ID: Received:		A-MARINA	Sai	mpling Da	c'n: CARL ate: 07/2 ime: 1000	6/2021	Matrix: WATER Moisture: NA						
Analy	rte	LOD	LOQ	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number		
E. Coliform		1.0	1.0		325	COL/100 ML	NONE	1604	NA	07/26/21	07286101		

(a) DOD and/or NELAC Accredited Analyte.

Sample 008754-09, Inorganic Analyses

Lab Report No: 008754

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Report Date: 08/16/2021

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

Lab Report No: 008754

Report Date: 08/06/2021

Project Name: Project No.: NELAC Certi:	CARLYLE LAKE fied - IL100308	Analytical Meth	sis: NP PEST nod: 8270C nod: 3510C	ICIDES (82	270SIM-M0)				
Field ID:	NA		ARDL Lab No	.: 008	754-01B1					
Desc/Location:	NA		Lab Filenam	e: E08	03103					
Sample Date:	NA		Received Da	te: NA						
Sample Time:	NA		Prep. Date:	07/:	29/2021					
Matrix:	QC Material	Analysis Date: 08/03/2021								
Amount Used:	1000 mL		Instrument	ID: AG5						
Final Volume:	1 mL	QC Batch: B11380								
% 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 RECOV	ERIES:	Limit	5	R	esults					

Triphenylphosphate	30-130	96%

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

(a) DOD-QSM Accredited Analyte.

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

Lab Report No: 008754

Report Date: 08/16/2021

Project	Name:	CARLYLE	LAKE
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NELAC Certified - IL100308

Analyte	LOD	LOQ	Blank Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run	QC Lab Number
Analyce	ЦОО	ТОÕ	RESULL	UNILS	Methou	Mechou	Date	Date	Ruii	Number
(a) Iron	0.040	0.050	ND	MG/L	3010A	6010C	07/29/21	07/30/21	P7561	008754-01B1
(a) Manganese	0.004	0.005	ND	MG/L	3010A	6010C	07/29/21	07/30/21	P7561	008754-01B1
Ammonia Nitrogen	0.020	0.030	ND	MG/L	NONE	350.1	NA	07/27/21	07296106	008754-01B1
Chlorophyll-a, Corre	1.0	1.0	ND	MG/CU.M.	10200H	10200H	07/27/21	08/10/21	08126157	008754-02B1
Nitrate as Nitrogen	0.019	0.020	ND	MG/L	NONE	GREEN	NA	07/30/21	08036130	008754-05B1
Nitrate as Nitrogen	0.019	0.020	ND	MG/L	NONE	GREEN	NA	07/30/21	08036129	008754-03B1
Pheophytin-a	1.0	1.0	ND	MG/CU.M.	10200H	10200H	07/27/21	08/10/21	08126157	008754-02B1
Phosphorus	0.008	0.010	ND	MG/L	365.2	365.2	08/12/21	08/13/21	08166163	008754-02B1
Solids, Total Suspen	1.0	1.0	ND	MG/L	NONE	160.2	NA	07/27/21	07306117	008754-01B1
Solids, Volatile Sus	1.0	1.0	ND	MG/L	NONE	160.4	NA	07/27/21	07306118	008754-01B1
Total Organic Carbon	0.50	1.0	ND	MG/L	NONE	415.1	NA	08/02/21	08066138	008742-01B1

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

Lab Report No: 008754

Report Date: 08/06/2021

Project Name: CARL Project No.:	YLE LAKE	Ana	lysis: NH	ytical Method: 8270C Prep Method: 3510C						
	Material 0 mL		QC Bato Level:	Prep. Date: 07/29/2021 Analysis Date: 08/03/2021						
Paramet	er	Spike Result	Spike Level	Spike % Rec	Duplicate Result	Duplicate Level	Duplicate % Rec	Recovery Limits	RPD	RPD Limit
Triflura	alin	3.5	4	88				30-130		
Atrazi	ne	3.49	4	87				30-130		
Metribu	izin	3.54	4	89				30-130		
Alachl	or	3.61	4	90				30-130		
Metolach	lor	3.44	4	86				30-130		
Chlorpyr	rifos	3.28	4	82				30-130		
Cyanazi.	ne	3.77	4	94				30-130		rappe shine
Pendimeth	alin	3.46	4	87				30-130		
	SU	RROGATE RECOVERIES:		Spi	ke %R Dupl	icate %R	%R Limits			
	Tr	iphenylphosphate			90		30-130			

(a) DOD-QSM Accredited Analyte.

'*' indicates a recovery outside of standard limits.

Spike Blanks for 008754-01, NP PESTICIDES (8270SIM-MOD)

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

Lab Report No: 008754

Report Date: 08/16/2021

Project Name:	CARLYLE L	AKE	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 Run	QC Lab Number
(a) Iron	4.6	5.0	92				87-115		P7561	008754-01C1
(a) Manganese	0.72	0.75	96				90-114		P7561	008754-01C1
Ammonia Nitrogen	0.99	1.0	99				80-120		07296106	008754-01C1
Nitrate as Nitrogen	0.95	1.0	95				80-120		08036129	008754-03C1
Nitrate as Nitrogen	0.93	1.0	93				80-120		08036130	008754-05C1
Phosphorus	0.67	0.67	101				80-120		08166163	008754-02C1
Total Organic Carbon	20.5	20.0	103				76-120		08066138	008742-01C1

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 008754

MATRIX SPIKE/SPIKE DUPLICATE REPORT

ARDL, INC. Lab Report No: 008754 400 Aviation Drive; P.O. Box 1566 Mt. Vernon, IL 62864

Report Date: 08/06/2021

Project Name: Project No.:	CARLYLE LAKE	P	Analysis: NP PESTICIDES (8270SIM-MOD) Analytical Method: 8270C Prep Method: 3510C										
Field ID: Desc/Location: Sample Date: Sample Time: Matrix:	CAR-1Prep. Date:07/29/2021ARDL Lab No.:008754-0CARLYLE LAKEAmount Used:900 mLLab Filename:07/26/2021% Moisture:NAReceived Date:07/26/2000840QC Batch:B11380Analysis Date:08/03/200WATERLevel:LOWLowComparison												
Para	meter	Sample Result	MS Result	MS Level	MS % Rec	MSD Result	MSD Level	MSD % Rec	% Rec Limits	RPD	RPD Limit		
Trifl	uralin	ND	3.38	4.44	76	3.43	4.44	77.3	30-130	1.6	30		
Atr	azine	0.933	4.4	4.44	78	4.13	4.44	72	30-130	6.3	30		
Metr	ibuzin	ND	3.43	4.44	77.3	3.23	4.44	72.8	30-130	6	30		
Ala	chlor	ND	3.83	4.44	86.3	3.57	4.44	80.3	30-130	7.2	30		
Metol	achlor	2.57	6.06	4.44	78.5	5.66	4.44	69.5	30-130	6.8	30		
Chlor	pyrifos	ND	3.18	4.44	71.5	3.13	4.44	70.5	30-130	1.4	30		
Cyana	azine	ND	3.58	4.44	80.5	3.38	4.44	76	30-130	5.8	30		
	ethalin	ND	3.33	4.44	75	3.4	4.44	76.5	30-130	2	30		

76

76

30-130

(a) DOD-QSM Accredited Analyte.

'nc' indicates sample >4X spike level.

'*' indicates a recovery outside of standard limits.

Matrix Spikes for 008754-01, NP PESTICIDES (8270SIM-MOD)

Triphenylphosphate

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

Lab Report No: 008754

Report Date: 08/16/2021

Project Nam	e:	CARLYLE LAKE								NELAC Certified - IL1003			
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 Number
(a) Iron	WATER	0.31	1.2	1.0	91	1.2	1.0	91	87-115	0	20	P7561	008754-01MS
(a) Manganese	WATER	0.14	0.62	0.50	96	0.62	0.50	95	90-114	1	20	P7561	008754-01MS
Ammonia Nitrogen	WATER	0.20	2.3	2.0	104	2.2	2.0	102	75-125	2	20	07296106	008754-01MS
Nitrate as Nitrogen	WATER	0.051	0.82	1.0	77	0.82	1.0	77	75-125	0	20	08036129	008754-03MS
Phosphorus	WATER	0.40	1.3	0.83	104	1.3	0.83	105	75-125	1	20	08166163	008754-02MS

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

(a) DOD and/or NELAC Accredited Analyte.

Inorganic Matrix Spikes for 008754

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

Lab Report No: 008754

Report Date: 08/16/2021

Project Name: CARLYLE LAKE

NELAC Certified - IL100308

Analyte	Sample Conc'n	First Duplicate	Second Duplicate	Units	Percent Diff	Mean (Smp,D1,D2)	Analytical Run	QC Lab Number
Chlorophyll-a, Corrected	35.4	37.2		MG/CU.M.	5		08126157	008754-02D1
Pheophytin-a	9.1	11.1		MG/CU.M.	20		08126157	008754-02D1
Solids, Total Suspended	10.8	11.2		MG/L	4		07306117	008754-01D1
Solids, Volatile Suspend	4.4	4.0		MG/L	10		07306118	008754-01D1

(a) DOD and/or NELAC Accredited Analyte Sample Duplicates for 008754

Sample Receipt Information

Including as appropriate:

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

ARDL Data Package 8754

Authorized By: DSD-QAO

ARDL, Inc.

P.O. Box 1566, 400 Aviation Drive, Mt. Vernon, IL 62864



(618) 244-3235 Phone (618) 244-1149 Fax

	PROJECT Carlyle Lake SAMPLERS: (Signature) B. Greeling, Keleb SAMPLE NUMBER	Ro	.ke-s				NO. OF CONTAINERS	0	Chi Too	o noto	00,00	3.1. 00	P WH3	E.F. OSt	Cour Mr		2.V	//	7			REMARKS	PRE	SERVATION SPECIFY CHEMICALS ADDED AND FINAL PH IF KNOWN
	SAMPLÉ NUMBER	DAT	E 1	ΓIME	COMP	GRAB	NO. 0	2	Chi	5/.						5	02-70 N-20	/ /	/		/ /	OR SAMPLE LOCATION		
1	CAR-1	7/2	1210	340		х	2	ζ		X	Χ	Χ	X		Χ								X	
Z	CAR - 2 - 0			950		x	2					Χ											X	
3	CAR - 2 - 10		00	945		х	2	Z		X	Χ		Х										X	
4	CAR-4		$ $ $ $ $ $	15		x	2	ζ [X	X	Х	Х											X	
5	CAR – 13		12	25		х	2	Z		X	Χ	Х											X	
6	CAR – 12		17	305		x	2	ζ :	X	X	Х	Χ											X	
7	CAR - 15		h	30		x	2	ζ.	X	X	Χ	Χ											X	
	CAR-KP-Marina			4	-	X				-	_			X		-					-	NOT Scapled \$6	X	_
8	CAR – DW – Marina			520		х								Χ									X	
	CAR = BL - Marina -			le		X-	-	-	_		_	-	· ·	X	-6			-		- 10		not sempled \$6	X	-
9	CAR – CSA - Marina		10	000		Х								Χ									X	
1																								
[<u>к</u>		
Ī																								
						1			~		2													
Ì	Relinquished by: (Signature)	Dat	te	Time	Rec	eive	d by:	Sie	hatur)/	-0	REI	MAR	RKS/	SPEC	CIAL	INST	RUCI	FION	IS:				
	Relinquished by (Signature)	7/26 Dat 7/20	21/5	Time	Rec	ceive	d by:	Sig	hatur		Ka				vith H	I2SO4 INO3						~ 7		
	Received for Laboratory by: (Signature)	Dat 07/2		Time	Shi	ppinį	g Tick	et N	о.				_											

PURCHASE ORDER NO:

	<u>COOLER RECEIPT RE</u> ARDL, INC.	EPORT				
	marcil	Pad 1				
ARI		Cooler # <u>KCA</u> Number of Coolers in Shipmer	nt ⁱ Z			
Pro		Date Received: $0.7/26$		•	-	
		× 0	<u> </u>			
Α.	PRELIMINARY EXAMINATION PHASE: Date cooler was opened 07/26/			$\overline{\wedge}$	<u></u>	
1.	Did cooler come with a shipping slip (airbill, etc.)?	'	YES (NO)	
	If YES, enter carrier name and airbill number here: ARD Co	urier-DSD			<u></u>	
2.	Were custody seals on outside of cooler?		YES	NO	(N/A)	
	How many and where?,Seal Date:,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? Hand delivered		YES	NO)	
6.	Were custody papers filled out properly (ink, signed, etc.)?		ÝES	NO	N/A	
7.	Were custody papers signed in appropriate place by ARDL personnel?			NO	N/A	
8.	Was project identifiable from custody papers? If YES, enter project name at the	e top of this form		NO	N/A	
9.	Was a separate container provided for measuring temperature? YESN	NO Observed Cooler Temp		; 0.0		
В.	LOG-IN PHASE: Date samples were logged-in: 07/26/202 (Si	gnature) <u>DCB</u> Correction				
10.	Describe type of packing in cooler: LOOSE CE					
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.	14. Did all sample labels agree with custody papers?					
15.	15. Were correct containers used for the tests indicated?					
16.	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	NA	
19.	Was the ARDL project coordinator notified of any deficiencies?		YES	NO	(N/A)	
	Comments and/or Corrective Action:	Sample Tra				
		Fraction Fr	action			
		Area # Ar	rea #			
		By By	,			
		Des				
		On Or	ו	,		
		07/2(0/202)	l]	
		Chain-of-Custody #	C and a state of the			
(E	By: Signature) Date:			_		

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	COOLER RECEIPT RE	<u>EPORT</u>
	Oncil ARDL, INC.	$\rho \wedge \gamma$
AR		Cooler # $Kell L$
		Number of Coolers in Shipment:
Pro		Date Received: <u>07/26/202/</u>
Α.	PRELIMINARY EXAMINATION PHASE: Date cooler was opened	2021 (Signature) CB
1.	Did cooler come with a shipping slip (airbill, etc.)?	YES NO
	If YES, enter carrier name and airbill number here:	urier-OSD
2.	Were custody seals on outside of cooler?	
	How many and where?,Seal Date:,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?	
5.	Were custody papers sealed in a plastic bag? Hand delivered	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 at the	e top of this form
9.	· · · · · · · · · · · · · · · · · · ·	NO Observed Cooler TempCC Correction factorO_OC
В.	LOG-IN PHASE: Date samples were logged-in: 0.7/26/2021 (Si	gnature)
10.	Describe type of packing in cooler: LOUSE ICE	
11.	Were all samples sealed in separate plastic bags?	
12.	Did all containers arrive unbroken and were labels in good condition?	YES NO
13.	Were sample labels complete?	
14.	Did all sample labels agree with custody papers?	
15.	Were correct containers used for the tests indicated?	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?	MO
18.	Were bubbles absent in VOA samples? If NO, list by sample #:	<u> </u>
19.	Was the ARDL project coordinator notified of any deficiencies?	YES NO (N/A)
	Comments and/or Corrective Action:	Sample Transfer
		(AI)
		Area # Area #
		By By
		DCAS
	· · · · ·	0^{n} 07/210/2021 0n
-		Chain-of-Custody #
(E	y: Signature) Date:	

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Environmental | Analytical | Management | Safety

Customer Name: SLCOE

Project Name: Carlyle Lake

Samples Received at ARDL: 8/25/21

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

www.ardlinc.com

Date: 9/27/21

Lab Name: ARDL, Inc.

ARDL Report No.: 8801

CASE NARRATIVE

<u>Customer</u> Sample No.	<u>Date</u> Collected	<u>Lab ID</u> Number	Applycop Porycotod
			Analyses Requested
CAR-1	8/25/21	8801-1	NP Pesticides, Metals(1), Inorganics(2)
CAR-2-0	8/25/21	8801-2	NP Pesticides, Inorganics(2)(3)
CAR-2-10	8/25/21	8801-3	Metals(1), Inorganics(2)
CAR-4	8/25/21	8801-4	NP Pesticides, Inorganics(2)(3)
CAR-13	8/25/21	8801-5	NP Pesticides, Inorganics(2), E. Coli
CAR-14	8/25/21	8801-6	NP Pesticides, Inorganics(2)(3)
CAR-15	8/25/21	8801-7	NP Pesticides, Inorganics(2)(3)
CAR-KP-MARINA	8/25/21	8801-8	E. Coli
CAR-DW-MARINA	8/25/21	8801-9	E. Coli
CAR-BL-Marina	8/25/21	8801-10	E. Coli
CAR-CSA-Marina	8/25/21	8801-11	E. Coli
KAS-1	8/25/21	8801-12	Inorganics(2)(3)(4), E. Coli
KAS-1	8/25/21	8801-13	Inorganics(2)(3)(4), E. Coli

(1) Including iron and manganese.

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

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

(4) Including nitrite and TKN.

The quality control data are summarized as follows:

NP PESTICIDE FRACTION - METHOD 8270-SIM

HOLDING TIME

Samples were prepared and analyzed within method specified holding times.

INITIAL CALIBRATION

The initial calibration passed criteria. The ICV passed criteria.

CONTINUING CALIBRATION

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

PREPARATION BLANK

The blank met acceptance criteria.

LABORATORY CONTROL SAMPLE

The LCS analyses met recovery criteria.

MATRIX SPIKE

The matrix spike and matrix spike duplicate met recovery criteria.

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

Project Name: Carlyle Lake

ARDL Report No.: 8801

CASE NARRATIVE (Continued)

DUPLICATE

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

<u>INTERNAL STANDARDS</u> All internal standard criteria were met.

<u>SURROGATES</u> All surrogate recovery criteria were met.

INORGANIC FRACTION

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

<u>PREPARATION BLANK</u> Results of the preparation blanks were undetected.

<u>LABORATORY CONTROL SAMPLE</u> 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 iron. The parent sample has been flagged appropriately with a 'J' qualifier.

DUPLICATE

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

DATA REPORTING QUALIFIERS

The following data reporting qualifiers are used as required:

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

REPORT ORGANIZATION

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

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

Dean S. Dickerson Technical Services Manager

Page 2 of 2

an (Anna)

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 8801

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

Authorized By: DSD-QAO

Lab Report No: 008801

Report Date: 09/01/2021

Project Name: Project No.:	CARLYLE LAKE/KAS	KASK Ana Analytical Me	-	PESTICII 270C	DES (827	OSIM-MO	D)
NELAC Certi	fied - IL100308	Prep Me	ethod: 35	510C			
Field ID:	CAR-1		ARDL I	Lab No.:	00880	1-01	
Desc/Location:			Lab Fi	llename:	E0830	114	
Sample Date:	08/25/2021		Receiv	ved Date:	08/25	/2021	
Sample Time:	1115		Prep.	Date:	08/27	/2021	
Matrix:	WATER		Analys	sis Date:	08/30	/2021	
Amount Used:	1000 mL		Instru	ument ID:	AG5		
Final Volume:	1 mL		QC Bat	ch:	B1139	2	
% 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	0.590		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	1.11		UG/L	1
Chlorpyrifos		0.200	0.200	ND		UG/L	1
Cyanazine		0.200	0.200	ND		UG/L	1
Pendimethalin		0.200	0.200	ND		UG/L	1

SURROGATE RECOVERIES:	Limits	Results	
Triphenylphosphate	30-130	64%	

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

(a) DOD-QSM Accredited Analyte.

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

Lab Report No: 008801

Report Date: 09/24/2021

Project Name: CARLY Project No:	CARLYLE LAKE/KASKASKIA RIVER	KASKIA RIVE	Я				4	Analysis: Inorganics NELAC Certified - IL100308	: Inorganics fied - IL1003	ics 00308
ARDL No: 008801-01 Field ID: CAR-1 Received: 08/25/202	008801-01 CAR-1 08/25/2021	Samp Sam Sam	Sampling Loc'n: Sampling Date: Sampling Time:	:'n: ite: 08/25/2021 .me: 1115	/2021			Matrix: Moisture:	:: WATER :: NA	
Analyte	LOD	ΓΟĞ	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
 (a) Iron (a) Manganese Ammonia Nitrogen Nitrate as Nitrogen Phosphorus Solids, Total Suspended Solids, Volatile Suspen Total Organic Carbon 	0.0400 0.00400 0.0200 0.0190 0.00800 1ded 4.00 ipen 4.00	0.0500 0.00500 0.0300 0.0200 4.00 4.00 1.00	Ċ	0.645 0.221 0.123 0.069 0.455 12.8 5.2 4.9	1/9W 7/9M 1/9M 1/9M 1/9M 1/9M 1/9M 1/9M	3010A 3010A NONE NONE 365.2 NONE NONE NONE	6010C 6010C 350.1 GREEN 365.2 160.4 415.1	09/10/21 09/10/21 NA NA NA 09/20/21 NA NA	09/10/21 09/10/21 08/30/21 09/21/21 08/30/21 08/30/21 08/30/21	P7610A P7610A 09016216 09216315 09236328 09136244 09136245 09236329

(a) DOD and/or NELAC Accredited Analyte.

Sample 008801-01, Inorganic Analyses

Lab Report No: 008801

Report Date: 08/31/2021

NELAC Certified - IL100308Prep Method: 351Field ID:CAR-2ARDL LalDesc/Location:Lab FileSample Date:08/25/2021ReceivedSample Time:1210Prep. DMatrix:WATERAnalysiAmount Used:1000 mLInstrumeFinal Volume:1 mLQC Batc% Moisture:NALevel:	PESTICIDES 70C	(8270SIM-MC)D)
Desc/Location:Lab FileSample Date:08/25/2021ReceivedSample Time:1210Prep. D.Matrix:WATERAnalysiAmount Used:1000 mLInstrumFinal Volume:1 mLQC Batc% Moisture:NALevel:ParameterLODLOQTrifluralin0.2000.200Atrazine0.2000.200Metribuzin0.2000.200Alachlor0.2000.200Chlorpyrifos0.2000.200Cyanazine0.2000.200			
Sample Date:08/25/2021ReceivedSample Time:1210Prep. DMatrix:WATERAnalysiAmount Used:1000 mLInstrumFinal Volume:1 mLQC Batc% Moisture:NALevel:ParameterLODLOQTrifluralin0.2000.200Atrazine0.2000.200Metribuzin0.2000.200Alachlor0.2000.200Metolachlor0.2000.200Chlorpyrifos0.2000.200Cyanazine0.2000.200	ab No.: 0	08801-02	
Sample Time:1210Prep. D.Matrix:WATERAnalysiAmount Used:1000 mLInstrumFinal Volume:1 mLQC Batc% Moisture:NALevel:ParameterLODLOQTrifluralin0.2000.200Atrazine0.2000.200Metribuzin0.2000.200Alachlor0.2000.200Metolachlor0.2000.200Chlorpyrifos0.2000.200Cyanazine0.2000.200	lename: E	0830117	
Matrix:WATERAnalysiAmount Used:1000 mLInstrumFinal Volume:1 mLQC Batc% Moisture:NALevel:ParameterLODLOQTrifluralin0.2000.200Atrazine0.2000.200Metribuzin0.2000.200Alachlor0.2000.200Metolachlor0.2000.200Chlorpyrifos0.2000.200Cyanazine0.2000.200	ed Date: 0	8/25/2021	
Amount Used:1000 mLInstrumFinal Volume:1 mLQC Batc% Moisture:NALevel:ParameterLODLOQTrifluralin0.2000.200Atrazine0.2000.200Metribuzin0.2000.200Alachlor0.2000.200Metolachlor0.2000.200Chlorpyrifos0.2000.200Cyanazine0.2000.200	Date: 0	8/27/2021	
Final Volume:1 mLQC Batc% Moisture:NALevel:ParameterLODLOQTrifluralin0.2000.200Atrazine0.2000.200Metribuzin0.2000.200Alachlor0.2000.200Metolachlor0.2000.200Chlorpyrifos0.2000.200Cyanazine0.2000.200	is Date: 0	8/30/2021	
% Moisture: NA Level: Parameter LOD LOQ Trifluralin 0.200 0.200 Atrazine 0.200 0.200 Metribuzin 0.200 0.200 Alachlor 0.200 0.200 Metolachlor 0.200 0.200 Chlorpyrifos 0.200 0.200 Cyanazine 0.200 0.200	ment ID: A	.G5	
Parameter LOD LOQ Trifluralin 0.200 0.200 Atrazine 0.200 0.200 Metribuzin 0.200 0.200 Alachlor 0.200 0.200 Metolachlor 0.200 0.200 Chlorpyrifos 0.200 0.200 Cyanazine 0.200 0.200	ch: B	11392	
Trifluralin0.2000.200Atrazine0.2000.200Metribuzin0.2000.200Alachlor0.2000.200Metolachlor0.2000.200Chlorpyrifos0.2000.200Cyanazine0.2000.200	L	WO	
Trifluralin0.2000.200Atrazine0.2000.200Metribuzin0.2000.200Alachlor0.2000.200Metolachlor0.2000.200Chlorpyrifos0.2000.200Cyanazine0.2000.200	Da	ta	Dilution
Atrazine0.2000.200Metribuzin0.2000.200Alachlor0.2000.200Metolachlor0.2000.200Chlorpyrifos0.2000.200Cyanazine0.2000.200	Result Fl.	ag Units	Factor
Metribuzin 0.200 0.200 Alachlor 0.200 0.200 Metolachlor 0.200 0.200 Chlorpyrifos 0.200 0.200 Cyanazine 0.200 0.200	ND	UG/L	1
Alachlor0.2000.200Metolachlor0.2000.200Chlorpyrifos0.2000.200Cyanazine0.2000.200	0.450	UG/L	1
Metolachlor 0.200 0.200 Chlorpyrifos 0.200 0.200 Cyanazine 0.200 0.200	ND	UG/L	1
Chlorpyrifos 0.200 0.200 Cyanazine 0.200 0.200	ND	UG/L	1
Cyanazine 0.200 0.200	0.850	UG/L	1
-	ND	UG/L	1
Pendimethalin 0.200 0.200	ND	UG/L	1
	ND	UG/L	1

SURROGATE RECOVERIES:	Limits	Results
Triphenylphosphate	30-130	51%

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

(a) DOD-QSM Accredited Analyte.

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

008801 Lab Report No:

Report Date: 09/24/2021

<pre>Project Name: CARLYLE LAKE/KASKASKIA RIVER Project No:</pre>	JE LAKE/KASF	(ASKIA RIVEI	<i></i>				Z	Analysis: Inorganics NELAC Certified - IL100308	: Inorganics fied - IL1003	ics 00308
ARDL No: 008801-02 Field ID: CAR-2 Received: 08/25/2021	-02	Samp] Samf Samf	Sampling Loc'n: Sampling Date: Sampling Time:		08/25/2021 1210			Matrix: Moisture:	: WATER : NA	
Analyte	TOD	ΓΟŌ	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
Ammonia Nitrogen Chlorophyll-a, Correcte Nitrate as Nitrogen Pheophytin-a Phosphorus Solids, Total Suspended Solids, Volatile Suspen Total Organic Carbon	0.0200 te 1.00 0.0190 1.00 0.00800 led 4.00 oen 4.00	0.0300 1.00 0.0200 1.00 4.00 4.00		0.0375 42.7 42.7 0.041 7.5 0.451 12.4 6.8 5.3	MG/L MG/CU.M. MG/CU.M. MG/L MG/L MG/L MG/L	NONE 10200H NONE 10200H 365.2 NONE NONE NONE	350.1 10200H GREEN 10200H 365.2 160.2 160.4 415.1	NA 08/26/21 NA 08/26/21 09/20/21 NA NA NA	08/30/21 09016216 09/21/21 09236330 09/16/21 09216315 09/21/21 09236330 09/21/21 09236328 08/30/21 09136244 08/30/21 09136245 08/30/21 09136245	09016216 09236330 09216315 09236330 09236328 09236244 09136245 09136245 09236329

(a) DOD and/or NELAC Accredited Analyte.

Sample 008801-02, Inorganic Analyses

Lab Report No: 008801

CARLYLE LAKE/KASKASKIA RIVER

Project Name:

Report Date: 09/24/2021

Analysis: Inorganics

Project No:	-						N	ELAC Certi	NELAC Certified - IL100308	00308
ARDL No: 008801-03	3	Sampl	Sampling Loc'n:	c'n:				Matrix:	: WATER	
Field ID: CAR-2-10		Samp	Sampling Date:	ate: 08/25/2021	/2021			Moisture:	: NA	
Received: 08/25/2021	21	Samp	Sampling Time:	ime: 1210						
						Prep	Analysis	Prep	Analysis	Run
Analyte	LOD	ГОQ	Flag	Result	Units	Method	Method	Date	Date	Number
(a) Iron	0.0400	0.0500		0.546	MG/L	3010A	6010C	09/10/21	09/10/21	P7610A
(a) Manganese	0.00400	0.00500		0.251	MG/L	3010A	6010C	09/10/21	09/10/21	P7610A
Ammonia Nitrogen	0.0200	0.0300		0.102	MG/L	NONE	350.1	NA	08/30/21	09016216
Nitrate as Nitrogen	0.0190	0.0200		0.063	MG/L	NONE	GREEN	NA	09/16/21	09216315
Phosphorus	0.00800	0.0100		0.42	MG/L	365.2	365.2	09/20/21	09/21/21	09236328
Solids, Total Suspended	4.00	4.00		13.6	MG/L	NONE	160.2	NA	08/30/21	09136244
Solids, Volatile Suspen	4.00	4.00		6.0	MG/L	NONE	160.4	NA	08/30/21	09136245
Total Organic Carbon	0.500	1.00		5.2	MG/L	NONE	415.1	NA	09/04/21	09236329

(a) DOD and/or NELAC Accredited Analyte.

Sample 008801-03, Inorganic Analyses

Lab Report No: 008801

Report Date: 08/31/2021

-	CARLYLE LAKE/KASKA		-	PESTICI	DES (827	OSIM-MO	D)
Project No.: NELAC Certi	fied - IL100308	alytical M Prep M	ethod: 32				
		-					
Field ID:	CAR-4			Lab No.:	00880		
Desc/Location:			Lab F:	llename:	E0830)118	
Sample Date:	08/25/2021		Receiv	ved Date:		5/2021	
Sample Time:	1320		Prep.	Date:	08/27	/2021	
Matrix:	WATER		Analys	sis Date:	08/30)/2021	
Amount Used:	1000 mL		Instru	ument ID:	AG5		
Final Volume:	1 mL		QC Bat	cch:	B1139	92	
<pre>% Moisture:</pre>	NA		Level	:	LOW		
				· · ·	Data		Dilution
Parameter		LOD	LOQ	Result	Flag	Units	Factor
Trifluralin		0.200	0.200	ND		UG/L	1
Atrazine		0.200	0.200	0.310		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	0.510		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	48%	1

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

(a) DOD-QSM Accredited Analyte.

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

Lab Report No: 008801

CARLYLE LAKE/KASKASKIA RIVER

Project Name: Project No:

Report Date: 09/24/2021

Analysis: Inorganics NELAC Certified - IL100308

Field ID: CAR-4 Received: 08/25/2021		Samp Samr Samr	Sampling Loc'n: Sampling Date: Sampling Time:		08/25/2021 1320			Matrix: Moisture:	: WATER : NA	
Analyte	LOD	ГОД	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
Ammonia Nitrogen	0.0200	0.0300		QN	MG/L	NONE	350.1	NA	08/30/21 09016216	09016216
Chlorophyll-a, Correcte	1.00	1.00		118	MG/CU.M.	10200H	10200H	08/26/21	09/21/21	09236330
Nitrate as Nitrogen	0.0190	0.0200		0.264	MG/L	NONE	GREEN	NA	09/16/21	09216315
Pheophytin-a	1.00	1.00		16.1	MG/CU.M.	10200H	10200H	08/26/21	09/21/21	09236330
	0.00800	0.0100		0.334	MG/L	365.2	365.2	09/20/21	09/21/21	09236328
Solids, Total Suspended	4.00	4.00		34.4	MG/L	NONE	160.2	NA	08/30/21	09136244
Solids, Volatile Suspen	4.00	4.00		12.4	MG/L	NONE	160.4	NA	08/30/21	09136245
Total Organic Carbon	0.500	1.00		5.2	MG/L	NONE	415.1	NA	09/04/21	09236329

(a) DOD and/or NELAC Accredited Analyte.

Sample 008801-04, Inorganic Analyses

Lab Report No: 008801

Report Date: 08/31/2021

2	CARLYLE LAKE/KAS		-	PESTICIE	DES (8270)SIM-MO	D)
Project No.:		Analytical Me					
NELAC Certi	fied - IL100308	Prep Me	ethod: 35	5100			
Field ID:	CAR-13		ARDL 1	Lab No.:	008803	1-05	
Desc/Location:			Lab F	ilename:	E08303	119	
Sample Date:	08/25/2021		Receiv	ved Date:	08/25,	/2021	
Sample Time:	1405		Prep.	Date:	08/27,	/2021	
Matrix:	WATER		Analys	sis Date:	08/30,	/2021	
Amount Used:	900 mL		Instru	ument ID:	AG5		
Final Volume:	1 mL		QC Bat	cch:	B11392	2	
% 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	0.856		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	58%	
			_

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

(a) DOD-QSM Accredited Analyte.

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

Project Name: CARLYLE LAKE/KASKASKIA RIVER

Report Date: 09/24/2021

Analysis: Inorganics

Project No:							Ŋ	NELAC Certified - IL100308	fied - IL1	00308
ARDL No: 008801-05 Field ID: CAR-13 Received: 08/25/2021)5)21	Samp. Samı Samı	Sampling Loc'n: Sampling Date: Sampling Time:	:'n: ate: 08/25/2021 ime: 1405	/2021			Matrix: Moisture:	K: WATER B: NA	
Analyte	LOD	LOQ	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
Ammonia Nitrogen	0.0200	0.0300		QN	MG/L	NONE	350.1	NA	08/30/21 09016216	09016216
Nitrate as Nitrogen	0.0190	0.0200		1.08	MG/L	NONE	GREEN	NA	09/16/21 09216315	09216315
Phosphorus	0.00800	0.0100		0.364	MG/L	365.2	365.2	09/20/21	09/21/21	09236328
Solids, Total Suspended	1 6.67	6.67		157	MG/L	NONE	160.2	NA	08/30/21	09136244
Solids, Volatile Suspen	1 6.67	6.67		16.0	MG/L	NONE	160.4	NA	08/30/21 09136245	09136245
Total Organic Carbon	0.500	1.00		3.4	MG/L	NONE	415.1	NA	09/04/21 09236329	09236329

(a) DOD and/or NELAC Accredited Analyte.

Sample 008801-05, Inorganic Analyses

Lab Report No: 008801

Report Date: 08/31/2021

-	CARLYLE LAKE/KASK		1	PESTICIE	DES (8270	SIM-MO	D)
Project No.: NELAC Certi	fied - IL100308	nalytical Me Prep Me	ethod: 35				
		-					
Field ID:	CAR-12		ARDL I	Lab No.:	008801	06	
Desc/Location:			Lab Fi	llename:	E08301	.20	
Sample Date:	08/25/2021		Receiv	ved Date:	08/25/	2021	
Sample Time:	1140		Prep.	Date:	08/27/	2021	
Matrix:	WATER		Analys	sis Date:	08/30/	2021	
Amount Used:	900 mL		Instru	ument ID:	AG5		
Final Volume:	1 mL		QC Bat	cch:	B11392	2	
% 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	0.411		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	0.733		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	53%	

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

(a) DOD-QSM Accredited Analyte.

Lab Keport No: UU	100000						4	keport vare:	: 03/24/202T	TZD
Project Name: CARLYLE Project No:	CARLYLE LAKE/KASKASKIA RIVER	SKIA RIVEF					Z	Analysis: Inor NELAC Certified -	: Inorganics fied - IL1003	ganics IL100308
ARDL No: 008801-06 Field ID: CAR-12 Received: 08/25/2021	06 021	Sampling Samplin Samplin		Loc'n: Date: 08/25 Time: 1140	08/25/2021 1140			Matrix: Moisture:	:: WATER :: NA	
Analyte	LOD	LOQ	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
Ammonia Nitrogen	0.0200	0.0300		QN	MG/L	NONE	350.1	NA	08/30/21 (09016216
Chlorophyll-a, Correcte	e 1.00	1.00		33.6	MG/CU.M.	10200H	10200H	08/26/21	09/21/21 (09236330
Nitrate as Nitrogen	0.0190	0.0200		1.11	MG/L	NONE	GREEN	NA	09/16/21 (09216315
Pheophytin-a	1.00	1.00		2.0	MG/CU.M.	10200H	10200H	08/26/21	09/21/21 (09236330
Phosphorus	0.00800	0.0100		0.20	MG/L	365.2	365.2	09/20/21	09/21/21 (09236328
Solids, Total Suspended	d 4.00	4.00		48.0	MG/L	NONE	160.2	NA	08/30/21 (09136244
Solids, Volatile Suspen	n 4.00	4.00		8.0	MG/L	NONE	160.4	NA	08/30/21 (09136245
Total Organic Carbon	0.500	1.00		3.4	MG/L	NONE	415.1	NA	09/04/21 (09236329

(a) DOD and/or NELAC Accredited Analyte.

Sample 008801-06, Inorganic Analyses

Lab Report No: 008801

Report Date: 09/13/2021

Project Name: Project No.:	CARLYLE LAKE/KASK.	ASK Ana nalytical Me		PESTICII 270C	DES (827	0SIM-MO	D)
NELAC Certi	fied - IL100308	Prep Me	ethod: 35	510C			
Field ID:	CAR-15		ARDL 1	Lab No.:	00880)1-07	
Desc/Location:			Lab Fi	llename:	E0830)121	
Sample Date:	08/25/2021		Receiv	ved Date:	08/25	5/2021	
Sample Time:	1555		Prep.	Date:	08/27	/2021	
Matrix:	WATER		Analys	sis Date:	08/30)/2021	
Amount Used:	800 mL		Instru	ument ID:	AG5		
Final Volume:	1 mL		QC Bat	ch:	B1139	92	
% Moisture:	NA		Level	:	LOW		
****					Data		Dilution
Parameter		LOD	LOQ	Result	Flag	Units	Factor
Trifluralin	 The second se	0.250	0.250	ND		UG/L	1
Atrazine		0.250	0.250	0.425		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	0.675		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	55%	
			_

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

(a) DOD-QSM Accredited Analyte.

Lab Report No: 008801

CARLYLE LAKE/KASKASKIA RIVER

Project Name:

Report Date: 09/24/2021

Analysis: Inorganics

Project No:							Z	ELAC Certi	NELAC Certified - IL100308	00308
ARDL No: 008801-07 Field ID: CAR-15 Received: 08/25/2021	21	Samp] Samp Samp	Sampling Loc'n: Sampling Date: Sampling Time:		08/25/2021 1555			Matrix: Moisture:	: WATER : NA	
Analyte	LOD	ГОО	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Numbe <i>r</i>
Ammonia Nitrogen	0.0200	0.0300		DN	MG/L	NONE	350.1	NA	08/30/21 09016216	09016216
Chlorophyll-a, Correcte	1.00	1.00		119	MG/CU.M.	10200H	10200H	08/26/21	09/21/21	09236330
Nitrate as Nitrogen	0.0190	0.0200		0.243	MG/L	NONE	GREEN	NA	09/16/21	09216315
Pheophytin-a	1.00	1.00		14.5	MG/CU.M.	10200H	10200H	08/26/21	09/21/21	09236330
Phosphorus	0.00800	0.0100		0.334	MG/L	365.2	365.2	09/20/21	09/21/21	09236328
Solids, Total Suspended	6.67	6.67		35.3	MG/L	NONE	160.2	NA	08/30/21	09136244
Solids, Volatile Suspen	6.67	6.67		14.0	MG/L	NONE	160.4	NA	08/30/21	09136245
Total Organic Carbon	0.500	1.00		5.1	MG/L	NONE	415.1	NA	09/04/21 09236329	09236329

(a) DOD and/or NELAC Accredited Analyte.

Sample 008801-07, Inorganic Analyses

P.O. Box 1566 P.O. Box 1566 nois 62864	Report Date: 09/24/2021	Analysis: Inorganics NELAC Certified - IL100308	Matrix: WATER Moisture: NA	Prep Analysis Prep Analysis Run Units Method Method Date Date Number	COL/100 ML NONE 1604 NA 08/25/21 08276199
400 Aviation Drive; P.O. Mt. Vernon, Illinois		SKIA RIVER	Sampling Loc'n: Sampling Date: 08/25/2021 Sampling Time: 1325	LOQ Flag Result Uni	1.00 950 COL/1
	Lab Report No: 008801	CARLYLE LAKE/KASKASKIA RIVER	008801-08 CAR-KP-MARINA 08/25/2021	e LOD	1.00
	Lab Report	Project Name: Project No:	ARDL No: Field ID: Received:	Analyte	E. Coliform

ARDL, INC.

(a) DOD and/or NELAC Accredited Analyte.

Sample 008801-08, Inorganic Analyses

2021	nics 100308		Run Number
09/24/	ied – IL	WATER NA	Analysis Date
Report Date: 09/24/2021	Analysis: Inorganics NELAC Certified - IL100308	Matrix: Moisture:	Prep Date
Re	ΗN		Prep Analysis Method Method
			Prep Method
		/2021	Units
		08/25 1150	ult
		oc'n: Date: Time:	Flad Result
	ER	Sampling Loc'n: Sampling Date: 08/25/2021 Sampling Time: 1150	Flac
	KASKIA RIV.	Sam Sar Sar	Ľ00
08801	E LAKE/KASF	-09 -MARINA 2021	LOD
No: 00	CARLYLE	008801- CAR-DW- 08/25/2	a
Lab Report No: 008801	<pre>Project Name: CARLYLE LAKE/KASKASKIA RIVER Project No:</pre>	ARDL No: 008801-09 Field ID: CAR-DW-MARINA Received: 08/25/2021	Analvte
	ч ц		

Analyte	гор	LOQ	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
E. Coliform	1.00	1.00		125	COL/100 ML	NONE	1604	NA	08/25/21 08276199	18276199

(a) DOD and/or NELAC Accredited Analyte.

Sample 008801-09, Inorganic Analyses

					6
	2021	nics .00308		Run Number	0827619
	Report Date: 09/24/2021	Analysis: Inorganics NELAC Certified - IL100308	x: WATER e: NA	Analysis Date	08/25/21 08276199
	eport Dat	Analysi ELAC Cert	Matrix: Moisture:	Prep Date	NA
Q	Я	Z		Analysis Method	1604
Box 1566 62864				Prep Method	NONE
ARDL, INC. Aviation Drive; P.O. ft. Vernon, Illinois			08/25/2021 1510	Units	COL/100 ML
AR ation D Vernon,				Result	1150
400 Avi Mt.		R	Sampling Loc'n: Sampling Date: Sampling Time:	Flag	
		ASKIA RIVE	Samp San San	ΓΟŐ	1.00
	: 008801	CARLYLE LAKE/KASKASKIA RIVER	008801-10 CAR-BL-MARINA 08/25/2021	LOD	1.00
	ort No			Analyte	
	Lab Report No:	Project Name: Project No:	ARDL No: Field ID: Received:	An	E. Coliform

(a) DOD and/or NELAC Accredited Analyte.

Sample 008801-10, Inorganic Analyses

	Report Date: 09/24/2021	Analysis: Inorganics NELAC Certified - IL100308	Matrix: WATER Moisture: NA	Analysis Prep Analysis Run Method Date Date Number	1604 NA 08/25/21 08276199
566					F
Box 1566 62864				Prep Method	NONE
ARDL, INC. Aviation Drive; P.O. 1 ft. Vernon, Illinois (08/25/2021 1158	Units	COL/100 ML
ARD Lation Dr Vernon,				Result	150
400 Avi Mt.		ſ.	1 0 0	Flag	
7		ASKIA RIVEI	Sampling Samplin Samplin	ΓΟÕ	1.00
	08801	CARLYLE LAKE/KASKASKIA RIVER	008801-11 CAR-CSA-MARINA 08/25/2021	LOD	1.00
	No: 0	CARLYL	008801-11 CAR-CSA-MA 08/25/2021	0 U	
	Lab Report No: 008801	Project Name: Project No:	ARDL No: Field ID: Received:	Analyte	E. Coliform

(a) DOD and/or NELAC Accredited Analyte.

Sample 008801-11, Inorganic Analyses

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

Report Date: 09/24/2021

Project Name: Project No:	CARLYLE L	AKE/KASKA	CARLYLE LAKE/KASKASKIA RIVER	~					Analysis: Inorganics NELAC Certified - IL100308	: Inorganics fied - IL1003	ics 00308
ARDL No: Field ID: Received:	008801-12 KAS-1 08/25/2021	-	Sampling Samplin Samplin			08/25/2021 0940			Matrix: Moisture:	: WATER : NA	
Analyte	Ø	LOD	ГОД	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
Ammonia Nitrogen	ц	0.0200	0.0300		0.109	MG/L	NONE	350.1	NA	08/30/21	09016216
Chlorophyll-a, Correcte	Correcte	1.00	1.00		23.6	MG/CU.M.	10200H	10200H	08/26/21	09/21/21	09236330
E. Coliform		1.00	1.00		625	COL/100 ML	NONE	1604	NA	08/25/21	08276199
Kjeldahl Nitrogen	en.	0.190	0.200		1.02	MG/L	351.2	351.2	09/08/21	09/09/21	09146257
Nitrate as Nitrogen	ogen	0.0190	0.0200		0.222	MG/L	NONE	GREEN	NA	09/16/21	09216315
Nitrite as Nitrogen	ogen	0.0200	0.0200		0.075	MG/L	NONE	354.1	NA	08/26/21	09156280
Pheophytin-a		1.00	1.00		12.6	MG/CU.M.	10200H	10200H	08/26/21	09/21/21	09236330
Phosphorus		0.00800	0.0100		0.472	MG/L	365.2	365.2	09/20/21	09/21/21	09236328
Solids, Total Suspended	uspended	6.67	6.67		54.7	MG/L	NONE	160.2	NA	08/30/21	09136244
Solids, Volatile Suspen	e Suspen	6.67	6.67		8.67	MG/L	NONE	160.4	NA	08/30/21	09136245
Total Organic Carbon	arbon	0.500	1.00		4.8	MG/L	NONE	415.1	NA	09/04/21	09236329

(a) DOD and/or NELAC Accredited Analyte.

Sample 008801-12, Inorganic Analyses

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

CARLYLE LAKE/KASKASKIA RIVER

Project Name: Project No:

Report Date: 09/24/2021

Analysis: Inorganics NELAC Certified - IL100308

ARDL No: 008801-13 Field ID: KAS-2	6	Sampling Samplin	0		08/25/2021			Matrix: Moisture:	: WATER : NA	
Received: 08/25/2021	21	Samp	Sampling Time:	Lme: 0755						
						Prep	Analysis	Prep	Analysis	Run
Analyte	LOD	LOQ	Flag	Result	Units	Method	Method	Date	Date	Number
Ammonia Nitrogen	0.0200	0.0300		0.0333	MG/L	NONE	350.1	NA	08/30/21 09016216	9016216
Chlorophyll-a, Correcte	1.00	1.00		25.4	MG/CU.M.	10200H	10200H	08/26/21	09/21/21 (09236330
E. Coliform	1.00	1.00		2000	COL/100 ML	NONE	1604	NA	08/25/21 (08276199
Kjeldahl Nitrogen	0.190	0.200		0.689	MG/L	351.2	351.2	09/08/21	09/09/21 (09146257
Nitrate as Nitrogen	0.0190	0.0200		0.193	MG/L	NONE	GREEN	NA	09/16/21 (09216315
Nitrite as Nitrogen	0.0200	0.0200		0.032	MG/L	NONE	354.1	NA	08/26/21 (09156280
Pheophytin-a	1.00	1.00		8.3	MG/CU.M.	10200H	10200H	08/26/21	09/21/21 (09236330
Phosphorus	0.00800	0.0100		0.632	MG/L	365.2	365.2	09/20/21	09/21/21 0	09236328
Solids, Total Suspended	6.67	6.67		130	MG/L	NONE	160.2	NA	08/30/21 0	09136244
Solids, Volatile Suspen	6.67	6.67		12.7	MG/L	NONE	160.4	NA	08/30/21 0	09136245

(a) DOD and/or NELAC Accredited Analyte.

Sample 008801-13, Inorganic Analyses

Page 1 of 1

09/04/21 09236329

NA

415.1

NONE

MG/L

5.1

1.00

0.500

ł

Total Organic Carbon

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

Lab Report No: 008800

Report Date: 09/01/2021

2	SHELBYVILLE LAKE		sis: NP PEST	TICIDES (82	270SIM-M	OD)
Project No.: NELAC Certi	fied - IL100308	Analytical Met	hod: 3510C			
	11100000	1100 1100				
Field ID:	NA		ARDL Lab No	b.: 0088	800-01B1	
Desc/Location:	NA		Lab Filenam	ne: E083	30103	
Sample Date:	NA		Received Da	ate: NA		
Sample Time:	NA		Prep. Date:	: 08/:	27/2021	
Matrix:	QC Material		Analysis Da	ate: 08/3	30/2021	
Amount Used:	1000 mL		Instrument	ID: AG5		
Final Volume:	1 mL		QC Batch:	B11	392	
<pre>% Moisture:</pre>	NA		Level:	LOW		
					Data	
Parameter		LOD	LOQ	Result	Flag	Units
Trifluralin		0.200	0.200	ND		UG/L
Atrazine		0.200	0.200	ND		UG/L
Metribuzin		0.200	0.200	ND		UG/L
Alachlor		0.200	0.200	ND		UG/L
Metolachlor		0.200	0.200	ND		UG/L
Chlorpyrifos		0.200	0.200	ND		UG/L
Cyanazine		0.200	0.200	ND		UG/L
Pendimethalin		0.200	0.200	ND		UG/L
SURROGATE RECOV		Limit	2		esults	
SURROGATE RECOV Triphenylphosph		30-13		R	esuits 75%	
rrthueuArbuosbu	late	30-13	00		100	

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

(a) DOD-QSM Accredited Analyte.

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

Lab Report No: 008801

Project Name:

Report Date: 09/24/2021

CARLYLE LAKE/KASKASKIA RIVER

NELAC Certified - IL100308

Analyte	LOD	ГОQ	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	09/10/21	09/10/21	P7610A	008800-01B1
(a) Manganese	0.004	0.005	UN	MG/L	3010A	6010C	09/10/21	09/10/21	P7610A	008800-01B1
Ammonia Nitrogen	0.020	0.030	DN	MG/L	NONE	350.1	NA	08/30/21	09016216	008801-01B1
Chlorophyll-a, Corre	1.0	1.0	DN	MG/CU.M.	10200H	10200H	08/26/21	09/21/21	09236330	008801-02B1
Kjeldahl Nitrogen	0.19	0.20	DN	MG/L	351.2	351.2	09/08/21	09/09/21	09146257	008800-09B1
Nitrate as Nitrogen	0.019	0.020	DN	MG/L	NONE	GREEN	NA	09/16/21	09216315	008801-04B1
Nitrite as Nitrogen	0.020	0.020	DN	MG/L	NONE	354.1	NA	08/26/21	09156280	008801-12B1
Pheophytin-a	1.0	1.0	DN	MG/CU.M.	10200H	10200H	08/26/21	09/21/21	09236330	008801-02B1
Phosphorus	0.008	0.010	ND	MG/L	365.2	365.2	09/20/21	09/21/21	09236328	008800-01B1
Solids, Total Suspen	1.0	1.0	ND	MG/L	NONE	160.2	NA	08/30/21	09136244	008801-01B1
Solids, Volatile Sus	1.0	1.0	ND	MG/L	NONE	160.4	NA	08/30/21 09136245	09136245	008801-01B1
Total Organic Carbon	0.50	1.0	QN	MG/L	NONE	415.1	NA	09/03/21 09236329	09236329	008800-01B1

(a) DOD and/or NELAC Accredited Analyte Inorganic Method Blanks for 008801

Page 1 of 1

ARDL Report 8801 - Page 24 of 33

	ARDL, INC.		BLANK 400 Av	SPIKE/{ riation	SPIKE D Drive;	UPLICATH P.O. Bo	BLANK SPIKE/SPIKE DUPLICATE REPORT 400 Aviation Drive; P.O. Box 1566	Mt. V∈	Mt. Vernon, IL	IL 62864	54	
Lab Report No:	008800								Re	Report Date:	: 09/01/2021	21
Project Name: SH Project No.:	SHELBYVILLE LAKE/KAS	KE/KAS	Analys	Analysis: NP P	PESTICIDES	S (8270SIM-MOD)	(dom-m:	Anal	Analytical M Prep M	Method: 82 Method: 35	8270C 3510C	
Matrix: Q Amount Used: 1	QC Material 1000 mL		Он	QC Batch: Level:	B11392 LOW	92		Prep. Dat Analysis	Date: is Date:	08/27/2021 08/30/2021	121 121	1
		Spike		Spike	Spike	Duplicate	Duplicate	Duplicate	Recovery		RPD	
para	Parameter	Result		Level	% Rec	Result	Level	% Rec	Limits	RPD	Limit	
Trifl	Trifluralin	3.21		4	80	-		-	30-130		1	
Atr	Atrazine	3.23		4	81	1	;	{	30-130		1	
Metr	Metribuzin	3.3		4	83	1	1	1	30-130	ł	1	
ALa	Alachlor	3.54		4	89			1	30-130		ł	
Metol	Metolachlor	3.24		4	81	ł	1	ł	30-130	-	4	
Chlor	Chlorpyrifos	3.09		4	ΓL	1	1	1	30-130	1	1	
Cyan	Cyanazine	3.53		4	88	1		ł	30-130		4 1	
Pendim	Pendimethalin	3.32		4	83	1	-	1	30-130	1		
	SURR	SURROGATE RECOVERIES:	IES:		Spike %R		Duplicate %R 4	%R Limits				
	Trip	Triphenylphosphate	۵		70.1		;	30-130				

(a) DOD-QSM Accredited Analyte.

'*' indicates a recovery outside of standard limits.

Spike Blanks for 008800-01, NP PESTICIDES (8270SIM-MOD)

Inorganic LCS Results for 008801

Lab Report No:	ARD 008801	ARDL, INC.	MATRIX S 400 Avia	SPIKE/SPIKE iation Drive;	SPIKE DUPLICATE Drive; P.O. Box	ICATE REPORT Box 1566		Mt. Vernon, IL Repoi	n, IL Report	62864 Date:	09/01/2021
<pre>Project Name: CARLYLE LAKE/KASKASK Project No.:</pre>	ARLYLE LAK	E/KASKASK	Analysis:	NP	PESTICIDES (82	(8270SIM-MOD)		Analytic Pr	Analytical Method: Prep Method:	d: 8270C d: 3510C	
Field ID: C Desc/Location:	CAR-1		Prep. Amoun	Prep. Date: Amount Used:	08/27/2021 1000 mL	F		ARDL Lab No.: Lab Filename:		008801-01	
Sample Date: 0 Sample Time: 1 Matrix: W	08/25/2021 1115 WATER		% Moist QC Bato Level:	Moisture: Batch: Vel:	NA B11392 LOW		ЦЧ	Received D Analysis D		08/25/2021 08/30/2021	
		Sample	WS	WS	WS	MSD	MSD	MSD	% Rec		RPD
Parameter	cer	Result	Result	Level	% Rec	Result	Level	% Rec	Limits	RPD	Limit
Trifluralin	alin	QN	2.54	4	63.5	2.98	4	74.5	30-130	15.9	30
Atrazine	ine	0.590	2.56	4	49.3	3.25	4	66.5	30-130	23.8	30
Metribuzin	nizi	UN	2.15	4	53.8	2.73	4	68.3	30-130	23.8	30
Alachlor	lor	UN	2.57	4	64.3	3.32	4	83	30-130	25.5	30
Metolachlor	ılor	1.11	3.23	4	53	3.94	4	70.8	30-130	19.8	30
Chlorpyrifos	rifos	UN	2.31	4	57.8	2.77	4	69.3	30-130	18.1	30
Cyanazine	ine	DN	2.32	4	58	2.87	4	71.8	30-130	21.2	30
Pendimethalin	nalin	UN	2.55	4	63.8	2.98	4	74.5	30-130	15.6	30
		SURROGATE RECOVERIES:	RIES:		MS &R	MSD &R	%R Limits	mits			
		Triphenylphosphate	te		54	63	30-130	30			

(a) DOD-QSM Accredited Analyte.

'nc' indicates sample >4X spike level.

'*' indicates a recovery outside of standard limits.

Matrix Spikes for 008801-01, NP PESTICIDES (8270SIM-MOD)

Page 1 of 1

ARDL Report 8801 - Page 27 of 33

	62864
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	Vernon,
REPORT	Mt.
DUPLICATE	t 1566
UPLI	Box
	Р.О.
SPIKE/SPIKE	Drive;
MATRIX SF	Aviation
	400
	INC.
	ARDL,

Report Date: 09/24/2021

NELAC Certified - IL100308 CARLYLE LAKE/KASKASKIA RIVER Project Name:

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Analyte	Sample Matrix	Sample Result	MS Result	MS Level	MS % Rec	MSD Result	MSD Level	MSD % Rec	<pre>% Rec Limits</pre>	RPD	RPD Limit	Run	QC Lab Number
(a) Iron	WATER	0.65	1.3	1.0	* 99	1.3	1.0	* 99	87-115	1	20	P7610A	008801-01MS
(a) Manganese	WATER	0.22	0.69	0.50	93	0.69	0.50	93	90-114	0	20	P7610A	008801-01MS
Ammonia Nitrogen	WATER	0.12	2.2	2.0	101	2.2	2.0	102	75-125	ч	20	09016216	008801-01MS
Kjeldahl Nitrogen	WATER	1.0	1.9	0.80	108	1.7	0.80	06	75-125	8	20	09146257	008801-12MS
Nitrate as Nitrogen	WATER	0.26	1.0	1.0	77	1.0	1.0	77	75-125	0	20	09216315	008801-04MS
Phosphorus	WATER	0.42	1.3	0.83	104	1.3	0.83	105	75-125	1	20	09236328	008801-03MS
Total Organic Carbon	WATER	5.3	10.9	5.0	112	11.0	5.0	114	76-120	Ч	20	09236329	008801-02MS

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

Inorganic Matrix Spikes for 008801

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

Report Date: 09/24/2021

CARLYLE LAKE/KASKASKIA RIVER Project Name:

NELAC Certified - IL100308

Analyte	Sample Conc'n	Sample First Conc'n Duplicate	Second Duplicate	Units	Percent Diff	Mean (Smp,D1,D2)	Analytical Run	QC Lab Number
Chlorophyll-a, Corrected	42.7	43.6		MG/CU.M.	2	I	09236330	008801-02D1
Pheophytin-a	7.5	7.3	1	MG/CU.M.	ო		09236330	008801-02D1
Solids, Total Suspended	12.8	12.8	ľ	MG/L	0		09136244	008801-01D1
Solids, Volatile Suspend	5.2	5.2	1	MG/L	0	I	09136245	008801-01D1

(a) DOD and/or NELAC Accredited Analyte Sample Duplicates for 008801

Sample Receipt Information

Including as appropriate:

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

ARDL Data Package 8801

Authorized By: DSD-QAO

	ARDL, Inc.		P.O. Box 1566, 400 Aviation Drive, Mt. Vernon, IL 62864 (618) 244-3235 Phone (618) 244-1149 Fax	400 Avi -3235 Ph	ation D	rive, N (618	ve, Mt. Vern (618) 244-	rnon, -1149	non, IL 623 1149 Fax	864		6	820H	T						CH	IAIN	OF O	CHAIN OF CUSTODY RECORD	DYF	ECO	RD
L	PROJECT Carlyle Lake								0			5													PRESER	PRESERVATION
.I	SAMPLERS: (Signature)						SS	06	7-1	HN	1			>				-						1		SPECIFY CHEMICALS
	4	RA	R Archestri	·Ý	E COM	10000 × 1000		000	14-5	20/ ie / il/		10	N-2 S	A	-	-				ŕ					ICE	FINAL PH IF KNOWN
	SAMPLE NUMBER	DATE	TIME			si	1014	24	~	1	0/	3	0				-		0	4 ND	REMARKS OR	KEMAKKS OR canadie 1 ocation	NC			
		805/2021	12	COV COV	_		5	*	V	*	T	10.	S.	1					n	SAIMI	וגרב ר	OCALIK	ND			
-	CAR-1	8:2	115	x		X	X	Х	X	X	X														X	
N	CAR - 2 - 0	ଟ୍ଟ	BIO	X		X X	X	Х	X												-				X	
m	CAR-2-10		1210	х		X	X	Х		X															X	
	CAR - 4	8-25	DRC1	X		XX	X	Х	X																X	
5	CAR - 13	8-22		×		X	X	Х	X												-				X	
9	CAR - 12	8.3	0771	X		XX	X	Х	X																X	
1	CAR - 15	8-3	1537	×		X X	X	X	X																X	
57	CAR – KP – Marina	40	1Jas	X						N	X										-				X	
6	CAR – DW – Marina	SPS	95/1	X						X	M														X	
0	CAR – BL – Marina	8.25	15(0	X						X	M														X	
Y	CAR - CSA - Marina	Srs	1158	X						X	M														X	
4	KAS-1	8.25	940	×		XX	X	X.		X	M	X	×								-				X	
	KAS-2	8-25	X	×		XX	X	X		X	M	X	\sim												X	
RDL																					_				_	
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port 8	Relinquished by: (Signature)	A'S		Received by	0 L L O	(Signature)	(ant	1	REM	LARK	S/SPE	CIAL	REMARKS/SPECIAL INSTRUCTIONS:	RUCT	SNOL											
801-	Relinguished by (Menature)	Date	Time WHO	Received by:	:kq pa	Signature)	ture)		*Pres	*Preserved with H ₂ SO ₄ #Preserved with HNO ₃	with l	*Preserved with H ₂ SO ₄ #Preserved with HNO ₃														
Page 3	Received for Laboratory by: (Signature)	Date	1	Shipping Ticket No.	lg Tick	et No.																				
1 of 33	PURCHASE ORDER NO:							1																		

	<u>COOLER RECEIPT REPORT</u> ARDL, INC.		
ARI	DL #: 8801 Cooler # 1 Red		
	Number of Coolers in Shinment		
Pro	ject: <u>Carlyle Lake Kaskaskia River</u> Date Received: <u>D8/25/2021</u>		
Α.	PRELIMINARY EXAMINATION PHASE: Date cooler was opened: 08/25/2021 (Signature)		
1.	Did cooler come with a shipping slip (airbill, etc.)?YES	NO)
	If YES, enter carrier name and airbill number here: ARDL COURIER - 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?	NO	
5.	Were custody papers sealed in a plastic bag? Hand delivered	NO	>
6.	Were custody papers filled out properly (ink, signed, etc.)?	NO	N/A
7.	Were custody papers signed in appropriate place by ARDL personnel?	NO	N/A
8.	Was project identifiable from custody papers? If YES, enter project name at the top of this form) NO	N/A
9.	Was a separate container provided for measuring temperature? YESNO Observed Cooler Temp. 4.2	0.0	С
В.	LOG-IN PHASE: Date samples were logged-in: 08/26/2021 (Signature)	<u> </u>	C
10.	Describe type of packing in cooler:		
11.	Were all samples sealed in separate plastic bags?	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?	NO	
16.	Was pH correct on preserved water samples?) NO	N/A
17.	Was a sufficient amount of sample sent for tests indicated?) NO	
18.	Were bubbles absent in VOA samples? If NO, list by sample #:YES	NO	(N/A)
19.	Was the ARDL project coordinator notified of any deficiencies?YES	NO	$\mathbb{N}_{\mathbb{A}}$
	Comments and/or Corrective Action: Sample Transfer		
	Fraction Fraction		
	Area# Area#		
	By By By		
	DCB S		
	OB/26/2021 On		
	Chain-of-Custody #		
(E	By: Signature) Date:		

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

	COOLER RECEIPT F	REPORT		
	(20) (ARDL, INC.	A 101		
AR	DL #:	Cooler # $1 Blue$	7	
		Number of Coolers in Shipment: 4	1959 	-
Prc	ject: Carlyle Larke	Date Received:/25/202/		
A.	PRELIMINARY EXAMINATION PHASE: Date cooler was opened:	5/202)(Signature)		
1.		,	NO))
	Did cooler come with a shipping slip (airbill, etc.)? If YES, enter carrier name and airbill number here:	vier-Valerie		
2.	Were custody seals on outside of cooler?	YES	NO	(N/A)
	How many and where?;Seal Date:;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	\sim
5.	Were custody papers sealed in a plastic bag? Hand delive	.uc	NO)
6.	Were custody papers filled out properly (ink, signed, etc.)?	ÝĒS) NO	N/A
7.	Were custody papers signed in appropriate place by ARDL personnel?		NO	N/A
8.	Was project identifiable from custody papers? If YES, enter project name at	the top of this form	NO	N/A
9.	Was a separate container provided for measuring temperature? YES		C	
B.			0.0	C
10.	Describe type of packing in cooler: Losse (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?) no	
13.	Were sample labels complete?		NO	
14.	Did all sample labels agree with custody papers?		NO	
15.	Were correct containers used for the tests indicated?) NO	
16.	Was pH correct on preserved water samples?	ES) 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:	Sample Transfer		
		Fraction Fraction		
		Area# Area#		
_		By In By		
		08 210 2021 on		
			and the second se	
(E	By: Signature) Date:	Chain-of-Custody #		******

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